ABINGTON TOWNSHIP

APRIL 23, 2024

PLANNING COMMISSION MEETING

TOWNSHIP OF ABINGTON

PLANNING COMMISSION MEETING

A G E N D A
April 23, 2024
7:30 PM

There are three ways for the public to participate in the meeting: in-person, online or by phone. Residents who wish to attend in person can do so in the Abington Township Board Room located at 1176 Old York Road, Abington, PA 19001, 2nd Floor. Alternative means of public participation are offered for those who do not wish to or are unable to attend the meetings in person. Residents who wish to participate in the meeting remotely can access the meeting online by a computer, iPad, iPhone, or Android at https://us06web.zoom.us/j/83637406019. This link will enable residents to hear the meeting and see presentations. There will be no video capabilities. Residents, who are unable to join online, can listen to the meeting by calling 1-929-436-2866 and entering the meeting ID number 836-3740-6019 when prompted.

CALL TO ORDER

ROLL CALL *BROWN, DICELLO, ROBINSON, BAKER, STRACKHOUSE, WEATHERLY*

CONSIDER APPROVAL OF MINUTES

a. Consider Approving Planning Commission Minutes of February 27, 2024.

PRESENTATION

UNFINISHED BUSINESS

NEW BUSINESS

a. Review the Final Major Land Development application LD-23-01 for the location at 711 Fox Chase Road, Jenkintown, PA 19046. (St. Basils).

PUBLIC COMMENT

ADJOURNMENT

To subscribe and receive agenda posting notifications, please sign up on our website under *Email Updates* at www.abingtonpa.gov/agendas

BOARD POLICY ON PUBLIC PARTICIPATION

For Information Purposes Only

The Township shall conduct business in accordance with the Commonwealth of Pennsylvania Laws governing the conduct of public meetings and only establish guidelines that shall govern public participation at meetings consistent with the law.

Each commenter shall:

- Direct their comments to the Presiding Officer;
- Speak from the podium or into a microphone designated by the presiding officer;
- State their name for the record;
- Either orally or in writing provide their address for the record;
- Have a maximum of three minutes to make their comments. Each commenter when speaking to a specific agenda item, is to keep their comments relative to that identified agenda item;
- Speak one time per agenda item;
- When commenting on non-agenda items, the commenter is to keep their comments related to matters of the Township of Abington, Montgomery County, Pennsylvania.
- State a question to the Presiding Officer after all commenters have spoken, and;
- Be seated after speaking or upon the request of the presiding officer;
- Not engage in debate, dialogue or discussion;
- Not disrupt the public meeting, and;
- Exercise restraint and sound judgement in avoiding the use of profane language, and the maligning of others.

The stated meeting of the Planning Commission of the Township of Abington was held on Tuesday, February 27, 2024 via webinar and in-person at the Township Administration Building, Abington, PA, with Chairman Brown presiding.

CALL TO ORDER: 7:30 p.m.

ROLL CALL: Present: BROWN, DICELLO, ROBINSON, BAKER, WEATHERLY
Excused: STRACKHOUSE

Also Present: Township Engineer Lee
County Planner Narcowich

PLEDGE OF ALLEGIANCE

CONSIDER APPROVAL OF MINUTES:

Mr. Baker made a MOTION, seconded by Mr. Brown to approve the minutes from the Planning Commission Meeting of December 20, 2023.

MOTION was ADOPTED 5-0.

PRESENTATION: None.

UNFINISHED BUSINESS: None.

NEW BUSINESS:

Review the Galman requested DRAFT Zoning Map Amendment Ordinance and comment:

Mr. Marc Jonas, Attorney representing the applicant, introduced Mr. Jerry Slipakoff from the Galman Group, and said this a request for a map amendment to shift the zoning line at the Pavilion Town Center to construct a medical office building at the southern end of the site near Lenox Road. A map change is the first step and the next will be the land development process when the details of construction will be presented.

Pavilion Town Center Master Plan Improvement Project rezoning area is approximately 2.2 acres moving the property line into the Business Center Zoning District and the entirety including the medical office building site is approximately 4 acres.

Mr. Brown asked for any comments from members of the Planning Commission.

Mr. Baker asked about the golf course part of the site.

Mr. Jonas replied there is a 9-hole golf course where the 7th hole will continue to exist but will be shorter.

Mr. Slipakoff added that we bought that piece of the golf course with the intention of using it for parking as the lot is so irregularly shaped and not much good for anything else.

Mr. Brown clarified that the proposed zoning boundary is the property line and a previously agreed upon boundary with the other property owner. Is that correct?

Mr. Jonas replied that is correct.

Mr. Baker said even though there will be extra green space, there seems to be a lot of parking spaces.

Mr. Jonas said this will be parking-compliant for medical office use and we will add green areas to other parts of the site, so there would be no loss of green area.

Mr. Slipakoff added that a study of the overall site was done to make sure we remain compliant with enough parking spaces.

Mr. Baker expressed concern about abutting against the neighbors in the rear and suggested creating green space buffer from the residential.

Mr. Jonas replied buffering is important and will be addressed.

Mr. Brown clarified that the plan meets the impervious/pervious ratio requirement for the Business Center Zoning District. Is that correct?

Mr. Jonas replied yes.

Ms. Allison Lee noted that the requirement for minimum green area is 25% in the BC District.

Mr. Weatherly said although there will be a net increase in green space, it feels parking-heavy for the proposed use.

Mr. Jonas replied that putting parking in reserve is a possibility depending on the type of user and their needs, and the ordinance has parking reduction factors that will be considered.

Mr. Brown questioned whether shared parking would be considered as part of the next phase.

Mr. Jonas replied this is a complex site with several different parcels and various agreements among them in terms of parking and shared parking; however, we do need enough parking for the medical use building.

Mr. DiCello asked is there any intent to build on the eastern end of the parcel?

Mr. Jonas replied there is no plan for an additional building.

Mr. Weather clarified that the applicant will not go beyond what is required for parking. Is that correct? Also, he asked about the drainage pattern.

Mr. Jonas replied if there is enough parking for patients and staff, we would be amenable to holding parking in reserve or consider parking reduction factors. And stormwater management will be addressed at a future date.

Mr. Weatherly suggested that the net green space be added to the vicinity of the parking lot to offset the consolidation of the impervious area.

Mr. Jonas replied we will look into that.

Ms. Allison Lee questioned whether the plan is to consolidate the two existing BC and RC lots or keep them separate.

Mr. Jonas replied we will look into consolidation or cross easements that would be recorded whichever is satisfactory to the Township Solicitor.

Mr. Brown asked for any public comment.

Lora Lehmann, resident, expressed concern about capturing the drainage going downhill, and about notice not given to the neighbors.

Mr. Brown replied the ordinance has requirements for directly notifying the relevant neighbors and property owners in advance of the Board of Commissioners meeting, and we do hope to see improvements for the word getting out about the Planning Commission meetings.

Mr. Weatherly made a MOTION, seconded by Mr. DiCello to recommend approval of the Galman proposed draft zoning map amendment ordinance.

MOTION was ADOPTED 5-0.

PUBLIC COMMENT: None.

ADJOURNMENT: 8:18 p.m.

Respectfully submitted,

Liz Vile, Minutes Secretary

PLANNING COMMISSION MEETING

AGENDA ITEM

April 23, 2024

DATE

AGENDA ITEM NUMBER

Administration

DEPARTMENT

FISCAL IMPACT	
Cost > $10,000	
Yes	No

PUBLIC BID REQUIRED	
Cost > $20,100	
Yes	No

AGENDA ITEM:

Toll Mid-Atlantic LP Company, Inc. Application

EXECUTIVE SUMMARY:

Under this Final Land Development application, the Applicant is proposing to demolish the existing structures of the former St. Basil Academy School site; and construct a total of 150 age-restricted carriage homes as well as a clubhouse and pool on an existing parcel of land located within the newly created AR - Age Restricted Carriage Home Overlay District. The entire site consists of approx. 46.37 acres and is located within the CS - Community Service Zoning District. Other site improvements for this site include parking, curbing, sidewalk, landscaping, lighting, and sanitary and stormwater management facilities. Access to/from the site will be by way of one (1) proposed entrance off Fox Chase Road. In addition, an emergency access road is proposed off of Fox Chase Road on the northwestern corner of the site.

PREVIOUS BOARD ACTIONS:

08.12.22 - A revised Ordinance was sent to address the Planning Commissions comments from the August 4, 2022 meeting. This Ordinance is attached and marked Revised 08.12.22.
08.23.22 - The Planning Commission recommended moving forward to the Comprehensive Plan Consistency Committee on August 31, 2022 with the recommendations stated in the Executive Summary.
09.08.22 - Working Session - recommended to move to the next Board of Commissioners meeting on October 13, 2022
10.13.22 - The Board of Commissioners approved advertisement of amendment
11.10.22 - Ordinance # 2199 was adopted.

05.23.23 - The Planning Commission reviewed the Conditional Use Application.
07.13.23 - The Board of Commissioners approved the Conditional Use Application.
02-08-24 - Working Session - Presentation of the Preliminary application
03-14-24 - The Board of Commissioners approved the preliminary major LD application.

RECOMMENDED BOARD ACTIONS:

Review the Final Major Land Development application LD-23-01 for the location at 711 Fox Chase Road, Jenkintown, PA 19046. (St. Basils).

April 3, 2024

ABINT130030

Mr. Richard Manfredi, Township Manager
Abington Township
1176 Old York Road
Abington, PA 19001

RE: LD-23-01-711 Fox Chase Road (St. Basil)
PARID: 30-00-22424-00-1/ TMID: 30059 025
PARID: 30-00-22424-00-5/ TMID: 30059 026
Final Major Subdivision and Land Development Plans Review (1st Submission)

Dear Mr. Manfredi:

We have received a copy of the " Preliminary/Final Major Subdivision and Land Development Plans" consisting of sixty-two (62) sheets dated March 24, 2023, revised March 22, 2024, and received on March 28, 2024, as prepared by ESE Consultants, Inc., located at 1140 Virginia Drive, in Fort Washington, PA for the above referenced project on behalf of the property owner, Sisters of St. Basil the Great, and the equitable owner, toll Mid-Atlantic, L.P Company, Inc. (the Applicant).

This project received preliminary major subdivision and land development plans approval from the Abington Township Planning Commission at their regular scheduled December 20, 2023 meeting, and from the Abington Township Board of Commissioners at their regular scheduled March 14, 2024 meeting.

This project is located within the CS – Community Service Zoning District with the newly created AR – Age Restricted Carriage Home Overlay District being an overlay for the underlying district. The site fronted by Fox Chase Road to the southwest; residential properties zoned in the R1 – Low Medium Density Residential Zoning District to the north or northeast; residential properties zoned in the R3 – Medium Density Residential Zoning District, as well as the RC – Recreation/Conservation Zoning District, to the southeast; and residential properties zoned in the R4 – High Density Residential Zoning District to the south. In addition, a tributary of the Pennypack Creek traverses from north to south within the eastern corner of the track.

Under this Final Major Subdivision and Land Development application, the Applicant is proposing to demolish the existing structures of the former St. Basil Academy School site; and construct a total of 150 age-restricted carriage homes as well as a clubhouse and pool on an existing parcel of land located within the newly created AR – Age Restricted Carriage Home Overlay District. The entire site consists of approx. 46.37 acres and is located within the CS – Community Service Zoning District. Other site improvements for this site include parking, curbing, sidewalk, landscaping, lighting, and sanitary and stormwater management facilities. Access to/from the site will be by way of one (1) proposed entrance off Fox Chase Road. In addition, an emergency access road is proposed off of Fox Chase Road on the northwestern corner of the site.

In accordance with the FEMA, Flood Insurance Rate Map (FIRM) Panel No.42091C0403G, effective March 2, 2016, the tract is identified to be primarily located within Zone X, an area outside the 0.2% chance flood and minimal flood hazard. However, the area where the Pennypack Creek tributary traverses the site is located within Flood Zone X, an area of 0.2% annual chance flood hazard, areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile. Therefore, based on the FEMA FIRM determination, this site is not located within the Floodplain Conservation District, and is therefore not subject to the floodplain regulations of the Floodplain Conservation District. However, per the Abington

Township Riparian Corridor Analysis Map, Figure 15.2, this parcel is identified as a parcel which is located within and intersecting the Riparian Corridor; and is therefore subject to the regulations of the Riparian Corridor Conservation District.

CONDITIONAL USE GRANTED

The Applicant appeared before the Abington Township Board of Commissioners at the Public Hearing held on July 13, 2023. The Applicant was granted the following conditional use approval from the Abington Township Zoning Code:

1. **§1503.B.2.b – Uses Permitted by Conditional Use, Zone 2** – A conditional use approval to allow for the installation of a central sewer line in Zone 2 of the Riparian Corridor Conservation District.

The conditional use approval shall be included on the Record Plan (Sheet 2).

WAIVERS GRANTED

At their March 14, 2024 meeting, the Abington Township Board of Commissioners granted the following waivers:

1. **§146-11.A.(4) – Property Identification Plans** – A waiver to not show all the information of the TMP, names of owners, the approx. acreage, and similar features within 400 feet.

2. **§146-11.B.(3) – Existing Features Plan** – A waiver is requested to not show the all the information of the location of property lines and names of owners, and similar features within 400 feet.

3. **§146-11.B.(7) – Existing Features Plan** – A waiver is requested to not show the all the information of the underground and above ground utilities, and similar features within 400 feet.

4. **§146-27.C – Sidewalks and Curbs - Location** – A waiver is requested for the sidewalk along Fox Chase Road. The existing locations of the sidewalk along portions of the road are within a few feet of the curb and roadway. The existing location will be repaired/replaced with a new sidewalk and extended along the entire frontage. The area between the sidewalk and the right-of-way (roughly 12'+) will be used for street tree plantings.

5. **§146-27.F – Sidewalks and Curbs** – A waiver is requested for the curbing on the interior roads to be constructed with 6" Belgian Block. The internal roadways will be privately maintained. This variation will help with the subdivision aesthetics and maintenance.

6. **§146-29.A – Blocks – Length** – A waiver is requested to allow for the internal roads C, D, F and G to have less than the 500' minimum length. All roads orientation and lengths have been affected by the layout and the extended buffer around the property.

7. **§146-33.I – Drainage** – A waiver is requested to not extend rood leaders to road gutter under sidewalk or connect to storm drains, but to instead allow roof drains to flow over lawn to allow pollutants to settler out and infiltrate into the topsoil. This section of the SALDO is also in conflict with 142-802.A of the Stormwater Management Ordinance.
   The Applicant shall show the roof drains and sump pumps (if any) for the proposed clubhouse building, as well as, for each of the proposed townhome dwellings on the plans. Stormwater Ordinance §142-802.A requires roof drains not to be connected to streets, sanitary or storm sewers, or roadside ditches, and shall discharge to infiltration areas or vegetative BMPs to the maximum extent practicable. The Applicant has requested a waiver from this Code Section to allow for roof drains to flow over the lawn areas and infiltrate instead of extending under the sidewalk to the gutter.

8. **§146-35.C.(2) – Design and construction of sewers – Size, grade and type –** A waiver is requested to modify the material of the sanitary sewer main to SDR-26 (plastic pipe) from ductile iron. The supply of the SDR-26 is more readily available.
   The Applicant is proposing 8-inch SDR-26 piping for the proposed sanitary sewer system to the site instead of ductile iron pipe per this Code Section. We defer to the Abington Township Wastewater Utilities department for any sewer related comments.

9. **§146-43.C.(3).(a) – Excavations and fills –** A waiver is requested to construct cut and fill slopes greater than 15% for the stormwater basin berms and allow basin slopes and slopes to ties into natural grade up to 33%. The steeper berms will limit the areas taken up by the berms while still adequately capturing and routing the stormwater from the site.

The "Waivers List" on Plan Sheet 2 only listed the waivers obtained for this project. The "Waivers List" shall be revised to "Waivers Approved," and a statement shall be added to indicate the following waivers were granted by the Abington Township Board of Commissioners at the regularly scheduled meeting held on March 14, 2024.

The following documents have been reviewed:

Title	Sheet	Dated	Revised
Land Development Plans			
Cover Sheet	1 of 62	03/24/23	03/22/24
Record Plans	2-5 of 62	03/24/23	03/22/24
General Notes	6 of 62	03/24/23	03/22/24
Existing Features Plans	7-10 of 62	03/24/23	03/22/24
Overall Site Plan	11 of 62	03/24/23	03/22/24
Grading Plans	12-19 of 62	03/24/23	03/22/24
Utility Plans	20-27 of 62	03/24/23	03/22/24
Road Plan & Profile	28-34 of 62	03/24/23	03/22/24
Easement Profiles	35-39 of 62	03/24/23	03/22/24
Construction Details	40-41 of 62	03/24/23	03/22/24
Storm Sewer Details	42-43 of 62	03/24/23	03/22/24
Sanitary Sewer Details	44-45 of 62	03/24/23	03/22/24
Water Details	46 of 62	03/24/23	03/22/24
Basin Details	47-53 of 62	03/24/23	03/22/24
Landscape & Lighting Plans	54-61 of 62	03/24/23	03/22/24
Landscape & Lighting Details & Notes	62 of 62	03/24/23	10/13/23
Stormwater Management Narrative	442 pages	July 2023	October 2024
Erosion and Sediment Control Narrative	144 pages	July 2023	March 2024

We have performed a review of the above referenced plans for compliance with the Zoning Ordinance (Chapter 162); Subdivision and Land Development Ordinance (Chapter 146); and Stormwater Management Ordinance (Chapter 142), and our previous review dated November 13, 2023. We offer the following outstanding comments for your consideration *(using the same numbering scheme as the prior reviews)*:

CHAPTER 146
SUBDIVISION & LAND DEVELOPMENT COMMENTS

39. ***Per §146-11.G.(1).(e),(f),&(h) – Utility Plan –*** *The utility plan shall show the electrical lines, junctions, vaults, telephone lines, cable television lines and other related appurtenances.*

The Applicant is showing the underground utilities running along the roadways within the development; however, the electrical, telephone, cable, etc. lines are not shown connecting to the proposed dwellings. The Applicant shall provide these connections on the Utility Plans. The Applicant shall also show the electrical lines connecting to the proposed streetlights.

There are multiple locations where a proposed fire hydrant is located directly on top of the underground electric line; i.e., the proposed fire hydrant adjacent to Unit 148 on Road B; adjacent to the side of Unit 118 on Road B; adjacent to the proposed clubhouse on Road A between inlets no. 206 and 212; adjacent to the side of Unit 50 on Road E. The plans show be updated to avoid any utility conflicts.

The fire hydrant adjacent to the proposed clubhouse between inlets 206 and 212 is still shown to be directly overtop the underground electric line. The plan shall be updated to avoid any utility conflicts.

Based on the Utility Plans (Sheets 20-27) and the Landscape and Lighting Plans (Sheets 54-61), electrical lines are still not shown on these plans for the proposed streetlights. The electrical lines shall be provided on the utility plans for the streetlights.

GENERAL COMMENTS

80. *Per the Existing Features Plans (Sheets 7 to 10), there are multiple locations where private fencing and structures are shown to be encroaching within the site boundaries from the abutting properties that front Forrest Avenue, Kirkwood Street, and Suffolk Road. The Applicant shall clarify if the private fences and structures are permitted to remain or be required to be removed outside the site boundaries. It is recommended that a written agreement to permit these encroachments for each of the properties should be provided to the Township.*

The Applicant has indicated that they are working with the Township and the neighboring properties that currently encroach the site boundary to remove the encroachments.

The Applicant has indicated that they are working to resolve the disposition of the encroachments. All encroachments shall be rectified prior to recording of the plans. Copies of written agreements shall be provided to the Township for encroachments to remain.

ADDITIONAL COMMENTS

1. Sufficient room for the signature and seal of the Township Engineer to ensure no text overwrites shall be provided on the Record Plan (Sheet 2).

We have received the following documents/permits/reviews:

- AQUA Will Serve Letter (January 29, 2021)
- Transportation Impact Assessment (February 10, 2023, last revised March 13, 2023)
- Conditional Use Application (March 27, 2023)
- MCPC Request for Review (March 27, 2023)
- Application for SALDO Review (March 27, 2023)
- Waivers Request (included w/ SALDO Application) (March 27, 2023)
- Post Construction Stormwater Management Report (March 2023)
- Updated Waiver Request Letter (July 25, 2024)
- TPD Traffic Review (August 16, 2022; April 29, 2023; November 10, 2023)
- Sanitary Sewer Review (May 12, 2023; November 9, 2023)
- STC Review (May 10, 2023; December 18, 2023)
- EAC Review (May 11, 2023)
- Fire Marshal Review (May 12, 2023 via email; November 9, 2023)

- MCPC Review (May 19, 2023; November 9, 2023)
- MCCD Incompleteness Review Letter (August 29, 2023)
- MCPC Request for Review (October 18, 2023)
- MCCD Withdrawal of Incomplete NOI Letter (January 11, 2024)
- MCPC Request for Review (March 22, 2024)
- Application for Final SALDO Review (March 26, 2024)

We have not received the following documents/permits/reviews:

- MCCD Approval
- Sanitary Sewer Availability Letter (pending historical downstream sewer capacity evaluation)
- Application for Sewage Facilities Planning Module Exemption Mailer
- NPDES Permit
- Financial Escrow
- LD Agreements
- Stormwater BMP O&M Agreement
- Legal Descriptions & Exhibits of all easements

SUMMARY

We recommend Final Major Subdivision and Land Development Plans approval conditioned that the Applicant addresses the above referenced comments and provides the required documents/permits/approvals prior to recording plan approval.

If you have any questions or comments with this submittal, please do not hesitate to contact me.

Sincerely,

PENNONI

Khaled R. Hassan, PE
Township Engineer

cc: Terry Castorina, Assistant to the Township Manager
Ashley McIlvaine, Assistant Township Manager & Assistant CAO

U:\ACCOUNTS\ABINT\ABINT130030 - LD-23-01 - 710 FOX CHASE RD (ST. BASIL)\ADMIN\4 - PLAN REVIEWS\4TH SUBMISSION FINAL 1\FR01040324 711FOXCHASEROAD.DOCX

APPLICATION FOR SUBDIVISION/LAND DEVELOPMENT

PROJECT NAME: Sisters of St. Basil

APPLICANT NAME: Toll Mid-Atlantic LP Company, Inc.

TO BE COMPLETED BY THE TOWNSHIP
Submission Information:

Application Number:_____ Date Complete:_____

Project Title:_____ 90 Day Date:_____

File Date:_____ Ward No.:_____

REQUIRED MATERIAL FOR ALL SUBDIVISION/LAND DEVELOPMENT APPLICATIONS:

1. This form **MUST** be completed and submitted.
2. A Subdivision/ Land Development Application MUST include all of the items listed in the application checklist in Section V to be considered complete.
3. Incomplete application will **NOT** be placed on the Planning Commission agenda. Incomplete applications will be returned to the applicant.
4. Complete applications must be received at least 45 DAYS (see schedule) prior to the Planning Commission meeting at which it will be heard.
5. Ten (10) full size paper copies, and one (1) 11x17 reduced copy of the plans, plus three (3) copies of each report or study are to be submitted in the initial submission of the complete application. A digital copy of all submitted documents must be included with the application.

   ***It is highly encouraged to submit applications in a digital format**

I. CONTACT INFORMATION

Applicant Information

Toll Mid-Atlantic LP Company, Inc.
Name

1140 Virginia Drive, Fort Washington, PA 19034
Address

(215) 938-8000 _____
Phone Fax

BThierrin@tollbrothers.com
Email Address

Property Owners Information (if different than applicant)

Sisters of St. Basil the Great
Name

710 Fox Chase Road, Jenkintown, PA 19046
Address

_____ _____
Phone Fax

_____
Email Address

Architect/ Planner

ESE Consultants, Inc.
Name

_____
Address

_____ _____
Phone Fax

_____
Email Address

Engineer/ Surveyor	ESE Consultants, Inc., Jeffrey Madden, PE Name 1140 Virginia Drive, Fort Washington, PA 19034 Address
Engineer/ Surveyor Cont'd	(215) 293-5441 Phone Fax JMadden@eseconsultants.com Email Address
Attorney	Alyson M. Zarro, Esquire, Riley Riper Hollin & Colagreco Name 717 Constitution Drive, Suite 201, Exton, PA 19341 Address (610) 458-4400 Phone Fax alyson@rrhc.com Email Address

II. PROJECT INFORMATION

Application Type:

____Minor Subdivision	____Minor Land Develop.	____Preliminary Major SD & LD
____Preliminary Major Subdivision	____Prelim. Major Land Develop.	__X__Final Major SD & LD
____Final Major Subdivision	____Final Major Land Develop.	

Full street address of the property: 711 Fox Chase Road, Jenkintown, PA 19046

Tax Parcel No.: 30-00-22424-00-1 30-00-22420-00-5 County Deed Book No.: 1572 2573 Page No.: 209 467

Description of Proposed Work: Redevelopment of the property with 150 Age-Restricted Carriage Home Dwelling Units and accessory uses, including a clubhouse and pool.

Total Tract Acreage: +/- 46.37 acres Project Acreage: _____

Zoning District: AR - Age Restricted Carriage Home Overlay Existing Number of Lots: 2 Proposed Number of Lots: 150 Units

Existing Sewer Flows: Public Proposed Sewer Flows: Public

Proposed Land Use:

____Single Family Detached	__X__Single Family Attached	____Single Family Semi-Detached	
____Multi-Family	____Commercial	____Office	____Industrial

____Other (Describe): _____

III. REVIEW

Please complete the following section by circling a response:

• Have you met with the Zoning Officer regarding this plan?	**Yes**	No
• Are there known variances/any zoning relief necessary for this project?*	Yes	**No**
• If YES, have you submitted an application to the Zoning Hearing Board?	Yes	No
• Has this plan been heard by the Zoning Hearing Board?	Yes	No
• Has this plan been submitted to, considered by, or received any formal action by the Planning Commission or Board of Commissioners in the past?	**Yes**	No

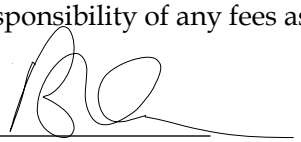
*Please be advised that if any variances are found to be necessary during the course of the review of this plan, you will be required to go to the Zoning Hearing Board prior to proceeding to the Planning Commission. In addition, you will be requested to grant the Township a waiver to the 90-day action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

It is recommended that ALL Land Development and Major Subdivision applications have a pre-submission meeting to discuss the project prior to full application submittal.

Minor Subdivision applications may request a pre-submission meeting; if one is desired.

Meetings are typically held the fourth Tuesday of each month at the Township Administrative Offices.

Applicants assume responsibility of any fees associated with this meeting.

Applicant signature  3/26/24

Date

To schedule a pre-submission meeting, please contact the Office of the Township Manager at 267-536-1003 or email TCastorina@abingtonpa.gov

IV. WAIVERS

List of Requested Waivers: Attach separate sheet if required.

Section/Requirement:	**Relief Requested:**
No requested waivers as part of this Final Subdivision and Land Development Application	

V. SUBMISSION

APPLICATION CHECKLIST

The applicant is responsible for the submission of a complete application. This checklist will aid both the applicant and staff in ensuring that all applications are complete. The following is a per item submission checklist for all Subdivision, Land Development and Conditional Use Applications for the Township of Abington.

- ✓ Application Form: completed and signed by the owner/applicant
- ✓ 10 (ten) copies of the proposed plan, folded to legal file size. Plan should not be smaller than 1" = 50' and not exceed a sheet size of 24"x 36"
- ✓ One (1) reduced copy of the proposed plan, no larger than 11"x17"
- 1 Two (2) sets of tentative architectural plans for all applications proposing construction or land development 1 Architecutral plans submitted with Preliminary Application, Applicant will submit more detailed plans when available.
- ✓ One (1) copy of the Recreation Facilities Plan (if required by §146-40)
- ✓ Letter of Sanitary Sewer availability from the Township Wastewater Treatment Department
- * Two (2) copies of Sewage Facilities Planning Module Applications
- * Letter of Water availability from AQUA PA *Submitted with Preliminary Application
- N/A One (1) copy of any previous Zoning Hearing Board decisions related to the subject property
- ✓ One (1) digital copy of all submitted documents
- ✓ Application Fee: Check made payable to the Township of Abington
- ✓ Escrow Fee: Check made payable to the Township of Abington. Separate check from application fee

VI. SIGNATURE

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

Signature of Applicant — Date: 3/26/24

Signature of Property Owner (if different than applicant) — Date: 3/26/24

THE FOLLOWING IS FOR INTERNAL USE ONLY:

PAYMENT

__x___ Application Fee Amount: $___500 _____ Check No.: #__76131_____

____ Review Escrow Fee Amount: Check No.: #_____

DECISION INFORMATION $_____

Approval _____ Denial_____ Decision Date: _____

Comments/Conditions:_____

_____

_____

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March 27, 2024

Abington Township
Richard Manfredi, Manager
1176 Old York Road
Abington, PA 19001

Dear Mr. Manfredi:

On behalf of the applicant, Toll Bros., Inc., please accept this response letter.

This response letter includes responses to the review letter by Pennoni Associates, dated November 13, 2023. Responses to review letters by the Abington Township Shade Tree Commission, dated December 18, 2023, Abington Township Environmental Advisory Council dated May 11, 2023, Township of Abington Fire Marshal, dated November 9, 2023, Traffic Planning & Design, dated November 10, 2023, Abington Township Wastewater Utilities Department, dated November 9, 2023, Montgomery County Planning Commission Review, dated November 9, 2023, and May 19, 2023.

Pennoni Associates, Inc, dated November 13, 2023

CONDITIONAL USE GRANTED

The Applicant appeared before the Abington Township Board of Commissioners at the Public Hearing held on July 13, 2023. The Applicant was granted the following conditional use approval from the Abington Township Zoning Code:

1. §1503.B.2.b – Uses Permitted by Conditional Use, Zone 2 – A conditional use approval to allow for the installation of a central sewer line in Zone 2 of the Riparian Corridor Conservation District.

ESE Response: No action required.

WAIVERS REQUESTED

The Applicant is requesting the following waivers from the Abington Township Subdivision and Land Development Code:

1. §146-11.A.(4) – Property Identification Plans – A waiver to not show all the information of the TMP, names of owners, the approx. acreage, and similar features within 400 feet.

   The Applicant has provided the property identification information for the immediately surrounding parcels abutting the site, and not the entire 400 feet distance per this Code Section.

   ESE Response: Waiver was granted on 3/14/2024 by the Abington Township Board of Commissioners. The waiver list has been added to sheet 2 of the planset.

2. §146-11.B.(3) – Existing Features Plan – A waiver is requested to not show the all the information of the location of property lines and names of owners, and similar features within 400 feet.

   The Applicant has provided the property lines and landowner information for the immediately surrounding parcels abutting the site and not the entire 400 feet distance per this Code Section.

   ESE Response: Waiver was granted on 3/14/2024 by the Abington Township Board of Commissioners.

3. §146-11.B.(7) – Existing Features Plan – A waiver is requested to not show the all the information of the underground and above ground utilities, and similar features within 400 feet.

The Applicant has provided the utility information immediately surrounding the parcel and not the entire 400 feet distance per this Code Section.

ESE Response: Waiver was granted on 3/14/2024 by the Abington Township Board of Commissioners.

4. §146-27.C – Sidewalks and Curbs - Location – A waiver is requested for the sidewalk along Fox Chase Road. The existing locations of the sidewalk along portions of the road are within a few feet of the curb and roadway. The existing location will be repaired/replaced with a new sidewalk and extended along the entire frontage. The area between the sidewalk and the right-of-way (roughly 12'+) will be used for street tree plantings.

   The Applicant is proposing to retain some portions of the existing curb and sidewalk and make repairs or replacement as needed along the site frontage on Fox Chase Road. The Applicant is proposing new 5 feet wide sidewalk primarily along the center portion of the site frontage which will be located approximately 24 feet to 27 feet from the property line along Fox Chase Road. In addition, the Applicant is proposing to plant street trees between the edge of the roadway and proposed new sidewalk.

   ESE Response: Waiver was granted on 3/14/2024 by the Abington Township Board of Commissioners.

5. §146-27.F – Sidewalks and Curbs – A waiver is requested for the curbing on the interior roads to be constructed with 6" Belgian Block. The internal roadways will be privately maintained. This variation will help with the subdivision aesthetics and maintenance.

   The Applicant is proposing 6-inch high Belgian Blocks along the interior roadways. The Township standard curb type is 6-inch-high cement concrete curb. The Applicant has requested a waiver from this Code Section to provide 6-inch high Belgian Blocks instead of the Township cement concrete curb standard since the internal roadways will be privately maintained and for aesthetics complementary to the land development.

   ESE Response: Waiver was granted on 3/14/2024 by the Abington Township Board of Commissioners.

6. §146-29.A – Blocks – Length – A waiver is requested to allow for the internal roads C, D, F and G to have less than the 500' minimum length. All roads orientation and lengths have been affected by the layout and the extended buffer around the property.

   The internal Road C has an approximate length of 360 feet between intersections; Road D has an approximate length of 470 feet between intersections; Road F has an approximate length of 410 feet between intersections; and Road G has an approximate length of 320 feet between intersections, all of which do not meet the minimum 500 feet length requirement per this Code Section.

   ESE Response: Waiver was granted on 3/14/2024 by the Abington Township Board of Commissioners.

7. §146-33.I – Drainage – A waiver is requested to not extend rood leaders to road gutter under sidewalk or connect to storm drains, but to instead allow roof drains to flow over lawn to allow pollutants to settler out and infiltrate into the topsoil. This section of the SALDO is also in conflict with 142-802.A of the Stormwater Management Ordinance.

   The Applicant shall show the roof drains and sump pumps (if any) for the proposed clubhouse building, as well as, *for each of the proposed townhome dwellings on the plans. Stormwater Ordinance §142-802.A requires roof drains not to be connected* to *streets, sanitary or storm sewers, or roadside ditches, and shall discharge* to *infiltration areas or vegetative BMPs* to *the maximum extent practicable. The Applicant has requested a waiver*

from this Code Section to *allow for roof drains* to *flow over the lawn areas and infiltrate instead of extending under the sidewalk* to *the gutter.*

The Applicant has added a typical dwelling unit to the sheet 40 to show possible locations of the roof drains or sump pump (if basement) and updated the sheet 16 to show the possible locations for the roof drains of the clubhouse. The Applicant is requesting a waiver from this Code Section to allow for roof drains to flow over the lawn areas and infiltrate instead of extending under the sidewalk to the gutter.

ESE Response: Waiver was granted on 3/14/2024 by the Abington Township Board of Commissioners.

8. §146-35.C.(2) – Design and construction of sewers – Size, grade and type – A waiver is requested to modify the material of the sanitary sewer main to SDR-26 (plastic pipe) from ductile iron. The supply of the SDR-26 is more readily available.

The Applicant is proposing 8-inch SDR-26 piping for the proposed sanitary sewer system to *the site instead of ductile iron pipe per this Code Section. We defer* to *the Abington Township Wastewater Utilities department for any sewer related comments.* The Applicant has received acceptance from the wastewater utilities department.

ESE Response: Waiver was granted on 3/14/2024 by the Abington Township Board of Commissioners.

9. §146-43.C.(3).(a) – Excavations and fills – A waiver is requested to construct cut and fill slopes greater than 15% for the stormwater basin berms and allow basin slopes and slopes to ties into natural grade up to 33%. The steeper berms will limit the areas taken up by the berms while still adequately capturing and routing the stormwater from the site.

The applicant is proposing grades of 3:1 or approximately 33% primarily for the stormwater basins to limit the earth disturbance on the site.

ESE Response: Waiver was granted on 3/14/2024 by the Abington Township Board of Commissioners.

The following documents have been reviewed:

Title	Sheet	Dated	Revised
Land Development Plans			
Cover Sheet	1 of 64	03/24/23	10/13/23
Record Plans	2-5 of 64	03/24/23	10/13/23
General Notes	6 of 64	03/24/23	10/13/23
Existing Features Plans	7-10 of 64	03/24/23	10/13/23
Overall Site Plan	11 of 64	03/24/23	10/13123
Grading Plans	12-19 of 64	03/24/23	10/13/23
Utility Plans	20-27 of 64	03/24/23	10/13123
Road Plan & Profile	28-34 of 64	03/24/23	10/13/23
Easement Profiles	35-39 of 64	03/24/23	10/13/23
Construction Details	40-41 of 64	03/24/23	10/13/23
Storm Sewer Details	42-43 of 64	03/24/23	10/13/23
Sanitary Sewer Details	44-45 of 64	03/24/23	10/13/23

Water Details	46 of 64	03/24/23	10/13/23
Basin Details	47-55 of 64	03/24/23	10/13/23
Landscape & Lighting Plans	56-63 of 64	03/24/23	10/13123
Landscape & Lighting Details & Notes	64 of 64	03/24/23	10/13/23
Stormwater Management Narrative	419 pages	Julv 2023	October

We have performed a review of the above referenced plans for compliance with the Zoning Ordinance (Chapter 162); Subdivision and Land Development Ordinance (Chapter 146); and Stormwater Management Ordinance (Chapter 142), and our previous review dated August 23, 2023 . We offer the following outstanding comments for your consideration:

8. Per §1711, Figure 17.2 - Dimensional Regulations - The minimum open space shall be the gross site area (in acres) x 0.40.

The Applicant has provided a building coverage percentage of 34.3% which is in compliance with this Code Section. The Applicant shall provide an open space calculation on the plans showing the total open space and the resulting percentages to ensure compliance with this Code Section.

The Applicant is showing the proposed open space on the Overall Site Plan (Sheet 11) and has provided the open space calculations on the Record Plan (Record Sheet 2 of 4). However, there is discrepancy between the open space calculated in the Area Tabulation (39.694 Ac) and the open space acreage given in the Zoning Table (22.6 Ac). The discrepancy shall be confirmed and revised to be consistent on both plan sheets.

The Applicant clarified that the open space calculated in the Area Tabulation (39.694 Ac) is all the area outside the road ROW's and the encroachment areas. The open space acreage in the Zoning Table (22.6 Ac) is the qualifying open space for the site. The applicant shall add the qualifying open space acreage at the end of the Area Tabulation to clarify the qualifying open space calculation.

ESE Response: The applicant has revised Sheet 3, RP50.02, to include a line item for the 22.60 AC. of Qualifying Open Space at the bottom of the Area Tabulation Chart. The qualifying open space is now consistent with the calculated open space in the Zoning Table located on Sheet 3, RP50.02.

18. *Per §2401.A.2.d.(1).(a) - Preservation and Protection of Existing Vegetation - Tree replacement shall occur when new impervious coverage exceeds 500 SF and a tree with a minimum caliper of six (6) inches is removed. In such* cases, *two new* trees, *each a minimum of 3-to-3.SN caliper, measured* 6" *above grade, shall be planted for each tree with a minimum caliper of 6N or greater that is removed.*

Based on the Existing Features Plan (Sheet 7), *the Applicant is indicating that they are removing* 67 *trees as part of this Land Development project. The trees shall be labeled with a diameter of the tree to be removed to confirm the required tree replacement. A tree replacement calculation shall be provided on the landscaping plan showing the total number of trees removed and the total number of trees proposed based on this code requirement. In addition, the Applicant shall label the trees that are proposed to* remain. *For example, on the Existing Features Plan (Sheet 7), the existing trees that are not labeled which are located between the trees labeled 44 and 45 and 48 and 49* as *not proposed to be removed; however, on the Utility Plan (Sheet 24) there is storm piping proposed directly underneath those trees which will require those trees* to *be removed. The Applicant shall clarify and confirm all trees* to *remain or to be removed and update the label on the Existing Features plan accordingly.*

The Applicant is indicating that they are subdividing the property and creating new lots; therefore

§2401.A.2.d.(1).(b) should be used for this project. The Applicant is indicating that no more than 25% of the existing tree canopy is being removed, and the tree replacement requirement does not apply. However, for the site, only the proposed individual homes will be lotted out but the entire site as a whole will be under a homeowners association or similar entity that will be operating and maintaining the common *areas and the Zoning Table is showing* a *total site area of 46.37-acres in the proposed condition for the existing 46.58- acre site area. Therefore, Section §2401.A.2.d.(1).(a) would be applicable to this site. Based on the existing tree chart provided on the Existing Features Plan (Sheet 8),* 66 *of the 100 trees on the list are being removed which will require tree replacement for trees with a 6-inch caliper or greater at a rate of 2:1. The tree replacement calculation and the proposed replacement trees shall be provided on the plans accordingly.*

The Applicant is proposing 67 trees to be removed which will require a tree replacement of 134 trees. As part of the landscaping proposed for the site, the Applicant is proposing 231 street trees, 70 buffer canopy trees, 175 buffer evergreen trees, and 70 buffer understory trees all of which would satisfy the tree replacement requirement as well as the street tree and buffer tree requirements. The Applicant shall provide a tree replacement calculation on the plans and indicate that the required replacement trees have been included under the street tree and buffer tree requirements. The street tree planting schedule and buffer canopy tree planting schedule shall be revised to reflect a minimum size of 3" to 3.5" to meet the tree replacement specifications.

ESE Response: Sheet 62 has been revised to show tree replacement requirement calculations. The street tree schedule has been updated to show which trees are part of the tree replacement and sizes have been updated.

CHAPTER 146
SUBDIVISION & LAND DEVELOPMENT COMMENTS

26. *Per §146-10.B.(5) – General Requirements – Once the Applicant confirms the submission type, the submission type in accordance with §146-9.D shall be indicated on all the plan sheets as either Preliminary Major Subdivision and Land Development" or "Preliminary/Final Major Subdivision and Land Development" and noted as land development application number "LD-23-01".*
The submission type is preliminary major subdivision and land development. The Applicant has revised the plans accordingly.

The submission type has been included on the plans; however, the application number "LD-23-01" has not been included on the plans. This application number should be included.

The Application number LD-23-01 shall be included on all plan sheets. Currently the application number is only shown on the Cover Sheet.

ESE Response: The applicant has revised all sheets in the plan set to include "Application Number LD-23-01" near the bottom right corner of all sheets.

39. *Per §146-11.G.(1).(e),(f),&(h) – Utility Plan – The utility plan shall show the electrical lines, junctions, vaults, telephone lines, cable television lines and other related appurtenances.*

The Applicant is showing the underground utilities running along the roadways within the development; however, the electrical, telephone, cable, etc. lines are not shown connecting to the proposed dwellings. The Applicant shall provide these connections on the Utility Plans. The Applicant shall also show the electrical lines connecting to the proposed streetlights.

There are multiple locations where a proposed fire hydrant is located directly on top of the underground electric line; i.e., *the proposed fire hydrant adjacent to Unit 148 on Road B; adjacent to the side of Unit 118 on Road B; adjacent to the proposed clubhouse on Road A between inlets no.* 206 *and 212; adjacent to the side of Unit 50 on Road E. The plans show be updated to avoid any utility conflicts.*

The fire hydrant adjacent to the proposed clubhouse between inlets 206 and 212 is still shown to be directly overtop the underground electric line. The plan shall be updated to avoid any utility conflicts.

ESE Response: The applicant revised the location of the electric, gas, and cable/telecommunication to avoid all fire hydrants and all storm inlets. Additionally, all streetlights have been updated with an electric lateral. The gas, electric, and cable/telecommunication laterals have been updated on the "Typical Utility Layout" located on Sheet 40, SD09.01, rather than on the Utility Plan Sheets to keep the plans more readable.

51. *Per §146-27.F – Sidewalks and Curbs – Curbs shall be the vertical type and constructed in accordance with Township specifications.*

Based on existing conditions, there is existing curbing along the northwestern and southwestern site frontage of Fox Chase Road. The Applicant is not proposing new curbing along the entire site frontage along Fox Chase Road. We recommend that curbing be provided along the entire site frontage to provide a safety barrier between the edge of roadway and new sidewalk, as well as, for consistency of the entire site. In addition, the Applicant is proposing 6-inch high Belgian Blocks along the interior roadways. The Township standard curb type is 6-inch-high cement concrete curb. The Applicant has requested a waiver from this Code Section to provide 6-inch high Belgian Blocks instead of the Township cement concrete curb standard since the internal roadways will be privately maintained and for aesthetics complementary to the land development.

The Applicant has indicated that they will discuss the curbing with the Township. We had recommended that curbing be provided along the entire site frontage to provide a safety barrier between the edge of roadway and new sidewalk, as well as, for consistency of the entire site.

This comment will remain open until the Applicant discusses the curbing along Fox Chase Road with the Township.

ESE Response: The Township Board of Commissions granted the waiver for the sidewalk along Fox Chase Road. The sidewalk will be placed 0.5' from the ROW and will be adjusted to be tied into the 2 edges of the property with the existing sidewalk located along the curb. The proposed road frontage of Fox Chase Road will have curb in the general locations as the existing locations. Curb will be constructed/ remain in the property edge near Kirkwood Avenue to the site entrance to the subdivision and also from the emergency access to the property edge near Forrest Avenue.

GENERAL STORMWATER MANAGEMENT COMMENTS

77. The emergency spillway for Basin 1 is shown on the plans to be directed towards Fox Chase Road. The emergency spillway for Basin 1 should be revised to minimize impacts to the main street. The Applicant may wish to redirect the overflow towards the open space across from the emergency access drive to allow for additional infiltration and/or extend the existing storm sewer located on Fox Chase Road adjacent to 777 Fox Chase Road (PARID No. 30-00-22428-00-6).

In the current resubmission, the Applicant has revised the emergency spillway for Basin 1 to discharge to internal Road A near the site entrance. The runoff from the emergency spillway will sheet flow from Basin 1 over the proposed sidewalk on Road A to be primarily captured by proposed inlet no. 804. However, the flows from

proposed inlet no. 804 will be discharged to the same manhole no. 802 and existing storm sewer system as the routed flows from Basin 1. The Applicant may wish to consider relocating the emergency spillway towards the emergency access end and evaluate the feasibility of directing flows onto the open space and tie into the existing storm sewer system at that end instead of discharging to the same storm sewer system on Fox Chase Road adjacent to the site entrance on Road A. The Applicant may also wish to consider moving the proposed inlets no. 804 and 806 closer to the stop sign on Road A to capture additional stormwater runoff prior to sheet flow onto Fox Chase Road. In addition, the Applicant should consider the feasibility of capturing the runoff from the emergency spillway of Basin 2 and direct the flows into the existing storm sewer that runs parallel to Fox Chase Road prior to sheet flow onto the existing sidewalk.

The Applicant has added additional inlets 808 and 810 to capture the stormwater flows from the emergency spillways of Basins 1 and 2, respectively. The Applicant also relocated proposed inlets 804 and 806 further upstream from the entrance intersection with Fox Chase Road. The Applicant may be able to avoid adding proposed inlet 808 at the Basin 1 emergency spillway by relocating proposed inlet 804 along proposed Road A further downstream of the emergency spillway, prior to the stop bar to capture the flows prior to leaving the site and flowing onto Fox Chase Road. We also recommend relocating proposed inlet 810 at the Basin 2 emergency spillway further down to the base of emergency spillway slope for higher efficiency in capturing the runoff and to allow infiltration prior to being conveyed by the proposed inlet.

ESE Response: The applicant revised the location of structures 804 through 810. Inlets 804 and 806 have been moved to the start of the intersection between Road A and Fox Chase Road to capture the potential runoff from the Basin 1 spillway. Inlet 808 (previously inlet 810) has been shifted 50' further downstream of the Basin 2 Spillway with a 6-inch berm to promote higher efficiency in capturing the runoff and allow more infiltration prior to being conveyed to the proposed inlet. Previous numbered Inlet 808 has been removed due to the new location of inlet 804 that will fully capture the runoff from the Basin 1 spillway.

GENERAL COMMENTS

80. Per the Existing Features Plans (Sheets 7 to 10), there are multiple locations where private fencing and structures are shown to be encroaching within the site boundaries from the abutting properties that front Forrest Avenue, Kirkwood Street, and Suffolk Road. The Applicant shall clarify if the private fences and structures are permitted to remain or be required to be removed outside the site boundaries. It is recommended that a written agreement to permit these encroachments for each of the properties should be provided to the Township.

The Applicant has indicated that they are working with the Township and the neighboring properties that currently encroach the site boundary to remove the encroachments.

The Applicant has indicated that they are working to resolve the disposition of the encroachments. All encroachments shall be rectified prior to recording of the plans. Copies of written agreements shall be provided to the Township for encroachments to remain.

ESE Response: The applicant will comply with this comment and continues to be in conversations and obtaining agreements. Copies of these agreements will be forwarded to the Township, when available.

82. The existing features shall be turned off on the proposed improvement plans.

For clarity, the existing features including but not limited to the existing trees, pavement, sidewalk, curbing, buildings, etc. which are labeled as "To Be Removed" shall not be shown on the proposed improvement plans.

In addition, sheets 52 and 54 are labeled as intentionally blank within the plan set. The Applicant shall clarify if information shall be provided on these plans. If no information is to be provided, these plan sheets can be removed from the plans set.

ESE Response: The applicant has revised proposed improvement plan on Sheets 11-39 and 54-61 to remove all existing trees, buildings, curbs, pavements, sidewalks, and existing utility laterals that are planned to be removed during construction. Additionally, the applicant has removed Sheet 52 and Sheet 54 that were labeled as Intentionally Blank from the Plan Set.

A detail of the proposed emergency access chain and bollards is provided on the Construction Details Plan (Sheet 41); however, the chain and bollard does not appear to be shown on the plans. The Applicant shall show the location of the chain and bollard for the proposed emergency access. The Applicant should provide no parking signs at the entrances to the emergency access in addition to the proposed "No Parking" sign located adjacent to Unit 100.

ESE Response: The applicant has updated sheet 12, SD05.01, with the bollard and chain object and callout. The bollard and chain is located along the Access Road connecting Fox Chase Road with Road B. Additionally, a "No Parking Sign" sign (Sign No. 5 in the Sheet 12 Legend) has been placed at the entrance along Fox Chase Road and internally along Road B. Lastly, the applicant has added a "Do Not Enter" sign (Sign No. 1 in the Sheet 12 Legend) along Road B and next to Unit 100.

As part of the emergency management/access for this site, vehicular circulation plans shall be provided showing the fire truck movement for the site to determine if the Abington Township fire truck can adequately maneuver throughout the site. A vehicular circulation plan for a refuse collection truck shall also be provided.

ESE Response: The applicant has updated Sheet 6, SD02.01, to include a vehicle circulation plan for an emergency vehicle (fire truck) and refuse collection truck.

We have received the following documents/permits/reviews:
AQUA Will Serve Letter (January 29, 2021)
Transportation Impact Assessment (February 10, 2023, last revised March 13, 2023)
Conditional Use Application (March 27, 2023)
MCPC Request for Review (March 27, 2023)
Application for SALDO Review (March 27, 2023)
Waivers Request (included w/ SALDO Application) (March 27, 2023)
Post Construction Stormwater Management Report (March 2023)
TPD Traffic Review (April 29, 2023; November 11, 2023)
Sanitary Sewer Review (May 12, 2023; November 9, 2023)
STC Review (May 10, 2023)
Fire Marshal Review (May 12, 2023 via email; November 9, 2023)
EAC Review (May 11, 2023)
MCPC Review (May 19, 2023; November 9, 2023)
MCCD Incompleteness Review Letter (August 29, 2023)
MCPC Request for Review (October 18, 2023)

We have not received the following documents/permits/reviews:
MCCD Approval
Sanitary Sewer Availability Letter (pending historical downstream sewer capacity evaluation)
Application for Sewage Facilities Planning Module Exemption Mailer
NPDES Permit

Financial Escrow
LD Agreements
Stormwater BMP O&M Agreement
Legal Descriptions & Exhibits of all easements

ESE Response: **The applicant will forward any additional documents to the Township, once received.**

Abington Shade Tree Commission, Inc, dated December 18, 2023

STC Comment 6: In the open spaces outside of the tree and shrub buffers there appears to be large areas unidentified and likely grass, which provides almost no value to wildlife or storm water absorption function. The STC strongly recommends expanding the tree and shrub buffers into these areas to reduce the amount of grass. Alternatively, well-defined sections within these areas could be seeded with native perennial grasses and wildflowers, providing ecological value to local wildlife and aesthetic value to the homeowners and visitors.

ESE Response**: The charette process with the neighboring community members, showed preference that the green area between the 40' medium intensity buffer and the adjacent parcels to remain as is (open lawn), which parties feel helps avoid unnecessary land disturbance.**

STC Response and Recommendations:

1. The STC would like to inquire if community members were presented with an option for expanding the tree and shrub buffer and reducing the amount of grass? If not, they should be provided with that option. If their preference "that the green area…remain…as open lawn…" is for purposes of recreation, the STC recommends that border strips be planted with native grasses or perennials such as wildflowers, leaving recreation space in the middle.

ESE Response: The community members were presented with a variety of options throughout the stages of the township approval process for how the open space would be developed. The community members were and are still addiment about the large amount of unobstructed grassed green area to remain as proposed.

2. As noted previously, grass provides little ecological value. Fertilized lawns are the preferred food for Canada geese, which are typically considered a nuisance in large numbers due to the amount of feces a flock will deposit on the lawn (https://www.humanesociety.org/sites/ default/files/docs/canada-goose-guide.pdf). One of the best ways to control geese is to modify the habitat, including replacing grass with other plantings or, if grass must remain, letting the grass naturalize.

ESE Response: The community members were presented with a variety of options throughout the stages of the township approval process for how the open space would be developed. The community members were and are still addiment about the large amount of unobstructed grassed green area to remain as proposed.

3. Planting trees and shrubs properly requires little land disturbance and is not considered a sufficient reason to refrain from planting additional trees and shrubs.

ESE Response: The community members during the township approval process were and are still addiment about the open space being developed with the buffers and grass areas that are currently proposed.

4. As noted previously, providing additional native shade trees and shrubs will increase property values, improve the aesthetics of the site, and provide ecological value to local wildlife. We repeat our recommendation to expand the tree and shrub buffers to decrease the amount of grass at the site. Alternatively, the lawn area should be naturalized to reduce the population of resident geese (https://www.ernstseed.com/product-category/grasses-grass-like-species/?_product_type=seed- mix).

ESE Response: The community members during the township approval process were and are still addiment about the open space being developed with the buffers and grass areas that are currently proposed.

Abington Township Environmental Advisory Council, dated May 11, 2023

1. Existing Features Plan - Sheet 8 of 64, Sheet 2 of 4
According to the construction designation chart showing existing trees of 10" diameter or more, Tags # 1 and #3 – are to remain. We recommend removal of these trees as these are Tree of Heaven, an invasive tree species known to be critical in the Spotted Lantern Fly life cycle. Tag 84 – indicates removal of a large beech tree for a sewer line easement – See also, Sheet 62. If this is a healthy tree, we request that placement of the easement be re- evaluated to avoid removal of this tree. Can the developer please explain the rationale for the proposed placement?

ESE Response: The existing features plans have been updated, tree #1 and #3 to be removed. Tree #84 will remain; the proposed drainage easement has been relocated to avoid tree removal. See sheet 8 of 64 for the existing tree chart and their designation whether to remain or to be removed.
The sewer line easement has been revised to avoid the removal of the large beech tree (tag #84).

2. Landscape Plans – Sheets 56-64
Plans note that 5 basins will be constructed to manage stormwater runoff. Please confirm that all basins will be designed as "naturalized" detention basin features as described in the draft PA DEP Post Construction Stormwater Manual (386-0300-001 / January 28, 2023 / DRAFT / Page 3-292). Naturalized detention basins are preferrable stormwater control measures to traditional grass basins as they provide both peak rate and water quality management benefits.

ESE Response: The applicants proposed basin seed is below:
Infiltration Basin Bottom: ERNST Seed Mix 126 (Or approved Equal) 20-40lbs per acre
Infiltration Basin Side Slopes: ERNST Seed Mix 183 (Or Approved Equal) 20lbs per acre
Detention Basin: ERNST Seed Mix 122 (Or Approved Equal) 20lbs per acre

3. Basin 1/Long Emergency Spillway – It appears that the emergency spillway would discharge directly out onto Fox Chase Rd. Can this be explained, especially the potential impacts to existing drainage capacity of the road?

ESE Response: The Basin 1 emergency spillway has been revised. The emergency spillway will direct flow into the open space adjacent to internal Road A.

4. Basin Long Term Operation and Maintenance. Plans indicate that development will be turned over to a Homeowner's Association who will be responsible for common area land management and maintenance of the proposed stormwater detention basins. The EAC requests that a strong O & M agreement be developed, providing the township with access to these facilities for regular inspection and if necessary, access to make any repairs.

ESE Response: An O&M agreement will be developed for the homeowner's association. The Homeowner Association documents, when completed, will be reviewed by the Township.

5. Invasive plants/trees in wooded area – In addition to strong O & M agreements for proper maintenance of stormwater control measures, we highly recommend that an invasive plant management plan be funded by the developer and conducted by either the township or specialized contractor for the existing wooded area. This plan should be included in any required long- term O&M agreements. For example, akebia is known to exist in the adjacent woodlands. This is considered a PA invasive vine that spreads/fruits throughout the wooded area preventing native plant growth.

ESE Response: An invasive plant management plan is included as part of the O & M agreement for the HOA, to address the significant invasive pressure in the wooded areas.

6. Green Areas, Open Space and Connectivity – It appears that a significant portion of the "green area" perimeter is proposed to be grass. The EAC strongly recommends minimizing lawn areas and instead provide additional native trees, shrubs, and deep-rooted warm season native grasses. These promote better water infiltration, require less mowing and less use of herbicides. As currently proposed, there are no cross access or walking trails proposed within these "green areas," missing an opportunity to build connectivity to the neighborhood, Alverthorpe Park and Crosswicks Sanctuary. Natural connective trails are desirable for both new residents and the surrounding neighborhood as they provide alternative non-motorized options for residents.

Related to the above, will the natural areas be protected from future infringements? We recommend placing conservation easements or deed restrictions in these areas to protect them in perpetuity. This comment is applicable to the common-owned "green areas" proposed to surround the development. These appear to be of sufficient depth and width to accommodate additional lots, especially since they could be connected to the existing street networks.

The EAC also recommends consideration of improving connectivity and pedestrian safety between the new development and Alverthorpe Park. We offer two potential options: 1) connect the sidewalk in front of the new development to existing sidewalks along Fox Chase Road to Forrest Ave, where there is an existing traffic light and crosswalk or 2) create a new crosswalk by the new access area. We feel this would likely become an informal crossing point to access the park so adding a pedestrian crosswalk at this mid-block location could help increase safety.

ESE Response: The proposed sidewalk along the new development has been connected to the existing sidewalk along Fox Chase Road leading up to Forrest Avenue.

7. Green Area and Open Space Calculationsi. As described in the plan, 65.7% or 29.53 acres are classified as "Green Area," while 50.5% or 22.6 acres are classified as open space. Since these two figures exceed the actual area of the site, we assume that the green areas include those considered as open space area. Can these calculations be confirmed by our zoning officer? We understand that open space cannot include required yard areas.

ESE Response: The qualifying open space is hatched on the overall site and phasing plan, on sheet 11, the hatched area does not include the required yard areas. The green area is an overall calculation subtracting the proposed impervious area from the gross site area, which includes the qualifying open space.

Additional comments/questions raised by EAC members.

8. Emergency access – There appears to be a main entrance and a secondary access way from Fox Chase Road. Please confirm if the secondary access point is considered an emergency access? How many emergency access points will be onsite?

ESE Response: The secondary access from Fox Chase Road is an emergency access point. There is a wide entrance road and a secondary access road. There are 2 emergency access points to access site.

9. Roadways in development – Street widths appear to be large enough for on-street parking. Is this amount of impervious roadway necessary? Would street parking be allowed on one or both sides? Have permeable pavement options been considered for areas designed for on-street parking?

ESE Response: Streets of this size are necessary for the development. The street width allows for one side on-street parking throughout sections the site (width 32' roads). The on-street parking is necessary to meet development standards for the number of parking spaces required. Options for permeable pavement have been considered.

10. We encourage the following sustainable building best practices:
a. Consider: Designed to Meet the Energy Star for new construction and Energy Star Portfolio Manager or another benchmarking tool for existing buildings greater than 10,000 sf
b. Low embodied carbon materials for construction and materials management
c. Building electrification for HVAC systems to avoid fossil fuels such as natural gas and support the Township's aspirations to be carbon neutral by 2050.
d. Rely on Renewable Energy sources and microgrids wherever possible.
e. Electric vehicle conduits or charging stations to reduce direct vehicle emissions and improve air quality.

ESE Response: All sustainable building best practices will be considered for the development of the site.

Township of Abington Fire Marshal, Inc, dated November 9, 2023

1. Withing the "Full Plan Set" document, on page SD02.01 (sheet 6 of 64), there is General Note 29-D2 which states "FIRE HYDRANTS SHALL BE SPACED IN A DEVELOPMENT SO THAT ALL PROPOSED BUILDING(S) WILL BE NO MORE THAN SIX HUNDRED (600) FEET FROM THE HYDRANT MEASURED ALONG TRAVEL WAYS."

Abington's Subdivision and Land Development Ordinance has specific requirements as it relates to water supply, specifically fire hydrant placement. SALDO 146-41 B(4)d requires a fire hydrant to be located within 500 feet of all buildings under construction. While it states all buildings under construction, hydrants are generally not a temporary solution, and my interpretation would be within 500 feet of all buildings constructed.

ESE Response: The applicant has updated Note 29 on Sheet 6, SD02.01, to state Fire hydrants shall be spaced in a development so that all proposed building(s) will be no more than five hundred (500) feet from the hydrant measured along travel ways.". This will keep the plans in compliance with SALDO 146-41 B(4)d as none of the fire hydrants proposed are temporary and are spaced as 500 feet of less per the requirement.

Traffic Planning & Design, Inc, dated November 10, 2023

Traffic Signal Design Review
The Applicant has indicated that it will implement modernization of the existing traffic signal and has submitted to PennDOT for review (received comments from 5/23). However, to date, TPD has not received any traffic signal plans or other correspondence related to the signals. Therefore, we defer our review on this item until receipt of these plans.

ESE Response: The signal permit plans will be provided for review.

Site Plan Review

Our initial review of this project recommended that separate left and right turn lanes should be provided on Fox Chase Road at its intersection with the Manor College driveway and the proposed site driveway. The Applicant responded that PennDOT was not requiring these lanes. The Township should comment on whether it desires that these lanes be constructed.

ESE Response: As discussed at the Planning Commission and Board of Commissioners meeting, the volume of traffic does not meet the turn lane criteria for installation of separate right- or left-turn lanes along Fox Chase Road. The volume of traffic making these turns at the subject intersection is lower than at the adjacent signalized intersections of Forrest Avenue and Cedar Road, where no turn lanes are provided.

Confirm that the need for streetlighting along the internal roads and along the property frontage on Fox Chase Road has been discussed with the Township. The applicant's response is that they would like to discuss this item during the Land Development phase.

ESE Response: The Township Board of Commissioners has approved the location of the streetlights shown on the land development plan. Luminaires will be provided on the traffic signal at Fox Chase Road and the new road accessing the development.

Confirm that the Township Fire Chief has reviewed the plan and approved the proposed circulation patterns. The applicant's response is that they would like to discuss this item during the Land Development phase.

ESE Response: The applicant has received comments from the Fire Marshal (included with this response letter). He has approved the internal roads, as the only comment remaining is the fire hydrant spacing note.

Based on the Land Development plans, curb is proposed to be replaced at the driveway tie-in. To the north of the driveway, there is no existing curb on Fox Chase Road (based on Streetview). We previously recommended that the Township consider requesting additional curb along the entire site frontage. The applicant's response is that they would like to discuss this item during the Land Development phase.

ESE Response: The Township Board of Commissions granted the waiver for the sidewalk along Fox Chase Road. The sidewalk will be placed 0.5' from the ROW and will be adjusted to be tied into the 2 edges of the property with the existing sidewalk located along the curb. The proposed road frontage of Fox Chase Road will have curb in the general locations as the existing locations. Curb will be constructed/ remain in the property edge near Kirkwood Avenue to the site entrance to the subdivision and also from the emergency access to the property edge near Forrest Avenue.

General

Since any modifications to the signalized intersection of Fox Chase Road, the Manor College driveway, and the proposed site driveway is subject to PennDOT review and approval, any correspondence to and from the Department must also be coordinated with our office and the Township, and evaluated and addressed accordingly in subsequent submissions.

ESE Response: The applicant will comply with this comment.

A response letter must be provided with the resubmission detailing how each comment above has been addressed, and where each can be found in the resubmission materials (i.e., plan sheet number(s), page number(s), etc.) to assist in the re-review process.

ESE Response: The applicant will comply with this comment.

Abington Township Wastewater Department letter dated November 9, 2023

Sheet 2 -Record Plan- General Note 11 should be revised to include ..."and new sanitary sewer pipe systems located in Right of Ways, Parcels, Lots, Open Spaces and Roadways".

ESE Response: The record plan, sheet 2, has been updated.

Sheet 2 -Record Plan- General Note 13 should be revised to the following: "Proposed Lots to be served by existing domestic and/or fire public water systems and existing public sanitary sewer systems".

ESE Response: The record plan, sheet 2, has been updated.

Sheets 20 through 27 - Utility Plans - A note should be added stating "Adjacent lateral wyes installed in an 8" diameter sanitary sewer main shall be located a minimum of 4 feet apart. Tee fittings are prohibited".

ESE Response: A note has been added to all the utility plans.

Sheets 20 through 27 - Utility Plans - The majority of 8" diameter sewers are proposed with slopes of 0.50%. A minimum slope of 0.70% should be utilized for sanitary sewers. Sanitary manholes with proposed invert in pipe connections less than 3.0 feet above the invert out should not be constructed as a drop manhole. The slope of the invert in pipe should be increased so that the pipe connects to the manhole 0.2 feet above the invert out elevation.

ESE Response: The applicant has revised the sanitary sewers on sheets 20 through 39 to increase the minimum slope to 0.70% on all sanitary pipes and adjust all manholes and pipe connections to comply with the specifications provided above.

Sheet 44- Sanitary Sewer Details - Detail No. 13 "Precast Sanitary Manhole Inside Drop Connection" should be added to the plans. (see enclosed)

ESE Response: Detail No. 13 "Precast Sanitary manhole Inside Drop Connection" has been included on Sheet 44.

Montgomery County Planning Commission letter dated November 9, 2023

The review letter does not appear to have any outstanding comments in the review comment section, but refers to the May 19, 2023 review.

ESE Response: See MCPC review letter below, dated May 19, 2023.

Montgomery County Planning Commission, dated May 19, 2023

RELEVANT COMMENTS FROM PREVIOUS REVIEW LETTER (FOR AGE-RESTRICTED CARRIAGE HOME OVERLAY DISTRICT, MCPC #22-0205-001)

A. Buffer Zone – We noted that the wide buffer zone surrounding the development with no landscaping seems like a lost opportunity for a landscaped open space.

ESE Response: A medium intensity buffer has been provided in the configuration shown on the Exhibit 'C' to

the Preliminary Plan response resolution.

B. Landscaping - Backyard Landscaping – We recommended that, where homes back to one another, that landscaping be added in between them to provide more privacy and visual interest (they might also provide passive cooling).

ESE Response: Proposed landscaping is limited within the rear yard of the townhomes to avoid impeding the homeowner's rear deck/patio options.

C. Property Line Buffer – We observed that the proposed open space does not seem to comply with the requirements of zoning [§2601.K. Open Space Standards].

ESE Response: Sheet 11 the overall site and phasing plan hatches the qualifying open space in accordance with the applicable zoning requirements.

D. Stormwater Basin – We noted that the basin along Fox Chase Road will be located in a prominent location and could serve as a prominent visual enhancement for the development, and recommended that all basins be sufficiently naturalized and landscaped.

ESE Response: The applicant will not be constructing naturalized basins; however, the applicant is providing landscaping around the perimeters of all the basins.

E. Transportation

1. Intersection Configuration – We suggested that the design of the proposed street intersections (where intersections would be located along curving roads, such as the intersection of Roads, D, B, and G; and the intersection of Roads A, F, and E) would be less confusing if traffic circles, rather than curves, were used to calm traffic. The applicant agreed to consider this, but design issues remain.

ESE Response: The applicant considered traffic circles but the configuration of such a design would have impacted other design aspects of the plan and the plan has been approved in the configuration as shown.

2. Guest Parking – We recommended that guest parking areas be provided in convenient locations.

ESE Response: The applicant has adjusted locations to be within the 32' wide road area.

3. Bus Shelter – Has the applicant communicated with SEPTA about the advisability of constructing a bus shelter and concrete waiting pad at this location? (*SEPTA's Bus Revolution initiative proposes doubling the frequency of bus service in this location*).

ESE Response: The applicant is coordinating with SEPTA. In the Nov 2023 Recommended Route Changes, the route along Fox Chase Road (Route 28) has been updated to provide a 60 max frequency. The existing bus pad has been connected to the proposed sidewalk along Fox Chase Road.

NEW COMMENTS (PREPARED FOR THE PLAN DATED MARCH 23, 2023):

APPLICABILITY OF COMMUNITY SERVICE DISTRICT

Since the Age-Restricted Overlay District does not clarify how to interpret the overlay zoning when and where it is in conflict with the underlying zoning district (CS Community Service District), we defer to the solicitor as to how the proposed plan conforms with the CS District requirements for cases where the CS Community Service District conflicts with, and has the stricter requirement than, the Age-Restricted Carriage-Home Overlay District. For example, the Community Service District has the following requirements that are stricter than the Overlay: minimum front yard (75

feet), minimum side yard (50 feet), and minimum sidewalk width on public streets (8 feet). *Note: see also ZONING TEXT Comment A. in our letter of #22-0205-001.*

ESE Response: No action required. The applicable zoning for the development is the Age-Restricted Carriage Home Overlay District.

OPEN SPACE

A. Open Space– The Age-Restricted Carriage Home Overlay District states that "Land preserved for open space purposes shall be in compliance with **Open Space Standards of the SALDO** for the Township Zoning Ordinance." The last part of the sentence is difficult to interpret (i.e., the zoning and SALDO are separate chapters—furthermore, does this mean that it need not comply with the open space standards of zoning?).
   1. A description and contract for the ownership, management and maintenance of open space shall be provided. Restrictive covenants governing the reservation and maintenance of undedicated open space shall be included. [§146-11.M]. The plan notes state that documents pertaining to the homeowners association will provided to the township solicitor for review with the final plan.

ESE Response: The information is within the O&M in the PCSM plans. The homeowners association documents will be provided to the Township under separate cover for review.

   2. If the open space standards of the zoning ordinance [§2601.K] do apply to development under the Age-Restricted Overlay District, the proposed land development does not comply with the requirement for: access (open space shall have safe and convenient pedestrian and maintenance access), visibility - it does not meet the requirement for open space to be visible from dwelling units and roadways, and being contiguous – it shall not consist of more than three non-contiguous areas to be counted towards the minimum required (it consists of at least four separate areas).

ESE Response: The open space has been adjusted to meet the requests of the Township and surrounding neighbors. The open space is located on the perimeter of the site.

   3. Open space is more usable and appealing when there are amenities. In addition to trails and paths, we suggest that—particularly in more central open space areas—the applicant consider providing amenities for future residents, such as benches, picnic tables, or gazebos. If proposed, these shall be shown, per §146-11.C.

ESE Response: Per Exhibit 'C' pf the Preliminary plan approval resolution, the Township Board of Commissioners approved the plan with the medium intensity buffer and lawn in the configuration as shown on the Final Plan. A clubhouse and pool are being provided for the residents as shown on the Final Plan.

B. Trail and Paths
   1. We suggest that the property line buffer be designed to allow for a trail corridor for use by the residents of the age-restricted carriage-home development, so that future residents could access and appreciate land on their own property (and that may also make them more likely to monitor and maintain it)

ESE Response: As discussed with the adjoining residents and the Township, the buffer area and lawn has been approved in the configuration as shown on the Final Plan and no trail is proposed.

      a. We suggest that the applicant consider adding pathways through open space areas #152, 153, and 154, outside of the utility easements, and through #151, connecting the two cul-de-sacs, provided that safe passage is practical in proximity to the stone stormwater management areas.

ESE Response: The plan has received approval from the Board of Commissioners in the configuration as shown and no additional pathways are proposed.

2. Open Space Lot 150 – The Area Tabulation states that "open space lot 150 includes carriage lots 1 through 110." Open space lot 150 is not labeled on the plan.

ESE Response: The tabulation has been adjusted to state open space 151.

3. Open Space Calculation – Open space "shall be substantially free of structures," as defined in the SALDO, and does not include required yards. Although there are no required yard areas in this overlay district, we suggest that the applicant show on the plans specifically which areas are being counted as open space, and show equivalent yard areas based on minimum separation distance between buildings and minimum distance from the curb; these types of areas are generally not counted towards meeting minimum open space requirements, nor should they be.

ESE Response: Sheet 11 the overall site and phasing plan hatches the qualifying open space, which does not include rear, side or front yards of the dwelling units.

LANDSCAPING

A. Street Trees
    1. Gaps. Street trees are required every 40 linear feet, although they do not need be evenly spaced. There are numerous gaps in street tree coverage of 100 linear feet or more. We feel that 100 linear foot spacing does not meet the intent of this section, nor the following sections of the Landscaping chapter's intent section:
        - "Improve the environment for pedestrians along streets, parking lots, and other pedestrian areas to provide cooling, encourage pedestrian activity, and reduce the urban heat island effect."
        - "Aesthetically improve the appearance and character of public and private streets."

ESE Response: Street trees do not need to be evenly spaced and we have included the required amount per zoning code. Street trees have been added in front of dwelling units where feasible due to utility connections, to improve the environment for pedestrians and aesthetically improve the appearance and character of private streets.

2. Trees in Front Homes. We recognize that the siting of the proposed homes' driveways directly in front of the townhomes, in conjunction with the location of utilities, makes it challenging to find a location to plant street trees in front of the homes. However, we suggest that locations for street trees in front of the homes might still be possible to find, particularly if the water lines could be relocated or driveways paired, thus creating larger contiguous green areas in front of the homes. See image above for example of trees planted in front of new townhomes (Location: Country View Way, Tylersport).

ESE Response: Street trees have been added in front of dwelling units where feasible due to utility connections.

3. Species. We do not feel that River Birch is an appropriate street tree.

ESE Response: River Birch can be found on the Abington Township Shade Tree Commission List of Recommended Plants.

B. Tree Protection and Replacement

1. Trees to be removed or preserved shall be marked as such on the plans [§2401.A].

ESE Response: Sheet 8 shows the existing tree chart and their designation whether to remain or to be removed.

2. On existing lots, tree replacement shall occur when new impervious coverage exceeds 500 s.f. and a tree with a minimum caliper of six inches (6") is removed. In such cases, two new trees, each a minimum of 3-to-3.5" caliper, measured 6" above grade, shall be planted for each tree with a minimum caliper of 6" or greater that is removed. Has the applicant calculated the tree replacement requirement? If so, where is it provided? [§2401. Preservation and Protection of Existing Vegetation].

ESE Response: Sheet 62 has been revised to show tree replacement requirement calculations. The street tree schedule has been updated to show which trees are part of the tree replacement and sizes have been updated.

C. Invasive Vegetation – Tree of Heaven is both invasive[2] and a favorite host of the spotted lantern fly. Please remove it from the planting schedule.

ESE Response: The tree of heaven is an existing tree that was shown to remain. The landscape plan has been updated to remove both trees tagged #1 and #3.

D. Property Line Buffer - Each buffer containing a wall or fence or other continuous element shall contain a 5- to 10-foot break at least once every 50 feet, for the purpose of pedestrian access, maintenance access, and/or to avoid creating a monolithic feature. The buffer does not have such breaks. For example, see the continuous buffer proposed behind units #32 through 37.

ESE Response: The landscape plan has been updated to include breaks approximately every 50' of the buffer landscaping for the purpose of pedestrian/maintenance access.

E. Site Element Screen - The pool shall be screened with a high-intensity site element screen, consistent with the requirement for "outdoor recreation, fields, and play areas, when adjacent to, or within 100' of a residential district or use." The plan states that there is a "proposed screening/landscape wall with security fence." A fence may be used as part of a high-intensity site element screen, as follows: "This shall consist of a 6-foot tall opaque fence surrounding the site element on at least three sides with additional plantings at a minimum rate of three shrubs (24" minimum height at time of planting) and two ornamental trees or large shrubs for each 10 linear feet of proposed fence, arranged formally or informally next to the fence."

ESE Response: The landscape plan has been updated to include, the High-Intensity Site Element Screen Type #6: Double Row of Evergreen Trees, between the clubhouse and the proposed dwelling units.

F. Foundation Landscaping –Building foundation landscaping shall be provided between (a) the foundations of nonresidential principal buildings' facades and (b) sidewalks, access drives, or parking areas. The clubhouse requires foundation landscaping [§2403.D]. We suggest planting shrubs and perennials around the neighborhood, visible from the street and fronts of homes, to provide more greenery, small stormwater management areas, and variety in plantings. Although the renderings provided by the applicant show clusters of shrubs and perennials around the bases of trees between rows of homes, and along the homes' foundations, they are not included in the landscape plans.

ESE Response: The landscape plan has been updated to show the foundation landscaping at the clubhouse.

We have also included a typical dwelling unit landscaping with plant list on sheet 54.

G. Off-Street Parking Areas – The island in the off-street parking area requires a deciduous or ornamental tree, and five percent of the area shall be landscaped [§146-39.B].

ESE Response: The site plan has been updated to remove the island in the off-street parking area.

ENVIRONMENTAL MANAGEMENT

A. Stone Stormwater Management Area - We recommend that a naturalized area be established around and over the stormwater management structure labeled "Stone BMP 2A.

ESE Response: The applicant continues to propose a lawn area over BMP 2A.

B. "Steep Slopes - The use of conservation easements on steep slopes shall be required to preserve the area in perpetuity. A conservation easement for the slope area required to be preserved shall be delineated on the plan.

ESE Response: A Conservation area is noted around the stream area in the back of the site where a majority of the steep slopes are located.

TRANSPORTATION

A. Proposed Intersections of Three Streets - Multiple intersections involving the junction of more than two streets shall be avoided [§146-25]. Note: see transportation comment in *Relevant Comments from previous review letter, above.*

ESE Response: The internal streets intersect at right angles or radial. There may be different street names, but the one street is a continuation of the connecting street.

B. Crosswalk - There is a crosswalk shown on the Construction Details Plan (p.41). Where will this be painted? (They do not appear on the plans). We recommend that, at a minimum, one of these be painted so as to continue the sidewalk along Fox Chase Road over the entrance to the proposed development (Road A) [§146-29.D]. The SALDO notes that crosswalks may be required where necessary to provide access to buildings of public assembly (adding them at the intersection of Roads A and B, at the Club House and Pool and close to Fox Chase Road seem like appropriate locations).

ESE Response: The intersection with Fox Chase Road has been updated to show full intersection crosswalks..

OTHER PLAN INFORMATION

A. Dimensional Criteria – Building setback lines from the face of the curb/edge of cartway (30 feet) shall be shown [§146-11.C].

ESE Response: The plans have been revised to show the 30' dwelling setback from the face of the curb.

B. Architectural Plans – Plans shall (in addition to façade elevations) provide side and rear elevations of buildings, and shall indicate whether a basement is proposed [§146-11.L]

ESE Response: Only a few lots will have basements, lots 6 to 15.

Enclosed are the following:

1. One (1) copy of the Abington Township Application for Subdivision/Land Development.
2. Ten (10) copies of the Preliminary/Final Major Subdivision and Land Development Plan for Sisters of St. Basil prepared by ESE Consultants, Inc. last revised March 22, 2024, consisting of sixty-two (62) sheets
3. One (1) copy of the Major Subdivision and Land Development Plan reduced to 11 x 17
4. Ten (10) copies of an Erosion Sedimentation Control Plan for Sisters of St. Basil prepared by ESE Consultants, Inc. dated March 18, 2024, consisting of nineteen (19) sheets.
5. One (1) copy of the Erosion and Sedimentation Control Plans reduced to 11 x 17.
6. Ten (10) copies of an Post Construction Stormwater Management Plan for Sisters of St. Basil prepared by ESE Consultants, Inc. dated March 18, 2024, consisting of Twenty-four (24) sheets.
7. One (1) copy of the Post Construction Stormwater Management Plan reduced to 11 x 17.
8. Three (3) copies of a Stormwater Management Narrative for Sisters of St. Basil prepared by ESE Consultants, Inc. last revised dated March 2024; which includes the drainage plans.
9. Three (3) copies of an Erosion and Sedimentation Control Narrative for Sisters of St. Basil prepared by ESE Consultants, Inc. last revised dated March 2024.
10. Three (3) copies of an NPDES Narrative for Sisters of St. Basil prepared by ESE Consultants, Inc. last revised dated March 2024.
11. PADEP Notice of Intent Form, dated March 18, 2024.
12. One (1) copy of the Montgomery County Planning Commission Act 247 Referral form;
13. A check in the amount of $500 made payable to Abington Township, for the final subdivision and land development application fee.

A copy of all the plans and documents will be forwarded to the Township thru an email link.

Thank you for your attention and anticipated cooperation regarding the above. Should you have any questions, comments, or require additional information please contact me at your convenience.

Sincerely,

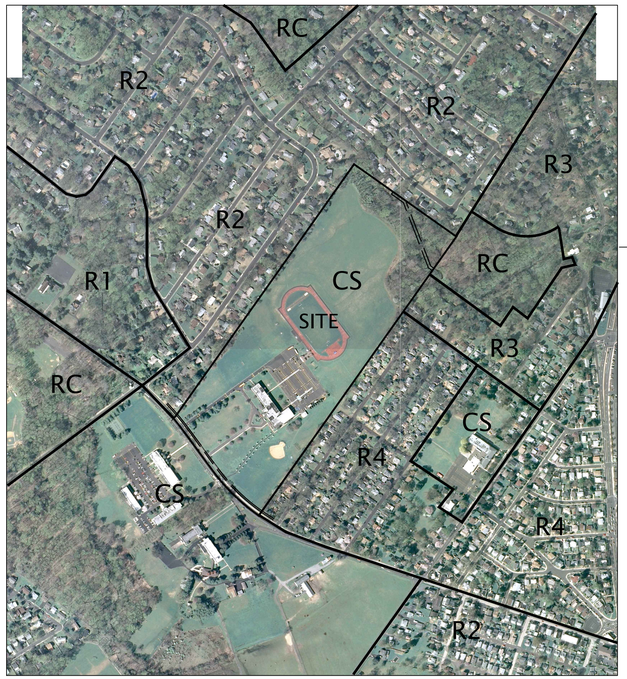
Jeff Madden

Jeff Madden, PE
Regional Director of Engineering
ESE Consultants, Inc.

PRELIMINARY/FINAL MAJOR SUBDIVISION AND LAND DEVELOPMENT PLANS FOR

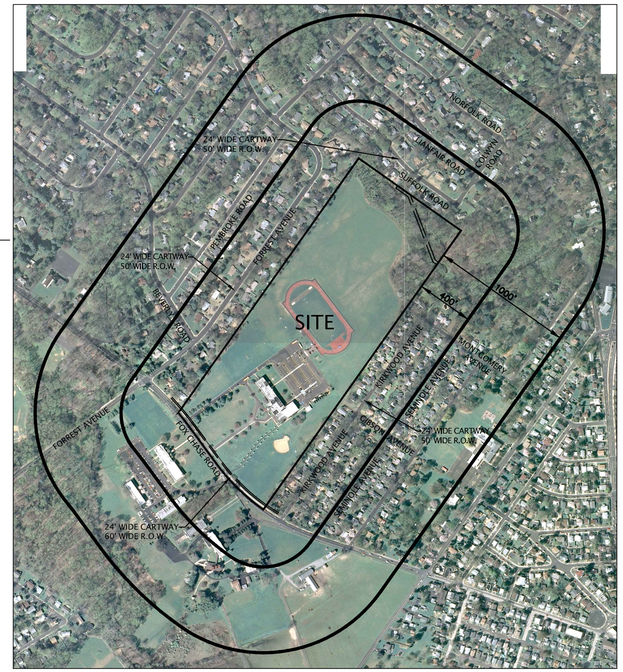
SISTERS OF ST. BASIL

ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA
TAX MAP PARCELS: 30-00-22424-00-1, 30-00-22420-00-5



ZONING MAP
SCALE: 1"=500'

GRAPHIC SCALE
500 0 250 500 1000 2000
(IN FEET)
1 inch = 500 ft.



LOCATION MAP
SCALE: 1"=500'

GRAPHIC SCALE
500 0 250 500 1000 2000
(IN FEET)
1 inch = 500 ft.

TYPE OF WATER SUPPLY – PUBLIC WATER
TYPE OF SEWAGE DISPOSAL – PUBLIC SEWER

OWNER AND APPLICANT:

SISTERS OF ST. BASIL THE GREAT
711 FOX CHASE ROAD
JENKINTOWN, PA. 19046-4198

EQUITABLE OWNER AND APPLICANT:

TOLL MID-ATLANTIC, L.P. COMPANY, INC.
1140 VIRGINIA DRIVE
FORT WASHINGTON, PA 19034
(215) 938-8000

ENGINEER, SURVEYOR, PLANNER, LANDSCAPE ARCHITECT

ESE CONSULTANTS, INC.
1140 VIRGINIA DRIVE
FORT WASHINGTON, PA 19034
(215) 914-2050

ARCHITECT:

TOLL ARCHITECTURE
1140 VIRGINIA DRIVE
FORT WASHINGTON, PA 19034
(215) 938-8000

ATTORNEY:

ALYSON M. ZARRO, ESQ
RILEY RIPER HOLLIN & COLAGRECO
717 CONSTITUTION DRIVE, SUITE 201
EXTON, PA 19341
(610) 458-4400 EXT. 202

NOTE:
PUBLIC WATER TO BE SUPPLIED BY – AQUA, PA.
PUBLIC SEWER TO BE PROVIDED BY – ABINGTON SANITARY SEWER AUTHORITY

STREET INDEX	
PLAN IDENTIFICATION	STREET NAME
ROAD "A"	XXXXX
ROAD "B"	XXXXX
ROAD "C"	XXXXX
ROAD "D"	XXXXX
ROAD "E"	XXXXX
ROAD "F"	XXXXX
ROAD "G"	XXXXX

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

THIS MAP DEPICTS PHYSICAL FEATURES VISIBLE ON THE SURFACE. BELOW GROUND STRUCTURES ARE SHOWN FOR GRAPHIC REPRESENTATION PURPOSES ONLY. ALTHOUGH EFFORTS HAVE BEEN MADE TO ACCURATELY DEPICT THE BELOW GROUND STRUCTURES, EXACT LOCATIONS ARE TO BE VERIFIED BY AND ARE THE RESPONSIBILITY OF PERSON(S) USING THIS MAP.

ALL CONTRACTORS WORKING ON THIS PROJECT SHALL VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES PRIOR TO START OF WORK AND SHALL COMPLY WITH THE REQUIREMENTS OF P.L. 852, NO. 287 DECEMBER 10, 1974 AS AMENDED ON DECEMBER 12, 1986, P.L. 1574, NO. 172. PA-ONE CALL SERIAL NUMBER FOR DESIGN PURPOSES ONLY.

PA ONE CALL WAS INITIATED 01-18-2023
SERIAL NO. 20230532913, 20230532932, 20230532933 AND 20230532937.

SHEET INDEX

SUBDIVISION PLANS		
SHEET NO.	REFERENCE NO.	DESCRIPTION
1	SD01.01	COVER SHEET
2-5	RP01.01 – RP01.04	RECORD PLANS
6	SD02.01	GENERAL NOTES
7-10	SD03.01 – SD03.04	EXISTING FEATURES PLANS/ERSAM
11	SD04.01	OVERALL SITE PLAN
12-19	SD05.01 – SD05.08	GRADING PLANS
20-27	SD07.01 – SD07.08	UTILITY PLANS
28-34	SD08.01 – SD08.07	ROAD PLAN & PROFILE
35-39	SD08.08 – SD08.12	EASEMENT PROFILES
40-41	SD09.01 – SD09.02	CONSTRUCTION DETAILS
42-43	SD09.03 – SD09.04	STORM SEWER DETAILS
44-45	SD09.05 – SD09.06	SANITARY SEWER DETAILS
46	SD09.07	WATER DETAILS
47-53	SD09.08 – SD09.14	BASIN DETAILS
54-61	SD10.01 – SD10.08	LANDSCAPE & LIGHTING PLANS
62	SD10.09	LANDSCAPE & LIGHTING DETAILS & NOTES

ESE CONSULTANTS
ENGINEERING • PLANNING • SURVEYING • ENVIRONMENTAL
ESE Consultants, Inc.
1140 Virginia Drive • Fort Washington, PA 19034
T: 215-914-2050

REV.	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTERS	ESE

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT-NOT TO BE RECORDED

APPLICATION NUMBER LD-23-01

COVER SHEET

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 03-24-23
SCALE: AS NOTED
DESIGN: JMM
DRAWN: EJS
JOB NO.: 7662
FILE NAME: 7662-S-01-COVER
REF. NO.: SD01.01
SHEET NO.: 1 OF 62

N:\PROJECTS\PENNSYLVANIA\7662-RYDAL ST. BASIL'S\ENGDEPT\DRAWINGS\7662-S-01-COVER.DWG-Luke Piotrowicz-3/21/2024 12:46 PM

FINAL MAJOR SUBDIVISION AND LAND DEVELOPMENT PLANS FOR

SISTERS OF ST. BASIL

ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

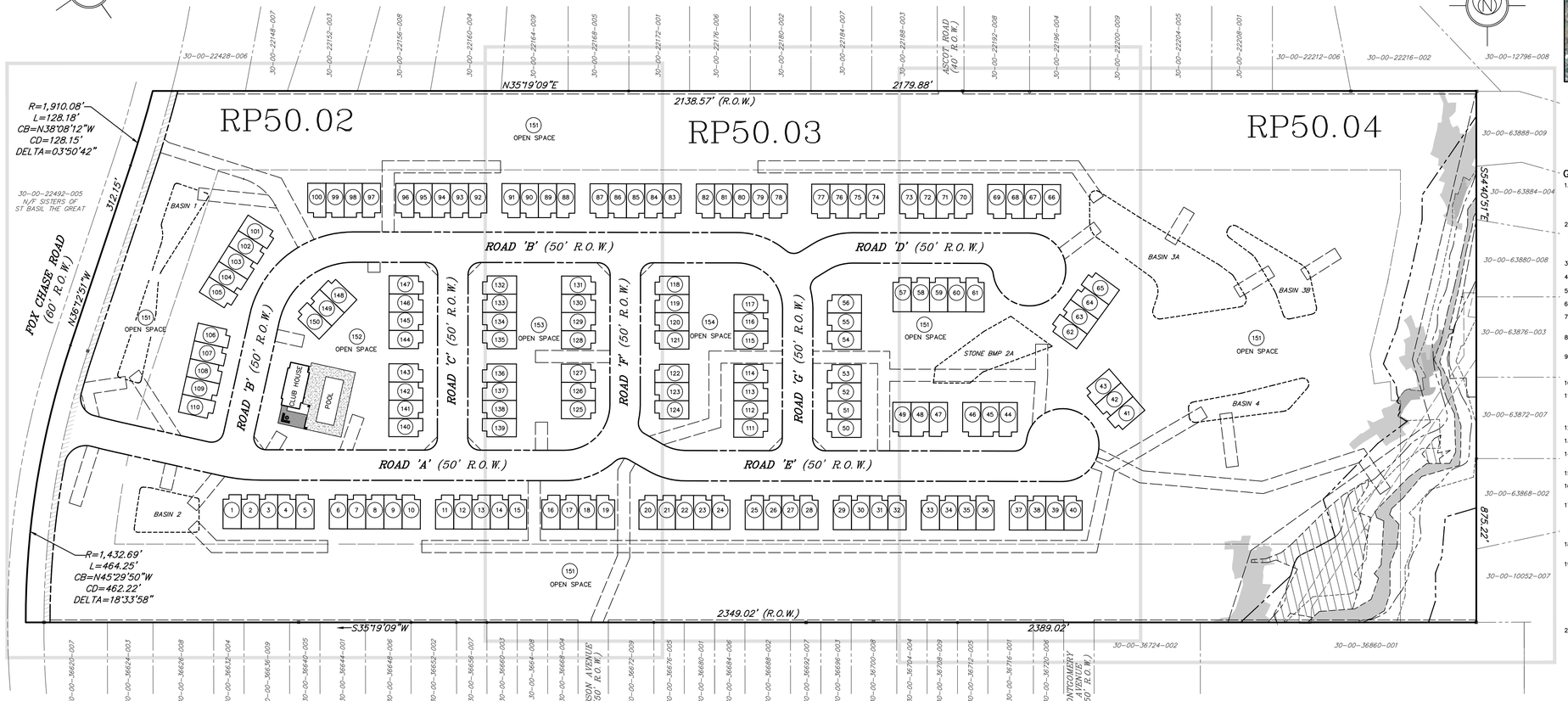
TAX MAP PARCELS: 30-00-22424-00-1 AND 30-00-22420-00-5

OWNER AND APPLICANT:
SISTERS OF ST. BASIL THE GREAT
711 FOX CHASE ROAD
ABINGTON, PA 19046-4198

EQUITABLE OWNER AND APPLICANT:
TOLL MID-ATLANTIC, L.P. COMPANY, INC.
1140 VIRGINIA DRIVE
FORT WASHINGTON, PA 19034
(215)938-8000



LOCATION MAP
SCALE: 1"=800'



NOTE: SEE SHEET RP50.03 FOR ADJOINERS INFORMATION TABLE

GENERAL NOTES:

1. DESIGN ENGINEER, SURVEYOR, PLANNER, LANDSCAPE ARCHITECT:
   ESE CONSULTANTS, INC.
   1140 VIRGINIA DRIVE
   FORT WASHINGTON, PA. 19034
   215/914-2050
2. WETLANDS CONSULTANT:
   ESE CONSULTANTS, INC.
   1140 VIRGINIA DRIVE
   FORT WASHINGTON, PA. 19034
   215/914-2050
3. WETLAND PRELIMINARY JURISDICTION DETERMINATION WAS OBTAINED ON SEPTEMBER 1, 2022 (NAP-2022-00532-45).
4. FLOODPLAIN SHOWN ON THE PLAN HAS BEEN TAKEN FROM THE FLOOD INSURANCE RATE MAP (FIRM), MAP NUMBER 42091C043G, EFFECTIVE DATE MARCH 2, 2016.
5. SOILS SHOWN WERE TAKEN FROM "SOIL SURVEY, MONTGOMERY COUNTY, PENNSYLVANIA", PREPARED BY THE NATURAL RESOURCE CONSERVATION SURVEY, DATED NOVEMBER 22, 2021.
6. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT ABINGTON TOWNSHIP CODES, SPECIFICATIONS AND THE ENGINEERING AND CONSTRUCTION STANDARDS.
7. THE EXISTING LAND USE IS A PARKING LOT AND SCHOOL WITH ATHLETIC FIELDS. THE PROPOSED USE IS ONE HUNDRED FIFTY (150) AGE RESTRICTED CARRIAGE HOME DWELLING UNITS (SINGLE FAMILY ATTACHED), PROPOSED ROADS, UTILITIES AND OPEN SPACE PARCEL.
8. THESE PLANS WERE PREPARED PER ABINGTON TOWNSHIP, STORMWATER MANAGEMENT ORDINANCE, SUBDIVISION AND LAND DEVELOPMENT ORDINANCE AND THE ZONING AND PLANNED RESIDENTIAL DEVELOPMENT ORDINANCE, AS LAST AMENDED.
9. THE EXISTING LAND USE IS A SCHOOL WITH A PARKING LOT AND ATHLETIC FIELDS WITH ACCESSORY STRUCTURES AND OUTBUILDINGS. THE PROPOSED LAND USE IS FOR ONE HUNDRED AND FIFTY (150) CARRIAGE HOMES, PROPOSED ROADS, UTILITIES, CLUBHOUSE AND OPEN SPACE PARCELS.
10. FURTHER SUBDIVISION OF ANY OF THE LOTS, BOTH PRIVATE LOTS AND OPEN SPACE LOTS IN THIS SUBDIVISION IS PROHIBITED.
11. THE PROPOSED ROADS SHALL BE OWNED AND MAINTAIN BY THE HOMEOWNERS ASSOCIATION. ROADS TO BE BUILT TO TOWNSHIP STANDARDS. THE HOMEOWNER ASSOCIATION WILL MAINTAIN STORM SEWER, SIDEWALK, CURBING AND ROADS WITHIN THE RIGHT OF WAYS AND NEW SANITARY SEWER PIPE SYSTEMS LOCATED IN RIGHT OF WAYS, PARCELS, LOTS, OPEN SPACES AND ROADWAYS.
12. OFFER OF DEDICATION TO THE ULTIMATE RIGHTS-OF-WAY LINE ON FOX CHASE ROAD AND SHALL RUN IN PERPETUITY IN FAVOR OF THE APPLICABLE GOVERNMENT AUTHORITY.
13. PROPOSED LOTS TO BE SERVED BY EXISTING DOMESTIC AND/OR FIRE PUBLIC WATER SYSTEMS AND EXISTING PUBLIC SANITARY SEWER SYSTEMS.
14. THE LOCATION OF THE HOUSES AND DRIVEWAYS AS SHOWN ON THE PLAN ARE FOR ILLUSTRATION AND PLANNING PURPOSES ONLY. THE APPLICANT RESERVES THE RIGHT TO MODIFY THE HOUSE SIZE, SHAPE AND LOCATION AT THE TIME OF BUILDING PERMIT APPLICATION.
15. STATE OR TOWNSHIP ROAD OCCUPANCY PERMITS, AS APPLICABLE, TO BE OBTAINED AS NECESSARY
16. NO TREES, SHRUBS, FENCES, SIGNS, STRUCTURE OD ANY TYPE OR ANY OTHER OBSTRUCTION SHALL BE PLACED, PLANTED, SET OR PUT WITHIN THE AREA OF A EASEMENT. THE AREA SHALL BE KEPT AS LAWN.
17. SIGHT TRIANGLE:
    A. CLEAR SIGHT TRIANGLES SHALL BE PROVED AT ALL STREET INTERSECTIONS. WITHIN SUCH TRIANGLES, NO VISION OBSTRUCTING OBJECTS SHALL BE PERMITTED WHICH OBSCURES VISION ABOVE THE HEIGHT OF THIRTY (30) INCHES AND BELOW TEN (10) FEET MEASURED FROM THE CENTERLINE GRADE OF INTERSECTING STREETS.
18. ALL CONTRACTORS WORKING ON THIS PROJECT SHALL BE RESPONSIBLE FOR ENSURING THAT ALL CONSTRUCTION ACTIVITIES RELATED TO THIS PROJECT ARE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE OSHA (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION) STANDARDS.
19. THE DEVELOPER, ITS SUCCESSORS AND ASSIGNS, HEREBY RESERVES THE RIGHT TO ENTER UPON EACH AND EVERY LOT AND AREA OF THE SUBDIVISION/DEVELOPMENT DEPICTED HEREON, WHETHER PRIOR OR SUBSEQUENT TO CONVEYANCE OF ANY LOT, UNTIL EXPIRATION OF THE STATUTORY MAINTENANCE PERIOD FOLLOWING DEDICATION OF PUBLIC IMPROVEMENTS AS SET FORTH AT SECTION 509 OF THE PENNSYLVANIA MUNICIPALITIES PLANNING CODE, AS AMENDED, 53 P.S. 10509, FOR THE PURPOSE OF COMPLETING ANY LANDSCAPING AS REQUIRED BY THE MUNICIPALITY AND FURTHER TO MAKE SUCH MODIFICATIONS IN GRADING AND/OR DRAINAGE IMPROVEMENTS ON ANY LOT AS MAY BE NECESSARY IN THE DISCRETION OF THE DEVELOPER, ITS SUCCESSORS AND ASSIGNS AND/OR THE TOWNSHIP ENGINEER FOR SATISFACTORY STORM WATER MANAGEMENT.
20. THE SWM FACILITIES SHOWN ON THESE PLANS ARE A BASIC AND PERPETUAL PART OF THE STORM DRAINAGE SYSTEM OF ABINGTON, AND AS SUCH IS TO BE PROTECTED AND PRESERVED, IN ACCORDANCE WITH THE APPROVED FINAL PLANS BY THE OWNERS OF THOSE LANDS WHERE THE STRUCTURE(S) ARE LOCATED. WHERE THE MAINTENANCE OF STORMWATER RETENTION FACILITIES IS THE RESPONSIBILITY OF THE INDIVIDUAL LOT OWNER, A HOMEOWNERS ASSOCIATION OR SIMILAR ENTITY, AND IN THE EVENT THAT THE PARTY OR PARTIES RESPONSIBLE FOR THE MAINTENANCE OF THE STORMWATER RETENTION FACILITIES OR PRIVATE STREETS IN THE DEVELOPMENT FAIL TO PROPERLY MAINTAIN SAID FACILITIES, THE TOWNSHIP MAY, BUT SHALL NOT BE OBLIGATED TO, PROVIDE SAID PARTIES WITH 30 DAYS NOTICE OF THE TOWNSHIP'S INTENTION TO PERFORM SAID MAINTENANCE OR REPAIR. IN THE EVENT THAT SAID PARTIES DO NOT PERFORM OR COMMENCE TO PERFORM SAID MAINTENANCE OR REPAIR WITHIN THE 30 DAY NOTICE PERIOD, THE TOWNSHIP MAY, BUT SHALL NOT BE OBLIGATED TO, PERFORM SAID MAINTENANCE OR REPAIR AND CHARGE THE COST THEREOF, INCLUDING ANY FEES OF THE TOWNSHIP PROFESSIONALS, PROPORTIONATELY TO EACH OF THE HOMEOWNERS IN THE DEVELOPMENT AND MAY FILE A LIEN AGAINST THE PROPERTY OF THE HOMEOWNER UNTIL SUCH AMOUNTS ARE FULLY REIMBURSED TO THE TOWNSHIP.
21. THE PROPOSED SWM FACILITIES HAVE BEEN DESIGNED TO ACCOMMODATE THE MAX. ALLOWABLE (50%) IMPERVIOUS SURFACE FOR HOUSE BOX.
22. THE APPLICANT/OWNER OF THIS PROPERTY ACKNOWLEDGES THE REQUIREMENT TO COMPLY WITH ALL STATE AND FEDERAL REGULATIONS REGARDING THE DISTURBANCE OF WETLANDS. ANY IMPROVEMENTS WHICH CANNOT BE COMPLETED AS SHOWN SHALL BE AMENDED TO THE SATISFACTION OF THE TOWNSHIP AND SHALL BE DEPICTED ON REVISED PLANS WHICH SHALL BE SUBMITTED TO THE TOWNSHIP FOR REVIEW. THE APPLICANT/OWNER OF THIS PROPERTY ACCEPTS ALL RESPONSIBILITY WITH RESPECT TO STATE AND FEDERAL REGULATIONS.
23. ALL IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SPECIFICATIONS PROVIDED IN THE SUBDIVISION AND LAND DEVELOPMENT ORDINANCE OR OTHER SPECIFICATIONS OF THE TOWNSHIP, THE PENNSYLVANIA DEPARTMENT OF TRANSPORTATION, PENNDOT PUBLICATION 408, AS AMENDED, AND THE PENNDOT ROAD CONSTRUCTION STANDARDS, AS AMENDED, PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION OR THE AUTHORITY HAVING JURISDICTION OVER SAID IMPROVEMENTS.
24. AN NPDES PERMIT IS REQUIRED FOR THIS PROJECT FROM THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION.
25. THE SPEED LIMIT WITHIN THIS DEVELOPMENT IS TO BE POSTED AT 20 M.P.H.
26. THE APPLICANT RESERVES THE RIGHT TO CONSTRUCT LANDSCAPE TOPSOIL BERMS WITHIN OPEN SPACE AND BUFFER YARDS.
27. BLANKET EASEMENT FOR ALL STORMWATER MANAGEMENT FACILITIES.
28. A CONDITIONAL USE APPROVAL ON JULY 13, 2023 WAS RECEIVED FOR THE ZONE 2 DISTURBANCE TO CONNECT THE SITE SANITARY SEWER TO THE EXISTING SANITARY SEWER LINE.
29. THE BOARD OF ABINGTON TOWNSHIP COMMISSIONERS APPROVED THE PRELIMINARY LAND DEVELOPMENT PLAN ON MARCH 14, 2024.

AREA TABULATION - SISTERS OF ST. BASIL:

TOTAL SITE AREA:	2,019,856	SQ. FT. OR	46.370 ACRES
ROAD A ROW AREA:	45,565	SQ. FT. OR	1.046 ACRES
ROAD B ROW AREA:	55,766	SQ. FT. OR	1.280 ACRES
ROAD C ROW AREA:	15,798	SQ. FT. OR	0.363 ACRES
ROAD D ROW AREA:	28,461	SQ. FT. OR	0.653 ACRES
ROAD E ROW AREA:	45,345	SQ. FT. OR	1.041 ACRES
ROAD F ROW AREA:	16,073	SQ. FT. OR	0.369 ACRES
ROAD G ROW AREA:	16,225	SQ. FT. OR	0.372 ACRES
FOX CHASE ROAD LEGAL ROW AREA:	27,139	SQ. FT. OR	0.623 ACRES
FOX CHASE ROAD DEDICATED ROW AREA:	9,048	SQ. FT. OR	0.208 ACRES
TOTAL ENCROACHMENT AREA:	26,577	SQ. FT. OR	0.610 ACRES
OPEN SPACE LOT 151 AREA:	1,510,742	SQ. FT. OR	34.682 ACRES*
OPEN SPACE LOT 152 AREA:	82,151	SQ. FT. OR	1.886 ACRES**
OPEN SPACE LOT 153 AREA:	70,865	SQ. FT. OR	1.627 ACRES***
OPEN SPACE LOT 154 AREA:	70,101	SQ. FT. OR	1.609 ACRES****
TOTAL OPEN SPACE:	1,733,859	SQ. FT. OR	39.804 ACRES
QUALIFYING OPEN SPACE:	985,560	SQ. FT. OR	22.600 ACRES

*OPEN SPACE LOT 151 INCLUDES CARRIAGE LOTS 1 THROUGH 110
**OPEN SPACE LOT 152 INCLUDES CARRIAGE LOTS 140 THROUGH 150 AND CLUBHOUSE
***OPEN SPACE LOT 153 INCLUDES CARRIAGE LOTS 125 THROUGH 139
****OPEN SPACE LOT 154 INCLUDES CARRIAGE LOTS 111 THROUGH 124

COUNTY RECORDER OF DEEDS:

RECORDED IN THE OFFICE OF THE RECORDER OF DEEDS IN NORRISTOWN, PENNSYLVANIA, IN PLAN BOOK_____ PAGE NO._____ ON THIS____DAY OF_____, 2023.

COUNTY RECORDER OF DEEDS

FIRE HYDRANTS AND STREETLIGHTS ARE TO BE INSTALLED AT THE EXPENSE IF THE SUBDIVIDER/LAND DEVELOPER IN ACCORDANCE WITH THE TOWNSHIP STANDARDS AND WITH THE RECOMMENDATIONS OF THE RESPECTIVE UTILITY COMPANIES, SUBJECT TO THE APPROVAL OF THE BOARD OF COMMISSIONERS.

STREETLIGHTS AND STREET NAME SIGNS ARE TO BE INSTALLED AT THE EXPENSE OF THE SUBDIVIDER/LAND DEVELOPER IN ACCORDANCE WITH TOWNSHIP STANDARDS AND DEDICATED TO THE TOWNSHIP.

THE PHILADELPHIA ELECTRIC COMPANY AND BELL TELEPHONE COMPANY OF PENNSYLVANIA ARE GRANTED THE RIGHT TO CONSTRUCT, MAINTAIN AND REPAIR POLE LINES AND UNDERGROUND EQUIPMENT ON, UNDER AND ACROSS ALL HIGHWAYS IN THIS TRACT.

WHERE A PLAN REQUIRES ACCESS TO A HIGHWAY WHICH IS UNDER THE JURISDICTION OF THE PENNSYLVANIA DEPARTMENT OF TRANSPORTATION, A HIGHWAY OCCUPANCY PERMIT IS REQUIRED BY SECTION 420 P.L. 1242, NO. 428 KNOWN AS THE STATE HIGHWAY LAW, BEFORE DRIVEWAY ACCESS TO A HIGHWAY IS PERMITTED OR CONSTRUCTED. WHERE A PLAN REQUIRES ACCESS TO A HIGHWAY WHICH IS UNDER THE JURISDICTION OF THE MONTGOMERY COUNTY, IT SHALL INCLUDE THE FOLLOWING NOTATION: "A DIVISION OF THE MONTGOMERY COUNTY PUBLIC WORKS BEFORE DRIVEWAY ACCESS TO A COUNTY HIGHWAY IS PERMITTED OR CONSTRUCTED."

WHEN THE INSTALLATION OF CURBS OR SIDEWALKS IS WAIVED FOR A PARTICULAR DEVELOPMENT PLAN, CURBS AND/OR SIDEWALKS MAY BE REQUIRED TO BE INSTALLED BY SUBSEQUENT LANDOWNERS AT THEIR EXPENSE, BY DIRECTION OF THE BOARD OF COMMISSIONERS.

OTHER NOTATIONS AS REQUIRED BY THIS CHAPTER AND THE BOARD OF COMMISSIONERS.

COMMONWEALTH OF PENNSYLVANIA
COUNTY OF MONTGOMERY

EQUITABLE OWNER/CORPORATE CERTIFICATION:

I DO HEREBYCERTIFY THAT TOLL MID-ATLANTIC L.P. COMPANY, INC., A DELAWARE CORPORATION, IS THE REGISTERED EQUITABLE OWNER AND APPLICANT OF THE LAND HEREIN SUBDIVIDED, PROPOSED TO BE DEVELOPED AND THAT IT DOES ADOPT THIS PLAN AND DESIRE THE SAME TO BE RECORDED.

BY:_____
BRIAN THIERRIN
SENIOR VICE PRESIDENT

T.M.P. NO. 30-00-22424-00-1 AND 30-00-22420-00-5

WAIVER LIST:

1. **§146-11.A.(4) – Property Identification Plans –** A partial waiver from the requirement to show tract boundary information, including tax map parcel numbers, names of owners, and approximate acreage, within 400 feet.
2. **§146-11.B.(3) – Existing Features Plan –** A partial waiver from the requirement that existing features plan shall include property lines and names of landowners within 400 feet of the site.
3. **§146-11.B.(7) – Existing Features Plan –** A partial waiver from the requirement to provide all utility information within 400 feet of the subject property.
4. **§146-27.C – Sidewalks and Curbs – Location –** A partial waiver from the requirement to located sidewalks between the curb and right-of-way line, six inches from the property line.
5. **§146-27.F – Sidewalks and Curbs –** A partial waiver to permit the curbing on the interior roads to be constructed with 6" Belgian Block.
6. **§146-29.A – Blocks – Length –** A partial waiver for internal roads C, D, F, and G from the requirement that blocks have a minimum length of 500 feet.
7. **§1460-33.I – Drainage –** A waiver from the requirement to direct roof drains under the sidewalk and connect to storm drains.
8. **§146-35.C.(2) – Design and construction of sewers – Size, grade and type –** A partial waiver to permit modification of the material of the sanitary sewer main to SDR-26 (plastic pipe) from ductile iron within the development only. The ductile iron pipe will be required within the public Fox Chase Road right-of-way.
9. **§146-43.C.(3).(a) – Excavations and fills –** A partial waiver to permit cut and fill slopes greater than 15% for the stormwater basin berms and allow basin slopes and slopes to tie into natural grade up to 33%.

NOTARY PUBLIC
COMMONWEALTH OF PENNSYLVANIA
COUNTY OF MONTGOMERY

ON THE ___DAY OF_____,2024, BEFORE ME THE UNDERSIGNED NOTARY PUBLIC, PERSONALLY APPEARED BRIAN THIERRIN, WHO ACKNOWLEDGED HIMSELF TO BE SENIOR VICE PRESIDENT OF TOLL MID-ATLANTIC L.P. COMPANY, INC., A DELAWARE CORPORATION, AND HE AS SUCH OFFICER BEING AUTHORIZED TO DO SO, HAS EXECUTED THE FOREGOING PLAN BY SIGNING HIS NAME AS SUCH OFFICER.

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

NOTARY PUBLIC:_____

MY COMMISSION EXPIRES:_____

CERTIFICATE OF MUNICIPAL APPROVAL

APPROVED BY THE BOARD OF COMMISIONERS OF THE TOWNSHIP OF ABINGTON.
THIS____DAY OF_____, 2024.

_____
PRESIDENT

ATTEST: _____
SECRETARY

MONTGOMERY COUNTY PLANNING COMMISSION

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

_____
FOR THE DIRECTOR

TOWNSHIP ENGINEER CERTIFICATION

THIS PLAN HAS BEEN REVIEWED BY THE ABINGTON TOWNSHIP ENGINEER IN ACCORDANCE WITH THE SUBDIVISION AND LAND DEVELOPMENT ORDINANCE AT THE TIME OF SUBDIVISION.

_____ _____
ENGINEER DATE

GRAPHIC SCALE

100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

CERTIFICATION OF ACCURACY

I HEREBY CERTIFY TO THE BEST OF MY KNOWLEDGE THAT THE PLAN SHOWN AND DESCRIBED HEREON IS TRUE AND CORRECT TO THE ACCURACY REQUIRED BY THE LAND SUBDIVISION REGULATIONS OF THE TOWNSHIP OF ABINGTON.

_____
THOMAS B. HENDRICKS
PA LICENSE NO. SU-044552-E

SURVEYOR CERTIFICATION

I HEREBY CERTIFY THAT I AM A REGISTERED PROFESSIONAL LAND SURVEYOR, LICENSED IN COMPLIANCE WITH THE LAWS OF THE COMMONWEALTH OF PENNSYLVANIA; THAT TO THE BEST OF MY KNOWLEDGE THIS IS TRUE AND CORRECT TO THE ACCURACY REQUIRED BY THE LAND SUBDIVISION REGULATIONS OF THE TOWNSHIP OF ABINGTON.

_____
THOMAS B. HENDRICKS, P.L.S.
PA LICENSE NO. SU-044552-E

CAUTION:
IF THIS DOCUMENT DOES NOT CONTAIN THE ORIGINAL SEAL OF THE REGISTERED LAND SURVEYOR, IT IS NOT AN AUTHENTIC COPY AND MAY HAVE BEEN ALTERED.

THOMAS B. HENDRICKS
PROFESSIONAL LAND SURVEYOR
PA LICENSE NO. SU-044552-E

ESE CONSULTANTS
ENGINEERING • PLANNING • SURVEYING • ENVIRONMENTAL
ESE Consultants, Inc.
1140 Virginia Drive • Fort Washington, PA 19034
T: 215-914-2050

REV.	DATE	DESCRIPTION	
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	KMS
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	KMS
1	7/24/23	TOWNSHIP REVIEW LETTERS	KMS
			DRAWN

RECORD PLAN
(RECORD SHEET 1 OF 4)

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT—NOT TO BE RECORDED

APPLICATION NUMBER LD-23-01

DATE: 03/24/23 | SCALE: 1"=100'
DESIGN: JMM | DRAWN: KMS
JOB NO.: 7662 | FILE NAME: RP50.01
REF. NO.: RP50.01
SHEET NO.: 2 OF 62

ZONING TABLE:

TAX MAP PARCEL NO.: 30-00-22424-00-1 AND 30-00-22420-00-5
TOTAL TAX PARCEL AREA: 46.37 ACRES
ZONING DISTRICT: CS- COMMUNITY SERVICE WITH AR-AGE RESTRICTED CARRIAGE HOME OVERLAY DISTRICT
PROPOSED USE: H-13 AGE RESTRICTED CARRIAGE HOMES SINGLE FAMILY ATTACHED DWELLINGS

TOTAL SITE AREA:	46.37 ACRES
EXISTING ROW AREA:	0.62 ACRES
60' ROW DEDICATED AREA:	0.21 ACRES
ENCROACHMENT EASEMENT AREA:	0.62 ACRES
GROSS SITE AREA:	44.92 ACRES

TOTAL NUMBER OF PROPOSED UNITS: 150 SINGLE FAMILY ATTACHED (CARRIAGES)

	EXISTING	REQUIRED	PROVIDED
MINIMUM SITE AREA:	46.58 AC.	40.0 AC.	46.37 AC.
MINIMUM SETBACK FROM ULTIMATE ROW:	100'	100'	100'
MINIMUM SETBACK FROM OTHER TRACT BOUNDARY LINES	125'	125'	125'
DWELLING SETBACK FROM FACE OF CURB/ EDGE OF CARTWAY	>30'	30'	>30'
MAXIMUM BUILDING AREA*	<25%	25% (11.23 AC.)	19.8% (8.89 AC.)
MAXIMUM IMPERVIOUS*	<50%	50% (22.46 AC.)	35.6% (15.99 AC.)
MINIMUM GREEN AREA*	>50%	50% (22.46 AC.)	64.4% (28.93 AC.)
MINIMUM OPEN SPACE*	>40%	40% (17.97 AC.)	50.5% (22.60 AC.)
MAXIMUM DENSITY*	N/A	3.4 DU/AC.	3.34 DU/AC.
*USING GROSS SITE AREA			
PARKING REQUIREMENTS (2 PER UNIT) PLUS ½ SPACE/UNIT OVERFLOW		300 IN DRIVEWAYS 38 OVERFLOW	300 IN DRIVEWAYS 42 OVERFLOW**
CLUBHOUSE PARKING (USE A-6):	N/A	N/A	13 (INCL 2 H.C. SPACE)
MAXIMUM UNIT WIDTH:		6 UNITS	6 OR LESS UNITS
MINIMUM UNIT WIDTH:	N/A	3 UNITS	3 PLUS UNITS
BUILDING TO BUILDING SEPARATION:			
SIDE TO SIDE:	N/A	20'	>20'
MAX. HEIGHT:	N/A	35' MAX	<35'
MAX. CARRIAGE HOME LENGTH:	N/A	160'	<160'
AGE RESTRICTED CARRIAGE HOMES:			
MINIMUM WIDTH:	N/A	28'	28'
MINIMUM DEPTH:	N/A	50'	50'+

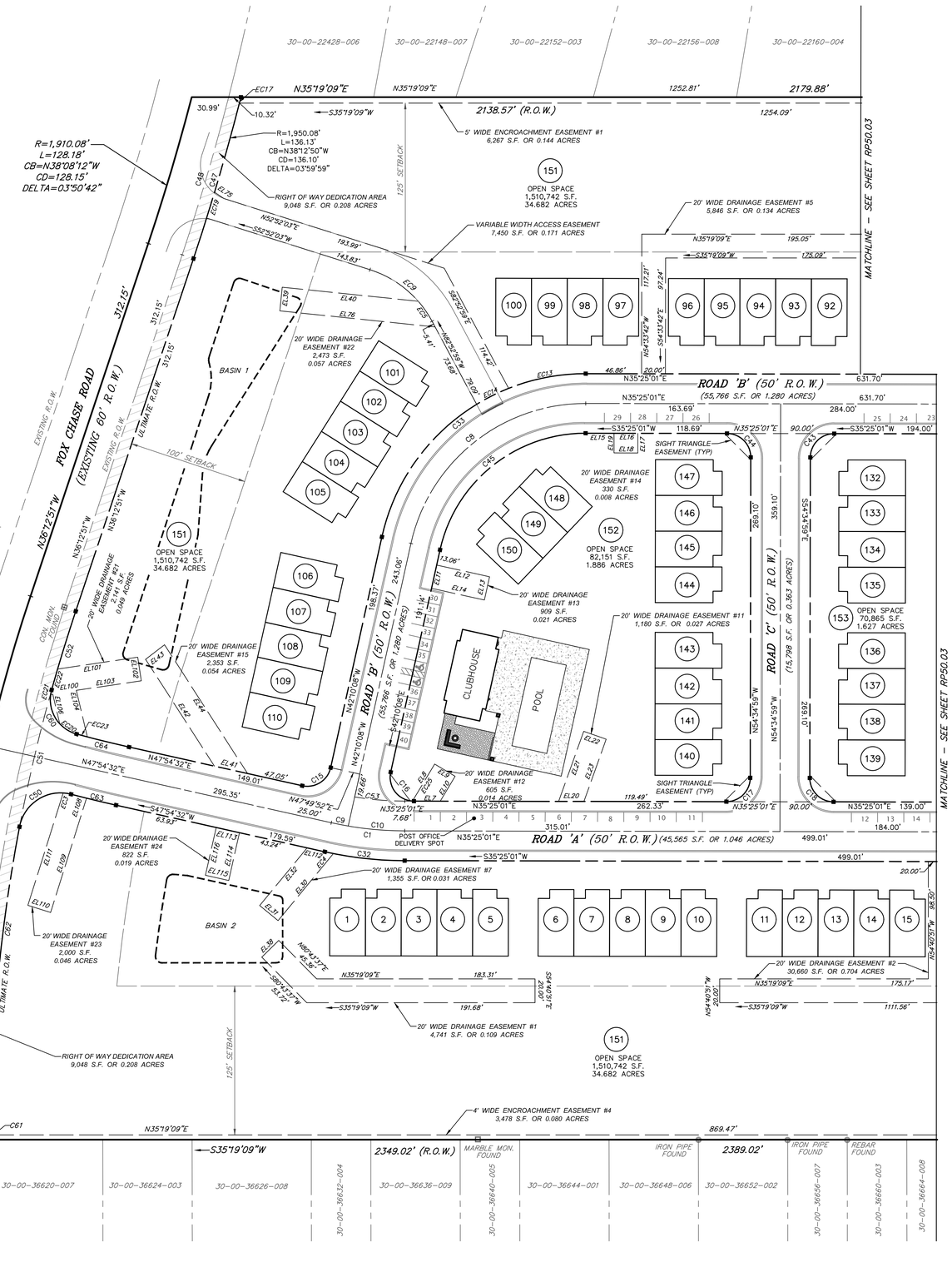
*PARKING PROVIDED FOR 2 VEHICLES IN GARAGE, 2 VEHICLES IN DRIVEWAY, AND ON-STREET STALLS. SINGLE CAR GARAGE MAY NOT BE UTILIZED AS REQUIRED PARKING SPACES, UNLESS A BASEMENT IS PROVIDED.

**OVERFLOW PARKING INCLUDES 39 PARKING SPACES, 2 HANDICAP SPACES AND 1 POST OFFICE SPOT.

LEGEND:

- MONUMENT TO BE SET
- MONUMENT FOUND
- IRON PIN/PIPE FOUND
- (50) PROPOSED LOT NUMBER
- BUILDING SETBACK LINE
- PROPOSED CENTER LINE
- STREAM LINE
- PROPOSED PROPERTY LINE
- PROPOSED R.O.W.
- OUTBOUND LINE
- ZONING BOUNDARY LINE
- PROPOSED EASEMENT
- TOWNSHIP RIPARIAN BUFFER – ZONE 1
- TOWNSHIP RIPARIAN BUFFER – ZONE 2
- STEEP SLOPES 15% TO 25%
- STEEP SLOPES > 25%
- WETLANDS LIMIT
- WATERS OF THE U.S.
- FLOODPLAIN (ZONE X)

EASEMENT LINE TABLE		
LINE	BEARING	DISTANCE
EL7	S35°25'01"W	22.05'
EL8	N23°45'18"W	36.20'
EL9	N66°14'42"E	20.00'
EL10	S23°45'18"E	24.30'
EL11	N42°10'08"W	20.00'
EL12	N47°49'52"E	45.47'
EL13	S42°10'08"E	20.00'
EL14	S47°49'52"W	45.47'
EL15	N35°25'01"E	23.82'
EL16	N35°25'01"E	20.00'
EL17	S54°34'59"E	16.50'
EL18	S35°25'01"W	20.00'
EL19	N54°34'59"W	16.50'
EL20	S35°25'01"W	21.23'
EL21	N35°01'11"W	62.43'
EL22	N54°22'19"E	20.00'
EL23	S35°01'11"E	55.54'
EL30	S15°12'51"E	72.93'
EL31	S74°47'09"W	20.00'
EL32	N15°12'51"W	62.69'
EL38	N09°16'23"W	20.00'
EL39	N48°46'46"W	20.00'
EL40	N41°13'14"E	114.75'
EL41	S47°54'32"W	28.49'
EL42	S87°29'39"W	106.67'
EL43	N02°13'44"W	20.07'
EL44	N87°29'39"E	128.61'
EL75	N68°58'58"E	9.45'
EL76	S41°13'14"W	131.10'
EL100	S25°04'45"W	1.83'
EL101	N26°54'34"E	68.06'
EL102	S63°05'25"E	20.00'
EL103	S26°54'34"W	55.10'
EL104	S67°57'35"E	40.14'
EL105	S47°54'32"W	13.45'
EL106	N67°57'35"W	25.52'
EL108	N47°54'32"E	13.33'
EL109	S37°14'05"E	100.61'
EL110	S52°45'55"W	20.00'
EL111	N37°14'05"W	98.94'
EL112	N47°54'32"E	15.17'
EL113	N47°54'32"E	20.00'
EL114	S41°59'05"E	41.09'
EL115	S48°00'55"W	20.00'
EL116	N41°59'05"W	41.06'

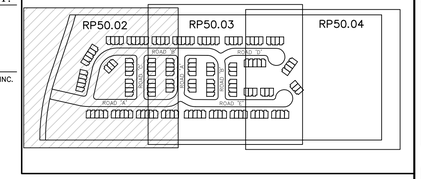


OWNER AND APPLICANT:

SISTERS OF ST. BASIL THE GREAT
711 FOX CHASE ROAD
ABINGTON, PA 19046-4198

EQUITABLE OWNER AND APPLICANT:

TOLL MID-ATLANTIC, L.P. COMPANY, INC.
1140 VIRGINIA DRIVE
FORT WASHINGTON, PA 19034
(215)938-8000



KEY MAP
N.T.S.

EASEMENT CURVE TABLE						
CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE	TANGENT
EC3	25.00'	6.76'	6.75'	S44°32'39"W	11°04'24"	3.39'
EC4	310.00'	7.30'	7.30'	S47°14'05"W	1°20'54"	3.65'
EC5	90.00'	20.49'	20.45'	N89°24'18"W	13°02'38"	10.29'
EC9	90.00'	69.51'	67.79'	N74°59'32"E	44°14'58"	36.59'
EC13	175.00'	66.31'	65.92'	N24°33'41"E	21°42'40"	33.56'
EC14	175.00'	30.05'	30.01'	N08°47'12"E	9°50'18"	15.06'
EC17	1950.08'	5.16'	5.16'	S40°17'22"E	0°09'06"	2.58'
EC19	1950.08'	22.62'	22.62'	N37°35'50"W	0°39'53"	11.31'
EC20	30.00'	16.78'	16.56'	S66°35'51"W	32°02'48"	8.62'
EC21	30.00'	4.00'	4.00'	N42°52'47"W	7°38'47"	2.00'
EC22	1392.69'	19.81'	19.81'	N38°42'50"W	0°48'54"	9.90'
EC23	975.00'	9.31'	9.31'	S50°18'03"W	0°32'49"	4.65'
EC24	75.00'	0.90'	0.90'	N65°04'28"E	0°41'05"	0.45'
EC25	20.00'	1.22'	1.22'	N37°09'43"E	3°29'24"	0.61'

CURVE TABLE						
CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE	TANGENT
C1	285.00'	62.14'	62.01'	S41°39'46"W	12°29'32"	31.19'
C8	150.00'	203.12'	187.95'	S03°22'34"E	77°35'09"	120.57'
C9	285.00'	14.49'	14.49'	S46°27'09"W	2°54'47"	7.25'
C10	285.00'	47.65'	47.59'	S40°12'23"W	9°34'44"	23.88'
C15	20.00'	31.44'	28.30'	S02°52'12"W	90°04'40"	20.03'
C16	20.00'	35.75'	31.18'	S86°37'26"W	102°24'51"	24.88'
C17	20.00'	31.42'	28.28'	S09°34'59"E	90°00'00"	20.00'
C18	20.00'	31.42'	28.28'	S80°25'01"W	90°00'00"	20.00'
C32	310.00'	67.59'	67.45'	N41°39'46"E	12°29'32"	33.93'
C33	175.00'	236.97'	219.28'	S03°22'34"E	77°35'09"	140.67'
C43	20.00'	31.42'	28.28'	N09°34'59"W	90°00'00"	20.00'
C44	20.00'	31.42'	28.28'	N80°25'01"E	90°00'00"	20.00'
C45	125.00'	169.27'	156.63'	N03°22'34"W	77°35'09"	100.48'
C46	1392.69'	264.26'	263.87'	S49°20'50"E	10°52'19"	132.53'
C47	1950.08'	141.29'	141.26'	S38°17'23"E	4°09'05"	70.68'
C48	1940.08'	138.01'	137.98'	N38°15'07"W	4°04'33"	69.04'
C49	1402.69'	454.58'	452.59'	N45°29'54"W	18°34'06"	229.30'
C50	35.00'	57.42'	51.19'	S03°05'05"W	93°59'31"	37.53'
C51	1392.69'	118.00'	117.97'	S41°29'02"E	04°51'17"	59.04'
C52	1392.69'	69.09'	34.55'	S37°38'07"E	2°50'33"	34.55'
C53	260.00'	42.23'	42.18'	S40°04'12"W	9°18'22"	21.16'
C60	30.00'	47.32'	42.56'	S84°14'28"E	90°22'09"	30.19'
C61	1392.69'	4.00'	4.00'	S54°42'03"E	0°09'52"	2.00'
C62	1392.69'	260.26'	259.88'	N49°15'54"W	10°42'26"	130.51'
C63	1025.00'	38.85'	38.85'	S48°59'41"W	02°10'18"	19.43'
C64	975.00'	45.35'	45.35'	S49°14'30"W	02°39'55"	22.68'

AREA TABULATION - SISTERS OF ST. BASIL:

TOTAL SITE AREA:	2,019,856 SQ. FT. OR 46.370 ACRES
ROAD A ROW AREA:	45,565 SQ. FT. OR 1.046 ACRES
ROAD B ROW AREA:	55,766 SQ. FT. OR 1.280 ACRES
ROAD C ROW AREA:	15,798 SQ. FT. OR 0.363 ACRES
ROAD D ROW AREA:	28,461 SQ. FT. OR 0.653 ACRES
ROAD E ROW AREA:	45,345 SQ. FT. OR 1.041 ACRES
ROAD F ROW AREA:	16,073 SQ. FT. OR 0.369 ACRES
ROAD G ROW AREA:	16,225 SQ. FT. OR 0.372 ACRES
FOX CHASE ROAD LEGAL ROW AREA:	27,139 SQ. FT. OR 0.623 ACRES
FOX CHASE ROAD DEDICATED ROW AREA:	9,048 SQ. FT. OR 0.208 ACRES
TOTAL ENCROACHMENT AREA:	26,577 SQ. FT. OR 0.610 ACRES
OPEN SPACE LOT 151 AREA:	1,510,742 SQ. FT. OR 34.682 ACRES*
OPEN SPACE LOT 152 AREA:	82,151 SQ. FT. OR 1.886 ACRES**
OPEN SPACE LOT 153 AREA:	70,865 SQ. FT. OR 1.627 ACRES***
OPEN SPACE LOT 154 AREA:	70,101 SQ. FT. OR 1.609 ACRES****
TOTAL OPEN SPACE:	1,733,859 SQ. FT. OR 39.804 ACRES
QUALIFYING OPEN SPACE:	985,560 SQ. FT. OR 22.600 ACRES

*OPEN SPACE LOT 151 INCLUDES CARRIAGE LOTS 1 THROUGH 110
**OPEN SPACE LOT 152 INCLUDES CARRIAGE LOTS 140 THROUGH 150 AND CLUBHOUSE
***OPEN SPACE LOT 153 INCLUDES CARRIAGE LOTS 125 THROUGH 139
****OPEN SPACE LOT 154 INCLUDES CARRIAGE LOTS 111 THROUGH 124

GRAPHIC SCALE

50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

SURVEYOR CERTIFICATION

I HEREBY CERTIFY THAT I AM A REGISTERED PROFESSIONAL LAND SURVEYOR, LICENSED IN COMPLIANCE WITH THE LAWS OF THE COMMONWEALTH OF PENNSYLVANIA; THAT TO THE BEST OF MY KNOWLEDGE THIS IS TRUE AND CORRECT TO THE ACCURACY REQUIRED BY THE LAND SUBDIVISION REGULATIONS OF THE TOWNSHIP OF ABINGTON.

THOMAS B. HENDRICKS, P.L.S.
PA LICENSE NO. SU-044552-E

CAUTION:
IF THIS DOCUMENT DOES NOT CONTAIN AN ORIGINAL SIGNATURE AND SEAL OF A LAND SURVEYOR, IT IS NOT AN OFFICIAL DOCUMENT (COPYRIGHT) AND MAY HAVE BEEN ALTERED.

THOMAS B. HENDRICKS
PROFESSIONAL LAND SURVEYOR
PA LICENSE NO. SU-044552-E

ESE CONSULTANTS
ENGINEERING • PLANNING • SURVEYING • ENVIRONMENTAL
ESE Consultants, Inc.
1140 Virginia Drive • Fort Washington, PA 19034
T: 215-914-2050

REV.	DATE	DESCRIPTION	
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	KMS
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	KMS
1	7/24/23	TOWNSHIP REVIEW LETTERS	KMS

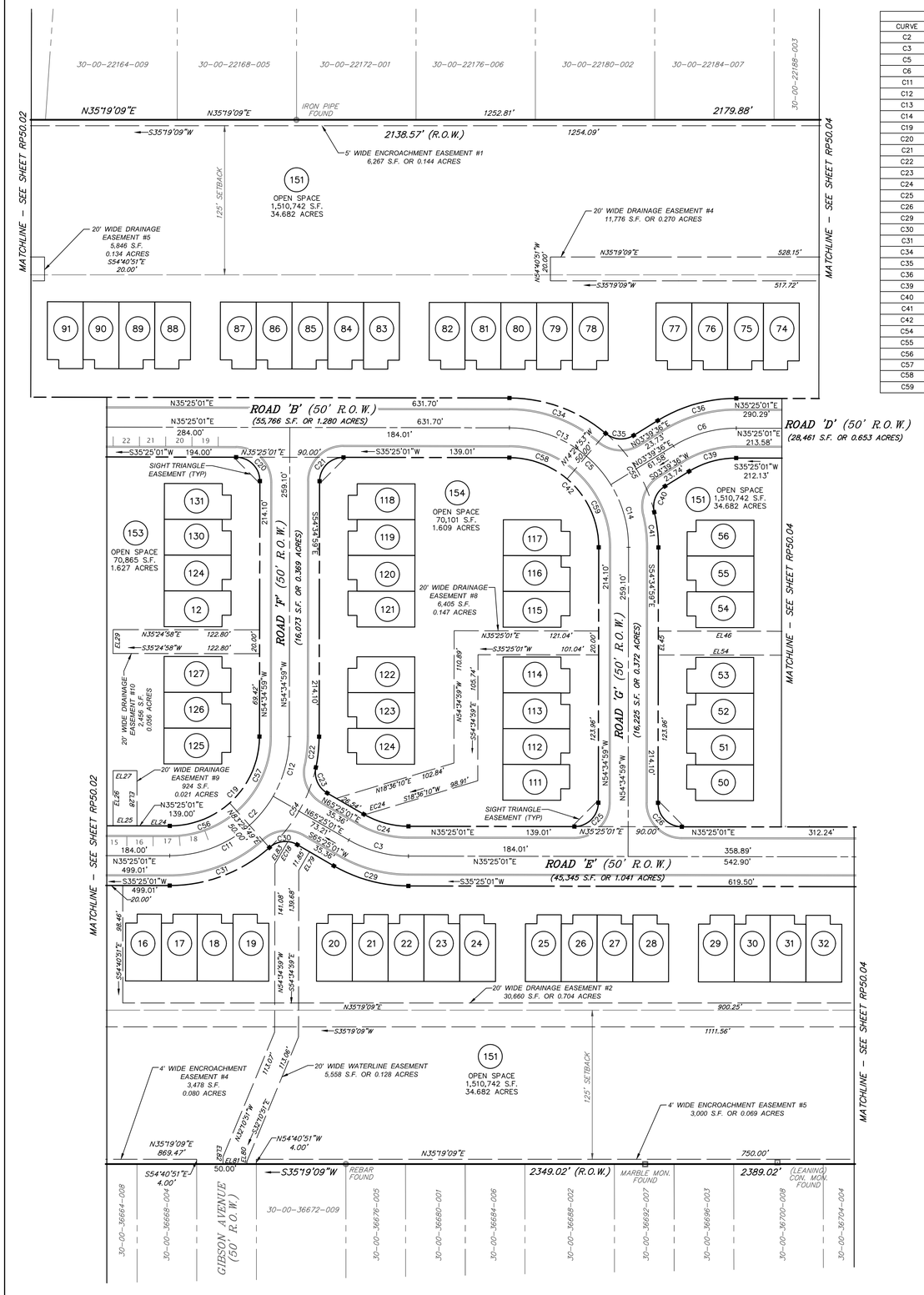
PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT–NOT TO BE RECORDED

APPLICATION NUMBER LD-23-01

RECORD PLAN
(RECORD SHEET 2 OF 4)

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 03/24/23	SCALE: 1"=50'
DESIGN: JMM	DRAWN: KMS
JOB NO.: 7662	FILE NAME: RP50.02
REF. NO.:	RP50.02
SHEET NO.:	3 OF 62



CURVE TABLE						
CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE	TANGENT
C2	100.00'	157.08'	141.42'	S09°34'59"E	90°00'00"	100.00'
C3	100.00'	52.36'	51.76'	S50°25'01"W	30°00'00"	26.79'
C5	100.00'	157.08'	141.42'	N80°25'01"E	90°00'00"	100.00'
C6	100.00'	55.43'	54.72'	S19°32'18"W	31°45'25"	28.45'
C11	100.00'	104.72'	100.00'	S05°25'01"W	60°00'00"	57.74'
C12	100.00'	52.36'	51.76'	S39°34'59"E	30°00'00"	26.79'
C13	100.00'	101.67'	97.34'	S64°32'32"W	58°15'02"	55.72'
C14	100.00'	55.41'	54.71'	N70°27'28"W	31°44'58"	28.44'
C19	75.00'	117.81'	106.07'	S09°34'59"E	90°00'00"	75.00'
C20	20.00'	31.42'	28.28'	N80°25'01"E	90°00'00"	20.00'
C21	20.00'	31.42'	28.28'	N09°34'59"W	90°00'00"	20.00'
C22	125.00'	26.01'	25.96'	N48°37'23"W	11°55'12"	13.05'
C23	20.00'	25.10'	23.49'	N78°37'23"W	71°55'12"	14.51'
C24	75.00'	39.27'	38.82'	S50°25'01"W	30°00'00"	20.10'
C25	20.00'	31.42'	28.28'	S09°34'59"E	90°00'00"	20.00'
C26	20.00'	31.42'	28.28'	S80°25'01"W	90°00'00"	20.00'
C29	125.00'	65.45'	64.70'	N50°25'01"E	30°00'00"	33.49'
C30	20.00'	25.10'	23.49'	N29°27'25"E	71°55'12"	14.51'
C31	125.00'	91.46'	89.43'	N14°27'25"E	41°55'12"	47.88'
C34	125.00'	87.63'	85.85'	S55°30'04"W	40°10'06"	45.70'
C35	20.00'	25.11'	23.49'	S39°37'22"W	71°55'31"	14.51'
C36	125.00'	69.28'	68.40'	S19°32'18"W	31°45'25"	35.56'
C39	75.00'	41.57'	41.04'	N19°32'18"E	31°45'25"	21.33'
C40	20.00'	25.10'	23.49'	N32°17'50"W	71°54'53"	14.51'
C41	125.00'	29.83'	29.76'	N61°25'08"W	13°40'18"	14.98'
C42	75.00'	117.81'	106.07'	N80°25'01"E	90°00'00"	75.00'
C54	125.00'	78.89'	77.59'	S24°34'59"E	36°09'36"	40.81'
C55	125.00'	78.89'	77.59'	N86°20'05"W	36°09'36"	40.81'
C56	75.00'	54.87'	53.66'	S14°27'25"W	41°55'12"	28.73'
C57	75.00'	62.94'	61.11'	S30°32'35"E	48°04'48"	33.45'
C58	75.00'	52.58'	51.51'	S55°30'04"W	40°10'06"	27.42'
C59	75.00'	65.23'	63.19'	N79°29'56"W	49°49'54"	34.84'

EASEMENT CURVE TABLE						
CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE	TANGENT
EC18	20.00'	8.39'	8.33'	N53°23'31"E	24°02'59"	4.26'
EC24	75.00'	0.90'	0.90'	N65°04'28"E	0°41'05"	0.45'

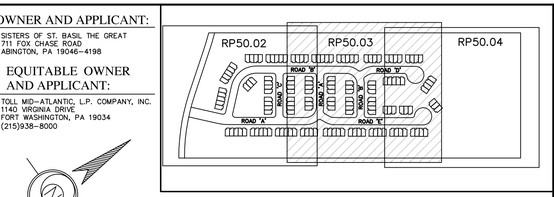
EASEMENT CURVE TABLE		
LINE	BEARING	DISTANCE
EL24	S35°25'01"W	27.54'
EL25	S35°25'01"W	20.00'
EL26	N54°40'54"W	46.20'
EL27	N35°19'06"E	20.00'
EL28	S54°40'54"E	46.24'
EL29	N54°35'02"W	20.00'
EL45	N54°34'59"W	20.00'
EL46	N35°25'01"E	126.88'
EL54	S35°25'01"W	106.86'
EL79	S24°34'59"E	17.99'
EL80	S54°40'51"E	2.01'
EL81	S35°19'09"W	20.00'
EL82	N54°40'51"W	5.99'
EL83	N24°34'59"W	21.61'

OWNER AND APPLICANT:

SISTERS OF ST. BASIL THE GREAT
711 FOX CHASE ROAD
ABINGTON, PA 19046–4198

EQUITABLE OWNER AND APPLICANT:

TOLL MID–ATLANTIC, L.P. COMPANY, INC.
1140 VIRGINIA DRIVE
FORT WASHINGTON, PA 19034
(215)938–8000



KEY MAP
N.T.S.

LEGEND:

- MONUMENT TO BE SET
- MONUMENT FOUND
- IRON PIN/PIPE FOUND
- (50) PROPOSED LOT NUMBER
- BUILDING SETBACK LINE
- PROPOSED CENTER LINE
- STREAM LINE
- PROPOSED PROPERTY LINE
- PROPOSED R.O.W.
- OUTBOUND LINE
- ZONING BOUNDARY LINE
- PROPOSED EASEMENT
- TOWNSHIP RIPARIAN BUFFER – ZONE 1
- TOWNSHIP RIPARIAN BUFFER – ZONE 2
- STEEP SLOPES 15% TO 25%
- STEEP SLOPES > 25%
- WETLANDS LIMIT
- WATERS OF THE U.S.
- FLOODPLAIN (ZONE X)

AREA TABULATION - SISTERS OF ST. BASIL:

TOTAL SITE AREA:	2,019,856 SQ. FT. OR	46.370 ACRES
ROAD A ROW AREA:	45,565 SQ. FT. OR	1.046 ACRES
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OPEN SPACE LOT 151 AREA:	1,510,742 SQ. FT. OR	34.682 ACRES*
OPEN SPACE LOT 152 AREA:	82,151 SQ. FT. OR	1.886 ACRES**
OPEN SPACE LOT 153 AREA:	70,865 SQ. FT. OR	1.627 ACRES***
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QUALIFYING OPEN SPACE:	985,560 SQ. FT. OR	22.600 ACRES

*OPEN SPACE LOT 151 INCLUDES CARRIAGE LOTS 1 THROUGH 110
**OPEN SPACE LOT 152 INCLUDES CARRIAGE LOTS 140 THROUGH 150 AND CLUBHOUSE
***OPEN SPACE LOT 153 INCLUDES CARRIAGE LOTS 125 THROUGH 139
****OPEN SPACE LOT 154 INCLUDES CARRIAGE LOTS 111 THROUGH 124

GRAPHIC SCALE

50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

ADJOINERS INFORMATION TABLE

PARCEL NUMBER	OWNER	ADDRESS	ACREAGE
30-00-22148-007	ARDEN C. AND KEATHLEEN A. HANDER	615 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.44
30-00-22152-003	ARNOLD J. AND SANDRA BERSON	623 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.48
30-00-22156-008	ROY B. AND LESLIE G. PORTNER	631 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.44
30-00-22160-004	CHARLES T. AND GLORIA MCDERMOTT	637 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.38
30-00-22164-009	LAZAROS KARASAVAS	645 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.36
30-00-22168-005	LUCAS BURKE	653 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.34
30-00-22172-001	THEODORE A. AND PATRICIA ZALEWSKI	661 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.34
30-00-22176-006	KILE F. AND KATHLEEN T. WIDMAN	669 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.34
30-00-22180-002	LISA A. HARKINS	677 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.34
30-00-22184-007	BILL RAY AND PATRICIA ANN JACOBS	685 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.34
30-00-22188-003	DENNIS JOHN AND NICOLE CYNTHIA LAURIA	693 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.38
30-00-22102-008	JOYCE M. AND DAVIS S. LEFF	707 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.38
30-00-22196-004	THOMAS P. DENNERY	715 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.34
30-00-22200-009	PEARSE P. AND ELIZABETH V. KERR	723 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.34
30-00-22204-005	HOWARD A. AND KATHLEEN A. WILSON	731 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.34
30-00-22208-001	ROBERT W. AND KIMBERLYA. GEISLER	739 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.34
30-00-22212-006	GLENN GRESSEN	747 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.39
30-00-22216-002	GEORGE H. JR. MORGAN	755 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.67
30-00-22428-006	SAMUEL AND NANCY KRENZEL	777 FOX CHASE ROAD, JENKINGTOWN, PA 19046	0.38
30-00-12796-008	SIMON AND TOBY GALAPO	803 DELENE ROAD, RYDAL, PA 19046	0.97
30-00-63888-009	JODY LIEBERMAN GOLDSBOROUGH	756 SUFFORK ROAD, RYDAL, PA 19046	0.47
30-00-63884-004	CHRISTINA BARTOSH	748 SUFFORK ROAD, RYDAL, PA 19046	0.36
30-00-63880-008	ROBERT AND ALBERINA DRIZA	742 SUFFORK ROAD, JENKINGTOWN, PA 19046	0.36
30-00-63876-003	ARBEN PROFKA	732 SUFFORK ROAD, JENKINGTOWN, PA 19046	0.35
30-00-63872-007	KOSTANDIN AND NEKIE TURTULLI	726 SUFFORK ROAD, JENKINGTOWN, PA 19046	0.35
30-00-63868-002	DIANE MEEHAN	716 SUFFORK ROAD, JENKINGTOWN, PA 19046	0.35
30-00-10052-007	SAIMIR AND JULINDA SHEHU	863 COLWYN ROAD, JENKINGTOWN, PA 19046	0.48
30-00-36620-007	ROBERT AND THERESA WAAS	608 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.28
30-00-36624-003	VINCENT J. AND JULIE A. KELLY	614 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.20
30-00-36628-008	GREGORY J. POEHLMANN	622 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.27
30-00-36632-004	ROY A. AND CAROLE ANNE STEIN	626 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.14
30-00-36636-009	JOSEPH AND DOLORES HURLEY	632 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.20
30-00-36640-005	MICHAEL GAZZARA AND JESSICA RUCH	636 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.13
30-00-36644-001	MICHAEL S. AND LINDA TOBIN	642 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.20
30-00-36648-006	STEVEN D. HUNTZINGER	648 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.20
30-00-36652-002	FRANCES C. MCKEOWN AND MICHAEL P. BURNER	654 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.20
30-00-36656-007	HARRY J. VANPELT AND LESLIE E. MAXWELL	658 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.14
30-00-36660-003	HARRY J. AND KAREN A. LOOBY	662 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.14
30-00-36664-008	JOHN A. AND ODARKA CHARAMBURA	666 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.13
30-00-36668-004	ALEXANDRA L. STILES	670 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.13
30-00-36672-009	JED K. MARGOLIS AND CARLEY M. TAYLOR	702 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.20
30-00-36676-005	JOSEPH E. AND JAIME M. AVON	706KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.13
30-00-36680-001	HUGH B. AND KATHLEEN A. MCHUGH	710 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.13
30-00-36684-006	RAYMOND AND KATE VANDEGRIFT	714 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.13
30-00-36688-002	RALPH AND ERMA F. YERKES	718 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.20
30-00-36692-007	PAMELA M. JONES	724 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.13
30-00-36696-003	WILLIAM F. AND PAMELA ANNE HAGERTY	728 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.13
30-00-36700-008	GLEN E. AND LISA B. HEILMAN	734 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.20
30-00-36704-004	FRANCIS N. AND CYNTHIA L. MAY	738 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.13
30-00-36708-009	WALTER G. JR AND PATRICIA A. WYATT	742 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.13
30-00-36712-005	VINCENT J. AND JEANETTE M. CALGIURI	746 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.13
30-00-36716-001	JESSIE G. AND ELEZABETH M. GRAZIANI	752 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.20
30-00-36720-006	LORRAINE ZWOLAK	756 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.13
30-00-36724-002	DENNIS AND CHERYL D. CONARD	802 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.60
30-00-36860-001	ABINGTON TOWNSHIP	KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	12.00

SURVEYOR CERTIFICATION

I HEREBY CERTIFY THAT I AM A REGISTERED PROFESSIONAL LAND SURVEYOR, LICENSED IN COMPLIANCE WITH THE LAWS OF THE COMMONWEALTH OF PENNSYLVANIA; THAT TO THE BEST OF MY KNOWLEDGE THIS IS TRUE AND CORRECT TO THE ACCURACY REQUIRED BY THE LAND SUBDIVISION REGULATIONS OF THE TOWNSHIP OF ABINGTON.

THOMAS B. HENDRICKS, P.L.S.
PA LICENSE NO. SU-044552-E

CAUTION:
IF THIS DOCUMENT DOES NOT CONTAIN THE ORIGINAL SEAL AND SIGNATURE OF THE LAND SURVEYOR, IT IS NOT AN ORIGINAL DOCUMENT AND MAY HAVE BEEN ALTERED.

THOMAS B. HENDRICKS
PROFESSIONAL LAND SURVEYOR
PA LICENSE NO. SU–044552–E

ESE CONSULTANTS
ENGINEERING • PLANNING • SURVEYING • ENVIRONMENTAL

ESE Consultants, Inc.
1140 Virginia Drive • Fort Washington, PA 19034
T: 215-914-2050

REV.	DATE	DESCRIPTION	
1	7/24/23	TOWNSHIP REVIEW LETTERS	KMS
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	KMS
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	KMS
			DRAWN

APPLICATION NUMBER LD–23–01

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT–NOT TO BE RECORDED

RECORD PLAN
(RECORD SHEET 3 OF 4)

SISTERS OF ST. BASIL

ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

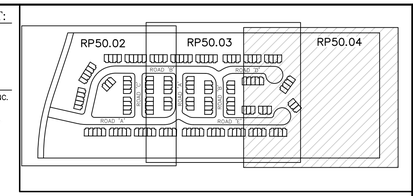
DATE: 03/24/23
SCALE: 1"=50'
DESIGN: JMM
DRAWN: KMS
JOB NO.: 7662
FILE NAME: RP50.03
REF. NO.: RP50.03
SHEET NO.: 4 OF 62

OWNER AND APPLICANT:

SISTERS OF ST. BASIL THE GREAT
711 FOX CHASE ROAD
ABINGTON, PA 19046-4198

EQUITABLE OWNER AND APPLICANT:

TOLL MID-ATLANTIC, L.P. COMPANY, INC.
1140 VIRGINIA DRIVE
FORT WASHINGTON, PA 19034
(215)938-8000



KEY MAP
N.T.S.

