



Massport Berth 11 & 12 Backlands Reconstruction Project

Notice of Intent

South Boston, MA

July 2021

Prepared by:



Boston, MA

Prepared for:

Massachusetts Port Authority
Boston, Massachusetts



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WPA Notice of Intent

- NOI Form
- NOI Fee Transmittal Form
- Copy of Check
- Supplemental Narrative
- Appendices



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Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File Number
Document Transaction Number
Boston
City/Town

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Note:
Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

A. General Information

1. Project Location (**Note:** electronic filers will click on button to locate project site):

<u>20 Farragut Road</u> a. Street Address	<u>South Boston</u> b. City/Town	<u>02127</u> c. Zip Code
Latitude and Longitude:		
<u>6052</u> f. Assessors Map/Plat Number	<u>42° 20' 27" N</u> d. Latitude	<u>71° 01' 13" W</u> e. Longitude
	<u>Parcel ID: 0603417000</u> g. Parcel /Lot Number	

2. Applicant:

<u>Peter</u> a. First Name	<u>DeBruin</u> b. Last Name	
<u>Massachusetts Port Authority (Massport)</u> c. Organization		
<u>One Harborside Drive, Suite 200</u> d. Street Address		
<u>East Boston</u> e. City/Town	<u>MA</u> f. State	<u>02128</u> g. Zip Code
<u>617-568-3583</u> h. Phone Number	<u>pdebruin@massport.com</u> j. Email Address	<u></u> i. Fax Number

3. Property owner (required if different from applicant): Check if more than one owner

<u></u> a. First Name	<u></u> b. Last Name	
<u></u> c. Organization		
<u></u> d. Street Address		
<u></u> e. City/Town	<u></u> f. State	<u></u> g. Zip Code
<u></u> h. Phone Number	<u></u> j. Email address	<u></u> i. Fax Number

4. Representative (if any):

<u>Nick</u> a. First Name	<u>Henke</u> b. Last Name	
<u>HDR Engineering, Inc.</u> c. Company		
<u>99 High Street, Suite 2300</u> d. Street Address		
<u>Boston</u> e. City/Town	<u>MA</u> f. State	<u>02110</u> g. Zip Code
<u>(617) 357-7705</u> h. Phone Number	<u>nicholas.henke@hdrinc.com</u> j. Email address	<u></u> i. Fax Number

5. Total WPA Fee Paid (from NOI Wetland Fee Transmittal Form):

<u>\$1,737.50</u> a. Total Fee Paid	<u>\$237.50</u> b. State Fee Paid	<u>\$1,500</u> c. City/Town Fee Paid
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A. General Information (continued)

6. General Project Description:

Massport's M555 Contract 1 (C1) project includes the reconstruction of approximately 364,000 square feet of the container yard landward of Berths 11 and 12 at the Conley Container Terminal including new asphalt, new concrete rubber-tired gantry (RTG) crane runways, a new trench drain, three new water quality units, a new sanitary sewer line, and three new tide flex outfall valves.

7a. Project Type Checklist: (Limited Project Types see Section A. 7b.)

- 1. Single Family Home
- 2. Residential Subdivision
- 3. Commercial/Industrial
- 4. Dock/Pier
- 5. Utilities
- 6. Coastal engineering Structure
- 7. Agriculture (e.g., cranberries, forestry)
- 8. Transportation
- 9. Other

7b. Is any portion of the proposed activity eligible to be treated as a limited project (including Ecological Restoration Limited Project) subject to 310 CMR 10.24 (coastal) or 310 CMR 10.53 (inland)?

- 1. Yes No If yes, describe which limited project applies to this project. (See 310 CMR 10.24 and 10.53 for a complete list and description of limited project types) 310 CMR 10.24(7)(c)(3) for the routine maintenance and repair of road drainage structures...which existed on November 1, 1987.

If the proposed activity is eligible to be treated as an Ecological Restoration Limited Project (310 CMR10.24(8), 310 CMR 10.53(4)), complete and attach Appendix A: Ecological Restoration Limited Project Checklist and Signed Certification.

8. Property recorded at the Registry of Deeds for:

Suffolk	
a. County	b. Certificate # (if registered land)
5191	623
c. Book	d. Page Number

B. Buffer Zone & Resource Area Impacts (temporary & permanent)

- 1. Buffer Zone Only – Check if the project is located only in the Buffer Zone of a Bordering Vegetated Wetland, Inland Bank, or Coastal Resource Area.
- 2. Inland Resource Areas (see 310 CMR 10.54-10.58; if not applicable, go to Section B.3, Coastal Resource Areas).

Check all that apply below. Attach narrative and any supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.



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B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

For all projects affecting other Resource Areas, please attach a narrative explaining how the resource area was delineated.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. <input type="checkbox"/> Bank	1. linear feet	2. linear feet
b. <input type="checkbox"/> Bordering Vegetated Wetland	1. square feet	2. square feet
c. <input type="checkbox"/> Land Under Waterbodies and Waterways	1. square feet	2. square feet
	3. cubic yards dredged	

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
d. <input type="checkbox"/> Bordering Land Subject to Flooding	1. square feet	2. square feet
	3. cubic feet of flood storage lost	4. cubic feet replaced
e. <input type="checkbox"/> Isolated Land Subject to Flooding	1. square feet	
	2. cubic feet of flood storage lost	3. cubic feet replaced
f. <input type="checkbox"/> Riverfront Area	1. Name of Waterway (if available) - specify coastal or inland	

2. Width of Riverfront Area (check one):

- 25 ft. - Designated Densely Developed Areas only
- 100 ft. - New agricultural projects only
- 200 ft. - All other projects

3. Total area of Riverfront Area on the site of the proposed project: _____ square feet

4. Proposed alteration of the Riverfront Area:

a. total square feet	b. square feet within 100 ft.	c. square feet between 100 ft. and 200 ft.
----------------------	-------------------------------	--

5. Has an alternatives analysis been done and is it attached to this NOI? Yes No

6. Was the lot where the activity is proposed created prior to August 1, 1996? Yes No

3. Coastal Resource Areas: (See 310 CMR 10.25-10.35)

Note: for coastal riverfront areas, please complete **Section B.2.f.** above.



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B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

Check all that apply below. Attach narrative and supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

Online Users:
Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

<u>Resource Area</u>	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
a. <input checked="" type="checkbox"/> Designated Port Areas	Indicate size under Land Under the Ocean, below	
b. <input type="checkbox"/> Land Under the Ocean	_____	
	1. square feet	

	2. cubic yards dredged	
c. <input type="checkbox"/> Barrier Beach	Indicate size under Coastal Beaches and/or Coastal Dunes below	
d. <input type="checkbox"/> Coastal Beaches	_____	_____
	1. square feet	2. cubic yards beach nourishment
e. <input type="checkbox"/> Coastal Dunes	_____	_____
	1. square feet	2. cubic yards dune nourishment
	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
f. <input type="checkbox"/> Coastal Banks	_____	
	1. linear feet	
g. <input type="checkbox"/> Rocky Intertidal Shores	_____	
	1. square feet	
h. <input type="checkbox"/> Salt Marshes	_____	_____
	1. square feet	2. sq ft restoration, rehab., creation
i. <input type="checkbox"/> Land Under Salt Ponds	_____	
	1. square feet	

	2. cubic yards dredged	
j. <input type="checkbox"/> Land Containing Shellfish	_____	
	1. square feet	
k. <input type="checkbox"/> Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above	

	1. cubic yards dredged	
l. <input checked="" type="checkbox"/> Land Subject to Coastal Storm Flowage	364,000	
	1. square feet	

4. Restoration/Enhancement
If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.2.b or B.3.h above, please enter the additional amount here.

a. square feet of BVW

b. square feet of Salt Marsh

5. Project Involves Stream Crossings

a. number of new stream crossings

b. number of replacement stream crossings



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C. Other Applicable Standards and Requirements

- This is a proposal for an Ecological Restoration Limited Project. Skip Section C and complete Appendix A: Ecological Restoration Limited Project Checklists – Required Actions (310 CMR 10.11).

Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review

1. Is any portion of the proposed project located in **Estimated Habitat of Rare Wildlife** as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP)? To view habitat maps, see the *Massachusetts Natural Heritage Atlas* or go to http://maps.massgis.state.ma.us/PRI_EST_HAB/viewer.htm.

- a. Yes No **If yes, include proof of mailing or hand delivery of NOI to:**

**Natural Heritage and Endangered Species Program
Division of Fisheries and Wildlife
1 Rabbit Hill Road
Westborough, MA 01581**

- 2017 _____
b. Date of map

If yes, the project is also subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18). To qualify for a streamlined, 30-day, MESA/Wetlands Protection Act review, please complete Section C.1.c, and include requested materials with this Notice of Intent (NOI); *OR* complete Section C.2.f, if applicable. *If MESA supplemental information is not included with the NOI, by completing Section 1 of this form, the NHESP will require a separate MESA filing which may take up to 90 days to review (unless noted exceptions in Section 2 apply, see below).*

- c. Submit Supplemental Information for Endangered Species Review*

1. Percentage/acreage of property to be altered:
 - (a) within wetland Resource Area _____ percentage/acreage
 - (b) outside Resource Area _____ percentage/acreage
2. Assessor's Map or right-of-way plan of site

2. Project plans for entire project site, including wetland resource areas and areas outside of wetlands jurisdiction, showing existing and proposed conditions, existing and proposed tree/vegetation clearing line, and clearly demarcated limits of work **
 - (a) Project description (including description of impacts outside of wetland resource area & buffer zone)
 - (b) Photographs representative of the site

* Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review (see <https://www.mass.gov/endangered-species-act-mesa-regulatory-review>).

Priority Habitat includes habitat for state-listed plants and strictly upland species not protected by the Wetlands Protection Act.

** MESA projects may not be segmented (321 CMR 10.16). The applicant must disclose full development plans even if such plans are not required as part of the Notice of Intent process.



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C. Other Applicable Standards and Requirements (cont'd)

(c) MESA filing fee (fee information available at <https://www.mass.gov/how-to/how-to-file-for-a-mesa-project-review>).

Make check payable to "Commonwealth of Massachusetts - NHESP" and **mail to NHESP** at above address

Projects altering 10 or more acres of land, also submit:

(d) Vegetation cover type map of site

(e) Project plans showing Priority & Estimated Habitat boundaries

(f) OR Check One of the Following

1. Project is exempt from MESA review.
Attach applicant letter indicating which MESA exemption applies. (See 321 CMR 10.14, <https://www.mass.gov/service-details/exemptions-from-review-for-projectsactivities-in-priority-habitat>; the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59.)

2. Separate MESA review ongoing. a. NHESP Tracking # _____ b. Date submitted to NHESP _____

3. Separate MESA review completed.
Include copy of NHESP "no Take" determination or valid Conservation & Management Permit with approved plan.

3. For coastal projects only, is any portion of the proposed project located below the mean high water line or in a fish run?

a. Not applicable – project is in inland resource area only b. Yes No

If yes, include proof of mailing, hand delivery, or electronic delivery of NOI to either:

South Shore - Cohasset to Rhode Island border, and the Cape & Islands:

North Shore - Hull to New Hampshire border:

Division of Marine Fisheries -
Southeast Marine Fisheries Station
Attn: Environmental Reviewer
836 South Rodney French Blvd.
New Bedford, MA 02744
Email: dmf.envreview-south@mass.gov

Division of Marine Fisheries -
North Shore Office
Attn: Environmental Reviewer
30 Emerson Avenue
Gloucester, MA 01930
Email: dmf.envreview-north@mass.gov

Also if yes, the project may require a Chapter 91 license. For coastal towns in the Northeast Region, please contact MassDEP's Boston Office. For coastal towns in the Southeast Region, please contact MassDEP's Southeast Regional Office.

c. Is this an aquaculture project? d. Yes No

If yes, include a copy of the Division of Marine Fisheries Certification Letter (M.G.L. c. 130, § 57).



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C. Other Applicable Standards and Requirements (cont'd)

Online Users:
Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

- 4. Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?
 a. Yes No If yes, provide name of ACEC (see instructions to WPA Form 3 or MassDEP Website for ACEC locations). **Note:** electronic filers click on Website.
 b. ACEC

- 5. Is any portion of the proposed project within an area designated as an Outstanding Resource Water (ORW) as designated in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?
 a. Yes No
- 6. Is any portion of the site subject to a Wetlands Restriction Order under the Inland Wetlands Restriction Act (M.G.L. c. 131, § 40A) or the Coastal Wetlands Restriction Act (M.G.L. c. 130, § 105)?
 a. Yes No
- 7. Is this project subject to provisions of the MassDEP Stormwater Management Standards?
 a. Yes. Attach a copy of the Stormwater Report as required by the Stormwater Management Standards per 310 CMR 10.05(6)(k)-(q) and check if:
 - 1. Applying for Low Impact Development (LID) site design credits (as described in Stormwater Management Handbook Vol. 2, Chapter 3)
 - 2. A portion of the site constitutes redevelopment
 - 3. Proprietary BMPs are included in the Stormwater Management System.
 b. No. Check why the project is exempt:
 - 1. Single-family house
 - 2. Emergency road repair
 - 3. Small Residential Subdivision (less than or equal to 4 single-family houses or less than or equal to 4 units in multi-family housing project) with no discharge to Critical Areas.

D. Additional Information

- This is a proposal for an Ecological Restoration Limited Project. Skip Section D and complete Appendix A: Ecological Restoration Notice of Intent – Minimum Required Documents (310 CMR 10.12).

Applicants must include the following with this Notice of Intent (NOI). See instructions for details.

Online Users: Attach the document transaction number (provided on your receipt page) for any of the following information you submit to the Department.

- 1. USGS or other map of the area (along with a narrative description, if necessary) containing sufficient information for the Conservation Commission and the Department to locate the site. (Electronic filers may omit this item.)
- 2. Plans identifying the location of proposed activities (including activities proposed to serve as a Bordering Vegetated Wetland [BVW] replication area or other mitigating measure) relative to the boundaries of each affected resource area.



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D. Additional Information (cont'd)

3. Identify the method for BVW and other resource area boundary delineations (MassDEP BVW Field Data Form(s), Determination of Applicability, Order of Resource Area Delineation, etc.), and attach documentation of the methodology.

4. List the titles and dates for all plans and other materials submitted with this NOI.

Massport Berth 11 & 12 Backlands Reconstruction - Environmental Plans (ENV-01 - ENV-19)

a. Plan Title

HDR Engineering, Inc.

b. Prepared By

June 2021

d. Final Revision Date

Roch Larochelle

c. Signed and Stamped by

Unique to each Plan

e. Scale

June 2021

g. Date

f. Additional Plan or Document Title

5. If there is more than one property owner, please attach a list of these property owners not listed on this form.

6. Attach proof of mailing for Natural Heritage and Endangered Species Program, if needed.

7. Attach proof of mailing for Massachusetts Division of Marine Fisheries, if needed.

8. Attach NOI Wetland Fee Transmittal Form

9. Attach Stormwater Report, if needed.

E. Fees

1. Fee Exempt: No filing fee shall be assessed for projects of any city, town, county, or district of the Commonwealth, federally recognized Indian tribe housing authority, municipal housing authority, or the Massachusetts Bay Transportation Authority.

Applicants must submit the following information (in addition to pages 1 and 2 of the NOI Wetland Fee Transmittal Form) to confirm fee payment:

0256293

2. Municipal Check Number

5/27/21

3. Check date

0256287

4. State Check Number

5/27/21

5. Check date

HDR, Inc.

6. Payor name on check: First Name

7. Payor name on check: Last Name



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F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

<u>Peter DeBruin</u>	<u>6/30/21</u>
1. Signature of Applicant	2. Date
<u>[Signature]</u>	<u>7/2/21</u>
3. Signature of Property Owner (if different)	4. Date
5. Signature of Representative (if any)	6. Date

For Conservation Commission:

Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents, two copies of the NOI Wetland Fee Transmittal Form, and the city/town fee payment, to the Conservation Commission by certified mail or hand delivery.

For MassDEP:

One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a **copy** of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

Other:

If the applicant has checked the "yes" box in any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.



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Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A. Applicant Information

1. Location of Project:

<u>20 Farragut Road</u>	<u>South Boston</u>
a. Street Address	b. City/Town
<u>0256287</u>	<u>\$237.50 (state fee)</u>
c. Check number	d. Fee amount

2. Applicant Mailing Address:

<u>Peter</u>	<u>DeBruin</u>	
a. First Name	b. Last Name	
<u>Massachusetts Port Authority (Massport)</u>		
c. Organization		
<u>One Harborside Drive, Suite 200</u>		
d. Mailing Address		
<u>East Boston</u>	<u>MA</u>	<u>02128</u>
e. City/Town	f. State	g. Zip Code
<u>617-568-3583</u>	<u>pdebruin@massport.com</u>	
h. Phone Number	i. Fax Number	j. Email Address

3. Property Owner (if different):

<u></u>	<u></u>	
a. First Name	b. Last Name	
<u></u>		
c. Organization		
<u></u>		
d. Mailing Address		
<u></u>	<u></u>	<u></u>
e. City/Town	f. State	g. Zip Code
<u></u>	<u></u>	<u></u>
h. Phone Number	i. Fax Number	j. Email Address

B. Fees

Fee should be calculated using the following process & worksheet. **Please see Instructions before filling out worksheet.**

Step 1/Type of Activity: Describe each type of activity that will occur in wetland resource area and buffer zone.

Step 2/Number of Activities: Identify the number of each type of activity.

Step 3/Individual Activity Fee: Identify each activity fee from the six project categories listed in the instructions.

Step 4/Subtotal Activity Fee: Multiply the number of activities (identified in Step 2) times the fee per category (identified in Step 3) to reach a subtotal fee amount. Note: If any of these activities are in a Riverfront Area in addition to another Resource Area or the Buffer Zone, the fee per activity should be multiplied by 1.5 and then added to the subtotal amount.

Step 5/Total Project Fee: Determine the total project fee by adding the subtotal amounts from Step 4.

Step 6/Fee Payments: To calculate the state share of the fee, divide the total fee in half and subtract \$12.50. To calculate the city/town share of the fee, divide the total fee in half and add \$12.50.

To calculate filing fees, refer to the category fee list and examples in the instructions for filling out WPA Form 3 (Notice of Intent).



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 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

B. Fees (continued)

Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee
Category 2(j)	1	\$500	\$500
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
Step 5/Total Project Fee:			\$500

Step 6/Fee Payments:

Total Project Fee:	<u>\$1,737.50 (BCC Guide)</u>
State share of filing Fee:	a. Total Fee from Step 5 <u>\$237.50</u>
City/Town share of filing Fee:	b. 1/2 Total Fee less \$12.50 <u>\$1,500 (BCC Guide)</u> c. 1/2 Total Fee plus \$12.50

C. Submittal Requirements

- a.) Complete pages 1 and 2 and send with a check or money order for the state share of the fee, payable to the Commonwealth of Massachusetts.

Department of Environmental Protection
 Box 4062
 Boston, MA 02211

- b.) **To the Conservation Commission:** Send the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and the city/town fee payment.

To MassDEP Regional Office (see Instructions): Send a copy of the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and a **copy** of the state fee payment. (E-filers of Notices of Intent may submit these electronically.)



NOI Narrative and Supporting Information



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Appendices

Appendix A: Figures

Figure 1 - USGS Locus Map

Figure 2 - FEMA Map

Figure 3 - Environmental Constraints Map

Appendix B: Environmental Plans

Appendix C: Photo Log

Appendix D: Notifications to Abutters

Appendix E: Stormwater Report

Appendix F: Mailing to Division of Marine Fisheries

List of Acronyms

ACEC	Area of Critical Environmental Concern
BCC	Boston Conservation Commission
BFE	base flood elevation
BMP	Best Management Practice
CMR	Code of Massachusetts Regulations
CWA	Clean Water Act
DPA	Designated Port Area
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
HDR	HDR Engineering, Inc.
MassDEP	Massachusetts Department of Environmental Protection
MassGIS	Massachusetts Office of Geographic Information
Massport	Massachusetts Port Authority
M.G.L.	Massachusetts General Law
NAVD88	North American Vertical Datum of 1988
NOI	Notice of Intent
NHESP	Massachusetts Natural Heritage and Endangered Species Program
ORW	Outstanding Resource Waters
RTG	Rubber Tired Gantry
SFHA	special flood hazard area
sf	square feet
Supplement	Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0
USACE	U.S. Army Corps of Engineers
WPA	Massachusetts Wetlands Protection Act
WQS	Massachusetts Surface Water Quality Standards



1 Project Description

Massport's M555 Contract 1 (C1) project includes the reconstruction of approximately 364,000 square feet of the container yard landward of Berths 11 and 12 at the Conley Container Terminal. The existing asphalt yard and concrete rubber-tired gantry (RTG) crane runways were constructed in the 1980's and require refurbishment to address areas of deteriorated/damaged surfaces within the truck travel lanes and container storage areas. In addition, the project will provide regrading and drainage improvements including the installation of a 1,000-foot long linear trench drain and the addition of three new water quality units, and new tide flex valves on existing outfalls in Berth 12 that currently have direct discharges to the Reserved Channel. Other improvements include the construction of approximately 420 feet of sanitary sewer pipe from the Marine Management Building adjacent to the wharf and three sanitary sewer manholes as well as replacement of approximately 850 LF of existing transite (i.e. asbestos-cement) water pipe with new ductile iron water pipe within the project limits. The existing sanitary sewer pipe will be abandoned in place and filled with flowable fill.

1.1 Project Plans

Environmental Plans depicting the Project limits of work and adjacent resource areas are included with this NOI in Appendix B.

2 Resource Area Description

The site is located on disturbed/previously developed land, which is virtually all impervious and is mapped by the NRCS Soil Survey as Urban land with a wet substratum and 0 to 3 percent slopes. The resource areas in the vicinity of the Project are shown in Appendix A, Figure 3 - Environmental Constraints Map and are regulated under Federal, State and Local regulatory programs.

The prominent resource area in the vicinity of the Project is the open water of the Reserved Channel, which is classified as Land Under the Ocean and Designated Port Area. The channel is contained by a vertical bulkhead wall which establishes the location for mean high water (MHW), the high tide line (HTL), and WPA jurisdictional Coastal Bank. These resources were delineated using the bulkhead wall's surveyed location and any necessary regulatory envelopes, including the WPA jurisdictional Buffer Zone, were generated in reference to that surveyed boundary. The entire project area is located within the FEMA mapped 1% annual chance flood zone (100-year flood), and therefore constitutes WPA jurisdictional Land Subject to Coastal Storm Flowage. There is no work proposed in Land Under the Ocean or the Coastal Bank beyond addition of tide flex valves to the ends of three existing outfall pipes which are located seaward of the Coastal Bank (bulkhead wall) and above the seafloor at an intertidal elevation.

3 WPA Resource Areas

The wetland resource areas along the Project route are regulated under Federal, State and Local regulatory programs including:

- Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Appropriation Act which are administered by the USACE;
- Section 401 of the CWA which is overseen by the MassDEP; and
- Massachusetts WPA and 310 CMR 10.00, which is administered by the Local Conservation Commission or (upon appeal) by MassDEP.

There are four WPA jurisdictional resource areas (including the Buffer Zone) the project falls within or adjacent to. The following sections describe jurisdictional areas associated with the Project.

3.1 Designated Port Area (DPA)

As defined in 310 CMR 10.26(2), Designated Port Area means those areas designated in 301 CMR 25.00: Designation of Port Areas. As further defined in 301 CMR 25.02, Designated Port Area means an area of contiguous lands and waters in the coastal zone that has been so designated in accordance with 301 CMR 25.00. The official DPA map for South Boston identifies the project area does fall within the Designated Port Area boundary.

3.2 Coastal Bank

As defined in 310 CMR 10.30(2), Coastal Bank means the seaward face or side of any elevated landform, other than a coastal dune, which lies at the landward edge of a coastal beach, land subject to tidal action, or other wetland.

3.3 Land Subject to Coastal Storm Flowage

As defined in 310 CMR 10.04, Land Subject to Coastal Storm Flowage means land subject to any inundation caused by coastal storms up to and including that caused by the 100-year storm, surge of record or storm of record, whichever is greater. This Project is located within the FEMA Flood Zone AE (1% Annual Chance of Flooding) with a base flood elevation of 12 feet (NAVD88).

3.4 Buffer Zone

As defined in 310 CMR 10.02(2)(b), Buffer Zone pertains to any activity other than minor activities identified in 310 CMR 10.02(2)(b)2 proposed or undertaken within 100 feet of an area specified in 310 CMR 10.02(1)(a). As it pertains to this project, the Buffer Zone extends 100 feet horizontally from the Coastal Bank.



4 Alternative Analyses

As a project objective to repair an existing asphalt surface marine shipping yard facility, alternatives were limited to build vs. no-build scenarios. The no-build scenario does not fulfill the overall project purpose of reconstructing the asphalt yard and concrete RTG crane runways to address areas of deteriorated/damaged surfaces within the truck travel lanes and container storage areas as well as improving drainage conditions.

5 Project Impacts

The Project was designed to avoid direct impacts to the greatest extent practicable. The proposed work will result in temporary impacts to Land Subject to Coastal Storm Flowage and 100-foot Buffer Zone to Coastal Bank as well as work within Designated Port Area. All work will take place within existing developed areas currently serving as a marine shipping and storage yard facility.

5.1 Resource Areas Impacts

As detailed below in Table 1, the proposed Project will have temporary impacts due to work taking place within Designated Port Area, Land Subject to Coastal Storm Flowage, and 100-foot Buffer Zone to Coastal Bank. These impacts are depicted on the Environmental Plans located in Appendix B.

Table 1 – Project Impacts

Resource Area	Temporary Impacts (square feet)	Permanent Impacts (square feet)
Designated Port Area	364,000*	0**
Land Subject to Coastal Storm Flowage	364,000	0**
Buffer Zone (100-ft to Coastal Bank)	18,000	0**

*Activities taking place will enhance the existing marine facilities and are consistent with the interests of protecting Designated Port Areas.

**Permanent impacts will not result from this project as the final condition will remain the same asphalt yard and concrete RTG crane runway conditions that exist currently.

5.1.1 Designated Port Area

Work within Designated Port Area will include pavement reclamation, resurfacing, grading, and drainage improvements, reconstruction of the existing sewer system extending from the marine managers building, as well as the installation of three water quality treatment units. These activities will all take place in existing disturbed areas currently being used

for marine yard (Designated Port) purposes and are intended to improve Designated Port Area activities.

5.1.2 Coastal Bank

There will be no impacts to the Coastal Bank as a result of this project. Three tide flex valves will be added to the ends of existing outfalls which currently extend seaward into the water column from the bulkhead wall (Coastal Bank), vertically located between MLW and MHW to mitigate backflow into the drainage system during high tide and flood related events.

5.1.3 Land Subject to Coastal Storm Flowage

Temporary impacts to Land Subject to Coastal Storm Flowage will mirror those presented above in Designated Port Area.

5.1.4 Buffer Zone

Temporary impacts to the Buffer Zone will result from installation of the three stormwater quality treatment units, reconstruction of the sewer line, and a very small portion of the resurfacing located in the northwest corner of the project.

5.1.5 Rare Species

MassWildlife's Natural Heritage & Endangered Species Program (NHESP) has not designated the project area as Estimated Habitat of Rare Wildlife and Priority Habitat of Rare Species.

5.1.6 Outstanding Resource Waters

Per MassGIS online data mapping, the Project area is not located within any Outstanding Resource Waters (ORWs), as defined in the Massachusetts Surface Water Quality Standards (WQS), 314 CMR 4.00 (WQS).

5.1.7 Areas of Critical Environmental Concern

Per MassGIS online data mapping, the Project area is not located within an Area of Critical Environmental Concern (ACEC).

5.2 Project Mitigation Measures

As a project intended to repair an existing asphalt surface marine shipping yard facility, opportunities for avoidance and/or minimization were limited to those related to stormwater treatment, drainage outfall backflow protection, and construction means and methods. The drainage design provides an opportunity to improve stormwater runoff by treating stormwater before entering the Reserved Channel and will do so by adding water quality treatment units on a series of outfalls that currently discharge untreated stormwater. Additionally, tide flex valves (functioning like check valves) will be placed on the ends of



three existing outfalls to protect against backflow during high tides and storm events. Construction methods will employ a recycled pavement process to avoid the need for full depth open excavation which should help with materials management and also include temporary erosion controls adjacent to the Reserved Channel.

A small portion of this site falls within an area restricted by an Activity Use and Limitation (AUL). See attached environmental Plans (Appendix B) for the location of this AUL. In accordance with the activity and use limitations for this area, the project will employ the services of a Licensed Site Professional (LSP) to oversee construction, develop a Health and Safety Plan, an Excavation Plan, and characterize, remove, and dispose of soils in accordance with federal, state, and local regulations.

6 Protection of the Interests of the WPA

As described in 310 CMR 10.00 (2), the purpose of the WPA is to protect the following eight interests of the Act:

- i. **Protection of public and private water supply:** The project is located in South Boston, adjacent to the Reserved Channel and Boston Inner Harbor and as a result will not have any on impact public or private water supplies.
- ii. **Protection of groundwater supply:** The project is located in South Boston, adjacent to the Reserved Channel and Boston Inner Harbor and as a result will not have any on impact on groundwater.
- iii. **Flood control:** This Project is located within the FEMA Flood Zone AE (1% Annual Chance of Flooding). Although the Project falls within a coastal flood hazard area where available flood storage is inconsequential, the Project's final condition will match the existing conditions and will not cause any increase in flood velocity or stage or restrict flows. Therefore, the proposed Project as described will not result in impacts to the storage of flood flows.
- iv. **Storm damage prevention:** The proposed work will not impact the Reserved Channel and/or Boston Inner Harbor's ability to provide value for storm damage prevention.
- v. **Prevention of pollution:** This project will provide a net benefit from adding three water quality treatment units to three existing untreated outfalls. Additionally, BMPs will be employed during the construction to minimize the potential for adverse impacts on the water quality of the adjacent Reserved Channel and/or Boston Inner Harbor. The proposed work is not anticipated to impact any resource areas that currently provide value for prevention of pollution or contaminant attenuation.
- vi. **Protection of land containing shellfish:** The Project will not have any impact on land containing shellfish.

- vii. **Protection of fisheries:** The Project will not have any impact on the protection of fisheries.
- viii. **Protection of wildlife habitat:** The Project will not have any impact on wildlife habitat.

7 Performance Standards

7.1 Designated Port Area

The regulations at 310 CMR 10.26 do not establish general performance standards for Designated Port Area, however there are performance standards for projects that take place within Land Under the Ocean found to be significant to the protection of marine fisheries, to storm damage prevention, or flood control under, 310 CMR 10.26(3) and (4). See below:

- (3) Projects shall be designed and constructed, using best practical measures, so as to minimize adverse effects on marine fisheries caused by changes in:
 - (a) water circulation;
 - (b) water quality, including, but not limited to, other than natural fluctuations in the level of dissolved oxygen, temperature or turbidity, or the addition of pollutants.
- (4) Projects shall be designed and constructed, using the best practical measures, so as to minimize, adverse effects on storm damage prevention or flood control caused by changes in such land's ability to provide support for adjacent coastal banks or adjacent coastal engineering structures.

The Project will not impact Land Under the Ocean which is significant to the protection of marine fisheries, to storm damage prevention, and/or flood control, and therefore the performance standards found in 310 CMR 10.26(3) and (4) are not applicable. As a result, the project does not conflict with the regulations outlined in 310 CMR 10.26 for activities within Designated Port Area. As a marine facility, the Project remains consonant with the interests of protecting Designated Port Areas.

7.2 Coastal Bank

As outlined within 310 CMR 10.30, when a Coastal Bank is determined to be significant to storm damage prevention or flood control because it is a vertical buffer to storm waters, the performance standards identified in 310 CMR 10.30(6) through (8) shall apply. See below:

- (6) Any project on such a coastal bank or within 100 feet landward of the top of such coastal bank shall have no adverse effects on the stability of the coastal bank.
- (7) Bulkheads, revetments, seawalls, groins or other coastal engineering structures may be permitted on such a coastal bank except when such bank is significant to storm



damage prevention or flood control because it supplies sediment to coastal beaches, coastal dunes, and barrier beaches.

(8) Notwithstanding the provisions of 310 CMR 10.30(3) through (7), no project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.37.

In this location the bulkhead wall serves as the Coastal Bank. The three tide flex valves to be added to the ends of existing outfalls, which currently extend seaward into the water column from the bulkhead wall, are intended to mitigate backflow into the drainage system during high tide and flood related events, and will not impact or change the function of the Coastal Bank in any way.

7.3 Land Subject to Coastal Storm Flowage

The regulations at 310 CMR 10.00 do not establish general performance standards for Land Subject to Coastal Storm Flowage.

7.4 Buffer Zone

The regulations at 310 CMR 10.02(b) do not establish general performance standards for Buffer Zone.

7.5 Limited Projects

The Boston Conservation Commission (BCC) has the authority to permit proposed activities as a limited project pursuant to 310 CMR 10.24(7)(a) through (c), where, as here, the proposed activities will not have an adverse effect on specified habitat sites of Rare Species. In determining whether to exercise its discretion to approve limited projects, BCC can consider the following as provided by 310 CMR 10.24(7): “the magnitude of the alteration and the significance of the project to the interests identified in M.G.L. c. 131, § 40, the availability of reasonable alternatives to the proposed activity, and the extent to which adverse impacts are minimized and the extent to which mitigation measures including replication or restoration are provided to contribute to the protection of the interests identified in M.G.L. c. 131, § 40. Adverse effects to be minimized include without limitation any adverse impacts on the relevant interests of M.G.L. c. 131, § 40...” If BCC finds that Project activities should be permitted as a Limited Project, 310 CMR 10.24(7)(c)(3) covers activities associated with:

3. The routine maintenance and repair of road drainage structures including culverts and catch basins, drainage easements, ditches, watercourses and artificial water conveyances to insure flow capacities which existed on November 1, 1987.

A portion of this project is aimed at repairing drainage structures, which currently are insufficient to alleviate significant ponding onsite following rain events (see photos in Appendix C) and aligns with the Limited Project criterion. Massport aims to accomplish this via regrading for better surface flow to existing catch basins and offering improvements

to the existing drainage system including the installation of a 1,000-foot long linear trench drain, three new water quality units to the existing drainage system, as well as the addition of new tide flex valves on three existing outfalls.

8 Conclusion

Massport's M555 C1 project includes the reconstruction of approximately 345,000 square feet of the container yard landward of Berths 11 and 12 at the Conley Container Terminal. The existing asphalt yard and concrete rubber-tired gantry (RTG) crane runways were constructed in the 1980's and require refurbishment to address areas of deteriorated/damaged surfaces within the truck travel lanes and container storage areas. In addition, the project will provide regrading and drainage improvements including the installation of a 1,000-foot long linear trench drain and three new water quality units, and new tide flex valves on existing outfalls in Berth 12 that currently have direct discharges to the Reserved Channel. Other improvements include the construction of approximately 420 feet of sanitary sewer pipe from the Marine Management Building adjacent to the wharf and three sanitary sewer manholes as well as replacement of approximately 850 LF of existing transite (i.e. asbestos-cement) water pipe with new ductile iron water pipe within the project limits. In addition, existing sanitary sewer pipe will be abandoned in place and filled with flowable fill.

The Project includes work within Designated Port Area, Land Subject to Coastal Storm Flowage, and 100-foot Buffer Zone to Coastal Bank. As a repair/replacement of an existing marine shipping and storage facility's surface and drainage conditions, there are no feasible nor practicable alternatives for the Project. Massport proposes the addition of three water quality treatment units to improve quality of currently untreated discharge as well as construction methods to employ a recycled pavement process to avoid the need for full depth open excavation in an effort to protect resources areas from the construction phase impacts. As such, impacts to the resource areas are negligible given that all construction work will be contained within the previously developed marine shipping and storage facility footprint.

Massport respectfully requests that the Boston Conservation Commission find that the proposed Project and measures detailed in the NOI would not negatively affect the protected resources, meets appropriate performance standards, improves water quality, and is not in conflict with interests identified in the WPA in any way. As such, Massport seeks an Order of Conditions approving the work described in this NOI and appendices.



Appendices



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Appendix A - Figures

- USGS Locus Map
- FEMA Map
- Environmental Constraints Map



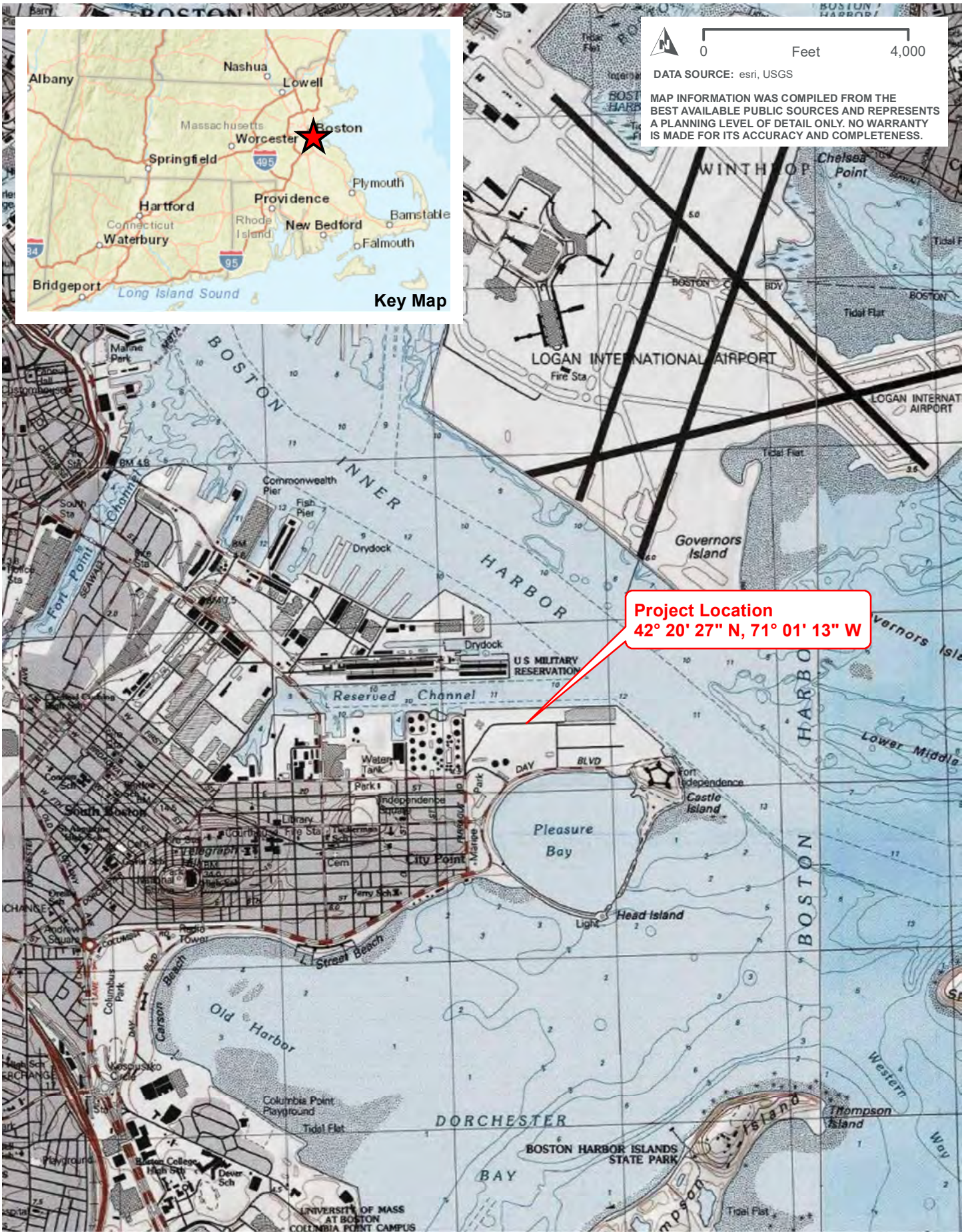
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0 Feet 4,000

DATA SOURCE: esri, USGS

MAP INFORMATION WAS COMPILED FROM THE BEST AVAILABLE PUBLIC SOURCES AND REPRESENTS A PLANNING LEVEL OF DETAIL ONLY. NO WARRANTY IS MADE FOR ITS ACCURACY AND COMPLETENESS.



MASSPORT BERTH 11 & 12 BACKLANDS RECONSTRUCTION

WPA NOTICE OF INTENT

USGS LOCUS MAP



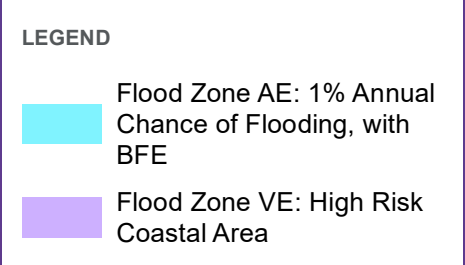
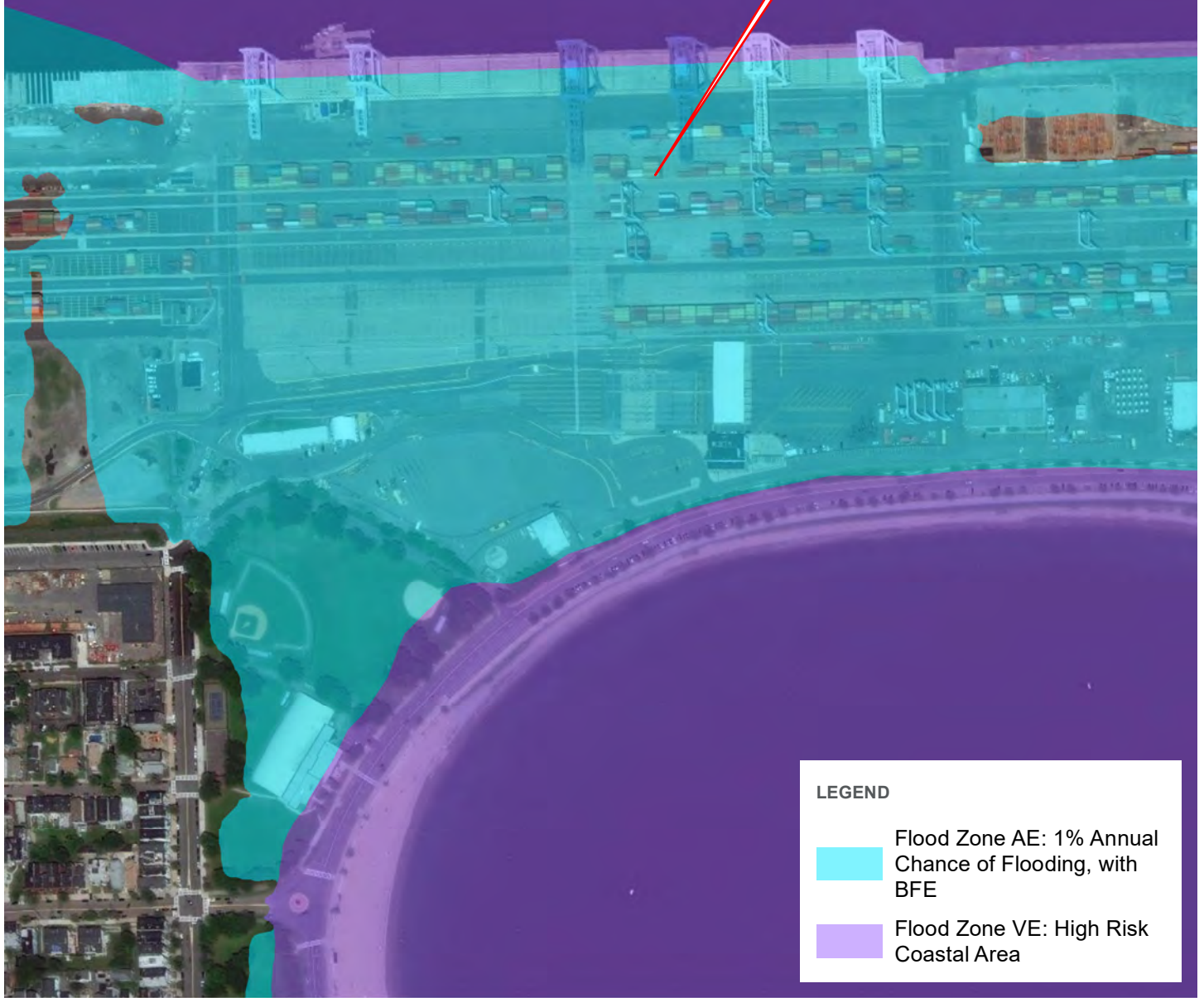
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DATA SOURCE: esri, MassGIS, FEMA

MAP INFORMATION WAS COMPILED FROM THE BEST AVAILABLE PUBLIC SOURCES AND REPRESENTS A PLANNING LEVEL OF DETAIL ONLY. NO WARRANTY IS MADE FOR ITS ACCURACY AND COMPLETENESS.

Project Location
 42° 20' 27" N, 71° 01' 13" W





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DATA SOURCE: esri, MassGIS, MassDEP

MAP INFORMATION WAS COMPILED FROM THE BEST AVAILABLE PUBLIC SOURCES AND REPRESENTS A PLANNING LEVEL OF DETAIL ONLY. NO WARRANTY IS MADE FOR ITS ACCURACY AND COMPLETENESS.

Project Location
 42° 20' 27" N, 71° 01' 13" W



LEGEND

-  Public Way
-  Ch. 91 Jurisdiction
-  Historic High Water
-  COASTAL BANK BLUFF OR SEA CLIFF
-  COASTAL BEACH
-  OPEN WATER
-  ROCKY INTERTIDAL SHORE





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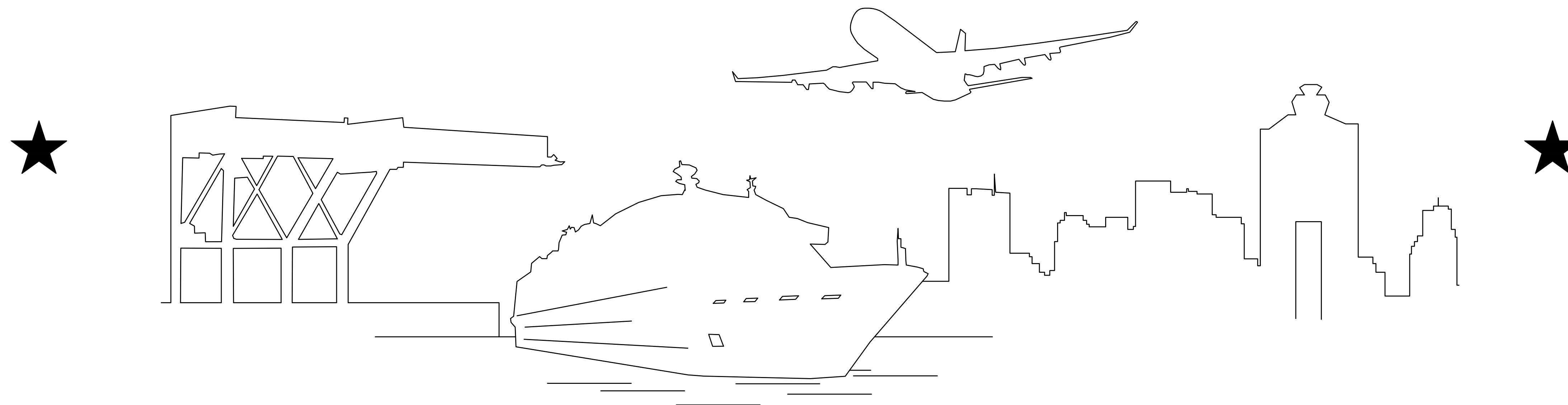


Appendix B - Environmental Plans



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MASSACHUSETTS PORT AUTHORITY



MASSACHUSETTS PORT AUTHORITY
APPROVAL
CAPITAL PROGRAMS DEPARTMENT
ONE HARBORSIDE DRIVE, SUITE 209S
EAST BOSTON, MASSACHUSETTS 02128

MASSPORT BERTH 11 & 12 BACKLANDS RECONSTRUCTION SOUTH BOSTON, MASSACHUSETTS MPA PROJECT NO. M555-C1 JUNE 2021



HDR ENGINEERING, INC.
99 HIGH STREET, SUITE 2300
BOSTON, MA 02110-2378

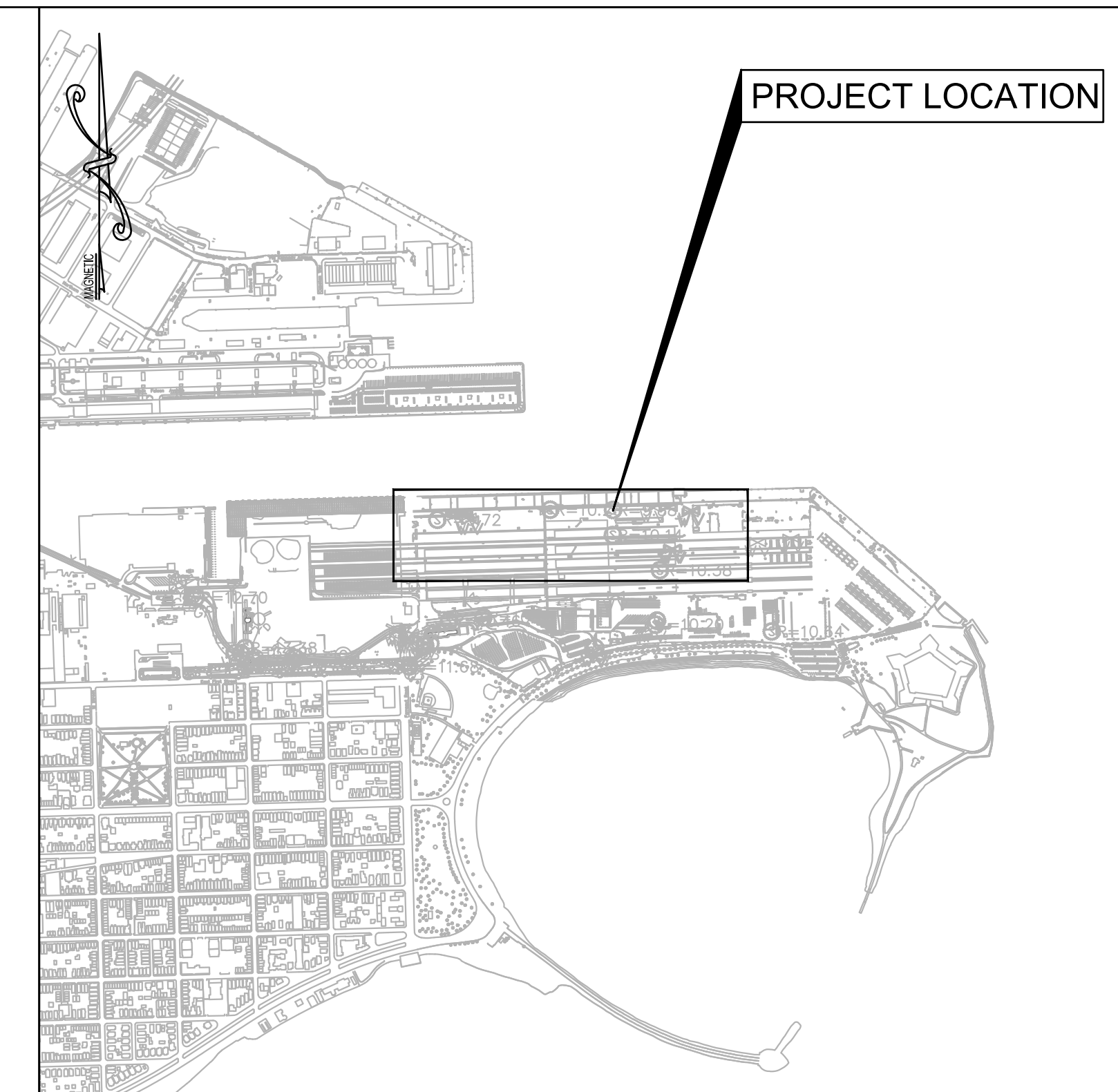


06.21.2021
HDR ENGINEERING - CIVIL

LIST OF DRAWINGS:

SHEET NUMBER	DRAWING NAME	SHEET TITLE
1	ENV-01	TITLE SHEET
2	ENV-02	GENERAL NOTES
3	ENV-03	LEGEND AND ABBREVIATIONS
4	ENV-04	KEY AND ALIGNMENT PLAN
5	ENV-05	CONSTRUCTION SEQUENCING
6 - 8	ENV-06-08	GENERAL PLANS
9	ENV-09	STORMWATER OUTFALL AND DETAIL
10	ENV-10	CONCRETE RTF RUNWAY DETAILS
11	ENV-11	PAVEMENT MARKING DETAILS
12	ENV-12	EROSION AND SEDIMENTATION CONTROL NOTES AND DETAILS
13-16	ENV-13-16	DRAINAGE DETAILS
17	ENV-17	WATER UTILITY DETAILS
18	ENV-18	SEWER DETAILS
19	ENV-19	TYPICAL SECTIONS

ENVIRONMENTAL PLANS



GENERAL NOTES

GENERAL

1. THE CONTRACTOR SHALL ESTABLISH LAY-DOWN, SOIL STOCKPILING, STAGING AND CONTRACTOR FIELD OFFICE AREAS WHICH SHALL BE CONTAINED WITHIN THE LIMITS OF WORK. THE CONTRACTOR SHALL SECURE THE WORK AREA BY INSTALLING 6-FOOT HIGH PERIMETER CHAIN LINK FENCE, WITH GATES AS REQUIRED FOR ACCESS. THE CONTRACTOR MAY BE REQUIRED TO RELOCATE CONSTRUCTION FENCING AS THE WORK PROGRESSES.
2. IN ACCORDANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP), THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING, INSTALLING AND MAINTAINING EROSION AND SEDIMENTATION CONTROLS AT ALL WORK AREAS, AND AS PROTECTION AT EXISTING DRAINAGE FACILITIES. ALL EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO PROCEEDING WITH ANY WORK, AND SHALL BE REPLACED, MAINTAINED AND/OR REMOVED AS DIRECTED BY THE ENGINEER.
3. THE CONTRACTOR SHALL NOTIFY "DIG-SAFE" AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WITHIN THE PROJECT AREA.
4. UNLESS THE PLANS CALL FOR THE RETENTION OR RESETTING OF PAVEMENT, SIGNS OR OTHER ROADWAY FEATURES WITHIN THE LIMITS OF WORK, THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SUCH FEATURES IN ACCORDANCE WITH THE CONTRACT REQUIREMENTS.
5. ALL EXISTING FEATURES WHICH ARE "TO REMAIN" AND WHICH ARE DISTURBED BY THE CONTRACTOR SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE, INCLUDING BUT NOT LIMITED TO ROADWAY LIGHTING, HYDRANTS AND UTILITIES.
6. EXISTING DRAINAGE SYSTEMS IN THE PROXIMITY OF THE CONSTRUCTION SHALL BE MAINTAINED IN OPERABLE CONDITION.
7. EXCAVATIONS SHALL BE PROTECTED AT THE END OF EACH WORK PERIOD. A STEEL PLATE OR DECKING SHALL BE TEMPORARILY PLACED IN ACCORDANCE WITH TRENCH EXCAVATION REQUIREMENTS OVER ALL EXCAVATIONS WHEN NOT ACTIVELY IN USE.
8. THE CONTRACTOR SHALL EMPLOY DUST CONTROL MEASURES IN ACCORDANCE WITH THE CONTRACTOR'S SITE SPECIFIC HEALTH AND SAFETY PLAN.
9. ALL SITE FEATURES WHICH ARE TO BE DISPOSED OF, INCLUDING EXISTING PAVEMENT, SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.
10. ALL RIMS, COVERS, GRATES AND OTHER CASTINGS OF EXISTING UTILITIES THAT ARE LOCATED IN AREAS OF FULL DEPTH CONSTRUCTION, NEW SIDEWALKS, COLD PLANING AND OVERLAY OR OTHERWISE WITHIN THE LIMITS OF WORK SHALL BE ADJUSTED BY THE CONTRACTOR TO MATCH FINAL GRADE.
11. PROTECT EXISTING BULKHEADS OUTSIDE OF DEMOLITION LIMITS. DO NOT PLACE CONSTRUCTION SURCHARGE WITHIN 15 FEET FROM THE FACE OF EXISTING BULKHEADS.

EXISTING CONDITIONS

1. FLOODPLAIN INFORMATION WAS OBTAINED FROM THE FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NO. 25025C0084J DATED MARCH 16, 2016. THE SITE IS LOCATED IN ZONE AE (BASE FLOOD ELEVATION DETERMINED).
2. THE EXISTING BASE MAPPING SHOWN ON THESE PLANS HAS BEEN COMPILED FROM A SERIES OF RECORD DRAWINGS PROVIDED BY MASSPORT FOR THE FOLLOWING CONTRACTS: M3-108, M3-108CCR, M3-108FC, M3-135C M187-C1, M165-C2, M3-203, M3-278, M394-C2, M394-C3, M495, M542-C2, M545, M623-C1, AND AS-BUILT INFORMATION THE EVERSOURCE, HEEC CABLE PROJECT (115kv) DATED 05-03-19.
3. BASE INFORMATION AND TOPOGRAPHY WAS ALSO SUPPLEMENTED WITH ADDITIONAL FIELD SURVEYS PERFORMED BY MASSPORT (2500-01.DWG 10-9-2019, 17150- CARLSON SURFACE.DWG 1-29-20, 2500-03.DWG 2-26-20).
4. DUE TO ONGOING CONCURRENT CONSTRUCTION AND DEMOLITION CONTRACTS BEING EXECUTED BY THE AUTHORITY, EXISTING CONDITIONS MAY VARY FROM WHAT IS SHOWN ON THE PLANS. THE CONTRACTOR SHALL VERIFY, PRIOR TO CONSTRUCTION, THE EXISTING CONDITIONS WITHIN THE PROJECT AREA AND NOTIFY THE ENGINEER OF DISCREPANCIES WHICH ARE FOUND.
5. EXISTING UTILITIES SHOWN ON THE PLANS HAVE BEEN COMPILED FROM INFORMATION RECEIVED FROM THE VARIOUS UTILITY COMPANIES; FROM DESIGN AND AS-BUILT PLANS OF ADJACENT CONSTRUCTION CONTRACTS; AND FROM FIELD SURVEYS AND SUBSURFACE UTILITY INVESTIGATIONS PERFORMED BY AND ON BEHALF OF, THE AUTHORITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING UTILITY LOCATIONS, INCLUDING VERTICAL LOCATION, PRIOR TO CONSTRUCTION, AND SHALL REPORT ANY DISCREPANCIES BETWEEN ACTUAL EXISTING CONDITIONS AND INFORMATION SHOWN ON THE PLAN TO THE ENGINEER, PRIOR TO PROCEEDING WITH WORK.
6. THE LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES SHALL BE CONSIDERED APPROXIMATE AND MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO ANY UTILITY CONNECTIONS OR CROSSINGS OF PROPOSED OR EXISTING UTILITIES. THE CONTRACTOR SHALL CONTACT THE RESPECTIVE UTILITY COMPANIES RELATIVE TO THE LOCATIONS AND ELEVATIONS OF THEIR LINES.
7. THE CONTRACTOR SHALL KEEP A RECORD OF ANY DISCREPANCIES OR CHANGES IN THE LOCATIONS OF ANY UTILITIES SHOWN OR ENCOUNTERED DURING CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER AND CORRECT LOCATION DOCUMENTED.

8. CONTRACTOR SHALL NOTE THAT ALL EXISTING STRUCTURE DETAILS AND DIMENSIONS ARE APPROXIMATE. CONTRACTOR SHALL MAKE THEIR OWN ASSESSMENT OF STRUCTURE MATERIALS, DIMENSIONS, AND THICKNESS FOR BIDDING.
9. CONTRACTOR SHALL ASSUME BURIED STRUCTURES AND OBSTRUCTIONS ARE PRESENT AND PROVIDE SUITABLE EQUIPMENT FOR DEMOLITION AND REMOVAL OF THESE TYPES OF STRUCTURES AND OBSTRUCTIONS WHERE THEY INTERFERE WITH THE PROPOSED WORK.
10. CONTRACTOR SHALL NOTIFY RESIDENT ENGINEER WHEN BURIED STRUCTURES OR OBSTRUCTIONS ARE FOUND.
11. THE HORIZONTAL DATUM IS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83) AS DETERMINED WITH RESPECT TO THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM (MAINLAND ZONE).
12. ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD88), EXISTING UTILITIES HAVE BEEN CONVERTED TO NAVD88 (FEBRUARY 2020)
13. THE UNIT OF MEASURE IS THE UNITED STATES SURVEY FOOT.

UTILITIES

1. ALL LENGTHS AND QUANTITIES SHOWN ON THE PLANS AND PROFILES ARE FOR REFERENCE PURPOSES ONLY AND SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO PURCHASE OF MATERIALS.
2. ALL UTILITY AND DRAINAGE STRUCTURES, PIPING AND CONDUITS SHALL BE DESIGNED AND CONSTRUCTED TO WITHSTAND AIRPORT EXTRA HEAVY DUTY LOADING AND RATED FOR 200,000 LBS CAPACITY UNLESS NOTED OTHERWISE. ALL CASTINGS SHALL CONFORM TO ASTM A48; CLASS 35B GRAY IRON.
3. ALL UTILITY OWNERS SHALL HAVE ACCESS TO THEIR EXISTING MANHOLES AND STRUCTURES AT ALL TIMES.

SUPPORT OF EXISTING UTILITIES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGNING TEMPORARY SUPPORT SYSTEMS FOR EXISTING UTILITIES TO REMAIN. THE CONTRACTOR SHALL SUBMIT WORKING DRAWINGS, TOGETHER WITH DESIGN CALCULATIONS STAMPED BY A MASS LICENSED PE AND MATERIAL SPECIFICATIONS FOR APPROVAL BY THE ENGINEER PRIOR TO COMMENCEMENT OF WORK. THE WORKING DRAWINGS SHALL INCLUDE THE ENTIRE PROPOSED SUPPORT SYSTEM.
2. IN ADDITION TO EXISTING UTILITIES WHICH CROSS NEW EXCAVATIONS, THE CONTRACTOR SHALL SUPPORT AND PROTECT IN PLACE EXISTING AND NEW UTILITIES WITHIN A HORIZONTAL DISTANCE EQUAL TO TWICE THE EXCAVATION DEPTH FROM THE EDGE OF THE EXCAVATION.
3. UTILITIES SHALL NOT BE RIGIDLY CONNECTED TO, OR IN DIRECT CONTACT WITH THE EXCAVATION SUPPORT SYSTEM.
4. THE MAXIMUM DISTANCE BETWEEN PIPE, CONDUIT OR DUCTBANK SUPPORTS SHALL NOT EXCEED THAT LENGTH WHICH MAY BE SAFELY ACHIEVED WITHOUT DETRIMENTAL EFFECT TO THE UTILITY, AS DETERMINED BY THE UTILITY OWNER.
5. EXISTING MATERIALS UNSUITABLE FOR TEMPORARY SUPPORT, SUCH AS BRICK SEWERS OR OTHER CONDUITS OF NON-HOMOGENOUS MATERIALS; OR EXISTING UTILITIES FOUND TO BE IN TOO POOR A CONDITION TO BE SUPPORTED AS AUTHORIZED BY THE ENGINEER, MUST BE REPLACED AS AUTHORIZED BY THE ENGINEER WITH NEW MATERIALS AS APPROVED BY THE ENGINEER THAT CAN BE SUPPORTED. PAYMENT FOR SUCH WORK WILL BE AT THE UNIT PRICE FOR THE ITEM BEING INSTALLED.
6. EXPOSED WATER MAINS WITH LOW FLOW, INCLUDING HYDRANT LATERALS, SHALL BE PROTECTED FROM FREEZING WITH INSULATION AND/OR HEAT TRACING AS REQUIRED.
7. ALL WOOD USED FOR TEMPORARY SUPPORT SHALL BE FIRE RETARDANT TREATED OR COATED WITH FIRE RETARDANT PAINT.
8. UTILITIES SHALL BE LATERALLY CONSTRAINED. CONSTRAINTS MUST NOT INTERFERE WITH EXISTING OR PROPOSED UTILITIES.
9. STRUCTURAL DESIGN CALCULATIONS AND DRAWINGS SHALL BE SEALED AND SIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN MASSACHUSETTS. STRUCTURAL STEEL DESIGN SHALL BE IN ACCORDANCE WITH AISC SPECIFICATIONS.

