

17 S. Gordon's Alley, Suite 3  
Atlantic City, New Jersey 08401  
Phone (609) 300-5171  
[www.sciulloengineering.com](http://www.sciulloengineering.com)

May 7, 2020

SCA 003.01

**Patricia Racz, Planning Board Secretary**  
**City of Pleasantville**  
18 North First Street  
Pleasantville, NJ 08232

**RE: Preliminary & Final Major Site Plan Application**  
**Spyglass QOZB, LLC**  
**Block 255, Lot 1**  
**Franklin Boulevard & Ansley Boulevard**  
**City of Pleasantville, Atlantic County, New Jersey**

Dear Ms. Racz:

Sciullo Engineering Services, LLC ("SE") is the consulting engineer assisting Spyglass QOZB, LLC (the "Owner/Applicant") with the above referenced project. On behalf of the Owner/Applicant, we are submitting this Preliminary and Final Major Site Plan application for approval of a mixed-use project on the former Pleasantville High School site.

The project site is in the Lakes Bay Redevelopment Area. The proposed development conforms to the standards in the redevelopment plan for that area prepared by Rutala Associates on behalf of the City. There are no variances or design waivers requested as part of this application. As you can see in the attached documents, the development consists of 180 market rate apartments in 6 buildings, a waterfront commercial area along the bulkhead of Tunis Basin, and a new boulevard style roadway to replace the portion of Ansley Boulevard against the bulkhead. There are also provisions for a bike path to connect Franklin Boulevard to the future redevelopment of Jokers Field to the east of this site that will become a Green Acres open space park as part of a separate future project. The project was designed to connect the recent streetscape improvements on Main Street that will extend east on Ansley Boulevard to the Lakes Bay waterfront. There is also additional public benefit in the form of upgraded storm sewer systems and sidewalk around the site.

We understand there are challenges regarding holding public hearings due to current public health directives. Please be advised our team has recently participated in multiple public hearings using electronic platforms and take no issue with this project being scheduled for a public hearing in that manner. As such, we respectfully request

to be heard for approval as soon as possible to ensure the project timeline is not delayed.

Enclosed please find the following for your review:

1. City of Pleasantville Application Package for Land Use Approval (1 original, 3 copies);
2. Submission Waiver Justification Narrative prepared by SE, dated May 6, 2020 (4 copies);
3. Engineering plans prepared by SE entitled "Spyglass at Lakes Bay, Preliminary & Final Site Plans" dated May 5, 2020 (4 sets, 13 sheets each);
4. Stormwater Management Report prepared SE, dated April 2020 (4 copies);
5. Architectural plans prepared by Thomas J. Brennan Architects, dated May 1, 2020 (4 sets, 7 sheets each)
6. Landscape plans prepared by Sikora Wells-Appel, dated May 5, 2020 (4 sets, 3 sheets each);
7. Traffic Engineering and Air quality Assessment report prepared by Shropshire Associates, dated May 3, 2020 (4 copies);
8. Topographic Survey prepared by Stephen C. Martinelli Land Surveying, LLC, dated August 18, 2017 (4 copies, 1 sheet each).

Thank you for your assistance with completion of this application. We look forward to working with you through the approval process. Please advise when we are deemed administratively complete and let us how many additional copies of any documents may be necessary for distribution to the Board and/or their professionals. Should you have any questions or require additional information, please feel free to contact me at (609) 300-5171 or [jsciullo@sciulloengineering.com](mailto:jsciullo@sciulloengineering.com).

Sincerely,

**Sciullo Engineering Services, LLC**



Jason T. Sciullo, PE, PP, CFM  
Principal Engineer

Cc: Sean Scarborough, Applicant (via email)  
John Ridgway, Esq. (via email)  
Tom Brennan, Brennan Architects (via email)  
Joe Sikora, Sikora-Wells Appel (via email)  
Nathan Mosley, Shropshire Associates (via email)  
Mike Lucey, Waters Edge Environmental (via email)

**APPLICATION PACKAGE  
for  
LAND USE APPROVAL**

**pursuant to the**

**LAND MANAGEMENT CODE  
(Chapter 300)  
CITY OF PLEASANTVILLE  
Atlantic County, New Jersey**

**Jesse L. Tweedle, Sr.  
Mayor**

with offices located at

18 North First Street

Pleasantville, New Jersey 08232

Planning Board Secretary: (609) 677-4805

Zoning Board Secretary: (609) 677-4805

Zoning Officer: (609) 484-3614

Fax: (609) 677-4804

**ORIGINAL**



**APPLICATION PACKAGE  
for  
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City of Pleasantville**

**APPLICATION STATUS CHECKLIST**  
(To Be Completed By Municipal Staff)

Application Filed:

\_\_\_\_/\_\_\_\_/\_\_\_\_

Application Fees & Escrow Deposits Paid-In-Full:

\_\_\_\_/\_\_\_\_/\_\_\_\_

\$ \_\_\_\_\_

Application Referred to Zoning Officer for Completeness Review

\_\_\_\_/\_\_\_\_/\_\_\_\_

Application Deemed Complete:

\_\_\_\_/\_\_\_\_/\_\_\_\_

Proof of Public Notice Submitted (where applicable):

\_\_\_\_/\_\_\_\_/\_\_\_\_

(    ) Planning (    ) Zoning Board Meeting Schedule for:

\_\_\_\_/\_\_\_\_/\_\_\_\_

Application Approved:

\_\_\_\_/\_\_\_\_/\_\_\_\_

with conditions (specify):

Application Denied:

\_\_\_\_/\_\_\_\_/\_\_\_\_

Unused Escrow Returned:

\_\_\_\_/\_\_\_\_/\_\_\_\_

\$ \_\_\_\_\_

Additional Escrow Deposit Requested:

\_\_\_\_/\_\_\_\_/\_\_\_\_

\$ \_\_\_\_\_

Final Plan Certification:

\_\_\_\_/\_\_\_\_/\_\_\_\_



**APPLICATION PACKAGE  
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**APPLICATION PACKAGE  
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City of Pleasantville**

**1.0 INTRODUCTION**

1.1 This Land Use Application Package provides a summary of the requirements for making Application for Land Use Approval to the City of Pleasantville. As such, this Package is intended to provide Applicants and prospective Applicants with the information necessary to prepare and submit complete and comprehensive applications for:

- Zoning Permits;
- Site Plan Approval;
- Subdivision Approval;
- Variance Relief;
- Appeals or Interpretations of decisions of the Zoning Officer;
- Certificates of Nonconformity; and/or
- Certificates of Redevelopment Plan Conformance.

1.2 All applications require conformance with Pleasantville's Land Management Code. Certain applications may require conformance with the following agencies, whose review processes are beyond the scope of this Application Package:

- The Atlantic County Planning Board;
- The Cape Atlantic Soil Conservation District;
- The New Jersey Department of Environmental Protection;
- The NJ Department of Transportation; and/or
- City of Pleasantville Storm / Wastewater Management Division
- City of Pleasantville Fire Official

**ACCORDINGLY, APPLICANTS AND PROSPECTIVE APPLICANTS ARE ENCOURAGED TO CONSULT EXPERIENCED LAND USE PROFESSIONALS<sup>60</sup> PRIOR TO MAKING ANY APPLICATION.**

Additional information regarding the Land Use Application process may be obtained by consulting:

A. The Land Management Code (Chapter 300) of the City of Pleasantville, with updates as indicated therein.<sup>61</sup>

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<sup>60</sup> Including, but not limited to, Attorney's, Professional Engineers, Professional Land Surveyors and Professional Planners licensed to practice in the State of New Jersey. **By Law, corporations must be represented by an attorney.**

<sup>61</sup> On file with the Pleasantville City Clerk and available for purchase with applicable copy charges as established by Ordinance.



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- B. The New Jersey Municipal Land Use Law (N.J.S.A. 40:55D-1 et seq.)
- C. Patricia Racz, Planning Board & Zoning Board Secretary @ (609) 677-4805  
Kevin Cain, Pleasantville Zoning Officer @ (609) 484-3614  
Norman Zlotnick, Esquire: Planning Board Solicitor @ (609) 344-1173  
Ronald Bloom, Esquire: Zoning Board Solicitor @ (609) 677-5551  
David S. Scheidegg, P.E., P.P. CME: Planning Board Engineer @ (609) 625-7400  
Jennifer Beahm, P.P.: Planning Board Planner @ (732) 462-7400  
Debra Wahl, P.E., P.P., Zoning Board Engineer @ (609) 646-3111  
Stuart B. Wiser, P.P. AICP: Zoning Board Planner @ (609) 645-7110



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**2.0 SUBMISSION PROCEDURES**

**Throughout this Application Package, references to “Subject Property” shall mean the property(ies) for which Land Use Approval is being requested.**

2.1 All Applications for Land Use Approval shall consist of the following, to be submitted to the Zoning Office or Planning or Zoning Board Secretary as applicable. Applicants are urged to submit all required items in as complete a manner as possible so that the City can expeditiously process the application. Legal time limits to approve applications will not commence until the application is deemed Complete.

A. The required number of copies of the completed Application Form, all necessary plans, plats and drawings, narrative and other information pursuant to the applicable Application Checklist(s). Applicants are reminded that certain types of documentation require preparation by a New Jersey licensed professional;<sup>62</sup>

**Applicants are required to sign and date the bottom of *each page* of the Land Use Application Form, including all pages of all applicable Application Checklist(s). By so signing, the Applicant or agent for the Applicant certifies that he/she has read and understood these instructions and that the Application Form and all Checklists have been completed honestly and truthfully.**

B. Verification from Pleasantville Tax Collector that all taxes due and owing on the Subject Property have been paid or that adequate provision for their payment has been made in a manner satisfactory to the City;

C. Samples of public notices to be published and mailed, as required; and

D. All appropriate Fees and Escrow Deposits.

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<sup>62</sup> Including, but not limited to, Attorney's, Professional Engineers, Professional Land Surveyors and Professional Planners licensed to practice in the State of New Jersey. By Law, corporations must be represented by an attorney.



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**3.0 TYPES OF APPLICATIONS**

3.1 Applications which do not require Site Plan approval, Subdivision approval or Variance relief may be processed administratively by the Zoning Officer.

3.2 Applications for Minor Site Plan approval, Minor Subdivision approval, Preliminary and/or Final Major Site Plan approval and/or Preliminary and/or Final Major Subdivision approval are typically granted by the Planning Board. Submission requirements differ for each type of application.

Explanation of what constitutes a Minor or Major application and a Preliminary or Final application may be found in the City's Land Management Code.

3.3 Any of the foregoing may involve the need for bulk (generally, but not limited to, lot size or setback) variance relief. Such variances are known as 'c' variances.

Applications for 'c' variance relief, including Site Plan and Subdivision applications, may be approved by the Planning Board, or by the Zoning Board of Adjustment in cases where 'd' variance relief is also required.

3.4 'd' Variances include permission to use (or expand the use of) lands or buildings in areas (Zoning Districts) where the proposed use is not permitted, deviation from what is termed a Conditional Use standard under the City's Land Management Code, an increase in the floor area ratio or density permitted in a Zoning District and building height above 10' or 10% of what is permitted in a particular Zoning District. 'd' variances may only be approved by the Zoning Board of Adjustment.



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**4.0 COMPLETENESS**

- 4.1 All Applications shall be submitted **WITH** the appropriate Application Fees and Escrow Deposits for the Approval(s) being sought. For Completeness review, only one (1) copy of the Application Package need be submitted.
- 4.2 Upon receipt of an Application Package, the Board Secretary shall date-stamp the Application and verify that the proper forms and Checklists are completed and that the appropriate Fees and Escrows have been paid.
- 4.3 Once the Board Secretary is satisfied that the Application contains the appropriate Forms, Checklists Application Fees and Escrow Deposits, the Secretary shall deliver the Application Package to the Zoning Officer for a determination as to whether the Application complies with the submission requirements of Land Management Code (§300-27 Completeness).

The Zoning Officer, along with the City Planner or City Engineer, shall convene to review Applications for Completeness (typically) on the 2<sup>nd</sup> and 4<sup>th</sup> Tuesdays of the month. Applications must be submitted to the Board Secretary no less than seven (7) days prior to a particular meeting date for such Application to be reviewed for Completeness.

Under the New Jersey Municipal Land Use Law,<sup>63</sup> a determination of Completeness (or Incompleteness) must be made within 45 days of initial submission or said Application is automatically deemed Complete.

**HOWEVER, NO APPLICATION WILL BE REVIEWED FOR COMPLETENESS UNLESS ALL APPROPRIATE APPLICATION FEES AND ESCROW DEPOSITS HAVE BEEN SUBMITTED.**

Neither the Applicant nor the Applicant's professionals need appear at the Completeness review.

Applicants (or their professionals, as appropriate) shall be notified by the Board Secretary as to the determination of Completeness within seven (7) days of the review. Such notice shall either indicate that the Application was deemed Complete and scheduled for Zoning Officer review (in the case of an Application for a Zoning Permit) or a Board meeting (for all other Applications), or that the Application has been deemed Incomplete. In the latter case, the notice will include deficiencies found in the Application.

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<sup>63</sup> N.J.S.A. 40:55D-10.3



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- 4.4 Applications deemed Incomplete will not be scheduled until all deficiencies have been resolved and the Application is deemed Complete.
- 4.5 Complete Applications for Zoning Permits will be processed by the Zoning Officer within 10 days of the Determination of Completeness.
- 4.6 Complete Applications requiring Planning or Zoning Board Approval shall be processed as follows:
- A. Applicant's shall submit to the Board Secretary the full number of copies of the Application Package as required by the applicable Application Checklist. Once such copies are submitted, the Board Secretary shall schedule the Application to be heard by the Appropriate Board.
  - B. Applicants must attend the Board meeting. Corporate Applicants must be represented by an attorney.
  - C. Planning Board meetings are (typically) held on the 1<sup>st</sup> Tuesday of the month. Meetings of the Zoning Board of Adjustment are (typically) held on the 4<sup>th</sup> Monday of the month. All meetings are held in the Municipal Court Room (Council Chambers) at the Pleasantville Police Complex, 17 N. First Street, Pleasantville New Jersey. All meetings begin promptly at 7:00.

Legal Holidays can impact the aforementioned meeting dates. Applicants are therefore urged to carefully note the *actual date* the Application has been scheduled.

While Applications are typically decided at a single meeting, the Planning Board and Zoning Board of Adjustment, as the case may be, reserve the right to continue the hearing on an Application for more than one meeting should the complexity of the Application so require. In such instance, and unless otherwise directed by the respective Board, no additional public notice shall be required.

Both the Planning Board and the Zoning Board of Adjustment attempt to set realistic meeting agendas, to hear applications on the date scheduled and to render decisions at the meeting the application is heard. However, situations do occur where an application can not be heard or completed on the date scheduled. In such an instance, the Board and Applicant will reschedule the hearing to a mutually-agreeable date, with no additional public notice required.



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- 4.7 **APPLICANTS ARE HEREBY ADVISED THAT A REVIEW FOR COMPLETENESS IS LIMITED TO CONFORMANCE WITH THE CHECKLIST(S)<sup>64</sup> APPROPRIATE TO THE SUBJECT APPLICATION. DETERMINATION OF COMPLETENESS (OR INCOMPLETENESS) SHALL NOT BE CONSTRUED AS A DETERMINATION AS TO THE TECHNICAL SUFFICIENCY OF ANY SUBMISSION ITEM.**
- 4.8 Questions regarding this procedure shall be addressed to the Zoning Officer @ (609) 484-3614.
- 4.9 **ALL LAND USE APPLICATION FORMS SHALL BE TYPED OR LEGIBLY PRINTED. DIFFICULTY READING AN ITEM MAY CAUSE CONFUSION WHICH MAY DELAY PROCESSING OF THE APPLICATION AND THE MEETING ON THE MATTER.**

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<sup>64</sup> Contained in this Land Use Application Package.



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**5.0 PUBLIC NOTICE REQUIREMENTS**

Once an Application has been deemed Complete and a meeting date scheduled, all applications to the Planning Board or Zoning Board of Adjustment are required to issue notice of the Subject Application by certified mail or hand delivery to all property owners within 200' of the Subject Property.

A Certified List of such property owners may be purchased from the City's Tax Assessor and is required to be included in the Application Package as part of the Completeness review. The List **must be less than three (3) months old** to be considered current.

Such notice must be accomplished at least 10 days prior to the scheduled meeting date (with the date of the meeting not counting toward the 10-day period).

In addition to mailed or hand delivered notice, notice must be published in either The Press of Atlantic City or the Mainland Journal at least 10 days prior to the scheduled meeting date (with the date of the meeting not counting toward the 10-day period). It is the Applicant's responsibility to make such notice.

An Affidavit indicating Proof of Notification must be submitted to the Board Secretary not less than seven (7) days prior to the Board meeting on the matter. For Certified mailings, such Affidavit shall be accompanied by the (white) "Return Receipt Requested" slips from the postal service. For hand delivered notices, such Affidavit shall be accompanied by a copy of the notice which has been signed and dated by the noticed property owner. For published notice, a copy of the legal advertisement, with publication name and date shall be provided.

Such Affidavit shall be signed by the Applicant, whose signature shall be attested by a Notary Public.

**Failure to notice properly or to provide evidence of proper notice will prevent the respective Board from meeting the application as scheduled; thereby requiring a rescheduling of the Application and the requirement that the Applicant reissue proper notice at his/her own cost and expense.** An example of appropriate notice language is included on the following page(s):



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**6.0 POST HEARING ACTIONS**

After completion of the hearing, the Planning Board or Zoning Board of Adjustment, as the case may be, shall vote to approve the Application, deny the Application or approve the Application with conditions.

The City shall advertise the action taken by the Board in The Press of Atlantic City or the Mainland Journal not more than 10 days after the Board action.

The action taken by the Board will be memorialized by a Decision & Resolution of the Board, which will be prepared by the Board Solicitor after the vote and approved by the Board at the next Board meeting after the vote is taken. An Application is not considered officially approved until the Decision and Resolution has been approved.

The Applicant shall submit all final plans and other documentation made a condition of the approval. In addition to paper copies, plats or plans shall be submitted in portable document format (".pdf") on CD-ROM. [This requirement may be waived, at the discretion of the Planning Board or Zoning Board of Adjustment, as the case may be, in cases where Applications require no professional assistance.]



**APPLICATION PACKAGE  
for  
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**FORM 1: NOTICE OF APPLICATION  
TO PROPERTY OWNERS  
WITHIN 200' OF SUBJECT PROPERTY**

**TAKE NOTICE THAT:**

As the owner of a property listed on the official tax records of the City of Pleasantville as being within 200' of my Property, you are hereby notified that I, \_\_\_\_\_, being the undersigned Applicant, have made application to [check one] ( ) the Planning Board of the City of Pleasantville or ( ) the Zoning Board of Adjustment of the City of Pleasantville for [check all that apply]:

- |   |  |
|---|--|
| ( ) Preliminary Major Site Plan Approval;   | ( ) 'c' Variance Relief;                           |
| ( ) Final Major Site Plan Approval;         | ( ) 'd' Variance Relief; and/or                    |
| ( ) Preliminary Major Subdivision Approval; | ( ) Certificate of Nonconformity                   |
| ( ) Final Major Subdivision Approval;       | ( ) Certificate of Redevelopment Plan Conformance. |
| ( ) Waiver of Site Plan Approval;           |  |

In accordance with the requirements of the Land Management Code of the City of Pleasantville (Chapter 300 of the Pleasantville City Code). Such Approval(s) / Relief / Certificate will permit me to:

*Description of Application, including requested deviations from the specific section(s) of the Pleasantville Land Management Code and the nature of such deviations:*

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at my property located : \_\_\_\_\_

Block: \_\_\_\_\_ Lot(s): \_\_\_\_\_

in the City of Pleasantville, Atlantic County, New Jersey.

A Public Hearing has been scheduled on this matter for (insert date) \_\_\_\_\_, 201\_\_\_\_ at 7:00 p.m. in the Municipal Court Room, Police Complex, 17 North First Street, Pleasantville, New Jersey, at which time you may appear either in person or by agent or attorney to present any objection, support or other comments you may have regarding the Subject Application.

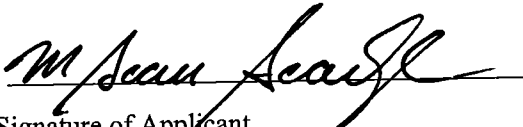


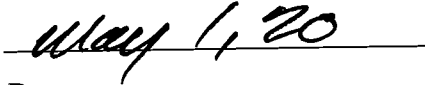
**APPLICATION PACKAGE  
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City of Pleasantville**

Documentation related to this Application, including all maps, plans, plats, surveys and other information, is available for public inspection at least 10 days prior to the aforementioned hearing in the office of the Board Secretary, City Hall Annex, 132 West Washington Avenue, Pleasantville, New Jersey during regular business hours (8:30 a.m. to 4:30 p.m., Monday through Friday).

This Notice is sent to you as the owner of a property listed on the City's official tax records as being within 200' of the Subject Property by order of the Pleasantville [check one] ( ☐ ) Planning Board or ( ☐ ) Zoning Board of Adjustment in compliance with N.J.S.A. 40:55D-11 et seq. and N.J.S.A. 40:55D-12 et seq.

Respectfully,

  
Signature of Applicant

  
Date



APPLICATION PACKAGE  
for  
LAND USE APPROVAL  
City of Pleasantville

FORM 2: NOTICE OF APPLICATION  
FOR PUBLICATION

TAKE NOTICE THAT:

\_\_\_\_\_, being the undersigned Applicant, has made application to [select one] ( )  
the Planning Board of the City of Pleasantville or ( ) the Zoning Board of Adjustment of the City of  
Pleasantville for [select all that apply]:

- |   |   |
|---|---|
| ( ) Preliminary Major Site Plan Approval;   | ( ) 'c' Variance Relief;                              |
| ( ) Final Major Site Plan Approval;         | ( ) 'd' Variance Relief; and/or                       |
| ( ) Preliminary Major Subdivision Approval; | ( ) Certificate of Nonconformity                      |
| ( ) Final Major Subdivision Approval;       | ( ) Certificate of Redevelopment Plan<br>Conformance. |
| ( ) Waiver of Site Plan Approval;           |   |

In accordance with the requirements of the Land Management Code of the City of Pleasantville (Chapter 300 of the Pleasantville City Code). Such Approval(s) / Relief / Certificate will permit:

*Description of Application, including requested deviations from the specific section(s) of the Pleasantville Land Management Code and the nature of such deviations:*

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at the property located : \_\_\_\_\_

Block: \_\_\_\_\_ Lot(s): \_\_\_\_\_

in the City of Pleasantville, Atlantic County, New Jersey.

A Public Hearing has been scheduled on this matter for (insert date) \_\_\_\_\_, 201\_\_\_\_ at 7:00 p.m. in the Municipal Court Room, Police Complex, 17 North First Street, Pleasantville, New Jersey, at which time individuals may appear either in person or by agent or attorney to present any objection, support or other comments regarding the Subject Application.



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**for**  
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**City of Pleasantville**

Documentation related to this Application, including all maps, plans, plats, surveys and other information, is available for public inspection at least 10 days prior to the aforementioned hearing in the office of the Board Secretary, City Hall Annex, 132 West Washington Avenue, Pleasantville, New Jersey during regular business hours (8:30 a.m. to 4:30 p.m., Monday through Friday).

This Notice is made in compliance with N.J.S.A. 40:55D-11 et seq. and N.J.S.A. 40:55D-12 et seq.

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Name of Applicant



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for  
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FORM 3: AFFIDAVIT OF SERVICE

STATE OF NEW JERSEY) ss.

COUNTY OF ATLANTIC)

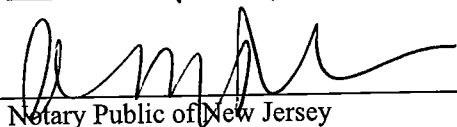
I, \_\_\_\_\_, of full age, being duly sworn according to law, under oath, deposes and says, that I reside at \_\_\_\_\_ in the City of \_\_\_\_\_, County of \_\_\_\_\_, State of \_\_\_\_\_, that I am the Applicant or Agent for the Applicant in a proceeding before the Planning Board and/or Zoning Board of Adjustment for the City of Pleasantville, Atlantic County, New Jersey, being an application under Land Management Code of the City of Pleasantville, New Jersey, which has the Application Number \_\_\_\_\_ and relates to the premises at \_\_\_\_\_, also known as Block \_\_\_\_\_, Lot(s) \_\_\_\_\_ on the official Tax Map of the City of Pleasantville.

I further depose and say that I gave notice to each and all owners of property affected by said application as required by N.J.S.A. 40:55D-11 et seq. and N.J.S.A. 40:55D-12 et seq. as well as the Pleasantville Land Management Code by personal service or by Certified mail on \_\_\_\_\_, 201\_\_\_\_, such date being not less than 10 days prior to the scheduled hearing on such matter.

A true copy of such notice is attached to this Affidavit as Exhibit A hereto, together with a list of owners of property within 200' of the Subject Property upon whom notice was served, with Block and Lot number indicated, as prepared by the City Tax Assessor (attached as Exhibit B. hereto).

  
Applicant's Signature

Sworn to and subscribed before me this  
Day of May, 2020.

  
Notary Public of New Jersey

AMY BARRON  
NOTARY PUBLIC OF NEW JERSEY  
My Commission Expires May 18, 2021



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for  
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City of Pleasantville

FORM 4: APPLICATION FOR LAND USE APPROVAL

TO BE COMPLETED BY MUNICIPAL STAFF

Application Filed: \_\_\_\_/\_\_\_\_/\_\_\_\_ Application No.: \_\_\_\_\_  
Received By: \_\_\_\_\_ Application Fees: \_\_\_\_\_  
Application Found Complete: \_\_\_\_/\_\_\_\_/\_\_\_\_ Escrow Number: \_\_\_\_\_  
Application Found Incomplete: \_\_\_\_/\_\_\_\_/\_\_\_\_ Escrow Deposit: \_\_\_\_\_

TO BE COMPLETED BY THE APPLICANT

**Applicant**

Applicant's Name: Spyglass QOZB, LLC  
Address: 6 W. Roosevelt Boulevard  
Marmora, NJ 08223  
Phone No.: 609-904-5444 Fax No.: \_\_\_\_\_

**Agent for Applicant (if applicable)**

Agent's Name: N/A  
Address: \_\_\_\_\_  
Phone No.: \_\_\_\_\_ Fax No.: \_\_\_\_\_

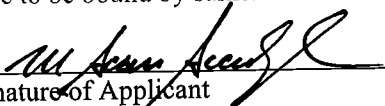
**Subject Property**

Street Address: Franklin Boulevard & Ansley Boulevard  
Block(s): 255 Lot(s): 1  
Zoning Districts: WFC & Lakes Bay Redevelopment Plan

**Application is being made to:**

( ) Zoning Officer ( ) Zoning Board of Adjustment (X) Planning Board

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

May 1, 20  
Date



**APPLICATION PACKAGE  
for  
LAND USE APPROVAL  
City of Pleasantville**

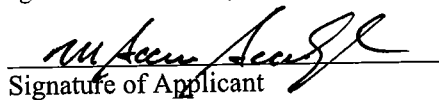
**APPLICATION IS BEING MADE FOR:**

- ☐ Zoning Permit under N.J.S.A. 40:55D-18
- ☐ Preapplication Conference under N.J.S.A. 40:55D-10.1
- ☐ Minor Site Plan Approval under N.J.S.A. 40:55D-46.1
- ☒ Preliminary Major Site Plan Approval under N.J.S.A. 40:55D-46
- ☒ Final Major Site Plan Approval under N.J.S.A. 40:55D-50
- ☐ Waiver of (under N.J.S.A. 40:55D-10.3):
  - ☐ Preliminary or
  - ☐ Final Major Site Plan Approval, or
  - ☐ Both
- ☐ Minor Subdivision Approval under N.J.S.A. 40:55D-47
- ☐ Major Subdivision Approval under N.J.S.A. 40:55D-48
- ☐ Variance Relief under N.J.S.A. 40:55D-70(c)
- ☐ Amendment or Revision to Existing Approval
- ☐ Extension of Prior Approval under N.J.S.A. 40:55D-52
- ☒ Certificate of Redevelopment Plan Conformance under N.J.S.A. 40A:12A-1 et seq.

*[As relates solely to the jurisdiction of the Zoning Board of Adjustment]*

- ☐ Directing the issuance of a building permit for construction ( ☐ ) in the bed of mapped street, public drainage-way, flood control basin or public area under N.J.S.A. 40:55D-60(b) or ( ☐ ) on a lot not abutting an approved public street under N.J.S.A. 40:55D-60(c)
- ☐ Appeal from action of the Administrative Officer under N.J.S.A. 40:5D-70(a)
- ☐ Map or other Interpretation or Special Question under N.J.S.A. 40:55D-70(b)
- ☐ Variance relief under N.J.S.A. 40:55D-70(d)
- ☐ Certificate of Nonconformity under N.J.S.A. 40:55D-70(d)
- ☐ Any of the foregoing where Application for Site Plan approval is to follow.

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

5/11/20  
Date



APPLICATION PACKAGE  
for  
LAND USE APPROVAL  
City of Pleasantville

**FORM 5: OWNERSHIP INFORMATION & CORPORATE DISCLOSURE**  
(To be completed by the Owner of Record of the Subject Property)

Owner's Name: Spyglass QOZB, LLC  
Address: 6 W. Roosevelt Boulevard  
Marmora, NJ 08223  
Phone No.: 609-904-5444 Fax No.: \_\_\_\_\_  
Email Address: sean@scarboroughproperties.com

Date Owner purchased the Subject Property: 12 31 2019

Was Subject Property purchased from the City of Pleasantville: ☒ Yes  
☐ No

If not the Owner, Applicant's standing to bring Application:

☐ Lessee ☐ Contract Purchaser ☐ Other

Attach Lease, Contract to Purchase or other proof of relationship as applicable.

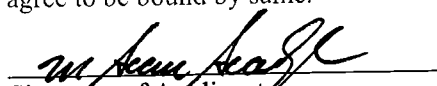
Applicant is a(n) (check one):

☐ Individual ☐ Corporation ☐ Partnership  
☒ Limited Liability Corporation (LLC) ☐ Limited Liability Partnership (LLP)

If Applicant is not an individual,

Name of Corporation, Partnership, LLC or LLP: Spyglass QOZB, LLC  
Official empowered to complete this Disclosure on behalf of the Corporation, Partnership, LLC or  
LLP: Sean Scarborough  
Address: 6 W. Roosevelt Boulevard  
Marmora, NJ 08223  
Phone No.: 609-904-5444 Fax No.: \_\_\_\_\_  
Email Address: sean@scarboroughproperties.com

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

May 1, 20  
Date



**APPLICATION PACKAGE**  
**for**  
**LAND USE APPROVAL**  
**City of Pleasantville**

Pursuant to N.J.S.A. 40:55D-48.1, Applicants must disclose the names and addresses of all persons owning 10% or more of the stock in a corporate applicant or 10% or more interest in a partnership applicant. N.J.S.A. 40:55D-48.2 provides that such disclosure applies to any corporation or partnership which owns 10% or more interest in any entity subject to disclosure under N.J.S.A. 40:55D-48.1.

Where a corporation / partnership owns 10% or more of the stock / interest in the Applicant or in another corporation / partnership so reported, this requirement shall apply to all non-corporate stockholders / individuals / partners qualifying under the 10% ownership criterion.

NAME & ADDRESS OF QUALIFYING INDIVIDUAL / ENTITY		DATE OF BIRTH (as applicable)	TAX ID NUMBER (if any)	POSITION	% INTEREST
M. Sean Scarborough	6 West Roosevelt Blvd. Marmora, NJ 08223	/ /		Member	50%
S. Todd Scarborough	6 West Roosevelt Blvd. Marmora, NJ 08223	/ /		Member	50%
		/ /			
		/ /			
		/ /			
		/ /			
		/ /			

(use additional sheets if necessary)

Signature of official empowered to complete the following Disclosure on behalf of the Corporation, Partnership, LLC or LLP (if additional sheets are necessary, such signature shall appear on each sheet):

Signature M Sean Scarborough

Date May 1, 20

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

Signature of Applicant M Sean Scarborough

Date May 1, 20



APPLICATION PACKAGE  
for  
LAND USE APPROVAL  
City of Pleasantville

FORM 6: PROJECT INFORMATION

Project Name: Spyglass at Lakes Bay

Present Use of the Subject Property: Vacant (Former High School)

Proposed Use of the Subject Property:

- ( ) Sale of Lot(s) (no construction proposed)  
( ) Construction of owner-occupied residential dwelling  
(X) Construction of (180) rental or ( ) for-sale residential dwellings  
( ) Construction of owner-occupied commercial or other use.

Specify: \_\_\_\_\_  
\_\_\_\_\_

- (X) Construction of rental or for-sale commercial or other use.

Specify: 6,000 SF retail and restaurant pads

- ( ) Other. Specify: \_\_\_\_\_  
\_\_\_\_\_

For each category (as applicable), provide number and type of units. For residential projects, include number of bedrooms per unit. For commercial projects, include the s.f. per unit:

72 1 BR Apartments \_\_\_\_\_

108 2 BR Apartments \_\_\_\_\_

6,000 SF Commercial in 4 Buildings \_\_\_\_\_

For residential projects, number of units to be deed restricted as "Affordable" under regulations established by the New Jersey Council on Affordable Housing (COAH): 0

Estimated cost of construction of Proposed Project: \$ TBD

Have any of the lands within the Subject Property been classified by any State or Federal Agency as Environmentally Sensitive, Wetlands, Riparian Lands, Brownfield, Greyfields or other applicable designation? (X) Yes ( ) No

If Yes, explain: Tidal Flood Hazard Area

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

M. Acme Acme  
Signature of Applicant

May 1, 20  
Date



**APPLICATION PACKAGE**  
**for**  
**LAND USE APPROVAL**  
**City of Pleasantville**

If No, is there any indication that the Subject Property might contain subsurface or groundwater contamination? ( ) Yes (X ) No

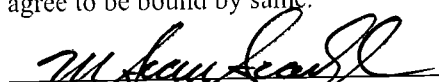
If Yes, explain: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Other than what is required by the City of Pleasantville, are any other approvals required for the Proposed Project? (X ) Yes ( ) No

If yes, specify (as applicable)

GOVERNMENTAL AGENCY OR PRIVATE ENTITY	YES	NO	DATE SUBMITTED	STATUS OF APPROVAL
City of Pleasantville Storm / Wastewater Division	X		___/___/___	Pending
Atlantic County Board of Health			___/___/___	
Atlantic County Health Department			___/___/___	
Atlantic County Planning Board			___/___/___	
Cape Atlantic Soil Conservation District	X		___/___/___	Pending
NJ Department of Environmental Protection	X		___/___/___	Pending
NJ Department of Transportation			___/___/___	
NJ Council on Affordable Housing			___/___/___	
NJDEP TWA Other	X		___/___/___	Pending
Other			___/___/___	
Other			___/___/___	

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

  
Date



**APPLICATION PACKAGE**  
**for**  
**LAND USE APPROVAL**  
**City of Pleasantville**

**FORM 7: ZONING CONFORMANCE**

(if multiple Principal buildings, provide information for all buildings)

Zoning District in which Subject Property is located:

**Residential Zoning Districts**

- ☐ Single-Family Residential 50 (SFR-50)
- ☐ Single-Family Residential 60 (SFR-60)
- ☐ Single-Family Residential 75 (SFR-75)
- ☐ Residential Duplex (R-D)
- ☐ Multi-Family (MF)

**Commercial Zoning Districts**

- ☐ Central Business District (CBD)
- ☐ Neighborhood Commercial (NC)
- ☐ General Commercial (GC)
- ☐ Regional Commercial (RC)
- ☐ Regional Shopping Center (RSC)
- ☐ Light Industrial (LI)

**Specialty Zoning Districts**

- ☐ Bayside Mixed-Use (BMU)
- ☐ Cemetery (CEM)
- ☐ Conservation (CONSERV)
- ☐ Waterfront Residential (WR)

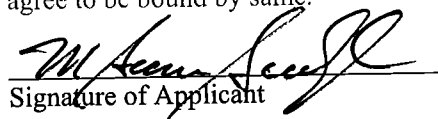
**Overlay Zoning Districts**

- ☐ Bayside Mixed Use Overlay Zone
- ☐ City Center Support Overlay
- ☐ Franklin Boulevard Professional Office Overlay
- ☐ Main Street Neighborhood Commercial Overlay
- ☐ New Road Professional Office Overlay

**Redevelopment Plans**

- ☐ Block 189 Rehabilitation Area
- ☐ California Avenue Rehabilitation Area
- ☐ CARA Cambria Avenue Redevelopment Area
- ☐ CCRA Center City Redevelopment Area
- ☒ LBRA Lakes Bay Waterfront Redevelopment Area
- ☐ NARA Narcissus Avenue Rehabilitation Area
- ☐ WTRA Woodland Terrace Rehabilitation Area

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

May 1, 20  
Date



**APPLICATION PACKAGE**  
**for**  
**LAND USE APPROVAL**  
**City of Pleasantville**

Lot Regulations for Zoning District in which Subject Property is located:

	<u>Existing</u>	<u>Required</u>	<u>Proposed</u>
Lot Width (ft)	604 FT	200 FT	604 FT
Lot Depth (ft)	650 FT	200 FT	650 FT
Lot Size (s.f.)	9.38 Ac	2.0 Ac	9.38 Ac

Building Regulations for Zoning District in which Subject Property is located:

	<u>Existing</u>	<u>Required</u>	<u>Proposed</u>
Front Yard Setback (ft)	N/A	15' Hampden 30' Others	16 FT 49 FT
Side Yard Setback [L / R] (ft)	N/A /	10 FT /	17 FT /
Rear Yard Setback (ft)	N/A	20 FT	N/A
Impervious Coverage (%)	8%	90%	73.2%

Height and number of stories for Principal Building (if multiple Principal buildings, provide information for tallest building): 52 feet 4 stories

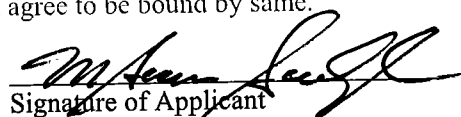
Does the Subject Project conform with all applicable requirements for the specific Zoning District in which the Subject Property is located as specified by the Pleasantville Land Management Code (Chapter 300)? ☒ Yes ☐ No

If No, explain nonconformities: \_\_\_\_\_  
\_\_\_\_\_

Have any variances, waivers of zoning interpretations been obtained as relates to the existing or proposed use of the Subject Property? ☐ Yes ☒ No

If Yes, explain: \_\_\_\_\_

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

May 1, 20  
Date



**APPLICATION PACKAGE**  
**for**  
**LAND USE APPROVAL**  
**City of Pleasantville**

**FORM 8: PROJECT PROFESSIONALS**

(use additional sheets if necessary)

Project Attorney: John Ridgeway, Ridgeway Legal  
Address: 15 Shore Road, PO Box 277  
Linwood, NJ 08221  
Phone No.: 609-927-0126 Fax No.: 609-927-1867  
Email Address: jridgway@ridgwaylegal.com

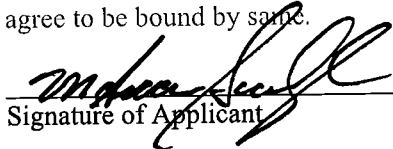
Project Engineer: Jay Sciallo, Sciallo Engineering Services, LLC  
Address: 17 S. Gordon's Alley, Suite 3  
Atlantic City, NJ 08401  
Phone No.: 609-300-5171 Fax No.: \_\_\_\_\_  
Email Address: jsciallo@scialloengineering.com

Project Planner: Jay Sciallo, Sciallo Engineering Services, LLC  
Address: 17 S. Gordon's Alley, Suite 3  
Atlantic City, NJ 08401  
Phone No.: 609-300-5171 Fax No.: \_\_\_\_\_  
Email Address: jsciallo@scialloengineering.com

Project Architect: Thomas Brennan, Thomas Brennan Architects  
Address: 3803 Parkwood Boulevard, Suite 700  
Frisco, Texas 75034  
Phone No.: 972-867-3948 Fax No.: 972-378-9416  
Email Address: tom@brennanarchitects.com

Project Surveyor: Dave Peifer, The Martinelli Group, LLC  
Address: 1217 S. Shore Road, Suite 106  
Ocean View, NJ 08226  
Phone No.: 609-390-9618 Fax No.: 609-390-9534  
Email Address: dave.martinellisurvey@verizon.net

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

May 1, 20  
Date

Traffic Engineer- Nathan Mosely

Shropshire Associates  
277 White Horse Pike, Suite 203  
Atco, NJ 08004  
Ph: 609-714-0400  
email:

Environmental Scientist: Mike Lucey

Waters Edge Environmental  
1259 A Asbury Avenue  
PO Box 118  
Ocean City, NJ 08226  
Ph: 609-249-3744  
email: mlucey@watersedgellc.com

Landscape Architect- Joe Sikora

Sikora Wells-Appel  
8 Kings Highway West, Suite A  
Haddonfield, NJ 08033  
Ph: 856-433-6380  
email: jsikora@sikora-wa.com



APPLICATION PACKAGE  
for  
LAND USE APPROVAL  
City of Pleasantville

FORM 9: CERTIFICATION OF PAYMENT OF TAXES

Date: \_\_\_\_\_

Applicant's Name: Spyglass QOZB, LLC

Subject Property

Address: Ansley Blvd & Franklin Blvd

Block: 255 Lot(s): 1

Qualification Code(s): \_\_\_\_\_

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TO BE COMPLETED BY THE PLEASANTVILLE TAX COLLECTOR

Taxes are paid and current through and including:	1Q	2Q	3Q	4Q	201_____
---	----	----	----	----	----------

The following taxes are unpaid and delinquent: \$\_\_\_\_\_ with interest  
calculated until: \_\_\_\_\_, 201\_\_\_\_\_.

---

Flor M. Roman  
Pleasantville Tax Collector

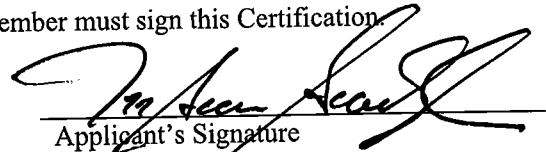
NO APPLICATION FOR LAND USE APPROVAL SHALL BE DEEMED COMPLETE WHERE  
TAXES ARE DUE



APPLICATION PACKAGE  
for  
LAND USE APPROVAL  
City of Pleasantville

FORM 10: CERTIFICATIONS

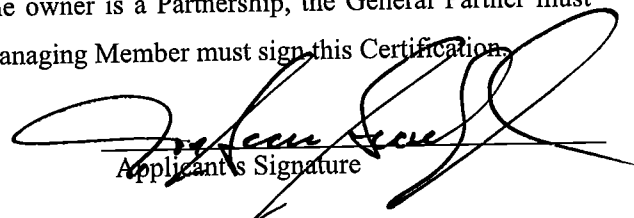
**APPLICANT:** I certify that the foregoing statements and the materials submitted are true. I further certify that I am that the individual Applicant or that I am an Officer of the Corporation who is the Applicant, and that I am authorized to sign the application for the Corporation, or that I am general partner of the partnership Applicant. If the Applicant is a Corporation, an authorized Corporate Officer must sign this Certification. If the Applicant is a Partnership, a General Partner must sign this Certification. If the Applicant is an LLC, the Managing Member must sign this Certification.

  
Applicant's Signature

Sworn to and subscribed before me this  
\_\_\_\_ Day of \_\_\_\_\_, 201\_\_\_\_.

\_\_\_\_\_  
Notary Public of New Jersey

**PROPERTY OWNER WHERE NOT APPLICANT:** I certify that I am the Owner of the property which is the subject of this application, that I have authorized the Applicant to make this Application and that I agree to be bound by the Application, the representations made by the Applicant and the decision of the Board in the same manner as if I were the Applicant. If the owner is a Corporation, an authorized Corporate Officer must sign this Certification. If the owner is a Partnership, the General Partner must sign this Certification. If the owner is an LLC, the Managing Member must sign this Certification.

  
Applicant's Signature

Sworn to and subscribed before me this  
1 Day of May, 2020.

  
\_\_\_\_\_  
Notary Public of New Jersey

**AMY BARRON**  
NOTARY PUBLIC OF NEW JERSEY  
My Commission Expires May 18, 2021



APPLICATION PACKAGE  
for  
LAND USE APPROVAL  
City of Pleasantville

FORM 11: CONSENT TO AN EXTENSION  
OF TIME FOR OFFICIAL ACTION  
(as applicable)

APPLICATION IS BEING MADE TO:

☐ Zoning Officer

☐ Zoning Board of Adjustment

☐ Planning Board

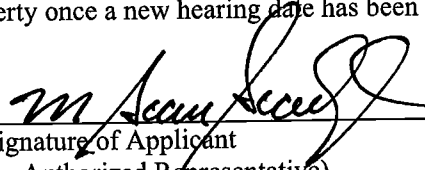
I, \_\_\_\_\_, being the undersigned Applicant or individual authorized to act for the Applicant, hereby consent to an extension of time within which the entity designated above shall be required to act on my Application.

I understand that such consent stops all time periods (deadlines) for the City to act on my application pursuant to the Municipal Land Use Law and the Pleasantville Land Management Code.

*For Applications to the Planning Board or Zoning Board of Adjustment:*

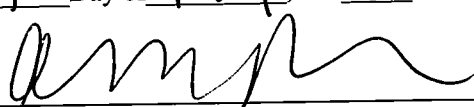
I understand that the City will make every effort to reschedule a hearing date on my application within a reasonable time period, but that it can not guarantee that my application will be heard at the next regularly-scheduled Board meeting.

I further understand that this request for extension will require me to issue or reissue a public notice to all property owners within 200' of my property once a new hearing date has been established.

  
\_\_\_\_\_  
Signature of Applicant  
(or Authorized Representative)

May 1, 20  
Date

Sworn to and subscribed before me this  
1st Day of May, 2020.

  
\_\_\_\_\_  
Notary Public of New Jersey

**AMY BARRON**  
NOTARY PUBLIC OF NEW JERSEY  
My Commission Expires May 18, 2021



APPLICATION PACKAGE  
for  
LAND USE APPROVAL  
City of Pleasantville

FORM 12: REQUEST FOR  
CERTIFIED LIST OF PROPERTY OWNERS

I, \_\_\_\_\_, being the undersigned Applicant or individual authorized to act for the Applicant, hereby request the names and addresses of the owners of record of every block and lot within 200' of the boundaries of the property known as:

Block: \_\_\_\_\_ Lot(s): \_\_\_\_\_


in the City of Pleasantville, Atlantic County, New Jersey.


I also request the name(s) and address(s) of:

- ☐ the Commissioner of the New Jersey Department of Transportation (if the Subject Property is located on a State Highway);
- ☐ the Atlantic County Planning Board (if the Subject Property is located on a County Highway);
- ☐ all public utility / CATV companies that may possess an easement or right-of-way within 200' of the Subject Property; and
- ☐ The municipal clerk for (if the Subject Property is located within 200' thereof);
  - ☐ City of Absecon
  - ☐ City of Atlantic City
  - ☐ City of Ventnor
  - ☐ City of Northfield
  - ☐ Egg Harbor Township

Requests for the Certified List shall be made by completing and delivering this form to the Pleasantville Tax Assessor. The List will be made available within 7 days from the date of this request.

Payment shall be made in the form of Check or Money Order, made payable to the City of Pleasantville, in the amount of \$10.00 for the first 40 names on the List plus an additional \$0.25 for each name thereafter.

  
\_\_\_\_\_  
Signature of Applicant  
(or Authorized Representative)

  
\_\_\_\_\_  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST A. General Requirements & Instructions

See §300-26 and 27 for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the Applicant.

The following series of Checklists were crafted to provide the City and its professionals with detailed information pertinent to each of the specific types of approvals or relief available to applicants. Applicants shall complete this Checklist A. for all applications except Applications for Zoning Permits, and shall complete Checklists C. through L. as applicable. Applicants requesting multiple approvals shall complete the appropriate Checklist for each approval requested.

Applications for Zoning Permits need only complete Checklist B.

Site Plans which include design of drainage, pavement, curbing, walkways, embankments, horizontal and vertical geometrics, utilities and other pertinent structures shall be prepared, signed and sealed by a New Jersey licensed Professional Engineer. A New Jersey Registered Architect may prepare a Site Plan if limited to general locations.

Topographical and Boundary Survey information, including all subdivisions, shall be provided by or attributed to a New Jersey licensed Professional Land Surveyor.

- X   1. One (1) original and fourteen (14) copies of:
- X   A. the completed Application Forms, all certifications and other components;
  - X   B. all required checklist(s) in completed form; and
  - X   C. all documents, reports, plats, plans, drawings and photographs relating to the Application.
- X   2. All plats, plans and drawings shall contain a Title Block, including:
- X   A. The name and title of the Application / Project, City of Pleasantville, Atlantic County;
  - X   B. The name, title, address, telephone and fax number of the Applicant;
  - X   C. The name, title, address, telephone and fax number of the person who prepared the plat, plan or drawing, including the New Jersey License number and original embossed seal with signature if the preparer is a New Jersey Licensed Land Surveyor, Professional Engineer, Professional Planner or Architect;
  - X   D. The name, address, telephone and fax number of the owner(s) of record of the Subject Property;

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST A.


#### General Requirements & Instructions

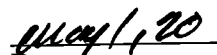
See §300-26 and 27 for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the Applicant.

- ☒ E. Written and graphic (bar) scale in inches to feet;
- ☒ F. North Arrow
- ☒ G. The original date that the plans were prepared, the date of each subsequent revision thereof and a list of specific revisions entered on each sheet.
- ☒ 3. Unless otherwise specified in Checklists C. through L., no plat, plan or drawings shall be accepted unless:
  - ☒ A. drawn to a scale of 1"=10', 1"=20', 1"=30', 1"=40', 1"=50' or 1"=60' for engineering drawings or 1/8"=1', 3/8"=1', 1/4"=1', 1/2"=1', 3/4"=1' or 1"=1' for architectural drawings, as per standard scales commercially available at any office supply store. **Items drawn to such scales but subsequently reduced or enlarged shall be summarily rejected.**
  - ☒ B. submitted on 24"x36" or larger sheet sizes, folded into eighths, with title block revealed. If one sheet is not sufficient to depict the entire tract, the plat, plan or drawing may be divided into sections and shown on separate sheets of equal size, with reference on each sheet as to the location of all adjoining sheets.
  - ☒ C. fully dimensioned to confirm conformity with all requirements.
  - ☒ D. dimensions are expressed to the nearest tenth of an acre when describing acreage or 2 decimal places when describing square feet of area or linear feet of distance. Bearings shall be given to the nearest 10 seconds and the error of closure shall not exceed 1 to 10,000.
- ☒ 4. A Key Map showing the entire parcel to be developed, the proposed development and the proposed street pattern, if any, within it, and the relationship of the tract to the surrounding area, with the proposed development shown in place, including all intersections and waterways within 300', at a scale not less than 1"=100', based on the City's official tax map. Where the scale of the map results in a street name not appearing, the Applicant shall legibly hand-print the missing street name.
- ☒ 5. Existing tax sheet with existing block and lot number(s) of the Subject Property(ies) as they appear on the current City Tax Map as well as all properties within 200' of the subject. Existing Street names of all streets bounding the subject property shall be clearly visible. Where the scale of the map results in a street name not appearing, the Applicant shall legibly hand-print the missing street name.

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST A. General Requirements & Instructions

See §300-26 and 27 for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the Applicant.

- X 6. Existing Zoning Map with existing block and lot number(s) of the Subject Property(ies) as they appear on the current City Tax Map as well as all properties within 200' of the subject. Existing Street names of all streets bounding the subject property shall be clearly visible. Where the scale of the map results in a street name not appearing, the Applicant shall legibly hand-print the missing street name.

Matrix containing the requirements of the Zoning District(s) in which the Subject Property(ies) are located, including the use(s) proposed, the bulk requirements of such District(s), and whether or not the proposed project conform(s) to such regulations. Such information shall be indicated on the plot or plan as well as a separate table.

- X 7. Recent Aerial photograph depicting the Subject Property and one (1) block in each direction from the Subject Property, dated and showing the location and size of structures and from other land uses as well as all access points to such uses.

2007 aerial photography is available at no charge from the NJGIN Information Warehouse ([https://njgin.state.nj.us/NJ\\_NJGINExplorer/IW.jsp?DLayer=NJ%202007%20Orthophotography](https://njgin.state.nj.us/NJ_NJGINExplorer/IW.jsp?DLayer=NJ%202007%20Orthophotography)). Should an applicant not be able to download such information, aerial photography from Google Earth, Microsoft Virtual Earth, Bing or other commercially available sources is acceptable.

- X 8. Neighborhood characteristic photographs depicting the Subject Property from the opposite side of the street as well as all properties fronting both sides of the street of the block on which the Subject Property is located.


Such photography shall be dated and keyed to a reproduction of the City's official tax map, at a scale of not less than 1"=60', with the Subject Property and all photographed properties indicated.

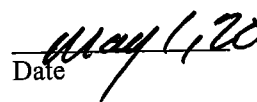
- X 9. A certified list of all property owners whose property is located within 200' of the extreme limits of the Subject Property, as they appear on the most recent tax list prepared by the Tax Assessor. Such list must be certified as current within three (3) months prior to the date of submission of the Subject Application. Such list shall include Owner's Name and Mailing Address as well as the Block number, Lot number and Property Address of the property within 200' of the Subject.

In addition to the Tax Assessor's (8½"x11") printout, such list shall be depicted on the plans.

- X 10. Certification that there are no outstanding uncollected fees or escrows resulting from past applications or prior submissions by the Applicant, or any entity now or previously related to the applicant, involving this property or any other properties connected with the Applicant within the City of Pleasantville. **No applications will be processed if the applicant owes the City or its professionals monies from previous applications.**

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST A. General Requirements & Instructions

See §300-26 and 27 for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the Applicant.

- N/A 11. Certification from the Zoning Officer and/or City Engineer that any conditions required as a result of any prior approval granted for the Subject Property have been fulfilled.
12. Certification from the City Tax Collector that all taxes and assessments are paid and current as of the date the Application is submitted, or that adequate provision for payments has been made in a matter satisfactory to the City.
- N/A 13. Statement regarding any prior Planning Board or Zoning Board of Adjustment appeal, approval or denial related to the Subject Property.
- N/A 14. Copies of protective covenants or deed restrictions affecting any portion of the Subject Property or any adjacent property (if obtainable).
- X   15. The location, width, legal (metes and bounds) description, use(s) for which they are intended, any limitations thereof and the manner of control or maintenance for all existing or proposed utility easements, right-of-way dedications and/or sight triangle dedication(s) affecting the Subject Property.

Items 14. and 15. are intended to address, but are not limited to, existing or proposed easements to telephone, electric, gas, water and sewer utilities; deed restrictions and covenants, master deeds and proposed by-laws of any homeowner's or community associations; proposed deeds to dedicate any portion of the affected property for public use or for ownership by any public body.

- X   16. **Detailed narrative** describing the existing use and condition of and the development proposed for the Subject property, addressing the individual lands and buildings therein, including a statement of the applicant's intent with respect to the ownership, sale and leasing of the project or the various components thereof.
- X   17. **Detailed narrative** justification for any requested waivers from any Checklist requirement. **Items which are not applicable shall be addressed as N/A.**
- X   18. **Detailed narrative** justification for any requested waiver(s) from any development standard and/or regulation where a variance is not required.
- X   19. Evidence that the Applicant has sufficient control over the Subject Property to effectuate the proposed development. Including, as appropriate:

N/A A. Property Owner's authorization to file the application when the Owner is not the Applicant.

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
\_\_\_\_\_  
Signature of Applicant

May 1, 20  
\_\_\_\_\_  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST A. General Requirements & Instructions

See §300-26 and 27 for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the Applicant.

X B. Notarized signature of the Applicant or Agent for the Applicant.

- X 20. All Application Fee(s) and Escrow Deposit(s), including Tax Map Update Fees for subdivisions or lot consolidations. **No application will be processed which does not include the appropriate Fees and Escrows.**


The Applicant shall be responsible to insure that Fees and Escrow Deposits are sufficient to address all approvals required, consistent with the Fee Schedule under §300-9. The City reserves the right to require additional Application Fees and Escrow Deposits should the review of the Application find that additional approvals are required.

Once such additional approvals have been identified, the City, and or its professionals shall immediately cease review of the subject application and issue a letter to the Board Secretary informing the Secretary of the situation. The Board Secretary shall immediately inform the Applicant of the necessity for additional funds. The review of the application shall not resume until the appropriate funds have been submitted.

- X 21. The Zoning Officer, Planning & Redevelopment Advisory Committee, Planning Board or Zoning Board of Adjustment, through their respective professionals, reserves the right to require such additional information as may be deemed necessary and appropriate for a full consideration of the entirety of the Subject Application.

While no application shall be deemed Incomplete for the lack of such information, the entities so indicated reserve the right to delay the granting of approvals until such information has been submitted and appropriately reviewed.

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

May 1, 20  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST B. Zoning Permits

See §300-26, 27 & 34 A. for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the Applicant.

This Checklist B. was crafted to provide the Zoning Officer with detailed information pertinent to development under §300-34. Applicants for such development shall complete this Checklist B., but are not required to complete Checklist A. or Checklists C. through L. However, Applicants requesting multiple approvals shall complete the appropriate Checklist for each approval requested.

Site Plans which include design of drainage, pavement, curbing, walkways, embankments, horizontal and vertical geometrics, utilities and other pertinent structures shall be prepared, signed and sealed by a New Jersey licensed Professional Engineer. A New Jersey Registered Architect may prepare a Site Plan if limited to general locations.

Topographical and Boundary Survey information, including all subdivisions, shall be provided by or attributed to a New Jersey licensed Professional Land Surveyor.

- \_\_\_\_\_ 1. One (1) original and fourteen (14) copies of:
- \_\_\_\_\_ A. the completed Application Form, all certifications and other components;
- \_\_\_\_\_ B. all required checklist(s) in **completed form**; and
- \_\_\_\_\_ C. all documents, reports, plats, plans, drawings and photographs relating to the Application.
- \_\_\_\_\_ 2. All plats, plans and drawings shall contain a Title Block, including:
- \_\_\_\_\_ A. The name and title of the Application / Project, City of Pleasantville, Atlantic County;
- \_\_\_\_\_ B. The name, title, address, telephone and fax number of the Applicant;
- \_\_\_\_\_ C. The name, title, address, telephone and fax number of the person who prepared the plat, plan or drawing, including the New Jersey License number and original embossed seal with signature if the preparer is a New Jersey Licensed Land Surveyor, Professional Engineer, Professional Planner or Architect;
- \_\_\_\_\_ D. The name, address, telephone and fax number of the owner(s) of record of the Subject Property;
- \_\_\_\_\_ E. Written and graphic (bar) scale in inches to feet;
- \_\_\_\_\_ F. North Arrow

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

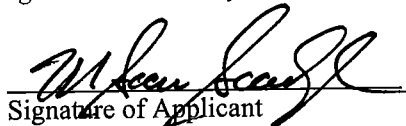
### CHECKLIST B. Zoning Permits

See §300-26, 27 & 34 A. for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the Applicant.

- \_\_\_\_\_ G. The original date that the plans were prepared, the date of each subsequent revision thereof and a list of specific revisions entered on each sheet.
- \_\_\_\_\_ 3. Unless otherwise specified, no plat, plan or drawings shall be accepted unless:
- \_\_\_\_\_ A. drawn to a scale of 1"=10', 1"=20', 1"=30', 1"=40', 1"=50' or 1"=60' for engineering drawings or  $\frac{1}{8}$ "=1',  $\frac{3}{8}$ "=1',  $\frac{1}{4}$ "=1',  $\frac{1}{2}$ "=1',  $\frac{3}{4}$ "=1' or 1"=1' for architectural drawings, as per standard scales commercially available at any office supply store. **Items drawn to such scales but subsequently reduced or enlarged shall be summarily rejected.**
- \_\_\_\_\_ B. submitted on 24"x36" or larger sheet sizes, folded into eighths, with title block revealed. If one sheet is not sufficient to depict the entire tract, the plat, plan or drawing may be divided into sections and shown on separate sheets of equal size, with reference on each sheet as to the location of all adjoining sheets.
- \_\_\_\_\_ C. fully dimensioned to confirm conformity with all requirements.
- \_\_\_\_\_ D. dimensions are expressed to the nearest tenth of an acre when describing acreage or 2 decimal places when describing square feet of area or linear feet of distance. Bearings shall be given to the nearest 10 seconds and the error of closure shall not exceed 1 to 10,000.
- \_\_\_\_\_ 4. Existing tax sheet with existing block and lot number(s) of the Subject Property as they appear on the current City Tax Map. Existing Street names of all streets bounding the subject property shall be clearly visible. Where the scale of the map results in a street name not appearing, the Applicant shall legibly hand-print the missing street name.
- \_\_\_\_\_ 5. Existing Conditions and Topographical Outbound Survey of the Subject Property, at a scale of not less than 1"=50', prepared by a New Jersey Licensed Land Surveyor, showing the property boundary lines and dimensions, structures, available utilities and easements, roadways, rail lines and public rights-of-way crossing and adjacent to the subject property.
- If Survey is dated more than 2 years prior to the date of submission of the Subject Application, an Affidavit of No Change, prepared by a New Jersey Licensed Land Surveyor, certifying that the submitted survey depicts the true existing conditions on the subject property.
- \_\_\_\_\_ 6. On a separate copy of the Survey required under item 5.
- \_\_\_\_\_ A. Scaled drawing depicting the location of all buildings, structures, walls, fences, signs, and other elements proposed for the site (with numerical dimensions, including height, to the nearest tenth of a foot).

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST B. Zoning Permits

See §300-26, 27 & 34 A. for further details regarding submission requirements and procedures.

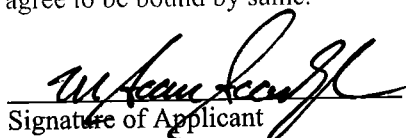
Each page of this Checklist must be signed and dated by the Applicant.

- \_\_\_\_\_ B. The dimensions of all yards in relation to the existing and proposed building(s) and the distances between such buildings and any other buildings on the same lot.
- \_\_\_\_\_ C. The distances between the proposed building(s) and any other buildings on adjacent lots (on both sides and the rear of the Subject Property).
- \_\_\_\_\_ 7. Recent Aerial photograph depicting a 200' radius from the extreme edges of the Subject Property, dated and printed / plotted at a scale not less than 1"=100', showing the location, use, size and height, in stories and feet, of structures and other land uses as well as all access points to such uses.

2007 aerial photography is available at no charge from the NJGIN Information Warehouse ([https://njgin.state.nj.us/NJ\\_NJGINExplorer/IW.jsp?DLayer=NJ%202007%20Orthophotography](https://njgin.state.nj.us/NJ_NJGINExplorer/IW.jsp?DLayer=NJ%202007%20Orthophotography)). Should an applicant not be able to download such information, aerial photography from Google Earth, Microsoft Virtual Earth, Bing or other commercially available sources is acceptable.
- \_\_\_\_\_ 8. Neighborhood characteristic photographs depicting the Subject Property from the opposite side of the street as well as all properties fronting both sides of the street of the block on which the Subject Property is located.

Such photography shall be dated and keyed to a reproduction of the City's official tax map, at a scale of not less than 1"=60', with the Subject Property and all photographed properties indicated.
- \_\_\_\_\_ 9. Certification that there are no outstanding uncollected fees or escrows resulting from past applications or prior submissions by the Applicant, or any entity now or previously related to the applicant, involving this property or any other properties connected with the Applicant within the City of Pleasantville. **No applications will be processed if the applicant owes the City or its professionals monies from previous applications.**
- \_\_\_\_\_ 10. Certification from the Zoning Officer and/or City Engineer that any conditions required as a result of any prior approval granted for the Subject Property have been fulfilled.
- \_\_\_\_\_ 11. Certification from the City Tax Collector that all taxes and assessments are paid and current as of the date the Application is submitted, or that adequate provision for payments has been made in a matter satisfactory to the City.
- \_\_\_\_\_ 12. Statement regarding any prior Planning Board or Zoning Board of Adjustment appeal, approval or denial related to the Subject Property.
- \_\_\_\_\_ 13. Copies of protective covenants or deed restrictions affecting any portion of the Subject Property or any adjacent property (if obtainable).

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

  
Date

3



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST B. Zoning Permits

See §300-26, 27 & 34 A. for further details regarding submission requirements and procedures.

**Each page** of this Checklist must be signed and dated by the Applicant.

- \_\_\_\_ 14. The location, width, legal (metes and bounds) description, use(s) for which they are intended, any limitations thereof and the manner of control or maintenance for all existing or proposed utility easements, right-of-way dedications and/or sight triangle dedication(s) affecting the Subject Property.

Items 13. and 14. are intended to address, but are not limited to, existing or proposed easements to telephone, electric, gas, water and sewer utilities; deed restrictions and covenants, master deeds and proposed by-laws of any homeowner's or community associations; proposed deeds to dedicate any portion of the affected property for public use or for ownership by any public body.

- \_\_\_\_ 15. **Detailed narrative** describing the existing use and condition of and the development proposed for the Subject property, including the number of dwelling units the building is designed to accommodate.
- \_\_\_\_ 16. **Detailed narrative** justification for any requested waivers from any Checklist requirement. **Items which are not applicable shall be addressed as N/A.**
- \_\_\_\_ 17. **Detailed narrative** justification for any requested waiver(s) from any development standard and/or regulation where a variance is not required.
- \_\_\_\_ 18. Evidence that the Applicant has sufficient control over the Subject Property to effectuate the proposed development. Including, as appropriate:

\_\_\_\_ A. Property Owner's authorization to file the application when the Owner is not the Applicant.

\_\_\_\_ B. Notarized signature of the Applicant or Agent for the Applicant.

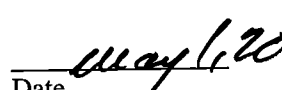
- \_\_\_\_ 19. All Application Fee(s). **No application will be processed which does not include the appropriate Fees.** The Applicant shall be responsible to insure that Fees are sufficient to address all approvals required, consistent with the Fee Schedule under §300-9. The City reserves the right to require additional Application Fees and, as applicable, Escrow Deposits should the review of the Application find that additional approvals are required.

Once such additional approvals have been identified, the City, and or its professionals shall immediately cease review of the subject application and issue a letter informing the Applicant of the necessity for additional funds. The review of the application shall not resume until the appropriate funds have been submitted.

- \_\_\_\_ 20. The Zoning Officer reserves the right to require such additional information as may be deemed necessary and appropriate for a full consideration of the entirety of the Subject Application. While no application shall be deemed Incomplete for the lack of such information, the entities so indicated reserve the right to delay the granting of approvals until such information has been submitted and appropriately reviewed.

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

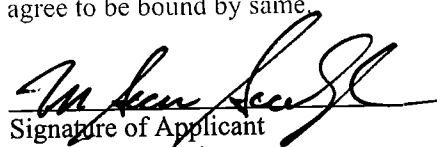
### CHECKLIST C. Preapplication Conference

See §300-26, 27 & 35 for further details regarding submission requirements and procedures.

**Each page** of this Checklist must be signed and dated by the Applicant.

- \_\_\_ 1. All General Checklist Requirements in such number as indicated in Checklist A.
- \_\_\_ 2. A Project Concept Plan and Description of Project Elements, clearly indicating:
  - \_\_\_ A. A brief and general description of the nature, location and extent of the proposed development;
  - \_\_\_ B. The name of the proposed development;
  - \_\_\_ C. The date of preparation of the plan and the name, address and telephone number of the person who prepared the plan;
  - \_\_\_ D. Scale, reference meridian and North arrow;
  - \_\_\_ E. The name, address and phone number of the person to be contacted concerning any questions on the proposed development;
  - \_\_\_ F. Area of the subject property, in square feet and in acres, to the nearest tenth of an acre; and
  - \_\_\_ G. A list of the professional consultants advising the prospective applicant with respect to the proposed development;
  - \_\_\_ H. Identification of variances required and requested waiver(s) from any development standard and/or regulation where a variance is not required.
  - \_\_\_ J. A statement as to any state and/or Federal approvals required in connection with the proposed development;
  - \_\_\_ K. The number and approximate area of new lots or parcels, if any, to be created, tabulated by each separate use as proposed.
- \_\_\_ 3. The names and addresses of all owners of property located within 200' of the Subject Property as shown in the latest property tax records.

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST D.

#### Minor Site Plans and Minor Subdivision Plats

See §300-26, 27 & 36 E. for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the Applicant.

- \_\_\_\_ 1. All General Checklist Requirements in such number as indicated in Checklist A.
- \_\_\_\_ 2. Plats or plans of the proposed project at a scale and paper size specified under Checklist A., item 2. B.
- \_\_\_\_ 3. Existing Conditions and Topographical Outbound Survey of the Subject Property, at a scale of not less than 1"=50', prepared by a New Jersey Licensed Land Surveyor, showing the property boundary lines and dimensions, structures, available utilities and easements, roadways, rail lines and public rights-of-way crossing and adjacent to the subject property.  
  
Survey shall include the distances between the proposed building(s) and any other buildings on adjacent lots (on both sides and the rear of the Subject Property).  
  
If Survey is dated more than 2 years prior to the date of submission of the Subject Application, an Affidavit of No Change, prepared by a New Jersey Licensed Land Surveyor, certifying that the submitted survey depicts the true existing conditions on the subject property.
- \_\_\_\_ 4. Lot area expressed both in acreage (to the nearest tenth of an acre) and square feet (to 2 decimal places), both with and without any area(s) located within any existing or proposed public rights-of-way.
- \_\_\_\_ 5. Computation of the area of the tract to be disturbed in square feet, the number of lots proposed and the area and dimensions of each proposed lot.
- \_\_\_\_ 6. Existing contours referenced to United States Geological Survey datum, with project site and proposed contours at 1' intervals plotted thereon, except in areas where the slope exceeds 5%, where intervals may be 5'. Any proposed regrading shall be shown.
- \_\_\_\_ 7. Existing and proposed spot elevations at all corners of the buildings and along the curbline.
- \_\_\_\_ 8. A soils map with project site plotted thereon.
- \_\_\_\_ 9. Existing tax sheet and existing block and lot number(s) of the lots to be subdivided or developed, as they appear on the current City Tax Map, with proposed block and lot numbers as provided by the City Tax Assessor.
- \_\_\_\_ 10. Subdivision or development boundary lines (heavy solid line), lot lines to be removed (faded) and new lots to be created.

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST D.

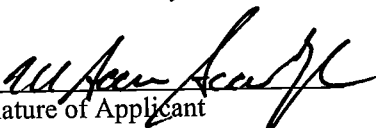
#### Minor Site Plans and Minor Subdivision Plats

See §300-26, 27 & 36 E. for further details regarding submission requirements and procedures.

**Each page** of this Checklist must be signed and dated by the Applicant.

- \_\_\_\_ 11. The location of existing and proposed property lines (with bearings and distances), streets, structures, walls, fences, signs, culverts and bridges (with numerical dimensions, including height, to the nearest tenth of a foot).
- \_\_\_\_ 12. Parking spaces, loading areas, driveways, watercourses, railroads, bridges, culverts, drain pipes, any natural features such as wetlands and vegetated areas both within the tract and within 100' of its boundary.
- \_\_\_\_ 13. The location and width of all existing proposed utility easements, the use(s) for which they are intended and the manner in which they will be controlled.
- \_\_\_\_ 14. Delineation of flood plains, including floodway, flood fringe areas and lands subject to flooding, and the location of all natural features, including wetlands, water courses, vegetated areas and buffers both within the tract and within 100' of the boundaries thereof.
- \_\_\_\_ 15. The location and material of all existing and proposed monuments, including iron and copper pins.
- \_\_\_\_ 16. Right-of-way dedication(s) and improvement(s), as applicable.
- \_\_\_\_ 17. Sight triangle easements with dimensions, bearings and distances, as applicable.
- \_\_\_\_ 18. Plans of proposed site improvements and/or utility layouts as required by ordinance. Plans must show proposed connections to existing water supply and sanitary sewerage systems.
- \_\_\_\_ 19. Detailed site drawings, drawn to scale and fully dimensioned, depicting the size and location of all existing and proposed structures, signs and lighting, with height noted, and indicating if existing structures and uses will be retained or removed. All existing and proposed setbacks must be delineated on the plans.
- \_\_\_\_ 20. Detailed architectural and elevation drawings, drawn to scale and fully dimensioned, depicting all four (4) building elevations (labeled north, south, east and west, with street names as applicable), with colors and materials indicated on the plans. All proposed setbacks for structures must be delineated on the plans.
- \_\_\_\_ 21. Certification from appropriate state and county agencies and private providers as applicable, granting approval for the extension of utility service(s).
- \_\_\_\_ 22. Soil Erosion and Sediment Control Plan as required by N.J.S.A. 4:24-39 et seq., as applicable.

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

May 1, 20  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST D.

#### Minor Site Plans and Minor Subdivision Plats

See §300-26, 27 & 36 E. for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the Applicant.

- \_\_\_\_ 23. Statement regarding details of any impact the proposed development may have on the City's Stormwater Management System in conformance with Chapter 251 of the City Code.
- \_\_\_\_ 24. Plans and computations for any storm drainage systems required.
- \_\_\_\_ 25. A Landscape Plan, depicting existing and proposed screening, buffering and landscape areas in conformance with §300-66.  
  
The location of all proposed plantings shall be indicated on the Landscape Plan, which shall be keyed to a Plant Schedule listing the botanical and common names, the sizes of plant material at time of planting and the total quantity of each plant.
- \_\_\_\_ 25. A Lightning Plan, addressing the proposed location, direction of illumination, power and type of proposed outdoor lighting, including details regarding light standards and fixtures, lumen pattern and foot-candles.
- \_\_\_\_ 27. Tax Map Update Fees, to be submitted on a separate check calculated at \$65 per affected lot.
- \_\_\_\_ 28. Trash/refuse and recycling storage plans, if applicable.
- \_\_\_\_ 29. Signage Plan, with details addressing location, dimensions, area, height, illumination and materials for all signage.
- \_\_\_\_ 30. Approval signature lines for the Board Chair, Board Secretary and City Engineer.
- \_\_\_\_ 31. Indication that Subdivision is to be filed by Deed or Plat.

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE


### CHECKLIST E. Preliminary Major Site Plans & Preliminary Major Subdivision Plats

See §300-26, 27 & 36 F. for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the Applicant.

- X 1. All General Checklist Requirements in such number as indicated in Checklist A.
- X 2. Plats or plans of the proposed project at a scale and paper size specified under Checklist A., item 2. B.
- X 3. Topographical Outbound Survey of the Subject Property, at a scale of not less than 1"=50', prepared by a New Jersey Licensed Land Surveyor. If Survey is dated more than 2 years prior to the date of submission of the Subject Application, an Affidavit of No Change, prepared by a New Jersey Licensed Land Surveyor, certifying that the submitted survey depicts the true existing conditions on the subject property, shall also be required.
- Survey shall include the distances between the proposed building(s) and any other buildings on adjacent lots (on both sides and the rear of the Subject Property).
- X 4. Computation of lot area, and breakout of the area of the lot to be disturbed, expressed both in acreage and square feet, to the nearest tenth of an acre, both with and without existing and proposed public rights-of-way, parking and common open space areas.
- N/A 5. Number of lots proposed, including the area and dimensions of each.
- X 6. Existing contours referenced to United States Geological Survey datum, with project site and proposed contours at 1' intervals plotted thereon, except in areas where the slope exceeds 5%, where intervals may be 5'. Any proposed regrading shall be shown.
- X 7. Existing and proposed spot elevations at all corners of the buildings and along the curbline.
- X 8. A soils map with project site plotted thereon.
- X 9. Existing tax sheet and existing block and lot number(s) of the lots to be subdivided or developed, as they appear on the current City Tax Map, with proposed block and lot numbers as provided by the City Tax Assessor.
- X 10. Subdivision or development boundary lines (heavy solid line), lot lines to be removed (faded) and new lots to be created.
- X 11. The location of existing and proposed property lines (with bearings and distances), streets, structures, walls, fences, signs, culverts and bridges (with numerical dimensions, including height, to the nearest tenth of a foot).

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

  
Date

1



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST E.

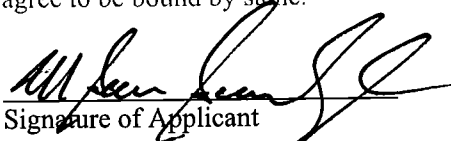
#### Preliminary Major Site Plans & Preliminary Major Subdivision Plats

See §300-26, 27 & 36 F. for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the Applicant.

- W 12. Parking spaces, loading areas, driveways, watercourses, railroads, bridges, culverts, drain pipes, any natural features such as wetlands and vegetated areas both within the tract and within 100' of its boundary. (Waiver 50')
- X 13. The location and width of all existing proposed utility easements, the use(s) for which they are intended, and the manner in which they will be controlled.
- X 14. Delineation of flood plains, including floodway, flood fringe areas and lands subject to flooding, and the location of all natural features, including wetlands, water courses, vegetated areas and buffers both within the tract and within 100' of the boundaries thereof.
- X 15. The location and material of all existing and proposed monuments, including iron and copper pins.
- X 16. Right-of-way dedication(s) and improvement(s), as applicable.
- X 17. Proposed reservations for parks, playgrounds and common open space.
- X 18. Sight triangle easements with dimensions, bearings (to the nearest 10 seconds) and distances, as applicable.
- X 19. Plans of proposed site improvements and/or utility layouts required by ordinance. Plans shall show proposed locations for all water and sewer lines, with connection details to existing water supply and sanitary sewerage systems for all valves, manholes and hydrants.
- WD 20. Certification from appropriate state and county agencies and private providers as applicable, granting approval for the extension of utility service(s).
- X 21. Soil Erosion and Sediment Control Plan as required by N.J.S.A. 4:24-39 et seq., as applicable.
- X 22. Detailed site drawings, drawn to scale and fully dimensioned, depicting the size and location of all existing and proposed structures, sidewalks and pedestrian walkways, signs and lighting, with height noted as applicable, and indicating if existing structures and uses will be retained or removed. All existing and proposed setbacks for structures must be delineated on the plans.
- X 23. Detailed architectural (floor-plan) and elevation drawings, drawn to scale and fully dimensioned, depicting all four (4) building elevations (labeled "viewed from the" north, south, east and west, with street names as applicable), with finished-floor elevation, colors and materials indicated on the plans. All proposed setbacks for structures shall be delineated on the plans.

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

May 1, 20  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

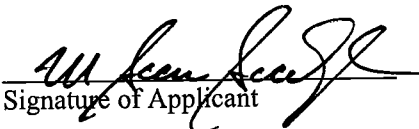
### CHECKLIST E. Preliminary Major Site Plans & Preliminary Major Subdivision Plats

See §300-26, 27 & 36 F. for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the Applicant.

- X 24. Plans and computations for any storm drainage systems required, including boring logs showing the character of the soil and elevation of the groundwater table; the location of all existing and proposed storm drainage pipes and watercourses; pipe sizes; grades; and flow directions.
- X 25. Flood Zone.
- X 26. A Landscape Plan, depicting existing and proposed open space, screening, buffering and landscape areas in conformance with §300-66.
- The location of all proposed plantings shall be indicated on the Landscape Plan, which shall be keyed to a Plant Schedule listing the botanical and common names, the sizes of plant material at time of planting and the total quantity of each plant.
- X 27. A Lightning Plan, addressing the proposed location, direction of illumination, power and type of proposed outdoor lighting, including details regarding light standards and fixtures, lumen pattern and foot-candles.
- X 28. Trash/refuse and recycling storage plans, if applicable.
29. Signage Plan, with details addressing location, dimensions, area, height, illumination and materials for all signage.
- NA 30. When a stream is proposed for alteration, improvement or relocation, or when a drainage structure or fill is proposed over, under, in or along a running stream, a report on the status of review by NJDEP (Division of Land Use Regulation);
- NA 31. Cross sections of watercourses and/or drainage swales at an appropriate scale, showing the extent of floodplain, top of bank, normal water levels and bottom elevations at locations required by the City Engineer.
- NA 32. The location and extent of drainage and conservation easements and stream encroachment lines.
- X 33. When a tidal watercourse or wetlands are proposed for alteration, development, improvement or relocation, provide the status of review by NJDEP (Division of Land Use Regulation).
- X 34. The status of application or request for exemption from NJDEP (Division of Land Use Regulation) for compliance with the Coastal Area Facility Review Act (N.J.S.A. 13:19-1 et seq.)

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST E. Preliminary Major Site Plans & Preliminary Major Subdivision Plats

See §300-26, 27 & 36 F. for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the Applicant.

- X 35. The location and type of adequate drainage provisions to reasonably reduce and minimize exposure to flood damage.
- X 36. The location, design and size of any on- or off-street parking or loading area(s), showing location of stalls, bays, aisles and barriers as well all means of vehicular ingress and egress from the site onto public streets.
- W 37. The location of existing utility structures on the tract and within 200' of the extreme limits of the tract.
- W 38. Profile plans, typical cross sections, construction details and horizontal and vertical alignment of the centerline of all proposed streets and of existing streets abutting the tract, clearly indicating the type and width of pavement and the location of curbs, sidewalks, shade trees and planting strips.
- X 39. Statement of compliance with the Stormwater Management Rules (N.J.A.C. 7:8) and Chapter 251 of the City Code.
- W 40. Concerning commercial development: the proposed number of shifts, the maximum number of employees on each shift and the hours of operation. To be determined based on uses
- NA 41. Concerning the development, conversion, expansion or use of condominiums:
- NA A. Where a condominium is a single structure, a detailed floor plan of the entire structure.
- NA B. Where the condominium is a complex of multiple structures, a detailed floor plan of the entire complex.
- NA 42. If the development is proposed for construction in stages or units, a schedule for the development of such stages or units, stating the approximate beginning and completion date for each such stage or unit; the proportion of the total public and private open space and the proportion of each type of proposed land use to be provided or constructed during each such stage; and the overall chronology of development to be followed from stage to stage.
- X 43. Approval signature lines for the Board Chair, Board Secretary & City Engineer.

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

May 1, 20  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

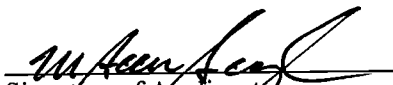
### CHECKLIST F. Final Major Site Plans & Final Major Subdivision Plats

See §300-26, 27 & 36 G. for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the Applicant.

- X 1. All General Checklist Requirements in such number as indicated in Checklist A.
- WD 2. The date on which Preliminary approval was granted and, if required, by Atlantic County, and a copy of each Decision & Resolution granting such approval(s).
- WD 3. A final version of the approved Preliminary plan or plat containing any revisions required as a condition of Preliminary approval.
- WD 4. Engineering plans, specifications and cost estimates.
- X 5. A tabulation of the following information for the stage or unit of the development being proposed for final approval:
- X A. The total number of dwelling units and rooming units proposed, by type of structure and number of bedrooms.
- X B. The total square footage of building floor area proposed for non-residential uses, by general type of use.
- X C. The proposed number of off-street parking and loading spaces for each proposed type of land use.
- X D. The total land area, expressed in square feet and as a percent of the total development area, proposed to be devoted to residential and non-residential uses, by type of structure; public and private open space; streets; off-street parking and loading areas; pedestrian circulation elements; and miscellaneous impervious areas.
- NA 6. Section or Construction Staging Plan, if proposed.
- WD 7. Copies of all required easements, declarations and covenants to be recorded upon final approval.
- WD 8. Copies of all declarations, covenants and bylaws necessary to establish, activate and govern any entity that is to be responsible for the management and maintenance of any private common open space or facility.
- WD 9. Copies of all preconstruction permits and approvals required from any federal or state agency or, for any required permit not yet secured, a copy of the application as filed and a statement of its current status or a statement explaining why an application has not been filed and indicating when it will be filed.

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

May 1, 20  
Date

1



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST F. Final Major Site Plans & Final Major Subdivision Plats

See §300-26, 27 & 36 G. for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the Applicant.

- WD 10. A statement summarizing all changes which have been made in or have occurred with respect to any document, plan, data or information made part of the Preliminary Approval, together with revised copies of same.
- WD 11. "Form-of" easements and deeds to be executed upon final plan approval necessary to convey any easements, rights-of-way or other lands or interests in lands to be conveyed or dedicated to any governmental agency or public utility.
- WD 12. "Form-of" the performance guaranty and maintenance guaranty to be submitted pursuant to §300-49, upon final plan approval and of any other performance or maintenance guaranties required to ensure installation and completion of the entire development, or any specific portion thereof, or the future provision and improvement of common open space or facilities.
- WD 13. Any stipulation or condition imposed at time of Preliminary Approval
- WD 14. Any ordinance requirement for Final Plan approval.
- WD 15. A statement from the City Engineer that all installed improvements have been inspected and satisfactorily installed.
- WD 16. Letters directed to the Board Chair and signed by a responsible official of all utility companies, etc., providing service to the tract.

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

*[Signature]*  
Signature of Applicant

*May 1, 20*  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST G.

#### Appeal or Interpretation / Special Question Pursuant to N.J.S.A. 40:55d-70a

See §300-26, 27, 38 & 39 for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the Applicant.

- \_\_\_\_ 1. All General Checklist Requirements in such number as indicated in Checklist A
- \_\_\_\_ 2. **Detailed narrative** justification for the Appeal or Interpretation sought or the Special Question at issue.
- \_\_\_\_ 3. Such other and further information or documentation as may be deemed to be necessary or appropriate to a full and proper consideration and disposition of the particular application.

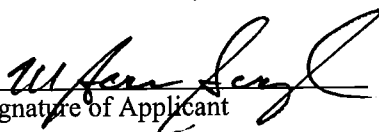
For Interpretations other than for the permissibility of use issues::

- \_\_\_\_ 4. The specific provision or provisions to be interpreted, the facts of the specific situation giving rise to the request for interpretation and the precise interpretation asserted by the applicant to be correct.

For Interpretation of the permissibility of use issues:

- \_\_\_\_ 5. The uses permitted in the zoning district which are most similar to the proposed use.
- \_\_\_\_ 6. Documents, statements and other evidence demonstrating that the proposed use will comply with all use limitations established for the district in which it is proposed to be located.

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST H.

#### 'c' Variances

Pursuant to N.J.S.A. 40:55d-70c

See §300-26, 27 & 37 C. for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the Applicant.

### PLEASE READ THE FOLLOWING CAREFULLY BEFORE COMPLETING THE VARIANCE JUSTIFICATION NARRATIVE

Under N.J.S.A. 40:55D-70(c), 'c' variance relief is required to permit the deviation from the strict application of land use regulations (generally) governing the physical development of a piece of property.

In order for a Planning Board or Zoning Board of Adjustment, as the case may be, to grant a 'c' variance request, an Applicant must demonstrate, to the Board's satisfaction, that special reasons (broadly defined as relieving an undue hardship on the Applicant [commonly referred to as a 'c-1' variance] OR advancing the purposes of the Municipal Land Use Law [commonly referred to as a 'c-2' variance]) exist. This is known as the Positive Criteria. Additionally, no variance may be granted which will be detrimental to the public good or the City's Zone Plan or Zoning Ordinance.

The grant of a 'c' variance requires an affirmative vote by a simple majority of the Board members present.

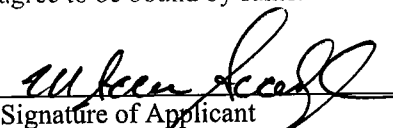
In order to satisfy the Positive Criteria for 'c-1' variances, the applicant must prove that:

(a) by reason of exceptional narrowness, shallowness or shape of a specific piece of property, or (b) by reason of exceptional topographic conditions or physical features uniquely affecting a specific piece of property, or (c) by reason of an extraordinary and exceptional situation uniquely affecting a specific piece of property or the structures lawfully existing thereon, the strict application of any regulation...would result in peculiar and exceptional practical difficulties to, or exceptional and undue hardship upon, the developer of such property..."

In order to satisfy the Positive Criteria for 'c-2' variances, the applicant must prove that the proposed development will achieve at least one (1) of the following Purposes of the Municipal Land Use Law:

- a. To encourage municipal action to guide the appropriate use or development of all lands in this State, in a manner which will promote the public health, safety, morals, and general welfare;

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST H.

#### 'c' Variances

Pursuant to N.J.S.A. 40:55d-70c


See §300-26, 27 & 37 C. for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the Applicant.

- b. To secure safety from fire, flood, panic and other natural and man-made disasters;
- c. To provide adequate light, air and open space;
- d. To ensure that the development of individual municipalities does not conflict with the development and general welfare of neighboring municipalities, the county and the State as a whole;
- e. To promote the establishment of appropriate population densities and concentrations that will contribute to the well-being of persons, neighborhoods, communities and regions and preservation of the environment;
- f. To encourage the appropriate and efficient expenditure of public funds by the coordination of public development with land use policies;
- g. To provide sufficient space in appropriate locations for a variety of agricultural, residential, recreational, commercial and industrial uses and open space, both public and private, according to their respective environmental requirements in order to meet the needs of all New Jersey's citizens;
- h. To encourage the location and design of transportation routes which will promote the free flow of traffic while discouraging location of such facilities and routes which result in congestion or blight;
- i. To promote a desirable visual environment through creative development techniques and good civic design and arrangement;
- j. To promote the conservation of historic sites and districts, open space, energy resources and valuable natural resources in the State and to prevent urban sprawl and degradation of the environment through improper use of land;
- k. To encourage planned unit developments which incorporate the best features of design and relate the type, design and layout of residential, commercial, industrial and recreational development to the particular site;

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST H.

#### 'c' Variances

Pursuant to N.J.S.A. 40:55d-70c

See §300-26, 27 & 37 C. for further details regarding submission requirements and procedures.


Each page of this Checklist must be signed and dated by the Applicant.

- l. To encourage senior citizen community housing construction;
- m. To encourage coordination of the various public and private procedures and activities shaping land development with a view of lessening the cost of such development and to the more efficient use of land;
- n. To promote utilization of renewable energy resources;
- o. To promote the maximum practicable recovery and recycling of recyclable materials from municipal solid waste through the use of planning practices designed to incorporate the State Recycling Plan goals and to complement municipal recycling programs.

Applicants requesting 'c' variance relief must complete the following **Checklist G.**, along with the accompanying **Schedule of Requested 'c' Variance(s)** and **'c' Variance Justification Narrative** setting forth and describing the specific requirements of the Pleasantville Land Management Code from which relief is being sought. Applicants must also address the reasons why such relief is justified.

Applicants **MUST** submit variance justifications for all requested variances as part of this application process. Applications not containing the aforementioned detailed written narrative, addressing both the Positive Criteria required for 'c' variance relief and any impact the granting of the requested variance will have on the public good and the City's Zone Plan and Zoning Ordinance, shall be deemed **INCOMPLETE**.

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

May 1, 20  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST H.

#### 'c' Variances

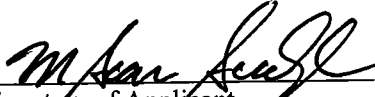
Pursuant to N.J.S.A. 40:55d-70c

See §300-26, 27 & 37 C. for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the Applicant.

- \_\_\_\_ 1. All General Checklist Requirements in such number as indicated in Checklist A.
- \_\_\_\_ 2. Plats, plans drawings of the proposed project at a scale specified under Checklist A., item 3.  
A. Plats, plans or drawings prepared by a New Jersey Licensed Land Surveyor, Professional Engineer, Professional Planner or Architect shall be submitted on a paper size specified under Checklist A., item 3. B. Plats or plans prepared by the Applicant may be submitted on a sheet no smaller than 11"x17".
- \_\_\_\_ 3. Topographical Outbound Survey of the Subject Property, at a scale of not less than 1"=50', prepared by a New Jersey Licensed Land Surveyor. If Survey is dated more than 2 years prior to the date of submission of the Subject Application, an Affidavit of No Change, prepared by a New Jersey Licensed Land Surveyor, certifying that the submitted survey depicts the true existing conditions on the subject property, shall also be required. The Survey shall include the distances between the proposed building(s) and any other buildings on adjacent lots (on both sides and the rear of the Subject Property).
- \_\_\_\_ 4. Lot area expressed both in acreage and square feet, to the nearest tenth of an acre, both with and without any area(s) located within any existing or proposed public rights-of-way.
- \_\_\_\_ 5. Development boundary lines (heavy solid line).
- \_\_\_\_ 6. Detailed site drawings, drawn to scale and fully dimensioned, depicting the size and location of all existing and proposed structures, signs and lighting, with height noted, and indicating if existing structures and uses will be retained or removed. All existing and proposed setbacks for structures must be delineated on the plans.
- \_\_\_\_ 7. Detailed architectural and elevation drawings, drawn to scale and fully dimensioned, depicting all four (4) building elevations (labeled north, south, east and west, with street names as applicable), with colors and materials indicated on the plans. All proposed setbacks for structures must be delineated on the plans.
- \_\_\_\_ 8. Completed **Schedule of Requested 'c' Variances** attached to this Checklist.
- \_\_\_\_ 9. Detailed justification for the relief requested, including statement addressing the Positive Criteria required for 'c' Variance relief, and specifically addressing any detrimental impact the grant of such variance might have to the public good or the City's Zone Plan or Zoning Ordinance.

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST H.

#### 'c' Variances

Pursuant to N.J.S.A. 40:55d-70c

See §300-26, 27 & 37 C. for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the Applicant.

**APPLICANTS MAY UTILIZE THIS FORM OR MAY CREATE THEIR OWN SCHEDULE AS LONG AS THE REQUIRED INFORMATION IS INCLUDED.**

SCHEDULE OF REQUESTED 'c' VARIANCES			
Variance Number	Ordinance Reference (§300- )	Regulation / Requirement	Existing / Proposed Condition
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

(use additional pages if necessary)

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

Date May 1, 20



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST H.

#### 'c' Variances

Pursuant to N.J.S.A. 40:55d-70c

See §300-26, 27 & 37 C. for further details regarding submission requirements and procedures.

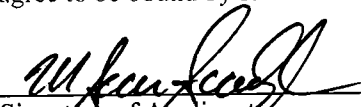
Each page of this Checklist must be signed and dated by the Applicant.

**APPLICANTS MAY UTILIZE THIS FORM OR MAY CREATE THEIR OWN SCHEDULE AS LONG AS THE REQUIRED INFORMATION IS INCLUDED.**

'c' VARIANCE JUSTIFICATION NARRATIVE	
Variance Number (from Schedule of Requested 'c' Variances)	Detailed Justification for Variance Request
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

(use additional pages if necessary)

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST I.

#### 'd' Variances

Pursuant to N.J.S.A. 40:55d-70d

See §300-26, 27 & 37 D. for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the Applicant.

### PLEASE READ THE FOLLOWING CAREFULLY BEFORE COMPLETING THE VARIANCE JUSTIFICATION NARRATIVE

Under N.J.S.A. 40:55D-70 (d), 'd' variance relief is required to permit (1) the use of lands or buildings in areas of the City (Zoning Districts) where such use is not permitted, (2) to expand an existing non-permitted use, (3) to deviate from a conditional use standard as defined in the City's Land Management Code, (4) to develop beyond the floor area ratio permitted in a Zoning District, (5) to develop beyond the density permitted in a Zoning District, and (6) to develop at a building height 10' or 10% beyond that which is permitted in a Zoning District.

Generally, in order for the Zoning Board of Adjustment<sup>65</sup> to grant a 'd' variance request, an Applicant must demonstrate, to the Board's satisfaction, that special reasons (broadly defined as relieving an undue hardship on the Applicant OR advancing the purposes of the Municipal Land Use Law) exist. This is known as the Positive Criteria. The Applicant must also demonstrate that granting such relief will not substantially impair the purpose and intent of the City's Zone Plan or Zoning Ordinance, and that the relief requested will not be a substantial detriment to the public good. This is known as the Negative Criteria.

Both the Positive Criteria and the Negative Criteria must be satisfied in order for the Board to grant a 'd' variance request.


The grant of a 'd' variance requires an affirmative vote by five (5) Board members, regardless of how many members may be attending the meeting.


In order to satisfy the Positive Criteria for 'd' variances, the applicant must prove that:

- (a) by reason of exceptional narrowness, shallowness or shape of a specific piece of property, or
- (b) by reason of exceptional topographic conditions or physical features uniquely affecting a specific piece of property, or
- (c) by reason of an extraordinary and

<sup>65</sup> Only a Zoning Board may grant 'd' variance relief

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST I.

#### 'd' Variances

Pursuant to N.J.S.A. 40:55d-70d

See §300-26, 27 & 37 D. for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the Applicant.

exceptional situation uniquely affecting a specific piece of property or the structures lawfully existing thereon, the strict application of any regulation...would result in peculiar and exceptional practical difficulties to, or exceptional and undue hardship upon, the developer of such property..."

**OR**, the applicant must prove that the proposed development will achieve at least one (1) of the following Purposes of the Municipal Land Use Law:

- a. To encourage municipal action to guide the appropriate use or development of all lands in this State, in a manner which will promote the public health, safety, morals, and general welfare;
- b. To secure safety from fire, flood, panic and other natural and man-made disasters;
- c. To provide adequate light, air and open space;
- d. To ensure that the development of individual municipalities does not conflict with the development and general welfare of neighboring municipalities, the county and the State as a whole;
- e. To promote the establishment of appropriate population densities and concentrations that will contribute to the well-being of persons, neighborhoods, communities and regions and preservation of the environment;
- f. To encourage the appropriate and efficient expenditure of public funds by the coordination of public development with land use policies;
- g. To provide sufficient space in appropriate locations for a variety of agricultural, residential, recreational, commercial and industrial uses and open space, both public and private, according to their respective environmental requirements in order to meet the needs of all New Jersey's citizens;
- h. To encourage the location and design of transportation routes which will promote the free flow of traffic while discouraging location of such facilities and routes which result in congestion or blight;

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST I.

#### 'd' Variances

Pursuant to N.J.S.A. 40:55d-70d

See §300-26, 27 & 37 D. for further details regarding submission requirements and procedures.


Each page of this Checklist must be signed and dated by the Applicant.

- i. To promote a desirable visual environment through creative development techniques and good civic design and arrangement;
- j. To promote the conservation of historic sites and districts, open space, energy resources and valuable natural resources in the State and to prevent urban sprawl and degradation of the environment through improper use of land;
- k. To encourage planned unit developments which incorporate the best features of design and relate the type, design and layout of residential, commercial, industrial and recreational development to the particular site;
- l. To encourage senior citizen community housing construction;
- m. To encourage coordination of the various public and private procedures and activities shaping land development with a view of lessening the cost of such development and to the more efficient use of land;
- n. To promote utilization of renewable energy resources;
- o. To promote the maximum practicable recovery and recycling of recyclable materials from municipal solid waste through the use of planning practices designed to incorporate the State Recycling Plan goals and to complement municipal recycling programs.

Applicants requesting 'd' variance relief must complete the following **Checklist H.**, along with the accompanying **Schedule of Requested 'd' Variance(s)** and **'d' Variance Justification Narrative** setting forth and describing the specific requirements of the Pleasantville Land Management Code from which relief is being sought. Applicants must also address the reasons why such relief is justified.

**Applicants MUST submit variance justifications for all requested variances as part of this application process. Applications not containing the aforementioned detailed written narrative, addressing both the Positive Criteria and Negative Criteria required for 'd' variance relief, shall be deemed INCOMPLETE.**

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST I.

#### 'd' Variances

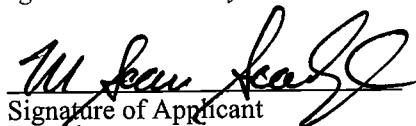
Pursuant to N.J.S.A. 40:55d-70d

See §300-26, 27 & 37 D. for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the Applicant.

- \_\_\_\_ 1. All General Checklist Requirements in such number as indicated in Checklist A.
- \_\_\_\_ 2. Plats, plans drawings of the proposed project at a scale specified under Checklist A., item 3.  
A. Plats, plans or drawings prepared by a New Jersey Licensed Land Surveyor, Professional Engineer, Professional Planner or Architect shall be submitted on a paper size specified under Checklist A., item 3. B. Plats or plans prepared by the Applicant may be submitted on a sheet no smaller than 11"x17".
- \_\_\_\_ 3. Topographical Outbound Survey of the Subject Property, at a scale of not less than 1"=50', prepared by a New Jersey Licensed Land Surveyor. If Survey is dated more than 2 years prior to the date of submission of the Subject Application, an Affidavit of No Change, prepared by a New Jersey Licensed Land Surveyor, certifying that the submitted survey depicts the true existing conditions on the subject property, shall also be required. The Survey shall include the distances between the proposed building(s) and any other buildings on adjacent lots (on both sides and the rear of the Subject Property).
- \_\_\_\_ 4. Lot area expressed both in acreage and square feet, to the nearest tenth of an acre, both with and without any area(s) located within any existing or proposed public rights-of-way.
- \_\_\_\_ 5. Development boundary lines (heavy solid line).
- \_\_\_\_ 6. Variance requests under N.J.S.A. 40:55d-70d(3), (4) & (6) only:
  - \_\_\_\_ A. detailed site drawings, drawn to scale and fully dimensioned, depicting the size and location of all existing and proposed structures, signs and lighting, with height noted, and indicating if existing structures and uses will be retained or removed.
  - \_\_\_\_ B. detailed architectural and elevation drawings, drawn to scale and fully dimensioned, depicting all four (4) building elevations (labeled north, south, east and west, with street names as applicable), with colors and materials indicated on the plans.
- \_\_\_\_ 7. Completed **Schedule of Requested 'd' Variances** attached to this Checklist.
- \_\_\_\_ 8. Detailed justification for the relief requested, including statement addressing the Positive Criteria and Negative Criteria required for 'd' Variance relief.

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

May 1, 20  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST I.

'd' Variances

Pursuant to N.J.S.A. 40:55d-70d

See §300-26, 27 & 37 D. for further details regarding submission requirements and procedures.

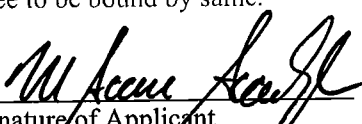
Each page of this Checklist must be signed and dated by the Applicant.

**APPLICANTS MAY UTILIZE THIS FORM OR MAY CREATE THEIR OWN SCHEDULE AS LONG AS THE REQUIRED INFORMATION IS INCLUDED.**

SCHEDULE OF REQUESTED VARIANCES			
Variance Number	Ordinance Reference (§300- )	Regulation/Requirement	Existing/Proposed Condition
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

(use additional pages if necessary)

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST I.

'd' Variances

Pursuant to N.J.S.A. 40:55d-70d

See §300-26, 27 & 37 D. for further details regarding submission requirements and procedures.

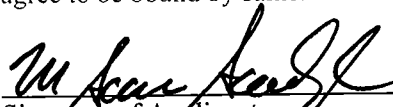
Each page of this Checklist must be signed and dated by the Applicant.

**APPLICANTS MAY UTILIZE THIS FORM OR MAY CREATE THEIR OWN SCHEDULE AS LONG AS THE REQUIRED INFORMATION IS INCLUDED.**

d' VARIANCE JUSTIFICATION NARRATIVE	
Variance Number (from Schedule of Requested 'c' Variances)	Detailed Justification for Variance Request
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

(use additional pages if necessary)

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

  
Date

1



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST J. Certificate of Nonconformity Pursuant to N.J.S.A. 40:55d-68.

See §300-20, 26 & 27 for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the person completing the Checklist.

#### APPLICATIONS FOR CERTIFICATE OF NONCONFORMITY

---

---

Pursuant to N.J.S.A. 40:55d-68:

any nonconforming use or structure existing at the time of the passage of the Land Management Code may be continued upon the lot or in the structure so occupied and any such structure may be restored or repaired in the event of partial destruction thereof.

A prospective purchaser, prospective mortgagee or any other person interested in any land upon which a nonconforming use or structure exists may apply in writing for the issuance of a Certificate of Nonconformity, certifying that the use or structure existed before the adoption of the section of the Land Management Code which rendered the use or structure nonconforming.

The Applicant for a Certificate of Nonconformity shall have the burden of proof.

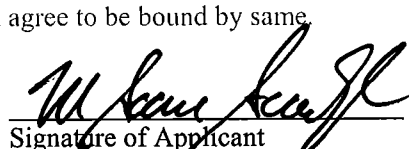
Application for a Certificate of Nonconformity may be made to the Zoning Officer within one (1) year of the adoption of the section of the Land Management Code which rendered the use or structure nonconforming, or at any time to the Zoning Board of Adjustment.

The Pleasantville Land Management Code was adopted on the date indicated under §300-1 therein. Until such time as the Land Management Code is amended, such date shall be the Test Date for any nonconformity. Upon any amendment to the Land Management Code, the date of adoption of an ordinance amending a specific section of the Land Management Code shall become the Test Date for such section.

---

---

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

  
Date

1



PLEASANTVILLE LAND MANAGEMENT CODE

CHECKLIST J.  
Certificate of Nonconformity  
Pursuant to N.J.S.A. 40:55d-68.

See §300-20, 26 & 27 for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the person completing the Checklist.

Certificate of Nonconformity is being sought for nonconforming:

( ) Use

( ) Building

( ) Both

Explain in detail the present nature of the nonconformity (use additional sheets if necessary):

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List all submitted evidence supporting the claim of nonconformity (use additional sheets if necessary):

1. 

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2. 

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3. 

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4. 

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5. 

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6. 

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7. 

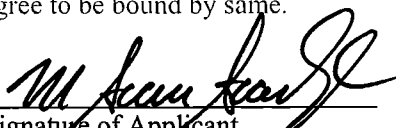
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8. 

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9. 

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10. 

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I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

May 1, 20  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

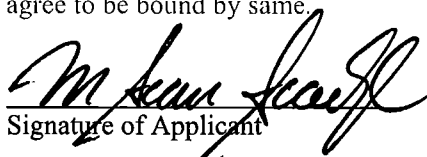
### CHECKLIST J. Certificate of Nonconformity Pursuant to N.J.S.A. 40:55d-68.

See §300-20, 26 & 27 for further details regarding submission requirements and procedures.

Each page of this Checklist must be signed and dated by the person completing the Checklist.

- \_\_\_\_ 1. All General Checklist Requirements in such number as indicated in Checklist A.
- \_\_\_\_ 2. Topographical Outbound Survey of the Subject Property, at a scale of not less than 1"=50', prepared by a New Jersey Licensed Land Surveyor. If Survey is dated more than 2 years prior to the date of submission of the Subject Application, an Affidavit of No Change, prepared by a New Jersey Licensed Land Surveyor, certifying that the submitted survey depicts the true existing conditions on the subject property, shall also be required. The Survey shall include the distances between the proposed building(s) and any other buildings on adjacent lots (on both sides and the rear of the Subject Property).
- \_\_\_\_ 3. Lot area expressed both in acreage and square feet, to the nearest tenth of an acre.
- \_\_\_\_ 4. **Test Date** for the portion of the Land Management Code which rendered the use or structure nonconforming.
- \_\_\_\_ 5. **Detailed narrative** supporting the lawful use of the Subject Property or the lawful existence of the nonconforming nature of the structure prior to the Test Date.

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

  
Date



## PLEASANTVILLE LAND MANAGEMENT CODE

### CHECKLIST K.

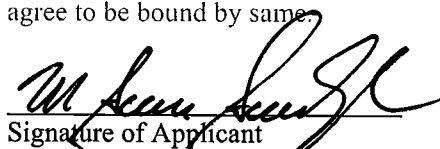
#### Certificate of Redevelopment Plan Conformance Pursuant to applicable Redevelopment Plan

See §300-26, 27 & the applicable Redevelopment Plan for further details of submission requirements and procedures.

Each page of this Checklist must be signed and dated by the person completing the Checklist.

- X 1. All General Checklist Requirements in such number as indicated in Checklist A.
- X 2. Redevelopment Plan under which certification of conformance is requested.
- X 3. Plats, plans drawings of the proposed project at a scale specified under Checklist A., item 3. A. Plats, plans or drawings prepared by a New Jersey Licensed Land Surveyor, Professional Engineer, Professional Planner or Architect shall be submitted on a paper size specified under Checklist A., item 3. B. Plats or plans prepared by the Applicant may be submitted on a sheet no smaller than 11"x17".
- X 4. Topographical Outbound Survey of the Subject Property, at a scale of not less than 1"=50', prepared by a New Jersey Licensed Land Surveyor. If Survey is dated more than 2 years prior to the date of submission of the Subject Application, an Affidavit of No Change, prepared by a New Jersey Licensed Land Surveyor, certifying that the submitted survey depicts the true existing conditions on the subject property, shall also be required. The Survey shall include the distances between the proposed building(s) and any other buildings on adjacent lots (on both sides and the rear of the Subject Property).
- X 5. Lot area expressed both in acreage and square feet, to the nearest tenth of an acre, both with and without any area(s) located within any existing or proposed public rights-of-way.
- X 6. Development boundary lines (heavy solid line).
- X 7. Detailed narrative of the proposed project and relationship to all applicable requirements of the subject Redevelopment Plan.
- X 8. Where physical changes are proposed to the Subject Property:
- X A. detailed site drawings, drawn to scale and fully dimensioned, depicting the size and location of all existing and proposed structures, signs and lighting, with height noted, and indicating if existing structures and uses will be retained or removed. All existing and proposed setbacks for structures must be delineated on the plans.
- X B. detailed architectural and elevation drawings, drawn to scale and fully dimensioned, depicting all four (4) building elevations (labeled north, south, east and west, with street names as applicable), with colors and materials indicated on the plans. All proposed setbacks for structures must be delineated on the plans.

I, as applicant for the subject Application, acknowledge that I have read and am familiar with the procedures set forth herein for submitting and acting upon applications for Land Use Approval in the City of Pleasantville and agree to be bound by same.

  
Signature of Applicant

May 1, 20  
Date

1

May 6, 2020

SCA 003.01

## **SUBMISSION WAIVER JUSTIFICATION NARRATIVE**

**RE: Spyglass at Lakes Bay  
Spyglass QOZB, LLC  
Franklin Blvd & Ansley Blvd  
City of Pleasantville, Atlantic County, New Jersey**

This narrative is provided to summarize the waivers being requested from submission requirements contained in Chapter 300 of the City of Pleasantville Land Use and Development Ordinance for the referenced project. The ordinance sections from which relief is requested, and justification for the requested waivers, is outlined below:

Chapter 300, Attachment 1, Checklist E – Preliminary Major Site Plans and Preliminary Major Subdivision Plans:

12. Parking spaces, loading areas, driveways, watercourses, railroads, bridges, culverts, drainpipes, and natural features such as wetlands and vegetated areas both within the tract and within 100' of it's boundary.

**The Applicant respectfully requests a waiver from this requirement to depict improvements within 75 feet of the property boundaries in lieu of the required 100 feet. The site is contained within a full City block so no impacts to neighbors on the opposite side of the roads are anticipated due to the roadways separating the parcels.**

20. Certification from appropriate state and county agencies and private providers as applicable, granting approval for the extension of utility service(s).

**The Applicant respectfully requests a waiver to defer evidence of approval of service from utility companies to be a condition of approval.**

37. The location of existing utility structures on the tract and within 200' of the extreme limits of the tract.

**The Applicant respectfully requests a waiver from this requirement to depict utility infrastructure within 75 feet of the property boundary in lieu of the required 200 feet. All utilities that will be utilized for service to the project are directly adjacent to the site, and the downstream end of the storm sewer infrastructure to which the project will connect are within the survey limits.**

38. Profile plans, typical cross sections, construction details and horizontal and vertical alignment of the centerline of all proposed streets and of existing streets abutting the tract, clearly indicating the type and width of pavement and the location of curbs, sidewalks, shade trees and planting strips.

**The Applicant respectfully requests a waiver from providing profiles and cross-sections of existing streets abutting the tract since no changes to the roadways are proposed.**

40. Concerning commercial development: the proposed number of shifts, the maximum number of employees on each shift and the hours of operation.

**The Applicant respectfully requests a waiver from providing this information since the actual users of the proposed commercial facilities against the waterfront, which are ancillary and supportive of the proposed residential portion of the project, have not yet been identified.**

Chapter 300, Attachment 1, Checklist F – Final Major Site Plans and Final Major Subdivision Plats:

2. The date on which Preliminary approval was granted and, if required, by Atlantic County, and a copy of each Decision and Resolution granting such approval(s).

**The Applicant respectfully requests a waiver from this requirement since both preliminary and final approval are requested concurrently.**

3. A final version of the approved Preliminary plan or plat containing any revisions required as a condition of Preliminary approval.

**The Applicant respectfully requests a waiver from this requirement since both preliminary and final approval are requested concurrently**

4. Engineering plans, specifications and cost estimates.

**The Applicant respectfully requests a waiver to defer providing a cost estimate for the proposed site improvements to be a condition of approval.**

7. Copies of all required easements, declarations and covenants to be recorded upon final approval.

**The Applicant respectfully requests a waiver to defer providing easement information for the proposed improvements to be a condition of approval.**

8. Copies of all declarations, covenants and bylaws necessary to establish, activate and govern any entity that is to be responsible for the management and maintenance of any private common open space or facility.

**The Applicant respectfully requests a waiver to defer providing management and maintenance entity information for the proposed improvements to be a condition of approval.**

9. Copies of all preconstruction permits and approvals required from any federal or state agency or, for any required permit not yet secured, a copy of the application as filed and a statement of its current status or a statement explaining why an application has not been filed and indicating when it will be filed.

**The Applicant respectfully requests a waiver from providing evidence of outside agency approvals to be a condition of approval. Applications for required approvals from the New Jersey Department of Environmental Protection (NJDEP) including a Coastal Area Facilities Review Act (CAFRA) Permit and Treatment Works Approval (TWA) for sewer will be submitted shortly after approval is granted by the City.**

10. A statement summarizing all changes which have been made in or have occurred with respect to any document, plan, data or information made part of the Preliminary Approval, together with revised copies of same.

**The Applicant respectfully requests a waiver of this requirement since preliminary and final approval are being requested concurrently.**

11. "Form-of" easements and deeds to be executed upon final plan approval necessary to convey any easements, rights-of-way or other lands or interests in lands to be conveyed or dedicated to any governmental agency or public entity.

**The Applicant respectfully requests to defer this requirement to be a condition of approval.**

12. "FORM-of" the performance guaranty and maintenance guaranty to be submitted pursuant to §300-49, upon final plan approval and of any other performance or maintenance guaranties required to ensure installation and completion of the entire development, or any specific portion thereof, or the future provision and improvement of common open space facilities.

**The Applicant respectfully requests to defer this requirement to be a condition of approval.**

13. Any stipulation or condition imposed at time of Preliminary Approval.

**The Applicant respectfully requests a waiver of this requirement since preliminary and final approval are being requested concurrently.**

14. Any ordinance requirement for Final Plan approval.

**The Applicant respectfully requests a waiver of this requirement since preliminary and final approval are being requested concurrently.**

15. A statement from the City Engineer that all installed improvements have been inspected and satisfactorily installed.

**The Applicant respectfully requests to defer this requirement to be a condition of approval.**

16. Letters directed to the Board Chair and signed by a responsible official of all utility companies, etc., providing service to the tract.

**The Applicant respectfully requests to defer this requirement to be a condition of approval**

# STORMWATER MANAGEMENT REPORT

for

## Spyglass at Lakes Bay

**Ansley Boulevard and Franklin Boulevard  
Block 255, Lot 1  
City of Pleasantville, Atlantic County, New Jersey**

April 2020

Prepared for:

**SPYGLASS QOZB LLC**

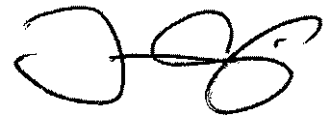
c/o *Scarborough*  
— PROPERTIES —

6 West Roosevelt Boulevard  
Marmora, New Jersey 08223

Prepared by:

**SE** | **SCIULLO**  
ENGINEERING  
SERVICES, LLC

17 South Gordon's Alley, Suite 3  
Atlantic City, New Jersey 08401  
609-300-5171  
[www.sciulloengineering.com](http://www.sciulloengineering.com)



Jason T. Sciullo, PE, PP, CFM  
NJ PE License No. 24GE04586000  
NJ Certificate of Authorization No. 24GA28290700

SCA 003.01

ALL DOCUMENTS PREPARED BY SCIULLO ENGINEERING SERVICES, LLC ARE INSTRUMENTS OF SERVICE WITH RESPECT TO THE PROJECT. THEY ARE NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR REUSE BY THE OWNER OR OTHERS ON EXTENSIONS OF THE PROJECT OR ON ANY OTHER PROJECT. ANY REUSE WITHOUT WRITTEN VERIFICATION OR ADAPTATION BY SCIULLO ENGINEERING SERVICES, LLC FOR THE SPECIFIC PURPOSE INTENDED WILL BE AT OWNER'S SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO SCIULLO ENGINEERING SERVICES, LLC; AND OWNER SHALL INDEMNIFY AND HOLD HARMLESS SCIULLO ENGINEERING SERVICES, LLC FROM ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM.

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## APPENDICES

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APPENDIX H	SOIL TEST PIT LOGS AND PERMEABILITY TESTING RESULTS
APPENDIX I	DRAINAGE AREA PLANS



## 1.0 PROJECT DESCRIPTION

Spyglass QOZB LLC (Applicant) is seeking land use approvals for construction of a mixed-use development with 180 apartments in 6 buildings and approximately 6,000 square feet of commercial and restaurant space along with related surface parking lot(s), landscaping, lighting, utilities and stormwater management features on Block 201, Lot 1 at the corner of Franklin Boulevard and Ansley Boulevard in the City of Pleasantville, Atlantic County, New Jersey (Figure 1).

The site is located within the Waterfront Development (WFC) zoning district of the City (Figure 2) and is subject to the land use controls outlined in the Lakes Bay Redevelopment Plan adopted by the City of Pleasantville. It will also be developed according to land use regulations such as the Coastal Zone Management Rules, Flood Hazard Area Control Act Rules and Stormwater Management Rules administered by the New Jersey Department of Environmental Protection (NJDEP) as applicable.

The surrounding land uses are as follows:

1. To the northwest (across Franklin Boulevard) – Single family residential;
2. To the northeast (across Ansley Boulevard) – Single family residential;
3. To the southeast (across Hampden Court) – Commercial and Recreation uses; and
4. To the southwest (across Bayview Avenue) – Single family residential.

Topographic elevations at the site range from 7 at the central portion of the site to 5 along the southwest property line along Bayview Avenue. Runoff flowing from the site and the immediately surrounding area travels in two general directions. The first being to the southwest along Franklin Boulevard toward Bayview Avenue. It then flows southeast along Bayview Avenue to a set of existing inlets in Bayview Avenue. Discharge from these inlets flows into a ditch located between Bayview and Edgewater Avenues and then along the ditch southeast to Lakes Bay. The second being to the southeast to Hampden Court into the stormwater collection in that street. It then flows northeast in that system to the bulkhead at Tunis Basin connected to Lakes Bay.

The site is located within Flood Zone AE (area of the 1%, 100-year tidal flood event) with a base flood elevation of 10 in the North American Vertical Datum of 1988 (NAVD88) as indicated on the preliminary FEMA Flood Insurance Rate Map for Atlantic County, New Jersey Panel 34001C0319G with a preliminary date of May 30, 2014.

According to the USDA Natural Resources Conservation Service (NRCS) New Jersey Soil Survey web data, the soil types on the project site are:

Hammonton (HbmB) loamy sand, 0 – 5% slopes, (Hydrologic Soil group B);  
Psammaquents (PstAt) sulfidic substratum, 0 – 2% slopes, frequently flooded (Hydrologic Soil group A/D). HSG D will be assumed in the Report.

## 2.0 DESIGN CRITERIA

The stormwater management analysis and design is in accordance with the Stormwater Management Rules at N.J.A.C. 7:8, subchapters 5 and 6, the New Jersey Stormwater Best Management Practices Manual, the New Jersey Soil Erosion and Sediment Control Standards, the New Jersey Residential Site Improvement Standards and City of Pleasantville municipal code chapter 251.

In accordance with the New Jersey Department of Environmental Protection (NJDEP) Stormwater Management Rules at N.J.A.C. 7:8, the development of the project is classified as a "Major Development." A Major Development is defined therein as a development which ultimately disturbs one or more acres of land and/or increases impervious coverage by one-quarter of an acre or more. This project includes disturbance to greater than one acre of land and increases impervious coverage by more than one-quarter acre. The three technical requirements of the Stormwater Management Rules at N.J.A.C. 7:8 that generally need to be addressed are groundwater recharge, runoff quality and runoff quantity. There is also a subjective standard requiring low impact design measures to be incorporated into the project design.

The Runoff Quality Standard at N.J.A.C. 7:8-5.5 requires the stormwater management measures be designed to reduce the post-developed load of total suspended solids (TSS) in stormwater runoff generated from the water quality design storm by 80 percent of the anticipated load from the developed site, expressed as an annual average. The water quality design storm is 1.25 inches of rainfall in two hours. Water quality calculations shall take into account the distribution of rain from the water quality design storm. The calculation of the volume of runoff may take into account the implementation of non-structural and structural stormwater management measures. Additionally, the policies contained within the questions and answers section of the rulemaking process require that any reconstructed vehicle-trafficked impervious surface be treated to 50% TSS removal.

As described at N.J.A.C. 7:8-5.5(i), pursuant to the Flood Hazard Area Control Act Rules at N.J.A.C. 7:13-11.2(j)4, runoff from the water quality design storm that is discharged within a 300-foot riparian zone shall be treated in accordance with N.J.A.C. 7:8-5.5 to reduce the post-construction load of total suspended solids by 95 percent of the anticipated load from the developed site, expressed as an annual average. The discharge point into Tunis Basin that is part of Lakes Bay, which is a Category 1 Water and carries a 300-foot riparian zone, is not within the riparian zone, but rather within the open water as the outfall is an existing pipe outlet extending from the existing bulkhead. This enhanced water quality standard only applies if the discharge is within the riparian zone, which is the area landward of the top of bank, normal water surface or mean high water. This discharge point is waterward of those limits and outside of the riparian zone, therefore this standard does not apply.

### 3.0 TECHNIQUES OF ANALYSIS

In accordance with the stormwater runoff calculation methodology at N.J.A.C. 7:8-5.6, the quantity (volume and rate) of stormwater runoff is calculated based on the USDA NRCS methodology using the NRCS Runoff Equation and Dimensionless Unit Hydrograph, as described in Technical Release 55 - Urban Hydrology for Small Watersheds (TR-55), dated June 1986. A unit peak discharge factor of 285 is applied to the dimensionless unit hydrograph for runoff estimation on lands that are located within the coastal zones of New Jersey rather than the standard factor of 484. This is known as the Delmarva unit hydrograph and applies to this site as described in NJDEP Bulletin No. NJ-210-3-1; being in the coastal plain region with slopes less than 5%, low relief and storage areas in depressions. The Delmarva unit hydrograph will predict a lower peak discharge than that of the standard hydrograph, but the volume of stormwater runoff will not be affected by the factor change.

NRCS 24 hour design storm rainfall depths for New Jersey, as revised August 2012, are used in the calculations. The various Times of Concentration ( $T_c$ ) were determined for pre and post-developed conditions using the hydraulically longest flow path. Where these times

were less than 10 minutes a minimum of 10 minutes is used. The Tc flow path can be found on the Drainage Area Plans located in Appendix I. The pre and post-developed Tc calculations can be found in Appendices C and D.

Curve numbers (CN) were generated for the drainage areas for pre and post-developed conditions based on the soil group and existing or proposed land use. The CN calculations can be found in Appendices C and D for the respective routings. Note that impervious areas were calculated as separate subareas to generate hydrographs without weighted CNs as outlined in the BMP manual chapter 5.

Using the drainage areas, the TCs and CNs as input data, version 10.00-21 of *HydroCAD*, a hydrologic/hydraulic software program by HydroCad Software Solutions, LLC, was employed to generate runoff volumes and rates.

#### 4.0 LAND COVER CONDITIONS

For the purpose of comparison of pre and post development conditions, the site and its tributary offsite areas are naturally broken into two general drainage areas based on the individual locations to which they discharge stormwater from the site. The tables below summarize the pre-existing and post developed cover conditions of the two drainage areas, called EXDA-1, which discharges to an outfall into Tunis Basin identified as Point 1; and EXDA-2, which discharges to an outfall at the ditch between Bayview and Edgewater Avenues identified as Point 2. For the purposes of the quantity analysis, EXDA-1 and EXDA-2 are subdivided into onsite and offsite areas. The significance of evaluating the offsite areas separately is the provisions of the Stormwater Management Rules will only apply to the portions of the drainage areas where improvements are proposed, not the offsite areas that drain to and through the site and will not be modified.

In the predeveloped condition there is a mix of land cover consisting of pavement, buildings, open space and woods as shown on the Drainage Area Plans in Appendix I and summarized below:

**Table 4.1: Pre-Developed Cover Conditions**

Drainage Area Name	Drainage Area (Ac.)	Paved Surfaces (Ac.)	Bare Soil (Ac.)	Open Space (Ac.)	Woods (Ac.)
EXDA-1A offsite	1.148	0.833	0.000	0.310	0.005
EXDA-1 onsite	7.391	0.322	0.000	7.031	0.037
EXDA-2A offsite	0.714	0.301	0.006	0.395	0.011
EXDA-2 onsite	2.417	0.000	0.492	1.794	0.132
Total Existing	11.670	1.456	0.499	9.530	0.185

\* Minor errors ( $\pm 0.001$ ) in totals are due to rounding errors.

**Table 4.2: Post-Developed Cover Conditions**

Drainage Area Name	Drainage Area (Ac.)	Roof & Paved Surfaces (Ac.)	Open Space (Ac.)	Woods (Ac.)
PRDA-1A offsite	3.689	2.887	0.802	0.000
PRDA-1B onsite	1.037	0.693	0.344	0.000
PRDA-2A offsite	0.902	0.503	0.399	0.000
PRDA-2B onsite	2.072	1.572	0.500	0.000
PRDA-2C onsite	2.258	1.116	1.142	0.000
ΣBLDG -1 through 6	1.712	1.712	0.000	0.000
Total Proposed	11.670	8.482	3.188	0.000

\* Minor errors ( $\pm 0.001$ ) in totals are due to rounding errors.

In summary, the total drainage area is 11.670 acres, the area of disturbance is 10.370 acres, and the total increase in impervious surface is 7.026 acres.

## 5.0 STORMWATER MANAGEMENT FACILITIES

The stormwater management (SWM) system will consist of a series of three stormwater management basins located throughout the site. Since this project is exempt from the Runoff Quantity Control Standard at N.J.A.C. 7:8-5.4(a)3 and the Groundwater Recharge Standard at N.J.A.C. 7:8-5.4(a)2, the facilities proposed for the project are designed to satisfy the Runoff Quality Control Standard at N.J.A.C. 7:8-5.5 and safely pass larger storm events without increased flooding downstream. Given the grading that will occur at the site due to its location in a flood hazard area, the proposed stormwater management features are filled infiltration basins within the Applicant's property.

The on-site stormwater management system will be maintained by the Applicant/Owner. It will be constructed in accordance with current NJDEP standards including adequate separation to the estimated seasonal high water table, limited depth of runoff to be infiltrated, and permeable soil to ensure stored runoff infiltrates within 72 hours. They will also include a K5 sand bottom area as recommended in the Best Management Practices (BMP) Manual for the purpose of maintaining permeability rates of the subsoil over time allowing ease of replacement during periodic maintenance.

According to Chapter 9.4 of the BMP Manual, the lowest elevation in an infiltration basin must be at least two (2) feet above the seasonal high groundwater table. Soil test pits were advanced at multiple locations within the site, the results for which are included in Appendix H and on the Grading Plan sheet C0301 in the overall project plan set. Depths to the seasonally high groundwater table at each of the soil boring locations were measured. The proposed minimum separation to the seasonal high water table will be two feet from the bottom of the K5 sand layer.

Basin 1B will be located in the northeastern portion of the site. Discharge from Basin 1B will be directed to the proposed stormwater collection system for discharge to Tunis Basin at Existing Outfall 1. Outlet Structure 1 will control the discharge from this basin. It will be a Type E Inlet with a low flow orifice.

Basin 2B will be centrally located within the site. Discharge from Basin 2B will be directed to Basin 2C through a 24" reinforced concrete pipe.

Basin 2C will be located at the southwesterly edge of the site along Bayview Avenue. Discharge from Basin 3 will be controlled by Outlet Structure 2. It will be a Type E Inlet with a low flow orifice. Discharge from this structure will be directed to the stormwater collection system in Bayview Avenue for discharge to an existing ditch at Existing Outfall 2. Discharge from this ditch flows to Lakes Bay.

## 6.0 GROUNDWATER RECHARGE

Pursuant to N.J.A.C. 7:8-5.4(a)2.ii, the groundwater recharge standard does not apply to projects within the 'urban redevelopment area' which are those areas of the Metropolitan Planning Area (Planning Area 1) that were previously developed. This site is within PA-1 and previously developed and is therefore exempt from the groundwater recharge standard.

## 7.0 RUNOFF QUANTITY

Pursuant to N.J.A.C. 7:8-5.4(a)3.iv, in tidal flood hazard areas, stormwater runoff quantity analysis in accordance with N.J.A.C. 7:8-5.4(a)3i, ii and iii shall only be applied if the increased volume of stormwater runoff could increase flood damages below the point of discharge. The point of discharge from this development is to two locations – the tidal waterbody known as Tunis Basin connected to Lakes Bay and an open ditch that flows to Lakes Bay. In both instances, the existing municipal sewer system immediately upstream of those points, to which the proposed site system will connect, are in poor condition and/or undersized by current design standards. As part of this project, sections of those existing municipal storm sewer systems below the point of discharge for this project will be replaced and/or upgraded so that any increase in runoff will not increase flood damages below the point of discharge. This project is therefore exempt from the runoff quantity standard.

Although exempt from the quantity control standard, the basins are designed so that during storms up to the 100-year (1% chance of occurring in any given year), the basins will safely pass runoff directed to them such that no runoff discharges uncontrolled or causes erosion on site or downstream. The tables below show the basin water surface elevations during each storm event at each basin:

**Table 7.1: Stormwater Management Basin water surface elevations**

Design Storm (year)	Water Surface Elevations		
	Proposed Basin 1B	Proposed Basin 2B	Proposed Basin 2C
WQ	7.45	7.22	7.22
2	7.60	7.80	7.80
10	7.65	8.24	8.24
100	7.73	8.81	8.81
100 (emergency)	8.00	9.36	9.36

As can be seen in the summaries above and the stormwater management calculations in Appendices C and D, the runoff leaving the site is controlled and will not increase potential for flood damage(s) downstream.

## 8.0 RUNOFF QUALITY

In accordance with NJAC 7:8-5.2 and 5.5(a), a land development that creates 0.25 acres or more of new or additional impervious surface must include stormwater management measures to address the water quality standard of the rules. The Runoff Quality Standard at N.J.A.C. 7:8-5.5 requires the stormwater management measures be designed to reduce the post-developed load of total suspended solids (TSS) in stormwater runoff generated from the water quality design storm by 80 percent of the anticipated load from the developed site, expressed as an annual average. Additionally, the policies contained with the questions and answers section of the rulemaking process require that any reconstructed vehicle-trafficked impervious surface be treated to 50% TSS removal.

Basins 1B and 3B are infiltration structures. In accordance with Chapter 4 of the BMP Manual, infiltration structures are given a TSS removal rate of 80%. The calculations for the Water Quality Storm in Appendix D show that the entire volume of runoff to those basins during the water quality storm event is retained for infiltration. Since the volume of runoff retained in the basins is greater than or equal to the runoff generated by the WQ storm, the water quality requirement provided by those basins is 80%. In addition to the infiltration basins, the project also includes Contech CDS treatment devices at the downstream end of the stormwater conveyance systems where they connect to the street system in Bayview Avenue and Tunis Basin. CDS devices are approved for a 50% TSS removal rate by the New Jersey Corporation for Advanced Technology (NJCAT) and NJDEP.

Comparing the sum of the coverage conditions from Tables 4.1 and 4.2, the development results in 7.026 acres increase in impervious coverage. 1.712 acres of that increase is rooftops, which does not require water quality treatment, leaving 5.314 acres that needs to be treated to 80% TSS removal. Additionally, there is a total of 0.322 acres of existing impervious surface on the project site that will be reconstructed (mostly the portion of Ansley Boulevard to be vacated), which is required to be treated to 50% TSS removal.

Pursuant to N.J.A.C. 7:8-5.5(d) if there is more than one onsite drainage area, the 80 percent TSS removal rate shall apply to each drainage area, unless the runoff from the subareas converge on site in which case the removal rate can be demonstrated through a calculation using a weighted average. There is a large offsite area of impervious surface that drains to the same outfall points as the project, and it (and the 0.322 acres of on-site impervious) currently goes untreated. This project proposes to not only treat the new and reconstructed impervious surfaces, but also areas of existing vehicle-trafficked impervious surface that currently receive no treatment in the form of the surrounding roadways that drain to the same outfalls. This approach provides an increase in overall treatment and net overall environmental benefit. The areas to be treated create the following average TSS removal rates:

Proposed to Point 1

- 0.693 acres to Basin 1B to receive 80% TSS removal then to treatment device for 50% TSS removal for a total of 90% TSS removal using equation at NJAC 7:8-5.5(b) [ $R = 80\% + 50\% - (80\% \times 50\%) / 100 = 90\%$ ]
- 2.810 acres of proposed on-site and existing offsite impervious area to treatment device for 50% TSS removal

$$\text{Proposed Average TSS removal} = (0.693\text{ac} \times 90\% + 2.810\text{ac} \times 50\%) / 3.503\text{ac} = 57.9\%$$

The treatment required for this same area is the increase in impervious surface at 80% and the reconstructed area at 50%. The total increase in impervious surface to Point 1 is 3.503 acres of proposed impervious – 1.456 acres of existing impervious = 2.047 acres of increased impervious surface. This has to be treated to 80% TSS removal. Of the existing impervious, 0.322 acres will be reconstructed and has to be treated to 50% TSS removal. The balance of the existing impervious area to Point 1 is existing roadways to remain unchanged and requires no TSS removal treatment. As such, the required average treatment to the drainage area to Point 1 is as follows:

$$\text{Required Average TSS removal} = (2.047\text{ac} \times 80\% + 0.322\text{ac} \times 50\% + 1.134\text{ac} \times 0\%) / 3.503\text{ac} = 51.3\%$$

Since the average TSS treatment proposed exceeds the average TSS treatment required, the project exceeds the water quality treatment standards of NJAC 7:8-5.5.

Proposed to Point 2

- 2.764 acres to Basin 2C to receive 80% TSS removal then to treatment device for 50% TSS removal for a total of 90% TSS removal using equation at NJAC 7:8-5.5(b) [ $R = 80\% + 50\% - (80\% \times 50\%) / 100 = 90\%$ ]
- 0.502 acres of proposed on-site and existing offsite impervious area to treatment device for 50% TSS removal

$$\text{Proposed Average TSS removal} = (2.764\text{ac} \times 90\% + 0.502\text{ac} \times 50\%) / 3.266\text{ac} = 83.85\%$$

The treatment required for this same area is the increase in impervious surface at 80% and the reconstructed area at 50%. The total increase in impervious surface to Point 2 is 3.266 acres of proposed impervious – 0.301 acres of existing impervious = 2.965 acres of increased impervious surface. This has to be treated to 80% TSS removal. The balance of the existing impervious area to Point 2 is existing roadways to remain unchanged and requires no TSS removal treatment. As such, the required average treatment to the drainage area to Point 2 is as follows:

$$\text{Required Average TSS removal} = (2.965\text{ac} \times 80\% + 0.301\text{ac} \times 0\%) / 3.266\text{ac} = 72.6\%$$

Since the average TSS treatment proposed exceeds the average TSS treatment required, the project exceeds the water quality treatment standards of NJAC 7:8-5.5.

## **9.0 LOW IMPACT TECHNIQUES**

The stormwater management system design includes Low Impact Design measures in the form of water quality treatment structures to remove suspended solids from not only the proposed vehicle trafficked impervious surfaces, but also the existing roads surrounding the site that drain to and through the project site. This approach provides water quality enhancement that not only exceeds the regulatory requirements, but also improves the water quality of runoff coming from a much larger area than required by the regulations. A Low Impact Development Checklist is included in Appendix A.

## **10.0 SOIL EROSION AND SEDIMENT CONTROL**

In addition to temporary soil erosion and sediment control measures during construction, permanent scour holes and rip-rap aprons are located at the points runoff will exit the developed areas towards the stormwater management basins.

## **11.0 STORMWATER CONVEYANCE**

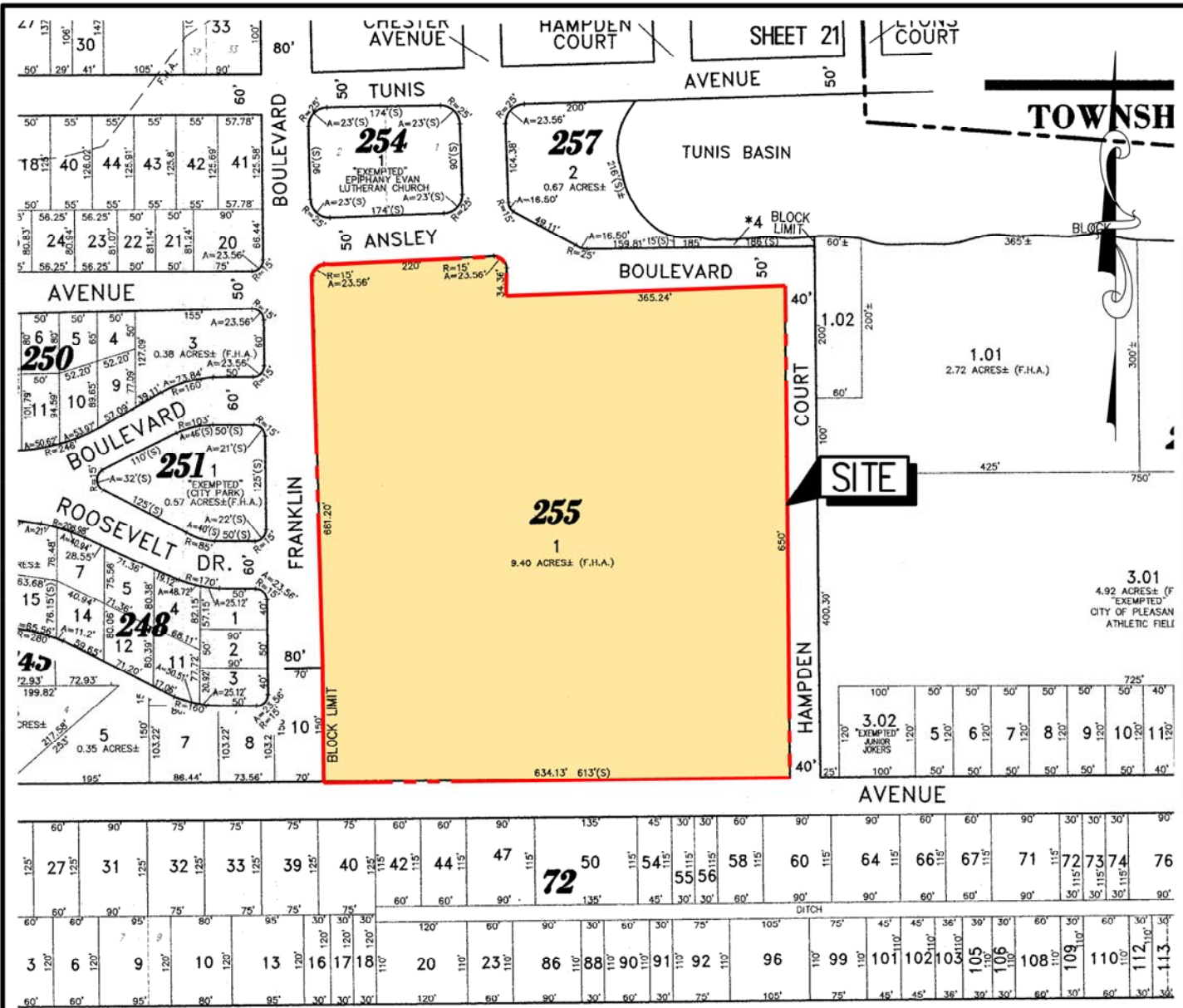
The Rational method was used for proposed storm inlet and pipe design. The stormwater conveyance system was designed in accordance with accepted practice. The proposed storm sewer collection pipes are designed to convey the 25-year storm. A minimum pipe diameter of 15 inches for storm drains is utilized. The crowns of the pipes have been matched when the pipe size increases. The pipe slopes are designed to provide a minimum of 2.0 feet/second velocity when flowing half full. See Appendix G for the Storm Sewer Calculations.

## **12.0 CONCLUSION**

As described above, the entire Stormwater Management System and its components are designed in accordance with applicable state and local municipal regulations and requirements and low impact stormwater management measures are utilized where practical. The infiltration basins are designed to accommodate the required design storms and provide water quality treatment as outlined in the State Stormwater Rules at N.J.A.C. 7:8 and Municipal ordinance chapters 251 and 300 while providing an environmentally responsible and economically feasible system.

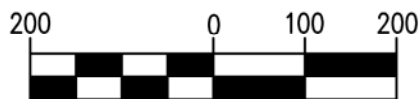
## **FIGURES**





SOURCE: OFFICIAL TAX MAP OF CITY OF PLEASANTVILLE, SHEET 20, REVISED OCTOBER 16, 2007

## GRAPHIC SCALE



1 INCH = 200 FEET

SCA 003.01

17 South Gordon's Alley  
Suite 3  
Atlantic City  
New Jersey 08401



NJ CERTIFICATE OF AUTHORIZATION NO. 24GA28290700

ph (609) 300-5171

## FIGURE 1 TAX MAP

## SPYGLASS AT LAKES BAY

CITY OF PLEASANTVILLE, ATLANTIC COUNTY, NEW JERSEY

DATE:

4/15/2020

SCALE:

$$1'' = 200'$$

DRAWN BY:

LAT



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SOURCE: OFFICIAL ZONING MAP, CITY OF PLEASANTVILLE

SCA 003.01

17 South Gordon's Alley  
Suite 3  
Atlantic City  
New Jersey 08401

**SE** | **SCIULLO**  
ENGINEERING  
SERVICES, LLC

ph (609) 300-5171

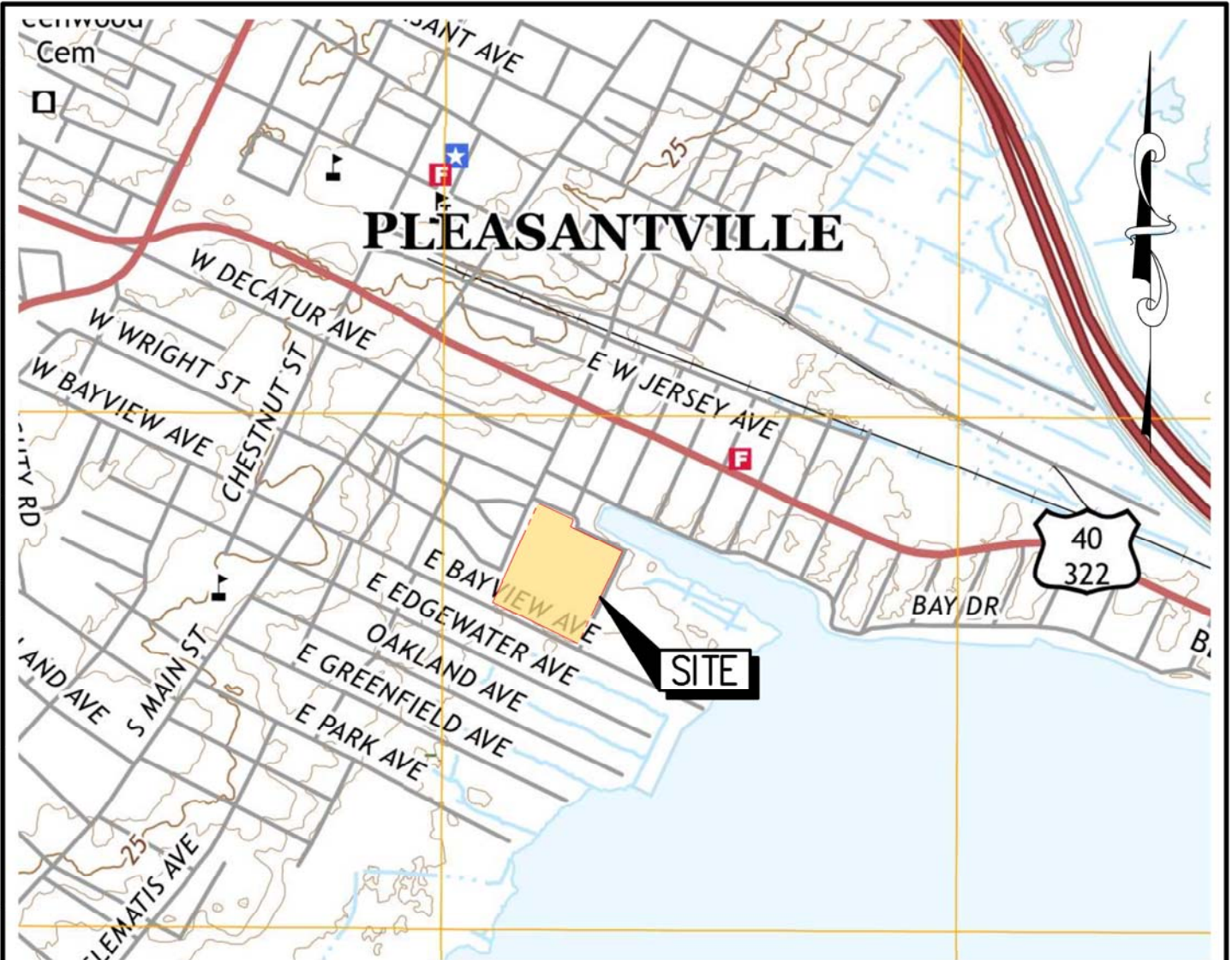
NJ CERTIFICATE OF AUTHORIZATION NO. 24GA28290700

**FIGURE 2 ZONING MAP**  
**SPYGLASS AT LAKES BAY**  
CITY OF PLEASANTVILLE, ATLANTIC COUNTY, NEW JERSEY

DATE:	4/15/2020	SCALE:	N.T.S.	DRAWN BY:	LAT
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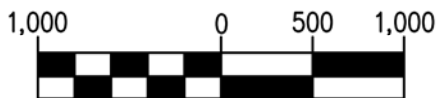


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SOURCE: U.S.G.S. QUAD SHEET FOR PLEASANTVILLE, NEW JERSEY

### GRAPHIC SCALE



1 INCH = 1,000 FEET

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Atlantic City  
New Jersey 08401

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## FIGURE 3 U.S.G.S. MAP

SPYGLASS AT LAKES BAY

CITY OF PLEASANTVILLE, ATLANTIC COUNTY, NEW JERSEY

DATE:

4/15/2020

SCALE:

1" = 1,000'

DRAWN BY:

LAT



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SOURCE: SOILS DATA OBTAINED FROM NATURAL RESOURCES CONSERVATION SERVICES (NRCS)  
U.S. DEPARTMENT OF AGRICULTURE.

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ENGINEERING  
SERVICES, LLC

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NJ CERTIFICATE OF AUTHORIZATION NO. 24GA28290700

## FIGURE 4 SOILS MAP

SPYGLASS AT LAKES BAY

CITY OF PLEASANTVILLE, ATLANTIC COUNTY, NEW JERSEY

DATE:

4/15/2020

SCALE:

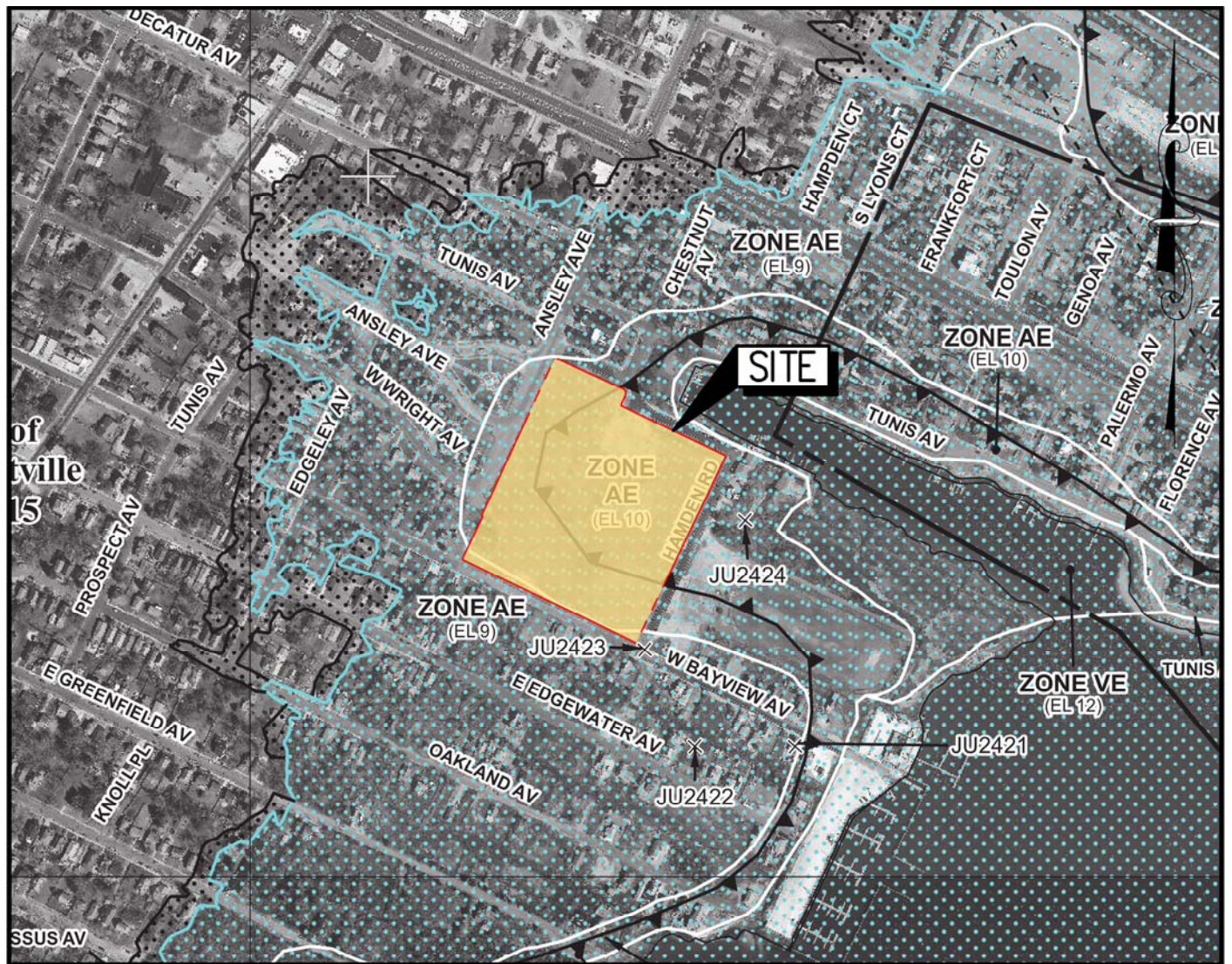
1" = 250'

DRAWN BY:

LAT



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SOURCE:  
FEMA FLOOD INSURANCE RATE MAP FOR TOWN OF HAMMONTON, PANEL NO. 34001C0319G

SCA 003.01

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Atlantic City  
New Jersey 08401

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**ENGINEERING**  
**SERVICES, LLC**

ph (609) 300-5171

NJ CERTIFICATE OF AUTHORIZATION NO. 24GA28290700

## FIGURE 5 FLOOD MAP

### SPYGLASS AT LAKES BAY

CITY OF PLEASANTVILLE, ATLANTIC COUNTY, NEW JERSEY

DATE:

4/15/2020

SCALE:

N.T.S.

DRAWN BY:

LAT



# **APPENDIX A**

## **Low Impact Development Checklist**



# New Jersey Stormwater Best Management Practices Manual

February 2004

## Low Impact Development Checklist

Municipality: City of Pleasantville

County: Atlantic County

Date: April 2020

Review board or agency: Pleasantville Planning Board  
Atlantic County Development Review Committee  
New Jersey Department of Environmental Protection  
Cape Atlantic Conservation District

Proposed land development name: Spyglass at Lakes Bay

Lot(s): 1 Block(s): 255

Project or application number:

Applicant's name: Spyglass QOZB LLC c/o Scarborough Properties

Applicant's address: 6 West Roosevelt Boulevard, Marmora, NJ 08223

Telephone: 609-904-5444 Fax:

Email address: sean@scarboroughproperties.com

Designer's name: Jason T. Sciullo, PE, PP; Sciullo Engineering Services, LLC

Designer's address: 17 South Gordon's Alley, Suite 3, Atlantic City, NJ 08401

Telephone: 609-300-5171 Fax:

Email address: [jsciullo@sciulloengineering.com](mailto:jsciullo@sciulloengineering.com)

### Part 1: Description of Nonstructural Approach to Site Design

In narrative form, provide an overall description of the nonstructural stormwater management approach and strategies incorporated into the proposed site's design. Attach additional pages as necessary. Details of each nonstructural strategy are provided in Part 3 below.

The Development Plan that is the subject of this report is a major site plan for the development of a mixed use project that includes 180 apartments in 6 buildings and approximately 6,000 square feet of retail and restaurant space. The site work includes parking and drives required to meet minimum parking standards, landscaping, lighting and stormwater management facilities. The nonstructural stormwater management strategies that are required have been generally employed in the design of this development and include the following:

1. Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss.
  - (a) The site is in a tidal flood hazard area and the development of it will protect the area from erosion and sediment loss and provide water quality benefits.
2. Maximize the protection of natural vegetation.
  - (a) There is no natural vegetation at the site since it is the former location of the Pleasantville High School and is currently an open grassed field.
3. Minimize the decrease in the “time of concentration” from pre-construction to post-construction.
  - (a) The time of concentration is decreased with the project development since the project site is required to use inlets and piping since it is relatively flat and has to be filled in order to meet flood hazard standards. As such, the design is “saw toothed” and requires conveyance to drain the site by gravity.
4. Minimize land disturbance including clearing and grading.
  - (a) Land disturbance is limited to only that necessary to construct the proposed project and the site is already cleared and was previously developed.
5. Minimize soil compaction.
  - (a) Construction traffic will be limited to only those areas to be developed at the site including parking areas and drives.
6. Provide low-maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers and pesticides.
  - (a) All landscaping and vegetative restoration will comply with the requirements of the Pleasantville Land Development Ordinance.
7. Provide other source controls to prevent or minimize the use or exposure of pollutants at the site in order to prevent or minimize the release of those pollutants into stormwater runoff.
  - (a) Maintenance of the stormwater management facilities will require that any trash or debris must be removed periodically and disposed of according to regulations.
  - (b) Revegetation of disturbed areas with a permanent vegetative cover will be performed in accordance with the Standards for Soil Erosion and Sediment Control in New Jersey.

## Part 2: Review of Local Stormwater Management Regulations

Title and date of stormwater management regulations used in development design:

NJ Stormwater Management Rules (NJAC 7:8-5.1 et. seq.).  
NJ Residential Site Improvement Standards (NJAC 5:21, which refer to NJAC 7:8).  
Pleasantville Stormwater Management Ordinance Chapters 251 and 300.

Do regulations include nonstructural requirements? Yes: XX No:

If yes, briefly describe: See NJAC 7:8-5.3(b)1-9.

List LID-BMP's prohibited by local regulations: None

Pre-design meeting held? Yes: XX Date: February 2019 No:

Meeting held with: City Planning Board and Redevelopment Committee

Pre-design site walk held? Yes: Date: No: XX

Site walk held with: NA

Other agencies with stormwater review jurisdiction:

Name: Cape Atlantic Conservation District

Required approval: Certification of Soil Erosion and Sediment Control Plan

Name: New Jersey Department of Environmental Protection

Required approval: Coastal Area Facilities Review Act (CAFRA) Permit

### Part 3: Nonstructural Strategies and LID-BMP's in Design

#### 3.1 Vegetation and Landscaping

Effective management of both existing and proposed site vegetation can reduce a development's adverse impacts on groundwater recharges and runoff quality and quantity. This section of the checklist helps identify the vegetation and landscaping strategies and nonstructural LID-BMP's that have been incorporated into the proposed development's design to help maintain existing recharge rates and/or minimize or prevent increases in runoff quantity and pollutant loading.

A. Has an inventory of existing site vegetation been performed? Yes: XX No:

If yes, was this inventory a factor in the site's layout and design? Yes: No: XX

B. Does the site design utilize any of the following nonstructural LID-BMP's?

Preservation of natural areas? Yes: No: XX If yes, specify % of site:

Native ground cover? Yes: No: XX If yes, specify % of site:

Vegetated buffers? Yes: No: XX If yes, specify % of site:

C. Do the land development regulations require these nonstructural LID-BMP's?

Preservation of natural areas? Yes: No: XX If yes, specify % of site:

Native ground cover? Yes: No: XX If yes, specify % of site:

Vegetated buffers? Yes: No: XX If yes, specify % of site:

D. If vegetated filter strips or buffers are utilized, specify their functions:

Reduce runoff volume increases through lower runoff coefficient: Yes: No:

Reduce runoff pollutant loads through runoff treatment: Yes: No:

Maintain groundwater recharge by preserving natural areas: Yes: No:

### 3.2 Minimize Land Disturbance

Minimizing land disturbance is a nonstructural LID-BMP that can be applied during both the development's construction and post-construction phases. This section of the checklist helps identify those land disturbance strategies and nonstructural LID-BMP's that have been incorporated into the proposed development's design to minimize land disturbance and the resultant change in the site's hydrologic character.

A. Have inventories of existing site soils and slopes been performed? Yes: XX No:

If yes, were these inventories factors in the site's layout and design? Yes: No: XX

B. Does the development's design utilize any of the following nonstructural LID-BMP's?

Restrict permanent site disturbance by land owners? Yes: No: XX  
If yes, how:

Restrict temporary site disturbance during construction? Yes: No: XX

If yes, how:

Consider soils and slopes in selecting disturbance limits? Yes: No: XX

If yes, how:

C. Specify percentage of site to be cleared: 0% Regraded: 100%

D. Specify percentage of cleared areas done so for buildings: 0%

For driveways and parking: 0% For roadways: 0%

E. What design criteria and/or site changes would be required to reduce the percentages in

C and D above? None.

F. Specify site's (area to be developed) hydrologic soil group (HSG) percentages:

HSG A: 0%                      HSG B: 51%                      HSG C: 0%                      HSG D: 49%

G. Specify percentage of each HSG that will be permanently disturbed:

HSG A: 0%                      HSG B: 100%                      HSG C: 0%                      HSG D: 100%

H. Locating site disturbance within areas with less permeable soils (HSG C and D) and minimizing disturbance within areas with greater permeable soils (HSG A and B) can help maintain groundwater recharge rates and reduce runoff volume increases. In light of the HSG percentages in F and G above, what other practical measures if any can be taken to achieve this?

None.

I. Does the site include Karst topography?                      Yes:                      No:    XX

If yes, discuss measures taken to limit Karst impacts:

### 3.3 Impervious Area Management

New impervious surfaces at a development site can have the greatest adverse effect on groundwater recharge and stormwater quality and quantity. This section of the checklist helps identify those nonstructural strategies and LID-BMP's that have been incorporated into a proposed development's design to comprehensively manage the extent and impacts of new impervious surfaces.

A. Specify impervious cover at site (within area to be developed):

Existing: 0.322 acres    Proposed: 6.865 acres (73.2%)

B. Specify maximum site impervious coverage allowed by regulations: 90%

C. Compare proposed street cartway widths with those required by regulations:

Type of Street	Proposed Cartway Width (feet)	Required Cartway Width (feet)
Residential access - low intensity	NA	NA
Residential access - medium intensity	NA	NA
Residential access - high intensity with parking	NA	NA
Residential access - high intensity without parking	NA	NA
Neighborhood	NA	NA
Minor collector -low intensity without parking	NA	NA
Minor collector - with one parking lane	NA	NA
Minor collector - with two parking lanes	NA	NA
Minor collector - without parking	NA	NA

Major collector	NA	NA
Private Drive	24	24

D. Compare proposed parking space dimensions with those required by regulations:

Proposed: onsite 9' x 18'      Regulations: 9' x 18'

E. Compare proposed number of parking spaces with those required by regulations (entire site):

Proposed: 306 surface + 96 garage      Regulations: 311

F. Specify percentage of total site (current development) impervious cover created by buildings: 27.1%

By driveways and parking: 60.3%      By roadways: 12.5%

G. What design criteria and/or site changes would be required to reduce the percentages in F above? Revise the zoning requirements to allow less coverage and/or require less parking.

H. Specify percentage of total impervious area that will be unconnected:

Total site: 0%    Buildings: 0%      Driveways and parking: 0%      Roads: 0%

I. Specify percentage of total impervious area that will be porous:

Total site: 0%    Buildings: 0%      Driveways and parking: 0%      Roads: 0%

J. Specify percentage of total building roof area that will be vegetated: 0%

K. Specify percentage of total parking area located beneath buildings: 0%

L. Specify percentage of total parking located within multi-level parking deck: 0%

### 3.4 Time of Concentration Modifications

Decreasing a site's time of concentration ( $T_c$ ) can lead directly to increased site runoff rates which, in turn, can create new and/or aggravate existing erosion and flooding problems downstream. This section of the checklist helps identify those nonstructural strategies and LID-BMP's that have been incorporated into the proposed development's design to effectively minimize such  $T_c$  decreases.

When reviewing  $T_c$  modification strategies, it is important to remember that a drainage area's  $T_c$  should reflect the general conditions throughout the area. As a result,  $T_c$  modifications must generally be applied throughout a drainage area, not just along a specific  $T_c$  route.

A. Specify percentage of site's total stormwater conveyance system length that will be:

Storm sewer: 83%                      Vegetated swale: 0%                      Natural Channel: 0%

Stormwater management facility: 17%                      Other: NA

Note: the total length of the stormwater conveyance system should be measured from the site's downstream property line to the downstream limit of sheet flow at the system's headwaters.

B. What design criteria and/or site changes would be required to reduce the storm sewer percentages and increase the vegetated swale and natural channel percentages in A above?

Since the site is in a tidal flood hazard area, has to be filled to meet flood hazard standards, and cannot drain overland via gravity without substantial additional fill or impacts to roadways, there is no practicable way to add vegetated conveyance without substantially reducing site yield. Since this is a redevelopment site, and not virgin ground, reducing yield is unreasonable.

C. In conveyance system sub areas that have overland or sheet flow over impervious surfaces or turf grass, what practical and effective site changes can be made to:

Decrease overland flow slope: none

Increase overland flow roughness: none

### 3.5 Preventative Source Controls

The most effective way to address water quality concerns is by pollution prevention. This section of the checklist helps identify those nonstructural strategies and LID-BMP's that have been incorporated into the proposed development's design to reduce the exposure of pollutants to prevent their release into the stormwater runoff.

A. Trash Receptacles

Specify the number of trash receptacles provided: 0

Specify the spacing between the trash receptacles: NA

Compare trash receptacles proposed with those required by regulations:

Proposed: 0

Regulations: 0

#### B. Pet Waste Stations

Specify the number of pet waste stations provided: none

Specify the spacing between the pet waste stations: none

Compare pet waste stations proposed with those required by regulations:

Proposed: NA

Regulations: NA

#### C. Inlets, Trash Racks, and Other Devices that Prevent Discharge of Large Trash and Debris

Specify percentage of total inlets that comply with the NJPDES storm drain inlet criteria: 100%.

#### D. Maintenance

Specify the frequency of the following maintenance activities:

Street sweeping: Proposed: annual Regulations: none

Litter collection: Proposed: weekly Regulations: none

Identify other stormwater management measures on the site that prevent discharge of large trash and debris: All entrances into the stormwater management system are protected with approved inlet grates or trash racks.

#### E. Prevention and Containment of Spills

Identify locations where pollutants are located on the site, and the features that prevent these pollutants from being exposed to stormwater runoff:

Pollutant: NA

Location: NA

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: NA

Location: NA

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: NA

Location: NA

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: NA

Location: NA

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: NA

Location: NA

## Part 4: Compliance with Nonstructural Requirements of NJDEP Stormwater Management Rules

- Based upon the checklist responses above, indicate which nonstructural strategies have been incorporated into the proposed development's design in accordance with N.J.A.C. 7:8-5.3(b):

No.	Nonstructural Strategy	Yes	No
1.	Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss.	X	
2.	Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces.	X	
3.	Maximize the protection of natural drainage features and vegetation.	X	
4.	Minimize the decrease in the pre-construction time of concentration.	X	
5.	Minimize land disturbance including clearing and grading.	X	
6.	Minimize soil compaction.	X	
7.	Provide low maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers, and pesticides.	X	
8.	Provide vegetated open-channel conveyance systems discharge into and through stable vegetated areas.	X	
9.	Provide preventative source controls.	X	

- For those strategies that have not been incorporated into the proposed development's design, provide engineering, environmental, and/or safety reasons. Attach additional pages as necessary.

The Low Impact Design measures outlined and recommended within the applicable regulations have been incorporated into the design to the maximum extent practicable.



## **APPENDIX B**

### **STORMWATER MANAGEMENT FACILITY MAINTENANCE MANUAL**



## **STORMWATER MANAGEMENT FACILITY MAINTENANCE MANUAL**

### **INSPECTION, MAINTENANCE AND CONTROL PLAN**

#### **A. PROJECT INFORMATION**

##### **I. DRAWINGS OF STORMWATER MANAGEMENT MEASURES:**

Site Stormwater Management Plans are included on the Project's Site Plan which is included herein by reference.

##### **II. LOCATION OF STORMWATER MANAGEMENT MEASURES BY MEANS OF LATITUDE AND LONGITUDE AND BLOCK AND LOT:**

The site's BMP's (Stormwater Management Facilities) are located on Block 255, Lot 1. The center of the site is approximately LAT: 39.385839, LONG: 74.521282

##### **III. PREVENTATIVE CORRECTIVE MAINTENANCE TASKS AND SCHEDULES:**

Refer to SECTION B.III for Summary of Maintenance Procedures.

##### **IV. COST ESTIMATE:**

Refer to SECTION B.IV, Cost of SWMF Maintenance Tasks

##### **V. NAME OF PERSON RESPONSIBLE FOR INSPECTIONS AND MAINTENANCE:**

Company / Individual:	Scarborough Properties
CONTACT:	Sean Scarborough
ADDRESS:	6 West Roosevelt Boulevard Marmora, New Jersey 08223
PHONE:	609-904-5444

#### **B. PREVENTATIVE MAINTENANCE PROCEDURES**

##### **I. OBJECTIVES**

The purpose of preventative maintenance is to assure that a Stormwater Management Facility (SWMF) remains operational and safe at all times, while minimizing the need for emergency or corrective procedures.

##### **II. OVERVIEW**

A comprehensive SWMP maintenance program is comprised of several related requirements including:

- A. Providing adequate funding, staffing, equipment, and materials.
- B. Performing routine maintenance procedures on a regular basis.

- C. Performing emergency maintenance procedures and repairs in a timely manner.
- D. Conducting SWMF inspections to determine the need for and effectiveness of maintenance work.
- E. Providing training and instruction to maintenance personnel and inspections.
- F. Conducting periodic program reviews and evaluations to determine the overall effectiveness of the maintenance programs and the need for revised or additional maintenance procedures, personnel, and equipment.
- G. Instilling pride of workmanship and a commitment to excellence in program personnel.