LEGEND:

- MONUMENT TO BE SET
- MONUMENT FOUND
- IRON PIN/PIPE FOUND
- (50) PROPOSED LOT NUMBER
- BUILDING SETBACK LINE
- PROPOSED CENTER LINE
- STREAM LINE
- PROPOSED PROPERTY LINE
- PROPOSED R.O.W.
- OUTBOUND LINE
- ZONING BOUNDARY LINE
- PROPOSED EASEMENT
- TOWNSHIP RIPARIAN BUFFER - ZONE 1
- TOWNSHIP RIPARIAN BUFFER - ZONE 2
- STEEP SLOPES 15% TO 25%
- STEEP SLOPES > 25%
- WETLANDS LIMIT
- WATERS OF THE U.S.
- FLOODPLAIN (ZONE X)

EASEMENT LINE TABLE		
LINE	BEARING	DISTANCE
EL1	S44°15'12"E	129.60'
EL2	S41°04'45"E	103.32'
EL3	S62°25'53"E	34.27'
EL4	N33°26'33"E	26.58'
EL5	S57°20'25"E	31.42'
EL6	N35°21'38"E	15.11'
EL33	N54°35'34"W	41.56'
EL34	N35°24'26"E	20.00'
EL35	S54°35'34"E	51.90'
EL36	S50°41'37"E	61.77'
EL37	N50°41'37"W	71.94'
EL46	N35°25'01"E	126.88'
EL47	S54°37'53"E	29.43'
EL48	N35°24'03"E	240.03'
EL49	S54°36'47"E	20.00'
EL50	S35°24'03"W	239.37'
EL51	S54°35'34"E	114.54'
EL52	S35°25'01"W	20.00'
EL53	N54°35'34"W	143.96'
EL58	S89°36'17"E	71.06'
EL59	S00°23'43"W	20.00'
EL60	N89°36'17"W	60.63'
EL61	N88°17'15"E	20.00'
EL62	S85°02'22"E	20.00'
EL63	S54°39'07"W	19.01'
EL64	N54°39'07"E	19.77'
EL65	S01°42'45"E	75.74'
EL66	N01°42'45"W	71.76'
EL70	N62°10'17"E	81.45'
EL71	S88°47'02"E	77.50'
EL72	S01°12'58"W	20.00'
EL73	N88°47'02"W	62.50'
EL74	S62°10'17"W	81.19'
EL84	N23°54'34"W	60.34'
EL85	N66°05'56"E	20.00'
EL86	S23°54'34"E	60.34'
EL87	S66°05'56"W	20.00'
EL88	N02°58'13"E	66.15'
EL89	S87°01'47"E	20.00'
EL90	S02°58'13"W	66.15'
EL91	N87°01'47"W	20.00'
EL92	N04°00'36"E	66.50'
EL93	S85°59'24"E	20.00'
EL94	S04°00'36"W	66.50'
EL95	N85°59'24"W	20.00'
EL96	N28°17'05"E	20.00'
EL97	S61°42'55"E	88.53'
EL98	S28°17'05"W	20.00'
EL99	N61°42'55"W	88.53'

EASEMENT CURVE TABLE						
CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE	TANGENT
EC1	60.00'	27.15'	26.92'	S34°25'56"E	25°55'31"	13.81'
EC2	60.00'	29.46'	29.17'	S07°24'09"E	28°08'04"	15.03'
EC6	60.00'	20.39'	20.29'	S25°34'25"E	19°28'25"	10.30'
EC7	60.00'	20.49'	20.39'	S80°27'34"E	19°34'04"	10.35'
EC10	60.00'	58.12'	55.88'	S62°00'20"W	55°30'06"	31.57'
EC11	60.00'	54.78'	52.90'	S10°19'14"W	52°18'52"	29.47'
EC12	60.00'	20.52'	20.42'	S39°28'14"E	19°35'42"	10.36'

CURVE TABLE						
CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE	TANGENT
C4	100.00'	71.25'	69.76'	S15°00'16"W	40°49'30"	37.21'
C7	100.00'	71.25'	69.76'	S55°49'45"W	40°49'30"	37.21'
C27	20.00'	28.91'	26.46'	S05°59'21"E	82°48'43"	17.64'
C28	60.00'	276.33'	89.27'	S84°32'29"W	263°52'22"	66.79'
C37	60.00'	276.43'	89.20'	N13°45'32"W	263°58'21"	66.67'
C38	20.00'	28.91'	26.46'	N76°49'19"E	82°48'37"	17.64'

AREA TABULATION - SISTERS OF ST. BASIL:

TOTAL SITE AREA:	2,019,856 SQ. FT. OR 46.370 ACRES
ROAD A ROW AREA:	45,565 SQ. FT. OR 1.046 ACRES
ROAD B ROW AREA:	55,766 SQ. FT. OR 1.280 ACRES
ROAD C ROW AREA:	15,798 SQ. FT. OR 0.363 ACRES
ROAD D ROW AREA:	28,461 SQ. FT. OR 0.653 ACRES
ROAD E ROW AREA:	45,345 SQ. FT. OR 1.041 ACRES
ROAD F ROW AREA:	16,073 SQ. FT. OR 0.369 ACRES
ROAD G ROW AREA:	16,225 SQ. FT. OR 0.372 ACRES
FOX CHASE ROAD LEGAL ROW AREA:	27,139 SQ. FT. OR 0.623 ACRES
FOX CHASE ROAD DEDICATED ROW AREA:	9,048 SQ. FT. OR 0.208 ACRES
TOTAL ENCROACHMENT AREA:	26,577 SQ. FT. OR 0.610 ACRES
OPEN SPACE LOT 151 AREA:	1,510,742 SQ. FT. OR 34.682 ACRES*
OPEN SPACE LOT 152 AREA:	82,151 SQ. FT. OR 1.886 ACRES**
OPEN SPACE LOT 153 AREA:	70,865 SQ. FT. OR 1.627 ACRES***
OPEN SPACE LOT 154 AREA:	70,101 SQ. FT. OR 1.609 ACRES****
TOTAL OPEN SPACE:	1,733,859 SQ. FT. OR 39.804 ACRES
QUALIFYING OPEN SPACE:	985,560 SQ. FT. OR 22.600 ACRES

*OPEN SPACE LOT 151 INCLUDES CARRIAGE LOTS 1 THROUGH 110
**OPEN SPACE LOT 152 INCLUDES CARRIAGE LOTS 140 THROUGH 150 AND CLUBHOUSE
***OPEN SPACE LOT 153 INCLUDES CARRIAGE LOTS 125 THROUGH 139
****OPEN SPACE LOT 154 INCLUDES CARRIAGE LOTS 111 THROUGH 124

SURVEYOR CERTIFICATION

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THOMAS B. HENDRICKS, P.L.S.
PA LICENSE NO. SU-044552-E

GRAPHIC SCALE

50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

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APPLICATION NUMBER LD-23-01

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT—NOT TO BE RECORDED

RECORD PLAN
(RECORD SHEET 4 OF 4)

SISTERS OF ST. BASIL

ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 03/24/23	SCALE: 1"=50'
DESIGN: JMM	DRAWN: KMS
JOB NO.: 7662	FILE NAME: RP50.04
REF. NO.: RP50.04	
SHEET NO.: 5 OF 62	

GENERAL NOTES:

1. DESIGN ENGINEER, SURVEYOR, PLANNER, LANDSCAPE ARCHITECT:
ESE CONSULTANTS, INC.
1140 VIRGINIA DRIVE
FORT WASHINGTON, PA. 19034
215/914-2050

2. WETLANDS CONSULTANT:
ESE CONSULTANTS, INC.
1140 VIRGINIA DRIVE
FORT WASHINGTON, PA. 19034
215/914-2050

3. WETLAND PRELIMINARY JURISDICTION DETERMINATION WAS OBTAINED ON SEPTEMBER 1, 2022 (NAP-2022-00532-45.

4. FLOODPLAIN SHOWN ON THE PLAN HAS BEEN TAKEN FROM THE FLOOD INSURANCE RATE MAP (FIRM), MAP NUMBER 42091C043G, EFFECTIVE DATE MARCH 2, 2016.

5. SOILS SHOWN WERE TAKEN FROM "SOIL SURVEY, MONTGOMERY COUNTY, PENNSYLVANIA", PREPARED BY THE NATURAL RESOURCE CONSERVATION SURVEY, DATED NOVEMBER 22, 2021.

6. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT ABINGTON TOWNSHIP CODES, SPECIFICATIONS AND THE ENGINEERING AND CONSTRUCTION STANDARDS.

7. THESE PLANS WERE PREPARED PER THE ABINGTON TOWNSHIP, STORMWATER MANAGEMENT ORDINANCE, SUBDIVISION AND LAND DEVELOPMENT ORDINANCE AND THE ZONING AND PLANNED RESIDENTIAL DEVELOPMENT ORDINANCE, AS LAST AMENDED.

8. THE EXISTING LAND USE IS A PARKING LOT, AND SCHOOL WITH ATHLETIC FIELDS. THE PROPOSED LAND USE IS FOR ONE HUNDRED FIFTY (150) AGE RESTRICTED CARRIAGE HOME DWELLING UNITS (SINGLE-FAMILY ATTACHED), PROPOSED ROADS, UTILITIES AND OPEN SPACE PARCELS.

9. FURTHER SUBDIVISION OF ANY OF THE LOTS, BOTH PRIVATE LOTS AND OPEN SPACE LOTS IN THIS SUBDIVISION IS PROHIBITED.

10. THE PROPOSED ROADS SHALL BE OFFERED FOR DEDICATION TO THE TOWNSHIP. ROADS TO BE BUILT TO TOWNSHIP STANDARDS. THE HOA WILL MAINTAIN STORM SEWER, SIDEWALK, CURBING AND ROADS WITHIN THE RIGHT OF WAYS, ONCE DEDICATED.

11. STATE OR TOWNSHIP ROAD OCCUPANCY PERMITS, AS APPLICABLE, TO BE OBTAINED AS NECESSARY.

12. PROPOSED LOTS TO BE SERVED BY PUBLIC WATER AND PUBLIC SEWER.

13. THE LOCATION OF THE HOUSES AND DRIVEWAYS AS SHOWN ON THE PLAN ARE FOR ILLUSTRATION AND PLANNING PURPOSES ONLY. THE APPLICANT RESERVES THE RIGHT TO MODIFY THE HOUSE SIZE, SHAPE AND LOCATION AT THE TIME OF BUILDING PERMIT APPLICATION.

14. GRADING:
   A. NO PLANTINGS, BUILDINGS, OR OTHER STRUCTURES, INCLUDING DRIVEWAYS, MAY BE PLACED IN OR ON DRAINAGE, UTILITY OR SANITARY SEWER EASEMENTS.
   B. MAXIMUM CUT AND FILL SLOPES SHALL BE 3 HORIZONTAL : 1 VERTICAL, UNLESS APPROVED BY THE TOWNSHIP.

15. DRIVEWAYS:
   A. PRIVATE DRIVEWAYS, EITHER INDIVIDUAL OR SHARED, SHALL BE PROVIDED FOR ALL RESIDENCES AND THE CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE REGULATIONS OF THIS SECTION IN ORDER TO PROVIDE SAFE ACCESS TO TOWNSHIP AND STATE ROADS AND TO ELIMINATE PROBLEMS OF STORMWATER RUNOFF.
   B. AT LEAST TWO (2) OFF-STREET PARKING SPACES WITH ACCESS TO A PUBLIC STREET SHALL BE PROVIDED FOR EACH PROPOSED DWELLING UNIT EITHER WITHIN A STRUCTURE OR IN THE OPEN. (DEPENDING ON SIZE OF GARAGE)

16. STATE OR TOWNSHIP ROAD OCCUPANCY PERMITS, AS APPLICABLE, TO BE OBTAINED AS NECESSARY.

17. NOTHING SHALL BE PERMITTED TO BE PLACED, PLANTED, SET OR PUT WITHIN THE AREA OF A UTILITY EASEMENT EXCEPT LAWNS, LOW GROUND COVER, OR OTHER LANDSCAPING THAT WILL NOT ADVERSELY AFFECT THE UTILITY OR THE EASEMENT.

18. SIGHT TRIANGLE:
   A. CLEAR SIGHT TRIANGLES SHALL BE PROVED AT ALL STREET INTERSECTIONS. WITHIN SUCH TRIANGLES, NO VISION OBSTRUCTING OBJECTS SHALL BE PERMITTED WHICH OBSCURES VISION ABOVE THE HEIGHT OF THIRTY (30) INCHES AND BELOW TEN (10) FEET MEASURED FROM THE CENTERLINE GRADE OF INTERSECTING STREETS.
   B. CLEAR SIGHT TRIANGLES OF 60 FEET ALONG RIGHT-OF-WAY LINES FROM THEIR POINTS OF JUNCTION SHALL BE PROVIDED AT ALL INTERSECTIONS; AND NO BUILDINGS, STRUCTURES, GRADES OR PLANTINGS HIGHER THAN THIRTY (30) INCHES OR LOWER THAN 10 FEET ABOVE THE CENTER LINES OF THE STREET SHALL BE PERMITTED WITHIN SUCH SIGHT TRIANGLES. ANY OBSTRUCTION TO SIGHT SHALL BE REMOVED AT THE TIME THE STREET IS GRADED OR AT A TIME A BUILDING OR STRUCTURE IS ERECTED, WHICHEVER SHALL FIRST OCCUR.

19. ALL CONTRACTORS WORKING ON THIS PROJECT SHALL BE RESPONSIBLE FOR ENSURING THAT ALL CONSTRUCTION ACTIVITIES RELATED TO THIS PROJECT ARE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE OSHA (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION) STANDARDS.

20. THE DEVELOPER, ITS SUCCESSORS AND ASSIGNS, HEREBY RESERVES THE RIGHT TO ENTER UPON EACH AND EVERY LOT AND AREA OF THE SUBDIVISION/DEVELOPMENT DEPICTED HEREON, WHETHER PRIOR OR SUBSEQUENT TO CONVEYANCE OF ANY LOT, UNTIL EXPIRATION OF THE STATUTORY MAINTENANCE PERIOD FOLLOWING DEDICATION OF PUBLIC IMPROVEMENTS AS SET FORTH AT SECTION 509 OF THE PENNSYLVANIA MUNICIPALITIES PLANNING CODE, AS AMENDED, 53 P.S. 10509, FOR THE PURPOSE OF COMPLETING ANY LANDSCAPING AS REQUIRED BY THE MUNICIPALITY AND FURTHER TO MAKE SUCH MODIFICATIONS IN GRADING AND/OR DRAINAGE IMPROVEMENTS ON ANY LOT AS MAY BE NECESSARY IN THE DISCRETION OF THE DEVELOPER, ITS SUCCESSORS AND ASSIGNS AND/OR THE TOWNSHIP ENGINEER FOR SATISFACTORY STORM WATER MANAGEMENT.

21. THE APPLICANT/OWNER OF THIS PROPERTY ACKNOWLEDGES THE REQUIREMENT TO COMPLY WITH ALL STATE AND FEDERAL REGULATIONS REGARDING THE DISTURBANCE OF WETLANDS. ANY IMPROVEMENTS WHICH CANNOT BE COMPLETED AS SHOWN SHALL BE AMENDED TO THE SATISFACTION OF THE TOWNSHIP AND SHALL BE DEPICTED ON REVISED PLANS WHICH SHALL BE SUBMITTED TO THE TOWNSHIP FOR REVIEW. THE APPLICANT/OWNER OF THIS PROPERTY ACCEPTS ALL RESPONSIBILITY WITH RESPECT TO STATE AND FEDERAL REGULATIONS.

22. ALL IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SPECIFICATIONS PROVIDED IN THE SUBDIVISION AND LAND DEVELOPMENT ORDINANCE OR OTHER SPECIFICATIONS OF THE TOWNSHIP, THE PENNSYLVANIA DEPARTMENT OF TRANSPORTATION, PENNDOT PUBLICATION 408, AS AMENDED, AND THE PENNDOT ROAD CONSTRUCTION STANDARDS, AS AMENDED, PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION OR THE AUTHORITY HAVING JURISDICTION OVER SAID IMPROVEMENTS.

23. AN NPDES PERMIT IS REQUIRED FOR THIS PROJECT FROM THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION.

24. THE SPEED LIMIT WITHIN THIS DEVELOPMENT IS TO BE POSTED AT 20 M.P.H.

25. THE APPLICANT RESERVES THE RIGHT TO CONSTRUCT LANDSCAPE TOPSOIL BERMS WITHIN OPEN SPACE AND BUFFER YARDS.

26. STORM SEWERS:
   A. ALL INLETS TO BE TYPE AS NOTED.
   B. DEVELOPER/CONTRACTOR IS RESPONSIBLE FOR PROVIDING SHOP DRAWINGS FOR ALL STRUCTURES.
   C. PIPES THROUGH BASIN EMBANKMENTS SHALL BE O-RING GASKETED PIPE WITH ANTI-SEEP COLLARS. ALL JOINTS SHALL BE MORTARED.
   D. A MINIMUM OF 24" OF COVER OVER THE BELL OF PIPE IS PROPOSED.
   E. STORMWATER ROOF DRAINS AND SUMP PUMPS SHALL DISCHARGE TO LAWNS, MULCH BEDS, GRASSED SWALES, OR UNDERGROUND WATER QUALITY BMPs AND NOT TO PAVED IMPERVIOUS SURFACES AND SHALL NOT CONNECT DIRECTLY TO A STORM SEWER SYSTEM W/O PRIOR APPROVAL FROM THE TOWNSHIP ENGINEER.
   F. STORM SEWERS, AS REQUIRED, SHALL BE PLACED UNDER OR IMMEDIATELY IN FRONT OF THE CURB, WHEN PARALLEL TO A PUBLIC STREET AND WITHIN THE RIGHT-OF-WAY. WHEN LOCATED IN UNDEDICATED LAND, THEY SHALL BE PLACED WITHIN AN EASEMENT NOT LESS THAN TWENTY (20) FEET WIDE AS APPROVED BY THE TOWNSHIP ENGINEER.
   G. STORM SEWERS SHALL HAVE A MINIMUM DIAMETER OF FIFTEEN (15) INCHES, AND SHALL BE GASKETED REINFORCED CONCRETE PIPE OR GASKETED SMOOTH LINED CURROGATED HIGH DENSITY POLYETHYLENE PIPE. MINIMUM GRADE SHALL BE ONE HALF PERCENT (0.5%). CHANGES IN ALIGNMENT SHALL BE BY STRAIGHT SECTIONS CONNECTED BY INLETS OR MANHOLES.
   H. MANHOLES SHALL BE NOT MORE THAN THREE HUNDRED (300) FEET APART FOR PIPE DIAMETER UP TO TWENTY-FOUR (24) INCHES, AND NOT MORE THAN FOUR HUNDRED AND FIFTY (450) FEET APART FOR GREATER DIAMETERS. INLETS MAY BE SUBSTITUTED FOR MANHOLES UPON APPROVAL BY THE TOWNSHIP ENGINEER.
   I. INLETS, MANHOLES, COVERS, AND FRAMES SHALL CONFORM TO PENNSYLVANIA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS.

28. SANITARY SEWER:
   A. SANITARY SEWERS SHALL BE DESIGNED AND CONSTRUCTED IN STRICT ACCORDANCE WITH PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL RESOURCES STANDARDS AND ABINGTON SEWER AUTHORITY (ASA) SPECIFICATIONS.
   B. SANITARY SEWERS SHALL NOT BE USED TO CARRY STORMWATER.
   C. REQUIREMENTS NOT REFERENCED IN THIS DOCUMENT SHALL BE REFERRED TO THE PENNSYLVANIA DEP SEWERAGE MANUAL, LATEST EDITION.
   D. SHOP DRAWINGS MUST BE SUBMITTED TO AND APPROVED BY THE ASA FOR ALL MATERIALS, STRUCTURES, EQUIPMENT, PIPING AND APPURTENANCES FOR THE SEWER PRIOR TO ORDERING ANY OF THESE ITEMS.
   E. ALL SEWER WORK MUST BE REVIEWED BY THE ASA AS THE INSTALLATION PROGRESSES. WORK PERFORMED WITHOUT SUCH INSPECTION IS SUBJECT TO REJECTION. A MINIMUM OF 48 HOURS ADVANCE NOTICE TO THE BCWSA IS REQUIRED.
   F. ALL SANITARY SEWER PIPING MUST BE TESTED IN THE PRESENCE OF THE ASA USING THE ASA STANDARD PROCEDURES. A MINIMUM OF 48 HOURS ADVANCE NOTICE TO THE ASA IS REQUIRED.
   G. THE ABINGTON SEWER AUTHORITY IS TO BE CONTACTED ONE WEEK PRIOR TO SANITARY SEWER CONSTRUCTION, AND 72 HOURS PRIOR TO EXCAVATING NEAR OR CONNECTING INTO ANY EXISTING SEWER FACILITIES.
   H. CLEANOUTS SHALL BE PROVIDED FOR ALL SANITARY LATERALS AT THE EDGE OF THE RIGHT-OF-WAY AND AT ALL MAJOR CHANGES IN DIRECTION. ALL LATERALS SHOULD BE PROVIDED WITH MINIMUM TWO PERCENT (2%) SLOPE BETWEEN THE SEWER MAIN AND FIRST CLEANOUT. CLEANOUTS SHOULD BE CUT TO SIX INCHES ABOVE FINISHED GRADE AND PROVIDED WITH A RECESSED TYPE PLUG. CLEANOUTS WITHIN PAVED AREAS OR WITHIN THREE FEET OF PAVED AREAS SHOULD BE PROVIDED WITH A CLEANOUT PROTECTION SLEEVE.
   I. MANHOLES SHALL BE LOCATED AT INTERVALS OF 300 FEET AND AT EACH CHANGE OF LINE OR GRADE. IN EXCEPTIONAL CASES, THE INTERVAL MAY BE EXTENDED TO NOT MORE THAN 300 FEET.
   J. TEN FEET OF HORIZONTAL CLEARANCE OR 18 ONCHES OF VERTICAL CLEARANCE SHOULD BE PROVIDED BETWEEN THE SANITARY SEWER AND ALL OTHER UTILITIES. OTHERWISE, CONCRETE ENCASEMENT OF THE SANITARY SEWER SHOULD BE PROVIDED.
   K. PIPE MATERIAL TO BE SDR-26.
   L. TESTING THE SANITARY SEWER SYSTEM SHALL BE TESTED IN ACCORDANCE WITH THE STANDARDS OF THE TOWNSHIP OF ABINGTON AND SHALL BE APPROVED BY THE TOWNSHIP ENGINEER BEFORE BUILDINGS ARE PERMITTED TO BE CONNECTED TO THE LATERALS.

29. WATER SERVICE:
   A. ALL WATER SYSTEM DESIGN SHALL BE IN ACCORDANCE WITH DESIGN STANDARDS AND REGULATIONS.
   B. ADEQUATE AND POTABLE WATER SUPPLY SYSTEM(S) SHALL BE INSTALLED CONSISTENT WITH DESIGN PRINCIPLES AND REQUIREMENTS CONTAINED IN THIS ORDINANCE AND TOWNSHIP STANDARDS, WHICH ARE THE U.S. PUBLIC HEALTH CRITERIA FOR DRINKING WATER AS ADMINISTERED BY THE EXISTING ENVIRONMENTAL PROTECTION AGENCY SAFE-DRINKING WATER ACT.
   C. THE SUBDIVISION SHALL BE PROVIDED WITH A COMPLETE PUBLIC WATER DISTRIBUTION SYSTEM. THE DESIGN AND INSTALLATION OF SUCH PUBLIC SYSTEM SHALL BE SUBJECT TO THE APPROVAL OF THE TOWNSHIP; THE DESIGN AND INSTALLATION OF SUCH COMMUNITY DISTRIBUTION SYSTEM SHALL BE SUBJECT TO THE APPROVAL OF THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL RESOURCES AND SUCH SYSTEM SHALL BE FURTHER SUBJECT TO SATISFACTORY PROVISION FOR THE MAINTENANCE THEREOF.
   D. FIRE HYDRANTS SUITABLE FOR THE COUPLING OF EQUIPMENT SERVING THE TOWNSHIP SHALL BE INSTALLED AS SPECIFIED BY THE INSURANCE SERVICES OFFICES OF PENNSYLVANIA.
      (1) ALL FIRE HYDRANTS WILL BE LOCATED ON AN EIGHT (8) INCH LINE OR A LOOPED SIX (6) INCH LINE
      (2) FIRE HYDRANTS SHALL BE SPACED IN A DEVELOPMENT SO THAT ALL PROPOSED BUILDING(S) WILL BE NO MORE THAN FIVE HUNDRED (500) FEET FROM THE HYDRANT MEASURED ALONG TRAVELED WAYS.
      (3) ALL COMMUNITY WATER SYSTEMS MUST PROVIDE A MINIMUM OF FIVE HUNDRED (500) GPM AT A RESIDUAL PRESSURE OF TWENTY (20) PSI FOR A TWO (2) HOUR PERIOD.
   E. NO PLANTINGS OR STRUCTURES SHALL BE LOCATED WITHIN THE WATER MAIN EASEMENTS OR WITHIN 5 FEET OF THE PROPOSED WATER MAINS OR WATER SERVICES.
   F. WATER MAIN TO BE DEFLECTED, WITHOUT BENDS, AROUND INLETS.

30. ALL OTHER UTILITY LINES INCLUDING, BUT NOT LIMITED TO ELECTRIC, GAS, STREET LIGHT SUPPLY, CABLE TELEVISION, AND TELEPHONE SHALL BE PLACED UNDERGROUND. INSTALLATION OF ALL UTILITIES SHALL BE IN STRICT ACCORDANCE WITH THE ENGINEERING STANDARDS AND SPECIFICATIONS OF THE TOWNSHIP AND PUBLIC UTILITY CONCERNED.

31. IN ACCORDANCE WITH THE PROVISIONS OF ACT 287, ALL DEVELOPERS, CONTRACTORS, ETC., WILL CONTACT ALL APPLICABLE UTILITIES AND ACCURATELY DETERMINE THE LOCATIONS AND DEPTH OF ALL UNDERGROUND UTILITIES WITHIN THE BOUNDARIES OF THE TRACT PROPOSED FOR DEVELOPMENT, PRIOR TO EXCAVATION. A LIST OF THE APPLICABLE UTILITIES AND THEIR PHONE NUMBERS SHALL APPEAR ON THE PLANS SUBMITTED FOR REVIEW AND PROOF SHALL BE PRESENTED TO THE TOWNSHIP PRIOR TO FINAL PLAN APPROVAL.

32. IT SHALL BE UNLAWFUL TO ALTER OR REMOVE ANY PERMANENT STORMWATER BMP REQUIRED BY AN APPROVED BMP OPERATIONS AND MAINTENANCE PLAN, OR ALLOW THE PROPERTY TO REMAIN IN A CONDITION WHICH DOES NOT CONFORM TO AN APPROVED BMP OPERATIONS AND MAINTENANCE PLAN, UNLESS AN EXCEPTION IS GRANTED IN WRITING BY THE TOWNSHIP.

33. HOME OWNERS ASSOCIATION:
   A. THE HOMEOWNERS ASSOCIATION MAY NOT BE DISSOLVED, NOR MAY IT DISPOSE OF THE OPEN SPACE BY SALE OR OTHERWISE, WITHOUT FIRST OFFERING TO DEDICATE THE SAME TO THE TOWNSHIP AT NO COST.
   B. THE HOMEOWNERS ASSOCIATION DOCUMENTS WILL CONTAIN AN OPEN SPACE MANAGEMENT PLAN TO PROTECT THE SIGNIFICANT NATURAL FEATURES OF THE PROPERTY.
   C. THE HOMEOWNERS ASSOCIATION DOCUMENTS SHALL BE SUBMITTED FOR REVIEW BY THE TOWNSHIP SOLICITOR AS PART OF THE FINAL SUBDIVISION AND LAND DEVELOPMENT APPROVAL.
   D. THE HOME OWNERS ASSOCIATION WILL BE RESPONSIBLE FOR THE MAINTENANCE OF ENTRANCE SIGN, DECORATIVE WALLS, FENCES OR LANDSCAPE ASSOCIATED WITH THEM.

34. EASEMENTS SHALL BE ESTABLISHED IN CONNECTION WITH ANY REGULATED ACTIVITY FOR ALL PERMANENT BMP'S AND CONVEYANCES THAT WILL NOT BE DEDICATED TO OR OTHERWISE OWNED BY THE MUNICIPALITY, (INCLUDING ANY TO BE LOCATED ON ANY PROPERTY OTHER THAN THE PROPERTY BEING DEVELOPED BY THE APPLICANT), AND SHALL:
   A. INCLUDE ALL LAND AREA OCCUPIED BY EACH BMP OR CONVEYANCE;
   B. INCLUDE A TEN (10)-FOOT WIDE PERIMETER (OR OTHER WIDTH AS DETERMINED IN CONSULTATION WITH THE MUNICIPAL ENGINEER) SURROUNDING THE FEATURE(S);
   C. PROVIDE SUFFICIENT VEHICULAR INGRESS AND EGRESS FROM A PUBLIC RIGHT-OF-WAY AND ROADWAY;
   D. GRANT THE MUNICIPALITY THE RIGHT, BUT NOT THE DUTY, TO ACCESS EVERY BMP AND CONVEYANCE FROM A PUBLIC RIGHT-OF-WAY OR PUBLIC ROADWAY TO CONDUCT PERIODIC INSPECTIONS AND TO UNDERTAKE OTHER ACTIONS THAT MAY BE NECESSARY TO ENFORCE THE REQUIREMENTS OF THIS ORDINANCE, OR OF ANY APPLICABLE O&M PLAN OR O&M AGREEMENT; WHERE ROADWAYS WILL NOT BE DEDICATED TO THE MUNICIPALITY, THE MUNICIPALITY SHALL BE GRANTED ACCESS TO THE PRIVATE ROADWAYS AS NECESSARY TO ACCESS EVERY BMP AND CONVEYANCE;
   E. GRANT THE OWNER OF EACH BMP AND CONVEYANCE THE RIGHT TO ACCESS, INSPECT, OPERATE, MAINTAIN, AND REPAIR THE BMP OR CONVEYANCE WHEN THE FEATURE IS TO BE OWNED, OPERATED AND MAINTAINED BY A PERSON OTHER THAN THE MUNICIPALITY AND OTHER THAN THE OWNER OF THE PARCEL ON WHICH IT IS LOCATED;
   F. LAWN-NO TREES, FENCES, SIGNS, STRUCTURES OF ANY TYPE OR ANY OTHER OBSTRUCTION SHALL BE PLACED, PLANTED, SET OR PUT WITHIN THE AREA OF AN EASEMENT. THE AREA SHALL BE KEPT AS LAWN.

35. THE APPLICANT/DEVELOPER SHALL PROMPTLY GRADE AND STABILIZE SLOPES AND OPEN DITCHES AND PROVIDE CONSTRUCTION FENCING WHEN DEEMED NECESSARY BY THE TOWNSHIP ENGINEER.

36. REMAINING AREAS DESIGNED AS OPEN SPACE WILL BE USED FOR ACTIVE AND PASSIVE OPEN SPACE ONLY.

37. ALL EXISTING STRUCTURES AND UTILITIES TO BE REMOVED UNLESS OTHERWISE NOTED.

38. THE HOMEOWNERS ASSOCIATION WILL BE RESPONSIBLE FOR THE MAINTENANCE OF ENTRANCE SIGNS, DECORATIVE WALLS, FENCES OR LANDSCAPE ASSOCIATED WITH THEM.

39. SIDEWALKS SHALL BE CONSTRUCTED OF CONCRETE WITH A MINIMUM TWENTY-EIGHT (28) DAY STRENGTH OF 4000 PS w/AIR, WITH A MINIMUM WIDTH OF FOUR (4) FEET AND A THICKNESS OF FOUR (4) INCHES EXCEPT AT DRIVEWAY CROSSINGS WHEN THE SIDEWALK THICKNESS SHALL BE INCREASED TO SIX (6) INCHES WITH REINFORCEMENT.

40. LIGHTING:
   A. ALL LIGHTING AND ACCESSORY EQUIPMENT SHALL BE STANDARD EQUIPMENT PROVIDED BY PECO OR VARIATIONS APPROVED BY PECO AND THE BOARD OF SUPERVISORS.
   B. ALL PERMITTED LIGHTING AND ALL EXTERNAL LIGHTING FIXTURES APPURTENANT TO A STRUCTURE SHALL BE SHIELDED FROM ALL RESIDENTIAL PROPERTIES AND FROM ALL ROWs SO AS TO ELIMINATE LIGHT GLARE BEYOND AN ANGLE OF THIRTY-FIVE (35) DEGREES FROM A VERTICAL PLANE.

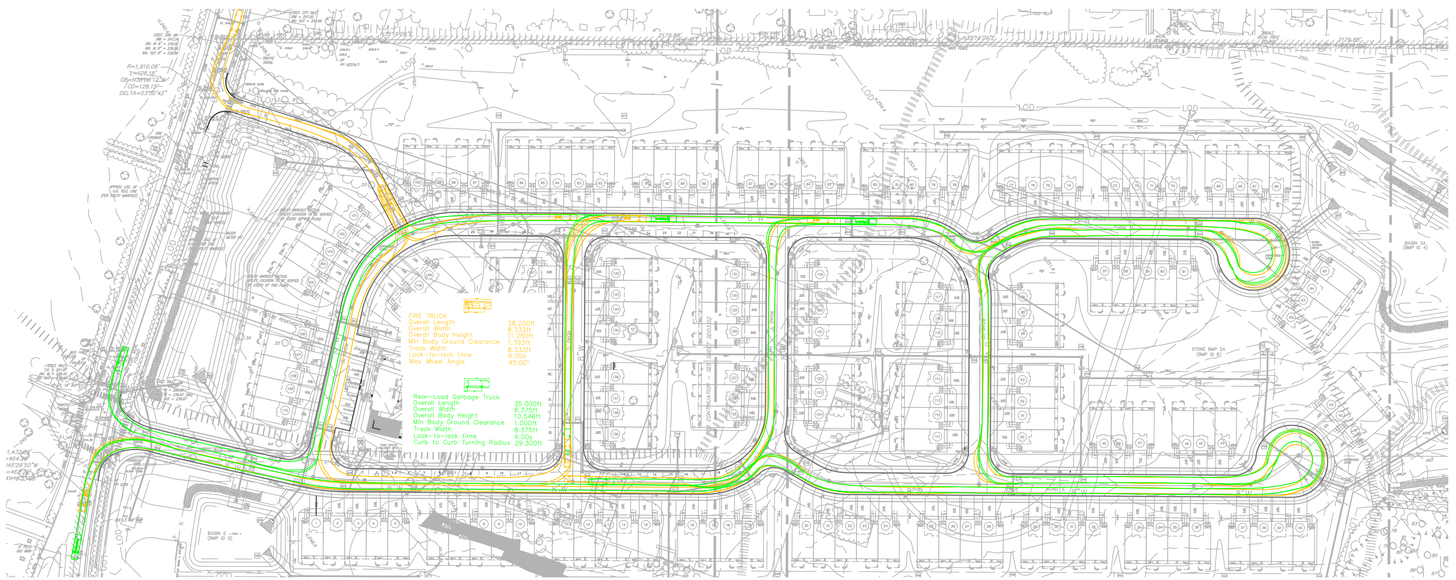
41. TRAFFIC NOTES:
   A. ALL TRAFFIC CONTROL SIGNS SHALL BE POSTED IN ACCORDANCE WITH THE 2009 MUTCD AND THE MOST RECENT VERSION OF PENNDOT PUBLICATION 236M, "HANDBOOK OF APPROVED SIGNS".
   B. TRAFFIC CONTROL SIGNS MUST BE POSTED ON PENNDOT APPROVED BREAKAWAY POSTS IN ACCORDANCE WITH THE MOST RECENT VERSION OF THE TC-8700 SERIES IN PENNDOT PUBLICATION 111M."
   C. ALL PROPOSED PEDESTRIAN FACILITIES REFLECTED ON THESE PLANS SHALL BE CONSTRUCTED TO COMPLY WITH THE FOLLOWING STANDARDS:
      C.a. PENNDOT DESIGN MANUAL 2, CHAPTER 6.
      C.b. PENNDOT STANDARDS FOR ROADWAY CONSTRUCTION, PUBLICATION 72M, RC-67M.
      C.c. U.S. ACCESS BOARD, PUBLIC RIGHT OF WAY ACCESSIBILITY GUIDELINES (PROWAG) AND ADA ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES (ADAAG).

42. OBSTRUCTIONS IN RIGHT-OF-WAY - NO FENCES, HEDGES, TREES, SHRUBBERY, PLANTS, WALLS, SIGNS OR OTHER OBSTRUCTIONS SHALL BE LOCATED OR BE PERMITTED WITHIN THE RIGHT-OF-WAY.

43. ALL TREE/SHRUB LIMBS SHALL BE PRUNED OR TRIMMED BACK, AND ALL ABOVE GROUND UTILITY CABLE LINES AND FREE STANDING SIGNS SHALL BE INSTALLED SUCH THAT EVERY ACCESSWAY WILL HAVE A VERTICAL CLEARANCE OF AT LEAST 14 FEET.

ON JULY 13, 2023 TOLL MID-ATLANTIC WAS GRANTED CONDITIONAL USE FOR THE PROJECT

IMPERVIOUS COVERAGE BREAKDOWN WITHIN PROJECT	
ROAD AND ACCESS ROAD	3.78 ACRES
CLUBHOUSE BUILDING AND ACCESSORY AREA	0.27 ACRES
UNIT BUILDINGS (SHOWN)	8.29 ACRES
UNIT BUILDINGS/SERVICE WALK/DRIVEWAY,ETC. (NOT SHOWN)	0.32 ACRES
SERVICE WALK/DRIVEWAY	1.74 ACRES
SIDEWALK	1.09 ACRES
FOX CHASE ROAD R.O.W.	0.50 ACRES
TOTAL	15.99 ACRES



VEHICULAR CIRCULATION PLAN
Scale 1"=100'

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT-NOT TO BE RECORDED

APPLICATION NUMBER LD-23-01

REV.	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTERS	ESE

ESE CONSULTANTS
ENGINEERING • PLANNING • SURVEYING • ENVIRONMENTAL
ESE Consultants, Inc.
1140 Virginia Drive • Fort Washington, PA 19034
T: 215-914-2050

COMMONWEALTH OF PENNSYLVANIA — JEFFREY M. MAUDER — ENGINEER — No. PE082190

GENERAL NOTES

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 3-24-23	SCALE: AS NOTED
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-02-NOTES
REF. NO.:	SD02.01
SHEET NO.:	6 OF 62

N:\PROJECTS\PENNSYLVANIA\7662-RYDAL ST. BASILS\ENGDEPT\DRAWINGS\7662-S-02-NOTES.DWG-Lake Plotrate=3/21/2024 12:46 PM

SOILS LEGEND:

Map Unit Symbol	Map Unit Name	Rating
GnB	Glenig Silt Loam, 3 to 8 Percent Slopes	B
GsA	Glenville Silt Loam, Somewhat Poorly Drained, 0 to 3 Percent Slopes	C/D
GsB	Glenig Silt Loam, 3 to 8 Percent Slopes	C/D
Ha	Hatboro Silt Loam	B/D
MaB	Manor Loam, 3 to 8 Percent Slopes	B
MaC	Manor Loam, 8 to 15 Percent Slopes	B
MaD	Manor Loam, 15 to 25 Percent Slopes	B
UdsB	Udorthents, Schist and Gneiss 0 to 8 Percent Slopes	C
UgB	Urban Land, 0 to 8 Percent Slopes	
UugB	Urban Land-Udorthents, Schist and Gneiss Complex, 0 to 8 Percent Slopes	

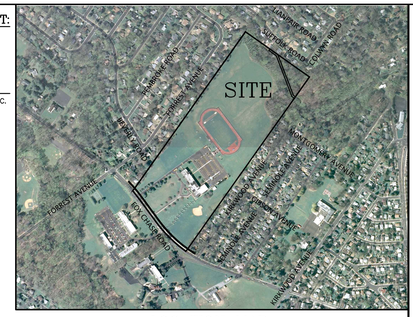
NATURAL RESOURCE CALCULATIONS:

	SITE AREA	PROTECTION %	REQUIRED PROTECTION	DESIGN PROTECTION
FLOODPLAIN:	N/A	100%	N/A	N/A
FLOODPLAIN SOILS:	3.19 AC.	100%*	3.19 AC.	3.15 AC.
WATERS OF THE US:	0.28 AC.	100%	0.28 AC.	0.28 AC.
WETLANDS:	0.51 AC.	100%	0.51 AC.	0.51 AC.
WOODLANDS:	3.64 AC.	75%	2.73 AC.	3.41 AC.
STEEP SLOPES: 15-25:	0.74 AC.	75%	0.56 AC.	0.58 AC.
STEEP SLOPES: >25:	0.07 AC.	85%	0.06 AC.	0.07 AC.
ZONE 1 BUFFER:	1.31 AC.	100%*	1.31 AC.	1.30 AC.
ZONE 2 BUFFER:	1.50 AC.	100%*	1.50 AC.	1.48 AC.

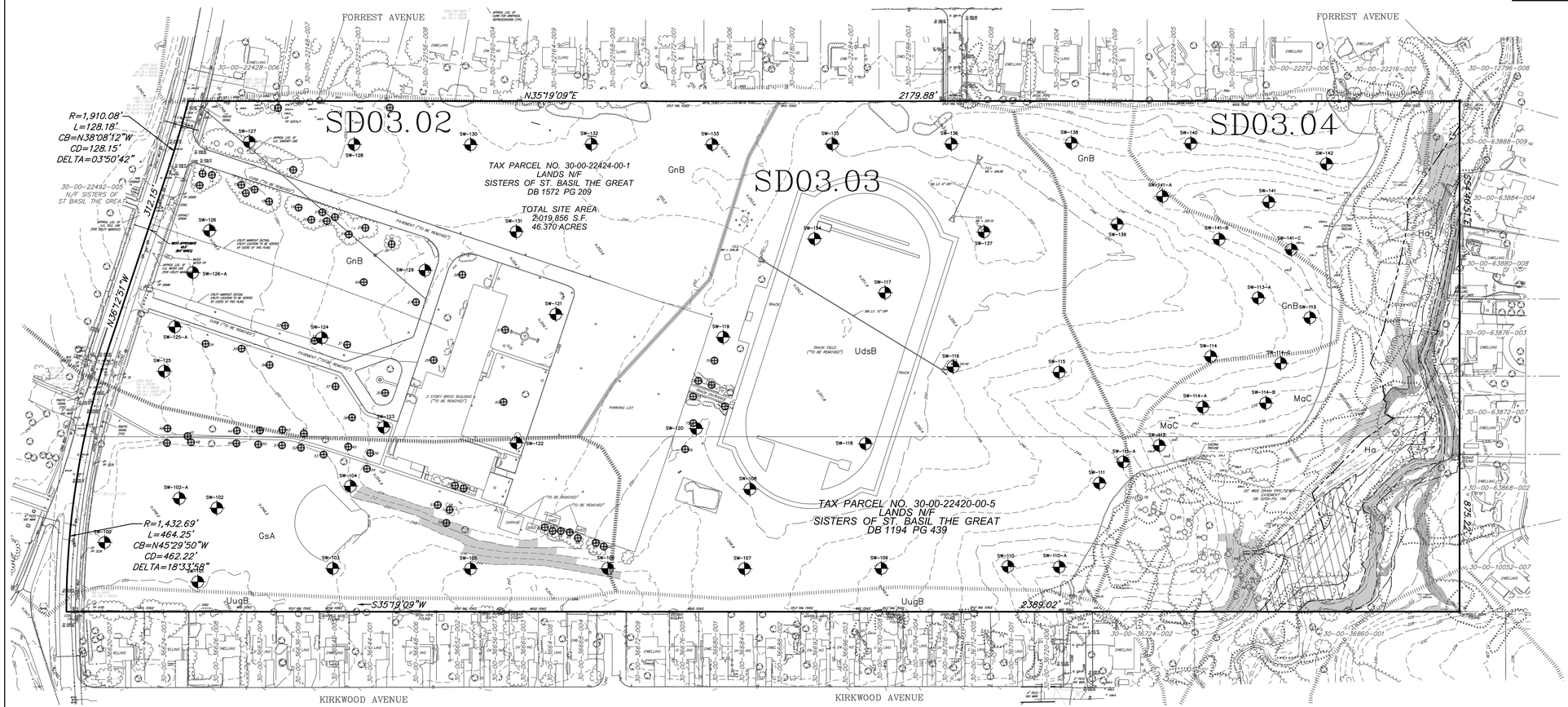
*CERTAIN USES WITHIN DISTRICT ARE ALLOWED TO DISTURB AREAS.

OWNER AND APPLICANT:
SISTERS OF ST. BASIL THE GREAT
711 FOX CHASE ROAD
ABINGTON, PA 19046-4198

EQUITABLE OWNER AND APPLICANT:
TOLL MID-ATLANTIC, L.P. COMPANY, INC.
1140 VIRGINIA DRIVE
FORT WASHINGTON, PA 19034
(215)938-8000



LOCATION MAP
SCALE: 1"=800'



NOTE: SEE SHEET SD03.04 FOR ADJOINERS INFORMATION TABLE
SEE SHEET SD03.02 FOR EXISTING TREE DESIGNATION CHART

INFILTRATION TESTING SUMMARY

Test Pit	Depth/Rock (in)	Redox (in)	Test Depth (in)	Infiltration Rate (in/hr)
SW-100	115+	26-48	82	0.75/4.5
SW-101	120+	23-50	TBD	TBD
SW-102	108R	-	76	1.0/1.5
SW-102A	100R	-	76	6.0/7.5
SW-103	125+	20-34	TBD	TBD
SW-104	115+	-	TBD	TBD
SW-105	125+	-	84	3.0/3.0
SW-106	126+	-	84	1.25/9.0
SW-106	126+	-	36	5.25/3.75
SW-107	122+	-	TBD	TBD
SW-108	101R	-	TBD	TBD
SW-109	126+	34-46	TBD	TBD
SW-110	122+	22-45	96	2.0/0.75
SW-110A	112R	35-68	72	8.25/9.0
SW-111	120+	35-48	TBD	TBD
SW-111A	92R	-	48	6.0/6.0
SW-112	128+	24-46	54	5.25/8.25
SW-113	52R	-	28	3.0/2.0
SW-113A	48R	-	24	0.25/1.25
SW-114	56R	-	26	3.0/2.5
SW-114A	108R	28-40	66	6.0/10.5
SW-114B	84R	-	60	8.25/10.5
SW-114C	50R	-	26	0.75/0.5
SW-115	104R	-	80	3.0/6.0
SW-116	122+	-	92	7.5/7.5
SW-117	126+	8-24	TBD	TBD
SW-118	116+	-	TBD	TBD
SW-119	108+	-	72	6.0/1.0
SW-120	125+	-	TBD	TBD
SW-121	101+			
SW-122	108+			
SW-123	120+	-	TBD	TBD
SW-124	108+	-	TBD	TBD
SW-125	120+	28-90	90	0.04/0.04
SW-125A	132+	28-48	102	2.0/2.0
SW-126	150+	-	120	2.0/7.5
SW-126A	132+	-	108	3.75/1.75
SW-127	102+	-	54/78	0/0
SW-128	118+	18-28	TBD	TBD
SW-129	115+	-	TBD	TBD
SW-130	106+	-	TBD	TBD
SW-131	108+	-	TBD	TBD
SW-132	76R	-	TBD	TBD
SW-133	112+	-	84	3.25/3.0
SW-134	120+	-	TBD	TBD
SW-135	117+	-	84	5.25/6.0
SW-136	120+	-	72	9.0/6.0
SW-137	78R	-	TBD	TBD
SW-138	108+	32-90+	TBD	TBD
SW-139	80R	-	24	3.0/3.0
SW-140	118+	28-60	TBD	TBD
SW-141	88+	27-60	24	0.0/0.02
SW-141A	114R	-	50	0.75/1.5
SW-141B	36R	-	12	1.25/1.5
SW-141C	60R	-	24	0.75/0.25
SW-142	45R	-	TBD	TBD

= Bedrock Limitations
= Feasible Reults
= Not Feasible Results

NOTES:

1. PLANIMETRIC AND TOPOGRAPHIC FEATURES COMPILED BY ESE CONSULTANTS, INC. UTILIZING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHY. AERIAL PHOTOGRAPHY PERFORMED BY KEYSTONE AERIAL PHOTOGRAPHY ON JANUARY 21, 2021 WITH A PHOTO SCALE OF 5cm GSD.
2. PHOTOGRAMMETRIC MAPPING HAS BEEN COMPILED IN ACCORDANCE WITH PROCEDURES THAT HAVE BEEN DEMONSTRATED TO COMPLY WITH THE AMERICAN SOCIETY OF PHOTOGRAMMETRY AND REMOTE SENSING (ASPRS) CLASS 1 STANDARD FOR A HORIZONTAL MAPPING SCALE OF 1"=50' AND A CONTOUR INTERVAL OF 1'..
3. FEATURES ARE LIMITED TO THOSE VISIBLE AT TIME OF THE PHOTOGRAPHY AND ARE SUBJECT TO FIELD VERIFICATION BY THE END USER. BUILDING OUTLINES REPRESENT APPROXIMATE ROOF LINE LOCATIONS AS SEEN ON THE AERIAL PHOTOGRAPHY. SUPPLEMENTED WITH VARIOUS FIELD DATA AS REQUESTED BY CLIENT.
4. DELINEATED AREAS DESIGNATED AS "OBSCURED" INDICATE THE GROUND IS OBSCURED BY VEGETATION OR SHADOWS. MAPPING WITHIN THESE AREAS MAY NOT MEET STANDARD ACCURACY.
5. THE VERTICAL DATUM SHOWN IS BASED ON NAVD88.
6. BOUNDARY INFORMATION TAKEN FROM A PLAN ENTITLED "PLAN OF SURVEY, LANDS N/F SISTERS OF ST. BASIL THE GREAT, DATED MARCH 22, 2021, LAST REVISED APRIL 14, 2021, PREPARED BY NAVE NEWELL, WAYNE, PA 19087.
7. WETLANDS INFORMATION SHOWN HEREIN TAKEN FROM A PLAN ENTITLED, "MAP OF WETLAND LOCATIONS, RYDAL ST. BASILS", DATED JUNE 16, 2022, LAST REVISED JULY 08, 2022. PREPARED BY ESE CONSULTANTS INC, FORT WASHINGTON PA 19034.
8. THE ABINGTON SEWER AUTHORITY VERTICAL DATUM IS 3.59' LOWER THAN THE VERTICAL DATUM USED.

LEGEND:

- EXISTING DIRT/GRAVEL ROAD
- EXISTING R.O.W.
- EXISTING BOUNDARY LINE
- EXISTING EASEMENT
- MAJOR CONTOURS
- MINOR CONTOURS
- EXISTING SETBACK LINE
- OBSCURED
- EXISTING SPOT ELEVATION
- EXISTING TREE LINE
- EXISTING VEGETATION LINE
- EXISTING TREE PER AERIAL MAPPING
- EXISTING TREE 10" OR GREAT DIAMETER
- EXISTING SHRUB
- EXISTING SIGN
- EXISTING MAIL BOX
- EXISTING UTILITY POLE
- EXISTING INLET
- EXISTING MANHOLE
- SOILS LINE
- MINOR STREAM
- CONCRETE MONUMENT
- EXISTING GAS LINE
- EXISTING WATER LINE
- EXISTING STORM PIPE
- EXISTING WATER VALVES
- EXISTING HYDRANTS
- STREAM LIMIT OF ORDINARY HIGH WATER MARK
- WATERS OF THE U.S.
- FLOODPLAIN LINE (ZONE X)
- EXISTING 15-25% SLOPES
- EXISTING >25% SLOPES
- TOWNSHIP RIPARIAN BUFFER - ZONE 1
- TOWNSHIP RIPARIAN BUFFER - ZONE 2
- EXISTING TREES TO BE REMOVED
- SW-103 TEST PIT

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Pennsylvania One Call System, Inc.
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West Mifflin, PA 15122-1078
1-800-242-1776
or 8-1-1
www.paonecall.org

GRAPHIC SCALE
100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

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ENGINEERING • PLANNING • SURVEYING • ENVIRONMENTAL
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1140 Virginia Drive • Fort Washington, PA 19034
T: 215-914-2050

CAUTION:
IF THIS DOCUMENT DOES NOT CONTAIN A PROFESSIONAL SEAL, IT IS NOT AN AUTHENTICATED DOCUMENT AND MAY HAVE BEEN ALTERED.

THOMAS B. HENDRICKS
PROFESSIONAL LAND SURVEYOR
PA LICENSE NO. SU-044552-E

REV.	DATE	DESCRIPTION
1	7/24/23	TOWNSHIP REVIEW LETTERS
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS
		DRAWN
		KMS
		KMS
		KMS

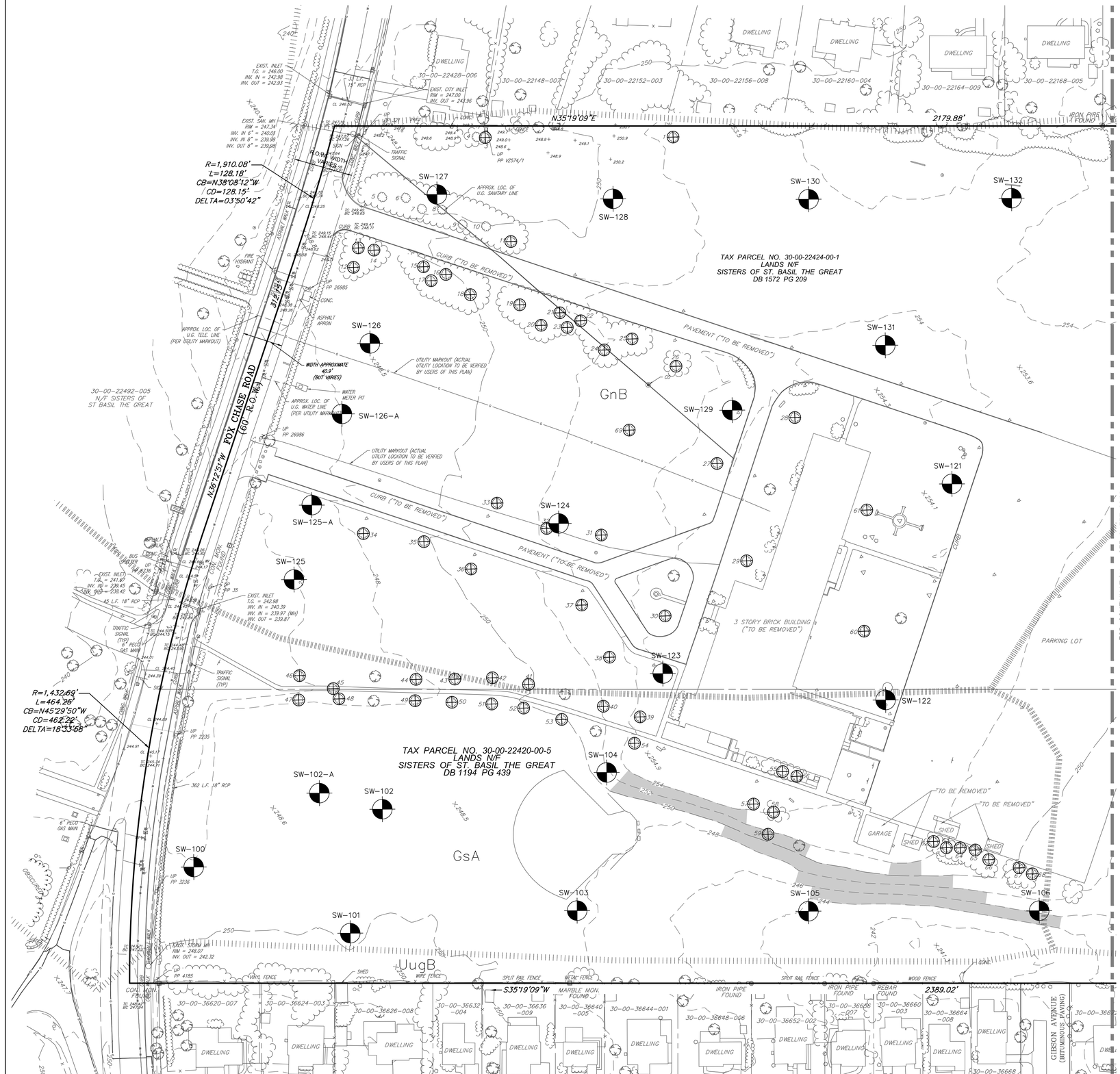
PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT-NOT TO BE RECORDED

APPLICATION NUMBER LD-23-01

EXISTING FEATURES PLAN/ERSAM
(SHEET 1 OF 4)

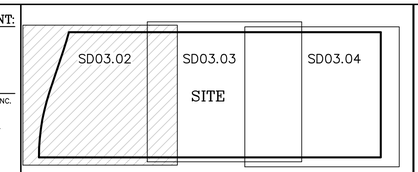
SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 03/24/23
SCALE: 1"=100'
DESIGN: JMM
DRAWN: KMS
JOB NO.: 7662
FILE NAME: SD03.01
REF. NO.: **SD03.01**
SHEET NO.: **7** OF **62**



OWNER AND APPLICANT:
SISTERS OF ST. BASIL THE GREAT
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EQUITABLE OWNER AND APPLICANT:
TOLL MID-ATLANTIC, L.P. COMPANY, INC.
1140 VIRGINIA DRIVE
FORT WASHINGTON, PA 19034
(215)938-8000



KEY MAP
N.T.S.

EXISTING TREE 10" OR GREATER IN DIAMETER CHART

EXISTING TREE CONSTRUCTION DESIGNATION CHART			
Tag	Code	Trunk	Designation
1	TREE OF HEAVEN	14	TO BE REMOVED
2	BLACK WALNUT	18	TO REMAIN
3	TREE OF HEAVEN	18	TO BE REMOVED
4	BLACK WALNUT	16	TO REMAIN
5	WHITE PINE	26	TO REMAIN
6	WHITE PINE	20	TO REMAIN
7	WHITE PINE	17	TO REMAIN
8	WHITE PINE	22	TO REMAIN
9	WHITE PINE	23	TO REMAIN
10	WHITE PINE	23	TO REMAIN
11	WHITE PINE	24	TO BE REMOVED
12	WHITE PINE	22	TO BE REMOVED
13	WHITE PINE	17	TO BE REMOVED
14	WHITE PINE	32	TO BE REMOVED
15	WHITE PINE	23	TO BE REMOVED
16	WHITE PINE	24	TO BE REMOVED
17	WHITE PINE	21	TO BE REMOVED
18	WHITE PINE	34	TO BE REMOVED
19	WHITE PINE	30	TO BE REMOVED
20	WHITE PINE	28	TO BE REMOVED
21	WHITE PINE	18	TO BE REMOVED
22	WHITE PINE	23	TO BE REMOVED
23	WHITE PINE	26	TO BE REMOVED
24	WHITE PINE	32	TO BE REMOVED
25	WHITE PINE	26	TO BE REMOVED
26	WHITE PINE	22	TO BE REMOVED
27	GRAY BIRCH	17	TO BE REMOVED
28	CRABAPPLE	14	TO BE REMOVED
29	CRABAPPLE	15	TO BE REMOVED
30	ORNAMENTAL CHERRY	14	TO BE REMOVED
31	ORNAMENTAL CHERRY	34	TO BE REMOVED
32	CRABAPPLE	10	TO BE REMOVED
33	ORNAMENTAL CHERRY	23	TO BE REMOVED
34	ORNAMENTAL CHERRY	27	TO BE REMOVED
35	CRABAPPLE	12	TO BE REMOVED
36	ORNAMENTAL CHERRY	34	TO BE REMOVED
37	ORNAMENTAL CHERRY	34	TO BE REMOVED
38	SAUCER MAGNOLIA	10	TO BE REMOVED
39	BRADFORD PEAR	11	TO BE REMOVED
40	BRADFORD PEAR	12	TO BE REMOVED
41	BRADFORD PEAR	12	TO BE REMOVED
42	BRADFORD PEAR	12	TO BE REMOVED
43	BRADFORD PEAR	10	TO BE REMOVED
44	BRADFORD PEAR	12	TO BE REMOVED
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46	BRADFORD PEAR	12	TO BE REMOVED
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49	BRADFORD PEAR	13	TO BE REMOVED
50	BRADFORD PEAR	12	TO BE REMOVED
51	BRADFORD PEAR	13	TO BE REMOVED
52	BRADFORD PEAR	11	TO BE REMOVED
53	BRADFORD PEAR	11	TO BE REMOVED
54	BRADFORD PEAR	13	TO BE REMOVED
55	CEDAR	11	TO BE REMOVED
56	CEDAR	12	TO BE REMOVED
57	CRABAPPLE	10	TO BE REMOVED
58	CRABAPPLE	16	TO BE REMOVED
59	NORWAY MAPLE	31	TO BE REMOVED
60	RED MAPLE	22	TO BE REMOVED
61	WEEPING CHERRY	18	TO BE REMOVED
62	CEDAR	10	TO BE REMOVED
63	CEDAR	12	TO BE REMOVED
64	CEDAR	13	TO BE REMOVED
65	CEDAR	13	TO BE REMOVED
66	CEDAR	13	TO BE REMOVED
67	CEDAR	11	TO BE REMOVED
68	CEDAR	10	TO BE REMOVED
69	RED MAPLE	20	TO BE REMOVED
70	RED MAPLE	17	TO BE REMOVED
71	ORNAMENTAL CHERRY	10	TO BE REMOVED
72	ORNAMENTAL CHERRY	11	TO BE REMOVED
73	ORNAMENTAL CHERRY	13	TO BE REMOVED
74	ORNAMENTAL CHERRY	13	TO BE REMOVED
75	RED MAPLE	18	TO BE REMOVED
76	RED MAPLE	20	TO BE REMOVED
77	RED OAK	20	TO REMAIN
78	SHAGBARK HICKORY	19	TO REMAIN
79	BEECH	20	TO REMAIN
80	RED OAK	14	TO REMAIN
81	RED MAPLE	10	TO REMAIN
82	RED OAK	27	TO REMAIN
83	BLACK CHERRY	13	TO REMAIN
84	BEECH	38	TO REMAIN
85	BEECH	25	TO REMAIN
86	TULIP POPLAR	23	TO REMAIN
87	TULIP POPLAR	27	TO REMAIN
88	TULIP POPLAR	18	TO REMAIN
89	BLACK CHERRY	14	TO REMAIN
90	RED OAK	17	TO REMAIN
91	RED OAK	22	TO REMAIN
92	TULIP POPLAR	28	TO REMAIN
93	TULIP POPLAR	12	TO REMAIN
94	BEECH	32	TO REMAIN
95	BEECH	34	TO REMAIN
96	BLACK CHERRY	17	TO REMAIN
97	RED OAK	30	TO REMAIN
98	RED MAPLE	12	TO REMAIN
99	RED MAPLE	23	TO REMAIN
100	SLIPPERY ELM	21	TO REMAIN

SOILS LEGEND:

Map Unit Symbol	Map Unit Name	Rating
GnB	Glenig Silt Loam, 3 to 8 Percent Slopes	B
GsA	Glenville Silt Loam, Somewhat Poorly Drained, 0 to 3 Percent Slopes	C/D
GsB	Glenig Silt Loam, 3 to 8 Percent Slopes	C/D
Ha	Hatboro Silt Loam	B/D
MaB	Manor Loam, 3 to 8 Percent Slopes	B
MaC	Manor Loam, 8 to 15 Percent Slopes	B
MaD	Manor Loam, 15 to 25 Percent Slopes	B
UdsB	Udorthents, Schist and Gneiss 0 to 8 Percent Slopes	C
UgB	Urban Land, 0 to 8 Percent Slopes	
UugB	Urban Land-Udorthents, Schist and Gneiss Complex, 0 to 8 Percent Slopes	

LEGEND:

- EXISTING DIRT/GRAVEL ROAD
- EXISTING R.O.W.
- EXISTING BOUNDARY LINE
- EXISTING EASEMENT
- MAJOR CONTOURS
- MINOR CONTOURS
- EXISTING SETBACK LINE
- OBSCURED
- EXISTING SPOT ELEVATION
- EXISTING TREE LINE
- EXISTING VEGETATION LINE
- EXISTING TREE PER AERIAL MAPPING
- EXISTING TREE 10" OR GREAT DIAMETER
- EXISTING SHRUB
- EXISTING SIGN
- EXISTING MAIL BOX
- EXISTING UTILITY POLE
- EXISTING INLET
- EXISTING MANHOLE
- SOILS LINE
- MINOR STREAM
- CONCRETE MONUMENT
- EXISTING GAS LINE
- EXISTING WATER LINE
- EXISTING STORM PIPE
- EXISTING WATER VALVES
- EXISTING HYDRANTS
- STREAM LIMIT OF ORDINARY HIGH WATER MARK
- WATERS OF THE U.S.
- FLOODPLAIN LINE (ZONE X)
- EXISTING 15-25% SLOPES
- EXISTING >25% SLOPES
- TOWNSHIP RIPARIAN BUFFER - ZONE 1
- TOWNSHIP RIPARIAN BUFFER - ZONE 2
- EXISTING TREES TO BE REMOVED
- SW-103 TEST PIT

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www.paonecall.org

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

FOR CONTINUATION - SEE SHEET SD03.03

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REV.	DATE	DESCRIPTION
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS
1	7/24/23	TOWNSHIP REVIEW LETTERS
		DRAWN: KMS KMS KMS

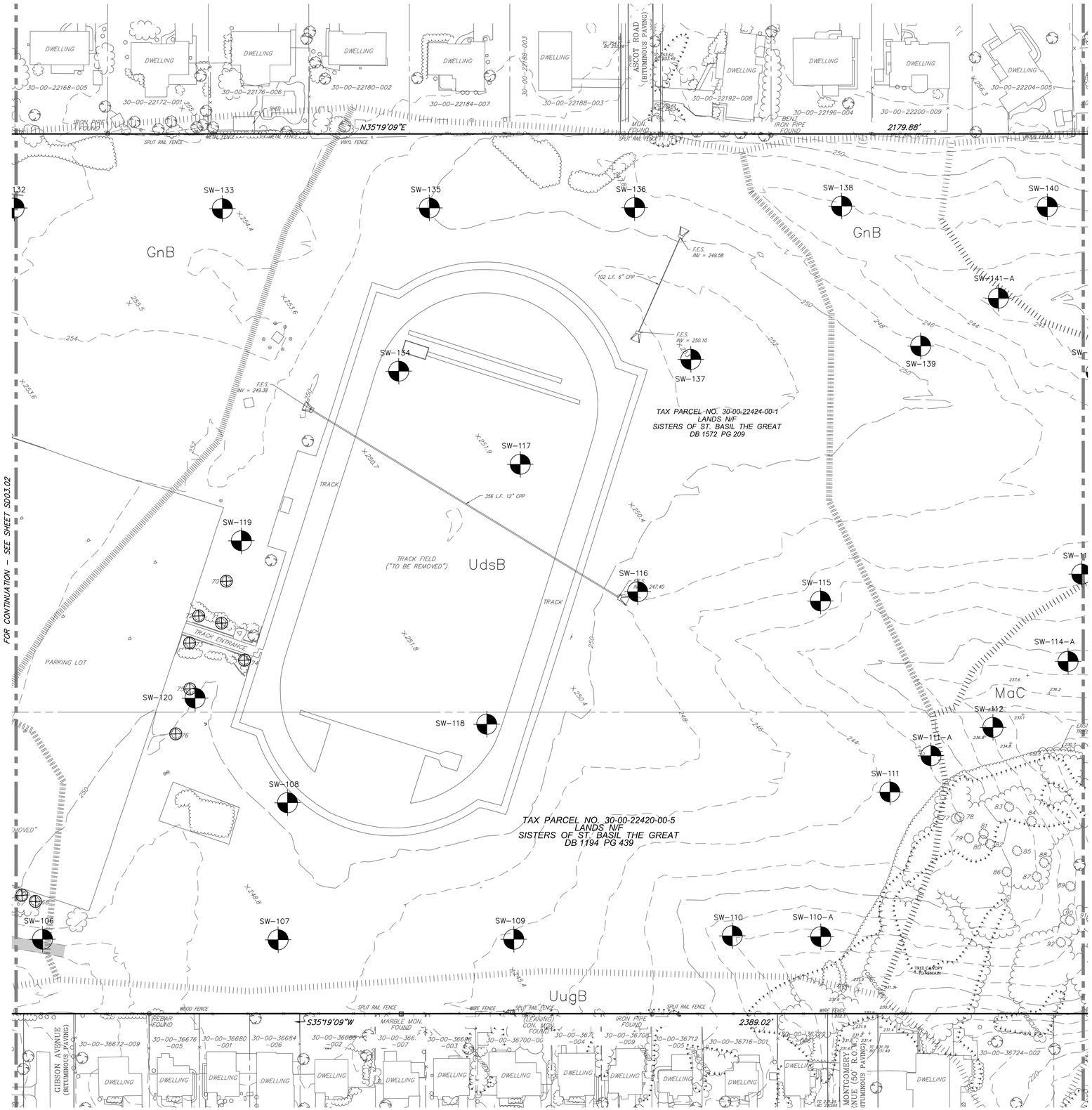
PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT-NOT TO BE RECORDED

EXISTING FEATURES PLAN/ERSAM
(SHEET 2 OF 4)

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

APPLICATION NUMBER LD-23-01

DATE: 03/24/23	SCALE: 1"=50'
DESIGN: JMM	DRAWN: KMS
JOB NO.: 7662	FILE NAME: SD03.02
REF. NO.:	SD03.02
SHEET NO.: 8	OF 62



OWNER AND APPLICANT:

SISTERS OF ST. BASIL THE GREAT
711 FOX CHASE ROAD
ABINGTON, PA 19046-4198

EQUITABLE OWNER AND APPLICANT:

TOLL MID-ATLANTIC, L.P. COMPANY, INC.
1140 VIRGINIA DRIVE
FORT WASHINGTON, PA 19034
(215)938-8000



KEY MAP
N.T.S.

SOILS LEGEND:

Map Unit Symbol	Map Unit Name	Rating
GnB	Glenig Silt Loam, 3 to 8 Percent Slopes	B
GsA	Glenville Silt Loam, Somewhat Poorly Drained, 0 to 3 Percent Slopes	C/D
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UgB	Urban Land, 0 to 8 Percent Slopes	
UugB	Urban Land-Udorthents, Schist and Gneiss Complex, 0 to 8 Percent Slopes	

LEGEND:

- EXISTING DIRT/GRAVEL ROAD
- EXISTING R.O.W.
- EXISTING BOUNDARY LINE
- EXISTING EASEMENT
- MAJOR CONTOURS
- MINOR CONTOURS
- EXISTING SETBACK LINE
- OBSCURED
- + 100.0 EXISTING SPOT ELEVATION
- EXISTING TREE LINE
- EXISTING VEGETATION LINE
- EXISTING TREE PER AERIAL MAPPING
- EXISTING TREE 10" OR GREAT DIAMETER
- EXISTING SHRUB
- EXISTING SIGN
- EXISTING MAIL BOX
- EXISTING UTILITY POLE
- EXISTING INLET
- EXISTING MANHOLE
- SOILS LINE
- MINOR STREAM
- CONCRETE MONUMENT
- G EXISTING GAS LINE
- W EXISTING WATER LINE
- EXISTING STORM PIPE
- EXISTING WATER VALVES
- EXISTING HYDRANTS
- STREAM LIMIT OF ORDINARY HIGH WATER MARK
- WATERS OF THE U.S.
- FLOODPLAIN LINE (ZONE X)
- EXISTING 15-25% SLOPES
- EXISTING >25% SLOPES
- TOWNSHIP RIPARIAN BUFFER – ZONE 1
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GRAPHIC SCALE

50 0 25 50 100 200
(IN FEET)
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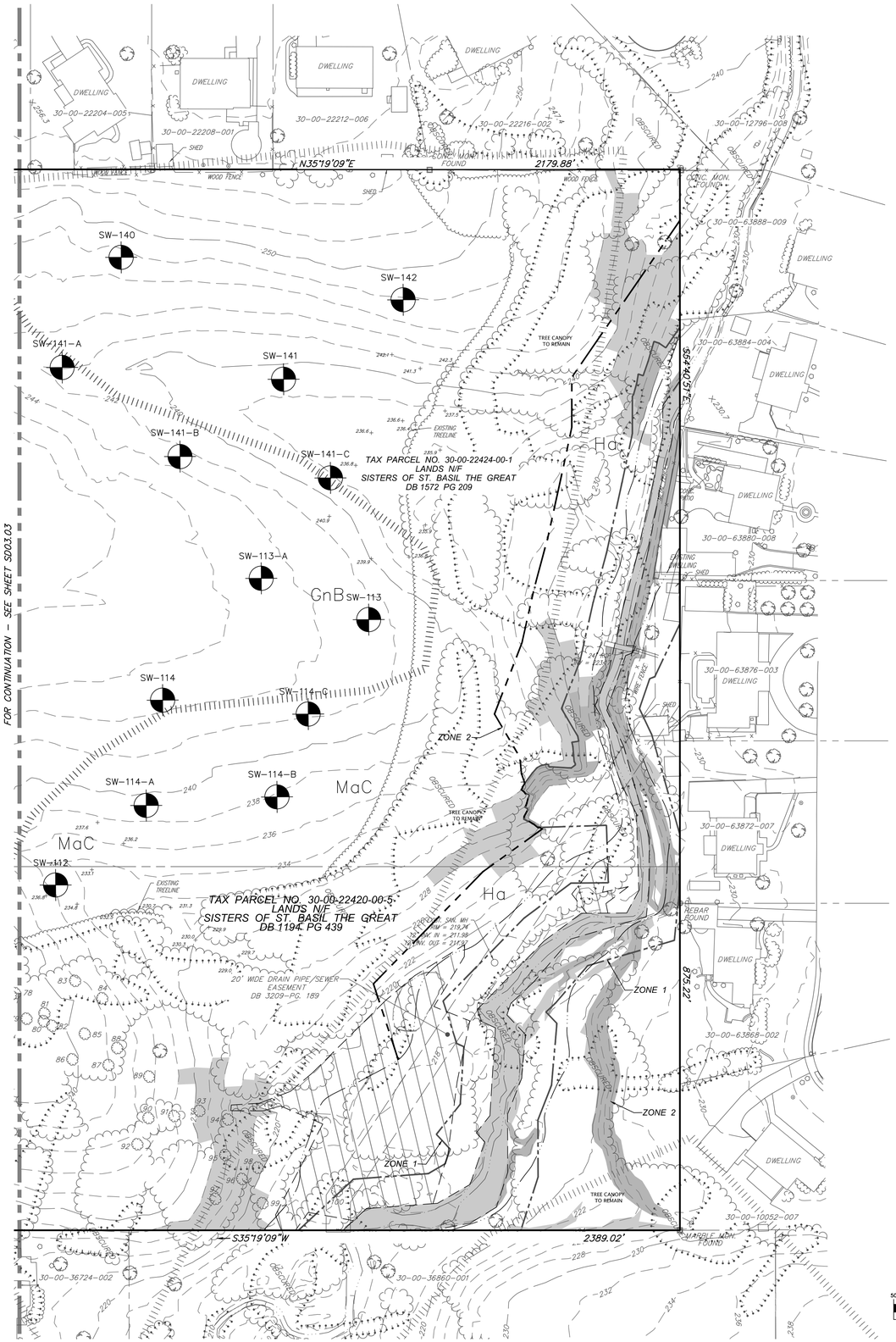
PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT–NOT TO BE RECORDED

APPLICATION NUMBER LD-23-01

EXISTING FEATURES PLAN/ERSAM
(SHEET 3 OF 4)

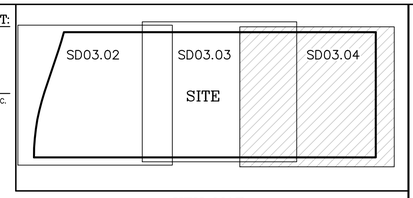
SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 03/24/23	SCALE: 1"=50'
DESIGN: JMM	DRAWN: KMS
JOB NO.: 7662	FILE NAME: SD03.03
REF. NO.: SD03.03	
SHEET NO.: 9 OF 62	



OWNER AND APPLICANT:
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ABINGTON, PA 19046-4198

EQUITABLE OWNER AND APPLICANT:
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KEY MAP
N.T.S.

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- MINOR CONTOURS
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- OBSCURED
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- EXISTING TREE LINE
- EXISTING VEGETATION LINE
- EXISTING TREE PER AERIAL MAPPING
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- EXISTING SIGN
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- EXISTING UTILITY POLE
- EXISTING INLET
- EXISTING MANHOLE
- SOILS LINE
- MINOR STREAM
- CONCRETE MONUMENT
- EXISTING GAS LINE (G)
- EXISTING WATER LINE (W)
- EXISTING STORM PIPE
- EXISTING WATER VALVES
- EXISTING HYDRANTS
- STREAM LIMIT OF ORDINARY HIGH WATER MARK
- WATERS OF THE U.S.
- FLOODPLAIN LINE (ZONE X)
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GRAPHIC SCALE

50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

ADJOINERS INFORMATION TABLE

PARCEL NUMBER	OWNER	ADDRESS	ACREAGE
30-00-22148-007	ARDEN C. AND KEATHLEEN A. HANDER	615 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.44
30-00-22152-003	ARNOLD J. AND SANDRA BERSON	623 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.48
30-00-22156-008	ROY B. AND LESLIE G. PORTNER	631 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.44
30-00-22160-004	CHARLES T. AND GLORIA MCDERMOTT	637 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.38
30-00-22164-009	LAZAROS KARASAVAS	645 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.36
30-00-22168-005	LUCAS BURKE	653 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.34
30-00-22172-001	THEODORE A. AND PATRICIA ZALEWSKI	661 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.34
30-00-22176-006	KILE F. AND KATHLEEN T. WIDMAN	669 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.34
30-00-22180-002	LISA A. HARKINS	677 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.34
30-00-22184-007	BILL RAY AND PATRICIA ANN JACOBS	685 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.34
30-00-22188-003	DENNIS JOHN AND NICOLE CYNTHIA LAURIA	693 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.38
30-00-22102-008	JOYCE M. AND DAVIS S. LEFF	707 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.38
30-00-22196-004	THOMAS P. DENNERY	715 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.34
30-00-22200-009	PEARSE P. AND ELIZABETH V. KERR	723 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.34
30-00-22204-005	HOWARD A. AND KATHLEEN A. WILSON	731 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.34
30-00-22208-001	ROBERT W. AND KIMBERLYA. GEISLER	739 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.34
30-00-22212-006	GLENN GRESSEN	747 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.39
30-00-22216-002	GEORGE H. JR. MORGAN	755 FORREST AVEUNE, JENKINGTOWN, PA 19046	0.67
30-00-22428-006	SAMUEL AND NANCY KRENZEL	777 FOX CHASE ROAD, JENKINGTOWN, PA 19046	0.38
30-00-12796-008	SIMON AND TOBY GALAPO	803 DELENE ROAD, RYDAL, PA 19046	0.97
30-00-63888-009	JODY LIEBERMAN GOLDSBOROUGH	756 SUFFORK ROAD, RYDAL, PA 19046	0.47
30-00-63884-004	CHRISTINA BARTOSH	748 SUFFORK ROAD, RYDAL, PA 19046	0.36
30-00-63880-008	ROBERT AND ALBERINA DRIZA	742 SUFFORK ROAD, JENKINGTOWN, PA 19046	0.36
30-00-63876-003	ARBEN PROFKA	732 SUFFORK ROAD, JENKINGTOWN, PA 19046	0.35
30-00-63872-007	KOSTANDIN AND NEKIE TURTULLI	726 SUFFORK ROAD, JENKINGTOWN, PA 19046	0.35
30-00-63868-002	DIANE MEEHAN	716 SUFFORK ROAD, JENKINGTON, PA 19046	0.35
30-00-10052-007	SAIMIR AND JULINDA SHEHU	863 COLWYN ROAD, JENKINGTOWN, PA 19046	0.48
30-00-36620-007	ROBERT AND THERESA WAAS	608 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.28
30-00-36624-003	VINCENT J. AND JULIE A. KELLY	614 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.20
30-00-36628-008	GREGORY J. POEHLMANN	622 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.27
30-00-36632-004	ROY A. AND CAROLE ANNE STEIN	626 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.14
30-00-36636-009	JOSEPH AND DOLORES HURLEY	632 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.20
30-00-36640-005	MICHAEL GAZZARA AND JESSICA RUCH	636 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.13
30-00-36644-001	MICHAEL S. AND LINDA TOBIN	642 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.20
30-00-36648-006	STEVEN D. HUNTZINGER	648 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.20
30-00-36652-002	FRANCES C. MCKEOWN AND MICHAEL P. BURNER	654 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.20
30-00-36656-007	HARRY J. VANPELT AND LESLIE E. MAXWELL	658 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.14
30-00-36660-003	HARRY J. AND KAREN A. LOOBY	662 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.14
30-00-36664-008	JOHN A. AND ODARKA CHARAMBURA	666 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.13
30-00-36668-004	ALEXANDRA L. STILES	670 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.13
30-00-36672-009	JED K. MARGOLIS AND CARLEY M. TAYLOR	702 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.20
30-00-36676-005	JOSEPH E. AND JAIME M. AVON	706KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.13
30-00-36680-001	HUGH B. AND KATHLEEN A. MCHUGH	710 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.13
30-00-36684-006	RAYMOND AND KATE VANDEGRIFT	714 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.13
30-00-36688-002	RALPH AND ERMA F. YERKES	718 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.20
30-00-36692-007	PAMELA M. JONES	724 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.13
30-00-36696-003	WILLIAM F. AND PAMELA ANNE HAGERTY	728 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.13
30-00-36700-008	GLEN E. AND LISA B. HEILMAN	734 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.20
30-00-36704-004	FRANCIS N. AND CYNTHIA L. MAY	738 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.13
30-00-36708-009	WALTER G. JR AND PATRICIA A. WYATT	742 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.13
30-00-36712-005	VINCENT J. AND JEANETTE M. CALGIURI	746 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.13
30-00-36716-001	JESSIE G. AND ELEZABETH M. GRAZIANI	752 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.20
30-00-36720-006	LORRAINE ZWOLAK	756 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.13
30-00-36724-002	DENNIS AND CHERYL D. CONARD	802 KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	0.60
30-00-36860-001	ABINGTON TOWNSHIP	KIRKWOOD AVENUE, JENKINGTOWN, PA 19046	12.00

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1	7/24/23	TOWNSHIP REVIEW LETTERS	KMS

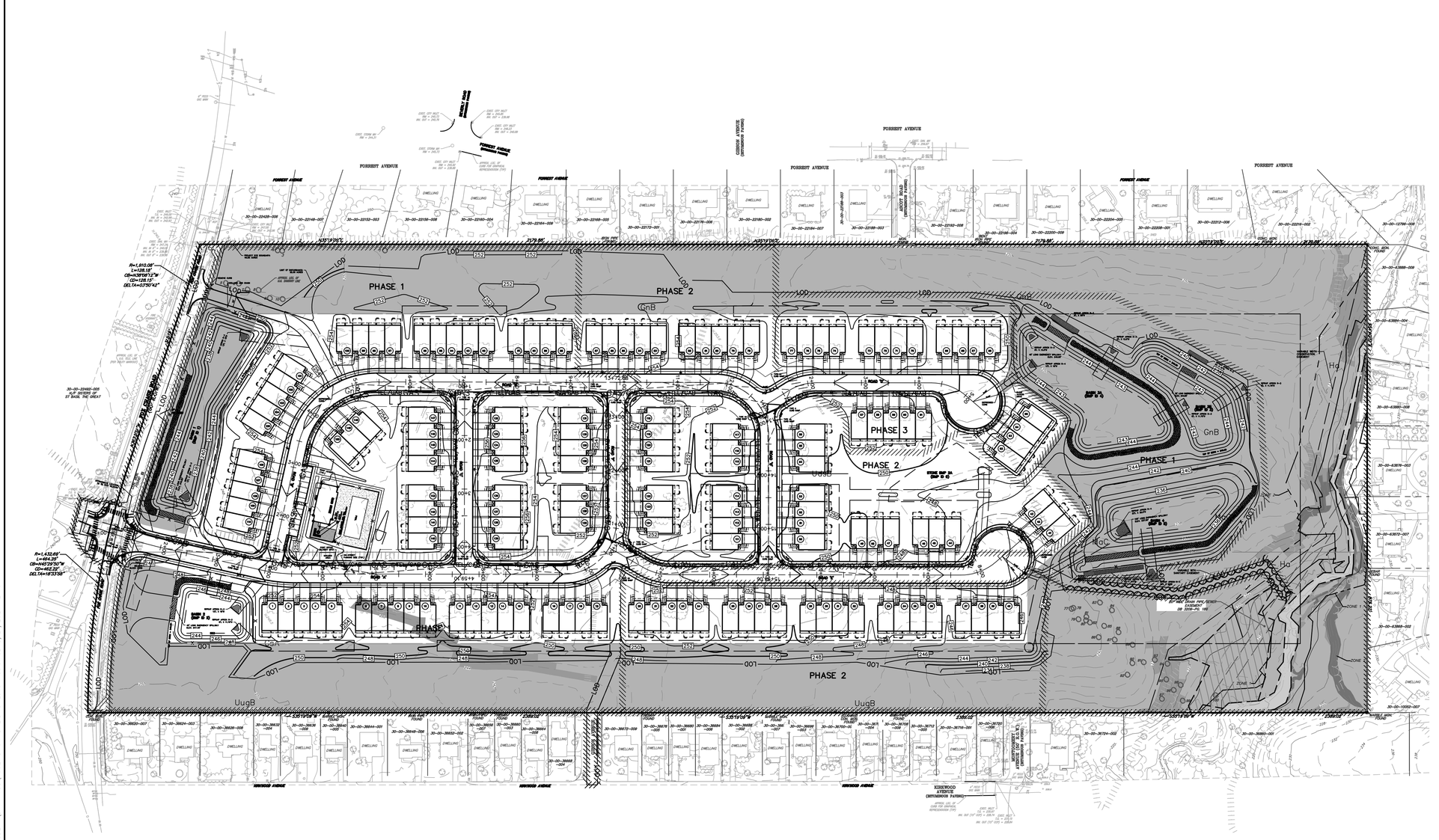
PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT—NOT TO BE RECORDED

APPLICATION NUMBER LD-23-01

EXISTING FEATURES PLAN/ERSAM
(SHEET 4 OF 4)

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 03/24/23	SCALE: 1"=50'
DESIGN: JMM	DRAWN: KMS
JOB NO.: 7662	FILE NAME: SD03.04
REF. NO.: **SD03.04**	
SHEET NO.: **10** OF **62**	



LEGEND

- EXISTING STRUCTURE
- EXISTING CONTOURS
- PROPOSED TREE LINE
- EXISTING TREE LINE
- WETLANDS LIMIT
- WATERS OF THE U.S.
- BUILDING SETBACK LINE
- PROPOSED CENTER LINE
- STREAM LINE
- PROPOSED PROPERTY LINE
- PROPOSED R.O.W.
- EXISTING CARTWAY
- PROPOSED CURB
- PROPOSED 4' WIDE SIDEWALK WITH ACCESS RAMP
- OUTBOUND LINE
- PROPOSED SPLIT RAIL FENCE
- PROPOSED EASEMENT
- (68) PROPOSED LOT NUMBER
- QUALIFYING OPEN SPACE 22.6 AC
- PHASE LINE

PHASE 1	68 HOMES
PHASE 2	61 HOMES
PHASE 3	21 HOMES
TOTAL	150 HOMES

HORIZONTAL GRAPHIC SCALE
100 0 100 200
(IN FEET)
1" = 100 FEET

N:\PROJECTS\PENNSYLVANIA\7662-RYDAL ST. BASILS\ENGDEPT\DRAWINGS\7662-S-04-SITE.DWG-Luke Piotrowicz-3/21/2024 12:46 PM

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COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL ENGINEER — JEFFREY M. MAUDER — No. PE084722

REV.	DATE	DESCRIPTION	DRAWN
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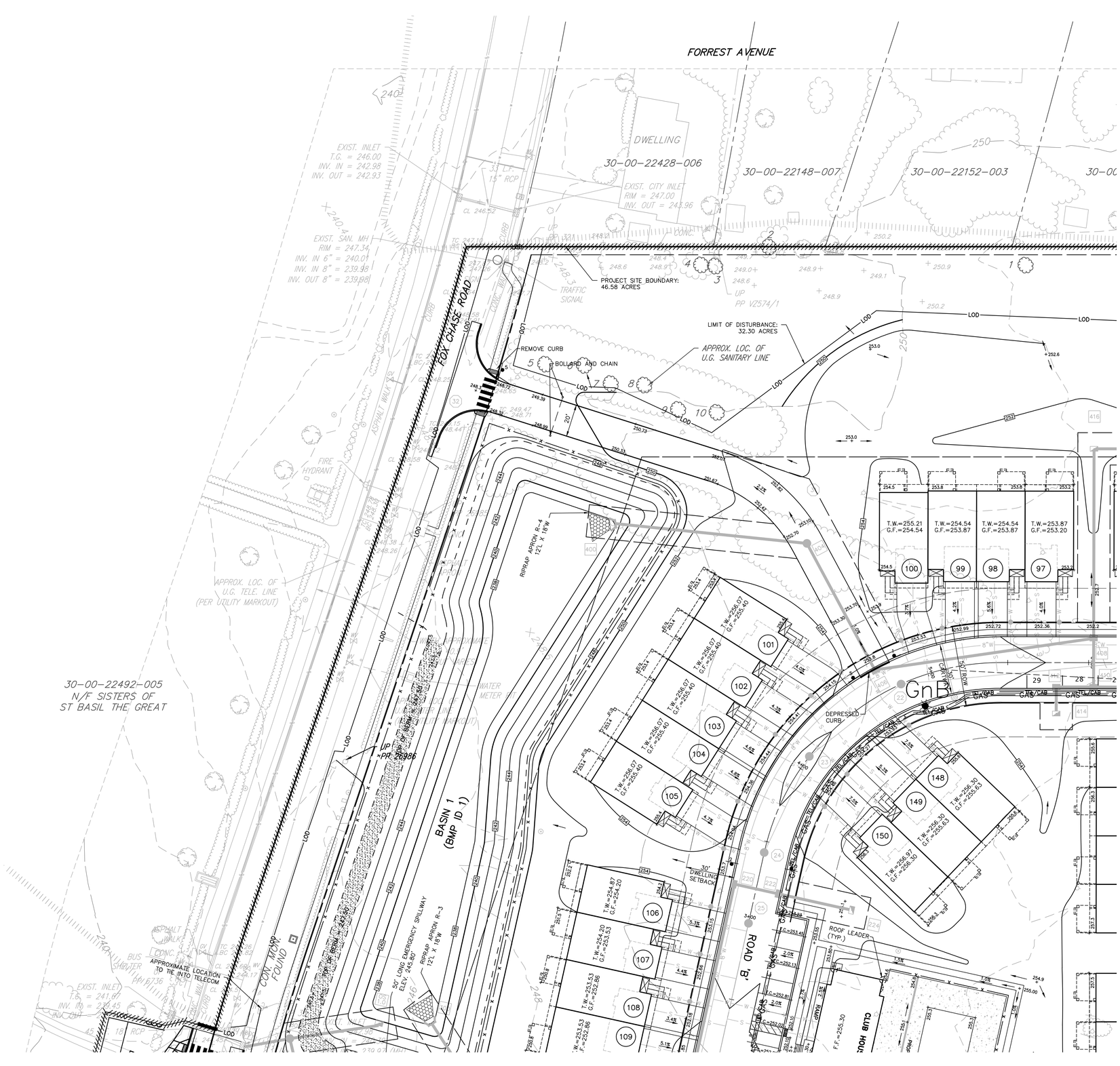
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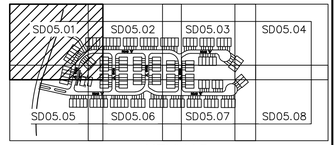
OVERALL SITE AND PHASING PLAN

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

APPLICATION NUMBER LD-23-01

DATE: 3-24-23	SCALE: 1" = 100'
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-04-SITE
REF. NO.: **SD04.01**	
SHEET NO.: **11** OF **62**	





KEYMAP

LEGEND

- TW= TOP OF WALL ELEVATION
- BF= BASEMENT FLOOR ELEVATION
- GF= GARAGE FLOOR ELEVATION
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- EXISTING DIRT/GRAVEL ROAD
- EXISTING STREET SIGN
- EXISTING UTILITY POLE
- EXISTING R.O.W.
- EXISTING CARTWAY
- STREAM LINE
- EXISTING CENTER LINE
- EXISTING BOUNDARY LINE
- SOILS LINE
- EXISTING OVERHEAD UTILITY (ELECTRIC, PHONE, CABLE, ETC.)
- EXISTING CONCRETE MONUMENT
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- EXISTING SIGN
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- EXISTING TREE
- TOWNSHIP RIPARIAN BUFFER – ZONE 1
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- STEEP SLOPES 15% TO 25%
- STEEP SLOPES > 25%
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- PROPOSED CONTOURS
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- PROPOSED SPOT ELEVATION
- EXISTING TREE LINE
- EXISTING VEGETATION
- PROPOSED TREE LINE
- EXISTING INLET W/ STORM SEWER
- PROPOSED STORM SEWER W/ STRUCTURE NUMBER
- PROPOSED STORM MANHOLE W/ STRUCTURE NUMBER
- PROPOSED FLARED END SECTION W/STRUCTURE NUMBER
- PROPOSED UNDERGROUND UTILITIES (ELECTRIC, PHONE, CABLE, ETC.)
- PROPOSED SPLIT RAIL FENCE
- PROPOSED SIGHT TRIANGLE
- PROPOSED WATER LATERAL
- PROPOSED SANITARY LATERAL w/ CLEANOUT
- TREE PROTECTION FENCE
- RIP-RAP APRON
- LOT NUMBER
- LIGHT POST
- STREET SIGN
- DO NOT ENTER SIGN
- SPEED LIMIT SIGN
- PEDESTRIAN CROSSING SIGN
- STOP SIGN 30"X30"
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- STOP BAR
- WETLANDS
- WATERS OF THE U.S.
- SANITARY MAIN AND MANHOLE w/ STRUCTURE NUMBER
- PROPOSED 8" WATERMAIN

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REV	DATE	DESCRIPTION	DRAWN
3	05/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTER	ESE

GRADING PLAN

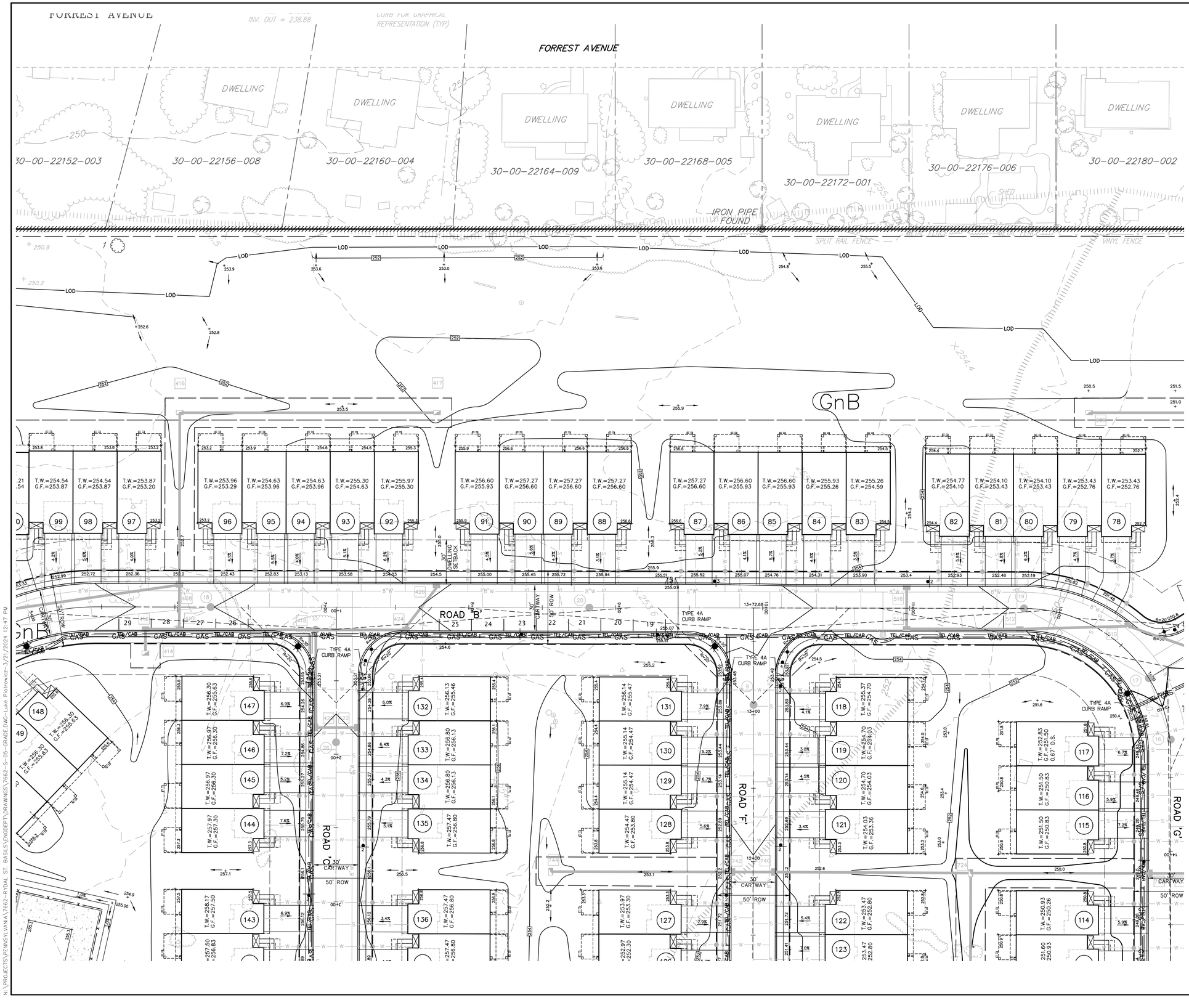
SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

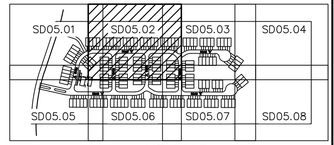
PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT–NOT TO BE RECORDED

APPLICATION NUMBER LD-23-01

DATE: 3-24-23	SCALE: 1" = 30'
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-05-GRADE
REF. NO.: **SD05.01**	
SHEET NO.: **12** OF **62**	

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KEYMAP

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- SANITARY MAIN AND MANHOLE w/ STRUCTURE NUMBER
- PROPOSED 8" WATERMAIN

GRAPHIC SCALE
30 0 30 60
(IN FEET)
1" = 30 FEET

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COMMONWEALTH OF PENNSYLVANIA — JEFFREY M. MAUDER — ENGINEER — No. PE082170

REV.	DATE	DESCRIPTION	DRAWN
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GRADING PLAN

SISTERS OF ST. BASIL

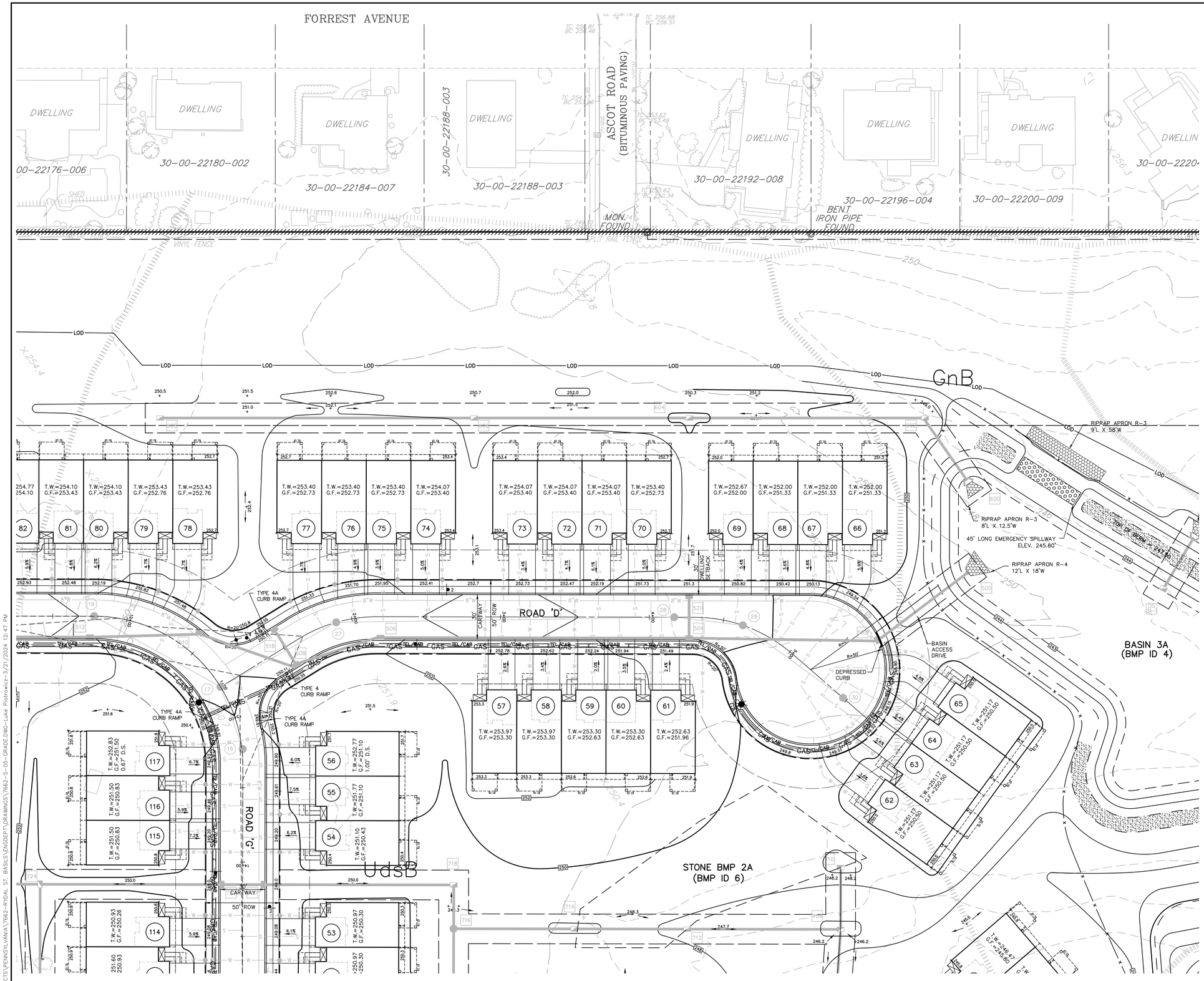
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

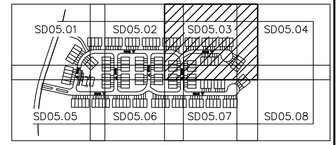
PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT–NOT TO BE RECORDED

APPLICATION NUMBER LD-23-01

DATE: 3-24-23	SCALE: 1" = 30'
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-05-GRADE
REF. NO.:	SD05.02
SHEET NO.:	13 OF 62

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KEYMAP

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GRAPHIC SCALE
30 0 30 60
(IN FEET)
1" = 30 FEET

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COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL ENGINEER — JEFFREY M. MAUDER

REV.	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
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1	7/24/23	TOWNSHIP REVIEW LETTER	ESE

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT-NOT TO BE RECORDED

APPLICATION NUMBER LD-23-01

GRADING PLAN

SISTERS OF ST. BASIL

ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 3-24-23	SCALE: 1" = 30'
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-05-GRADE
REF. NO.:	SD05.03
SHEET NO.:	14 OF 62

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FORREST AVENUE

DWELLING
DWELLING
DWELLING
DWELLING
DWELLING
30-00-22200-009
30-00-22204-005
30-00-22208-001
30-00-22212-006
30-00-22216-002
30-00-12796-008
30-00-63888-009
30-00-63884-004
30-00-63880-008
30-00-63876-003
SHED
CONC. MON. FOUND
CONC. MON. FOUND
WOOD FENCE
WOOD FENCE
WIRE FENCE
EXISTING TREELINE
VARIABLE WIDTH CONSERVATION EASEMENT
ZONE 2
GnB
Ha

RIPRAP APRON R-3
9'L X 58'W
RIPRAP APRON R-3
8'L X 12.5'W
RIPRAP APRON R-3
8'L X 12.5'W
45' LONG EMERGENCY SPILLWAY
ELEV. 245.80'
RIPRAP APRON R-4
12'L X 18'W
RIPRAP APRON R-2
8'L X 41'W
RIPRAP APRON R-3
8'L X 11.75'W
30' LONG EMERGENCY SPILLWAY
ELEV. 244.60'
RIPRAP APRON R-3
8'L X 11.75'W
RIPRAP APRON R-4

BASIN 3A
(BMP ID 4)
BASIN 3B
(BMP ID 3)

TOP OF BERM = 247.80
TOP OF BERM = 246.00
TOP OF BERM = 247.60
TOP OF BERM = 246.00

LOD

T.W.=251.17
G.F.=250.50
T.W.=246.47
G.F.=245.80

SD05.01 SD05.02 SD05.03 SD05.04
SD05.05 SD05.06 SD05.07 SD05.08

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100	PROPOSED CONTOURS
x 100.0	EXISTING SPOT ELEVATION
+ 100.00	PROPOSED SPOT ELEVATION
	EXISTING TREE LINE
	EXISTING VEGETATION
	PROPOSED TREE LINE
	EXISTING INLET W/ STORM SEWER
10	PROPOSED STORM SEWER W/ STRUCTURE NUMBER
11	PROPOSED STORM MANHOLE W/ STRUCTURE NUMBER
12	PROPOSED FLARED END SECTION W/STRUCTURE NUMBER
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x x	PROPOSED SPLIT RAIL FENCE
	PROPOSED SIGHT TRIANGLE
W	PROPOSED WATER LATERAL
S	PROPOSED SANITARY LATERAL w/ CLEANOUT
	TREE PROTECTION FENCE
	RIP-RAP APRON
3	LOT NUMBER
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	STREET SIGN
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2	SPEED LIMIT SIGN
3	PEDESTRIAN CROSSING SIGN
4	STOP SIGN 30"X30"
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	STOP BAR
	WETLANDS
	WATERS OF THE U.S.
6	SANITARY MAIN AND MANHOLE w/ STRUCTURE NUMBER
8"W	PROPOSED 8" WATERMAIN

GRAPHIC SCALE
30 0 30 60
(IN FEET)
1" = 30 FEET

COMMONWEALTH OF PENNSYLVANIA — JEFFREY M. MAUDER — ENGINEER — No. PE078006

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REV.	DATE	DESCRIPTION
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS
1	7/24/23	TOWNSHIP REVIEW LETTERS
		DRAWN
		ESE
		ESE
		ESE
		ESE

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT-NOT TO BE RECORDED

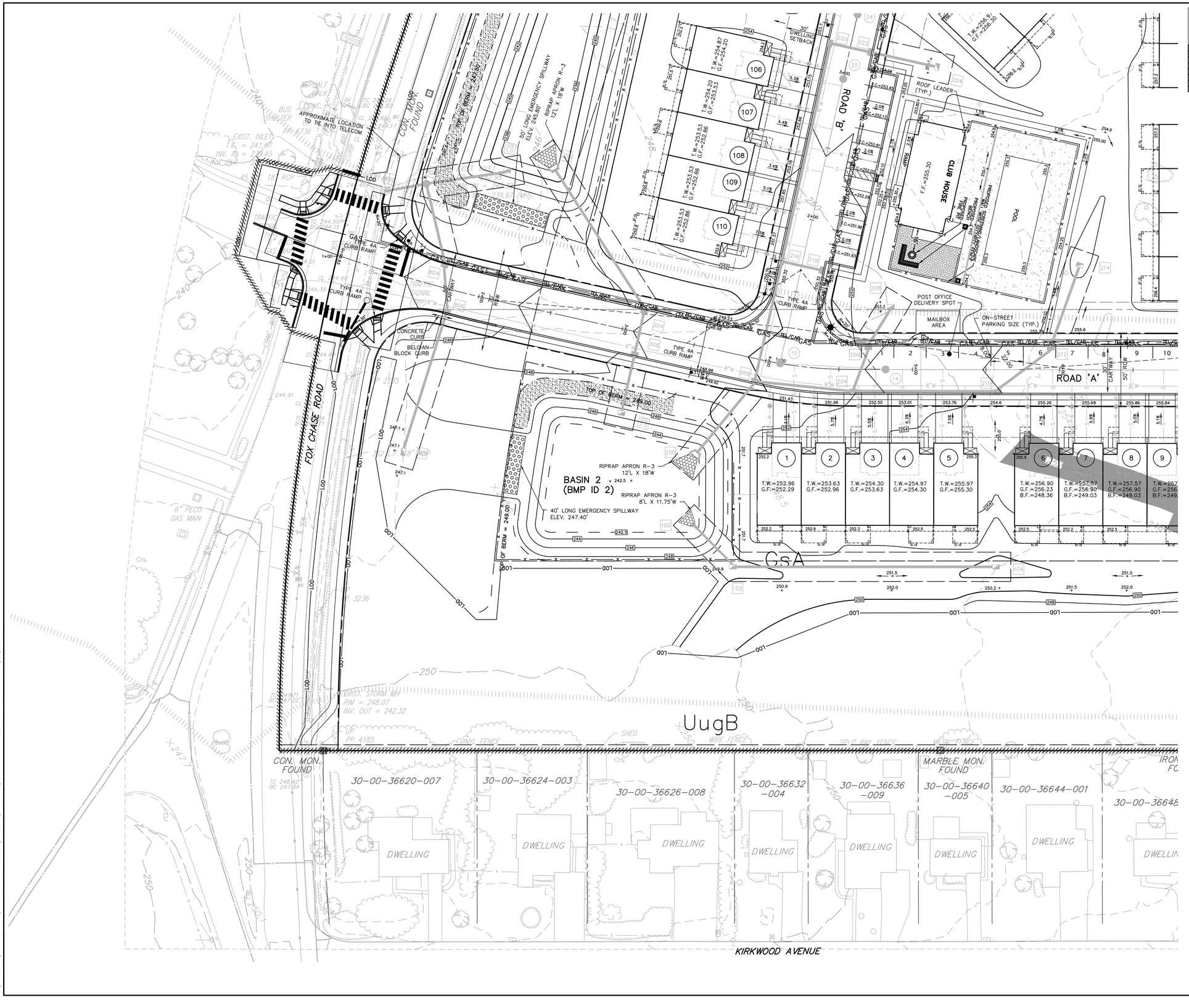
APPLICATION NUMBER LD-23-01

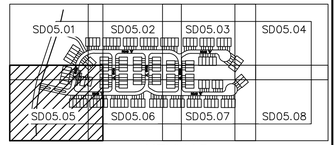
GRADING PLAN

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 3-24-23	SCALE: 1" = 30'
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-05-GRADE
REF. NO.:	SD05.04
SHEET NO.:	15 OF 62

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- SANITARY MAIN AND MANHOLE w/ STRUCTURE NUMBER
- 8"W PROPOSED 8" WATERMAIN

NOTE 1 CLUBHOUSE IS SCHEMATIC IN THE PLAN AND FINAL LAYOUT WILL BE HANDLED AT BUILDING PERMIT STAGE.

GRAPHIC SCALE
30 0 30 60
(IN FEET)
1" = 30 FEET

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COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL ENGINEER — JEFFREY M. MAUDER

REV.	DATE	DESCRIPTION	DRAWN
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APPLICATION NUMBER LD-23-01 PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT—NOT TO BE RECORDED

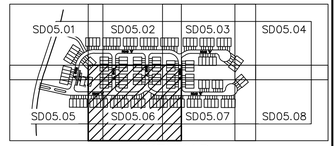
GRADING PLAN

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 3-24-23	SCALE: 1"= 30'
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-05-GRADE
REF. NO.:	SD05.05
SHEET NO.:	16 OF 62

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JEFFREY M. MAUDEN
ENGINEER
PROJECT MANAGER

REV.	DATE	DESCRIPTION	DRAWN
3	05/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
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GRADING PLAN

SISTERS OF ST. BASIL

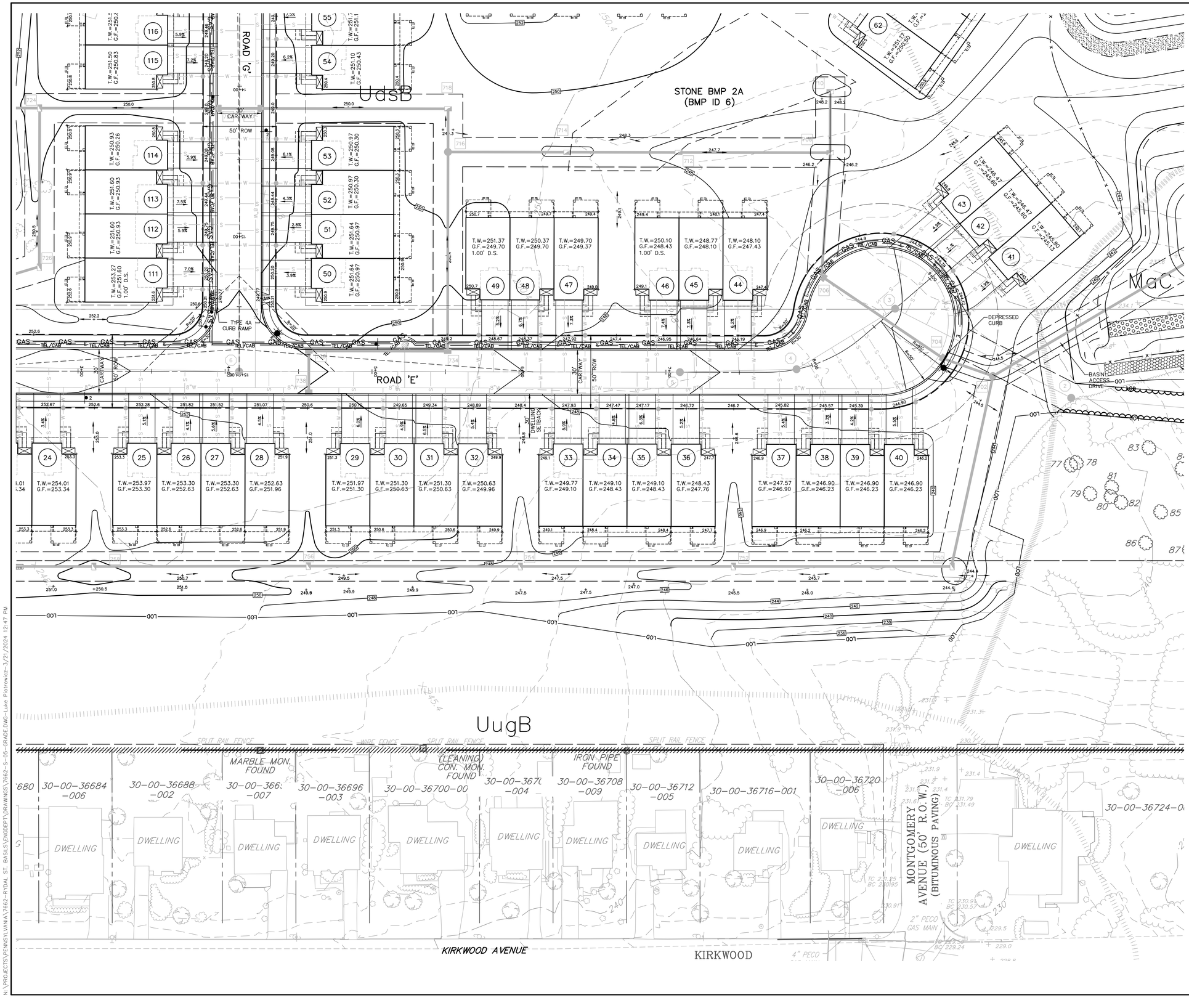
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

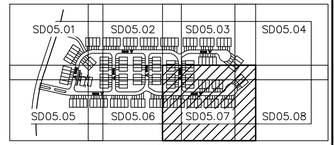
PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT–NOT TO BE RECORDED

APPLICATION NUMBER LD-23-01

DATE: 3-24-23	SCALE: 1"= 30'
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-05-GRADE
REF. NO.:	SD05.06
SHEET NO.:	17 OF 62

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KEYMAP

LEGEND

- TW= TOP OF WALL ELEVATION
- BF= BASEMENT FLOOR ELEVATION
- GF= GARAGE FLOOR ELEVATION
- EXISTING STRUCTURE
- EXISTING DIRT/GRAVEL ROAD
- EXISTING STREET SIGN
- EXISTING UTILITY POLE
- EXISTING R.O.W.
- EXISTING CARTWAY
- STREAM LINE
- EXISTING CENTER LINE
- EXISTING BOUNDARY LINE
- SOILS LINE
- EXISTING OVERHEAD UTILITY (ELECTRIC, PHONE, CABLE, ETC.)
- EXISTING CONCRETE MONUMENT
- EXISTING IRON PIN
- EXISTING SIGN
- EXISTING UTILITY POLE
- EXISTING INLET
- EXISTING SPOT ELEVATION
- EXISTING TREE
- TOWNSHIP RIPARIAN BUFFER – ZONE 1
- TOWNSHIP RIPARIAN BUFFER – ZONE 2
- STEEP SLOPES 15% TO 25%
- STEEP SLOPES > 25%
- 200 EXISTING CONTOURS
- 100 PROPOSED CONTOURS
- + 100.0 EXISTING SPOT ELEVATION
- + 100.00 PROPOSED SPOT ELEVATION
- EXISTING TREE LINE
- EXISTING VEGETATION
- PROPOSED TREE LINE
- EXISTING INLET W/ STORM SEWER
- PROPOSED STORM SEWER W/ STRUCTURE NUMBER
- 11 / 10 PROPOSED STORM MANHOLE W/ STRUCTURE NUMBER
- 12 PROPOSED FLARED END SECTION W/STRUCTURE NUMBER
- U PROPOSED UNDERGROUND UTILITIES (ELECTRIC, PHONE, CABLE, ETC.)
- X X PROPOSED SPLIT RAIL FENCE
- PROPOSED SIGHT TRIANGLE
- W PROPOSED WATER LATERAL
- S PROPOSED SANITARY LATERAL W/ CLEANOUT
- TREE PROTECTION FENCE
- RIP-RAP APRON
- 3 LOT NUMBER
- LIGHT POST
- STREET SIGN
- 1 DO NOT ENTER SIGN
- 2 SPEED LIMIT SIGN
- 3 PEDESTRIAN CROSSING SIGN
- 4 STOP SIGN 30"X30"
- 5 NO PARKING SIGN
- STOP BAR
- WETLANDS
- WATERS OF THE U.S.
- 6 SANITARY MAIN AND MANHOLE W/ STRUCTURE NUMBER
- 8"W PROPOSED 8" WATERMAIN

GRAPHIC SCALE
30 0 30 60
(IN FEET)
1" = 30 FEET

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COMMONWEALTH OF PENNSYLVANIA — JEFFREY M. MAUDER — ENGINEER — REGISTERED PROFESSIONAL

REV.	DATE	DESCRIPTION	
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTERS	ESE

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT—NOT TO BE RECORDED

APPLICATION NUMBER LD-23-01

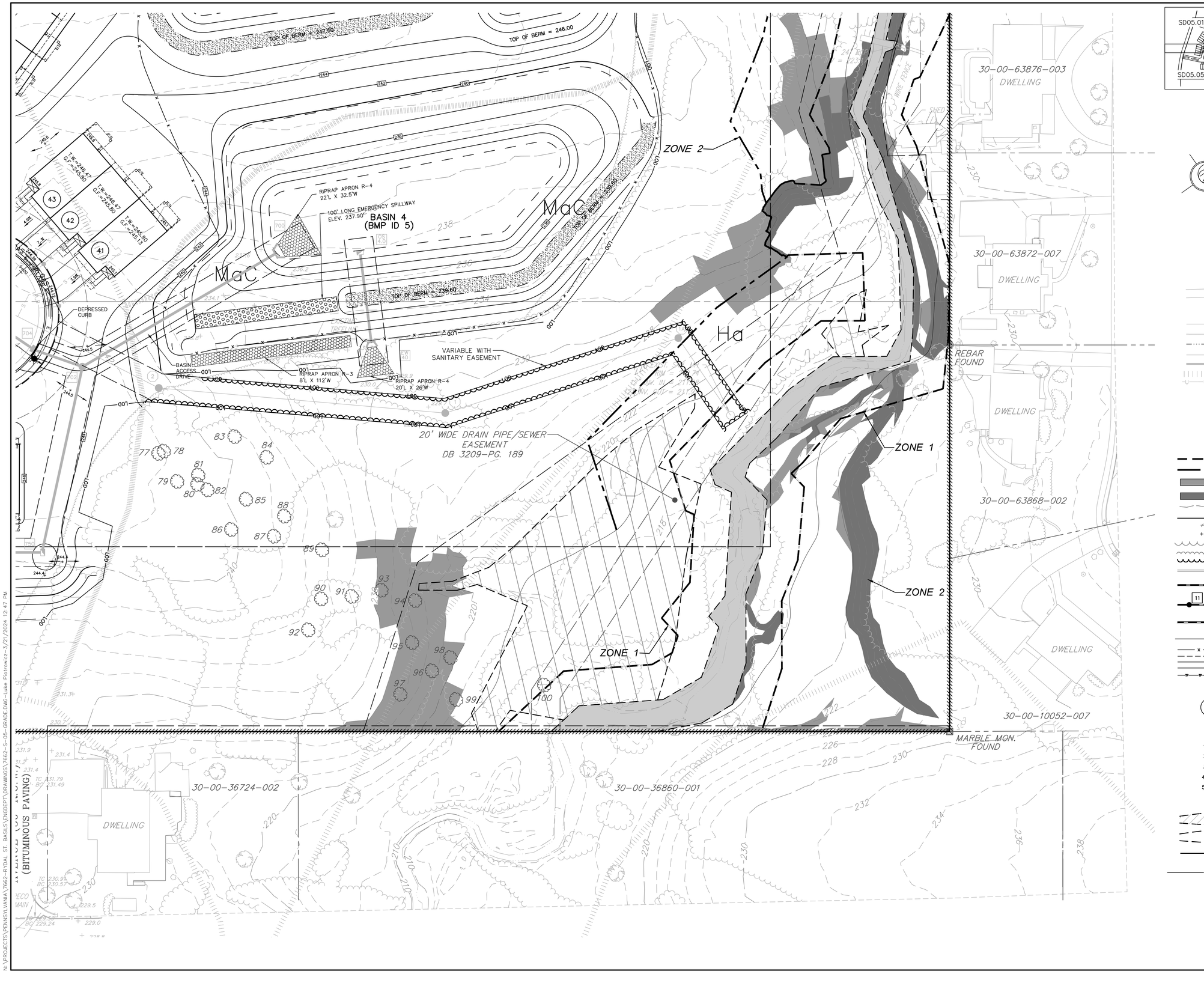
GRADING PLAN

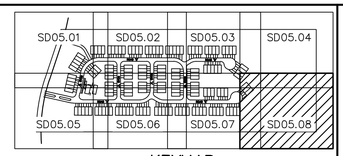
SISTERS OF ST. BASIL

ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 3-24-23	SCALE: 1"= 30'
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-05-GRADE
REF. NO.: **SD05.07**	
SHEET NO.: **18** OF **62**	

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KEYMAP

LEGEND

- TW= TOP OF WALL ELEVATION
- BF= BASEMENT FLOOR ELEVATION
- GF= GARAGE FLOOR ELEVATION
- EXISTING STRUCTURE
- EXISTING DIRT/GRAVEL ROAD
- EXISTING STREET SIGN
- EXISTING UTILITY POLE
- EXISTING R.O.W.
- EXISTING CARTWAY
- STREAM LINE
- EXISTING CENTER LINE
- EXISTING BOUNDARY LINE
- SOILS LINE
- EXISTING OVERHEAD UTILITY (ELECTRIC, PHONE, CABLE, ETC.)
- EXISTING CONCRETE MONUMENT
- EXISTING IRON PIN
- EXISTING SIGN
- EXISTING UTILITY POLE
- EXISTING INLET
- x 409.4 EXISTING SPOT ELEVATION
- EXISTING TREE
- TOWNSHIP RIPARIAN BUFFER - ZONE 1
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- x x PROPOSED SPLIT RAIL FENCE
- PROPOSED SIGHT TRIANGLE
- W PROPOSED WATER LATERAL
- S PROPOSED SANITARY LATERAL w/ CLEANOUT
- TREE PROTECTION FENCE
- RIP-RAP APRON
- 3 LOT NUMBER
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- 1 DO NOT ENTER SIGN
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- WETLANDS
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- 6 SANITARY MAIN AND MANHOLE w/ STRUCTURE NUMBER
- 8"W PROPOSED 8" WATERMAIN

GRAPHIC SCALE
30 0 30 60
(IN FEET)
1" = 30 FEET

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COMMONWEALTH OF PENNSYLVANIA
JEFFREY M. MAUDEN
ENGINEER
No. PE082170

REV.	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTER COMMENTS	ESE

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT–NOT TO BE RECORDED

APPLICATION NUMBER LD-23-01

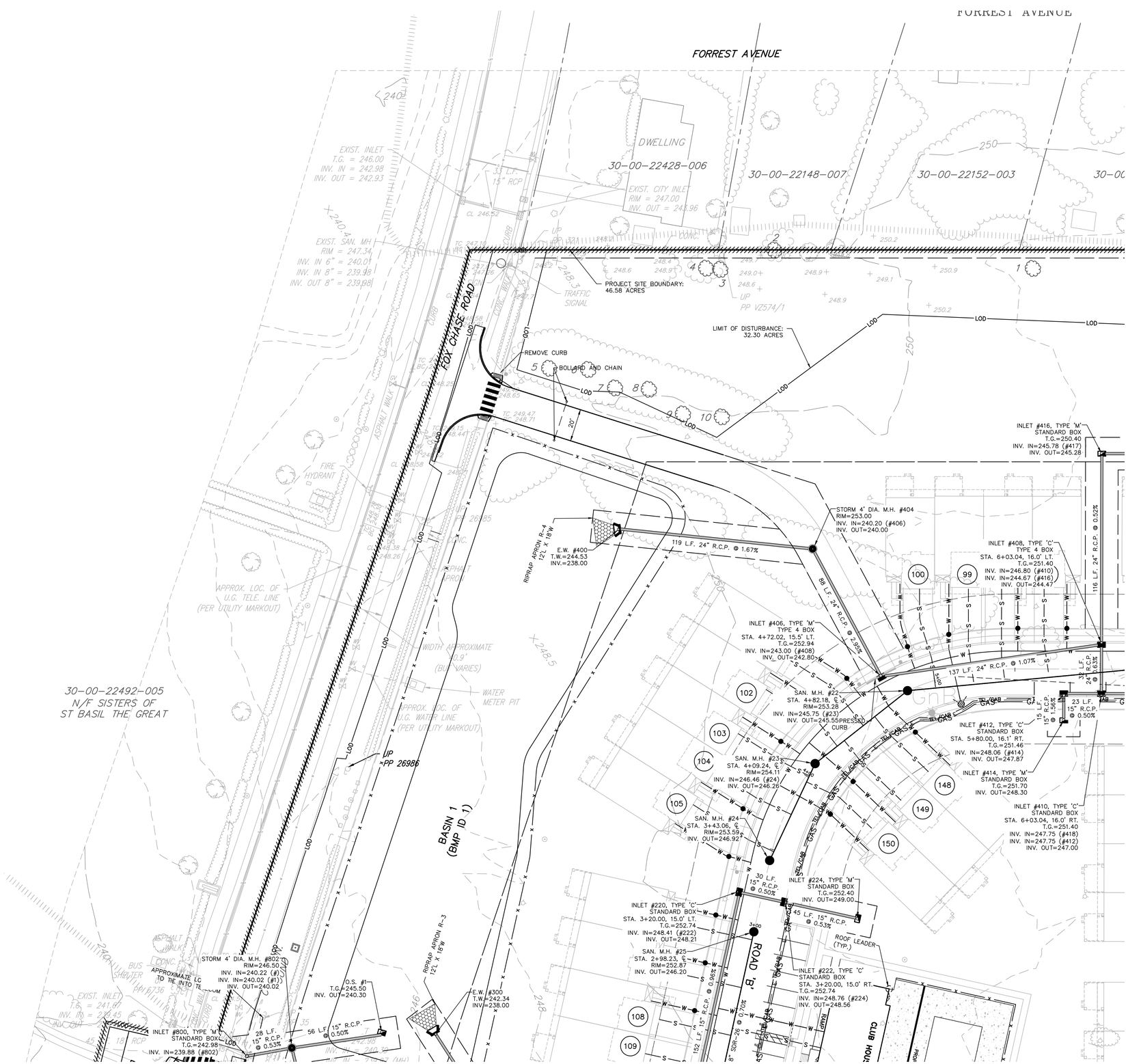
GRADING PLAN

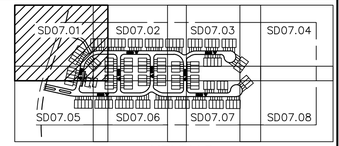
SISTERS OF ST. BASIL

ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 3-24-23	SCALE: 1"= 30'
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-05-GRADE
REF. NO.: **SD05.08**	
SHEET NO.: **19** OF **62**	

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KEYMAP

NOTE: ALL WORK WILL BE PERFORMED IN STRICT COMPLIANCE WITH THE PROVISIONS OF PENNSYLVANIA STATE ACT 287, GOVERNING THE INSTALLATION OF PUBLIC UTILITIES.

NOTE: ADJACENT LATERALS WYES INSTALLED IN AN 8 INCH DIAMETER SANITARY SEWER MAIN SHALL BE LOCATED A MINIMUM OF 4 FEET APART.

UTILITY OWNERSHIP

GAS AND ELECTRIC	PECO
PHONE AND CABLE	VERIZON
WATER	AQUA

LEGEND

- EXISTING DIRT/GRAVEL ROAD
- EXISTING R.O.W.
- EXISTING CARTWAY
- STREAM LINE
- EXISTING CENTER LINE
- EXISTING BOUNDARY LINE
- SOILS LINE
- EXISTING OVERHEAD UTILITY (ELECTRIC, PHONE, CABLE, ETC.)
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- EXISTING INLET
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- EXISTING TREE LINE
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- PROPOSED TREE LINE
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- PROPOSED SANITARY LATERAL w/ CLEANOUT
- 3 — LOT NUMBER
- WETLANDS
- WATERS OF THE U.S.
- 6 — SANITARY MAIN AND MANHOLE w/ STRUCTURE NUMBER
- 8"W — PROPOSED 8" WATERMAIN
- STREET SIGN
- STOP SIGN
- PROPOSED FIRE HYDRANT

GRAPHIC SCALE
30 0 30 60
(IN FEET)
1" = 30 FEET

COMMONWEALTH OF PENNSYLVANIA
PROFESSIONAL ENGINEER
JEFFREY M. MAUDER
ENGINEER
PROJECT MANAGER
Jeff Mauder

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REC.	DATE	DESCRIPTION
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS
2	10/11/23	REVISIONS PER TOWNSHIP COMMENTS
1	7/24/23	TOWNSHIP REVIEW LETTERS

DRAWN: ESE ESE ESE ESE

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT–NOT TO BE RECORDED

UTILITY PLAN

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

APPLICATION NUMBER LD-23-01

DATE: 3-24-23	SCALE: 1"= 30'
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-07-UTILITY
REF. NO.: **SD07.01**	
SHEET NO.: **20** OF **62**	

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FORREST AVENUE

INV. OUT = 238.88

CURB FOR GRAPHICAL REPRESENTATION (TYP)

FORREST AVENUE

DWELLING

DWELLING

DWELLING

DWELLING

DWELLING

DWELLING

DWELLING

30-00-22152-003

30-00-22156-008

30-00-22160-004

30-00-22164-009

30-00-22168-005

30-00-22172-001

30-00-22176-006

30-00-22180-002

IRON PIPE FOUND

SHED

SPLIT RAIL FENCE

VINYL FENCE

LOD

INLET #416, TYPE 'M'
STANDARD BOX
T.G.=250.40
INV. IN=245.78 (#417)
INV. OUT=245.28

INLET #417, TYPE 'M'
STANDARD BOX
T.G.=250.00
INV. OUT=246.65

175 L.F. 18" R.C.P. @ 0.50%

INLET #608, TYPE 'M'
STANDARD BOX
T.G.=250.00
INV. OUT=246.70

GnB

INLET #408, TYPE 'C'
TYPE 4 BOX
STA. 6+03.04, 16.0' LT.
T.G.=251.40
INV. IN=246.80 (#410)
INV. IN=244.67 (#416)
INV. OUT=244.47

116 L.F. 24" R.C.P. @ 0.52%

SAN. M.H. #18
STA. 6+24.37, ℄
RIM=251.98
INV. IN=244.56 (#22)
INV. OUT=244.36

38 L.F.
15" R.C.P.
@ 0.82%

INLET #426, TYPE 'C'
STANDARD BOX
STA. 7+78.00, 16.0' LT.
T.G.=253.68
INV. OUT=250.29

SAN. M.H. #20
STA. 8+82.05, ℄
RIM=255.57
INV. IN=242.55 (#18)
INV. OUT=242.35

INLET #516, TYPE 'C'
STANDARD BOX
STA. 10+97.98, 15.0' LT.
T.G.=252.56
INV. OUT=249.06

SAN. M.H. #19
STA. 11+77.87, ℄
RIM=251.85
INV. IN=240.27 (#20)
INV. OUT=240.07

INLET #510, TYPE 'C'
STANDARD BOX
STA. 12+45.03, 14.9' LT.
T.G.=250.36
INV. IN=246.96 (#512)
INV. OUT=246.71

137 L.F. 24" R.C.P. @ 1.07%

258 L.F. 8" SDR-26 @ 0.70%

296 L.F. 8" SDR-26 @ 0.70%

30 L.F.
15" R.C.P.
@ 0.50%

75 L.F. 15" R.C.P.
@ 1.53%

97 L.F. 8" SDR-26
@ 1.52%

69 L.F. 18" R.C.P.
@ 0.51%

ROAD 'B'

INLET #412, TYPE 'C'
STANDARD BOX
STA. 5+80.00, 16.1' RT.
T.G.=251.46
INV. IN=248.06 (#414)
INV. OUT=247.87

INLET #414, TYPE 'M'
STANDARD BOX
T.G.=251.70
INV. OUT=248.30

23 L.F.
15" R.C.P.
@ 0.50%

15 L.F.
15" R.C.P.
@ 1.56%

93 L.F. 18" R.C.P. @ 1.38%

461 L.F. 15" R.C.P. @ 0.88%

INLET #424, TYPE 'C'
STANDARD BOX
STA. 7+57.25, 16.0' RT.
T.G.=253.37
INV. IN=249.97 (#426)
INV. OUT=249.77

STORM 4' DIA. M.H. #418
STA. 6+95.84, 15.4' RT.
RIM=252.63
INV. IN=249.23 (#424)
INV. IN=249.23 (#420)
INV. OUT=249.03

INLET #410, TYPE 'C'
STANDARD BOX
STA. 6+03.04, 16.0' RT.
T.G.=251.40
INV. IN=247.75 (#418)
INV. IN=247.75 (#412)
INV. OUT=247.00

INLET #420, TYPE 'C'
STANDARD BOX
STA. 1+81.89, 15.0' RT.
T.G.=253.70
INV. IN=250.15 (#422)
INV. OUT=249.94

67 L.F. 15" R.C.P.
@ 1.07%

30 L.F.
15" R.C.P.
@ 0.51%

INLET #422, TYPE 'C'
STANDARD BOX
STA. 1+81.89, 15.0' LT.
T.G.=253.70
INV. OUT=250.30

SAN. M.H. #26
STA. 1+91.89, ℄
RIM=254.39
INV. OUT=247.72

ROAD 'C'

INLET #744, TYPE 'M'
STANDARD BOX
T.G.=251.80
INV. OUT=248.30

123 L.F. 15" R.C.P. @ 0.50%

SAN. M.H. #9
STA. 13+06.83, ℄
RIM=250.13
INV. OUT=243.46

INLET #514, TYPE 'C'
STANDARD BOX
STA. 10+97.96, 15.0' RT.
T.G.=252.56
INV. IN=248.91 (#516)
INV. OUT=248.71

INLET #512, TYPE 'C'
STANDARD BOX
STA. 11+75.00, 15.0' RT.
T.G.=251.60
INV. IN=248.30 (#514)
INV. OUT=248.10

SAN. M.H. #17
STA. 12+79.54, ℄
RIM=250.32
INV. IN=238.59 (#19)
INV. IN=238.59 (#27)
INV. OUT=238.39

SAN. M.H. #16
STA. 13+24.10, ℄
RIM=249.64
INV. IN=238.08 (#17)
INV. OUT=237.88

ROAD 'F'

INLET #742, TYPE 'C'
STANDARD BOX
STA. 11+93.00, 15.0' LT.
T.G.=251.35
INV. IN=247.69 (#744)
INV. OUT=247.49

INLET #740, TYPE 'C'
STANDARD BOX
STA. 11+93.00, 15.0' RT.
T.G.=251.35
INV. IN=247.34 (#742)
INV. OUT=246.59

193 L.F. 8" SDR-26 @ 0.70%

30 L.F.
15" R.C.P.
@ 0.50%

133 L.F. 24" R.C.P. @ 1.64%

INLET #724, TYPE 'M'
STANDARD BOX
T.G.=248.80
INV. IN=244.67 (#726)
INV. IN=244.41 (#740)
INV. OUT=243.91

INLET #722, TYPE 'C'
STANDARD BOX
STA. 14+15.10, 15.0' RT.
T.G.=248.05
INV. IN=243.30 (#724)
INV. OUT=243.10

121 L.F. 30" R.C.P. @ 0.50%

30 L.F.
30" R.C.P.
@ 0.50%

ROAD 'G'

208 L.F. 15" R.C.P. @ 0.50%

208 L.F. 8" SDR-26 @ 0.70%

NOTE: ADJACENT LATERALS WYES INSTALLED IN AN 8 INCH DIAMETER SANITARY SEWER MAIN SHALL BE LOCATED A MINIMUM OF 4 FEET APART.

KEYMAP

SD07.01 SD07.02 SD07.03 SD07.04
SD07.05 SD07.06 SD07.07 SD07.08

LEGEND

- EXISTING DIRT/GRAVEL ROAD
- EXISTING R.O.W.
- EXISTING CARTWAY
- STREAM LINE
- EXISTING CENTER LINE
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- EXISTING TREE
- EXISTING TREE LINE
- EXISTING VEGETATION
- PROPOSED TREE LINE
- EXISTING INLET W/ STORM SEWER
- 10 PROPOSED STORM SEWER W/ STRUCTURE NUMBER
- 11 PROPOSED STORM MANHOLE W/ STRUCTURE NUMBER
- 12 PROPOSED FLARED END SECTION W/STRUCTURE NUMBER
- PROPOSED UNDERGROUND UTILITIES (ELECTRIC, PHONE, CABLE, ETC.)
- PROPOSED SPLIT RAIL FENCE
- PROPOSED WATER LATERAL
- PROPOSED SANITARY LATERAL W/ CLEANOUT
- 3 LOT NUMBER
- WETLANDS
- WATERS OF THE U.S.
- SANITARY MAIN AND MANHOLE W/ STRUCTURE NUMBER
- 6 8"W PROPOSED 8" WATERMAIN
- STREET SIGN
- STOP SIGN
- PROPOSED FIRE HYDRANT

GRAPHIC SCALE
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(IN FEET)
1" = 30 FEET

N:\PROJECTS\PENNSYLVANIA\7662-RYDAL ST. BASILS\ENGDEPT\DRAWINGS\7662-S-07-UTILITY.DWG-Lake Plotrwize-3/21/2024 12:47 PM

APPLICATION NUMBER LD-23-01

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT-NOT TO BE RECORDED

COMMONWEALTH OF PENNSYLVANIA — JEFFREY M. MAUDER — ENGINEER — No. PE039574 — REGISTERED PROFESSIONAL

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UTILITY PLAN

SISTERS OF ST. BASIL

ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 3-24-23	SCALE: 1" = 30'
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-07-UTILITY
REF. NO.:	SD07.02
SHEET NO.:	21 OF 62

FORREST AVENUE

ASCOT ROAD (BITUMINOUS PAVING)

DWELLING

30-00-22176-006

SHED

30-00-22180-002

30-00-22184-007

30-00-22188-003

30-00-22192-008

30-00-22196-004

30-00-22200-009

MON. FOUND

BENT IRON PIPE FOUND

VINYL FENCE

WIRE FENCE

INLET #608, TYPE 'M' STANDARD BOX T.G.=250.00 INV. OUT=246.70

INLET #606, TYPE 'M' STANDARD BOX T.G.=250.20 INV. IN=245.65 (#608) INV. OUT=245.40

INLET #604, TYPE 'M' STANDARD BOX T.G.=249.80 INV. IN=244.68 (#606) INV. OUT=244.48

INLET #602, TYPE 'M' STANDARD BOX T.G.=248.50 INV. IN=243.69 (#604) INV. OUT=243.49

211 L.F. 15" PERFORATED PIPE @ 0.50%

145 L.F. 18" PERFORATED PIPE @ 0.50%

158 L.F. 18" R.C.P. @ 0.50%

50 L.F. 18" R.C.P. @ 0.50%

RIPRAP APRON R-3 9'L X 58'W

E.W. #600 T.W.=245.44 INV.=243.00

RIPRAP APRON R-3 8'L X 12.5'W

45' LONG EMERGENCY SPILLWAY ELEV. 245.80'

E.W. #10 T.W.=244.44 INV.=242.00

39 L.F. 18" R.C.P. @ 1.00%

O.S. #3A-1 T.G.=245.80 INV. OUT=242.50

RIPRAP APRON R-4 12'L X 18'W

E.W. #500 T.W.=245.71 INV.=243.00

75 L.F. 24" R.C.P. @ 0.52%

127 L.F. 24" R.C.P. @ 0.50%

BASIN 3A (BMP ID 4)

BASIN ACCESS DRIVE

DEPRESSED CURB

83 L.F. 8" SDR-26 @ 0.70%

SAN. M.H. #29 STA. 4+63.49, ℄ RIM=250.33 INV. IN=241.73 (#30) INV. OUT=241.53

SAN. M.H. #30 STA. 5+47.24, ℄ RIM=248.98 INV. OUT=242.31

28 L.F. 8" SDR-26 @ 0.70%

INLET #502, TYPE 'C' STANDARD BOX STA. 5+39.59, 45.4' LT. T.G.=247.83 INV. IN=243.59 (#504) INV. OUT=243.39

INLET #520, TYPE 'C' STANDARD BOX STA. 4+26.75, 15.0' LT. T.G.=250.40 INV. OUT=246.90

30 L.F. 15" R.C.P. @ 6.42%

46 L.F. 8" SDR-26 @ 0.71%

227 L.F. 8" SDR-26 @ 0.70%

SAN. M.H. #28 STA. 4+16.75, ℄ RIM=251.03 INV. IN=241.20 (#29) INV. OUT=241.00

INLET #504, TYPE 'C' STANDARD BOX STA. 4+26.75, 15.0' RT. T.G.=250.40 INV. IN=244.98 (#520) INV. IN=244.72 (#506) INV. OUT=244.22

207 L.F. 18" R.C.P. @ 0.51%

INLET #506, TYPE 'C' STANDARD BOX STA. 2+19.42, 14.6' RT. T.G.=251.10 INV. IN=245.97 (#508) INV. OUT=245.77

INLET #508, TYPE 'C' STANDARD BOX STA. 1+51.00, 15.0' RT. T.G.=250.07 INV. IN=246.36 (#510) INV. IN=246.41 (#518) INV. OUT=246.26

SAN. M.H. #27 STA. 1+89.29, ℄ RIM=251.12 INV. IN=239.41 (#28) INV. OUT=239.21

30 L.F. 15" R.C.P. @ 0.53%

89 L.F. 8" SDR-26 @ 0.70%

INLET #518, TYPE 'C' STANDARD BOX STA. 1+51.00, 15.0' LT. T.G.=250.07 INV. OUT=246.57

INLET #510, TYPE 'C' STANDARD BOX STA. 12+45.03, 14.9' LT. T.G.=250.36 INV. IN=246.96 (#512) INV. OUT=246.71

75 L.F. 15" R.C.P. @ 1.53%

SAN. M.H. #19 STA. 11+77.87, ℄ RIM=251.85 INV. IN=240.27 (#20) INV. OUT=240.07

97 L.F. 8" SDR-26 @ 1.32%

69 L.F. 18" R.C.P. @ 0.51%

59 L.F. 18" R.C.P. @ 0.50%

INLET #512, TYPE 'C' STANDARD BOX STA. 11+75.00, 15.0' RT. T.G.=251.60 INV. IN=248.30 (#514) INV. OUT=248.10

SAN. M.H. #17 STA. 12+79.54, ℄ RIM=250.32 INV. IN=238.59 (#19) INV. IN=238.59 (#27) INV. OUT=238.39

77 L.F. 15" R.C.P. @ 0.53%

44 L.F. 8" SDR-26 @ 0.70%

SAN. M.H. #16 STA. 13+24.10, ℄ RIM=249.64 INV. IN=238.08 (#17) INV. OUT=237.88

ROAD 'D'

ROAD 'G'

INLET #724, TYPE 'M' STANDARD BOX T.G.=248.80 INV. IN=244.67 (#726) INV. IN=244.41 (#740) INV. OUT=243.91

INLET #722, TYPE 'C' STANDARD BOX STA. 14+15.10, 15.0' RT. T.G.=248.05 INV. IN=243.30 (#724) INV. OUT=243.10

30 L.F. 30" R.C.P. @ 0.50%

INLET #720, TYPE 'C' STANDARD BOX STA. 14+15.10, 15.0' LT. T.G.=248.30 INV. IN=242.95 (#722) INV. OUT=242.75

121 L.F. 30" R.C.P. @ 0.50%

127 L.F. 30" R.C.P. @ 0.51%

108 L.F. 15" R.C.P. @ 0.50%

INLET #718, TYPE 'M' TYPE 4 BOX T.G.=248.30 INV. IN=242.10 (#720) INV. OUT=241.90

STONE BMP 2A (BMP ID 2)

INLET #710, TYPE 'M' STANDARD BOX T.G.=247.80 INV. OUT=242.80

INLET #708, TYPE 'M' TYPE 4 BOX T.G.=245.80 INV. IN=240.20 (#712) INV. IN=240.20 (#710) INV. OUT=239.70

INLET #712, TYPE 'M' TYPE 4 BOX T.G.=247.80 INV. IN=242.44 (#714) INV. OUT=242.80

29 L.F. 30" R.C.P. @ 0.68%

42 L.F. 30" R.C.P. @ 6.27%

76 L.F. 24" PERFORATED @ 0.47%

103 L.F. 30" R.C.P. @ 2.52%

81 L.F. 30" R.C.P. @ 0.62%

STORM 4' DIA. M.H. #716 RIM=249.00 INV. IN=241.70 (#718) INV. IN=243.50 (#734) INV. OUT=241.50

INLET #714, TYPE 'M' TYPE 4 BOX T.G.=247.70 INV. IN=241.00 (#716) INV. OUT=242.80

NOTE: ADJACENT LATERALS WYES INSTALLED IN AN 8 INCH DIAMETER SANITARY SEWER MAIN SHALL BE LOCATED A MINIMUM OF 4 FEET APART.