MAINTENANCE OF TRAFFIC AND MASSPORT OPERATIONS

1. THE CONTRACTOR SHALL COORDINATE ALL CONSTRUCTION ACTIVITIES AS TO NOT DISRUPT MASSPORT OPERATIONS INCLUDING ANY VESSEL BERTHING, CONTAINER HANDLING, OR OTHER ACTIVITIES UNLESS OTHERWISE APPROVED BY MASSPORT.
2. MASSPORT OPERATIONS INCLUDE VESSELS EMBARKING/DISEMBARKING BERTH, SHIP TO SHORE (STS) CRANE OPERATIONS, ALL CONTAINER HANDLING ACTIVITIES AND OTHER PIER CONTAINER ACTIVITIES WHEN A SHIP IS AT BERTH.
3. THE CONTRACTOR SHALL NOT PLACE OR LEAVE ANY EQUIPMENT OR MATERIALS IN ACTIVE AREAS OF THE TERMINAL EXCEPT AS APPROVED BY MASSPORT.
4. UPON AWARD OF THE CONTRACT, A CONTRACTOR STORAGE AREA AND SITE ACCESS WILL BE PROVIDED AT THE DISCRETION OF MASSPORT AND MAY BE SUBJECT TO CHANGE DURING CONSTRUCTION.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ARRANGING POLICE DETAILS, AS REQUIRED AND AS AUTHORIZED BY THE ENGINEER, WHILE CONDUCTING CONSTRUCTION OPERATIONS ON STREETS AND ROADWAYS OPEN TO PUBLIC TRAVEL, OR IN ACTIVE USE WITHIN THE TERMINAL.
6. ALL EXISTING PAVEMENT MARKINGS AND/OR SIGNAGE AFFECTED BY CONSTRUCTION OPERATIONS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION UNLESS OTHERWISE SPECIFIED BY THE CONTRACT DOCUMENTS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING, FOR REVIEW AND APPROVAL BY THE ENGINEER, DETAILED PLANS SHOWING THE MAINTENANCE OF TRAFFIC DURING CONSTRUCTION IN EXISTING ROADWAYS, USING REFLECTORIZED DRUMS, TEMPORARY CONCRETE BARRIERS, ARROW PANELS, VARIABLE MESSAGE SIGNS, AND TEMPORARY SIGNAGE AND MARKINGS. ALL TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE DESIGNED, INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF CURRENT VERSION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). THE CONTRACTOR SHALL COORDINATE THE MAINTENANCE OF TRAFFIC OPERATIONS WITH MASSPORT, AND WITH ADJACENT CONSTRUCTION PROJECTS BY MASSPORT AND OTHERS.
8. THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL TRAFFIC MANAGEMENT MEASURES AND EQUIPMENT FOR THE DURATION REQUIRED.
9. THE CONTRACTOR SHALL RELOCATE TRAFFIC MANAGEMENT MEASURES AND EQUIPMENT IF SO REQUIRED BY THE AUTHORITY.

CONSTRUCTION CONTRACT COORDINATION

1. THE CONTRACTOR IS ADVISED THAT THERE ARE SEVERAL ONGOING MASSPORT PROJECTS THAT WILL BE ADVERTISED SEPARATELY REQUIRING CAREFUL COORDINATION OF RESPECTIVE CONSTRUCTION ACTIVITIES AND COOPERATION BETWEEN CONTRACTORS. CONCURRENT OR FUTURE CONTRACTS INCLUDE THE PROJECTS LISTED BELOW.
 - MPA CONTRACT M560-C1 (BERTH 16-17 IMPROVEMENTS): THIS PROJECT WILL INVOLVE RECONSTRUCTION OF THE BULKHEADS AS WELL AS CERTAIN GRADING, UTILITY AND STORMDRAIN IMPROVEMENTS WITHIN THE BERTH 16-17 AREA AND ADJACENT CONTAINER YARD BEHIND THE BULKHEADS.
 - MPA CONTRACT M560-C2 (NEW CONLEY IN GATE & OUT GATE FACILITIES CONLEY TERMINAL): THE NEW GATE FACILITIES COMPRISE IN AND OUT GATES, OPTICAL CHARACTER RECOGNITION (OCR) FACILITIES, CUSTOMS FACILITIES, ROADWAYS, CONTAINER YARD, AND ASSOCIATED DRAINAGE, ELECTRICAL, LIGHTING AND UNDERGROUND SERVICES
2. CONTRACTOR SHALL COORDINATE ITS CONSTRUCTION ACTIVITIES WITH ALL ADJACENT CONTRACTS.
3. OBTAIN PRIOR APPROVAL FOR SPECIFIC CONSTRUCTION ACTIVITIES OR PLANNED UTILITY INSTALLATIONS.

STAGING AND CONSTRUCTION ACCESS

1. CONTRACTOR SHALL COORDINATE ITS CONSTRUCTION ACTIVITIES WITH ALL ADJACENT CONTRACTS.
2. THE CONTRACTOR SHALL NOT BE ALLOWED TO USE THE EXISTING CONLEY TERMINAL ENTRANCE WITHOUT WRITTEN PRIOR APPROVAL FOR SPECIFIC CONSTRUCTION ACTIVITIES OR PLANNED UTILITY INSTALLATIONS.



MASSACHUSETTS PORT AUTHORITY
EAST BOSTON, MASSACHUSETTS 02128

PROJECT LOCATION:
**CONLEY TERMINAL
SOUTH BOSTON, MASSACHUSETTS**

MPA CONTRACT NO.:
M555 - C1

LOCATION CODE:
4300

PROJECT SUBMISSION PHASE:

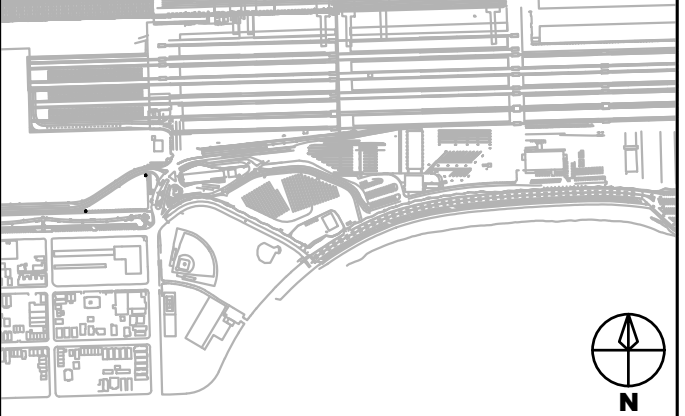
ENVIRONMENTAL PLANS

REGISTRATION STAMP:



06.21.2021

KEY PLAN:



REVISIONS:

REV NO.	DATE	DESCRIPTION	BY

PRIMARY:



CONSULTANT:

PROJECT NUMBER AND TITLE:

M555-C1
BERTH 11 & 12
BACKLANDS
RECONSTRUCTION

SHEET TITLE:

GENERAL NOTES

DISCIPLINE:

CIVIL

DRAWN BY:	CHECKED BY:	APPROVED BY:
KLH	RDL	BNJ

SCALE:	DATE:
N/A	JUNE 2021

DRAWING NAME:

ENV-02

ABBREVIATIONS

ABD	ABANDONED	O.C.	WATER MANHOLE
ADJ	ADJUST	OHW	OVERHEAD WIRES
B	BOLLARD	PE	POLYETHYLENE
BB	BITUMINOUS CONCRETE BERM	PED	PEDESTRIAN
BL	BURIED LIGHT	PROP	PROPOSED
BO	BY OTHERS	PVC	POLYVINYL CHLORIDE
BT	BURIED TEL.	PVMT	PAVEMENT
BWSC	BOSTON WATER/SEWER COMMISSION	RCP	REINFORCED CONCRETE PIPE
BWW	BOSTON WATER WORKS	R&D	REMOVE & DISPOSE
CB/CBN	CATCH BASIN	R&R	REMOVE & RESET
CEM	CEMENT	RET	RETAIN/ITEM TO REMAIN
CIT	CHANGE IN TYPE	RR	RAILROAD
CLF	CHAIN LINK FENCE	RTG	RUBBER TYRED GANTRY (CRANE)
CLDI	CEMENT LINED DUCTILE IRON	S	SEWER LINE
CO	CLEANOUT	SD	STORM DRAIN
CONC	CONCRETE	SGC	SLOPED GRANITE CURB
COMM	TELECOMMUNICATIONS	SHLDR	SHOULDER
CU	COPPER PIPE	SMH	SEWER MANHOLE
DI	DRAIN INLET	SS	SANITARY SEWER
DIP	DUCTILE IRON PIPE	STD	STANDARD
DGCS	DENSE GRADED CRUSHED STONE	SL	STOP LINE
DMH	DRAIN MANHOLE	SWEL	SOLID WHITE EDGE LINE
DYCL	DOUBLE YELLOW CENTER LINE	SWL	SOLID WHITE LINE
DS	DOWNSPOUT	SWLL	SOLID WHITE LANE LANE
EHH	ELECTRIC HAND HOLE	SYGL	SOLID YELLOW GORE LINE
ELEC., E	ELECTRIC	SYL	SOLID YELLOW LINE
EMH	ELECTRIC MANHOLE	SYLL	SOLID YELLOW LANE LINE
EXIST	EXISTING	T	TELEPHONE
FD	FULL DEPTH	TBA	TO BE ABANDONED
FM	FORCE MAIN	TD	TRENCH DRAIN
FP	FIRE PROTECTION	TMH	TELEPHONE MANHOLE
G	GAS SERVICE/GAS LINE	WG	WATER GATE VALVE
GG	GAS VALVE	UD	UNDERDRAIN
GP	GATE POST	VGC	VERTICAL GRANITE CURB
HH	HANDHOLE	W	WATER LINE
HMA	HOT MIX ASPHALT	WMH	WATER MANHOLE
HS	HIGH SERVICE WATER	WSO	WATER SHUT OFF
HWY	HIGHWAY	WV	WATER VALVE
JB	JUNCTION BOX		
LP	LIGHT POLE		
LS	LOW SERVICE WATER		
M&M	MEET AND MATCH		
MPA	MASS. PORT AUTHORITY		
MW	MONITORING WELL		

DRAINAGE LEGEND:

X	STRUCTURE ID
PX	PIPE ID
TC	TREATMENT CHAMBER
DMH	DRAIN MANHOLE
CB	CATCH BASIN
DCB	DOUBLE GRATE CB
DI-A	PROPOSED INLET TYPE A
HW	HEADWALL
EW	ENDWALL (OUTFALL)
BPX	BUFFER PARK PIPE ID
BX	BUFFER PARK STRUCTURE ID
BP-A	BUFFER PARK INLET TYPE A
BP-B	BUFFER PARK INLET TYPE B
OS	OUTLET STRUCTURE
BC	BOTTOM OF CURB
TC	TOP OF CURB

UTILITIES SYMBOLS

EXISTING	PROPOSED
CATCH BASIN	GATE VALVE
DRAINLINE	GATE VALVE
PLUG OR CAP	WATER VALVE
VALVE	MANUAL AIR RELEASE VALVE
DRAIN MANHOLE	TEE
ELECTRIC MANHOLE	PLUG OR CAP
TELEPHONE MANHOLE	VERT. OR HORIZ. BEND
SEWER MANHOLE	TELEPHONE MANHOLE
UNKNOWN MANHOLE	SEWER OR DRAIN MANHOLE
BORING HOLE / TEST PIT	ELECTRIC MANHOLE
MONITORING WELL	CATCH BASIN
WATER SHUT OFF VALVE	STORMWATER TREATMENT SYSTEM
LIGHT POLE	CLEANOUT
RAILROAD TRACKS	HDPE FIELD INLET
WATER HYDRANT	G — GAS
UTILITY POLE	S — SEWER
TELEPHONE POLE	W — WATER
	T — TELEPHONE/COMMUNICATION
	E — ELECTRICAL



MASSACHUSETTS PORT AUTHORITY
EAST BOSTON, MASSACHUSETTS 02128

PROJECT LOCATION:
CONLEY TERMINAL
SOUTH BOSTON, MASSACHUSETTS

MPA CONTRACT NO.: M555 - C1 LOCATION CODE: 4300

PROJECT SUBMISSION PHASE:

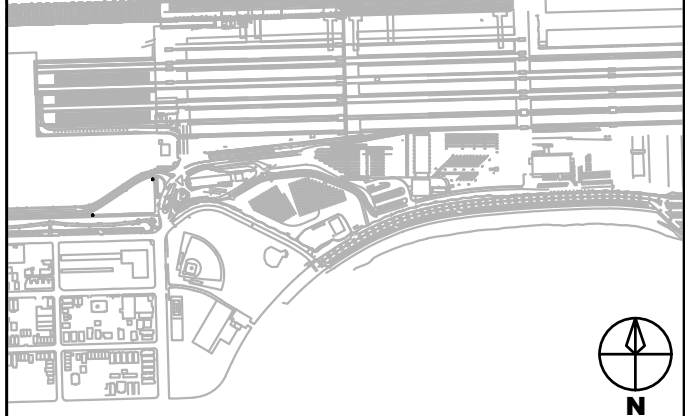
ENVIRONMENTAL PLANS

REGISTRATION STAMP:



06.21.2021

KEY PLAN:



REVISIONS:

REV NO.	DATE	DESCRIPTION	BY

PRIMARY:



CONSULTANT:

PROJECT NUMBER AND TITLE:

M555-C1
BERTH 11 & 12
BACKLANDS
RECONSTRUCTION

SHEET TITLE:

LEGEND AND ABBREVIATIONS

DISCIPLINE:
CIVIL

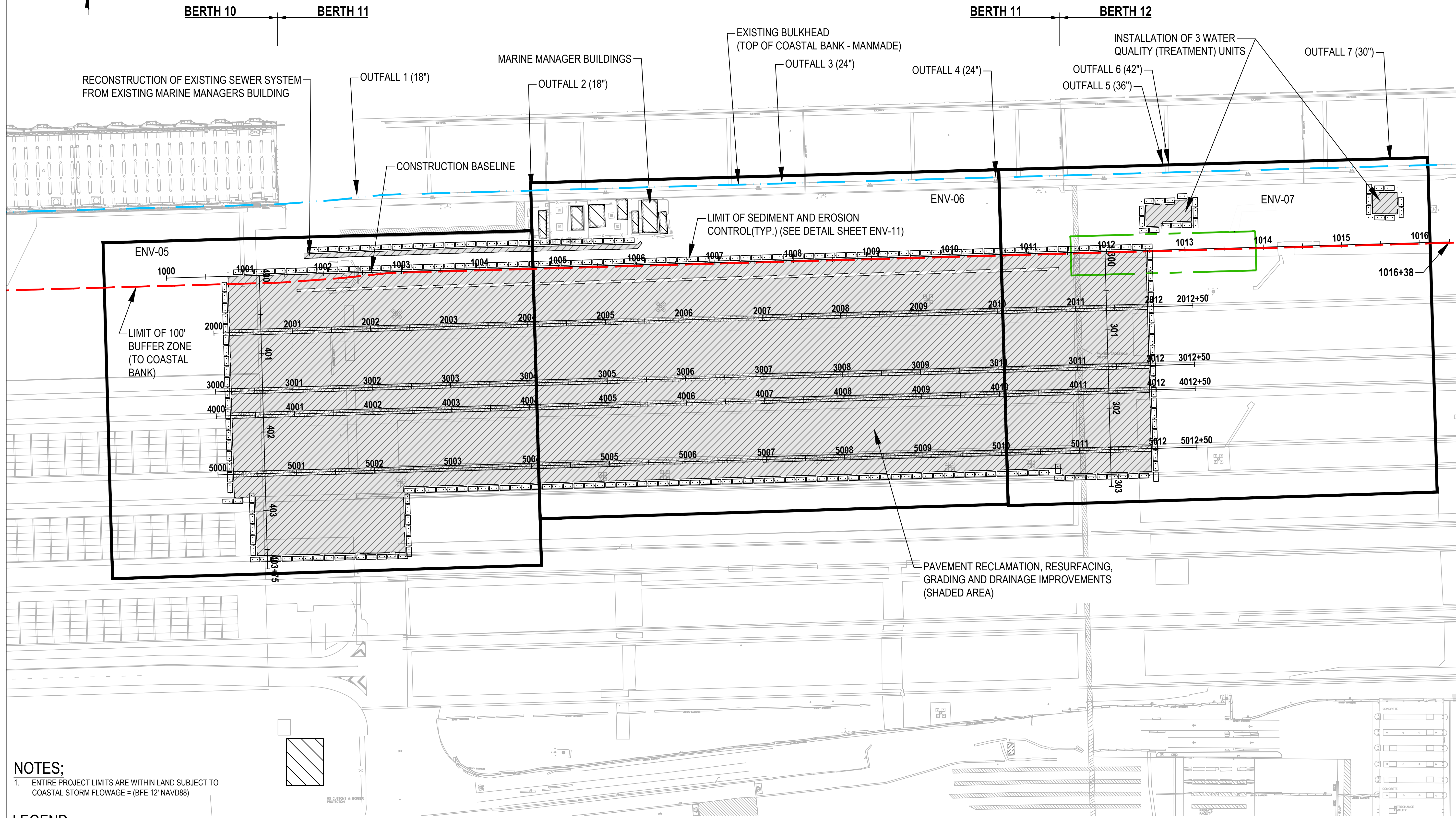
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SCALE: N/A	DATE: JUNE 2021
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DRAWING NAME:

ENV-03

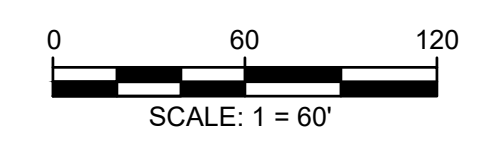
RESERVED CHANNEL



NOTES:
 1. ENTIRE PROJECT LIMITS ARE WITHIN LAND SUBJECT TO COASTAL STORM FLOWAGE = (BFE 12' NAVD88)

LEGEND:

	PROPOSED FULL DEPTH HMA		IMPACT TO LAND SUBJECT TO COASTAL STORM FLOWAGE
	PROPOSED RTG RUNWAY		EXISTING BUILDING
	LIMIT OF SEDIMENT AND EROSION CONTROL		100' BUFFER ZONE
	COASTAL BANK		CONLEY AUL-2 (APPROX.)



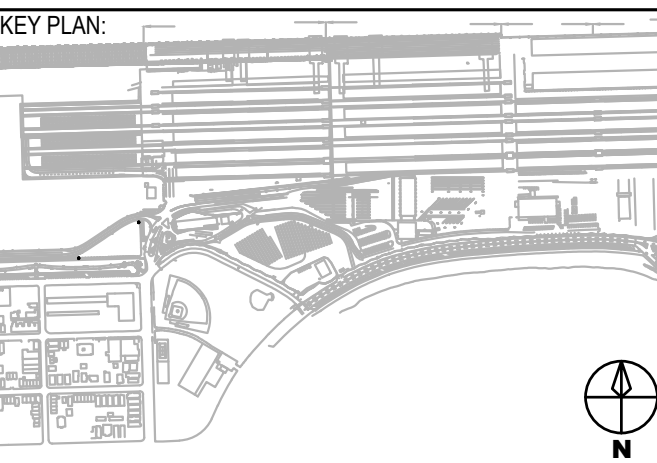
MASSACHUSETTS PORT AUTHORITY
 EAST BOSTON, MASSACHUSETTS 02128

PROJECT LOCATION:
CONLEY TERMINAL
 SOUTH BOSTON, MASSACHUSETTS

MPA CONTRACT NO.: M555 - C1
 LOCATION CODE: 4300

PROJECT SUBMISSION PHASE:
ENVIRONMENTAL PLANS

REGISTRATION STAMP:



REVISIONS:

REV NO.	DATE	DESCRIPTION	BY

PRIMARY:

99 HIGH STREET, SUITE 2300,
 BOSTON, MA 02110-2378
 (617) 357-7700

CONSULTANT:

PROJECT NUMBER AND TITLE:
M555-C1
 BERTH 11 & 12
 BACKLANDS
 RECONSTRUCTION

SHEET TITLE:
KEY AND ALIGNMENT PLAN

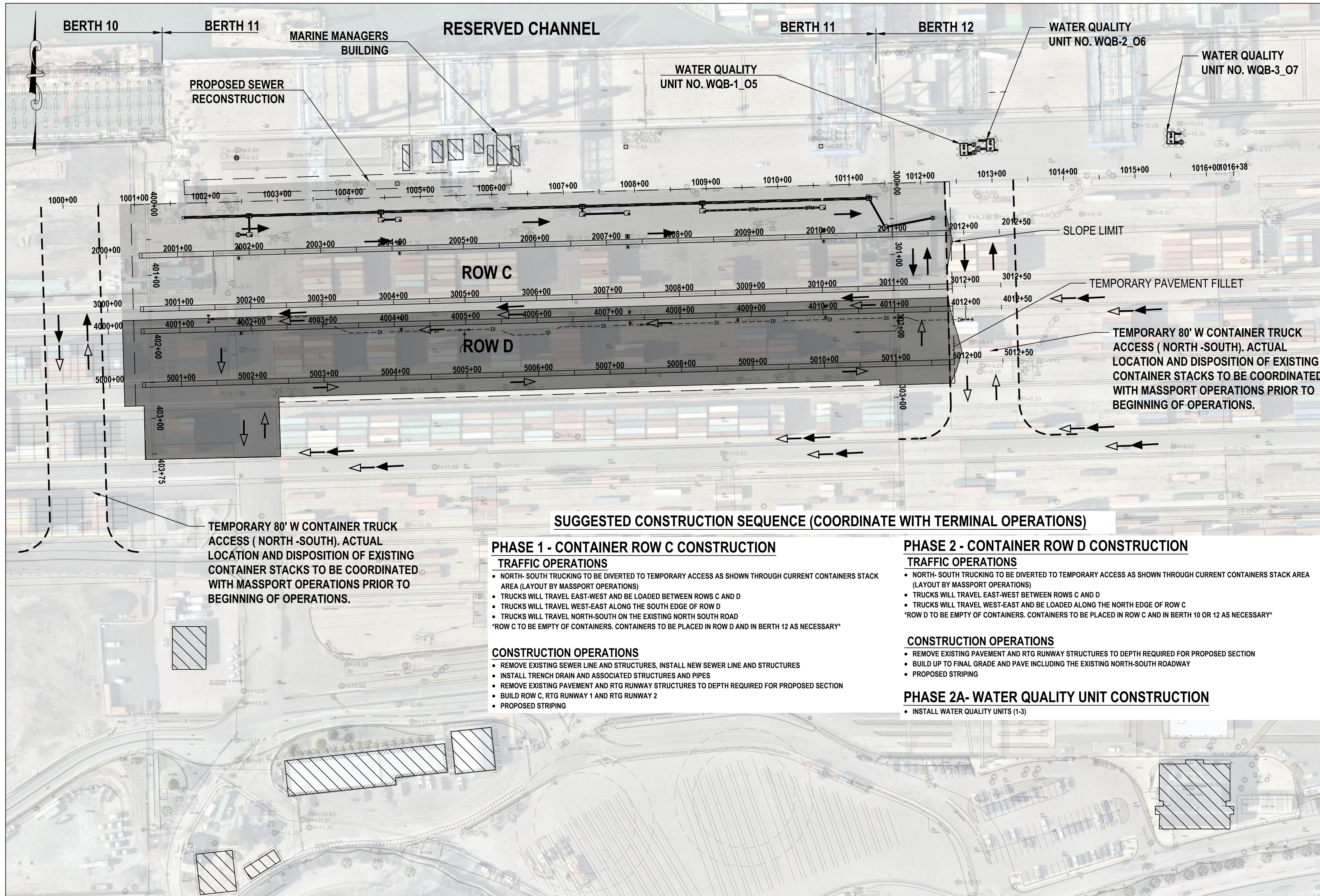
DISCIPLINE:
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DRAWN BY: KLH	CHECKED BY: RDL	APPROVED BY: BNJ
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SCALE:
 1 = 60'

DATE:
 JUNE 2021

DRAWING NAME:
ENV-04



MASSACHUSETTS PORT AUTHORITY
EAST BOSTON, MASSACHUSETTS 02128

PROJECT LOCATION:
CONLEY TERMINAL
SOUTH BOSTON, MASSACHUSETTS

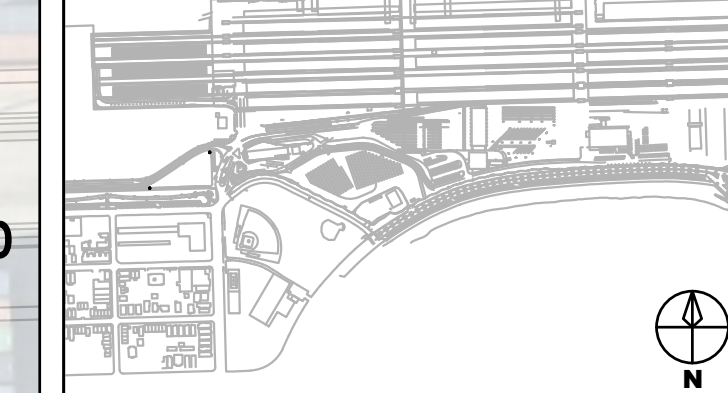
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PROJECT SUBMISSION PHASE:
ENVIRONMENTAL PLANS

REGISTRATION STAMP:



KEY PLAN:



REVISIONS:

REV NO.	DATE	DESCRIPTION	BY

PRIMARY:



99 HIGH STREET, SUITE 2300,
BOSTON, MA 02110-2378
(617) 357-7700

CONSULTANT:

PROJECT NUMBER AND TITLE:

M555-C1
BERTH 11 & 12
BACKLANDS
RECONSTRUCTION

SHEET TITLE:
CONSTRUCTION SEQUENCING

DISCIPLINE:
CIVIL

DRAWN BY: KLH	CHECKED BY: RDL	APPROVED BY: BNJ
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SCALE: 1" = 60'	DATE: JUNE 2021
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DRAWING NAME:

ENV-05



- SUGGESTED CONSTRUCTION SEQUENCE (COORDINATE WITH TERMINAL OPERATIONS)**
- PHASE 1 - CONTAINER ROW C CONSTRUCTION**
- TRAFFIC OPERATIONS**
- NORTH-SOUTH TRUCKING TO BE DIVERTED TO TEMPORARY ACCESS AS SHOWN THROUGH CURRENT CONTAINERS STACK AREA (LAYOUT BY MASSPORT OPERATIONS)
 - TRUCKS WILL TRAVEL EAST-WEST AND BE LOADED BETWEEN ROWS C AND D
 - TRUCKS WILL TRAVEL WEST-EAST ALONG THE SOUTH EDGE OF ROW D
 - TRUCKS WILL TRAVEL NORTH-SOUTH ON THE EXISTING NORTH SOUTH ROAD
 - *ROW C TO BE EMPTY OF CONTAINERS. CONTAINERS TO BE PLACED IN ROW D AND IN BERTH 12 AS NECESSARY*
- CONSTRUCTION OPERATIONS**
- REMOVE EXISTING SEWER LINE AND STRUCTURES, INSTALL NEW SEWER LINE AND STRUCTURES
 - INSTALL TRENCH DRAIN AND ASSOCIATED STRUCTURES AND PIPES
 - REMOVE EXISTING PAVEMENT AND RTG RUNWAY STRUCTURES TO DEPTH REQUIRED FOR PROPOSED SECTION
 - BUILD ROW C, RTG RUNWAY 1 AND RTG RUNWAY 2
 - PROPOSED STRIPING
- PHASE 2 - CONTAINER ROW D CONSTRUCTION**
- TRAFFIC OPERATIONS**
- NORTH-SOUTH TRUCKING TO BE DIVERTED TO TEMPORARY ACCESS AS SHOWN THROUGH CURRENT CONTAINERS STACK AREA (LAYOUT BY MASSPORT OPERATIONS)
 - TRUCKS WILL TRAVEL EAST-WEST BETWEEN ROWS C AND D
 - TRUCKS WILL TRAVEL WEST-EAST AND BE LOADED ALONG THE NORTH EDGE OF ROW C
 - *ROW D TO BE EMPTY OF CONTAINERS. CONTAINERS TO BE PLACED IN ROW C AND IN BERTH 10 OR 12 AS NECESSARY*
- CONSTRUCTION OPERATIONS**
- REMOVE EXISTING PAVEMENT AND RTG RUNWAY STRUCTURES TO DEPTH REQUIRED FOR PROPOSED SECTION
 - BUILD UP TO FINAL GRADE AND PAVE INCLUDING THE EXISTING NORTH-SOUTH ROADWAY
 - PROPOSED STRIPING
- PHASE 2A- WATER QUALITY UNIT CONSTRUCTION**
- INSTALL WATER QUALITY UNITS (1-3)

- GENERAL NOTES**
- SEE KEY AND ALIGNMENT PLANS FOR HORIZONTAL ALIGNMENT INFORMATION.
 - SEE DRAINAGE AND GRADING PLANS FOR PROPOSED DRAINAGE STRUCTURE AND PIPE INFORMATION.



BERTH 10 BERTH 11

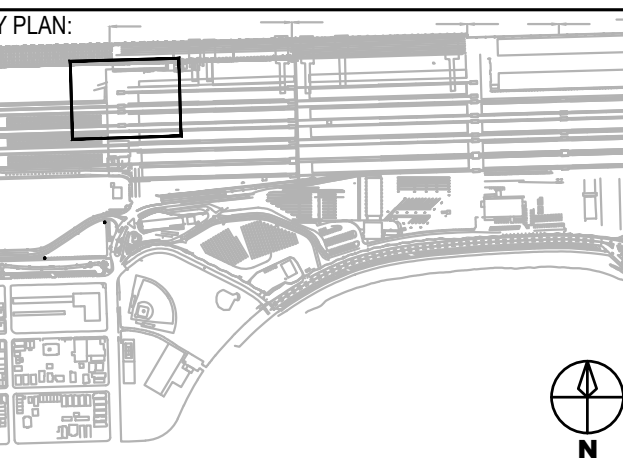
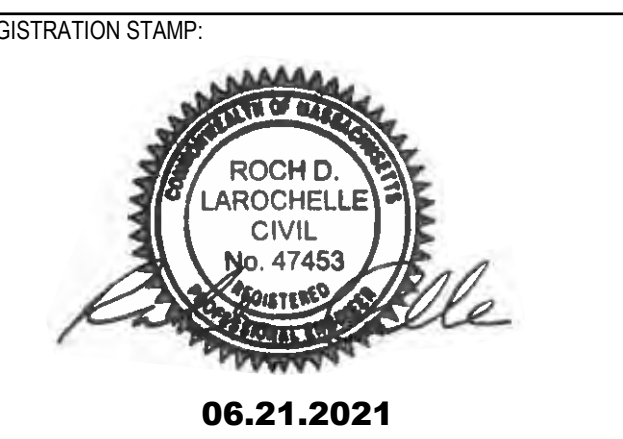


MASSACHUSETTS PORT AUTHORITY
EAST BOSTON, MASSACHUSETTS 02128

PROJECT LOCATION:
**CONLEY TERMINAL
SOUTH BOSTON, MASSACHUSETTS**

MPA CONTRACT NO.: M555-C1 LOCATION CODE: 4300

PROJECT SUBMISSION PHASE:
ENVIRONMENTAL PLANS



REVISIONS:

REV NO.	DATE	DESCRIPTION	BY



PROJECT NUMBER AND TITLE:
**M555-C1
BERTH 11 & 12
BACKLANDS
RECONSTRUCTION**

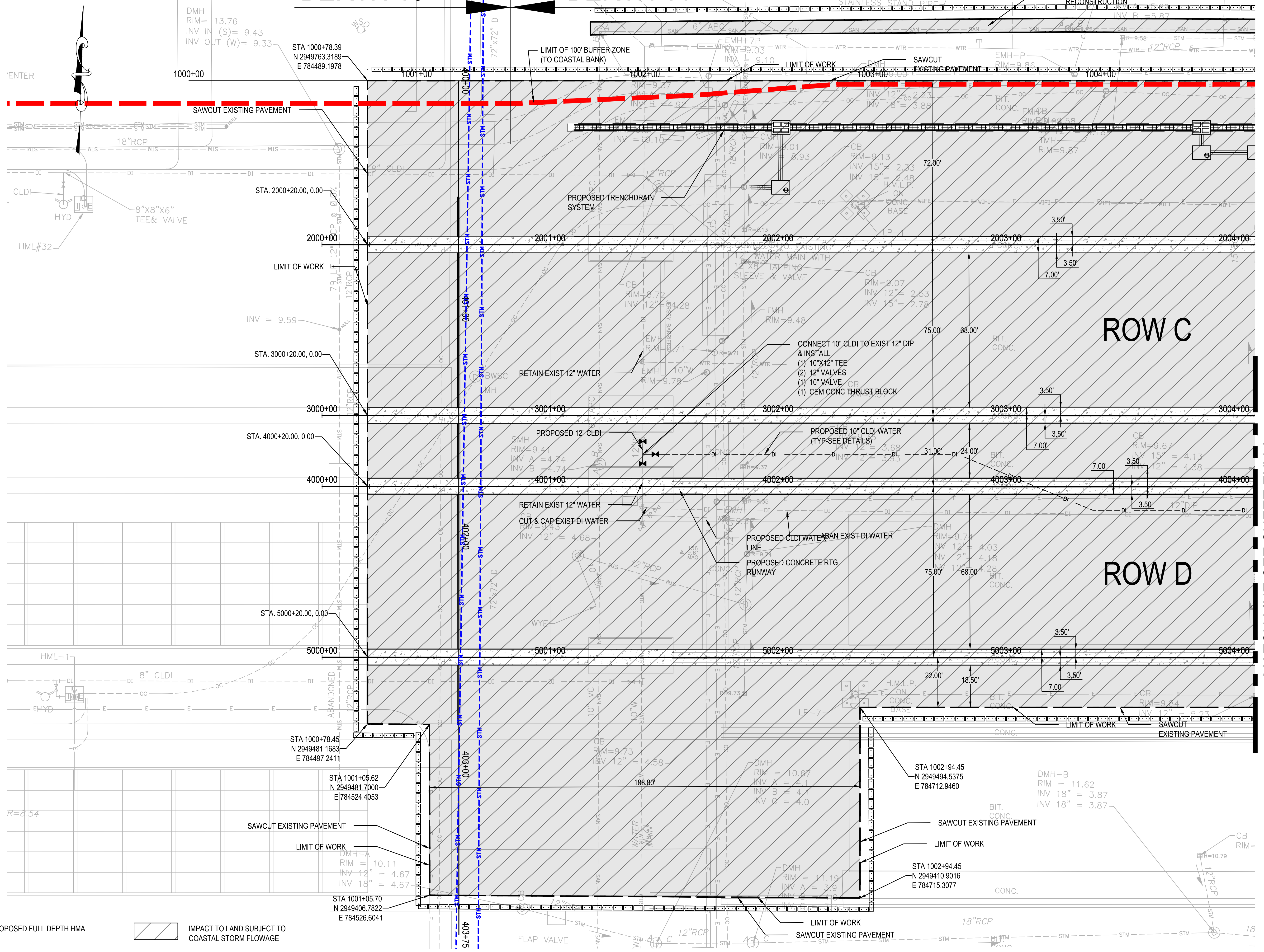
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GENERAL PLANS - 1 OF 3

DISCIPLINE:
CIVIL

DRAWN BY: KLH	CHECKED BY: RDL	APPROVED BY: BNJ
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SCALE: 1 = 20' DATE: JUNE 2021

DRAWING NAME:
ENV-06

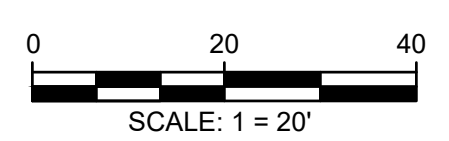


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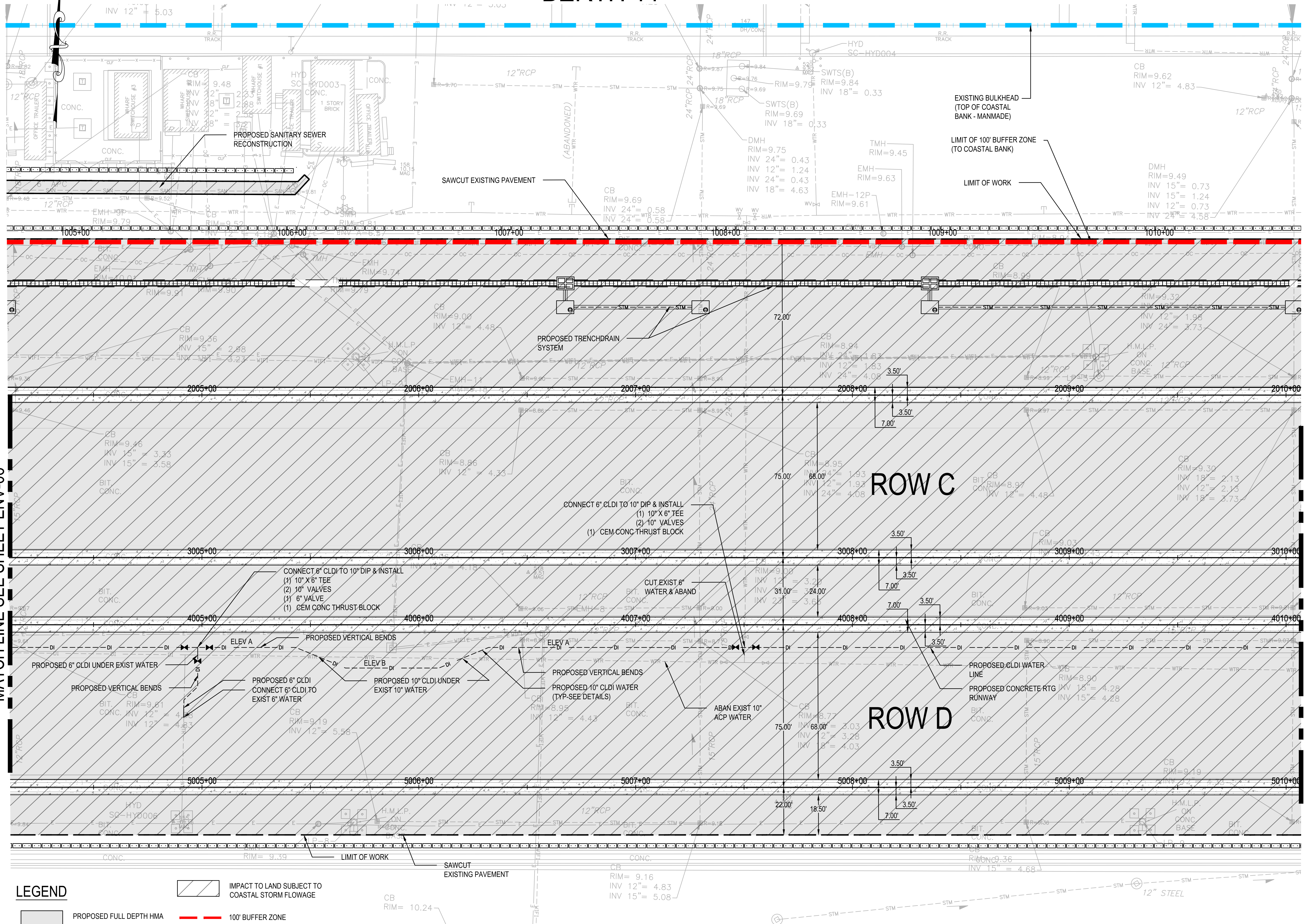
LEGEND

PROPOSED FULL DEPTH HMA	IMPACT TO LAND SUBJECT TO COASTAL STORM FLOWAGE
PROPOSED RTG RUNWAY	100' BUFFER ZONE
72" x 72" BOX DRAIN OUTLET (BWSC)	COASTAL BANK
LIMIT OF SEDIMENT AND EROSION CONTROL	

NOTES:
1. ENTIRE PROJECT LIMITS ARE WITHIN LAND SUBJECT TO COASTAL STORM FLOWAGE = (BFE 12' NAVD88)



BERTH 11



LEGEND

- IMPACT TO LAND SUBJECT TO COASTAL STORM FLOWAGE
- 100' BUFFER ZONE
- PROPOSED FULL DEPTH HMA
- COASTAL BANK
- LIMIT OF SEDIMENT AND EROSION CONTROL
- PROPOSED RTG RUNWAY

NOTES:

1. ENTIRE PROJECT LIMITS ARE WITHIN LAND SUBJECT TO COASTAL STORM FLOWAGE = (BFE 12' NAVD88)



MASSACHUSETTS PORT AUTHORITY
EAST BOSTON, MASSACHUSETTS 02128

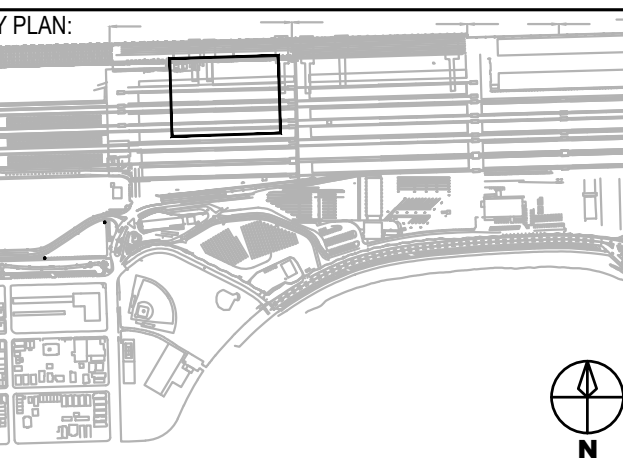
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CONLEY TERMINAL
SOUTH BOSTON, MASSACHUSETTS

MPA CONTRACT NO.: M555-C1 LOCATION CODE: 4300

PROJECT SUBMISSION PHASE:
ENVIRONMENTAL PLANS

REGISTRATION STAMP:

06.21.2021



REVISIONS:

REV NO.	DATE	DESCRIPTION	BY

CONSULTANT:

99 HIGH STREET, SUITE 2300,
BOSTON, MA 02110-2378
(617) 357-7700

PROJECT NUMBER AND TITLE:
M555-C1
BERTH 11 & 12
BACKLANDS
RECONSTRUCTION

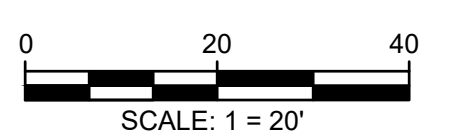
SHEET TITLE:
GENERAL PLANS - 2 OF 3

DISCIPLINE:
CIVIL

DRAWN BY: **KLH** CHECKED BY: **RDL** APPROVED BY: **BNJ**

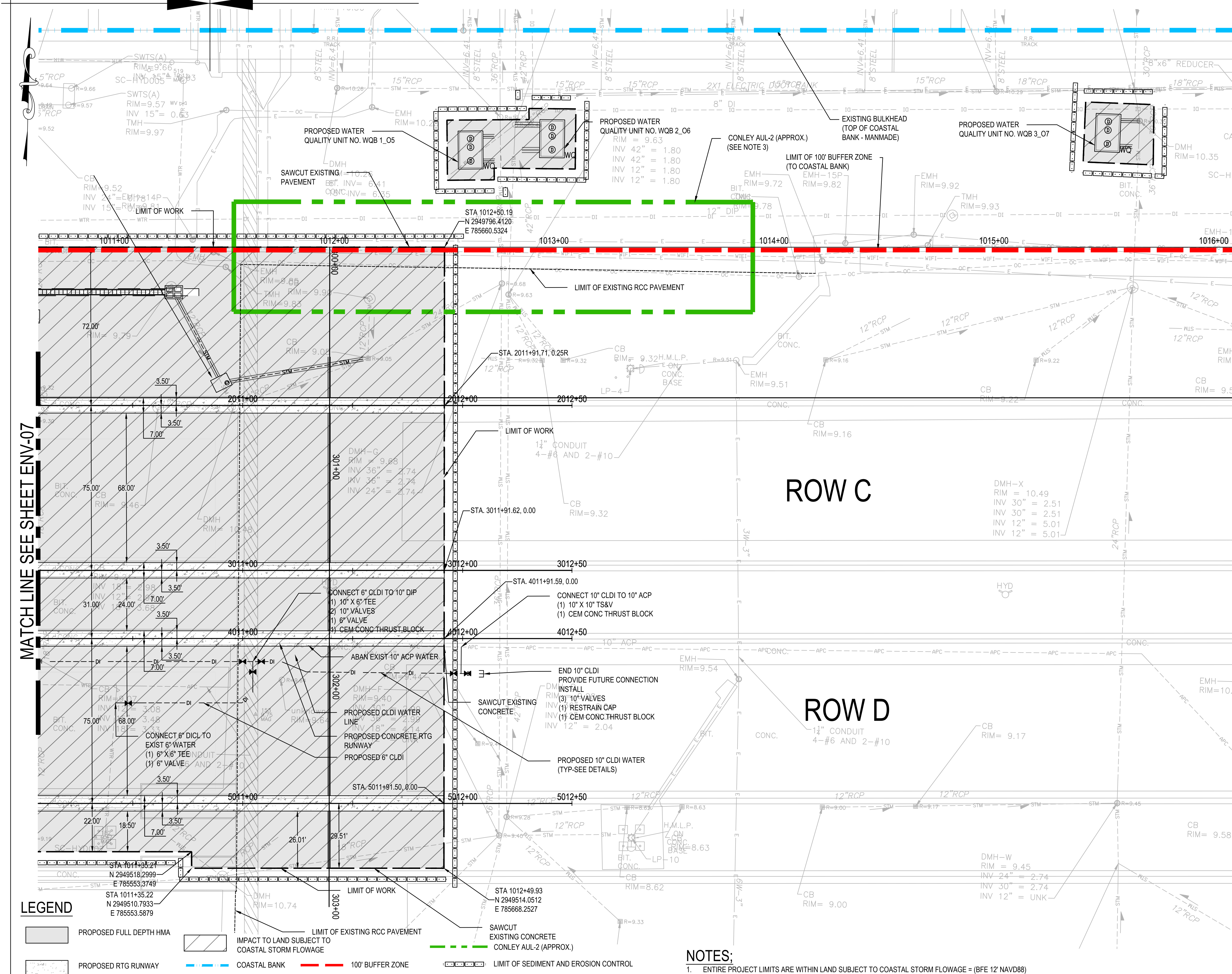
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DRAWING NAME:
ENV-07



BERTH 11

BERTH 12



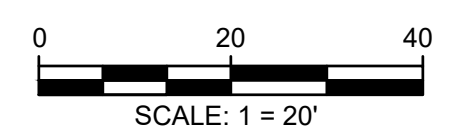
MATCH LINE SEE SHEET ENV-07

LEGEND

- PROPOSED FULL DEPTH HMA
- PROPOSED RTG RUNWAY
- LIMIT OF EXISTING RCC PAVEMENT
- IMPACT TO LAND SUBJECT TO COASTAL STORM FLOWAGE
- COASTAL BANK
- 100' BUFFER ZONE
- LIMIT OF SEDIMENT AND EROSION CONTROL
- CONLEY AUL-2 (APPROX.)

NOTES:

1. ENTIRE PROJECT LIMITS ARE WITHIN LAND SUBJECT TO COASTAL STORM FLOWAGE = (BFE 12' NAVD88)



PROJECT LOCATION:
CONLEY TERMINAL
 SOUTH BOSTON, MASSACHUSETTS

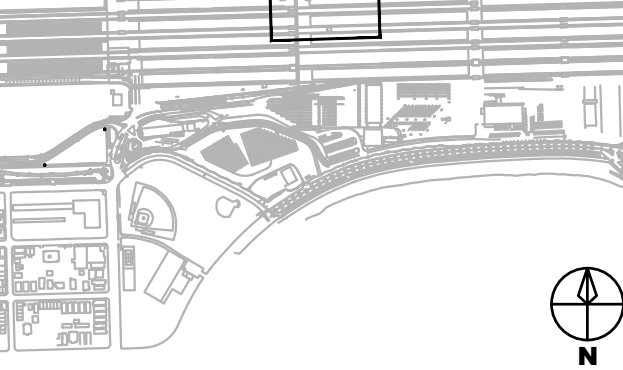
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 LOCATION CODE: 4300

PROJECT SUBMISSION PHASE:
ENVIRONMENTAL PLANS

REGISTRATION STAMP:

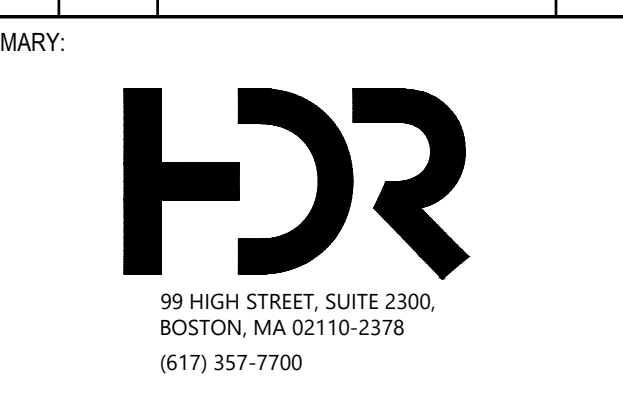


KEY PLAN:



REVISIONS:

REV NO.	DATE	DESCRIPTION	BY



CONSULTANT:

PROJECT NUMBER AND TITLE:

M555-C1
 BERTH 11 & 12
 BACKLANDS
 RECONSTRUCTION

SHEET TITLE:

GENERAL PLANS - 3 OF 3

DISCIPLINE:

CIVIL

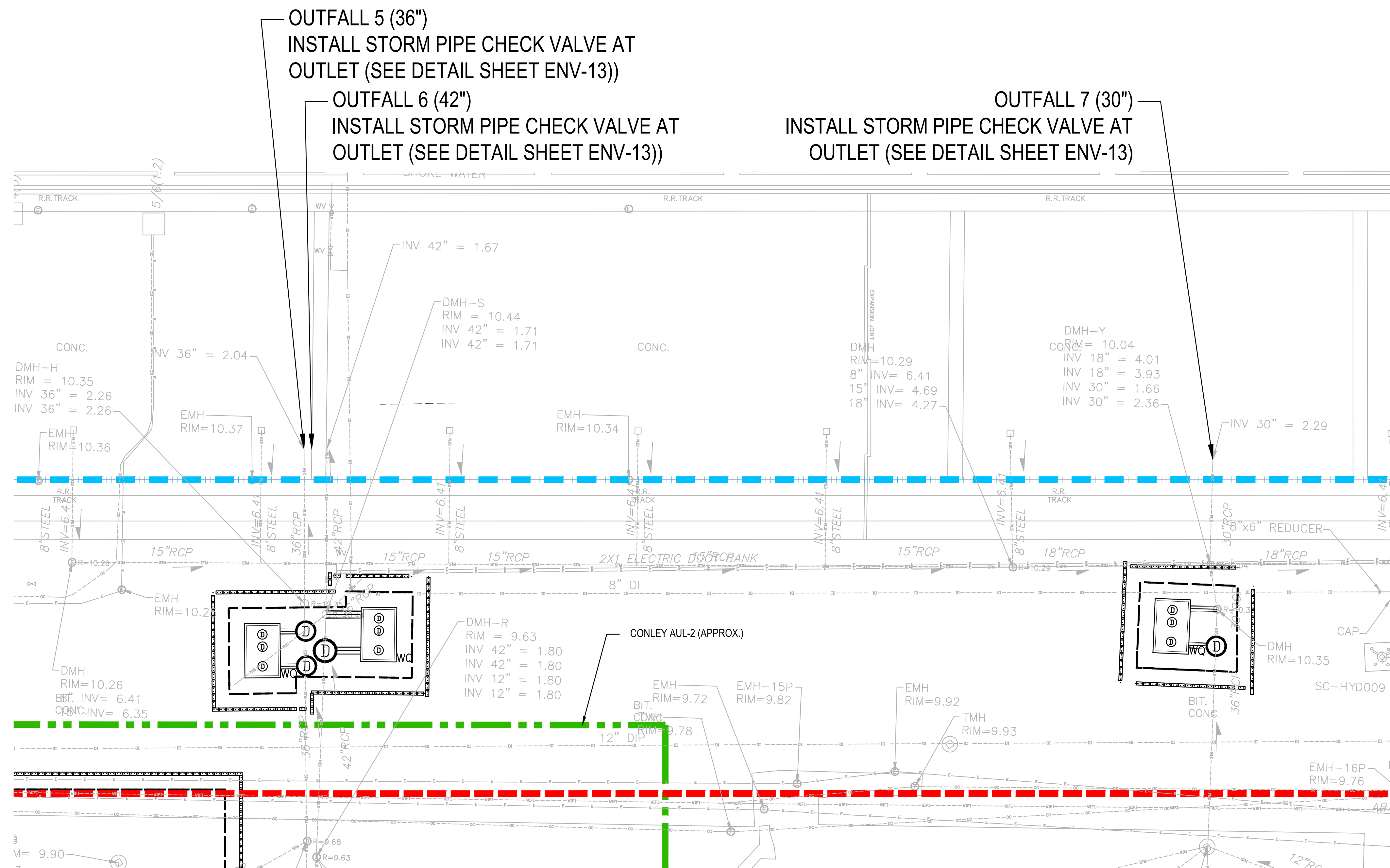
DRAWN BY:	CHECKED BY:	APPROVED BY:
KLH	RDL	BNJ

SCALE: 1 = 20'
 DATE: JUNE 2021

DRAWING NAME:

ENV-08

RESERVED CHANNEL



LEGEND:

- - - - - 100' BUFFER ZONE
- - - - - COASTAL BANK
- - - - - CONLEY AUL-2 (APPROX.)