### **III. SUMMARY OF MAINTENANCE PROCEDURES**

#### **A. PREVENTATIVE MAINTENANCE PROCEDURES**

##### **1. Grass Cutting**

A regularly scheduled program of mowing and trimming of grass at SWMF's during the growing season will help to maintain a tightly knit turf and will also help to prevent diseases, pests, and the intrusion of weeds. The actual mowing requirements of an area should be tailored to the specific site conditions, grass type, and seasonal variations in the climate. In general, grass should not be allowed to grow more than 1 to 2 inches between cuttings. Allowing the grass to grow more than this amount prior to cutting it may result in damage to the blades growing points and limit its continued healthy growth. Agencies such as the local Soil Conservation District can provide valuable assistance in determining optimum mowing requirements.

##### **2. Grass Maintenance**

Grassed areas require periodic fertilizing, de-thatching, and soil conditioning in order to maintain healthy growth. Additionally, provisions should be made to re-seed and re-establish grass cover in areas damaged by sediment accumulation, storm water flow, or other causes. Agencies such as the local Soil Conservation District can provide valuable assistance in establishing a suitable grass maintenance program.

##### **3. Vegetative Cover**

Trees, shrubs, and ground cover require periodic maintenance, including fertilizing, pruning, and pest control in order to maintain healthy growth. Agencies such as the local Soil Conservation District can be of assistance in establishing a preventative maintenance program.

##### **4. Removal and Disposal of Trash and Debris**

A regularly scheduled program of debris and trash removal from SWMF's will reduce the chance of outlet structures, trash racks, and other components becoming clogged and inoperable during storm events. Specific attention to the weirs within manholes as well

as the oil and grease separators shall be included at each inspection. Additionally, removal of trash and debris will prevent possible damage to vegetated areas and eliminate potential mosquito breeding habitats. Disposal of debris and trash must comply with all local, county, state, and federal waste flow control regulations. Only suitable disposal and recycling sites should be utilized. Agencies such as the Division of Solid Waste Management of the New Jersey Department of Environmental Protection should be contacted for information on disposal regulations.

## **5. Sediment Removal and Disposal**

The roof drainage collection and subterranean storage system are designed as a closed system through the use of gutter guards at the source of the runoff. No other surface runoff is expected to enter this system. Accumulated sediment should be removed before it threatens the operation or storage volume of a SWMF. This includes the sections of the roof drainage collection system, the eccentric manifold at each end of the subterranean basin. Removal of accumulated sediment in these pipes shall be accomplished with the use of Vactor equipment. Disposal of sediment must comply with all local, county, state, and federal regulations. Only suitable disposal sites should be utilized. The sediment removal program in infiltration facilities must also include provisions for monitoring the porosity of the sub-base, and replacement or cleansing of the pervious materials as necessary. Agencies such as the Division of Soil Waste Management of the New Jersey Department of Environmental Protection should be contacted for information on disposal regulations.

## **6. Mechanical Components**

SWMF components, such as valves, sluice gates, pumps, fence gates, locks, and access hatches should remain functional at all times. Regularly scheduled maintenance should be performed in accordance with the manufacturers' recommendations. Additionally, all mechanical components should be operated at least once every three months to assure their continued performance.

## **7. Elimination of Potential Mosquito Breeding Habitats**

The most effective mosquito control program is one that eliminates potential breeding habitats. Almost any stagnant pool of water can be attractive to mosquitoes, and the source of a large mosquito population. Ponded water in areas such as open cans and bottles, debris and sediment accumulations and areas of ground settlement provide ideal locations for mosquito breeding. A maintenance program dedicated to eliminating potential breeding areas is certainly preferable to controlling the health and nuisance effects of flying mosquitoes. The local Mosquito Control Commission can provide valuable information on establishing this maintenance program.

## **8. Inspection**

Regularly scheduled inspections of the facility should be performed by qualified inspectors. The primary purpose of the inspections is to ascertain the operational condition of embankments, outlet structures, and other safety-related aspects. Inspections will also provide information on the effectiveness of regularly scheduled preventative and aesthetic maintenance procedures and will help to identify where changes are warranted. Finally, the facility inspections should be used to determine the

need for and timing of corrective maintenance procedures. In addition to regularly scheduled inspections, an informal inspection should be performed during every visit to a SWMF by maintenance or supervisory personnel. An inspection checklist and is included as part of this maintenance plan.

## **9. Reporting**

The recording of all maintenance work and inspections provide valuable data on the facility condition. Along with the written reports, a chain of command for reporting and solving maintenance problems and addressing maintenance needs should be established.

# **B. CORRECTIVE MAINTENANCE PROCEDURES**

## **1. Removal of Debris and Sediment**

Sediment, debris, and trash should be removed immediately and properly disposed of in a timely manner. Equipment and personnel must be available to perform the removal work on short notice. The lack of an available disposal site should not delay the removal of trash, debris, and sediment. Temporary disposal sites may be utilized if necessary.

## **2. Structural Repairs**

Structural damage to gutter guards, outlet and inlet structures, trash racks, and headwalls from vandalism, flood events, or other causes must be repaired promptly. Equipment, material, and personnel must be available to perform these repairs on short notice. The analysis of structural damage and the design and performance of structural repairs shall only be undertaken by qualified personnel.

## **3. Dam, Embankment, and Slope Repairs**

Damage to dams, embankments, and side slopes must be repaired promptly. Typical problems include settlement, scouring, cracking, sloughing, seepage, and rutting. Equipment, materials, and personnel must be available to perform these repairs on short notice. The immediacy of the repairs will depend upon the nature of the damage and its effects on the safety and operation of the facility. The analysis of damage and the design and performance of geotechnical repairs should only be undertaken by qualified personnel.

## **4. Dewatering**

It may be necessary to remove ponded water from within a malfunctioning SWMF. This ponding may be the result of a blocked principal outlet (detention facility), inoperable low level outlet (retention facility), loss of infiltration capacity (infiltration facility), or poor bottom drainage. Portable pumps may be necessary to remove the ponded water temporarily until a permanent solution can be implemented.

## **5. Extermination of Mosquitoes**

If neglected, a SWMF can readily become an ideal mosquito breeding area. Extermination of mosquitoes will usually require the services of an expert, such as the

local Mosquito Commission. Proper procedures carried out by trained personnel can control the mosquitoes with a minimum of damage or disturbance to the environment. If mosquito control in a facility becomes necessary, the preventative maintenance program should be re-evaluated, and more emphasis placed on control of mosquito breeding habitats.

## **6. Erosion Repair**

Vegetative cover or other protective measures are necessary to prevent the loss of soil from the erosive forces of wind and water. Where a re-seeding program has not been effective in maintaining a non-erosive vegetative cover, or other factors have exposed soils, to erosion, corrective steps should be initiated to prevent further loss of soil and any subsequent danger to the stability of the facility. Soil loss can be controlled by a variety of materials and methods, including riprap, gabion lining, sod, seeding, concrete lining, and re-grading. The local Conservation District can provide assistance in recommending materials and methodologies to control erosion.

## **7. Fence Repair**

Fences are damaged by many factors, including vandalism and storm events. Timely repair will maintain the security of the site.

## **8. Elimination of Trees, Brush, Roots, and Animal Burrows**

Large roots can impair the stability of dams, embankments, and side slopes and animal burrows. Burrows can present a safety hazard for maintenance personnel. Trees and brush with extensive, woody root systems should be completely removed from dams and embankments to prevent their destabilization and the creation of seepage routes. Roots should also be completely removed to prevent their decomposition within the dam or embankment. Root voids and burrows should be plugged by filling with material similar to the existing material, and capped just below grade with stone, concrete, or other material. If plugging of the burrows does not discourage the animals from returning, further measures should be taken to either remove the animal population or to make critical areas of the facility unattractive to them.

## **9. Snow and Ice Removal**

Accumulations of snow and ice can threaten the functioning of a SWMF, particularly at inlets, outlets, and emergency spillways. Providing the equipment, materials, and personnel to monitor and remove snow and ice from these critical areas is necessary to assure the continued functioning of the facility during the winter months.

# **C. AESTHETIC MAINTENANCE PROCEDURES**

## **1. Graffiti Removal**

The timely removal of this eyesore will restore the aesthetic quality of a SWMF. Removal can be accomplished by painting or otherwise covering it, or removing it with scrapers, solvents, or cleansers. Timely removal is important to discourage further graffiti and other acts of vandalism.

## **2. Grass Trimming**

Trimming of grass edges around structures and fences will provide for a neat and attractive appearance of the facility.

## **3. Control of Weeds**

Although a regular grass maintenance program will keep weed intrusion to a minimum, some weeds will appear. Periodic weeding, either chemically or mechanically, will not only help to maintain a healthy turf, but will also keep grassed areas attractive.

## **4. Details**

Careful, meticulous, and frequent attention to the performance of maintenance items such as painting, tree pruning, leaf collection, debris removal, and grass cutting will result in a SWMF that remains both functional and attractive.

## **D. CHECKLISTS AND LOGS**

Included in this report are Tables and Sample Checklists and Logs regarding various aspects of SWMF maintenance and inspection.

# **IV. MAINTENANCE EQUIPMENT AND MATERIALS**

## **A. GRASS MAINTENANCE EQUIPMENT**

1. Tractor-Mounted Mowers
2. Riding Mowers
3. Hand Mowers
4. Gas Powered Trimmers
5. Gas Powered Edgers
6. Seed Spreaders
7. Fertilizer Spreaders
8. De-Thatching Equipment
9. Pesticide and Herbicide Application Equipment
10. Grass Clipping and Leaf Collection Equipment

## **B. VEGETATIVE COVER MAINTENANCE EQUIPMENT**

1. Saws
2. Pruning Shears
3. Hedge Trimmers
4. Wood Chippers

## **C. TRANSPORTATION EQUIPMENT**

1. Trucks for Transportation of Materials
2. Trucks for Transportation of Equipment
3. Vehicles for Transportation of Personnel

## **D. DEBRIS, TRASH, AND SEDIMENT REMOVAL EQUIPMENT**

1. Loader
2. Backhoe
3. Grader

## 4. Vactor Equipment

**E. MISCELLANEOUS EQUIPMENT**

1. Shovels
2. Rakes
3. Picks
4. Wheelbarrows
5. Fence Repair Tools
6. Painting Equipment
7. Gloves
8. Standard Mechanics Tools
9. Tools for Maintenance of Equipment
10. Office Space
11. Office Equipment
12. Telephones
13. Safety Equipment
14. Tools for Concrete Work (Mixers, Form Materials, etc.)
15. Welding Equipment (for Repair of Trash Racks, etc.)

**F. MATERIALS**

1. Topsoil
2. Fill
3. Seed
4. Soil Amenities (Fertilizer, Lime, etc.)
5. Chemicals (Pesticides, Herbicides, etc.)
6. Mulch
7. Paint
8. Paint Removers (for Graffiti)
9. Spare Parts for Equipment
10. Oil and Grease for Equipment and SWMF Components
11. Concrete

**V. SWMF MAINTENANCE EQUIPMENT AND MATERIAL COSTS**

This estimate is taken from NJDEP Stormwater Management Facilities Manual Table 6-1 and adjusted for 2020 costs

**GRASS MAINTENANCE EQUIPMENT**

	<b>Purchase (dollars)</b>	<b>Rent (per day) (dollars)</b>
Hand Mower	300 - 500	25 - 40
Riding Mower	3,000 - 5,000	75 - 100
Tractor Mower	15,000 - 20,000	100 - 300
Trimmer / Edger	200 - 500	25 - 35
Spreader	100 - 200	20 - 30
Chemical Sprayer	200 - 500	25 - 40

**VEGETATIVE COVER MAINTENANCE EQUIPMENT**

	<b>Purchase (dollars)</b>	<b>Rent (per day) (dollars)</b>
Hand Saw	15	5

Chain Saw	300 - 500	15 - 35
Pruning Shears	25	5
Shrub Trimmer	200	25 - 35
Brush Chipper	1,000 - 5,000	50 - 150

**TRANSPORTATION EQUIPMENT**

	<b>Purchase (dollars)</b>	<b>Lease (per month) (dollars)</b>	<b>Rent (per day) (dollars)</b>
Van	10,000 - 15,000	400	50 - 70
Pickup Truck	10,000 - 15,000	400	50 - 70
Dump Truck	30,000 - 50,000	1,200	75 - 150
Light Duty Trailer	3,000 - 5,000	150	30 - 50
Heavy Duty Trailer	10,000 - 20,000	500	100 - 200

**DEBRIS, TRASH, AND SEDIMENT REMOVAL EQUIPMENT**

	<b>Purchase (dollars)</b>	<b>Lease (per month) (dollars)</b>	<b>Rent (per day) (dollars)</b>
Front End Loader	50,000 - 100,000	1,500 - 2,000	200 - 400
Backhoe	30,000 - 50,000	1,200	150 - 300
Excavator	100,000+	2,000	400 - 1,000
Grader	100,000+	2,000	400 - 1,000
Vactor Equipment	100,000+	2,000	400 - 1,000

**MISCELLANEOUS EQUIPMENT**

	<b>Purchase (dollars)</b>	<b>Rent (per day) (dollars)</b>
Shovel	15	5
Leaf Rake	15	5
Soil Rake	15	5
Pick	15	5
Wheelbarrow	100 - 200	10
Gloves	5	N / A
Portable Compressor	500 - 1,000	50 - 100
Portable Generator	500 - 1,000	50 - 100
Concrete Mixer	500 - 1,000	25 - 50
Welding Equipment	500 - 1,500	35 - 70

**MATERIALS**

	<b>Purchase (dollars)</b>
Topsoil	35 / cubic yard
Fill Soil	15 / cubic yard
Grass Seed	5 / pound
Soil Amenities (Fertilizer, Lime, etc)	0.05 / sq ft
Chemicals (Pesticides, Herbicides, etc)	10 / gallon
Mulch	25 / cubic yard
Paint	20 / gallon
Paint Remover	10 / gallon
Machine / Motor Lubricants	5 / gallon

Dry Mortar Mix	4 / 50 pound bag
Concrete Delivered to Site	60 – 100 / cubic yard

Notes:

1. These estimates are approximation of the probable construction costs in 2015 dollars and are based upon previous construction experience and should be used as an approximate budget figure only.
2. Estimated equipment costs are based upon Industrial / Commercial grade equipment.

## VI. COST OF SWMF MAINTENANCE TASKS

Taken from NJDEP Stormwater Management Facilities Manual Table 6-2

### PREVENTATIVE MAINTENANCE TASKS

	Small Facility (Man-Hours)	Large Facility (Man-Hours)
Grass Cutting	1	1 - 2
Grass Maintenance	0.5	1
Trash & Debris Removal	0.5	1
Sediment Removal	4	8
Mobilization	1	1
Inspection & Reporting	1	2

### CORRECTIVE MAINTENANCE TASKS

	Small Facility (Man-Hours)	Large Facility (Man-Hours)
Trash & Debris Removal	4	8
Structural Repairs	2-4	40
Dewatering	4	8
Mosquito Extermination	1	2-4
Erosion Repair	4	8
Fence Repair	2-4	4-8
Snow & Ice Removal	1	2
Mobilization	2	2

### AESTHETIC MAINTENANCE TASKS

	Small Facility (Man-Hours)	Large Facility (Man-Hours)
Grass Trimming	0.5	2
Weed Control	0.5	2
Landscape Maintenance	1 - 2	2 - 4
Graffiti Removal	2 - 4	4 - 8

Notes:

1. This estimate is an approximation of the man-hours as provided in the NJDEP Stormwater Facility Maintenance Manual. It is based upon previous construction experience and should be used as an approximate budget figure only.
2. Cost estimates are presented in terms of man-hours. These values should be used in conjunction with applicable personnel rates to determine labor costs for a specific program or facility.
3. Facility size definitions:  
 Small Facility: Total SWMF Site Area ¼ Acre

Large Facility: Total SWMF Site Area 1 Acre

Appropriate adjustments to the estimates presented should be made as necessary to account for actual SWMF size.

Table 6-3 Taken from NJDEP Stormwater Management Facilities Manual

**WORKSHEET FOR DETERMINING DEVELOPER'S 10-YEAR MAINTENANCE BOND FOR PRIVATELY HELD SWMF's OR DEVELOPER'S CONTRIBUTION FOR MUNICIPAL MANAGEMENT OF SWMF's**

**SURFACE STORMWATER BASINS**

**Total Area of SWMF's = 1.12 Acres**

**Total Area of SWMF's Basin Bottom = 0.60 Acres**

**1. Mowing**

A.	Rate per Hour for Labor & Equipment	40	\$	
B.	Base number of Hours for Labor and Equipment for Mobilization and Mowing Up to One Acre	2		
C.	Number of Hours for Mowing Additional Area (Based on One Hour Per Acre)	0		
D.	Hours per Mowing = B + C	2		
E.	Cost per Mowing = A x D		\$	80
F.	Number of Mowings per Year:	10		
G.	Annual Mowing Cost = E x F		\$	800
H.	Materials		\$	100
I.	Total Cost = G + H		\$	<b>900</b>

**2. Landscape Maintenance**

A.	Rate per Hour for Labor & Equipment	40	\$	
B.	Number of Hours of Required Landscape Maintenance per Year	10		
C.	Annual Landscape Maintenance Cost = A x B		\$	400
D.	Total Cost of Original Landscaping (per Cost Estimate)	\$10,000		
E.	Replacement Factor (2% per Year)	x0.02		
F.	Annual Replacement Cost = D x E		\$	200
G.	Total Cost = C + F		\$	<b>600</b>

**3. General Maintenance**

A.	Rate per Hour for Labor & Equipment	40	\$	
B.	Number of Required Hours of General Maintenance per Occurrence	4		
C.	Cost per Occurrence = A x B		\$	160
D.	Number of Occurrences per Year	20		
E.	Total Cost = C x D		\$	<b>3,200</b>

**4. Insurance**

A.	Annual Insurance Cost	To be determined	\$	To be determined
----	-----------------------	------------------	----	------------------

**5. Scarify and De-Silt Basin – Every 5 years**

A.	Rate per Hour for Labor & Equipment	50	\$	
B.	Number of Required Hours of General Maintenance (@ 40 / acre)	50		
C.	Labor & Equipment Cost = A x B		\$	2,500
D.	Cost of Disposal per cubic yard	20	\$	
E.	Number of cubic yards (6" Deep Remove & Replace)	485		
F.	Disposal Cost = D x E		\$	9,700
G.	Cost per Occurrence = C + F		\$	12,200
H.	Duration factor = 0.2 (for 5 years)	0.2		
I.	Total Cost = G x H		\$	<b>2,440</b>

**6. Inspection - Annual**

A.	Rate per Hour for Labor	100		
B.	Number of Required Hours per Inspection	2		
C.	Total Cost = A x B		\$	<b>200</b>

**7. Total First Year Cost**

A.	Mowing (1.I)		\$	<b>900</b>
B.	Landscape Maintenance (2.G)		\$	<b>600</b>
C.	General Maintenance (3.E)		\$	<b>3,200</b>
D.	Insurance (4.A)		\$	To be determined
E.	Scarify and De-Silt (5.I) x 4 / 20 years		\$	<b>2,440</b>
F.	Inspection (6.C)		\$	<b>200</b>
G.	Total Cost for Year = SUM (A : F)		\$	<b>7,340 + insurance</b>

**Total For 10 yr Maintenance Bond**

A.	Total Cost = (7.G) x 10 years		\$	<b>73,400+insurance</b>
----	-------------------------------	--	----	-------------------------

OR

**Calculation of Developer Contribution**

A.	Total Cost = (7.G) x 10 years		\$	73,400+insurance
B.	Developer Contribution Percentage	X 0.75		
C.	Total Developer Contribution = A x B		\$	55,050+insurance

NOTE: This estimate is an approximation of the probable cost in 2020 dollars. It is based upon previous construction experience and should be used as an approximate budget figure only.

## VII. MAINTENANCE REQUIREMENTS FOR DRAINAGE SYSTEMS

### SCHEDULE A

## MAINTENANCE REQUIREMENTS FOR DRAINAGE SYSTEMS

The following are those minimum activities that shall be the responsibility of the designated entity for maintenance to ensure that the drainage system will operate as designed. The designated party is only responsible for those activities discussed below that apply to the type of drainage structures existing on the project.

### **Retention and Detention Basins**

The following are minimum requirements for maintenance of these systems. Other items recommended by the design engineer are encouraged to ensure the system will function as designed.

In the event of standing water in the drainage system longer than 3 days (72 hours) after all maintenance activities have been conducted, the Municipal or County Engineer's Office shall be notified immediately.

#### (1) Inspection Schedule

Drainage systems must be inspected on a routine basis to ensure that they are functioning properly. Inspection shall be conducted a minimum of semi-annually and always after major storms.

#### (2) Inlet and Outlet Structure

All inlet and outlet structures shall be examined at the time of inspection for debris and accumulation of sediment which shall be removed from these structures.

#### (3) Maintenance of Vegetated Basins

- a) A dense turf with extensive root growth is encouraged to reduce erosion of the sides of the basin. Basin bottom shall be constructed of clean sand to enhance infiltration. Well established turf forming a porous turf will prevent the formation of an impermeable layer.
- b) Grasses of the fescue family are recommended for seeding primarily due to their adaptability to dry sandy soils, drought resistance, hardiness, and ability to withstand brief inundations. Fescues will also permit longer intervals between mowings.
- c) Mowing of the grass is required twice a year, once around June and again in September. Additional mowing is recommended to ensure the aesthetic quality of the site.
- d) Fertilization and liming is left to the discretion of the maintenance entity. A 10-6-4 ratio fertilizer at a rate of 500 lb. per acre (11 lb. per 1,000 sf) is provided for guidance.

#### (4) Maintenance of Gravel Bottom Retention Basins

- a) Sediment shall not be allowed to build up to the point where it reduces the rate of infiltration that the system was designed to accommodate. In the event of standing water greater than 3 days (72) hours because of siltation, the system must be thoroughly cleaned.

- b) If the system still remains inoperable after a thorough cleaning; the system must be removed and replaced so that the system will function as designed.
- (5) Maintenance of Non-Vegetated Basins (Soil Floors)**
- a) All sediment accumulated in the basin bottom must be removed. Sediment removal is only to be conducted when the basin is completely dry, after the silt layer has mud cracks and has separated from the basin floor.
  - b) Tilling is required periodically and at least once annually, from June through September, to restore the natural infiltration capacity the system was designed for by overcoming the effects of surface compaction. All sediment must be removed prior to tilling the basin bottom.
  - c) Rotary tillers or disc harrows should be used since precise blade control and equipment maneuverability are essential in small areas.
  - d) After tilling the basin floor should be smooth and free of ridges and furrows to enable easy removal of sediment during future cleaning operations. The basin floor should slope toward a low-flow channel wherever applicable.

### **Manufactured Treatment Devices (CDS by Contech)**

The following are minimum requirements for maintenance of these systems as recommended by the manufacturer:

#### **Maintenance**

The CDS system should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects pollutants will depend more heavily on site activities than the size of the unit. For example, unstable soils or heavy winter sanding will cause the grit chamber to fill more quickly but regular sweeping of paved surfaces will slow accumulation.

#### **Inspection**

Inspection is the key to effective maintenance and is easily performed. Pollutant transport and deposition may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. At a minimum, inspections should be performed twice per year (e.g. spring and fall) however more frequent inspections may be necessary in climates where winter sanding operations may lead to rapid accumulations, or in equipment washdown areas. Installations should also be inspected more frequently where excessive amounts of trash are expected.

The visual inspection should ascertain that the system components are in working order and that there are no blockages or obstructions in the inlet and separation screen. The inspection should also quantify the accumulation of hydrocarbons, trash, and sediment in the system. Measuring pollutant accumulation can be done with a calibrated dipstick, tape measure or other measuring instrument. If absorbent material is used for enhanced removal of hydrocarbons, the level of discoloration of the sorbent material should also be identified during inspection. It is useful and often required as part of an operating permit to keep a record of each inspection. A simple form for doing so is included in this manual.

Access to the CDS unit is typically achieved through two manhole access covers. One opening allows for inspection and cleanout of the separation chamber (cylinder and screen) and isolated sump. The other allows for inspection and cleanout of sediment captured and retained outside the screen. For deep units, a single manhole access point would allow both sump cleanout and access outside the screen. The CDS system should be cleaned when the level of sediment has

reached 75% of capacity in the isolated sump or when an appreciable level of hydrocarbons and trash has accumulated.

If absorbent material is used, it should be replaced when significant discoloration has occurred. Performance will not be impacted until 100% of the sump capacity is exceeded however it is recommended that the system be cleaned prior to that for easier removal of sediment. The level of sediment is easily determined by measuring from finished grade down to the top of the sediment pile. To avoid underestimating the level of sediment in the chamber, the measuring device must be lowered to the top of the sediment pile carefully. Particles at the top of the pile typically offer less resistance to the end of the rod than consolidated particles toward the bottom of the pile. Once this measurement is recorded, it should be compared to the as-built drawing for the unit to determine whether the height of the sediment pile off the bottom of the sump floor exceeds 75% of the total height of isolated sump.

### **Cleaning**

Cleaning of a CDS systems should be done during dry weather conditions when no flow is entering the system. The use of a vacuum truck is generally the most effective and convenient method of removing pollutants from the system. Simply remove the manhole covers and insert the vacuum hose into the sump. The system should be completely drained down and the sump fully evacuated of sediment. The area outside the screen should also be cleaned out if pollutant build-up exists in this area. In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, the system should be cleaned out immediately in the event of an oil or gasoline spill should be cleaned out immediately. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use absorbent pads since they are usually less expensive to dispose than the oil/water emulsion that may be created by vacuuming the oily layer. Trash and debris can be netted out to separate it from the other pollutants. The screen should be power washed to ensure it is free of trash and debris. Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and also to ensure that proper safety precautions have been followed. Confined space entry procedures need to be followed if physical access is required. Disposal of all material removed from the CDS system should be done in accordance with local regulations. In many jurisdictions, disposal of the sediments may be handled in the same manner as the disposal of sediments removed from catch basins or deep sump manholes.

## VIII. MAINTENANCE AND INSPECTION LOGS AND CHECKLISTS

### SWM Maintenance List

Page 1 of 4

#### Maintenance Work Order and Checklist for Stormwater Management Facilities

Name of Facility: \_\_\_\_\_  
 Location: \_\_\_\_\_ Date: \_\_\_\_\_

<b>Crew:</b>		<b>Work Started:</b>		<b>Time:</b>	
<b>Equipment:</b>		<b>Work Completed:</b>		<b>Time:</b>	
<b>Weather:</b>		<b>Total Man-hours for Work::</b>			

#### A. Preventative Maintenance

	Items Required √	Items Done √	Comments and Special Instructions
<b>1. Grass Cutting</b>			
A. Bottoms			
B. Embankments and Side Slopes			
C. Perimeter Areas			
D. Access Areas and Roads			
E. Other:			

	Items Required √	Items Done √	Comments and Special Instructions
<b>2. Grass Maintenance</b>			
A. Fertilizing			
B. Re-Seeding			
C. De-Thatching			
D. Pest Control			
E. Other:			

	Items Required √	Items Done √	Comments and Special Instructions
<b>3. Vegetative Cover</b>			
A. Fertilizing			
B. Pruning			
C. Pest Control			
D. Other:			

	Items Required √	Items Done √	Comments and Special Instructions
<b>4. Trash and Debris Removal</b>			
A. Bottoms			
B. Embankments and Side Slopes			
C. Perimeter Areas			
D. Access Areas and Roads			
E. Inlets			
F. Outlets and Trash Racks			
G. Other:			

**SWM Maintenance List****Page 2 of 4**

	Items Required	Items Done	
<b>5. Sediment Removal</b>	√	√	Comments and Special Instructions
A. Inlets			
B. Outlets and Trash Racks			
C. Bottoms			
E. Other			
<b>6. Mechanical Components</b>	√	√	Comments and Special Instructions
A. Valves			
B. Sluice Gates			
C. Pumps			
D. Fence Gates			
E. Locks			
F. Access Hatches			
G. Other:			
<b>7. Elimination of Potential Mosquito Breeding Habitats</b>	√	√	Comments and Special Instructions
A.			
B.			
C.			
D.			
<b>8. Pond Maintenance</b>	Items Required	Items Done	√
A. Aeration Equipment			Comments and Special Instructions
B. Debris & Trash Removal			
C. Weed Removal			
D. Other:			
<b>9. Other Preventative Maintenance</b>	√	√	Comments and Special Instructions
A.			
B.			
C.			
D.			

**SWM Maintenance List****Page 3 of 4****B. Corrective Maintenance**

Work Item	Items Required √	Items Done √	Location, Comments, and Special Instructions
1. Removal of Debris & Sediment			
2. Structural Repairs			
3. Dam, Embankment & Slope Repairs			
4. Dewatering			
5. Control of Mosquitoes			
6. Pond Maintenance			
7. Erosion Repair , Roots &			
8. Fence Repair			
9. Elimination of Trees, Brush and Animal Burrows			
10. Snow & Ice Removal			
11. Other			

**C. Aesthetic Maintenance**

Work Item	Items Required √	Items Done √	Location, Comments, and Special Instructions
1. Graffiti Removal			
2. Grass Trimming			
3. Weeding			
4. Other			

**SWM Maintenance List**

**Page 4 of 4**

**Remarks:** ( Refer to Item No, If Applicable)

Work Order Prepared By: \_\_\_\_\_

Work Completed By: \_\_\_\_\_

## SWM Maintenance Log

Page 1 of 3

### Maintenance Log Stormwater Management Facilities

Name of Facility: \_\_\_\_\_

Location: \_\_\_\_\_ Date: \_\_\_\_\_

**A. Preventative Maintenance**Date: 

--	--	--	--	--	--	--	--	--	--

Work Item

(√) Completed

**1. Grass Cutting**

A. Bottoms										
B. Embankments and Side Slopes										
C. Perimeter Areas										
D. Access Areas and Roads										
E. Other:										

**2. Grass Maintenance**

A. Fertilizing										
B. Re-Seeding										
C. De-Thatching										
D. Pest Control										
E. Other:										

**3. Vegetative Cover**

A. Fertilizing										
B. Pruning										
C. Pest Control										
D. Other:										

**4. Trash and Debris Removal**

A. Bottoms										
B. Embankments and Side Slopes										
C. Perimeter Areas										
D. Access Areas and Roads										
E. Inlets:										
F. Outlets and Trash Racks										
G. Other:										

**5. Sediment Removal**

A. Inlets										
B. Outlets and Trash Racks										
C. Bottoms										
D. Other:										

## SWM Maintenance Log

Page 2 of 3

Date: 

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Work Item

(✓) Completed

**6. Mechanical Components**

A. Valves										
B. Sluice Gates										
C. Pumps										
D. Fence Gates										
E. Locks										
F. Access Hatches										
G. Other										

**7. Elimination of Potential Mosquito Breeding Habits**

A.										
B.										
C.										

**8. Pond Maintenance**

A. Aeration Equipment										
B. Debris & Trash Removal										
C. Weed Removal										
D. Other:										

**9. Other Preventative Maintenance**

A.										
B.										
C.										
D.										

**B. Corrective Maintenance**Date: 

--	--	--	--	--	--	--	--	--	--

Work Item

(✓) Completed

1. Removal of Debris & Sediment
2. Structural Repairs
3. Dam, Embankment & Slope Repairs
4. Dewatering
5. Pond Maintenance
6. Control of Mosquitoes
7. Erosion Repair
8. Fence Repair
9. Elimination of Trees, Brush, Roots & Animal Burrows
10. Snow & Ice Removal
11. Other


SWM Maintenance Log

Page 3 of 3

**C. Aesthetic Maintenance**

**Date:**

--	--	--	--	--	--	--	--	--	--

Work Item                      (√) Completed

- 1. Graffiti Removal
- 2. Grass Trimming
- 3. Weeding
- 4. Other:


---

**Remarks:**     (Refer to Item No, If Applicable)

Work Order Prepared By: \_\_\_\_\_

Work Completed By: \_\_\_\_\_

## SWM Inspection List

Page 1 of 3

### Inspection Checklist for Stormwater Management Facilities

Name of Facility: \_\_\_\_\_

Location: \_\_\_\_\_ Date: \_\_\_\_\_

Weather: \_\_\_\_\_

Facility Item	OK <sup>1</sup>	Routine <sup>2</sup>	Urgent <sup>3</sup>	Comments <sup>4</sup>
---------------	-----------------	----------------------	---------------------	-----------------------

**1. Embankments and Side Slopes**

A. Vegetation				
B. Linings				
C. Erosion				
D. Settlement				
E. Sloughing				
F. Trash And Debris				
G. Seepage				
H. Aesthetics				
I. Other:				

**2. Bottoms (Detention and Infiltration)**

A. Vegetation				
B. Erosion				
C. Standing Water				
D. Settlement				
E. Trash and Debris				
F. Sediment				
G. Aesthetics				
H. Other:				

**3. Low Flow Channels (Detention)**

A. Vegetation				
B. Linings				
C. Erosion				
D. Settlement				
E. Standing Water				
F. Trash and Debris				
G. Sediment				
H. Other:				

1. The item checked is in good condition and the maintenance program is adequate.
2. The item checked requires attention but does not present an immediate threat to the facility function or other facility components.
3. The item checked requires immediate attention to keep the facility operational or to prevent damage to other facility components.
4. Provide explanation and details if columns 2 or 3 are checked.

## SWM Inspection List

Page 2 of 3

Facility Item	OK <sup>1</sup>	Routine <sup>2</sup>	Urgent <sup>3</sup>	Comments <sup>4</sup>
<b>4. Ponds (Retention)</b>				
A. Vegetation				
B. Shoreline Erosion				
C. Aeration Equipment				
D. Trash and Debris				
E. Sediment				
F. Water Quality				
G. Other:				
<b>5. Inlet Structure</b>				
A. Condition of Structure				
B. Erosion				
C. Trash & Debris				
D. Sediment				
E. Aesthetics				
F. Other:				
<b>6. Outlet Structure (Detention &amp; Retention)</b>				
A. Condition of Structure				
B. Erosion				
C. Trash & Debris				
D. Sediment				
E. Mechanical Components				
F. Aesthetics				
G. Other:				
<b>7. Emergency Spillway</b>				
A. Vegetation				
B. Lining				
C. Erosion				
D. Trash & Debris				
E. Other:				
<b>8. Perimeter</b>				
A. Vegetation				
B. Erosion				
C. Trash & Debris				
D. Fences & Gates				
E. Aesthetics				
F. Other:				
<b>9. Access Roads</b>				
A. Vegetation				
B. Road Surface				
C. Fences & Gates				
D. Erosion				
E. Aesthetics				
F. Other:				

1. The item checked is in good condition and the maintenance program is adequate.
2. The item checked requires attention but does not present an immediate threat to the facility function or other facility components.
3. The item checked requires immediate attention to keep the facility operational or to prevent damage to other facility components.
4. Provide explanation and details if columns 2 or 3 are checked.

## SWM Inspection List

Page 3 of 3

Facility Item	OK <sup>1</sup>	Routine <sup>2</sup>	Urgent <sup>3</sup>	Comments <sup>4</sup>
<b>10. Miscellaneous</b>				
A. Effectiveness of Exist. Maint. Program				
B. Dam Inspections				
C. Potential Mosquito Habitats				
D. Mosquitoes				
E.				
F.				
G. :				

1. The item checked is in good condition and the maintenance program is adequate.
2. The item checked requires attention but does not present an immediate threat to the facility function or other facility components.
3. The item checked requires immediate attention to keep the facility operational or to prevent damage to other facility components.
4. Provide explanation and details if columns 2 or 3 are checked.

---

**Remarks:** (Refer to Item No, If Applicable)

Inspector: \_\_\_\_\_

SWM Inspection

Page 1 of 3

### Maintenance Log Stormwater Management Facilities

Name of Facility: \_\_\_\_\_

Location: \_\_\_\_\_ Date: \_\_\_\_\_

Date: 

--	--	--	--	--	--	--	--	--	--

Facility Item

Indicate Condition (i.e. 1, 2, or 3)

**1. Embankments and Side Slopes**

A. Vegetation										
B. Linings										
C. Erosion										
D. Settlement										
E. Sloughing:										
F. Trash and Debris										
G. Seepage										
H. Aesthetics										
I. Other										

**2. Bottoms (Detention and Infiltration)**

A. Vegetation										
B. Erosion										
C. Standing Water										
D. Settlement										
E. Trash and Debris										
F. Sediment										
G. Aesthetics										
H. Other										

**3. Low Flow Channels (Detention)**

A. Vegetation										
B. Linings										
C. Erosion										
D. Settlement:										
E. Standing Water										
F. Trash and Debris										
G. Sediment										
H. Other										

**4. Ponds**

A. Vegetation										
B. Shoreline Erosion										
C. Aeration Equipment										
D. Trash & Debris										
E. Sediment										
F. Water Quality										
G. Other:										

1 The item checked is in good condition and the maintenance program is adequate.

2 The item checked requires attention, but does not present an immediate threat to the facility function or other facility components.

3 The item checked requires immediate attention to keep the facility operational or to prevent damage to other facility components.

## SWM Maintenance Log

Page 2 of 3

Date: 

--	--	--	--	--	--	--	--	--	--

Facility Item

Indicate Condition (i.e. 1, 2, or 3)

**5. Inlet Structure**

A. Condition of Structure										
B. Erosion										
C. Trash & Debris										
D. Sediment:										
E. Aesthetics										
F. Other:										

**6. Outlet Structure (Detention & Retention)**

A. Condition of Structure										
B. Erosion										
C. Trash & Debris										
D. Sediment										
E. Mechanical Components										
F. Aesthetics										
G. Other										

**7. Emergency Spillway**

A. Vegetation										
B. Lining										
C. Trash & Debris										
D. Other:										

**8. Perimeter**

A. Vegetation										
B. Erosion										
C. Trash & Debris										
D. Fences & Gates:										
E. Aesthetics										
F. Other:										

**9. Access Roads**

A. Vegetation										
B. Road Surface										
C. Trash & Debris										
D. Fences & Gates										
E. Aesthetics										
F. Other:										

1 The item checked is in good condition and the maintenance program is adequate.

2 The item checked requires attention, but does not present an immediate threat to the facility function or other facility components.

3 The item checked requires immediate attention to keep the facility operational or to prevent damage to other facility components.

## SWM Maintenance Log

Page 3 of 3

**10. Miscellaneous**

A. Effectiveness of Exist. Maintenance Program										
B. Dam Inspections										
C. Potential Mosquito Habitats										
D. Mosquitoes										
E.										
F.										
G.										

- 1 The item checked is in good condition and the maintenance program is adequate.
- 2 The item checked requires attention, but does not present an immediate threat to the facility function or other facility components.
- 3 The item checked requires immediate attention to keep the facility operational or to prevent damage to other facility components.

**Remarks:** (Refer to Item No, If Applicable)

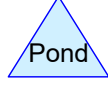
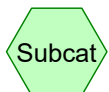
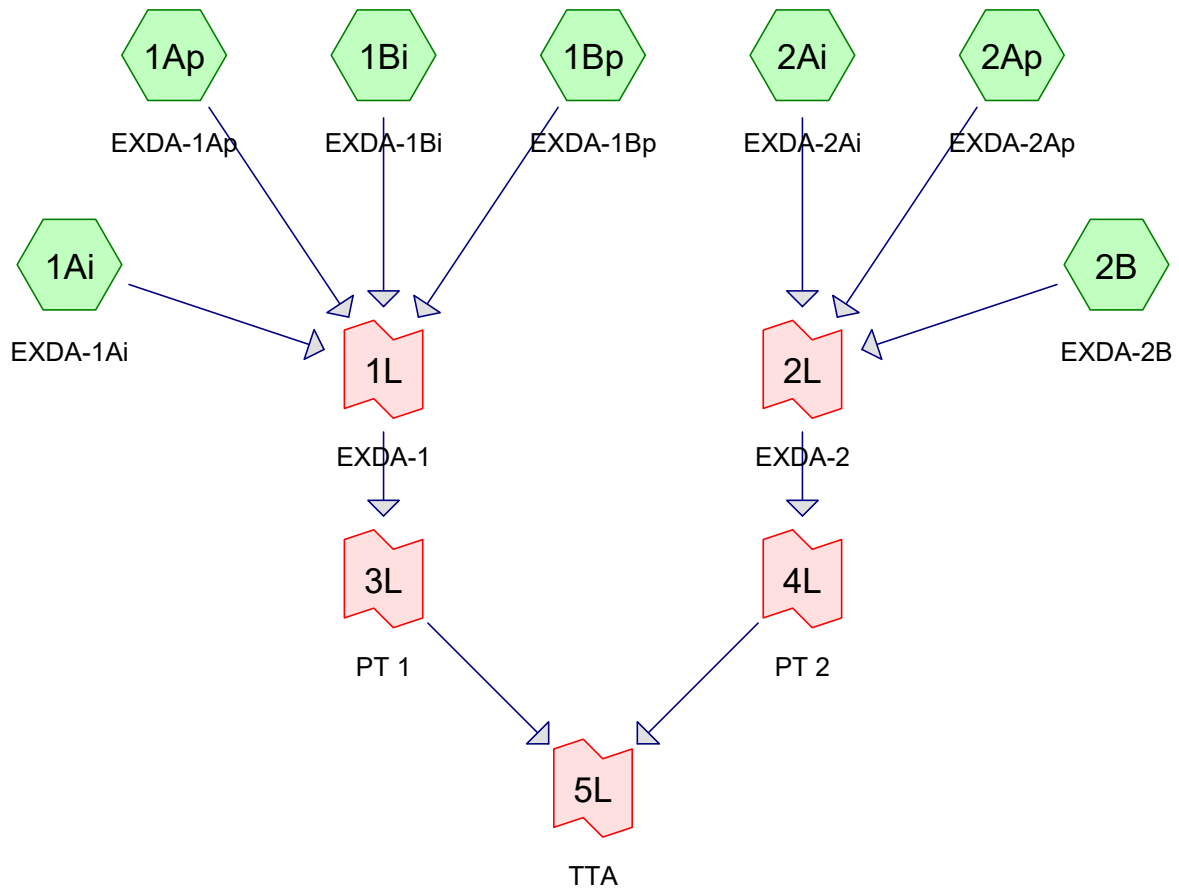
Prepared By: \_\_\_\_\_



## **APPENDIX C**

### PRE-DEVELOPED RUNOFF CALCULATIONS





## Pre Developed Conditions

Prepared by Sciallo

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Page 2

### Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.570	61	>75% Grass cover, Good, HSG B (1Ap, 1Bp, 2Ap, 2B)
4.959	80	>75% Grass cover, Good, HSG D (1Ap, 1Bp, 2Ap, 2B)
0.498	82	Dirt roads, HSG B (2Ap, 2B)
0.715	98	Paved parking, HSG B (1Ai, 1Bi, 2Ai)
0.741	98	Paved parking, HSG D (1Ai, 1Bi, 2Ai)
0.185	55	Woods, Good, HSG B (1Ap, 1Bp, 2Ap, 2B)
<b>11.668</b>	<b>74</b>	<b>TOTAL AREA</b>

## Pre Developed Conditions

Prepared by Sciallo

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### Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
5.968	HSG B	1Ai, 1Ap, 1Bi, 1Bp, 2Ai, 2Ap, 2B
0.000	HSG C	
5.700	HSG D	1Ai, 1Ap, 1Bi, 1Bp, 2Ai, 2Ap, 2B
0.000	Other	
<b>11.668</b>		<b>TOTAL AREA</b>

## Pre Developed Conditions

Prepared by Sciullo

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Page 4

### Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	4.570	0.000	4.959	0.000	9.529	>75% Grass cover, Good	1Ap, 1Bp, 2Ap, 2B
0.000	0.498	0.000	0.000	0.000	0.498	Dirt roads	2Ap, 2B
0.000	0.715	0.000	0.741	0.000	1.456	Paved parking	1Ai, 1Bi, 2Ai
0.000	0.185	0.000	0.000	0.000	0.185	Woods, Good	1Ap, 1Bp, 2Ap, 2B
<b>0.000</b>	<b>5.968</b>	<b>0.000</b>	<b>5.700</b>	<b>0.000</b>	<b>11.668</b>	<b>TOTAL AREA</b>	

## Pre Developed Conditions

Prepared by Sciullo

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Page 5

### Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1Ai	0.00	0.00	1,185.0	0.0030	0.013	18.0	0.0	0.0
2	1Ap	0.00	0.00	920.0	0.0010	0.015	18.0	0.0	0.0
3	1Bi	0.00	0.00	1,185.0	0.0030	0.013	18.0	0.0	0.0
4	1Bp	0.00	0.00	920.0	0.0010	0.013	18.0	0.0	0.0

**Pre Developed Conditions***Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"*

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Time span=0.00-60.00 hrs, dt=0.05 hrs, 1201 points

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1Ai: EXDA-1Ai** Runoff Area=0.833 ac 100.00% Impervious Runoff Depth=3.08"  
Flow Length=1,255' Slope=0.0030 '/' Tc=10.0 min CN=0/98 Runoff=1.79 cfs 0.214 af

**Subcatchment 1Ap: EXDA-1Ap** Runoff Area=0.315 ac 0.00% Impervious Runoff Depth=0.70"  
Flow Length=1,435' Tc=63.7 min CN=66/0 Runoff=0.05 cfs 0.018 af

**Subcatchment 1Bi: EXDA-1Bi** Runoff Area=0.322 ac 100.00% Impervious Runoff Depth=3.08"  
Flow Length=1,255' Slope=0.0030 '/' Tc=10.0 min CN=0/98 Runoff=0.69 cfs 0.083 af

**Subcatchment 1Bp: EXDA-1Bp** Runoff Area=7.068 ac 0.00% Impervious Runoff Depth=0.94"  
Flow Length=1,435' Tc=45.7 min CN=71/0 Runoff=2.05 cfs 0.557 af

**Subcatchment 2Ai: EXDA-2Ai** Runoff Area=0.301 ac 100.00% Impervious Runoff Depth=3.08"  
Flow Length=274' Slope=0.0070 '/' Tc=10.0 min CN=0/98 Runoff=0.65 cfs 0.077 af

**Subcatchment 2Ap: EXDA-2Ap** Runoff Area=0.411 ac 0.00% Impervious Runoff Depth=0.65"  
Flow Length=402' Tc=27.2 min CN=65/0 Runoff=0.10 cfs 0.022 af

**Subcatchment 2B: EXDA-2B** Runoff Area=2.418 ac 0.00% Impervious Runoff Depth=1.17"  
Flow Length=402' Tc=27.2 min CN=75/0 Runoff=1.25 cfs 0.236 af

**Link 1L: EXDA-1** Inflow=3.06 cfs 0.871 af  
Primary=3.06 cfs 0.871 af

**Link 2L: EXDA-2** Inflow=1.75 cfs 0.335 af  
Primary=1.75 cfs 0.335 af

**Link 3L: PT 1** Inflow=3.06 cfs 0.871 af  
Primary=3.06 cfs 0.871 af

**Link 4L: PT 2** Inflow=1.75 cfs 0.335 af  
Primary=1.75 cfs 0.335 af

**Link 5L: TTA** Inflow=4.80 cfs 1.206 af  
Primary=4.80 cfs 1.206 af

**Total Runoff Area = 11.668 ac Runoff Volume = 1.206 af Average Runoff Depth = 1.24"**  
**87.52% Pervious = 10.212 ac 12.48% Impervious = 1.456 ac**

**Pre Developed Conditions**

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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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**Summary for Subcatchment 1Ai: EXDA-1Ai**

Runoff = 1.79 cfs @ 12.16 hrs, Volume= 0.214 af, Depth= 3.08"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-60.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

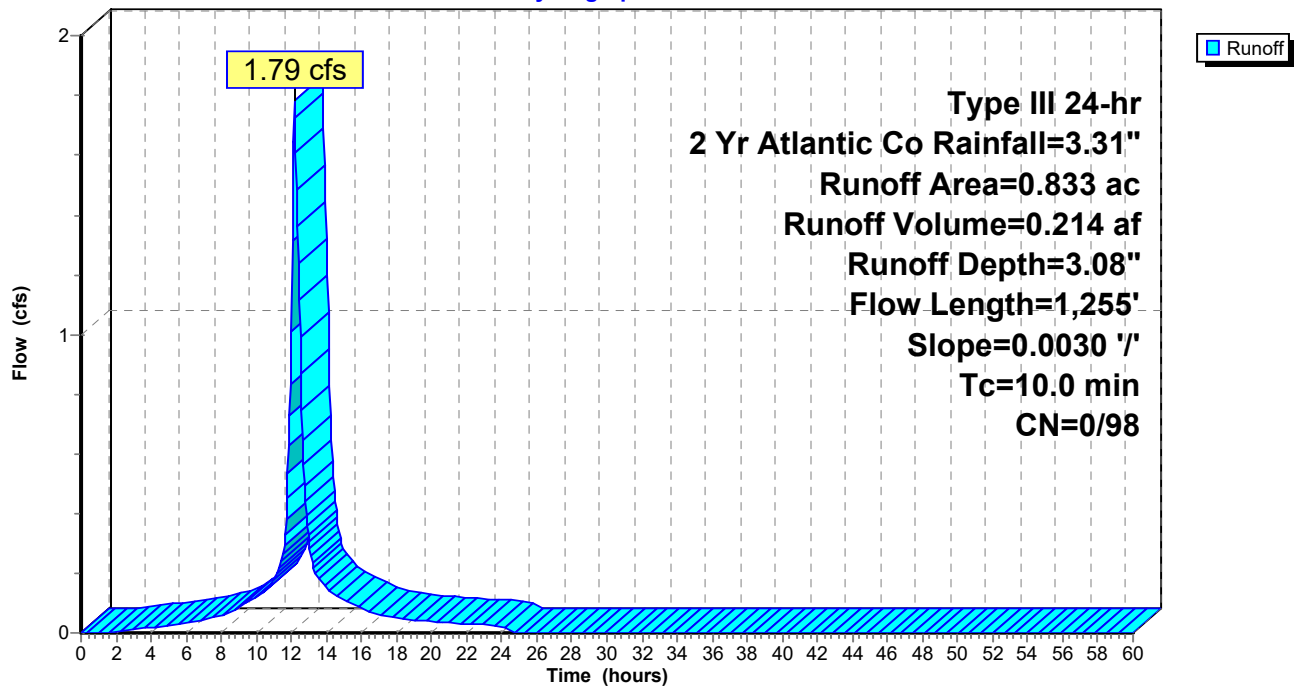
Area (ac)	CN	Description
0.475	98	Paved parking, HSG B
0.358	98	Paved parking, HSG D
0.833	98	Weighted Average
0.833	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	70	0.0030	0.61		<b>Sheet Flow, EXDA-1A.1</b> Smooth surfaces n= 0.011 P2= 3.36"
6.1	1,185	0.0030	3.26	5.75	<b>Pipe Channel, EXDA-1A.2</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
8.0	1,255	Total, Increased to minimum Tc = 10.0 min			

**Subcatchment 1Ai: EXDA-1Ai**

Hydrograph



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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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**Summary for Subcatchment 1Ap: EXDA-1Ap**

Runoff = 0.05 cfs @ 13.13 hrs, Volume= 0.018 af, Depth= 0.70"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-60.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

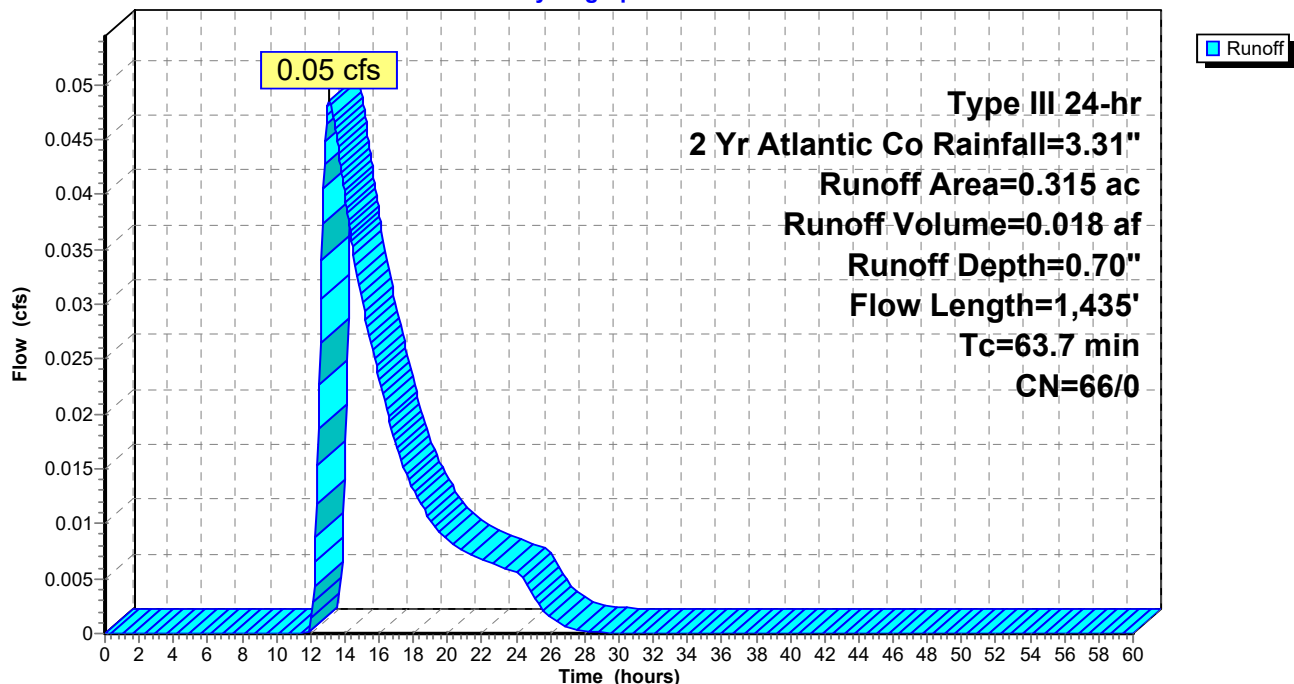
Area (ac)	CN	Description
0.220	61	>75% Grass cover, Good, HSG B
0.005	55	Woods, Good, HSG B
0.090	80	>75% Grass cover, Good, HSG D
0.315	66	Weighted Average
0.315	66	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
46.2	100	0.0010	0.04		<b>Sheet Flow, EXDA-1B.1</b> Grass: Dense n= 0.240 P2= 3.36"
6.6	350	0.0030	0.88		<b>Shallow Concentrated Flow, EXDA-1B.2</b> Unpaved Kv= 16.1 fps
1.5	65	0.0020	0.72		<b>Shallow Concentrated Flow, EXDA-1B.3</b> Unpaved Kv= 16.1 fps
9.4	920	0.0010	1.63	2.88	<b>Pipe Channel, EXDA-1B.4</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015 Concrete sewer w/manholes & inlets
63.7	1,435	Total			

**Subcatchment 1Ap: EXDA-1Ap**

Hydrograph



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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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**Summary for Subcatchment 1Bi: EXDA-1Bi**

Runoff = 0.69 cfs @ 12.16 hrs, Volume= 0.083 af, Depth= 3.08"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-60.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

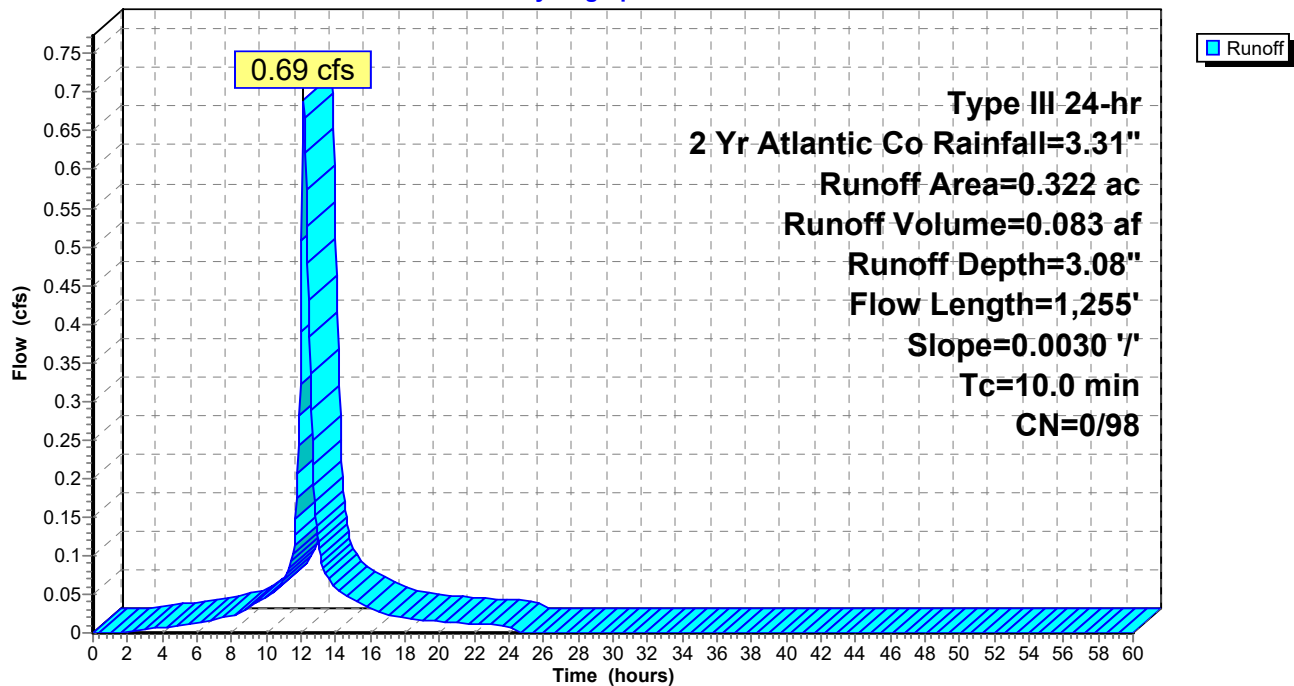
Area (ac)	CN	Description
0.108	98	Paved parking, HSG B
0.214	98	Paved parking, HSG D
0.322	98	Weighted Average
0.322	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	70	0.0030	0.61		<b>Sheet Flow, EXDA-1A.1</b> Smooth surfaces n= 0.011 P2= 3.36"
6.1	1,185	0.0030	3.26	5.75	<b>Pipe Channel, EXDA-1B.4</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
8.0	1,255	Total, Increased to minimum Tc = 10.0 min			

**Subcatchment 1Bi: EXDA-1Bi**

Hydrograph



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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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**Summary for Subcatchment 1Bp: EXDA-1Bp**

Runoff = 2.05 cfs @ 12.79 hrs, Volume= 0.557 af, Depth= 0.94"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-60.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

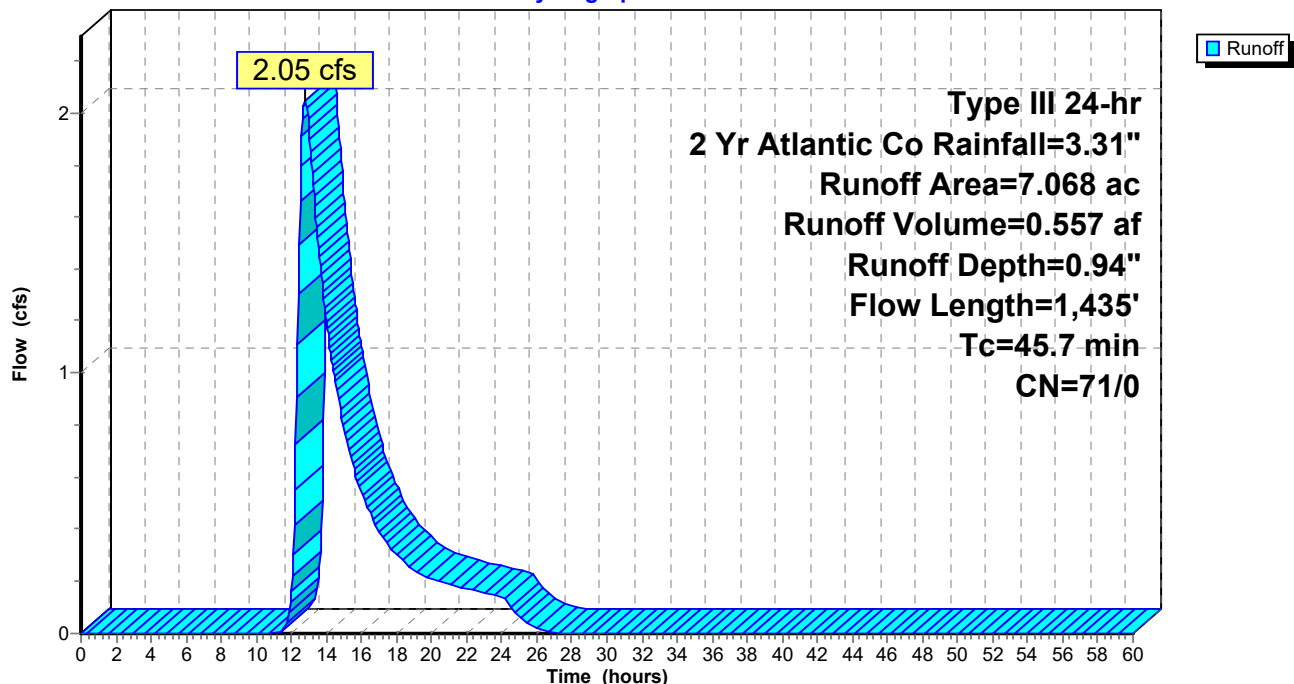
Area (ac)	CN	Description
3.483	61	>75% Grass cover, Good, HSG B
0.037	55	Woods, Good, HSG B
3.548	80	>75% Grass cover, Good, HSG D
7.068	71	Weighted Average
7.068	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.7	100	0.0030	0.06		<b>Sheet Flow, EXDA-1B.1</b> Grass: Dense n= 0.240 P2= 3.36"
6.6	350	0.0030	0.88		<b>Shallow Concentrated Flow, EXDA-1B.2</b> Unpaved Kv= 16.1 fps
1.2	65	0.0020	0.91		<b>Shallow Concentrated Flow, EXDA-1B.3</b> Paved Kv= 20.3 fps
8.2	920	0.0010	1.88	3.32	<b>Pipe Channel, EXDA-1B.4</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
45.7	1,435	Total			

**Subcatchment 1Bp: EXDA-1Bp**

Hydrograph



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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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### Summary for Subcatchment 2Ai: EXDA-2Ai

Runoff = 0.65 cfs @ 12.16 hrs, Volume= 0.077 af, Depth= 3.08"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-60.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

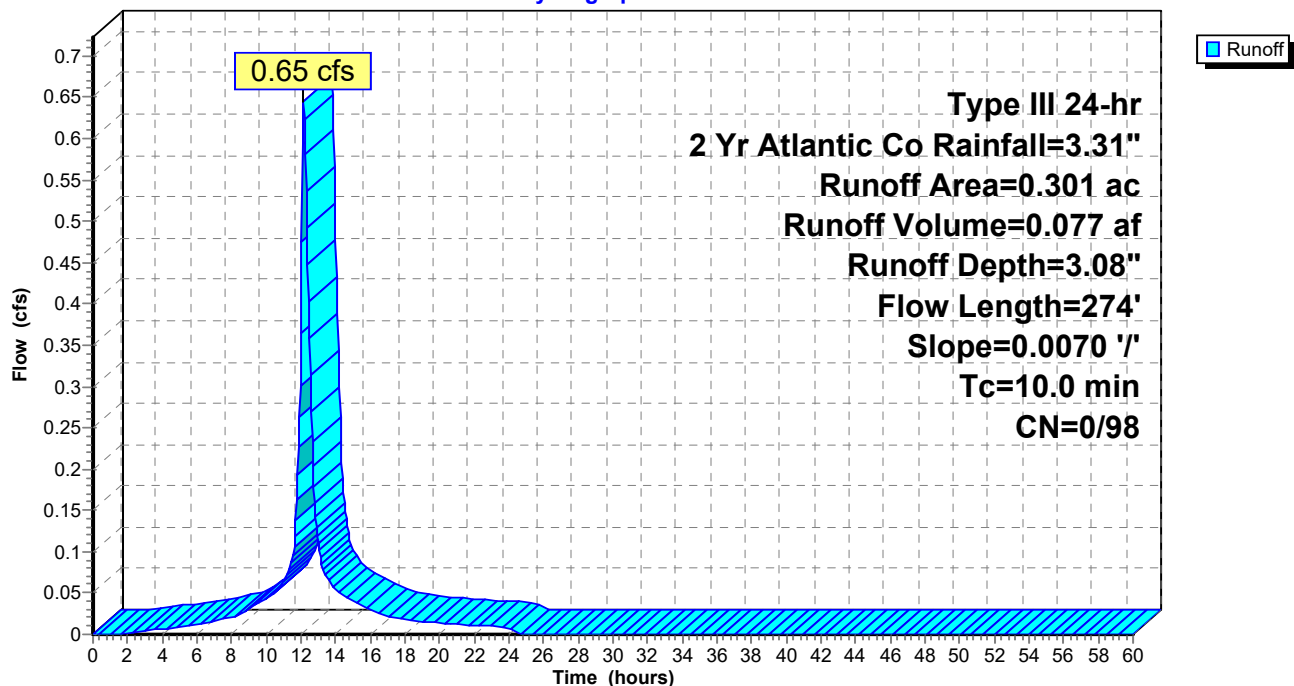
Area (ac)	CN	Description
0.132	98	Paved parking, HSG B
0.169	98	Paved parking, HSG D
0.301	98	Weighted Average
0.301	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	100	0.0070	0.93		<b>Sheet Flow, EXDA2A.1</b> Smooth surfaces n= 0.011 P2= 3.36"
1.7	174	0.0070	1.70		<b>Shallow Concentrated Flow, EXDA-2A.2</b> Paved Kv= 20.3 fps
3.5	274	Total, Increased to minimum Tc = 10.0 min			

### Subcatchment 2Ai: EXDA-2Ai

Hydrograph



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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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**Summary for Subcatchment 2Ap: EXDA-2Ap**

Runoff = 0.10 cfs @ 12.58 hrs, Volume= 0.022 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-60.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

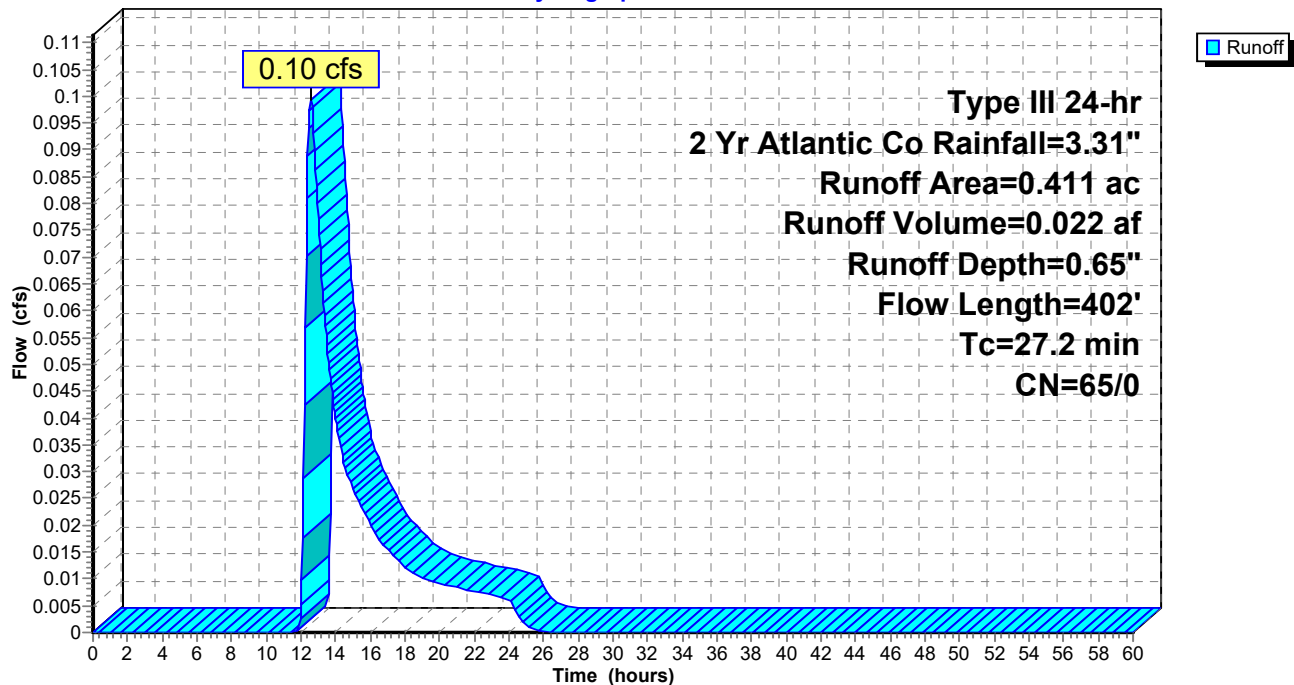
Area (ac)	CN	Description
0.006	82	Dirt roads, HSG B
0.311	61	>75% Grass cover, Good, HSG B
0.011	55	Woods, Good, HSG B
0.083	80	>75% Grass cover, Good, HSG D
0.411	65	Weighted Average
0.411	65	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.2	100	0.0050	0.07		<b>Sheet Flow, EXDA2B.1</b> Grass: Dense n= 0.240 P2= 3.36"
1.9	210	0.0130	1.84		<b>Shallow Concentrated Flow, EXDA-2B.2</b> Unpaved Kv= 16.1 fps
1.1	92	0.0050	1.44		<b>Shallow Concentrated Flow, EXDA-2A.3</b> Paved Kv= 20.3 fps
27.2	402	Total			

**Subcatchment 2Ap: EXDA-2Ap**

Hydrograph



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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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**Summary for Subcatchment 2B: EXDA-2B**

Runoff = 1.25 cfs @ 12.50 hrs, Volume= 0.236 af, Depth= 1.17"

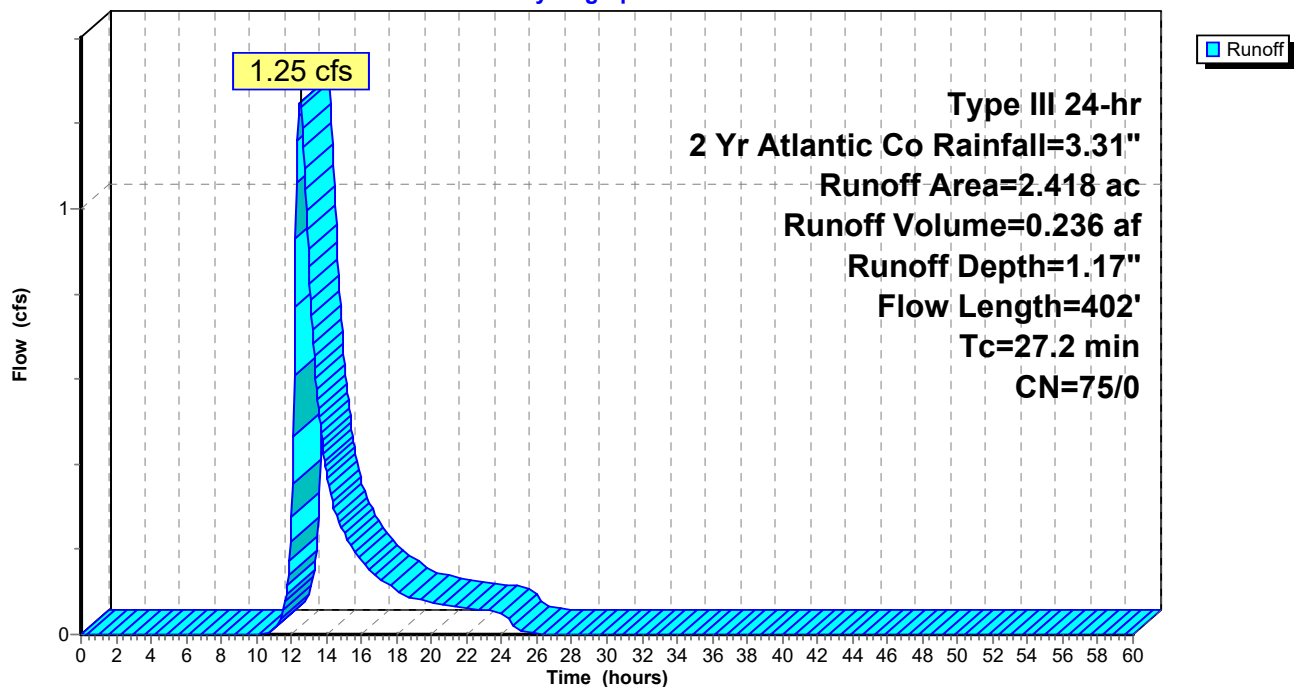
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-60.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

Area (ac)	CN	Description
0.492	82	Dirt roads, HSG B
0.556	61	>75% Grass cover, Good, HSG B
0.132	55	Woods, Good, HSG B
1.238	80	>75% Grass cover, Good, HSG D
2.418	75	Weighted Average
2.418	75	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.2	100	0.0050	0.07		<b>Sheet Flow, EXDA-2B.1</b> Grass: Dense n= 0.240 P2= 3.36"
1.9	210	0.0130	1.84		<b>Shallow Concentrated Flow, EXDA-2B.2</b> Unpaved Kv= 16.1 fps
1.1	92	0.0050	1.44		<b>Shallow Concentrated Flow, EXDA-2B.3</b> Paved Kv= 20.3 fps
27.2	402	Total			

**Subcatchment 2B: EXDA-2B**

Hydrograph



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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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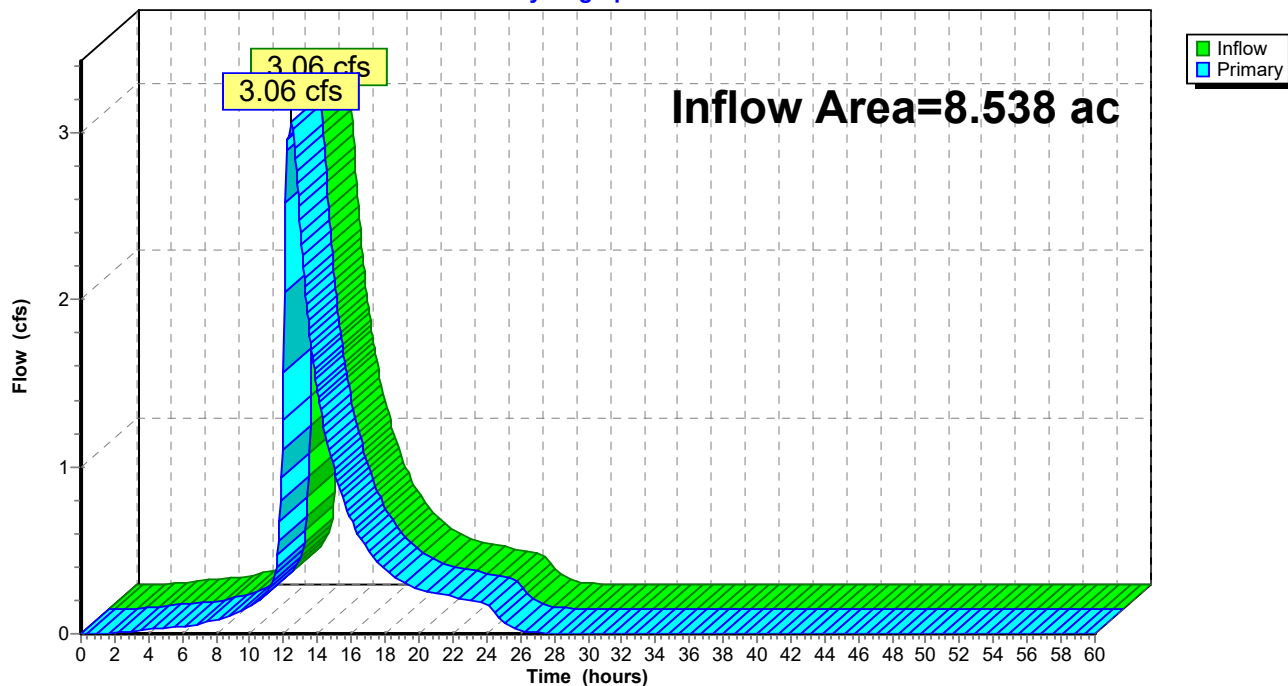
### Summary for Link 1L: EXDA-1

Inflow Area = 8.538 ac, 13.53% Impervious, Inflow Depth = 1.22" for 2 Yr Atlantic Co event  
Inflow = 3.06 cfs @ 12.48 hrs, Volume= 0.871 af  
Primary = 3.06 cfs @ 12.48 hrs, Volume= 0.871 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs

### Link 1L: EXDA-1

Hydrograph



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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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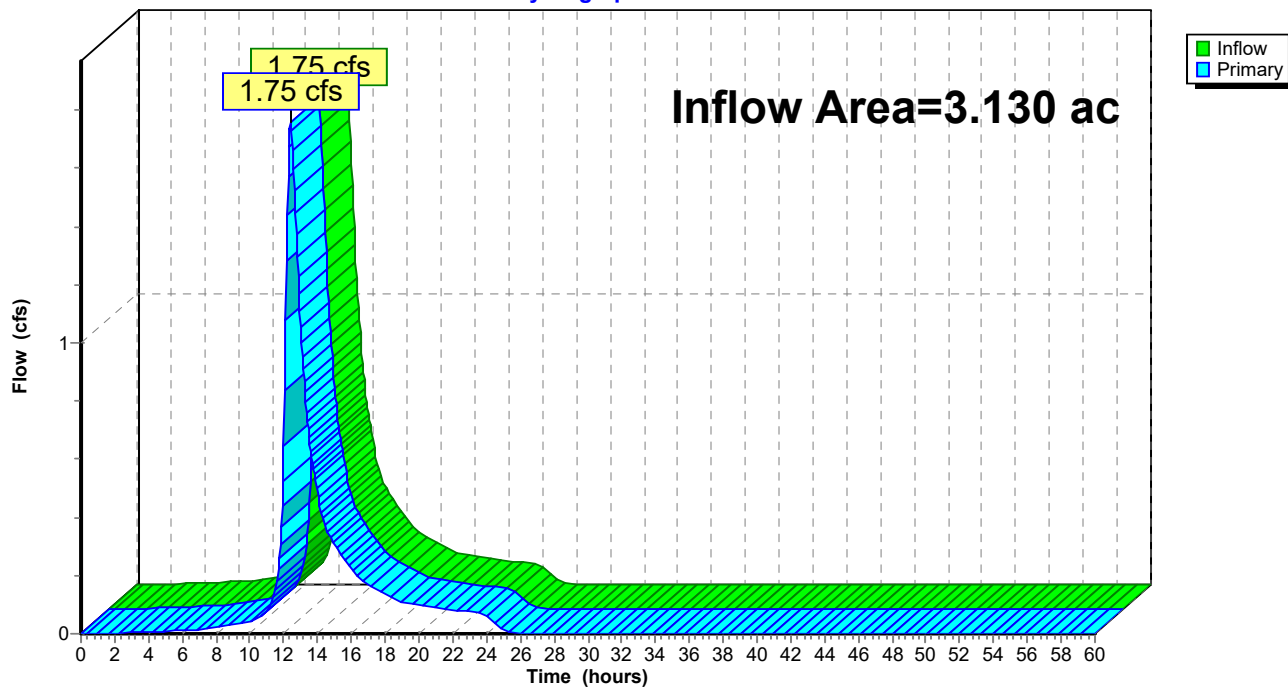
### Summary for Link 2L: EXDA-2

Inflow Area = 3.130 ac, 9.62% Impervious, Inflow Depth = 1.29" for 2 Yr Atlantic Co event  
Inflow = 1.75 cfs @ 12.41 hrs, Volume= 0.335 af  
Primary = 1.75 cfs @ 12.41 hrs, Volume= 0.335 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs

### Link 2L: EXDA-2

Hydrograph



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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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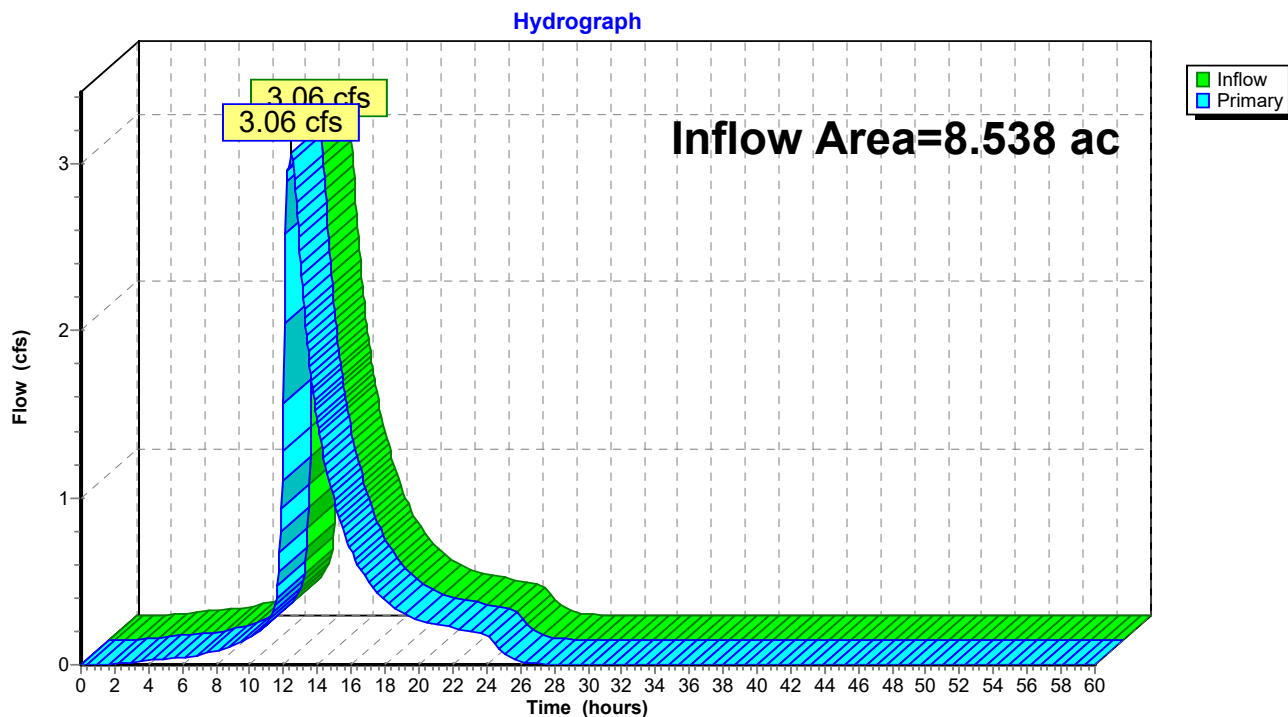
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### Summary for Link 3L: PT 1

Inflow Area = 8.538 ac, 13.53% Impervious, Inflow Depth = 1.22" for 2 Yr Atlantic Co event  
Inflow = 3.06 cfs @ 12.48 hrs, Volume= 0.871 af  
Primary = 3.06 cfs @ 12.48 hrs, Volume= 0.871 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs

### Link 3L: PT 1



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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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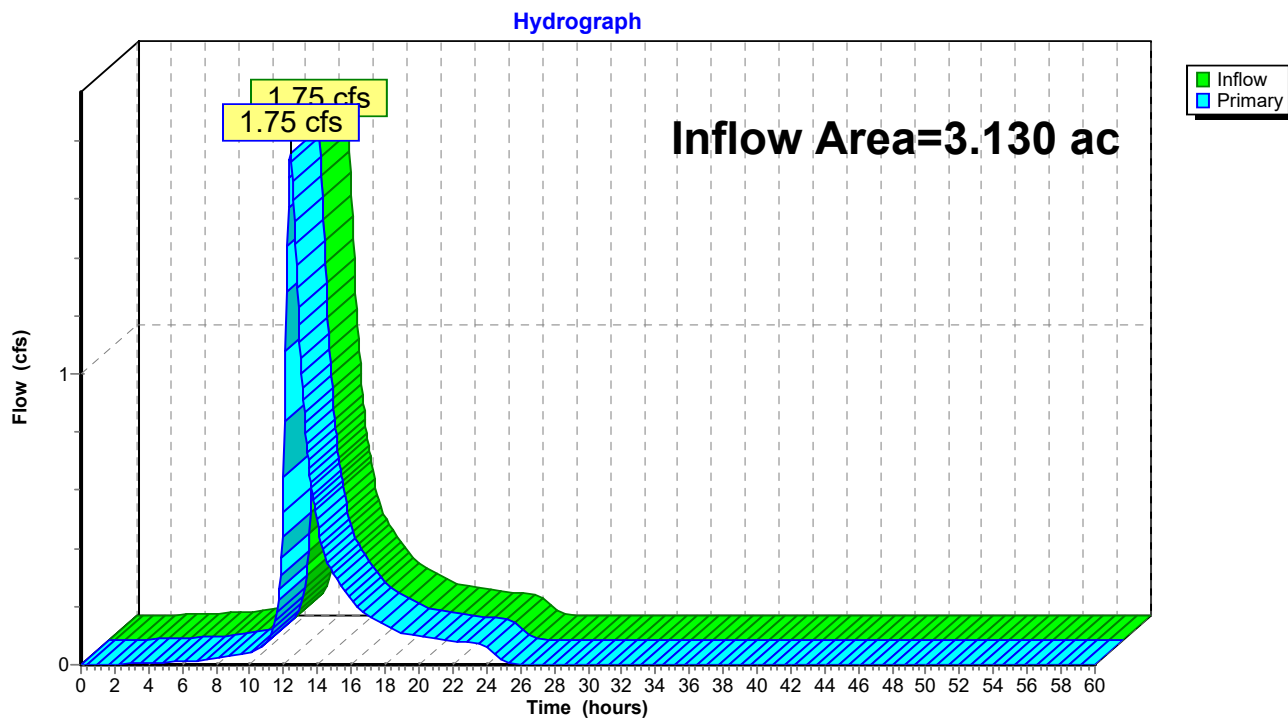
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### Summary for Link 4L: PT 2

Inflow Area = 3.130 ac, 9.62% Impervious, Inflow Depth = 1.29" for 2 Yr Atlantic Co event  
Inflow = 1.75 cfs @ 12.41 hrs, Volume= 0.335 af  
Primary = 1.75 cfs @ 12.41 hrs, Volume= 0.335 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs

### Link 4L: PT 2



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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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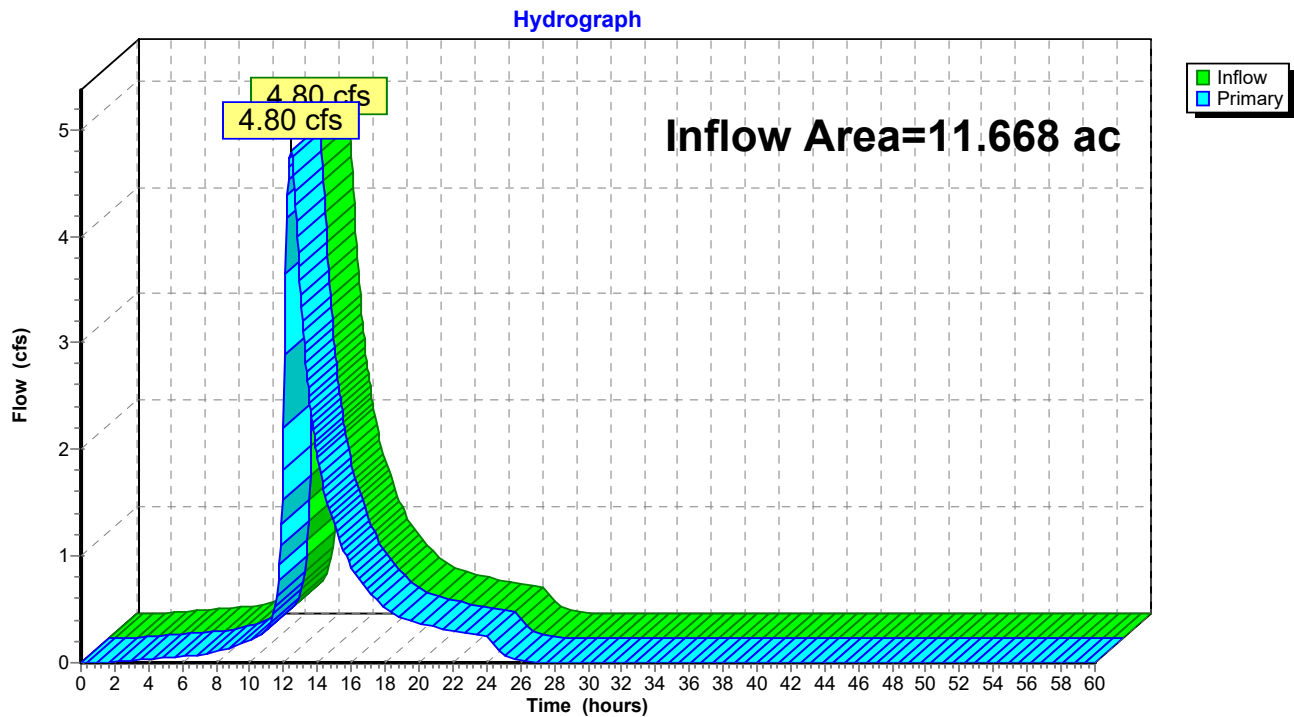
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### Summary for Link 5L: TTA

Inflow Area = 11.668 ac, 12.48% Impervious, Inflow Depth = 1.24" for 2 Yr Atlantic Co event  
Inflow = 4.80 cfs @ 12.43 hrs, Volume= 1.206 af  
Primary = 4.80 cfs @ 12.43 hrs, Volume= 1.206 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs

### Link 5L: TTA



**Pre Developed Conditions***Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"*

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Time span=0.00-60.00 hrs, dt=0.05 hrs, 1201 points

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1Ai: EXDA-1Ai** Runoff Area=0.833 ac 100.00% Impervious Runoff Depth=4.92"  
Flow Length=1,255' Slope=0.0030 '/' Tc=10.0 min CN=0/98 Runoff=2.81 cfs 0.342 af

**Subcatchment 1Ap: EXDA-1Ap** Runoff Area=0.315 ac 0.00% Impervious Runoff Depth=1.84"  
Flow Length=1,435' Tc=63.7 min CN=66/0 Runoff=0.15 cfs 0.048 af

**Subcatchment 1Bi: EXDA-1Bi** Runoff Area=0.322 ac 100.00% Impervious Runoff Depth=4.92"  
Flow Length=1,255' Slope=0.0030 '/' Tc=10.0 min CN=0/98 Runoff=1.09 cfs 0.132 af

**Subcatchment 1Bp: EXDA-1Bp** Runoff Area=7.068 ac 0.00% Impervious Runoff Depth=2.24"  
Flow Length=1,435' Tc=45.7 min CN=71/0 Runoff=5.35 cfs 1.318 af

**Subcatchment 2Ai: EXDA-2Ai** Runoff Area=0.301 ac 100.00% Impervious Runoff Depth=4.92"  
Flow Length=274' Slope=0.0070 '/' Tc=10.0 min CN=0/98 Runoff=1.01 cfs 0.123 af

**Subcatchment 2Ap: EXDA-2Ap** Runoff Area=0.411 ac 0.00% Impervious Runoff Depth=1.76"  
Flow Length=402' Tc=27.2 min CN=65/0 Runoff=0.32 cfs 0.060 af

**Subcatchment 2B: EXDA-2B** Runoff Area=2.418 ac 0.00% Impervious Runoff Depth=2.58"  
Flow Length=402' Tc=27.2 min CN=75/0 Runoff=2.91 cfs 0.520 af

**Link 1L: EXDA-1** Inflow=6.94 cfs 1.840 af  
Primary=6.94 cfs 1.840 af

**Link 2L: EXDA-2** Inflow=3.89 cfs 0.704 af  
Primary=3.89 cfs 0.704 af

**Link 3L: PT 1** Inflow=6.94 cfs 1.840 af  
Primary=6.94 cfs 1.840 af

**Link 4L: PT 2** Inflow=3.89 cfs 0.704 af  
Primary=3.89 cfs 0.704 af

**Link 5L: TTA** Inflow=10.71 cfs 2.544 af  
Primary=10.71 cfs 2.544 af

**Total Runoff Area = 11.668 ac Runoff Volume = 2.544 af Average Runoff Depth = 2.62"**  
**87.52% Pervious = 10.212 ac 12.48% Impervious = 1.456 ac**

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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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**Summary for Subcatchment 1Ai: EXDA-1Ai**

Runoff = 2.81 cfs @ 12.16 hrs, Volume= 0.342 af, Depth= 4.92"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-60.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

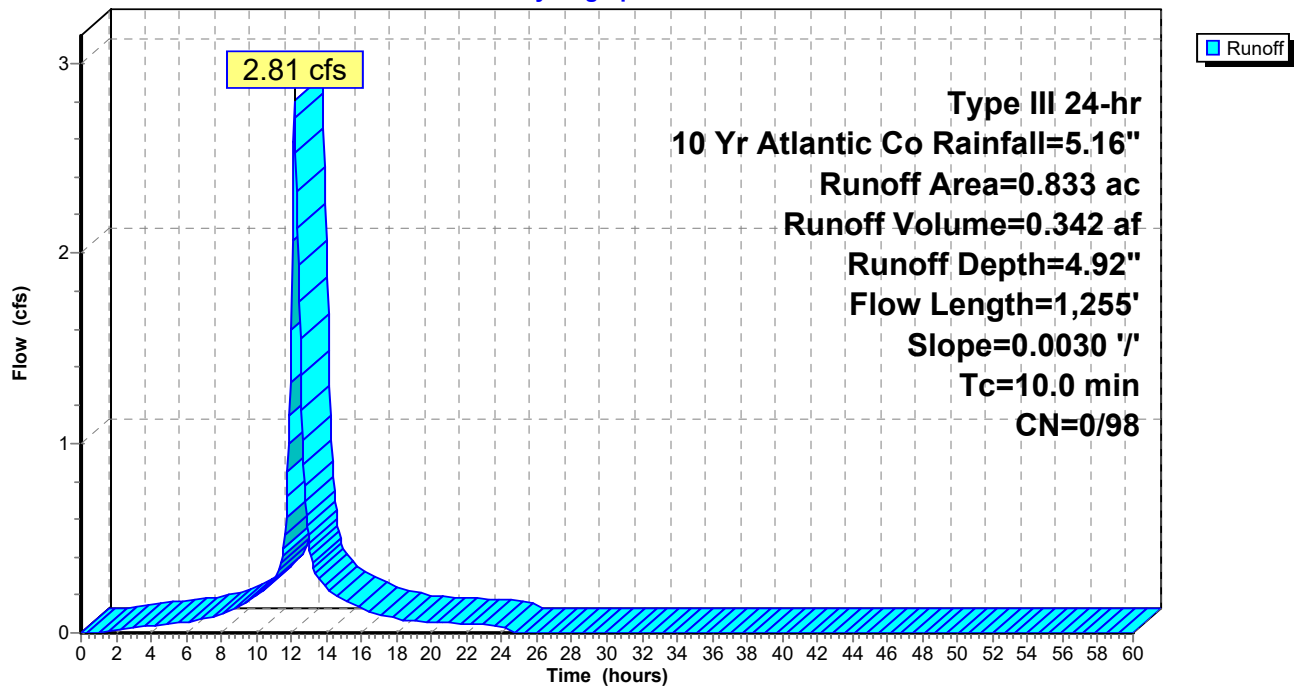
Area (ac)	CN	Description
0.475	98	Paved parking, HSG B
0.358	98	Paved parking, HSG D
0.833	98	Weighted Average
0.833	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	70	0.0030	0.61		<b>Sheet Flow, EXDA-1A.1</b> Smooth surfaces n= 0.011 P2= 3.36"
6.1	1,185	0.0030	3.26	5.75	<b>Pipe Channel, EXDA-1A.2</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
8.0	1,255	Total, Increased to minimum Tc = 10.0 min			

**Subcatchment 1Ai: EXDA-1Ai**

Hydrograph



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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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**Summary for Subcatchment 1Ap: EXDA-1Ap**

Runoff = 0.15 cfs @ 13.01 hrs, Volume= 0.048 af, Depth= 1.84"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-60.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

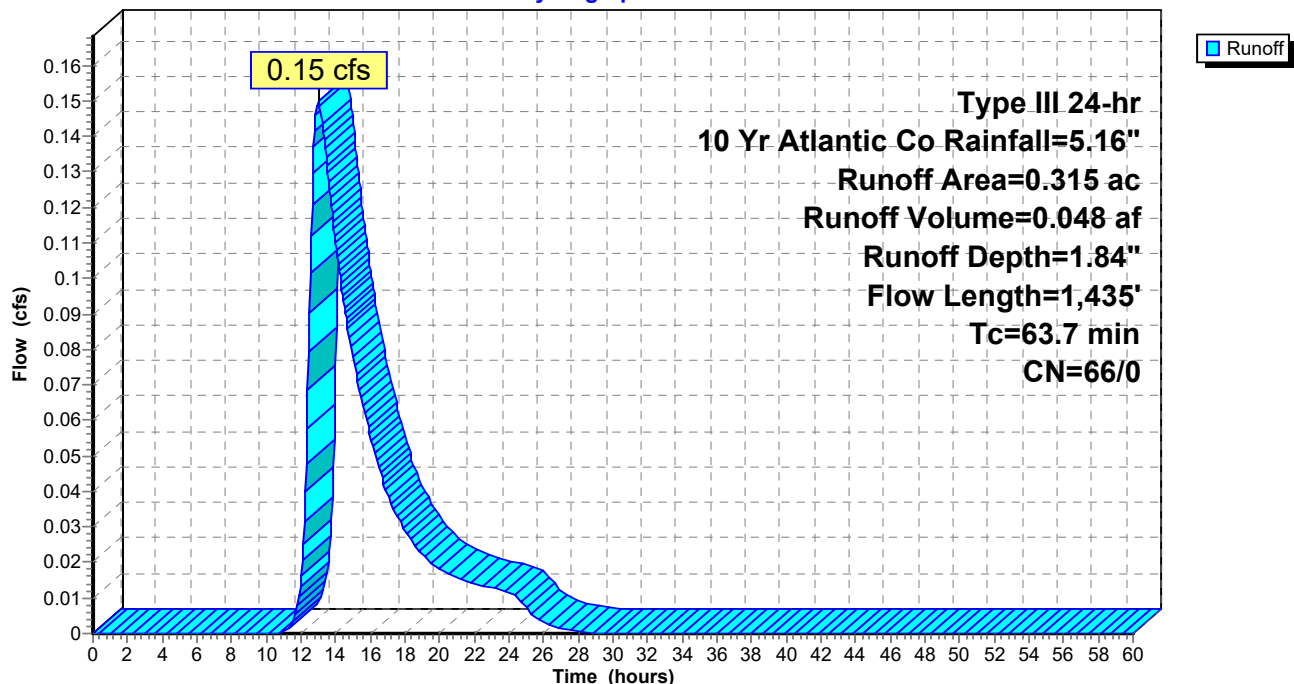
Area (ac)	CN	Description
0.220	61	>75% Grass cover, Good, HSG B
0.005	55	Woods, Good, HSG B
0.090	80	>75% Grass cover, Good, HSG D
0.315	66	Weighted Average
0.315	66	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
46.2	100	0.0010	0.04		<b>Sheet Flow, EXDA-1B.1</b> Grass: Dense n= 0.240 P2= 3.36"
6.6	350	0.0030	0.88		<b>Shallow Concentrated Flow, EXDA-1B.2</b> Unpaved Kv= 16.1 fps
1.5	65	0.0020	0.72		<b>Shallow Concentrated Flow, EXDA-1B.3</b> Unpaved Kv= 16.1 fps
9.4	920	0.0010	1.63	2.88	<b>Pipe Channel, EXDA-1B.4</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015 Concrete sewer w/manholes & inlets
63.7	1,435	Total			

**Subcatchment 1Ap: EXDA-1Ap**

Hydrograph



**Pre Developed Conditions**

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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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**Summary for Subcatchment 1Bi: EXDA-1Bi**

Runoff = 1.09 cfs @ 12.16 hrs, Volume= 0.132 af, Depth= 4.92"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-60.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

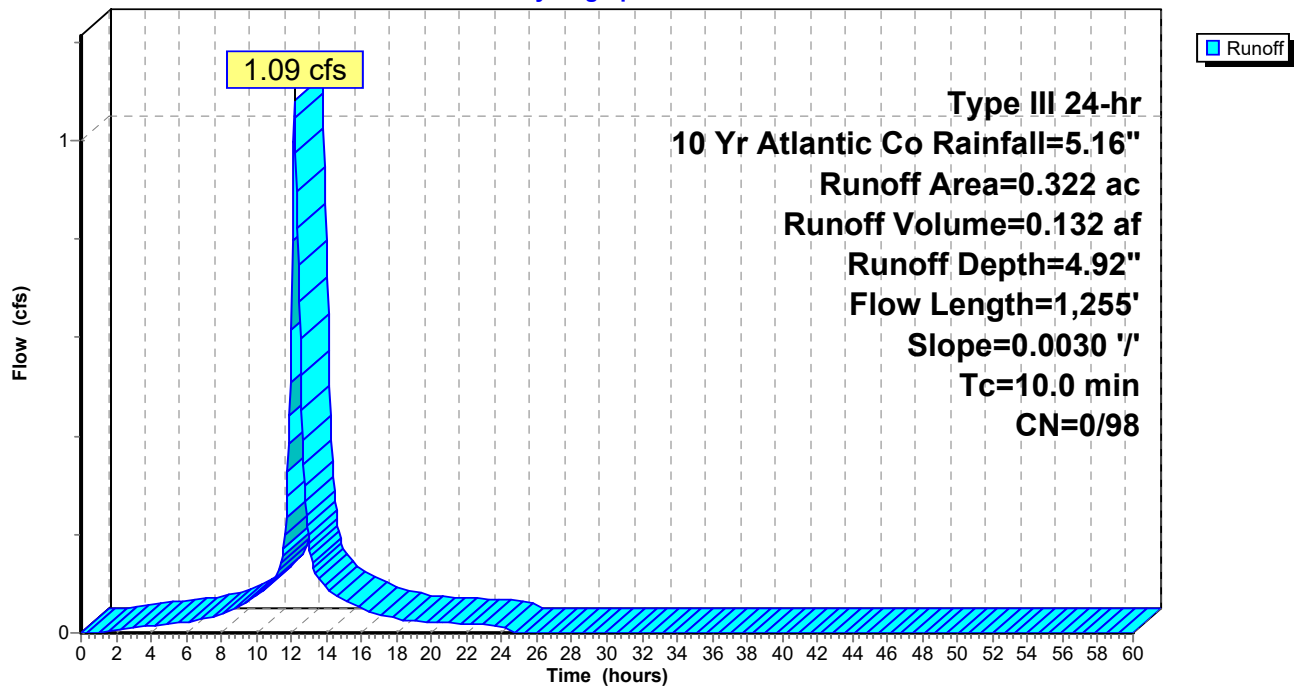
Area (ac)	CN	Description
0.108	98	Paved parking, HSG B
0.214	98	Paved parking, HSG D
0.322	98	Weighted Average
0.322	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	70	0.0030	0.61		<b>Sheet Flow, EXDA-1A.1</b> Smooth surfaces n= 0.011 P2= 3.36"
6.1	1,185	0.0030	3.26	5.75	<b>Pipe Channel, EXDA-1B.4</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
8.0	1,255	Total, Increased to minimum Tc = 10.0 min			

**Subcatchment 1Bi: EXDA-1Bi**

Hydrograph



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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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**Summary for Subcatchment 1Bp: EXDA-1Bp**

Runoff = 5.35 cfs @ 12.72 hrs, Volume= 1.318 af, Depth= 2.24"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-60.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

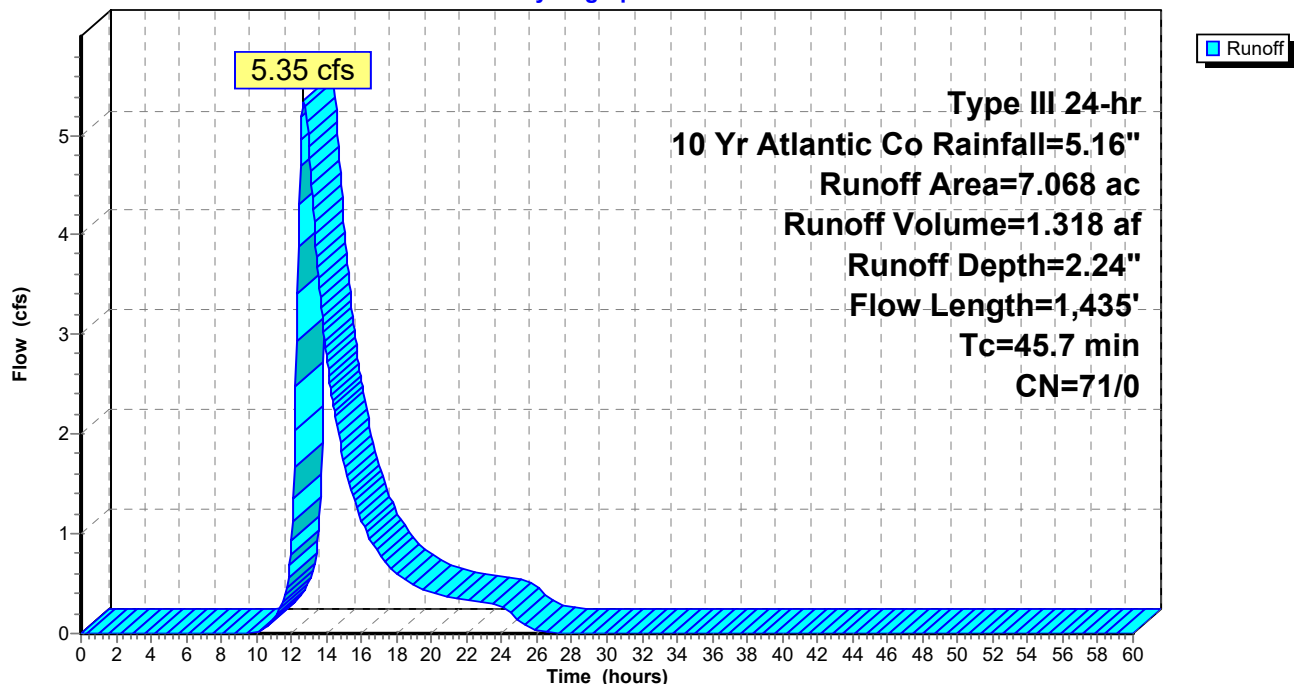
Area (ac)	CN	Description
3.483	61	>75% Grass cover, Good, HSG B
0.037	55	Woods, Good, HSG B
3.548	80	>75% Grass cover, Good, HSG D
7.068	71	Weighted Average
7.068	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.7	100	0.0030	0.06		<b>Sheet Flow, EXDA-1B.1</b> Grass: Dense n= 0.240 P2= 3.36"
6.6	350	0.0030	0.88		<b>Shallow Concentrated Flow, EXDA-1B.2</b> Unpaved Kv= 16.1 fps
1.2	65	0.0020	0.91		<b>Shallow Concentrated Flow, EXDA-1B.3</b> Paved Kv= 20.3 fps
8.2	920	0.0010	1.88	3.32	<b>Pipe Channel, EXDA-1B.4</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
45.7	1,435	Total			

**Subcatchment 1Bp: EXDA-1Bp**

Hydrograph



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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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**Summary for Subcatchment 2Ai: EXDA-2Ai**

Runoff = 1.01 cfs @ 12.16 hrs, Volume= 0.123 af, Depth= 4.92"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-60.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

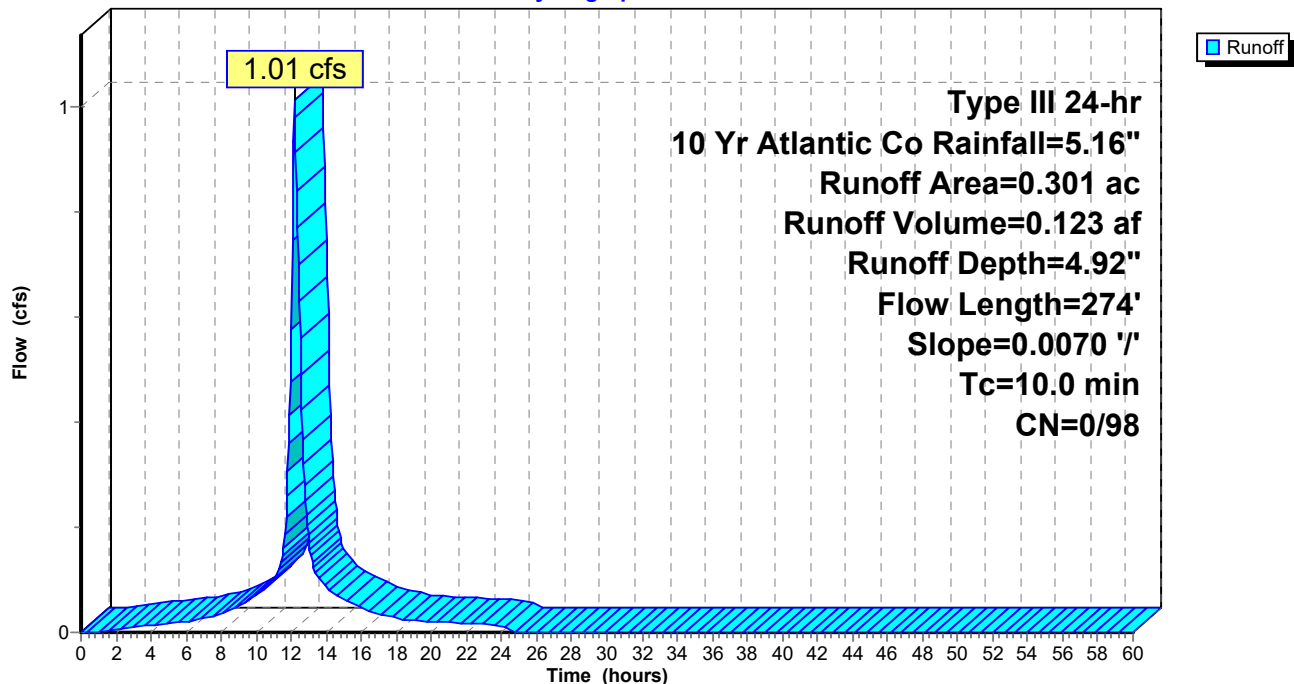
Area (ac)	CN	Description
0.132	98	Paved parking, HSG B
0.169	98	Paved parking, HSG D
0.301	98	Weighted Average
0.301	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	100	0.0070	0.93		<b>Sheet Flow, EXDA2A.1</b>
					Smooth surfaces n= 0.011 P2= 3.36"
1.7	174	0.0070	1.70		<b>Shallow Concentrated Flow, EXDA-2A.2</b>
					Paved Kv= 20.3 fps
3.5	274	Total, Increased to minimum Tc = 10.0 min			

**Subcatchment 2Ai: EXDA-2Ai**

Hydrograph



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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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**Summary for Subcatchment 2Ap: EXDA-2Ap**

Runoff = 0.32 cfs @ 12.50 hrs, Volume= 0.060 af, Depth= 1.76"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-60.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

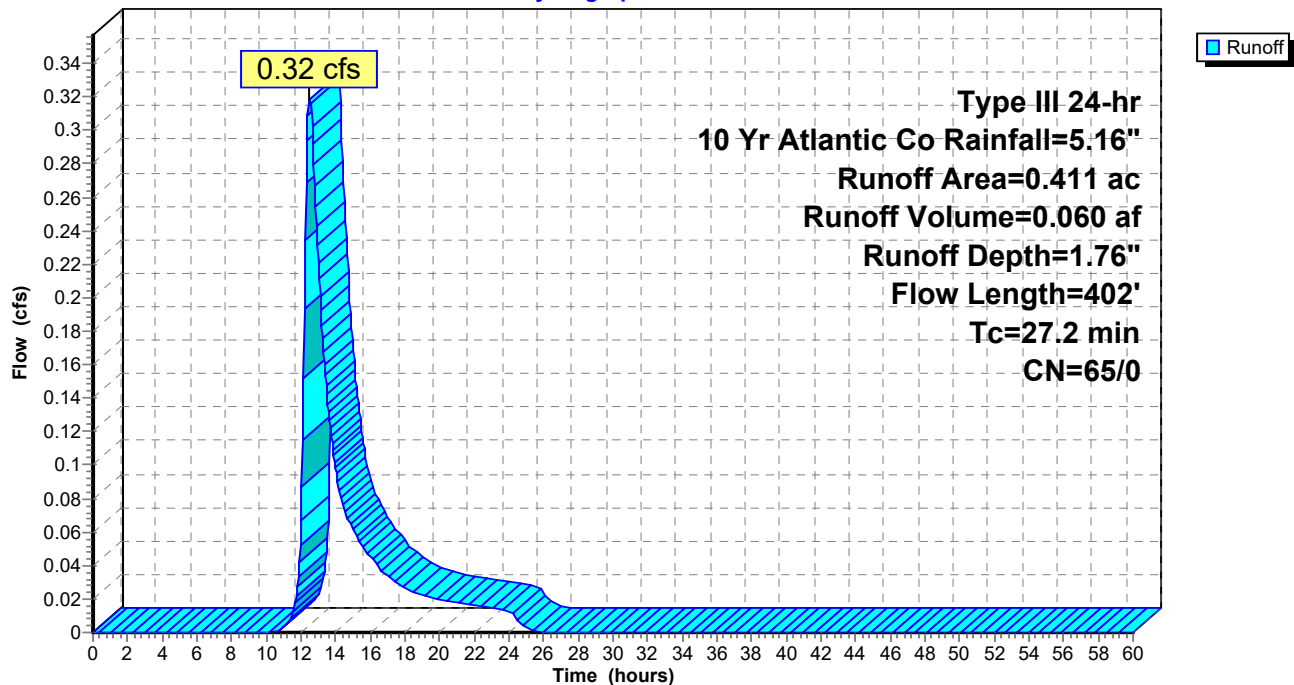
Area (ac)	CN	Description
0.006	82	Dirt roads, HSG B
0.311	61	>75% Grass cover, Good, HSG B
0.011	55	Woods, Good, HSG B
0.083	80	>75% Grass cover, Good, HSG D
0.411	65	Weighted Average
0.411	65	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.2	100	0.0050	0.07		<b>Sheet Flow, EXDA2B.1</b> Grass: Dense n= 0.240 P2= 3.36"
1.9	210	0.0130	1.84		<b>Shallow Concentrated Flow, EXDA-2B.2</b> Unpaved Kv= 16.1 fps
1.1	92	0.0050	1.44		<b>Shallow Concentrated Flow, EXDA-2A.3</b> Paved Kv= 20.3 fps
27.2	402	Total			

**Subcatchment 2Ap: EXDA-2Ap**

Hydrograph



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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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**Summary for Subcatchment 2B: EXDA-2B**

Runoff = 2.91 cfs @ 12.46 hrs, Volume= 0.520 af, Depth= 2.58"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-60.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

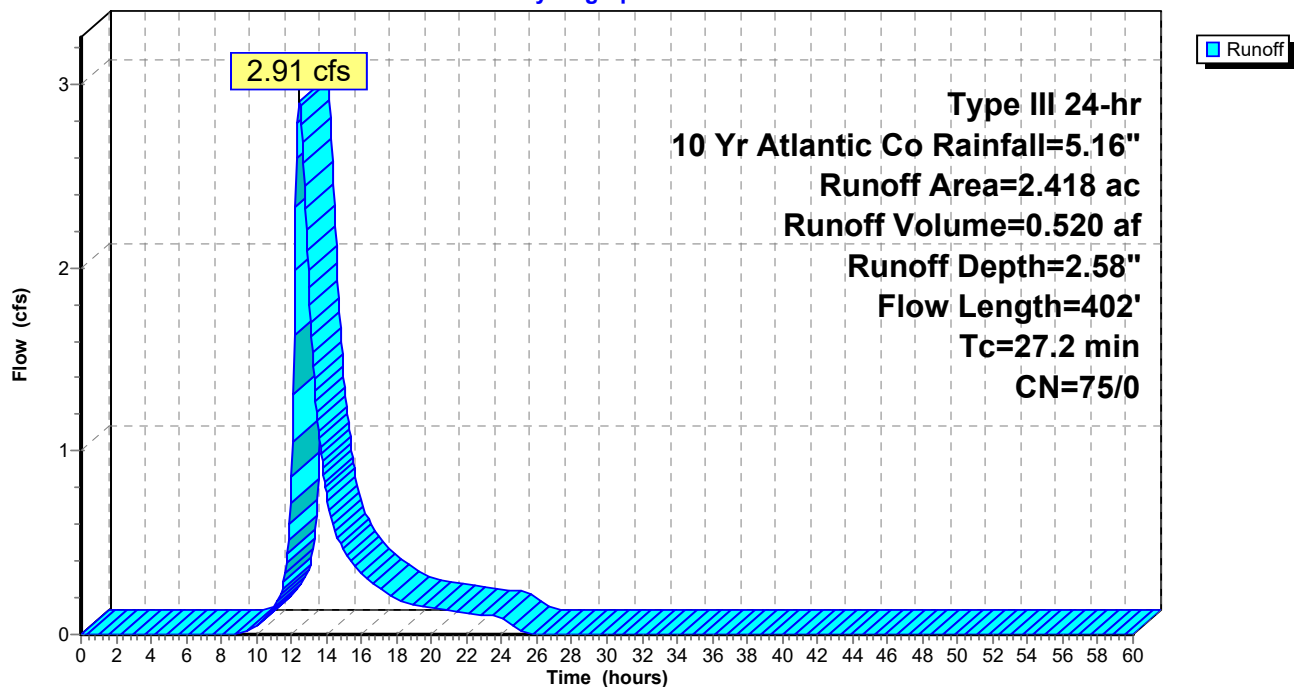
Area (ac)	CN	Description
0.492	82	Dirt roads, HSG B
0.556	61	>75% Grass cover, Good, HSG B
0.132	55	Woods, Good, HSG B
1.238	80	>75% Grass cover, Good, HSG D
2.418	75	Weighted Average
2.418	75	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.2	100	0.0050	0.07		<b>Sheet Flow, EXDA-2B.1</b> Grass: Dense n= 0.240 P2= 3.36"
1.9	210	0.0130	1.84		<b>Shallow Concentrated Flow, EXDA-2B.2</b> Unpaved Kv= 16.1 fps
1.1	92	0.0050	1.44		<b>Shallow Concentrated Flow, EXDA-2B.3</b> Paved Kv= 20.3 fps
27.2	402	Total			

**Subcatchment 2B: EXDA-2B**

Hydrograph



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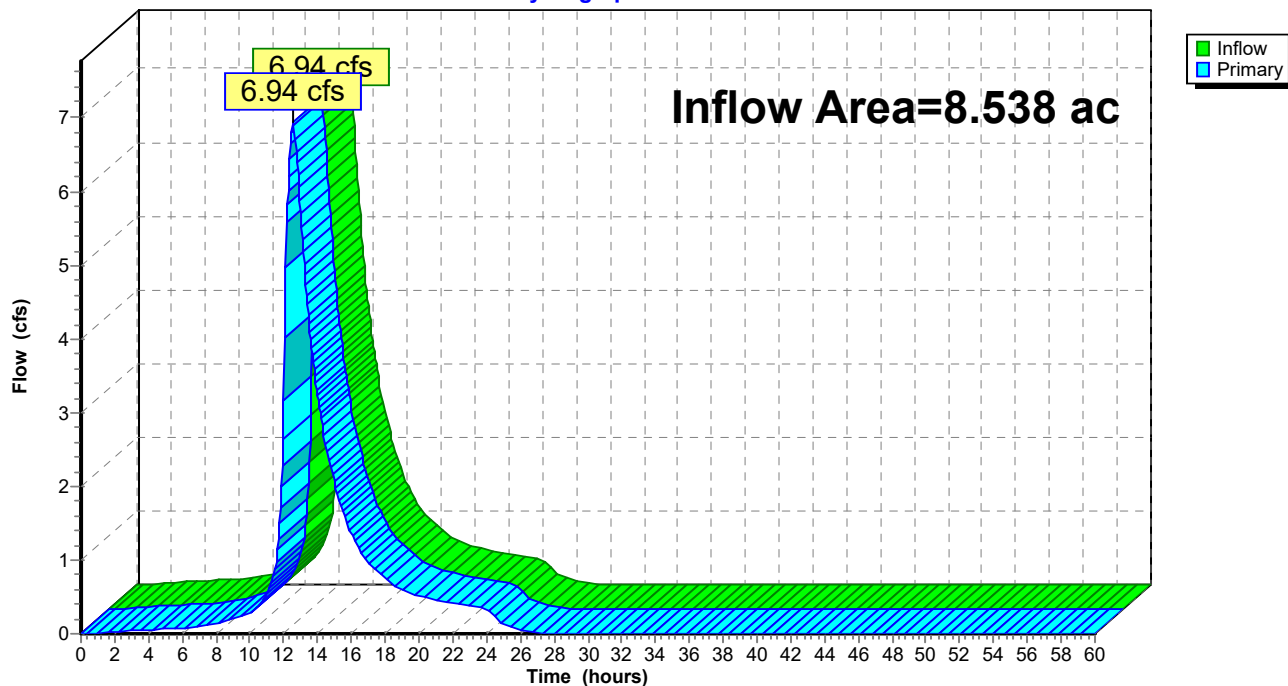
### Summary for Link 1L: EXDA-1

Inflow Area = 8.538 ac, 13.53% Impervious, Inflow Depth = 2.59" for 10 Yr Atlantic Co event  
Inflow = 6.94 cfs @ 12.54 hrs, Volume= 1.840 af  
Primary = 6.94 cfs @ 12.54 hrs, Volume= 1.840 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs

### Link 1L: EXDA-1

Hydrograph



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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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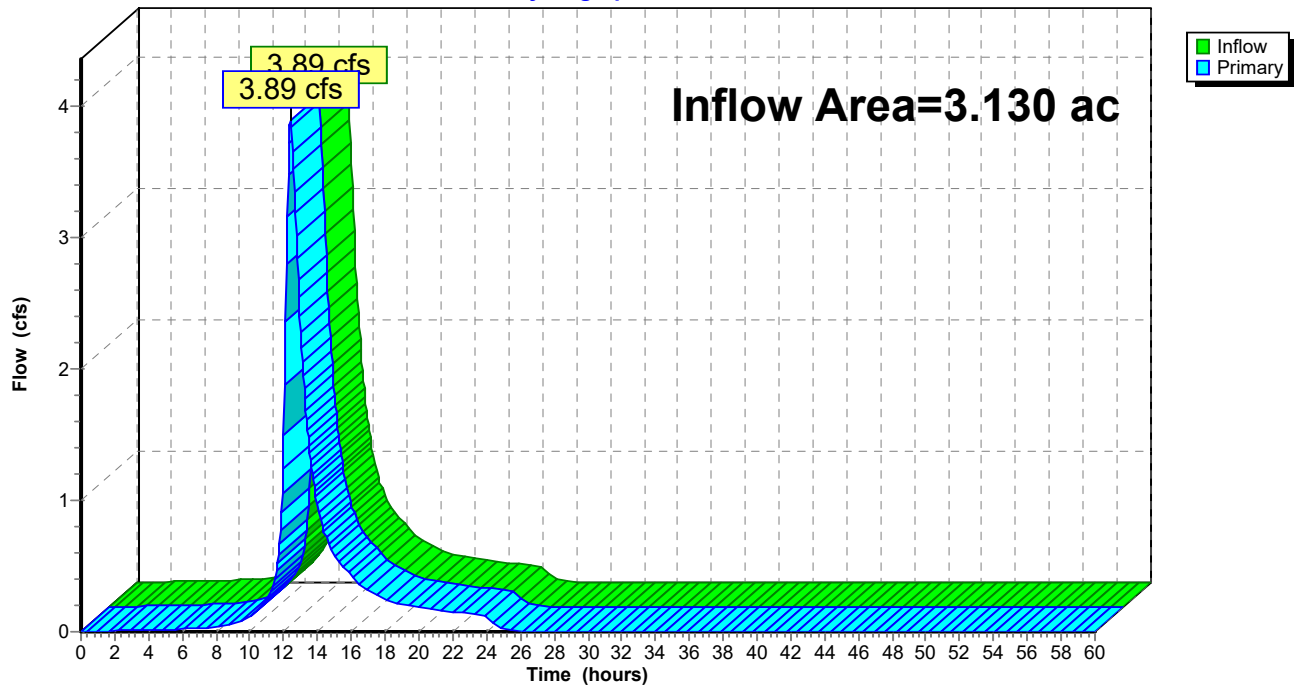
### Summary for Link 2L: EXDA-2

Inflow Area = 3.130 ac, 9.62% Impervious, Inflow Depth = 2.70" for 10 Yr Atlantic Co event  
Inflow = 3.89 cfs @ 12.40 hrs, Volume= 0.704 af  
Primary = 3.89 cfs @ 12.40 hrs, Volume= 0.704 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs

### Link 2L: EXDA-2

Hydrograph



## Pre Developed Conditions

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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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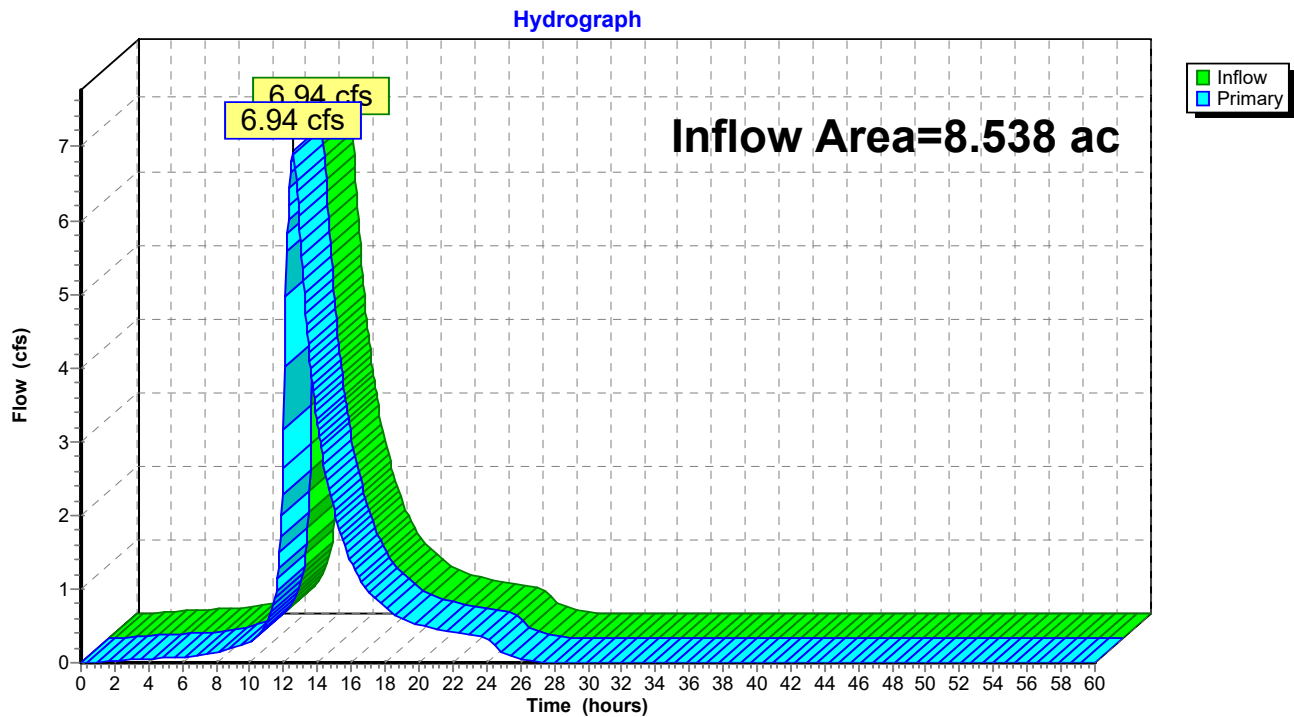
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### Summary for Link 3L: PT 1

Inflow Area = 8.538 ac, 13.53% Impervious, Inflow Depth = 2.59" for 10 Yr Atlantic Co event  
Inflow = 6.94 cfs @ 12.54 hrs, Volume= 1.840 af  
Primary = 6.94 cfs @ 12.54 hrs, Volume= 1.840 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs

### Link 3L: PT 1



## Pre Developed Conditions

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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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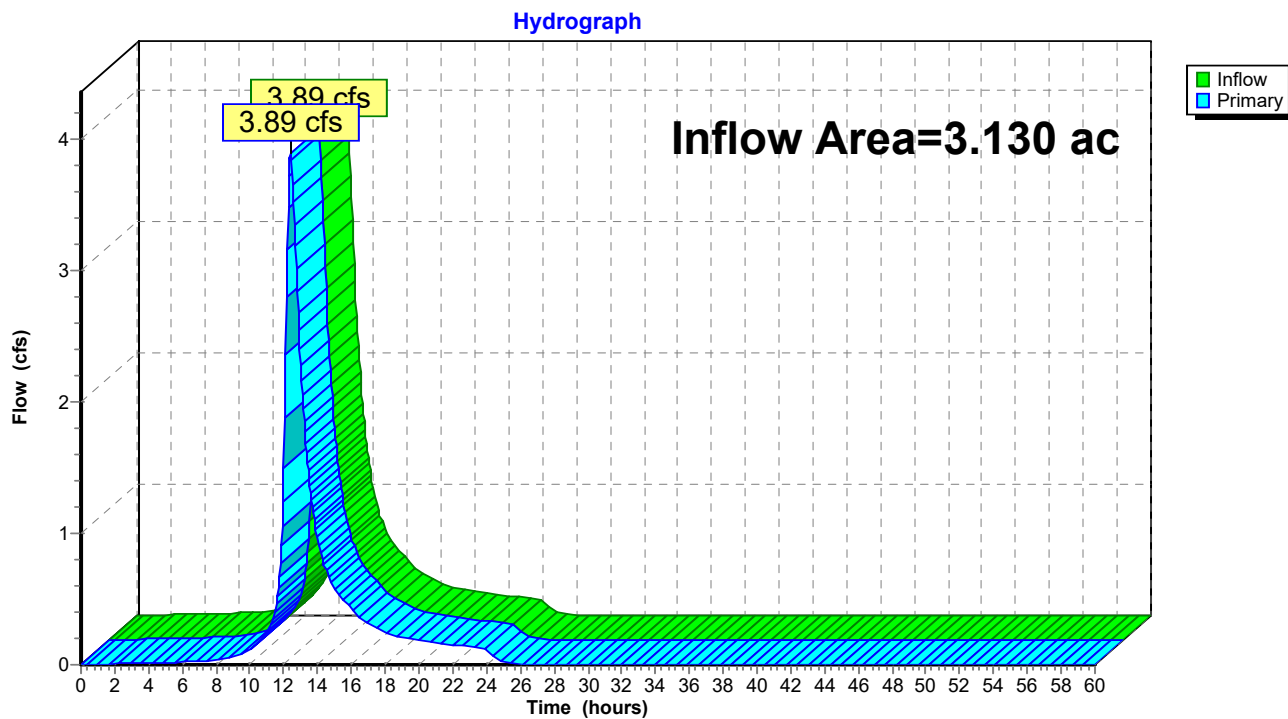
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### Summary for Link 4L: PT 2

Inflow Area = 3.130 ac, 9.62% Impervious, Inflow Depth = 2.70" for 10 Yr Atlantic Co event  
Inflow = 3.89 cfs @ 12.40 hrs, Volume= 0.704 af  
Primary = 3.89 cfs @ 12.40 hrs, Volume= 0.704 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs

### Link 4L: PT 2



## Pre Developed Conditions

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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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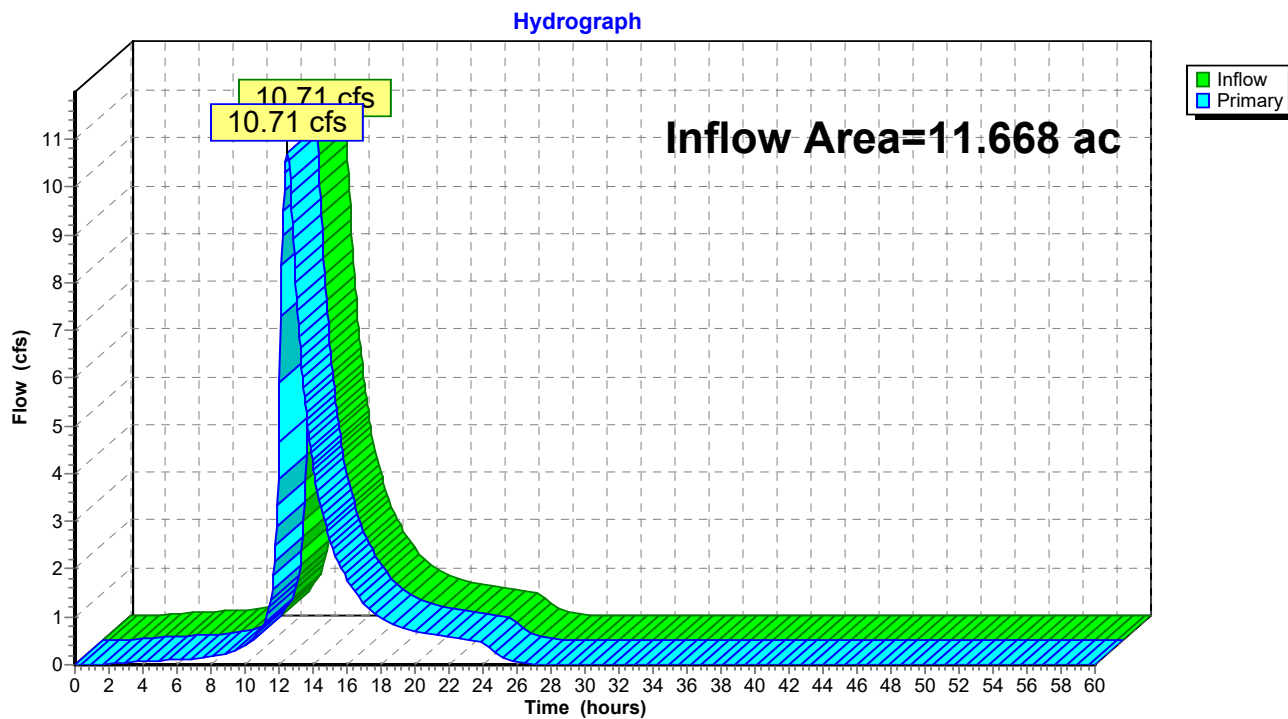
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### Summary for Link 5L: TTA

Inflow Area = 11.668 ac, 12.48% Impervious, Inflow Depth = 2.62" for 10 Yr Atlantic Co event  
Inflow = 10.71 cfs @ 12.49 hrs, Volume= 2.544 af  
Primary = 10.71 cfs @ 12.49 hrs, Volume= 2.544 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs

### Link 5L: TTA



**Pre Developed Conditions***Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"*

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Time span=0.00-60.00 hrs, dt=0.05 hrs, 1201 points

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1Ai: EXDA-1Ai** Runoff Area=0.833 ac 100.00% Impervious Runoff Depth=8.66"  
Flow Length=1,255' Slope=0.0030 '/' Tc=10.0 min CN=0/98 Runoff=4.86 cfs 0.601 af

**Subcatchment 1Ap: EXDA-1Ap** Runoff Area=0.315 ac 0.00% Impervious Runoff Depth=4.76"  
Flow Length=1,435' Tc=63.7 min CN=66/0 Runoff=0.42 cfs 0.125 af

**Subcatchment 1Bi: EXDA-1Bi** Runoff Area=0.322 ac 100.00% Impervious Runoff Depth=8.66"  
Flow Length=1,255' Slope=0.0030 '/' Tc=10.0 min CN=0/98 Runoff=1.88 cfs 0.232 af

**Subcatchment 1Bp: EXDA-1Bp** Runoff Area=7.068 ac 0.00% Impervious Runoff Depth=5.37"  
Flow Length=1,435' Tc=45.7 min CN=71/0 Runoff=13.29 cfs 3.163 af

**Subcatchment 2Ai: EXDA-2Ai** Runoff Area=0.301 ac 100.00% Impervious Runoff Depth=8.66"  
Flow Length=274' Slope=0.0070 '/' Tc=10.0 min CN=0/98 Runoff=1.76 cfs 0.217 af

**Subcatchment 2Ap: EXDA-2Ap** Runoff Area=0.411 ac 0.00% Impervious Runoff Depth=4.63"  
Flow Length=402' Tc=27.2 min CN=65/0 Runoff=0.89 cfs 0.159 af

**Subcatchment 2B: EXDA-2B** Runoff Area=2.418 ac 0.00% Impervious Runoff Depth=5.86"  
Flow Length=402' Tc=27.2 min CN=75/0 Runoff=6.68 cfs 1.181 af

**Link 1L: EXDA-1** Inflow=16.25 cfs 4.121 af  
Primary=16.25 cfs 4.121 af

**Link 2L: EXDA-2** Inflow=8.77 cfs 1.557 af  
Primary=8.77 cfs 1.557 af

**Link 3L: PT 1** Inflow=16.25 cfs 4.121 af  
Primary=16.25 cfs 4.121 af

**Link 4L: PT 2** Inflow=8.77 cfs 1.557 af  
Primary=8.77 cfs 1.557 af

**Link 5L: TTA** Inflow=24.56 cfs 5.678 af  
Primary=24.56 cfs 5.678 af

**Total Runoff Area = 11.668 ac Runoff Volume = 5.678 af Average Runoff Depth = 5.84"**  
**87.52% Pervious = 10.212 ac 12.48% Impervious = 1.456 ac**

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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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**Summary for Subcatchment 1Ai: EXDA-1Ai**

Runoff = 4.86 cfs @ 12.16 hrs, Volume= 0.601 af, Depth= 8.66"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-60.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

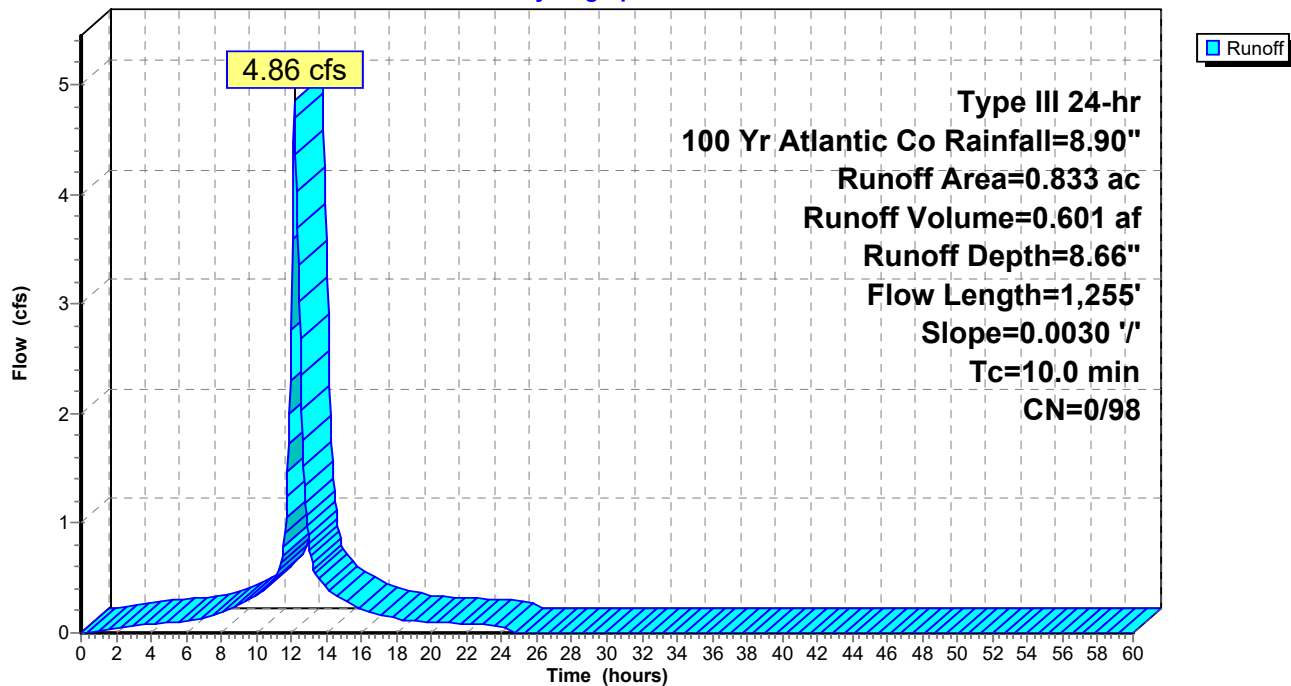
Area (ac)	CN	Description
0.475	98	Paved parking, HSG B
0.358	98	Paved parking, HSG D
0.833	98	Weighted Average
0.833	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	70	0.0030	0.61		<b>Sheet Flow, EXDA-1A.1</b> Smooth surfaces n= 0.011 P2= 3.36"
6.1	1,185	0.0030	3.26	5.75	<b>Pipe Channel, EXDA-1A.2</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
8.0	1,255	Total, Increased to minimum Tc = 10.0 min			

**Subcatchment 1Ai: EXDA-1Ai**

Hydrograph



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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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**Summary for Subcatchment 1Ap: EXDA-1Ap**

Runoff = 0.42 cfs @ 12.92 hrs, Volume= 0.125 af, Depth= 4.76"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-60.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

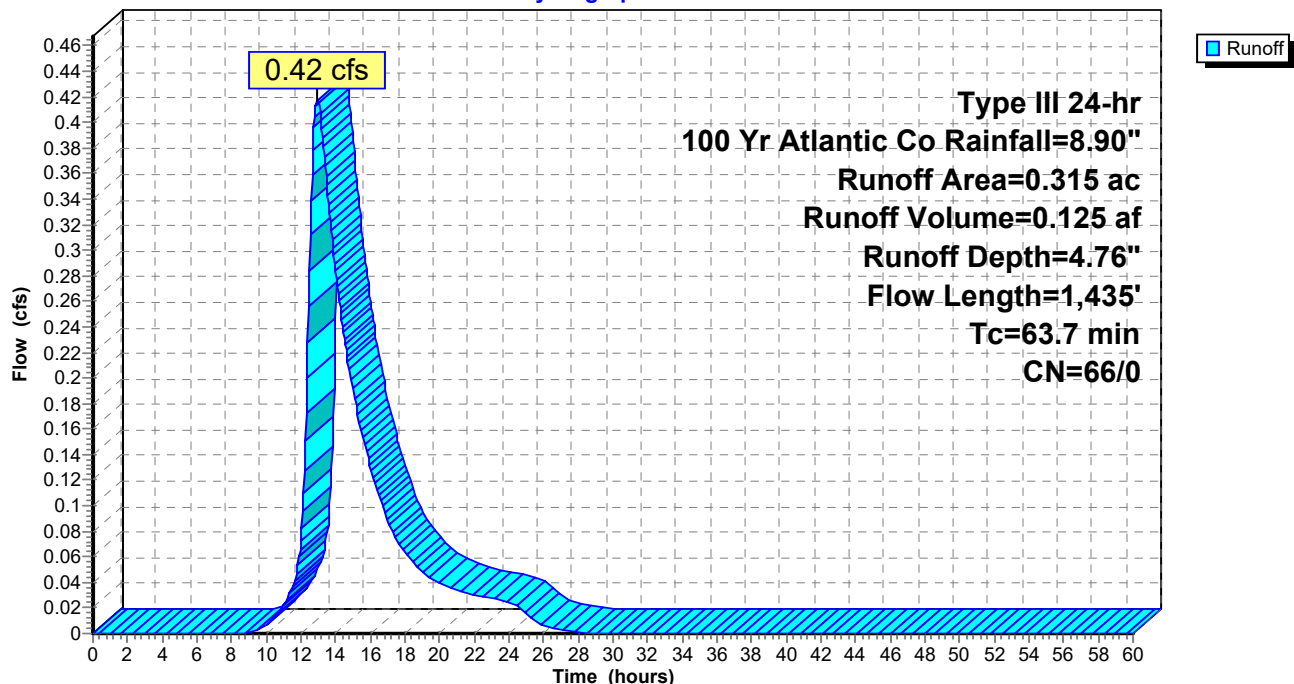
Area (ac)	CN	Description
0.220	61	>75% Grass cover, Good, HSG B
0.005	55	Woods, Good, HSG B
0.090	80	>75% Grass cover, Good, HSG D
0.315	66	Weighted Average
0.315	66	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
46.2	100	0.0010	0.04		<b>Sheet Flow, EXDA-1B.1</b> Grass: Dense n= 0.240 P2= 3.36"
6.6	350	0.0030	0.88		<b>Shallow Concentrated Flow, EXDA-1B.2</b> Unpaved Kv= 16.1 fps
1.5	65	0.0020	0.72		<b>Shallow Concentrated Flow, EXDA-1B.3</b> Unpaved Kv= 16.1 fps
9.4	920	0.0010	1.63	2.88	<b>Pipe Channel, EXDA-1B.4</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015 Concrete sewer w/manholes & inlets
63.7	1,435	Total			

**Subcatchment 1Ap: EXDA-1Ap**

Hydrograph



**Pre Developed Conditions**

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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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**Summary for Subcatchment 1Bi: EXDA-1Bi**

Runoff = 1.88 cfs @ 12.16 hrs, Volume= 0.232 af, Depth= 8.66"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-60.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

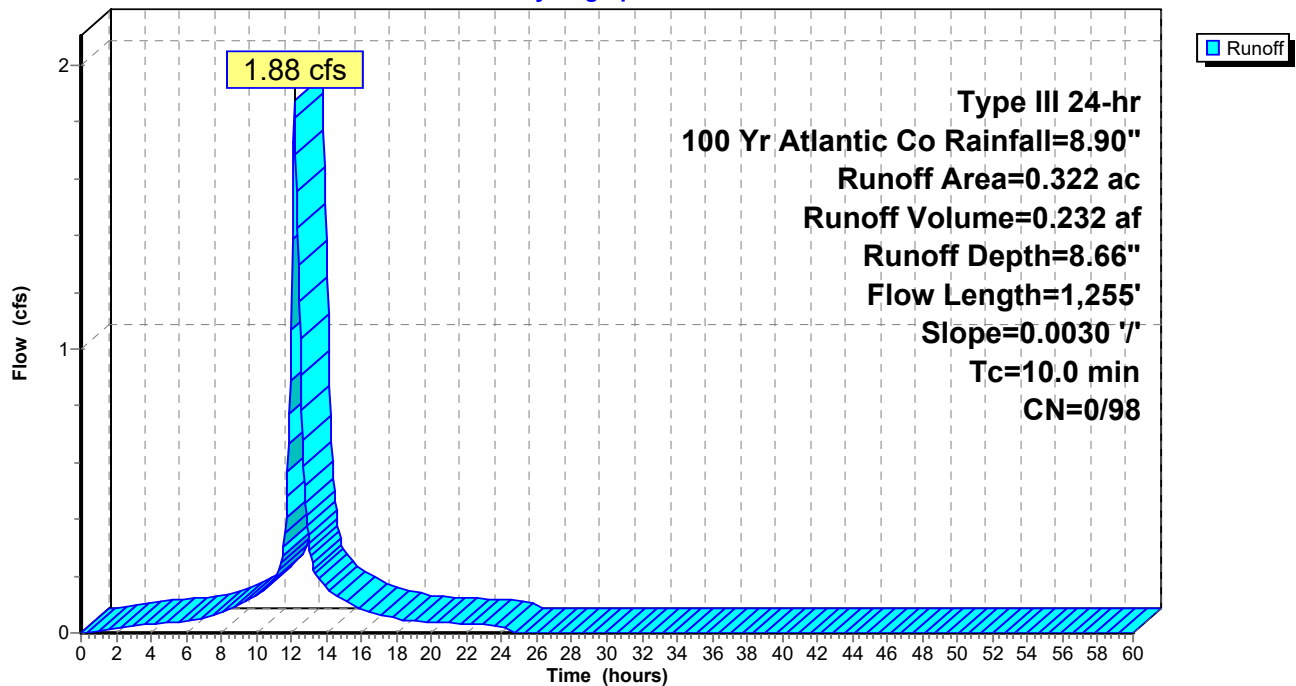
Area (ac)	CN	Description
0.108	98	Paved parking, HSG B
0.214	98	Paved parking, HSG D
0.322	98	Weighted Average
0.322	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	70	0.0030	0.61		<b>Sheet Flow, EXDA-1A.1</b> Smooth surfaces n= 0.011 P2= 3.36"
6.1	1,185	0.0030	3.26	5.75	<b>Pipe Channel, EXDA-1B.4</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
8.0	1,255	Total, Increased to minimum Tc = 10.0 min			

**Subcatchment 1Bi: EXDA-1Bi**

Hydrograph



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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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**Summary for Subcatchment 1Bp: EXDA-1Bp**

Runoff = 13.29 cfs @ 12.69 hrs, Volume= 3.163 af, Depth= 5.37"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-60.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

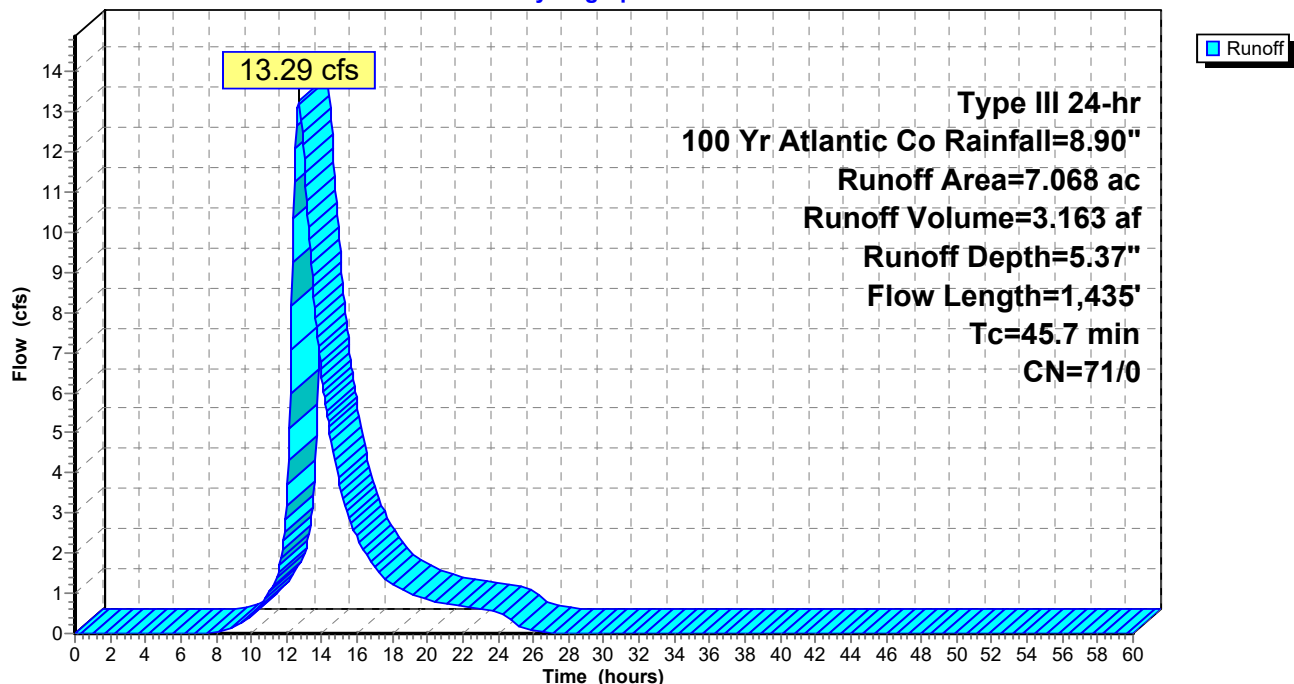
Area (ac)	CN	Description
3.483	61	>75% Grass cover, Good, HSG B
0.037	55	Woods, Good, HSG B
3.548	80	>75% Grass cover, Good, HSG D
7.068	71	Weighted Average
7.068	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.7	100	0.0030	0.06		<b>Sheet Flow, EXDA-1B.1</b> Grass: Dense n= 0.240 P2= 3.36"
6.6	350	0.0030	0.88		<b>Shallow Concentrated Flow, EXDA-1B.2</b> Unpaved Kv= 16.1 fps
1.2	65	0.0020	0.91		<b>Shallow Concentrated Flow, EXDA-1B.3</b> Paved Kv= 20.3 fps
8.2	920	0.0010	1.88	3.32	<b>Pipe Channel, EXDA-1B.4</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
45.7	1,435	Total			

**Subcatchment 1Bp: EXDA-1Bp**

Hydrograph



**Pre Developed Conditions**

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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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**Summary for Subcatchment 2Ai: EXDA-2Ai**

Runoff = 1.76 cfs @ 12.16 hrs, Volume= 0.217 af, Depth= 8.66"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-60.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

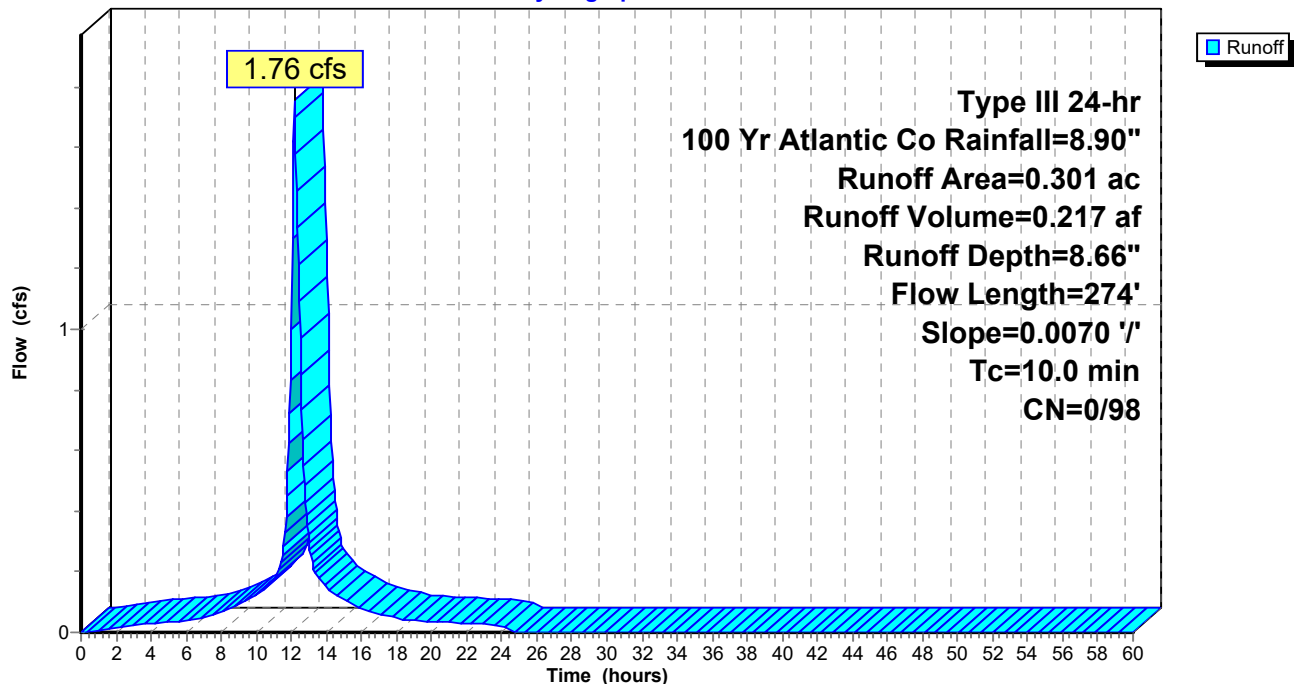
Area (ac)	CN	Description
0.132	98	Paved parking, HSG B
0.169	98	Paved parking, HSG D
0.301	98	Weighted Average
0.301	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	100	0.0070	0.93		<b>Sheet Flow, EXDA2A.1</b>
					Smooth surfaces n= 0.011 P2= 3.36"
1.7	174	0.0070	1.70		<b>Shallow Concentrated Flow, EXDA-2A.2</b>
					Paved Kv= 20.3 fps
3.5	274	Total, Increased to minimum Tc = 10.0 min			

**Subcatchment 2Ai: EXDA-2Ai**

Hydrograph



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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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**Summary for Subcatchment 2Ap: EXDA-2Ap**

Runoff = 0.89 cfs @ 12.46 hrs, Volume= 0.159 af, Depth= 4.63"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-60.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

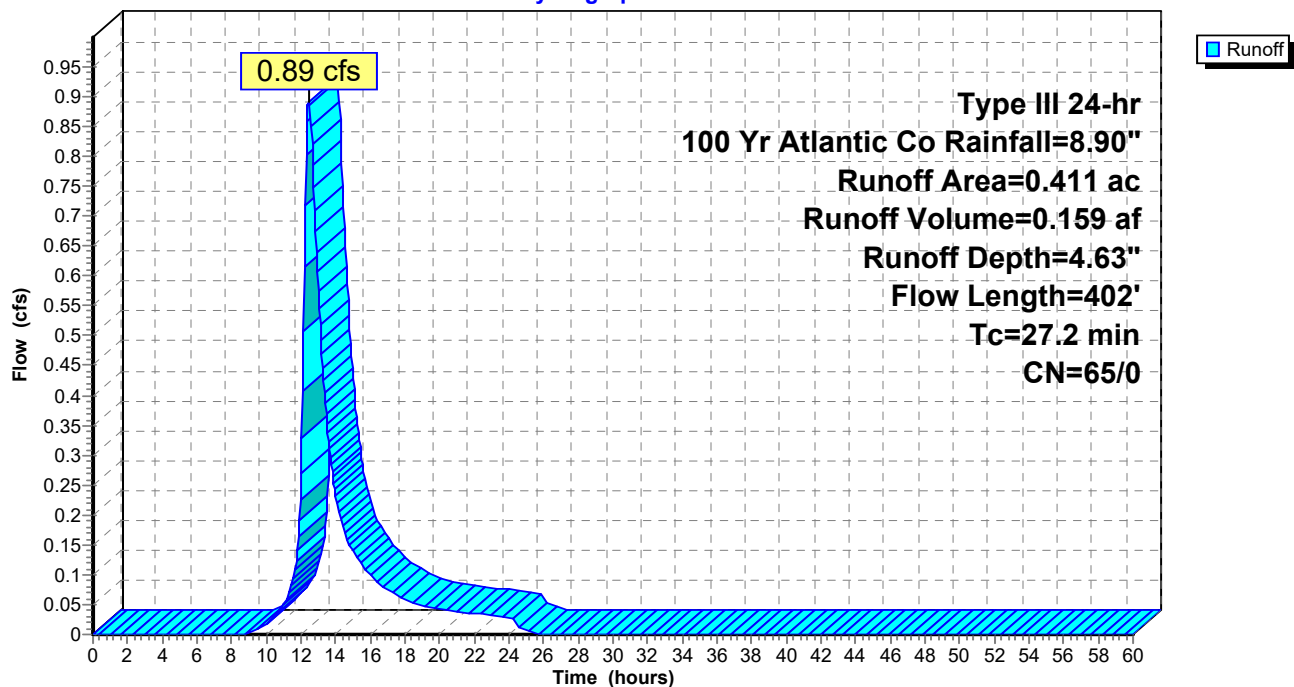
Area (ac)	CN	Description
0.006	82	Dirt roads, HSG B
0.311	61	>75% Grass cover, Good, HSG B
0.011	55	Woods, Good, HSG B
0.083	80	>75% Grass cover, Good, HSG D
0.411	65	Weighted Average
0.411	65	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.2	100	0.0050	0.07		<b>Sheet Flow, EXDA2B.1</b> Grass: Dense n= 0.240 P2= 3.36"
1.9	210	0.0130	1.84		<b>Shallow Concentrated Flow, EXDA-2B.2</b> Unpaved Kv= 16.1 fps
1.1	92	0.0050	1.44		<b>Shallow Concentrated Flow, EXDA-2A.3</b> Paved Kv= 20.3 fps
27.2	402	Total			

**Subcatchment 2Ap: EXDA-2Ap**

Hydrograph



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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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**Summary for Subcatchment 2B: EXDA-2B**

Runoff = 6.68 cfs @ 12.43 hrs, Volume= 1.181 af, Depth= 5.86"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-60.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

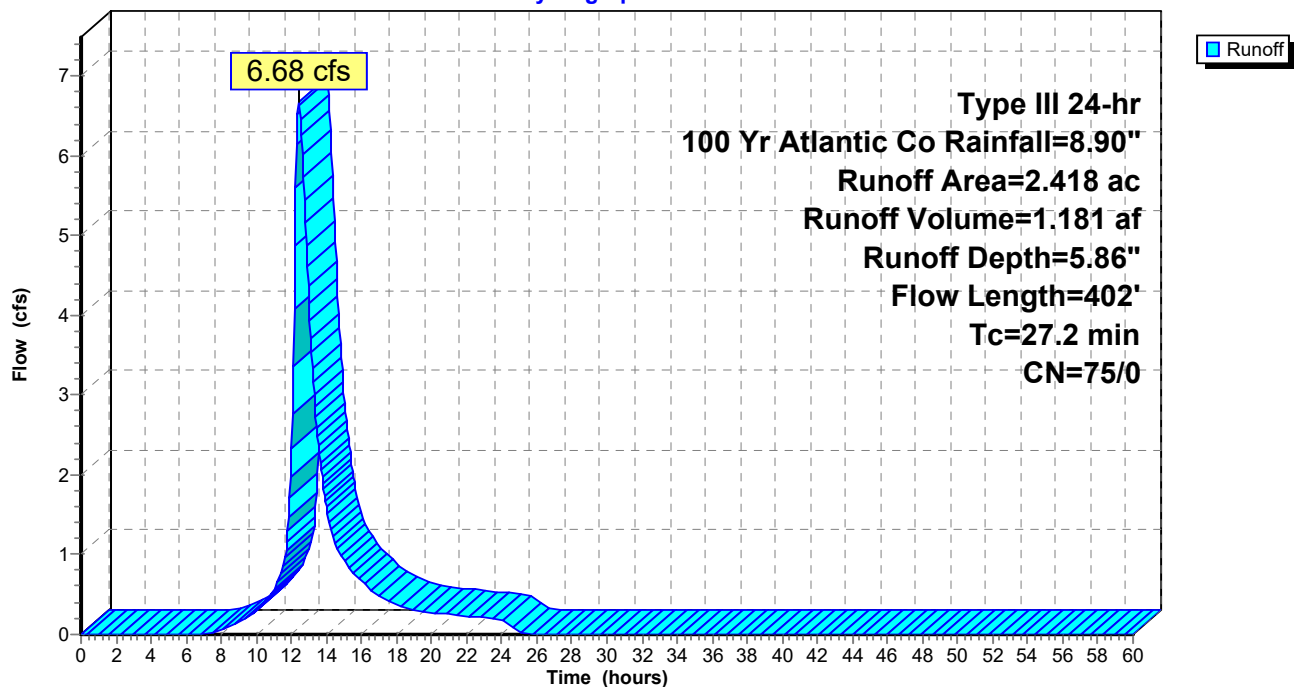
Area (ac)	CN	Description
0.492	82	Dirt roads, HSG B
0.556	61	>75% Grass cover, Good, HSG B
0.132	55	Woods, Good, HSG B
1.238	80	>75% Grass cover, Good, HSG D
2.418	75	Weighted Average
2.418	75	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.2	100	0.0050	0.07		<b>Sheet Flow, EXDA-2B.1</b> Grass: Dense n= 0.240 P2= 3.36"
1.9	210	0.0130	1.84		<b>Shallow Concentrated Flow, EXDA-2B.2</b> Unpaved Kv= 16.1 fps
1.1	92	0.0050	1.44		<b>Shallow Concentrated Flow, EXDA-2B.3</b> Paved Kv= 20.3 fps
27.2	402	Total			

**Subcatchment 2B: EXDA-2B**

Hydrograph



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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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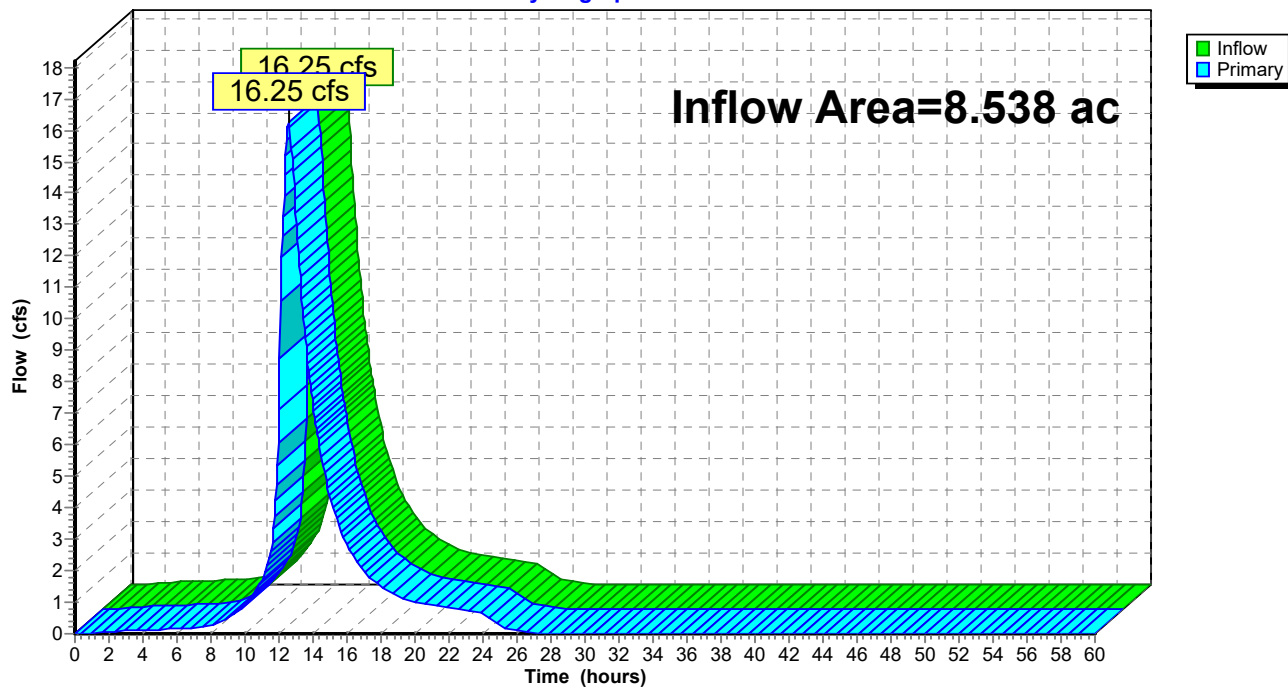
### Summary for Link 1L: EXDA-1

Inflow Area = 8.538 ac, 13.53% Impervious, Inflow Depth = 5.79" for 100 Yr Atlantic Co event  
Inflow = 16.25 cfs @ 12.58 hrs, Volume= 4.121 af  
Primary = 16.25 cfs @ 12.58 hrs, Volume= 4.121 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs

### Link 1L: EXDA-1

Hydrograph



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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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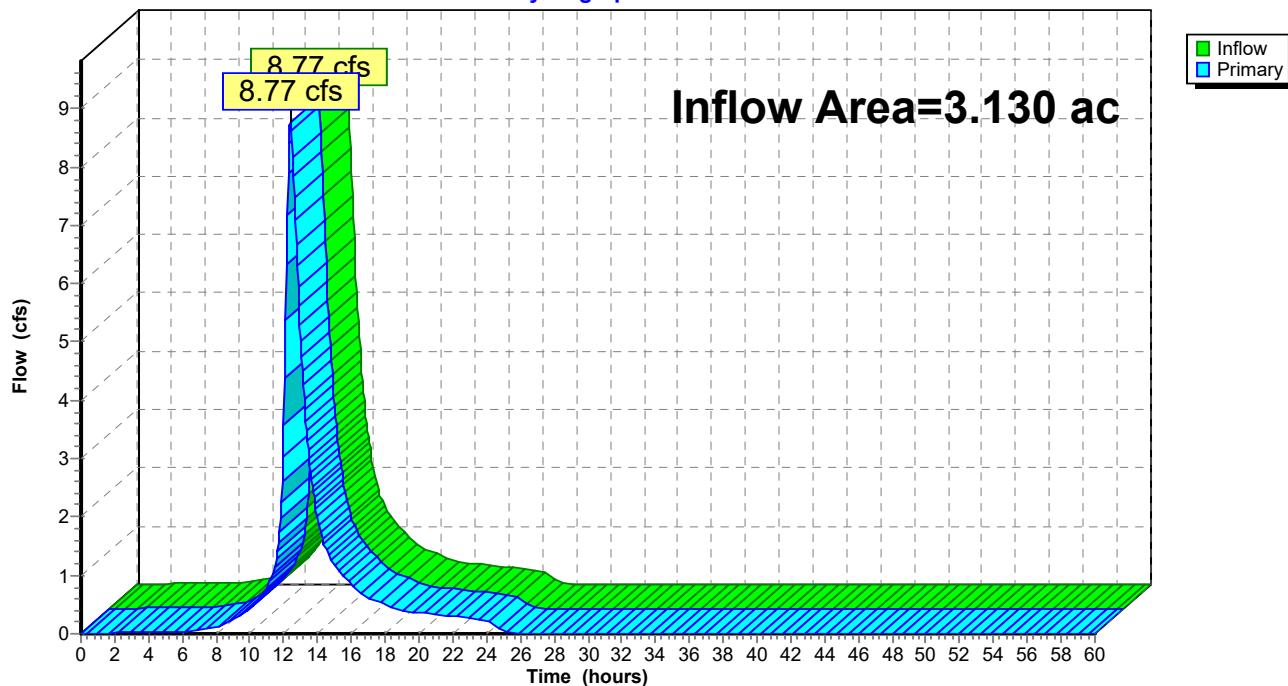
### Summary for Link 2L: EXDA-2

Inflow Area = 3.130 ac, 9.62% Impervious, Inflow Depth = 5.97" for 100 Yr Atlantic Co event  
Inflow = 8.77 cfs @ 12.39 hrs, Volume= 1.557 af  
Primary = 8.77 cfs @ 12.39 hrs, Volume= 1.557 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs

### Link 2L: EXDA-2

Hydrograph



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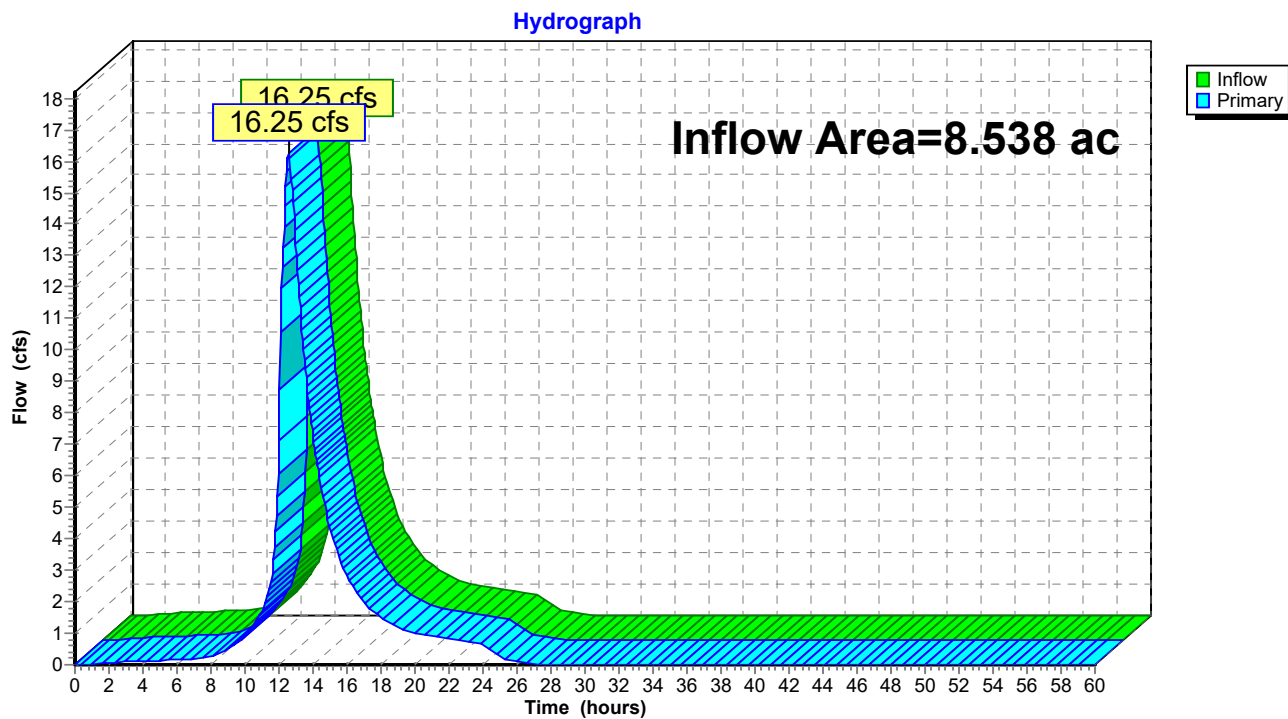
Page 42

### Summary for Link 3L: PT 1

Inflow Area = 8.538 ac, 13.53% Impervious, Inflow Depth = 5.79" for 100 Yr Atlantic Co event  
Inflow = 16.25 cfs @ 12.58 hrs, Volume= 4.121 af  
Primary = 16.25 cfs @ 12.58 hrs, Volume= 4.121 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs

### Link 3L: PT 1



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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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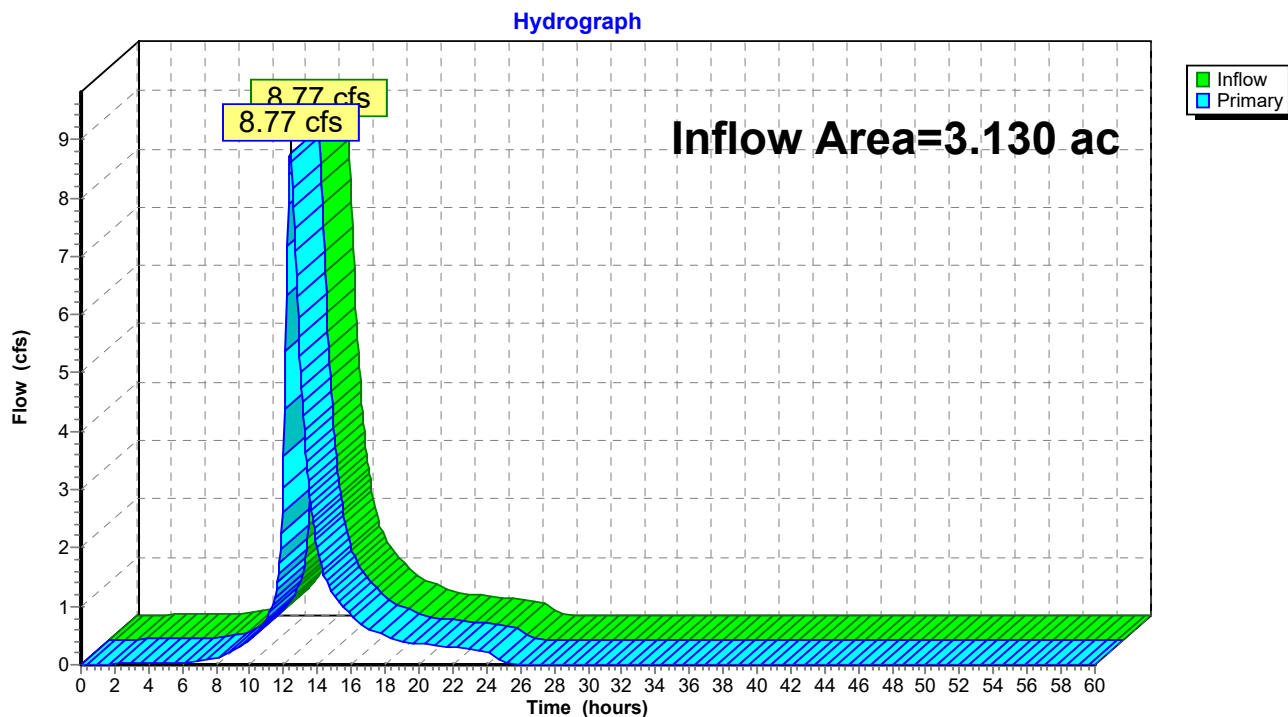
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### Summary for Link 4L: PT 2

Inflow Area = 3.130 ac, 9.62% Impervious, Inflow Depth = 5.97" for 100 Yr Atlantic Co event  
Inflow = 8.77 cfs @ 12.39 hrs, Volume= 1.557 af  
Primary = 8.77 cfs @ 12.39 hrs, Volume= 1.557 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs

### Link 4L: PT 2



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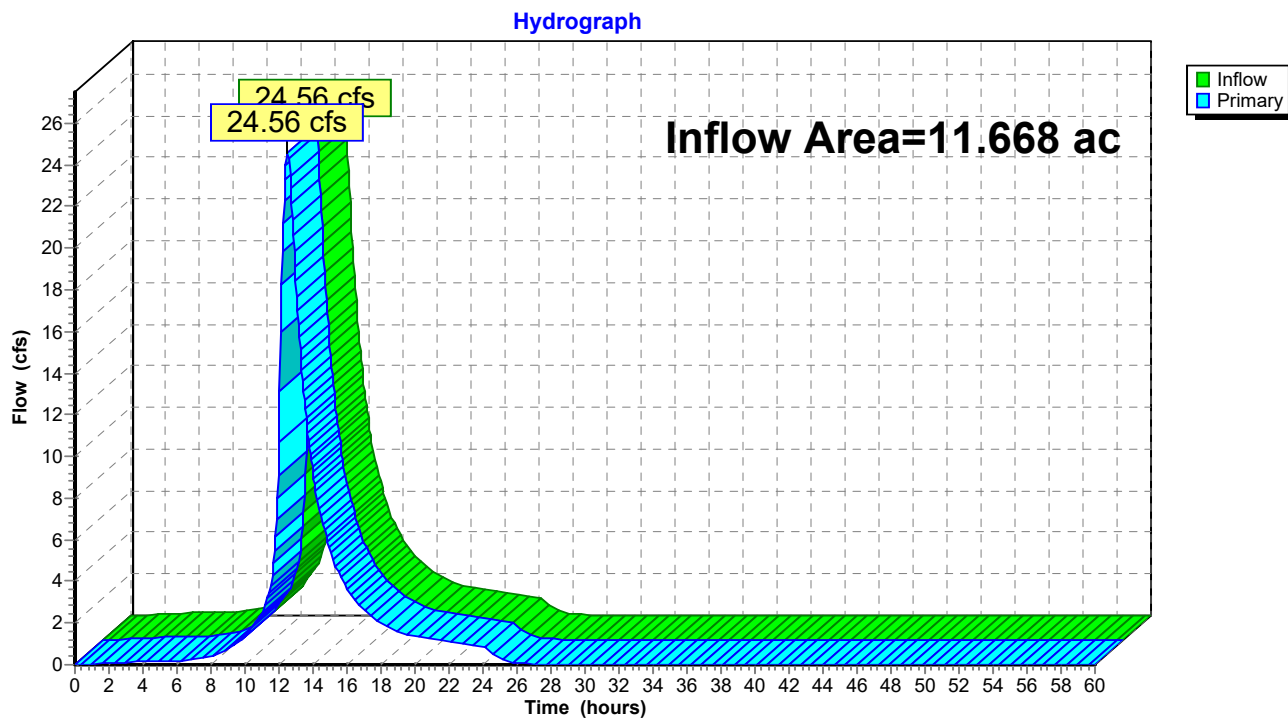
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### Summary for Link 5L: TTA

Inflow Area = 11.668 ac, 12.48% Impervious, Inflow Depth = 5.84" for 100 Yr Atlantic Co event  
Inflow = 24.56 cfs @ 12.50 hrs, Volume= 5.678 af  
Primary = 24.56 cfs @ 12.50 hrs, Volume= 5.678 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs

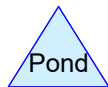
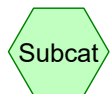
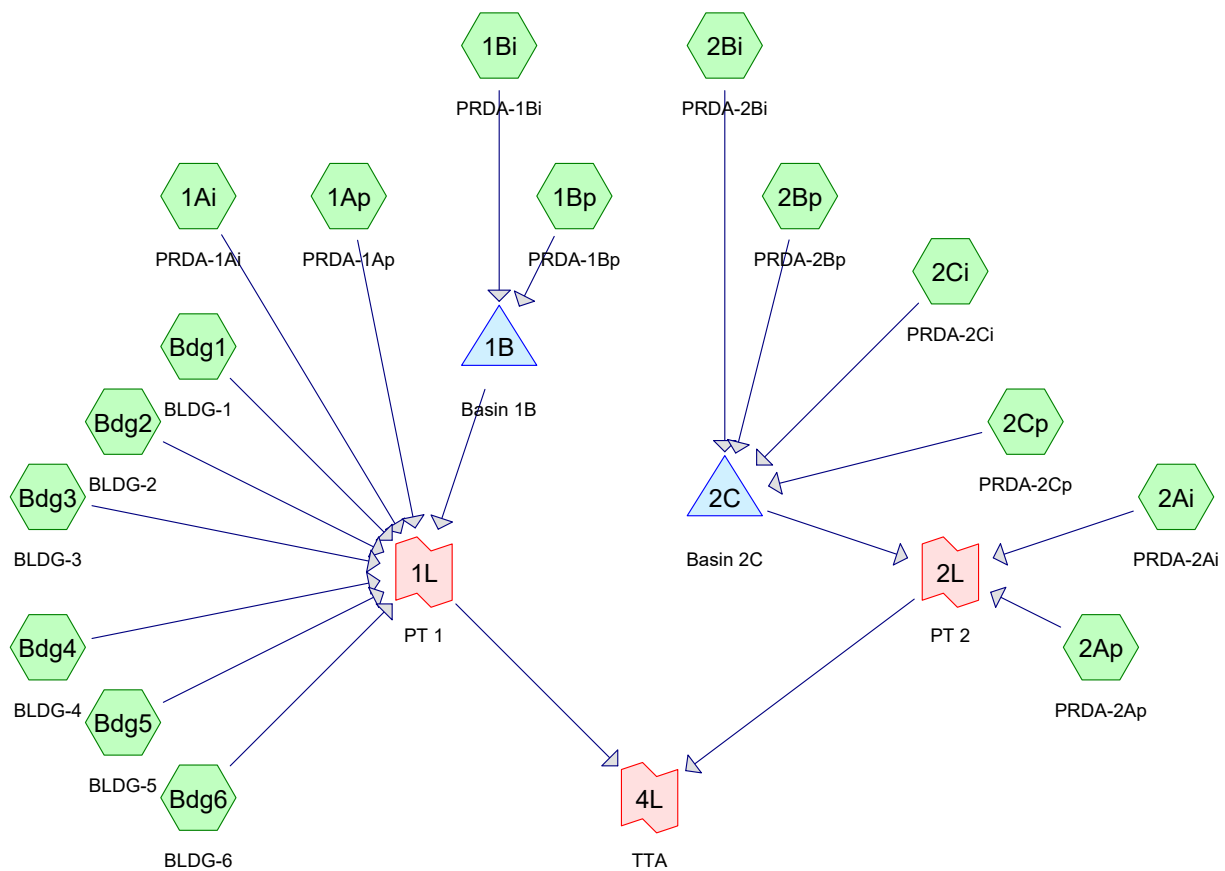
### Link 5L: TTA



## **APPENDIX D**

### POST-DEVELOPED RUNOFF CALCULATIONS





### Routing Diagram for Post Developed Conditions

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### Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.824	61	>75% Grass cover, Good, HSG B (1Ap, 1Bp, 2Ap, 2Bp, 2Cp)
1.327	80	>75% Grass cover, Good, HSG D (1Ap, 1Bp, 2Ap, 2Bp, 2Cp)
3.114	98	Paved parking, HSG B (1Ai, 1Bi, 2Ai, 2Bi, 2Ci)
3.158	98	Paved parking, HSG D (1Ai, 1Bi, 2Ai, 2Bi, 2Ci)
0.855	98	Roofs, HSG B (Bdg1, Bdg2, Bdg3)
0.855	98	Roofs, HSG D (Bdg4, Bdg5, Bdg6)
0.138	98	Unconnected roofs, HSG B (1Ai)
<b>11.271</b>	<b>90</b>	<b>TOTAL AREA</b>

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### Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
5.931	HSG B	1Ai, 1Ap, 1Bi, 1Bp, 2Ai, 2Ap, 2Bi, 2Bp, 2Ci, 2Cp, Bdg1, Bdg2, Bdg3
0.000	HSG C	
5.340	HSG D	1Ai, 1Ap, 1Bi, 1Bp, 2Ai, 2Ap, 2Bi, 2Bp, 2Ci, 2Cp, Bdg4, Bdg5, Bdg6
0.000	Other	
<b>11.271</b>		<b>TOTAL AREA</b>

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### Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	1.824	0.000	1.327	0.000	3.151	>75% Grass cover, Good	1Ap, 1Bp, 2Ap, 2Bp, 2Cp
0.000	3.114	0.000	3.158	0.000	6.272	Paved parking	1Ai, 1Bi, 2Ai, 2Bi, 2Ci
0.000	0.855	0.000	0.855	0.000	1.710	Roofs	Bdg1, Bdg2, Bdg3, Bdg4, Bdg5, Bdg6
0.000	0.138	0.000	0.000	0.000	0.138	Unconnected roofs	1Ai
<b>0.000</b>	<b>5.931</b>	<b>0.000</b>	<b>5.340</b>	<b>0.000</b>	<b>11.271</b>	<b>TOTAL AREA</b>	

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### Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1Ai	0.00	0.00	1,254.0	0.0030	0.013	18.0	0.0	0.0
2	1Ap	0.00	0.00	1,254.0	0.0030	0.013	18.0	0.0	0.0
3	2Ai	0.00	0.00	263.0	0.0050	0.013	15.0	0.0	0.0
4	2Ap	0.00	0.00	263.0	0.0050	0.013	15.0	0.0	0.0
5	1B	3.75	3.36	48.0	0.0081	0.013	15.0	0.0	0.0
6	2C	3.00	1.94	34.0	0.0312	0.013	15.0	0.0	0.0

**Post Developed Conditions***Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"*

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.