KEYMAP

SD07.01 SD07.02 SD07.03 SD07.04 SD07.05 SD07.06 SD07.07 SD07.08

LEGEND

- EXISTING DIRT/GRAVEL ROAD
- EXISTING R.O.W.
- EXISTING CARTWAY
- STREAM LINE
- EXISTING CENTER LINE
- EXISTING BOUNDARY LINE
- SOILS LINE
- EXISTING OVERHEAD UTILITY (ELECTRIC, PHONE, CABLE, ETC.)
- EXISTING UTILITY POLE
- EXISTING FIRE HYDRANT
- EXISTING INLET
- EXISTING TREE
- EXISTING TREE LINE
- EXISTING VEGETATION
- PROPOSED TREE LINE
- EXISTING INLET W/ STORM SEWER
- 10 PROPOSED STORM SEWER W/ STRUCTURE NUMBER
- 11 PROPOSED STORM MANHOLE W/ STRUCTURE NUMBER
- 12 PROPOSED FLARED END SECTION W/STRUCTURE NUMBER
- PROPOSED UNDERGROUND UTILITIES (ELECTRIC, PHONE, CABLE, ETC.)
- PROPOSED SPLIT RAIL FENCE
- PROPOSED WATER LATERAL
- PROPOSED SANITARY LATERAL W/ CLEANOUT
- 3 LOT NUMBER
- WETLANDS
- WATERS OF THE U.S.
- 6 SANITARY MAIN AND MANHOLE W/ STRUCTURE NUMBER
- 8"W PROPOSED 8" WATERMAIN
- STREET SIGN
- STOP SIGN
- PROPOSED FIRE HYDRANT

GRAPHIC SCALE

30 0 30 60

(IN FEET)

1" = 30 FEET

COMMONWEALTH OF PENNSYLVANIA JEFFREY M. MAUDER ENGINEER PROJECT MANAGER

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REV.	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTER COMMENTS	ESE

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT–NOT TO BE RECORDED

APPLICATION NUMBER LD-23-01

UTILITY PLAN

SISTERS OF ST. BASIL

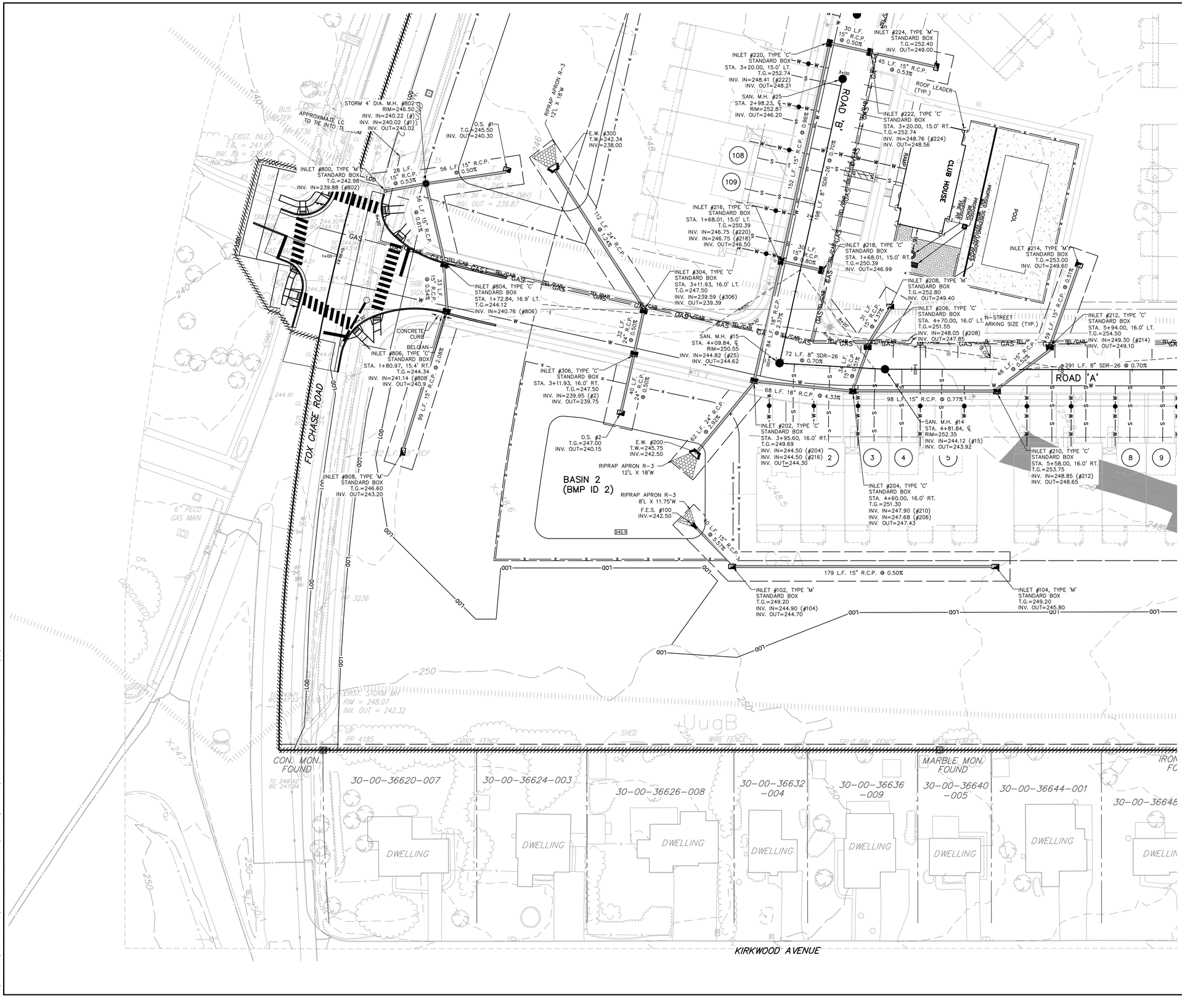
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

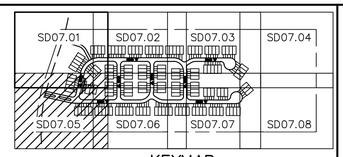
DATE: 3-24-23	SCALE: 1"= 30'
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-07-UTILITY
REF. NO.:	SD07.03
SHEET NO.:	22 OF 62

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FORREST AVENUE

DWELLING
DWELLING
DWELLING
DWELLING
DWELLING
DWELLING
DWELLING
DWELLING
DWELLING
SHED
SHED
SHED
SHED
SHED
SHED
WOOD FENCE
WOOD FENCE
WIRE FENCE
WIRE FENCE
OBSCURED
OBSCURED
OBSCURED





KEYMAP

NOTE: ADJACENT LATERALS WYES INSTALLED IN AN 8 INCH DIAMETER SANITARY SEWER MAIN SHALL BE LOCATED A MINIMUM OF 4 FEET APART.

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GRAPHIC SCALE
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(IN FEET)
1" = 30 FEET

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COMMONWEALTH OF PENNSYLVANIA — JEFFREY M. MAUDER — ENGINEER — PROFESSIONAL

REC.	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/11/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTER	ESE

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT–NOT TO BE RECORDED

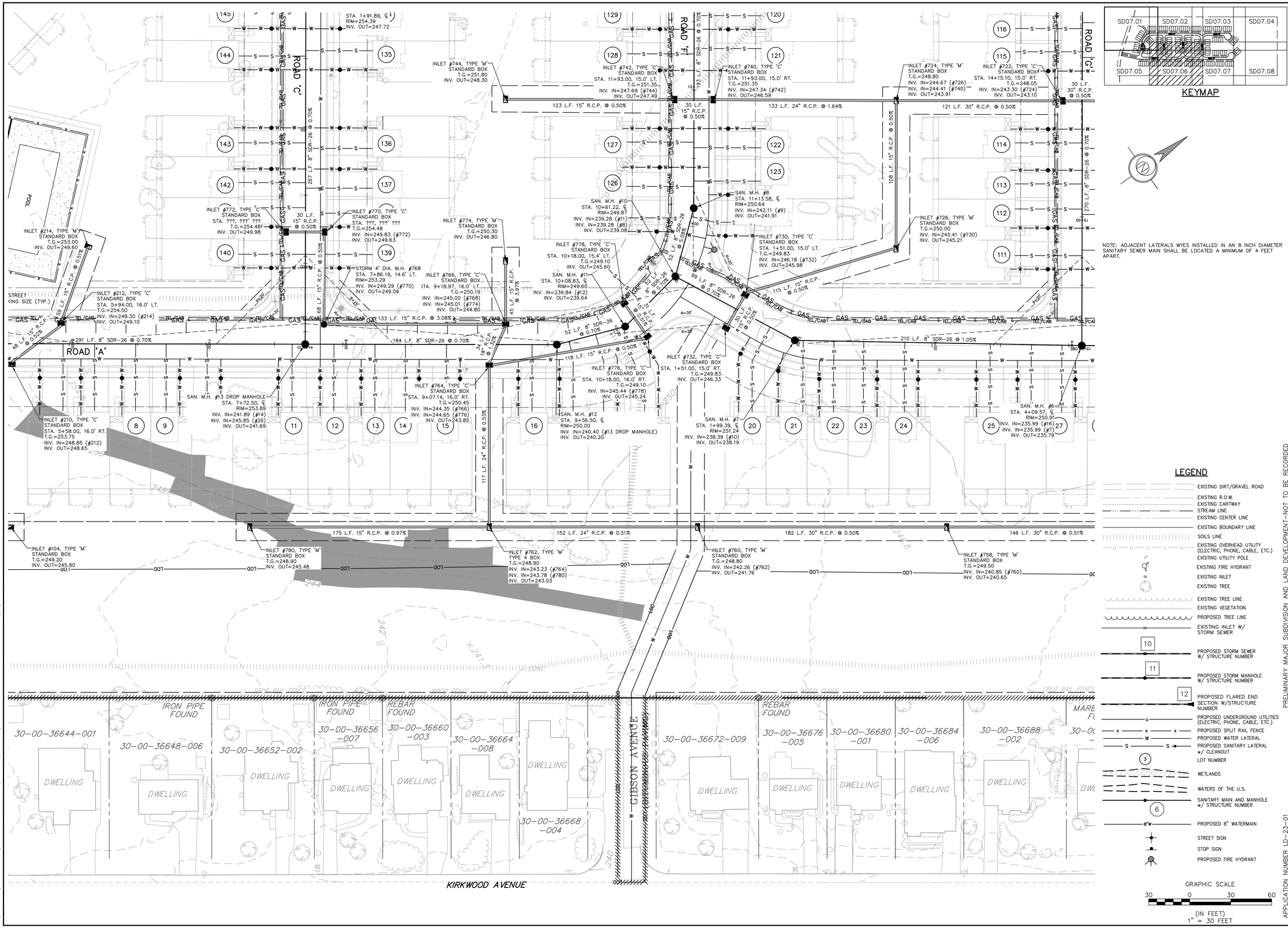
APPLICATION NUMBER LD-23-01

UTILITY PLAN

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 3-24-23	SCALE: 1"= 30'
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-07-UTILITY
REF. NO.:	SD07.05
SHEET NO.:	24 OF 62

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KEYMAP

NOTE: ADJACENT LATERALS WYES INSTALLED IN AN 8 INCH DIAMETER SANITARY SEWER MAIN SHALL BE LOCATED A MINIMUM OF 4 FEET APART.

LEGEND

- EXISTING DIRT/GRAVEL ROAD
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- SOILS LINE
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- PROPOSED SANITARY LATERAL W/ CLEANOUT
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- 8"W — PROPOSED 8" WATERMAIN
- STREET SIGN
- STOP SIGN
- PROPOSED FIRE HYDRANT

GRAPHIC SCALE
30 0 30 60
(IN FEET)
1" = 30 FEET

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JEFFREY M. MAUDEN, ENGINEER, PROJECT MANAGER

REV.	DATE	DESCRIPTION	DRAWN
3	05/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTER	ESE

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT–NOT TO BE RECORDED

APPLICATION NUMBER LD-23-01

UTILITY PLAN

SISTERS OF ST. BASIL

ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 3-24-23	SCALE: 1"= 30'
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-07-UTILITY
REF. NO.:	SD07.06
SHEET NO.:	25 OF 62

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INLET #724, TYPE 'M'
STANDARD BOX
T.G.=248.80
INV. IN=244.67 (#726)
INV. IN=244.41 (#740)
INV. OUT=243.91

INLET #722, TYPE 'C'
STANDARD BOX
STA. 14+15.10, 15.0' RT.
T.G.=248.05
INV. IN=243.30 (#724)
INV. OUT=243.10

INLET #720, TYPE 'C'
STANDARD BOX
STA. 14+15.10, 15.0' LT.
T.G.=248.05
INV. IN=242.95 (#722)
INV. OUT=242.75

INLET #718, TYPE 'M'
TYPE 4 BOX
T.G.=248.30
INV. IN=242.10 (#720)
INV. OUT=241.90

INLET #710, TYPE 'M'
STANDARD BOX
T.G.=247.80
INV. OUT=242.80

INLET #712, TYPE 'M'
TYPE 4 BOX
T.G.=247.80
INV. IN=242.44 (#714)
INV. OUT=242.80

INLET #708, TYPE 'M'
TYPE 4 BOX
T.G.=245.80
INV. IN=240.20 (#712)
INV. IN=240.20 (#710)
INV. OUT=239.70

INLET #714, TYPE 'M'
TYPE 4 BOX
T.G.=247.70
INV. IN=241.00 (#716)
INV. OUT=242.80

STORM 4' DIA. M.H. #716
RIM=249.00
INV. IN=241.70 (#718)
INV. IN=243.50 (#734)
INV. OUT=241.50

INLET #726, TYPE 'M'
STANDARD BOX
T.G.=250.00
INV. IN=245.41 (#730)
INV. OUT=245.21

INLET #706, TYPE 'C'
STANDARD BOX
STA. 8+45.62, 48.9' LT.
T.G.=244.38
INV. IN=238.78 (#708)
INV. OUT=238.58

INLET #736, TYPE 'C'
STANDARD BOX
STA. 4+56.97, 15.0' LT.
T.G.=249.72
INV. IN=246.06 (#738)
INV. OUT=245.86

INLET #734, TYPE 'C'
STANDARD BOX
STA. 5+51.46, 15.0' LT.
T.G.=248.30
INV. IN=245.39 (#736)
INV. OUT=245.19

INLET #704, TYPE 'C'
STANDARD BOX
STA. 8+71.90, 47.4' RT.
T.G.=242.84
INV. IN=237.34 (#706)
INV. OUT=237.14

E.W. #700
T.W.=235.50
INV.=231.00

SAN. M.H. #6
STA. 4+09.57, ℄
RIM=250.91
INV. IN=235.99 (#16)
INV. IN=235.99 (#7)
INV. OUT=235.79

SAN. M.H. #5
STA. 7+09.57, ℄
RIM=246.41
INV. IN=233.69 (#6)
INV. OUT=233.49

SAN. M.H. #4
STA. 7+89.10, ℄
RIM=245.22
INV. IN=232.93 (#5)
INV. OUT=232.73

SAN. M.H. #3
STA. 8+68.93, ℄
RIM=244.07
INV. IN=232.18 (#4)
INV. OUT=231.98

BASIN
SAN. M.H. #2
DRIRIM=241.00
INV. IN=231.04 (#3)
INV. OUT=230.84

INLET #738, TYPE 'C'
STANDARD BOX
STA. 4+56.97, 15.0' RT.
T.G.=249.72
INV. OUT=246.22

STORM 4' DIA. M.H. #702
RIM=244.50
INV. IN=235.95 (#704)
INV. IN=236.20 (#750)
INV. OUT=235.75

INLET #758, TYPE 'M'
STANDARD BOX
T.G.=249.50
INV. IN=240.85 (#760)
INV. OUT=240.65

INLET #756, TYPE 'M'
STANDARD BOX
T.G.=249.00
INV. IN=239.90 (#758)
INV. OUT=239.70

INLET #754, TYPE 'M'
STANDARD BOX
T.G.=246.50
INV. IN=238.97 (#756)
INV. OUT=238.77

INLET #752, TYPE 'M'
STANDARD BOX
T.G.=244.60
INV. IN=238.04 (#754)
INV. OUT=237.84

INLET #750, TYPE 'M'
TYPE 4 BOX
T.G.=243.90
INV. IN=237.10 (#752)
INV. OUT=236.90

STONE BMP 2A
(BMP ID

ROAD 'G'

ROAD 'E'

KIRKWOOD AVENUE

KIRKWOOD

MONTGOMERY AVENUE (50' R.O.W.) (BITUMINOUS PAVING)

MARBLE MON. FOUND

(LEANING) CON. MON. FOUND

IRON PIPE FOUND

DWELLING

30-00-36684-006

30-00-36688-002

30-00-36696-003

30-00-36700-00

30-00-36708-009

30-00-36712-005

30-00-36716-001

30-00-36720-006

30-00-36724-0

SPLIT RAIL FENCE

WIRE FENCE

2" PECO GAS MAIN

4" PECO

KEYMAP

SD07.01 SD07.02 SD07.03 SD07.04
SD07.05 SD07.06 SD07.07 SD07.08

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- W PROPOSED WATER LATERAL
- S S PROPOSED SANITARY LATERAL W/ CLEANOUT
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- WATERS OF THE U.S.
- 6 SANITARY MAIN AND MANHOLE W/ STRUCTURE NUMBER
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- STREET SIGN
- STOP SIGN
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GRAPHIC SCALE
30 0 30 60
(IN FEET)
1" = 30 FEET

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COMMONWEALTH OF PENNSYLVANIA
JEFFREY M. MAUDER
ENGINEER
No. PE082172

REV.	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
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PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT–NOT TO BE RECORDED

APPLICATION NUMBER LD-23-01

UTILITY PLAN

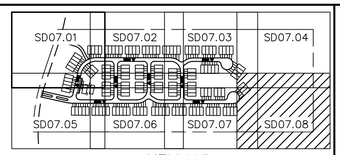
SISTERS OF ST. BASIL

ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 3-24-23	SCALE: 1"= 30'
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-07-UTILITY
REF. NO.:	SD07.07
SHEET NO.:	26 OF 62

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(IN FEET)
1" = 30 FEET

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COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL ENGINEER — JEFFREY M. MAUDER

REV.	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/11/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTERS	ESE

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT–NOT TO BE RECORDED

APPLICATION NUMBER LD-23-01

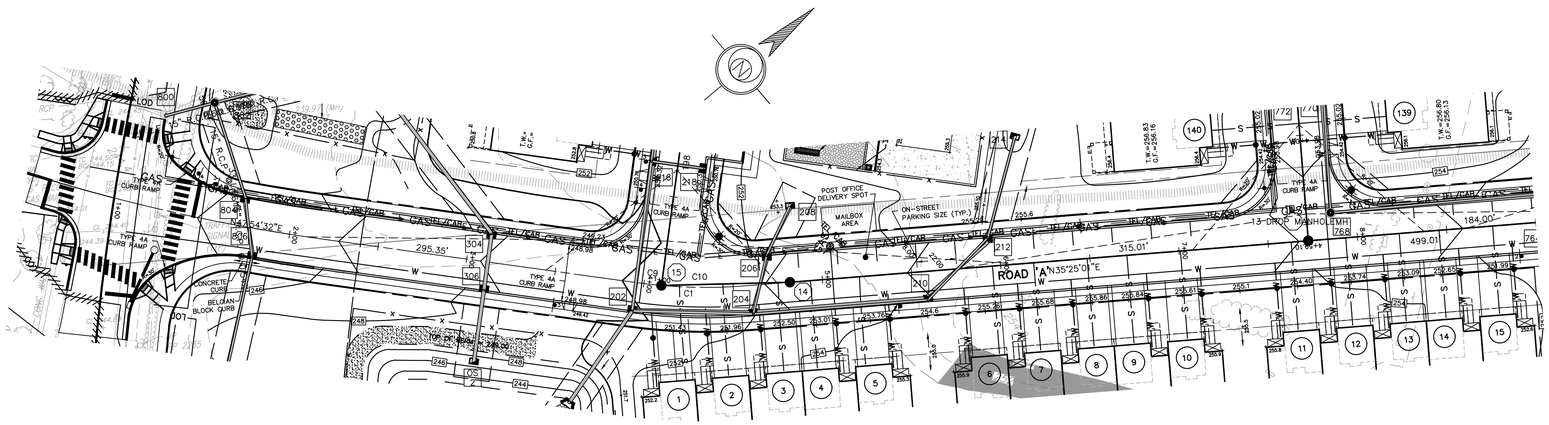
UTILITY PLAN

SISTERS OF ST. BASIL

ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

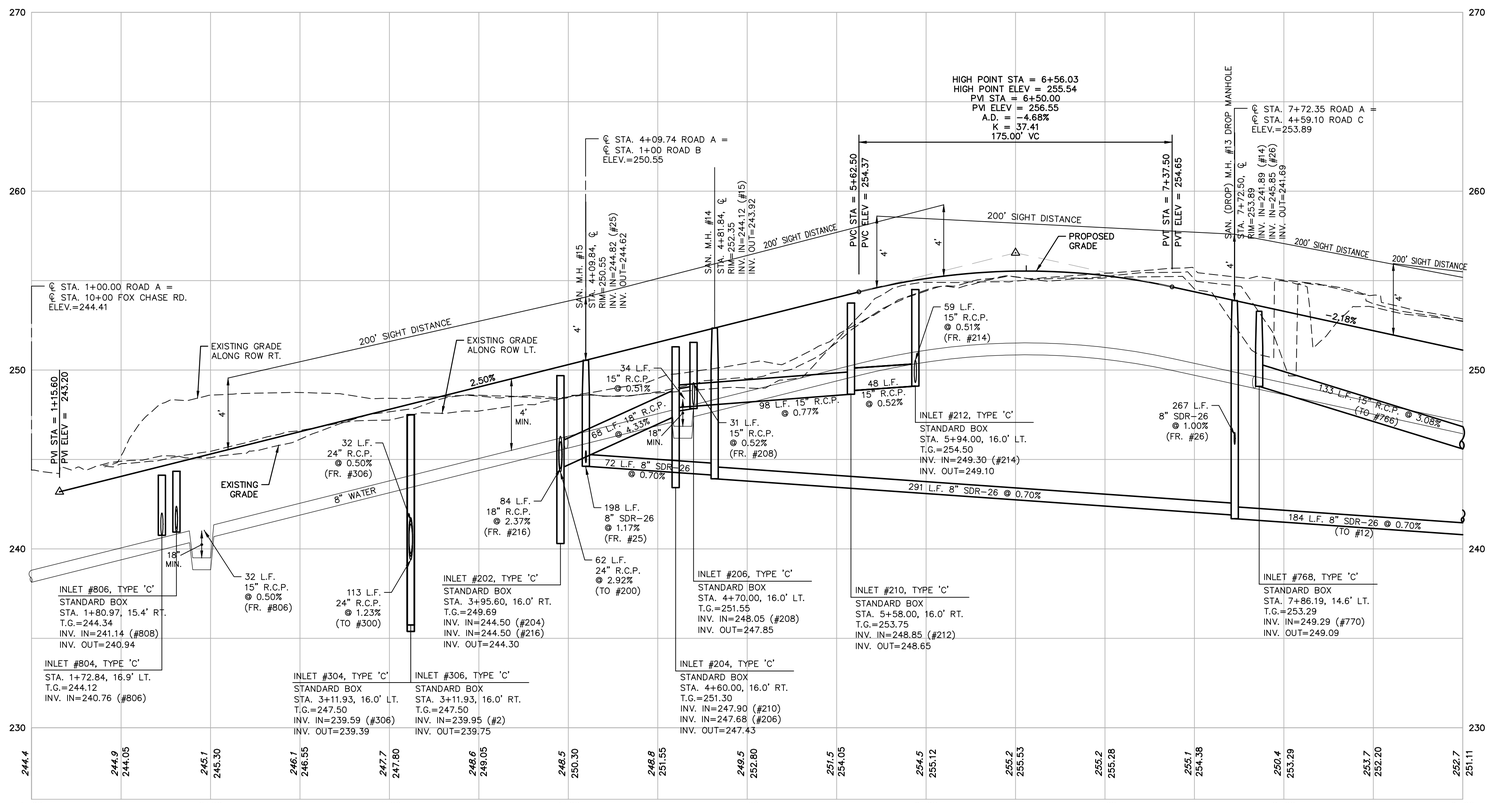
DATE: 3-24-23	SCALE: 1" = 30'
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-07-UTILITY
REF. NO.:	SD07.08
SHEET NO.:	27 OF 62

N:\PROJECTS\PENNSYLVANIA\7662-RYDAL ST. BASILS\ENGDEPT\DRAWINGS\7662-S-07-UTILITY.DWG-Luke Piotrowicz-3/21/2024 12:47 PM



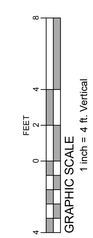
PLAN: ROAD 'A'
SCALE: 1"= 40'

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE	TANGENT
C1	285.00'	62.14'	62.01'	S41°39'46"W	12°29'32"	31.19'
C9	285.00'	14.49'	14.49'	S46°27'09"W	2°54'47"	7.25'
C10	285.00'	47.65'	47.59'	S40°12'23"W	9°34'44"	23.88'



PROFILE: ROAD A
1"=40' Horizontal
1"=4' Vertical

NOTE: SIZE OF THE INLETS AND MANHOLES MAY BE UPDATED BY CONTRACTOR DURING THE CONSTRUCTION PROCESS, AS THE SIZES ARE ONLY GUIDANCE AND MAY NOT BE REFLECTIVE OF THE PIPE ANGLES. GENERAL SIZE SHOP DRAWINGS WILL NEED TO BE REVIEWED BY TOWNSHIP PRIOR TO INSTALLATION.



GRAPHIC SCALE
1 inch = 4 ft. Vertical



GRAPHIC SCALE
1 inch = 40 ft. Horizontal

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JEFFREY M. MAUDER
ENGINEER
No. PE079006
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REC.	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTERS	ESE

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT–NOT TO BE RECORDED

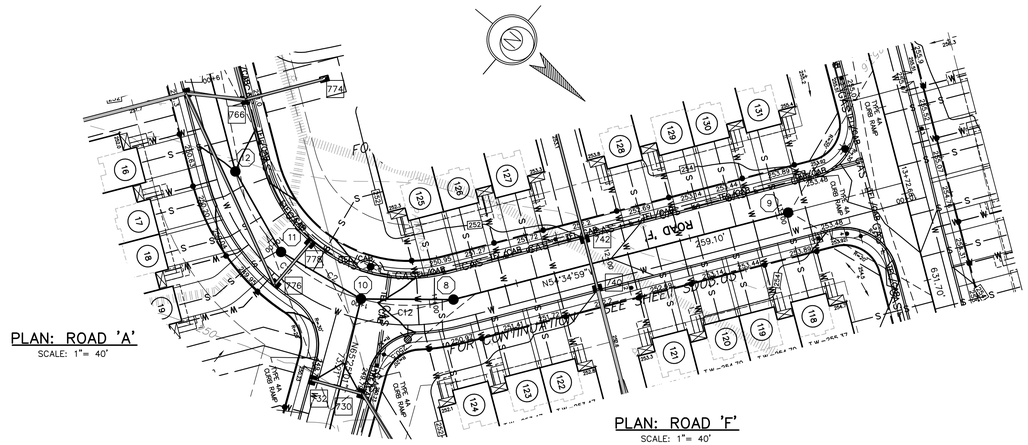
APPLICATION NUMBER LD-23-01

PLAN AND PROFILE
ROAD A STA 1+00 TO 9+00

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 3-24-23	SCALE: AS NOTED
DESIGN: JMM	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-08-PROF
REF. NO.: **SD08.01**	
SHEET NO.: **28** OF **62**	

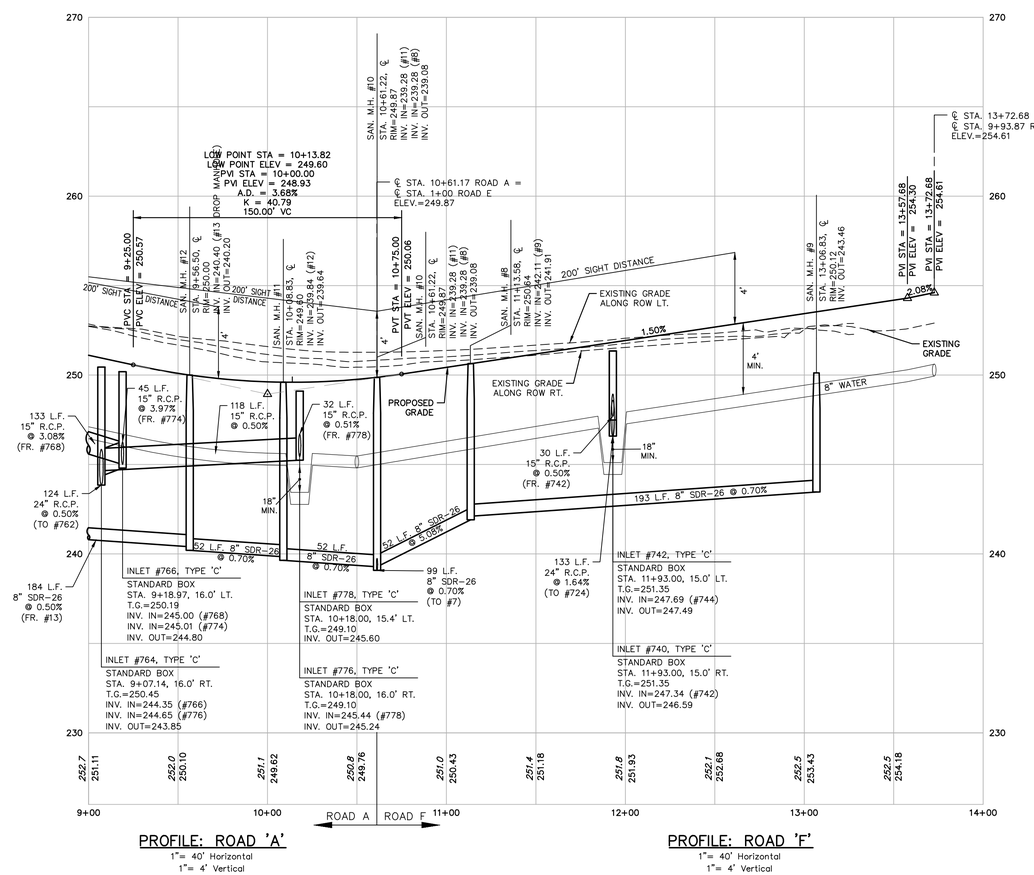
N:\PROJECTS\PENNSYLVANIA\7662-RYDAL ST. BASIL'S\ENGDEPT\DRAWINGS\7662-S-08-PROF.DWG-Lake Plotnowicz-3/21/2024 12:48 PM



PLAN: ROAD 'A'
SCALE: 1"= 40'

PLAN: ROAD 'F'
SCALE: 1"= 40'

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE	TANGENT
C2	100.00'	157.08'	141.42'	S09°34'59"E	90°00'00"	100.00'
C11	100.00'	104.72'	100.00'	S05°25'01"W	60°00'00"	57.74'
C12	100.00'	52.36'	51.76'	S39°34'59"E	30°00'00"	26.79'



PROFILE: ROAD 'A'
1"= 40' Horizontal
1"= 4' Vertical

PROFILE: ROAD 'F'
1"= 40' Horizontal
1"= 4' Vertical

NOTE: SIZE OF THE INLETS AND MANHOLES MAY BE UPDATED BY CONTRACTOR DURING THE CONSTRUCTION PROCESS, AS THE SIZES ARE ONLY GUIDANCE AND MAY NOT BE REFLECTIVE OF THE PIPE ANGLES. GENERAL SIZE SHOP DRAWINGS WILL NEED TO BE REVIEWED BY TOWNSHIP PRIOR TO INSTALLATION.

GRAPHIC SCALE
1 inch = 4 ft. Vertical
FEET 8 4 2 0 4

GRAPHIC SCALE
1 inch = 40 ft. Horizontal
FEET 40 0 20 40 80

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL ENGINEER
JEFFREY M. MAUDER
ENGINEER
PROJECT MANAGER

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REV.	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTER	ESE

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT–NOT TO BE RECORDED

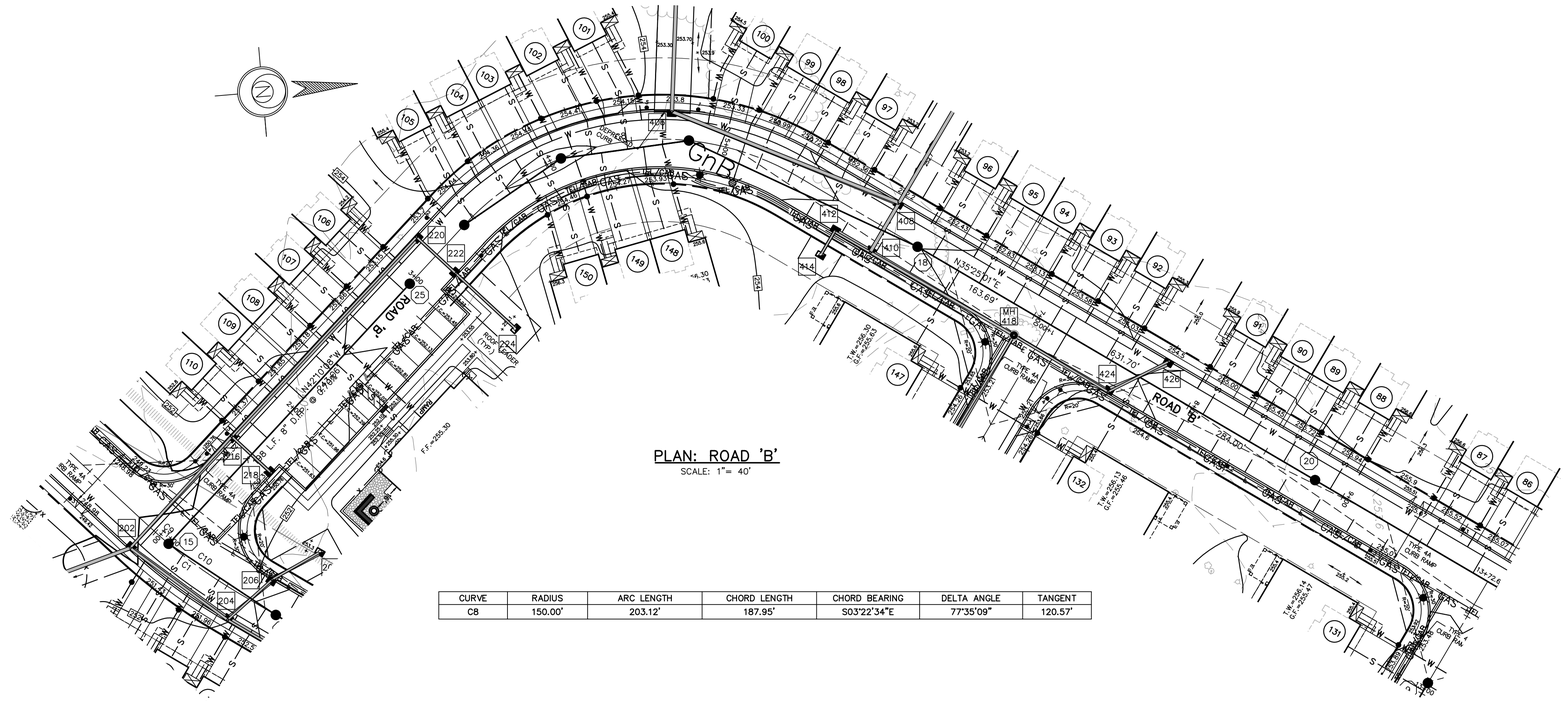
PLAN AND PROFILE
ROAD A STA 9+00 TO 10+61.17
ROAD F STA 10+61.17 TO 13+72.68

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

APPLICATION NUMBER LD-23-01

DATE: 3-24-23	SCALE: AS NOTED
DESIGN: JMM	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-08-PROF
REF. NO.:	SD08.02
SHEET NO.:	29 OF 62

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PLAN: ROAD 'B'
SCALE: 1"= 40'

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE	TANGENT
C8	150.00'	203.12'	187.95'	S03°22'34"E	77°35'09"	120.57'

NOTE: SIZE OF THE INLETS AND MANHOLES MAY BE UPDATED BY CONTRACTOR DURING THE CONSTRUCTION PROCESS, AS THE SIZES ARE ONLY GUIDANCE AND MAY NOT BE REFLECTIVE OF THE PIPE ANGLES. GENERAL SIZE SHOP DRAWINGS WILL NEED TO BE REVIEWED BY TOWNSHIP PRIOR TO INSTALLATION.

PROFILE: ROAD B
1"=40' Horizontal
1"=4' Vertical

GRAPHIC SCALE
1 inch = 4 ft. Vertical

GRAPHIC SCALE
1 inch = 40 ft. Horizontal

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT-NOT TO BE RECORDED

APPLICATION NUMBER LD-23-01

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL ENGINEER
JEFFREY M. MAUDER
ENGINEER
PROJECT MANAGER

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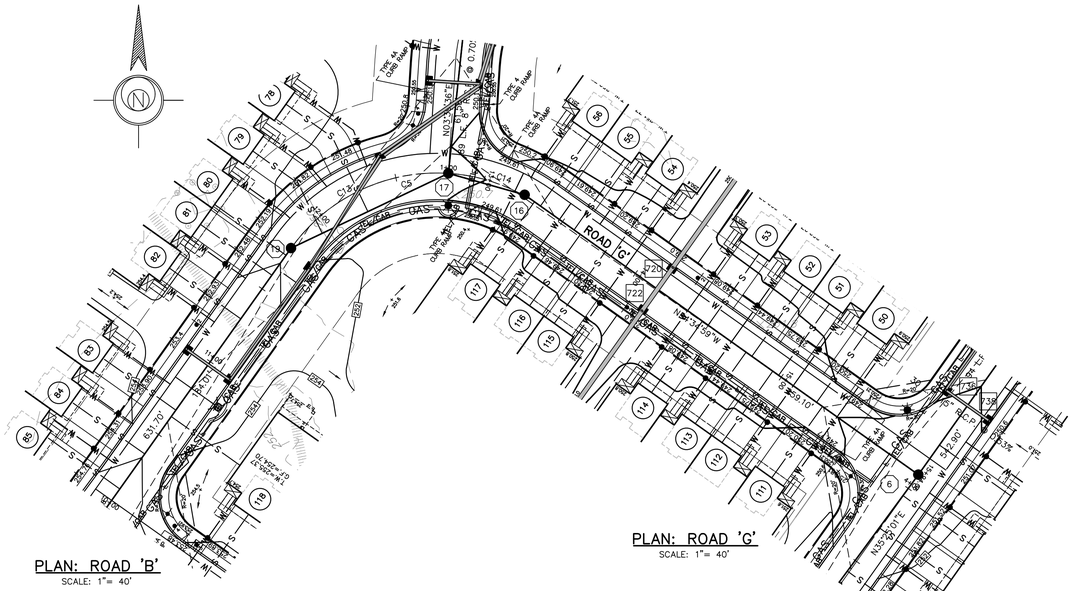
REC.	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTERS	ESE

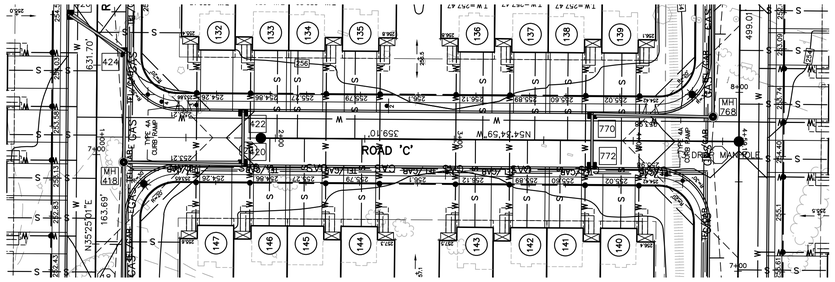
PLAN AND PROFILE
ROAD B STA 1+00 TO 10+00

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

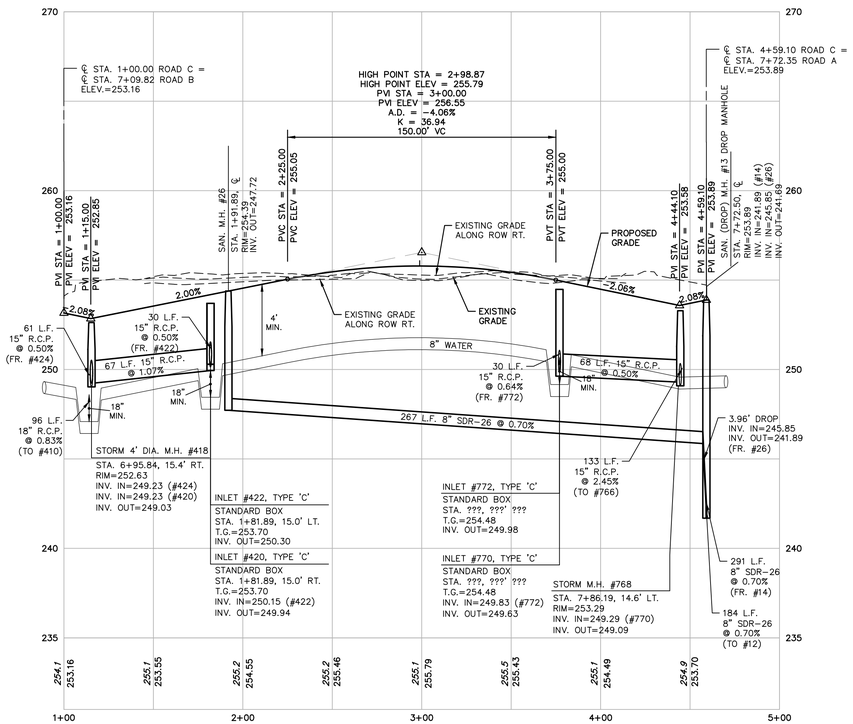
DATE: 3-24-23	SCALE: AS NOTED
DESIGN: JMM	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-08-PROF
REF. NO.: SD08.03	
SHEET NO.: 30 OF 62	

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ROAD 'G'
722
724
738
CURB
GAS
SAN. M.H. #16
STA. 13+24.10, 0.6' LT.
RIM=243.64
INV. IN=238.08 (#17)
INV. OUT=237.88
SAN. M.H. #17
STA. 12+79.54, ℄
RIM=250.32
INV. IN=238.59 (#19)
INV. IN=238.59 (#27)
INV. OUT=238.39
SAN. M.H. #19
STA. 11+77.87, ℄
RIM=251.85
INV. IN=240.27 (#20)
INV. OUT=240.07
N35°30'01"E
N34°36'W
N55°30'01"E
S34°36'E
S55°30'01"W
633.70'
633.70'
DRIVE
DRIVE
DRIVE



PLAN: ROAD 'C'
SCALE: 1"= 40'



PROFILE: ROAD C
1"=40' Horizontal
1"=4' Vertical

NOTE: SIZE OF THE INLETS AND MANHOLES MAY BE UPDATED BY CONTRACTOR DURING THE CONSTRUCTION PROCESS, AS THE SIZES ARE ONLY GUIDANCE AND MAY NOT BE REFLECTIVE OF THE PIPE ANGLES. GENERAL SIZE SHOP DRAWINGS WILL NEED TO BE REVIEWED BY TOWNSHIP PRIOR TO INSTALLATION.

GRAPHIC SCALE
1 inch = 4 ft. Vertical
FEET 8 4 2 0 4

GRAPHIC SCALE
1 inch = 40 ft. Horizontal
FEET 40 0 20 40 80

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT–NOT TO BE RECORDED

APPLICATION NUMBER LD-23-01

REC.	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTERS	ESE

COMMONWEALTH OF PENNSYLVANIA – REGISTERED PROFESSIONAL – ENGINEER – JEFFREY M. MAUDER – PROFESSIONAL ENGINEER

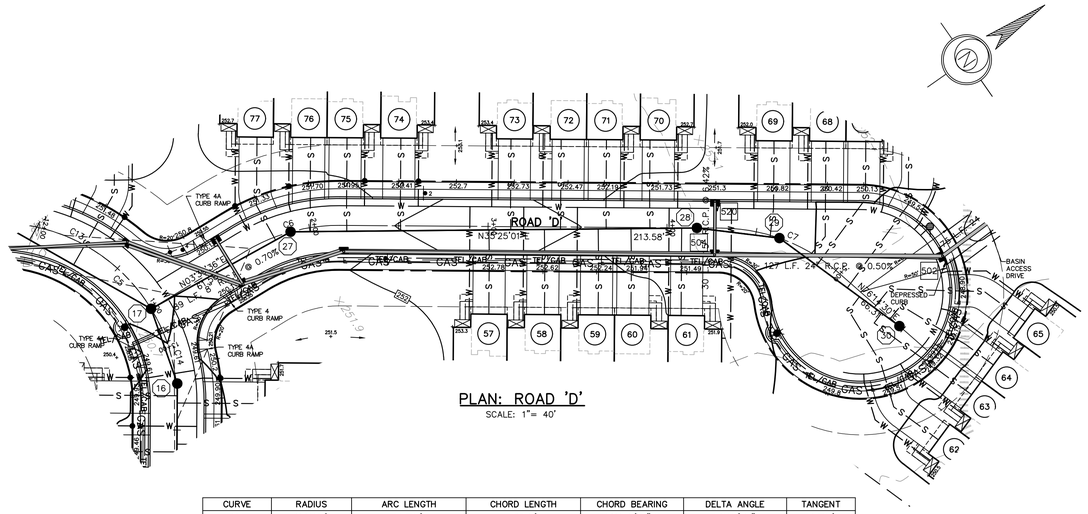
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PLAN AND PROFILE
ROAD C STA 1+00 TO 15+94.06

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 3-24-23	SCALE: AS NOTED
DESIGN: JMM	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-08-PROF
REF. NO.: **SD08.05**	
SHEET NO.: **32** OF **62**	

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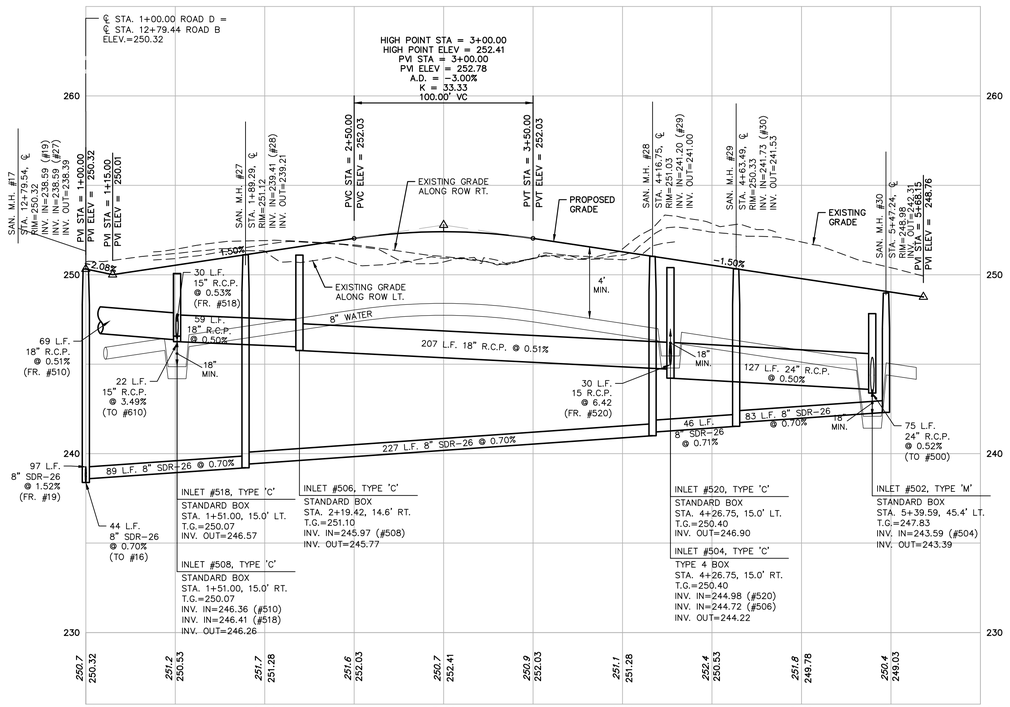


PLAN: ROAD 'D'

SCALE: 1"= 40'

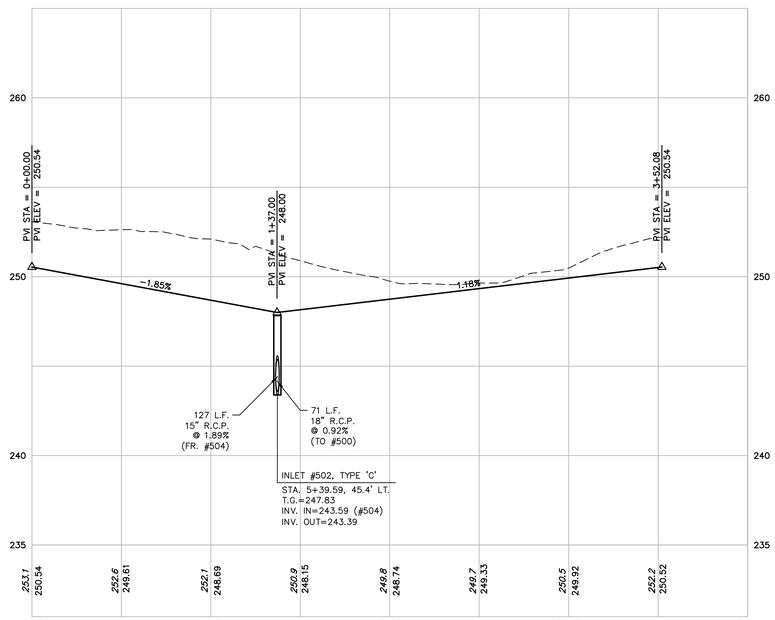
CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE	TANGENT
C6	100.00'	55.43'	54.72'	S19°32'18"W	31°45'25"	28.45'
C7	100.00'	71.25'	69.76'	S55°49'45"W	40°49'30"	37.21'

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PROFILE: ROAD D

1"=40' Horizontal
1"=4' Vertical



PROFILE: CUL-DE-SAC ROAD D

1"=40' Horizontal
1"=4' Vertical

GRAPHIC SCALE
1 inch = 40 ft. Horizontal

GRAPHIC SCALE
1 inch = 4 ft. Vertical

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER JEFFREY M. MAUDER

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REC.	DATE	DESCRIPTION	DRAWN
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2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTERS	ESE

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT-NOT TO BE RECORDED

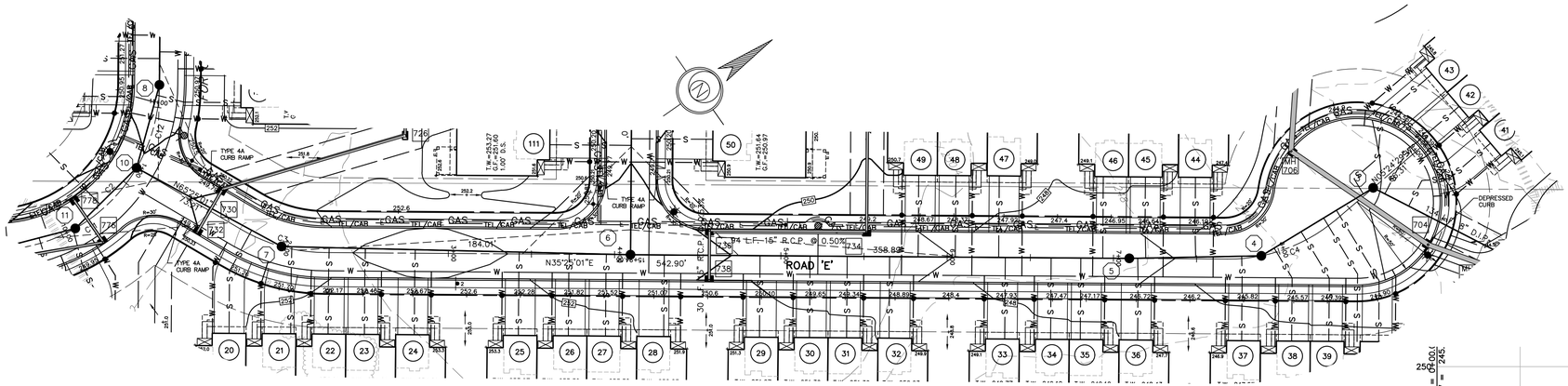
PLAN AND PROFILE
ROAD D STA 1+00 TO 5+68.15

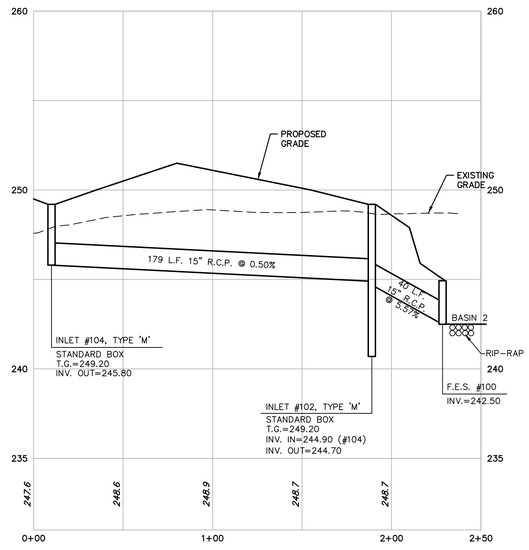
SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

APPLICATION NUMBER LD-23-01

DATE: 3-24-23	SCALE: AS NOTED
DESIGN: JMM	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-08-PROF
REF. NO.:	SD08.06
SHEET NO.:	33 OF 62

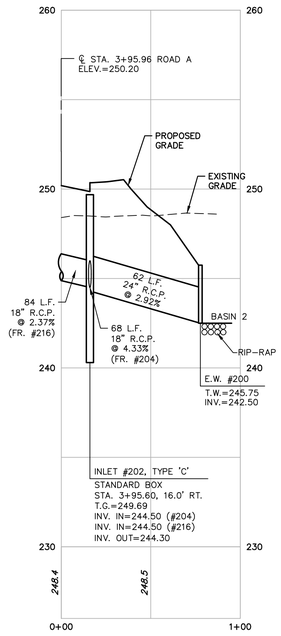
N:\PROJECTS\PENNSYLVANIA\7662-RYDAL ST. BASIL\ENGDEPT\DRAWINGS\7662-S-08-PROF DWG-Lake Plotwalz-3/21/2024 12:48 PM


ROAD 'E'
184.01'
N35°01'01"E
542.90'
358.83'
94 L.F. 15" R.C.P. @ 0.50%
TYPE 4A CURB RAMP
DEPRESSED CURB
N30°24'25"W
60.51'
N05°27'49"W
73.47'
N35°01'01"W
N30°01'01"W
TM=251.64
C.L.F.=250.97
TM=251.27
C.L.F.=250.60
TM=251.27
C.L.F.=250.97
TM=251.64
C.L.F.=250.97
TM=251.64
C.L.F.=250.97
TM=251.27
C.L.F.=250.60



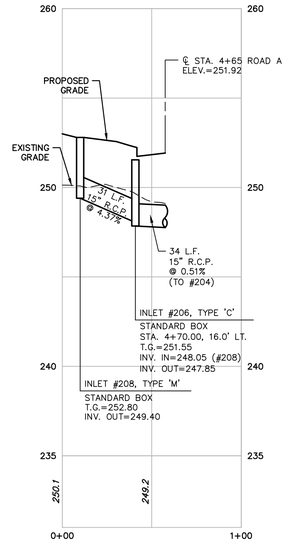
PROFILE: 104–100

1"=40' Horizontal
1"=4' Vertical



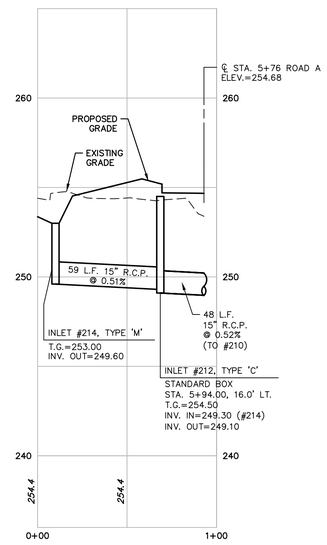
PROFILE: 202–200

1"=40' Horizontal
1"=4' Vertical



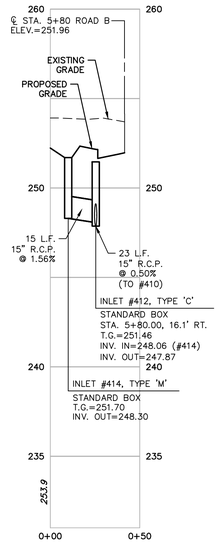
PROFILE: 208–204

1"=40' Horizontal
1"=4' Vertical



PROFILE: 214–210

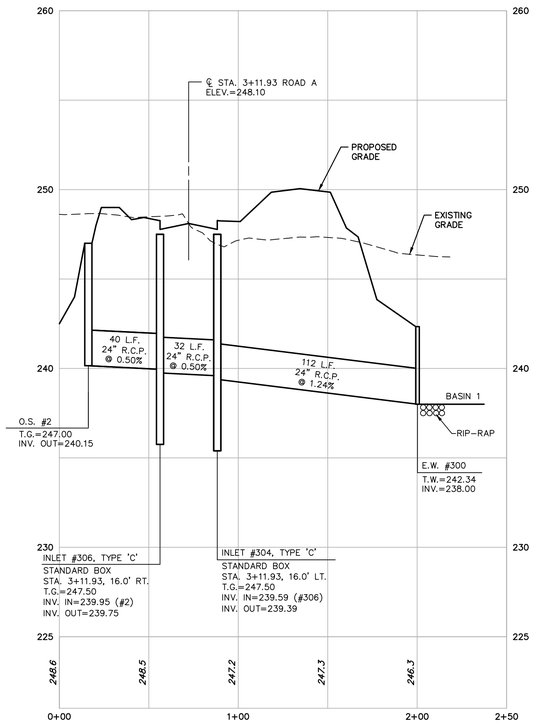
1"=40' Horizontal
1"=4' Vertical



PROFILE: 414–412

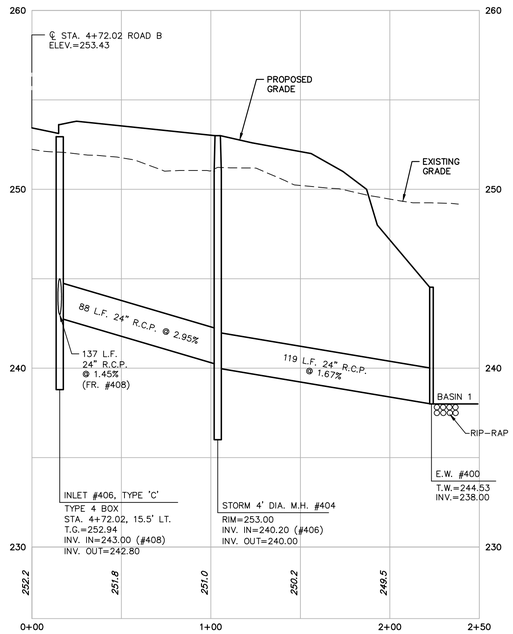
1"=40' Horizontal
1"=4' Vertical

NOTE: SIZE OF THE INLETS AND MANHOLES MAY BE UPDATED BY CONTRACTOR DURING THE CONSTRUCTION PROCESS, AS THE SIZES ARE ONLY GUIDANCE AND MAY NOT BE REFLECTIVE OF THE PIPE ANGLES. GENERAL SIZE SHOP DRAWINGS WILL NEED TO BE REVIEWED BY TOWNSHIP PRIOR TO INSTALLATION.



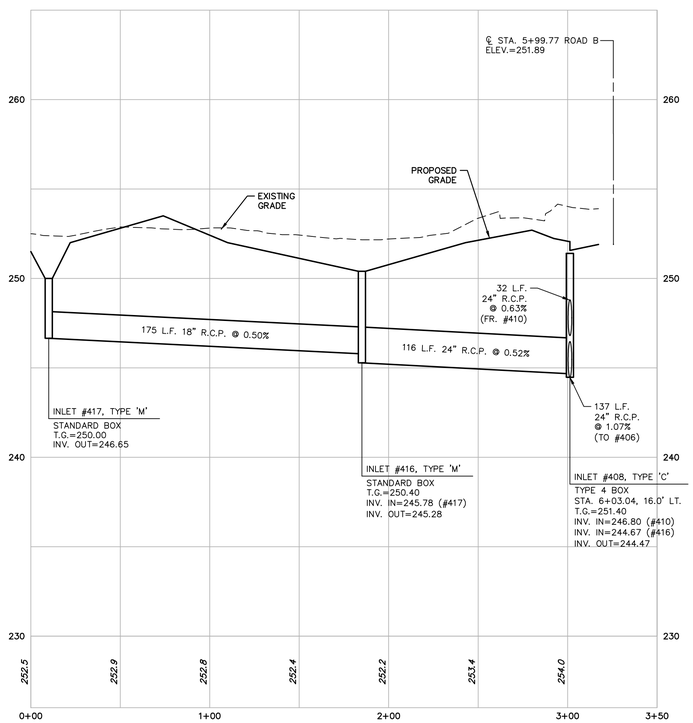
PROFILE: 308–300

1"=40' Horizontal
1"=4' Vertical



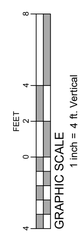
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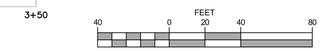
1"=40' Horizontal
1"=4' Vertical



PROFILE: 428–408

1"=40' Horizontal
1"=4' Vertical





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T: 215-914-2050

REC.	DATE	DESCRIPTION
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS
2	10/31/23	REVISIONS PER TOWNSHIP COMMENTS
1	7/24/23	TOWNSHIP REVIEW LETTERS

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT–NOT TO BE RECORDED

APPLICATION NUMBER LD-23-01

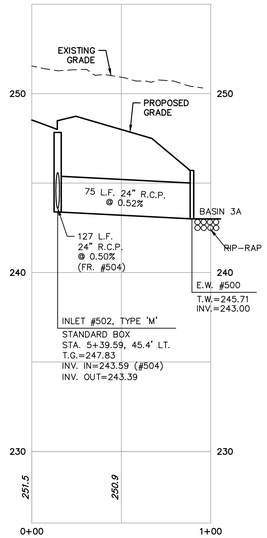
EASEMENT PROFILES

SISTERS OF ST. BASIL

ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

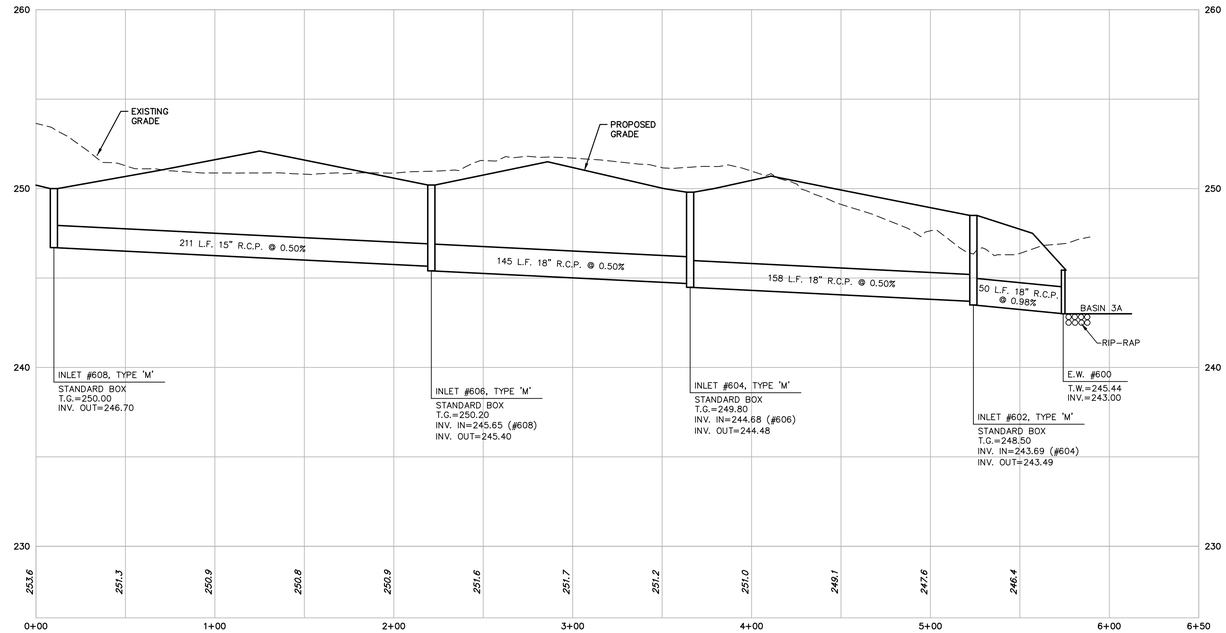
DATE: 3-24-23	SCALE: AS NOTED
DESIGN: JMM	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-08-PROF
REF. NO.:	SD08.08
SHEET NO.:	35 OF 62

N:\PROJECTS\PENNSYLVANIA\7662-RYDAL ST. BASIL\ENGDEPT\DRAWINGS\7662-S-08-PROF.DWG-Lake Plotwizz-3/21/2024 12:48 PM



PROFILE: 502 to 500

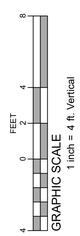
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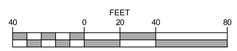


PROFILE: 608 to 600

1"=40' Horizontal
1"=4' Vertical

NOTE: SIZE OF THE INLETS AND MANHOLES MAY BE UPDATED BY CONTRACTOR DURING THE CONSTRUCTION PROCESS, AS THE SIZES ARE ONLY GUIDANCE AND MAY NOT BE REFLECTIVE OF THE PIPE ANGLES. GENERAL SIZE SHOP DRAWINGS WILL NEED TO BE REVIEWED BY TOWNSHIP PRIOR TO INSTALLATION.





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COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER JEFFREY M. MAUDER

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT–NOT TO BE RECORDED

REV.:	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTERS	ESE

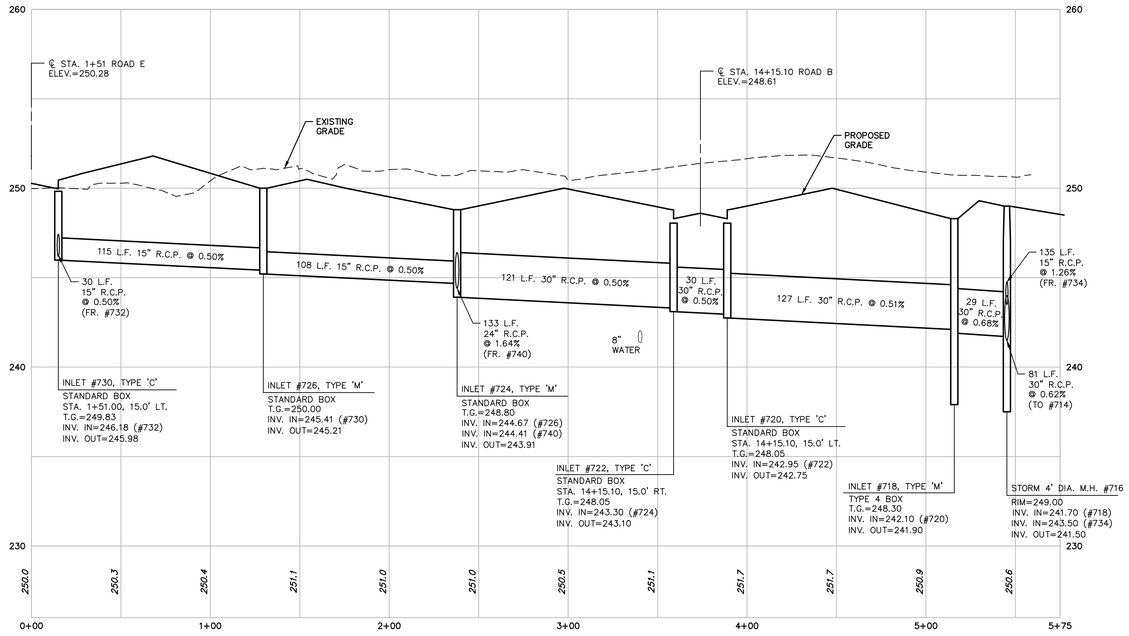
EASEMENT PROFILES

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

APPLICATION NUMBER LD-23-01

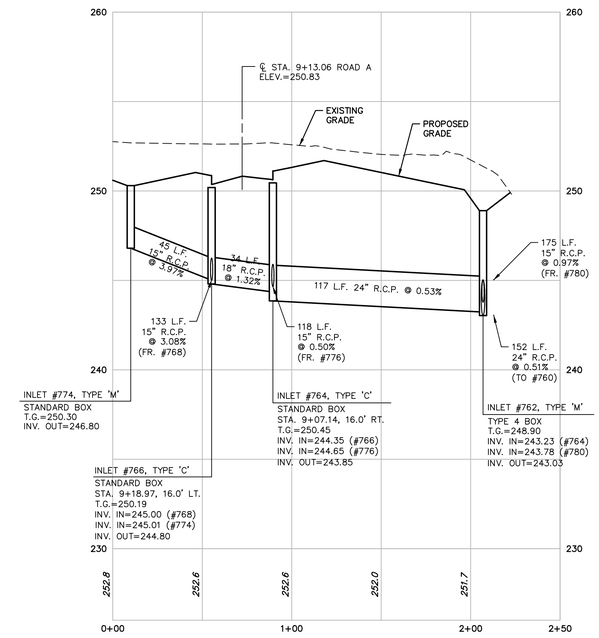
DATE: 3-24-23	SCALE: AS NOTED
DESIGN: JMM	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-08-PROF
REF. NO.:	SD08.09
SHEET NO.:	36 OF 62

N:\PROJECTS\PENNSYLVANIA\7662-RYDAL ST. BASILS\ENGDEPT\DRAWINGS\7662-S-08-PROF.DWG-Luke Pistrowicz-3/21/2024 12:48 PM



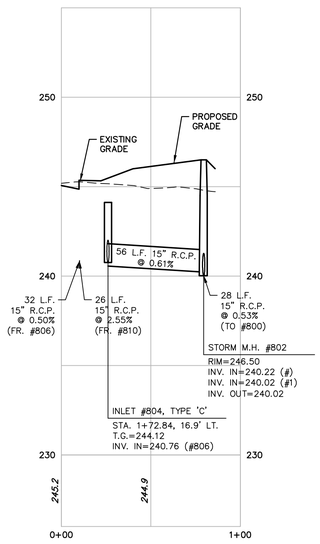
PROFILE: 728 to 716

1"=40' Horizontal
1"=4' Vertical



PROFILE: 774 TO 762

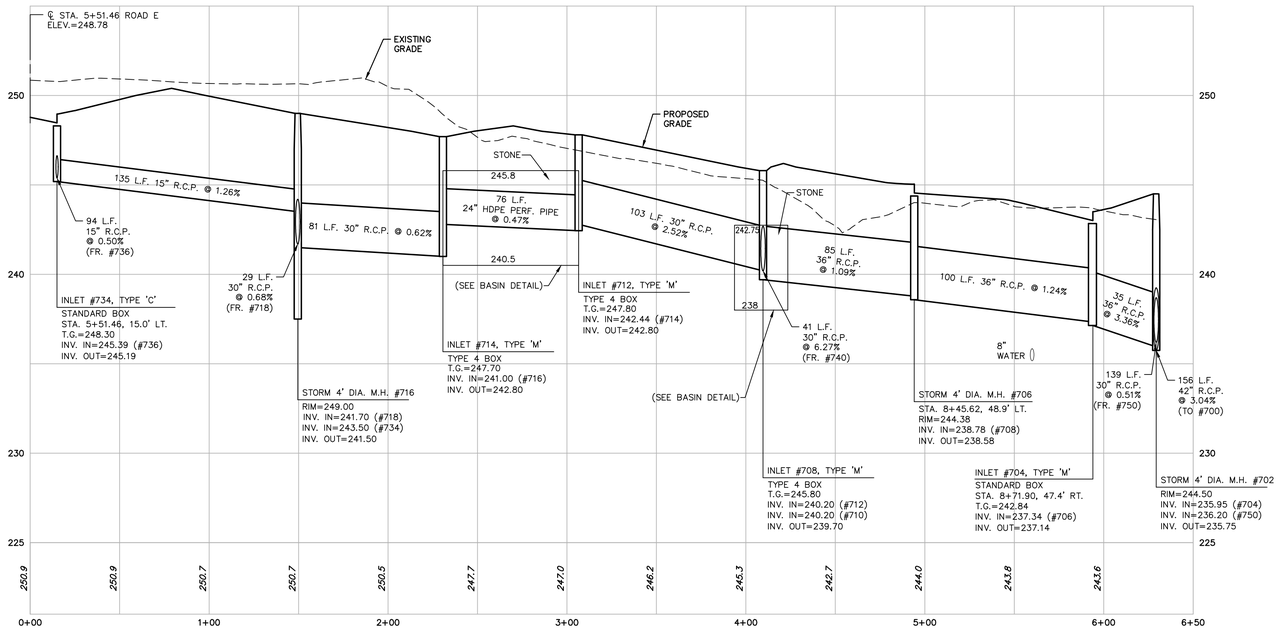
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PROFILE: 804-802

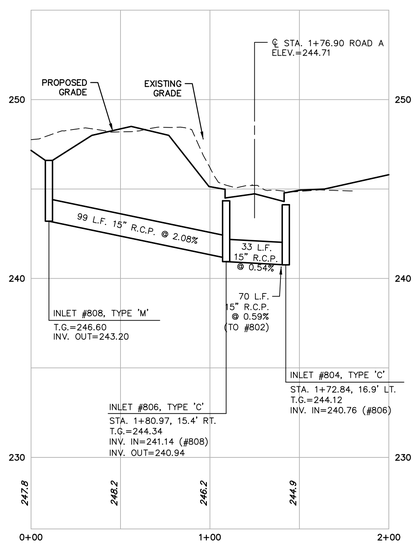
1"=40' Horizontal
1"=4' Vertical

NOTE: SIZE OF THE INLETS AND MANHOLES MAY BE UPDATED BY CONTRACTOR DURING THE CONSTRUCTION PROCESS, AS THE SIZES ARE ONLY GUIDANCE AND MAY NOT BE REFLECTIVE OF THE PIPE ANGLES. GENERAL SIZE SHOP DRAWINGS WILL NEED TO BE REVIEWED BY TOWNSHIP PRIOR TO INSTALLATION.



PROFILE: 716 to 702

1"=40' Horizontal
1"=4' Vertical



PROFILE: 808 to 804

1"=40' Horizontal
1"=4' Vertical

GRAPHIC SCALE
1 inch = 4 ft. Vertical

FEET 8 4 2 0 4

GRAPHIC SCALE
1 inch = 40 ft. Horizontal

FEET 40 0 20 40 80

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COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER JEFFREY M. MAUDER

REV.	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/11/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTERS	ESE

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT-NOT TO BE RECORDED

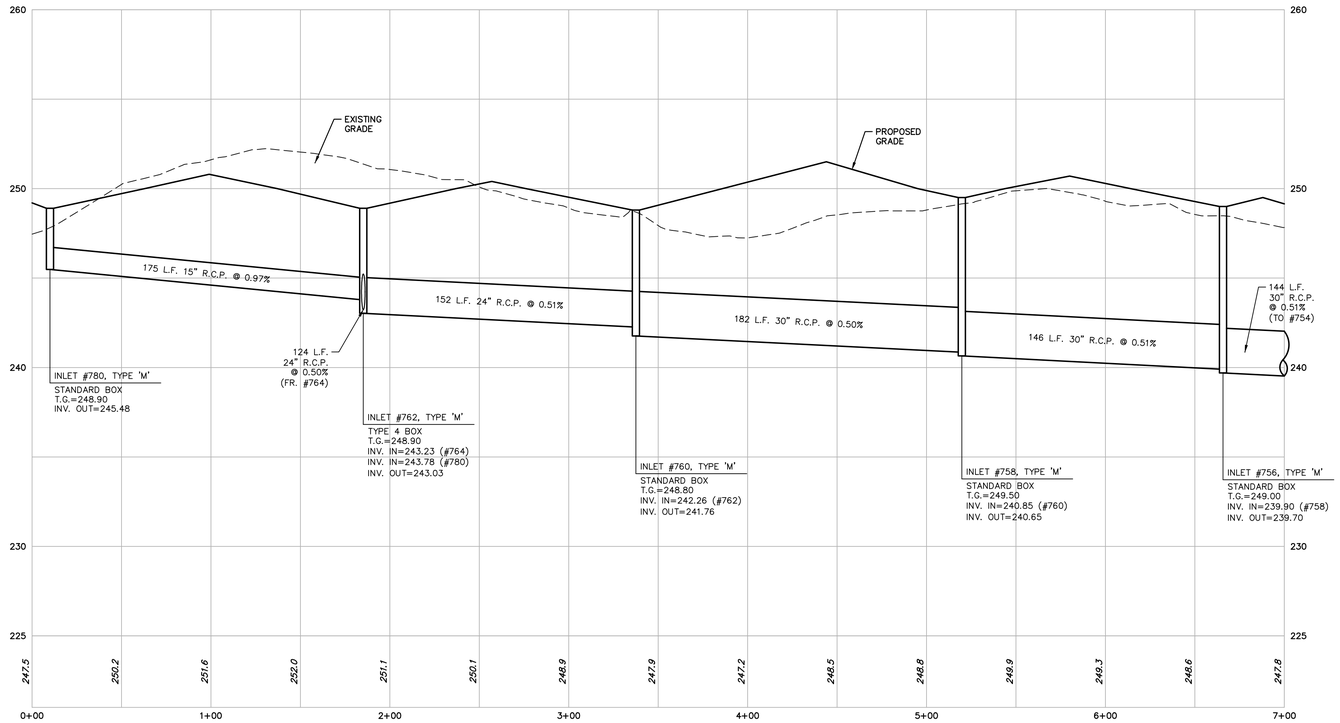
APPLICATION NUMBER LD-23-01

EASEMENT PROFILES

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

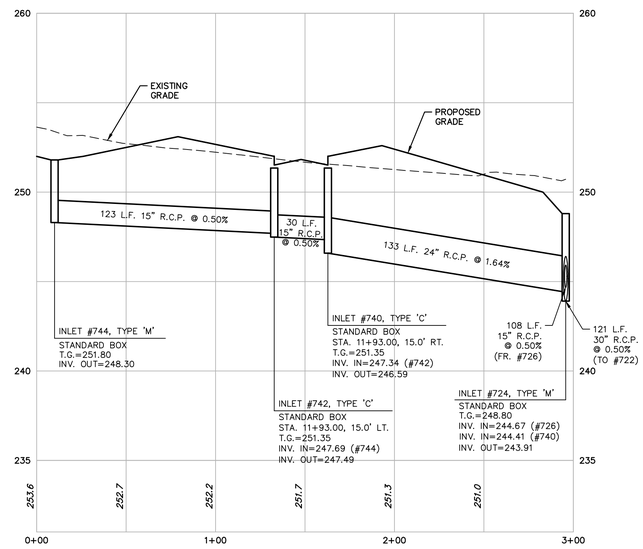
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DESIGN: JMM	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-08-PROF
REF. NO.: **SD08.10**	
SHEET NO.: **37** OF **62**	

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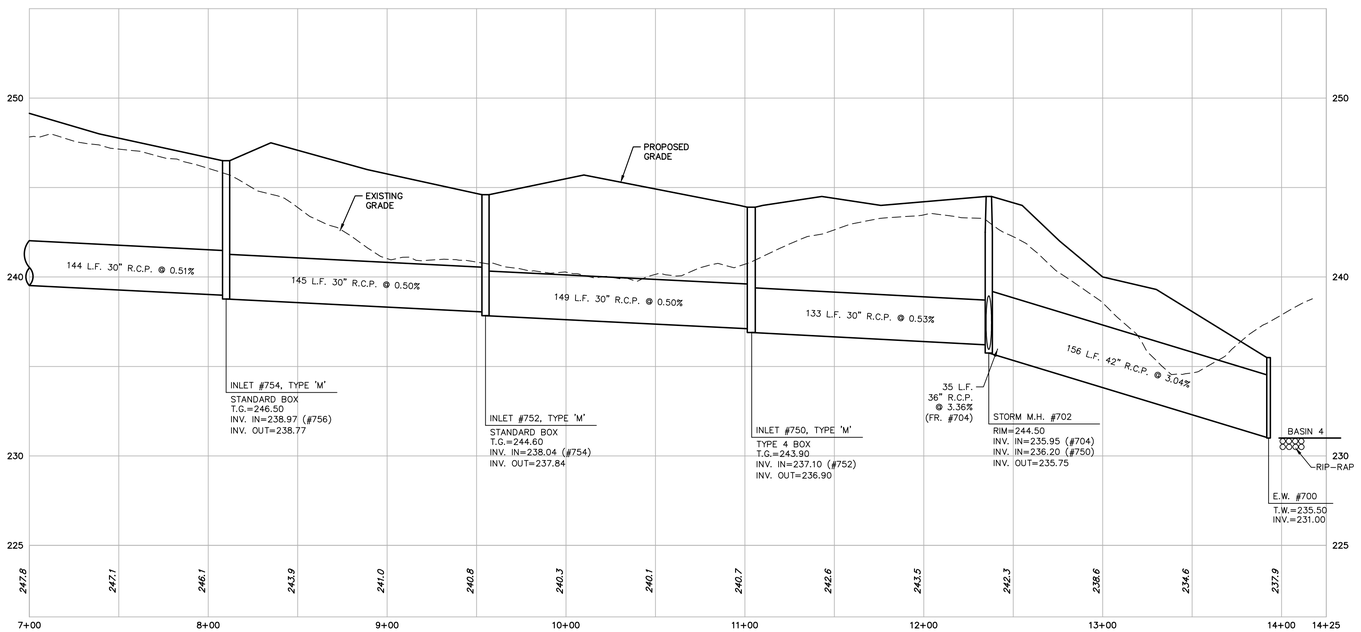
PROFILE: 780–700

1"=40' Horizontal
1"=4' Vertical



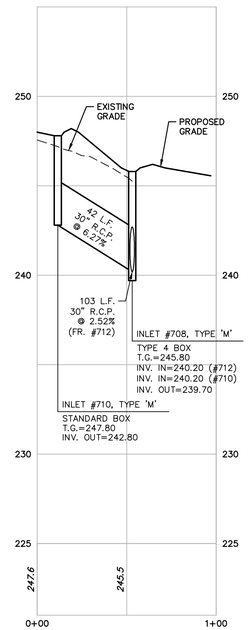
PROFILE: 744–724

1"=40' Horizontal
1"=4' Vertical



PROFILE: 780–700

1"=40' Horizontal
1"=4' Vertical



PROFILE: 710 to 708

1"=40' Horizontal
1"=4' Vertical

NOTE: SIZE OF THE INLETS AND MANHOLES MAY BE UPDATED BY CONTRACTOR DURING THE CONSTRUCTION PROCESS, AS THE SIZES ARE ONLY GUIDANCE AND MAY NOT BE REFLECTIVE OF THE PIPE ANGLES. GENERAL SIZE SHOP DRAWINGS WILL NEED TO BE REVIEWED BY TOWNSHIP PRIOR TO INSTALLATION.

GRAPHIC SCALE
1 inch = 40 ft. Horizontal
FEET 40 0 20 40 80

GRAPHIC SCALE
1 inch = 4 ft. Vertical
FEET 8 4 2 0 4

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — ENGINEER — JEFFREY M. MAUDER — PROFESSIONAL ENGINEER

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REV.	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/12/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTERS	ESE

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT–NOT TO BE RECORDED

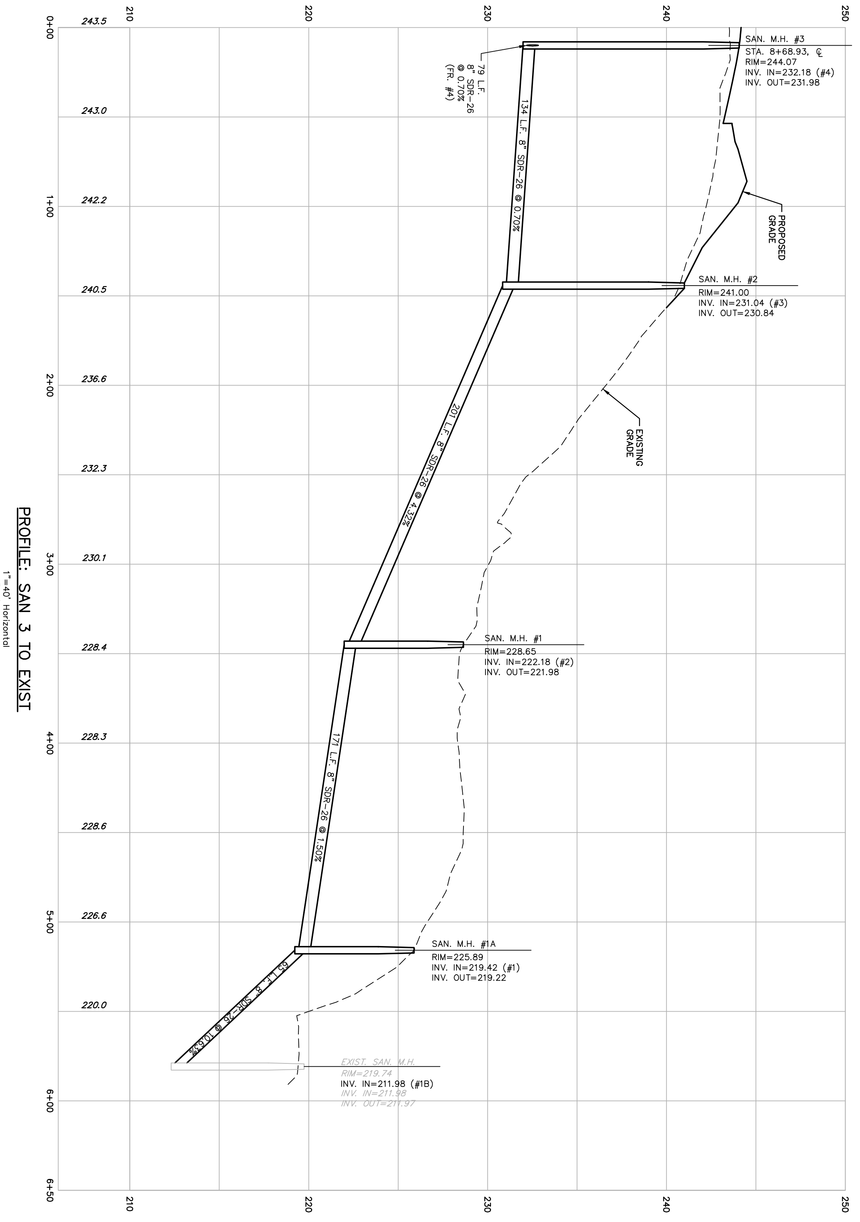
EASEMENT PROFILES

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

APPLICATION NUMBER LD-23-01

DATE: 3-24-23	SCALE: AS NOTED
DESIGN: JMM	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-08-PROF
REF. NO.: SD08.11	
SHEET NO.: 38 OF 62	

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GRAPHIC SCALE
1 inch = 40 ft. Horizontal
40 0 20 40 80 FEET

GRAPHIC SCALE
1 inch = 4 ft. Vertical
4 0 2 4 8 FEET

APPLICATION NUMBER LD-23-01

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT-NOT TO BE RECORDED

SHEET NO.: 39 OF 62
PLAN NO.: SD08.12
JOB NO.: 7662
DESIGN: JMM
DRAWN: EJS
DATE: 3-24-23
SCALE: AS NOTED
FILE NAME: 7662-SP-PROF

EASEMENT PROFILES

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

REV.	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTERS	ESE

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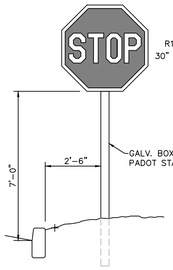
COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JEFFREY M. MADDEN
ENGINEER
No. PE070760



PEDESTRIAN CROSSING SIGN DETAIL
N.T.S.
(W11A–2)



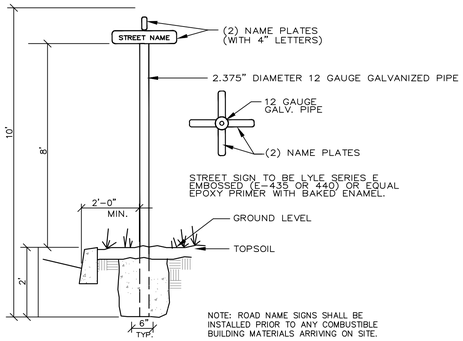
SPEED LIMIT SIGN DETAIL
N.T.S.
(R2–1)



INSTALLATION, DIMENSIONS, COLORS AND DETAILS OF VARIOUS SIZE SIGNS, SHIELDS AND ACCESORY PANELS TO FOLLOW STANDARDS IN THE CURRENT "STANDARD HIGHWAY SIGNS PUBLICATION" AND THE CURRENT "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS".

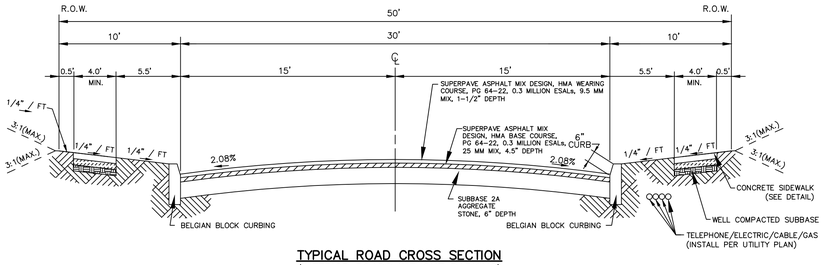
NOTE: ALL SIGNS SHALL BE IN ACCORDANCE WITH DEPT. OF TRANSPORTATION STANDARDS.

STOP SIGN LOCATION DETAIL
N.T.S.
(R1–1)

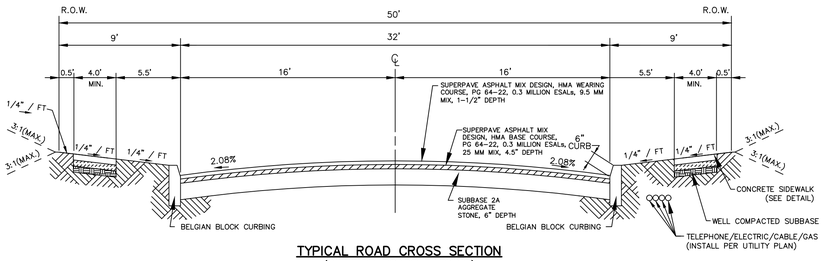


NOTE: ROAD NAME SIGNS SHALL BE INSTALLED PRIOR TO ANY COMBUSTIBLE BUILDING MATERIALS ARRIVING ON SITE.

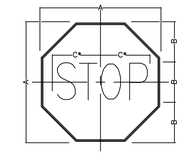
STREET SIGN
N.T.S.



TYPICAL ROAD CROSS SECTION
(INTERIOR ROADS WITHOUT PARKING)
N.T.S



TYPICAL ROAD CROSS SECTION
(INTERIOR ROADS PARKING)
ROAD A STA. 1+00 TO 10+00 ROAD B STA. 3+50 TO 9+50
N.T.S



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

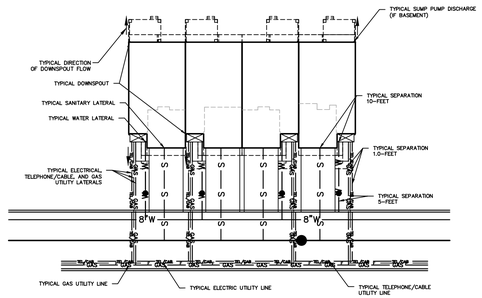
SIGN SIZE	DIMENSIONS A	B	C*	SERIES	BORDER	BLANK STUD
24 x 24	24	8	12	C	3/8	B1–24
30 x 30	30	12	12 3/16	C	3/4	B1–30
36 x 36	36	12	15	C	7/8	B1–36
48 x 48	48	16	20	C	1 1/4	B1–48

* REDUCE SPACING BY 40%

STOP SIGN DETAIL (*) (#1)
N.T.S.
(R1–1)

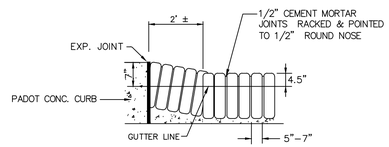


NO OUTLET SIGN DETAIL
N.T.S.
(W14–2)

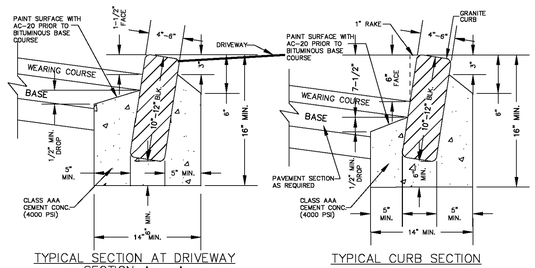


TYPICAL UTILITY LAYOUT
N.T.S.

NOTE: EROSION DISSIPATORS TO BE PLACED AT ALL DOWNSPOUT AND SUMP PUMP DISCHARGES.

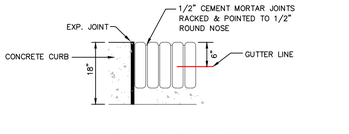


PADOT CURB TO BELGIAN BLOCK TRANSITION DETAIL
N.T.S.

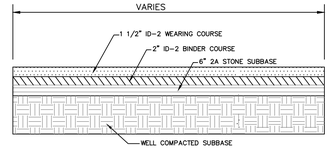


TYPICAL SECTION AT DRIVEWAY
SECTION A – A

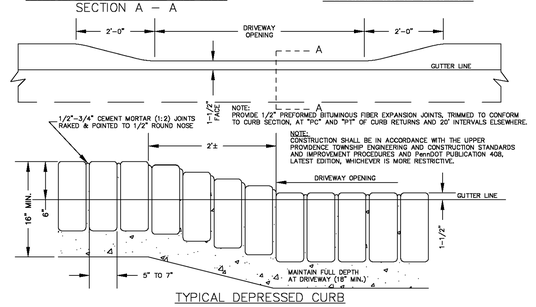
TYPICAL CURB SECTION



CONCRETE CURB TO BELGIAN BLOCK CURB TRANSITION DETAIL
N.T.S.

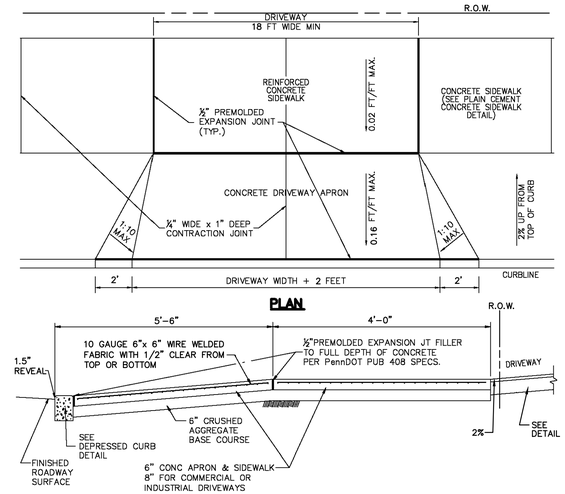


DRIVEWAY CROSS–SECTION DETAIL
N.T.S.



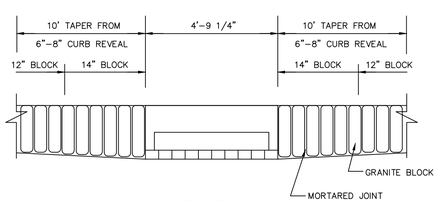
TYPICAL DEPRESSED CURB

BELGIAN BLOCK CURB DETAIL
N.T.S.



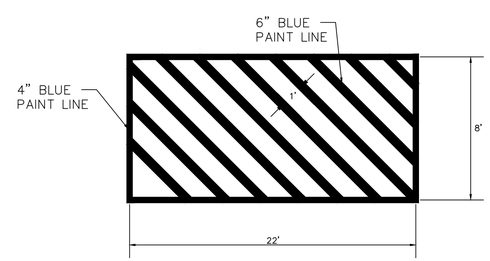
NOTES:
1. MAINTAIN SIDEWALK GRADE @ 2% ABOVE TOP OF FULL HEIGHT (6" REVEAL) CURB AS PROJECTED THROUGH DRIVEWAY.
2. CONCRETE SHALL HAVE A MINIMUM 3,000 PSI COMPRESSIVE STRENGTH, AIR ENTRAINED WITH A MAXIMUM SLUMP OF 5".
3. CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE UPPER PROVIDENCE TOWNSHIP ENGINEERING AND CONSTRUCTION STANDARDS AND IMPROVEMENT PROCEDURES AND PennDOT PUBLICATION 408, LATEST EDITION, WHICHEVER IS MORE RESTRICTIVE.

CURB, APRON & DRIVEWAY DETAIL



ELEVATION

BELGIAN BLOCK CURB TRANSITION @ TYPE C INLET
N.T.S.



MAIL DELIVERY– PAINTED AREA (NO PARKING)
NOT TO SCALE

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COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL ENGINEER — JEFFREY M. MAUDER — PROFESSIONAL ENGINEER — 078E037

REV.	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/12/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTERS	ESE

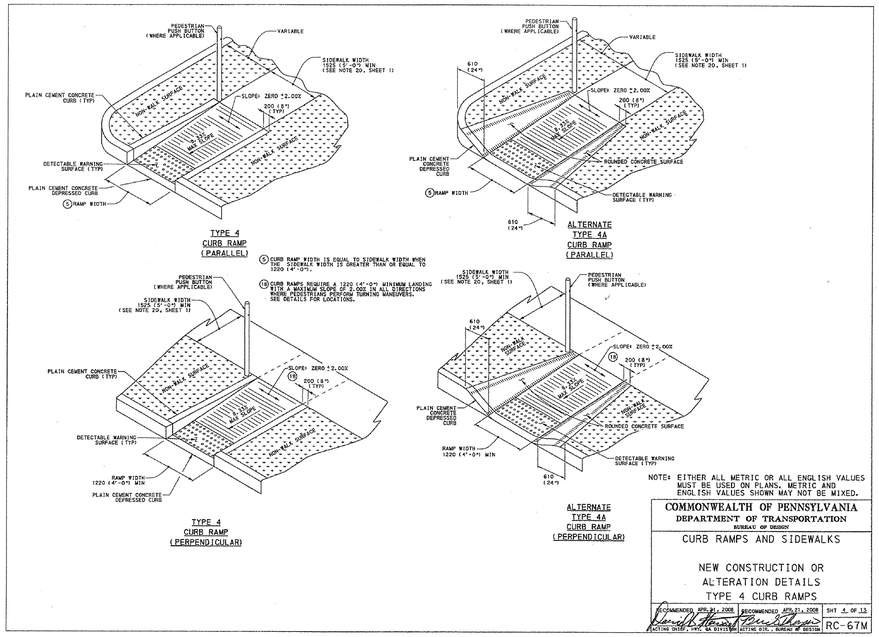
APPLICATION NUMBER LD–23–01 — PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT–NOT TO BE RECORDED

CONSTRUCTION DETAILS

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 3–24–23	SCALE: AS NOTED
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662–5–09–DET–CONST
REF. NO.:	SD09.01
SHEET NO.:	40 OF 62

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(5) CURB RAMP WIDTH IS EQUAL TO SIDEWALK WIDTH WHEN THE SIDEWALK WIDTH IS GREATER THAN OR EQUAL TO 1220 (4'-0").

(12) CURB RAMPS REQUIRING A 1220 (4'-0") MINIMUM LANDING WITH A MAXIMUM SLOPE OF 2.00% IN ALL DIRECTIONS TO ACCOMMODATE PEDESTRIAN TURNING MANEUVERS. SEE DETAILS FOR LOCATIONS.

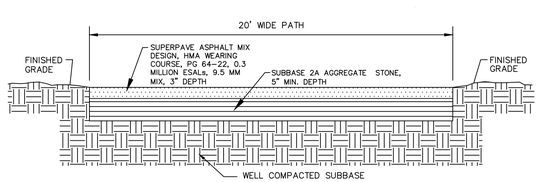
NOTE: EITHER ALL METRIC OR ALL ENGLISH VALUES MUST BE USED ON PLANS. METRIC AND ENGLISH VALUES SHOWN MAY NOT BE MIXED.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

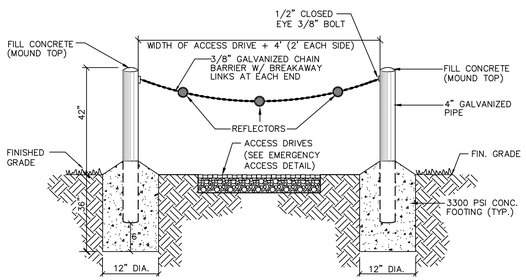
CURB RAMPS AND SIDEWALKS

NEW CONSTRUCTION OR ALTERATION DETAILS
TYPE 4 CURB RAMPS

RECOMMENDED APR 21, 2008 — ACTING DISTR. / SPEC. DIV. DIRECTOR
RECOMMENDED APR 21, 2008 — ACTING DIR., BUREAU OF DESIGN
SHT 4 OF 13
RC-67M

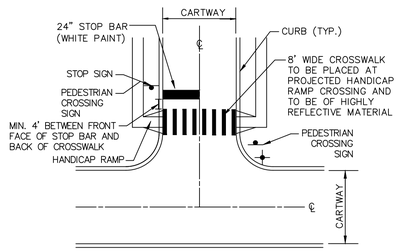


EMERGENCY ACCESS CROSS-SECTION DETAIL
N.T.S.

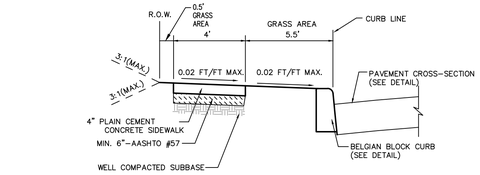


NOTES
1. THIS BARRIER IS SUBJECT TO REVIEW AND APPROVAL OF THE TOWNSHIP FIRE MARSHALL
2. SHOP DRAWINGS AND OR CUT SHEETS SHALL BE SENT TO TOWNSHIP PRIOR TO INSTALLATION OF THIS BARRIER
3. PROVIDE BREAKAWAY BOLLARDS AND CHAINS
4. TOWNSHIP FIRE MARSHAL TO BE PROVIDED WITH KNOX BOX PAD LOCK KEYS TO LOCKS ON CHAIN, AS USED IN TOWNSHIP.

ACCESS BOLLARDS AND CHAIN FOR EMERGENCY ACCESS
N.T.S.



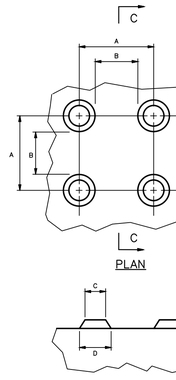
INTERSECTION STRIPING & SIGN DETAIL
N.T.S.



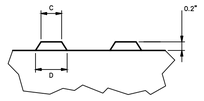
NOTES:

1. CONCRETE SHALL HAVE A MINIMUM 3,000 PSI COMPRESSIVE STRENGTH, 6% AIR ENTRAINMENT WITH A MAXIMUM SLUMP OF 3".
2. ALL SIDEWALKS SHALL RECEIVE A BROOM FINISH UNLESS APPROVED OTHERWISE BY THE TOWNSHIP ENGINEER.
3. EXPANSION JOINTS SHALL BE EVERY 30', WITH CONTRACTION JOINTS EVERY 5', A MINIMUM OF 1" IN DEPTH. THE CONCRETE SHALL BE PLACED SO THAT THERE IS A SEPARATE JOINT EVERY 5' AND SHALL BE CONSTRUCTED SO THAT THE 5' SECTIONS ARE COMPLETELY SEPARATED FROM THE ADJACENT SECTIONS. A 0.5-INCH PREMOLDED EXPANSION JOINT SHALL BE PLACED WHERE THE CONCRETE SIDEWALK ABUTS A CONCRETE CURB. ADDITIONAL EXPANSION MATERIAL SHALL BE PLACED BETWEEN ANY CURB AND DRIVEWAY APRONS AND IN THE SIDEWALK AT THE DRIVEWAY LIMITS.
4. CONSTRUCTION SHALL BE IN ACCORDANCE WITH ABINGTON TOWNSHIP ENGINEERING AND CONSTRUCTION STANDARD AND IMPROVEMENT PROCEDURES AND PENNDOT PUBLICATION 408, LATEST EDITION, WHICHEVER IS MORE RESTRICTIVE.
5. ALL EDGES TO BE ROUNDED WITH A 1/4" TOOL.
6. 6" THICK @ DRIVEWAY CROSSINGS.

CONCRETE SIDEWALK DETAIL
N.T.S.



PLAN

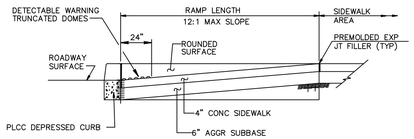


SECTION C-C

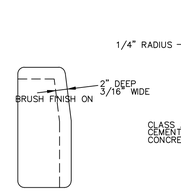
TRUNCATED DOME DIMENSIONS		
DIM	MIN	MAX
A	1.6"	2.4"
B	0.65"	1.5"
C	(13)	(13)
D	0.9"	1.4"

(13) THE C DIMENSION IS 50% TO 65% OF THE D DIMENSION.

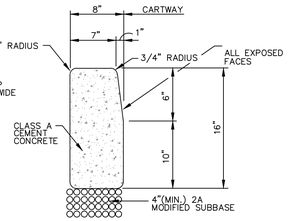
DETECTABLE WARNING SURFACE (DWS) TRUNCATED DOME DETAIL
NTS
Pa-DOT RC-67M



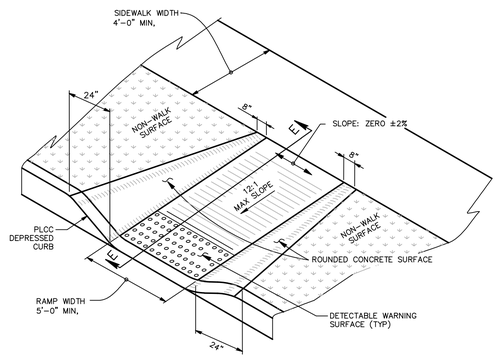
SECTION E-E



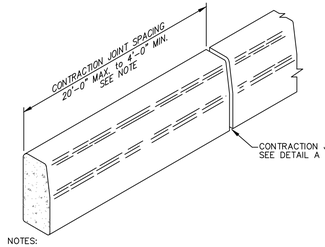
DETAIL A
CONTRACTION JOINT



TYPICAL CROSS SECTION



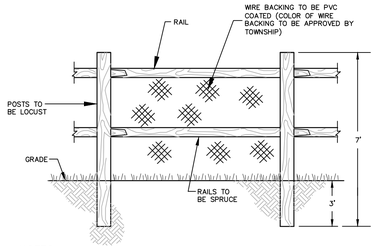
TYPE 4A CURB RAMP DETAIL
(PERPENDICULAR)
Pa-DOT RC-67M
NTS



NOTES:

1. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATIONS PUBLICATION 408, SECTION 630 FOR PLAIN CONCRETE CURB AND DEPRESSED CURB.
2. SPACE CONTRACTION JOINTS IN UNIFORM LENGTHS OR SECTIONS.
3. PLACE 3/4" PREMOLDED EXPANSION JOINT FILLER MATERIAL AT STRUCTURES AND AT THE END OF THE WORK DAY. CUT MATERIAL TO CONFORM TO AREA ADJACENT TO CURB OR TO CONFORM TO CROSS-SECTIONAL AREA OF CURB.

6" CONCRETE CURB DETAIL
N.T.S.
(CONSTRUCT NEAR FOX CHASE ROAD)



NOTES:
1. ALL RAILS TO BE SPRUCE AND POSTS TO BE LOCUST WOOD.
2. WIRE MESH TO BE INSTALLED ON FENCES ABOVE WALLS AND SURROUNDING THE STORMWATER BASINS.
3. WIRE MESH TO BE INSTALLED 4" ABOVE GROUND SURFACE AND PVC COATED.
4. ANY RETAINING WALL THREE FEET OR MORE IN HEIGHT SHALL HAVE A FENCE APPROVED BY THE TOWNSHIP.

SPLIT-RAIL FENCE DETAIL
N.T.S.

ESE CONSULTANTS
ENGINEERING • PLANNING • SURVEYING • ENVIRONMENTAL
ESE Consultants, Inc.
1140 Virginia Drive • Fort Washington, PA 19034
T: 215-914-2050

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL ENGINEER — JEFFREY M. MAUDER — ENGINEER'S SEAL

REV.#	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTER COMMENTS	ESE

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT-NOT TO BE RECORDED

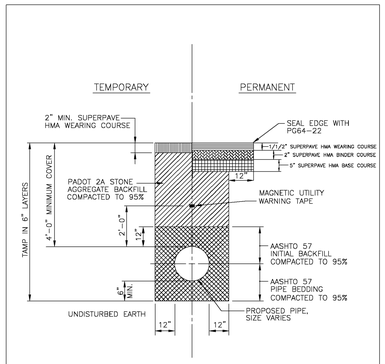
APPLICATION NUMBER LD-23-01

CONSTRUCTION DETAILS

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 3-24-23	SCALE: AS NOTED
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-09-DET-CONST
REF. NO.:	SD09.02
SHEET NO.:	41 OF 62

N:\PROJECTS\PENNSYLVANIA\7662-RYDAL ST. BASILS\ENGDEPT\DRAWINGS\7662-S-09-DET-CONST.DWG-Luke Pistrowicz-3/21/2024 12:49 PM

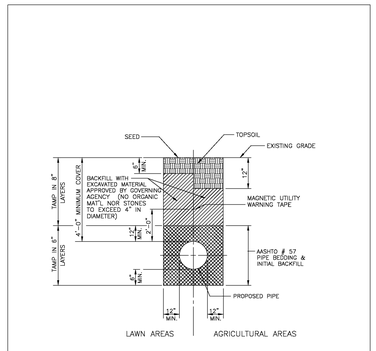


NOTES:

1. ALL MATERIALS AND CONSTRUCTION METHODS SHALL COMPLY WITH PADOT PUBLICATION 408 REGULATIONS.
2. CONTRACTOR SHALL PROVIDE UNIFORM GRADE FROM EXISTING POAVEMENT
3. TEMPORARY RESTORATION SHALL BE MAINTAINED FOR A MIN. 90 DAYS.

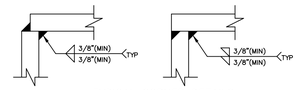
TRENCH BACKFILL AND PAVEMENT RESTORATION DETAIL FOR TOWNSHIP ROADS

Date: JUNE 2007
Detail: 1

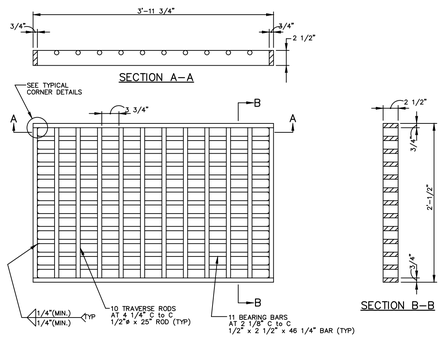


TRENCH RESTORATION LAWN / AGRICULTURAL AREAS

DATE: JUNE 2007
DETAIL: 2



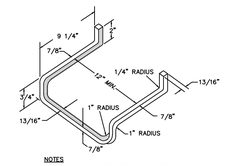
TYPICAL CORNER DETAILS



STRUCTURAL STEEL GRATE (BICYCLE SAFE)

N.T.S.

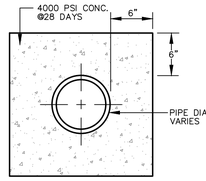
1. ALL PRE-CAST STRUCTURES SHALL BE DESIGNED AND MANUFACTURED AND INSTALLED IN ACCORDANCE WITH PENNDOT'S STANDARDS FOR ROADWAY CONSTRUCTION (APRIL 2000 EDITION, AS LAST REVISED) AND PENNDOT SPECIFICATIONS PUBLICATION 408/2000 (APRIL 2000 AS LAST REVISED.
2. THE CONTRACTOR SHALL ONLY USE PRE-CAST INLET BOXES SUPPLIED BY A MANUFACTURE LISTED IN PENNDOT'S BULLENTIN 15.
3. CLASS AA CONCRETE SHALL BE USED FOR ALL PRE-CAST INLET BOXES.
4. CLIMBING RUNGS ARE REQUIRED TO BE PROVIDED ON ALL STRUCTURES 5 FEET OR GREATER IN DEPTH. THE CLIMBING RUNGS SHALL BEGIN AT A MAXIMUM HEIGHT OF 24 INCHES FROM THE STRUCTURE INVERT, SHALL BE SPACED 12 INCHES ON CENTER, AND SHALL TERMINATE 12 INCHES FROM THE TOP OF THE STRUCTURE.
5. IN CASES WHERE COVER ADJUSTMENT SLABS AND CLIMBING RUNGS ARE REQUIRED, THE OPENING IN THE COVER ADJUSTMENT SLAB SHALL BE LOCATED APPROPRIATELY TO ACCOMMODATE THE STRUCTURE CLIMBING RUNGS. INACCESSIBLE INLETS WILL NOT BE ACCEPTED.
6. CONCRETE LOW FLOW CHANNELS (3300 PSI MINIMUM) SHALL BE POURED IN THE BASE OF ALL INLET STRUCTURES AFTER THE STRUCTURES AND ASSOCIATED PIPING ARE INSTALLED.
7. A MINIMUM OF 4 INCHES SHALL BE MAINTAINED BETWEEN THE TOP OF THE PIPE BLOCKOUTS AND THE TOP OF THE BASE OR RISER SECTION IN ACCORDANCE WITH PENNDOT RC STANDARDS. WHEN PROJECTS REQUIRE PIPE BLOCKOUTS TO BE FORMED WITHIN 4 INCHES FROM THE TOP OF THE INLET BOX OR RISER, THE MANUFACTURER SHALL AS A MINIMUM PROVIDE AN ADDITIONAL NO. 3 REINFORCEMENT BAR LOCATED 1-5/8 INCHES FROM THE TOP OF THE INLET BASE, FULL WIDTH ALONG THE INLET FACE. THE CONTRACTOR SHALL RENOVE ANY VISIBLE PORTION OF THE BAR, IF REQUIRED, DURING INSTALLATION AND PRIOR TO JOINING THE PIPE TO THE INLET. THE REINFORCING ROD SHALL BE PROVIDED ON THE SHOP DRAWING WHEN APPROPRIATE.
8. IF REINFORCED CONCRETE PIPE IS USED, THE PIPE BLOCKOUT MAY BE FORMED "FLUSH" WITH THE INLET BASE.
9. FOR ALL INLET BOXES, RISER SECTIONS, AND COVER ADJUSTMENT SLABS THAT ARE NOT MONOLITHIC, CONSTRUCTION JOINTS, AS SHOWN ON THE PENNDOT RC STANDARDS, SHALL BE PROVIDED.
10. ALL STRUCTURE SECTIONS, INCLUDING THE BOX TOPS SHALL BE SET ON A BUTYL SEAL (1"x 1" MINIMUM).
11. ALL PIPES SHALL BE SET FLUSH WITH THE INSIDE STRUCTURE FACE AND PARGED USING FIBROUS MORTAR IN ACCORDANCE WITH PENNDOT PUBLICATION 408/2000.
12. PRE-CAST RISER SECTIONS AND GRATE ADJUSTMENT RINGS SHALL BE USED TO ADJUST THE INLET GRATE. THE USE OF CONCRETE BLOCK/BRICK AND MORTAR IS NOT PERMITTED.
13. PIPE BLOCKOUT SIZES ARE LIMITED TO THOSE LISTED IN PENNDOT'S ROAD CONSTRUCTION STANDARDS. THIS INCLUDES PIPES WHICH ENTER INLET BOXES AT A SKEW ANGLE. ENCROACHMENT INTO THE CORNERS WILL NOT BE PERMITTED.
14. IN CASES WHERE ROADWAY SUBGRADE DRAINS DISCHARGE INTO PRE-CAST CONCRETE INLET BOXES, THE ROADWAY SUBGRADE DRAIN OPENING SHALL BE PRE-CAST OR CORE DRILLED INTO THE INLET STRUCTURE. ALL ROADWAY SUBGRADE DRAIN DISCHARGE OPENINGS SHALL BE PARGED WITH FIBROUS MORTAR IN ACCORDANCE WITH PENNDOT PUBLICATION 408/2000.
15. ALL PRE-CAST STRUCTURES SHALL BE DESIGNED TO WITHSTAND AN AASHTO HS-20 LIVE LOAD.
16. ALL STORM SEWER INLETS AND MANHOLES SHALL BE SET AND COMPLETELY BACKFILLED WITH 2-A MODIFIED STONE IN ACCORDANCE WITH THE APPROVED PLANS AND IN THE PRESENCE OF THE TOWNSHIP ENGINEER. THE AREA IMMEDIATELY AROUND THE INLET AND MANHOLE FACILITIES SHALL BE COMPACTED.
17. PRIOR TO INSTALLATION OF PRE-CAST STRUCTURES, 12" OF SUBBASE MATERIAL (2-A MODIFIED STONE) SHALL BE PLACED MEETING THE REQUIREMENTS OF PUBLICATION 408-200, SECTION 350.2, IN MAXIMUM LAYERS 4" THICK, AND COMPACTED TO A DENSITY SATISFACTORY TO THE TOWNSHIP ENGINEER.



NOTES
1. STEPS TO BE EXTRUDED OF 6061-T6 ALUMINUM OR EQUAL.
2. STEPS SHALL BE PROVIDED AT 12" ON CENTER.

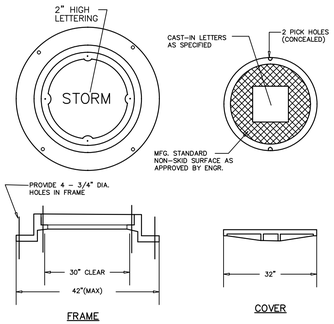
ALUMINUM STEP

N.T.S.



CONCRETE ENCASEMENT

N.T.S.



FRAME COVER

ALL MATERIAL GRAY CAST IRON, A.S.T.M. A-48, CL30 SUITABLE FOR HIGHWAY LOADING

ALL FRAMES & COVERS SHALL BE COATED WITH COAL TAR PITCH VARNISH.

VENT HOLES ARE REQUIRED IN COVERS FOR TERMINAL MANHOLES, AND WHERE SHOWN ON DRAWINGS.

PROVIDE FOUR (4) ANCHOR BOLT HOLES, 3/4" DIA. MIN.

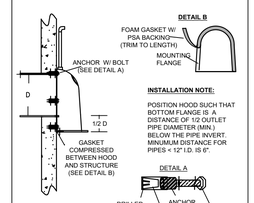
STANDARD MANHOLE FRAME & COVER

N.T.S.

NOTES:

1. ALL HOODS AND TRAPS FOR CATCH BASINS AND WATER QUALITY STRUCTURES SHALL BE
   AS MANUFACTURED BY:
   BEST MANAGEMENT PRODUCTS, INC.
   9 MATHEWS DRIVE, UNIT A1-A2,
   EAST HADDAM, CT 06423
   TOLL FREE: (800) 504-8008 OR (888) 434-0277, FAX: (877) 434-3197
   WEB SITE: www.bmpinc.com
   OR PRE-APPROVED EQUAL
2. ALL HOODS SHALL BE CONSTRUCTED OF A GLASS REINFORCED RESIN COMPOSITE WITH
   ISO GEL COAT EXTERIOR FINISH WITH A MINIMUM 0.125" LAMINATE THICKNESS.
3. ALL HOODS SHALL BE EQUIPPED WITH A WATERTIGHT ACCESS PORT, A MOUNTING FLANGE,
   AND AN ANTI-SIPHON VENT PIPE AND ELBOW AS DRAWN. (SEE CONFIGURATION DETAIL)
4. THE SIZE AND POSITION OF THE HOOD SHALL BE DETERMINED BY OUTLET PIPE SIZE AS
   PER MANUFACTURER'S RECOMMENDATION (SNOUT SIZE ALWAYS LARGER THAN PIPE SIZE).
5. THE BOTTOM OF THE HOOD SHALL EXTEND DOWNWARD A MINIMUM DISTANCE EQUAL TO
   1/2 THE OUTLET PIPE DIAMETER WITH A MINIMUM DISTANCE OF 6" FOR PIPES <12" I.D.
6. THE ANTI-SIPHON VENT SHALL EXTEND ABOVE HOOD BY MINIMUM OF 3" AND A MAXIMUM OF
   12" ACCORDING TO STRUCTURE CONFIGURATION.
7. THE SURFACE OF THE STRUCTURE WHERE THE HOOD IS MOUNTED SHALL BE FINISHED
   SMOOTH AND FREE OF LOOSE MATERIAL AND PIPE SHALL BE FINISHED FLUSH TO WALL.
8. ALL STRUCTURE JOINTS SHALL BE WATERTIGHT.
9. THE HOOD SHALL BE SECURELY ATTACHED TO STRUCTURE WALL WITH 3/8" STAINLESS
   STEEL BOLTS AND OIL-RESISTANT GASKET AS SUPPLIED BY MANUFACTURER. (SEE
   INSTALLATION DETAIL)
10. INSTALLATION INSTRUCTIONS SHALL BE FURNISHED WITH MANUFACTURER SUPPLIED
    INSTALLATION KIT.
    INSTALLATION KIT SHALL INCLUDE:
    A. INSTALLATION INSTRUCTIONS
    B. PVC ANTI-SIPHON VENT PIPE AND ADAPTER
    C. OIL-RESISTANT CRUSHED CELL FOAM GASKET WITH PSA BACKING
    D. 3/8" STAINLESS STEEL BOLTS
    E. ANCHOR SHIELDS

INSTALLATION DETAIL



HOOD SPECIFICATION FOR CATCH BASINS AND WATER QUALITY STRUCTURES

DESCRIPTION	DATE	SCALE
OIL- DEBRIS HOOD SPECIFICATION AND INSTALLATION (TYPICAL)	09/08/18	NONE
	DRAWING NUMBER	SP-SN

MAINTENANCE RECOMMENDATIONS:

- MONTHLY MONITORING FOR THE FIRST YEAR OF A NEW INSTALLATION AFTER THE SITE HAS BEEN STABILIZED IS A RECOMMENDED PRACTICE.
- MEASUREMENTS SHOULD BE TAKEN AFTER EACH RAIN EVENT OF .5 INCHES OR MORE, OR MONTHLY, AS DETERMINED BY LOCAL WEATHER CONDITIONS.
- CHECKING SEDIMENT DEPTH AND NOTING THE SURFACE POLLUTANTS IN THE STRUCTURE WILL BE HELPFUL IN PLANNING MAINTENANCE.
- THE POLLUTANTS COLLECTED IN SNOUT EQUIPPED STRUCTURES WILL CONSIST OF FLOATABLE DEBRIS AND OILS ON THE SURFACE OF THE CAPTURED WATER, AND GRIT AND SEDIMENT ON THE BOTTOM OF THE STRUCTURE.
- IT IS BEST TO SCHEDULE MAINTENANCE BASED ON THE SOLIDS COLLECTED IN THE SUMP.
- OPTIMALLY, THE STRUCTURE SHOULD BE CLEANED WHEN THE SUMP IS HALF FULL (E.G. WHEN 2 FEET OF MATERIAL COLLECTS IN A 4 FOOT SUMP, CLEAN IT OUT).
- STRUCTURES SHOULD ALSO BE CLEANED IF A SPILL OR OTHER INCIDENT CAUSES A LARGER THAN NORMAL ACCUMULATION OF POLLUTANTS IN A STRUCTURE.
- MAINTENANCE IS BEST DONE WITH A VACUUM TRUCK.

- INLETS AND MANHOLES TO HAVE SNOUTS INSTALLED: 102, 202, 204, 216, 304, 306, 404, 406, 716, AND 718.

SNOUT DETAIL

N.T.S.

TABLE A
DESIGN FOR MAX 2:1 SLOPES; MAX 3:1 SLOPES USED)

PIPE DIAMETER	SKEW b =90° TO 60° Φ = 35°			SKEW b = 55° Φ = 35°			SKEW b = 50° Φ = 40°			SKEW b = 45° Φ = 45°			SKEW b = 40° Φ = 50°			SKEW b = 30° Φ = 60°			SKEW b = 20° Φ = 70°			SKEW b = 10° Φ = 80°			
$D_{s\phi}$	$L_{s\phi}$	ø	W_s	$L_{s\phi}$	ø	W_s	$L_{s\phi}$	ø	W_s	$L_{s\phi}$	ø	W_s	$L_{s\phi}$	ø	W_s	$L_{s\phi}$	ø	W_s	$L_{s\phi}$	ø	W_s	$L_{s\phi}$	ø	W_s	$A_{s\phi}$
(in.)	(Ft.)	(Ft.)	(Ft.)	(Ft.)	(Ft.)	(Ft.)	(Ft.)	(Ft.)	(Ft.)	(Ft.)	(Ft.)	(Ft.)	(Ft.)	(Ft.)	(Ft.)	(Ft.)	(Ft.)	(Ft.)	(Ft.)	(Ft.)	(Ft.)	(Ft.)	(Ft.)	(Ft.)	(in.)
36	5.8	0	4.6	6.0	.33	4.9	6.2	.5	5.2	6.5	.67	5.7	7.0	.75	6.2	8.3	1.33	8.0	11.1	1.75	11.7	19.6	5.0	23.0	4.6	12
42	6.3	0	5.8	6.6	.33	6.1	6.9	.5	6.5	7.3	.67	7.1	7.8	.75	7.8	9.3	1.33	10.0	12.5	1.75	14.6	22.5	5.0	28.8	5.8	12
48	6.9	0	6.9	7.2	.33	7.3	7.5	.5	7.8	8.0	.67	8.5	8.5	.75	9.4	10.3	1.33	12.0	14.0	1.75	17.5	25.3	5.0	34.6	6.9	12
54	7.5	0	8.0	7.8	.33	8.5	8.2	.5	9.1	8.7	.67	9.9	9.3	.75	10.9	11.3	1.33	14.0	15.5	1.75	20.5	28.2	5.0	40.3	8.0	12
60	8.1	0	9.2	8.4	.33	9.8	8.8	.5	10.4	9.4	.67	11.3	10.1	.75	12.5	12.3	1.33	16.0	16.9	1.75	23.4	31.1	5.0	46.0	9.2	15
72	9.2	0	11.5	9.6	.33	12.2	10.1	.5	13.0	10.8	.67	14.1	11.7	.75	15.6	14.3	1.33	20.0	19.8	1.75	29.2	36.9	5.0	57.6	11.5	15

$SD = \frac{D_{s\phi}}{\cos\Phi} = \frac{D_{s\phi}}{\sin \text{Skew } b}$

$L = SD + 2.3'$

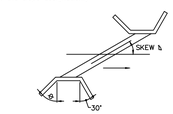
$W_s = \frac{2_{s\phi}- 2'}{\cos\Phi}$ (DESIGN FOR MAX 2:1 SLOPES, MAX 3:1 SLOPES USED)

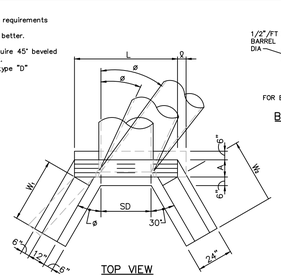
$W_s = \frac{X}{\cos\Phi}\ (D_{s\phi}- 0.5 - \frac{1.0}{X})$

(For variable slope when X equals horizontal dimension of the slope designation.)

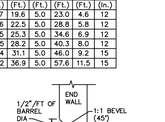
NOTES

1. Construct in accordance with the requirements of Publication 408, Section 605.
2. Use Class A cement concrete or better.
3. Chamfer exposed edges one inch.
4. End Walls 13, 14, 15, AND 19 require 45° beveled edges as shown on detail at right.
5. Pipes smaller than 36" requires type "D" endwall (see detail).



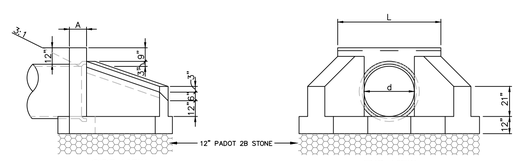


TOP VIEW



FOR EW#13, EW#14, EW#15, AND EW#19

BEVELED EDGE



SIDE VIEW END VIEW

(SEE TABLE 'A' FOR DIMENSIONS NOT INCLUDED)

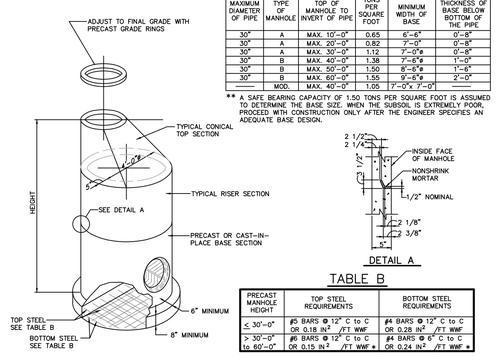
TYPE D-W ENDWALL

N.T.S.

TABLE A
BASE SLAB DIMENSIONS

MAXIMUM DIAMETER OF PIPE	TYPE OF MANHOLE	DEPTH FROM TOP OF MANHOLE TO INVERT OF PIPE	AS DESIGNED ** TONS PER SQUARE FOOT	MINIMUM WIDTH OF BASE	MINIMUM THICKNESS OF BASE BELOW BOTTOM OF THE PIPE
30"	A	MAX. 10'-0"	0.65	6'-6"	0'-8"
30"	A	MAX. 20'-0"	0.82	7'-0"	0'-8"
30"	A	MAX. 30'-0"	1.12	7'-0"ø	0'-8"
30"	B	MAX. 40'-0"	1.38	7'-6"ø	1'-0"
30"	B	MAX. 50'-0"	1.50	8'-6"ø	1'-6"
30"	B	MAX. 60'-0"	1.55	9'-6"ø	2'-0"
———	MOD.	MAX. 40'-0"	1.05	7'-0"x 7'-0"	———

** A SAFE BEARING CAPACITY OF 1.50 TONS PER SQUARE FOOT IS ASSUMED TO DETERMINE THE BASE SIZE. WHEN THE SUBSOIL IS EXTREMELY POOR, PROCEED WITH CONSTRUCTION ONLY AFTER THE ENGINEER SPECIFIES AN ADEQUATE BASE DESIGN.



PRECAST MANHOLE DETAIL A

TABLE B

PRECAST MANHOLE HEIGHT	TOP STEEL REQUIREMENTS	BOTTOM STEEL REQUIREMENTS
≤ 30'-0"	#5 BARS @ 12" C to C OR 0.18 IN² /FT WMF	#4 BARS @ 12" C to C OR 0.28 IN² /FT WMF
> 30'-0" to 60'-0"	#6 BARS @ 12" C to C OR 0.15 IN² /FT WMF *	#4 BARS @ 6" C to C OR 0.24 IN² /FT WMF *

PROVIDE WELDED WIRE FABRIC MEETING THE REQUIREMENTS OF PUBLICATION 408 SPECIFICATIONS, SECTION 709.3

NOTE:
ALL MANHOLES IN NON-PAVED AREAS TO UTILIZE BOLTED COVER.

STORM MANHOLE DETAIL

ESE CONSULTANTS
ENGINEERING • PLANNING • SURVEYING • ENVIRONMENTAL
ESE Consultants, Inc.
1140 Virginia Drive • Fort Washington, PA 19034
T: 215-914-2050

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL ENGINEER — JEFFREY M. MAUDLIN

REV.	DATE	DESCRIPTION	DRAWN
1	3-24-23	TOWNSHIP REVIEW LETTER	ESE
2	7/24/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
3	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
4	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT-NOT TO BE RECORDED

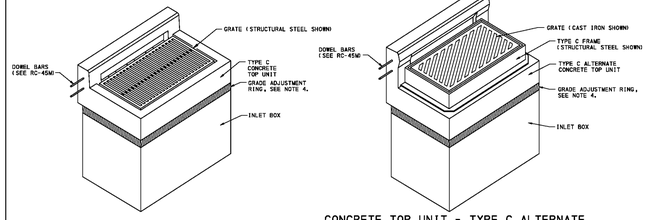
APPLICATION NUMBER LD-23-01

STORM SEWER DETAILS

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

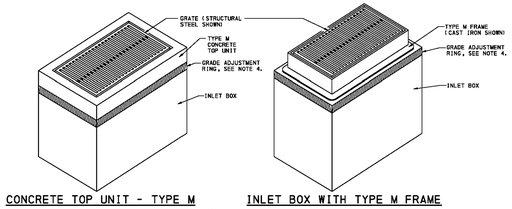
DATE: 3-24-23	SCALE: AS NOTED
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-09-DET-STORM
REF. NO.: SD09.03	
SHEET NO.: 42 OF 62	

N:\PROJECTS\PENNSYLVANIA\7662-RYDAL ST. BASILS\ENGDEPT\DRAWINGS\7662-S-09-DET-STORM.DWG-Luke Piotrowicz-3/21/2024 12:49 PM



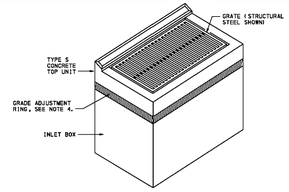
CONCRETE TOP UNIT - TYPE C

CONCRETE TOP UNIT - TYPE C ALTERNATE WITH TYPE C FRAME



CONCRETE TOP UNIT - TYPE M

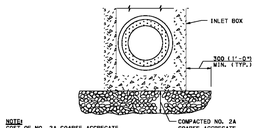
INLET BOX WITH TYPE M FRAME



CONCRETE TOP UNIT - TYPE S

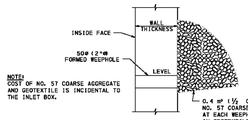
NOTES:

1. FOR ADDITIONAL NOTES, SEE SHEETS 1 - 3.
2. STANDARD INLET BOXES SHOWN, PROVIDE TOP SLABS FOR OTHER INLET BOX TYPES.
3. SEE RC-45M FOR DETAILS FOR THE CONCRETE TOP UNITS, FRAMES, AND GRATES.
4. PROVIDE GRADE ADJUSTMENT RINGS WHEN REQUIRED. SEE RC-45M FOR DETAILS.



NOTE: COST OF NO. 2A COARSE AGGREGATE IS INCIDENTAL TO THE INLET BOX.

INLET BOX SUBBASE PREPARATION DETAIL
(SEE FIELD CONSTRUCTION NOTES ON SHEET 1)



NOTE: COST OF NO. 57 COARSE AGGREGATE AND GEOTEXTILE IS INCIDENTAL TO THE INLET BOX.

0.4 cy (½ cu. yd.) OF NO. 57 COARSE AGGREGATE AT EACH WEEPHOLE WRAPPED IN GEOTEXTILE, CLASS 1 (PUB 408, SECTION 1001.3 (a) & (d))

WEEPHOLE DETAIL
(SEE GENERAL NOTE 15 ON SHEET 1)

NOTE: EITHER ALL METRIC OR ALL ENGLISH VALUES MUST BE USED ON PLANS. METRIC AND ENGLISH VALUES SHOWN MAY NOT BE MIXED.

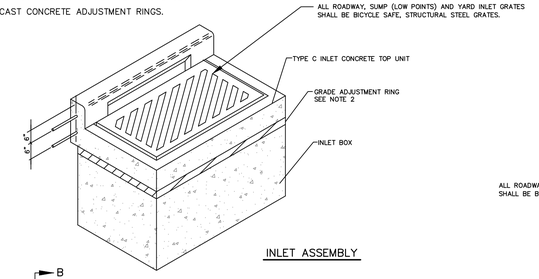
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

INLET BOXES
INLET ASSEMBLIES - 1

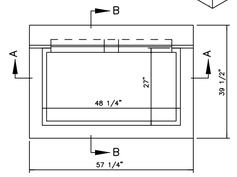
RECOMMENDED JUN. 1, 2010	RECOMMENDED JUN. 1, 2010	SHT 4 OF 45
CHIEF, HWY. SA DIVISION	DIRECTOR, BUREAU OF DESIGN	RC-46M

NOTES

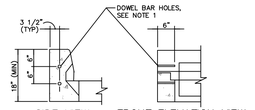
1) DOWEL INLET TOPUNIT WITH (2) #8 x 1'-0" DOWEL BARS AND PLACE 1/4" PREMOLDED EXPANSION JOINT FILLER WHEN CONNECTING TO ADJACENT CURB SECTIONS.
2) USE PRECAST CONCRETE ADJUSTMENT RINGS.



INLET ASSEMBLY

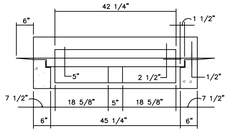


PLAN VIEW

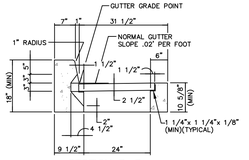


SIDE VIEW FRONT ELEVATION VIEW

DOWEL HOLE LOCATIONS

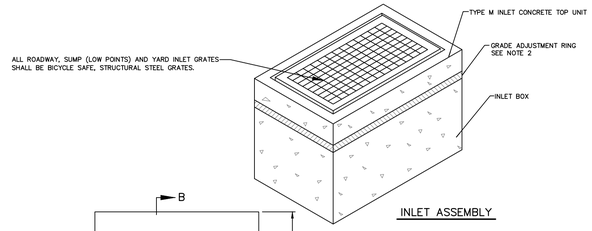


SECTION A-A

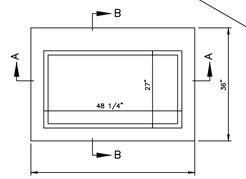


SECTION B-B

CONCRETE TOP UNIT
TYPE C INLET
N.T.S.

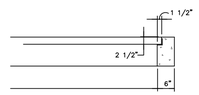


INLET ASSEMBLY

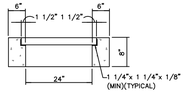


NOTES

1) USE PRECAST CONCRETE OR MASONRY GRADE ADJUSTMENT RINGS.

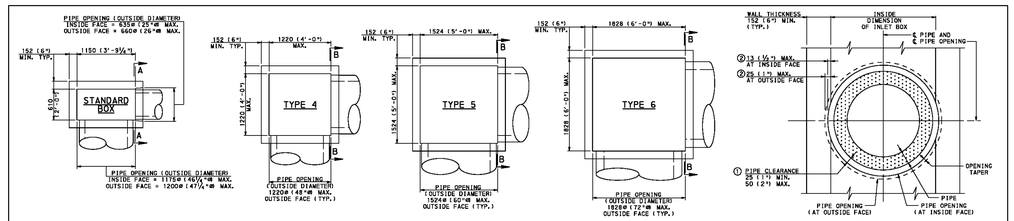


SECTION A-A

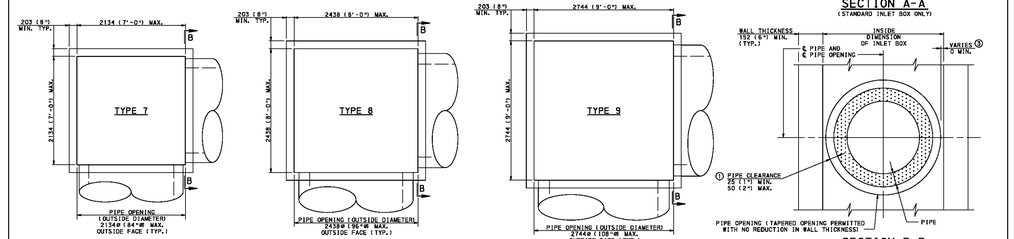


SECTION B-B

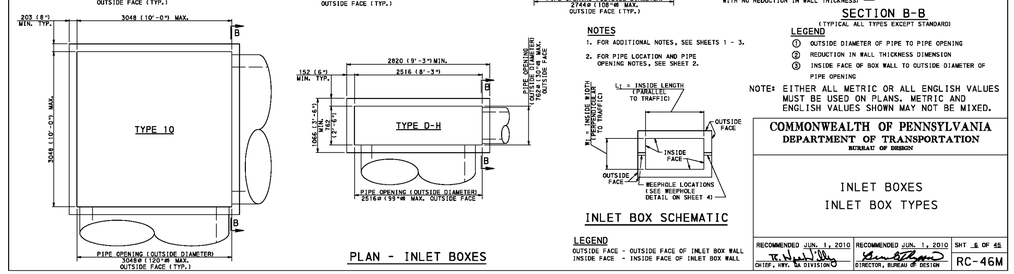
CONCRETE TOP UNIT
TYPE M INLET
N.T.S.



SECTION A-A
(STANDARD INLET BOX ONLY)



SECTION B-B
(TYPICAL ALL TYPES EXCEPT STANDARD)



PLAN - INLET BOXES

NOTES

1. FOR ADDITIONAL NOTES, SEE SHEETS 1 - 3.
2. FOR PIPE LOCATION AND PIPE OPENING NOTES, SEE SHEET 2.

LEGEND

① OUTSIDE DIAMETER OF PIPE TO PIPE OPENING
② REDUCTION IN WALL THICKNESS DIMENSION
③ INSIDE FACE OF BOX WALL TO OUTSIDE DIAMETER OF PIPE OPENING

INLET BOX SCHEMATIC

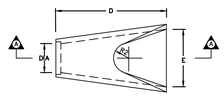
LEGEND
OUTSIDE FACE - OUTSIDE FACE OF INLET BOX WALL
INSIDE FACE - INSIDE FACE OF INLET BOX WALL

NOTE: EITHER ALL METRIC OR ALL ENGLISH VALUES MUST BE USED ON PLANS. METRIC AND ENGLISH VALUES SHOWN MAY NOT BE MIXED.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF DESIGN

INLET BOXES
INLET BOX TYPES

RECOMMENDED JUN. 1, 2010	RECOMMENDED JUN. 1, 2010	SHT 5 OF 45
CHIEF, HWY. SA DIVISION	DIRECTOR, BUREAU OF DESIGN	RC-46M

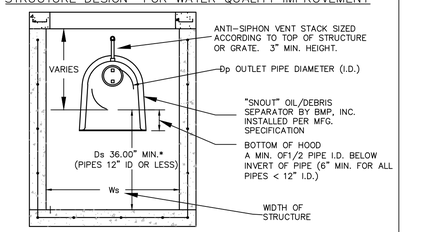


DIA	A	B	C	D	E	R1	R2	X:Y
15"	6"	2'-3"	3"-10"	6"-1"	2'-6"	12 1/2"	11"	3:1
18"	9"	2'-3"	3"-10"	6"-1"	3'-0"	15 1/2"	12"	3:1
21"	9"	2'-11"	3'-2"	6"-1"	3'-6"	16 1/8"	13"	3:1
24"	9 1/2"	3'-7.5"	3'-6"	6"-1.5"	4'-0"	16 13/16"	14"	3:1
27"	10 1/2"	4'-0"	3'-1.5"	6"-1.5"	4'-6"	18 3/16"	14 1/2"	3:1
30"	1'-0"	4'-6"	1'-7.75"	6"-1.75"	51-0"	18 1/2"	15"	3:1
36"	1'-3"	5'-3"	2'-10"	8"-1"	6'-0"	24 9/16"	20"	3:1
48"	2'-0"	6'-0"	2'-2"	8"-2"	7'-0"	28 1/2"	22"	3:1

THE ABOVE CHART IS FOR REFERENCE ONLY. DIMENSIONS MAY VARY WITH DIFFERENT MANUFACTURERS

FLARED END SECTION
N.T.S.

STRUCTURE DESIGN FOR WATER QUALITY IMPROVEMENT



RULE # 1- AT AN ABSOLUTE MINIMUM, STRUCTURE INTERNAL DIMENSIONS MUST BE AT LEAST LARGE ENOUGH TO ACCOMODATE EXTERNAL DIMENSIONS OF THE SNOUT, AND ALLOW FOR A PERSON TO INSTALL IT. REFER TO BMP, INC. CAD DETAILS FOR PART DIMENSIONS. BMP RECOMMENDS STRUCTURE WALL TO BE AT LEAST 12" WIDER THAN MAXIMUM SNOUT WIDTH. FOR TRASHSCREEN, STRUCTURE MUST BE AT LEAST 6" WIDER THAN TRASHSCREEN WIDTH.

RULE #2- USE ONLY "F" SERIES SNOUTS FOR RECTANGULAR OR SQUARE STRUCTURES, AVAILABLE IN 12", 18", 24", 30", 36", 48", 72" AND 96" SIZES. USE ONLY "R" SERIES SNOUTS FOR ROUND STRUCTURES, AVAILABLE IN 12", 18", 24", 30", 42", 52" AND 72" SIZES.

SIZING EXAMPLES:

OUTLET HOLE SIZE	SNOUT SIZE
11.9" O.D. OR LESS	12 F or R (R FITS 36"-48" DIAM STRUCTURE)
12.0"-17.9" O.D.	18 F or R (R FITS 48"-60" DIAM STRUCTURE)
18.0"-23.9" O.D.	24 F or R (R FITS 48"-60" DIAM STRUCTURE)
24.0"-29.9" O.D.	30 F or R (R FITS 60"-72" DIAM STRUCTURE)
30.0"-35.9" O.D.	36FTB
30.0"-41.9" O.D.	42RTB/60 (FITS 60" DIAM STRUCTURE ONLY)
30.0"-47.9" O.D.	48 FTB
30.0"-51.9" O.D.	52RTB/72 OR I54 (FITS 72" OR 84" DIAM STRUCTURE ONLY)
48.0"-71.9" O.D.	72FTB OR 72RTB/96 (FITS 96" DIAM STRUCTURE ONLY)
72"-95.9" O.D.	96 FTB OR 96FTBB

NPSNOUT (FOR PVC OR SMALL DIAM. STRUCTURE)

UP TO 12" PIPE IN 18" ID STRUCTURE NP1218
UP TO 15" PIPE IN 24" ID STRUCTURE NP1524
UP TO 18" PIPE IN 30" ID STRUCTURE NP1830
UP TO 18" PIPE IN 36-42" ID STRUCTURE NP1836
UP TO 24" PIPE IN 30" ID STRUCTURE NP 2430

BMP, INC.
9 MATHEWS DR. UNIT A1-A2, E. HADDAM, CT
(800) 504-8008 FAX: (877)434-3197

DESCRIPTION	DATE	SCALE
SNOUT SIZING CHART	09/09/18	NONE
	DRAWING NUMBER	SP-SI

NOTES:
1. INLETS OR MANHOLES TO HAVE SNOUTS INSTALLED: 102, 202, 204, 216, 304, 306, 404, 406, 716, AND 718.

ESE CONSULTANTS
ENGINEERING • PLANNING • SURVEYING • ENVIRONMENTAL
ESE Consultants, Inc.
1140 Virginia Drive • Fort Washington, PA 19034
T: 215-914-2050

COMMONWEALTH OF PENNSYLVANIA — JEFFREY M. MAUDER — ENGINEER — 044102 — REGISTERED PROFESSIONAL

REV.	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTERS	ESE

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT-NOT TO BE RECORDED

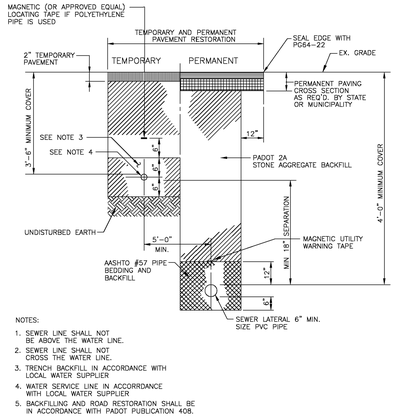
STORM SEWER DETAILS

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

APPLICATION NUMBER LD-23-01

DATE:	SCALE:
3-24-23	AS NOTED
DESIGN:	DRAWN:
	EJS
JOB NO.:	FILE NAME:
7662	7662-S-09-DET-STORM
REF. NO.:	SD09.04
SHEET NO.:	43 OF 62

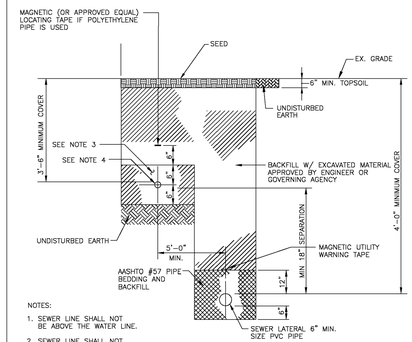
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(NOT REQUIRED FOR NEW ROADS)

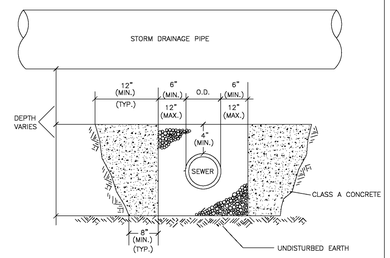
COMBINED TRENCH DETAIL-SEWER LATERAL/ WATER SERVICE LINE STATE / TWP. ROADS

DATE: JUNE 2007
DETAIL: 3



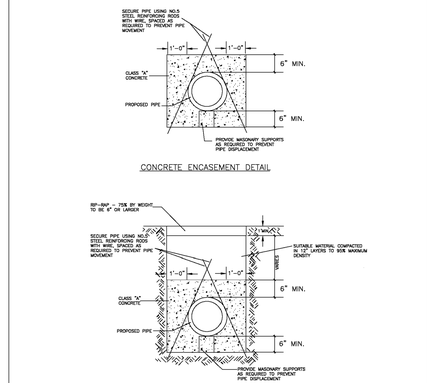
COMBINED TRENCH DETAIL-SEWER LATERAL/ WATER SERVICE LINE LAWN / AGRICULTURAL AREAS

DATE: JUNE 2007
DETAIL: 4



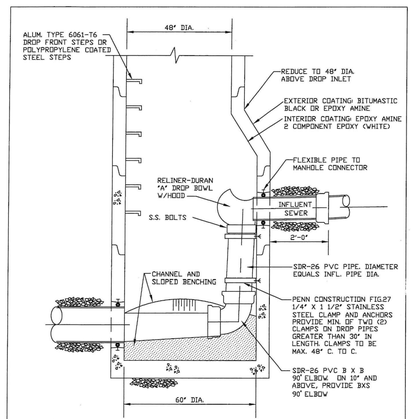
GRAVITY SEWER CROSSING DETAIL USING PIER SUPPORTS

DATE: JUNE 2007
DETAIL: 7



STANDARD CONCRETE ENCASEMENT DETAILS

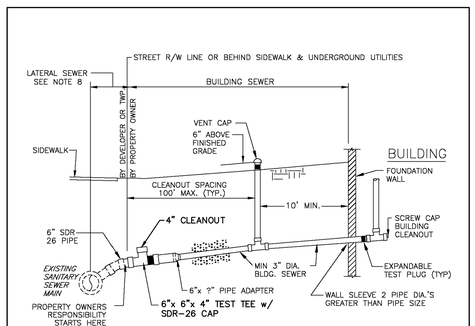
DATE: JUNE 2007
DETAIL: 9



Township of Abington
STANDARD DETAIL - SEWER SYSTEM

PRECAST SANITARY MANHOLE INSIDE DROP CONNECTION (8" - 24" SEWERS)

DATE: NOVEMBER 2015
DETAIL: 13

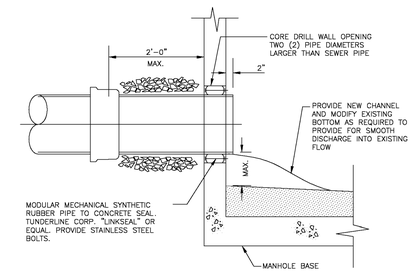


NOTES:

1) PROVIDE 6" OF AASHTO NO. 8 OR 57 STONE BELOW PIPE AND 12" ABOVE PIPE (TYPICAL ENTIRE LENGTH OF LATERAL).
2) MINIMUM SLOPE = 1% (1/8" PER FT.)
3) MINIMUM DEPTH OF COVER = 3 FT
4) PIPE MATERIALS AS PER THE PENNSYLVANIA CONSTRUCTION CODE ACT
5) TO CONDUCT AIR TESTING OF BLDG. SEWER INSTALL EXPANDABLE PLUGS AT LOCATIONS SHOWN. AIR TEST SHALL BE 5 LBS. FOR 15 MINS. AFTER COMPLETION OF AIR TESTING, SEAL TEST TEE.
6) NO SEWER SERVICE LINE VENT CAPS SHALL BE INSTALLED WITHIN A 100-YR FLOOD PLAIN OR WITHIN FLOOD PRONE AREAS.
7) NO VENT CAPS OR CLEANOUTS SHALL BE INSTALLED IN DRIVEWAYS OR OTHER PAVED AREAS, UNLESS SPECIFICALLY APPROVED BY THE TOWNSHIP.
8) THE LATERAL SEWER SHALL BE INSTALLED TO THE EDGE OF THE SEWER EASMENT FOR SEWERS LOCATED IN AN EASEMENT OR TO THE STREET RIGHT-OF WAY AS A MINIMUM; OR TO SUCH A POINT AS REQUIRED TO CLEAR STREET SIDEWALKS AND UNDERGROUND UTILITIES.

GRAVITY BUIDLING SEWER INSTALLATION DETAIL

DATE: OCTOBER 2007
DETAIL: 19



PIPE CONNECTION TO AN EXISTING MANHOLE
N.T.S.