MASSACHUSETTS PORT AUTHORITY
EAST BOSTON, MASSACHUSETTS 02128

PROJECT LOCATION:
CONLEY TERMINAL
SOUTH BOSTON, MASSACHUSETTS

MPA CONTRACT NO.: M555-C1
LOCATION CODE: 4300

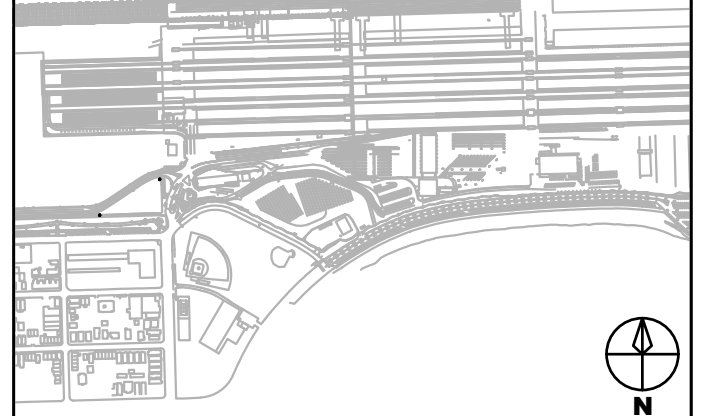
PROJECT SUBMISSION PHASE:
100% PLANS

REGISTRATION STAMP:



06.21.2021

KEY PLAN:



REVISIONS:

REV NO.	DATE	DESCRIPTION	BY

PRIMARY:



99 HIGH STREET, SUITE 2300,
BOSTON, MA 02110-2378
(617) 357-7700

CONSULTANT:

PROJECT NUMBER AND TITLE:

M555-C1
BERTH 11 & 12
BACKLANDS
RECONSTRUCTION

SHEET TITLE:

STORMWATER OUTFALL AND
DETAIL

DISCIPLINE:

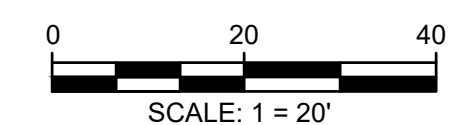
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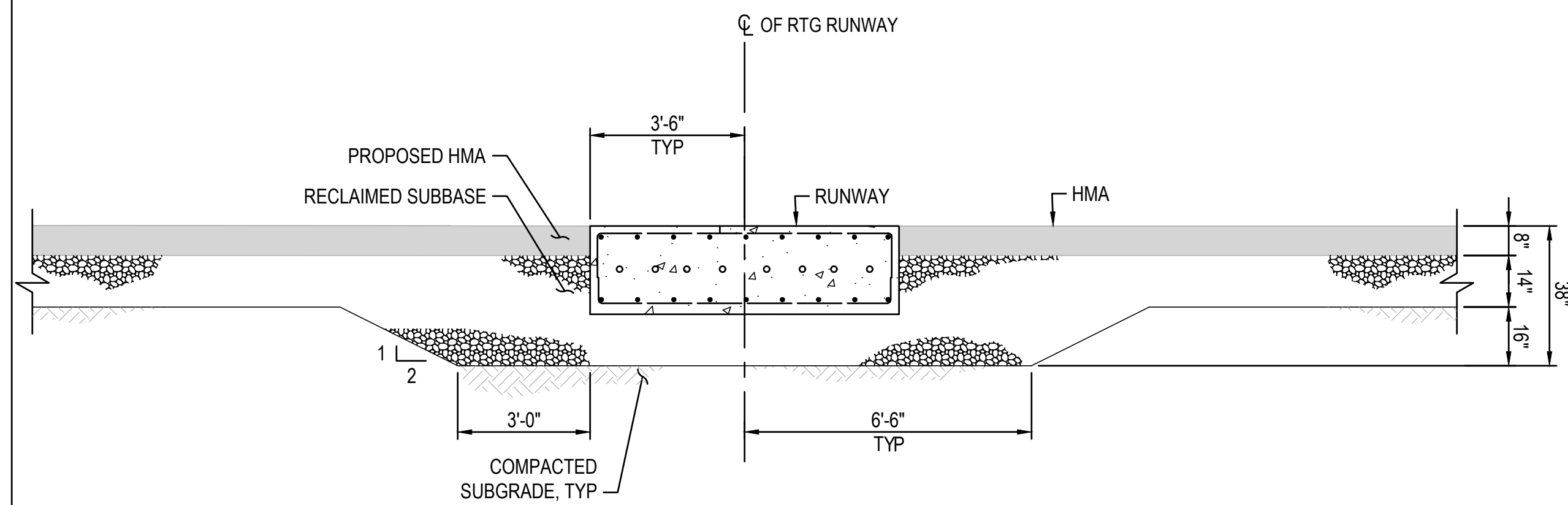
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1 = 20'	JUNE 2021

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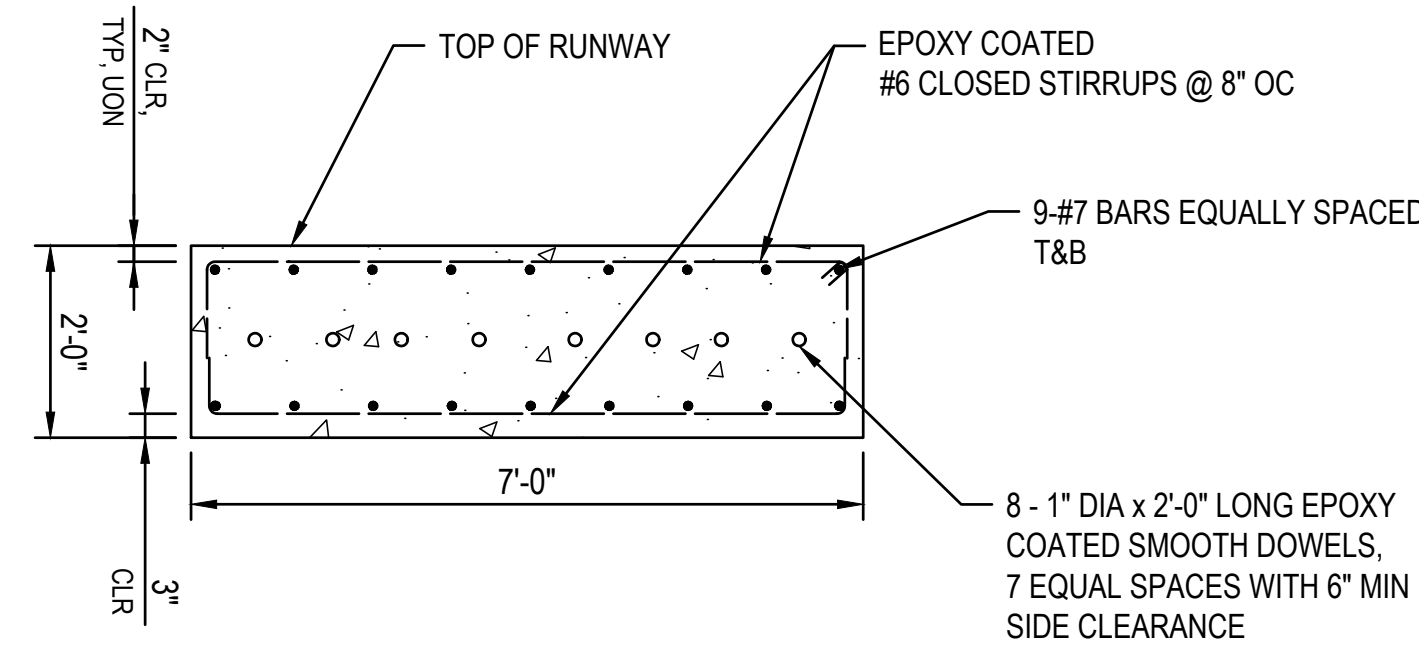
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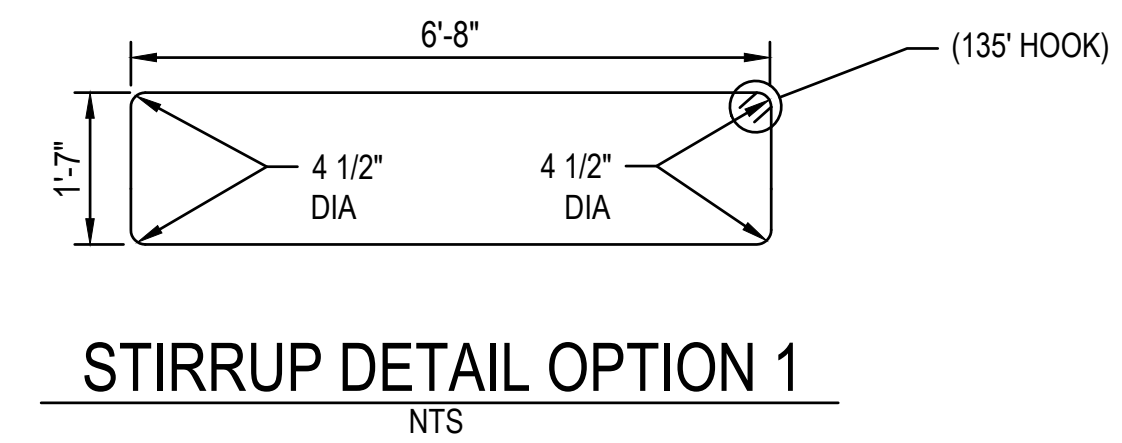
SCALE: 1" = 20'



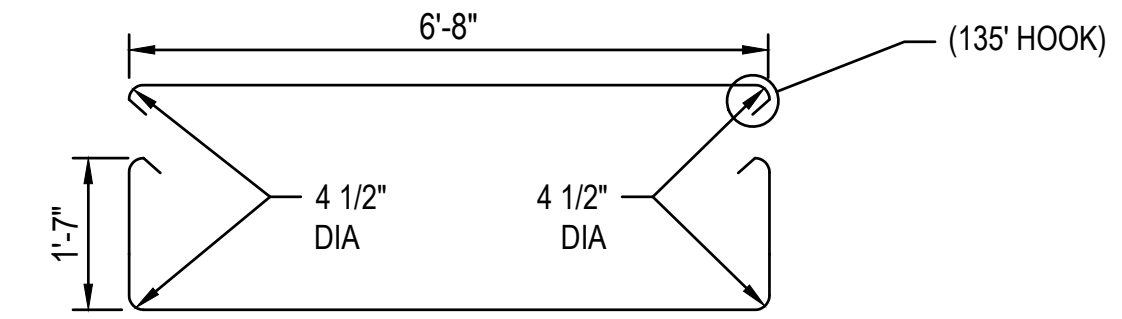
RTG RUNWAY TYPICAL SECTION
NTS



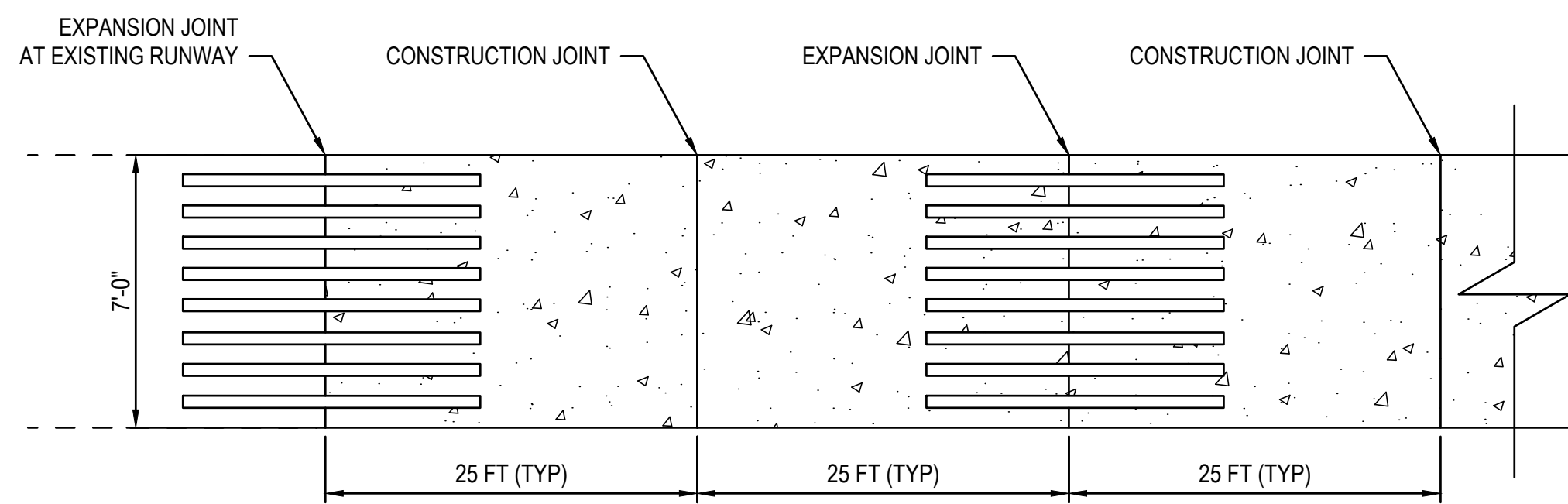
RTG RUNWAY REINFORCING SECTION
NTS



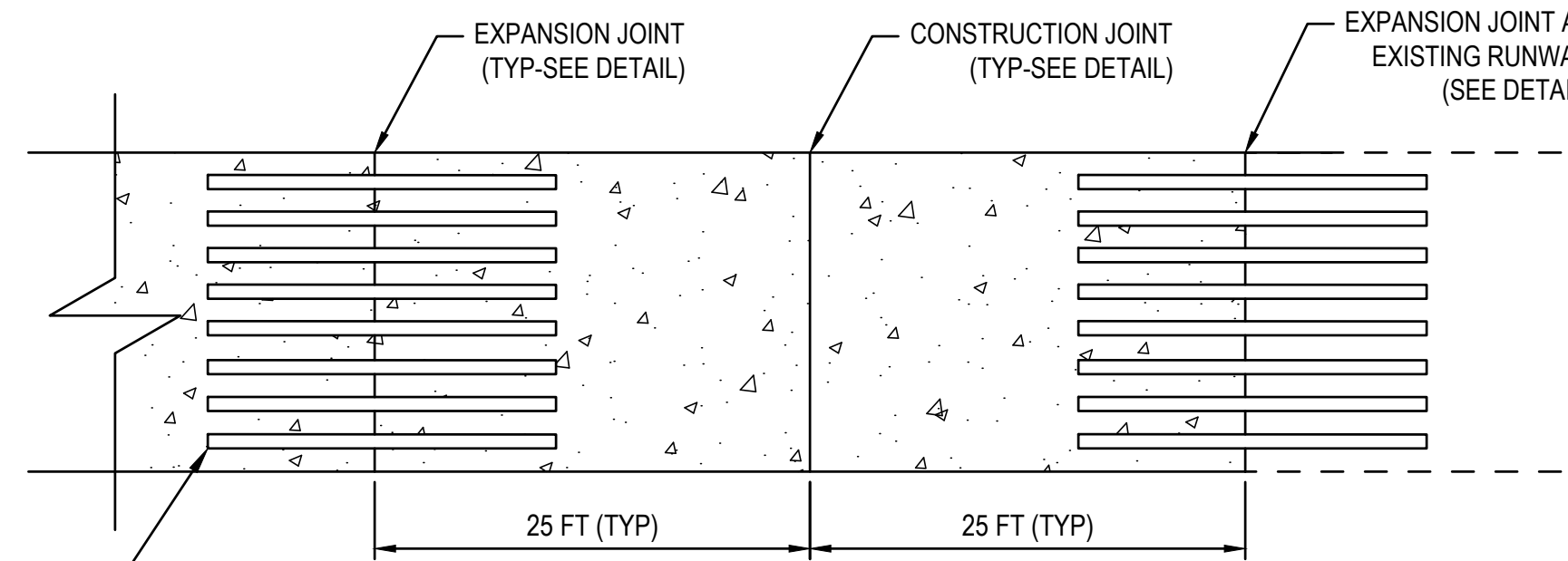
STIRRUP DETAIL OPTION 1
NTS



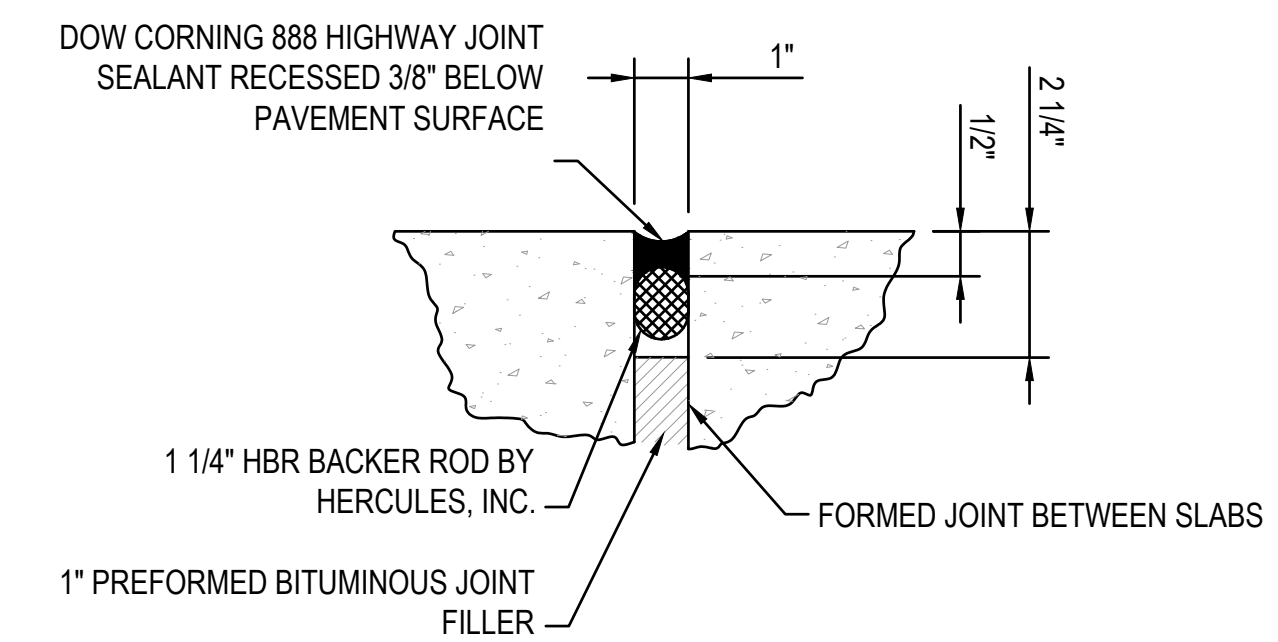
STIRRUP DETAIL OPTION 2
NTS



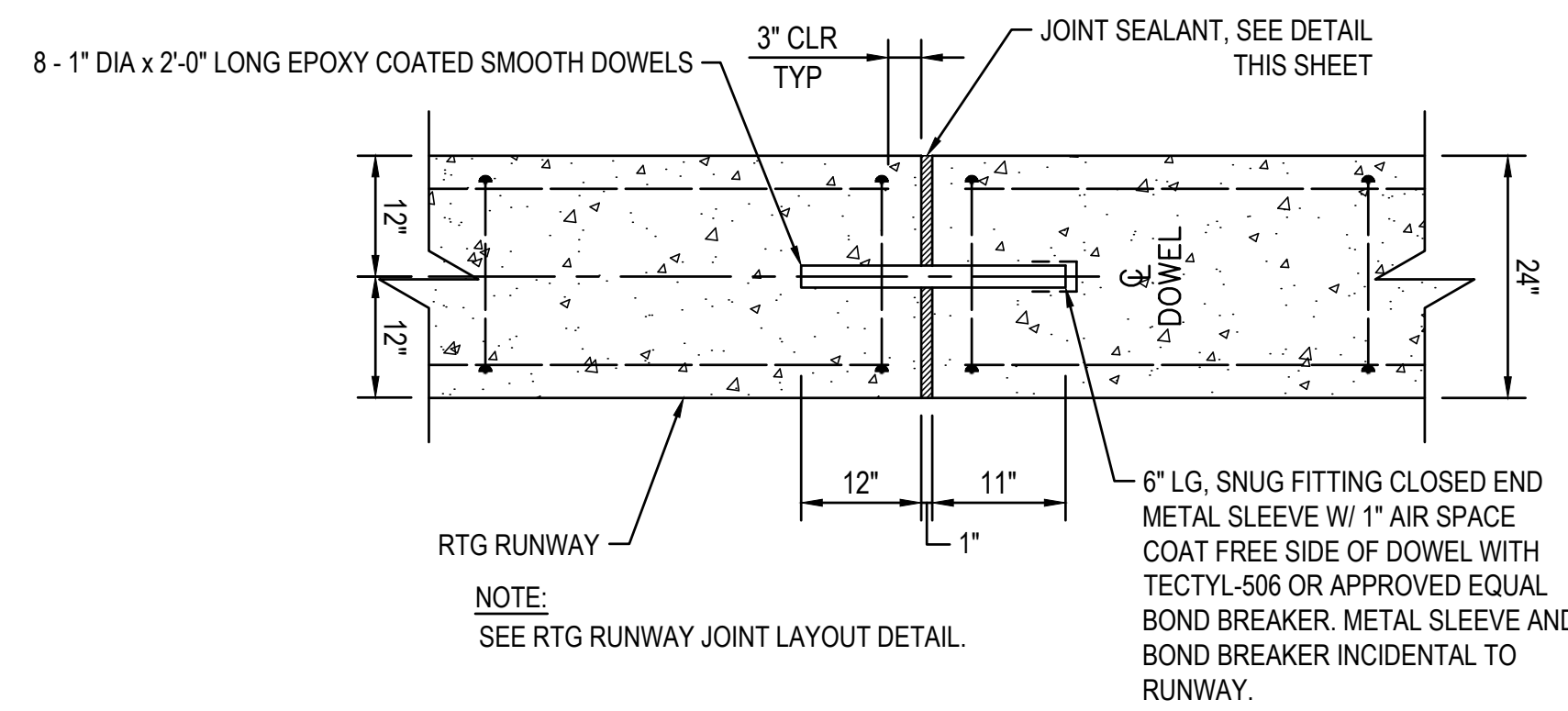
RTG RUNWAY JOINT LAYOUT PLAN
NTS



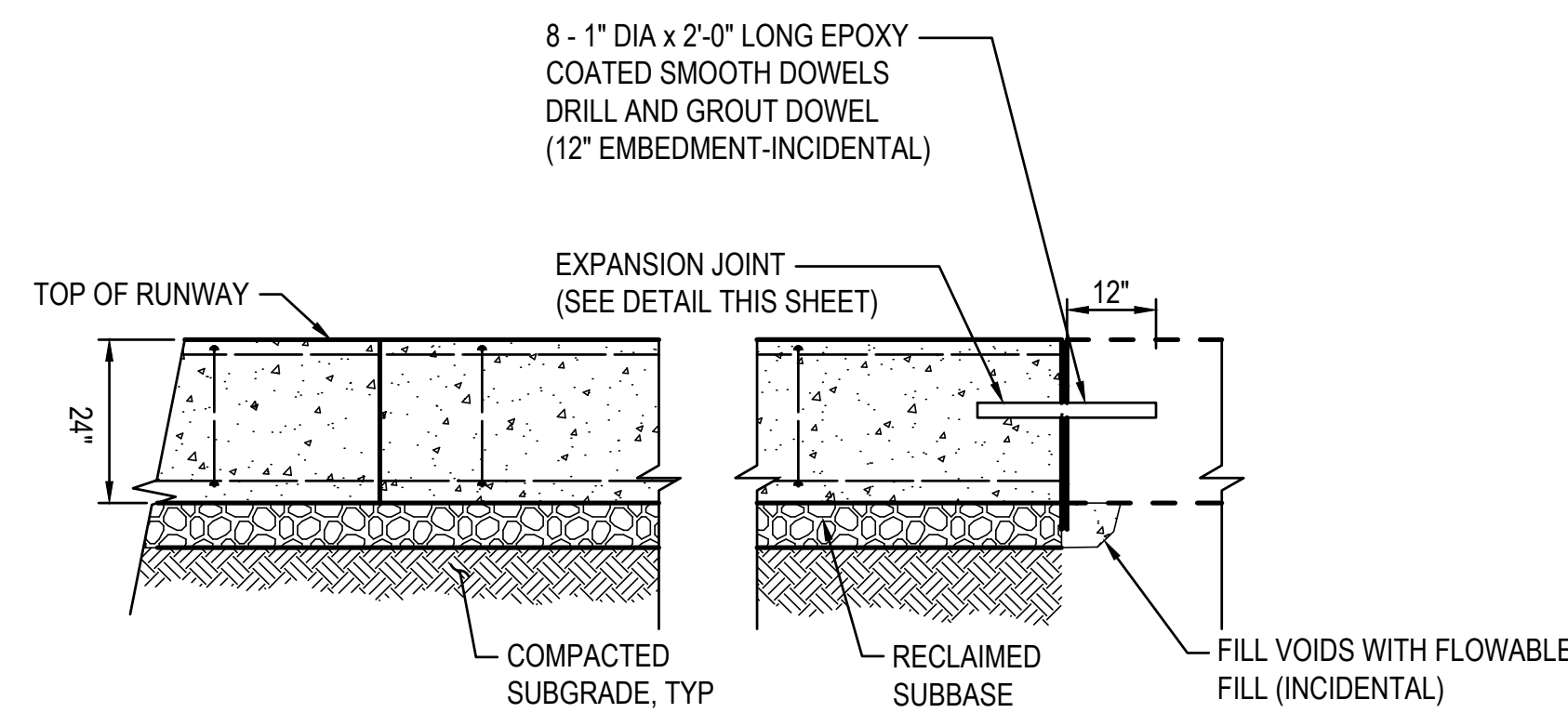
EPOXY COATED DOWEL (TYP)
(SEE DETAIL THIS SHEET)



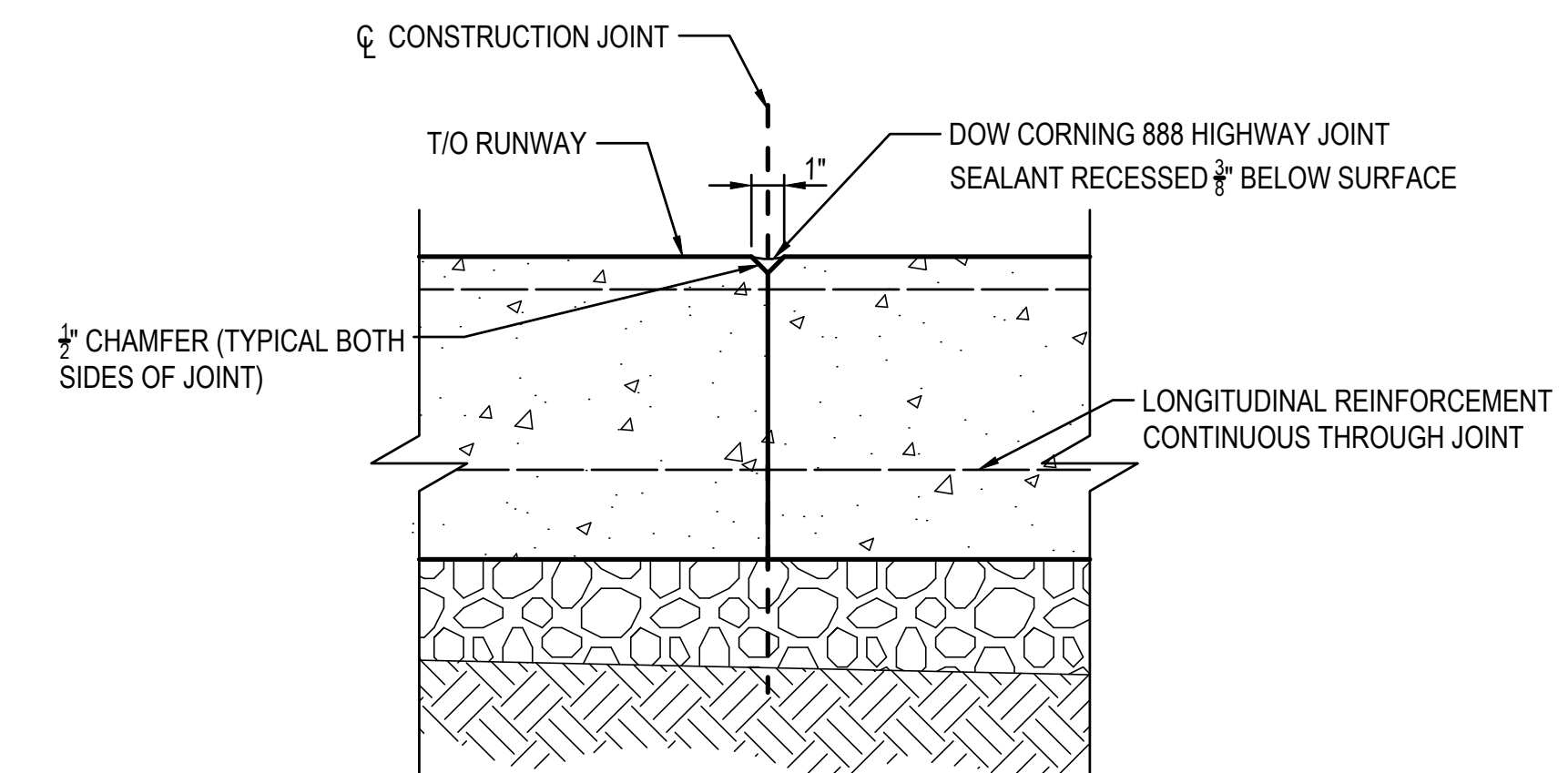
JOINT SEALANT DETAIL
NTS



RTG RUNWAY EXPANSION JOINT DETAIL
NTS



RTG RUNWAY EXPANSION JOINT DETAIL
(AT EXISTING RUNWAY)
NTS



RTG RUNWAY CONSTRUCTION JOINT DETAIL
NTS

NOTES:

- DESIGNED IN ACCORDANCE TO ACI 318-19 AND ASCE 7-10.
- CONCRETE DESIGN STRENGTH, $f_c = 5,000$ PSI.
- REINFORCING STEEL DESIGN YIELD STRENGTH, $f_y = 60,000$ PSI.
- REINFORCING STEEL SHALL CONFORM TO ASTM A615 AND SHALL BE EPOXY COATED.
- CONCRETE COVER DIMENSIONS ARE CLEAR COVER DIMENSIONS UNLESS OTHERWISE NOTED.
- SMOOTH DOWEL RODS SHALL BE BE ASTM A615 AND EPOXY COATED.
- RTG RUNWAY BEAM IS DESIGNED FOR A MODULUS OF SUBGRADE REACTION REPRESENTING 150 PSI/IN.
- REINFORCING BAR DIMENSIONS SHOWN ARE OUTSIDE OF BEND TO OUTSIDE OF BEND.



MASSACHUSETTS PORT AUTHORITY
EAST BOSTON, MASSACHUSETTS 02128

PROJECT LOCATION:
CONLEY TERMINAL
SOUTH BOSTON, MASSACHUSETTS

MPA CONTRACT NO.: M555-C1 LOCATION CODE: 4300

PROJECT SUBMISSION PHASE:

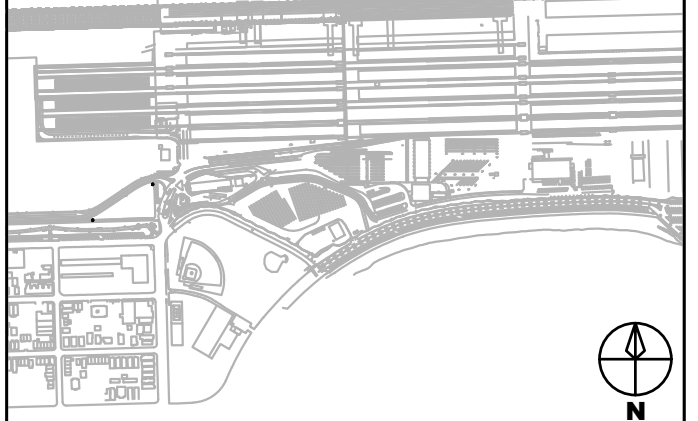
100% PLANS

REGISTRATION STAMP:



06.21.2021

KEY PLAN:



REVISIONS:

REV NO.	DATE	DESCRIPTION	BY

PRIMARY:



99 HIGH STREET, SUITE 2300,
BOSTON, MA 02110-2378
(617) 357-7700

CONSULTANT:

PROJECT NUMBER AND TITLE:

M555-C1
BERTH 11 & 12
BACKLANDS
RECONSTRUCTION

SHEET TITLE:

CONCRETE RTG RUNWAY DETAILS

DISCIPLINE:

CIVIL

DRAWN BY: KLH	CHECKED BY: RDL	APPROVED BY: BNJ
------------------	--------------------	---------------------

SCALE:	DATE: JUNE 2021
--------	--------------------

DRAWING NAME:

ENV-10



MASSACHUSETTS PORT AUTHORITY
EAST BOSTON, MASSACHUSETTS 02128

PROJECT LOCATION:
CONLEY TERMINAL
SOUTH BOSTON, MASSACHUSETTS

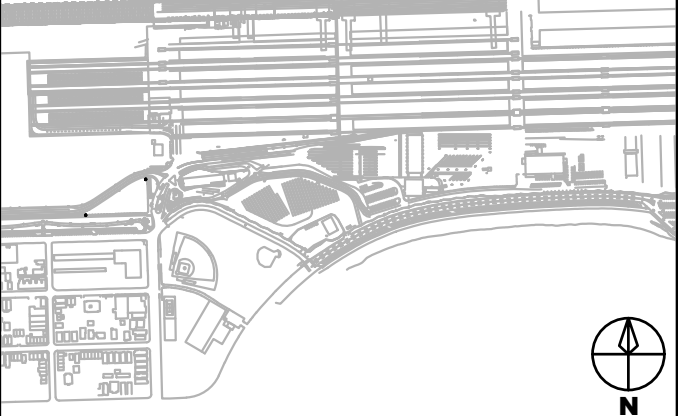
MPA CONTRACT NO.: M555-C1
LOCATION CODE: 4300

PROJECT SUBMISSION PHASE:
100% PLANS

REGISTRATION STAMP:



KEY PLAN:



REVISIONS:

REV NO.	DATE	DESCRIPTION	BY

PRIMARY:



CONSULTANT:

PROJECT NUMBER AND TITLE:

M555-C1
BERTH 11 & 12
BACKLANDS
RECONSTRUCTION

SHEET TITLE:

PAVEMENT MARKING DETAILS

DISCIPLINE:

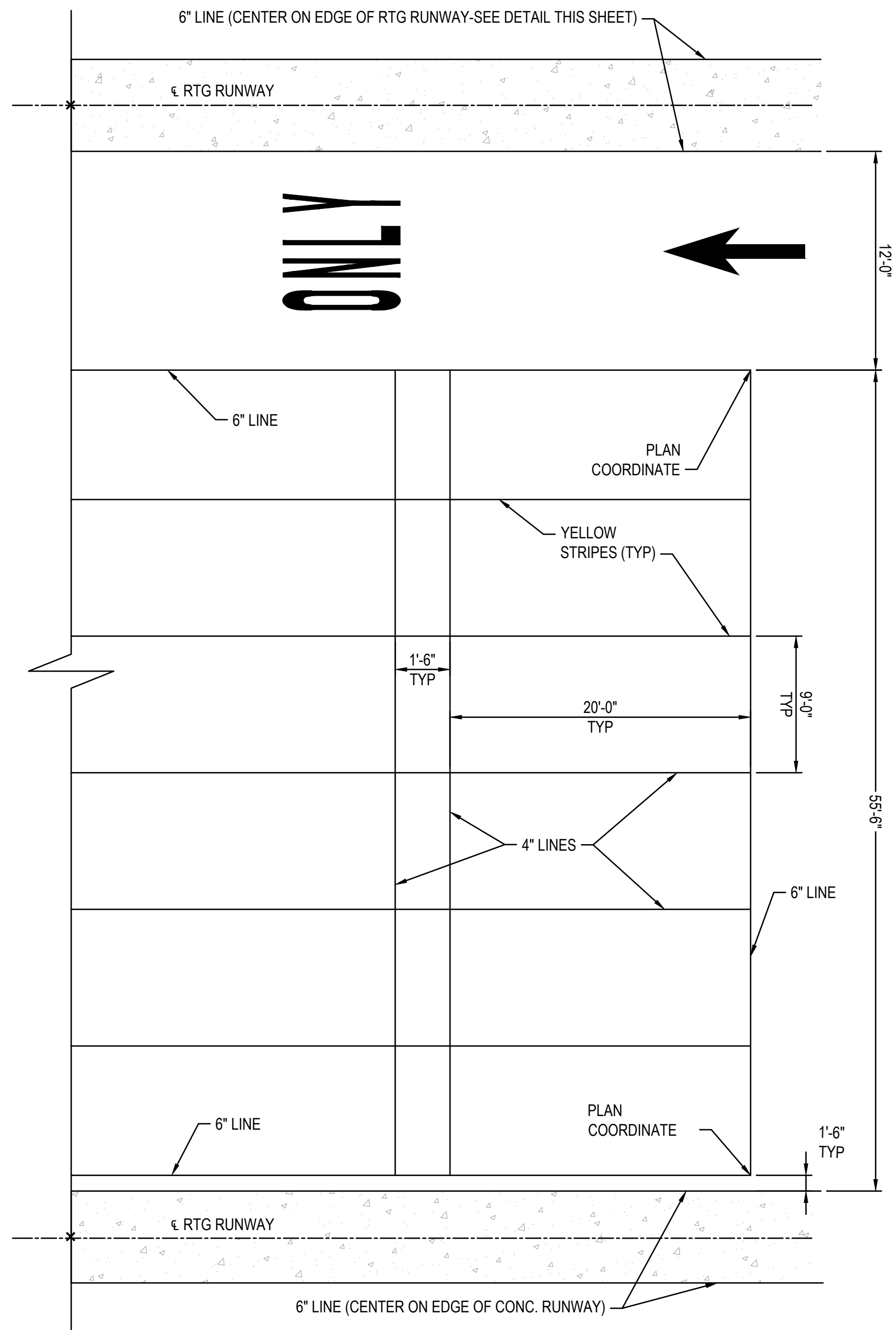
CIVIL

DRAWN BY: KLH
CHECKED BY: RDL
APPROVED BY: BNJ

SCALE:
DATE: JUNE 2021

DRAWING NAME:

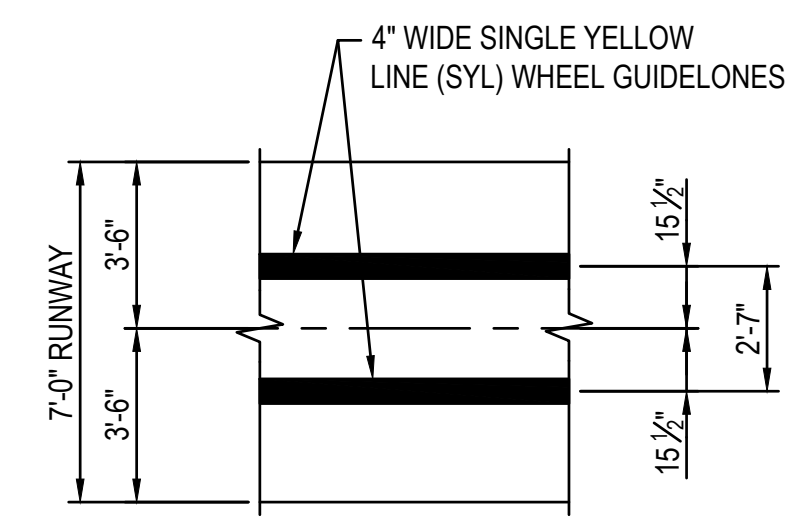
ENV-11



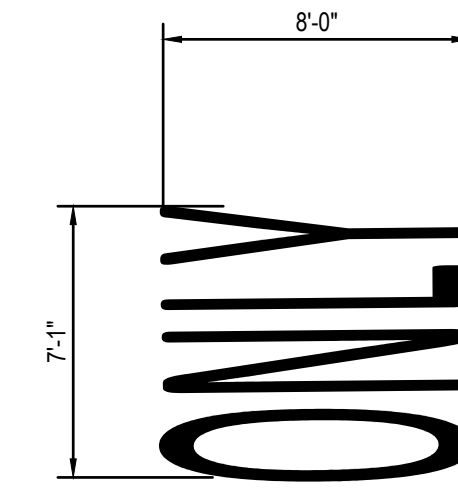
CONTAINER STORAGE AND EAST WEST ROAD DETAIL
NTS

NOTES: (DETAIL 1 ONLY)

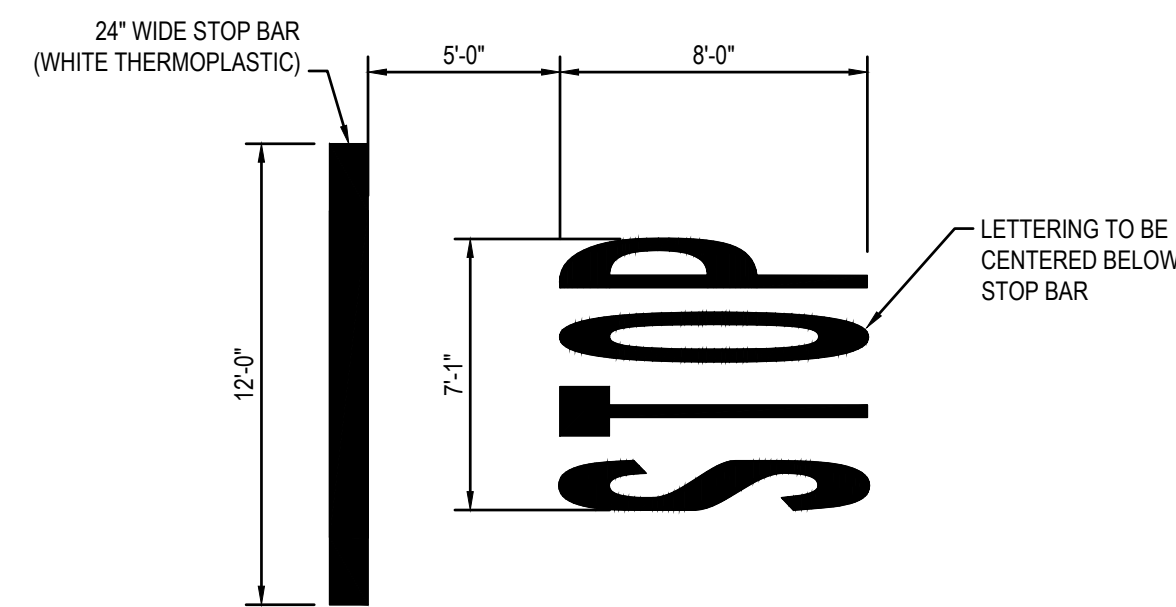
1. ALL DIMENSIONS TO THE CENTERLINE OF PAVEMENT MARKING, UNLESS OTHERWISE NOTED
2. ALL LINES SHALL BE THERMOPLASTIC (YELLOW)
3. ALL LINES ARE CONTINUOUS. NO DASHED LINES UNLESS NOTED OTHERWISE.



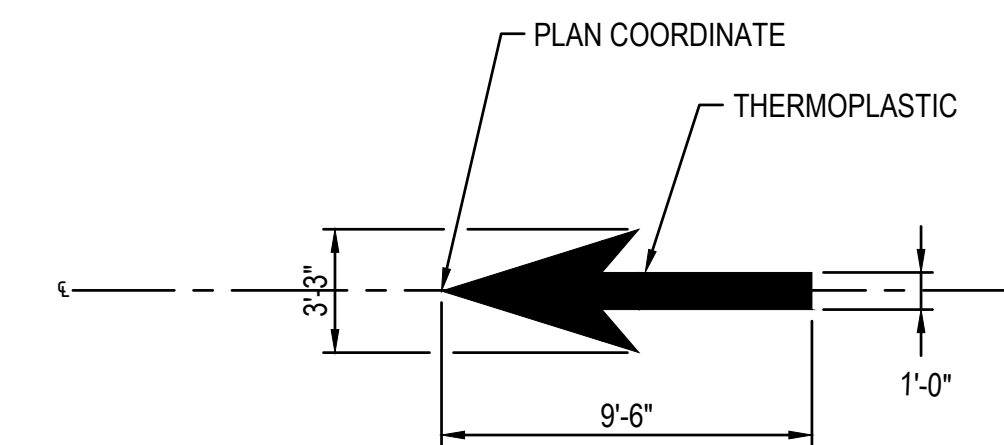
TYPICAL RUNWAY MARKING
NTS



ONLY DETAIL
NTS



STOP BAR DETAIL
NTS



ARROW DETAIL
NTS



MASSACHUSETTS PORT AUTHORITY
EAST BOSTON, MASSACHUSETTS 02128

PROJECT LOCATION:
CONLEY TERMINAL
SOUTH BOSTON, MASSACHUSETTS

MPA CONTRACT NO.: M555-C1 LOCATION CODE: 4300

PROJECT SUBMISSION PHASE:

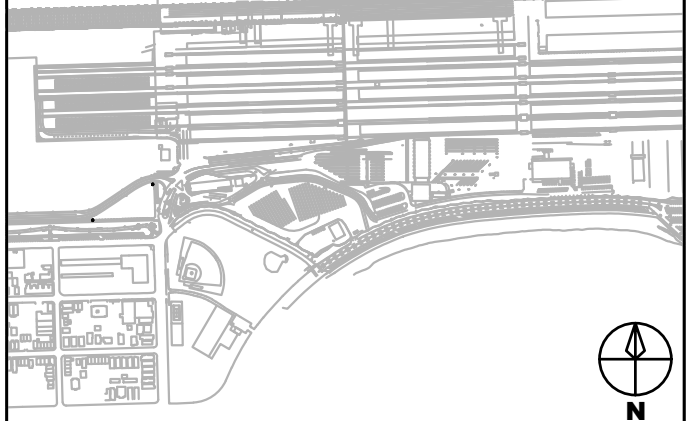
100% PLANS

REGISTRATION STAMP:



06.21.2021

KEY PLAN:



REVISIONS:

REV NO.	DATE	DESCRIPTION	BY

PRIMARY:



99 HIGH STREET, SUITE 2300,
BOSTON, MA 02110-2378
(617) 357-7700

CONSULTANT:

PROJECT NUMBER AND TITLE:

M555-C1
BERTH 11 & 12
BACKLANDS
RECONSTRUCTION

SHEET TITLE:

EROSION AND SEDIMENTATION
CONTROL NOTES AND DETAILS

DISCIPLINE:

CIVIL

DRAWN BY:

KLH

CHECKED BY:

RDL

APPROVED BY:

BNJ

SCALE:

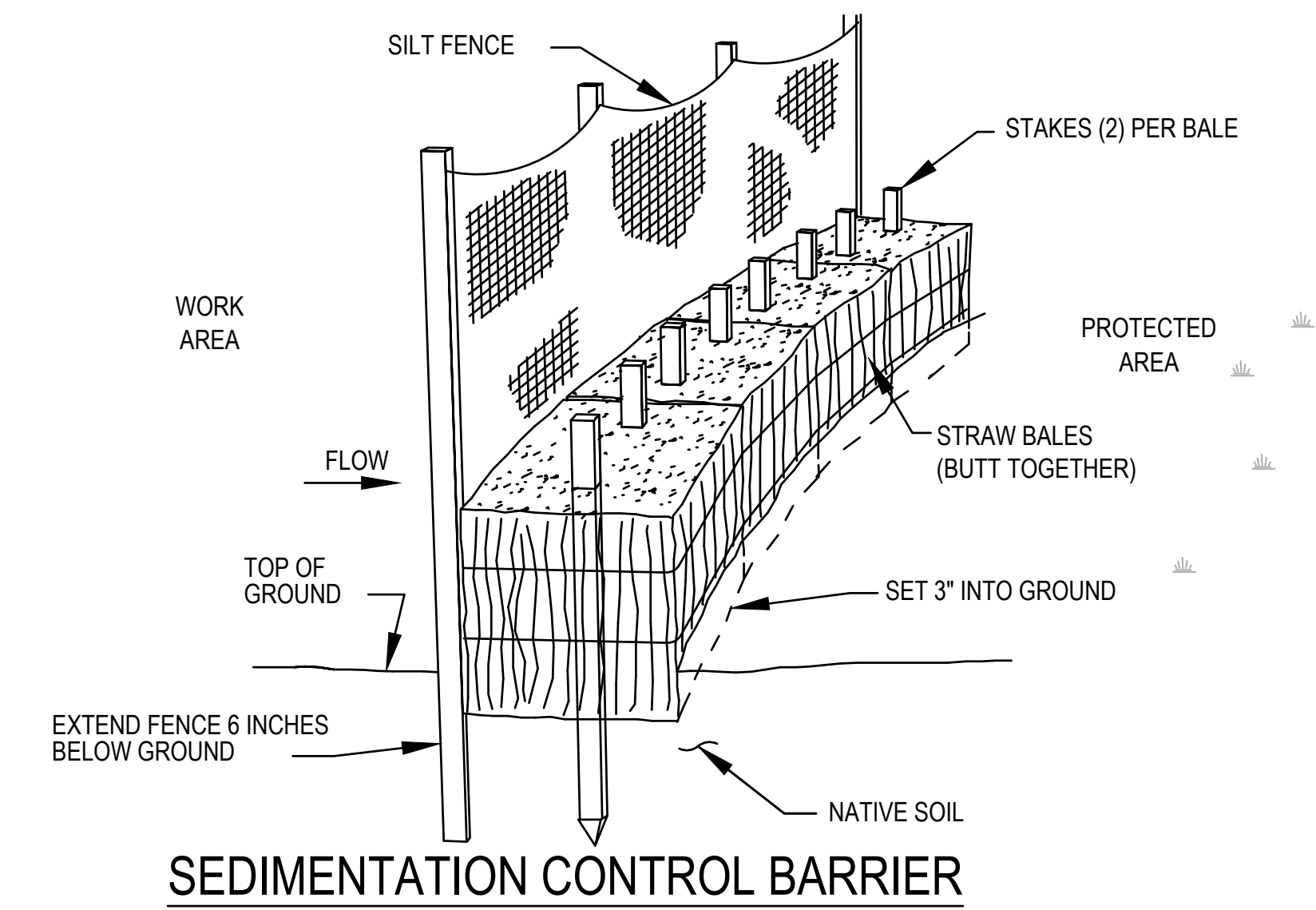
NTS

DATE:

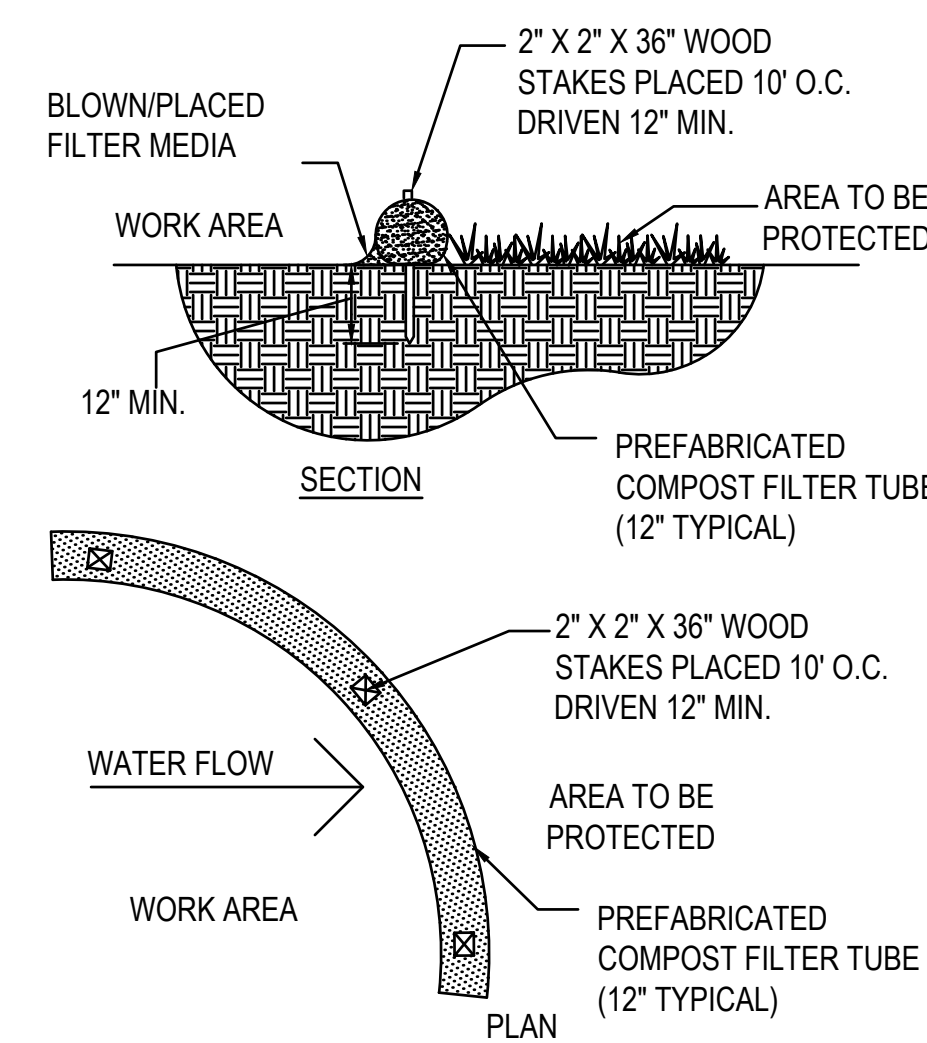
JUNE 2021

DRAWING NAME:

ENV-12

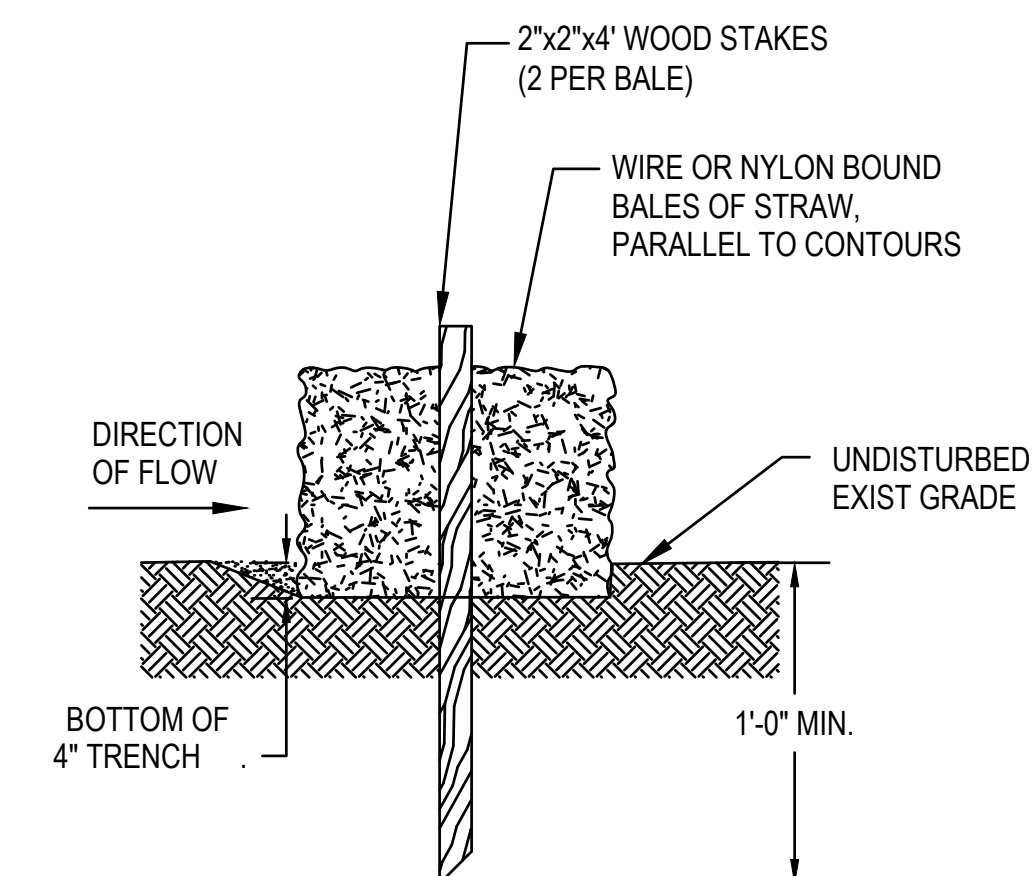


SEDIMENTATION CONTROL BARRIER
NTS

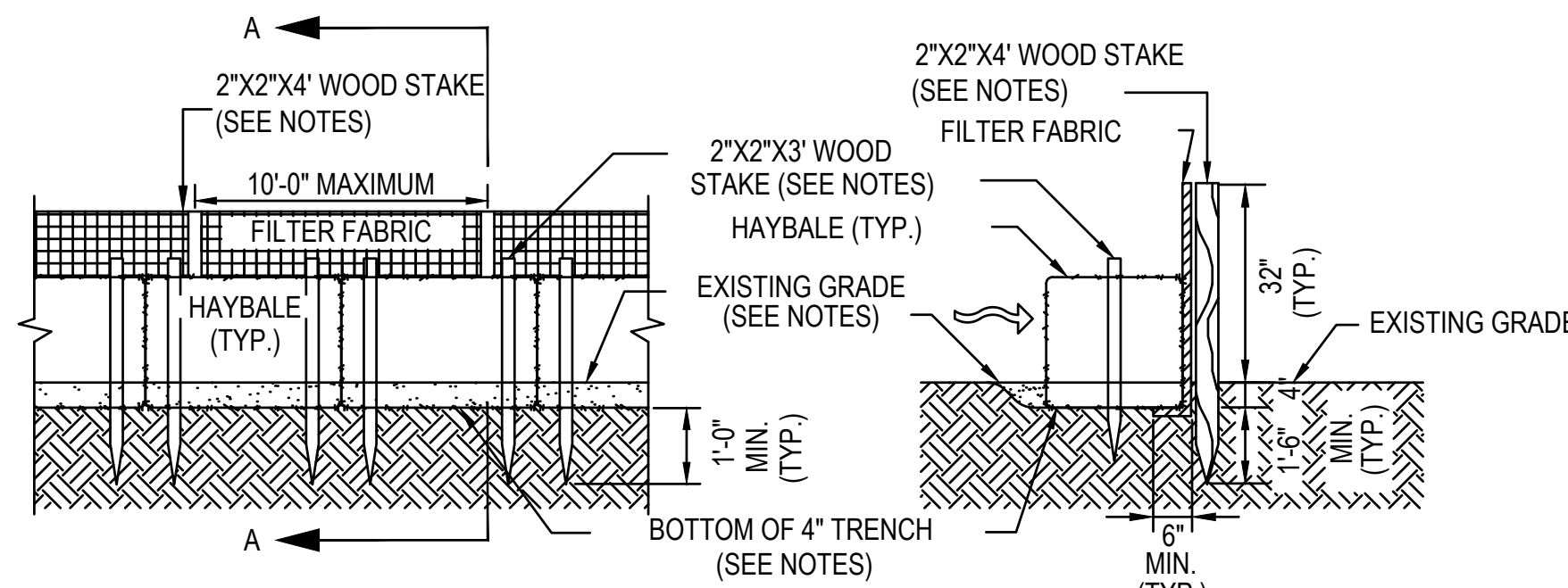


- NOTES:
1. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

COMPOST FILTER TUBE
NTS



HAYBALE
NTS



NOTES:

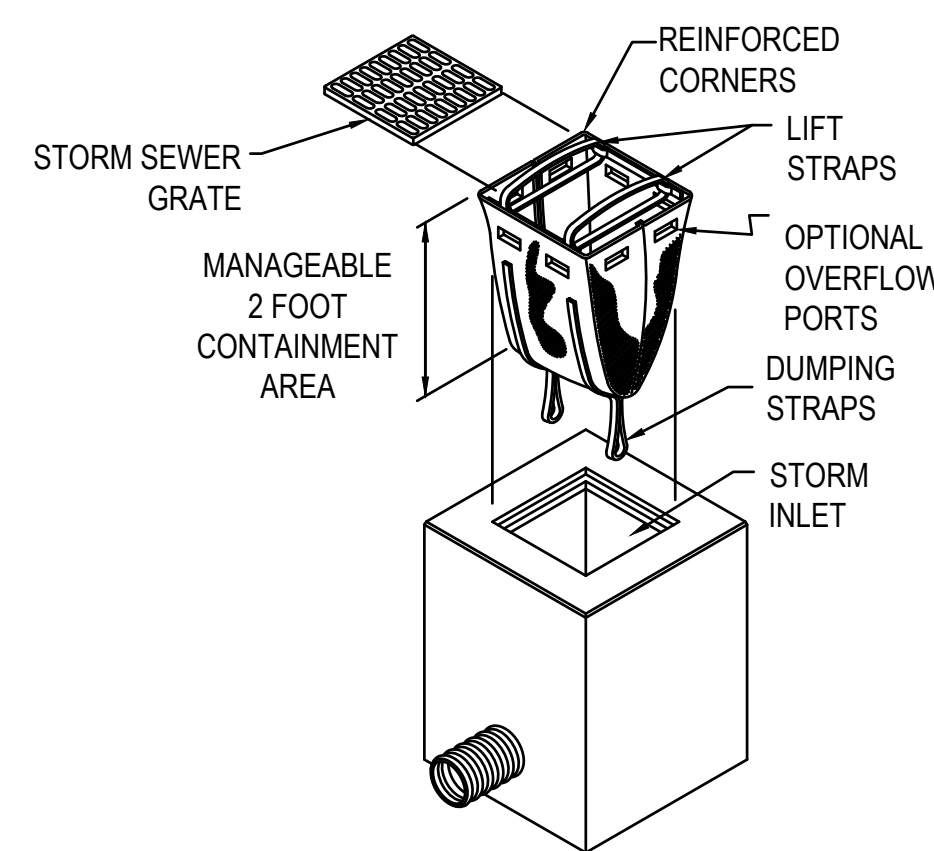
1. FABRIC TO BE UV RESISTANT POLYPROPYLENE WITH A MINIMUM WEIGHT OF 2.5 OZ./S.Y.
2. FABRIC TO BE ATTACHED TO STAKES WITH STAPLES.
3. USE SILT FENCE AND HAYBALES WHERE INDICATED OR AS DIRECTED BY THE ENGINEER.
4. WHERE HAYBALES ARE USED, TRENCH A MINIMUM OF 4" INTO EXISTING GRADE.
5. A MINIMUM OF (2) WOOD OR METAL STAKES PER HAYBALE. DRIVE STAKES A MINIMUM OF 12" INTO GROUND.
6. REMOVE SILT FENCE AND HAYBALES AT THE DIRECTION OF THE OWNER.

HAY BALE AND SILT FENCE FOR EROSION CONTROL
NTS

SACK SPECIFICATIONS

MECHANICAL PROPERTIES	TEST METHOD	UNITS	MARV HFDS-SO
GRAB TENSILE STRENGTH	ASTM D 4632	kN (LBS)	1.62 (365) x 0.89 (200)
GRAB TENSILE ELONGATION	ASTM D 4632	%	24 x 10
PUNCTURE STRENGTH	ASTM D 4833	kN (LBS)	0.40 (90)
MULLEN BURST STRENGTH	ASTM D 3786	kPa (PSI)	3097 (450)
TRAPEZOID TEAR STRENGTH	ASTM D 4533	kN (LBS)	0.51 (115) x 0.33 (75)
UV RESISTENCE	ASTM D 4355	%	90
APPARENT OPENING SIZE	ASTM D 4751	Mm (US STD SIEVE)	0.425 (40)
FLOW RATE	ASTM D 4491	1/MIN/M ² (GAL/MIN/FT ²) ²	5907 (145)
PERMITTIVITY	ASTM D 4491	SEC ⁻¹	2.1

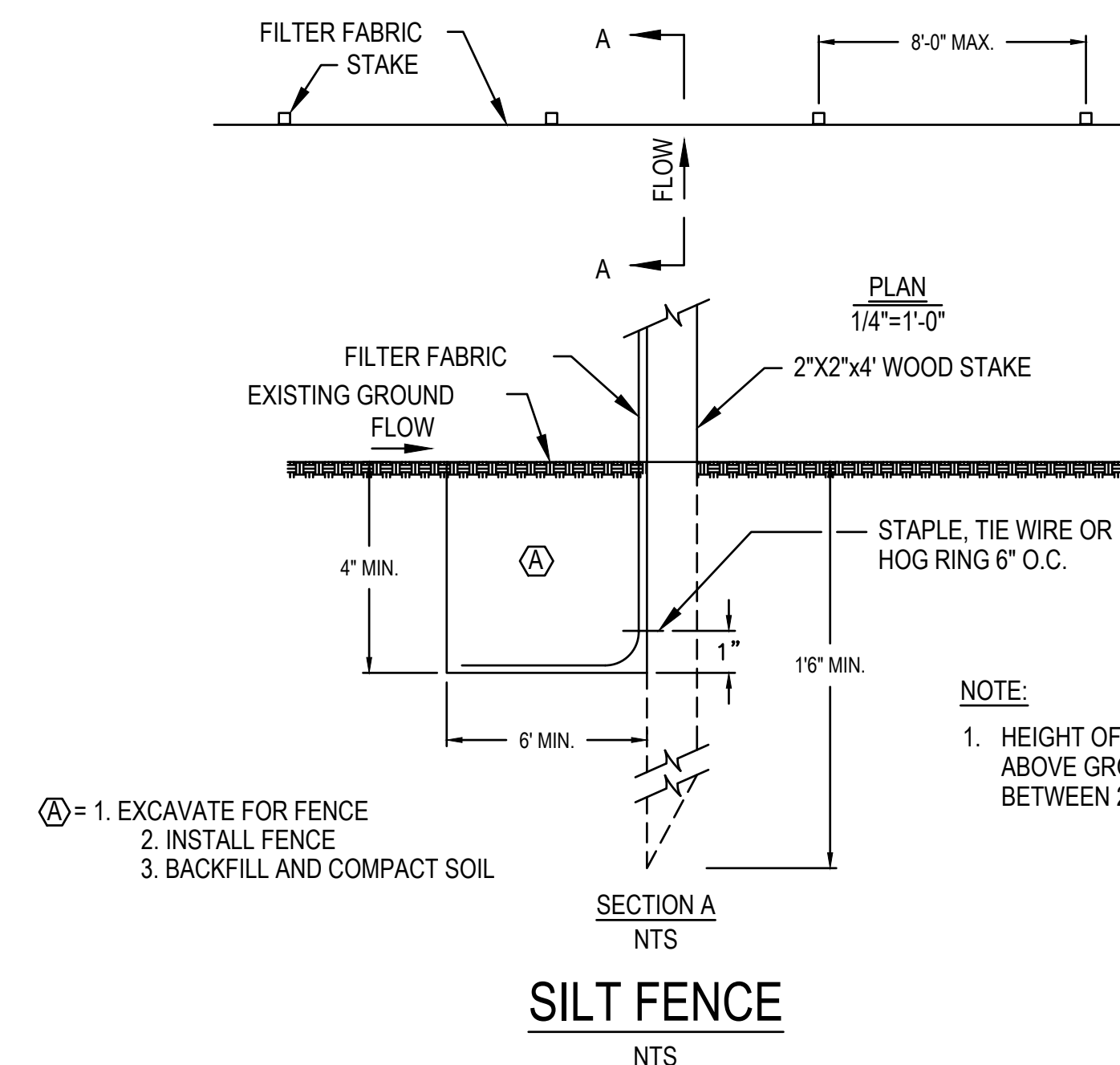
RFDS-B REGULAR FLOW SACK (BLACK)
HFDS-SO HI-FLOW SACK (SAFETY ORANGE)
NOTE: THE CURB SACK WILL BE MANUFACTURED FROM A WOVEN MONOFILAMENT FABRIC THAT MEETS OR EXCEEDS THE MANUFACTURER'S SPECIFICATIONS.
*NOTE: SACKS CAN BE ORDERED WITH OPTIONAL OIL ABSORBENT PILLOWS



NOTES:

1. INSTALL SILTSACK IN ALL CATCH BASINS WHERE INDICATED ON THE PLAN BEFORE COMMENCING WORK OR IN PAVED AREAS AFTER BINDER COURSE IS PLACED AND HAY BALES HAVE BEEN REMOVED.
2. GRATE TO BE PLACED OVER SILTSACK.
3. SILTSACK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND CLEANING OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED. MAINTAIN UNTIL UPSTREAM AREAS HAVE BEEN PERMANENTLY STABILIZED.
4. APPLICATION OF THESE STANDARD EROSION CONTROL METHODS WILL BE BASED ON CONTRACTORS MEANS AND METHODS. ALTERNATIVE METHODS BASED ON SITE CONDITIONS MAY BE EMPLOYED BY CONTRACTOR AS APPROVED BY ENGINEER.