Reach routing by Sim-Route method - Pond routing by Sim-Route method w/Net Flows

<b>Subcatchment1Ai: PRDA-1Ai</b>	Runoff Area=2.810 ac 100.00% Impervious Runoff Depth=3.08" Flow Length=1,354' Tc=10.0 min CN=0/98 Runoff=6.04 cfs 0.721 af
<b>Subcatchment1Ap: PRDA-1Ap</b>	Runoff Area=0.795 ac 0.00% Impervious Runoff Depth=0.70" Flow Length=1,354' Tc=10.0 min CN=66/0 Runoff=0.33 cfs 0.046 af
<b>Subcatchment1Bi: PRDA-1Bi</b>	Runoff Area=0.693 ac 100.00% Impervious Runoff Depth=3.08" Tc=10.0 min CN=0/98 Runoff=1.49 cfs 0.178 af
<b>Subcatchment1Bp: PRDA-1Bp</b>	Runoff Area=0.344 ac 0.00% Impervious Runoff Depth=0.70" Tc=10.0 min CN=66/0 Runoff=0.14 cfs 0.020 af
<b>Subcatchment2Ai: PRDA-2Ai</b>	Runoff Area=0.502 ac 100.00% Impervious Runoff Depth=3.08" Flow Length=352' Tc=10.0 min CN=0/98 Runoff=1.08 cfs 0.129 af
<b>Subcatchment2Ap: PRDA-2Ap</b>	Runoff Area=0.399 ac 0.00% Impervious Runoff Depth=0.94" Flow Length=352' Tc=10.0 min CN=71/0 Runoff=0.25 cfs 0.031 af
<b>Subcatchment2Bi: PRDA-2Bi</b>	Runoff Area=0.581 ac 100.00% Impervious Runoff Depth=3.08" Tc=10.0 min CN=0/98 Runoff=1.25 cfs 0.149 af
<b>Subcatchment2Bp: PRDA-2Bp</b>	Runoff Area=0.214 ac 0.00% Impervious Runoff Depth=1.11" Tc=10.0 min CN=74/0 Runoff=0.17 cfs 0.020 af
<b>Subcatchment2Ci: PRDA-2Ci</b>	Runoff Area=1.824 ac 100.00% Impervious Runoff Depth=3.08" Tc=10.0 min CN=0/98 Runoff=3.92 cfs 0.468 af
<b>Subcatchment2Cp: PRDA-2Cp</b>	Runoff Area=1.399 ac 0.00% Impervious Runoff Depth=0.89" Tc=10.0 min CN=70/0 Runoff=0.83 cfs 0.104 af
<b>SubcatchmentBdg1: BLDG-1</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=3.08" Tc=10.0 min CN=0/98 Runoff=0.61 cfs 0.073 af
<b>SubcatchmentBdg2: BLDG-2</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=3.08" Tc=10.0 min CN=0/98 Runoff=0.61 cfs 0.073 af
<b>SubcatchmentBdg3: BLDG-3</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=3.08" Tc=10.0 min CN=0/98 Runoff=0.61 cfs 0.073 af
<b>SubcatchmentBdg4: BLDG-4</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=3.08" Tc=10.0 min CN=0/98 Runoff=0.61 cfs 0.073 af
<b>SubcatchmentBdg5: BLDG-5</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=3.08" Tc=10.0 min CN=0/98 Runoff=0.61 cfs 0.073 af
<b>SubcatchmentBdg6: BLDG-6</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=3.08" Tc=10.0 min CN=0/98 Runoff=0.61 cfs 0.073 af

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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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### Pond 1B: Basin 1B

Peak Elev=7.60' Storage=3,077 cf Inflow=1.63 cfs 0.198 af  
Outflow=1.55 cfs 0.134 af

### Pond 2C: Basin 2C

Peak Elev=7.80' Storage=24,774 cf Inflow=6.15 cfs 0.741 af  
Outflow=0.24 cfs 0.444 af

### Link 1L: PT 1

Inflow=11.39 cfs 1.340 af  
Primary=11.39 cfs 1.340 af

### Link 2L: PT 2

Inflow=1.33 cfs 0.604 af  
Primary=1.33 cfs 0.604 af

### Link 4L: TTA

Inflow=12.72 cfs 1.943 af  
Primary=12.72 cfs 1.943 af

**Total Runoff Area = 11.271 ac   Runoff Volume = 2.304 af   Average Runoff Depth = 2.45"**  
**27.96% Pervious = 3.151 ac   72.04% Impervious = 8.120 ac**

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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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### Summary for Subcatchment 1Ai: PRDA-1Ai

Runoff = 6.04 cfs @ 12.16 hrs, Volume= 0.721 af, Depth= 3.08"

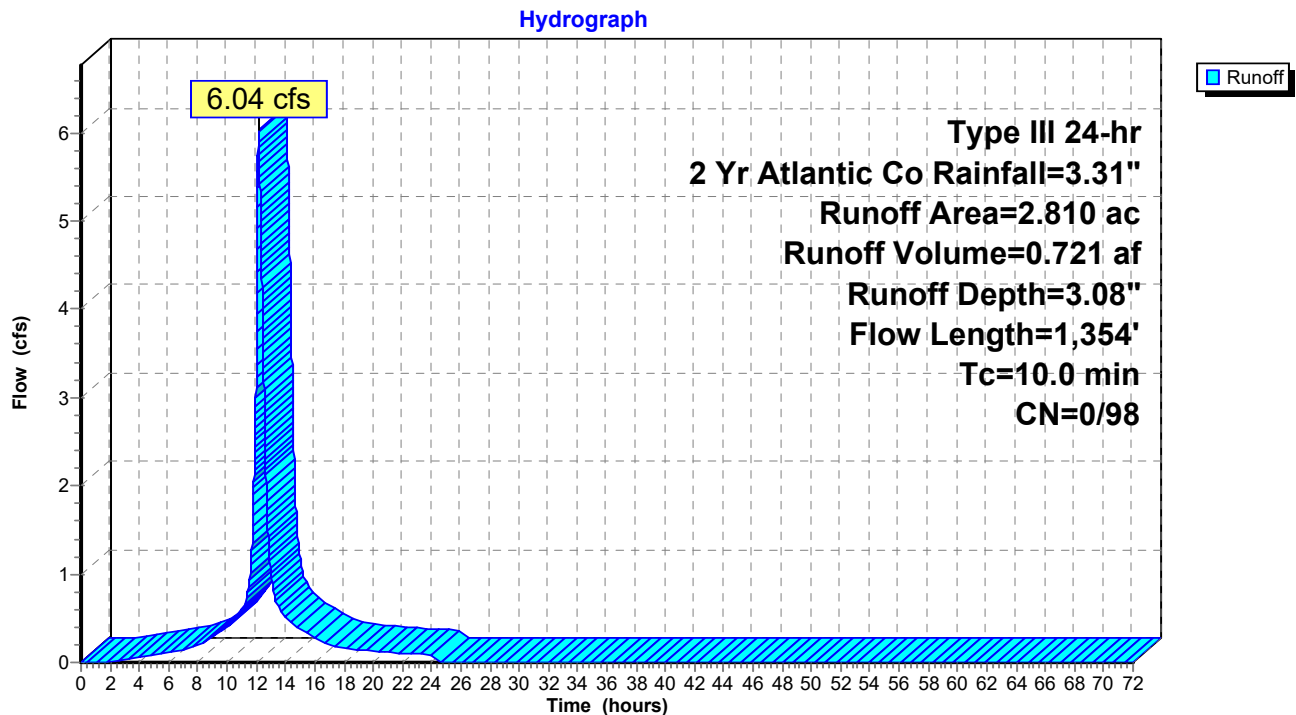
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

Area (ac)	CN	Description
1.113	98	Paved parking, HSG B
1.559	98	Paved parking, HSG D
0.138	98	Unconnected roofs, HSG B
2.810	98	Weighted Average
2.810	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0130	1.19		<b>Sheet Flow, PRDA-1.1</b> Smooth surfaces n= 0.011 P2= 3.36"
6.4	1,254	0.0030	3.26	5.75	<b>Pipe Channel, PRDA-1.2</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
7.8	1,354	Total, Increased to minimum Tc = 10.0 min			

### Subcatchment 1Ai: PRDA-1Ai



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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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### Summary for Subcatchment 1Ap: PRDA-1Ap

Runoff = 0.33 cfs @ 12.23 hrs, Volume= 0.046 af, Depth= 0.70"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

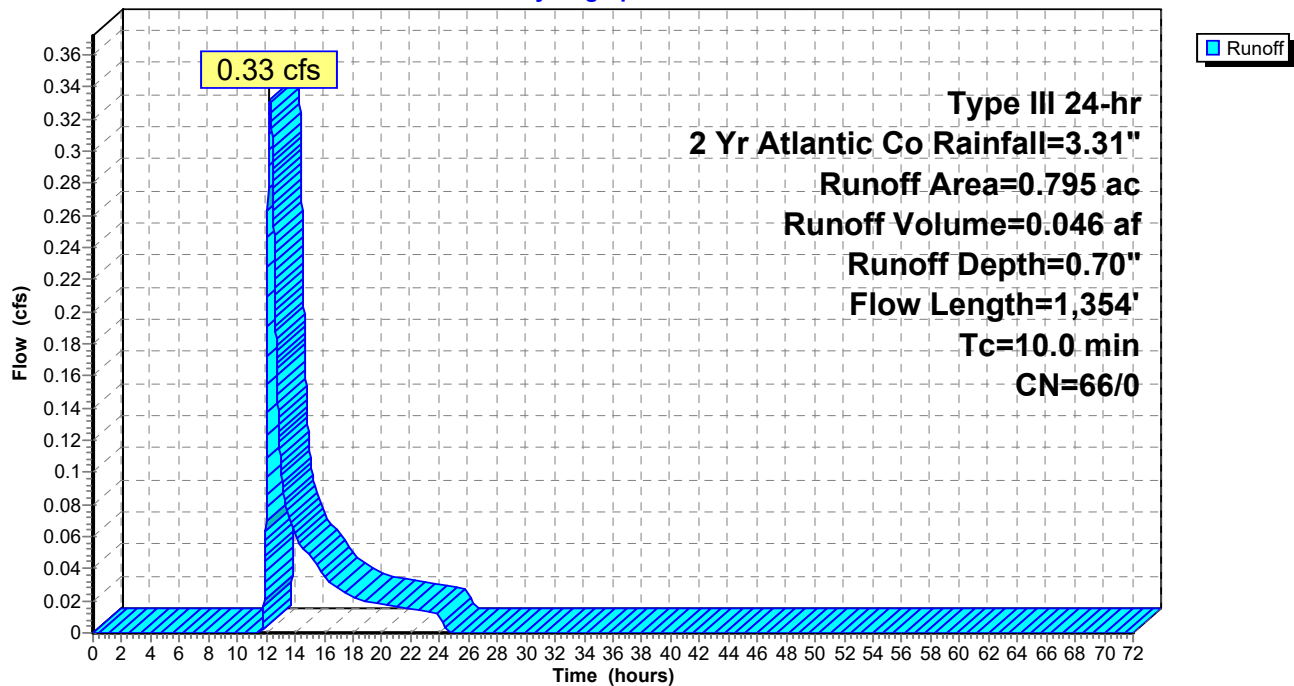
Area (ac)	CN	Description
0.574	61	>75% Grass cover, Good, HSG B
0.221	80	>75% Grass cover, Good, HSG D
0.795	66	Weighted Average
0.795	66	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0130	1.19		<b>Sheet Flow, PRDA-1.1</b> Smooth surfaces n= 0.011 P2= 3.36"
6.4	1,254	0.0030	3.26	5.75	<b>Pipe Channel, PRDA-1.2</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
7.8	1,354	Total, Increased to minimum Tc = 10.0 min			

### Subcatchment 1Ap: PRDA-1Ap

Hydrograph



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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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### Summary for Subcatchment 1Bi: PRDA-1Bi

Runoff = 1.49 cfs @ 12.16 hrs, Volume= 0.178 af, Depth= 3.08"

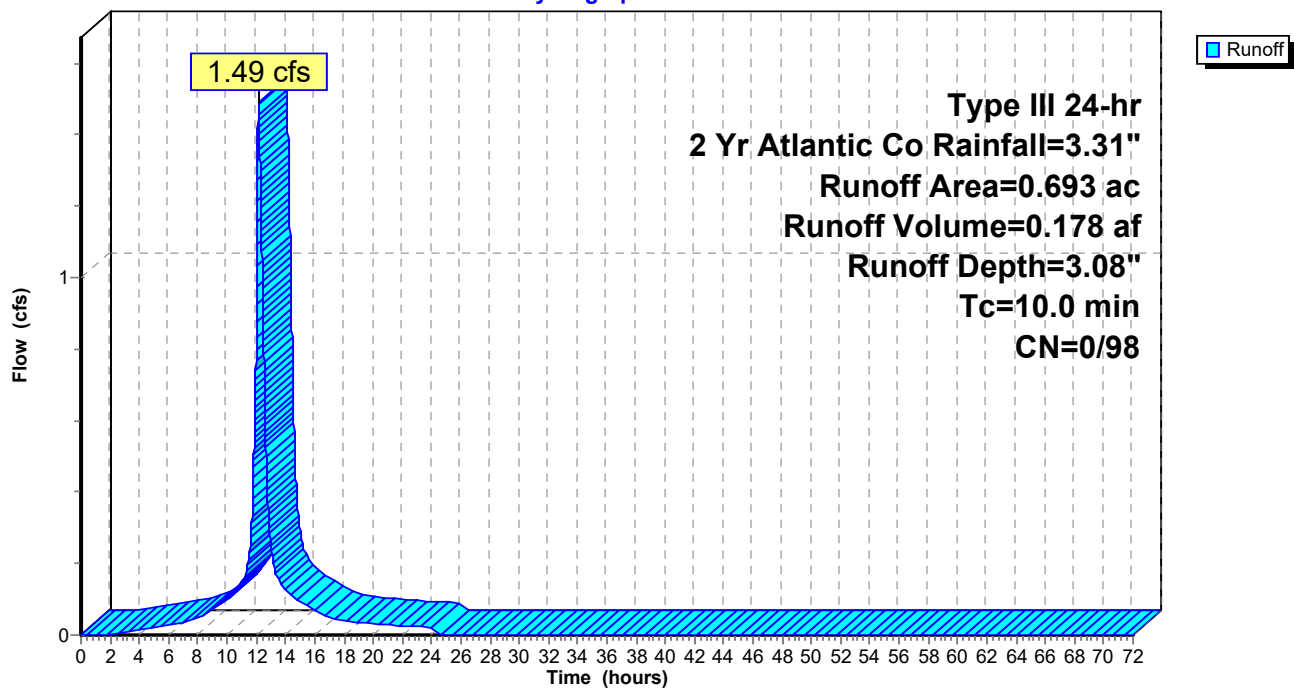
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

Area (ac)	CN	Description
0.293	98	Paved parking, HSG B
0.400	98	Paved parking, HSG D
0.693	98	Weighted Average
0.693	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 1Bi: PRDA-1Bi

Hydrograph



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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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### Summary for Subcatchment 1Bp: PRDA-1Bp

Runoff = 0.14 cfs @ 12.23 hrs, Volume= 0.020 af, Depth= 0.70"

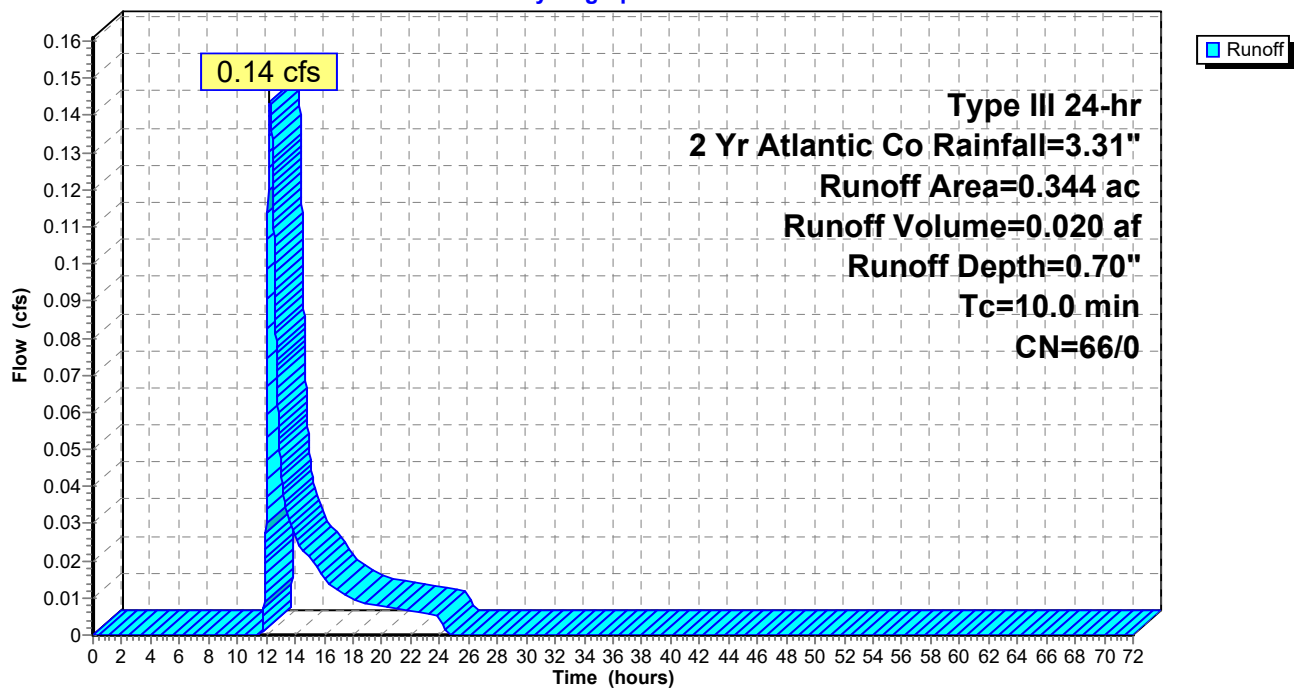
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

Area (ac)	CN	Description
0.262	61	>75% Grass cover, Good, HSG B
0.082	80	>75% Grass cover, Good, HSG D
0.344	66	Weighted Average
0.344	66	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 1Bp: PRDA-1Bp

Hydrograph



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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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### Summary for Subcatchment 2Ai: PRDA-2Ai

Runoff = 1.08 cfs @ 12.16 hrs, Volume= 0.129 af, Depth= 3.08"

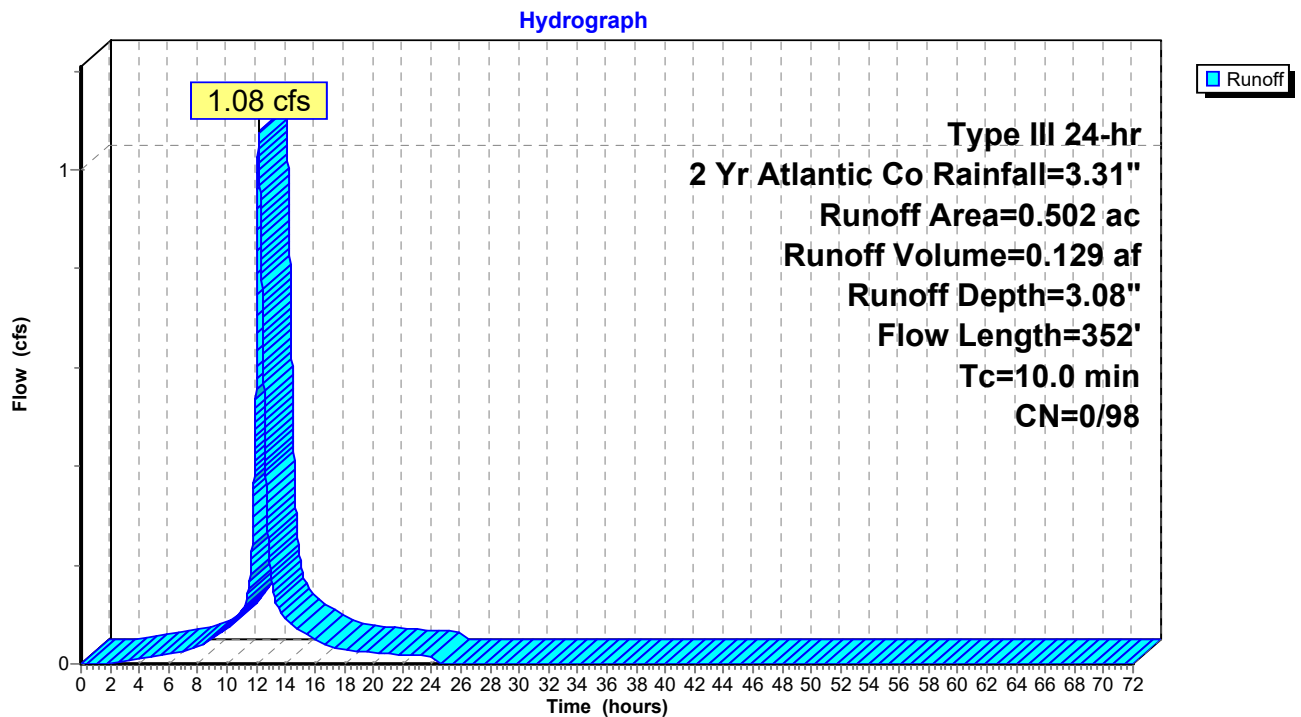
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

Area (ac)	CN	Description
0.281	98	Paved parking, HSG B
0.221	98	Paved parking, HSG D
0.502	98	Weighted Average
0.502	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	89	0.0150	1.23		<b>Sheet Flow, PRDA-2.1</b> Smooth surfaces n= 0.011 P2= 3.36"
1.2	263	0.0050	3.72	4.57	<b>Pipe Channel, PRDA-2.1</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
2.4	352	Total, Increased to minimum Tc = 10.0 min			

### Subcatchment 2Ai: PRDA-2Ai



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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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### Summary for Subcatchment 2Ap: PRDA-2Ap

Runoff = 0.25 cfs @ 12.19 hrs, Volume= 0.031 af, Depth= 0.94"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

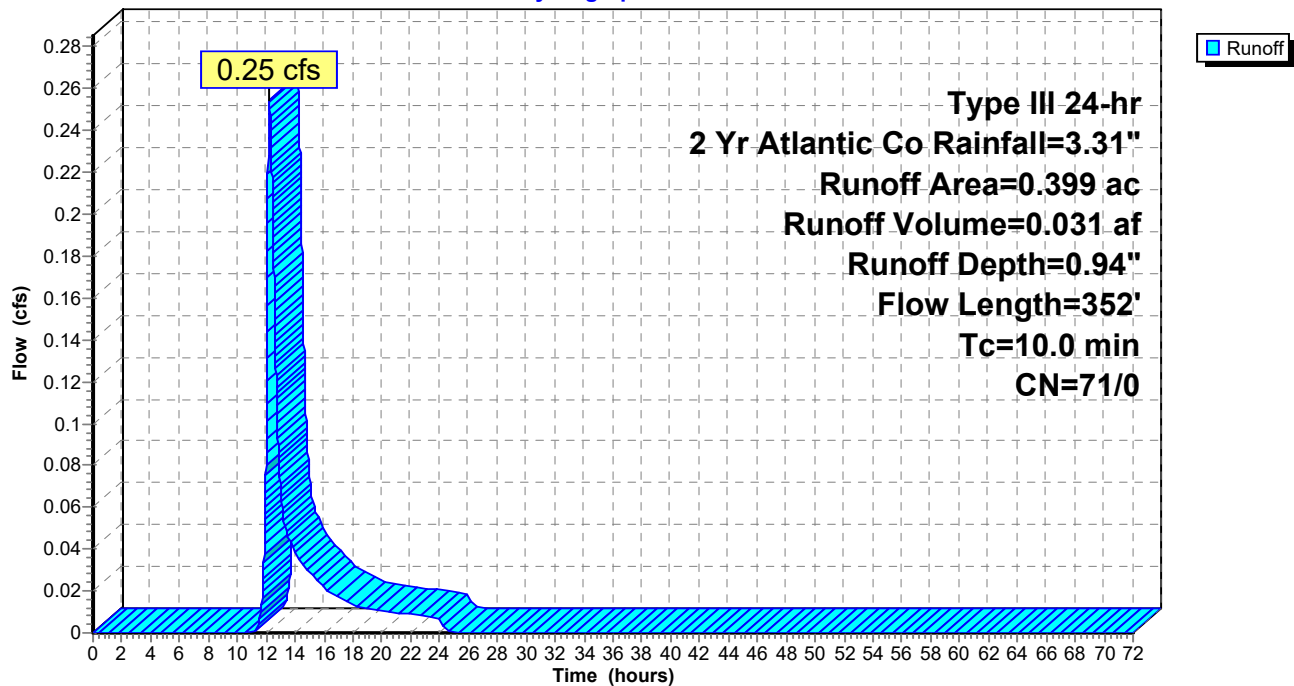
Area (ac)	CN	Description
0.193	61	>75% Grass cover, Good, HSG B
0.206	80	>75% Grass cover, Good, HSG D
0.399	71	Weighted Average
0.399	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	89	0.0150	1.23		<b>Sheet Flow, PRDA-2.1</b> Smooth surfaces n= 0.011 P2= 3.36"
1.2	263	0.0050	3.72	4.57	<b>Pipe Channel, PRDA-2.1</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
2.4	352	Total, Increased to minimum Tc = 10.0 min			

### Subcatchment 2Ap: PRDA-2Ap

Hydrograph



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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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### Summary for Subcatchment 2Bi: PRDA-2Bi

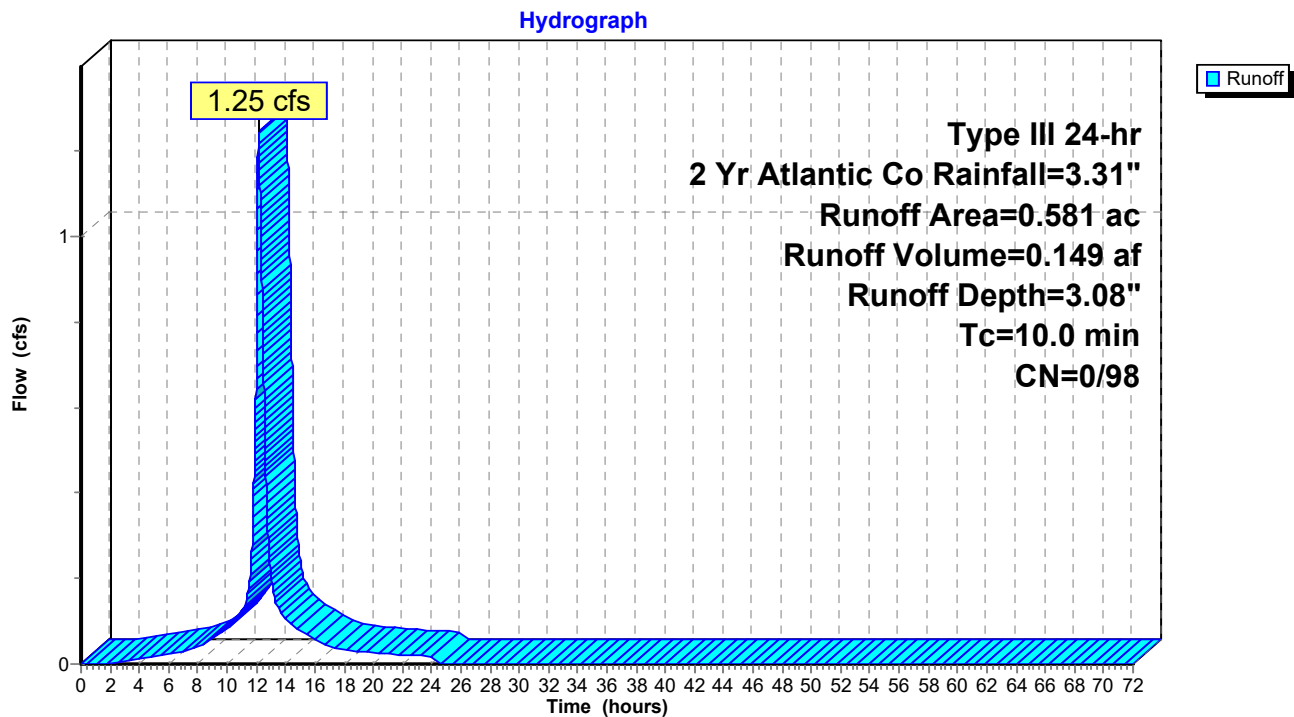
Runoff = 1.25 cfs @ 12.16 hrs, Volume= 0.149 af, Depth= 3.08"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

Area (ac)	CN	Description
0.437	98	Paved parking, HSG B
0.144	98	Paved parking, HSG D
0.581	98	Weighted Average
0.581	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Direct

### Subcatchment 2Bi: PRDA-2Bi



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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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### Summary for Subcatchment 2Bp: PRDA-2Bp

Runoff = 0.17 cfs @ 12.18 hrs, Volume= 0.020 af, Depth= 1.11"

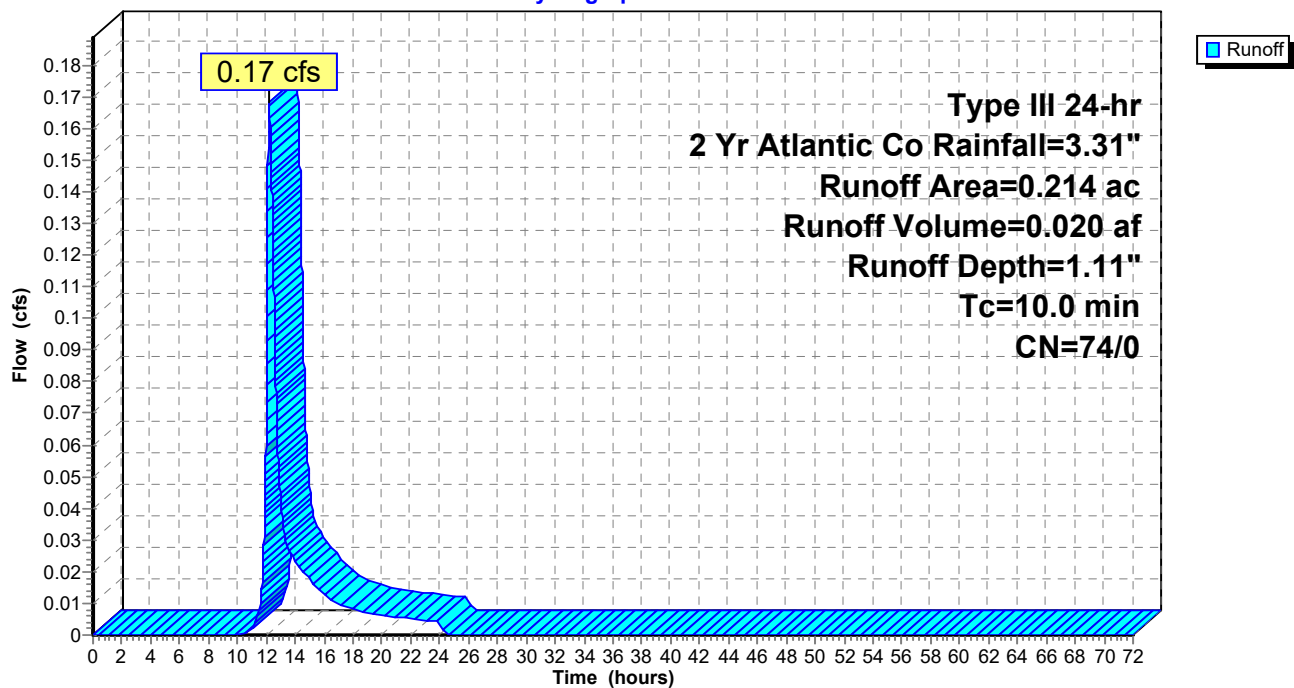
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

Area (ac)	CN	Description
0.070	61	>75% Grass cover, Good, HSG B
0.144	80	>75% Grass cover, Good, HSG D
0.214	74	Weighted Average
0.214	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Direct

### Subcatchment 2Bp: PRDA-2Bp

Hydrograph



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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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### Summary for Subcatchment 2Ci: PRDA-2Ci

Runoff = 3.92 cfs @ 12.16 hrs, Volume= 0.468 af, Depth= 3.08"

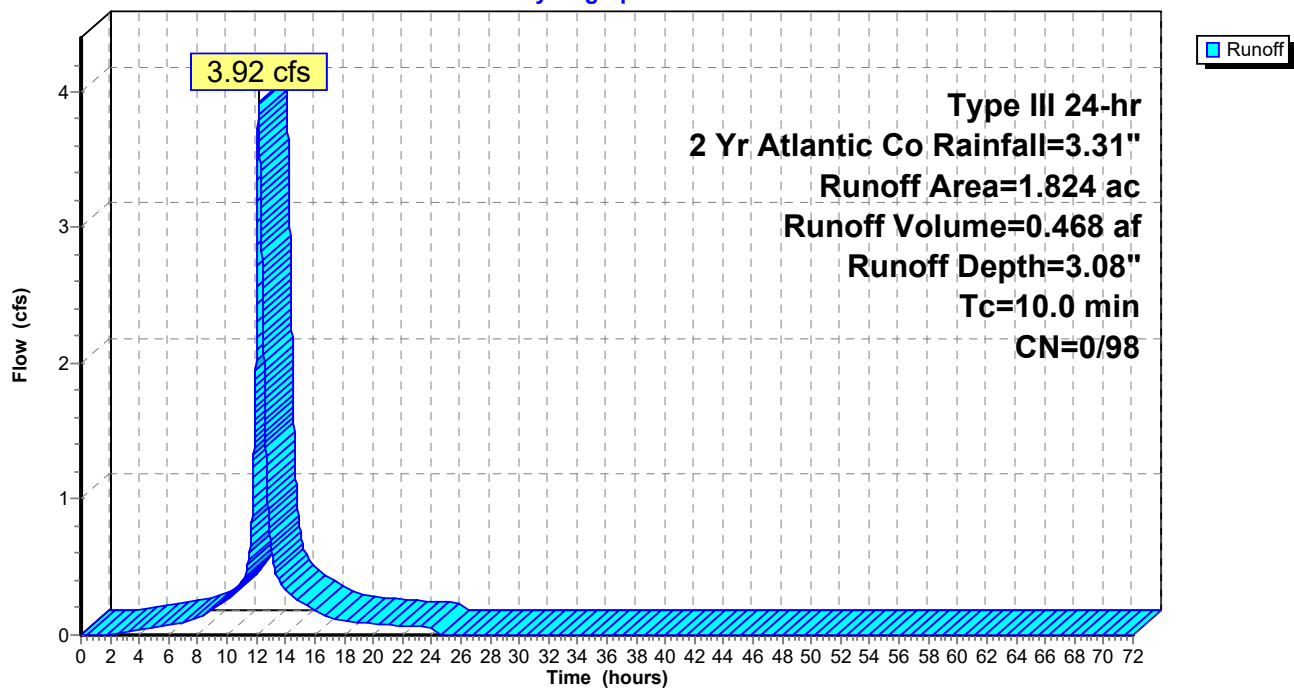
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

Area (ac)	CN	Description
0.990	98	Paved parking, HSG B
0.834	98	Paved parking, HSG D
1.824	98	Weighted Average
1.824	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 2Ci: PRDA-2Ci

Hydrograph



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### Summary for Subcatchment 2Cp: PRDA-2Cp

Runoff = 0.83 cfs @ 12.20 hrs, Volume= 0.104 af, Depth= 0.89"

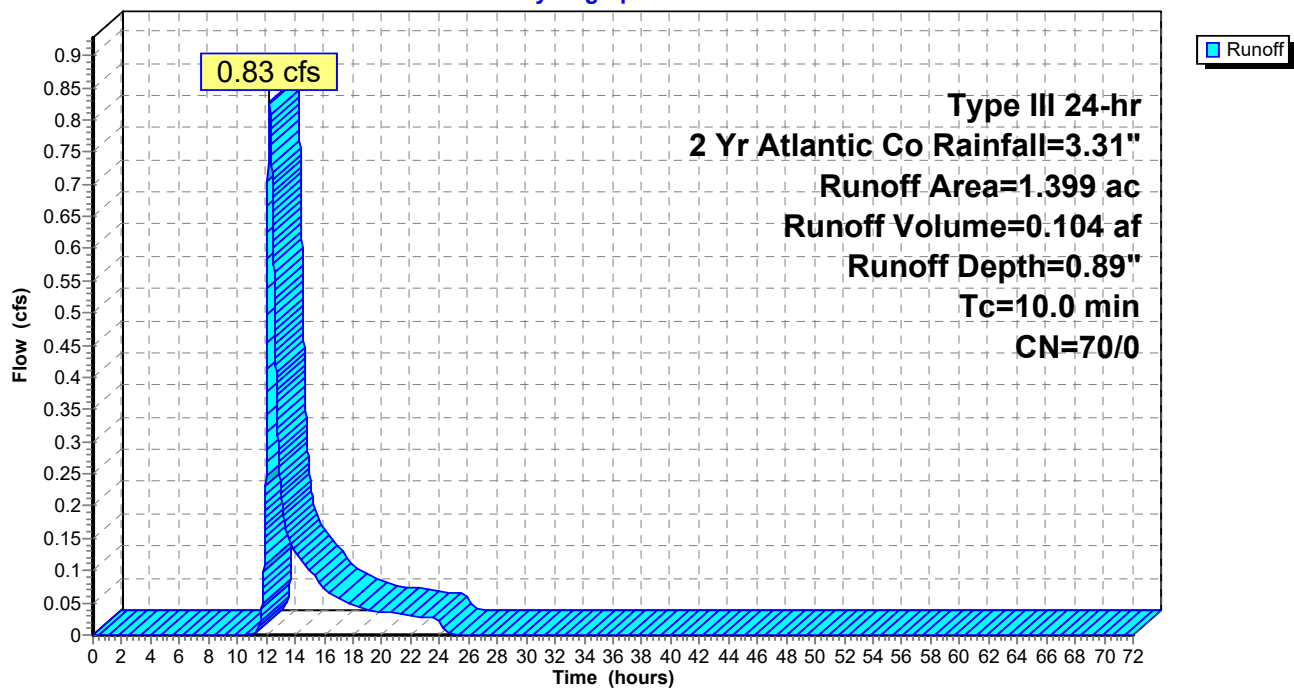
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

Area (ac)	CN	Description
0.725	61	>75% Grass cover, Good, HSG B
0.674	80	>75% Grass cover, Good, HSG D
1.399	70	Weighted Average
1.399	70	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 2Cp: PRDA-2Cp

Hydrograph



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### Summary for Subcatchment Bdg1: BLDG-1

Runoff = 0.61 cfs @ 12.16 hrs, Volume= 0.073 af, Depth= 3.08"

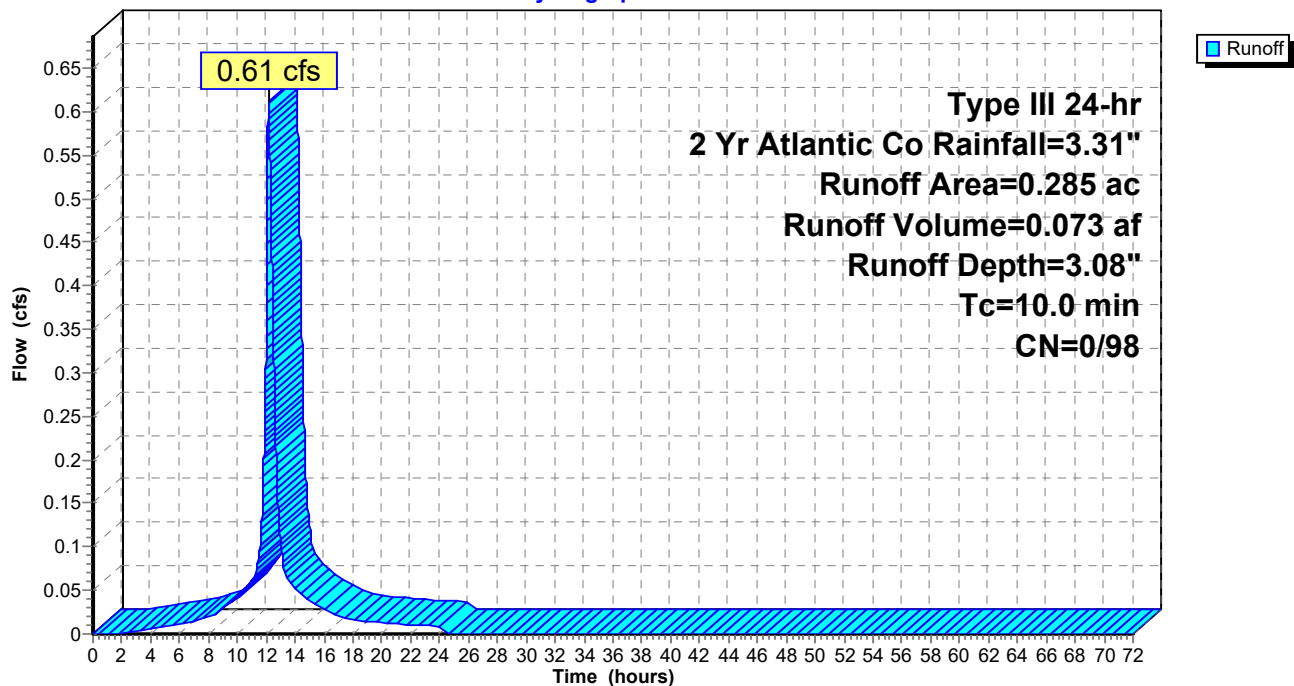
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

Area (ac)	CN	Description
0.285	98	Roofs, HSG B
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg1: BLDG-1

Hydrograph



## Post Developed Conditions

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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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### Summary for Subcatchment Bdg2: BLDG-2

Runoff = 0.61 cfs @ 12.16 hrs, Volume= 0.073 af, Depth= 3.08"

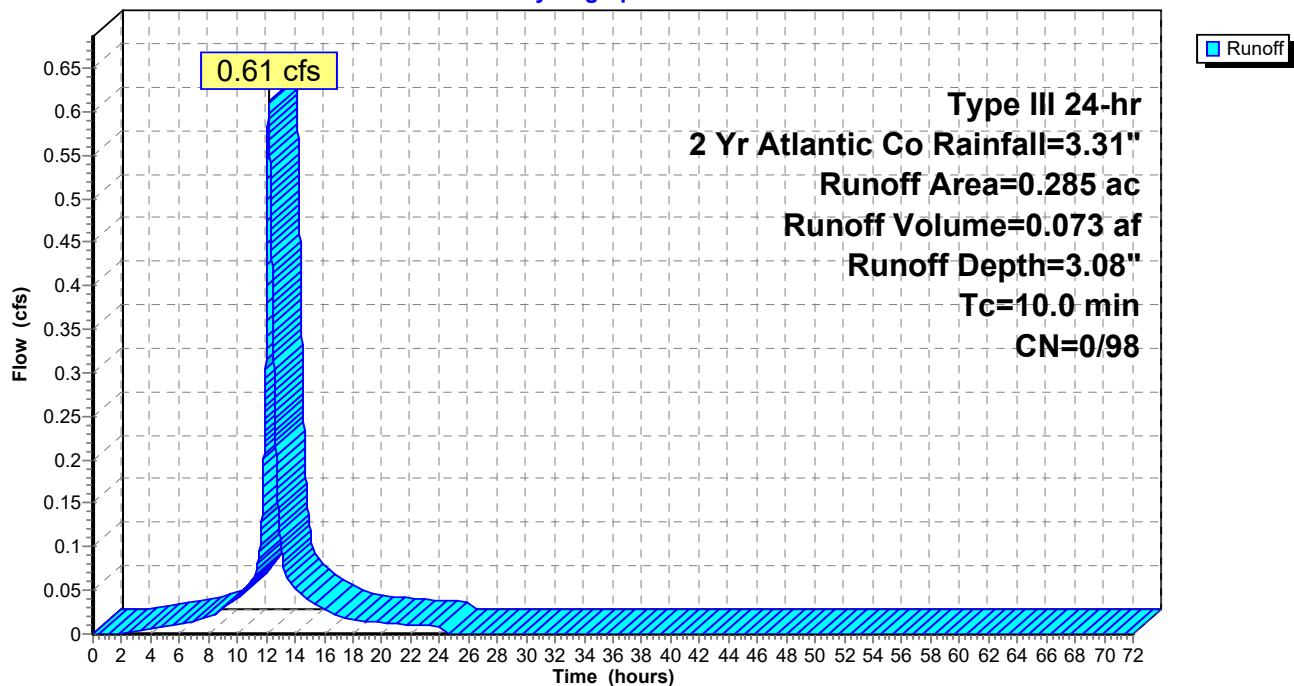
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

Area (ac)	CN	Description
0.285	98	Roofs, HSG B
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg2: BLDG-2

Hydrograph



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### Summary for Subcatchment Bdg3: BLDG-3

Runoff = 0.61 cfs @ 12.16 hrs, Volume= 0.073 af, Depth= 3.08"

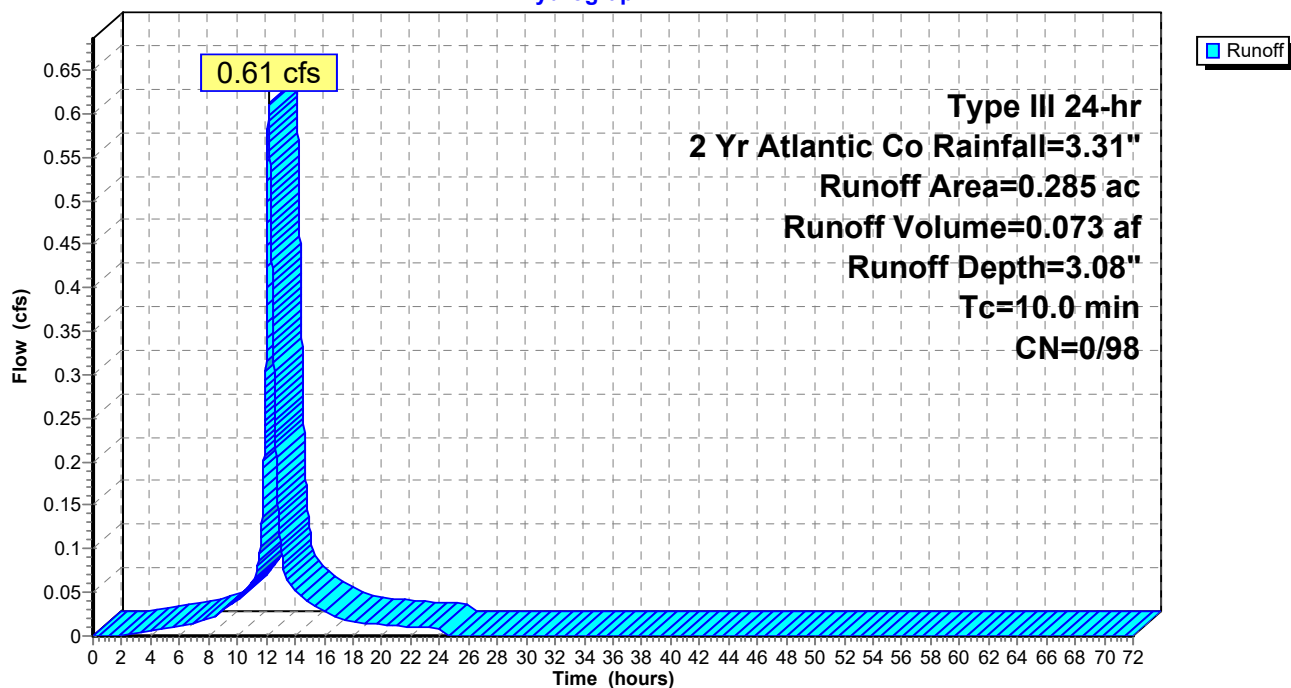
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

Area (ac)	CN	Description
0.285	98	Roofs, HSG B
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg3: BLDG-3

Hydrograph



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### Summary for Subcatchment Bdg4: BLDG-4

Runoff = 0.61 cfs @ 12.16 hrs, Volume= 0.073 af, Depth= 3.08"

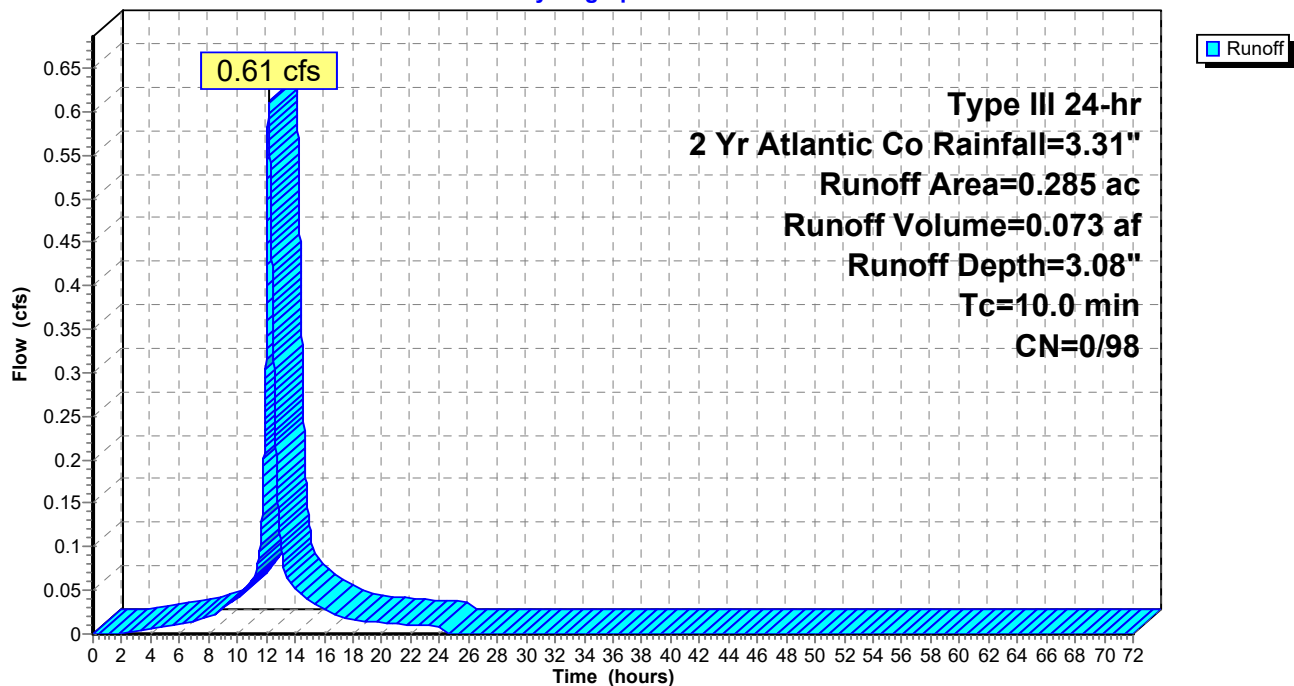
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

Area (ac)	CN	Description
0.285	98	Roofs, HSG D
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg4: BLDG-4

Hydrograph



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### Summary for Subcatchment Bdg5: BLDG-5

Runoff = 0.61 cfs @ 12.16 hrs, Volume= 0.073 af, Depth= 3.08"

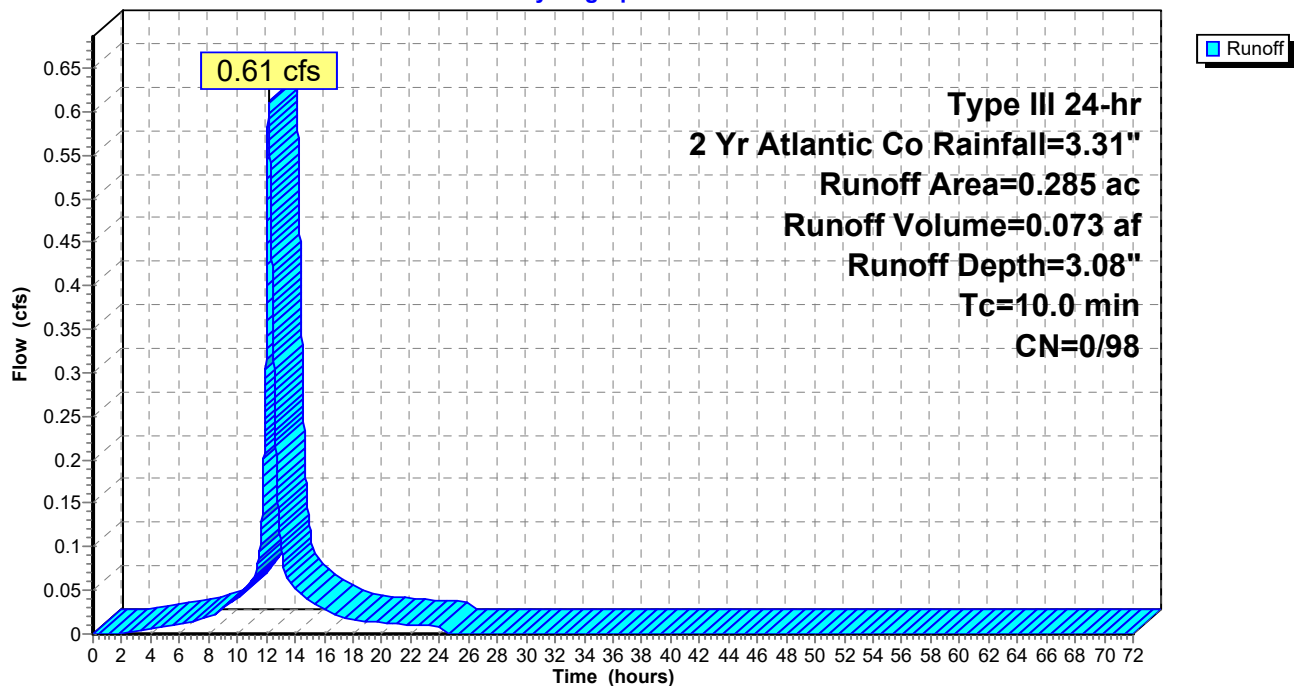
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

Area (ac)	CN	Description
0.285	98	Roofs, HSG D
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg5: BLDG-5

Hydrograph



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### Summary for Subcatchment Bdg6: BLDG-6

Runoff = 0.61 cfs @ 12.16 hrs, Volume= 0.073 af, Depth= 3.08"

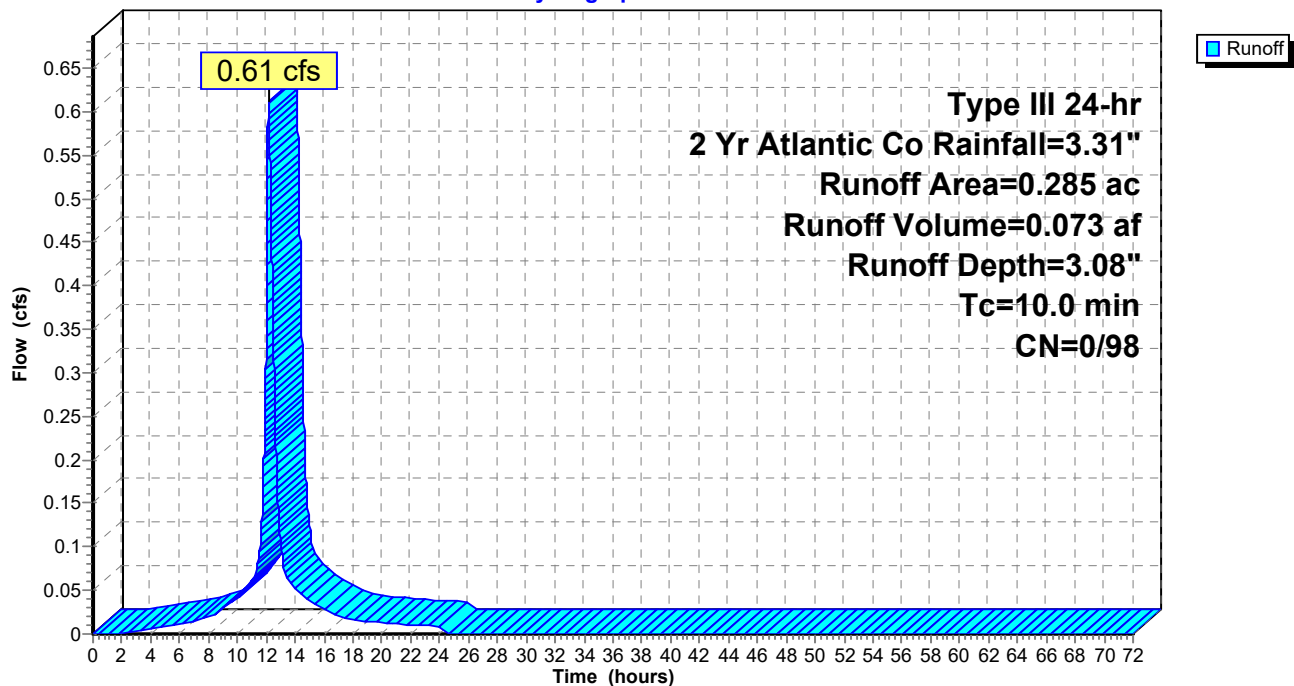
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

Area (ac)	CN	Description
0.285	98	Roofs, HSG D
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg6: BLDG-6

Hydrograph



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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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**Summary for Pond 1B: Basin 1B**

Inflow Area = 1.037 ac, 66.83% Impervious, Inflow Depth = 2.29" for 2 Yr Atlantic Co event  
 Inflow = 1.63 cfs @ 12.16 hrs, Volume= 0.198 af  
 Outflow = 1.55 cfs @ 12.22 hrs, Volume= 0.134 af, Atten= 5%, Lag= 3.9 min  
 Primary = 1.55 cfs @ 12.22 hrs, Volume= 0.134 af

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 7.60' @ 12.22 hrs Surf.Area= 3,250 sf Storage= 3,077 cf

Plug-Flow detention time= 191.4 min calculated for 0.134 af (68% of inflow)  
 Center-of-Mass det. time= 89.9 min ( 868.8 - 778.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	6.20'	6,627 cf	<b>Proposed Contours (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.20	1,170	0	0
7.00	2,335	1,402	1,402
8.00	3,860	3,098	4,500
8.50	4,650	2,128	6,627

Device	Routing	Invert	Outlet Devices
#1	Primary	3.75'	<b>15.0" Round 15" Culvert</b> L= 48.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 3.75' / 3.36' S= 0.0081 ' S= 0.0081 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	7.50'	<b>48.0" x 42.0" Horiz. Type E Inlet</b> C= 0.600 Limited to weir flow at low heads
#3	Primary	7.75'	<b>10' Wide Broadcrested Weir, Cv= 3.10 (C= 3.88)</b> Head (feet) 0.00 0.25 0.50 0.75 1.00 Width (feet) 10.00 11.50 13.00 14.50 16.00

**Primary OutFlow** Max=1.54 cfs @ 12.22 hrs HW=7.60' TW=0.00' (Dynamic Tailwater)

1=15" Culvert (Passes 1.54 cfs of 10.52 cfs potential flow)  
 2=Type E Inlet (Weir Controls 1.54 cfs @ 1.03 fps)  
 3=10' Wide Broadcrested Weir ( Controls 0.00 cfs)

## Post Developed Conditions

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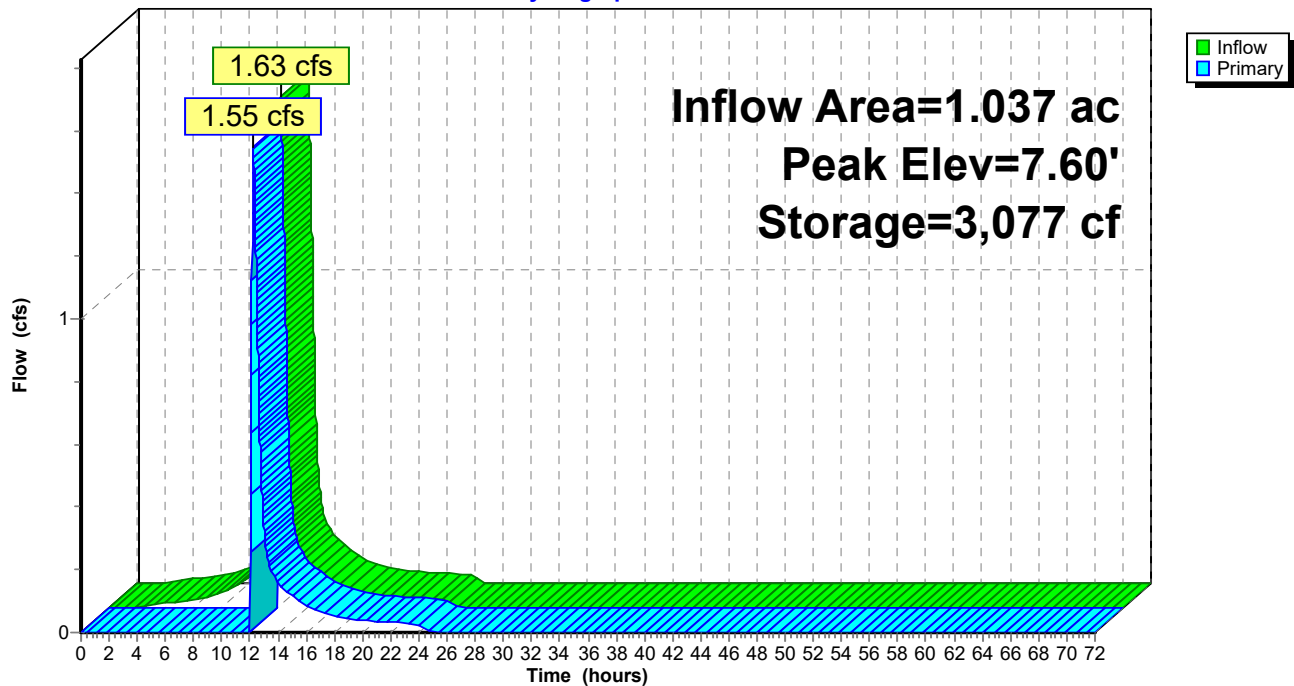
Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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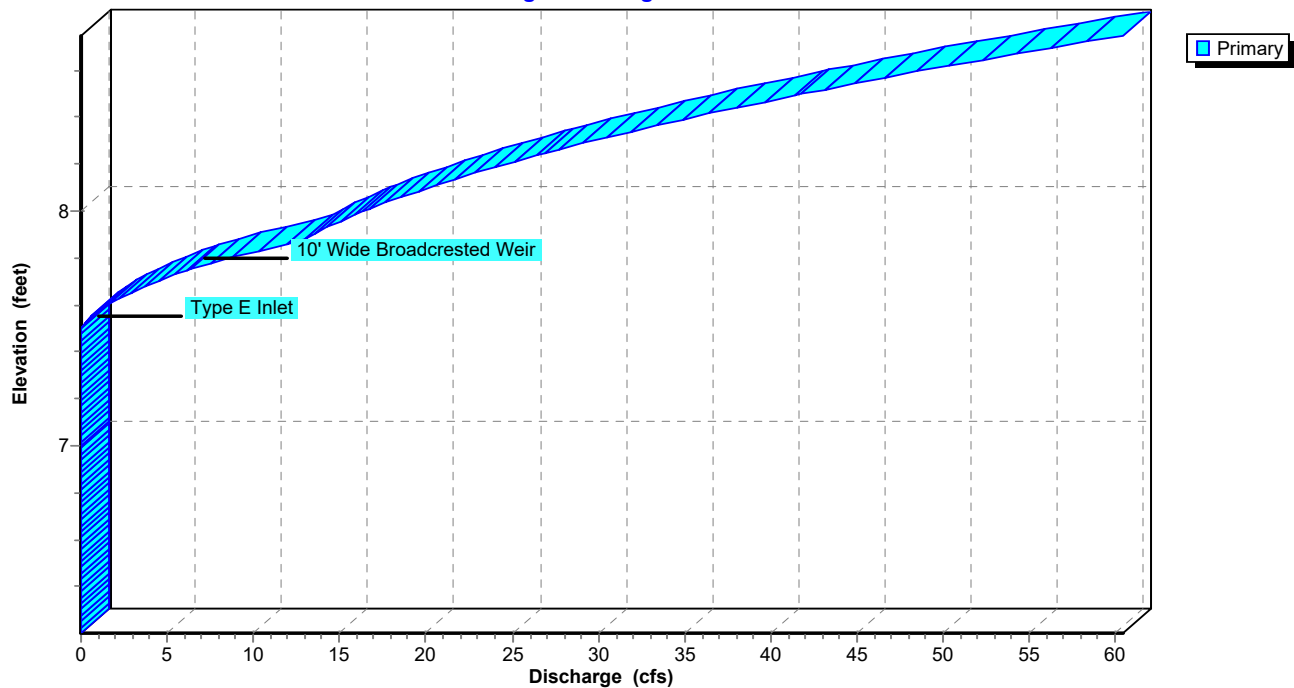
### Pond 1B: Basin 1B

Hydrograph



### Pond 1B: Basin 1B

Stage-Discharge



## Post Developed Conditions

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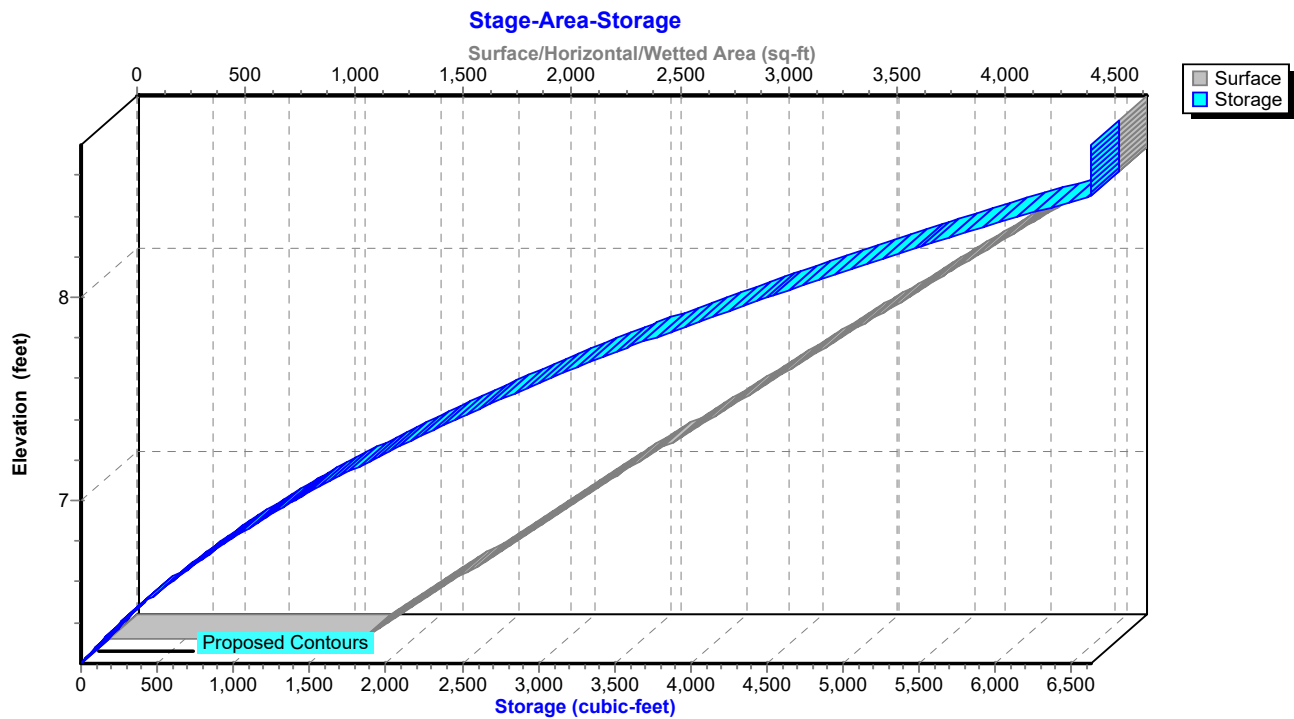
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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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### Pond 1B: Basin 1B



**Post Developed Conditions**

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**Summary for Pond 2C: Basin 2C**

Inflow Area = 4.018 ac, 59.86% Impervious, Inflow Depth = 2.21" for 2 Yr Atlantic Co event  
 Inflow = 6.15 cfs @ 12.16 hrs, Volume= 0.741 af  
 Outflow = 0.24 cfs @ 17.08 hrs, Volume= 0.444 af, Atten= 96%, Lag= 295.3 min  
 Primary = 0.24 cfs @ 17.08 hrs, Volume= 0.444 af

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 7.80' @ 17.08 hrs Surf.Area= 27,826 sf Storage= 24,774 cf

Plug-Flow detention time= 965.5 min calculated for 0.444 af (60% of inflow)  
 Center-of-Mass det. time= 851.4 min ( 1,636.2 - 784.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	6.85'	94,944 cf	<b>Proposed Contours (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.85	24,460	0	0
7.00	24,990	3,709	3,709
8.00	28,545	26,768	30,476
9.00	32,215	30,380	60,856
10.00	35,960	34,088	94,944

Device	Routing	Invert	Outlet Devices
#1	Primary	3.00'	<b>15.0" Round 15" Culvert</b> L= 34.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 3.00' / 1.94' S= 0.0312 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	7.30'	<b>4.0" Vert. 4" Orifice</b> C= 0.600
#3	Device 1	8.10'	<b>48.0" W x 42.0" H Vert. Type E Inlet</b> C= 0.600
#4	Primary	9.00'	<b>20' Wide Broadcrested Weir, Cv= 3.10 (C= 3.88)</b> Head (feet) 0.00 0.50 1.00 1.50 Width (feet) 20.00 23.00 26.00 29.00

**Primary OutFlow** Max=0.24 cfs @ 17.08 hrs HW=7.80' TW=0.00' (Dynamic Tailwater)

1=15" Culvert (Passes 0.24 cfs of 12.07 cfs potential flow)  
 2=4" Orifice (Orifice Controls 0.24 cfs @ 2.77 fps)  
 3=Type E Inlet ( Controls 0.00 cfs)  
 4=20' Wide Broadcrested Weir ( Controls 0.00 cfs)

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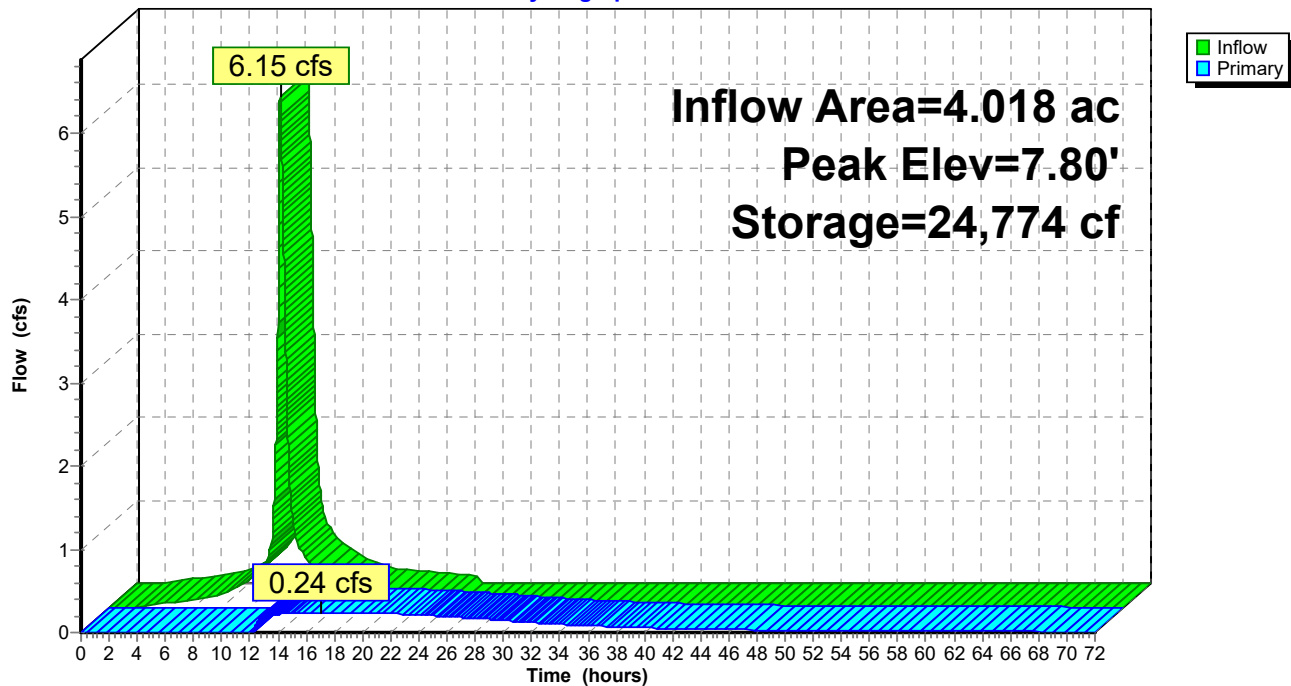
Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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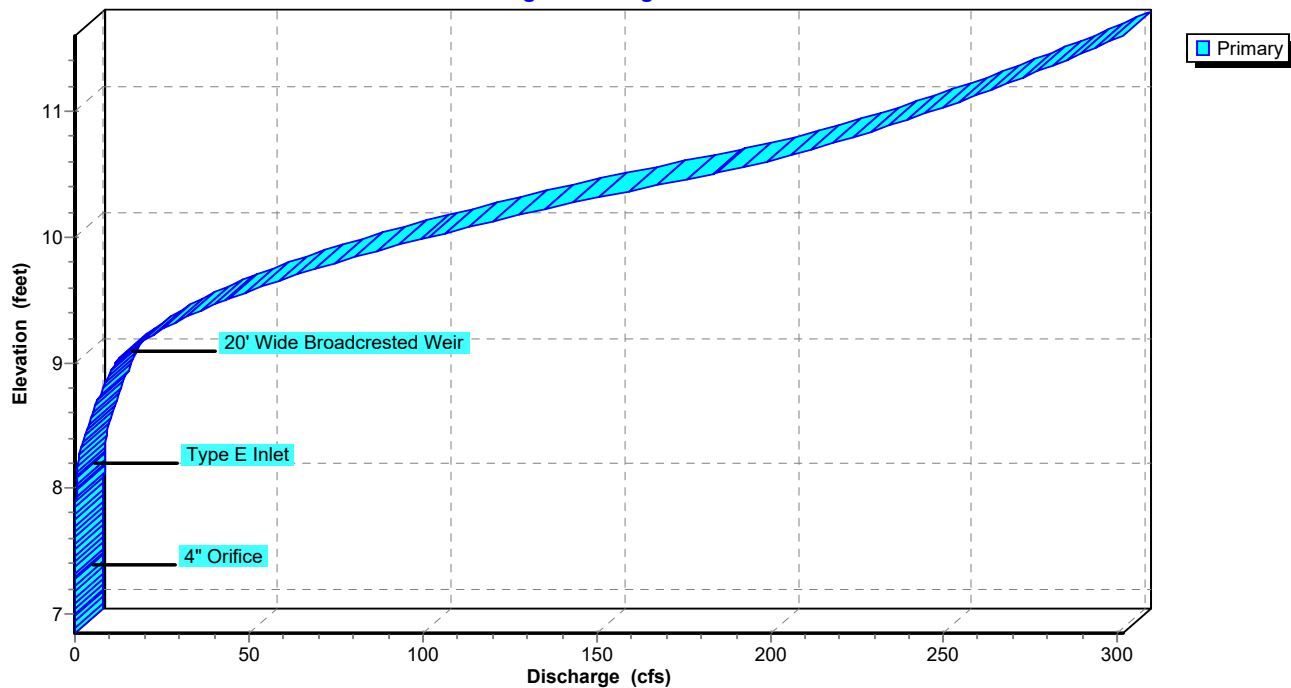
### Pond 2C: Basin 2C

Hydrograph



### Pond 2C: Basin 2C

Stage-Discharge



## Post Developed Conditions

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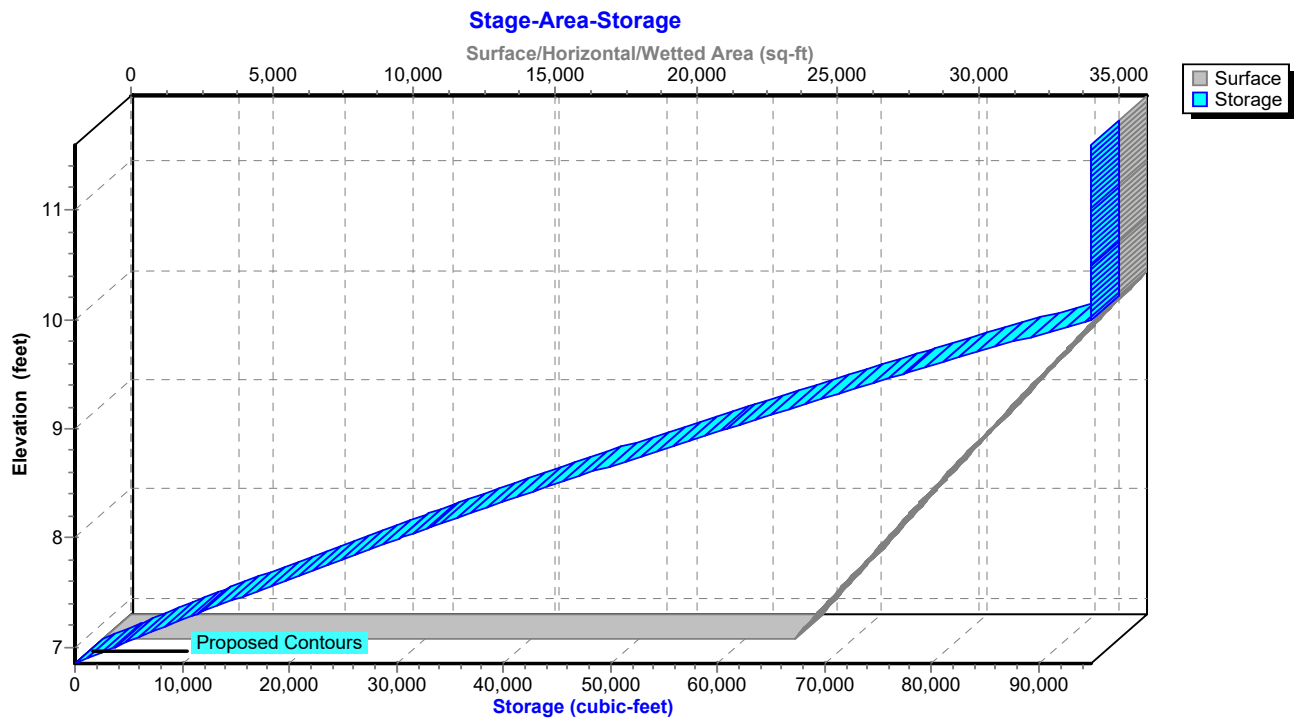
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### Pond 2C: Basin 2C



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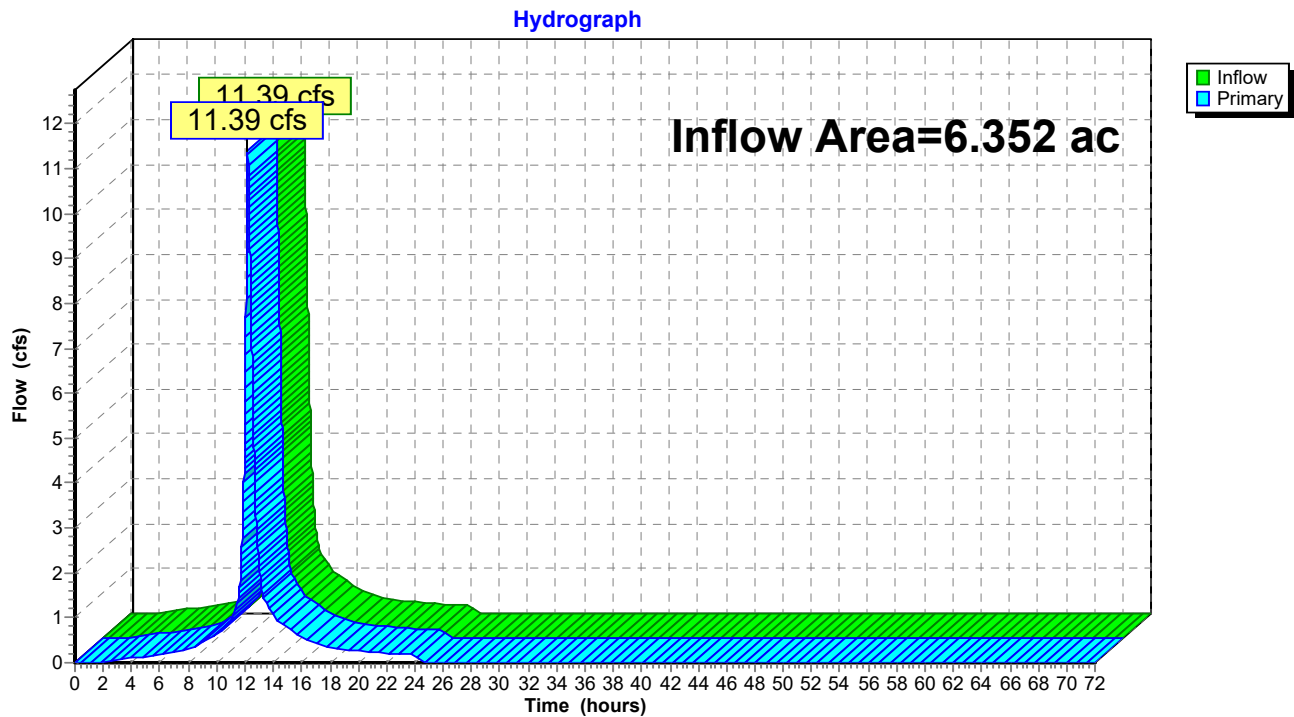
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### Summary for Link 1L: PT 1

Inflow Area = 6.352 ac, 82.07% Impervious, Inflow Depth = 2.53" for 2 Yr Atlantic Co event  
Inflow = 11.39 cfs @ 12.17 hrs, Volume= 1.340 af  
Primary = 11.39 cfs @ 12.18 hrs, Volume= 1.340 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Link 1L: PT 1



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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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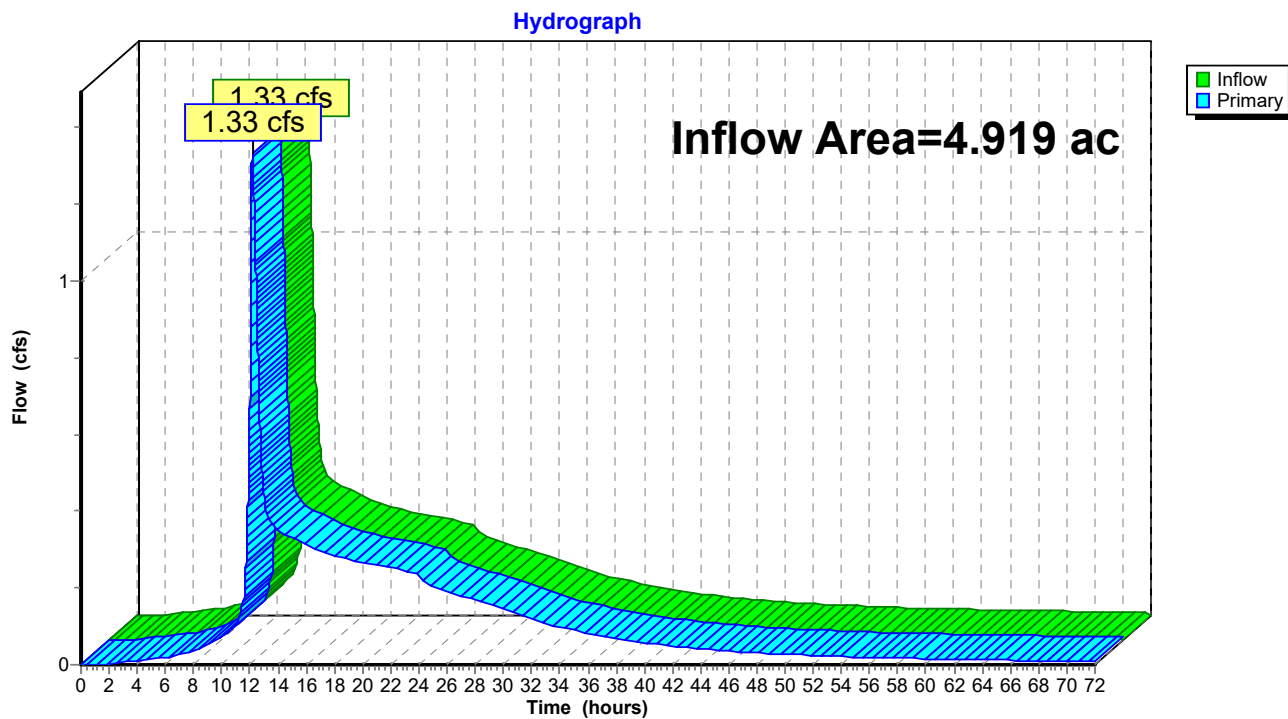
Page 31

### Summary for Link 2L: PT 2

Inflow Area = 4.919 ac, 59.10% Impervious, Inflow Depth > 1.47" for 2 Yr Atlantic Co event  
Inflow = 1.33 cfs @ 12.16 hrs, Volume= 0.604 af  
Primary = 1.33 cfs @ 12.17 hrs, Volume= 0.604 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Link 2L: PT 2



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Type III 24-hr 2 Yr Atlantic Co Rainfall=3.31"

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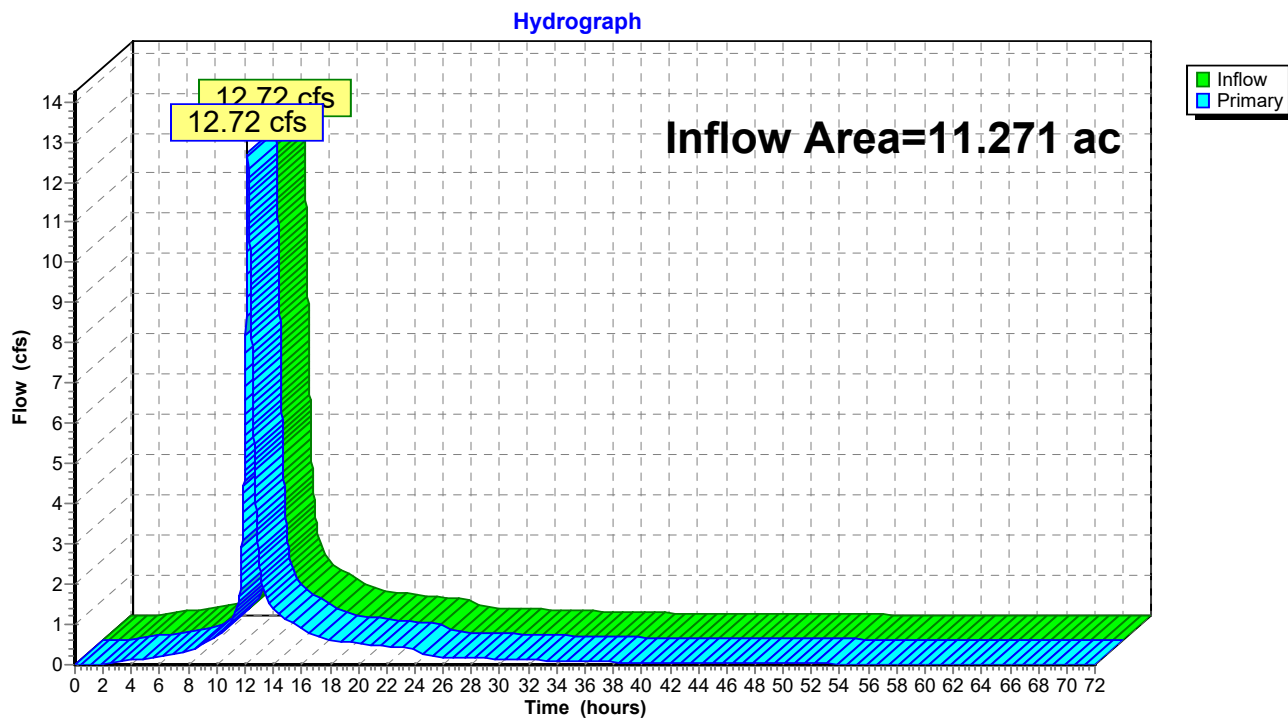
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### Summary for Link 4L: TTA

Inflow Area = 11.271 ac, 72.04% Impervious, Inflow Depth > 2.07" for 2 Yr Atlantic Co event  
Inflow = 12.72 cfs @ 12.18 hrs, Volume= 1.943 af  
Primary = 12.72 cfs @ 12.19 hrs, Volume= 1.943 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Link 4L: TTA



**Post Developed Conditions***Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"*

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.

Reach routing by Sim-Route method - Pond routing by Sim-Route method w/Net Flows

<b>Subcatchment1Ai: PRDA-1Ai</b>	Runoff Area=2.810 ac 100.00% Impervious Runoff Depth=4.92" Flow Length=1,354' Tc=10.0 min CN=0/98 Runoff=9.50 cfs 1.153 af
<b>Subcatchment1Ap: PRDA-1Ap</b>	Runoff Area=0.795 ac 0.00% Impervious Runoff Depth=1.84" Flow Length=1,354' Tc=10.0 min CN=66/0 Runoff=1.05 cfs 0.122 af
<b>Subcatchment1Bi: PRDA-1Bi</b>	Runoff Area=0.693 ac 100.00% Impervious Runoff Depth=4.92" Tc=10.0 min CN=0/98 Runoff=2.34 cfs 0.284 af
<b>Subcatchment1Bp: PRDA-1Bp</b>	Runoff Area=0.344 ac 0.00% Impervious Runoff Depth=1.84" Tc=10.0 min CN=66/0 Runoff=0.45 cfs 0.053 af
<b>Subcatchment2Ai: PRDA-2Ai</b>	Runoff Area=0.502 ac 100.00% Impervious Runoff Depth=4.92" Flow Length=352' Tc=10.0 min CN=0/98 Runoff=1.70 cfs 0.206 af
<b>Subcatchment2Ap: PRDA-2Ap</b>	Runoff Area=0.399 ac 0.00% Impervious Runoff Depth=2.24" Flow Length=352' Tc=10.0 min CN=71/0 Runoff=0.67 cfs 0.074 af
<b>Subcatchment2Bi: PRDA-2Bi</b>	Runoff Area=0.581 ac 100.00% Impervious Runoff Depth=4.92" Tc=10.0 min CN=0/98 Runoff=1.96 cfs 0.238 af
<b>Subcatchment2Bp: PRDA-2Bp</b>	Runoff Area=0.214 ac 0.00% Impervious Runoff Depth=2.49" Tc=10.0 min CN=74/0 Runoff=0.40 cfs 0.044 af
<b>Subcatchment2Ci: PRDA-2Ci</b>	Runoff Area=1.824 ac 100.00% Impervious Runoff Depth=4.92" Tc=10.0 min CN=0/98 Runoff=6.16 cfs 0.748 af
<b>Subcatchment2Cp: PRDA-2Cp</b>	Runoff Area=1.399 ac 0.00% Impervious Runoff Depth=2.16" Tc=10.0 min CN=70/0 Runoff=2.23 cfs 0.251 af
<b>SubcatchmentBdg1: BLDG-1</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=4.92" Tc=10.0 min CN=0/98 Runoff=0.96 cfs 0.117 af
<b>SubcatchmentBdg2: BLDG-2</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=4.92" Tc=10.0 min CN=0/98 Runoff=0.96 cfs 0.117 af
<b>SubcatchmentBdg3: BLDG-3</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=4.92" Tc=10.0 min CN=0/98 Runoff=0.96 cfs 0.117 af
<b>SubcatchmentBdg4: BLDG-4</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=4.92" Tc=10.0 min CN=0/98 Runoff=0.96 cfs 0.117 af
<b>SubcatchmentBdg5: BLDG-5</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=4.92" Tc=10.0 min CN=0/98 Runoff=0.96 cfs 0.117 af
<b>SubcatchmentBdg6: BLDG-6</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=4.92" Tc=10.0 min CN=0/98 Runoff=0.96 cfs 0.117 af

## Post Developed Conditions

Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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### Pond 1B: Basin 1B

Peak Elev=7.65' Storage=3,229 cf Inflow=2.79 cfs 0.337 af  
Outflow=2.74 cfs 0.274 af

### Pond 2C: Basin 2C

Peak Elev=8.24' Storage=37,479 cf Inflow=10.75 cfs 1.282 af  
Outflow=1.05 cfs 0.977 af

### Link 1L: PT 1

Inflow=18.98 cfs 2.250 af  
Primary=18.98 cfs 2.250 af

### Link 2L: PT 2

Inflow=2.54 cfs 1.257 af  
Primary=2.54 cfs 1.257 af

### Link 4L: TTA

Inflow=21.51 cfs 3.507 af  
Primary=21.51 cfs 3.507 af

**Total Runoff Area = 11.271 ac   Runoff Volume = 3.876 af   Average Runoff Depth = 4.13"**  
**27.96% Pervious = 3.151 ac   72.04% Impervious = 8.120 ac**

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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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### Summary for Subcatchment 1Ai: PRDA-1Ai

Runoff = 9.50 cfs @ 12.15 hrs, Volume= 1.153 af, Depth= 4.92"

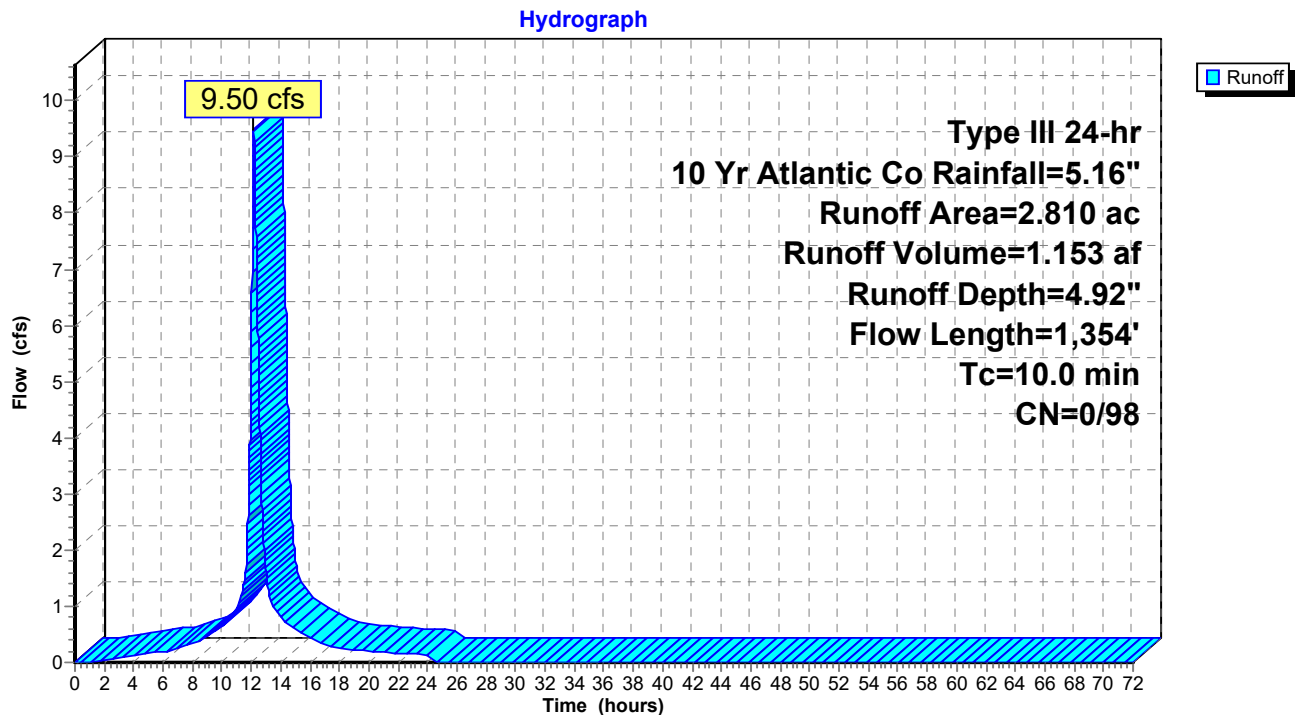
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

Area (ac)	CN	Description
1.113	98	Paved parking, HSG B
1.559	98	Paved parking, HSG D
0.138	98	Unconnected roofs, HSG B
2.810	98	Weighted Average
2.810	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0130	1.19		<b>Sheet Flow, PRDA-1.1</b> Smooth surfaces n= 0.011 P2= 3.36"
6.4	1,254	0.0030	3.26	5.75	<b>Pipe Channel, PRDA-1.2</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
7.8	1,354	Total, Increased to minimum Tc = 10.0 min			

### Subcatchment 1Ai: PRDA-1Ai



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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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### Summary for Subcatchment 1Ap: PRDA-1Ap

Runoff = 1.05 cfs @ 12.18 hrs, Volume= 0.122 af, Depth= 1.84"

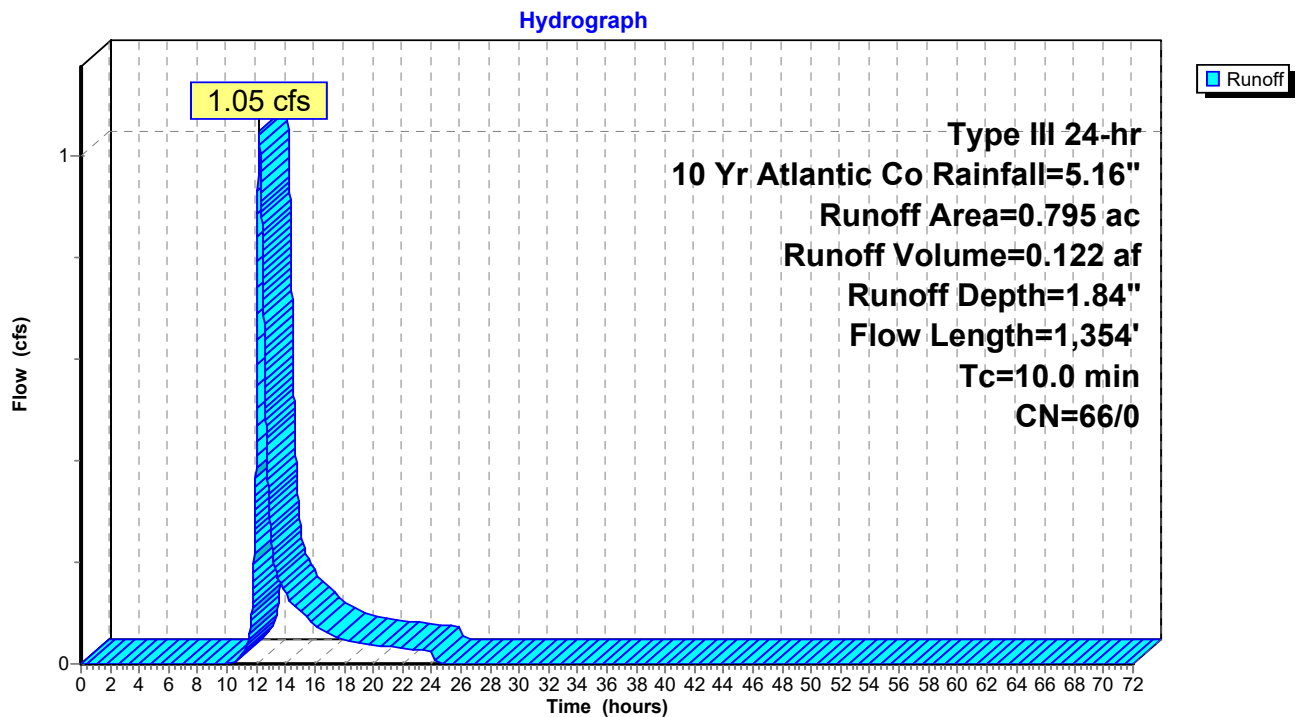
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

Area (ac)	CN	Description
0.574	61	>75% Grass cover, Good, HSG B
0.221	80	>75% Grass cover, Good, HSG D
0.795	66	Weighted Average
0.795	66	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0130	1.19		<b>Sheet Flow, PRDA-1.1</b> Smooth surfaces n= 0.011 P2= 3.36"
6.4	1,254	0.0030	3.26	5.75	<b>Pipe Channel, PRDA-1.2</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
7.8	1,354	Total, Increased to minimum Tc = 10.0 min			

### Subcatchment 1Ap: PRDA-1Ap



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### Summary for Subcatchment 1Bi: PRDA-1Bi

Runoff = 2.34 cfs @ 12.15 hrs, Volume= 0.284 af, Depth= 4.92"

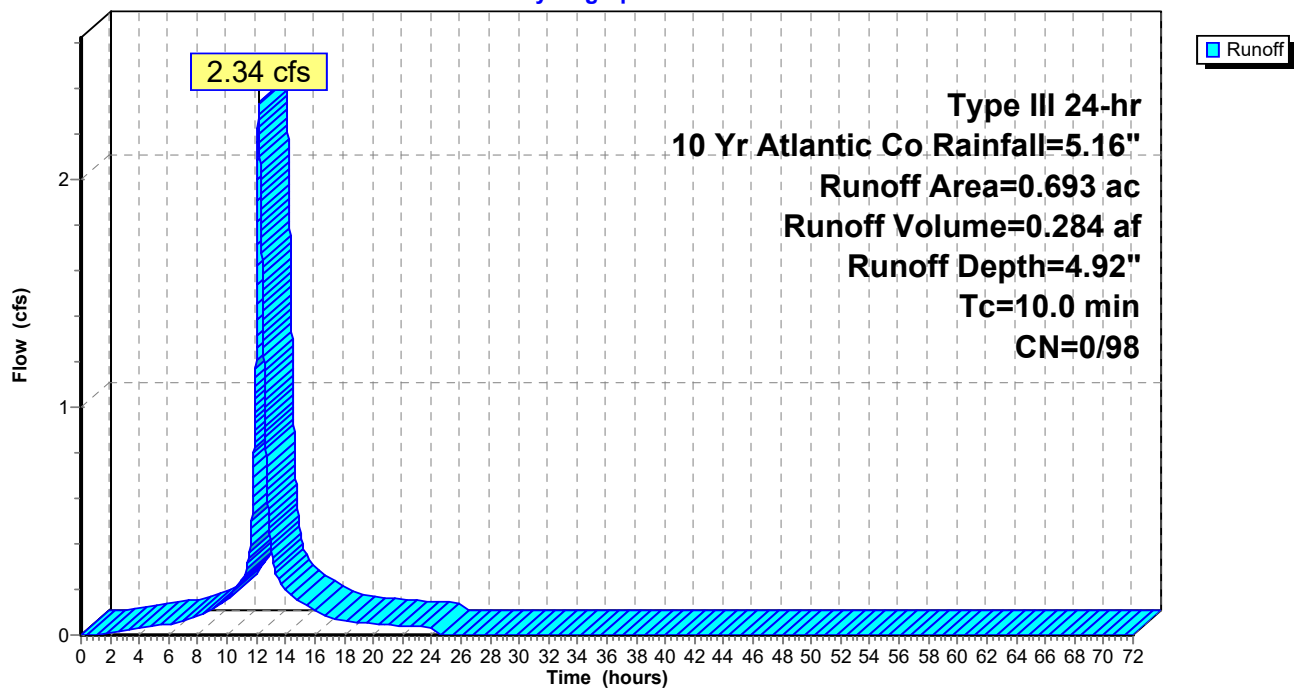
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

Area (ac)	CN	Description
0.293	98	Paved parking, HSG B
0.400	98	Paved parking, HSG D
0.693	98	Weighted Average
0.693	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 1Bi: PRDA-1Bi

Hydrograph



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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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### Summary for Subcatchment 1Bp: PRDA-1Bp

Runoff = 0.45 cfs @ 12.18 hrs, Volume= 0.053 af, Depth= 1.84"

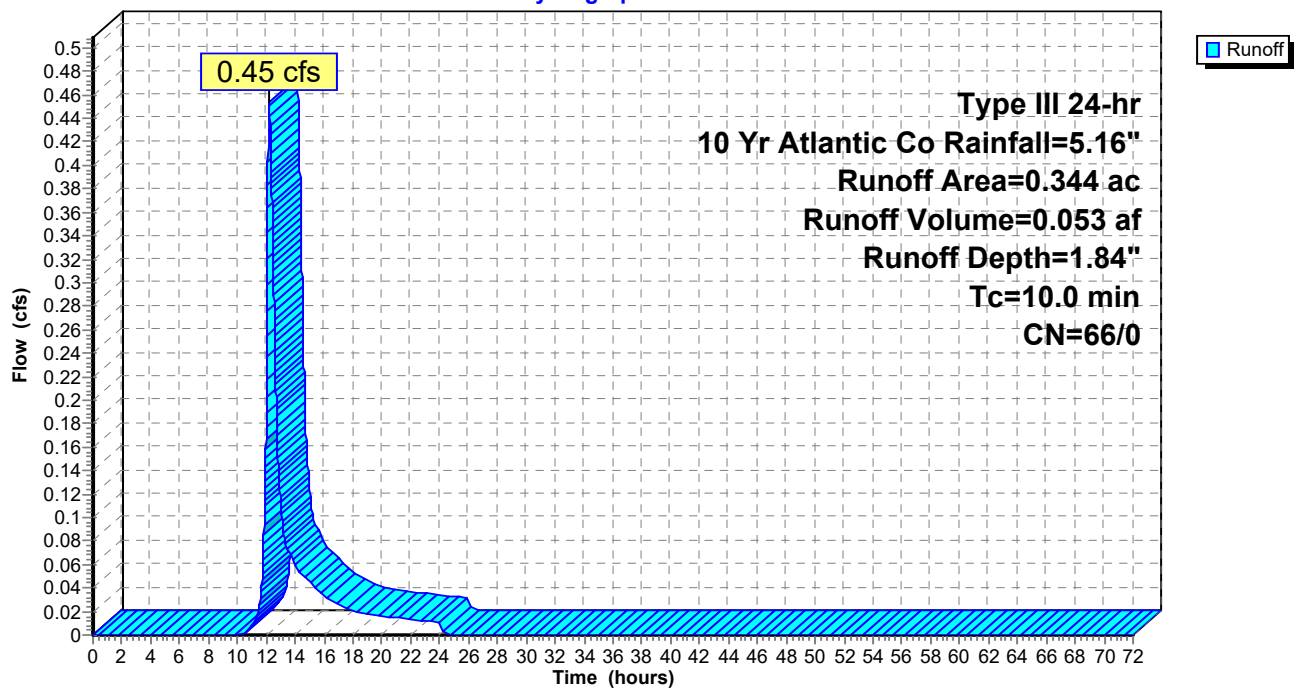
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

Area (ac)	CN	Description
0.262	61	>75% Grass cover, Good, HSG B
0.082	80	>75% Grass cover, Good, HSG D
0.344	66	Weighted Average
0.344	66	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 1Bp: PRDA-1Bp

Hydrograph



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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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**Summary for Subcatchment 2Ai: PRDA-2Ai**

Runoff = 1.70 cfs @ 12.15 hrs, Volume= 0.206 af, Depth= 4.92"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

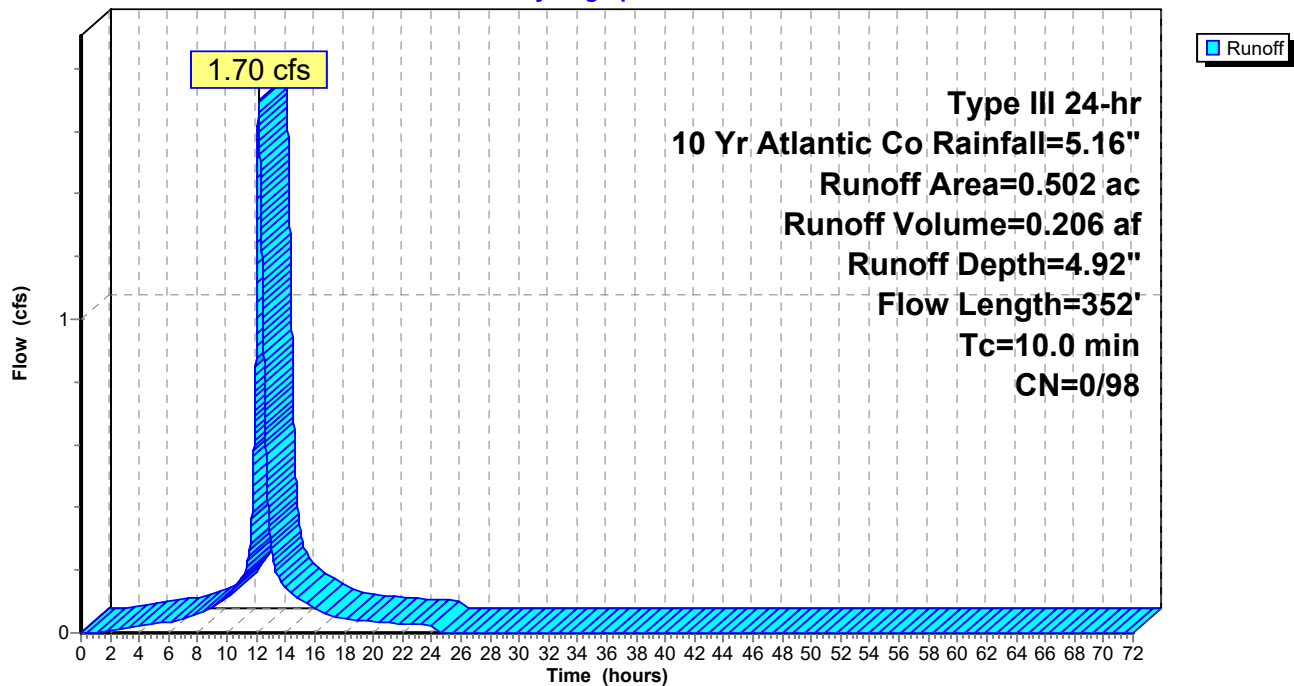
Area (ac)	CN	Description
0.281	98	Paved parking, HSG B
0.221	98	Paved parking, HSG D
0.502	98	Weighted Average
0.502	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	89	0.0150	1.23		<b>Sheet Flow, PRDA-2.1</b> Smooth surfaces n= 0.011 P2= 3.36"
1.2	263	0.0050	3.72	4.57	<b>Pipe Channel, PRDA-2.1</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
2.4	352	Total, Increased to minimum Tc = 10.0 min			

**Subcatchment 2Ai: PRDA-2Ai**

Hydrograph



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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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### Summary for Subcatchment 2Ap: PRDA-2Ap

Runoff = 0.67 cfs @ 12.18 hrs, Volume= 0.074 af, Depth= 2.24"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

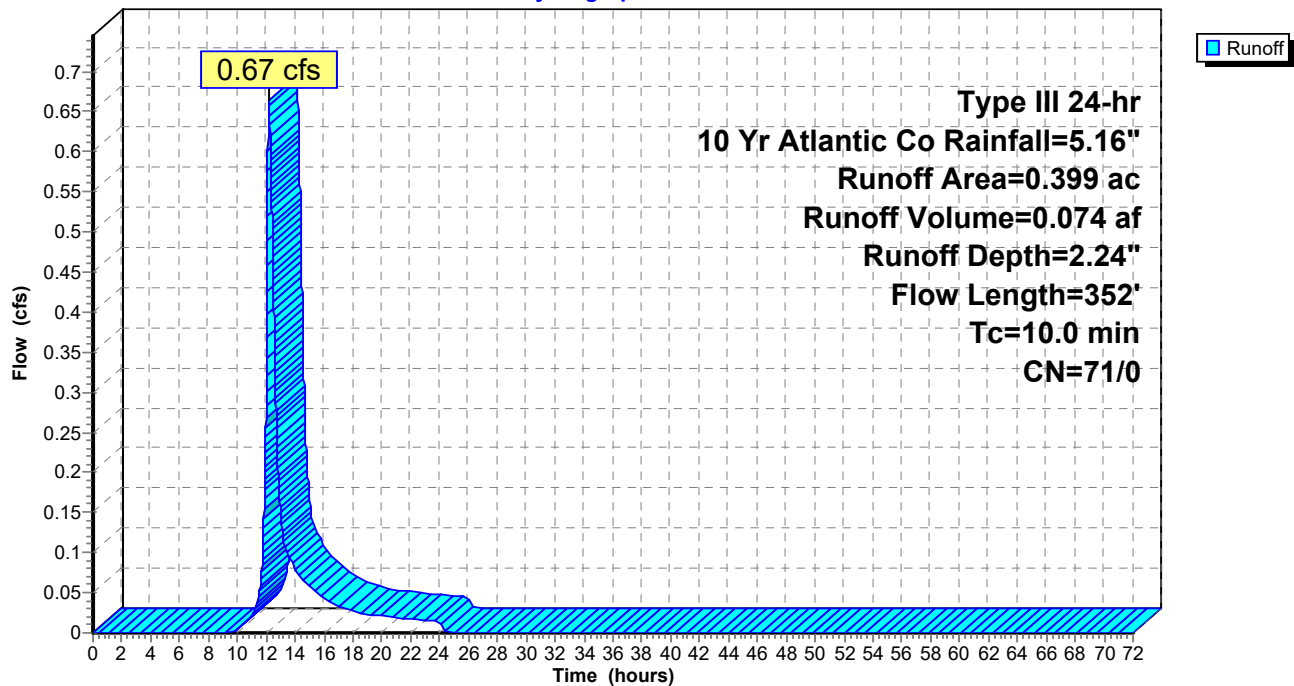
Area (ac)	CN	Description
0.193	61	>75% Grass cover, Good, HSG B
0.206	80	>75% Grass cover, Good, HSG D
0.399	71	Weighted Average
0.399	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	89	0.0150	1.23		<b>Sheet Flow, PRDA-2.1</b> Smooth surfaces n= 0.011 P2= 3.36"
1.2	263	0.0050	3.72	4.57	<b>Pipe Channel, PRDA-2.1</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
2.4	352	Total, Increased to minimum Tc = 10.0 min			

### Subcatchment 2Ap: PRDA-2Ap

Hydrograph



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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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### Summary for Subcatchment 2Bi: PRDA-2Bi

Runoff = 1.96 cfs @ 12.15 hrs, Volume= 0.238 af, Depth= 4.92"

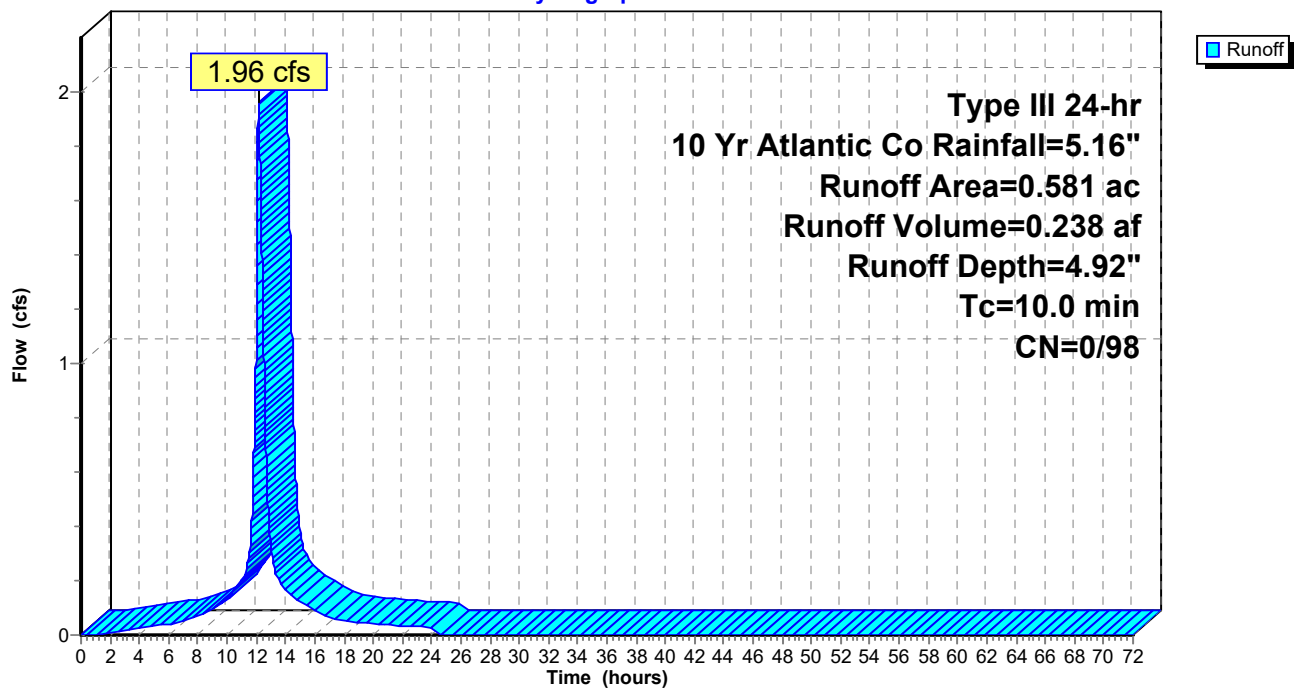
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

Area (ac)	CN	Description
0.437	98	Paved parking, HSG B
0.144	98	Paved parking, HSG D
0.581	98	Weighted Average
0.581	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Direct

### Subcatchment 2Bi: PRDA-2Bi

Hydrograph



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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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### Summary for Subcatchment 2Bp: PRDA-2Bp

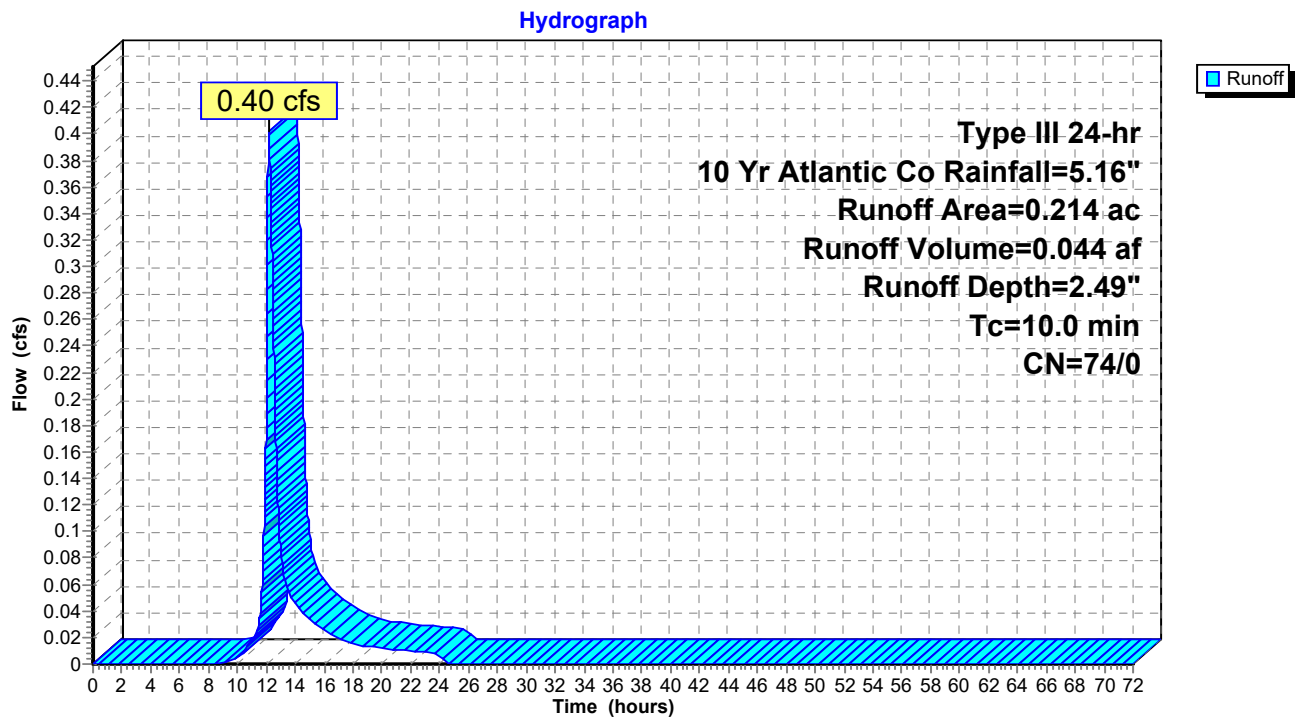
Runoff = 0.40 cfs @ 12.17 hrs, Volume= 0.044 af, Depth= 2.49"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

Area (ac)	CN	Description
0.070	61	>75% Grass cover, Good, HSG B
0.144	80	>75% Grass cover, Good, HSG D
0.214	74	Weighted Average
0.214	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Direct

### Subcatchment 2Bp: PRDA-2Bp



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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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### Summary for Subcatchment 2Ci: PRDA-2Ci

Runoff = 6.16 cfs @ 12.15 hrs, Volume= 0.748 af, Depth= 4.92"

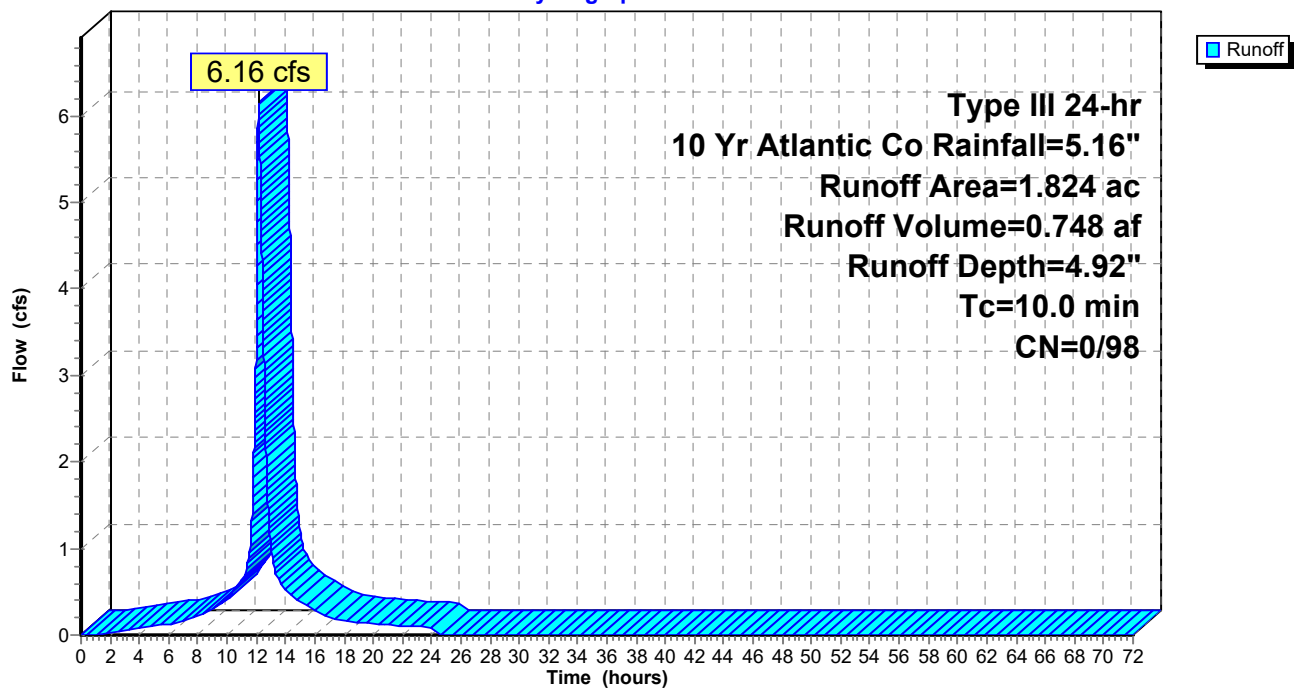
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

Area (ac)	CN	Description
0.990	98	Paved parking, HSG B
0.834	98	Paved parking, HSG D
1.824	98	Weighted Average
1.824	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 2Ci: PRDA-2Ci

Hydrograph



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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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### Summary for Subcatchment 2Cp: PRDA-2Cp

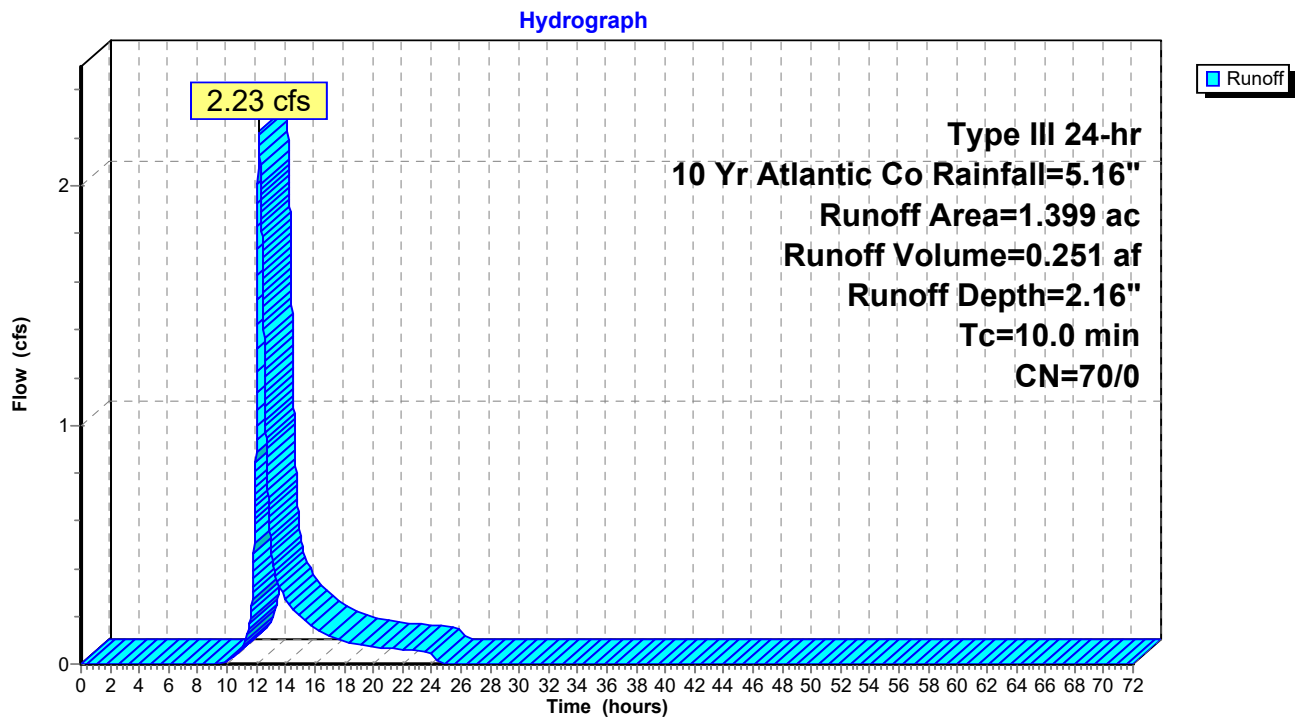
Runoff = 2.23 cfs @ 12.18 hrs, Volume= 0.251 af, Depth= 2.16"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

Area (ac)	CN	Description
0.725	61	>75% Grass cover, Good, HSG B
0.674	80	>75% Grass cover, Good, HSG D
1.399	70	Weighted Average
1.399	70	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 2Cp: PRDA-2Cp



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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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### Summary for Subcatchment Bdg1: BLDG-1

Runoff = 0.96 cfs @ 12.15 hrs, Volume= 0.117 af, Depth= 4.92"

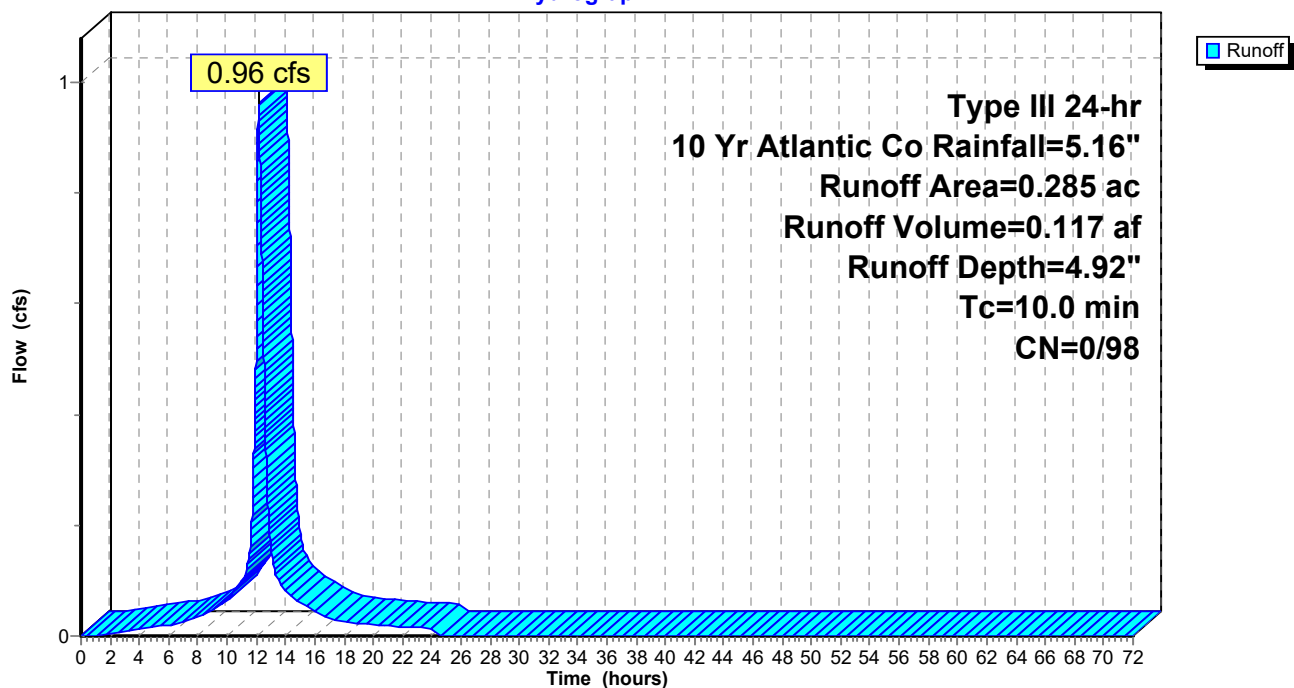
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

Area (ac)	CN	Description
0.285	98	Roofs, HSG B
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg1: BLDG-1

Hydrograph



## Post Developed Conditions

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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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### Summary for Subcatchment Bdg2: BLDG-2

Runoff = 0.96 cfs @ 12.15 hrs, Volume= 0.117 af, Depth= 4.92"

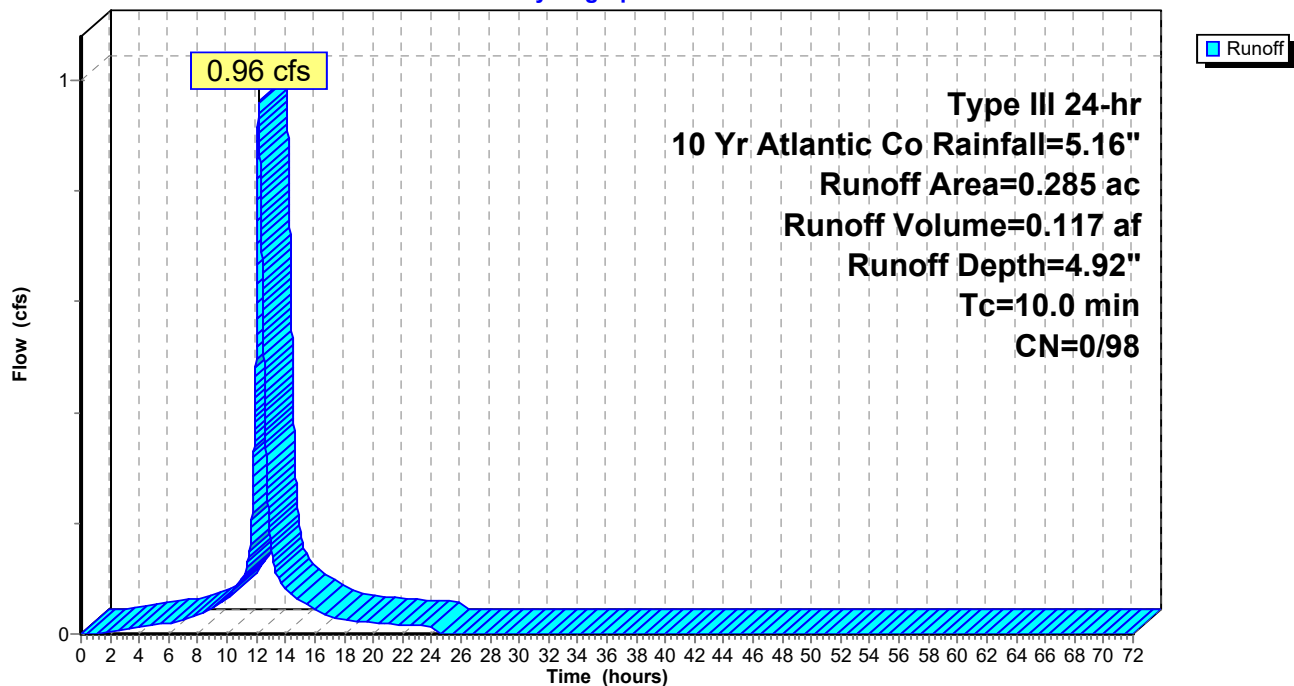
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

Area (ac)	CN	Description
0.285	98	Roofs, HSG B
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg2: BLDG-2

Hydrograph



## Post Developed Conditions

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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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### Summary for Subcatchment Bdg3: BLDG-3

Runoff = 0.96 cfs @ 12.15 hrs, Volume= 0.117 af, Depth= 4.92"

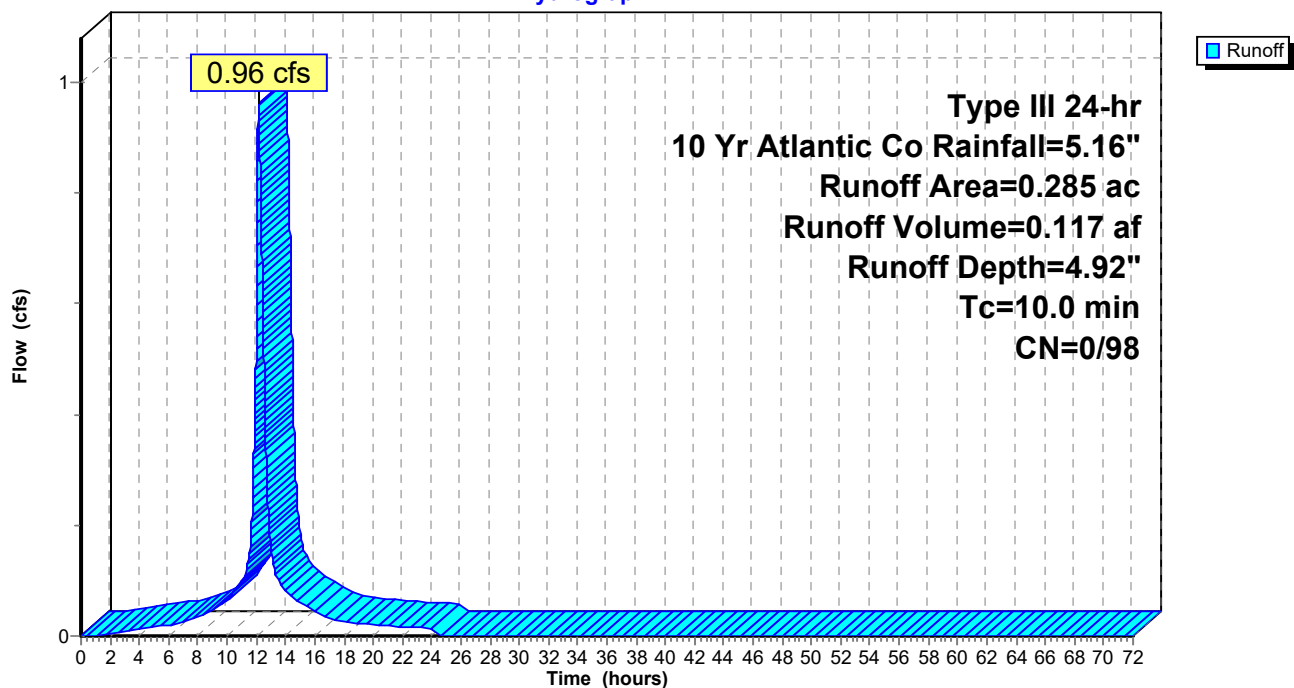
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

Area (ac)	CN	Description
0.285	98	Roofs, HSG B
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg3: BLDG-3

Hydrograph



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### Summary for Subcatchment Bdg4: BLDG-4

Runoff = 0.96 cfs @ 12.15 hrs, Volume= 0.117 af, Depth= 4.92"

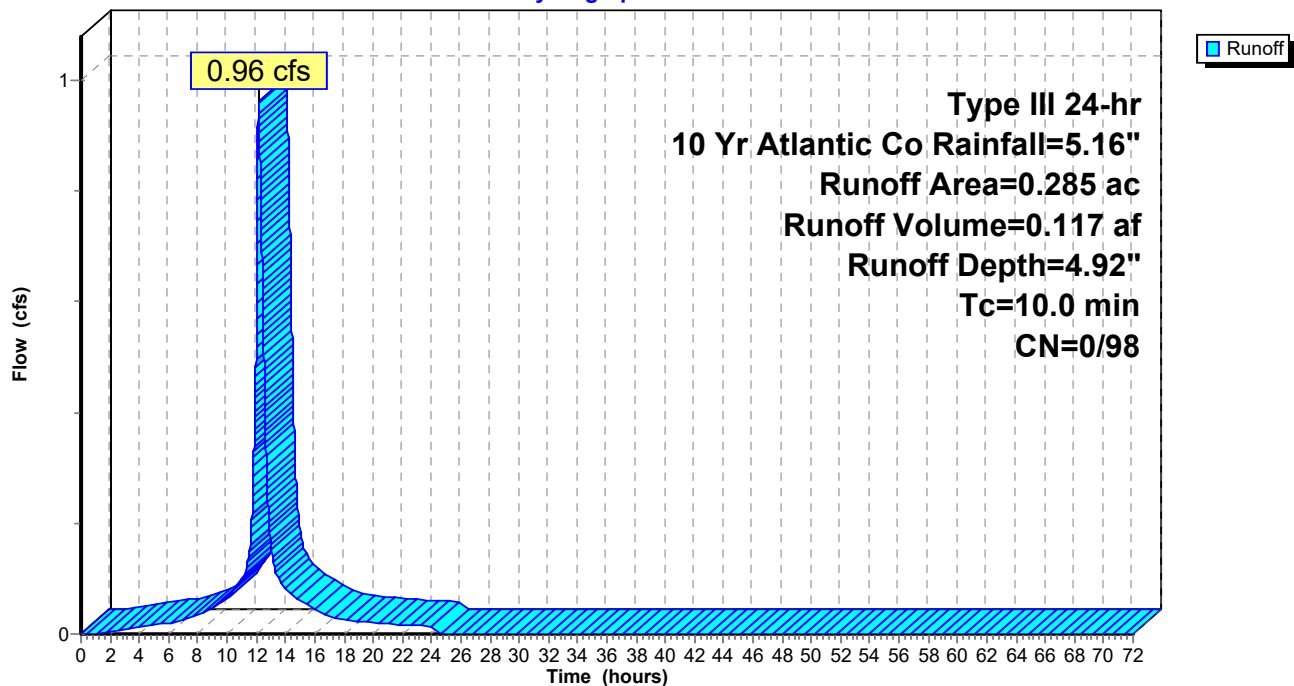
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

Area (ac)	CN	Description
0.285	98	Roofs, HSG D
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg4: BLDG-4

Hydrograph



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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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### Summary for Subcatchment Bdg5: BLDG-5

Runoff = 0.96 cfs @ 12.15 hrs, Volume= 0.117 af, Depth= 4.92"

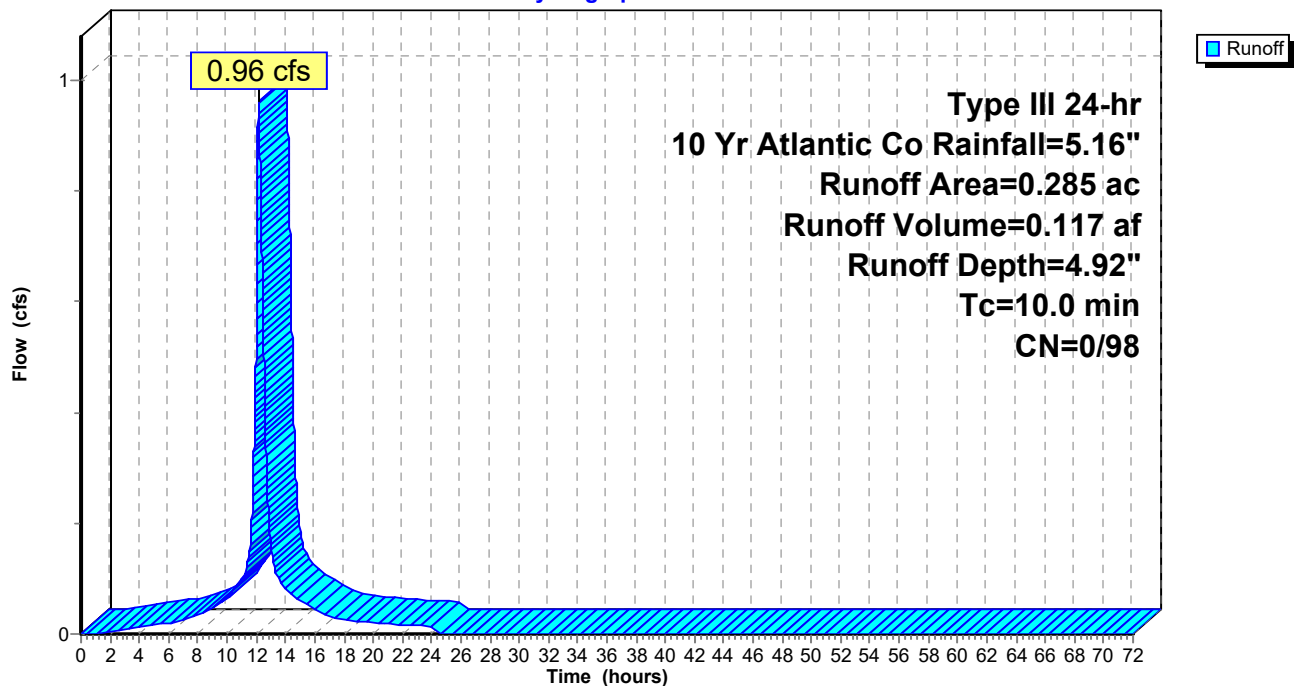
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

Area (ac)	CN	Description
0.285	98	Roofs, HSG D
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg5: BLDG-5

Hydrograph



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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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### Summary for Subcatchment Bdg6: BLDG-6

Runoff = 0.96 cfs @ 12.15 hrs, Volume= 0.117 af, Depth= 4.92"

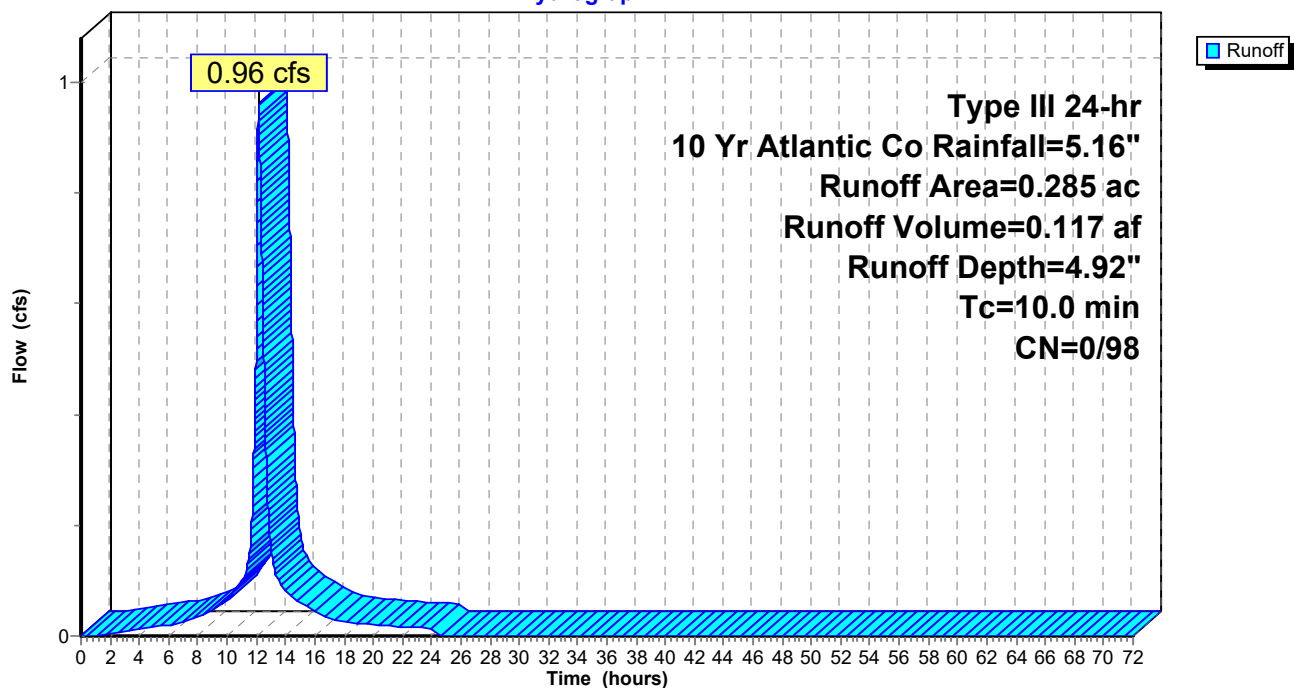
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

Area (ac)	CN	Description
0.285	98	Roofs, HSG D
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg6: BLDG-6

Hydrograph



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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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**Summary for Pond 1B: Basin 1B**

Inflow Area = 1.037 ac, 66.83% Impervious, Inflow Depth = 3.90" for 10 Yr Atlantic Co event  
 Inflow = 2.79 cfs @ 12.16 hrs, Volume= 0.337 af  
 Outflow = 2.74 cfs @ 12.19 hrs, Volume= 0.274 af, Atten= 2%, Lag= 2.2 min  
 Primary = 2.74 cfs @ 12.19 hrs, Volume= 0.274 af

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 7.65' @ 12.19 hrs Surf.Area= 3,320 sf Storage= 3,229 cf

Plug-Flow detention time= 142.9 min calculated for 0.274 af (81% of inflow)  
 Center-of-Mass det. time= 66.2 min ( 840.5 - 774.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	6.20'	6,627 cf	<b>Proposed Contours (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.20	1,170	0	0
7.00	2,335	1,402	1,402
8.00	3,860	3,098	4,500
8.50	4,650	2,128	6,627

Device	Routing	Invert	Outlet Devices
#1	Primary	3.75'	<b>15.0" Round 15" Culvert</b> L= 48.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 3.75' / 3.36' S= 0.0081 ' S= 0.0081 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	7.50'	<b>48.0" x 42.0" Horiz. Type E Inlet</b> C= 0.600 Limited to weir flow at low heads
#3	Primary	7.75'	<b>10' Wide Broadcrested Weir, Cv= 3.10 (C= 3.88)</b> Head (feet) 0.00 0.25 0.50 0.75 1.00 Width (feet) 10.00 11.50 13.00 14.50 16.00

**Primary OutFlow** Max=2.74 cfs @ 12.19 hrs HW=7.65' TW=0.00' (Dynamic Tailwater)

1=15" Culvert (Passes 2.74 cfs of 10.60 cfs potential flow)  
 2=Type E Inlet (Weir Controls 2.74 cfs @ 1.25 fps)  
 3=10' Wide Broadcrested Weir ( Controls 0.00 cfs)