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JEFFREY M. MAUDER
ENGINEER
No. PE078170
Jeff Mauder

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REV.	DATE	DESCRIPTION
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS
2	10/23/23	REVISIONS PER TOWNSHIP COMMENTS
1	7/24/23	TOWNSHIP REVIEW LETTERS

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PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT-NOT TO BE RECORDED

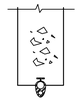
APPLICATION NUMBER LD-23-01

SANITARY SEWER DETAILS

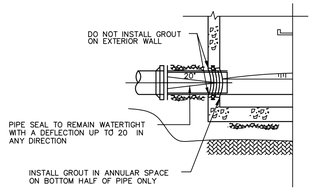
SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 3-24-23
SCALE: AS NOTED
DESIGN:
DRAWN: EJS
JOB NO.: 7662
FILE NAME: 7662-S-09-DET-SAN
REF. NO.: SD09.05
SHEET NO.: 44 OF 62

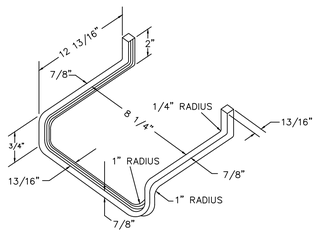
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INTEGRAL PIPE GASKET
(BEFORE INSTALLATION)

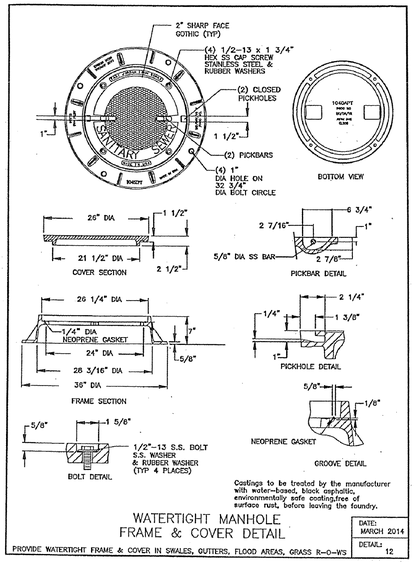


MANHOLE PIPE GASKET (DMG-02)
N.T.S.



NOTES
1. STEPS TO BE EXTRUDED OF 6061-T6 ALUMINUM.
2. STEPS SHALL BE PROVIDED AT 12" ON CENTER.

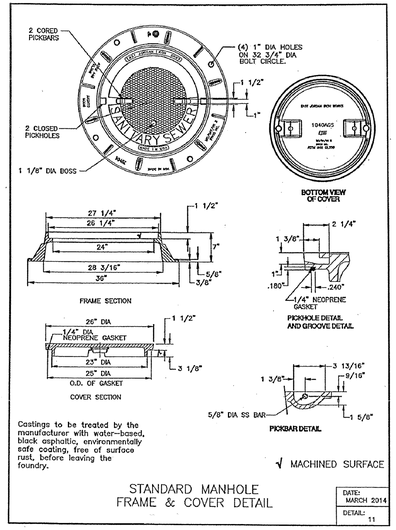
ALUMINUM STEP
N.T.S.



WATERTIGHT MANHOLE FRAME & COVER DETAIL

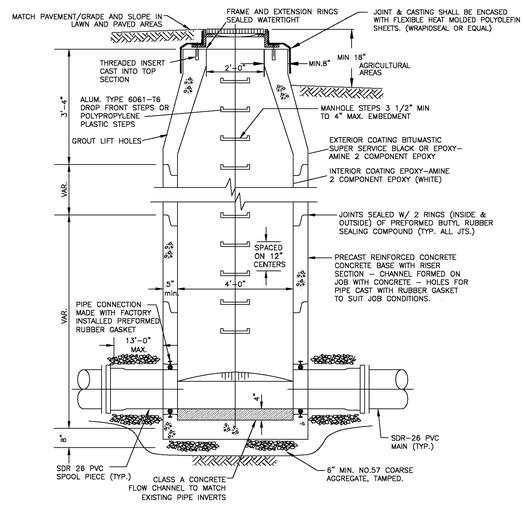
DATE: MARCH 2014
DETAIL: 12

PROVIDE WATERTIGHT FRAME & COVER IN SWALES, GUTTERS, FLOOD AREAS, GRASS R-O-W'S



STANDARD MANHOLE FRAME & COVER DETAIL

DATE: MARCH 2014
DETAIL: 11



PRECAST CONCRETE STANDARD MANHOLE
N.T.S.

MANHOLE COATING SPECIFICATIONS

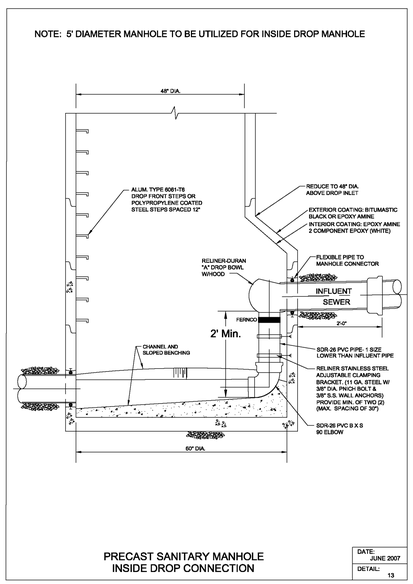
EXTERIOR

1. THE COATING SHALL BE BITUMASTIC SUPER SERVICE BLACK AS MANUFACTURED BY KOPPERS Co., INC. EQUIVALENT OF MOBIL CHEMICAL Co., OR EQUAL. AT LEAST TWO (2) COATS SHALL BE APPLIED GIVING A TOTAL DRY FILM THICKNESS OF A MINIMUM OF 24.0 MILS. AFTER INSTALLATION, DAMAGED SURFACES SHALL BE RECOATED IN ACCORDNCE WITH COATING MANUFACTURER'S RECOMMENDATION TO GIVE THE REQUIRED 24 MILS DRY FILM THICKNESS.

2. AS AN ALTERNATE, THE COATING SHALL INCLUDE TWO (2) COATS OF EPOXY-AMINE ADDUCT, MULTI-MIL, TWO COMPONENT, CATALYZED EPOXY, WITH TOTAL SOLIDS VOLUME OF 49-51% WHICH IS RESISTANT TO ALKALI, SALT AND GROUND WATER IMMERSION, PERTOLEUM PRODUTS AND ACIDS. COATING SHALL MEET AWWA D102-78 PAINT SYSTEM No. 1 STANDARDS AND A MINIMUM 12 MILSDRY FILM THICKNESS PER COAT.

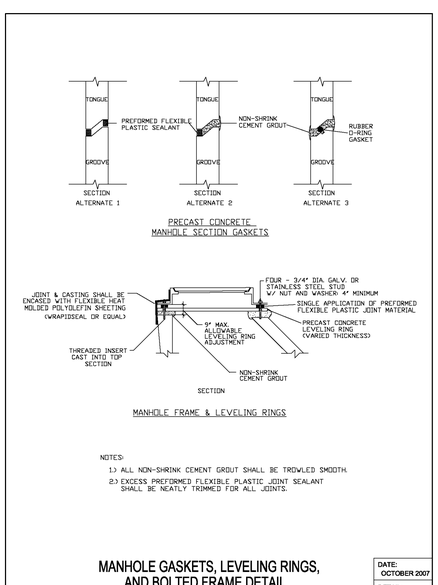
INTERIOR

1. THE COATING SHALL INCLUDE 2 COATS OF EPOXY-AMINE ADDUCT, MULTI-MIL, TWO COMPONENT, CATALYZED EPOXY, WITH TOTAL SOLIDS VOLUME OF 49-51% WHICH IS RESISTANT TO ALKALI, SALT AND GROUNDWATER IMMERSION, PETROLEUM PRODUCTS AND ACIDS. COATING SHALL MEET AWWA D102-78, PAINT SYSTEM No. 1 STANDARDS AND A MINIMUM 12 MILS DRY THICKNESS PER COAT.



PRECAST SANITARY MANHOLE INSIDE DROP CONNECTION

DATE: JUNE 2007
DETAIL: 13



NOTES:
1.) ALL NON-SHRINK CEMENT GROUT SHALL BE TROWLED SMOOTH.
2.) EXCESS PREFORMED FLEXIBLE PLASTIC JOINT SEALANT SHALL BE NEATLY TRIMMED FOR ALL JOINTS.

MANHOLE GASKETS, LEVELING RINGS, AND BOLTED FRAME DETAIL

DATE: OCTOBER 2007
DETAIL: 20

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COMMONWEALTH OF PENNSYLVANIA — PROFESSIONAL ENGINEER — JEFFREY M. MAUDER

REC.	DATE	DESCRIPTION
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS
2	10/31/23	REVISIONS PER TOWNSHIP COMMENTS
1	7/24/23	TOWNSHIP REVIEW LETTERS
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PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT-NOT TO BE RECORDED

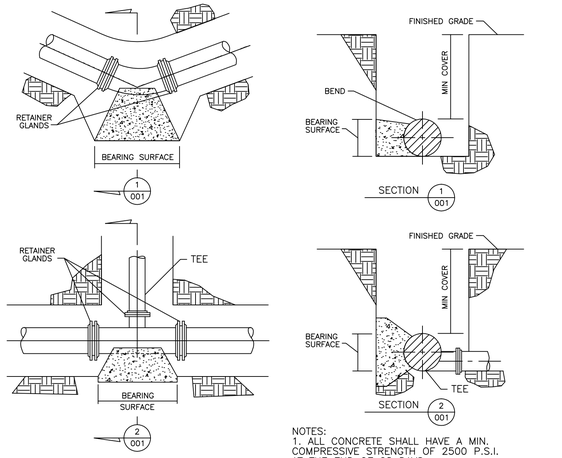
APPLICATION NUMBER LD-23-01

SANITARY SEWER DETAILS

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 3-24-23	SCALE: AS NOTED
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-09-DET-SAN
REF. NO.: **SD09.06**	
SHEET NO.: **45** OF **62**	

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PLAN

NOTES:
1. ALL CONCRETE SHALL HAVE A MIN. COMPRESSIVE STRENGTH OF 2500 P.S.I. AT THE END OF 28 DAYS.
2. NO COUPLING OR JOINTS SHALL BE COVERED WITH CONCRETE.
3. FOR BEARING SURFACE DIMENSIONS SEE TABLES FOR VARIOUS PIPE SIZES.
4. BEARING SURFACE MUST BE UNDISTURBED EARTH.
5. PIPING SHALL BE WRAPPED WITH POLYETHYLENE PRIOR TO PLACEMENT OF CONCRETE.

HORIZONTAL THRUST BLOCKING 150 PSI WORKING PRESSURE

PIPE SIZES	6" AND 8"				10" AND 12"			
TYPE OF BEARING MATERIAL AND ALLOWABLE LOADS	DEGREE BEND OR DEFLECTION				DEGREE BEND OR DEFLECTION			
	11 1/4°	22 1/2°	45°	90°	11 1/4°	22 1/2°	45°	90°
SAND 1 TON/SQ.FT., SOFT CLAY 1 TON/SQ.FT.	1.50	3.00	6.00	12.00	3.00	6.00	12.00	24.50
SAND & GRAVEL 2 TON/SQ.FT.	1.00	1.50	3.00	6.00	1.50	3.00	6.00	12.00
CLAY 3 TON/SQ.FT.	1.00	1.00	2.00	4.00	1.00	2.00	4.00	8.00
SOFT ROCK 5 TON/SQ.FT.	1.00	1.00	1.00	2.50	1.00	1.00	2.50	5.00
ROCK 20 TON/SQ.FT.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

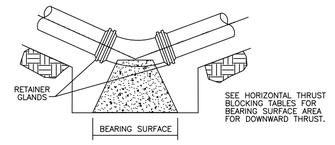
PIPE SIZES	14 AND 16"			
TYPE OF BEARING MATERIAL AND ALLOWABLE LOADS	DEGREE BEND OR DEFLECTION			
	11 1/4°	22 1/2°	45°	90°
SAND 1 TON/SQ.FT, SOFT CLAY 1 TON/SQ.FT.	5.50	11.00	21.50	43.00
SAND & GRAVEL 2 TON/SQ.FT.	2.50	5.50	11.00	21.50
CLAY 3 TON/SQ.FT.	2.00	3.50	7.00	14.00
SOFT ROCK 5 TON/SQ.FT.	1.00	2.00	4.50	8.50
ROCK 20 TON/SQ.FT.	1.00	1.00	1.00	2.00

NOTE:
BEARING SURFACE AREAS SHOWN ARE MINIMUMS FOR THE VARIOUS PIPE SIZES.

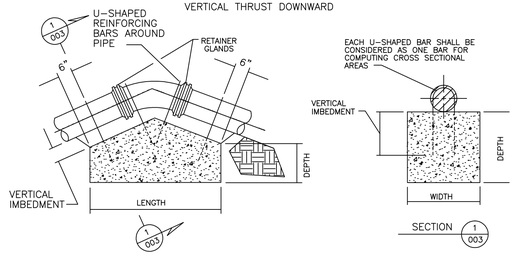
HORIZONTAL THRUST BLOCKING AND VERTICAL THRUSTS DOWNWARD BEARING SURFACE AREA

NOTES:
1. THIS METHOD OF CONSTRUCTION SHALL BE UTILIZED BY THE CONTRACTOR WHERE IT IS NECESSARY TO PASS BENEATH AN EXISTING UTILITY PIPE OR STRUCTURE TO MAINTAIN A MINIMUM 3'-6" COVER OVER THE NEW WATER MAIN.
2. THIS DETAIL IS TO BE USED AS DIRECTED BY AQUA PENNSYLVANIA.

WATER MAIN/UTILITY PIPE CROSSING DETAIL
N.T.S.



VERTICAL THRUST DOWNWARD



VERTICAL THRUST UPWARD

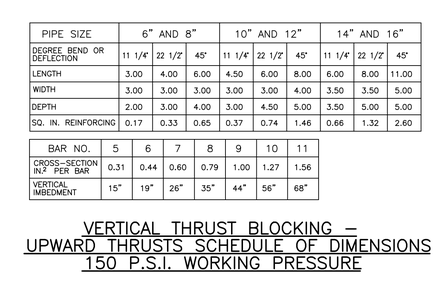
NOTES:
1. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2500 P.S.I. AT THE END OF 28 DAYS.
2. PAINT ALL EXPOSED STEEL WITH TWO COATS OF ASPHALT PAINT.
3. NO COUPLING OR JOINTS SHALL BE CONVEYED WITH CONCRETE.
4. ALL-THREADS WITH PIPE STRAPS MAY BE USED IN PLACE OF REINFORCING BARS.
5. ALL THRUST BLOCKS SHOWN ARE INTENDED AS A GUIDE AND SHALL WITHSTAND THE REQUIRED PRESSURE.
6. RETAINER GLANDS REQUIRED ON ALL MECHANICAL JOINT FITTINGS.
7. CERTAIN SITUATIONS MAY WARRENT THE USE OF TIE RODS, AUTHORIZED BY THE WATER COMPANY ONLY.

VERTICAL THRUST BLOCKING

PIPE SIZE	6" AND 8"			10" AND 12"			14" AND 16"		
DEGREE BEND OR DEFLECTION	11 1/4°	22 1/2°	45°	11 1/4°	22 1/2°	45°	11 1/4°	22 1/2°	45°
LENGTH	3.00	4.00	6.00	4.50	6.00	8.00	6.00	8.00	11.00
WIDTH	3.00	3.00	3.00	3.00	3.00	4.00	3.50	3.50	5.00
DEPTH	2.00	3.00	4.00	3.00	4.50	5.00	3.50	5.00	5.00
SQ. IN. REINFORCING	0.17	0.33	0.65	0.37	0.74	1.46	0.66	1.32	2.60

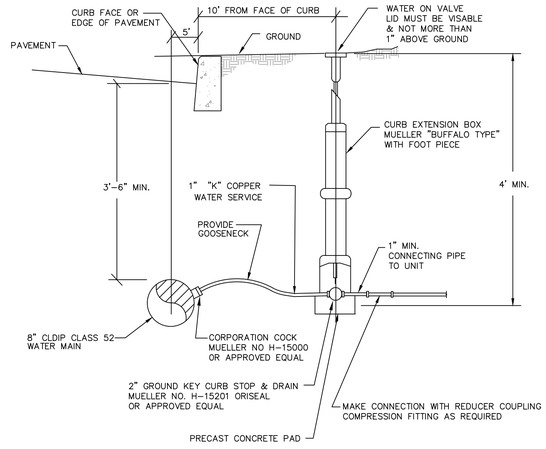
BAR NO.	5	6	7	8	9	10	11
CROSS-SECTION IN.² PER BAR	0.31	0.44	0.60	0.79	1.00	1.27	1.56
VERTICAL IMBEDMENT	15"	19"	26"	35"	44"	56"	68"

VERTICAL THRUST BLOCKING – UPWARD THRUSTS SCHEDULE OF DIMENSIONS 150 P.S.I. WORKING PRESSURE

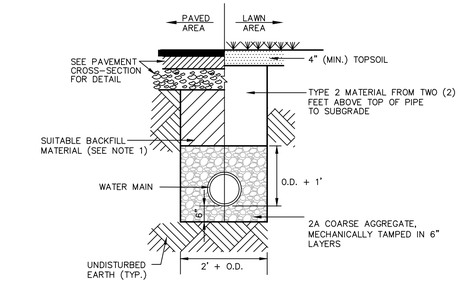


NOTES:
1. RETAINER GLANDS REQUIRED ON ALL MECHANICAL JOINT FITTINGS.
2. VALVE BOX SHALL BE 2 PIECE SCREW TYPE.

GATE VALVE INSTALLATION



WATER SERVICE CONNECTIONS
N.T.S.



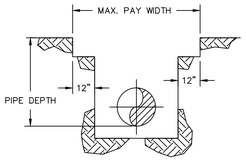
NOTES

1. SUITABLE BACKFILL MATERIAL, WHEN USED AS BACKFILL SHALL BE CAPABLE OF BEING COMPACTED TO AT LEAST NINETY-FIVE PERCENT (95%) OF MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT.

2. TYPE 1 MATERIAL: EXCAVATED MATERIAL FROM THE TRENCH OR MATERIALS FROM OTHER SOURCES WHICH ARE FREE FROM LARGE CLODS, ROOTS, OR STONES LARGER THAT TWO INCHES MAY BE USED.

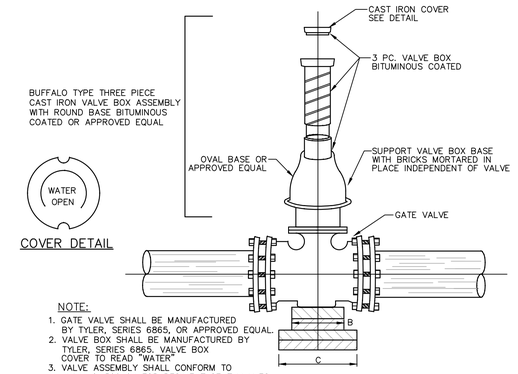
3. TYPE 2 MATERIAL: EXCAVATED MATERIAL FROM THE TRENCH OR MATERIALS FROM OTHER SOURCES WHICH ARE FREE FROM LARGE CLODS, ROOTS, OR STONES LARGER THAN EIGHT INCHES MAY BE USED.

WATER MAIN TRENCH DETAIL
N.T.S.



NOMINAL PIPE DIA. (IN.)	MAX. PAY WIDTH PIPE DEPTH 0'-8"	MAX. PAY WIDTH PIPE DEPTH OVER 6'
4	5.0	6.0
8	5.0	6.0
8	5.0	6.0
10	5.0	6.0
12	5.0	6.0
14	5.5	6.0
15	5.5	6.0
16	5.5	6.0
18	5.5	6.0
20	6.0	6.0
24	6.0	6.0
27	-	6.5
30	-	6.5
36	-	7.0
42	-	8.0
48	-	8.5
54	-	9.0
60	-	9.5

MAXIMUM TRENCH WIDTHS FOR STREET REPAVING

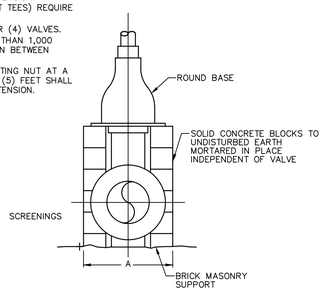


COVER DETAIL

ELEVATION

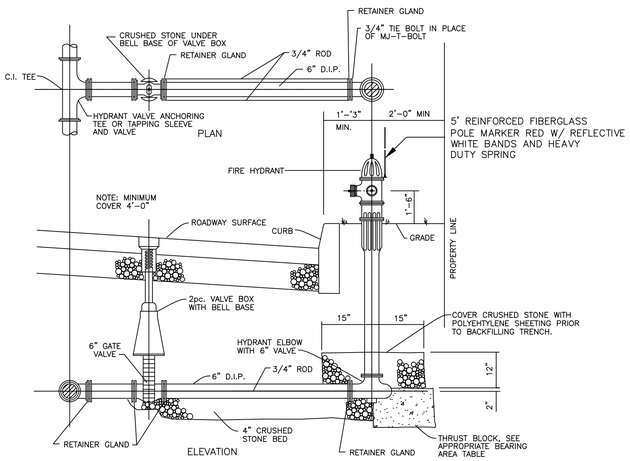
NOTE:
1. GATE VALVE SHALL BE MANUFACTURED BY TYLER, SERIES 6865, OR APPROVED EQUAL.
2. VALVE BOX SHALL BE MANUFACTURED BY TYLER, SERIES 6865, VALVE BOX COVER TO READ "WATER"
3. VALVE ASSEMBLY SHALL CONFORM TO AWWA C-509 94 FOR RESILIENT SEAT VALVES.
4. ANY VALVE WITH AN OPERATING NUT AT A DEPTH GREATER THAN FIVE (5) FEET SHALL REQUIRE A VALVE STEM EXTENSION.
5. ALL TEES (EXCEPT HYDRANT TEES) REQUIRE THREE (3) VALVES.
6. ALL CROSSES REQUIRE FOUR (4) VALVES.
7. THERE SHALL BE NO MORE THAN 1,000 LINEAR FEET OF WATER MAIN BETWEEN VALVES.
8. ANY VALVE WITH AN OPERATING NUT AT A DEPTH GREATER THAN FIVE (5) FEET SHALL REQUIRE A VALVE STEM EXTENSION.

SZ. OF VALVE	DIMENSIONS A	B	C
12"	24	8	14
10"	24	8	14
8"	20	6	12
6"	8	4	10
4"	8	4	10



END VIEW

GATE VALVE WITH VALVE BOX DETAIL
N.T.S.



NOTES:

1.1. THREAD SPECIFICATION: NATIONAL STANDARD;
BARREL COLOR: FIRE PROT. RED; BONNET COLOR: REFLECTIVE WHITE; CAP COLOR: GLOSS WHITE.
2. APPROVED HYDRANT MODELS ARE MUELLER CENTURION, DARLING B-84-B AND KENNEDY GUARDIAN.
3. ALL HYDRANTS SHALL INCLUDE ONE 4½" PUMPER NOZZLE AND TWO 2½" HOSE NOZZLES.
4. HYDRANT VALVE OPENING SHALL BE 5¼".
5. ALL HYDRANTS SHALL OPEN LEFT.
6. ALL HYDRANTS SHALL BE EQUIPPED WITH A 5 FOOT REINFORCED FIBERGLASS POLE MARKER WITH RED AND WHITE REFLECTIVE BANDS. THE POLE MARKER SHALL HAVE A FLEXIBLE SHAFT, HEAVY DUTY SPRING AND INTEGRAL MOUNTING BRACKET. REFERENCE MODEL 22516 FROM USA BLUE BOOK.
7. RETAINER GLANDS REQUIRED ON ALL MECHANICAL JOINT FITTINGS.
8. DRAIN HOLE IN HYDRANT MUST NOT BE OBSTRUCTED WITH CONCRETE.
9. ALL TIE BOLTS, RODS NUTS AND WASHERS SHALL BE COATED WITH BITUMASTIC AFTER INSTALLATION.
10. A BLUE PLASTIC ROAD REFLECTOR TO BE PLACED IN CENTER OF ROADWAY LOCATED IN FRONT OF FIRE HYDRANT. REFLECTOR TO BE RECESSED INTO ROADWAY.
11. CURBING IN FRONT OF HYDRANT 15' ON EACH SIDE TO BE PAINTED YELLOW.
12. FIRE HYDRANT MUST BE SUPPLIED WITH AT LEAST 8" MAIN.

FIRE HYDRANT DETAIL

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COMMONWEALTH OF PENNSYLVANIA — PROFESSIONAL ENGINEER — JEFFREY M. MAUDER — 044551 — REGISTERED PROFESSIONAL

REV.	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTERS	ESE

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT–NOT TO BE RECORDED

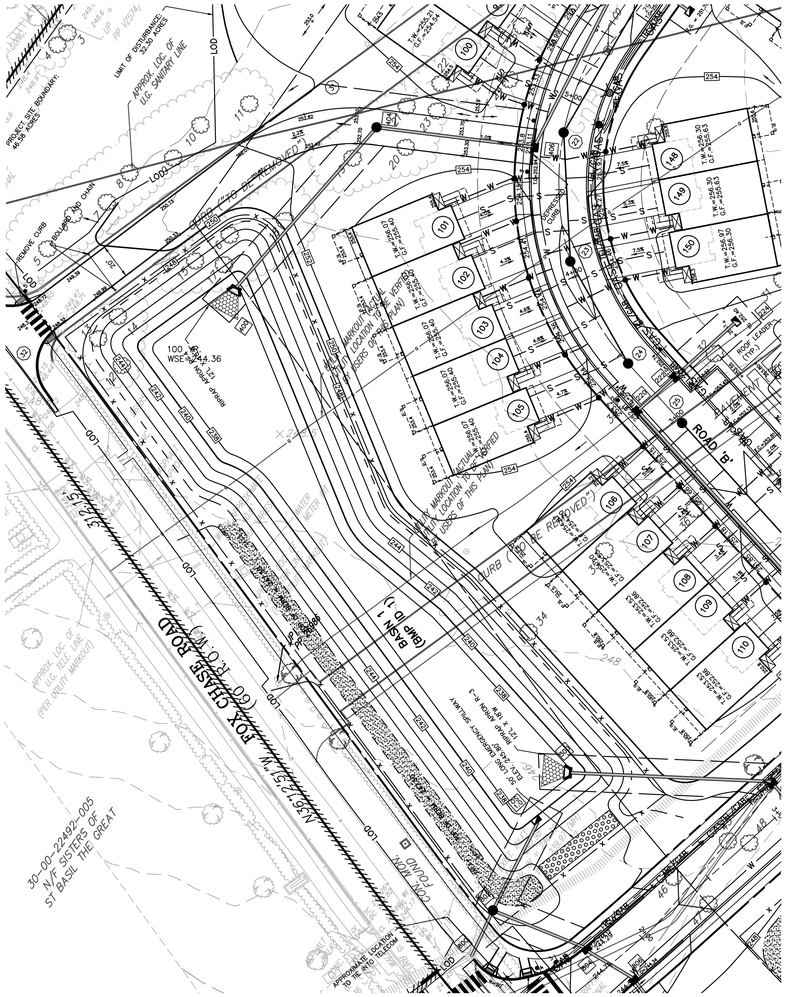
APPLICATION NUMBER LD-23-01

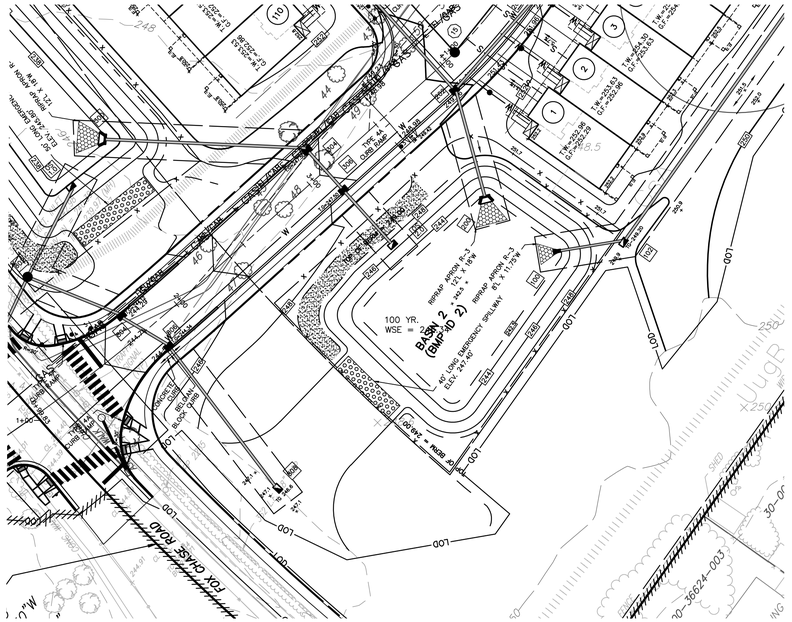
WATER DETAILS

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 3-24-23	SCALE: AS NOTED
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-09-DET-WATER
REF. NO.:	SD09.07
SHEET NO.:	46 OF 62

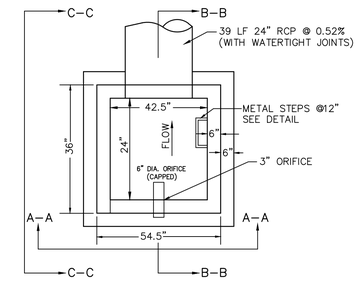
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PROJECT SITE BOUNDARY
49.38 ACRES
LIMIT OF DISTURBANCE
33.35 ACRES
APPROX. LOC. OF U.G. SANITARY LINE
REMOVE CURB
REMOVE CURB AND CHAIR
TREE TO BE REMOVED (TYP.)
APPROX. LOC. OF EXISTING TREE LINE TO BE REMOVED
APPROX. LOC. OF EXISTING TREE LINE TO REMAIN
APPROX. LOC. OF EXISTING TREE LINE TO BE REMOVED
ROAD 'B'
ROAD 'A'
FOX CHASE ROAD (60' R.O.W.)
N36°12'51"W 1321.51'
30-00-22482-005
N/F SISTERS OF ST BASIL THE GREAT
BASIN 1 (BMP ID 1)
INV. OUT=240.30
INV. IN=240.02 (#1)
INV. IN=240.22 (#)
INV. OUT=240.02
100-YR WSEL=244.36
APPROXIMATE LOCATION TO BE FIELD VERIFIED
APPROXIMATE LOCATION TO BE RELOCATED
APPROXIMATE LOCATION TO BE REMOVED
APPROX. LOC. OF U.G. TELE. LINE (PER UTILITY MARKOUT)
APPROX. LOC. OF U.G. ELEC. LINE (PER UTILITY MARKOUT)
APPROX. LOC. OF U.G. GAS LINE (PER UTILITY MARKOUT)
APPROX. LOC. OF U.G. WATER LINE (PER UTILITY MARKOUT)
APPROX. LOC. OF U.G. TELE. LINE
APPROX. LOC. OF U.G. ELEC. LINE
APPROX. LOC. OF U.G. GAS LINE
APPROX. LOC. OF U.G. WATER LINE
APPROX. LOC. OF U.G. SANITARY LINE
APPROX. LOC. OF U.G. STORM LINE
APPROX. LOC. OF U.G. COMBINED SEWER LINE
APPROX. LOC. OF U.G. TELE. LINE (PER UTILITY MARKOUT)
APPROX. LOC. OF U.G. ELEC. LINE (PER UTILITY MARKOUT)
APPROX. LOC. OF U.G. GAS LINE (PER UTILITY MARKOUT)
APPROX. LOC. OF U.G. WATER LINE (PER UTILITY MARKOUT)
APPROX. LOC. OF U.G. SANITARY LINE (PER UTILITY MARKOUT)
APPROX. LOC. OF U.G. STORM LINE (PER UTILITY MARKOUT)
APPROX. LOC. OF U.G. COMBINED SEWER LINE (PER UTILITY MARKOUT)

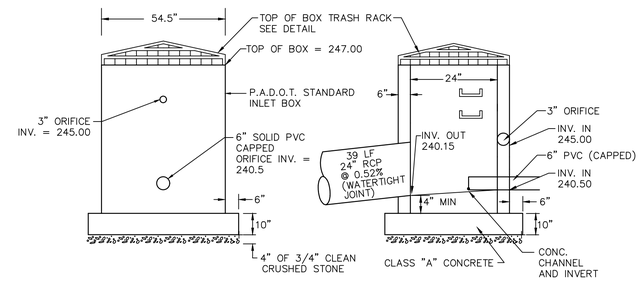


PLAN VIEW: BASIN #2

SCALE: 1"=40'



PLAN

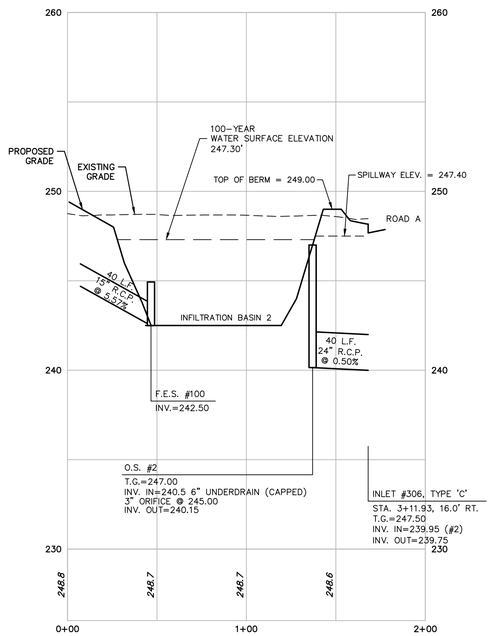


ELEVATION A–A SECTION B–B

NOTES:
1. WATERTIGHT SEALS TO BE USED ON ALL JOINTS.
2. BASIN NOT TO BE USED DURING CONSTRUCTION.

OUTLET STRUCTURE #2

N.T.S.



PROFILE: BASIN 2

1"=40' Horizontal
1"=4' Vertical

STORAGE CHART:

Elevation (feet)	Surf. Area (sq–ft)	Inc. Store (cubic–feet)	Cum. Store (cubic–feet)
242.50	6,500	0	0
244.00	8,000	10,875	10,875
246.00	10,400	18,400	29,275
248.00	12,900	23,300	52,575
249.00	14,750	13,825	66,400

DESIGN WATER SURFACE ELEVATION:

1–YR	=	244.00
2–YR	=	244.63
5–YR	=	245.40
10–YR	=	245.98
25–YR	=	246.90
50–YR	=	247.11
100–YR	=	247.30

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COMMONWEALTH OF PENNSYLVANIA — JEFFREY M. MAUDER — ENGINEER — No. PE082572

REC.	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/31/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTERS	ESE

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT–NOT TO BE RECORDED

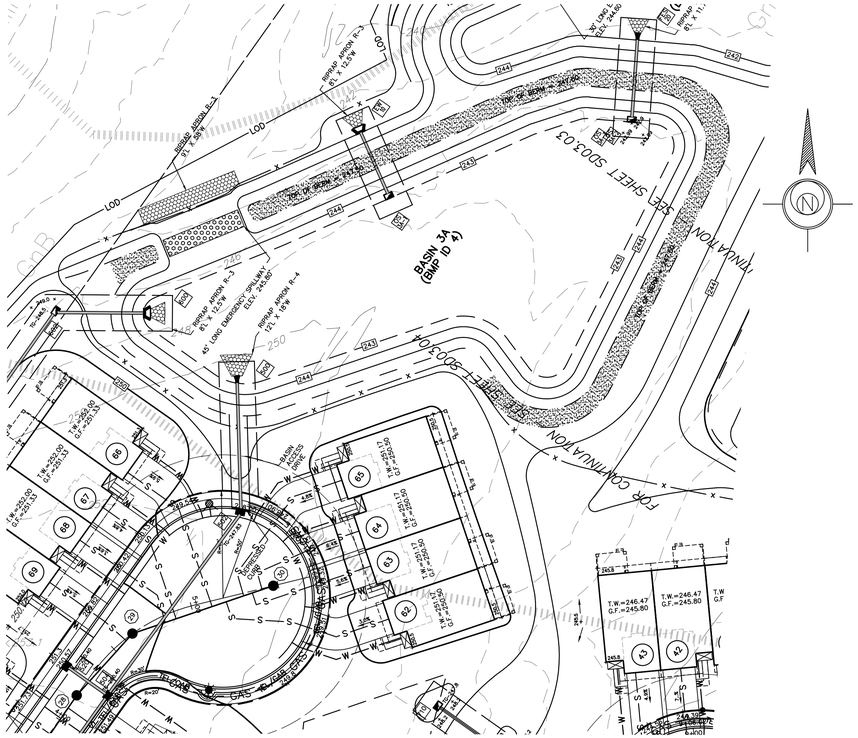
APPLICATION NUMBER LD–23–01

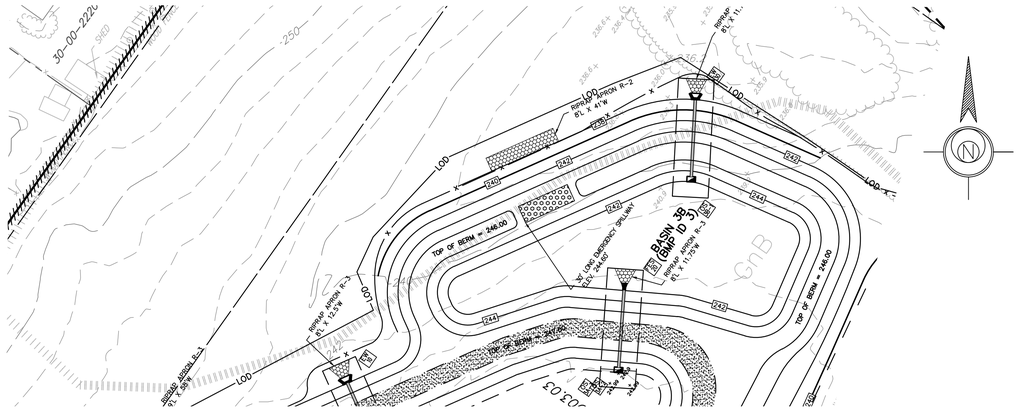
BASIN DETAILS
BASIN #2

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 3–24–23	SCALE: AS NOTED
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662–S–09–DET–BASIN
REF. NO.:	SD09.09
SHEET NO.:	48 OF 62

N:\PROJECTS\PENNSYLVANIA\7662-RYDAL ST. BASILS\ENGDEPT\DRAWINGS\7662-S-09-DET-BASIN.DWG-Luke Piotrowicz-3/21/2024 12:50 PM


BASIN 3A
(BMP ID 6)
SEE SHEET S003.03
SEE SHEET S003.04
FOR CONTINUATION
TOP OF BERM = 247.50
TOP OF BERM = 247.50
RIPRAP APRON R-3
8'L x 12'W
RIPRAP APRON R-3
8'L x 12'W
RIPRAP APRON R-4
12'L x 16'W
45' LONG EMERGENCY SPILLWAY
ELEV. 245.80'
RIPRAP APRON R-4
12'L x 16'W
RIPRAP APRON R-4
12'L x 11'W
36" RCP
@ 0.50%
36" RCP
@ 1.30%
LOD
GAS
T.W.=246.47
G.F.=245.80
T.W.=246.47
G.F.=245.80
T.W.
G.F.
INLET #502
TYPE 'C'
INLET #503
TYPE 'C'
INLET #504
TYPE 'C'
INLET #505
TYPE 'C'
INLET #506
TYPE 'C'
INLET #507
TYPE 'C'
INLET #508
TYPE 'C'
INLET #509
TYPE 'C'
INLET #510
TYPE 'C'
INLET #511
TYPE 'C'
INLET



PLAN VIEW: BASIN #3B

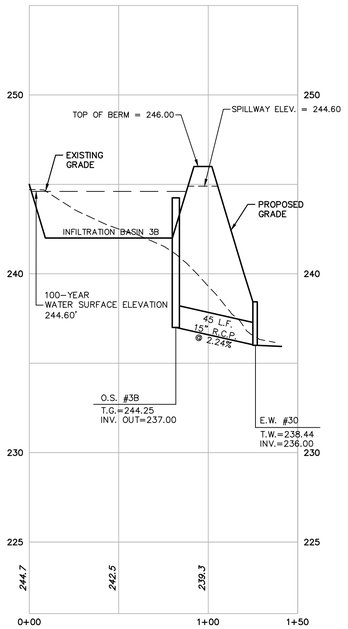
SCALE: 1"=40'

STORAGE CHART:

Elevation (feet)	Surf. Area (sq-ft)	Inc. Store (cubic-feet)	Cum. Store (cubic-feet)
242.50	8,470	0	0
244.00	11,340	14,858	14,858
246.00	14,450	25,790	40,648

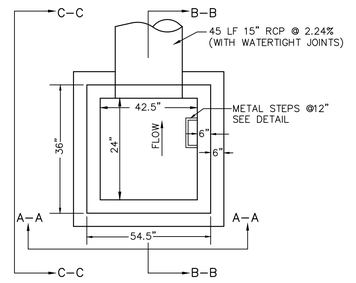
DESIGN WATER SURFACE ELEVATION:

1-YR	=	243.41
2-YR	=	243.66
5-YR	=	244.05
10-YR	=	244.31
25-YR	=	244.46
50-YR	=	244.53
100-YR	=	244.60

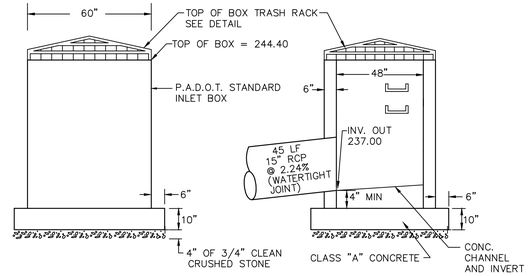


PROFILE: BASIN 3B

1"=40' Horizontal
1"=4' Vertical



PLAN



ELEVATION A-A SECTION B-B

NOTES:

1. WATERTIGHT SEALS TO BE USED ON ALL JOINTS.
2. BASIN 3B TO NOT BE USED DURING CONSTRUCTION.

OUTLET STRUCTURE #3B

N.T.S.

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COMMONWEALTH OF PENNSYLVANIA — PROFESSIONAL ENGINEER — JEFFREY M. MAUDER

REV.	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/31/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTERS	ESE

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT-NOT TO BE RECORDED

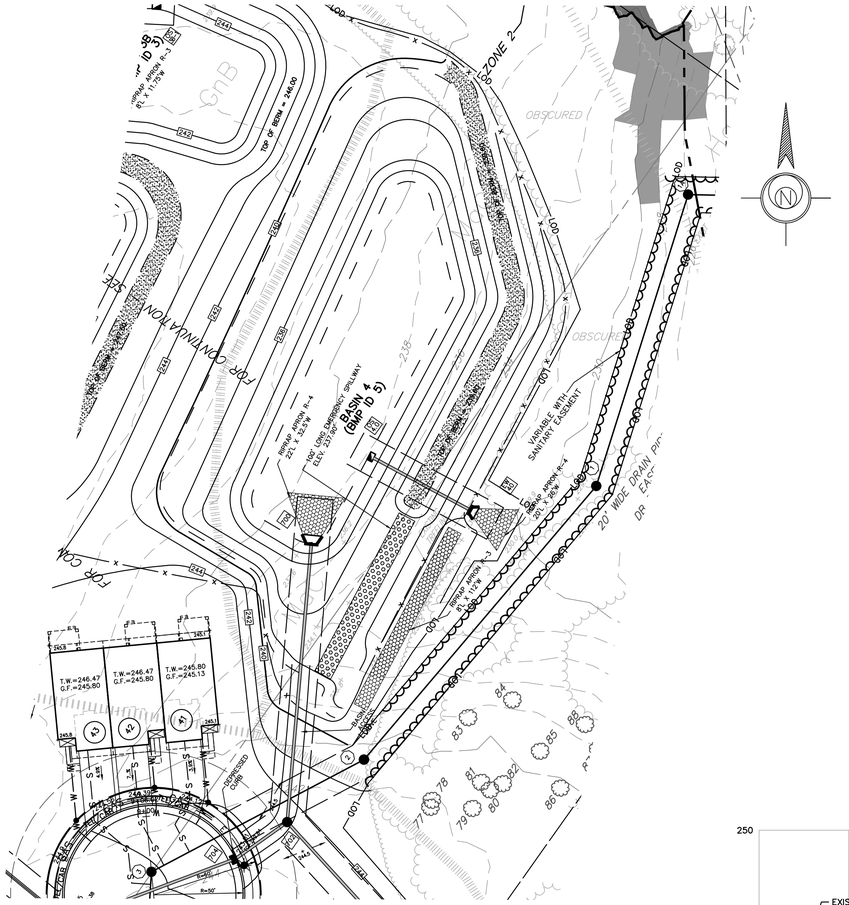
APPLICATION NUMBER LD-23-01

BASIN DETAILS
BASIN #3B

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

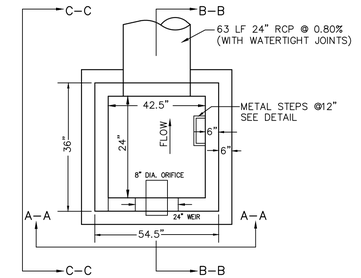
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DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-09-DET-BASIN
REF. NO.: SD09.11	
SHEET NO.: 50 OF 62	

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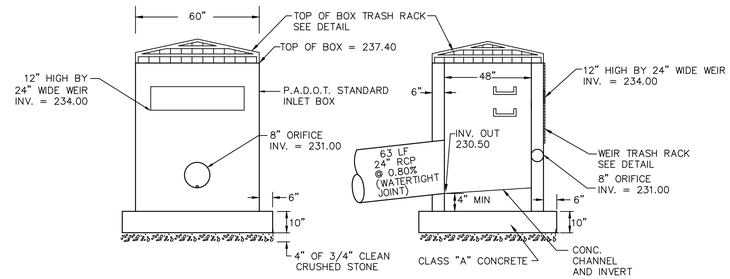


PLAN VIEW: BASIN #4

SCALE: 1"=40'



PLAN



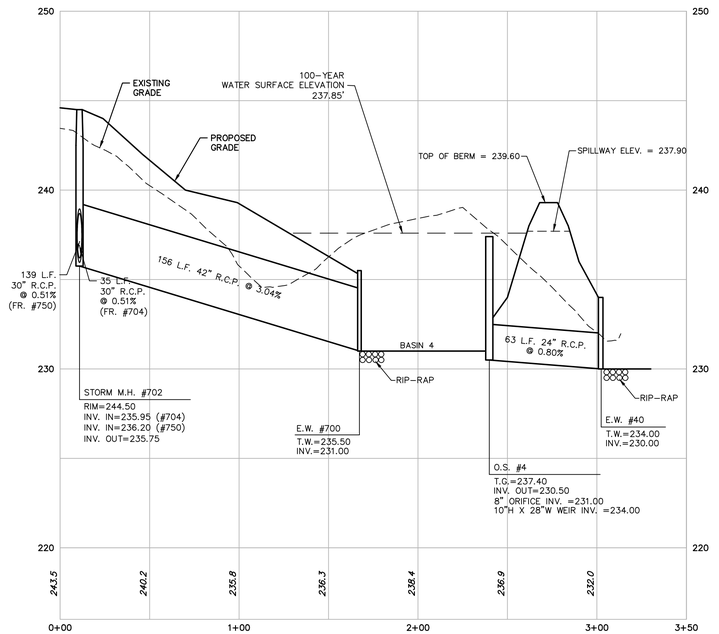
ELEVATION A–A SECTION B–B

NOTES:

1. WATERTIGHT SEALS TO BE USED ON ALL JOINTS.
2. LOWER ORIFICE TO BE CLOSED DURING CONSTRUCTION.
3. WEIR TO BE CLOSED DURING CONSTRUCTION, SEE NOTE.
4. TOP OF BOX TO BE 236.70 DURING CONSTRUCTION.

OUTLET STRUCTURE #4

N.T.S.



PROFILE: BASIN 4

1"=40' Horizontal
1"=4' Vertical

STORAGE CHART:

Elevation (feet)	Surf. Area (sq–ft)	Inc. Store (cubic–feet)	Cum. Store (cubic–feet)
231.00	7,450	0	0
232.00	10,400	8,925	8,925
234.00	14,760	25,160	34,085
236.00	22,200	36,960	71,045
238.00	28,000	50,200	121,245
239.30	33,800	40,170	161,415

DESIGN WATER SURFACE ELEVATION:

1–YR	=	232.86
2–YR	=	233.75
5–YR	=	234.70
10–YR	=	235.34
25–YR	=	236.34
50–YR	=	237.17
100–YR	=	237.85

COMMONWEALTH OF PENNSYLVANIA
JEFFREY M. MAUDER
ENGINEER
No. PE076006
REGISTERED PROFESSIONAL

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REV.	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTER	ESE

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT–NOT TO BE RECORDED

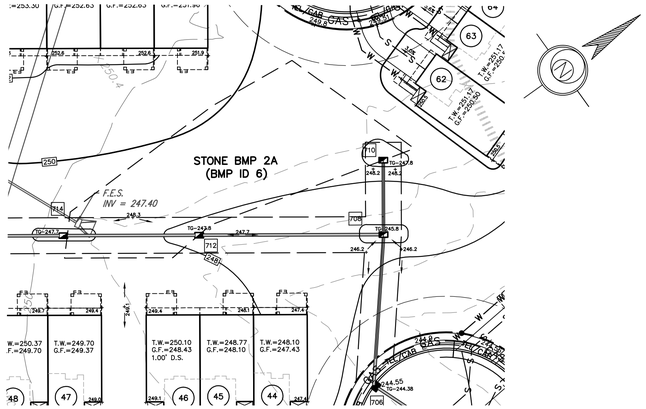
APPLICATION NUMBER LD–23–01

BASIN DETAILS
BASIN #4

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

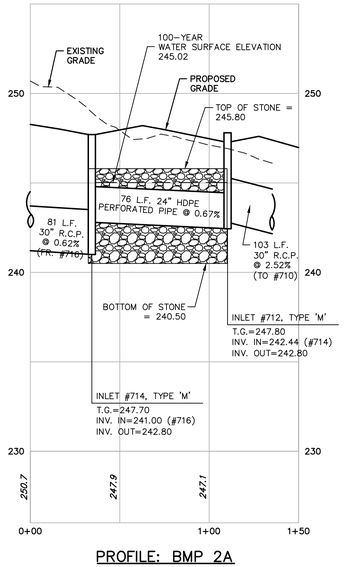
DATE: 3–24–23	SCALE: AS NOTED
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662–S–09–DET–BASIN
REF. NO.: SD09.12	
SHEET NO.: 51 OF 62	

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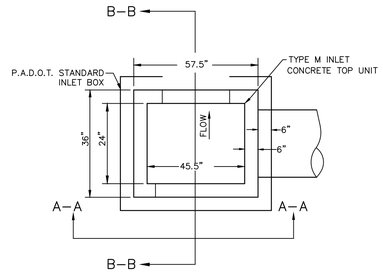
PLAN VIEW: STONE BMP #2A

SCALE: 1"=40'



PROFILE: BMP 2A

1"=40' Horizontal
1"=4' Vertical



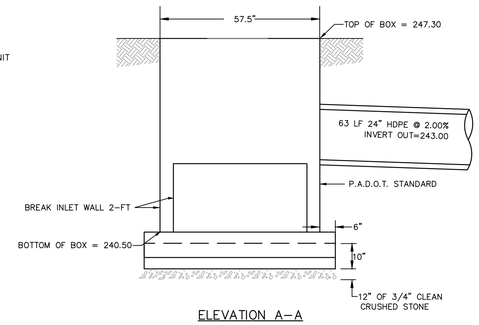
PLAN

NOTE:

1. WATERTIGHT SEALS TO BE USED ON ALL JOINTS.

INLET 746

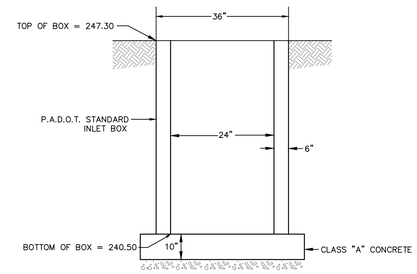
N.T.S.



ELEVATION A–A

INLET 746

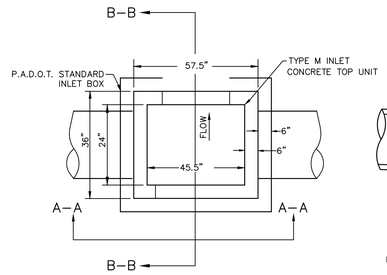
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ELEVATION B–B

INLET 746

N.T.S.



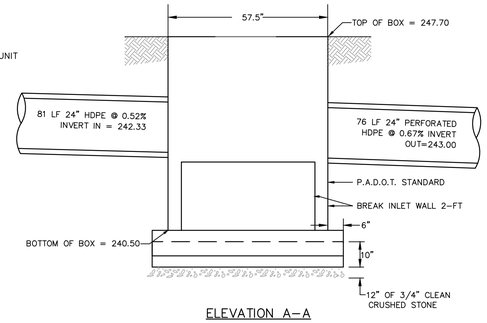
PLAN

NOTE:

1. WATERTIGHT SEALS TO BE USED ON ALL JOINTS.

INLET 714 AND 712

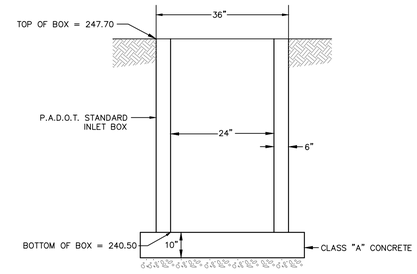
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ELEVATION A–A

INLET 714

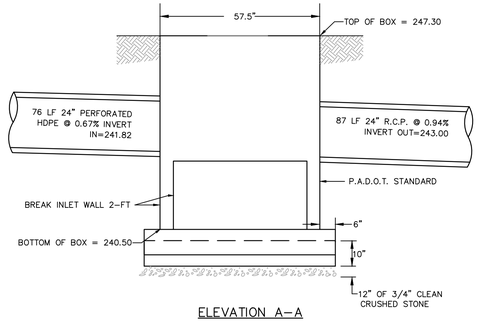
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ELEVATION B–B

INLET 714

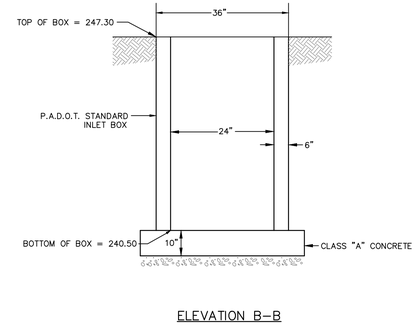
N.T.S.



ELEVATION A–A

INLET 712

N.T.S.



ELEVATION B–B

INLET 712

N.T.S.

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COMMONWEALTH OF PENNSYLVANIA — JEFFREY M. MAUDER — ENGINEER — No. PE082111

REV.	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTER	ESE

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT–NOT TO BE RECORDED

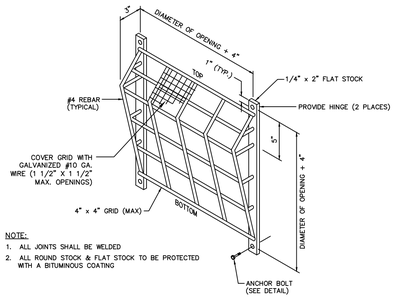
APPLICATION NUMBER LD–23–01

BASIN DETAILS
STONE BMP #2A

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 3–24–23	SCALE: AS NOTED
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-09-DET-BASIN
REF. NO.:	**SD09.14**
SHEET NO.:	**52** OF **62**

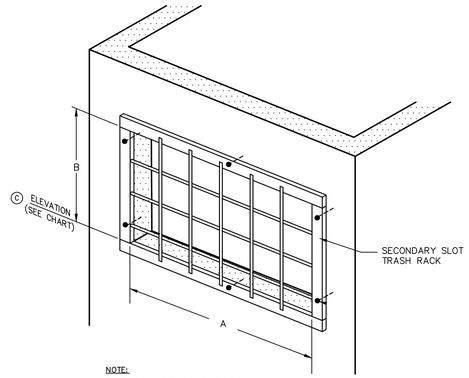
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NOTE:
1. ALL JOINTS SHALL BE WELDED
2. ALL ROUND STOCK & FLAT STOCK TO BE PROTECTED WITH A BITUMINOUS COATING

PRIMARY ORIFICE ABOVE BASIN BOTTOM TRASH RACK DETAIL

N.T.S.

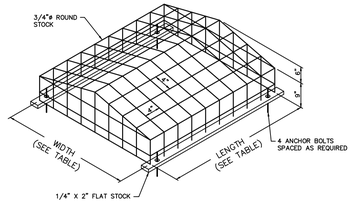


NOTE:
1. ALL JOINTS SHALL BE WELDED
2. ALL ROUND STOCK & FLAT STOCK TO BE PROTECTED WITH A BITUMINOUS COATING

BMP ID	BASIN	STRUCTURE #	A (FEET)	B (FEET)	C (ELEVATION)
5	4	O.S. #4.0	FRONT: 2.33	0.83	234.00.

SECONDARY SLOT TRASH RACK DETAIL

N.T.S.

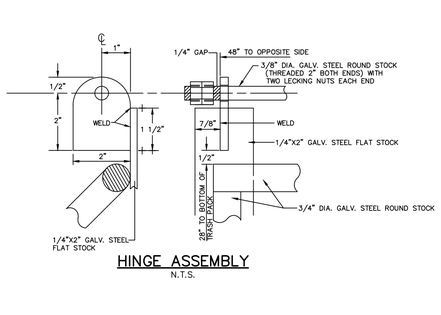


NOTE:
1. ALL JOINTS SHALL BE WELDED
2. ALL ROUND STOCK & FLAT STOCK TO BE PROTECTED WITH A BITUMINOUS COATING

BMP ID	BASIN	STRUCTURE #	LENGTH	WIDTH
1	1	O.S. #1.0	52"	30"
2	2	O.S. #2.0	52"	30"
4	3A	O.S. #3A-1	52"	30"
4	3A	O.S. #3A-2	52"	30"
3	3B	O.S. #3B-1	52"	30"
5	4	O.S. #4.0	52"	30"

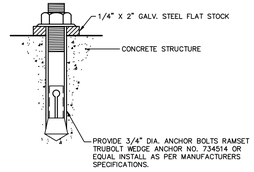
TOP OF STRUCTURE TRASH RACK

N.T.S.



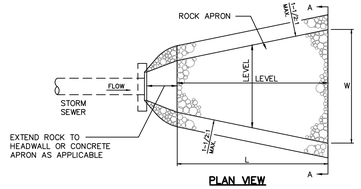
HINGE ASSEMBLY

N.T.S.

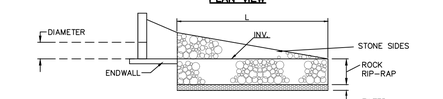


ANCHOR BOLT DETAIL

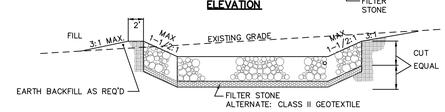
N.T.S.



PLAN VIEW

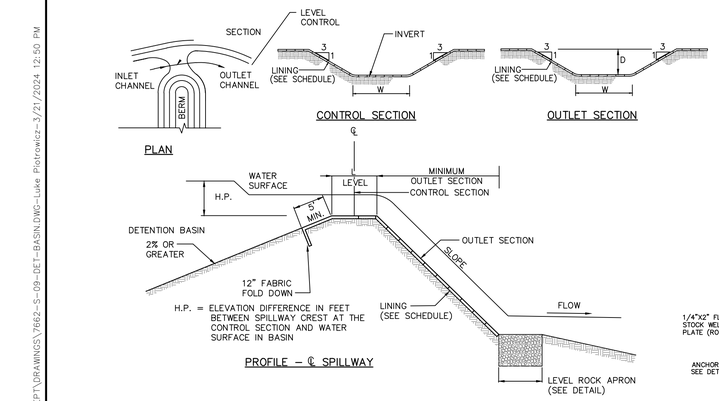


ELEVATION



STORM SEWER OUTLET ROCK APRON SCHEDULE

OUTLET #	PIPE DIA (in)	RIP-RAP CALCULATED SIZE	RIP-RAP PROVIDED SIZE	RIP-RAP THICK (in)	MIN. APRON DIM. L (ft)	MIN. APRON DIM. INITIAL WIDTH (ft)	MIN. APRON DIM. TERMINAL W (ft)
FES 100	15	R-3	R-3	9	8	3.75	11.75
EW 200	24	R-3	R-3	9	12	6	18.0
EW 300	24	R-3	R-3	9	12	6	18.0
EW 400	24	R-3	R-3	9	12	6	18.0
FES 500	24	R-3	R-3	9	12	6	18.0
EW 600	18	R-3	R-3	9	8	4.5	12.5
EW 700	42	R-4	R-4	18	22	10.5	32.5
O.S. 3A-2	18	R-3	R-3	9	12.5	4.5	12.5
O.S. 3A-4	15	R-3	R-3	9	11.80	3.75	11.75
O.S. 3B-2	15	R-3	R-3	9	8	3.75	11.75
O.S. 4.1	24	R-4	R-4	18	20	6	26.0



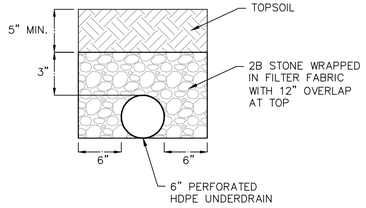
PROFILE – ℄ SPILLWAY

EMERGENCY SPILLWAY SCHEDULE

BMP ID	BASIN #	TOP OF BERM ft.	PERMANENT CONTROL SECTION WIDTH ft.	PERMANENT CONTROL SECTION INVERT ft.	PERMANENT CONTROL SECTION LINING	TEMPORARY CONTROL SECTION WIDTH ft.	TEMPORARY CONTROL SECTION INVERT ft.	TEMPORARY CONTROL SECTION LINING	OUTLET SECTION MAX SLOPE ft.	OUTLET SECTION W ft.	OUTLET SECTION D ft.	OUTLET SECTION LINING
1	1	247.50	50	245.80	C-125	NA	NA	NA	3:1	50	1.70	C-125
2	2	249.00	40	247.40	C-125	NA	NA	NA	3:1	40	1.60	C-125
4	3A	247.50	45	245.80	C-125	NA	NA	NA	3:1	45	1.70	C-125
4	3A	246.00	30	244.60	C-125	NA	NA	NA	3:1	30	1.40	C-125
3	3B	246.00	30	244.60	C-125	NA	NA	NA	3:1	30	1.40	C-125
5	4	239.60	100	237.90	C-125	NA	NA	NA	3:1	100	1.70	C-125

EMERGENCY SPILLWAY CALCULATION

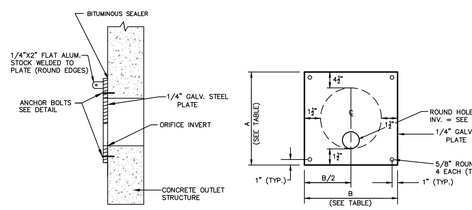
FORMULA: Q =2.7 L (H 3/2)



NOTE: UNDERDRAIN TO INCLUDE A THREADED CAP AT THE OUTLET STRUCTURE CONNECTION.

INFILTRATION BASIN UNDERDRAIN

N.T.S.

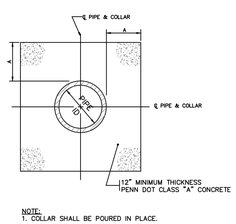


BMP ID	BASIN #	STRUCTURE #	A (in.)	B (in.)	ORIFICE DIAMETER (in.)	ORIFICE INVERT (ft.)
1	1	O.S. #1.0	9	6	3.0	241.00
2	2	O.S. #2.0	9	6	3.0	245.00
4	3A	O.S. #3A-1	16	13	10.0	242.90
4	3A	O.S. #3A-2	9	6	3.0	244.00
5	4	O.S. #4.0	14	11	8.0	231.00

TWO (2) 10" ORIFICES

ORIFICE PLATE DETAIL

N.T.S.



NOTE:
1. COLLAR SHALL BE POURED IN PLACE.

CONCRETE ANTI-SEEP COLLAR

N.T.S.

SECTION A–A

RIPRAP

PADOT No.	Size Inches (sq. openings) Max.	Avg. (1)	Min. (2)	Filter Stone NCSA Size No.
R-3	6	3	2	FS-2
R-4	12	6	3	FS-2
R-5	18	9	5	FS-2
R-6	24	12	7	FS-3
R-7	30	15	12	FS-3
R-8	48	24	15	FS-3

FILTER STONE

Size Inches (sq. openings)

NCSA No.	Max	Avg.	Min	Thickness
FS-2	2	No. 4	No. 100	4 in (minimum)
FS-3	6-1/2	2.5	No. 16	8 in (minimum)

RIPRAP APRONS AT PIPE OUTLETS WITH D–W ENDWALLS

NOTES:
1. "AVERAGE SIZE" IS THAT SIZE EXCEEDED BY AT LEAST 50% OF THE TOTAL WEIGHT OF THE TONNAGE SHIPPED; 50% OF THE TONNAGE SHALL CONSIST OF PIECES LARGER THAN THE "AVERAGE" SIZE.
2. PIECES SMALLER THAN THE MINIMUM SIZE SHOWN SHALL NOT EXCEED 15% OF THE TONNAGE SHIPPED.
3. THE TABLE ASSUMES A STONE DRY DENSITY OF 165 POUNDS PER CUBIC FOOT.
4. PLACE FILTER STONE TO SPECIFIED THICKNESS UNDER RIP RAP.
5. FILTER STONE ALTERNATIVE: PADOT CLASS 2 GEOTEXTILE MAY BE SUBSTITUTED FOR FILTER STONE AS FOLLOWS:

   TYPE A – UNDER R-3, R-4, R-5, AND R-6 RIP RAP.
   TYPE B – UNDER R-7 AND R-8 RIP RAP.
6. ALL APRONS ARE TO BE LEVEL AT ELEVATIONS MATCHING THE PIPE OUTLET INVERT.
7. ALL APRONS SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EACH RUNOFF EVENT. DISPLACED RIPRAP WITHIN THE APRON SHALL BE REPLACED IMMEDIATELY.

STORM SEWER ROCK APRONS

(NOT TO SCALE)

BMP ID	BASIN #	# OF COLLARS	VERTICAL PROJECTION A (IN.)	SPACING (FT.)	DISTANCE TO FIRST COLLAR (FT)	BARREL DIA. (IN)
4	O.S. 3A-1	2	12	8.12	8.12	18
4	O.S. 3A-2	2	12	8.06	8.06	15
3	O.S. 3B-1	3	18	14.02	14.02	15
5	O.S. 4.0	3	18	12.11	12.11	24

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1140 Virginia Drive • Fort Washington, PA 19034
T: 215-914-2050

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER JEFFREY M. MAUDER

REV.	DATE	DESCRIPTION	DRAWN
3	05/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTER	ESE

APPLICATION NUMBER LD-23-01 PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT–NOT TO BE RECORDED

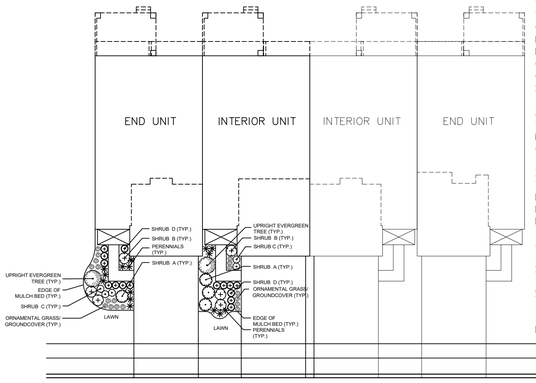
BASIN DETAILS

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE: 3-24-23	SCALE: AS NOTED
DESIGN:	DRAWN: EJS
JOB NO.: 7662	FILE NAME: 7662-S-09-DET-BASIN
REF. NO.:	SD09.16
SHEET NO.:	53 OF 62

N:\PROJECTS\PENNSYLVANIA\7662-RYDAL ST. BASIL\ENGDEPT\DRAWINGS\7662-S-09-DET-BASIN.DWG-Luke Pistrowicz-3/21/2024 12:50 PM

TYPICAL UNIT LANDSCAPING



END UNIT - TYPICAL UNIT PLANT QUANTITIES

(1)	UPRIGHT EVERGREEN
(1)	SHRUB A - MEDIUM EVERGREEN SHRUB
(3)	SHRUB B - MEDIUM DECIDUOUS SHRUB
(3)	SHRUB C - SMALL DECIDUOUS
(8)	SHRUB D - EVERGREEN SHRUB
(9)	PERENNIALS
(11)	LOW ORNAMENTAL GRASSES OR GROUNDCOVER

INTERIOR UNIT - TYPICAL UNIT PLANT QUANTITIES

(1)	UPRIGHT EVERGREEN
(3)	SHRUB A - MEDIUM EVERGREEN SHRUB
(3)	SHRUB B - MEDIUM DECIDUOUS SHRUB
(2)	SHRUB C - SMALL DECIDUOUS
(7)	SHRUB D - EVERGREEN SHRUB
(6)	PERENNIALS
(7)	LOW ORNAMENTAL GRASSES OR GROUNDCOVER

GRAPHIC SCALE 1 inch = 20 ft.

FEET 20 0 10 20 40

TYPICAL UNIT PLANTING NOTES:

1. LAYOUT OF PLANTING BED IS CONCEPTUAL AND MAY VARY DUE TO EXISTING SITE CONDITIONS AND MODEL ELEVATION. SPECIES CHOSEN SHALL CORRELATE WITH EXISTING SITE CONDITIONS OF EACH HOME (IE: SUN/SHADE) TO ENSURE SURVIVABILITY OF PLANT.

2. SHRUBS SHALL BE PLANTED IN GROUPS OF THE SAME SPECIES (3-5 PLANTS) TO MAINTAIN BALANCE THROUGHOUT THE GARDEN.

3. FOUNDATION PLANTS ARE IN ADDITION TO AND ARE TO BE COORDINATED WITH PROPOSED STREET TREES, OPEN SPACE PLANTINGS AND EXISTING VEGETATION TO REMAIN.

4. QUALITY OF PLANT SHALL BE IN ACCORDANCE WITH THE AMERICAN STANDARDS FOR NURSERY STOCK.

5. SUBSTITUTIONS PERMITTED WITH WRITTEN APPROVAL BY ESE LANDSCAPE ARCHITECT AND TOWN REPRESENTATIVE PRIOR TO PLANTING.

TYPICAL UNIT PLANT LIST

Upright Evergreen Tree
- *Chamaecyparis nootkanensis 'Pendula'*
- *Ilex 'Nellie R. Stevens'*
- *Thuja plicata 'Green Giant'*

Shrub A - Medium Evergreen
- Ilex glabra 'Densa' or 'Shamrock'
- *Ilex x meservae 'Blue Princess'* ***plant with 1 male for berries***
- *Ilex x meservae 'Blue Prince'* ***1 needed as pollinator***
- *Rhododendron x 'PJM'*
- Taxus x media 'Hatfield'

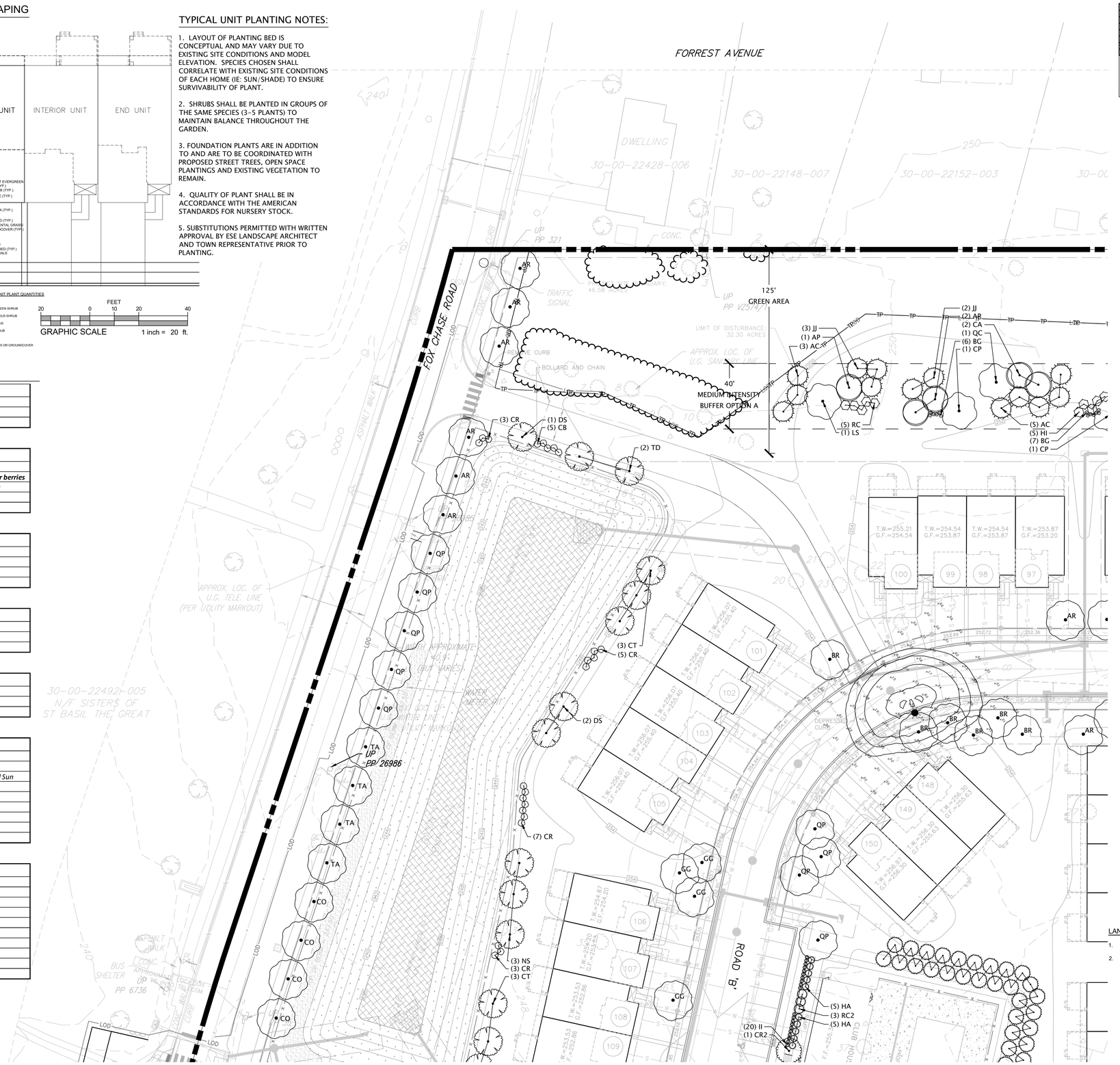
Shrub B - Medium Deciduous
- Comptonia peregrina
- Hydrangea arborescens 'Invincibal!'
- Itea virginica 'Little Henry'
- Rosa rugosa 'Radtko' or 'Sunny Knockout'

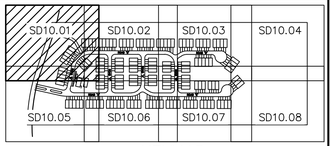
Shrub C - Small Deciduous
- *Azalea 'Encore Autumn Cheer'*
- *Buxus 'Winter Gem' or 'Green Mound'*
- Thuja occidentalis 'Hetz Midget'

Shrub D - Small Evergreen
- *Azalea 'Encore Autumn Cheer'*
- *Buxus 'Winter Gem' or 'Green Mound'*
- Thuja occidentalis 'Hetz Midget'

Perennials
- **Sun/ Part Shade**
- *nepeta racemosa 'Little Trudy' or 'Walker's Low'*
- *Rudbeckia fulgida var. sullivanti 'Little Goldstar' - Full Sun*
- *Sedum 'Black Beauty'*
- **Part Shade/ Full Shade**
- *Bergenia cordifolia*
- *Geranium macrorrhizum 'Bevans Variety'*
- *Heuchera x 'Plum Pudding'*
- *Hosta varieties*

Ornamental Grasses/ Groundcover
- **Sun/ Part Shade**
- *Pennisetum alopecuriodes* 'Hameln'
- Dianthus gratianopolitanus *'Bath's Pink'*
- *Liriope muscari 'Big Blue or 'Variegata'*
- *Sedum x 'Vera Jameson'*
- **Part Shade/ Full Shade**
- *Hakonechloa macra 'Aureola'*
- *Liriope muscari 'Big Blue or 'Variegata'*
- *Phlox stolonifera 'Sherwood Purple'*
- *Tiarella ' Sugar and Spice'*





KEYMAP

PLANT LEGEND

STREET TREES

SYMBOL		BOTANICAL/COMMON NAME
	AR	ACER RUBRUM 'AUTUMN RED'/ AUTUMN RED MAPLE
	BR	BETULA NIGRA/ RIVER BIRCH
	CO	CARPINUS CAROLINIANA 'ORANGE CRUSH'/A. HORNBEAM
	QP	QUERCUS PHELLOS / WILLOW OAK
	GG	GLEDITSIA TRIACANTHOS / GREEN GLORY HONEY LOCUST
	TA	TILIA AMERICANA / AMERICAN LINDEN

BUFFER CANOPY TREES

SYMBOL		BOTANICAL/COMMON NAME
	CP	CELTIS OCCIDENTALIS 'PRAIRIE HARVET'/HACKBERRY
	LS	LIQUIDAMBAR STYRACIFLUA/AMERICAN SWEET GUM
	QC	QUERCUS COCCINEA/SCARLET OAK
	QR	QUERCUS RUBRA/RED OAK

BUFFER EVERGREEN TREES

SYMBOL		BOTANICAL/COMMON NAME
	AB	ABIES CONCOLOR/WHITE FIR
	PG	PICEA GLAUCA/WHITE SPRUCE
	PB	PICEA PUNGENS 'BABY BLUE' / BABY BLUE COLORADO SPRUCE

BUFFER UNDERSTORY TREES

SYMBOL		BOTANICAL/COMMON NAME
	AP	AMELANCHER X GRANDIFLORA/APPLE SERVICEBERRY
	CA	CERCIS CAMADEMSIS 'ALLEY CAT'/ EASTERN REDBUD
	CF	CORNUS FLORIDA/FIRST LADY DOGWOOD
	HV	HAMAMELIS VIRGINIANA/ COMMON WITCH HAZEL

BUFFER SHRUBS

SYMBOL		BOTANICAL/COMMON NAME
	BG	BUXUS X 'GREEN MOUNTAIN'/GREEN MOUNTAIN BOXWOOD
	CG	CORNUS RACEMOSA/'CAN' DOGWOOD
	HI	HYDRANGEA ARBORESCENS 'KOLPINBEL'/HYDRANGEA
	IM	ITEA VIRGINICA 'MORNING STAR'/MORNING STAR SWEETSPIRE
	RC	RHODODENDRON CATAWBIENSE 'CAPISTRANO'/RHODODENDRON

CLUBHOUSE FOUNDATION

SYMBOL		BOTANICAL/COMMON NAME
	CR2	CORNUS X 'RUTGAN'/STELLAR PINK DOGWOOD
	HA	HYDRANGEA ARBORESCENS/ANNABELLE HYDRANGEA
	II	ILEX CLABRA 'COMPACTA'/COMPACT INKBERRY
	RC2	RHODODENDRON CATAWBIENSE 'CAPISTRANO'/RHODODENDRON

SITE ELEMENT SCREEN

SYMBOL		BOTANICAL/COMMON NAME
	TO	THUJA OCCIDENTALIS/AMERICAN ARBORVITAE

BASIN TREES

SYMBOL		BOTANICAL/COMMON NAME
	DS	AMALANCHIER ARBOREA / DOWNY SERVICEBERRY
	CT	CHAMAECYPARIS THYOIDES / ATLANTIC WHITE CYPRESS
	NS	NYSSA SYLVATICA / TUPELO
	TD	TAXODIUM / BALD CYPRESS

BASIN SHRUBS

SYMBOL		BOTANICAL/COMMON NAME
	CR	CLETHRA ALNIFOLIA / RUBY SPICE SUMMERSWEET
	CB	CORNUS SERICEA / BAYLEY'S RED TWIG DOGWOOD
	IG	ILEX GLABRA / INKBERRY HOLLY

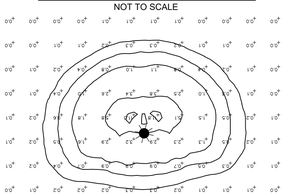
BASIN SEED MIX

SYMBOL		NAME
	122	DETENTION BASIN BOTTOM - ERNST SEED MIX 122
	126	BASIN BOTTOM - ERNST SEED MIX 126
	231	BASIN SIDE SLOPE - ERNST SEED MIX 231

TP TP TP

TEMPORARY TREE PROTECTION FENCING
NOT TO SCALE

VEGETATION TO REMAIN
NOT TO SCALE



STREET LIGHT LUMINAIRE
NOT TO SCALE

LANDSCAPE NOTES:

1. ALL LANDSCAPE BUFFERS SHALL BE MAINTAINED AND KEPT CLEAN OF DEBRIS, RUBBISH, NOXIOUS WEEDS AND INVASIVE SPECIES.
2. EXISTING VEGETATION TO BE UTILIZED AS BUFFERS SHALL BE FREE OF NOXIOUS WEEDS AND INVASIVE SPECIES. IF EXISTING VEGETATION CONTAINS NOXIOUS WEEDS OR INVASIVE SPECIES, THESE SPECIES SHALL BE REMOVED AND ERADICATED PRIOR TO ACCEPTANCE.

GRAPHIC SCALE
30 0 30 60
(IN FEET)
1" = 30 FEET

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1140 Virginia Drive • Fort Washington, PA 19034
T: 215-914-2050

REV.#	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTER COMMENTS	ESE

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT - NOT TO BE RECORDED

APPLICATION NUMBER LD-23-01

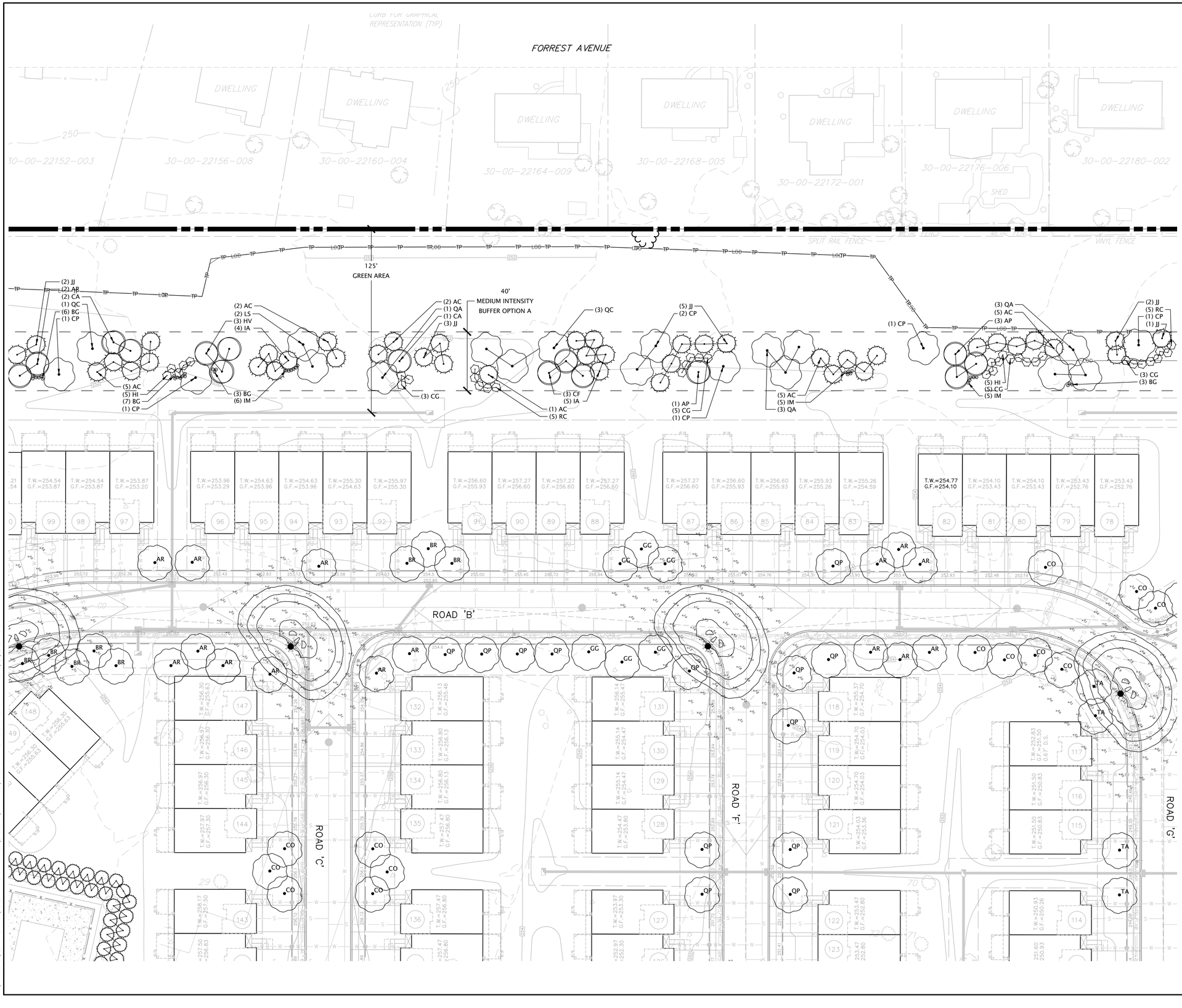
LANDSCAPE PLAN

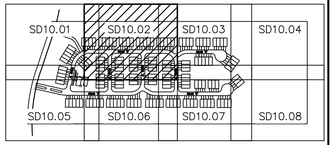
SISTERS OF ST. BASIL

ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE:	SCALE: 1"= 30'
DESIGN:	DRAWN: EED
JOB NO.: 7662	FILE NAME: 7662-S-09-LAND
REF. NO.:	SD10.01
SHEET NO.:	54 OF 62

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KEYMAP

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SYMBOL		BOTANICAL/COMMON NAME
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	CF	CORNUS FLORIDA/FIRST LADY DOGWOOD
	HV	HAMAMELIS VIRGINIANA/ COMMON WITCH HAZEL

BUFFER SHRUBS

SYMBOL		BOTANICAL/COMMON NAME
	BG	BUXUS X 'GREEN MOUNTAIN'/GREEN MOUNTAIN BOXWOOD
	CG	CORNUS RACEMOSA/'GRAY DOGWOOD
	HI	HYDRANGEA ARBORESCENS 'KOLPINBEL'/HYDRANGEA
	IM	ITEA VIRGINICA 'MORNING STAR'/MORNING STAR SWEETSPIRE
	RC	RHODODENDRON CATAWBIENSE 'CAPISTRANO'/RHODODENDRON

CLUBHOUSE FOUNDATION

SYMBOL		BOTANICAL/COMMON NAME
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	II	ILEX CLABRA 'COMPACTA'/COMPACT INKBERRY
	RC2	RHODODENDRON CATAWBIENSE 'CAPISTRANO'/RHODODENDRON

SITE ELEMENT SCREEN

SYMBOL		BOTANICAL/COMMON NAME
	TO	THUJA OCCIDENTALIS/AMERICAN ARBORVITAE

BASIN TREES

SYMBOL		BOTANICAL/COMMON NAME
	DS	AMALANCHER ARBOREA / DOWNY SERVICEBERRY
	CT	CHAMAECYPARIS THYOIDES / ATLANTIC WHITE CYPRESS
	NS	NYSSA SYLVATICA / TUPELO
	TD	TAXODIUM / BALD CYPRESS

BASIN SHRUBS

SYMBOL		BOTANICAL/COMMON NAME
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	CB	CORNUS SERICEA / BAYLEY'S RED TWIG DOGWOOD
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BASIN SEED MIX

SYMBOL		NAME
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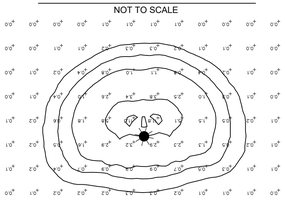
TP TP TP

TEMPORARY TREE PROTECTION FENCING

NOT TO SCALE

VEGETATION TO REMAIN

NOT TO SCALE



STREET LIGHT LUMINAIRE

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LANDSCAPE NOTES:

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GRAPHIC SCALE

30 0 30 60

(IN FEET)
1" = 30 FEET

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REV.	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTERS	ESE

PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT - NOT TO BE RECORDED

APPLICATION NUMBER LD-23-01

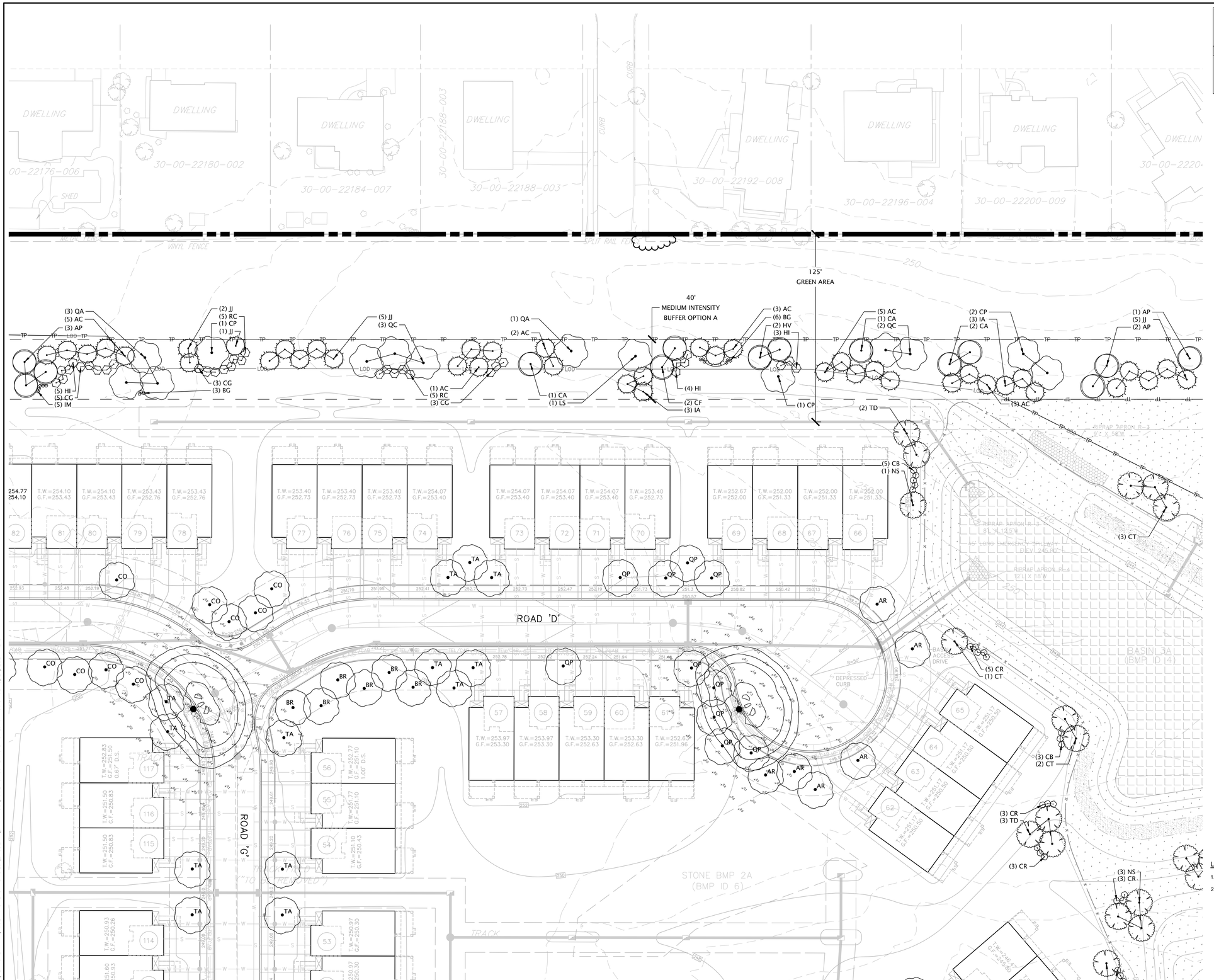
LANDSCAPE PLAN

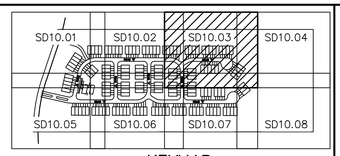
SISTERS OF ST. BASIL

ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE:	SCALE: 1"= 30'
DESIGN:	DRAWN: EED
JOB NO.: 7662	FILE NAME: 7662-S-09-LAND
REF. NO.:	SD10.02
SHEET NO.:	55 OF 62

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KEYMAP

PLANT LEGEND

STREET TREES

SYMBOL		BOTANICAL/COMMON NAME
	AR	ACER RUBRUM 'AUTUMN RED'/ AUTUMN RED MAPLE
	BR	BETULA NIGRA/ RIVER BIRCH
	CO	CARPINUS CAROLINIANA 'ORANGE CRUSH'/A. HORNBEAM
	QP	QUERCUS PHELLOS / WILLOW OAK
	CG	GLEDITSIA TRIACANTHOS / GREEN GLORY HONEY LOCUST
	TA	TILIA AMERICANA / AMERICAN LINDEN

BUFFER CANOPY TREES

SYMBOL		BOTANICAL/COMMON NAME
	CP	CELTIS OCCIDENTALIS 'PRAIRIE HARVET'/HACKBERRY
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PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT - NOT TO BE RECORDED

APPLICATION NUMBER LD-23-01

LANDSCAPE PLAN

SISTERS OF ST. BASIL

ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE:	SCALE: 1"= 30'
DESIGN:	DRAWN: EED
JOB NO.: 7662	FILE NAME: 7662-S-09-LAND
REF. NO.:	SD10.03
SHEET NO.:	56 OF 62

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FORREST AVENUE

DWELLING
DWELLING
DWELLING
DWELLING
30-00-22204-005
30-00-22200-009
30-00-22208-001
30-00-22212-006
30-00-22216-002
30-00-12796-008
30-00-63888-009
30-00-63884-004
30-00-63880-008
30-00-63876-003
SHED
WOOD FENCE
EXISTING TREELINE
125' GREEN AREA
40' MEDIUM INTENSITY BUFFER OPTION A
(2) CP
(3) IA
(2) CA
(3) AC
(1) AP
(5) JJ
(2) AP
(2) AP
(1) QC
(1) CF
(3) JJ
(1) CF
(2) LS
(1) CF
(2) HV
(1) CP
(3) AC
(1) LS
(5) JJ
(1) LS
(3) CA
(3) QA
(3) JJ
TREE CANOPY TO REMAIN
(5) DS
(3) CT
(5) CR
(1) CT
(3) CB
(2) CT
(3) CR
(3) TD
(3) CR
(3) NS
(3) CR
(3) DS
(3) DS
(3) TD
BASIN 3A (BMP ID 14)
ZONE 2
RIPRAP APRON R-4 8'L x 14.5'W
RIPRAP APRON R-4 12'L x 18'W
RIPRAP APRON R-4 8'L x 11.75'W
RIPRAP APRON R-4 12'L x 18'W
18" RCPO TRAPEZOIDAL SHELL WEIR ELEV. 246.80
DI-3A INLET = 246.50
DI-3B INLET = 246.50
TOP OF BERM = 246.00
EXISTING TREELINE
FIRE LANE
SHED
TP
TP
TP

SD10.01 | SD10.02 | SD10.03 | SD10.04
SD10.05 | SD10.06 | SD10.07 | SD10.08

KEYMAP

PLANT LEGEND

STREET TREES

SYMBOL		BOTANICAL/COMMON NAME
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PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT - NOT TO BE RECORDED

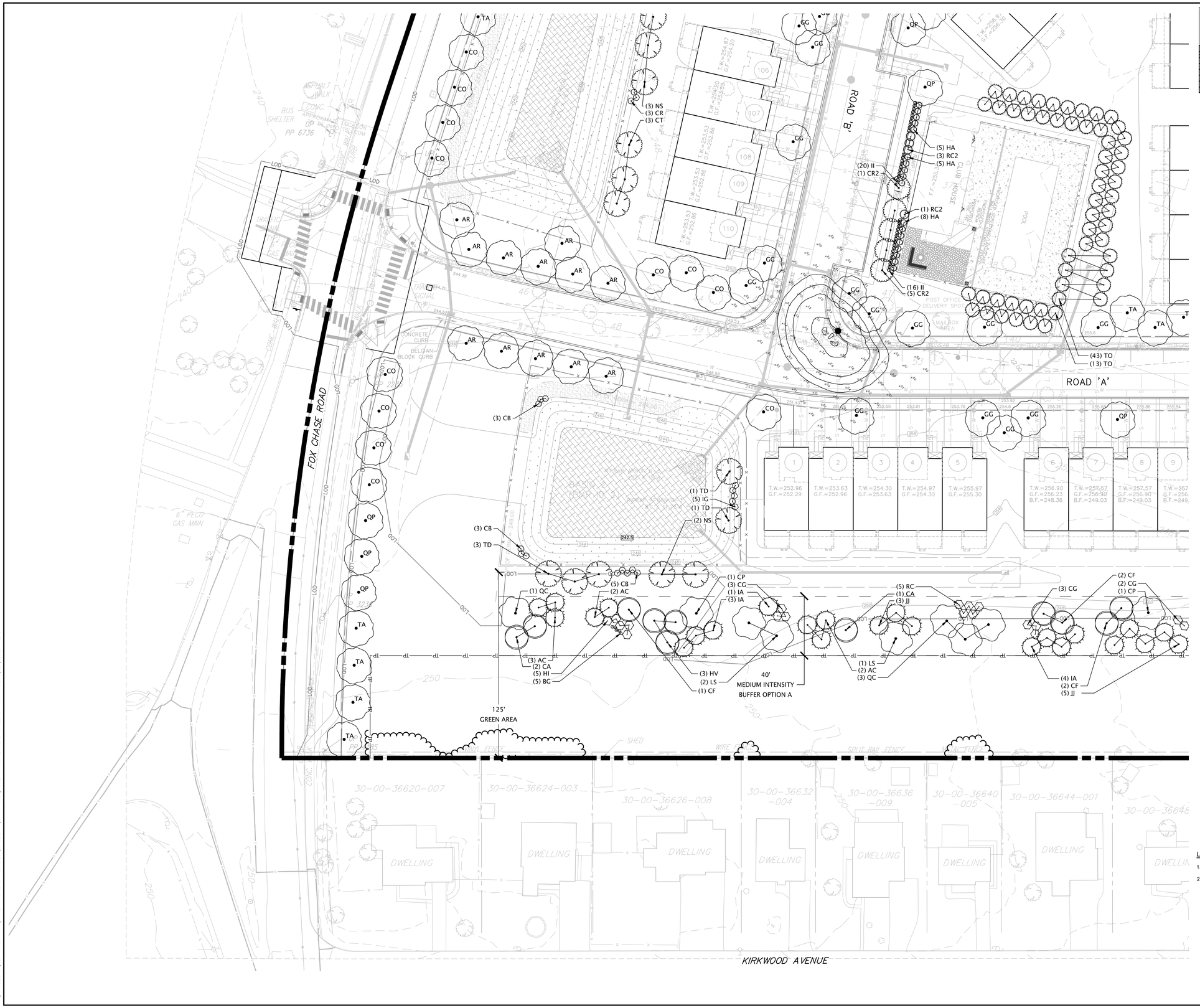
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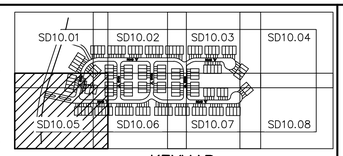
LANDSCAPE PLAN

SISTERS OF ST. BASIL
ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE:	SCALE: 1" = 30'
DESIGN:	DRAWN: EED
JOB NO.: 7662	FILE NAME: 7662-S-09-LAND
REF. NO.:	SD10.04
SHEET NO.:	57 OF 62

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KEYMAP

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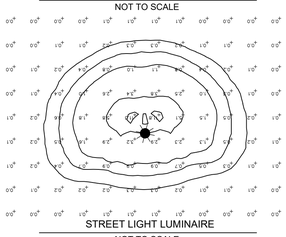
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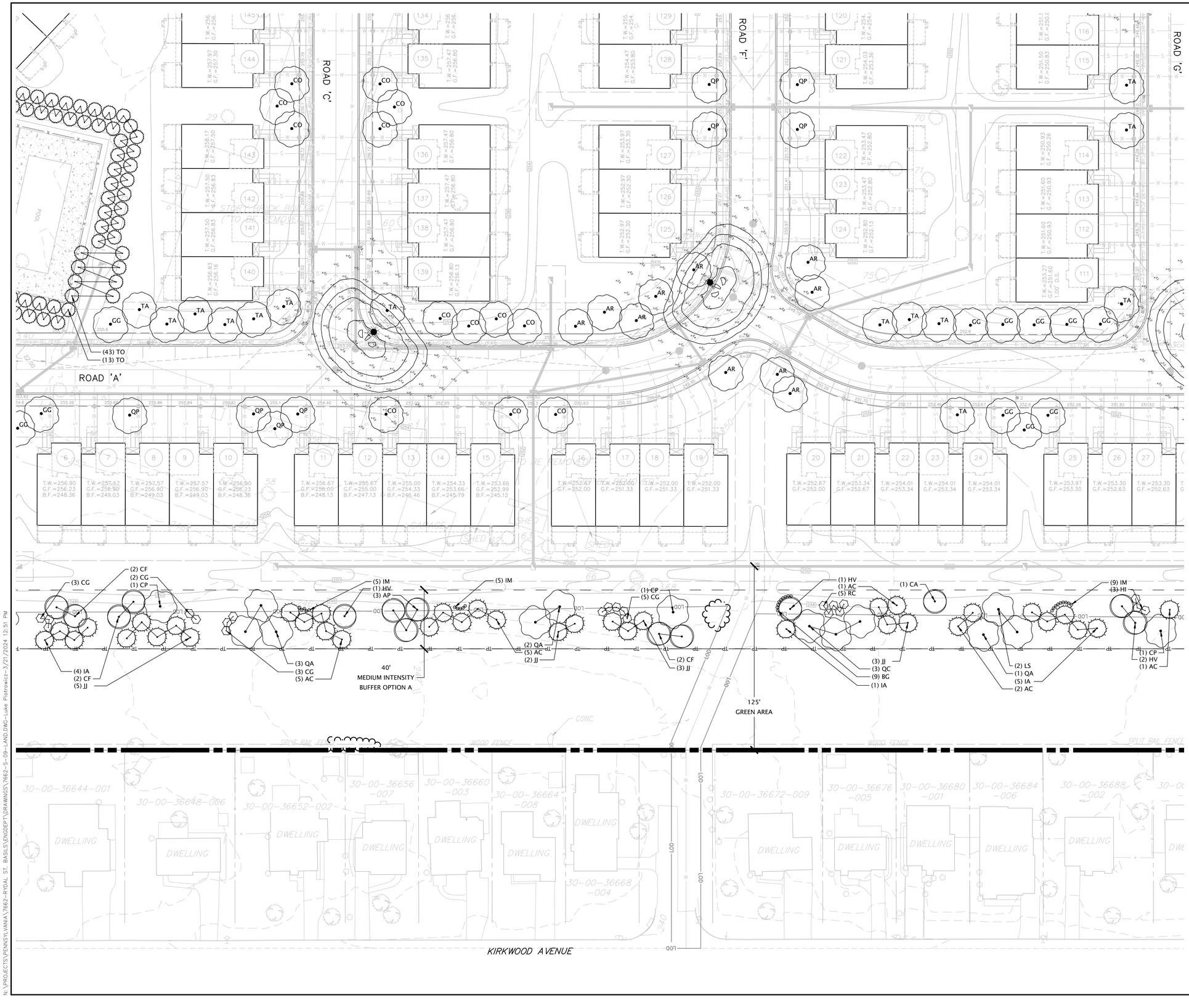
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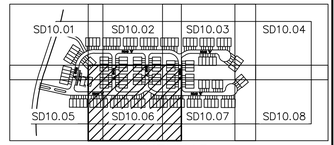
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DATE:	SCALE: 1"= 30'
DESIGN:	DRAWN: EED
JOB NO.: 7662	FILE NAME: 7662-S-09-LAND
REF. NO.: **SD10.05**	
SHEET NO.: **58** OF **62**	

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	AP	AMELANCHER X GRANDIFLORA/APPLE SERVICEBERRY
	CA	CERCIS CAMADEMSIS 'ALLEY CAT'/ EASTERN REDBUD
	CF	CORNUS FLORIDA/FIRST LADY DOGWOOD
	HV	HAMAMELIS VIRGINIANA/ COMMON WITCH HAZEL

BUFFER SHRUBS

SYMBOL		BOTANICAL/COMMON NAME
	BG	BUXUS X 'GREEN MOUNTAIN'/GREEN MOUNTAIN BOXWOOD
	CG	CORNUS RACEMOSA/'GRAY DOGWOOD
	HI	HYDRANGEA ARBORESCENS 'KOLPINBEL'/HYDRANGEA
	IM	ITEA VIRGINICA 'MORNING STAR'/MORNING STAR SWEETSPIRE
	RC	RHODODENDRON CATAWBIENSE 'CAPISTRANO'/RHODODENDRON

CLUBHOUSE FOUNDATION

SYMBOL		BOTANICAL/COMMON NAME
	CX2	CORNUS X 'RUTGAN'/STELLAR PINK DOGWOOD
	HA	HYDRANGEA ARBORESCENS/ANNABELLE HYDRANGEA
	II	ILEX GLABRA 'COMPACTA'/COMPACT INKBERRY
	RC2	RHODODENDRON CATAWBIENSE 'CAPISTRANO'/RHODODENDRON

SITE ELEMENT SCREEN

SYMBOL		BOTANICAL/COMMON NAME
	TO	THUJA OCCIDENTALIS/AMERICAN ARBORVITAE

BASIN TREES

SYMBOL		BOTANICAL/COMMON NAME
	DS	AMALANCHER ARBOREA / DOWNY SERVICEBERRY
	CT	CHAMAECYPARIS THYOIDES / ATLANTIC WHITE CYPRESS
	NS	NYSSA SYLVATICA / TUPELO
	TD	TAXODIUM / BALD CYPRESS

BASIN SHRUBS

SYMBOL		BOTANICAL/COMMON NAME
	CR	CLETHRA ALNIFOLIA / RUBY SPICE SUMMERSWEET
	CB	CORNUS SERICEA / BAYLEY'S RED TWIG DOGWOOD
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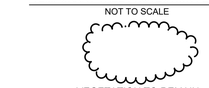
BASIN SEED MIX

SYMBOL		NAME
	122	DETENTION BASIN BOTTOM - ERNST SEED MIX 122
	126	BASIN BOTTOM - ERNST SEED MIX 126
	231	BASIN SIDE SLOPE - ERNST SEED MIX 231

TP TP TP

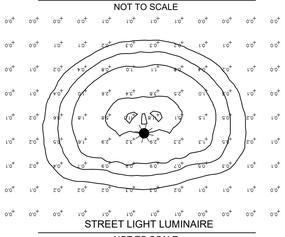
TEMPORARY TREE PROTECTION FENCING

NOT TO SCALE



VEGETATION TO REMAIN

NOT TO SCALE



STREET LIGHT LUMINAIRE

NOT TO SCALE

LANDSCAPE NOTES:

1. ALL LANDSCAPE BUFFERS SHALL BE MAINTAINED AND KEPT CLEAN OF DEBRIS, RUBBISH, NOXIOUS WEEDS AND INVASIVE SPECIES.
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GRAPHIC SCALE

30 0 30 60

(IN FEET)
1" = 30 FEET

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REV.	DATE	DESCRIPTION	DRAWN
3	03/22/24	REVISIONS PER TOWNSHIP COMMENTS	ESE
2	10/13/23	REVISIONS PER TOWNSHIP COMMENTS	ESE
1	7/24/23	TOWNSHIP REVIEW LETTERS	ESE

LANDSCAPE PLAN

SISTERS OF ST. BASIL

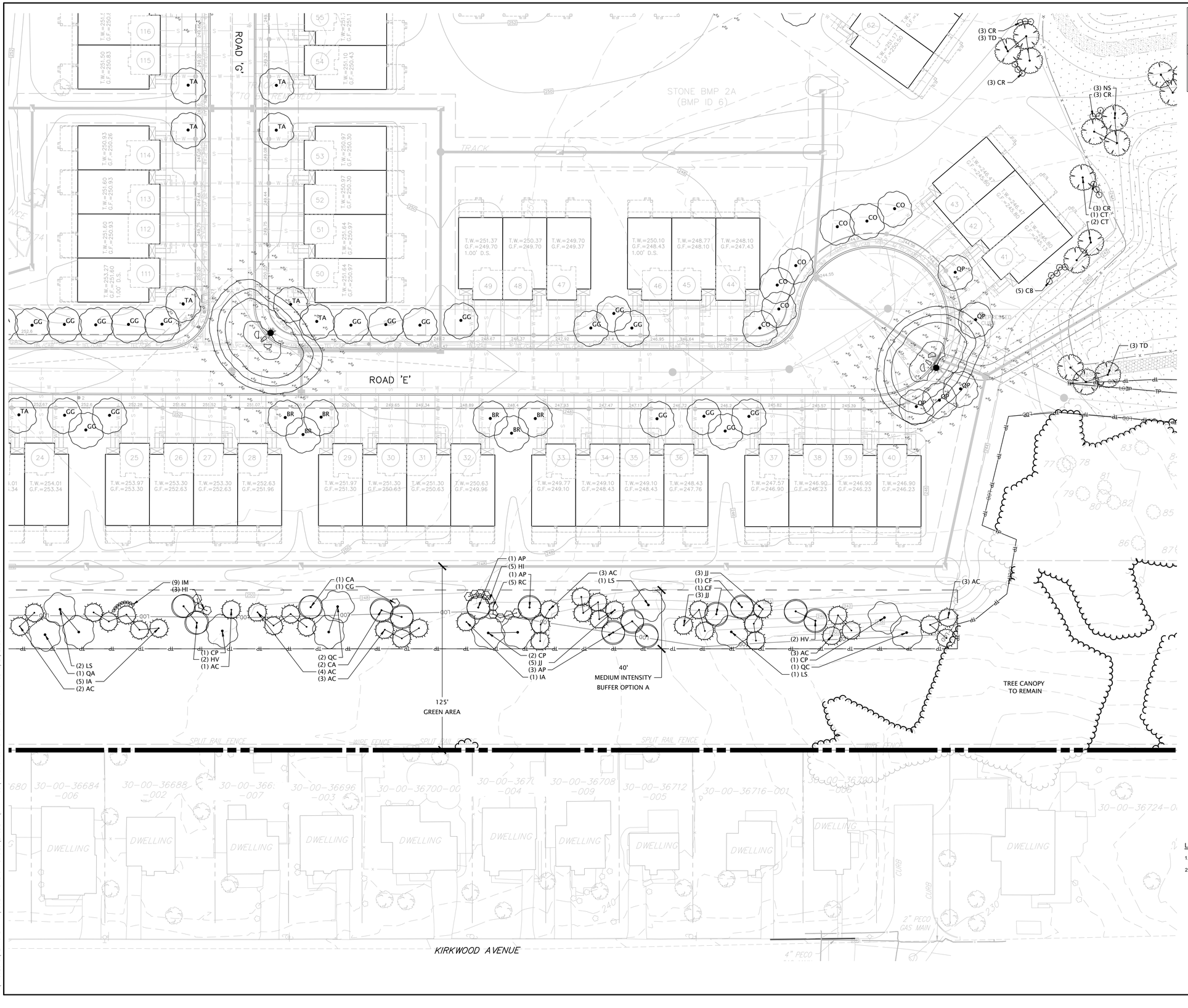
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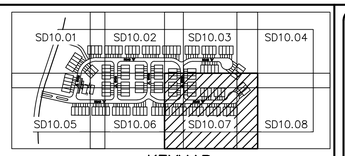
PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT - NOT TO BE RECORDED

APPLICATION NUMBER LD-23-01

DATE:	SCALE: 1"= 30'
DESIGN:	DRAWN: EED
JOB NO.: 7662	FILE NAME: 7662-S-09-LAND
REF. NO.:	SD10.06
SHEET NO.:	59 OF 62

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KEYMAP

PLANT LEGEND

STREET TREES		
SYMBOL		BOTANICAL/COMMON NAME
	AR	ACER RUBRUM 'AUTUMN RED' / AUTUMN RED MAPLE
	BR	BETULA NIGRA/ RIVER BIRCH
	CO	CARPINUS CAROLINIANA 'ORANGE CRUSH'/A. HORNBEAM
	QP	QUERCUS PHELLOS / WILLOW OAK
	GG	GLEDITSIA TRIACANTHOS / GREEN GLORY HONEY LOCUST
	TA	TILIA AMERICANA / AMERICAN LINDEN

BUFFER CANOPY TREES		
SYMBOL		BOTANICAL/COMMON NAME
	CP	CELTIS OCCIDENTALIS 'PRAIRIE HARVET'/HACKBERRY
	LS	LIQUIDAMBAR STYRACIFLUA/AMERICAN SWEET GUM
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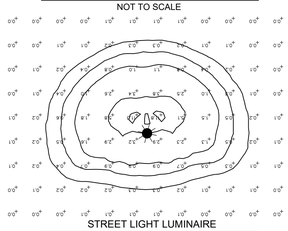
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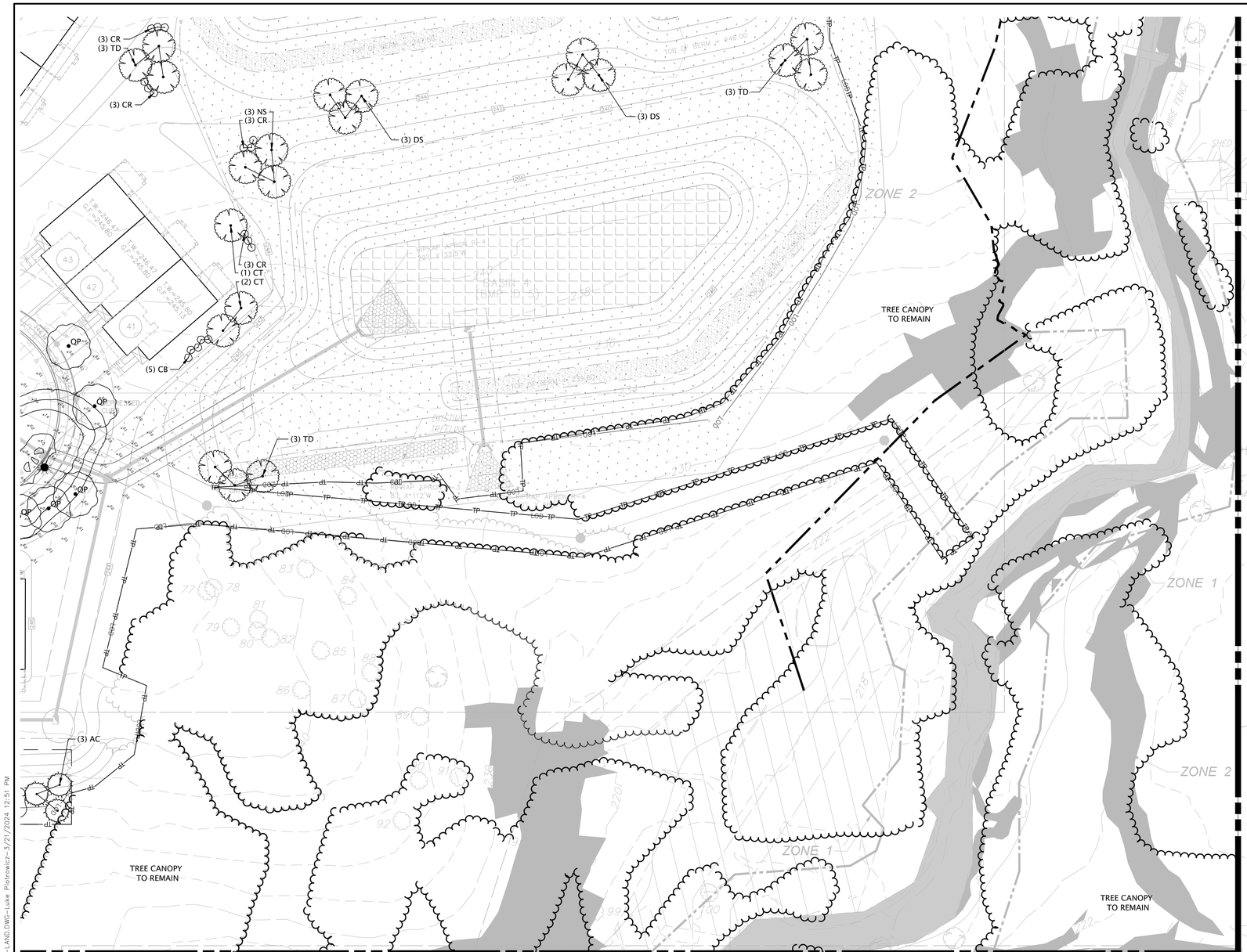
LANDSCAPE PLAN

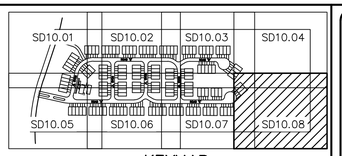
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REF. NO.:	SD10.07
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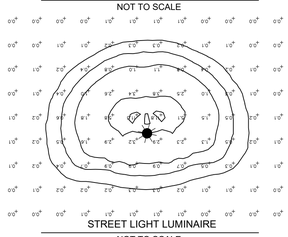
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TP TP TP

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PRELIMINARY MAJOR SUBDIVISION AND LAND DEVELOPMENT - NOT TO BE RECORDED

APPLICATION NUMBER LD-23-01

LANDSCAPE PLAN

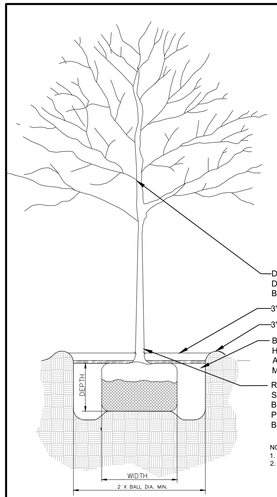
SISTERS OF ST. BASIL

ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE:	SCALE: 1"= 30'
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JOB NO.: 7662	FILE NAME: 7662-S-09-LAND
REF. NO.:	SD10.08
SHEET NO.:	61 OF 62

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TYPE 1& 2 SHADE TREES	
CALIPER	MIN. DIA. ROOTBALL
1/2 INCH	12 INCH
3/4 INCH	14 INCH
1 INCH	16 INCH
1 1/4 INCH	18 INCH
1 1/2 INCH	20 INCH
1 3/4 INCH	22 INCH
2 INCH	24 INCH
2 1/2 INCH	28 INCH
3 INCH	32 INCH
3 1/2 INCH	38 INCH
4 INCH	42 INCH
4 1/2 INCH	48 INCH
5 INCH	54 INCH
5 1/2 INCH	57 INCH
6 INCH	60 INCH
7 INCH	70 INCH
8 INCH	80 INCH

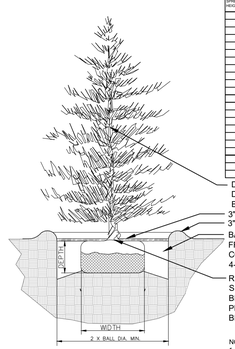


DO NOT CUT CENTRAL LEADER. TREES WITH DAMAGED/CUT/BROKEN CENTRAL LEADERS WILL BE REJECTED.
3" MULCH WITH NO MULCH AGAINST TRUNK
3" EARTH SAUCER
BACKFILL MIXTURE: 2 PARTS PARENT SOIL DUG FROM HOLE THAT HAS BEEN AMENDED WITH 1 PART COMPOST AND ESPOMA BIO-TONE STARTER PLUS 4-3-3, MIXED THOROUGHLY
REMOVE BURLAP FROM ENTIRE BASE. NO BURLAP SHALL BE SEEN ABOVE SOILS LINE. ROPE & TWINE TO BE REMOVED FROM PIT. CUT WIRE BASKET IN 4 PLACES, FOLD DOWN 8" INTO HOLE. TOP OF BALL TO BE LEVEL WITH GRADE. ROOT FLARE EXPOSED.

NOTE:
1. SEE CHART FOR MINIMUM ROOTBALL DIAMENTER
2. THE DEPTH OF ROOTBALL SHALL BE NO LESS THAN 60% ITS WIDTH

TREE PLANTING DETAIL
NOT TO SCALE

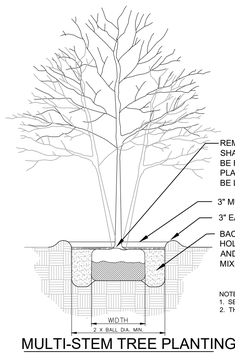
TYPE 1, 2 &3 SPREADING, BROAD, COMPACT UPRIGHT		TYPE 4&5 PYRAMIDAL, BROAD UPRIGHT		TYPE 6 COLUMNAR	
SPREAD (TYPES 1&2) HEIGHT (TYPE 3)	MIN. DIA. BALL	HEIGHT/ CALIPER	MIN. DIA. BALL	HEIGHT/ CALIPER	MIN. DIA. BALL
9 IN.	8 IN.	12 IN.	8 IN.	12 IN.	7 IN.
12 IN.	10 IN.	15 IN.	10 IN.	15 IN.	8 IN.
15 IN.	12 IN.	18 IN.	12 IN.	18 IN.	9 IN.
18 IN.	14 IN.	24 IN.	14 IN.	24 IN.	11 IN.
24 IN.	16 IN.	30 IN.	16 IN.	30 IN.	13 IN.
30 IN.	18 IN.	3 FT.	18 IN.	3 FT.	14 IN.
36 IN.	24 IN.	4 FT.	20 IN.	4 FT.	16 IN.
42 IN.	26 IN.	5 FT.	22 IN.	5 FT.	18 IN.
4 FT.	28 IN.	6 FT.	24 IN.	6 FT.	20 IN.
5 FT.	36 IN.	7 FT.	26 IN.	7 FT.	22 IN.
5 FT.	40 IN.	8 FT.	28 IN.	8 FT.	24 IN.
7 FT.	46 IN.	9 FT. /3 IN.	32 IN.	9 FT. /2 1/2 IN.	26 IN.
8 FT.	52 IN.	3 1/2 IN.	34 IN.	3 IN.	28 IN.
		4 IN.	38 IN.	3 1/2 IN.	32 IN.
		4 1/2 IN.	42 IN.	4 IN.	36 IN.
		5 IN.	48 IN.	4 1/2 IN.	40 IN.
		5 1/2 IN.	54 IN.	5 IN.	44 IN.
		6 IN.	60 IN.	5 1/2 IN.	48 IN.
		7 IN.	72 IN.	6 IN.	54 IN.
		8 IN.	84 IN.	7 IN.	66 IN.
		9 IN.	90 IN.	8 IN.	78 IN.
				9 IN.	90 IN.



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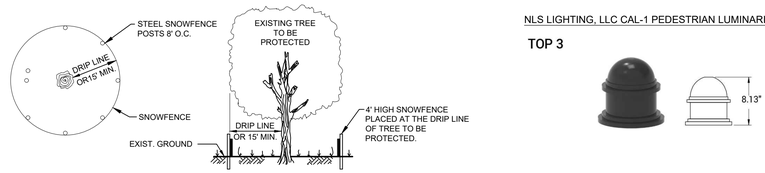
CONIFER PLANTING DETAIL
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MULTI-STEM TREE PLANTING
NOT TO SCALE



PLAN SECTION

NOTES:
1. TREE PROTECTION SHALL BE PROVIDED FOR ANY AND ALL TREES TO BE PRESERVED DURING AND AFTER CONSTRUCTION. TREE PROTECTION SHALL BE LOCATED WITHIN 25 FEET OF ANY PROPOSED DISTURBANCE.
2. WHEN FENCING HAS BEEN INSTALLED, ITS SHALL BE INSPECTED AND APPROVED BY THE TOWNSHIP PRIOR TO COMMENCING CLEARING AND FURTHER CONSTRUCTION.
3. 4' HIGH SNOWFENCE TO BE REPLACED WITH APPROPRIATELY SIZED COMPOST FILTER SOCK WHERE INDICATED ON THE PLANS, OR WHERE SITE CONDITIONS ALLOW.
4. BOARDS SHALL NOT BE NAILED TO TREES DURING CONSTRUCTION.
5. ROOTS SHALL NOT BE CUT IN AN AREA INSIDE THE DRIP LINE OF THE TREE BRANCHES.
6. TREE LIMB REMOVAL, WHERE NECESSARY, WILL BE MADE IN LINE WITH THE TRUNK COLLAR OR MAIN LIMB COLLAR, CUTS SHALL NOT BE PAINTED, AND BE PERFORMED UNDER THE IMMEDIATE SUPERVISION OF A LICENSED NURSERYMAN.

TREE PROTECTION FENCE DETAIL
NOT TO SCALE

LANDSCAPE AND LIGHTING NOTES

LANDSCAPE NOTES:
1. IN THE EVENT THAT ANY DISCREPANCIES BETWEEN THE QUANTITIES OF PLANTS INDICATED ON THE PLANT SCHEDULE AND THOSE INDICATED ON THE PLAN, THE QUANTITIES INDICATED ON THE PLAN SHALL GOVERN.
2. NO SUBSTITUTIONS SHALL BE ACCEPTED, EXCEPT WITH THE WRITTEN PERMISSION OF THE LANDSCAPE ARCHITECT OR HIS AGENT.
3. THE LANDSCAPE ARCHITECT OR HIS AGENT SHALL BE THE SOLE JUDGE OF THE QUALITY AND ACCEPTABILITY OF THE MATERIALS. ALL REJECTED MATERIALS SHALL BE IMMEDIATELY REPLACED WITH ACCEPTABLE MATERIAL AT NO ADDITIONAL COST.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PLANTING AT CORRECT GRADES AND ALIGNMENT.
5. THE TREES SHALL BE NURSERY STOCK COMPATIBLE WITH SOILS, EXISTING TREES AND CLIMATIC CONDITIONS IN THE SUBDIVISION. THEY SHALL BE SYMMETRICAL IN GROWTH, FREE OF INSECTS AND DISEASE AND SUITABLE FOR STREET PLANTINGS.
6. PLANTS SHALL BE TYPICAL OF THEIR SPECIES AND VARIETY; HAVE NORMAL GROWTH HABITS; WELL DEVELOPED BRANCHES, DENSELY FOLIATED, VIGOROUS ROOT SYSTEMS AND BE FREE FROM DEFECTS AND INJURIES.
7. THE CONTRACTOR SHALL REPORT ANY SOIL OR DRAINAGE CONDITION CONSIDERED DETRIMENTAL TO THE GROWTH OF PLANT MATERIAL.
8. QUALITY AND SIZE OF PLANTS, SPREAD OF ROOTS AND SIZE OF BALLS SHALL BE IN ACCORDANCE WITH "AMERICAN STANDARDS FOR NURSERY STOCK" ANSI 260 (MOST RECENT EDITION) AS PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC.
9. B & B PLANTS SHALL BE HANDLED FROM THE BOTTOM OF THE ROOT BALL ONLY. PLANTS WITH BROKEN, SPLIT OR DAMAGED ROOT BALLS SHALL BE REJECTED.
10. TREES SHALL BE LOCATED IN A MANNER WHICH WILL NOT OBSTRUCT ACCESS TO FIRE HYDRANT OR VISIBILITY OF STREET OR TRAFFIC SIGNS. NO TREES OR SHRUBS SHALL BE PLANTED IN A SIGHT TRIANGLE. NO TREES SHALL BE PLANTED IN ANY UTILITY OR MUNICIPAL EASEMENTS.
11. TREES SHALL BE STRUCTURALLY PRUNED, WATERED AND MULCHED ACCORDING TO ISA BEST MANAGEMENT PRACTICES UNTIL THEY ARE ESTABLISHED.
12. PLANTING OPERATIONS SHALL BE PERFORMED DURING PERIODS WITHIN THE PLANTING SEASON WHEN WEATHER AND SOIL CONDITION ARE SUITABLE. SPRING PLANTING SEASON SHALL BE: MARCH 1ST TO JUNE 1ST. FALL PLANTING SEASON SHALL BE: AUGUST 15TH TO DECEMBER 15TH FOR EVERGREEN PLANTS AND SEPTEMBER 15TH TO DECEMBER 15TH, FOR DECIDUOUS PLANTS.
13. SET ALL PLANTS PLUMB AND STRAIGHT. SET AT SUCH LEVEL THAT, AFTER SETTLEMENT, A NORMAL OR NATURAL RELATIONSHIP TO THE CROWN OF THE PLANT WITH THE GROUND SURFACE WILL BE ESTABLISHED. LOCATE PLANTS IN THE CENTER OF THE PLANTING PIT.
14. THE LOCATION OF ALL PLANT MATERIAL IS DIAGRAMMATIC. FINAL LOCATION OF ALL PLANT MATERIAL SHALL BE DETERMINED IN THE FIELD UNDER THE DIRECTION OF THE LANDSCAPE ARCHITECT OR HIS AGENT.
15. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY BEARING UPON THE PERFORMANCE OF THE WORK.
16. THE CONTRACTOR SHALL BE RESPONSIBLE TO CALL FOR UTILITY LOCATIONS, IF NECESSARY AND NOTIFY ALL UTILITY COMPANIES PRIOR TO EXCAVATING PLANT PITS. PLANT LOCATIONS MAY BE ADJUSTED IN FIELD TO AVOID INTERFERENCE WITH UTILITIES.
17. SEE THE SOIL EROSION AND SEDIMENT CONTROL PLAN FOR ALL TURF SPECIFICATIONS.
18. INDIVIDUAL LOT LANDSCAPING SHALL BE PLANTED PRIOR TO THE ISSUANCE OF A USE AND OCCUPANCY PERMIT.
19. GUARANTY: ALL LANDSCAPING REQUIRED UNDER THIS SECTION AND THE PROVISIONS OF THE ZONING CODE SHALL BE GUARANTEED BY THE SUBDIVIDER/LAND DEVELOPER OR BUILDER FOR A PERIOD OF ONE YEAR AFTER THE TOWNSHIP HAS ISSUED AN OCCUPANCY PERMIT FOR THE PROPERTY. IT SHALL BE THE RESPONSIBILITY OF THE SUBDIVIDER/LAND DEVELOPER OR BUILDER TO PROTECT, MAINTAIN AND FEED (IF NECESSARY) BOTH NEWLY PLANTED AND EXISTING PLANT MATERIALS DURING THIS PERIOD TO ENSURE THAT PLANTS ARE ALIVE AND HEALTHY. AN INSPECTION SHALL BE MADE BY THE TOWNSHIP AT THE END OF THE ONE-YEAR PERIOD; ANY PLANT MATERIALS UNACCEPTABLE AT THE TIME OF INSPECTION SHALL BE REPLACED IN ORDER TO SATISFY THE LANDSCAPING REQUIREMENTS OF THIS SECTION AND THE ZONING CODE.
20. TREE PROTECTION DURING CONSTRUCTION: TREE PROTECTION AREAS SHALL BE DELINEATED TO IMPLEMENT THE STANDARDS CONTAINED IN THE TOWNSHIP ZONING ORDINANCE AND THIS ORDINANCE REGARDING PRESERVATION OF TREES, WOODLANDS, AND FORESTS DURING THE DEVELOPMENT AND CONSTRUCTION PROCESS.
21. TREE PROTECTION AREA: AN AREA THAT IS RADIAL TO THE TRUNK OF A TREE. THE TREE PROTECTION AREA SHALL BE 15 FEET FROM THE TRUNK OF THE TREE TO BE RETAINED, OR THE DISTANCE FROM THE TRUNK TO THE DRIP LINE (THE LINE MARKING THE OUTER EDGE OF THE BRANCHES OF THE TREE) WHICHEVER IS GREATER. WHERE THERE IS A GROUP OF TREES OR WOODLANDS, THE TREE PROTECTION AREA SHALL BE THE AGGREGATE OF THE PROTECTION AREAS FOR THE INDIVIDUAL TREES.

LIGHTING NOTES:
22. POST APPROVAL ALTERATIONS TO LIGHTING PLANS, OR INTENDED SUBSTITUTIONS FOR APPROVED LIGHTING EQUIPMENT, SHALL BE SUBMITTED TO TOWNSHIP FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
23. TOWNSHIP RESERVES THE RIGHT TO CONDUCT A POST-INSPECTION OF LIGHTING TO VERIFY COMPLIANCE WITH APPROVED-PLAN COMMITMENTS, AND IF APPROPRIATE, TO REQUIRE REMEDIAL ACTION AT NO EXPENSE TO TOWNSHIP.

BASIN SEED MIX

BASIN SIDE SLOPE
(±176,335 SF) ERNST SEED MIX 183 (OR APPROVED EQUAL)
20 LB PER ACRE OR 1/2 LB PER 1,000 SF)



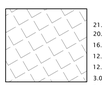
Mix Composition
16.0% Panicum clandestinum, 'Tioga' (Deertongue)
20.0% Carex vulpinoidea, PA Ecotype(Fox Sedge, PA Ecotype)
20.0% Elymus virginicus, PA Ecotype (Virginia Wildrye, PA Ecotype)
20.0% Panicum virgatum, 'Shawnee' (Switchgrass)
7.0% Juncus tenuis, PA Ecotype (Path Rush, PA Ecotype)
1.0% Juncus effusus (Soft Rush)
1.0% Panicum rigidulum, PA Ecotype (Redtop Panicgrass)
Total: 100%

BASIN BOTTOM - LOW MAINTENANCE
(±26,265 SF) ERNST SEED MIX 126 (OR APPROVED EQUAL)
20-40 LB PER ACRE OR 1LB PER 1,000 SF)



Mix Composition
25% Redtop Panicgrass, PA Ecotype (Panicum rigidulum (F. stipitatum), PA Ecotype)
16% Virginia Wildrye, PA Ecotype (Elymus virginicus, PA Ecotype)
16% Alkaligrass, 'Fults' (Puccinellia distans, 'Fults')
15% Fowl Bluegrass (Poa palustris)
10% Creeping Bentgrass (Agrostis stolonifera)
5% Redtop Bentgrass (Agrostis gigantea), PA Ecotype (Agrostis scabra, PA Ecotype)
5% Soft Rush (Juncus effusus)
2% Autumn Bentgrass, PA Ecotype (Agrostis perennans, PA Ecotype)
1% Path Rush, PA Ecotype (Juncus tenuis, PA Ecotype)
Total: 100% - See more at: http://www.ernstseed.com

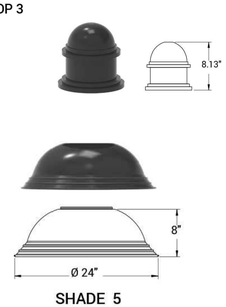
DETENTION BASIN BOTTOM
(±32,925 SF) ERNST SEED MIX 122 (OR APPROVED EQUAL)
20 LB PER ACRE OR 1/2 LB PER 1,000 SF)



21.0% CAREX VULPINOIDEA, PA ECOTYPE (FOX SEDGE, PA ECOTYPE)
20.0% ELYMUS VIRGINICUS, PA ECOTYPE (VIRGINIA WILDRYE, PA ECOTYPE)
16.0% CAREX LURIDA, PA ECOTYPE (LURID SEDGE, PA ECOTYPE)
12.0% CAREX LUPULINA, PA ECOTYPE (HOP SEDGE, PA ECOTYPE)
12.0% CAREX SCOPARIA, PA ECOTYPE (BLUNT BROOM SEDGE, PA ECOTYPE)
3.0% VERBENA HASTATA, PA ECOTYPE (BLUE VERVAIN, PA ECOTYPE)
2.4% ASCLEPIAS INCARNATA, PA ECOTYPE (SWAMP MILKWEED, PA ECOTYPE)
2.0% JUNCUS EFFUSUS (SOFT RUSH)
2.0% ZIZIA AUREA, PA ECOTYPE (GOLDEN ALEXANDERS, PA ECOTYPE)
1.6% ASTER NOVAE-ANGLIAE, PA ECOTYPE (NEW ENGLAND ASTER, PA ECOTYPE)
1.3% CAREX STIPATA, PA ECOTYPE (AWL SEDGE, PA ECOTYPE)
1.0% BIDENS CERNUA, PA ECOTYPE (NODDING BUR MARIGOLD, PA ECOTYPE)
1.0% JUNCUS TENUIS, PA ECOTYPE (PATH RUSH, PA ECOTYPE)
0.8% SOLIDAGO RUGOSA, PA ECOTYPE (WRINKLELEAF GOLDENROD, PA ECOTYPE)
0.6% VERBENA URTICIFOLIA, PA ECOTYPE (WHITE VERVAIN, PA ECOTYPE)
0.5% CAREX CRINITA, PA ECOTYPE (FRINGED SEDGE, PA ECOTYPE)
0.5% EUPATORIUM PERFOLIATUM, PA ECOTYPE (BONESET, PA ECOTYPE)
0.5% HELENIUM AUTUMNALE, PA ECOTYPE (COMMON SNEEZEWEED, PA ECOTYPE)
0.5% MIMULUS RINGENS, PA ECOTYPE (SQUARE STEMMED MONKEYFLOWER, PA ECOTYPE)
0.3% LOBELIA SIPHILITICA, PA ECOTYPE (GREAT BLUE LOBELIA, PA ECOTYPE)
0.3% SCIRPUS CYPERINUS, PA ECOTYPE (WOOLGRASS, PA ECOTYPE)
0.2% ALISMA SUBCORDATUM, PA ECOTYPE (MUD PLANTAIN, PA ECOTYPE)
0.2% ASTER PUNICEUS, PA ECOTYPE (PURPLESTEM ASTER, PA ECOTYPE)
0.2% ASTER UMBELLATUS, PA ECOTYPE (FLAT TOPPED WHITE ASTER, PA ECOTYPE)
0.1% PENTHORUM SEDOIDES, PA ECOTYPE (DITCH STONECROP, PA ECOTYPE)
TOTAL:100%

NLS LIGHTING, LLC CAL-1 PEDESTRIAN LUMINARIES, RSAP POLE, AND DPB-500 POLE BASE (OR APPROVED EQUAL)

TOP 3



SHADE 5

CAL-1	TP3	S5	T3	48L	53	30K8	UNV	AM	BLK	
Cat#	**Top**	**Shade**	**Light Dist.**	**# of LEDs**	**Milliamps**	**Kelvin**	**Volts**	**Mounting**	**Color**	**Options**
California 1 25' Diameter **(CAL-1)**	Top 1 **(TP1)**	Shade 1 **(S1)**	Type 2 **(T2)**	32 **(32L)**	350 **(35)** ❶	2700K, 80 CRI **(27K8)** ❶ ❷	120-277 **(UNV)**	Arm Mount **(AM)** ❶	Bronze Textured **(BRZ)**	House Side Shield **(HSS)**
	Top 2 **(TP2)**	Shade 2 **(S2)**			530 **(53)** ❶	3000K, 70 CRI **(30K7)** ❶		Wall Mount **(WM)** ❶	White Textured **(WHT)**	Bird Spikes **(BS)**
	Top 3 **(TP3)**	Shade 4 **(S4)**	Type 3 **(T3)**	48 **(48L)**		3000K, 80 CRI **(30K8)** ❶ ❷	347-480 **(HV)**		Smooth White Gloss **(SWT)**	Photocell **(PC)** ❶
		Shade 5 **(S5)**		64 **(64L)**	700 **(7)**	3500K, 80 CRI **(35K8)** ❶			Silver **(SVR)**	Nema 7-Pin Receptacle **(PE7)** ❶
		Shade 6 **(S6)**	Type 4 **(T4)**			4000K, 70 CRI **(40K7)**			Black Textured **(BLK)**	Photocell + Receptacle **(PCR)** ❶
		Shade 7 **(S7)**	Type 5 **(T5)**		1050 **(1)**	4000K, 80 CRI **(40K8)** ❶			Smooth Black Gloss **(SBK)**	Receptacle + Shorting Cap **(PER)** ❶
		Shade 8 **(S8)**				5000K, 70 CRI **(50K7)**			Graphite Textured **(GPH)**	FSP-211 with Motion Sensor **(FSP-8)** ❶ *8' and Below **(FSP-20)** ❶ *9'-20' Heights **(FSP-40)** ❶ *21-40' Heights
						5000K, 80 CRI **(50K8)** ❶			Grey Textured **(GRY)**	Frosted Lens **(FL)** ❶
									Custom **(CS)**	Marine Grade Finish **(MGF)**

Notes:
❶ 48L-64L Only
❷ Consult Factory for Lead Time. Consult Factory for 90 CRI Requests.
For Arm Mount, please select an Architectural Arm (AA) separately.
Universal Voltage 120-277
Only compatible with Arm Mount Arch Arms: 2, 3, 7-11, 13-18
48L option only, using IK-10 rated Silicone Optics
3000K or warmer must be selected to meet International Dark-Sky Association certification.
For Wall Mount, please select an Architectural arm (AA) separately.

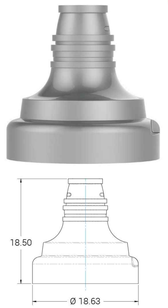
REV. 10.04.22

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ALL STREET LIGHTS SHALL HAVE MOTION CONTROLLED DYNADIMMERS AND SHALL BE PROGRAMMED TO DIM LIGHTING TO 25% BETWEEN THE HOURS OF 11PM TO 6AM. FULL LIGHT OUTPUT MODE WHEN MOTION DETECTION OCCURS, RETURNING TO 25% OUTPUT AFTER 5 MINUTES OF NO MOTION. (OR TOWNSHIP APPROVED EQUAL)

STREET LIGHT DETAIL (QTY:11)
NOT TO SCALE

NLS LIGHTING, DPB-500-4R-BLK POLE BASE (OR APPROVED EQUAL)



LIGHT POLE BASE DETAIL
NOT TO SCALE

STREET TREE PLANT SCHEDULE

2402.B.2.c. STREET TREES = 9,195 LF /40 = 230 TREES REQUIRED
146-39.B.(3)[2] >10 PARKING SPACES = 1 TREE REQUIRED

STREET TREES	QUANTITY	BOTANICAL NAME	COMMON NAME	CONT.	SIZE
AR	50	ACER RUBRUM 'AUTUMN RED'	AUTUMN RED MAPLE	B & B	3"-3.5" CAL. *
BR	21	BETULA NIGRA	RIVER BIRCH	B & B	10` MIN. HT.
CO	41	CARPINUS CAROLINIANA 'ORANGE CRUSH'	ORANGE CRUSH AMERICAN HORNBEAM	B & B	2" CAL.
GG	40	GLEDITSIA TRIACANTHOS 'GREEN GLORY'	GREEN GLORY HONEY LOCUST	B & B	3"-3.5" CAL. *
QP	44	QUERCUS PHELLOS	WILLOW OAK	B & B	3"-3.5" CAL. *
TA	35	TILIA AMERICANA	AMERICAN LINDEN	B & B	2" CAL.
TOTAL REQUIRED	**231**				
TOTAL PROPOSED	**231**	*REPLACEMENT TREES FROM CALCULATION OF SECTION 2401.A.2.d.(1)(a)			

40' MEDIUM INTENSITY BUFFER OPTION "A" PLANT SCHEDULE

2403.B.4.a.[2][A] BUFFERS AND SCREENS / MEDIUM INTENSITY BUFFER: PER 100 LF = 3,480 LF
SHADE 35.0 (2 TREES) = 70 TREES, FLOWERING 35.0 (2 TREES) = 70 TREES,
EVERGREEN 35.0 (5 TREES) = 175 TREES, SHRUBS 35.0 (5 SHRUBS) = 175 SHRUBS

BUFFER CANOPY TREES	QUANTITY	BOTANICAL NAME	COMMON NAME	CONT.	SIZE
CP	18	CELTIS OCCIDENTALIS 'PRAIRIE HARVEST'	PRAIRIE HARVEST HACKBERRY	B & B	2" CAL.
LS	15	LIQUIDAMBAR STYRACIFLUA	SWEET GUM	B & B	2" CAL.
QA	17	QUERCUS ALBA	WHITE OAK	B & B	2" CAL.
QC	20	QUERCUS COCCINEA	SCARLET OAK	B & B	2" CAL.
TOTAL REQUIRED	**70**				
TOTAL PROPOSED	**70**				
BUFFER EVERGREEN TREES	**QUANTITY**	**BOTANICAL NAME**	**COMMON NAME**	**CONT.**	**SIZE**
AC	78	ABIES CONCOLOR	WHITE FIR	B & B	8` MIN. HT.
IA	30	ILEX OPACA	AMERICAN HOLLY	B & B	8` MIN. HT.
JJ	67	JUNIPERUS COMMUNIS	COMMON JUNIPER	B & B	8` MIN. HT.
TOTAL REQUIRED	**175**				
TOTAL PROPOSED	**175**				
BUFFER UNDERSTORY TREES	**QUANTITY**	**BOTANICAL NAME**	**COMMON NAME**	**CONT.**	**SIZE**
AP	20	AMELANCHIER X GRANDIFLORA 'PRINCESS DIANA'	PRINCESS DIANA APPLE SERVICEBERRY	B & B	1 1/2" MIN. CAL.
CA	17	CERCIS CANADENSIS 'ALLEY CAT'	ALLEY CAT EASTERN REDBUD	B & B	1 1/2" MIN. CAL.
CF	17	CORNUS FLORIDA 'FIRST LADY'	FIRST LADY DOGWOOD	B & B	1 1/2" MIN. CAL.
HV	16	HAMAMELIS VIRGINIANA	COMMON WITCH HAZEL	B & B	1 1/2" MIN. CAL.
TOTAL REQUIRED	**70**				
TOTAL PROPOSED	**70**				
BUFFER SHRUBS	**QUANTITY**	**BOTANICAL NAME**	**COMMON NAME**	**CONT.**	**SIZE**
BG	39	BUXUS X 'GREEN MOUNTAIN'	GREEN MOUNTAIN BOXWOOD	CONT.	24" MIN HT.
CG	36	CORNUS RACEMOSA	GRAY DOGWOOD	CONT.	24" MIN HT.
HI	30	HYDRANGEA ARBORESCENS 'KOLPINBEL'	PINKERELLA™ HYDRANGEA	CONT.	24" MIN HT.
IM	35	ITEA VIRGINICA 'MORNING STAR'	MORNING STAR SWEETSPIRE	CONT.	24" MIN HT.
RC	35	RHODODENDRON CATAWBIENSE 'CAPISTRANO'	YELLOW FLOWERED RHODODENDRON	CONT.	24" MIN HT.
TOTAL REQUIRED	**175**				
TOTAL PROPOSED	**175**				

CLUBHOUSE FOUNDATION PLANT SCHEDULE

CLUBHOUSE FOUNDATION	QUANTITY	BOTANICAL NAME	COMMON NAME	CONT.	SIZE
CR2	6	CORNUS X 'RUTGAN'	STELLAR PINK® DOGWOOD	B & B	1 1/2" MIN. CAL.
HA	18	HYDRANGEA ARBORESCENS 'ANNABELLE'	ANNABELLE HYDRANGEA	CONT.	24" MIN HT.
II	37	ILEX GLABRA 'COMPACTA'	COMPACT INKBERRY	CONT.	24" MIN HT.
RC2	4	RHODODENDRON CATAWBIENSE 'CAPISTRANO'	YELLOW FLOWERED RHODODENDRON	CONT.	24" MIN HT.
TOTAL PROPOSED	**65**				

SITE ELEMENT SCREEN PLANT SCHEDULE

SITE ELEMENT SCREEN	QUANTITY	BOTANICAL NAME	COMMON NAME	CONT.	SIZE
TO	56	THUJA OCCIDENTALIS	AMERICAN ARBORVITAE	B & B	6` MIN. HT

BASIN PLANT SCHEDULE

BASIN TREES	QUANTITY	BOTANICAL NAME	COMMON NAME	CONT.	SIZE
DS	14	AMELANCHIER ARBOREA	DOWNY SERVICEBERRY	B & B	2" CAL.
CT	15	CHAMAECYPARIS THYOIDES	ATLANTIC WHITE CYPRESS	B & B	8` MIN. HT.
NS	9	NYSSA SYLVATICA	TUPELO	B & B	2" CAL.
TD	18	TAXODIUM DISTICHUM	BALD CYPRESS	B & B	8` MIN. HT.
TOTAL PROPOSED	**56**				
BASIN SHRUBS	**QUANTITY**	**BOTANICAL NAME**	**COMMON NAME**	**CONT.**	**SIZE**
CR	35	CLETHRA ALNIFOLIA 'RUBY SPICE'	RUBY SPICE SUMMERSWEET	CONT.	24" MIN HT.
CB	29	CORNUS SERICEA 'BAILEYI'	BAYLEY'S RED TWIG DOGWOOD	CONT.	24" MIN HT.
IG	5	ILEX GLABRA	INKBERRY HOLLY	CONT.	24" MIN HT.
TOTAL PROPOSED	**69**				

TREE REPLACEMENT REQUIREMENTS

SECTION 2401.A.2.d.(1)(a)
TREE REPLACEMENT SHALL OCCUR WHEN NEW IMPERVIOUS COVERAGE EXCEEDS 500 S.F. AND A TREE WITH A MINIMUM CALIPER OF SIX INCHES IS REMOVED. IN SUCH CASES, TWO NEW TREES, EACH A MINIMUM OF 3"-3.5" CALIPER, MEASURED 6" ABOVE GRADE, SHALL BE PLANTED FOR EACH TREE WITH A MINIMUM CALIPER OF 6" OR GREATER THAT IS REMOVED.

67 TREES REMOVED @ >6" CALIPER x 2 REPLACEMENT TREES = 134 REPLACEMENT TREES REQUIRED
134 REPLACEMENT TREES PROVIDED

RSAP ORDERING GUIDE

Cat#	Height	Pole Dimension	Gauge	Base Pattern
RSAP Round Straight Aluminum Pole **(RSAP)**	10' **(10)** 12' **(12)** 14' **(14)** 16' **(16)** 18' **(18)** 20' **(20)** 22' **(22)** 24' **(24)** 25 **(25)**	4R 4" Round **(4R)** 5" Round **(5R)** 6" Round **(6R)**	120 Wall Thickness **(120)** ❶ 188 Wall Thickness **(188)** 25 Wall Thickness **(250)**	9BC (10'-20') 8 3/16" TO 9 3/16" Bolt Circle **(9BC)** (22'-Over) 11 1/2"- 14" Bolt Circle **(13BC)** Custom Bolt Circle **(CBC)** *Consult Factory

Mounting	Color	Bolts	Options
SGL Single **(SGL)** DU-90D **(D-180)** Triple **(T-90)** Quad **(QD)** No Drill **(ND)** *Tenon Option **Tenon** 2 3/8" Round **(T2R)** 3" Round **(T3R)** 3 1/2" Round **(T312R)** 4 1/2" Round **(T412R)**	BLK Bronze Textured **(BRZ)** White Textured **(WHT)** Smooth White Gloss **(SWT)** Silver **(SVR)** Green Textured **(GRN)** Hunter Green Textured **(HGN)** Black Textured **(BLK)** Smooth Black Gloss **(SBK)** Graphite Textured **(GPH)** Grey Textured **(GRY)** Custom **(CS)**	3430 3/4" x 30" **(3430)** 1" x 36" **(136)** Less Anchor Bolts **(LAB)**	GFI-Kit **(GFI20A)** 20 Amp Weather Proof Receptacle GFI Provision Only **(PROV)** Round Base Cover **(RBC)** 1/2" Coupling **(COUP)** *Specify Location Vibration Dampener **(VD)** Extra Hand Hole **(3HH)** *Specify Location Marine Grade Finish **(MGF)** Anodized Under Powder **(AUP)**

Notes:
❶ 120 Wall Thickness only available in Poles 16' or shorter. Pole Dimension of 6" not available with 120 Wall Thickness.