SILTSACK
NTS

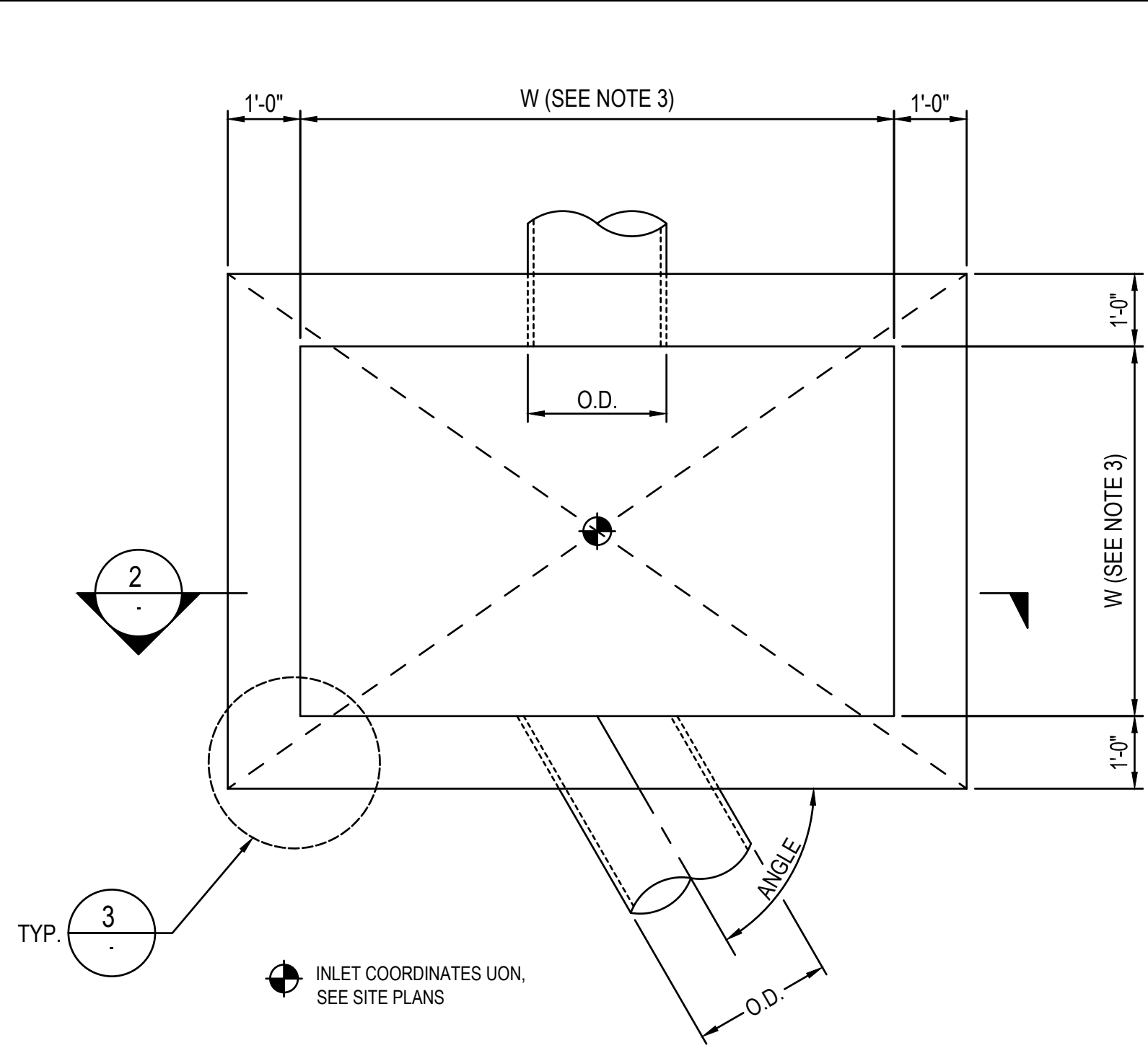


NOTE:

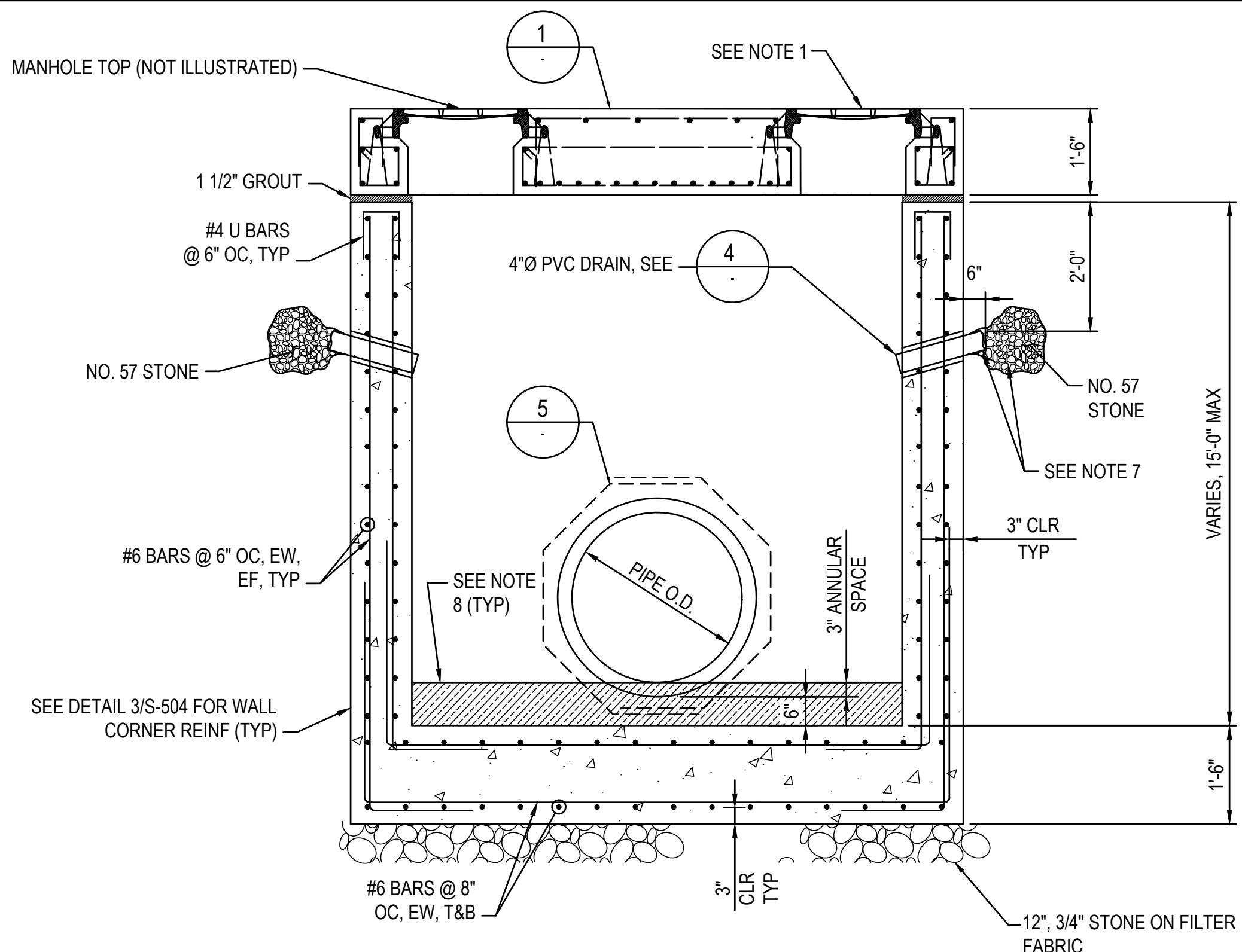
1. HEIGHT OF SILT FENCE ABOVE GROUND SHALL BE BETWEEN 24" AND 36".

- (A) = 1. EXCAVATE FOR FENCE
2. INSTALL FENCE
3. BACKFILL AND COMPACT SOIL

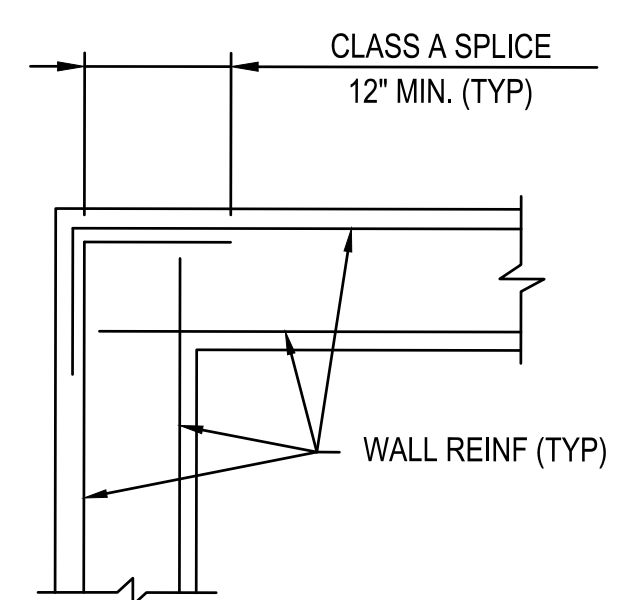
SILT FENCE
NTS



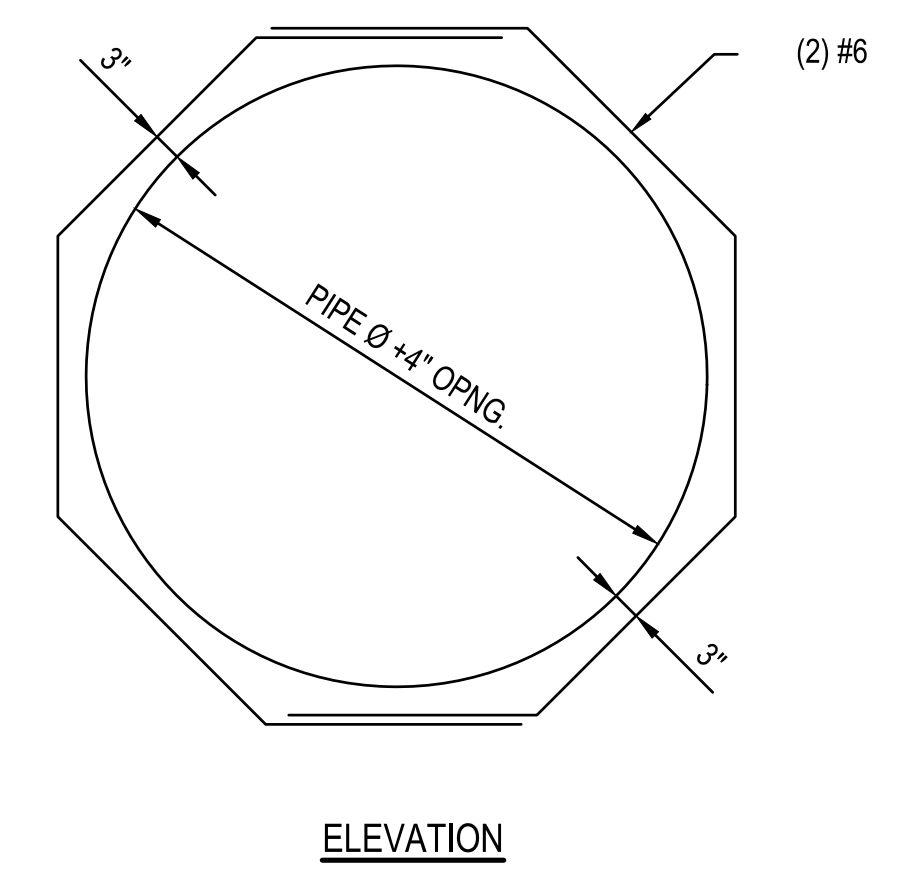
1 DRAINAGE STRUCTURE (HEAVY DUTY INLET OR MANHOLE)
 ENV-13 SCALE: 3/8" = 1'-0"



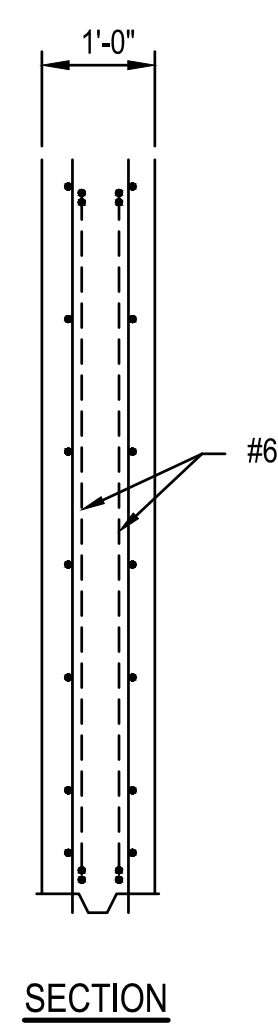
2 DRAINAGE STRUCTURE - SECTION
 ENV-13 SCALE: 3/8" = 1'-0"



3 DETAIL
 ENV-13 NOT TO SCALE

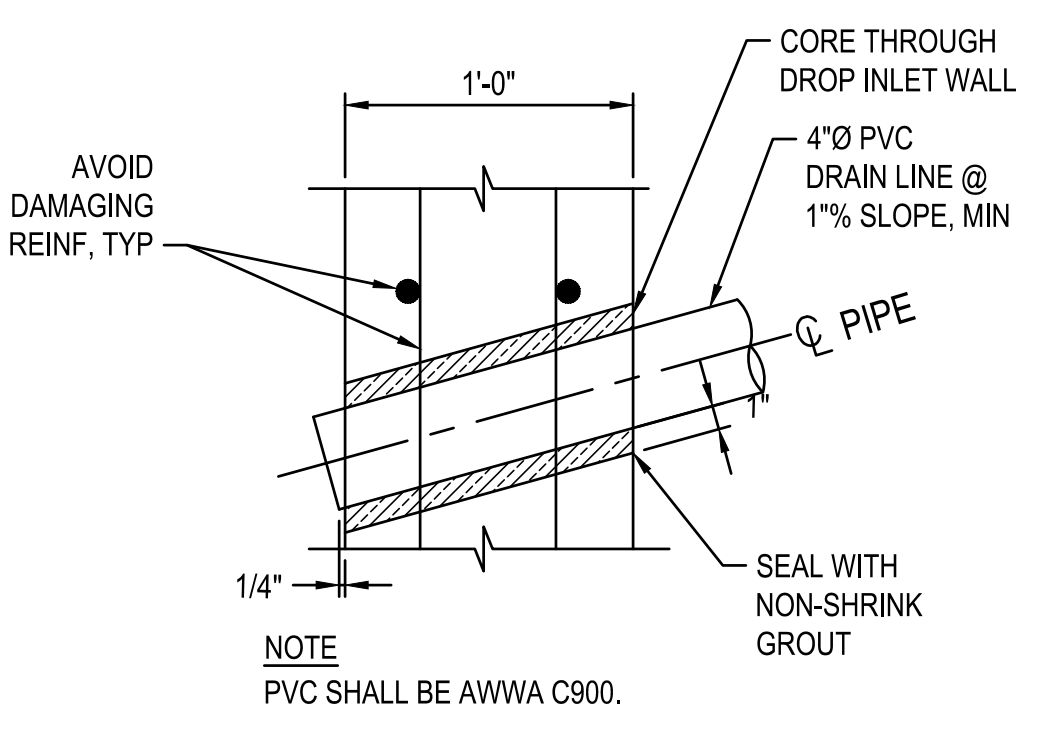


ELEVATION

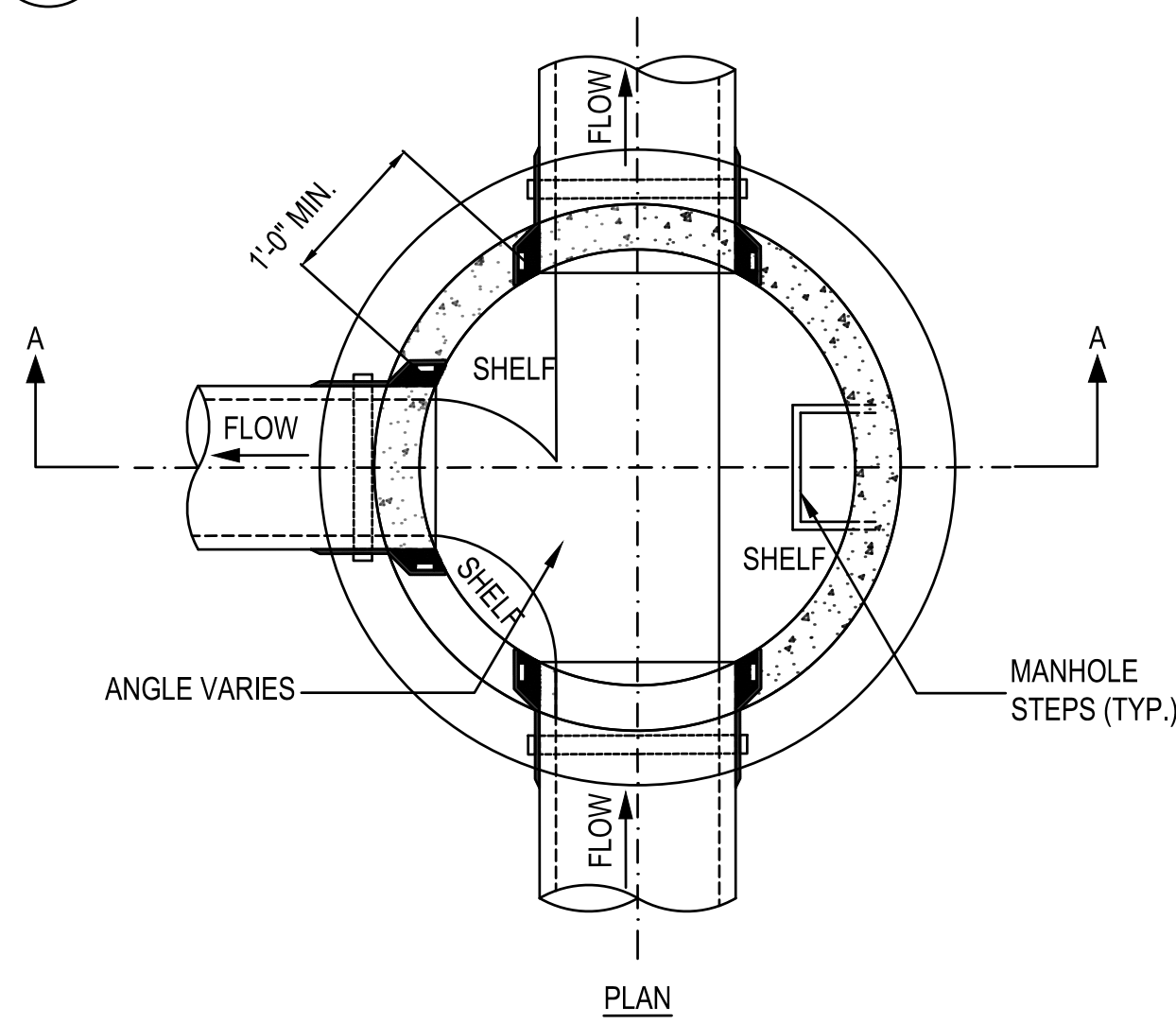


SECTION

5 DETAIL
 ENV-13 NOT TO SCALE



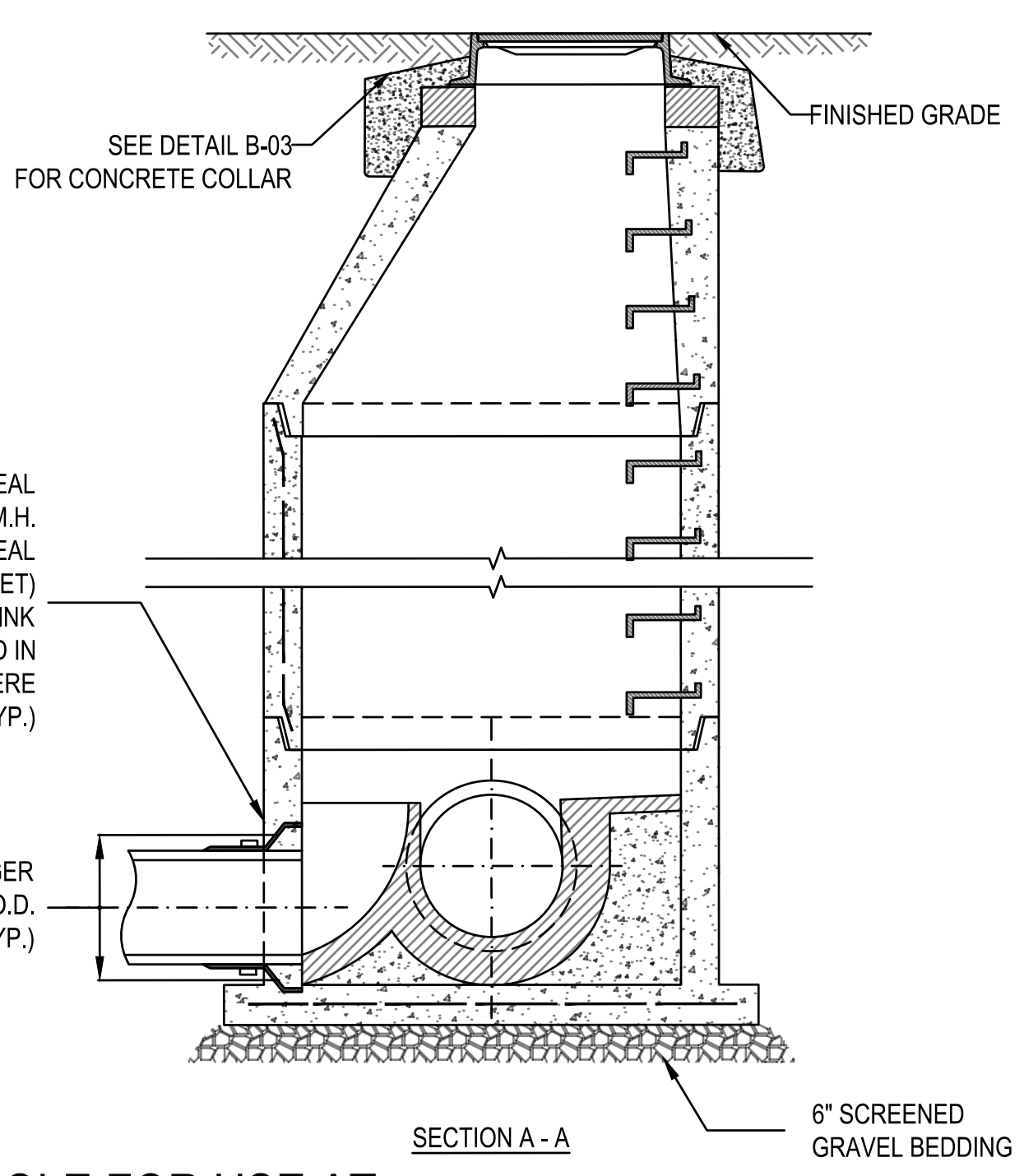
4 PVC DRAIN PENETRATION DETAIL
 ENV-13 NOT TO SCALE



PRECAST CONCRETE MANHOLE FOR USE AT PIPE JUNCTIONS (BWSC B-02c)(MODIFIED)
 NO SCALE

PROVIDE MECHANICAL SEAL (LOCK-JOINT FLEXIBLE M.H. SLEEVE, PRESS WEDGE SEAL OR LINK SEAL GASKET) EXCEPT NON-SHRINK MORTAR MAY BE USED IN STORM DRAINS WHERE APPROVED BY BWSC. (TYP.)

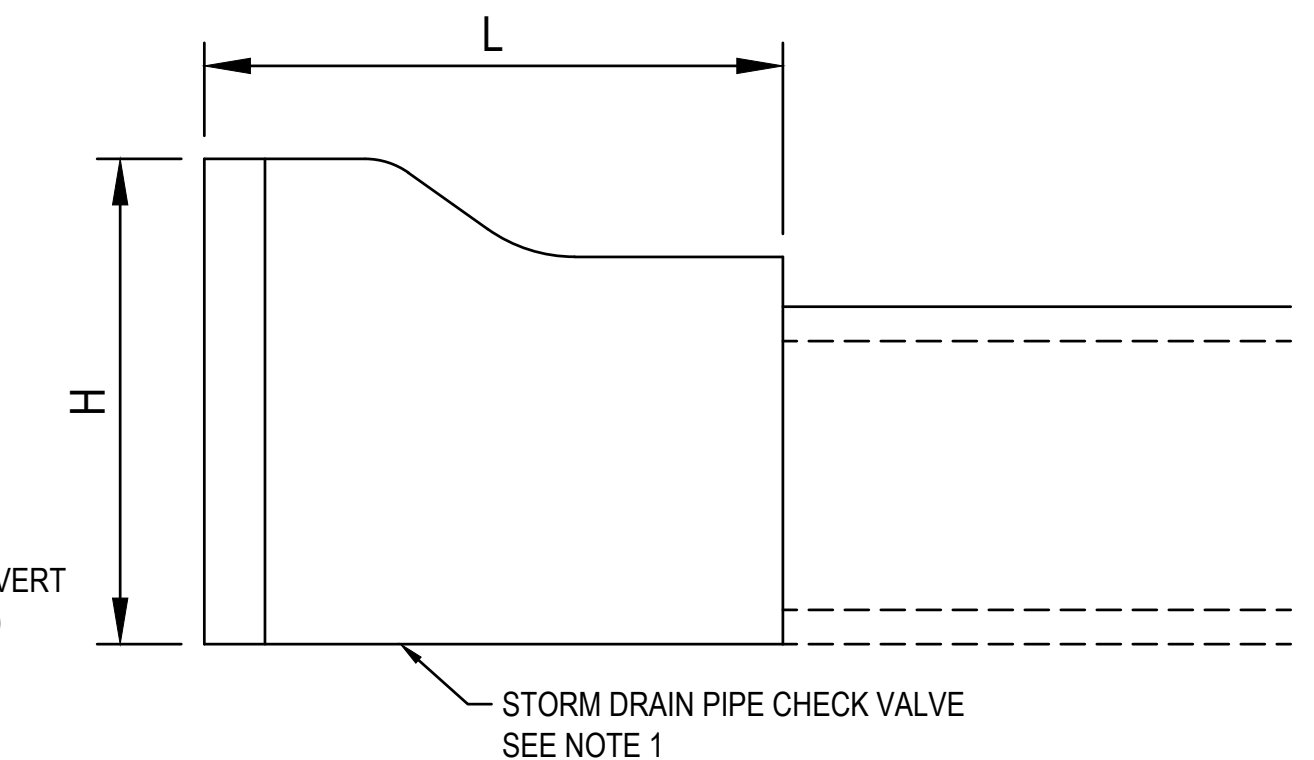
OPENING 4" LARGER THAN PIPE O.D. MAX.(TYP.)



NOTES:

- STORM DRAIN PIPE CHECK VALVE TO BE RED VALVE TIDEFLEX SERIES TF-1 (OR APPROVED EQUAL).
- SEE KEY AND ALIGNMENT PLAN FOR OUTFALL LOCATIONS.

OUTFALL STRUCTURE TABLE				
STRUCTURE	PIPE SIZE	INVERT	CHECK VALVE BILL HEIGHT (H)	CHECK VALVE LENGTH (L)
OUTFALL 1	18"	0.78	34"	36"
OUTFALL 2	18"	1.43	34"	36"
OUTFALL 3	24"	0.03	43"	48"
OUTFALL 4	24"	0.43	43"	48"
OUTFALL 5	36"	2.04	69"	67"
OUTFALL 6	42"	1.67	71"	61"
OUTFALL 7	30"	2.29	55"	56"



STORM PIPE CHECK VALVE
 SCALE: NTS

INLET NOTES

- FRAME AND GRATES SHALL BE AS FOLLOWS (OR APPROVED EQUALS) :
 QUAD: NEENAH R-4994-HAB (TYPE A GRATE AND TYPE S FRAME)
- GRATE SHALL BE BOLTED TO THE FRAME.
- MINIMUM INSIDE WALL DIMENSION "W" SHALL BE DETERMINED BY THE FORMULA $W=(O.D./\sin \text{ANGLE})+2'-6"$, BUT IN NO CASE SHALL THE DIMENSION "W" BE LESS THAN 4 FEET NOR MORE THAN 8 FEET.
- OPENINGS IN THE WALLS FOR PIPE SHALL BE CAST-IN OR CUT CLEANLY WITHOUT PERCUSSION TO A MAXIMUM DIAMETER OF O.D. $\pm 3"$. THE SPACE BETWEEN PIPE AND WALL SHALL THEN BE FILLED WITH NON SHRINK GROUT, OR APPROVED JOINT INSERT ASSEMBLY.
- PRECASTER SHALL BE RESPONSIBLE FOR DESIGNING LIFTING PROVISIONS.
- FOR PRECAST CONCRETE SECTIONS, MINIMUM COVER IS 2". FOR CAST-IN-PLACE CONCRETE SECTIONS, MINIMUM COVER IS 3".
- SECURELY TIE 1 CUBIC FOOT OF NO. 57 STONE IN BAG OF NON-WOVEN FILTER FABRIC. ENSURE POSITIVE CLOSURE AROUND PIPE TO PREVENT MATERIAL FROM MIGRATING OUT OF PIPE.
- GROUT BOTTOM OF STRUCTURE TO INVERT OF PIPE.

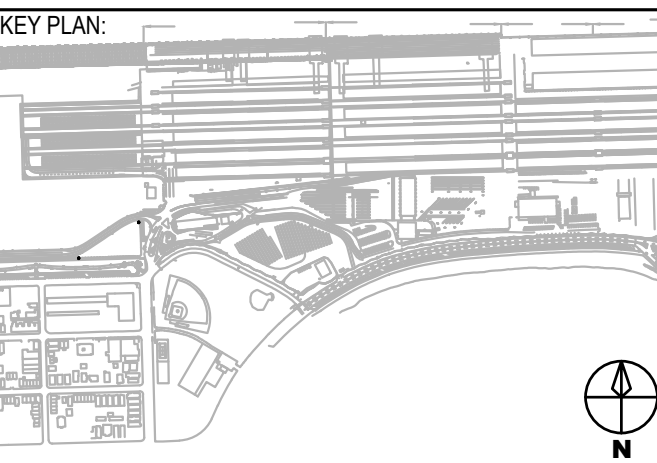
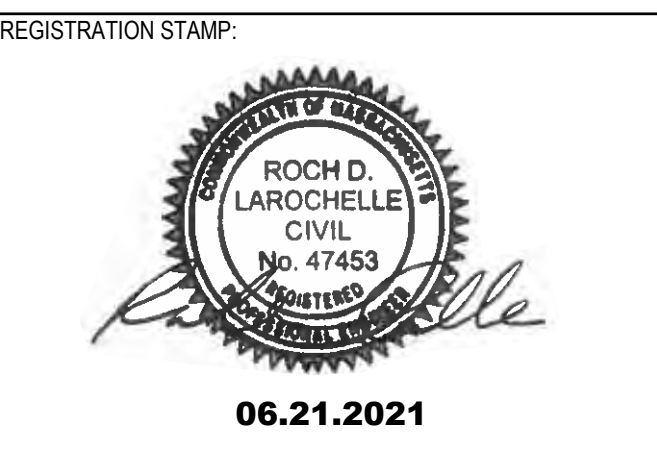


MASSACHUSETTS PORT AUTHORITY
 EAST BOSTON, MASSACHUSETTS 02128

PROJECT LOCATION:
CONLEY TERMINAL
 SOUTH BOSTON, MASSACHUSETTS

MPA CONTRACT NO.: M555-C1 LOCATION CODE: 4300

PROJECT SUBMISSION PHASE:
ENVIRONMENTAL PLANS



REVISIONS:

REV NO.	DATE	DESCRIPTION	BY



CONSULTANT:
 PROJECT NUMBER AND TITLE:
M555-C1
 BERTH 11 & 12
 BACKLANDS
 RECONSTRUCTION

SHEET TITLE:
DRAINAGE DETAILS - 1

DISCIPLINE:
CIVIL

DRAWN BY: **KLH** CHECKED BY: **RDL** APPROVED BY: **BNJ**

SCALE: **N/A** DATE: **JUNE 2021**

DRAWING NAME:
ENV-13



MASSACHUSETTS PORT AUTHORITY
EAST BOSTON, MASSACHUSETTS 02128

PROJECT LOCATION:
CONLEY TERMINAL
SOUTH BOSTON, MASSACHUSETTS

MPA CONTRACT NO.: M555 - C1 LOCATION CODE: 4300

PROJECT SUBMISSION PHASE:

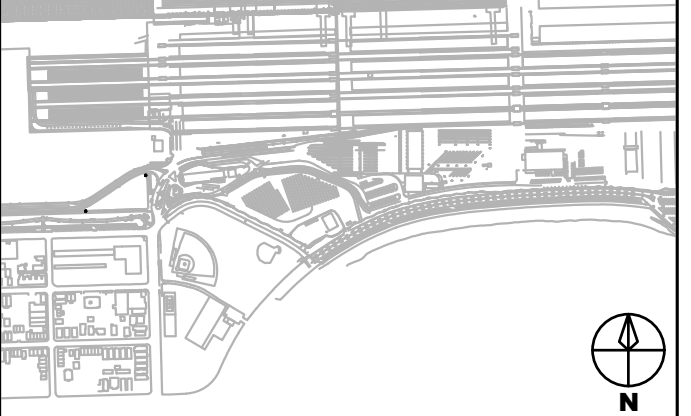
ENVIRONMENTAL PLANS

REGISTRATION STAMP:



06.21.2021

KEY PLAN:



REVISIONS:

REV NO.	DATE	DESCRIPTION	BY:

PRIMARY:



CONSULTANT:

PROJECT NUMBER AND TITLE:

M555-C1
BERTH 11 & 12
BACKLANDS
RECONSTRUCTION

SHEET TITLE:

DRAINAGE DETAILS - 2

DISCIPLINE:

CIVIL

DRAWN BY:

KLH

CHECKED BY:

RDL

APPROVED BY:

BNJ

SCALE:

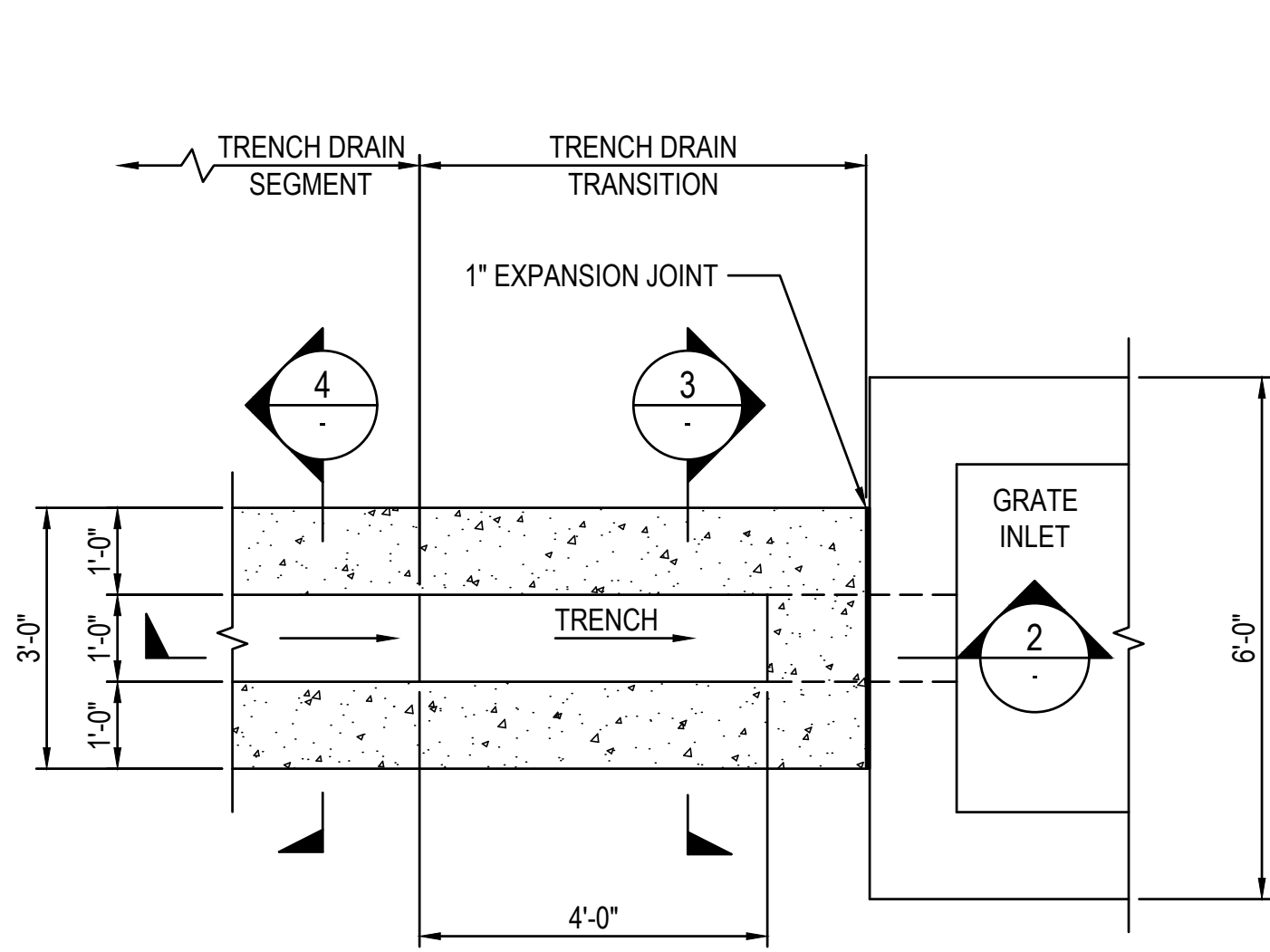
N/A

DATE:

JUNE 2021

DRAWING NAME:

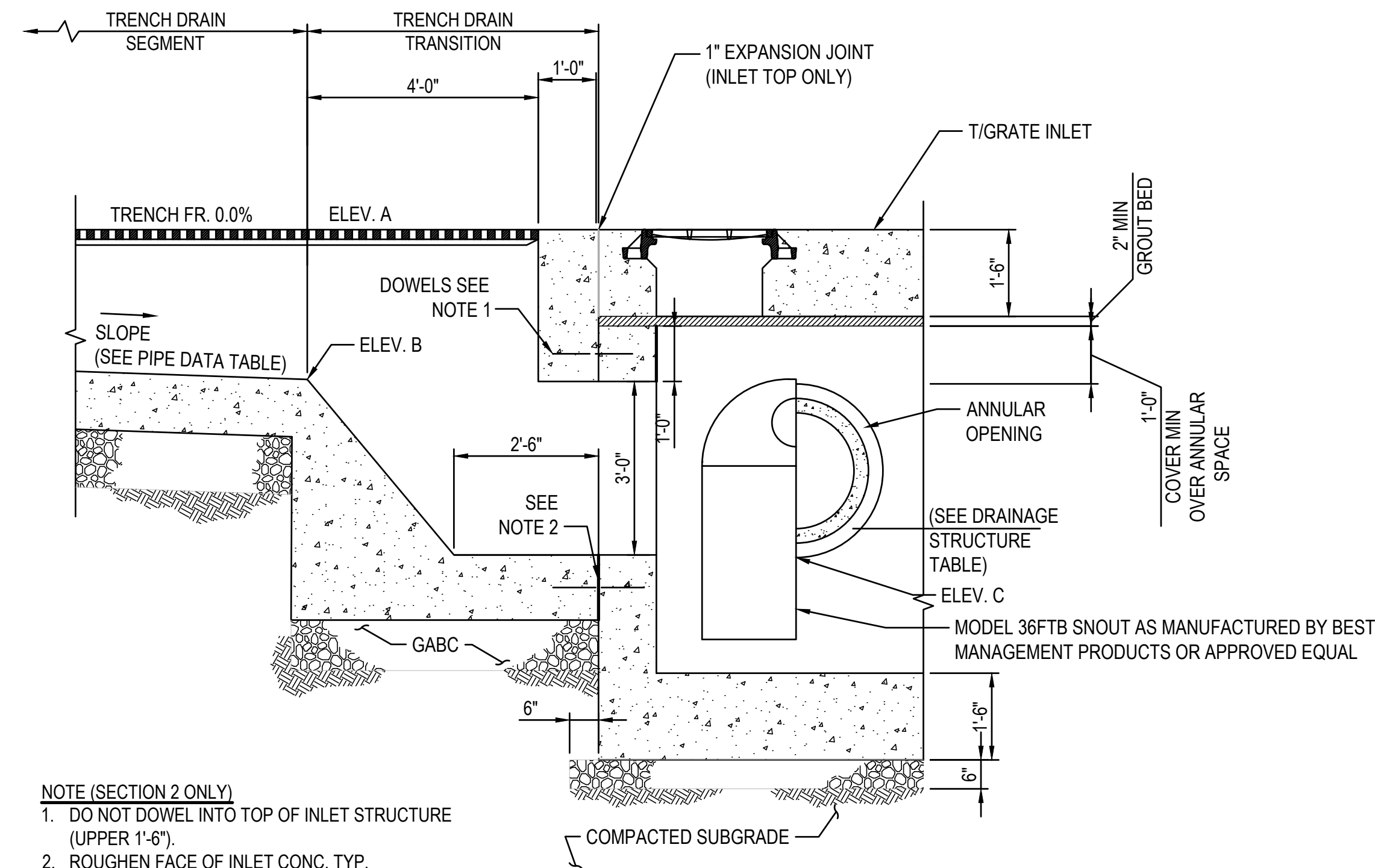
ENV-14



NOTE:
GRATE AND FRAMES NOT ILLUSTRATED.

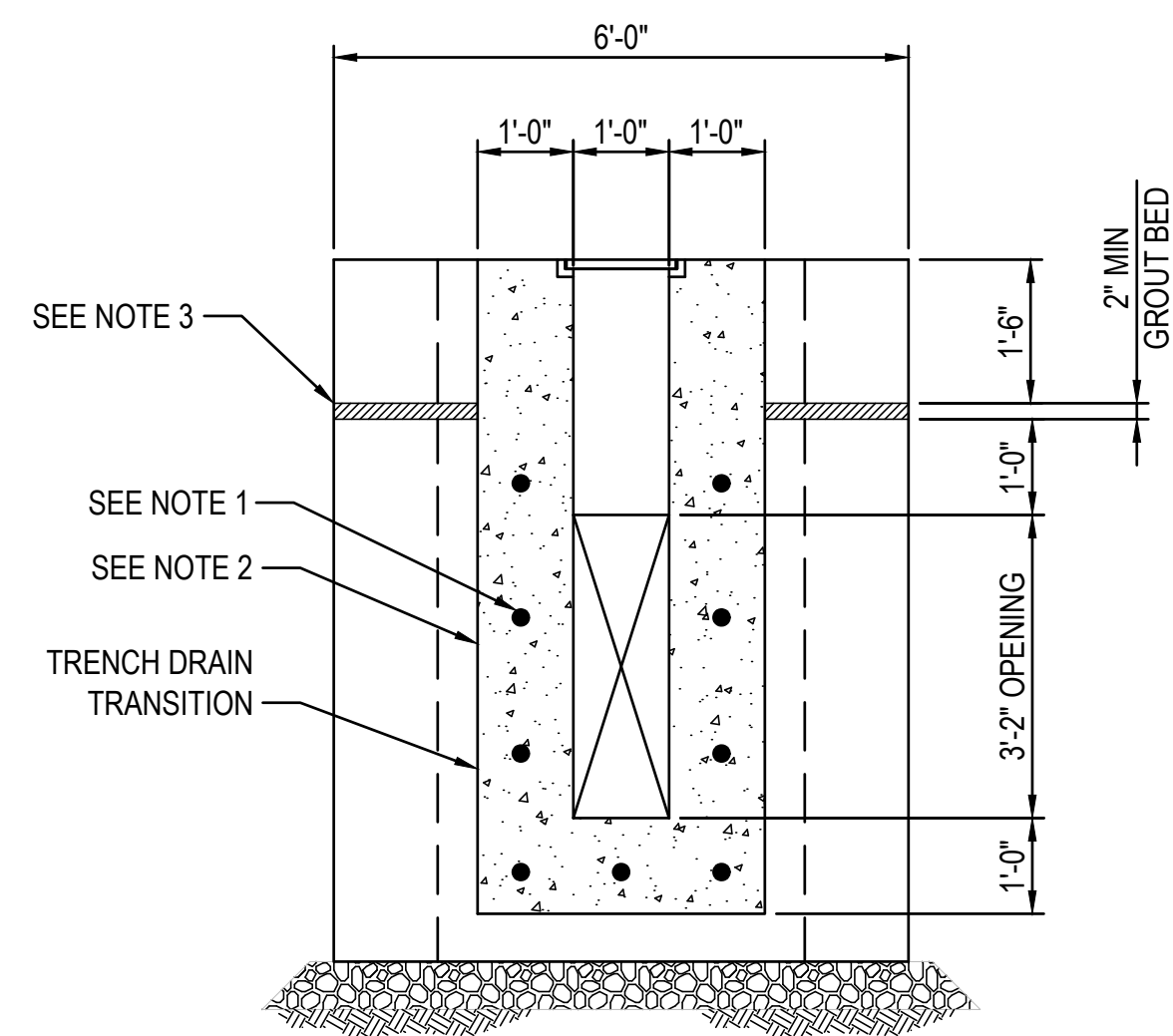
PLAN VIEW

1 DETAIL
ENV-14 NOT TO SCALE



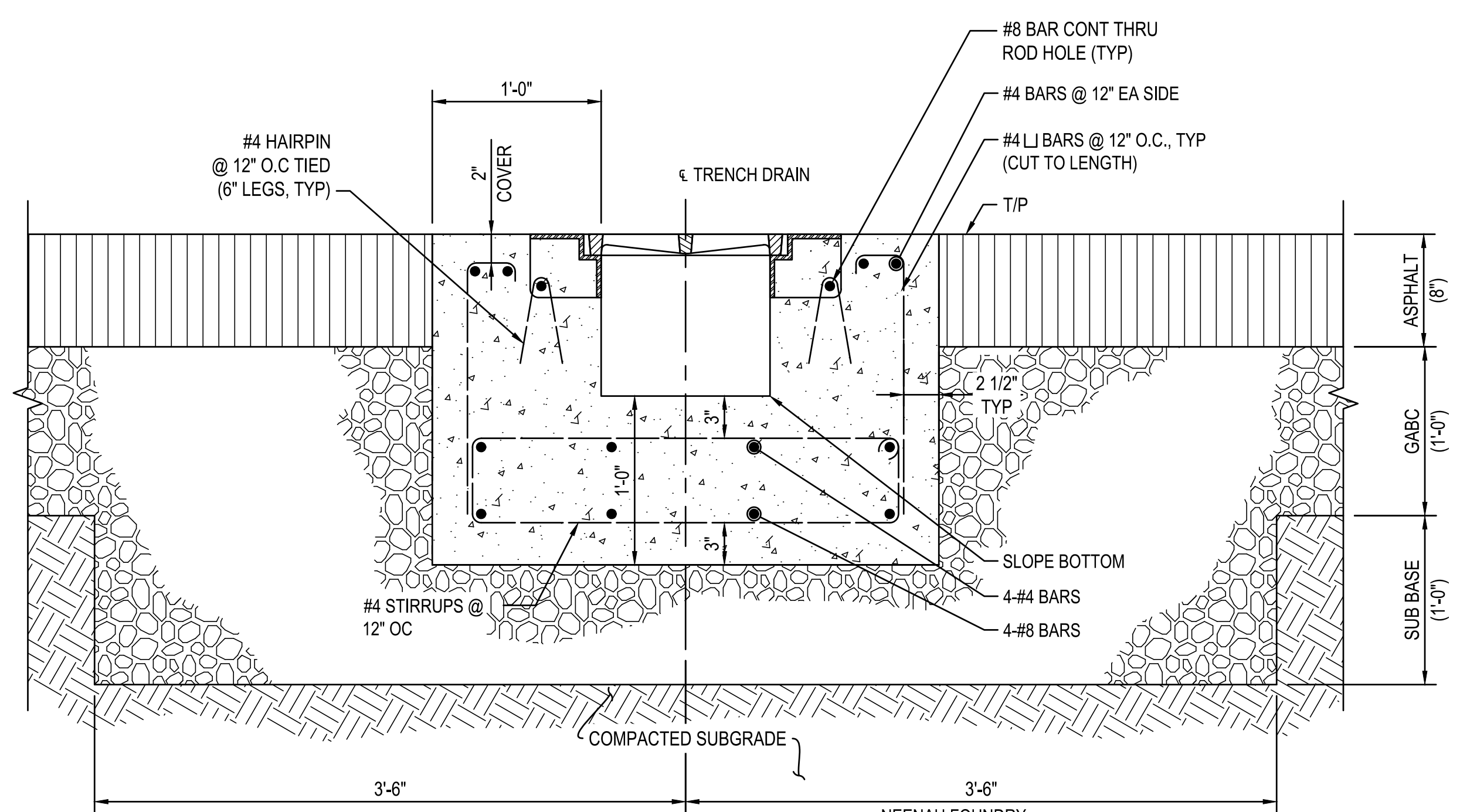
NOTE (SECTION 2 ONLY)
1. DO NOT DOWEL INTO TOP OF INLET STRUCTURE (UPPER 1'-6").
2. ROUGHEN FACE OF INLET CONC. TYP.

2 SECTION
ENV-14 NOT TO SCALE



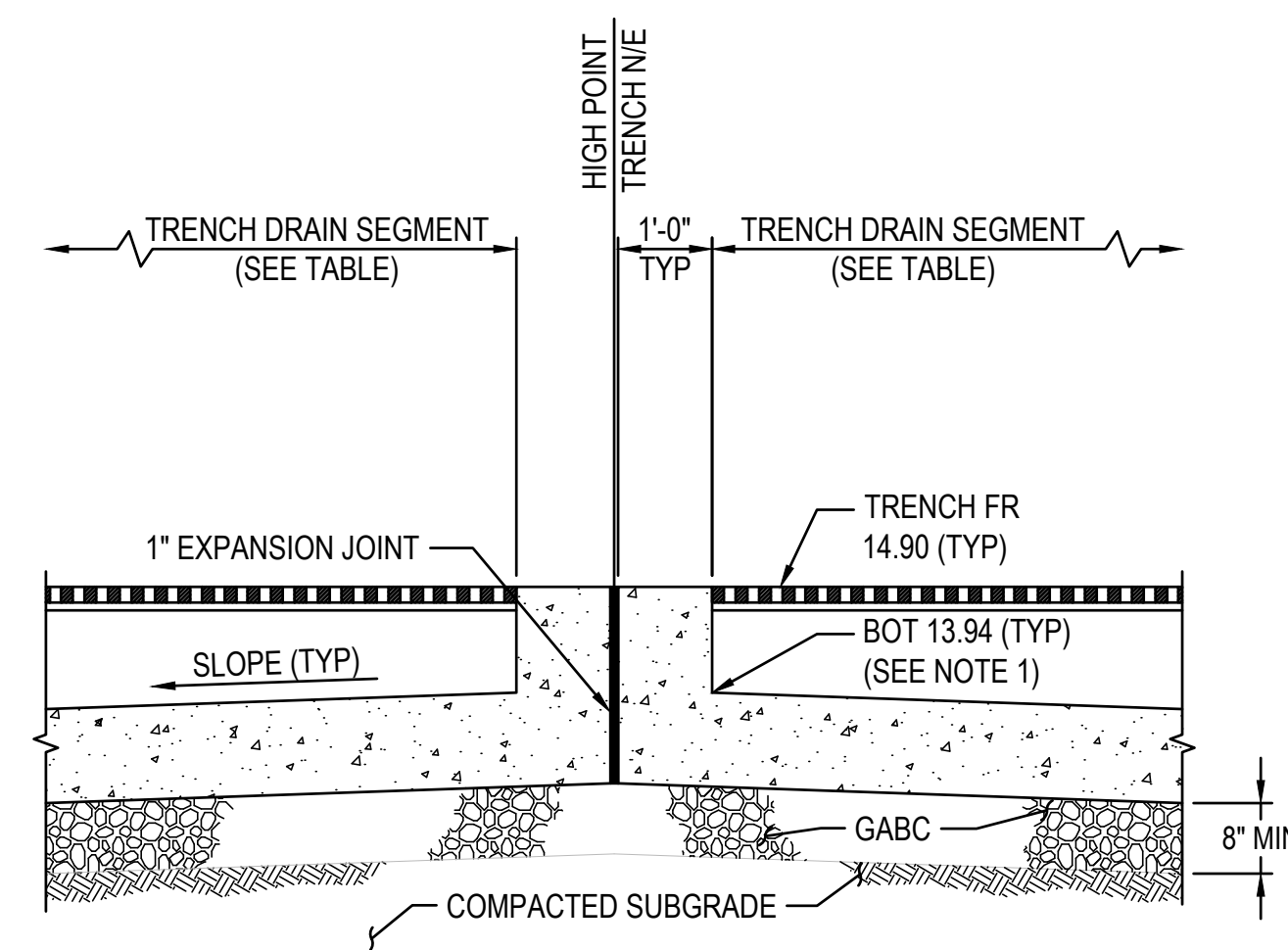
NOTE (SECTION 3 ONLY)
1. DOWEL BARS SHALL BE 1" DIAMETER, 18" LONG AND @ 15" O.C. MIN YIELD STRENGTH = 50 KSI.
2. ROUGHEN FACE OF INLET CONC.
3. GROUT BED BEHIND TRENCH DRAIN TRANSITION NOT ILLUSTRATED.

3 SECTION
ENV-14 NOT TO SCALE



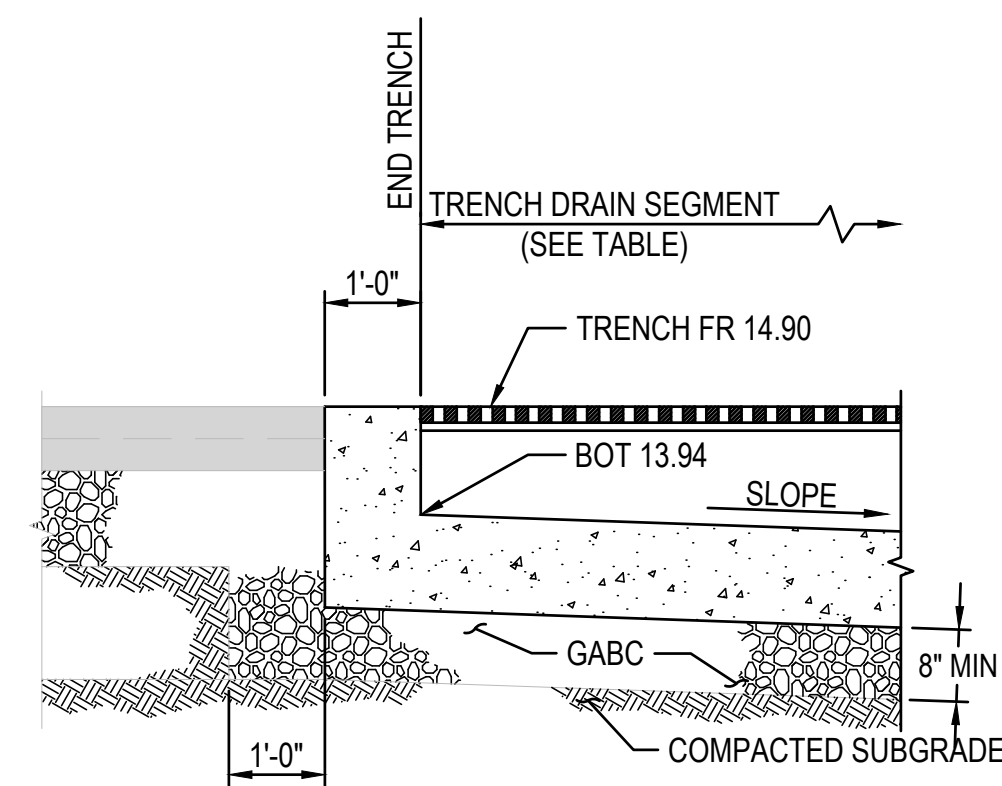
NOTES: (SECTION 5 ONLY)
1. REBAR TO BE EPOXY COATED.
2. CONCRETE MIX SHALL INCLUDE SHRINKAGE REDUCING ADMIXTURE.

4 TRENCH DRAIN SECTION
SCALE: 1/2" = 1'-0"

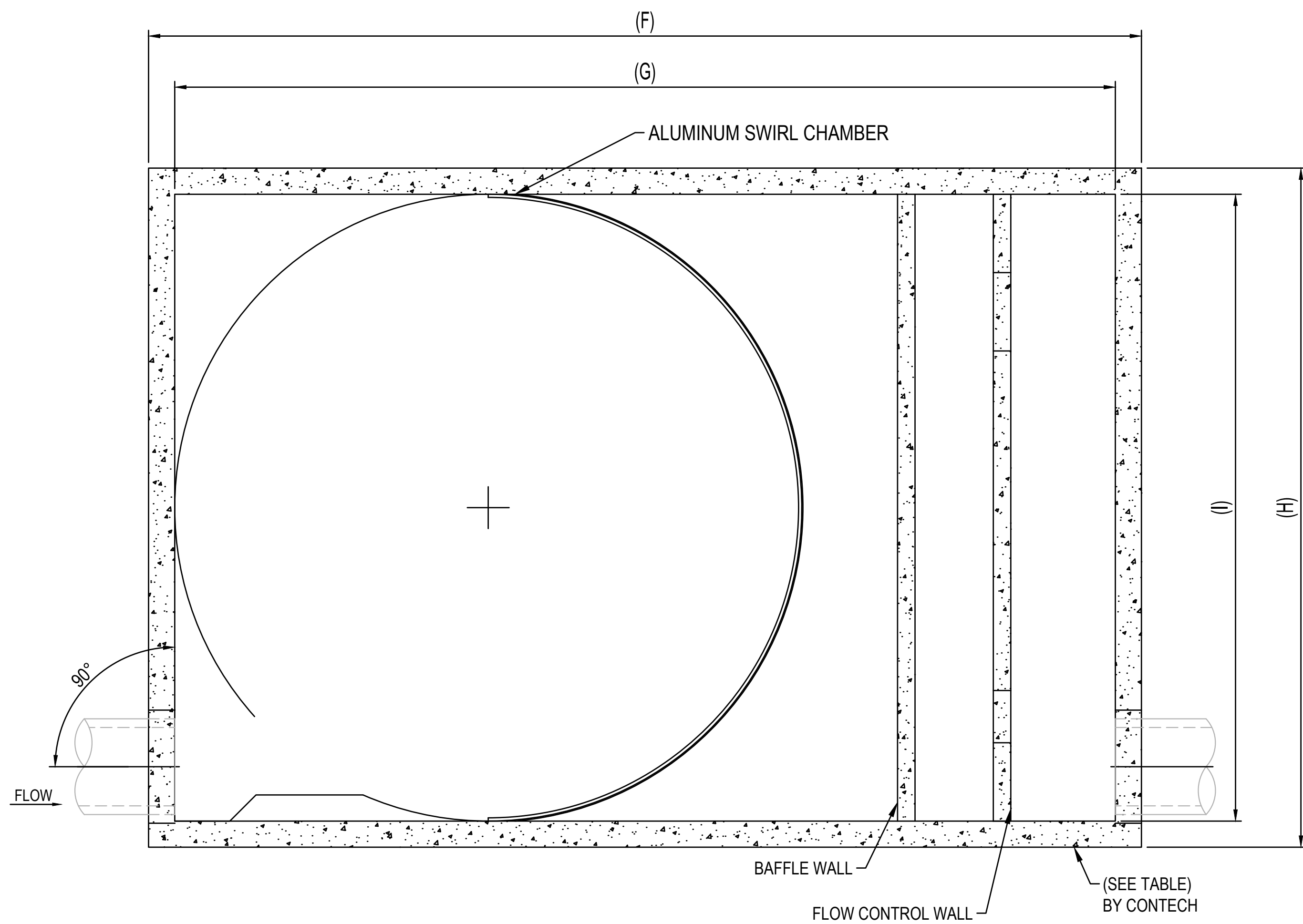


NOTE (SECTION 4 ONLY)
1. BOTTOM ELEVATION FOR TRENCH SEGMENTS 1 THRU 5 ILLUSTRATED. SEE DETAIL 6/CU-503 FOR TRENCH DRAIN SEGMENTS 6 AND 7.

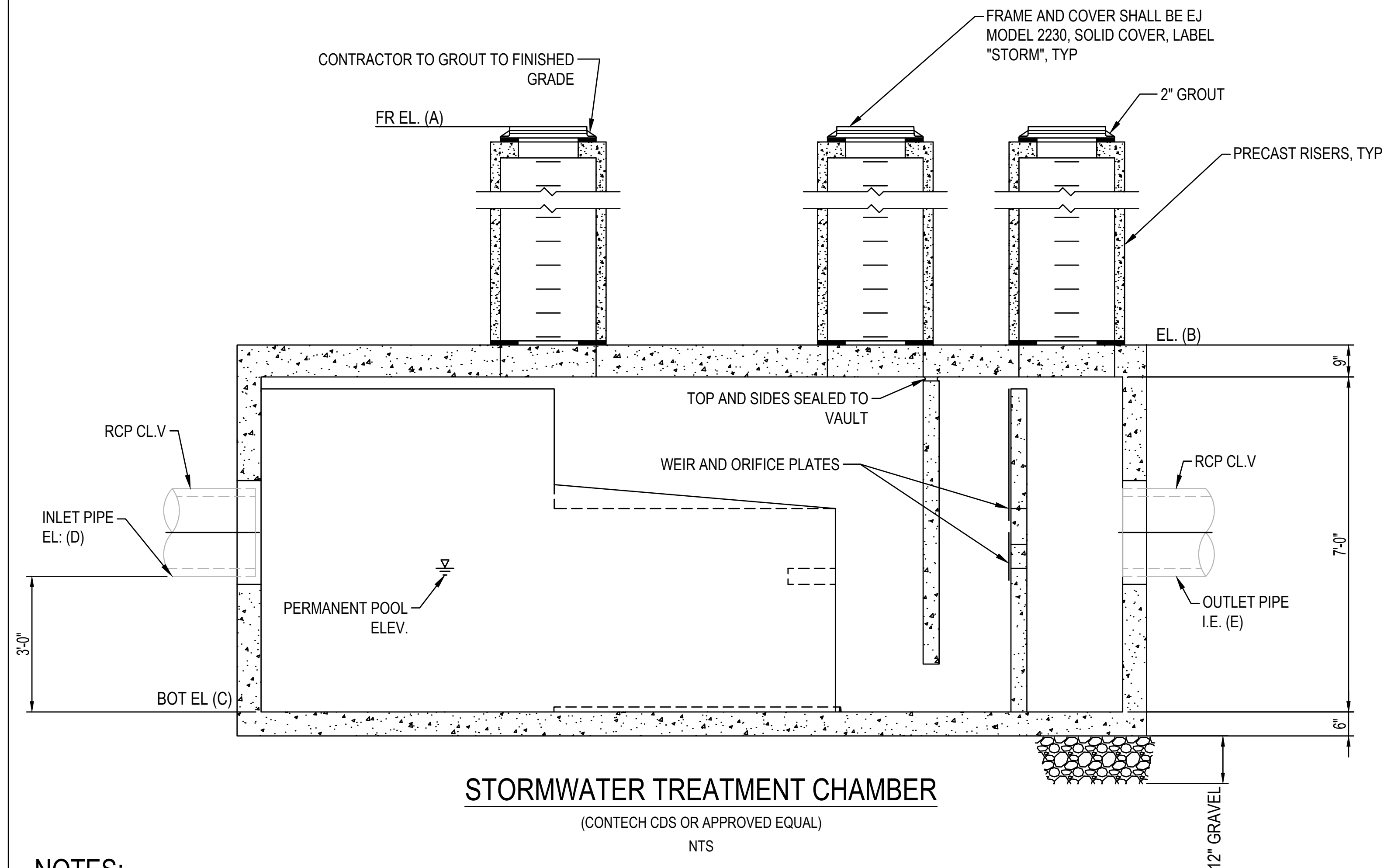
SECTION
NOT TO SCALE



SECTION
NOT TO SCALE



DETAIL
NTS



SITE SPECIFIC DATA REQUIREMENTS

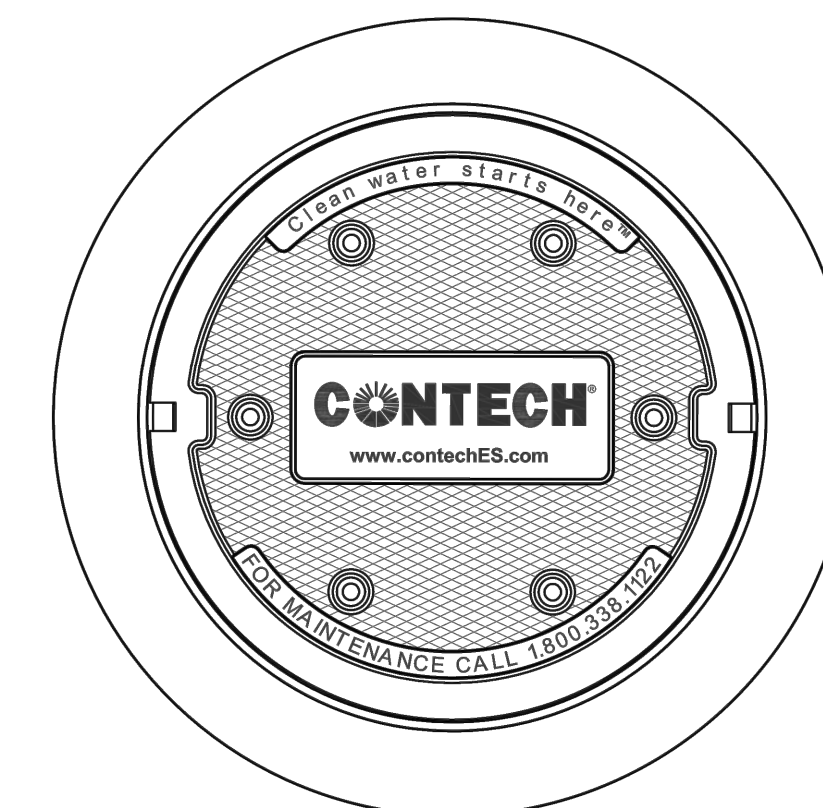
STRUCTURE ID	WQB-1_05			WQB-2_06			WQB-3_07		
WATER QUALITY FLOW RATE (CFS OR L/s)	11.06			15.79			8.94		
PEAK FLOW RATE (CFS OR L/s)	14 CFS			17.5 CFS			11.0 CFS		
RETURN PERIOD OF PEAK FLOW (YRS)	10			10			10		
MODEL	VORTECHS 9000			VORTECHS 11000			VORTECHS 7000		
PIPE DATA:	I.E.	MATERIAL	DIAMETER	I.E.	MATERIAL	DIAMETER	I.E.	MATERIAL	DIAMETER
(D) INLET PIPE 1	2.34	RCP CL V	18"	1.72	RCP CL V	24"	2.39	RCP CL V	18"
(E) OUTLET PIPE	1.59	RCP CL V	18"	1.72	RCP CL V	24"	2.39	RCP CL V	18"
(A) RIM ELEVATION	9.96			10.19			10.15		
(B) TOP ELEVATION	7.26			6.64			7.31		
(C) BOTTOM ELEVATION	-0.49			-1.11			-0.44		
STRUCTURE DATA									
(F) LENGTH (EXTERIOR)	16.00			17.00			15.00		
(G) LENGTH (INTERIOR)	15.00			16.00			14.00		
(H) WIDTH (EXTERIOR)	10.00			11.00			9.00		
(I) WIDTH (INTERIOR)	9.00			10.00			8.00		
ANTI-FLOTATION BALLAST	WIDTH	HEIGHT	WIDTH	HEIGHT	WIDTH	HEIGHT	WIDTH	HEIGHT	
	-		-		-		-		

GENERAL NOTES:

1. WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
2. STRUCTURE SHALL MEET AIRPORT EXTRA HEAVY DUTY LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.