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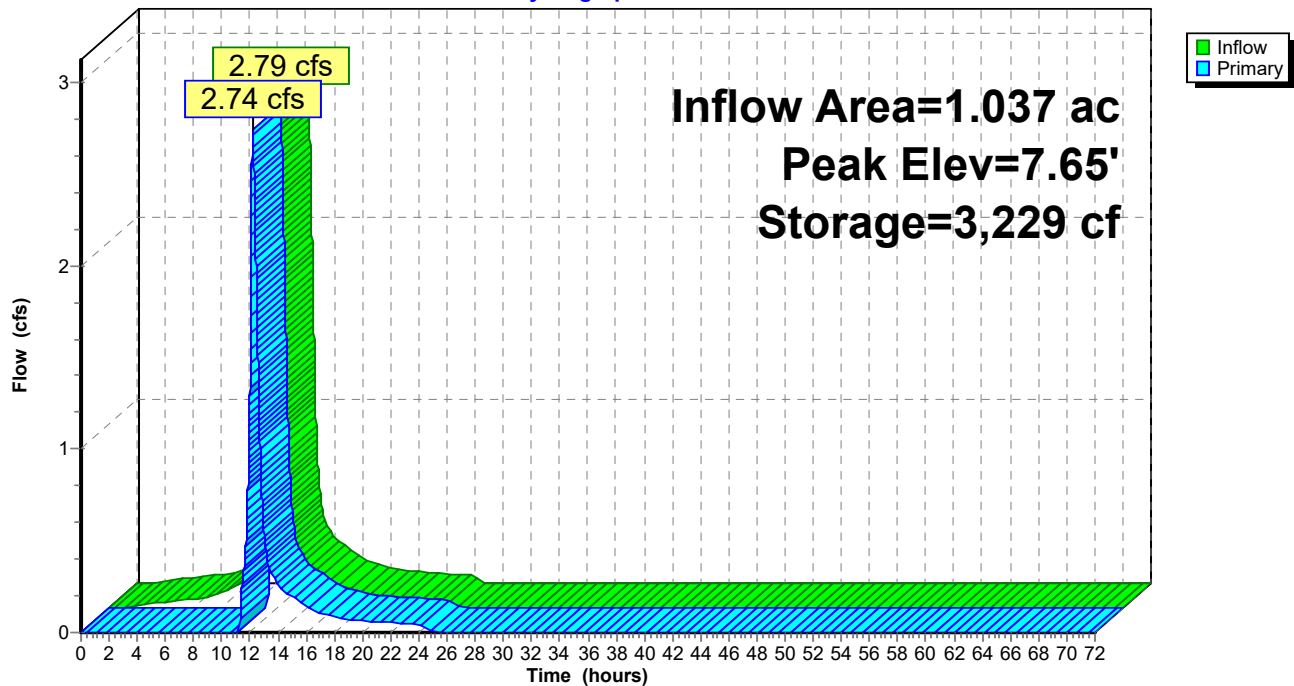
Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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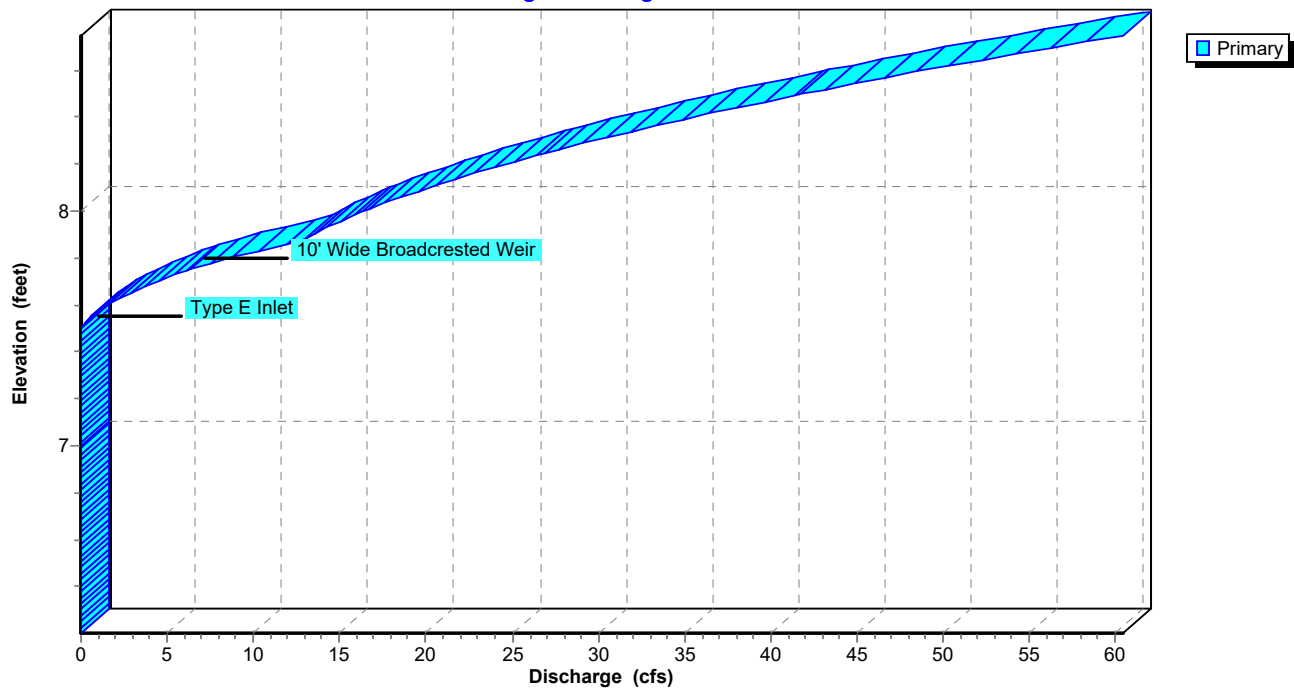
### Pond 1B: Basin 1B

Hydrograph



### Pond 1B: Basin 1B

Stage-Discharge



Post Developed Conditions

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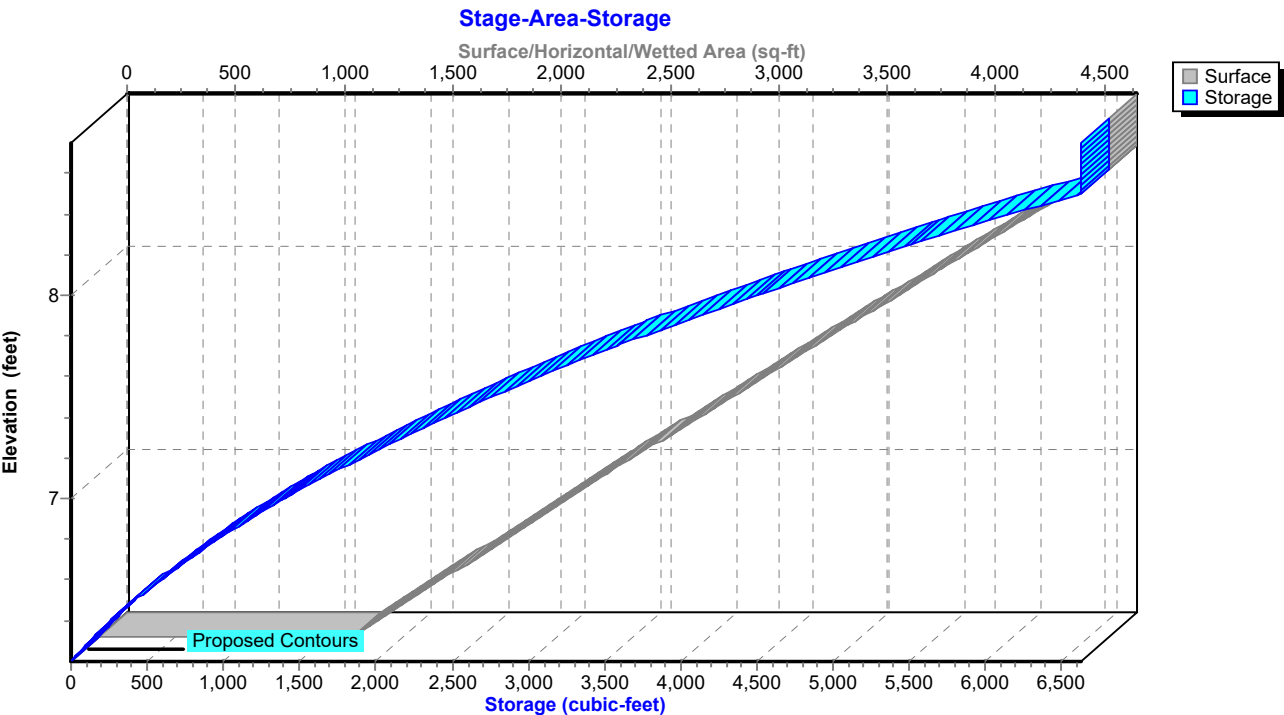
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Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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Pond 1B: Basin 1B



**Post Developed Conditions**

Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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**Summary for Pond 2C: Basin 2C**

Inflow Area = 4.018 ac, 59.86% Impervious, Inflow Depth = 3.83" for 10 Yr Atlantic Co event  
 Inflow = 10.75 cfs @ 12.16 hrs, Volume= 1.282 af  
 Outflow = 1.05 cfs @ 13.89 hrs, Volume= 0.977 af, Atten= 90%, Lag= 104.1 min  
 Primary = 1.05 cfs @ 13.89 hrs, Volume= 0.977 af

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 8.24' @ 13.89 hrs Surf.Area= 29,432 sf Storage= 37,479 cf

Plug-Flow detention time= 840.4 min calculated for 0.976 af (76% of inflow)  
 Center-of-Mass det. time= 753.2 min ( 1,532.9 - 779.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	6.85'	94,944 cf	<b>Proposed Contours (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.85	24,460	0	0
7.00	24,990	3,709	3,709
8.00	28,545	26,768	30,476
9.00	32,215	30,380	60,856
10.00	35,960	34,088	94,944

Device	Routing	Invert	Outlet Devices
#1	Primary	3.00'	<b>15.0" Round 15" Culvert</b> L= 34.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 3.00' / 1.94' S= 0.0312 ' S= 0.0312 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	7.30'	<b>4.0" Vert. 4" Orifice</b> C= 0.600
#3	Device 1	8.10'	<b>48.0" W x 42.0" H Vert. Type E Inlet</b> C= 0.600
#4	Primary	9.00'	<b>20' Wide Broadcrested Weir, Cv= 3.10 (C= 3.88)</b> Head (feet) 0.00 0.50 1.00 1.50 Width (feet) 20.00 23.00 26.00 29.00

**Primary OutFlow** Max=1.05 cfs @ 13.89 hrs HW=8.24' TW=0.00' (Dynamic Tailwater)

1=15" Culvert (Passes 1.05 cfs of 12.70 cfs potential flow)  
 2=4" Orifice (Orifice Controls 0.37 cfs @ 4.24 fps)  
 3=Type E Inlet (Orifice Controls 0.68 cfs @ 1.21 fps)  
 4=20' Wide Broadcrested Weir ( Controls 0.00 cfs)

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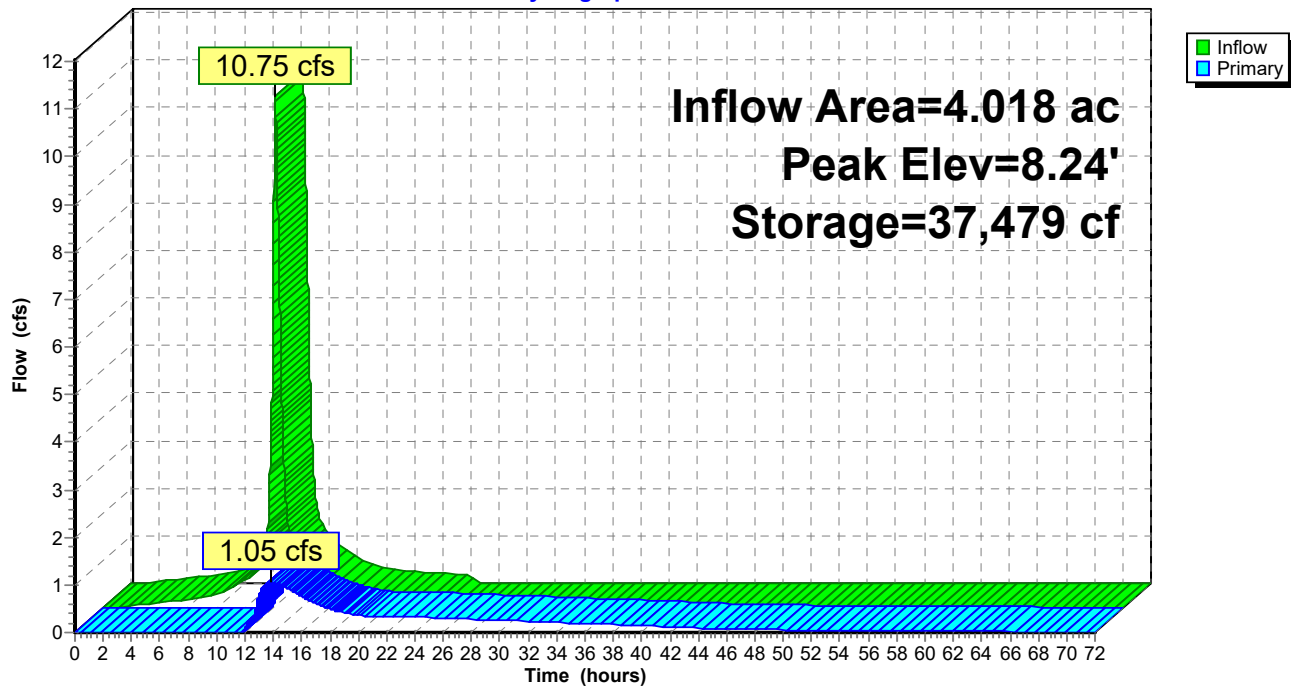
Type III 24-hr 10 Yr Atlantic Co Rainfall=5.16"

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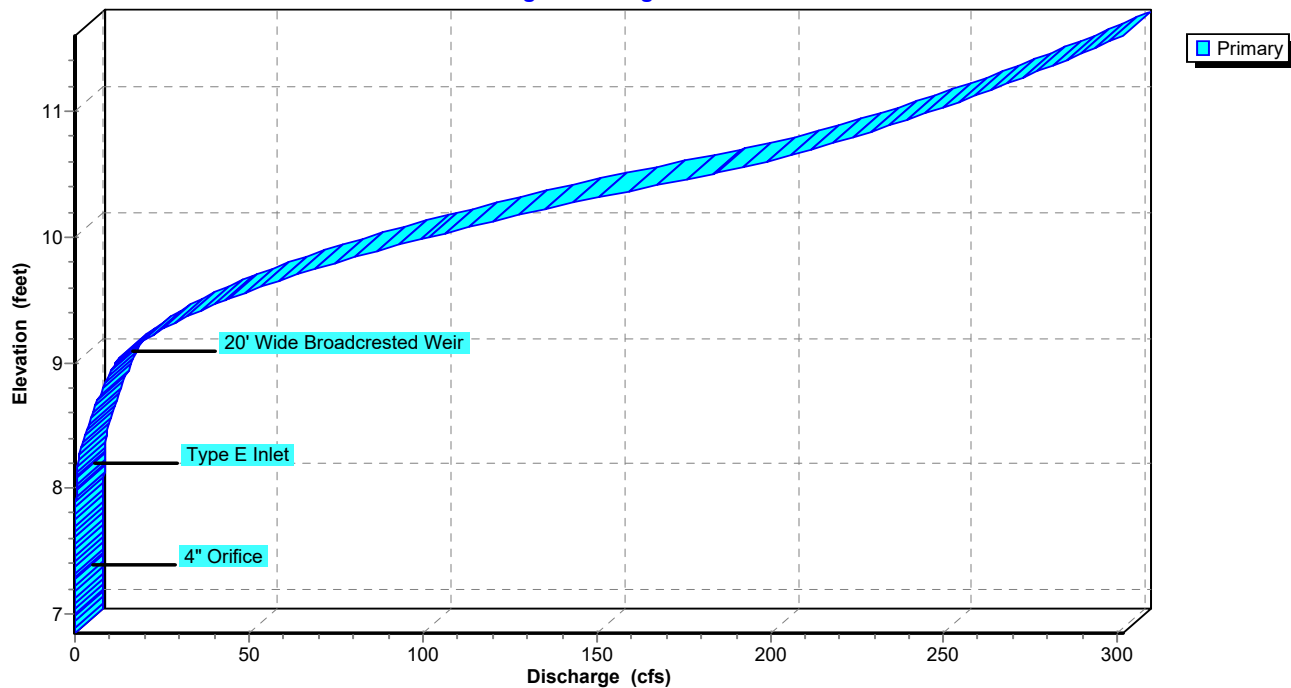
### Pond 2C: Basin 2C

Hydrograph



### Pond 2C: Basin 2C

Stage-Discharge



## Post Developed Conditions

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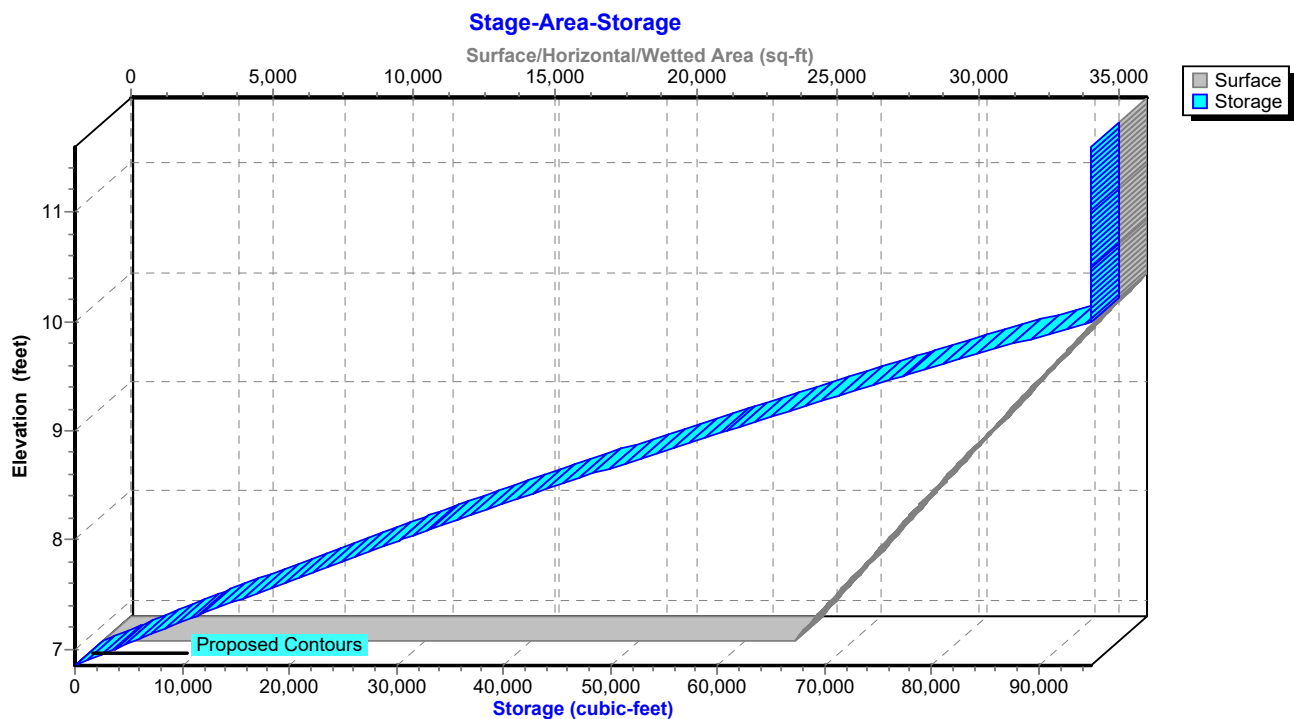
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### Pond 2C: Basin 2C



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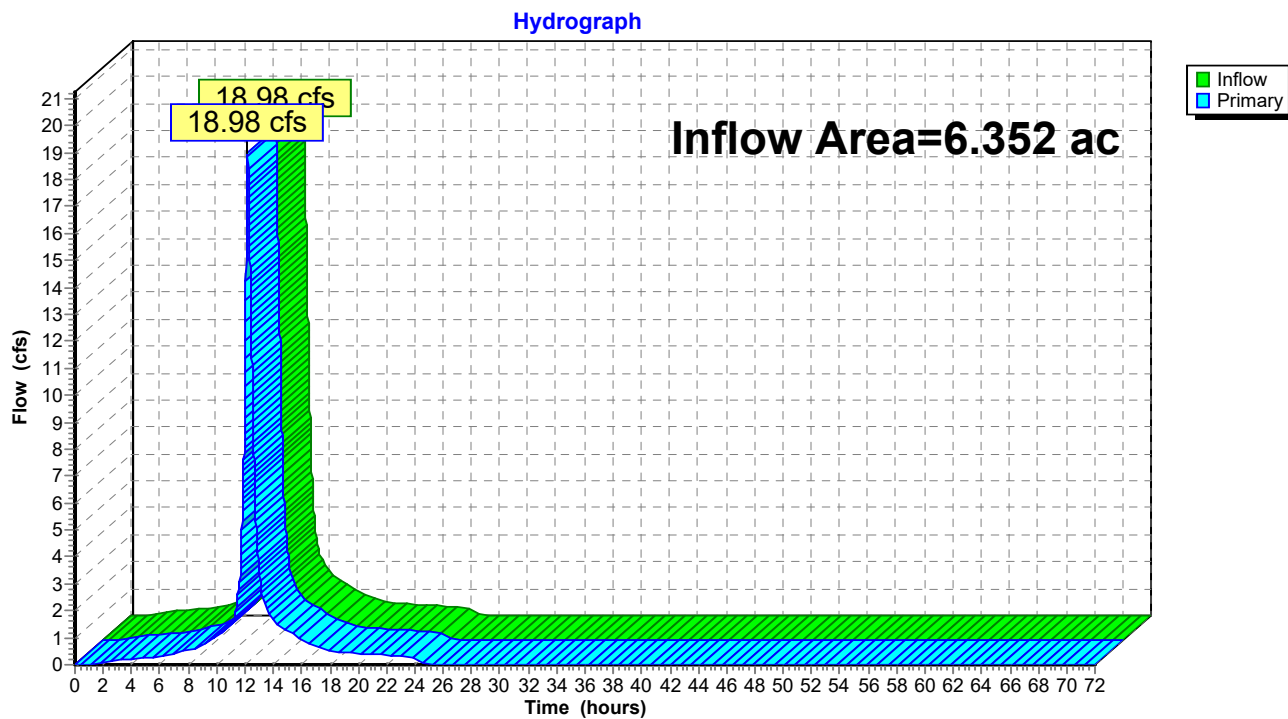
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### Summary for Link 1L: PT 1

Inflow Area = 6.352 ac, 82.07% Impervious, Inflow Depth = 4.25" for 10 Yr Atlantic Co event  
Inflow = 18.98 cfs @ 12.16 hrs, Volume= 2.250 af  
Primary = 18.98 cfs @ 12.17 hrs, Volume= 2.250 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Link 1L: PT 1



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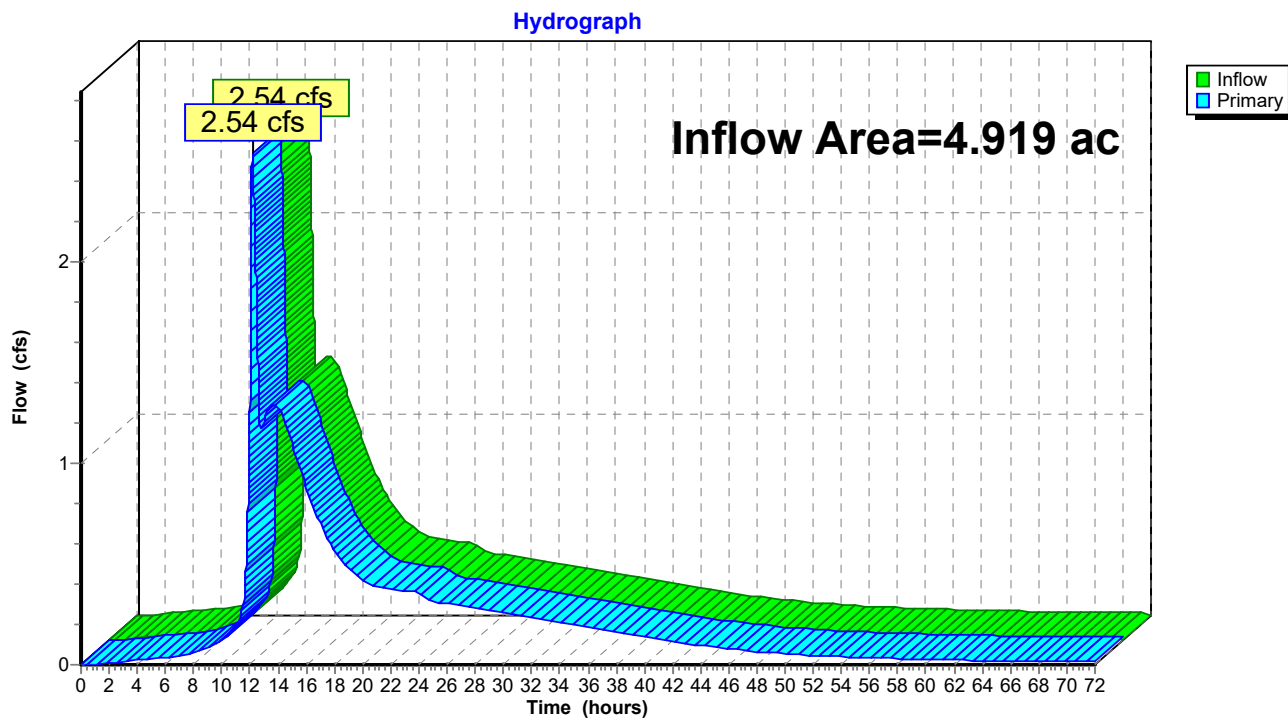
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### Summary for Link 2L: PT 2

Inflow Area = 4.919 ac, 59.10% Impervious, Inflow Depth > 3.07" for 10 Yr Atlantic Co event  
Inflow = 2.54 cfs @ 12.16 hrs, Volume= 1.257 af  
Primary = 2.54 cfs @ 12.17 hrs, Volume= 1.257 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Link 2L: PT 2



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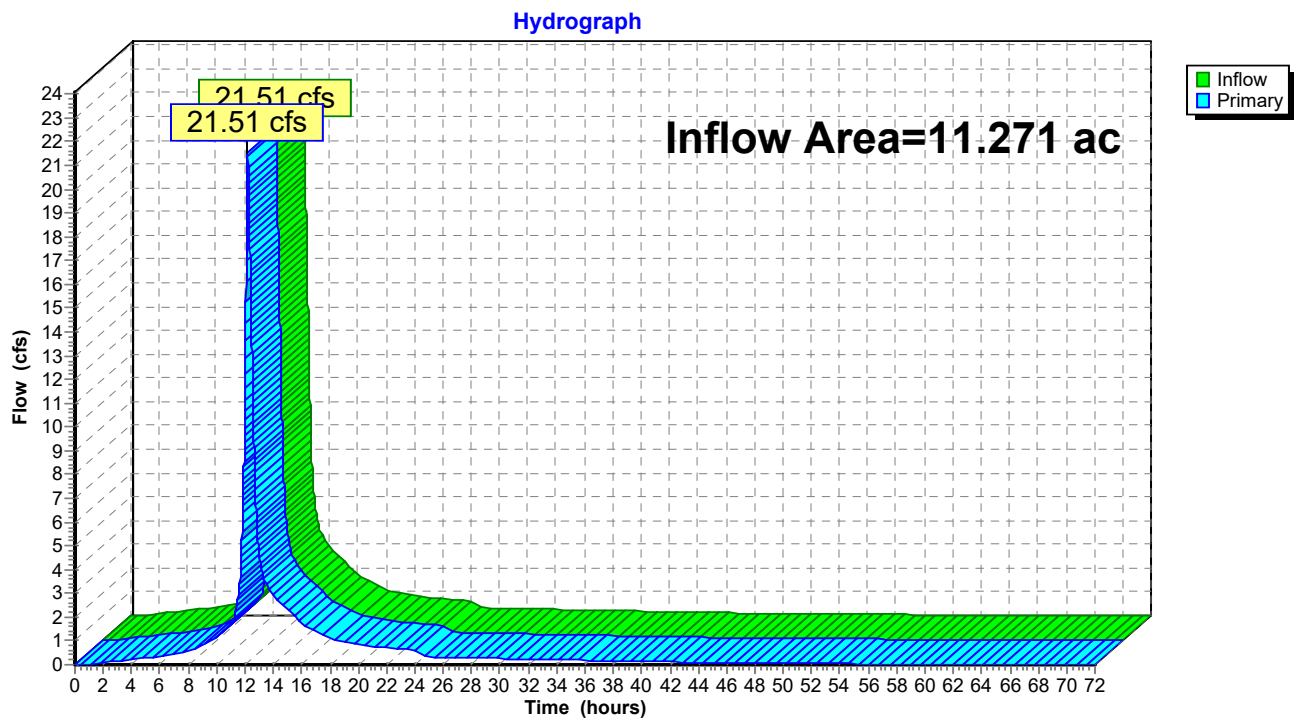
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### Summary for Link 4L: TTA

Inflow Area = 11.271 ac, 72.04% Impervious, Inflow Depth > 3.73" for 10 Yr Atlantic Co event  
Inflow = 21.51 cfs @ 12.17 hrs, Volume= 3.507 af  
Primary = 21.51 cfs @ 12.18 hrs, Volume= 3.507 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Link 4L: TTA



**Post Developed Conditions***Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"*

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.

Reach routing by Sim-Route method - Pond routing by Sim-Route method w/Net Flows

<b>Subcatchment1Ai: PRDA-1Ai</b>	Runoff Area=2.810 ac 100.00% Impervious Runoff Depth=8.66" Flow Length=1,354' Tc=10.0 min CN=0/98 Runoff=16.45 cfs 2.028 af
<b>Subcatchment1Ap: PRDA-1Ap</b>	Runoff Area=0.795 ac 0.00% Impervious Runoff Depth=4.76" Flow Length=1,354' Tc=10.0 min CN=66/0 Runoff=2.88 cfs 0.315 af
<b>Subcatchment1Bi: PRDA-1Bi</b>	Runoff Area=0.693 ac 100.00% Impervious Runoff Depth=8.66" Tc=10.0 min CN=0/98 Runoff=4.06 cfs 0.500 af
<b>Subcatchment1Bp: PRDA-1Bp</b>	Runoff Area=0.344 ac 0.00% Impervious Runoff Depth=4.76" Tc=10.0 min CN=66/0 Runoff=1.25 cfs 0.136 af
<b>Subcatchment2Ai: PRDA-2Ai</b>	Runoff Area=0.502 ac 100.00% Impervious Runoff Depth=8.66" Flow Length=352' Tc=10.0 min CN=0/98 Runoff=2.94 cfs 0.362 af
<b>Subcatchment2Ap: PRDA-2Ap</b>	Runoff Area=0.399 ac 0.00% Impervious Runoff Depth=5.37" Flow Length=352' Tc=10.0 min CN=71/0 Runoff=1.64 cfs 0.179 af
<b>Subcatchment2Bi: PRDA-2Bi</b>	Runoff Area=0.581 ac 100.00% Impervious Runoff Depth=8.66" Tc=10.0 min CN=0/98 Runoff=3.40 cfs 0.419 af
<b>Subcatchment2Bp: PRDA-2Bp</b>	Runoff Area=0.214 ac 0.00% Impervious Runoff Depth=5.74" Tc=10.0 min CN=74/0 Runoff=0.94 cfs 0.102 af
<b>Subcatchment2Ci: PRDA-2Ci</b>	Runoff Area=1.824 ac 100.00% Impervious Runoff Depth=8.66" Tc=10.0 min CN=0/98 Runoff=10.68 cfs 1.316 af
<b>Subcatchment2Cp: PRDA-2Cp</b>	Runoff Area=1.399 ac 0.00% Impervious Runoff Depth=5.25" Tc=10.0 min CN=70/0 Runoff=5.62 cfs 0.612 af
<b>SubcatchmentBdg1: BLDG-1</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=8.66" Tc=10.0 min CN=0/98 Runoff=1.67 cfs 0.206 af
<b>SubcatchmentBdg2: BLDG-2</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=8.66" Tc=10.0 min CN=0/98 Runoff=1.67 cfs 0.206 af
<b>SubcatchmentBdg3: BLDG-3</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=8.66" Tc=10.0 min CN=0/98 Runoff=1.67 cfs 0.206 af
<b>SubcatchmentBdg4: BLDG-4</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=8.66" Tc=10.0 min CN=0/98 Runoff=1.67 cfs 0.206 af
<b>SubcatchmentBdg5: BLDG-5</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=8.66" Tc=10.0 min CN=0/98 Runoff=1.67 cfs 0.206 af
<b>SubcatchmentBdg6: BLDG-6</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=8.66" Tc=10.0 min CN=0/98 Runoff=1.67 cfs 0.206 af

## Post Developed Conditions

Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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### Pond 1B: Basin 1B

Peak Elev=7.73' Storage=3,496 cf Inflow=5.30 cfs 0.636 af  
Outflow=5.24 cfs 0.573 af

### Pond 2C: Basin 2C

Peak Elev=8.81' Storage=54,769 cf Inflow=20.62 cfs 2.450 af  
Outflow=8.15 cfs 2.142 af

### Link 1L: PT 1

Inflow=34.47 cfs 4.150 af  
Primary=34.47 cfs 4.150 af

### Link 2L: PT 2

Inflow=10.28 cfs 2.683 af  
Primary=10.28 cfs 2.683 af

### Link 4L: TTA

Inflow=40.88 cfs 6.833 af  
Primary=40.88 cfs 6.833 af

**Total Runoff Area = 11.271 ac   Runoff Volume = 7.204 af   Average Runoff Depth = 7.67"**  
**27.96% Pervious = 3.151 ac   72.04% Impervious = 8.120 ac**

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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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### Summary for Subcatchment 1Ai: PRDA-1Ai

Runoff = 16.45 cfs @ 12.15 hrs, Volume= 2.028 af, Depth= 8.66"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

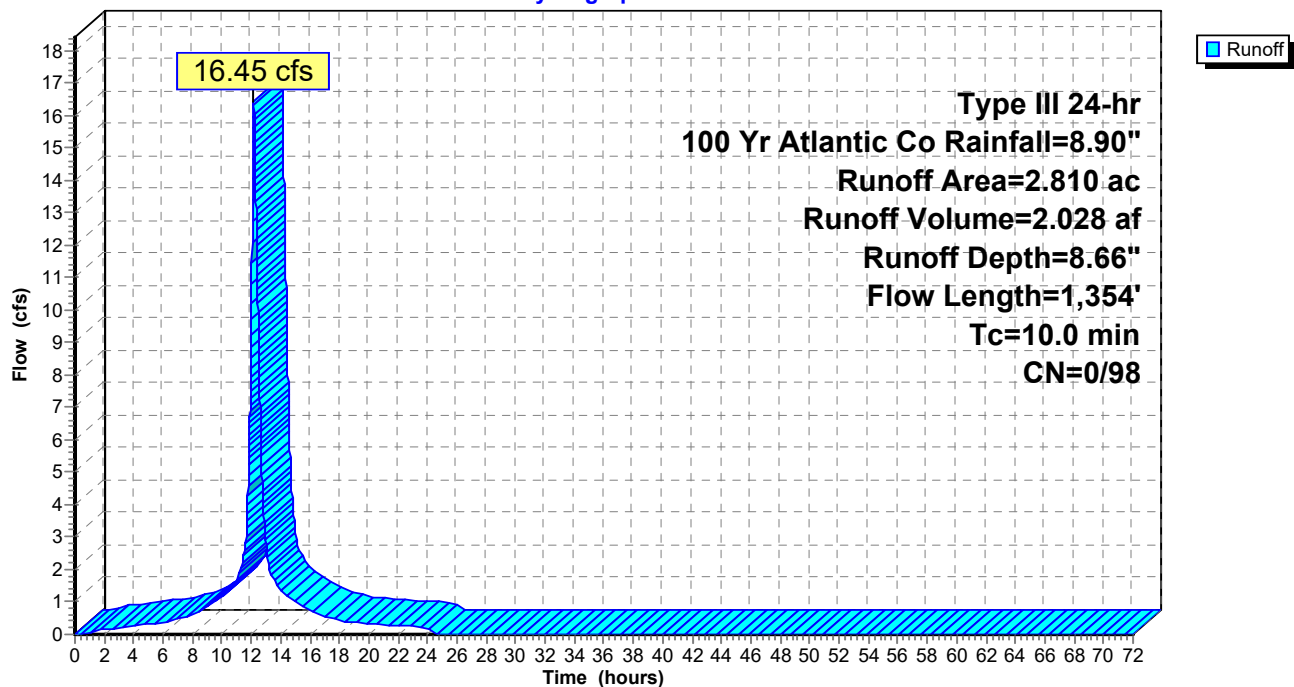
Area (ac)	CN	Description
1.113	98	Paved parking, HSG B
1.559	98	Paved parking, HSG D
0.138	98	Unconnected roofs, HSG B
2.810	98	Weighted Average
2.810	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0130	1.19		<b>Sheet Flow, PRDA-1.1</b> Smooth surfaces n= 0.011 P2= 3.36"
6.4	1,254	0.0030	3.26	5.75	<b>Pipe Channel, PRDA-1.2</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
7.8	1,354	Total, Increased to minimum Tc = 10.0 min			

### Subcatchment 1Ai: PRDA-1Ai

Hydrograph



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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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### Summary for Subcatchment 1Ap: PRDA-1Ap

Runoff = 2.88 cfs @ 12.16 hrs, Volume= 0.315 af, Depth= 4.76"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

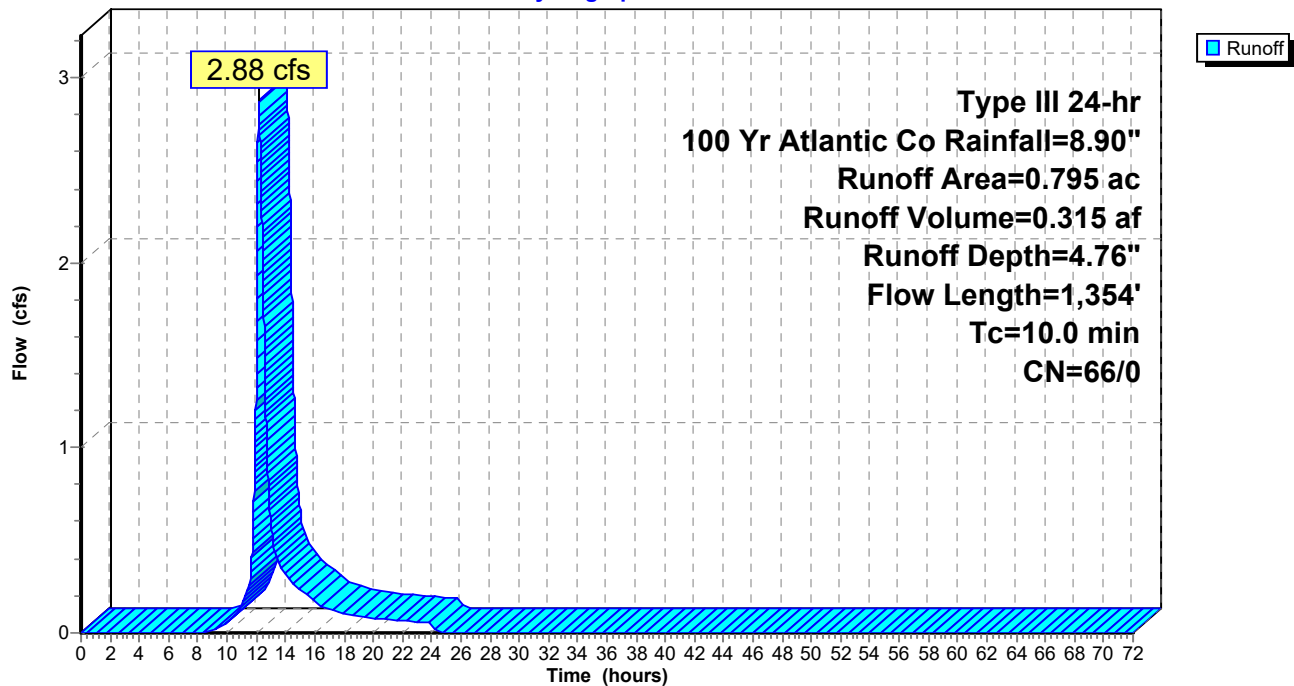
Area (ac)	CN	Description
0.574	61	>75% Grass cover, Good, HSG B
0.221	80	>75% Grass cover, Good, HSG D
0.795	66	Weighted Average
0.795	66	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0130	1.19		<b>Sheet Flow, PRDA-1.1</b> Smooth surfaces n= 0.011 P2= 3.36"
6.4	1,254	0.0030	3.26	5.75	<b>Pipe Channel, PRDA-1.2</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
7.8	1,354	Total, Increased to minimum Tc = 10.0 min			

### Subcatchment 1Ap: PRDA-1Ap

Hydrograph



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### Summary for Subcatchment 1Bi: PRDA-1Bi

Runoff = 4.06 cfs @ 12.15 hrs, Volume= 0.500 af, Depth= 8.66"

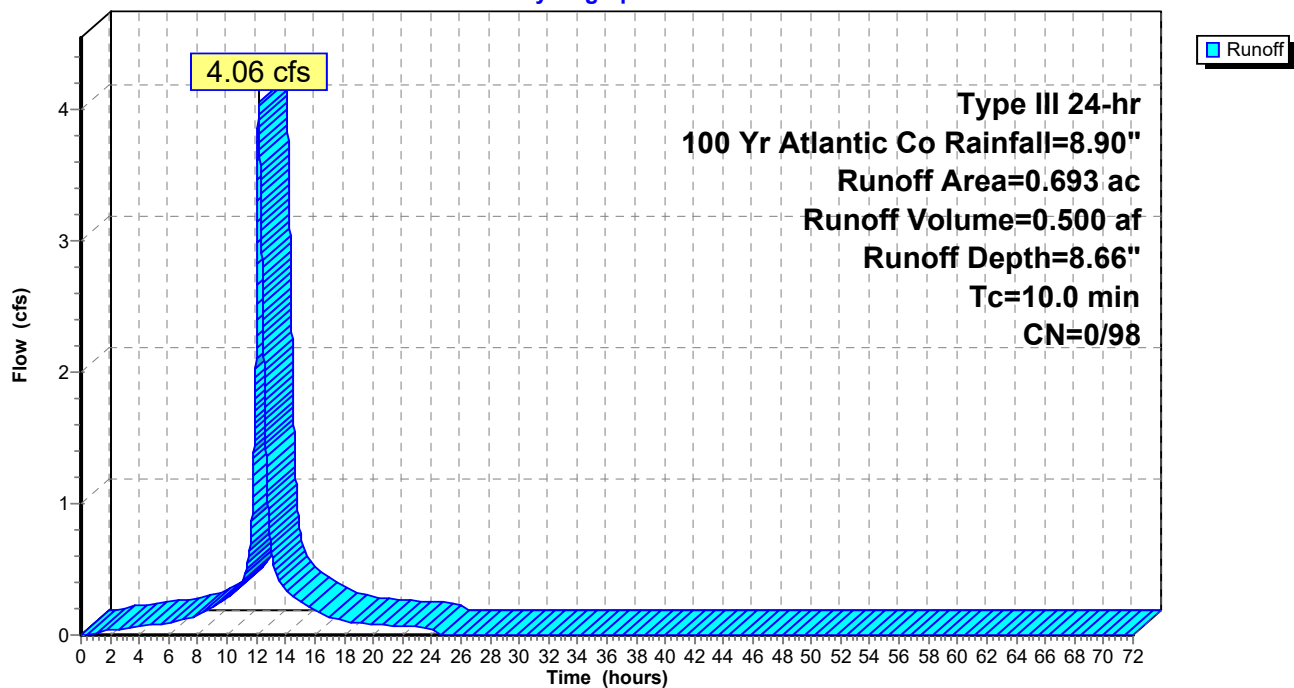
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.293	98	Paved parking, HSG B
0.400	98	Paved parking, HSG D
0.693	98	Weighted Average
0.693	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 1Bi: PRDA-1Bi

Hydrograph



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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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### Summary for Subcatchment 1Bp: PRDA-1Bp

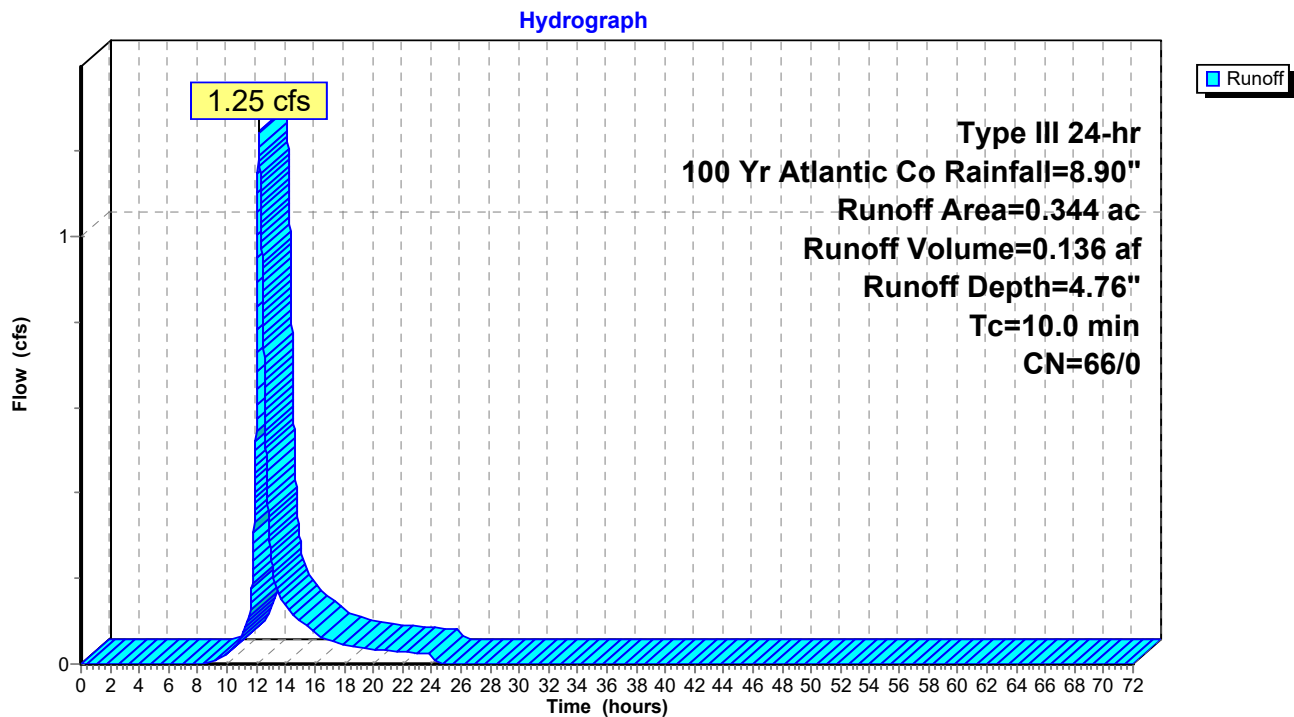
Runoff = 1.25 cfs @ 12.16 hrs, Volume= 0.136 af, Depth= 4.76"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.262	61	>75% Grass cover, Good, HSG B
0.082	80	>75% Grass cover, Good, HSG D
0.344	66	Weighted Average
0.344	66	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 1Bp: PRDA-1Bp



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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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**Summary for Subcatchment 2Ai: PRDA-2Ai**

Runoff = 2.94 cfs @ 12.15 hrs, Volume= 0.362 af, Depth= 8.66"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

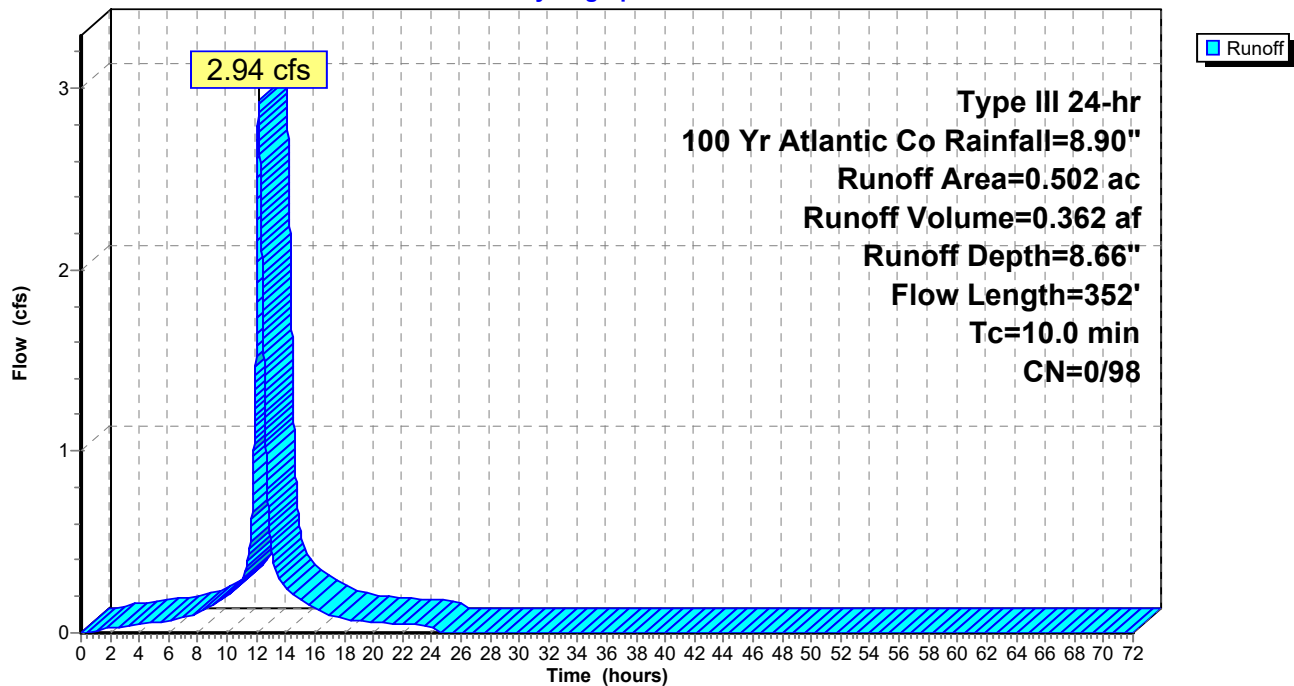
Area (ac)	CN	Description
0.281	98	Paved parking, HSG B
0.221	98	Paved parking, HSG D
0.502	98	Weighted Average
0.502	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	89	0.0150	1.23		<b>Sheet Flow, PRDA-2.1</b> Smooth surfaces n= 0.011 P2= 3.36"
1.2	263	0.0050	3.72	4.57	<b>Pipe Channel, PRDA-2.1</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
2.4	352	Total, Increased to minimum Tc = 10.0 min			

**Subcatchment 2Ai: PRDA-2Ai**

Hydrograph



## Post Developed Conditions

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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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### Summary for Subcatchment 2Ap: PRDA-2Ap

Runoff = 1.64 cfs @ 12.16 hrs, Volume= 0.179 af, Depth= 5.37"

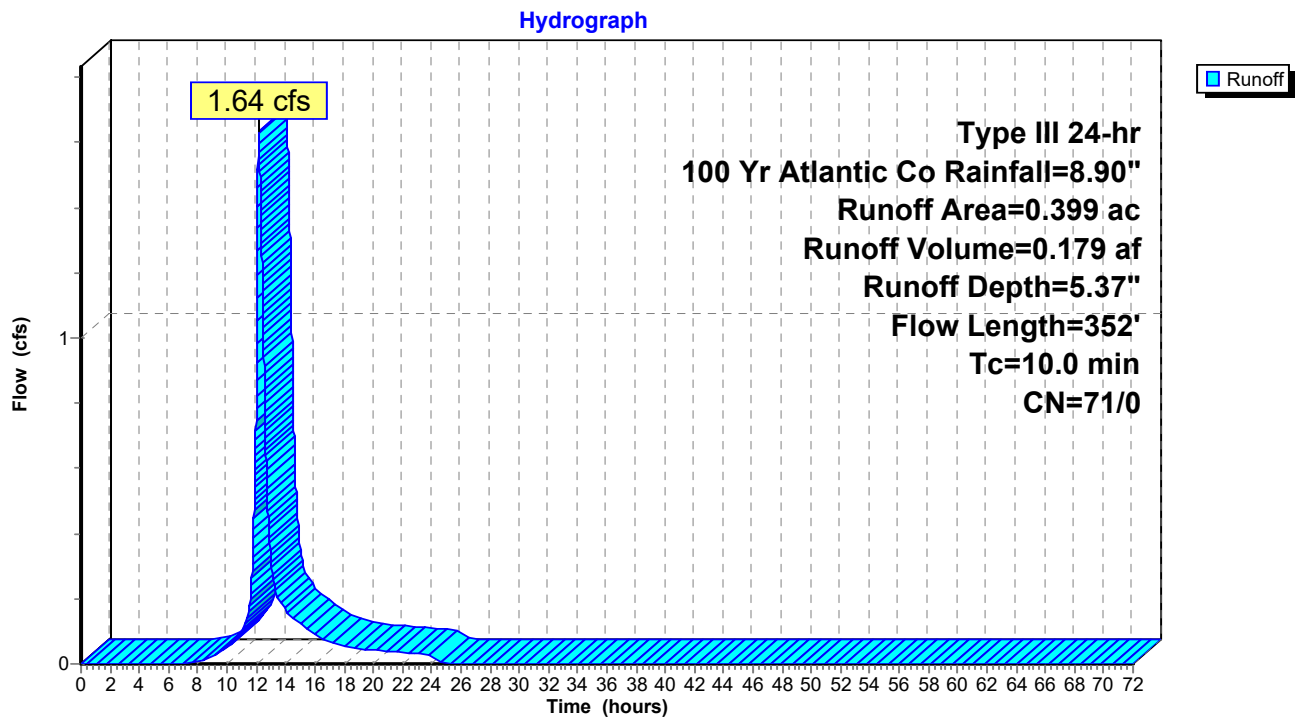
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.193	61	>75% Grass cover, Good, HSG B
0.206	80	>75% Grass cover, Good, HSG D
0.399	71	Weighted Average
0.399	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	89	0.0150	1.23		<b>Sheet Flow, PRDA-2.1</b> Smooth surfaces n= 0.011 P2= 3.36"
1.2	263	0.0050	3.72	4.57	<b>Pipe Channel, PRDA-2.1</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
2.4	352	Total, Increased to minimum Tc = 10.0 min			

### Subcatchment 2Ap: PRDA-2Ap



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**Summary for Subcatchment 2Bi: PRDA-2Bi**

Runoff = 3.40 cfs @ 12.15 hrs, Volume= 0.419 af, Depth= 8.66"

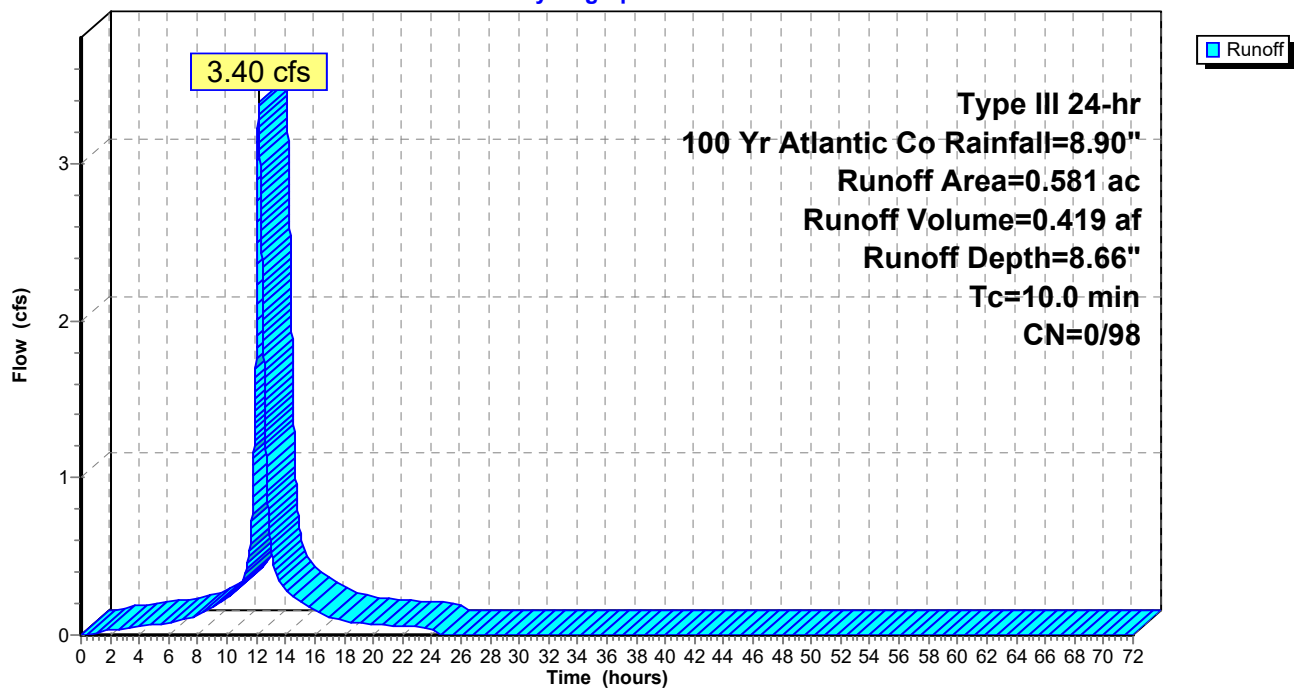
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.437	98	Paved parking, HSG B
0.144	98	Paved parking, HSG D
0.581	98	Weighted Average
0.581	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Direct

**Subcatchment 2Bi: PRDA-2Bi**

Hydrograph



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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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### Summary for Subcatchment 2Bp: PRDA-2Bp

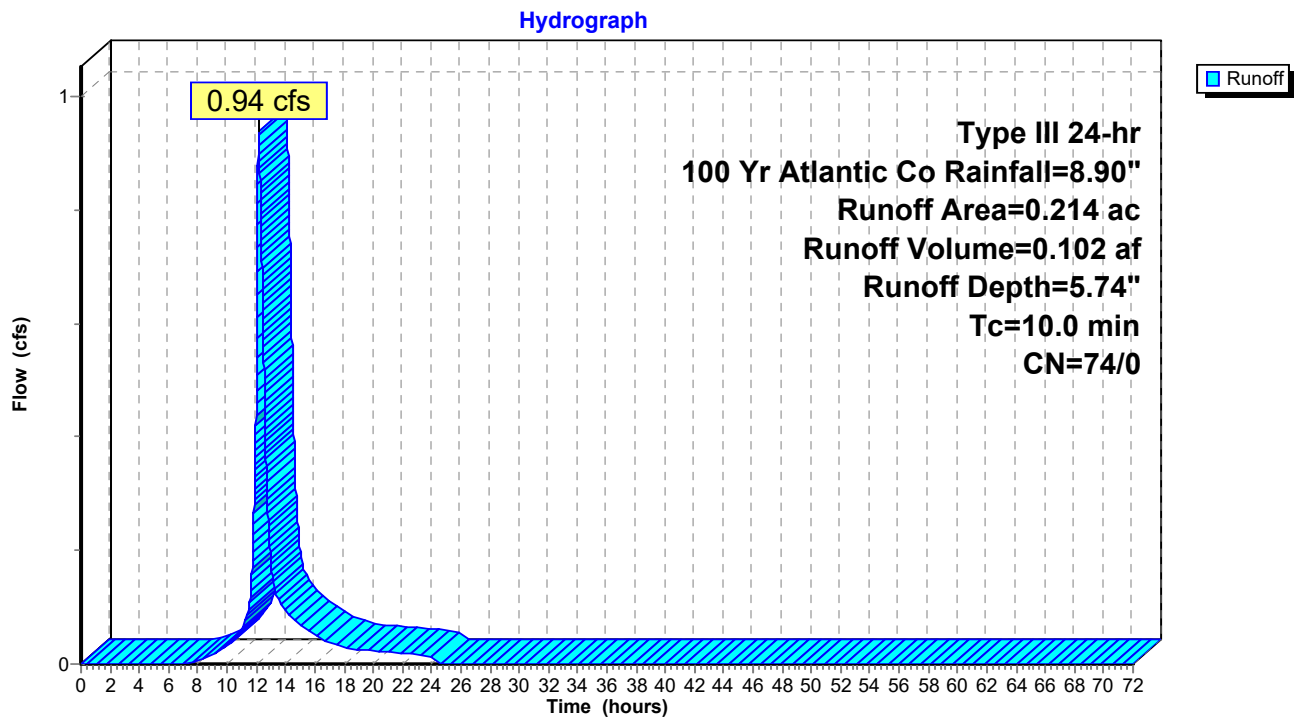
Runoff = 0.94 cfs @ 12.16 hrs, Volume= 0.102 af, Depth= 5.74"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.070	61	>75% Grass cover, Good, HSG B
0.144	80	>75% Grass cover, Good, HSG D
0.214	74	Weighted Average
0.214	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Direct

### Subcatchment 2Bp: PRDA-2Bp



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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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### Summary for Subcatchment 2Ci: PRDA-2Ci

Runoff = 10.68 cfs @ 12.15 hrs, Volume= 1.316 af, Depth= 8.66"

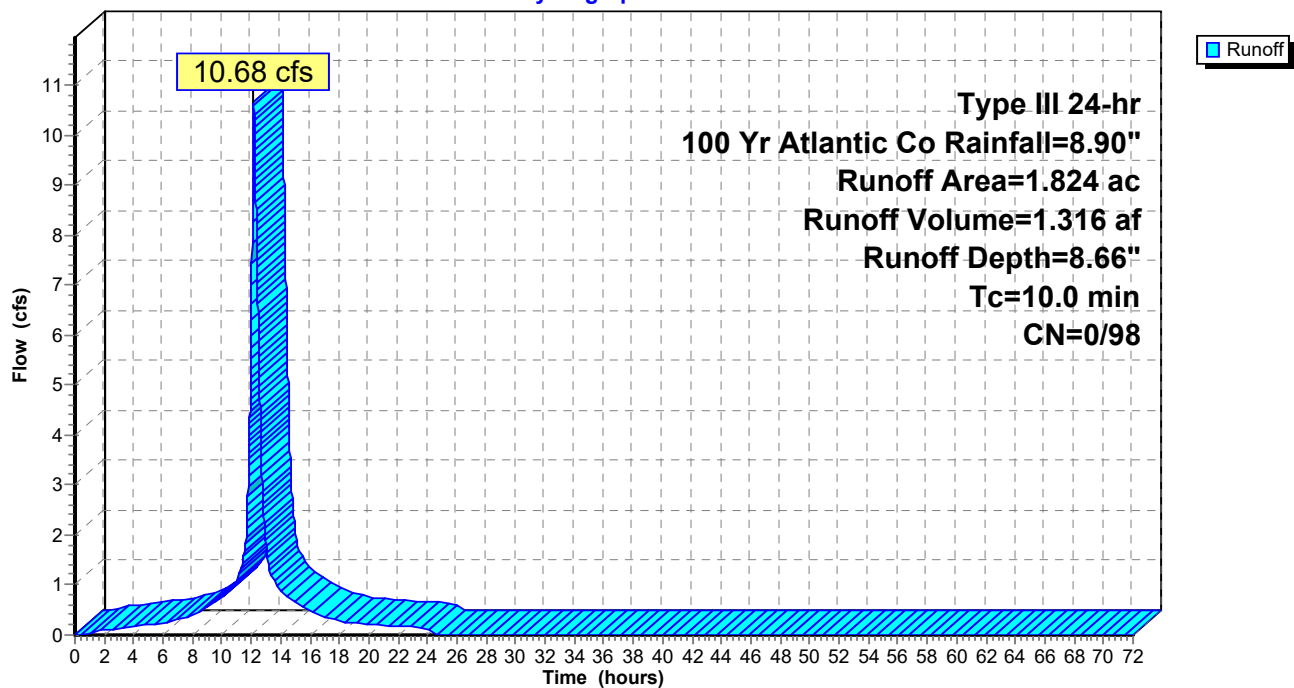
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.990	98	Paved parking, HSG B
0.834	98	Paved parking, HSG D
1.824	98	Weighted Average
1.824	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 2Ci: PRDA-2Ci

Hydrograph



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### Summary for Subcatchment 2Cp: PRDA-2Cp

Runoff = 5.62 cfs @ 12.16 hrs, Volume= 0.612 af, Depth= 5.25"

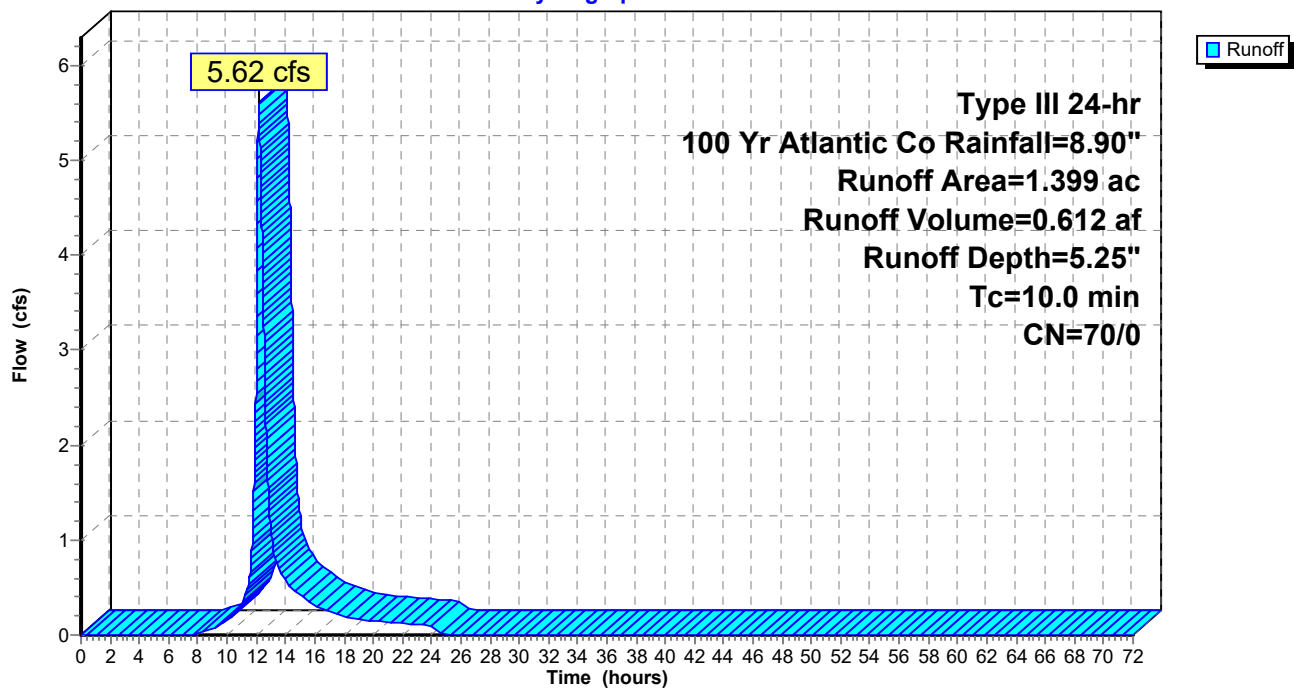
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.725	61	>75% Grass cover, Good, HSG B
0.674	80	>75% Grass cover, Good, HSG D
1.399	70	Weighted Average
1.399	70	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 2Cp: PRDA-2Cp

Hydrograph



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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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### Summary for Subcatchment Bdg1: BLDG-1

Runoff = 1.67 cfs @ 12.15 hrs, Volume= 0.206 af, Depth= 8.66"

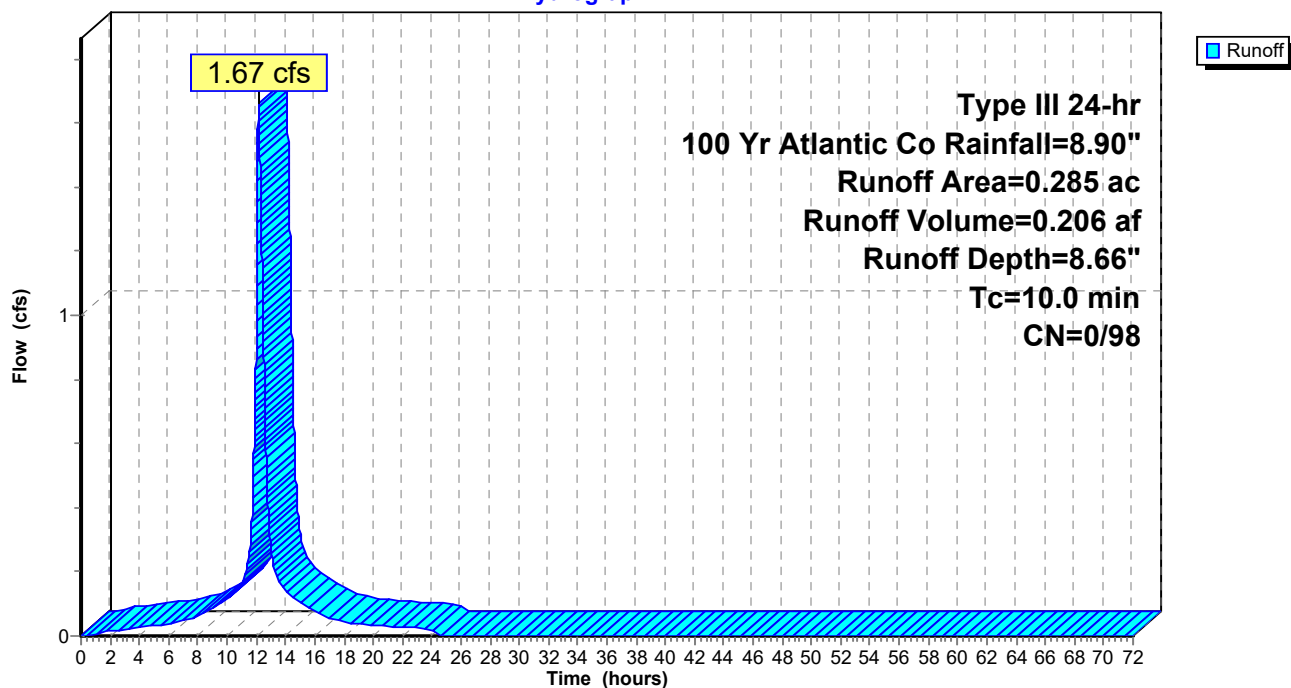
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.285	98	Roofs, HSG B
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg1: BLDG-1

Hydrograph



## Post Developed Conditions

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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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### Summary for Subcatchment Bdg2: BLDG-2

Runoff = 1.67 cfs @ 12.15 hrs, Volume= 0.206 af, Depth= 8.66"

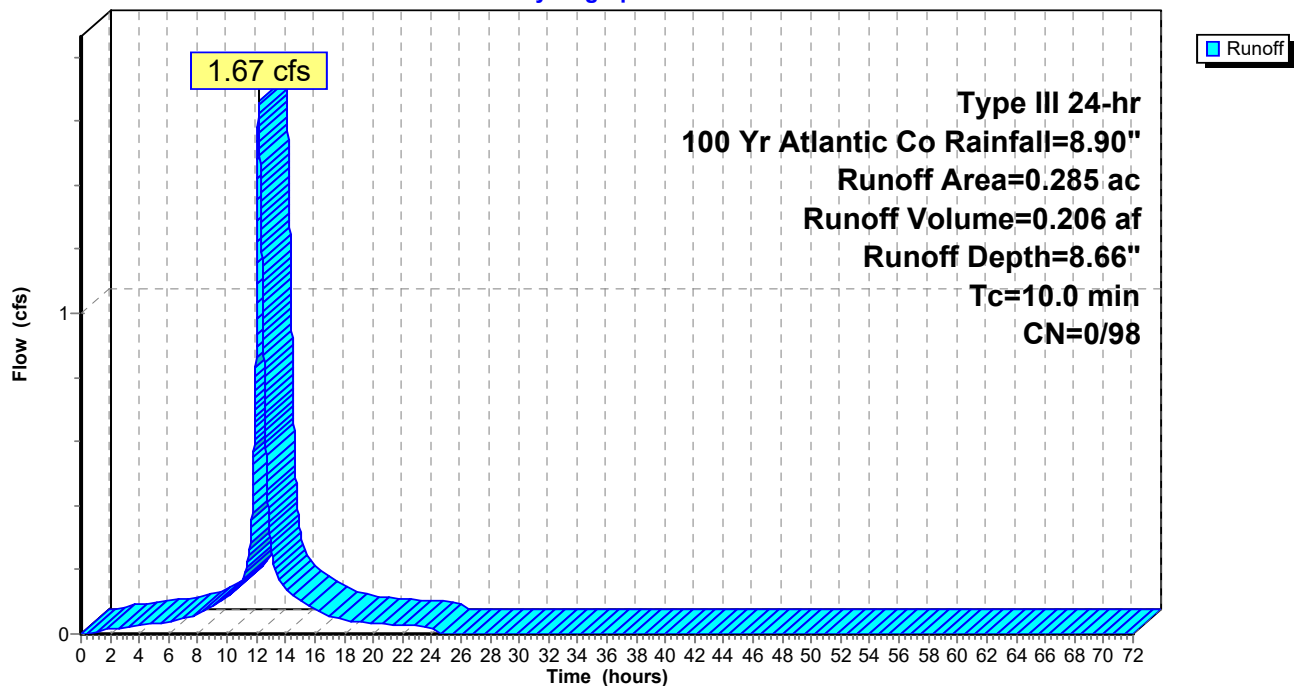
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.285	98	Roofs, HSG B
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg2: BLDG-2

Hydrograph



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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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### Summary for Subcatchment Bdg3: BLDG-3

Runoff = 1.67 cfs @ 12.15 hrs, Volume= 0.206 af, Depth= 8.66"

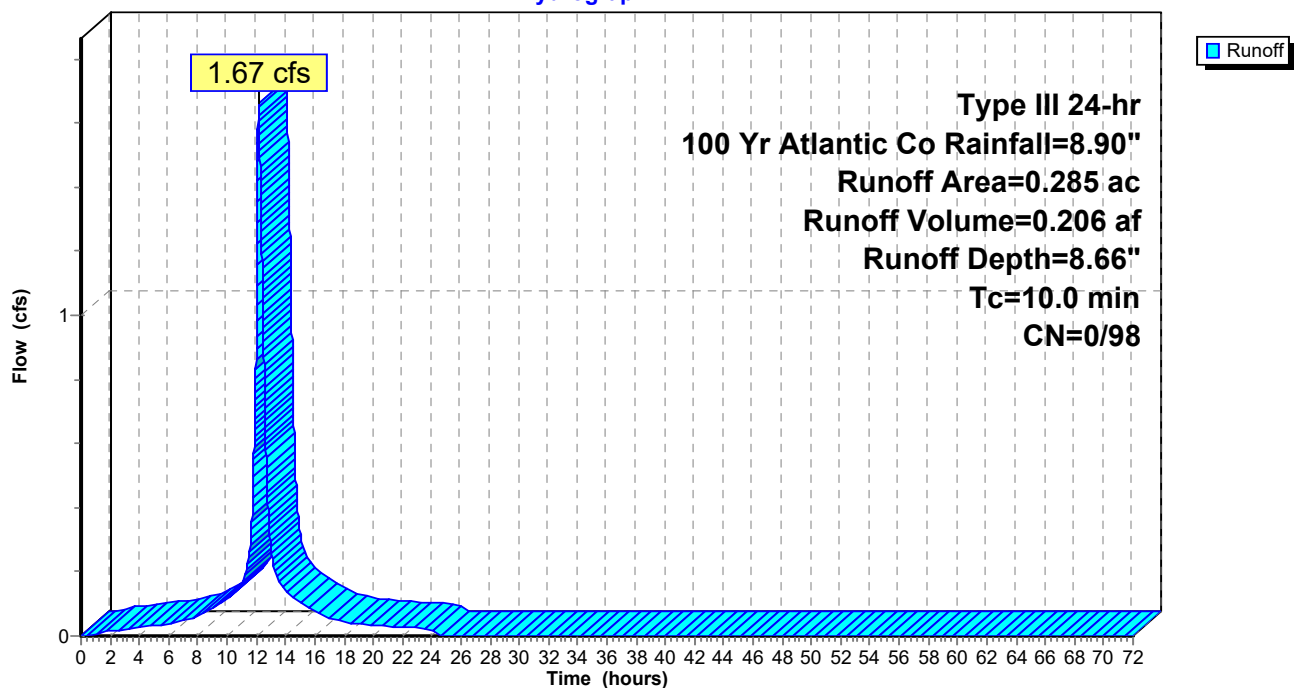
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.285	98	Roofs, HSG B
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg3: BLDG-3

Hydrograph



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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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### Summary for Subcatchment Bdg4: BLDG-4

Runoff = 1.67 cfs @ 12.15 hrs, Volume= 0.206 af, Depth= 8.66"

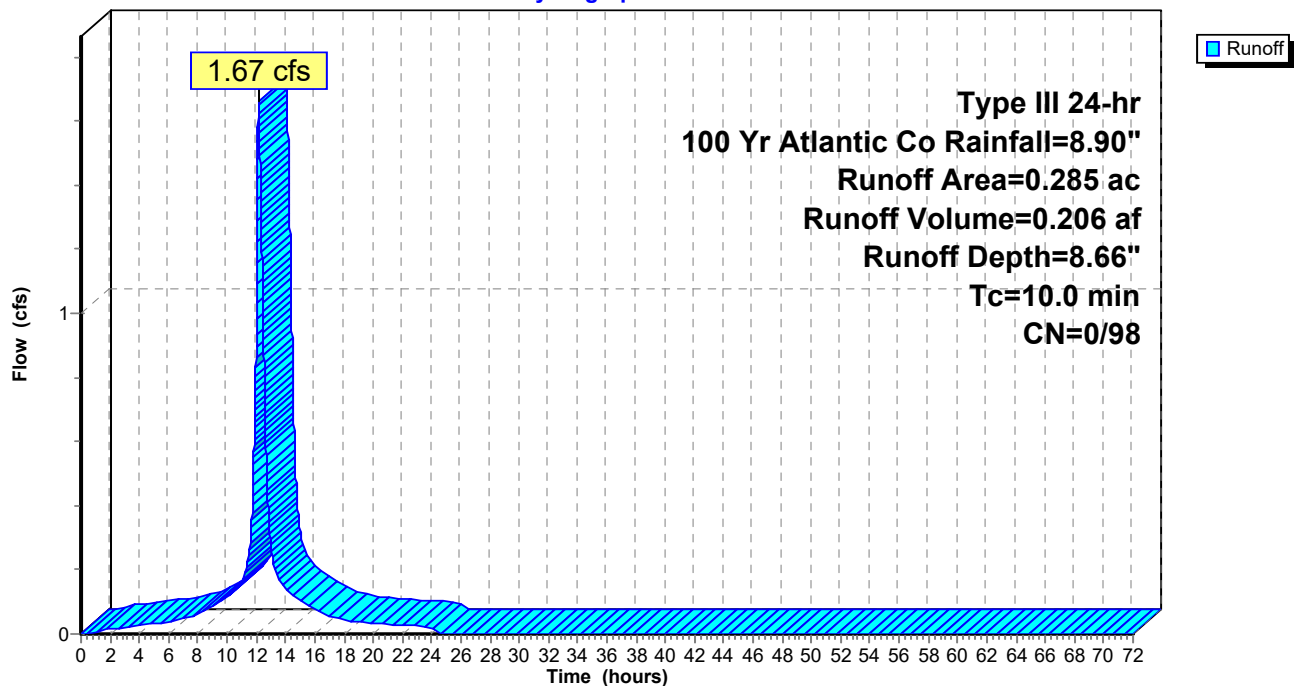
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.285	98	Roofs, HSG D
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg4: BLDG-4

Hydrograph



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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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### Summary for Subcatchment Bdg5: BLDG-5

Runoff = 1.67 cfs @ 12.15 hrs, Volume= 0.206 af, Depth= 8.66"

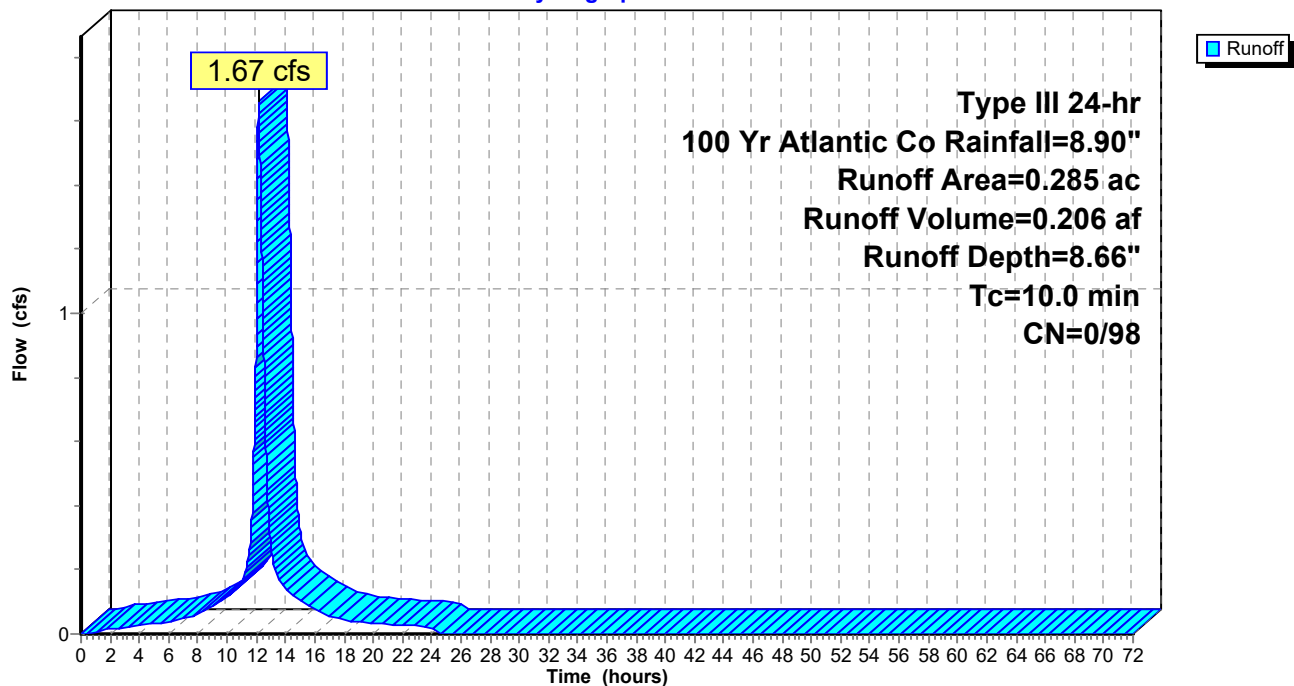
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.285	98	Roofs, HSG D
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg5: BLDG-5

Hydrograph



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### Summary for Subcatchment Bdg6: BLDG-6

Runoff = 1.67 cfs @ 12.15 hrs, Volume= 0.206 af, Depth= 8.66"

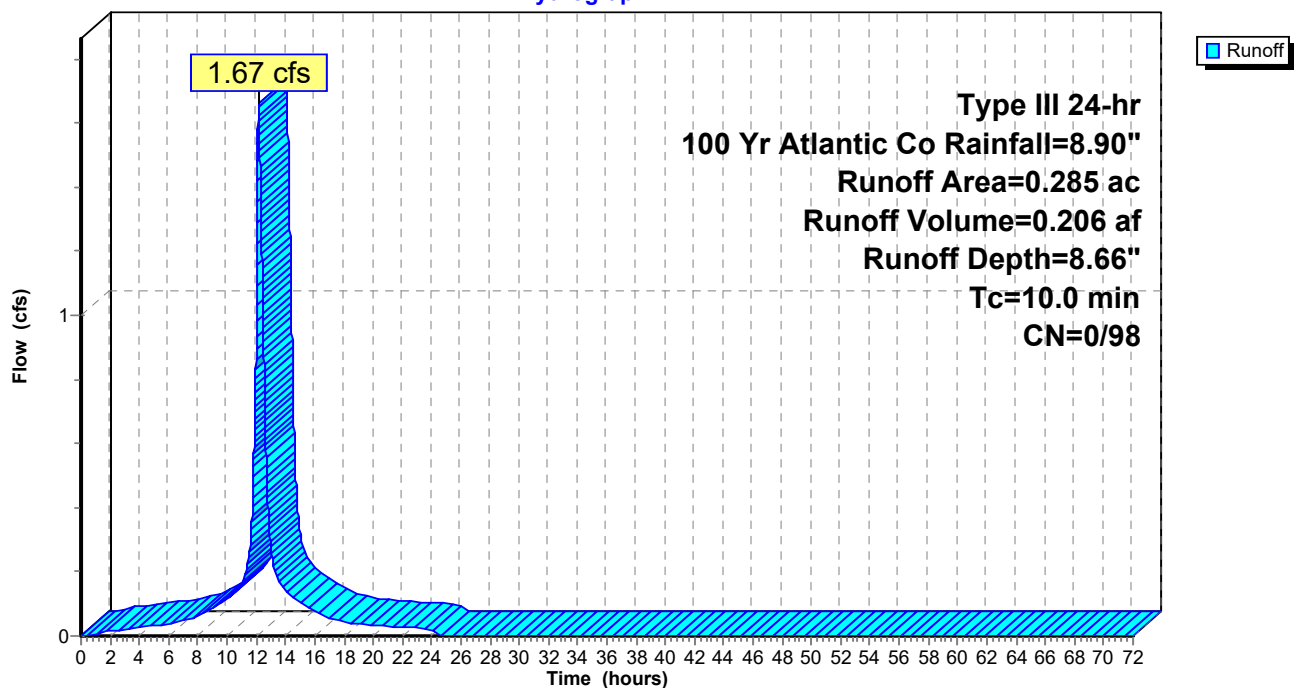
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.285	98	Roofs, HSG D
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg6: BLDG-6

Hydrograph



**Post Developed Conditions**

Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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**Summary for Pond 1B: Basin 1B**

Inflow Area = 1.037 ac, 66.83% Impervious, Inflow Depth = 7.36" for 100 Yr Atlantic Co event  
 Inflow = 5.30 cfs @ 12.16 hrs, Volume= 0.636 af  
 Outflow = 5.24 cfs @ 12.19 hrs, Volume= 0.573 af, Atten= 1%, Lag= 1.8 min  
 Primary = 5.24 cfs @ 12.19 hrs, Volume= 0.573 af

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 7.73' @ 12.19 hrs Surf.Area= 3,441 sf Storage= 3,496 cf

Plug-Flow detention time= 97.0 min calculated for 0.573 af (90% of inflow)  
 Center-of-Mass det. time= 46.7 min ( 815.3 - 768.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	6.20'	6,627 cf	<b>Proposed Contours (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.20	1,170	0	0
7.00	2,335	1,402	1,402
8.00	3,860	3,098	4,500
8.50	4,650	2,128	6,627

Device	Routing	Invert	Outlet Devices
#1	Primary	3.75'	<b>15.0" Round 15" Culvert</b> L= 48.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 3.75' / 3.36' S= 0.0081 ' S= 0.0081 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	7.50'	<b>48.0" x 42.0" Horiz. Type E Inlet</b> C= 0.600 Limited to weir flow at low heads
#3	Primary	7.75'	<b>10' Wide Broadcrested Weir, Cv= 3.10 (C= 3.88)</b> Head (feet) 0.00 0.25 0.50 0.75 1.00 Width (feet) 10.00 11.50 13.00 14.50 16.00

**Primary OutFlow** Max=5.23 cfs @ 12.19 hrs HW=7.72' TW=0.00' (Dynamic Tailwater)

1=15" Culvert (Passes 5.23 cfs of 10.74 cfs potential flow)  
 2=Type E Inlet (Weir Controls 5.23 cfs @ 1.55 fps)  
 3=10' Wide Broadcrested Weir ( Controls 0.00 cfs)

## Post Developed Conditions

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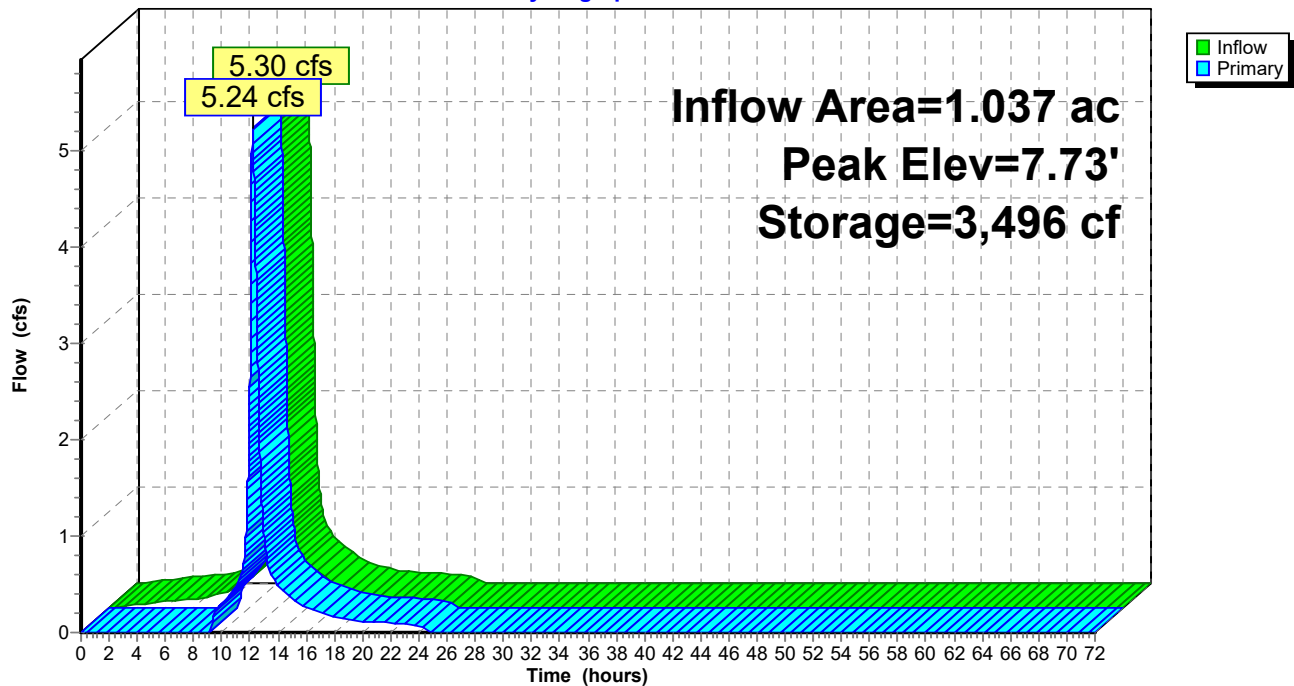
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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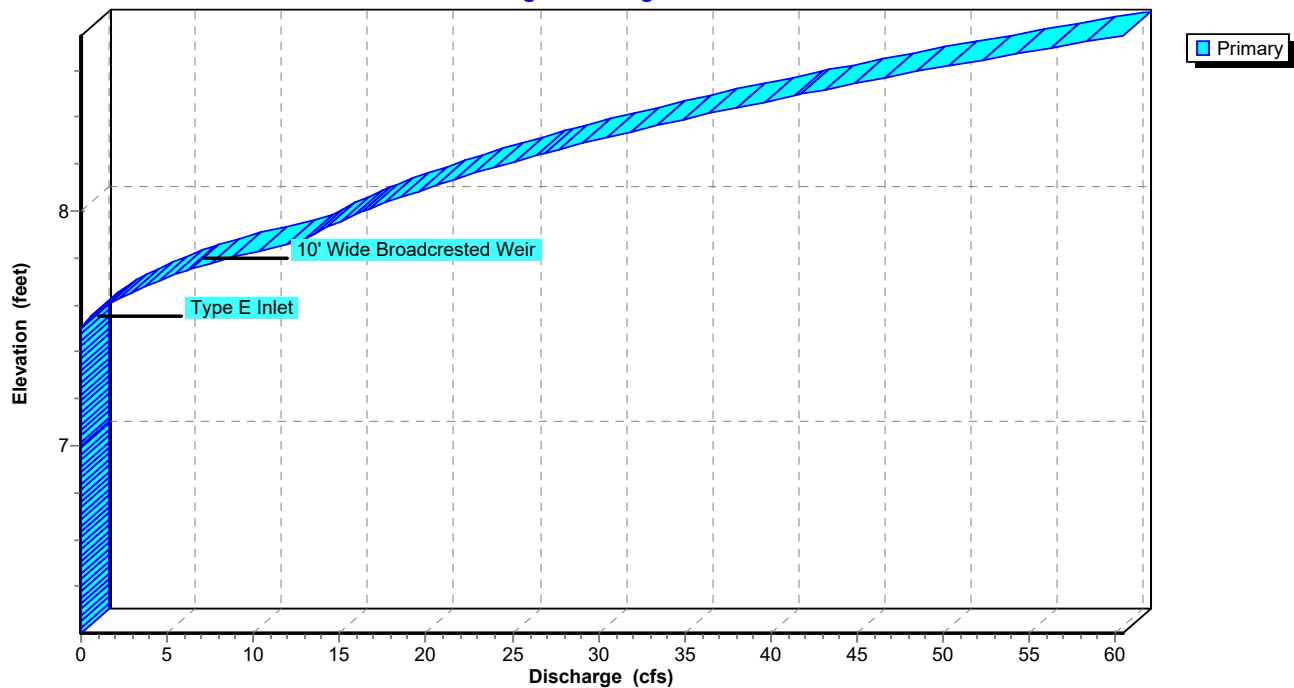
### Pond 1B: Basin 1B

Hydrograph



### Pond 1B: Basin 1B

Stage-Discharge



## Post Developed Conditions

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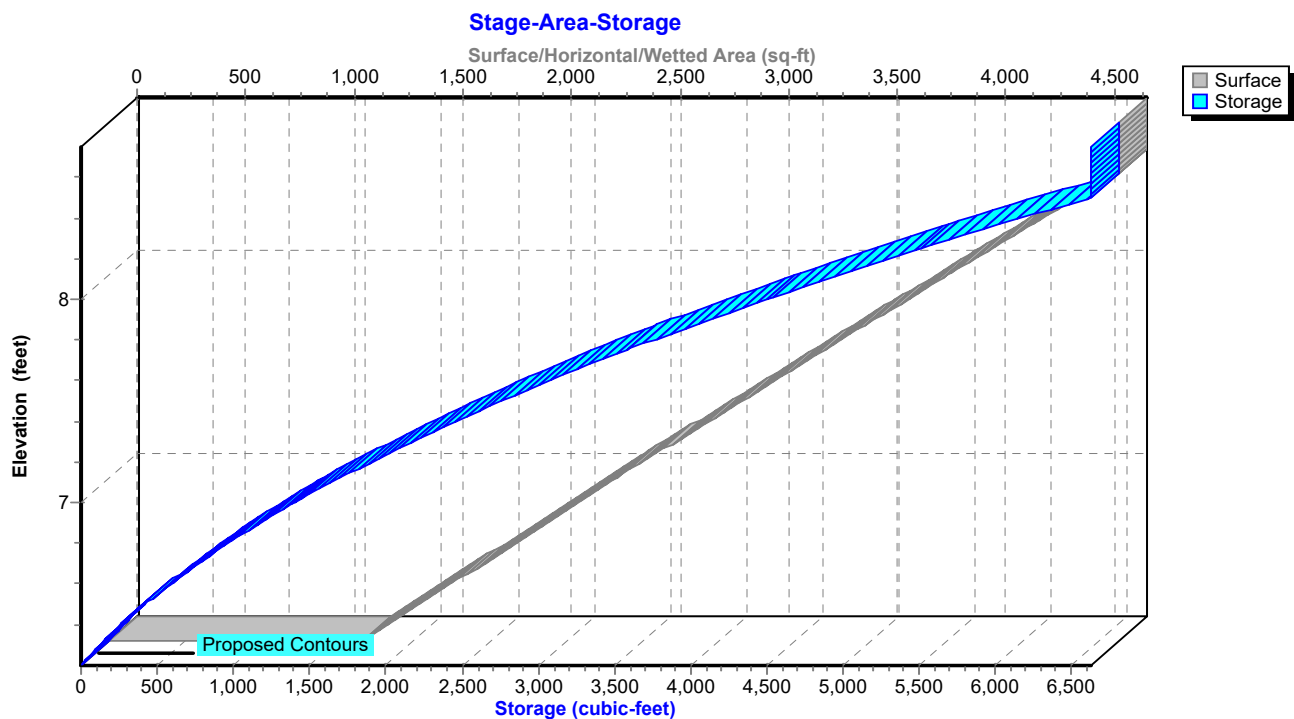
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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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### Pond 1B: Basin 1B



**Post Developed Conditions**

Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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**Summary for Pond 2C: Basin 2C**

Inflow Area = 4.018 ac, 59.86% Impervious, Inflow Depth = 7.32" for 100 Yr Atlantic Co event  
 Inflow = 20.62 cfs @ 12.16 hrs, Volume= 2.450 af  
 Outflow = 8.15 cfs @ 12.63 hrs, Volume= 2.142 af, Atten= 60%, Lag= 28.6 min  
 Primary = 8.15 cfs @ 12.63 hrs, Volume= 2.142 af

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 8.81' @ 12.63 hrs Surf.Area= 31,514 sf Storage= 54,769 cf

Plug-Flow detention time= 477.6 min calculated for 2.142 af (87% of inflow)  
 Center-of-Mass det. time= 418.6 min ( 1,191.4 - 772.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	6.85'	94,944 cf	<b>Proposed Contours (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.85	24,460	0	0
7.00	24,990	3,709	3,709
8.00	28,545	26,768	30,476
9.00	32,215	30,380	60,856
10.00	35,960	34,088	94,944

Device	Routing	Invert	Outlet Devices
#1	Primary	3.00'	<b>15.0" Round 15" Culvert</b> L= 34.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 3.00' / 1.94' S= 0.0312 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	7.30'	<b>4.0" Vert. 4" Orifice</b> C= 0.600
#3	Device 1	8.10'	<b>48.0" W x 42.0" H Vert. Type E Inlet</b> C= 0.600
#4	Primary	9.00'	<b>20' Wide Broadcrested Weir, Cv= 3.10 (C= 3.88)</b> Head (feet) 0.00 0.50 1.00 1.50 Width (feet) 20.00 23.00 26.00 29.00

**Primary OutFlow** Max=8.15 cfs @ 12.63 hrs HW=8.81' TW=0.00' (Dynamic Tailwater)

1=15" Culvert (Passes 8.15 cfs of 13.45 cfs potential flow)  
 2=4" Orifice (Orifice Controls 0.49 cfs @ 5.58 fps)  
 3=Type E Inlet (Orifice Controls 7.66 cfs @ 2.70 fps)  
 4=20' Wide Broadcrested Weir ( Controls 0.00 cfs)

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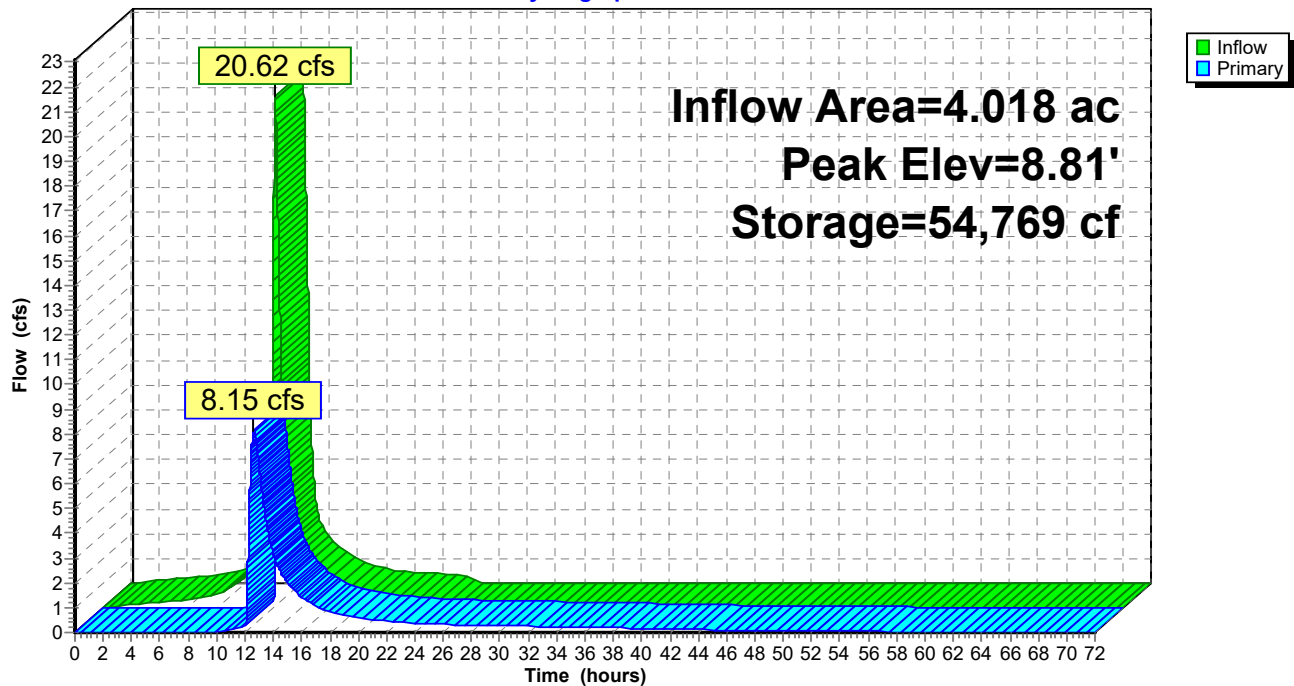
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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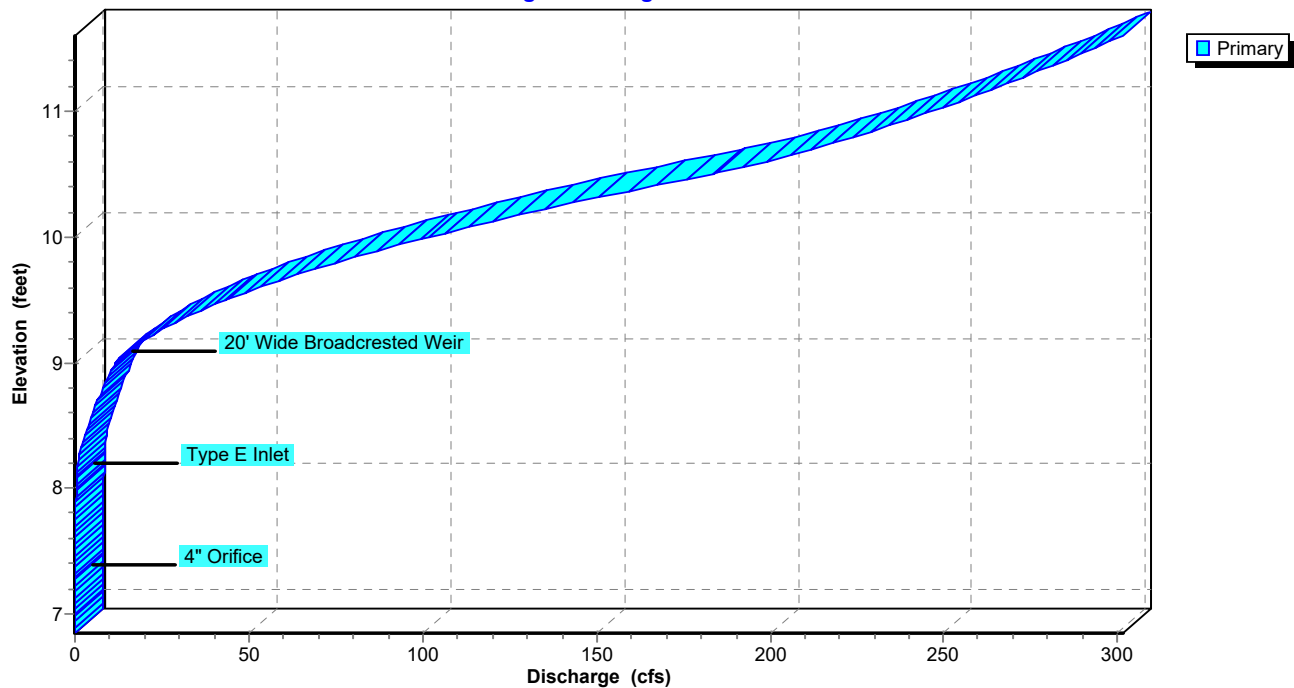
### Pond 2C: Basin 2C

Hydrograph



### Pond 2C: Basin 2C

Stage-Discharge



## Post Developed Conditions

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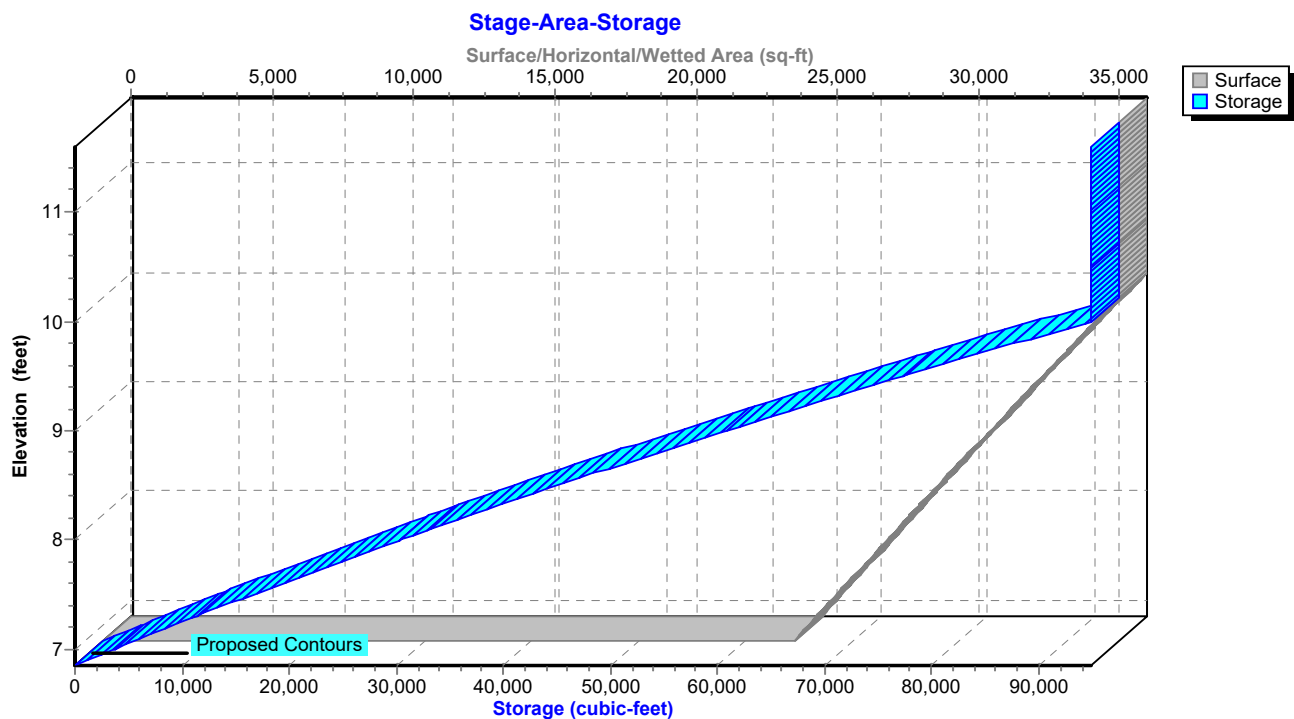
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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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### Pond 2C: Basin 2C



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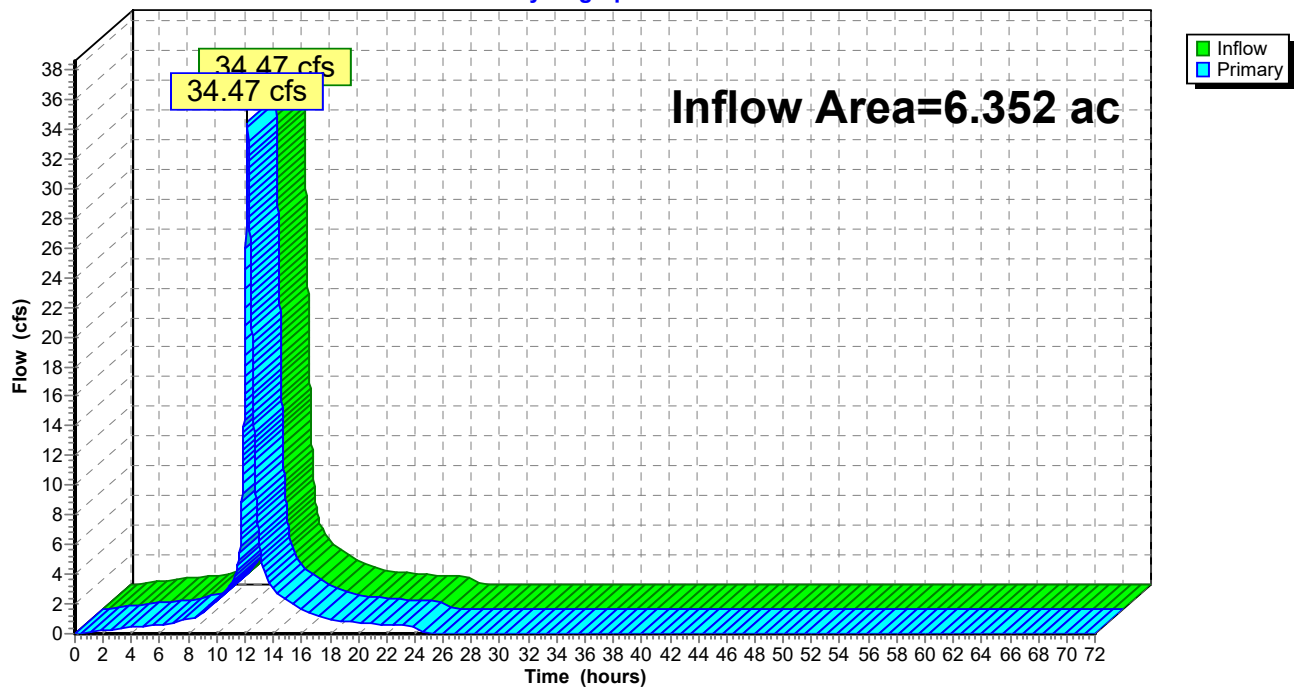
### Summary for Link 1L: PT 1

Inflow Area = 6.352 ac, 82.07% Impervious, Inflow Depth = 7.84" for 100 Yr Atlantic Co event  
Inflow = 34.47 cfs @ 12.16 hrs, Volume= 4.150 af  
Primary = 34.47 cfs @ 12.17 hrs, Volume= 4.150 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Link 1L: PT 1

Hydrograph



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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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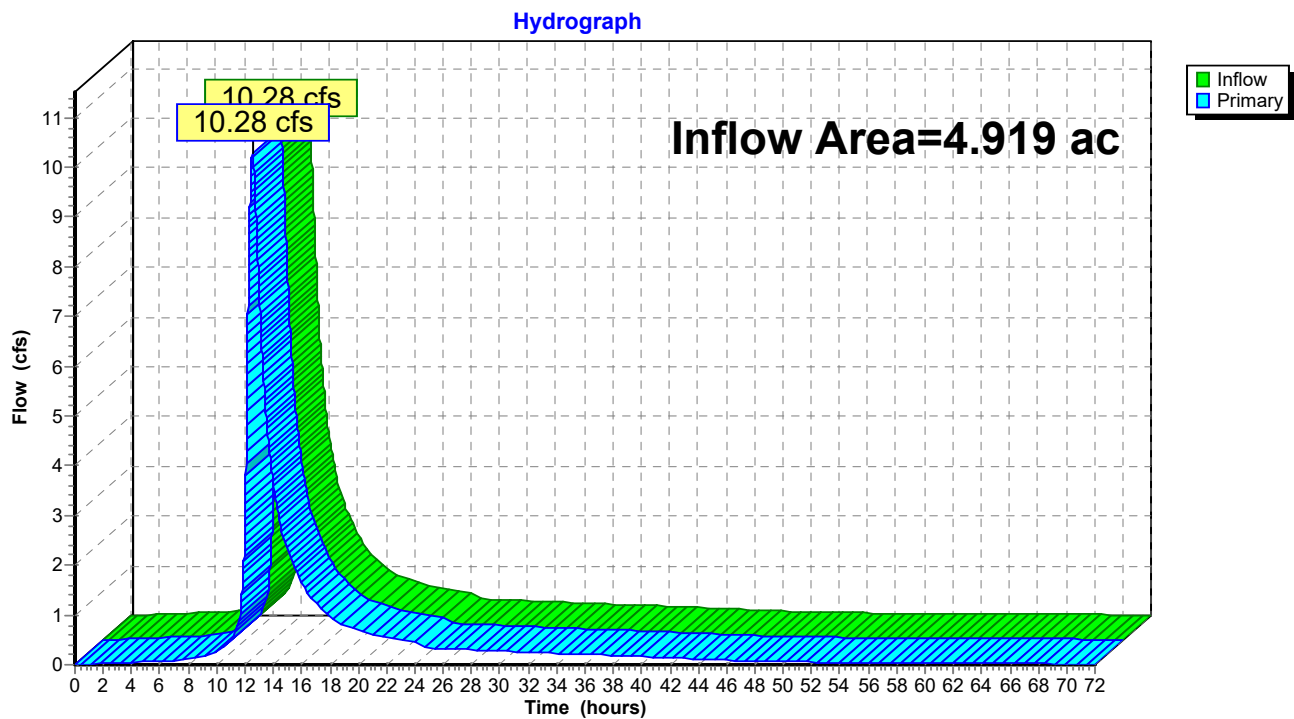
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### Summary for Link 2L: PT 2

Inflow Area = 4.919 ac, 59.10% Impervious, Inflow Depth > 6.54" for 100 Yr Atlantic Co event  
Inflow = 10.28 cfs @ 12.52 hrs, Volume= 2.683 af  
Primary = 10.28 cfs @ 12.53 hrs, Volume= 2.683 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Link 2L: PT 2



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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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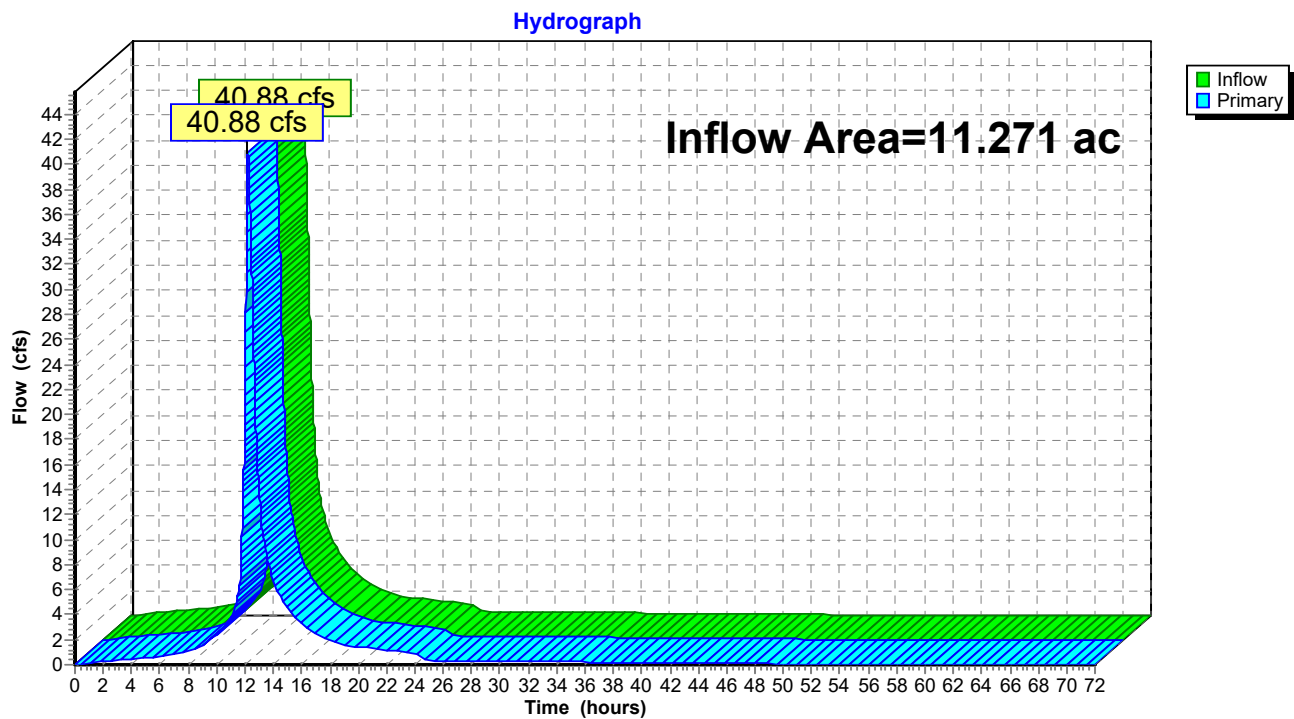
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### Summary for Link 4L: TTA

Inflow Area = 11.271 ac, 72.04% Impervious, Inflow Depth > 7.27" for 100 Yr Atlantic Co event  
Inflow = 40.88 cfs @ 12.19 hrs, Volume= 6.833 af  
Primary = 40.88 cfs @ 12.20 hrs, Volume= 6.833 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Link 4L: TTA



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NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.

Reach routing by Sim-Route method - Pond routing by Sim-Route method w/Net Flows

<b>Subcatchment1Ai: PRDA-1Ai</b>	Runoff Area=2.810 ac 100.00% Impervious Runoff Depth=1.03" Flow Length=1,354' Tc=10.0 min CN=0/98 Runoff=5.25 cfs 0.242 af
<b>Subcatchment1Ap: PRDA-1Ap</b>	Runoff Area=0.795 ac 0.00% Impervious Runoff Depth=0.01" Flow Length=1,354' Tc=10.0 min CN=66/0 Runoff=0.01 cfs 0.001 af
<b>Subcatchment1Bi: PRDA-1Bi</b>	Runoff Area=0.693 ac 100.00% Impervious Runoff Depth=1.03" Tc=10.0 min CN=0/98 Runoff=1.29 cfs 0.060 af
<b>Subcatchment1Bp: PRDA-1Bp</b>	Runoff Area=0.344 ac 0.00% Impervious Runoff Depth=0.01" Tc=10.0 min CN=66/0 Runoff=0.01 cfs 0.000 af
<b>Subcatchment2Ai: PRDA-2Ai</b>	Runoff Area=0.502 ac 100.00% Impervious Runoff Depth=1.03" Flow Length=352' Tc=10.0 min CN=0/98 Runoff=0.94 cfs 0.043 af
<b>Subcatchment2Ap: PRDA-2Ap</b>	Runoff Area=0.399 ac 0.00% Impervious Runoff Depth=0.04" Flow Length=352' Tc=10.0 min CN=71/0 Runoff=0.02 cfs 0.001 af
<b>Subcatchment2Bi: PRDA-2Bi</b>	Runoff Area=0.581 ac 100.00% Impervious Runoff Depth=1.03" Tc=10.0 min CN=0/98 Runoff=1.08 cfs 0.050 af
<b>Subcatchment2Bp: PRDA-2Bp</b>	Runoff Area=0.214 ac 0.00% Impervious Runoff Depth=0.07" Tc=10.0 min CN=74/0 Runoff=0.02 cfs 0.001 af
<b>Subcatchment2Ci: PRDA-2Ci</b>	Runoff Area=1.824 ac 100.00% Impervious Runoff Depth=1.03" Tc=10.0 min CN=0/98 Runoff=3.41 cfs 0.157 af
<b>Subcatchment2Cp: PRDA-2Cp</b>	Runoff Area=1.399 ac 0.00% Impervious Runoff Depth=0.03" Tc=10.0 min CN=70/0 Runoff=0.06 cfs 0.004 af
<b>SubcatchmentBdg1: BLDG-1</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=1.03" Tc=10.0 min CN=0/98 Runoff=0.53 cfs 0.025 af
<b>SubcatchmentBdg2: BLDG-2</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=1.03" Tc=10.0 min CN=0/98 Runoff=0.53 cfs 0.025 af
<b>SubcatchmentBdg3: BLDG-3</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=1.03" Tc=10.0 min CN=0/98 Runoff=0.53 cfs 0.025 af
<b>SubcatchmentBdg4: BLDG-4</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=1.03" Tc=10.0 min CN=0/98 Runoff=0.53 cfs 0.025 af
<b>SubcatchmentBdg5: BLDG-5</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=1.03" Tc=10.0 min CN=0/98 Runoff=0.53 cfs 0.025 af
<b>SubcatchmentBdg6: BLDG-6</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=1.03" Tc=10.0 min CN=0/98 Runoff=0.53 cfs 0.025 af

## Post Developed Conditions

NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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### Pond 1B: Basin 1B

Peak Elev=7.45' Storage=2,614 cf Inflow=1.29 cfs 0.060 af  
Outflow=0.00 cfs 0.000 af

### Pond 2C: Basin 2C

Peak Elev=7.22' Storage=9,256 cf Inflow=4.51 cfs 0.213 af  
Outflow=0.00 cfs 0.000 af

### Link 1L: PT 1

Inflow=8.44 cfs 0.390 af  
Primary=8.44 cfs 0.390 af

### Link 2L: PT 2

Inflow=0.94 cfs 0.045 af  
Primary=0.94 cfs 0.045 af

### Link 4L: TTA

Inflow=9.38 cfs 0.435 af  
Primary=9.38 cfs 0.435 af

**Total Runoff Area = 11.271 ac   Runoff Volume = 0.707 af   Average Runoff Depth = 0.75"**  
**27.96% Pervious = 3.151 ac   72.04% Impervious = 8.120 ac**

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### Summary for Subcatchment 1Ai: PRDA-1Ai

Runoff = 5.25 cfs @ 1.17 hrs, Volume= 0.242 af, Depth= 1.03"

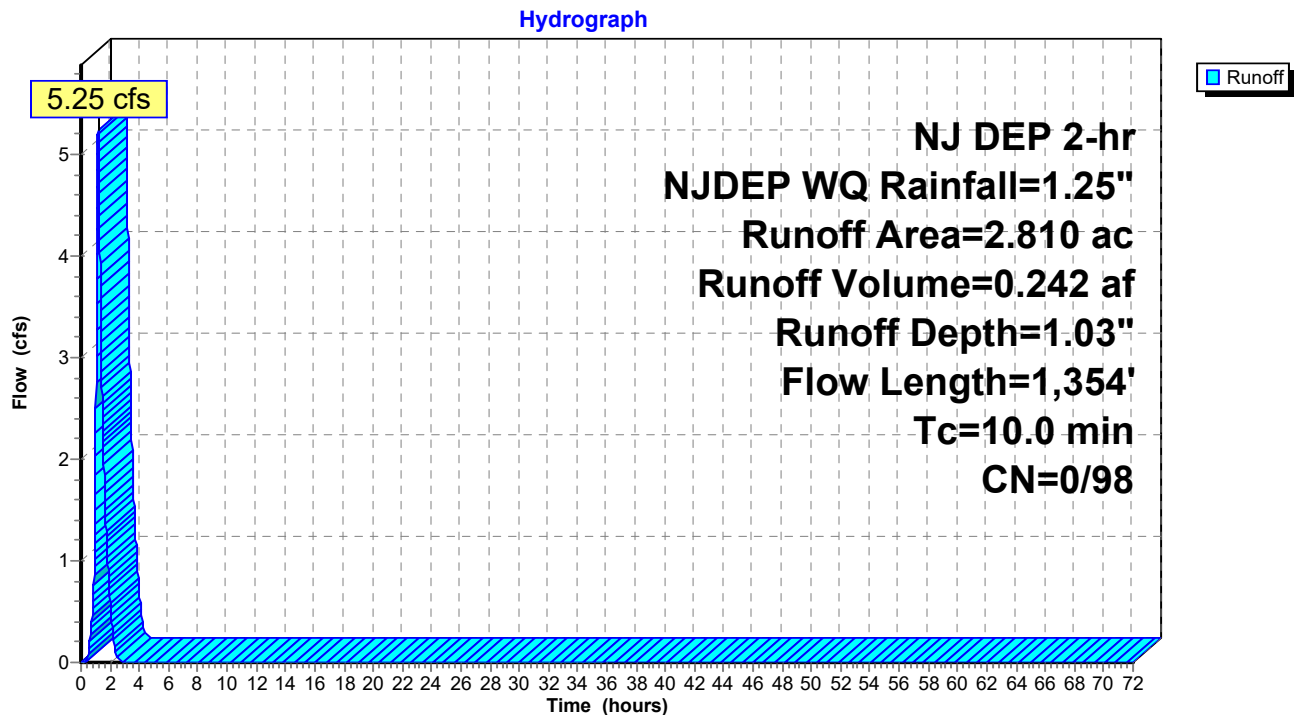
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (ac)	CN	Description
1.113	98	Paved parking, HSG B
1.559	98	Paved parking, HSG D
0.138	98	Unconnected roofs, HSG B
2.810	98	Weighted Average
2.810	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0130	1.19		<b>Sheet Flow, PRDA-1.1</b> Smooth surfaces n= 0.011 P2= 3.36"
6.4	1,254	0.0030	3.26	5.75	<b>Pipe Channel, PRDA-1.2</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
7.8	1,354	Total, Increased to minimum Tc = 10.0 min			

### Subcatchment 1Ai: PRDA-1Ai



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### Summary for Subcatchment 1Ap: PRDA-1Ap

Runoff = 0.01 cfs @ 1.82 hrs, Volume= 0.001 af, Depth= 0.01"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

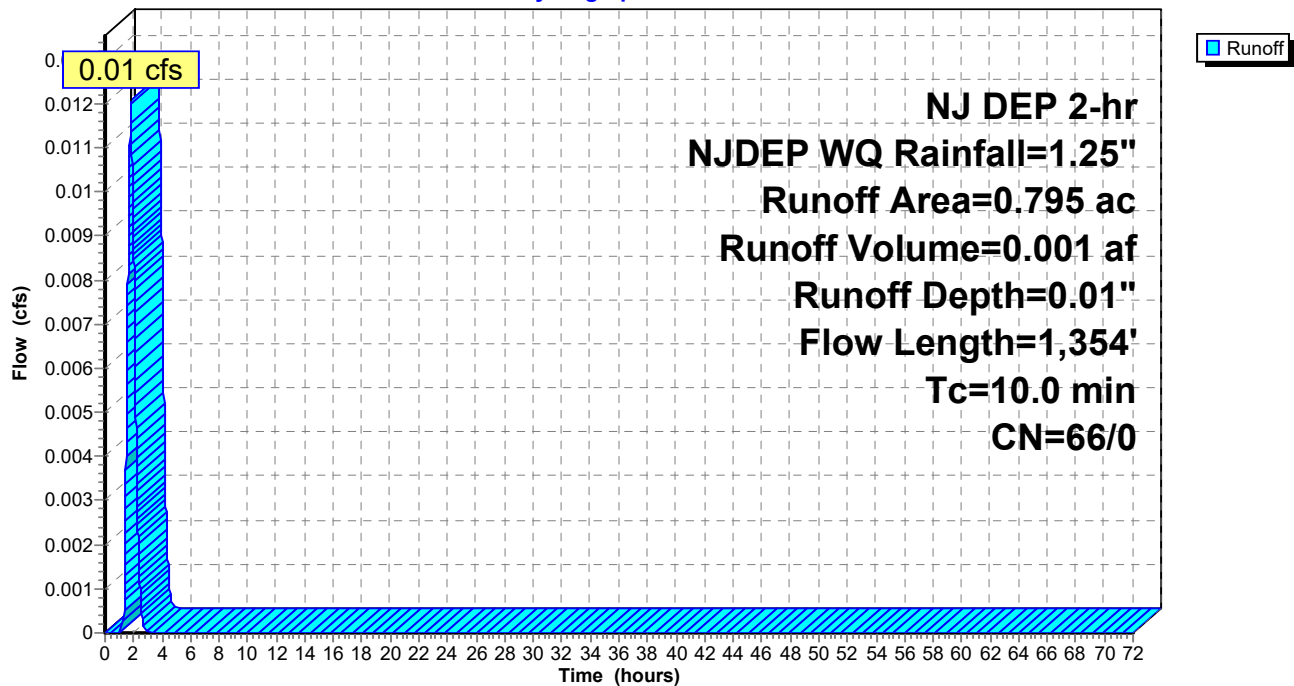
Area (ac)	CN	Description
0.574	61	>75% Grass cover, Good, HSG B
0.221	80	>75% Grass cover, Good, HSG D
0.795	66	Weighted Average
0.795	66	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0130	1.19		<b>Sheet Flow, PRDA-1.1</b> Smooth surfaces n= 0.011 P2= 3.36"
6.4	1,254	0.0030	3.26	5.75	<b>Pipe Channel, PRDA-1.2</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
7.8	1,354	Total, Increased to minimum Tc = 10.0 min			

### Subcatchment 1Ap: PRDA-1Ap

Hydrograph



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NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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### Summary for Subcatchment 1Bi: PRDA-1Bi

Runoff = 1.29 cfs @ 1.17 hrs, Volume= 0.060 af, Depth= 1.03"

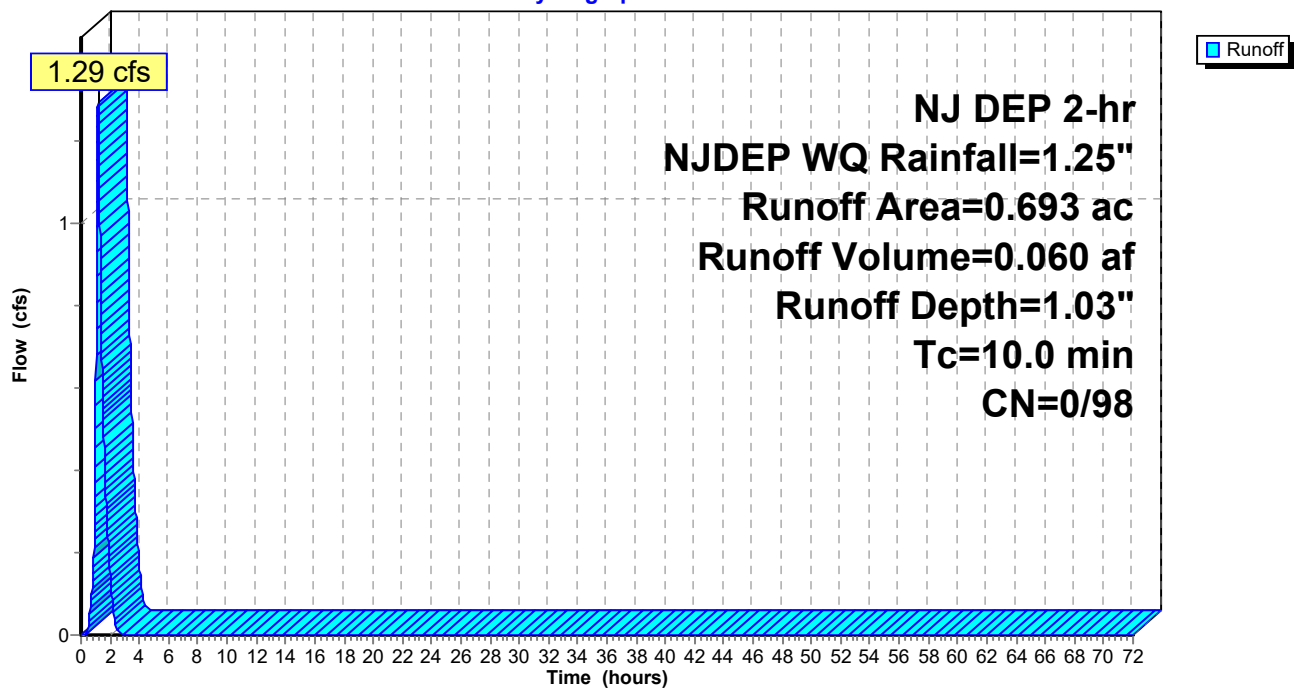
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (ac)	CN	Description
0.293	98	Paved parking, HSG B
0.400	98	Paved parking, HSG D
0.693	98	Weighted Average
0.693	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 1Bi: PRDA-1Bi

Hydrograph



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### Summary for Subcatchment 1Bp: PRDA-1Bp

Runoff = 0.01 cfs @ 1.82 hrs, Volume= 0.000 af, Depth= 0.01"

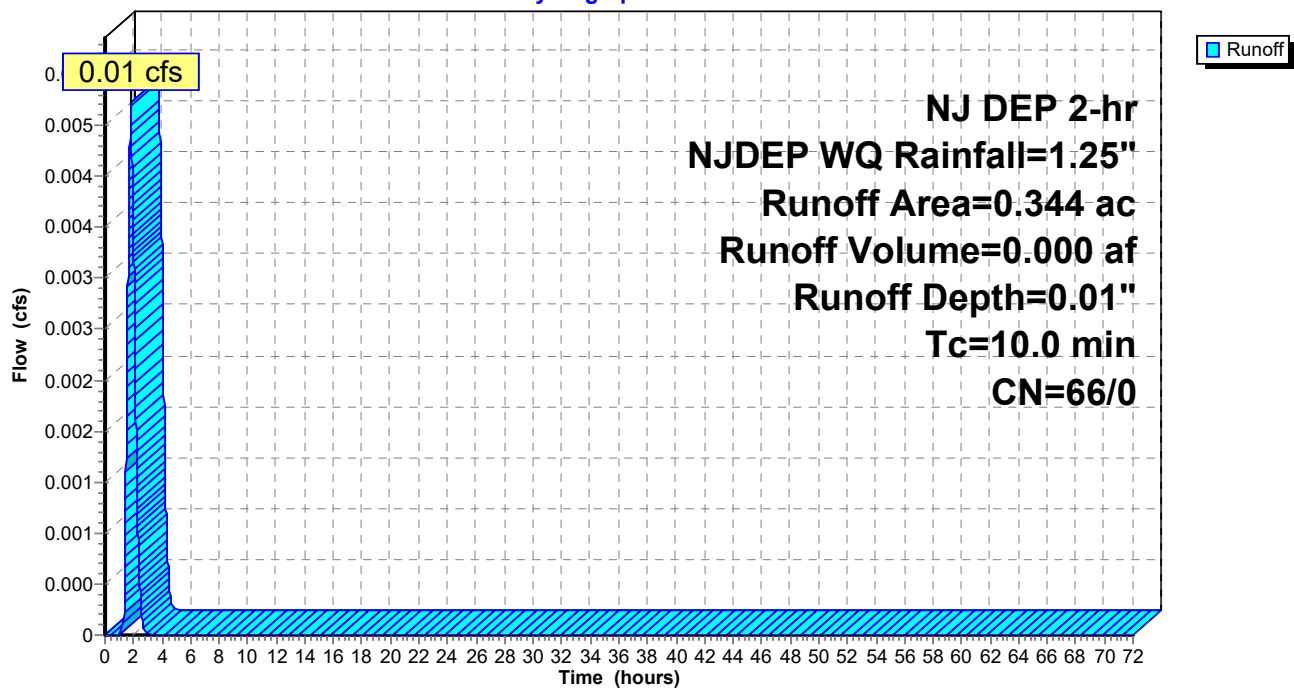
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (ac)	CN	Description
0.262	61	>75% Grass cover, Good, HSG B
0.082	80	>75% Grass cover, Good, HSG D
0.344	66	Weighted Average
0.344	66	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 1Bp: PRDA-1Bp

Hydrograph



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NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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### Summary for Subcatchment 2Ai: PRDA-2Ai

Runoff = 0.94 cfs @ 1.17 hrs, Volume= 0.043 af, Depth= 1.03"

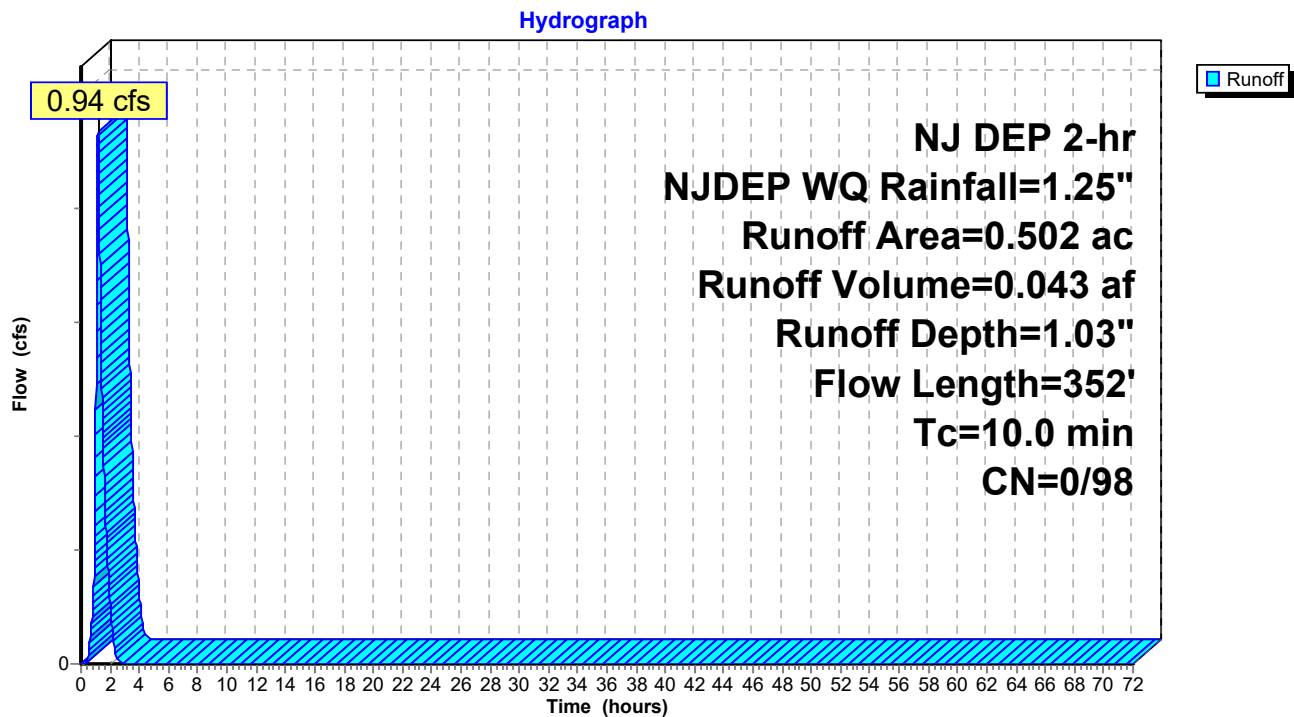
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (ac)	CN	Description
0.281	98	Paved parking, HSG B
0.221	98	Paved parking, HSG D
0.502	98	Weighted Average
0.502	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	89	0.0150	1.23		<b>Sheet Flow, PRDA-2.1</b> Smooth surfaces n= 0.011 P2= 3.36"
1.2	263	0.0050	3.72	4.57	<b>Pipe Channel, PRDA-2.1</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
2.4	352	Total, Increased to minimum Tc = 10.0 min			

### Subcatchment 2Ai: PRDA-2Ai



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### Summary for Subcatchment 2Ap: PRDA-2Ap

Runoff = 0.02 cfs @ 1.60 hrs, Volume= 0.001 af, Depth= 0.04"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

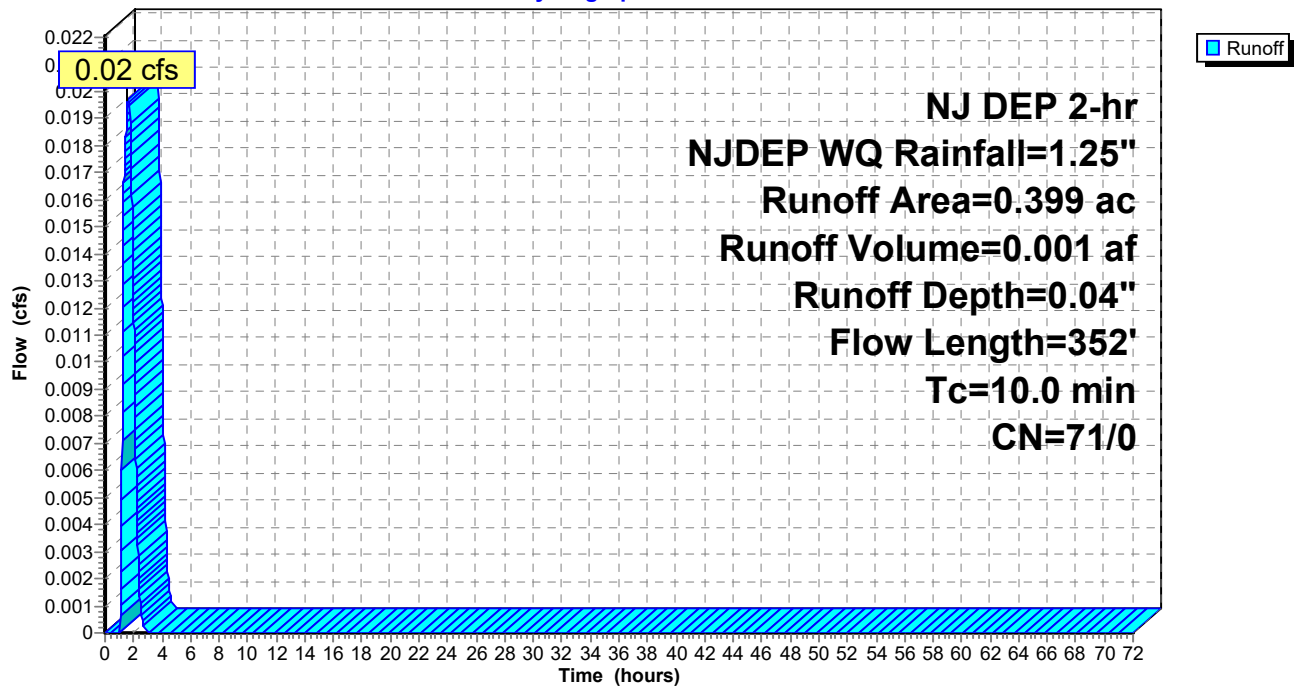
Area (ac)	CN	Description
0.193	61	>75% Grass cover, Good, HSG B
0.206	80	>75% Grass cover, Good, HSG D
0.399	71	Weighted Average
0.399	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	89	0.0150	1.23		<b>Sheet Flow, PRDA-2.1</b> Smooth surfaces n= 0.011 P2= 3.36"
1.2	263	0.0050	3.72	4.57	<b>Pipe Channel, PRDA-2.1</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
2.4	352	Total, Increased to minimum Tc = 10.0 min			

### Subcatchment 2Ap: PRDA-2Ap

Hydrograph



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### Summary for Subcatchment 2Bi: PRDA-2Bi

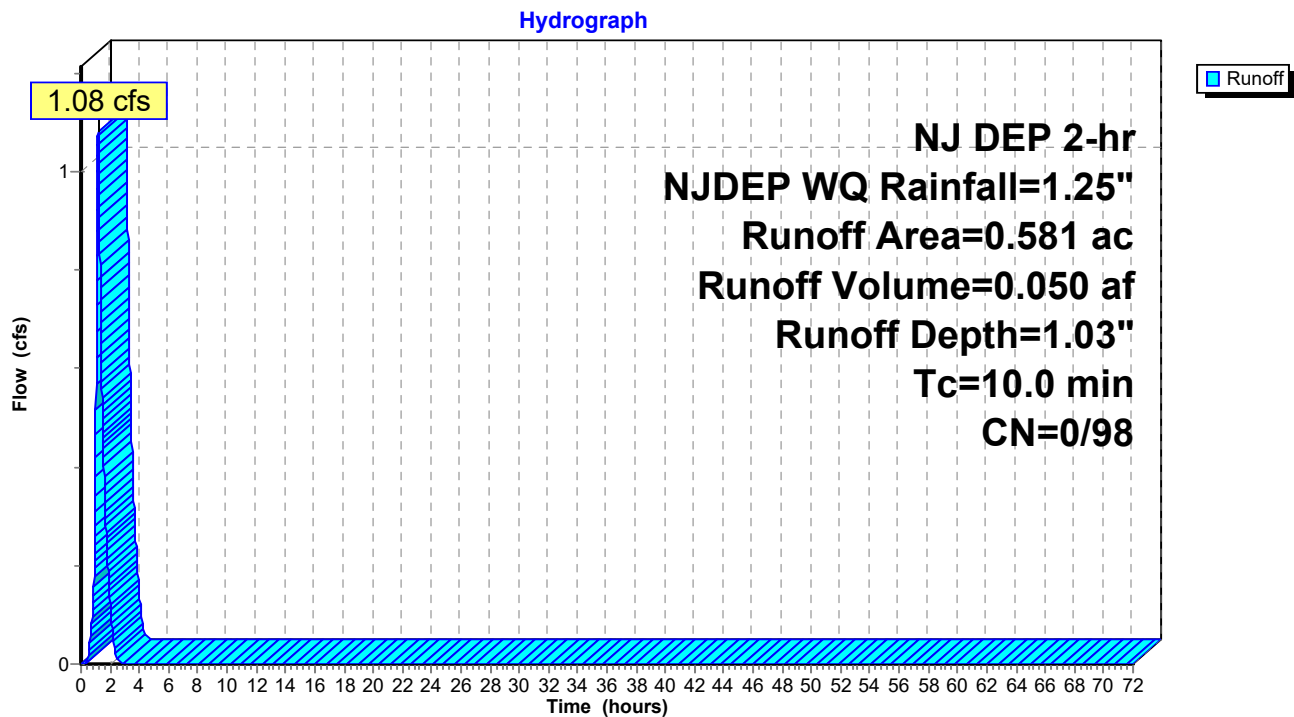
Runoff = 1.08 cfs @ 1.17 hrs, Volume= 0.050 af, Depth= 1.03"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (ac)	CN	Description
0.437	98	Paved parking, HSG B
0.144	98	Paved parking, HSG D
0.581	98	Weighted Average
0.581	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Direct

### Subcatchment 2Bi: PRDA-2Bi



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NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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### Summary for Subcatchment 2Bp: PRDA-2Bp

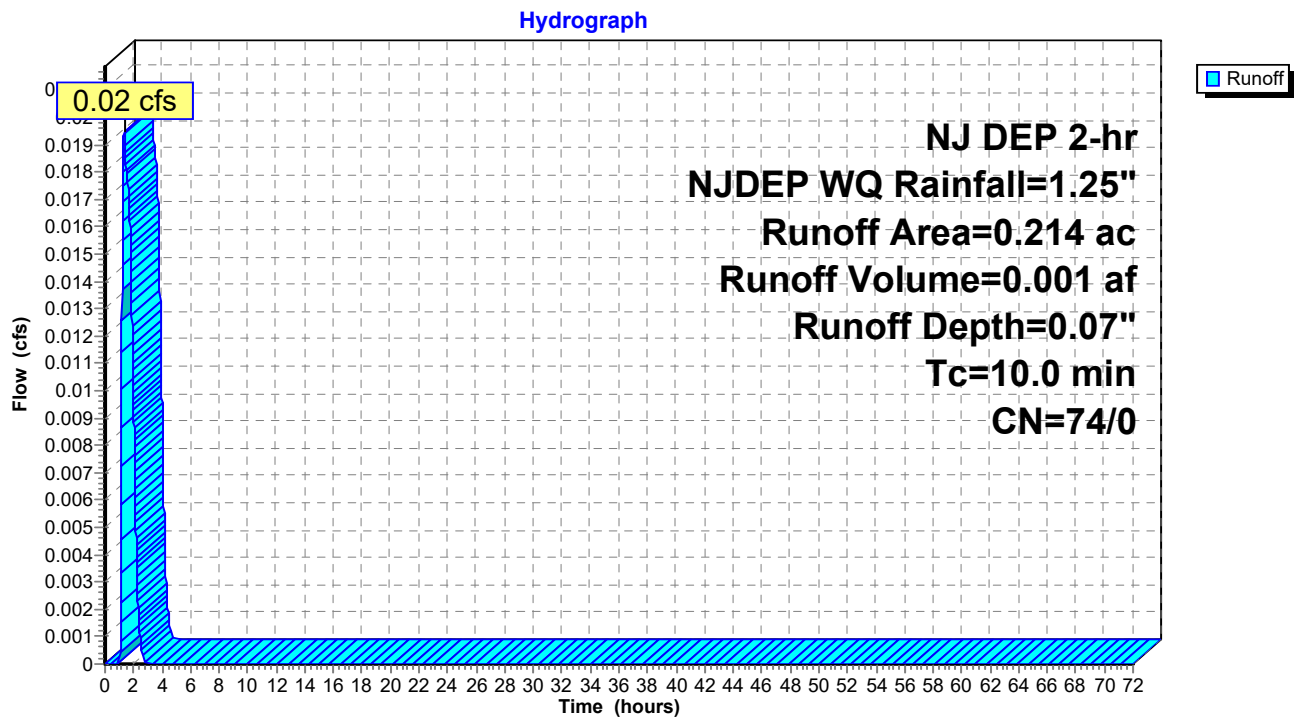
Runoff = 0.02 cfs @ 1.33 hrs, Volume= 0.001 af, Depth= 0.07"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (ac)	CN	Description
0.070	61	>75% Grass cover, Good, HSG B
0.144	80	>75% Grass cover, Good, HSG D
0.214	74	Weighted Average
0.214	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Direct

### Subcatchment 2Bp: PRDA-2Bp



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NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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### Summary for Subcatchment 2Ci: PRDA-2Ci

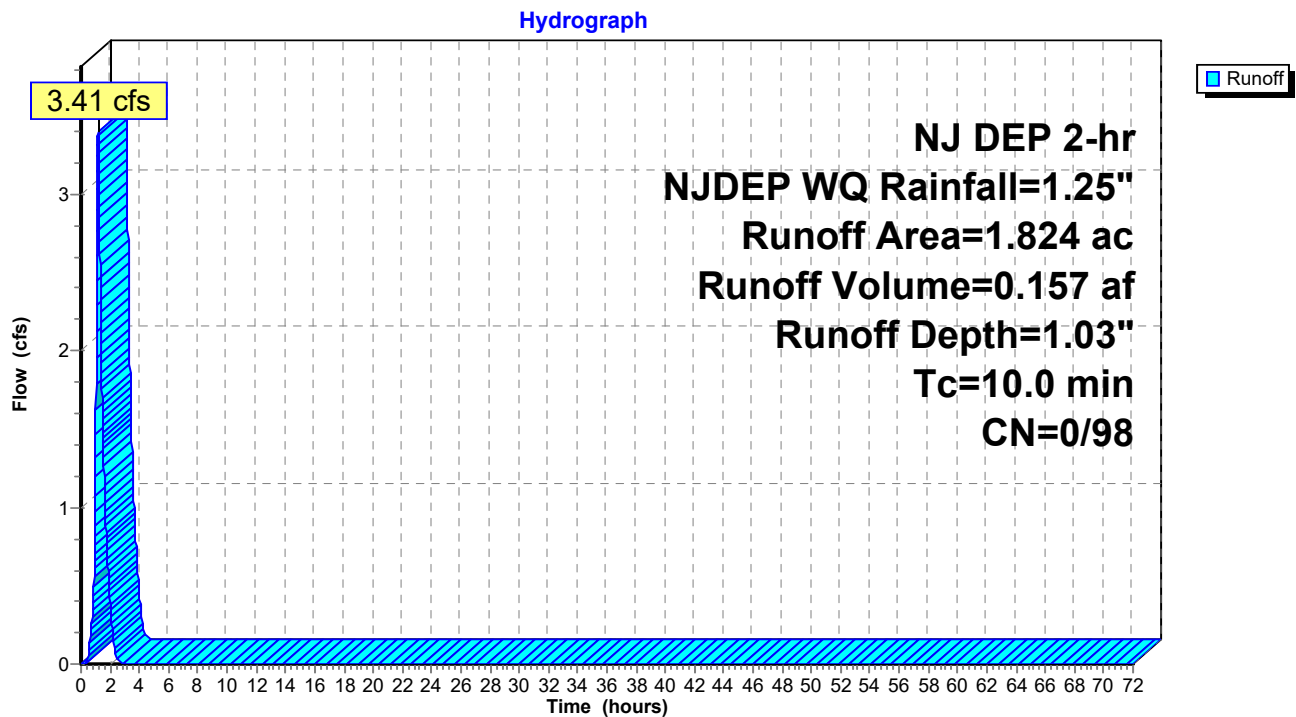
Runoff = 3.41 cfs @ 1.17 hrs, Volume= 0.157 af, Depth= 1.03"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (ac)	CN	Description
0.990	98	Paved parking, HSG B
0.834	98	Paved parking, HSG D
1.824	98	Weighted Average
1.824	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 2Ci: PRDA-2Ci



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NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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### Summary for Subcatchment 2Cp: PRDA-2Cp

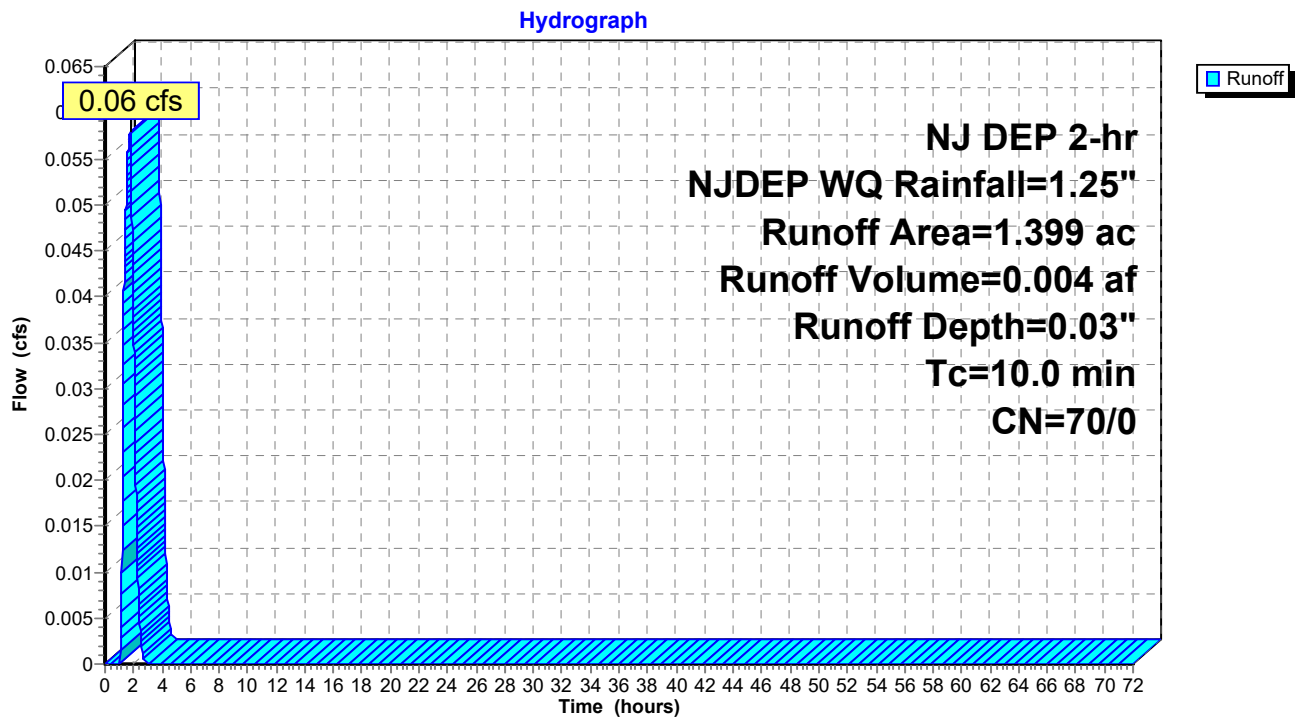
Runoff = 0.06 cfs @ 1.78 hrs, Volume= 0.004 af, Depth= 0.03"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (ac)	CN	Description
0.725	61	>75% Grass cover, Good, HSG B
0.674	80	>75% Grass cover, Good, HSG D
1.399	70	Weighted Average
1.399	70	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 2Cp: PRDA-2Cp



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### Summary for Subcatchment Bdg1: BLDG-1

Runoff = 0.53 cfs @ 1.17 hrs, Volume= 0.025 af, Depth= 1.03"

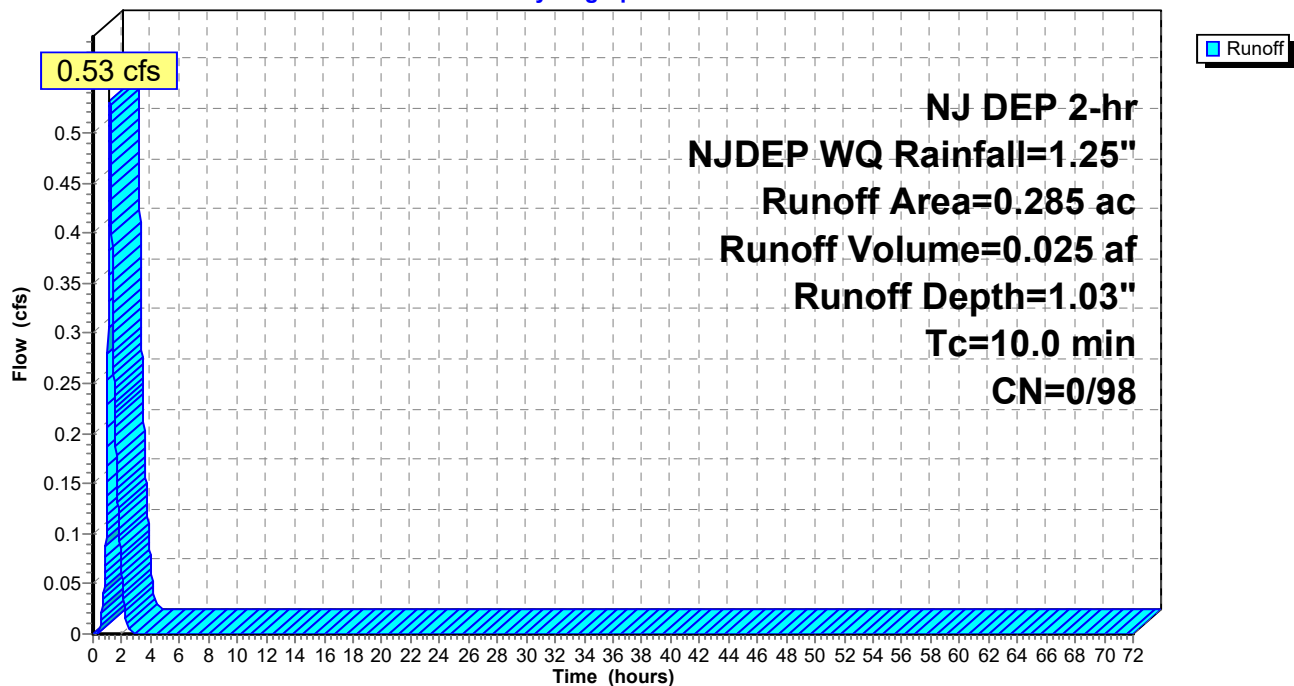
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (ac)	CN	Description
0.285	98	Roofs, HSG B
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg1: BLDG-1

Hydrograph



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### Summary for Subcatchment Bdg2: BLDG-2

Runoff = 0.53 cfs @ 1.17 hrs, Volume= 0.025 af, Depth= 1.03"

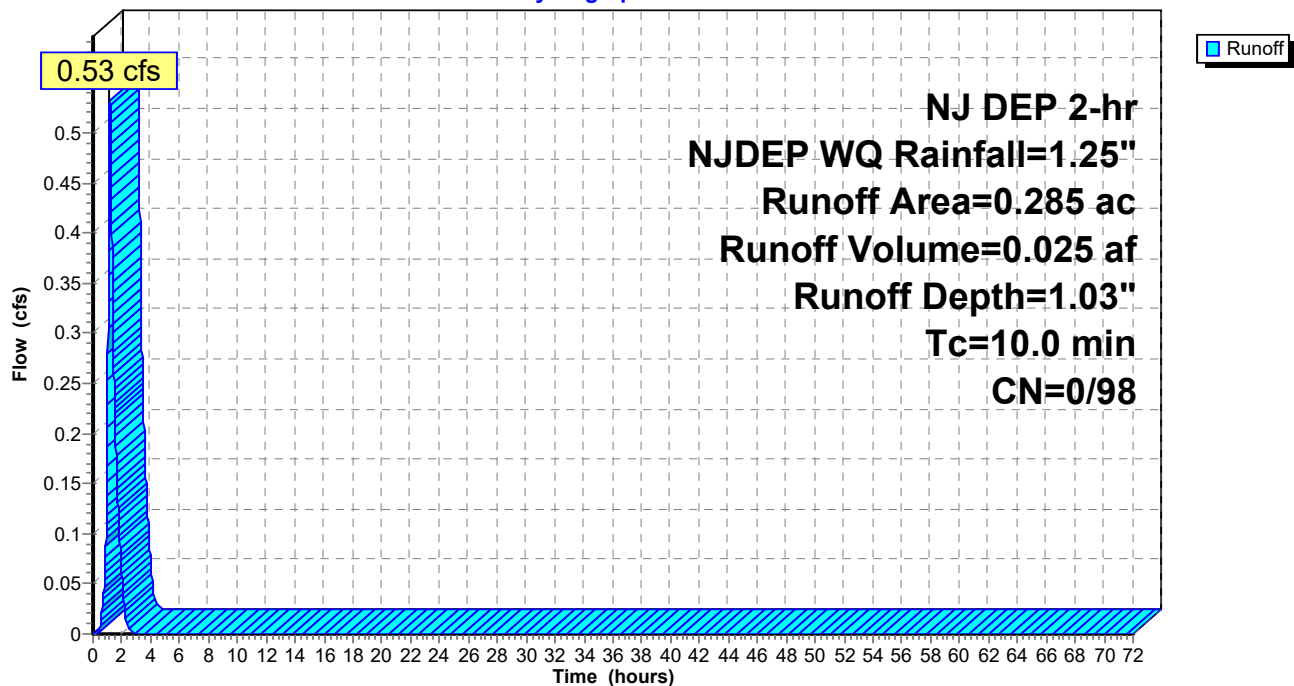
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (ac)	CN	Description
0.285	98	Roofs, HSG B
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg2: BLDG-2

Hydrograph



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NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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### Summary for Subcatchment Bdg3: BLDG-3

Runoff = 0.53 cfs @ 1.17 hrs, Volume= 0.025 af, Depth= 1.03"

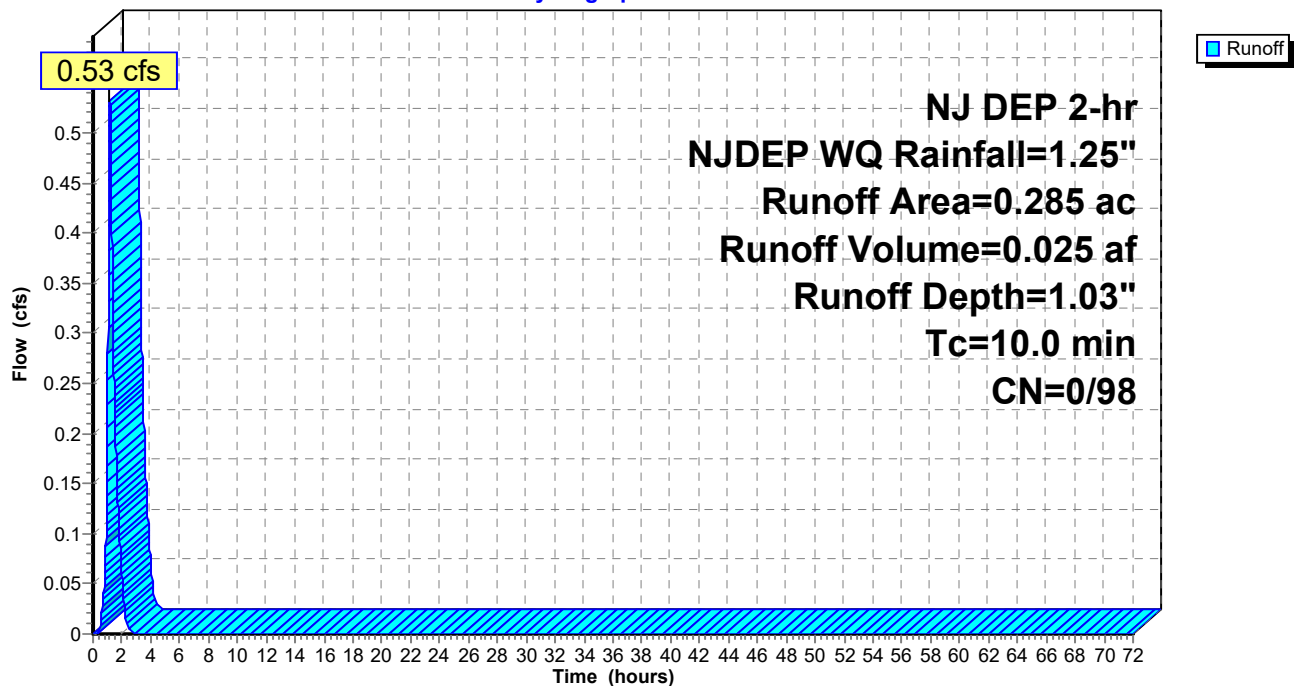
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (ac)	CN	Description
0.285	98	Roofs, HSG B
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg3: BLDG-3

Hydrograph



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NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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### Summary for Subcatchment Bdg4: BLDG-4

Runoff = 0.53 cfs @ 1.17 hrs, Volume= 0.025 af, Depth= 1.03"

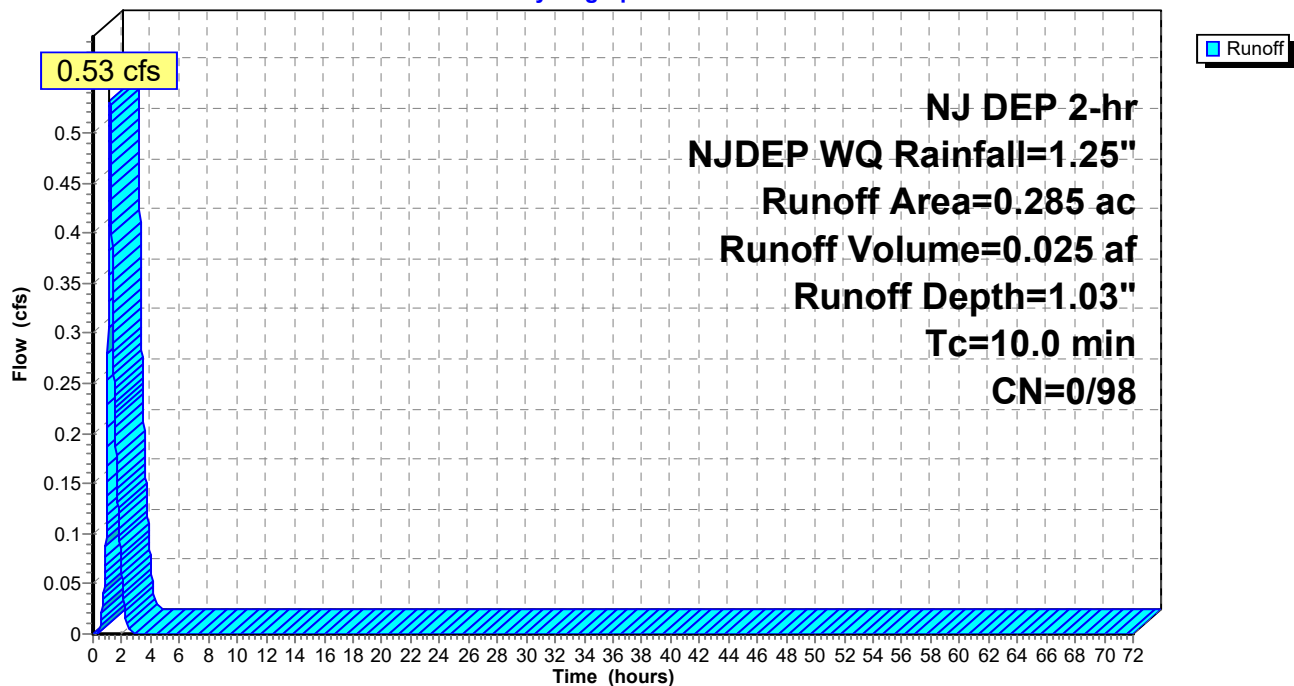
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (ac)	CN	Description
0.285	98	Roofs, HSG D
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg4: BLDG-4