NLS LIGHTING 701 Kingshill Place, Carson, CA 90746 Call Us Today (310) 341-2037 nlslighting.com

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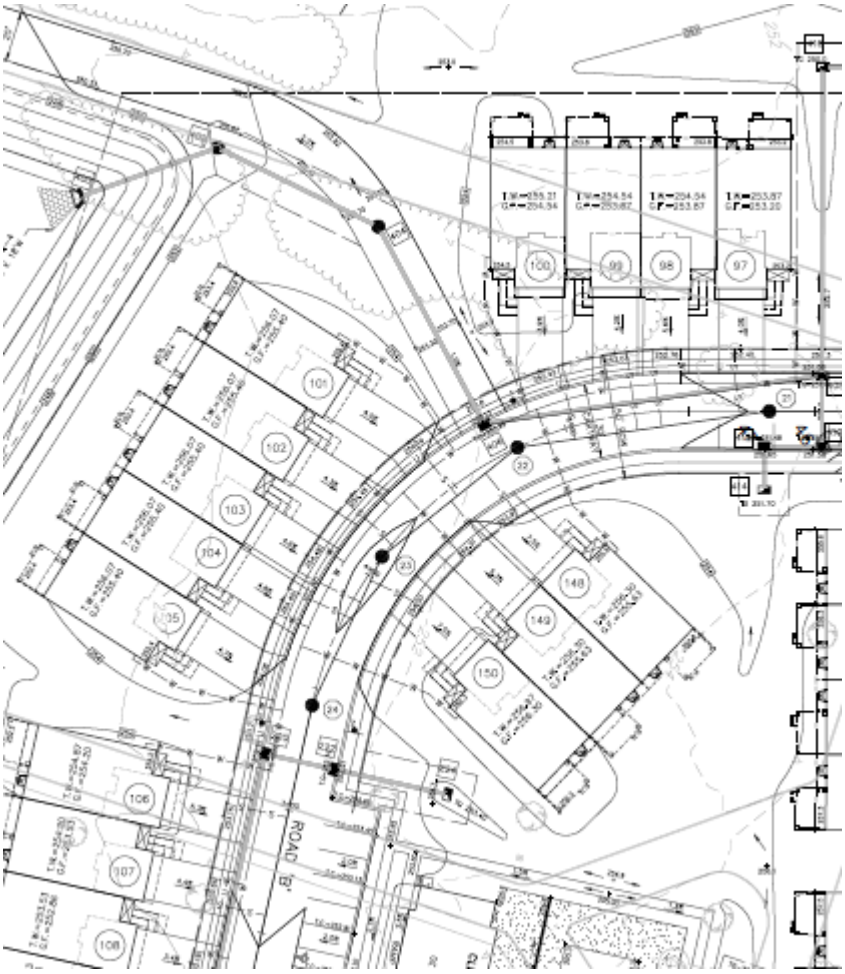
ESE CONSULTANTS
ENGINEERING · PLANNING · SURVEYING · ENVIRONMENTAL

ESE Consultants, Inc.
250 Gibraltar Road
Suite 2E
Horsham, PA 19044
TEL: 215-914-2050
FAX: 215-293-5488

NPDES NARRATIVE

FOR

SISTERS OF ST. BASIL



LOCATED IN:

ABINGTON TOWNSHIP, MONTGOMERY COUNTY, STATE OF PENNSYLVANIA

Jeffrey M. Madden
Professional Engineer
Pennsylvania License No.
PE 070760

July 2023
L.R. March 2024

Associated plans and documents:

- Preliminary Major Subdivision Plans –dated March 23, 2023, last revised October 13, 2023
- Erosion and Sediment Control Plans – dated July 17, 2023, last revised March 18, 2024
- Post Construction Stormwater Management Plans – dated July 17, 2023, last revised March 18, 2024
- Stormwater Management Narrative – dated July 2023, last revised March 2024
- Erosion and Sediment Control Narrative – dated July 2023, last revised March 2024

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Site Information

Location and Surrounding Uses

Sisters of St. Basils in Abington Township, Montgomery County, PA consists of 46.37 acres located in the CS Community Service District and within the Age-Restricted Carriage Home Overlay District. The tract is also known as tax parcel numbers 30-00-22424-00-1 and 30-00-22420-00-5.

The Unnamed Tributary to Pennypack Creek passes within the northeastern portion of the property. The property is bounded to the south by Fox Chase Road, to the west by Forrest Ave (residential), to the east by Kirkwood Avenue (residential), and to the south by Sulfolk Road (residential).

The Zoning Ordinance permits the development of land located in the CS District and within the Age-Restricted Carriage Home Overlay District to include the construction of single-family attached dwellings. This design proposes 150 single-family attached townhomes with 12.9 acres of open space, 32.30 ac of disturbance, and an NPDES site boundary of 46.58 acres.

The site is located within District B of the Pennypack Creek Watershed and within District B of the Tookany/Tacony-Frankford Creek Watershed.

There are seven (7) study points for stormwater runoff noted within this report as Drainage Area A through Drainage Area G. Furthermore, the site is designed with a total of ten (10) discharge points noted within this report as DP001 through DP010.

Existing Conditions

The site contains natural resource areas such as steep slopes, waters of the U.S., preliminary federally regulated wetlands, and mature trees. Existing contours range in elevation from 210 to 260.

The existing topography is generally the highest at the center of the site and then slopes down in all directions. Most of the site ultimately draining towards the Tributary to Pennypack Creek to the north and the existing residential lots along Forrest Avenue to the west, and along Kirkwood Avenue to the east. The remainder of the site drains from the center of the site to the south and ultimately discharging into Fox Chase Road. The property consists of a school, parking lot, track and field facility, meadows and woodlands. Impervious areas include portions of Fox Chase Road.

Stormwater Management

Infiltration is proposed on the site due to good preliminary soil testing performed on the site. To provide for water quality on-site and provide infiltration to meet delta 2 requirements, the BMPs selected for the site are as follows: Three Infiltration Basins, Two Dry Extended Detention Basin, and One Subsurface Infiltration Bed.

To calculate the Delta 2 Volume that is required to be infiltrated, the DEP PCSM Spreadsheets were used. Since the site lies in both the Tookany/Tacony-Frankford Creek Watershed and the Pennypack Creek Watershed, two DEP PCSM Spreadsheets were calculated.

Per the Volume tab on the DEP PCSM Spreadsheet, the 2-year volume increase equals 41,322 cuft for the Tookany/Tacony-Frankford Creek Watershed.

Per the Volume tab on the second DEP PCSM Spreadsheet, the 2-year volume increase equals 63,038 cuft for the Pennypack Creek Watershed.

The total volume increase for the site, (51.07 acres in Pre- and Post Development) equals 104,360 cuft.

Below are the required volumes for the two watersheds calculated by using the two DEP PCSM Spreadsheets.

Tookany/Tacony-Frankford Creek Watershed Pre-dev 2-year volume = 31,150 cubic-feet
Tookany/Tacony-Frankford Creek Watershed Post dev 2-year volume = 72,472 cubic-feet

Tookany/Tacony-Frankford Creek Watershed; 2-year WQv to be treated = **41,322** cubic-feet

Pennypack Creek Watershed Pre-dev 2-year volume = 86,459 cubic-feet
Pennypack Creek Watershed Post dev 2-year volume = 149,497 cubic-feet

Pennypack Creek Watershed; 2-year WQv difference = **63,038** cubic-feet
Overall 2-year WQv difference = ***104,360*** cubic-feet

Design Infiltration Rates

Basin 1:
Tested Infiltration Rate: 1.49 in/hr
Design Infiltration Rate w/ FOS: 1.49 / 2 = 0.75 in/hr
DEP PCSM Spreadsheet Rate: 0.75 * 0.9 = 0.67 in/hr
Bottom Surface Area: 10,750 sf
Basin 1 Design Rate = 10,750 * 0.67 / 12 / 60 / 60 = 0.17 cfs/s

Basin 2:
Tested Infiltration Rate: 2.87 in/hr
Design Infiltration Rate w/ FOS: 2.87 / 2 = 1.44 in/hr
DEP PCSM Spreadsheet Rate: 1.44 * 0.9 = 1.29 in/hr
Bottom Surface Area: 6,500 sf
Basin 2 Design Rate = 6,500 * 1.29 / 12 / 60 / 60 = 0.19 cfs/s

Stone BMP 2A:
Tested Infiltration Rate: 5.6 in/hr
Design Infiltration Rate w/ FOS: 5.6 / 2 = 2.8 in/hr
DEP PCSM Spreadsheet Rate: 2.8 * 0.9 = 2.52 in/hr
Bottom Surface Area: 9,900 sf
Stone BMP 2A Design Rate = 9,900 * 2.52 / 12 / 60 / 60 = 0.58 cfs/s

Basin 3B:
Tested Infiltration Rate: 1.28 in/hr
Design Infiltration Rate w/ FOS: 1.28 / 2 = 0.64 in/hr
DEP PCSM Spreadsheet Rate: 0.64 * 0.9 = 0.58 in/hr
Bottom Surface Area: 8,470 sf
Basin 3B Design Rate = 8,470 * 0.58 / 12 / 60 / 60 = 0.11 cfs/s

Detention Basin Tc Calculations

The Tc calculations for all basins use information from the Storm Sewer System tabulations. For basins 1, 2, 3A, 3B and Stone BMP 2A the actual sheet flow time, as calculated using TR-55, has been used. For basin 1 this is 12.8 minutes, for basin 2 this is 19.8 minutes, for basin 3A this is 13.8 minutes, for basin 3B this is 5.0 minutes. For Stone BMP 2A this is 12.1 minutes. For the pipe flow section, the Storm Sewer pipe run time was used. This time was calculated by taking the total system time minus the user entered 5-minute inlet time.

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*Item 16 -Not required as the DEP PCSM Spreadsheets are used

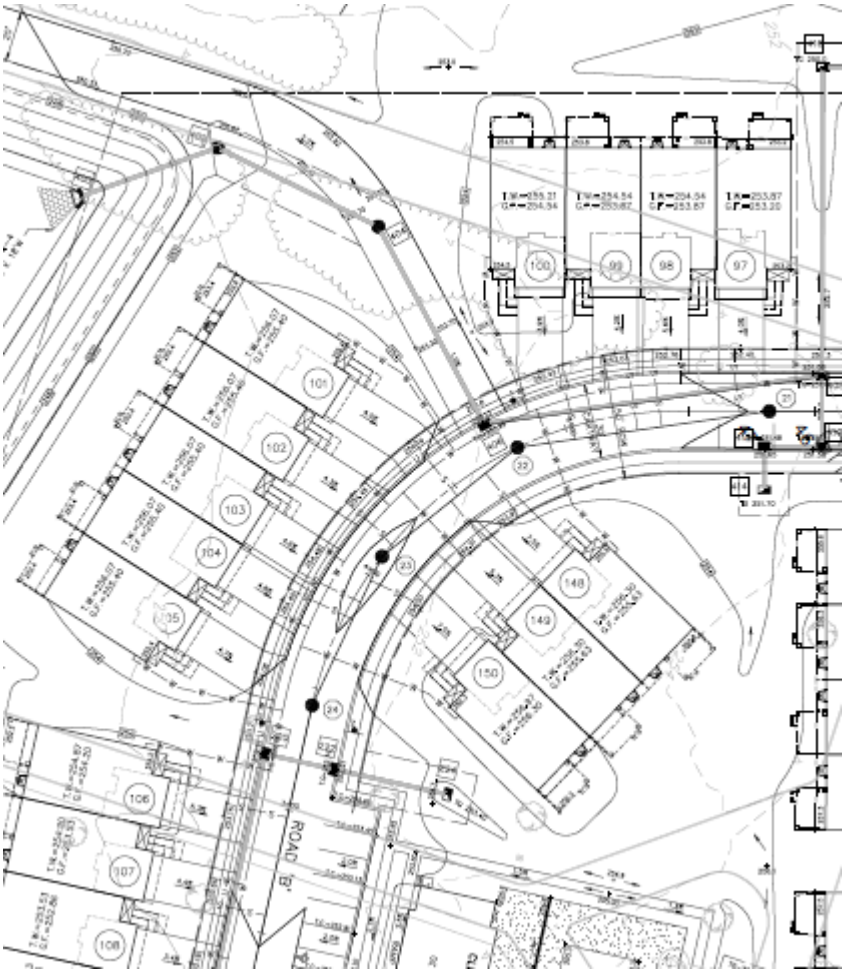
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STORMWATER MANAGEMENT NARRATIVE

FOR

SISTERS OF ST. BASIL



LOCATED IN:

ABINGTON TOWNSHIP, MONTGOMERY COUNTY, STATE OF PENNSYLVANIA

Jeffrey M. Madden
Professional Engineer
Pennsylvania License No.
PE 070760

July 2023
L.R. March 2024

Associated plans and documents:

- Preliminary Major Subdivision Plans – dated March 24, 2023, last revised March 22, 2024
- Erosion and Sediment Control Plans – dated July 17, 2023, last revised March 18, 2024
- Post Construction Stormwater Management Plans – dated July 17, 2023, last revised March 18, 2024
- Erosion and Sediment Control Narrative – dated July 2023, last revised March 2024

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I

Site Information

Location and Surrounding Uses

Sisters of St. Basils in Abington Township, Montgomery County, PA consists of 46.37 acres located in the CS Community Service District and within the Age-Restricted Carriage Home Overlay District. The tract is also known as tax parcel numbers 30-00-22424-00-1 and 30-00-22420-00-5.

The Tributary to Pennypack Creek passes within the northeastern portion of the property. The property is bounded to the south by Fox Chase Road, to the west by Forrest Ave (residential), to the east by Kirkwood Avenue (residential), and to the south by Sulfolk Road (residential).

The Zoning Ordinance permits the development of land located in the CS District and within the Age-Restricted Carriage Home Overlay District to include the construction of single-family attached dwellings. This design proposes 150 single-family attached townhomes with 12.9 acres of open space, 32.30 ac of disturbance, and an NPDES site boundary of 46.58 acres.

The site is located within District B of the Pennypack Creek Watershed and within District B of the Tookany/Tacony-Frankford Creek Watershed.

There are seven (7) study points for stormwater runoff noted within this report as Drainage Area A through Drainage Area G. Furthermore, the site is designed with a total of ten (10) discharge points noted within this report as DP001 through DP010.

Existing Conditions

The site contains natural resource areas such as steep slopes, waters of the U.S., preliminary federally regulated wetlands, and mature trees. Existing contours range in elevation from 210 to 260.

The existing topography is generally the highest at the center of the site and then slopes down in all directions. Most of the site ultimately draining towards the Tributary to Pennypack Creek to the north and the existing residential lots along Forrest Avenue to the west, and along Kirkwood Avenue to the east. The remainder of the site drains from the center of the site to the south and ultimately discharging into Fox Chase Road. The property consists of a school, parking lot, track and field facility, meadows and woodlands. Impervious areas include portions of Fox Chase Road.

Soil Types and Limitations

The soils information for the project is found on the 'Natural Resources Conservation Service" on the "Web Soil Survey, http://websoilsurvey.nrcs.usda.gov". The Soil Survey Area is Montgomery County, PA and the Survey Area Data is Version 16, September 1, 2021.

The following soil types are found on the site:

Soil Type	Symbol	Soil Group
Genelg silt loam, 3 to 8 percent slopes	GnB	B
Glenville silt loam, somewhat poorly drained, 0 to 3 percent slopes	GsA	C/D
Glenville silt loam, 3 to 8 percent slopes	GsB	B/C
Hatboro silt loam	Ha	B/D
Manor loam, 3 to 8 percent slopes	MaB	B
Manor loam, 8 to 15 percent slopes	MaC	B
Manor loam, 15 to 25 percent slopes	MaD	C
Udorthents, schist and gneiss, 0 to 8 percent slopes	UdsB	C
Urban land, 0 to 8 percent slopes	UgB	
Urban land-Udorthents, schist and gneiss complex, 0 to 8 percent slopes	UugB	

SOIL TYPE	DESCRIPTION	HYDROLOGIC GROUP	RATING	RATING REASON BLDGS W/ BASEMENTS
GnB	GENELG SILT LOAM, 3 TO 8 PERCENT SLOPES	B	NOT LIMITED	
GsA	GLENVILLE SILT LOAM, SOMEWHAT POORLY DRAINED, 0 TO 3 PERCENT	C/D	VERY LIMITED	DEPTH TO SATURATED ZONE, PONDING
GsB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	B/C	VERY LIMITED	DEPTH TO SATURATED ZONE, PONDING
Ha	HATBORO SILT LOAM	B/D	VERY LIMITED	DEPTH TO SATURATED ZONE, FLOODING
MaB	MANOR LOAM, 3 TO 8 PERCENT SLOPES	B	NOT LIMITED	
MaC	MANOR LOAM, 8 TO 15 PERCENT SLOPES	B	SOMWHAT LIMITED	SLOPE
MaD	MANOR LOAM, 15 TO 25 PERCENT SLOPES	C	VERY LIMITED	DEPTH TO HARD BEDROCK, DEPTH TO SOFT BEDROCK,
UdsB	UDORTHENTS, SCHIST AND GNEISS, 0 TO 8 PERCENT SLOPES	C	SOMWHAT LIMITED	DEPTH TO SATURATED ZONE, SHRINK-SWELL
UgB	URBAN LAND, 0 TO 8 PERCENT SLOPES		NOT RATED	
UugB	URBAN LAND-UDORTHENTS, SCHIST AND GNEISS COMPLEX, 0 TO 8 PERCENT		NOT RATED	

II

Hydrology

Stormwater Management Design Criteria

The Stormwater Management Plan described herein has been designed according to the following publications and criteria:

- Abington Township Stormwater Management Ordinance 2100 Article III and Article IV
- Abington Township Code, Part II General Legislation, Chapter 142 Stormwater Management
- Abington Township Code, Part II General Legislation, Chapter 146 Subdivision and Land Development
- Pennsylvania Stormwater Best Management Practices Manual – Final Draft -April 2006,
- "Urban Hydrology for Small Watersheds" (Technical Release No. 55), published by the United States Department of Agriculture, Soil Conservation Service, dated June 1986.

Peak Runoff Rate Control

Per, the Abington Township Code, Chapter 142-Stormwater Management Section 142-401.M, the rainfall intensities for these events are taken from NOAA Chapter 14 as 2.74, 3.31, 4.18, 4.92, 6.00, 6.92, and 7.93 inches for the 1, 2, 5, 10, 25, 50 and 100- year events, respectively.

Section 142-409.A.8 and Section 142-409.B.6 from the Abington Stormwater Management Chapter 142 states that the reduction only applies to the disturbed areas. In order to account for the non-disturbed areas, an "Allowable Post Developed Flows" chart was setup. The allowable flows have been calculated by using the 1-year pre-developed design flow multiplied with the percentage UN-disturbed of the shed. That number is then added to the product of the 2-year frequency storm multiplied by the percent disturbed of the shed. As an example:
(Q-1-pre x % disturbed) + (Q-2-pre x % undisturbed) = Q-2 post-allowable.

The site is located within District B of the Pennypack Creek Watershed and within District B of the Tookany/Tacony-Frankford Creek Watershed. Therefore, per Section 142-409.A.7 each subarea must meet each management district criteria.

The reductions shown in the tables below have been applied to and achieved for the overall site.

Per Section 142-409 Table 409.1T:
Peak Rate Control Standards by Stormwater Management District in the Tookany/Tacony-Frankford Creek Watershed, District B:

Post Construction Storm	Pre-Construction Storm for new development
2-year	1-year
5-year	2-year
10-year	5-year
25-year	10-year
50-year	25-year
100-year	100-year

The *'St. Basils – Watershed Summaries'* table, included in the appendix section, summarizes the peak runoff rates and reductions for each point of interest in the Tookany/Tacony-Frankford Creek Watershed (POI A, B, C). As demonstrated in the table, the post-developed peak rate has been reduced per the above requirement at all study points.

Per Section 142-409 Table 409.1P:
Peak Rate Control Standards by Stormwater Management District in the Pennypack Creek Watershed, District B:

Post Construction Storm	Pre-Construction Storm for new development
2-year	1-year
5-year	2-year
10-year	5-year
25-year	10-year
50-year	25-year
100-year	50-year

The *'St. Basils – Watershed Summaries'* table, included in the appendix section, summarizes the peak runoff rates and reductions for each point of interest in the Pennypack Creek Watershed (POI D, E, F, G). As demonstrated in the table, the post-developed peak rate has been reduced per the above requirement at all study points.

Impervious surface

For the SWM calculations, the maximum on lot allowable impervious area of 2,500 sf for the interior and exterior units has been used. This area includes the proposed dwelling and any options and future lot improvements.

The sum of this allowable impervious unit area, proposed roadways, clubhouse, parking, sidewalk, service walk, and driveway aprons within the right-of-way totals 15.85 ac. of on-site impervious or 31.0% of the total site area which is below the ordinance stated maximum of 50% impervious cover.

Delta 2-year storm event Volume Requirement and Water Quality

Infiltration is proposed on the site due to good preliminary soil testing performed on the site. To provide for water quality on-site and provide infiltration to meet delta 2 requirements, the BMPs selected for the site are as follows: Three Infiltration Basins, Two Dry Extended Detention Basin, and One Subsurface Infiltration Bed.

Per Section 142-401.M: All storage facilities shall completely drain both the volume and rate control capacities over a period not less than 24 hours and not more than 72 hours.

Per Section 142-405.2.B: The recharge volume required shall be computed as Rev = (1/12)*I, Where: Rev = Recharge Volume and I = Impervious area within limits of disturbance in sqft.

Rev = (1/12) * 690,430 sf= 57,535 cuft (1.32 acre-ft).

Per Section 142-407.B: The water quality storage volume shall be computed as WQv = [P * Rv * A] / 12, Where: WQv= Water Quality Volume in acre-ft, P=1 inch, A=area of the project contributing to the water quality BMP in acres, Rv=0.05+0.009*I, where I is the percent of the area that is impervious surface.

Rv = 0.05 + 0.009 * (31.00%) = 0.5279
WQv = (1 inch * 0.5279 * 28.85 acres) / 12 = 1.27 acre-ft

Per Section 142-406.A.1: The post development total runoff volume for all storms equal to or less than the 2-year 24 hour storm event shall not be increased.

The DEP PCSM Spreadsheet has been calculated for the two separate watersheds on the site. The Tookany/Tacony-Frankford Creek Watershed and the Pennypack Creek Watershed.

Per the Volume tab on the DEP PCSM Spreadsheet, which has been included in appendix 2 of this report, the 2-year volume increase equals 41,322 cuft for the Tookany/Tacony-Frankford Creek Watershed.

Per the Volume tab on the DEP PCSM Spreadsheet, which has been included in appendix 2 of this report, the 2-year volume increase equals 63,038 cuft for the Pennypack Creek Watershed.

The total volume increase for the site, (51.07 acres in Pre- and Post-Development) equals 104,360 cuft.

Below are the required volumes for the two watersheds calculated by using the DEP PCSM Spreadsheet shown in appendix 2.

Tookany/Tacony-Frankford Creek Watershed Pre-dev 2-year volume = 31,150 cubic-feet
Tookany/Tacony-Frankford Creek Watershed Post dev 2-year volume = 72,472 cubic-feet

Tookany/Tacony-Frankford Creek Watershed; 2-year WQv to be treated = **41,322** cubic-feet

Pennypack Creek Watershed Pre-dev 2-year volume = 86,459 cubic-feet
Pennypack Creek Watershed Post dev 2-year volume = 149,497 cubic-feet

Pennypack Creek Watershed; 2-year WQv difference = **63,038** cubic-feet
Overall 2-year WQv difference = ***104,360*** cubic-feet

Design Infiltration Rates

Basin 1:
Tested Infiltration Rate: 1.49 in/hr
Design Infiltration Rate w/ FOS: 1.49 / 2 = 0.75 in/hr
DEP PCSM Spreadsheet Rate: 0.75 * 0.9 = 0.67 in/hr
Bottom Surface Area: 10,750 sf
Basin 1 Design Rate = 10,750 * 0.67 / 12 / 60 / 60 = 0.17 cfs/s

Basin 2:
Tested Infiltration Rate: 2.87 in/hr
Design Infiltration Rate w/ FOS: 2.87 / 2 = 1.44 in/hr
DEP PCSM Spreadsheet Rate: 1.44 * 0.9 = 1.29 in/hr
Bottom Surface Area: 6,500 sf
Basin 2 Design Rate = 6,500 * 1.29 / 12 / 60 / 60 = 0.19 cfs/s

Stone BMP 2A:
Tested Infiltration Rate: 5.6 in/hr
Design Infiltration Rate w/ FOS: 5.6 / 2 = 2.8 in/hr
DEP PCSM Spreadsheet Rate: 2.8 * 0.9 = 2.52 in/hr
Bottom Surface Area: 9,900 sf
Stone BMP 2A Design Rate = 9,900 * 2.52 / 12 / 60 / 60 = 0.58 cfs/s

Basin 3B:
Tested Infiltration Rate: 1.28 in/hr
Design Infiltration Rate w/ FOS: 1.28 / 2 = 0.64 in/hr
DEP PCSM Spreadsheet Rate: 0.64 * 0.9 = 0.58 in/hr
Bottom Surface Area: 8,470 sf
Basin 3B Design Rate = 8,470 * 0.58 / 12 / 60 / 60 = 0.11 cfs/s

Detention Basin Tc Calculations

The Tc calculations for all basins use information from the Storm Sewer System tabulations. For basins 1, 2, 3A, 3B and Stone BMP 2A the actual sheet flow time, as calculated using TR-55, has been used. For basin 1 this is 12.8 minutes, for basin 2 this is 19.8 minutes, for basin 3A this is 13.8 minutes, for basin 3B this is 5.0 minutes. For Stone BMP 2A this is 12.1 minutes. For the pipe flow section, the Storm Sewer pipe run time was used. This time was calculated by taking the total system time minus the user entered 5-minute inlet time.

The Tc calculations are shown in appendix 9.

III

During Construction Hydrology

The Construction Sequence within the ENS plans should be followed in detail. Below is a synopsis of that construction sequence. If there is any discrepancy between this chapter and the construction sequence, the construction sequence is to be followed.

Per the Construction Sequence shown on the ENS plans, the construction entrance is to be installed first, then the super silt fence and tree protection, followed by the construction of the sediment basin, and the temporary swales. After the sediment basin and swales have been stabilized per the Construction Sequence, site construction can start.

The runoff will be collected through the temporary and permanent swales and proposed storm system and will be diverted to the Sediment Basin.

The Sediment Basin will be converted after the drainage area has been stabilized to the satisfaction of the conservation district and as listen in the construction sequence.

Calculations and routings for the Basin can be found in the appendix 2.

IV

Closed Conveyance System

Design Criteria

All closed conveyances were designed in accordance with Section 146-33. of the Abington Township Code, Part II General Legislation, Chapter 146.

Per Section 146-33.B.2, Storm pipes designed for residential areas are required to be designed for a ten-year-return frequency storm. All stormwater designs shall provide for overflow that will cause no damage to property nor affect the health and safety of individuals. Per the requirements the 10-year design storm are not allowed to surcharge out of the inlets. The system has been run to show capacity for the 100-year storm event to ensure all runoff designed to go to the basin will reach the basin. All pipes are proposed with a minimum diameter of fifteen inches (15”).

Methodology

Peak flow rates to each collection point were calculated using the Rational Method with applicable C values and storm frequency design factors as required by the ordinance.

Closed conveyance systems were then designed for capacity using Manning’s Equation. Hydraflow Storm Sewers Extension for AutoCAD® Civil 3D® Version 11 was utilized to perform the design calculation. The resulting inlet and pipe tables are included in the appendix.

Hydraulic Gradeline Analysis

Hydraulic gradeline calculations were performed for the entire conveyance system, to assure that the HGL fell below the grate/rim elevation for each structure in the system during the 10-year storm event (design storm) and the 100-year storm event. Hydraulic calculations were performed using Hydraflow Storm Sewers Extension for AutoCAD® Civil 3D® Version 11.

V

Open Conveyance System

Design Criteria

Wherever possible, overland runoff was directed to the discharge points via open channels or swales.

Swale calculations are shown in Appendix 14. All swales will be lined with NA-Green lining where required (or approved equal).

Summary Report

1

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

Date: 27-Jan-23
By: LJP
Chk'd:
Rev'd: 12-Oct-23

Allowable Post Developed Flows - SCS

Area Summaries

Area	Pre Q -1 yr (cfs)	Pre Q -2 yr (cfs)	Pre Q -5 yr (cfs)	Pre Q -10 yr (cfs)	Pre Q -25 yr (cfs)	Pre Q - 50 yr (cfs)	Pre Q - 100 yr (cfs)	Pre Total Area (Ac.)	Total Area Disturbed (Ac.)	% of shed (%)	Total Area Undisturbed (Ac.)	% of shed (%)
POI A	0.45	0.94	1.90	2.85	4.39	5.79	7.40	1.97	1.37	69.5%	0.60	30.5%
POI B	3.77	6.76	12.12	17.21	25.23	32.44	40.64	8.83	7.36	83.4%	1.47	16.6%
POI C	0.14	0.46	1.23	2.05	3.43	4.72	6.25	1.70	1.55	91.2%	0.15	8.8%
POI D	7.26	11.18	17.75	23.75	32.92	40.96	49.96	11.05	8.37	75.7%	2.68	24.3%
POI E	3.19	6.39	12.50	18.46	27.97	36.64	46.59	11.67	4.26	36.5%	7.41	63.5%
POI F	4.32	7.92	14.38	20.52	30.23	38.97	48.92	9.17	6.57	71.6%	2.60	28.4%
POI G	3.58	5.96	10.11	13.96	19.96	25.28	31.29	5.03	2.58	51.3%	2.45	48.7%

32.06

Weighted Allowable

Area	Post Q-2 yr (cfs)	Post Q-5 yr (cfs)	Post Q-10 yr (cfs)	Post Q-25 yr (cfs)	Post Q-50 yr (cfs)	Post Q-100 yr (cfs)
POI A	0.60	1.23	2.19	3.32	4.82	7.40
POI B	4.27	7.65	12.97	18.55	26.43	40.64
POI C	0.17	0.53	1.30	2.17	3.54	6.25
POI D	8.21	12.77	19.21	25.97	34.87	43.14
POI E	5.22	10.27	16.28	24.50	33.48	42.96
POI F	5.34	9.75	16.12	23.27	32.71	41.79
POI G	4.74	7.98	11.99	16.88	22.55	28.21

POI A, B, C: All fall into the T-Watershed, therefore the 100 year storm rate will not have to be reduced.

Note: The allowable post developed flows are calculated by using the previous year pre developed design flow multiplied with the percent **UN**-disturbed of the shed. That number is then added to the product of the actual year frequency storm multiplied by the percent disturbed of the shed.

Example:
(Q-1-pre * % disturbed) + (Q-2-pre * % undisturbed) = Q-2 post-allowable
(Q-2-pre * % disturbed) + (Q-5-pre * % undisturbed) = Q-5 post-allowable
(Q-5-pre * % disturbed) + (Q-10-pre * % undisturbed) = Q-10 post-allowable
(Q-10-pre * % disturbed) + (Q-25-pre * % undisturbed) = Q-25 post-allowable
(Q-25-pre * % disturbed) + (Q-50-pre * % undisturbed) = Q-50 post-allowable
(Q-50-pre * % disturbed) + (Q-100-pre * % undisturbed) = Q-100 post-allowable

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

Date: 2/2/2023
By: LJP
Chk'd:
Rev'd: 12-Oct-23

Sisters of St. Basil (7662) - WATERSHED SUMMARIES - Tookany/Tacony-Frankford Creek								
WATERSHED DESCRIPTION		PEAK RUNOFF RATES (CFS)						
		1 Year	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year
POI A	Pre-Developed POI A	0.45	0.94	1.90	2.85	4.39	5.79	7.40
	Post Developed to POI A	0.20	0.44	0.92	1.39	2.17	2.88	3.70
	ALLOWABLE POST DEVELOPED FLOW (from allowable excel sheet)	--	*0.60*	*1.23*	*2.19*	*3.32*	*4.82*	*7.40*
POI B	Pre-Developed POI B	3.77	6.76	12.12	17.21	25.23	32.44	40.64
	Post Bypass B	2.19	3.17	4.77	6.19	8.32	10.16	12.19
	Post Developed Basin 1	0.00	0.00	0.17	0.26	0.35	0.42	0.49
	Post Developed Basin 2	0.00	0.00	0.12	0.22	0.31	1.78	6.73
	Post Developed to POI B	2.19	3.17	4.77	6.19	8.47	10.38	12.48
	ALLOWABLE POST DEVELOPED FLOW (from allowable excel sheet)	--	*4.27*	*7.65*	*12.97*	*18.55*	*26.43*	*40.64*
POI C	Pre-Developed flow to POI C	0.14	0.46	1.23	2.05	3.43	4.72	6.25
	Post Developed to POI C	0.08	0.19	0.40	0.60	0.93	1.23	1.58
	ALLOWABLE POST DEVELOPED FLOW (from allowable excel sheet)	--	*0.17*	*0.53*	*1.30*	*2.17*	*3.54*	*6.25*

Sisters of St. Basil (7662) - WATERSHED SUMMARIES - Pennypack Creek								
WATERSHED DESCRIPTION		PEAK RUNOFF RATES (CFS)						
		1 Year	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year
POI D	Pre-Developed POI D	7.26	11.18	17.75	23.75	32.92	40.96	49.96
	Post Developed to POI D	1.79	2.91	4.83	6.61	9.37	11.81	14.55
	ALLOWABLE POST DEVELOPED FLOW (from allowable excel sheet)	--	*8.21*	*12.77*	*19.21*	*25.97*	*34.87*	*43.14*
POI E	Pre-Developed POI E	3.19	6.39	12.50	18.46	27.97	36.64	46.59
	Post Bypass E	2.41	4.85	9.41	13.83	20.93	27.39	34.80
	Post Developed Basin 3A	1.54	2.39	3.54	4.30	4.98	5.04	5.17
	Post Developed Basin 3B	0.00	0.00	0.00	0.00	0.60	1.81	3.27
	Post Developed flow to POI E	2.41	4.85	9.41	13.83	20.95	27.50	34.96
	ALLOWABLE POST DEVELOPED FLOW (from allowable excel sheet)	--	*5.22*	*10.27*	*16.28*	*24.50*	*33.48*	*42.96*
POI F	Pre-Developed POI F	4.32	7.92	14.38	20.52	30.23	38.97	48.92
	Post Bypass F	1.58	2.95	5.43	7.79	11.53	14.91	18.76
	Post Developed Stone BMP 2A	4.40	10.36	18.83	24.80	32.34	38.34	44.73
	Post Developed Basin 4	2.08	2.61	7.42	12.29	16.73	19.58	33.02
	Post Developed flow to POI F	3.05	4.75	8.35	14.22	22.82	29.34	38.09
	ALLOWABLE POST DEVELOPED FLOW (from allowable excel sheet)	--	*5.34*	*9.75*	*16.12*	*23.27*	*32.71*	*41.79*
POI G	Pre-Developed POI G	3.58	5.96	10.11	13.96	19.96	25.28	31.29
	Post Developed flow to POI G	1.80	3.15	5.54	7.79	11.32	14.49	18.07
	ALLOWABLE POST DEVELOPED FLOW (from allowable excel sheet)	--	*4.74*	*7.98*	*11.99*	*16.88*	*22.55*	*28.21*

	1 Year	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year
TOTAL PRE DEVELOPED	22.71	39.61	69.99	98.80	144.13	184.80	231.05
TOTAL ALLOWABLE POST	--	28.55	50.19	80.05	114.66	158.39	210.39
TOTAL POST DEVELOPED	11.52	19.46	34.22	50.63	76.03	97.63	123.43

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

Date: 27-Jan-23
By: LJP
Chk'd:
Rev'd:

Allowable Post Developed Flows - SCS

Area Summaries												
Area	Pre Q -1 yr (cfs)	Pre Q -2 yr (cfs)	Pre Q -5 yr (cfs)	Pre Q -10 yr (cfs)	Pre Q -25 yr (cfs)	Pre Q - 50 yr (cfs)	Pre Q - 100 yr (cfs)	Pre Total Area (Ac.)	Total Area Disturbed (Ac.)	% of shed (%)	Total Area Undisturbed (Ac.)	% of shed (%)
POI A	0.45	0.94	1.90	2.85	4.39	5.79	7.40			#DIV/0!	0.00	#DIV/0!
POI B	3.77	6.76	12.12	17.21	25.23	32.44	40.64			#DIV/0!	0.00	#DIV/0!
POI C	0.14	0.46	1.23	2.05	3.43	4.72	6.25			#DIV/0!	0.00	#DIV/0!
POI D	7.26	11.18	17.75	23.75	32.92	40.96	49.96			#DIV/0!	0.00	#DIV/0!
POI E	3.19	6.39	12.50	18.46	27.97	36.64	46.59			#DIV/0!	0.00	#DIV/0!
POI F	4.32	7.92	14.38	20.52	30.23	38.97	48.92			#DIV/0!	0.00	#DIV/0!
POI G	3.58	5.96	10.11	13.96	19.96	25.28	31.29			#DIV/0!	0.00	#DIV/0!

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

Date: 3/10/2023
By: JMM
Chk'd:
Rev'd:

Sisters of St. Basil (7662) - WATERSHED SUMMARIES - Tookany/Tacony-Frankford Creek								
WATERSHED DESCRIPTION		PEAK RUNOFF RATES (CFS)						
		1 Year	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year
POI A	Pre-Developed POI A	0.45	0.94	1.90	2.85	4.39	5.79	7.40
	During Construction Bypass to POI A	0.44	0.77	1.36	1.91	2.77	3.54	4.42
POI B	Pre-Developed POI B	3.77	6.76	12.12	17.21	25.23	32.44	40.64
	During Construction Bypass B	3.54	4.62	6.27	7.67	9.72	11.45	13.34
	During Construction to E&S Basin 1 Out	0.23	0.31	0.40	0.46	1.99	5.60	10.10
	Total During Construction to POI B	3.66	4.74	6.55	8.02	10.14	11.92	23.28
POI C	Pre-Developed flow to POI C	0.14	0.46	1.23	2.05	3.43	4.72	6.25
	During Construction to POI C	0.17	0.30	0.55	0.78	1.14	1.46	1.83

Sisters of St. Basil (7662) - WATERSHED SUMMARIES - Pennypack Creek								
WATERSHED DESCRIPTION		PEAK RUNOFF RATES (CFS)						
		1 Year	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year
POI D	Pre-Developed POI D	7.26	11.18	17.75	23.75	32.92	40.96	49.96
	During Construction to POI D	5.33	7.46	10.48	13.10	16.93	20.19	23.76
POI E	Pre-Developed POI E	3.19	6.39	12.50	18.46	27.97	36.64	46.59
	During Construction Bypass E	2.77	5.34	10.05	14.60	21.84	28.41	35.91
	During Construction E&S Basin 3A Out	0.12	0.20	0.30	0.36	1.32	3.82	10.21
	During Construction Basin 3B Out	0.00	0.00	0.41	0.89	1.33	1.84	2.44
	Total During Construction flow to POI E	2.89	5.46	10.22	14.86	22.23	29.14	46.31
POI F	Pre-Developed POI F	4.32	7.92	14.38	20.52	30.23	38.97	48.92
	During Construction Bypass F	1.75	3.15	5.66	8.05	11.81	15.19	19.03
	During Construction Basin 4 Out	0.12	0.12	0.12	0.69	2.87	8.82	21.37
	Total During Construction flow to POI F	1.87	3.27	5.87	8.17	11.93	15.31	30.53
POI G	Pre-Developed POI G	3.58	5.96	10.11	13.96	19.96	25.28	31.29
	During Construction flow to POI G	3.29	4.97	7.79	10.33	14.18	17.55	21.29

	1 Year	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year
TOTAL PRE DEVELOPED	22.71	39.61	69.99	98.80	144.13	184.80	231.05
TOTAL DURING CONSTRUCTION	17.65	26.97	42.82	57.17	79.32	99.11	151.42

2-Year Volume
(DEP PCSM Spreadsheets)

2

General Information

Instructions | *General* | Volume | Rate | Quality

Project Name: **Sisters of St. Basil (Watershed 01)**

Application Type: **PAG-02 NOI**

County: **Montgomery**

Municipality: **Abington Township**

Project Type: **Single-Family Housing**

◉ New Project ○ Minor / Major Amendment

Area: **12.75** acres *(In Watershed)*

Total Earth Disturbance: **10.95** acres *(In Watershed)*

No. of Post-Construction Discharge Points: **3**

Start DP Numbering at: **001**

Discharge Point (DP) No.	Drainage Area (DA) (acres)	Earth Disturbance in DA (acres)	Existing Impervious in DA (acres)	Proposed Impervious in DA (acres)	Receiving Waters	Ch. 93 Class	Structural BMP(s)
001					East Branch Jenkintown Creek 25598789	WWF	No
002	9.41	9.00	1.18	4.75	East Branch Jenkintown Creek 25598789	WWF	Yes
003					East Branch Jenkintown Creek 25598789	WWF	No
Undetained Areas	3.34	1.95	0.31	0.79	East Branch Jenkintown Creek 25598789	WWF	
Totals:	**12.75**	**10.95**	**1.49**	**5.54**			

Volume Management

Project: Sisters of St. Basil (Watershed 01)

Instructions | General | *Volume* | Rate | Quality

2-Year / 24-Hour Storm Event (NOAA Atlas 14): **3.31** inches

Alternative 2-Year / 24-Hour Storm Event _____ inches

Alternative Source: _____

Pre-Construction Conditions: *No. Rows:* **7** ☐ *Exempt from Meadow in Good Condition* ☑ *Automatically Calculate CN, Ia, Runoff and Volume*

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Impervious Areas: Institutional	0.92	B	98	0.041	3.08	10,276
Impervious Areas: Institutional	0.14	C	98	0.041	3.08	1,564
Impervious Areas: Streets and Roads - Paved; Curbs and Storm Sewers (Excluding ROW)	0.16	C	98	0.041	3.08	1,787
Impervious as Meadow	0.24	B	58	1.448	0.38	332
Impervious as Meadow	0.03	C	71	0.817	0.94	103
Pervious as Meadow	6.73	B	58	1.448	0.38	9,302
Pervious as Meadow	2.27	C	71	0.817	0.94	7,787
TOTAL (ACRES):	**10.49**				**TOTAL (CF):**	**31,150**

Post-Construction Conditions: *No. Rows:* 6

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Impervious Areas: Streets and Roads - Paved; Curbs and Storm Sewers (Excluding ROW)	0.92	B	98	0.041	3.08	10,276
Impervious Areas: Streets and Roads - Paved; Curbs and Storm Sewers (Excluding ROW)	0.64	C	98	0.041	3.08	7,149
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	2.97	B	98	0.041	3.08	33,174
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	0.71	C	98	0.041	3.08	7,931
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	4.25	B	61	1.279	0.49	7,556
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	1.46	C	74	0.703	1.11	5,886
TOTAL (ACRES):	**10.95**				**TOTAL (CF):**	**71,972**

IET CHANGE IN VOLUME TO MANAGE (CF): **40,822**

Non-Structural BMP Volume Credits:

☐ Tree Planting Credit

☐ Other (attach calculations):

Structural BMP Volume Credits: *No. Structural BMPs:* **2** *Start BMP Numbering at:* **1**

DP No.	BMP No.	BMP Name	MRC?	Discharge	Incremental BMP DA (acres)	Volume Routed to BMP (CF)	Infiltration / Vegetated Area (SF)	Infiltration Rate (in/hr)	Infiltration Period (hrs)	Vegeta-ted?	Media Depth (ft)	Storage Volume (CF)	Infiltration Credit (CF)	ET Credit (CF)
002	1	Infiltration Basin	-	Off-Site	5.99	30,840	10,750	0.75	50	No		22,434	**29,690**	
002	2	Infiltration Basin	-	to BMP No. 1	3.01	21,998	6,500	1.44	32	No		13,592	**21,998**	
												Totals:	**51,688**	

INFILTRATION & ET CREDITS (CF):	**51,688**
NET CHANGE IN VOLUME TO MANAGE (CF):	**40,822**
TOTAL CREDITS (CF):	**51,688**

VOLUME REQUIREMENT SATISFIED

Rate Control

Project: Sisters of St. Basil (Watershed 01)

Precipitation Amounts:

NOAA 2-Year 24-Hour Storm Event (in):	**3.31**	Alternative 2-Year 24-Hour Storm Event (in):	
NOAA 10-Year 24-Hour Storm Event (in):	**4.92**	Alternative 10-Year 24-Hour Storm Event (in):	
NOAA 50-Year 24-Hour Storm Event (in):	**6.92**	Alternative 50-Year 24-Hour Storm Event (in):	
NOAA 100-Year 24-Hour Storm Event (in):	**7.93**	Alternative 100-Year 24-Hour Storm Event (in):	

☑ **Report Summary of Peak Rates Only**

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

	Peak Discharge Rates (cfs)			
	Pre-Construction	**Post-Construction**	**Net Change**	
2-Year Storm:	**8.26**	**4.07**	**-4.19**	***Rate Control Satisfied***
10-Year Storm:	**22.32**	**8.41**	**-13.91**	***Rate Control Satisfied***
50-Year Storm:	**43.30**	**14.54**	**-28.76**	***Rate Control Satisfied***
100-Year Storm:	**54.71**	**17.70**	**-37.01**	***Rate Control Satisfied***

DP No.	BMP No.	BMP Name	MRC?	Inflow to BMP (cfs)				Outflow from BMP (cfs)			
				2-yr	10-yr	50-yr	100-yr	2-yr	10-yr	50-yr	100-yr
002	1	Infiltration Basin	-	11.81	22.82	37.44	48.93	0.17	0.43	0.59	0.66
002	2	Infiltration Basin	-	12.18	21.40	33.00	38.84	0.19	0.41	1.97	6.92

Water Quality

Project: Sisters of St. Basil (Watershed 01)

PRINT

Instructions | General | Volume | Rate | *Quality*

Pre-Construction Pollutant Loads:

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN
Impervious Areas: Institutional	Institutional	0.92	B	10,276	67.5	0.14	1.21	43.31	0.09	0.78
Impervious Areas: Institutional	Institutional	0.14	C	1,564	67.5	0.14	1.21	6.59	0.01	0.12
Impervious Areas: Streets and Roads - Paved; Curbs and Storm Sewers (Excluding ROW)	Urban Highway	0.16	C	1,787	142.0	0.32	3.00	15.85	0.04	0.33
Impervious as Meadow	Grassland/Herbaceous	0.24	B	332	48.8	0.22	2.30	1.01	0.00	0.05
Impervious as Meadow	Grassland/Herbaceous	0.03	C	103	48.8	0.22	2.30	0.31	0.00	0.01
Pervious as Meadow	Grassland/Herbaceous	6.73	B	9,302	48.8	0.22	2.30	28.34	0.13	1.34
Pervious as Meadow	Grassland/Herbaceous	2.27	C	7,787	48.8	0.22	2.30	23.73	0.11	1.12
	TOTAL (ACRES):	**10.49**					**TOTALS:**	**119.14**	**0.38**	**3.75**

Post-Construction Pollutant Loads (without BMPs):

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN
Impervious Areas: Streets and Roads - Paved; Curbs and Storm Sewers (Excluding ROW)	Urban Highway	0.92	B	10,276	142.0	0.32	3.00	91.12	0.21	1.93
Impervious Areas: Streets and Roads - Paved; Curbs and Storm Sewers (Excluding ROW)	Urban Highway	0.64	C	7,149	142.0	0.32	3.00	63.39	0.14	1.34
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	2.97	B	33,174	65.0	0.29	2.05	134.65	0.60	4.25
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	0.71	C	7,931	65.0	0.29	2.05	32.19	0.14	1.02
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	Open Space	4.25	B	7,556	78.0	0.25	1.25	36.80	0.12	0.59
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	Open Space	1.46	C	5,886	78.0	0.25	1.25	28.67	0.09	0.46
	TOTAL (ACRES):	**10.95**					**TOTALS:**	**386.81**	**1.30**	**9.58**

POLLUTANT LOAD REDUCTION REQUIREMENTS (LBS):	**267.67**	**0.92**	**5.83**

☑ **Characterize Undetained Areas (for Untreated Stormwater)** *No. Rows:* **3**

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	0.76	B	61	1.279	0.49	1,351
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	0.64	C	74	0.703	1.11	2,580
Impervious Areas: Streets and Roads - Paved; Curbs and Storm Sewers (Excluding ROW)	0.56	N/A	98	0.041	3.08	6,255

Non-Structural BMP Water Quality Credits:

☑ Pervious Undetained Area Credit

TSS	TP	TN
2.99	0.01	0.08

☐ Other (attach calculations)

Structural BMP Water Quality Credits:

☑ *Use default BMP Outflows and Median BMP Outflow Concentrations*

DP No.	BMP No.	BMP Name	MRC?	BMP DA (acres)	Vol. Routed to BMP (CF)	Inf. & ET Credits (CF)	Capture & Buffer Credits (CF)	Outflow (CF)	Outflow Conc. (mg/L)			Pollutant Loads (lbs)		
									TSS	TP	TN	TSS	TP	TN
002	1	Infiltration Basin	-	5.99	30,840	29,690		1,150	10.00	0.24	0.96	0.72	0.02	0.07
002	2	Infiltration Basin	-	3.01	21,998	21,998		0	-	-	-	-	-	-

	TSS	TP	TN
POLLUTANT LOADS FROM STRUCTURAL BMP (TREATED) OUTFLOWS (LBS):	0.72	0.02	0.07
POLLUTANT LOADS FROM UNTREATED STORMWATER (LBS):	74.61	0.19	1.48
NON-STRUCTURAL BMP WATER QUALITY CREDITS (LBS):	2.99	0.01	0.08
NET POLLUTANT LOADS FROM SITE, POST-CONSTRUCTION (LBS):	72.33	0.19	1.46
POLLUTANT LOADS FROM SITE, PRE-CONSTRUCTION (LBS):	119.14	0.38	3.75

WATER QUALITY REQUIREMENT SATISFIED

CERTIFICATION

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

Luke Piotrowicz	3/15/2024
Spreadsheet User Name	Date

Version	Date	Change(s)
1.9	10/18/2021	1) Modified dropdown list for Infiltration Period (Volume Worksheet, Structural BMP Volume Credits table) to eliminate hours 1-11 (i.e., the minimum Infiltration Period must be 12 hours). 2) Updated median outflow concentrations (MOCs) for structural BMPs based on the latest analysis of literature data.
1.8	12/21/2020	1) Updated list of pre-construction land covers in Volume Worksheet so that the same post-construction impervious land cover options are available for pre-construction conditions (for more accurate water quality analyses). 2) Removed Soil Amendment from dropdown list of structural BMPs in Volume Worksheet (Soil Amendment credits should be calculated separately in accordance with Stormwater BMP Manual and reported as an "Other" Non-Structural BMP credit). 3) Increased number of allowable digits in the Peak Rate Summary table of the Rate Worksheet from 3 to 4. 4) Corrected problem on Quality Worksheet where acres for custom-input land covers on Volume Worksheet were not displayed.
1.7	8/28/2020	1) Modified the Quality Worksheet such that outflows from MRC BMPs are not subject to pollutant load calculations. 2) Added new section for "Characterization of Undetained Areas (for Untreated Stormwater)" in the Quality Worksheet to allow for the calculation of more accurate estimates of pollutant loads in untreated stormwater. 3) Modified the Pervious Undetained Area Credit to calculate automatically when the "Characterization of Undetained Areas (for Untreated Stormwater)" function is completed. 4) Corrected an error that did not allow the selection of more than 10 DPs from the Structural BMP table in the Volume Worksheet.
1.6	5/11/2020	1) Updated calculation of weighted curve number for calculation of peak rates in Rate Worksheet to consider any selection of "Impervious as Meadow" as having a CN of 98; 2) Added "MRC?" column to Structural BMP table in Volume Worksheet (outflows from BMPs when this column = "Y" and Discharge = "Off-Site" are added to Managed Release Credit shown at bottom of table); 3) Removed "Series" and "Impervious in DA" columns and added "Discharge" column to allow flexibility to user in the entry of BMPs in series (see Instructions); 4) Added three BMPs to drop-down list in Structural BMP table in Volume Worksheet: Vegetated Roof, Riparian Forest Buffer (Min 150 Ft), and Riparian Buffer; 5) Changed Managed Release Credit from manual entry to auto-calculation in Structural BMP table - if MRC? column = "Y" and Discharge = "Off-Site", Managed Release Credits are calculated and shown; 6) Increased number of possible discharge points from 10 to 20 in the General Worksheet, the number of possible pre-construction and post-construction land covers from 8 to 20 (each, with number of rows controlled separately) in the Volume Worksheet, and the number of possible structural BMPs from 20 to 50 in the Volume, Rate and Quality Worksheets; 7) Added row for Riparian Forest Buffer Credits in Volume Worksheet; 8) Removed Pervious Undetained Area Credits from Volume Worksheet and added it to the Quality Worksheet (Non-Structural WQ Credit), changing the type of credit from volume reduction to pollutant load reduction (see Instructions); 8) Modified calculation of pollutant loads in untreated stormwater to utilize post-construction volume-weighted pollutant concentrations instead of area-weighted pollutant concentrations; 9) Added "Clear Project" button to General Worksheet to remove all entries throughout spreadsheet; 10) Added Certification statement to bottom of Quality Worksheet.
1.5	1/24/2020	1) Removed pervious undetained area credit on Volume Worksheet to calculate the credit based on the pervious undetained area within the earth disturbance area only (previously the credit was applied to undetained areas reported for the project site); 2) Changed validation for pre- and post-construction conditions (land covers) in Volume Worksheet to ensure user-entered areas do not exceed the Total Earth Disturbance Area as reported in the General Worksheet (as opposed to the Project Site Area previously used) due to the possibility that areas of a project site outside the limit of disturbance may be treated differently by the spreadsheet in pre- and post-construction conditions.
1.4	1/14/2020	1) Added drop-down lists in General and Volume Worksheets to allow users to select the starting Discharge Point and BMP Numbers for the spreadsheet (addresses concern that two instances of the spreadsheet for the same project site could have the same DP or BMP numbering). 2) Updated equation for determining volume of untreated stormwater in Quality Worksheet to subtract all non-structural volume credits entered in the Volume Worksheet.
1.3	1/7/2020	1) Increased number of decimal places for Area in the Quality Worksheet from one to two; 2) unlocked cells for BMP outflow concentrations for manual input that were mistakenly locked; and 3) modified the formula for pervious undetained area credit in the Volume Worksheet to consider total acres of impervious and pervious in undetained areas instead of percentages.
1.2	1/2/2020	1) Updated calculation that determines the total volume routed to BMPs when BMPs are in series, which affects the calculation of pollutant loads in untreated stormwater in the Quality worksheet. Previous versions of the spreadsheet did not fully credit the volume routed to BMPs in series, as stormwater flows from drainage areas beyond that of the first BMP in series were not considered. Update - if the volume routed to a downstream BMP in series exceeds the volume routed to the previous BMP, minus infiltration and ET credits, the difference in this volume is credited to the downstream BMP. 2) Increased the allowable infiltration/vegetated area to six figures in the Volume Worksheet, Structural BMP table. 3) Added an advisory to the Rate worksheet that if the weighted curve number for either pre- or post-construction conditions is less than 40, the Rate worksheet should not be used except to report peak rates.
1.1	12/19/2019	1) Added peak rate summary checkbox and table to Rate worksheet; 2) removed validation constraint for BMP inflows and outflows in Rate worksheet; 3) provided ability to manually enter Impervious in BMP Drainage Area in Volume Worksheet; and 4) other miscellaneous corrections and updates.
1	12/6/2019	Original

Summary for Subcatchment 80S+: BASIN 2: DISTURBED AREA FOR DEP PCSM SPREADSHEET

Runoff = 11.02 cfs @ 11.96 hrs, Volume= 0.505 af, Depth= 2.01"
Routed to Pond 10P : BASIN 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	3.010	87	
	3.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

BMP NO. 2

Summary for Subcatchment 90S: Basin 1

Runoff = 11.81 cfs @ 12.05 hrs, Volume= 0.708 af, Depth= 1.42"
Routed to Pond 20P : BASIN 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	5.980	79	
	5.980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8					**Direct Entry, Total Tc**

BMP NO. 1

Summary for Pond 10P: BASIN 2

Inflow Area = 3.010 ac, 0.00% Impervious, Inflow Depth = 2.01" for 2-YR event
Inflow = 11.02 cfs @ 11.96 hrs, Volume= 0.505 af
Outflow = 0.19 cfs @ 11.46 hrs, Volume= 0.505 af, Atten= 98%, Lag= 0.0 min
Discarded = 0.19 cfs @ 11.46 hrs, Volume= 0.505 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 20P : BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.42' @ 16.58 hrs Surf.Area= 8,074 sf Storage= 13,592 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 712.0 min (1,525.4 - 813.4)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	63,080 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	6,500	0	0
244.00	8,000	10,875	10,875
246.00	10,400	18,400	29,275
248.00	12,900	23,300	52,575
249.00	14,750	13,825	66,400

Device	Routing	Invert	Outlet Devices
#1	Primary	240.15'	**24.0" Round OS pipe to Basin 1** L= 39.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 240.15' / 239.95' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Discarded	242.50'	**0.19 cfs Exfiltration at all elevations**
#3	Device 1	245.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	247.00'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.19 cfs @ 11.46 hrs HW=242.57' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=242.50' TW=239.87' (Dynamic Tailwater)
└**1=OS pipe to Basin 1** (Passes 0.00 cfs of 15.22 cfs potential flow)
├**3=Orifice/Grate** (Controls 0.00 cfs)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Hydrograph for Pond 10P: BASIN 2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	242.50	0.00	0.00	**0.00**
2.00	0.00	0	242.50	0.00	0.00	0.00
4.00	0.00	0	242.50	0.00	0.00	0.00
6.00	0.00	0	242.50	0.00	0.00	0.00
8.00	0.02	0	242.50	0.02	0.02	0.00
10.00	**0.12**	0	242.50	**0.12**	**0.12**	0.00
12.00	**9.37**	7,915	243.68	**0.19**	**0.19**	0.00
14.00	0.33	13,045	244.35	0.19	0.19	0.00
16.00	0.21	**13,579**	**244.41**	0.19	0.19	0.00
18.00	0.16	**13,516**	**244.41**	0.19	0.19	0.00
20.00	0.12	13,146	244.36	0.19	0.19	0.00
22.00	0.11	12,580	244.29	0.19	0.19	0.00
24.00	0.10	11,953	244.21	0.19	0.19	0.00
26.00	0.00	10,612	244.04	0.19	0.19	0.00
28.00	0.00	9,244	243.86	0.19	0.19	0.00
30.00	0.00	7,876	243.67	0.19	0.19	0.00
32.00	0.00	6,508	243.48	0.19	0.19	0.00
34.00	0.00	5,140	243.29	0.19	0.19	0.00
36.00	0.00	3,772	243.08	0.19	0.19	0.00
38.00	0.00	2,404	242.88	0.19	0.19	0.00
40.00	0.00	1,036	242.67	0.19	0.19	0.00
42.00	0.00	0	242.50	0.00	0.00	0.00
44.00	0.00	0	242.50	0.00	0.00	0.00
46.00	0.00	0	242.50	0.00	0.00	0.00
48.00	0.00	0	242.50	0.00	0.00	0.00
50.00	0.00	0	242.50	0.00	0.00	0.00
52.00	0.00	0	242.50	0.00	0.00	0.00
54.00	0.00	0	242.50	0.00	0.00	0.00
56.00	0.00	0	242.50	0.00	0.00	0.00
58.00	0.00	0	242.50	0.00	0.00	0.00
60.00	0.00	0	242.50	0.00	0.00	0.00
62.00	0.00	0	242.50	0.00	0.00	0.00
64.00	0.00	0	242.50	0.00	0.00	0.00
66.00	0.00	0	242.50	0.00	0.00	0.00
68.00	0.00	0	242.50	0.00	0.00	0.00
70.00	0.00	0	242.50	0.00	0.00	0.00
72.00	0.00	0	242.50	0.00	0.00	0.00
74.00	0.00	0	242.50	0.00	0.00	0.00
76.00	0.00	0	242.50	0.00	0.00	0.00
78.00	0.00	0	242.50	0.00	0.00	0.00
80.00	0.00	0	242.50	0.00	0.00	0.00
82.00	0.00	0	242.50	0.00	0.00	0.00
84.00	0.00	0	242.50	0.00	0.00	0.00
86.00	0.00	0	242.50	0.00	0.00	0.00
88.00	0.00	0	242.50	0.00	0.00	0.00
90.00	0.00	0	242.50	0.00	0.00	0.00
92.00	0.00	0	242.50	0.00	0.00	0.00
94.00	0.00	0	242.50	0.00	0.00	0.00
96.00	0.00	0	242.50	0.00	0.00	0.00
98.00	0.00	0	242.50	0.00	0.00	0.00
100.00	0.00	0	242.50	0.00	0.00	0.00

BMP NO. 2: INFILTRATION PERIOD = 32 HOURS.

Summary for Pond 20P: BASIN 1

Inflow Area = 8.990 ac, 0.00% Impervious, Inflow Depth = 0.94" for 2-YR event
Inflow = 11.81 cfs @ 12.05 hrs, Volume= 0.708 af
Outflow = 0.17 cfs @ 11.59 hrs, Volume= 0.708 af, Atten= 99%, Lag= 0.0 min
Discarded = 0.17 cfs @ 11.59 hrs, Volume= 0.708 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 20L : OUTFALL FOX CHASE RD (POST B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 239.83' @ 23.77 hrs Surf.Area= 14,336 sf Storage= 22,434 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1,293.1 min (2,140.3 - 847.2)

Volume	Invert	Avail.Storage	Storage Description
#1	238.00'	206,673 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
238.00	10,750	0	0
240.00	15,500	26,250	26,250
242.00	20,750	36,250	62,500
244.00	26,000	46,750	109,250
246.00	31,600	57,600	166,850
247.50	36,000	50,700	217,550

Device	Routing	Invert	Outlet Devices
#1	Primary	240.29'	**15.0" Round OS Pipe Basin 1 to Road Inlet** L= 81.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 240.29' / 239.87' S= 0.0052 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Discarded	238.00'	**0.17 cfs Exfiltration at all elevations**
#3	Device 1	241.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	245.50'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.17 cfs @ 11.59 hrs HW=238.03' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.17 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=238.00' TW=0.00' (Dynamic Tailwater)
└**1=OS Pipe Basin 1 to Road Inlet** (Controls 0.00 cfs)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Hydrograph for Pond 20P: BASIN 1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	238.00	0.00	0.00	**0.00**
2.00	0.00	0	238.00	0.00	0.00	0.00
4.00	0.00	0	238.00	0.00	0.00	0.00
6.00	0.00	0	238.00	0.00	0.00	0.00
8.00	0.00	0	238.00	0.00	0.00	0.00
10.00	0.02	0	238.00	**0.02**	**0.02**	0.00
12.00	**10.43**	5,007	238.47	**0.17**	**0.17**	0.00
14.00	**0.57**	18,822	239.57	0.17	0.17	0.00
16.00	0.35	20,807	239.71	0.17	0.17	0.00
18.00	0.27	21,783	239.78	0.17	0.17	0.00
20.00	0.20	22,261	239.82	0.17	0.17	0.00
22.00	0.18	**22,396**	**239.83**	0.17	0.17	0.00
24.00	0.17	**22,434**	**239.83**	0.17	0.17	0.00
26.00	0.00	21,329	239.75	0.17	0.17	0.00
28.00	0.00	20,105	239.66	0.17	0.17	0.00
30.00	0.00	18,881	239.57	0.17	0.17	0.00
32.00	0.00	17,657	239.49	0.17	0.17	0.00
34.00	0.00	16,433	239.39	0.17	0.17	0.00
36.00	0.00	15,209	239.30	0.17	0.17	0.00
38.00	0.00	13,985	239.21	0.17	0.17	0.00
40.00	0.00	12,761	239.11	0.17	0.17	0.00
42.00	0.00	11,537	239.02	0.17	0.17	0.00
44.00	0.00	10,313	238.92	0.17	0.17	0.00
46.00	0.00	9,089	238.82	0.17	0.17	0.00
48.00	0.00	7,865	238.71	0.17	0.17	0.00
50.00	0.00	6,641	238.61	0.17	0.17	0.00
52.00	0.00	5,417	238.50	0.17	0.17	0.00
54.00	0.00	4,193	238.39	0.17	0.17	0.00
56.00	0.00	2,969	238.28	0.17	0.17	0.00
58.00	0.00	1,745	238.17	0.17	0.17	0.00
60.00	0.00	521	238.05	0.17	0.17	0.00
62.00	0.00	0	238.00	0.00	0.00	0.00
64.00	0.00	0	238.00	0.00	0.00	0.00
66.00	0.00	0	238.00	0.00	0.00	0.00
68.00	0.00	0	238.00	0.00	0.00	0.00
70.00	0.00	0	238.00	0.00	0.00	0.00
72.00	0.00	0	238.00	0.00	0.00	0.00
74.00	0.00	0	238.00	0.00	0.00	0.00
76.00	0.00	0	238.00	0.00	0.00	0.00
78.00	0.00	0	238.00	0.00	0.00	0.00
80.00	0.00	0	238.00	0.00	0.00	0.00
82.00	0.00	0	238.00	0.00	0.00	0.00
84.00	0.00	0	238.00	0.00	0.00	0.00
86.00	0.00	0	238.00	0.00	0.00	0.00
88.00	0.00	0	238.00	0.00	0.00	0.00
90.00	0.00	0	238.00	0.00	0.00	0.00
92.00	0.00	0	238.00	0.00	0.00	0.00
94.00	0.00	0	238.00	0.00	0.00	0.00
96.00	0.00	0	238.00	0.00	0.00	0.00
98.00	0.00	0	238.00	0.00	0.00	0.00
100.00	0.00	0	238.00	0.00	0.00	0.00

BMP NO. 1: INFILTRATION PERIOD = 50 HOURS.

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 10/2/2023
Chk'd:
Rev'd:

Watershed: **Post Developed - (Basin 1) - DISTURBED AREA**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B/C	(On-site) Building Impervious	98	1.57	154.11
B/C	(On-site) Impervious	98	1.33	130.70
B	Lawn	61	3.02	184.04
C	Lawn	74	0.05	4.03

Totals = 5.98 472.88

Composite Cn = $\frac{472.88}{5.98}$ = 79.11

USE Cn = 79.1

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 10/2/2023
Chk'd:
Rev'd:

Watershed: **Post Developed - (Basin 2) - DISTURBED AREA**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				
C	(On-site) Building Impervious	98	0.84	82.12
C	(On-site) Impervious	98	1.01	99.19
B	Lawn	61	0.40	24.29
C	Lawn	74	0.76	56.32
Undisturbed area into Basin 2				
B	Residentail 1/4 Ac Lot (offsite)	75	0.30	22.83
B	Lawn	61	0.13	7.93
C	Lawn	74	0.28	20.71
	Totals =		3.01	261.91

$$\text{Composite Cn} = \frac{261.91}{3.01} = 87.03$$

USE Cn = 87.0

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

General Information

Instructions | *General* | Volume | Rate | Quality

Project Name: **Sisters of St. Basil (Watershed 02)**

Application Type: **PAG-02 NOI**

County: **Montgomery**

Municipality: **Abington Township**

Project Type: **Single-Family Housing**

◉ New Project ○ Minor / Major Amendment

Area: **33.83** acres
(In Watershed)

Total Earth Disturbance: **21.81** acres
(In Watershed)

No. of Post-Construction Discharge Points: **7**

Start DP Numbering at: **004**

Discharge Point (DP) No.	Drainage Area (DA) (acres)	Earth Disturbance in DA (acres)	Existing Impervious in DA (acres)	Proposed Impervious in DA (acres)	Receiving Waters	Ch. 93 Class	Structural BMP(s)
004					Unnamed Tributary to Pennypack Creek 25599077	TSF	No
005					Unnamed Tributary to Pennypack Creek 25599077	TSF	No
006					Unnamed Tributary to Pennypack Creek 25599077	TSF	No
007					Unnamed Tributary to Pennypack Creek 25599077	TSF	No

008	5.22	5.15	0.37	2.80	Unnamed Tributary to Pennypack Creek 25599077	TSF	Yes
009	0.43	0.43	0.00	0.00	Unnamed Tributary to Pennypack Creek 25599077	TSF	Yes
010	13.50	13.50	3.81	7.72	Unnamed Tributary to Pennypack Creek 25599077	TSF	Yes
Undetained Areas	14.68	2.27	0.02	0.02	Unnamed Tributary to Pennypack Creek 25599077	TSF	
Totals:	**33.83**	**21.35**	**4.2**	**10.54**			

Volume Management

Project: Sisters of St. Basil (Watershed 02)

Instructions | General | *Volume* | Rate | Quality

2-Year / 24-Hour Storm Event (NOAA Atlas 14): **3.31** inches

Alternative 2-Year / 24-Hour Storm Event _____ inches

Alternative Source: _____

Pre-Construction Conditions: *No. Rows:* **9**

☐ *Exempt from Meadow in Good Condition* ☑ *Automatically Calculate CN, Ia, Runoff and Volume*

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Impervious Areas: Institutional	0.90	B	98	0.041	3.08	10,053
Impervious Areas: Institutional	2.47	C	98	0.041	3.08	27,590
Impervious as Meadow	0.22	B	58	1.448	0.38	304
Impervious as Meadow	0.61	C	71	0.817	0.94	2,092
Pervious as Meadow	6.59	B	58	1.448	0.38	9,108
Pervious as Meadow	10.70	C	71	0.817	0.94	36,703
Forested (Good Condition)	0.22	B	55	1.636	0.28	227
Forested (Good Condition)	0.06	C	70	0.857	0.89	194
Forested (Good Condition)	0.04	D	77	0.597	1.29	187
TOTAL (ACRES):	**21.81**				**TOTAL (CF):**	**86,459**

Post-Construction Conditions: *No. Rows:* **8**

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	2.13	B	98	0.041	3.08	23,792
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	6.40	C	98	0.041	3.08	71,487
Impervious Areas: Streets and Roads - Paved; Curbs and Storm Sewers (Excluding ROW)	0.38	B	98	0.041	3.08	4,245
Impervious Areas: Streets and Roads - Paved; Curbs and Storm Sewers (Excluding ROW)	1.63	C	98	0.041	3.08	18,207
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	4.62	B	61	1.279	0.49	8,214
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	5.60	C	74	0.703	1.11	22,577
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	0.04	D	80	0.500	1.49	216
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	0.55	B	58	1.448	0.38	760
TOTAL (ACRES):	**21.35**				**TOTAL (CF):**	**149,497**

ıET CHANGE IN VOLUME TO MANAGE (CF): **63,038**

Non-Structural BMP Volume Credits:

☐ Tree Planting Credit

☐ Other (attach calculations):

Structural BMP Volume Credits: *No. Structural BMPs:* **4** *Start BMP Numbering at:* **3**

DP No.	BMP No.	BMP Name	MRC?	Discharge	Incremental BMP DA (acres)	Volume Routed to BMP (CF)	Infiltration / Vegetated Area (SF)	Infiltration Rate (in/hr)	Infiltration Period (hrs)	Vegeta-ted?	Media Depth (ft)	Storage Volume (CF)	Infiltration Credit (CF)	ET Credit (CF)
009	3	Infiltration Basin	-	Off-Site	0.43	32,539	8,470	0.64	80	No		26,803	**31,682**	
008	4	Dry Extended Detention Basin	-	to BMP No. 3	5.15	31,799	0	0.00		No		15,995		
010	5	Dry Extended Detention Basin	-	Off-Site	8.09	65,688	0	0.00		No		34,876		
010	6	Infiltration Bed	-	to BMP No. 5	5.41	42,863	9,900	2.80	16	No		12,774	**33,264**	
												Totals:	**64,946**	

INFILTRATION & ET CREDITS (CF): **64,946**

NET CHANGE IN VOLUME TO MANAGE (CF): **63,038**

TOTAL CREDITS (CF): **64,946**

VOLUME REQUIREMENT SATISFIED

Rate Control

Project: Sisters of St. Basil (Watershed 02)

Precipitation Amounts:

NOAA 2-Year 24-Hour Storm Event (in):	**3.31**	Alternative 2-Year 24-Hour Storm Event (in):	
NOAA 10-Year 24-Hour Storm Event (in):	**4.92**	Alternative 10-Year 24-Hour Storm Event (in):	
NOAA 50-Year 24-Hour Storm Event (in):	**6.92**	Alternative 50-Year 24-Hour Storm Event (in):	
NOAA 100-Year 24-Hour Storm Event (in):	**7.93**	Alternative 100-Year 24-Hour Storm Event (in):	

☑ **Report Summary of Peak Rates Only**

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

	Peak Discharge Rates (cfs)			
	Pre-Construction	**Post-Construction**	**Net Change**	
2-Year Storm:	**27.52**	**14.51**	**-13.01**	***Rate Control Satisfied***
10-Year Storm:	**68.43**	**40.20**	**-28.23**	***Rate Control Satisfied***
50-Year Storm:	**127.74**	**79.35**	**-48.39**	***Rate Control Satisfied***
100-Year Storm:	**159.58**	**98.42**	**-61.16**	***Rate Control Satisfied***

DP No.	BMP No.	BMP Name	MRC?	Inflow to BMP (cfs)				Outflow from BMP (cfs)			
				2-yr	10-yr	50-yr	100-yr	2-yr	10-yr	50-yr	100-yr
009	3	Infiltration Basin	-	2.44	4.43	5.67	6.25	0.11	0.11	1.92	3.38
008	4	Dry Extended Detention Basin	-	11.45	21.05	33.34	39.57	2.39	4.30	5.04	5.17
010	5	Dry Extended Detention Basin	-	25.26	60.92	95.93	112.74	2.61	12.29	19.58	33.02
010	6	Infiltration Bed	-	16.68	27.55	40.97	47.69	10.94	25.38	38.92	45.31

Water Quality

Project: Sisters of St. Basil (Watershed 02)

PRINT

Instructions | General | Volume | Rate | *Quality*

Pre-Construction Pollutant Loads:

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN
Impervious Areas: Institutional	Institutional	0.90	B	10,053	67.5	0.14	1.21	42.37	0.09	0.76
Impervious Areas: Institutional	Institutional	2.47	C	27,590	67.5	0.14	1.21	116.27	0.24	2.08
Impervious as Meadow	Grassland/Herbaceous	0.22	B	304	48.8	0.22	2.30	0.93	0.00	0.04
Impervious as Meadow	Grassland/Herbaceous	0.61	C	2,092	48.8	0.22	2.30	6.38	0.03	0.30
Pervious as Meadow	Grassland/Herbaceous	6.59	B	9,108	48.8	0.22	2.30	27.75	0.13	1.31
Pervious as Meadow	Grassland/Herbaceous	10.70	C	36,703	48.8	0.22	2.30	111.84	0.50	5.27
Forested (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	0.22	B	227	45.0	0.13	1.05	0.64	0.00	0.01
Forested (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	0.06	C	194	45.0	0.13	1.05	0.55	0.00	0.01

Forested (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	0.04	D	187	45.0	0.13	1.05	0.53	0.00	0.01
	TOTAL (ACRES):	**21.81**					**TOTALS:**	**307.24**	**1.00**	**9.81**

Post-Construction Pollutant Loads (without BMPs):

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	2.13	B	23,792	65.0	0.29	2.05	96.57	0.43	3.05
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	6.40	C	71,487	65.0	0.29	2.05	290.15	1.29	9.15
Impervious Areas: Streets and Roads - Paved; Curbs and Storm Sewers (Excluding ROW)	Urban Highway	0.38	B	4,245	142.0	0.32	3.00	37.64	0.08	0.80
Impervious Areas: Streets and Roads - Paved; Curbs and Storm Sewers (Excluding ROW)	Urban Highway	1.63	C	18,207	142.0	0.32	3.00	161.44	0.36	3.41
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	Open Space	4.62	B	8,214	78.0	0.25	1.25	40.01	0.13	0.64
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	Open Space	5.60	C	22,577	78.0	0.25	1.25	109.96	0.35	1.76
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	Open Space	0.04	D	216	78.0	0.25	1.25	1.05	0.00	0.02
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	Grassland/Herbaceous	0.55	B	760	48.8	0.22	2.30	2.32	0.01	0.11
	TOTAL (ACRES):	**21.35**					**TOTALS:**	**739.12**	**2.67**	**18.93**

POLLUTANT LOAD REDUCTION REQUIREMENTS (LBS):	431.88	1.67	9.12

☑ **Characterize Undetained Areas (for Untreated Stormwater)** *No. Rows:* 5

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	0.55	B	58	1.448	0.38	760
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	0.54	B	61	1.279	0.49	960
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	1.12	C	74	0.703	1.11	4,515
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	0.04	D	80	0.500	1.49	216
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	0.02	N/A	98	0.041	3.08	223

Non-Structural BMP Water Quality Credits:

☑ Pervious Undetained Area Credit

TSS	TP	TN
4.91	0.02	0.14

☐ Other (attach calculations)

Structural BMP Water Quality Credits:

☑ *Use default BMP Outflows and Median BMP Outflow Concentrations*

DP No.	BMP No.	BMP Name	MRC?	BMP DA (acres)	Vol. Routed to BMP (CF)	Inf. & ET Credits (CF)	Capture & Buffer Credits (CF)	Outflow (CF)	Outflow Conc. (mg/L)			Pollutant Loads (lbs)		
									TSS	TP	TN	TSS	TP	TN
009	3	Infiltration Basin	-	0.43	32,539	31,682		857	10.00	0.24	0.96	0.54	0.01	0.05
008	4	Dry Extended Detention Basin	-	5.15	31,799			31,799	-	-	-	-	-	-
010	5	Dry Extended Detention Basin	-	8.09	65,688			65,688	22.00	0.19	1.22	90.24	0.78	5.00
010	6	Infiltration Bed	-	5.41	42,863	33,264		9,599	-	-	-	-	-	-

	TSS	TP	TN
POLLUTANT LOADS FROM STRUCTURAL BMP (TREATED) OUTFLOWS (LBS):	**90.77**	**0.79**	**5.06**
POLLUTANT LOADS FROM UNTREATED STORMWATER (LBS):	**30.94**	**0.10**	**0.58**
NON-STRUCTURAL BMP WATER QUALITY CREDITS (LBS):	**4.91**	**0.02**	**0.14**
NET POLLUTANT LOADS FROM SITE, POST-CONSTRUCTION (LBS):	**116.80**	**0.88**	**5.50**
POLLUTANT LOADS FROM SITE, PRE-CONSTRUCTION (LBS):	**307.24**	**1.00**	**9.81**

WATER QUALITY REQUIREMENT SATISFIED

CERTIFICATION

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

Luke Piotrowicz	3/15/2024
Spreadsheet User Name	Date

Version	Date	Change(s)
1.9	10/18/2021	1) Modified dropdown list for Infiltration Period (Volume Worksheet, Structural BMP Volume Credits table) to eliminate hours 1-11 (i.e., the minimum Infiltration Period must be 12 hours). 2) Updated median outflow concentrations (MOCs) for structural BMPs based on the latest analysis of literature data.
1.8	12/21/2020	1) Updated list of pre-construction land covers in Volume Worksheet so that the same post-construction impervious land cover options are available for pre-construction conditions (for more accurate water quality analyses). 2) Removed Soil Amendment from dropdown list of structural BMPs in Volume Worksheet (Soil Amendment credits should be calculated separately in accordance with Stormwater BMP Manual and reported as an "Other" Non-Structural BMP credit). 3) Increased number of allowable digits in the Peak Rate Summary table of the Rate Worksheet from 3 to 4. 4) Corrected problem on Quality Worksheet where acres for custom-input land covers on Volume Worksheet were not displayed.
1.7	8/28/2020	1) Modified the Quality Worksheet such that outflows from MRC BMPs are not subject to pollutant load calculations. 2) Added new section for "Characterization of Undetained Areas (for Untreated Stormwater)" in the Quality Worksheet to allow for the calculation of more accurate estimates of pollutant loads in untreated stormwater. 3) Modified the Pervious Undetained Area Credit to calculate automatically when the "Characterization of Undetained Areas (for Untreated Stormwater)" function is completed. 4) Corrected an error that did not allow the selection of more than 10 DPs from the Structural BMP table in the Volume Worksheet.
1.6	5/11/2020	1) Updated calculation of weighted curve number for calculation of peak rates in Rate Worksheet to consider any selection of "Impervious as Meadow" as having a CN of 98; 2) Added "MRC?" column to Structural BMP table in Volume Worksheet (outflows from BMPs when this column = "Y" and Discharge = "Off-Site" are added to Managed Release Credit shown at bottom of table); 3) Removed "Series" and "Impervious in DA" columns and added "Discharge" column to allow flexibility to user in the entry of BMPs in series (see Instructions); 4) Added three BMPs to drop-down list in Structural BMP table in Volume Worksheet: Vegetated Roof, Riparian Forest Buffer (Min 150 Ft), and Riparian Buffer; 5) Changed Managed Release Credit from manual entry to auto-calculation in Structural BMP table - if MRC? column = "Y" and Discharge = "Off-Site", Managed Release Credits are calculated and shown; 6) Increased number of possible discharge points from 10 to 20 in the General Worksheet, the number of possible pre-construction and post-construction land covers from 8 to 20 (each, with number of rows controlled separately) in the Volume Worksheet, and the number of possible structural BMPs from 20 to 50 in the Volume, Rate and Quality Worksheets; 7) Added row for Riparian Forest Buffer Credits in Volume Worksheet; 8) Removed Pervious Undetained Area Credits from Volume Worksheet and added it to the Quality Worksheet (Non-Structural WQ Credit), changing the type of credit from volume reduction to pollutant load reduction (see Instructions); 8) Modified calculation of pollutant loads in untreated stormwater to utilize post-construction volume-weighted pollutant concentrations instead of area-weighted pollutant concentrations; 9) Added "Clear Project" button to General Worksheet to remove all entries throughout spreadsheet; 10) Added Certification statement to bottom of Quality Worksheet.
1.5	1/24/2020	1) Removed pervious undetained area credit on Volume Worksheet to calculate the credit based on the pervious undetained area within the earth disturbance area only (previously the credit was applied to undetained areas reported for the project site); 2) Changed validation for pre- and post-construction conditions (land covers) in Volume Worksheet to ensure user-entered areas do not exceed the Total Earth Disturbance Area as reported in the General Worksheet (as opposed to the Project Site Area previously used) due to the possibility that areas of a project site outside the limit of disturbance may be treated differently by the spreadsheet in pre- and post-construction conditions.
1.4	1/14/2020	1) Added drop-down lists in General and Volume Worksheets to allow users to select the starting Discharge Point and BMP Numbers for the spreadsheet (addresses concern that two instances of the spreadsheet for the same project site could have the same DP or BMP numbering). 2) Updated equation for determining volume of untreated stormwater in Quality Worksheet to subtract all non-structural volume credits entered in the Volume Worksheet.
1.3	1/7/2020	1) Increased number of decimal places for Area in the Quality Worksheet from one to two; 2) unlocked cells for BMP outflow concentrations for manual input that were mistakenly locked; and 3) modified the formula for pervious undetained area credit in the Volume Worksheet to consider total acres of impervious and pervious in undetained areas instead of percentages.
1.2	1/2/2020	1) Updated calculation that determines the total volume routed to BMPs when BMPs are in series, which affects the calculation of pollutant loads in untreated stormwater in the Quality worksheet. Previous versions of the spreadsheet did not fully credit the volume routed to BMPs in series, as stormwater flows from drainage areas beyond that of the first BMP in series were not considered. Update - if the volume routed to a downstream BMP in series exceeds the volume routed to the previous BMP, minus infiltration and ET credits, the difference in this volume is credited to the downstream BMP. 2) Increased the allowable infiltration/vegetated area to six figures in the Volume Worksheet, Structural BMP table. 3) Added an advisory to the Rate worksheet that if the weighted curve number for either pre- or post-construction conditions is less than 40, the Rate worksheet should not be used except to report peak rates.
1.1	12/19/2019	1) Added peak rate summary checkbox and table to Rate worksheet; 2) removed validation constraint for BMP inflows and outflows in Rate worksheet; 3) provided ability to manually enter Impervious in BMP Drainage Area in Volume Worksheet; and 4) other miscellaneous corrections and updates.
1	12/6/2019	Original

Summary for Subcatchment 130S+: BASIN 3A: DISTURBED AREA FOR DEP PCSM SPREADSHEET

Runoff = 11.81 cfs @ 12.06 hrs, Volume= 0.730 af, Depth= 1.70"
Routed to Pond 30p : BASIN 3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	5.150	83	
	5.150		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8					**Direct Entry,**

Summary for Subcatchment 140S: TO BASIN 3B

Runoff = 0.33 cfs @ 11.98 hrs, Volume= 0.018 af, Depth= 0.49"
Routed to Pond 40P : BASIN 3B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	0.430	61	
	0.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Time**

Summary for Subcatchment 160S: TO STONE BMP 2A

Runoff = 16.68 cfs @ 12.04 hrs, Volume= 0.984 af, Depth= 2.18"
Routed to Pond 50P : STONE BMP 2A (BASIN)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	5.410	89	
	5.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					**Direct Entry,**

Summary for Subcatchment 170S: TO BASIN 4

Runoff = 21.86 cfs @ 12.02 hrs, Volume= 1.197 af, Depth= 1.77"
Routed to Pond 60P : BASIN 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	8.090	84	
	8.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3					**Direct Entry,**

Summary for Pond 40P: BASIN 3B

Inflow Area = 5.580 ac, 0.00% Impervious, Inflow Depth = 1.61" for 2-YR event
Inflow = 2.55 cfs @ 12.38 hrs, Volume= 0.747 af
Outflow = 0.11 cfs @ 11.95 hrs, Volume= 0.747 af, Atten= 96%, Lag= 0.0 min
Discarded = 0.11 cfs @ 11.95 hrs, Volume= 0.747 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 243.68' @ 24.16 hrs Surf.Area= 10,200 sf Storage= 10,808 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1,047.0 min (3,050.9 - 2,003.9)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	38,615 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	8,470	0	0
244.00	11,340	14,858	14,858
246.00	14,450	25,790	40,648

BASIN 3A & 3B ARE IN SERIES, TOTAL STORGAE BASIN 3B = 10,808 CF + 15,995 CF = 26,803 CF

Device	Routing	Invert	Outlet Devices
#1	Discarded	242.50'	**0.11 cfs Exfiltration at all elevations**
#2	Primary	237.00'	**15.0" Round Culvert - OS 3B** L= 45.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 237.00' / 236.00' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	244.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.11 cfs @ 11.95 hrs HW=242.54' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=242.50' TW=0.00' (Dynamic Tailwater)
↑—**2=Culvert - OS 3B** (Passes 0.00 cfs of 13.05 cfs potential flow)
↑—**3=Orifice/Grate** (Controls 0.00 cfs)

Hydrograph for Pond 40P: BASIN 3B

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	242.50	0.00	0.00	**0.00**
2.00	0.00	0	242.50	0.00	0.00	0.00
4.00	0.00	0	242.50	0.00	0.00	0.00
6.00	0.00	0	242.50	0.00	0.00	0.00
8.00	0.00	0	242.50	0.00	0.00	0.00
10.00	0.07	0	242.50	**0.07**	**0.07**	0.00
12.00	**1.18**	452	242.56	**0.11**	**0.11**	0.00
14.00	**0.25**	9,134	243.52	0.11	0.11	0.00
16.00	0.18	9,846	243.59	0.11	0.11	0.00
18.00	0.16	10,253	243.63	0.11	0.11	0.00
20.00	0.14	10,512	243.66	0.11	0.11	0.00
22.00	0.13	10,672	243.67	0.11	0.11	0.00
24.00	0.13	**10,802**	**243.68**	0.11	0.11	0.00
26.00	0.08	**10,607**	**243.66**	0.11	0.11	0.00
28.00	0.08	10,375	243.64	0.11	0.11	0.00
30.00	0.08	10,143	243.62	0.11	0.11	0.00
32.00	0.08	9,912	243.60	0.11	0.11	0.00
34.00	0.08	9,680	243.57	0.11	0.11	0.00
36.00	0.08	9,448	243.55	0.11	0.11	0.00
38.00	0.08	9,216	243.53	0.11	0.11	0.00
40.00	0.08	8,984	243.50	0.11	0.11	0.00
42.00	0.08	8,752	243.48	0.11	0.11	0.00
44.00	0.08	8,521	243.46	0.11	0.11	0.00
46.00	0.08	8,289	243.43	0.11	0.11	0.00
48.00	0.08	8,057	243.41	0.11	0.11	0.00
50.00	0.08	7,825	243.38	0.11	0.11	0.00
52.00	0.08	7,593	243.36	0.11	0.11	0.00
54.00	0.08	7,360	243.34	0.11	0.11	0.00
56.00	0.08	7,128	243.31	0.11	0.11	0.00
58.00	0.08	6,895	243.29	0.11	0.11	0.00
60.00	0.08	6,663	243.26	0.11	0.11	0.00
62.00	0.08	6,429	243.24	0.11	0.11	0.00
64.00	0.08	6,196	243.21	0.11	0.11	0.00
66.00	0.08	5,961	243.19	0.11	0.11	0.00
68.00	0.08	5,726	243.16	0.11	0.11	0.00
70.00	0.08	5,489	243.14	0.11	0.11	0.00
72.00	0.08	5,249	243.11	0.11	0.11	0.00
74.00	0.08	5,005	243.08	0.11	0.11	0.00
76.00	0.07	4,755	243.06	0.11	0.11	0.00
78.00	0.07	4,493	243.03	0.11	0.11	0.00
80.00	0.07	4,211	243.00	0.11	0.11	0.00
82.00	0.06	3,899	242.96	0.11	0.11	0.00
84.00	0.00	3,145	242.87	0.11	0.11	0.00
86.00	0.00	2,353	242.78	0.11	0.11	0.00
88.00	0.00	1,561	242.69	0.11	0.11	0.00
90.00	0.00	769	242.59	0.11	0.11	0.00
92.00	0.00	0	242.50	0.00	0.00	0.00
94.00	0.00	0	242.50	0.00	0.00	0.00
96.00	0.00	0	242.50	0.00	0.00	0.00
98.00	0.00	0	242.50	0.00	0.00	0.00
100.00	0.00	0	242.50	0.00	0.00	0.00

BMP NO.5 INFILTRATION PERIOD: 80 HOURS

Summary for Pond 50P: STONE BMP 2A (BASIN)

Inflow Area = 5.410 ac, 0.00% Impervious, Inflow Depth = 2.18" for 2-YR event
Inflow = 16.68 cfs @ 12.04 hrs, Volume= 0.984 af
Outflow = 10.94 cfs @ 12.13 hrs, Volume= 0.984 af, Atten= 34%, Lag= 5.9 min
Discarded = 0.58 cfs @ 11.42 hrs, Volume= 0.672 af
Primary = 10.36 cfs @ 12.13 hrs, Volume= 0.312 af
Routed to Pond 60P : BASIN 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 243.72' @ 12.13 hrs Surf.Area= 9,900 sf Storage= 12,774 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 107.2 min (919.4 - 812.2)

Volume	Invert	Avail.Storage	Storage Description
#1	240.50'	20,831 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 52,470 cf Overall - 393 cf Embedded = 52,077 cf x 40.0% Voids
#2	242.80'	236 cf	**24.0" Round Pipe 714 to 712** Inside #1 L= 75.0' S= 0.0050 '/' 393 cf Overall - 3.5" Wall Thickness = 236 cf
		21,066 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
240.50	9,900	0	0
242.00	9,900	14,850	14,850
243.00	9,900	9,900	24,750
244.25	9,900	12,375	37,125
245.80	9,900	15,345	52,470

Device	Routing	Invert	Outlet Devices
#1	Discarded	240.50'	**0.58 cfs Exfiltration at all elevations**
#2	Primary	242.80'	**30.0" Round Culvert 712 TO 708** L= 103.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 242.00' S= 0.0078 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#3	Primary	242.80'	**30.0" Round Culvert 710 TO 708** L= 42.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 240.20' S= 0.0619 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Discarded OutFlow Max=0.58 cfs @ 11.42 hrs HW=240.55' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.58 cfs)

Primary OutFlow Max=10.34 cfs @ 12.13 hrs HW=243.72' TW=232.98' (Dynamic Tailwater)
├**2=Culvert 712 TO 708** (Barrel Controls 4.99 cfs @ 4.53 fps)
└**3=Culvert 710 TO 708** (Inlet Controls 5.35 cfs @ 3.26 fps)

Hydrograph for Pond 50P: STONE BMP 2A (BASIN)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	240.50	0.00	0.00	0.00
2.00	0.00	0	240.50	0.00	0.00	0.00
4.00	0.00	0	240.50	0.00	0.00	0.00
6.00	0.00	0	240.50	0.00	0.00	0.00
8.00	0.07	0	240.50	0.07	0.07	0.00
10.00	0.25	0	240.50	0.25	**0.25**	0.00
12.00	**15.71**	**8,383**	**242.62**	**0.58**	**0.58**	**0.00**
14.00	**0.65**	**9,566**	**242.92**	**0.76**	0.58	**0.18**
16.00	0.39	8,763	242.71	0.58	0.58	0.00
18.00	0.30	7,051	242.28	0.58	0.58	0.00
20.00	0.22	4,760	241.70	0.58	0.58	0.00
22.00	0.20	2,080	241.03	0.58	0.58	0.00
24.00	0.18	0	240.50	0.24	0.24	0.00
26.00	0.00	0	240.50	0.00	0.00	0.00
28.00	0.00	0	240.50	0.00	0.00	0.00
30.00	0.00	0	240.50	0.00	0.00	0.00
32.00	0.00	0	240.50	0.00	0.00	0.00
34.00	0.00	0	240.50	0.00	0.00	0.00
36.00	0.00	0	240.50	0.00	0.00	0.00
38.00	0.00	0	240.50	0.00	0.00	0.00
40.00	0.00	0	240.50	0.00	0.00	0.00
42.00	0.00	0	240.50	0.00	0.00	0.00
44.00	0.00	0	240.50	0.00	0.00	0.00
46.00	0.00	0	240.50	0.00	0.00	0.00
48.00	0.00	0	240.50	0.00	0.00	0.00
50.00	0.00	0	240.50	0.00	0.00	0.00
52.00	0.00	0	240.50	0.00	0.00	0.00
54.00	0.00	0	240.50	0.00	0.00	0.00
56.00	0.00	0	240.50	0.00	0.00	0.00
58.00	0.00	0	240.50	0.00	0.00	0.00
60.00	0.00	0	240.50	0.00	0.00	0.00
62.00	0.00	0	240.50	0.00	0.00	0.00
64.00	0.00	0	240.50	0.00	0.00	0.00
66.00	0.00	0	240.50	0.00	0.00	0.00
68.00	0.00	0	240.50	0.00	0.00	0.00
70.00	0.00	0	240.50	0.00	0.00	0.00
72.00	0.00	0	240.50	0.00	0.00	0.00
74.00	0.00	0	240.50	0.00	0.00	0.00
76.00	0.00	0	240.50	0.00	0.00	0.00
78.00	0.00	0	240.50	0.00	0.00	0.00
80.00	0.00	0	240.50	0.00	0.00	0.00
82.00	0.00	0	240.50	0.00	0.00	0.00
84.00	0.00	0	240.50	0.00	0.00	0.00
86.00	0.00	0	240.50	0.00	0.00	0.00
88.00	0.00	0	240.50	0.00	0.00	0.00
90.00	0.00	0	240.50	0.00	0.00	0.00
92.00	0.00	0	240.50	0.00	0.00	0.00
94.00	0.00	0	240.50	0.00	0.00	0.00
96.00	0.00	0	240.50	0.00	0.00	0.00
98.00	0.00	0	240.50	0.00	0.00	0.00
100.00	0.00	0	240.50	0.00	0.00	0.00

BMP NO.6 INFILTRATION PERIOD: 16 HOURS

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 10/3/2023
Chk'd:
Rev'd: 01/23/24

Watershed: **Post Developed - (Basin 3A) - DISTURBED AREA**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B/C/D	(On-site) Impervious	98	1.19	116.22
B/C/D	(On-site) Building Impervious	98	1.61	157.48
B	Lawn	61	1.79	109.25
C	Lawn	74	0.56	41.53
Undisturbed area into Basin 3A				
B	Lawn	61	0.07	4.41
Totals =			5.15	424.49

Composite Cn = $\frac{424.49}{5.15}$ = 82.50

USE Cn = 82.5

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 10/3/2023
Chk'd:
Rev'd:

Watershed: **Post Developed - (Basin 3B) - DISTURBED AREA**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B	Lawn	61	0.43	26.20
All Area conveyed to Basin 3B is Disturbed				
Totals =			0.43	26.20

Composite Cn = $\frac{26.20}{0.43}$ = 61.00

USE Cn = 61.0

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 10/3/2023
Chk'd:
Rev'd:

Watershed: **Post Developed - (Stone BMP 2A) - DISTURBED AREA**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B/C/D	(On-site) Impervious	98	1.32	129.77
B/C/D	(On-site) Building Impervious	98	2.09	204.73
B	Lawn	61	0.24	14.74
C	Lawn	74	1.75	129.53
All Area conveyed to Stone BMP 2A is Disturbed				

Totals =	5.41	478.77

Composite Cn = $\frac{478.77}{5.41}$ = 88.57

USE Cn = 88.6

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 10/3/2023
Chk'd:
Rev'd:

Watershed: **Post Developed - (Basin 4) - DISTURBED AREA**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B/C	(On-site) Impervious	98	1.81	177.81
B/C	(On-site) Building Impervious	98	2.50	245.22
B	Lawn	61	1.84	112.44
C	Lawn	74	1.93	142.88
All Area conveyed to Basin 4 is Disturbed				
	Totals =		8.09	678.35

$$\text{Composite Cn} = \frac{678.35}{8.09} = 83.84$$

USE Cn = 83.8

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Pre-developed Tc

3

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 1/25/2023
Chk'd: 3/20/2023
Rev'd:

Watershed: **Pre Developed A**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

		Segment ID	A - B		
Surface Description (table B-8)			Meadow		
Manning's Roughness Coefficient, n (table B-8)			0.17		
Flow Length, L		ft.	150		
Two Year 24 Hour Rainfall, P2		in.	3.31		
Land Slope, s		ft/ft	0.0111		
Tt =	$\frac{0.007(nL)^{0.8}}{(P2^{0.5})(s^{0.4})}$	hr	0.3110		
	Sheet flow Subtotal Tt =	**hr**			**0.3110**

Shallow concentrated flow

		Segment ID	B - C	C - D	
Surface Description (paved or unpaved)			Unpaved	Paved	
Flow Length, L		ft	446	29	
Watercourse Slope, s		ft/ft	0.0106	0.0197	
Average Velociity, V (figure B-8)		fps	1.66	2.85	
Tt =	$\frac{L}{(3600 \times V)}$	hr	0.0746	0.0028	
Shallow concentrated flow Subtotal Tt =		**hr**			**0.0775**

Channel flow

		Segment ID			
Cross Sectional Flow Area, a		sq ft			
Wetted Perimeter, Pw		ft			
Hydraulic Radius, r = a/Pw		ft			
Channel Slope, s		ft/ft			
Manning's Roughness Coefficient, n					
Velocity, V = (1.486)(r^2/3)(s^1/2)/n		fps			
Flow length, L		ft			
Tt =	$\frac{L}{(3600 \times V)}$	hr			
	Channel flow Subtotal Tt =	**hr**			

Pipe flow

		Segment ID			
Structure 'From' - 'To'					
Flow Length, L		ft			
Pipe Diameter, D		in			
Manning's Roughness Coefficient, n					
Pipe Slope, s		ft/ft			
Velocity, V = (1.486)(r^2/3)(s^1/2)/n		fps			
Tt =	$\frac{L}{(3600 \times V)}$	hr			
	Pipe flow Subtotal Tt =	**hr**			

Total Tt = 0.3885
Tt (min) = 23.310

Total Hydraulic Length = 625
Total Elevation Change = 6.9
Average Slope = 1.11%

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 1/27/2023
Chk'd:
Rev'd:

Watershed: **Pre Developed B**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

	Segment ID	A - B		
Surface Description		Meadow		
Manning's Roughness Coefficient, n		0.17		
Flow Length, L	ft.	150		
Two Year 24 Hour Rainfall, P2	in.	3.31		
Land Slope, s	ft/ft	0.0135		
Tt = $\frac{0.007(nL)^{0.8}}{(P2^{0.5})(s^{0.4})}$	hr	0.2870		
Sheet flow Subtotal Tt =	**hr**			**0.2870**

Shallow concentrated flow

	Segment ID	B - C	C - D	D - E
Surface Description (paved or unpaved)		Unpaved	Paved	Unpaved
Flow Length, L	ft	196	37	197
Watercourse Slope, s	ft/ft	0.0181	0.0122	0.0251
Average Velociity, V (figure B-8)	fps	2.17	2.24	2.56
Tt = $\frac{L}{(3600 \times V)}$	hr	0.0251	0.0046	0.0214
Shallow concentrated flow Subtotal Tt =	**hr**			**0.0511**

Channel flow

	Segment ID			
Cross Sectional Flow Area, a	sq ft			
Wetted Perimeter, Pw	ft			
Hydraulic Radius, r = a/Pw	ft			
Channel Slope, s	ft/ft			
Manning's Roughness Coefficient, n				
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Flow length, L	ft			
Tt = $\frac{L}{(3600 \times V)}$	hr			
Channel flow Subtotal Tt =	**hr**			

Pipe flow

	Segment ID			
Structure 'From' - 'To'				
Flow Length, L	ft			
Pipe Diameter, D	in			
Manning's Roughness Coefficient, n				
Pipe Slope, s	ft/ft			
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Tt = $\frac{L}{(3600 \times V)}$	hr			
Pipe flow Subtotal Tt =	**hr**			

Total Tt = 0.3380
Tt (min) = 20.282

Total Hydraulic Length =	580
Total Elevation Change =	11.0
Average Slope =	1.89%

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 1/18/2023
Chk'd: 3/20/2023
Rev'd:

Watershed: **Pre Developed C**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

		Segment ID	A - B		
Surface Description			Meadow		
Manning's Roughness Coefficient, n			0.17		
Flow Length, L		ft.	150		
Two Year 24 Hour Rainfall, P2		in.	3.31		
Land Slope, s		ft/ft	0.0167		
Tt =	$\frac{0.007(nL)^{0.8}}{(P2^{0.5})(s^{0.4})}$	hr	0.2640		
	Sheet flow Subtotal Tt =	**hr**			**0.2640**

Shallow concentrated flow

		Segment ID	B - C		
Surface Description (paved or unpaved)			Unpaved		
Flow Length, L		ft	105		
Watercourse Slope, s		ft/ft	0.0138		
Average Velociity, V (figure B-8)		fps	1.90		
Tt =	$\frac{L}{(3600 \times V)}$	hr	0.0154		
	Shallow concentrated flow Subtotal Tt =	**hr**			**0.0154**

Channel flow

		Segment ID			
Cross Sectional Flow Area, a		sq ft			
Wetted Perimeter, Pw		ft			
Hydraulic Radius, r = a/Pw		ft			
Channel Slope, s		ft/ft			
Manning's Roughness Coefficient, n					
Velocity, V = (1.486)(r^2/3)(s^1/2)/n		fps			
Flow length, L		ft			
Tt =	$\frac{L}{(3600 \times V)}$	hr			
	Channel flow Subtotal Tt =	**hr**			

Pipe flow

		Segment ID			
Structure 'From' - 'To'					
Flow Length, L		ft			
Pipe Diameter, D		in			
Manning's Roughness Coefficient, n					
Pipe Slope, s		ft/ft			
Velocity, V = (1.486)(r^2/3)(s^1/2)/n		fps			
Tt =	$\frac{L}{(3600 \times V)}$	hr			
	Pipe flow Subtotal Tt =	**hr**			

Total Tt = 0.2794
Tt (min) = 16.766

Total Hydraulic Length =	255
Total Elevation Change =	3.9
Average Slope =	1.55%

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 1/27/2023
Chk'd: 3/20/2023
Rev'd:

Watershed: **Pre Developed D**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

	Segment ID	A - B		
Surface Description		Meadow		
Manning's Roughness Coefficient, n		0.17		
Flow Length, L	ft.	150		
Two Year 24 Hour Rainfall, P2	in.	3.31		
Land Slope, s	ft/ft	0.0093		
Tt = $\frac{0.007(nL)^{0.8}}{(P2^{0.5})(s^{0.4})}$	hr	0.3339		
Sheet flow Subtotal Tt =	**hr**			**0.3339**

Shallow concentrated flow

	Segment ID	B - C	C - D	D - E
Surface Description (paved or unpaved)		Unpaved	Paved	Unpaved
Flow Length, L	ft	363	16	487
Watercourse Slope, s	ft/ft	0.0075	0.0156	0.0210
Average Velociity, V (figure B-8)	fps	1.39	2.54	2.34
Tt = $\frac{L}{(3600 \times V)}$	hr	0.0723	0.0017	0.0578
Shallow concentrated flow Subtotal Tt =	**hr**			**0.1319**

Channel flow

	Segment ID			
Cross Sectional Flow Area, a	sq ft			
Wetted Perimeter, Pw	ft			
Hydraulic Radius, r = a/Pw	ft			
Channel Slope, s	ft/ft			
Manning's Roughness Coefficient, n				
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Flow length, L	ft			
Tt = $\frac{L}{(3600 \times V)}$	hr			
Channel flow Subtotal Tt =	**hr**			

Pipe flow

	Segment ID			
Structure 'From' - 'To'				
Flow Length, L	ft			
Pipe Diameter, D	in			
Manning's Roughness Coefficient, n				
Pipe Slope, s	ft/ft			
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Tt = $\frac{L}{(3600 \times V)}$	hr			
Pipe flow Subtotal Tt =	**hr**			

Total Tt = 0.4658
Tt (min) = 27.948

Total Hydraulic Length = 1016
Total Elevation Change = 14.6
Average Slope = 1.44%

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 1/19/2023
Chk'd: 3/20/2023
Rev'd:

Watershed: **Pre Developed E**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

		Segment ID	A - B		
Surface Description			Meadow		
Manning's Roughness Coefficient, n			0.17		
Flow Length, L		ft.	150		
Two Year 24 Hour Rainfall, P2		in.	3.31		
Land Slope, s		ft/ft	0.0224		
Tt =	$\frac{0.007(nL)^{0.8}}{(P2^{0.5})(s^{0.4})}$	hr	0.2346		
	Sheet flow Subtotal Tt =	**hr**			**0.2346**

Shallow concentrated flow

		Segment ID	B - C		
Surface Description (paved or unpaved)			Unpaved		
Flow Length, L		ft	1196		
Watercourse Slope, s		ft/ft	0.0228		
Average Velociity, V (figure B-8)		fps	2.44		
Tt =	$\frac{L}{(3600 \times V)}$	hr	0.1363		
	Shallow concentrated flow Subtotal Tt =	**hr**			**0.1363**

Channel flow

		Segment ID			
Cross Sectional Flow Area, a		sq ft			
Wetted Perimeter, Pw		ft			
Hydraulic Radius, r = a/Pw		ft			
Channel Slope, s		ft/ft			
Manning's Roughness Coefficient, n					
Velocity, V = (1.486)(r^2/3)(s^1/2)/n		fps			
Flow length, L		ft			
Tt =	$\frac{L}{(3600 \times V)}$	hr			
	Channel flow Subtotal Tt =	**hr**			

Pipe flow

		Segment ID			
Structure 'From' - 'To'					
Flow Length, L		ft			
Pipe Diameter, D		in			
Manning's Roughness Coefficient, n					
Pipe Slope, s		ft/ft			
Velocity, V = (1.486)(r^2/3)(s^1/2)/n		fps			
Tt =	$\frac{L}{(3600 \times V)}$	hr			
	Pipe flow Subtotal Tt =	**hr**			

Total Tt = 0.3709
Tt (min) = 22.256

Total Hydraulic Length = 1346
Total Elevation Change = 30.6
Average Slope = 2.28%

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 1/19/2023
Chk'd: 3/20/2023
Rev'd:

Watershed: **Pre Developed F**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

		Segment ID	A - B		
Surface Description			Meadow		
Manning's Roughness Coefficient, n			0.17		
Flow Length, L		ft.	150		
Two Year 24 Hour Rainfall, P2		in.	3.31		
Land Slope, s		ft/ft	0.0408		
Tt =	$\frac{0.007(nL)^{0.8}}{(P2^{0.5})(s^{0.4})}$	hr	0.1846		
	Sheet flow Subtotal Tt =	**hr**			**0.1846**

Shallow concentrated flow

		Segment ID	B - C		
Surface Description (paved or unpaved)			Unpaved		
Flow Length, L		ft	707		
Watercourse Slope, s		ft/ft	0.0433		
Average Velociity, V (figure B-8)		fps	3.36		
Tt =	$\frac{L}{(3600 \times V)}$	hr	0.0585		
	Shallow concentrated flow Subtotal Tt =	**hr**			**0.0585**

Channel flow

		Segment ID			
Cross Sectional Flow Area, a		sq ft			
Wetted Perimeter, Pw		ft			
Hydraulic Radius, r = a/Pw		ft			
Channel Slope, s		ft/ft			
Manning's Roughness Coefficient, n					
Velocity, V = (1.486)(r^2/3)(s^1/2)/n		fps			
Flow length, L		ft			
Tt =	$\frac{L}{(3600 \times V)}$	hr			
	Channel flow Subtotal Tt =	**hr**			

Pipe flow

		Segment ID			
Structure 'From' - 'To'					
Flow Length, L		ft			
Pipe Diameter, D		in			
Manning's Roughness Coefficient, n					
Pipe Slope, s		ft/ft			
Velocity, V = (1.486)(r^2/3)(s^1/2)/n		fps			
Tt =	$\frac{L}{(3600 \times V)}$	hr			
	Pipe flow Subtotal Tt =	**hr**			

Total Tt = 0.2430
Tt (min) = 14.583

Total Hydraulic Length =	857
Total Elevation Change =	36.8
Average Slope =	4.29%

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 1/19/2023
Chk'd: 3/20/2023
Rev'd:

Watershed: **Pre Developed G**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

		Segment ID	A - B		
Surface Description			Meadow		
Manning's Roughness Coefficient, n			0.17		
Flow Length, L		ft.	150		
Two Year 24 Hour Rainfall, P2		in.	3.31		
Land Slope, s		ft/ft	0.0433		
Tt =	$\frac{0.007(nL)^{0.8}}{(P2^{0.5})(s^{0.4})}$	hr	0.1802		
	Sheet flow Subtotal Tt =	**hr**			**0.1802**

Shallow concentrated flow

		Segment ID	B - C		
Surface Description (paved or unpaved)			Unpaved		
Flow Length, L		ft	340		
Watercourse Slope, s		ft/ft	0.0471		
Average Velociity, V (figure B-8)		fps	3.50		
Tt =	$\frac{L}{(3600 \times V)}$	hr	0.0270		
	Shallow concentrated flow Subtotal Tt =	**hr**			**0.0270**

Channel flow

		Segment ID			
Cross Sectional Flow Area, a		sq ft			
Wetted Perimeter, Pw		ft			
Hydraulic Radius, r = a/Pw		ft			
Channel Slope, s		ft/ft			
Manning's Roughness Coefficient, n					
Velocity, V = (1.486)(r^2/3)(s^1/2)/n		fps			
Flow length, L		ft			
Tt =	$\frac{L}{(3600 \times V)}$	hr			
	Channel flow Subtotal Tt =	**hr**			

Pipe flow

		Segment ID			
Structure 'From' - 'To'					
Flow Length, L		ft			
Pipe Diameter, D		in			
Manning's Roughness Coefficient, n					
Pipe Slope, s		ft/ft			
Velocity, V = (1.486)(r^2/3)(s^1/2)/n		fps			
Tt =	$\frac{L}{(3600 \times V)}$	hr			
	Pipe flow Subtotal Tt =	**hr**			

Total Tt = 0.2072
Tt (min) = 12.429

Total Hydraulic Length =	490
Total Elevation Change =	22.5
Average Slope =	4.59%

Pre-developed Cn

4

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 1/25/2023
Chk'd: 3/20/2023
Rev'd:

Watershed: **Pre Developed A**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B	Existing road	98	0.06	5.81
B	Existing Impervious TBR	98	0.23	22.24
B	20% Existing Impervious TBR (Counted as Meadow)	58	0.06	3.29
B	Meadow (good)	58	1.63	94.53

Totals = 1.97 125.87

Composite Cn = $\frac{125.87}{1.97}$ = 64

USE Cn = 63.8

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 1/27/2023
Chk'd:
Rev'd: 11/28/23

Watershed: **Pre Developed B**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				
B/C	Existing Road	98	0.41	39.71
B/C	Existing Impervious TBR	98	0.86	84.58
B	20% Existing Impervious TBR (Counted as Meadow)	58	0.18	10.52
C	20% Existing Impervious TBR (Counted as Meadow)	71	0.03	2.44
B	Meadow (good)	58	4.52	262.02
C	Meadow (good)	71	2.53	179.87
B	Residentail 1/4 Ac Lot (offsite)	75	0.39	29.11
C	Lawn (good)	74	0.08	6.20

Totals = 9.01 | 614.45

Composite Cn = $\frac{614.45}{9.01}$ = 68.22

USE Cn = 68

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 1/25/2023
Chk'd: 3/20/2023
Rev'd:

Watershed: **Pre Developed C**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				
B	Meadow (good)	58	1.70	98.53

Totals =	1.70	98.53

Composite Cn = $\frac{98.53}{1.70}$ = 58.00

USE Cn = 58.0

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 1/25/2023
Chk'd:
Rev'd: 11/28/23

Watershed: **Pre Developed D**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B/C	Existing Impervious TBR	98	2.62	256.58
B	20% Existing Impervious TBR (Counted as Meadow)	58	0.22	12.65
C	20% Existing Impervious TBR (Counted as Meadow)	71	0.44	30.99
B	Meadow (good)	58	2.15	124.60
C	Meadow (good)	71	4.72	334.95
B	Residentail 1/4 Ac Lot (offsite)	75	1.18	88.47
B	Existing Road	98	0.04	4.30
Totals =			11.36	852.53

Composite Cn = $\frac{852.53}{11.36}$ = 75.03

USE Cn = 75

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 3/20/2023
Chk'd: 3/20/2023
Rev'd:

Watershed: **Pre Developed E**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B/C/D	Existing Impervious TBR	98	0.21	20.96
C	20% Existing Impervious TBR (Counted as Meadow)	71	0.05	3.80
B	Off-site 1/3 Acre Residential Lots (offsite)	72	2.17	156.00
C	Off-site 1/3 Acre Residential Lots (offsite)	81	0.07	6.04
B	Woods (good)	55	1.24	68.31
D	Woods (good)	77	0.73	56.52
B	Meadow (good)	58	4.49	260.22
C	Meadow (good)	71	2.70	191.43
Totals =			11.67	763.27

$$\text{Composite Cn} = \frac{763.27}{11.67} = 65.42$$

USE Cn = 65.4

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 1/19/2023
Chk'd: 3/20/2023
Rev'd:

Watershed: **Pre Developed F**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B/C/D	Existing Impervious TBR	98	0.28	27.70
C	20% Existing Impervious TBR (Counted as Meadow)	71	0.07	5.02
B	Woods (good)	55	1.43	78.55
C	Woods (good)	70	0.01	0.71
D	Woods (good)	77	1.39	106.88
B	Meadow (good)	58	2.54	147.08
C	Meadow (good)	71	3.45	245.27
Totals =			9.17	611.21

$$\text{Composite Cn} = \frac{611.21}{9.17} = 66.65$$

USE Cn = 66.7

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 1/19/2023
Chk'd: 3/20/2023
Rev'd:

Watershed: **Pre Developed G**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B/C/D	Existing Impervious TBR	98	0.22	21.15
C	20% Existing Impervious TBR (Counted as Meadow)	71	0.05	3.83
B	Off-site 1/4 Acre Residential Lots	75	0.68	51.32
B	Woods (good)	55	0.59	32.50
C	Woods (good)	70	0.17	11.57
D	Woods (good)	77	0.02	1.49
B	Meadow (good)	58	0.43	24.90
C	Meadow (good)	71	2.87	204.10
Totals =			5.03	350.86

Composite Cn = $\frac{350.86}{5.03}$ = 69.70

USE Cn = 69.7

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Pre-developed Hydrographs

5



Subcat Reach Pond Link

Routing Diagram for 7662-PRE vs POST
Prepared by ESE Consultants, Inc, Printed 11/30/2023
HydroCAD® 10.20-3c s/n 01254 © 2023 HydroCAD Software Solutions LLC

Summary for Subcatchment 10S: PRE A

Runoff = 0.45 cfs @ 12.24 hrs, Volume= 0.059 af, Depth= 0.36"
Routed to Link 10L : PRE TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	1.970	64	Bypass
	1.970		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.3					**Direct Entry, Total Tc**

Summary for Subcatchment 20S: PRE B

Runoff = 3.84 cfs @ 12.16 hrs, Volume= 0.374 af, Depth= 0.50"
Routed to Link 10L : PRE TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	9.010	68	
	9.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.3					**Direct Entry, Total Tc**

Summary for Subcatchment 30S: PRE C

Runoff = 0.14 cfs @ 12.19 hrs, Volume= 0.028 af, Depth= 0.20"
Routed to Link 10L : PRE TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	1.700	58	
	1.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8					**Direct Entry, Total Tc**

Summary for Subcatchment 40S: PRE D

Runoff = 7.47 cfs @ 12.24 hrs, Volume= 0.753 af, Depth= 0.80"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	11.360	75	
	11.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9					**Direct Entry,**

Summary for Subcatchment 50S: PRE E

Runoff = 3.19 cfs @ 12.21 hrs, Volume= 0.382 af, Depth= 0.39"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	11.670	65	
	11.670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.3					**Direct Entry,**

Summary for Subcatchment 60S: PRE F

Runoff = 4.32 cfs @ 12.09 hrs, Volume= 0.352 af, Depth= 0.46"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	9.170	67	
	9.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6					**Direct Entry,**

Summary for Subcatchment 70S: PRE G

Runoff = 3.58 cfs @ 12.06 hrs, Volume= 0.241 af, Depth= 0.57"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	5.030	70	
	5.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4					**Direct Entry,**

Summary for Link 10L: PRE TOOKANY WATERSHED (01)

Inflow Area = 12.680 ac, 0.00% Impervious, Inflow Depth = 0.44" for 1-YR event
Inflow = 4.39 cfs @ 12.17 hrs, Volume= 0.460 af
Primary = 4.39 cfs @ 12.17 hrs, Volume= 0.460 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 40L: PRE PENNYPACK CREEK WATERSHED (02)

Inflow Area = 37.230 ac, 0.00% Impervious, Inflow Depth = 0.56" for 1-YR event
Inflow = 15.85 cfs @ 12.15 hrs, Volume= 1.728 af
Primary = 15.85 cfs @ 12.15 hrs, Volume= 1.728 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 10S: PRE A

Runoff = 0.94 cfs @ 12.20 hrs, Volume= 0.100 af, Depth= 0.61"
Routed to Link 10L : PRE TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	1.970	64	Bypass
	1.970		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.3					**Direct Entry, Total Tc**

Summary for Subcatchment 20S: PRE B

Runoff = 6.90 cfs @ 12.16 hrs, Volume= 0.596 af, Depth= 0.79"
Routed to Link 10L : PRE TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	9.010	68	
	9.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.3					**Direct Entry, Total Tc**

Summary for Subcatchment 30S: PRE C

Runoff = 0.46 cfs @ 12.15 hrs, Volume= 0.054 af, Depth= 0.38"
Routed to Link 10L : PRE TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	1.700	58	
	1.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8					**Direct Entry, Total Tc**

Summary for Subcatchment 40S: PRE D

Runoff = 11.49 cfs @ 12.24 hrs, Volume= 1.107 af, Depth= 1.17"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	11.360	75	
	11.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9					**Direct Entry,**

Summary for Subcatchment 50S: PRE E

Runoff = 6.39 cfs @ 12.19 hrs, Volume= 0.637 af, Depth= 0.65"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	11.670	65	
	11.670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.3					**Direct Entry,**

Summary for Subcatchment 60S: PRE F

Runoff = 7.92 cfs @ 12.09 hrs, Volume= 0.570 af, Depth= 0.75"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	9.170	67	
	9.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6					**Direct Entry,**

Summary for Subcatchment 70S: PRE G

Runoff = 5.96 cfs @ 12.06 hrs, Volume= 0.374 af, Depth= 0.89"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	5.030	70	
	5.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4					**Direct Entry,**

Summary for Link 10L: PRE TOOKANY WATERSHED (01)

Inflow Area = 12.680 ac, 0.00% Impervious, Inflow Depth = 0.71" for 2-YR event
Inflow = 8.26 cfs @ 12.16 hrs, Volume= 0.750 af
Primary = 8.26 cfs @ 12.16 hrs, Volume= 0.750 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 40L: PRE PENNYPACK CREEK WATERSHED (02)

Inflow Area = 37.230 ac, 0.00% Impervious, Inflow Depth = 0.87" for 2-YR event
Inflow = 27.52 cfs @ 12.12 hrs, Volume= 2.687 af
Primary = 27.52 cfs @ 12.12 hrs, Volume= 2.687 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 10S: PRE A

Runoff = 1.91 cfs @ 12.19 hrs, Volume= 0.177 af, Depth= 1.08"
Routed to Link 10L : PRE TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	1.970	64	Bypass
	1.970		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.3					**Direct Entry, Total Tc**

Summary for Subcatchment 20S: PRE B

Runoff = 12.37 cfs @ 12.15 hrs, Volume= 0.991 af, Depth= 1.32"
Routed to Link 10L : PRE TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	9.010	68	
	9.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.3					**Direct Entry, Total Tc**

Summary for Subcatchment 30S: PRE C

Runoff = 1.23 cfs @ 12.12 hrs, Volume= 0.106 af, Depth= 0.75"
Routed to Link 10L : PRE TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	1.700	58	
	1.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8					**Direct Entry, Total Tc**

Summary for Subcatchment 40S: PRE D

Runoff = 18.24 cfs @ 12.24 hrs, Volume= 1.707 af, Depth= 1.80"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	11.360	75	
	11.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9					**Direct Entry,**

Summary for Subcatchment 50S: PRE E

Runoff = 12.50 cfs @ 12.17 hrs, Volume= 1.103 af, Depth= 1.13"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	11.670	65	
	11.670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.3					**Direct Entry,**

Summary for Subcatchment 60S: PRE F

Runoff = 14.38 cfs @ 12.08 hrs, Volume= 0.961 af, Depth= 1.26"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	9.170	67	
	9.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6					**Direct Entry,**

Summary for Subcatchment 70S: PRE G

Runoff = 10.11 cfs @ 12.05 hrs, Volume= 0.608 af, Depth= 1.45"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	5.030	70	
	5.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4					**Direct Entry,**

Summary for Link 10L: PRE TOOKANY WATERSHED (01)

Inflow Area = 12.680 ac, 0.00% Impervious, Inflow Depth = 1.21" for 5-YR event
Inflow = 15.41 cfs @ 12.15 hrs, Volume= 1.274 af
Primary = 15.41 cfs @ 12.15 hrs, Volume= 1.274 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 40L: PRE PENNYPACK CREEK WATERSHED (02)

Inflow Area = 37.230 ac, 0.00% Impervious, Inflow Depth = 1.41" for 5-YR event
Inflow = 48.56 cfs @ 12.12 hrs, Volume= 4.379 af
Primary = 48.56 cfs @ 12.12 hrs, Volume= 4.379 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 10S: PRE A

Runoff = 2.86 cfs @ 12.19 hrs, Volume= 0.251 af, Depth= 1.53"
Routed to Link 10L : PRE TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	1.970	64	Bypass
	1.970		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.3					**Direct Entry, Total Tc**

Summary for Subcatchment 20S: PRE B

Runoff = 17.56 cfs @ 12.14 hrs, Volume= 1.369 af, Depth= 1.82"
Routed to Link 10L : PRE TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	9.010	68	
	9.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.3					**Direct Entry, Total Tc**

Summary for Subcatchment 30S: PRE C

Runoff = 2.05 cfs @ 12.11 hrs, Volume= 0.159 af, Depth= 1.13"
Routed to Link 10L : PRE TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	1.700	58	
	1.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8					**Direct Entry, Total Tc**

Summary for Subcatchment 40S: PRE D

Runoff = 24.41 cfs @ 12.22 hrs, Volume= 2.257 af, Depth= 2.38"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	11.360	75	
	11.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9					**Direct Entry,**

Summary for Subcatchment 50S: PRE E

Runoff = 18.46 cfs @ 12.17 hrs, Volume= 1.557 af, Depth= 1.60"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	11.670	65	
	11.670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.3					**Direct Entry,**

Summary for Subcatchment 60S: PRE F

Runoff = 20.52 cfs @ 12.08 hrs, Volume= 1.335 af, Depth= 1.75"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	9.170	67	
	9.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6					**Direct Entry,**

Summary for Subcatchment 70S: PRE G

Runoff = 13.96 cfs @ 12.05 hrs, Volume= 0.829 af, Depth= 1.98"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	5.030	70	
	5.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4					**Direct Entry,**

Summary for Link 10L: PRE TOOKANY WATERSHED (01)

Inflow Area = 12.680 ac, 0.00% Impervious, Inflow Depth = 1.68" for 10-YR event
Inflow = 22.32 cfs @ 12.14 hrs, Volume= 1.779 af
Primary = 22.32 cfs @ 12.14 hrs, Volume= 1.779 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 40L: PRE PENNYPACK CREEK WATERSHED (02)

Inflow Area = 37.230 ac, 0.00% Impervious, Inflow Depth = 1.93" for 10-YR event
Inflow = 68.43 cfs @ 12.11 hrs, Volume= 5.978 af
Primary = 68.43 cfs @ 12.11 hrs, Volume= 5.978 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 10S: PRE A

Runoff = 4.39 cfs @ 12.17 hrs, Volume= 0.372 af, Depth= 2.26"
Routed to Link 10L : PRE TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	1.970	64	Bypass
	1.970		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.3					**Direct Entry, Total Tc**

Summary for Subcatchment 20S: PRE B

Runoff = 25.74 cfs @ 12.14 hrs, Volume= 1.968 af, Depth= 2.62"
Routed to Link 10L : PRE TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	9.010	68	
	9.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.3					**Direct Entry, Total Tc**

Summary for Subcatchment 30S: PRE C

Runoff = 3.43 cfs @ 12.11 hrs, Volume= 0.249 af, Depth= 1.76"
Routed to Link 10L : PRE TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	1.700	58	
	1.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8					**Direct Entry, Total Tc**

Summary for Subcatchment 40S: PRE D

Runoff = 33.84 cfs @ 12.22 hrs, Volume= 3.107 af, Depth= 3.28"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	11.360	75	
	11.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9					**Direct Entry,**

Summary for Subcatchment 50S: PRE E

Runoff = 27.97 cfs @ 12.16 hrs, Volume= 2.287 af, Depth= 2.35"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	11.670	65	
	11.670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.3					**Direct Entry,**

Summary for Subcatchment 60S: PRE F

Runoff = 30.23 cfs @ 12.07 hrs, Volume= 1.933 af, Depth= 2.53"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	9.170	67	
	9.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6					**Direct Entry,**

Summary for Subcatchment 70S: PRE G

Runoff = 19.96 cfs @ 12.05 hrs, Volume= 1.176 af, Depth= 2.81"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	5.030	70	
	5.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4					**Direct Entry,**

Summary for Link 10L: PRE TOOKANY WATERSHED (01)

Inflow Area = 12.680 ac, 0.00% Impervious, Inflow Depth = 2.45" for 25-YR event
Inflow = 33.32 cfs @ 12.14 hrs, Volume= 2.588 af
Primary = 33.32 cfs @ 12.14 hrs, Volume= 2.588 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 40L: PRE PENNYPACK CREEK WATERSHED (02)

Inflow Area = 37.230 ac, 0.00% Impervious, Inflow Depth = 2.74" for 25-YR event
Inflow = 99.67 cfs @ 12.11 hrs, Volume= 8.503 af
Primary = 99.67 cfs @ 12.11 hrs, Volume= 8.503 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 10S: PRE A

Runoff = 5.79 cfs @ 12.17 hrs, Volume= 0.483 af, Depth= 2.94"
Routed to Link 10L : PRE TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	1.970	64	Bypass
	1.970		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.3					**Direct Entry, Total Tc**

Summary for Subcatchment 20S: PRE B

Runoff = 33.10 cfs @ 12.13 hrs, Volume= 2.512 af, Depth= 3.35"
Routed to Link 10L : PRE TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	9.010	68	
	9.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.3					**Direct Entry, Total Tc**

Summary for Subcatchment 30S: PRE C

Runoff = 4.72 cfs @ 12.10 hrs, Volume= 0.334 af, Depth= 2.36"
Routed to Link 10L : PRE TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	1.700	58	
	1.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8					**Direct Entry, Total Tc**

Summary for Subcatchment 40S: PRE D

Runoff = 42.11 cfs @ 12.22 hrs, Volume= 3.861 af, Depth= 4.08"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	11.360	75	
	11.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9					**Direct Entry,**

Summary for Subcatchment 50S: PRE E

Runoff = 36.64 cfs @ 12.16 hrs, Volume= 2.957 af, Depth= 3.04"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	11.670	65	
	11.670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.3					**Direct Entry,**

Summary for Subcatchment 60S: PRE F

Runoff = 38.97 cfs @ 12.07 hrs, Volume= 2.478 af, Depth= 3.24"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	9.170	67	
	9.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6					**Direct Entry,**

Summary for Subcatchment 70S: PRE G

Runoff = 25.28 cfs @ 12.04 hrs, Volume= 1.489 af, Depth= 3.55"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	5.030	70	
	5.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4					**Direct Entry,**

Summary for Link 10L: PRE TOOKANY WATERSHED (01)

Inflow Area = 12.680 ac, 0.00% Impervious, Inflow Depth = 3.15" for 50-YR event
Inflow = 43.30 cfs @ 12.13 hrs, Volume= 3.328 af
Primary = 43.30 cfs @ 12.13 hrs, Volume= 3.328 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 40L: PRE PENNYPACK CREEK WATERSHED (02)

Inflow Area = 37.230 ac, 0.00% Impervious, Inflow Depth = 3.48" for 50-YR event
Inflow = 127.74 cfs @ 12.11 hrs, Volume= 10.786 af
Primary = 127.74 cfs @ 12.11 hrs, Volume= 10.786 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 10S: PRE A

Runoff = 7.40 cfs @ 12.17 hrs, Volume= 0.612 af, Depth= 3.73"
Routed to Link 10L : PRE TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	1.970	64	Bypass
	1.970		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.3					**Direct Entry, Total Tc**

Summary for Subcatchment 20S: PRE B

Runoff = 41.47 cfs @ 12.13 hrs, Volume= 3.136 af, Depth= 4.18"
Routed to Link 10L : PRE TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	9.010	68	
	9.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.3					**Direct Entry, Total Tc**

Summary for Subcatchment 30S: PRE C

Runoff = 6.25 cfs @ 12.10 hrs, Volume= 0.434 af, Depth= 3.06"
Routed to Link 10L : PRE TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	1.700	58	
	1.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8					**Direct Entry, Total Tc**

Summary for Subcatchment 40S: PRE D

Runoff = 51.36 cfs @ 12.21 hrs, Volume= 4.713 af, Depth= 4.98"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	11.360	75	
	11.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9					**Direct Entry,**

Summary for Subcatchment 50S: PRE E

Runoff = 46.59 cfs @ 12.16 hrs, Volume= 3.732 af, Depth= 3.84"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	11.670	65	
	11.670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.3					**Direct Entry,**

Summary for Subcatchment 60S: PRE F

Runoff = 48.92 cfs @ 12.07 hrs, Volume= 3.105 af, Depth= 4.06"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	9.170	67	
	9.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6					**Direct Entry,**

Summary for Subcatchment 70S: PRE G

Runoff = 31.29 cfs @ 12.04 hrs, Volume= 1.846 af, Depth= 4.40"
Routed to Link 40L : PRE PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	5.030	70	
	5.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4					**Direct Entry,**

Summary for Link 10L: PRE TOOKANY WATERSHED (01)

Inflow Area = 12.680 ac, 0.00% Impervious, Inflow Depth = 3.96" for 100-YR event
Inflow = 54.71 cfs @ 12.13 hrs, Volume= 4.181 af
Primary = 54.71 cfs @ 12.13 hrs, Volume= 4.181 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 40L: PRE PENNYPACK CREEK WATERSHED (02)

Inflow Area = 37.230 ac, 0.00% Impervious, Inflow Depth = 4.32" for 100-YR event
Inflow = 159.58 cfs @ 12.10 hrs, Volume= 13.396 af
Primary = 159.58 cfs @ 12.10 hrs, Volume= 13.396 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

During Construction Tc

6

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 2/10/2023
Chk'd:
Rev'd:

Watershed: **During Construction - (E&S Basin 1)**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

	Segment ID	A - B			Elev. A = 253.50
Surface Description		Disturbed			Elev. B = 250.40
Manning's Roughness Coefficient, n		0.13			Chg. Elev. = 3.10
Flow Length, L	ft.	100			
Two Year 24 Hour Rainfall, P2	in.	3.31			
Land Slope, s	ft/ft	0.0310			
Tt = $\frac{0.007(nL)^{0.8}}{(P2^{0.5})(s^{0.4})}$	hr	0.1202			
Sheet flow Subtotal Tt =	**hr**			**0.1202**	

Shallow concentrated flow

Segment ID		-		
Surface Description (paved or unpaved)				
Flow Length, L	ft			
Watercourse Slope, s	ft/ft			
Average Velociity, V (figure B-8)	fps			
Tt = $\frac{L}{(3600 \times V)}$	hr			
Shallow concentrated flow Subtotal Tt =	**hr**			

Channel flow

Segment ID				
Cross Sectional Flow Area, a	sq ft			
Wetted Perimeter, Pw	ft			
Hydraulic Radius, r = a/Pw	ft			
Channel Slope, s	ft/ft			
Manning's Roughness Coefficient, n				
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Flow length, L	ft			
Tt = $\frac{L}{(3600 \times V)}$	hr			
Channel flow Subtotal Tt =	**hr**			

Pipe flow

	Segment ID	B - B	-		Elev. B = 250.40
Structure 'From' - 'To'					Elev. B = 239.00
Flow Length, L	ft	650			Chg. Elev. = 11.40
Pipe Diameter, D	in	15.00			246.52
Manning's Roughness Coefficient, n		0.013			
Pipe Slope, s	ft/ft	0.018	#VALUE!	#VALUE!	
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps	11.07	#VALUE!	#VALUE!	
Tt = $\frac{L}{(3600 \times V)}$	hr	0.0163	#VALUE!	#VALUE!	
Pipe flow Subtotal Tt =	**hr**			**0.0163**	

Total Tt = 0.1365
Tt (min) = 8.189

Total Hydraulic Length =	750
Total Elevation Change =	14.5
Average Slope =	1.93%

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 1/27/2023
Chk'd:
Rev'd:

Watershed: **During Construction - By-Pass A**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

	Segment ID	A - B			Elev. A = 253.10
Surface Description		Grass			Elev. B = 250.10
Manning's Roughness Coefficient, n		0.24			Chg. Elev. = 3.00
Flow Length, L	ft.	150			
Two Year 24 Hour Rainfall, P2	in.	3.31			
Land Slope, s	ft/ft	0.0200			
Tt = $\frac{0.007(nL)^{0.8}}{(P2^{0.5})(s^{0.4})}$	hr	0.3235			
Sheet flow Subtotal Tt =	**hr**			**0.3235**	

Shallow concentrated flow

	Segment ID	B - C			Elev. B = 250.10
Surface Description (paved or unpaved)		Unpaved			Elev. C = 248.20
Flow Length, L	ft	253			Chg. Elev. = 1.90
Watercourse Slope, s	ft/ft	0.0075			
Average Velociity, V (figure B-8)	fps	1.40			
Tt = $\frac{L}{(3600 \times V)}$	hr	0.0503			
Shallow concentrated flow Subtotal Tt =	**hr**			**0.0503**	

Channel flow

	Segment ID			
Cross Sectional Flow Area, a	sq ft			
Wetted Perimeter, Pw	ft			
Hydraulic Radius, r = a/Pw	ft			
Channel Slope, s	ft/ft			
Manning's Roughness Coefficient, n				
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Flow length, L	ft			
Tt = $\frac{L}{(3600 \times V)}$	hr			
Channel flow Subtotal Tt =	**hr**			

Pipe flow

	Segment ID			
Structure 'From' - 'To'				
Flow Length, L	ft			
Pipe Diameter, D	in			
Manning's Roughness Coefficient, n				
Pipe Slope, s	ft/ft			
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Tt = $\frac{L}{(3600 \times V)}$	hr			
Pipe flow Subtotal Tt =	**hr**			

Total Tt = 0.3737
Tt (min) = 22.423

Total Hydraulic Length =	403
Total Elevation Change =	4.9
Average Slope =	1.22%

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 2/7/2023
Chk'd:
Rev'd:

Watershed: **During Construction - By-Pass B**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

Segment ID		A - B			
Surface Description		Grass			Elev. A = 249.00
Manning's Roughness Coefficient, n		0.24			Elev. B = 245.50
Flow Length, L	ft.	150			Chg. Elev. = 3.50
Two Year 24 Hour Rainfall, P2	in.	3.31			
Land Slope, s	ft/ft	0.0233			
Tt = 0.007(nL)^0.8 / (P2^0.5)(s^0.4)	hr	0.3041			
Sheet flow Subtotal Tt =	**hr**			**0.3041**	

Shallow concentrated flow

Segment ID		B - C	C - D		
Surface Description (paved or unpaved)		Unpaved	Paved		Elev. B = 245.50
Flow Length, L	ft	73	90		Elev. C = 244.50
Watercourse Slope, s	ft/ft	0.0137	0.0060		Chg. Elev. = 1.00
Average Velociity, V (figure B-8)	fps	1.89	1.57		Elev. C = 244.50
Tt = L / (3600 x V)	hr	0.0107	0.0159		Elev. D = 243.96
Shallow concentrated flow Subtotal Tt =	**hr**			**0.0266**	Chg. Elev. = 0.54

Channel flow

Segment ID				
Cross Sectional Flow Area, a	sq ft			
Wetted Perimeter, Pw	ft			
Hydraulic Radius, r = a/Pw	ft			
Channel Slope, s	ft/ft			
Manning's Roughness Coefficient, n				
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Flow length, L	ft			
Tt = L / (3600 x V)	hr			
Channel flow Subtotal Tt =	**hr**			

Pipe flow

Segment ID				
Structure 'From' - 'To'				
Flow Length, L	ft			
Pipe Diameter, D	in			
Manning's Roughness Coefficient, n				
Pipe Slope, s	ft/ft			
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Tt = L / (3600 x V)	hr			
Pipe flow Subtotal Tt =	**hr**			

Total Tt = 0.3307
Tt (min) = 19.844

Total Hydraulic Length =	313
Total Elevation Change =	5.0
Average Slope =	1.61%

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 2/7/2023
Chk'd:
Rev'd:

Watershed: **During Construction - By-Pass C**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

	Segment ID			
Surface Description				
Manning's Roughness Coefficient, n				
Flow Length, L	ft.			
Two Year 24 Hour Rainfall, P2	in.			
Land Slope, s	ft/ft			
Tt = $\frac{0.007(nL)^{0.8}}{(P2^{0.5})(s^{0.4})}$	hr			
Sheet flow Subtotal Tt =	**hr**			

Shallow concentrated flow

	Segment ID			
Surface Description (paved or unpaved)				
Flow Length, L	ft			
Watercourse Slope, s	ft/ft			
Average Velociity, V (figure B-8)	fps			
Tt = $\frac{L}{(3600 \times V)}$	hr			
Shallow concentrated flow Subtotal Tt =	**hr**			

Channel flow

	Segment ID			
Cross Sectional Flow Area, a	sq ft			
Wetted Perimeter, Pw	ft			
Hydraulic Radius, r = a/Pw	ft			
Channel Slope, s	ft/ft			
Manning's Roughness Coefficient, n				
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Flow length, L	ft			
Tt = $\frac{L}{(3600 \times V)}$	hr			
Channel flow Subtotal Tt =	**hr**			

Pipe flow

	Segment ID			
Structure 'From' - 'To'				
Flow Length, L	ft			
Pipe Diameter, D	in			
Manning's Roughness Coefficient, n				
Pipe Slope, s	ft/ft			
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Tt = $\frac{L}{(3600 \times V)}$	hr			
Pipe flow Subtotal Tt =	**hr**			

Total Tt =
Tt (min) = 5.000

Total Hydraulic Length =
Total Elevation Change =
Average Slope =

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 2/7/2023
Chk'd:
Rev'd:

Watershed: **During Construction - By-Pass D**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

	Segment ID	A - B			Elev. A = 250.00
Surface Description		Disturbed			Elev. B = 247.80
Manning's Roughness Coefficient, n		0.13			Chg. Elev. = 2.20
Flow Length, L	ft.	150			
Two Year 24 Hour Rainfall, P2	in.	3.31			
Land Slope, s	ft/ft	0.0147			
Tt = 0.007(nL)^0.8 / (P2^0.5)(s^0.4)	hr	0.2242			
Sheet flow Subtotal Tt =	**hr**			**0.2242**	

Shallow concentrated flow

	Segment ID	B - C			Elev. B = 247.80
Surface Description (paved or unpaved)		Unpaved			Elev. C = 240.20
Flow Length, L	ft	238			Chg. Elev. = 7.60
Watercourse Slope, s	ft/ft	0.0319			240.20
Average Velociity, V (figure B-8)	fps	2.88			
Tt = L / (3600 x V)	hr	0.0229			
Shallow concentrated flow Subtotal Tt =	**hr**			**0.0229**	

Channel flow

	Segment ID			
Cross Sectional Flow Area, a	sq ft			
Wetted Perimeter, Pw	ft			
Hydraulic Radius, r = a/Pw	ft			
Channel Slope, s	ft/ft			
Manning's Roughness Coefficient, n				
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Flow length, L	ft			
Tt = L / (3600 x V)	hr			
Channel flow Subtotal Tt =	**hr**			

Pipe flow

	Segment ID			
Structure 'From' - 'To'				
Flow Length, L	ft			
Pipe Diameter, D	in			
Manning's Roughness Coefficient, n				
Pipe Slope, s	ft/ft			
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Tt = L / (3600 x V)	hr			
Pipe flow Subtotal Tt =	**hr**			

Total Tt = 0.2472
Tt (min) = 14.829

Total Hydraulic Length =	388
Total Elevation Change =	9.8
Average Slope =	2.53%

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 3/6/2023
Chk'd:
Rev'd:

Watershed: **During Construction - By-Pass E**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

	Segment ID	A - B			Elev. A = 252.00
Surface Description		Grass			Elev. B = 246.00
Manning's Roughness Coefficient, n		0.24			Chg. Elev. = 6.00
Flow Length, L	ft.	150			
Two Year 24 Hour Rainfall, P2	in.	3.31			
Land Slope, s	ft/ft	0.0400			
Tt = $\frac{0.007(nL)^{0.8}}{(P2^{0.5})(s^{0.4})}$	hr	0.2451			
Sheet flow Subtotal Tt =	**hr**			**0.2451**	

Shallow concentrated flow

	Segment ID	B - C			Elev. B = 246.00
Surface Description (paved or unpaved)		Unpaved			Elev. C = 223.76
Flow Length, L	ft	800			Chg. Elev. = 22.24
Watercourse Slope, s	ft/ft	0.0278			
Average Velociity, V (figure B-8)	fps	2.69			
Tt = $\frac{L}{(3600 \times V)}$	hr	0.0826			
Shallow concentrated flow Subtotal Tt =	**hr**			**0.0826**	

Channel flow

	Segment ID			
Cross Sectional Flow Area, a	sq ft			
Wetted Perimeter, Pw	ft			
Hydraulic Radius, r = a/Pw	ft			
Channel Slope, s	ft/ft			
Manning's Roughness Coefficient, n				
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Flow length, L	ft			
Tt = $\frac{L}{(3600 \times V)}$	hr			
Channel flow Subtotal Tt =	**hr**			

Pipe flow

	Segment ID			
Structure 'From' - 'To'				
Flow Length, L	ft			
Pipe Diameter, D	in			
Manning's Roughness Coefficient, n				
Pipe Slope, s	ft/ft			
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Tt = $\frac{L}{(3600 \times V)}$	hr			
Pipe flow Subtotal Tt =	**hr**			

Total Tt = 0.3277
Tt (min) = 19.664

Total Hydraulic Length =	950
Total Elevation Change =	28.2
Average Slope =	2.97%

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 3/7/2023
Chk'd:
Rev'd:

Watershed: **During Construction - By-Pass F**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

	Segment ID	A - B	B - C		
Surface Description		Grass	Woods		Elev. A = 239.00
Manning's Roughness Coefficient, n		0.24	0.4		Elev. B = 234.00
Flow Length, L	ft.	30	70		Chg. Elev. = 5.00
Two Year 24 Hour Rainfall, P2	in.	3.31	3.31		Elev. B = 234.00
Land Slope, s	ft/ft	0.1667	0.1071		Elev. C = 226.50
					Chg. Elev. = 7.50
$Tt = \frac{0.007(nL)^{0.8}}{(P2^{0.5})(s^{0.4})}$	hr	0.0382	0.1352		
Sheet flow Subtotal Tt =	**hr**			**0.1734**	

Shallow concentrated flow

	Segment ID	B - C			
Surface Description (paved or unpaved)		Unpaved			Elev. B = 234.00
Flow Length, L	ft	230			Elev. C = 214.00
Watercourse Slope, s	ft/ft	0.0870			Chg. Elev. = 20.00
Average Velociity, V (figure B-8)	fps	4.76			214.00
$Tt = \frac{L}{(3600 \times V)}$	hr	0.0134			
Shallow concentrated flow Subtotal Tt =	**hr**			**0.0134**	

Channel flow

	Segment ID			
Cross Sectional Flow Area, a	sq ft			
Wetted Perimeter, Pw	ft			
Hydraulic Radius, r = a/Pw	ft			
Channel Slope, s	ft/ft			
Manning's Roughness Coefficient, n				
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Flow length, L	ft			
$Tt = \frac{L}{(3600 \times V)}$	hr			
Channel flow Subtotal Tt =	**hr**			

Pipe flow

	Segment ID			
Structure 'From' - 'To'				
Flow Length, L	ft			
Pipe Diameter, D	in			
Manning's Roughness Coefficient, n				
Pipe Slope, s	ft/ft			
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
$Tt = \frac{L}{(3600 \times V)}$	hr			
Pipe flow Subtotal Tt =	**hr**			

Total Tt = 0.1868
Tt (min) = 11.210

Total Hydraulic Length =	330
Total Elevation Change =	32.5
Average Slope =	9.85%

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 3/6/2023
Chk'd:
Rev'd:

Watershed: **Post Developed - By-pass G**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

		Segment ID	A - B		
Surface Description			Grass		
Manning's Roughness Coefficient, n			0.24		
Flow Length, L		ft.	150		
Two Year 24 Hour Rainfall, P2		in.	3.31		
Land Slope, s		ft/ft	0.0873		
Tt =	0.007(nL)^0.8 / (P2^0.5)(s^0.4)	hr	0.1794		
Sheet flow Subtotal Tt =		**hr**			**0.1794**

Elev. A = 245.10
Elev. B = 232.00
Chg. Elev. = 13.10

Shallow concentrated flow

		Segment ID	B - C		
Surface Description (paved or unpaved)			Unpaved		
Flow Length, L		ft	92		
Watercourse Slope, s		ft/ft	0.0489		
Average Velociity, V (figure B-8)		fps	3.57		
Tt =	L / (3600 x V)	hr	0.0072		
Shallow concentrated flow Subtotal Tt =		**hr**			**0.0072**

Elev. B = 232.00
Elev. C = 227.50
Chg. Elev. = 4.50

Channel flow

		Segment ID			
Cross Sectional Flow Area, a		sq ft			
Wetted Perimeter, Pw		ft			
Hydraulic Radius, r = a/Pw		ft			
Channel Slope, s		ft/ft			
Manning's Roughness Coefficient, n					
Velocity, V = (1.486)(r^2/3)(s^1/2)/n		fps			
Flow length, L		ft			
Tt =	L / (3600 x V)	hr			
Channel flow Subtotal Tt =		**hr**			

Pipe flow

		Segment ID			
Structure 'From' - 'To'					
Flow Length, L		ft			
Pipe Diameter, D		in			
Manning's Roughness Coefficient, n					
Pipe Slope, s		ft/ft			
Velocity, V = (1.486)(r^2/3)(s^1/2)/n		fps			
Tt =	L / (3600 x V)	hr			
Pipe flow Subtotal Tt =		**hr**			

Total Tt = 0.1865
Tt (min) = 11.192

Total Hydraulic Length =	242
Total Elevation Change =	17.6
Average Slope =	7.27%

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 3/7/2023
Chk'd:
Rev'd:

Watershed: **During Construction - (E&S Basin 3A)**

TIME OF CONCENTRATION

(S.C.S. TR-55 method)

Sheet Flow

Segment ID		-		
Surface Description		Grass		
Manning's Roughness Coefficient, n		0.24		
Flow Length, L	ft.			
Two Year 24 Hour Rainfall, P2	in.	3.31		
Land Slope, s	ft/ft			
$Tt = \frac{0.007(nL)^{0.8}}{(P2^{0.5})(s^{0.4})}$	hr			
Sheet flow Subtotal Tt =	**hr**			

Shallow concentrated flow

Segment ID				
Surface Description (paved or unpaved)		unpaved		
Flow Length, L	ft			
Watercourse Slope, s	ft/ft			
Average Velociity, V (figure B-8)	fps			
$Tt = \frac{L}{(3600 \times V)}$	hr			
Shallow concentrated flow Subtotal Tt =	**hr**			

Channel flow

Segment ID				
Cross Sectional Flow Area, a	sq ft			
Wetted Perimeter, Pw	ft			
Hydraulic Radius, r = a/Pw	ft			
Channel Slope, s	ft/ft			
Manning's Roughness Coefficient, n				
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Flow length, L	ft			
$Tt = \frac{L}{(3600 \times V)}$	hr			
Channel flow Subtotal Tt =	**hr**			