INSTALLATION NOTES:

1. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE (LIFTING CLUTCHES PROVIDED)
2. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
3. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES, MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
4. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.



FRAME AND COVER
(DIAMETER VARIES)

NOTES:

1. STRUCTURE TO BE DESIGNED BY MANUFACTURER FOR DEAD AND LIVE LOADS.



MASSACHUSETTS PORT AUTHORITY
EAST BOSTON, MASSACHUSETTS 02128

PROJECT LOCATION:
CONLEY TERMINAL
SOUTH BOSTON, MASSACHUSETTS

MPA CONTRACT NO.: M555-C1
LOCATION CODE: 4300

PROJECT SUBMISSION PHASE:

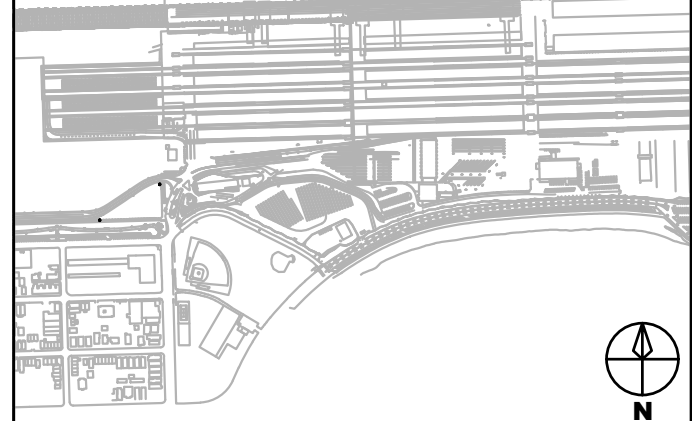
ENVIRONMENTAL PLANS

REGISTRATION STAMP:



06.21.2021

KEY PLAN:



REVISIONS:

REV NO.	DATE	DESCRIPTION	BY

PRIMARY:



CONSULTANT:

PROJECT NUMBER AND TITLE:

M555-C1
BERTH 11 & 12
BACKLANDS
RECONSTRUCTION

SHEET TITLE:

DRAINAGE DETAILS - 3

DISCIPLINE:

CIVIL

DRAWN BY: CHECKED BY: APPROVED BY:

KLH RDL BNJ

SCALE:

N/A

DATE:

JUNE 2021

DRAWING NAME:

ENV-15



MASSACHUSETTS PORT AUTHORITY
EAST BOSTON, MASSACHUSETTS 02128

PROJECT LOCATION:
CONLEY TERMINAL
SOUTH BOSTON, MASSACHUSETTS

MPA CONTRACT NO.: M555 - C1
LOCATION CODE: 4300

PROJECT SUBMISSION PHASE:

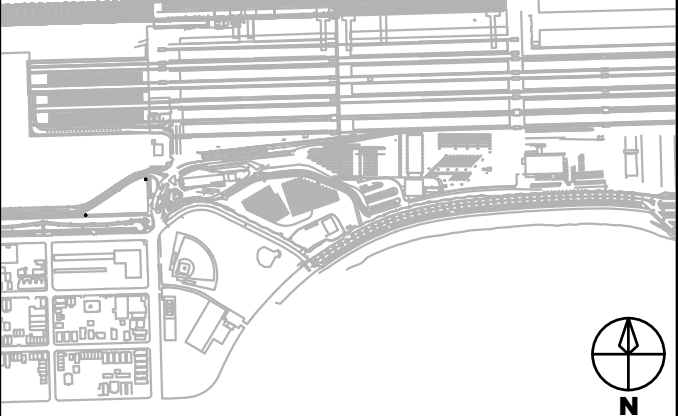
ENVIRONMENTAL PLANS

REGISTRATION STAMP:



06.21.2021

KEY PLAN:



REVISIONS:

REV NO.	DATE	DESCRIPTION	BY

PRIMARY:



99 HIGH STREET, SUITE 2300,
BOSTON, MA 02110-2378
(617) 357-7700

CONSULTANT:

PROJECT NUMBER AND TITLE:

M555-C1
BERTH 11 & 12
BACKLANDS
RECONSTRUCTION

SHEET TITLE:

DRAINAGE DETAILS - 4

DISCIPLINE:

CIVIL

DRAWN BY: CHECKED BY: APPROVED BY:

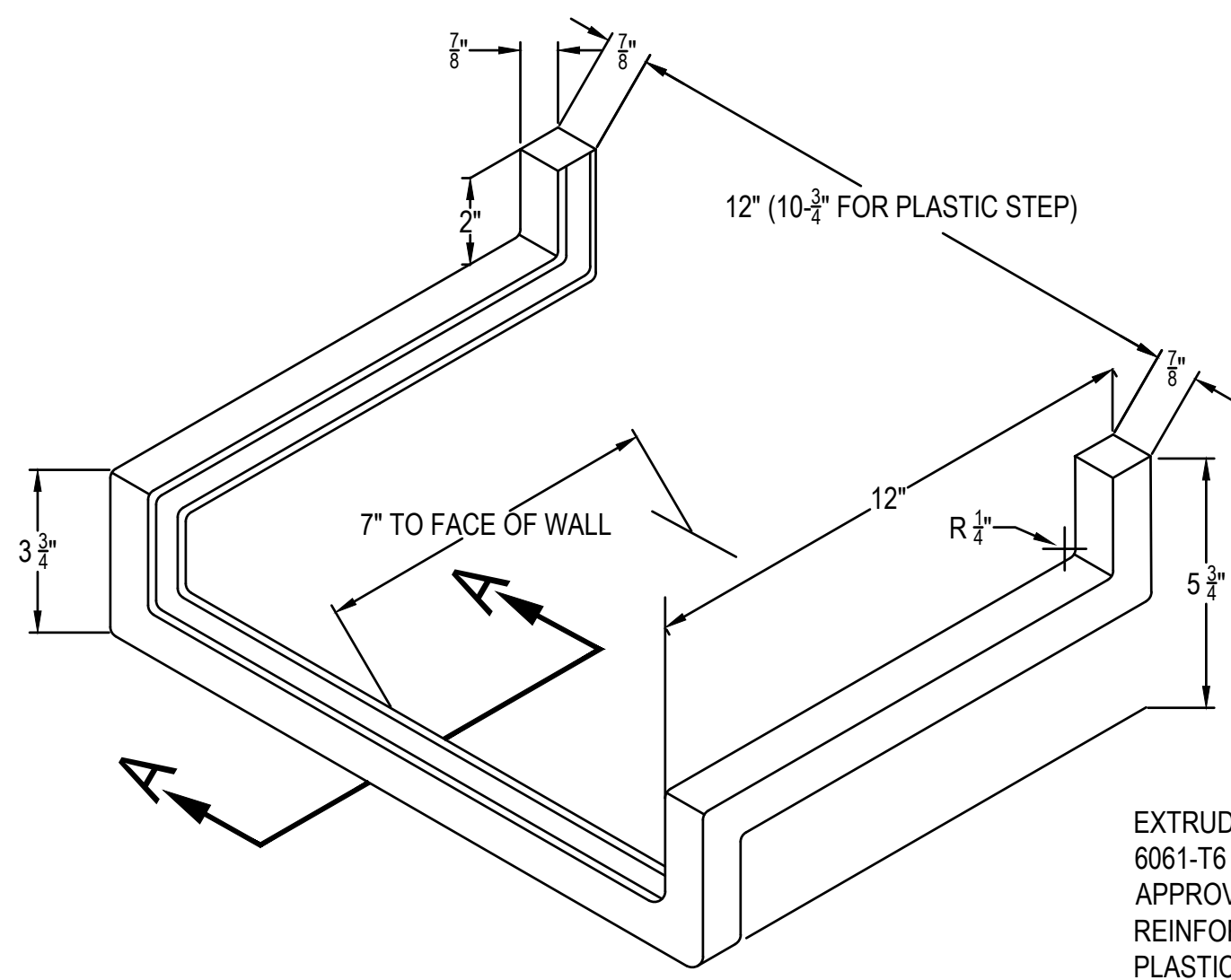
KLH RDL BNJ

SCALE: DATE:

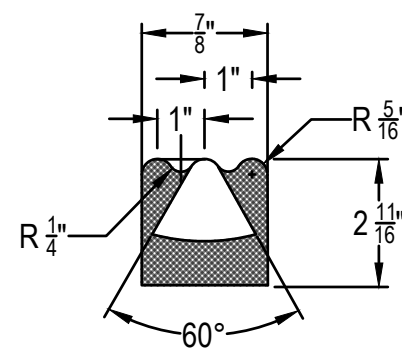
N/A JUNE 2021

DRAWING NAME:

ENV-16



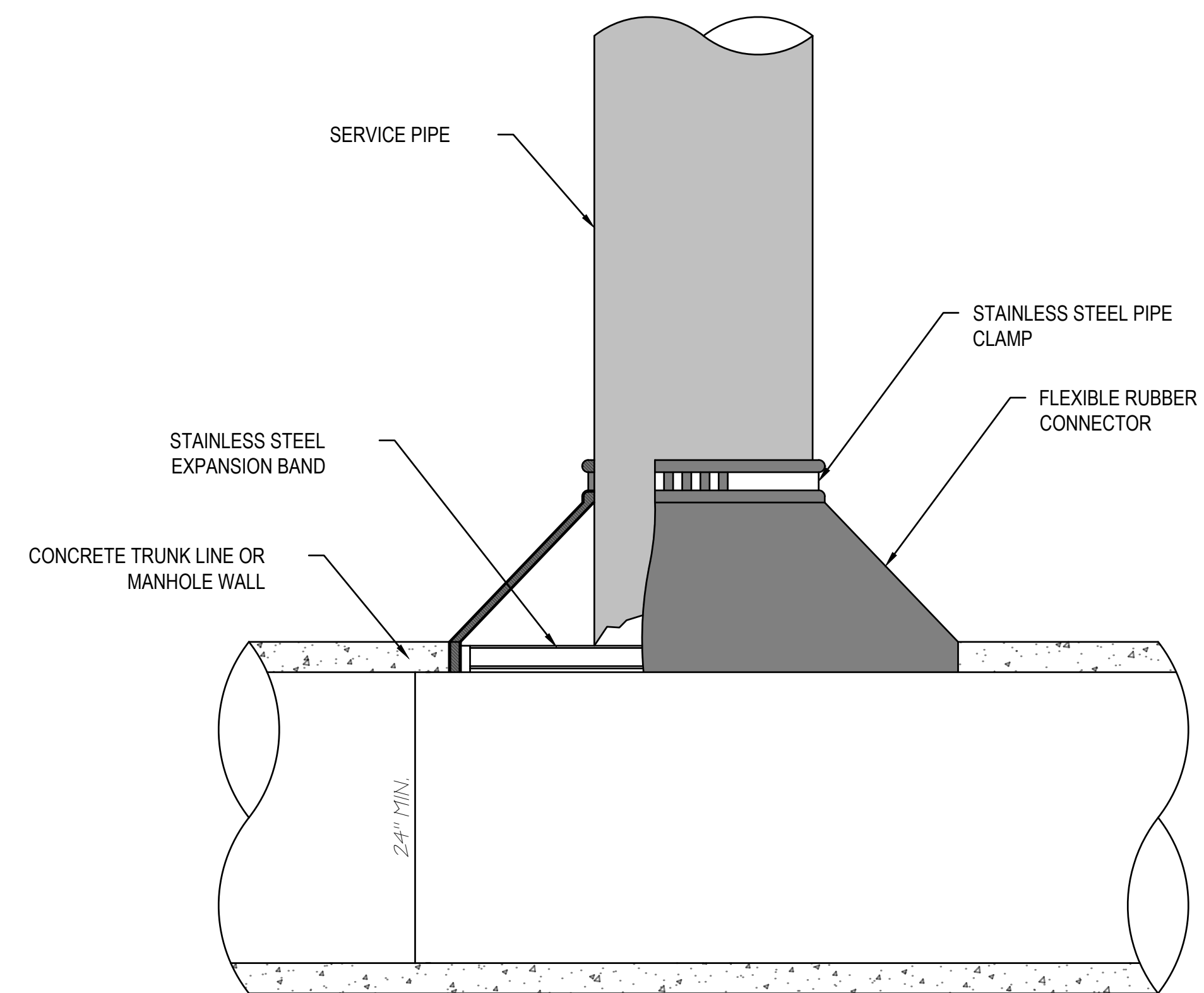
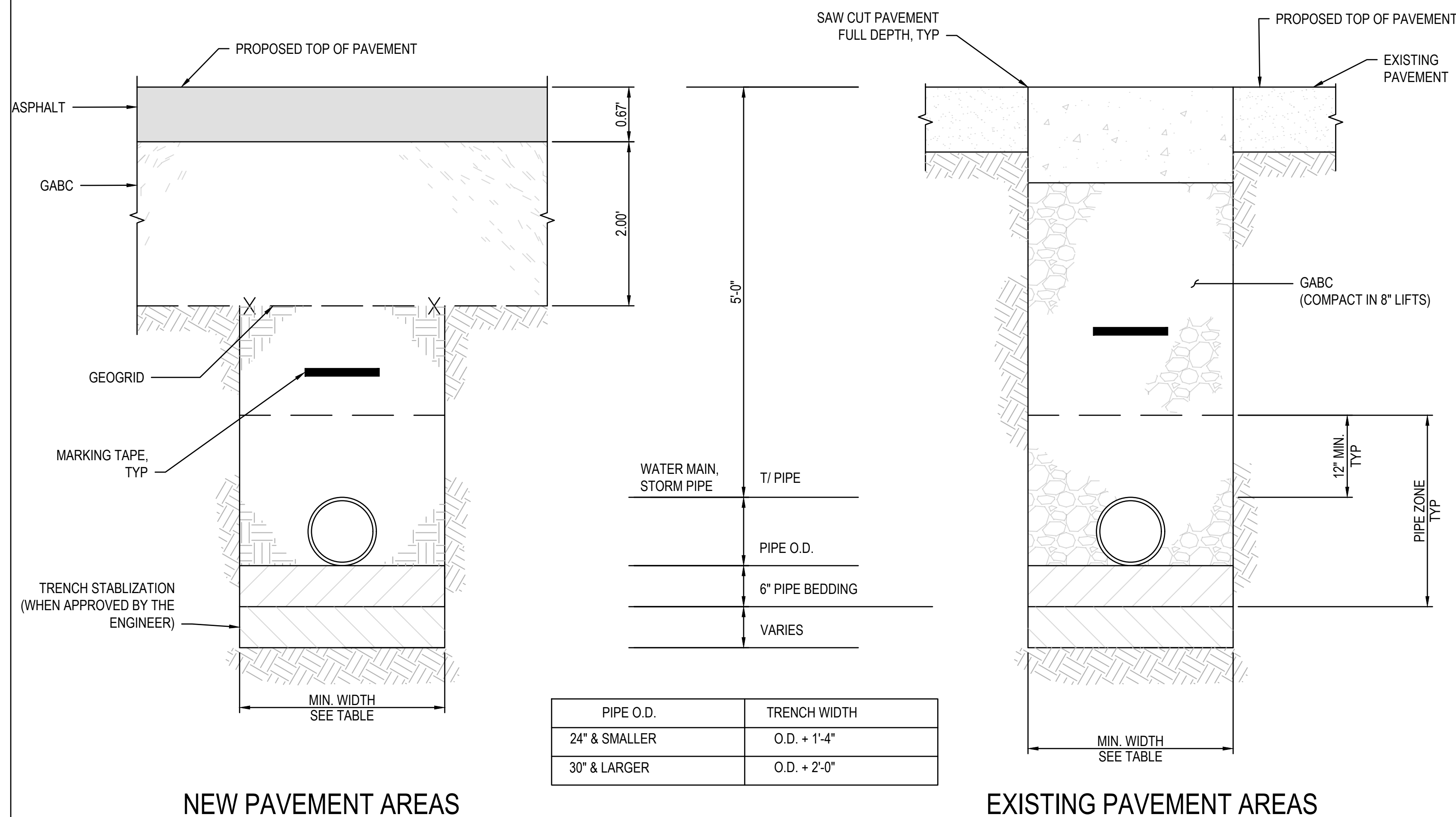
EXTRUDED ALUMINUM *ALCOA
6061-T6 NO. 126538 OR
APPROVED EQUAL OR STEEL
REINFORCED POLYPROPYLEN
PLASTIC.



NOTE:
PORTION EMBEDDED IN CONCRETE
COATED WITH HEAVY-BODIED
BITUMINOUS MATERIAL AS SPECIFIED
OR APPROVED.

SECTION A-A

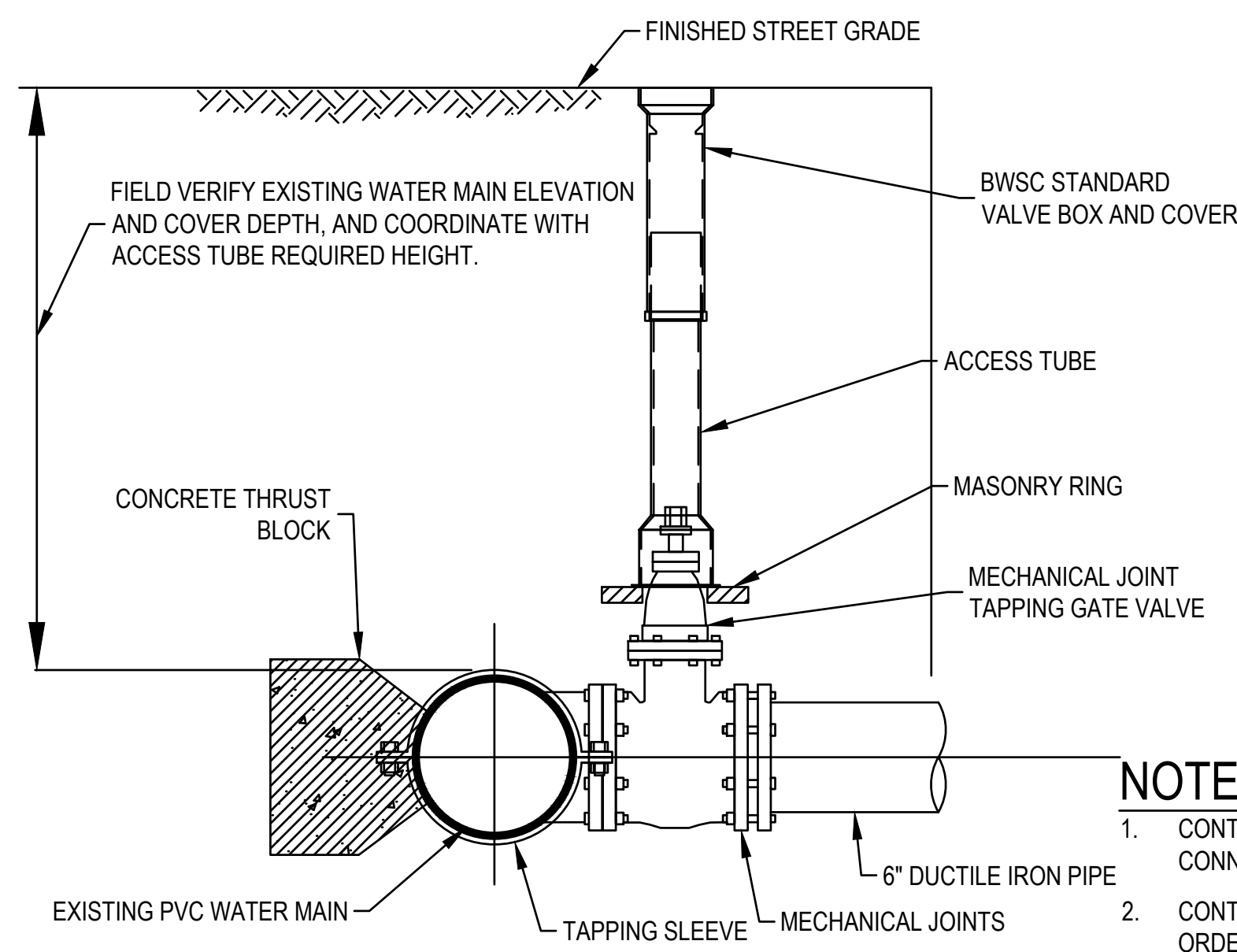
ALUMINUM MANHOLE STEP
(BWS C B-02f)
NO SCALE



NOTES:

1. OPENING IN CONCRETE WALL SHALL BE CORED USING HIGH SPEED DIAMOND DRILL.
2. ALL METAL FIXTURES SHALL BE OF STAINLESS STEEL.
3. SERVICE LINE SHALL BE FLUSH WITH THE INSIDE OF THE CONCRETE PIPE OR WALL.
4. IF TRUNK LINE DIAMETER IS LESS THAN 24" THEN A SADDLE TYPE CONNECTION WILL BE USED.

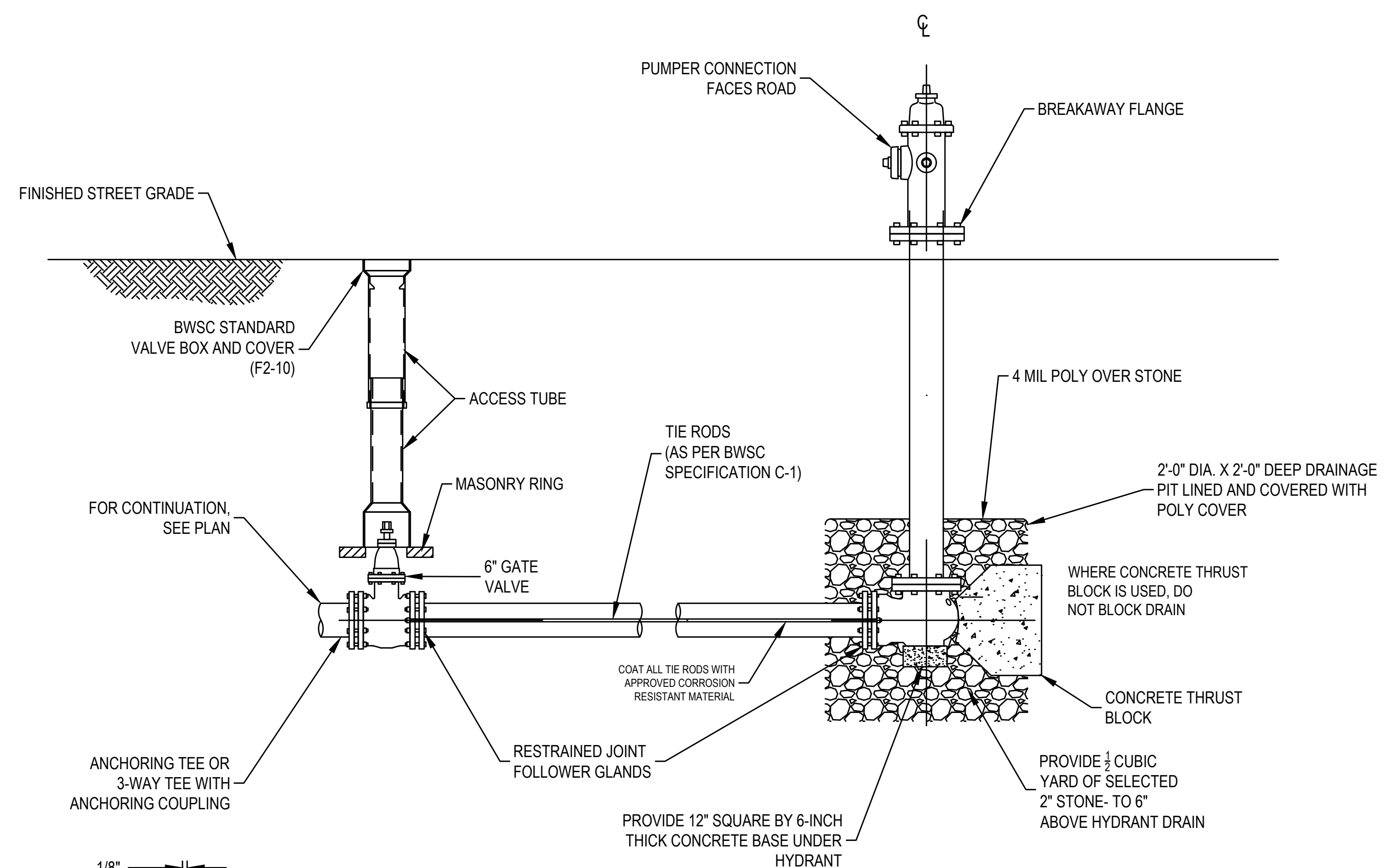
TYPICAL FIELD CONNECTION TO LARGE CONCRETE PIPE
OR CONCRETE MANHOLE
(BWS C B-05)
NO SCALE



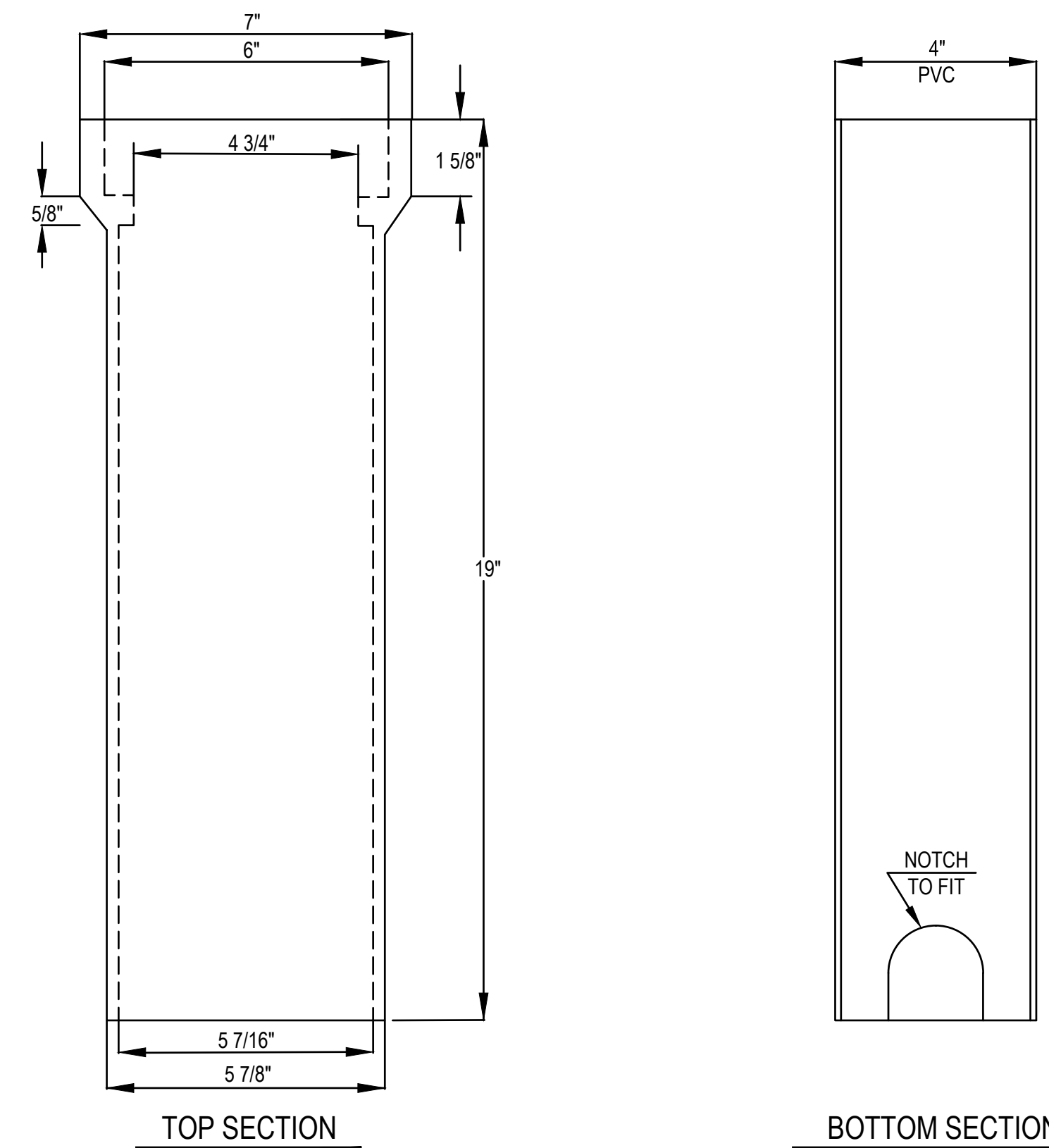
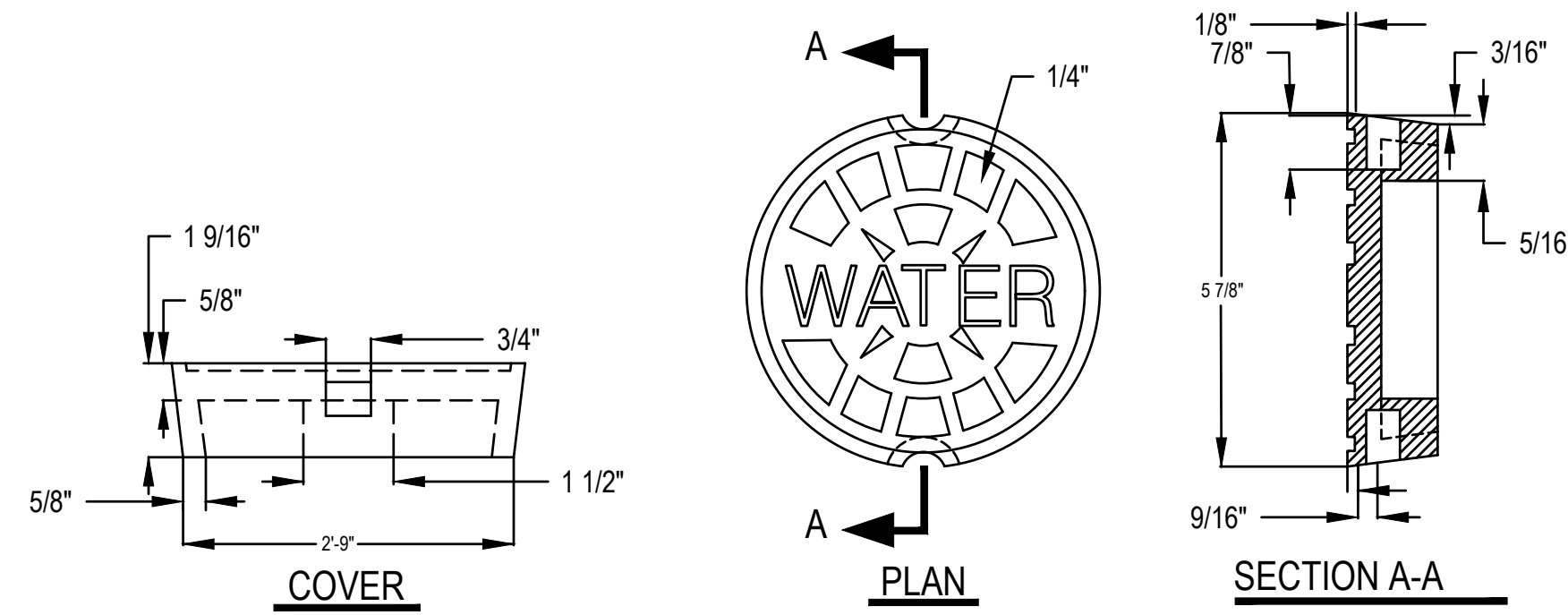
TYPICAL WATER PIPE CONNECTION WITH TAPPING SLEEVE AND GATE VALVE
NOT TO SCALE

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY EXISTING WATER MAIN LOCATION AND ELEVATION PRIOR TO CONNECTION.
2. CONTRACTOR SHALL FIELD VERIFY OUTSIDE DIAMETER OF THE PVC WATER MAIN BEFORE ORDERING TAPPING SLEEVE AND VALVE, AND COORDINATE THE TRANSITION FROM PVC PIPING TO DIP.
3. CONTRACTOR TO FIELD VERIFY OPERATING PRESSURE OF THE WATER MAIN



HYDRANT DETAIL
NOT TO SCALE



BWSC ROADWAY BOX
NOT TO SCALE

ITEM	NUMBER
COVER TOP SECTION	99460000 99460001



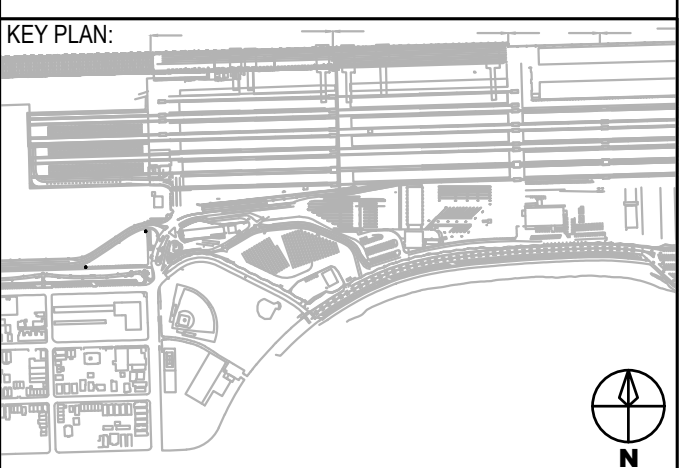
MASSACHUSETTS PORT AUTHORITY
EAST BOSTON, MASSACHUSETTS 02128

PROJECT LOCATION:
CONLEY TERMINAL
SOUTH BOSTON, MASSACHUSETTS

MPA CONTRACT NO.: M555 - C1
LOCATION CODE: 4300

PROJECT SUBMISSION PHASE:
ENVIRONMENTAL PLANS

REGISTRATION STAMP:



REVISIONS:

REV NO.	DATE	DESCRIPTION	BY

PRIMARY:

99 HIGH STREET, SUITE 2300,
BOSTON, MA 02110-2378
(617) 357-7700

CONSULTANT:

PROJECT NUMBER AND TITLE:
M555-C1
BERTH 11 & 12
BACKLANDS
RECONSTRUCTION

SHEET TITLE:
WATER UTILITY DETAILS

DISCIPLINE:
CIVIL

DRAWN BY: KLH	CHECKED BY: RDL	APPROVED BY: BNJ
-------------------------	---------------------------	----------------------------

SCALE: N/A	DATE: JUNE 2021
----------------------	---------------------------

DRAWING NAME:
ENV-17



MASSACHUSETTS PORT AUTHORITY
EAST BOSTON, MASSACHUSETTS 02128

PROJECT LOCATION:
CONLEY TERMINAL
SOUTH BOSTON, MASSACHUSETTS

MPA CONTRACT NO.: M555 - C1
LOCATION CODE: 4300

PROJECT SUBMISSION PHASE:

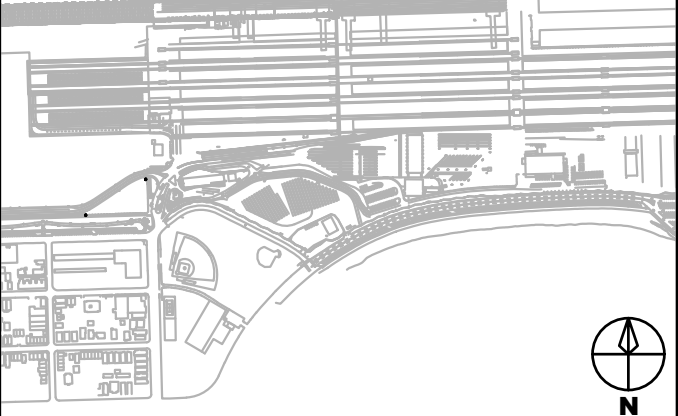
ENVIRONMENTAL PLANS

REGISTRATION STAMP:



06.21.2021

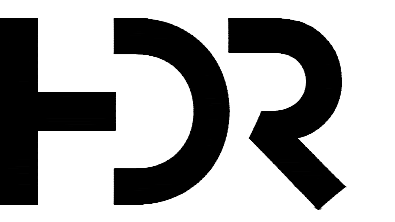
KEY PLAN:



REVISIONS:

REV NO.	DATE	DESCRIPTION	BY:

PRIMARY:



99 HIGH STREET, SUITE 2300,
BOSTON, MA 02110-2378
(617) 357-7700

CONSULTANT:

PROJECT NUMBER AND TITLE:

M555-C1
BERTH 11 & 12
BACKLANDS
RECONSTRUCTION

SHEET TITLE:

SEWER DETAILS

DISCIPLINE:

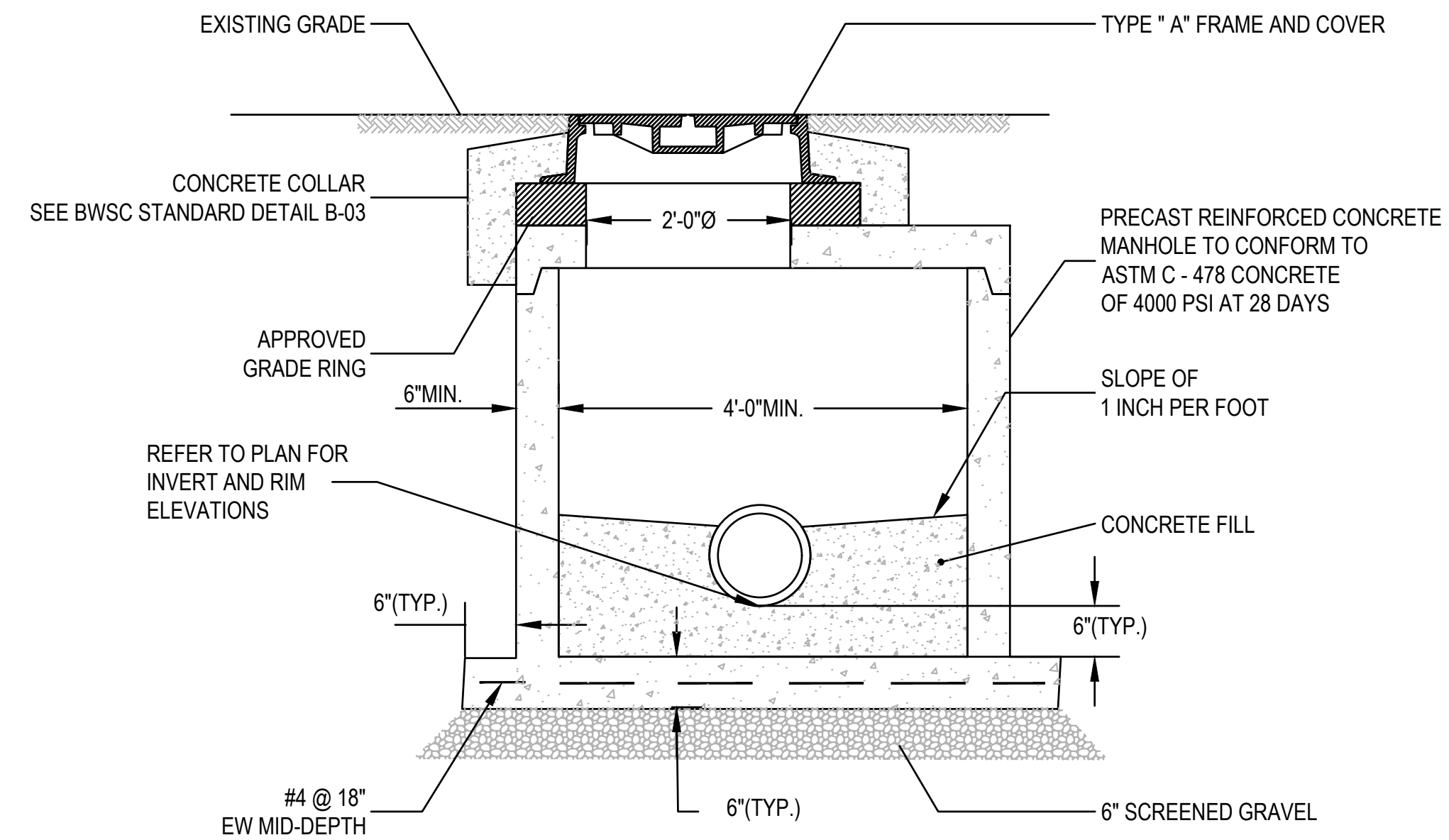
CIVIL

DRAWN BY:	CHECKED BY:	APPROVED BY:
KLH	RDL	BNJ

SCALE:	DATE:
N/A	JUNE 2021

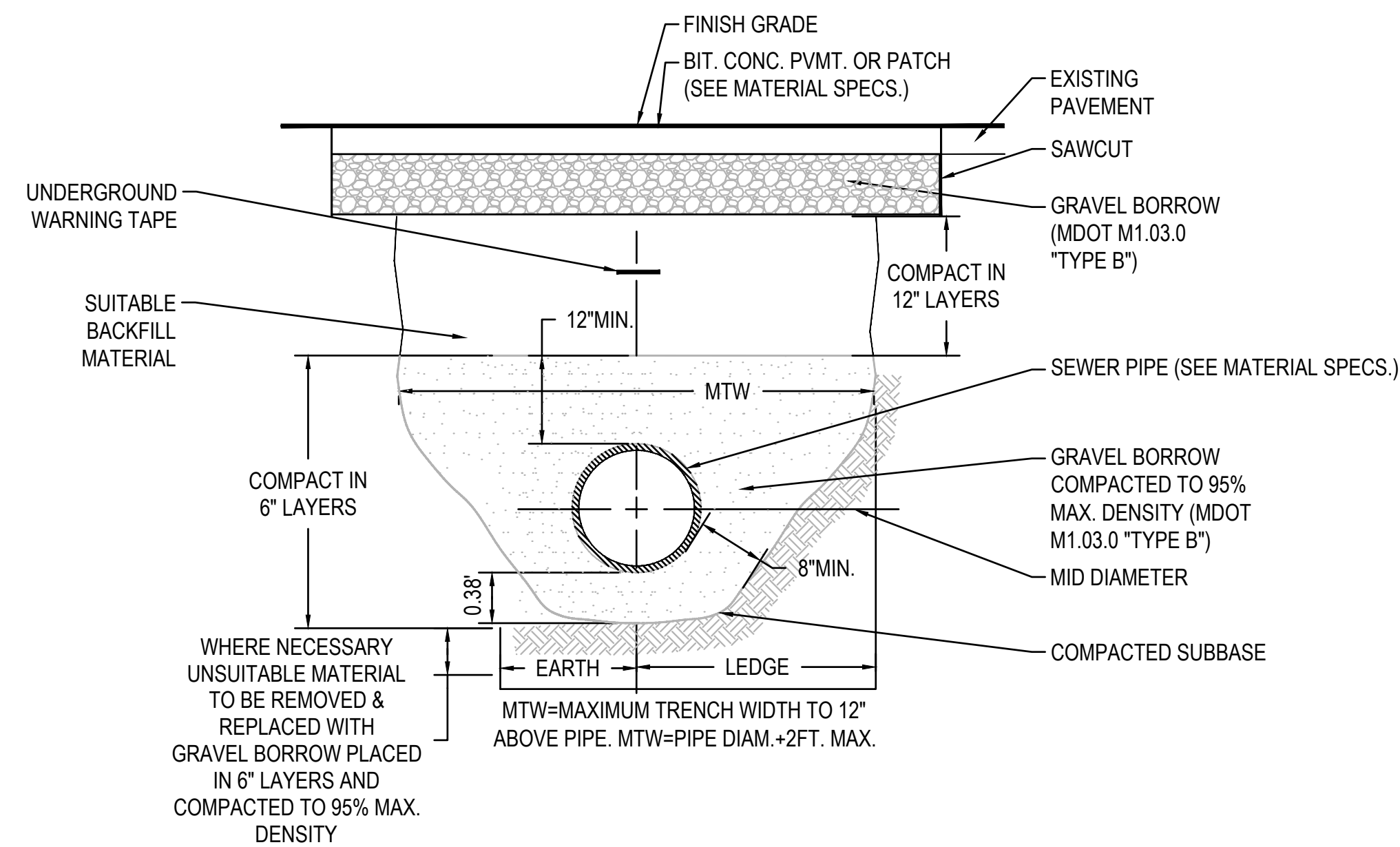
DRAWING NAME:

ENV-18



TYPICAL SEWER MANHOLE DETAIL - SECTION

NOT TO SCALE



STANDARD TRENCH DETAIL FOR SEWER PIPE

NOT TO SCALE



MASSACHUSETTS PORT AUTHORITY
EAST BOSTON, MASSACHUSETTS 02128

PROJECT LOCATION:
CONLEY TERMINAL
SOUTH BOSTON, MASSACHUSETTS

MPA CONTRACT NO.: M555 - C1
LOCATION CODE: 4300

PROJECT SUBMISSION PHASE:

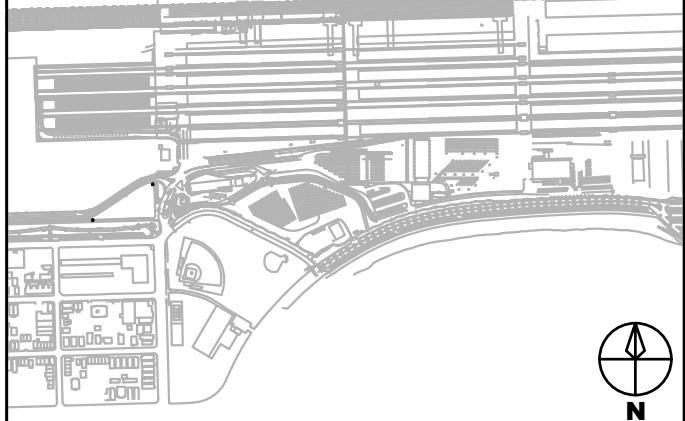
ENVIRONMENTAL PLANS

REGISTRATION STAMP:



06.21.2021

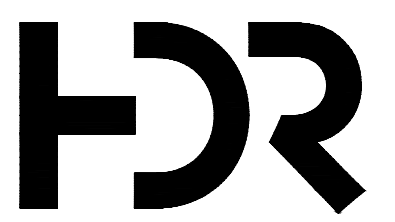
KEY PLAN:



REVISIONS:

REV NO.	DATE	DESCRIPTION	BY

PRIMARY:



99 HIGH STREET, SUITE 2300,
BOSTON, MA 02110-2378
(617) 357-7700

CONSULTANT:

PROJECT NUMBER AND TITLE:

M555-C1
BERTH 11 & 12
BACKLANDS
RECONSTRUCTION

SHEET TITLE:

TYPICAL SECTIONS

DISCIPLINE:

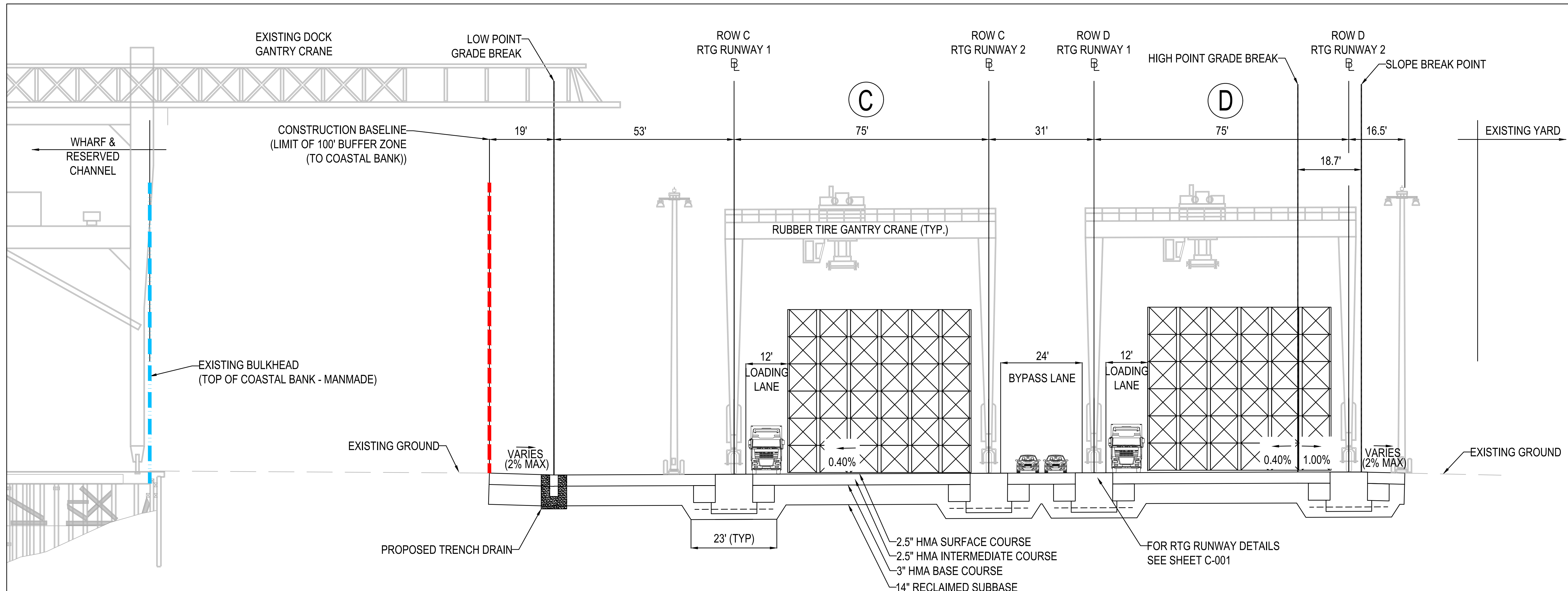
CIVIL

DRAWN BY:	CHECKED BY:	APPROVED BY:
KLH	RDL	BNJ

SCALE:	DATE:
	JUNE 2021

DRAWING NAME:

ENV-19

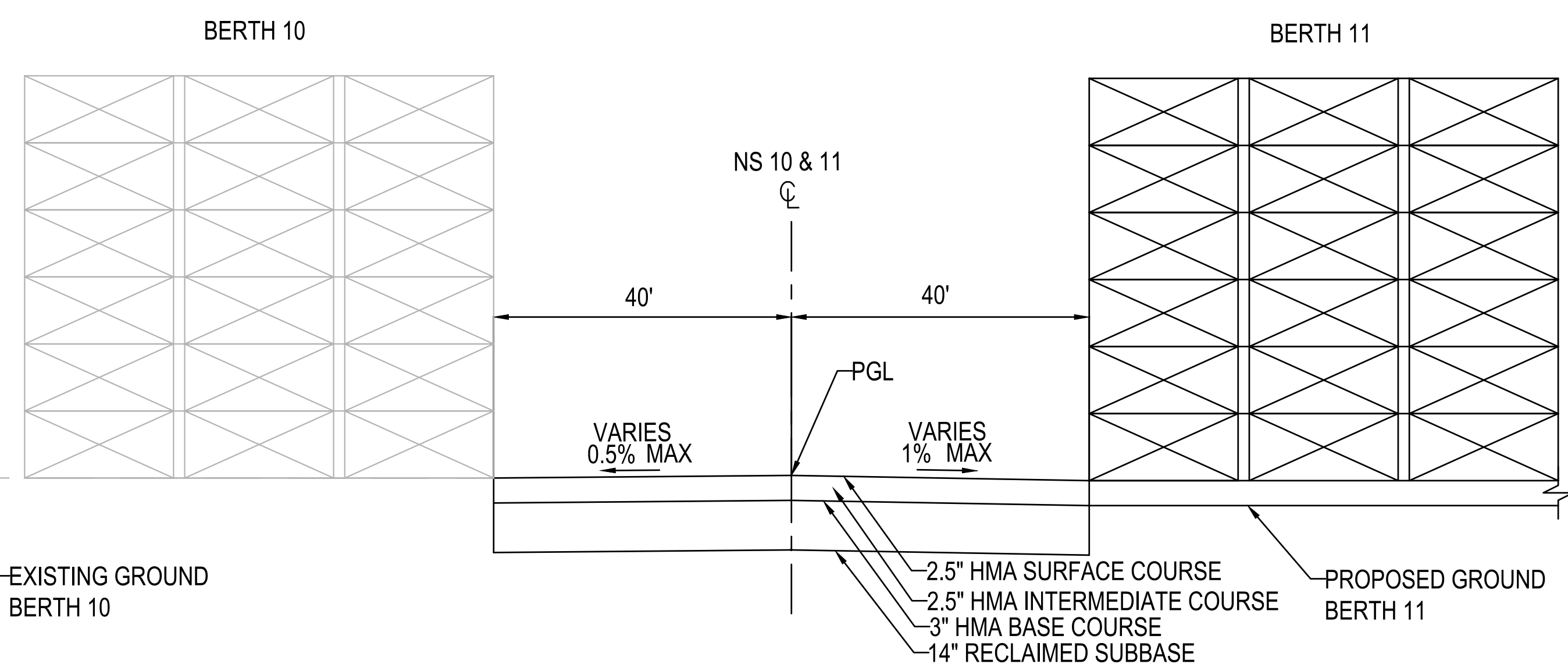


LEGEND:

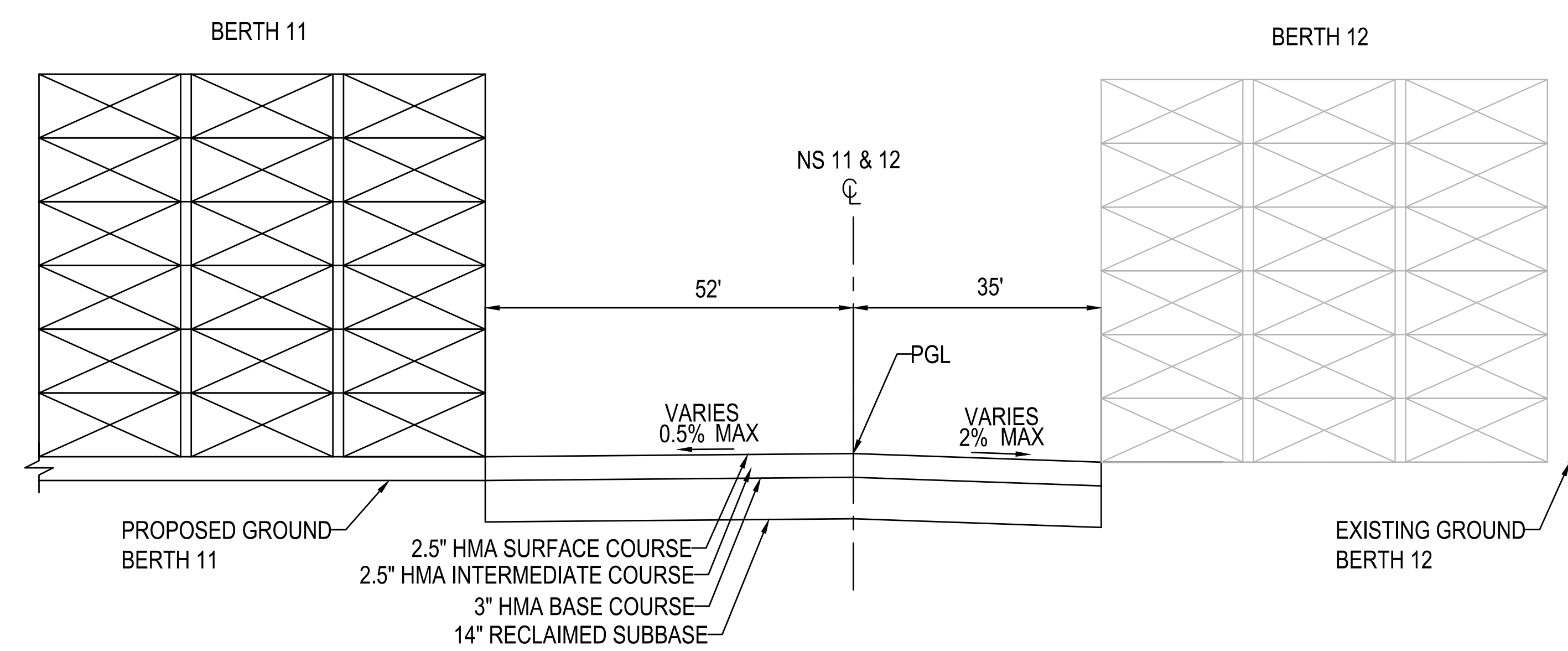
--- 100' BUFFER ZONE

--- COASTAL BANK

CONTAINER YARD ROW C & ROW D
(LOOKING EAST)
FULL DEPTH RECLAMATION
(8" HMA & 14" RECLAIMED SUBBASE)
NTS (SEE NOTE 1)



TYPICAL ROADWAY SECTION
NORTH TO SOUTH BERTH 10/11
NTS (SEE NOTE 1)



TYPICAL ROADWAY SECTION
NORTH TO SOUTH BERTH 11/12
NTS (SEE NOTE 1)

NOTE:

1. SUBSURFACE ELEMENTS SHOWN ON THESE TYPICALS ARE EXAGGERATED VERTICALLY FOR CLARIFICATION. SURFACE ELEMENTS INCLUDING HIGH MAST LIGHTS, GANTRY CRANES, TRUCKS AND CONTAINER STACKS ARE NOT EXAGGERATED FOR PRESENTATION PURPOSES.



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Appendix C - Photo Log



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		PHOTOGRAPHIC LOG
Site Location: Massport Berth 11 & 12 Backlands Reconstruction Project in South Boston, MA		Project No. 10292391
Photo No. 1	Date:	
Direction Photo Taken: Down		
Description: Photo represents an aerial view of the project location with section/row identification.		

Photo No. 2	Date: 7/15/20	
Direction Photo Taken: East		
Description: Photo represents degraded conditions of the asphalt within section B3 of berth 11.		

PHOTOGRAPHIC LOG



Site Location: Massport Berth 11 & 12 Backlands Reconstruction Project in South Boston, MA		Project No. 10292391
Photo No. 3	Date: 7/15/20	
Direction Photo Taken: East		
Description: Photo represents degraded conditions of the concrete RTG crane runway within section C3 of berth 11.		

Photo No. 4	Date: 7/15/20	
Direction Photo Taken: Down		
Description: Photo represents temporary patch repair of the concrete RTG crane runway within section D3 of berth 11.		



PHOTOGRAPHIC LOG

Site Location: Massport Berth 11 & 12 Backlands Reconstruction Project in South Boston, MA

Project No. 10292391

Photo No. 5	Date: 7/15/20
-----------------------	-------------------------

Direction Photo Taken:
West

Description:
Photo represents ponded stormwater drainage conditions within section E3 of berth 11.



Photo No. 6	Date: 7/15/20
-----------------------	-------------------------

Direction Photo Taken:
East

Description:
Photo represents significant stormwater ponding within section F3 of berth 11.



PHOTOGRAPHIC LOG

Site Location: Massport Berth 11 & 12 Backlands Reconstruction Project in South Boston, MA

Project No. 10292391

Photo No.
7

Date:
7/15/20

Direction Photo Taken:
West

Description:
Photo represents degraded conditions of the asphalt within section G3 of berth 11.



Photo No.
8

Date:
7/15/20

Direction Photo Taken:
West

Description:
Photo represents overall conditions following a rain event within section Bs of berth 12.



PHOTOGRAPHIC LOG

Site Location: Massport Berth 11 & 12 Backlands Reconstruction Project in South Boston, MA

Project No. 10292391

Photo No.
9

Date:
7/15/20

Direction Photo Taken:
North

Description:
Photo represents degraded conditions of the asphalt within section C2 of berth 12.

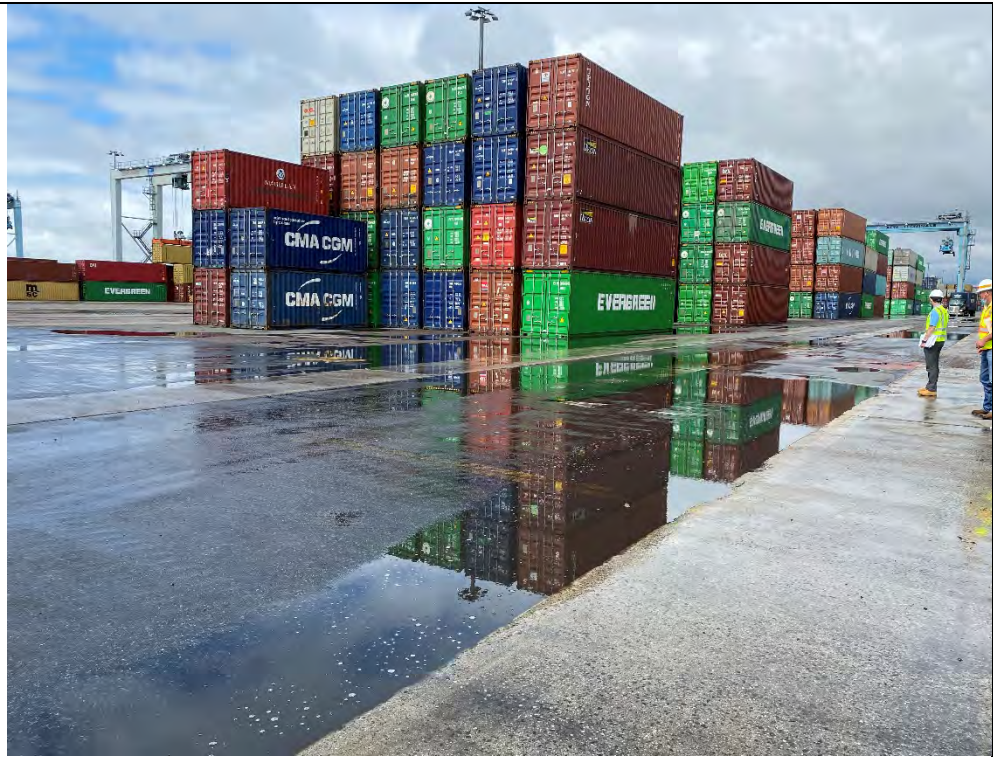


Photo No.
10

Date:
7/15/20

Direction Photo Taken:
Southwest


Description:
Photo represents ponding following a rain event within section D2 of berth 12.