Hydrograph



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NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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### Summary for Subcatchment Bdg5: BLDG-5

Runoff = 0.53 cfs @ 1.17 hrs, Volume= 0.025 af, Depth= 1.03"

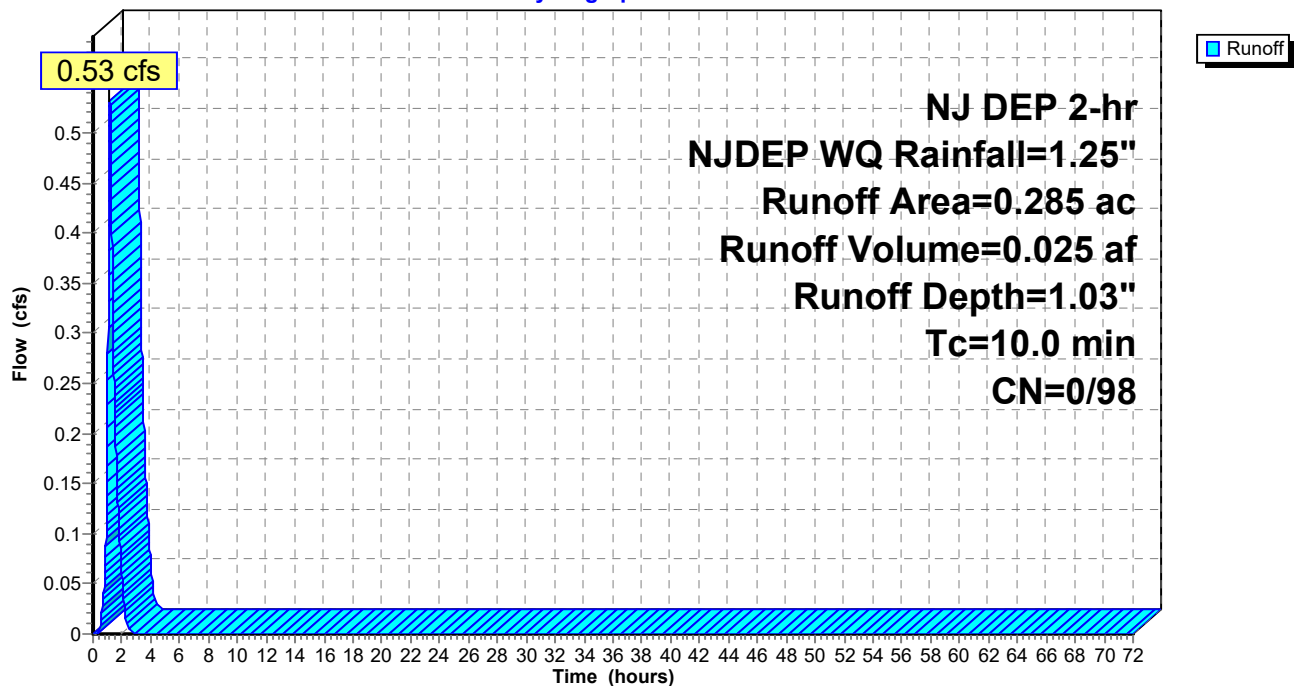
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (ac)	CN	Description
0.285	98	Roofs, HSG D
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg5: BLDG-5

Hydrograph



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NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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### Summary for Subcatchment Bdg6: BLDG-6

Runoff = 0.53 cfs @ 1.17 hrs, Volume= 0.025 af, Depth= 1.03"

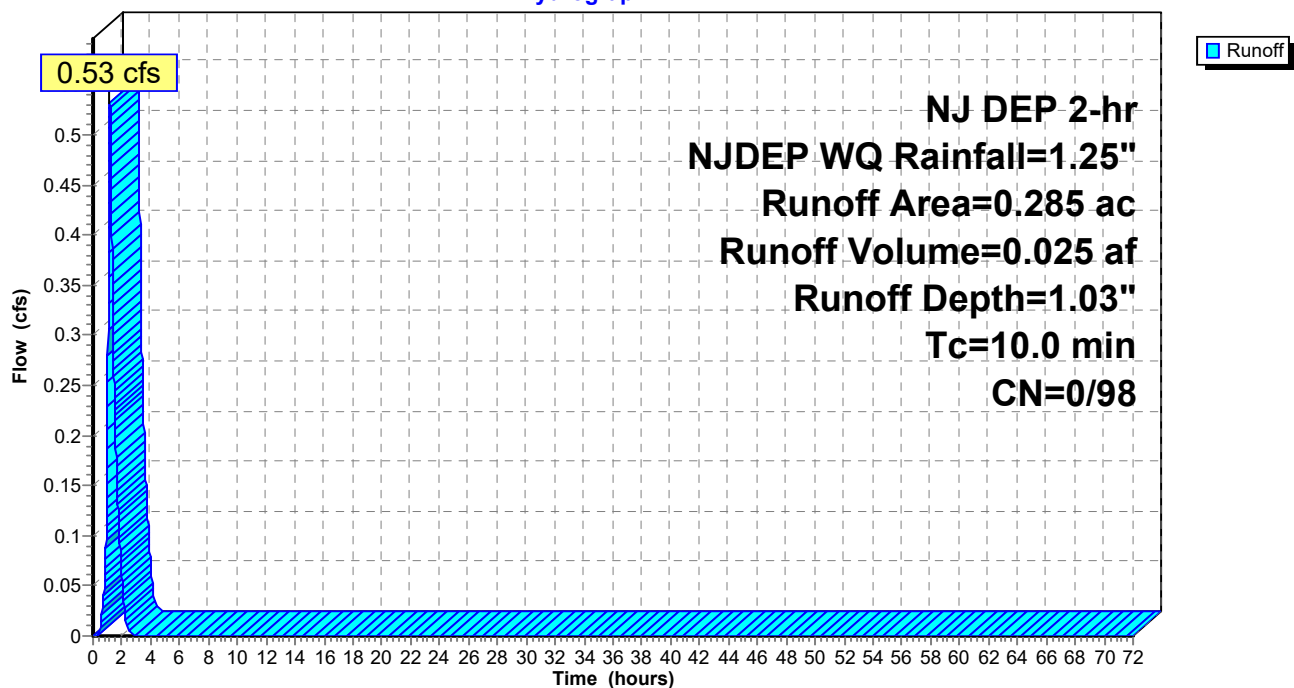
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (ac)	CN	Description
0.285	98	Roofs, HSG D
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg6: BLDG-6

Hydrograph



**Post Developed Conditions**

NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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**Summary for Pond 1B: Basin 1B**

Inflow Area = 1.037 ac, 66.83% Impervious, Inflow Depth = 0.69" for NJDEP WQ event  
 Inflow = 1.29 cfs @ 1.17 hrs, Volume= 0.060 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 7.45' @ 3.10 hrs Surf.Area= 3,025 sf Storage= 2,614 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	6.20'	6,627 cf	<b>Proposed Contours (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.20	1,170	0	0
7.00	2,335	1,402	1,402
8.00	3,860	3,098	4,500
8.50	4,650	2,128	6,627

Device	Routing	Invert	Outlet Devices
#1	Primary	3.75'	<b>15.0" Round 15" Culvert</b> L= 48.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 3.75' / 3.36' S= 0.0081 ' S= 0.0081 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	7.50'	<b>48.0" x 42.0" Horiz. Type E Inlet</b> C= 0.600 Limited to weir flow at low heads
#3	Primary	7.75'	<b>10' Wide Broadcrested Weir, Cv= 3.10 (C= 3.88)</b> Head (feet) 0.00 0.25 0.50 0.75 1.00 Width (feet) 10.00 11.50 13.00 14.50 16.00

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=6.20' TW=0.00' (Dynamic Tailwater)

1=15" Culvert (Passes 0.00 cfs of 7.67 cfs potential flow)

2=Type E Inlet ( Controls 0.00 cfs)

3=10' Wide Broadcrested Weir ( Controls 0.00 cfs)

## Post Developed Conditions

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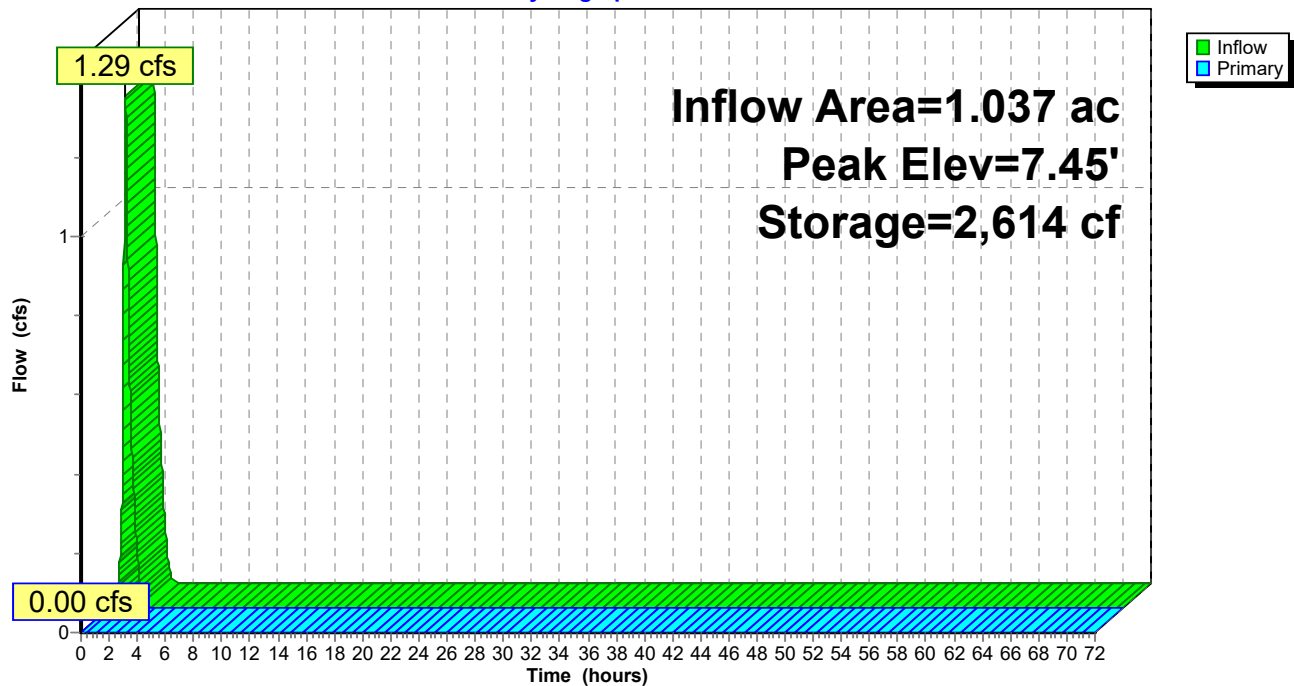
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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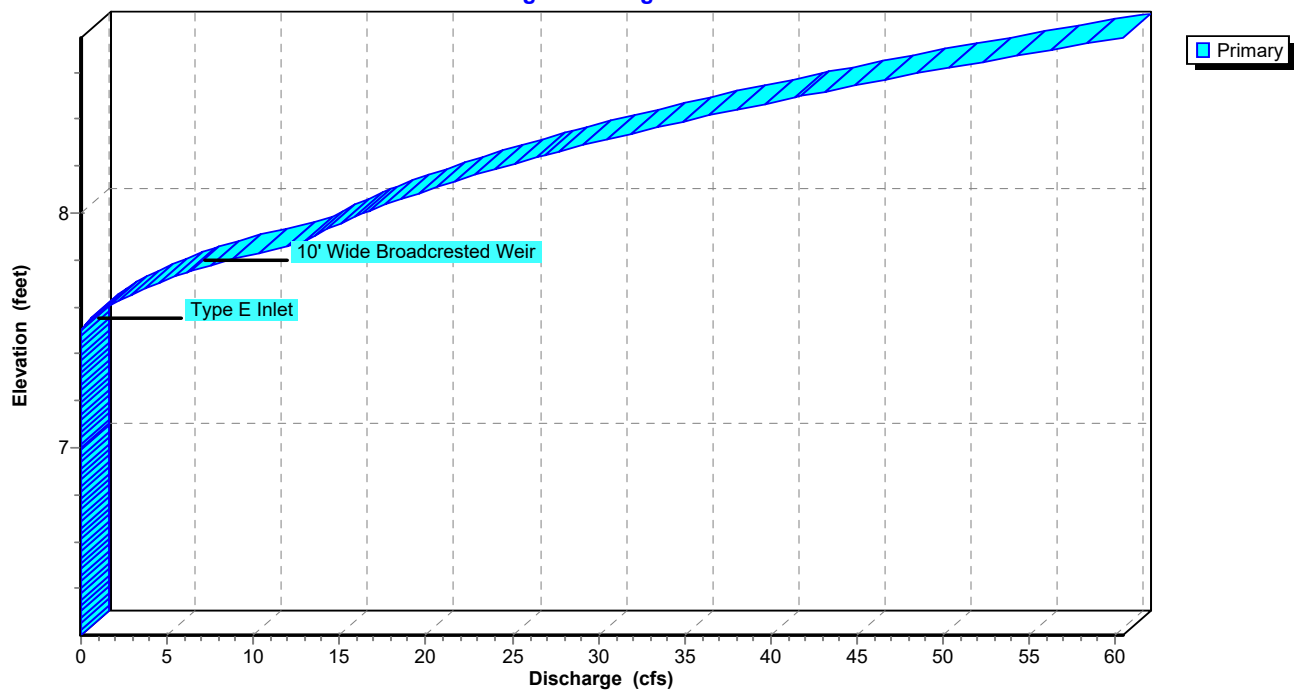
### Pond 1B: Basin 1B

Hydrograph



### Pond 1B: Basin 1B

Stage-Discharge



## Post Developed Conditions

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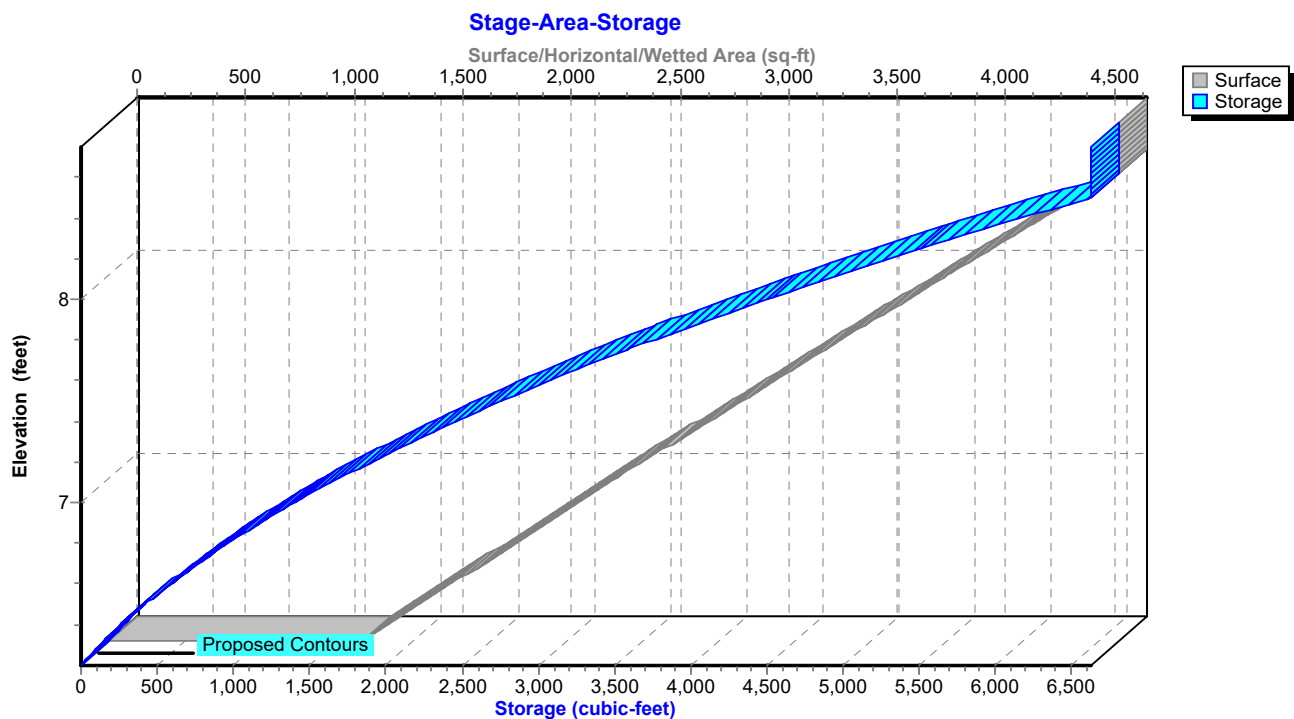
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NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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### Pond 1B: Basin 1B



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NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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### Summary for Pond 2C: Basin 2C

Inflow Area = 4.018 ac, 59.86% Impervious, Inflow Depth = 0.63" for NJDEP WQ event  
Inflow = 4.51 cfs @ 1.17 hrs, Volume= 0.213 af  
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Peak Elev= 7.22' @ 3.10 hrs Surf.Area= 25,767 sf Storage= 9,256 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	6.85'	94,944 cf	<b>Proposed Contours (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.85	24,460	0	0
7.00	24,990	3,709	3,709
8.00	28,545	26,768	30,476
9.00	32,215	30,380	60,856
10.00	35,960	34,088	94,944

Device	Routing	Invert	Outlet Devices
#1	Primary	3.00'	<b>15.0" Round 15" Culvert</b> L= 34.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 3.00' / 1.94' S= 0.0312 ' S= 0.0312 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	7.30'	<b>4.0" Vert. 4" Orifice</b> C= 0.600
#3	Device 1	8.10'	<b>48.0" W x 42.0" H Vert. Type E Inlet</b> C= 0.600
#4	Primary	9.00'	<b>20' Wide Broadcrested Weir, Cv= 3.10 (C= 3.88)</b> Head (feet) 0.00 0.50 1.00 1.50 Width (feet) 20.00 23.00 26.00 29.00

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=6.85' TW=0.00' (Dynamic Tailwater)

1=15" Culvert (Passes 0.00 cfs of 10.61 cfs potential flow)  
2=4" Orifice ( Controls 0.00 cfs)  
3=Type E Inlet ( Controls 0.00 cfs)  
4=20' Wide Broadcrested Weir ( Controls 0.00 cfs)

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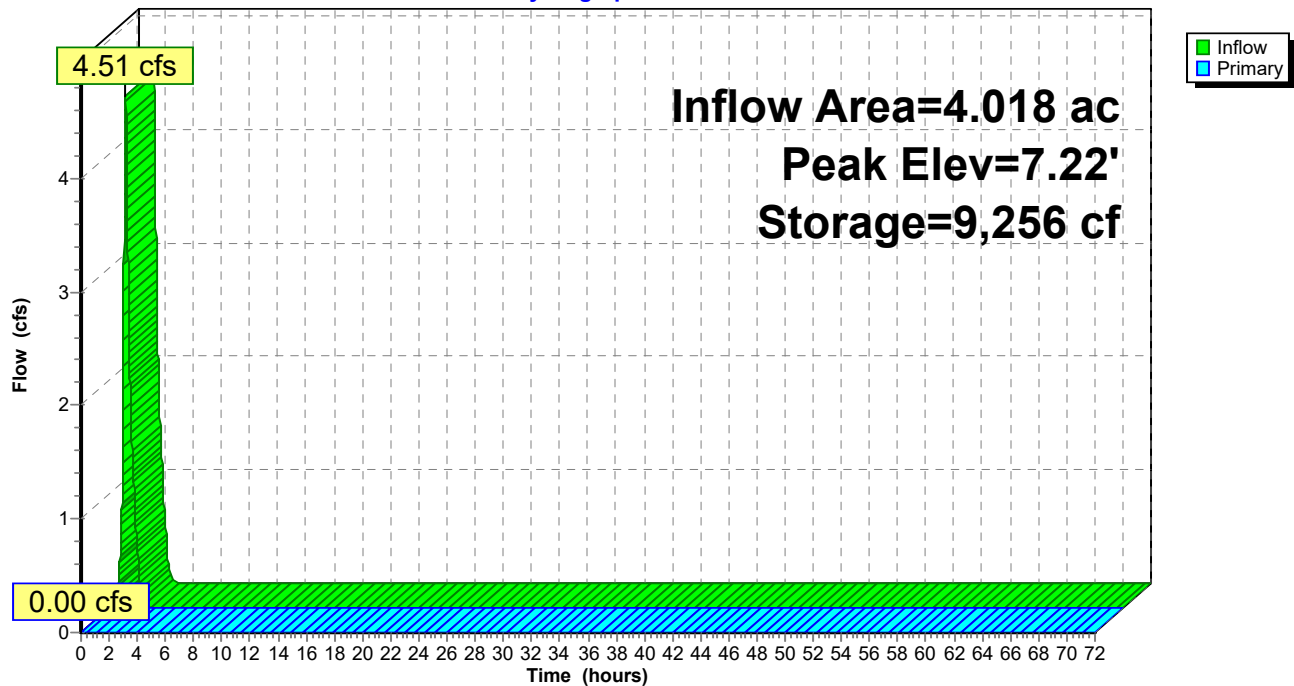
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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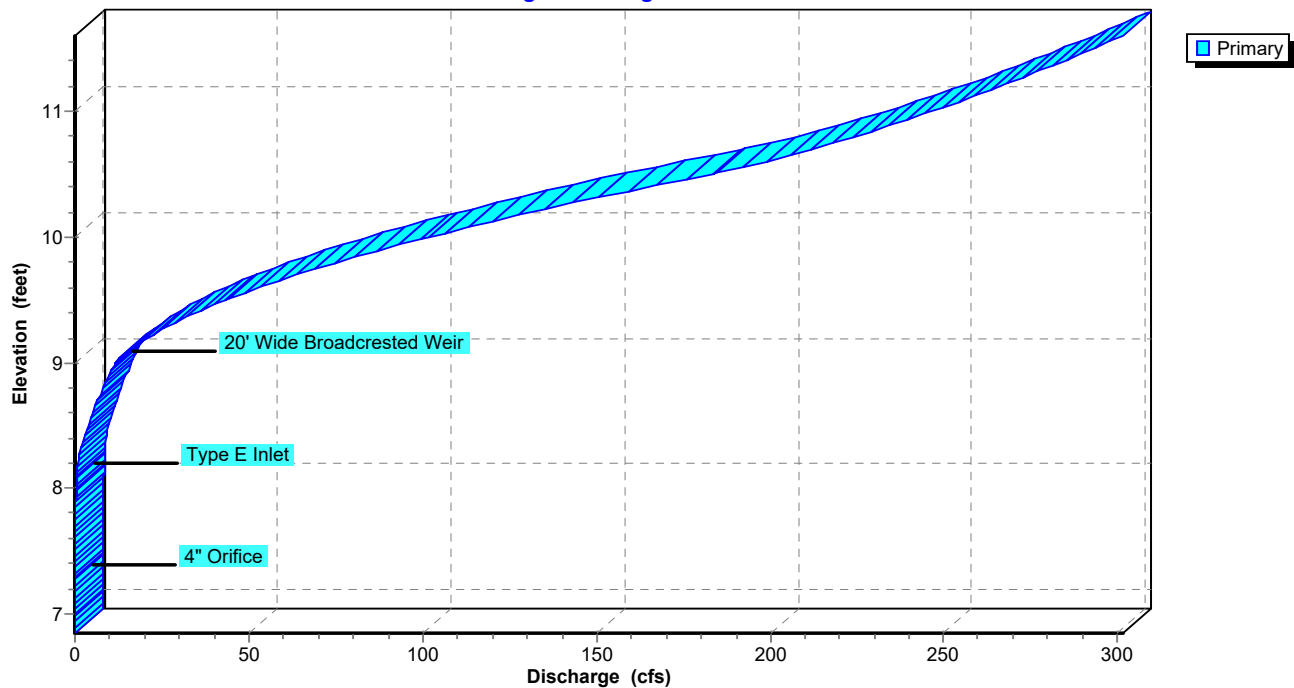
### Pond 2C: Basin 2C

Hydrograph



### Pond 2C: Basin 2C

Stage-Discharge



## Post Developed Conditions

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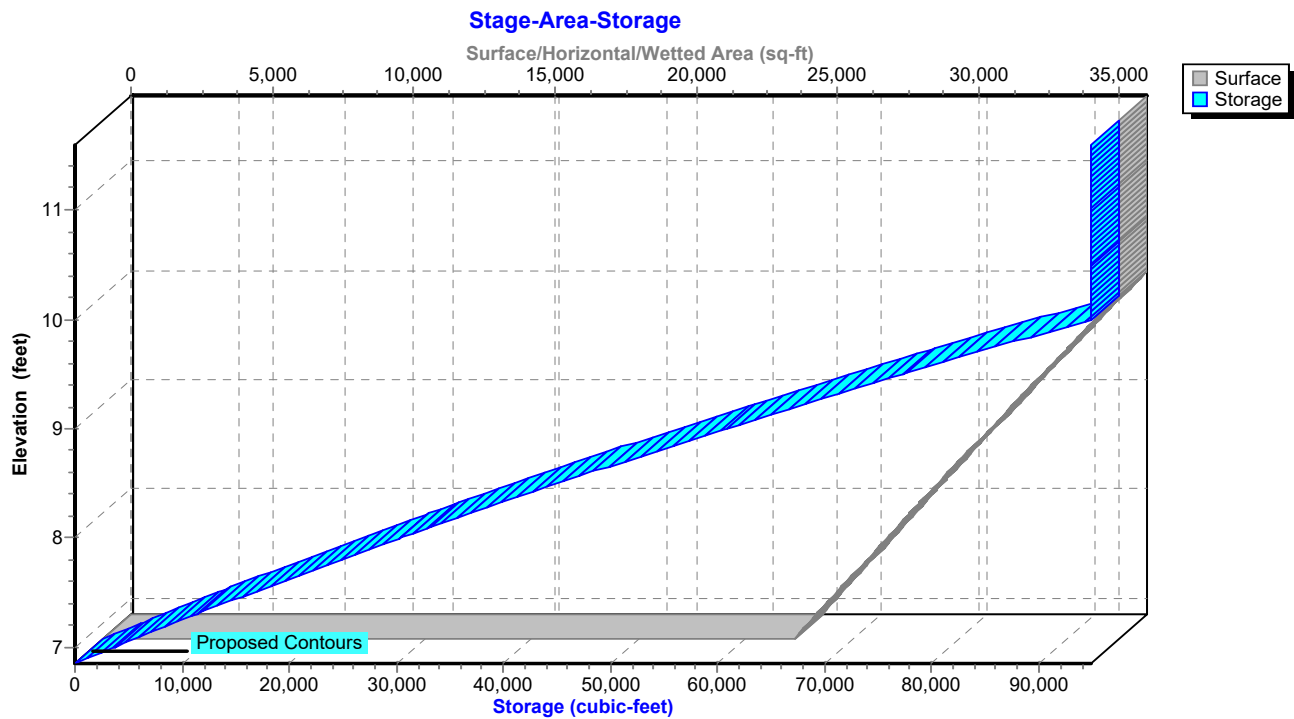
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### Pond 2C: Basin 2C



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NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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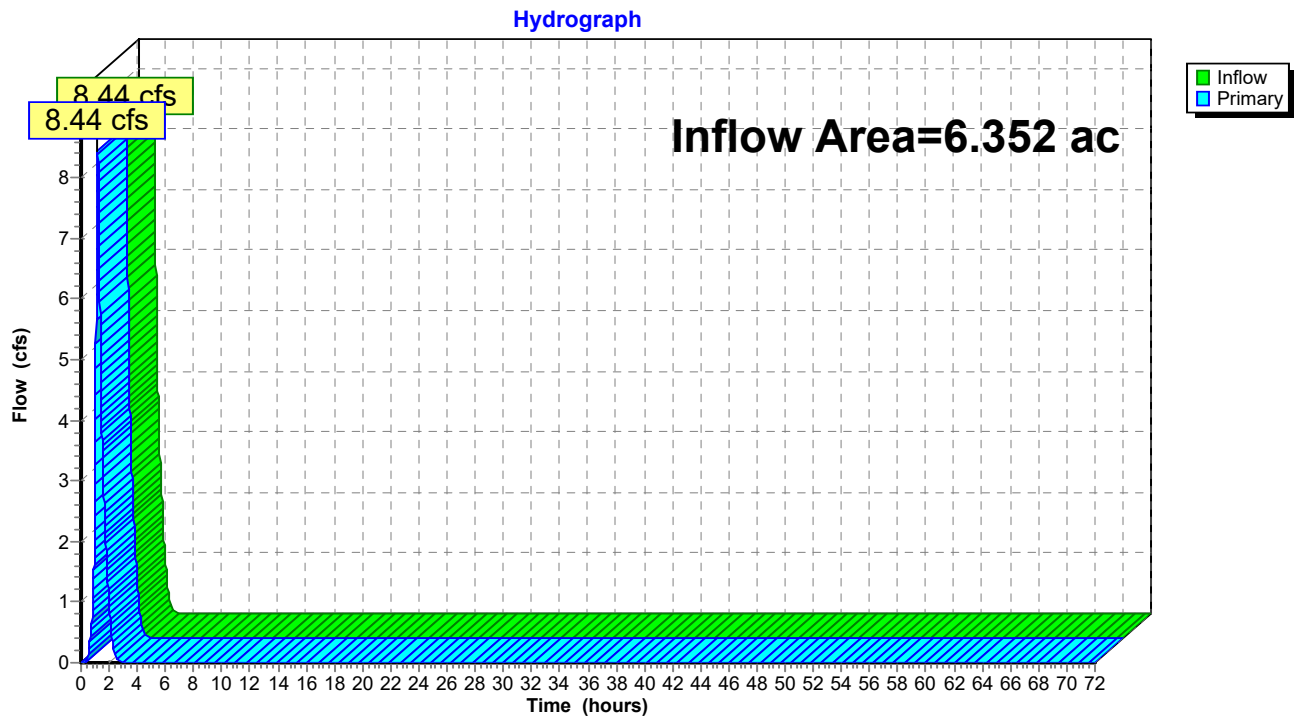
Page 111

### Summary for Link 1L: PT 1

Inflow Area = 6.352 ac, 82.07% Impervious, Inflow Depth = 0.74" for NJDEP WQ event  
Inflow = 8.44 cfs @ 1.17 hrs, Volume= 0.390 af  
Primary = 8.44 cfs @ 1.18 hrs, Volume= 0.390 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Link 1L: PT 1



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NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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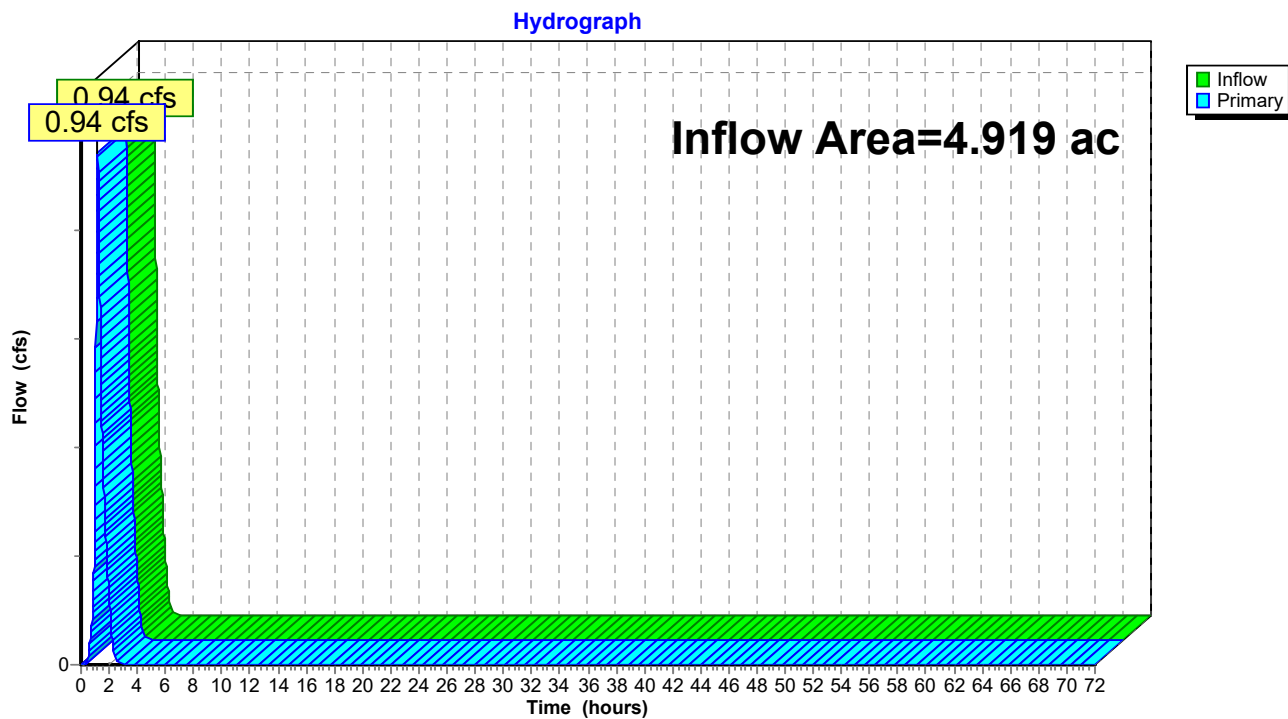
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### Summary for Link 2L: PT 2

Inflow Area = 4.919 ac, 59.10% Impervious, Inflow Depth = 0.11" for NJDEP WQ event  
Inflow = 0.94 cfs @ 1.17 hrs, Volume= 0.045 af  
Primary = 0.94 cfs @ 1.18 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Link 2L: PT 2



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NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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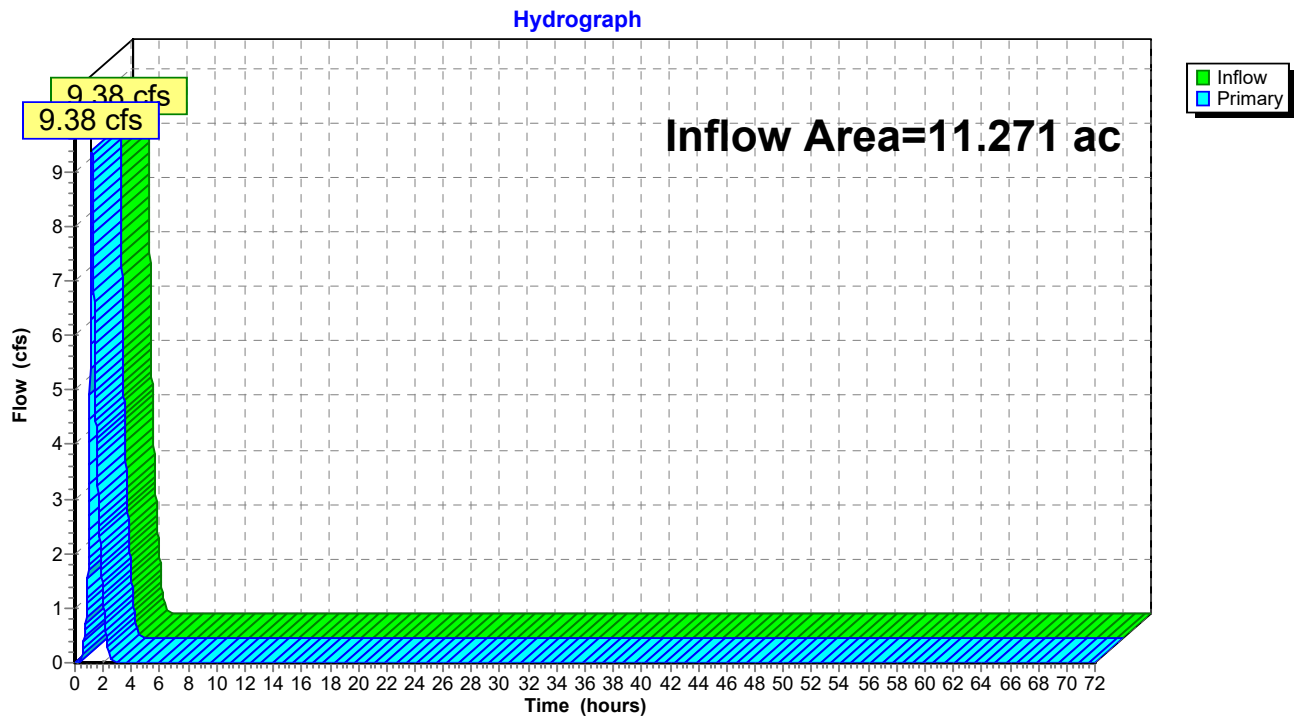
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### Summary for Link 4L: TTA

Inflow Area = 11.271 ac, 72.04% Impervious, Inflow Depth = 0.46" for NJDEP WQ event  
Inflow = 9.38 cfs @ 1.18 hrs, Volume= 0.435 af  
Primary = 9.38 cfs @ 1.19 hrs, Volume= 0.435 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Link 4L: TTA





# APPENDIX E

## INFILTRATION CALCULATIONS



**INFILTRATION CALCULATIONS****Equations and Terms**

Q	=	K i A
Q	=	infiltration flow rate
K	=	hydraulic conductivity of soil (ft/hr)
i	=	hydraulic gradient = $D_{AVG} / d$
A	=	infiltration area
D	=	depth from ESHWT to bottom of infiltration area (ft)
$d_{STORM}$	=	depth from infiltration area bottom to storm event elevation
$D_{AVG}$	=	average distance from water surface to ESHWT
V	=	basin volume during storm event
T	=	time to infiltrate basin (hr) = $V / Q$
ESHWT	=	Estimated Seasonal High Water Table

**Basin 1B**

1,167 sf equals basin bottom area at elevation 6.20

TP-1 SHW @ 4.18 K5 sand &gt;20 in hr

Permeability of Underlying Soils = 20.00 in/hr  
 Design permeability rate =  $0.5 \times K_{TEST} = 10$  in/hr = 0.83 ft/hr

Storm frequency	D (ft)	$d_{STORM}$ (ft)	$D_{AVG}$ (ft)	i (unitless)	A (sf)	Q (cf/hr)	V (cf)	T (hr)
2 - year	2.02	1.30	2.67	1.32	1,167	1285	2,760	2.1
10 - year	2.02	1.30	2.67	1.32	1,167	1285	2,760	2.1
100 - year	2.02	1.30	2.67	1.32	1,167	1285	2,760	2.1

All times are less than 72 hours

**Basin 2B**

475 sf equals basin bottom area at elevation 6.85

TP-4 SHW @ 4.70 K5 sand &gt;20 in hr

Permeability of Underlying Soils = 20.00 in/hr  
 Design permeability rate =  $0.5 \times K_{TEST} = 10$  in/hr = 0.83 ft/hr

Storm frequency	D (ft)	$d_{STORM}$ (ft)	$D_{AVG}$ (ft)	i (unitless)	A (sf)	Q (cf/hr)	V (cf)	T (hr)
2 - year	2.15	0.45	2.38	1.10	475	437	249	0.6
10 - year	2.15	0.45	2.38	1.10	475	437	249	0.6
100 - year	2.15	0.45	2.38	1.10	475	437	249	0.6

All times are less than 72 hours

**Basin 2C**

24,460 sf equals basin bottom area at elevation 6.85

TP-4 SHW @ 4.70 K5 sand &gt;20 in hr

Permeability of Underlying Soils = 20.00 in/hr  
 Design permeability rate =  $0.5 \times K_{TEST} = 10$  in/hr = 0.83 ft/hr

Storm frequency	D (ft)	$d_{STORM}$ (ft)	$D_{AVG}$ (ft)	i (unitless)	A (sf)	Q (cf/hr)	V (cf)	T (hr)
2 - year	2.15	0.45	2.38	1.10	24,460	22516	11,366	0.5
10 - year	2.15	0.45	2.38	1.10	24,460	22516	11,366	0.5
100 - year	2.15	0.45	2.38	1.10	24,460	22516	11,366	0.5

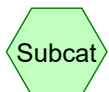
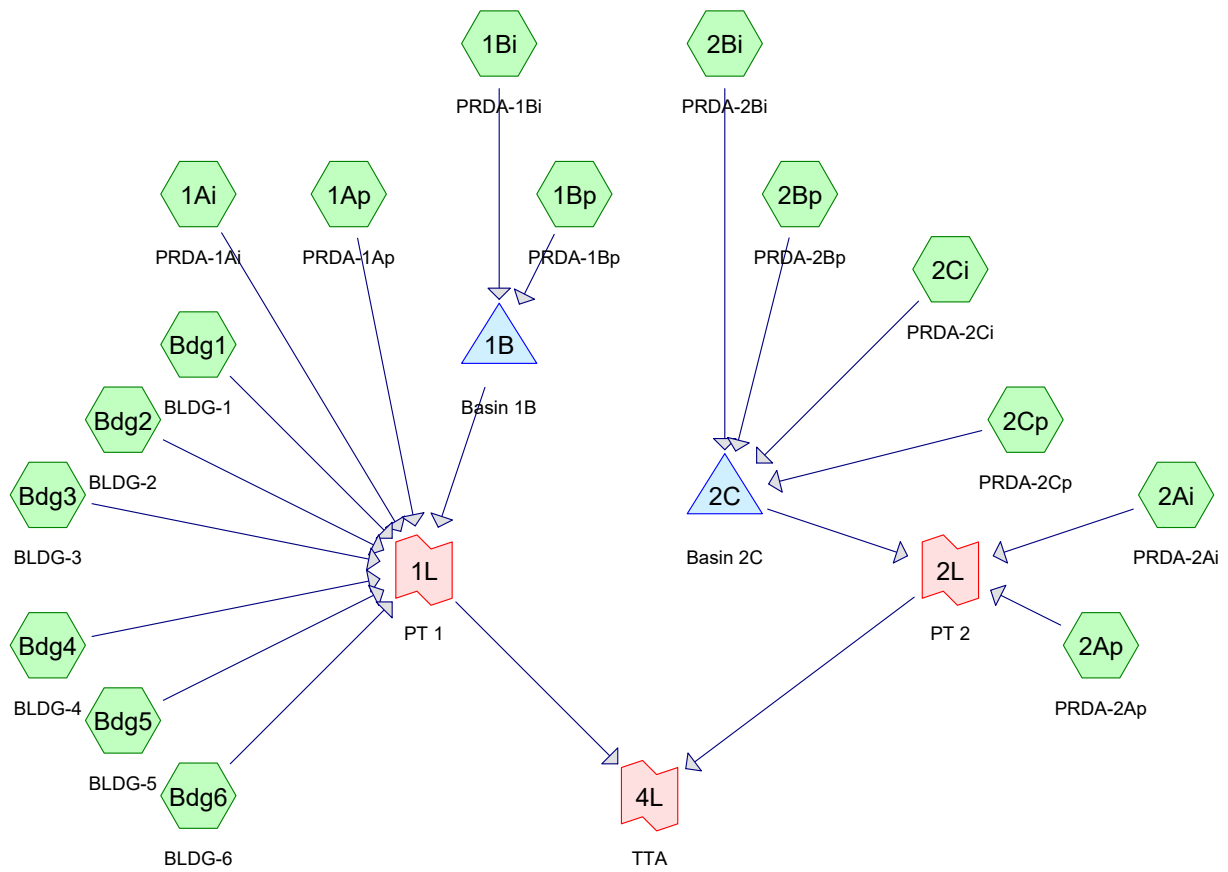
All times are less than 72 hours



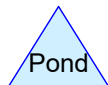
# **APPENDIX F**

## EMERGENCY CONDITIONS CALCULATIONS





Reach



### Routing Diagram for Emergency Conditions

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## Emergency Conditions

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### Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.824	61	>75% Grass cover, Good, HSG B (1Ap, 1Bp, 2Ap, 2Bp, 2Cp)
1.327	80	>75% Grass cover, Good, HSG D (1Ap, 1Bp, 2Ap, 2Bp, 2Cp)
3.114	98	Paved parking, HSG B (1Ai, 1Bi, 2Ai, 2Bi, 2Ci)
3.158	98	Paved parking, HSG D (1Ai, 1Bi, 2Ai, 2Bi, 2Ci)
0.855	98	Roofs, HSG B (Bdg1, Bdg2, Bdg3)
0.855	98	Roofs, HSG D (Bdg4, Bdg5, Bdg6)
0.138	98	Unconnected roofs, HSG B (1Ai)
<b>11.271</b>	<b>90</b>	<b>TOTAL AREA</b>

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### Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
5.931	HSG B	1Ai, 1Ap, 1Bi, 1Bp, 2Ai, 2Ap, 2Bi, 2Bp, 2Ci, 2Cp, Bdg1, Bdg2, Bdg3
0.000	HSG C	
5.340	HSG D	1Ai, 1Ap, 1Bi, 1Bp, 2Ai, 2Ap, 2Bi, 2Bp, 2Ci, 2Cp, Bdg4, Bdg5, Bdg6
0.000	Other	
<b>11.271</b>		<b>TOTAL AREA</b>

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### Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	1.824	0.000	1.327	0.000	3.151	>75% Grass cover, Good	1Ap, 1Bp, 2Ap, 2Bp, 2Cp
0.000	3.114	0.000	3.158	0.000	6.272	Paved parking	1Ai, 1Bi, 2Ai, 2Bi, 2Ci
0.000	0.855	0.000	0.855	0.000	1.710	Roofs	Bdg1, Bdg2, Bdg3, Bdg4, Bdg5, Bdg6
0.000	0.138	0.000	0.000	0.000	0.138	Unconnected roofs	1Ai
<b>0.000</b>	<b>5.931</b>	<b>0.000</b>	<b>5.340</b>	<b>0.000</b>	<b>11.271</b>	<b>TOTAL AREA</b>	

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### Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1Ai	0.00	0.00	1,254.0	0.0030	0.013	18.0	0.0	0.0
2	1Ap	0.00	0.00	1,254.0	0.0030	0.013	18.0	0.0	0.0
3	2Ai	0.00	0.00	263.0	0.0050	0.013	15.0	0.0	0.0
4	2Ap	0.00	0.00	263.0	0.0050	0.013	15.0	0.0	0.0

**Emergency Conditions**

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*Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"*

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.

Reach routing by Sim-Route method - Pond routing by Sim-Route method w/Net Flows

<b>Subcatchment1Ai: PRDA-1Ai</b>	Runoff Area=2.810 ac 100.00% Impervious Runoff Depth=8.66" Flow Length=1,354' Tc=10.0 min CN=0/98 Runoff=16.45 cfs 2.028 af
<b>Subcatchment1Ap: PRDA-1Ap</b>	Runoff Area=0.795 ac 0.00% Impervious Runoff Depth=4.76" Flow Length=1,354' Tc=10.0 min CN=66/0 Runoff=2.88 cfs 0.315 af
<b>Subcatchment1Bi: PRDA-1Bi</b>	Runoff Area=0.693 ac 100.00% Impervious Runoff Depth=8.66" Tc=10.0 min CN=0/98 Runoff=4.06 cfs 0.500 af
<b>Subcatchment1Bp: PRDA-1Bp</b>	Runoff Area=0.344 ac 0.00% Impervious Runoff Depth=4.76" Tc=10.0 min CN=66/0 Runoff=1.25 cfs 0.136 af
<b>Subcatchment2Ai: PRDA-2Ai</b>	Runoff Area=0.502 ac 100.00% Impervious Runoff Depth=8.66" Flow Length=352' Tc=10.0 min CN=0/98 Runoff=2.94 cfs 0.362 af
<b>Subcatchment2Ap: PRDA-2Ap</b>	Runoff Area=0.399 ac 0.00% Impervious Runoff Depth=5.37" Flow Length=352' Tc=10.0 min CN=71/0 Runoff=1.64 cfs 0.179 af
<b>Subcatchment2Bi: PRDA-2Bi</b>	Runoff Area=0.581 ac 100.00% Impervious Runoff Depth=8.66" Tc=10.0 min CN=0/98 Runoff=3.40 cfs 0.419 af
<b>Subcatchment2Bp: PRDA-2Bp</b>	Runoff Area=0.214 ac 0.00% Impervious Runoff Depth=5.74" Tc=10.0 min CN=74/0 Runoff=0.94 cfs 0.102 af
<b>Subcatchment2Ci: PRDA-2Ci</b>	Runoff Area=1.824 ac 100.00% Impervious Runoff Depth=8.66" Tc=10.0 min CN=0/98 Runoff=10.68 cfs 1.316 af
<b>Subcatchment2Cp: PRDA-2Cp</b>	Runoff Area=1.399 ac 0.00% Impervious Runoff Depth=5.25" Tc=10.0 min CN=70/0 Runoff=5.62 cfs 0.612 af
<b>SubcatchmentBdg1: BLDG-1</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=8.66" Tc=10.0 min CN=0/98 Runoff=1.67 cfs 0.206 af
<b>SubcatchmentBdg2: BLDG-2</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=8.66" Tc=10.0 min CN=0/98 Runoff=1.67 cfs 0.206 af
<b>SubcatchmentBdg3: BLDG-3</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=8.66" Tc=10.0 min CN=0/98 Runoff=1.67 cfs 0.206 af
<b>SubcatchmentBdg4: BLDG-4</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=8.66" Tc=10.0 min CN=0/98 Runoff=1.67 cfs 0.206 af
<b>SubcatchmentBdg5: BLDG-5</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=8.66" Tc=10.0 min CN=0/98 Runoff=1.67 cfs 0.206 af
<b>SubcatchmentBdg6: BLDG-6</b>	Runoff Area=0.285 ac 100.00% Impervious Runoff Depth=8.66" Tc=10.0 min CN=0/98 Runoff=1.67 cfs 0.206 af

## Emergency Conditions

Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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### Pond 1B: Basin 1B

Peak Elev=8.00' Storage=4,507 cf Inflow=5.30 cfs 0.636 af  
Outflow=5.20 cfs 0.636 af

### Pond 2C: Basin 2C

Peak Elev=9.36' Storage=72,658 cf Inflow=20.62 cfs 2.450 af  
Outflow=17.38 cfs 2.450 af

### Link 1L: PT 1

Inflow=34.38 cfs 4.213 af  
Primary=34.38 cfs 4.213 af

### Link 2L: PT 2

Inflow=21.28 cfs 2.990 af  
Primary=21.28 cfs 2.990 af

### Link 4L: TTA

Inflow=53.80 cfs 7.204 af  
Primary=53.80 cfs 7.204 af

**Total Runoff Area = 11.271 ac   Runoff Volume = 7.204 af   Average Runoff Depth = 7.67"**  
**27.96% Pervious = 3.151 ac   72.04% Impervious = 8.120 ac**

## Emergency Conditions

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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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### Summary for Subcatchment 1Ai: PRDA-1Ai

Runoff = 16.45 cfs @ 12.15 hrs, Volume= 2.028 af, Depth= 8.66"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

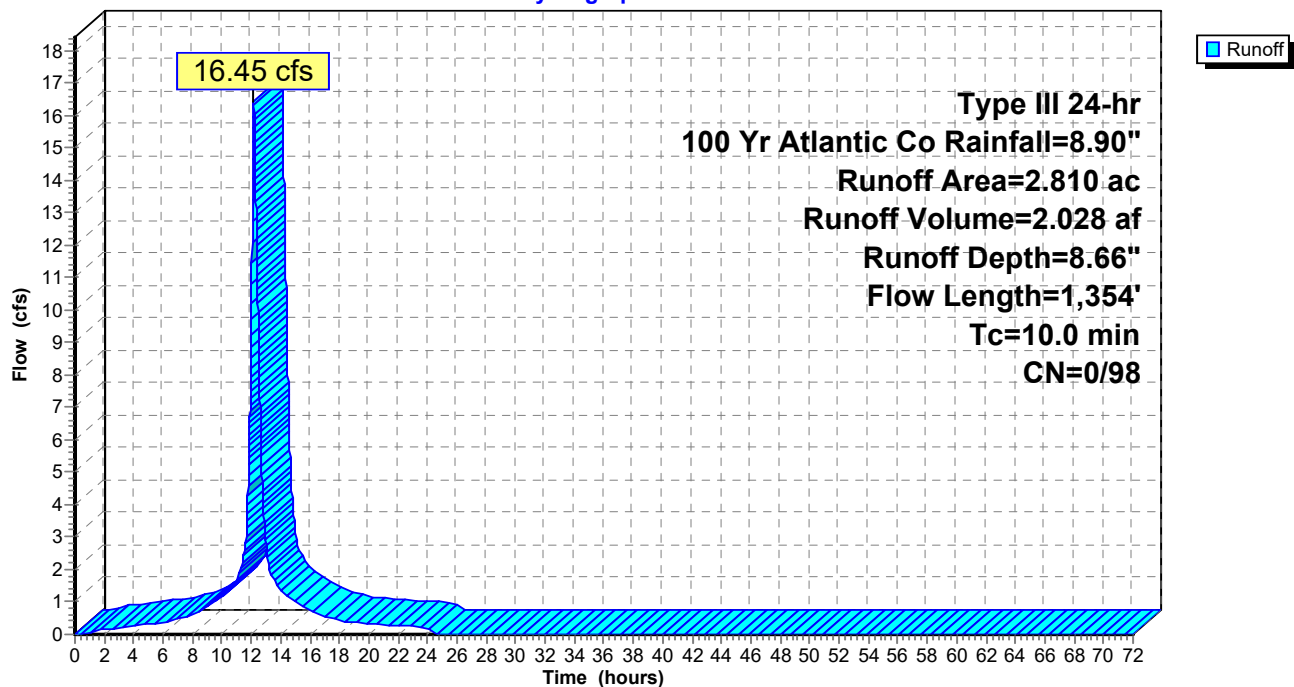
Area (ac)	CN	Description
1.113	98	Paved parking, HSG B
1.559	98	Paved parking, HSG D
0.138	98	Unconnected roofs, HSG B
2.810	98	Weighted Average
2.810	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0130	1.19		<b>Sheet Flow, PRDA-1.1</b> Smooth surfaces n= 0.011 P2= 3.36"
6.4	1,254	0.0030	3.26	5.75	<b>Pipe Channel, PRDA-1.2</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
7.8	1,354	Total, Increased to minimum Tc = 10.0 min			

### Subcatchment 1Ai: PRDA-1Ai

Hydrograph



## Emergency Conditions

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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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### Summary for Subcatchment 1Ap: PRDA-1Ap

Runoff = 2.88 cfs @ 12.16 hrs, Volume= 0.315 af, Depth= 4.76"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

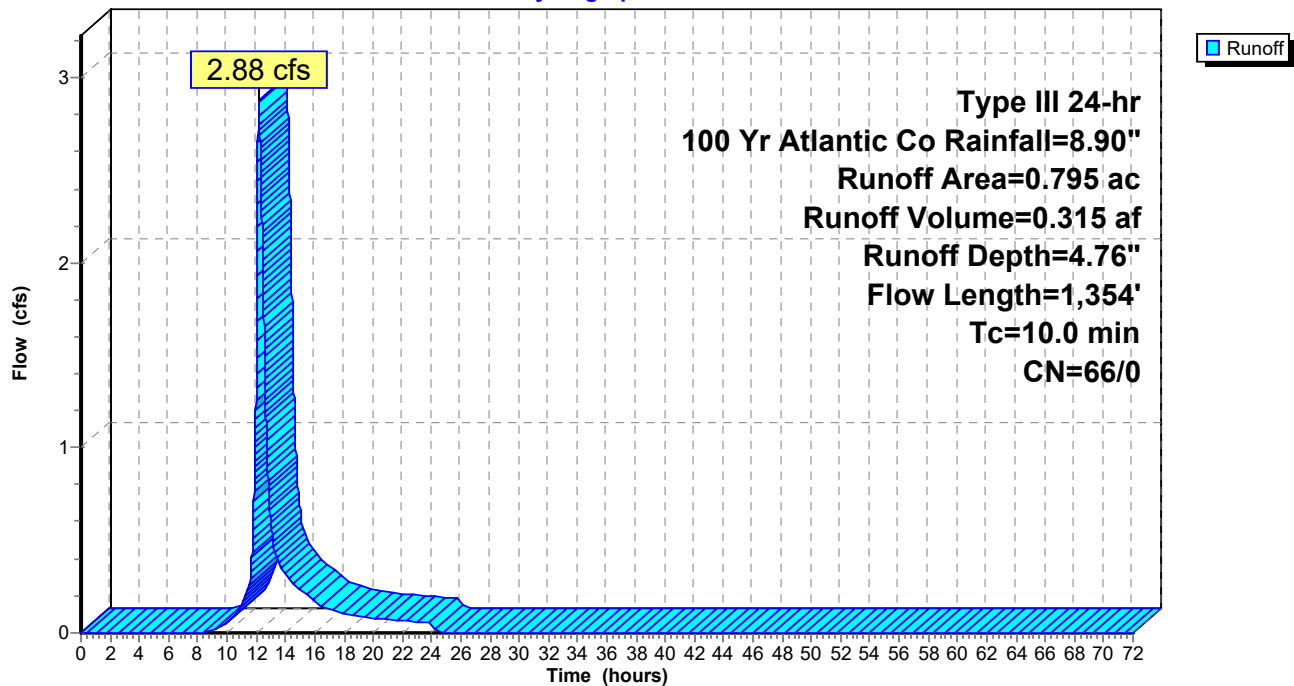
Area (ac)	CN	Description
0.574	61	>75% Grass cover, Good, HSG B
0.221	80	>75% Grass cover, Good, HSG D
0.795	66	Weighted Average
0.795	66	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0130	1.19		<b>Sheet Flow, PRDA-1.1</b> Smooth surfaces n= 0.011 P2= 3.36"
6.4	1,254	0.0030	3.26	5.75	<b>Pipe Channel, PRDA-1.2</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
7.8	1,354	Total, Increased to minimum Tc = 10.0 min			

### Subcatchment 1Ap: PRDA-1Ap

Hydrograph



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### Summary for Subcatchment 1Bi: PRDA-1Bi

Runoff = 4.06 cfs @ 12.15 hrs, Volume= 0.500 af, Depth= 8.66"

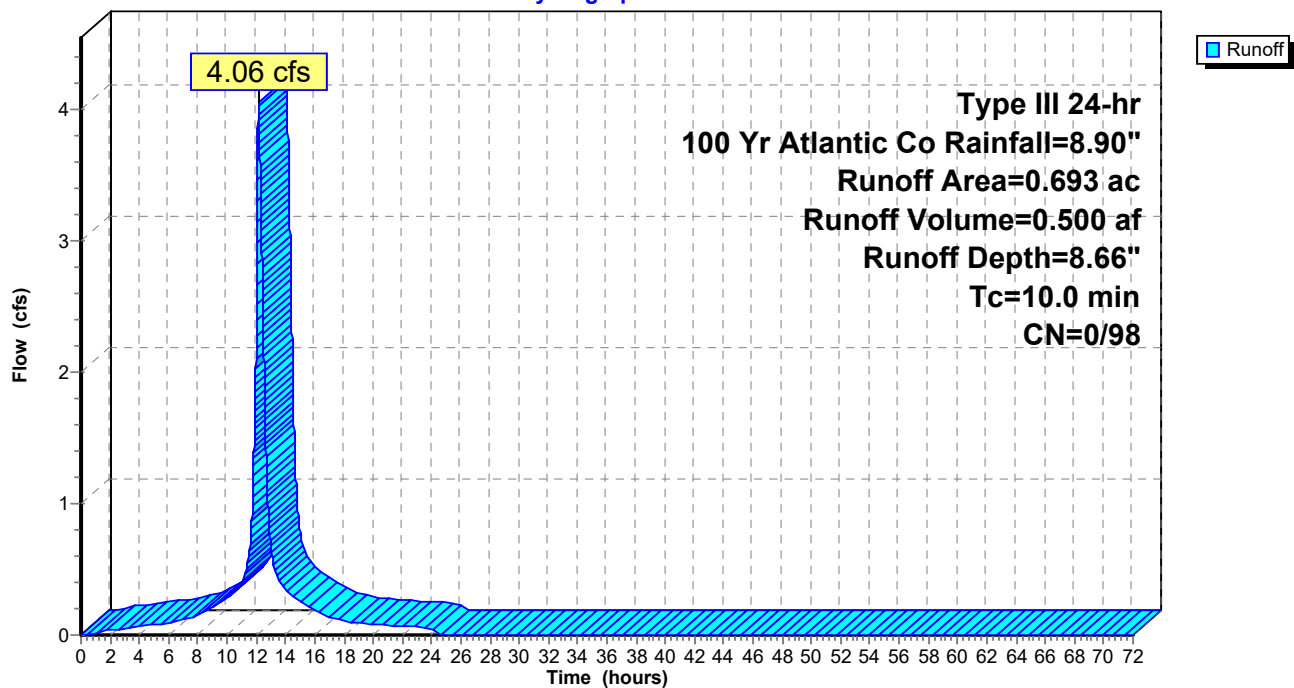
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.293	98	Paved parking, HSG B
0.400	98	Paved parking, HSG D
0.693	98	Weighted Average
0.693	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 1Bi: PRDA-1Bi

Hydrograph



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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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### Summary for Subcatchment 1Bp: PRDA-1Bp

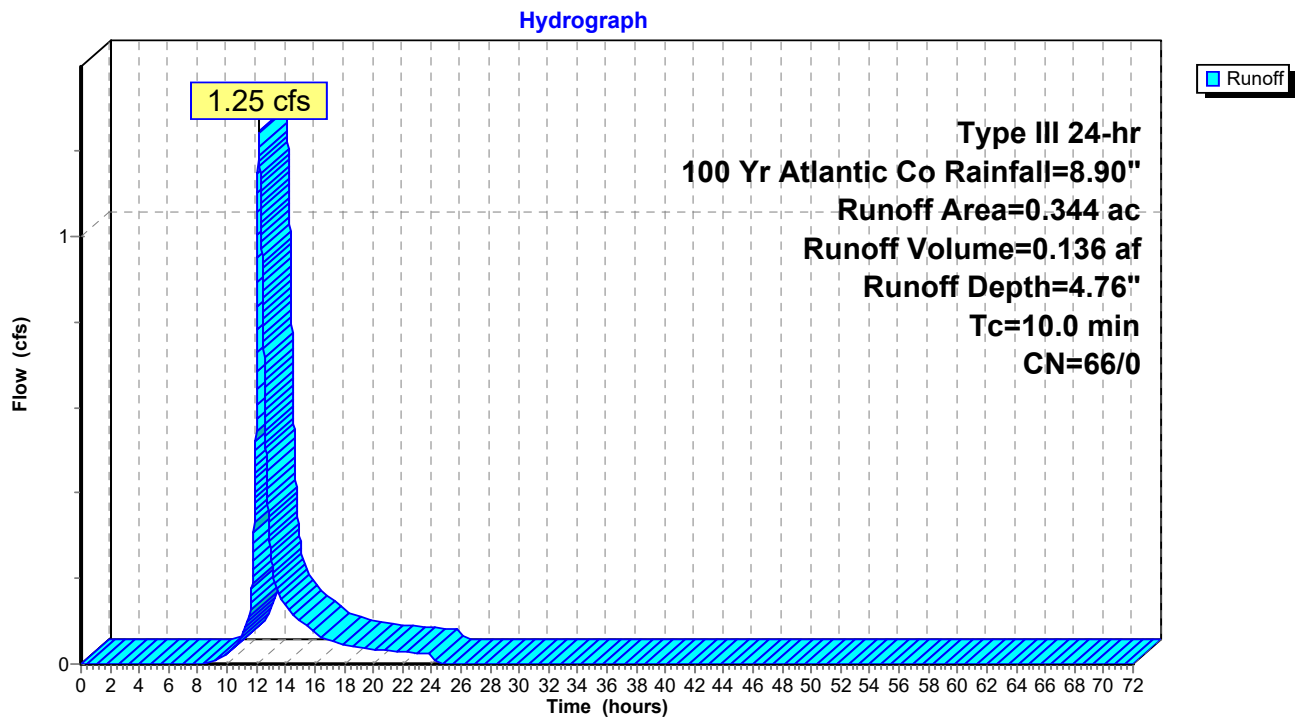
Runoff = 1.25 cfs @ 12.16 hrs, Volume= 0.136 af, Depth= 4.76"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.262	61	>75% Grass cover, Good, HSG B
0.082	80	>75% Grass cover, Good, HSG D
0.344	66	Weighted Average
0.344	66	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 1Bp: PRDA-1Bp



## Emergency Conditions

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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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### Summary for Subcatchment 2Ai: PRDA-2Ai

Runoff = 2.94 cfs @ 12.15 hrs, Volume= 0.362 af, Depth= 8.66"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

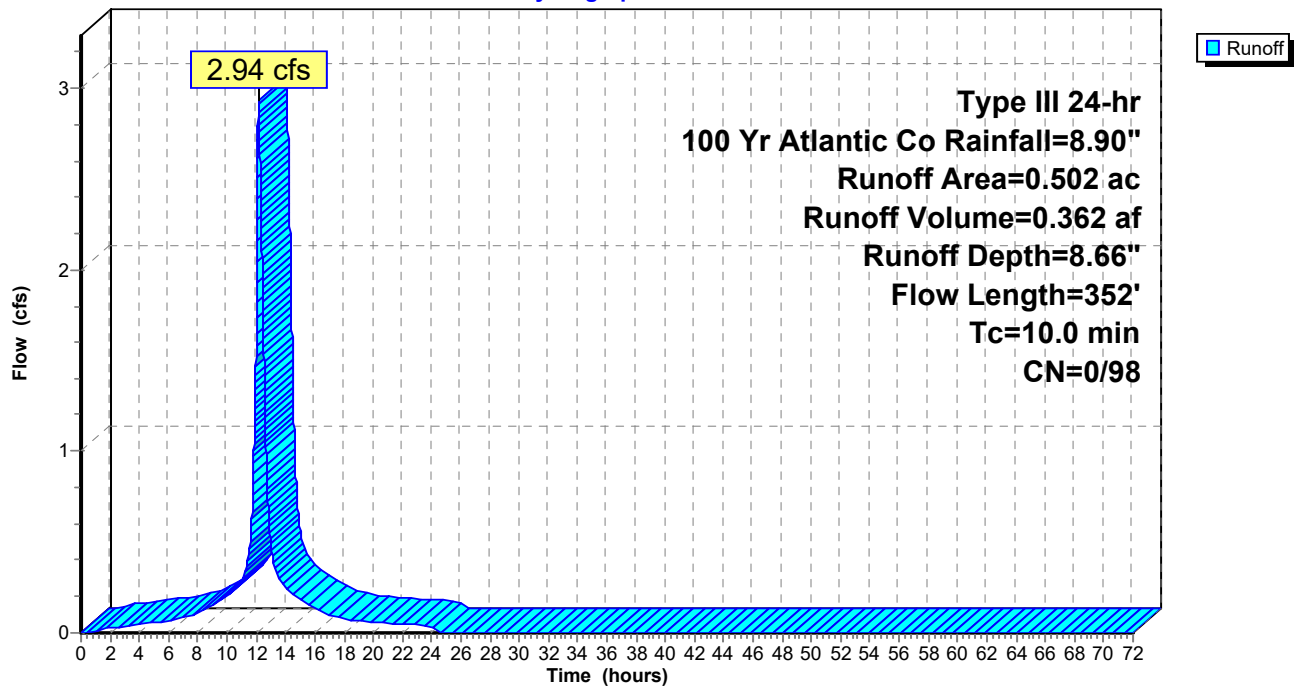
Area (ac)	CN	Description
0.281	98	Paved parking, HSG B
0.221	98	Paved parking, HSG D
0.502	98	Weighted Average
0.502	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	89	0.0150	1.23		<b>Sheet Flow, PRDA-2.1</b> Smooth surfaces n= 0.011 P2= 3.36"
1.2	263	0.0050	3.72	4.57	<b>Pipe Channel, PRDA-2.1</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
2.4	352	Total, Increased to minimum Tc = 10.0 min			

### Subcatchment 2Ai: PRDA-2Ai

Hydrograph



## Emergency Conditions

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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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### Summary for Subcatchment 2Ap: PRDA-2Ap

Runoff = 1.64 cfs @ 12.16 hrs, Volume= 0.179 af, Depth= 5.37"

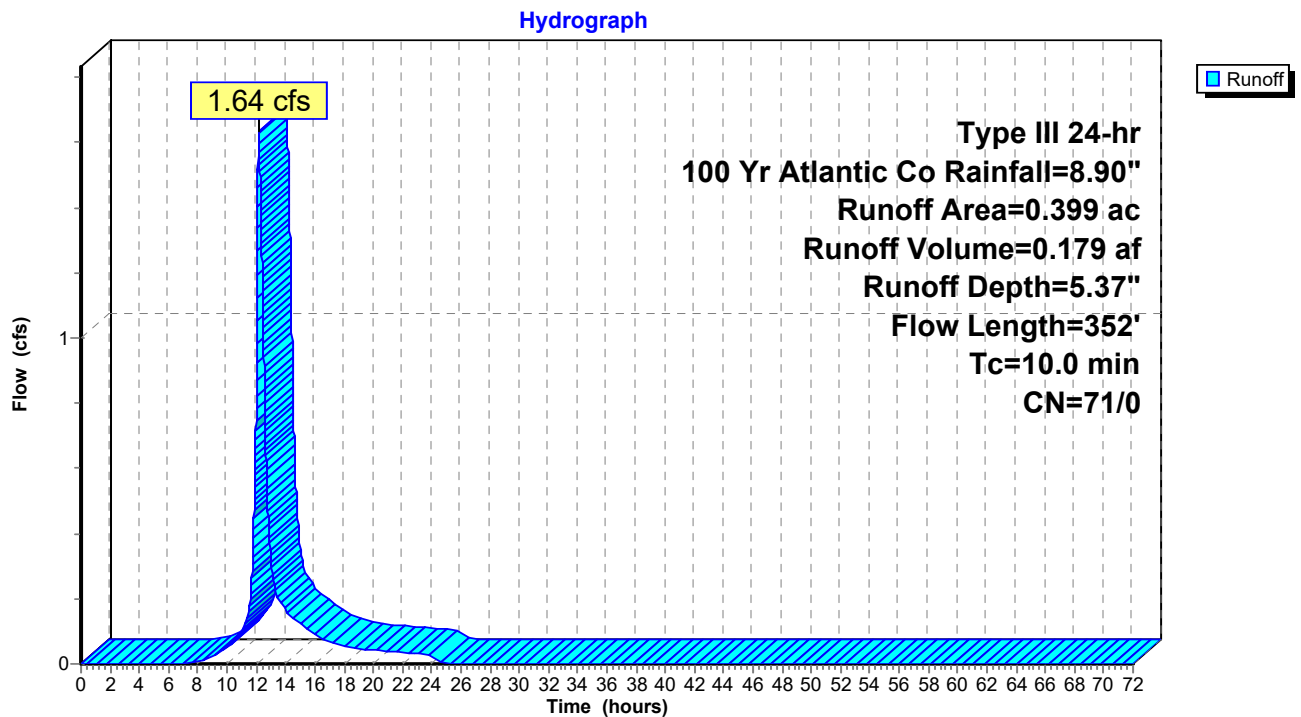
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.193	61	>75% Grass cover, Good, HSG B
0.206	80	>75% Grass cover, Good, HSG D
0.399	71	Weighted Average
0.399	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	89	0.0150	1.23		<b>Sheet Flow, PRDA-2.1</b> Smooth surfaces n= 0.011 P2= 3.36"
1.2	263	0.0050	3.72	4.57	<b>Pipe Channel, PRDA-2.1</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
2.4	352	Total, Increased to minimum Tc = 10.0 min			

### Subcatchment 2Ap: PRDA-2Ap



## Emergency Conditions

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### Summary for Subcatchment 2Bi: PRDA-2Bi

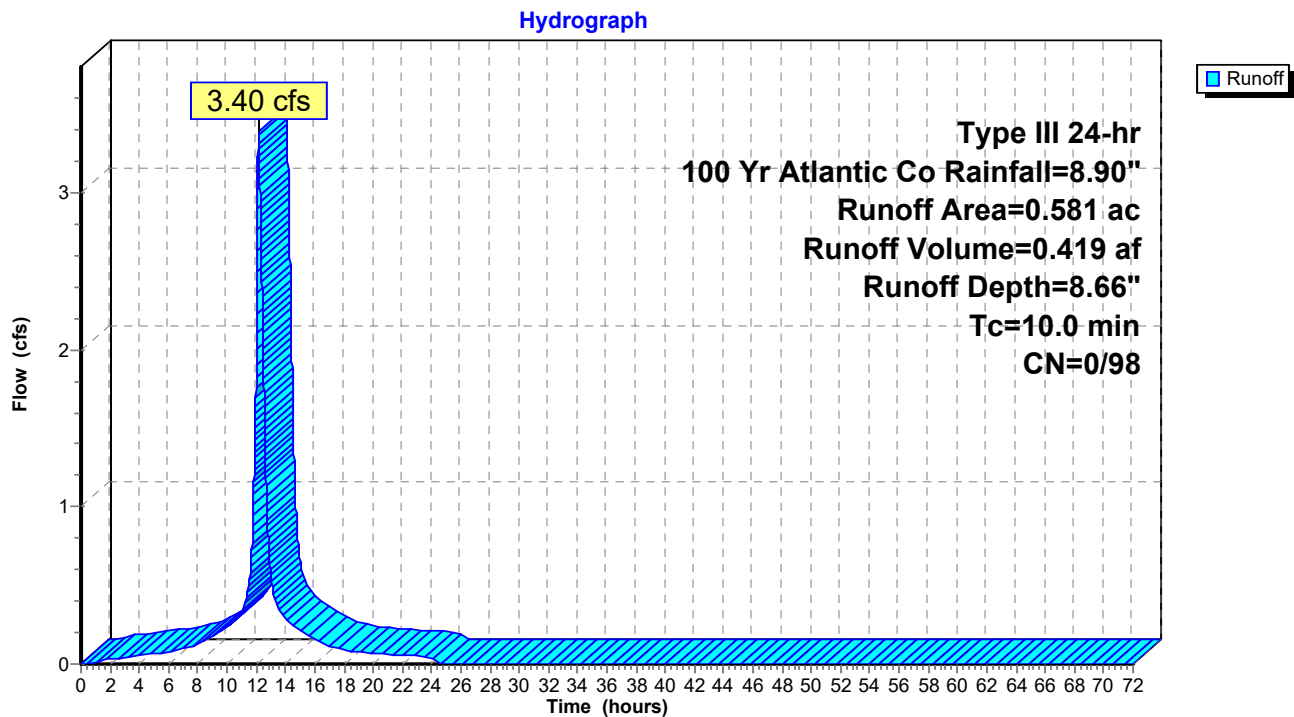
Runoff = 3.40 cfs @ 12.15 hrs, Volume= 0.419 af, Depth= 8.66"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.437	98	Paved parking, HSG B
0.144	98	Paved parking, HSG D
0.581	98	Weighted Average
0.581	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Direct

### Subcatchment 2Bi: PRDA-2Bi



## Emergency Conditions

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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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### Summary for Subcatchment 2Bp: PRDA-2Bp

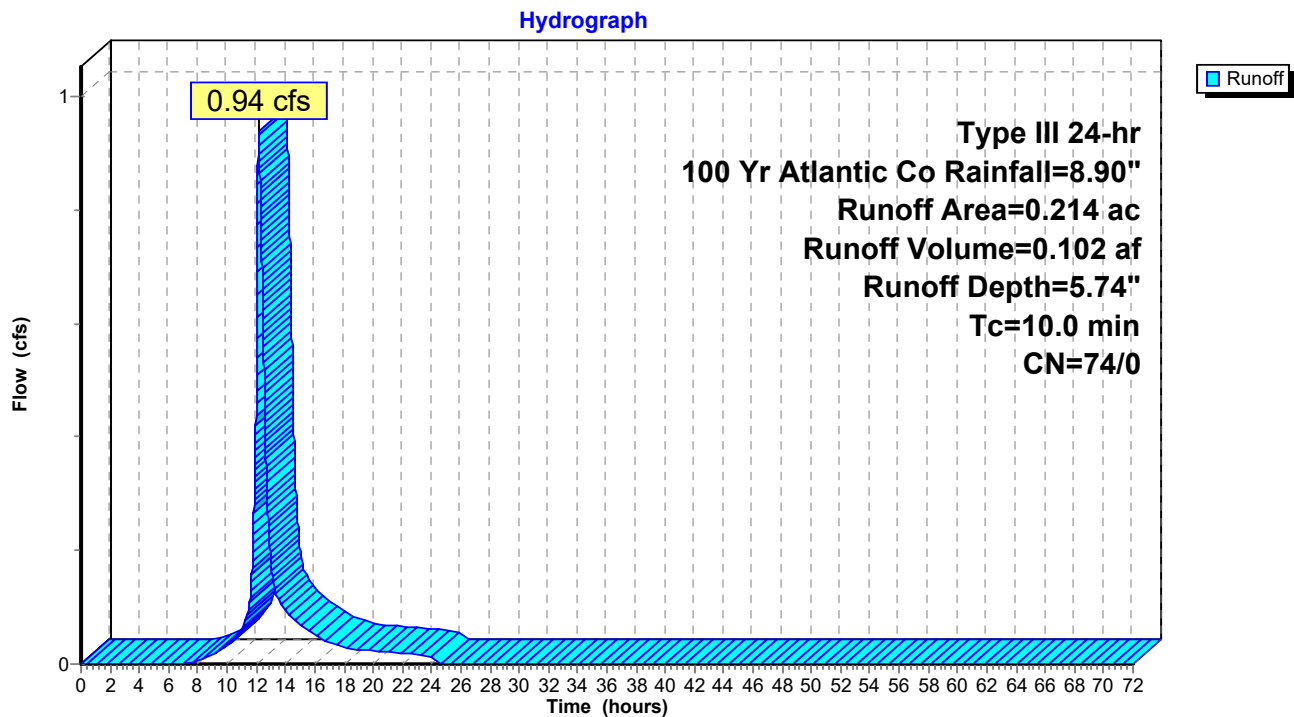
Runoff = 0.94 cfs @ 12.16 hrs, Volume= 0.102 af, Depth= 5.74"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.070	61	>75% Grass cover, Good, HSG B
0.144	80	>75% Grass cover, Good, HSG D
0.214	74	Weighted Average
0.214	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Direct

### Subcatchment 2Bp: PRDA-2Bp



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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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### Summary for Subcatchment 2Ci: PRDA-2Ci

Runoff = 10.68 cfs @ 12.15 hrs, Volume= 1.316 af, Depth= 8.66"

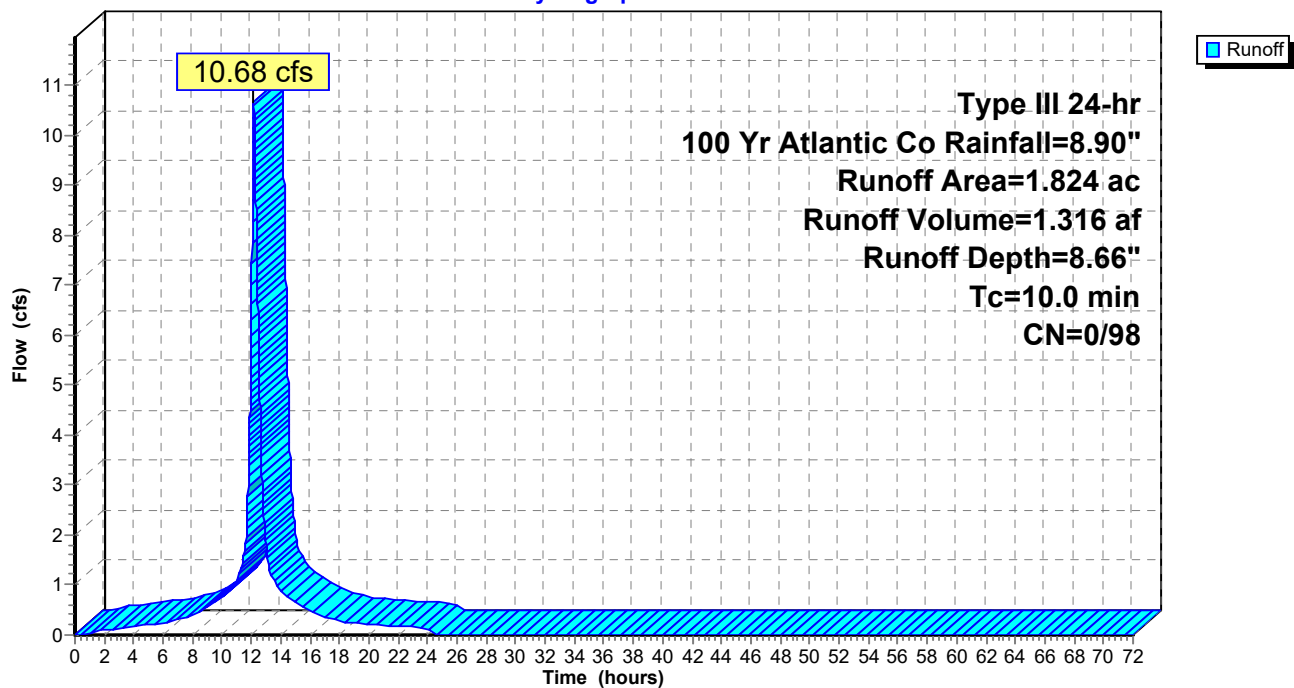
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.990	98	Paved parking, HSG B
0.834	98	Paved parking, HSG D
1.824	98	Weighted Average
1.824	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 2Ci: PRDA-2Ci

Hydrograph



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### Summary for Subcatchment 2Cp: PRDA-2Cp

Runoff = 5.62 cfs @ 12.16 hrs, Volume= 0.612 af, Depth= 5.25"

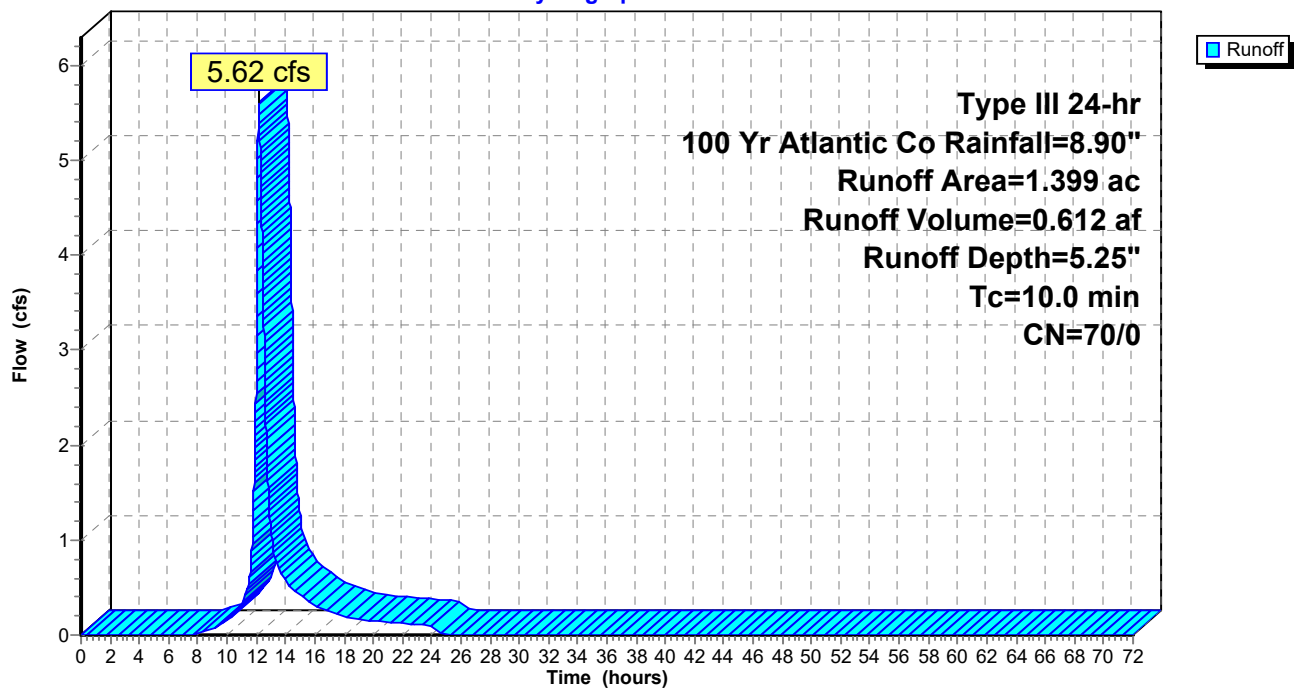
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.725	61	>75% Grass cover, Good, HSG B
0.674	80	>75% Grass cover, Good, HSG D
1.399	70	Weighted Average
1.399	70	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 2Cp: PRDA-2Cp

Hydrograph



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### Summary for Subcatchment Bdg1: BLDG-1

Runoff = 1.67 cfs @ 12.15 hrs, Volume= 0.206 af, Depth= 8.66"

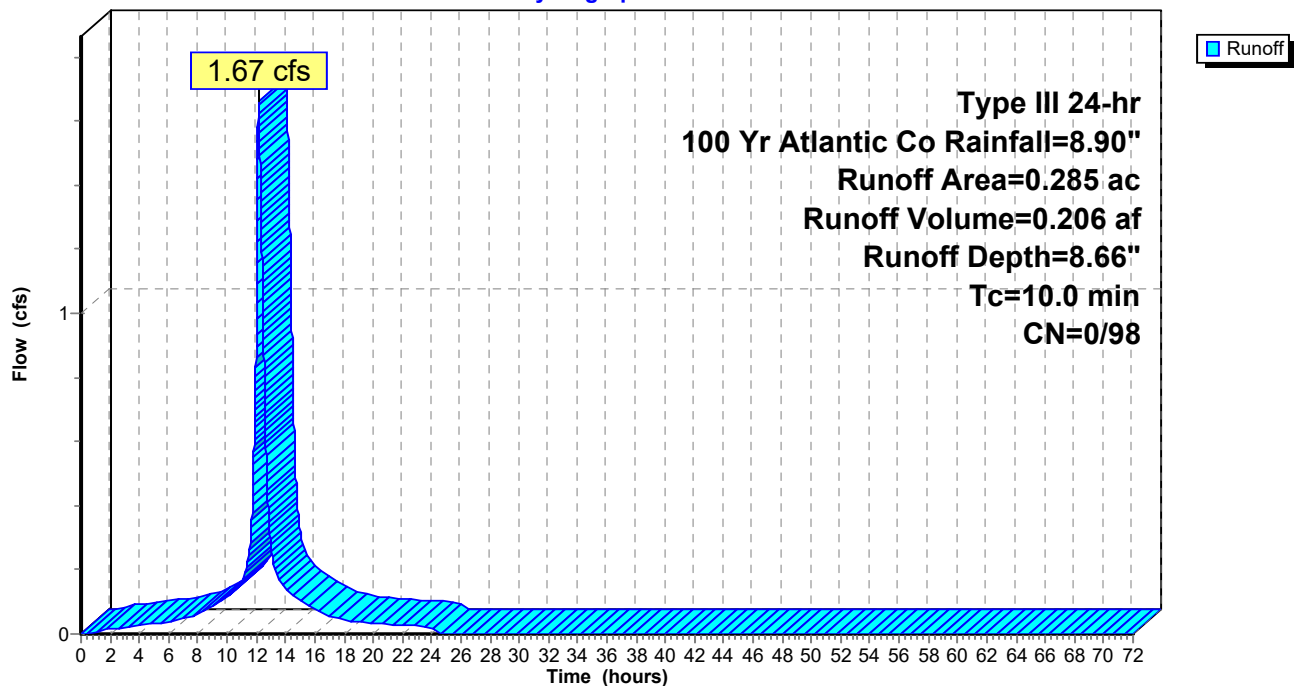
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.285	98	Roofs, HSG B
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg1: BLDG-1

Hydrograph



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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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### Summary for Subcatchment Bdg2: BLDG-2

Runoff = 1.67 cfs @ 12.15 hrs, Volume= 0.206 af, Depth= 8.66"

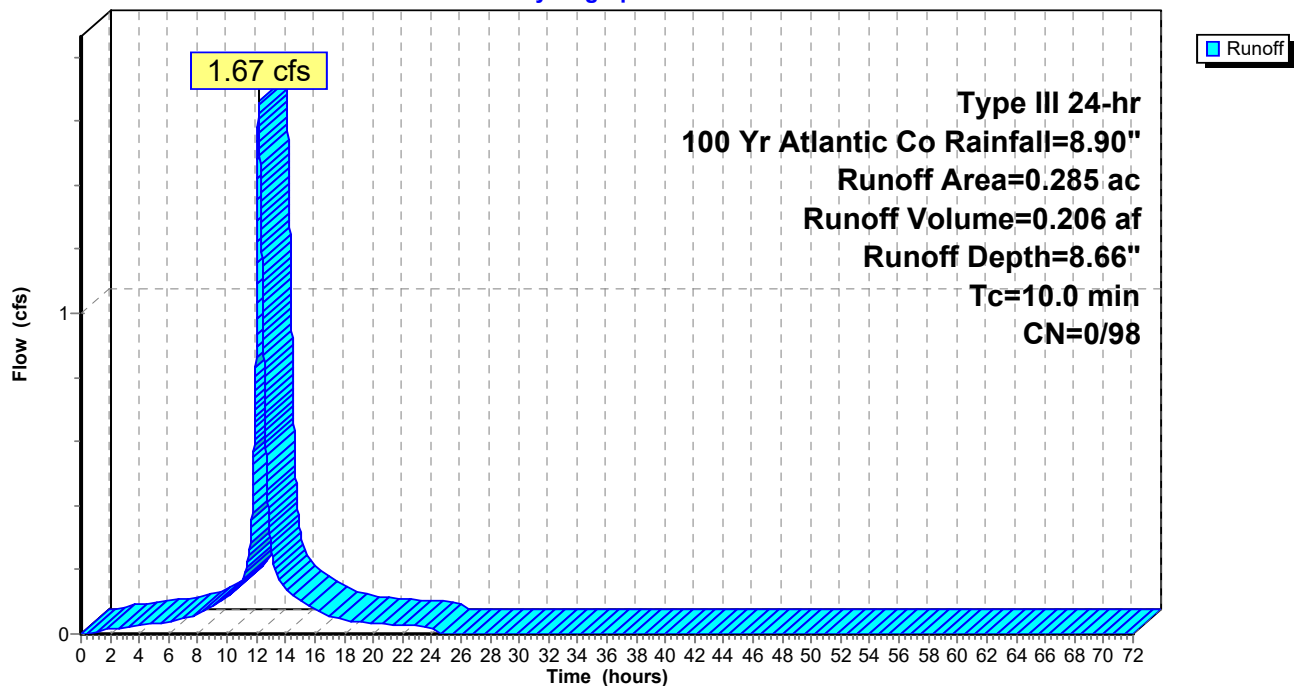
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.285	98	Roofs, HSG B
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg2: BLDG-2

Hydrograph



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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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### Summary for Subcatchment Bdg3: BLDG-3

Runoff = 1.67 cfs @ 12.15 hrs, Volume= 0.206 af, Depth= 8.66"

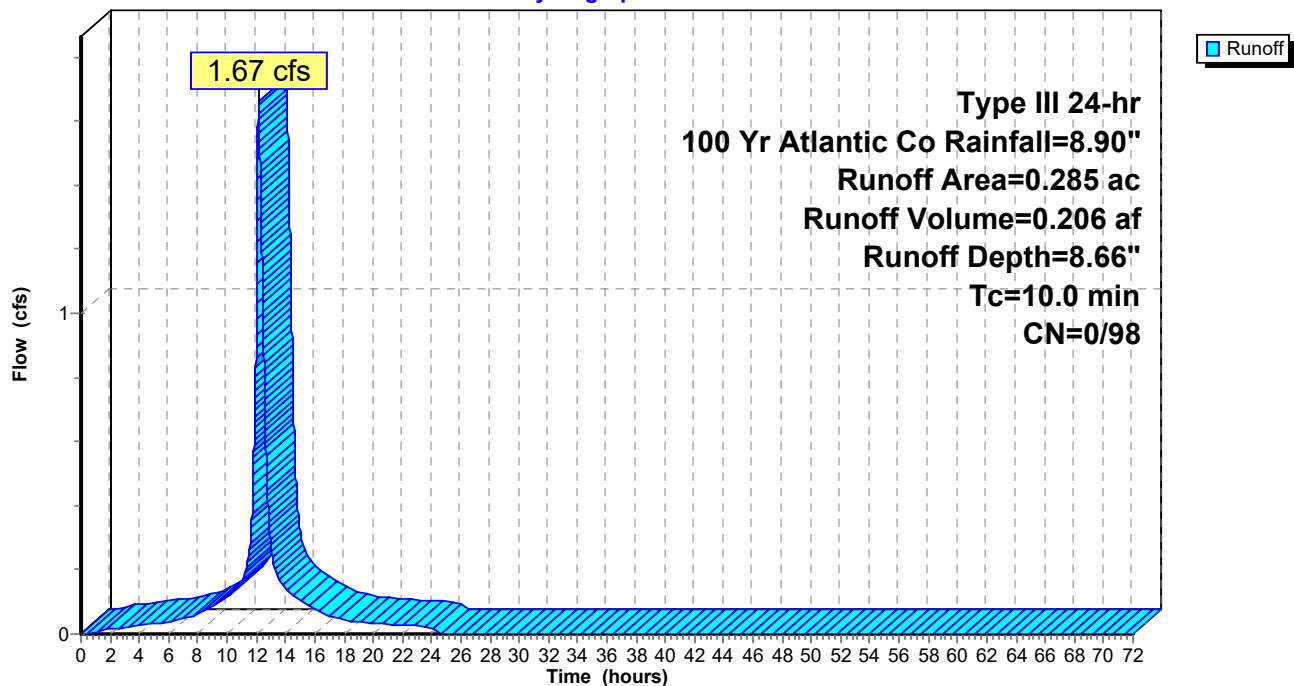
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.285	98	Roofs, HSG B
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg3: BLDG-3

Hydrograph



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### Summary for Subcatchment Bdg4: BLDG-4

Runoff = 1.67 cfs @ 12.15 hrs, Volume= 0.206 af, Depth= 8.66"

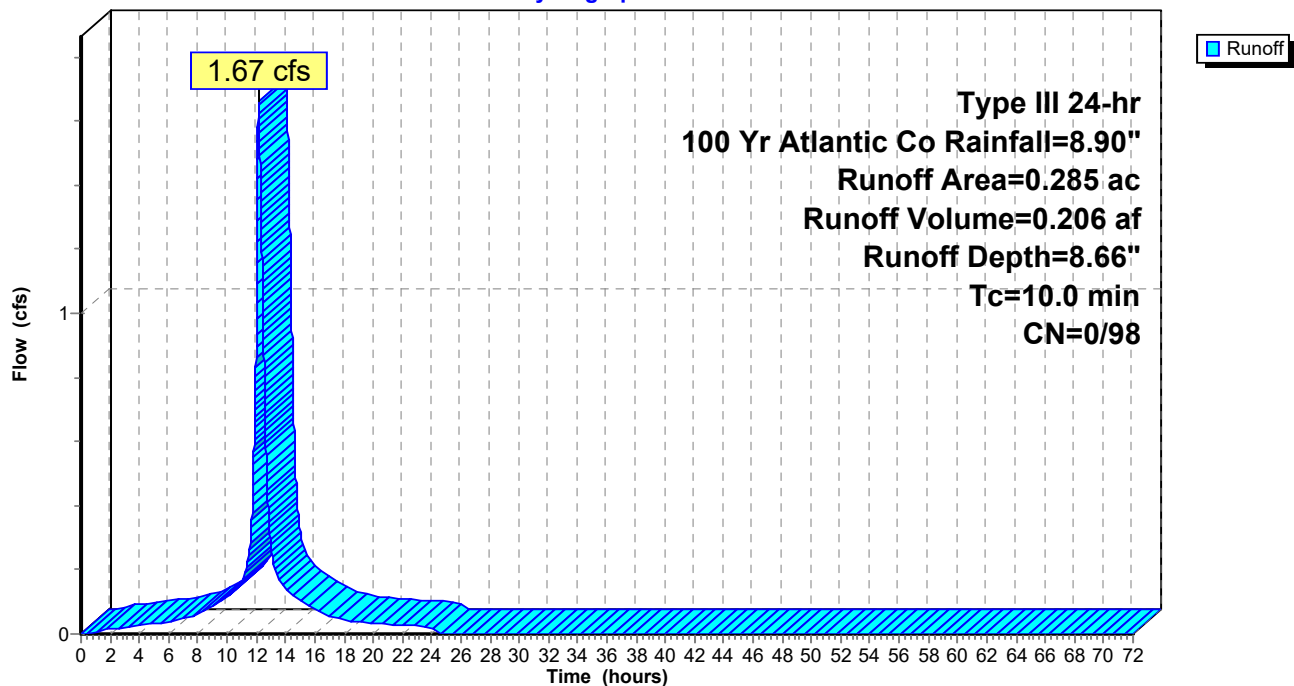
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.285	98	Roofs, HSG D
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg4: BLDG-4

Hydrograph



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### Summary for Subcatchment Bdg5: BLDG-5

Runoff = 1.67 cfs @ 12.15 hrs, Volume= 0.206 af, Depth= 8.66"

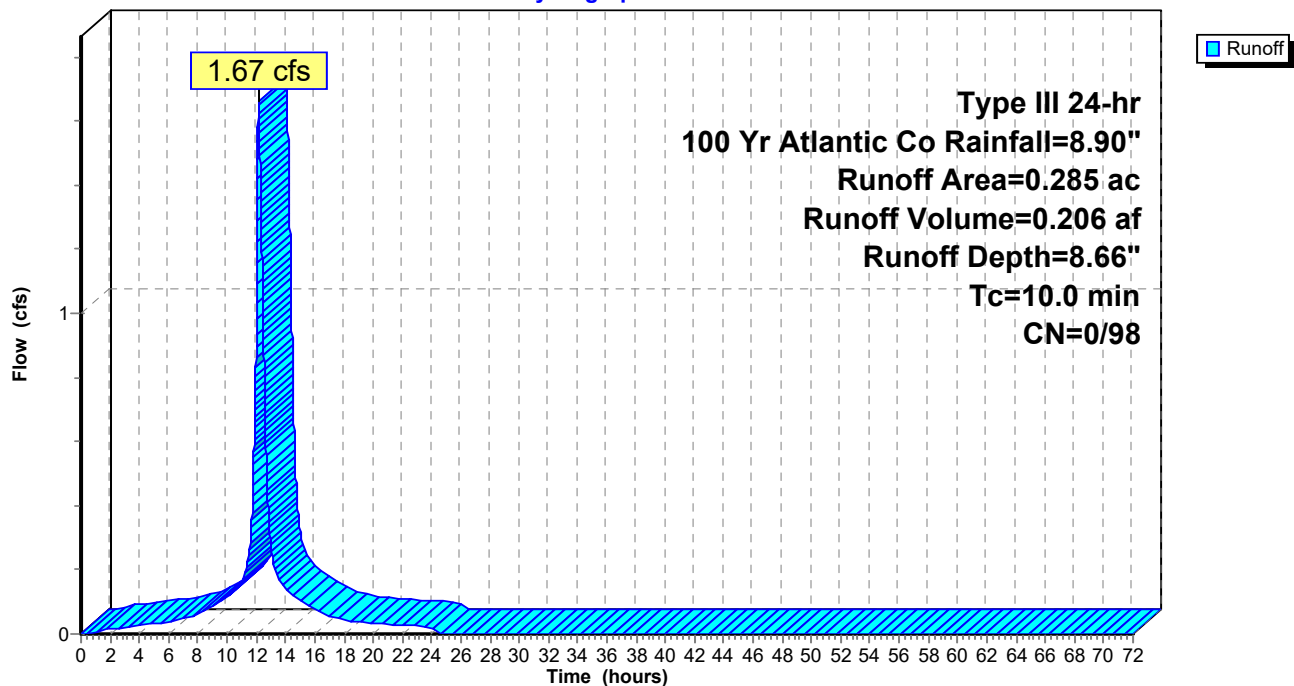
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.285	98	Roofs, HSG D
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg5: BLDG-5

Hydrograph



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### Summary for Subcatchment Bdg6: BLDG-6

Runoff = 1.67 cfs @ 12.15 hrs, Volume= 0.206 af, Depth= 8.66"

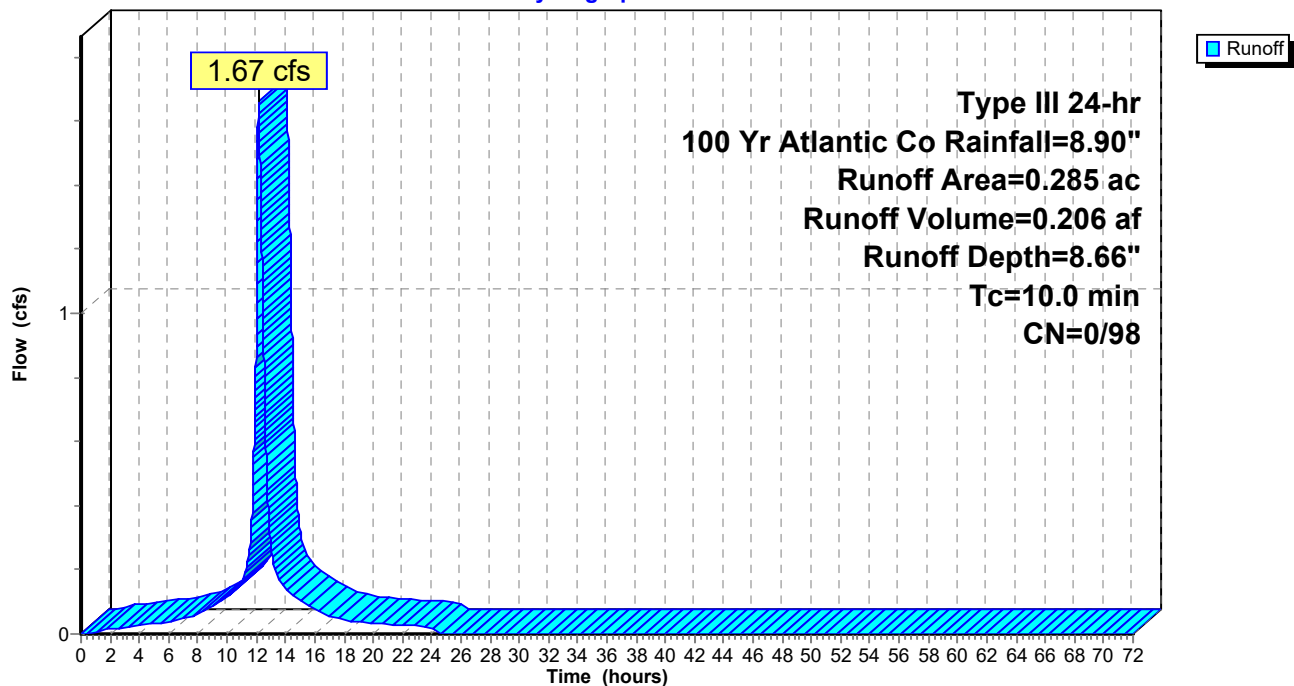
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

Area (ac)	CN	Description
0.285	98	Roofs, HSG D
0.285	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment Bdg6: BLDG-6

Hydrograph



**Emergency Conditions**

Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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**Summary for Pond 1B: Basin 1B**

[58] Hint: Peaked 0.25' above defined flood level

Inflow Area = 1.037 ac, 66.83% Impervious, Inflow Depth = 7.36" for 100 Yr Atlantic Co event  
 Inflow = 5.30 cfs @ 12.16 hrs, Volume= 0.636 af  
 Outflow = 5.20 cfs @ 12.19 hrs, Volume= 0.636 af, Atten= 2%, Lag= 2.2 min  
 Primary = 5.20 cfs @ 12.19 hrs, Volume= 0.636 af

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Starting Elev= 7.75' Surf.Area= 3,479 sf Storage= 3,582 cf  
 Peak Elev= 8.00' @ 12.19 hrs Surf.Area= 3,863 sf Storage= 4,507 cf (925 cf above start)  
 Flood Elev= 7.75' Surf.Area= 3,479 sf Storage= 3,582 cf

Plug-Flow detention time= 116.0 min calculated for 0.554 af (87% of inflow)  
 Center-of-Mass det. time= 6.1 min ( 774.8 - 768.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	6.20'	6,627 cf	<b>Proposed Contours (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.20	1,170	0	0
7.00	2,335	1,402	1,402
8.00	3,860	3,098	4,500
8.50	4,650	2,128	6,627

Device	Routing	Invert	Outlet Devices
#1	Primary	7.75'	<b>10' Wide Broadcrested Weir, Cv= 3.10 (C= 3.88)</b> Head (feet) 0.00 0.25 0.50 0.75 1.00 Width (feet) 10.00 11.50 13.00 14.50 16.00

**Primary OutFlow** Max=5.20 cfs @ 12.19 hrs HW=8.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=10' Wide Broadcrested Weir (Weir Controls 5.20 cfs @ 1.92 fps)

## Emergency Conditions

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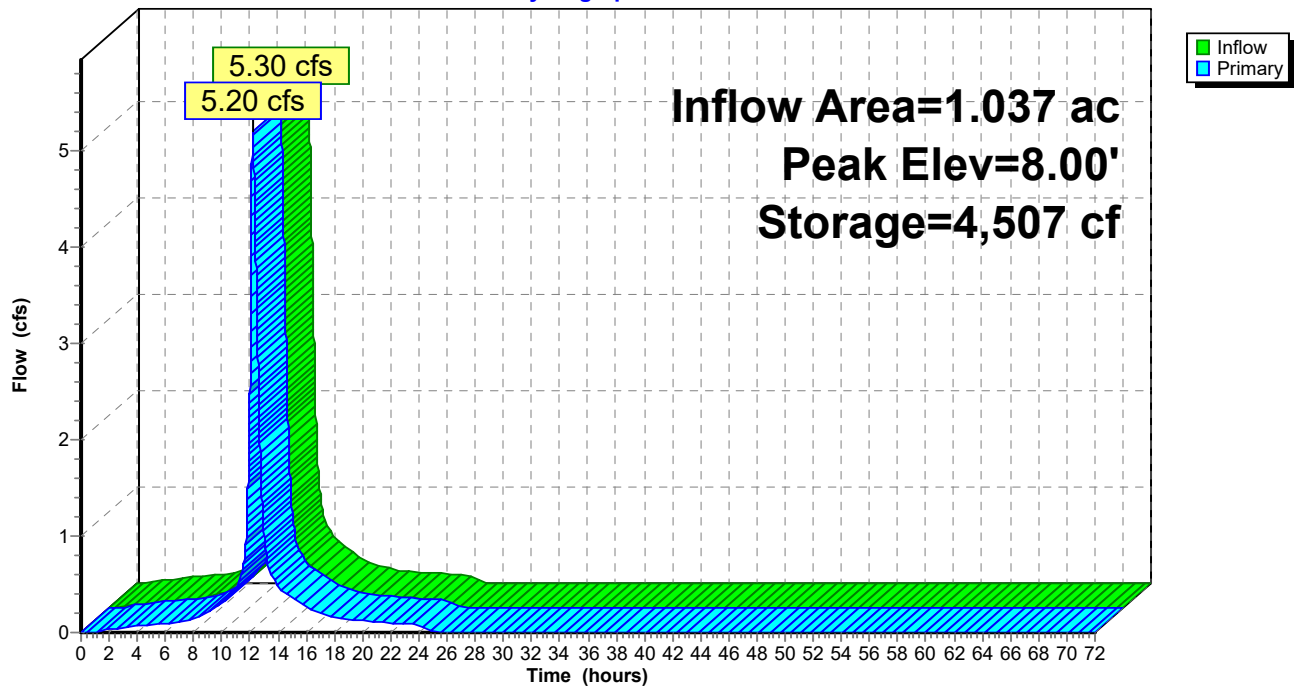
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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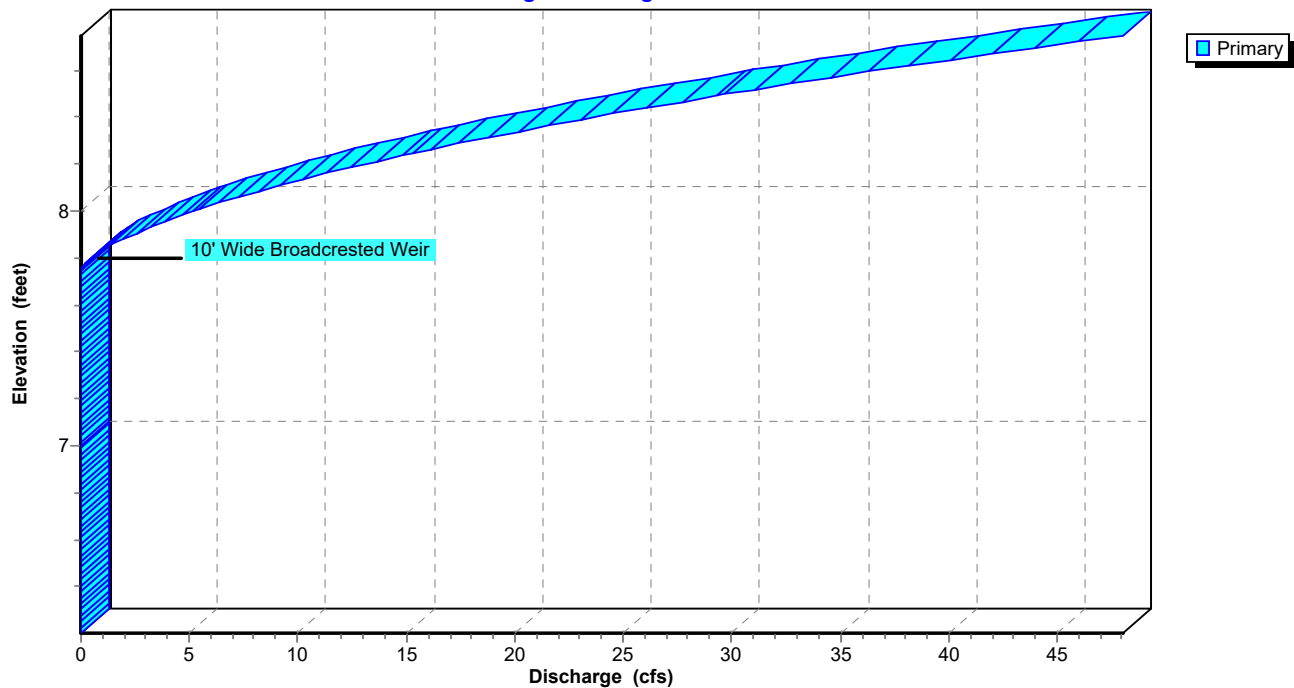
### Pond 1B: Basin 1B

Hydrograph



### Pond 1B: Basin 1B

Stage-Discharge



## Emergency Conditions

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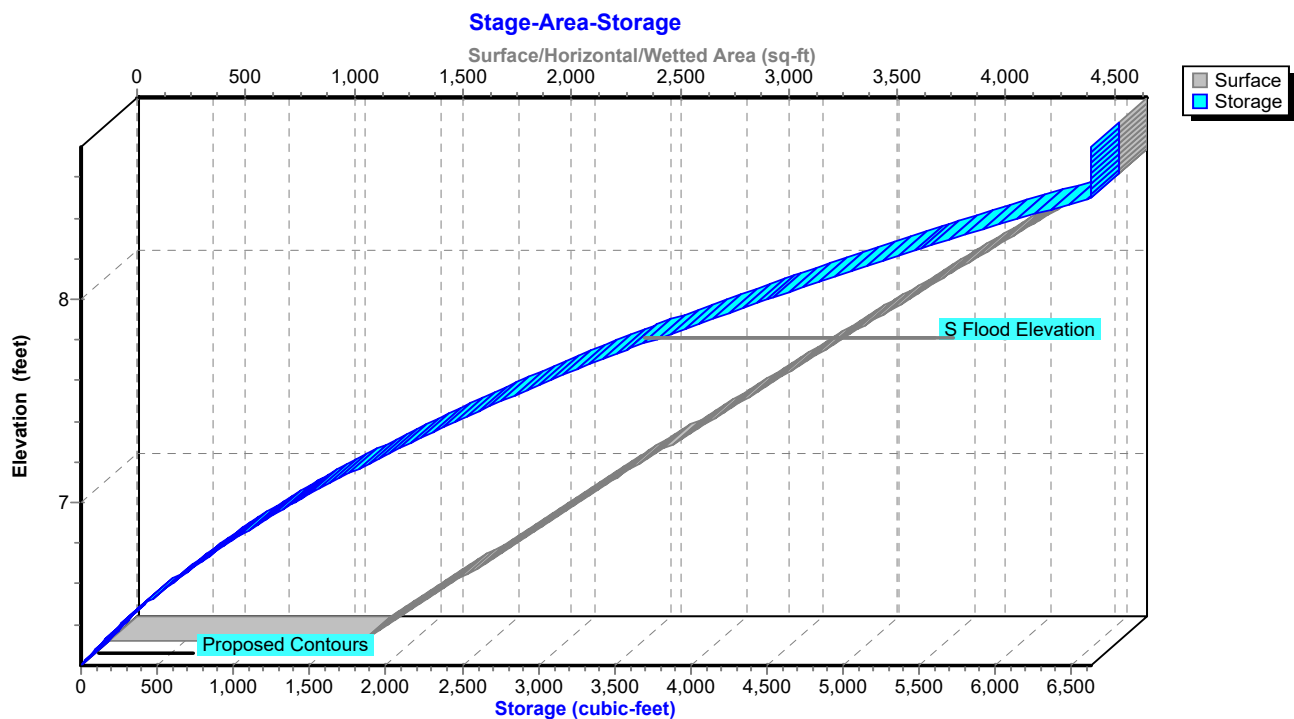
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### Pond 1B: Basin 1B



**Emergency Conditions**

Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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**Summary for Pond 2C: Basin 2C**

[58] Hint: Peaked 0.36' above defined flood level

Inflow Area = 4.018 ac, 59.86% Impervious, Inflow Depth = 7.32" for 100 Yr Atlantic Co event  
 Inflow = 20.62 cfs @ 12.16 hrs, Volume= 2.450 af  
 Outflow = 17.38 cfs @ 12.30 hrs, Volume= 2.450 af, Atten= 16%, Lag= 8.7 min  
 Primary = 17.38 cfs @ 12.30 hrs, Volume= 2.450 af

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Starting Elev= 9.00' Surf.Area= 32,215 sf Storage= 60,856 cf  
 Peak Elev= 9.36' @ 12.30 hrs Surf.Area= 33,559 sf Storage= 72,658 cf (11,802 cf above start)  
 Flood Elev= 9.00' Surf.Area= 32,215 sf Storage= 60,856 cf

Plug-Flow detention time= 330.6 min calculated for 1.052 af (43% of inflow)  
 Center-of-Mass det. time= 22.9 min ( 795.7 - 772.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	6.85'	94,944 cf	<b>Proposed Contours (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.85	24,460	0	0
7.00	24,990	3,709	3,709
8.00	28,545	26,768	30,476
9.00	32,215	30,380	60,856
10.00	35,960	34,088	94,944

Device	Routing	Invert	Outlet Devices
#1	Primary	9.00'	<b>20' Wide Broadcrested Weir, Cv= 3.10 (C= 3.88)</b> Head (feet) 0.00 0.50 1.00 1.50 Width (feet) 20.00 23.00 26.00 29.00

**Primary OutFlow** Max=17.38 cfs @ 12.30 hrs HW=9.36' TW=0.00' (Dynamic Tailwater)  
 ↑1=20' Wide Broadcrested Weir (Weir Controls 17.38 cfs @ 2.30 fps)

## Emergency Conditions

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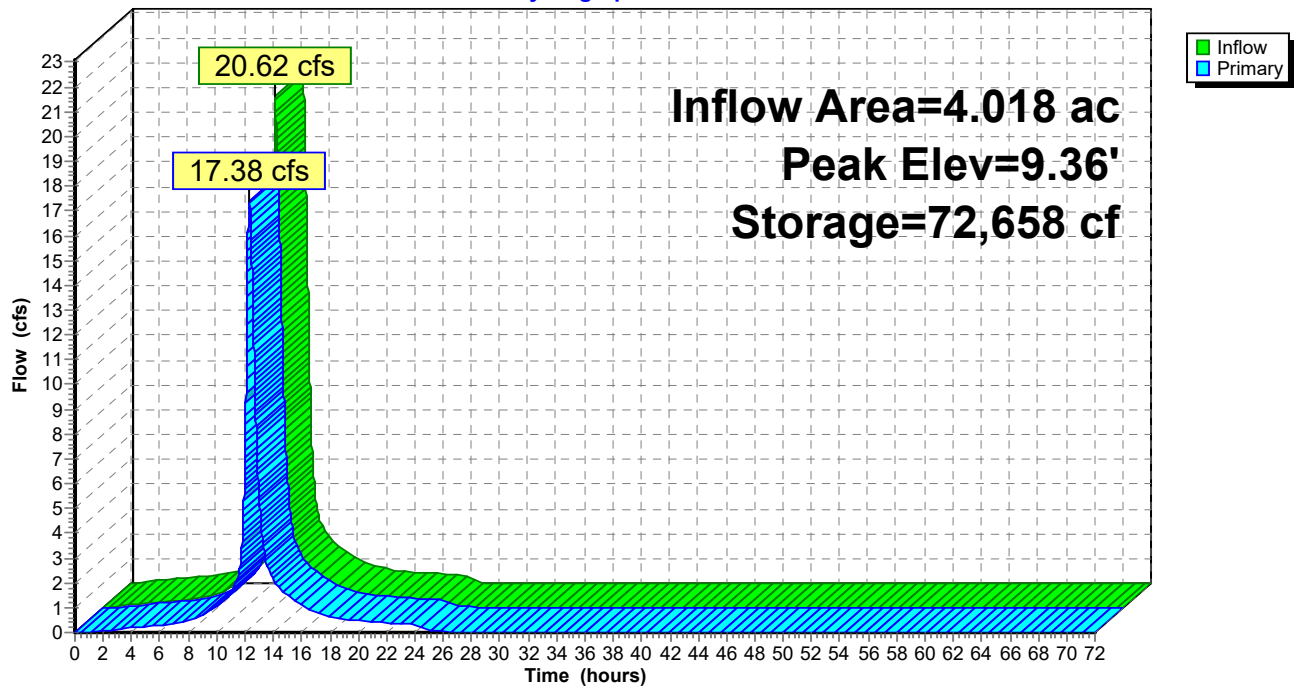
Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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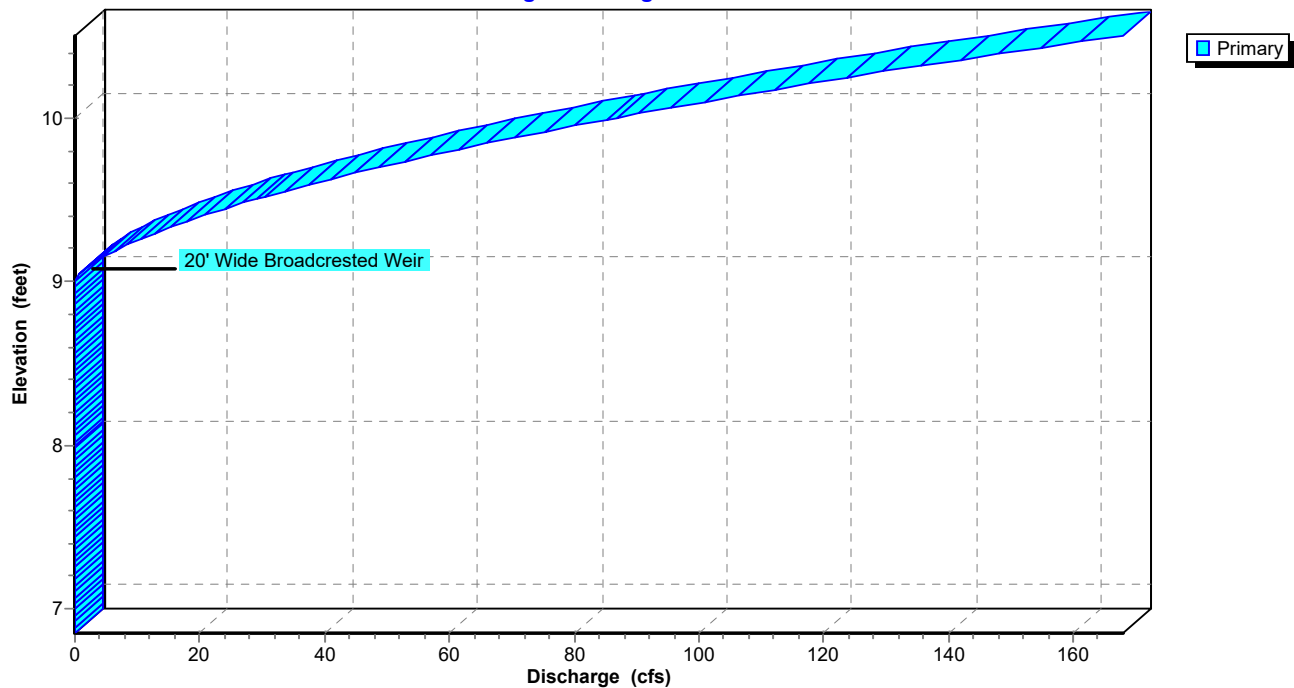
### Pond 2C: Basin 2C

Hydrograph



### Pond 2C: Basin 2C

Stage-Discharge



## Emergency Conditions

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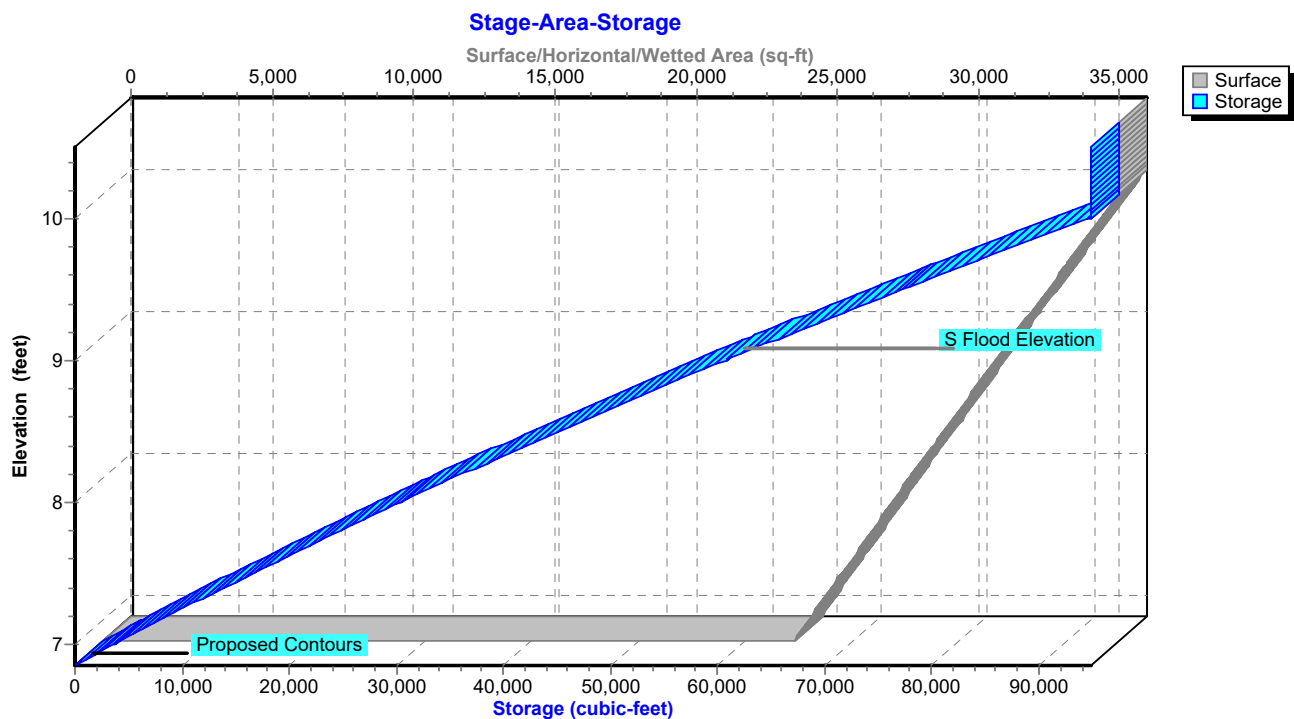
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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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### Pond 2C: Basin 2C



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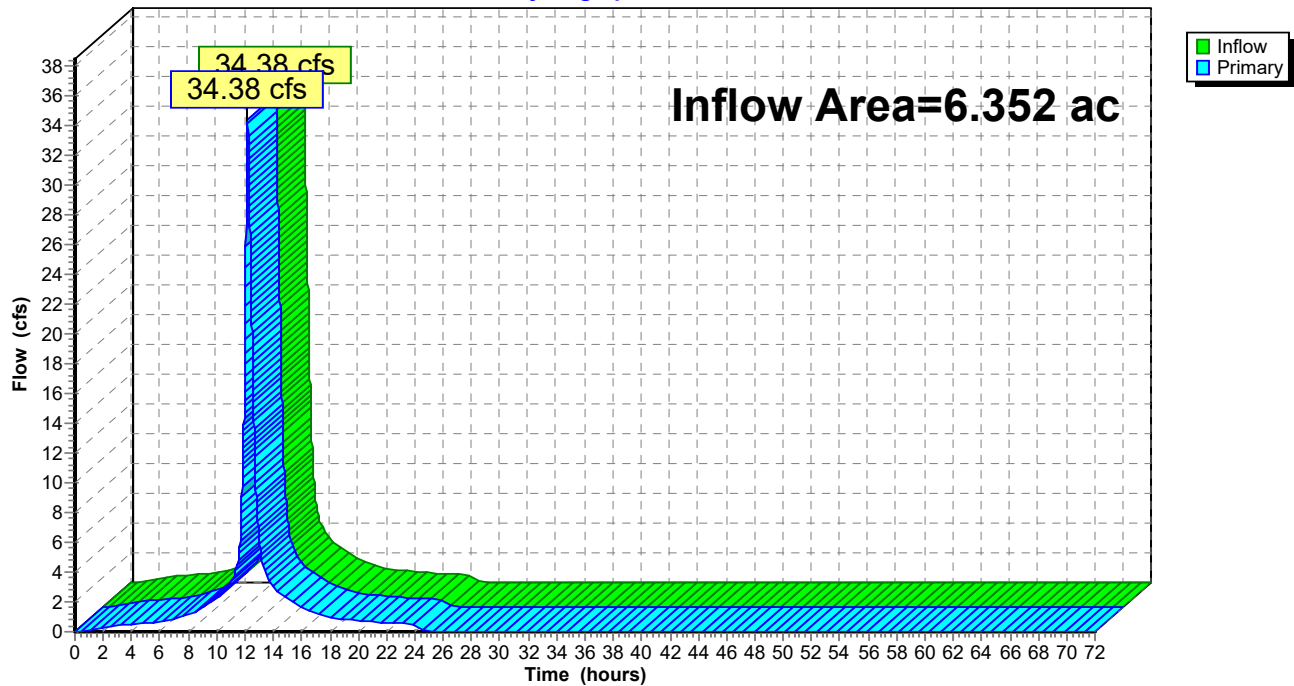
### Summary for Link 1L: PT 1

Inflow Area = 6.352 ac, 82.07% Impervious, Inflow Depth = 7.96" for 100 Yr Atlantic Co event  
Inflow = 34.38 cfs @ 12.16 hrs, Volume= 4.213 af  
Primary = 34.38 cfs @ 12.17 hrs, Volume= 4.213 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Link 1L: PT 1

Hydrograph



## Emergency Conditions

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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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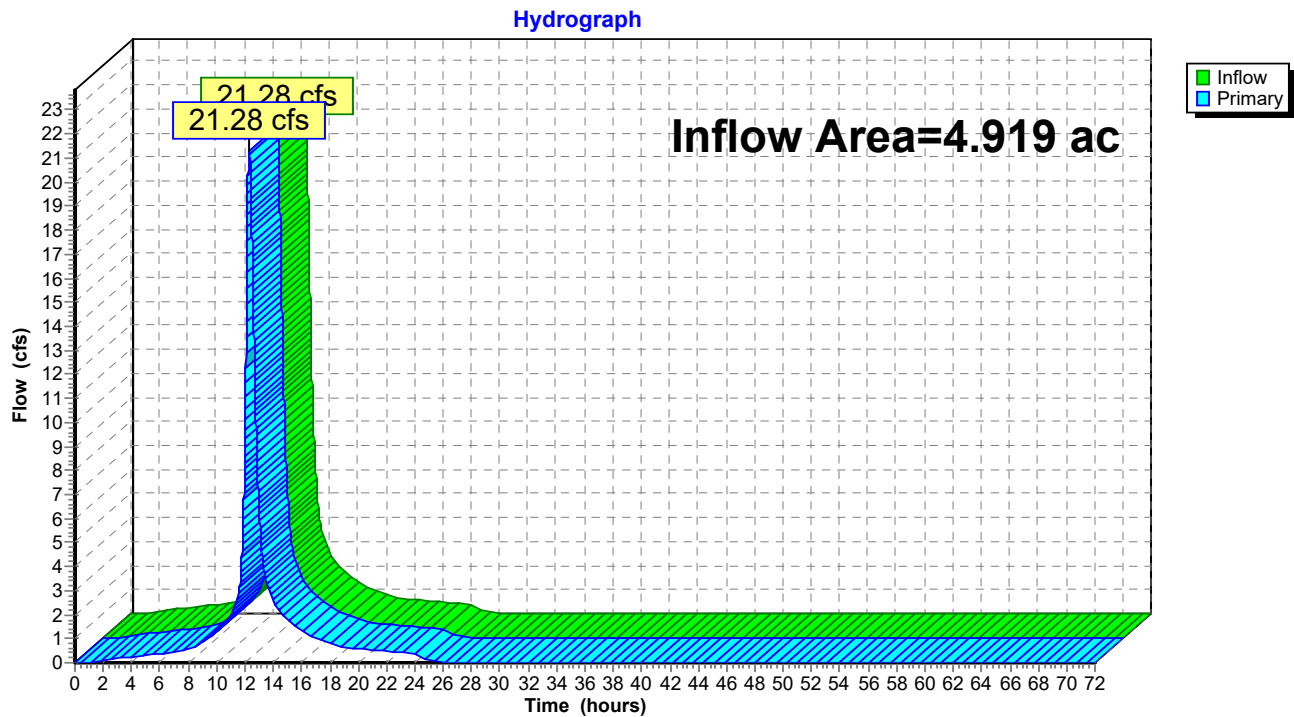
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### Summary for Link 2L: PT 2

Inflow Area = 4.919 ac, 59.10% Impervious, Inflow Depth = 7.30" for 100 Yr Atlantic Co event  
Inflow = 21.28 cfs @ 12.28 hrs, Volume= 2.990 af  
Primary = 21.28 cfs @ 12.29 hrs, Volume= 2.990 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Link 2L: PT 2



## Emergency Conditions

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Type III 24-hr 100 Yr Atlantic Co Rainfall=8.90"

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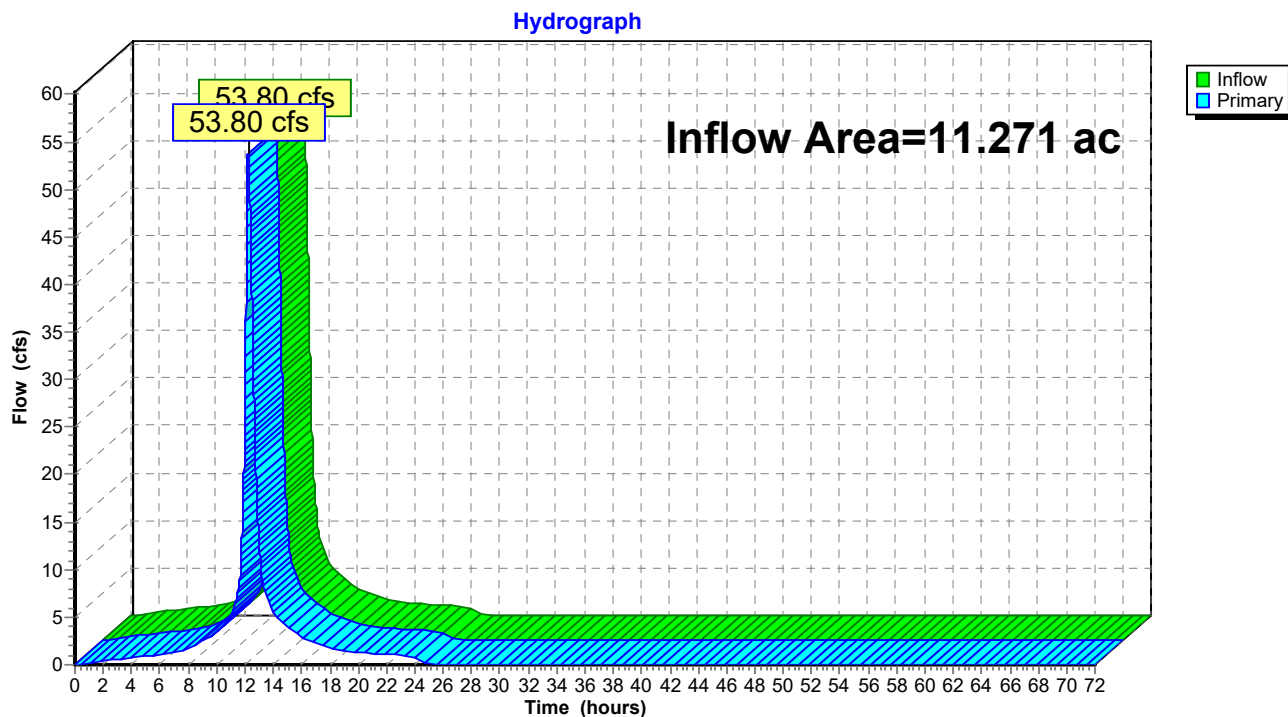
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### Summary for Link 4L: TTA

Inflow Area = 11.271 ac, 72.04% Impervious, Inflow Depth = 7.67" for 100 Yr Atlantic Co event  
Inflow = 53.80 cfs @ 12.20 hrs, Volume= 7.204 af  
Primary = 53.80 cfs @ 12.21 hrs, Volume= 7.204 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Link 4L: TTA



# **APPENDIX G**

## STORM SEWER CALCULATIONS





## RUNOFF COEFFICIENTS

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INLET-1		HSG B				HSG D		HSG B		HSG D	
		Area		Area		Area					
		SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious		12915	0.296	12915	0.296	0	0.000	0.99	0.294	0.99	0.000
0.25 Ac Resi		79060	1.815	79060	1.815	0	0.000	0.55	0.998	0.80	0.000
		91975	2.111	91975	2.111	0	0.000		1.292		0.000
INLET-2		HSG B				HSG D		HSG B		HSG D	
		Area		Area		Area					
		SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious		5375	0.123	5375	0.123	0	0.000	0.99	0.122	0.99	0.000
0.25 Ac Resi		31510	0.723	31510	0.723	0	0.000	0.55	0.398	0.80	0.000
		36885	0.847	36885	0.847	0	0.000		0.520		0.000
INLET-3		HSG B				HSG D		HSG B		HSG D	
		Area		Area		Area					
		SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious		16020	0.368	6365	0.146	9655	0.222	0.99	0.145	0.99	0.219
Open Space		14880	0.342	5910	0.136	8970	0.206	0.25	0.034	0.65	0.134
		30900	0.709	12275	0.282	18625	0.428		0.179		0.353
INLET-4		HSG B				HSG D		HSG B		HSG D	
		Area		Area		Area					
		SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious		5925	0.136	4340	0.100	1585	0.036	0.99	0.099	0.99	0.036
0.25 Ac Resi		24550	0.564	18340	0.421	6210	0.143	0.55	0.232	0.80	0.114
		30475	0.700	22680	0.521	7795	0.179		0.330		0.150
INLET-5		HSG B				HSG D		HSG B		HSG D	
		Area		Area		Area					
		SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious		4505	0.103	4505	0.103	0	0.000	0.99	0.102	0.99	0.000
Open Space		3560	0.082	3560	0.082	0	0.000	0.25	0.020	0.65	0.000
		8065	0.185	8065	0.185	0	0.000		0.123		0.000



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INLET-6	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	2630	0.060	2630	0.060	0	0.000	0.99	0.060	0.99	0.000
Open Space	1930	0.044	1930	0.044	0	0.000	0.25	0.011	0.65	0.000
	4560	0.105	4560	0.105	0	0.000		0.071		0.000

INLET-7	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	8490	0.195	8490	0.195	0	0.000	0.99	0.193	0.99	0.000
Open Space	7335	0.168	7335	0.168	0	0.000	0.25	0.042	0.65	0.000
	15825	0.363	15825	0.363	0	0.000		0.235		0.000

INLET-7A	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	12955	0.297	12955	0.297	0	0.000	0.99	0.294	0.99	0.000
Open Space	4660	0.107	4660	0.107	0	0.000	0.25	0.027	0.65	0.000
	17615	0.404	17615	0.404	0	0.000		0.321		0.000

INLET-8	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	5840	0.134	5840	0.134	0	0.000	0.99	0.133	0.99	0.000
Open Space	0	0.000	0	0.000	0	0.000	0.25	0.000	0.65	0.000
	5840	0.134	5840	0.134	0	0.000		0.133		0.000

INLET-8A	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	9330	0.214	9330	0.214	0	0.000	0.99	0.212	0.99	0.000
Open Space	5345	0.123	5345	0.123	0	0.000	0.25	0.031	0.65	0.000
	14675	0.337	14675	0.337	0	0.000		0.243		0.000

INLET-8B	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	6805	0.156	6805	0.156	0	0.000	0.99	0.155	0.99	0.000
Open Space	165	0.004	165	0.004	0	0.000	0.25	0.001	0.65	0.000
	6970	0.160	6970	0.160	0	0.000		0.156		0.000



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### INLET-9

	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	3465	0.080	2820	0.065	645	0.015	0.99	0.064	0.99	0.015
Open Space	<u>1695</u>	<u>0.039</u>	<u>1630</u>	<u>0.037</u>	<u>65</u>	<u>0.001</u>	0.25	<u>0.009</u>	0.65	<u>0.001</u>
	5160	0.118	4450	0.102	710	0.016		0.073		0.016

### INLET-10

	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	12070	0.277	400	0.009	11670	0.268	0.99	0.009	0.99	0.265
Open Space	<u>1115</u>	<u>0.026</u>	<u>0</u>	<u>0.000</u>	<u>1115</u>	<u>0.026</u>	0.25	<u>0.000</u>	0.65	<u>0.017</u>
	13185	0.303	400	0.009	12785	0.294		0.009		0.282

### INLET-10A

	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	1110	0.025	1110	0.025	0	0.000	0.99	0.025	0.99	0.000
Open Space	<u>2245</u>	<u>0.052</u>	<u>345</u>	<u>0.008</u>	<u>1900</u>	<u>0.044</u>	0.25	<u>0.002</u>	0.65	<u>0.028</u>
	3355	0.077	1455	0.033	1900	0.044		0.027		0.028

### INLET-11

	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	31745	0.729	0	0.000	31745	0.729	0.99	0.000	0.99	0.721
Open Space	<u>1450</u>	<u>0.033</u>	<u>0</u>	<u>0.000</u>	<u>1450</u>	<u>0.033</u>	0.25	<u>0.000</u>	0.65	<u>0.022</u>
	33195	0.762	0	0.000	33195	0.762		0.000		0.743

### INLET-11A

	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	9290	0.213	0	0.000	9290	0.213	0.99	0.000	0.99	0.211
Open Space	<u>1330</u>	<u>0.031</u>	<u>0</u>	<u>0.000</u>	<u>1330</u>	<u>0.031</u>	0.25	<u>0.000</u>	0.65	<u>0.020</u>
	10620	0.244	0	0.000	10620	0.244		0.000		0.231

### INLET-12

	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	2965	0.068	0	0.000	2965	0.068	0.99	0.000	0.99	0.067
Open Space	<u>3330</u>	<u>0.076</u>	<u>0</u>	<u>0.000</u>	<u>3330</u>	<u>0.076</u>	0.25	<u>0.000</u>	0.65	<u>0.050</u>
	6295	0.145	0	0.000	6295	0.145		0.000		0.117



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INLET-13		Area		HSG B Area		HSG D Area		HSG B		HSG D	
		SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious		14650	0.336	0	0.000	14650	0.336	0.99	0.000	0.99	0.333
Open Space		<u>3760</u>	<u>0.086</u>	<u>0</u>	<u>0.000</u>	<u>3760</u>	<u>0.086</u>	0.25	<u>0.000</u>	0.65	<u>0.056</u>
		18410	0.423	0	0.000	18410	0.423		0.000		0.389
INLET-13A		Area		HSG B Area		HSG D Area		HSG B		HSG D	
		SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious		2575	0.059	0	0.000	2575	0.059	0.99	0.000	0.99	0.059
Open Space		<u>4650</u>	<u>0.107</u>	<u>0</u>	<u>0.000</u>	<u>4650</u>	<u>0.107</u>	0.25	<u>0.000</u>	0.65	<u>0.069</u>
		7225	0.166	0	0.000	7225	0.166		0.000		0.128
INLET-14		Area		HSG B Area		HSG D Area		HSG B		HSG D	
		SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious		1555	0.036	0	0.000	1555	0.036	0.99	0.000	0.99	0.035
Open Space		<u>1555</u>	<u>0.036</u>	<u>0</u>	<u>0.000</u>	<u>1555</u>	<u>0.036</u>	0.25	<u>0.000</u>	0.65	<u>0.023</u>
		3110	0.071	0	0.000	3110	0.071		0.000		0.059
INLET-14A		Area		HSG B Area		HSG D Area		HSG B		HSG D	
		SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious		3165	0.073	0	0.000	3165	0.073	0.99	0.000	0.99	0.072
Open Space		<u>35020</u>	<u>0.804</u>	<u>0</u>	<u>0.000</u>	<u>35020</u>	<u>0.804</u>	0.25	<u>0.000</u>	0.65	<u>0.523</u>
		38185	0.877	0	0.000	38185	0.877		0.000		0.594
INLET-15		Area		HSG B Area		HSG D Area		HSG B		HSG D	
		SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious		10025	0.230	0	0.000	10025	0.230	0.99	0.000	0.99	0.228
Open Space		<u>930</u>	<u>0.021</u>	<u>0</u>	<u>0.000</u>	<u>930</u>	<u>0.021</u>	0.25	<u>0.000</u>	0.65	<u>0.014</u>
		10955	0.251	0	0.000	10955	0.251		0.000		0.242
INLET-16		Area		HSG B Area		HSG D Area		HSG B		HSG D	
		SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious		15815	0.363	8100	0.186	7715	0.177	0.99	0.184	0.99	0.175
Open Space		<u>4980</u>	<u>0.114</u>	<u>2645</u>	<u>0.061</u>	<u>2335</u>	<u>0.054</u>	0.25	<u>0.015</u>	0.65	<u>0.035</u>
		20795	0.477	10745	0.247	10050	0.231		0.199		0.210



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### INLET-17

	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	23730	0.545	23730	0.545	0	0.000	0.99	0.539	0.99	0.000
Open Space	<u>3140</u>	<u>0.072</u>	<u>3140</u>	<u>0.072</u>	<u>0</u>	<u>0.000</u>	0.25	<u>0.018</u>	0.65	<u>0.000</u>
	26870	0.617	26870	0.617	0	0.000		0.557		0.000

### INLET-18

	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	25615	0.588	10890	0.250	14725	0.338	0.99	0.248	0.99	0.335
Open Space	<u>9830</u>	<u>0.226</u>	<u>4570</u>	<u>0.105</u>	<u>5260</u>	<u>0.121</u>	0.25	<u>0.026</u>	0.65	<u>0.078</u>
	35445	0.814	15460	0.355	19985	0.459		0.274		0.413

### INLET-19

	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	8890	0.204	8495	0.195	395	0.009	0.99	0.193	0.99	0.009
Open Space	<u>2260</u>	<u>0.052</u>	<u>2260</u>	<u>0.052</u>	<u>0</u>	<u>0.000</u>	0.25	<u>0.013</u>	0.65	<u>0.000</u>
	11150	0.256	10755	0.247	395	0.009		0.206		0.009

### INLET-19A

	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	11525	0.265	11090	0.255	435	0.010	0.99	0.252	0.99	0.010
Open Space	<u>2925</u>	<u>0.067</u>	<u>2255</u>	<u>0.052</u>	<u>670</u>	<u>0.015</u>	0.25	<u>0.013</u>	0.65	<u>0.010</u>
	14450	0.332	13345	0.306	1105	0.025		0.265		0.020

### INLET-20

	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	8885	0.204	0	0.000	8885	0.204	0.99	0.000	0.99	0.202
Open Space	<u>2260</u>	<u>0.052</u>	<u>0</u>	<u>0.000</u>	<u>2260</u>	<u>0.052</u>	0.25	<u>0.000</u>	0.65	<u>0.034</u>
	11145	0.256	0	0.000	11145	0.256		0.000		0.236

### INLET-20A

	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	11535	0.265	0	0.000	11535	0.265	0.99	0.000	0.99	0.262
Open Space	<u>2905</u>	<u>0.067</u>	<u>0</u>	<u>0.000</u>	<u>2905</u>	<u>0.067</u>	0.25	<u>0.000</u>	0.65	<u>0.043</u>
	14440	0.331	0	0.000	14440	0.331		0.000		0.306



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### INLET-21

	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	8240	0.189	0	0.000	8240	0.189	0.99	0.000	0.99	0.187
Open Space	<u>2970</u>	<u>0.068</u>	<u>0</u>	<u>0.000</u>	<u>2970</u>	<u>0.068</u>	0.25	<u>0.000</u>	0.65	<u>0.044</u>
	11210	0.257	0	0.000	11210	0.257		0.000		0.232

### INLET-22

	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	7915	0.182	6650	0.153	1265	0.029	0.99	0.151	0.99	0.029
Open Space	<u>2975</u>	<u>0.068</u>	<u>2780</u>	<u>0.064</u>	<u>195</u>	<u>0.004</u>	0.25	<u>0.016</u>	0.65	<u>0.003</u>
	10890	0.250	9430	0.216	1460	0.034		0.167		0.032

### INLET-23

	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	6805	0.156	5975	0.137	830	0.019	0.99	0.136	0.99	0.019
Open Space	<u>680</u>	<u>0.016</u>	<u>655</u>	<u>0.015</u>	<u>25</u>	<u>0.001</u>	0.25	<u>0.004</u>	0.65	<u>0.000</u>
	7485	0.172	6630	0.152	855	0.020		0.140		0.019

### INLET-23A

	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	7220	0.166	0	0.000	7220	0.166	0.99	0.000	0.99	0.164
Open Space	<u>455</u>	<u>0.010</u>	<u>0</u>	<u>0.000</u>	<u>455</u>	<u>0.010</u>	0.25	<u>0.000</u>	0.65	<u>0.007</u>
	7675	0.176	0	0.000	7675	0.176		0.000		0.171

### RD-1

	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	6165	0.142	6165	0.142	0	0.000	0.99	0.140	0.99	0.000
Open Space	<u>0</u>	<u>0.000</u>	<u>0</u>	<u>0.000</u>	<u>0</u>	<u>0.000</u>	0.25	<u>0.000</u>	0.65	<u>0.000</u>
	6165	0.142	6165	0.142	0	0.000		0.140		0.000

### RD-2

	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	6265	0.144	6265	0.144	0	0.000	0.99	0.142	0.99	0.000
Open Space	<u>0</u>	<u>0.000</u>	<u>0</u>	<u>0.000</u>	<u>0</u>	<u>0.000</u>	0.25	<u>0.000</u>	0.65	<u>0.000</u>
	6265	0.144	6265	0.144	0	0.000		0.142		0.000



## RUNOFF COEFFICIENTS

Project: SCA 001.01  
 Location: Pleasantville  
 Condition: Proposed

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### RD-3

	Area		HSG B Area		HSG D Area		C	CA	C	CA
	SF	AC	SF	AC	SF	AC				
Impervious	6265	0.144	6265	0.144	0	0.000	0.99	0.142	0.99	0.000
Open Space	<u>0</u>	<u>0.000</u>	<u>0</u>	<u>0.000</u>	<u>0</u>	<u>0.000</u>	0.25	<u>0.000</u>	0.65	<u>0.000</u>
	6265	0.144	6265	0.144	0	0.000		0.142		0.000

### RD-4

	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	6165	0.142	6165	0.142	0	0.000	0.99	0.140	0.99	0.000
Open Space	<u>0</u>	<u>0.000</u>	<u>0</u>	<u>0.000</u>	<u>0</u>	<u>0.000</u>	0.25	<u>0.000</u>	0.65	<u>0.000</u>
	6165	0.142	6165	0.142	0	0.000		0.140		0.000

### RD-5

	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	6165	0.142	6165	0.142	0	0.000	0.99	0.140	0.99	0.000
Open Space	<u>0</u>	<u>0.000</u>	<u>0</u>	<u>0.000</u>	<u>0</u>	<u>0.000</u>	0.25	<u>0.000</u>	0.65	<u>0.000</u>
	6165	0.142	6165	0.142	0	0.000		0.140		0.000

### RD-6

	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	6265	0.144	6265	0.144	0	0.000	0.99	0.142	0.99	0.000
Open Space	<u>0</u>	<u>0.000</u>	<u>0</u>	<u>0.000</u>	<u>0</u>	<u>0.000</u>	0.25	<u>0.000</u>	0.65	<u>0.000</u>
	6265	0.144	6265	0.144	0	0.000		0.142		0.000

### RD-7

	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	6165	0.142	0	0.000	6165	0.142	0.99	0.000	0.99	0.140
Open Space	<u>0</u>	<u>0.000</u>	<u>0</u>	<u>0.000</u>	<u>0</u>	<u>0.000</u>	0.25	<u>0.000</u>	0.65	<u>0.000</u>
	6165	0.142	0	0.000	6165	0.142		0.000		0.140

### RD-8

	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	6265	0.144	0	0.000	6265	0.144	0.99	0.000	0.99	0.142
Open Space	<u>0</u>	<u>0.000</u>	<u>0</u>	<u>0.000</u>	<u>0</u>	<u>0.000</u>	0.25	<u>0.000</u>	0.65	<u>0.000</u>
	6265	0.144	0	0.000	6265	0.144		0.000		0.142



## RUNOFF COEFFICIENTS

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RD-9	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	6265	0.144	0	0.000	6265	0.144	0.99	0.000	0.99	0.142
Open Space	<u>0</u>	<u>0.000</u>	<u>0</u>	<u>0.000</u>	<u>0</u>	<u>0.000</u>	0.25	<u>0.000</u>	0.65	<u>0.000</u>
	6265	0.144	0	0.000	6265	0.144		0.000		0.142

RD-10	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	6165	0.142	0	0.000	6165	0.142	0.99	0.000	0.99	0.140
Open Space	<u>0</u>	<u>0.000</u>	<u>0</u>	<u>0.000</u>	<u>0</u>	<u>0.000</u>	0.25	<u>0.000</u>	0.65	<u>0.000</u>
	6165	0.142	0	0.000	6165	0.142		0.000		0.140

RD-11	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	6165	0.142	0	0.000	6165	0.142	0.99	0.000	0.99	0.140
Open Space	<u>0</u>	<u>0.000</u>	<u>0</u>	<u>0.000</u>	<u>0</u>	<u>0.000</u>	0.25	<u>0.000</u>	0.65	<u>0.000</u>
	6165	0.142	0	0.000	6165	0.142		0.000		0.140

RD-12	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	6265	0.144	0	0.000	6265	0.144	0.99	0.000	0.99	0.142
Open Space	<u>0</u>	<u>0.000</u>	<u>0</u>	<u>0.000</u>	<u>0</u>	<u>0.000</u>	0.25	<u>0.000</u>	0.65	<u>0.000</u>
	6265	0.144	0	0.000	6265	0.144		0.000		0.142

B-1B	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	0	0.000	0	0.000	0	0.000	0.99	0.000	0.99	0.000
Open Space	<u>7690</u>	<u>0.177</u>	<u>7690</u>	<u>0.177</u>	<u>0</u>	<u>0.000</u>	0.25	<u>0.044</u>	0.65	<u>0.000</u>
	7690	0.177	7690	0.177	0	0.000		0.044		0.000

B-2B	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	0	0.000	0	0.000	0	0.000	0.99	0.000	0.99	0.000
Open Space	<u>2990</u>	<u>0.069</u>	<u>750</u>	<u>0.017</u>	<u>2240</u>	<u>0.051</u>	0.25	<u>0.004</u>	0.65	<u>0.033</u>
	2990	0.069	750	0.017	2240	0.051		0.004		0.033



**RUNOFF COEFFICIENTS**

Project: SCA 001.01  
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Condition: Proposed

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Date  
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B-2C	Area		HSG B Area		HSG D Area		HSG B		HSG D	
	SF	AC	SF	AC	SF	AC	C	CA	C	CA
Impervious	0	0.000	0	0.000	0	0.000	0.99	0.000	0.99	0.000
Open Space	39750	0.913	20170	0.463	19580	0.449	0.25	0.116	0.65	0.292
	39750	0.913	20170	0.463	19580	0.449		0.116		0.292



STORM SEWER CALCULATIONS

Project: SCA 003.01  
Computed By: DFW Date: 4/9/2020  
Revised By: Date:

Sheet 1 Of 1  
Pipe Material: HDPE RCP  
"n" Factor: 0.010 0.013

25 Year Storm

Location	From	To	Inc. Area Ac	C	Equiv. Area C * A	Total Area C * A	Tc min	I in/hr	Q CFS	Slope ft/ft	Pipe Dia. in	V FPS	Pipe Length ft	Flow Time min.	Pipe Cap. CFS	Ground Elev.		Invert Elev.	
																Upper End	Lower End	Upper End	Lower End
P-1	INLT-1	MH-1	2.11	0.61	1.29	1.29	20.00	2.80	3.62	0.0085	15	4.85	20	0.07	5.96	5.00	5.44	2.50	2.33
P-2	INLT-2	MH-1	0.85	0.61	0.52	0.52	15.00	4.55	2.37	0.0022	15	2.47	9	0.06	3.03	5.48	5.44	2.35	2.33
P-3	MH-1	MH-2	---	---	---	1.81	20.07	2.78	5.04	0.0069	18	4.94	265	0.89	8.73	5.44	4.33	2.08	0.25
P-4	OTLT ST-2	INLT-3	---	---	---	---	---	---	3.73	0.0547	15	12.31	34	0.05	15.11	6.85	3.64	3.00	1.14
P-5	INLT-3	MH-2	0.71	0.75	0.53	0.53	10.00	6.30	7.08	0.0147	15	6.38	20	0.05	7.83	3.64	4.33	0.79	0.50
P-6	MH-2	INLT-4	---	---	---	2.34	20.96	2.46	9.50	0.0193	18	8.26	9	0.02	14.59	4.33	3.89	0.25	0.07
P-7	INLT-4	TRT ST-2	0.70	0.69	0.48	2.82	20.98	2.46	10.68	0.0033	24	4.14	5	0.02	13.00	4.33	5.00	-0.43	-0.44
P-8	TRT ST-2	HDWL-1	---	---	---	2.82	21.00	2.45	10.65	0.0033	24	4.14	16	0.06	13.00	5.00	2.50	-0.44	-0.50
P-9	INLT-5	INLT-6	0.19	0.66	0.12	0.12	10.00	6.30	0.77	0.0144	15	8.21	70	0.14	10.08	4.80	4.64	3.10	2.09
P-10	INLT-6	INLT-7	0.10	0.68	0.07	0.19	10.14	6.25	1.21	0.0022	24	4.43	266	1.00	13.92	4.64	5.40	1.34	0.75
P-11	INLT-7	INLT-7A	0.36	0.65	0.24	0.43	11.14	5.90	2.53	0.0004	24	1.82	132	1.21	5.73	5.40	5.28	0.75	0.70
P-12	INLT-7A	INLT-8	0.40	0.79	0.32	0.75	12.35	5.48	4.11	0.0019	24	4.12	85	0.34	12.95	5.28	7.25	1.80	1.64
P-13	INLT-8A	INLT-8	0.34	0.72	0.24	0.24	10.00	6.30	1.53	0.0028	15	2.79	75	0.45	3.42	5.95	7.25	3.60	3.39
P-14	OTLT ST-1	INLT-8B	---	---	---	---	---	---	3.59	0.0069	15	4.37	36	0.14	5.37	6.20	7.50	3.75	3.50
P-15	INLT-8B	INLT-8	0.16	0.97	0.16	0.16	10.00	6.30	4.57	0.0371	18	11.45	24	0.03	20.23	7.50	7.25	3.25	2.36
P-16	INLT-8	MH-3	0.13	0.99	0.13	1.28	12.69	5.36	10.46	0.0020	24	3.18	166	0.87	9.99	7.25	8.06	1.64	1.31
P-17	INLT-9	MH-3	0.12	0.75	0.09	0.09	10.00	6.30	0.56	0.0206	15	7.56	50	0.11	9.27	6.09	8.06	3.50	2.47
P-18	MH-3	MH-4	---	---	---	1.37	13.56	5.05	10.51	0.0030	24	3.94	59	0.25	12.39	8.06	8.12	1.31	1.13
P-19	INLT-10A	INLT-10	0.08	0.72	0.06	0.06	10.00	6.30	0.35	0.0204	15	7.52	60	0.13	9.23	6.31	7.55	3.81	2.59
P-20	INLT-10	MH-4	0.30	0.96	0.29	0.35	10.13	6.25	2.17	0.0204	15	7.52	30	0.07	9.23	7.55	8.12	2.59	1.97
P-21	MH-4	MH-5	---	---	---	1.72	13.81	4.97	12.12	0.0049	24	5.04	49	0.16	15.84	8.12	9.40	0.87	0.63
P-22	MH-5	MH-6	---	---	---	1.72	13.97	4.91	12.02	0.0053	24	5.24	285	0.91	16.47	9.40	6.00	0.63	-0.88



STORM SEWER CALCULATIONS

Project: SCA 003.01  
Computed By: DFW Date: 4/9/2020  
Revised By: Date:

Sheet 1 Of 1  
Pipe Material: HDPEP RCP  
"n" Factor: 0.010 0.013

25 Year Storm

Location	From	To	Inc. Area Ac	C	Equiv. Area C * A	Total Area C * A	Tc min	I in/hr	Q CFS	Slope ft/ft	Pipe Dia. in	V FPS	Pipe Length ft	Flow Time min.	Pipe Cap. CFS	Ground Elev.		Invert Elev.	
																Upper End	Lower End	Upper End	Lower End
RD-6	J-12	J-11	0.14	0.99	0.14	0.14	10.00	6.30	0.90	0.0100	8	4.50	195	0.72	1.57	10.50	10.50	7.93	5.98
P-23	J-11	J-9	---	---	---	0.14	10.72	6.05	0.86	0.0100	8	4.50	85	0.31	1.57	10.50	10.50	5.98	5.13
RD-5	J-10	J-9	0.14	0.99	0.14	0.14	10.00	6.30	0.88	0.0157	8	5.65	195	0.58	1.97	10.90	10.75	8.20	5.13
P-24	J-9	J-21	---	---	---	0.28	11.04	5.94	1.68	0.0050	12	4.17	106	0.42	3.28	10.50	10.50	4.80	4.27
RD-11	J-21	J-22	0.14	0.99	0.14	0.42	11.46	5.79	2.46	0.0056	12	4.41	196	0.74	3.47	10.75	10.75	4.27	3.17
RD-12	J-23	J-24	0.14	0.99	0.14	0.14	10.00	6.30	0.90	0.0100	8	4.50	196	0.73	1.57	10.50	10.50	7.83	5.87
P-25	J-24	J-22	---	---	---	0.14	10.73	6.05	0.86	0.0279	8	7.52	85	0.19	2.62	10.50	10.75	5.87	3.50
P-26	J-22	INLT-14	---	---	---	0.57	12.20	5.53	3.14	0.0037	15	4.14	60	0.24	5.08	10.75	5.44	2.92	2.70
P-27	INLT-14A	INLT-14	0.88	0.68	0.59	0.59	10.00	6.30	3.75	0.0049	15	3.68	28	0.13	4.52	5.28	5.44	2.84	2.70
P-28	INLT-14	INLT-13	0.07	0.82	0.06	1.22	12.44	5.45	6.65	0.0030	24	3.97	145	0.61	12.47	5.44	5.74	1.27	0.83
P-29	INLT-13A	INLT-13	0.17	0.77	0.13	0.13	10.00	6.30	0.81	0.0017	15	2.17	28	0.22	2.66	5.74	5.74	3.23	3.18
P-30	INLT-13	INLT-12	0.42	0.92	0.39	1.74	13.02	5.24	9.10	0.0033	24	4.14	144	0.58	13.00	5.74	6.08	0.83	0.35
RD-4	J-8	J-7	0.14	0.99	0.14	0.14	10.00	6.30	0.88	0.0100	8	4.50	195	0.72	1.57	10.50	10.50	8.23	6.28
P-31	J-7	J-5	---	---	---	0.14	10.72	6.05	0.85	0.0100	8	4.50	85	0.31	1.57	10.50	10.50	6.28	5.43
RD-3	J-6	J-5	0.14	0.99	0.14	0.14	10.00	6.30	0.90	0.0159	8	5.67	195	0.57	1.98	10.50	10.50	8.53	5.43
P-32	J-5	J-3	---	---	---	0.28	11.04	5.94	1.68	0.0050	12	4.17	50	0.20	3.28	10.50	10.50	5.10	4.85
RD-2	J-4	J-3	0.14	0.99	0.14	0.14	11.24	5.87	0.84	0.0162	8	5.72	195	0.57	2.00	10.50	10.50	8.33	5.18
P-33	J-3	J-1	---	---	---	0.42	11.80	5.67	2.41	0.0051	12	4.21	85	0.34	3.31	10.50	10.30	4.85	4.42
RD-1	J-2	J-1	0.14	0.99	0.14	0.14	10.00	6.30	0.88	0.0122	8	4.97	195	0.65	1.74	10.50	10.30	7.13	4.75
P-34	J-1	J-13	---	---	---	0.57	12.14	5.55	3.14	0.0057	12	4.44	106	0.40	3.49	10.30	10.30	4.42	3.82



STORM SEWER CALCULATIONS

Project: SCA 003.01  
Computed By: DFW Date: 4/9/2020  
Revised By: Date:

Sheet 1 Of 1  
Pipe Material: HDPE RCP  
"n" Factor: 0.010 0.013

25 Year Storm

Location	From	To	Inc. Area Ac	C	Equiv. Area C * A	Total Area C * A	Tc min	I in/hr	Q CFS	Slope ft/ft	Pipe Dia. in	V FPS	Pipe Length ft	Flow Time min.	Pipe Cap. CFS	Ground Elev.		Invert Elev.	
																Upper End	Lower End	Upper End	Lower End
RD-7	J-13	J-14	0.14	0.99	0.14	0.71	12.54	5.41	3.81	0.0046	15	4.65	196	0.70	5.70	10.30	10.30	3.57	2.66
RD-10	J-19	J-20	0.14	0.99	0.14	0.14	10.00	6.30	0.88	0.0100	8	4.50	196	0.73	1.57	10.75	10.50	7.98	6.02
P-35	J-20	J-18	---	---	---	0.14	10.73	6.05	0.85	0.0100	8	4.50	85	0.31	1.57	10.50	10.50	6.02	5.17
RD-9	J-17	J-18	0.14	0.99	0.14	0.14	10.00	6.30	0.89	0.0128	8	5.09	196	0.64	1.78	10.50	10.50	7.68	5.17
P-36	J-18	J-16	---	---	---	0.28	10.73	6.05	1.70	0.0050	12	4.17	50	0.20	3.28	10.50	10.50	4.84	4.59
RD-8	J-15	J-16	0.14	0.99	0.14	0.14	10.00	6.30	0.89	0.0141	8	5.34	196	0.61	1.87	10.50	10.50	7.68	4.92
P-37	J-16	J-14	---	---	---	0.42	10.93	5.98	2.52	0.0198	12	8.30	85	0.17	6.52	10.50	10.50	4.59	2.91
P-38	J-14	INLT-12	---	---	---	1.13	13.24	5.17	5.83	0.0168	15	8.87	63	0.12	10.88	10.50	6.08	2.66	1.60
P-39	INLT-12	MH-6	0.14	0.81	0.12	1.24	13.36	5.12	6.37	0.0084	24	6.60	147	0.37	20.73	6.08	5.99	0.35	-0.88
P-40	MH-6	TRT ST-1	---	---	---	2.96	13.73	4.99	18.36	0.0094	24	6.98	11	0.03	21.93	5.99	5.98	-0.88	-0.98
P-41	TRT ST-1	INLT-11	---	---	---	2.96	14.88	4.59	17.18	0.0094	24	6.98	11	0.03	21.93	5.98	1.69	-0.98	-1.09
P-42	INLT-11A	INLT-11	0.24	0.95	0.23	0.23	10.00	6.30	1.46	0.0861	15	15.45	24	0.03	18.95	5.71	5.98	2.81	0.74
P-43	INLT-11	OTFL-1	0.76	0.98	0.74	3.93	14.91	4.58	21.61	0.0094	24	6.98	18	0.04	21.93	6.85	4.32	-1.09	-1.26
P-44	INLT-15	HDWL-9	0.25	0.96	0.24	0.24	10.00	6.30	1.52	0.0055	15	3.90	29	0.12	4.79	9.26	9.10	7.01	6.85
P-45	INLT-16	HDWL-8	0.48	0.86	0.41	0.41	10.00	6.30	2.58	0.0055	15	3.90	29	0.12	4.79	9.26	9.10	7.01	6.85
P-46	INLT-17	HDWL-7	0.62	0.90	0.56	0.56	10.00	6.30	3.51	0.0055	15	3.90	29	0.12	4.79	9.26	9.10	7.01	6.85
P-47	INLT-18	HDWL-6	0.81	0.84	0.69	0.69	10.00	6.30	4.33	0.0066	15	4.28	61	0.24	5.25	9.75	9.10	7.25	6.85



STORM SEWER CALCULATIONS

Project: SCA 003.01  
Computed By: DFW Date: 4/9/2020  
Revised By: Date:

Sheet 1 Of 1  
Pipe Material: HDPEP RCP  
"n" Factor: 0.010 0.013

25 Year Storm

Location	From	To	Inc. Area Ac	C	Equiv. Area		Tc min	I in/hr	Q CFS	Slope ft/ft	Pipe Dia. in	V FPS	Pipe Length ft	Flow Time min.	Pipe Cap. CFS	Ground Elev.		Invert Elev.	
					C * A	C * A										Upper End	Lower End	Upper End	Lower End
P-48	HDWL-5	HDWL-10	---	---	---	---	---	---	2.81	0.0002	24	0.91	264	4.83	2.86	9.85	9.85	6.89	6.85
P-49	INLT-19A	INLT-19	0.33	0.86	0.28	0.28	10.00	6.30	1.79	0.0017	15	2.17	36	0.28	2.66	9.26	9.26	7.09	7.03
P-50	INLT-19	HDWL-3	0.26	0.84	0.22	0.50	10.28	6.20	3.10	0.0037	15	3.20	49	0.26	3.93	9.26	9.10	7.03	6.85
P-51	INLT-20A	INLT-20	0.33	0.92	0.31	0.31	10.00	6.30	1.92	0.0017	15	2.17	36	0.28	2.66	9.26	9.26	7.09	7.03
P-52	INLT-20	HDWL-4	0.26	0.92	0.24	0.54	10.28	6.20	3.36	0.0037	15	3.20	49	0.26	3.93	9.26	9.10	7.03	6.85
P-53	INLT-21	INLT-22	0.26	0.90	0.23	0.23	10.00	6.30	1.46	0.0020	15	2.35	45	0.32	2.89	9.25	9.25	6.75	6.66
P-54	INLT-22	INLT-23	0.25	0.80	0.20	0.43	10.32	6.19	2.66	0.0026	15	2.68	45	0.28	3.29	9.26	9.10	6.66	6.54
P-55	INLT-23A	INLT-23	0.18	0.97	0.17	0.17	10.00	6.30	1.08	0.0058	15	4.01	36	0.15	4.92	9.25	9.25	6.75	6.54
P-56	INLT-23	HDWL-2	0.17	0.92	0.16	0.76	10.60	6.09	4.63	0.0110	15	5.52	31	0.09	6.78	9.25	9.25	6.54	6.20



## CONDUIT OUTLET PROTECTION CALCULATIONS

Project: Lakes Bay Redevelopment Area  
 Computed By: DFW  
 Revised By:  
 Project Number SCA 003.01

Date: 4/10/2020  
 Date:

**Structure No.**                      **HW-1**  
 25 Yr. Discharge (Q25)              6.92 cfs                      q=unit discharge=Q25/Wo =              3.46  
 Do =                      2 feet                      HW-1 Inv.              -0.5  
 Wo =                      2 feet  
 Tailwater (TW) =                      0.4 feet

Apron Length (La) =               $((q \times 3) / Do^{0.5})$   
 La =                      7.34 feet

Apron Width (W) =               $3 \times Wo + 0.4(La)$   
 W =                      8.94 feet

Median Stone Dia.(D50) =  $(0.016/TW) \times (q)^{1.33}$   
 (D50)                      0.21 feet                      Use 6" min.