Pipe flow

Segment ID				
Structure 'From' - 'To'				
Flow Length, L	ft			
Pipe Diameter, D	in			
Manning's Roughness Coefficient, n		0.013		
Pipe Slope, s	ft/ft	#DIV/0!		
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps	1.50		
$Tt = \frac{L}{(3600 \times V)}$	hr			
Pipe flow Subtotal Tt =	**hr**			

Total Tt =
Tt (min) = 5 minutes

Total Hydraulic Length =
Total Elevation Change =
Average Slope =

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 3/7/2023
Chk'd:
Rev'd:

Watershed: **During Construction - (E&S Basin 3B)**

TIME OF CONCENTRATION

(S.C.S. TR-55 method)

Sheet Flow

	Segment ID			
Surface Description				
Manning's Roughness Coefficient, n				
Flow Length, L	ft.			
Two Year 24 Hour Rainfall, P2	in.			
Land Slope, s	ft/ft			
Tt = $\frac{0.007(nL)^{0.8}}{(P2^{0.5})(s^{0.4})}$	hr			
Sheet flow Subtotal Tt =	**hr**			

Shallow concentrated flow

	Segment ID			
Surface Description (paved or unpaved)				
Flow Length, L	ft			
Watercourse Slope, s	ft/ft			
Average Velociity, V (figure B-8)	fps			
Tt = $\frac{L}{(3600 \times V)}$	hr			
Shallow concentrated flow Subtotal Tt =	**hr**			

Channel flow

	Segment ID			
Cross Sectional Flow Area, a	sq ft			
Wetted Perimeter, Pw	ft			
Hydraulic Radius, r = a/Pw	ft			
Channel Slope, s	ft/ft			
Manning's Roughness Coefficient, n				
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Flow length, L	ft			
Tt = $\frac{L}{(3600 \times V)}$	hr			
Channel flow Subtotal Tt =	**hr**			

Pipe flow

	Segment ID	A - B			
Structure 'From' - 'To'					Elev. A =
Flow Length, L	ft				Elev. B =
Pipe Diameter, D	in				Chg. Elev. =
Manning's Roughness Coefficient, n					
Pipe Slope, s	ft/ft	#DIV/0!			
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps				
Tt = $\frac{L}{(3600 \times V)}$	hr	0.0833			
Pipe flow Subtotal Tt =	**hr**			**0.0833**	

Total Tt = 0.0833
Tt (min) = 5.000

Total Hydraulic Length =
Total Elevation Change =
Average Slope =

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 3/7/2023
Chk'd:
Rev'd:

Watershed: **During Construction - (E&S Basin 4)**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

		Segment ID	A - B		
Surface Description			Grass		
Manning's Roughness Coefficient, n			0.24		
Flow Length, L		ft.	37		
Two Year 24 Hour Rainfall, P2		in.	3.31		
Land Slope, s		ft/ft	0.1027		
Tt =	0.007(nL)^0.8 / (P2^0.5)(s^0.4)	hr	0.0549		
Sheet flow Subtotal Tt =		**hr**			**0.0549**

Elev. A = 253.30
Elev. B = 249.50
Chg. Elev. = 3.80

Shallow concentrated flow

		Segment ID			
Surface Description (paved or unpaved)					
Flow Length, L		ft			
Watercourse Slope, s		ft/ft			
Average Velociity, V (figure B-8)		fps			
Tt =	L / (3600 x V)	hr			
Shallow concentrated flow Subtotal Tt =		**hr**			

Channel flow

		Segment ID			
Cross Sectional Flow Area, a		sq ft			
Wetted Perimeter, Pw		ft			
Hydraulic Radius, r = a/Pw		ft			
Channel Slope, s		ft/ft			
Manning's Roughness Coefficient, n					
Velocity, V = (1.486)(r^2/3)(s^1/2)/n		fps			
Flow length, L		ft			
Tt =	L / (3600 x V)	hr			
Channel flow Subtotal Tt =		**hr**			

Pipe flow

		Segment ID	B - C		
Structure 'From' - 'To'			START TO END		
Flow Length, L		ft	835		
Pipe Diameter, D		in	varies		
Manning's Roughness Coefficient, n			0.013		
Pipe Slope, s		ft/ft	0.016		
Velocity, V = (1.486)(r^2/3)(s^1/2)/n		fps	2.00		
Tt =	L / (3600 x V)	hr	0.1160		
Pipe flow Subtotal Tt =		**hr**			**0.1160**

Elev. B = 249.50
Elev. C = 236.00
Chg. Elev. = 13.50

Total Tt = 0.1708
Tt (min) = 10.250

Total Hydraulic Length =	872
Total Elevation Change =	17.3
Average Slope =	1.98%

During Construction Cn

7

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 2/10/2023
Chk'd: 3/3/2023
Rev'd:

Watershed: **During Construction - (E&S Basin 1)**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B/C	(On-site) Building Impervious	98	2.41	236.23
B/C	Disturbed Soil (Future (On-site) Impervious)	91	2.33	211.61
B	Disturbed Soil	86	3.92	336.74
C	Disturbed Soil	91	0.87	79.10
B	Residentail 1/4 Ac Lot (offsite)	75	0.30	22.83
Totals =			9.83	886.51

$$\text{Composite Cn} = \frac{886.51}{9.83} = 90.23$$

USE Cn = 90.2

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 1/25/2023
Chk'd:
Rev'd:

Watershed: **During Construction - By-Pass A**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B	Existing Road	98	0.06	5.52
B/C/D	(On-site) Impervious	98	0.01	0.59
B	Lawn (Good Condition)	61.0	0.69	42.20
B	Disturbed Soil	86.0	0.24	20.65

Totals = 0.99 | 68.97

Composite Cn = $\frac{68.97}{0.99}$ = 69.36

USE Cn = 69

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 2/10/2023
Chk'd:
Rev'd:

Watershed: **During Construction - By-Pass B**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				
B/C	Existing Road	98	0.31	30.65
B/C	(On-site) Impervious	98	0.27	26.20
B	Disturbed Soil	86	0.33	28.37
C	Disturbed Soil	91	0.71	64.80
B	Residentail 1/4 Ac Lot (offsite)	75	0.08	6.23
B	Meadow (good)	58	0.10	5.85
C	Meadow (good)	71	0.10	7.10
Totals =			1.91	169.19

Composite Cn = $\frac{169.19}{1.91}$ = 88.77

USE Cn = 89

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: JMM
Date: 11/23/2021
Chk'd:
Rev'd:

Watershed: **During Construction - By-Pass C**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B	Disturbed Soil	86	0.05	4.54
B	Lawn (Good Condition)	61	0.20	12.18
Totals =			0.25	16.72

Composite Cn = $\frac{16.72}{0.25}$ = 66.23

USE Cn = 66

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 2/28/2023
Chk'd:
Rev'd: 03/06/23

Watershed: **During Construction - By-Pass D**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				
B	Residentail 1/4 Ac Lot (offsite)	75	0.91	68.60
B	Disturbed	86	0.51	43.47
C	Disturbed	91	1.67	152.37
Totals =			3.09	264.44

Composite Cn = $\frac{264.44}{3.09}$ = 85.45

USE Cn = 85

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 2/23/2023
Chk'd:
Rev'd: 03/06/23

Watershed: **During Construction - By-Pass E**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B	(Off-site) 1/3 Acre Residential Lots	72	2.17	156.00
C	(Off-site) 1/3 Acre Residential Lots	81	0.07	6.04
B	Meadow (good)	58	2.67	154.92
B	Woods (good)	55	1.24	68.31
D	Woods (good)	77	0.73	56.52
B	Lawn	61	0.12	7.46
C	Lawn	74	0.75	55.67
C	Disturbed	91	0.35	32.12

Totals = 8.12 537.03

Composite Cn = $\frac{537.03}{8.12}$ = 66.17

USE Cn = 66.2

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 3/7/2023
Chk'd:
Rev'd:

Watershed: **During Construction - By-Pass F**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B	Woods (good)	55	1.18	64.65
C	Woods (good)	70	0.00	0.19
D	Woods (good)	77	1.35	103.65
B	Disturbed	86	0.19	16.22
C	Disturbed	91	0.07	6.01
B	Meadow (good)	58	0.39	22.86
Totals =			3.17	213.59

Composite Cn = $\frac{213.59}{3.17}$ = 67.31

USE Cn = 67.3

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 2/23/2023
Chk'd:
Rev'd: 03/06/23

Watershed: **During Construction - By-pass G**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B	(Off-site) 1/4 Acre Residential Lots	75	0.68	51.32
B	Woods (good)	55	0.58	32.07
C	Woods (good)	70	0.06	3.92
D	Woods (good)	77	0.02	1.49
B	Lawn	61	0.44	27.11
C	Disturbed	91	1.14	103.80

Totals = 2.93 219.72

Composite Cn = $\frac{219.72}{2.93}$ = 75.04

USE Cn = 75.0

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 3/1/2023
Chk'd:
Rev'd:

Watershed: **During Construction - (E&S Basin 3A)**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B/C/D	(On-site) Impervious	98	1.67	163.32
B/C/D	Disturbed Soil (Future (On-site) Impervious)	91	2.07	188.02
B	Lawn	61	2.11	128.92
C	Lawn	74	0.97	71.64

Totals = 6.81 551.88

Composite Cn = $\frac{551.88}{6.81}$ = 80.99

USE Cn = 81.0

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 3/1/2023
Chk'd:
Rev'd:

Watershed: **During Construction - (E&S Basin 3B)**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B	Lawn	61	0.43	26.20

Totals =	0.43	26.20

Composite Cn = $\frac{26.20}{0.43}$ = 61.00

USE Cn = 61.0

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 3/7/2023
Chk'd:
Rev'd:

Watershed: **During Construction - (E&S Basin 4)**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B/C	(On-site) Impervious	98	2.80	274.65
B/C	Disturbed Soil (Future (On-site) Impervious)	91	4.10	372.90
B	Lawn	61	0.81	49.22
C	Lawn	74	4.64	343.67
C	Disturbed Soil (Misc Area)	91	3.88	353.08
Totals =			16.23	1393.52

Composite Cn = $\frac{1393.52}{16.23}$ = 85.85

USE Cn = 85.9

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

During Construction Hydrographs

8



Subcat Reach Pond Link

Routing Diagram for 7662-PRE vs DURING
Prepared by ESE Consultants, Inc, Printed 11/30/2023
HydroCAD® 10.20-3c s/n 01254 © 2023 HydroCAD Software Solutions LLC

Summary for Subcatchment 10S: DURING A (BYPASS)

Runoff = 0.44 cfs @ 12.19 hrs, Volume= 0.044 af, Depth= 0.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	0.990	69	
	0.990		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.4					**Direct Entry, Total Tc**

Summary for Subcatchment 20S: DURING B (BYPASS)

Runoff = 3.54 cfs @ 12.12 hrs, Volume= 0.264 af, Depth= 1.67"
Routed to Link 10L : OUTFALL FOX CHASE RD (POST B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	1.900	89	
	1.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.8					**Direct Entry, Total Tc**

Summary for Subcatchment 30S: DURING E&S BASIN 1

Runoff = 27.74 cfs @ 12.00 hrs, Volume= 1.431 af, Depth= 1.75"
Routed to Pond 10P : ENS BASIN 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	9.830	90	
	9.830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2					**Direct Entry, Total Tc**

Summary for Subcatchment 40S: DURING C (BYPASS)

Runoff = 0.17 cfs @ 11.98 hrs, Volume= 0.009 af, Depth= 0.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	0.250	66	
	0.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 50S: DURING D (BYPASS)

Runoff = 5.53 cfs @ 12.07 hrs, Volume= 0.353 af, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	3.090	85	
	3.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8					**Direct Entry,**

Summary for Subcatchment 60S: DURING G (BYPASS)

Runoff = 3.29 cfs @ 12.04 hrs, Volume= 0.194 af, Depth= 0.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	2.930	75	
	2.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2					**Direct Entry,**

Summary for Subcatchment 70S: POST E (BYPASS)

Runoff = 2.77 cfs @ 12.17 hrs, Volume= 0.288 af, Depth= 0.43"
Routed to Link 20L : DURING E TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	8.120	66	
	8.120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7					**Direct Entry,**

Summary for Subcatchment 80S: DURING TO E&S BASIN 3A

Runoff = 14.17 cfs @ 11.96 hrs, Volume= 0.634 af, Depth= 1.12"
Routed to Pond 20P : E&S BASIN 3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	6.810	81	
	6.810		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 90S: TO BASIN 3B

Runoff = 0.14 cfs @ 11.99 hrs, Volume= 0.010 af, Depth= 0.27"
Routed to Pond 30P : BASIN 3B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	0.430	61	
	0.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Time**

Summary for Subcatchment 100S: DURING TO BASIN 4

Runoff = 16.70 cfs @ 12.02 hrs, Volume= 0.913 af, Depth= 1.44"
Routed to Pond 40P : E&S BASIN 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	7.600	86	
	7.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3					**Direct Entry,**

Summary for Subcatchment 110S: DURING F (BYPASS)

Runoff = 1.75 cfs @ 12.06 hrs, Volume= 0.122 af, Depth= 0.46"
Routed to Link 30L : DURING F TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	3.170	67	
	3.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2					**Direct Entry,**

Summary for Pond 10P: ENS BASIN 1

Inflow Area = 9.830 ac, 0.00% Impervious, Inflow Depth = 1.75" for 1-YR event
Inflow = 27.74 cfs @ 12.00 hrs, Volume= 1.431 af
Outflow = 0.24 cfs @ 24.06 hrs, Volume= 1.085 af, Atten= 99%, Lag= 724.1 min
Primary = 0.24 cfs @ 24.06 hrs, Volume= 1.085 af
Routed to Link 10L : OUTFALL FOX CHASE RD (POST B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 241.00' Surf.Area= 21,589 sf Storage= 18,157 cf
Peak Elev= 242.89' @ 24.06 hrs Surf.Area= 30,589 sf Storage= 69,466 cf (51,309 cf above start)

Plug-Flow detention time= 3,286.6 min calculated for 0.668 af (47% of inflow)
Center-of-Mass det. time= 2,138.3 min (2,950.3 - 812.0)

Volume	Invert	Avail.Storage	Storage Description
#1	240.00'	239,353 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
240.00	15,500	0	0
242.00	29,950	45,450	45,450
244.00	35,000	64,950	110,400
246.00	41,600	76,600	187,000
247.50	45,000	64,950	251,950

Device	Routing	Invert	Outlet Devices
#1	Primary	240.29'	**15.0" Round OS Pipe Basin 1 to Road Inlet** L= 84.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 240.29' / 239.87' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	242.50'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	245.00'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	241.00'	**0.12 cfs Exfiltration when above 241.00'**

Primary OutFlow Max=0.24 cfs @ 24.06 hrs HW=242.89' TW=0.00' (Dynamic Tailwater)
└─**1=OS Pipe Basin 1 to Road Inlet** (Passes 0.24 cfs of 6.56 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.12 cfs @ 2.48 fps)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  └─**4=Exfiltration** (Exfiltration Controls 0.12 cfs)

Summary for Pond 20P: E&S BASIN 3A

Inflow Area = 6.810 ac, 0.00% Impervious, Inflow Depth = 1.12" for 1-YR event
Inflow = 14.17 cfs @ 11.96 hrs, Volume= 0.634 af
Outflow = 0.12 cfs @ 11.62 hrs, Volume= 0.634 af, Atten= 99%, Lag= 0.0 min
Secondary = 0.12 cfs @ 11.62 hrs, Volume= 0.634 af
  Routed to Link 20L : DURING E TOTAL
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
  Routed to Link 20L : DURING E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 243.00' Surf.Area= 21,698 sf Storage= 17,974 cf
Peak Elev= 243.92' @ 24.05 hrs Surf.Area= 25,662 sf Storage= 39,692 cf (21,718 cf above start)

Plug-Flow detention time= 3,083.5 min calculated for 0.221 af (35% of inflow)
Center-of-Mass det. time= 1,700.9 min (2,544.2 - 843.3)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	147,827 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	15,000	0	0
243.00	22,840	18,920	18,920
244.00	27,390	25,115	44,035
246.00	32,170	59,560	103,595
247.50	37,180	52,013	155,608

Device	Routing	Invert	Outlet Devices
#1	Secondary	242.50'	**18.0" Round Culvert** L= 33.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0152 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	245.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	244.25'	**3.0" Vert. ENS Skimmer 3" orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	243.00'	**0.12 cfs Exfiltration at top of sediment storgae when above 243.00'**
#5	Tertiary	245.80'	**45.0 deg x 45.0' long x 1.70' rise Spillway BAsin 3A** Cv= 2.56 (C= 3.20)

Secondary OutFlow Max=0.12 cfs @ 11.62 hrs HW=243.02' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.12 cfs of 1.35 cfs potential flow)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  ├─**3=ENS Skimmer 3" orifice** (Controls 0.00 cfs)
  └─**4=Exfiltration at top of sediment storgae** (Exfiltration Controls 0.12 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=243.00' TW=0.00' (Dynamic Tailwater)
└─**5=Spillway BAsin 3A** (Controls 0.00 cfs)

Summary for Pond 30P: BASIN 3B

Inflow Area = 0.430 ac, 0.00% Impervious, Inflow Depth = 0.27" for 1-YR event
Inflow = 0.14 cfs @ 11.99 hrs, Volume= 0.010 af
Outflow = 0.12 cfs @ 12.02 hrs, Volume= 0.010 af, Atten= 13%, Lag= 1.8 min
Discarded = 0.12 cfs @ 12.02 hrs, Volume= 0.010 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 20L : DURING E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 242.53' @ 12.02 hrs Surf.Area= 8,109 sf Storage= 3 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	386 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 0.95 38,615 cf Overall x 1.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	8,470	0	0
244.00	11,340	14,858	14,858
246.00	14,450	25,790	40,648

Device	Routing	Invert	Outlet Devices
#1	Discarded	242.50'	**1.280 in/hr Exfiltration X 0.50 over Surface area** Conductivity to Groundwater Elevation = 240.00'
#2	Primary	238.00'	**15.0" Round Culvert** L= 43.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 238.00' / 236.00' S= 0.0465 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	244.25'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.12 cfs @ 12.02 hrs HW=242.53' (Free Discharge)
└**1=Exfiltration** (Controls 0.12 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=242.50' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.00 cfs of 11.63 cfs potential flow)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 40P: E&S BASIN 4

Inflow Area = 7.600 ac, 0.00% Impervious, Inflow Depth = 1.44" for 1-YR event
Inflow = 16.70 cfs @ 12.02 hrs, Volume= 0.913 af
Outflow = 0.12 cfs @ 10.76 hrs, Volume= 0.901 af, Atten= 99%, Lag= 0.0 min
Primary = 0.12 cfs @ 10.76 hrs, Volume= 0.901 af
Routed to Link 30L : DURING F TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 232.10' Surf.Area= 17,751 sf Storage= 22,191 cf
Peak Elev= 233.83' @ 24.13 hrs Surf.Area= 20,787 sf Storage= 55,477 cf (33,286 cf above start)

Plug-Flow detention time= 4,108.8 min calculated for 0.391 af (43% of inflow)
Center-of-Mass det. time= 2,444.5 min (3,274.8 - 830.3)

Volume	Invert	Avail.Storage	Storage Description
#1	230.00'	212,173 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
230.00	4,900	0	0
231.00	9,800	7,350	7,350
232.00	18,500	14,150	21,500
234.00	22,200	40,700	62,200
236.00	26,900	49,100	111,300
238.00	31,300	58,200	169,500
239.60	36,000	53,840	223,340

Device	Routing	Invert	Outlet Devices
#1	Primary	230.50'	**24.0" Round Culvert** L= 61.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 230.50' / 230.00' S= 0.0082 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	236.70'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	232.10'	**0.12 cfs Exfiltration when above 232.10'**

Primary OutFlow Max=0.12 cfs @ 10.76 hrs HW=232.11' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.12 cfs of 10.31 cfs potential flow)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Exfiltration** (Exfiltration Controls 0.12 cfs)

Summary for Link 10L: OUTFALL FOX CHASE RD (POST B)

Inflow Area = 11.730 ac, 0.00% Impervious, Inflow Depth > 1.38" for 1-YR event
Inflow = 3.66 cfs @ 12.12 hrs, Volume= 1.349 af
Primary = 3.66 cfs @ 12.12 hrs, Volume= 1.349 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 20L: DURING E TOTAL

Inflow Area = 8.550 ac, 0.00% Impervious, Inflow Depth = 1.29" for 1-YR event
Inflow = 2.89 cfs @ 12.17 hrs, Volume= 0.922 af
Primary = 2.89 cfs @ 12.17 hrs, Volume= 0.922 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 30L: DURING F TOTAL

Inflow Area = 10.770 ac, 0.00% Impervious, Inflow Depth > 1.14" for 1-YR event
Inflow = 1.87 cfs @ 12.06 hrs, Volume= 1.023 af
Primary = 1.87 cfs @ 12.06 hrs, Volume= 1.023 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 10S: DURING A (BYPASS)

Runoff = 0.77 cfs @ 12.17 hrs, Volume= 0.069 af, Depth= 0.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	0.990	69	
	0.990		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.4					**Direct Entry, Total Tc**

Summary for Subcatchment 20S: DURING B (BYPASS)

Runoff = 4.62 cfs @ 12.12 hrs, Volume= 0.346 af, Depth= 2.18"
Routed to Link 10L : OUTFALL FOX CHASE RD (POST B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	1.900	89	
	1.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.8					**Direct Entry, Total Tc**

Summary for Subcatchment 30S: DURING E&S BASIN 1

Runoff = 35.62 cfs @ 12.00 hrs, Volume= 1.860 af, Depth= 2.27"
Routed to Pond 10P : ENS BASIN 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	9.830	90	
	9.830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2					**Direct Entry, Total Tc**

Summary for Subcatchment 40S: DURING C (BYPASS)

Runoff = 0.30 cfs @ 11.97 hrs, Volume= 0.015 af, Depth= 0.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	0.250	66	
	0.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 50S: DURING D (BYPASS)

Runoff = 7.46 cfs @ 12.07 hrs, Volume= 0.477 af, Depth= 1.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	3.090	85	
	3.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8					**Direct Entry,**

Summary for Subcatchment 60S: DURING G (BYPASS)

Runoff = 4.97 cfs @ 12.04 hrs, Volume= 0.285 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	2.930	75	
	2.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2					**Direct Entry,**

Summary for Subcatchment 70S: POST E (BYPASS)

Runoff = 5.34 cfs @ 12.15 hrs, Volume= 0.473 af, Depth= 0.70"
Routed to Link 20L : DURING E TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	8.120	66	
	8.120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7					**Direct Entry,**

Summary for Subcatchment 80S: DURING TO E&S BASIN 3A

Runoff = 19.70 cfs @ 11.96 hrs, Volume= 0.883 af, Depth= 1.56"
Routed to Pond 20P : E&S BASIN 3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	6.810	81	
	6.810		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 90S: TO BASIN 3B

Runoff = 0.33 cfs @ 11.98 hrs, Volume= 0.018 af, Depth= 0.49"
Routed to Pond 30P : BASIN 3B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	0.430	61	
	0.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Time**

Summary for Subcatchment 100S: DURING TO BASIN 4

Runoff = 22.23 cfs @ 12.02 hrs, Volume= 1.223 af, Depth= 1.93"
Routed to Pond 40P : E&S BASIN 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	7.600	86	
	7.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3					**Direct Entry,**

Summary for Subcatchment 110S: DURING F (BYPASS)

Runoff = 3.15 cfs @ 12.05 hrs, Volume= 0.197 af, Depth= 0.75"
Routed to Link 30L : DURING F TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	3.170	67	
	3.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2					**Direct Entry,**

Summary for Pond 10P: ENS BASIN 1

Inflow Area = 9.830 ac, 0.00% Impervious, Inflow Depth = 2.27" for 2-YR event
Inflow = 35.62 cfs @ 12.00 hrs, Volume= 1.860 af
Outflow = 0.32 cfs @ 24.05 hrs, Volume= 1.375 af, Atten= 99%, Lag= 723.2 min
Primary = 0.32 cfs @ 24.05 hrs, Volume= 1.375 af
Routed to Link 10L : OUTFALL FOX CHASE RD (POST B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 241.00' Surf.Area= 21,589 sf Storage= 18,157 cf
Peak Elev= 243.35' @ 24.05 hrs Surf.Area= 31,687 sf Storage= 83,727 cf (65,570 cf above start)

Plug-Flow detention time= 2,709.7 min calculated for 0.958 af (52% of inflow)
Center-of-Mass det. time= 1,896.7 min (2,701.3 - 804.5)

Volume	Invert	Avail.Storage	Storage Description
#1	240.00'	239,353 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
240.00	15,500	0	0
242.00	29,950	45,450	45,450
244.00	35,000	64,950	110,400
246.00	41,600	76,600	187,000
247.50	45,000	64,950	251,950

Device	Routing	Invert	Outlet Devices
#1	Primary	240.29'	**15.0" Round OS Pipe Basin 1 to Road Inlet** L= 84.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 240.29' / 239.87' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	242.50'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	245.00'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	241.00'	**0.12 cfs Exfiltration when above 241.00'**

Primary OutFlow Max=0.32 cfs @ 24.05 hrs HW=243.35' TW=0.00' (Dynamic Tailwater)
└─**1=OS Pipe Basin 1 to Road Inlet** (Passes 0.32 cfs of 7.28 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.20 cfs @ 4.10 fps)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  └─**4=Exfiltration** (Exfiltration Controls 0.12 cfs)

Summary for Pond 20P: E&S BASIN 3A

Inflow Area = 6.810 ac, 0.00% Impervious, Inflow Depth = 1.56" for 2-YR event
Inflow = 19.70 cfs @ 11.96 hrs, Volume= 0.883 af
Outflow = 0.13 cfs @ 24.06 hrs, Volume= 0.883 af, Atten= 99%, Lag= 725.8 min
Secondary = 0.13 cfs @ 24.06 hrs, Volume= 0.883 af
  Routed to Link 20L : DURING E TOTAL
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
  Routed to Link 20L : DURING E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 243.00' Surf.Area= 21,698 sf Storage= 17,974 cf
Peak Elev= 244.32' @ 24.06 hrs Surf.Area= 26,737 sf Storage= 50,159 cf (32,185 cf above start)

Plug-Flow detention time= 3,775.7 min calculated for 0.470 af (53% of inflow)
Center-of-Mass det. time= 2,407.5 min (3,241.2 - 833.7)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	147,827 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	15,000	0	0
243.00	22,840	18,920	18,920
244.00	27,390	25,115	44,035
246.00	32,170	59,560	103,595
247.50	37,180	52,013	155,608

Device	Routing	Invert	Outlet Devices
#1	Secondary	242.50'	**18.0" Round Culvert** L= 33.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0152 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	245.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	244.25'	**3.0" Vert. ENS Skimmer 3" orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	243.00'	**0.12 cfs Exfiltration at top of sediment storgae when above 243.00'**
#5	Tertiary	245.80'	**45.0 deg x 45.0' long x 1.70' rise Spillway BAsin 3A** Cv= 2.56 (C= 3.20)

Secondary OutFlow Max=0.13 cfs @ 24.06 hrs HW=244.32' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.13 cfs of 8.78 cfs potential flow)
  - **2=Orifice/Grate** (Controls 0.00 cfs)
  - **3=ENS Skimmer 3" orifice** (Orifice Controls 0.01 cfs @ 0.87 fps)
  - **4=Exfiltration at top of sediment storgae** (Exfiltration Controls 0.12 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=243.00' TW=0.00' (Dynamic Tailwater)
- **5=Spillway BAsin 3A** (Controls 0.00 cfs)

Summary for Pond 30P: BASIN 3B

Inflow Area = 0.430 ac, 0.00% Impervious, Inflow Depth = 0.49" for 2-YR event
Inflow = 0.33 cfs @ 11.98 hrs, Volume= 0.018 af
Outflow = 0.17 cfs @ 12.05 hrs, Volume= 0.018 af, Atten= 47%, Lag= 4.3 min
Discarded = 0.17 cfs @ 12.05 hrs, Volume= 0.018 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 20L : DURING E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 243.20' @ 12.05 hrs Surf.Area= 9,320 sf Storage= 61 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1.1 min (909.0 - 907.9)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	386 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 0.95 38,615 cf Overall x 1.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	8,470	0	0
244.00	11,340	14,858	14,858
246.00	14,450	25,790	40,648

Device	Routing	Invert	Outlet Devices
#1	Discarded	242.50'	**1.280 in/hr Exfiltration X 0.50 over Surface area** Conductivity to Groundwater Elevation = 240.00'
#2	Primary	238.00'	**15.0" Round Culvert** L= 43.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 238.00' / 236.00' S= 0.0465 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	244.25'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.17 cfs @ 12.05 hrs HW=243.20' (Free Discharge)
└**1=Exfiltration** (Controls 0.17 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=242.50' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.00 cfs of 11.63 cfs potential flow)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 40P: E&S BASIN 4

Inflow Area = 7.600 ac, 0.00% Impervious, Inflow Depth = 1.93" for 2-YR event
Inflow = 22.23 cfs @ 12.02 hrs, Volume= 1.223 af
Outflow = 0.12 cfs @ 10.07 hrs, Volume= 0.910 af, Atten= 99%, Lag= 0.0 min
Primary = 0.12 cfs @ 10.07 hrs, Volume= 0.910 af
Routed to Link 30L : DURING F TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 232.10' Surf.Area= 17,751 sf Storage= 22,191 cf
Peak Elev= 234.44' @ 24.15 hrs Surf.Area= 22,070 sf Storage= 68,566 cf (46,375 cf above start)

Plug-Flow detention time= 4,093.9 min calculated for 0.401 af (33% of inflow)
Center-of-Mass det. time= 2,425.5 min (3,247.4 - 822.0)

Volume	Invert	Avail.Storage	Storage Description
#1	230.00'	212,173 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
230.00	4,900	0	0
231.00	9,800	7,350	7,350
232.00	18,500	14,150	21,500
234.00	22,200	40,700	62,200
236.00	26,900	49,100	111,300
238.00	31,300	58,200	169,500
239.60	36,000	53,840	223,340

Device	Routing	Invert	Outlet Devices
#1	Primary	230.50'	**24.0" Round Culvert** L= 61.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 230.50' / 230.00' S= 0.0082 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	236.70'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	232.10'	**0.12 cfs Exfiltration when above 232.10'**

Primary OutFlow Max=0.12 cfs @ 10.07 hrs HW=232.11' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.12 cfs of 10.31 cfs potential flow)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Exfiltration** (Exfiltration Controls 0.12 cfs)

Summary for Link 10L: OUTFALL FOX CHASE RD (POST B)

Inflow Area = 11.730 ac, 0.00% Impervious, Inflow Depth > 1.76" for 2-YR event
Inflow = 4.74 cfs @ 12.12 hrs, Volume= 1.721 af
Primary = 4.74 cfs @ 12.12 hrs, Volume= 1.721 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 20L: DURING E TOTAL

Inflow Area = 8.550 ac, 0.00% Impervious, Inflow Depth = 1.90" for 2-YR event
Inflow = 5.46 cfs @ 12.15 hrs, Volume= 1.356 af
Primary = 5.46 cfs @ 12.15 hrs, Volume= 1.356 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 30L: DURING F TOTAL

Inflow Area = 10.770 ac, 0.00% Impervious, Inflow Depth > 1.23" for 2-YR event
Inflow = 3.27 cfs @ 12.05 hrs, Volume= 1.107 af
Primary = 3.27 cfs @ 12.05 hrs, Volume= 1.107 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 10S: DURING A (BYPASS)

Runoff = 1.36 cfs @ 12.17 hrs, Volume= 0.114 af, Depth= 1.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	0.990	69	
	0.990		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.4					**Direct Entry, Total Tc**

Summary for Subcatchment 20S: DURING B (BYPASS)

Runoff = 6.27 cfs @ 12.12 hrs, Volume= 0.474 af, Depth= 2.99"
Routed to Link 10L : OUTFALL FOX CHASE RD (POST B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	1.900	89	
	1.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.8					**Direct Entry, Total Tc**

Summary for Subcatchment 30S: DURING E&S BASIN 1

Runoff = 47.63 cfs @ 11.99 hrs, Volume= 2.531 af, Depth= 3.09"
Routed to Pond 10P : ENS BASIN 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	9.830	90	
	9.830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2					**Direct Entry, Total Tc**

Summary for Subcatchment 40S: DURING C (BYPASS)

Runoff = 0.55 cfs @ 11.97 hrs, Volume= 0.025 af, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	0.250	66	
	0.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 50S: DURING D (BYPASS)

Runoff = 10.48 cfs @ 12.07 hrs, Volume= 0.674 af, Depth= 2.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	3.090	85	
	3.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8					**Direct Entry,**

Summary for Subcatchment 60S: DURING G (BYPASS)

Runoff = 7.79 cfs @ 12.03 hrs, Volume= 0.440 af, Depth= 1.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	2.930	75	
	2.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2					**Direct Entry,**

Summary for Subcatchment 70S: POST E (BYPASS)

Runoff = 10.05 cfs @ 12.14 hrs, Volume= 0.809 af, Depth= 1.20"
Routed to Link 20L : DURING E TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	8.120	66	
	8.120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7					**Direct Entry,**

Summary for Subcatchment 80S: DURING TO E&S BASIN 3A

Runoff = 28.52 cfs @ 11.96 hrs, Volume= 1.290 af, Depth= 2.27"
Routed to Pond 20P : E&S BASIN 3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	6.810	81	
	6.810		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 90S: TO BASIN 3B

Runoff = 0.68 cfs @ 11.97 hrs, Volume= 0.032 af, Depth= 0.91"
Routed to Pond 30P : BASIN 3B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	0.430	61	
	0.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Time**

Summary for Subcatchment 100S: DURING TO BASIN 4

Runoff = 30.86 cfs @ 12.02 hrs, Volume= 1.716 af, Depth= 2.71"
Routed to Pond 40P : E&S BASIN 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	7.600	86	
	7.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3					**Direct Entry,**

Summary for Subcatchment 110S: DURING F (BYPASS)

Runoff = 5.66 cfs @ 12.04 hrs, Volume= 0.332 af, Depth= 1.26"
Routed to Link 30L : DURING F TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	3.170	67	
	3.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2					**Direct Entry,**

Summary for Pond 10P: ENS BASIN 1

Inflow Area = 9.830 ac, 0.00% Impervious, Inflow Depth = 3.09" for 5-YR event
Inflow = 47.63 cfs @ 11.99 hrs, Volume= 2.531 af
Outflow = 0.41 cfs @ 24.05 hrs, Volume= 1.860 af, Atten= 99%, Lag= 723.6 min
Primary = 0.41 cfs @ 24.05 hrs, Volume= 1.860 af
Routed to Link 10L : OUTFALL FOX CHASE RD (POST B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 241.00' Surf.Area= 21,589 sf Storage= 18,157 cf
Peak Elev= 244.11' @ 24.05 hrs Surf.Area= 33,590 sf Storage= 108,506 cf (90,350 cf above start)

Plug-Flow detention time= 2,410.1 min calculated for 1.443 af (57% of inflow)
Center-of-Mass det. time= 1,825.8 min (2,621.7 - 795.8)

Volume	Invert	Avail.Storage	Storage Description
#1	240.00'	239,353 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
240.00	15,500	0	0
242.00	29,950	45,450	45,450
244.00	35,000	64,950	110,400
246.00	41,600	76,600	187,000
247.50	45,000	64,950	251,950

Device	Routing	Invert	Outlet Devices
#1	Primary	240.29'	**15.0" Round OS Pipe Basin 1 to Road Inlet** L= 84.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 240.29' / 239.87' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	242.50'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	245.00'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	241.00'	**0.12 cfs Exfiltration when above 241.00'**

Primary OutFlow Max=0.41 cfs @ 24.05 hrs HW=244.11' TW=0.00' (Dynamic Tailwater)
└─**1=OS Pipe Basin 1 to Road Inlet** (Passes 0.41 cfs of 8.34 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.29 cfs @ 5.86 fps)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  └─**4=Exfiltration** (Exfiltration Controls 0.12 cfs)

Summary for Pond 20P: E&S BASIN 3A

Inflow Area = 6.810 ac, 0.00% Impervious, Inflow Depth = 2.27" for 5-YR event
Inflow = 28.52 cfs @ 11.96 hrs, Volume= 1.290 af
Outflow = 0.27 cfs @ 24.02 hrs, Volume= 1.138 af, Atten= 99%, Lag= 723.3 min
Secondary = 0.27 cfs @ 24.02 hrs, Volume= 1.138 af
  Routed to Link 20L : DURING E TOTAL
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
  Routed to Link 20L : DURING E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 243.00' Surf.Area= 21,698 sf Storage= 17,974 cf
Peak Elev= 244.76' @ 24.02 hrs Surf.Area= 27,747 sf Storage= 62,280 cf (44,306 cf above start)

Plug-Flow detention time= 3,119.1 min calculated for 0.725 af (56% of inflow)
Center-of-Mass det. time= 2,069.4 min (2,892.2 - 822.8)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	147,827 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	15,000	0	0
243.00	22,840	18,920	18,920
244.00	27,390	25,115	44,035
246.00	32,170	59,560	103,595
247.50	37,180	52,013	155,608

Device	Routing	Invert	Outlet Devices
#1	Secondary	242.50'	**18.0" Round Culvert** L= 33.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0152 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	245.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	244.25'	**3.0" Vert. ENS Skimmer 3" orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	243.00'	**0.12 cfs Exfiltration at top of sediment storgae when above 243.00'**
#5	Tertiary	245.80'	**45.0 deg x 45.0' long x 1.70' rise Spillway BAsin 3A** Cv= 2.56 (C= 3.20)

Secondary OutFlow Max=0.27 cfs @ 24.02 hrs HW=244.76' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.27 cfs of 10.46 cfs potential flow)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  ├─**3=ENS Skimmer 3" orifice** (Orifice Controls 0.15 cfs @ 2.99 fps)
  └─**4=Exfiltration at top of sediment storgae** (Exfiltration Controls 0.12 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=243.00' TW=0.00' (Dynamic Tailwater)
└─**5=Spillway BAsin 3A** (Controls 0.00 cfs)

Summary for Pond 30P: BASIN 3B

Inflow Area = 0.430 ac, 0.00% Impervious, Inflow Depth = 0.91" for 5-YR event
Inflow = 0.68 cfs @ 11.97 hrs, Volume= 0.032 af
Outflow = 0.68 cfs @ 12.01 hrs, Volume= 0.032 af, Atten= 1%, Lag= 2.3 min
Discarded = 0.27 cfs @ 12.01 hrs, Volume= 0.031 af
Primary = 0.41 cfs @ 12.01 hrs, Volume= 0.001 af
Routed to Link 20L : DURING E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.30' @ 12.01 hrs Surf.Area= 11,215 sf Storage= 174 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.9 min (885.7 - 882.8)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	386 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 0.95 38,615 cf Overall x 1.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	8,470	0	0
244.00	11,340	14,858	14,858
246.00	14,450	25,790	40,648

Device	Routing	Invert	Outlet Devices
#1	Discarded	242.50'	**1.280 in/hr Exfiltration X 0.50 over Surface area** Conductivity to Groundwater Elevation = 240.00'
#2	Primary	238.00'	**15.0" Round Culvert** L= 43.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 238.00' / 236.00' S= 0.0465 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	244.25'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.27 cfs @ 12.01 hrs HW=244.30' (Free Discharge)
└**1=Exfiltration** (Controls 0.27 cfs)

Primary OutFlow Max=0.37 cfs @ 12.01 hrs HW=244.30' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.37 cfs of 14.07 cfs potential flow)
└**3=Orifice/Grate** (Weir Controls 0.37 cfs @ 0.70 fps)

Summary for Pond 40P: E&S BASIN 4

Inflow Area = 7.600 ac, 0.00% Impervious, Inflow Depth = 2.71" for 5-YR event
Inflow = 30.86 cfs @ 12.02 hrs, Volume= 1.716 af
Outflow = 0.12 cfs @ 9.00 hrs, Volume= 0.922 af, Atten= 100%, Lag= 0.0 min
Primary = 0.12 cfs @ 9.00 hrs, Volume= 0.922 af
Routed to Link 30L : DURING F TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 232.10' Surf.Area= 17,751 sf Storage= 22,191 cf
Peak Elev= 235.35' @ 24.17 hrs Surf.Area= 24,098 sf Storage= 89,536 cf (67,344 cf above start)

Plug-Flow detention time= 4,081.1 min calculated for 0.412 af (24% of inflow)
Center-of-Mass det. time= 2,399.8 min (3,212.1 - 812.3)

Volume	Invert	Avail.Storage	Storage Description
#1	230.00'	212,173 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
230.00	4,900	0	0
231.00	9,800	7,350	7,350
232.00	18,500	14,150	21,500
234.00	22,200	40,700	62,200
236.00	26,900	49,100	111,300
238.00	31,300	58,200	169,500
239.60	36,000	53,840	223,340

Device	Routing	Invert	Outlet Devices
#1	Primary	230.50'	**24.0" Round Culvert** L= 61.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 230.50' / 230.00' S= 0.0082 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	236.70'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	232.10'	**0.12 cfs Exfiltration when above 232.10'**

Primary OutFlow Max=0.12 cfs @ 9.00 hrs HW=232.11' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.12 cfs of 10.31 cfs potential flow)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Exfiltration** (Exfiltration Controls 0.12 cfs)

Summary for Link 10L: OUTFALL FOX CHASE RD (POST B)

Inflow Area = 11.730 ac, 0.00% Impervious, Inflow Depth > 2.39" for 5-YR event
Inflow = 6.55 cfs @ 12.12 hrs, Volume= 2.334 af
Primary = 6.55 cfs @ 12.12 hrs, Volume= 2.334 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 20L: DURING E TOTAL

Inflow Area = 8.550 ac, 0.00% Impervious, Inflow Depth > 2.73" for 5-YR event
Inflow = 10.17 cfs @ 12.14 hrs, Volume= 1.947 af
Primary = 10.17 cfs @ 12.14 hrs, Volume= 1.947 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 30L: DURING F TOTAL

Inflow Area = 10.770 ac, 0.00% Impervious, Inflow Depth > 1.40" for 5-YR event
Inflow = 5.78 cfs @ 12.04 hrs, Volume= 1.254 af
Primary = 5.78 cfs @ 12.04 hrs, Volume= 1.254 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 10S: DURING A (BYPASS)

Runoff = 1.91 cfs @ 12.17 hrs, Volume= 0.157 af, Depth= 1.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	0.990	69	
	0.990		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.4					**Direct Entry, Total Tc**

Summary for Subcatchment 20S: DURING B (BYPASS)

Runoff = 7.67 cfs @ 12.12 hrs, Volume= 0.585 af, Depth= 3.70"
Routed to Link 10L : OUTFALL FOX CHASE RD (POST B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	1.900	89	
	1.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.8					**Direct Entry, Total Tc**

Summary for Subcatchment 30S: DURING E&S BASIN 1

Runoff = 57.84 cfs @ 11.99 hrs, Volume= 3.112 af, Depth= 3.80"
Routed to Pond 10P : ENS BASIN 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	9.830	90	
	9.830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2					**Direct Entry, Total Tc**

Summary for Subcatchment 40S: DURING C (BYPASS)

Runoff = 0.78 cfs @ 11.97 hrs, Volume= 0.035 af, Depth= 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	0.250	66	
	0.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 50S: DURING D (BYPASS)

Runoff = 13.10 cfs @ 12.06 hrs, Volume= 0.848 af, Depth= 3.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	3.090	85	
	3.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8					**Direct Entry,**

Summary for Subcatchment 60S: DURING G (BYPASS)

Runoff = 10.33 cfs @ 12.03 hrs, Volume= 0.582 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	2.930	75	
	2.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2					**Direct Entry,**

Summary for Subcatchment 70S: POST E (BYPASS)

Runoff = 14.60 cfs @ 12.14 hrs, Volume= 1.132 af, Depth= 1.67"
Routed to Link 20L : DURING E TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	8.120	66	
	8.120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7					**Direct Entry,**

Summary for Subcatchment 80S: DURING TO E&S BASIN 3A

Runoff = 36.23 cfs @ 11.96 hrs, Volume= 1.654 af, Depth= 2.91"
Routed to Pond 20P : E&S BASIN 3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	6.810	81	
	6.810		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 90S: TO BASIN 3B

Runoff = 1.03 cfs @ 11.97 hrs, Volume= 0.047 af, Depth= 1.32"
Routed to Pond 30P : BASIN 3B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	0.430	61	
	0.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Time**

Summary for Subcatchment 100S: DURING TO BASIN 4

Runoff = 38.26 cfs @ 12.02 hrs, Volume= 2.149 af, Depth= 3.39"
Routed to Pond 40P : E&S BASIN 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	7.600	86	
	7.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3					**Direct Entry,**

Summary for Subcatchment 110S: DURING F (BYPASS)

Runoff = 8.05 cfs @ 12.04 hrs, Volume= 0.462 af, Depth= 1.75"
Routed to Link 30L : DURING F TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	3.170	67	
	3.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2					**Direct Entry,**

Summary for Pond 10P: ENS BASIN 1

Inflow Area = 9.830 ac, 0.00% Impervious, Inflow Depth = 3.80" for 10-YR event
Inflow = 57.84 cfs @ 11.99 hrs, Volume= 3.112 af
Outflow = 0.47 cfs @ 24.06 hrs, Volume= 2.299 af, Atten= 99%, Lag= 724.1 min
Primary = 0.47 cfs @ 24.06 hrs, Volume= 2.299 af
Routed to Link 10L : OUTFALL FOX CHASE RD (POST B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 241.00' Surf.Area= 21,589 sf Storage= 18,157 cf
Peak Elev= 244.76' @ 24.06 hrs Surf.Area= 35,624 sf Storage= 130,961 cf (112,804 cf above start)

Plug-Flow detention time= 2,402.4 min calculated for 1.882 af (60% of inflow)
Center-of-Mass det. time= 1,904.4 min (2,694.5 - 790.1)

Volume	Invert	Avail.Storage	Storage Description
#1	240.00'	239,353 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
240.00	15,500	0	0
242.00	29,950	45,450	45,450
244.00	35,000	64,950	110,400
246.00	41,600	76,600	187,000
247.50	45,000	64,950	251,950

Device	Routing	Invert	Outlet Devices
#1	Primary	240.29'	**15.0" Round OS Pipe Basin 1 to Road Inlet** L= 84.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 240.29' / 239.87' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	242.50'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	245.00'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	241.00'	**0.12 cfs Exfiltration when above 241.00'**

Primary OutFlow Max=0.47 cfs @ 24.06 hrs HW=244.76' TW=0.00' (Dynamic Tailwater)
└─**1=OS Pipe Basin 1 to Road Inlet** (Passes 0.47 cfs of 9.14 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.35 cfs @ 7.03 fps)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  └─**4=Exfiltration** (Exfiltration Controls 0.12 cfs)

Summary for Pond 20P: E&S BASIN 3A

Inflow Area = 6.810 ac, 0.00% Impervious, Inflow Depth = 2.91" for 10-YR event
Inflow = 36.23 cfs @ 11.96 hrs, Volume= 1.654 af
Outflow = 0.33 cfs @ 23.61 hrs, Volume= 1.390 af, Atten= 99%, Lag= 699.1 min
Secondary = 0.33 cfs @ 23.61 hrs, Volume= 1.390 af
  Routed to Link 20L : DURING E TOTAL
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
  Routed to Link 20L : DURING E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 243.00' Surf.Area= 21,698 sf Storage= 17,974 cf
Peak Elev= 245.19' @ 23.61 hrs Surf.Area= 28,732 sf Storage= 74,526 cf (56,552 cf above start)

Plug-Flow detention time= 2,665.2 min calculated for 0.977 af (59% of inflow)
Center-of-Mass det. time= 1,880.8 min (2,696.5 - 815.7)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	147,827 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	15,000	0	0
243.00	22,840	18,920	18,920
244.00	27,390	25,115	44,035
246.00	32,170	59,560	103,595
247.50	37,180	52,013	155,608

Device	Routing	Invert	Outlet Devices
#1	Secondary	242.50'	**18.0" Round Culvert** L= 33.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0152 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	245.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	244.25'	**3.0" Vert. ENS Skimmer 3" orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	243.00'	**0.12 cfs Exfiltration at top of sediment storgae when above 243.00'**
#5	Tertiary	245.80'	**45.0 deg x 45.0' long x 1.70' rise Spillway BAsin 3A** Cv= 2.56 (C= 3.20)

Secondary OutFlow Max=0.33 cfs @ 23.61 hrs HW=245.19' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.33 cfs of 11.86 cfs potential flow)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  ├─**3=ENS Skimmer 3" orifice** (Orifice Controls 0.21 cfs @ 4.36 fps)
  └─**4=Exfiltration at top of sediment storgae** (Exfiltration Controls 0.12 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=243.00' TW=0.00' (Dynamic Tailwater)
└─**5=Spillway BAsin 3A** (Controls 0.00 cfs)

Summary for Pond 30P: BASIN 3B

Inflow Area = 0.430 ac, 0.00% Impervious, Inflow Depth = 1.32" for 10-YR event
Inflow = 1.03 cfs @ 11.97 hrs, Volume= 0.047 af
Outflow = 1.16 cfs @ 11.95 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.27 cfs @ 11.95 hrs, Volume= 0.041 af
Primary = 0.89 cfs @ 11.95 hrs, Volume= 0.006 af
Routed to Link 20L : DURING E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.33' @ 11.95 hrs Surf.Area= 11,260 sf Storage= 177 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.8 min (872.2 - 869.4)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	386 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 0.95 38,615 cf Overall x 1.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	8,470	0	0
244.00	11,340	14,858	14,858
246.00	14,450	25,790	40,648

Device	Routing	Invert	Outlet Devices
#1	Discarded	242.50'	**1.280 in/hr Exfiltration X 0.50 over Surface area** Conductivity to Groundwater Elevation = 240.00'
#2	Primary	238.00'	**15.0" Round Culvert** L= 43.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 238.00' / 236.00' S= 0.0465 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	244.25'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.27 cfs @ 11.95 hrs HW=244.33' (Free Discharge)
└**1=Exfiltration** (Controls 0.27 cfs)

Primary OutFlow Max=0.81 cfs @ 11.95 hrs HW=244.33' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.81 cfs of 14.11 cfs potential flow)
└**3=Orifice/Grate** (Weir Controls 0.81 cfs @ 0.91 fps)

Summary for Pond 40P: E&S BASIN 4

Inflow Area = 7.600 ac, 0.00% Impervious, Inflow Depth = 3.39" for 10-YR event
Inflow = 38.26 cfs @ 12.02 hrs, Volume= 2.149 af
Outflow = 0.12 cfs @ 8.22 hrs, Volume= 0.930 af, Atten= 100%, Lag= 0.0 min
Primary = 0.12 cfs @ 8.22 hrs, Volume= 0.930 af
Routed to Link 30L : DURING F TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 232.10' Surf.Area= 17,751 sf Storage= 22,191 cf
Peak Elev= 236.09' @ 24.18 hrs Surf.Area= 25,739 sf Storage= 107,998 cf (85,807 cf above start)

Plug-Flow detention time= 4,078.3 min calculated for 0.421 af (20% of inflow)
Center-of-Mass det. time= 2,381.1 min (3,187.1 - 805.9)

Volume	Invert	Avail.Storage	Storage Description
#1	230.00'	212,173 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
230.00	4,900	0	0
231.00	9,800	7,350	7,350
232.00	18,500	14,150	21,500
234.00	22,200	40,700	62,200
236.00	26,900	49,100	111,300
238.00	31,300	58,200	169,500
239.60	36,000	53,840	223,340

Device	Routing	Invert	Outlet Devices
#1	Primary	230.50'	**24.0" Round Culvert** L= 61.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 230.50' / 230.00' S= 0.0082 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	236.70'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	232.10'	**0.12 cfs Exfiltration when above 232.10'**

Primary OutFlow Max=0.12 cfs @ 8.22 hrs HW=232.11' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.12 cfs of 10.31 cfs potential flow)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Exfiltration** (Exfiltration Controls 0.12 cfs)

Summary for Link 10L: OUTFALL FOX CHASE RD (POST B)

Inflow Area = 11.730 ac, 0.00% Impervious, Inflow Depth > 2.95" for 10-YR event
Inflow = 8.02 cfs @ 12.12 hrs, Volume= 2.884 af
Primary = 8.02 cfs @ 12.12 hrs, Volume= 2.884 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 20L: DURING E TOTAL

Inflow Area = 8.550 ac, 0.00% Impervious, Inflow Depth > 3.55" for 10-YR event
Inflow = 14.79 cfs @ 12.14 hrs, Volume= 2.528 af
Primary = 14.79 cfs @ 12.14 hrs, Volume= 2.528 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 30L: DURING F TOTAL

Inflow Area = 10.770 ac, 0.00% Impervious, Inflow Depth > 1.55" for 10-YR event
Inflow = 8.17 cfs @ 12.04 hrs, Volume= 1.392 af
Primary = 8.17 cfs @ 12.04 hrs, Volume= 1.392 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 10S: DURING A (BYPASS)

Runoff = 2.77 cfs @ 12.17 hrs, Volume= 0.224 af, Depth= 2.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	0.990	69	
	0.990		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.4					**Direct Entry, Total Tc**

Summary for Subcatchment 20S: DURING B (BYPASS)

Runoff = 9.72 cfs @ 12.12 hrs, Volume= 0.750 af, Depth= 4.74"
Routed to Link 10L : OUTFALL FOX CHASE RD (POST B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	1.900	89	
	1.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.8					**Direct Entry, Total Tc**

Summary for Subcatchment 30S: DURING E&S BASIN 1

Runoff = 72.64 cfs @ 11.99 hrs, Volume= 3.970 af, Depth= 4.85"
Routed to Pond 10P : ENS BASIN 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	9.830	90	
	9.830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2					**Direct Entry, Total Tc**

Summary for Subcatchment 40S: DURING C (BYPASS)

Runoff = 1.14 cfs @ 11.96 hrs, Volume= 0.051 af, Depth= 2.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	0.250	66	
	0.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 50S: DURING D (BYPASS)

Runoff = 16.93 cfs @ 12.06 hrs, Volume= 1.108 af, Depth= 4.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	3.090	85	
	3.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8					**Direct Entry,**

Summary for Subcatchment 60S: DURING G (BYPASS)

Runoff = 14.18 cfs @ 12.03 hrs, Volume= 0.801 af, Depth= 3.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	2.930	75	
	2.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2					**Direct Entry,**

Summary for Subcatchment 70S: POST E (BYPASS)

Runoff = 21.84 cfs @ 12.13 hrs, Volume= 1.651 af, Depth= 2.44"
Routed to Link 20L : DURING E TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	8.120	66	
	8.120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7					**Direct Entry,**

Summary for Subcatchment 80S: DURING TO E&S BASIN 3A

Runoff = 47.63 cfs @ 11.96 hrs, Volume= 2.204 af, Depth= 3.88"
Routed to Pond 20P : E&S BASIN 3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	6.810	81	
	6.810		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 90S: TO BASIN 3B

Runoff = 1.60 cfs @ 11.97 hrs, Volume= 0.072 af, Depth= 2.01"
Routed to Pond 30P : BASIN 3B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	0.430	61	
	0.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Time**

Summary for Subcatchment 100S: DURING TO BASIN 4

Runoff = 49.07 cfs @ 12.02 hrs, Volume= 2.793 af, Depth= 4.41"
Routed to Pond 40P : E&S BASIN 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	7.600	86	
	7.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3					**Direct Entry,**

Summary for Subcatchment 110S: DURING F (BYPASS)

Runoff = 11.81 cfs @ 12.03 hrs, Volume= 0.668 af, Depth= 2.53"
Routed to Link 30L : DURING F TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	3.170	67	
	3.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2					**Direct Entry,**

Summary for Pond 10P: ENS BASIN 1

Inflow Area = 9.830 ac, 0.00% Impervious, Inflow Depth = 4.85" for 25-YR event
Inflow = 72.64 cfs @ 11.99 hrs, Volume= 3.970 af
Outflow = 1.98 cfs @ 14.47 hrs, Volume= 3.101 af, Atten= 97%, Lag= 148.6 min
Primary = 1.98 cfs @ 14.47 hrs, Volume= 3.101 af
Routed to Link 10L : OUTFALL FOX CHASE RD (POST B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 241.00' Surf.Area= 21,589 sf Storage= 18,157 cf
Peak Elev= 245.12' @ 14.47 hrs Surf.Area= 36,748 sf Storage= 143,930 cf (125,773 cf above start)

Plug-Flow detention time= 1,969.4 min calculated for 2.684 af (68% of inflow)
Center-of-Mass det. time= 1,618.8 min (2,402.2 - 783.4)

Volume	Invert	Avail.Storage	Storage Description
#1	240.00'	239,353 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
240.00	15,500	0	0
242.00	29,950	45,450	45,450
244.00	35,000	64,950	110,400
246.00	41,600	76,600	187,000
247.50	45,000	64,950	251,950

Device	Routing	Invert	Outlet Devices
#1	Primary	240.29'	**15.0" Round OS Pipe Basin 1 to Road Inlet** L= 84.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 240.29' / 239.87' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	242.50'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	245.00'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	241.00'	**0.12 cfs Exfiltration when above 241.00'**

Primary OutFlow Max=1.98 cfs @ 14.47 hrs HW=245.12' TW=0.00' (Dynamic Tailwater)
└─**1=OS Pipe Basin 1 to Road Inlet** (Passes 1.98 cfs of 9.56 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.37 cfs @ 7.60 fps)
  ├─**3=Orifice/Grate** (Weir Controls 1.49 cfs @ 1.11 fps)
  └─**4=Exfiltration** (Exfiltration Controls 0.12 cfs)

Summary for Pond 20P: E&S BASIN 3A

Inflow Area = 6.810 ac, 0.00% Impervious, Inflow Depth = 3.88" for 25-YR event
Inflow = 47.63 cfs @ 11.96 hrs, Volume= 2.204 af
Outflow = 1.33 cfs @ 14.13 hrs, Volume= 1.889 af, Atten= 97%, Lag= 130.2 min
Secondary = 1.33 cfs @ 14.13 hrs, Volume= 1.889 af
  Routed to Link 20L : DURING E TOTAL
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
  Routed to Link 20L : DURING E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 243.00' Surf.Area= 21,698 sf Storage= 17,974 cf
Peak Elev= 245.49' @ 14.13 hrs Surf.Area= 29,395 sf Storage= 83,019 cf (65,045 cf above start)

Plug-Flow detention time= 2,026.5 min calculated for 1.476 af (67% of inflow)
Center-of-Mass det. time= 1,511.7 min (2,319.3 - 807.6)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	147,827 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	15,000	0	0
243.00	22,840	18,920	18,920
244.00	27,390	25,115	44,035
246.00	32,170	59,560	103,595
247.50	37,180	52,013	155,608

Device	Routing	Invert	Outlet Devices
#1	Secondary	242.50'	**18.0" Round Culvert** L= 33.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0152 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	245.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	244.25'	**3.0" Vert. ENS Skimmer 3" orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	243.00'	**0.12 cfs Exfiltration at top of sediment storgae when above 243.00'**
#5	Tertiary	245.80'	**45.0 deg x 45.0' long x 1.70' rise Spillway BAsin 3A** Cv= 2.56 (C= 3.20)

Secondary OutFlow Max=1.33 cfs @ 14.13 hrs HW=245.49' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.33 cfs of 12.72 cfs potential flow)
  ├─**2=Orifice/Grate** (Weir Controls 0.96 cfs @ 0.96 fps)
  ├─**3=ENS Skimmer 3" orifice** (Orifice Controls 0.25 cfs @ 5.08 fps)
  └─**4=Exfiltration at top of sediment storgae** (Exfiltration Controls 0.12 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=243.00' TW=0.00' (Dynamic Tailwater)
└─**5=Spillway BAsin 3A** (Controls 0.00 cfs)

Summary for Pond 30P: BASIN 3B

Inflow Area = 0.430 ac, 0.00% Impervious, Inflow Depth = 2.01" for 25-YR event
Inflow = 1.60 cfs @ 11.97 hrs, Volume= 0.072 af
Outflow = 1.60 cfs @ 11.97 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.1 min
Discarded = 0.27 cfs @ 11.97 hrs, Volume= 0.056 af
Primary = 1.33 cfs @ 11.97 hrs, Volume= 0.016 af
Routed to Link 20L : DURING E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.36' @ 11.97 hrs Surf.Area= 11,300 sf Storage= 181 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.7 min (858.6 - 855.9)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	386 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 0.95 38,615 cf Overall x 1.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	8,470	0	0
244.00	11,340	14,858	14,858
246.00	14,450	25,790	40,648

Device	Routing	Invert	Outlet Devices
#1	Discarded	242.50'	**1.280 in/hr Exfiltration X 0.50 over Surface area** Conductivity to Groundwater Elevation = 240.00'
#2	Primary	238.00'	**15.0" Round Culvert** L= 43.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 238.00' / 236.00' S= 0.0465 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	244.25'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.27 cfs @ 11.97 hrs HW=244.36' (Free Discharge)
└**1=Exfiltration** (Controls 0.27 cfs)

Primary OutFlow Max=1.32 cfs @ 11.97 hrs HW=244.36' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 1.32 cfs of 14.15 cfs potential flow)
└**3=Orifice/Grate** (Weir Controls 1.32 cfs @ 1.07 fps)

Summary for Pond 40P: E&S BASIN 4

Inflow Area = 7.600 ac, 0.00% Impervious, Inflow Depth = 4.41" for 25-YR event
Inflow = 49.07 cfs @ 12.02 hrs, Volume= 2.793 af
Outflow = 0.68 cfs @ 19.11 hrs, Volume= 1.189 af, Atten= 99%, Lag= 425.9 min
Primary = 0.68 cfs @ 19.11 hrs, Volume= 1.189 af
Routed to Link 30L : DURING F TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 232.10' Surf.Area= 17,751 sf Storage= 22,191 cf
Peak Elev= 236.76' @ 19.11 hrs Surf.Area= 27,144 sf Storage= 125,762 cf (103,571 cf above start)

Plug-Flow detention time= 3,295.4 min calculated for 0.680 af (24% of inflow)
Center-of-Mass det. time= 1,961.8 min (2,760.3 - 798.5)

Volume	Invert	Avail.Storage	Storage Description
#1	230.00'	212,173 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
230.00	4,900	0	0
231.00	9,800	7,350	7,350
232.00	18,500	14,150	21,500
234.00	22,200	40,700	62,200
236.00	26,900	49,100	111,300
238.00	31,300	58,200	169,500
239.60	36,000	53,840	223,340

Device	Routing	Invert	Outlet Devices
#1	Primary	230.50'	**24.0" Round Culvert** L= 61.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 230.50' / 230.00' S= 0.0082 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	236.70'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	232.10'	**0.12 cfs Exfiltration when above 232.10'**

Primary OutFlow Max=0.68 cfs @ 19.11 hrs HW=236.76' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.68 cfs of 34.69 cfs potential flow)
  ├─**2=Orifice/Grate** (Weir Controls 0.56 cfs @ 0.80 fps)
  └─**3=Exfiltration** (Exfiltration Controls 0.12 cfs)

Summary for Link 10L: OUTFALL FOX CHASE RD (POST B)

Inflow Area = 11.730 ac, 0.00% Impervious, Inflow Depth > 3.94" for 25-YR event
Inflow = 10.14 cfs @ 12.12 hrs, Volume= 3.851 af
Primary = 10.14 cfs @ 12.12 hrs, Volume= 3.851 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 20L: DURING E TOTAL

Inflow Area = 8.550 ac, 0.00% Impervious, Inflow Depth > 4.99" for 25-YR event
Inflow = 22.19 cfs @ 12.13 hrs, Volume= 3.556 af
Primary = 22.19 cfs @ 12.13 hrs, Volume= 3.556 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 30L: DURING F TOTAL

Inflow Area = 10.770 ac, 0.00% Impervious, Inflow Depth > 2.07" for 25-YR event
Inflow = 11.93 cfs @ 12.03 hrs, Volume= 1.858 af
Primary = 11.93 cfs @ 12.03 hrs, Volume= 1.858 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 10S: DURING A (BYPASS)

Runoff = 3.54 cfs @ 12.16 hrs, Volume= 0.284 af, Depth= 3.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	0.990	69	
	0.990		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.4					**Direct Entry, Total Tc**

Summary for Subcatchment 20S: DURING B (BYPASS)

Runoff = 11.45 cfs @ 12.12 hrs, Volume= 0.891 af, Depth= 5.63"
Routed to Link 10L : OUTFALL FOX CHASE RD (POST B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	1.900	89	
	1.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.8					**Direct Entry, Total Tc**

Summary for Subcatchment 30S: DURING E&S BASIN 1

Runoff = 85.18 cfs @ 11.99 hrs, Volume= 4.706 af, Depth= 5.74"
Routed to Pond 10P : ENS BASIN 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	9.830	90	
	9.830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2					**Direct Entry, Total Tc**

Summary for Subcatchment 40S: DURING C (BYPASS)

Runoff = 1.46 cfs @ 11.96 hrs, Volume= 0.065 af, Depth= 3.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	0.250	66	
	0.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 50S: DURING D (BYPASS)

Runoff = 20.19 cfs @ 12.06 hrs, Volume= 1.333 af, Depth= 5.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	3.090	85	
	3.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8					**Direct Entry,**

Summary for Subcatchment 60S: DURING G (BYPASS)

Runoff = 17.55 cfs @ 12.03 hrs, Volume= 0.996 af, Depth= 4.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	2.930	75	
	2.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2					**Direct Entry,**

Summary for Subcatchment 70S: POST E (BYPASS)

Runoff = 28.41 cfs @ 12.13 hrs, Volume= 2.126 af, Depth= 3.14"
Routed to Link 20L : DURING E TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	8.120	66	
	8.120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7					**Direct Entry,**

Summary for Subcatchment 80S: DURING TO E&S BASIN 3A

Runoff = 57.39 cfs @ 11.96 hrs, Volume= 2.685 af, Depth= 4.73"
Routed to Pond 20P : E&S BASIN 3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	6.810	81	
	6.810		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 90S: TO BASIN 3B

Runoff = 2.12 cfs @ 11.97 hrs, Volume= 0.095 af, Depth= 2.64"
Routed to Pond 30P : BASIN 3B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	0.430	61	
	0.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Time**

Summary for Subcatchment 100S: DURING TO BASIN 4

Runoff = 58.27 cfs @ 12.01 hrs, Volume= 3.350 af, Depth= 5.29"
Routed to Pond 40P : E&S BASIN 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

Area (ac)	CN	Description
* 7.600	86	
7.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3					**Direct Entry,**

Summary for Subcatchment 110S: DURING F (BYPASS)

Runoff = 15.19 cfs @ 12.03 hrs, Volume= 0.857 af, Depth= 3.24"
Routed to Link 30L : DURING F TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

Area (ac)	CN	Description
* 3.170	67	
3.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2					**Direct Entry,**

Summary for Pond 10P: ENS BASIN 1

Inflow Area = 9.830 ac, 0.00% Impervious, Inflow Depth = 5.74" for 50-YR event
Inflow = 85.18 cfs @ 11.99 hrs, Volume= 4.706 af
Outflow = 5.60 cfs @ 12.70 hrs, Volume= 3.836 af, Atten= 93%, Lag= 42.2 min
Primary = 5.60 cfs @ 12.70 hrs, Volume= 3.836 af
Routed to Link 10L : OUTFALL FOX CHASE RD (POST B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 241.00' Surf.Area= 21,589 sf Storage= 18,157 cf
Peak Elev= 245.26' @ 12.70 hrs Surf.Area= 37,208 sf Storage= 149,357 cf (131,200 cf above start)

Plug-Flow detention time= 1,591.9 min calculated for 3.419 af (73% of inflow)
Center-of-Mass det. time= 1,328.1 min (2,107.0 - 778.9)

Volume	Invert	Avail.Storage	Storage Description
#1	240.00'	239,353 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
240.00	15,500	0	0
242.00	29,950	45,450	45,450
244.00	35,000	64,950	110,400
246.00	41,600	76,600	187,000
247.50	45,000	64,950	251,950

Device	Routing	Invert	Outlet Devices
#1	Primary	240.29'	**15.0" Round OS Pipe Basin 1 to Road Inlet** L= 84.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 240.29' / 239.87' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	242.50'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	245.00'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	241.00'	**0.12 cfs Exfiltration when above 241.00'**

Primary OutFlow Max=5.60 cfs @ 12.70 hrs HW=245.26' TW=0.00' (Dynamic Tailwater)
└─**1=OS Pipe Basin 1 to Road Inlet** (Passes 5.60 cfs of 9.73 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.38 cfs @ 7.82 fps)
  ├─**3=Orifice/Grate** (Weir Controls 5.09 cfs @ 1.68 fps)
  └─**4=Exfiltration** (Exfiltration Controls 0.12 cfs)

Summary for Pond 20P: E&S BASIN 3A

Inflow Area = 6.810 ac, 0.00% Impervious, Inflow Depth = 4.73" for 50-YR event
Inflow = 57.39 cfs @ 11.96 hrs, Volume= 2.685 af
Outflow = 3.83 cfs @ 12.57 hrs, Volume= 2.368 af, Atten= 93%, Lag= 36.5 min
Secondary = 3.83 cfs @ 12.57 hrs, Volume= 2.368 af
  Routed to Link 20L : DURING E TOTAL
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
  Routed to Link 20L : DURING E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 243.00' Surf.Area= 21,698 sf Storage= 17,974 cf
Peak Elev= 245.60' @ 12.57 hrs Surf.Area= 29,658 sf Storage= 86,438 cf (68,464 cf above start)

Plug-Flow detention time= 1,585.8 min calculated for 1.955 af (73% of inflow)
Center-of-Mass det. time= 1,220.2 min (2,022.2 - 802.0)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	147,827 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	15,000	0	0
243.00	22,840	18,920	18,920
244.00	27,390	25,115	44,035
246.00	32,170	59,560	103,595
247.50	37,180	52,013	155,608

Device	Routing	Invert	Outlet Devices
#1	Secondary	242.50'	**18.0" Round Culvert** L= 33.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0152 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	245.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	244.25'	**3.0" Vert. ENS Skimmer 3" orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	243.00'	**0.12 cfs Exfiltration at top of sediment storgae when above 243.00'**
#5	Tertiary	245.80'	**45.0 deg x 45.0' long x 1.70' rise Spillway BAsin 3A** Cv= 2.56 (C= 3.20)

Secondary OutFlow Max=3.83 cfs @ 12.57 hrs HW=245.60' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 3.83 cfs of 13.05 cfs potential flow)
  ├─**2=Orifice/Grate** (Weir Controls 3.44 cfs @ 1.47 fps)
  ├─**3=ENS Skimmer 3" orifice** (Orifice Controls 0.26 cfs @ 5.33 fps)
  └─**4=Exfiltration at top of sediment storgae** (Exfiltration Controls 0.12 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=243.00' TW=0.00' (Dynamic Tailwater)
└─**5=Spillway BAsin 3A** (Controls 0.00 cfs)

Summary for Pond 30P: BASIN 3B

Inflow Area = 0.430 ac, 0.00% Impervious, Inflow Depth = 2.64" for 50-YR event
Inflow = 2.12 cfs @ 11.97 hrs, Volume= 0.095 af
Outflow = 2.12 cfs @ 11.97 hrs, Volume= 0.095 af, Atten= 0%, Lag= 0.1 min
Discarded = 0.27 cfs @ 11.97 hrs, Volume= 0.069 af
Primary = 1.84 cfs @ 11.97 hrs, Volume= 0.026 af
Routed to Link 20L : DURING E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.38' @ 11.97 hrs Surf.Area= 11,339 sf Storage= 184 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.7 min (850.2 - 847.5)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	386 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 0.95 38,615 cf Overall x 1.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	8,470	0	0
244.00	11,340	14,858	14,858
246.00	14,450	25,790	40,648

Device	Routing	Invert	Outlet Devices
#1	Discarded	242.50'	**1.280 in/hr Exfiltration X 0.50 over Surface area** Conductivity to Groundwater Elevation = 240.00'
#2	Primary	238.00'	**15.0" Round Culvert** L= 43.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 238.00' / 236.00' S= 0.0465 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	244.25'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.27 cfs @ 11.97 hrs HW=244.38' (Free Discharge)
└**1=Exfiltration** (Controls 0.27 cfs)

Primary OutFlow Max=1.84 cfs @ 11.97 hrs HW=244.38' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 1.84 cfs of 14.18 cfs potential flow)
└**3=Orifice/Grate** (Weir Controls 1.84 cfs @ 1.19 fps)

Summary for Pond 40P: E&S BASIN 4

Inflow Area = 7.600 ac, 0.00% Impervious, Inflow Depth = 5.29" for 50-YR event
Inflow = 58.27 cfs @ 12.01 hrs, Volume= 3.350 af
Outflow = 1.85 cfs @ 14.20 hrs, Volume= 1.745 af, Atten= 97%, Lag= 131.3 min
Primary = 1.85 cfs @ 14.20 hrs, Volume= 1.745 af
Routed to Link 30L : DURING F TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 232.10' Surf.Area= 17,751 sf Storage= 22,191 cf
Peak Elev= 236.83' @ 14.20 hrs Surf.Area= 27,285 sf Storage= 127,605 cf (105,414 cf above start)

Plug-Flow detention time= 2,076.1 min calculated for 1.236 af (37% of inflow)
Center-of-Mass det. time= 1,393.1 min (2,186.5 - 793.5)

Volume	Invert	Avail.Storage	Storage Description
#1	230.00'	212,173 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
230.00	4,900	0	0
231.00	9,800	7,350	7,350
232.00	18,500	14,150	21,500
234.00	22,200	40,700	62,200
236.00	26,900	49,100	111,300
238.00	31,300	58,200	169,500
239.60	36,000	53,840	223,340

Device	Routing	Invert	Outlet Devices
#1	Primary	230.50'	**24.0" Round Culvert** L= 61.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 230.50' / 230.00' S= 0.0082 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	236.70'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	232.10'	**0.12 cfs Exfiltration when above 232.10'**

Primary OutFlow Max=1.85 cfs @ 14.20 hrs HW=236.83' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.85 cfs of 34.92 cfs potential flow)
  ├─**2=Orifice/Grate** (Weir Controls 1.73 cfs @ 1.17 fps)
  └─**3=Exfiltration** (Exfiltration Controls 0.12 cfs)

Summary for Link 10L: OUTFALL FOX CHASE RD (POST B)

Inflow Area = 11.730 ac, 0.00% Impervious, Inflow Depth > 4.84" for 50-YR event
Inflow = 11.92 cfs @ 12.12 hrs, Volume= 4.727 af
Primary = 11.92 cfs @ 12.12 hrs, Volume= 4.727 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 20L: DURING E TOTAL

Inflow Area = 8.550 ac, 0.00% Impervious, Inflow Depth > 6.34" for 50-YR event
Inflow = 29.13 cfs @ 12.13 hrs, Volume= 4.520 af
Primary = 29.13 cfs @ 12.13 hrs, Volume= 4.520 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 30L: DURING F TOTAL

Inflow Area = 10.770 ac, 0.00% Impervious, Inflow Depth > 2.90" for 50-YR event
Inflow = 15.31 cfs @ 12.03 hrs, Volume= 2.602 af
Primary = 15.31 cfs @ 12.03 hrs, Volume= 2.602 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 10S: DURING A (BYPASS)

Runoff = 4.42 cfs @ 12.15 hrs, Volume= 0.354 af, Depth= 4.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	0.990	69	
	0.990		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.4					**Direct Entry, Total Tc**

Summary for Subcatchment 20S: DURING B (BYPASS)

Runoff = 13.34 cfs @ 12.12 hrs, Volume= 1.048 af, Depth= 6.62"
Routed to Link 10L : OUTFALL FOX CHASE RD (POST B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	1.900	89	
	1.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.8					**Direct Entry, Total Tc**

Summary for Subcatchment 30S: DURING E&S BASIN 1

Runoff = 98.87 cfs @ 11.99 hrs, Volume= 5.518 af, Depth= 6.74"
Routed to Pond 10P : ENS BASIN 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	9.830	90	
	9.830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2					**Direct Entry, Total Tc**

Summary for Subcatchment 40S: DURING C (BYPASS)

Runoff = 1.83 cfs @ 11.96 hrs, Volume= 0.082 af, Depth= 3.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	0.250	66	
	0.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 50S: DURING D (BYPASS)

Runoff = 23.76 cfs @ 12.06 hrs, Volume= 1.583 af, Depth= 6.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	3.090	85	
	3.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8					**Direct Entry,**

Summary for Subcatchment 60S: DURING G (BYPASS)

Runoff = 21.29 cfs @ 12.03 hrs, Volume= 1.216 af, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	2.930	75	
	2.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2					**Direct Entry,**

Summary for Subcatchment 70S: POST E (BYPASS)

Runoff = 35.91 cfs @ 12.13 hrs, Volume= 2.673 af, Depth= 3.95"
Routed to Link 20L : DURING E TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	8.120	66	
	8.120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7					**Direct Entry,**

Summary for Subcatchment 80S: DURING TO E&S BASIN 3A

Runoff = 68.12 cfs @ 11.96 hrs, Volume= 3.221 af, Depth= 5.68"
Routed to Pond 20P : E&S BASIN 3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	6.810	81	
	6.810		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 90S: TO BASIN 3B

Runoff = 2.72 cfs @ 11.96 hrs, Volume= 0.122 af, Depth= 3.39"
Routed to Pond 30P : BASIN 3B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	0.430	61	
	0.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Time**

Summary for Subcatchment 100S: DURING TO BASIN 4

Runoff = 68.32 cfs @ 12.01 hrs, Volume= 3.967 af, Depth= 6.26"
Routed to Pond 40P : E&S BASIN 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	7.600	86	
	7.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3					**Direct Entry,**

Summary for Subcatchment 110S: DURING F (BYPASS)

Runoff = 19.03 cfs @ 12.03 hrs, Volume= 1.073 af, Depth= 4.06"
Routed to Link 30L : DURING F TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	3.170	67	
	3.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2					**Direct Entry,**

Summary for Pond 10P: ENS BASIN 1

Inflow Area = 9.830 ac, 0.00% Impervious, Inflow Depth = 6.74" for 100-YR event
Inflow = 98.87 cfs @ 11.99 hrs, Volume= 5.518 af
Outflow = 10.10 cfs @ 12.43 hrs, Volume= 4.647 af, Atten= 90%, Lag= 26.2 min
Primary = 10.10 cfs @ 12.43 hrs, Volume= 4.647 af
Routed to Link 10L : OUTFALL FOX CHASE RD (POST B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 241.00' Surf.Area= 21,589 sf Storage= 18,157 cf
Peak Elev= 245.60' @ 12.43 hrs Surf.Area= 38,270 sf Storage= 162,141 cf (143,984 cf above start)

Plug-Flow detention time= 1,316.3 min calculated for 4.230 af (77% of inflow)
Center-of-Mass det. time= 1,110.9 min (1,885.6 - 774.7)

Volume	Invert	Avail.Storage	Storage Description
#1	240.00'	239,353 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
240.00	15,500	0	0
242.00	29,950	45,450	45,450
244.00	35,000	64,950	110,400
246.00	41,600	76,600	187,000
247.50	45,000	64,950	251,950

Device	Routing	Invert	Outlet Devices
#1	Primary	240.29'	**15.0" Round OS Pipe Basin 1 to Road Inlet** L= 84.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 240.29' / 239.87' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	242.50'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	245.00'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	241.00'	**0.12 cfs Exfiltration when above 241.00'**

Primary OutFlow Max=10.10 cfs @ 12.43 hrs HW=245.60' TW=0.00' (Dynamic Tailwater)
↑└─**1=OS Pipe Basin 1 to Road Inlet** (Inlet Controls 10.10 cfs @ 8.23 fps)
↑ ├─**2=Orifice/Grate** (Passes < 0.41 cfs potential flow)
 ├─**3=Orifice/Grate** (Passes < 17.66 cfs potential flow)
 └─**4=Exfiltration** (Passes < 0.12 cfs potential flow)

Summary for Pond 20P: E&S BASIN 3A

Inflow Area = 6.810 ac, 0.00% Impervious, Inflow Depth = 5.68" for 100-YR event
Inflow = 68.12 cfs @ 11.96 hrs, Volume= 3.221 af
Outflow = 10.29 cfs @ 12.14 hrs, Volume= 2.903 af, Atten= 85%, Lag= 11.2 min
Secondary = 10.21 cfs @ 12.14 hrs, Volume= 2.903 af
Routed to Link 20L : DURING E TOTAL
Tertiary = 0.07 cfs @ 12.14 hrs, Volume= 0.000 af
Routed to Link 20L : DURING E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 243.00' Surf.Area= 21,698 sf Storage= 17,974 cf
Peak Elev= 245.81' @ 12.14 hrs Surf.Area= 30,122 sf Storage= 92,540 cf (74,566 cf above start)

Plug-Flow detention time= 1,272.8 min calculated for 2.491 af (77% of inflow)
Center-of-Mass det. time= 1,004.3 min (1,801.1 - 796.8)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	147,827 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	15,000	0	0
243.00	22,840	18,920	18,920
244.00	27,390	25,115	44,035
246.00	32,170	59,560	103,595
247.50	37,180	52,013	155,608

Device	Routing	Invert	Outlet Devices
#1	Secondary	242.50'	**18.0" Round Culvert** L= 33.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0152 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	245.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	244.25'	**3.0" Vert. ENS Skimmer 3" orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	243.00'	**0.12 cfs Exfiltration at top of sediment storgae when above 243.00'**
#5	Tertiary	245.80'	**45.0 deg x 45.0' long x 1.70' rise Spillway BAsin 3A** Cv= 2.56 (C= 3.20)

Secondary OutFlow Max=10.21 cfs @ 12.14 hrs HW=245.81' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 10.21 cfs of 13.60 cfs potential flow)
  ├─**2=Orifice/Grate** (Weir Controls 9.81 cfs @ 2.08 fps)
  ├─**3=ENS Skimmer 3" orifice** (Orifice Controls 0.28 cfs @ 5.76 fps)
  └─**4=Exfiltration at top of sediment storgae** (Exfiltration Controls 0.12 cfs)

Tertiary OutFlow Max=0.07 cfs @ 12.14 hrs HW=245.81' TW=0.00' (Dynamic Tailwater)
└─**5=Spillway BAsin 3A** (Weir Controls 0.07 cfs @ 0.25 fps)

Summary for Pond 30P: BASIN 3B

Inflow Area = 0.430 ac, 0.00% Impervious, Inflow Depth = 3.39" for 100-YR event
Inflow = 2.72 cfs @ 11.96 hrs, Volume= 0.122 af
Outflow = 2.72 cfs @ 11.97 hrs, Volume= 0.122 af, Atten= 0%, Lag= 0.1 min
Discarded = 0.28 cfs @ 11.97 hrs, Volume= 0.082 af
Primary = 2.44 cfs @ 11.97 hrs, Volume= 0.039 af
Routed to Link 20L : DURING E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.41' @ 11.97 hrs Surf.Area= 11,380 sf Storage= 187 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.6 min (842.8 - 840.2)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	386 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 0.95 38,615 cf Overall x 1.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	8,470	0	0
244.00	11,340	14,858	14,858
246.00	14,450	25,790	40,648

Device	Routing	Invert	Outlet Devices
#1	Discarded	242.50'	**1.280 in/hr Exfiltration X 0.50 over Surface area** Conductivity to Groundwater Elevation = 240.00'
#2	Primary	238.00'	**15.0" Round Culvert** L= 43.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 238.00' / 236.00' S= 0.0465 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	244.25'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.28 cfs @ 11.97 hrs HW=244.41' (Free Discharge)
└**1=Exfiltration** (Controls 0.28 cfs)

Primary OutFlow Max=2.43 cfs @ 11.97 hrs HW=244.41' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 2.43 cfs of 14.21 cfs potential flow)
└**3=Orifice/Grate** (Weir Controls 2.43 cfs @ 1.31 fps)

Summary for Pond 40P: E&S BASIN 4

Inflow Area = 7.600 ac, 0.00% Impervious, Inflow Depth = 6.26" for 100-YR event
Inflow = 68.32 cfs @ 12.01 hrs, Volume= 3.967 af
Outflow = 5.04 cfs @ 12.70 hrs, Volume= 2.362 af, Atten= 93%, Lag= 41.3 min
Primary = 5.04 cfs @ 12.70 hrs, Volume= 2.362 af
Routed to Link 30L : DURING F TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 232.10' Surf.Area= 17,751 sf Storage= 22,191 cf
Peak Elev= 236.96' @ 12.70 hrs Surf.Area= 27,554 sf Storage= 131,129 cf (108,938 cf above start)

Plug-Flow detention time= 1,468.6 min calculated for 1.852 af (47% of inflow)
Center-of-Mass det. time= 1,047.3 min (1,836.1 - 788.8)

Volume	Invert	Avail.Storage	Storage Description
#1	230.00'	212,173 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
230.00	4,900	0	0
231.00	9,800	7,350	7,350
232.00	18,500	14,150	21,500
234.00	22,200	40,700	62,200
236.00	26,900	49,100	111,300
238.00	31,300	58,200	169,500
239.60	36,000	53,840	223,340

Device	Routing	Invert	Outlet Devices
#1	Primary	230.50'	**24.0" Round Culvert** L= 61.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 230.50' / 230.00' S= 0.0082 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	236.70'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	232.10'	**0.12 cfs Exfiltration when above 232.10'**

Primary OutFlow Max=5.03 cfs @ 12.70 hrs HW=236.96' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 5.03 cfs of 35.33 cfs potential flow)
  ├─**2=Orifice/Grate** (Weir Controls 4.91 cfs @ 1.66 fps)
  └─**3=Exfiltration** (Exfiltration Controls 0.12 cfs)

Summary for Link 10L: OUTFALL FOX CHASE RD (POST B)

Inflow Area = 11.730 ac, 0.00% Impervious, Inflow Depth > 5.83" for 100-YR event
Inflow = 23.28 cfs @ 12.12 hrs, Volume= 5.695 af
Primary = 23.28 cfs @ 12.12 hrs, Volume= 5.695 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 20L: DURING E TOTAL

Inflow Area = 8.550 ac, 0.00% Impervious, Inflow Depth > 7.88" for 100-YR event
Inflow = 46.38 cfs @ 12.13 hrs, Volume= 5.616 af
Primary = 46.38 cfs @ 12.13 hrs, Volume= 5.616 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 30L: DURING F TOTAL

Inflow Area = 10.770 ac, 0.00% Impervious, Inflow Depth > 3.83" for 100-YR event
Inflow = 19.15 cfs @ 12.03 hrs, Volume= 3.435 af
Primary = 19.15 cfs @ 12.03 hrs, Volume= 3.435 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Post-developed Tc

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Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 2/10/2023
Chk'd: 3/20/2023
Rev'd:

Watershed: **Post Developed - (Basin 1)**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

	Segment ID		A - B		
Surface Description			Lawn		
Manning's Roughness Coefficient, n			0.24		
Flow Length, L		ft.	100		
Two Year 24 Hour Rainfall, P2		in.	3.31		
Land Slope, s		ft/ft	0.0310		
Tt =	0.007(nL)^0.8 / (P2^0.5)(s^0.4)	hr	0.1962		
	Sheet flow Subtotal Tt =	**hr**			**0.1962**

Elev. A = 253.50
Elev. B = 250.40
Chg. Elev. = 3.10

Shallow concentrated flow

	Segment ID		-		
Surface Description (paved or unpaved)					
Flow Length, L		ft			
Watercourse Slope, s		ft/ft			
Average Velociity, V (figure B-8)		fps			
Tt =	L / (3600 x V)	hr			
	Shallow concentrated flow Subtotal Tt =	**hr**			

Channel flow

	Segment ID				
Cross Sectional Flow Area, a		sq ft			
Wetted Perimeter, Pw		ft			
Hydraulic Radius, r = a/Pw		ft			
Channel Slope, s		ft/ft			
Manning's Roughness Coefficient, n					
Velocity, V = (1.486)(r^2/3)(s^1/2)/n		fps			
Flow length, L		ft			
Tt =	L / (3600 x V)	hr			
	Channel flow Subtotal Tt =	**hr**			

Pipe flow

	Segment ID		B - C	-	
Structure 'From' - 'To'					
Flow Length, L		ft	650		
Pipe Diameter, D		in	15.00		
Manning's Roughness Coefficient, n			0.013		
Pipe Slope, s		ft/ft	0.018		
Velocity, V = (1.486)(r^2/3)(s^1/2)/n		fps	11.07		
Tt =	L / (3600 x V)	hr	0.0163		
	Pipe flow Subtotal Tt =	**hr**			**0.0163**

Elev. B = 250.40
Elev. C = 239.00
Chg. Elev. = 11.40
246.52

Total Tt = 0.2126
Tt (min) = 12.754

Total Hydraulic Length =	750
Total Elevation Change =	14.5
Average Slope =	1.93%

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 2/10/2023
Chk'd: 3/20/2023
Rev'd:

Watershed: **Post Developed - (Basin 2)**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

Segment ID				
Surface Description				
Manning's Roughness Coefficient, n				
Flow Length, L	ft.			
Two Year 24 Hour Rainfall, P2	in.			
Land Slope, s	ft/ft			
Tt = 0.007(nL)^0.8 / (P2^0.5)(s^0.4)	hr			
Sheet flow Subtotal Tt =	**hr**			

Shallow concentrated flow

Segment ID				
Surface Description (paved or unpaved)				
Flow Length, L	ft			
Watercourse Slope, s	ft/ft			
Average Velociity, V (figure B-8)	fps			
Tt = L / (3600 x V)	hr			
Shallow concentrated flow Subtotal Tt =	**hr**			

Channel flow

Segment ID				
Cross Sectional Flow Area, a	sq ft			
Wetted Perimeter, Pw	ft			
Hydraulic Radius, r = a/Pw	ft			
Channel Slope, s	ft/ft			
Manning's Roughness Coefficient, n				
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Flow length, L	ft			
Tt = L / (3600 x V)	hr			
Channel flow Subtotal Tt =	**hr**			

Pipe flow

Segment ID			-	
Structure 'From' - 'To'				
Flow Length, L	ft			
Pipe Diameter, D	in			
Manning's Roughness Coefficient, n				
Pipe Slope, s	ft/ft			
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Tt = L / (3600 x V)	hr			
Pipe flow Subtotal Tt =	**hr**			

Total Tt =
Tt (min) = 5.000

Total Hydraulic Length =
Total Elevation Change =
Average Slope =

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 1/27/2023
Chk'd: 3/20/2023
Rev'd:

Watershed: **Post Developed - By-Pass A**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

		Segment ID	A - B		
Surface Description			Grass		
Manning's Roughness Coefficient, n			0.24		
Flow Length, L		ft.	150		
Two Year 24 Hour Rainfall, P2		in.	3.31		
Land Slope, s		ft/ft	0.0200		
Tt =	0.007(nL)^0.8 / (P2^0.5)(s^0.4)	hr	0.3235		
Sheet flow Subtotal Tt =		**hr**			**0.3235**

Elev. A = 253.10
Elev. B = 250.10
Chg. Elev. = 3.00

Shallow concentrated flow

		Segment ID	B - C		
Surface Description (paved or unpaved)			Unpaved		
Flow Length, L		ft	253		
Watercourse Slope, s		ft/ft	0.0075		
Average Velociity, V (figure B-8)		fps	1.40		
Tt =	L / (3600 x V)	hr	0.0503		
Shallow concentrated flow Subtotal Tt =		**hr**			**0.0503**

Elev. B = 250.10
Elev. C = 248.20
Chg. Elev. = 1.90

Channel flow

		Segment ID			
Cross Sectional Flow Area, a		sq ft			
Wetted Perimeter, Pw		ft			
Hydraulic Radius, r = a/Pw		ft			
Channel Slope, s		ft/ft			
Manning's Roughness Coefficient, n					
Velocity, V = (1.486)(r^2/3)(s^1/2)/n		fps			
Flow length, L		ft			
Tt =	L / (3600 x V)	hr			
Channel flow Subtotal Tt =		**hr**			

Pipe flow

		Segment ID			
Structure 'From' - 'To'					
Flow Length, L		ft			
Pipe Diameter, D		in			
Manning's Roughness Coefficient, n					
Pipe Slope, s		ft/ft			
Velocity, V = (1.486)(r^2/3)(s^1/2)/n		fps			
Tt =	L / (3600 x V)	hr			
Pipe flow Subtotal Tt =		**hr**			

Total Tt = 0.3737
Tt (min) = 22.423

Total Hydraulic Length =	403
Total Elevation Change =	4.9
Average Slope =	1.22%

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 2/7/2023
Chk'd: 3/20/2023
Rev'd:

Watershed: **Post Developed - By-Pass B**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

	Segment ID	A - B		
Surface Description		Grass		
Manning's Roughness Coefficient, n		0.24		
Flow Length, L	ft.	150		
Two Year 24 Hour Rainfall, P2	in.	3.31		
Land Slope, s	ft/ft	0.0233		
Tt = 0.007(nL)^0.8 / (P2^0.5)(s^0.4)	hr	0.3041		
Sheet flow Subtotal Tt =	**hr**			**0.3041**

Elev. A = 249.00
Elev. B = 245.50
Chg. Elev. = 3.50

Shallow concentrated flow

	Segment ID	B - C	C - D	
Surface Description (paved or unpaved)		Unpaved	Paved	
Flow Length, L	ft	67	90	
Watercourse Slope, s	ft/ft	0.0149	0.0060	
Average Velociity, V (figure B-8)	fps	1.97	1.57	
Tt = L / (3600 x V)	hr	0.0094	0.0159	
Shallow concentrated flow Subtotal Tt =	**hr**			**0.0253**

Elev. B = 245.50
Elev. C = 244.50
Chg. Elev. = 1.00
Elev. C = 244.50
Elev. D = 243.96
Chg. Elev. = 0.54

Channel flow

	Segment ID			
Cross Sectional Flow Area, a	sq ft			
Wetted Perimeter, Pw	ft			
Hydraulic Radius, r = a/Pw	ft			
Channel Slope, s	ft/ft			
Manning's Roughness Coefficient, n				
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Flow length, L	ft			
Tt = L / (3600 x V)	hr			
Channel flow Subtotal Tt =	**hr**			

Pipe flow

	Segment ID			
Structure 'From' - 'To'				
Flow Length, L	ft			
Pipe Diameter, D	in			
Manning's Roughness Coefficient, n				
Pipe Slope, s	ft/ft			
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Tt = L / (3600 x V)	hr			
Pipe flow Subtotal Tt =	**hr**			

Total Tt = 0.3294
Tt (min) = 19.766

Total Hydraulic Length = 307
Total Elevation Change = 5.0
Average Slope = 1.64%

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 2/7/2023
Chk'd: 3/20/2023
Rev'd:

Watershed: **Post Developed - By-Pass C**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

Segment ID				
Surface Description				
Manning's Roughness Coefficient, n				
Flow Length, L	ft.			
Two Year 24 Hour Rainfall, P2	in.			
Land Slope, s	ft/ft			
Tt = $\frac{0.007(nL)^{0.8}}{(P2^{0.5})(s^{0.4})}$	hr			
Sheet flow Subtotal Tt =	**hr**			

Shallow concentrated flow

Segment ID				
Surface Description (paved or unpaved)				
Flow Length, L	ft			
Watercourse Slope, s	ft/ft			
Average Velociity, V (figure B-8)	fps			
Tt = $\frac{L}{(3600 \times V)}$	hr			
Shallow concentrated flow Subtotal Tt =	**hr**			

Channel flow

Segment ID				
Cross Sectional Flow Area, a	sq ft			
Wetted Perimeter, Pw	ft			
Hydraulic Radius, r = a/Pw	ft			
Channel Slope, s	ft/ft			
Manning's Roughness Coefficient, n				
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Flow length, L	ft			
Tt = $\frac{L}{(3600 \times V)}$	hr			
Channel flow Subtotal Tt =	**hr**			

Pipe flow

Segment ID				
Structure 'From' - 'To'				
Flow Length, L	ft			
Pipe Diameter, D	in			
Manning's Roughness Coefficient, n				
Pipe Slope, s	ft/ft			
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Tt = $\frac{L}{(3600 \times V)}$	hr			
Pipe flow Subtotal Tt =	**hr**			

Total Tt =
Tt (min) = 5.000

Total Hydraulic Length =
Total Elevation Change =
Average Slope =

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 2/7/2023
Chk'd: 3/20/2023
Rev'd:

Watershed: **Post Developed - By-pass D**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

	Segment ID	A - B			Elev. A = 250.00
Surface Description		Grass			Elev. B = 247.80
Manning's Roughness Coefficient, n		0.24			Chg. Elev. = 2.20
Flow Length, L	ft.	150			
Two Year 24 Hour Rainfall, P2	in.	3.31			
Land Slope, s	ft/ft	0.0147			
Tt = $\frac{0.007(nL)^{0.8}}{(P2^{0.5})(s^{0.4})}$	hr	0.3662			
Sheet flow Subtotal Tt =	**hr**			**0.3662**	

Shallow concentrated flow

	Segment ID	B - C			Elev. B = 247.80
Surface Description (paved or unpaved)		Unpaved			Elev. C = 240.20
Flow Length, L	ft	238			Chg. Elev. = 7.60
Watercourse Slope, s	ft/ft	0.0319			240.20
Average Velociity, V (figure B-8)	fps	2.88			
Tt = $\frac{L}{(3600 \times V)}$	hr	0.0229			
Shallow concentrated flow Subtotal Tt =	**hr**			**0.0229**	

Channel flow

	Segment ID			
Cross Sectional Flow Area, a	sq ft			
Wetted Perimeter, Pw	ft			
Hydraulic Radius, r = a/Pw	ft			
Channel Slope, s	ft/ft			
Manning's Roughness Coefficient, n				
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Flow length, L	ft			
Tt = $\frac{L}{(3600 \times V)}$	hr			
Channel flow Subtotal Tt =	**hr**			

Pipe flow

	Segment ID			
Structure 'From' - 'To'				
Flow Length, L	ft			
Pipe Diameter, D	in			
Manning's Roughness Coefficient, n				
Pipe Slope, s	ft/ft			
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Tt = $\frac{L}{(3600 \times V)}$	hr			
Pipe flow Subtotal Tt =	**hr**			

Total Tt = 0.3891
Tt (min) = 23.347

Total Hydraulic Length =	388
Total Elevation Change =	9.8
Average Slope =	2.53%

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 3/6/2023
Chk'd: 3/20/2023
Rev'd:

Watershed: **Post Developed - By-Pass E**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

		Segment ID	A - B		
Surface Description			Grass		
Manning's Roughness Coefficient, n			0.24		
Flow Length, L		ft.	150		
Two Year 24 Hour Rainfall, P2		in.	3.31		
Land Slope, s		ft/ft	0.0400		
Tt =	0.007(nL)^0.8 / (P2^0.5)(s^0.4)	hr	0.2451		
Sheet flow Subtotal Tt =		**hr**			**0.2451**

Elev. A = 252.00
Elev. B = 246.00
Chg. Elev. = 6.00

Shallow concentrated flow

		Segment ID	B - C		
Surface Description (paved or unpaved)			Unpaved		
Flow Length, L		ft	800		
Watercourse Slope, s		ft/ft	0.0278		
Average Velociity, V (figure B-8)		fps	2.69		
Tt =	L / (3600 x V)	hr	0.0826		
Shallow concentrated flow Subtotal Tt =		**hr**			**0.0826**

Elev. B = 246.00
Elev. C = 223.76
Chg. Elev. = 22.24

Channel flow

		Segment ID			
Cross Sectional Flow Area, a		sq ft			
Wetted Perimeter, Pw		ft			
Hydraulic Radius, r = a/Pw		ft			
Channel Slope, s		ft/ft			
Manning's Roughness Coefficient, n					
Velocity, V = (1.486)(r^2/3)(s^1/2)/n		fps			
Flow length, L		ft			
Tt =	L / (3600 x V)	hr			
Channel flow Subtotal Tt =		**hr**			

Pipe flow

		Segment ID			
Structure 'From' - 'To'					
Flow Length, L		ft			
Pipe Diameter, D		in			
Manning's Roughness Coefficient, n					
Pipe Slope, s		ft/ft			
Velocity, V = (1.486)(r^2/3)(s^1/2)/n		fps			
Tt =	L / (3600 x V)	hr			
Pipe flow Subtotal Tt =		**hr**			

Total Tt = 0.3277
Tt (min) = 19.664

Total Hydraulic Length = 950
Total Elevation Change = 28.2
Average Slope = 2.97%

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 3/7/2023
Chk'd:
Rev'd: 3/20/2023

Watershed: **Post Developed - By-Pass F**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

	Segment ID	A - B	B - C		
Surface Description		Grass	Woods		Elev. A = 239.30
Manning's Roughness Coefficient, n		0.24	0.4		Elev. B = 230.00
Flow Length, L	ft.	80	20		Chg. Elev. = 9.30
Two Year 24 Hour Rainfall, P2	in.	3.31	3.31		Elev. B = 230.00
Land Slope, s	ft/ft	0.1163	0.0600		Elev. C = 228.80
Tt = 0.007(nL)^0.8 / (P2^0.5)(s^0.4)	hr	0.0968	0.0626		Chg. Elev. = 1.20
Sheet flow Subtotal Tt =	**hr**			**0.1593**	

Shallow concentrated flow

	Segment ID	C - D			
Surface Description (paved or unpaved)		Unpaved			Elev. C = 228.80
Flow Length, L	ft	277			Elev. D = 214.00
Watercourse Slope, s	ft/ft	0.0534			Chg. Elev. = 14.80
Average Velociity, V (figure B-8)	fps	3.73			214.00
Tt = L / (3600 x V)	hr	0.0206			
Shallow concentrated flow Subtotal Tt =	**hr**			**0.0206**	

Channel flow

	Segment ID			
Cross Sectional Flow Area, a	sq ft			
Wetted Perimeter, Pw	ft			
Hydraulic Radius, r = a/Pw	ft			
Channel Slope, s	ft/ft			
Manning's Roughness Coefficient, n				
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Flow length, L	ft			
Tt = L / (3600 x V)	hr			
Channel flow Subtotal Tt =	**hr**			

Pipe flow

	Segment ID			
Structure 'From' - 'To'				
Flow Length, L	ft			
Pipe Diameter, D	in			
Manning's Roughness Coefficient, n				
Pipe Slope, s	ft/ft			
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Tt = L / (3600 x V)	hr			
Pipe flow Subtotal Tt =	**hr**			

Total Tt = 0.1800
Tt (min) = 10.798

Total Hydraulic Length =	377
Total Elevation Change =	25.3
Average Slope =	6.71%

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 3/6/2023
Chk'd: 3/20/2023
Rev'd:

Watershed: **Post Developed - By-pass G**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

	Segment ID	A - B			Elev. A = 245.10
Surface Description		Meadow			Elev. B = 232.00
Manning's Roughness Coefficient, n		0.24			Chg. Elev. = 13.10
Flow Length, L	ft.	150			
Two Year 24 Hour Rainfall, P2	in.	3.31			
Land Slope, s	ft/ft	0.0873			
Tt = $\frac{0.007(nL)^{0.8}}{(P2^{0.5})(s^{0.4})}$	hr	0.1794			
Sheet flow Subtotal Tt =	**hr**			**0.1794**	

Shallow concentrated flow

	Segment ID	B - C			Elev. B = 232.00
Surface Description (paved or unpaved)		Unpaved			Elev. C = 227.50
Flow Length, L	ft	92			Chg. Elev. = 4.50
Watercourse Slope, s	ft/ft	0.0489			
Average Velociity, V (figure B-8)	fps	3.57			
Tt = $\frac{L}{(3600 \times V)}$	hr	0.0072			
Shallow concentrated flow Subtotal Tt =	**hr**			**0.0072**	

Channel flow

	Segment ID			
Cross Sectional Flow Area, a	sq ft			
Wetted Perimeter, Pw	ft			
Hydraulic Radius, r = a/Pw	ft			
Channel Slope, s	ft/ft			
Manning's Roughness Coefficient, n				
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Flow length, L	ft			
Tt = $\frac{L}{(3600 \times V)}$	hr			
Channel flow Subtotal Tt =	**hr**			

Pipe flow

	Segment ID			
Structure 'From' - 'To'				
Flow Length, L	ft			
Pipe Diameter, D	in			
Manning's Roughness Coefficient, n				
Pipe Slope, s	ft/ft			
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Tt = $\frac{L}{(3600 \times V)}$	hr			
Pipe flow Subtotal Tt =	**hr**			

Total Tt = 0.1865
Tt (min) = 11.192

Total Hydraulic Length =	242
Total Elevation Change =	17.6
Average Slope =	7.27%

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 3/7/2023
Chk'd: 3/20/2023
Rev'd: 7/10/2023

Watershed: **Post Developed - (Basin 3A)**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

		Segment ID	A - B		
Surface Description			Grass		
Manning's Roughness Coefficient, n			0.24		
Flow Length, L		ft.	122		
Two Year 24 Hour Rainfall, P2		in.	3.31		
Land Slope, s		ft/ft	0.0361		
Tt =	0.007(nL)^0.8 / (P2^0.5)(s^0.4)	hr	0.2166		
Sheet flow Subtotal Tt =		**hr**			**0.2166**

Elev. A = 254.40
Elev. B = 250.00
Chg. Elev. = 4.40

Shallow concentrated flow

		Segment ID			
Surface Description (paved or unpaved)					
Flow Length, L		ft			
Watercourse Slope, s		ft/ft			
Average Velociity, V (figure B-8)		fps			
Tt =	L / (3600 x V)	hr			
Shallow concentrated flow Subtotal Tt =		**hr**			

Channel flow

		Segment ID			
Cross Sectional Flow Area, a		sq ft			
Wetted Perimeter, Pw		ft			
Hydraulic Radius, r = a/Pw		ft			
Channel Slope, s		ft/ft			
Manning's Roughness Coefficient, n					
Velocity, V =	(1.486)(r^2/3)(s^1/2)/n	fps			
Flow length, L		ft			
Tt =	L / (3600 x V)	hr			
Channel flow Subtotal Tt =		**hr**			

Pipe flow

		Segment ID	B - C		
Structure 'From' - 'To'			606 TO 600		
Flow Length, L		ft	569		
Pipe Diameter, D		in	18.00		
Manning's Roughness Coefficient, n			0.011		
Pipe Slope, s		ft/ft	0.012		
Velocity, V =	(1.486)(r^2/3)(s^1/2)/n	fps	12.37		
Tt =	L / (3600 x V)	hr	0.0128		
Pipe flow Subtotal Tt =		**hr**			**0.0128**

Elev. B = 250.00
Elev. C = 243.00
Chg. Elev. = 7.00

Total Tt = 0.2294
Tt (min) = 13.761

Total Hydraulic Length =	691
Total Elevation Change =	11.4
Average Slope =	1.65%

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 3/7/2023
Chk'd: 3/20/2023
Rev'd:

Watershed: **Post Developed - (Basin 3B)**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

Segment ID				
Surface Description				
Manning's Roughness Coefficient, n				
Flow Length, L	ft.			
Two Year 24 Hour Rainfall, P2	in.			
Land Slope, s	ft/ft			
Tt = 0.007(nL)^0.8 / (P2^0.5)(s^0.4)	hr			
Sheet flow Subtotal Tt =	**hr**			

Shallow concentrated flow

Segment ID				
Surface Description (paved or unpaved)				
Flow Length, L	ft			
Watercourse Slope, s	ft/ft			
Average Velociity, V (figure B-8)	fps			
Tt = L / (3600 x V)	hr			
Shallow concentrated flow Subtotal Tt =	**hr**			

Channel flow

Segment ID				
Cross Sectional Flow Area, a	sq ft			
Wetted Perimeter, Pw	ft			
Hydraulic Radius, r = a/Pw	ft			
Channel Slope, s	ft/ft			
Manning's Roughness Coefficient, n				
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Flow length, L	ft			
Tt = L / (3600 x V)	hr			
Channel flow Subtotal Tt =	**hr**			

Pipe flow

Segment ID				
Structure 'From' - 'To'				
Flow Length, L	ft			
Pipe Diameter, D	in			
Manning's Roughness Coefficient, n				
Pipe Slope, s	ft/ft			
Velocity, V = (1.486)(r^2/3)(s^1/2)/n	fps			
Tt = L / (3600 x V)	hr	0.0833		
Pipe flow Subtotal Tt =	**hr**			**0.0833**

Total Tt = 0.0833
Tt (min) = 5.000

Total Hydraulic Length =
Total Elevation Change =
Average Slope =

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 3/7/2023
Chk'd: 3/20/2023
Rev'd:

Watershed: **Post Developed - (Stone BMP 2A)**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

		Segment ID	A - B		
Surface Description			Grass		
Manning's Roughness Coefficient, n			0.24		
Flow Length, L		ft.	57		
Two Year 24 Hour Rainfall, P2		in.	3.31		
Land Slope, s		ft/ft	0.0456		
Tt =	0.007(nL)^0.8 / (P2^0.5)(s^0.4)	hr	0.1073		
Sheet flow Subtotal Tt =		**hr**			**0.1073**

Elev. A = 254.40
Elev. B = 251.80
Chg. Elev. = 2.60

Shallow concentrated flow

		Segment ID			
Surface Description (paved or unpaved)					
Flow Length, L		ft			
Watercourse Slope, s		ft/ft			
Average Velociity, V (figure B-8)		fps			
Tt =	L / (3600 x V)	hr			
Shallow concentrated flow Subtotal Tt =		**hr**			

Channel flow

		Segment ID			
Cross Sectional Flow Area, a		sq ft			
Wetted Perimeter, Pw		ft			
Hydraulic Radius, r = a/Pw		ft			
Channel Slope, s		ft/ft			
Manning's Roughness Coefficient, n					
Velocity, V =	(1.486)(r^2/3)(s^1/2)/n	fps			
Flow length, L		ft			
Tt =	L / (3600 x V)	hr			
Channel flow Subtotal Tt =		**hr**			

Pipe flow

		Segment ID	B - C		
Structure 'From' - 'To'			START TO END		
Flow Length, L		ft	675		
Pipe Diameter, D		in	varies		
Manning's Roughness Coefficient, n			0.013		
Pipe Slope, s		ft/ft	0.014		
Velocity, V =	(1.486)(r^2/3)(s^1/2)/n	fps	2.00		
Tt =	L / (3600 x V)	hr	0.0938		
Pipe flow Subtotal Tt =		**hr**			**0.0938**

Elev. B = 251.80
Elev. C = 242.30
Chg. Elev. = 9.50

Total Tt = 0.2010
Tt (min) = 12.060

Total Hydraulic Length =	732
Total Elevation Change =	12.1
Average Slope =	1.65%

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 3/7/2023
Chk'd:
Rev'd:

Watershed: **Post Developed - (Basin 4)**

TIME OF CONCENTRATION
(S.C.S. TR-55 method)

Sheet Flow

		Segment ID	A - B		
Surface Description			Grass		
Manning's Roughness Coefficient, n			0.24		
Flow Length, L		ft.	37		
Two Year 24 Hour Rainfall, P2		in.	3.31		
Land Slope, s		ft/ft	0.1027		
Tt =	0.007(nL)^0.8 / (P2^0.5)(s^0.4)	hr	0.0549		
Sheet flow Subtotal Tt =		**hr**			**0.0549**

Elev. A = 253.30
Elev. B = 249.50
Chg. Elev. = 3.80

Shallow concentrated flow

		Segment ID			
Surface Description (paved or unpaved)					
Flow Length, L		ft			
Watercourse Slope, s		ft/ft			
Average Velociity, V (figure B-8)		fps			
Tt =	L / (3600 x V)	hr			
Shallow concentrated flow Subtotal Tt =		**hr**			

Channel flow

		Segment ID			
Cross Sectional Flow Area, a		sq ft			
Wetted Perimeter, Pw		ft			
Hydraulic Radius, r = a/Pw		ft			
Channel Slope, s		ft/ft			
Manning's Roughness Coefficient, n					
Velocity, V = (1.486)(r^2/3)(s^1/2)/n		fps			
Flow length, L		ft			
Tt =	L / (3600 x V)	hr			
Channel flow Subtotal Tt =		**hr**			

Pipe flow

		Segment ID	B - C		
Structure 'From' - 'To'			START TO END		
Flow Length, L		ft	835		
Pipe Diameter, D		in	varies		
Manning's Roughness Coefficient, n			0.013		
Pipe Slope, s		ft/ft	0.016		
Velocity, V = (1.486)(r^2/3)(s^1/2)/n		fps	2.00		
Tt =	L / (3600 x V)	hr	0.1160		
Pipe flow Subtotal Tt =		**hr**			**0.1160**

Elev. B = 249.50
Elev. C = 236.00
Chg. Elev. = 13.50

Total Tt = 0.1708
Tt (min) = 10.250

Total Hydraulic Length =	872
Total Elevation Change =	17.3
Average Slope =	1.98%

Post-developed Cn

10

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 1/25/2023
Chk'd:
Rev'd: 06/01/23

Watershed: **Post Developed - (Basin 1)**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B/C	(On-site) Building Impervious	98	1.57	154.11
B/C	(On-site) Impervious	98	1.33	130.70
B	Lawn	61	3.02	184.04
C	Lawn	74	0.05	4.03

Totals = 5.98 472.88

Composite Cn = $\frac{472.88}{5.98}$ = 79.11

USE Cn = 79.1

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 1/25/2023
Chk'd:
Rev'd: 03/20/23

Watershed: **Post Developed - (Basin 2)**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				
B	Residentail 1/4 Ac Lot (offsite)	75	0.30	22.83
C	(On-site) Building Impervious	98	0.84	82.12
C	(On-site) Impervious	98	1.01	99.19
B	Lawn	61	0.53	32.22
C	Lawn	74	1.04	77.02
Totals =			3.72	313.38

$$\text{Composite Cn} = \frac{313.38}{3.72} = 84.16$$

USE Cn = 84.2

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 1/25/2023
Chk'd: 3/20/2023
Rev'd: 04/07/23

Watershed: **Post Developed - By-Pass A**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B	Existing Road	98	0.05	4.50
B/C/D	(On-site) Impervious	98	0.02	1.82
B	Lawn (Good Condition)	61.0	0.93	56.75

Totals =	0.99	63.07

Composite Cn = $\frac{63.07}{0.99}$ = 63.40

USE Cn = 63.4

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 1/27/2023
Chk'd:
Rev'd: 11/28/23

Watershed: **Post Developed - By-Pass B**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				
B/C	Existing Road	98	0.25	24.66
B/C	(On-site) Impervious	98	0.54	52.69
B	Lawn (Good Condition)	61	0.43	26.19
C	Lawn (Good Condition)	74	0.90	66.69
B	Residentail 1/4 Ac Lot (offsite)	75	0.08	6.23
Totals =			2.20	176.45

Composite Cn = $\frac{176.45}{2.20}$ = 80.10

USE Cn = 80.1

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 1/25/2023
Chk'd: 3/20/2023
Rev'd:

Watershed: **Post Developed - By-Pass C**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B	Lawn (Good Condition)	61	0.25	15.15

Totals =	0.25	15.15

Composite Cn = $\frac{15.15}{0.25}$ = 61.00

USE Cn = 61.0

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 2/28/2023
Chk'd:
Rev'd: 11/28/23

Watershed: **Post Developed - By-pass D**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				
B	Residentail 1/4 Ac Lot (offsite)	75	1.18	88.51
B	Lawn (Good Condition)	61	0.51	30.83
B	Existing Road	98	0.04	4.30
C	Lawn (Good Condition)	74	1.67	123.90
Totals =			3.40	247.55

Composite Cn = $\frac{247.55}{3.40}$ = 72.73

USE Cn = 72.7

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 2/23/2023
Chk'd: 3/20/2023
Rev'd: 03/06/23

Watershed: **Post Developed - By-Pass E**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B	(Off-site) 1/3 Acre Residential Lots	72	2.17	156.00
C	(Off-site) 1/3 Acre Residential Lots	81	0.07	6.04
B	Meadow (good)	58	2.68	155.29
B	Woods (good)	55	1.23	67.87
D	Woods (good)	77	0.73	56.52
B	Lawn	61	0.12	7.46
C	Lawn	74	1.11	81.79
Totals =			8.11	530.96

Composite Cn = $\frac{530.96}{8.11}$ = 65.44

USE Cn = 65.4

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 3/7/2023
Chk'd:
Rev'd: 10/12/23

Watershed: **Post Developed - By-Pass F**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B	Woods (good)	55	1.18	64.65
C	Woods (good)	70	0.00	0.19
D	Woods (good)	77	1.35	104.01
B	Lawn	61	0.48	29.54
C	Lawn	74	0.07	4.89
D	Lawn	80	0.04	2.97
B	Meadow (good)	58	0.05	3.18
Totals =			3.17	209.44

Composite Cn = $\frac{209.44}{3.17}$ = 66.04

USE Cn = 66.0

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 2/23/2023
Chk'd:
Rev'd: 03/06/23

Watershed: **Post Developed - By-pass G**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B	(Off-site) 1/4 Acre Residential Lots	75	0.68	51.32
B	Woods (good)	55	0.58	32.07
C	Woods (good)	70	0.06	3.92
D	Woods (good)	77	0.02	1.49
B	Lawn	61	0.44	27.11
C	Lawn	74	1.14	84.41

Totals =	2.93	200.32

Composite Cn = $\frac{200.32}{2.93}$ = 68.42

USE Cn = 68.4

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 3/1/2023
Chk'd:
Rev'd: 07/10/23

Watershed: **Post Developed - (Basin 3A)**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B/C/D	(On-site) Impervious	98	1.19	116.22
B/C/D	(On-site) Building Impervious	98	1.61	157.48
B	Lawn	61	1.86	113.66
C	Lawn	74	0.56	41.53

Totals = 5.22 428.90

Composite Cn = $\frac{428.90}{5.22}$ = 82.20

USE Cn = 82.2

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 3/1/2023
Chk'd: 3/20/2023
Rev'd:

Watershed: **Post Developed - (Basin 3B)**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B	Lawn	61	0.43	26.20

Totals =	0.43	26.20

Composite Cn = $\frac{26.20}{0.43}$ = 61.00

USE Cn = 61.0

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 3/2/2023
Chk'd: 3/20/2023
Rev'd: 07/10/23

Watershed: **Post Developed - (Stone BMP 2A)**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B/C/D	(On-site) Impervious	98	1.32	129.77
B/C/D	(On-site) Building Impervious	98	2.09	204.73
B	Lawn	61	0.24	14.74
C	Lawn	74	1.75	129.53

Totals =	5.41	478.77

$$\text{Composite Cn} = \frac{478.77}{5.41} = 88.57$$

USE Cn = 88.6

24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Sisters of St. Basil (7662)
Abington Township
Montgomery County, Pennsylvania

By: LJP
Date: 3/7/2023
Chk'd:
Rev'd: 06/01/23

Watershed: **Post Developed - (Basin 4)**

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Soil name and hydrologic group	Cover Description	Cn	Area (acres)	Product of CN x Area
--				0.00
B/C	(On-site) Impervious	98	1.81	177.81
B/C	(On-site) Building Impervious	98	2.50	245.22
B	Lawn	61	1.84	112.44
C	Lawn	74	1.93	142.88

Totals = 8.09 678.35

Composite Cn = $\frac{678.35}{8.09}$ = 83.84

USE Cn = 83.8

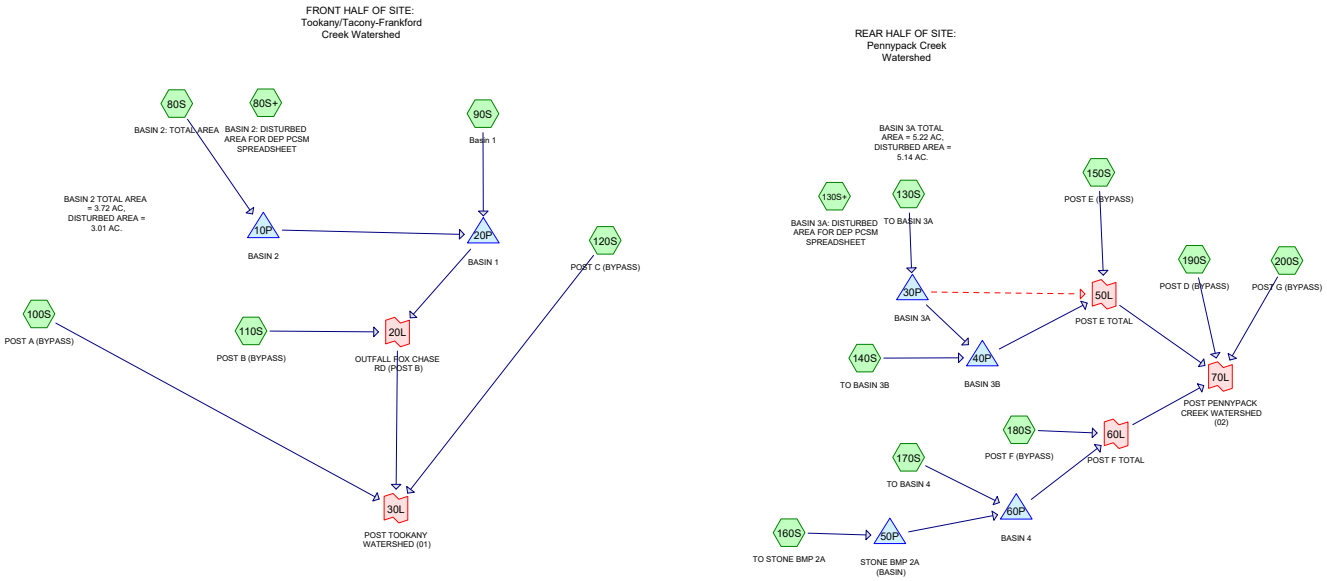
24 hr RAINFALL for Abington Township

(per NOAA)

1 year	2 year	5 year	10 year	25 year	50 year	100 year
2.74	3.31	4.18	4.92	6.00	6.92	7.93

Post-developed Hydrographs

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Routing Diagram for 7662-PRE vs POST
Prepared by ESE Consultants, Inc, Printed 11/30/2023
HydroCAD® 10.20-3c s/n 01254 © 2023 HydroCAD Software Solutions LLC

Summary for Subcatchment 80S: BASIN 2: TOTAL AREA

Runoff = 9.02 cfs @ 11.96 hrs, Volume= 0.405 af, Depth= 1.31"
Routed to Pond 10P : BASIN 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	3.720	84	
	3.720		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Total Tc**

Summary for Subcatchment 80S+: BASIN 2: DISTURBED AREA FOR DEP PCSM SPREADSHEET

Runoff = 8.38 cfs @ 11.96 hrs, Volume= 0.380 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	3.010	87	
	3.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 90S: Basin 1

Runoff = 8.22 cfs @ 12.05 hrs, Volume= 0.499 af, Depth= 1.00"
Routed to Pond 20P : BASIN 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	5.980	79	
	5.980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8					**Direct Entry, Total Tc**

Summary for Subcatchment 100S: POST A (BYPASS)

Runoff = 0.20 cfs @ 12.22 hrs, Volume= 0.027 af, Depth= 0.33"
Routed to Link 30L : POST TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	0.990	63	
	0.990		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.4					**Direct Entry, Total Tc**

Summary for Subcatchment 110S: POST B (BYPASS)

Runoff = 2.54 cfs @ 12.13 hrs, Volume= 0.194 af, Depth= 1.06"
Routed to Link 20L : OUTFALL FOX CHASE RD (POST B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	2.200	80	
	2.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.8					**Direct Entry, Total Tc**

Summary for Subcatchment 120S: POST C (BYPASS)

Runoff = 0.08 cfs @ 11.99 hrs, Volume= 0.006 af, Depth= 0.27"
Routed to Link 30L : POST TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	0.250	61	
	0.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 130S: TO BASIN 3A

Runoff = 8.25 cfs @ 12.06 hrs, Volume= 0.512 af, Depth= 1.18"
Routed to Pond 30P : BASIN 3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	5.220	82	
	5.220		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8					**Direct Entry,**

Summary for Subcatchment 130S+: BASIN 3A: DISTURBED AREA FOR DEP PCSM SPREADSHEET

Runoff = 8.58 cfs @ 12.06 hrs, Volume= 0.531 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	5.140	83	
	5.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8					**Direct Entry,**

Summary for Subcatchment 140S: TO BASIN 3B

Runoff = 0.14 cfs @ 11.99 hrs, Volume= 0.010 af, Depth= 0.27"
Routed to Pond 40P : BASIN 3B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	0.430	61	
	0.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Time**

Summary for Subcatchment 150S: POST E (BYPASS)

Runoff = 2.41 cfs @ 12.17 hrs, Volume= 0.265 af, Depth= 0.39"
Routed to Link 50L : POST E TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	8.110	65	
	8.110		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7					**Direct Entry,**

Summary for Subcatchment 160S: TO STONE BMP 2A

Runoff = 12.85 cfs @ 12.04 hrs, Volume= 0.751 af, Depth= 1.67"
Routed to Pond 50P : STONE BMP 2A (BASIN)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	5.410	89	
	5.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					**Direct Entry,**

Summary for Subcatchment 170S: TO BASIN 4

Runoff = 16.11 cfs @ 12.02 hrs, Volume= 0.880 af, Depth= 1.31"
Routed to Pond 60P : BASIN 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	8.090	84	
	8.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3					**Direct Entry,**

Summary for Subcatchment 180S: POST F (BYPASS)

Runoff = 1.58 cfs @ 12.05 hrs, Volume= 0.113 af, Depth= 0.43"
Routed to Link 60L : POST F TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	3.170	66	
	3.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8					**Direct Entry,**

Summary for Subcatchment 190S: POST D (BYPASS)

Runoff = 2.15 cfs @ 12.19 hrs, Volume= 0.199 af, Depth= 0.70"
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	3.400	73	
	3.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.3					**Direct Entry,**

Summary for Subcatchment 200S: POST G (BYPASS)

Runoff = 1.80 cfs @ 12.05 hrs, Volume= 0.121 af, Depth= 0.50"
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.74"

	Area (ac)	CN	Description
*	2.930	68	
	2.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2					**Direct Entry,**

Summary for Pond 10P: BASIN 2

Inflow Area = 3.720 ac, 0.00% Impervious, Inflow Depth = 1.31" for 1-YR event
Inflow = 9.02 cfs @ 11.96 hrs, Volume= 0.405 af
Outflow = 0.19 cfs @ 11.68 hrs, Volume= 0.405 af, Atten= 98%, Lag= 0.0 min
Discarded = 0.19 cfs @ 11.68 hrs, Volume= 0.405 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 20P : BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.00' @ 15.91 hrs Surf.Area= 7,596 sf Storage= 10,299 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 566.9 min (1,399.7 - 832.8)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	63,080 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	6,500	0	0
244.00	8,000	10,875	10,875
246.00	10,400	18,400	29,275
248.00	12,900	23,300	52,575
249.00	14,750	13,825	66,400

Device	Routing	Invert	Outlet Devices
#1	Primary	240.15'	**24.0" Round OS pipe to Basin 1** L= 39.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 240.15' / 239.95' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Discarded	242.50'	**0.19 cfs Exfiltration at all elevations**
#3	Device 1	245.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	247.00'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.19 cfs @ 11.68 hrs HW=242.57' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=242.50' TW=239.87' (Dynamic Tailwater)
└**1=OS pipe to Basin 1** (Passes 0.00 cfs of 15.22 cfs potential flow)
├**3=Orifice/Grate** (Controls 0.00 cfs)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 20P: BASIN 1

Inflow Area = 9.700 ac, 0.00% Impervious, Inflow Depth = 0.62" for 1-YR event
Inflow = 8.22 cfs @ 12.05 hrs, Volume= 0.499 af
Outflow = 0.17 cfs @ 0.00 hrs, Volume= 1.028 af, Atten= 98%, Lag= 0.0 min
Discarded = 0.17 cfs @ 0.00 hrs, Volume= 1.028 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 20L : OUTFALL FOX CHASE RD (POST B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 239.87' Surf.Area= 14,432 sf Storage= 23,042 cf
Peak Elev= 240.37' @ 19.35 hrs Surf.Area= 15,637 sf Storage= 30,489 cf (7,447 cf above start)

Plug-Flow detention time= 2,467.6 min calculated for 0.499 af (100% of inflow)
Center-of-Mass det. time= 1,338.2 min (2,195.7 - 857.5)

Volume	Invert	Avail.Storage	Storage Description
#1	238.00'	206,673 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
238.00	10,750	0	0
240.00	15,500	26,250	26,250
242.00	20,750	36,250	62,500
244.00	26,000	46,750	109,250
246.00	31,600	57,600	166,850
247.50	36,000	50,700	217,550

Device	Routing	Invert	Outlet Devices
#1	Primary	240.30'	**15.0" Round OS Pipe Basin 1 to Road Inlet** L= 81.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 240.30' / 239.87' S= 0.0053 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Discarded	238.00'	**0.17 cfs Exfiltration at all elevations**
#3	Device 1	241.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	245.50'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.17 cfs @ 0.00 hrs HW=239.87' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.17 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=239.87' TW=0.00' (Dynamic Tailwater)
└**1=OS Pipe Basin 1 to Road Inlet** (Controls 0.00 cfs)
├**3=Orifice/Grate** (Controls 0.00 cfs)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 30P: BASIN 3A

Inflow Area = 5.220 ac, 0.00% Impervious, Inflow Depth = 1.18" for 1-YR event
Inflow = 8.25 cfs @ 12.06 hrs, Volume= 0.512 af
Outflow = 1.54 cfs @ 12.45 hrs, Volume= 0.512 af, Atten= 81%, Lag= 23.3 min
Primary = 1.54 cfs @ 12.45 hrs, Volume= 0.512 af
Routed to Pond 40P : BASIN 3B
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 243.41' @ 24.10 hrs Surf.Area= 23,462 sf Storage= 9,330 cf

Plug-Flow detention time= 700.8 min calculated for 0.512 af (100% of inflow)
Center-of-Mass det. time= 701.0 min (1,549.0 - 848.0)

Volume	Invert	Avail.Storage	Storage Description
#1	242.90'	129,966 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.90	0	0	0
242.99	100	5	5
243.00	22,840	115	119
244.00	27,390	25,115	25,234
246.00	32,170	59,560	84,794
247.50	37,180	52,013	136,807

Device	Routing	Invert	Outlet Devices
#1	Primary	242.50'	**15.0" Round Culvert - OS 3A-2** L= 45.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	242.90'	**10.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Secondary	242.50'	**18.0" Round Culvert - OS 3A-1** L= 39.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0128 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#4	Device 1	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 3	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 3	244.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.54 cfs @ 12.45 hrs HW=243.38' TW=242.75' (Dynamic Tailwater)
└─**1=Culvert - OS 3A-2** (Passes 1.54 cfs of 2.66 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.54 cfs @ 2.36 fps)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=242.90' TW=0.00' (Dynamic Tailwater)
└─**3=Culvert - OS 3A-1** (Passes 0.00 cfs of 0.81 cfs potential flow)
  ├─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 40P: BASIN 3B

Inflow Area = 5.650 ac, 0.00% Impervious, Inflow Depth = 1.11" for 1-YR event
Inflow = 1.57 cfs @ 12.44 hrs, Volume= 0.522 af
Outflow = 0.11 cfs @ 12.07 hrs, Volume= 0.522 af, Atten= 93%, Lag= 0.0 min
Discarded = 0.11 cfs @ 12.07 hrs, Volume= 0.522 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 243.41' @ 24.12 hrs Surf.Area= 9,695 sf Storage= 8,047 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 826.3 min (2,363.9 - 1,537.6)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	38,615 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	8,470	0	0
244.00	11,340	14,858	14,858
246.00	14,450	25,790	40,648

Device	Routing	Invert	Outlet Devices
#1	Discarded	242.50'	**0.11 cfs Exfiltration at all elevations**
#2	Primary	237.00'	**15.0" Round Culvert - OS 3B** L= 45.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 237.00' / 236.00' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	244.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.11 cfs @ 12.07 hrs HW=242.54' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=242.50' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert - OS 3B** (Passes 0.00 cfs of 13.05 cfs potential flow)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 50P: STONE BMP 2A (BASIN)

Inflow Area = 5.410 ac, 0.00% Impervious, Inflow Depth = 1.67" for 1-YR event
Inflow = 12.85 cfs @ 12.04 hrs, Volume= 0.751 af
Outflow = 4.98 cfs @ 12.20 hrs, Volume= 0.751 af, Atten= 61%, Lag= 10.0 min
Discarded = 0.58 cfs @ 11.66 hrs, Volume= 0.594 af
Primary = 4.40 cfs @ 12.20 hrs, Volume= 0.157 af
Routed to Pond 60P : BASIN 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 243.38' @ 12.20 hrs Surf.Area= 9,900 sf Storage= 11,420 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 118.7 min (938.6 - 819.9)

Volume	Invert	Avail.Storage	Storage Description
#1	240.50'	20,831 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 52,470 cf Overall - 393 cf Embedded = 52,077 cf x 40.0% Voids
#2	242.80'	236 cf	**24.0" Round Pipe 714 to 712** Inside #1 L= 75.0' S= 0.0050 '/' 393 cf Overall - 3.5" Wall Thickness = 236 cf
		21,066 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
240.50	9,900	0	0
242.00	9,900	14,850	14,850
243.00	9,900	9,900	24,750
244.25	9,900	12,375	37,125
245.80	9,900	15,345	52,470

Device	Routing	Invert	Outlet Devices
#1	Discarded	240.50'	**0.58 cfs Exfiltration at all elevations**
#2	Primary	242.80'	**30.0" Round Culvert 712 TO 708** L= 103.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 242.00' S= 0.0078 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#3	Primary	242.80'	**30.0" Round Culvert 710 TO 708** L= 42.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 240.20' S= 0.0619 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Discarded OutFlow Max=0.58 cfs @ 11.66 hrs HW=240.56' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.58 cfs)

Primary OutFlow Max=4.40 cfs @ 12.20 hrs HW=243.38' TW=232.50' (Dynamic Tailwater)
├**2=Culvert 712 TO 708** (Barrel Controls 2.13 cfs @ 3.70 fps)
└**3=Culvert 710 TO 708** (Inlet Controls 2.26 cfs @ 2.60 fps)

Summary for Pond 60P: BASIN 4

Inflow Area = 13.500 ac, 0.00% Impervious, Inflow Depth = 0.92" for 1-YR event
Inflow = 16.11 cfs @ 12.02 hrs, Volume= 1.037 af
Outflow = 2.08 cfs @ 12.78 hrs, Volume= 1.035 af, Atten= 87%, Lag= 45.4 min
Primary = 2.08 cfs @ 12.78 hrs, Volume= 1.035 af
Routed to Link 60L : POST F TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 232.86' @ 12.78 hrs Surf.Area= 13,677 sf Storage= 22,112 cf

Plug-Flow detention time= 168.4 min calculated for 1.035 af (100% of inflow)
Center-of-Mass det. time= 167.1 min (991.7 - 824.6)

Volume	Invert	Avail.Storage	Storage Description
#1	231.00'	161,092 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
231.00	10,000	0	0
232.00	13,000	11,500	11,500
234.00	16,250	29,250	40,750
236.00	22,200	38,450	79,200
238.00	28,000	50,200	129,400
239.30	33,800	40,170	169,570

Device	Routing	Invert	Outlet Devices
#1	Primary	230.50'	**24.0" Round Culvert - OS 4** L= 62.8' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 230.50' / 230.00' S= 0.0080 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	231.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	234.00'	**28.0" W x 10.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	237.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.08 cfs @ 12.78 hrs HW=232.86' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert - OS 4** (Passes 2.08 cfs of 16.95 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 2.08 cfs @ 5.95 fps)
3=Orifice/Grate (Controls 0.00 cfs)
4=Orifice/Grate (Controls 0.00 cfs)

Summary for Link 20L: OUTFALL FOX CHASE RD (POST B)

Inflow Area = 11.900 ac, 0.00% Impervious, Inflow Depth = 0.20" for 1-YR event
Inflow = 2.54 cfs @ 12.13 hrs, Volume= 0.194 af
Primary = 2.54 cfs @ 12.13 hrs, Volume= 0.194 af, Atten= 0%, Lag= 0.0 min
Routed to Link 30L : POST TOOKANY WATERSHED (01)

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 30L: POST TOOKANY WATERSHED (01)

Inflow Area = 13.140 ac, 0.00% Impervious, Inflow Depth = 0.21" for 1-YR event
Inflow = 2.73 cfs @ 12.14 hrs, Volume= 0.227 af
Primary = 2.73 cfs @ 12.14 hrs, Volume= 0.227 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 50L: POST E TOTAL

Inflow Area = 13.760 ac, 0.00% Impervious, Inflow Depth = 0.23" for 1-YR event
Inflow = 2.41 cfs @ 12.17 hrs, Volume= 0.265 af
Primary = 2.41 cfs @ 12.17 hrs, Volume= 0.265 af, Atten= 0%, Lag= 0.0 min
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 60L: POST F TOTAL

Inflow Area = 16.670 ac, 0.00% Impervious, Inflow Depth > 0.83" for 1-YR event
Inflow = 3.05 cfs @ 12.07 hrs, Volume= 1.148 af
Primary = 3.05 cfs @ 12.07 hrs, Volume= 1.148 af, Atten= 0%, Lag= 0.0 min
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 70L: POST PENNYPACK CREEK WATERSHED (02)

Inflow Area = 36.760 ac, 0.00% Impervious, Inflow Depth = 0.57" for 1-YR event
Inflow = 8.41 cfs @ 12.11 hrs, Volume= 1.733 af
Primary = 8.41 cfs @ 12.11 hrs, Volume= 1.733 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 80S: BASIN 2: TOTAL AREA

Runoff = 12.18 cfs @ 11.96 hrs, Volume= 0.550 af, Depth= 1.77"
Routed to Pond 10P : BASIN 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	3.720	84	
	3.720		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Total Tc**

Summary for Subcatchment 80S+: BASIN 2: DISTURBED AREA FOR DEP PCSM SPREADSHEET

Runoff = 11.02 cfs @ 11.96 hrs, Volume= 0.505 af, Depth= 2.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	3.010	87	
	3.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 90S: Basin 1

Runoff = 11.81 cfs @ 12.05 hrs, Volume= 0.708 af, Depth= 1.42"
Routed to Pond 20P : BASIN 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	5.980	79	
	5.980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8					**Direct Entry, Total Tc**

Summary for Subcatchment 100S: POST A (BYPASS)

Runoff = 0.44 cfs @ 12.20 hrs, Volume= 0.047 af, Depth= 0.57"
Routed to Link 30L : POST TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	0.990	63	
	0.990		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.4					**Direct Entry, Total Tc**

Summary for Subcatchment 110S: POST B (BYPASS)

Runoff = 3.63 cfs @ 12.12 hrs, Volume= 0.273 af, Depth= 1.49"
Routed to Link 20L : OUTFALL FOX CHASE RD (POST B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	2.200	80	
	2.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.8					**Direct Entry, Total Tc**

Summary for Subcatchment 120S: POST C (BYPASS)

Runoff = 0.19 cfs @ 11.98 hrs, Volume= 0.010 af, Depth= 0.49"
Routed to Link 30L : POST TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	0.250	61	
	0.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 130S: TO BASIN 3A

Runoff = 11.45 cfs @ 12.06 hrs, Volume= 0.708 af, Depth= 1.63"
Routed to Pond 30P : BASIN 3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	5.220	82	
	5.220		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8					**Direct Entry,**

Summary for Subcatchment 130S+: BASIN 3A: DISTURBED AREA FOR DEP PCSM SPREADSHEET

Runoff = 11.79 cfs @ 12.06 hrs, Volume= 0.728 af, Depth= 1.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	5.140	83	
	5.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8					**Direct Entry,**

Summary for Subcatchment 140S: TO BASIN 3B

Runoff = 0.33 cfs @ 11.98 hrs, Volume= 0.018 af, Depth= 0.49"
Routed to Pond 40P : BASIN 3B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	0.430	61	
	0.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Time**

Summary for Subcatchment 150S: POST E (BYPASS)

Runoff = 4.85 cfs @ 12.15 hrs, Volume= 0.442 af, Depth= 0.65"
Routed to Link 50L : POST E TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	8.110	65	
	8.110		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7					**Direct Entry,**

Summary for Subcatchment 160S: TO STONE BMP 2A

Runoff = 16.68 cfs @ 12.04 hrs, Volume= 0.984 af, Depth= 2.18"
Routed to Pond 50P : STONE BMP 2A (BASIN)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	5.410	89	
	5.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					**Direct Entry,**

Summary for Subcatchment 170S: TO BASIN 4

Runoff = 21.86 cfs @ 12.02 hrs, Volume= 1.197 af, Depth= 1.77"
Routed to Pond 60P : BASIN 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	8.090	84	
	8.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3					**Direct Entry,**

Summary for Subcatchment 180S: POST F (BYPASS)

Runoff = 2.95 cfs @ 12.04 hrs, Volume= 0.185 af, Depth= 0.70"
Routed to Link 60L : POST F TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	3.170	66	
	3.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8					**Direct Entry,**

Summary for Subcatchment 190S: POST D (BYPASS)

Runoff = 3.42 cfs @ 12.19 hrs, Volume= 0.299 af, Depth= 1.05"
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	3.400	73	
	3.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.3					**Direct Entry,**

Summary for Subcatchment 200S: POST G (BYPASS)

Runoff = 3.15 cfs @ 12.04 hrs, Volume= 0.194 af, Depth= 0.79"
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=3.31"

	Area (ac)	CN	Description
*	2.930	68	
	2.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2					**Direct Entry,**

Summary for Pond 10P: BASIN 2

Inflow Area = 3.720 ac, 0.00% Impervious, Inflow Depth = 1.77" for 2-YR event
Inflow = 12.18 cfs @ 11.96 hrs, Volume= 0.550 af
Outflow = 0.19 cfs @ 11.52 hrs, Volume= 0.550 af, Atten= 98%, Lag= 0.0 min
Discarded = 0.19 cfs @ 11.52 hrs, Volume= 0.550 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 20P : BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.63' @ 17.86 hrs Surf.Area= 8,321 sf Storage= 15,363 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 815.5 min (1,639.4 - 823.9)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	63,080 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	6,500	0	0
244.00	8,000	10,875	10,875
246.00	10,400	18,400	29,275
248.00	12,900	23,300	52,575
249.00	14,750	13,825	66,400

Device	Routing	Invert	Outlet Devices
#1	Primary	240.15'	**24.0" Round OS pipe to Basin 1** L= 39.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 240.15' / 239.95' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Discarded	242.50'	**0.19 cfs Exfiltration at all elevations**
#3	Device 1	245.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	247.00'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.19 cfs @ 11.52 hrs HW=242.57' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=242.50' TW=239.87' (Dynamic Tailwater)
└**1=OS pipe to Basin 1** (Passes 0.00 cfs of 15.22 cfs potential flow)
├**3=Orifice/Grate** (Controls 0.00 cfs)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 20P: BASIN 1

Inflow Area = 9.700 ac, 0.00% Impervious, Inflow Depth = 0.88" for 2-YR event
Inflow = 11.81 cfs @ 12.05 hrs, Volume= 0.708 af
Outflow = 0.17 cfs @ 0.00 hrs, Volume= 1.237 af, Atten= 99%, Lag= 0.0 min
Discarded = 0.17 cfs @ 0.00 hrs, Volume= 1.237 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 20L : OUTFALL FOX CHASE RD (POST B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 239.87' Surf.Area= 14,432 sf Storage= 23,042 cf
Peak Elev= 240.89' @ 23.77 hrs Surf.Area= 16,948 sf Storage= 39,057 cf (16,015 cf above start)

Plug-Flow detention time= 2,922.4 min calculated for 0.708 af (100% of inflow)
Center-of-Mass det. time= 1,793.1 min (2,640.3 - 847.2)

Volume	Invert	Avail.Storage	Storage Description
#1	238.00'	206,673 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
238.00	10,750	0	0
240.00	15,500	26,250	26,250
242.00	20,750	36,250	62,500
244.00	26,000	46,750	109,250
246.00	31,600	57,600	166,850
247.50	36,000	50,700	217,550

Device	Routing	Invert	Outlet Devices
#1	Primary	240.30'	**15.0" Round OS Pipe Basin 1 to Road Inlet** L= 81.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 240.30' / 239.87' S= 0.0053 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Discarded	238.00'	**0.17 cfs Exfiltration at all elevations**
#3	Device 1	241.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	245.50'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.17 cfs @ 0.00 hrs HW=239.87' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.17 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=239.87' TW=0.00' (Dynamic Tailwater)
└**1=OS Pipe Basin 1 to Road Inlet** (Controls 0.00 cfs)
├**3=Orifice/Grate** (Controls 0.00 cfs)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 30P: BASIN 3A

Inflow Area = 5.220 ac, 0.00% Impervious, Inflow Depth = 1.63" for 2-YR event
Inflow = 11.45 cfs @ 12.06 hrs, Volume= 0.708 af
Outflow = 2.39 cfs @ 12.40 hrs, Volume= 0.708 af, Atten= 79%, Lag= 20.3 min
Primary = 2.39 cfs @ 12.40 hrs, Volume= 0.708 af
Routed to Pond 40P : BASIN 3B
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 243.66' @ 24.15 hrs Surf.Area= 24,553 sf Storage= 15,389 cf

Plug-Flow detention time= 1,151.4 min calculated for 0.708 af (100% of inflow)
Center-of-Mass det. time= 1,151.6 min (1,990.2 - 838.7)

Volume	Invert	Avail.Storage	Storage Description
#1	242.90'	129,966 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.90	0	0	0
242.99	100	5	5
243.00	22,840	115	119
244.00	27,390	25,115	25,234
246.00	32,170	59,560	84,794
247.50	37,180	52,013	136,807

Device	Routing	Invert	Outlet Devices
#1	Primary	242.50'	**15.0" Round Culvert - OS 3A-2** L= 45.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	242.90'	**10.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Secondary	242.50'	**18.0" Round Culvert - OS 3A-1** L= 39.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0128 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#4	Device 1	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 3	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 3	244.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.39 cfs @ 12.40 hrs HW=243.53' TW=242.88' (Dynamic Tailwater)
└─**1=Culvert - OS 3A-2** (Passes 2.39 cfs of 3.34 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 2.39 cfs @ 2.70 fps)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=242.90' TW=0.00' (Dynamic Tailwater)
└─**3=Culvert - OS 3A-1** (Passes 0.00 cfs of 0.81 cfs potential flow)
  ├─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 40P: BASIN 3B

Inflow Area = 5.650 ac, 0.00% Impervious, Inflow Depth = 1.54" for 2-YR event
Inflow = 2.44 cfs @ 12.39 hrs, Volume= 0.725 af
Outflow = 0.11 cfs @ 11.97 hrs, Volume= 0.725 af, Atten= 95%, Lag= 0.0 min
Discarded = 0.11 cfs @ 11.97 hrs, Volume= 0.725 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 243.66' @ 24.16 hrs Surf.Area= 10,155 sf Storage= 10,557 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1,028.8 min (2,992.8 - 1,964.1)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	38,615 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	8,470	0	0
244.00	11,340	14,858	14,858
246.00	14,450	25,790	40,648

Device	Routing	Invert	Outlet Devices
#1	Discarded	242.50'	**0.11 cfs Exfiltration at all elevations**
#2	Primary	237.00'	**15.0" Round Culvert - OS 3B** L= 45.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 237.00' / 236.00' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	244.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.11 cfs @ 11.97 hrs HW=242.54' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=242.50' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert - OS 3B** (Passes 0.00 cfs of 13.05 cfs potential flow)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 50P: STONE BMP 2A (BASIN)

Inflow Area = 5.410 ac, 0.00% Impervious, Inflow Depth = 2.18" for 2-YR event
Inflow = 16.68 cfs @ 12.04 hrs, Volume= 0.984 af
Outflow = 10.94 cfs @ 12.13 hrs, Volume= 0.984 af, Atten= 34%, Lag= 5.9 min
Discarded = 0.58 cfs @ 11.42 hrs, Volume= 0.672 af
Primary = 10.36 cfs @ 12.13 hrs, Volume= 0.312 af
Routed to Pond 60P : BASIN 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 243.72' @ 12.13 hrs Surf.Area= 9,900 sf Storage= 12,774 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 107.2 min (919.4 - 812.2)

Volume	Invert	Avail.Storage	Storage Description
#1	240.50'	20,831 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 52,470 cf Overall - 393 cf Embedded = 52,077 cf x 40.0% Voids
#2	242.80'	236 cf	**24.0" Round Pipe 714 to 712** Inside #1 L= 75.0' S= 0.0050 '/' 393 cf Overall - 3.5" Wall Thickness = 236 cf
		21,066 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
240.50	9,900	0	0
242.00	9,900	14,850	14,850
243.00	9,900	9,900	24,750
244.25	9,900	12,375	37,125
245.80	9,900	15,345	52,470

Device	Routing	Invert	Outlet Devices
#1	Discarded	240.50'	**0.58 cfs Exfiltration at all elevations**
#2	Primary	242.80'	**30.0" Round Culvert 712 TO 708** L= 103.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 242.00' S= 0.0078 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#3	Primary	242.80'	**30.0" Round Culvert 710 TO 708** L= 42.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 240.20' S= 0.0619 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Discarded OutFlow Max=0.58 cfs @ 11.42 hrs HW=240.55' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.58 cfs)

Primary OutFlow Max=10.34 cfs @ 12.13 hrs HW=243.72' TW=232.98' (Dynamic Tailwater)
├**2=Culvert 712 TO 708** (Barrel Controls 4.99 cfs @ 4.53 fps)
└**3=Culvert 710 TO 708** (Inlet Controls 5.35 cfs @ 3.26 fps)

Summary for Pond 60P: BASIN 4

Inflow Area = 13.500 ac, 0.00% Impervious, Inflow Depth = 1.34" for 2-YR event
Inflow = 25.26 cfs @ 12.08 hrs, Volume= 1.508 af
Outflow = 2.61 cfs @ 12.83 hrs, Volume= 1.506 af, Atten= 90%, Lag= 44.8 min
Primary = 2.61 cfs @ 12.83 hrs, Volume= 1.506 af
Routed to Link 60L : POST F TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 233.75' @ 12.83 hrs Surf.Area= 15,049 sf Storage= 34,876 cf

Plug-Flow detention time= 185.1 min calculated for 1.506 af (100% of inflow)
Center-of-Mass det. time= 184.7 min (996.8 - 812.2)

Volume	Invert	Avail.Storage	Storage Description
#1	231.00'	161,092 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
231.00	10,000	0	0
232.00	13,000	11,500	11,500
234.00	16,250	29,250	40,750
236.00	22,200	38,450	79,200
238.00	28,000	50,200	129,400
239.30	33,800	40,170	169,570