		PHOTOGRAPHIC LOG	
Site Location: Massport Berth 11 & 12 Backlands Reconstruction Project in South Boston, MA		Project No. 10292391	
Photo No. 11	Date: 7/15/20		
Direction Photo Taken: Southeast			
Description: Photo represents degraded conditions of the asphalt within section E2 of berth 12.			

Photo No. 12	Date: 7/15/20		
Direction Photo Taken: Northwest			
Description: Photo represents degraded conditions of the concrete RTG crane runway joint within section F2 of berth 12.			



		PHOTOGRAPHIC LOG	
Site Location: Massport Berth 11 & 12 Backlands Reconstruction Project in South Boston, MA		Project No. 10292391	
Photo No. 13	Date: 7/15/20		
Direction Photo Taken: Down			
Description: Photo represents degraded conditions of the concrete RTG crane runway within section G2 of berth 12.			



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Appendix D – Notifications to Abutters

- Affidavit of Service
- List of Abutters
- Notification to Abutters



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AFFIDAVIT OF SERVICE – ABUTTER NOTIFICATION

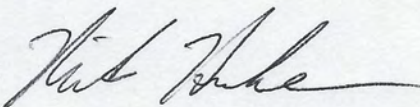
Massachusetts Wetlands Protection Act

I, Nick Henke, on behalf of Massport, hereby certify under the pains and penalties of perjury, that I will give notification to abutters at least seven days in advance of the public hearing in compliance with the second paragraph of Massachusetts General Laws Chapter 131, Section 40 and 310 CMR 10.05(4)(a) in connection with the following matter.

The filing of a Notice of Intent for the Berth 11 & 12 Backlands Reconstruction Project, pursuant to the provisions of the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), with the conservation commission for the municipality of Boston, Massachusetts.

The form of notification, and a list of the abutters to whom it was given and their addresses, are attached to this Affidavit of Service.

Signature:



Date: 6/29/21



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List of Project Abutters

Property Address

800-900 E First Street
South Boston, MA 02127
PID: 603411000

E First Street
South Boston, MA 02127
PID: 603411010

Farragut Road
South Boston, MA 02127
PID: 603413000

1889 William J Day Boulevard
South Boston, MA 02127
PID: 603415000

Farragut Road
South Boston, MA 02127
PID: 603416000

20 Farragut Road
South Boston, MA 02127
PID: 603417000

William J Day Boulevard
South Boston, MA 02127
PID: 603418000

William J Day Boulevard
South Boston, MA 02127
PID: 603418001

Castle Island Terminal 27
South Boston, MA 02127
PID: 603418002

Owner Address

Massport
1 Harborside Drive
Suite 200S
East Boston, MA 02128

Massport
1 Harborside Drive
Suite 200S
East Boston, MA 02128

City of Boston
Farragut Road
South Boston, MA 02127

Commonwealth of MA
1889 William J Day Boulevard
South Boston, MA 02127

Commonwealth of MA
Farragut Road
South Boston, MA 02127

Commonwealth of MA
20 Farragut Road
South Boston, MA 02127

Commonwealth of MA
William J Day Boulevard
South Boston, MA 02127

Commonwealth of MA
William J Day Boulevard
South Boston, MA 02127

Commonwealth of MA
Castle Island Terminal
South Boston, MA 02127



Property Address

William J Day Boulevard
South Boston, MA 02127
PID: 603418030

P Street
South Boston, MA 02127
PID: 603924000

Owner Address

Daniel F. Sullivan
24 Cabot Street
Milton, MA 02186

Admiral Farragut LLC
60 K Street
Jamaica Plain, MA 02130

*Abutter information gathered using City of Boston Abutter Mailing List Generator ([Abutter Mailing List Generator | Boston.gov](#)) for abutters within 100 feet of project parcel 0603417000.



**NOTIFICATION TO ABUTTERS
BOSTON CONSERVATION COMMISSION**

In accordance with the Massachusetts Wetlands Protection Act and Massachusetts General Laws Chapter 131, Section 40, you are hereby notified as an abutter to a project filed with the Boston Conservation Commission.

A. The Massachusetts Port Authority (Massport) has filed a Notice of Intent with the Boston Conservation Commission seeking permission to alter an Area Subject to Protection under the Wetlands Protection Act (General Laws Chapter 131, section 40).

B. The address of the lot where the activity is proposed is 20 Farragut Road, South Boston, Ma 02127.

C. The project involves Reconstruction of approximately 364,000 square feet of the container yard landward of Berths 11 and 12 at the Conley Container Terminal. The existing asphalt yard and concrete RTG crane runways were constructed in the 1980's and require refurbishment to address areas of deteriorated/damaged surfaces within the truck travel lanes and container storage areas. In addition, the project will provide regrading and drainage improvements including the installation of a 1,000-foot long linear trench drain and three new water quality units on existing outfalls in Berth 12 that currently have direct discharges to the Reserved Channel. Other improvements include the construction of approximately 420 feet of sanitary sewer pipe from the Marine Management Building adjacent to the wharf and three sanitary sewer manholes as well as replacement of approximately 850 LF of existing transite (i.e. asbestos-cement) water pipe with new ductile iron water pipe within the project limits. In addition, existing sanitary sewer pipe will be abandoned in place and filled with flowable fill.

D. Copies of the Notice of Intent may be obtained by contacting the Boston Conservation Commission at CC@boston.gov.

E. Copies of the Notice of Intent may be obtained from Peter DeBruin at pdebruin@massport.com, or (617) 568-3583 between the hours of 9am - 5pm, Monday - Friday.

F. In accordance with the Commonwealth of Massachusetts Executive Order Suspending Certain Provisions of the Open Meeting Law, the public hearing will take place **virtually** at <https://zoom.us/j/6864582044>. If you are unable to access the internet, you can call 1-929-205-6099, enter Meeting ID 686 458 2044 # and use # as your participant ID.

G. Information regarding the date and time of the public hearing may be obtained from the **Boston Conservation Commission** by emailing CC@boston.gov or calling (617) 635-3850 between the hours of 9 AM - 5 PM, Monday - Friday.

NOTE: Notice of the public hearing, including its date, time, and place, will be published at least five (5) days in advance in the **Boston Herald**.

NOTE: Notice of the public hearing, including its date, time, and place, will be posted on www.boston.gov/public-notice and in Boston City Hall not less than forty-eight (48) hours in advance.



City of Boston
Environment



City of Boston
Mayor Martin J. Walsh

NOTE: If you would like to provide comments, you may attend the public hearing or send written comments to CC@boston.gov or Boston City Hall, Environment Department, Room 709, 1 City Hall Square, Boston, MA 02201

NOTE: You also may contact the Boston Conservation Commission or the Department of Environmental Protection Northeast Regional Office for more information about this application or the Wetlands Protection Act. To contact DEP, call: the Northeast Region: (978) 694-3200.



Appendix E – Stormwater Report

- Stormwater Checklist
- Stormwater Report



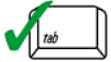
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Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the [Massachusetts Stormwater Handbook](#). The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.¹ This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8²
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

¹ The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

² For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.



Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



Arthur K. Bonney

July 6, 2021

Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

- New development
- Redevelopment
- Mix of New Development and Redevelopment



Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- No disturbance to any Wetland Resource Areas
- Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- Reduced Impervious Area (Redevelopment Only)
- Minimizing disturbance to existing trees and shrubs
- LID Site Design Credit Requested:
 - Credit 1
 - Credit 2
 - Credit 3
- Use of "country drainage" versus curb and gutter conveyance and pipe
- Bioretention Cells (includes Rain Gardens)
- Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- Treebox Filter
- Water Quality Swale
- Grass Channel
- Green Roof
- Other (describe): _____

Standard 1: No New Untreated Discharges

- No new untreated discharges
- Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.



Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

- Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.
- Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.
- Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

- Soil Analysis provided.
- Required Recharge Volume calculation provided.
- Required Recharge volume reduced through use of the LID site Design Credits.
- Sizing the infiltration, BMPs is based on the following method: Check the method used.
 - Static
 - Simple Dynamic
 - Dynamic Field¹
- Runoff from all impervious areas at the site discharging to the infiltration BMP.
- Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.
- Recharge BMPs have been sized to infiltrate the Required Recharge Volume.
- Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:
 - Site is comprised solely of C and D soils and/or bedrock at the land surface
 - M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
 - Solid Waste Landfill pursuant to 310 CMR 19.000
 - Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.
- Calculations showing that the infiltration BMPs will drain in 72 hours are provided.
- Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

¹ 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.



Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

- The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.
- Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
 - Provisions for storing materials and waste products inside or under cover;
 - Vehicle washing controls;
 - Requirements for routine inspections and maintenance of stormwater BMPs;
 - Spill prevention and response plans;
 - Provisions for maintenance of lawns, gardens, and other landscaped areas;
 - Requirements for storage and use of fertilizers, herbicides, and pesticides;
 - Pet waste management provisions;
 - Provisions for operation and management of septic systems;
 - Provisions for solid waste management;
 - Snow disposal and plowing plans relative to Wetland Resource Areas;
 - Winter Road Salt and/or Sand Use and Storage restrictions;
 - Street sweeping schedules;
 - Provisions for prevention of illicit discharges to the stormwater management system;
 - Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
 - Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
 - List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.
- A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.
 - Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:
 - is within the Zone II or Interim Wellhead Protection Area
 - is near or to other critical areas
 - is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
 - involves runoff from land uses with higher potential pollutant loads.
 - The Required Water Quality Volume is reduced through use of the LID site Design Credits.
 - Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.



Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

- The BMP is sized (and calculations provided) based on:
 - The ½" or 1" Water Quality Volume or
 - The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.
- The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.
- A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

- The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.
- The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted **prior to** the discharge of stormwater to the post-construction stormwater BMPs.
- The NPDES Multi-Sector General Permit does **not** cover the land use.
- LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.
- All exposure has been eliminated.
- All exposure has **not** been eliminated and all BMPs selected are on MassDEP LUHPPL list.
- The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

- The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.
- Critical areas and BMPs are identified in the Stormwater Report.



Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

- The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:
- Limited Project
 - Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
 - Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
 - Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
 - Bike Path and/or Foot Path
 - Redevelopment Project
 - Redevelopment portion of mix of new and redevelopment.
- Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.
- The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
 - Construction Period Operation and Maintenance Plan;
 - Names of Persons or Entity Responsible for Plan Compliance;
 - Construction Period Pollution Prevention Measures;
 - Erosion and Sedimentation Control Plan Drawings;
 - Detail drawings and specifications for erosion control BMPs, including sizing calculations;
 - Vegetation Planning;
 - Site Development Plan;
 - Construction Sequencing Plan;
 - Sequencing of Erosion and Sedimentation Controls;
 - Operation and Maintenance of Erosion and Sedimentation Controls;
 - Inspection Schedule;
 - Maintenance Schedule;
 - Inspection and Maintenance Log Form.
- A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.



Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

- The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has **not** been included in the Stormwater Report but will be submitted **before** land disturbance begins.
- The project is **not** covered by a NPDES Construction General Permit.
- The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.
- The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

- The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:
 - Name of the stormwater management system owners;
 - Party responsible for operation and maintenance;
 - Schedule for implementation of routine and non-routine maintenance tasks;
 - Plan showing the location of all stormwater BMPs maintenance access areas;
 - Description and delineation of public safety features;
 - Estimated operation and maintenance budget; and
 - Operation and Maintenance Log Form.
- The responsible party is **not** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:
 - A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
 - A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

- The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;
- An Illicit Discharge Compliance Statement is attached;
- NO Illicit Discharge Compliance Statement is attached but will be submitted **prior to** the discharge of any stormwater to post-construction BMPs.



Stormwater Runoff Analysis and Operation and Maintenance Plan

Conley Terminal

Conley Terminal Berth 11 12 Backlands
Reconstruction

Massport Project No. M555-D1

South Boston, MA

July 7, 2021



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PROJECT DESCRIPTION

Existing Conditions

The project site is located at the Massachusetts Port Authority's (Massport) Paul W. Conley Container Terminal in South Boston (Suffolk County), Massachusetts. The terminal and project site are bordered by the Boston Harbor Reserved Channel to the north and E 1st Street and Harbor Island Causeway to the south. The work being performed for this project will be contained to the northern portion of Conley Terminal comprising Berths 10, 11, and 12. No other sites are included for this project. Refer to project site locus plan (Figure 1). This site is owned by Massport and no other entities.

Site Operations

The Paul W. Conley Container Terminal is located south of the Boston Harbor Reserved Channel and covers approximately 100 acres. There are two active ship berths along the Reserved Channel served by ship-to-shore cranes. An additional ship berth is currently under construction on the western side of the terminal and is anticipated to be operational in fall 2021. Import and export containers are stacked and handled by rubber tire gantry cranes (RTGs), which move parallel to the berth. Containers are transported from the stacks to the ship (and vice versa) via yard tractor trailer trucks and from the street to the stacks (and vice versa) via street trucks. Conley Terminal groundcover consists almost entirely 100% impervious pavement and buildings. The project site contains only impervious area.

Site Topography




The general topography for the Backlands project area is generally flat. The site gradually slopes from north to south to a low point at Row C of the container yard. The site then increases elevation gradually to a high point near Row E. The site topography west to east is mostly flat. Surface gradients are generally flat, indicative of prior and current marine/industrial land uses.

Soils

A review of the Soil Survey for Norfolk and Suffolk Counties, Massachusetts conducted by the USDA Natural Resources Conservation Service (NRCS) indicates Urban land, wet substratum as the primary soil onsite. This soil is generally comprised of a mixture of urban fill and native soils such that determination of their Hydrologic Soil Group (HSG) classifications is not practical. The entire site is 100% paved area and so to simplify the analysis, a B/C classification was used for the hydrologic model employing HydroCAD included in this study. Refer to the appendix for the NRCS Soils Map of the project site.

Project Site Locus Plan



 <p>LEGEND</p> <p> PROJECT LIMIT BOUNDARY</p>	 <p>HDR Engineering, Inc. 29 HIGH ST., SUITE 2300 BOSTON, MA 02110 (617) 357-7700 www.hdrinc.com</p>	<p>PLAN TITLE</p> <p>PROJECT SITE LOCUS PLAN</p>	<p>DATE 07/06/2021</p> <p>SCALE: Not to Scale</p>
		<p>PROJECT</p> <p>M555 CONLEY TERMINAL BERTH 11 12 BACKLANDS RECONSTRUCTION</p>	<p>FIGURE</p> <p>FIG. 1</p>

Proposed Design

The overall Conley Terminal Improvements program consists of three main projects:

- Berth 11 & 12 Backlands Reconstruction
- Dedicated Freight Corridor (in construction)
- In-Gate & Out-Gate Processing Areas (in construction)

This Stormwater Runoff Analysis addresses the Backlands Reconstruction project which is a Redevelopment Project. The project is scheduled to be substantially complete by late 2022. The other two projects have entered the construction phase and will follow a similar completion schedule.

Berth 11 & 12 Backlands Reconstruction

As noted above, the pavement reconstruction project for Berths 11 and 12 is a separate project from the New Conley Terminal Dedicated Freight Corridor and In-Gate & Out-Gate Facilities project. The Berth 11 and 12 Reconstruction project will provide rehabilitated pavements within the container yard and improved stormwater quality through the addition of deep sump catch basins and water quality treatment structures where appropriate. In addition, tide gate valves will be placed at existing outfalls to enhance stormwater flow during tidal events and storm surge. The project's drainage system is downstream of the improvements to be made for the projects occurring to support the DFC and gate processing locations.

STORMWATER MANAGEMENT STANDARDS

The proposed development has been designed in compliance with the Stormwater Management Standards issued by the Massachusetts Department of Environmental Protection (MassDEP). The Stormwater Management Standards includes ten standards for stormwater management compliance. The following is a description of how the proposed project will comply with each standard.

Standard #1

No new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

Stormwater runoff within the project limits will be discharged through existing outfalls 1, 2, 3, 4, 5, 6, and 7. Flow will receive treatment from proposed catch basins with sumps/oil trap hoods, and stormwater treatment structures. New stormwater treatment structures will be installed upstream of outfalls 5, 6, and 7. The remaining watershed areas will only moderately change due to this project's regrading activities and as such the existing stormwater treatment structures will be utilized. The stormwater outfalls will receive similar flow in the post condition compared with the pre condition. With these proposed measures, the proposed project will not discharge untreated stormwater runoff to existing resource areas. Below are a list of outfalls that the project contributes to and the treatment train of the stormwater.

- Outfall 1 – will discharge treated stormwater. Treatment provided by new deep sump catch basin with new hood and an existing water quality structure.
- Outfall 2 – will discharge treated stormwater. Treatment provided by new deep sump catch basin with new hood and an existing water quality structure.
- Outfall 3 – will discharge treated stormwater. Treatment provided by new deep sump catch basin with new hood and an existing water quality structure.
- Outfall 4 – will discharge treated stormwater. Treatment provided by new deep sump catch basin with new hood and an existing water quality structure.
- Outfall 5 – will discharge treated stormwater. Treatment provided by a proposed stormwater quality structure.
- Outfall 6 – will discharge treated stormwater. Treatment provided by a proposed stormwater quality structure.
- Outfall 7 – will discharge treated stormwater. Treatment provided by a proposed stormwater quality structure.

The Standard is met.

Standard #2

Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.

The stormwater runoff was calculated in accordance with methods developed by the NRCS. Storm hydrographs were developed using the NRCS TR-20/TR-55 methodologies (incorporated into HydroCad® hydrologic modeling software) with a Type III storm distribution.

The methodologies provide for hydrologic analyses of a watershed under various combinations of land cover/use. Surface runoff hydrographs were developed from storm rainfall data using a dimensionless unit hydrograph, drainage areas, time of concentration (Tc) and NRCS runoff curve numbers (Cn).

For this analysis, hydrographs were developed to simulate storm runoff flows under pre/post development conditions for the 2, 10, 25 and 100-year storm events (Suffolk County, 24-hour duration, 3.2, 5.0, 6.15, and 7.92 inches of rainfall, respectively for the current time period and conditions). These calculations estimate the pre/post development peak runoff rates from the project site. The pre-development condition and post-development condition have similar surface cover characteristics because the project improvements repurpose existing impervious area to support the construction of the Backlands area with full impervious ground cover.

The quantity of named drainage areas change in the pre versus post condition and this is due to the proposed design instituting a new high point running west to east near Row D which splits the drainage area in the south and north direction. No new impervious area is created because all of the area within the site is impervious.

Pre-Development Site Boundaries

Area E1 N is 1.30± acres of existing paved area within the Conley Terminal container yard. Stormwater is collected from the access roadways and container yard pavements into catch basins which connect to a treatment chamber and discharge to the Reserved Channel. Area drains to Outfall 1.

Area E1 S is 0.36± acres of existing paved area within the Conley Terminal container yard. Stormwater is collected from the access roadways and container yard pavements into catch basins which connect to an existing treatment chamber and discharge to the Reserved Channel. Area drains to Outfall 1.

Area E2 N is 1.81± acres of existing paved area within the Conley Terminal container yard. Stormwater is collected from the access roadways and container yard pavements into catch basins which connect to an existing treatment chamber and discharge to the Reserved Channel. Area drains to Outfall 2.

Area E3 N is 1.79± acres of existing paved area within the Conley Terminal container yard. Stormwater is collected from the access roadways and container yard pavements into catch basins which connect to an existing treatment chamber and discharge to the Reserved Channel. Area drains to Outfall 3.

Area E4 N is 1.65± acres of existing paved area within the Conley Terminal container yard. Stormwater is collected from the access roadways and container yard pavements into catch basins which connect to an existing treatment chamber and discharge to the Reserved Channel. Area drains to Outfall 4.

Area E5 N is 0.87± acres of existing paved area within the Conley Terminal container yard. Stormwater is collected from the access roadways and container yard pavements into catch basins which then discharge to the Reserved Channel. There is no existing water quality treatment structure at outfall 5. Area drains to Outfall 5.

Post-Development Watersheds

Area P1 N is 1.32± acres of proposed repaved area within the Conley Terminal container yard. Stormwater is collected from the container yard pavements into trench drains connecting to catch basin structures with hoods which connect to an existing treatment chamber and discharge to the Reserved Channel. However, the area does not significantly change between pre and post condition. Area drains to Outfall 1.

Area P1 S is 0.51± acres of proposed repaved area within the Conley Terminal container yard. Stormwater is collected from the repaved access roadways and container yard pavements into an existing catch basin system which connects to an existing treatment chamber and discharge

to the Reserved Channel. However, the overall drainage area conveying flow to outfall does not significantly change between pre and post condition. Area drains to Outfall 1.

Area P2 N is 1.67± acres of proposed repaved area within the Conley Terminal container yard. Stormwater is collected from the proposed access roadways and container yard pavements into trench drains connecting to catch basin structures with hoods which connect to an existing treatment chamber and discharge to the Reserved Channel. However, the area does not significantly change between pre and post condition. Area drains to Outfall 2.

Area P2 S is 0.33± acres of proposed repaved area within the Conley Terminal container yard. Stormwater is collected from the proposed access roadways and container yard pavements into an existing catch basin system which connects to an existing treatment chamber and discharge to the Reserved Channel. However, the overall drainage area conveying flow to outfall does not significantly change between pre and post condition. Area drains to Outfall 2.

Area P3 N is 1.23± acres of proposed repaved area within the Conley Terminal container yard. Stormwater is collected from the proposed access roadways and container yard pavements into trench drains connecting to catch basin structures with hoods which connect to an existing treatment chamber and discharge to the Reserved Channel. However, the area does not significantly change between pre and post condition. Area drains to Outfall 3.

Area P3 S is 0.20± acres of proposed repaved area within the Conley Terminal container yard. Stormwater is collected from the proposed access roadways and container yard pavements into an existing catch basin system which connects to an existing treatment chamber and discharge to the Reserved Channel. However, the overall drainage area conveying flow to outfall does not significantly change between pre and post condition. Area drains to Outfall 3.

Area P4 N is 1.22± acres of proposed repaved area within the Conley Terminal container yard. Stormwater is collected from the proposed access roadways and container yard pavements into trench drains connecting to catch basin structures with hoods which connect to an existing treatment chamber and discharge to the Reserved Channel. However, the area does not significantly change between pre and post condition. Area drains to Outfall 4.

Area P4 S is 0.19± acres of proposed repaved area within the Conley Terminal container yard. Stormwater is collected from the proposed access roadways and container yard pavements into an existing catch basin system which connects to an existing treatment chamber and discharge to the Reserved Channel. However, the overall drainage area conveying flow to outfall does not significantly change between pre and post condition. Area drains to Outfall 4.

Area P5 N is 0.67± acres of proposed repaved area within the Conley Terminal container yard. Stormwater is collected from the proposed access roadways and container yard pavements into trench drains connecting to catch basin structures with hoods which connect to a proposed treatment chamber and discharge to the Reserved Channel. However, the area does not significantly change between pre and post condition. Area drains to Outfall 5.

Area P5 S is 0.10± acres of proposed repaved area within the Conley Terminal container yard. Stormwater is collected from the proposed access roadways and container yard pavements into an existing catch basin system which connects to an existing treatment chamber and discharge to the Reserved Channel. However, the overall drainage area conveying flow to outfall does not significantly change between pre and post condition. Area drains to Outfall 5.

Area P6 N is 0.27± acres of proposed repaved area within the Conley Terminal container yard. Stormwater is collected from the proposed access roadways and container yard pavements into existing catch basins which connect to a proposed treatment chamber and discharge to the Reserved Channel. However, the area does not significantly change between pre and post condition. Area drains to Outfall 6.

Area P7 N is 0.07± acres of proposed repaved area within the Conley Terminal container yard. Stormwater is collected from the proposed access roadways and container yard pavements into existing catch basins which connect to a proposed treatment chamber and discharge to the Reserved Channel. However, the area does not significantly change between pre and post condition. Area drains to Outfall 7.

Stormwater Mitigation Measures

Attenuation of peak stormwater runoff rates for each of the watersheds within the site directly discharging to the Reserved Channel is not required because the Reserved Channel is a tidal water body (Boston Harbor).

Stormwater Calculations

Sizing calculations have also been included for the proposed drainpipe system utilizing the Rational Design Method and the 10-year design storm event.

The Standard is met.

Standard #3

Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures including environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.

The onsite soils are primarily urban fill which is a mixture of native soils, gravel and assorted urban debris and as such are unclassified. Given the current and former industrial/marine land uses for the parcels within the proposed project limits, the extent of impervious cover as well as the proximity to the Reserved Channel (Boston Harbor), the expected stormwater infiltration occurring onsite under existing conditions is minimal. This site is an active container terminal that uses all available space for operations. For this reason, no supplemental infiltration facilities

are proposed as part of this project. The existing development infiltration conditions and proposed development infiltration conditions are not changing.

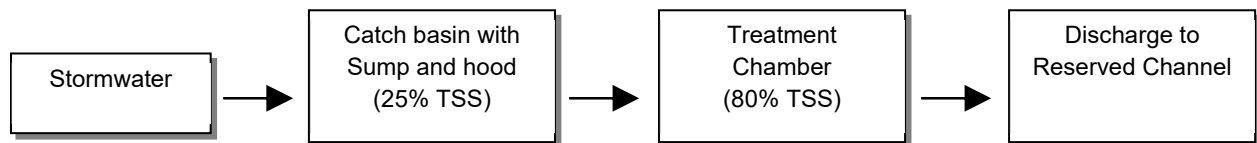
Standard #4

Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This Standard is met when:

- a. Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained;
- b. Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and
- c. Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.

Treatment of stormwater runoff from the proposed repaved areas for the container yard will be provided by a combination of existing and proposed structural treatment BMPs located at the outfall discharge points. Stormwater will enter into the drainage system and receive treatment from deep sump catch basins. Stormwater will then enter into the existing trunk line drainage system and receive treatment from water quality units prior to discharge through the outfalls. Existing structural treatment BMPs will be utilized where available and appropriate. BMP inspection and rehabilitation has been undertaken under the Backlands project. Existing water quality structures were inspected and are in appropriate operating condition. Outfalls 5, 6, and 7 do not have existing water quality units and will receive new hydrodynamic separators located offline, to treat stormwater before discharging to the Reserved Channel. There is no appreciable net change in impervious area for the watersheds under study and as such, the existing water quality units will be retained as appropriate. Watersheds providing flow to Outfalls, 5, 6, and 7 will receive new units and they will be selected to provide treatment for the equivalent 1-inch Water Quality Volume.

The following diagram illustrates the proposed BMP treatment train:



Long-Term Pollution Prevention Plan (LTPPP)

Good Housekeeping BMPS:

Waste Materials: Debris and trash will be collected in a metal dumpster. The dumpster will meet all Municipal requirements. Surplus soil material will be removed from the site and legally disposed of. Handling, sampling, manifesting, transportation and disposal of waste material will be documented.

Hazardous Waste: Hazardous waste will be disposed of as required under local, state and federal regulations. Site personnel will be instructed regarding proper management of hazardous waste. The individual in charge of this activity will be properly trained in hazardous waste management in accordance with OSHA regulations and MassDEP regulation 310 CMR 30 and 310 CMR 40.

Sanitary Waste: Temporary sanitary waste facilities will be provided onsite. Waste will be collected as required, and in any event as required by local regulation, by a sanitary waste management contractor.

Hazardous Products: The following practices will be used to reduce the risks associated with hazardous materials onsite:

- a. All shipments will be promptly inspected to assure that products comply with requirements and items are undamaged.
- b. Products will be stored and protected in accordance with the manufacturer's instructions with seals and labels intact and legible.
- c. Products will be stored in a secure location and access to the materials will be provided to authorize personnel only.

Establish Proper Building Material Staging Areas:

- a. Material deliveries will be coordinated with installation to ensure minimum holding time for items that are hazardous, flammable, easily damaged or sensitive to deterioration.
- b. Deliveries will be scheduled to reduce long-term onsite storage prior to installation, unless written authorization is provided by the engineer.
- c. Materials stored onsite will be stored in manufacturer's original sealed containers or other packing systems complete with instruction for handling, storing, unpacking, protecting and installing.
- d. Adequate equipment and personnel will be provided to ensure materials can be safely handled.
- e. Cement and lime will be stored under a roof and off the ground to be kept completely dry at all times.
- f. Petroleum products will be stored in a secure location under control of the site superintendent.
- g. Mechanical and electrical equipment will be stored in a weatherproof structure.

Designated Washout Areas:

- a. Concrete contractors should be encouraged where possible to use the washout facilities at their own plants.
- b. Concrete washouts areas shall be established onsite with signs noting the locations. The washout area is to be inspected daily during concrete operations.

- c. Provide adequate containment for the amount of wash water that will be used.
- d. Dispose of materials properly. Concrete wastewater can be highly polluted. It is not to be discharged to any surface water or storm drain system.

Establish Proper Vehicle / Equipment Maintenance Practices:

- a. Train employees and subcontractor in proper fueling procedures (stay with vehicles during fueling, proper use of pumps, emergency shutoff valves, and such).
- b. Inspect onsite vehicles and equipment daily for leaks, equipment damage and other service problems.
- c. Clearly designate vehicle / equipment service areas away from drainage facilities and water course to prevent stormwater run-on and runoff.
- d. Use drip pans, drip cloths, or absorbent pads when replacing spent fluids.
- e. Collect all spent fluids, store in appropriate labeled containers in the proper storage areas and recycle fluids whenever possible.

Allowance for Non-Stormwater Discharges & Control Equipment/Vehicle Washing:

There will be non-permitted non-stormwater discharges associated with this project. Specifically prohibited are the discharges of process water, non-contact cooling water, vehicle wash water and sanitary wastewater via stormwater drainage systems.

Allowable non-stormwater discharges include discharges from fire-fighting activities, fire hydrant flushing, water used to wash buildings where detergent is not used, water used to control dust and uncontaminated air condition condensation.

Spill Prevention and Control Plan:

In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and clean up:

- a. Manufacturer's recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
- b. The Contractor shall provide a 55-gallon spill containment kit and maintain it onsite throughout the construction period.
- c. All spills will be cleaned up immediately after discovery.
- d. The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- e. Spills of toxic or hazardous materials, at or greater than reportable quantities, will be reported to the appropriate state or local government agency.

- f. The spill prevention plan will be adjusted to include measures to prevent this type of spill from reoccurring and how to clean up the spill if there is another one. A description of the spill, what caused it, and the cleanup measures will also be included.
- g. The Site Superintendent is the designated responsible party for day to day operations and spill cleanup procedures.

Allowable Non-Stormwater Discharge Management:

The allowable non-stormwater discharges may include the following:

- a. Discharges from fire-fighting activities.
- b. Fire hydrant flushings.
- c. Waters used to wash vehicles where detergents are not used.
- d. Water used to control dust in accordance with EPA's, CGP, Part 3, Subpart 3.4 G.
- e. Potable water including uncontaminated water line flushings.
- f. Routine external building wash down that does not use detergents.
- g. Pavement wash where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used.
- h. Uncontaminated air conditioning or compressor condensate.
- i. Uncontaminated ground water or spring water.
- j. Foundation or footing drains where flows are not contaminated with process materials such as solvents.
- k. Uncontaminated excavation dewatering.
- l. Landscape irrigation.

Non-stormwater discharges should be eliminated or reduced to the extent feasible.

- a. Water used to control dust.

Dust control will be implemented as needed once site grading has begun and during windy conditions (forecasted or actual wind conditions of 20 mph or greater) while site grading is occurring. Spraying of potable water at a rate of 300 gallons per acre or less will be performed by a mobile pressure-type distributor truck no more than three times a day during the months of May through September or whenever the dryness of the soil warrants it.

- b. Uncontaminated Excavation Dewatering

Dewatering activities are not anticipated for this project due to the depth of the groundwater. If dewatering does occur, the LTPPP will be revised to address the need for appropriate BMP's.

Inspection Personnel:

Inspection must be conducted by qualified personnel. "Qualified Personnel" means a person knowledgeable in the principals and practice of erosion and sediment controls who possesses the skills to assess conditions at the construction site that could impact stormwater quality and to assess the effectiveness of any sediment and erosion control measure selected to control the quality of stormwater discharges for the construction activity. Prior to construction the contractor shall submit the names of the personnel whom will be responsible for the inspections.

Inspection Schedule and Procedures:

Inspections of the site will be performed once every 7 days and within 24 hours of the end of a storm event of one-half inch or greater. The inspections will verify that all BMPs required are implemented, maintained, and effectively minimizing erosion and preventing stormwater contamination from construction materials.

Inspections must include all areas of the site disturbed by construction activity and areas used for storage of materials that are exposed to precipitation. Inspectors must look for evidence of, or the potential for, pollutants entering the stormwater conveyance system. Sedimentation and erosion control measures identified in the LTPPP must be observed to ensure proper operation. Discharge locations must be inspected to ascertain whether erosion control measures are effective. Where discharge locations are inaccessible, nearby downstream locations must be inspected to the extent that such inspections are practicable. Locations where vehicles enter or exit the site must be inspected for evidence of offsite sediment tracking.

If corrective actions are identified during the inspections, the construction managers will be notified, and a copy of the inspection report will be submitted to them. Corrective action is to be initiated within 24 hours of the report and the maintenance completed as soon as possible or before the next storm event. In addition, the LTPPP shall be modified as necessary to include the additional or modified BMP's designed to correct the problems identified. Revisions to the LTPPP must be completed within seven (7) calendar days following the inspection.

The Standard is met.

Standard #5

For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If through source control and/or pollution prevention all land uses with higher potential pollutant loads cannot be completely protected from exposure to rain, snow, snow melt, and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by the Department to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from land uses with higher potential pollutant loads shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53 and the regulations promulgated thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.

Some areas of the Project may contain Land Uses with Higher Potential Pollutant Loads (LUHPPLs) as defined by MassDEP. The site will continue to be used to store cargo containers and to provide truck access for container pick up. These land uses are classified as a LUHPPL under Standard 5 because they are regulated by the NPDES Multi-Sector General Permit Program.

To mitigate the potential stormwater pollution generated by the LUHPPL, the Project includes new proprietary water quality structures. These are acceptable for treatment of a LUHPPL under Standard 5 and the proprietary structure has been accepted under the MASTEP process. No infiltration is proposed on-site, therefore the pretreatment requirements for infiltration in a LUHPPL area are not applicable. In addition to the stormwater management system, the Owner will also implement source control and pollution prevention practices outlined in the Long-Term Pollution Prevention and Stormwater Operation and Maintenance Plan as part of this report.

The Standard is met.

Standard #6

Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply, and stormwater discharges near or to any other critical area, require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas, as provided in the Massachusetts Stormwater Handbook. A discharge is near a critical area if there is a strong likelihood of a significant impact occurring to said area, taking into account site-specific factors. Stormwater discharges to Outstanding Resource Waters and Special Resource Waters shall be removed and set back from the receiving water or wetland and receive the highest and best practical method of treatment. A "storm water discharge" as defined in 314 CMR 3.04(2)(a)1 or (b) to an Outstanding Resource Water or Special Resource Water shall comply with 314 CMR 3.00 and 314 CMR 4.00. Stormwater discharges to a Zone I or Zone A are prohibited unless essential to the operation of a public water supply.

The proposed project does not discharge to a “critical area”. Although not a requirement, the proposed stormwater management systems for outfalls 5, 6, and 7 are designed to treat 1.0-inch of Water Quality Volume *WQV).

The Standard is met.

Standard #7

A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.

The proposed project is a redevelopment of both current and previously developed industrial/marine parcels. All standards have been met to the maximum extent practicable and the proposed project design components for stormwater quality represent a significant improvement over existing conditions. The project includes deep sump catch basins with hoods where appropriate to improve stormwater quality throughout the site.

The Standard is met.

Standard #8

A plan to control construction-related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.

Downslope areas will be protected through the installation of a combination of compost filter-tube and filter fabric fence to be located along the perimeter and/or elsewhere as required to protect and stabilize earthworks in stockpile areas. Refer to the Operation and Maintenance Plan attached appended to the report.

The Standard is met.

Standard #9

A long-term operation and maintenance plan shall be developed and implemented to ensure that stormwater management systems function as designed.

The site shall be maintained by the Owner to provide a stabilized, maintained surface thereby preventing excess materials from contacting surface runoff and minimizing transport of materials within the drain system. Refer to the Operation and Maintenance Plan.

The Standard is met.

Standard #10

All illicit discharges to the stormwater management system are prohibited.

The proposed project does not have any known or proposed illicit discharges to the proposed stormwater management system within the scope and limits of work.

The Standard is met.

SILTATION CONTROL PROCEDURES

Downgradient areas will be protected through the installation of a combination of compost filter tubes and/or filter fabric fence to be located along the perimeter and/or elsewhere as required to protect and stabilize earthwork. All pipe drains and drainage structures will be installed early in the construction period to provide early control of site runoff. The erosion controls are further described in the Operation and Maintenance Plan located in the appendix.

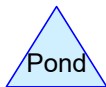
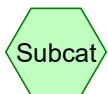
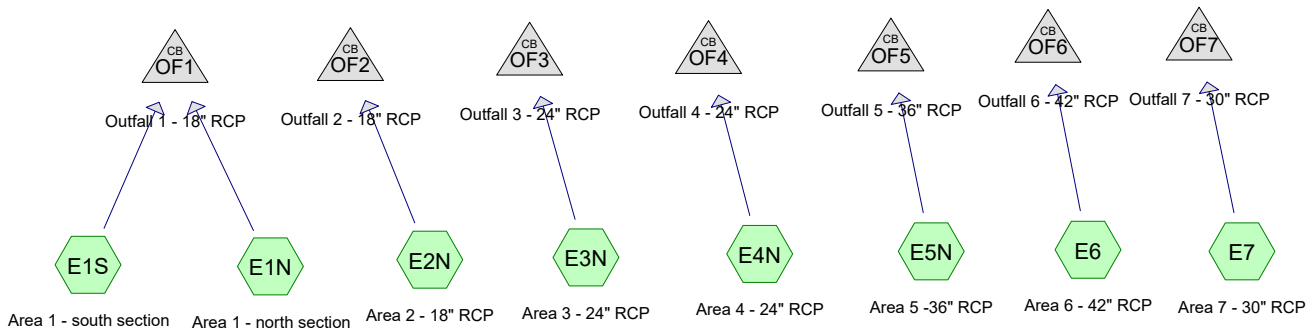
SUMMARY AND CONCLUSION

The Backlands Reconstruction project is a redevelopment project that will rehabilitate existing pavements and upgrade existing drainage infrastructure to promote water quality. The project will allow the Conley Terminal to continue to provide uninterrupted service in supporting freight movement throughout the Commonwealth and region. The proposed Backlands Reconstruction project will comply with the standards established by the Boston Water and Sewer Commission and the MassDEP Stormwater Management Regulations when constructed as designed. The project will increase water quality over existing conditions. New water quality treatment structures will be provided to treat flow entering outfalls 5, 6, and 7. In addition, water quality from outfalls 1, 2, 3, 4, 5 will be improved by constructing new catch basins with deep sumps and hoods.



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HYDROCAD CALCULATIONS



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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.30	98	OF 1 paved north (E1N)
0.36	98	OF 1 paved south (E1S)
1.81	98	OF 2 paved north (E2N)
1.79	98	OF 3 paved north (E3N)
1.65	98	OF 4 paved north (E4N)
0.87	98	OF 5 paved north (E5N)
7.78	98	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.00	HSG A	
0.00	HSG B	
0.00	HSG C	
0.00	HSG D	
7.78	Other	E1N, E1S, E2N, E3N, E4N, E5N
7.78		TOTAL AREA

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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
0.00	0.00	0.00	0.00	1.30	1.30	OF 1 paved north	E1N
0.00	0.00	0.00	0.00	0.36	0.36	OF 1 paved south	E1S
0.00	0.00	0.00	0.00	1.81	1.81	OF 2 paved north	E2N
0.00	0.00	0.00	0.00	1.79	1.79	OF 3 paved north	E3N
0.00	0.00	0.00	0.00	1.65	1.65	OF 4 paved north	E4N
0.00	0.00	0.00	0.00	0.87	0.87	OF 5 paved north	E5N
0.00	0.00	0.00	0.00	7.78	7.78	TOTAL AREA	

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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	OF1	0.38	0.78	26.0	-0.0154	0.012	18.0	0.0	0.0
2	OF2	1.58	1.43	20.0	0.0075	0.012	18.0	0.0	0.0
3	OF3	0.23	0.03	21.0	0.0095	0.012	24.0	0.0	0.0
4	OF4	0.53	0.43	27.0	0.0037	0.012	24.0	0.0	0.0
5	OF5	2.26	2.04	48.0	0.0046	0.012	36.0	0.0	0.0
6	OF6	1.71	1.67	54.0	0.0007	0.012	42.0	0.0	0.0
7	OF7	1.66	2.29	34.0	-0.0185	0.012	30.0	0.0	0.0

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentE1N: Area 1 - north section Runoff Area=56,819 sf 100.00% Impervious Runoff Depth=2.94"
Tc=5.0 min CN=98 Runoff=4.2 cfs 0.319 af

SubcatchmentE1S: Area 1 - south section Runoff Area=15,671 sf 100.00% Impervious Runoff Depth=2.94"
Tc=5.0 min CN=98 Runoff=1.1 cfs 0.088 af

SubcatchmentE2N: Area 2 - 18" RCP Runoff Area=78,786 sf 100.00% Impervious Runoff Depth=2.94"
Tc=5.0 min CN=98 Runoff=5.8 cfs 0.443 af

SubcatchmentE3N: Area 3 - 24" RCP Runoff Area=77,980 sf 100.00% Impervious Runoff Depth=2.94"
Tc=5.0 min CN=98 Runoff=5.7 cfs 0.438 af

SubcatchmentE4N: Area 4 - 24" RCP Runoff Area=71,766 sf 100.00% Impervious Runoff Depth=2.94"
Tc=5.0 min CN=98 Runoff=5.3 cfs 0.403 af

SubcatchmentE5N: Area 5 -36" RCP Runoff Area=37,897 sf 100.00% Impervious Runoff Depth=2.94"
Tc=5.0 min CN=98 Runoff=2.8 cfs 0.213 af

SubcatchmentE6: Area 6 - 42" RCP Runoff Area=0 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=0 Runoff=0.0 cfs 0.000 af

SubcatchmentE7: Area 7 - 30" RCP Runoff Area=0 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=0 Runoff=0.0 cfs 0.000 af

Pond OF1: Outfall 1 - 18" RCP Peak Elev=1.79' Inflow=5.3 cfs 0.407 af
18.0" Round Culvert n=0.012 L=26.0' S=-0.0154 '/ Outflow=5.3 cfs 0.407 af

Pond OF2: Outfall 2 - 18" RCP Peak Elev=2.88' Inflow=5.8 cfs 0.443 af
18.0" Round Culvert n=0.012 L=20.0' S=0.0075 '/ Outflow=5.8 cfs 0.443 af

Pond OF3: Outfall 3 - 24" RCP Peak Elev=1.32' Inflow=5.7 cfs 0.438 af
24.0" Round Culvert n=0.012 L=21.0' S=0.0095 '/ Outflow=5.7 cfs 0.438 af

Pond OF4: Outfall 4 - 24" RCP Peak Elev=1.66' Inflow=5.3 cfs 0.403 af
24.0" Round Culvert n=0.012 L=27.0' S=0.0037 '/ Outflow=5.3 cfs 0.403 af

Pond OF5: Outfall 5 - 36" RCP Peak Elev=2.94' Inflow=2.8 cfs 0.213 af
36.0" Round Culvert n=0.012 L=48.0' S=0.0046 '/ Outflow=2.8 cfs 0.213 af

Pond OF6: Outfall 6 - 42" RCP Peak Elev=1.71' Inflow=0.0 cfs 0.000 af
42.0" Round Culvert n=0.012 L=54.0' S=0.0007 '/ Outflow=0.0 cfs 0.000 af

Pond OF7: Outfall 7 - 30" RCP Peak Elev=2.29' Inflow=0.0 cfs 0.000 af
30.0" Round Culvert n=0.012 L=34.0' S=-0.0185 '/ Outflow=0.0 cfs 0.000 af

Total Runoff Area = 7.78 ac Runoff Volume = 1.905 af Average Runoff Depth = 2.94"
0.00% Pervious = 0.00 ac 100.00% Impervious = 7.78 ac

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Summary for Subcatchment E1N: Area 1 - north section

Runoff = 4.2 cfs @ 12.07 hrs, Volume= 0.319 af, Depth= 2.94"

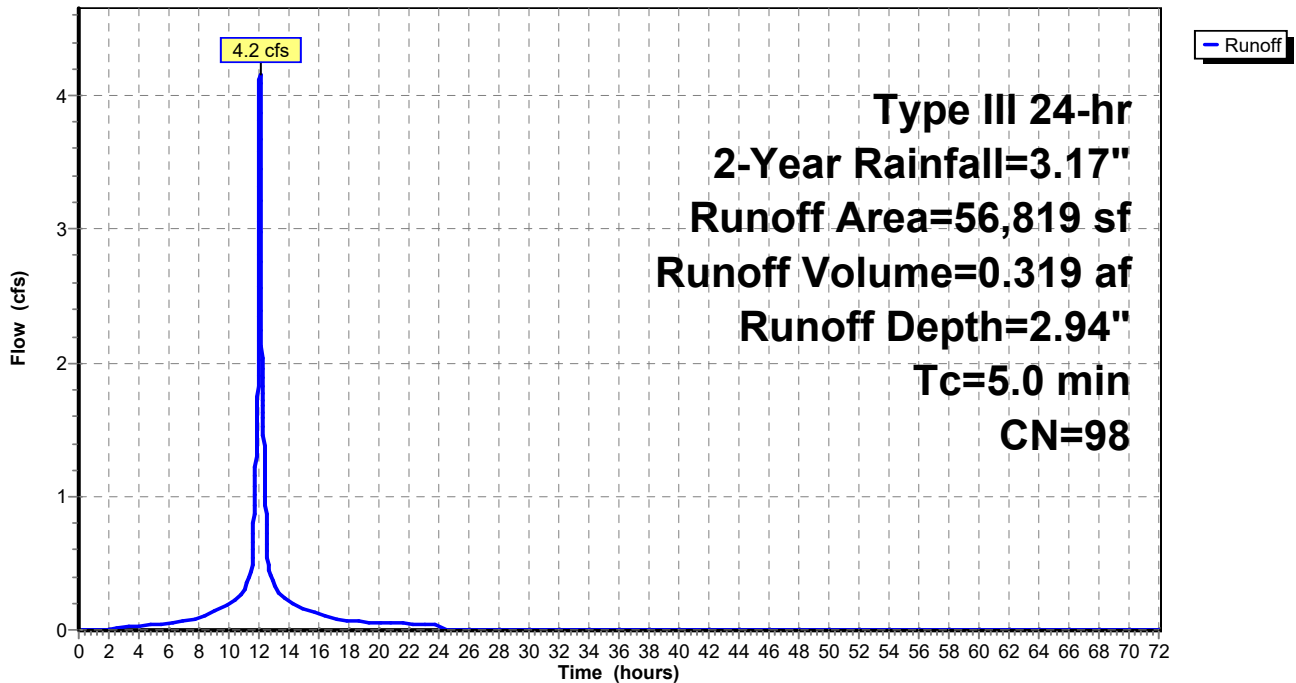
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.17"

Area (sf)	CN	Description
* 56,819	98	OF 1 paved north
56,819		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment E1N: Area 1 - north section

Hydrograph



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Hydrograph for Subcatchment E1N: Area 1 - north section

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	3.17	2.94	0.0
1.00	0.03	0.00	0.0	52.00	3.17	2.94	0.0
2.00	0.06	0.00	0.0	53.00	3.17	2.94	0.0
3.00	0.10	0.01	0.0	54.00	3.17	2.94	0.0
4.00	0.14	0.03	0.0	55.00	3.17	2.94	0.0
5.00	0.18	0.06	0.0	56.00	3.17	2.94	0.0
6.00	0.23	0.09	0.0	57.00	3.17	2.94	0.0
7.00	0.29	0.13	0.1	58.00	3.17	2.94	0.0
8.00	0.36	0.20	0.1	59.00	3.17	2.94	0.0
9.00	0.46	0.28	0.1	60.00	3.17	2.94	0.0
10.00	0.60	0.41	0.2	61.00	3.17	2.94	0.0
11.00	0.79	0.59	0.3	62.00	3.17	2.94	0.0
12.00	1.58	1.36	2.8	63.00	3.17	2.94	0.0
13.00	2.38	2.15	0.3	64.00	3.17	2.94	0.0
14.00	2.57	2.34	0.2	65.00	3.17	2.94	0.0
15.00	2.71	2.48	0.2	66.00	3.17	2.94	0.0
16.00	2.81	2.58	0.1	67.00	3.17	2.94	0.0
17.00	2.88	2.65	0.1	68.00	3.17	2.94	0.0
18.00	2.94	2.71	0.1	69.00	3.17	2.94	0.0
19.00	2.99	2.76	0.1	70.00	3.17	2.94	0.0
20.00	3.03	2.80	0.1	71.00	3.17	2.94	0.0
21.00	3.07	2.84	0.0	72.00	3.17	2.94	0.0
22.00	3.11	2.88	0.0				
23.00	3.14	2.91	0.0				
24.00	3.17	2.94	0.0				
25.00	3.17	2.94	0.0				
26.00	3.17	2.94	0.0				
27.00	3.17	2.94	0.0				
28.00	3.17	2.94	0.0				
29.00	3.17	2.94	0.0				
30.00	3.17	2.94	0.0				
31.00	3.17	2.94	0.0				
32.00	3.17	2.94	0.0				
33.00	3.17	2.94	0.0				
34.00	3.17	2.94	0.0				
35.00	3.17	2.94	0.0				
36.00	3.17	2.94	0.0				
37.00	3.17	2.94	0.0				
38.00	3.17	2.94	0.0				
39.00	3.17	2.94	0.0				
40.00	3.17	2.94	0.0				
41.00	3.17	2.94	0.0				
42.00	3.17	2.94	0.0				
43.00	3.17	2.94	0.0				
44.00	3.17	2.94	0.0				
45.00	3.17	2.94	0.0				
46.00	3.17	2.94	0.0				
47.00	3.17	2.94	0.0				
48.00	3.17	2.94	0.0				
49.00	3.17	2.94	0.0				
50.00	3.17	2.94	0.0				

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Summary for Subcatchment E1S: Area 1 - south section

Runoff = 1.1 cfs @ 12.07 hrs, Volume= 0.088 af, Depth= 2.94"

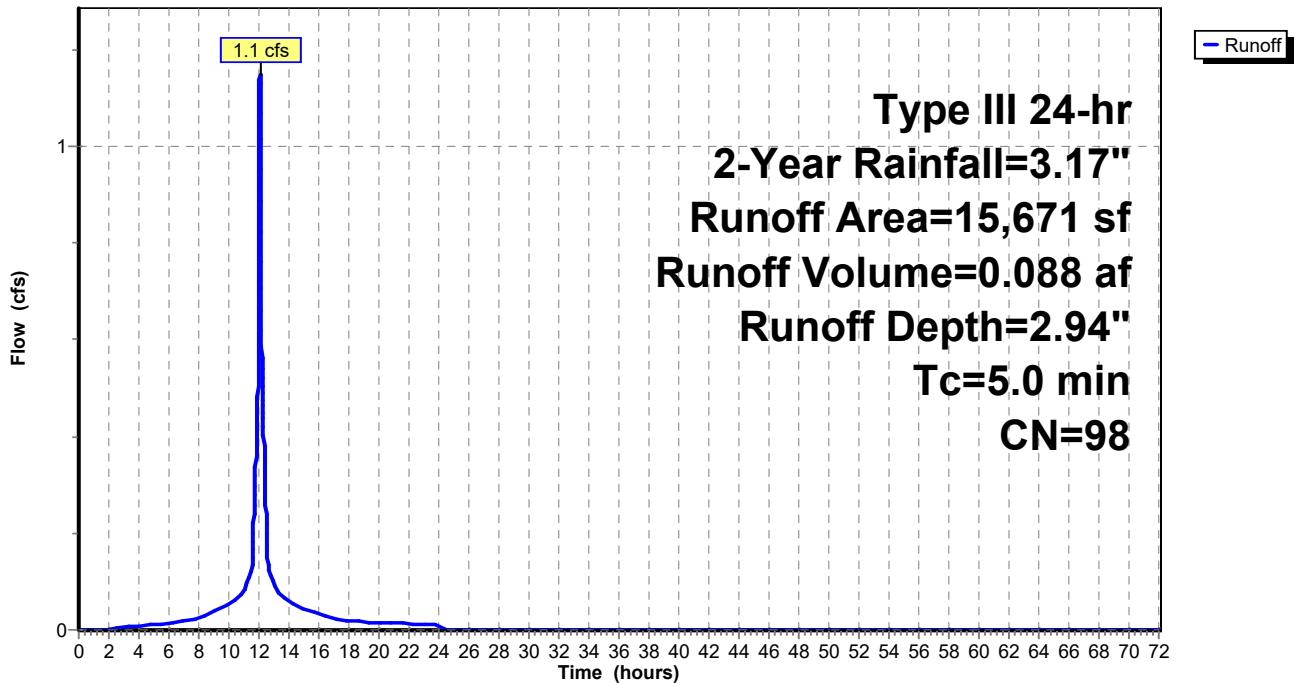
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.17"

Area (sf)	CN	Description
* 15,671	98	OF 1 paved south
15,671		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment E1S: Area 1 - south section

Hydrograph



Massport_M555_Backlands_PRE_LOW

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Hydrograph for Subcatchment E1S: Area 1 - south section

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	3.17	2.94	0.0
1.00	0.03	0.00	0.0	52.00	3.17	2.94	0.0
2.00	0.06	0.00	0.0	53.00	3.17	2.94	0.0
3.00	0.10	0.01	0.0	54.00	3.17	2.94	0.0
4.00	0.14	0.03	0.0	55.00	3.17	2.94	0.0
5.00	0.18	0.06	0.0	56.00	3.17	2.94	0.0
6.00	0.23	0.09	0.0	57.00	3.17	2.94	0.0
7.00	0.29	0.13	0.0	58.00	3.17	2.94	0.0
8.00	0.36	0.20	0.0	59.00	3.17	2.94	0.0
9.00	0.46	0.28	0.0	60.00	3.17	2.94	0.0
10.00	0.60	0.41	0.1	61.00	3.17	2.94	0.0
11.00	0.79	0.59	0.1	62.00	3.17	2.94	0.0
12.00	1.58	1.36	0.8	63.00	3.17	2.94	0.0
13.00	2.38	2.15	0.1	64.00	3.17	2.94	0.0
14.00	2.57	2.34	0.1	65.00	3.17	2.94	0.0
15.00	2.71	2.48	0.0	66.00	3.17	2.94	0.0
16.00	2.81	2.58	0.0	67.00	3.17	2.94	0.0
17.00	2.88	2.65	0.0	68.00	3.17	2.94	0.0
18.00	2.94	2.71	0.0	69.00	3.17	2.94	0.0
19.00	2.99	2.76	0.0	70.00	3.17	2.94	0.0
20.00	3.03	2.80	0.0	71.00	3.17	2.94	0.0
21.00	3.07	2.84	0.0	72.00	3.17	2.94	0.0
22.00	3.11	2.88	0.0				
23.00	3.14	2.91	0.0				
24.00	3.17	2.94	0.0				
25.00	3.17	2.94	0.0				
26.00	3.17	2.94	0.0				
27.00	3.17	2.94	0.0				
28.00	3.17	2.94	0.0				
29.00	3.17	2.94	0.0				
30.00	3.17	2.94	0.0				
31.00	3.17	2.94	0.0				
32.00	3.17	2.94	0.0				
33.00	3.17	2.94	0.0				
34.00	3.17	2.94	0.0				
35.00	3.17	2.94	0.0				
36.00	3.17	2.94	0.0				
37.00	3.17	2.94	0.0				
38.00	3.17	2.94	0.0				
39.00	3.17	2.94	0.0				
40.00	3.17	2.94	0.0				
41.00	3.17	2.94	0.0				
42.00	3.17	2.94	0.0				
43.00	3.17	2.94	0.0				
44.00	3.17	2.94	0.0				
45.00	3.17	2.94	0.0				
46.00	3.17	2.94	0.0				
47.00	3.17	2.94	0.0				
48.00	3.17	2.94	0.0				
49.00	3.17	2.94	0.0				
50.00	3.17	2.94	0.0				

Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Subcatchment E2N: Area 2 - 18" RCP

Runoff = 5.8 cfs @ 12.07 hrs, Volume= 0.443 af, Depth= 2.94"

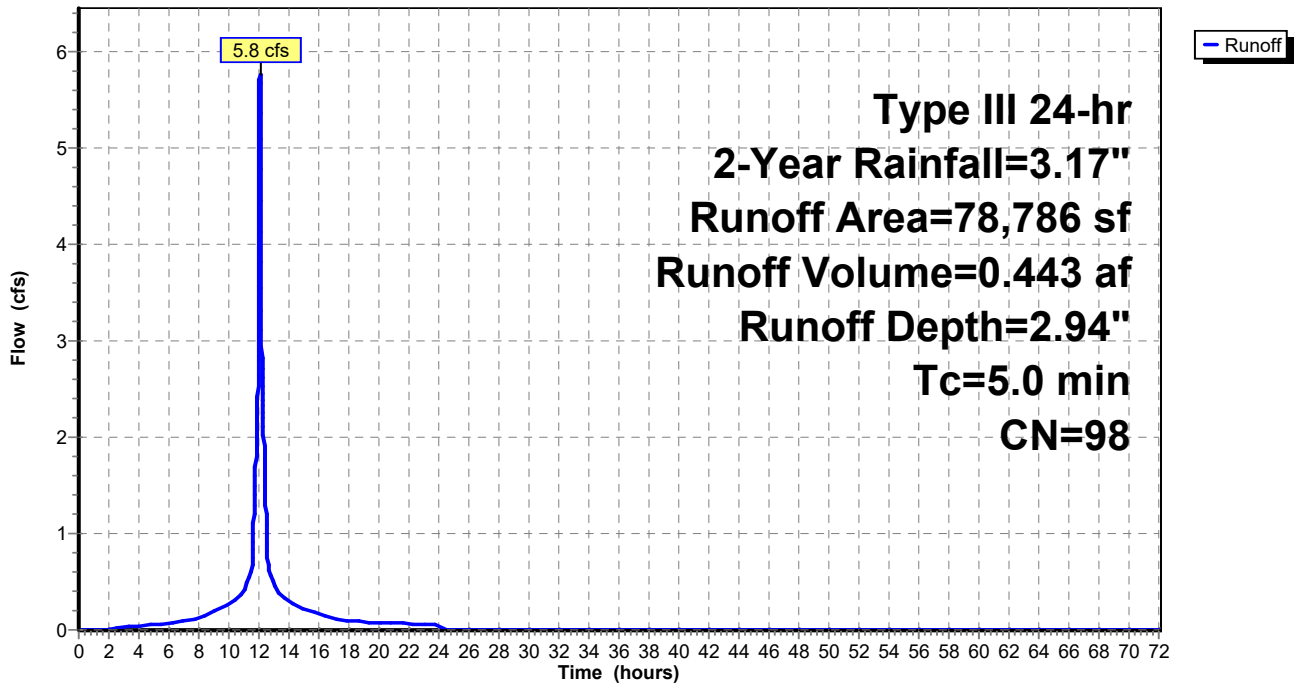
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.17"

Area (sf)	CN	Description
* 78,786	98	OF 2 paved north
78,786		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment E2N: Area 2 - 18" RCP

Hydrograph



Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 2-Year Rainfall=3.17"

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Hydrograph for Subcatchment E2N: Area 2 - 18" RCP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	3.17	2.94	0.0
1.00	0.03	0.00	0.0	52.00	3.17	2.94	0.0
2.00	0.06	0.00	0.0	53.00	3.17	2.94	0.0
3.00	0.10	0.01	0.0	54.00	3.17	2.94	0.0
4.00	0.14	0.03	0.0	55.00	3.17	2.94	0.0
5.00	0.18	0.06	0.1	56.00	3.17	2.94	0.0
6.00	0.23	0.09	0.1	57.00	3.17	2.94	0.0
7.00	0.29	0.13	0.1	58.00	3.17	2.94	0.0
8.00	0.36	0.20	0.1	59.00	3.17	2.94	0.0
9.00	0.46	0.28	0.2	60.00	3.17	2.94	0.0
10.00	0.60	0.41	0.3	61.00	3.17	2.94	0.0
11.00	0.79	0.59	0.4	62.00	3.17	2.94	0.0
12.00	1.58	1.36	3.9	63.00	3.17	2.94	0.0
13.00	2.38	2.15	0.5	64.00	3.17	2.94	0.0
14.00	2.57	2.34	0.3	65.00	3.17	2.94	0.0
15.00	2.71	2.48	0.2	66.00	3.17	2.94	0.0
16.00	2.81	2.58	0.2	67.00	3.17	2.94	0.0
17.00	2.88	2.65	0.1	68.00	3.17	2.94	0.0
18.00	2.94	2.71	0.1	69.00	3.17	2.94	0.0
19.00	2.99	2.76	0.1	70.00	3.17	2.94	0.0
20.00	3.03	2.80	0.1	71.00	3.17	2.94	0.0
21.00	3.07	2.84	0.1	72.00	3.17	2.94	0.0
22.00	3.11	2.88	0.1				
23.00	3.14	2.91	0.1				
24.00	3.17	2.94	0.0				
25.00	3.17	2.94	0.0				
26.00	3.17	2.94	0.0				
27.00	3.17	2.94	0.0				
28.00	3.17	2.94	0.0				
29.00	3.17	2.94	0.0				
30.00	3.17	2.94	0.0				
31.00	3.17	2.94	0.0				
32.00	3.17	2.94	0.0				
33.00	3.17	2.94	0.0				
34.00	3.17	2.94	0.0				
35.00	3.17	2.94	0.0				
36.00	3.17	2.94	0.0				
37.00	3.17	2.94	0.0				
38.00	3.17	2.94	0.0				
39.00	3.17	2.94	0.0				
40.00	3.17	2.94	0.0				
41.00	3.17	2.94	0.0				
42.00	3.17	2.94	0.0				
43.00	3.17	2.94	0.0				
44.00	3.17	2.94	0.0				
45.00	3.17	2.94	0.0				
46.00	3.17	2.94	0.0				
47.00	3.17	2.94	0.0				
48.00	3.17	2.94	0.0				
49.00	3.17	2.94	0.0				
50.00	3.17	2.94	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Subcatchment E3N: Area 3 - 24" RCP