**Structure No.**                      **HW-2**  
 25 Yr. Discharge (Q25)              4.63 cfs                      q=unit discharge=Q25/Wo =              3.70  
 Do =                      1.25 feet                      HW-2 Inv.              6.2  
 Wo =                      1.25 feet                      2Yr. Basin elevation              7.6  
 Tailwater (TW) =                      1.4 feet

Apron Length (La) =               $((q \times 3) / Do^{0.5})$   
 La =                      9.94 feet

Apron Width (W) =               $3 \times Wo + 0.4(La)$   
 W =                      7.73 feet

Median Stone Dia.(D50) =  $(0.016/TW) \times (q)^{1.33}$   
 (D50)                      0.07 feet                      Use 6" min.



## CONDUIT OUTLET PROTECTION CALCULATIONS

Project: Lakes Bay Redevelopment Area  
 Computed By: DFW  
 Revised By:  
 Project Number SCA 003.01

Date: 4/10/2020  
 Date:

**Structure No. HW-3**

25 Yr. Discharge (Q25)	3.10 cfs	q=unit discharge=Q25/Wo =	2.48
Do =	1.25 feet	HW-3 Inv.	6.85
Wo =	1.25 feet	2Yr. Basin elevation	7.8
Tailwater (TW) =	0.95 feet		

Apron Length (La) =  $((q \times 3) / Do^{0.5})$   
 La = 6.65 feet

Apron Width (W) =  $3 \times Wo + 0.4(La)$   
 W = 6.41 feet

Median Stone Dia.(D50) =  $(0.016/TW) \times (q)^{1.33}$   
 (D50) = 0.06 feet Use 6" min.

**Structure No. HW-4**

25 Yr. Discharge (Q25)	3.36 cfs	q=unit discharge=Q25/Wo =	2.69
Do =	1.25 feet	HW-4 Inv.	6.85
Wo =	1.25 feet	2Yr. Basin elevation	7.8
Tailwater (TW) =	0.95 feet		

Apron Length (La) =  $((q \times 3) / Do^{0.5})$   
 La = 7.21 feet

Apron Width (W) =  $3 \times Wo + 0.4(La)$   
 W = 6.64 feet

Median Stone Dia.(D50) =  $(0.016/TW) \times (q)^{1.33}$   
 (D50) = 0.06 feet Use 6" min.



## CONDUIT OUTLET PROTECTION CALCULATIONS

Project: Lakes Bay Redevelopment Area  
 Computed By: DFW  
 Revised By:  
 Project Number SCA 003.01

Date: 4/10/2020  
 Date:

### HW-5

25 Yr. Discharge (Q25)	0.50 cfs	q=unit discharge=Q25/Wo =	0.25
Do =	2 feet	HW-5 Inv.	6.85
Wo =	2 feet	2Yr. Basin elevation	7.8
Tailwater (TW) =	0.95 feet		

Apron Length (La) =  $((q \times 3) / Do^{0.5})$   
 La = 0.53 feet

Apron Width (W) =  $3 \times Wo + 0.4(La)$   
 W = 6.21 feet

Median Stone Dia.(D50) =  $(0.016/TW) \times (q)^{1.33}$   
 (D50) 0.00 feet Use 6" min.

### HW-6

25 Yr. Discharge (Q25)	4.33 cfs	q=unit discharge=Q25/Wo =	3.46
Do =	1.25 feet	HW-6 Inv.	6.85
Wo =	1.25 feet	2Yr. Basin elevation	7.8
Tailwater (TW) =	0.95 feet		

Apron Length (La) =  $((q \times 3) / Do^{0.5})$   
 La = 9.29 feet

Apron Width (W) =  $3 \times Wo + 0.4(La)$   
 W = 7.47 feet

Median Stone Dia.(D50) =  $(0.016/TW) \times (q)^{1.33}$   
 (D50) 0.09 feet Use 6" min.



## CONDUIT OUTLET PROTECTION CALCULATIONS

Project: Lakes Bay Redevelopment Area  
 Computed By: DFW  
 Revised By:  
 Project Number SCA 003.01

Date: 4/10/2020  
 Date:

### HW-7

25 Yr. Discharge (Q25)	3.51 cfs	q=unit discharge=Q25/Wo =	2.81
Do =	1.25 feet	HW-7 Inv.	6.85
Wo =	1.25 feet	2Yr. Basin elevation	7.8
Tailwater (TW) =	0.95 feet		

Apron Length (La) =  $((q \times 3) / Do^{0.5})$   
 La = 7.53 feet

Apron Width (W) =  $3 \times Wo + 0.4(La)$   
 W = 6.76 feet

Median Stone Dia.(D50) =  $(0.016/TW) \times (q)^{1.33}$   
 (D50) 0.07 feet Use 6" min.

### Structure No.

### HW-8

25 Yr. Discharge (Q25)	2.58 cfs	q=unit discharge=Q25/Wo =	2.06
Do =	1.25 feet	HW-8 Inv.	6.85
Wo =	1.25 feet	2Yr. Basin elevation	7.8
Tailwater (TW) =	0.95 feet		

Apron Length (La) =  $((q \times 3) / Do^{0.5})$   
 La = 5.54 feet

Apron Width (W) =  $3 \times Wo + 0.4(La)$   
 W = 5.97 feet

Median Stone Dia.(D50) =  $(0.016/TW) \times (q)^{1.33}$   
 (D50) 0.04 feet Use 6" min.



## CONDUIT OUTLET PROTECTION CALCULATIONS

Project: Lakes Bay Redevelopment Area  
 Computed By: DFW  
 Revised By:  
 Project Number SCA 003.01

Date: 4/10/2020  
 Date:

### HW-9

25 Yr. Discharge (Q25)	1.52 cfs	q=unit discharge=Q25/Wo =	1.22
Do =	1.25 feet	HW-9 Inv.	6.85
Wo =	1.25 feet	2Yr. Basin elevation	7.8
Tailwater (TW) =	0.95 feet		

Apron Length (La) =  $((q \times 3) / Do^{0.5})$   
 La = 3.26 feet

Apron Width (W) =  $3 \times Wo + 0.4(La)$   
 W = 5.06 feet

Median Stone Dia.(D50) =  $(0.016/TW) \times (q)^{1.33}$   
 (D50) 0.02 feet Use 6" min.

### Structure No.

### HW-10

25 Yr. Discharge (Q25)	2.81 cfs	q=unit discharge=Q25/Wo =	1.41
Do =	2 feet	HW-10 Inv	6.85
Wo =	2 feet	2Yr. Basin elevation	7.8
Tailwater (TW) =	0.95 feet		

Apron Length (La) =  $((q \times 3) / Do^{0.5})$   
 La = 2.98 feet

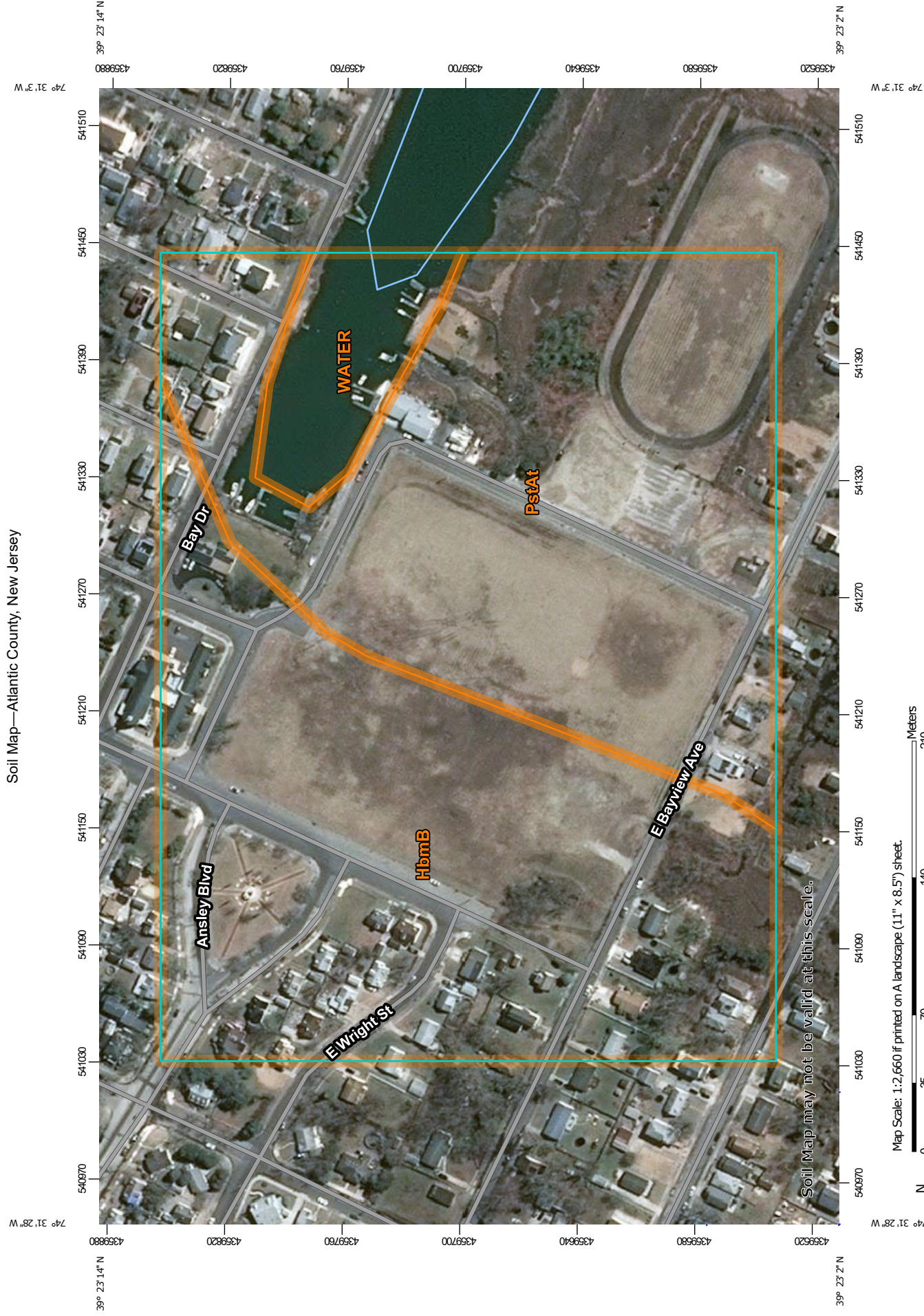
Apron Width (W) =  $3 \times Wo + 0.4(La)$   
 W = 7.19 feet

Median Stone Dia.(D50) =  $(0.016/TW) \times (q)^{1.33}$   
 (D50) 0.03 feet Use 6" min.

# **APPENDIX H**

SOIL TEST PIT LOGS  
AND  
PERMEABILITY TESTING RESULTS





Soil Map may not be valid at this scale.

Map Scale: 1:2,660 if printed on A landscape (11" x 8.5") sheet.



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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Atlantic County, New Jersey  
Survey Area Data: Version 15, Sep 13, 2018

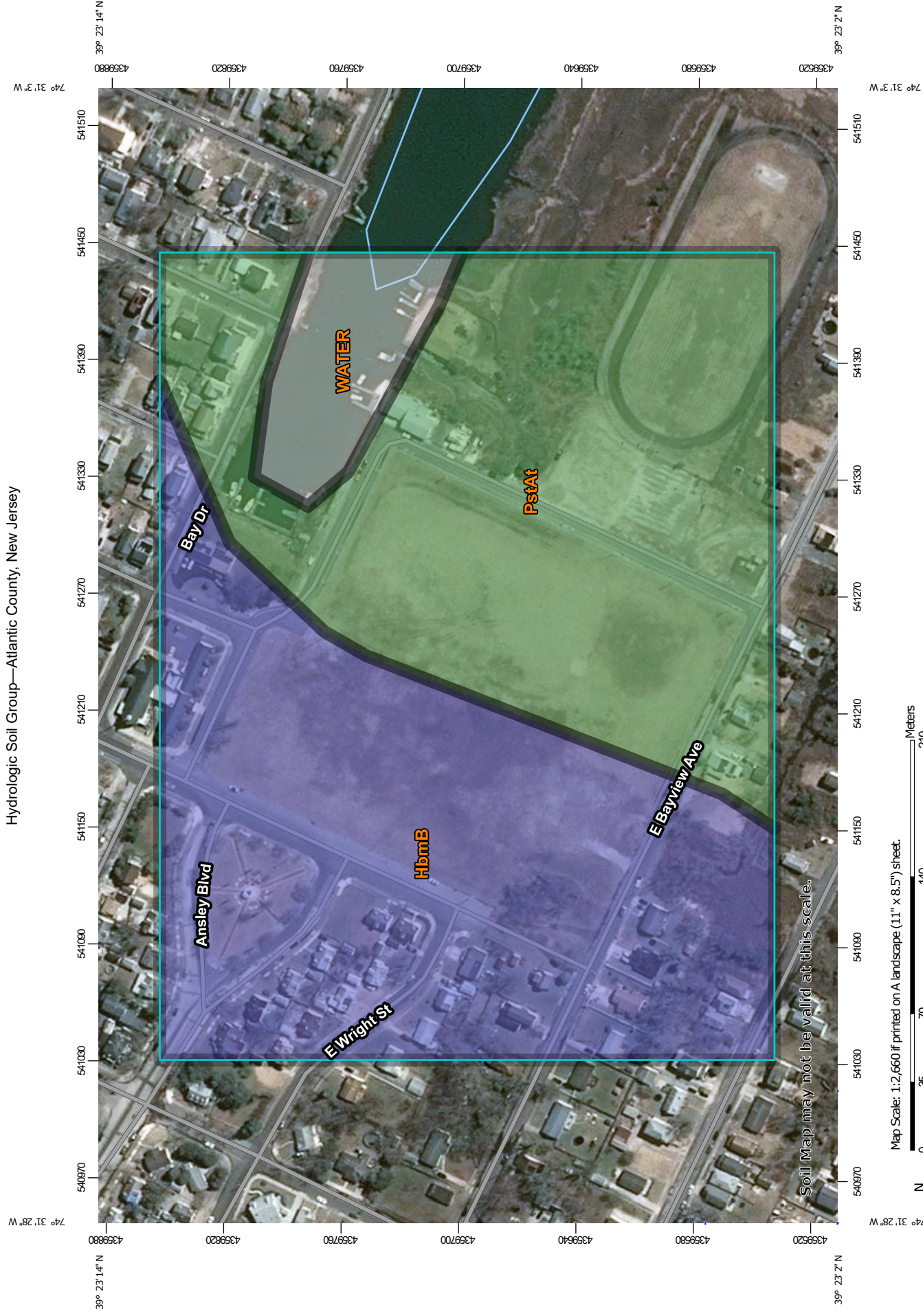
Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 14, 2019—Mar 26, 2019

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

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
HbmB	Hammonton loamy sand, 0 to 5 percent slopes	15.4	47.6%
PstAt	Psammaquents, sulfidic substratum, 0 to 2 percent slopes, frequently flooded	14.9	46.2%
WATER	Water	2.0	6.1%
<b>Totals for Area of Interest</b>		<b>32.3</b>	<b>100.0%</b>

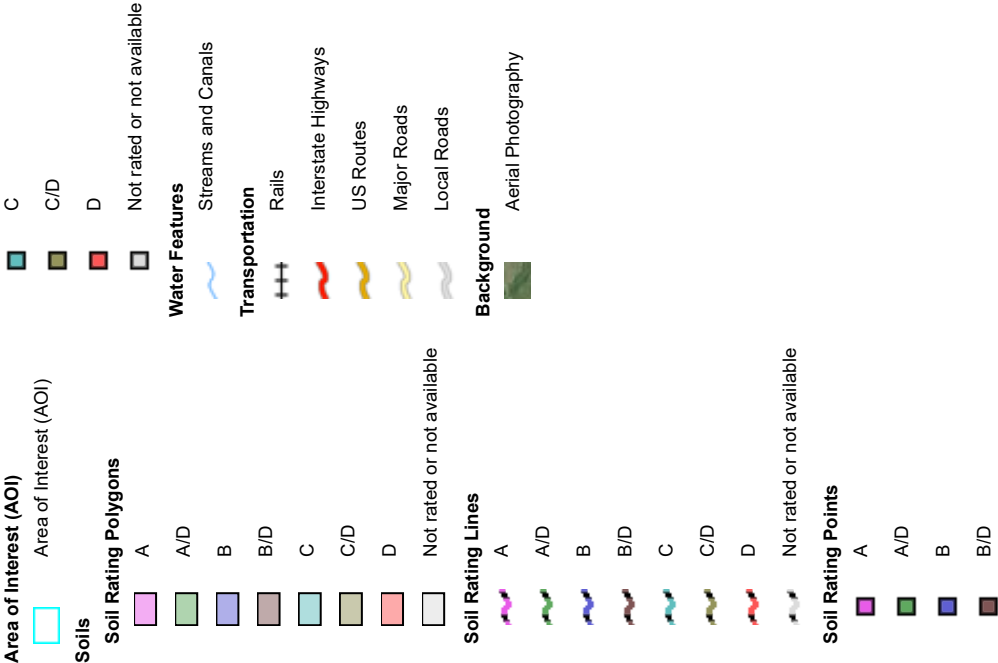


Map Scale: 1:2,660 if printed on A landscape (11" x 8.5") sheet.



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

MAP LEGEND



MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Atlantic County, New Jersey  
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Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 14, 2019—Mar 26, 2019

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

## Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
HbmB	Hammonton loamy sand, 0 to 5 percent slopes	B	15.4	47.6%
PstAt	Psammaquents, sulfidic substratum, 0 to 2 percent slopes, frequently flooded	A/D	14.9	46.2%
WATER	Water		2.0	6.1%
<b>Totals for Area of Interest</b>			<b>32.3</b>	<b>100.0%</b>

## Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

## Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Higher

**UNDERWOOD ENGINEERING COMPANY**

143 HARDING AVE.  
BELLMAWR, NJ 08031

856-933-1818

William R. Underwood, P. E.

Fax 856-933-3123

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CLIENT:	SCARBOROUGH PROPERTIES 415 New Road Unit 5 Somers Point, NJ 08244
PROJECT:	Pleasantville Project Bayview Avenue & Franklin Boulevard Pleasantville, NJ
REQUIREMENT:	Professional Engineering Services
LOCATION:	Proposed Stormwater Management Areas Basin Area Test Pits (x6)
DATE:	8/29/2019
UE REF. NO.:	4582-10513-1
W.O. NO.:	19-8421
ATTENTION:	Sean Scarborough                      e-mail: sean@scarboroughproperties.com

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**PURPOSE**

The purpose of this report is to present the findings and conclusions of the field investigation performed at the above-referenced project. More specifically, this investigation was conducted to determine soil types, depth to estimated seasonal high water table (ESHWT) and depth to groundwater (GW) at the locations observed.

**INVESTIGATION**

A representative of Underwood Engineering, Inc. (UEI) was present at the above-captioned project on August 15, 2019 to witness the excavation of test pits in proposed stormwater management areas located generally along Franklin Boulevard and Bayview Avenue frontages. A total of six soil profile (test) pits were excavated at the locations noted on the attached Test Pit Location Plan (attached). One representative soil sample of the most hydraulically restrictive soil observed at the test pit locations was returned to the UEI soil mechanics laboratory for textural analysis (Hydrometer and Sieve – ASTM D422) and to establish soil permeability class rating (K).

**FINDINGS & CONCLUSIONS**

Soils encountered at the test pit locations consist generally of fine to coarse sands and fine to medium gravels with trace to little silt. All test pits were excavated to depths of approximately 40 to 50 inches below existing site grades and groundwater data was recorded. Estimated seasonal high groundwater (ESHWT) was encountered at the test pit locations from depths ranging from 22 inches to 30 inches below the existing ground surface and static groundwater (GW) was encountered at depths ranging from 30 to 41 inches below the existing ground surface.

Please Note: The reported static GW levels represent the depths at the time the test pits were excavated and could vary significantly due to seasonal, as well as tidal effects.

Soil profiles recorded at each test pit location are as follows:

TP-1

Rod El.: 5.43

Inlet adj.: 6.85

<u>Depth (in.)</u>	<u>Field Classification</u>
0-4	Topsoil
4-15	5 YR 4/3 (reddish brown) f. SAND, (l.) f.-m. gravel, (tr.) silt
15-50	10YR 6/4 (lt. yellowish brown) f.-m. SAND (tr.-l) silt <Samp. #1> Mottles: 2.5YR 5/8 (red); common, medium, distinct @ 24 inches Sidewall seepage observed 32 inches Static GW observed at 40 inches Test pit caved at 26 inches End of Test Pit (EOTP)

TP-2

<u>Depth (in.)</u>	<u>Field Classification</u>
0-3	Topsoil
3-8	5 YR 4/3 (reddish brown) f. SAND, (l.-s.) f.-m. gravel, (tr.) silt
8-12	5YR 6/8 (reddish yellow) f.-m. SAND (l.) f. gravel
12-48	GL2 7/1 (lt. gray) f.-m. SAND (l.-s.) f.-m. gravel Mottles: 2.5YR 5/8 (red); common, medium, distinct @ 22 inches Sidewall seepage observed 35 inches Static GW observed at 41 inches Test pit caved at 23 inches End of Test Pit (EOTP)

TP-3

Rod El.: 5.56

<u>Depth (in.)</u>	<u>Field Classification</u>
0-3	Topsoil
3-5	5 YR 4/3 (reddish brown) f. SAND, (s.) f.-m. gravel, (tr.) silt
5-7	5YR 6/8 (reddish yellow) f.-m. SAND (l.) f. gravel
7-42	GL2 7/1 (lt. gray) f.-c. SAND (a.) f.-m. gravel Mottles: 2.5YR 5/8 (red); common, massive, distinct @ 30 inches Sidewall seepage observed 35 inches Static GW observed at 40 inches Test pit caved at 31 inches End of Test Pit (EOTP)

TP-4

Rod El.: 5.45

<u>Depth (in.)</u>	<u>Field Classification</u>
0-3	Topsoil
3-9	5YR 6/8 (reddish yellow) f.-c. SAND (l.) f.-m. gravel
9-42	GL2 7/1 (lt. gray) f.-c. SAND (s.) f.-m. gravel Mottles: 2.5YR 5/8 (red); common, massive, faint @ 28 inches Sidewall seepage observed 36 inches Static GW observed at 37 inches Test pit caved at 32 inches End of Test Pit (EOTP)

TP-5

Rod El.: 6.25

<u>Depth (in.)</u>	<u>Field Classification</u>
0-2	Topsoil
2-6	5YR 6/8 (reddish yellow) f.-c. SAND (l.) f.-m. gravel
6-40	GL2 7/1 (lt. gray) f.-c. SAND (a.) f.-m. gravel Mottles: 2.5YR 5/8 (red); common, massive, faint @ 22 inches Sidewall seepage observed 32 inches Static GW observed at 30 inches Test pit caved at 27 inches End of Test Pit (EOTP)

TP-6

Rod El.: 5.58

<u>Depth (in.)</u>	<u>Field Classification</u>
0-6	Topsoil
6-16	10YR 6/4 (lt. yellowish brown) f. SAND (l.) f.-m. gravel, (l.) silt
16-48	GL2 7/1 (lt. gray) f.-c. SAND (l.) f.-m. gravel Mottles: 2.5YR 5/8 (red); common, massive, distinct @ 22 inches Sidewall seepage observed 30 inches Static GW observed at 39 inches Test pit caved at 30 inches End of Test Pit (EOTP)

A textural analysis (Hydrometer and Sieve Analysis - ASTM D-422) was performed on the most hydraulically restrictive soil observed at the test pit locations. The sample tested was obtained from Test Pit TP-1. Results are as follows:

<u>Location (TP-x)</u>	<u>Depth (in.)</u>	<u>Classification</u>	<u>Soil Permeability Class Rating (K)</u>
TP-1	15-50	f.-m. SAND (tr.-l) silt	K5 SAND (> 20 in./hr)

Hydrometer & Sieve Analysis Report attached.

### QUALIFICATIONS

The findings and conclusions presented in this report are based solely on the above investigation. No conclusions are to be drawn other than those specifically stated herein.

Respectfully submitted,

UNDERWOOD ENGINEERING COMPANY



William R. Underwood, P.E.



Attachments:

Test Pit Location Plan

Hydrometer & Sieve Analysis (ASTM D-422)

UNDERWOOD ENGINEERING COMPANY

# Underwood Engineering Company

143 Harding Avenue • Bellmawr, New Jersey 08031

William R. Underwood, P.E., President

(856) 933-1818 • Fax (215) 259-2372

Client: Scarborough Properties

Project: Pleasantville Site

Requirement: Hydrometer & Sieve Analysis

Date Performed: 8/23/2019

Location: TP-1 @ 15-50 in.

Test Number: 1

Project No:

## ASTM D-422 HYDROMETER AND SIEVE ANALYSIS

### A. COARSE FRAGMENT CONTENT

Total dry sample wt. = 250.0

Wt. retained #10 sieve (2mm) = 22.4

% Coarse fragments = 9.0

### B. HYDROMETER ANALYSIS

Weight used for hydrometer analysis = 100.0g

Percent Passing #10 sieve = 91

Temperature = 24 °C

a = 1.0 based on specific gravity of soil particles = 2.65 from Table 1 of ASTM D-422

w, weight used for hydrometer analysis/percent passing #10 x 100 = 109.8

L, value of effective depth, Table 2 of ASTM D-422 = see table below

k, based on specific gravity of soil particle and temperature = 0.01301

Time, t (minutes)	Hydrometer reading, r	Percent in suspension, $P=100ra/w$	L (cm)	Soil particle diam.(mm), $D = k \sqrt{L/t}$
2	12	10.9	14.3	0.03479
5	11	10.0	14.5	0.02216
15	9	8.2	14.8	0.01292
30	7	6.4	15.2	0.00926
60	6	5.5	15.3	0.00657
250	5	4.6	15.5	0.00324
1440	4	3.6	15.6	0.00135

### C. SIEVE ANALYSIS (of hydrometer sample)

Wt. passing #60 sieve (0.25mm) = 9.9

Wt retained #300 sieve (0.045mm) = 91.4

% Fine plus very fine sand = 10.8

### D. SOIL MORPHOLOGY

Structure : Single Grain

Consistence : Loose

### E. Soil Permeability CLASS RATING and TEXTURAL ANALYSIS

%Sand = 91.4

%Silt = 5.7

%Clay = 2.9

Soil Texture: SAND

Soil Permeability Class Rating: K5 (> 20 in.hr.)

# **APPENDIX I**

## DRAINAGE AREA PLANS



PEAK RUNOFF DISCHARGE FLOW RATES

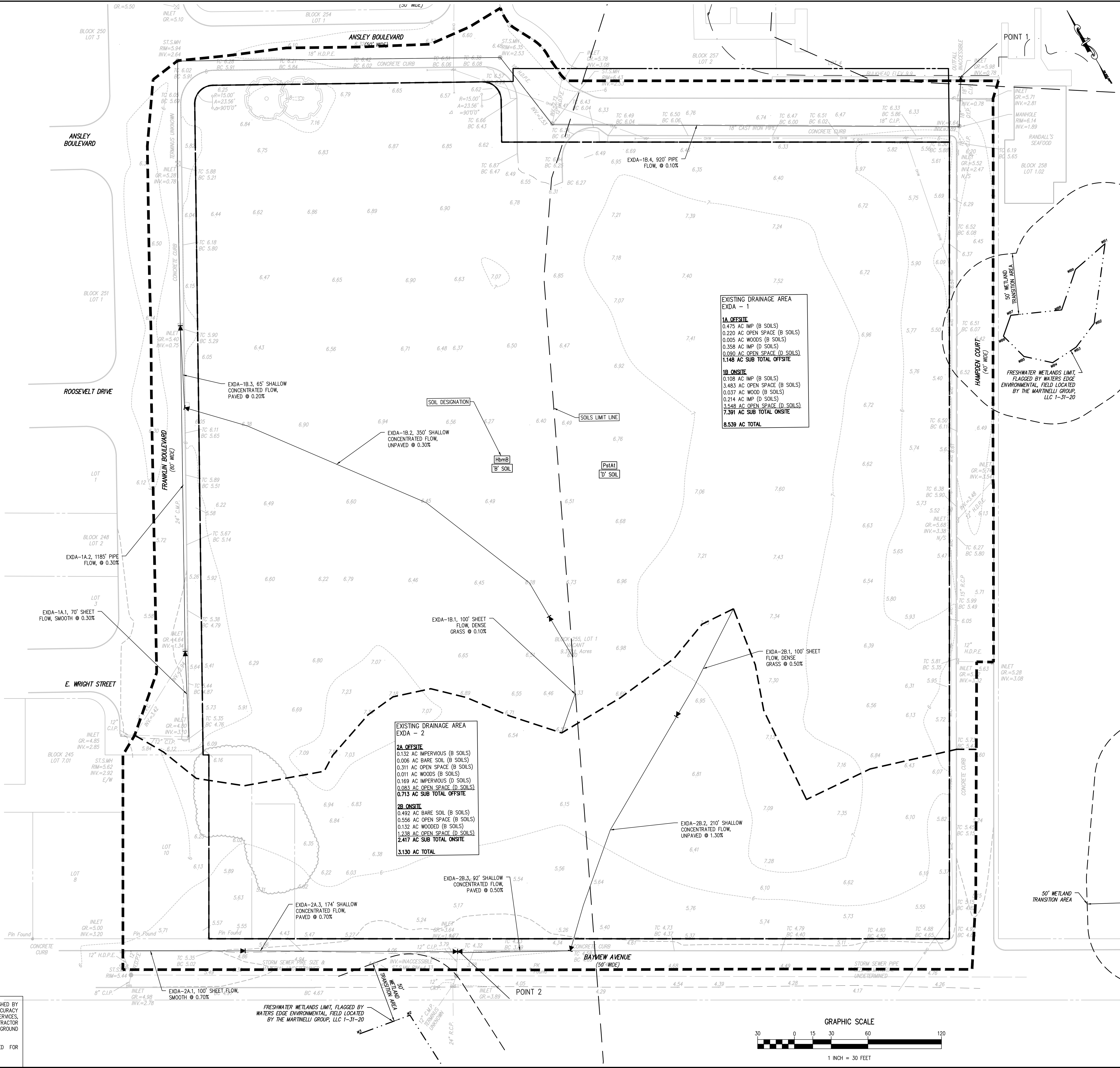
DESIGN STORM	PEAK FLOW (CFS)	
	PT 1	PT 2
2-YEAR	3.06	1.75
10-YEAR	6.94	3.89
100-YEAR	16.25	8.77

SOILS DATA

HbmB HAMMONTON LOAMY SAND, 0 TO 5% SLOPES, 'B' SOIL  
PstAt PSAMMENTS, SULFIDIC SUBSTRATUM 0 TO 3% SLOPES FREQUENTLY FLOODED, 'D' SOIL  
SOILS DATA OBTAINED FROM NATURAL RESOURCES CONSERVATION SERVICES (NRCS)  
U.S. DEPARTMENT OF AGRICULTURE.



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EXISTING DRAINAGE AREA  
EXDA - 1

1A OFFSITE  
0.475 AC IMP (B SOILS)  
0.220 AC OPEN SPACE (B SOILS)  
0.005 AC WOODS (B SOILS)  
0.358 AC IMP (D SOILS)  
0.090 AC OPEN SPACE (D SOILS)  
1.148 AC SUB TOTAL OFFSITE

1B ONSITE  
0.108 AC IMP (B SOILS)  
3.483 AC OPEN SPACE (B SOILS)  
0.037 AC WOOD (B SOILS)  
0.214 AC IMP (D SOILS)  
3.548 AC OPEN SPACE (D SOILS)  
7.391 AC SUB TOTAL ONSITE

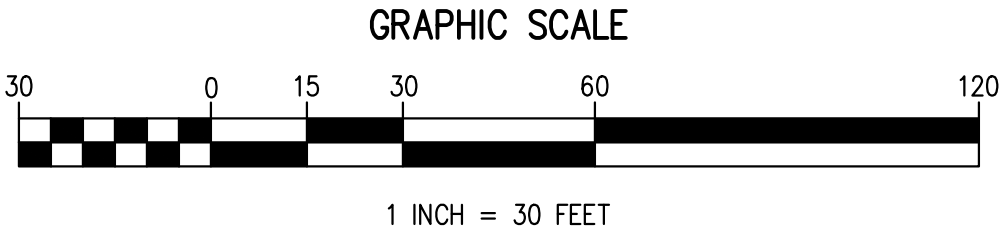
8.539 AC TOTAL

EXISTING DRAINAGE AREA  
EXDA - 2

2A OFFSITE  
0.132 AC IMPERVIOUS (B SOILS)  
0.006 AC BARE SOIL (B SOILS)  
0.311 AC OPEN SPACE (B SOILS)  
0.011 AC WOODS (B SOILS)  
0.169 AC IMPERVIOUS (D SOILS)  
0.083 AC OPEN SPACE (D SOILS)  
0.713 AC SUB TOTAL OFFSITE

2B ONSITE  
0.492 AC BARE SOIL (B SOILS)  
0.556 AC OPEN SPACE (B SOILS)  
0.132 AC WOODS (B SOILS)  
1.238 AC OPEN SPACE (D SOILS)  
2.417 AC SUB TOTAL ONSITE

3.130 AC TOTAL



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NJ CERTIFICATE OF AUTHORIZATION NO. ZC-6428280700

SPYGLASS AT LAKES BAY  
BLOCK 255, LOT 1  
CITY OF PLEASANTVILLE, ATLANTIC COUNTY, NEW JERSEY

EXISTING DRAINAGE AREA PLANS

6 W. ROOSEVELT BLVD.  
MARMORA, NEW JERSEY 08223

PROJECT NO.	SCA 003.01	SHEET NO.	1 OF 3
DATE	4/7/2020	ISSUE NO.	1
INITIAL RELEASE	DATE	BY	JTS
SUBMISSION/REVISION	DATE	BY	JTS

C1401

# PEAK RUNOFF DISCHARGE FLOW RATES

DESIGN STORM	PEAK FLOW (CFS)	
	PT 1	PT 2
2-YEAR	11.39	1.33
10-YEAR	18.98	2.54
100-YEAR	34.47	10.28

## SOILS DATA

HmB HAMMONTON LOAMY SAND, 0 TO 5% SLOPES, 'B' SOIL  
 PsIAT PSAMMENTS, SULFIDIC SUBSTRATUM 0 TO 3% SLOPES FREQUENTLY FLOODED, 'D' SOIL  
 SOILS DATA OBTAINED FROM NATURAL RESOURCES CONSERVATION SERVICES (NRCS)  
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PROPOSED DRAINAGE AREA  
 PRDA - 2A (OFFSITE)  
 0.281 AC IMP (B SOILS)  
 0.193 AC OP SP (B SOILS)  
 0.221 AC IMP (D SOILS)  
 0.206 AC OP SP (D SOILS)  
**0.902 AC TOTAL**

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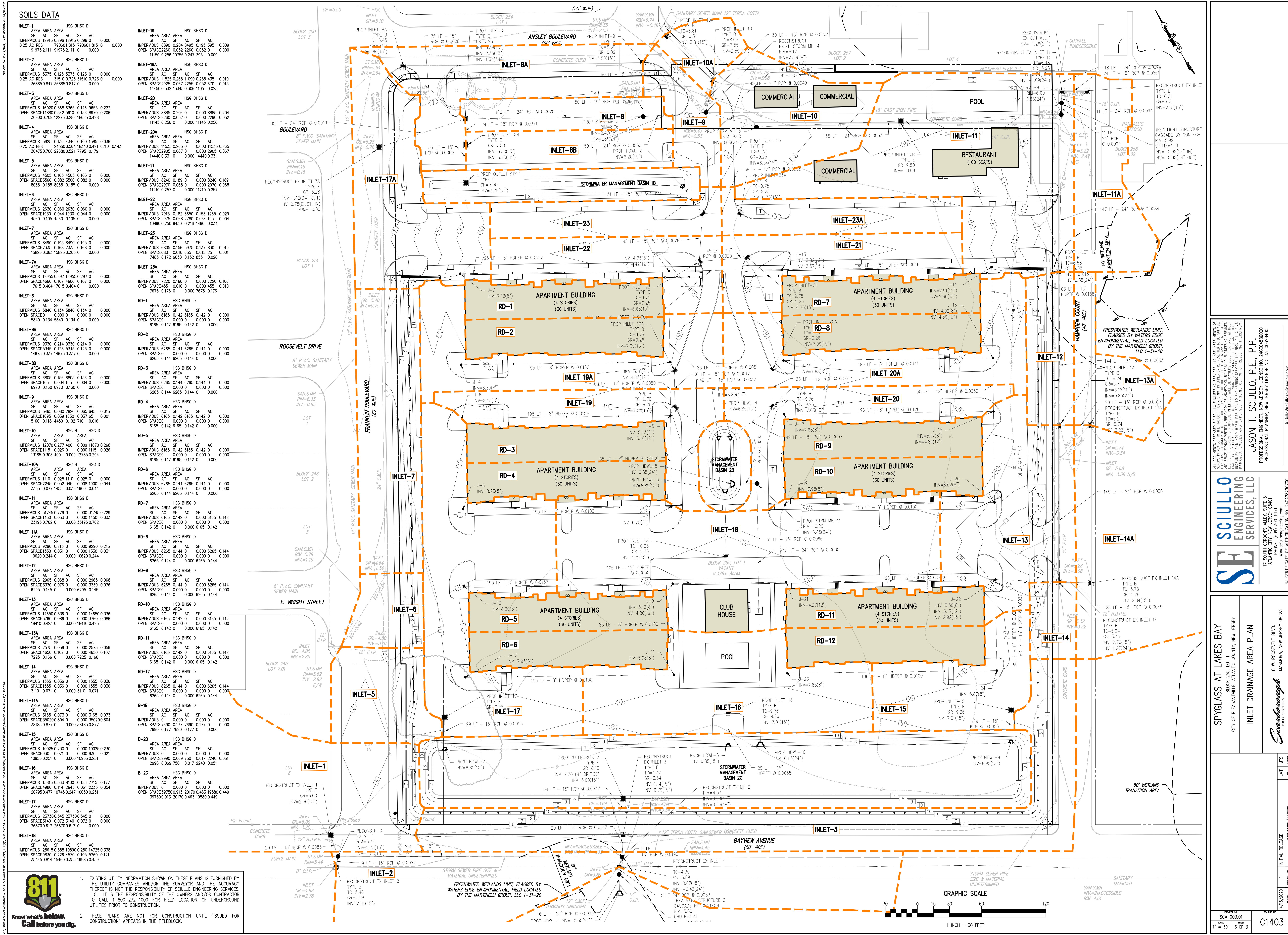
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LOT 287


LOT 288

LOT 289

LOT 290



SOILS DATA									
INLET-1 HSG BHSG D									
AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA
AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
IMPERVIOUS	12915	0.296	12915	0.296	0	0.000			
OPEN SPACE	14880	0.342	5910	0.136	8970	0.206			
OPEN SPACE	14880	0.342	5910	0.136	8970	0.206			
INLET-2 HSG BHSG D									
AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA
AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
IMPERVIOUS	5375	0.123	5375	0.123	0	0.000			
OPEN SPACE	3160	0.073	3160	0.073	0	0.000			
OPEN SPACE	3160	0.073	3160	0.073	0	0.000			
INLET-3 HSG BHSG D									
AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA
AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
IMPERVIOUS	16020	0.368	6365	0.146	9655	0.222			
OPEN SPACE	14880	0.342	5910	0.136	8970	0.206			
OPEN SPACE	14880	0.342	5910	0.136	8970	0.206			
INLET-4 HSG BHSG D									
AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA
AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
IMPERVIOUS	5925	0.136	4340	0.100	1585	0.036			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
INLET-5 HSG BHSG D									
AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA
AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
IMPERVIOUS	4505	0.103	4505	0.103	0	0.000			
OPEN SPACE	3660	0.082	3660	0.082	0	0.000			
OPEN SPACE	3660	0.082	3660	0.082	0	0.000			
INLET-6 HSG BHSG D									
AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA
AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
IMPERVIOUS	2630	0.060	2630	0.060	0	0.000			
OPEN SPACE	1930	0.044	1930	0.044	0	0.000			
OPEN SPACE	1930	0.044	1930	0.044	0	0.000			
INLET-7 HSG BHSG D									
AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA
AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
IMPERVIOUS	5925	0.136	4340	0.100	1585	0.036			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
INLET-8 HSG BHSG D									
AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA
AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
IMPERVIOUS	8490	0.195	8490	0.195	0	0.000			
OPEN SPACE	7335	0.168	7335	0.168	0	0.000			
OPEN SPACE	7335	0.168	7335	0.168	0	0.000			
INLET-9 HSG BHSG D									
AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA
AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
IMPERVIOUS	12915	0.296	12915	0.296	0	0.000			
OPEN SPACE	14880	0.342	5910	0.136	8970	0.206			
OPEN SPACE	14880	0.342	5910	0.136	8970	0.206			
INLET-10 HSG BHSG D									
AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA
AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
IMPERVIOUS	5375	0.123	5375	0.123	0	0.000			
OPEN SPACE	3160	0.073	3160	0.073	0	0.000			
OPEN SPACE	3160	0.073	3160	0.073	0	0.000			
INLET-11 HSG BHSG D									
AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA
AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
IMPERVIOUS	5925	0.136	4340	0.100	1585	0.036			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
INLET-12 HSG BHSG D									
AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA
AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
IMPERVIOUS	5925	0.136	4340	0.100	1585	0.036			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
INLET-13 HSG BHSG D									
AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA
AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
IMPERVIOUS	5925	0.136	4340	0.100	1585	0.036			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
INLET-14 HSG BHSG D									
AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA
AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
IMPERVIOUS	5925	0.136	4340	0.100	1585	0.036			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
INLET-15 HSG BHSG D									
AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA
AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
IMPERVIOUS	5925	0.136	4340	0.100	1585	0.036			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
INLET-16 HSG BHSG D									
AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA
AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
IMPERVIOUS	5925	0.136	4340	0.100	1585	0.036			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
INLET-17 HSG BHSG D									
AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA
AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
IMPERVIOUS	5925	0.136	4340	0.100	1585	0.036			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
INLET-18 HSG BHSG D									
AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA
AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
IMPERVIOUS	5925	0.136	4340	0.100	1585	0.036			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
INLET-19 HSG BHSG D									
AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA
AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
IMPERVIOUS	5925	0.136	4340	0.100	1585	0.036			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
INLET-20 HSG BHSG D									
AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA
AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
IMPERVIOUS	5925	0.136	4340	0.100	1585	0.036			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
INLET-21 HSG BHSG D									
AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA
AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
IMPERVIOUS	5925	0.136	4340	0.100	1585	0.036			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
INLET-22 HSG BHSG D									
AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA
AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
IMPERVIOUS	5925	0.136	4340	0.100	1585	0.036			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
INLET-23 HSG BHSG D									
AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA	AREA
AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
IMPERVIOUS	5925	0.136	4340	0.100	1585	0.036			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			
OPEN SPACE	2450	0.060	2450	0.060	0	0.000			



Know what's below.  
Call before you dig.

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**JASON T. SCULLO, P.E., P.D.**  
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**SE SCULLO ENGINEERING SERVICES, LLC**

**SPYGLASS AT LAKES BAY**  
CITY OF PLEASANTVILLE, ATLANTIC COUNTY, NEW JERSEY

**INLET DRAINAGE AREA PLAN**

6 W. ROOSEVELT BLVD.  
MARMORA, NEW JERSEY 08053

PROJECT NO. SCA 003.01  
SCALE: 1" = 30'  
DATE: 4/7/2020  
BY: JTS  
SUBMITTER/REVISION: 1 INITIAL RELEASE

**C1403**

# SPYGLASS AT LAKES BAY

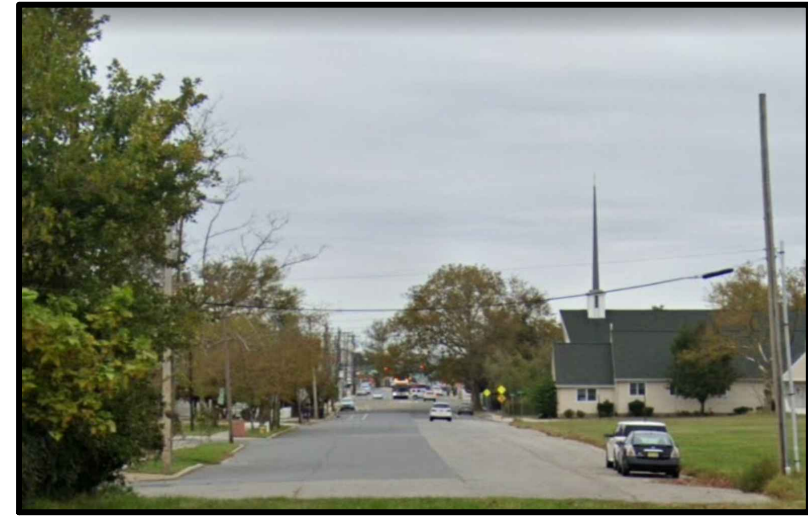
BLOCK 255, LOT 1

CITY OF PLEASANTVILLE, ATLANTIC COUNTY, NEW JERSEY

## PRELIMINARY AND FINAL SITE PLANS



FRANKLIN BOULEVARD  
LOOKING SOUTH



FRANKLIN BOULEVARD  
LOOKING NORTH



BAYVIEW AVENUE  
LOOKING WEST



BAYVIEW AVENUE  
LOOKING EAST



AERIAL MAP  
SCALE: 1" = 300'



ANSLEY BOULEVARD  
LOOKING WEST



ANSLEY BOULEVARD  
LOOKING EAST



HAMPDEN COURT  
LOOKING SOUTH



HAMPDEN COURT  
LOOKING NORTH

APPLICANT/OWNER:

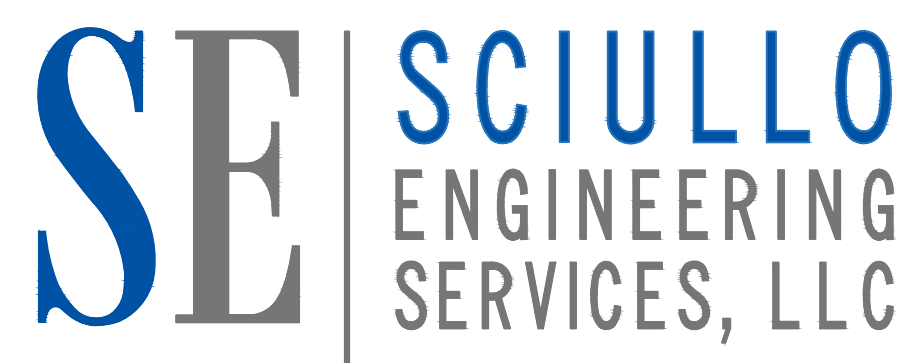
## SPYGLASS QOZB LLC

c/o *Scarborough*  
PROPERTIES

6 W. ROOSEVELT BLVD.

MARMORA, NEW JERSEY 08223

PREPARED BY:



17 SOUTH GORDON'S ALLEY, SUITE 3  
ATLANTIC CITY, NEW JERSEY 08401  
PHONE: (609) 300-5171  
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### APPLICANT/OWNER:

SPYGLASS QOZB LLC c/o SCARBOROUGH PROPERTIES  
6 W. ROOSEVELT BLVD.  
MARMORA, NEW JERSEY 08223

### APPLICANT'S INTENT:

THE APPLICANT PROPOSES TO CONSTRUCT A MIXED USE DEVELOPMENT THAT INCLUDES 180 RESIDENTIAL APARTMENTS IN 6 BUILDINGS AND RETAIL & COMMERCIAL USES IN MULTIPLE BUILDINGS ALONG THE WATERFRONT OF TUNNIS BASIN. THE PROJECT INCLUDES VACATION OF A PORTION OF ANSLEY BOULEVARD & CREATION OF A NEW ROAD TO CONNECT FRANKLIN BOULEVARD & HAMPDEN COURT. IN ADDITION TO THE BUILDINGS & ROADWAY, THE DEVELOPMENT INCLUDES LANDSCAPING, LIGHTING, PARKING & STORMWATER MANAGEMENT FACILITIES. DEVELOPMENT WILL BE PERFORMED FOLLOWING THE STANDARDS SET FORTH BY THE LAKES BAY REDEVELOPMENT PLAN OR THE CITY OF PLEASANTVILLE & APPLICABLE STATE REGULATION SUCH AS THE NJ COASTAL ZONE MANAGEMENT RULES, FLOOD HAZARD AREA CONTROL ACT, STORMWATER MANAGEMENT RULES & RESIDENTIAL SITE IMPROVEMENT STANDARDS.

ALL DRAWINGS PREPARED BY SCIULLO ENGINEERING SERVICES, LLC ARE THE PROPERTY OF SCIULLO ENGINEERING SERVICES, LLC AND ARE NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT WRITTEN PERMISSION OR ADAPTATION BY SCIULLO ENGINEERING SERVICES, LLC. ANY REUSE, MODIFICATION, OR ADAPTATION OF ANY PART OF THESE DRAWINGS WITHOUT THE WRITTEN PERMISSION OF SCIULLO ENGINEERING SERVICES, LLC AND SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO SCIULLO ENGINEERING SERVICES, LLC AND SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY. DAMAGES, LOSSES AND EXPENSES ARISING OUT OF OR RESULTING HEREFROM.

JASON T. SCIULLO, P.E., P.P.  
PROFESSIONAL ENGINEER, NEW JERSEY LICENSE NO. 2460468000  
PROFESSIONAL PLANNER, NEW JERSEY LICENSE NO. 3310062840

SCIULLO  
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SERVICES, LLC  
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PHONE: (609) 300-5171  
www.sciulloengineering.com  
NJ CERTIFICATE OF AUTHORIZATION NO. 24-64-28280700

### CERTIFICATION OF APPROVALS

I HEREBY CERTIFY THAT THIS SITE PLAN HAS BEEN APPROVED BY RESOLUTION \_\_\_\_\_ OF THE CITY OF PLEASANTVILLE PLANNING BOARD.

BOARD CHAIRPERSON \_\_\_\_\_ DATE \_\_\_\_\_

BOARD SECRETARY \_\_\_\_\_ DATE \_\_\_\_\_

CITY ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

SHEET INDEX		
SHEET NO.	DWG. NO.	SHEET TITLE
1 OF 13	C0001	COVER SHEET
2 OF 13	C0002	INFORMATION SHEET
3 OF 13	C0101	SITE PLAN
4 OF 13	C0201	GRADING AND STORMWATER MANAGEMENT PLAN
5 OF 13	C0401	UTILITY PLAN
6 OF 13	C0701	LIGHTING PLAN
7 OF 13	C1101	SITE DETAILS
8 OF 13	C1102	UTILITY DETAILS
9 OF 13	C1103	SANITARY SEWER DETAILS AND PROFILES
10 OF 13	C1104	WATER DETAILS
11 OF 13	C1201	SOIL EROSION AND SEDIMENT CONTROL PLAN
12 OF 13	C1301	SOIL EROSION AND SEDIMENT CONTROL NOTES & DETAILS
13 OF 13	C2001	TRUCK TURNING MOVEMENT & SIGHT TRIANGLES PLAN

SPYGLASS AT LAKES BAY  
BLOCK 255, LOT 1  
CITY OF PLEASANTVILLE, ATLANTIC COUNTY, NEW JERSEY

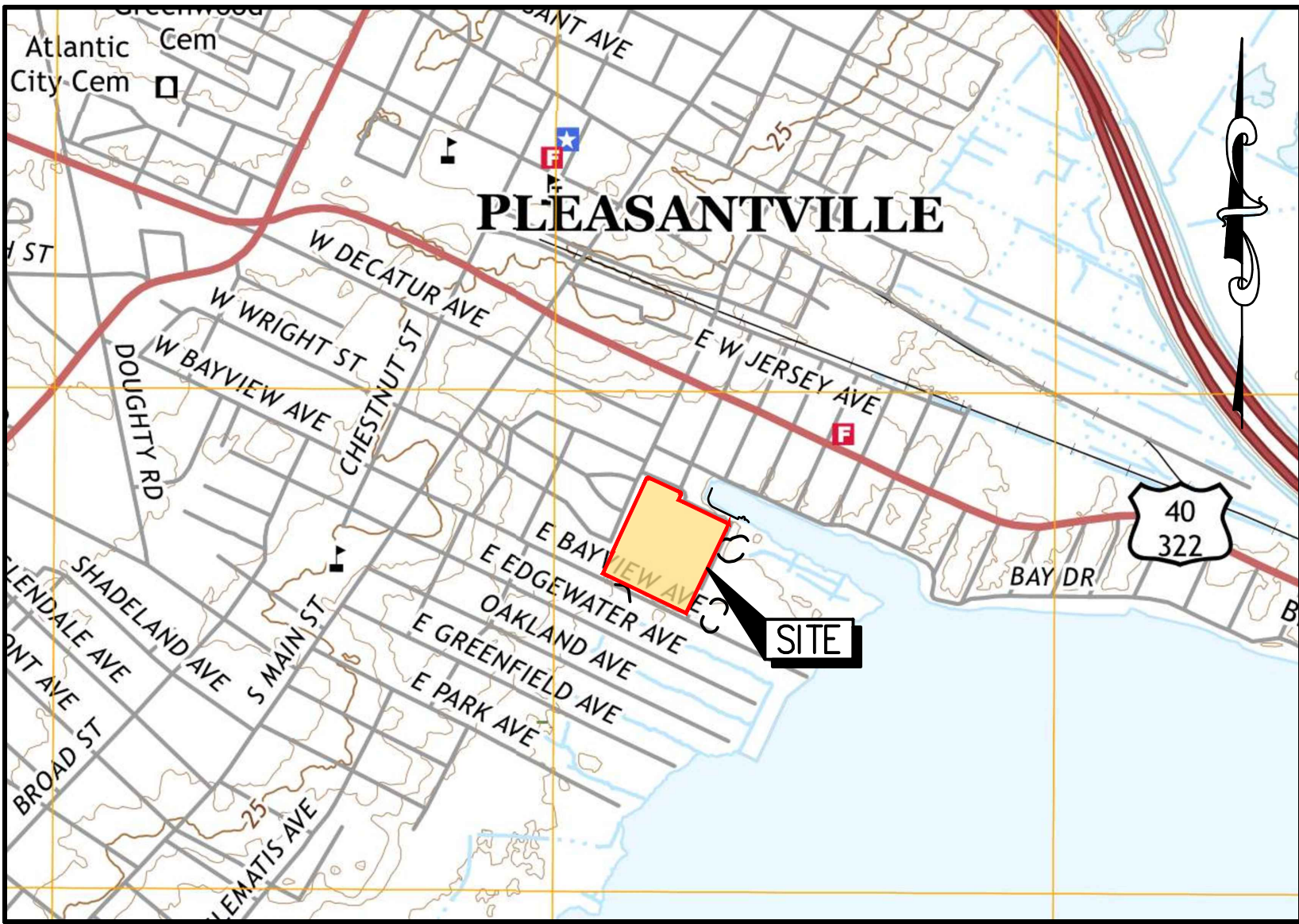
COVER SHEET

*Scarborough*  
PROPERTIES

6 W. ROOSEVELT BLVD.  
MARMORA, NEW JERSEY 08223

PROJECT NO.		DRAWING NO.	
SCA 003.01		C0001	
DATE	ISSUE NO.	INITIAL RELEASE	SUBMISSION/REVISION
5/5/2020	1		
DATE	ISSUE NO.	INITIAL RELEASE	SUBMISSION/REVISION
5/5/2020	1		
DATE	ISSUE NO.	INITIAL RELEASE	SUBMISSION/REVISION
5/5/2020	1		

DATE: 11/27/2019 1:45 PM  
DRAWN BY: JASON T. SCUULLO  
CHECKED BY: JASON T. SCUULLO  
APPROVED BY: JASON T. SCUULLO  
PROJECT: 2019-0001  
SHEET: 1 OF 1  
SCALE: 1" = 1,000'



U.S.G.S. PLEASANTVILLE QUAD SHEET LOCATION MAP  
SCALE: 1" = 1,000'

## PROJECT NOTES

### A. GENERAL SITE NOTES

- TRACT FOR DEVELOPMENT CONSISTS OF SHEETS # 13 & 20, BLOCK 255, LOT 1, OF THE OFFICIAL TAX MAP OF PLEASANTVILLE.
- TRACT FOR DEVELOPMENT IS ZONED WFC AS INDICATED ON THE OFFICIAL ZONING MAP OF PLEASANTVILLE. THE DEVELOPMENT, HOWEVER IS GOVERNED BY THE STANDARDS OUTLINED IN THE LAKES BAY REDEVELOPMENT AREA PLAN.
- TOTAL AREA OF TRACT = 9.3784 ACRES OF LAND.
- THE PROJECT SHALL COMPLY WITH THE CURRENT RECYCLING PROGRAM IN EFFECT IN PLEASANTVILLE.
- GRADING AROUND BUILDING AND FINISHED FLOOR ELEVATIONS ARE SUBJECT TO CHANGE UPON REVIEW OF CONSTRUCTION PLANS OF PROPOSED BUILDINGS UNITS.
- ALL BARRIER FREE DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST BARRIER FREE AND N.J.D.O.T. STANDARDS.
- ANY VARIATIONS FROM THE PLANS MUST BE AUTHORIZED BY THE DESIGN ENGINEER AND APPROVED BY THE CITY ENGINEER.
- THIS SET OF PLANS SHALL NOT BE UTILIZED AS CONSTRUCTION DOCUMENTS UNTIL EACH PLAN HAS BEEN REVISED TO INDICATE "ISSUED FOR CONSTRUCTION".
- CONSTRUCTION DETAILS/SHOP DRAWINGS UTILIZED BY THE CONTRACTOR SHALL BE REVIEWED AND APPROVED BY THE TOWNSHIP ENGINEER.
- REFER TO COMPLETE SET OF PLANS FOR ADDITIONAL INFORMATION.
- THIS SET OF DRAWINGS AND ALL INFORMATION CONTAINED HEREIN IS AUTHORIZED FOR THE USE ONLY BY THE PARTY FOR WHOM THE WORK IS CONTRACTED OR WHOM IT IS CERTIFIED. THIS SET OF DRAWINGS MAY NOT BE COPIED, REUSED, DISCLOSED, DISTRIBUTED, OR RELIED UPON FOR ANY OTHER PURPOSE WITHOUT THE WRITTEN CONSENT OF SCUULLO ENGINEERING SERVICES, LLC.
- ANY DEMOLITION MATERIAL SHALL BE PROPERLY DISPOSED OF AND NO ON-SITE BURIAL IS PERMITTED.
- THE DEVELOPER AND/OR CONTRACTOR SHALL OBTAIN A STREET OPENING/ACCESS PERMIT FROM THE CITY OF PLEASANTVILLE PRIOR TO THE START OF CONSTRUCTION.
- PRIOR TO ANY WORK BEING PERFORMED WITHIN FRANKLIN BOULEVARD, ANSLEY BOULEVARD, HAMPDEN COURT OR BAYVIEW AVENUE, THE PLEASANTVILLE POLICE DEPARTMENT SHALL BE CONTACTED REGARDING PROVISIONS FOR ANY TRAFFIC CONTROL MEASURES THAT MAY NEED TO BE IMPLEMENTED DURING CONSTRUCTION.

### B. SURVEY NOTES

- BEARINGS REFER TO THE NEW JERSEY PLANE COORDINATE SYSTEM NAD83. VERTICAL DATUM REFERS TO NAVD83.
- BOUNDARY, TOPOGRAPHICAL, AND EXISTING CONDITIONS INFORMATION TAKEN FROM PLAN ENTITLED "TOPOGRAPHIC SURVEY SITUATE IN BLOCK 255, LOT 1, CITY OF PLEASANTVILLE, ATLANTIC COUNTY, NEW JERSEY" BY STEPHEN C. MARTINELLI, LAND SURVEYING, LLC, PROJECT NUMBER 15256, SHEET 1 OF 1, DATED 8-18-17, AND UNREVISED.

### C. CONTRACTOR/OWNER RESPONSIBILITY NOTES

- THE CONTRACTOR/OWNER SHALL DESIGNATE A PERSON THAT IS KNOWLEDGEABLE OF CONSTRUCTION SAFETY STANDARDS AND IS EXPECTED TO BE AT THE CONSTRUCTION SITE ON A REGULAR BASIS. THIS PERSON SHALL BE RESPONSIBLE FOR THE IMPLEMENTATION, DISCHARGE, AND MONITORING OF SAFETY STANDARDS AND PRACTICES AT THE SITE. THE CONTRACTOR/OWNER SHALL PROVIDE DESIGN ENGINEER WITH NAME, ADDRESS AND TELEPHONE NUMBER OF DESIGNEE. IN LIEU OF THIS INFORMATION, THE REPRESENTATIVE PERSON FROM THE CONTRACTOR'S ORGANIZATION WHO SIGNED THE CONTRACT SHALL HEREBY BE RESPONSIBLE FOR THIS FUNCTION.
- CONTRACTOR SHALL SCHEDULE ALL CONSTRUCTION TO BE IN ACCORDANCE WITH CURRENT O.S.H.A. STANDARDS.
- SITE CONTRACTOR IS TO VERIFY WITH DESIGN ENGINEER ON WHAT PERMITS AND APPROVALS ARE PENDING OR HAVE BEEN APPROVED.
- SITE CONTRACTOR IS TO VERIFY AND MATCH HORIZONTAL CONTROL AND VERTICAL ELEVATIONS.
- CONTRACTOR SHALL PERFORM ALL WORK IN A WORKMANLIKE MANNER IN ACCORDANCE WITH ALL APPLICABLE CODES, ORDINANCES, AND MANUFACTURER'S RECOMMENDATIONS AND STANDARDS.
- ALL DIMENSIONS AND EXISTING CONDITIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.
- UNDERGROUND UTILITIES LOCATIONS ARE APPROXIMATE AND ARE TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR AT THE TIME OF CONSTRUCTION.
- THE CONTRACTOR SHALL VERIFY IN FIELD ALL CONDITIONS AS SHOWN ON THE PLANS AND SHALL BE RESPONSIBLE FOR FIELD MEASUREMENTS FOR ALL NEW CONSTRUCTION. REFER TO ARCHITECTURAL DRAWINGS FOR ANY INFORMATION NOT SHOWN HERE. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SHORING, UNDERPINNING AND STRUCTURAL STABILITY DURING CONSTRUCTION.
- THE CONTRACTOR SHALL CALL 1-800-272-1000 FOR FIELD LOCATIONS OF UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION.
- IN THE EVENT CONDITIONS AT THE SITE ARE NOTICABLY DIFFERENT (AT THE TIME OF CONSTRUCTION) FROM THE DOCUMENTS PROVIDED, THE CONTRACTOR AND/OR OWNER SHALL NOTIFY THE DESIGN ENGINEER.
- THE PROPOSED SITE GRADING DEPICTED IN THESE PLANS IS INTENDED TO PROVIDE A GENERAL GUIDE FOR GRADING. THE GENERAL CONTRACTOR, CONSTRUCTION MANAGER OR OWNER SHALL INSTRUCT THE CONCRETE CONTRACTOR TO TAKE CARE IN SETTING FORMS FOR PEDESTRIAN AREAS TO ENSURE THEY CONFORM TO THE NEW JERSEY BARRIER FREE SUBCODE.
- THE CONTRACTOR SHALL COMPLY WITH ALL CONDITIONS OF APPROVAL IMPOSED BY ALL REGULATORY AGENCIES HAVING JURISDICTION AS IT RELATES TO THE CONSTRUCTION AND MAINTENANCE OF THE IMPROVEMENTS.
- CONTRACTOR DAMAGE TO ANY EXISTING FEATURE SUCH AS, BUT NOT LIMITED TO, CONCRETE CURBS, CONCRETE WALKS, PAVING, LIGHTS, PLANTERS, SIGNS, UTILITIES OR BUILDINGS NOT SCHEDULED FOR REMOVAL SHALL BE RESTORED TO ORIGINAL CONDITION BY THE CONTRACTOR.
- THE OWNER, OR HIS REPRESENTATIVE, IS TO DESIGNATE AN INDIVIDUAL RESPONSIBLE FOR CONSTRUCTION SITE SAFETY DURING THE COURSE OF SITE IMPROVEMENTS PURSUANT TO N.J.A.C. 5:23-2.21 (E) OF THE N.J. UNIFORM CONSTRUCTION CODE AND CFR 1926.32 (f) (OSHA COMPETENT PERSON).

### D. ROADWAY & SIGNAGE NOTES

- ALL CONSTRUCTION UNDER THIS CONTRACT SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NEW JERSEY DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION AS AMENDED.
- ALL ROADWAY DESIGN AND CONSTRUCTION FOR MUNICIPAL ROADS SHALL BE IN ACCORDANCE WITH STANDARDS SET FORTH BY CITY OF PLEASANTVILLE AND THE NEW JERSEY RSIS STANDARDS.
- ALL TRAFFIC SIGN PLACEMENT SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, U.S. DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION AS AMENDED. ALL SIGNS SHALL BE MOUNTED ON BREAKAWAY SIGN POSTS AS DETAILED AND APPROVED BY NJDOT.
- THE APPLICANT SHALL NOTIFY THE CITY ENGINEER A MINIMUM OF 72 HOURS PRIOR TO THE START OF ANY ROAD CONSTRUCTION. ALL ROADWAY SUBGRADGES SHALL BE TESTED IN ACCORDANCE WITH THE ORDINANCE. ANY DEFICIENCIES SHALL BE CORRECTED TO THE SATISFACTION OF THE CITY ENGINEER.
- THE SURFACE COURSE SHALL NOT BE CONSTRUCTED UNTIL A MINIMUM OF ONE (1) YEAR AFTER THE COMPLETION OF THE BASE COURSE, EXCEPT THAT TEMPORARY PAVING SHALL BE PLACED AROUND ALL MANHOLES, VALVES, BOXES, INLETS, ETC. MATERIAL PLACED AS FILL SHALL BE FREE OF DETRIMENTAL AMOUNTS OF SOO, ROOTS, STONE (>6" DIAMETER), FROZEN SOIL AND OTHER OBJECTIONABLE MATERIALS.

### E. UTILITY NOTES

- PROPOSED UTILITIES SHALL BE INSTALLED UNDERGROUND WITHIN THE PROPOSED PROJECT LIMITS.
- STORMWATER MANAGEMENT SHALL BE IN ACCORDANCE WITH STANDARDS SET FORTH BY CITY OF PLEASANTVILLE, NEW JERSEY RESIDENTIAL SITE IMPROVEMENT STANDARDS, AND THE STATE OF NEW JERSEY STORMWATER MANAGEMENT RULES.
- STORM SEWER (RCP PIPE ROUNDO) TO BE IN ACCORDANCE WITH ASTM C-76 CLASS III WALL S, EXCEPT WHERE NOTED. ALL CONCRETE STORM SEWER PIPE IS TO HAVE EITHER RUBBER GASKET OR BUTYL TAPE JOINTS AND BE WRAPPED WITH MORTAR AND FABRIC ON THE OUTSIDE. ALL 36" AND LARGER PIPE SHALL HAVE AN INSIDE OF THE JOINT MORTARED.
- DRAINAGE, INLET STRUCTURES AND ENDWALLS SHALL BE CONSTRUCTED IN ACCORDANCE WITH NJDOT STANDARD DETAILS.
- ALL INLETS TO HAVE BICYCLE SAFE GRATES.
- T.C. DESIGNATIONS INDICATE TOP OF CURB ELEVATIONS, B.C. INDICATES BOTTOM OF CURB ELEVATIONS AND GUT. INDICATES GUTTER ELEVATIONS.
- GAS, ELECTRIC AND TELEPHONE SERVICE SHALL BE INSTALLED UNDERGROUND THROUGHOUT THE DEVELOPMENT IN ACCORDANCE WITH REGULATIONS OF THE LOCAL UTILITY COMPANIES AND CITY OF PLEASANTVILLE.
- ALL MATERIALS, METHODS AND DETAILS OF IMPROVEMENT CONSTRUCTION SHALL CONFORM TO THE REGULATIONS OF CITY OF PLEASANTVILLE, ATLANTIC COUNTY AND/OR THE APPROPRIATE UTILITY COMPANY, WHICHEVER REGULATION TAKES PRECEDENCE.
- WHERE IT IS NECESSARY TO CONNECT TO EXISTING UTILITIES WITHIN EXISTING ROADWAYS, THE CONTRACTOR SHALL PROVIDE ALL NECESSARY SAW CUTTING, FOR WATER AND SEWER SERVICE, TRENCHING, BACKFILL, COMPACTION AND PAVING SHALL BE IN ACCORDANCE WITH CITY OF PLEASANTVILLE AND ATLANTIC COUNTY SPECIFICATIONS, AS APPLICABLE.
- BEDDING AND BACKFILL FOR THE REINFORCED CONCRETE PIPE SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- TELEVISION INSPECTION OF THE STORM SEWER SYSTEM, AT NO EXPENSE TO THE TOWNSHIP, WILL BE REQUIRED PRIOR TO FINAL ACCEPTANCE BY THE TOWNSHIP.
- PIPE LENGTHS AND GRADIENTS ARE CALCULATED TO THE CENTERLINE OF SANITARY AND STORM SEWER STRUCTURES. ACTUAL PIPE LENGTH MAY BE LESS THAN CALCULATED LENGTH, AND SHOULD BE COMPLETED BY CONTRACTOR PRIOR TO CONSTRUCTION.



N.R.C.S. U.S. DEPARTMENT OF AGRICULTURE SOILS MAP  
SCALE: 1" = 250'

- EXISTING UTILITY INFORMATION SHOWN ON THIS PLAN IS FURNISHED BY THE UTILITY COMPANIES OR SURVEY PLAN BY SURVEYOR AND THE ACCURACY THEREOF IS NOT THE RESPONSIBILITY OF SCUULLO ENGINEERING SERVICES, LLC. IT IS THE RESPONSIBILITY OF OWNER AND/OR CONTRACTOR TO CALL 1-800-272-1000 FOR FIELD LOCATION OF UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION.

### F. SOILS DATA NOTES

- SOIL INVESTIGATION PERFORMED BY UNDERWOOD ENGINEERING COMPANY, BELLMAMR, NEW JERSEY, DATED 8/29/2019.
- FOR TEST PIT RESULTS REFER TO STORMWATER MANAGEMENT REPORT.
- SOIL LOGS REFLECT A SAMPLING OF SOIL CONDITIONS IN APPROXIMATE LOCATIONS WITHIN THE AREA OF THE PROPOSED DRAINAGE BASIN AND TO THE DEPTH IN WHICH THEY WERE TAKEN. THEY ARE NOT INTENDED TO REFLECT SOIL CONDITIONS OF THE ENTIRE BASIN. IF AT THE TIME OF EXCAVATION THE CONTRACTOR DETERMINES THAT THERE MAY BE CLAY OR HARD-PACKED CLODS, THE CONTRACTOR SHOULD NOTIFY THE OWNER AND DESIGN ENGINEER TO DETERMINE IF TOTAL REMOVAL IS REQUIRED.
- ALL SOIL EROSION AND SEDIMENT CONTROL IMPLEMENTATION SHALL BE IN ACCORDANCE WITH STANDARDS SET FORTH BY THE CAPE ATLANTIC CONSERVATION DISTRICT.

### SOILS DATA

HmB HAMMONTON LOAMY SAND 0 TO 5% SLOPES  
PsM PSAMMENTS, SULFIDIC SUBSTRATUM 0 TO 3% SLOPES FREQUENTLY FLOODED

SOILS DATA OBTAINED FROM NATURAL RESOURCES CONSERVATION SERVICES (NRCS) U.S. DEPARTMENT OF AGRICULTURE.

### FLOOD HAZARD NOTES

- THE ENTIRE SITE IS LOCATED IN THE TIDAL FLOOD HAZARD AREA (FLOOD ZONE AE10) ACCORDING TO THE PRELIMINARY FEDERAL EMERGENCY MANAGEMENT AREA FLOOD INSURANCE RATE MAP NUMBER 34001C03195 WITH A PRELIMINARY DATE OF MAY 30, 2014.
- IN ACCORDANCE WITH NJAC 7:13-3.4(D) (FLOOD HAZARD AREA AND FLOODWAY BASED ON A FEMA FLOOD INSURANCE STUDY, FEMA TIDAL METHOD), THE FLOOD HAZARD AREA DESIGN FLOOD ELEVATION AT THE PROJECT SITE IS 10 FEET IN NAVD 1988. TO CONVERT TO NGVD 1929, ADD 1.3 FEET.
- THE STATE OF NEW JERSEY HAS DETERMINED THAT ALL OR A PORTION OF THIS SITE LIES IN A FLOOD HAZARD AREA AND/OR RIPARIAN ZONE. CERTAIN ACTIVITIES IN FLOOD HAZARD AREAS AND RIPARIAN ZONES ARE REGULATED BY THE NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SOME ACTIVITIES ARE PROHIBITED ON THIS SITE OR MAY FIRST REQUIRE A FLOOD HAZARD AREA PERMIT. CONSULT WWW.NJGOV/DEP/LAND/USE OR CONTACT THE DIVISION OF LAND USE REGULATION AT (609) 777-0454 FOR MORE INFORMATION PRIOR TO ANY CONSTRUCTION ON-SITE.

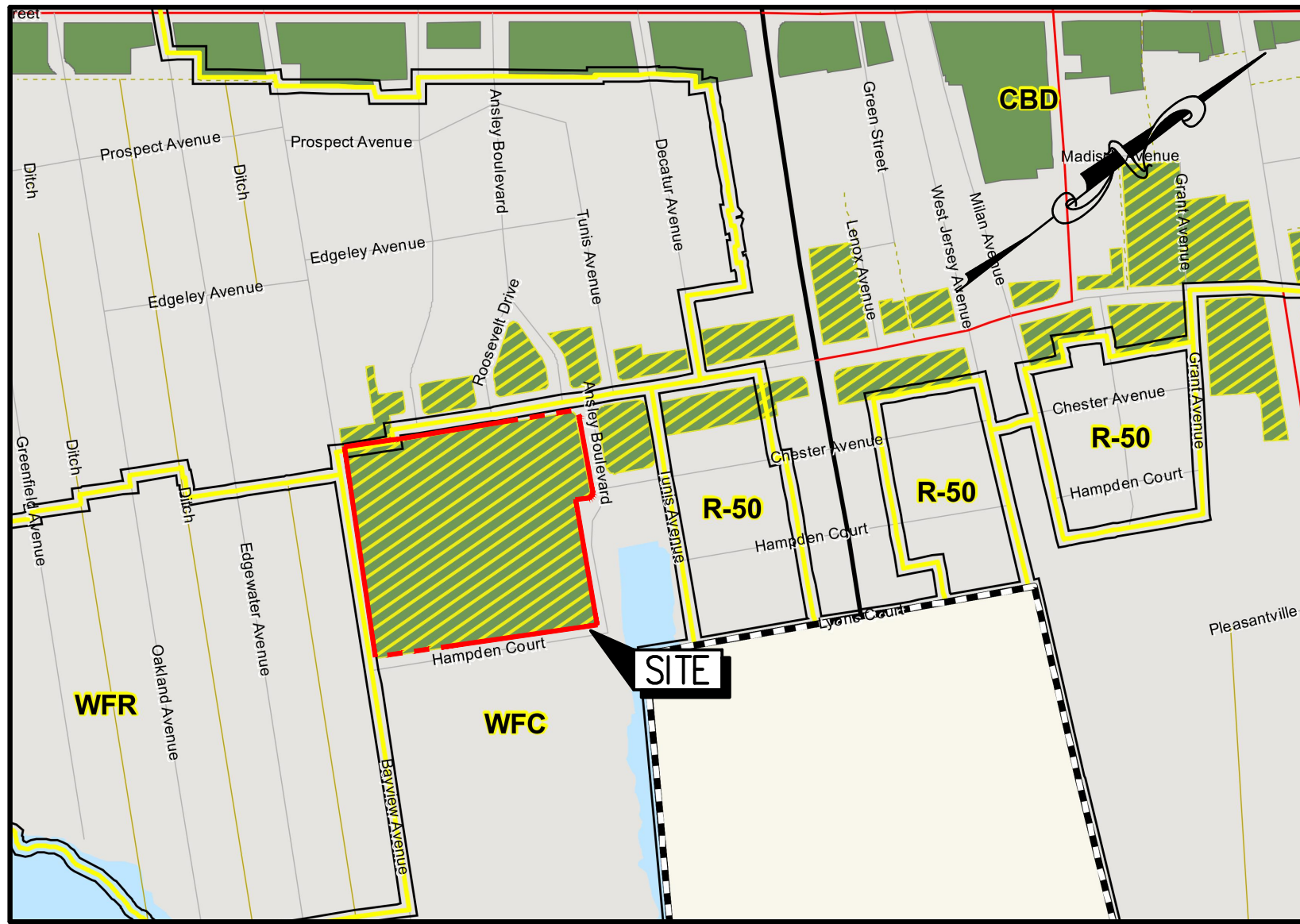
### ZONING SCHEDULE

3RD AMENDED SUPPLEMENTED LAKES BAY REDEVELOPMENT PLAN DATED NOV. 12, 2019				
PLAN SECTION	STANDARD	PERMITTED/REQUIRED	PROPOSED	STATUS
5.1D	USE	APARTMENTS (180 MAX)	180 APARTMENT UNITS	C
5.1A	USE	EATING & DRINKING ESTABLISHMENTS	EATING & DRINKING ESTABLISHMENTS	C
	MINIMUM LOT AREA	2.0 AC	9.38 AC	C
	MINIMUM LOT DEPTH	200 FT	650 FT	C
	MINIMUM LOT WIDTH	200 FT	604 FT	C
	MINIMUM FRONT YARD (HAMPDEN COURT)	15 FT	16 FT	C
	MINIMUM FRONT YARD (OTHER STREETS)	30 FT	49 FT	C
	MINIMUM SIDE YARD	10 FT	17 FT	C
	MINIMUM REAR YARD	20 FT	N/A	N/A
	MAXIMUM BUILDING HEIGHT	52 FT	52 FT	C
	MAXIMUM NUMBER OF STORIES	4	4	C
	MAXIMUM FLOORING COVERAGE	30%	20%	C
	MAXIMUM BUILDING AREA RATIO	1.20	0.77	C
	MINIMUM PARKING SETBACK	20 FT	20 FT	C
	MINIMUM OPEN SPACE	10%	26.81%	C
	MAXIMUM SITE COVERAGE	90%	73.2%	C
	MINIMUM BUFFER FROM RESIDENTIAL USES	30 FT	34 FT	C
	MINIMUM BUFFER FROM NON-RESIDENTIAL USES	10 FT	N/A	N/A
	MAXIMUM BUILDING LENGTH	200 FT	185 FT	C
	SEPARATION BETWEEN BUILDINGS	20 FT	84 FT	C
	NUMBER OF LOADING SPACES	1 LOADING SPACE FOR EVERY 10,000 GROSS SF OF COMMERCIAL SPACE (6,000 SF = 1 SPACE)	1	C
5.2B	NUMBER OF PARKING SPACES NON-RESIDENTIAL USES	COMMERCIAL ACTIVITIES	1 SPACE FOR EVERY 300 SF 2400 SF/300 SF = 8	TOTAL REQUIRED = 311;
		MEDICAL OFFICES	1 SPACE FOR EVERY 2 EXAM ROOMS = N/A	
		PROFESSIONAL & ADMINISTRATIVE OFFICES	1 SPACE FOR EVERY 350 SF = N/A	
		EATING AND DRINKING ESTABLISHMENTS	1 SPACE FOR EVERY 3 SEATS = 33 SPACES	
	NUMBER OF PARKING SPACES RESIDENTIAL USES	PERSONAL SERVICE ESTABLISHMENTS	1 SPACE FOR EACH 1/3 OF AN OPERATOR OTHERWISE 1 SPACE FOR EACH 100 SF OF GROSS FLOOR AREA = N/A	306 ON-SITE 98 GARAGE 48 ON-STREET
		1- AND 2-BEDROOM APARTMENT UNITS	1.5 SPACES PER UNIT = 180 X 1.5 = 270	
		3 BEDROOM APARTMENT UNITS	2.0 SPACES PER UNIT = N/A	

PARKING CALCULATION  
RESIDENTIAL = 180 1 & 2 BR UNITS X 1.5 SPACE/UNIT = 270 SPACES  
RESTAURANT = 100 SEATS X 1 SPACE/3 SEATS = 33 SPACES

### CAFRA COVERAGE REQUIREMENTS

VEGETATIVE COVER REQUIREMENTS FOR SITE IN CAFRA AREA (7.7-13.18 TABLE 1)									
SITE LOCATION	VEGETATIVE COVER	NET LAND AREA	TREE PRESERVATION REQUIRED (FOR FORESTED PORTION)	PROPOSED TREE PRESERVATION	TREE PRESERVATION AND/OR PLANTING REQUIRED (FOR UNFORESTED PORTION)	PROPOSED TREE PRESERVATION AND/OR PLANTING	PROPOSED TREE PRESERVATION AND/OR PLANTING	PROPOSED TREE PRESERVATION AND/OR PLANTING	PROPOSED TREE PRESERVATION AND/OR PLANTING
COASTAL METROPOLITAN PLANNING AREA (PA-1)	FORESTED	0.000 AC	10%	0.000 AC	0.00%	0.00%	N/A	N/A	N/A
	UNFORESTED	9.378 AC	N/A	N/A	0 AC	0 %	0 AC	5%	0.47 AC



OFFICIAL ZONING MAP OF PLEASANTVILLE  
SCALE: N.T.S.

## CITY OF PLEASANTVILLE CERTIFIED OWNER'S LIST WITHIN 200'

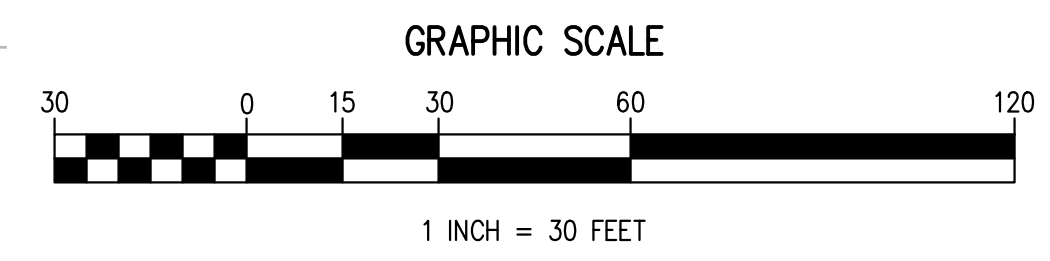
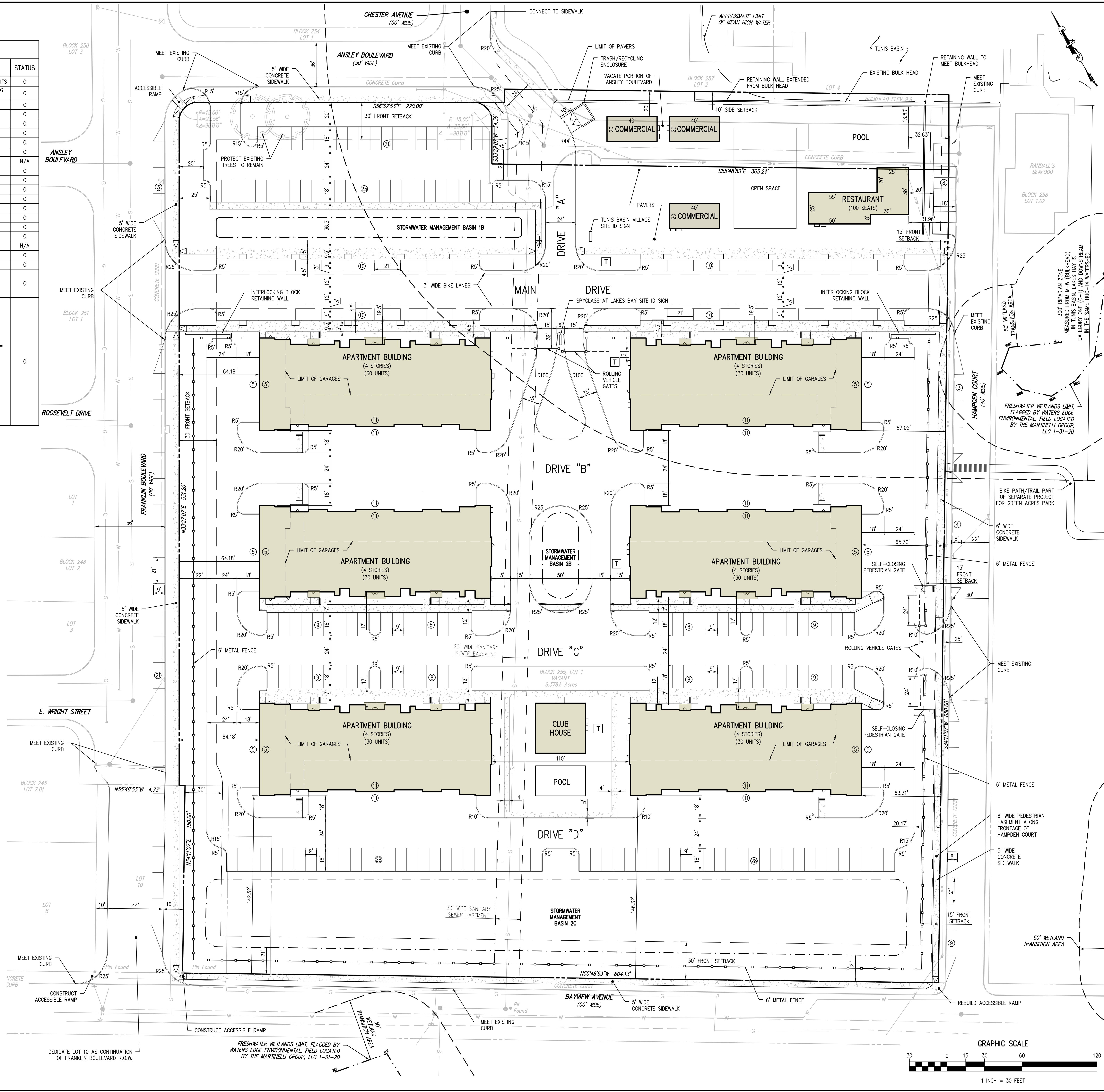
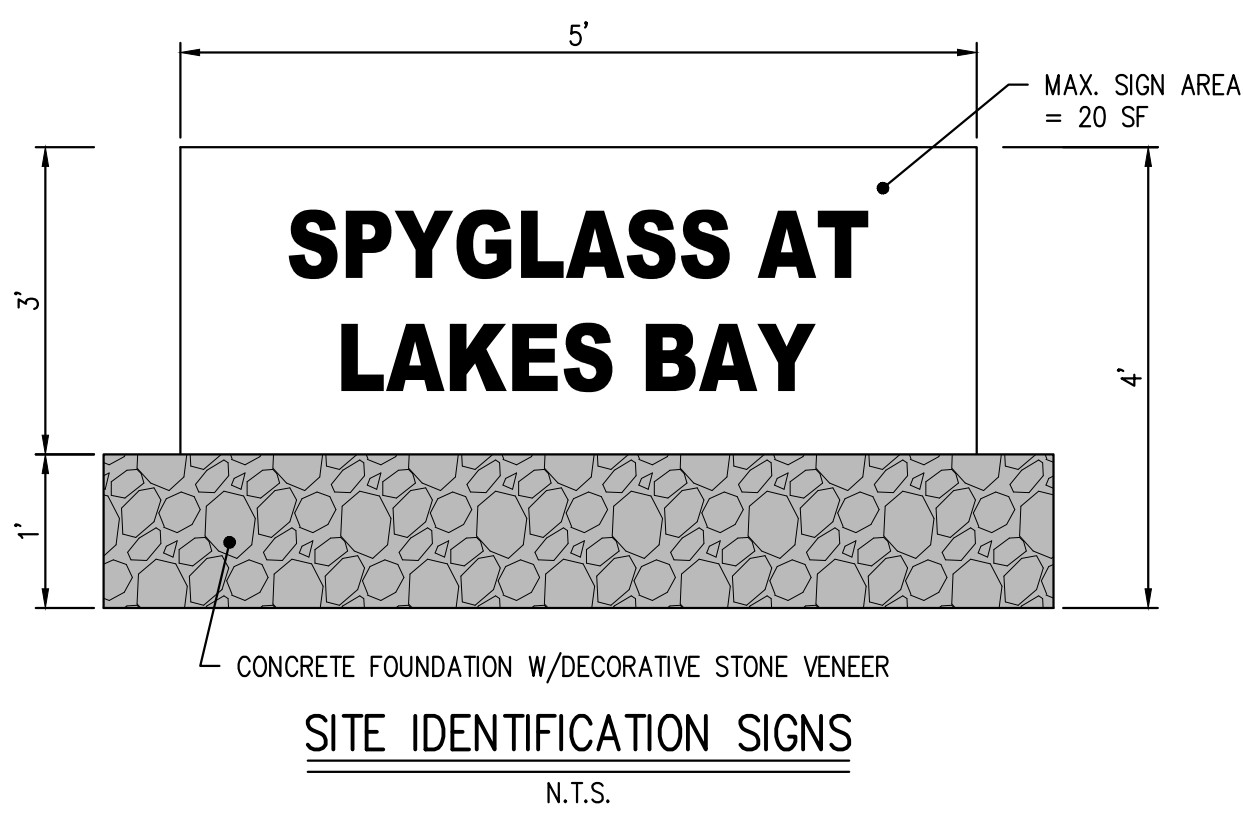
LOT	PROPERTY LOCATION	OWNER	BLOCK	LOT	PROPERTY LOCATION	OWNER
38	129 E EDGEWATER AVE	SKINNER, REGINALD & TRACY J 129 EDGEWATER AVENUE PLEASANTVILLE, NJ 08232	258	9	322 E BAYVIEW	MITCHELL, JOHN 258 E BAYVIEW PLEASANTVILLE, NJ 08232
39	201 E EDGEWATER AVE	NUEP 401 E STATE ST TRENTON, NJ 08625	258	10	324 E BAYVIEW AVE	GRIFITH, LESTER & VICTORIA 244 LAFAYETTE AVE PEMBERTON, NJ 08068
41	203 E EDGEWATER AVE	US BANK TRUST C/O RES CAP MGT 3630 PEACHTREE RD NE 1500 ATLANTA, GA 30326	258	11	326 E BAYVIEW AVE	LASHLEY, CLAUDIA M 328 E BAYVIEW AVE PLEASANTVILLE, NJ 08232
42	205 E EDGEWATER AVE	CHAMPAGNE ROOM, LLC 55 MAIN ST TOMS RIVER, NJ 08753	259	21	66 TUNIS AVE	MMA PROPERTY MANAGEMENT 1025 TILTON RD #1 NORTHFIELD, NJ 08225
43	207 E EDGEWATER AVE	CITY IN REM 1958 CITY HALL HOLD FOR DRAIN PLEASANTVILLE, NJ 08232	260	16	215 LYONS CT	GERBERT, DONNA DISPAS 505 GRANDVIEW AVE PERKASE, PA 18944
44	209 E EDGEWATER AVE	CITY IN REM 202 CITY HALL PLEASANTVILLE, NJ 08232	260	20	217 LYONS CT	DONNELLY, JOHN 217 LYONS CT PLEASANTVILLE, NJ 08232
46	211-217 E EDGEWATER AVE	CITY IN REM 1958 CITY HALL HOLD FOR DRAIN PLEASANTVILLE, NJ 08232	260	26	223 LYONS CT	KOWALEWSKI, PATRICK D & 223 LYONS CT PLEASANTVILLE, NJ 08232
50	221 E EDGEWATER AVE	RIKENBACH, ERNEST D & MARYANNE P 2135 OLD WELSH RD ABINGTON, PA 19001	71	35	125 E EDGEWATER AVE	DEROUZAN R & DEROUZMAN P 125 E EDGEWATER AVE PLEASANTVILLE, NJ 08232
52	225 E EDGEWATER AVE	GONZALEZ, MAYRA 225 E EDGEWATER AVE PLEASANTVILLE, NJ 08232	72	16	130 E EDGEWATER AVE	MOORE JOHN 130 E EDGEWATER AVE PLEASANTVILLE, NJ 08232
54	229-301 E EDGEWATER AVE	CITY OF PLEASANTVILLE CITY HALL PLEASANTVILLE, NJ 08232	72	17	200 E EDGEWATER AVE	NEW JERSEY DEP 401 E STATE ST TRENTON, NJ 08625
10	120 E EDGEWATER AVE	GANNON, FRANCIS JOHN 248 SHOMELTON AVE ABSECON, NJ 08201	72	18	202 E EDGEWATER AVE	MCKENNA, CHRISTINE 202 E EDGEWATER AVE PLEASANTVILLE, NJ 08232
13	124 E EDGEWATER AVE	4 SHEPHERDS LLC 2304 SHEPHERD DR NORTHFIELD, NJ 08225	72	20	204 E EDGEWATER AVE	CITY IN REM 2002 CITY HALL PLEASANTVILLE, NJ 08232
42	205 E BAYVIEW AVE	LAZARO, RAQUEL 205 E BAYVIEW AVE PLEASANTVILLE, NJ 08232	72	23	212 E EDGEWATER AVE	CITY IN REM 1959 CITY HALL HOLD FOR DRAIN PLEASANTVILLE, NJ 08232
44	209 E BAYVIEW AVE	MASS, ANTHONY D & JOAN 174 FRANKLIN AVE COLLINGSWOOD, NJ 08108	72	31	111 E BAYVIEW AVE	MCKINNON, ZACHARY & K 111 E BAYVIEW AVE PLEASANTVILLE, NJ 08232
47	213 E BAYVIEW AVE	CITY IN REM 1954 CITY HALL HOLD FOR DRAIN PLEASANTVILLE, NJ 08232	72	32	117 E BAYVIEW AVE	CHISOLA, TINA 117 E BAYVIEW AVE PLEASANTVILLE, NJ 08232
60	237 E BAYVIEW AVE	DICKEL, CHARLES R 237 BAYVIEW AVE PLEASANTVILLE, NJ 08232	72	33	125 E BAYVIEW AVE	149 W THOMPSON PROPER 405 DELAWARE AVE PLEASANTVILLE, NJ 08232
64	303 E BAYVIEW AVE	CITY OF PLEASANTVILLE CITY HALL PLEASANTVILLE, NJ 08232	72	39	127 E BAYVIEW AVE	MANOLEJO, JOHN & BAR LUIZ 127 E BAYVIEW AVE PLEASANTVILLE, NJ 08232
66	311 E BAYVIEW AVE	RAAB, ROZALIA PO BOX 482 NYC, NY 10014	72	40	201 E BAYVIEW AVE	GARCES, TERESA RAMOS 201 E BAYVIEW AVE PLEASANTVILLE, NJ 08232
67	313 E BAYVIEW AVE	LOPEZ, JUANIA 8220 MONEGAN CT SEVEN, MD 21144	72	50	223 E BAYVIEW AVE	PEREZ, PRIMITIVO 223 E BAYVIEW AVE PLEASANTVILLE, NJ 08232
71	317 E BAYVIEW AVE	CRISDINE, PAUL & MARC 1228 WEEKSTOWN RD EGG HARBOR, NJ 08215	72	52	227 E BAYVIEW AVE	KACZANOWSKI, HELEN L 316 E GREENFIELD AVE PLEASANTVILLE, NJ 08232
72	323 E BAYVIEW AVE	CRISDINE, PAUL & MARC 1228 WEEKSTOWN RD EGG HARBOR, NJ 08215	76	2220 S FRANKLIN BLVD	WU, A FU 2220 S FRANKLIN BLVD PLEASANTVILLE, NJ 08232	
73	325 E BAYVIEW AVE	SHEVINSKY, RUSSEL 2015 FRANKLIN AVE PHILA, PA 19152	78	1210 S CHESTER AVE	CARRERA DE HIDALGO, YOKARA 1210 S CHESTER AVE PLEASANTVILLE, NJ 08232	
74	327 E BAYVIEW AVE	GLUDEN, OLGA 1818 LONEY ST PHILA, PA 19111	245	926 E BAYVIEW AVE	IRWIN, HELEN I (EST) 126 E BAYVIEW AVE PLEASANTVILLE, NJ 08232	
86	218 E EDGEWATER AVE	ROGERS, RONALD 717 RAVENWOOD DR GALLOWAY, NJ 08020	245	730 E BAYVIEW AVE	PRECISE MANAGEMENT LLC 130 E BAYVIEW AVE PLEASANTVILLE, NJ 08232	
88	222 E EDGEWATER AVE	CITY IN REM 1959 CITY HALL PLEASANTVILLE, NJ 08232	245	7077 E WRIGHT ST	ARIAS, DAGOBERTO & MAR 77 E WRIGHT ST PLEASANTVILLE, NJ 08232	
90	224 E EDGEWATER AVE	CITY IN REM 2002 CITY HALL PLEASANTVILLE, NJ 08232	245	8136 E BAYVIEW AVE	BRADFORD, MICHAEL D 136 E BAYVIEW AVE PLEASANTVILLE, NJ 08232	
91	228 E EDGEWATER AVE	HOLDEN, SCOTTY 228 E EDGEWATER AVE PLEASANTVILLE, NJ 08232	245	1042 E BAYVIEW AVE	CITY OF PLEASANTVILLE CITY HALL PLEASANTVILLE, NJ 08232	
92	234 E EDGEWATER AVE	MIRNY, N. KIAN, H & RAHMAN, K TC 480 GENISTA AVE GALLOWAY, NJ 08025	245	2071 E WRIGHT ST	FORD, LISA D 71 E WRIGHT ST PLEASANTVILLE, NJ 08232	
96	238 E EDGEWATER AVE	CITY IN REM 2000 CITY HALL PLEASANTVILLE, NJ 08232	245	2273 E WRIGHT ST	QUARTO, MAXIMO 71 E WRIGHT ST PLEASANTVILLE, NJ 08232	
99	304 E EDGEWATER AVE	CITY OF PLEASANTVILLE CITY HALL PLEASANTVILLE, NJ 08232	245	308 E WRIGHT ST	CHAMBERS, MARIO 69 E WRIGHT ST PLEASANTVILLE, NJ 08232	
101	308 E EDGEWATER AVE	HDR INC PO BOX 1241 PLEASANTVILLE, NJ 08232	248	951 S FRANKLIN BLVD	LOCKETT, VIVIAN & FRANK 129 E EDGEWATER AVE PLEASANTVILLE, NJ 08232	
102	308 E EDGEWATER AVE	SHAW, ROBERT R JR 127 TILER ROAD GREENFIELD, NJ 08020	248	2	353 S FRANKLIN BLVD	BLUESPHAN, VICTORIA 112 N 1ST ST PLEASANTVILLE, NJ 08232
3	108 E BAYVIEW AVE	RODRIGUEZ, WADY & SANTIAGO, CARLOS 108 E BAYVIEW AVE PLEASANTVILLE, NJ 08232	248	3355 S FRANKLIN BLVD	JONES, KEVIN M SR & VETTA 355 S FRANKLIN BLVD PLEASANTVILLE, NJ 08232	
27	75 E WRIGHT ST	YAP, EDGARDO & ZADOTTA 75 E WRIGHT ST PLEASANTVILLE, NJ 08232	248	469 ROOSEVELT DR	LOCKETT, VIVIAN & FRANK 69 ROOSEVELT DR PLEASANTVILLE, NJ 08232	
59	59 ROOSEVELT DR	AGNEDO, ALDO 59 ROOSEVELT DR PLEASANTVILLE, NJ 08232	248	563 ROOSEVELT DR	LU NGUYEN THU 13 S 51 ST, DAVOS PL ATLANTIC CITY, NJ 08401	
15	52 E WRIGHT ST	OLSON, STEPHEN M 52 E WRIGHT ST PLEASANTVILLE, NJ 08232	248	853 ANSLEY BLVD	CHOWHURY, RUBAYET 184 STEINWALL RD EGG HARBOR, TOWNSHIP, NJ	
1	300 S FRANKLIN BLVD	EPHRAIM EVAN LUTHERAN CHURCH PO BOX 741 PLEASANTVILLE, NJ 08232	248	10350 S EDGELEY AVE	WAGNER, HELEN CAROL 350 S EDGELEY AVE PLEASANTVILLE, NJ 08232	
1	350 S FRANKLIN BLVD	CITY OF PLEASANTVILLE CITY HALL PLEASANTVILLE, NJ 08232	248	11	68 E WRIGHT ST	BATHROOM AND KITCHEN 2408 BARCLAY BLVD MARTIN, NJ 08053
1.01	320 S HAMPDEN CT	MAGDO, DIANE 320 S HAMPDEN CT PLEASANTVILLE, NJ 08234	248	12	62 E WRIGHT ST	BISHOP, ROSS B & NICOLE 62 E WRIGHT ST PLEASANTVILLE, NJ 08232
1.01	320 S HAMPDEN CT	MAGDO, DIANE 320 S HAMPDEN CT PLEASANTVILLE, NJ 08234	248	14	58 E WRIGHT ST	CARRUTHERS, WILFRED & JENARA 58 E WRIGHT ST PLEASANTVILLE, NJ 08232
6	314 E BAYVIEW AVE	ROAS, JUAN R & PALARDY, SUSAN M PO BOX 124 ABSECON, NJ 08201	251	1	333 S FRANKLIN BLVD	CITY OF PLEASANTVILLE CITY HALL PLEASANTVILLE, NJ 08232
7	316 E BAYVIEW AVE	CITY OF PLEASANTVILLE CITY HALL PLEASANTVILLE, NJ 08232	257	2	300 S CHESTER AVE	HARMON, AUGUSTUS C & 300 S CHESTER AVE PLEASANTVILLE, NJ 08232

DATE: 05/11/2020  
PROJECT: SPYGLASS AT LAKES BAY  
SUBMITTER: JASON T. SCIULLO, P.E., P.P.  
SCALE: 1" = 30'

## ZONING SCHEDULE

3RD AMENDED SUPPLEMENTED LAKES BAY REDEVELOPMENT PLAN DATED NOV. 12, 2019				
PLAN SECTION	STANDARD	PERMITTED/REQUIRED	PROPOSED	STATUS
5.1D	USE	APARTMENTS (180 MAX)	180 APARTMENT UNITS	C
5.1A	USE	EATING & DRINKING ESTABLISHMENTS	EATING & DRINKING ESTABLISHMENTS	C
5.2B	MINIMUM LOT AREA	2.0 AC	9.38 AC	C
	MINIMUM LOT DEPTH	200 FT	650 FT	C
	MINIMUM LOT WIDTH	200 FT	604 FT	C
	MINIMUM FRONT YARD (HAMPTON COURT)	15 FT	16 FT	C
	MINIMUM FRONT YARD (OTHER STREETS)	30 FT	49 FT	C
	MINIMUM SIDE YARD	10 FT	17 FT	C
	MINIMUM REAR YARD	20 FT	N/A	N/A
	MAXIMUM BUILDING HEIGHT	52 FT	52 FT	C
	MAXIMUM NUMBER OF STORIES	4	4	C
	MAXIMUM BUILDING COVERAGE	30%	20%	C
	MAXIMUM FLOOR AREA RATIO	1.20	0.77	C
	MINIMUM PARKING SETBACK	20 FT	20 FT	C
	MINIMUM OPEN SPACE	10%	26.81%	C
	MAXIMUM SITE COVERAGE	90%	73.2%	C
	MINIMUM BUFFER FROM RESIDENTIAL USES	30 FT	34 FT	C
	MINIMUM BUFFER FROM NON-RESIDENTIAL USES	10 FT	N/A	N/A
	MAXIMUM BUILDING LENGTH	200 FT	185 FT	C
	SEPARATION BETWEEN BUILDINGS	20 FT	84 FT	C
NUMBER OF PARKING SPACES NON-RESIDENTIAL USES	NUMBER OF LOADING SPACES	1 LOADING SPACE FOR EVERY 10,000 GROSS SF OF COMMERCIAL SPACE (6,000 SF = 1 SPACE)	1	C
	COMMERCIAL ACTIVITIES	1 SPACE FOR EVERY 300 SF 2400 SF/300 SF = 8		
	MEDICAL OFFICES	1 SPACE FOR EVERY 2 EXAM ROOMS = N/A		
	PROFESSIONAL & ADMINISTRATIVE OFFICES	1 SPACE FOR EVERY 350 SF = N/A		
	EATING AND DRINKING ESTABLISHMENTS	1 SPACE FOR EVERY 3 SEATS = 33 SPACES		
NUMBER OF PARKING SPACES RESIDENTIAL USES	PERSONAL SERVICE ESTABLISHMENTS	1 SPACE FOR EACH 1/3 OF AN OPERATOR OTHERWISE 1 SPACE FOR EACH 100 SF OF GROSS FLOOR AREA = N/A	TOTAL REQUIRED = 311; 306 ON-SITE 96 GARAGE 48 ON-STREET	C
	1- AND 2-BEDROOM APARTMENT UNITS	1.5 SPACES PER UNIT = 180 x 1.5 = 270		
	3 BEDROOM APARTMENT UNITS	2.0 SPACES PER UNIT = N/A		

PARKING CALCULATION  
RESIDENTIAL = 180 1 & 2 BR UNITS X 1.5 SPACE/UNIT = 270 SPACES  
RESTAURANT = 100 SEATS X 1 SPACE/3 SEATS = 33 SPACES



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PROFESSIONAL ENGINEER, NEW JERSEY LICENSE NO. 2460468000  
PROFESSIONAL PLANNER, NEW JERSEY LICENSE NO. 33000628400  
jason@sciulloengineering.com

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ATLANTIC CITY, NEW JERSEY 08401  
PHONE: (609) 300-5171  
www.sciulloengineering.com  
NJ CERTIFICATE OF AUTHORIZATION NO. 2464628280700

**SPYGLASS AT LAKES BAY**  
BLOCK 255, LOT 1  
CITY OF PLEASANTVILLE, ATLANTIC COUNTY, NEW JERSEY

**SITE PLAN**

*Sciullo*  
PROPERTIES

6 W. ROOSEVELT BLVD.  
MARLTON, NEW JERSEY 08053

PROJECT NO.	SCA 003.01	SUBMITTER	DATE
SCALE	1" = 30'	DATE	5/5/2020
DATE	5/5/2020	ISSUE NO.	1
DATE	5/5/2020	INITIAL RELEASE	BY JTS
DATE	5/5/2020	SUBMISSION/REVISION	BY JTS

C0101

1. THE ENTIRE SITE IS LOCATED IN THE TIDAL FLOOD HAZARD AREA (FLOOD ZONE AE10) ACCORDING TO THE PRELIMINARY FEDERAL EMERGENCY MANAGEMENT AREA FLOOD INSURANCE RATE MAP NUMBER 34001C03139 WITH A PRELIMINARY DATE OF MAY 13, 2014.
2. IN ACCORDANCE WITH NJAC 7:25-3.4(d) (FLOOD HAZARD AREA AND FLOODWAY BASED ON A FEMA FLOOD INSURANCE STUDY, FEMA TOTAL FLOOD), THE FLOOD HAZARD AREA DESIGN FLOOD ELEVATION AT THE PROJECT SITE IS 10 FEET IN NAVD 1988 TO CONVERT TO NGVD 1929, ADD 1.3 FEET.
3. THE STATE OF NEW JERSEY HAS DETERMINED THAT ALL OR A PORTION OF THIS SITE LIES IN A FLOOD HAZARD AREA AND/OR RIPARIAN ZONE. CERTAIN ACTIVITIES IN FLOOD HAZARD AREAS AND RIPARIAN ZONES ARE REGULATED BY THE NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SOME ACTIVITIES ARE PROHIBITED ON THIS SITE OR MAY FIRST REQUIRE A FLOOD HAZARD AREA PERMIT. CONSULT THE DEPARTMENT OF ENVIRONMENTAL PROTECTION DIVISION OF LAND USE REGULATION AT (609) 787-0454 FOR MORE INFORMATION PRIOR TO ANY CONSTRUCTION ONSITE.

## SOILS TEST PITS PERFORMED BY AND LOGS PREPARED BY UNDERWOOD ENGINEERING (8/29/2019)

TP-1 GR. EL=6.70  
ESHW EL=4.70

Depth (in.)	Field Classification
0-4	Topsoil
4-15	5 YR 4/3 (reddish brown) f. SAND, (l.) f-m. gravel, (tr.) silt
15-50	10YR 6/4 (lt. yellowish brown) f-m. SAND (tr-l) silt <Samp. #1 Mottles: 2.5YR 5/8 (red); common, medium, distinct @ 24 inches Stidewal seepage observed 32 inches Satic GW observed at 40 inches Test pit caved at 26 inches End of Test Pit (EOTP)

TP-2 GR. EL=6.20  
ESHWT EL=4.37

Depth (in.)	Field Classification
0-3	Topsoil
3-8	5 YR 4/3 (reddish brown) f. SAND, (l.-s.) f.-m. gravel, (tr.) silt.
8-12	5YR 6/8 (reddish yellow) f.-m. SAND (l.) f. gravel
12-18	GL2 7/1 (lt. gray) f.-m. SAND (l.-s.) f.-m. gravel
	Mottles: 2.5YR 5/8 (red); common, medium, distinct @ 22 inches
	Sidewall exposed about 35 inches
	Static GW observed at 41 inches
	Test pit caved at 23 inches
	End of Test Pit (EOTP)

TP-3 GR. EL=6.57  
ESHWT EL=4.07

<u>Depth (in.)</u>	<u>Field Classification</u>
0-3	Topsoil
3-5	5YR 4/3 (reddish brown) f. SAND, (s.) f-m. gravel, (tr) silt
5-7	5YR 6/8 (reddish yellow) f-m. SAND (L) f gravel
7-42	GL2 7/1 (tl. gray) f. SAND (a.) f-m. gravel
	Mottles: 2.5YR 5/8 (red); common, massive, distinct @ 30 inches
	Sidewall seepage observed 35 inches
	Static GW observed at 40 inches
	Test pit caved at 31 inches
	End of Test Pit (EOTP)

TP-4 GR. EL=6.68  
ESHWT EL=4.35

Depth (in.)	Field Classification
0-3	Topsoil
3-9	5YR 6/8 (reddish yellow) f.-c. SAND (L) f.-m. gravel
9-42	GL2 7/1 (lt. gray) f.-c. SAND (s) f.-m. gravel
	Mottles: 2.5YR 5/8 (s); common, massive, faint @ 28 inches
	Sidewall seepage observed 36 inches
	Static GW observed at 37 inches
	Test pit caved at 32 inches
	End of Test Pit (EOTPT)

TP-5 GR. EL=5.88  
ESHWT EL=4.05

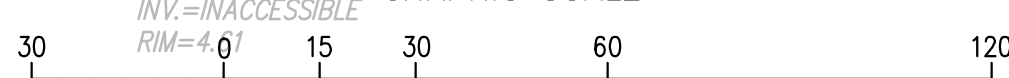
<u>Depth (ft.)</u>	<u>Field Classification</u>
0-2	Topsoil
2-6	5YR 6/8 (reddish yellow) f.-c. SAND (f) f.-m. gravel
6-40	GL2 7/1 (f. gray) f.-c. SAND (a) f.-m. gravel
	Mottles: 2.5YR 5/8 (red), common, massive, faint @ 22 inches
	Sidewall seepage observed 32 inches
	Static GW observed at 30 inches
	Test pit caved at 27 inches
	End of Test Pit (EOTP)

TP-6 GR. EL=6.55  
ESHWT EL=4.72

Depth (in.)	Field Classification
0-6	Topsoil
6-16	10YR 6/4 (lt. yellowish brown) f. SAND (f. f-m. gravel, (f) silt
16-48	GL2 7/1 (lt. gray) f-c. SAND (f) f-m. gravel
	Mottles: 2.5YR 5/8 (red), common, massive, distinct @ 22inches
	Sidewall seepage observed 30 inches
	Static GW observed at 39 inches
	Test pit caved at 30 inches
	End of Test Pit (EOTP)



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2. THESE PLANS ARE NOT FOR CONSTRUCTION UNTIL "ISSUED FOR CONSTRUCTION" APPEARS IN THE TITLEBLOCK.



1 INCH = 30 FEET

**SPYGLASS AT LAKES BAY**  
BLOCK 255, LOT 1  
CITY OF PLEASANTVILLE, ATLANTIC COUNTY, NEW JERSEY

## GRADING PLAN

**Scarborough**  
— PROPERTIES —  
6 W. ROOSEVELT BLVD.  
MADISONA NEW JERSEY 08222

*Scarborough*  
—PROPERTIES—

SE	LAT	JTS
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/5/2020	1	INITIAL R
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DRAWING NO.  
C0301

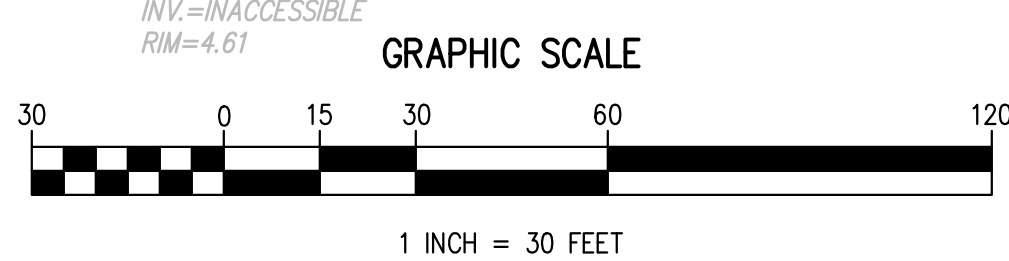
I HEREBY CERTIFY THAT THE ABOVE INFORMATION IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

JASON T. SCIULLO, P.E., P.P.  
PROFESSIONAL ENGINEER, NEW JERSEY LICENSE NO. 246C0458600  
PROFESSIONAL PLANNER, NEW JERSEY LICENSE NO. 301.00629400

I HEREBY CERTIFY THAT THE ABOVE INFORMATION IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I AM NOT PROVIDING ANY OTHER INFORMATION IN THIS STATEMENT THAT WOULD BE MATERIAL TO THE TRANSACTION.

JASON T. SCIULLO, P.E., P.P.  
PROFESSIONAL ENGINEER, NEW JERSEY LICENSE NO. 246024586000  
PROFESSIONAL PLANNER, NEW JERSEY LICENSE NO. 30100629400

1. THE EXISTING STORM SEWER SYSTEM IN FRANKLIN BOULEVARD APPEARS TO BE LOWER THAN THE ADJACENT STORM SEWER INFRASTRUCTURE LEADING TO THE BAY, SO IT APPEARS TO BE A SUMP & FUNCTIONING USING SIPHONS. THIS PROJECT INCLUDES A CONNECTION TO NEW STORM SEWER SYSTEM TO PROVIDE RELIEF, BUT THE SYSTEM WILL REMAIN A SUMP & RELY ON HYDRAULIC GRADE TO DRAIN.



Now what's below.  
Call before you dig.

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[illegible]

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PHONE: (609) 300-5171  
[www.sciulloengineering.com](http://www.sciulloengineering.com)

NAI CERTIFICATE OF AUTHORIZATION NO. 2424292/00700

SPYGLASS AT LAKES BAY  
BLOCK 265, LOT 1  
CITY OF PLEASANTVILLE, ATLANTIC COUNTY, NEW JERSEY

UTILITY PLAN

*Scardomough*  
PROPERTIES

6 W. ROOSEVELT BLVD.  
MARLORA, NEW JERSEY 08223

PROJECT NO. SCA 003.01		DRAWING NO.	C0401
SCALE AS SHOWN	SHEET 5 OF 13		

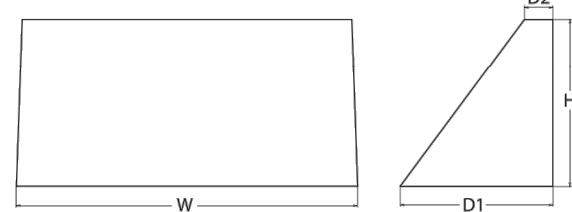
# LIGHTING SCHEDULE

QUANTITY	SYMBOL	LABEL	MANUFACTURER	CATALOG NUMBER	DISTRIBUTION TYPE	LUMENS	MOUNTING HEIGHT
25		A	STERNBERG LIGHTING	AB50SRLED-32L40T5-MDL016	T5	14147	16'
14		B	STERNBERG LIGHTING	AB50SRLED-32L40T3-MDL016	T5	1366	16'
10		C	STERNBERG LIGHTING	AB50SRLED-32L40T4-MDL016	T4	13825	16'
2		CHS	STERNBERG LIGHTING	AB50SRLED-32L40T4-MDL016-BLOC	T4	9464	16'
16		WM	LITHONIA LIGHTING	WGE LED P2 70CRI R3 40K	R3	8519	12'

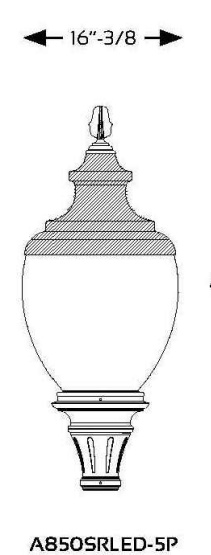


**WDE3 LED**  
Architectural Wall Sconce

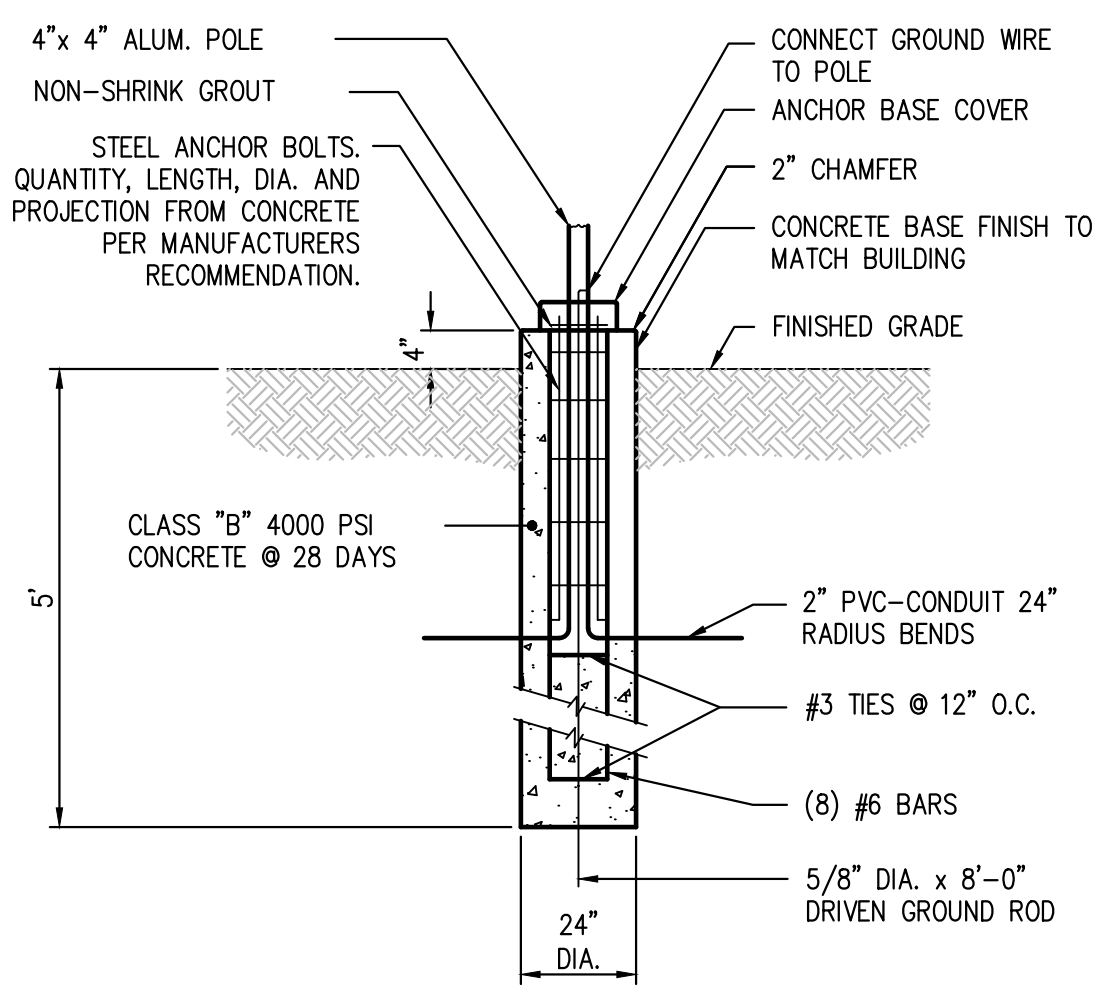
**Specifications**  
Depth (D1): 8"  
Depth (D2): 1.5"  
Height: 9"  
Width: 18"  
Weight: 19.5 lbs  
(without options)



**WALL MOUNTED FIXTURE**



**POLE MOUNTED FIXTURE**

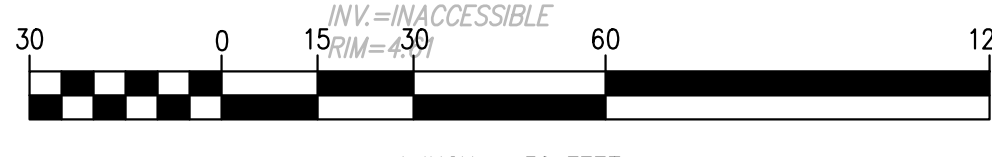
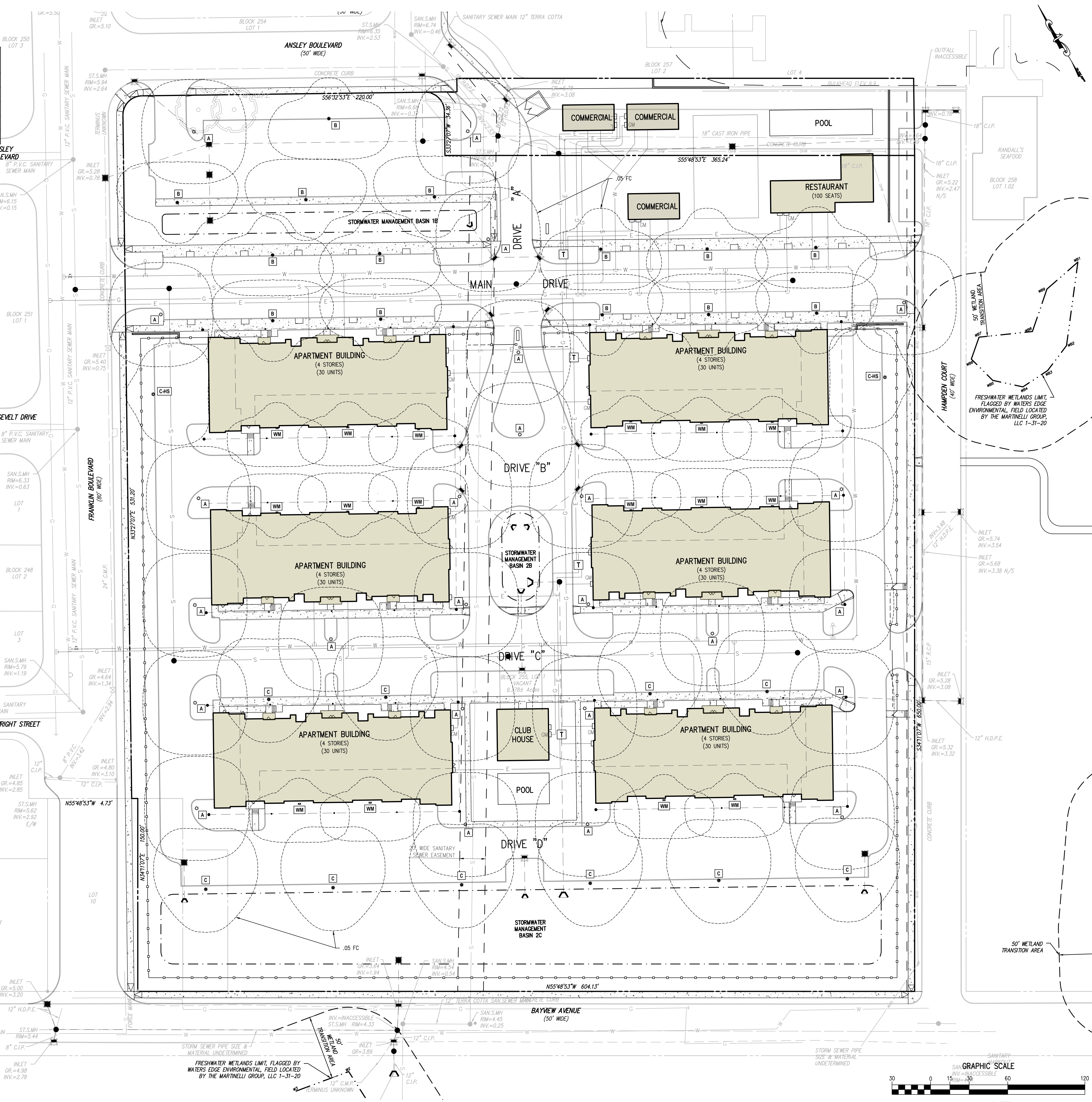


**LIGHT BASE DETAIL**  
N.T.S.

LIGHT BASES SHALL BE SETBACK 3 FEET FROM CURB LINES WHERE POSSIBLE.



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jts@sciulloengineering.com

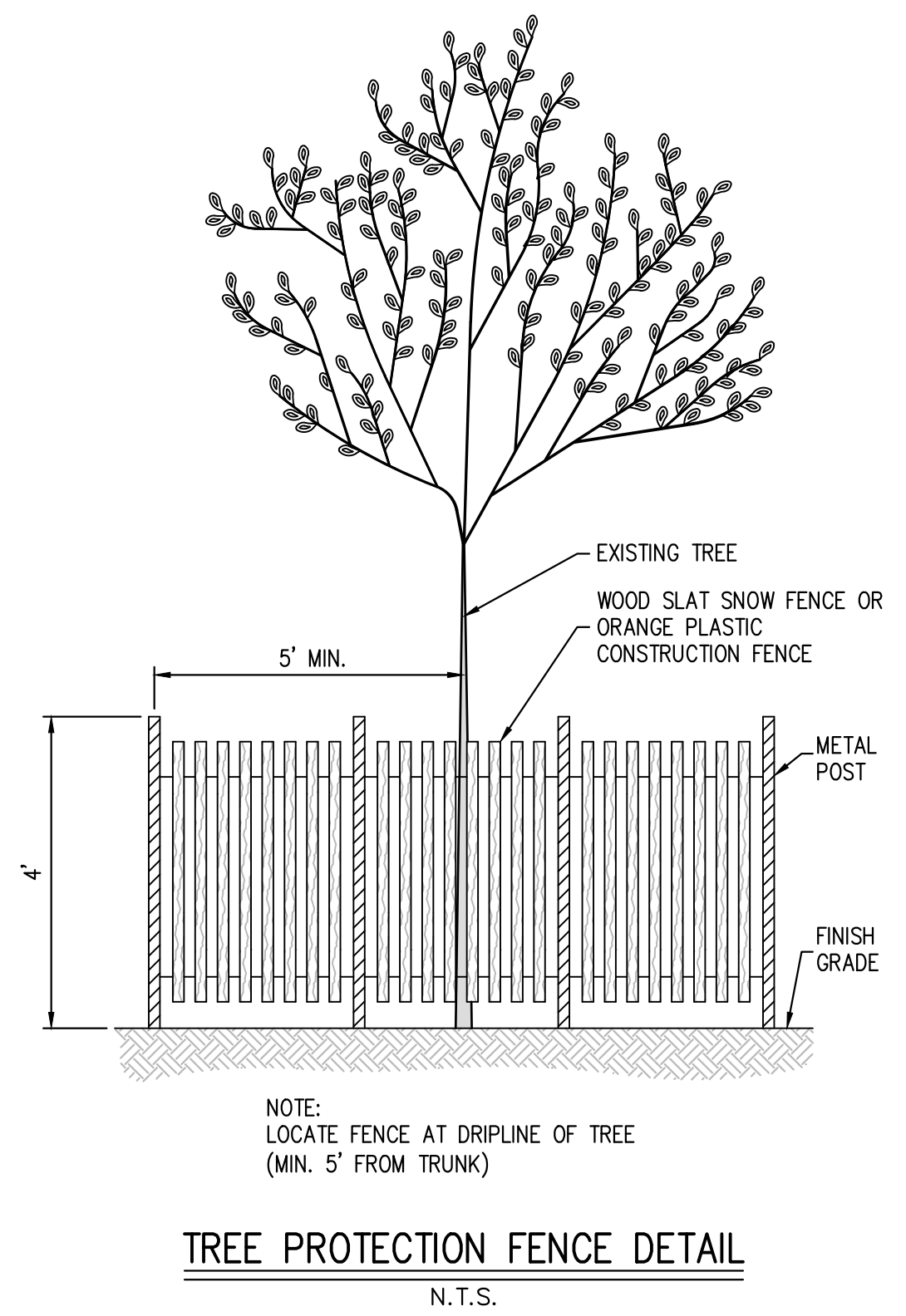
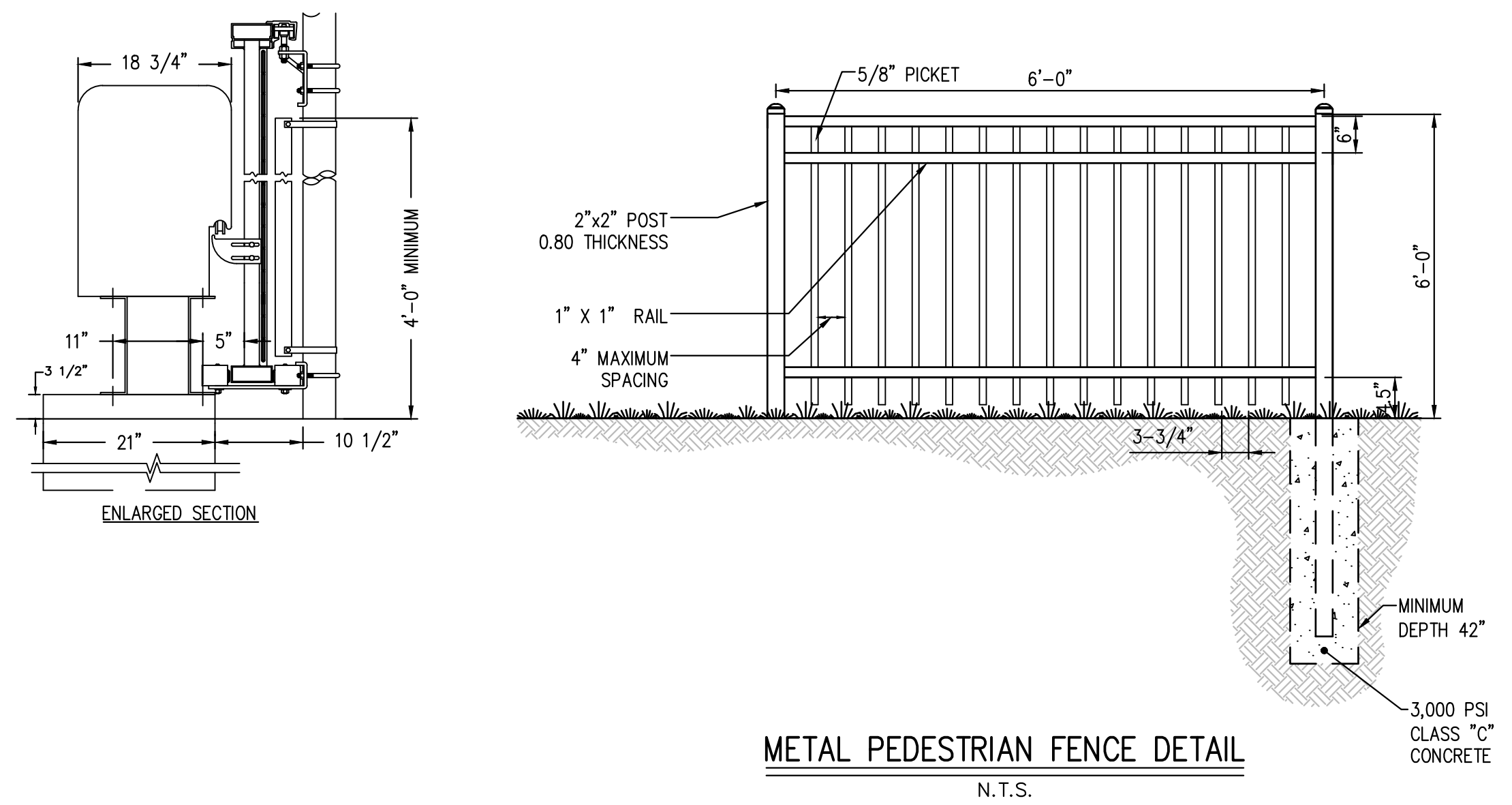
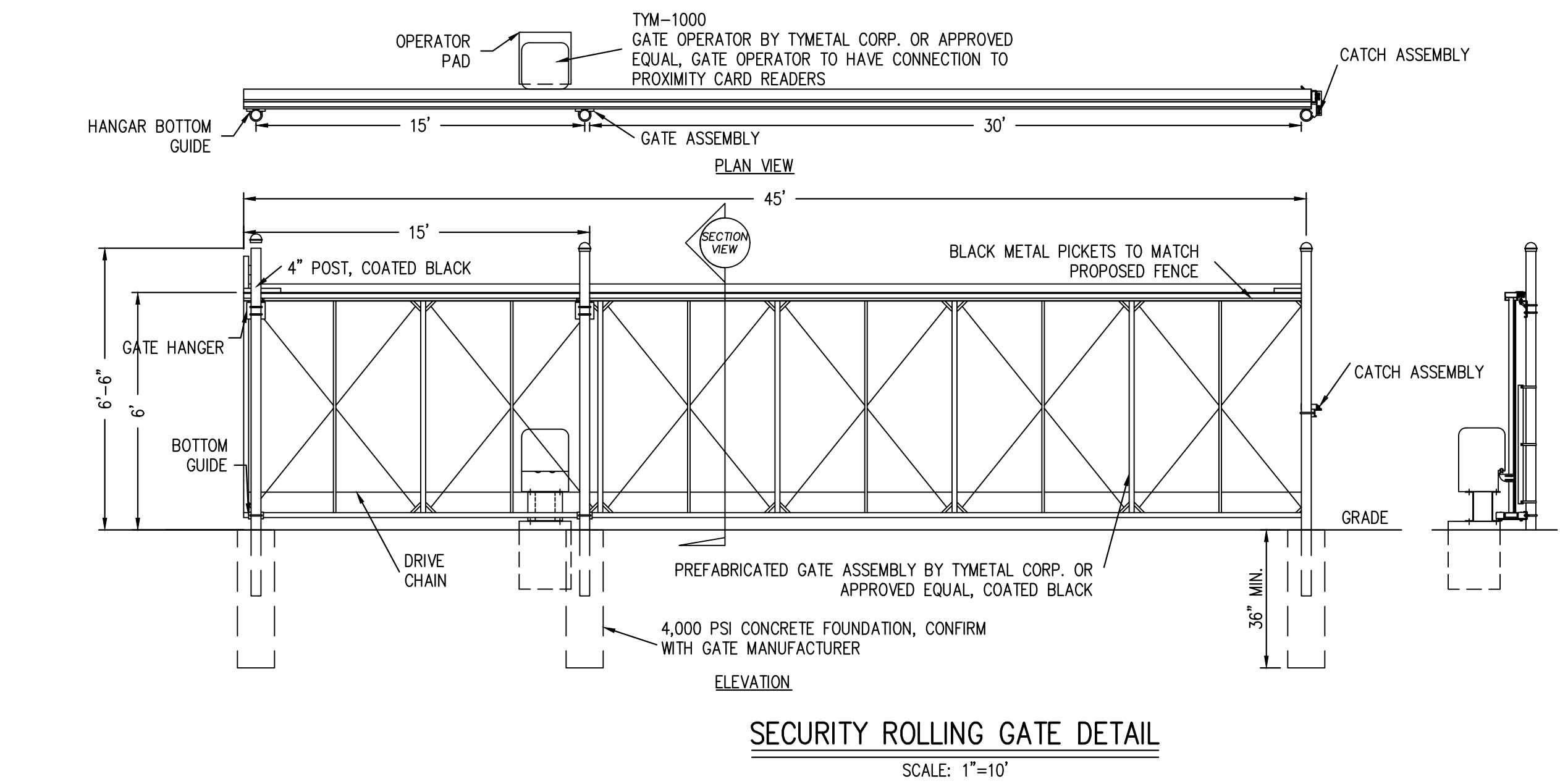
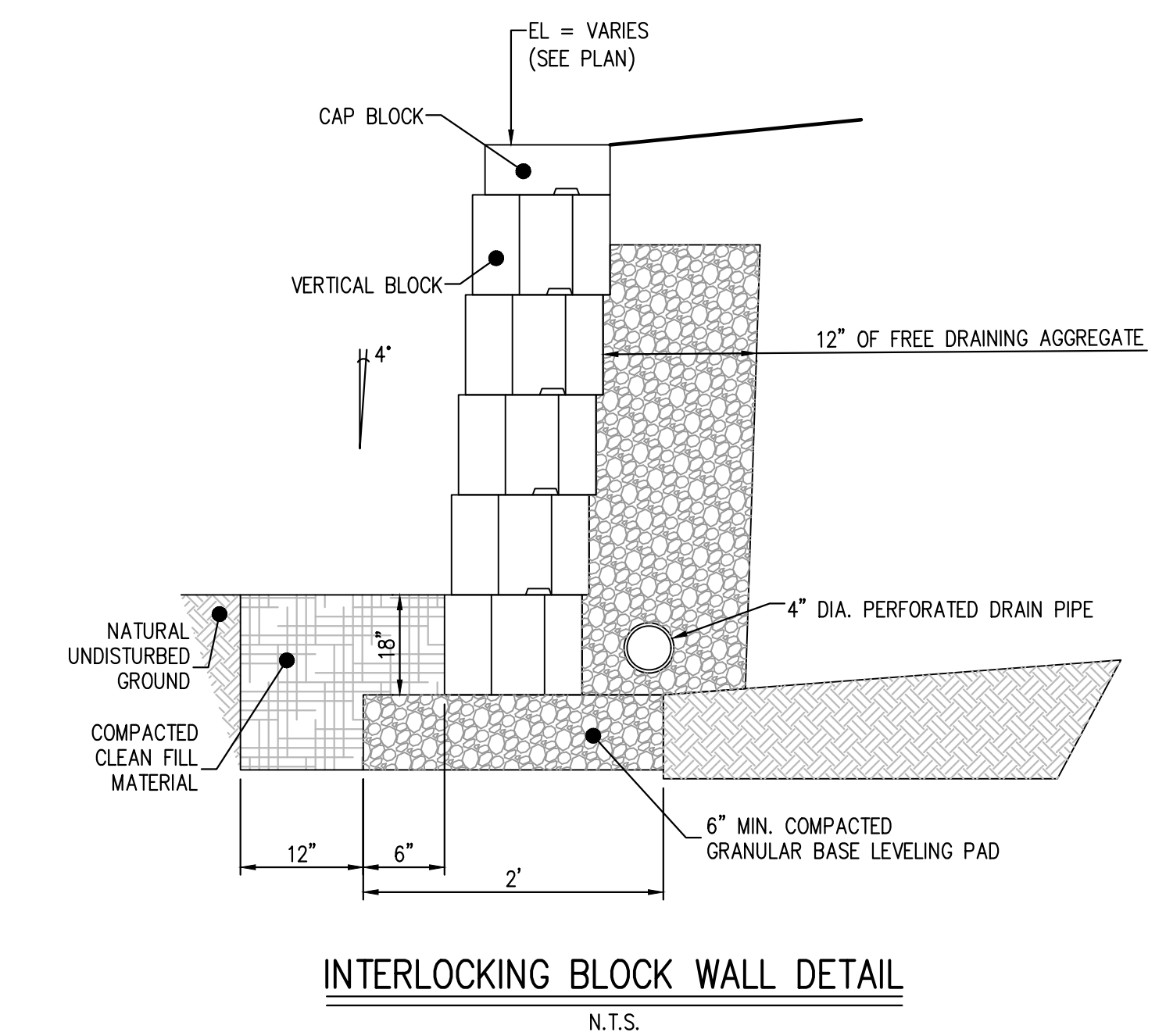
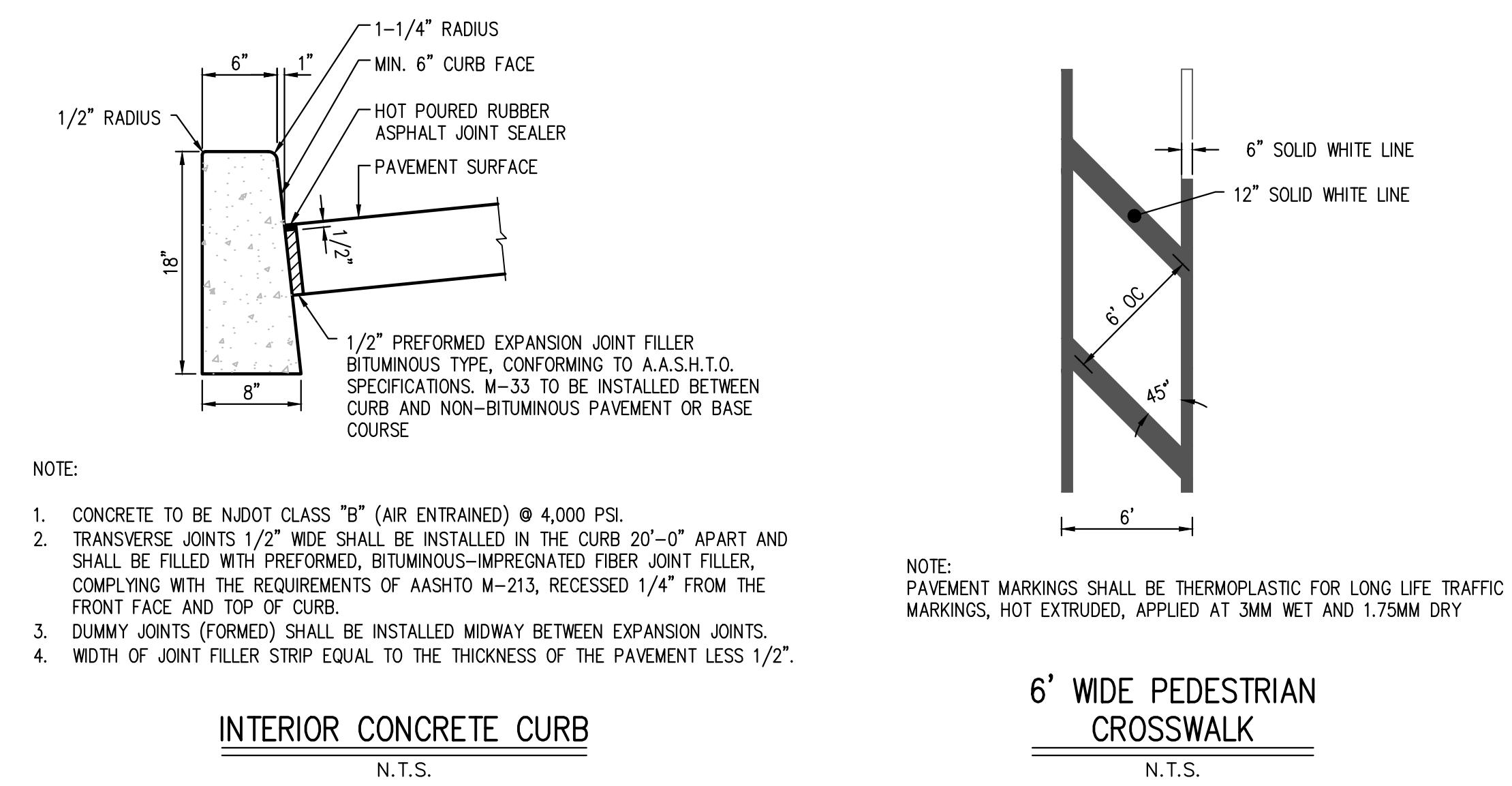
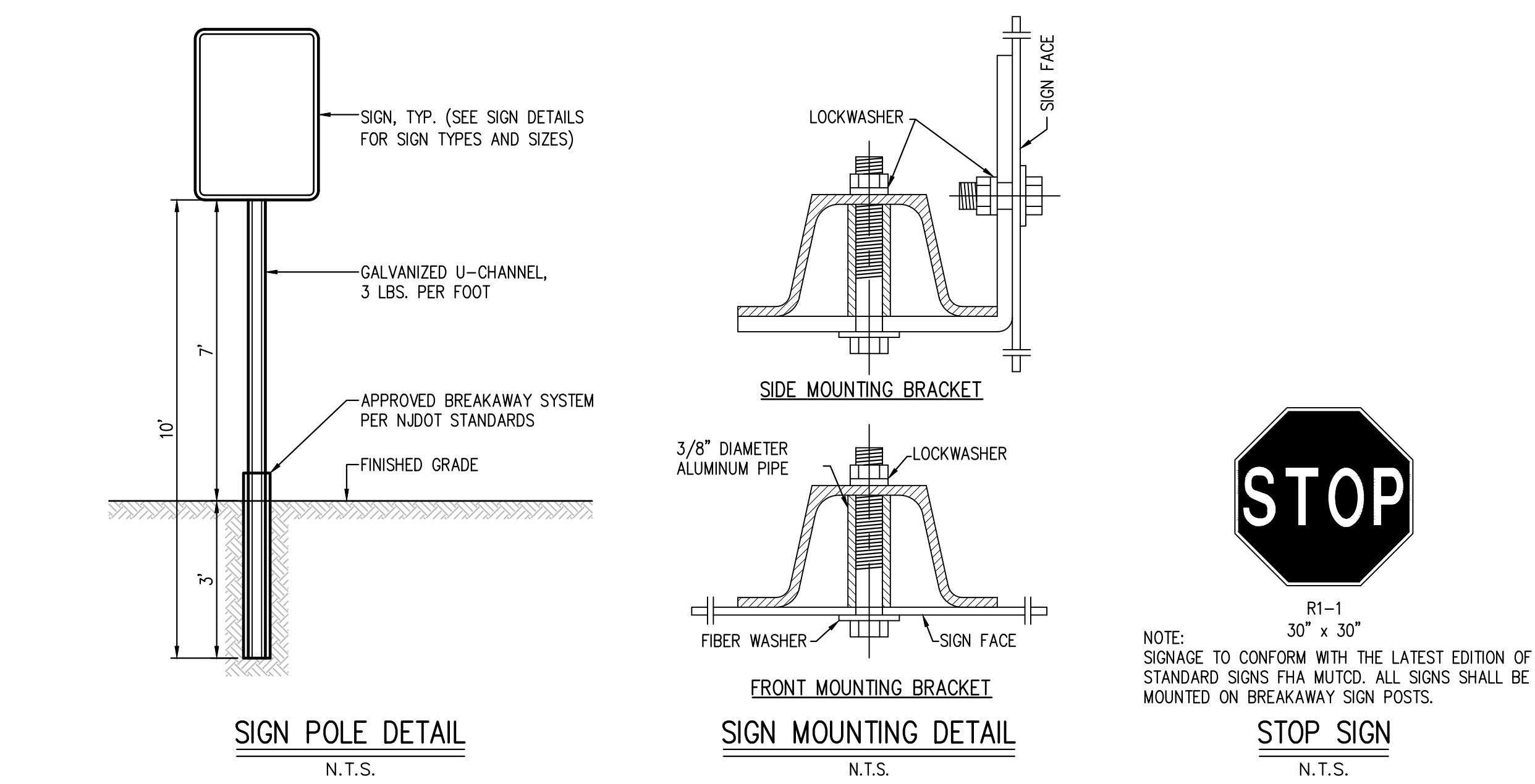
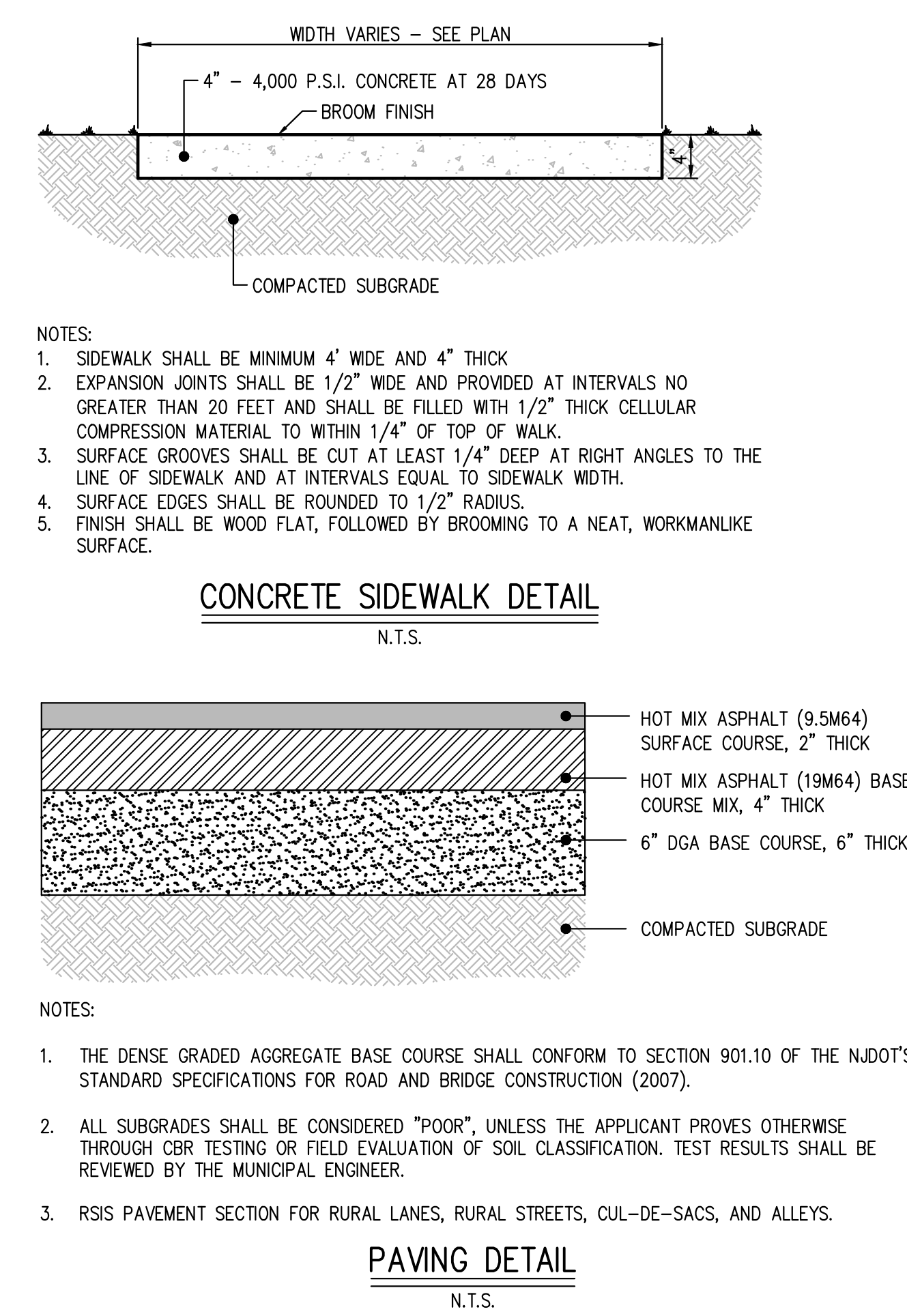
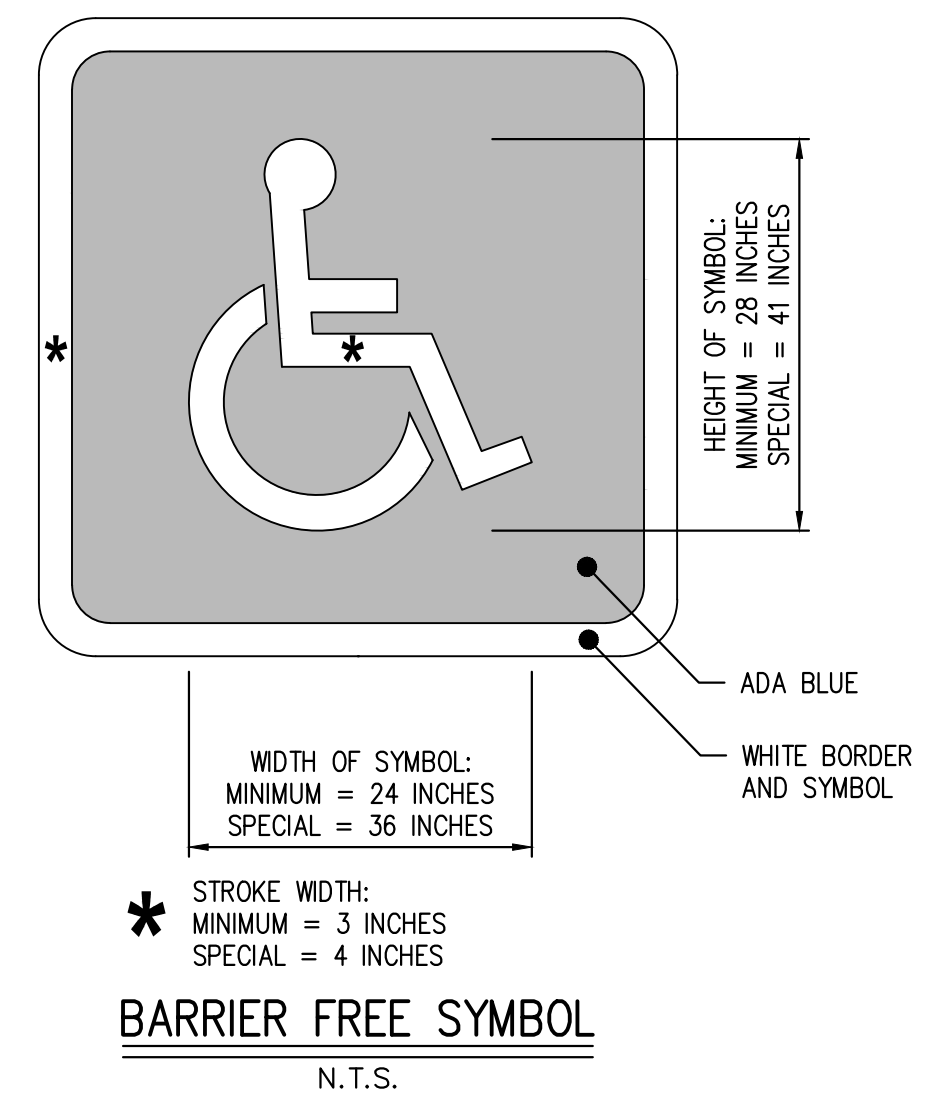
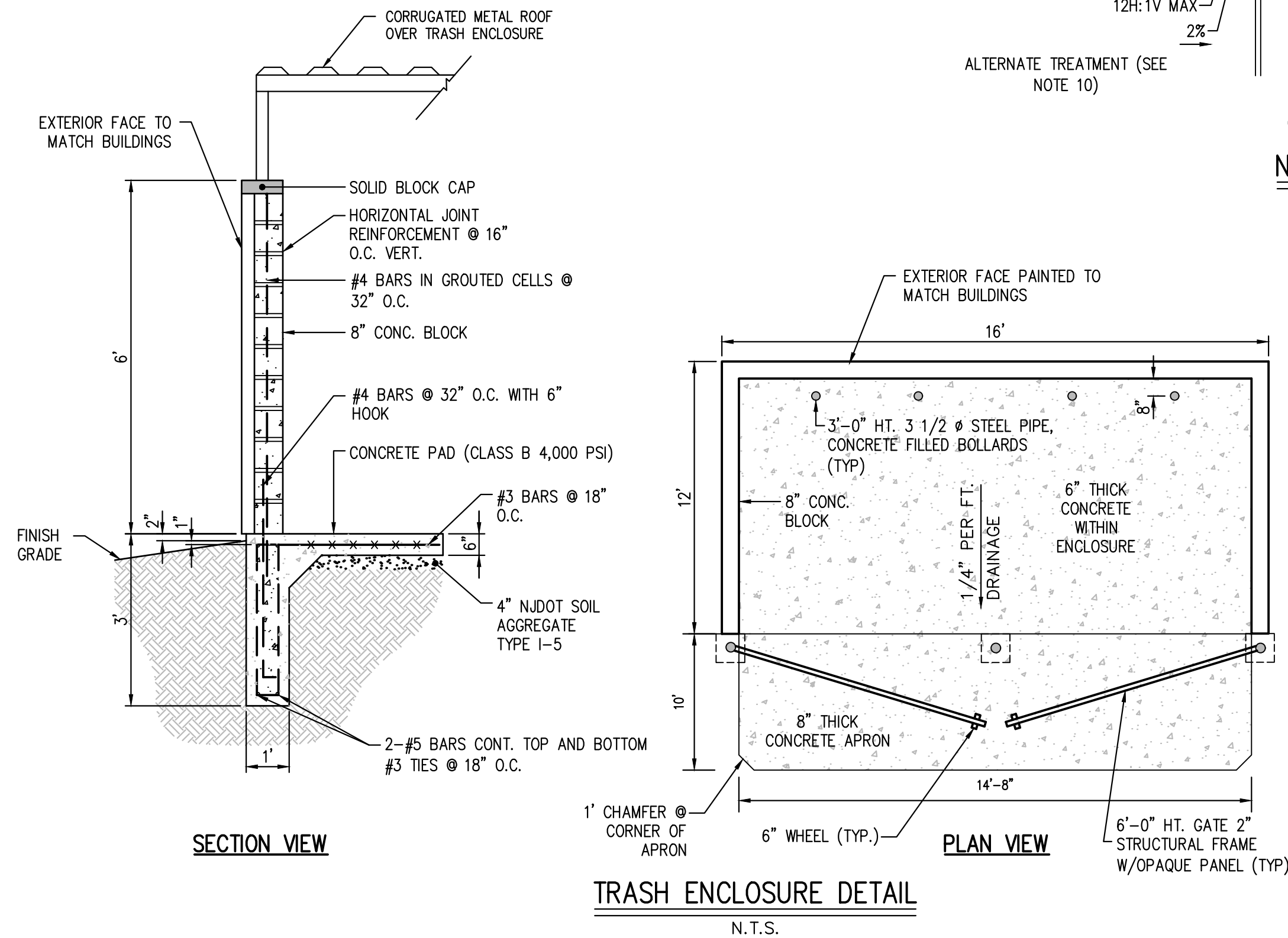
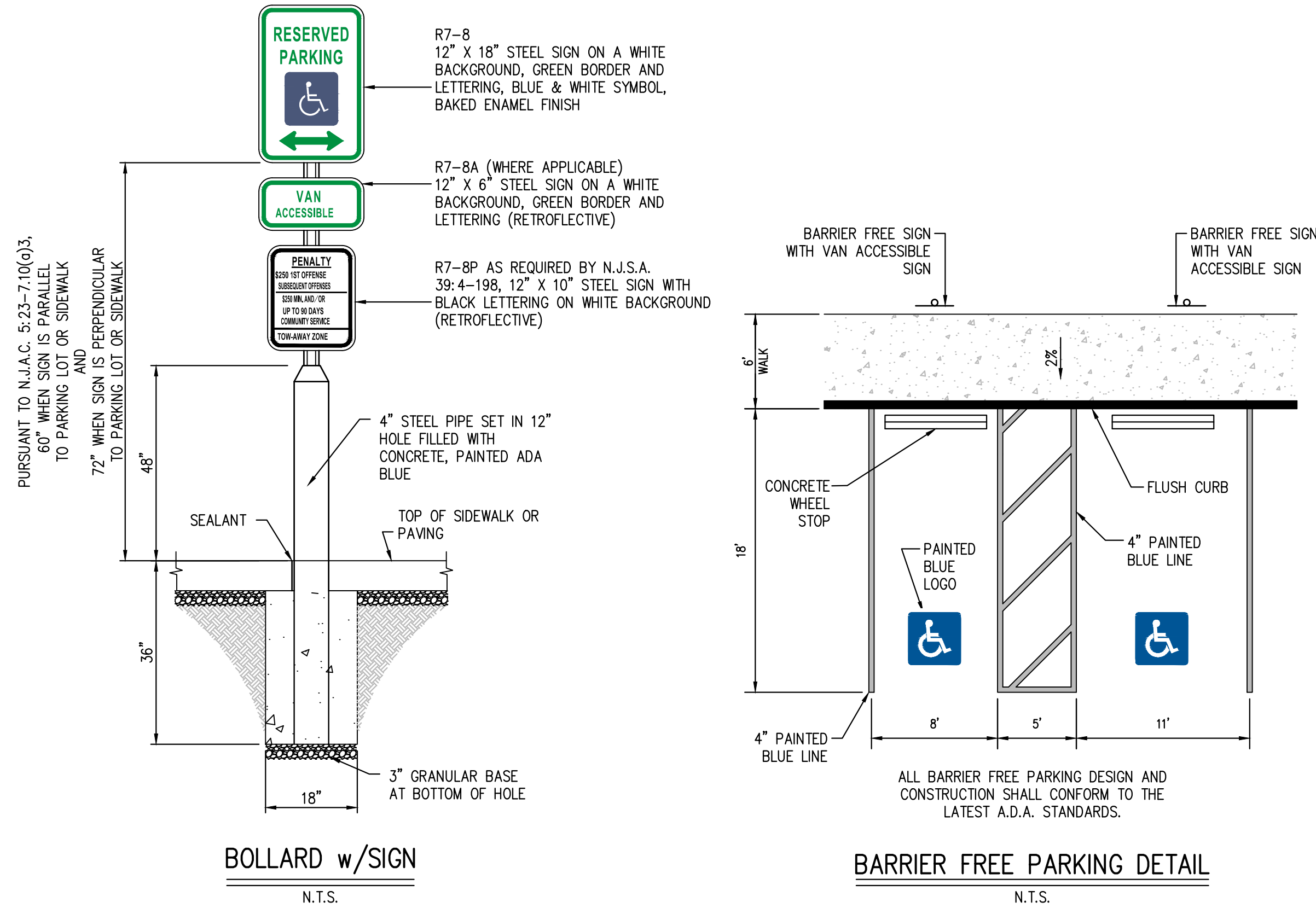
**SCIULLO ENGINEERING SERVICES, LLC**  
17 SOUTH CORONADO AVE., SUITE 3  
ATLANTIC CITY, NEW JERSEY 08401  
PHONE: (609) 300-5171  
www.sciulloengineering.com  
NJ CERTIFICATE OF AUTHORIZATION NO. Z64628280700

**SPYGLASS AT LAKES BAY**  
BLOCK 255, LOT 1  
CITY OF PLEASANTVILLE, ATLANTIC COUNTY, NEW JERSEY  
**LIGHTING PLAN**

DATE	ISSUE NO.	INITIAL RELEASE	SUBMISSION/REVISION	LAT	JTS	BY	APPR.
5/5/2020	1						

PROJECT NO. SCA 003.01  
SCALE: 1" = 30'  
SHEET 6 OF 13  
DWG. NO. C0701

DESIGNED BY SCULLO ENGINEERING SERVICES, LLC AND APPROVED BY THE TOWNSHIP ENGINEER. ANY CHANGES TO THESE PLANS MUST BE APPROVED BY THE TOWNSHIP ENGINEER. ANY CHANGES TO THESE PLANS MUST BE APPROVED BY THE TOWNSHIP ENGINEER. ANY CHANGES TO THESE PLANS MUST BE APPROVED BY THE TOWNSHIP ENGINEER.



**811**  
Know what's below.  
Call before you dig.

1. EXISTING UTILITY INFORMATION SHOWN ON THESE PLANS IS FURNISHED BY THE UTILITY COMPANIES AND/OR THE SURVEYOR AND THE ACCURACY THEREOF IS NOT THE RESPONSIBILITY OF SCULLO ENGINEERING SERVICES, LLC. IT IS THE RESPONSIBILITY OF THE OWNERS AND/OR CONTRACTOR TO CALL 1-800-272-1000 FOR FIELD LOCATION OF UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION.