Device	Routing	Invert	Outlet Devices
#1	Primary	230.50'	**24.0" Round Culvert - OS 4** L= 62.8' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 230.50' / 230.00' S= 0.0080 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	231.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	234.00'	**28.0" W x 10.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	237.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.61 cfs @ 12.83 hrs HW=233.75' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert - OS 4** (Passes 2.61 cfs of 22.06 cfs potential flow)
↑—**2=Orifice/Grate** (Orifice Controls 2.61 cfs @ 7.48 fps)
—**3=Orifice/Grate** (Controls 0.00 cfs)
—**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Link 20L: OUTFALL FOX CHASE RD (POST B)

Inflow Area = 11.900 ac, 0.00% Impervious, Inflow Depth = 0.27" for 2-YR event
Inflow = 3.63 cfs @ 12.12 hrs, Volume= 0.273 af
Primary = 3.63 cfs @ 12.12 hrs, Volume= 0.273 af, Atten= 0%, Lag= 0.0 min
Routed to Link 30L : POST TOOKANY WATERSHED (01)

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 30L: POST TOOKANY WATERSHED (01)

Inflow Area = 13.140 ac, 0.00% Impervious, Inflow Depth = 0.30" for 2-YR event
Inflow = 4.07 cfs @ 12.13 hrs, Volume= 0.330 af
Primary = 4.07 cfs @ 12.13 hrs, Volume= 0.330 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 50L: POST E TOTAL

Inflow Area = 13.760 ac, 0.00% Impervious, Inflow Depth = 0.39" for 2-YR event
Inflow = 4.85 cfs @ 12.15 hrs, Volume= 0.442 af
Primary = 4.85 cfs @ 12.15 hrs, Volume= 0.442 af, Atten= 0%, Lag= 0.0 min
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 60L: POST F TOTAL

Inflow Area = 16.670 ac, 0.00% Impervious, Inflow Depth = 1.22" for 2-YR event
Inflow = 4.75 cfs @ 12.06 hrs, Volume= 1.691 af
Primary = 4.75 cfs @ 12.06 hrs, Volume= 1.691 af, Atten= 0%, Lag= 0.0 min
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 70L: POST PENNYPACK CREEK WATERSHED (02)

Inflow Area = 36.760 ac, 0.00% Impervious, Inflow Depth = 0.86" for 2-YR event
Inflow = 14.51 cfs @ 12.10 hrs, Volume= 2.626 af
Primary = 14.51 cfs @ 12.10 hrs, Volume= 2.626 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 80S: BASIN 2: TOTAL AREA

Runoff = 17.13 cfs @ 11.96 hrs, Volume= 0.784 af, Depth= 2.53"
Routed to Pond 10P : BASIN 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	3.720	84	
	3.720		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Total Tc**

Summary for Subcatchment 80S+: BASIN 2: DISTURBED AREA FOR DEP PCSM SPREADSHEET

Runoff = 15.09 cfs @ 11.96 hrs, Volume= 0.703 af, Depth= 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	3.010	87	
	3.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 90S: Basin 1

Runoff = 17.63 cfs @ 12.05 hrs, Volume= 1.052 af, Depth= 2.11"
Routed to Pond 20P : BASIN 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	5.980	79	
	5.980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8					**Direct Entry, Total Tc**

Summary for Subcatchment 100S: POST A (BYPASS)

Runoff = 0.92 cfs @ 12.17 hrs, Volume= 0.084 af, Depth= 1.02"
Routed to Link 30L : POST TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	0.990	63	
	0.990		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.4					**Direct Entry, Total Tc**

Summary for Subcatchment 110S: POST B (BYPASS)

Runoff = 5.40 cfs @ 12.12 hrs, Volume= 0.402 af, Depth= 2.19"
Routed to Link 20L : OUTFALL FOX CHASE RD (POST B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	2.200	80	
	2.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.8					**Direct Entry, Total Tc**

Summary for Subcatchment 120S: POST C (BYPASS)

Runoff = 0.40 cfs @ 11.97 hrs, Volume= 0.019 af, Depth= 0.91"
Routed to Link 30L : POST TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	0.250	61	
	0.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 130S: TO BASIN 3A

Runoff = 16.57 cfs @ 12.06 hrs, Volume= 1.026 af, Depth= 2.36"
Routed to Pond 30P : BASIN 3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	5.220	82	
	5.220		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8					**Direct Entry,**

Summary for Subcatchment 130S+: BASIN 3A: DISTURBED AREA FOR DEP PCSM SPREADSHEET

Runoff = 16.88 cfs @ 12.06 hrs, Volume= 1.046 af, Depth= 2.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	5.140	83	
	5.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8					**Direct Entry,**

Summary for Subcatchment 140S: TO BASIN 3B

Runoff = 0.68 cfs @ 11.97 hrs, Volume= 0.032 af, Depth= 0.91"
Routed to Pond 40P : BASIN 3B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	0.430	61	
	0.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Time**

Summary for Subcatchment 150S: POST E (BYPASS)

Runoff = 9.41 cfs @ 12.15 hrs, Volume= 0.767 af, Depth= 1.13"
Routed to Link 50L : POST E TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	8.110	65	
	8.110		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7					**Direct Entry,**

Summary for Subcatchment 160S: TO STONE BMP 2A

Runoff = 22.56 cfs @ 12.04 hrs, Volume= 1.349 af, Depth= 2.99"
Routed to Pond 50P : STONE BMP 2A (BASIN)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	5.410	89	
	5.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					**Direct Entry,**

Summary for Subcatchment 170S: TO BASIN 4

Runoff = 30.91 cfs @ 12.02 hrs, Volume= 1.706 af, Depth= 2.53"
Routed to Pond 60P : BASIN 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	8.090	84	
	8.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3					**Direct Entry,**

Summary for Subcatchment 180S: POST F (BYPASS)

Runoff = 5.43 cfs @ 12.04 hrs, Volume= 0.316 af, Depth= 1.20"
Routed to Link 60L : POST F TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	3.170	66	
	3.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8					**Direct Entry,**

Summary for Subcatchment 190S: POST D (BYPASS)

Runoff = 5.58 cfs @ 12.17 hrs, Volume= 0.470 af, Depth= 1.66"
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	3.400	73	
	3.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.3					**Direct Entry,**

Summary for Subcatchment 200S: POST G (BYPASS)

Runoff = 5.54 cfs @ 12.04 hrs, Volume= 0.322 af, Depth= 1.32"
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-YR Rainfall=4.18"

	Area (ac)	CN	Description
*	2.930	68	
	2.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2					**Direct Entry,**

Summary for Pond 10P: BASIN 2

Inflow Area = 3.720 ac, 0.00% Impervious, Inflow Depth = 2.53" for 5-YR event
Inflow = 17.13 cfs @ 11.96 hrs, Volume= 0.784 af
Outflow = 0.31 cfs @ 16.07 hrs, Volume= 0.784 af, Atten= 98%, Lag= 246.5 min
Discarded = 0.19 cfs @ 11.06 hrs, Volume= 0.692 af
Primary = 0.12 cfs @ 16.07 hrs, Volume= 0.092 af
Routed to Pond 20P : BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 245.40' @ 16.07 hrs Surf.Area= 9,195 sf Storage= 22,077 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 949.9 min (1,763.7 - 813.8)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	63,080 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	6,500	0	0
244.00	8,000	10,875	10,875
246.00	10,400	18,400	29,275
248.00	12,900	23,300	52,575
249.00	14,750	13,825	66,400

Device	Routing	Invert	Outlet Devices
#1	Primary	240.15'	**24.0" Round OS pipe to Basin 1** L= 39.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 240.15' / 239.95' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Discarded	242.50'	**0.19 cfs Exfiltration at all elevations**
#3	Device 1	245.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	247.00'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.19 cfs @ 11.06 hrs HW=242.57' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.12 cfs @ 16.07 hrs HW=245.40' TW=241.51' (Dynamic Tailwater)
└**1=OS pipe to Basin 1** (Passes 0.12 cfs of 29.85 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 0.12 cfs @ 2.52 fps)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 20P: BASIN 1

Inflow Area = 9.700 ac, 0.00% Impervious, Inflow Depth = 1.42" for 5-YR event
Inflow = 17.63 cfs @ 12.05 hrs, Volume= 1.144 af
Outflow = 0.34 cfs @ 21.39 hrs, Volume= 1.626 af, Atten= 98%, Lag= 560.7 min
Discarded = 0.17 cfs @ 0.00 hrs, Volume= 1.405 af
Primary = 0.17 cfs @ 21.39 hrs, Volume= 0.221 af
Routed to Link 20L : OUTFALL FOX CHASE RD (POST B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 239.87' Surf.Area= 14,432 sf Storage= 23,042 cf
Peak Elev= 241.63' @ 21.39 hrs Surf.Area= 18,790 sf Storage= 52,250 cf (29,207 cf above start)

Plug-Flow detention time= 2,841.3 min calculated for 1.097 af (96% of inflow)
Center-of-Mass det. time= 1,918.4 min (2,774.4 - 856.0)

Volume	Invert	Avail.Storage	Storage Description
#1	238.00'	206,673 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
238.00	10,750	0	0
240.00	15,500	26,250	26,250
242.00	20,750	36,250	62,500
244.00	26,000	46,750	109,250
246.00	31,600	57,600	166,850
247.50	36,000	50,700	217,550

Device	Routing	Invert	Outlet Devices
#1	Primary	240.30'	**15.0" Round OS Pipe Basin 1 to Road Inlet** L= 81.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 240.30' / 239.87' S= 0.0053 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Discarded	238.00'	**0.17 cfs Exfiltration at all elevations**
#3	Device 1	241.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	245.50'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.17 cfs @ 0.00 hrs HW=239.87' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.17 cfs)

Primary OutFlow Max=0.17 cfs @ 21.39 hrs HW=241.63' TW=0.00' (Dynamic Tailwater)
└**1=OS Pipe Basin 1 to Road Inlet** (Passes 0.17 cfs of 4.28 cfs potential flow)
├**3=Orifice/Grate** (Orifice Controls 0.17 cfs @ 3.42 fps)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 30P: BASIN 3A

Inflow Area = 5.220 ac, 0.00% Impervious, Inflow Depth = 2.36" for 5-YR event
Inflow = 16.57 cfs @ 12.06 hrs, Volume= 1.026 af
Outflow = 3.54 cfs @ 12.38 hrs, Volume= 0.931 af, Atten= 79%, Lag= 19.4 min
Primary = 3.54 cfs @ 12.38 hrs, Volume= 0.930 af
Routed to Pond 40P : BASIN 3B
Secondary = 0.01 cfs @ 24.18 hrs, Volume= 0.002 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.05' @ 24.18 hrs Surf.Area= 26,138 sf Storage= 25,321 cf

Plug-Flow detention time= 1,577.7 min calculated for 0.931 af (91% of inflow)
Center-of-Mass det. time= 1,530.0 min (2,358.0 - 828.1)

Volume	Invert	Avail.Storage	Storage Description
#1	242.90'	129,966 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.90	0	0	0
242.99	100	5	5
243.00	22,840	115	119
244.00	27,390	25,115	25,234
246.00	32,170	59,560	84,794
247.50	37,180	52,013	136,807

Device	Routing	Invert	Outlet Devices
#1	Primary	242.50'	**15.0" Round Culvert - OS 3A-2** L= 45.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	242.90'	**10.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Secondary	242.50'	**18.0" Round Culvert - OS 3A-1** L= 39.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0128 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#4	Device 1	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 3	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 3	244.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.54 cfs @ 12.38 hrs HW=243.77' TW=243.13' (Dynamic Tailwater)
└─**1=Culvert - OS 3A-2** (Passes 3.54 cfs of 4.24 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 3.54 cfs @ 3.24 fps)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.01 cfs @ 24.18 hrs HW=244.05' TW=0.00' (Dynamic Tailwater)
└─**3=Culvert - OS 3A-1** (Passes 0.01 cfs of 7.62 cfs potential flow)
  ├─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Orifice Controls 0.01 cfs @ 0.77 fps)

Summary for Pond 40P: BASIN 3B

Inflow Area = 5.650 ac, 0.00% Impervious, Inflow Depth > 2.04" for 5-YR event
Inflow = 3.63 cfs @ 12.36 hrs, Volume= 0.962 af
Outflow = 0.11 cfs @ 11.75 hrs, Volume= 0.828 af, Atten= 97%, Lag= 0.0 min
Discarded = 0.11 cfs @ 11.75 hrs, Volume= 0.828 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.05' @ 24.19 hrs Surf.Area= 10,849 sf Storage= 14,669 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 959.2 min (3,269.0 - 2,309.7)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	38,615 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	8,470	0	0
244.00	11,340	14,858	14,858
246.00	14,450	25,790	40,648

Device	Routing	Invert	Outlet Devices
#1	Discarded	242.50'	**0.11 cfs Exfiltration at all elevations**
#2	Primary	237.00'	**15.0" Round Culvert - OS 3B** L= 45.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 237.00' / 236.00' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	244.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.11 cfs @ 11.75 hrs HW=242.54' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=242.50' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert - OS 3B** (Passes 0.00 cfs of 13.05 cfs potential flow)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 50P: STONE BMP 2A (BASIN)

Inflow Area = 5.410 ac, 0.00% Impervious, Inflow Depth = 2.99" for 5-YR event
Inflow = 22.56 cfs @ 12.04 hrs, Volume= 1.349 af
Outflow = 19.41 cfs @ 12.09 hrs, Volume= 1.349 af, Atten= 14%, Lag= 3.4 min
Discarded = 0.58 cfs @ 10.99 hrs, Volume= 0.776 af
Primary = 18.83 cfs @ 12.09 hrs, Volume= 0.573 af
Routed to Pond 60P : BASIN 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.09' @ 12.09 hrs Surf.Area= 9,900 sf Storage= 14,246 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 96.0 min (899.3 - 803.3)

Volume	Invert	Avail.Storage	Storage Description
#1	240.50'	20,831 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 52,470 cf Overall - 393 cf Embedded = 52,077 cf x 40.0% Voids
#2	242.80'	236 cf	**24.0" Round Pipe 714 to 712** Inside #1 L= 75.0' S= 0.0050 '/' 393 cf Overall - 3.5" Wall Thickness = 236 cf
		21,066 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
240.50	9,900	0	0
242.00	9,900	14,850	14,850
243.00	9,900	9,900	24,750
244.25	9,900	12,375	37,125
245.80	9,900	15,345	52,470

Device	Routing	Invert	Outlet Devices
#1	Discarded	240.50'	**0.58 cfs Exfiltration at all elevations**
#2	Primary	242.80'	**30.0" Round Culvert 712 TO 708** L= 103.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 242.00' S= 0.0078 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#3	Primary	242.80'	**30.0" Round Culvert 710 TO 708** L= 42.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 240.20' S= 0.0619 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Discarded OutFlow Max=0.58 cfs @ 10.99 hrs HW=240.55' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.58 cfs)

Primary OutFlow Max=18.81 cfs @ 12.09 hrs HW=244.09' TW=233.72' (Dynamic Tailwater)
├**2=Culvert 712 TO 708** (Barrel Controls 9.00 cfs @ 5.16 fps)
└**3=Culvert 710 TO 708** (Inlet Controls 9.81 cfs @ 3.86 fps)

Summary for Pond 60P: BASIN 4

Inflow Area = 13.500 ac, 0.00% Impervious, Inflow Depth = 2.03" for 5-YR event
Inflow = 45.92 cfs @ 12.05 hrs, Volume= 2.279 af
Outflow = 7.42 cfs @ 12.45 hrs, Volume= 2.277 af, Atten= 84%, Lag= 23.9 min
Primary = 7.42 cfs @ 12.45 hrs, Volume= 2.277 af
Routed to Link 60L : POST F TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 234.70' @ 12.45 hrs Surf.Area= 17,402 sf Storage= 50,125 cf

Plug-Flow detention time= 173.0 min calculated for 2.277 af (100% of inflow)
Center-of-Mass det. time= 172.8 min (973.8 - 801.0)

Volume	Invert	Avail.Storage	Storage Description
#1	231.00'	161,092 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
231.00	10,000	0	0
232.00	13,000	11,500	11,500
234.00	16,250	29,250	40,750
236.00	22,200	38,450	79,200
238.00	28,000	50,200	129,400
239.30	33,800	40,170	169,570

Device	Routing	Invert	Outlet Devices
#1	Primary	230.50'	**24.0" Round Culvert - OS 4** L= 62.8' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 230.50' / 230.00' S= 0.0080 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	231.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	234.00'	**28.0" W x 10.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	237.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.42 cfs @ 12.45 hrs HW=234.70' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert - OS 4** (Passes 7.42 cfs of 27.04 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 3.08 cfs @ 8.83 fps)
3=Orifice/Grate (Orifice Controls 4.34 cfs @ 2.68 fps)
4=Orifice/Grate (Controls 0.00 cfs)

Summary for Link 20L: OUTFALL FOX CHASE RD (POST B)

Inflow Area = 11.900 ac, 0.00% Impervious, Inflow Depth = 0.63" for 5-YR event
Inflow = 5.40 cfs @ 12.12 hrs, Volume= 0.623 af
Primary = 5.40 cfs @ 12.12 hrs, Volume= 0.623 af, Atten= 0%, Lag= 0.0 min
Routed to Link 30L : POST TOOKANY WATERSHED (01)

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 30L: POST TOOKANY WATERSHED (01)

Inflow Area = 13.140 ac, 0.00% Impervious, Inflow Depth = 0.66" for 5-YR event
Inflow = 6.33 cfs @ 12.13 hrs, Volume= 0.725 af
Primary = 6.33 cfs @ 12.13 hrs, Volume= 0.725 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 50L: POST E TOTAL

Inflow Area = 13.760 ac, 0.00% Impervious, Inflow Depth = 0.67" for 5-YR event
Inflow = 9.41 cfs @ 12.15 hrs, Volume= 0.768 af
Primary = 9.41 cfs @ 12.15 hrs, Volume= 0.768 af, Atten= 0%, Lag= 0.0 min
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 60L: POST F TOTAL

Inflow Area = 16.670 ac, 0.00% Impervious, Inflow Depth = 1.87" for 5-YR event
Inflow = 8.35 cfs @ 12.41 hrs, Volume= 2.592 af
Primary = 8.35 cfs @ 12.41 hrs, Volume= 2.592 af, Atten= 0%, Lag= 0.0 min
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 70L: POST PENNYPACK CREEK WATERSHED (02)

Inflow Area = 36.760 ac, 0.00% Impervious, Inflow Depth = 1.36" for 5-YR event
Inflow = 25.52 cfs @ 12.09 hrs, Volume= 4.153 af
Primary = 25.52 cfs @ 12.09 hrs, Volume= 4.153 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 80S: BASIN 2: TOTAL AREA

Runoff = 21.40 cfs @ 11.96 hrs, Volume= 0.991 af, Depth= 3.20"
Routed to Pond 10P : BASIN 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	3.720	84	
	3.720		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Total Tc**

Summary for Subcatchment 80S+: BASIN 2: DISTURBED AREA FOR DEP PCSM SPREADSHEET

Runoff = 18.56 cfs @ 11.96 hrs, Volume= 0.876 af, Depth= 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	3.010	87	
	3.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 90S: Basin 1

Runoff = 22.79 cfs @ 12.05 hrs, Volume= 1.362 af, Depth= 2.73"
Routed to Pond 20P : BASIN 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	5.980	79	
	5.980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8					**Direct Entry, Total Tc**

Summary for Subcatchment 100S: POST A (BYPASS)

Runoff = 1.39 cfs @ 12.17 hrs, Volume= 0.120 af, Depth= 1.46"
Routed to Link 30L : POST TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	0.990	63	
	0.990		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.4					**Direct Entry, Total Tc**

Summary for Subcatchment 110S: POST B (BYPASS)

Runoff = 6.96 cfs @ 12.12 hrs, Volume= 0.518 af, Depth= 2.82"
Routed to Link 20L : OUTFALL FOX CHASE RD (POST B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	2.200	80	
	2.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.8					**Direct Entry, Total Tc**

Summary for Subcatchment 120S: POST C (BYPASS)

Runoff = 0.60 cfs @ 11.97 hrs, Volume= 0.028 af, Depth= 1.32"
Routed to Link 30L : POST TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	0.250	61	
	0.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 130S: TO BASIN 3A

Runoff = 21.05 cfs @ 12.06 hrs, Volume= 1.308 af, Depth= 3.01"
Routed to Pond 30P : BASIN 3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	5.220	82	
	5.220		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8					**Direct Entry,**

Summary for Subcatchment 130S+: BASIN 3A: DISTURBED AREA FOR DEP PCSM SPREADSHEET

Runoff = 21.32 cfs @ 12.06 hrs, Volume= 1.329 af, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	5.140	83	
	5.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8					**Direct Entry,**

Summary for Subcatchment 140S: TO BASIN 3B

Runoff = 1.03 cfs @ 11.97 hrs, Volume= 0.047 af, Depth= 1.32"
Routed to Pond 40P : BASIN 3B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	0.430	61	
	0.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Time**

Summary for Subcatchment 150S: POST E (BYPASS)

Runoff = 13.83 cfs @ 12.14 hrs, Volume= 1.082 af, Depth= 1.60"
Routed to Link 50L : POST E TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	8.110	65	
	8.110		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7					**Direct Entry,**

Summary for Subcatchment 160S: TO STONE BMP 2A

Runoff = 27.55 cfs @ 12.03 hrs, Volume= 1.666 af, Depth= 3.70"
Routed to Pond 50P : STONE BMP 2A (BASIN)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	5.410	89	
	5.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					**Direct Entry,**

Summary for Subcatchment 170S: TO BASIN 4

Runoff = 38.74 cfs @ 12.02 hrs, Volume= 2.156 af, Depth= 3.20"
Routed to Pond 60P : BASIN 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	8.090	84	
	8.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3					**Direct Entry,**

Summary for Subcatchment 180S: POST F (BYPASS)

Runoff = 7.79 cfs @ 12.03 hrs, Volume= 0.442 af, Depth= 1.67"
Routed to Link 60L : POST F TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	3.170	66	
	3.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8					**Direct Entry,**

Summary for Subcatchment 190S: POST D (BYPASS)

Runoff = 7.58 cfs @ 12.17 hrs, Volume= 0.628 af, Depth= 2.22"
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	3.400	73	
	3.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.3					**Direct Entry,**

Summary for Subcatchment 200S: POST G (BYPASS)

Runoff = 7.79 cfs @ 12.04 hrs, Volume= 0.445 af, Depth= 1.82"
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.92"

	Area (ac)	CN	Description
*	2.930	68	
	2.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2					**Direct Entry,**

Summary for Pond 10P: BASIN 2

Inflow Area = 3.720 ac, 0.00% Impervious, Inflow Depth = 3.20" for 10-YR event
Inflow = 21.40 cfs @ 11.96 hrs, Volume= 0.991 af
Outflow = 0.41 cfs @ 15.82 hrs, Volume= 0.991 af, Atten= 98%, Lag= 231.5 min
Discarded = 0.19 cfs @ 10.63 hrs, Volume= 0.762 af
Primary = 0.22 cfs @ 15.82 hrs, Volume= 0.229 af
Routed to Pond 20P : BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 245.98' @ 15.82 hrs Surf.Area= 9,861 sf Storage= 27,647 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 948.9 min (1,756.0 - 807.2)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	63,080 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	6,500	0	0
244.00	8,000	10,875	10,875
246.00	10,400	18,400	29,275
248.00	12,900	23,300	52,575
249.00	14,750	13,825	66,400

Device	Routing	Invert	Outlet Devices
#1	Primary	240.15'	**24.0" Round OS pipe to Basin 1** L= 39.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 240.15' / 239.95' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Discarded	242.50'	**0.19 cfs Exfiltration at all elevations**
#3	Device 1	245.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	247.00'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.19 cfs @ 10.63 hrs HW=242.57' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.22 cfs @ 15.82 hrs HW=245.98' TW=242.09' (Dynamic Tailwater)
└**1=OS pipe to Basin 1** (Passes 0.22 cfs of 29.85 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 0.22 cfs @ 4.46 fps)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 20P: BASIN 1

Inflow Area = 9.700 ac, 0.00% Impervious, Inflow Depth = 1.97" for 10-YR event
Inflow = 22.82 cfs @ 12.05 hrs, Volume= 1.591 af
Outflow = 0.43 cfs @ 24.07 hrs, Volume= 1.918 af, Atten= 98%, Lag= 721.4 min
Discarded = 0.17 cfs @ 0.00 hrs, Volume= 1.405 af
Primary = 0.26 cfs @ 24.07 hrs, Volume= 0.513 af
Routed to Link 20L : OUTFALL FOX CHASE RD (POST B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 239.87' Surf.Area= 14,432 sf Storage= 23,042 cf
Peak Elev= 242.33' @ 24.07 hrs Surf.Area= 20,529 sf Storage= 65,964 cf (42,922 cf above start)

Plug-Flow detention time= 2,486.1 min calculated for 1.389 af (87% of inflow)
Center-of-Mass det. time= 1,740.2 min (2,614.6 - 874.4)

Volume	Invert	Avail.Storage	Storage Description
#1	238.00'	206,673 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
238.00	10,750	0	0
240.00	15,500	26,250	26,250
242.00	20,750	36,250	62,500
244.00	26,000	46,750	109,250
246.00	31,600	57,600	166,850
247.50	36,000	50,700	217,550

Device	Routing	Invert	Outlet Devices
#1	Primary	240.30'	**15.0" Round OS Pipe Basin 1 to Road Inlet** L= 81.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 240.30' / 239.87' S= 0.0053 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Discarded	238.00'	**0.17 cfs Exfiltration at all elevations**
#3	Device 1	241.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	245.50'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.17 cfs @ 0.00 hrs HW=239.87' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.17 cfs)

Primary OutFlow Max=0.26 cfs @ 24.07 hrs HW=242.33' TW=0.00' (Dynamic Tailwater)
└**1=OS Pipe Basin 1 to Road Inlet** (Passes 0.26 cfs of 5.88 cfs potential flow)
├**3=Orifice/Grate** (Orifice Controls 0.26 cfs @ 5.28 fps)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 30P: BASIN 3A

Inflow Area = 5.220 ac, 0.00% Impervious, Inflow Depth = 3.01" for 10-YR event
Inflow = 21.05 cfs @ 12.06 hrs, Volume= 1.308 af
Outflow = 4.30 cfs @ 12.36 hrs, Volume= 1.105 af, Atten= 80%, Lag= 18.0 min
Primary = 4.30 cfs @ 12.36 hrs, Volume= 0.968 af
Routed to Pond 40P : BASIN 3B
Secondary = 0.10 cfs @ 24.12 hrs, Volume= 0.137 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.31' @ 24.12 hrs Surf.Area= 26,732 sf Storage= 32,233 cf

Plug-Flow detention time= 1,422.8 min calculated for 1.105 af (84% of inflow)
Center-of-Mass det. time= 1,352.7 min (2,173.8 - 821.1)

Volume	Invert	Avail.Storage	Storage Description
#1	242.90'	129,966 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.90	0	0	0
242.99	100	5	5
243.00	22,840	115	119
244.00	27,390	25,115	25,234
246.00	32,170	59,560	84,794
247.50	37,180	52,013	136,807

Device	Routing	Invert	Outlet Devices
#1	Primary	242.50'	**15.0" Round Culvert - OS 3A-2** L= 45.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	242.90'	**10.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Secondary	242.50'	**18.0" Round Culvert - OS 3A-1** L= 39.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0128 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#4	Device 1	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 3	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 3	244.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.29 cfs @ 12.36 hrs HW=243.99' TW=243.32' (Dynamic Tailwater)
└─**1=Culvert - OS 3A-2** (Passes 4.29 cfs of 4.82 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 4.29 cfs @ 3.93 fps)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.10 cfs @ 24.12 hrs HW=244.31' TW=0.00' (Dynamic Tailwater)
└─**3=Culvert - OS 3A-1** (Passes 0.10 cfs of 8.77 cfs potential flow)
  ├─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Orifice Controls 0.10 cfs @ 2.09 fps)

Summary for Pond 40P: BASIN 3B

Inflow Area = 5.650 ac, 0.00% Impervious, Inflow Depth > 2.16" for 10-YR event
Inflow = 4.43 cfs @ 12.36 hrs, Volume= 1.015 af
Outflow = 0.11 cfs @ 11.29 hrs, Volume= 0.835 af, Atten= 98%, Lag= 0.0 min
Discarded = 0.11 cfs @ 11.29 hrs, Volume= 0.835 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.31' @ 24.13 hrs Surf.Area= 11,235 sf Storage= 17,556 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1,041.8 min (3,245.2 - 2,203.4)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	38,615 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	8,470	0	0
244.00	11,340	14,858	14,858
246.00	14,450	25,790	40,648

Device	Routing	Invert	Outlet Devices
#1	Discarded	242.50'	**0.11 cfs Exfiltration at all elevations**
#2	Primary	237.00'	**15.0" Round Culvert - OS 3B** L= 45.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 237.00' / 236.00' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	244.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.11 cfs @ 11.29 hrs HW=242.54' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=242.50' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert - OS 3B** (Passes 0.00 cfs of 13.05 cfs potential flow)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 50P: STONE BMP 2A (BASIN)

Inflow Area = 5.410 ac, 0.00% Impervious, Inflow Depth = 3.70" for 10-YR event
Inflow = 27.55 cfs @ 12.03 hrs, Volume= 1.666 af
Outflow = 25.38 cfs @ 12.08 hrs, Volume= 1.666 af, Atten= 8%, Lag= 2.4 min
Discarded = 0.58 cfs @ 10.62 hrs, Volume= 0.853 af
Primary = 24.80 cfs @ 12.08 hrs, Volume= 0.813 af
Routed to Pond 60P : BASIN 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.31' @ 12.08 hrs Surf.Area= 9,900 sf Storage= 15,154 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 89.0 min (886.4 - 797.3)

Volume	Invert	Avail.Storage	Storage Description
#1	240.50'	20,831 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 52,470 cf Overall - 393 cf Embedded = 52,077 cf x 40.0% Voids
#2	242.80'	236 cf	**24.0" Round Pipe 714 to 712** Inside #1 L= 75.0' S= 0.0050 '/' 393 cf Overall - 3.5" Wall Thickness = 236 cf
		21,066 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
240.50	9,900	0	0
242.00	9,900	14,850	14,850
243.00	9,900	9,900	24,750
244.25	9,900	12,375	37,125
245.80	9,900	15,345	52,470

Device	Routing	Invert	Outlet Devices
#1	Discarded	240.50'	**0.58 cfs Exfiltration at all elevations**
#2	Primary	242.80'	**30.0" Round Culvert 712 TO 708** L= 103.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 242.00' S= 0.0078 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#3	Primary	242.80'	**30.0" Round Culvert 710 TO 708** L= 42.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 240.20' S= 0.0619 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Discarded OutFlow Max=0.58 cfs @ 10.62 hrs HW=240.56' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.58 cfs)

Primary OutFlow Max=24.78 cfs @ 12.08 hrs HW=244.31' TW=234.37' (Dynamic Tailwater)
├**2=Culvert 712 TO 708** (Barrel Controls 11.81 cfs @ 5.46 fps)
└**3=Culvert 710 TO 708** (Inlet Controls 12.97 cfs @ 4.18 fps)

Summary for Pond 60P: BASIN 4

Inflow Area = 13.500 ac, 0.00% Impervious, Inflow Depth = 2.64" for 10-YR event
Inflow = 60.92 cfs @ 12.04 hrs, Volume= 2.968 af
Outflow = 12.29 cfs @ 12.35 hrs, Volume= 2.966 af, Atten= 80%, Lag= 18.6 min
Primary = 12.29 cfs @ 12.35 hrs, Volume= 2.966 af
Routed to Link 60L : POST F TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 235.34' @ 12.35 hrs Surf.Area= 19,231 sf Storage= 61,976 cf

Plug-Flow detention time= 153.0 min calculated for 2.966 af (100% of inflow)
Center-of-Mass det. time= 152.9 min (947.9 - 795.0)

Volume	Invert	Avail.Storage	Storage Description
#1	231.00'	161,092 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
231.00	10,000	0	0
232.00	13,000	11,500	11,500
234.00	16,250	29,250	40,750
236.00	22,200	38,450	79,200
238.00	28,000	50,200	129,400
239.30	33,800	40,170	169,570

Device	Routing	Invert	Outlet Devices
#1	Primary	230.50'	**24.0" Round Culvert - OS 4** L= 62.8' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 230.50' / 230.00' S= 0.0080 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	231.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	234.00'	**28.0" W x 10.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	237.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=12.29 cfs @ 12.35 hrs HW=235.34' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert - OS 4** (Passes 12.29 cfs of 29.65 cfs potential flow)
↑—**2=Orifice/Grate** (Orifice Controls 3.37 cfs @ 9.64 fps)
—**3=Orifice/Grate** (Orifice Controls 8.93 cfs @ 4.59 fps)
—**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Link 20L: OUTFALL FOX CHASE RD (POST B)

Inflow Area = 11.900 ac, 0.00% Impervious, Inflow Depth = 1.04" for 10-YR event
Inflow = 6.96 cfs @ 12.12 hrs, Volume= 1.031 af
Primary = 6.96 cfs @ 12.12 hrs, Volume= 1.031 af, Atten= 0%, Lag= 0.0 min
Routed to Link 30L : POST TOOKANY WATERSHED (01)

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 30L: POST TOOKANY WATERSHED (01)

Inflow Area = 13.140 ac, 0.00% Impervious, Inflow Depth = 1.08" for 10-YR event
Inflow = 8.41 cfs @ 12.12 hrs, Volume= 1.178 af
Primary = 8.41 cfs @ 12.12 hrs, Volume= 1.178 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 50L: POST E TOTAL

Inflow Area = 13.760 ac, 0.00% Impervious, Inflow Depth = 1.06" for 10-YR event
Inflow = 13.83 cfs @ 12.14 hrs, Volume= 1.219 af
Primary = 13.83 cfs @ 12.14 hrs, Volume= 1.219 af, Atten= 0%, Lag= 0.0 min
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 60L: POST F TOTAL

Inflow Area = 16.670 ac, 0.00% Impervious, Inflow Depth = 2.45" for 10-YR event
Inflow = 14.22 cfs @ 12.17 hrs, Volume= 3.408 af
Primary = 14.22 cfs @ 12.17 hrs, Volume= 3.408 af, Atten= 0%, Lag= 0.0 min
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 70L: POST PENNYPACK CREEK WATERSHED (02)

Inflow Area = 36.760 ac, 0.00% Impervious, Inflow Depth = 1.86" for 10-YR event
Inflow = 40.20 cfs @ 12.13 hrs, Volume= 5.700 af
Primary = 40.20 cfs @ 12.13 hrs, Volume= 5.700 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 80S: BASIN 2: TOTAL AREA

Runoff = 27.67 cfs @ 11.96 hrs, Volume= 1.301 af, Depth= 4.20"
Routed to Pond 10P : BASIN 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	3.720	84	
	3.720		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Total Tc**

Summary for Subcatchment 80S+: BASIN 2: DISTURBED AREA FOR DEP PCSM SPREADSHEET

Runoff = 23.62 cfs @ 11.96 hrs, Volume= 1.133 af, Depth= 4.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	3.010	87	
	3.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 90S: Basin 1

Runoff = 30.50 cfs @ 12.05 hrs, Volume= 1.834 af, Depth= 3.68"
Routed to Pond 20P : BASIN 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	5.980	79	
	5.980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8					**Direct Entry, Total Tc**

Summary for Subcatchment 100S: POST A (BYPASS)

Runoff = 2.17 cfs @ 12.17 hrs, Volume= 0.180 af, Depth= 2.18"
Routed to Link 30L : POST TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	0.990	63	
	0.990		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.4					**Direct Entry, Total Tc**

Summary for Subcatchment 110S: POST B (BYPASS)

Runoff = 9.29 cfs @ 12.12 hrs, Volume= 0.693 af, Depth= 3.78"
Routed to Link 20L : OUTFALL FOX CHASE RD (POST B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	2.200	80	
	2.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.8					**Direct Entry, Total Tc**

Summary for Subcatchment 120S: POST C (BYPASS)

Runoff = 0.93 cfs @ 11.97 hrs, Volume= 0.042 af, Depth= 2.01"
Routed to Link 30L : POST TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	0.250	61	
	0.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 130S: TO BASIN 3A

Runoff = 27.66 cfs @ 12.05 hrs, Volume= 1.734 af, Depth= 3.99"
Routed to Pond 30P : BASIN 3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	5.220	82	
	5.220		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8					**Direct Entry,**

Summary for Subcatchment 130S+: BASIN 3A: DISTURBED AREA FOR DEP PCSM SPREADSHEET

Runoff = 27.85 cfs @ 12.05 hrs, Volume= 1.752 af, Depth= 4.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	5.140	83	
	5.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8					**Direct Entry,**

Summary for Subcatchment 140S: TO BASIN 3B

Runoff = 1.60 cfs @ 11.97 hrs, Volume= 0.072 af, Depth= 2.01"
Routed to Pond 40P : BASIN 3B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	0.430	61	
	0.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Time**

Summary for Subcatchment 150S: POST E (BYPASS)

Runoff = 20.93 cfs @ 12.13 hrs, Volume= 1.589 af, Depth= 2.35"
Routed to Link 50L : POST E TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	8.110	65	
	8.110		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7					**Direct Entry,**

Summary for Subcatchment 160S: TO STONE BMP 2A

Runoff = 34.81 cfs @ 12.03 hrs, Volume= 2.135 af, Depth= 4.74"
Routed to Pond 50P : STONE BMP 2A (BASIN)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	5.410	89	
	5.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					**Direct Entry,**

Summary for Subcatchment 170S: TO BASIN 4

Runoff = 50.24 cfs @ 12.02 hrs, Volume= 2.829 af, Depth= 4.20"
Routed to Pond 60P : BASIN 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	8.090	84	
	8.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3					**Direct Entry,**

Summary for Subcatchment 180S: POST F (BYPASS)

Runoff = 11.53 cfs @ 12.03 hrs, Volume= 0.645 af, Depth= 2.44"
Routed to Link 60L : POST F TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	3.170	66	
	3.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8					**Direct Entry,**

Summary for Subcatchment 190S: POST D (BYPASS)

Runoff = 10.65 cfs @ 12.17 hrs, Volume= 0.875 af, Depth= 3.09"
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	3.400	73	
	3.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.3					**Direct Entry,**

Summary for Subcatchment 200S: POST G (BYPASS)

Runoff = 11.32 cfs @ 12.03 hrs, Volume= 0.640 af, Depth= 2.62"
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=6.00"

	Area (ac)	CN	Description
*	2.930	68	
	2.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2					**Direct Entry,**

Summary for Pond 10P: BASIN 2

Inflow Area = 3.720 ac, 0.00% Impervious, Inflow Depth = 4.20" for 25-YR event
Inflow = 27.67 cfs @ 11.96 hrs, Volume= 1.301 af
Outflow = 0.50 cfs @ 15.89 hrs, Volume= 1.301 af, Atten= 98%, Lag= 235.6 min
Discarded = 0.19 cfs @ 9.88 hrs, Volume= 0.867 af
Primary = 0.31 cfs @ 15.89 hrs, Volume= 0.434 af
Routed to Pond 20P : BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 246.90' @ 15.89 hrs Surf.Area= 10,944 sf Storage= 37,143 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1,011.0 min (1,810.5 - 799.4)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	63,080 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	6,500	0	0
244.00	8,000	10,875	10,875
246.00	10,400	18,400	29,275
248.00	12,900	23,300	52,575
249.00	14,750	13,825	66,400

Device	Routing	Invert	Outlet Devices
#1	Primary	240.15'	**24.0" Round OS pipe to Basin 1** L= 39.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 240.15' / 239.95' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Discarded	242.50'	**0.19 cfs Exfiltration at all elevations**
#3	Device 1	245.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	247.00'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.19 cfs @ 9.88 hrs HW=242.57' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.31 cfs @ 15.89 hrs HW=246.90' TW=242.93' (Dynamic Tailwater)
└**1=OS pipe to Basin 1** (Passes 0.31 cfs of 30.12 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 0.31 cfs @ 6.41 fps)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 20P: BASIN 1

Inflow Area = 9.700 ac, 0.00% Impervious, Inflow Depth = 2.81" for 25-YR event
Inflow = 30.71 cfs @ 12.05 hrs, Volume= 2.268 af
Outflow = 0.52 cfs @ 24.14 hrs, Volume= 2.389 af, Atten= 98%, Lag= 725.8 min
Discarded = 0.17 cfs @ 0.00 hrs, Volume= 1.405 af
Primary = 0.35 cfs @ 24.14 hrs, Volume= 0.984 af
Routed to Link 20L : OUTFALL FOX CHASE RD (POST B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 239.87' Surf.Area= 14,432 sf Storage= 23,042 cf
Peak Elev= 243.30' @ 24.14 hrs Surf.Area= 22,956 sf Storage= 87,125 cf (64,083 cf above start)

Plug-Flow detention time= 2,247.0 min calculated for 1.860 af (82% of inflow)
Center-of-Mass det. time= 1,636.9 min (2,542.5 - 905.6)

Volume	Invert	Avail.Storage	Storage Description
#1	238.00'	206,673 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
238.00	10,750	0	0
240.00	15,500	26,250	26,250
242.00	20,750	36,250	62,500
244.00	26,000	46,750	109,250
246.00	31,600	57,600	166,850
247.50	36,000	50,700	217,550

Device	Routing	Invert	Outlet Devices
#1	Primary	240.30'	**15.0" Round OS Pipe Basin 1 to Road Inlet** L= 81.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 240.30' / 239.87' S= 0.0053 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Discarded	238.00'	**0.17 cfs Exfiltration at all elevations**
#3	Device 1	241.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	245.50'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.17 cfs @ 0.00 hrs HW=239.87' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.17 cfs)

Primary OutFlow Max=0.35 cfs @ 24.14 hrs HW=243.30' TW=0.00' (Dynamic Tailwater)
└**1=OS Pipe Basin 1 to Road Inlet** (Passes 0.35 cfs of 7.90 cfs potential flow)
├**3=Orifice/Grate** (Orifice Controls 0.35 cfs @ 7.10 fps)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 30P: BASIN 3A

Inflow Area = 5.220 ac, 0.00% Impervious, Inflow Depth = 3.99" for 25-YR event
Inflow = 27.66 cfs @ 12.05 hrs, Volume= 1.734 af
Outflow = 4.98 cfs @ 12.19 hrs, Volume= 1.499 af, Atten= 82%, Lag= 8.0 min
Primary = 4.92 cfs @ 12.18 hrs, Volume= 1.251 af
Routed to Pond 40P : BASIN 3B
Secondary = 0.14 cfs @ 15.42 hrs, Volume= 0.248 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.48' @ 15.42 hrs Surf.Area= 27,109 sf Storage= 36,705 cf

Plug-Flow detention time= 1,130.7 min calculated for 1.499 af (86% of inflow)
Center-of-Mass det. time= 1,066.8 min (1,879.9 - 813.1)

Volume	Invert	Avail.Storage	Storage Description
#1	242.90'	129,966 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.90	0	0	0
242.99	100	5	5
243.00	22,840	115	119
244.00	27,390	25,115	25,234
246.00	32,170	59,560	84,794
247.50	37,180	52,013	136,807

Device	Routing	Invert	Outlet Devices
#1	Primary	242.50'	**15.0" Round Culvert - OS 3A-2** L= 45.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	242.90'	**10.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Secondary	242.50'	**18.0" Round Culvert - OS 3A-1** L= 39.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0128 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#4	Device 1	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 3	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 3	244.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.86 cfs @ 12.18 hrs HW=244.20' TW=243.34' (Dynamic Tailwater)
└─**1=Culvert - OS 3A-2** (Passes 4.86 cfs of 5.47 cfs potential flow)
  └─**2=Orifice/Grate** (Orifice Controls 4.86 cfs @ 4.46 fps)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.14 cfs @ 15.42 hrs HW=244.48' TW=0.00' (Dynamic Tailwater)
└─**3=Culvert - OS 3A-1** (Passes 0.14 cfs of 9.43 cfs potential flow)
  └─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Orifice Controls 0.14 cfs @ 2.87 fps)

Summary for Pond 40P: BASIN 3B

Inflow Area = 5.650 ac, 0.00% Impervious, Inflow Depth > 2.81" for 25-YR event
Inflow = 5.17 cfs @ 12.18 hrs, Volume= 1.322 af
Outflow = 0.71 cfs @ 15.49 hrs, Volume= 1.129 af, Atten= 86%, Lag= 198.5 min
Discarded = 0.11 cfs @ 10.51 hrs, Volume= 0.844 af
Primary = 0.60 cfs @ 15.49 hrs, Volume= 0.285 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.46' @ 15.49 hrs Surf.Area= 11,457 sf Storage= 19,262 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 772.7 min (2,673.5 - 1,900.7)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	38,615 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	8,470	0	0
244.00	11,340	14,858	14,858
246.00	14,450	25,790	40,648

Device	Routing	Invert	Outlet Devices
#1	Discarded	242.50'	**0.11 cfs Exfiltration at all elevations**
#2	Primary	237.00'	**15.0" Round Culvert - OS 3B** L= 45.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 237.00' / 236.00' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	244.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.11 cfs @ 10.51 hrs HW=242.54' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.60 cfs @ 15.49 hrs HW=244.46' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert - OS 3B** (Passes 0.60 cfs of 15.45 cfs potential flow)
  └─**3=Orifice/Grate** (Weir Controls 0.60 cfs @ 0.82 fps)

Summary for Pond 50P: STONE BMP 2A (BASIN)

Inflow Area = 5.410 ac, 0.00% Impervious, Inflow Depth = 4.74" for 25-YR event
Inflow = 34.81 cfs @ 12.03 hrs, Volume= 2.135 af
Outflow = 32.92 cfs @ 12.07 hrs, Volume= 2.135 af, Atten= 5%, Lag= 2.0 min
Discarded = 0.58 cfs @ 10.02 hrs, Volume= 0.948 af
Primary = 32.34 cfs @ 12.07 hrs, Volume= 1.187 af
Routed to Pond 60P : BASIN 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.58' @ 12.07 hrs Surf.Area= 9,900 sf Storage= 16,228 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 80.5 min (871.0 - 790.5)

Volume	Invert	Avail.Storage	Storage Description
#1	240.50'	20,831 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 52,470 cf Overall - 393 cf Embedded = 52,077 cf x 40.0% Voids
#2	242.80'	236 cf	**24.0" Round Pipe 714 to 712** Inside #1 L= 75.0' S= 0.0050 '/' 393 cf Overall - 3.5" Wall Thickness = 236 cf
		21,066 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
240.50	9,900	0	0
242.00	9,900	14,850	14,850
243.00	9,900	9,900	24,750
244.25	9,900	12,375	37,125
245.80	9,900	15,345	52,470

Device	Routing	Invert	Outlet Devices
#1	Discarded	240.50'	**0.58 cfs Exfiltration at all elevations**
#2	Primary	242.80'	**30.0" Round Culvert 712 TO 708** L= 103.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 242.00' S= 0.0078 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#3	Primary	242.80'	**30.0" Round Culvert 710 TO 708** L= 42.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 240.20' S= 0.0619 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Discarded OutFlow Max=0.58 cfs @ 10.02 hrs HW=240.55' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.58 cfs)

Primary OutFlow Max=32.31 cfs @ 12.07 hrs HW=244.58' TW=235.29' (Dynamic Tailwater)
├**2=Culvert 712 TO 708** (Barrel Controls 15.37 cfs @ 5.77 fps)
└**3=Culvert 710 TO 708** (Inlet Controls 16.94 cfs @ 4.54 fps)

Summary for Pond 60P: BASIN 4

Inflow Area = 13.500 ac, 0.00% Impervious, Inflow Depth = 3.57" for 25-YR event
Inflow = 80.32 cfs @ 12.03 hrs, Volume= 4.016 af
Outflow = 16.73 cfs @ 12.33 hrs, Volume= 4.014 af, Atten= 79%, Lag= 17.7 min
Primary = 16.73 cfs @ 12.33 hrs, Volume= 4.014 af
Routed to Link 60L : POST F TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 236.34' @ 12.33 hrs Surf.Area= 22,033 sf Storage= 82,618 cf

Plug-Flow detention time= 137.7 min calculated for 4.014 af (100% of inflow)
Center-of-Mass det. time= 137.4 min (926.6 - 789.2)

Volume	Invert	Avail.Storage	Storage Description
#1	231.00'	161,092 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
231.00	10,000	0	0
232.00	13,000	11,500	11,500
234.00	16,250	29,250	40,750
236.00	22,200	38,450	79,200
238.00	28,000	50,200	129,400
239.30	33,800	40,170	169,570

Device	Routing	Invert	Outlet Devices
#1	Primary	230.50'	**24.0" Round Culvert - OS 4** L= 62.8' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 230.50' / 230.00' S= 0.0080 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	231.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	234.00'	**28.0" W x 10.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	237.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=16.73 cfs @ 12.33 hrs HW=236.34' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert - OS 4** (Passes 16.73 cfs of 33.29 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 3.76 cfs @ 10.78 fps)
3=Orifice/Grate (Orifice Controls 12.97 cfs @ 6.67 fps)
4=Orifice/Grate (Controls 0.00 cfs)

Summary for Link 20L: OUTFALL FOX CHASE RD (POST B)

Inflow Area = 11.900 ac, 0.00% Impervious, Inflow Depth = 1.69" for 25-YR event
Inflow = 9.44 cfs @ 12.12 hrs, Volume= 1.677 af
Primary = 9.44 cfs @ 12.12 hrs, Volume= 1.677 af, Atten= 0%, Lag= 0.0 min
Routed to Link 30L : POST TOOKANY WATERSHED (01)

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 30L: POST TOOKANY WATERSHED (01)

Inflow Area = 13.140 ac, 0.00% Impervious, Inflow Depth = 1.73" for 25-YR event
Inflow = 11.71 cfs @ 12.12 hrs, Volume= 1.898 af
Primary = 11.71 cfs @ 12.12 hrs, Volume= 1.898 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 50L: POST E TOTAL

Inflow Area = 13.760 ac, 0.00% Impervious, Inflow Depth = 1.85" for 25-YR event
Inflow = 20.95 cfs @ 12.13 hrs, Volume= 2.123 af
Primary = 20.95 cfs @ 12.13 hrs, Volume= 2.123 af, Atten= 0%, Lag= 0.0 min
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 60L: POST F TOTAL

Inflow Area = 16.670 ac, 0.00% Impervious, Inflow Depth = 3.35" for 25-YR event
Inflow = 22.82 cfs @ 12.08 hrs, Volume= 4.659 af
Primary = 22.82 cfs @ 12.08 hrs, Volume= 4.659 af, Atten= 0%, Lag= 0.0 min
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 70L: POST PENNYPACK CREEK WATERSHED (02)

Inflow Area = 36.760 ac, 0.00% Impervious, Inflow Depth = 2.71" for 25-YR event
Inflow = 61.85 cfs @ 12.09 hrs, Volume= 8.296 af
Primary = 61.85 cfs @ 12.09 hrs, Volume= 8.296 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 80S: BASIN 2: TOTAL AREA

Runoff = 33.00 cfs @ 11.96 hrs, Volume= 1.570 af, Depth= 5.06"
Routed to Pond 10P : BASIN 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	3.720	84	
	3.720		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Total Tc**

Summary for Subcatchment 80S+: BASIN 2: DISTURBED AREA FOR DEP PCSM SPREADSHEET

Runoff = 27.91 cfs @ 11.96 hrs, Volume= 1.355 af, Depth= 5.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	3.010	87	
	3.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 90S: Basin 1

Runoff = 37.15 cfs @ 12.04 hrs, Volume= 2.248 af, Depth= 4.51"
Routed to Pond 20P : BASIN 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	5.980	79	
	5.980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8					**Direct Entry, Total Tc**

Summary for Subcatchment 100S: POST A (BYPASS)

Runoff = 2.88 cfs @ 12.17 hrs, Volume= 0.234 af, Depth= 2.84"
Routed to Link 30L : POST TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	0.990	63	
	0.990		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.4					**Direct Entry, Total Tc**

Summary for Subcatchment 110S: POST B (BYPASS)

Runoff = 11.31 cfs @ 12.12 hrs, Volume= 0.847 af, Depth= 4.62"
Routed to Link 20L : OUTFALL FOX CHASE RD (POST B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	2.200	80	
	2.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.8					**Direct Entry, Total Tc**

Summary for Subcatchment 120S: POST C (BYPASS)

Runoff = 1.23 cfs @ 11.97 hrs, Volume= 0.055 af, Depth= 2.64"
Routed to Link 30L : POST TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	0.250	61	
	0.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 130S: TO BASIN 3A

Runoff = 33.34 cfs @ 12.05 hrs, Volume= 2.106 af, Depth= 4.84"
Routed to Pond 30P : BASIN 3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	5.220	82	
	5.220		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8					**Direct Entry,**

Summary for Subcatchment 130S+: BASIN 3A: DISTURBED AREA FOR DEP PCSM SPREADSHEET

Runoff = 33.45 cfs @ 12.05 hrs, Volume= 2.121 af, Depth= 4.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	5.140	83	
	5.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8					**Direct Entry,**

Summary for Subcatchment 140S: TO BASIN 3B

Runoff = 2.12 cfs @ 11.97 hrs, Volume= 0.095 af, Depth= 2.64"
Routed to Pond 40P : BASIN 3B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	0.430	61	
	0.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Time**

Summary for Subcatchment 150S: POST E (BYPASS)

Runoff = 27.39 cfs @ 12.13 hrs, Volume= 2.055 af, Depth= 3.04"
Routed to Link 50L : POST E TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	8.110	65	
	8.110		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7					**Direct Entry,**

Summary for Subcatchment 160S: TO STONE BMP 2A

Runoff = 40.97 cfs @ 12.03 hrs, Volume= 2.538 af, Depth= 5.63"
Routed to Pond 50P : STONE BMP 2A (BASIN)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	5.410	89	
	5.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					**Direct Entry,**

Summary for Subcatchment 170S: TO BASIN 4

Runoff = 60.05 cfs @ 12.02 hrs, Volume= 3.414 af, Depth= 5.06"
Routed to Pond 60P : BASIN 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	8.090	84	
	8.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3					**Direct Entry,**

Summary for Subcatchment 180S: POST F (BYPASS)

Runoff = 14.91 cfs @ 12.03 hrs, Volume= 0.830 af, Depth= 3.14"
Routed to Link 60L : POST F TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	3.170	66	
	3.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8					**Direct Entry,**

Summary for Subcatchment 190S: POST D (BYPASS)

Runoff = 13.36 cfs @ 12.17 hrs, Volume= 1.095 af, Depth= 3.87"
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	3.400	73	
	3.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.3					**Direct Entry,**

Summary for Subcatchment 200S: POST G (BYPASS)

Runoff = 14.49 cfs @ 12.03 hrs, Volume= 0.817 af, Depth= 3.35"
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=6.92"

	Area (ac)	CN	Description
*	2.930	68	
	2.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2					**Direct Entry,**

Summary for Pond 10P: BASIN 2

Inflow Area = 3.720 ac, 0.00% Impervious, Inflow Depth = 5.06" for 50-YR event
Inflow = 33.00 cfs @ 11.96 hrs, Volume= 1.570 af
Outflow = 1.97 cfs @ 12.66 hrs, Volume= 1.570 af, Atten= 94%, Lag= 42.2 min
Discarded = 0.19 cfs @ 9.23 hrs, Volume= 0.899 af
Primary = 1.78 cfs @ 12.66 hrs, Volume= 0.671 af
Routed to Pond 20P : BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 247.11' @ 12.66 hrs Surf.Area= 11,202 sf Storage= 39,549 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 904.9 min (1,699.1 - 794.1)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	63,080 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	6,500	0	0
244.00	8,000	10,875	10,875
246.00	10,400	18,400	29,275
248.00	12,900	23,300	52,575
249.00	14,750	13,825	66,400

Device	Routing	Invert	Outlet Devices
#1	Primary	240.15'	**24.0" Round OS pipe to Basin 1** L= 39.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 240.15' / 239.95' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Discarded	242.50'	**0.19 cfs Exfiltration at all elevations**
#3	Device 1	245.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	247.00'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.19 cfs @ 9.23 hrs HW=242.57' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=1.78 cfs @ 12.66 hrs HW=247.11' TW=242.92' (Dynamic Tailwater)
└**1=OS pipe to Basin 1** (Passes 1.78 cfs of 30.98 cfs potential flow)
├**3=Orifice/Grate** (Orifice Controls 0.33 cfs @ 6.79 fps)
└**4=Orifice/Grate** (Weir Controls 1.45 cfs @ 1.10 fps)

Summary for Pond 20P: BASIN 1

Inflow Area = 9.700 ac, 0.00% Impervious, Inflow Depth = 3.61" for 50-YR event
Inflow = 37.44 cfs @ 12.05 hrs, Volume= 2.919 af
Outflow = 0.59 cfs @ 24.14 hrs, Volume= 2.869 af, Atten= 98%, Lag= 725.7 min
Discarded = 0.17 cfs @ 0.00 hrs, Volume= 1.405 af
Primary = 0.42 cfs @ 24.14 hrs, Volume= 1.464 af
Routed to Link 20L : OUTFALL FOX CHASE RD (POST B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 239.87' Surf.Area= 14,432 sf Storage= 23,042 cf
Peak Elev= 244.28' @ 24.14 hrs Surf.Area= 25,457 sf Storage= 110,928 cf (87,886 cf above start)

Plug-Flow detention time= 2,204.3 min calculated for 2.340 af (80% of inflow)
Center-of-Mass det. time= 1,676.7 min (2,570.6 - 893.9)

Volume	Invert	Avail.Storage	Storage Description
#1	238.00'	206,673 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
238.00	10,750	0	0
240.00	15,500	26,250	26,250
242.00	20,750	36,250	62,500
244.00	26,000	46,750	109,250
246.00	31,600	57,600	166,850
247.50	36,000	50,700	217,550

Device	Routing	Invert	Outlet Devices
#1	Primary	240.30'	**15.0" Round OS Pipe Basin 1 to Road Inlet** L= 81.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 240.30' / 239.87' S= 0.0053 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Discarded	238.00'	**0.17 cfs Exfiltration at all elevations**
#3	Device 1	241.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	245.50'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.17 cfs @ 0.00 hrs HW=239.87' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.17 cfs)

Primary OutFlow Max=0.42 cfs @ 24.14 hrs HW=244.28' TW=0.00' (Dynamic Tailwater)
└**1=OS Pipe Basin 1 to Road Inlet** (Passes 0.42 cfs of 9.52 cfs potential flow)
├**3=Orifice/Grate** (Orifice Controls 0.42 cfs @ 8.56 fps)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 30P: BASIN 3A

Inflow Area = 5.220 ac, 0.00% Impervious, Inflow Depth = 4.84" for 50-YR event
Inflow = 33.34 cfs @ 12.05 hrs, Volume= 2.106 af
Outflow = 5.04 cfs @ 12.19 hrs, Volume= 1.869 af, Atten= 85%, Lag= 8.4 min
Primary = 4.90 cfs @ 12.19 hrs, Volume= 1.605 af
Routed to Pond 40P : BASIN 3B
Secondary = 0.17 cfs @ 13.22 hrs, Volume= 0.265 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.65' @ 13.22 hrs Surf.Area= 27,507 sf Storage= 41,490 cf

Plug-Flow detention time= 930.0 min calculated for 1.869 af (89% of inflow)
Center-of-Mass det. time= 874.6 min (1,682.2 - 807.6)

Volume	Invert	Avail.Storage	Storage Description
#1	242.90'	129,966 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.90	0	0	0
242.99	100	5	5
243.00	22,840	115	119
244.00	27,390	25,115	25,234
246.00	32,170	59,560	84,794
247.50	37,180	52,013	136,807

Device	Routing	Invert	Outlet Devices
#1	Primary	242.50'	**15.0" Round Culvert - OS 3A-2** L= 45.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	242.90'	**10.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Secondary	242.50'	**18.0" Round Culvert - OS 3A-1** L= 39.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0128 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#4	Device 1	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 3	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 3	244.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.85 cfs @ 12.19 hrs HW=244.46' TW=243.61' (Dynamic Tailwater)
└─**1=Culvert - OS 3A-2** (Passes 4.85 cfs of 5.45 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 4.85 cfs @ 4.44 fps)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.17 cfs @ 13.22 hrs HW=244.65' TW=0.00' (Dynamic Tailwater)
└─**3=Culvert - OS 3A-1** (Passes 0.17 cfs of 10.08 cfs potential flow)
  ├─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Orifice Controls 0.17 cfs @ 3.50 fps)

Summary for Pond 40P: BASIN 3B

Inflow Area = 5.650 ac, 0.00% Impervious, Inflow Depth > 3.61" for 50-YR event
Inflow = 5.67 cfs @ 12.00 hrs, Volume= 1.699 af
Outflow = 1.92 cfs @ 13.42 hrs, Volume= 1.505 af, Atten= 66%, Lag= 85.4 min
Discarded = 0.11 cfs @ 9.84 hrs, Volume= 0.850 af
Primary = 1.81 cfs @ 13.42 hrs, Volume= 0.655 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.53' @ 13.42 hrs Surf.Area= 11,558 sf Storage= 20,052 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 558.1 min (2,230.7 - 1,672.6)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	38,615 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	8,470	0	0
244.00	11,340	14,858	14,858
246.00	14,450	25,790	40,648

Device	Routing	Invert	Outlet Devices
#1	Discarded	242.50'	**0.11 cfs Exfiltration at all elevations**
#2	Primary	237.00'	**15.0" Round Culvert - OS 3B** L= 45.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 237.00' / 236.00' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	244.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.11 cfs @ 9.84 hrs HW=242.54' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=1.81 cfs @ 13.42 hrs HW=244.53' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert - OS 3B** (Passes 1.81 cfs of 15.53 cfs potential flow)
  └─**3=Orifice/Grate** (Weir Controls 1.81 cfs @ 1.19 fps)

Summary for Pond 50P: STONE BMP 2A (BASIN)

Inflow Area = 5.410 ac, 0.00% Impervious, Inflow Depth = 5.63" for 50-YR event
Inflow = 40.97 cfs @ 12.03 hrs, Volume= 2.538 af
Outflow = 38.92 cfs @ 12.07 hrs, Volume= 2.538 af, Atten= 5%, Lag= 1.9 min
Discarded = 0.58 cfs @ 9.27 hrs, Volume= 1.011 af
Primary = 38.34 cfs @ 12.07 hrs, Volume= 1.527 af
Routed to Pond 60P : BASIN 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.79' @ 12.07 hrs Surf.Area= 9,900 sf Storage= 17,063 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 74.6 min (860.4 - 785.8)

Volume	Invert	Avail.Storage	Storage Description
#1	240.50'	20,831 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 52,470 cf Overall - 393 cf Embedded = 52,077 cf x 40.0% Voids
#2	242.80'	236 cf	**24.0" Round Pipe 714 to 712** Inside #1 L= 75.0' S= 0.0050 '/' 393 cf Overall - 3.5" Wall Thickness = 236 cf
		21,066 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
240.50	9,900	0	0
242.00	9,900	14,850	14,850
243.00	9,900	9,900	24,750
244.25	9,900	12,375	37,125
245.80	9,900	15,345	52,470

Device	Routing	Invert	Outlet Devices
#1	Discarded	240.50'	**0.58 cfs Exfiltration at all elevations**
#2	Primary	242.80'	**30.0" Round Culvert 712 TO 708** L= 103.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 242.00' S= 0.0078 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#3	Primary	242.80'	**30.0" Round Culvert 710 TO 708** L= 42.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 240.20' S= 0.0619 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Discarded OutFlow Max=0.58 cfs @ 9.27 hrs HW=240.55' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.58 cfs)

Primary OutFlow Max=38.30 cfs @ 12.07 hrs HW=244.79' TW=236.03' (Dynamic Tailwater)
├**2=Culvert 712 TO 708** (Barrel Controls 18.24 cfs @ 5.98 fps)
└**3=Culvert 710 TO 708** (Inlet Controls 20.06 cfs @ 4.80 fps)

Summary for Pond 60P: BASIN 4

Inflow Area = 13.500 ac, 0.00% Impervious, Inflow Depth = 4.39" for 50-YR event
Inflow = 95.93 cfs @ 12.03 hrs, Volume= 4.941 af
Outflow = 19.58 cfs @ 12.33 hrs, Volume= 4.939 af, Atten= 80%, Lag= 17.8 min
Primary = 19.58 cfs @ 12.33 hrs, Volume= 4.939 af
Routed to Link 60L : POST F TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 237.17' @ 12.33 hrs Surf.Area= 24,313 sf Storage= 101,801 cf

Plug-Flow detention time= 130.8 min calculated for 4.939 af (100% of inflow)
Center-of-Mass det. time= 130.5 min (916.3 - 785.8)

Volume	Invert	Avail.Storage	Storage Description
#1	231.00'	161,092 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
231.00	10,000	0	0
232.00	13,000	11,500	11,500
234.00	16,250	29,250	40,750
236.00	22,200	38,450	79,200
238.00	28,000	50,200	129,400
239.30	33,800	40,170	169,570

Device	Routing	Invert	Outlet Devices
#1	Primary	230.50'	**24.0" Round Culvert - OS 4** L= 62.8' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 230.50' / 230.00' S= 0.0080 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	231.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	234.00'	**28.0" W x 10.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	237.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=19.58 cfs @ 12.33 hrs HW=237.17' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert - OS 4** (Passes 19.58 cfs of 36.02 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 4.06 cfs @ 11.63 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 15.52 cfs @ 7.98 fps)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Link 20L: OUTFALL FOX CHASE RD (POST B)

Inflow Area = 11.900 ac, 0.00% Impervious, Inflow Depth = 2.33" for 50-YR event
Inflow = 11.53 cfs @ 12.12 hrs, Volume= 2.311 af
Primary = 11.53 cfs @ 12.12 hrs, Volume= 2.311 af, Atten= 0%, Lag= 0.0 min
Routed to Link 30L : POST TOOKANY WATERSHED (01)

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 30L: POST TOOKANY WATERSHED (01)

Inflow Area = 13.140 ac, 0.00% Impervious, Inflow Depth = 2.37" for 50-YR event
Inflow = 14.54 cfs @ 12.12 hrs, Volume= 2.601 af
Primary = 14.54 cfs @ 12.12 hrs, Volume= 2.601 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 50L: POST E TOTAL

Inflow Area = 13.760 ac, 0.00% Impervious, Inflow Depth = 2.59" for 50-YR event
Inflow = 27.50 cfs @ 12.13 hrs, Volume= 2.975 af
Primary = 27.50 cfs @ 12.13 hrs, Volume= 2.975 af, Atten= 0%, Lag= 0.0 min
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 60L: POST F TOTAL

Inflow Area = 16.670 ac, 0.00% Impervious, Inflow Depth = 4.15" for 50-YR event
Inflow = 29.34 cfs @ 12.06 hrs, Volume= 5.769 af
Primary = 29.34 cfs @ 12.06 hrs, Volume= 5.769 af, Atten= 0%, Lag= 0.0 min
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 70L: POST PENNYPACK CREEK WATERSHED (02)

Inflow Area = 36.760 ac, 0.00% Impervious, Inflow Depth = 3.48" for 50-YR event
Inflow = 79.35 cfs @ 12.09 hrs, Volume= 10.656 af
Primary = 79.35 cfs @ 12.09 hrs, Volume= 10.656 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 80S: BASIN 2: TOTAL AREA

Runoff = 38.84 cfs @ 11.96 hrs, Volume= 1.869 af, Depth= 6.03"
Routed to Pond 10P : BASIN 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	3.720	84	
	3.720		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Total Tc**

Summary for Subcatchment 80S+: BASIN 2: DISTURBED AREA FOR DEP PCSM SPREADSHEET

Runoff = 32.60 cfs @ 11.96 hrs, Volume= 1.601 af, Depth= 6.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	3.010	87	
	3.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 90S: Basin 1

Runoff = 44.50 cfs @ 12.04 hrs, Volume= 2.712 af, Depth= 5.44"
Routed to Pond 20P : BASIN 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	5.980	79	
	5.980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8					**Direct Entry, Total Tc**

Summary for Subcatchment 100S: POST A (BYPASS)

Runoff = 3.70 cfs @ 12.17 hrs, Volume= 0.298 af, Depth= 3.61"
Routed to Link 30L : POST TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	0.990	63	
	0.990		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.4					**Direct Entry, Total Tc**

Summary for Subcatchment 110S: POST B (BYPASS)

Runoff = 13.52 cfs @ 12.12 hrs, Volume= 1.019 af, Depth= 5.56"
Routed to Link 20L : OUTFALL FOX CHASE RD (POST B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	2.200	80	
	2.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.8					**Direct Entry, Total Tc**

Summary for Subcatchment 120S: POST C (BYPASS)

Runoff = 1.58 cfs @ 11.96 hrs, Volume= 0.071 af, Depth= 3.39"
Routed to Link 30L : POST TOOKANY WATERSHED (01)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	0.250	61	
	0.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 130S: TO BASIN 3A

Runoff = 39.57 cfs @ 12.05 hrs, Volume= 2.520 af, Depth= 5.79"
Routed to Pond 30P : BASIN 3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	5.220	82	
	5.220		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8					**Direct Entry,**

Summary for Subcatchment 130S+: BASIN 3A: DISTURBED AREA FOR DEP PCSM SPREADSHEET

Runoff = 39.58 cfs @ 12.05 hrs, Volume= 2.532 af, Depth= 5.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	5.140	83	
	5.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8					**Direct Entry,**

Summary for Subcatchment 140S: TO BASIN 3B

Runoff = 2.72 cfs @ 11.96 hrs, Volume= 0.122 af, Depth= 3.39"
Routed to Pond 40P : BASIN 3B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	0.430	61	
	0.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Time**

Summary for Subcatchment 150S: POST E (BYPASS)

Runoff = 34.80 cfs @ 12.13 hrs, Volume= 2.594 af, Depth= 3.84"
Routed to Link 50L : POST E TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	8.110	65	
	8.110		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7					**Direct Entry,**

Summary for Subcatchment 160S: TO STONE BMP 2A

Runoff = 47.69 cfs @ 12.03 hrs, Volume= 2.984 af, Depth= 6.62"
Routed to Pond 50P : STONE BMP 2A (BASIN)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	5.410	89	
	5.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					**Direct Entry,**

Summary for Subcatchment 170S: TO BASIN 4

Runoff = 70.79 cfs @ 12.02 hrs, Volume= 4.064 af, Depth= 6.03"
Routed to Pond 60P : BASIN 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	8.090	84	
	8.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3					**Direct Entry,**

Summary for Subcatchment 180S: POST F (BYPASS)

Runoff = 18.76 cfs @ 12.03 hrs, Volume= 1.044 af, Depth= 3.95"
Routed to Link 60L : POST F TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	3.170	66	
	3.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8					**Direct Entry,**

Summary for Subcatchment 190S: POST D (BYPASS)

Runoff = 16.40 cfs @ 12.16 hrs, Volume= 1.345 af, Depth= 4.75"
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	3.400	73	
	3.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.3					**Direct Entry,**

Summary for Subcatchment 200S: POST G (BYPASS)

Runoff = 18.07 cfs @ 12.03 hrs, Volume= 1.020 af, Depth= 4.18"
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.93"

	Area (ac)	CN	Description
*	2.930	68	
	2.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2					**Direct Entry,**

Summary for Pond 10P: BASIN 2

Inflow Area = 3.720 ac, 0.00% Impervious, Inflow Depth = 6.03" for 100-YR event
Inflow = 38.84 cfs @ 11.96 hrs, Volume= 1.869 af
Outflow = 6.92 cfs @ 12.12 hrs, Volume= 1.869 af, Atten= 82%, Lag= 9.5 min
Discarded = 0.19 cfs @ 8.65 hrs, Volume= 0.924 af
Primary = 6.73 cfs @ 12.12 hrs, Volume= 0.944 af
Routed to Pond 20P : BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 247.30' @ 12.12 hrs Surf.Area= 11,430 sf Storage= 41,716 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 792.9 min (1,582.2 - 789.3)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	63,080 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	6,500	0	0
244.00	8,000	10,875	10,875
246.00	10,400	18,400	29,275
248.00	12,900	23,300	52,575
249.00	14,750	13,825	66,400

Device	Routing	Invert	Outlet Devices
#1	Primary	240.15'	**24.0" Round OS pipe to Basin 1** L= 39.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 240.15' / 239.95' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Discarded	242.50'	**0.19 cfs Exfiltration at all elevations**
#3	Device 1	245.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	247.00'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.19 cfs @ 8.65 hrs HW=242.57' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=6.72 cfs @ 12.12 hrs HW=247.30' TW=242.58' (Dynamic Tailwater)
└**1=OS pipe to Basin 1** (Passes 6.72 cfs of 32.88 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 0.35 cfs @ 7.11 fps)
  └**4=Orifice/Grate** (Weir Controls 6.37 cfs @ 1.81 fps)

Summary for Pond 20P: BASIN 1

Inflow Area = 9.700 ac, 0.00% Impervious, Inflow Depth = 4.52" for 100-YR event
Inflow = 48.93 cfs @ 12.06 hrs, Volume= 3.657 af
Outflow = 0.66 cfs @ 24.13 hrs, Volume= 3.430 af, Atten= 99%, Lag= 724.0 min
Discarded = 0.17 cfs @ 0.00 hrs, Volume= 1.405 af
Primary = 0.49 cfs @ 24.13 hrs, Volume= 2.024 af
Routed to Link 20L : OUTFALL FOX CHASE RD (POST B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 239.87' Surf.Area= 14,432 sf Storage= 23,042 cf
Peak Elev= 245.34' @ 24.13 hrs Surf.Area= 28,264 sf Storage= 139,266 cf (116,223 cf above start)

Plug-Flow detention time= 2,264.5 min calculated for 2.900 af (79% of inflow)
Center-of-Mass det. time= 1,794.6 min (2,670.6 - 875.9)

Volume	Invert	Avail.Storage	Storage Description
#1	238.00'	206,673 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
238.00	10,750	0	0
240.00	15,500	26,250	26,250
242.00	20,750	36,250	62,500
244.00	26,000	46,750	109,250
246.00	31,600	57,600	166,850
247.50	36,000	50,700	217,550

Device	Routing	Invert	Outlet Devices
#1	Primary	240.30'	**15.0" Round OS Pipe Basin 1 to Road Inlet** L= 81.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 240.30' / 239.87' S= 0.0053 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Discarded	238.00'	**0.17 cfs Exfiltration at all elevations**
#3	Device 1	241.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	245.50'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.17 cfs @ 0.00 hrs HW=239.87' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.17 cfs)

Primary OutFlow Max=0.49 cfs @ 24.13 hrs HW=245.34' TW=0.00' (Dynamic Tailwater)
└**1=OS Pipe Basin 1 to Road Inlet** (Passes 0.49 cfs of 10.99 cfs potential flow)
├**3=Orifice/Grate** (Orifice Controls 0.49 cfs @ 9.89 fps)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 30P: BASIN 3A

Inflow Area = 5.220 ac, 0.00% Impervious, Inflow Depth = 5.79" for 100-YR event
Inflow = 39.57 cfs @ 12.05 hrs, Volume= 2.520 af
Outflow = 5.17 cfs @ 12.21 hrs, Volume= 2.282 af, Atten= 87%, Lag= 9.7 min
Primary = 4.98 cfs @ 12.21 hrs, Volume= 2.003 af
Routed to Pond 40P : BASIN 3B
Secondary = 0.22 cfs @ 12.68 hrs, Volume= 0.280 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 245.00' @ 12.68 hrs Surf.Area= 28,285 sf Storage= 51,053 cf

Plug-Flow detention time= 783.4 min calculated for 2.282 af (91% of inflow)
Center-of-Mass det. time= 734.9 min (1,537.4 - 802.5)

Volume	Invert	Avail.Storage	Storage Description
#1	242.90'	129,966 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.90	0	0	0
242.99	100	5	5
243.00	22,840	115	119
244.00	27,390	25,115	25,234
246.00	32,170	59,560	84,794
247.50	37,180	52,013	136,807

Device	Routing	Invert	Outlet Devices
#1	Primary	242.50'	**15.0" Round Culvert - OS 3A-2** L= 45.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	242.90'	**10.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Secondary	242.50'	**18.0" Round Culvert - OS 3A-1** L= 39.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0128 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#4	Device 1	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 3	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 3	244.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.93 cfs @ 12.21 hrs HW=244.80' TW=243.92' (Dynamic Tailwater)
└─**1=Culvert - OS 3A-2** (Passes 4.93 cfs of 5.55 cfs potential flow)
  └─**2=Orifice/Grate** (Orifice Controls 4.93 cfs @ 4.52 fps)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.22 cfs @ 12.68 hrs HW=245.00' TW=0.00' (Dynamic Tailwater)
└─**3=Culvert - OS 3A-1** (Passes 0.22 cfs of 11.25 cfs potential flow)
  └─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Orifice Controls 0.22 cfs @ 4.50 fps)

Summary for Pond 40P: BASIN 3B

Inflow Area = 5.650 ac, 0.00% Impervious, Inflow Depth > 4.51" for 100-YR event
Inflow = 6.25 cfs @ 11.98 hrs, Volume= 2.124 af
Outflow = 3.38 cfs @ 13.07 hrs, Volume= 1.930 af, Atten= 46%, Lag= 65.4 min
Discarded = 0.11 cfs @ 9.17 hrs, Volume= 0.856 af
Primary = 3.27 cfs @ 13.07 hrs, Volume= 1.073 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.60' @ 13.07 hrs Surf.Area= 11,652 sf Storage= 20,789 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 425.2 min (1,937.9 - 1,512.7)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	38,615 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	8,470	0	0
244.00	11,340	14,858	14,858
246.00	14,450	25,790	40,648

Device	Routing	Invert	Outlet Devices
#1	Discarded	242.50'	**0.11 cfs Exfiltration at all elevations**
#2	Primary	237.00'	**15.0" Round Culvert - OS 3B** L= 45.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 237.00' / 236.00' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	244.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.11 cfs @ 9.17 hrs HW=242.54' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=3.27 cfs @ 13.07 hrs HW=244.60' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert - OS 3B** (Passes 3.27 cfs of 15.60 cfs potential flow)
  └─**3=Orifice/Grate** (Weir Controls 3.27 cfs @ 1.44 fps)

Summary for Pond 50P: STONE BMP 2A (BASIN)

Inflow Area = 5.410 ac, 0.00% Impervious, Inflow Depth = 6.62" for 100-YR event
Inflow = 47.69 cfs @ 12.03 hrs, Volume= 2.984 af
Outflow = 45.31 cfs @ 12.07 hrs, Volume= 2.984 af, Atten= 5%, Lag= 1.9 min
Discarded = 0.58 cfs @ 8.81 hrs, Volume= 1.072 af
Primary = 44.73 cfs @ 12.07 hrs, Volume= 1.912 af
Routed to Pond 60P : BASIN 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 245.02' @ 12.07 hrs Surf.Area= 9,900 sf Storage= 17,967 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 69.3 min (850.7 - 781.5)

Volume	Invert	Avail.Storage	Storage Description
#1	240.50'	20,831 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 52,470 cf Overall - 393 cf Embedded = 52,077 cf x 40.0% Voids
#2	242.80'	236 cf	**24.0" Round Pipe 714 to 712** Inside #1 L= 75.0' S= 0.0050 '/' 393 cf Overall - 3.5" Wall Thickness = 236 cf
		21,066 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
240.50	9,900	0	0
242.00	9,900	14,850	14,850
243.00	9,900	9,900	24,750
244.25	9,900	12,375	37,125
245.80	9,900	15,345	52,470

Device	Routing	Invert	Outlet Devices
#1	Discarded	240.50'	**0.58 cfs Exfiltration at all elevations**
#2	Primary	242.80'	**30.0" Round Culvert 712 TO 708** L= 103.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 242.00' S= 0.0078 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#3	Primary	242.80'	**30.0" Round Culvert 710 TO 708** L= 42.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 240.20' S= 0.0619 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Discarded OutFlow Max=0.58 cfs @ 8.81 hrs HW=240.55' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.58 cfs)

Primary OutFlow Max=44.69 cfs @ 12.07 hrs HW=245.01' TW=236.80' (Dynamic Tailwater)
├**2=Culvert 712 TO 708** (Barrel Controls 21.40 cfs @ 6.18 fps)
└**3=Culvert 710 TO 708** (Inlet Controls 23.29 cfs @ 5.07 fps)

Summary for Pond 60P: BASIN 4

Inflow Area = 13.500 ac, 0.00% Impervious, Inflow Depth = 5.31" for 100-YR event
Inflow = 112.74 cfs @ 12.03 hrs, Volume= 5.976 af
Outflow = 33.02 cfs @ 12.25 hrs, Volume= 5.974 af, Atten= 71%, Lag= 13.2 min
Primary = 33.02 cfs @ 12.25 hrs, Volume= 5.974 af
Routed to Link 60L : POST F TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 237.85' @ 12.25 hrs Surf.Area= 26,184 sf Storage= 118,947 cf

Plug-Flow detention time= 123.3 min calculated for 5.974 af (100% of inflow)
Center-of-Mass det. time= 123.1 min (906.0 - 783.0)

Volume	Invert	Avail.Storage	Storage Description
#1	231.00'	161,092 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
231.00	10,000	0	0
232.00	13,000	11,500	11,500
234.00	16,250	29,250	40,750
236.00	22,200	38,450	79,200
238.00	28,000	50,200	129,400
239.30	33,800	40,170	169,570

Device	Routing	Invert	Outlet Devices
#1	Primary	230.50'	**24.0" Round Culvert - OS 4** L= 62.8' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 230.50' / 230.00' S= 0.0080 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	231.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	234.00'	**28.0" W x 10.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	237.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=33.02 cfs @ 12.25 hrs HW=237.85' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert - OS 4** (Passes 33.02 cfs of 38.12 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 4.29 cfs @ 12.29 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 17.33 cfs @ 8.92 fps)
  └─**4=Orifice/Grate** (Weir Controls 11.40 cfs @ 2.19 fps)

Summary for Link 20L: OUTFALL FOX CHASE RD (POST B)

Inflow Area = 11.900 ac, 0.00% Impervious, Inflow Depth = 3.07" for 100-YR event
Inflow = 13.81 cfs @ 12.12 hrs, Volume= 3.044 af
Primary = 13.81 cfs @ 12.12 hrs, Volume= 3.044 af, Atten= 0%, Lag= 0.0 min
Routed to Link 30L : POST TOOKANY WATERSHED (01)

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 30L: POST TOOKANY WATERSHED (01)

Inflow Area = 13.140 ac, 0.00% Impervious, Inflow Depth = 3.12" for 100-YR event
Inflow = 17.70 cfs @ 12.12 hrs, Volume= 3.412 af
Primary = 17.70 cfs @ 12.12 hrs, Volume= 3.412 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 50L: POST E TOTAL

Inflow Area = 13.760 ac, 0.00% Impervious, Inflow Depth = 3.44" for 100-YR event
Inflow = 34.96 cfs @ 12.13 hrs, Volume= 3.947 af
Primary = 34.96 cfs @ 12.13 hrs, Volume= 3.947 af, Atten= 0%, Lag= 0.0 min
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 60L: POST F TOTAL

Inflow Area = 16.670 ac, 0.00% Impervious, Inflow Depth = 5.05" for 100-YR event
Inflow = 38.09 cfs @ 12.23 hrs, Volume= 7.018 af
Primary = 38.09 cfs @ 12.23 hrs, Volume= 7.018 af, Atten= 0%, Lag= 0.0 min
Routed to Link 70L : POST PENNYPACK CREEK WATERSHED (02)

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Link 70L: POST PENNYPACK CREEK WATERSHED (02)

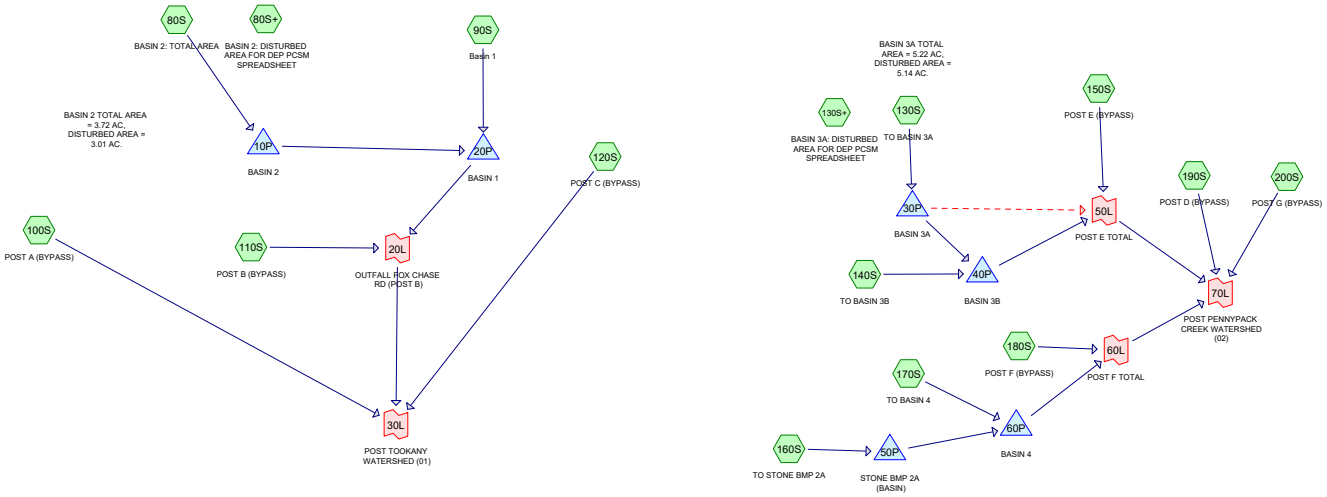
Inflow Area = 36.760 ac, 0.00% Impervious, Inflow Depth = 4.35" for 100-YR event
Inflow = 98.42 cfs @ 12.08 hrs, Volume= 13.329 af
Primary = 98.42 cfs @ 12.08 hrs, Volume= 13.329 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Basin Design Calculations

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Pond Report
Emergency Spillway Calculations
Antiseep Design Calculations
NOAA Chapter 14 precipitation Data
Rainfall Report



Subcat Reach Pond Link

Routing Diagram for 7662-PRE vs POST
Prepared by ESE Consultants, Inc, Printed 11/30/2023
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Summary for Pond 10P: BASIN 2

Inflow Area = 3.720 ac, 0.00% Impervious, Inflow Depth = 1.31" for 1-YR event
Inflow = 9.02 cfs @ 11.96 hrs, Volume= 0.405 af
Outflow = 0.19 cfs @ 11.68 hrs, Volume= 0.405 af, Atten= 98%, Lag= 0.0 min
Discarded = 0.19 cfs @ 11.68 hrs, Volume= 0.405 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 20P : BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.00' @ 15.91 hrs Surf.Area= 7,596 sf Storage= 10,299 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 566.9 min (1,399.7 - 832.8)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	63,080 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	6,500	0	0
244.00	8,000	10,875	10,875
246.00	10,400	18,400	29,275
248.00	12,900	23,300	52,575
249.00	14,750	13,825	66,400

Device	Routing	Invert	Outlet Devices
#1	Primary	240.15'	**24.0" Round OS pipe to Basin 1** L= 39.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 240.15' / 239.95' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Discarded	242.50'	**0.19 cfs Exfiltration at all elevations**
#3	Device 1	245.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	247.00'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.19 cfs @ 11.68 hrs HW=242.57' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=242.50' TW=239.87' (Dynamic Tailwater)
└**1=OS pipe to Basin 1** (Passes 0.00 cfs of 15.22 cfs potential flow)
├**3=Orifice/Grate** (Controls 0.00 cfs)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 20P: BASIN 1

Inflow Area = 9.700 ac, 0.00% Impervious, Inflow Depth = 0.62" for 1-YR event
Inflow = 8.22 cfs @ 12.05 hrs, Volume= 0.499 af
Outflow = 0.17 cfs @ 0.00 hrs, Volume= 1.028 af, Atten= 98%, Lag= 0.0 min
Discarded = 0.17 cfs @ 0.00 hrs, Volume= 1.028 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 20L : OUTFALL FOX CHASE RD (POST B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 239.87' Surf.Area= 14,432 sf Storage= 23,042 cf
Peak Elev= 240.37' @ 19.35 hrs Surf.Area= 15,637 sf Storage= 30,489 cf (7,447 cf above start)

Plug-Flow detention time= 2,467.6 min calculated for 0.499 af (100% of inflow)
Center-of-Mass det. time= 1,338.2 min (2,195.7 - 857.5)

Volume	Invert	Avail.Storage	Storage Description
#1	238.00'	206,673 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
238.00	10,750	0	0
240.00	15,500	26,250	26,250
242.00	20,750	36,250	62,500
244.00	26,000	46,750	109,250
246.00	31,600	57,600	166,850
247.50	36,000	50,700	217,550

Device	Routing	Invert	Outlet Devices
#1	Primary	240.30'	**15.0" Round OS Pipe Basin 1 to Road Inlet** L= 81.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 240.30' / 239.87' S= 0.0053 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Discarded	238.00'	**0.17 cfs Exfiltration at all elevations**
#3	Device 1	241.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	245.50'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.17 cfs @ 0.00 hrs HW=239.87' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.17 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=239.87' TW=0.00' (Dynamic Tailwater)
└**1=OS Pipe Basin 1 to Road Inlet** (Controls 0.00 cfs)
├**3=Orifice/Grate** (Controls 0.00 cfs)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 30P: BASIN 3A

Inflow Area = 5.220 ac, 0.00% Impervious, Inflow Depth = 1.18" for 1-YR event
Inflow = 8.25 cfs @ 12.06 hrs, Volume= 0.512 af
Outflow = 1.54 cfs @ 12.45 hrs, Volume= 0.512 af, Atten= 81%, Lag= 23.3 min
Primary = 1.54 cfs @ 12.45 hrs, Volume= 0.512 af
Routed to Pond 40P : BASIN 3B
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 243.41' @ 24.10 hrs Surf.Area= 23,462 sf Storage= 9,330 cf

Plug-Flow detention time= 700.8 min calculated for 0.512 af (100% of inflow)
Center-of-Mass det. time= 701.0 min (1,549.0 - 848.0)

Volume	Invert	Avail.Storage	Storage Description
#1	242.90'	129,966 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.90	0	0	0
242.99	100	5	5
243.00	22,840	115	119
244.00	27,390	25,115	25,234
246.00	32,170	59,560	84,794
247.50	37,180	52,013	136,807

Device	Routing	Invert	Outlet Devices
#1	Primary	242.50'	**15.0" Round Culvert - OS 3A-2** L= 45.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	242.90'	**10.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Secondary	242.50'	**18.0" Round Culvert - OS 3A-1** L= 39.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0128 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#4	Device 1	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 3	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 3	244.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.54 cfs @ 12.45 hrs HW=243.38' TW=242.75' (Dynamic Tailwater)
└─**1=Culvert - OS 3A-2** (Passes 1.54 cfs of 2.66 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.54 cfs @ 2.36 fps)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=242.90' TW=0.00' (Dynamic Tailwater)
└─**3=Culvert - OS 3A-1** (Passes 0.00 cfs of 0.81 cfs potential flow)
  ├─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 40P: BASIN 3B

Inflow Area = 5.650 ac, 0.00% Impervious, Inflow Depth = 1.11" for 1-YR event
Inflow = 1.57 cfs @ 12.44 hrs, Volume= 0.522 af
Outflow = 0.11 cfs @ 12.07 hrs, Volume= 0.522 af, Atten= 93%, Lag= 0.0 min
Discarded = 0.11 cfs @ 12.07 hrs, Volume= 0.522 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 243.41' @ 24.12 hrs Surf.Area= 9,695 sf Storage= 8,047 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 826.3 min (2,363.9 - 1,537.6)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	38,615 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	8,470	0	0
244.00	11,340	14,858	14,858
246.00	14,450	25,790	40,648

Device	Routing	Invert	Outlet Devices
#1	Discarded	242.50'	**0.11 cfs Exfiltration at all elevations**
#2	Primary	237.00'	**15.0" Round Culvert - OS 3B** L= 45.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 237.00' / 236.00' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	244.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.11 cfs @ 12.07 hrs HW=242.54' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=242.50' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert - OS 3B** (Passes 0.00 cfs of 13.05 cfs potential flow)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 50P: STONE BMP 2A (BASIN)

Inflow Area = 5.410 ac, 0.00% Impervious, Inflow Depth = 1.67" for 1-YR event
Inflow = 12.85 cfs @ 12.04 hrs, Volume= 0.751 af
Outflow = 4.98 cfs @ 12.20 hrs, Volume= 0.751 af, Atten= 61%, Lag= 10.0 min
Discarded = 0.58 cfs @ 11.66 hrs, Volume= 0.594 af
Primary = 4.40 cfs @ 12.20 hrs, Volume= 0.157 af
Routed to Pond 60P : BASIN 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 243.38' @ 12.20 hrs Surf.Area= 9,900 sf Storage= 11,420 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 118.7 min (938.6 - 819.9)

Volume	Invert	Avail.Storage	Storage Description
#1	240.50'	20,831 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 52,470 cf Overall - 393 cf Embedded = 52,077 cf x 40.0% Voids
#2	242.80'	236 cf	**24.0" Round Pipe 714 to 712** Inside #1 L= 75.0' S= 0.0050 '/' 393 cf Overall - 3.5" Wall Thickness = 236 cf
		21,066 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
240.50	9,900	0	0
242.00	9,900	14,850	14,850
243.00	9,900	9,900	24,750
244.25	9,900	12,375	37,125
245.80	9,900	15,345	52,470

Device	Routing	Invert	Outlet Devices
#1	Discarded	240.50'	**0.58 cfs Exfiltration at all elevations**
#2	Primary	242.80'	**30.0" Round Culvert 712 TO 708** L= 103.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 242.00' S= 0.0078 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#3	Primary	242.80'	**30.0" Round Culvert 710 TO 708** L= 42.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 240.20' S= 0.0619 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Discarded OutFlow Max=0.58 cfs @ 11.66 hrs HW=240.56' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.58 cfs)

Primary OutFlow Max=4.40 cfs @ 12.20 hrs HW=243.38' TW=232.50' (Dynamic Tailwater)
├**2=Culvert 712 TO 708** (Barrel Controls 2.13 cfs @ 3.70 fps)
└**3=Culvert 710 TO 708** (Inlet Controls 2.26 cfs @ 2.60 fps)

Summary for Pond 60P: BASIN 4

Inflow Area = 13.500 ac, 0.00% Impervious, Inflow Depth = 0.92" for 1-YR event
Inflow = 16.11 cfs @ 12.02 hrs, Volume= 1.037 af
Outflow = 2.08 cfs @ 12.78 hrs, Volume= 1.035 af, Atten= 87%, Lag= 45.4 min
Primary = 2.08 cfs @ 12.78 hrs, Volume= 1.035 af
Routed to Link 60L : POST F TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 232.86' @ 12.78 hrs Surf.Area= 13,677 sf Storage= 22,112 cf

Plug-Flow detention time= 168.4 min calculated for 1.035 af (100% of inflow)
Center-of-Mass det. time= 167.1 min (991.7 - 824.6)

Volume	Invert	Avail.Storage	Storage Description
#1	231.00'	161,092 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
231.00	10,000	0	0
232.00	13,000	11,500	11,500
234.00	16,250	29,250	40,750
236.00	22,200	38,450	79,200
238.00	28,000	50,200	129,400
239.30	33,800	40,170	169,570

Device	Routing	Invert	Outlet Devices
#1	Primary	230.50'	**24.0" Round Culvert - OS 4** L= 62.8' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 230.50' / 230.00' S= 0.0080 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	231.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	234.00'	**28.0" W x 10.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	237.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.08 cfs @ 12.78 hrs HW=232.86' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert - OS 4** (Passes 2.08 cfs of 16.95 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 2.08 cfs @ 5.95 fps)
3=Orifice/Grate (Controls 0.00 cfs)
4=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 10P: BASIN 2

Inflow Area = 3.720 ac, 0.00% Impervious, Inflow Depth = 1.77" for 2-YR event
Inflow = 12.18 cfs @ 11.96 hrs, Volume= 0.550 af
Outflow = 0.19 cfs @ 11.52 hrs, Volume= 0.550 af, Atten= 98%, Lag= 0.0 min
Discarded = 0.19 cfs @ 11.52 hrs, Volume= 0.550 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 20P : BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.63' @ 17.86 hrs Surf.Area= 8,321 sf Storage= 15,363 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 815.5 min (1,639.4 - 823.9)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	63,080 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	6,500	0	0
244.00	8,000	10,875	10,875
246.00	10,400	18,400	29,275
248.00	12,900	23,300	52,575
249.00	14,750	13,825	66,400

Device	Routing	Invert	Outlet Devices
#1	Primary	240.15'	**24.0" Round OS pipe to Basin 1** L= 39.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 240.15' / 239.95' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Discarded	242.50'	**0.19 cfs Exfiltration at all elevations**
#3	Device 1	245.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	247.00'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.19 cfs @ 11.52 hrs HW=242.57' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=242.50' TW=239.87' (Dynamic Tailwater)
└**1=OS pipe to Basin 1** (Passes 0.00 cfs of 15.22 cfs potential flow)
├**3=Orifice/Grate** (Controls 0.00 cfs)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 20P: BASIN 1

Inflow Area = 9.700 ac, 0.00% Impervious, Inflow Depth = 0.88" for 2-YR event
Inflow = 11.81 cfs @ 12.05 hrs, Volume= 0.708 af
Outflow = 0.17 cfs @ 0.00 hrs, Volume= 1.237 af, Atten= 99%, Lag= 0.0 min
Discarded = 0.17 cfs @ 0.00 hrs, Volume= 1.237 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 20L : OUTFALL FOX CHASE RD (POST B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 239.87' Surf.Area= 14,432 sf Storage= 23,042 cf
Peak Elev= 240.89' @ 23.77 hrs Surf.Area= 16,948 sf Storage= 39,057 cf (16,015 cf above start)

Plug-Flow detention time= 2,922.4 min calculated for 0.708 af (100% of inflow)
Center-of-Mass det. time= 1,793.1 min (2,640.3 - 847.2)

Volume	Invert	Avail.Storage	Storage Description
#1	238.00'	206,673 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
238.00	10,750	0	0
240.00	15,500	26,250	26,250
242.00	20,750	36,250	62,500
244.00	26,000	46,750	109,250
246.00	31,600	57,600	166,850
247.50	36,000	50,700	217,550

Device	Routing	Invert	Outlet Devices
#1	Primary	240.30'	**15.0" Round OS Pipe Basin 1 to Road Inlet** L= 81.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 240.30' / 239.87' S= 0.0053 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Discarded	238.00'	**0.17 cfs Exfiltration at all elevations**
#3	Device 1	241.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	245.50'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.17 cfs @ 0.00 hrs HW=239.87' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.17 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=239.87' TW=0.00' (Dynamic Tailwater)
└**1=OS Pipe Basin 1 to Road Inlet** (Controls 0.00 cfs)
├**3=Orifice/Grate** (Controls 0.00 cfs)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 30P: BASIN 3A

Inflow Area = 5.220 ac, 0.00% Impervious, Inflow Depth = 1.63" for 2-YR event
Inflow = 11.45 cfs @ 12.06 hrs, Volume= 0.708 af
Outflow = 2.39 cfs @ 12.40 hrs, Volume= 0.708 af, Atten= 79%, Lag= 20.3 min
Primary = 2.39 cfs @ 12.40 hrs, Volume= 0.708 af
Routed to Pond 40P : BASIN 3B
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 243.66' @ 24.15 hrs Surf.Area= 24,553 sf Storage= 15,389 cf

Plug-Flow detention time= 1,151.4 min calculated for 0.708 af (100% of inflow)
Center-of-Mass det. time= 1,151.6 min (1,990.2 - 838.7)

Volume	Invert	Avail.Storage	Storage Description
#1	242.90'	129,966 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.90	0	0	0
242.99	100	5	5
243.00	22,840	115	119
244.00	27,390	25,115	25,234
246.00	32,170	59,560	84,794
247.50	37,180	52,013	136,807

Device	Routing	Invert	Outlet Devices
#1	Primary	242.50'	**15.0" Round Culvert - OS 3A-2** L= 45.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	242.90'	**10.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Secondary	242.50'	**18.0" Round Culvert - OS 3A-1** L= 39.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0128 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#4	Device 1	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 3	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 3	244.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.39 cfs @ 12.40 hrs HW=243.53' TW=242.88' (Dynamic Tailwater)
└─**1=Culvert - OS 3A-2** (Passes 2.39 cfs of 3.34 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 2.39 cfs @ 2.70 fps)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=242.90' TW=0.00' (Dynamic Tailwater)
└─**3=Culvert - OS 3A-1** (Passes 0.00 cfs of 0.81 cfs potential flow)
  ├─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 40P: BASIN 3B

Inflow Area = 5.650 ac, 0.00% Impervious, Inflow Depth = 1.54" for 2-YR event
Inflow = 2.44 cfs @ 12.39 hrs, Volume= 0.725 af
Outflow = 0.11 cfs @ 11.97 hrs, Volume= 0.725 af, Atten= 95%, Lag= 0.0 min
Discarded = 0.11 cfs @ 11.97 hrs, Volume= 0.725 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 243.66' @ 24.16 hrs Surf.Area= 10,155 sf Storage= 10,557 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1,028.8 min (2,992.8 - 1,964.1)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	38,615 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	8,470	0	0
244.00	11,340	14,858	14,858
246.00	14,450	25,790	40,648

Device	Routing	Invert	Outlet Devices
#1	Discarded	242.50'	**0.11 cfs Exfiltration at all elevations**
#2	Primary	237.00'	**15.0" Round Culvert - OS 3B** L= 45.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 237.00' / 236.00' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	244.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.11 cfs @ 11.97 hrs HW=242.54' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=242.50' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert - OS 3B** (Passes 0.00 cfs of 13.05 cfs potential flow)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 50P: STONE BMP 2A (BASIN)

Inflow Area = 5.410 ac, 0.00% Impervious, Inflow Depth = 2.18" for 2-YR event
Inflow = 16.68 cfs @ 12.04 hrs, Volume= 0.984 af
Outflow = 10.94 cfs @ 12.13 hrs, Volume= 0.984 af, Atten= 34%, Lag= 5.9 min
Discarded = 0.58 cfs @ 11.42 hrs, Volume= 0.672 af
Primary = 10.36 cfs @ 12.13 hrs, Volume= 0.312 af
Routed to Pond 60P : BASIN 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 243.72' @ 12.13 hrs Surf.Area= 9,900 sf Storage= 12,774 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 107.2 min (919.4 - 812.2)

Volume	Invert	Avail.Storage	Storage Description
#1	240.50'	20,831 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 52,470 cf Overall - 393 cf Embedded = 52,077 cf x 40.0% Voids
#2	242.80'	236 cf	**24.0" Round Pipe 714 to 712** Inside #1 L= 75.0' S= 0.0050 '/' 393 cf Overall - 3.5" Wall Thickness = 236 cf
		21,066 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
240.50	9,900	0	0
242.00	9,900	14,850	14,850
243.00	9,900	9,900	24,750
244.25	9,900	12,375	37,125
245.80	9,900	15,345	52,470

Device	Routing	Invert	Outlet Devices
#1	Discarded	240.50'	**0.58 cfs Exfiltration at all elevations**
#2	Primary	242.80'	**30.0" Round Culvert 712 TO 708** L= 103.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 242.00' S= 0.0078 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#3	Primary	242.80'	**30.0" Round Culvert 710 TO 708** L= 42.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 240.20' S= 0.0619 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Discarded OutFlow Max=0.58 cfs @ 11.42 hrs HW=240.55' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.58 cfs)

Primary OutFlow Max=10.34 cfs @ 12.13 hrs HW=243.72' TW=232.98' (Dynamic Tailwater)
├**2=Culvert 712 TO 708** (Barrel Controls 4.99 cfs @ 4.53 fps)
└**3=Culvert 710 TO 708** (Inlet Controls 5.35 cfs @ 3.26 fps)

Summary for Pond 60P: BASIN 4

Inflow Area = 13.500 ac, 0.00% Impervious, Inflow Depth = 1.34" for 2-YR event
Inflow = 25.26 cfs @ 12.08 hrs, Volume= 1.508 af
Outflow = 2.61 cfs @ 12.83 hrs, Volume= 1.506 af, Atten= 90%, Lag= 44.8 min
Primary = 2.61 cfs @ 12.83 hrs, Volume= 1.506 af
Routed to Link 60L : POST F TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 233.75' @ 12.83 hrs Surf.Area= 15,049 sf Storage= 34,876 cf

Plug-Flow detention time= 185.1 min calculated for 1.506 af (100% of inflow)
Center-of-Mass det. time= 184.7 min (996.8 - 812.2)

Volume	Invert	Avail.Storage	Storage Description
#1	231.00'	161,092 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
231.00	10,000	0	0
232.00	13,000	11,500	11,500
234.00	16,250	29,250	40,750
236.00	22,200	38,450	79,200
238.00	28,000	50,200	129,400
239.30	33,800	40,170	169,570

Device	Routing	Invert	Outlet Devices
#1	Primary	230.50'	**24.0" Round Culvert - OS 4** L= 62.8' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 230.50' / 230.00' S= 0.0080 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	231.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	234.00'	**28.0" W x 10.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	237.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.61 cfs @ 12.83 hrs HW=233.75' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert - OS 4** (Passes 2.61 cfs of 22.06 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 2.61 cfs @ 7.48 fps)
3=Orifice/Grate (Controls 0.00 cfs)
4=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 10P: BASIN 2

Inflow Area = 3.720 ac, 0.00% Impervious, Inflow Depth = 2.53" for 5-YR event
Inflow = 17.13 cfs @ 11.96 hrs, Volume= 0.784 af
Outflow = 0.31 cfs @ 16.07 hrs, Volume= 0.784 af, Atten= 98%, Lag= 246.5 min
Discarded = 0.19 cfs @ 11.06 hrs, Volume= 0.692 af
Primary = 0.12 cfs @ 16.07 hrs, Volume= 0.092 af
Routed to Pond 20P : BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 245.40' @ 16.07 hrs Surf.Area= 9,195 sf Storage= 22,077 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 949.9 min (1,763.7 - 813.8)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	63,080 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	6,500	0	0
244.00	8,000	10,875	10,875
246.00	10,400	18,400	29,275
248.00	12,900	23,300	52,575
249.00	14,750	13,825	66,400

Device	Routing	Invert	Outlet Devices
#1	Primary	240.15'	**24.0" Round OS pipe to Basin 1** L= 39.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 240.15' / 239.95' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Discarded	242.50'	**0.19 cfs Exfiltration at all elevations**
#3	Device 1	245.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	247.00'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.19 cfs @ 11.06 hrs HW=242.57' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.12 cfs @ 16.07 hrs HW=245.40' TW=241.51' (Dynamic Tailwater)
└**1=OS pipe to Basin 1** (Passes 0.12 cfs of 29.85 cfs potential flow)
├**3=Orifice/Grate** (Orifice Controls 0.12 cfs @ 2.52 fps)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 20P: BASIN 1

Inflow Area = 9.700 ac, 0.00% Impervious, Inflow Depth = 1.42" for 5-YR event
Inflow = 17.63 cfs @ 12.05 hrs, Volume= 1.144 af
Outflow = 0.34 cfs @ 21.39 hrs, Volume= 1.626 af, Atten= 98%, Lag= 560.7 min
Discarded = 0.17 cfs @ 0.00 hrs, Volume= 1.405 af
Primary = 0.17 cfs @ 21.39 hrs, Volume= 0.221 af
Routed to Link 20L : OUTFALL FOX CHASE RD (POST B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 239.87' Surf.Area= 14,432 sf Storage= 23,042 cf
Peak Elev= 241.63' @ 21.39 hrs Surf.Area= 18,790 sf Storage= 52,250 cf (29,207 cf above start)

Plug-Flow detention time= 2,841.3 min calculated for 1.097 af (96% of inflow)
Center-of-Mass det. time= 1,918.4 min (2,774.4 - 856.0)

Volume	Invert	Avail.Storage	Storage Description
#1	238.00'	206,673 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
238.00	10,750	0	0
240.00	15,500	26,250	26,250
242.00	20,750	36,250	62,500
244.00	26,000	46,750	109,250
246.00	31,600	57,600	166,850
247.50	36,000	50,700	217,550

Device	Routing	Invert	Outlet Devices
#1	Primary	240.30'	**15.0" Round OS Pipe Basin 1 to Road Inlet** L= 81.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 240.30' / 239.87' S= 0.0053 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Discarded	238.00'	**0.17 cfs Exfiltration at all elevations**
#3	Device 1	241.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	245.50'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.17 cfs @ 0.00 hrs HW=239.87' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.17 cfs)

Primary OutFlow Max=0.17 cfs @ 21.39 hrs HW=241.63' TW=0.00' (Dynamic Tailwater)
└**1=OS Pipe Basin 1 to Road Inlet** (Passes 0.17 cfs of 4.28 cfs potential flow)
├**3=Orifice/Grate** (Orifice Controls 0.17 cfs @ 3.42 fps)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 30P: BASIN 3A

Inflow Area = 5.220 ac, 0.00% Impervious, Inflow Depth = 2.36" for 5-YR event
Inflow = 16.57 cfs @ 12.06 hrs, Volume= 1.026 af
Outflow = 3.54 cfs @ 12.38 hrs, Volume= 0.931 af, Atten= 79%, Lag= 19.4 min
Primary = 3.54 cfs @ 12.38 hrs, Volume= 0.930 af
Routed to Pond 40P : BASIN 3B
Secondary = 0.01 cfs @ 24.18 hrs, Volume= 0.002 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.05' @ 24.18 hrs Surf.Area= 26,138 sf Storage= 25,321 cf

Plug-Flow detention time= 1,577.7 min calculated for 0.931 af (91% of inflow)
Center-of-Mass det. time= 1,530.0 min (2,358.0 - 828.1)

Volume	Invert	Avail.Storage	Storage Description
#1	242.90'	129,966 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.90	0	0	0
242.99	100	5	5
243.00	22,840	115	119
244.00	27,390	25,115	25,234
246.00	32,170	59,560	84,794
247.50	37,180	52,013	136,807

Device	Routing	Invert	Outlet Devices
#1	Primary	242.50'	**15.0" Round Culvert - OS 3A-2** L= 45.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	242.90'	**10.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Secondary	242.50'	**18.0" Round Culvert - OS 3A-1** L= 39.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0128 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#4	Device 1	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 3	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 3	244.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.54 cfs @ 12.38 hrs HW=243.77' TW=243.13' (Dynamic Tailwater)
└─**1=Culvert - OS 3A-2** (Passes 3.54 cfs of 4.24 cfs potential flow)
  └─**2=Orifice/Grate** (Orifice Controls 3.54 cfs @ 3.24 fps)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.01 cfs @ 24.18 hrs HW=244.05' TW=0.00' (Dynamic Tailwater)
└─**3=Culvert - OS 3A-1** (Passes 0.01 cfs of 7.62 cfs potential flow)
  └─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Orifice Controls 0.01 cfs @ 0.77 fps)

Summary for Pond 40P: BASIN 3B

Inflow Area = 5.650 ac, 0.00% Impervious, Inflow Depth > 2.04" for 5-YR event
Inflow = 3.63 cfs @ 12.36 hrs, Volume= 0.962 af
Outflow = 0.11 cfs @ 11.75 hrs, Volume= 0.828 af, Atten= 97%, Lag= 0.0 min
Discarded = 0.11 cfs @ 11.75 hrs, Volume= 0.828 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.05' @ 24.19 hrs Surf.Area= 10,849 sf Storage= 14,669 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 959.2 min (3,269.0 - 2,309.7)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	38,615 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	8,470	0	0
244.00	11,340	14,858	14,858
246.00	14,450	25,790	40,648

Device	Routing	Invert	Outlet Devices
#1	Discarded	242.50'	**0.11 cfs Exfiltration at all elevations**
#2	Primary	237.00'	**15.0" Round Culvert - OS 3B** L= 45.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 237.00' / 236.00' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	244.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.11 cfs @ 11.75 hrs HW=242.54' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=242.50' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert - OS 3B** (Passes 0.00 cfs of 13.05 cfs potential flow)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 50P: STONE BMP 2A (BASIN)

Inflow Area = 5.410 ac, 0.00% Impervious, Inflow Depth = 2.99" for 5-YR event
Inflow = 22.56 cfs @ 12.04 hrs, Volume= 1.349 af
Outflow = 19.41 cfs @ 12.09 hrs, Volume= 1.349 af, Atten= 14%, Lag= 3.4 min
Discarded = 0.58 cfs @ 10.99 hrs, Volume= 0.776 af
Primary = 18.83 cfs @ 12.09 hrs, Volume= 0.573 af
Routed to Pond 60P : BASIN 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.09' @ 12.09 hrs Surf.Area= 9,900 sf Storage= 14,246 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 96.0 min (899.3 - 803.3)

Volume	Invert	Avail.Storage	Storage Description
#1	240.50'	20,831 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 52,470 cf Overall - 393 cf Embedded = 52,077 cf x 40.0% Voids
#2	242.80'	236 cf	**24.0" Round Pipe 714 to 712** Inside #1 L= 75.0' S= 0.0050 '/' 393 cf Overall - 3.5" Wall Thickness = 236 cf
		21,066 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
240.50	9,900	0	0
242.00	9,900	14,850	14,850
243.00	9,900	9,900	24,750
244.25	9,900	12,375	37,125
245.80	9,900	15,345	52,470

Device	Routing	Invert	Outlet Devices
#1	Discarded	240.50'	**0.58 cfs Exfiltration at all elevations**
#2	Primary	242.80'	**30.0" Round Culvert 712 TO 708** L= 103.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 242.00' S= 0.0078 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#3	Primary	242.80'	**30.0" Round Culvert 710 TO 708** L= 42.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 240.20' S= 0.0619 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Discarded OutFlow Max=0.58 cfs @ 10.99 hrs HW=240.55' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.58 cfs)

Primary OutFlow Max=18.81 cfs @ 12.09 hrs HW=244.09' TW=233.72' (Dynamic Tailwater)
├**2=Culvert 712 TO 708** (Barrel Controls 9.00 cfs @ 5.16 fps)
└**3=Culvert 710 TO 708** (Inlet Controls 9.81 cfs @ 3.86 fps)

Summary for Pond 60P: BASIN 4

Inflow Area = 13.500 ac, 0.00% Impervious, Inflow Depth = 2.03" for 5-YR event
Inflow = 45.92 cfs @ 12.05 hrs, Volume= 2.279 af
Outflow = 7.42 cfs @ 12.45 hrs, Volume= 2.277 af, Atten= 84%, Lag= 23.9 min
Primary = 7.42 cfs @ 12.45 hrs, Volume= 2.277 af
Routed to Link 60L : POST F TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 234.70' @ 12.45 hrs Surf.Area= 17,402 sf Storage= 50,125 cf

Plug-Flow detention time= 173.0 min calculated for 2.277 af (100% of inflow)
Center-of-Mass det. time= 172.8 min (973.8 - 801.0)

Volume	Invert	Avail.Storage	Storage Description
#1	231.00'	161,092 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
231.00	10,000	0	0
232.00	13,000	11,500	11,500
234.00	16,250	29,250	40,750
236.00	22,200	38,450	79,200
238.00	28,000	50,200	129,400
239.30	33,800	40,170	169,570

Device	Routing	Invert	Outlet Devices
#1	Primary	230.50'	**24.0" Round Culvert - OS 4** L= 62.8' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 230.50' / 230.00' S= 0.0080 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	231.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	234.00'	**28.0" W x 10.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	237.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.42 cfs @ 12.45 hrs HW=234.70' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert - OS 4** (Passes 7.42 cfs of 27.04 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 3.08 cfs @ 8.83 fps)
3=Orifice/Grate (Orifice Controls 4.34 cfs @ 2.68 fps)
4=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 10P: BASIN 2

Inflow Area = 3.720 ac, 0.00% Impervious, Inflow Depth = 3.20" for 10-YR event
Inflow = 21.40 cfs @ 11.96 hrs, Volume= 0.991 af
Outflow = 0.41 cfs @ 15.82 hrs, Volume= 0.991 af, Atten= 98%, Lag= 231.5 min
Discarded = 0.19 cfs @ 10.63 hrs, Volume= 0.762 af
Primary = 0.22 cfs @ 15.82 hrs, Volume= 0.229 af
Routed to Pond 20P : BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 245.98' @ 15.82 hrs Surf.Area= 9,861 sf Storage= 27,647 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 948.9 min (1,756.0 - 807.2)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	63,080 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	6,500	0	0
244.00	8,000	10,875	10,875
246.00	10,400	18,400	29,275
248.00	12,900	23,300	52,575
249.00	14,750	13,825	66,400

Device	Routing	Invert	Outlet Devices
#1	Primary	240.15'	**24.0" Round OS pipe to Basin 1** L= 39.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 240.15' / 239.95' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Discarded	242.50'	**0.19 cfs Exfiltration at all elevations**
#3	Device 1	245.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	247.00'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.19 cfs @ 10.63 hrs HW=242.57' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.22 cfs @ 15.82 hrs HW=245.98' TW=242.09' (Dynamic Tailwater)
└**1=OS pipe to Basin 1** (Passes 0.22 cfs of 29.85 cfs potential flow)
├**3=Orifice/Grate** (Orifice Controls 0.22 cfs @ 4.46 fps)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 20P: BASIN 1

Inflow Area = 9.700 ac, 0.00% Impervious, Inflow Depth = 1.97" for 10-YR event
Inflow = 22.82 cfs @ 12.05 hrs, Volume= 1.591 af
Outflow = 0.43 cfs @ 24.07 hrs, Volume= 1.918 af, Atten= 98%, Lag= 721.4 min
Discarded = 0.17 cfs @ 0.00 hrs, Volume= 1.405 af
Primary = 0.26 cfs @ 24.07 hrs, Volume= 0.513 af
Routed to Link 20L : OUTFALL FOX CHASE RD (POST B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 239.87' Surf.Area= 14,432 sf Storage= 23,042 cf
Peak Elev= 242.33' @ 24.07 hrs Surf.Area= 20,529 sf Storage= 65,964 cf (42,922 cf above start)

Plug-Flow detention time= 2,486.1 min calculated for 1.389 af (87% of inflow)
Center-of-Mass det. time= 1,740.2 min (2,614.6 - 874.4)

Volume	Invert	Avail.Storage	Storage Description
#1	238.00'	206,673 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
238.00	10,750	0	0
240.00	15,500	26,250	26,250
242.00	20,750	36,250	62,500
244.00	26,000	46,750	109,250
246.00	31,600	57,600	166,850
247.50	36,000	50,700	217,550

Device	Routing	Invert	Outlet Devices
#1	Primary	240.30'	**15.0" Round OS Pipe Basin 1 to Road Inlet** L= 81.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 240.30' / 239.87' S= 0.0053 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Discarded	238.00'	**0.17 cfs Exfiltration at all elevations**
#3	Device 1	241.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	245.50'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.17 cfs @ 0.00 hrs HW=239.87' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.17 cfs)

Primary OutFlow Max=0.26 cfs @ 24.07 hrs HW=242.33' TW=0.00' (Dynamic Tailwater)
└**1=OS Pipe Basin 1 to Road Inlet** (Passes 0.26 cfs of 5.88 cfs potential flow)
├**3=Orifice/Grate** (Orifice Controls 0.26 cfs @ 5.28 fps)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 30P: BASIN 3A

Inflow Area = 5.220 ac, 0.00% Impervious, Inflow Depth = 3.01" for 10-YR event
Inflow = 21.05 cfs @ 12.06 hrs, Volume= 1.308 af
Outflow = 4.30 cfs @ 12.36 hrs, Volume= 1.105 af, Atten= 80%, Lag= 18.0 min
Primary = 4.30 cfs @ 12.36 hrs, Volume= 0.968 af
Routed to Pond 40P : BASIN 3B
Secondary = 0.10 cfs @ 24.12 hrs, Volume= 0.137 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.31' @ 24.12 hrs Surf.Area= 26,732 sf Storage= 32,233 cf

Plug-Flow detention time= 1,422.8 min calculated for 1.105 af (84% of inflow)
Center-of-Mass det. time= 1,352.7 min (2,173.8 - 821.1)

Volume	Invert	Avail.Storage	Storage Description
#1	242.90'	129,966 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.90	0	0	0
242.99	100	5	5
243.00	22,840	115	119
244.00	27,390	25,115	25,234
246.00	32,170	59,560	84,794
247.50	37,180	52,013	136,807

Device	Routing	Invert	Outlet Devices
#1	Primary	242.50'	**15.0" Round Culvert - OS 3A-2** L= 45.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	242.90'	**10.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Secondary	242.50'	**18.0" Round Culvert - OS 3A-1** L= 39.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0128 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#4	Device 1	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 3	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 3	244.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.29 cfs @ 12.36 hrs HW=243.99' TW=243.32' (Dynamic Tailwater)
└─**1=Culvert - OS 3A-2** (Passes 4.29 cfs of 4.82 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 4.29 cfs @ 3.93 fps)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.10 cfs @ 24.12 hrs HW=244.31' TW=0.00' (Dynamic Tailwater)
└─**3=Culvert - OS 3A-1** (Passes 0.10 cfs of 8.77 cfs potential flow)
  ├─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Orifice Controls 0.10 cfs @ 2.09 fps)

Summary for Pond 40P: BASIN 3B

Inflow Area = 5.650 ac, 0.00% Impervious, Inflow Depth > 2.16" for 10-YR event
Inflow = 4.43 cfs @ 12.36 hrs, Volume= 1.015 af
Outflow = 0.11 cfs @ 11.29 hrs, Volume= 0.835 af, Atten= 98%, Lag= 0.0 min
Discarded = 0.11 cfs @ 11.29 hrs, Volume= 0.835 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.31' @ 24.13 hrs Surf.Area= 11,235 sf Storage= 17,556 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1,041.8 min (3,245.2 - 2,203.4)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	38,615 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	8,470	0	0
244.00	11,340	14,858	14,858
246.00	14,450	25,790	40,648

Device	Routing	Invert	Outlet Devices
#1	Discarded	242.50'	**0.11 cfs Exfiltration at all elevations**
#2	Primary	237.00'	**15.0" Round Culvert - OS 3B** L= 45.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 237.00' / 236.00' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	244.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.11 cfs @ 11.29 hrs HW=242.54' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=242.50' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert - OS 3B** (Passes 0.00 cfs of 13.05 cfs potential flow)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 50P: STONE BMP 2A (BASIN)

Inflow Area = 5.410 ac, 0.00% Impervious, Inflow Depth = 3.70" for 10-YR event
Inflow = 27.55 cfs @ 12.03 hrs, Volume= 1.666 af
Outflow = 25.38 cfs @ 12.08 hrs, Volume= 1.666 af, Atten= 8%, Lag= 2.4 min
Discarded = 0.58 cfs @ 10.62 hrs, Volume= 0.853 af
Primary = 24.80 cfs @ 12.08 hrs, Volume= 0.813 af
Routed to Pond 60P : BASIN 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.31' @ 12.08 hrs Surf.Area= 9,900 sf Storage= 15,154 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 89.0 min (886.4 - 797.3)

Volume	Invert	Avail.Storage	Storage Description
#1	240.50'	20,831 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 52,470 cf Overall - 393 cf Embedded = 52,077 cf x 40.0% Voids
#2	242.80'	236 cf	**24.0" Round Pipe 714 to 712** Inside #1 L= 75.0' S= 0.0050 '/' 393 cf Overall - 3.5" Wall Thickness = 236 cf
		21,066 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
240.50	9,900	0	0
242.00	9,900	14,850	14,850
243.00	9,900	9,900	24,750
244.25	9,900	12,375	37,125
245.80	9,900	15,345	52,470

Device	Routing	Invert	Outlet Devices
#1	Discarded	240.50'	**0.58 cfs Exfiltration at all elevations**
#2	Primary	242.80'	**30.0" Round Culvert 712 TO 708** L= 103.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 242.00' S= 0.0078 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#3	Primary	242.80'	**30.0" Round Culvert 710 TO 708** L= 42.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 240.20' S= 0.0619 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Discarded OutFlow Max=0.58 cfs @ 10.62 hrs HW=240.56' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.58 cfs)

Primary OutFlow Max=24.78 cfs @ 12.08 hrs HW=244.31' TW=234.37' (Dynamic Tailwater)
├**2=Culvert 712 TO 708** (Barrel Controls 11.81 cfs @ 5.46 fps)
└**3=Culvert 710 TO 708** (Inlet Controls 12.97 cfs @ 4.18 fps)

Summary for Pond 60P: BASIN 4

Inflow Area = 13.500 ac, 0.00% Impervious, Inflow Depth = 2.64" for 10-YR event
Inflow = 60.92 cfs @ 12.04 hrs, Volume= 2.968 af
Outflow = 12.29 cfs @ 12.35 hrs, Volume= 2.966 af, Atten= 80%, Lag= 18.6 min
Primary = 12.29 cfs @ 12.35 hrs, Volume= 2.966 af
Routed to Link 60L : POST F TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 235.34' @ 12.35 hrs Surf.Area= 19,231 sf Storage= 61,976 cf

Plug-Flow detention time= 153.0 min calculated for 2.966 af (100% of inflow)
Center-of-Mass det. time= 152.9 min (947.9 - 795.0)

Volume	Invert	Avail.Storage	Storage Description
#1	231.00'	161,092 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
231.00	10,000	0	0
232.00	13,000	11,500	11,500
234.00	16,250	29,250	40,750
236.00	22,200	38,450	79,200
238.00	28,000	50,200	129,400
239.30	33,800	40,170	169,570

Device	Routing	Invert	Outlet Devices
#1	Primary	230.50'	**24.0" Round Culvert - OS 4** L= 62.8' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 230.50' / 230.00' S= 0.0080 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	231.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	234.00'	**28.0" W x 10.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	237.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=12.29 cfs @ 12.35 hrs HW=235.34' TW=0.00' (Dynamic Tailwater)
1=Culvert - OS 4 (Passes 12.29 cfs of 29.65 cfs potential flow)
2=Orifice/Grate (Orifice Controls 3.37 cfs @ 9.64 fps)
3=Orifice/Grate (Orifice Controls 8.93 cfs @ 4.59 fps)
4=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 10P: BASIN 2

Inflow Area = 3.720 ac, 0.00% Impervious, Inflow Depth = 4.20" for 25-YR event
Inflow = 27.67 cfs @ 11.96 hrs, Volume= 1.301 af
Outflow = 0.50 cfs @ 15.89 hrs, Volume= 1.301 af, Atten= 98%, Lag= 235.6 min
Discarded = 0.19 cfs @ 9.88 hrs, Volume= 0.867 af
Primary = 0.31 cfs @ 15.89 hrs, Volume= 0.434 af
Routed to Pond 20P : BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 246.90' @ 15.89 hrs Surf.Area= 10,944 sf Storage= 37,143 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1,011.0 min (1,810.5 - 799.4)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	63,080 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	6,500	0	0
244.00	8,000	10,875	10,875
246.00	10,400	18,400	29,275
248.00	12,900	23,300	52,575
249.00	14,750	13,825	66,400

Device	Routing	Invert	Outlet Devices
#1	Primary	240.15'	**24.0" Round OS pipe to Basin 1** L= 39.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 240.15' / 239.95' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Discarded	242.50'	**0.19 cfs Exfiltration at all elevations**
#3	Device 1	245.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	247.00'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.19 cfs @ 9.88 hrs HW=242.57' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.31 cfs @ 15.89 hrs HW=246.90' TW=242.93' (Dynamic Tailwater)
└**1=OS pipe to Basin 1** (Passes 0.31 cfs of 30.12 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 0.31 cfs @ 6.41 fps)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 20P: BASIN 1

Inflow Area = 9.700 ac, 0.00% Impervious, Inflow Depth = 2.81" for 25-YR event
Inflow = 30.71 cfs @ 12.05 hrs, Volume= 2.268 af
Outflow = 0.52 cfs @ 24.14 hrs, Volume= 2.389 af, Atten= 98%, Lag= 725.8 min
Discarded = 0.17 cfs @ 0.00 hrs, Volume= 1.405 af
Primary = 0.35 cfs @ 24.14 hrs, Volume= 0.984 af
Routed to Link 20L : OUTFALL FOX CHASE RD (POST B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 239.87' Surf.Area= 14,432 sf Storage= 23,042 cf
Peak Elev= 243.30' @ 24.14 hrs Surf.Area= 22,956 sf Storage= 87,125 cf (64,083 cf above start)

Plug-Flow detention time= 2,247.0 min calculated for 1.860 af (82% of inflow)
Center-of-Mass det. time= 1,636.9 min (2,542.5 - 905.6)

Volume	Invert	Avail.Storage	Storage Description
#1	238.00'	206,673 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
238.00	10,750	0	0
240.00	15,500	26,250	26,250
242.00	20,750	36,250	62,500
244.00	26,000	46,750	109,250
246.00	31,600	57,600	166,850
247.50	36,000	50,700	217,550

Device	Routing	Invert	Outlet Devices
#1	Primary	240.30'	**15.0" Round OS Pipe Basin 1 to Road Inlet** L= 81.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 240.30' / 239.87' S= 0.0053 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Discarded	238.00'	**0.17 cfs Exfiltration at all elevations**
#3	Device 1	241.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	245.50'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.17 cfs @ 0.00 hrs HW=239.87' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.17 cfs)

Primary OutFlow Max=0.35 cfs @ 24.14 hrs HW=243.30' TW=0.00' (Dynamic Tailwater)
└**1=OS Pipe Basin 1 to Road Inlet** (Passes 0.35 cfs of 7.90 cfs potential flow)
├**3=Orifice/Grate** (Orifice Controls 0.35 cfs @ 7.10 fps)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 30P: BASIN 3A

Inflow Area = 5.220 ac, 0.00% Impervious, Inflow Depth = 3.99" for 25-YR event
Inflow = 27.66 cfs @ 12.05 hrs, Volume= 1.734 af
Outflow = 4.98 cfs @ 12.19 hrs, Volume= 1.499 af, Atten= 82%, Lag= 8.0 min
Primary = 4.92 cfs @ 12.18 hrs, Volume= 1.251 af
Routed to Pond 40P : BASIN 3B
Secondary = 0.14 cfs @ 15.42 hrs, Volume= 0.248 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.48' @ 15.42 hrs Surf.Area= 27,109 sf Storage= 36,705 cf

Plug-Flow detention time= 1,130.7 min calculated for 1.499 af (86% of inflow)
Center-of-Mass det. time= 1,066.8 min (1,879.9 - 813.1)

Volume	Invert	Avail.Storage	Storage Description
#1	242.90'	129,966 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.90	0	0	0
242.99	100	5	5
243.00	22,840	115	119
244.00	27,390	25,115	25,234
246.00	32,170	59,560	84,794
247.50	37,180	52,013	136,807

Device	Routing	Invert	Outlet Devices
#1	Primary	242.50'	**15.0" Round Culvert - OS 3A-2** L= 45.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	242.90'	**10.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Secondary	242.50'	**18.0" Round Culvert - OS 3A-1** L= 39.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0128 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#4	Device 1	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 3	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 3	244.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.86 cfs @ 12.18 hrs HW=244.20' TW=243.34' (Dynamic Tailwater)
└─**1=Culvert - OS 3A-2** (Passes 4.86 cfs of 5.47 cfs potential flow)
  └─**2=Orifice/Grate** (Orifice Controls 4.86 cfs @ 4.46 fps)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.14 cfs @ 15.42 hrs HW=244.48' TW=0.00' (Dynamic Tailwater)
└─**3=Culvert - OS 3A-1** (Passes 0.14 cfs of 9.43 cfs potential flow)
  └─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Orifice Controls 0.14 cfs @ 2.87 fps)

Summary for Pond 40P: BASIN 3B

Inflow Area = 5.650 ac, 0.00% Impervious, Inflow Depth > 2.81" for 25-YR event
Inflow = 5.17 cfs @ 12.18 hrs, Volume= 1.322 af
Outflow = 0.71 cfs @ 15.49 hrs, Volume= 1.129 af, Atten= 86%, Lag= 198.5 min
Discarded = 0.11 cfs @ 10.51 hrs, Volume= 0.844 af
Primary = 0.60 cfs @ 15.49 hrs, Volume= 0.285 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.46' @ 15.49 hrs Surf.Area= 11,457 sf Storage= 19,262 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 772.7 min (2,673.5 - 1,900.7)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	38,615 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	8,470	0	0
244.00	11,340	14,858	14,858
246.00	14,450	25,790	40,648

Device	Routing	Invert	Outlet Devices
#1	Discarded	242.50'	**0.11 cfs Exfiltration at all elevations**
#2	Primary	237.00'	**15.0" Round Culvert - OS 3B** L= 45.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 237.00' / 236.00' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	244.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.11 cfs @ 10.51 hrs HW=242.54' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.60 cfs @ 15.49 hrs HW=244.46' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert - OS 3B** (Passes 0.60 cfs of 15.45 cfs potential flow)
  └─**3=Orifice/Grate** (Weir Controls 0.60 cfs @ 0.82 fps)

Summary for Pond 50P: STONE BMP 2A (BASIN)

Inflow Area = 5.410 ac, 0.00% Impervious, Inflow Depth = 4.74" for 25-YR event
Inflow = 34.81 cfs @ 12.03 hrs, Volume= 2.135 af
Outflow = 32.92 cfs @ 12.07 hrs, Volume= 2.135 af, Atten= 5%, Lag= 2.0 min
Discarded = 0.58 cfs @ 10.02 hrs, Volume= 0.948 af
Primary = 32.34 cfs @ 12.07 hrs, Volume= 1.187 af
Routed to Pond 60P : BASIN 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.58' @ 12.07 hrs Surf.Area= 9,900 sf Storage= 16,228 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 80.5 min (871.0 - 790.5)

Volume	Invert	Avail.Storage	Storage Description
#1	240.50'	20,831 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 52,470 cf Overall - 393 cf Embedded = 52,077 cf x 40.0% Voids
#2	242.80'	236 cf	**24.0" Round Pipe 714 to 712** Inside #1 L= 75.0' S= 0.0050 '/' 393 cf Overall - 3.5" Wall Thickness = 236 cf
		21,066 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
240.50	9,900	0	0
242.00	9,900	14,850	14,850
243.00	9,900	9,900	24,750
244.25	9,900	12,375	37,125
245.80	9,900	15,345	52,470

Device	Routing	Invert	Outlet Devices
#1	Discarded	240.50'	**0.58 cfs Exfiltration at all elevations**
#2	Primary	242.80'	**30.0" Round Culvert 712 TO 708** L= 103.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 242.00' S= 0.0078 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#3	Primary	242.80'	**30.0" Round Culvert 710 TO 708** L= 42.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 240.20' S= 0.0619 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Discarded OutFlow Max=0.58 cfs @ 10.02 hrs HW=240.55' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.58 cfs)

Primary OutFlow Max=32.31 cfs @ 12.07 hrs HW=244.58' TW=235.29' (Dynamic Tailwater)
├**2=Culvert 712 TO 708** (Barrel Controls 15.37 cfs @ 5.77 fps)
└**3=Culvert 710 TO 708** (Inlet Controls 16.94 cfs @ 4.54 fps)

Summary for Pond 60P: BASIN 4

Inflow Area = 13.500 ac, 0.00% Impervious, Inflow Depth = 3.57" for 25-YR event
Inflow = 80.32 cfs @ 12.03 hrs, Volume= 4.016 af
Outflow = 16.73 cfs @ 12.33 hrs, Volume= 4.014 af, Atten= 79%, Lag= 17.7 min
Primary = 16.73 cfs @ 12.33 hrs, Volume= 4.014 af
Routed to Link 60L : POST F TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 236.34' @ 12.33 hrs Surf.Area= 22,033 sf Storage= 82,618 cf

Plug-Flow detention time= 137.7 min calculated for 4.014 af (100% of inflow)
Center-of-Mass det. time= 137.4 min (926.6 - 789.2)

Volume	Invert	Avail.Storage	Storage Description
#1	231.00'	161,092 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
231.00	10,000	0	0
232.00	13,000	11,500	11,500
234.00	16,250	29,250	40,750
236.00	22,200	38,450	79,200
238.00	28,000	50,200	129,400
239.30	33,800	40,170	169,570

Device	Routing	Invert	Outlet Devices
#1	Primary	230.50'	**24.0" Round Culvert - OS 4** L= 62.8' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 230.50' / 230.00' S= 0.0080 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	231.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	234.00'	**28.0" W x 10.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	237.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=16.73 cfs @ 12.33 hrs HW=236.34' TW=0.00' (Dynamic Tailwater)
1=Culvert - OS 4 (Passes 16.73 cfs of 33.29 cfs potential flow)
2=Orifice/Grate (Orifice Controls 3.76 cfs @ 10.78 fps)
3=Orifice/Grate (Orifice Controls 12.97 cfs @ 6.67 fps)
4=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 10P: BASIN 2

Inflow Area = 3.720 ac, 0.00% Impervious, Inflow Depth = 5.06" for 50-YR event
Inflow = 33.00 cfs @ 11.96 hrs, Volume= 1.570 af
Outflow = 1.97 cfs @ 12.66 hrs, Volume= 1.570 af, Atten= 94%, Lag= 42.2 min
Discarded = 0.19 cfs @ 9.23 hrs, Volume= 0.899 af
Primary = 1.78 cfs @ 12.66 hrs, Volume= 0.671 af
Routed to Pond 20P : BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 247.11' @ 12.66 hrs Surf.Area= 11,202 sf Storage= 39,549 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 904.9 min (1,699.1 - 794.1)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	63,080 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	6,500	0	0
244.00	8,000	10,875	10,875
246.00	10,400	18,400	29,275
248.00	12,900	23,300	52,575
249.00	14,750	13,825	66,400

Device	Routing	Invert	Outlet Devices
#1	Primary	240.15'	**24.0" Round OS pipe to Basin 1** L= 39.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 240.15' / 239.95' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Discarded	242.50'	**0.19 cfs Exfiltration at all elevations**
#3	Device 1	245.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	247.00'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.19 cfs @ 9.23 hrs HW=242.57' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=1.78 cfs @ 12.66 hrs HW=247.11' TW=242.92' (Dynamic Tailwater)
└**1=OS pipe to Basin 1** (Passes 1.78 cfs of 30.98 cfs potential flow)
├**3=Orifice/Grate** (Orifice Controls 0.33 cfs @ 6.79 fps)
└**4=Orifice/Grate** (Weir Controls 1.45 cfs @ 1.10 fps)

Summary for Pond 20P: BASIN 1

Inflow Area = 9.700 ac, 0.00% Impervious, Inflow Depth = 3.61" for 50-YR event
Inflow = 37.44 cfs @ 12.05 hrs, Volume= 2.919 af
Outflow = 0.59 cfs @ 24.14 hrs, Volume= 2.869 af, Atten= 98%, Lag= 725.7 min
Discarded = 0.17 cfs @ 0.00 hrs, Volume= 1.405 af
Primary = 0.42 cfs @ 24.14 hrs, Volume= 1.464 af
Routed to Link 20L : OUTFALL FOX CHASE RD (POST B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 239.87' Surf.Area= 14,432 sf Storage= 23,042 cf
Peak Elev= 244.28' @ 24.14 hrs Surf.Area= 25,457 sf Storage= 110,928 cf (87,886 cf above start)

Plug-Flow detention time= 2,204.3 min calculated for 2.340 af (80% of inflow)
Center-of-Mass det. time= 1,676.7 min (2,570.6 - 893.9)

Volume	Invert	Avail.Storage	Storage Description
#1	238.00'	206,673 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
238.00	10,750	0	0
240.00	15,500	26,250	26,250
242.00	20,750	36,250	62,500
244.00	26,000	46,750	109,250
246.00	31,600	57,600	166,850
247.50	36,000	50,700	217,550

Device	Routing	Invert	Outlet Devices
#1	Primary	240.30'	**15.0" Round OS Pipe Basin 1 to Road Inlet** L= 81.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 240.30' / 239.87' S= 0.0053 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Discarded	238.00'	**0.17 cfs Exfiltration at all elevations**
#3	Device 1	241.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	245.50'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.17 cfs @ 0.00 hrs HW=239.87' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.17 cfs)

Primary OutFlow Max=0.42 cfs @ 24.14 hrs HW=244.28' TW=0.00' (Dynamic Tailwater)
└**1=OS Pipe Basin 1 to Road Inlet** (Passes 0.42 cfs of 9.52 cfs potential flow)
├**3=Orifice/Grate** (Orifice Controls 0.42 cfs @ 8.56 fps)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 30P: BASIN 3A

Inflow Area = 5.220 ac, 0.00% Impervious, Inflow Depth = 4.84" for 50-YR event
Inflow = 33.34 cfs @ 12.05 hrs, Volume= 2.106 af
Outflow = 5.04 cfs @ 12.19 hrs, Volume= 1.869 af, Atten= 85%, Lag= 8.4 min
Primary = 4.90 cfs @ 12.19 hrs, Volume= 1.605 af
Routed to Pond 40P : BASIN 3B
Secondary = 0.17 cfs @ 13.22 hrs, Volume= 0.265 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.65' @ 13.22 hrs Surf.Area= 27,507 sf Storage= 41,490 cf

Plug-Flow detention time= 930.0 min calculated for 1.869 af (89% of inflow)
Center-of-Mass det. time= 874.6 min (1,682.2 - 807.6)

Volume	Invert	Avail.Storage	Storage Description
#1	242.90'	129,966 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.90	0	0	0
242.99	100	5	5
243.00	22,840	115	119
244.00	27,390	25,115	25,234
246.00	32,170	59,560	84,794
247.50	37,180	52,013	136,807

Device	Routing	Invert	Outlet Devices
#1	Primary	242.50'	**15.0" Round Culvert - OS 3A-2** L= 45.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	242.90'	**10.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Secondary	242.50'	**18.0" Round Culvert - OS 3A-1** L= 39.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0128 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#4	Device 1	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 3	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 3	244.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.85 cfs @ 12.19 hrs HW=244.46' TW=243.61' (Dynamic Tailwater)
└─**1=Culvert - OS 3A-2** (Passes 4.85 cfs of 5.45 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 4.85 cfs @ 4.44 fps)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.17 cfs @ 13.22 hrs HW=244.65' TW=0.00' (Dynamic Tailwater)
└─**3=Culvert - OS 3A-1** (Passes 0.17 cfs of 10.08 cfs potential flow)
  ├─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Orifice Controls 0.17 cfs @ 3.50 fps)

Summary for Pond 40P: BASIN 3B

Inflow Area = 5.650 ac, 0.00% Impervious, Inflow Depth > 3.61" for 50-YR event
Inflow = 5.67 cfs @ 12.00 hrs, Volume= 1.699 af
Outflow = 1.92 cfs @ 13.42 hrs, Volume= 1.505 af, Atten= 66%, Lag= 85.4 min
Discarded = 0.11 cfs @ 9.84 hrs, Volume= 0.850 af
Primary = 1.81 cfs @ 13.42 hrs, Volume= 0.655 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.53' @ 13.42 hrs Surf.Area= 11,558 sf Storage= 20,052 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 558.1 min (2,230.7 - 1,672.6)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	38,615 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	8,470	0	0
244.00	11,340	14,858	14,858
246.00	14,450	25,790	40,648

Device	Routing	Invert	Outlet Devices
#1	Discarded	242.50'	**0.11 cfs Exfiltration at all elevations**
#2	Primary	237.00'	**15.0" Round Culvert - OS 3B** L= 45.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 237.00' / 236.00' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	244.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.11 cfs @ 9.84 hrs HW=242.54' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=1.81 cfs @ 13.42 hrs HW=244.53' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert - OS 3B** (Passes 1.81 cfs of 15.53 cfs potential flow)
  └─**3=Orifice/Grate** (Weir Controls 1.81 cfs @ 1.19 fps)

Summary for Pond 50P: STONE BMP 2A (BASIN)

Inflow Area = 5.410 ac, 0.00% Impervious, Inflow Depth = 5.63" for 50-YR event
Inflow = 40.97 cfs @ 12.03 hrs, Volume= 2.538 af
Outflow = 38.92 cfs @ 12.07 hrs, Volume= 2.538 af, Atten= 5%, Lag= 1.9 min
Discarded = 0.58 cfs @ 9.27 hrs, Volume= 1.011 af
Primary = 38.34 cfs @ 12.07 hrs, Volume= 1.527 af
Routed to Pond 60P : BASIN 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.79' @ 12.07 hrs Surf.Area= 9,900 sf Storage= 17,063 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 74.6 min (860.4 - 785.8)

Volume	Invert	Avail.Storage	Storage Description
#1	240.50'	20,831 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 52,470 cf Overall - 393 cf Embedded = 52,077 cf x 40.0% Voids
#2	242.80'	236 cf	**24.0" Round Pipe 714 to 712** Inside #1 L= 75.0' S= 0.0050 '/' 393 cf Overall - 3.5" Wall Thickness = 236 cf
		21,066 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
240.50	9,900	0	0
242.00	9,900	14,850	14,850
243.00	9,900	9,900	24,750
244.25	9,900	12,375	37,125
245.80	9,900	15,345	52,470

Device	Routing	Invert	Outlet Devices
#1	Discarded	240.50'	**0.58 cfs Exfiltration at all elevations**
#2	Primary	242.80'	**30.0" Round Culvert 712 TO 708** L= 103.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 242.00' S= 0.0078 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#3	Primary	242.80'	**30.0" Round Culvert 710 TO 708** L= 42.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 240.20' S= 0.0619 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Discarded OutFlow Max=0.58 cfs @ 9.27 hrs HW=240.55' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.58 cfs)

Primary OutFlow Max=38.30 cfs @ 12.07 hrs HW=244.79' TW=236.03' (Dynamic Tailwater)
├**2=Culvert 712 TO 708** (Barrel Controls 18.24 cfs @ 5.98 fps)
└**3=Culvert 710 TO 708** (Inlet Controls 20.06 cfs @ 4.80 fps)

Summary for Pond 60P: BASIN 4

Inflow Area = 13.500 ac, 0.00% Impervious, Inflow Depth = 4.39" for 50-YR event
Inflow = 95.93 cfs @ 12.03 hrs, Volume= 4.941 af
Outflow = 19.58 cfs @ 12.33 hrs, Volume= 4.939 af, Atten= 80%, Lag= 17.8 min
Primary = 19.58 cfs @ 12.33 hrs, Volume= 4.939 af
Routed to Link 60L : POST F TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 237.17' @ 12.33 hrs Surf.Area= 24,313 sf Storage= 101,801 cf

Plug-Flow detention time= 130.8 min calculated for 4.939 af (100% of inflow)
Center-of-Mass det. time= 130.5 min (916.3 - 785.8)

Volume	Invert	Avail.Storage	Storage Description
#1	231.00'	161,092 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
231.00	10,000	0	0
232.00	13,000	11,500	11,500
234.00	16,250	29,250	40,750
236.00	22,200	38,450	79,200
238.00	28,000	50,200	129,400
239.30	33,800	40,170	169,570

Device	Routing	Invert	Outlet Devices
#1	Primary	230.50'	**24.0" Round Culvert - OS 4** L= 62.8' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 230.50' / 230.00' S= 0.0080 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	231.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	234.00'	**28.0" W x 10.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	237.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=19.58 cfs @ 12.33 hrs HW=237.17' TW=0.00' (Dynamic Tailwater)
1=Culvert - OS 4 (Passes 19.58 cfs of 36.02 cfs potential flow)
2=Orifice/Grate (Orifice Controls 4.06 cfs @ 11.63 fps)
3=Orifice/Grate (Orifice Controls 15.52 cfs @ 7.98 fps)
4=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 10P: BASIN 2

Inflow Area = 3.720 ac, 0.00% Impervious, Inflow Depth = 6.03" for 100-YR event
Inflow = 38.84 cfs @ 11.96 hrs, Volume= 1.869 af
Outflow = 6.92 cfs @ 12.12 hrs, Volume= 1.869 af, Atten= 82%, Lag= 9.5 min
Discarded = 0.19 cfs @ 8.65 hrs, Volume= 0.924 af
Primary = 6.73 cfs @ 12.12 hrs, Volume= 0.944 af
Routed to Pond 20P : BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 247.30' @ 12.12 hrs Surf.Area= 11,430 sf Storage= 41,716 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 792.9 min (1,582.2 - 789.3)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	63,080 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	6,500	0	0
244.00	8,000	10,875	10,875
246.00	10,400	18,400	29,275
248.00	12,900	23,300	52,575
249.00	14,750	13,825	66,400

Device	Routing	Invert	Outlet Devices
#1	Primary	240.15'	**24.0" Round OS pipe to Basin 1** L= 39.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 240.15' / 239.95' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Discarded	242.50'	**0.19 cfs Exfiltration at all elevations**
#3	Device 1	245.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	247.00'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.19 cfs @ 8.65 hrs HW=242.57' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=6.72 cfs @ 12.12 hrs HW=247.30' TW=242.58' (Dynamic Tailwater)
└**1=OS pipe to Basin 1** (Passes 6.72 cfs of 32.88 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 0.35 cfs @ 7.11 fps)
  └**4=Orifice/Grate** (Weir Controls 6.37 cfs @ 1.81 fps)

Summary for Pond 20P: BASIN 1

Inflow Area = 9.700 ac, 0.00% Impervious, Inflow Depth = 4.52" for 100-YR event
Inflow = 48.93 cfs @ 12.06 hrs, Volume= 3.657 af
Outflow = 0.66 cfs @ 24.13 hrs, Volume= 3.430 af, Atten= 99%, Lag= 724.0 min
Discarded = 0.17 cfs @ 0.00 hrs, Volume= 1.405 af
Primary = 0.49 cfs @ 24.13 hrs, Volume= 2.024 af
Routed to Link 20L : OUTFALL FOX CHASE RD (POST B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 239.87' Surf.Area= 14,432 sf Storage= 23,042 cf
Peak Elev= 245.34' @ 24.13 hrs Surf.Area= 28,264 sf Storage= 139,266 cf (116,223 cf above start)

Plug-Flow detention time= 2,264.5 min calculated for 2.900 af (79% of inflow)
Center-of-Mass det. time= 1,794.6 min (2,670.6 - 875.9)

Volume	Invert	Avail.Storage	Storage Description
#1	238.00'	206,673 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
238.00	10,750	0	0
240.00	15,500	26,250	26,250
242.00	20,750	36,250	62,500
244.00	26,000	46,750	109,250
246.00	31,600	57,600	166,850
247.50	36,000	50,700	217,550

Device	Routing	Invert	Outlet Devices
#1	Primary	240.30'	**15.0" Round OS Pipe Basin 1 to Road Inlet** L= 81.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 240.30' / 239.87' S= 0.0053 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Discarded	238.00'	**0.17 cfs Exfiltration at all elevations**
#3	Device 1	241.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	245.50'	**45.5" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.17 cfs @ 0.00 hrs HW=239.87' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.17 cfs)

Primary OutFlow Max=0.49 cfs @ 24.13 hrs HW=245.34' TW=0.00' (Dynamic Tailwater)
└**1=OS Pipe Basin 1 to Road Inlet** (Passes 0.49 cfs of 10.99 cfs potential flow)
├**3=Orifice/Grate** (Orifice Controls 0.49 cfs @ 9.89 fps)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 30P: BASIN 3A

Inflow Area = 5.220 ac, 0.00% Impervious, Inflow Depth = 5.79" for 100-YR event
Inflow = 39.57 cfs @ 12.05 hrs, Volume= 2.520 af
Outflow = 5.17 cfs @ 12.21 hrs, Volume= 2.282 af, Atten= 87%, Lag= 9.7 min
Primary = 4.98 cfs @ 12.21 hrs, Volume= 2.003 af
Routed to Pond 40P : BASIN 3B
Secondary = 0.22 cfs @ 12.68 hrs, Volume= 0.280 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 245.00' @ 12.68 hrs Surf.Area= 28,285 sf Storage= 51,053 cf

Plug-Flow detention time= 783.4 min calculated for 2.282 af (91% of inflow)
Center-of-Mass det. time= 734.9 min (1,537.4 - 802.5)

Volume	Invert	Avail.Storage	Storage Description
#1	242.90'	129,966 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.90	0	0	0
242.99	100	5	5
243.00	22,840	115	119
244.00	27,390	25,115	25,234
246.00	32,170	59,560	84,794
247.50	37,180	52,013	136,807

Device	Routing	Invert	Outlet Devices
#1	Primary	242.50'	**15.0" Round Culvert - OS 3A-2** L= 45.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	242.90'	**10.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Secondary	242.50'	**18.0" Round Culvert - OS 3A-1** L= 39.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0128 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#4	Device 1	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 3	245.80'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 3	244.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.93 cfs @ 12.21 hrs HW=244.80' TW=243.92' (Dynamic Tailwater)
└─**1=Culvert - OS 3A-2** (Passes 4.93 cfs of 5.55 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 4.93 cfs @ 4.52 fps)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.22 cfs @ 12.68 hrs HW=245.00' TW=0.00' (Dynamic Tailwater)
└─**3=Culvert - OS 3A-1** (Passes 0.22 cfs of 11.25 cfs potential flow)
  ├─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Orifice Controls 0.22 cfs @ 4.50 fps)

Summary for Pond 40P: BASIN 3B

Inflow Area = 5.650 ac, 0.00% Impervious, Inflow Depth > 4.51" for 100-YR event
Inflow = 6.25 cfs @ 11.98 hrs, Volume= 2.124 af
Outflow = 3.38 cfs @ 13.07 hrs, Volume= 1.930 af, Atten= 46%, Lag= 65.4 min
Discarded = 0.11 cfs @ 9.17 hrs, Volume= 0.856 af
Primary = 3.27 cfs @ 13.07 hrs, Volume= 1.073 af
Routed to Link 50L : POST E TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 244.60' @ 13.07 hrs Surf.Area= 11,652 sf Storage= 20,789 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 425.2 min (1,937.9 - 1,512.7)

Volume	Invert	Avail.Storage	Storage Description
#1	242.50'	38,615 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.50	8,470	0	0
244.00	11,340	14,858	14,858
246.00	14,450	25,790	40,648

Device	Routing	Invert	Outlet Devices
#1	Discarded	242.50'	**0.11 cfs Exfiltration at all elevations**
#2	Primary	237.00'	**15.0" Round Culvert - OS 3B** L= 45.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 237.00' / 236.00' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	244.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.11 cfs @ 9.17 hrs HW=242.54' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=3.27 cfs @ 13.07 hrs HW=244.60' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert - OS 3B** (Passes 3.27 cfs of 15.60 cfs potential flow)
  └─**3=Orifice/Grate** (Weir Controls 3.27 cfs @ 1.44 fps)

Summary for Pond 50P: STONE BMP 2A (BASIN)

Inflow Area = 5.410 ac, 0.00% Impervious, Inflow Depth = 6.62" for 100-YR event
Inflow = 47.69 cfs @ 12.03 hrs, Volume= 2.984 af
Outflow = 45.31 cfs @ 12.07 hrs, Volume= 2.984 af, Atten= 5%, Lag= 1.9 min
Discarded = 0.58 cfs @ 8.81 hrs, Volume= 1.072 af
Primary = 44.73 cfs @ 12.07 hrs, Volume= 1.912 af
Routed to Pond 60P : BASIN 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 245.02' @ 12.07 hrs Surf.Area= 9,900 sf Storage= 17,967 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 69.3 min (850.7 - 781.5)

Volume	Invert	Avail.Storage	Storage Description
#1	240.50'	20,831 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 52,470 cf Overall - 393 cf Embedded = 52,077 cf x 40.0% Voids
#2	242.80'	236 cf	**24.0" Round Pipe 714 to 712** Inside #1 L= 75.0' S= 0.0050 '/' 393 cf Overall - 3.5" Wall Thickness = 236 cf
		21,066 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
240.50	9,900	0	0
242.00	9,900	14,850	14,850
243.00	9,900	9,900	24,750
244.25	9,900	12,375	37,125
245.80	9,900	15,345	52,470

Device	Routing	Invert	Outlet Devices
#1	Discarded	240.50'	**0.58 cfs Exfiltration at all elevations**
#2	Primary	242.80'	**30.0" Round Culvert 712 TO 708** L= 103.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 242.00' S= 0.0078 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#3	Primary	242.80'	**30.0" Round Culvert 710 TO 708** L= 42.0' Ke= 0.500 Inlet / Outlet Invert= 242.80' / 240.20' S= 0.0619 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Discarded OutFlow Max=0.58 cfs @ 8.81 hrs HW=240.55' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.58 cfs)

Primary OutFlow Max=44.69 cfs @ 12.07 hrs HW=245.01' TW=236.80' (Dynamic Tailwater)
├**2=Culvert 712 TO 708** (Barrel Controls 21.40 cfs @ 6.18 fps)
└**3=Culvert 710 TO 708** (Inlet Controls 23.29 cfs @ 5.07 fps)

Summary for Pond 60P: BASIN 4

Inflow Area = 13.500 ac, 0.00% Impervious, Inflow Depth = 5.31" for 100-YR event
Inflow = 112.74 cfs @ 12.03 hrs, Volume= 5.976 af
Outflow = 33.02 cfs @ 12.25 hrs, Volume= 5.974 af, Atten= 71%, Lag= 13.2 min
Primary = 33.02 cfs @ 12.25 hrs, Volume= 5.974 af
Routed to Link 60L : POST F TOTAL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 237.85' @ 12.25 hrs Surf.Area= 26,184 sf Storage= 118,947 cf

Plug-Flow detention time= 123.3 min calculated for 5.974 af (100% of inflow)
Center-of-Mass det. time= 123.1 min (906.0 - 783.0)

Volume	Invert	Avail.Storage	Storage Description
#1	231.00'	161,092 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 0.95

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
231.00	10,000	0	0
232.00	13,000	11,500	11,500
234.00	16,250	29,250	40,750
236.00	22,200	38,450	79,200
238.00	28,000	50,200	129,400
239.30	33,800	40,170	169,570

Device	Routing	Invert	Outlet Devices
#1	Primary	230.50'	**24.0" Round Culvert - OS 4** L= 62.8' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 230.50' / 230.00' S= 0.0080 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	231.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	234.00'	**28.0" W x 10.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	237.40'	**24.0" x 45.5" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=33.02 cfs @ 12.25 hrs HW=237.85' TW=0.00' (Dynamic Tailwater)
1=Culvert - OS 4 (Passes 33.02 cfs of 38.12 cfs potential flow)
2=Orifice/Grate (Orifice Controls 4.29 cfs @ 12.29 fps)
3=Orifice/Grate (Orifice Controls 17.33 cfs @ 8.92 fps)
4=Orifice/Grate (Weir Controls 11.40 cfs @ 2.19 fps)

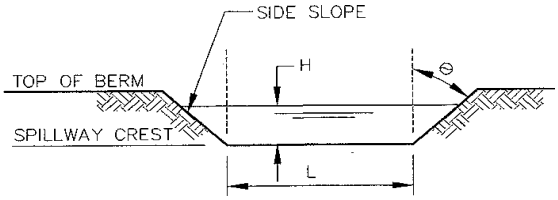
Sisters of St. Basil (7662)
Abington Township
Montgomery County, PA

Prepared By: LJP
Date: 03/03/23
Revised By:
Last Revised: 10/13/23

EMERGENCY SPILLWAY CALCULATION

Formula:
$Q = 2.7\ LH^{3/2} + 2.5\ H^{5/2}\ (Tan\theta)$

Inflow Q_{100}: 48.93 c.f.s.