Runoff = 5.7 cfs @ 12.07 hrs, Volume= 0.438 af, Depth= 2.94"

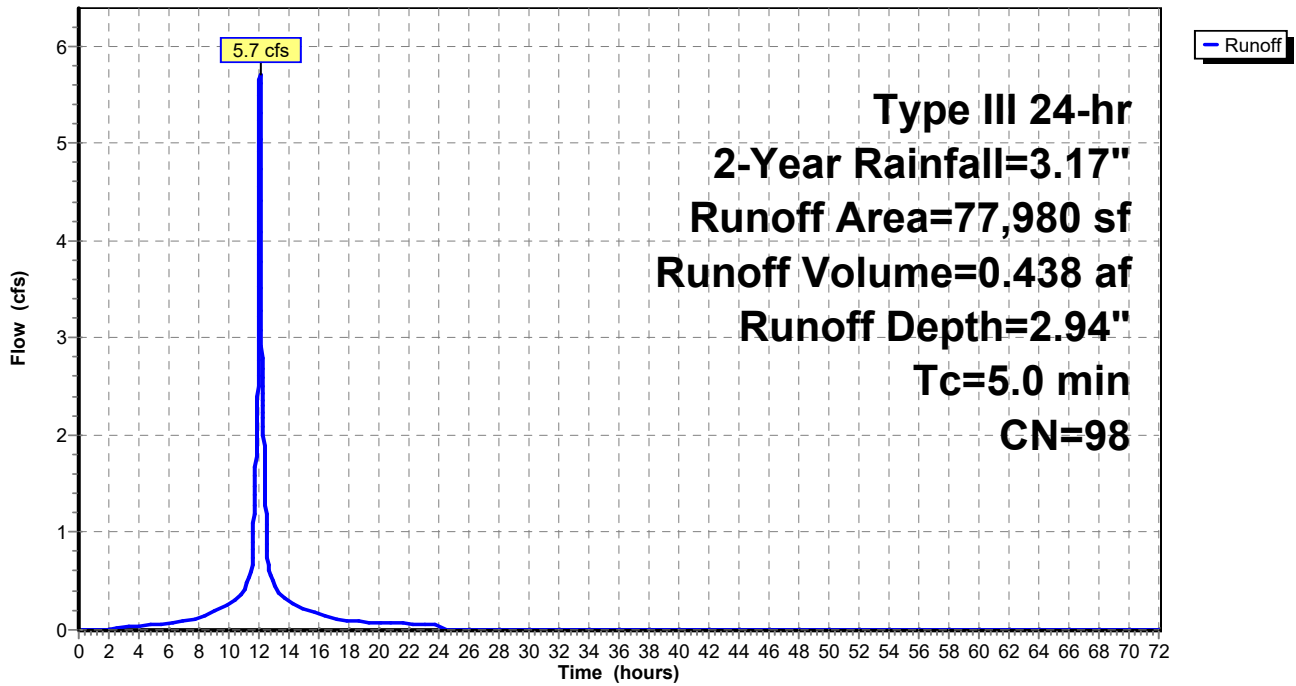
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.17"

Area (sf)	CN	Description
* 77,980	98	OF 3 paved north
77,980		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment E3N: Area 3 - 24" RCP

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.17"

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Hydrograph for Subcatchment E3N: Area 3 - 24" RCP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	3.17	2.94	0.0
1.00	0.03	0.00	0.0	52.00	3.17	2.94	0.0
2.00	0.06	0.00	0.0	53.00	3.17	2.94	0.0
3.00	0.10	0.01	0.0	54.00	3.17	2.94	0.0
4.00	0.14	0.03	0.0	55.00	3.17	2.94	0.0
5.00	0.18	0.06	0.1	56.00	3.17	2.94	0.0
6.00	0.23	0.09	0.1	57.00	3.17	2.94	0.0
7.00	0.29	0.13	0.1	58.00	3.17	2.94	0.0
8.00	0.36	0.20	0.1	59.00	3.17	2.94	0.0
9.00	0.46	0.28	0.2	60.00	3.17	2.94	0.0
10.00	0.60	0.41	0.3	61.00	3.17	2.94	0.0
11.00	0.79	0.59	0.4	62.00	3.17	2.94	0.0
12.00	1.58	1.36	3.8	63.00	3.17	2.94	0.0
13.00	2.38	2.15	0.5	64.00	3.17	2.94	0.0
14.00	2.57	2.34	0.3	65.00	3.17	2.94	0.0
15.00	2.71	2.48	0.2	66.00	3.17	2.94	0.0
16.00	2.81	2.58	0.2	67.00	3.17	2.94	0.0
17.00	2.88	2.65	0.1	68.00	3.17	2.94	0.0
18.00	2.94	2.71	0.1	69.00	3.17	2.94	0.0
19.00	2.99	2.76	0.1	70.00	3.17	2.94	0.0
20.00	3.03	2.80	0.1	71.00	3.17	2.94	0.0
21.00	3.07	2.84	0.1	72.00	3.17	2.94	0.0
22.00	3.11	2.88	0.1				
23.00	3.14	2.91	0.1				
24.00	3.17	2.94	0.0				
25.00	3.17	2.94	0.0				
26.00	3.17	2.94	0.0				
27.00	3.17	2.94	0.0				
28.00	3.17	2.94	0.0				
29.00	3.17	2.94	0.0				
30.00	3.17	2.94	0.0				
31.00	3.17	2.94	0.0				
32.00	3.17	2.94	0.0				
33.00	3.17	2.94	0.0				
34.00	3.17	2.94	0.0				
35.00	3.17	2.94	0.0				
36.00	3.17	2.94	0.0				
37.00	3.17	2.94	0.0				
38.00	3.17	2.94	0.0				
39.00	3.17	2.94	0.0				
40.00	3.17	2.94	0.0				
41.00	3.17	2.94	0.0				
42.00	3.17	2.94	0.0				
43.00	3.17	2.94	0.0				
44.00	3.17	2.94	0.0				
45.00	3.17	2.94	0.0				
46.00	3.17	2.94	0.0				
47.00	3.17	2.94	0.0				
48.00	3.17	2.94	0.0				
49.00	3.17	2.94	0.0				
50.00	3.17	2.94	0.0				

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Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Subcatchment E4N: Area 4 - 24" RCP

Runoff = 5.3 cfs @ 12.07 hrs, Volume= 0.403 af, Depth= 2.94"

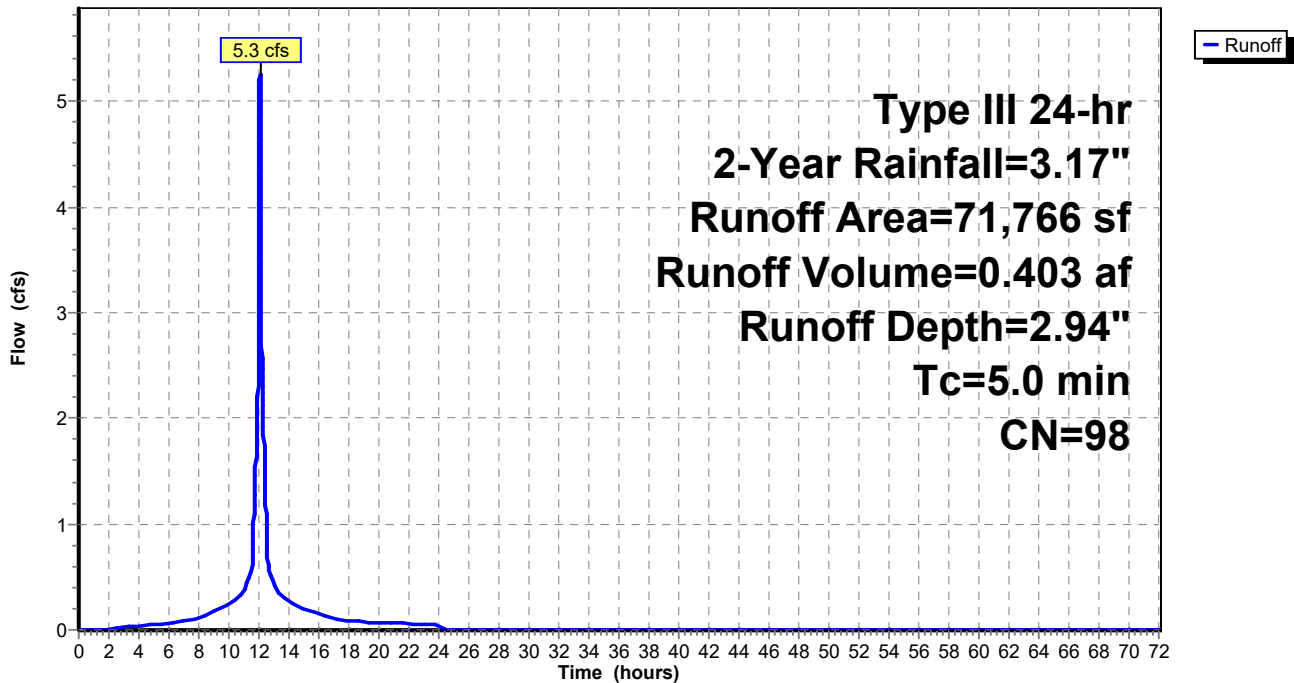
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.17"

Area (sf)	CN	Description
* 71,766	98	OF 4 paved north
71,766		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment E4N: Area 4 - 24" RCP

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.17"

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Hydrograph for Subcatchment E4N: Area 4 - 24" RCP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	3.17	2.94	0.0
1.00	0.03	0.00	0.0	52.00	3.17	2.94	0.0
2.00	0.06	0.00	0.0	53.00	3.17	2.94	0.0
3.00	0.10	0.01	0.0	54.00	3.17	2.94	0.0
4.00	0.14	0.03	0.0	55.00	3.17	2.94	0.0
5.00	0.18	0.06	0.0	56.00	3.17	2.94	0.0
6.00	0.23	0.09	0.1	57.00	3.17	2.94	0.0
7.00	0.29	0.13	0.1	58.00	3.17	2.94	0.0
8.00	0.36	0.20	0.1	59.00	3.17	2.94	0.0
9.00	0.46	0.28	0.2	60.00	3.17	2.94	0.0
10.00	0.60	0.41	0.2	61.00	3.17	2.94	0.0
11.00	0.79	0.59	0.4	62.00	3.17	2.94	0.0
12.00	1.58	1.36	3.5	63.00	3.17	2.94	0.0
13.00	2.38	2.15	0.4	64.00	3.17	2.94	0.0
14.00	2.57	2.34	0.3	65.00	3.17	2.94	0.0
15.00	2.71	2.48	0.2	66.00	3.17	2.94	0.0
16.00	2.81	2.58	0.1	67.00	3.17	2.94	0.0
17.00	2.88	2.65	0.1	68.00	3.17	2.94	0.0
18.00	2.94	2.71	0.1	69.00	3.17	2.94	0.0
19.00	2.99	2.76	0.1	70.00	3.17	2.94	0.0
20.00	3.03	2.80	0.1	71.00	3.17	2.94	0.0
21.00	3.07	2.84	0.1	72.00	3.17	2.94	0.0
22.00	3.11	2.88	0.1				
23.00	3.14	2.91	0.1				
24.00	3.17	2.94	0.0				
25.00	3.17	2.94	0.0				
26.00	3.17	2.94	0.0				
27.00	3.17	2.94	0.0				
28.00	3.17	2.94	0.0				
29.00	3.17	2.94	0.0				
30.00	3.17	2.94	0.0				
31.00	3.17	2.94	0.0				
32.00	3.17	2.94	0.0				
33.00	3.17	2.94	0.0				
34.00	3.17	2.94	0.0				
35.00	3.17	2.94	0.0				
36.00	3.17	2.94	0.0				
37.00	3.17	2.94	0.0				
38.00	3.17	2.94	0.0				
39.00	3.17	2.94	0.0				
40.00	3.17	2.94	0.0				
41.00	3.17	2.94	0.0				
42.00	3.17	2.94	0.0				
43.00	3.17	2.94	0.0				
44.00	3.17	2.94	0.0				
45.00	3.17	2.94	0.0				
46.00	3.17	2.94	0.0				
47.00	3.17	2.94	0.0				
48.00	3.17	2.94	0.0				
49.00	3.17	2.94	0.0				
50.00	3.17	2.94	0.0				

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Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Subcatchment E5N: Area 5 -36" RCP

Runoff = 2.8 cfs @ 12.07 hrs, Volume= 0.213 af, Depth= 2.94"

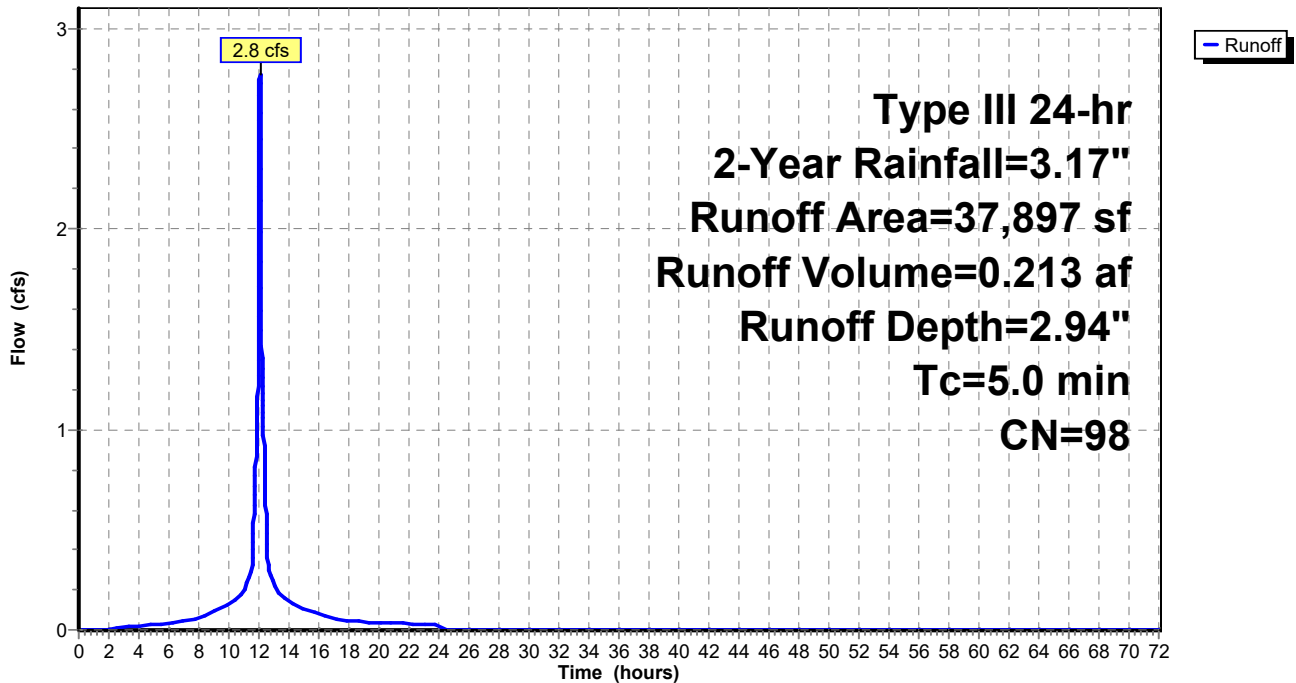
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.17"

Area (sf)	CN	Description
* 37,897	98	OF 5 paved north
37,897		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment E5N: Area 5 -36" RCP

Hydrograph



Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 2-Year Rainfall=3.17"

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Hydrograph for Subcatchment E5N: Area 5 -36" RCP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	3.17	2.94	0.0
1.00	0.03	0.00	0.0	52.00	3.17	2.94	0.0
2.00	0.06	0.00	0.0	53.00	3.17	2.94	0.0
3.00	0.10	0.01	0.0	54.00	3.17	2.94	0.0
4.00	0.14	0.03	0.0	55.00	3.17	2.94	0.0
5.00	0.18	0.06	0.0	56.00	3.17	2.94	0.0
6.00	0.23	0.09	0.0	57.00	3.17	2.94	0.0
7.00	0.29	0.13	0.0	58.00	3.17	2.94	0.0
8.00	0.36	0.20	0.1	59.00	3.17	2.94	0.0
9.00	0.46	0.28	0.1	60.00	3.17	2.94	0.0
10.00	0.60	0.41	0.1	61.00	3.17	2.94	0.0
11.00	0.79	0.59	0.2	62.00	3.17	2.94	0.0
12.00	1.58	1.36	1.9	63.00	3.17	2.94	0.0
13.00	2.38	2.15	0.2	64.00	3.17	2.94	0.0
14.00	2.57	2.34	0.1	65.00	3.17	2.94	0.0
15.00	2.71	2.48	0.1	66.00	3.17	2.94	0.0
16.00	2.81	2.58	0.1	67.00	3.17	2.94	0.0
17.00	2.88	2.65	0.1	68.00	3.17	2.94	0.0
18.00	2.94	2.71	0.0	69.00	3.17	2.94	0.0
19.00	2.99	2.76	0.0	70.00	3.17	2.94	0.0
20.00	3.03	2.80	0.0	71.00	3.17	2.94	0.0
21.00	3.07	2.84	0.0	72.00	3.17	2.94	0.0
22.00	3.11	2.88	0.0				
23.00	3.14	2.91	0.0				
24.00	3.17	2.94	0.0				
25.00	3.17	2.94	0.0				
26.00	3.17	2.94	0.0				
27.00	3.17	2.94	0.0				
28.00	3.17	2.94	0.0				
29.00	3.17	2.94	0.0				
30.00	3.17	2.94	0.0				
31.00	3.17	2.94	0.0				
32.00	3.17	2.94	0.0				
33.00	3.17	2.94	0.0				
34.00	3.17	2.94	0.0				
35.00	3.17	2.94	0.0				
36.00	3.17	2.94	0.0				
37.00	3.17	2.94	0.0				
38.00	3.17	2.94	0.0				
39.00	3.17	2.94	0.0				
40.00	3.17	2.94	0.0				
41.00	3.17	2.94	0.0				
42.00	3.17	2.94	0.0				
43.00	3.17	2.94	0.0				
44.00	3.17	2.94	0.0				
45.00	3.17	2.94	0.0				
46.00	3.17	2.94	0.0				
47.00	3.17	2.94	0.0				
48.00	3.17	2.94	0.0				
49.00	3.17	2.94	0.0				
50.00	3.17	2.94	0.0				

Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Subcatchment E6: Area 6 - 42" RCP

Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

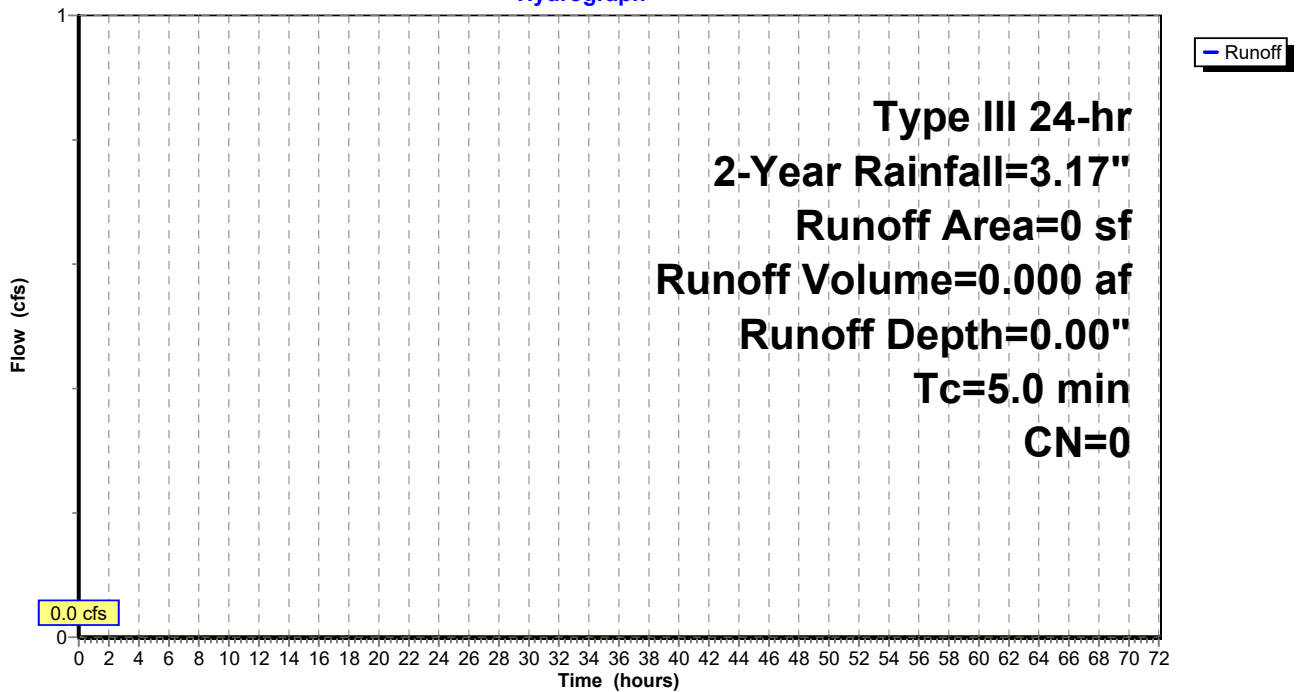
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.17"

Area (sf)	CN	Description
* 0	98	OF 6 paved north within LOW

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment E6: Area 6 - 42" RCP

Hydrograph



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Hydrograph for Subcatchment E6: Area 6 - 42" RCP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	3.17	0.00	0.0
1.00	0.03	0.00	0.0	52.00	3.17	0.00	0.0
2.00	0.06	0.00	0.0	53.00	3.17	0.00	0.0
3.00	0.10	0.00	0.0	54.00	3.17	0.00	0.0
4.00	0.14	0.00	0.0	55.00	3.17	0.00	0.0
5.00	0.18	0.00	0.0	56.00	3.17	0.00	0.0
6.00	0.23	0.00	0.0	57.00	3.17	0.00	0.0
7.00	0.29	0.00	0.0	58.00	3.17	0.00	0.0
8.00	0.36	0.00	0.0	59.00	3.17	0.00	0.0
9.00	0.46	0.00	0.0	60.00	3.17	0.00	0.0
10.00	0.60	0.00	0.0	61.00	3.17	0.00	0.0
11.00	0.79	0.00	0.0	62.00	3.17	0.00	0.0
12.00	1.58	0.00	0.0	63.00	3.17	0.00	0.0
13.00	2.38	0.00	0.0	64.00	3.17	0.00	0.0
14.00	2.57	0.00	0.0	65.00	3.17	0.00	0.0
15.00	2.71	0.00	0.0	66.00	3.17	0.00	0.0
16.00	2.81	0.00	0.0	67.00	3.17	0.00	0.0
17.00	2.88	0.00	0.0	68.00	3.17	0.00	0.0
18.00	2.94	0.00	0.0	69.00	3.17	0.00	0.0
19.00	2.99	0.00	0.0	70.00	3.17	0.00	0.0
20.00	3.03	0.00	0.0	71.00	3.17	0.00	0.0
21.00	3.07	0.00	0.0	72.00	3.17	0.00	0.0
22.00	3.11	0.00	0.0				
23.00	3.14	0.00	0.0				
24.00	3.17	0.00	0.0				
25.00	3.17	0.00	0.0				
26.00	3.17	0.00	0.0				
27.00	3.17	0.00	0.0				
28.00	3.17	0.00	0.0				
29.00	3.17	0.00	0.0				
30.00	3.17	0.00	0.0				
31.00	3.17	0.00	0.0				
32.00	3.17	0.00	0.0				
33.00	3.17	0.00	0.0				
34.00	3.17	0.00	0.0				
35.00	3.17	0.00	0.0				
36.00	3.17	0.00	0.0				
37.00	3.17	0.00	0.0				
38.00	3.17	0.00	0.0				
39.00	3.17	0.00	0.0				
40.00	3.17	0.00	0.0				
41.00	3.17	0.00	0.0				
42.00	3.17	0.00	0.0				
43.00	3.17	0.00	0.0				
44.00	3.17	0.00	0.0				
45.00	3.17	0.00	0.0				
46.00	3.17	0.00	0.0				
47.00	3.17	0.00	0.0				
48.00	3.17	0.00	0.0				
49.00	3.17	0.00	0.0				
50.00	3.17	0.00	0.0				

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Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Subcatchment E7: Area 7 - 30" RCP

Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

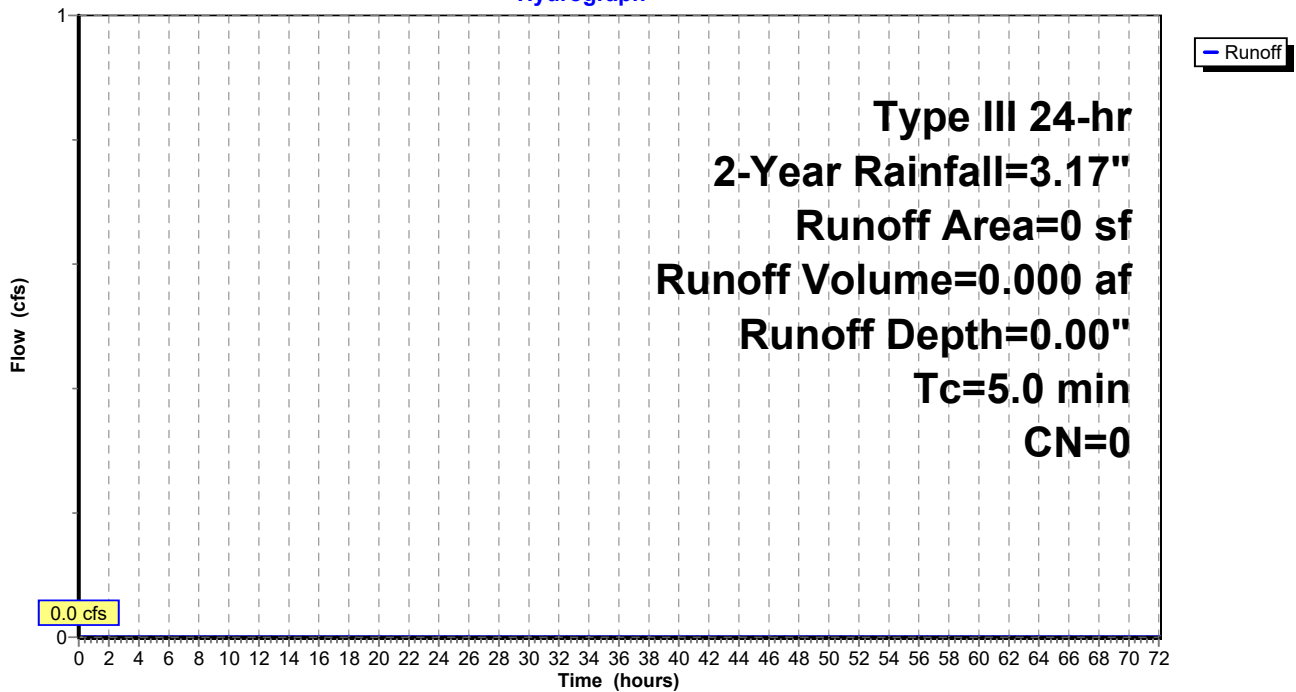
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.17"

Area (sf)	CN	Description
* 0	98	OF 7 paved north within LOW

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment E7: Area 7 - 30" RCP

Hydrograph



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Hydrograph for Subcatchment E7: Area 7 - 30" RCP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	3.17	0.00	0.0
1.00	0.03	0.00	0.0	52.00	3.17	0.00	0.0
2.00	0.06	0.00	0.0	53.00	3.17	0.00	0.0
3.00	0.10	0.00	0.0	54.00	3.17	0.00	0.0
4.00	0.14	0.00	0.0	55.00	3.17	0.00	0.0
5.00	0.18	0.00	0.0	56.00	3.17	0.00	0.0
6.00	0.23	0.00	0.0	57.00	3.17	0.00	0.0
7.00	0.29	0.00	0.0	58.00	3.17	0.00	0.0
8.00	0.36	0.00	0.0	59.00	3.17	0.00	0.0
9.00	0.46	0.00	0.0	60.00	3.17	0.00	0.0
10.00	0.60	0.00	0.0	61.00	3.17	0.00	0.0
11.00	0.79	0.00	0.0	62.00	3.17	0.00	0.0
12.00	1.58	0.00	0.0	63.00	3.17	0.00	0.0
13.00	2.38	0.00	0.0	64.00	3.17	0.00	0.0
14.00	2.57	0.00	0.0	65.00	3.17	0.00	0.0
15.00	2.71	0.00	0.0	66.00	3.17	0.00	0.0
16.00	2.81	0.00	0.0	67.00	3.17	0.00	0.0
17.00	2.88	0.00	0.0	68.00	3.17	0.00	0.0
18.00	2.94	0.00	0.0	69.00	3.17	0.00	0.0
19.00	2.99	0.00	0.0	70.00	3.17	0.00	0.0
20.00	3.03	0.00	0.0	71.00	3.17	0.00	0.0
21.00	3.07	0.00	0.0	72.00	3.17	0.00	0.0
22.00	3.11	0.00	0.0				
23.00	3.14	0.00	0.0				
24.00	3.17	0.00	0.0				
25.00	3.17	0.00	0.0				
26.00	3.17	0.00	0.0				
27.00	3.17	0.00	0.0				
28.00	3.17	0.00	0.0				
29.00	3.17	0.00	0.0				
30.00	3.17	0.00	0.0				
31.00	3.17	0.00	0.0				
32.00	3.17	0.00	0.0				
33.00	3.17	0.00	0.0				
34.00	3.17	0.00	0.0				
35.00	3.17	0.00	0.0				
36.00	3.17	0.00	0.0				
37.00	3.17	0.00	0.0				
38.00	3.17	0.00	0.0				
39.00	3.17	0.00	0.0				
40.00	3.17	0.00	0.0				
41.00	3.17	0.00	0.0				
42.00	3.17	0.00	0.0				
43.00	3.17	0.00	0.0				
44.00	3.17	0.00	0.0				
45.00	3.17	0.00	0.0				
46.00	3.17	0.00	0.0				
47.00	3.17	0.00	0.0				
48.00	3.17	0.00	0.0				
49.00	3.17	0.00	0.0				
50.00	3.17	0.00	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Pond OF1: Outfall 1 - 18" RCP

Inflow Area = 1.66 ac, 100.00% Impervious, Inflow Depth = 2.94" for 2-Year event
Inflow = 5.3 cfs @ 12.07 hrs, Volume= 0.407 af
Outflow = 5.3 cfs @ 12.07 hrs, Volume= 0.407 af, Atten= 0%, Lag= 0.0 min
Primary = 5.3 cfs @ 12.07 hrs, Volume= 0.407 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 1.79' @ 12.07 hrs

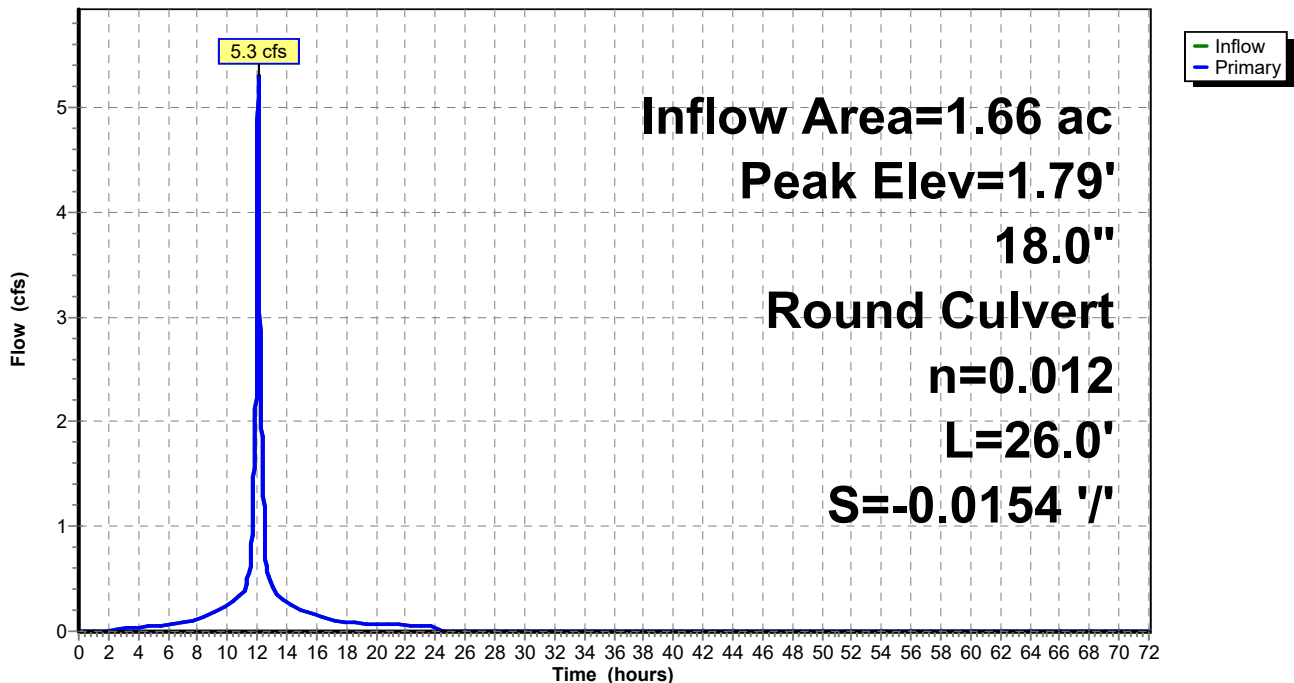
Device	Routing	Invert	Outlet Devices
#1	Primary	0.78'	18.0" Round RCP_Round 18" L= 26.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 0.38' / 0.78' S= -0.0154 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=5.3 cfs @ 12.07 hrs HW=1.79' (Free Discharge)

↑1=RCP_Round 18" (Barrel Controls 5.3 cfs @ 3.99 fps)

Pond OF1: Outfall 1 - 18" RCP

Hydrograph



Massport_M555_Backlands_PRE_LOW

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Hydrograph for Pond OF1: Outfall 1 - 18" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	0.78	0.0	51.00	0.0	0.78	0.0
1.00	0.0	0.78	0.0	52.00	0.0	0.78	0.0
2.00	0.0	0.81	0.0	53.00	0.0	0.78	0.0
3.00	0.0	0.83	0.0	54.00	0.0	0.78	0.0
4.00	0.0	0.85	0.0	55.00	0.0	0.78	0.0
5.00	0.0	0.86	0.0	56.00	0.0	0.78	0.0
6.00	0.1	0.87	0.1	57.00	0.0	0.78	0.0
7.00	0.1	0.89	0.1	58.00	0.0	0.78	0.0
8.00	0.1	0.90	0.1	59.00	0.0	0.78	0.0
9.00	0.2	0.93	0.2	60.00	0.0	0.78	0.0
10.00	0.2	0.96	0.2	61.00	0.0	0.78	0.0
11.00	0.4	1.00	0.4	62.00	0.0	0.78	0.0
12.00	3.6	1.53	3.6	63.00	0.0	0.78	0.0
13.00	0.4	1.02	0.4	64.00	0.0	0.78	0.0
14.00	0.3	0.97	0.3	65.00	0.0	0.78	0.0
15.00	0.2	0.95	0.2	66.00	0.0	0.78	0.0
16.00	0.1	0.92	0.1	67.00	0.0	0.78	0.0
17.00	0.1	0.90	0.1	68.00	0.0	0.78	0.0
18.00	0.1	0.89	0.1	69.00	0.0	0.78	0.0
19.00	0.1	0.88	0.1	70.00	0.0	0.78	0.0
20.00	0.1	0.88	0.1	71.00	0.0	0.78	0.0
21.00	0.1	0.87	0.1	72.00	0.0	0.78	0.0
22.00	0.1	0.87	0.1				
23.00	0.1	0.86	0.1				
24.00	0.0	0.86	0.0				
25.00	0.0	0.78	0.0				
26.00	0.0	0.78	0.0				
27.00	0.0	0.78	0.0				
28.00	0.0	0.78	0.0				
29.00	0.0	0.78	0.0				
30.00	0.0	0.78	0.0				
31.00	0.0	0.78	0.0				
32.00	0.0	0.78	0.0				
33.00	0.0	0.78	0.0				
34.00	0.0	0.78	0.0				
35.00	0.0	0.78	0.0				
36.00	0.0	0.78	0.0				
37.00	0.0	0.78	0.0				
38.00	0.0	0.78	0.0				
39.00	0.0	0.78	0.0				
40.00	0.0	0.78	0.0				
41.00	0.0	0.78	0.0				
42.00	0.0	0.78	0.0				
43.00	0.0	0.78	0.0				
44.00	0.0	0.78	0.0				
45.00	0.0	0.78	0.0				
46.00	0.0	0.78	0.0				
47.00	0.0	0.78	0.0				
48.00	0.0	0.78	0.0				
49.00	0.0	0.78	0.0				
50.00	0.0	0.78	0.0				

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Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Pond OF2: Outfall 2 - 18" RCP

Inflow Area = 1.81 ac, 100.00% Impervious, Inflow Depth = 2.94" for 2-Year event
Inflow = 5.8 cfs @ 12.07 hrs, Volume= 0.443 af
Outflow = 5.8 cfs @ 12.07 hrs, Volume= 0.443 af, Atten= 0%, Lag= 0.0 min
Primary = 5.8 cfs @ 12.07 hrs, Volume= 0.443 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 2.88' @ 12.07 hrs

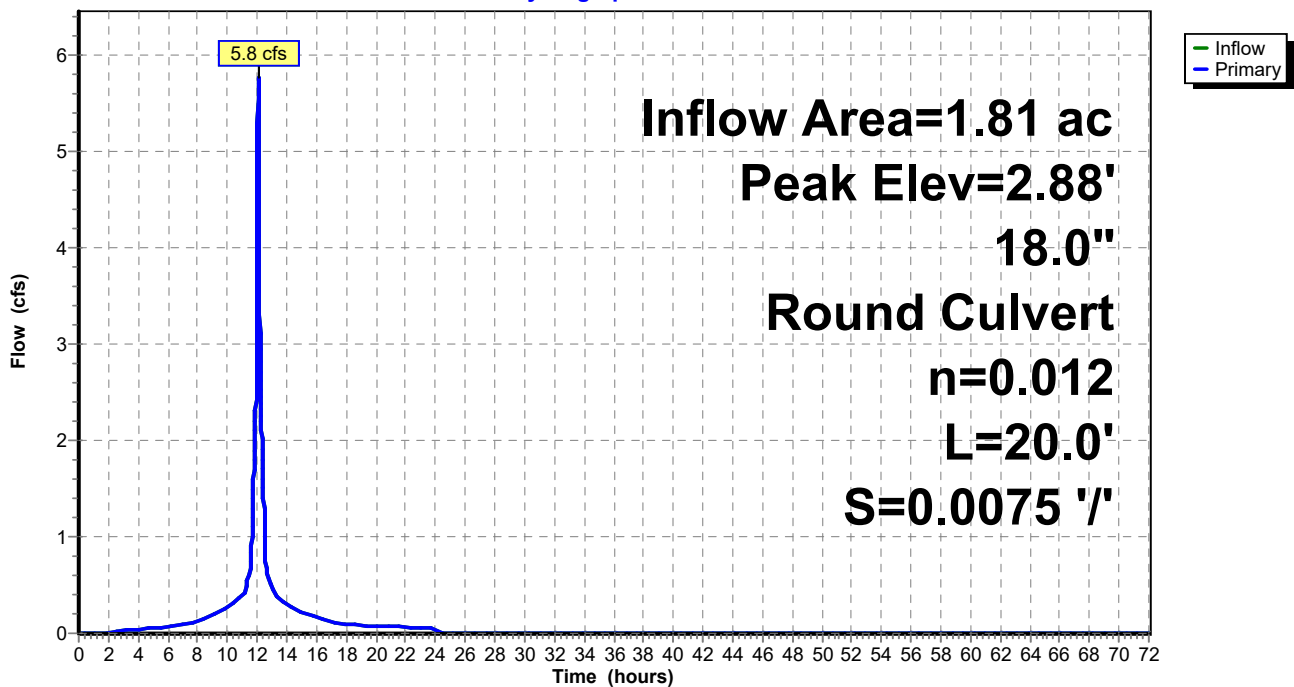
Device	Routing	Invert	Outlet Devices
#1	Primary	1.58'	18.0" Round RCP_Round 18" L= 20.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1.58' / 1.43' S= 0.0075 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=5.8 cfs @ 12.07 hrs HW=2.88' (Free Discharge)

↑1=RCP_Round 18" (Barrel Controls 5.8 cfs @ 4.74 fps)

Pond OF2: Outfall 2 - 18" RCP

Hydrograph



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Hydrograph for Pond OF2: Outfall 2 - 18" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	1.58	0.0	51.00	0.0	1.58	0.0
1.00	0.0	1.58	0.0	52.00	0.0	1.58	0.0
2.00	0.0	1.63	0.0	53.00	0.0	1.58	0.0
3.00	0.0	1.65	0.0	54.00	0.0	1.58	0.0
4.00	0.0	1.67	0.0	55.00	0.0	1.58	0.0
5.00	0.1	1.69	0.1	56.00	0.0	1.58	0.0
6.00	0.1	1.70	0.1	57.00	0.0	1.58	0.0
7.00	0.1	1.72	0.1	58.00	0.0	1.58	0.0
8.00	0.1	1.74	0.1	59.00	0.0	1.58	0.0
9.00	0.2	1.78	0.2	60.00	0.0	1.58	0.0
10.00	0.3	1.81	0.3	61.00	0.0	1.58	0.0
11.00	0.4	1.87	0.4	62.00	0.0	1.58	0.0
12.00	3.9	2.60	3.9	63.00	0.0	1.58	0.0
13.00	0.5	1.89	0.5	64.00	0.0	1.58	0.0
14.00	0.3	1.83	0.3	65.00	0.0	1.58	0.0
15.00	0.2	1.80	0.2	66.00	0.0	1.58	0.0
16.00	0.2	1.76	0.2	67.00	0.0	1.58	0.0
17.00	0.1	1.74	0.1	68.00	0.0	1.58	0.0
18.00	0.1	1.72	0.1	69.00	0.0	1.58	0.0
19.00	0.1	1.71	0.1	70.00	0.0	1.58	0.0
20.00	0.1	1.71	0.1	71.00	0.0	1.58	0.0
21.00	0.1	1.70	0.1	72.00	0.0	1.58	0.0
22.00	0.1	1.70	0.1				
23.00	0.1	1.69	0.1				
24.00	0.0	1.68	0.0				
25.00	0.0	1.58	0.0				
26.00	0.0	1.58	0.0				
27.00	0.0	1.58	0.0				
28.00	0.0	1.58	0.0				
29.00	0.0	1.58	0.0				
30.00	0.0	1.58	0.0				
31.00	0.0	1.58	0.0				
32.00	0.0	1.58	0.0				
33.00	0.0	1.58	0.0				
34.00	0.0	1.58	0.0				
35.00	0.0	1.58	0.0				
36.00	0.0	1.58	0.0				
37.00	0.0	1.58	0.0				
38.00	0.0	1.58	0.0				
39.00	0.0	1.58	0.0				
40.00	0.0	1.58	0.0				
41.00	0.0	1.58	0.0				
42.00	0.0	1.58	0.0				
43.00	0.0	1.58	0.0				
44.00	0.0	1.58	0.0				
45.00	0.0	1.58	0.0				
46.00	0.0	1.58	0.0				
47.00	0.0	1.58	0.0				
48.00	0.0	1.58	0.0				
49.00	0.0	1.58	0.0				
50.00	0.0	1.58	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Pond OF3: Outfall 3 - 24" RCP

Inflow Area = 1.79 ac, 100.00% Impervious, Inflow Depth = 2.94" for 2-Year event
Inflow = 5.7 cfs @ 12.07 hrs, Volume= 0.438 af
Outflow = 5.7 cfs @ 12.07 hrs, Volume= 0.438 af, Atten= 0%, Lag= 0.0 min
Primary = 5.7 cfs @ 12.07 hrs, Volume= 0.438 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 1.32' @ 12.07 hrs

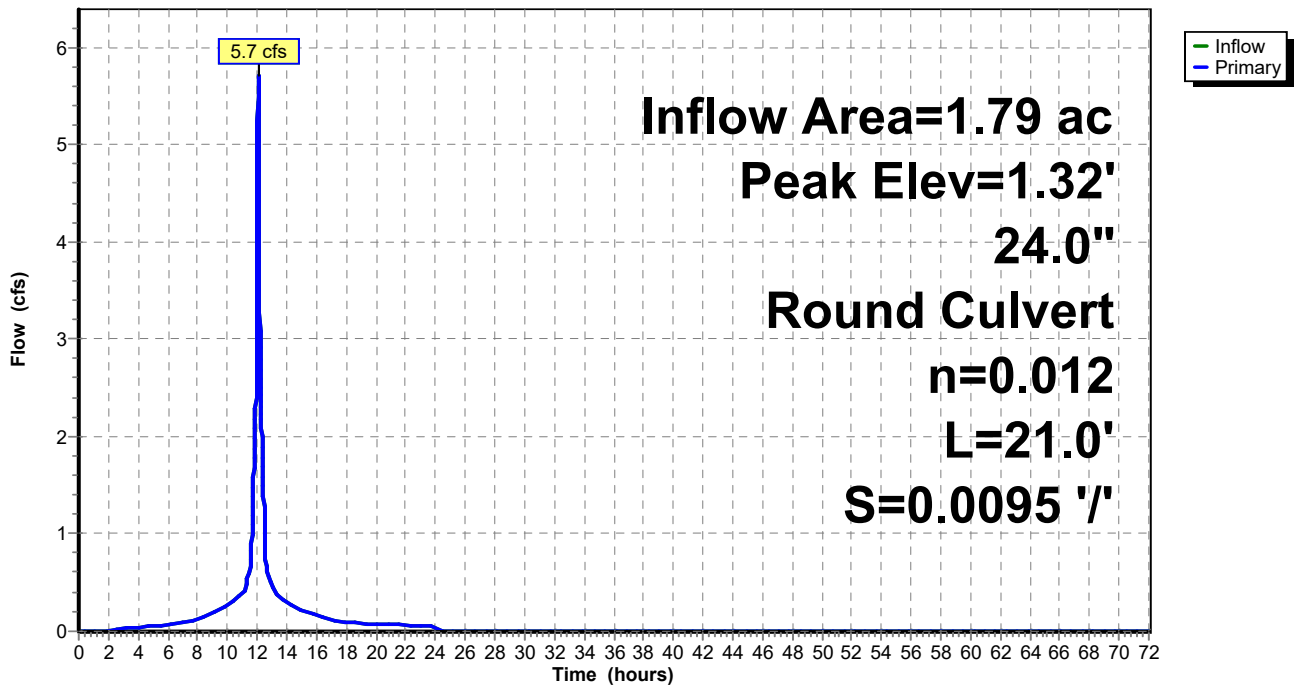
Device	Routing	Invert	Outlet Devices
#1	Primary	0.23'	24.0" Round RCP_Round 24" L= 21.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 0.23' / 0.03' S= 0.0095 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=5.7 cfs @ 12.07 hrs HW=1.32' (Free Discharge)

↑1=RCP_Round 24" (Barrel Controls 5.7 cfs @ 4.72 fps)

Pond OF3: Outfall 3 - 24" RCP

Hydrograph



Massport_M555_Backlands_PRE_LOW

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Hydrograph for Pond OF3: Outfall 3 - 24" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	0.23	0.0	51.00	0.0	0.23	0.0
1.00	0.0	0.23	0.0	52.00	0.0	0.23	0.0
2.00	0.0	0.27	0.0	53.00	0.0	0.23	0.0
3.00	0.0	0.29	0.0	54.00	0.0	0.23	0.0
4.00	0.0	0.31	0.0	55.00	0.0	0.23	0.0
5.00	0.1	0.32	0.1	56.00	0.0	0.23	0.0
6.00	0.1	0.33	0.1	57.00	0.0	0.23	0.0
7.00	0.1	0.35	0.1	58.00	0.0	0.23	0.0
8.00	0.1	0.37	0.1	59.00	0.0	0.23	0.0
9.00	0.2	0.40	0.2	60.00	0.0	0.23	0.0
10.00	0.3	0.43	0.3	61.00	0.0	0.23	0.0
11.00	0.4	0.48	0.4	62.00	0.0	0.23	0.0
12.00	3.8	1.10	3.8	63.00	0.0	0.23	0.0
13.00	0.5	0.50	0.5	64.00	0.0	0.23	0.0
14.00	0.3	0.45	0.3	65.00	0.0	0.23	0.0
15.00	0.2	0.42	0.2	66.00	0.0	0.23	0.0
16.00	0.2	0.39	0.2	67.00	0.0	0.23	0.0
17.00	0.1	0.37	0.1	68.00	0.0	0.23	0.0
18.00	0.1	0.35	0.1	69.00	0.0	0.23	0.0
19.00	0.1	0.35	0.1	70.00	0.0	0.23	0.0
20.00	0.1	0.34	0.1	71.00	0.0	0.23	0.0
21.00	0.1	0.34	0.1	72.00	0.0	0.23	0.0
22.00	0.1	0.33	0.1				
23.00	0.1	0.33	0.1				
24.00	0.0	0.32	0.0				
25.00	0.0	0.23	0.0				
26.00	0.0	0.23	0.0				
27.00	0.0	0.23	0.0				
28.00	0.0	0.23	0.0				
29.00	0.0	0.23	0.0				
30.00	0.0	0.23	0.0				
31.00	0.0	0.23	0.0				
32.00	0.0	0.23	0.0				
33.00	0.0	0.23	0.0				
34.00	0.0	0.23	0.0				
35.00	0.0	0.23	0.0				
36.00	0.0	0.23	0.0				
37.00	0.0	0.23	0.0				
38.00	0.0	0.23	0.0				
39.00	0.0	0.23	0.0				
40.00	0.0	0.23	0.0				
41.00	0.0	0.23	0.0				
42.00	0.0	0.23	0.0				
43.00	0.0	0.23	0.0				
44.00	0.0	0.23	0.0				
45.00	0.0	0.23	0.0				
46.00	0.0	0.23	0.0				
47.00	0.0	0.23	0.0				
48.00	0.0	0.23	0.0				
49.00	0.0	0.23	0.0				
50.00	0.0	0.23	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Pond OF4: Outfall 4 - 24" RCP

Inflow Area = 1.65 ac, 100.00% Impervious, Inflow Depth = 2.94" for 2-Year event
Inflow = 5.3 cfs @ 12.07 hrs, Volume= 0.403 af
Outflow = 5.3 cfs @ 12.07 hrs, Volume= 0.403 af, Atten= 0%, Lag= 0.0 min
Primary = 5.3 cfs @ 12.07 hrs, Volume= 0.403 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 1.66' @ 12.07 hrs

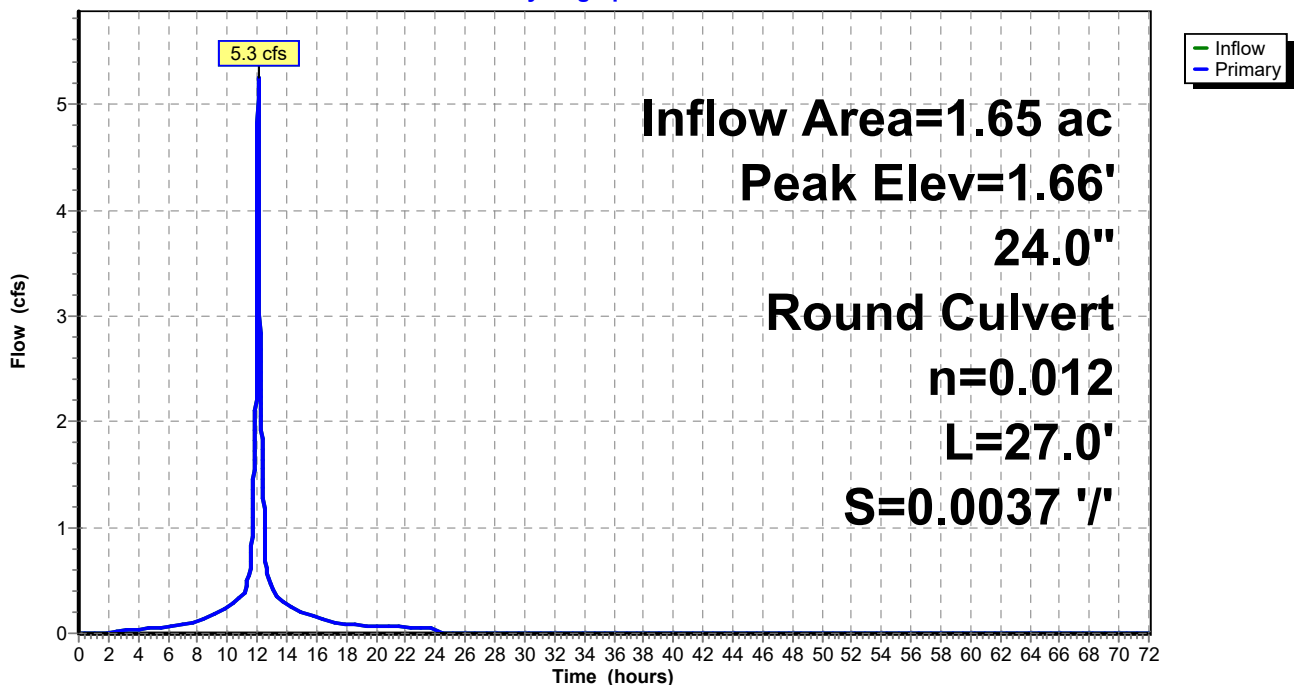
Device	Routing	Invert	Outlet Devices
#1	Primary	0.53'	24.0" Round RCP_Round 24" L= 27.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 0.53' / 0.43' S= 0.0037 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=5.3 cfs @ 12.07 hrs HW=1.66' (Free Discharge)

↑1=RCP_Round 24" (Barrel Controls 5.3 cfs @ 4.15 fps)

Pond OF4: Outfall 4 - 24" RCP

Hydrograph



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Hydrograph for Pond OF4: Outfall 4 - 24" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	0.53	0.0	51.00	0.0	0.53	0.0
1.00	0.0	0.53	0.0	52.00	0.0	0.53	0.0
2.00	0.0	0.58	0.0	53.00	0.0	0.53	0.0
3.00	0.0	0.61	0.0	54.00	0.0	0.53	0.0
4.00	0.0	0.62	0.0	55.00	0.0	0.53	0.0
5.00	0.0	0.64	0.0	56.00	0.0	0.53	0.0
6.00	0.1	0.65	0.1	57.00	0.0	0.53	0.0
7.00	0.1	0.67	0.1	58.00	0.0	0.53	0.0
8.00	0.1	0.69	0.1	59.00	0.0	0.53	0.0
9.00	0.2	0.73	0.2	60.00	0.0	0.53	0.0
10.00	0.2	0.76	0.2	61.00	0.0	0.53	0.0
11.00	0.4	0.81	0.4	62.00	0.0	0.53	0.0
12.00	3.5	1.44	3.5	63.00	0.0	0.53	0.0
13.00	0.4	0.84	0.4	64.00	0.0	0.53	0.0
14.00	0.3	0.78	0.3	65.00	0.0	0.53	0.0
15.00	0.2	0.74	0.2	66.00	0.0	0.53	0.0
16.00	0.1	0.71	0.1	67.00	0.0	0.53	0.0
17.00	0.1	0.69	0.1	68.00	0.0	0.53	0.0
18.00	0.1	0.67	0.1	69.00	0.0	0.53	0.0
19.00	0.1	0.67	0.1	70.00	0.0	0.53	0.0
20.00	0.1	0.66	0.1	71.00	0.0	0.53	0.0
21.00	0.1	0.65	0.1	72.00	0.0	0.53	0.0
22.00	0.1	0.65	0.1				
23.00	0.1	0.64	0.1				
24.00	0.0	0.64	0.0				
25.00	0.0	0.53	0.0				
26.00	0.0	0.53	0.0				
27.00	0.0	0.53	0.0				
28.00	0.0	0.53	0.0				
29.00	0.0	0.53	0.0				
30.00	0.0	0.53	0.0				
31.00	0.0	0.53	0.0				
32.00	0.0	0.53	0.0				
33.00	0.0	0.53	0.0				
34.00	0.0	0.53	0.0				
35.00	0.0	0.53	0.0				
36.00	0.0	0.53	0.0				
37.00	0.0	0.53	0.0				
38.00	0.0	0.53	0.0				
39.00	0.0	0.53	0.0				
40.00	0.0	0.53	0.0				
41.00	0.0	0.53	0.0				
42.00	0.0	0.53	0.0				
43.00	0.0	0.53	0.0				
44.00	0.0	0.53	0.0				
45.00	0.0	0.53	0.0				
46.00	0.0	0.53	0.0				
47.00	0.0	0.53	0.0				
48.00	0.0	0.53	0.0				
49.00	0.0	0.53	0.0				
50.00	0.0	0.53	0.0				

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Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Pond OF5: Outfall 5 - 36" RCP

Inflow Area = 0.87 ac, 100.00% Impervious, Inflow Depth = 2.94" for 2-Year event
Inflow = 2.8 cfs @ 12.07 hrs, Volume= 0.213 af
Outflow = 2.8 cfs @ 12.07 hrs, Volume= 0.213 af, Atten= 0%, Lag= 0.0 min
Primary = 2.8 cfs @ 12.07 hrs, Volume= 0.213 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 2.94' @ 12.07 hrs

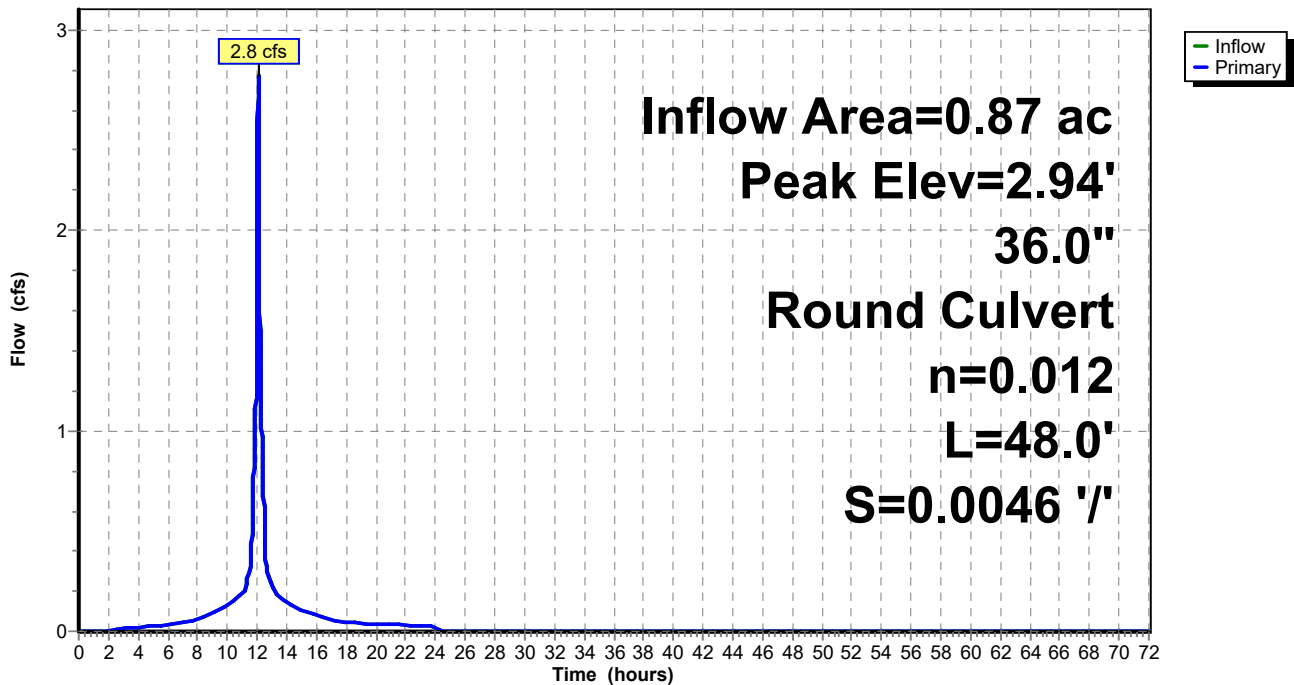
Device	Routing	Invert	Outlet Devices
#1	Primary	2.26'	36.0" Round RCP_Round 36" L= 48.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 2.26' / 2.04' S= 0.0046 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 7.07 sf

Primary OutFlow Max=2.8 cfs @ 12.07 hrs HW=2.94' (Free Discharge)

↑1=RCP_Round 36" (Barrel Controls 2.8 cfs @ 3.49 fps)

Pond OF5: Outfall 5 - 36" RCP

Hydrograph



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Hydrograph for Pond OF5: Outfall 5 - 36" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	2.26	0.0	51.00	0.0	2.26	0.0
1.00	0.0	2.26	0.0	52.00	0.0	2.26	0.0
2.00	0.0	2.29	0.0	53.00	0.0	2.26	0.0
3.00	0.0	2.31	0.0	54.00	0.0	2.26	0.0
4.00	0.0	2.32	0.0	55.00	0.0	2.26	0.0
5.00	0.0	2.33	0.0	56.00	0.0	2.26	0.0
6.00	0.0	2.34	0.0	57.00	0.0	2.26	0.0
7.00	0.0	2.35	0.0	58.00	0.0	2.26	0.0
8.00	0.1	2.36	0.1	59.00	0.0	2.26	0.0
9.00	0.1	2.39	0.1	60.00	0.0	2.26	0.0
10.00	0.1	2.41	0.1	61.00	0.0	2.26	0.0
11.00	0.2	2.44	0.2	62.00	0.0	2.26	0.0
12.00	1.9	2.81	1.9	63.00	0.0	2.26	0.0
13.00	0.2	2.45	0.2	64.00	0.0	2.26	0.0
14.00	0.1	2.42	0.1	65.00	0.0	2.26	0.0
15.00	0.1	2.40	0.1	66.00	0.0	2.26	0.0
16.00	0.1	2.38	0.1	67.00	0.0	2.26	0.0
17.00	0.1	2.36	0.1	68.00	0.0	2.26	0.0
18.00	0.0	2.35	0.0	69.00	0.0	2.26	0.0
19.00	0.0	2.35	0.0	70.00	0.0	2.26	0.0
20.00	0.0	2.34	0.0	71.00	0.0	2.26	0.0
21.00	0.0	2.34	0.0	72.00	0.0	2.26	0.0
22.00	0.0	2.33	0.0				
23.00	0.0	2.33	0.0				
24.00	0.0	2.33	0.0				
25.00	0.0	2.26	0.0				
26.00	0.0	2.26	0.0				
27.00	0.0	2.26	0.0				
28.00	0.0	2.26	0.0				
29.00	0.0	2.26	0.0				
30.00	0.0	2.26	0.0				
31.00	0.0	2.26	0.0				
32.00	0.0	2.26	0.0				
33.00	0.0	2.26	0.0				
34.00	0.0	2.26	0.0				
35.00	0.0	2.26	0.0				
36.00	0.0	2.26	0.0				
37.00	0.0	2.26	0.0				
38.00	0.0	2.26	0.0				
39.00	0.0	2.26	0.0				
40.00	0.0	2.26	0.0				
41.00	0.0	2.26	0.0				
42.00	0.0	2.26	0.0				
43.00	0.0	2.26	0.0				
44.00	0.0	2.26	0.0				
45.00	0.0	2.26	0.0				
46.00	0.0	2.26	0.0				
47.00	0.0	2.26	0.0				
48.00	0.0	2.26	0.0				
49.00	0.0	2.26	0.0				
50.00	0.0	2.26	0.0				