2. THESE PLANS ARE NOT FOR CONSTRUCTION UNTIL "ISSUED FOR CONSTRUCTION" APPEARS IN THE TITLEBLOCK.

**SCULLO ENGINEERING SERVICES, LLC**  
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PHONE: (609) 300-5171  
www.sculloengineering.com  
NJ CERTIFICATE OF AUTHORIZATION NO. 24-6428280700

**JASON T. SCULLO, P.E., P.P.**  
PROFESSIONAL ENGINEER, NEW JERSEY LICENSE NO. 2460468000  
PROFESSIONAL PLANNER, NEW JERSEY LICENSE NO. 33.000628400

**SPYGLASS AT LAKES BAY**  
BLOCK 255, LOT 1  
CITY OF PLEASANTVILLE, ATLANTIC COUNTY, NEW JERSEY

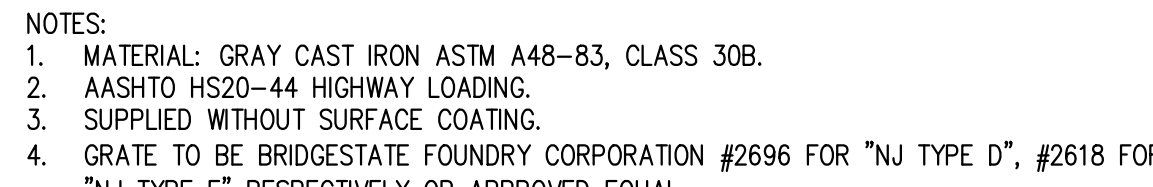
**SITE DETAILS**

**Scarbrough PROPERTIES**  
6 W. ROOSEVELT BLVD.  
MARLTON, NEW JERSEY 08223

PROJECT NO. SCA 003.01  
DATE: 5/5/2020  
ISSUE NO. 1  
INITIAL RELEASE  
SUBMISSION/REVISION

LAT. JTS  
BY: JTS  
DATE: 5/5/2020

7 OF 13  
C1101



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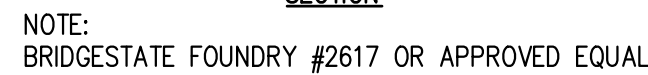
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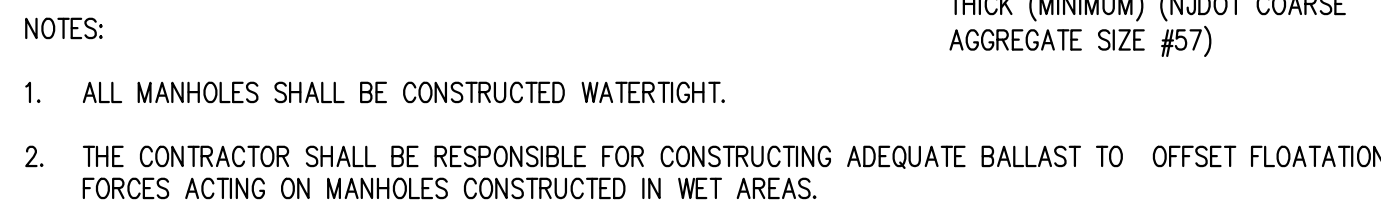
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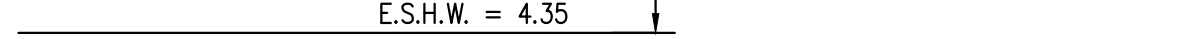
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N.T.S



N.T.S



N.T.S.



- NOTES:
1. ALL EDGES TO BE CHAMFERED 1".
  2. THE RUBBING OF HEADWALLS TO REMOVE FORM MARKS AS REQUIRED IN SUBSECTION 501.14 FOR CONCRETE STRUCTURES, WILL NOT BE REQUIRED FOR HEADWALLS AT THE BOTTOM OF EMBANKMENTS IN RURAL AREAS.
  3. FOR SLOPE DRAIN HEADWALLS, DIMENSIONS AND APRON GRADES SHALL BE SET BY ENGINEER.
  4. FOR MORE THAN ONE PIPE, SET THE PIPES A MINIMUM OF ONE FOOT APART (OUTSIDE BARREL FOR OUTSIDE BARREL) BE 12" ABOVE THE TOP OF A PIPE IN A WINCWall. THE TERMINUS OF THE WINCWall SHALL BE 20 FROM THE CENTERLINE OF THE PIPE IN A WINCWall.
  5. THE TERMINUS FOR OUTLET AND INLET APRONS SHALL BE SET BY EXTENDING THE PIPE GRADE AHEAD AND BACK, RESPECTIVELY.
  6. FOR ARCH PIPE, THE SPAN SHALL BE SUBSTITUTED FOR D.

## N.T.S.




## NTS

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PRELIM NO SCA 003.01		SHEET 10 OF 13		DRAWING NO C1104
DATE AS SHOWN		DATE 10 OF 13		
5/5/2020		I INITIAL RELEASE	LAT JTS	6 W. ROOSEVELT BLVD. MANHATTAN, NEW YORK 10023  SPOKANE PROPERTIES
SPYGLASS AT LAKES BAY BLOCK 255, LOT 1 CITY OF PLEASANTVILLE, ATLANTIC COUNTY, NEW JERSEY				WATER DETAILS

DATE: 05/15/2020  
DRAWN BY: JASON T. SCIULLO, P.E.  
CHECKED BY: JASON T. SCIULLO, P.E.  
APPROVED BY: JASON T. SCIULLO, P.E.  
SUBMITTAL: 11/11/2019  
PROJECT: SPYGLASS AT LAKES BAY  
SHEET: SCA 003.01  
SCALE: AS SHOWN  
DATE: 5/15/2020  
ISSUE NO: 1  
INITIAL RELEASE: 5/15/2020  
SUBMISSION/REVISION: 11/11/2019  
C1201

## NOTES

- THIS PLAN IS TO BE USED FOR SOIL EROSION AND SEDIMENT CONTROL PURPOSES ONLY.
- SOIL EROSION AND SEDIMENT CONTROL IMPLEMENTATION SHALL BE IN ACCORDANCE WITH STANDARDS SET FORTH BY THE CAPE ATLANTIC CONSERVATION DISTRICT.

## LIMIT OF DISTURBANCE

TOTAL AREA OF PROPOSED DISTURBANCE = 451,968 SF; 10.37 AC

## LEGEND

- TEMPORARY STANDARD SILT FENCE/LIMIT OF DISTURBANCE
- LIMIT OF DISTURBANCE
- SOILS LIMIT LINE
- TEMPORARY STABILIZED CONSTRUCTION ENTRANCE
- SOIL RESTORATION LIMIT (SET 12 FOOT FROM BUILDING FOUNDATION AND ALL IMPERVIOUS SURFACES EXCLUDED)
- SOIL RESTORATION AREA (SOIL TESTING REQUIRED FOR AREAS OF DISTURBANCE TO BE RESTORED TO LANDSCAPE OVER 500 S.F.) = 77,257 SF; 1.77 AC
- SOIL COMPACTION TEST REQUIRED (DISPERSED IN OPEN AREAS WITH FINAL LOCATIONS TO BE DETERMINED IN FIELD)
- PERVIOUS AREA UNDER 500 S.F. (NO SOIL COMPACTION TESTING REQUIRED)
- TEMPORARY INLET PROTECTION
- SOILS DESIGNATION

## SOILS DATA

Hmb HAMMONTON LOAMY SAND 0-5% SLOPE  
PstAI PSAMMENTS, SULFIDIC SUBSTRATUM, FREQUENTLY FLOODED 0-3% SLOPE

SOILS OBTAINED FROM NATURAL RESOURCES CONSERVATION SERVICES (NRCS) U.S. DEPARTMENT OF AGRICULTURE.  
ALL SOIL EROSION AND SEDIMENT CONTROL IMPLEMENTATION SHALL BE IN ACCORDANCE WITH STANDARDS SET FORTH BY THE CAPE ATLANTIC CONSERVATION DISTRICT.

## SOIL DE-COMPACTION AND TESTING REQUIREMENTS

### SOIL COMPACTION TESTING REQUIREMENTS

- SUBGRADE SOILS PRIOR TO THE APPLICATION OF TOPSOIL (SEE PERMANENT SEEDING AND STABILIZATION NOTES FOR TOPSOIL REQUIREMENTS) SHALL BE FREE OF EXCESSIVE COMPACTION TO A DEPTH OF 6.0 INCHES TO ENHANCE THE ESTABLISHMENT OF PERMANENT VEGETATIVE COVER.
- AREAS OF THE SITE WHICH ARE SUBJECT TO COMPACTION TESTING AND/OR MITIGATION ARE GRAPHICALLY DENOTED ON THE CERTIFIED SOIL EROSION CONTROL PLAN.
- COMPACTION TESTING LOCATIONS ARE DENOTED ON THE PLAN. A COPY OF THE PLAN OR PORTION OF THE PLAN SHALL BE USED TO MARK LOCATIONS OF TESTS, AND ATTACHED TO THE COMPACTION REMEDIATION FORM, AVAILABLE FROM THE LOCAL SOIL CONSERVATION DISTRICT. THIS FORM MUST BE FILLED OUT AND SUBMITTED PRIOR TO RECEIVING A CERTIFICATE OF COMPLIANCE FROM THE DISTRICT.
- IN THE EVENT THAT TESTING INDICATES COMPACTION IN EXCESS OF THE MAXIMUM THRESHOLDS INDICATED FOR SIMPLIFIED TESTING METHOD (SEE DETAIL BELOW), THE CONTRACTOR/OWNER SHALL HAVE THE OPTION TO PERFORM EITHER (1) COMPACTION MITIGATION OVER THE ENTIRE MITIGATION AREA DENOTED ON THE PLAN (EXCLUDING EXEMPT AREAS), OR (2) PERFORM ADDITIONAL, MORE DETAILED TESTING TO ESTABLISH THE LIMITS OF EXCESSIVE COMPACTION WHEREUPON ONLY THE EXCESSIVELY COMPACTED AREAS WOULD REQUIRE COMPACTION MITIGATION. ADDITIONAL DETAILED TESTING SHALL BE PERFORMED BY A TRAINED, LICENSED PROFESSIONAL.

### COMPACTION TESTING METHODS

- PROBING WIRE TEST (SEE DETAIL)
- HAND-HELD PENETROMETER TEST (SEE DETAIL)
- TUBE BULK DENSITY TEST (LICENSED PROFESSIONAL ENGINEER REQUIRED)
- NUCLEAR DENSITY TEST (LICENSED PROFESSIONAL ENGINEER REQUIRED)

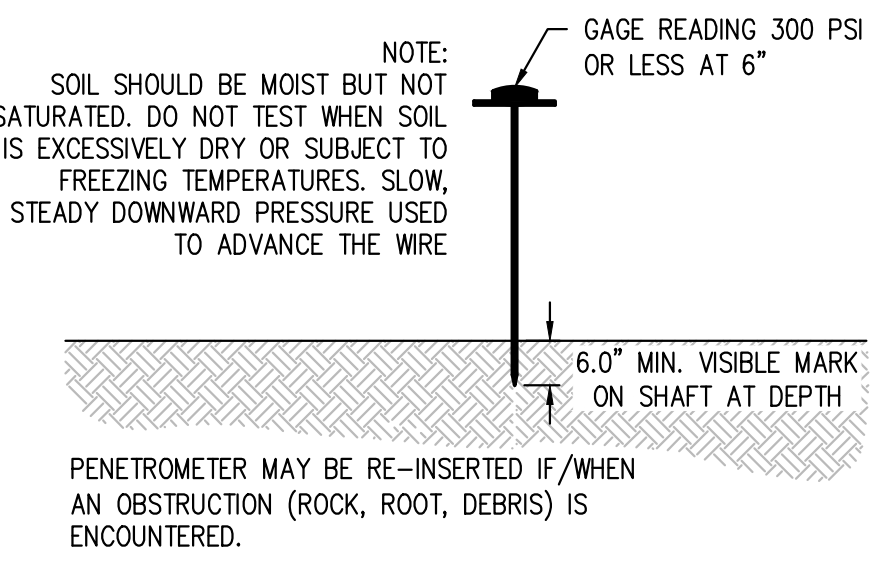
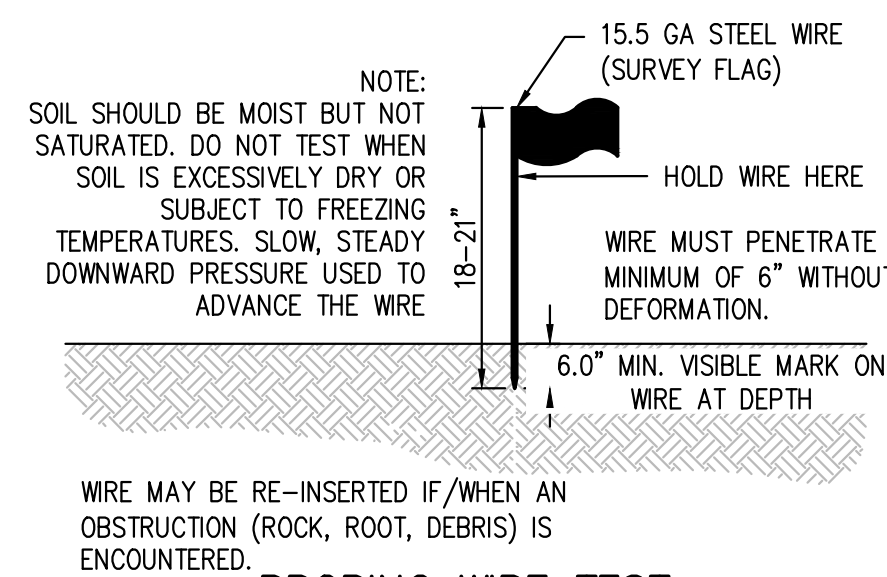
NOTE: ADDITIONAL TESTING METHODS WHICH CONFORM TO ASTM STANDARDS AND SPECIFICATIONS, AND WHICH PRODUCE A DRY WEIGHT, SOIL BULK DENSITY MEASUREMENT MAY BE ALLOWED SUBJECT TO DISTRICT APPROVAL.

SOIL COMPACTION TESTING IS NOT REQUIRED IF WHEN SUBSOIL COMPACTION REMEDIATION (SCARIFICATION/TILLAGE (6" MINIMUM DEPTH) OR SIMILAR) IS PROPOSED AS PART OF THE SEQUENCE OF CONSTRUCTION.

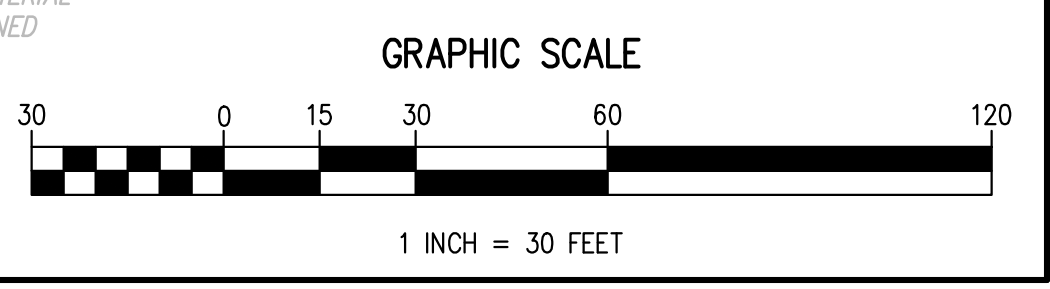
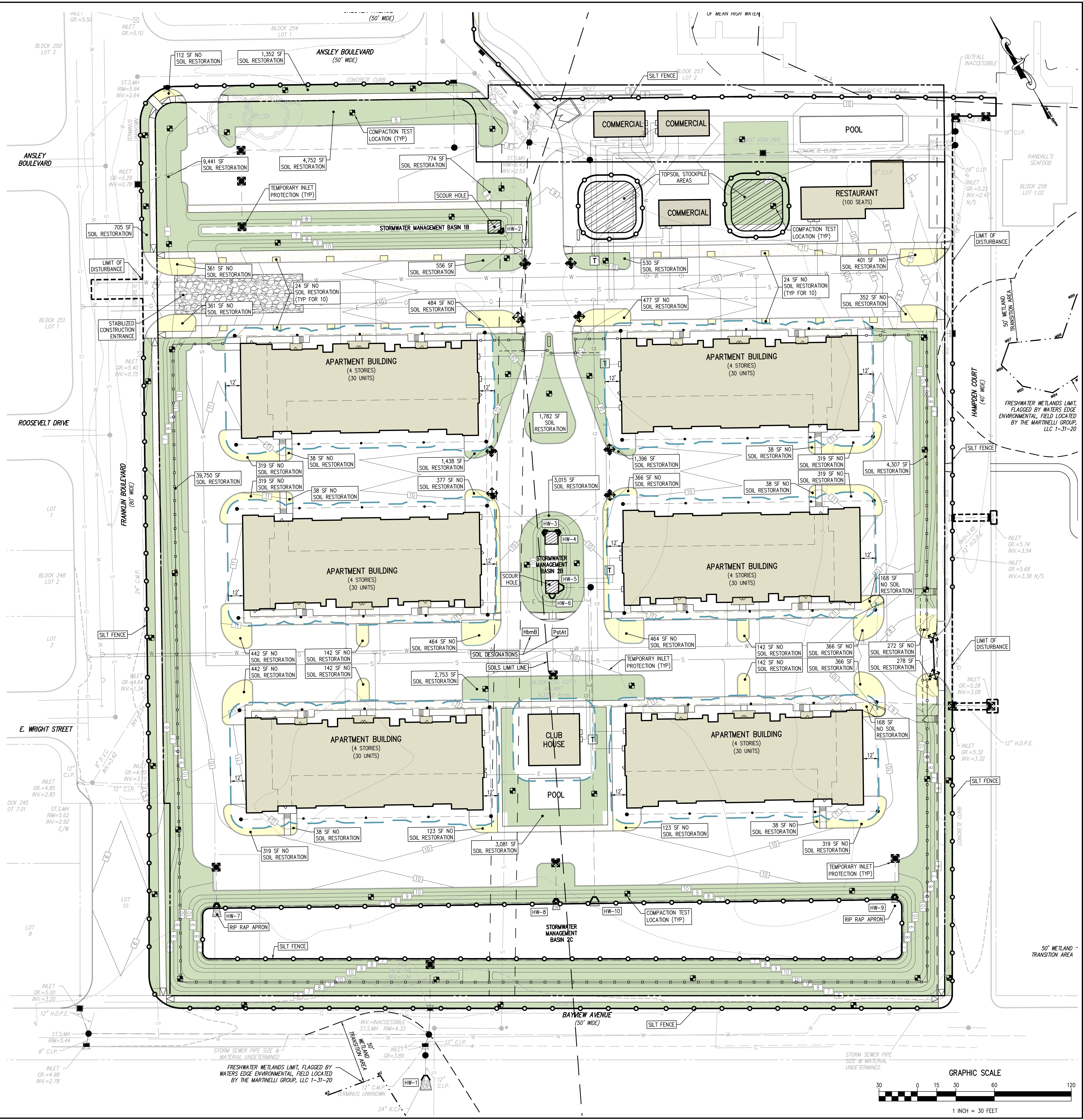
### PROCEDURES FOR SOIL COMPACTION MITIGATION

PROCEDURES SHALL BE USED TO MITIGATE EXCESSIVE SOIL COMPACTION PRIOR TO PLACEMENT OF TOPSOIL AND ESTABLISHMENT OF PERMANENT VEGETATIVE COVER.

RESTORATION OF COMPACTED SOILS SHALL BE THROUGH DEEP SCARIFICATION/TILLAGE (6" MINIMUM DEPTH) WHERE THERE IS NO DANGER TO UNDERGROUND UTILITIES (CABLE, IRRIGATION SYSTEMS, ETC.). IN THE ALTERNATIVE, ANOTHER METHOD AS SPECIFIED BY A NEW JERSEY LICENSED PROFESSIONAL ENGINEER MAY BE SUBSTITUTED SUBJECT TO DISTRICT APPROVAL.



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JASON T. SCIULLO, P.E., P.P.  
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PROFESSIONAL PLANNER, NEW JERSEY LICENSE NO. 3300028400

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WWW.SCIULLOENGINEERING.COM  
NJ CERTIFICATE OF AUTHORIZATION NO. Z64-662820700

SPYGLASS AT LAKES BAY  
BLOCK 255, LOT 1  
CITY OF PLEASANTVILLE, ATLANTIC COUNTY, NEW JERSEY

SOIL EROSION AND SEDIMENT CONTROL PLAN

DATE: 5/15/2020  
ISSUE NO: 1  
INITIAL RELEASE: 5/15/2020  
SUBMISSION/REVISION: 11/11/2019

LAT: 40° 00' 00" N  
LONG: 74° 00' 00" W

PROJECT NO: SCA 003.01  
SHEET: 11 OF 13  
C1201

GENERAL NOTES

1. THE SOIL CONSERVATION DISTRICT SHALL BE NOTIFIED 48 HOURS PRIOR TO ANY LAND DISTURBANCE.  

CAPE ATLANTIC CONSERVATION DISTRICT  
6260 OLD HARDING HIGHWAY  
WAYS LANDING, NJ 08330  
(609) 625-3144 OR (609) 625-7000 EXT. 6154  
FAX: (609) 625-7360
2. SOIL EROSION AND SEDIMENT CONTROL PRACTICES ON THIS PLAN SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY.
3. A COPY OF THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLAN INCLUDING REVISION THEREOF MUST BE MAINTAINED ON THE PROJECT SITE DURING CONSTRUCTION.
4. IN NO CASE SHALL THE CERTIFICATION OF THE PROJECT BY THE DISTRICT EXTEND BEYOND THREE AND ONE HALF YEARS OF THE ORIGINAL CERTIFICATION DATE.
5. PRIOR TO ANY GRADING OPERATION AND/OR INSTALLATION OF PROPOSED STRUCTURES OR UTILITIES, A NJDES REQUEST FOR AUTHORIZATION (RFA) FORM FOR STORMWATER DISCHARGE ASSOCIATED WITH CONSTRUCTION ACTIVITY MUST BE FILED WITH NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION (NJDEP). IF THE CONSTRUCTION WILL DISTURB MORE THAN ONE ACRE, THE APPLICATION MUST BE COMPLETED BY THE ENTITY RESPONSIBLE FOR MAINTENANCE OF SOIL EROSION CONTROL MEASURES DURING CONSTRUCTION, TYPICALLY THE DEVELOPER OR CONTRACTOR. THE APPLICATION IS A SIMPLE FORM FILED ON THE NJDEP WEBSITE USING PROJECT CODES PROVIDED BY THE SOIL CONSERVATION DISTRICT. IF REQUIRED, THE ENGINEER WILL ASSIST THE DEVELOPER OR CONTRACTOR BY PROVIDING TECHNICAL INFORMATION TO COMPLETE THE APPLICATION.
6. ALL APPLICABLE SOIL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE IN PLACE PRIOR TO ANY GRADING OPERATION AND/OR INSTALLATION OF PROPOSED STRUCTURES OR UTILITIES.
7. ANY CHANGES TO THE SITE PLAN WILL REQUIRE THE SUBMISSION OF A REVISED SOIL EROSION AND SEDIMENT CONTROL PLAN TO THE DISTRICT. THE REVISED PLAN MUST BE IN ACCORDANCE WITH THE CURRENT NEW JERSEY STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL.
8. THE CONTRACTOR SHALL PERFORM ALL WORK, FURNISH ALL MATERIALS AND INSTALL ALL MEASURES REQUIRED TO REASONABLY CONTROL SOIL EROSION RESULTING FROM CONSTRUCTION OPERATIONS AND PREVENT EXCESSIVE FLOW OF SEDIMENT FROM THE CONSTRUCTION SITE.
9. THE DISTRICT MAY REQUIRE ADDITIONAL SOIL EROSION MEASURES TO BE INSTALLED, AS DETERMINED BY THE DISTRICT.
10. OFFSITE LAND DISTURBANCE MAY REQUIRE ADDITIONAL SOIL EROSION AND SEDIMENT CONTROL MEASURES TO BE DETERMINED BY THE DISTRICT.
11. STAGED CONSTRUCTION METHODS TO MINIMIZE EXPOSED SURFACES, WHERE APPLICABLE.
12. THE SITE SHALL AT ALL TIMES BE GRADED AND MAINTAINED SUCH THAT STORMWATER RUNOFF IS DIVERTED TO SOIL EROSION AND SEDIMENT CONTROL FACILITIES.
13. SOIL EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSPECTED AND MAINTAINED ON A REGULAR BASIS AND AFTER EVERY STORM EVENT.
14. APPLICABLE SOIL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE LEFT IN PLACE UNTIL CONSTRUCTION IS COMPLETED AND/OR THE AREA IS STABILIZED.
15. NUSA 4:24-39, ET SEQ. REQUIRES THAT NO CERTIFICATE OF OCCUPANCY, TEMPORARY OR PERMANENT, BE ISSUED BEFORE ALL PROVISIONS OF THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLAN HAVE BEEN COMPLIED WITH PERMANENT MEASURES. ALL SITE WORK FOR THE PROJECT MUST BE COMPLETED PRIOR TO THE DISTRICT ISSUING A REPORT OF COMPLIANCE AS A PREQUISITE TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY BY THE MUNICIPALITY. INSPECTION FOR THE CERTIFICATE OF OCCUPANCY MUST BE SCHEDULED AT LEAST A WEEK IN ADVANCE.
16. NUSA 4:24-39, ET SEQ., REQUIRES THAT UPON PERMANENT SITE STABILIZATION AND COMPLETION OF THE CONTRACTOR SHALL APPLY TO THE DISTRICT FOR FINAL COMPLIANCE INSPECTION TO CHECK THAT ALL THE PROVISIONS OF THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLAN HAVE BEEN COMPLIED WITH FOR PERMANENT MEASURES.
17. ANY CONVEYANCE OF THIS PROJECT, OR PORTION THEREOF, PRIOR TO ITS COMPLETION WILL TRANSFER FULL RESPONSIBILITY FOR COMPLIANCE WITH THE CERTIFIED PLAN TO ANY SUBSEQUENT OWNERS. THE DISTRICT MUST BE NOTIFIED IN WRITING OF ANY CHANGE IN OWNERSHIP.
18. A CRUSHED STONE, TIRE CLEANING PAD WILL BE INSTALLED WHEREVER A CONSTRUCTION ACCESS EXISTS. THE STABILIZED PAD WILL BE INSTALLED ACCORDING TO THE STANDARD FOR STABILIZED CONSTRUCTION ACCESS. THE PAD MUST BE 100 FEET IN LENGTH AND 15 INCHES IN SIZE, PLACED 12" THICK AND THE FULL WIDTH OF THE ENTRANCE. THE PAD SHALL BE UNDERLAIN WITH A SUITABLE SYNTHETIC FILTER FABRIC AND MAINTAINED. IF A CONSTRUCTION ACCESS IS TO BE USED AS AN EXIT ONTO A MAJOR HIGHWAY, A THIRTY (30) PAVED TRANSITION AREA SHALL BE INSTALLED. CONSTRUCTION ACCESS ONTO INDIVIDUAL LOTS MUST BE STABILIZED WITH 2.5" CRUSHED STONE OR SUBBASE.
19. PAVED ROADWAYS MUST BE KEPT CLEAN AT ALL TIMES.
20. ALL CATCH BASIN INLETS WILL BE PROTECTED ACCORDING TO THE CERTIFIED PLAN.
21. ALL STORM DRAINAGE OUTLETS SHALL BE STABILIZED AS REQUIRED BEFORE THE DISCHARGE POINT BECOMES OPERATION.
22. NATURAL VEGETATION AND SPECIES SHALL BE RETAINED WHERE SPECIFIED ON THE LANDSCAPE PLAN.
23. ADJOINING PROPERTIES SHALL BE PROTECTED FROM EXCAVATION AND FILLING OPERATIONS ON THE CONSTRUCTION SITE.
24. THE DEVELOPER SHALL BE RESPONSIBLE FOR ANY EROSION OR SEDIMENTATION THAT MAY OCCUR BELOW STORMWATER OUTFALLS OR OFFSITE AS A RESULT OF CONSTRUCTION OF THE PROJECT.
25. IMMEDIATELY AFTER THE COMPLETION OF STRIPPING AND STOCKPILING OF TOPSOIL, THE STOCKPILE MUST BE STABILIZED ACCORDING TO THE STANDARD FOR TEMPORARY VEGETATIVE COVER. STABILIZE TOPSOIL PILE WITH STRAW MULCH FOR PROTECTION IF THE SEASON DOES NOT PERMIT THE APPLICATION AND ESTABLISHMENT OF TEMPORARY SEEDING.
26. ALL SOIL STOCKPILES ARE NOT TO BE LOCATED WITHIN FIFTY (50) FEET OF A FLOODPLAIN, SLOPE, ROADWAY OR DRAINAGE FACILITY AND THE BASE MUST BE PROTECTED WITH SEDIMENT BARRIER.
27. MAXIMUM SIDE SLOPES OF ALL EXPOSED SURFACES SHALL NOT BE CONSTRUCTED STEEPER THAN 3:1 UNLESS OTHERWISE APPROVED BY THE SOIL CONSERVATION DISTRICT.
28. ALL CRITICAL AREAS SUBJECT TO SOIL EROSION WILL RECEIVE A TEMPORARY SEEDING IN COMBINATION WITH STRAW MULCH AT A RATE OF 32 POUNDS PER 1000 SQUARE FEET ACCORDING TO THE NEW JERSEY STANDARDS IMMEDIATELY FOLLOWING ROUGH GRADING.
29. TEMPORARY AND PERMANENT SEEDING MEASURES MUST BE APPLIED ACCORDING TO THE NEW JERSEY STANDARDS, AND MULCHED WITH SALT HAY OR EQUIVALENT AND ANCHORED IN ACCORDANCE WITH THE NEW JERSEY STANDARDS (I.E. PEG AND TWINE, MULCH NETTING OR LIQUID MULCH BINDER).
30. MAXIMUM SIDE SLOPES OF ALL EXPOSED SURFACES SHALL NOT BE CONSTRUCTED STEEPER THAN 3:1 UNLESS OTHERWISE APPROVED BY THE SOIL CONSERVATION DISTRICT.
31. ANY DISTURBED AREA THAT IS TO BE LEFT EXPOSED FOR MORE THAN THIRTY (30) DAYS AND NOT SUBJECT TO CONSTRUCTION TRAFFIC SHALL IMMEDIATELY RECEIVE A TEMPORARY SEEDING AND FERTILIZATION IN ACCORDANCE WITH THE NEW JERSEY STANDARDS AND THE RATES SHOULD BE IN ACCORDANCE WITH THE TEMPORARY SEEDING SPECIFICATION. IF THE SEASON PROHIBITS TEMPORARY SEEDING, THE DISTURBED AREAS WILL BE MULCHED WITH SALT HAY OR THE EQUIVALENT AND ANCHORED IN ACCORDANCE WITH THE NEW JERSEY STANDARDS (I.E. PEG AND TWINE, MULCH NETTING OR LIQUID MULCH BINDER).
32. MULCHING IS REQUIRED ON ALL SEEDDED AREAS TO ENSURE AGAINST SOIL EROSION BEFORE GRASS IS ESTABLISHED TO PROMOTE EARLIER VEGETATION COVER.
33. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER TO PROVIDE CONFIRMATION OF LIME, FERTILIZER AND SEED APPLICATION AND RATES OF APPLICATION AT THE REQUEST OF THE SOIL CONSERVATION DISTRICT.
34. ALL VEGETATIVE MATERIAL SHALL BE SELECTED IN ACCORDANCE WITH AMERICAN STANDARDS FOR NURSERY STOCK OF THE AMERICAN ASSOCIATION OF THE NURSERYMEN AND IN ACCORDANCE WITH THE NEW JERSEY STANDARDS.
35. ALL Dewatering operations must discharge directly into a sediment filter area. The sediment filter should be composed of a suitable filter fabric. (SEE DETAIL). THE SEDIMENT FILTER MUST BE CAPABLE OF FILTERING THE SEDIMENT AND BE PLACED SO AS NOT TO CAUSE EROSION OF THE DOWNSTREAM AREA. FIELD PLACEMENT AND USE OF THE STRUCTURE MUST BE APPROVED BY THE DISTRICT PRIOR TO COMMENCEMENT OF Dewatering ACTIVITIES. THE WATER QUALITY BASIN MUST BE Dewatered TO NORMAL POOL WITHIN 10 DAYS OF THE DESIGN STORM.
36. DUST IS TO BE CONTROLLED BY AN APPROVED METHOD ACCORDING TO THE NEW JERSEY STANDARDS AND INCLUDE WATERING WITH A SOLUTION OF CALCIUM CHLORIDE AND WATER.
37. METHODS FOR THE MANAGEMENT OF HIGH ACID PRODUCING SOILS SHALL BE IN ACCORDANCE WITH THE NEW JERSEY STANDARDS. HIGH ACID PRODUCING SOILS ARE THOSE FOUND TO CONTAIN IRON SULFIDES OR HAVE A PH OF 4 OR LESS.

WORK HOURS AND NOISE CONTROL

1. CONSTRUCTION HOURS  
A. MONDAY THRU FRIDAY: 7:00AM-6:00PM  
B. SATURDAY: 8:00AM-4:30PM  
C. SUNDAY: NO WORK TO BE PERFORMED.  
D. THE HOURS STATED SHALL BE ADHERED TO UNLESS DUE TO WEATHER AND OR SCHEDULE CHANGES. THE CITY OF ABERDEEN EQUIPMENT WILL BE NOTIFIED OF ALL TIME CHANGES.
2. NOISE CONTROL EQUIPMENT TO BE UTILIZED SHALL BE STANDARD EARTH MOVING EQUIPMENT, CRANES, MIXERS, ETC. WHICH MEET STANDARDS ESTABLISHED BY STATE AND FEDERAL LAWS REGARDING THE AMOUNT OF NOISE PRODUCED.

DETAILED CONSTRUCTION SEQUENCE

1. INSTALL TEMPORARY SOIL EROSION AND SEDIMENT CONTROL MEASURES.  
A. PLACE STABILIZED CONSTRUCTION ENTRANCE WHERE INDICATED ON PLAN.  
B. PLACE SILT FENCE AND INLET PROTECTION FOR EXISTING INLETS WHERE INDICATED ON PLAN.
2. CLEAR AND GRUB CONSTRUCTION AREA.  
A. PLACE TOPSOIL STOCKPILE AREAS WHERE INDICATED ON PLANS.  
B. EXCAVATE BASINS AND INSTALL FILTER FABRIC IN BOTTOM.
3. ROUGH GRADE PAVEMENT AREA BED AND BUILDING PADS  
A. PLACE TOPSOIL STOCKPILE AREAS WHERE INDICATED ON PLANS.  
B. EXCAVATE BASINS AND INSTALL FILTER FABRIC IN BOTTOM.
4. INSTALL UNDERGROUND UTILITIES AND COMMENCE BUILDING CONSTRUCTION
5. INSTALL TEMPORARY INLET PROTECTION.
6. CONSTRUCT CURBING AND SUBBASE FOR PAVEMENT AREAS.
7. CONSTRUCT BASE PAVEMENT COURSE.
8. ESTABLISH FINAL GRADING, PERMANENT VEGETATIVE COVER AND FINAL BASIN CLEAN-UP. ADD KS SAND MATERIAL TO BASIN BOTTOM.  
SOIL COMPACTION TESTING IS NOT REQUIRED IF WHEN SUBSOIL COMPACTION REMEDIATION (SCARIFICATION/TILLAGE (6" MINIMUM DEPTH) OR SIMILAR) IS PROPOSED AS PART OF THE SEQUENCE OF CONSTRUCTION.
9. LANDSCAPE AS NECESSARY.
10. CONSTRUCT FINAL PAVEMENT COURSE.
11. REMOVE SOIL CONSERVATION MEASURES WHEN CONSTRUCTION IS COMPLETED AND/OR SITE IS STABILIZED.
12. REQUEST REPORT OF COMPLIANCE FROM THE SOIL CONSERVATION DISTRICT.

TEMPORARY AND PERMANENT STABILIZATION

STABILIZATION COVER SHALL BE ACCOMPLISHED BY THE FOLLOWING METHODS AND MATERIALS:

- A. SITE PREPARATION  
1) PREPARE SUBGRADE AS NEEDED AND FEASIBLE TO ALLOW USE OF CONVENTIONAL EQUIPMENT FOR TOPSOILING, SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING.  
2) INSTALL NEEDED SOIL EROSION CONTROL PRACTICES OR MEASURES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS.  
3) THE SUBGRADE SHALL BE FREE OF EXCESSIVE COMPACTION TO A DEPTH OF 6 INCHES TO ENHANCE THE ESTABLISHMENT OF VEGETATIVE COVER. IF TESTING INDICATES EXCESSIVE SUBGRADE COMPACTION, THE SUBGRADE MUST BE FREE OF EXCESSIVE COMPACTION TO A DEPTH OF 6 INCHES PRIOR TO THE APPLICATION OF TOPSOIL. THE SUBGRADE SHALL BE SCARIFIED TO A DEPTH OF 6" TO 12" WHERE THERE HAS BEEN EXCESSIVE SOIL COMPACTION. THIS PRACTICE IS PERMISSIBLE ONLY IN AREAS WHERE THERE IS NO DANGER TO UNDERGROUND UTILITIES (CABLES, IRRIGATION SYSTEMS, ETC.).  
4) THE SUBGRADE SHALL BE TESTED TO DETERMINE WHETHER COMPACTION EXCEEDS THE MAXIMUM THRESHOLDS INDICATED FOR THE SIMPLIFIED TESTING METHODS. THE TEST SHALL BE PERFORMED AT ONE-HALF ACRE INTERVALS FOR SITES ONE ACRE OR MORE. FOR SITES LESS THAN ONE ACRE, AT LEAST TWO TESTS ARE REQUIRED REGARDLESS OF THE SIZE. CONTIGUOUS AREAS OF 500 SQUARE FEET OR LESS ARE EXEMPT FROM TESTING OR REMEDIATION. COMPACTION TESTING METHODS SHALL INCLUDE (1) PROBING WIRE TEST, (2) HAND-HELD PENETROMETER TEST, (3) TUBE BULK DENSITY TEST, OR (4) NUCLEAR DENSITY TEST. THE MAXIMUM THRESHOLD FOR THE PROBING WIRE TEST IS DETERMINED IF A 15 GAGE WIRE BENDS WHEN INSERTED INTO THE SUBGRADE TO A DEPTH OF 6 INCHES OR FOR THE PENETROMETER TEST IF THE PRESSURE AT A DEPTH OF 6 INCHES IS 300 PSI OR MORE. IF COMPACTION EXCEEDS THE MAXIMUM THRESHOLD, THE CONTRACTOR SHALL HAVE THE OPTION TO PERFORM EITHER (1) COMPACTION MITIGATION OVER THE ENTIRE MITIGATION AREA, OR (2) PERFORM ADDITIONAL MORE DETAILED TESTING TO ESTABLISH THE LIMITS OF EXCESSIVE COMPACTION WHEREUPON ONLY THE EXCESSIVELY COMPACTED AREAS WOULD REQUIRE COMPACTION MITIGATION. ADDITIONAL DETAILED TESTING SHALL BE PERFORMED BY A TRAINED, LICENSED PROFESSIONAL.
- B. STRIPPING AND STOCKPILING  
1) FIELD EXPLORATION SHOULD BE MADE TO DETERMINE WHETHER QUANTITY AND/OR QUALITY OF SURFACE SOIL JUSTIFIES STRIPPING.  
2) STRIPPING SHOULD BE CONFINED TO THE IMMEDIATE CONSTRUCTION AREA.  
3) WHERE FEASIBLE, LIME MAY BE APPLIED BEFORE STRIPPING AT A RATE DETERMINED BY SOIL TEST TO BRING THE SOIL PH TO APPROXIMATELY 6.5. IN LIEU OF SOIL TEST, SEE LIME RATE GUIDE IN SEEDBED PREPARATION.  
4) A 4 TO 6 INCH STRIPPING DEPTH IS COMMON, BUT MAY VARY DEPENDING ON THE PARTICULAR SOIL.  
5) STOCKPILES OF TOPSOIL SHOULD BE SITUATED SO AS NOT TO OBSTRUCT NATURAL DRAINAGE OR CAUSE OFF-SITE ENVIRONMENTAL DAMAGE.  
6) STOCKPILES OF TOPSOIL SHOULD BE VEGETATED IN ACCORDANCE WITH STANDARDS FOR PERMANENT OR TEMPORARY STABILIZATION. WEEDS SHOULD NOT BE ALLOWED TO GROW ON STOCKPILES.
- C. TOPSOILING - THE CONTRACTOR SHALL PREPARE AREAS TO BE STABILIZED WITH PERMANENT VEGETATIVE COVER BY APPLYING TOPSOIL TO A UNIFORM DEPTH OF 6 INCHES. TOPSOIL SHOULD BE FRIABLE, LOAMY, FREE OF DEBRIS, OBJECTS, QUESTIONABLE WEEDS AND STONES, AND CONTAIN NO TOXIC SUBSTANCES. CHEMICAL OR PHYSICAL CONDITION THAT MAY BE HARMFUL TO PLANT GROWTH. SOLUBLE SALTS SHOULD NOT BE EXCESSIVE (CONDUCTIVITY LESS THAN 0.5 MILLIMOHS PER CENTIMETER. MORE THAN 0.5 MILLIMOHS MAY DEGRADATE SEEDLINGS AND ADVERSELY IMPACT GROWTH). TOPSOIL HAULED IN FROM OFFSITE SHOULD HAVE A MINIMUM ORGANIC MATTER CONTENT OF 2.75 PERCENT. ORGANIC MATTER CONTENT MAY BE RAISED BY ADDITIVES.  
TOPSOIL SUBSTITUTES MAY BE UTILIZED ON SITES WITH INSUFFICIENT TOPSOIL FOR ESTABLISHING PERMANENT VEGETATION. TOPSOIL SUBSTITUTE IS A SOIL MATERIAL WHICH MAY HAVE BEEN AMENDED WITH SAND, SILT, CLAY, ORGANIC MATTER, FERTILIZER OR LIME AND HAS THE APPEARANCE OF TOPSOIL. ALL TOPSOIL SUBSTITUTE MATERIALS SHALL MEET THE REQUIREMENTS OF TOPSOIL NOTED ABOVE. SOIL TESTS SHALL BE PERFORMED TO DETERMINE THE COMPONENTS OF SAND, SILT, CLAY, ORGANIC MATTER, SOLUBLE SALTS AND PH LEVEL.  
D. SEEDBED PREPARATION - APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TESTS SUCH AS THOSE OFFERED BY RUTGERS UNIVERSITY SOIL TESTING LABORATORY. SOIL SAMPLE MAILERS ARE AVAILABLE FROM THE LOCAL COOPERATIVE EXTENSION SERVICE OFFICE. IF SOIL TESTING IS NOT FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL, THE CONTRACTOR MAY APPLY PULVERIZED DILOMIC LIMESTONE AT THE RATE OF 90 POUNDS PER 1000 SQUARE FEET. APPLY 10-20-10 FERTILIZER OR EQUIVALENT AT THE RATE OF 11 POUNDS PER 1000 SQUARE FEET. IN ADDITION, 300 POUNDS 38-0-0 PER ACRE, OR EQUIVALENT OF SLOW RELEASE NITROGEN MAY BE USED IN LIEU OF TOPDRESSING. APPLY LIMESTONE (EQUIVALENT TO 50 PERCENT CALCIUM PLUS MAGNESIUM OXIDES) AS FOLLOWS:  
E. TEMPORARY VEGETATION SEEDING - ESTABLISH TEMPORARY VEGETATIVE COVER ON SOILS EXPOSED FOR PERIODS OF TWO TO SIX MONTHS. PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION (OR NOT SCHEDULED FOR PERMANENT SEEDING WITHIN 60 DAYS. SEEDING SHALL CONSIST OF PERENNIAL RYEGRASS APPLIED AT THE RATE OF 1 POUND PER 1000 SQUARE FEET DURING COOL SEASON OR WEEPING LOVEGRASS AT 5 LBS. PER ACRE DURING WARM SEASON PLANTING.  
F. PERMANENT VEGETATION SEEDING - IMMEDIATELY FOLLOWING THE COMPLETION OF CONSTRUCTION ACTIVITIES AT THE SITE, THE CONTRACTOR SHALL STABILIZE WITH PERMANENT VEGETATIVE COVER, ALL EXPOSED AND

DISTURBED SOILS.

#15 MIXTURE (LAWN)	LBS/ACRE	LBS/1000 S.F.
HARD FESCUE	130	3.00
CHEWING FESCUE	45	1.00
STRONG CREEPING RED FESCUE	45	1.00
PERENNIAL RYEGRASS	10	0.25
#11 MIXTURE (SWALE)	LBS/ACRE	LBS/1000 S.F.
KENTUCKY BLUEGRASS	45	1.00
TURF-TYPE TALL FESCUE	22	0.50

- IF HYDROSEEDING IS USED ALL SEEDING RATES SHALL BE INCREASED BY 25%. IF SODDING IS USED SEE SOD SPECIFICATIONS.
- G. SEEDING DATES - SEEDING DATES FOR VEGETATION SHALL OCCUR BETWEEN MARCH 1 AND APRIL 30 (OPTIMAL PLANTING PERIOD) OR BETWEEN AUGUST 15 AND NOVEMBER 15. IF SEED IS NOT PLANTED WITHIN THESE DATES, THE CONTRACTOR SHALL STABILIZE WITH MULCH AS SPECIFIED ABOVE.
  - E. MULCHING - THE CONTRACTOR SHALL MULCH ALL NEWLY SEEDDED AREAS WITH UNROTTED SMALL GRAIN STRAW OR HAY FREE OF SEEDS AT THE RATE OF 70 TO 90 POUNDS PER 1,000 SQUARE FEET. IT SHALL BE ANCHORED THROUGH THE USE OF THE PEG AND TWINE METHOD. THE PEG AND TWINE METHOD OF MULCH ANCHORING SHALL CONSIST OF DRIVING 8-10 INCH WOODEN PEGS TO WITHIN 2-3 INCHES OF THE SOIL SURFACE EVERY 4 FEET IN ALL DIRECTIONS. STRAKES MAY BE DRIVEN BEFORE OR AFTER APPLYING MULCH. SECURE MULCH TO SOIL SURFACE BY STRETCHING TWINE BETWEEN PEGS IN A CRISS-CROSS AND A SQUARE PATTERN. SECURE TWINE AROUND EACH PEG WITH TWO OR MORE ROUND TURN.
  - F. SODDING  
1) CULTIVATED SOD IS PREFERRED OVER NATIVE SOD. SPECIFY "CERTIFIED SOD", OR OTHER HIGH QUALITY CULTIVATED SOD. SOD SHOULD BE FREE OF WEEDS AND UNDESIRABLE CREEPY GRASSES. SOD SHOULD BE OF UNIFORM THICKNESS, APPROXIMATELY 5/8 INCH, PLUS OR MINUS 1/4 INCH, AT TIME OF CUTTING. (EXCLUDES TOP GROWTH). SOD SHOULD BE VIGOROUS AND DENSE AND BE ABLE TO RETAIN ITS OWN SHAPE AND WEIGHT WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP FROM THE UPPER 10 PERCENT OF THE STRIP. BROKEN PADS OR TORN OR UNEVEN ENDS WILL NOT BE ACCEPTED. FOR DROUGHTY SITES, A SOD OF KENTUCKY 31 TALL FESCUE AND BLUEGRASS IS PREFERRED OVER A STRAIGHT BLUEGRASS SOD. ONLY MOST, FRESH, UNHEATED SOD SHOULD BE USED. SOD SHOULD BE HARVESTED, DELIVERED AND INSTALLED WITHIN A PERIOD OF 36 HOURS.  
2) REMOVE FROM THE SURFACE ALL OBJECTS THAT WOULD PREVENT GOOD SOD TO SOIL CONTACT AND REMOVE ALL OTHER DEBRIS SUCH AS WIRE, CABLE, TREE ROOTS, PIECES OF CONCRETE, CLODS, LUMPS OR OTHER UNSUITABLE MATERIAL.  
3) INSPECT SITE JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED, THE AREA MUST BE RETILLED AND FIRMED AS ABOVE.  
4) SOD PLACEMENT:  
A) SOD STRIPS SHOULD BE LAID ON THE CONTOUR, NEVER UP AND DOWN THE SLOPE, STARTING AT THE BOTTOM OF THE SLOPE AND WORKING UP. ON STEEP SLOPES, THE USE OF LADDERS WILL FACILITATE THE WORK AND PREVENT DAMAGE TO THE SOD. DURING PERIODS OF HIGH TEMPERATURE, LIGHTLY IRRIGATE THE SOIL IMMEDIATELY PRIOR TO LAYING THE SOD.  
B) PLACE SOD STRIPS WITH SNUG, EVEN JOINTS THAT ARE STAGGERED. OPEN SPACES INVITE EROSION.  
C) ROLL OR TAMP SOD IMMEDIATELY FOLLOWING PLACEMENT TO INSURE SOIL CONTACT OF ROOT MAT AND SOIL SURFACE. DO NOT OVERLAP SOD. ALL JOINTS SHOULD BE BUTTED TIGHTLY IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE DRYING OF THE ROOTS.  
D) ON SLOPES GREATER THAN 3:1, SECURE SOD TO SURFACE SOIL WITH WOOD PEGS, WIRE STAPLES, OR SPLIT SHINGLES (8" TO 10" LONG BY 3/4" WIDE).  
E) IMMEDIATELY FOLLOWING INSTALLATION, SOD SHOULD BE WATERED UNTIL MOISTURE PENETRATES THE SOIL LAYER BENEATH SOD TO A DEPTH OF 4 INCHES. MAINTAIN OPTIMUM MOISTURE FOR AT LEAST TWO WEEKS.  
F) TOPDRESSING - IF SLOW RELEASE NITROGEN (300 POUNDS 38-0-0 PER ACRE OR EQUIVALENT) IS USED IN ADDITION TO SUGGESTED FERTILIZER, THEN A FOLLOW-UP OF TOPDRESSING IS NOT MANDATORY.  
G. FALL INSTALLATION OF SOD WILL REQUIRE AN APPLICATION OF FERTILIZER SUCH AS 10-20-10 OR EQUIVALENT AT 400 POUNDS PER ACRE OR 10 POUNDS PER 1000 SQUARE FEET BETWEEN SEPTEMBER 1 AND OCTOBER 15.

SURFACE WATER CANNOT TO ALWAYS BE DIVERTED FROM FLOWING OVER THE FACE OF THE SLOPE, BUT A CAPPING STRIP OF HEAVY JUDE OR PLASTIC NETTING, PROPERLY SECURED, ALONG THE CROWN OF THE SLOPE AND EDGES WILL PROVIDE EXTRA PROTECTION AGAINST LIFTING AND UNDERCUTTING OF SOD. THE SAME TECHNIQUE CAN BE USED TO ANCHOR SOD IN WATER-CARRYING CHANNELS AND OTHER CRITICAL AREAS. WIRE STAPLES MUST BE USED TO ANCHOR NETTING IN CHANNEL WORK.

FALL INSTALLATION OF SOD WILL REQUIRE AN APPLICATION OF FERTILIZER SUCH AS 10-20-10 OR EQUIVALENT AT 400 POUNDS PER ACRE OR 10 POUNDS PER 1000 SQUARE FEET BETWEEN SEPTEMBER 1 AND OCTOBER 15.

MANAGEMENT OF HIGH ACID-PRODUCING SOILS

HIGH ACID-PRODUCING SOILS ARE SOILS WITH A PH OF 4.0 OR LESS OR CONTAIN IRON SULFIDE. HIGH ACID-PRODUCING SOILS MAY BE PRESENT IN UNDISTURBED SOILS AT VARYING DEPTHS, INCLUDING NEAR THE SOIL SURFACE TO EXCAVATIONS OR DEEP DISTURBANCES. ITS PRESENCE ON A SITE MAY BE SIGNIFICANT OR LIMITED IN THE SOIL PROFILE. HIGH ACID-PRODUCING SOILS ARE COMMONLY BLACK, DARK BROWN, GRAY OR GREENISH WITH SILVERY PYRITE OR MARCASITE NUGGETS OR FLAKES. ALTERNATIVELY, SANDY SOILS OR REDDISH, YELLOWISH OR LIGHT TO MEDIUM BROWN SOIL MATERIALS ARE USUALLY FREE OF HIGH ACID-PRODUCING DEPOSITS.

TO PREVENT OR LIMIT EXPOSURE AREA, TIME, AND SPREADING BY EQUIPMENT OR RAINFALL ON- AND OFF-SITE AND TO MINIMIZE EROSION, SEDIMENTATION AND ACID LEACHATE-RELATED DAMAGES, HIGH ACID-PRODUCING SOIL MAY BE EXPOSED DURING EXCAVATION AND LAND GRADING ACTIVITIES, OR MAY BE INTRODUCED IN DREDGED SEDIMENT, SOILS AND SEDIMENT CONTAINING IRON SULFIDE, CHARACTERIZED BY PYRITE OR MARCASITE NUGGETS OR GREENSANDS, ARE CHEMICALLY OXIDIZED WHEN EXPOSED TO AIR, PRODUCING SULFURIC ACID AND RESULT IN SOIL PH LEVELS FALLING TO PH 4.0 AND LOWER. MOST VEGETATION IS INCAPABLE OF GROWTH AT THIS PH LEVEL. ADJACENT LAND AND RECEIVING WATERS WILL BE NEGATIVELY IMPACTED BY THE ACID LEACHATE. CALCIUM-CONTAINING MATERIALS SUCH AS SIDEWALKS, CURBSETS AND OTHER STRUCTURES AND SOME METALLIC MATERIALS ARE ALSO SUSCEPTIBLE TO DEGRADATION. AGRICULTURAL LIMESTONE MATERIALS APPLIED AT RATES OF 8 TONS PER ACRE HAVE RESULTED IN ONLY A TEMPORARY BUFFERING EFFECT, AND "LIMING-ONLY" IS THEREFORE NOT CONSIDERED AN ACCEPTABLE MITIGATION PRACTICE.

METHODS AND MATERIALS OF MANAGING HIGH ACID-PRODUCING SOILS

1. LIMIT THE EXCAVATION AREA AND EXPOSURE TIME WHEN HIGH ACID-PRODUCING SOILS ARE ENCOUNTERED.
2. TOPSOIL STRIPPED FROM THE SITE SHALL BE STORED SEPARATELY FROM TEMPORARILY STOCKPILED HIGH ACID-PRODUCING SOILS.
3. STOCKPILES OF HIGH ACID-PRODUCING SOIL SHOULD BE LOCATED ON LEVEL LAND TO MINIMIZE ITS MOVEMENT, ESPECIALLY WHEN THIS MATERIAL HAS A HIGH CLAY CONTENT.
4. TEMPORARILY STOCKPILED HIGH ACID-PRODUCING SOIL MATERIAL TO BE STORED MORE THAN 48 HOURS SHOULD BE COVERED WITH PROPERLY ANCHORED, HEAVY GRADE SHEETS OF POLYETHYLENE WHERE POSSIBLE. IF NOT POSSIBLE, STOCKPILES SHALL BE COVERED WITH A MINIMUM OF 3 TO 6 INCHES OF WOOD CHIPS TO MINIMIZE EROSION OF THE STOCKPILE. SILT FENCE SHALL BE INSTALLED AT THE TOE OF THE SLOPE TO CONTAIN MOVEMENT OF THE STOCKPILED MATERIAL. TOPSOIL SHALL NOT BE APPLIED TO THE STOCKPILES TO PREVENT TOPSOIL CONTAMINATION WITH HIGH ACID-PRODUCING SOIL.
5. HIGH ACID-PRODUCING SOILS WITH A PH OF 4.0 OR LESS OR CONTAINING IRON SULFIDE (INCLUDING BORROW FROM CUTS OR DREDGED SEDIMENT) SHALL BE ULTIMATELY PLACED OR BURIED WITH LIMESTONE APPLIED AT THE RATE OF 10 TONS PER ACRE (OR 450 POUNDS PER 1,000 SQUARE FEET OF SURFACE AREA) AND COVERED WITH A MINIMUM OF 12 INCHES OF SHUTTLED SOIL WITH A PH OF 5.0 OR MORE EXCEPT AS FOLLOWS:  
A. AREAS WHERE TREES OR SHRUBS ARE TO BE PLANTED SHALL BE COVERED WITH A MINIMUM OF 24 INCHES OF SOIL WITH A PH OF 5 OR MORE.  
B. DISPOSAL AREAS SHALL NOT BE LOCATED WITHIN 24 INCHES OF ANY SURFACE OF A SLOPE OR BANK, SUCH AS BERMS, STREAM BANKS, DITCHES, AND OTHERS, TO PREVENT POTENTIAL LATERAL LEACHING DAMAGES.
6. EQUIPMENT USED FOR MOVEMENT OF HIGH ACID-PRODUCING SOILS SHOULD BE CLEANED AT THE END OF EACH DAY TO PREVENT SPREADING OF HIGH ACID-PRODUCING SOIL MATERIALS TO OTHER PARTS OF THE SITE, INTO STREAMS OR STORMWATER CONVEYANCES, AND TO PROTECT MACHINERY FROM ACCELERATED RUSTING.
7. NON-VEGETATION EROSION CONTROL PRACTICES (STONE TRACKING PADS, STRATEGICALLY PLACED LIMESTONE CHECK DAM, SEDIMENT BARRIER, WOOD CHIPS) SHOULD BE INSTALLED TO LIMIT THE MOVEMENT OF HIGH ACID-PRODUCING SOILS FROM, AROUND, OR OFF THE SITE.
8. FOLLOWING BURIAL OR REMOVAL OF HIGH ACID-PRODUCING SOIL, TOPSOILING AND SEEDING OF THE SITE (SEE TEMPORARY VEGETATIVE COVER FOR SOIL STABILIZATION OR PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION, AND TOPSOILING), MONITORING MUST CONTINUE FOR A MINIMUM OF 6 MONTHS TO ENSURE THERE IS ADEQUATE STABILIZATION AND THAT NO HIGH ACID-PRODUCING SOIL PROBLEMS EMERGE. IF PROBLEMS STILL EXIST, THE AFFECTED AREA MUST BE TREATED AS INDICATED ABOVE TO CORRECT THE PROBLEM.

MATERIAL	WATER DILUTION	TYPE OF NOZZLE	APPLY GALLONS/AC
ANIONIC ASPHALT EMULSION	7:1	COARSE SPRAY	1200
LATEX EMULSION	12.5:1	FINE SPRAY	235
RESIN IN WATER	4:1	FINE SPRAY	300
POLYACRYLAMIDE (PAM) - SPRAY ON PRECIPITATE SUSPENDED COLLOIDS. SEE SEDIMENT BASIN STANDARD, P. 26-1			
ADULATED SOY BEAN SOAP STICK	NONE	COARSE SPRAY	1200

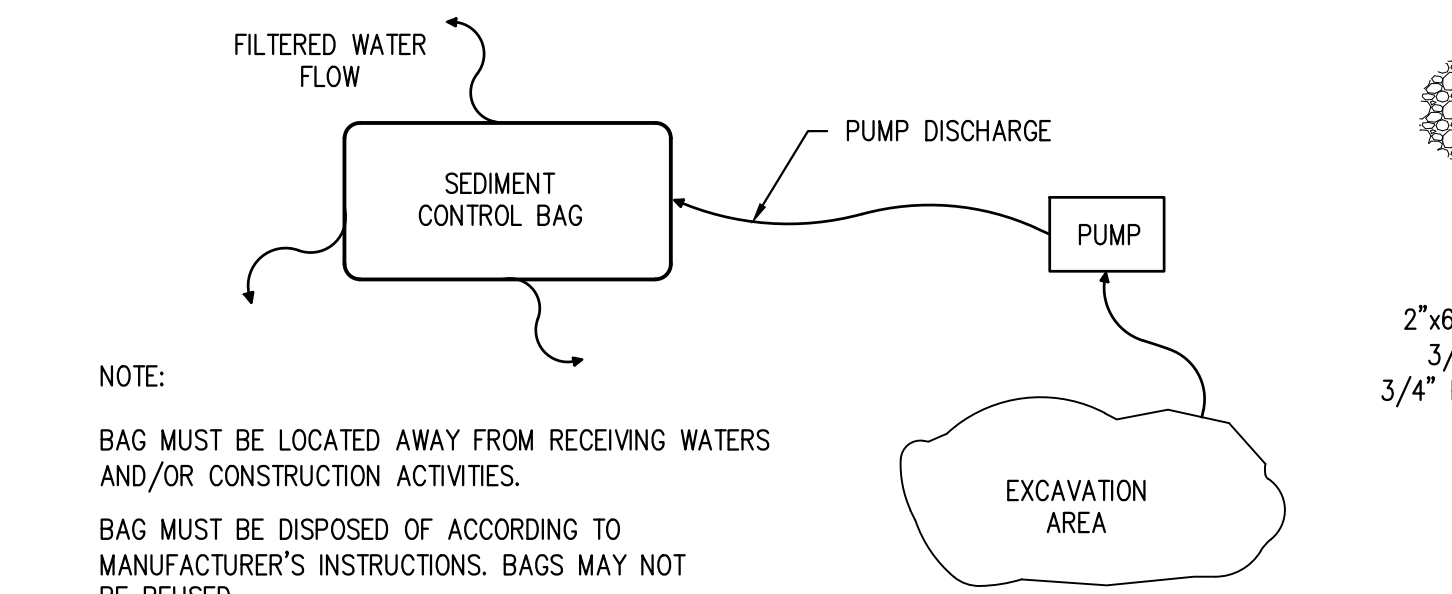
TILLAGE: TO ROUGHEN SURFACE AND BRING CLODS TO THE SURFACE. THIS IS A TEMPORARY EMERGENCY MEASURE WHICH SHOULD BE USED BEFORE SOIL BLOWING STARTS. BEGIN PLOWING ON WINDWARD SIDE OF SITE. CHISEL-TYPE PLOWS PLACED ABOUT 12 INCHES APART, AND SPRING TOOTHED HARROWS ARE EXAMPLES OF EQUIPMENT WHICH MAY PROVIDE THE DESIRED EFFECT.

SPRINKLING: SITE IS SPRINKLED UNTIL THE SURFACE IS WET.

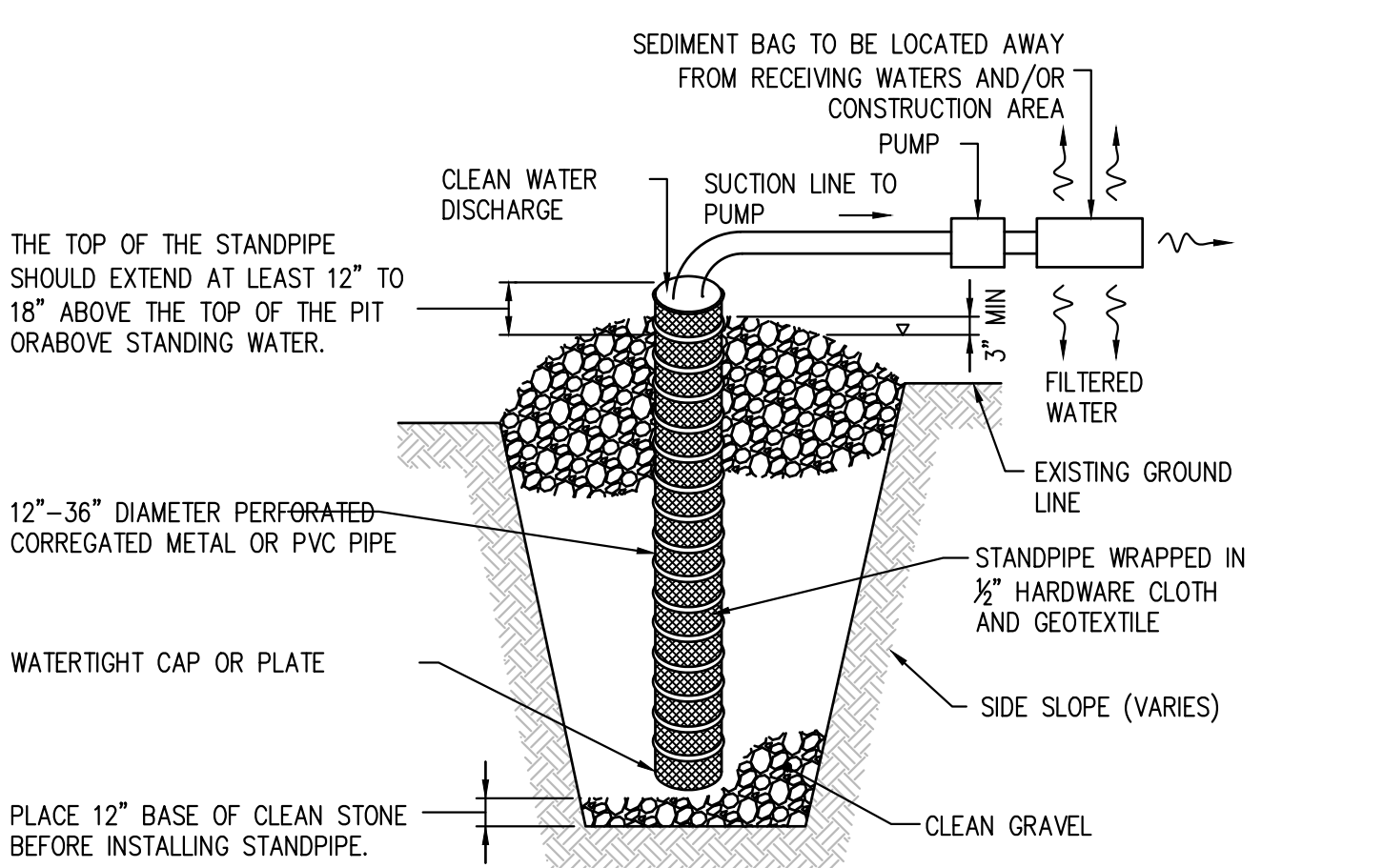
BARRIERS: SOLID BOARD FENCES, SNOW FENCES, BURLAP FENCES, CRATE WALLS, BALES OF HAY AND SIMILAR MATERIAL CAN BE USED TO CONTROL AIR CURRENTS AND SOIL BLOWING.

CALCIUM CHLORIDE: SHALL BE IN THE FORM OF LOOSE, DRY GRANULES OR FLAKES FINE ENOUGH TO FEED THROUGH COMMONLY USED SPREADERS AT A RATE THAT WILL KEEP SURFACE MOIST BUT NOT CAUSE POLLUTION OR PLANT DAMAGE. IF USED ON STEEPER SLOPES, THEN USE OTHER PRACTICES TO PREVENT WASHING INTO STREAMS, OR ACCUMULATION AROUND PLANTS.

STONE: COVER SURFACE WITH CRUSHED STONE OR COARSE GRAVEL.



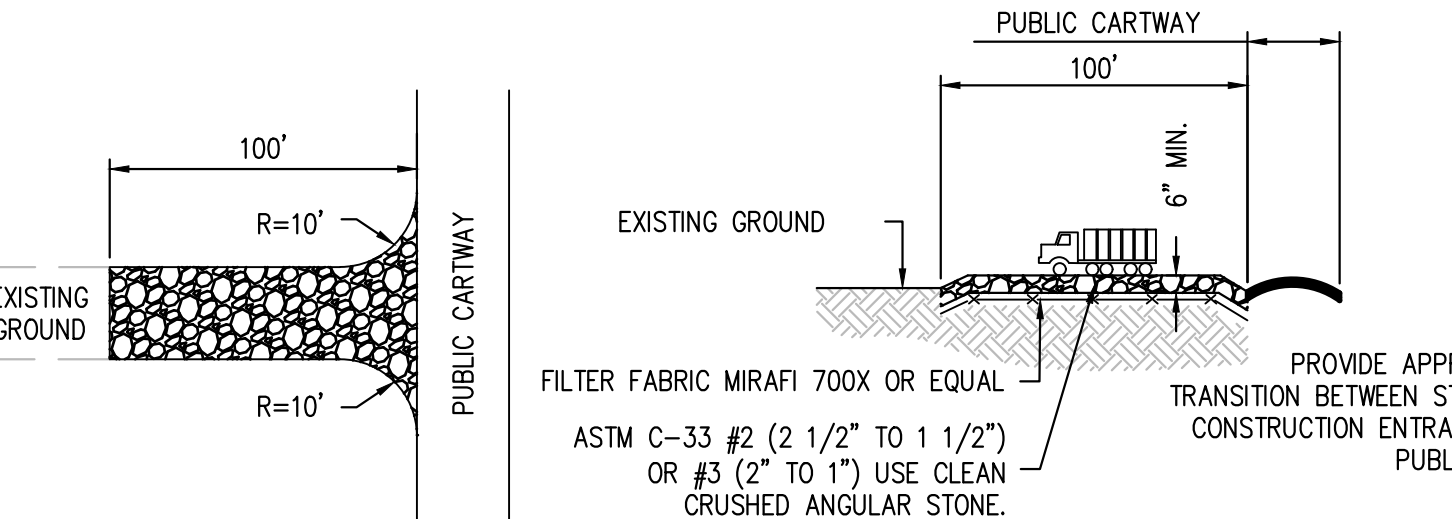
SEDIMENT CONTROL BAG FOR DEWATERING DETAIL  
N.T.S.



CONSTRUCTION SPECIFICATIONS

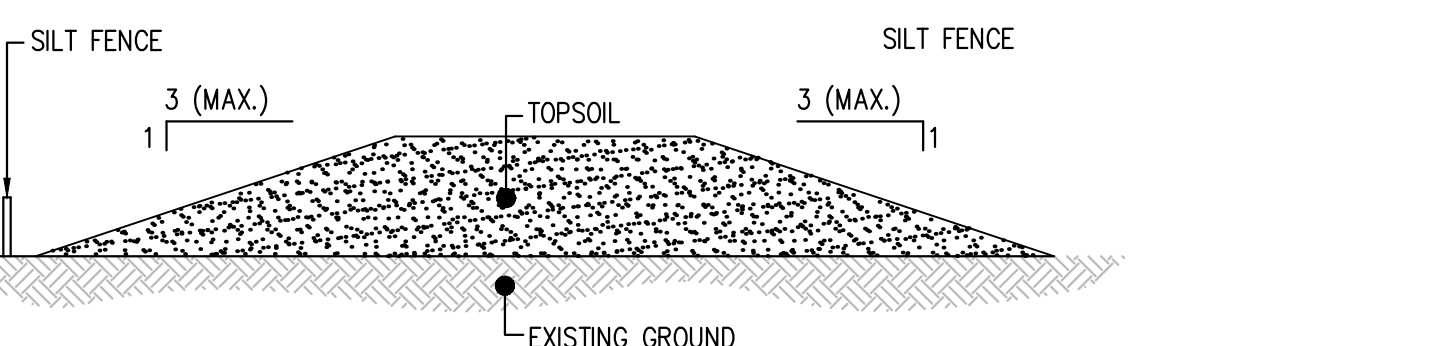
1. PIT DIMENSIONS ARE VARIABLE, WITH THE MINIMUM DIAMETER BEING TWO TIMES THE STANDPIPE DIAMETER.
2. THE STANDPIPE SHOULD BE CONSTRUCTED BY PERFORATING A 12" TO 24" DIAMETER CORRUGATED OR PVC PIPE. THEN WRAPPING WITH 1/2" HARDWARE CLOTH AND GEOTEXTILE FABRIC. THE PERFORATIONS SHALL BE 1/2" x 6" SLITS OR 1" DIAMETER HOLES.
3. A BASE FILTER MATERIAL CONSISTING OF CLEAN GRAVEL OR ASTM C 33 STONE SHOULD BE PLACED IN THE PIT TO A DEPTH OF 12", AFTER INSTALLING THE STANDPIPE, THE SILT SURROUNDING THE STANDPIPE SHOULD THEN BE BACKFILLED WITH THE SAME FILTER MATERIAL.
4. THE STANDPIPE SHOULD EXTEND 12" TO 18" ABOVE THE LIP OF THE PIT OR THE RISER CREST ELEVATION (BASIN DEWATERING ONLY) AND THE FILTER MATERIAL SHOULD EXTEND 3" MINIMUM ABOVE THE ANTICIPATED STANDING WATER ELEVATION.
5. WATER SURFACE ELEVATION.
6. SEDIMENT CONTROL BAGS MUST BE DISPOSED OF ACCORDING TO MANUFACTURER'S INSTRUCTIONS. BAGS MAY NOT BE REUSED.

TEMPORARY SUMP PIT DURING CONSTRUCTION  
N.T.S.



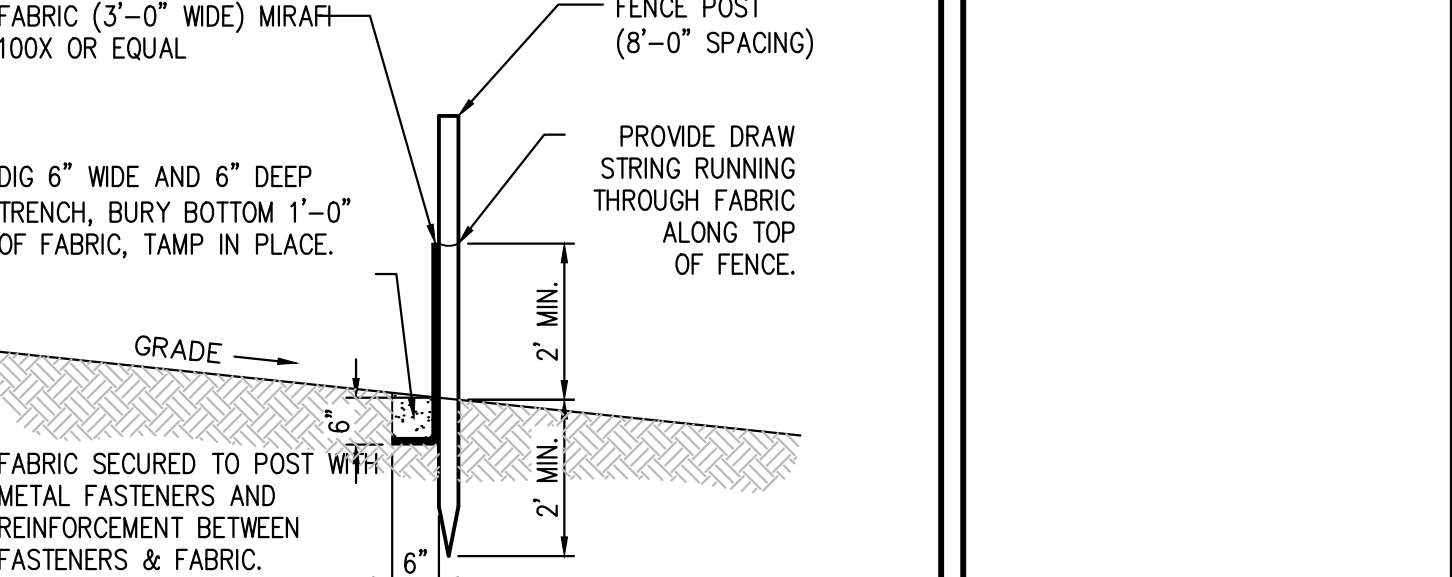
MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND AND REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SHALL BE PROPERLY WASHED, OR TRACKED OUT ON PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.

STABILIZED CONSTRUCTION ENTRANCE DETAIL  
N.T.S.

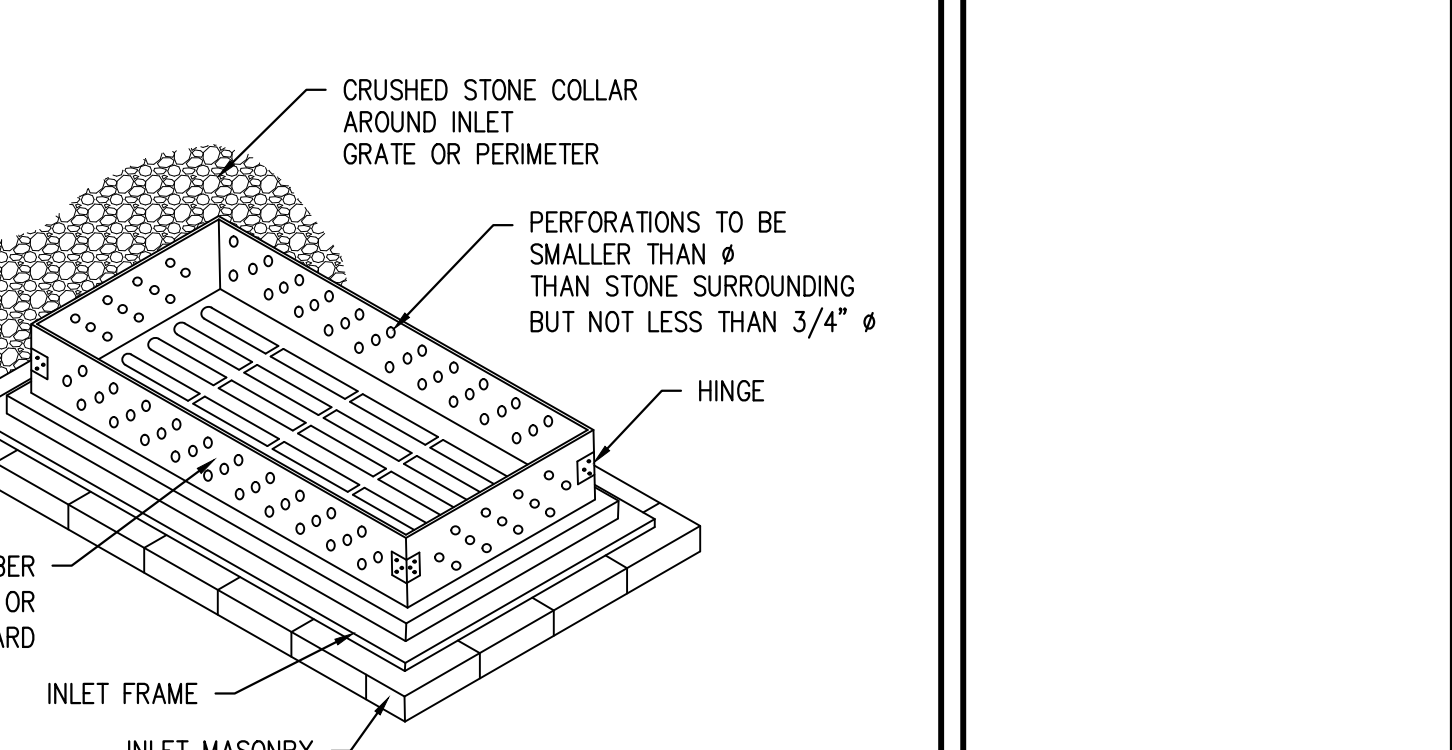


NOTES:  
1. TOPSOIL STOCKPILE SHALL BE SURROUNDED BY SILT FENCE.  
2. STOCKPILE SHALL RECEIVE TEMPORARY VEGETATIVE STABILIZATION IN ACCORDANCE WITH THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY IMMEDIATELY AFTER COMPLETION OF STOCKPILE.  
3. STOCKPILES ARE NOT TO BE LOCATED WITHIN FIFTY FEET OF A FLOODPLAIN, SLOPES, ROADWAY, OR DRAINAGE FACILITY.

TOPSOIL STOCKPILE DETAIL  
N.T.S.

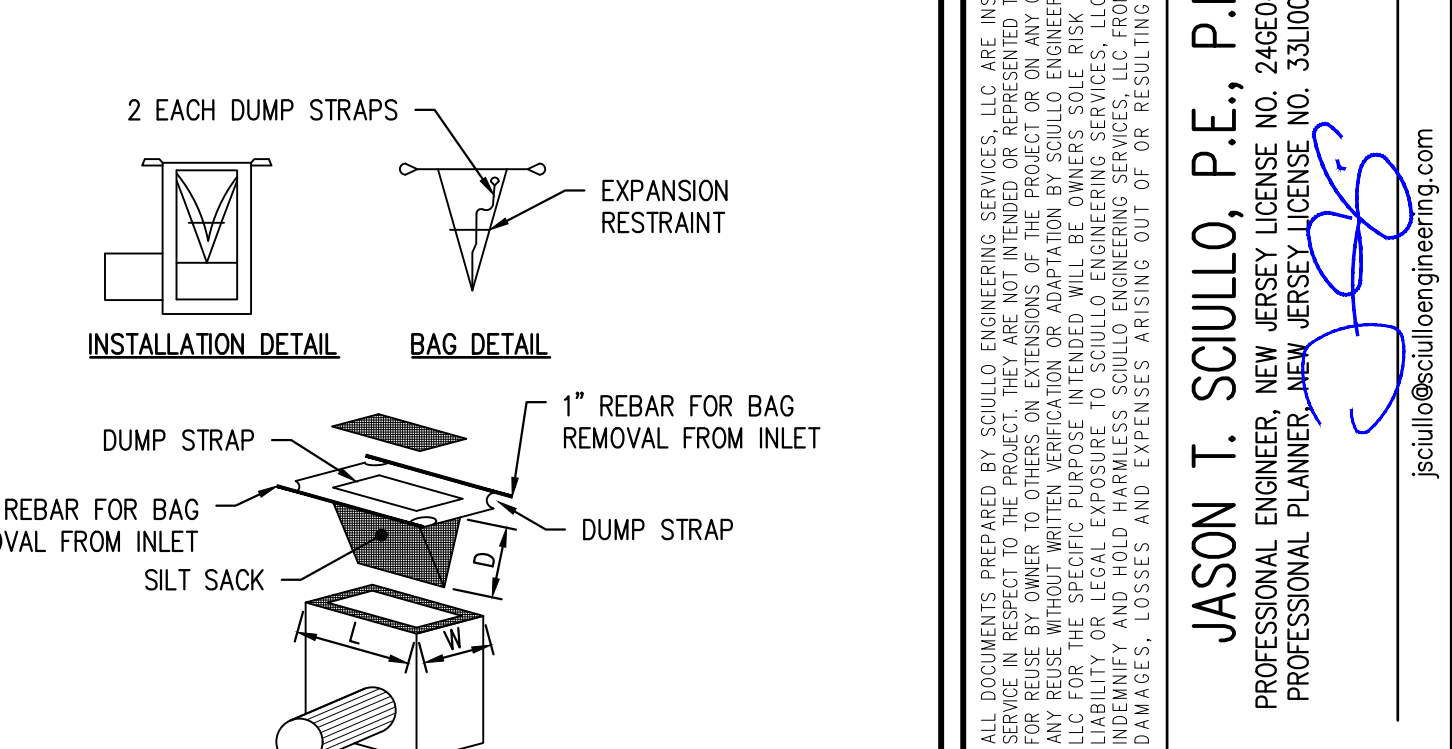


SILT FENCE DETAIL  
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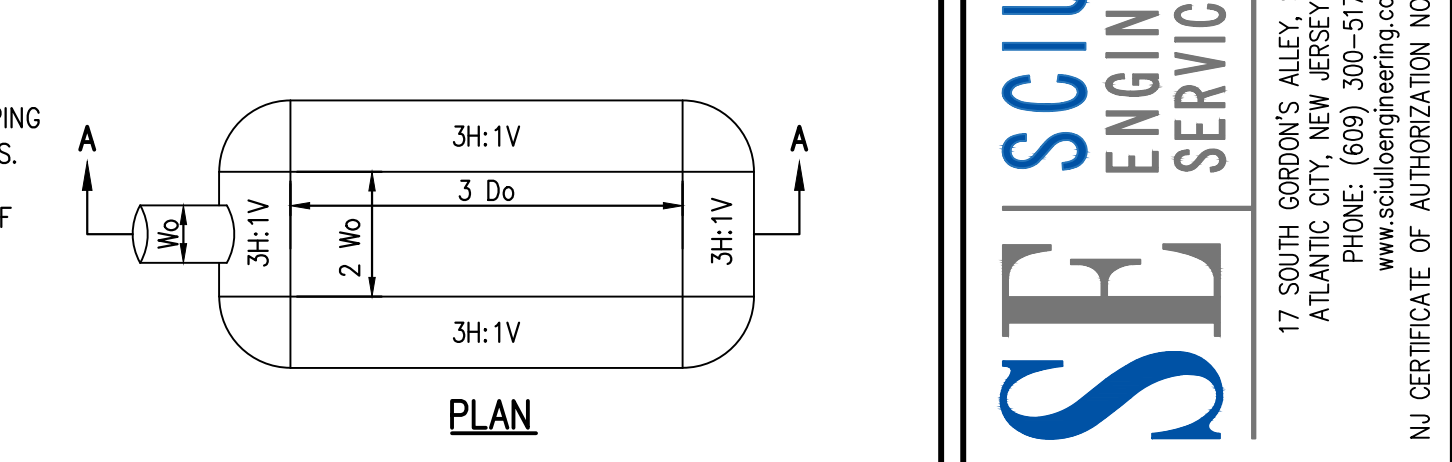


NOTE: SILT REMOVAL AROUND INLET TO BE PERIODICALLY MAINTAINED THROUGHOUT THE COURSE OF CONSTRUCTION

OUTSIDE PAVED AREAS INLET PROTECTION DETAIL  
N.T.S.



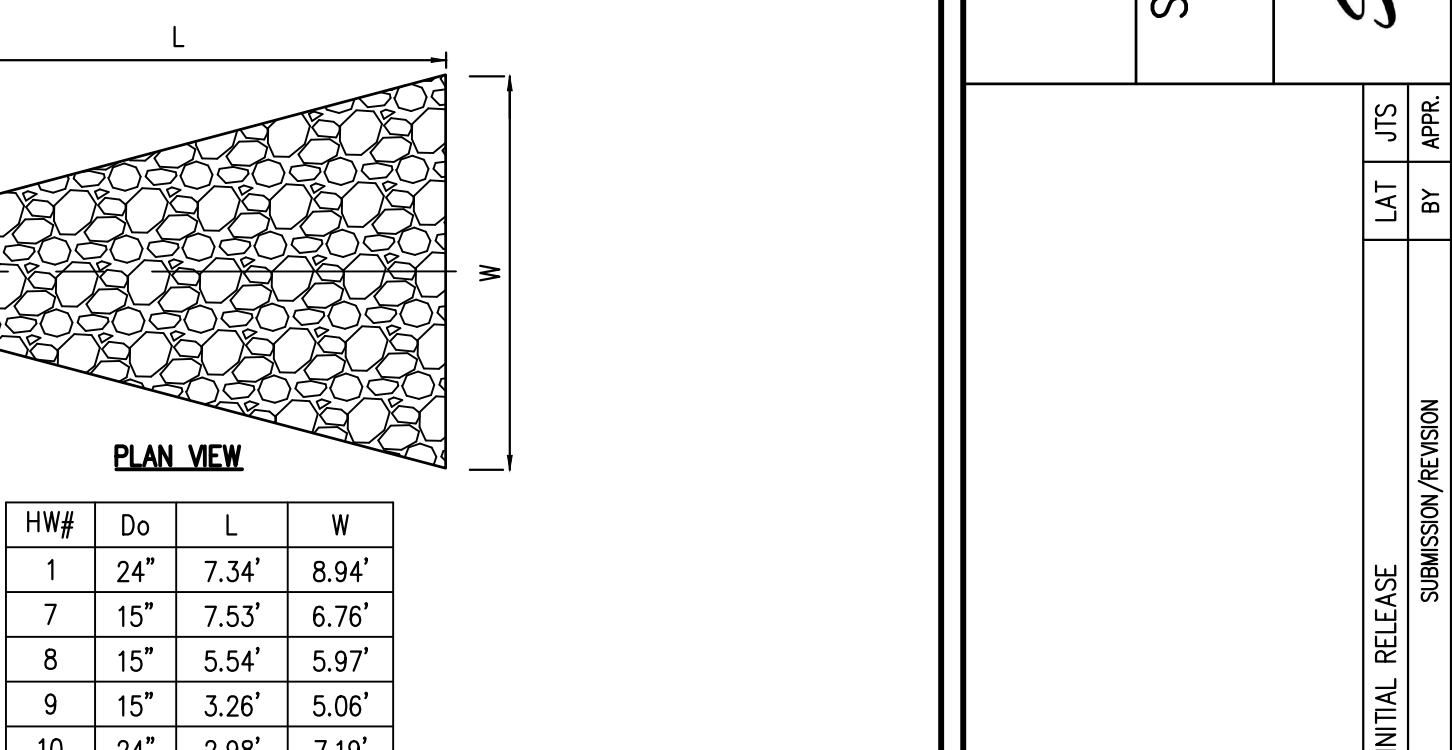
WITHIN PAVED AREAS INLET PROTECTION DETAIL  
N.T.S.



PREFORMED SCOUR HOLE DETAIL  
N.T.S.

HW	Wb	Do	W	L
2	15"	15"	2.5'	4'
3	15"	15"	2.5'	4'
4	15"	15"	2.5'	4'
5	24"	24"	4'	6'
6	15"	15"	2.5'	4'

PREFORMED SCOUR HOLE DETAIL  
N.T.S.



SECTION VIEW  
RIP RAP APRON  
N.T.S.

Know what's below.  
Call before you dig.

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2. THESE PLANS ARE NOT FOR CONSTRUCTION UNTIL "ISSUED FOR CONSTRUCTION" APPEARS IN THE TITLEBLOCK.

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jts@scullengr.com

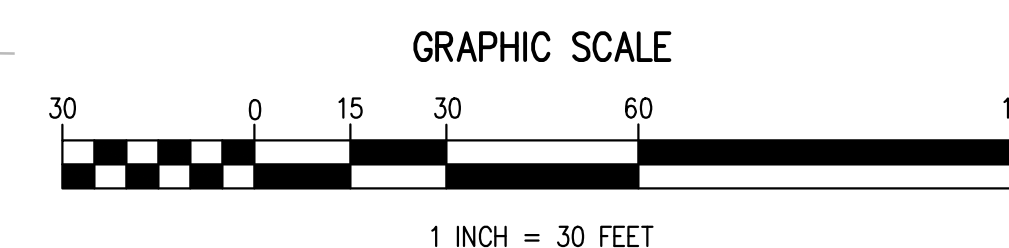
**SCIULLO ENGINEERING SERVICES, LLC**  
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www.scullengr.com  
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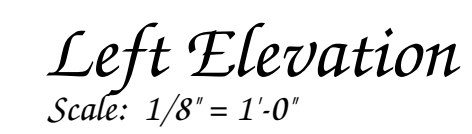
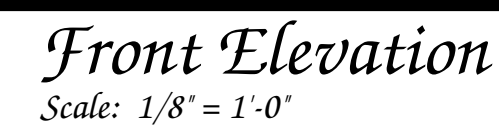
**SPYGLASS AT LAKES BAY**  
CITY OF PLEASANTVILLE, ATLANTIC COUNTY, NEW JERSEY  
BLOCK 255, LOT 1

**SOIL EROSION AND SEDIMENT CONTROL NOTES & DETAILS**

**Carlsberg PROPERTIES**  
6 W. ROOSEVELT BLVD.  
MAMORA, NEW JERSEY 08223

DATE	BY	APPROVED	REVISION
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ISSUE FOR SUBMISSION: 05-01-2020

No.

Description
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Date \_\_\_\_\_

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## New Multi-Family Apartment For

# Spyglass at Lakes Bay

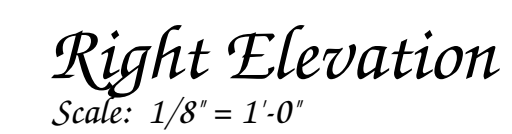
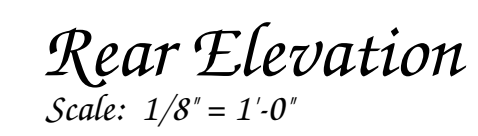
Pleasantville  
New Jersey

Thomas J. Brennan  
ARCHITECTS

**3803 Parkwood Blvd  
Suite 700  
Frisco, Texas 75034  
972-867-3948  
Fax  
972-378-9416**

D1

19380



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## New Multi-Family Apartment For

# Spyglass at Lakes Bay

Pleasantville  
New Jersey

Thomas J. Brennan  
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Frisco, Texas 75034  
972-867-3948  
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# Spyglass at Lakes Bay

Pleasantville  
New Jersey

# D3

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## Floor Plans

 Description |

## New Multi-Family Apartment For

# Spyglass at Lakes Bay

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New Jersey

## Floor Plans

**b**

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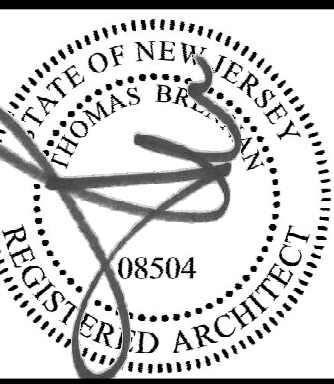


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NEW MULTI-FAMILY APARTMENT FOR

# Spyglass at Lakes Bay

New Jersey

## Perspective views



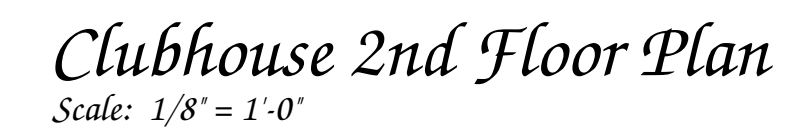
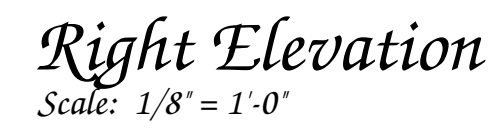
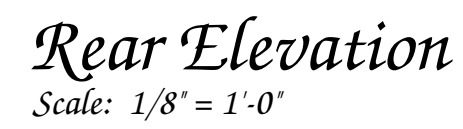
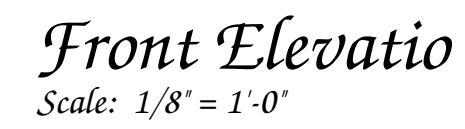
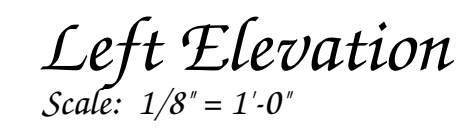
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Suite 700  
Frisco, Texas 75034  
972-867-3948  
Fax  
972-378-9416

sheet:

D5

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<i>Building Program</i>	
Unit	Area
1st Floor Plan	2557 SF
2nd Floor Plan	800 SF
TOTAL	3357 SF



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Pleasantville,  
New Jersey

**b**

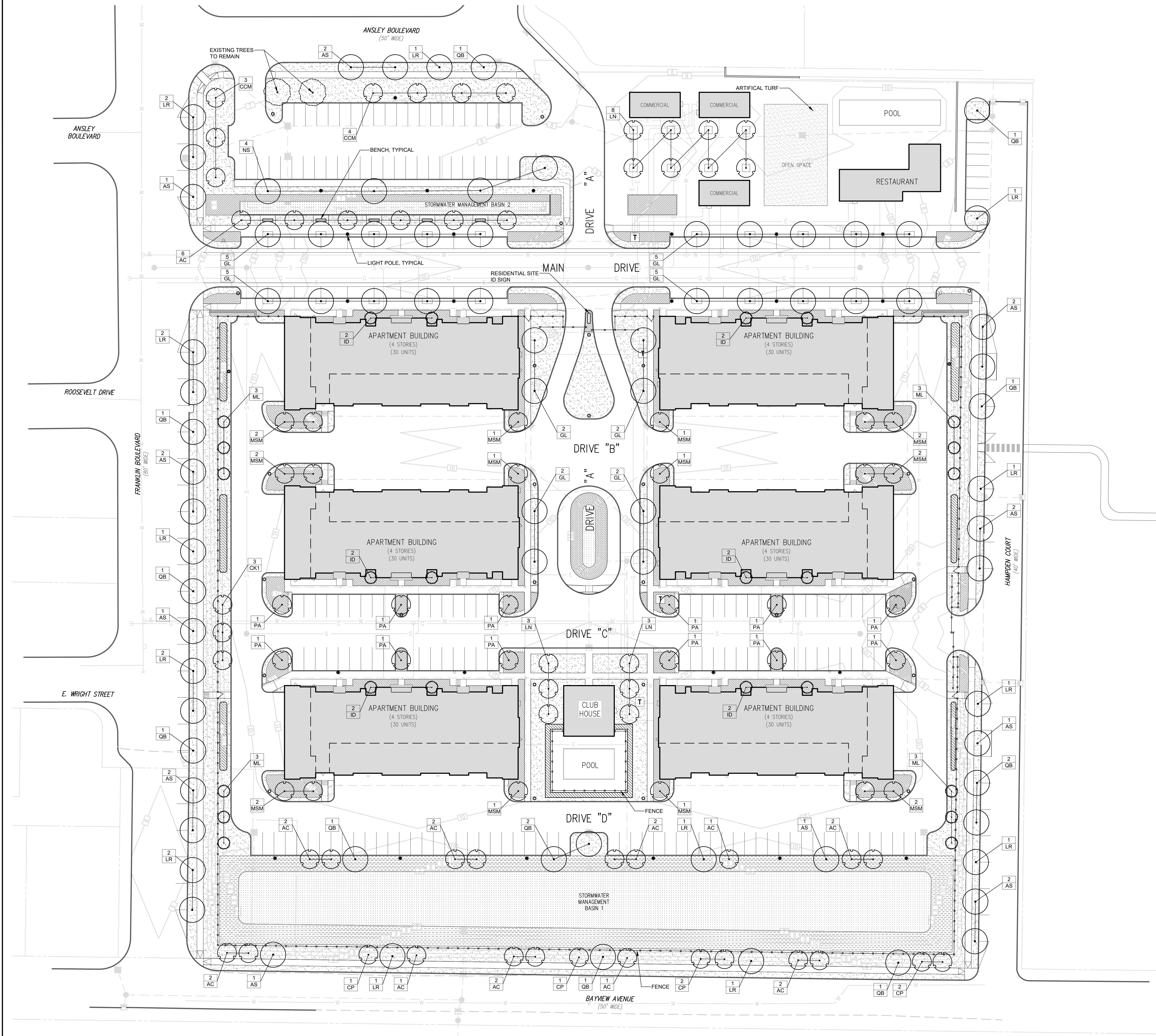
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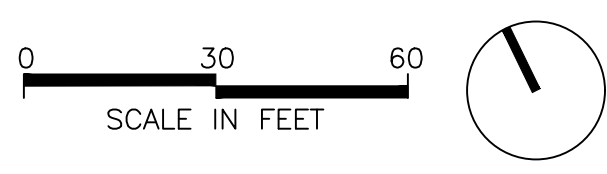
19380



LEGEND:

- DECIDUOUS CANOPY TREE
- ORNAMENTAL FLOWERING TREE
- EVERGREEN TREE
- SHRUB PLANTING, 2,700 SF
- STREETSCAPE PLANTING BED, 4,500 SF
- RESIDENTIAL PLANTING BED, 17,500 SF
- NO-MOW GRASS, 17,800 SF
- SEEDED LAWN, 61,300 SF
- ARTIFICIAL TURF
- STORMWATER SAND

- NOTES:
- REFER TO CIVIL ENGINEERING DRAWINGS FOR ALL HARDSCAPE, GRADING, DRAINAGE, STORMWATER MANAGEMENT, UTILITY, LIGHTING, SITE WALLS, AND FENCING INFORMATION.
  - REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL BUILDING INFORMATION.




SIKORA WELLS APPEL

LANDSCAPE ARCHITECTURE

8 Kings Hwy West, Suite A  
Haddonfield, NJ 08033

856.433.6360  
sikora-wells.com



Joseph T. Sikora  
N.J.C.L.A. #21450095400

NO

DATE

COMMENT


DRAWING ISSUE

ISSUE FOR SUBMISSION

DATE

05/05/2020

DRAWN BY

JK

CHECKED BY

JS

PROJECT #

2004

SCALE

1"=30'

DISCIPLINE

LANDSCAPE ARCHITECTURE

DRAWING TITLE

PLANTING PLAN

DRAWING NUMBER

L01

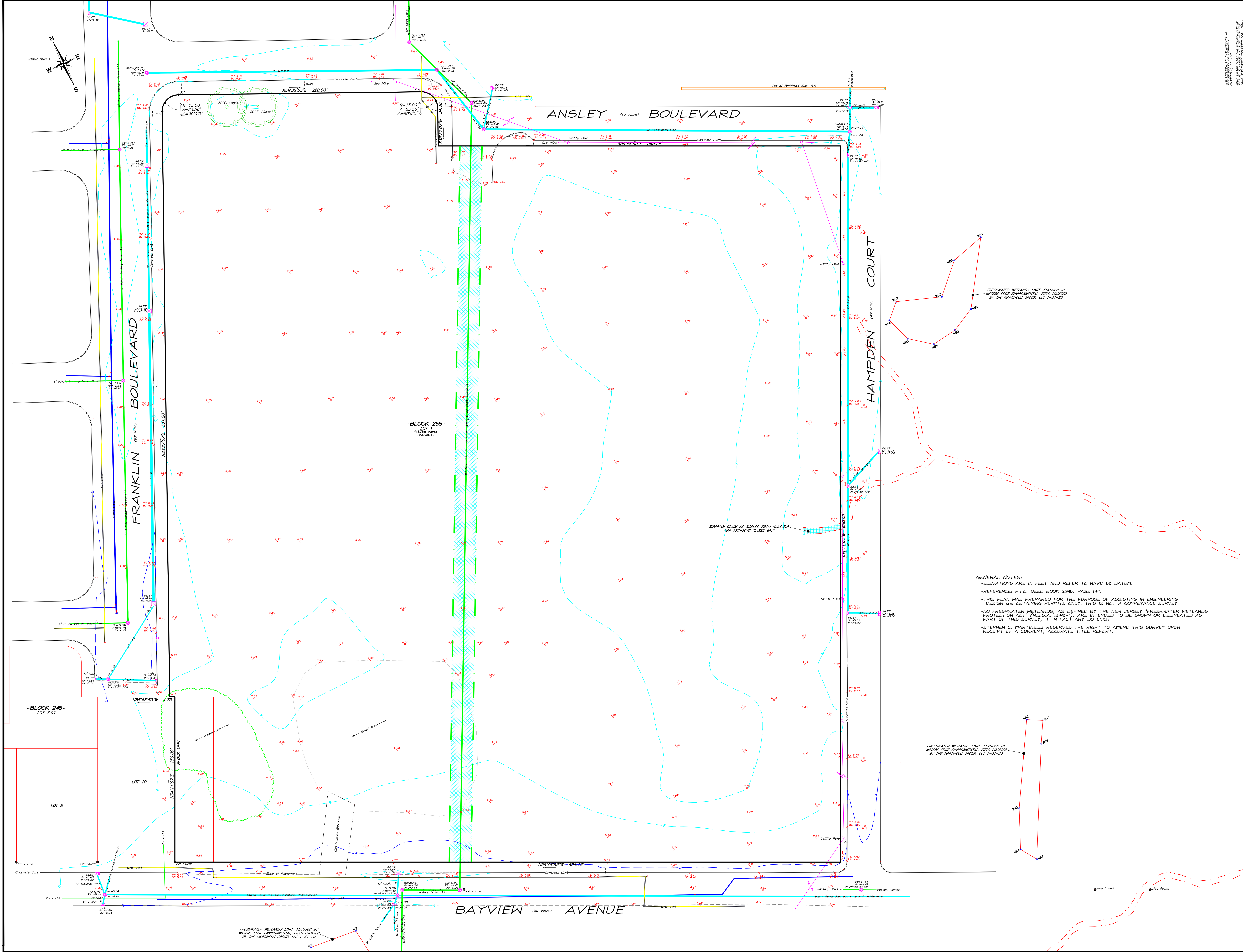
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# Scarborough Properties

# L03

E. Mulch material shall not come in contact with the trunk of trees and shrubs. Keep approximately 3" away from all sides.

A. Guarantee. Plants shall be guaranteed for twelve (12) months after planting, and shall be alive and in satisfactory growth at the end of the guarantee period. Plants, which die within the guarantee period, will be removed by the Landscape Contractor within ten (10) days of notice or the Owner will remove the plants and bill the Landscape Contractor accordingly. Replacement material may be installed during the next appropriate planting season. All replacements shall be plants of the same kind and size as specified in the plant list. They shall be furnished and planted as specifications.



THE ORIGINAL OF THIS DRAWING IS  
DATE: 11-15-2011  
DRAWN BY: JDP  
PROJECT NO: 15256

STEPHEN C. MARTINELLI  
PROFESSIONAL LAND SURVEYOR  
PROFESSIONAL PLANNER  
N.J. LICENSE 04853

REVISIONS

Added Wetlands Offsite Flaga.....11-31-20

TOPOGRAPHIC SURVEY

SITUATE IN

SCALE: 1" = 30'

DATE: 8-18-17

DRAWN BY: JDP

PROJ. NO: 15256

SHEET: 1

OF: 1

STEPHEN C. MARTINELLI

LAND SURVEYING, LLC  
CERTIFICATE OF AUTHORIZATION NUMBER 240A28136700  
PHONE : (609) 390-9818 FAX : (609) 390-9834  
102 SOUTHWEST ROAD SUITES 200  
OCEAN VIEW, NEW JERSEY 08230

DRAFT

STEPHEN C. MARTINELLI  
PROFESSIONAL LAND SURVEYOR  
PROFESSIONAL PLANNER  
N.J. LICENSE 04853

Traffic Engineering, Transportation Planning & Design

277 White Horse Pike, Suite 203, Atco, NJ 08004  
P: 609-714-0400 F: 609-714-9944 www.sallc.org

David R. Shropshire, PE, PP  
A Andrew Feranda, PE, PTOE, CME  
Randal C. Barranger, PE  
Nathan B. Mosley, PE, CME

May 3, 2020

Mr. Michael Lucey  
Water's Edge Environmental, LLC  
1259A Asbury Avenue  
Ocean City, New Jersey 08226

(7 copies via UPS and email: mlucey@watersedgellc.com)

**Re: Traffic Engineering and Air Quality Assessment  
Spyglass at Lakes Bay  
Block 255, Lot 1  
Bayview Avenue, Franklin Boulevard, Hampden Court  
City of Pleasantville, Atlantic County, NJ  
SA Project No. 20033**

Dear Michael:

In response to your request, Shropshire Associates, LLC has prepared a traffic engineering and air quality assessment to evaluate the impact of traffic to be generated by the proposed Spyglass at Lakes Bay residential development which will contain six (6) 4-story buildings containing a total of 180 apartments units and associated parking and amenities. The proposed development is located along Bayview Avenue, Franklin Boulevard, and Hampden Court in the City of Pleasantville, Atlantic County, New Jersey.

Access to the development is proposed via one (1) full-movement driveway along northbound Franklin Boulevard, one (1) full-movement driveway along eastbound Ansley Boulevard, and two (2) full-movement driveways along Hampden Court. It should be noted that the proposed development will re-route Ansley Boulevard and Hampden Court on site and connect the two through a proposed Main Drive. For the purpose of this study, Hampden Court and Ansley Boulevard will be treated as site driveways. Also, the extension of Franklin Boulevard to Bayview Avenue is proposed. Street parking along Franklin Boulevard and Hampden Court is proposed. Currently, the property is primarily vacant.

## **Existing Conditions**

A field reconnaissance was conducted in the vicinity of the site to determine the features of the adjacent roadway network within the study area. A description of the roadways and intersections are provided below.

In the vicinity of the site, **Black Horse Pike (U.S. 40 and U.S. 322)** is a four-lane roadway that is under the jurisdiction of the New Jersey Department of Transportation (NJDOT) and is classified<sup>1</sup> as an Urban Principal Arterial. The Black Horse Pike consists of two (2) lanes in each direction with an approximate cartway width of 64'. The posted speed limit along Black Horse Pike is 40 MPH. For the purpose of this study, Black Horse Pike is assumed to extend in a general east-west direction.

---

<sup>1</sup> NJDOT Straight Line Diagram



In the vicinity of the site, **Main Street (CR 585)** is a two-lane roadway that is under the jurisdiction of Atlantic County and is classified<sup>1</sup> as an Urban Minor Arterial. Main Street consists of one (1) lane in each direction with an approximate cartway width of 30'. The posted speed limit along Main Street goes from 35 MPH between Bayview Avenue and Wright Street to 25 MPH from Wright Street to the Black Horse Pike. For the purpose of this study, Main Street is assumed to extend in a general north-south direction.

In the vicinity of the site, **Franklin Boulevard** is a two-lane roadway that is under the jurisdiction of the City of Pleasantville and is classified as an Urban Major Collector between Roosevelt Drive and Black Horse Pike and a local street south of Roosevelt Drive. Franklin Boulevard consists of one (1) lane in each direction with bike lanes north of Ansley Boulevard with on-street parking and has an approximate cartway width of 55'. The posted speed limit along Franklin Boulevard is 25 MPH. For the purpose of this study, Franklin Boulevard is assumed to extend in a general north-south direction.

**Ansley Boulevard** is two-lane roadway that is under the jurisdiction of the City of Pleasantville and is classified as an Urban Major Collector west of Franklin Boulevard and a local street east of Franklin Boulevard. Ansley Boulevard consists of one (1) lane in each direction with on-street parking and has an approximate cartway width of 60' west of Franklin Boulevard and 36' east of Franklin Boulevard. The posted speed limit along Ansley Boulevard is 25 MPH. For the purpose of this study, Ansley Boulevard is assumed to extend in a general east-west direction.

**Decatur Avenue** is a two-lane local roadway that is under the jurisdiction of the City of Pleasantville. Decatur Avenue consists of one (1) lane in each direction with on-street parking and an approximate cartway width of 38'. The posted speed limit along Decatur Avenue is 25 MPH. For the purpose of this study, Decatur Avenue is assumed to extend in a general east-west direction.

**Bayview Avenue** is a two-lane local roadway that consists of one (1) lane in each direction with on-street parking and an approximate cartway width of 28'. The posted speed limit along Bayview Avenue is 25 MPH. For the purpose of this study, Bayview Avenue is assumed to extend in a general east-west direction.

**Hampden Court** is a two-lane local roadway that consists of one (1) lane in each direction with bike lanes and on-street parking and has an approximate cartway width of 30'. The posted speed limit along Hampden Court is 25 MPH. For the purpose of this study, Hampden Court is assumed to extend in a general north-south direction.

**Roosevelt Drive** is a one-lane local roadway that consist of a one-way connection between Ansley Boulevard and Franklin Boulevard for eastbound movements. Roosevelt Drive has an approximate cartway width of 38' and has street parking. The posted speed limit along Roosevelt Drive is 25 MPH. For the purpose of this study, Roosevelt Drive is assumed to extend in a general east-west direction.

The **Black Horse Pike/Franklin Boulevard** signalized intersection is controlled by a three-phase semi-actuated traffic signal with a 120-second background cycle length during the weekday AM and weekday PM peak periods. Both the eastbound and westbound Black Horse Pike approaches consist of one (1) left-turn lane, one (1) through lane, and one (1) through/right-turn lane. Both the northbound and southbound Franklin Boulevard approaches consist of one (1) left-turn lane, one (1) through lane, and one (1) right-turn lane.



The **Main Street/Decatur Avenue** signalized intersection is controlled by a two-phase traffic signal with a 70-second background cycle length during the weekday AM and weekday PM peak periods. All approaches consist of one (1) shared left-turn/through/right-turn lane.

The **Main Street/Ansley Boulevard** intersection is a T-shaped intersection that is stop-controlled along the westbound Ansley Boulevard approach. All approaches to the intersection consist of one lane for all permitted movements.

The **Main Street/Bayview Avenue** intersection is a four-way intersection that is stop-controlled along the eastbound and westbound Bayview Avenue approaches. All approaches consist of one lane for all permitted movements.

The **Ansley Boulevard/Franklin Boulevard** intersection is a four-way intersection that is stop controlled along the westbound Ansley Boulevard approach with a one-way outbound only leg adjacent to the westbound Ansley Boulevard approach. All approaches consist of one lane for all permitted movements.

The **Franklin Boulevard/Roosevelt Drive** intersection is a T-shaped intersection that is stop controlled along the eastbound Roosevelt Drive approach. The eastbound Roosevelt Drive approach is a one-way inbound only approach. The northbound and southbound Franklin Boulevard approaches consist of one lane for through movements.

The **Franklin Boulevard/Hampden Court** intersection is a T-shaped intersection that is stop controlled along the southbound Hampden Court approach. Each approach consists of one lane for all permitted movements.

### ***Traffic Counts***

To determine the amount of traffic on the adjacent roadway network, manual turning movement counts (MTMC) were conducted at the study intersections on Thursday, March 12, 2020 during the weekday AM (7:00 AM - 9:00 AM) and weekday PM (7:00 AM – 9:00 AM) peak periods. A summary of the traffic counts can be found in the appendix to this assessment and the existing volumes are illustrated on Figure 1.

### **Future Conditions**

As indicated above, the proposed Spyglass at Lakes Bay residential development will consist of 180 apartments units and associated parking and amenities. The traffic resulting from the proposed development will not affect the adjacent roadway network until 2024, when the development is expected to be fully built-out and occupied. It can be expected that the traffic volumes along the adjacent roadway network will increase as a result of other developments in the area of the site and general area traffic growth.

Based on the *Annual Background Growth Table* prepared by the New Jersey Department of Transportation (NJDOT), a 1.00% annual traffic growth is projected along Black Horse Pike, Main Street, Decatur Avenue, Bayview Avenue, Hampden Court, Franklin Boulevard south of Roosevelt Drive, and Ansley drive east of Franklin Boulevard and a 1.75% annual traffic growth is projected along Ansley Boulevard west of Franklin Boulevard, Franklin Boulevard north of Roosevelt Drive, and Roosevelt Drive in the vicinity of the site. By applying a 1.00% and 1.75% annual growth rate to the respective 2020 roadway volumes, the 2024 No-Build volumes were estimated and are indicated on Figure 2.



### ***ITE Trip Generation***

The amount of traffic to be generated by the proposed Spyglass at Lakes Bay residential development can best be estimated based on data published by the Institute of Transportation Engineers (ITE). ITE has compiled data from thousands of studies for various land uses, independent variables and study periods, and published the results in *Trip Generation, 10th Edition*. The proposed development is most similar to ITE Land Use 221: Multifamily Housing (Mid-Rise). Table 1 below indicates the total traffic to be generated by the development based on the ITE trip generation data (the trip generation worksheets are attached for reference).

<b>Table 1</b> <b>ITE Trip Generation – Lakes Bay Redevelopment</b>						
Land Use	Weekday PM Peak			Saturday Peak		
	In	Out	Total	In	Out	Total
Multifamily Housing (180 units)	17	48	65	48	30	78

The traffic to be generated by the proposed residential development during the peak hours must then be distributed to the adjacent street network in a manner which the residents can reasonably be expected to travel. The site traffic was assigned to the street network based on the existing distribution of traffic along the adjacent street network, as illustrated on Figure 3. The resulting site traffic assignment is illustrated on Figure 4 and Figure 4A. The site traffic was then added to the 2024 No-Build traffic volumes (Figure 2) to project the 2024 Build traffic volumes, which are illustrated on Figure 5 and Figure 5A.

### **Operational Analysis**

In order to measure the quality of the traffic flow for the adjacent roadway, capacity analysis for the study locations were performed based upon the methods outlined in the *Highway Capacity Manual*. Capacity analysis is a procedure used to estimate the ability of the roadway network to carry traffic. Capacity analyses are performed based on a Level of Service methodology. Level of Service (LOS) is a qualitative measure that characterizes the operational conditions of a roadway or intersection based on the perceptions by motorists and passengers. Levels of Service are defined for each type of facility (i.e. freeways, highways, signalized intersections, unsignalized intersections). These Levels of Service range from LOS A to LOS F, with a LOS A representing the best operating conditions and a LOS F representing the worst operating conditions.

The Level of Service for an unsignalized intersection is determined based on the average control delay associated with each minor movement (i.e. yielding left-turn movements from the major roads and stop-controlled movements from the minor approaches). The Levels of Service for signalized intersections are classified in terms of delay, which is based on the extent of driver discomfort and frustration, fuel consumption and lost travel time. The delay experienced by a motorist consists of many factors that relate to control, geometrics, and traffic. Some of these factors include the quality of progression, traffic signal cycle length, the green ratio, and the volume-to-capacity ratio. The Level of Service criteria for unsignalized and signalized intersections is summarized in Table 2.



<b>Table 2</b>		
<b>Level of Service Criteria</b>		
Level of Service	Unsignalized Delay (sec)	Signalized Delay (sec)
A	≤ 10	≤ 10
B	> 10 and ≤ 15	> 10 and ≤ 20
C	> 15 and ≤ 25	> 20 and ≤ 35
D	> 25 and ≤ 35	> 35 and ≤ 55
E	> 35 and ≤ 50	> 55 and ≤ 80
F	> 50	> 80

The operating conditions at the study intersections and the proposed site access were evaluated using the above-described methodology and the latest Synchro software. The Existing, No-Build, and Build Levels of Service are illustrated on Figures 6, 7, 8 and 8A; respectively. The detailed capacity analyses worksheets for the intersection analyses are attached to this assessment with a description of the operating conditions summarized below.

### ***Black Horse Pike (Route 40) and Franklin Boulevard Intersection***

Under the existing conditions, the Black Horse Pike and Franklin Boulevard signalized intersection currently operates with an overall LOS C during the weekday AM peak hour and an overall LOS D during the weekday PM peak hour. In addition, the eastbound and westbound Black Horse Pike left-turn movements currently operate at a LOS E during both peak hours, with the exception of the eastbound left-turn movements, which currently operate at a LOS F during the weekday PM peak hour. In addition, the eastbound and westbound Route 40 shared through/right-turn movements currently operate at a LOS C or better during both peak hours. The northbound and southbound Franklin Boulevard individual movements currently operate at a LOS D or better during both peak hours with the exception of the southbound left-turn movements, which currently operate at a LOS F during both peak hours.

Under the No-Build conditions, the Black Horse Pike and Franklin Boulevard signalized intersection will continue to operate at an overall LOS C during the weekday AM peak hour and an overall LOS D during the weekday PM peak hour. In addition, all individual movements will continue to operate at existing levels of service or better with the exception of the westbound Route 40 through/right-turn movements, which will operate at a LOS C during the weekday AM peak hour.

Under the Build conditions, the traffic resulting from the proposed Spyglass at Lakes Bay residential development will cause no changes in the individual or overall levels of service at the Black Horse Pike/Franklin Boulevard signalized intersection during the weekday AM and weekday PM peak hours. All individual movements will continue to operate at No-Build levels of service during both peak hours. Overall, the intersection will continue to operate at a LOS C during the weekday AM peak hour and a LOS D during the weekday PM peak hour.

It should be noted that under the Build conditions, the traffic resulting from the proposed residential development will account for 2.0% of the total traffic at the intersection during the weekday AM peak hour and 1.9% of the total traffic at the intersection during the weekday PM peak hour.



### ***Main Street (CR 585) and Decatur Avenue Intersection***

Under the existing conditions, the Main Street/Decatur Avenue signalized intersection currently operates at an overall LOS A during the weekday AM peak hour and an overall LOS B during the weekday PM peak hour. All individual movements will operate at a LOS C or better during both peak hours.

Under the No-Build conditions, the Main Street and Decatur Avenue signalized intersection will continue to operate with an overall LOS A during the weekday AM peak hour and an overall LOS B during the weekday PM peak hour. The westbound Decatur Avenue shared left-turn/through/right-turn movements will operate with a LOS D during the weekday PM peak hour. All other movements at the intersection will continue to operate with existing levels of service.

In the Build scenario, the traffic resulting from the proposed Lakes Bay residential development will cause no changes in the future individual or overall levels of service at the Main Street/Decatur Avenue signalized intersection during the AM and PM peak hours. Overall, the intersection will continue to operate at a LOS A during the weekday AM peak hour and an overall LOS B during the weekday PM peak hour.

### ***Main Street (CR 585) and Ansley Boulevard Intersection***

Under the Existing conditions, the southbound Main Street conflicting left-turn movements currently operate at a LOS A during both the weekday AM and PM peak hours. In addition, the westbound Ansley Boulevard stop-controlled movements currently operate at a LOS B during the weekday AM peak hour and a LOS C during the weekday PM peak hour.

Under the No-Build conditions, the westbound stop-controlled Ansley Boulevard approach at its intersection with Main Street will operate at a LOS C during the weekday AM peak hour and a LOS D during the weekday PM peak hour. The southbound Main Street conflicting left-turn will continue to operate at a LOS A during both peak hours.

In the Build scenario, the traffic resulting from the proposed Spyglass at Lakes Bay residential development will cause no changes in the future levels of service during both the weekday AM and weekday PM peak hours. All stop-controlled and conflicting left-turn movements at the future Main Street/Ansley Boulevard intersection will continue to operate at No-Build levels of service during both peak hours.

### ***Main Street (CR 585) and Bayview Avenue Intersection***

Under the Existing conditions, the northbound and southbound Main Street conflicting left-turn movements currently operate at a LOS A during both the weekday AM and PM peak hours. The eastbound and westbound Bayview Avenue stop-controlled movements currently operate at a LOS C during the weekday AM peak hour and a LOS E and LOS D during the weekday PM peak hour for the eastbound and westbound approaches, respectively.

Under the No-Build conditions, all stop-controlled and conflicting left-turn movements at the Main Street/Bayview Avenue intersection will continue to operate at existing levels of service during both peak hours.



In the Build scenario, the traffic resulting from the proposed Spyglass at Lakes Bay residential development will cause no changes in the future levels of service during the weekday AM and weekday PM peak hours at the Main Street/Bayview Avenue intersection. All stop-controlled and conflicting left-turn movements will continue to operate at No-Build levels of service during both peak hours.

#### ***Franklin Boulevard and Ansley Boulevard Intersection***

Under the Existing, No-Build, and Build conditions, all stop-controlled and conflicting left-turn movements at the Ansley Boulevard/Franklin Boulevard intersection will operate at a LOS B or better during both the weekday AM and weekday PM peak hours. The traffic resulting from the proposed Spyglass at Lakes Bay residential development will have a minimal impact on the future study location during the weekday AM and weekday PM peak hours.

#### ***Franklin Boulevard and Roosevelt Boulevard Intersection***

Under the Existing, No-Build, and Build conditions, all stop-controlled and conflicting left-turn movements at the Roosevelt Boulevard/Franklin Boulevard intersection will operate at a LOS B or better during both the weekday AM and weekday PM peak hours. The traffic resulting from the proposed Spyglass at Lakes Bay residential development will have a minimal impact on the future study location during the weekday AM and weekday PM peak hours.

#### ***Bayview Avenue and Hampden Court Intersection***

Under the Existing, No-Build, and Build conditions, all stop-controlled and conflicting left-turn movements at the Bayview Avenue/Hampden Court intersection will operate at a LOS B or better during both the weekday AM and weekday PM peak hours. The traffic resulting from the proposed Spyglass at Lakes Bay residential development will have a minimal impact on the future study location during the weekday AM and weekday PM peak hours. It should be noted that under the future Build conditions, Hampden Court be integrated into the overall residential development.

#### ***Franklin Boulevard and Primary Site Driveway Intersection***

Under the Build conditions, as part of the overall Spyglass at Lakes Bay residential development, one (1) new full-movement site driveway will be constructed along northbound Franklin Boulevard. The proposed site driveway will be stop-controlled at its intersection with Franklin Boulevard. Based upon this configuration, the southbound Franklin Boulevard conflicting left-turn movements will operate with a LOS A during both peak hours, while the westbound site driveway stop-controlled movements will operate at a LOS B during the weekday AM peak hour and a LOS A during the weekday PM peak hour.

#### ***Bayview Avenue and Franklin Boulevard Intersection***

Under the future Build conditions, in conjunction with the proposed Spyglass at Lakes Bay residential development, the proposal is for the extension of Franklin Avenue south to create a new T-shaped intersection with Bayview Avenue. The Franklin Boulevard and Bayview Avenue intersection will be a T-shaped intersection that is stop-controlled along the southbound Franklin Boulevard approach. Based upon this configuration, all stop-controlled and conflicting left-turn movements will operate at a LOS A during both peak hours.



## **Air Quality Analysis**

### ***NJDEP Protocol***

The New Jersey Department of Environmental Protection (NJDEP) outlines an air quality evaluation protocol in *Air Quality Analysis for Intersections*. NJDEP requires dispersion modeling to demonstrate that the National Ambient Air Quality Standards (NAAQS) for carbon monoxide will not be exceeded due to the additional traffic to be generated by a proposed development. As per N.J.A.C. 7:27-13.5, carbon monoxide concentrations shall not exceed 35 ppm for one-hour average concentrations and 9 ppm for eight-hour average concentrations.

Levels of service (LOS) results are the basis for determining whether or not an intersection requires dispersion modeling. Generally, a LOS A, B or C indicates that vehicle delays at an intersection are not significant enough to generate excessive CO concentrations. At signalized intersections, any movement that functions at a LOS D, E or F requires CO dispersion modeling. For unsignalized intersections, a LOS E or F on the stop-controlled approaches, and a LOS D, E or F for the major street left-turn movement indicates the need for CO dispersion modeling.

### ***Data Analysis***

The intersections to be analyzed for air quality violations are dependent on the levels of service at each intersection. Based on the levels of service presented in this traffic engineering assessment report and the NJDEP protocol, dispersion modeling is required for the Route 40/Franklin Boulevard and Main Street/Decatur Avenue signalized intersections. Dispersion modeling is performed during the peak hour that experiences the highest total volume at the intersection. Based upon this criterion, the study intersections were analyzed during the weekday PM peak hour.

The future No-Build and Build levels of service at the other study locations contained in this report do not require modeling based upon the latest NJDEP Protocol.

### ***Data Results***

Dispersion modeling was performed for the study intersections using the CAL3QHC program with input variables obtained from the MOBILE6.2 program. The MOBILE6.2 program estimates carbon monoxide emission factors for motor vehicles using default values issued by the NJDEP. These emission factors are calculated for various speeds and the anticipated build-out year. Table 3 summarizes the emission factors for the build year and the various posted speed limits within the study area. It should be noted that idle emission factors are based on a 2.5 MPH speed limit.

<b>Table 3 Vehicle Emission Factors (grams/vehicle-hour)</b>		
<b>Roadway</b>	<b>Speed Limit</b>	<b>Emission Factor</b>
Idle	2.5 MPH	54.87
Route 40	40 MPH	10.11
Other Roadways	25 MPH	9.92



The above emission factors were utilized to perform dispersion modeling for the required study intersections with the CAL3QHC program. The study intersections were modeled for the future No-Build and Build conditions. The CAL3QHC program yields the maximum one-hour carbon monoxide concentrations at the study intersection for each scenario. The detailed CAL3QHC output files are attached to this report.

To obtain the one-hour average CO concentration, the default background concentration of 5.0 ppm for a suburban area was added to the modeled CO concentrations obtained from the CAL3QHC program. The eight-hour average CO concentration is obtained by multiplying the one-hour average CO concentration by a 0.7 persistence factor. The resulting CO concentrations are provided in Table 4 for the study intersection under the No-Build and Build conditions.

<b>Table 4</b>			
<b>CO Concentrations (ppm)</b>			
Study Intersection	Scenario	One Hour Average	Eight Hour Average
Route 40 and Franklin Boulevard	No-Build	6.90	4.83
	Build	6.90	4.83
Main Street and Decatur Avenue	No-Build	5.90	4.13
	Build	5.90	4.13

The results presented in the Table 4 show that the CO concentrations resulting from the dispersion modeling presented in this report do not violate the NAAQS of 35 ppm for one-hour average concentrations and 9 ppm for eight-hour average concentrations. The maximum carbon monoxide concentrations for the Build conditions occur in the northwest quadrant of the Route 40/Franklin Boulevard signalized intersection. The maximum one-hour average CO concentration of 6.90 ppm does not exceed NAAQS standards; therefore, no further improvements are required at the study locations due to air quality conditions.

## **Conclusion**

Based on the results presented in this traffic engineering and air quality assessment, the traffic resulting from the proposed Spyglass at Lakes Bay 180-unit residential development will have a minimal impact on the adjacent street network based upon the following conclusions:

- Based upon the current ITE trip generation rates, the proposed 180-unit apartment complex will generate approximately 65 total trips during the weekday AM peak hour and approximately 78 total trips during the weekday PM peak hour. These trips will be distributed between three main access points.
- The traffic resulting from the proposed Spyglass at Lakes Bay residential development will cause no changes in the individual or overall levels of service at the Black Horse Pike/Franklin Boulevard signalized intersection during the weekday AM and weekday PM peak hours. Overall, the intersection will continue to operate at a LOS C during the weekday AM peak hour and a LOS D during the weekday PM peak hour.



Under the build conditions, the traffic generated from the proposed development will account for approximately 2.0% of the total traffic at the future Black Horse Pike/Franklin Avenue intersection during the weekday AM peak hour and 1.9% of the total traffic at the intersection during the weekday PM peak hour.

- The traffic resulting from the proposed Spyglass at Lakes Bay residential development will cause no changes in the future individual or overall levels of service at the Main Street/Decatur Avenue signalized intersection during the AM and PM peak hours. Overall, the intersection will continue to operate at a LOS A during the weekday AM peak hour and an overall LOS B during the weekday PM peak hour.
- The traffic resulting from the proposed Spyglass at Lakes Bay residential development will cause no changes in the future levels of service during both the weekday AM and weekday PM peak hours. All stop-controlled and conflicting left-turn movements at the future Main Street/Ansley Boulevard intersection will continue to operate at No-Build levels of service during both peak hours.
- The traffic resulting from the proposed Spyglass at Lakes Bay residential development will cause no changes in the future levels of service during the weekday AM and weekday PM peak hours at the Main Street/Bayview Avenue intersection. All stop-controlled and conflicting left-turn movements will continue to operate at No-Build levels of service during both peak hours.
- The traffic resulting from the proposed Spyglass at Lakes Bay residential development will have a minimal impact on the following future study locations during the weekday AM and weekday PM peak hours.
  - Franklin Boulevard and Ansley Boulevard
  - Franklin Boulevard and Roosevelt Boulevard
  - Bayview Avenue and Hampden Court
- As part of the overall Spyglass at Lakes Bay residential development, one (1) new full-movement site driveway will be constructed along northbound Franklin Boulevard. The proposed site driveway will be stop-controlled at its intersection with Franklin Boulevard. Based upon this configuration, the southbound Franklin Boulevard conflicting left-turn movements will operate with a LOS A during both peak hours, while the westbound site driveway stop-controlled movements will operate at a LOS B during the weekday AM peak hour and a LOS A during the weekday PM peak hour.
- In conjunction with the proposed Spyglass at Lakes Bay residential development, the proposal is for the extension of Franklin Avenue south to create a new T-shaped intersection with Bayview Avenue. The Franklin Boulevard and Bayview Avenue intersection will be a T-shaped intersection that is stop-controlled along the southbound Franklin Boulevard approach. Based upon this configuration, all stop-controlled and conflicting left-turn movements will operate at a LOS A during both peak hours.



- Based upon our air quality analysis, the Route 40/Franklin Boulevard intersection in the vicinity of the proposed development will not exceed NAAQS standards for air quality under the future Build conditions. The maximum one-hour average CO concentration of 6.90 ppm will occur in the northwest quadrant of the signalized intersection. This level does not violate the standards of 35 ppm for one-hour average concentrations and 9 ppm for eight-hour average concentrations. Therefore, no further improvements are required at the study intersections due to air quality conditions.

Should you have any questions or require any additional information, please feel free to contact us.

Sincerely,  
**Shropshire Associates LLC**

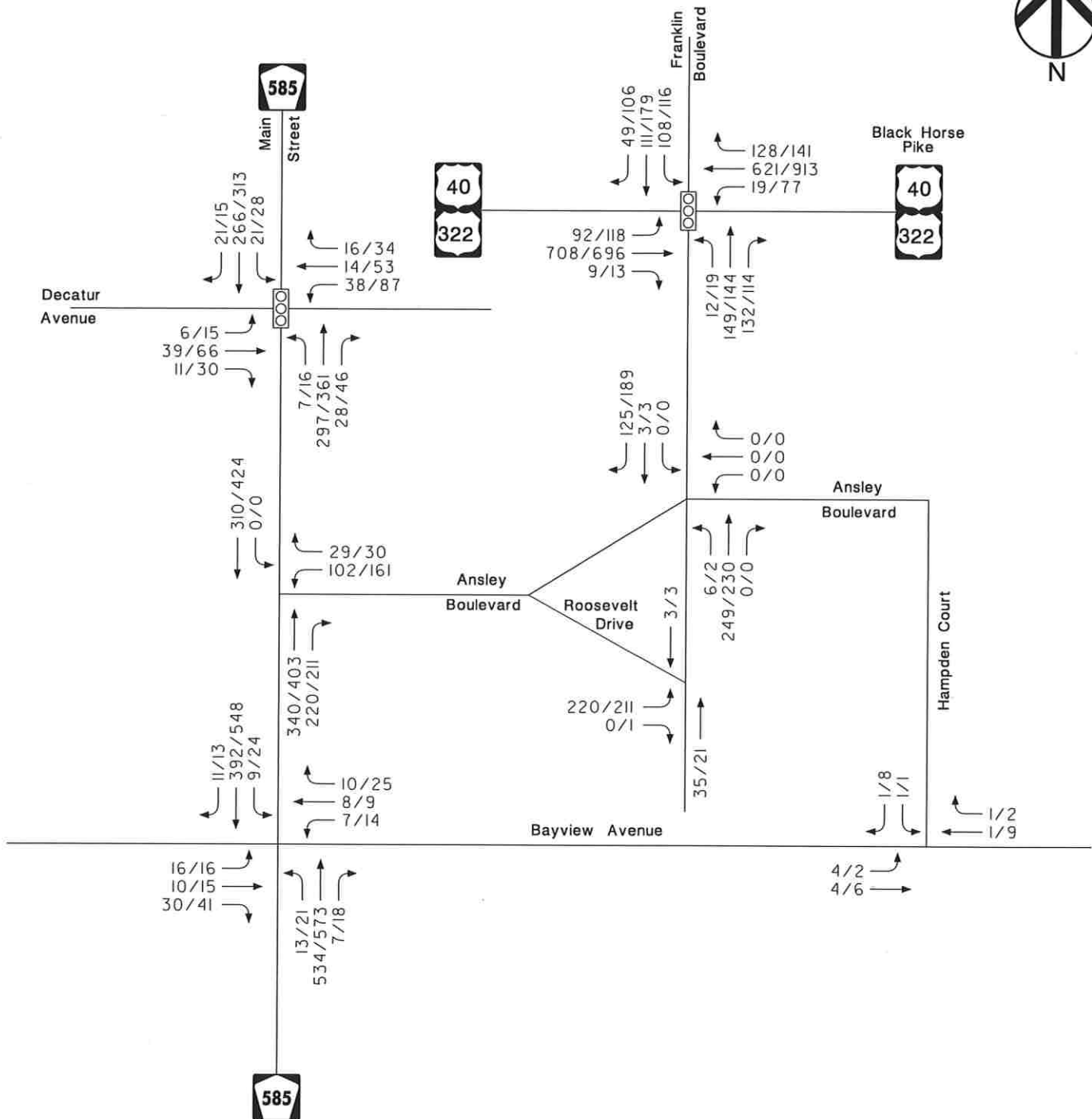
A handwritten signature in black ink, appearing to read 'Nathan B. Mosley'.

Nathan B. Mosley, P.E., C.M.E.  
Professional Engineer  
N.J. License No. 48698

NBM/jab  
Attachments

cc: Sean Scarborough  
Jay Sciuillo

(via email: [sean@scarboroughproperties.com](mailto:sean@scarboroughproperties.com))  
(4 copies via UPS and email: [jsciullo@sciulloengineering.com](mailto:jsciullo@sciulloengineering.com))

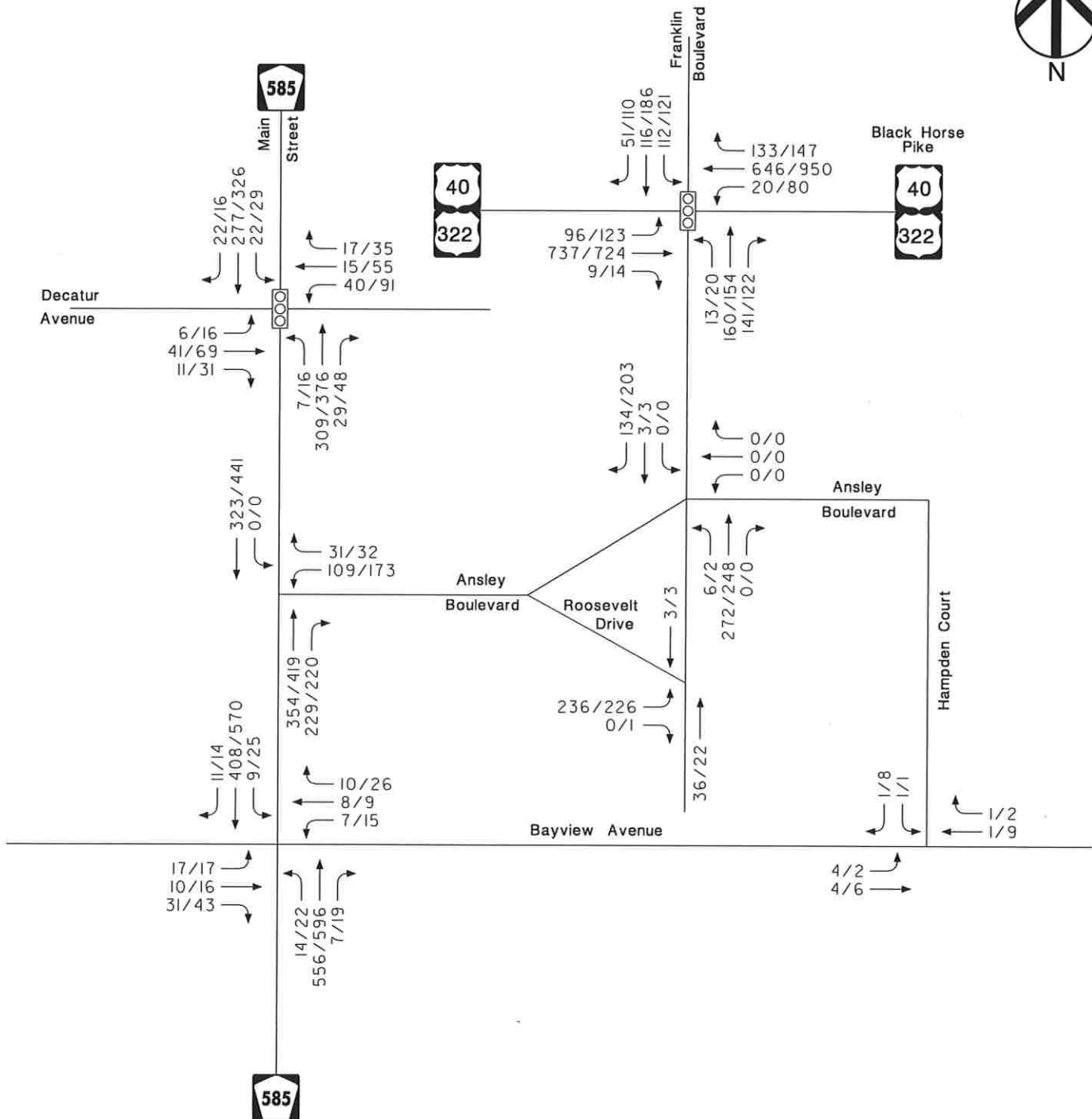


## Spyglass at Lakes Bay

City of Pleasantville, Atlantic County, New Jersey

May 2020


TRAFFIC SIGNAL  
AM/PM PEAK HOUR

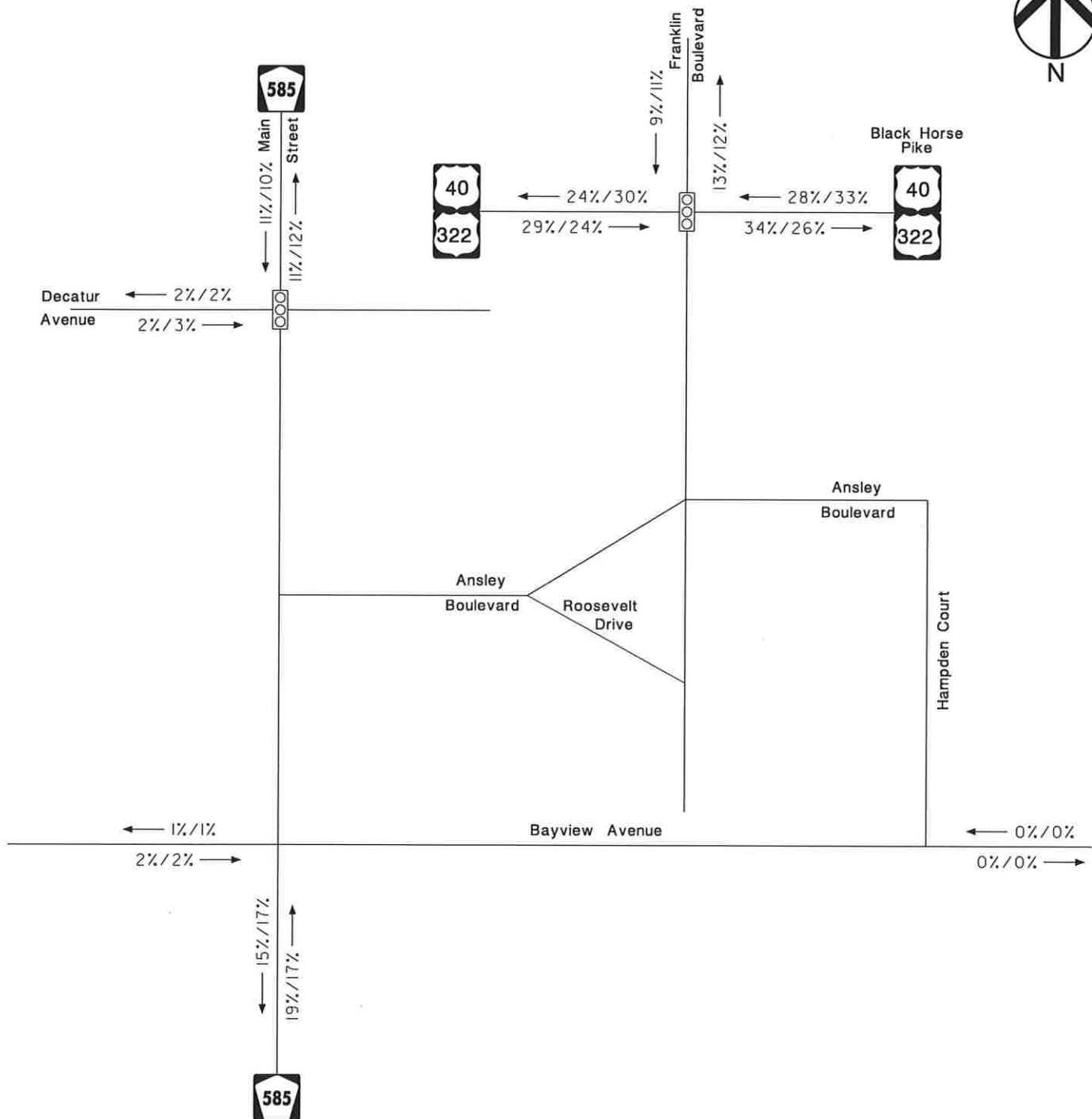


## Spyglass at Lakes Bay

City of Pleasantville, Atlantic County, New Jersey

May 2020


 TRAFFIC SIGNAL  
AM/PM PEAK HOUR

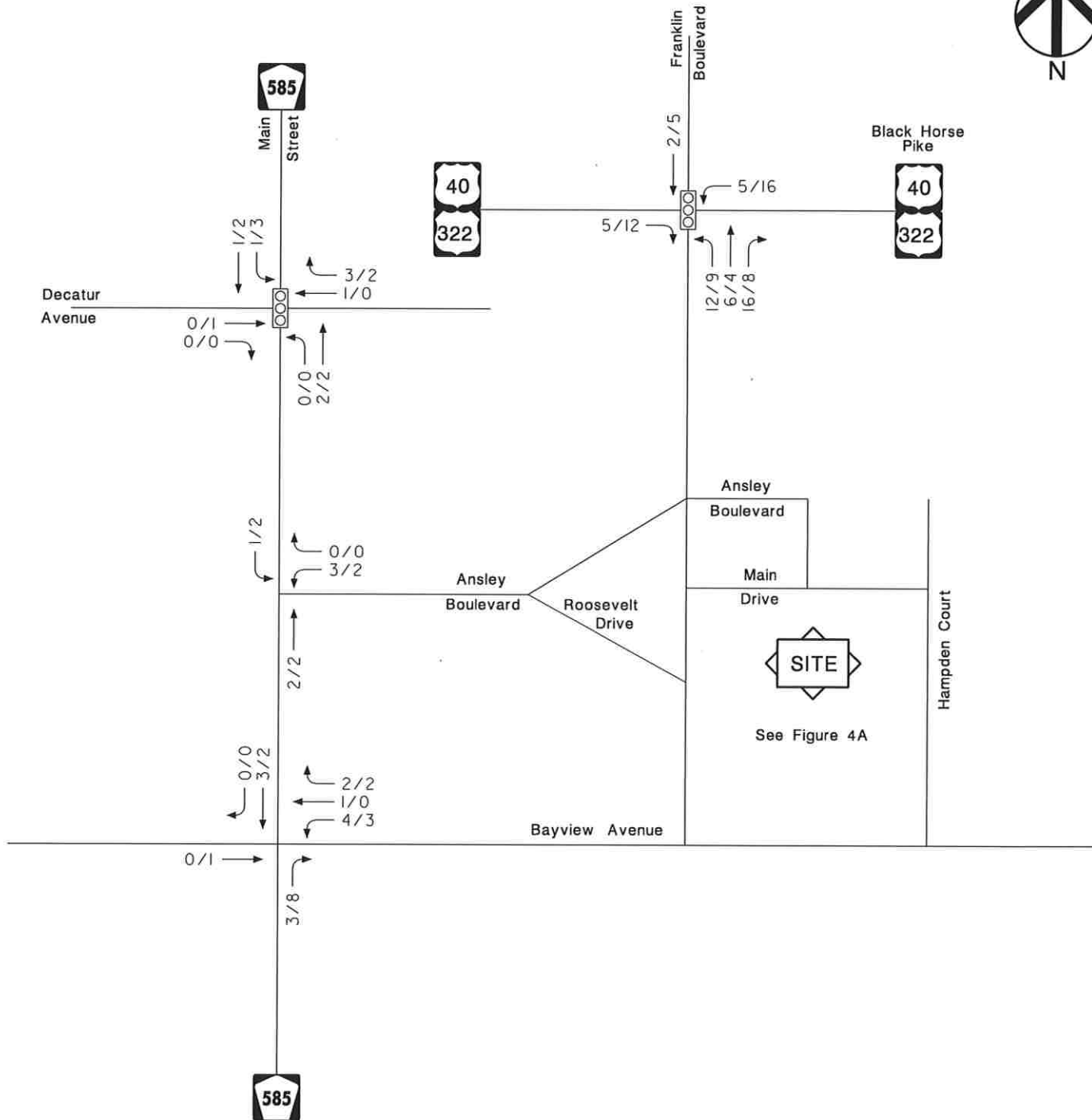


## Spyglass at Lakes Bay

City of Pleasantville, Atlantic County, New Jersey

May 2020


 TRAFFIC SIGNAL  
AM/PM PEAK HOUR

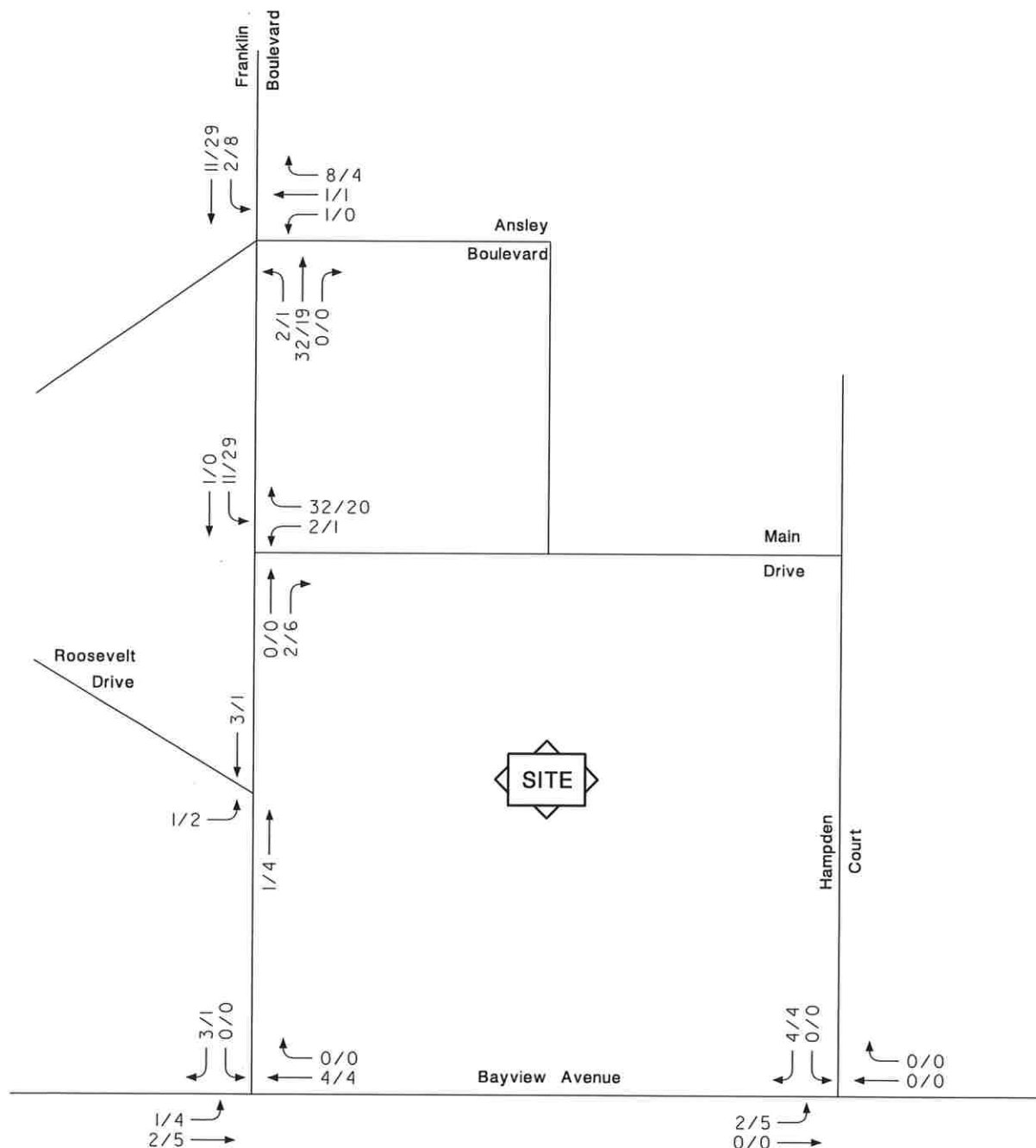


## Spyglass at Lakes Bay

City of Pleasantville, Atlantic County, New Jersey

May 2020

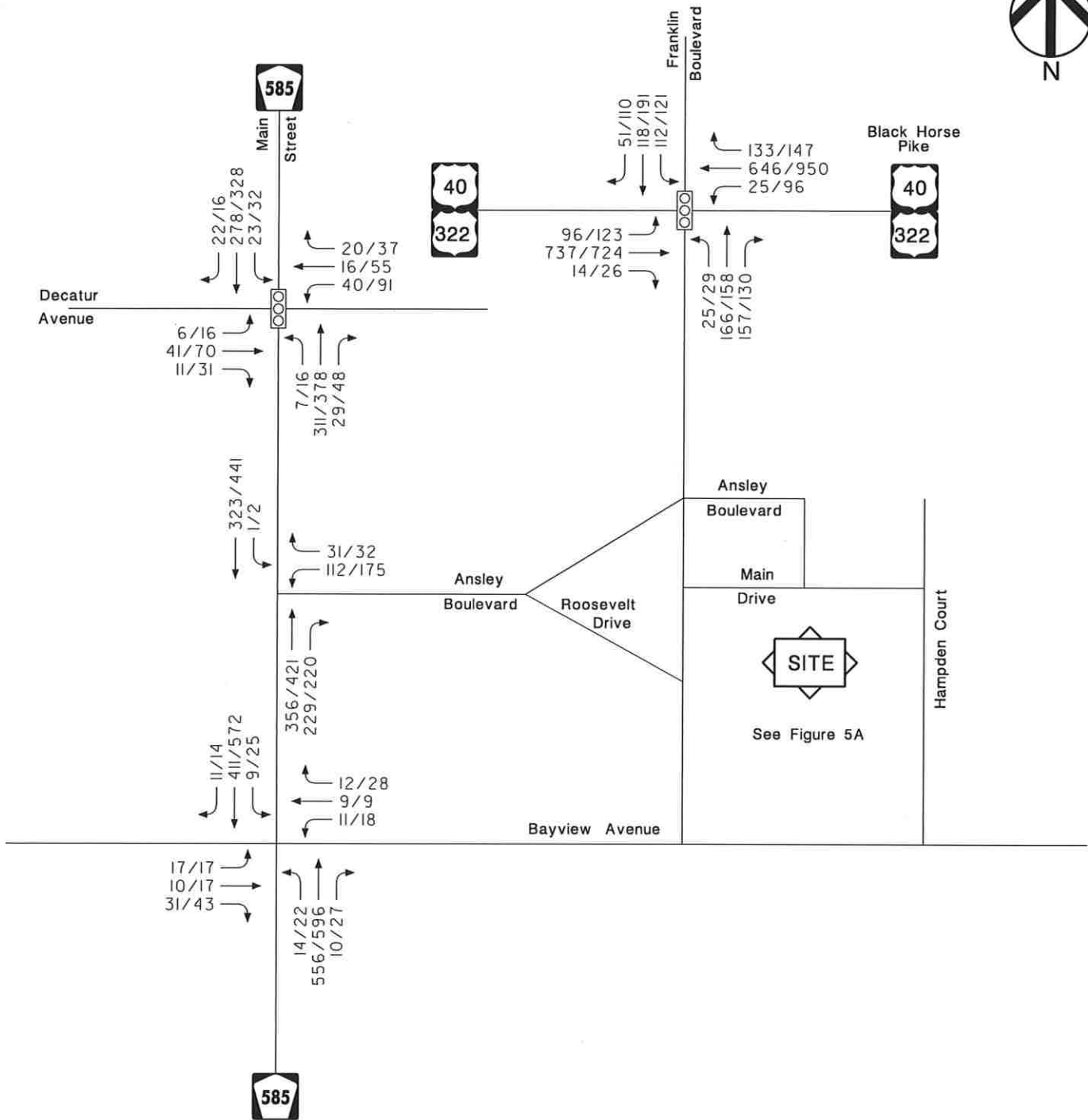
 TRAFFIC SIGNAL  
AM/PM PEAK HOUR



City of Pleasantville, Atlantic County, New Jersey  
May 2020

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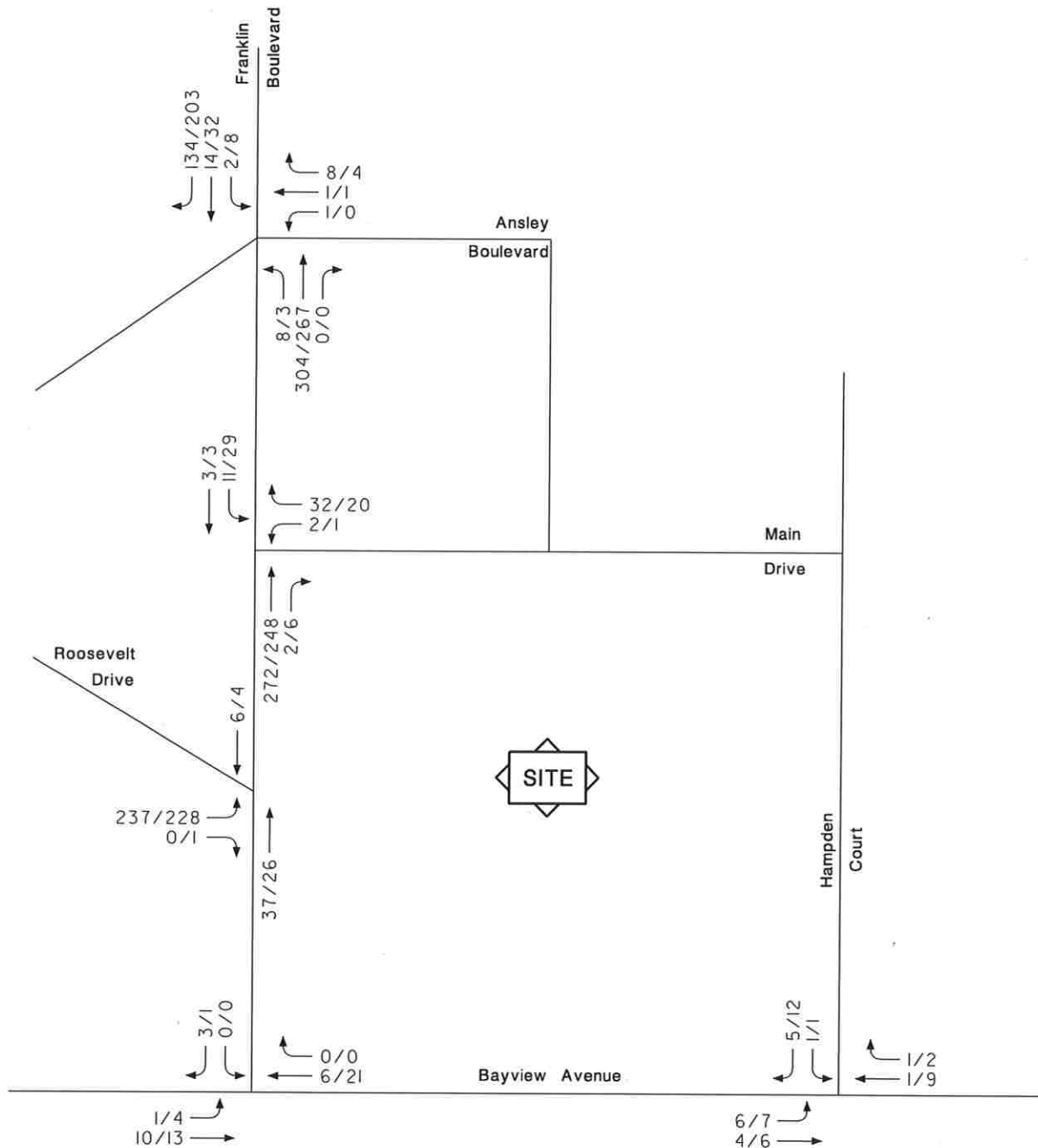
SA Project No. 20033



## Spyglass at Lakes Bay

City of Pleasantville, Atlantic County, New Jersey  
May 2020

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AM/PM PEAK HOUR

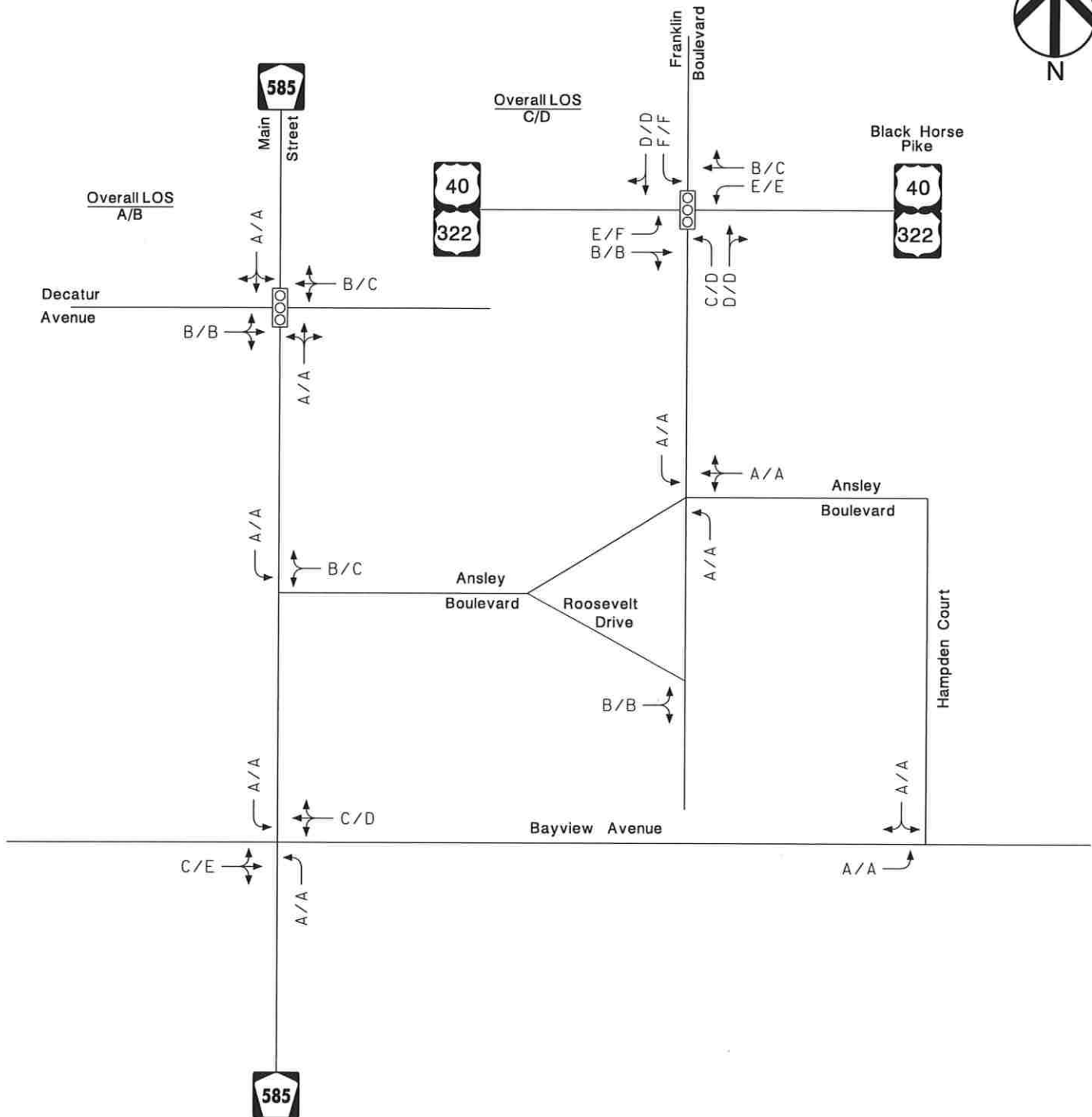


## Spyglass at Lakes Bay

City of Pleasantville, Atlantic County, New Jersey

May 2020


AM/PM PEAK HOUR

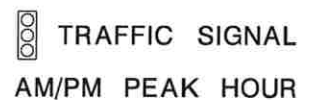


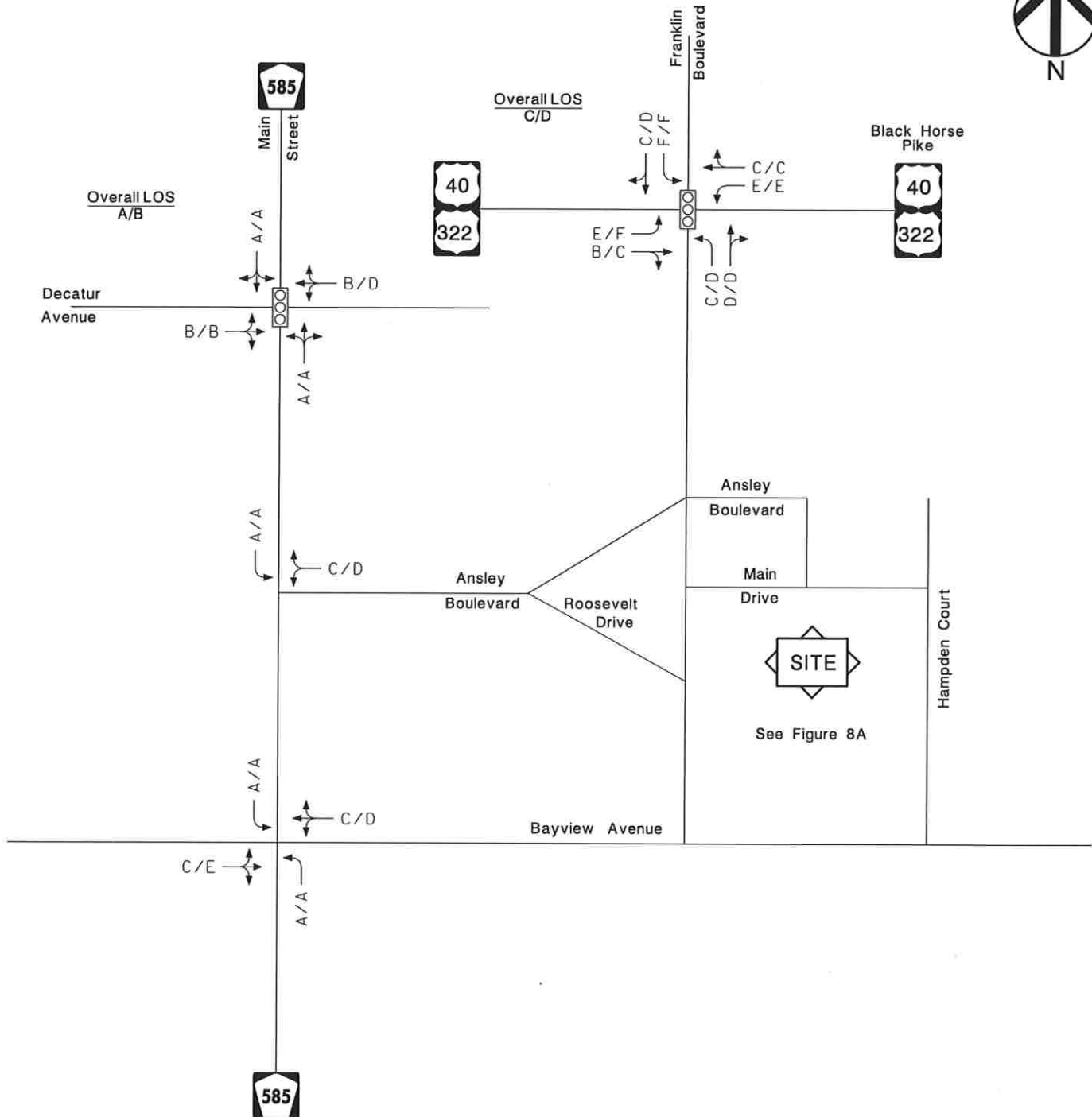
## Spyglass at Lakes Bay

City of Pleasantville, Atlantic County, New Jersey

May 2020

 TRAFFIC SIGNAL  
AM/PM PEAK HOUR



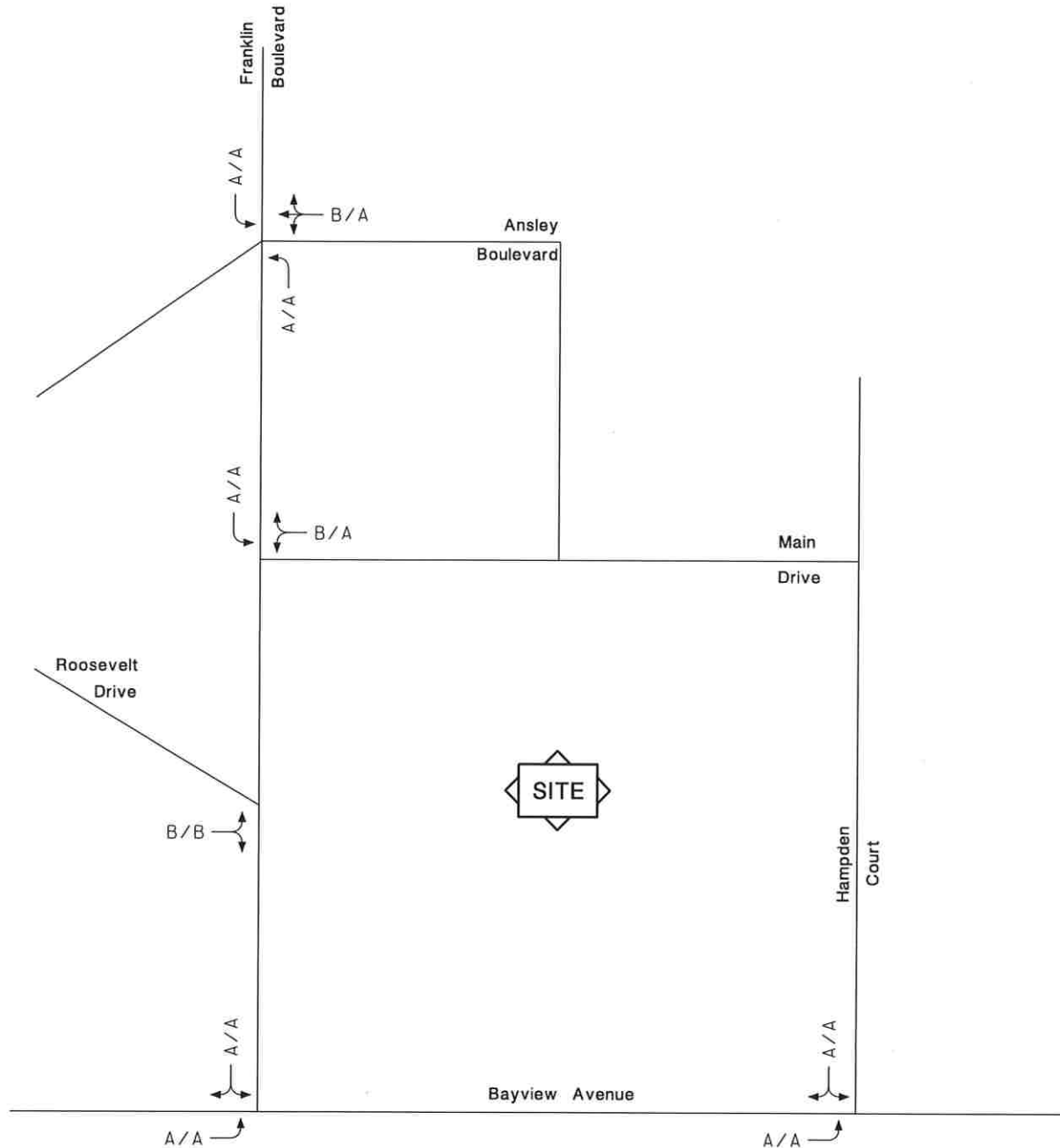


## Spyglass at Lakes Bay

City of Pleasantville, Atlantic County, New Jersey

May 2020

TRAFFIC SIGNAL  
AM/PM PEAK HOUR



## Spyglass at Lakes Bay

City of Pleasantville, Atlantic County, New Jersey  
May 2020

AM/PM PEAK HOUR

# Shropshire Associates LLC

277 Whitehorse Pike, Suite 203  
Atco, NJ 08004

N/S Route: S, Franklin Blvd  
E/W Route: Route 40  
Pleasantville Twp/Atlantic County/NJ  
Thursday/cloudy rain/GH/3142