Basin Identification: Basin 1

Water Surface Elevation (Ft.)	Discharge Q (CFS)
245.80	0.0
245.90	4.3
246.00	12.1
246.10	22.4
246.20	34.6
246.30	48.4
246.40	63.9
246.50	80.7
246.60	98.9
246.70	118.4
246.80	139.0
246.90	160.9
247.00	183.8
247.10	207.9
247.20	233.0
247.30	259.2
247.40	286.3
247.50	314.5

Inflow Q_{100}:	48.93
Top of Berm Elevation:	247.50
Spillway Crest Elevation:	245.80
Spillway Bottom Width (L):	50.0
Spillway Side Slope Run:	5.00
Spillway Side Slope Rise:	1.70
Side Angle (θ):	45.00

100 Year Water Surface Elevation:	**246.30**
Freeboard to Top of Berm (Ft.):	**1.20**

NOTE:
The formula used is a combination of Broad-Crested Weir flow (Q=CLH^3/2) and V-Notch weir flow (Q=CH^5/2tanθ). The 'C' values used in the formula are low and thus conservative.

Sisters of St. Basil (7662)
Abington Township
Montgomery County, PA

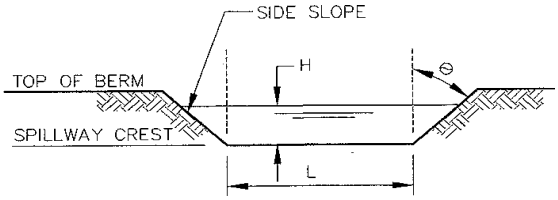
Prepared By: LJP
Date: 03/03/23
Revised By:
Last Revised:

EMERGENCY SPILLWAY CALCULATION

Formula:
$Q = 2.7\ LH^{3/2} + 2.5\ H^{5/2}\ (Tan\theta)$

Inflow Q_{100}: 38.84 c.f.s.

Basin Identification: Basin 2



Water Surface Elevation (Ft.)	Discharge Q (CFS)
247.40	0.0
247.50	3.4
247.60	9.7
247.70	17.9
247.80	27.7
247.90	38.9
248.00	51.3
248.10	64.9
248.20	79.6
248.30	95.3
248.40	112.0
248.50	129.7
248.60	148.4
248.70	167.9
248.80	188.3
248.90	209.6
249.00	231.7

Inflow Q_{100}:	38.84
Top of Berm Elevation:	249.00
Spillway Crest Elevation:	247.40
Spillway Bottom Width (L):	40.0
Spillway Side Slope Run:	5.00
Spillway Side Slope Rise:	1.60
Side Angle (θ):	45.00

100 Year Water Surface Elevation:	**247.90**
Freeboard to Top of Berm (Ft.):	**1.10**

NOTE:
The formula used is a combination of Broad-Crested Weir flow (Q=CLH^3/2) and V-Notch weir flow (Q=CH^5/2tanθ). The 'C' values used in the formula are low and thus conservative.

Sisters of St. Basil (7662)
Abington Township
Montgomery County, PA

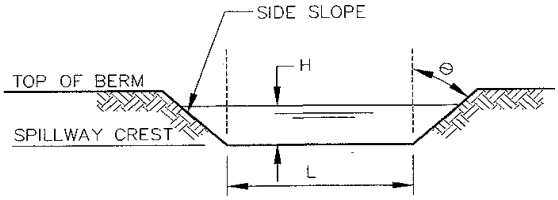
Prepared By: LJP
Date: 03/07/23
Revised By:
Last Revised: 07/10/23

EMERGENCY SPILLWAY CALCULATION

Formula:
$Q = 2.7\ LH^{3/2} + 2.5\ H^{5/2}\ (Tan\theta)$

Inflow Q_{100}: 39.57 c.f.s.

Basin Identification: Basin 3A



Water Surface Elevation (Ft.)	Discharge Q (CFS)
245.80	0.0
245.90	3.9
246.00	10.9
246.10	20.2
246.20	31.1
246.30	43.7
246.40	57.6
246.50	72.8
246.60	89.3
246.70	106.9
246.80	125.5
246.90	145.3
247.00	166.1
247.10	187.9
247.20	210.7
247.30	234.4
247.40	259.0
247.50	284.6

Inflow Q_{100}:	39.57
Top of Berm Elevation:	247.50
Spillway Crest Elevation:	245.80
Spillway Bottom Width (L):	45.0
Spillway Side Slope Run:	5.00
Spillway Side Slope Rise:	1.70
Side Angle (θ):	45.00

100 Year Water Surface Elevation:	**246.27**
Freeboard to Top of Berm (Ft.):	**1.23**

NOTE:
The formula used is a combination of Broad-Crested Weir flow (Q=CLH^3/2) and V-Notch weir flow (Q=CH^5/2tanθ). The 'C' values used in the formula are low and thus conservative.

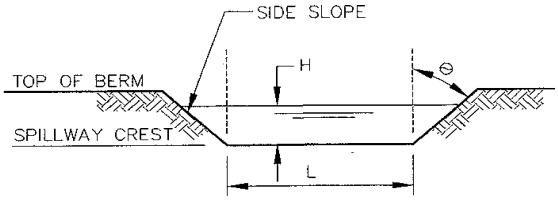
Sisters of St. Basil (7662)
Abington Township
Montgomery County, PA

Prepared By: LJP
Date: 03/07/23
Revised By:
Last Revised: 10/13/23

EMERGENCY SPILLWAY CALCULATION

Formula:
$Q = 2.7\ LH^{3/2} + 2.5\ H^{5/2}\ (Tan\theta)$

Inflow Q_{100}: 6.25 c.f.s.



Basin Identification: Basin 3B

Water Surface Elevation (Ft.)	Discharge Q (CFS)
244.60	0.0
244.70	2.6
244.80	7.3
244.90	13.5
245.00	20.9
245.10	29.4
245.20	38.8
245.30	49.1
245.40	60.3
245.50	72.3
245.60	85.0
245.70	98.6
245.80	112.9
245.90	127.9
246.00	143.6

Inflow Q_{100}:	6.25
Top of Berm Elevation:	246.00
Spillway Crest Elevation:	244.60
Spillway Bottom Width (L):	30.0
Spillway Side Slope Run:	4.00
Spillway Side Slope Rise:	1.40
Side Angle (θ):	45.00

100 Year Water Surface Elevation:	**244.78**
Freeboard to Top of Berm (Ft.):	**1.22**

NOTE:
The formula used is a combination of Broad-Crested Weir flow (Q=CLH^3/2) and V-Notch weir flow (Q=CH^5/2tanθ). The 'C' values used in the formula are low and thus conservative.

Sisters of St. Basil (7662)
Abington Township
Montgomery County, PA

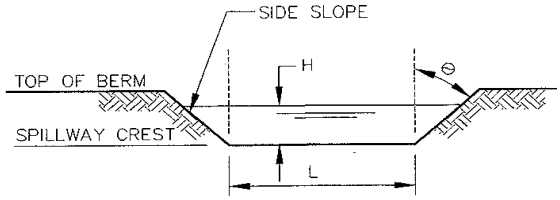
Prepared By: LJP
Date: 03/07/23
Revised By:
Last Revised: 10/13/23

EMERGENCY SPILLWAY CALCULATION

Formula:
$Q = 2.7\ LH^{3/2} + 2.5\ H^{5/2}\ (Tan\theta)$

Inflow Q_{100}: 112.74 c.f.s.

Basin Identification: Basin 4



Water Surface Elevation (Ft.)	Discharge Q (CFS)
237.90	0.0
238.00	8.6
238.10	24.2
238.20	44.6
238.30	68.7
238.40	96.2
238.50	126.6
238.60	159.8
238.70	195.5
238.80	233.6
238.90	274.0
239.00	316.6
239.10	361.3
239.20	408.0
239.30	456.6
239.40	507.2
239.50	559.6
239.60	613.7

Inflow Q_{100}:	112.74
Top of Berm Elevation:	239.60
Spillway Crest Elevation:	237.90
Spillway Bottom Width (L):	100.0
Spillway Side Slope Run:	5.00
Spillway Side Slope Rise:	1.70
Side Angle (θ):	45.00

100 Year Water Surface Elevation:	**238.45**
Freeboard to Top of Berm (Ft.):	**1.15**

NOTE:
The formula used is a combination of Broad-Crested Weir flow (Q=CLH^3/2) and V-Notch weir flow (Q=CH^5/2tanθ). The 'C' values used in the formula are low and thus conservative.

STANDARD E&S WORKSHEET #18

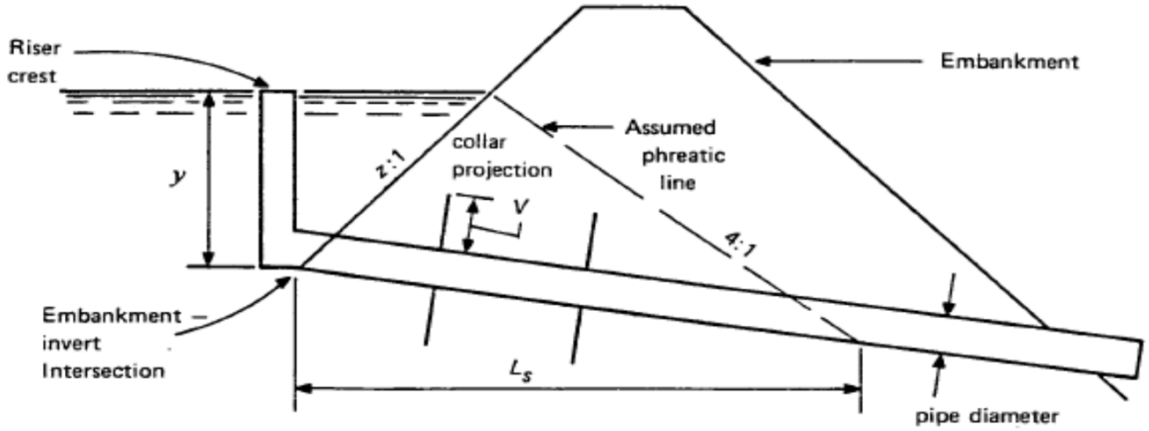
Anti-seep Collar Design

PROJECT NAME: Sisters of St. Basil

LOCATION: Abington Township, Montgomery County, PA

PREPARED BY: LJP DATE: 7/10/2023

CHECKED BY: DATE:



BASIN NO.	TEMP. OR PERM.	Y (FT)	Z	Ls (FT)	Lf (FT)	V (IN)	BARREL DIA. (IN)	COLLAR SIZE (IN)	NO. COLLARS	COLLAR SPACING (FT)	DISTANCE TO 1ST COLLAR (FT)
O.S. 3A-1	PERM	3.30	3	24.3	28.0	12	18	42	2	8.12	8.12
O.S. 3A-2	PERM	3.30	3	24.2	27.8	12	15	39	2	8.06	8.06
O.S. 3B-1	PERM	7.30	3	56.1	64.5	18	15	51	3	14.02	14.02
O.S. 4.0	PERM	6.70	3	48.4	55.7	18	24	60	3	12.11	12.11

NOAA Atlas 14, Volume 2, Version 3
Location name: Jenkintown, Pennsylvania, USA*
Latitude: 40.0908°, Longitude: -75.1015°
Elevation: 251 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.346** (0.315-0.380)	**0.412** (0.375-0.453)	**0.487** (0.442-0.535)	**0.541** (0.491-0.594)	**0.607** (0.547-0.665)	**0.653** (0.586-0.717)	**0.699** (0.625-0.769)	**0.741** (0.658-0.818)	**0.792** (0.697-0.879)	**0.830** (0.725-0.927)
10-min	**0.552** (0.503-0.607)	**0.659** (0.600-0.724)	**0.780** (0.708-0.856)	**0.865** (0.785-0.949)	**0.967** (0.872-1.06)	**1.04** (0.934-1.14)	**1.11** (0.993-1.22)	**1.17** (1.04-1.30)	**1.25** (1.10-1.39)	**1.31** (1.14-1.46)
15-min	**0.690** (0.629-0.758)	**0.829** (0.755-0.910)	**0.987** (0.896-1.08)	**1.09** (0.993-1.20)	**1.23** (1.11-1.34)	**1.32** (1.18-1.45)	**1.40** (1.26-1.54)	**1.48** (1.32-1.64)	**1.58** (1.39-1.75)	**1.64** (1.43-1.83)
30-min	**0.946** (0.862-1.04)	**1.14** (1.04-1.26)	**1.40** (1.27-1.54)	**1.59** (1.44-1.74)	**1.82** (1.64-1.99)	**1.98** (1.78-2.18)	**2.15** (1.92-2.37)	**2.31** (2.05-2.55)	**2.51** (2.21-2.78)	**2.66** (2.32-2.97)
60-min	**1.18** (1.08-1.30)	**1.44** (1.31-1.58)	**1.80** (1.63-1.97)	**2.06** (1.87-2.27)	**2.42** (2.18-2.65)	**2.69** (2.41-2.95)	**2.96** (2.65-3.26)	**3.23** (2.87-3.57)	**3.60** (3.17-4.00)	**3.88** (3.39-4.33)
2-hr	**1.42** (1.28-1.56)	**1.73** (1.56-1.90)	**2.17** (1.96-2.39)	**2.51** (2.26-2.76)	**2.96** (2.66-3.26)	**3.33** (2.97-3.66)	**3.70** (3.28-4.07)	**4.07** (3.58-4.49)	**4.59** (3.99-5.09)	**4.99** (4.29-5.56)
3-hr	**1.55** (1.41-1.72)	**1.89** (1.71-2.09)	**2.38** (2.15-2.63)	**2.76** (2.49-3.04)	**3.28** (2.94-3.62)	**3.69** (3.29-4.07)	**4.12** (3.65-4.56)	**4.56** (4.00-5.06)	**5.17** (4.48-5.77)	**5.66** (4.84-6.34)
6-hr	**1.95** (1.77-2.16)	**2.36** (2.14-2.61)	**2.96** (2.68-3.27)	**3.44** (3.11-3.80)	**4.14** (3.70-4.56)	**4.71** (4.18-5.19)	**5.32** (4.68-5.87)	**5.96** (5.19-6.60)	**6.89** (5.89-7.68)	**7.65** (6.44-8.58)
12-hr	**2.37** (2.17-2.63)	**2.87** (2.62-3.18)	**3.62** (3.30-4.00)	**4.26** (3.86-4.70)	**5.19** (4.66-5.72)	**5.99** (5.32-6.60)	**6.86** (6.02-7.58)	**7.82** (6.76-8.68)	**9.24** (7.80-10.3)	**10.4** (8.65-11.7)
24-hr	**2.74** (2.53-2.98)	**3.31** (3.06-3.60)	**4.18** (3.86-4.54)	**4.92** (4.52-5.34)	**6.00** (5.49-6.49)	**6.92** (6.28-7.48)	**7.93** (7.15-8.56)	**9.03** (8.06-9.76)	**10.7** (9.38-11.5)	**12.0** (10.5-13.1)
2-day	**3.16** (2.90-3.44)	**3.82** (3.51-4.16)	**4.83** (4.44-5.26)	**5.67** (5.20-6.16)	**6.88** (6.28-7.46)	**7.90** (7.17-8.57)	**9.00** (8.10-9.75)	**10.2** (9.10-11.1)	**11.9** (10.5-13.0)	**13.3** (11.7-14.6)
3-day	**3.34** (3.09-3.63)	**4.03** (3.73-4.38)	**5.08** (4.69-5.51)	**5.94** (5.47-6.44)	**7.17** (6.58-7.76)	**8.20** (7.48-8.87)	**9.30** (8.44-10.1)	**10.5** (9.44-11.4)	**12.2** (10.9-13.2)	**13.6** (12.0-14.8)
4-day	**3.52** (3.27-3.82)	**4.25** (3.95-4.60)	**5.33** (4.94-5.76)	**6.20** (5.74-6.71)	**7.46** (6.87-8.06)	**8.50** (7.80-9.17)	**9.61** (8.77-10.4)	**10.8** (9.78-11.6)	**12.5** (11.2-13.5)	**13.9** (12.3-15.0)
7-day	**4.12** (3.84-4.44)	**4.94** (4.61-5.33)	**6.12** (5.70-6.60)	**7.10** (6.60-7.65)	**8.50** (7.86-9.14)	**9.66** (8.90-10.4)	**10.9** (9.98-11.7)	**12.2** (11.1-13.1)	**14.1** (12.7-15.2)	**15.6** (14.0-16.9)
10-day	**4.69** (4.39-5.02)	**5.61** (5.25-6.01)	**6.85** (6.40-7.34)	**7.85** (7.33-8.41)	**9.26** (8.61-9.90)	**10.4** (9.63-11.1)	**11.6** (10.7-12.4)	**12.8** (11.8-13.7)	**14.5** (13.2-15.6)	**16.0** (14.4-17.1)
20-day	**6.34** (5.99-6.72)	**7.53** (7.12-7.98)	**8.99** (8.50-9.54)	**10.1** (9.57-10.8)	**11.7** (11.0-12.4)	**12.9** (12.1-13.7)	**14.2** (13.3-15.0)	**15.4** (14.4-16.4)	**17.1** (15.9-18.2)	**18.5** (17.0-19.6)
30-day	**7.90** (7.49-8.31)	**9.31** (8.83-9.80)	**10.9** (10.3-11.4)	**12.1** (11.5-12.7)	**13.7** (13.0-14.4)	**14.9** (14.1-15.7)	**16.1** (15.2-17.0)	**17.3** (16.3-18.3)	**18.9** (17.6-19.9)	**20.1** (18.6-21.2)
45-day	**10.1** (9.58-10.6)	**11.8** (11.3-12.4)	**13.6** (13.0-14.3)	**15.0** (14.2-15.7)	**16.7** (15.9-17.5)	**18.0** (17.0-18.8)	**19.2** (18.2-20.1)	**20.3** (19.2-21.3)	**21.8** (20.5-22.9)	**22.8** (21.4-24.0)
60-day	**12.0** (11.5-12.6)	**14.1** (13.5-14.8)	**16.1** (15.4-16.9)	**17.6** (16.8-18.4)	**19.5** (18.6-20.4)	**20.9** (19.9-21.8)	**22.1** (21.0-23.2)	**23.3** (22.2-24.5)	**24.8** (23.5-26.0)	**25.8** (24.4-27.1)

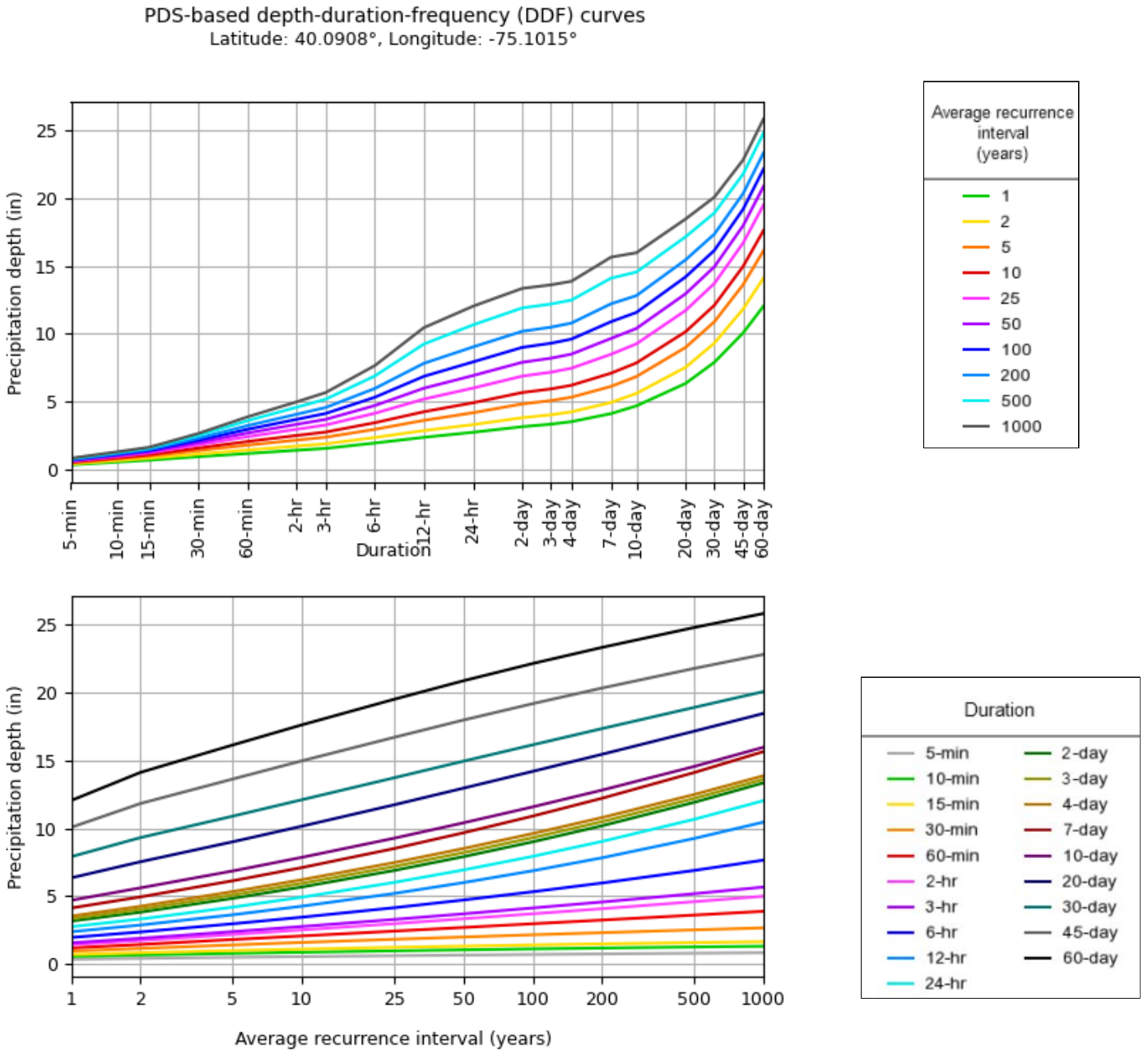
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical



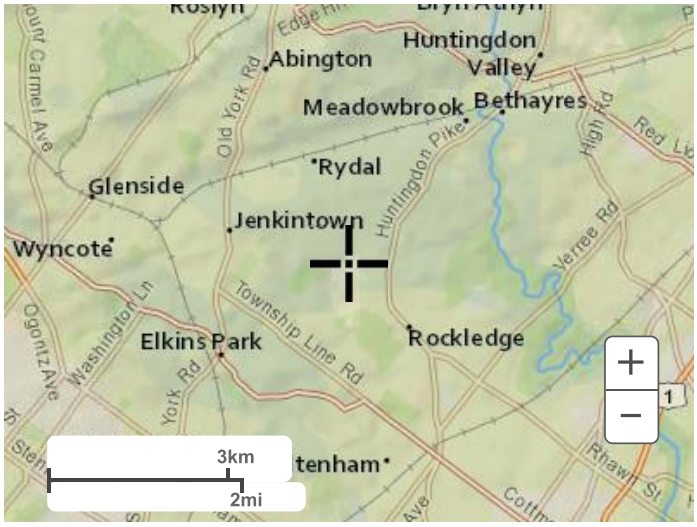
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Maps & aerials

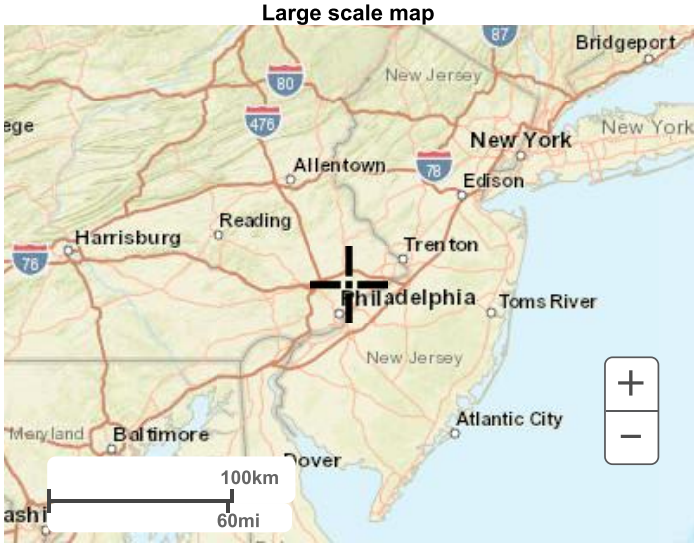
Small scale terrain



Large scale terrain



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-YR	Type II 24-hr		Default	24.00	1	2.74	2
2	2-YR	Type II 24-hr		Default	24.00	1	3.31	2
3	5-YR	Type II 24-hr		Default	24.00	1	4.18	2
4	10-YR	Type II 24-hr		Default	24.00	1	4.92	2
5	25-YR	Type II 24-hr		Default	24.00	1	6.00	2
6	50-YR	Type II 24-hr		Default	24.00	1	6.92	2
7	100-YR	Type II 24-hr		Default	24.00	1	7.93	2

Storm Sewer Design Information

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C-value Calculations
Inlet, Pipe, Spread, HGL Calculations
Outlet Protection Calculations

Sisters of St. Basil
Abington Township
Montgomery County, PA

Date: 07/10/23
By: LJP
Chk'd:
Revised:

STORM SEWER INLET RUNOFF COEFFICIENT CALCULATIONS

Inlet No.	Road	Inlet Drainage Area 'C' Value														overland travel time to inlet (min.)
		Imp. (ac.)	'C'	Add. Imp. (ac.)	'C'	Woods. (ac.)	'C'	1/4 Acre SFam. (ac.)	'C'	1/3 Acre SFam. (ac.)	'C'	Other (Lawn) (ac.)	'C'	Total Area (ac.)	Overall 'C' 25/100 yr	
100 Run																
FES 100	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
102	Yard	0.10	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.05	0.30	0.15	0.74	5.00
104	Yard	0.17	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.11	0.30	0.29	0.68	5.00

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200 Run																
FES 200	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
202	Road A	0.10	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.02	0.30	0.12	0.86	5.00
204	Road A	0.15	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.02	0.30	0.17	0.87	5.00
206	Road A	0.06	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.05	0.30	0.10	0.65	5.00
208	Yard	0.27	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.05	0.30	0.32	0.84	5.00
210	Road A	0.15	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.03	0.30	0.18	0.85	5.00
212	Road A	0.03	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.01	0.30	0.04	0.73	5.00
214	Yard	0.15	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.15	0.30	0.30	0.62	5.00
216	Road B	0.25	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.02	0.30	0.26	0.91	5.00
218	Road B	0.15	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.08	0.30	0.23	0.73	5.00
220	Road B	0.15	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.00	0.30	0.15	0.94	5.00
222	Road B	0.06	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.04	0.30	0.10	0.71	5.00
224	Yard	0.04	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.10	0.30	0.14	0.50	5.00

Sisters of St. Basil
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Chk'd:
Revised:

STORM SEWER INLET RUNOFF COEFFICIENT CALCULATIONS

Inlet No.	Road	Inlet Drainage Area 'C' Value														overland travel time to inlet (min.)
		Imp. (ac.)	'C'	Add. Imp. (ac.)	'C'	Woods. (ac.)	'C'	1/4 Acre SFam. (ac.)	'C'	1/3 Acre SFam. (ac.)	'C'	Other (Lawn) (ac.)	'C'	Total Area (ac.)	Overall 'C' 25/100 yr	
300 Run																
FES 300	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
304	Road A	0.13	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.09	0.30	0.22	0.68	5.00
306	Road A	0.05	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.00	0.30	0.05	0.90	5.00
O.S. 2.0	Basin 2	0.00	0.95	0.00	0.95	0.00	0.20	0.30	0.56	0.00	0.53	0.89	0.30	1.19	0.37	5.00

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		Imp. (ac.)	'C'	Add. Imp. (ac.)	'C'	Woods. (ac.)	'C'	1/4 Acre SFam. (ac.)	'C'	1/3 Acre SFam. (ac.)	'C'	Other (Lawn) (ac.)	'C'	Total Area (ac.)	Overall 'C' 25/100 yr	
400 Run																
FES 400	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MH 404	Acc. Rd.	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
406	Road B	0.11	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.01	0.30	0.12	0.89	5.00
408	Road B	0.47	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.08	0.30	0.55	0.86	5.00
410	Road B	0.21	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.09	0.30	0.30	0.75	5.00
412	Road B	0.15	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.05	0.30	0.21	0.79	5.00
414	Yard	0.21	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.19	0.30	0.40	0.64	5.00
416	Road B	0.24	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.43	0.30	0.67	0.53	5.00
MH 418	Road B/C	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
420	Road C	0.16	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.03	0.30	0.20	0.84	5.00
422	Road C	0.16	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.03	0.30	0.20	0.85	5.00
424	Road B	0.06	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.06	0.30	0.12	0.63	5.00
426	Road B	0.20	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.02	0.30	0.22	0.88	5.00
428	Yard	0.21	0.95	0.00	0.95	0.00	0.20	0.00	0.56	0.00	0.53	0.66	0.30	0.87	0.45	5.00

Sisters of St. Basil
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Inlet No.	Road	Inlet Drainage Area 'C' Value														overland travel time to inlet (min.)
		Imp. (ac.)	'C'	Add. Imp. (ac.)	'C'	Other (Lawn) (ac.)	'C'	(ac.)	'C'	(ac.)	'C'	(ac.)	'C'	Total Area (ac.)	Overall 'C' 25/100 yr	
500 Run																
FES 500	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
502	Road D	0.48	0.95	0.09	0.30	---	---	---	---	---	---	---	---	0.56	0.85	5.00
504	Road D	0.23	0.95	0.01	0.30	---	---	---	---	---	---	---	---	0.24	0.92	5.00
506	Road D	0.04	0.95	0.01	0.30	---	---	---	---	---	---	---	---	0.04	0.82	5.00
508	Road D	0.03	0.95	0.01	0.30	---	---	---	---	---	---	---	---	0.03	0.83	5.00
510	Road B	0.26	0.95	0.03	0.30	---	---	---	---	---	---	---	---	0.30	0.87	5.00
512	Road B	0.04	0.95	0.02	0.30	---	---	---	---	---	---	---	---	0.06	0.73	5.00
514	Road B	0.04	0.95	0.04	0.30	---	---	---	---	---	---	---	---	0.09	0.63	5.00
516	Road A	0.25	0.95	0.07	0.30	---	---	---	---	---	---	---	---	0.33	0.80	5.00
518	Road A	0.22	0.95	0.04	0.30	---	---	---	---	---	---	---	---	0.26	0.85	5.00
520	Yard	0.20	0.95	0.02	0.30	---	---	---	---	---	---	---	---	0.22	0.88	5.00

Sisters of St. Basil
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		Imp. (ac.)	'C'	Add. Imp. (ac.)	'C'	Other (Lawn) (ac.)	'C'	(ac.)	'C'	(ac.)	'C'	(ac.)	'C'	Total Area (ac.)	Overall 'C' 25/100 yr	
600 Run																
FES 600	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
602	Yard	0.10	0.95	0.05	0.30			---	---	---	---	---	---	0.15	0.75	5.00
604	Yard	0.10	0.95	0.11	0.30	---	---	---	---	---	---	---	---	0.21	0.62	5.00
606	Yard	0.17	0.95	0.11	0.30	---	---	---	---	---	---	---	---	0.29	0.69	5.00
608	Yard	0.38	0.95	0.72	0.30	---	---	---	---	---	---	---	---	1.10	0.52	5.00

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		Imp. (ac.)	'C'	Add. Imp. (ac.)	'C'	Other (Lawn) (ac.)	'C'	(ac.)	'C'	(ac.)	'C'	(ac.)	'C'	Total Area (ac.)	Overall 'C' 25/100 yr	
700 Run																
FES 700	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MH-702	Yard	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-
704	Road E	0.85	0.95	0.00	0.95	0.34	0.30	---	---	---	---	---	---	1.19	0.76	5.00
706	Road E	0.36	0.95	0.00	0.95	0.12	0.30	---	---	---	---	---	---	0.48	0.78	5.00
708	Yard	0.07	0.95	0.00	0.95	0.30	0.30	---	---	---	---	---	---	0.37	0.42	5.00
710	Yard	0.00	0.95	0.00	0.95	0.06	0.30	---	---	---	---	---	---	0.06	0.31	5.00
712	Yard	0.10	0.95	0.00	0.95	0.16	0.30	---	---	---	---	---	---	0.26	0.56	5.00
714	Yard	0.28	0.95	0.00	0.95	0.26	0.30	---	---	---	---	---	---	0.53	0.64	5.00
MH-716	Yard	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-
718	Yard	0.14	0.95	0.00	0.95	0.22	0.30	---	---	---	---	---	---	0.35	0.55	5.00
720	Road B	0.45	0.95	0.00	0.95	0.23	0.30	---	---	---	---	---	---	0.68	0.73	5.00
722	Road B	0.49	0.95	0.00	0.95	-0.49	0.30	---	---	---	---	---	---		#DIV/0!	5.00
724	Yard	0.38	0.95	0.00	0.95	0.28	0.30	---	---	---	---	---	---	0.65	0.68	5.00
726	Yard	0.10	0.95	0.00	0.95	0.09	0.30	---	---	---	---	---	---	0.19	0.65	5.00
730	Road E	0.06	0.95	0.00	0.95	0.06	0.30	---	---	---	---	---	---	0.12	0.63	5.00
732	Road E	0.25	0.95	0.00	0.95	0.03	0.30	---	---	---	---	---	---	0.28	0.88	5.00
734	Road E	0.04	0.95	0.00	0.95	0.11	0.30	---	---	---	---	---	---	0.15	0.49	5.00
736	Road E	0.02	0.95	0.00	0.95	0.01	0.30	---	---	---	---	---	---	0.02	0.71	5.00
738	Road E	0.22	0.95	0.00	0.95	0.04	0.30	---	---	---	---	---	---	0.26	0.84	5.00

Sisters of St. Basil
Abington Township
Montgomery County, PA

Date: 07/10/23
By: LJP
Chk'd:
Revised:

STORM SEWER INLET RUNOFF COEFFICIENT CALCULATIONS

Inlet No.	Road	Inlet Drainage Area 'C' Value														overland travel time to inlet (min.)
		Imp. (ac.)	'C'	Add. Imp. (ac.)	'C'	Other (Lawn) (ac.)	'C'	(ac.)	'C'	(ac.)	'C'	(ac.)	'C'	Total Area (ac.)	Overall 'C' 25/100 yr	
740	Road F	0.22	0.95	0.04	0.30	---	---	---	---	---	---	---	---	0.26	0.85	5.00
742	Road F	0.25	0.95	0.07	0.30	---	---	---	---	---	---	---	---	0.33	0.80	5.00
744	Yard	0.28	0.95	0.27	0.30	---	---	---	---	---	---	---	---	0.54	0.63	5.00
750	Yard	0.10	0.95	0.00	0.95	0.04	0.30	---	---	---	---	---	---	0.15	0.75	5.00
752	Yard	0.17	0.95	0.00	0.95	0.12	0.30	---	---	---	---	---	---	0.29	0.68	5.00
754	Yard	0.14	0.95	0.00	0.95	0.12	0.30	---	---	---	---	---	---	0.25	0.65	5.00
756	Yard	0.07	0.95	0.00	0.95	0.11	0.30	---	---	---	---	---	---	0.18	0.54	5.00
758	Yard	0.14	0.95	0.00	0.95	0.11	0.30	---	---	---	---	---	---	0.24	0.67	5.00
760	Yard	0.17	0.95	0.00	0.95	0.16	0.30	---	---	---	---	---	---	0.33	0.64	5.00
762	Yard	0.14	0.95	0.00	0.95	0.12	0.30	---	---	---	---	---	---	0.26	0.64	5.00
764	Road A	0.37	0.95	0.00	0.95	0.06	0.30	---	---	---	---	---	---	0.43	0.86	5.00
766	Road A	0.25	0.95	0.00	0.95	0.13	0.30	---	---	---	---	---	---	0.38	0.73	5.00
MH-768	Road A/C	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
770	Road C	0.14	0.95	0.00	0.95	0.01	0.30	---	---	---	---	---	---	0.15	0.91	5.00
772	Road C	0.14	0.95	0.00	0.95	0.01	0.30	---	---	---	---	---	---	0.15	0.91	5.00
774	Yard	0.17	0.95	0.00	0.95	0.14	0.30	---	---	---	---	---	---	0.32	0.65	5.00
776	Road A	0.44	0.95	0.00	0.95	0.13	0.30	---	---	---	---	---	---	0.57	0.80	5.00
778	Road A	0.23	0.95	0.00	0.95	0.09	0.30	---	---	---	---	---	---	0.33	0.76	5.00
780	Yard	0.17	0.95	0.00	0.95	0.13	0.30	---	---	---	---	---	---	0.30	0.67	5.00

Sisters of St. Basil
Abington Township
Montgomery County, PA

Date: 10/16/23
By: LJP
Chk'd:
Revised: 02/14/24

STORM SEWER INLET RUNOFF COEFFICIENT CALCULATIONS

Inlet No.	Road	Inlet Drainage Area 'C' Value														overland travel time to inlet (min.)
		Imp. (ac.)	'C'	Add. Imp. (ac.)	'C'	Other (Lawn) (ac.)	'C'	(ac.)	'C'	(ac.)	'C'	(ac.)	'C'	Total Area (ac.)	Overall 'C' 25/100 yr	
800 Run																
EX 800	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MH-802	Road	---	---	---	---	---	---	---	---	---	---	---	---	-	-	-
804	Road	0.07	0.95	0.14	0.30	---	---	---	---	---	---	---	---	0.21	0.52	5.00
806	Road	0.07	0.95	0.12	0.30	---	---	---	---	---	---	---	---	0.19	0.54	5.00
808	Yard	0.00	0.95	0.16	0.30	---	---	---	---	---	---	---	---	0.16	0.30	5.00

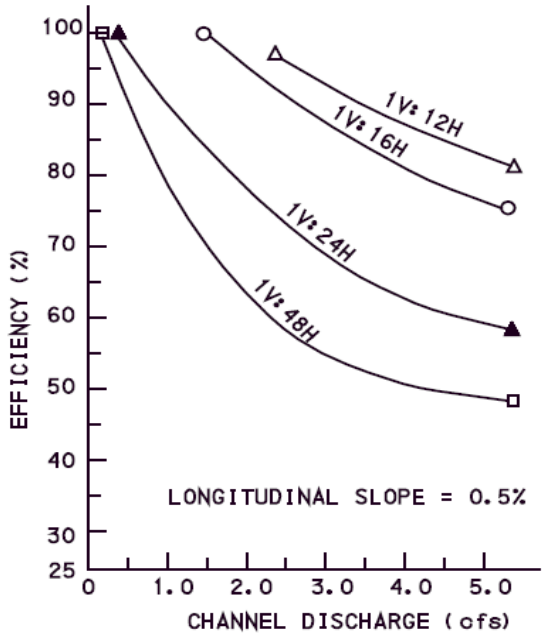


FIGURE 10.3.1 (ENGLISH)
EFFICIENCY CURVES: CAPACITY OF TYPE C INLET OR TYPE M INLET (MOUNTABLE CURB)

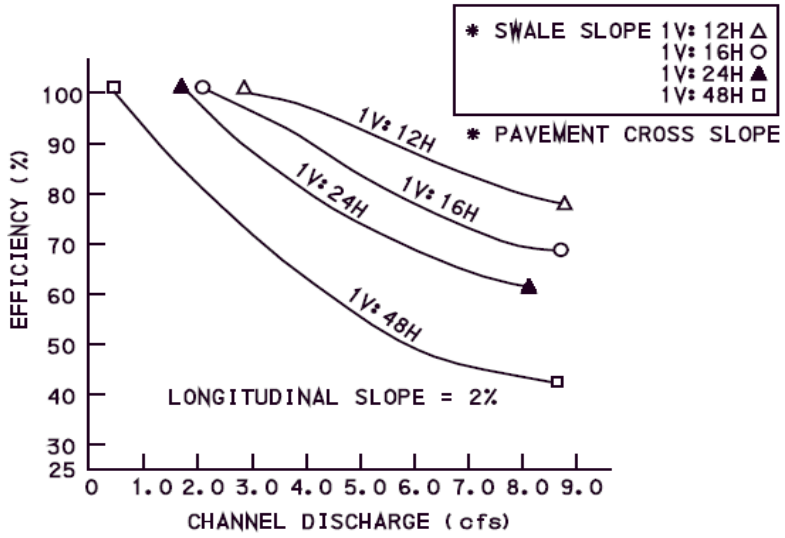


FIGURE 10.3.2 (ENGLISH)
EFFICIENCY CURVES: CAPACITY OF TYPE C INLET OR TYPE M INLET (MOUNTABLE CURB)

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	47.968	0.15	0.43	0.74	0.11	0.30	5.0	7.8	5.7	1.75	14.99	1.54	15	4.59	242.50	244.70	245.68	245.70	242.50	249.30	102 to FES100
2	1	173.116	0.28	0.28	0.69	0.19	0.19	5.0	5.0	6.5	1.25	5.04	2.33	15	0.52	244.90	245.80	245.75	246.24	249.30	249.20	104 to 102

Project File: Run 100.stm | Number of lines: 2 | Run Date: 7/14/2023

NOTES:Intensity = 60.89 / (Inlet time + 12.00) ^ 0.79; Return period =Yrs. 10 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	102	0.72	0.00	0.72	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.09	10.87	0.09	10.87	0.0	Off
2	104	1.25	0.00	1.25	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.13	14.84	0.13	14.84	0.0	Off

Project File: Run 100.stm | Number of lines: 2 | Run Date: 7/14/2023

NOTES: Inlet N-Values = 0.016; Intensity = 60.89 / (Inlet time + 12.00) ^ 0.79; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	47.968	0.15	0.43	0.74	0.11	0.30	5.0	7.2	7.6	2.32	14.99	1.89	15	4.59	242.50	244.70	247.26	247.31	242.50	249.30	102 to FES100
2	1	173.116	0.28	0.28	0.69	0.19	0.19	5.0	5.0	8.4	1.62	5.04	1.32	15	0.52	244.90	245.80	247.38	247.47	249.30	249.20	104 to 102

Project File: Run 100.stm | Number of lines: 2 | Run Date: 7/14/2023

NOTES:Intensity = 47.90 / (Inlet time + 9.20) ^ 0.66; Return period =Yrs. 100 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	102	0.93	0.00	0.93	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.11	12.53	0.11	12.53	0.0	Off
2	104	1.62	0.00	1.62	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.15	17.24	0.15	17.24	0.0	Off

Project File: Run 100.stm | Number of lines: 2 | Run Date: 7/14/2023

NOTES: Inlet N-Values = 0.016; Intensity = 47.90 / (Inlet time + 9.20) ^ 0.66; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	56.250	0.12	2.11	0.86	0.10	1.64	5.0	10.1	5.3	8.64	40.01	2.87	24	2.67	242.50	244.00	245.68	245.73	242.50	249.67	202 to FES200
2	1	68.778	0.17	1.11	0.87	0.15	0.85	5.0	7.6	5.8	4.93	24.54	3.81	18	4.65	244.50	247.70	245.90	248.55	249.67	251.30	204 to 202
3	2	33.525	0.10	0.42	0.65	0.07	0.33	5.0	5.4	6.4	2.13	12.90	3.54	15	3.40	247.90	249.04	248.55	249.62	251.30	251.55	206 to 204
4	3	30.871	0.32	0.32	0.84	0.27	0.27	5.0	5.0	6.5	1.74	5.04	3.65	15	0.52	249.24	249.40	249.75	249.92	251.55	252.80	208 to 206
5	2	97.983	0.18	0.52	0.85	0.15	0.37	5.0	6.7	6.0	2.21	6.12	3.63	15	0.77	247.90	248.65	248.55	249.24	251.30	253.75	210 to 204
6	5	48.162	0.04	0.34	0.73	0.03	0.22	5.0	6.0	6.2	1.33	5.04	3.38	15	0.52	248.85	249.10	249.29	249.56	253.75	254.50	212 to 210
7	6	58.560	0.30	0.30	0.62	0.19	0.19	5.0	5.0	6.5	1.21	5.01	3.28	15	0.51	249.30	249.60	249.72	250.03	254.50	253.00	214 to 212
8	1	90.501	0.26	0.88	0.91	0.24	0.69	5.0	9.5	5.4	3.70	16.91	3.23	18	2.21	244.50	246.50	245.90	247.23	249.67	250.39	216 to 202
9	8	30.022	0.23	0.23	0.73	0.17	0.17	5.0	5.0	6.5	1.09	6.25	2.79	15	0.80	246.75	246.99	247.23	247.40	250.39	250.39	218 to 216
10	8	151.972	0.15	0.39	0.94	0.14	0.28	5.0	7.7	5.8	1.62	6.86	3.60	15	0.96	246.75	248.21	247.23	248.71	250.39	252.74	220 to 216
11	10	30.001	0.10	0.24	0.71	0.07	0.14	5.0	7.1	5.9	0.84	4.95	2.94	15	0.50	248.41	248.56	248.76	248.92	252.74	252.74	222 to 220
12	11	45.511	0.14	0.14	0.50	0.07	0.07	5.0	5.0	6.5	0.45	5.08	2.50	15	0.53	248.76	249.00	249.01	249.26	252.74	252.40	224 to 222

Project File: Run 200.stm

Number of lines: 12

Run Date: 7/14/2023

NOTES:Intensity = 60.89 / (Inlet time + 12.00) ^ 0.79; Return period =Yrs. 10 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	202	0.67	0.49	0.57	0.59	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.17	5.34	0.17	5.34	0.0	Off
2	204	0.96	0.27	0.74	0.49	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.17	5.50	0.17	5.50	0.0	1
3	206	0.42	0.00	0.41	0.01	Comb	4.0	1.00	0.00	1.00	2.00	0.020	2.00	0.050	0.020	0.013	0.12	2.95	0.03	0.51	0.0	Off
4	208	1.74	0.00	1.74	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.16	18.00	0.16	18.00	0.0	Off
5	210	0.99	0.00	0.72	0.27	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.16	4.93	0.16	4.93	0.0	2
6	212	0.19	0.00	0.19	0.00	Comb	4.0	1.00	0.00	1.00	2.00	0.020	2.00	0.050	0.020	0.013	0.09	1.77	0.00	0.00	0.0	3
7	214	1.21	0.00	1.21	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.13	14.52	0.13	14.52	0.0	Off
8	216	1.53	0.24	1.09	0.69	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.19	6.55	0.19	6.55	0.0	Off
9	218	1.09	0.01	0.72	0.38	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.16	5.20	0.16	5.20	0.0	Off
10	220	0.91	0.00	0.67	0.24	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.15	4.73	0.15	4.73	0.0	8
11	222	0.46	0.00	0.45	0.01	Comb	4.0	1.00	0.00	1.00	2.00	0.020	2.00	0.050	0.020	0.013	0.12	3.14	0.03	0.63	0.0	9
12	224	0.45	0.00	0.45	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.07	8.52	0.07	8.52	0.0	Off

Project File: Run 200.stm | Number of lines: 12 | Run Date: 7/14/2023

NOTES: Inlet N-Values = 0.016; Intensity = 60.89 / (Inlet time + 12.00) ^ 0.79; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	56.250	0.12	2.11	0.86	0.10	1.64	5.0	8.9	7.1	11.70	40.01	3.72	24	2.67	242.50	244.00	247.26	247.39	242.50	249.67	202 to FES200
2	1	68.778	0.17	1.11	0.87	0.15	0.85	5.0	7.0	7.7	6.53	24.54	4.50	18	4.65	244.50	247.70	247.66	248.69	249.67	251.30	204 to 202
3	2	33.525	0.10	0.42	0.65	0.07	0.33	5.0	5.3	8.3	2.76	12.90	3.77	15	3.40	247.90	249.04	248.69	249.71	251.30	251.55	206 to 204
4	3	30.871	0.32	0.32	0.84	0.27	0.27	5.0	5.0	8.4	2.25	5.04	3.93	15	0.52	249.24	249.40	249.83	250.00	251.55	252.80	208 to 206
5	2	97.983	0.18	0.52	0.85	0.15	0.37	5.0	6.3	7.9	2.91	6.12	3.90	15	0.77	247.90	248.65	248.69	249.34	251.30	253.75	210 to 204
6	5	48.162	0.04	0.34	0.73	0.03	0.22	5.0	5.8	8.1	1.74	5.04	3.65	15	0.52	248.85	249.10	249.36	249.62	253.75	254.50	212 to 210
7	6	58.560	0.30	0.30	0.62	0.19	0.19	5.0	5.0	8.4	1.56	5.01	3.53	15	0.51	249.30	249.60	249.78	250.09	254.50	253.00	214 to 212
8	1	90.501	0.26	0.88	0.91	0.24	0.69	5.0	8.5	7.3	4.99	16.91	2.94	18	2.21	244.50	246.50	247.66	247.80	249.67	250.39	216 to 202
9	8	30.022	0.23	0.23	0.73	0.17	0.17	5.0	5.0	8.4	1.41	6.25	1.22	15	0.80	246.75	246.99	248.02	248.03	250.39	250.39	218 to 216
10	8	151.972	0.15	0.39	0.94	0.14	0.28	5.0	7.1	7.6	2.16	6.86	2.79	15	0.96	246.75	248.21	248.02	248.80	250.39	252.74	220 to 216
11	10	30.001	0.10	0.24	0.71	0.07	0.14	5.0	6.6	7.8	1.10	4.95	3.18	15	0.50	248.41	248.56	248.81	248.97	252.74	252.74	222 to 220
12	11	45.511	0.14	0.14	0.50	0.07	0.07	5.0	5.0	8.4	0.59	5.08	2.68	15	0.53	248.76	249.00	249.05	249.30	252.74	252.40	224 to 222

Project File: Run 200.stm | Number of lines: 12 | Run Date: 7/14/2023

NOTES:Intensity = 47.90 / (Inlet time + 9.20) ^ 0.66; Return period =Yrs. 100 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	202	0.86	1.06	0.57	1.36	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.20	6.79	0.20	6.79	0.0	Off
2	204	1.24	0.56	0.74	1.06	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.19	6.59	0.19	6.59	0.0	1
3	206	0.54	0.00	0.52	0.03	Comb	4.0	1.00	0.00	1.00	2.00	0.020	2.00	0.050	0.020	0.013	0.13	3.51	0.04	0.83	0.0	Off
4	208	2.25	0.00	2.25	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.19	20.99	0.19	20.99	0.0	Off
5	210	1.28	0.00	0.72	0.56	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.17	5.61	0.17	5.61	0.0	2
6	212	0.24	0.00	0.24	0.00	Comb	4.0	1.00	0.00	1.00	2.00	0.020	2.00	0.050	0.020	0.013	0.10	1.95	0.00	0.00	0.0	3
7	214	1.56	0.00	1.56	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.15	16.86	0.15	16.86	0.0	Off
8	216	1.98	0.51	1.09	1.40	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.21	7.62	0.21	7.62	0.0	Off
9	218	1.41	0.04	0.72	0.72	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.18	5.94	0.18	5.94	0.0	Off
10	220	1.18	0.00	0.67	0.51	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.17	5.39	0.17	5.39	0.0	8
11	222	0.59	0.00	0.56	0.04	Comb	4.0	1.00	0.00	1.00	2.00	0.020	2.00	0.050	0.020	0.013	0.13	3.70	0.05	0.95	0.0	9
12	224	0.59	0.00	0.59	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.08	9.74	0.08	9.74	0.0	Off

Project File: Run 200.stm | Number of lines: 12 | Run Date: 7/14/2023

NOTES: Inlet N-Values = 0.016; Intensity = 47.90 / (Inlet time + 9.20) ^ 0.66; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	109.476	0.22	0.26	0.68	0.15	0.19	5.0	7.7	5.8	2.53	26.70	0.81	24	1.19	238.00	239.30	241.34	241.35	238.00	247.50	304 TO OUTFALL
2	1	49.948	0.04	0.04	0.89	0.04	0.04	5.0	6.1	6.2	1.68	17.33	1.87	24	0.50	239.50	239.75	241.36	240.20	247.50	247.50	306 TO 304
3	2	31.116	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	1.46	19.64	3.37	24	0.64	239.95	240.15	240.32	240.57	247.50	247.00	O.S. #2 TO 306

Project File: Run 300.stm | Number of lines: 3 | Run Date: 7/14/2023

NOTES:Intensity = 60.89 / (Inlet time + 12.00) ^ 0.79; Return period =Yrs. 10 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	304	0.97	0.00	0.89	0.08	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.16	4.87	0.16	4.87	0.0	Off
2	306	0.23	0.00	0.23	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.10	1.91	0.10	1.91	0.0	Off
3	O.S. #2	1.46*	0.00	1.46	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.14	16.22	0.14	16.22	0.0	Off

Project File: Run 300.stm | Number of lines: 3 | Run Date: 7/14/2023

NOTES: Inlet N-Values = 0.016; Intensity = 60.89 / (Inlet time + 12.00) ^ 0.79; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	109.476	0.22	0.26	0.68	0.15	0.19	5.0	7.6	7.5	2.85	26.70	0.91	24	1.19	238.00	239.30	243.89	243.90	238.00	247.50	304 TO OUTFALL
2	1	49.948	0.04	0.04	0.89	0.04	0.04	5.0	6.1	8.0	1.74	17.33	0.56	24	0.50	239.50	239.75	243.92	243.92	247.50	247.50	306 TO 304
3	2	31.116	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	1.46	19.64	0.46	24	0.64	239.95	240.15	243.93	243.93	247.50	247.00	O.S. #2 TO 306

Project File: Run 300.stm | Number of lines: 3 | Run Date: 7/14/2023

NOTES:Intensity = 47.90 / (Inlet time + 9.20) ^ 0.66; Return period =Yrs. 100 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	304	1.25	0.00	0.89	0.36	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.17	5.55	0.17	5.55	0.0	Off
2	306	0.30	0.00	0.23	0.07	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.10	2.25	0.10	2.25	0.0	Off
3	O.S. #2	1.46*	0.00	1.46	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.14	16.22	0.14	16.22	0.0	Off

Project File: Run 300.stm | Number of lines: 3 | Run Date: 7/14/2023

NOTES: Inlet N-Values = 0.016; Intensity = 47.90 / (Inlet time + 9.20) ^ 0.66; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	119.613	0.00	3.86	0.00	0.00	2.58	5.0	9.2	5.4	14.05	31.65	4.78	24	1.67	238.00	240.00	241.34	241.64	237.90	253.00	MH-404 TO OUTF
2	1	88.181	0.12	3.86	0.89	0.11	2.58	5.0	8.9	5.5	14.21	42.12	5.53	24	2.95	240.20	242.80	241.99	244.16	253.00	252.94	406 TO MH-404
3	2	136.962	0.55	3.74	0.86	0.47	2.47	5.0	8.4	5.6	13.88	25.41	6.78	24	1.08	243.00	244.47	244.16	245.81	252.94	251.40	408 TO 406
4	3	31.946	0.30	1.65	0.75	0.23	1.25	5.0	6.8	6.0	7.49	32.00	6.49	18	7.91	244.97	247.50	245.81	248.56	251.40	251.40	410 TO 408
5	4	22.985	0.21	0.61	0.79	0.17	0.42	5.0	5.2	6.4	2.71	4.92	3.48	15	0.50	247.75	247.86	248.56	248.58	251.40	251.46	412 TO 410
6	5	15.385	0.40	0.40	0.64	0.26	0.26	5.0	5.0	6.5	1.66	8.60	2.70	15	1.51	248.06	248.30	248.90	248.81	251.46	251.70	414 TO 412
7	3	121.207	0.67	1.54	0.53	0.36	0.75	5.0	7.0	5.9	4.43	17.29	3.29	24	0.50	244.67	245.28	245.81	246.02	251.40	250.00	416 TO 408
8	7	175.088	0.87	0.87	0.45	0.39	0.39	5.0	5.0	6.5	2.54	8.04	3.92	18	0.50	245.78	246.65	246.36	247.25	250.00	250.40	417 TO 416
9	4	92.799	0.00	0.74	0.00	0.00	0.61	5.0	6.4	6.1	3.70	8.21	4.51	15	1.38	247.75	249.03	248.56	249.80	251.40	252.63	MH-418 TO 410
10	9	66.611	0.20	0.40	0.84	0.17	0.34	5.0	5.6	6.3	2.14	7.25	3.83	15	1.07	249.23	249.94	249.80	250.52	252.63	253.70	420 TO MH-418
11	10	29.912	0.20	0.20	0.85	0.17	0.17	5.0	5.0	6.5	1.10	5.00	3.19	15	0.51	250.14	250.30	250.54	250.71	253.70	253.70	422 TO 420
12	9	61.505	0.12	0.34	0.63	0.08	0.27	5.0	5.6	6.3	1.70	6.56	3.30	15	0.88	249.23	249.77	249.80	250.28	252.63	253.37	424 TO MH-418
13	12	38.195	0.22	0.22	0.88	0.19	0.19	5.0	5.0	6.5	1.25	6.36	3.63	15	0.83	249.97	250.28	250.34	250.73	253.37	253.68	426 TO 424

Project File: Run 400.stm | Number of lines: 13 | Run Date: 7/14/2023

NOTES:Intensity = 60.89 / (Inlet time + 12.00) ^ 0.79; Return period =Yrs. 10 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	MH-404	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	406	0.69	0.00	0.53	0.16	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.14	4.05	0.14	4.05	0.0	3
3	408	3.07	0.55	3.61	0.00	Comb	4.0	8.58	17.15	8.58	2.00	Sag	2.00	0.050	0.020	0.000	0.26	9.97	0.26	9.97	0.0	Off
4	410	1.46	0.98	2.44	0.00	Comb	4.0	6.30	12.60	6.30	2.00	Sag	2.00	0.050	0.020	0.000	0.23	8.72	0.23	8.72	0.0	Off
5	412	1.08	0.00	0.76	0.32	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.16	5.14	0.16	5.14	0.0	4
6	414	1.66	0.00	1.66	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.15	17.49	0.15	17.49	0.0	Off
7	416	2.30	0.00	2.30	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.19	21.27	0.19	21.27	0.0	Off
8	417	2.54	0.00	2.54	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.21	22.57	0.21	22.57	0.0	Off
9	MH-418	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
10	420	1.09	0.00	0.77	0.32	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.16	5.17	0.16	5.17	0.0	4
11	422	1.10	0.00	0.77	0.33	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.16	5.21	0.16	5.21	0.0	4
12	424	0.49	0.00	0.47	0.02	Comb	4.0	0.17	0.00	0.17	2.00	0.020	2.00	0.050	0.020	0.013	0.13	3.27	0.04	0.75	0.0	4
13	426	1.25	0.00	0.87	0.38	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.17	5.55	0.17	5.55	0.0	3

Project File: Run 400.stm | Number of lines: 13 | Run Date: 7/14/2023

NOTES: Inlet N-Values = 0.016; Intensity = 60.89 / (Inlet time + 12.00) ^ 0.79; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	119.613	0.00	3.86	0.00	0.00	2.58	5.0	8.2	7.3	18.89	31.65	6.01	24	1.67	238.00	240.00	243.89	244.60	237.90	253.00	MH-404 TO OUTF
2	1	88.181	0.12	3.86	0.89	0.11	2.58	5.0	8.0	7.4	19.06	42.12	6.07	24	2.95	240.20	242.80	245.09	245.62	253.00	252.94	406 TO MH-404
3	2	136.962	0.55	3.74	0.86	0.47	2.47	5.0	7.6	7.5	18.54	25.41	5.90	24	1.08	243.00	244.47	246.44	247.22	252.94	251.40	408 TO 406
4	3	31.946	0.30	1.65	0.75	0.23	1.25	5.0	6.4	7.9	9.87	32.00	6.02	18	7.91	244.97	247.50	248.43	248.71	251.40	251.40	410 TO 408
5	4	22.985	0.21	0.61	0.79	0.17	0.42	5.0	5.1	8.3	3.51	4.92	3.62	15	0.50	247.75	247.86	248.71	248.75	251.40	251.46	412 TO 410
6	5	15.385	0.40	0.40	0.64	0.26	0.26	5.0	5.0	8.4	2.15	8.60	2.91	15	1.51	248.06	248.30	249.08	248.88	251.46	251.70	414 TO 412
7	3	121.207	0.67	1.54	0.53	0.36	0.75	5.0	6.6	7.8	5.84	17.29	1.86	24	0.50	244.67	245.28	248.43	248.50	251.40	250.00	416 TO 408
8	7	175.088	0.87	0.87	0.45	0.39	0.39	5.0	5.0	8.4	3.28	8.04	1.86	18	0.50	245.78	246.65	248.58	248.72	250.00	250.40	417 TO 416
9	4	92.799	0.00	0.74	0.00	0.00	0.61	5.0	6.0	8.0	4.86	8.21	4.99	15	1.38	247.75	249.03	248.71	249.92	251.40	252.63	MH-418 TO 410
10	9	66.611	0.20	0.40	0.84	0.17	0.34	5.0	5.4	8.2	2.78	7.25	4.07	15	1.07	249.23	249.94	249.92	250.61	252.63	253.70	420 TO MH-418
11	10	29.912	0.20	0.20	0.85	0.17	0.17	5.0	5.0	8.4	1.42	5.00	3.38	15	0.51	250.14	250.30	250.61	250.77	253.70	253.70	422 TO 420
12	9	61.505	0.12	0.34	0.63	0.08	0.27	5.0	5.5	8.2	2.21	6.56	3.51	15	0.88	249.23	249.77	249.92	250.36	252.63	253.37	424 TO MH-418
13	12	38.195	0.22	0.22	0.88	0.19	0.19	5.0	5.0	8.4	1.62	6.36	3.91	15	0.83	249.97	250.28	250.40	250.79	253.37	253.68	426 TO 424

Project File: Run 400.stm | Number of lines: 13 | Run Date: 7/14/2023

NOTES:Intensity = 47.90 / (Inlet time + 9.20) ^ 0.66; Return period =Yrs. 100 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	MH-404	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	406	0.89	0.00	0.53	0.36	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.15	4.67	0.15	4.67	0.0	3
3	408	3.96	1.12	5.08	0.00	Comb	4.0	8.58	17.15	8.58	2.00	Sag	2.00	0.050	0.020	0.000	0.31	12.64	0.31	12.64	0.0	Off
4	410	1.89	1.98	3.86	0.00	Comb	4.0	6.30	12.60	6.30	2.00	Sag	2.00	0.050	0.020	0.000	0.30	12.00	0.30	12.00	0.0	Off
5	412	1.39	0.00	0.76	0.63	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.18	5.84	0.18	5.84	0.0	4
6	414	2.15	0.00	2.15	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.18	20.39	0.18	20.39	0.0	Off
7	416	2.98	0.00	2.98	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.23	24.88	0.23	24.88	0.0	Off
8	417	3.28	0.00	3.28	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.24	26.41	0.24	26.41	0.0	Off
9	MH-418	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
10	420	1.41	0.00	0.77	0.64	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.18	5.87	0.18	5.87	0.0	4
11	422	1.42	0.00	0.77	0.65	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.18	5.90	0.18	5.90	0.0	4
12	424	0.63	0.00	0.58	0.05	Comb	4.0	0.17	0.00	0.17	2.00	0.020	2.00	0.050	0.020	0.013	0.14	3.85	0.06	1.11	0.0	4
13	426	1.62	0.00	0.87	0.75	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.19	6.28	0.19	6.28	0.0	3

Project File: Run 400.stm | Number of lines: 13 | Run Date: 7/14/2023

NOTES: Inlet N-Values = 0.016; Intensity = 47.90 / (Inlet time + 9.20) ^ 0.66; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	75.027	0.56	2.13	0.85	0.48	1.80	5.0	9.5	5.4	9.69	17.67	5.19	24	0.52	243.00	243.39	244.19	244.50	243.00	247.83	502 TO 500
2	1	127.402	0.24	1.57	0.92	0.22	1.33	5.0	8.7	5.6	7.37	17.23	5.09	24	0.49	243.59	244.22	244.50	245.18	247.83	250.40	504 TO 502
3	2	207.415	0.04	1.11	0.82	0.03	0.91	5.0	7.6	5.8	5.29	8.09	4.88	18	0.51	244.72	245.77	245.60	246.66	250.40	251.10	506 TO 504
4	3	58.969	0.03	1.07	0.83	0.02	0.88	5.0	7.2	5.9	5.17	7.98	4.80	18	0.49	245.97	246.26	246.85	247.14	251.10	250.07	508 TO 506
5	4	68.795	0.30	0.78	0.87	0.26	0.64	5.0	6.7	6.0	3.84	8.11	3.35	18	0.51	246.36	246.71	247.67	247.46	250.07	250.36	510 TO 508
6	5	74.573	0.06	0.48	0.73	0.04	0.38	5.0	6.1	6.2	2.33	8.65	4.52	15	1.53	246.96	248.10	247.46	248.71	250.36	251.60	512 TO 510
7	6	77.098	0.09	0.42	0.63	0.06	0.33	5.0	5.3	6.4	2.13	5.10	3.89	15	0.53	248.30	248.71	248.86	249.29	251.60	252.56	514 TO 512
8	2	30.054	0.22	0.22	0.88	0.19	0.19	5.0	5.0	6.5	1.25	17.73	5.79	15	6.42	244.97	246.90	245.20	247.34	250.40	250.40	520 TO 504
9	4	30.061	0.26	0.26	0.83	0.22	0.22	5.0	5.0	6.5	1.40	5.10	1.18	15	0.53	246.41	246.57	247.67	247.67	250.07	250.07	518 TO 508
10	7	30.036	0.33	0.33	0.84	0.28	0.28	5.0	5.0	6.5	1.80	4.94	3.66	15	0.50	248.91	249.06	249.43	249.59	252.56	252.56	516 TO 514

Project File: Run 500.stm | Number of lines: 10 | Run Date: 7/14/2023

NOTES:Intensity = 60.89 / (Inlet time + 12.00) ^ 0.79; Return period =Yrs. 10 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	502	3.08	0.00	3.08	0.00	Comb	4.0	6.64	13.27	6.64	2.00	Sag	2.00	0.050	0.020	0.000	0.26	10.03	0.26	10.03	0.0	Off
2	504	1.43	0.00	1.43	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.18	5.92	0.18	5.92	0.0	1
3	506	0.21	0.00	0.21	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.09	1.85	0.09	1.85	0.0	4
4	508	0.16	0.00	0.16	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.08	1.67	0.08	1.67	0.0	Off
5	510	1.69	0.00	1.69	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.19	6.40	0.19	6.40	0.0	4
6	512	0.28	0.00	0.28	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.10	2.15	0.10	2.15	0.0	Off
7	514	0.37	0.00	0.37	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.11	2.67	0.11	2.67	0.0	6
8	520	1.25	0.00	1.25	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.17	5.55	0.17	5.55	0.0	1
9	518	1.40	0.00	1.40	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.18	5.85	0.18	5.85	0.0	Off
10	516	1.80	0.00	1.80	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.19	6.58	0.19	6.58	0.0	5

Project File: Run 500.stm | Number of lines: 10 | Run Date: 7/14/2023

NOTES: Inlet N-Values = 0.016; Intensity = 60.89 / (Inlet time + 12.00) ^ 0.79; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	75.027	0.56	2.13	0.85	0.48	1.80	5.0	8.5	7.2	13.06	17.67	5.10	24	0.52	243.00	243.39	244.99	244.69	243.00	247.83	502 TO 500
2	1	127.402	0.24	1.57	0.92	0.22	1.33	5.0	7.8	7.4	9.86	17.23	5.50	24	0.49	243.59	244.22	244.69	245.34	247.83	250.40	504 TO 502
3	2	207.415	0.04	1.11	0.82	0.03	0.91	5.0	7.0	7.7	7.02	8.09	5.16	18	0.51	244.72	245.77	245.80	246.85	250.40	251.10	506 TO 504
4	3	58.969	0.03	1.07	0.83	0.02	0.88	5.0	6.7	7.8	6.83	7.98	5.01	18	0.49	245.97	246.26	247.07	247.32	251.10	250.07	508 TO 506
5	4	68.795	0.30	0.78	0.87	0.26	0.64	5.0	6.3	7.9	5.05	8.11	2.96	18	0.51	246.36	246.71	247.92	248.03	250.07	250.36	510 TO 508
6	5	74.573	0.06	0.48	0.73	0.04	0.38	5.0	5.8	8.1	3.05	8.65	3.43	15	1.53	246.96	248.10	248.13	248.80	250.36	251.60	512 TO 510
7	6	77.098	0.09	0.42	0.63	0.06	0.33	5.0	5.3	8.3	2.76	5.10	4.20	15	0.53	248.30	248.71	248.96	249.38	251.60	252.56	514 TO 512
8	2	30.054	0.22	0.22	0.88	0.19	0.19	5.0	5.0	8.4	1.62	17.73	4.39	15	6.42	244.97	246.90	245.34	247.40	250.40	250.40	520 TO 504
9	4	30.061	0.26	0.26	0.83	0.22	0.22	5.0	5.0	8.4	1.81	5.10	1.47	15	0.53	246.41	246.57	247.92	247.94	250.07	250.07	518 TO 508
10	7	30.036	0.33	0.33	0.84	0.28	0.28	5.0	5.0	8.4	2.32	4.94	3.94	15	0.50	248.91	249.06	249.51	249.67	252.56	252.56	516 TO 514

Project File: Run 500.stm | Number of lines: 10 | Run Date: 7/14/2023

NOTES:Intensity = 47.90 / (Inlet time + 9.20) ^ 0.66; Return period =Yrs. 100 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	502	3.99	0.00	3.99	0.00	Comb	4.0	6.64	13.27	6.64	2.00	Sag	2.00	0.050	0.020	0.000	0.30	12.01	0.30	12.01	0.0	Off
2	504	1.85	0.00	1.85	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.19	6.67	0.19	6.67	0.0	1
3	506	0.27	0.00	0.27	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.10	2.09	0.10	2.09	0.0	4
4	508	0.21	0.00	0.21	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.09	1.85	0.09	1.85	0.0	Off
5	510	2.19	0.00	2.19	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.20	7.20	0.20	7.20	0.0	4
6	512	0.37	0.00	0.37	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.11	2.66	0.11	2.66	0.0	Off
7	514	0.48	0.00	0.48	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.12	3.21	0.12	3.21	0.0	6
8	520	1.62	0.00	1.62	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.19	6.28	0.19	6.28	0.0	1
9	518	1.81	0.00	1.81	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.19	6.60	0.19	6.60	0.0	Off
10	516	2.32	0.00	2.32	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.21	7.39	0.21	7.39	0.0	5

Project File: Run 500.stm | Number of lines: 10 | Run Date: 7/14/2023

NOTES: Inlet N-Values = 0.016; Intensity = 47.90 / (Inlet time + 9.20) ^ 0.66; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	56.514	0.22	1.82	0.88	0.19	1.10	5.0	7.9	5.7	6.27	10.73	4.69	18	0.89	243.00	243.50	244.19	244.47	243.00	248.50	602 to 600
2	1	154.807	0.21	1.60	0.62	0.13	0.90	5.0	7.1	5.9	5.34	8.04	4.87	18	0.50	243.70	244.48	244.60	245.37	248.50	249.80	604 to 602
3	2	144.581	0.29	1.39	0.69	0.20	0.77	5.0	6.2	6.2	4.75	8.04	4.55	18	0.50	244.68	245.40	245.55	246.24	249.80	250.20	606 to 604
4	3	211.053	1.10	1.10	0.52	0.57	0.57	5.0	5.0	6.5	3.71	4.95	4.42	15	0.50	245.65	246.70	246.46	247.51	250.20	250.00	608 to 606

Run 600 | Number of lines: 4 | Run Date: 7/14/2023

NOTES:Intensity = 60.89 / (Inlet time + 12.00) ^ 0.79; Return period =Yrs. 10 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	602	1.25	0.00	1.25	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.13	14.86	0.13	14.86	0.0	Off
2	604	0.84	0.00	0.84	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.10	11.87	0.10	11.87	0.0	Off
3	606	1.30	0.00	1.30	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.13	15.15	0.13	15.15	0.0	Off
4	608	3.71	0.00	3.71	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.26	28.49	0.26	28.49	0.0	Off

Run 600 | Number of lines: 4 | Run Date: 7/14/2023

NOTES: Inlet N-Values = 0.016; Intensity = 60.89 / (Inlet time + 12.00) ^ 0.79; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	56.514	0.22	1.82	0.88	0.19	1.10	5.0	7.3	7.6	8.34	10.73	4.72	18	0.89	243.00	243.50	244.99	245.29	243.00	248.50	602 to 600
2	1	154.807	0.21	1.60	0.62	0.13	0.90	5.0	6.6	7.8	7.05	8.04	3.99	18	0.50	243.70	244.48	245.74	246.34	248.50	249.80	604 to 602
3	2	144.581	0.29	1.39	0.69	0.20	0.77	5.0	5.9	8.0	6.21	8.04	3.53	18	0.50	244.68	245.40	246.46	246.86	249.80	250.20	606 to 604
4	3	211.053	1.10	1.10	0.52	0.57	0.57	5.0	5.0	8.4	4.79	4.95	3.96	15	0.50	245.65	246.70	246.96	247.87	250.20	250.00	608 to 606

Run 600 | Number of lines: 4 | Run Date: 7/14/2023

NOTES:Intensity = 47.90 / (Inlet time + 9.20) ^ 0.66; Return period =Yrs. 100 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	602	1.62	0.00	1.62	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.15	17.26	0.15	17.26	0.0	Off
2	604	1.09	0.00	1.09	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.12	13.71	0.12	13.71	0.0	Off
3	606	1.68	0.00	1.68	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.16	17.60	0.16	17.60	0.0	Off
4	608	4.79	0.00	4.79	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.31	33.44	0.31	33.44	0.0	Off

Run 600 | Number of lines: 4 | Run Date: 7/14/2023

NOTES: Inlet N-Values = 0.016; Intensity = 47.90 / (Inlet time + 9.20) ^ 0.66; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	81.101	0.00	4.48	0.00	0.00	3.22	0.0	10.0	5.3	17.05	34.89	3.47	30	0.62	241.00	241.50	244.29	244.41	247.70	249.00	MH-716 TO 714
2	1	29.429	0.35	4.05	0.55	0.19	2.92	5.0	9.8	5.3	15.51	36.63	3.16	30	0.68	241.70	241.90	244.60	244.63	249.00	248.30	718 TO MH-716
3	2	126.867	0.67	3.70	0.74	0.50	2.72	5.0	9.2	5.4	14.84	31.80	3.12	30	0.51	242.10	242.75	244.87	244.98	248.30	248.05	720 TO 718
4	3	29.912	0.66	3.03	0.78	0.51	2.23	5.0	9.0	5.5	12.22	31.46	4.09	30	0.50	242.95	243.10	245.06	244.27	248.05	248.05	722 TO 720
5	4	121.112	0.65	2.37	0.68	0.44	1.71	5.0	8.0	5.7	9.75	31.53	5.28	30	0.50	243.30	243.91	244.27	244.95	248.05	248.80	724 TO 722
6	5	133.006	0.54	1.13	0.63	0.34	0.83	5.0	6.7	6.0	4.97	31.37	5.78	24	1.64	244.41	246.59	244.95	247.37	248.80	251.35	740 TO 724
7	6	29.912	0.26	0.59	0.85	0.22	0.49	5.0	6.5	6.1	2.94	4.95	4.22	15	0.50	247.34	247.49	248.03	248.18	251.35	251.35	742 TO 790
8	7	122.863	0.33	0.33	0.80	0.26	0.26	5.0	5.0	6.5	1.71	4.93	3.16	15	0.50	247.69	248.30	248.32	248.82	251.35	251.80	744 TO 792
9	5	108.285	0.19	0.59	0.65	0.12	0.45	5.0	6.5	6.1	2.70	4.94	4.10	15	0.50	244.67	245.21	245.33	245.87	248.80	250.00	726 TO 724
10	9	114.593	0.12	0.40	0.63	0.08	0.32	5.0	5.4	6.4	2.05	4.93	3.05	15	0.50	245.41	245.98	246.25	246.55	250.00	249.83	730 TO 726
11	10	30.009	0.28	0.28	0.88	0.25	0.25	5.0	5.0	6.5	1.60	4.95	3.53	15	0.50	246.18	246.33	246.67	246.83	249.83	249.83	732 TO 730
12	1	134.626	0.15	0.43	0.49	0.07	0.31	5.0	6.7	6.0	1.84	7.84	2.62	15	1.26	243.50	245.19	244.60	245.73	249.00	248.30	734 TO MH-716
13	12	94.480	0.02	0.28	0.71	0.01	0.23	5.0	5.4	6.4	1.48	4.93	3.45	15	0.50	245.39	245.86	245.86	246.34	248.30	249.72	736 TO 734
14	13	30.054	0.26	0.26	0.84	0.22	0.22	5.0	5.0	6.5	1.42	5.10	3.45	15	0.53	246.06	246.22	246.51	246.69	249.72	249.72	738 TO 736

Project File: Run 700 To Enter BMP 2A.stm

Number of lines: 14

Run Date: 7/14/2023

NOTES:Intensity = 60.89 / (Inlet time + 12.00) ^ 0.79; Return period =Yrs. 10 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	MH-716	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	718	1.25	0.00	1.25	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.13	14.81	0.13	14.81	0.0	Off
3	720	3.21	0.00	3.21	0.00	Comb	4.0	7.08	14.16	7.08	2.00	Sag	2.00	0.050	0.020	0.000	0.26	10.04	0.26	10.04	0.0	Off
4	722	3.34	0.00	3.34	0.00	Comb	4.0	7.50	15.00	7.50	2.00	Sag	2.00	0.050	0.020	0.000	0.26	10.04	0.26	10.04	0.0	Off
5	724	2.86	0.00	2.86	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.22	24.30	0.22	24.30	0.0	Off
6	740	2.20	0.00	2.20	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.20	7.22	0.20	7.22	0.0	10
7	742	1.43	0.00	1.43	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.18	5.92	0.18	5.92	0.0	Off
8	744	1.71	0.00	1.71	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.16	17.81	0.16	17.81	0.0	Off
9	726	0.80	0.00	0.80	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.10	11.53	0.10	11.53	0.0	Off
10	730	0.49	0.00	0.49	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.13	3.27	0.13	3.27	0.0	Off
11	732	1.60	0.00	1.21	0.39	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.18	6.23	0.18	6.23	0.0	Off
12	734	0.48	0.00	0.48	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.12	3.21	0.12	3.21	0.0	Off
13	736	0.09	0.00	0.09	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.07	1.35	0.07	1.35	0.0	12
14	738	1.42	0.00	1.08	0.34	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.18	5.89	0.18	5.89	0.0	Off

Project File: Run 700 To Enter BMP 2A.stm | Number of lines: 14 | Run Date: 7/14/2023

NOTES: Inlet N-Values = 0.016; Intensity = 60.89 / (Inlet time + 12.00) ^ 0.79; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	81.101	0.00	4.48	0.00	0.00	3.22	0.0	8.8	7.2	23.07	34.89	4.70	30	0.62	241.00	241.50	244.99	245.21	247.70	249.00	MH-716 TO 714
2	1	29.429	0.35	4.05	0.55	0.19	2.92	5.0	8.7	7.2	20.96	36.63	4.27	30	0.68	241.70	241.90	245.55	245.62	249.00	248.30	718 TO MH-716
3	2	126.867	0.67	3.70	0.74	0.50	2.72	5.0	8.2	7.3	19.95	31.80	4.06	30	0.51	242.10	242.75	246.04	246.30	248.30	248.05	720 TO 718
4	3	29.912	0.66	3.03	0.78	0.51	2.23	5.0	8.1	7.4	16.41	31.46	3.34	30	0.50	242.95	243.10	246.43	246.47	248.05	248.05	722 TO 720
5	4	121.112	0.65	2.37	0.68	0.44	1.71	5.0	7.3	7.6	12.98	31.53	2.65	30	0.50	243.30	243.91	246.56	246.66	248.05	248.80	724 TO 722
6	5	133.006	0.54	1.13	0.63	0.34	0.83	5.0	6.3	7.9	6.53	31.37	3.40	24	1.64	244.41	246.59	246.82	247.49	248.80	251.35	740 TO 724
7	6	29.912	0.26	0.59	0.85	0.22	0.49	5.0	6.1	8.0	3.86	4.95	4.46	15	0.50	247.34	247.49	248.17	248.32	251.35	251.35	742 TO 790
8	7	122.863	0.33	0.33	0.80	0.26	0.26	5.0	5.0	8.4	2.21	4.93	3.29	15	0.50	247.69	248.30	248.48	248.89	251.35	251.80	744 TO 792
9	5	108.285	0.19	0.59	0.65	0.12	0.45	5.0	6.2	8.0	3.54	4.94	2.89	15	0.50	244.67	245.21	246.82	247.10	248.80	250.00	726 TO 724
10	9	114.593	0.12	0.40	0.63	0.08	0.32	5.0	5.3	8.3	2.66	4.93	2.17	15	0.50	245.41	245.98	247.29	247.45	250.00	249.83	730 TO 726
11	10	30.009	0.28	0.28	0.88	0.25	0.25	5.0	5.0	8.4	2.06	4.95	1.69	15	0.50	246.18	246.33	247.53	247.56	249.83	249.83	732 TO 730
12	1	134.626	0.15	0.43	0.49	0.07	0.31	5.0	6.3	7.9	2.42	7.84	2.96	15	1.26	243.50	245.19	245.55	245.81	249.00	248.30	734 TO MH-716
13	12	94.480	0.02	0.28	0.71	0.01	0.23	5.0	5.3	8.3	1.92	4.93	3.02	15	0.50	245.39	245.86	246.18	246.41	248.30	249.72	736 TO 734
14	13	30.054	0.26	0.26	0.84	0.22	0.22	5.0	5.0	8.4	1.83	5.10	3.72	15	0.53	246.06	246.22	246.58	246.76	249.72	249.72	738 TO 736

Project File: Run 700 To Enter BMP 2A.stm

Number of lines: 14

Run Date: 7/14/2023

NOTES:Intensity = 47.90 / (Inlet time + 9.20) ^ 0.66; Return period =Yrs. 100 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	MH-716	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	718	1.61	0.00	1.61	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.15	17.20	0.15	17.20	0.0	Off
3	720	4.15	0.00	4.15	0.00	Comb	4.0	7.08	14.16	7.08	2.00	Sag	2.00	0.050	0.020	0.000	0.30	12.00	0.30	12.00	0.0	Off
4	722	4.31	0.00	4.31	0.00	Comb	4.0	7.50	15.00	7.50	2.00	Sag	2.00	0.050	0.020	0.000	0.30	12.01	0.30	12.01	0.0	Off
5	724	3.70	0.00	3.70	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.26	28.46	0.26	28.46	0.0	Off
6	740	2.85	0.00	2.85	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.22	8.08	0.22	8.08	0.0	10
7	742	1.85	0.00	1.85	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.19	6.67	0.19	6.67	0.0	Off
8	744	2.21	0.00	2.21	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.19	20.77	0.19	20.77	0.0	Off
9	726	1.03	0.00	1.03	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.11	13.31	0.11	13.31	0.0	Off
10	730	0.63	0.00	0.63	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.14	3.85	0.14	3.85	0.0	Off
11	732	2.06	0.00	1.21	0.85	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.20	7.01	0.20	7.01	0.0	Off
12	734	0.62	0.00	0.62	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.14	3.78	0.14	3.78	0.0	Off
13	736	0.12	0.00	0.12	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.07	1.49	0.07	1.49	0.0	12
14	738	1.83	0.00	1.08	0.75	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.19	6.64	0.19	6.64	0.0	Off

Project File: Run 700 To Enter BMP 2A.stm | Number of lines: 14 | Run Date: 7/14/2023

NOTES: Inlet N-Values = 0.016; Intensity = 47.90 / (Inlet time + 9.20) ^ 0.66; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	156.396	0.00	6.70	0.00	0.00	4.75	0.0	14.6	4.6	65.83	189.9	7.82	42	3.04	231.00	235.75	235.29	238.29	231.00	244.50	MH-702 to E.W. 7
2	1	35.442	1.19	2.37	0.76	0.90	1.60	5.0	5.8	6.2	54.19	132.4	9.07	36	3.36	235.95	237.14	238.29	239.53	244.50	242.84	704 TO 702
3	2	99.924	0.47	1.18	0.79	0.37	0.69	5.0	5.6	6.3	48.59	80.49	8.64	36	1.24	237.34	238.58	239.53	240.85	242.84	244.38	706 TO 704
4	3	84.530	0.36	0.71	0.42	0.15	0.32	5.0	5.4	6.4	46.27	75.38	8.59	36	1.09	238.78	239.70	240.85	241.91	244.38	245.80	708 TO 706
5	4	103.083	0.29	0.29	0.53	0.15	0.15	5.0	5.0	6.5	22.16	70.56	6.43	30	2.52	240.20	242.80	241.91	244.40	245.80	247.80	712 TO 708
6	4	41.450	0.06	0.06	0.31	0.02	0.02	5.0	5.0	6.5	23.17	111.3	6.63	30	6.27	240.20	242.80	241.91	244.44	245.80	247.80	710 TO 708
7	1	138.585	0.15	4.33	0.75	0.11	3.15	5.0	13.8	4.7	14.66	31.58	4.54	30	0.51	236.20	236.90	238.29	238.19	244.50	243.90	750 TO MH-702
8	7	147.530	0.29	4.18	0.68	0.20	3.03	5.0	13.0	4.8	14.48	31.47	6.00	30	0.50	237.10	237.84	238.29	239.12	243.90	244.60	752 TO 750
9	8	145.099	0.25	3.89	0.65	0.16	2.84	5.0	12.2	4.9	13.90	31.51	5.93	30	0.50	238.04	238.77	239.20	240.02	244.60	246.50	754 TO 752
10	9	144.198	0.18	3.64	0.54	0.10	2.67	5.0	11.4	5.0	13.47	31.61	5.88	30	0.51	238.97	239.70	240.11	240.93	246.50	249.00	756 TO 754
11	10	146.035	0.24	3.46	0.67	0.16	2.58	5.0	10.5	5.2	13.36	31.84	5.88	30	0.51	239.90	240.65	241.03	241.88	249.00	249.50	758 TO 756
12	11	182.118	0.33	3.22	0.65	0.21	2.42	5.0	9.5	5.4	13.03	31.41	5.81	30	0.50	240.85	241.76	241.97	242.97	249.50	248.80	760 TO 758
13	12	152.452	0.26	2.89	0.64	0.17	2.20	5.0	8.8	5.5	12.15	17.41	5.93	24	0.51	242.26	243.03	243.49	244.28	248.80	248.90	762 TO 760
14	13	175.046	0.30	0.30	0.67	0.20	0.20	5.0	5.0	6.5	1.30	6.89	3.05	15	0.97	243.78	245.48	244.28	245.93	248.90	248.90	780 TO 762
15	13	123.471	0.43	2.33	0.86	0.37	1.84	5.0	8.3	5.6	10.35	17.36	5.65	24	0.50	243.23	243.85	244.34	245.00	248.90	250.45	764 to 762
16	15	33.993	0.38	1.00	0.73	0.28	0.76	5.0	8.1	5.7	4.31	13.09	5.20	18	1.32	244.35	244.80	245.00	245.60	250.45	250.19	766 to 764
17	16	132.905	0.00	0.30	0.00	0.00	0.27	5.0	6.5	6.1	1.66	12.27	3.19	15	3.08	245.00	249.09	245.60	249.60	250.19	253.29	MH-768 to 766
18	17	67.514	0.15	0.30	0.91	0.14	0.27	0.0	5.7	6.3	1.71	4.96	3.61	15	0.50	249.29	249.63	249.80	250.15	253.29	254.48	770 to MH-768
19	18	29.912	0.15	0.15	0.91	0.14	0.14	5.0	5.0	6.5	0.88	4.95	2.99	15	0.50	249.83	249.98	250.19	250.35	254.48	254.48	772 to 770
20	16	45.312	0.32	0.32	0.65	0.21	0.21	5.0	5.0	6.5	1.35	13.94	2.82	15	3.97	245.00	246.80	245.60	247.26	250.19	250.30	774 to 766
21	15	118.297	0.57	0.90	0.80	0.46	0.71	5.0	5.4	6.4	4.50	4.94	4.56	15	0.50	244.65	245.24	245.59	246.18	250.45	249.10	776 to 764
22	21	31.500	0.33	0.33	0.76	0.25	0.25	5.0	5.0	6.5	1.63	4.99	2.41	15	0.51	245.44	245.60	246.66	246.11	249.10	249.10	778 to 776

Project File: Run 700 To Exit BMP 2A.stm | Number of lines: 22 | Run Date: 7/14/2023

NOTES:Intensity = 60.89 / (Inlet time + 12.00) ^ 0.79; Return period =Yrs. 10 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	MH-702	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	704	5.86	0.90	6.76	0.00	Comb	4.0	22.48	44.96	22.48	2.00	Sag	2.00	0.050	0.020	0.000	0.24	9.18	0.24	9.18	0.0	Off
3	706	2.41	0.00	1.51	0.90	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.21	7.51	0.21	7.51	0.0	2
4	708	0.98	0.00	0.98	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.11	12.90	0.11	12.90	0.0	Off
5	712	22.16*	0.00	22.16	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.87	89.26	0.87	89.26	0.0	Off
6	710	23.17*	0.00	23.17	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.90	91.90	0.90	91.90	0.0	Off
7	750	0.73	0.00	0.73	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.09	10.95	0.09	10.95	0.0	Off
8	752	1.28	0.00	1.28	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.13	15.01	0.13	15.01	0.0	Off
9	754	1.05	0.00	1.05	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.11	13.44	0.11	13.44	0.0	Off
10	756	0.63	0.00	0.63	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.08	10.12	0.08	10.12	0.0	Off
11	758	1.04	0.00	1.04	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.11	13.36	0.11	13.36	0.0	Off
12	760	1.39	0.00	1.39	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.14	15.77	0.14	15.77	0.0	Off
13	762	1.08	0.00	1.08	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.12	13.62	0.12	13.62	0.0	Off
14	780	1.30	0.00	1.30	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.13	15.18	0.13	15.18	0.0	Off
15	764	2.40	0.00	2.40	0.00	Genr	0.0	0.00	0.00	0.00	0.00	Sag	2.00	0.050	0.020	0.000	0.30	12.00	0.30	12.00	0.0	Off
16	766	1.80	0.21	2.01	0.00	Genr	0.0	0.00	0.00	0.00	0.00	Sag	2.00	0.050	0.020	0.000	0.30	12.00	0.30	12.00	0.0	Off
17	MH-768	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	770	0.00	0.00	0.00	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.00	0.00	0.00	0.00	0.0	16
19	772	0.88	0.00	0.67	0.21	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.15	4.64	0.15	4.64	0.0	16
20	774	1.35	0.00	1.35	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.13	15.49	0.13	15.49	0.0	Off
21	776	2.96	0.00	2.96	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.22	8.21	0.22	8.21	0.0	15
22	778	1.63	0.00	1.63	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.19	6.28	0.19	6.28	0.0	16

Project File: Run 700 To Exit BMP 2A.stm | Number of lines: 22 | Run Date: 7/14/2023

NOTES: Inlet N-Values = 0.016; Intensity = 60.89 / (Inlet time + 12.00) ^ 0.79; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	156.396	0.00	6.70	0.00	0.00	4.75	0.0	12.4	6.4	74.43	189.9	8.54	42	3.04	231.00	235.75	237.72	238.45	231.00	244.50	MH-702 to E.W. 7
2	1	35.442	1.19	2.37	0.76	0.90	1.60	5.0	5.8	8.1	57.12	132.4	9.17	36	3.36	235.95	237.14	238.45	239.59	244.50	242.84	704 TO 702
3	2	99.924	0.47	1.18	0.79	0.37	0.69	5.0	5.6	8.2	49.88	80.49	8.69	36	1.24	237.34	238.58	239.59	240.88	242.84	244.38	706 TO 704
4	3	84.530	0.36	0.71	0.42	0.15	0.32	5.0	5.4	8.2	46.87	75.38	8.61	36	1.09	238.78	239.70	240.88	241.93	244.38	245.80	708 TO 706
5	4	103.083	0.29	0.29	0.53	0.15	0.15	5.0	5.0	8.4	22.45	70.56	6.46	30	2.52	240.20	242.80	241.93	244.41	245.80	247.80	712 TO 708
6	4	41.450	0.06	0.06	0.31	0.02	0.02	5.0	5.0	8.4	23.21	111.3	6.61	30	6.27	240.20	242.80	241.93	244.44	245.80	247.80	710 TO 708
7	1	138.585	0.15	4.33	0.75	0.11	3.15	5.0	11.8	6.5	20.39	31.58	5.42	30	0.51	236.20	236.90	238.45	238.43	244.50	243.90	750 TO MH-702
8	7	147.530	0.29	4.18	0.68	0.20	3.03	5.0	11.2	6.6	20.04	31.47	6.61	30	0.50	237.10	237.84	238.55	239.36	243.90	244.60	752 TO 750
9	8	145.099	0.25	3.89	0.65	0.16	2.84	5.0	10.6	6.7	19.13	31.51	6.52	30	0.50	238.04	238.77	239.45	240.25	244.60	246.50	754 TO 752
10	9	144.198	0.18	3.64	0.54	0.10	2.67	5.0	9.9	6.9	18.42	31.61	6.45	30	0.51	238.97	239.70	240.34	241.15	246.50	249.00	756 TO 754
11	10	146.035	0.24	3.46	0.67	0.16	2.58	5.0	9.3	7.0	18.16	31.84	6.44	30	0.51	239.90	240.65	241.25	242.09	249.00	249.50	758 TO 756
12	11	182.118	0.33	3.22	0.65	0.21	2.42	5.0	8.5	7.3	17.56	31.41	6.35	30	0.50	240.85	241.76	242.19	243.18	249.50	248.80	760 TO 758
13	12	152.452	0.26	2.89	0.64	0.17	2.20	5.0	8.0	7.4	16.29	17.41	6.30	24	0.51	242.26	243.03	243.79	244.56	248.80	248.90	762 TO 760
14	13	175.046	0.30	0.30	0.67	0.20	0.20	5.0	5.0	8.4	1.68	6.89	2.45	15	0.97	243.78	245.48	245.49	245.99	248.90	248.90	780 TO 762
15	13	123.471	0.43	2.33	0.86	0.37	1.84	5.0	7.5	7.5	13.81	17.36	4.40	24	0.50	243.23	243.85	245.49	245.85	248.90	250.45	764 to 762
16	15	33.993	0.38	1.00	0.73	0.28	0.76	5.0	7.4	7.6	5.74	13.09	3.25	18	1.32	244.35	244.80	246.29	246.38	250.45	250.19	766 to 764
17	16	132.905	0.00	0.30	0.00	0.00	0.27	5.0	6.1	8.0	2.17	12.27	2.80	15	3.08	245.00	249.09	246.62	249.68	250.19	253.29	MH-768 to 766
18	17	67.514	0.15	0.30	0.91	0.14	0.27	0.0	5.5	8.2	2.23	4.96	3.90	15	0.50	249.29	249.63	249.88	250.23	253.29	254.48	770 to MH-768
19	18	29.912	0.15	0.15	0.91	0.14	0.14	5.0	5.0	8.4	1.14	4.95	3.22	15	0.50	249.83	249.98	250.24	250.40	254.48	254.48	772 to 770
20	16	45.312	0.32	0.32	0.65	0.21	0.21	5.0	5.0	8.4	1.74	13.94	2.50	15	3.97	245.00	246.80	246.62	247.32	250.19	250.30	774 to 766
21	15	118.297	0.57	0.90	0.80	0.46	0.71	5.0	5.3	8.3	5.84	4.94	4.76	15	0.50	244.65	245.24	246.29	247.12	250.45	249.10	776 to 764
22	21	31.500	0.33	0.33	0.76	0.25	0.25	5.0	5.0	8.4	2.10	4.99	1.71	15	0.51	245.44	245.60	247.64	247.67	249.10	249.10	778 to 776

Project File: Run 700 To Exit BMP 2A.stm

Number of lines: 22

Run Date: 7/14/2023

NOTES:Intensity = 47.90 / (Inlet time + 9.20) ^ 0.66; Return period =Yrs. 100 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	MH-702	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	704	7.58	1.60	9.18	0.00	Comb	4.0	22.48	44.96	22.48	2.00	Sag	2.00	0.050	0.020	0.000	0.29	11.37	0.29	11.37	0.0	Off
3	706	3.11	0.00	1.51	1.60	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.23	8.39	0.23	8.39	0.0	2
4	708	1.27	0.00	1.27	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.13	14.94	0.13	14.94	0.0	Off
5	712	22.45*	0.00	22.45	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.88	90.02	0.88	90.02	0.0	Off
6	710	23.21*	0.00	23.21	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.90	91.99	0.90	91.99	0.0	Off
7	750	0.94	0.00	0.94	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.11	12.62	0.11	12.62	0.0	Off
8	752	1.65	0.00	1.65	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.15	17.45	0.15	17.45	0.0	Off
9	754	1.36	0.00	1.36	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.14	15.58	0.14	15.58	0.0	Off
10	756	0.81	0.00	0.81	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.10	11.64	0.10	11.64	0.0	Off
11	758	1.35	0.00	1.35	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.13	15.48	0.13	15.48	0.0	Off
12	760	1.80	0.00	1.80	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.16	18.34	0.16	18.34	0.0	Off
13	762	1.39	0.00	1.39	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.14	15.79	0.14	15.79	0.0	Off
14	780	1.68	0.00	1.68	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.16	17.65	0.16	17.65	0.0	Off
15	764	3.10	0.00	3.10	0.00	Genr	0.0	0.00	0.00	0.00	0.00	Sag	2.00	0.050	0.020	0.000	0.30	12.00	0.30	12.00	0.0	Off
16	766	2.32	0.48	2.32	0.48	Genr	0.0	0.00	0.00	0.00	0.00	Sag	2.00	0.050	0.020	0.000	0.30	12.00	0.30	12.00	0.0	Off
17	MH-768	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	770	0.00	0.00	0.00	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.00	0.00	0.00	0.00	0.0	16
19	772	1.14	0.00	0.67	0.47	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.17	5.30	0.17	5.30	0.0	16
20	774	1.74	0.00	1.74	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.16	18.01	0.16	18.01	0.0	Off
21	776	3.82	0.00	3.82	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.24	9.15	0.24	9.15	0.0	15
22	778	2.10	0.00	2.10	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.050	0.020	0.013	0.20	7.07	0.20	7.07	0.0	16

Project File: Run 700 To Exit BMP 2A.stm | Number of lines: 22 | Run Date: 7/14/2023

NOTES: Inlet N-Values = 0.016; Intensity = 47.90 / (Inlet time + 9.20) ^ 0.66; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	27.907	0.00	0.56	0.00	0.00	0.26	5.0	12.9	4.8	1.24	5.13	2.97	15	0.54	239.87	240.02	240.37	240.46	0.00	246.50	MH-802 TO EX-8
2	1	55.837	0.21	0.56	0.52	0.11	0.26	5.0	12.2	4.9	1.27	5.50	3.44	15	0.62	240.22	240.56	240.63	241.01	246.50	244.29	804 TO MH-802
3	2	33.369	0.19	0.35	0.54	0.10	0.15	5.0	11.5	5.0	0.76	5.03	2.87	15	0.52	240.76	240.94	241.09	241.28	244.29	244.34	806 TO 804
4	3	99.055	0.16	0.16	0.30	0.05	0.05	5.0	5.0	6.5	0.31	10.10	2.95	15	2.08	241.14	243.20	241.29	243.42	244.34	246.60	808 TO 806

Project File: Run 800.stm | Number of lines: 4 | Run Date: 2/14/2024

NOTES:Intensity = 60.89 / (Inlet time + 12.00) ^ 0.79; Return period =Yrs. 10 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	MH-802	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	804	0.71	0.00	0.71	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.020	0.020	0.013	0.10	5.15	0.10	5.15	0.0	Off
3	806	0.66	0.00	0.66	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.020	0.020	0.013	0.10	5.03	0.10	5.03	0.0	Off
4	808	0.31	0.00	0.31	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.05	7.07	0.05	7.07	0.0	Off

Project File: Run 800.stm | Number of lines: 4 | Run Date: 2/14/2024

NOTES: Inlet N-Values = 0.016; Intensity = 60.89 / (Inlet time + 12.00) ^ 0.79; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	27.907	0.00	0.56	0.00	0.00	0.26	5.0	11.1	6.6	1.72	5.13	3.66	15	0.54	239.87	240.02	240.37	240.54	0.00	246.50	MH-802 TO EX-8
2	1	55.837	0.21	0.56	0.52	0.11	0.26	5.0	10.6	6.7	1.75	5.50	3.78	15	0.62	240.22	240.56	240.71	241.09	246.50	244.29	804 TO MH-802
3	2	33.369	0.19	0.35	0.54	0.10	0.15	5.0	10.0	6.9	1.03	5.03	3.14	15	0.52	240.76	240.94	241.15	241.34	244.29	244.34	806 TO 804
4	3	99.055	0.16	0.16	0.30	0.05	0.05	5.0	5.0	8.4	0.40	10.10	2.77	15	2.08	241.14	243.20	241.34	243.45	244.34	246.60	808 TO 806

Project File: Run 800.stm | Number of lines: 4 | Run Date: 2/14/2024

NOTES:Intensity = 47.90 / (Inlet time + 9.20) ^ 0.66; Return period =Yrs. 100 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	MH-802	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	804	0.92	0.00	0.92	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.020	0.020	0.013	0.11	5.67	0.11	5.67	0.0	Off
3	806	0.86	0.00	0.86	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.020	2.00	0.020	0.020	0.013	0.11	5.54	0.11	5.54	0.0	Off
4	808	0.40	0.00	0.40	0.00	DrGrt	0.0	0.00	5.06	2.53	2.00	Sag	2.00	0.020	0.020	0.000	0.06	8.02	0.06	8.02	0.0	Off

Project File: Run 800.stm | Number of lines: 4 | Run Date: 2/14/2024

NOTES: Inlet N-Values = 0.016; Intensity = 47.90 / (Inlet time + 9.20) ^ 0.66; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Sisters of St. Basils (#7662)
Abington Township
Montgomery County, PA

By: LJP
Date: 14-Mar-23
Chk'd:
Rev'd 9-Oct-23

STORM SEWER RIPRAP APRON OUTLET PROTECTION

OUTLET No.	Temporary (E&S) or Permanent Condition	Mannings 'n'	PIPE DIA Do (in)	PIPE SLOPE (ft/ft)	100-yr Flow Q (cfs)	100-yr FLOW V (fps)	APRON (Internal) W (ft)	APRON La (ft)	APRON (External) W (ft)	RIPRAP STONE SIZE (NSA No.)	RIPRAP STONE THICK (in)	RIPRAP STONE d50 (in)	RIPRAP FILTER THICK (in)	RIPRAP FILTER SIZE (NSA No.)	OPTIONAL RENO MAT/GABION THICK (in)	OPTIONAL RENO MAT/GABION SIZE (in)
FES 100	permanent	0.013	15	0.0459	2.32	2	3.75	8	11.8	R-3	9	3	3	FS-1	6	3 to 6
EW 200	permanent	0.013	24	0.0267	11.70	4	6.0	12	18.0	R-3	9	3	3	FS-1	6	3 to 6
EW 300	permanent	0.013	24	0.0119	2.85	1	6.0	12	18.0	R-3	9	3	3	FS-1	6	3 to 6
EW 400	permanent	0.013	24	0.0167	18.89	6	6.0	12	18.0	R-3	9	3	3	FS-1	9	3 to 6
FES 500	permanent	0.013	24	0.0052	13.06	4	6.0	12	18.0	R-3	9	3	3	FS-1	6	3 to 6
EW 600	permanent	0.013	18	0.0089	8.34	6	4.5	8	12.5	R-3	9	3	3	FS-1	6	3 to 6
EW 700	permanent	0.013	42	0.0304	74.43	8	10.5	22	32.5	R-4	18	6	4	FS-2	9	3 to 6
O.S. 3A-1	permanent	0.013	18	0.0128	0.22	4	4.5	8	12.5	R-3	9	3	3	FS-1	6	3 to 6
O.S. 3A-2	permanent	0.013	15	0.0111	5.05	5	3.75	8	11.8	R-3	9	3	3	FS-1	6	3 to 6
O.S. 3B-1	permanent	0.013	15	0.0233	3.42	1	3.75	8	11.8	R-3	9	3	3	FS-1	6	3 to 6
O.S. 4.1	permanent	0.013	24	0.0080	35.37	7	6.0	20	26.0	R-4	18	6	4	FS-2	9	3 to 6

Sisters of St. Basils (#7662)

Abington Township

Montgomery County, PA

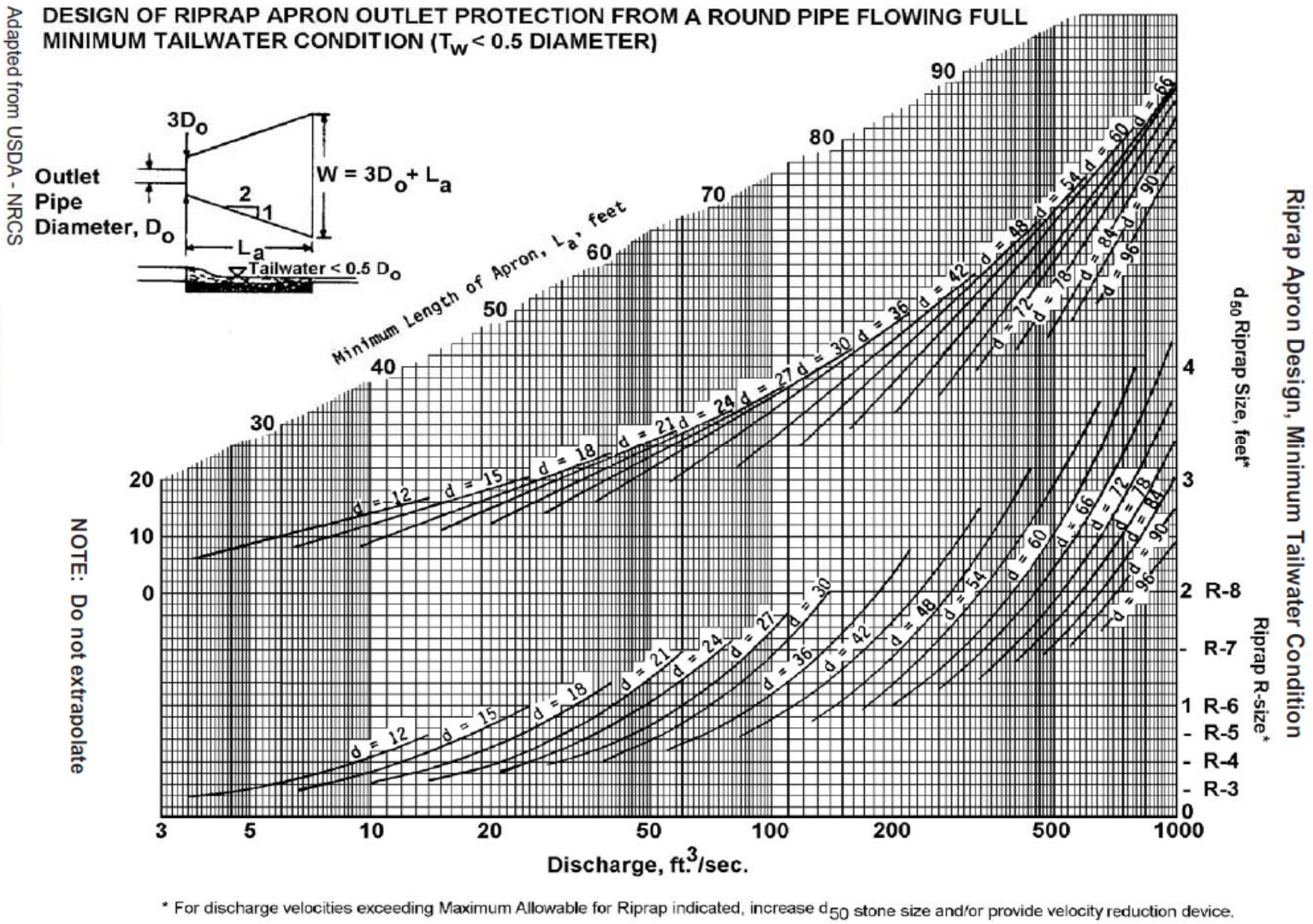
STORM SEWER RIP-RAP DATA TABLE

RIP-RAP		FILTER		RIP-RAP DESIGN DATA			
SIZE (NSA No.)	THICK (in)	SIZE (NSA No.)	THICK (in)	MAX V (fps)	d50 (ft)	d50 (in)	dMAX (in)
R-1	2.25	N/A	N/A		0.0625	0.75	1.5
R-2	4.5	N/A	N/A	4.5	0.125	1.5	3
R-3	9	FS-1	3	6.5	0.25	3	6
R-4	18	FS-2	4	9	0.5	6	12
R-5	27	FS-2	6	11.5	0.75	9	18
R-6	36	FS-3	8	13	1	12	24
R-7	45	FS-3	10	14.5	1.25	15	30
R-8	63			17	1.75	21	42

RENO MATTRESS DATA TABLE

STONE		MAX V
THICK (in)	SIZE (in)	V (fps)
6	3 to 6	6
9	3 to 6	12
12	3 to 6	15
18	4 to 6	18
>18	5 to 9	22

NOTES:
1. dMAX per PADEP E&S Manual Table 9, page 24.
2. Rip-Rap "THICK" = 1.5 x "dMAX".
3. Filter stone "SIZE" and "THICK" per PADEP E&S Manual, Table 9, Page 24.
4. Geotextile may be used as an alternative to Filter Stone.
5. Rip-Rap is required for outlet velocities > 2.5 fps.
6. MAX V (Rip-Rap) per PADEP E&S Manual, Table 9, page 24.
7. Minimum Tailwater Condition is assumed for all outlets.
8. Apron length (La) per PADEP E&S Manual, Fig. 21, page 116.
9. Rip-Rap Apron W = L + 3 x PIPE DIA.
10. Reno Mattress/Gabions may be used where maximum velocities exceed 14.5 fps, per PADEP E&S Manual, Table 13, page 31.



* For discharge velocities exceeding Maximum Allowable for Riprap indicated, increase d_{50} stone size and/or provide velocity reduction device.

FIGURE 9.3
Riprap Apron Design, Minimum Tailwater Condition

Swale Calculations

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STANDARD E&S WORKSHEET #11

Channel Design Data

PROJECT NAME: Sisters of St. Basil (#7662)

LOCATION: ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PA

PREPARED BY: LJP DATE: 10/9/2023

CHECKED BY: DATE:

CHANNEL OR CHANNEL SECTION		1	1	2	2	3	3
TEMPORARY OR PERMANENT?	(T OR P)	T	P	T	P	T	P
DESIGN STORM	(2, 5, OR 10 YR)	2	2	2	2	2	2
ACRES	(AC)	4.46	0.15	0.33	0.33	0.64	0.64
MULTIPLIER	(1.6, 2.25, OR 2.75)[1]	1.60	2.75	2.75	2.75	2.75	2.75
Qr (REQUIRED CAPACITY)	(CFS)	7.14	0.41	0.91	0.91	1.76	1.76
Q (CALCULATED AT FLOW DEPTH d)	(CFS)	4.44	0.38	0.67	0.71	0.90	0.87
PROTECTIVE LINING[2]		NAG S75	Grass	NAG S75	Grass	NAG S75	Grass
n (MANNING'S COEFFICIENT)[2]		0.07	0.09	0.07	0.09	0.07	0.08
Va (ALLOWABLE VELOCITY)	(FPS)	5.00	5.00	5.00	5.00	5.00	5.00
V (CALCULATED AT FLOW DEPTH d)	(FPS)	1.17	0.63	0.84	0.67	0.91	0.77
τ_a (MAX ALLOWABLE SHEAR STRESS)	(LB/FT^2)	1.60	N/A	1.60	N/A	1.60	N/A
τ_d (CALC'S SHEAR STRESS AT FLOW DEPTH d)	(LB/FT^2)	0.42	N/A	0.25	N/A	0.29	N/A
CHANNEL BOTTOM WIDTH	(FT)	1.00	1.00	2.00	2.00	2.00	2.00
CHANNEL SIDE SLOPES	(H:V)	7.0 :1	7.0 :1	10.0 :1	10.0 :1	10.0 :1	10.0 :1
D (TOTAL DEPTH)	(FT)	1.17	0.73	0.70	0.74	0.73	0.75
CHANNEL TOP WIDTH @ D	(FT)	17.38	11.22	16.00	16.80	16.60	17.00
d (CALCULATED FLOW DEPTH)	(FT)	0.67	0.23	0.20	0.24	0.23	0.25
CHANNEL TOP WIDTH @ FLOW DEPTH d	(FT)	10.38	4.22	6.00	6.80	6.60	7.00
BOTTOM WIDTH: FLOW DEPTH RATIO	(12:1 MAX)	1.49 :1	4.35 :1	10.00 :1	8.33 :1	8.70 :1	8.00 :1
d_{50} STONE SIZE	(IN)	NA	NA	NA	NA	NA	NA
A (CROSS-SECTIONAL AREA)	(SQ. FT.)	3.81	0.60	0.80	1.06	0.99	1.13
R (HYDRAULIC RADIUS)		0.36	0.14	0.13	0.15	0.15	0.16
S (BED SLOPE)[3]	(FT/FT)	0.010	0.020	0.020	0.020	0.020	0.020
Sc (CRITICAL SLOPE)	(FT/FT)	0.09	0.23	0.12	0.22	0.12	0.17
.7 Sc	(FT/FT)	0.06	0.16	0.08	0.15	0.08	0.12
1.3 Sc	(FT/FT)	0.11	0.30	0.16	0.29	0.15	0.22
STABLE FLOW?	(Y/N)	YES	YES	YES	YES	YES	YES
FREEBOARD BASED ON UNSTABLE FLOW	(FT)	NA	NA	NA	NA	NA	NA
FREEBOARD BASED ON STABLE FLOW	(FT)	0.17	0.06	0.05	0.06	0.06	0.06
MINIMUM REQUIRED FREEBOARD[4]	(FT)	0.50	0.50	0.50	0.50	0.50	0.50
DESIGN METHOD FOR PROTECTIVE LINING[5] PERMISSIBILE VELOCITY (V) OR SHEAR STRESS (S)		S	V	S	V	S	V

1. Use 1.6 for Temporary Channel, 2.25 for Temporary Channels in Special Protection (HQ or EV) Watersheds, 2.75 for Permanent Channels. For Rational Method, enter "N/A" and attach E&S Worksheets 9 and 10. For TR-55 enter "N/A" and attach approriate Worksheets.

2. Adjust "n" value for changes in channel liner and flow depth. For vegetated channels, provide data for manufactured linings without vegetation and with vegetation in separate columns.

3. Slopes may not be averaged.

4. Minimum Freeboard is 0.5 ft. or 1/4 Total Channel Depth, whichever is greater.

5. Permissible velocity lining design method is not acceptable for channels with a bed slope of 10% of greater. Shear stress lining design method is required for channels with a bed slope of 10% or greater. Shear stress lining design method may be used for any channel bed slope.

STANDARD E&S WORKSHEET #11

Channel Design Data

PROJECT NAME: St. Basils (7662)

LOCATION: ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PA

PREPARED BY: LJP DATE: 10/9/2023

CHECKED BY: DATE:

CHANNEL OR CHANNEL SECTION		4	4	5	5	6	6
TEMPORARY OR PERMANENT?	(T OR P)	T	P	T	P	T	P
DESIGN STORM	(2, 5, OR 10 YR)	2	2	2	2	2	2
ACRES	(AC)	0.32	0.32	0.54	0.54	0.65	0.65
MULTIPLIER	(1.6, 2.25, OR 2.75)[1]	2.75	2.75	2.75	2.75	2.75	2.75
Qr (REQUIRED CAPACITY)	(CFS)	0.88	0.88	1.49	1.49	1.79	1.79
Q (CALCULATED AT FLOW DEPTH d)	(CFS)	0.74	0.71	1.19	1.17	1.50	1.47
PROTECTIVE LINING[2]		NAG S75	Grass	NAG S75	Grass	NAG S75	Grass
n (MANNING'S COEFFICIENT)[2]		0.07	0.09	0.07	0.08	0.07	0.07
Va (ALLOWABLE VELOCITY)	(FPS)	5.00	5.00	5.00	5.00	5.00	5.00
V (CALCULATED AT FLOW DEPTH d)	(FPS)	0.87	0.67	1.13	0.97	1.26	1.19
τ_a (MAX ALLOWABLE SHEAR STRESS)	(LB/FT^2)	1.60	N/A	1.60	N/A	1.60	N/A
τ_d (CALC'S SHEAR STRESS AT FLOW DEPTH d)	(LB/FT^2)	0.26	N/A	0.37	N/A	0.44	N/A
CHANNEL BOTTOM WIDTH	(FT)	2.00	2.00	2.00	2.00	2.00	2.00
CHANNEL SIDE SLOPES	(H:V)	10.0 :1	10.0 :1	5.0 :1	5.0 :1	4.0 :1	4.0 :1
D (TOTAL DEPTH)	(FT)	0.71	0.74	0.80	0.83	0.85	0.86
CHANNEL TOP WIDTH @ D	(FT)	16.20	16.80	10.00	10.30	8.80	8.88
d (CALCULATED FLOW DEPTH)	(FT)	0.21	0.24	0.30	0.33	0.35	0.36
CHANNEL TOP WIDTH @ FLOW DEPTH d	(FT)	6.20	6.80	5.00	5.30	4.80	4.88
BOTTOM WIDTH: FLOW DEPTH RATIO	(12:1 MAX)	9.52 :1	8.33 :1	6.67 :1	6.06 :1	5.71 :1	5.56 :1
d_{50} STONE SIZE	(IN)	NA	NA	NA	NA	NA	NA
A (CROSS-SECTIONAL AREA)	(SQ. FT.)	0.86	1.06	1.05	1.20	1.19	1.24
R (HYDRAULIC RADIUS)		0.14	0.15	0.21	0.22	0.24	0.25
S (BED SLOPE)[3]	(FT/FT)	0.020	0.020	0.020	0.020	0.020	0.020
Sc (CRITICAL SLOPE)	(FT/FT)	0.12	0.22	0.11	0.16	0.10	0.12
.7 Sc	(FT/FT)	0.08	0.15	0.07	0.11	0.07	0.08
1.3 Sc	(FT/FT)	0.16	0.29	0.14	0.20	0.13	0.15
STABLE FLOW?	(Y/N)	YES	YES	YES	YES	YES	YES
FREEBOARD BASED ON UNSTABLE FLOW	(FT)	NA	NA	NA	NA	NA	NA
FREEBOARD BASED ON STABLE FLOW	(FT)	0.05	0.06	0.08	0.08	0.09	0.09
MINIMUM REQUIRED FREEBOARD[4]	(FT)	0.50	0.50	0.50	0.50	0.50	0.50
DESIGN METHOD FOR PROTECTIVE LINING[5] PERMISSIBILE VELOCITY (V) OR SHEAR STRESS (S)		S	V	S	V	S	V

1. Use 1.6 for Temporary Channel, 2.25 for Temporary Channels in Special Protection (HQ or EV) Watersheds, 2.75 for Permanent Channels. For Rational Method, enter "N/A" and attach E&S Worksheets 9 and 10. For TR-55 enter "N/A" and attach approriate Worksheets.

2. Adjust "n" value for changes in channel liner and flow depth. For vegetated channels, provide data for manufactured linings without vegetation and with vegetation in separate columns.

3. Slopes may not be averaged.

4. Minimum Freeboard is 0.5 ft. or 1/4 Total Channel Depth, whichever is greater.

5. Permissible velocity lining design method is not acceptable for channels with a bed slope of 10% of greater. Shear stress lining design method is required for channels with a bed slope of 10% or greater. Shear stress lining design method may be used for any channel bed slope.

STANDARD E&S WORKSHEET #11

Channel Design Data

PROJECT NAME: St. Basils (7662)

LOCATION: ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PA

PREPARED BY: LJP DATE: 10/9/2023

CHECKED BY: DATE:

CHANNEL OR CHANNEL SECTION		7	7	8	8	9	9
TEMPORARY OR PERMANENT?	(T OR P)	T	P	T	P	T	P
DESIGN STORM	(2, 5, OR 10 YR)	2	2	2	2	2	2
ACRES	(AC)	0.52	0.52	0.35	0.35	1.44	0.67
MULTIPLIER	(1.6, 2.25, OR 2.75)[1]	2.75	2.75	2.75	2.75	1.60	2.75
Qr (REQUIRED CAPACITY)	(CFS)	1.43	1.43	0.96	0.96	2.30	1.84
Q (CALCULATED AT FLOW DEPTH d)	(CFS)	1.17	1.20	0.67	0.71	1.40	1.25
PROTECTIVE LINING[2]		NAG S75	Grass	NAG S75	Grass	NAG S75	Grass
n (MANNING'S COEFFICIENT)[2]		0.07	0.08	0.07	0.09	0.07	0.09
Va (ALLOWABLE VELOCITY)	(FPS)	5.00	5.00	5.00	5.00	5.00	5.00
V (CALCULATED AT FLOW DEPTH d)	(FPS)	0.97	0.84	0.84	0.67	1.05	0.80
τ_a (MAX ALLOWABLE SHEAR STRESS)	(LB/FT^2)	1.60	N/A	1.60	N/A	1.60	N/A
τ_d (CALC'S SHEAR STRESS AT FLOW DEPTH d)	(LB/FT^2)	0.32	N/A	0.25	N/A	0.36	N/A
CHANNEL BOTTOM WIDTH	(FT)	2.00	2.00	2.00	2.00	2.00	2.00
CHANNEL SIDE SLOPES	(H:V)	10.0 :1	10.0 :1	10.0 :1	10.0 :1	9.0 :1	9.0 :1
D (TOTAL DEPTH)	(FT)	0.76	0.79	0.70	0.74	0.79	0.82
CHANNEL TOP WIDTH @ D	(FT)	17.20	17.80	16.00	16.80	16.22	16.76
d (CALCULATED FLOW DEPTH)	(FT)	0.26	0.29	0.20	0.24	0.29	0.32
CHANNEL TOP WIDTH @ FLOW DEPTH d	(FT)	7.20	7.80	6.00	6.80	7.22	7.76
BOTTOM WIDTH: FLOW DEPTH RATIO	(12:1 MAX)	7.69 :1	6.90 :1	10.00 :1	8.33 :1	6.90 :1	6.25 :1
d_{50} STONE SIZE	(IN)	NA	NA	NA	NA	NA	NA
A (CROSS-SECTIONAL AREA)	(SQ. FT.)	1.20	1.42	0.80	1.06	1.34	1.56
R (HYDRAULIC RADIUS)		0.17	0.18	0.13	0.15	0.18	0.20
S (BED SLOPE)[3]	(FT/FT)	0.020	0.020	0.020	0.020	0.020	0.020
Sc (CRITICAL SLOPE)	(FT/FT)	0.11	0.17	0.12	0.22	0.11	0.20
.7 Sc	(FT/FT)	0.08	0.12	0.08	0.15	0.08	0.14
1.3 Sc	(FT/FT)	0.15	0.21	0.16	0.29	0.14	0.26
STABLE FLOW?	(Y/N)	YES	YES	YES	YES	YES	YES
FREEBOARD BASED ON UNSTABLE FLOW	(FT)	NA	NA	NA	NA	NA	NA
FREEBOARD BASED ON STABLE FLOW	(FT)	0.07	0.07	0.05	0.06	0.07	0.08
MINIMUM REQUIRED FREEBOARD[4]	(FT)	0.50	0.50	0.50	0.50	0.50	0.50
DESIGN METHOD FOR PROTECTIVE LINING[5] PERMISSIBILE VELOCITY (V) OR SHEAR STRESS (S)		S	V	S	V	S	V

1. Use 1.6 for Temporary Channel, 2.25 for Temporary Channels in Special Protection (HQ or EV) Watersheds, 2.75 for Permanent Channels. For Rational Method, enter "N/A" and attach E&S Worksheets 9 and 10. For TR-55 enter "N/A" and attach approriate Worksheets.

2. Adjust "n" value for changes in channel liner and flow depth. For vegetated channels, provide data for manufactured linings without vegetation and with vegetation in separate columns.

3. Slopes may not be averaged.

4. Minimum Freeboard is 0.5 ft. or 1/4 Total Channel Depth, whichever is greater.

5. Permissible velocity lining design method is not acceptable for channels with a bed slope of 10% of greater. Shear stress lining design method is required for channels with a bed slope of 10% or greater. Shear stress lining design method may be used for any channel bed slope.

STANDARD E&S WORKSHEET #11

Channel Design Data

PROJECT NAME: St. Basils (7662)

LOCATION: ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PA

PREPARED BY: LJP DATE: 10/9/2023

CHECKED BY: DATE:

CHANNEL OR CHANNEL SECTION		10	10	11	11	12	12
TEMPORARY OR PERMANENT?	(T OR P)	T	P	T	P	T	P
DESIGN STORM	(2, 5, OR 10 YR)	2	2	2	2	2	2
ACRES	(AC)	1.31	0.94	2.20	1.12	0.57	0.29
MULTIPLIER	(1.6, 2.25, OR 2.75)[1]	1.60	2.75	1.60	2.75	1.60	2.75
Qr (REQUIRED CAPACITY)	(CFS)	2.10	2.59	3.52	3.08	0.91	0.80
Q (CALCULATED AT FLOW DEPTH d)	(CFS)	2.07	2.58	3.61	3.19	1.04	0.91
PROTECTIVE LINING[2]		NAG S75	Grass	NAG S75	Grass	NAG S75	Grass
n (MANNING'S COEFFICIENT)[2]		0.07	0.08	0.07	0.08	0.07	0.08
Va (ALLOWABLE VELOCITY)	(FPS)	5.00	5.00	5.00	5.00	5.00	5.00
V (CALCULATED AT FLOW DEPTH d)	(FPS)	1.34	1.22	1.56	1.29	1.15	0.95
τ_a (MAX ALLOWABLE SHEAR STRESS)	(LB/FT^2)	1.60	N/A	1.60	N/A	1.60	N/A
τ_d (CALC'S SHEAR STRESS AT FLOW DEPTH d)	(LB/FT^2)	0.51	N/A	0.67	N/A	0.39	N/A
CHANNEL BOTTOM WIDTH	(FT)	2.00	2.00	2.00	2.00	2.00	2.00
CHANNEL SIDE SLOPES	(H:V)	5.0 :1	5.0 :1	5.0 :1	5.0 :1	5.0 :1	5.0 :1
D (TOTAL DEPTH)	(FT)	0.89	0.98	1.01	1.03	0.77	0.78
CHANNEL TOP WIDTH @ D	(FT)	10.90	11.80	12.10	12.30	9.70	9.80
d (CALCULATED FLOW DEPTH)	(FT)	0.39	0.48	0.51	0.53	0.27	0.28
CHANNEL TOP WIDTH @ FLOW DEPTH d	(FT)	5.90	6.80	7.10	7.30	4.70	4.80
BOTTOM WIDTH: FLOW DEPTH RATIO	(12:1 MAX)	5.13 :1	4.17 :1	3.92 :1	3.77 :1	7.41 :1	7.14 :1
d_{50} STONE SIZE	(IN)	NA	NA	NA	NA	NA	NA
A (CROSS-SECTIONAL AREA)	(SQ. FT.)	1.54	2.11	2.32	2.46	0.90	0.95
R (HYDRAULIC RADIUS)		0.26	0.31	0.32	0.33	0.19	0.20
S (BED SLOPE)[3]	(FT/FT)	0.021	0.021	0.021	0.021	0.023	0.023
Sc (CRITICAL SLOPE)	(FT/FT)	0.10	0.14	0.09	0.14	0.11	0.16
.7 Sc	(FT/FT)	0.07	0.10	0.06	0.10	0.08	0.11
1.3 Sc	(FT/FT)	0.13	0.18	0.12	0.18	0.14	0.21
STABLE FLOW?	(Y/N)	YES	YES	YES	YES	YES	YES
FREEBOARD BASED ON UNSTABLE FLOW	(FT)	NA	NA	NA	NA	NA	NA
FREEBOARD BASED ON STABLE FLOW	(FT)	0.10	0.12	0.13	0.13	0.07	0.07
MINIMUM REQUIRED FREEBOARD[4]	(FT)	0.50	0.50	0.50	0.50	0.50	0.50
DESIGN METHOD FOR PROTECTIVE LINING[5] PERMISSIBILE VELOCITY (V) OR SHEAR STRESS (S)		S	V	S	V	S	V

1. Use 1.6 for Temporary Channel, 2.25 for Temporary Channels in Special Protection (HQ or EV) Watersheds, 2.75 for Permanent Channels. For Rational Method, enter "N/A" and attach E&S Worksheets 9 and 10. For TR-55 enter "N/A" and attach approriate Worksheets.

2. Adjust "n" value for changes in channel liner and flow depth. For vegetated channels, provide data for manufactured linings without vegetation and with vegetation in separate columns.

3. Slopes may not be averaged.

4. Minimum Freeboard is 0.5 ft. or 1/4 Total Channel Depth, whichever is greater.

5. Permissible velocity lining design method is not acceptable for channels with a bed slope of 10% of greater. Shear stress lining design method is required for channels with a bed slope of 10% or greater. Shear stress lining design method may be used for any channel bed slope.

STANDARD E&S WORKSHEET #11

Channel Design Data

PROJECT NAME: St. Basils (7662)

LOCATION: ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PA

PREPARED BY: LJP DATE: 10/9/2023

CHECKED BY: DATE:

CHANNEL OR CHANNEL SECTION		13	13				
TEMPORARY OR PERMANENT?	(T OR P)	T	P				
DESIGN STORM	(2, 5, OR 10 YR)	2	2				
ACRES	(AC)	0.21	0.41				
MULTIPLIER	(1.6, 2.25, OR 2.75)[1]	1.60	2.75				
Qr (REQUIRED CAPACITY)	(CFS)	0.34	1.13				
Q (CALCULATED AT FLOW DEPTH d)	(CFS)	0.38	1.18				
PROTECTIVE LINING[2]		NAG S75	Grass				
n (MANNING'S COEFFICIENT)[2]		0.07	0.08				
Va (ALLOWABLE VELOCITY)	(FPS)	5.00	5.00				
V (CALCULATED AT FLOW DEPTH d)	(FPS)	0.86	1.02				
τ_a (MAX ALLOWABLE SHEAR STRESS)	(LB/FT^2)	1.60	N/A				
τ_d (CALC'S SHEAR STRESS AT FLOW DEPTH d)	(LB/FT^2)	0.23	N/A				
CHANNEL BOTTOM WIDTH	(FT)	2.00	2.00				
CHANNEL SIDE SLOPES	(H:V)	5.0 :1	5.0 :1				
D (TOTAL DEPTH)	(FT)	0.66	0.82				
CHANNEL TOP WIDTH @ D	(FT)	8.60	10.20				
d (CALCULATED FLOW DEPTH)	(FT)	0.16	0.32				
CHANNEL TOP WIDTH @ FLOW DEPTH d	(FT)	3.60	5.20				
BOTTOM WIDTH: FLOW DEPTH RATIO	(12:1 MAX)	12.50 :1	6.25 :1				
d_{50} STONE SIZE	(IN)	NA	NA				
A (CROSS-SECTIONAL AREA)	(SQ. FT.)	0.45	1.15				
R (HYDRAULIC RADIUS)		0.12	0.22				
S (BED SLOPE)[3]	(FT/FT)	0.023	0.023				
Sc (CRITICAL SLOPE)	(FT/FT)	0.12	0.16				
.7 Sc	(FT/FT)	0.09	0.11				
1.3 Sc	(FT/FT)	0.16	0.20				
STABLE FLOW?	(Y/N)	YES	YES				
FREEBOARD BASED ON UNSTABLE FLOW	(FT)	NA	NA				
FREEBOARD BASED ON STABLE FLOW	(FT)	0.04	0.08				
MINIMUM REQUIRED FREEBOARD[4]	(FT)	0.50	0.50				
DESIGN METHOD FOR PROTECTIVE LINING[5] PERMISSIBILE VELOCITY (V) OR SHEAR STRESS (S)		S	V				

1. Use 1.6 for Temporary Channel, 2.25 for Temporary Channels in Special Protection (HQ or EV) Watersheds, 2.75 for Permanent Channels. For Rational Method, enter "N/A" and attach E&S Worksheets 9 and 10. For TR-55 enter "N/A" and attach approriate Worksheets.

2. Adjust "n" value for changes in channel liner and flow depth. For vegetated channels, provide data for manufactured linings without vegetation and with vegetation in separate columns.

3. Slopes may not be averaged.

4. Minimum Freeboard is 0.5 ft. or 1/4 Total Channel Depth, whichever is greater.

5. Permissible velocity lining design method is not acceptable for channels with a bed slope of 10% of greater. Shear stress lining design method is required for channels with a bed slope of 10% or greater. Shear stress lining design method may be used for any channel bed slope.

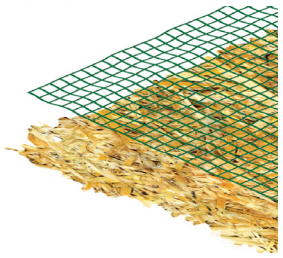
MATERIAL PROPERTY DATA SHEET

EroNet™ S75®

Short Term • Single Net • Straw Matrix • Erosion Control Blanket

DESCRIPTION

S75 temporary Erosion Control Blanket is composed of a 100% weed free agricultural straw matrix mechanically (stitch) bonded on two-inch centers to a single synthetic, photodegradable net. The net is secured to the top of the RECP to restrain the straw matrix once installed. S75 blanket is intended for use in applications requiring erosion protection for a period up to twelve months. The material is fully degradable. The net and thread are photodegradable and the fiber matrix is biodegradable. Actual field longevity is dependent on soil and climatic conditions.



Each roll of S75 is made in the USA and manufactured under Western Green's Quality Assurance Program to ensure a continuous distribution of fibers and consistent thickness.

Material Content		
Matrix	Straw	
Netting	Lightweight, Synthetic Regular Degradable	Single Net (Green)
Thread	Synthetic, Regular Degradable	

Standard Roll Sizes				
Width	8 ft	(2.4 m)	16 ft	(4.9 m)
Length	112 ft	(34.1 m)	563 ft	(171.0 m)
Weight ± 10%	50 lb	(22.7 kg)	500 lb	(227.0 kg)
Area	100 sy	(83.6 m^2)	1000 SY	(836.0 m^2)

Material available in custom roll sizes

Approvals & Classification	
Classification	FHWA: Type 2.C / ECTC: Type 2.C
TTI Approvals	Class 1 Type A, B
NTPEP Number	ECP-2020-01-18

Index Property	Test Method	Typical	
Thickness	ASTM D6525	0.28 in.	(7 mm)
Mass/Unit Area	ASTM D6566	8.0 oz/sy	(275 g/sm)
Tensile Strength – MD	ASTM D6818	110 lbs/ft	(1.6 kN/m)
Tensile Strength – TD	ASTM D6818	60 lbs/ft	(0.9 kN/m)
Elongation - MD	ASTM D6818	30%	
Elongation – TD	ASTM D6818	30%	
Density/Specific Gravity	D792	N/A	
Light Penetration	ASTM D6567	15%	
Biomass Improvement	ASTM D7322	375%	
Water Absorption	ASTM D1117	400%	

Design Parameters		
Property	**Unvegetated**	**Vegetated[3]**
RUSLE C Factor[2]	0.02	N/A
Slope Maximum Gradient[1]	3H:1V	N/A
Permissible Shear Stress[2]	1.6 psf (75 Pa)	N/A
Permissible Velocity[2]	5.0 fps (1.5 m/s)	N/A

Manning's n Roughness (HEC-15)		
τ_{lower}	τ_{mid}	τ_{upper}
0.040	0.030	0.030

1 Maximum Gradient a recomendation for typical insllations.
2 Hydraulic thresholds compliant with ASTM D6459/D6460 but generalized for typical applications.
3 Vegetated values dependent on established stand of vegetation

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Rev. 4.2023
Scan for additional and updated product information, or click here.

Infiltration Test Results

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INFILTRATION TESTING PLAN

SISTERS OF ST. BASIL

ABINGTON TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

DATE:	SCALE:
07/11/2023	1" = 100'
DESIGN:	DRAWN:
JJP	JJP
JOB NO.:	FILE NAME:
7662	7662-S-INFL-TESTING
REF. NOS.:	SHEET NO.:
IN-TEST.01	1 OF 1

REV.	DATE	DESCRIPTION	DRAWN

ESE CONSULTANTS

ENGINEERING • PLANNING • SURVEYING • ENVIRONMENTAL

ESE Consultants, Inc.
1140 Virginia Drive • Fort Washington, PA 19034
T: 215-654-9000

LEGEND

- EXISTING STRUCTURE
- EXISTING CONTOURS
- PROPOSED TREE LINE
- EXISTING TREE LINE
- WETLANDS LIMIT
- WATERS OF THE U.S.
- BUILDING SETBACK LINE
- PROPOSED CENTER LINE
- STREAM LINE
- PROPOSED PROPERTY LINE
- PROPOSED R.O.W.
- EXISTING CARTWAY
- PROPOSED CURB
- PROPOSED 4' WIDE SIDEWALK WITH ACCESS RAMP
- OUTBOUND LINE
- ZONING BOUNDARY LINE
- PROPOSED SPLIT RAIL FENCE
- PROPOSED EASEMENT
- PROPOSED LOT NUMBER (58)
- PROPOSED TESTING LOCATION SW-XXX

HORIZONTAL GRAPHIC SCALE
100 0 100 200
(IN FEET)
1" = 100 FEET

\\ESE\DEPTS\CADD\PROJECTS\PENNSYLVANIA\7662-RYDAL ST. BASILS\ENGDEPT\DESIGN\SWM\INFILTRATION TESTING\7662-S-INFL-TESTING.DWG-Luke Plotted:7/11/2023 1:51 PM

7662 Sisters of St. Basil Infiltration Testing Summary

2/21/2023

Test Pit	Depth/Rock (in)	Redox (in)	Prelim Design Depth (in)	Test Depth (in)	Infiltration Rate (in/hr)	Suitable Depth (in) *	Comments
SW-100	115+	26-48	82	82	0.75/4.5	48-91+	Best from 82-115+
SW-101	120+	23-50	NA	TBD	TBD	50-96+	Best from 86-120+
SW-102	108R	-	84 to 108	76	2.87	32-84	
SW-102A	100R	-		76		28-76	
SW-103	125+	20-34	NA	TBD	TBD	72-101+	Best from 88-125+
SW-104	115+	-	NA	TBD	TBD	96+	Silt loam to 96"
SW-105	125+	-	84	84	4.2	36-101+	Best from 75-125+
SW-106	126+	-	84	84		32-102+	Fill and asphalt to 15"; compacted to 32"; Best 32-126+
SW-106	126+	-	36	36	5.25/3.75	32-102+	Fill and asphalt to 15"; compacted to 32"; Best 32-126+
SW-107	122+	-	NA	TBD	TBD	28-98+	Best 46-122+
SW-108	101R	-	NA	TBD	TBD	34-77	Best from 60-77
SW-109	126+	34-46	NA	TBD	TBD	46-102+	Best 56-126+
SW-110	122+	22-45	96	96	3.2	45-98+	
SW-110A	112R	35-68	72	72		68-88	
SW-111	120+	35-48	NA	TBD	TBD	48-96+	Best 80-120+
SW-111A	92R	-	*48+	48	6.3	9-68	Will be very difficult to set rings 48"+ due to rock
SW-112	128+	24-46	*54+	54		46-104+	Best 54-128+
SW-113	52R	-	*26+	28	3.0/2.0	8-28	Best 20-28
SW-113A	48R	-	102	24	0.25/1.25	15-24	
SW-114	56R	-	*26+	26	3.0/2.5	9-26	Best 21-26
SW-114A	108R	28-40	*26+	66	6.0/10.5	40-66	Best 60-66
SW-114B	84R	-	*26+	60	8.25/10.5	10-60	Best 56-60
SW-114C	50R	-	72	26	0.75/0.5	8-26	
SW-115	104R	-	80	80	5.6	32-80	
SW-116	122+	-	92	92		32-98+	Best 62-128+
SW-117	126+	8-24	NA	TBD	TBD	24-102+	Fill to 24"; Best 56-124+
SW-118	116+	-	NA	TBD	TBD	32-92	Compacted to 32"; Best 48-116+
SW-119	108+	-	72	72	6.0/1.0	9-84+	
SW-120	125+	-	NA	TBD	TBD	24-101+	
SW-121	101+	?	Unsuitable				Numerous seeps; water filling test pit; compacted
SW-122	108+		Unsuitable				Legacy fill; Seeps

SW-123	120+	-	NA	TBD	TBD	56-96+	
SW-124	108+	-	NA	TBD	TBD	20-84+	
SW-125	120+	28-90	72-90	90	1.49; recommend at 238ft	90-120+	Tested at bottom of loam horizon w redox ; slowest inf rate of 4 pits. Rec 6" deeper design
SW-125A	132+	28-48	84-108	102		48-132+	Best 95-132+
SW-126	150+	-	102-126	120		18-150+	Best 40-150+
SW-126A	132+	-	90-114	108		12-132+	Best 48-132+
SW-127	102+	-	56	54/78	0/0	56-78+	Compacted to 32"
SW-128	118+	18-28	NA	TBD	TBD	84-94+	Compacted to 28"
SW-129	115+	-	NA	TBD	TBD	80-91+	Compacted to 42"
SW-130	106+	-	NA	TBD	TBD	28-82+	Compacted to 20"
SW-131	108+	-	NA	TBD	TBD	29-84+	Compacted to 29"
SW-132	76R	-	NA	TBD	TBD	30-52	
SW-133	112+	-	84	84	3.25/3.0	34-88+	
SW-134	120+	-	NA	TBD	TBD	26-96+	Best 45-120+
SW-135	117+	-	84	84	6.4	48-93+	
SW-136	120+	-	72	72		36-96+	
SW-137	78R	-	NA	TBD	TBD	15-54	
SW-138	108+	32-90+	NA	TBD	TBD	Unsuitable	In swale; numerous seeps; unsafe to enter
SW-139	80R	-	*24+	24	3.0/3.0	9-56	Likely too rocky to set double rings 25"+
SW-140	118+	28-60	NA	TBD	TBD	60-94+	
SW-141	88+	27-60	*24	24	0.0/0.02	60-88	Generally not suitable at 24" based on morph.
SW-141A	114R	-	*12+	50	0.75/1.5	16-90	Best 48-90
SW-141B	36R	-	72	12	1.25/1.5	12	
SW-141C	60R	-	24	24	0.75/0.25	9-36	
SW-142	45R	-	NA	TBD	TBD	9-21	Extremely flaggy 22"+

* Deeper depth 24 in above rock or bottom of excavation

= Not Evaluated

Drainage Area Plans

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