File Name : 20033003  
Site Code : 20033003  
Start Date : 3/12/2020  
Page No : 1

## Groups Printed- Unshifted - Bank 1

Start Time	S. Franklin Blvd Southbound					Route 40 Westbound					S. Franklin Blvd Northbound					Route 40 Eastbound					Int. Total
	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	
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07:15 AM	3	16	23	13	55	26	89	2	3	120	4	11	3	19	37	2	129	14	0	145	357
07:30 AM	3	26	27	5	61	32	134	4	5	175	14	42	2	24	82	2	184	31	0	217	535
07:45 AM	10	21	31	6	68	36	144	4	3	187	14	40	4	18	76	2	203	28	0	233	564
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08:15 AM	8	31	24	7	70	28	191	6	4	229	19	43	3	14	79	4	158	15	0	177	555
08:30 AM	13	22	31	5	71	14	170	4	4	192	13	34	1	17	65	3	166	16	0	185	513
08:45 AM	11	37	35	19	102	13	143	8	4	168	8	35	3	23	69	1	136	17	1	155	494
Total	36	123	116	37	312	73	656	23	14	766	47	136	10	76	269	9	623	66	1	699	2046
*** BREAK ***																					
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02:30 PM	10	32	25	10	77	31	242	10	0	283	8	24	6	9	47	3	174	25	0	202	609
02:45 PM	6	28	34	13	81	30	219	8	0	257	10	30	5	11	56	10	157	27	0	194	588
Total	28	117	121	41	307	112	818	31	2	963	51	104	26	51	232	18	663	85	0	766	2268
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03:45 PM	8	35	29	10	82	29	209	15	5	258	15	34	7	12	68	3	180	20	0	203	611
Total	47	177	117	53	394	133	848	43	5	1029	63	141	18	56	278	9	632	107	0	748	2449
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04:15 PM	12	58	29	19	118	38	223	13	1	275	20	32	4	10	66	3	189	23	1	216	675
04:30 PM	14	34	22	18	88	31	221	11	0	263	18	32	2	8	60	1	185	23	0	209	620
04:45 PM	11	46	29	20	106	42	244	14	0	300	19	36	5	5	65	6	171	19	1	197	668
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05:15 PM	9	54	34	12	109	33	231	21	1	286	22	43	4	23	92	1	176	42	0	219	706
05:30 PM	7	31	25	12	75	29	199	13	4	245	17	26	7	16	66	2	189	22	0	213	599
05:45 PM	10	27	31	2	70	19	183	8	2	212	23	26	5	6	60	5	197	13	0	215	557
Total	39	157	121	35	352	114	830	73	8	1025	68	128	24	58	278	12	726	111	0	849	2504
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Apprch %	10.9	41	34.2	13.8		12.4	82.7	4.1	0.8		21.1	48.9	6.8	23.2		1.4	86.9	11.6	0.1		
Total %	1.6	6	5	2	14.5	5	33.3	1.7	0.3	40.3	2.4	5.6	0.8	2.6	11.4	0.5	29.4	3.9	0	33.8	
Unshifted	214	809	676	271	1970	679	4515									3983					13555
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Bank 1	2	1	0	1	4	1	4	0	0	5	0	0	0	0	0	0	3	2	0	5	14
% Bank 1	0.9	0.1	0	0.4	0.2	0.1	0.1	0	0	0.1	0	0	0	0	0	0	0.1	0.4	0	0.1	0.1

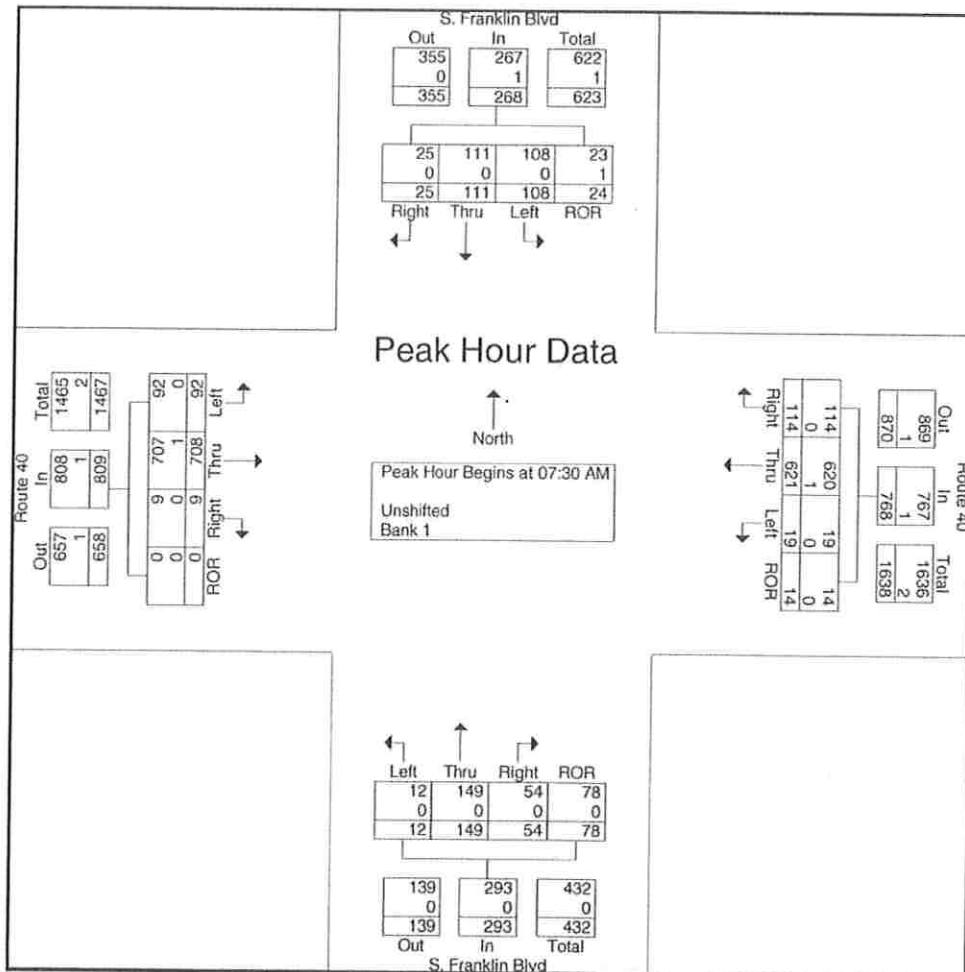
# Shropshire Associates LLC

277 Whitehorse Pike, Suite 203  
Atco, NJ 08004

N/S Route: S, Franklin Blvd  
E/W Route: Route 40  
Pleasantville Twp/Atlantic County/NJ  
Thursday/cloudy rain/GH/3142

File Name : 20033003  
Site Code : 20033003  
Start Date : 3/12/2020  
Page No : 2

	S. Franklin Blvd Southbound					Route 40 Westbound					S. Franklin Blvd Northbound					Route 40 Eastbound					
Start Time	Right	Thru	Left	ROR	App Total	Right	Thru	Left	ROR	App Total	Right	Thru	Left	ROR	App Total	Right	Thru	Left	ROR	App Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	3	26	27	5	61	32	134	4	5	175	14	42	2	24	82	2	184	31	0	217	535
07:45 AM	10	21	31	6	68	36	144	4	3	187	14	40	4	18	76	2	203	28	0	233	564
08:00 AM	4	33	26	6	69	18	152	5	2	177	7	24	3	22	56	1	163	18	0	182	484
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% App. Total	9.3	41.4	40.3	9		14.8	80.9	2.5	1.8		18.4	50.9	4.1	26.6		1.1	87.5	11.4	0		
PHF	.625	.841	.871	.857	.957	.792	.813	.792	.700	.838	.711	.866	.750	.813	.893	.563	.872	.742	.000	.868	.948
Unshifted	25	111	108	23	267	114	620	19	14	767	54	149	12	78	293	9	707	92	0	808	2135
% Unshifted				95.8	99.6	100	99.8	100	100	99.9	100	100	100	100	100	100	99.9	100	0	99.9	99.9
Bank 1	0	0	0	1	1	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	3
% Bank 1	0	0	0	4.2	0.4	0	0.2	0	0	0.1	0	0	0	0	0	0	0.1	0	0	0.1	0.1



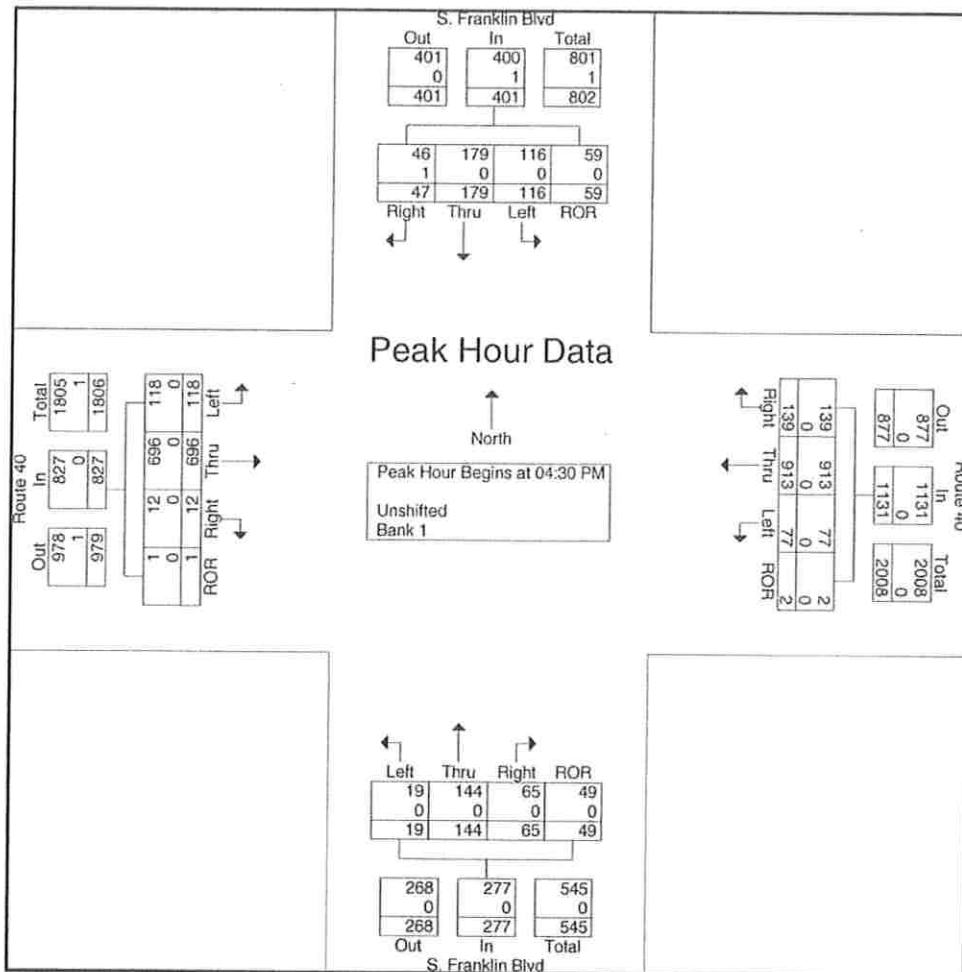
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277 Whitehorse Pike, Suite 203  
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N/S Route: S, Franklin Blvd  
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Pleasantville Twp/Atlantic County/NJ  
Thursday/cloudy rain/GH/3142

File Name : 20033003  
Site Code : 20033003  
Start Date : 3/12/2020  
Page No : 3

Start Time	S. Franklin Blvd Southbound					Route 40 Westbound					S. Franklin Blvd Northbound					Route 40 Eastbound					Inf. Total
	Right	Thru	Left	ROR	App Total	Right	Thru	Left	ROR	App Total	Right	Thru	Left	ROR	App Total	Right	Thru	Left	ROR	App Total	
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	14	34	22	18	88	31	221	11	0	263	18	32	2	8	60	1	185	23	0	209	620
04:45 PM	11	46	29	20	106	42	244	14	0	300	19	36	5	5	65	6	171	19	1	197	668
05:00 PM	13	45	31	9	98	33	217	31	1	282	6	33	8	13	60	4	164	34	0	202	642
05:15 PM	9	54	34	12	109	33	231	21	1	286	22	43	4	23	92	1	176	42	0	219	706
Total Volume	47	179	116	59	401	139	913	77	2	1131	65	144	19	49	277	12	696	118	1	827	2636
% App. Total	11.7	44.6	28.9	14.7		12.3	80.7	6.8	0.2		23.5	52	6.9	17.7		1.5	84.2	14.3	0.1		
PHF	.839	.829	.853	.738	.920	.827	.935	.621	.500	.943	.739	.837	.594	.533	.753	.500	.941	.702	.250	.944	.933
Unshifted	46	179	116	59	400	139	913	77	2	1131	65	144	19	49	277	12	696	118	1	827	2635
% Unshifted	97.9	100	100	100	99.8	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100.0
Bank 1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Bank 1	2.1	0	0	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0



277 Whitehorse Pike, Suite 203  
Atco, NJ 08004

File Name : 20033001  
Site Code : 20033001  
Start Date : 3/10/2020  
Page No : 1

	Main Street Southbound					Decatur Avenue Westbound					Main Street Northbound					Decatur Avenue Eastbound					
Start Time	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Int. Total
07:00 AM	2	41	2	0	45	0	4	3	2	9	3	35	2	1	41	4	0	0	1	5	100
07:15 AM	1	64	2	0	67	3	1	4	0	8	1	61	1	3	66	0	1	0	0	1	142
07:30 AM	6	62	2	1	71	0	5	8	1	14	4	78	1	0	83	4	5	2	0	11	179
07:45 AM	3	63	1	1	68	2	2	7	3	14	2	71	4	0	77	2	6	4	0	12	171
Total	12	230	7	2	251	5	12	22	6	45	10	245	8	4	267	10	12	6	1	29	592
08:00 AM	6	59	7	0	72	2	3	7	0	12	6	78	0	1	85	5	6	2	1	14	183
08:15 AM	4	70	4	0	78	3	3	10	3	19	4	73	1	3	81	0	8	3	2	13	191
08:30 AM	8	61	1	1	71	4	4	10	2	20	5	77	2	1	85	1	13	0	1	15	191
08:45 AM	1	76	9	1	87	1	4	11	1	17	6	69	4	2	81	0	12	1	1	14	199
Total	19	266	21	2	308	10	14	38	6	68	21	297	7	7	332	6	39	6	5	56	764
*** BREAK ***																					
02:00 PM	4	71	7	1	83	8	5	12	3	28	11	82	3	1	97	5	26	3	3	37	245
02:15 PM	9	70	4	0	83	4	14	13	2	33	7	81	4	0	92	3	14	5	4	26	234
02:30 PM	6	99	7	0	112	10	4	13	1	28	3	77	3	1	84	8	16	8	2	34	258
02:45 PM	4	65	9	0	78	7	14	16	0	37	10	82	1	0	93	6	13	8	0	27	235
Total	23	305	27	1	356	29	37	54	6	126	31	322	11	2	366	22	69	24	9	124	972
03:00 PM	7	78	5	0	90	8	9	24	1	42	3	83	0	0	86	6	19	6	4	35	253
03:15 PM	1	73	6	1	81	6	17	16	2	41	9	73	3	0	85	10	18	8	2	38	245
03:30 PM	6	70	9	0	85	5	13	28	1	47	5	80	4	0	89	7	17	5	1	30	251
03:45 PM	5	58	7	0	70	13	12	29	0	54	14	72	6	0	92	7	17	4	2	30	246
Total	19	279	27	1	326	32	51	97	4	184	31	308	13	0	352	30	71	23	9	133	995
04:00 PM	3	59	8	1	71	6	12	29	1	48	11	102	6	0	119	7	16	6	0	29	267
04:15 PM	3	77	10	0	90	5	12	32	2	51	5	94	3	0	102	12	16	6	2	36	279
04:30 PM	2	87	4	0	93	7	14	22	1	44	13	85	3	1	102	2	20	4	0	26	265
04:45 PM	4	68	7	0	79	11	6	13	0	30	15	90	6	0	111	5	15	2	0	22	242
Total	12	291	29	1	333	29	44	96	4	173	44	371	18	1	434	26	67	18	2	113	1053
05:00 PM	6	81	7	0	94	7	21	20	1	49	11	92	4	1	108	5	15	3	4	27	278
05:15 PM	4	83	12	0	99	7	14	17	0	38	6	96	5	0	107	6	11	6	4	27	271
05:30 PM	6	97	10	0	113	7	8	25	1	41	7	77	1	1	86	8	17	4	0	29	269
05:45 PM	3	67	11	0	81	5	9	11	2	27	5	79	2	0	86	8	12	8	3	31	225
Total	19	328	40	0	387	26	52	73	4	155	29	344	12	2	387	27	55	21	11	114	1043
Grand Total	104	1699	151	7	1961	131	210	380	30	751	166	1887	69	16	2138	121	313	98	37	569	5419
Apprch %	5.3	86.6	7.7	0.4		17.4	28	50.6	4		7.8	88.3	3.2	0.7		21.3	55	17.2	6.5		
Total %	1.9	31.4	2.8	0.1	36.2	2.4	3.9	7	0.6	13.9	3.1	34.8	1.3	0.3	39.5	2.2	5.8	1.8	0.7	10.5	
Unshifted % Unshifted	104	1699				100	100	99.7	100	99.9	100	100	100	100	100	100	100	100	100	100	100
Bank 1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
% Bank 1	0	0	0	0	0	0	0	0.3	0	0.1	0	0	0	0	0	0	0	0	0	0	0

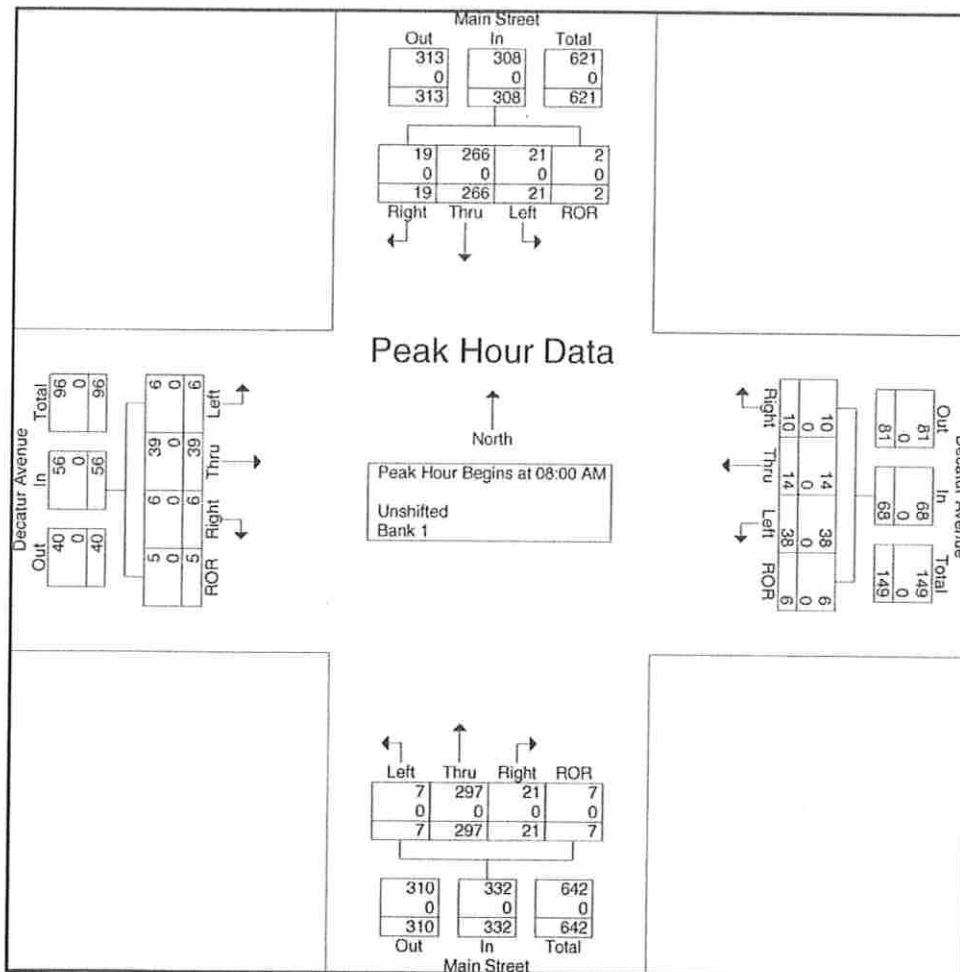
# Shropshire Associates LLC

277 Whitehorse Pike, Suite 203  
Atco, NJ 08004

N/S Route: Main Street  
E/W Route: Decatur Avenue  
Pleasantville Twp/Atlantic County/NJ  
Tuesday/cloudy rain/GH/3142

File Name : 20033001  
Site Code : 20033001  
Start Date : 3/10/2020  
Page No : 2

	Main Street Southbound					Decatur Avenue Westbound					Main Street Northbound					Decatur Avenue Eastbound					
Start Time	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	6	59	7	0	72	2	3	7	0	12	6	78	0	1	85	5	6	2	1	14	183
08:15 AM	4	70	4	0	78	3	3	10	3	19	4	73	1	3	81	0	8	3	2	13	191
08:30 AM	8	61	1	1	71	4	4	10	2	20	5	77	2	1	85	1	13	0	1	15	191
08:45 AM	1	76	9	1	87	1	4	11	1	17	6	69	4	2	81	0	12	1	1	14	199
Total Volume	19	266	21	2	308	10	14	38	6	68	21	297	7	7	332	6	39	6	5	56	764
% App. Total	6.2	86.4	6.8	0.6		14.7	20.6	55.9	8.8		6.3	89.5	2.1	2.1		10.7	69.6	10.7	8.9		
PHF	.594	.875	.583	.500	.885	.625	.875	.864	.500	.850	.875	.952	.438	.583	.976	.300	.750	.500	.625	.933	.960
Unshifted	19	266	21	2	308	10	14	38	6	68	21	297	7	7	332	6	39	6	5	56	764
% Unshifted																					
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



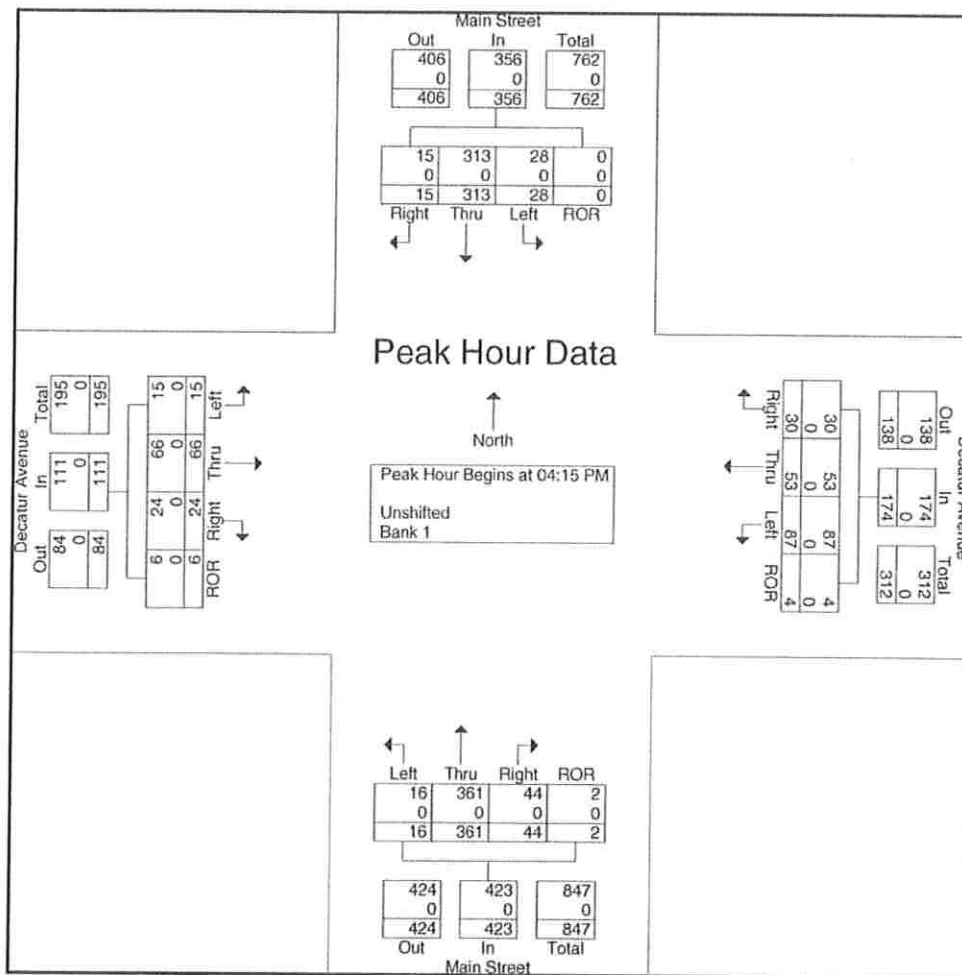
# Shropshire Associates LLC

277 Whitehorse Pike, Suite 203  
Atco, NJ 08004

N/S Route: Main Street  
E/W Route: Decatur Avenue  
Pleasantville Twp/Atlantic County/NJ  
Tuesday/cloudy rain/GH/3142

File Name : 20033001  
Site Code : 20033001  
Start Date : 3/10/2020  
Page No : 3

	Main Street Southbound					Decatur Avenue Westbound					Main Street Northbound					Decatur Avenue Eastbound					
Start Time	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	3	77	10	0	90	5	12	32	2	51	5	94	3	0	102	12	16	6	2	36	279
04:30 PM	2	87	4	0	93	7	14	22	1	44	13	85	3	1	102	2	20	4	0	26	265
04:45 PM	4	68	7	0	79	11	6	13	0	30	15	90	6	0	111	5	15	2	0	22	242
05:00 PM	6	81	7	0	94	7	21	20	1	49	11	92	4	1	108	5	15	3	4	27	278
Total Volume	15	313	28	0	356	30	53	87	4	174	44	361	16	2	423	24	66	15	6	111	1064
% App. Total	4.2	87.9	7.9	0		17.2	30.5	50	2.3		10.4	85.3	3.8	0.5		21.6	59.5	13.5	5.4		
PHF	.625	.899	.700	.000	.947	.682	.631	.680	.500	.853	.733	.960	.667	.500	.953	.500	.825	.625	.375	.771	.953
Unshifted	15	313	28	0	356	30	53	87	4	174	44	361	16	2	423	24	66	15	6	111	1064
% Unshifted																					
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



277 Whitehorse Pike, Suite 203  
Atco, NJ 08004

File Name : 2033002  
Site Code : 20033002  
Start Date : 3/10/2020  
Page No : 1

	Main Street Southbound				Bayview Avenue Westbound				Main Street Northbound				Bayview Avenue Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
07:00 AM	1	58	0	59	0	1	0	1	1	67	2	70	4	3	1	8	138
07:15 AM	4	77	1	82	3	2	2	7	0	92	2	94	5	1	5	11	194
07:30 AM	4	90	2	96	4	2	1	7	3	144	2	149	4	1	2	7	259
07:45 AM	6	97	5	108	5	0	1	6	1	132	4	137	10	0	4	14	265
Total	15	322	8	345	12	5	4	21	5	435	10	450	23	5	12	40	856
08:00 AM	4	92	1	97	2	3	1	6	1	133	2	136	5	6	3	14	253
08:15 AM	1	102	1	104	2	2	2	6	4	134	4	142	8	1	4	13	265
08:30 AM	0	101	2	103	1	3	3	7	1	135	3	139	7	3	5	15	264
08:45 AM	2	95	4	101	4	1	0	5	1	117	6	124	13	3	4	20	250
Total	7	390	8	405	9	9	6	24	7	519	15	541	33	13	16	62	1032
*** BREAK ***																	
02:00 PM	1	114	4	119	2	0	2	4	2	111	4	117	10	2	3	15	255
02:15 PM	1	112	3	116	6	3	3	12	3	119	4	126	5	2	5	12	266
02:30 PM	3	131	3	137	4	3	2	9	3	105	3	111	9	5	1	15	272
02:45 PM	4	136	3	143	3	0	5	8	1	128	2	131	8	2	7	17	299
Total	9	493	13	515	15	6	12	33	9	463	13	485	32	11	16	59	1092
03:00 PM	3	120	7	130	4	2	0	6	4	131	6	141	10	3	2	15	292
03:15 PM	1	146	6	153	2	5	4	11	4	122	3	129	5	6	1	12	305
03:30 PM	2	136	2	140	4	4	7	15	9	93	2	104	10	2	3	15	274
03:45 PM	6	141	2	149	2	4	4	10	6	130	2	138	8	4	3	15	312
Total	12	543	17	572	12	15	15	42	23	476	13	512	33	15	9	57	1183
04:00 PM	5	97	0	102	4	5	0	9	5	147	0	152	3	0	8	11	274
04:15 PM	0	135	3	138	1	1	2	4	0	158	0	158	7	3	1	11	311
04:30 PM	7	157	6	170	10	4	3	17	9	131	4	144	9	3	9	21	352
04:45 PM	2	125	6	133	8	3	4	15	1	153	6	160	10	4	3	17	325
Total	14	514	15	543	23	13	9	45	15	589	10	614	29	10	21	60	1262
05:00 PM	4	108	3	115	5	2	3	10	3	151	5	159	15	6	2	23	307
05:15 PM	0	158	9	167	2	0	4	6	5	138	6	149	7	2	2	11	333
05:30 PM	2	163	6	171	5	4	12	21	4	103	2	109	3	4	2	9	310
05:45 PM	3	128	8	139	9	6	0	15	0	144	3	147	2	0	3	5	306
Total	9	557	26	592	21	12	19	52	12	536	16	564	27	12	9	48	1256
Grand Total	66	2819	87	2972	92	60	65	217	71	3018	77	3166	177	66	83	326	6681
Apprch %	2.2	94.9	2.9		42.4	27.6	30		2.2	95.3	2.4		54.3	20.2	25.5		
Total %	1	42.2	1.3	44.5	1.4	0.9	1	3.2	1.1	45.2	1.2	47.4	2.6	1	1.2	4.9	
Unshifted	66	2818	87	2971	92	60	65	217	71	3018	77	3166	177	66	83	326	6680
% Unshifted	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Bank 1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

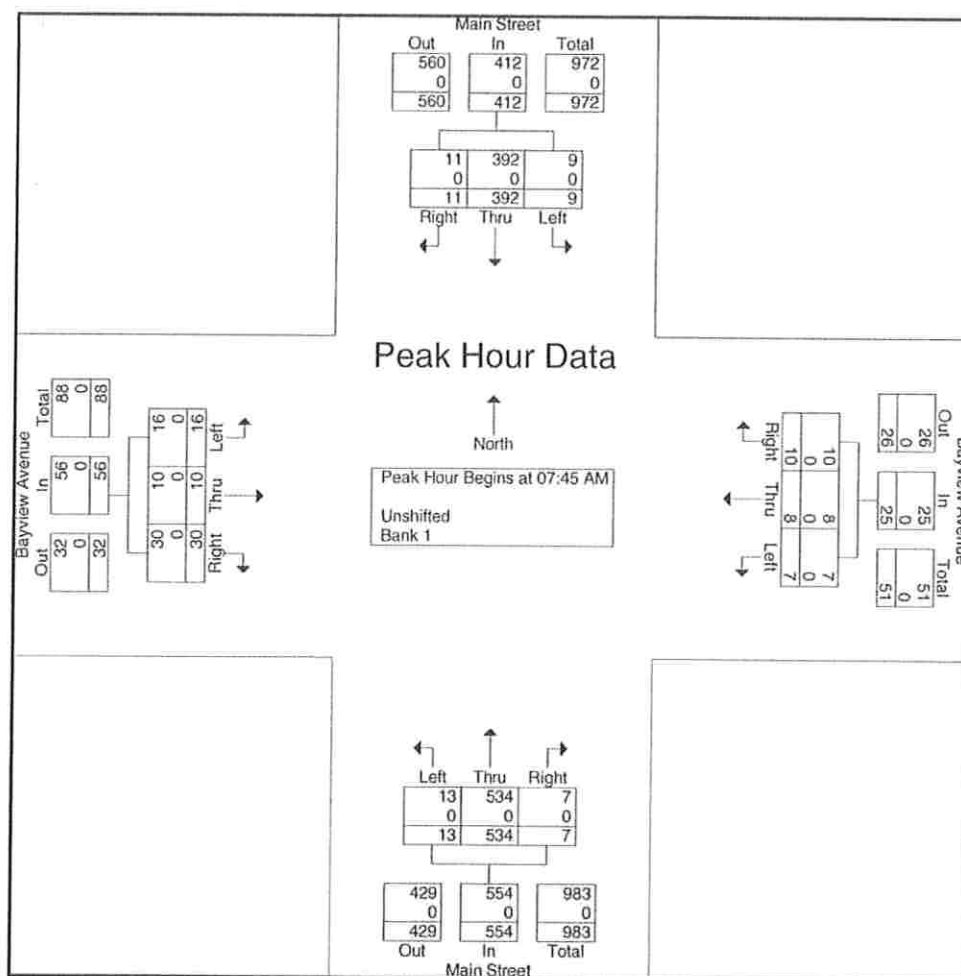
# Shropshire Associates LLC

277 Whitehorse Pike, Suite 203  
Atco, NJ 08004

N/S Route: Main Street  
E/W Route: Bayview Avenue  
Pleasantville Twp/Atlantic County/NJ  
Tuesday/cloudy rainr/ECM/5142

File Name : 2033002  
Site Code : 20033002  
Start Date : 3/10/2020  
Page No : 2

	Main Street Southbound				Bayview Avenue Westbound				Main Street Northbound				Bayview Avenue Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	6	97	5	108	5	0	1	6	1	132	4	137	10	0	4	14	265
08:00 AM	4	92	1	97	2	3	1	6	1	133	2	136	5	6	3	14	253
08:15 AM	1	102	1	104	2	2	2	6	4	134	4	142	8	1	4	13	265
08:30 AM	0	101	2	103	1	3	3	7	1	135	3	139	7	3	5	15	264
Total Volume	11	392	9	412	10	8	7	25	7	534	13	554	30	10	16	56	1047
% App. Total	2.7	95.1	2.2		40	32	28		1.3	96.4	2.3		53.6	17.9	28.6		
PHF	.458	.961	.450	.954	.500	.667	.583	.893	.438	.989	.813	.975	.750	.417	.800	.933	.988
Unshifted	11	392	9	412	10	8	7	25	7	534	13	554	30	10	16	56	1047
% Unshifted	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



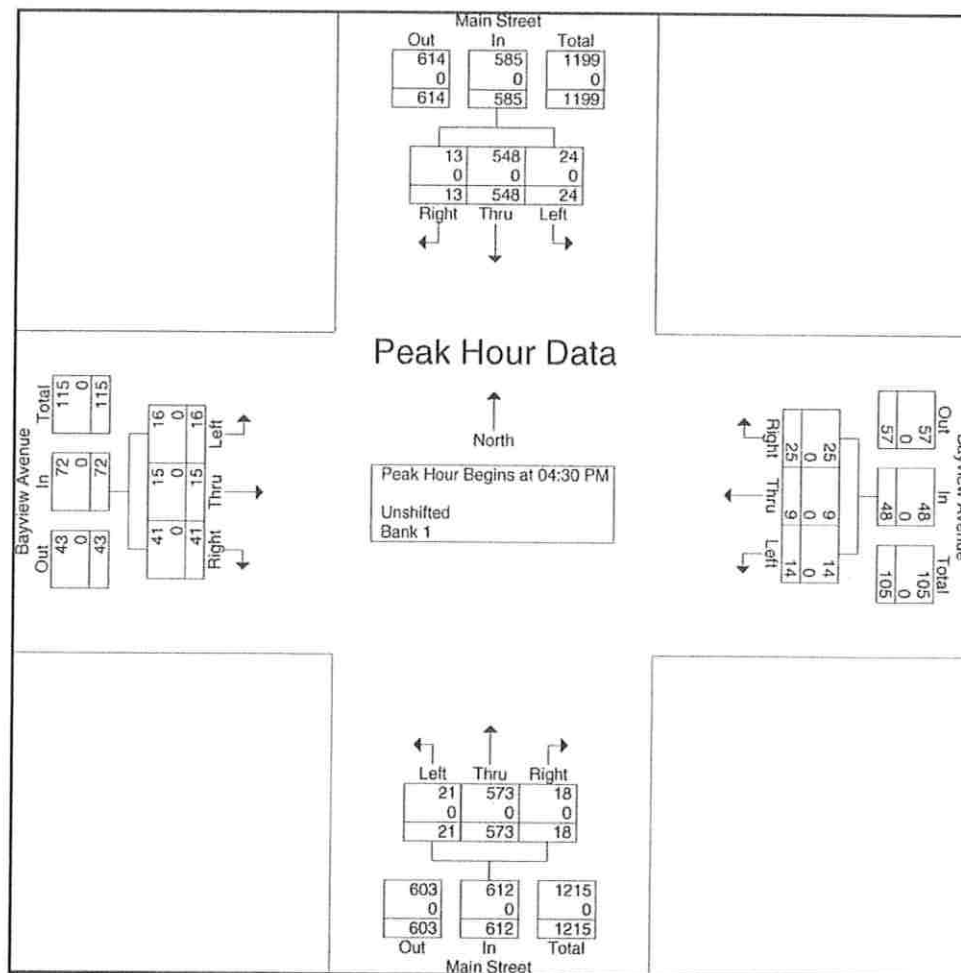
# Shropshire Associates LLC

277 Whitehorse Pike, Suite 203  
Atco, NJ 08004

N/S Route: Main Street  
E/W Route: Bayview Avenue  
Pleasantville Twp/Atlantic County/NJ  
Tuesday/cloudy rain/ECM/5142

File Name : 2033002  
Site Code : 20033002  
Start Date : 3/10/2020  
Page No : 3

	Main Street Southbound				Bayview Avenue Westbound				Main Street Northbound				Bayview Avenue Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	7	157	6	170	10	4	3	17	9	131	4	144	9	3	9	21	352
04:45 PM	2	125	6	133	8	3	4	15	1	153	6	160	10	4	3	17	325
05:00 PM	4	108	3	115	5	2	3	10	3	151	5	159	15	6	2	23	307
05:15 PM	0	158	9	167	2	0	4	6	5	138	6	149	7	2	2	11	333
Total Volume	13	548	24	585	25	9	14	48	18	573	21	612	41	15	16	72	1317
% App. Total	2.2	93.7	4.1		52.1	18.8	29.2		2.9	93.6	3.4		56.9	20.8	22.2		
PHF	.464	.867	.667	.860	.625	.563	.875	.706	.500	.936	.875	.956	.683	.625	.444	.783	.935
Unshifted	13	548	24	585	25	9	14	48	18	573	21	612	41	15	16	72	1317
% Unshifted	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



# Shropshire Associates LLC

277 Whitehorse Pike, Suite 203  
Atco, NJ 08004

N/S Route: Franklin Blvd  
E/W Route: Roosevelt Drive/Ansley Blvd  
Pleasantville Twp/Atlantic County/NJ  
Thursday/cloudy rain/ECM/5142

File Name : 20033004  
Site Code : 20033004  
Start Date : 3/12/2020  
Page No : 1

## Groups Printed- Unshifted

Start Time	Franklin Blvd Southbound			Franklin Blvd Northbound			Roosevelt Drive Eastbound			Int. Total
	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	
07:00 AM	15	0	15	4	0	4	0	17	17	36
07:15 AM	15	0	15	5	0	5	0	33	33	53
07:30 AM	27	0	27	9	0	9	0	62	62	98
07:45 AM	33	0	33	15	1	16	0	64	64	113
Total	90	0	90	33	1	34	0	176	176	300
08:00 AM	32	0	32	2	0	2	0	43	43	77
08:15 AM	32	2	34	9	2	11	0	52	52	97
08:30 AM	28	1	29	9	3	12	0	61	61	102
08:45 AM	22	0	22	5	1	6	0	54	54	82
Total	114	3	117	25	6	31	0	210	210	358
*** BREAK ***										
02:00 PM	15	0	15	4	2	6	1	34	35	56
02:15 PM	39	0	39	5	0	5	0	38	38	82
02:30 PM	43	1	44	5	1	6	0	27	27	77
02:45 PM	38	0	38	4	1	5	1	43	44	87
Total	135	1	136	18	4	22	2	142	144	302
03:00 PM	43	1	44	5	1	6	0	42	42	92
03:15 PM	46	1	47	4	0	4	0	61	61	112
03:30 PM	62	1	63	8	0	8	0	65	65	136
03:45 PM	30	1	31	1	0	1	1	49	50	82
Total	181	4	185	18	1	19	1	217	218	422
04:00 PM	33	0	33	4	0	4	0	49	49	86
04:15 PM	46	1	47	5	2	7	0	39	39	93
04:30 PM	38	1	39	1	1	2	0	69	69	110
04:45 PM	50	0	50	5	0	5	0	35	35	90
Total	167	2	169	15	3	18	0	192	192	379
05:00 PM	51	1	52	3	1	4	0	47	47	103
05:15 PM	46	0	46	7	3	10	0	68	68	124
05:30 PM	49	0	49	6	2	8	0	52	52	109
05:45 PM	35	0	35	5	0	5	0	47	47	87
Total	181	1	182	21	6	27	0	214	214	423
Grand Total	868	11	879	130	21	151	3	1151	1154	2184
Apprch %	98.7	1.3		86.1	13.9		0.3	99.7		
Total %	39.7	0.5	40.2	6	1	6.9	0.1	52.7	52.8	

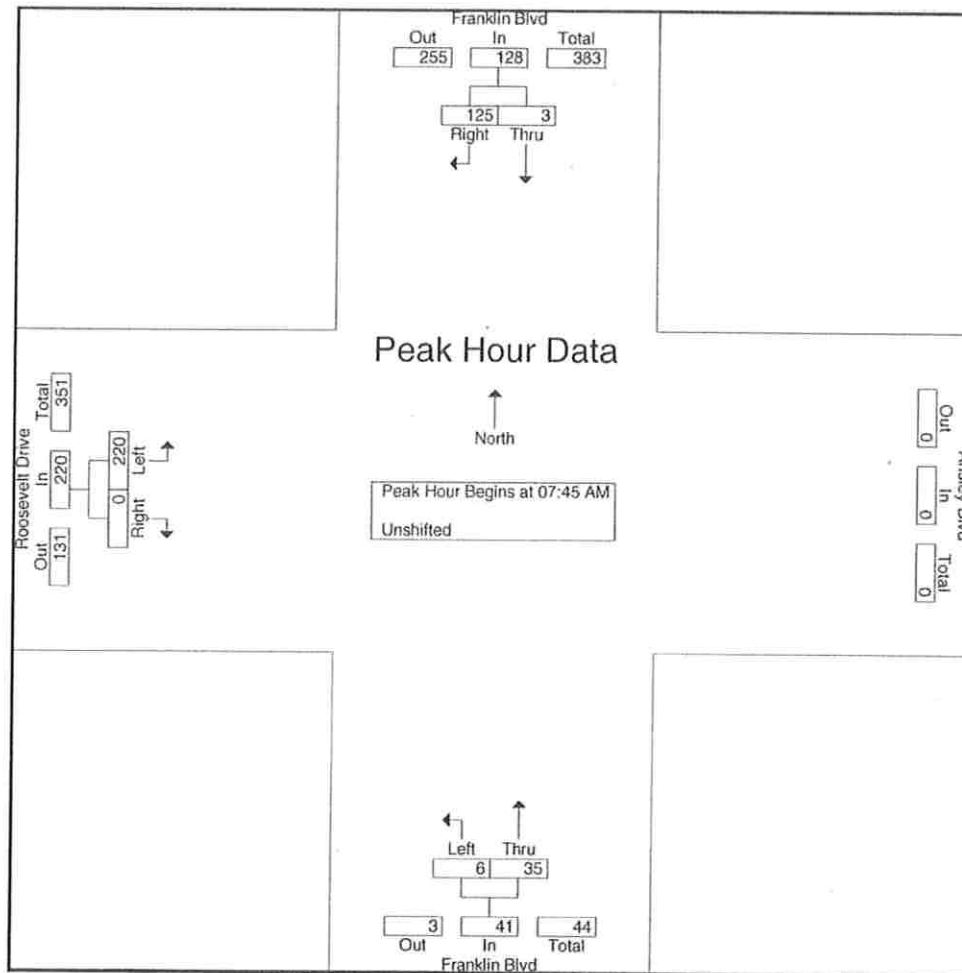
# Shropshire Associates LLC

277 Whitehorse Pike, Suite 203  
Atco, NJ 08004

N/S Route: Franklin Blvd  
E/W Route: Roosevelt Drive/Ansley Blvd  
Pleasantville Twp/Atlantic County/NJ  
Thursday/cloudy rain/ECM/5142

File Name : 20033004  
Site Code : 20033004  
Start Date : 3/12/2020  
Page No : 2

	Franklin Blvd Southbound			Franklin Blvd Northbound			Roosevelt Drive Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	33	0	33	15	1	16	0	64	64	113
08:00 AM	32	0	32	2	0	2	0	43	43	77
08:15 AM	32	2	34	9	2	11	0	52	52	97
08:30 AM	28	1	29	9	3	12	0	61	61	102
Total Volume	125	3	128	35	6	41	0	220	220	389
% App. Total	97.7	2.3		85.4	14.6		0	100		
PHF	.947	.375	.941	.583	.500	.641	.000	.859	.859	.861



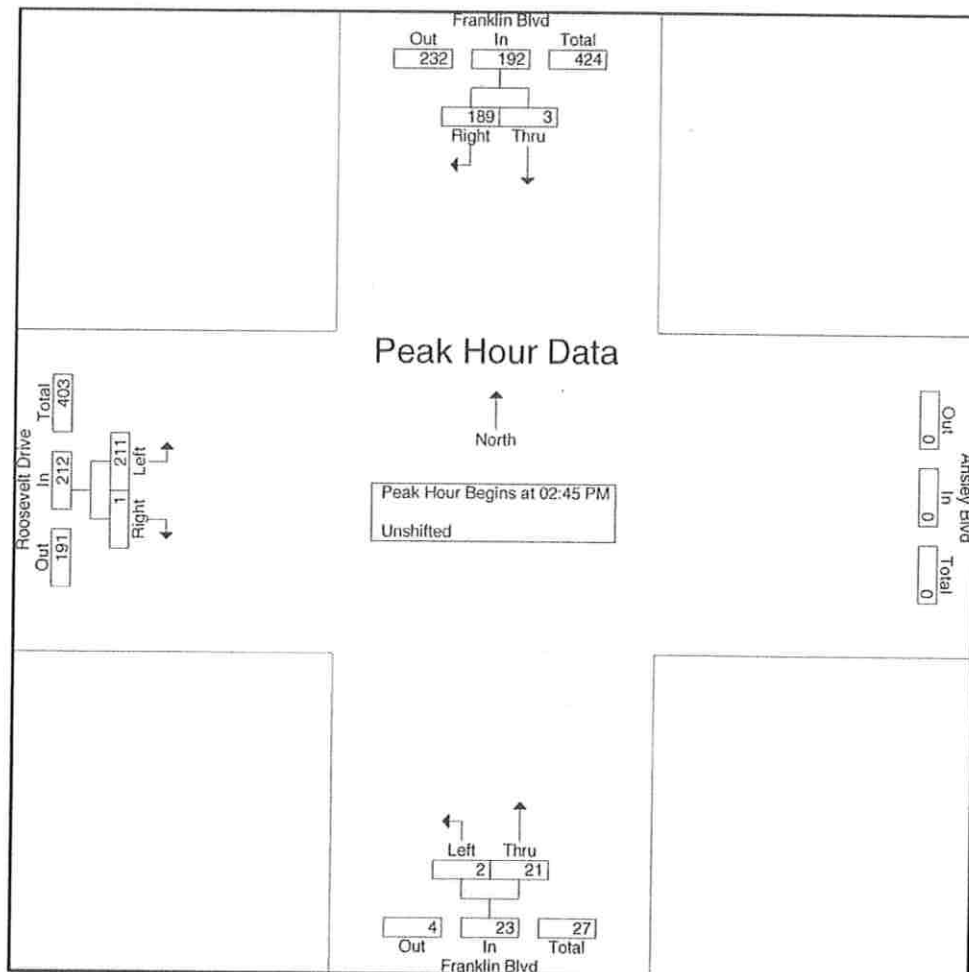
# Shropshire Associates LLC

277 Whitehorse Pike, Suite 203  
Atco, NJ 08004

N/S Route: Franklin Blvd  
E/W Route: Roosevelt Drive/Ansley Blvd  
Pleasantville Twp/Atlantic County/NJ  
Thursday/cloudy rain/ECM/5142

File Name : 20033004  
Site Code : 20033004  
Start Date : 3/12/2020  
Page No : 3

	Franklin Blvd Southbound			Franklin Blvd Northbound			Roosevelt Drive Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 02:45 PM										
02:45 PM	38	0	38	4	1	5	1	43	44	87
03:00 PM	43	1	44	5	1	6	0	42	42	92
03:15 PM	46	1	47	4	0	4	0	61	61	112
03:30 PM	62	1	63	8	0	8	0	65	65	136
Total Volume	189	3	192	21	2	23	1	211	212	427
% App. Total	98.4	1.6		91.3	8.7		0.5	99.5		
PHF	.762	.750	.762	.656	.500	.719	.250	.812	.815	.785



# Shropshire Associates LLC

277 Whitehorse Pike, Suite 203  
Atco, NJ 08004

N/S Route: Hampden Court  
E/W Route: Bayview Avenue  
Pleasantville Twp/Atlantic County/NJ  
Thursday/cloudy rain/SP/4607

File Name : Not Named 3  
Site Code : 20033005  
Start Date : 3/12/2020  
Page No : 1

## Groups Printed- Unshifted

Start Time	Hampden Court Southbound			Bayview Avenue Westbound			Bayview Avenue Eastbound			Int. Total
	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	
07:00 AM	0	0	0	0	0	0	1	1	2	2
07:15 AM	0	0	0	0	0	0	0	2	2	2
07:30 AM	0	0	0	0	0	0	0	1	1	1
*** BREAK ***										
Total	0	0	0	0	0	0	1	4	5	5
08:00 AM	0	0	0	0	1	1	2	1	3	4
08:15 AM	0	0	0	1	0	1	1	2	3	4
08:30 AM	1	1	2	0	0	0	0	1	1	3
08:45 AM	0	0	0	0	0	0	1	0	1	1
Total	1	1	2	1	1	2	4	4	8	12
*** BREAK ***										
02:00 PM	0	1	1	0	1	1	3	2	5	7
02:15 PM	0	0	0	0	1	1	2	2	4	5
02:30 PM	2	0	2	0	0	0	2	1	3	5
02:45 PM	2	0	2	1	1	2	2	1	3	7
Total	4	1	5	1	3	4	9	6	15	24
03:00 PM	4	0	4	1	1	2	1	0	1	7
03:15 PM	1	0	1	0	1	1	2	0	2	4
03:30 PM	1	1	2	0	6	6	1	1	2	10
03:45 PM	1	0	1	0	0	0	0	1	1	2
Total	7	1	8	1	8	9	4	2	6	23
04:00 PM	0	1	1	1					2	4
04:15 PM	1	0	1	0					4	5
04:30 PM	0	3	3	0					3	7
04:45 PM	1	0	1	2					0	4
Total	2	4	6	3					0	20
05:00 PM	0	0	0	0						2
05:15 PM	2	0	2	0						5
05:30 PM	0	2	2	1						4
05:45 PM	0	0	0	0						2
Total	2	2	4	1						13
Grand Total	16	9	25	7						97
Apprch %	64	36		30.4						
Total %	16.5	9.3	25.8	7.2						

NO TRAILER  
TRAILERS  
IN BANK 7

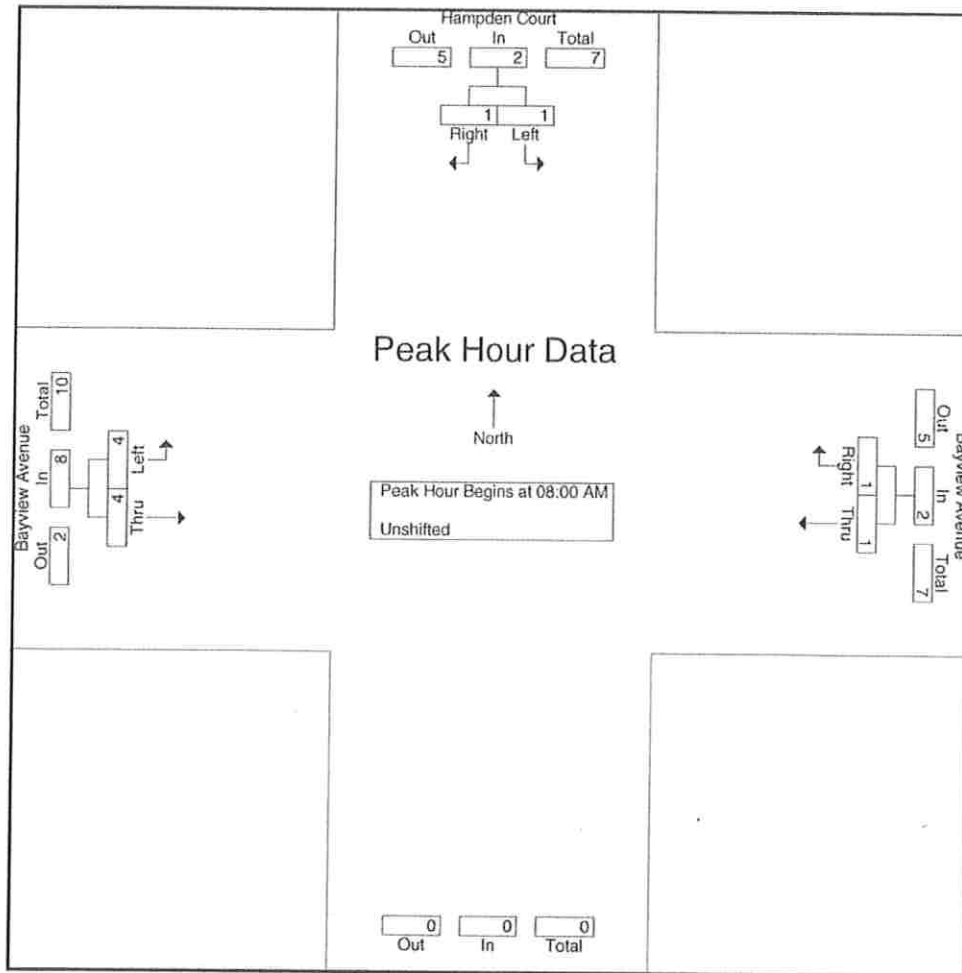
# Shropshire Associates LLC

277 Whitehorse Pike, Suite 203  
Atco, NJ 08004

N/S Route: Hampden Court  
E/W Route: Bayview Avenue  
Pleasantville Twp/Atlantic County/NJ  
Thursday/cloudy rain/SP/4607

File Name : Not Named 3  
Site Code : 20033005  
Start Date : 3/12/2020  
Page No : 2

	Hampden Court Southbound			Bayview Avenue Westbound			Bayview Avenue Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	0	0	0	0	1	1	2	1	3	4
08:15 AM	0	0	0	1	0	1	1	2	3	4
08:30 AM	1	1	2	0	0	0	0	1	1	3
08:45 AM	0	0	0	0	0	0	1	0	1	1
Total Volume	1	1	2	1	1	2	4	4	8	12
% App. Total	50	50		50	50		50	50		
PHF	.250	.250	.250	.250	.250	.500	.500	.500	.667	.750



# Shropshire Associates LLC

277 Whitehorse Pike, Suite 203

Atco, NJ 08004

N/S Route: Hampden Court  
E/W Route: Bayview Avenue  
Pleasantville Twp/Atlantic County/NJ  
Thursday/cloudy rain/SP/4607

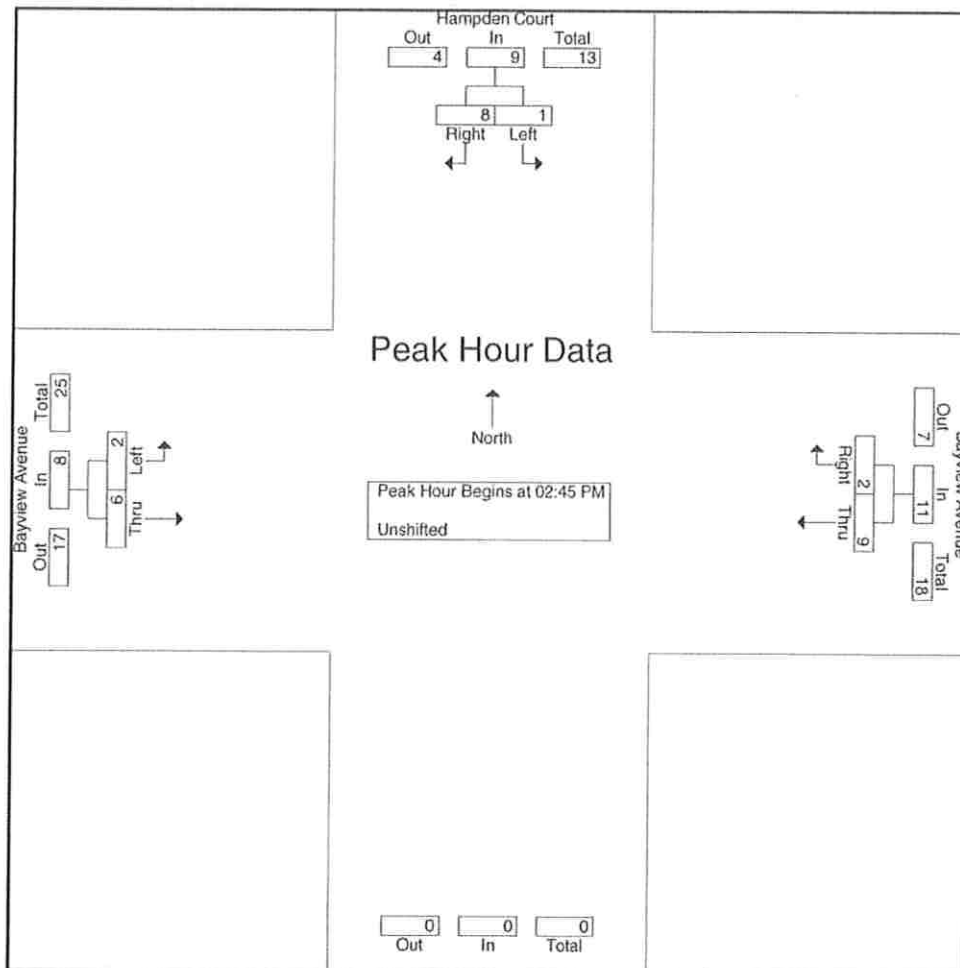
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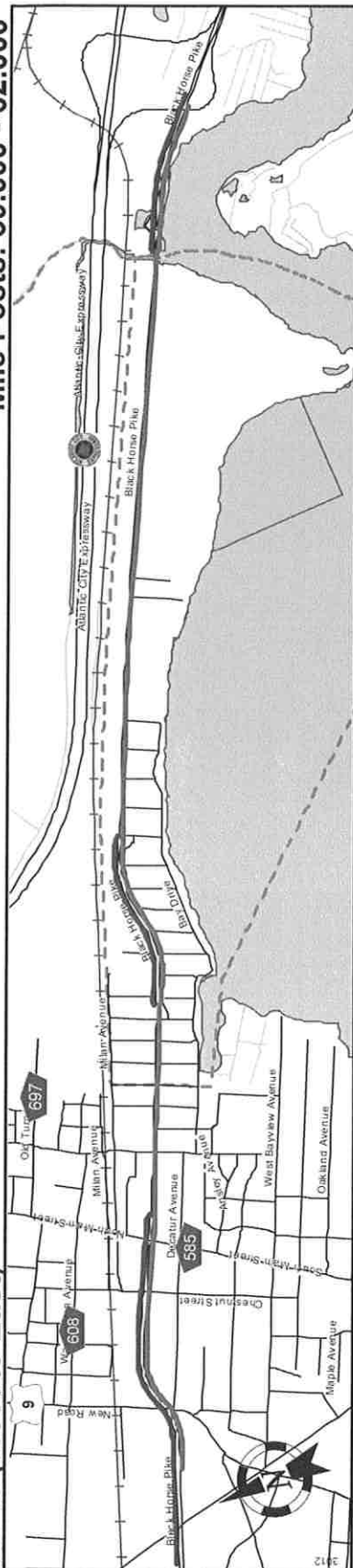
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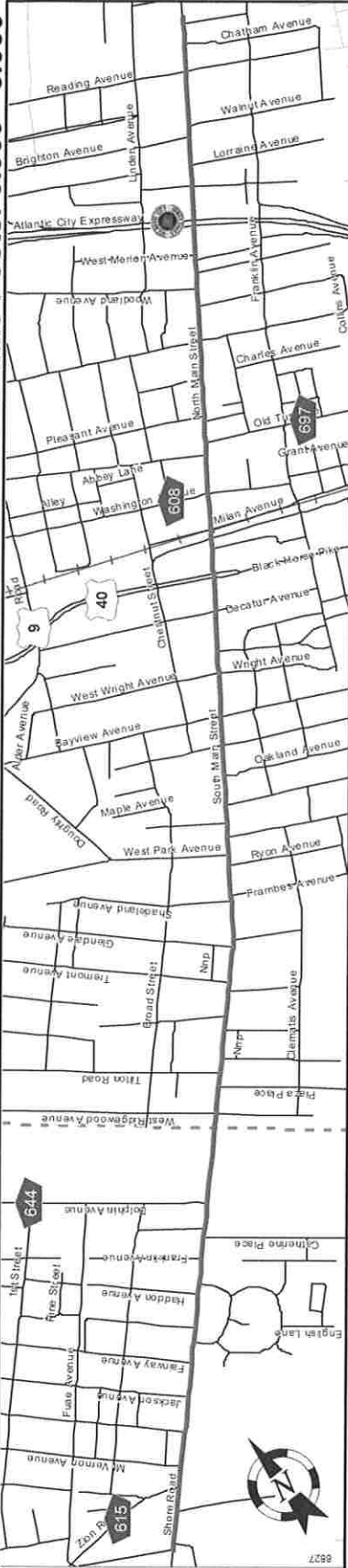
Start Date : 3/12/2020

Page No : 3

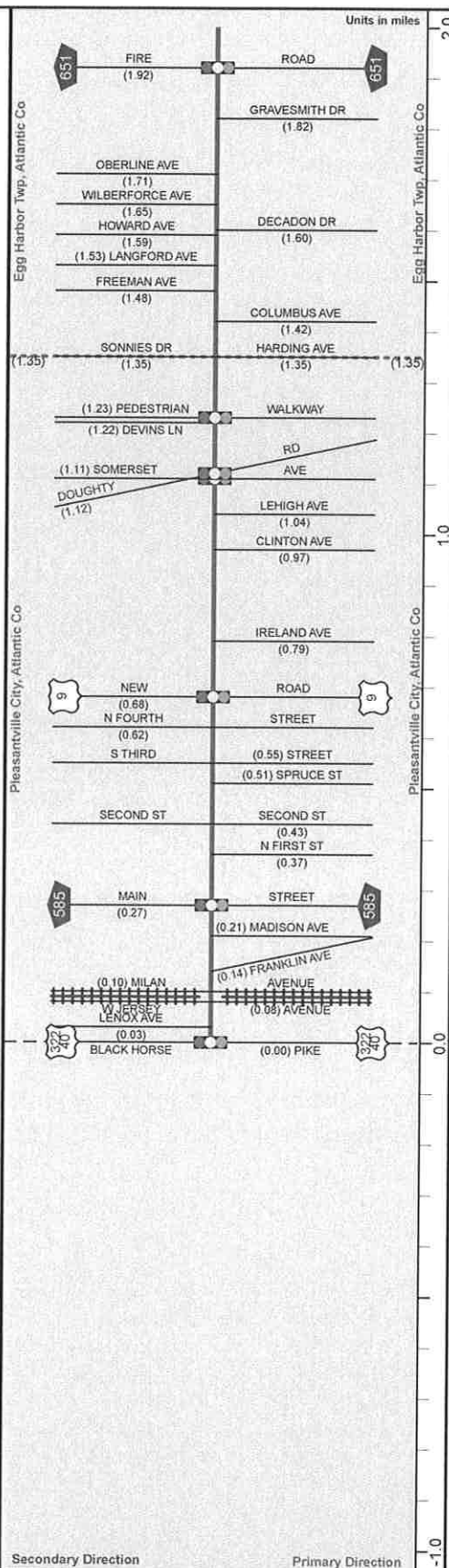
	Hampden Court Southbound			Bayview Avenue Westbound			Bayview Avenue Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 02:45 PM										
02:45 PM	2	0	2	1	1	2	2	1	3	7
03:00 PM	4	0	4	1	1	2	1	0	1	7
03:15 PM	1	0	1	0	1	1	2	0	2	4
03:30 PM	1	1	2	0	6	6	1	1	2	10
Total Volume	8	1	9	2	9	11	6	2	8	28
% App. Total	88.9	11.1		18.2	81.8		75	25		
PHF	.500	.250	.563	.500	.375	.458	.750	.500	.667	.700



[illegible]



Secondary Direction		Primary Direction		Mile Post	
Interstate Route	287	Interstate Route	287	5.0	8.0
US Route	22	US Route	22	5.0	8.0
NJ Route	33	NJ Route	33	5.0	8.0
County Road	689	County Road	689	5.0	8.0
Interchange Number	2	Interchange Number	2	5.0	8.0
Grade		Grade		5.0	8.0
Separated Interchange		Separated Interchange		5.0	8.0
Traffic Signal		Traffic Signal		5.0	8.0
Traffic Monitoring Sites		Traffic Monitoring Sites		5.0	8.0
Road Underpass		Road Underpass		5.0	8.0
Road Overpass		Road Overpass		5.0	8.0
Street Name	Shore Road	Street Name	Shore Road	5.0	8.0
Jurisdiction	Northfield City, Atlantic Co	Jurisdiction	Pleasantville City, Atlantic Co	5.0	8.0
Functional Class	County	Functional Class	County	5.0	8.0
Federal Aid - NHS Sy	Urban Minor Arterial	Federal Aid - NHS Sy	Urban Minor Arterial	5.0	8.0
Control Section	STP	Control Section	STP	5.0	8.0
Speed Limit	35	Speed Limit	35	5.0	8.0
Number of Lanes	2	Number of Lanes	2	5.0	8.0
Med. Type	None	Med. Type	None	5.0	8.0
Med. Width	0	Med. Width	0	5.0	8.0
Pavement	30	Pavement	30	5.0	8.0
Shoulder	40	Shoulder	40	5.0	8.0
Traffic Volume		Traffic Volume		5.0	8.0
Traffic Sta. ID		Traffic Sta. ID		5.0	8.0
Structure No		Structure No		5.0	8.0
Enlarged Views		Enlarged Views		5.0	8.0



Street Name	Jurisdiction	Functional Class	Federal Aid - NHS Sy	Control Section	Speed Limit	Number of Lanes	Med. Type	Med. Width	Pavement	Shoulder	Traffic Volume	Traffic Sta. ID	Structure No	Enlarged Views
Franklin Avenue	County	Urban Minor Arterial	STP		25	2	None	0			28	10	0	
Washington Avenue	County	Urban Minor Arterial	STP		40	2	None	0			26	0	0	
Gravesmith Dr	Egg Harbor Twp, Atlantic Co										24	10	4	6
Oberline Ave	Egg Harbor Twp, Atlantic Co													
Wilberforce Ave	Egg Harbor Twp, Atlantic Co													
Howard Ave	Egg Harbor Twp, Atlantic Co													
(1.53) Langford Ave	Egg Harbor Twp, Atlantic Co													
Freeman Ave	Egg Harbor Twp, Atlantic Co													
Sonnies Dr	Egg Harbor Twp, Atlantic Co													
(1.23) Pedestrian	Egg Harbor Twp, Atlantic Co													
(1.22) Devins Ln	Egg Harbor Twp, Atlantic Co													
(1.11) Somerset	Egg Harbor Twp, Atlantic Co													
Doughty	Egg Harbor Twp, Atlantic Co													
Lehigh Ave	Egg Harbor Twp, Atlantic Co													
Clinton Ave	Egg Harbor Twp, Atlantic Co													
Ireland Ave	Egg Harbor Twp, Atlantic Co													
New	Pleasantville City, Atlantic Co													
N Fourth	Pleasantville City, Atlantic Co													
S Third	Pleasantville City, Atlantic Co													
Second St	Pleasantville City, Atlantic Co													
Main	Pleasantville City, Atlantic Co													
(0.21) Madison Ave	Pleasantville City, Atlantic Co													
(0.10) Milan	Pleasantville City, Atlantic Co													
(0.14) Franklin Ave	Pleasantville City, Atlantic Co													
(0.03) Black Horse	Pleasantville City, Atlantic Co													
(0.00) Pike	Pleasantville City, Atlantic Co													
Begin Atlantic County 608 MP=0.00														

**120-SECOND BACKGROUND CYCLE**

<u>Phase</u>	<u>Signal Heads</u>					<u>Time</u>	<u>Offset</u>
	<u>3,4,5, 8,9,10</u>	<u>11,12,13, 14,15,16</u>	<u>1,2, 6,7</u>	<u>17,18, 19,20</u>	<u>21,22, 23,24</u>		
<b><i>Without Pedestrian Actuation</i></b>							
A) Route US 40/322 ROW	G	R	<R-	W	DW	76-40	
Pedestrian Clearance	G	R	<R-	FDW	DW	15	
Change	Y	R	<R-	DW	DW	4	1*
Clearance	R	R	<R-	DW	DW	1	
B) Franklin Boulevard	R	G	<R-	DW	DW	10-36	
Change	R	Y	<R-	DW	DW	3	
Clearance	R	R	<R-	DW	DW	2	
C) Route US 40/322 Left-Turn Slots	R	R	<G-	DW	DW	5-15	
Change	R	R	<Y-	DW	DW	3	
Clearance	R	R	<R-	DW	DW	1	
<b><i>With Pedestrian Actuation</i></b>							
A) Route US 40/322 ROW	G	R	<R-	W	DW	59-40	
Pedestrian Clearance	G	R	<R-	FDW	DW	15	
Change	Y	R	<R-	DW	DW	4	1*
Clearance	R	R	<R-	DW	DW	1	
B) Franklin Boulevard ROW	R	G	<R-	DW	W	10	
Pedestrian Clearance	R	G	<R-	DW	FDW	17	
Vehicle Extension	R	G	<R-	DW	DW	0-9	
Change	R	Y	<R-	DW	DW	3	
Clearance	R	R	<R-	DW	DW	2	
C) Route US 40/322 Left-Turn Slots	R	R	<G-	DW	DW	5-15	
Change	R	R	<Y-	DW	DW	3	
Clearance	R	R	<R-	DW	DW	1	

\*Offset is measured from the beginning of yellow to Route US 40/322 at Main Street to the beginning of yellow to Route US 40/322 at this intersection.

The manual control be connected.

Vehicle interval is to be 2 seconds for Phases B and C.

The memory circuit is to be disconnected for Phases B and C.

The controller be capable of skipping any unactuated phases.

The recall switch for Phase A be in the "On" position, and in the "Off" position for Phases B and C.

The left-turn slots be separate phases but concurrently timed if actuation occurs in both slots.

Each left-turn slot has the capability of terminating or extending independently of each other, thereby reverting the timing to the non-conflicting Phase A movement.

Emergency Flash Operation:    Signal Heads #3, 4, 5, 8, 9, 10 – Flash Yellow  
  Signal Heads #1, 2, 6, 7, 11, 12, 13, 14, 15, 16 – Flash Red  
  Pedestrian Indications #17, 18, 19, 20, 21, 22, 23, 24 – Dark





















**MAIN STREET (CR 585) & DECATUR AVENUE  
PLEASANTVILLE  
70-SECOND CYCLE (FIXED-TIME)**

SIGNAL INTERVAL	MAIN ST. SIGNALS	DECATUR SIGNALS	TIME (SECS.)
MAIN STREET RIGHT-OF-WAY	G	R	42
MAIN STREET CHANGE	Y	R	4
CLEARANCE	R	R	1
DECATUR AVENUE RIGHT-OF-WAY	R	G	18
DECATUR AVENUE CHANGE	R	Y	4
CLEARANCE	R	R	1
EMERGENCY FLASH	Y	R	

Rev. 10-17-2018 J.H. Mason













Lanes, Volumes, Timings  
8: Franklin Boulevard & Route 40/322

Existing AM  
05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	708	9	19	621	128	12	149	132	108	111	49
Future Volume (vph)	92	708	9	19	621	128	12	149	132	108	111	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.974			0.922			0.944	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3599	0	1805	3516	0	1805	1752	0	1805	1780	0
Flt Permitted	0.950			0.950			0.475			0.217		
Satd. Flow (perm)	1805	3599	0	1805	3516	0	902	1752	0	412	1780	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			27			47			25	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		512			642			750			338	
Travel Time (s)		11.6			14.6			17.0			7.7	
Peak Hour Factor	0.74	0.88	0.56	0.79	0.81	0.79	0.75	0.87	0.71	0.87	0.84	0.63
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%
Adj. Flow (vph)	124	805	16	24	767	162	16	171	186	124	132	78
Shared Lane Traffic (%)												
Lane Group Flow (vph)	124	821	0	24	929	0	16	357	0	124	210	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												

Lanes, Volumes, Timings  
8: Franklin Boulevard & Route 40/322

Existing AM  
05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	55.0		5.0	55.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	9.0	60.0		9.0	60.0		15.0	15.0		15.0	15.0	
Total Split (s)	19.0	60.0		19.0	60.0		41.0	41.0		41.0	41.0	
Total Split (%)	15.8%	50.0%		15.8%	50.0%		34.2%	34.2%		34.2%	34.2%	
Maximum Green (s)	15.0	55.0		15.0	55.0		36.0	36.0		36.0	36.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
Act Effct Green (s)	12.1	74.4		6.3	64.9		29.0	29.0		29.0	29.0	
Actuated g/C Ratio	0.10	0.62		0.05	0.54		0.24	0.24		0.24	0.24	
v/c Ratio	0.69	0.37		0.26	0.49		0.07	0.78		1.25	0.47	
Control Delay	70.8	13.8		60.7	19.4		32.2	48.0		210.0	36.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	70.8	13.8		60.7	19.4		32.2	48.0		210.0	36.1	
LOS	E	B		E	B		C	D		F	D	
Approach Delay		21.3			20.4			47.3			100.7	
Approach LOS		C			C			D			F	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 115 (96%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.25

Intersection Signal Delay: 34.9







Intersection LOS: C

Intersection Capacity Utilization 91.0%

ICU Level of Service F

















Analysis Period (min) 15

Splits and Phases: 8: Franklin Boulevard & Route 40/322

 Ø2	 Ø3	 Ø4 (R)
41 s	19 s	60 s
 Ø6	 Ø7	 Ø8 (R)
41 s	19 s	60 s













Lanes, Volumes, Timings  
3: Main Street & Decatur Avenue

Existing AM  
05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	39	11	38	14	16	7	297	28	21	266	21
Future Volume (vph)	6	39	11	38	14	16	7	297	28	21	266	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.951			0.960			0.988			0.987	
Flt Protected		0.994			0.975			0.998			0.995	
Satd. Flow (prot)	0	1796	0	0	1778	0	0	1873	0	0	1866	0
Flt Permitted		0.968			0.823			0.980			0.946	
Satd. Flow (perm)	0	1749	0	0	1501	0	0	1840	0	0	1774	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		37			25			13			14	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		431			451			469			268	
Travel Time (s)		11.8			12.3			12.8			7.3	
Peak Hour Factor	0.50	0.75	0.30	0.86	0.88	0.63	0.44	0.95	0.88	0.58	0.88	0.59
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	12	52	37	44	16	25	16	313	32	36	302	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	101	0	0	85	0	0	361	0	0	374	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	23.0	23.0		23.0	23.0		47.0	47.0		47.0	47.0	
Total Split (s)	23.0	23.0		23.0	23.0		47.0	47.0		47.0	47.0	
Total Split (%)	32.9%	32.9%		32.9%	32.9%		67.1%	67.1%		67.1%	67.1%	
Maximum Green (s)	18.0	18.0		18.0	18.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		18.0			18.0			42.0			42.0	
Actuated g/C Ratio		0.26			0.26			0.60			0.60	
v/c Ratio		0.21			0.21			0.33			0.35	
Control Delay		15.3			17.1			7.7			7.9	
Queue Delay		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings  
3: Main Street & Decatur Avenue

Existing AM  
05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		15.3			17.1			7.7			7.9	
LOS		B			B			A			A	
Approach Delay		15.3			17.1			7.7			7.9	
Approach LOS		B			B			A			A	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 70

Control Type: Pretimed

Maximum v/c Ratio: 0.35

Intersection Signal Delay: 9.5





Intersection LOS: A

Intersection Capacity Utilization 58.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 3: Main Street & Decatur Avenue

 Ø2 (R)	 Ø4
47 s	23 s
 Ø6 (R)	 Ø8
47 s	23 s

Intersection						
Int Delay, s/veh	1.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		Y			Y
Traffic Vol, veh/h	102	29	340	220	0	310
Future Vol, veh/h	102	29	340	220	0	310
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	111	32	370	239	0	337

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	827	490	0	0	609
Stage 1	490	-	-	-	-
Stage 2	337	-	-	-	-
Critical Hdwy	5.5	5	-	-	3.5
Critical Hdwy Stg 1	5	-	-	-	-
Critical Hdwy Stg 2	5	-	-	-	-
Follow-up Hdwy	3	3	-	-	2
Pot Cap-1 Maneuver	469	740	-	-	1174
Stage 1	740	-	-	-	-
Stage 2	862	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	469	740	-	-	1174
Mov Cap-2 Maneuver	469	-	-	-	-
Stage 1	740	-	-	-	-
Stage 2	862	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	510	1174
HCM Lane V/C Ratio	-	-	0.279	-
HCM Control Delay (s)	-	-	14.8	0
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	1.1	0

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	16	10	30	7	8	10	13	534	7	9	392	11
Future Vol, veh/h	16	10	30	7	8	10	13	534	7	9	392	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	42	75	58	67	50	81	99	44	45	96	46
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	20	24	40	12	12	20	16	539	16	20	408	24

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1055	1047	420	1071	1051	547	432	0	0	555	0	0
Stage 1	460	460	-	579	579	-	-	-	-	-	-	-
Stage 2	595	587	-	492	472	-	-	-	-	-	-	-
Critical Hdwy	6.5	6	6	6.5	6	6	3.5	-	-	3.5	-	-
Critical Hdwy Stg 1	5.5	5	-	5.5	5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.5	5	-	5.5	5	-	-	-	-	-	-	-
Follow-up Hdwy	3	3.5	3	3	3.5	3	2	-	-	2	-	-
Pot Cap-1 Maneuver	268	286	706	262	285	600	1330	-	-	1219	-	-
Stage 1	715	673	-	625	602	-	-	-	-	-	-	-
Stage 2	613	597	-	690	666	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	243	275	706	224	274	600	1330	-	-	1219	-	-
Mov Cap-2 Maneuver	243	275	-	224	274	-	-	-	-	-	-	-
Stage 1	703	658	-	614	592	-	-	-	-	-	-	-
Stage 2	571	587	-	614	651	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	17.5			17.3			0.2			0.4		
HCM LOS	C			C								

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1330	-	-	372	336	1219	-	-
HCM Lane V/C Ratio	0.012	-	-	0.225	0.131	0.016	-	-
HCM Control Delay (s)	7.7	0	-	17.5	17.3	8	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.9	0.4	0.1	-	-

HCM 2010 TWSC  
16: Fanklin Boulevard/Franklin Boulevard & Ansley Boulevard

Existing AM  
05/01/2020

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Traffic Vol, veh/h	0	0	0	0	0	0	6	249	0	0	3	125
Future Vol, veh/h	0	0	0	0	0	0	6	249	0	0	3	125
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	50	92	92	92	38	95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	0	0	0	12	271	0	0	8	132

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	369	435	271	140	0	0	271	0	0
Stage 1	295	295	-	-	-	-	-	-	-
Stage 2	74	140	-	-	-	-	-	-	-
Critical Hdwy	6.4	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	5.4	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.4	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	635	517	773	1456	-	-	1304	-	-
Stage 1	760	673	-	-	-	-	-	-	-
Stage 2	954	785	-	-	-	-	-	-	-
Platoon blocked, %					-	-	-	-	-
Mov Cap-1 Maneuver	629	0	773	1456	-	-	1304	-	-
Mov Cap-2 Maneuver	629	0	-	-	-	-	-	-	-
Stage 1	752	0	-	-	-	-	-	-	-
Stage 2	954	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	NBRWBLn1	SBL	SBT	SBR
Capacity (veh/h)	1456	-	-	1304	-	-
HCM Lane V/C Ratio	0.008	-	-	-	-	-
HCM Control Delay (s)	7.5	0	0	0	-	-
HCM Lane LOS	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	-	-

Intersection

Int Delay, s/veh 8.2

Movement	NBL	NBT	SBT	SBR	SEL	SER
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Lane Configurations		↑	↑		Y	
Traffic Vol, veh/h	0	35	3	0	220	0
Future Vol, veh/h	0	35	3	0	220	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	58	92	92	86	25
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	60	3	0	256	0

Major/Minor	Major1	Major2	Minor2
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Conflicting Flow All	-	0	0	63	3
Stage 1	-	-	-	3	-
Stage 2	-	-	-	60	-
Critical Hdwy	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	0	-	0	948	1087
Stage 1	0	-	0	1025	-
Stage 2	0	-	0	968	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	948	1087
Mov Cap-2 Maneuver	-	-	-	948	-
Stage 1	-	-	-	1025	-
Stage 2	-	-	-	968	-

Approach	NB	SB	SE
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HCM Control Delay, s	0	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBT SELn1	SBT
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Capacity (veh/h)	- 948	-
HCM Lane V/C Ratio	- 0.27	-
HCM Control Delay (s)	- 10.2	-
HCM Lane LOS	- B	-
HCM 95th %tile Q(veh)	- 1.1	-

Intersection

Int Delay, s/veh 3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Vol, veh/h	4	4	1	1	1	1
Future Vol, veh/h	4	4	1	1	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	50	50	25	25	25	25
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	8	8	4	4	4	4





















Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	8	0	0 30 6
Stage 1	-	-	- 6 -
Stage 2	-	-	- 24 -
Critical Hdwy	4.1	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	1625	-	- 989 1083
Stage 1	-	-	- 1022 -
Stage 2	-	-	- 1004 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1625	-	- 984 1083
Mov Cap-2 Maneuver	-	-	- 984 -
Stage 1	-	-	- 1017 -
Stage 2	-	-	- 1004 -

Approach	EB	WB	SB
HCM Control Delay, s	3.6	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1625	-	-	-	1031
HCM Lane V/C Ratio	0.005	-	-	-	0.008
HCM Control Delay (s)	7.2	0	-	-	8.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0


Lanes, Volumes, Timings  
8: Franklin Boulevard & Route 40/322

Existing PM  
05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	696	13	77	913	141	19	144	114	116	179	106
Future Volume (vph)	118	696	13	77	913	141	19	144	114	116	179	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Fr't		0.995			0.978			0.929			0.947	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3592	0	1805	3531	0	1805	1765	0	1805	1793	0
Flt Permitted	0.950			0.950			0.245			0.262		
Satd. Flow (perm)	1805	3592	0	1805	3531	0	466	1765	0	498	1793	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			22			39			24	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		512			642			750			338	
Travel Time (s)		8.7			10.9			20.5			9.2	
Peak Hour Factor	0.70	0.94	0.50	0.62	0.94	0.83	0.59	0.84	0.74	0.85	0.83	0.89
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
Adj. Flow (vph)	169	740	26	124	971	170	32	171	154	136	216	119
Shared Lane Traffic (%)												
Lane Group Flow (vph)	169	766	0	124	1141	0	32	325	0	136	335	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2		6		
Permitted Phases							2					
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												

Lanes, Volumes, Timings  
8: Franklin Boulevard & Route 40/322

Existing PM  
05/01/2020






												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	55.0		5.0	55.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	9.0	60.0		9.0	60.0		15.0	15.0		15.0	15.0	
Total Split (s)	19.0	60.0		19.0	60.0		41.0	41.0		41.0	41.0	
Total Split (%)	15.8%	50.0%		15.8%	50.0%		34.2%	34.2%		34.2%	34.2%	
Maximum Green (s)	15.0	55.0		15.0	55.0		36.0	36.0		36.0	36.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
Act Effct Green (s)	13.8	65.5		12.1	63.8		28.4	28.4		28.4	28.4	
Actuated g/C Ratio	0.12	0.55		0.10	0.53		0.24	0.24		0.24	0.24	
v/c Ratio	0.82	0.39		0.69	0.60		0.29	0.73		1.15	0.76	
Control Delay	81.1	18.1		70.8	22.4		41.6	45.7		171.7	49.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	81.1	18.1		70.8	22.4		41.6	45.7		171.7	49.8	
LOS	F	B		E	C		D	D		F	D	
Approach Delay		29.5			27.1			45.3			85.0	
Approach LOS		C			C			D			F	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 115 (96%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow  
 Natural Cycle: 95  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.15  
 Intersection Signal Delay: 39.0  
 Intersection Capacity Utilization 92.4%  
 Analysis Period (min) 15

Intersection LOS: D  
ICU Level of Service F

















Splits and Phases: 8: Franklin Boulevard & Route 40/322

 Ø2	 Ø6	 Ø7	 Ø4 (R)	 Ø8 (R)
41 s	41 s	19 s	60 s	60 s

Lanes, Volumes, Timings  
3: Main Street & Decatur Avenue













Existing PM

05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	66	30	87	53	34	16	361	46	28	313	15
Future Volume (vph)	15	66	30	87	53	34	16	361	46	28	313	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.951			0.974			0.982			0.992	
Flt Protected		0.993			0.976			0.997			0.995	
Satd. Flow (prot)	0	1794	0	0	1806	0	0	1860	0	0	1875	0
Flt Permitted		0.939			0.757			0.971			0.932	
Satd. Flow (perm)	0	1697	0	0	1401	0	0	1812	0	0	1757	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		40			16			20			8	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		431			451			469			268	
Travel Time (s)		11.8			12.3			12.8			7.3	
Peak Hour Factor	0.63	0.83	0.50	0.68	0.63	0.68	0.67	0.96	0.73	0.70	0.90	0.63
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	24	80	60	128	84	50	24	376	63	40	348	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	164	0	0	262	0	0	463	0	0	412	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	23.0	23.0		23.0	23.0		47.0	47.0		47.0	47.0	
Total Split (s)	23.0	23.0		23.0	23.0		47.0	47.0		47.0	47.0	
Total Split (%)	32.9%	32.9%		32.9%	32.9%		67.1%	67.1%		67.1%	67.1%	
Maximum Green (s)	18.0	18.0		18.0	18.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		18.0			18.0			42.0			42.0	
Actuated g/C Ratio		0.26			0.26			0.60			0.60	
v/c Ratio		0.35			0.70			0.42			0.39	
Control Delay		18.4			34.4			8.6			8.5	
Queue Delay		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings  
3: Main Street & Decatur Avenue

Existing PM  
05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		18.4			34.4			8.6			8.5	
LOS		B			C			A			A	
Approach Delay		18.4			34.4			8.6			8.5	
Approach LOS		B			C			A			A	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 70

Control Type: Pretimed

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 15.0





Intersection LOS: B

Intersection Capacity Utilization 59.7%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 3: Main Street & Decatur Avenue

 Ø2 (R)	 Ø4
47 s	23 s
 Ø6 (R)	 Ø8
47 s	23 s

Intersection

Int Delay, s/veh 3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	161	30	403	211	0	424
Future Vol, veh/h	161	30	403	211	0	424
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	175	33	438	229	0	461

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1014	553	0
Stage 1	553	-	-
Stage 2	461	-	-
Critical Hdwy	5.5	5	-
Critical Hdwy Stg 1	5	-	-
Critical Hdwy Stg 2	5	-	-
Follow-up Hdwy	3	3	-
Pot Cap-1 Maneuver	378	695	-
Stage 1	695	-	-
Stage 2	762	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	378	695	-
Mov Cap-2 Maneuver	378	-	-
Stage 1	695	-	-
Stage 2	762	-	-

Approach	WB	NB	SB
HCM Control Delay, s	22.7	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	407	1126
HCM Lane V/C Ratio	-	-	0.51	-
HCM Control Delay (s)	-	-	22.7	0
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	2.8	0

Intersection

Int Delay, s/veh 4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	16	15	41	14	9	25	21	573	18	24	548	13
Future Vol, veh/h	16	15	41	14	9	25	21	573	18	24	548	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	44	63	68	88	56	63	88	94	50	67	87	56
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	36	24	60	16	16	40	24	610	36	36	630	23

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1418	1408	642	1432	1401	628	653	0	0	646	0	0
Stage 1	714	714	-	676	676	-	-	-	-	-	-	-
Stage 2	704	694	-	756	725	-	-	-	-	-	-	-
Critical Hdwy	6.5	6	6	6.5	6	6	3.5	-	-	3.5	-	-
Critical Hdwy Stg 1	5.5	5	-	5.5	5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.5	5	-	5.5	5	-	-	-	-	-	-	-
Follow-up Hdwy	3	3.5	3	3	3.5	3	2	-	-	2	-	-
Pot Cap-1 Maneuver	158	181	531	155	182	541	1138	-	-	1143	-	-
Stage 1	535	529	-	559	549	-	-	-	-	-	-	-
Stage 2	541	539	-	510	524	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	127	166	531	115	167	541	1138	-	-	1143	-	-
Mov Cap-2 Maneuver	127	166	-	115	167	-	-	-	-	-	-	-
Stage 1	517	503	-	541	531	-	-	-	-	-	-	-
Stage 2	470	521	-	409	498	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	38.9	27.2	0.3	0.4
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1138	-	-	222	233	1143	-	-
HCM Lane V/C Ratio	0.021	-	-	0.543	0.308	0.031	-	-
HCM Control Delay (s)	8.2	0	-	38.9	27.2	8.3	0	-
HCM Lane LOS	A	A	-	E	D	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	2.9	1.3	0.1	-	-

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Traffic Vol, veh/h	0	0	0	0	0	0	2	230	0	0	3	189
Future Vol, veh/h	0	0	0	0	0	0	2	230	0	0	3	189
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	50	92	92	92	75	76
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	0	0	0	4	250	0	0	4	249

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	387	511	250	253	0	0
Stage 1	258	258	-	-	-	-
Stage 2	129	253	-	-	-	-
Critical Hdwy	6.4	6.5	6.2	4.1	-	4.1
Critical Hdwy Stg 1	5.4	5.5	-	-	-	-
Critical Hdwy Stg 2	5.4	5.5	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	2.2	-	2.2
Pot Cap-1 Maneuver	620	469	794	1324	-	1327
Stage 1	790	698	-	-	-	-
Stage 2	902	701	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	618	0	794	1324	-	1327
Mov Cap-2 Maneuver	618	0	-	-	-	-
Stage 1	787	0	-	-	-	-
Stage 2	902	0	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	NBRWBLn1	SBL	SBT	SBR
Capacity (veh/h)	1324	-	-	1327	-	-
HCM Lane V/C Ratio	0.003	-	-	-	-	-
HCM Control Delay (s)	7.7	0	0	0	-	-
HCM Lane LOS	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	-	-

Intersection						
Int Delay, s/veh	8.8					
Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations		↑	↑		Y	
Traffic Vol, veh/h	0	21	3	0	211	1
Future Vol, veh/h	0	21	3	0	211	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	67	75	92	81	25
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	31	4	0	260	4

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	35
Stage 1	-	-	-	-	4
Stage 2	-	-	-	-	31
Critical Hdwy	-	-	-	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	-	-	3.5
Pot Cap-1 Maneuver	0	-	-	0	983
Stage 1	0	-	-	0	1024
Stage 2	0	-	-	0	997
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	983
Mov Cap-2 Maneuver	-	-	-	-	983
Stage 1	-	-	-	-	1024
Stage 2	-	-	-	-	997

Approach	NB	SB	SE
HCM Control Delay, s	0	0	10
HCM LOS			B

Minor Lane/Major Mvmt	NBT	SELn1	SBT
Capacity (veh/h)	-	984	-
HCM Lane V/C Ratio	-	0.269	-
HCM Control Delay (s)	-	10	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	1.1	-

Intersection						
Int Delay, s/veh	3.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	2	6	9	2	1	8
Future Vol, veh/h	2	6	9	2	1	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	50	75	38	50	25	50
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	8	24	4	4	16





















Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	28	0	42
Stage 1	-	-	26
Stage 2	-	-	16
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1599	-	974
Stage 1	-	-	1002
Stage 2	-	-	1012
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1599	-	971
Mov Cap-2 Maneuver	-	-	971
Stage 1	-	-	999
Stage 2	-	-	1012

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1599	-	-	-	1038
HCM Lane V/C Ratio	0.003	-	-	-	0.019
HCM Control Delay (s)	7.3	0	-	-	8.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1













Lanes, Volumes, Timings  
8: Franklin Boulevard & Route 40/322

No-Build AM  
05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	737	9	20	646	133	12	160	141	112	116	51
Future Volume (vph)	96	737	9	20	646	133	12	160	141	112	116	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Fr't		0.997			0.974			0.922			0.945	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3599	0	1805	3516	0	1805	1752	0	1805	1782	0
Flt Permitted	0.950			0.950			0.482			0.221		
Satd. Flow (perm)	1805	3599	0	1805	3516	0	916	1752	0	420	1782	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			27			46			25	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		512			642			750			338	
Travel Time (s)		11.6			14.6			17.0			7.7	
Peak Hour Factor	0.74	0.88	0.56	0.79	0.81	0.79	0.75	0.87	0.71	0.87	0.84	0.63
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%
Adj. Flow (vph)	130	838	16	25	798	168	16	184	199	129	138	81
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	854	0	25	966	0	16	383	0	129	219	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												

Lanes, Volumes, Timings  
8: Franklin Boulevard & Route 40/322

No-Build AM  
05/01/2020







												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	55.0		5.0	55.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	9.0	60.0		9.0	60.0		15.0	15.0		15.0	15.0	
Total Split (s)	19.0	60.0		19.0	60.0		41.0	41.0		41.0	41.0	
Total Split (%)	15.8%	50.0%		15.8%	50.0%		34.2%	34.2%		34.2%	34.2%	
Maximum Green (s)	15.0	55.0		15.0	55.0		36.0	36.0		36.0	36.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
Act Effct Green (s)	12.3	71.3		6.3	61.7		32.0	32.0		32.0	32.0	
Actuated g/C Ratio	0.10	0.59		0.05	0.51		0.27	0.27		0.27	0.27	
v/c Ratio	0.71	0.40		0.26	0.53		0.07	0.77		1.15	0.44	
Control Delay	72.0	15.3		60.9	21.6		31.2	45.7		172.8	34.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	72.0	15.3		60.9	21.6		31.2	45.7		172.8	34.2	
LOS	E	B		E	C		C	D		F	C	
Approach Delay		22.8			22.6			45.1			85.6	
Approach LOS		C			C			D			F	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 115 (96%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow  
 Natural Cycle: 95  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.15  
 Intersection Signal Delay: 34.0  
 Intersection Capacity Utilization 92.4%  
 Analysis Period (min) 15

















Intersection LOS: C  
 ICU Level of Service F

Splits and Phases: 8: Franklin Boulevard & Route 40/322

 Ø2	 Ø3	 Ø4 (R)
41 s	19 s	60 s
 Ø6	 Ø7	 Ø8 (R)
41 s	19 s	60 s













Lanes, Volumes, Timings  
3: Main Street & Decatur Avenue

No-Build AM  
05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	41	11	40	15	17	7	309	29	22	277	22
Future Volume (vph)	6	41	11	40	15	17	7	309	29	22	277	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr't		0.952			0.960			0.988			0.987	
Flt Protected		0.994			0.975			0.998			0.995	
Satd. Flow (prot)	0	1798	0	0	1778	0	0	1873	0	0	1866	0
Flt Permitted		0.968			0.819			0.980			0.943	
Satd. Flow (perm)	0	1751	0	0	1494	0	0	1840	0	0	1768	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		37			27			12			13	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		431			451			469			268	
Travel Time (s)		11.8			12.3			12.8			7.3	
Peak Hour Factor	0.50	0.75	0.30	0.86	0.88	0.63	0.44	0.95	0.88	0.58	0.88	0.59
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	12	55	37	47	17	27	16	325	33	38	315	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	104	0	0	91	0	0	374	0	0	390	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	23.0	23.0		23.0	23.0		47.0	47.0		47.0	47.0	
Total Split (s)	23.0	23.0		23.0	23.0		47.0	47.0		47.0	47.0	
Total Split (%)	32.9%	32.9%		32.9%	32.9%		67.1%	67.1%		67.1%	67.1%	
Maximum Green (s)	18.0	18.0		18.0	18.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		18.0			18.0			42.0			42.0	
Actuated g/C Ratio		0.26			0.26			0.60			0.60	
v/c Ratio		0.22			0.23			0.34			0.37	
Control Delay		15.5			17.1			7.8			8.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		15.5			17.1			7.8			8.1	
LOS		B			B			A			A	
Approach Delay		15.5			17.1			7.8			8.1	

Lanes, Volumes, Timings  
3: Main Street & Decatur Avenue

No-Build AM  
05/01/2020













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		B			B			A			A	

Intersection Summary

Area Type: Other  
 Cycle Length: 70  
 Actuated Cycle Length: 70  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 70  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.37  
 Intersection Signal Delay: 9.6  
 Intersection Capacity Utilization 58.3%  
 Analysis Period (min) 15

Intersection LOS: A  
 ICU Level of Service B

Splits and Phases: 3: Main Street & Decatur Avenue

					
Ø2 (R)			Ø4		
47 s			23 s		
					
Ø6 (R)			Ø8		
47 s			23 s		

Intersection

Int Delay, s/veh 2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	109	31	354	229	0	323
Future Vol, veh/h	109	31	354	229	0	323
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	118	34	385	249	0	351

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	861	510	0
Stage 1	510	-	-
Stage 2	351	-	-
Critical Hdwy	5.5	5	3.5
Critical Hdwy Stg 1	5	-	-
Critical Hdwy Stg 2	5	-	-
Follow-up Hdwy	3	3	2
Pot Cap-1 Maneuver	451	725	1153
Stage 1	725	-	-
Stage 2	850	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	451	725	1153
Mov Cap-2 Maneuver	451	-	-
Stage 1	725	-	-
Stage 2	850	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.6	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	492	1153	-
HCM Lane V/C Ratio	-	0.309	-	-
HCM Control Delay (s)	-	15.6	0	-
HCM Lane LOS	-	C	A	-
HCM 95th %tile Q(veh)	-	1.3	0	-

Intersection

Int Delay, s/veh 2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	17	10	31	7	8	10	14	556	7	9	408	11
Future Vol, veh/h	17	10	31	7	8	10	14	556	7	9	408	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	42	75	58	67	50	81	99	44	45	96	46
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	21	24	41	12	12	20	17	562	16	20	425	24

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1097	1089	437	1114	1093	570	449	0	0	578	0	0
Stage 1	477	477	-	604	604	-	-	-	-	-	-	-
Stage 2	620	612	-	510	489	-	-	-	-	-	-	-
Critical Hdwy	6.5	6	6	6.5	6	6	3.5	-	-	3.5	-	-
Critical Hdwy Stg 1	5.5	5	-	5.5	5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.5	5	-	5.5	5	-	-	-	-	-	-	-
Follow-up Hdwy	3	3.5	3	3	3.5	3	2	-	-	2	-	-
Pot Cap-1 Maneuver	253	272	691	246	270	583	1314	-	-	1200	-	-
Stage 1	702	663	-	607	588	-	-	-	-	-	-	-
Stage 2	596	583	-	676	655	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	228	261	691	209	259	583	1314	-	-	1200	-	-
Mov Cap-2 Maneuver	228	261	-	209	259	-	-	-	-	-	-	-
Stage 1	689	648	-	595	577	-	-	-	-	-	-	-
Stage 2	553	572	-	599	641	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.4	18.1	0.2	0.3
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1314	-	-	354	319	1200	-	-
HCM Lane V/C Ratio	0.013	-	-	0.244	0.138	0.017	-	-
HCM Control Delay (s)	7.8	0	-	18.4	18.1	8.1	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.9	0.5	0.1	-	-

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Traffic Vol, veh/h	0	0	0	0	0	0	6	272	0	0	3	134
Future Vol, veh/h	0	0	0	0	0	0	6	272	0	0	3	134
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	50	92	92	92	38	95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	0	0	0	12	296	0	0	8	141

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	399	469	296
Stage 1	320	320	-
Stage 2	79	149	-
Critical Hdwy	6.4	6.5	6.2
Critical Hdwy Stg 1	5.4	5.5	-
Critical Hdwy Stg 2	5.4	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	611	495	748
Stage 1	741	656	-
Stage 2	949	778	-
Platoon blocked, %			
Mov Cap-1 Maneuver	605	0	748
Mov Cap-2 Maneuver	605	0	-
Stage 1	734	0	-
Stage 2	949	0	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	NBRWBLn1	SBL	SBT	SBR
Capacity (veh/h)	1445	-	-	1277	-	-
HCM Lane V/C Ratio	0.008	-	-	-	-	-
HCM Control Delay (s)	7.5	0	0	0	-	-
HCM Lane LOS	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	-	-

Intersection

Int Delay, s/veh 8.4

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations		↑	↑		↑↑	
Traffic Vol, veh/h	0	36	3	0	236	0
Future Vol, veh/h	0	36	3	0	236	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	58	92	92	86	25
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	62	3	0	274	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	65
Stage 1	-	-	-	-	3
Stage 2	-	-	-	-	62
Critical Hdwy	-	-	-	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	-	-	3.5
Pot Cap-1 Maneuver	0	-	-	0	946
Stage 1	0	-	-	0	1025
Stage 2	0	-	-	0	966
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	946
Mov Cap-2 Maneuver	-	-	-	-	946
Stage 1	-	-	-	-	1025
Stage 2	-	-	-	-	966

Approach	NB	SB	SE
HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBT SELn1	SBT
Capacity (veh/h)	- 946	-
HCM Lane V/C Ratio	- 0.29	-
HCM Control Delay (s)	- 10.4	-
HCM Lane LOS	- B	-
HCM 95th %tile Q(veh)	- 1.2	-

Intersection

Int Delay, s/veh 3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	4	4	1	1	1	1
Future Vol, veh/h	4	4	1	1	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	50	50	25	25	25	25
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	8	8	4	4	4	4

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	8	0	0 30 6
Stage 1	-	-	- 6 -
Stage 2	-	-	- 24 -
Critical Hdwy	4.1	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	1625	-	- 989 1083
Stage 1	-	-	- 1022 -
Stage 2	-	-	- 1004 -
Platoon blocked, %		-	- -
Mov Cap-1 Maneuver	1625	-	- 984 1083
Mov Cap-2 Maneuver	-	-	- 984 -
Stage 1	-	-	- 1017 -
Stage 2	-	-	- 1004 -





















Approach	EB	WB	SB
HCM Control Delay, s	3.6	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1625	-	-	-	1031
HCM Lane V/C Ratio	0.005	-	-	-	0.008
HCM Control Delay (s)	7.2	0	-	-	8.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Lanes, Volumes, Timings  
8: Franklin Boulevard & Route 40/322













No-Build PM

05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	724	14	80	950	147	20	154	122	121	186	110
Future Volume (vph)	123	724	14	80	950	147	20	154	122	121	186	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.978			0.929			0.947	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3592	0	1805	3531	0	1805	1765	0	1805	1793	0
Flt Permitted	0.950			0.950			0.257			0.257		
Satd. Flow (perm)	1805	3592	0	1805	3531	0	488	1765	0	488	1793	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			22			39			24	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		512			642			750			338	
Travel Time (s)		8.7			10.9			20.5			9.2	
Peak Hour Factor	0.70	0.94	0.50	0.62	0.94	0.83	0.59	0.84	0.74	0.85	0.83	0.89
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
Adj. Flow (vph)	176	770	28	129	1011	177	34	183	165	142	224	124
Shared Lane Traffic (%)												
Lane Group Flow (vph)	176	798	0	129	1188	0	34	348	0	142	348	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												

Lanes, Volumes, Timings  
8: Franklin Boulevard & Route 40/322

No-Build PM  
05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	55.0		5.0	55.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	9.0	60.0		9.0	60.0		15.0	15.0		15.0	15.0	
Total Split (s)	19.0	60.0		19.0	60.0		41.0	41.0		41.0	41.0	
Total Split (%)	15.8%	50.0%		15.8%	50.0%		34.2%	34.2%		34.2%	34.2%	
Maximum Green (s)	15.0	55.0		15.0	55.0		36.0	36.0		36.0	36.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
Act Effct Green (s)	14.0	63.1		12.3	61.4		30.7	30.7		30.7	30.7	
Actuated g/C Ratio	0.12	0.53		0.10	0.51		0.26	0.26		0.26	0.26	
v/c Ratio	0.84	0.42		0.70	0.65		0.27	0.73		1.15	0.73	
Control Delay	83.6	19.7		71.8	24.7		39.3	44.5		164.6	46.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	83.6	19.7		71.8	24.7		39.3	44.5		164.6	46.7	
LOS	F	B		E	C		D	D		F	D	
Approach Delay		31.2			29.3			44.0			80.9	
Approach LOS		C			C			D			F	







Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 115 (96%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow  
 Natural Cycle: 105  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.15  
 Intersection Signal Delay: 39.7  
 Intersection Capacity Utilization 93.3%  
 Analysis Period (min) 15

Intersection LOS: D

ICU Level of Service F

















Splits and Phases: 8: Franklin Boulevard & Route 40/322

 Ø2	 Ø3	 Ø4 (R)
41 s	19 s	60 s
 Ø6	 Ø7	 Ø8 (R)
41 s	19 s	60 s

Lanes, Volumes, Timings  
3: Main Street & Decatur Avenue













No-Build PM

05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	69	31	91	55	35	16	376	48	29	326	16
Future Volume (vph)	16	69	31	91	55	35	16	376	48	29	326	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.951			0.975			0.982			0.992	
Flt Protected		0.993			0.976			0.998			0.995	
Satd. Flow (prot)	0	1794	0	0	1808	0	0	1862	0	0	1875	0
Flt Permitted		0.936			0.747			0.971			0.931	
Satd. Flow (perm)	0	1691	0	0	1384	0	0	1812	0	0	1755	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		40			16			20			8	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		431			451			469			268	
Travel Time (s)		11.8			12.3			12.8			7.3	
Peak Hour Factor	0.63	0.83	0.50	0.68	0.63	0.68	0.67	0.96	0.73	0.70	0.90	0.63
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	25	83	62	134	87	51	24	392	66	41	362	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	170	0	0	272	0	0	482	0	0	428	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	23.0	23.0		23.0	23.0		47.0	47.0		47.0	47.0	
Total Split (s)	23.0	23.0		23.0	23.0		47.0	47.0		47.0	47.0	
Total Split (%)	32.9%	32.9%		32.9%	32.9%		67.1%	67.1%		67.1%	67.1%	
Maximum Green (s)	18.0	18.0		18.0	18.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		18.0			18.0			42.0			42.0	
Actuated g/C Ratio		0.26			0.26			0.60			0.60	
v/c Ratio		0.37			0.74			0.44			0.41	
Control Delay		18.8			37.0			8.8			8.7	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		18.8			37.0			8.8			8.7	
LOS		B			D			A			A	
Approach Delay		18.8			37.0			8.8			8.7	

Lanes, Volumes, Timings  
3: Main Street & Decatur Avenue

No-Build PM  
05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		B			D			A			A	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 70

Control Type: Pretimed

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 15.7





Intersection LOS: B

Intersection Capacity Utilization 60.1%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 3: Main Street & Decatur Avenue

 Ø2 (L)	 Ø4
47 s	23 s
 Ø6 (R)	 Ø8
47 s	23 s

Intersection						
Int Delay, s/veh	4.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		Y			Y
Traffic Vol, veh/h	173	32	419	220	0	441
Future Vol, veh/h	173	32	419	220	0	441
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	188	35	455	239	0	479

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1054	575	0
Stage 1	575	-	-
Stage 2	479	-	-
Critical Hdwy	5.5	5	-
Critical Hdwy Stg 1	5	-	-
Critical Hdwy Stg 2	5	-	-
Follow-up Hdwy	3	3	-
Pot Cap-1 Maneuver	360	680	-
Stage 1	680	-	-
Stage 2	748	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	360	680	-
Mov Cap-2 Maneuver	360	-	-
Stage 1	680	-	-
Stage 2	748	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	389	1105
HCM Lane V/C Ratio	-	-	0.573	-
HCM Control Delay (s)	-	-	26	0
HCM Lane LOS	-	-	D	A
HCM 95th %tile Q(veh)	-	-	3.5	0

Intersection												
Int Delay, s/veh	5.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	17	16	43	15	9	26	22	596	19	25	570	14
Future Vol, veh/h	17	16	43	15	9	26	22	596	19	25	570	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	44	63	68	88	56	63	88	94	50	67	87	56
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	39	25	63	17	16	41	25	634	38	37	655	25

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1474	1464	668	1489	1457	653	680	0	0	672	0	0
Stage 1	742	742	-	703	703	-	-	-	-	-	-	-
Stage 2	732	722	-	786	754	-	-	-	-	-	-	-
Critical Hdwy	6.5	6	6	6.5	6	6	3.5	-	-	3.5	-	-
Critical Hdwy Stg 1	5.5	5	-	5.5	5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.5	5	-	5.5	5	-	-	-	-	-	-	-
Follow-up Hdwy	3	3.5	3	3	3.5	3	2	-	-	2	-	-
Pot Cap-1 Maneuver	146	168	514	142	170	524	1116	-	-	1122	-	-
Stage 1	518	515	-	542	535	-	-	-	-	-	-	-
Stage 2	524	525	-	492	509	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	116	153	514	102	155	524	1116	-	-	1122	-	-
Mov Cap-2 Maneuver	116	153	-	102	155	-	-	-	-	-	-	-
Stage 1	499	488	-	522	516	-	-	-	-	-	-	-
Stage 2	451	506	-	387	482	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	47.6	30.7	0.3	0.4
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1116	-	-	205	213	1122	-	-
HCM Lane V/C Ratio	0.022	-	-	0.621	0.349	0.033	-	-
HCM Control Delay (s)	8.3	0	-	47.6	30.7	8.3	0	-
HCM Lane LOS	A	A	-	E	D	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	3.6	1.5	0.1	-	-

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Traffic Vol, veh/h	0	0	0	0	0	0	2	248	0	0	3	203
Future Vol, veh/h	0	0	0	0	0	0	2	248	0	0	3	203
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	50	92	92	92	75	76
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	0	0	0	4	270	0	0	4	267

Major/Minor	Minor1		Major1		Major2					
Conflicting Flow All	416	549	270	271	0	0	270	0	0	
Stage 1	278	278	-	-	-	-	-	-	-	
Stage 2	138	271	-	-	-	-	-	-	-	
Critical Hdwy	6.4	6.5	6.2	4.1	-	-	4.1	-	-	
Critical Hdwy Stg 1	5.4	5.5	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.4	5.5	-	-	-	-	-	-	-	
Follow-up Hdwy	3.5	4	3.3	2.2	-	-	2.2	-	-	
Pot Cap-1 Maneuver	597	446	774	1304	-	-	1305	-	-	
Stage 1	774	684	-	-	-	-	-	-	-	
Stage 2	894	689	-	-	-	-	-	-	-	
Platoon blocked, %					-	-	-	-	-	
Mov Cap-1 Maneuver	595	0	774	1304	-	-	1305	-	-	
Mov Cap-2 Maneuver	595	0	-	-	-	-	-	-	-	
Stage 1	771	0	-	-	-	-	-	-	-	
Stage 2	894	0	-	-	-	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s	0	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	NBRWBLn1	SBL	SBT	SBR
Capacity (veh/h)	1304	-	-	1305	-	-
HCM Lane V/C Ratio	0.003	-	-	-	-	-
HCM Control Delay (s)	7.8	0	0	0	-	-
HCM Lane LOS	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	-	-

Intersection						
Int Delay, s/veh	8.9					
Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations		↑	↑		↔	
Traffic Vol, veh/h	0	22	3	0	226	1
Future Vol, veh/h	0	22	3	0	226	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	67	75	92	81	25
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	33	4	0	279	4

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	0 37 4
Stage 1	-	-	- 4 -
Stage 2	-	-	- 33 -
Critical Hdwy	-	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	-	-	- 3.5 3.3
Pot Cap-1 Maneuver	0	-	0 981 1085
Stage 1	0	-	0 1024 -
Stage 2	0	-	0 995 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	-	-	- 981 1085
Mov Cap-2 Maneuver	-	-	- 981 -
Stage 1	-	-	- 1024 -
Stage 2	-	-	- 995 -

Approach	NB	SB	SE
HCM Control Delay, s	0	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBT SELn1	SBT
Capacity (veh/h)	- 982	-
HCM Lane V/C Ratio	- 0.288	-
HCM Control Delay (s)	- 10.1	-
HCM Lane LOS	- B	-
HCM 95th %tile Q(veh)	- 1.2	-

Intersection						
Int Delay, s/veh	3.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	2	6	9	2	1	8
Future Vol, veh/h	2	6	9	2	1	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	50	75	38	50	25	50
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	8	24	4	4	16





















Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	28	0	42
Stage 1	-	-	26
Stage 2	-	-	16
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1599	-	974
Stage 1	-	-	1002
Stage 2	-	-	1012
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1599	-	971
Mov Cap-2 Maneuver	-	-	971
Stage 1	-	-	999
Stage 2	-	-	1012

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	8.5
HCM LOS	A		

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1599	-	-	-	1038
HCM Lane V/C Ratio	0.003	-	-	-	0.019
HCM Control Delay (s)	7.3	0	-	-	8.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

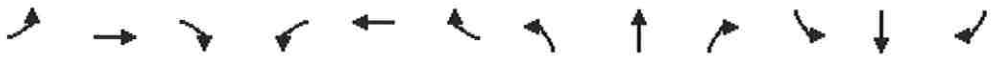
Lanes, Volumes, Timings  
8: Franklin Boulevard & Route 40/322

Build AM  
05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	737	14	25	646	133	25	166	157	112	118	51
Future Volume (vph)	96	737	14	25	646	133	25	166	157	112	118	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.974			0.920			0.945	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3596	0	1805	3516	0	1805	1748	0	1805	1782	0
Flt Permitted	0.950			0.950			0.504			0.232		
Satd. Flow (perm)	1805	3596	0	1805	3516	0	958	1748	0	441	1782	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			27			50			25	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		512			642			750			338	
Travel Time (s)		11.6			14.6			17.0			7.7	
Peak Hour Factor	0.74	0.88	0.56	0.79	0.81	0.79	0.75	0.87	0.71	0.87	0.84	0.63
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%
Adj. Flow (vph)	130	838	25	32	798	168	33	191	221	129	140	81
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	863	0	32	966	0	33	412	0	129	221	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												

Lanes, Volumes, Timings  
8: Franklin Boulevard & Route 40/322

Build AM  
05/01/2020







												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	55.0		5.0	55.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	9.0	60.0		9.0	60.0		15.0	15.0		15.0	15.0	
Total Split (s)	19.0	60.0		19.0	60.0		41.0	41.0		41.0	41.0	
Total Split (%)	15.8%	50.0%		15.8%	50.0%		34.2%	34.2%		34.2%	34.2%	
Maximum Green (s)	15.0	55.0		15.0	55.0		36.0	36.0		36.0	36.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
Act Effct Green (s)	12.3	66.9		6.8	57.7		36.0	36.0		36.0	36.0	
Actuated g/C Ratio	0.10	0.56		0.06	0.48		0.30	0.30		0.30	0.30	
v/c Ratio	0.71	0.43		0.32	0.57		0.11	0.74		0.98	0.40	
Control Delay	72.0	17.0		62.0	23.6		32.0	42.1		116.0	32.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	72.0	17.0		62.0	23.6		32.0	42.1		116.0	32.0	
LOS	E	B		E	C		C	D		F	C	
Approach Delay		24.2			24.8			41.3			63.0	
Approach LOS		C			C			D			E	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 115 (96%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow  
 Natural Cycle: 105  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.98  
 Intersection Signal Delay: 32.0  
 Intersection Capacity Utilization 93.7%  
 Analysis Period (min) 15

















Intersection LOS: C  
 ICU Level of Service F

Splits and Phases: 8: Franklin Boulevard & Route 40/322

 Ø2	 Ø3	 Ø4 (R)
41 s	19 s	60 s
 Ø6	 Ø7	 Ø8 (R)
41 s	19 s	60 s













Lanes, Volumes, Timings  
3: Main Street & Decatur Avenue

Build AM  
05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	41	11	40	16	20	7	311	29	23	278	22
Future Volume (vph)	6	41	11	40	16	20	7	311	29	23	278	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.952			0.955			0.988			0.987	
Flt Protected		0.994			0.976			0.998			0.995	
Satd. Flow (prot)	0	1798	0	0	1771	0	0	1873	0	0	1866	0
Flt Permitted		0.967			0.828			0.980			0.939	
Satd. Flow (perm)	0	1749	0	0	1502	0	0	1840	0	0	1761	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		37			32			12			13	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		431			451			469			268	
Travel Time (s)		11.8			12.3			12.8			7.3	
Peak Hour Factor	0.50	0.75	0.30	0.86	0.88	0.63	0.44	0.95	0.88	0.58	0.88	0.59
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	12	55	37	47	18	32	16	327	33	40	316	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	104	0	0	97	0	0	376	0	0	393	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	23.0	23.0		23.0	23.0		47.0	47.0		47.0	47.0	
Total Split (s)	23.0	23.0		23.0	23.0		47.0	47.0		47.0	47.0	
Total Split (%)	32.9%	32.9%		32.9%	32.9%		67.1%	67.1%		67.1%	67.1%	
Maximum Green (s)	18.0	18.0		18.0	18.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		18.0			18.0			42.0			42.0	
Actuated g/C Ratio		0.26			0.26			0.60			0.60	
v/c Ratio		0.22			0.24			0.34			0.37	
Control Delay		15.5			16.5			7.8			8.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		15.5			16.5			7.8			8.2	
LOS		B			B			A			A	
Approach Delay		15.5			16.5			7.8			8.2	

Lanes, Volumes, Timings  
3: Main Street & Decatur Avenue

Build AM  
05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		B			B			A			A	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 70

Control Type: Pretimed

Maximum v/c Ratio: 0.37

Intersection Signal Delay: 9.7





Intersection LOS: A

Intersection Capacity Utilization 58.3%

ICU Level of Service B




Analysis Period (min) 15

Splits and Phases: 3: Main Street & Decatur Avenue

 Ø2 (R)	 Ø4
47 s	23 s
 Ø6 (R)	 Ø8
47 s	23 s

Intersection

Int Delay, s/veh 2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	112	31	356	229	1	323
Future Vol, veh/h	112	31	356	229	1	323
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	122	34	387	249	1	351

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	865	512	0
Stage 1	512	-	-
Stage 2	353	-	-
Critical Hdwy	5.5	5	-
Critical Hdwy Stg 1	5	-	-
Critical Hdwy Stg 2	5	-	-
Follow-up Hdwy	3	3	-
Pot Cap-1 Maneuver	449	724	-
Stage 1	724	-	-
Stage 2	848	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	449	724	-
Mov Cap-2 Maneuver	449	-	-
Stage 1	724	-	-
Stage 2	847	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	489	1151
HCM Lane V/C Ratio	-	-	0.318	0.001
HCM Control Delay (s)	-	-	15.8	8.1
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	1.4	0

Intersection

Int Delay, s/veh 2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	17	10	31	11	9	12	14	556	10	9	411	11
Future Vol, veh/h	17	10	31	11	9	12	14	556	10	9	411	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	42	75	58	67	50	81	99	44	45	96	46
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	21	24	41	19	13	24	17	562	23	20	428	24

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1106	1099	440	1121	1100	574	452	0	0	585	0	0
Stage 1	480	480	-	608	608	-	-	-	-	-	-	-
Stage 2	626	619	-	513	492	-	-	-	-	-	-	-
Critical Hdwy	6.5	6	6	6.5	6	6	3.5	-	-	3.5	-	-
Critical Hdwy Stg 1	5.5	5	-	5.5	5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.5	5	-	5.5	5	-	-	-	-	-	-	-
Follow-up Hdwy	3	3.5	3	3	3.5	3	2	-	-	2	-	-
Pot Cap-1 Maneuver	249	268	688	244	268	580	1312	-	-	1194	-	-
Stage 1	699	661	-	604	586	-	-	-	-	-	-	-
Stage 2	592	579	-	673	653	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	222	257	688	207	257	580	1312	-	-	1194	-	-
Mov Cap-2 Maneuver	222	257	-	207	257	-	-	-	-	-	-	-
Stage 1	686	646	-	593	575	-	-	-	-	-	-	-
Stage 2	544	568	-	596	639	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	18.7		19.5		0.2		0.3	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1312	-	-	348	304	1194	-	-
HCM Lane V/C Ratio	0.013	-	-	0.248	0.186	0.017	-	-
HCM Control Delay (s)	7.8	0	-	18.7	19.5	8.1	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1	0.7	0.1	-	-

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Traffic Vol, veh/h	0	0	0	1	1	8	8	304	0	2	14	134
Future Vol, veh/h	0	0	0	1	1	8	8	304	0	2	14	134
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	50	92	92	92	38	95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	1	1	9	16	330	0	2	37	141

Major/Minor	Minor1		Major1		Major2					
Conflicting Flow All	474	544	330	178	0	0	330	0	0	
Stage 1	362	362	-	-	-	-	-	-	-	
Stage 2	112	182	-	-	-	-	-	-	-	
Critical Hdwy	6.4	6.5	6.2	4.1	-	-	4.1	-	-	
Critical Hdwy Stg 1	5.4	5.5	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.4	5.5	-	-	-	-	-	-	-	
Follow-up Hdwy	3.5	4	3.3	2.2	-	-	2.2	-	-	
Pot Cap-1 Maneuver	553	449	716	1410	-	-	1241	-	-	
Stage 1	709	629	-	-	-	-	-	-	-	
Stage 2	918	753	-	-	-	-	-	-	-	
Platoon blocked, %					-	-	-	-	-	
Mov Cap-1 Maneuver	544	0	716	1410	-	-	1241	-	-	
Mov Cap-2 Maneuver	544	0	-	-	-	-	-	-	-	
Stage 1	699	0	-	-	-	-	-	-	-	
Stage 2	916	0	-	-	-	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s	10.3	0.4	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	NBRWBLn1	SBL	SBT	SBR
Capacity (veh/h)	1410	-	-	692	1241	-
HCM Lane V/C Ratio	0.011	-	-	0.016	0.002	-
HCM Control Delay (s)	7.6	0	-	10.3	7.9	0
HCM Lane LOS	A	A	-	B	A	A
HCM 95th %tile Q(veh)	0	-	-	0	0	-

## Intersection

Int Delay, s/veh 8.3

Movement	NBL	NBT	SBT	SBR	SEL	SER
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Lane Configurations		↑	↑		Y	
Traffic Vol, veh/h	0	37	6	0	237	0
Future Vol, veh/h	0	37	6	0	237	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	58	92	92	86	25
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	64	7	0	276	0

Major/Minor	Major1	Major2	Minor2
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Conflicting Flow All	-	0	-	0	71	7
Stage 1	-	-	-	-	7	-
Stage 2	-	-	-	-	64	-
Critical Hdwy	-	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	0	-	-	0	938	1081
Stage 1	0	-	-	0	1021	-
Stage 2	0	-	-	0	964	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	938	1081
Mov Cap-2 Maneuver	-	-	-	-	938	-
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	964	-

Approach	NB	SB	SE
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HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBT SELn1	SBT
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Capacity (veh/h)	- 938	-
HCM Lane V/C Ratio	- 0.294	-
HCM Control Delay (s)	- 10.4	-
HCM Lane LOS	- B	-
HCM 95th %tile Q(veh)	- 1.2	-

Intersection

Int Delay, s/veh 5.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	6	4	1	1	1	5
Future Vol, veh/h	6	4	1	1	1	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	50	50	25	25	25	25
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	12	8	4	4	4	20

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	8	0	0	38	6
Stage 1	-	-	-	6	-
Stage 2	-	-	-	32	-
Critical Hdwy	4.1	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	3.5	3.3
Pot Cap-1 Maneuver	1625	-	-	979	1083
Stage 1	-	-	-	1022	-
Stage 2	-	-	-	996	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1625	-	-	972	1083
Mov Cap-2 Maneuver	-	-	-	972	-
Stage 1	-	-	-	1015	-
Stage 2	-	-	-	996	-

Approach	EB	WB	SB
HCM Control Delay, s	4.3	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1625	-	-	-	1063
HCM Lane V/C Ratio	0.007	-	-	-	0.023
HCM Control Delay (s)	7.2	0	-	-	8.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection

Int Delay, s/veh 1.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	1	10	6	0	0	3
Future Vol, veh/h	1	10	6	0	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	11	7	0	0	3

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	7	0	-	0	20
Stage 1	-	-	-	-	7
Stage 2	-	-	-	-	13
Critical Hdwy	4.1	-	-	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	2.2	-	-	-	3.5
Pot Cap-1 Maneuver	1627	-	-	-	1002
Stage 1	-	-	-	-	1021
Stage 2	-	-	-	-	1015
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1627	-	-	-	1001
Mov Cap-2 Maneuver	-	-	-	-	1001
Stage 1	-	-	-	-	1020
Stage 2	-	-	-	-	1015

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	8.3
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1627	-	-	-	1081
HCM Lane V/C Ratio	0.001	-	-	-	0.003
HCM Control Delay (s)	7.2	0	-	-	8.3
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection

Int Delay, s/veh 1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑			↑
Traffic Vol, veh/h	2	32	272	2	11	3
Future Vol, veh/h	2	32	272	2	11	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	2	35	296	2	12	3





















Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	324	297	0	0	298
Stage 1	297	-	-	-	-
Stage 2	27	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	674	747	-	-	1275
Stage 1	758	-	-	-	-
Stage 2	1001	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	668	747	-	-	1275
Mov Cap-2 Maneuver	668	-	-	-	-
Stage 1	758	-	-	-	-
Stage 2	992	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	6.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	742	1275
HCM Lane V/C Ratio	-	-	0.05	0.009
HCM Control Delay (s)	-	-	10.1	7.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.2	0


Lanes, Volumes, Timings  
8: Franklin Boulevard & Route 40/322

Build PM  
05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	724	26	96	950	147	29	158	130	121	191	110
Future Volume (vph)	123	724	26	96	950	147	29	158	130	121	191	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Fr't		0.991			0.978			0.927			0.947	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3578	0	1805	3531	0	1805	1761	0	1805	1793	0
Flt Permitted	0.950			0.950			0.268			0.253		
Satd. Flow (perm)	1805	3578	0	1805	3531	0	509	1761	0	481	1793	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			22			40			23	
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		512			642			750			338	
Travel Time (s)		8.7			10.9			20.5			9.2	
Peak Hour Factor	0.70	0.94	0.50	0.62	0.94	0.83	0.59	0.84	0.74	0.85	0.83	0.89
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
Adj. Flow (vph)	176	770	52	155	1011	177	49	188	176	142	230	124
Shared Lane Traffic (%)												
Lane Group Flow (vph)	176	822	0	155	1188	0	49	364	0	142	354	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2		6		6
Permitted Phases							2			6		
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												

Lanes, Volumes, Timings  
8: Franklin Boulevard & Route 40/322

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	55.0		5.0	55.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	9.0	60.0		9.0	60.0		15.0	15.0		15.0	15.0	
Total Split (s)	19.0	60.0		19.0	60.0		41.0	41.0		41.0	41.0	
Total Split (%)	15.8%	50.0%		15.8%	50.0%		34.2%	34.2%		34.2%	34.2%	
Maximum Green (s)	15.0	55.0		15.0	55.0		36.0	36.0		36.0	36.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
Act Effct Green (s)	14.0	60.5		13.3	59.8		32.2	32.2		32.2	32.2	
Actuated g/C Ratio	0.12	0.50		0.11	0.50		0.27	0.27		0.27	0.27	
v/c Ratio	0.84	0.46		0.78	0.67		0.36	0.73		1.10	0.71	
Control Delay	83.6	21.2		76.7	25.8		42.0	43.6		150.4	44.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	83.6	21.2		76.7	25.8		42.0	43.6		150.4	44.8	
LOS	F	C		E	C		D	D		F	D	
Approach Delay		32.2			31.6			43.4			75.0	
Approach LOS		C			C			D			E	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 115 (96%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow  
 Natural Cycle: 105  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.10  
 Intersection Signal Delay: 39.9  
 Intersection Capacity Utilization 93.6%  
 Analysis Period (min) 15

Intersection LOS: D  
ICU Level of Service F

















Splits and Phases: 8: Franklin Boulevard & Route 40/322

 Ø2	 Ø3	 Ø4 (R)
41 s	19 s	60 s
 Ø6	 Ø7	 Ø8 (R)
41 s	19 s	60 s

Lanes, Volumes, Timings  
3: Main Street & Decatur Avenue













Build PM

05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	70	31	91	55	37	16	378	48	32	328	16
Future Volume (vph)	16	70	31	91	55	37	16	378	48	32	328	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.951			0.973			0.982			0.992	
Flt Protected		0.993			0.976			0.998			0.995	
Satd. Flow (prot)	0	1794	0	0	1804	0	0	1862	0	0	1875	0
Flt Permitted		0.936			0.748			0.971			0.921	
Satd. Flow (perm)	0	1691	0	0	1383	0	0	1812	0	0	1736	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		39			17			20			8	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		431			451			469			268	
Travel Time (s)		11.8			12.3			12.8			7.3	
Peak Hour Factor	0.63	0.83	0.50	0.68	0.63	0.68	0.67	0.96	0.73	0.70	0.90	0.63
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	25	84	62	134	87	54	24	394	66	46	364	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	171	0	0	275	0	0	484	0	0	435	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	23.0	23.0		23.0	23.0		47.0	47.0		47.0	47.0	
Total Split (s)	23.0	23.0		23.0	23.0		47.0	47.0		47.0	47.0	
Total Split (%)	32.9%	32.9%		32.9%	32.9%		67.1%	67.1%		67.1%	67.1%	
Maximum Green (s)	18.0	18.0		18.0	18.0		42.0	42.0		42.0	42.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		18.0			18.0			42.0			42.0	
Actuated g/C Ratio		0.26			0.26			0.60			0.60	
v/c Ratio		0.37			0.75			0.44			0.42	
Control Delay		19.0			37.3			8.8			8.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		19.0			37.3			8.8			8.8	
LOS		B			D			A			A	
Approach Delay		19.0			37.3			8.8			8.8	

Lanes, Volumes, Timings  
3: Main Street & Decatur Avenue

Build PM  
05/01/2020





												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	B			D			A			A		

Intersection Summary

Area Type: Other  
 Cycle Length: 70  
 Actuated Cycle Length: 70  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 70  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.75  
 Intersection Signal Delay: 15.9  
 Intersection Capacity Utilization 60.2%  
 Analysis Period (min) 15

Intersection LOS: B  
 ICU Level of Service B

Splits and Phases: 3: Main Street & Decatur Avenue

 Ø2 (R)	 Ø4
47 s	23 s
 Ø6 (R)	 Ø8
47 s	23 s

Intersection						
Int Delay, s/veh	4.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		P			Y
Traffic Vol, veh/h	175	32	421	220	2	441
Future Vol, veh/h	175	32	421	220	2	441
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	190	35	458	239	2	479

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1061	578	0
Stage 1	578	-	-
Stage 2	483	-	-
Critical Hdwy	5.5	5	-
Critical Hdwy Stg 1	5	-	-
Critical Hdwy Stg 2	5	-	-
Follow-up Hdwy	3	3	-
Pot Cap-1 Maneuver	357	678	-
Stage 1	678	-	-
Stage 2	745	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	356	678	-
Mov Cap-2 Maneuver	356	-	-
Stage 1	678	-	-
Stage 2	744	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.8	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	384	1102
HCM Lane V/C Ratio	-	-	0.586	0.002
HCM Control Delay (s)	-	-	26.8	8.3
HCM Lane LOS	-	-	D	A
HCM 95th %tile Q(veh)	-	-	3.6	0

Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	17	17	43	18	9	28	22	596	27	25	572	14
Future Vol, veh/h	17	17	43	18	9	28	22	596	27	25	572	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	70	75	88	56	63	88	94	50	67	87	56
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	34	24	57	20	16	44	25	634	54	37	657	25

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1485	1482	670	1495	1467	661	682	0	0	688	0	0
Stage 1	744	744	-	711	711	-	-	-	-	-	-	-
Stage 2	741	738	-	784	756	-	-	-	-	-	-	-
Critical Hdwy	6.5	6	6	6.5	6	6	3.5	-	-	3.5	-	-
Critical Hdwy Stg 1	5.5	5	-	5.5	5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.5	5	-	5.5	5	-	-	-	-	-	-	-
Follow-up Hdwy	3	3.5	3	3	3.5	3	2	-	-	2	-	-
Pot Cap-1 Maneuver	143	164	513	141	167	519	1114	-	-	1110	-	-
Stage 1	517	514	-	537	531	-	-	-	-	-	-	-
Stage 2	518	517	-	493	508	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	112	149	513	102	152	519	1114	-	-	1110	-	-
Mov Cap-2 Maneuver	112	149	-	102	152	-	-	-	-	-	-	-
Stage 1	498	486	-	517	511	-	-	-	-	-	-	-
Stage 2	442	498	-	394	481	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	45.1	33.1	0.3	0.4
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1114	-	-	200	207	1110	-	-
HCM Lane V/C Ratio	0.022	-	-	0.578	0.391	0.034	-	-
HCM Control Delay (s)	8.3	0	-	45.1	33.1	8.4	0	-
HCM Lane LOS	A	A	-	E	D	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	3.2	1.7	0.1	-	-

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Traffic Vol, veh/h	0	0	0	0	1	4	3	267	0	8	32	203
Future Vol, veh/h	0	0	0	0	1	4	3	267	0	8	32	203
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	50	92	92	92	75	76
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	0	1	4	6	290	0	9	43	267

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	497	630	290	310	0	0
Stage 1	302	302	-	-	-	-
Stage 2	195	328	-	-	-	-
Critical Hdwy	6.4	6.5	6.2	4.1	-	4.1
Critical Hdwy Stg 1	5.4	5.5	-	-	-	-
Critical Hdwy Stg 2	5.4	5.5	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	2.2	-	2.2
Pot Cap-1 Maneuver	536	401	754	1262	-	1283
Stage 1	755	668	-	-	-	-
Stage 2	843	651	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	528	0	754	1262	-	1283
Mov Cap-2 Maneuver	528	0	-	-	-	-
Stage 1	750	0	-	-	-	-
Stage 2	835	0	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0.2	0.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	NBRWBLn1	SBL	SBT	SBR
Capacity (veh/h)	1262	-	-	754	1283	-
HCM Lane V/C Ratio	0.005	-	-	0.007	0.007	-
HCM Control Delay (s)	7.9	0	-	9.8	7.8	0
HCM Lane LOS	A	A	-	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	-

Intersection						
Int Delay, s/veh	8.9					
Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations		↑	↑		↑	↑
Traffic Vol, veh/h	0	26	4	0	228	1
Future Vol, veh/h	0	26	4	0	228	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	67	92	92	81	25
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	39	4	0	281	4

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	0 43 4
Stage 1	-	-	- 4 -
Stage 2	-	-	- 39 -
Critical Hdwy	-	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	-	-	- 3.5 3.3
Pot Cap-1 Maneuver	0	-	0 973 1085
Stage 1	0	-	0 1024 -
Stage 2	0	-	0 989 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	-	-	- 973 1085
Mov Cap-2 Maneuver	-	-	- 973 -
Stage 1	-	-	- 1024 -
Stage 2	-	-	- 989 -

Approach	NB	SB	SE
HCM Control Delay, s	0	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBT SELn1	SBT
Capacity (veh/h)	- 974	-
HCM Lane V/C Ratio	- 0.293	-
HCM Control Delay (s)	- 10.2	-
HCM Lane LOS	- B	-
HCM 95th %tile Q(veh)	- 1.2	-

Intersection						
Int Delay, s/veh	4.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	7	6	9	2	1	12
Future Vol, veh/h	7	6	9	2	1	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	50	75	38	50	25	50
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	14	8	24	4	4	24

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	28	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1599	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1599	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	4.6	0	8.6
HCM LOS	A		

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1599	-	-	-	1038
HCM Lane V/C Ratio	0.009	-	-	-	0.027
HCM Control Delay (s)	7.3	0	-	-	8.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	4	13	21	0	0	1
Future Vol, veh/h	4	13	21	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	14	23	0	0	1




Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	23	0	0 45 23
Stage 1	-	-	- 23 -
Stage 2	-	-	- 22 -
Critical Hdwy	4.1	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	1605	-	- 970 1060
Stage 1	-	-	- 1005 -
Stage 2	-	-	- 1006 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1605	-	- 967 1060
Mov Cap-2 Maneuver	-	-	- 967 -
Stage 1	-	-	- 1002 -
Stage 2	-	-	- 1006 -

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0	8.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1605	-	-	-	1060
HCM Lane V/C Ratio	0.003	-	-	-	0.001
HCM Control Delay (s)	7.2	0	-	-	8.4
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection

Int Delay, s/veh 1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	20	248	6	29	3
Future Vol, veh/h	1	20	248	6	29	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	22	270	7	32	3

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	341	274	0
Stage 1	274	-	-
Stage 2	67	-	-
Critical Hdwy	6.4	6.2	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	659	770	-
Stage 1	777	-	-
Stage 2	961	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	643	770	-
Mov Cap-2 Maneuver	643	-	-
Stage 1	777	-	-
Stage 2	937	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	7.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	763	1298
HCM Lane V/C Ratio	-	-	0.03	0.024
HCM Control Delay (s)	-	-	9.9	7.8
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1

CAL3QHC - (DATED 95221)

CAL3QHC PC (32 BIT) VERSION 3.0.0  
(C) COPYRIGHT 1993-2000, TRINITY CONSULTANTS

Run Began on 5/01/2020 at 7:11:29

JOB: ROUTE 40 &amp; FRANKLIN BOULEVARD

RUN: NO-BUILD

DATE : 05/01/2020  
TIME : 07:11:29

The MODE flag has been set to C for calculating CO averages.

## SITE &amp; METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 11. CM  
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

## LINK VARIABLES

QUEUE (VEH)	LINK DESCRIPTION	* X1	Y1	X2	Y2	* LENGTH (M)	BRG TYPE (DEG)	VPH	EF (G/MI)	H (M)	W (M)	V/C
1.	ROUTE 40 EB APP	0.0	-3.7	-305.0	-3.7	305.	270. AG	861.	10.1	0.0	17.1	
2.	ROUTE 40 EB DEP	0.0	-5.5	305.0	-5.5	305.	90. AG	967.	10.1	0.0	13.4	
3.	ROUTE 40 WB APP	0.0	3.7	305.0	3.7	305.	90. AG	1177.	10.1	0.0	17.1	
4.	ROUTE 40 WB DEP	0.0	5.5	-305.0	5.5	305.	270. AG	1080.	10.1	0.0	13.4	
5.	FRANKLIN NB APP	1.8	0.0	1.8	-152.5	152.	180. AG	296.	9.9	0.0	13.4	
6.	FRANKLIN NB DEP	3.7	0.0	3.7	152.5	152.	360. AG	424.	9.9	0.0	9.8	
7.	FRANKLIN SB APP	-1.8	0.0	-1.8	152.5	152.	360. AG	417.	9.9	0.0	13.4	
8.	FRANKLIN SB DEP	-3.7	0.0	-3.7	-152.5	152.	180. AG	280.	9.9	0.0	9.8	
9.	ROUTE 40 EB L	-8.5	0.0	-29.5	0.0	21.	270. AG	125.	100.0	0.0	3.7	0.56
10.	ROUTE 40 EB TR	-8.5	-5.5	-46.1	-5.5	38.	270. AG	150.	100.0	0.0	7.3	0.42
11.	ROUTE 40 WB L	8.5	0.0	22.1	0.0	14.	90. AG	125.	100.0	0.0	3.7	0.36
12.	ROUTE 40 WB TR	8.5	5.5	64.3	5.5	56.	90. AG	150.	100.0	0.0	7.3	0.63
13.	FRANKLIN NB L	0.0	-12.2	0.0	-14.9	3.	180. AG	99.	100.0	0.0	3.7	0.04
14.	FRANKLIN NB TR	3.7	-12.2	3.7	-49.5	37.	180. AG	99.	100.0	0.0	3.7	0.50
15.	FRANKLIN SB L	0.0	12.2	0.0	28.5	16.	360. AG	99.	100.0	0.0	3.7	0.22
16.	FRANKLIN SB TR	-3.7	12.2	-3.7	52.2	40.	360. AG	99.	100.0	0.0	3.7	0.53

JOB: ROUTE 40 &amp; FRANKLIN BOULEVARD

RUN: NO-BUILD

DATE : 05/01/2020  
TIME : 07:11:29

## ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
9. ROUTE 40 EB L	120	102	2.0	123	1900	54.87	3	3
10. ROUTE 40 EB TR	120	61	2.0	738	1900	54.87	3	3
11. ROUTE 40 WB L	120	102	2.0	80	1900	54.87	3	3
12. ROUTE 40 WB TR	120	61	2.0	1097	1900	54.87	3	3
13. FRANKLIN NB L	120	81	2.0	20	1900	54.87	3	3
14. FRANKLIN NB TR	120	81	2.0	276	1900	54.87	3	3
15. FRANKLIN SB L	120	81	2.0	121	1900	54.87	3	3
16. FRANKLIN SB TR	120	81	2.0	296	1900	54.87	3	3

## RECEPTOR LOCATIONS

RECEPTOR	* X	COORDINATES (M) Y	Z	*
1. NORTHWEST	-9.0	12.6	1.8	*
2. NORTHEAST	9.1	12.6	1.8	*
3. SOUTHEAST	9.1	-12.7	1.8	*
4. SOUTHWEST	-9.0	-12.6	1.8	*

## MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND	*	CONCENTRATION			
ANGLE	*	(PPM)			
(DEGR)	*	REC1	REC2	REC3	REC4
0.	*	0.4	0.3	1.1	1.3
5.	*	0.6	0.1	1.2	1.5
10.	*	0.7	0.1	1.1	1.3
15.	*	0.7	0.0	1.0	1.2
20.	*	0.8	0.0	1.0	1.1
25.	*	0.8	0.0	1.0	0.9
30.	*	0.7	0.0	1.1	0.8
35.	*	0.8	0.0	1.1	1.0
40.	*	0.8	0.0	1.2	0.9
45.	*	0.8	0.0	1.1	0.9
50.	*	0.8	0.0	1.1	1.2
55.	*	0.7	0.0	1.0	1.2
60.	*	0.7	0.0	1.2	1.3
65.	*	0.7	0.0	1.2	1.4
70.	*	0.7	0.1	1.2	1.5
75.	*	0.7	0.1	1.2	1.5
80.	*	0.9	0.2	1.2	1.4
85.	*	1.1	0.6	1.0	1.6
90.	*	1.6	1.0	0.7	1.2
95.	*	1.7	1.4	0.4	0.8
100.	*	1.9	1.6	0.2	0.5
105.	*	1.8	1.6	0.1	0.5
110.	*	1.6	1.5	0.0	0.4
115.	*	1.4	1.5	0.0	0.4
120.	*	1.2	1.4	0.0	0.4
125.	*	1.2	1.2	0.0	0.4
130.	*	1.0	1.3	0.0	0.4
135.	*	0.9	1.2	0.0	0.4
140.	*	0.9	1.3	0.0	0.4
145.	*	0.8	1.3	0.0	0.4
150.	*	0.9	1.3	0.0	0.4
155.	*	1.0	1.2	0.0	0.5
160.	*	1.0	1.1	0.0	0.4
165.	*	0.9	1.1	0.0	0.4
170.	*	1.0	1.2	0.0	0.3
175.	*	1.2	1.3	0.2	0.3
180.	*	1.0	1.3	0.2	0.2
185.	*	1.0	1.4	0.5	0.1
190.	*	0.9	1.2	0.6	0.0
195.	*	0.9	1.1	0.6	0.0
200.	*	0.9	0.9	0.7	0.0
205.	*	0.9	0.8	0.6	0.0

PAGE 4

JOB: ROUTE 40 & FRANKLIN BOULEVARD

RUN: NO-BUILD

WIND	*	CONCENTRATION			
ANGLE	*	(PPM)			
(DEGR)	*	REC1	REC2	REC3	REC4
210.	*	1.0	1.0	0.5	0.0
215.	*	1.1	1.1	0.5	0.0
220.	*	1.1	1.0	0.5	0.0
225.	*	1.1	1.0	0.5	0.0
230.	*	1.1	1.2	0.5	0.0
235.	*	1.2	1.1	0.5	0.0
240.	*	1.1	1.4	0.5	0.0
245.	*	1.2	1.6	0.5	0.0
250.	*	1.0	1.5	0.6	0.0
255.	*	1.0	1.5	0.5	0.1
260.	*	1.1	1.4	0.6	0.1
265.	*	1.1	1.4	0.9	0.5
270.	*	0.8	1.2	1.4	0.7
275.	*	0.5	0.8	1.6	1.2
280.	*	0.2	0.7	1.7	1.3
285.	*	0.1	0.6	1.7	1.3
290.	*	0.1	0.6	1.6	1.3
295.	*	0.0	0.6	1.4	1.4
300.	*	0.0	0.6	1.2	1.4
305.	*	0.0	0.7	1.1	1.4
310.	*	0.0	0.7	0.8	1.3
315.	*	0.0	0.7	0.8	1.2
320.	*	0.0	0.7	0.9	1.2
325.	*	0.0	0.7	0.9	1.2
330.	*	0.0	0.7	1.0	1.2
335.	*	0.0	0.7	1.1	1.1
340.	*	0.0	0.6	1.1	1.1
345.	*	0.0	0.6	1.2	1.1
350.	*	0.1	0.6	1.4	1.1
MAX	*	1.9	1.6	1.7	1.6
DEGR.	*	100	100	280	85

THE HIGHEST CONCENTRATION OF 1.90 PPM OCCURRED AT RECEPTOR REC1 .

CAL3QHC PC (32 BIT) VERSION 3.0.0  
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Run Began on 5/01/2020 at 7:16:11

JOB: ROUTE 40 & FRANKLIN BOULEVARD

RUN: Build

DATE : 05/01/2020  
TIME : 07:16:11

The MODE flag has been set to C for calculating CO averages.

## SITE &amp; METEOROLOGICAL VARIABLES

VS = 0.0 CM/S      VD = 0.0 CM/S      Z0 = 11. CM  
U = 1.0 M/S      CLAS = 4 (D)      ATIM = 60. MINUTES  
MIXH = 1000. M      AMB = 0.0 PPM

## LINK VARIABLES

QUEUE	LINK DESCRIPTION	* X1	Y1	X2	Y2	* LENGTH	BRG TYPE	VPH	EF	H	W	V/C
(VEH)						(M)	(DEG)		(G/MI)	(M)	(M)	
	1. ROUTE 40 EB APP	0.0	-3.7	-305.0	-3.7 *	305.	270. AG	873.	10.1	0.0	17.1	
	2. ROUTE 40 EB DEP	0.0	-5.5	305.0	-5.5 *	305.	90. AG	975.	10.1	0.0	13.4	
	3. ROUTE 40 WB APP	0.0	3.7	305.0	3.7 *	305.	90. AG	1193.	10.1	0.0	17.1	
	4. ROUTE 40 WB DEP	0.0	5.5	-305.0	5.5 *	305.	270. AG	1089.	10.1	0.0	13.4	
	5. FRANKLIN NB APP	1.8	0.0	1.8	-152.5 *	152.	180. AG	317.	9.9	0.0	13.4	
	6. FRANKLIN NB DEP	3.7	0.0	3.7	152.5 *	152.	360. AG	428.	9.9	0.0	9.8	
	7. FRANKLIN SB APP	-1.8	0.0	-1.8	152.5 *	152.	360. AG	422.	9.9	0.0	13.4	
	8. FRANKLIN SB DEP	-3.7	0.0	-3.7	-152.5 *	152.	180. AG	313.	9.9	0.0	9.8	
	9. ROUTE 40 EB L	-8.5	0.0	-29.5	0.0 *	21.	270. AG	125.	100.0	0.0	3.7	0.56
	10. ROUTE 40 EB TR	-8.5	-5.5	-46.7	-5.5 *	38.	270. AG	150.	100.0	0.0	7.3	0.43
	11. ROUTE 40 WB L	8.5	0.0	24.9	0.0 *	16.	90. AG	125.	100.0	0.0	3.7	0.43
	12. ROUTE 40 WB TR	8.5	5.5	64.3	5.5 *	56.	90. AG	150.	100.0	0.0	7.3	0.63
	13. FRANKLIN NB L	0.0	-12.2	0.0	-16.1 *	4.	180. AG	99.	100.0	0.0	3.7	0.05
	14. FRANKLIN NB TR	3.7	-12.2	3.7	-51.1 *	39.	180. AG	99.	100.0	0.0	3.7	0.52
	15. FRANKLIN SB L	0.0	12.2	0.0	28.5 *	16.	360. AG	99.	100.0	0.0	3.7	0.22
	16. FRANKLIN SB TR	-3.7	12.2	-3.7	52.8 *	41.	360. AG	99.	100.0	0.0	3.7	0.54

JOB: ROUTE 40 &amp; FRANKLIN BOULEVARD

RUN: Build

DATE : 05/01/2020  
TIME : 07:16:11

## ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
9. ROUTE 40 EB L	120	102	2.0	123	1900	54.87	3	3
10. ROUTE 40 EB TR	120	61	2.0	750	1900	54.87	3	3
11. ROUTE 40 WB L	120	102	2.0	96	1900	54.87	3	3
12. ROUTE 40 WB TR	120	61	2.0	1097	1900	54.87	3	3
13. FRANKLIN NB L	120	81	2.0	29	1900	54.87	3	3
14. FRANKLIN NB TR	120	81	2.0	288	1900	54.87	3	3
15. FRANKLIN SB L	120	81	2.0	121	1900	54.87	3	3
16. FRANKLIN SB TR	120	81	2.0	301	1900	54.87	3	3

## RECEPTOR LOCATIONS

RECEPTOR	* X	COORDINATES (M) Y	Z	*
1. NORTHWEST	-9.0	12.6	1.8	*
2. NORTHEAST	9.1	12.6	1.8	*
3. SOUTHEAST	9.1	-12.7	1.8	*
4. SOUTHWEST	-9.0	-12.6	1.8	*

## MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND	*	CONCENTRATION			
ANGLE	*	(PPM)			
(DEGR)	*	REC1	REC2	REC3	REC4
0.	*	0.4	0.3	1.1	1.3
5.	*	0.6	0.1	1.2	1.5
10.	*	0.7	0.1	1.1	1.3
15.	*	0.8	0.0	1.0	1.2
20.	*	0.8	0.0	1.0	1.1
25.	*	0.8	0.0	1.0	0.9
30.	*	0.7	0.0	1.1	0.8
35.	*	0.8	0.0	1.1	1.1
40.	*	0.8	0.0	1.2	0.9
45.	*	0.8	0.0	1.2	0.9
50.	*	0.8	0.0	1.1	1.2
55.	*	0.7	0.0	1.1	1.2
60.	*	0.7	0.0	1.3	1.4
65.	*	0.7	0.0	1.2	1.4
70.	*	0.7	0.1	1.2	1.5
75.	*	0.7	0.1	1.2	1.5
80.	*	0.9	0.2	1.2	1.4
85.	*	1.1	0.6	1.1	1.6
90.	*	1.6	1.0	0.7	1.2
95.	*	1.8	1.4	0.4	0.8
100.	*	1.9	1.6	0.2	0.5
105.	*	1.8	1.7	0.1	0.5
110.	*	1.6	1.6	0.0	0.4
115.	*	1.4	1.5	0.0	0.5
120.	*	1.2	1.5	0.0	0.4
125.	*	1.2	1.3	0.0	0.4
130.	*	1.0	1.3	0.0	0.4
135.	*	0.9	1.3	0.0	0.4
140.	*	0.9	1.3	0.0	0.4
145.	*	0.8	1.3	0.0	0.4
150.	*	0.9	1.3	0.0	0.5
155.	*	1.0	1.2	0.0	0.5
160.	*	1.1	1.2	0.0	0.4
165.	*	0.9	1.2	0.0	0.4
170.	*	1.1	1.2	0.0	0.4
175.	*	1.3	1.3	0.2	0.3
180.	*	1.0	1.3	0.2	0.3
185.	*	1.0	1.4	0.5	0.1
190.	*	0.9	1.3	0.6	0.1
195.	*	0.9	1.1	0.6	0.0
200.	*	0.9	1.0	0.7	0.0
205.	*	0.9	0.9	0.7	0.0

PAGE 4

JOB: ROUTE 40 & FRANKLIN BOULEVARD

RUN: Build

WIND	*	CONCENTRATION			
ANGLE	*	(PPM)			
(DEGR)	*	REC1	REC2	REC3	REC4
210.	*	1.0	1.0	0.5	0.0
215.	*	1.1	1.1	0.5	0.0
220.	*	1.1	1.1	0.5	0.0
225.	*	1.1	1.0	0.5	0.0
230.	*	1.1	1.2	0.5	0.0
235.	*	1.3	1.2	0.5	0.0
240.	*	1.1	1.4	0.5	0.0
245.	*	1.2	1.6	0.6	0.0
250.	*	1.0	1.5	0.6	0.0
255.	*	1.1	1.5	0.5	0.1
260.	*	1.1	1.4	0.6	0.1
265.	*	1.1	1.4	0.9	0.5
270.	*	0.8	1.2	1.4	0.8
275.	*	0.5	0.8	1.6	1.2
280.	*	0.2	0.7	1.8	1.3
285.	*	0.1	0.6	1.7	1.4
290.	*	0.1	0.6	1.6	1.4
295.	*	0.0	0.6	1.4	1.4
300.	*	0.0	0.6	1.2	1.4
305.	*	0.0	0.7	1.1	1.4
310.	*	0.0	0.7	0.9	1.3
315.	*	0.0	0.7	0.9	1.2
320.	*	0.0	0.7	0.9	1.2
325.	*	0.0	0.7	0.9	1.2
330.	*	0.0	0.7	1.0	1.2
335.	*	0.0	0.7	1.1	1.1
340.	*	0.0	0.6	1.2	1.1
345.	*	0.0	0.6	1.2	1.1
350.	*	0.1	0.6	1.4	1.1
MAX	*	1.9	1.7	1.8	1.6
DEGR.	*	100	105	280	85

THE HIGHEST CONCENTRATION OF 1.90 PPM OCCURRED AT RECEPTOR REC1 .



JOB: Main Street & Decatur Avenue

RUN: No-Build

DATE : 05/01/2020  
TIME : 07:28:44

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
9. Main NB LTR	70	24	2.0	440	1900	54.87	1	3
10. Main SB LTR	70	24	2.0	371	1900	54.87	1	3
11. Decatur EB LTR	70	48	2.0	116	1900	54.87	1	3
12. Decatur WB LTR	70	48	2.0	181	1900	54.87	1	3

RECEPTOR LOCATIONS

RECEPTOR	* X	COORDINATES (M) Y	Z	*
1. Northwest	-7.2	7.3	1.8	*
2. Northeast	7.2	7.2	1.8	*
3. Southeast	7.2	-7.3	1.8	*
4. Southwest	-7.2	-7.3	1.8	*

## MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND	*	CONCENTRATION			
ANGLE	*	(PPM)			
(DEGR)	*	REC1	REC2	REC3	REC4
0.	*	0.3	0.4	0.5	0.5
5.	*	0.5	0.3	0.4	0.7
10.	*	0.5	0.1	0.3	0.7
15.	*	0.6	0.0	0.2	0.7
20.	*	0.5	0.0	0.2	0.6
25.	*	0.5	0.0	0.3	0.5
30.	*	0.5	0.0	0.4	0.3
35.	*	0.5	0.0	0.4	0.3
40.	*	0.4	0.0	0.4	0.3
45.	*	0.3	0.0	0.4	0.3
50.	*	0.3	0.0	0.4	0.4
55.	*	0.3	0.0	0.3	0.3
60.	*	0.3	0.0	0.3	0.5
65.	*	0.3	0.0	0.3	0.6
70.	*	0.3	0.0	0.2	0.5
75.	*	0.3	0.0	0.2	0.5
80.	*	0.3	0.0	0.2	0.5
85.	*	0.4	0.1	0.2	0.5
90.	*	0.5	0.1	0.1	0.5
95.	*	0.6	0.2	0.0	0.4
100.	*	0.6	0.3	0.0	0.3
105.	*	0.6	0.3	0.0	0.3
110.	*	0.6	0.4	0.0	0.3
115.	*	0.5	0.4	0.0	0.4
120.	*	0.4	0.5	0.0	0.4
125.	*	0.3	0.5	0.0	0.4
130.	*	0.3	0.4	0.0	0.4
135.	*	0.4	0.4	0.0	0.4
140.	*	0.3	0.4	0.0	0.4
145.	*	0.3	0.4	0.0	0.5
150.	*	0.4	0.4	0.0	0.5
155.	*	0.6	0.4	0.0	0.5
160.	*	0.6	0.4	0.0	0.5
165.	*	0.6	0.3	0.0	0.5
170.	*	0.7	0.4	0.1	0.6
175.	*	0.6	0.6	0.3	0.5
180.	*	0.4	0.6	0.4	0.4
185.	*	0.4	0.9	0.5	0.3
190.	*	0.3	0.9	0.6	0.1
195.	*	0.2	0.8	0.6	0.0
200.	*	0.2	0.7	0.6	0.0
205.	*	0.2	0.7	0.5	0.0

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JOB: Main Street & Decatur Avenue

RUN: No-Build

WIND	*	CONCENTRATION			
ANGLE	*	(PPM)			
(DEGR)	*	REC1	REC2	REC3	REC4
210.	*	0.2	0.4	0.6	0.0
215.	*	0.2	0.4	0.6	0.0
220.	*	0.1	0.4	0.6	0.0
225.	*	0.1	0.4	0.4	0.0
230.	*	0.1	0.4	0.4	0.0
235.	*	0.0	0.4	0.4	0.0
240.	*	0.0	0.3	0.4	0.0
245.	*	0.0	0.3	0.3	0.0
250.	*	0.1	0.3	0.3	0.0
255.	*	0.2	0.4	0.3	0.0
260.	*	0.1	0.4	0.3	0.0
265.	*	0.1	0.3	0.4	0.0
270.	*	0.0	0.3	0.5	0.1
275.	*	0.0	0.3	0.6	0.1
280.	*	0.0	0.3	0.4	0.1
285.	*	0.0	0.3	0.4	0.1
290.	*	0.0	0.3	0.4	0.2
295.	*	0.0	0.3	0.3	0.2
300.	*	0.0	0.4	0.4	0.3
305.	*	0.0	0.4	0.2	0.3
310.	*	0.0	0.4	0.3	0.2
315.	*	0.0	0.4	0.4	0.3
320.	*	0.0	0.4	0.3	0.3
325.	*	0.0	0.4	0.3	0.3
330.	*	0.0	0.4	0.4	0.3
335.	*	0.0	0.4	0.4	0.3
340.	*	0.0	0.5	0.6	0.3
345.	*	0.0	0.5	0.6	0.2
350.	*	0.1	0.5	0.7	0.3
MAX	*	0.7	0.9	0.7	0.7
DEGR.	*	170	185	350	15

THE HIGHEST CONCENTRATION OF 0.90 PPM OCCURRED AT RECEPTOR REC2 .

CAL3QHC - (DATED 95221)

CAL3QHC PC (32 BIT) VERSION 3.0.0  
(C) COPYRIGHT 1993-2000, TRINITY CONSULTANTS

Run Began on 5/01/2020 at 7:31:31

JOB: Main Street & Decatur Avenue

RUN: Build

DATE : 05/01/2020  
TIME : 07:31:31

The MODE flag has been set to C for calculating CO averages.

## SITE &amp; METEOROLOGICAL VARIABLES

VS = 0.0 CM/S  
U = 1.0 M/S  
VD = 0.0 CM/S  
CLAS = 4 (D)  
Z0 = 11. CM  
ATIM = 60. MINUTES  
MIXH = 1000. M  
AMB = 0.0 PPM

## LINK VARIABLES

[illegible]

JOB: Main Street & Decatur Avenue

RUN: Build

DATE : 05/01/2020  
TIME : 07:31:31

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
9. Main NB LTR	* 70	24	2.0	442	1900	54.87	1	3
10. Main SB LTR	* 70	24	2.0	376	1900	54.87	1	3
11. Decatur EB LTR	* 70	48	2.0	117	1900	54.87	1	3
12. Decatur WB LTR	* 70	48	2.0	183	1900	54.87	1	3

RECEPTOR LOCATIONS

RECEPTOR	* X	COORDINATES (M) Y	Z	*
1. Northwest	* -7.2	7.3	1.8	*
2. Northeast	* 7.2	7.2	1.8	*
3. Southeast	* 7.2	-7.3	1.8	*
4. Southwest	* -7.2	-7.3	1.8	*

## MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND ANGLE (DEGR)	* * *	CONCENTRATION (PPM)	REC1	REC2	REC3	REC4
0.	*	0.3	0.4	0.5	0.5	
5.	*	0.5	0.3	0.5	0.7	
10.	*	0.5	0.1	0.3	0.7	
15.	*	0.6	0.0	0.2	0.7	
20.	*	0.5	0.0	0.2	0.6	
25.	*	0.5	0.0	0.4	0.5	
30.	*	0.5	0.0	0.4	0.3	
35.	*	0.5	0.0	0.4	0.3	
40.	*	0.4	0.0	0.4	0.3	
45.	*	0.4	0.0	0.4	0.3	
50.	*	0.3	0.0	0.4	0.4	
55.	*	0.3	0.0	0.3	0.4	
60.	*	0.3	0.0	0.3	0.5	
65.	*	0.3	0.0	0.3	0.6	
70.	*	0.3	0.0	0.2	0.6	
75.	*	0.3	0.0	0.2	0.5	
80.	*	0.3	0.0	0.2	0.5	
85.	*	0.4	0.1	0.2	0.5	
90.	*	0.5	0.1	0.1	0.5	
95.	*	0.6	0.2	0.0	0.4	
100.	*	0.6	0.3	0.0	0.3	
105.	*	0.6	0.3	0.0	0.3	
110.	*	0.6	0.4	0.0	0.3	
115.	*	0.5	0.4	0.0	0.4	
120.	*	0.4	0.5	0.0	0.4	
125.	*	0.3	0.5	0.0	0.4	
130.	*	0.3	0.5	0.0	0.4	
135.	*	0.4	0.4	0.0	0.4	
140.	*	0.3	0.4	0.0	0.4	
145.	*	0.3	0.4	0.0	0.5	
150.	*	0.4	0.4	0.0	0.5	
155.	*	0.6	0.4	0.0	0.6	
160.	*	0.6	0.4	0.0	0.5	
165.	*	0.6	0.3	0.0	0.5	
170.	*	0.7	0.4	0.1	0.6	
175.	*	0.6	0.6	0.3	0.5	
180.	*	0.4	0.6	0.4	0.4	
185.	*	0.4	0.9	0.5	0.3	
190.	*	0.3	0.9	0.7	0.1	
195.	*	0.2	0.8	0.6	0.0	
200.	*	0.2	0.7	0.6	0.0	
205.	*	0.2	0.7	0.5	0.0	

PAGE 4

JOB: Main Street & Decatur Avenue

RUN: Build

WIND	*	CONCENTRATION			
ANGLE	*	(PPM)			
(DEGR)	*	REC1	REC2	REC3	REC4
210.	*	0.2	0.4	0.6	0.0
215.	*	0.2	0.4	0.6	0.0
220.	*	0.1	0.4	0.6	0.0
225.	*	0.1	0.4	0.4	0.0
230.	*	0.1	0.5	0.4	0.0
235.	*	0.0	0.4	0.4	0.0
240.	*	0.0	0.3	0.4	0.0
245.	*	0.0	0.3	0.3	0.0
250.	*	0.1	0.3	0.3	0.0
255.	*	0.2	0.4	0.3	0.0
260.	*	0.1	0.4	0.3	0.0
265.	*	0.1	0.3	0.4	0.0
270.	*	0.0	0.4	0.5	0.1
275.	*	0.0	0.3	0.6	0.1
280.	*	0.0	0.3	0.4	0.1
285.	*	0.0	0.3	0.4	0.1
290.	*	0.0	0.3	0.4	0.2
295.	*	0.0	0.3	0.4	0.2
300.	*	0.0	0.4	0.4	0.3
305.	*	0.0	0.4	0.2	0.3
310.	*	0.0	0.4	0.3	0.3
315.	*	0.0	0.4	0.4	0.3
320.	*	0.0	0.4	0.3	0.3
325.	*	0.0	0.4	0.3	0.3
330.	*	0.0	0.4	0.5	0.3
335.	*	0.0	0.4	0.5	0.3
340.	*	0.0	0.5	0.6	0.3
345.	*	0.0	0.5	0.6	0.2
350.	*	0.1	0.5	0.7	0.3
MAX	*	0.7	0.9	0.7	0.7
DEGR.	*	170	185	350	15

THE HIGHEST CONCENTRATION OF 0.90 PPM OCCURRED AT RECEPTOR REC2 .