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Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Pond OF6: Outfall 6 - 42" RCP

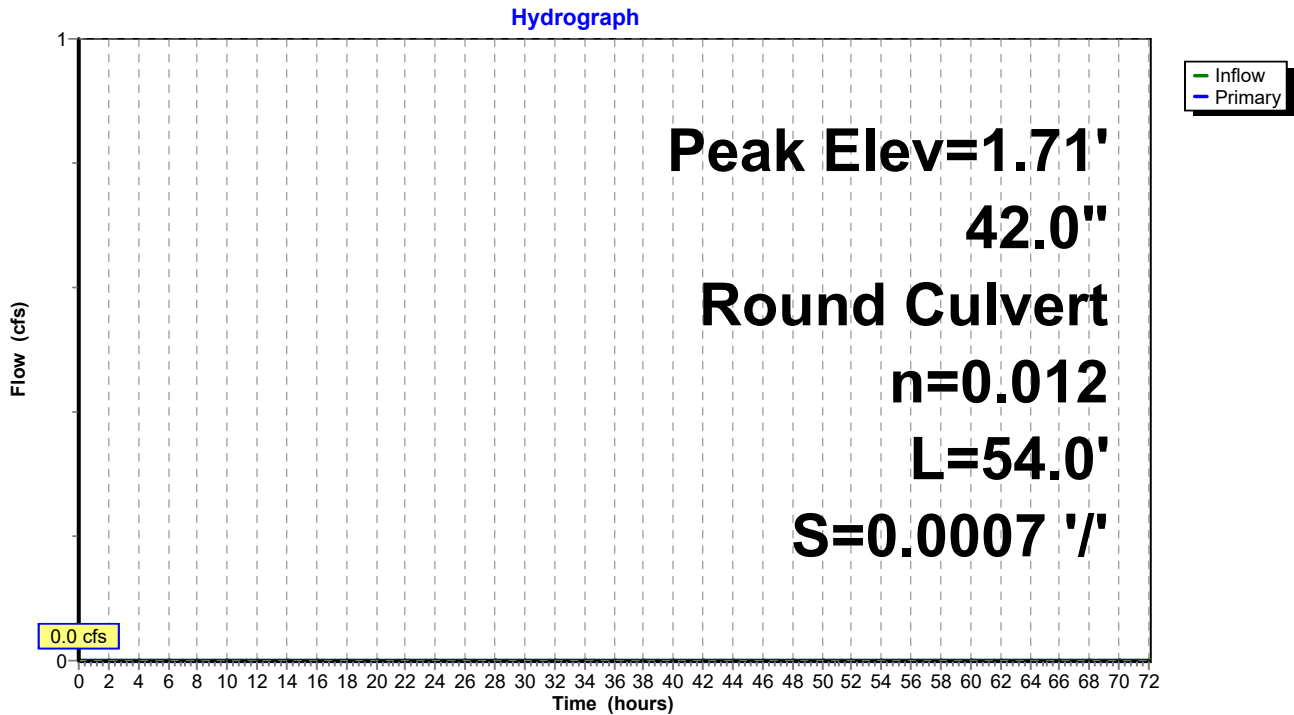
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 1.71' @ 0.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1.71'	42.0" Round RCP_Round 42" L= 54.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1.71' / 1.67' S= 0.0007 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 9.62 sf

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=1.71' (Free Discharge)
↑1=RCP_Round 42" (Controls 0.0 cfs)

Pond OF6: Outfall 6 - 42" RCP



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Hydrograph for Pond OF6: Outfall 6 - 42" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	1.71	0.0	51.00	0.0	1.71	0.0
1.00	0.0	1.71	0.0	52.00	0.0	1.71	0.0
2.00	0.0	1.71	0.0	53.00	0.0	1.71	0.0
3.00	0.0	1.71	0.0	54.00	0.0	1.71	0.0
4.00	0.0	1.71	0.0	55.00	0.0	1.71	0.0
5.00	0.0	1.71	0.0	56.00	0.0	1.71	0.0
6.00	0.0	1.71	0.0	57.00	0.0	1.71	0.0
7.00	0.0	1.71	0.0	58.00	0.0	1.71	0.0
8.00	0.0	1.71	0.0	59.00	0.0	1.71	0.0
9.00	0.0	1.71	0.0	60.00	0.0	1.71	0.0
10.00	0.0	1.71	0.0	61.00	0.0	1.71	0.0
11.00	0.0	1.71	0.0	62.00	0.0	1.71	0.0
12.00	0.0	1.71	0.0	63.00	0.0	1.71	0.0
13.00	0.0	1.71	0.0	64.00	0.0	1.71	0.0
14.00	0.0	1.71	0.0	65.00	0.0	1.71	0.0
15.00	0.0	1.71	0.0	66.00	0.0	1.71	0.0
16.00	0.0	1.71	0.0	67.00	0.0	1.71	0.0
17.00	0.0	1.71	0.0	68.00	0.0	1.71	0.0
18.00	0.0	1.71	0.0	69.00	0.0	1.71	0.0
19.00	0.0	1.71	0.0	70.00	0.0	1.71	0.0
20.00	0.0	1.71	0.0	71.00	0.0	1.71	0.0
21.00	0.0	1.71	0.0	72.00	0.0	1.71	0.0
22.00	0.0	1.71	0.0				
23.00	0.0	1.71	0.0				
24.00	0.0	1.71	0.0				
25.00	0.0	1.71	0.0				
26.00	0.0	1.71	0.0				
27.00	0.0	1.71	0.0				
28.00	0.0	1.71	0.0				
29.00	0.0	1.71	0.0				
30.00	0.0	1.71	0.0				
31.00	0.0	1.71	0.0				
32.00	0.0	1.71	0.0				
33.00	0.0	1.71	0.0				
34.00	0.0	1.71	0.0				
35.00	0.0	1.71	0.0				
36.00	0.0	1.71	0.0				
37.00	0.0	1.71	0.0				
38.00	0.0	1.71	0.0				
39.00	0.0	1.71	0.0				
40.00	0.0	1.71	0.0				
41.00	0.0	1.71	0.0				
42.00	0.0	1.71	0.0				
43.00	0.0	1.71	0.0				
44.00	0.0	1.71	0.0				
45.00	0.0	1.71	0.0				
46.00	0.0	1.71	0.0				
47.00	0.0	1.71	0.0				
48.00	0.0	1.71	0.0				
49.00	0.0	1.71	0.0				
50.00	0.0	1.71	0.0				

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Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Pond OF7: Outfall 7 - 30" RCP

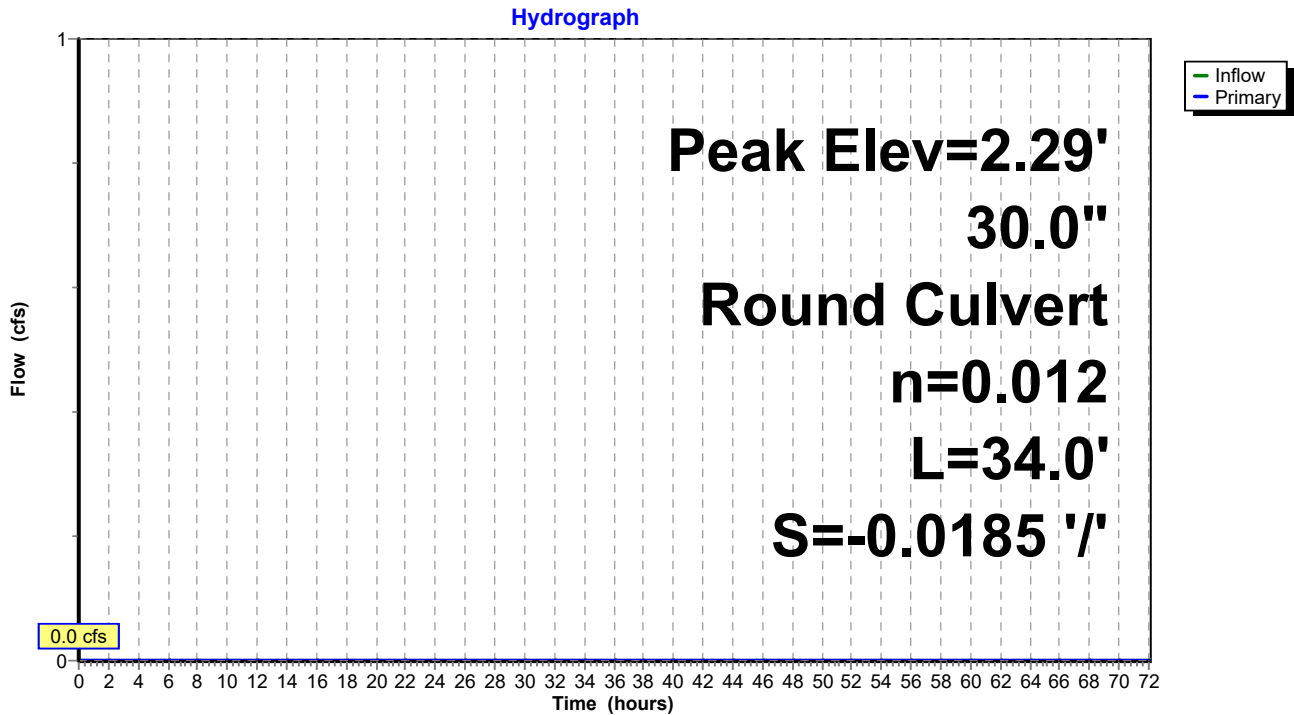
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 2.29' @ 0.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2.29'	30.0" Round RCP_Round 30" L= 34.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1.66' / 2.29' S= -0.0185 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=2.29' (Free Discharge)
↑1=RCP_Round 30" (Controls 0.0 cfs)

Pond OF7: Outfall 7 - 30" RCP



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Hydrograph for Pond OF7: Outfall 7 - 30" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	2.29	0.0	51.00	0.0	2.29	0.0
1.00	0.0	2.29	0.0	52.00	0.0	2.29	0.0
2.00	0.0	2.29	0.0	53.00	0.0	2.29	0.0
3.00	0.0	2.29	0.0	54.00	0.0	2.29	0.0
4.00	0.0	2.29	0.0	55.00	0.0	2.29	0.0
5.00	0.0	2.29	0.0	56.00	0.0	2.29	0.0
6.00	0.0	2.29	0.0	57.00	0.0	2.29	0.0
7.00	0.0	2.29	0.0	58.00	0.0	2.29	0.0
8.00	0.0	2.29	0.0	59.00	0.0	2.29	0.0
9.00	0.0	2.29	0.0	60.00	0.0	2.29	0.0
10.00	0.0	2.29	0.0	61.00	0.0	2.29	0.0
11.00	0.0	2.29	0.0	62.00	0.0	2.29	0.0
12.00	0.0	2.29	0.0	63.00	0.0	2.29	0.0
13.00	0.0	2.29	0.0	64.00	0.0	2.29	0.0
14.00	0.0	2.29	0.0	65.00	0.0	2.29	0.0
15.00	0.0	2.29	0.0	66.00	0.0	2.29	0.0
16.00	0.0	2.29	0.0	67.00	0.0	2.29	0.0
17.00	0.0	2.29	0.0	68.00	0.0	2.29	0.0
18.00	0.0	2.29	0.0	69.00	0.0	2.29	0.0
19.00	0.0	2.29	0.0	70.00	0.0	2.29	0.0
20.00	0.0	2.29	0.0	71.00	0.0	2.29	0.0
21.00	0.0	2.29	0.0	72.00	0.0	2.29	0.0
22.00	0.0	2.29	0.0				
23.00	0.0	2.29	0.0				
24.00	0.0	2.29	0.0				
25.00	0.0	2.29	0.0				
26.00	0.0	2.29	0.0				
27.00	0.0	2.29	0.0				
28.00	0.0	2.29	0.0				
29.00	0.0	2.29	0.0				
30.00	0.0	2.29	0.0				
31.00	0.0	2.29	0.0				
32.00	0.0	2.29	0.0				
33.00	0.0	2.29	0.0				
34.00	0.0	2.29	0.0				
35.00	0.0	2.29	0.0				
36.00	0.0	2.29	0.0				
37.00	0.0	2.29	0.0				
38.00	0.0	2.29	0.0				
39.00	0.0	2.29	0.0				
40.00	0.0	2.29	0.0				
41.00	0.0	2.29	0.0				
42.00	0.0	2.29	0.0				
43.00	0.0	2.29	0.0				
44.00	0.0	2.29	0.0				
45.00	0.0	2.29	0.0				
46.00	0.0	2.29	0.0				
47.00	0.0	2.29	0.0				
48.00	0.0	2.29	0.0				
49.00	0.0	2.29	0.0				
50.00	0.0	2.29	0.0				

Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentE1N: Area 1 - north section Runoff Area=56,819 sf 100.00% Impervious Runoff Depth=4.76"
Tc=5.0 min CN=98 Runoff=6.6 cfs 0.518 af

SubcatchmentE1S: Area 1 - south section Runoff Area=15,671 sf 100.00% Impervious Runoff Depth=4.76"
Tc=5.0 min CN=98 Runoff=1.8 cfs 0.143 af

SubcatchmentE2N: Area 2 - 18" RCP Runoff Area=78,786 sf 100.00% Impervious Runoff Depth=4.76"
Tc=5.0 min CN=98 Runoff=9.2 cfs 0.718 af

SubcatchmentE3N: Area 3 - 24" RCP Runoff Area=77,980 sf 100.00% Impervious Runoff Depth=4.76"
Tc=5.0 min CN=98 Runoff=9.1 cfs 0.711 af

SubcatchmentE4N: Area 4 - 24" RCP Runoff Area=71,766 sf 100.00% Impervious Runoff Depth=4.76"
Tc=5.0 min CN=98 Runoff=8.3 cfs 0.654 af

SubcatchmentE5N: Area 5 -36" RCP Runoff Area=37,897 sf 100.00% Impervious Runoff Depth=4.76"
Tc=5.0 min CN=98 Runoff=4.4 cfs 0.345 af

SubcatchmentE6: Area 6 - 42" RCP Runoff Area=0 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=0 Runoff=0.0 cfs 0.000 af

SubcatchmentE7: Area 7 - 30" RCP Runoff Area=0 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=0 Runoff=0.0 cfs 0.000 af

Pond OF1: Outfall 1 - 18" RCP Peak Elev=2.41' Inflow=8.4 cfs 0.661 af
18.0" Round Culvert n=0.012 L=26.0' S=-0.0154 '/ Outflow=8.4 cfs 0.661 af

Pond OF2: Outfall 2 - 18" RCP Peak Elev=3.42' Inflow=9.2 cfs 0.718 af
18.0" Round Culvert n=0.012 L=20.0' S=0.0075 '/ Outflow=9.2 cfs 0.718 af

Pond OF3: Outfall 3 - 24" RCP Peak Elev=1.67' Inflow=9.1 cfs 0.711 af
24.0" Round Culvert n=0.012 L=21.0' S=0.0095 '/ Outflow=9.1 cfs 0.711 af

Pond OF4: Outfall 4 - 24" RCP Peak Elev=2.00' Inflow=8.3 cfs 0.654 af
24.0" Round Culvert n=0.012 L=27.0' S=0.0037 '/ Outflow=8.3 cfs 0.654 af

Pond OF5: Outfall 5 - 36" RCP Peak Elev=3.12' Inflow=4.4 cfs 0.345 af
36.0" Round Culvert n=0.012 L=48.0' S=0.0046 '/ Outflow=4.4 cfs 0.345 af

Pond OF6: Outfall 6 - 42" RCP Peak Elev=1.71' Inflow=0.0 cfs 0.000 af
42.0" Round Culvert n=0.012 L=54.0' S=0.0007 '/ Outflow=0.0 cfs 0.000 af

Pond OF7: Outfall 7 - 30" RCP Peak Elev=2.29' Inflow=0.0 cfs 0.000 af
30.0" Round Culvert n=0.012 L=34.0' S=-0.0185 '/ Outflow=0.0 cfs 0.000 af

Total Runoff Area = 7.78 ac Runoff Volume = 3.088 af Average Runoff Depth = 4.76"
0.00% Pervious = 0.00 ac 100.00% Impervious = 7.78 ac

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Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Subcatchment E1N: Area 1 - north section

Runoff = 6.6 cfs @ 12.07 hrs, Volume= 0.518 af, Depth= 4.76"

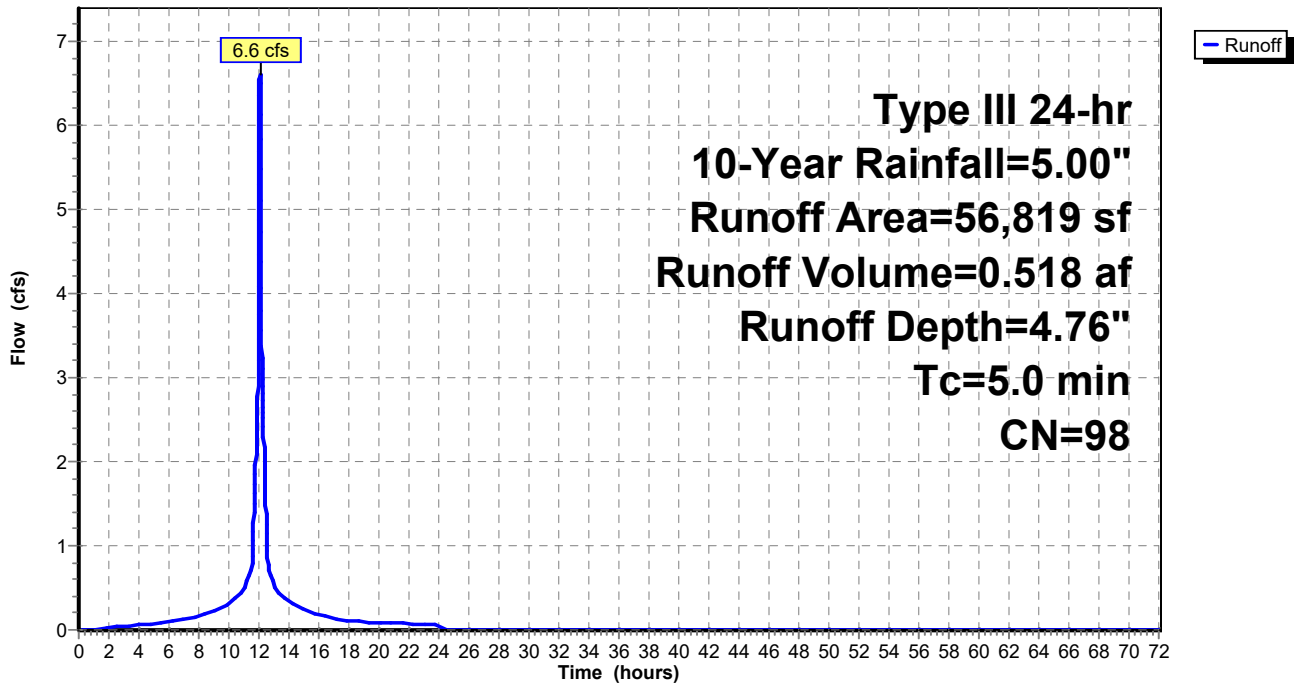
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.00"

Area (sf)	CN	Description
* 56,819	98	OF 1 paved north
56,819		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment E1N: Area 1 - north section

Hydrograph



Massport_M555_Backlands_PRE_LOW

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Type III 24-hr 10-Year Rainfall=5.00"

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Hydrograph for Subcatchment E1N: Area 1 - north section

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	5.00	4.76	0.0
1.00	0.05	0.00	0.0	52.00	5.00	4.76	0.0
2.00	0.10	0.01	0.0	53.00	5.00	4.76	0.0
3.00	0.15	0.04	0.0	54.00	5.00	4.76	0.0
4.00	0.22	0.08	0.1	55.00	5.00	4.76	0.0
5.00	0.28	0.13	0.1	56.00	5.00	4.76	0.0
6.00	0.36	0.19	0.1	57.00	5.00	4.76	0.0
7.00	0.45	0.28	0.1	58.00	5.00	4.76	0.0
8.00	0.57	0.38	0.2	59.00	5.00	4.76	0.0
9.00	0.73	0.53	0.2	60.00	5.00	4.76	0.0
10.00	0.95	0.74	0.3	61.00	5.00	4.76	0.0
11.00	1.25	1.03	0.5	62.00	5.00	4.76	0.0
12.00	2.50	2.27	4.5	63.00	5.00	4.76	0.0
13.00	3.75	3.52	0.5	64.00	5.00	4.76	0.0
14.00	4.06	3.82	0.3	65.00	5.00	4.76	0.0
15.00	4.27	4.04	0.3	66.00	5.00	4.76	0.0
16.00	4.43	4.19	0.2	67.00	5.00	4.76	0.0
17.00	4.55	4.31	0.1	68.00	5.00	4.76	0.0
18.00	4.64	4.40	0.1	69.00	5.00	4.76	0.0
19.00	4.72	4.48	0.1	70.00	5.00	4.76	0.0
20.00	4.79	4.55	0.1	71.00	5.00	4.76	0.0
21.00	4.85	4.61	0.1	72.00	5.00	4.76	0.0
22.00	4.90	4.67	0.1				
23.00	4.95	4.72	0.1				
24.00	5.00	4.76	0.1				
25.00	5.00	4.76	0.0				
26.00	5.00	4.76	0.0				
27.00	5.00	4.76	0.0				
28.00	5.00	4.76	0.0				
29.00	5.00	4.76	0.0				
30.00	5.00	4.76	0.0				
31.00	5.00	4.76	0.0				
32.00	5.00	4.76	0.0				
33.00	5.00	4.76	0.0				
34.00	5.00	4.76	0.0				
35.00	5.00	4.76	0.0				
36.00	5.00	4.76	0.0				
37.00	5.00	4.76	0.0				
38.00	5.00	4.76	0.0				
39.00	5.00	4.76	0.0				
40.00	5.00	4.76	0.0				
41.00	5.00	4.76	0.0				
42.00	5.00	4.76	0.0				
43.00	5.00	4.76	0.0				
44.00	5.00	4.76	0.0				
45.00	5.00	4.76	0.0				
46.00	5.00	4.76	0.0				
47.00	5.00	4.76	0.0				
48.00	5.00	4.76	0.0				
49.00	5.00	4.76	0.0				
50.00	5.00	4.76	0.0				

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Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Subcatchment E1S: Area 1 - south section

Runoff = 1.8 cfs @ 12.07 hrs, Volume= 0.143 af, Depth= 4.76"

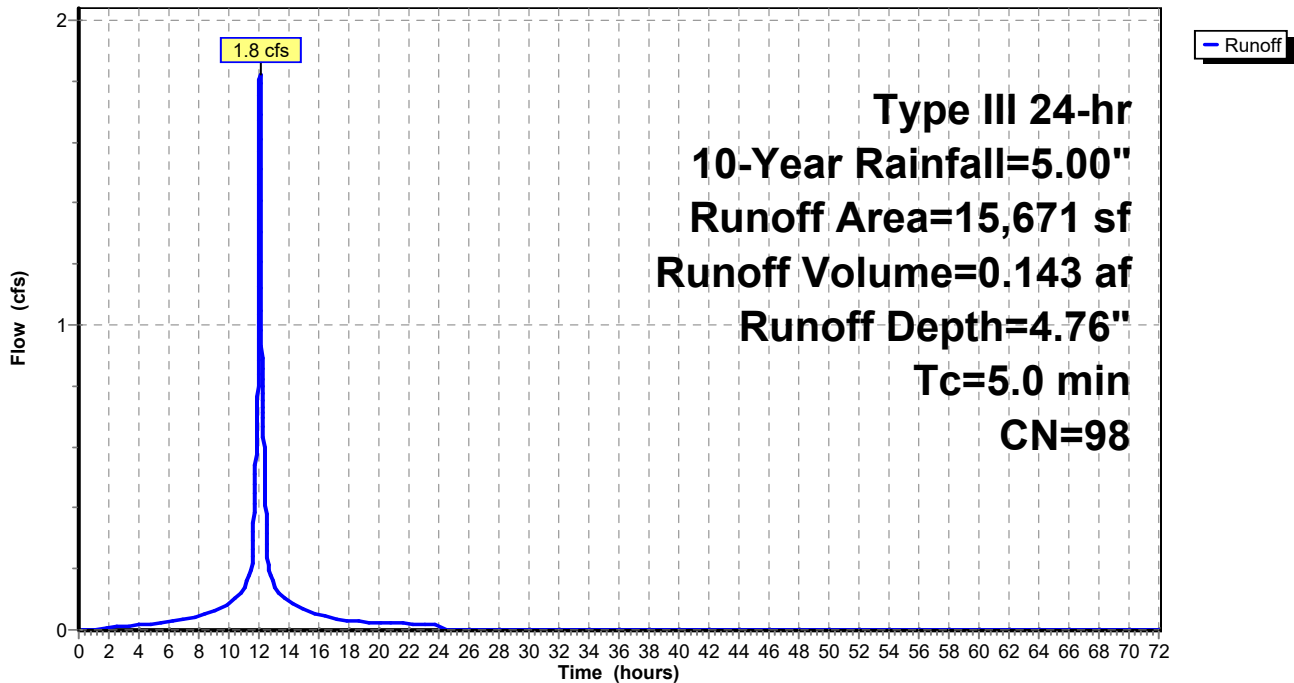
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.00"

Area (sf)	CN	Description
* 15,671	98	OF 1 paved south
15,671		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment E1S: Area 1 - south section

Hydrograph



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Type III 24-hr 10-Year Rainfall=5.00"

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Hydrograph for Subcatchment E1S: Area 1 - south section

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	5.00	4.76	0.0
1.00	0.05	0.00	0.0	52.00	5.00	4.76	0.0
2.00	0.10	0.01	0.0	53.00	5.00	4.76	0.0
3.00	0.15	0.04	0.0	54.00	5.00	4.76	0.0
4.00	0.22	0.08	0.0	55.00	5.00	4.76	0.0
5.00	0.28	0.13	0.0	56.00	5.00	4.76	0.0
6.00	0.36	0.19	0.0	57.00	5.00	4.76	0.0
7.00	0.45	0.28	0.0	58.00	5.00	4.76	0.0
8.00	0.57	0.38	0.0	59.00	5.00	4.76	0.0
9.00	0.73	0.53	0.1	60.00	5.00	4.76	0.0
10.00	0.95	0.74	0.1	61.00	5.00	4.76	0.0
11.00	1.25	1.03	0.1	62.00	5.00	4.76	0.0
12.00	2.50	2.27	1.2	63.00	5.00	4.76	0.0
13.00	3.75	3.52	0.1	64.00	5.00	4.76	0.0
14.00	4.06	3.82	0.1	65.00	5.00	4.76	0.0
15.00	4.27	4.04	0.1	66.00	5.00	4.76	0.0
16.00	4.43	4.19	0.0	67.00	5.00	4.76	0.0
17.00	4.55	4.31	0.0	68.00	5.00	4.76	0.0
18.00	4.64	4.40	0.0	69.00	5.00	4.76	0.0
19.00	4.72	4.48	0.0	70.00	5.00	4.76	0.0
20.00	4.79	4.55	0.0	71.00	5.00	4.76	0.0
21.00	4.85	4.61	0.0	72.00	5.00	4.76	0.0
22.00	4.90	4.67	0.0				
23.00	4.95	4.72	0.0				
24.00	5.00	4.76	0.0				
25.00	5.00	4.76	0.0				
26.00	5.00	4.76	0.0				
27.00	5.00	4.76	0.0				
28.00	5.00	4.76	0.0				
29.00	5.00	4.76	0.0				
30.00	5.00	4.76	0.0				
31.00	5.00	4.76	0.0				
32.00	5.00	4.76	0.0				
33.00	5.00	4.76	0.0				
34.00	5.00	4.76	0.0				
35.00	5.00	4.76	0.0				
36.00	5.00	4.76	0.0				
37.00	5.00	4.76	0.0				
38.00	5.00	4.76	0.0				
39.00	5.00	4.76	0.0				
40.00	5.00	4.76	0.0				
41.00	5.00	4.76	0.0				
42.00	5.00	4.76	0.0				
43.00	5.00	4.76	0.0				
44.00	5.00	4.76	0.0				
45.00	5.00	4.76	0.0				
46.00	5.00	4.76	0.0				
47.00	5.00	4.76	0.0				
48.00	5.00	4.76	0.0				
49.00	5.00	4.76	0.0				
50.00	5.00	4.76	0.0				

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Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Subcatchment E2N: Area 2 - 18" RCP

Runoff = 9.2 cfs @ 12.07 hrs, Volume= 0.718 af, Depth= 4.76"

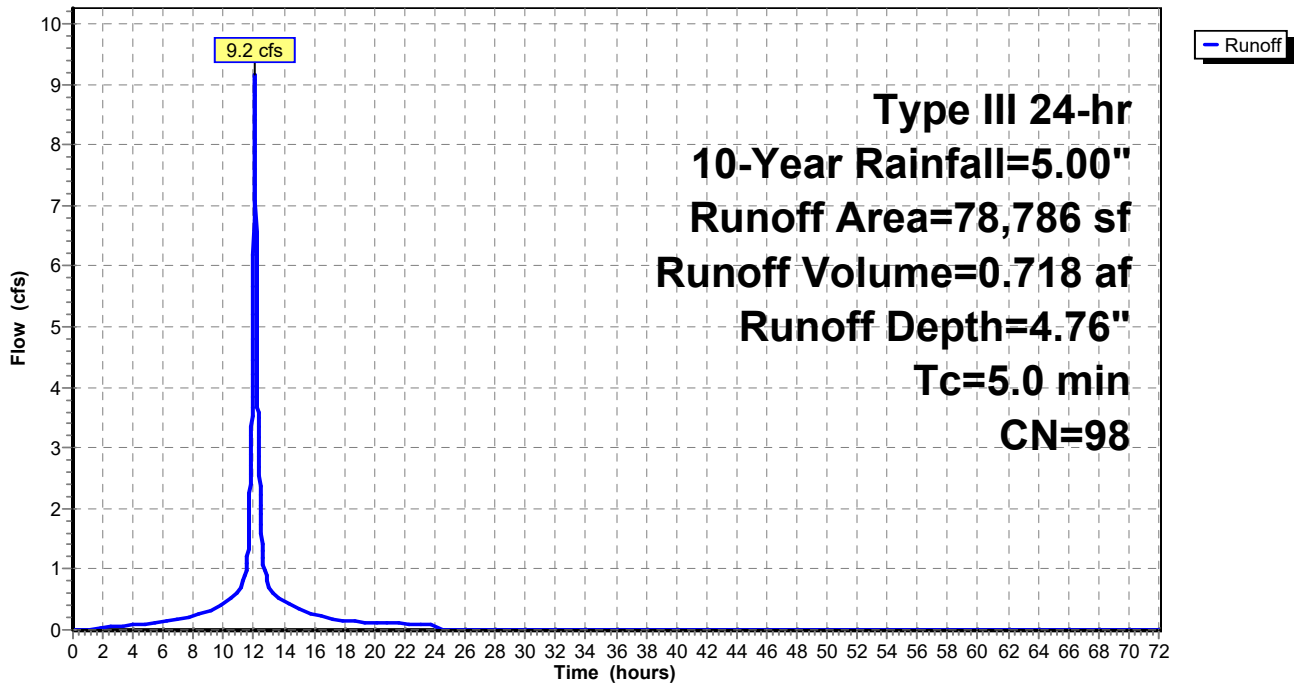
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.00"

Area (sf)	CN	Description
* 78,786	98	OF 2 paved north
78,786		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment E2N: Area 2 - 18" RCP

Hydrograph



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Type III 24-hr 10-Year Rainfall=5.00"

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Hydrograph for Subcatchment E2N: Area 2 - 18" RCP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	5.00	4.76	0.0
1.00	0.05	0.00	0.0	52.00	5.00	4.76	0.0
2.00	0.10	0.01	0.0	53.00	5.00	4.76	0.0
3.00	0.15	0.04	0.1	54.00	5.00	4.76	0.0
4.00	0.22	0.08	0.1	55.00	5.00	4.76	0.0
5.00	0.28	0.13	0.1	56.00	5.00	4.76	0.0
6.00	0.36	0.19	0.1	57.00	5.00	4.76	0.0
7.00	0.45	0.28	0.2	58.00	5.00	4.76	0.0
8.00	0.57	0.38	0.2	59.00	5.00	4.76	0.0
9.00	0.73	0.53	0.3	60.00	5.00	4.76	0.0
10.00	0.95	0.74	0.4	61.00	5.00	4.76	0.0
11.00	1.25	1.03	0.6	62.00	5.00	4.76	0.0
12.00	2.50	2.27	6.2	63.00	5.00	4.76	0.0
13.00	3.75	3.52	0.7	64.00	5.00	4.76	0.0
14.00	4.06	3.82	0.5	65.00	5.00	4.76	0.0
15.00	4.27	4.04	0.3	66.00	5.00	4.76	0.0
16.00	4.43	4.19	0.2	67.00	5.00	4.76	0.0
17.00	4.55	4.31	0.2	68.00	5.00	4.76	0.0
18.00	4.64	4.40	0.1	69.00	5.00	4.76	0.0
19.00	4.72	4.48	0.1	70.00	5.00	4.76	0.0
20.00	4.79	4.55	0.1	71.00	5.00	4.76	0.0
21.00	4.85	4.61	0.1	72.00	5.00	4.76	0.0
22.00	4.90	4.67	0.1				
23.00	4.95	4.72	0.1				
24.00	5.00	4.76	0.1				
25.00	5.00	4.76	0.0				
26.00	5.00	4.76	0.0				
27.00	5.00	4.76	0.0				
28.00	5.00	4.76	0.0				
29.00	5.00	4.76	0.0				
30.00	5.00	4.76	0.0				
31.00	5.00	4.76	0.0				
32.00	5.00	4.76	0.0				
33.00	5.00	4.76	0.0				
34.00	5.00	4.76	0.0				
35.00	5.00	4.76	0.0				
36.00	5.00	4.76	0.0				
37.00	5.00	4.76	0.0				
38.00	5.00	4.76	0.0				
39.00	5.00	4.76	0.0				
40.00	5.00	4.76	0.0				
41.00	5.00	4.76	0.0				
42.00	5.00	4.76	0.0				
43.00	5.00	4.76	0.0				
44.00	5.00	4.76	0.0				
45.00	5.00	4.76	0.0				
46.00	5.00	4.76	0.0				
47.00	5.00	4.76	0.0				
48.00	5.00	4.76	0.0				
49.00	5.00	4.76	0.0				
50.00	5.00	4.76	0.0				

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Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Subcatchment E3N: Area 3 - 24" RCP

Runoff = 9.1 cfs @ 12.07 hrs, Volume= 0.711 af, Depth= 4.76"

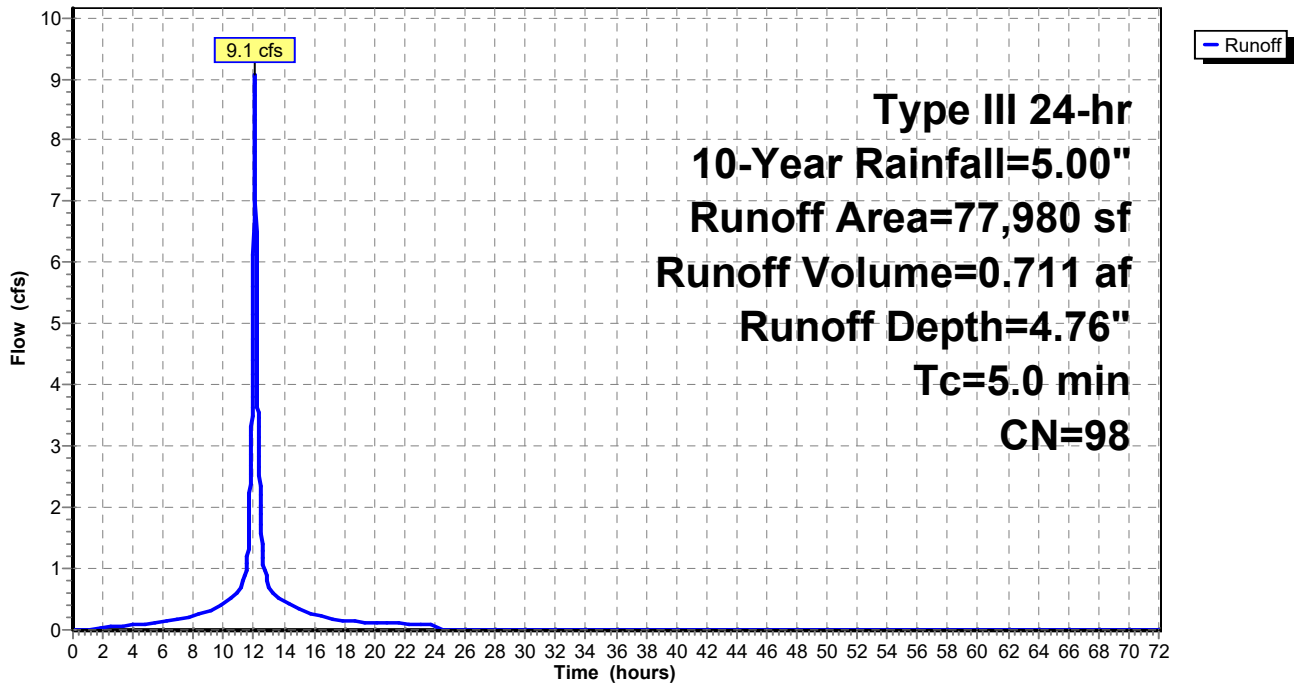
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.00"

Area (sf)	CN	Description
* 77,980	98	OF 3 paved north
77,980		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment E3N: Area 3 - 24" RCP

Hydrograph



Massport_M555_Backlands_PRE_LOW

Prepared by HDR, Inc

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

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Hydrograph for Subcatchment E3N: Area 3 - 24" RCP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	5.00	4.76	0.0
1.00	0.05	0.00	0.0	52.00	5.00	4.76	0.0
2.00	0.10	0.01	0.0	53.00	5.00	4.76	0.0
3.00	0.15	0.04	0.1	54.00	5.00	4.76	0.0
4.00	0.22	0.08	0.1	55.00	5.00	4.76	0.0
5.00	0.28	0.13	0.1	56.00	5.00	4.76	0.0
6.00	0.36	0.19	0.1	57.00	5.00	4.76	0.0
7.00	0.45	0.28	0.2	58.00	5.00	4.76	0.0
8.00	0.57	0.38	0.2	59.00	5.00	4.76	0.0
9.00	0.73	0.53	0.3	60.00	5.00	4.76	0.0
10.00	0.95	0.74	0.4	61.00	5.00	4.76	0.0
11.00	1.25	1.03	0.6	62.00	5.00	4.76	0.0
12.00	2.50	2.27	6.1	63.00	5.00	4.76	0.0
13.00	3.75	3.52	0.7	64.00	5.00	4.76	0.0
14.00	4.06	3.82	0.5	65.00	5.00	4.76	0.0
15.00	4.27	4.04	0.3	66.00	5.00	4.76	0.0
16.00	4.43	4.19	0.2	67.00	5.00	4.76	0.0
17.00	4.55	4.31	0.2	68.00	5.00	4.76	0.0
18.00	4.64	4.40	0.1	69.00	5.00	4.76	0.0
19.00	4.72	4.48	0.1	70.00	5.00	4.76	0.0
20.00	4.79	4.55	0.1	71.00	5.00	4.76	0.0
21.00	4.85	4.61	0.1	72.00	5.00	4.76	0.0
22.00	4.90	4.67	0.1				
23.00	4.95	4.72	0.1				
24.00	5.00	4.76	0.1				
25.00	5.00	4.76	0.0				
26.00	5.00	4.76	0.0				
27.00	5.00	4.76	0.0				
28.00	5.00	4.76	0.0				
29.00	5.00	4.76	0.0				
30.00	5.00	4.76	0.0				
31.00	5.00	4.76	0.0				
32.00	5.00	4.76	0.0				
33.00	5.00	4.76	0.0				
34.00	5.00	4.76	0.0				
35.00	5.00	4.76	0.0				
36.00	5.00	4.76	0.0				
37.00	5.00	4.76	0.0				
38.00	5.00	4.76	0.0				
39.00	5.00	4.76	0.0				
40.00	5.00	4.76	0.0				
41.00	5.00	4.76	0.0				
42.00	5.00	4.76	0.0				
43.00	5.00	4.76	0.0				
44.00	5.00	4.76	0.0				
45.00	5.00	4.76	0.0				
46.00	5.00	4.76	0.0				
47.00	5.00	4.76	0.0				
48.00	5.00	4.76	0.0				
49.00	5.00	4.76	0.0				
50.00	5.00	4.76	0.0				

Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Subcatchment E4N: Area 4 - 24" RCP

Runoff = 8.3 cfs @ 12.07 hrs, Volume= 0.654 af, Depth= 4.76"

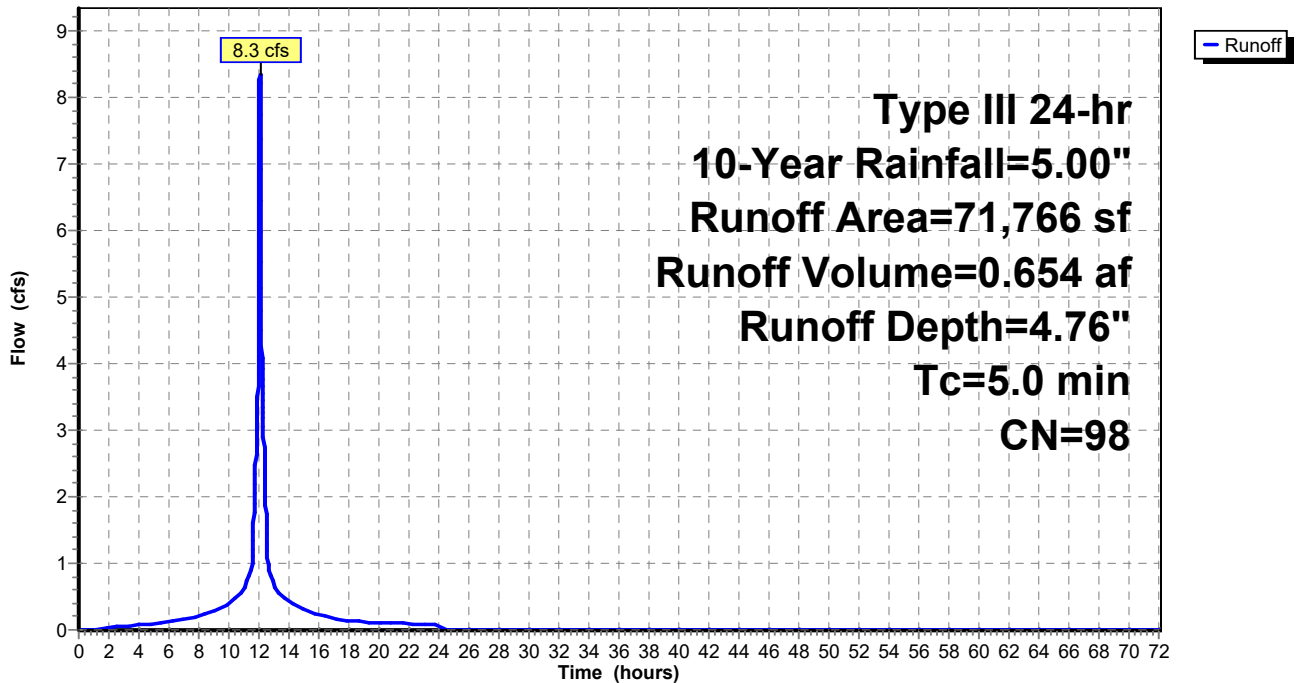
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-Year Rainfall=5.00"

Area (sf)	CN	Description
* 71,766	98	OF 4 paved north
71,766		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment E4N: Area 4 - 24" RCP

Hydrograph



Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

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Hydrograph for Subcatchment E4N: Area 4 - 24" RCP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	5.00	4.76	0.0
1.00	0.05	0.00	0.0	52.00	5.00	4.76	0.0
2.00	0.10	0.01	0.0	53.00	5.00	4.76	0.0
3.00	0.15	0.04	0.1	54.00	5.00	4.76	0.0
4.00	0.22	0.08	0.1	55.00	5.00	4.76	0.0
5.00	0.28	0.13	0.1	56.00	5.00	4.76	0.0
6.00	0.36	0.19	0.1	57.00	5.00	4.76	0.0
7.00	0.45	0.28	0.2	58.00	5.00	4.76	0.0
8.00	0.57	0.38	0.2	59.00	5.00	4.76	0.0
9.00	0.73	0.53	0.3	60.00	5.00	4.76	0.0
10.00	0.95	0.74	0.4	61.00	5.00	4.76	0.0
11.00	1.25	1.03	0.6	62.00	5.00	4.76	0.0
12.00	2.50	2.27	5.6	63.00	5.00	4.76	0.0
13.00	3.75	3.52	0.7	64.00	5.00	4.76	0.0
14.00	4.06	3.82	0.4	65.00	5.00	4.76	0.0
15.00	4.27	4.04	0.3	66.00	5.00	4.76	0.0
16.00	4.43	4.19	0.2	67.00	5.00	4.76	0.0
17.00	4.55	4.31	0.2	68.00	5.00	4.76	0.0
18.00	4.64	4.40	0.1	69.00	5.00	4.76	0.0
19.00	4.72	4.48	0.1	70.00	5.00	4.76	0.0
20.00	4.79	4.55	0.1	71.00	5.00	4.76	0.0
21.00	4.85	4.61	0.1	72.00	5.00	4.76	0.0
22.00	4.90	4.67	0.1				
23.00	4.95	4.72	0.1				
24.00	5.00	4.76	0.1				
25.00	5.00	4.76	0.0				
26.00	5.00	4.76	0.0				
27.00	5.00	4.76	0.0				
28.00	5.00	4.76	0.0				
29.00	5.00	4.76	0.0				
30.00	5.00	4.76	0.0				
31.00	5.00	4.76	0.0				
32.00	5.00	4.76	0.0				
33.00	5.00	4.76	0.0				
34.00	5.00	4.76	0.0				
35.00	5.00	4.76	0.0				
36.00	5.00	4.76	0.0				
37.00	5.00	4.76	0.0				
38.00	5.00	4.76	0.0				
39.00	5.00	4.76	0.0				
40.00	5.00	4.76	0.0				
41.00	5.00	4.76	0.0				
42.00	5.00	4.76	0.0				
43.00	5.00	4.76	0.0				
44.00	5.00	4.76	0.0				
45.00	5.00	4.76	0.0				
46.00	5.00	4.76	0.0				
47.00	5.00	4.76	0.0				
48.00	5.00	4.76	0.0				
49.00	5.00	4.76	0.0				
50.00	5.00	4.76	0.0				

Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Subcatchment E5N: Area 5 -36" RCP

Runoff = 4.4 cfs @ 12.07 hrs, Volume= 0.345 af, Depth= 4.76"

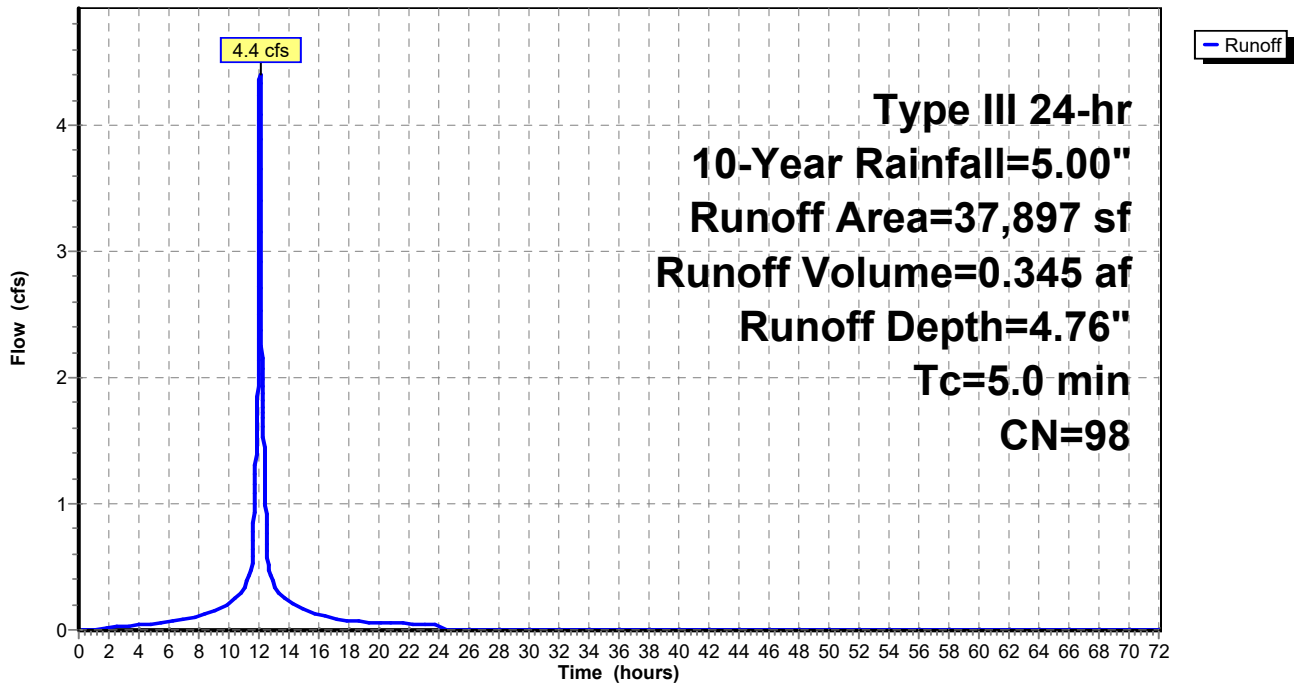
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.00"

Area (sf)	CN	Description
* 37,897	98	OF 5 paved north
37,897		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment E5N: Area 5 -36" RCP

Hydrograph



Massport_M555_Backlands_PRE_LOW

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Type III 24-hr 10-Year Rainfall=5.00"

Printed 7/6/2021

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Hydrograph for Subcatchment E5N: Area 5 -36" RCP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	5.00	4.76	0.0
1.00	0.05	0.00	0.0	52.00	5.00	4.76	0.0
2.00	0.10	0.01	0.0	53.00	5.00	4.76	0.0
3.00	0.15	0.04	0.0	54.00	5.00	4.76	0.0
4.00	0.22	0.08	0.0	55.00	5.00	4.76	0.0
5.00	0.28	0.13	0.0	56.00	5.00	4.76	0.0
6.00	0.36	0.19	0.1	57.00	5.00	4.76	0.0
7.00	0.45	0.28	0.1	58.00	5.00	4.76	0.0
8.00	0.57	0.38	0.1	59.00	5.00	4.76	0.0
9.00	0.73	0.53	0.2	60.00	5.00	4.76	0.0
10.00	0.95	0.74	0.2	61.00	5.00	4.76	0.0
11.00	1.25	1.03	0.3	62.00	5.00	4.76	0.0
12.00	2.50	2.27	3.0	63.00	5.00	4.76	0.0
13.00	3.75	3.52	0.4	64.00	5.00	4.76	0.0
14.00	4.06	3.82	0.2	65.00	5.00	4.76	0.0
15.00	4.27	4.04	0.2	66.00	5.00	4.76	0.0
16.00	4.43	4.19	0.1	67.00	5.00	4.76	0.0
17.00	4.55	4.31	0.1	68.00	5.00	4.76	0.0
18.00	4.64	4.40	0.1	69.00	5.00	4.76	0.0
19.00	4.72	4.48	0.1	70.00	5.00	4.76	0.0
20.00	4.79	4.55	0.1	71.00	5.00	4.76	0.0
21.00	4.85	4.61	0.1	72.00	5.00	4.76	0.0
22.00	4.90	4.67	0.0				
23.00	4.95	4.72	0.0				
24.00	5.00	4.76	0.0				
25.00	5.00	4.76	0.0				
26.00	5.00	4.76	0.0				
27.00	5.00	4.76	0.0				
28.00	5.00	4.76	0.0				
29.00	5.00	4.76	0.0				
30.00	5.00	4.76	0.0				
31.00	5.00	4.76	0.0				
32.00	5.00	4.76	0.0				
33.00	5.00	4.76	0.0				
34.00	5.00	4.76	0.0				
35.00	5.00	4.76	0.0				
36.00	5.00	4.76	0.0				
37.00	5.00	4.76	0.0				
38.00	5.00	4.76	0.0				
39.00	5.00	4.76	0.0				
40.00	5.00	4.76	0.0				
41.00	5.00	4.76	0.0				
42.00	5.00	4.76	0.0				
43.00	5.00	4.76	0.0				
44.00	5.00	4.76	0.0				
45.00	5.00	4.76	0.0				
46.00	5.00	4.76	0.0				
47.00	5.00	4.76	0.0				
48.00	5.00	4.76	0.0				
49.00	5.00	4.76	0.0				
50.00	5.00	4.76	0.0				

Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

Printed 7/6/2021

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Summary for Subcatchment E6: Area 6 - 42" RCP

Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

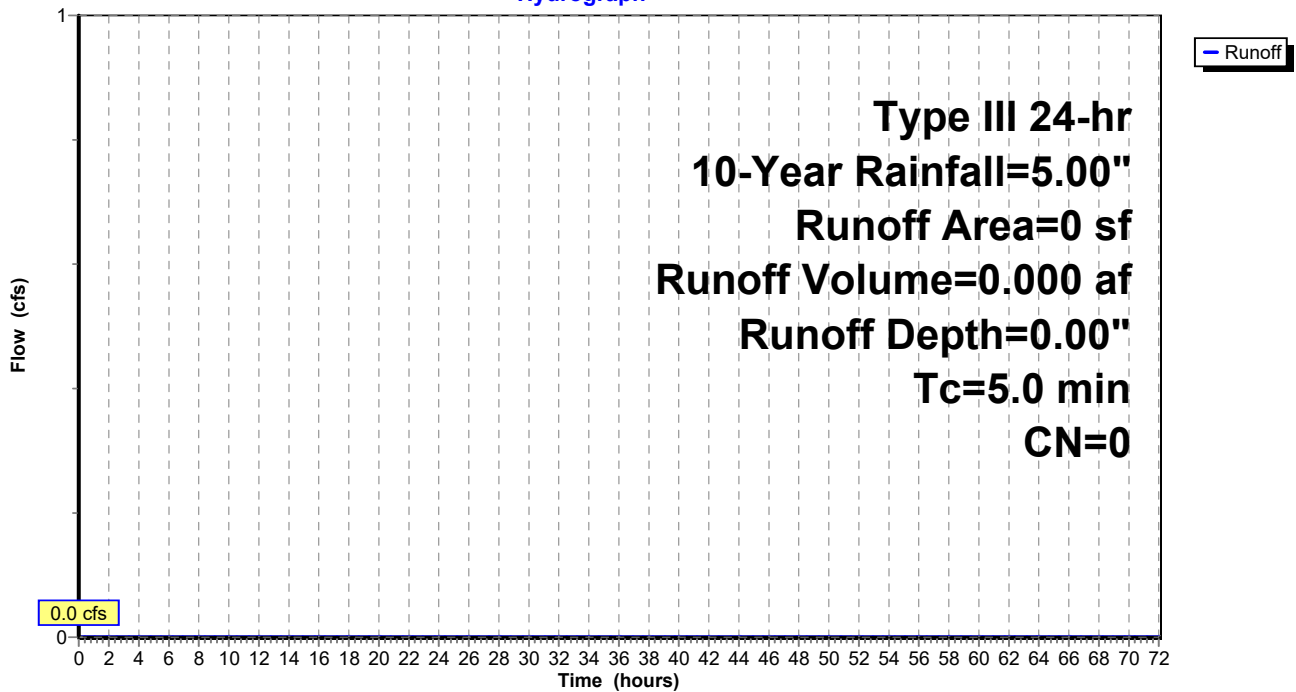
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.00"

Area (sf)	CN	Description
* 0	98	OF 6 paved north within LOW

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment E6: Area 6 - 42" RCP

Hydrograph



Massport_M555_Backlands_PRE_LOW

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Type III 24-hr 10-Year Rainfall=5.00"

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Hydrograph for Subcatchment E6: Area 6 - 42" RCP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	5.00	0.00	0.0
1.00	0.05	0.00	0.0	52.00	5.00	0.00	0.0
2.00	0.10	0.00	0.0	53.00	5.00	0.00	0.0
3.00	0.15	0.00	0.0	54.00	5.00	0.00	0.0
4.00	0.22	0.00	0.0	55.00	5.00	0.00	0.0
5.00	0.28	0.00	0.0	56.00	5.00	0.00	0.0
6.00	0.36	0.00	0.0	57.00	5.00	0.00	0.0
7.00	0.45	0.00	0.0	58.00	5.00	0.00	0.0
8.00	0.57	0.00	0.0	59.00	5.00	0.00	0.0
9.00	0.73	0.00	0.0	60.00	5.00	0.00	0.0
10.00	0.95	0.00	0.0	61.00	5.00	0.00	0.0
11.00	1.25	0.00	0.0	62.00	5.00	0.00	0.0
12.00	2.50	0.00	0.0	63.00	5.00	0.00	0.0
13.00	3.75	0.00	0.0	64.00	5.00	0.00	0.0
14.00	4.06	0.00	0.0	65.00	5.00	0.00	0.0
15.00	4.27	0.00	0.0	66.00	5.00	0.00	0.0
16.00	4.43	0.00	0.0	67.00	5.00	0.00	0.0
17.00	4.55	0.00	0.0	68.00	5.00	0.00	0.0
18.00	4.64	0.00	0.0	69.00	5.00	0.00	0.0
19.00	4.72	0.00	0.0	70.00	5.00	0.00	0.0
20.00	4.79	0.00	0.0	71.00	5.00	0.00	0.0
21.00	4.85	0.00	0.0	72.00	5.00	0.00	0.0
22.00	4.90	0.00	0.0				
23.00	4.95	0.00	0.0				
24.00	5.00	0.00	0.0				
25.00	5.00	0.00	0.0				
26.00	5.00	0.00	0.0				
27.00	5.00	0.00	0.0				
28.00	5.00	0.00	0.0				
29.00	5.00	0.00	0.0				
30.00	5.00	0.00	0.0				
31.00	5.00	0.00	0.0				
32.00	5.00	0.00	0.0				
33.00	5.00	0.00	0.0				
34.00	5.00	0.00	0.0				
35.00	5.00	0.00	0.0				
36.00	5.00	0.00	0.0				
37.00	5.00	0.00	0.0				
38.00	5.00	0.00	0.0				
39.00	5.00	0.00	0.0				
40.00	5.00	0.00	0.0				
41.00	5.00	0.00	0.0				
42.00	5.00	0.00	0.0				
43.00	5.00	0.00	0.0				
44.00	5.00	0.00	0.0				
45.00	5.00	0.00	0.0				
46.00	5.00	0.00	0.0				
47.00	5.00	0.00	0.0				
48.00	5.00	0.00	0.0				
49.00	5.00	0.00	0.0				
50.00	5.00	0.00	0.0				

Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Subcatchment E7: Area 7 - 30" RCP

Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

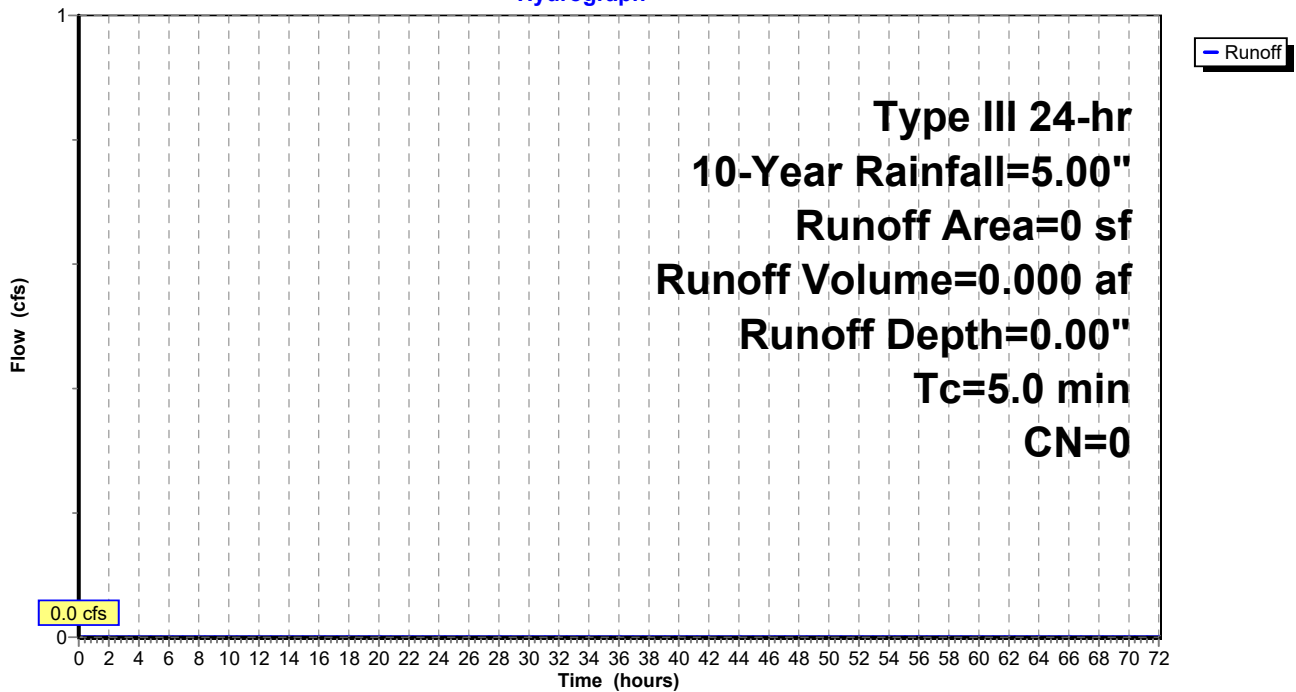
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.00"

Area (sf)	CN	Description
* 0	98	OF 7 paved north within LOW

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment E7: Area 7 - 30" RCP

Hydrograph



Massport_M555_Backlands_PRE_LOW

Prepared by HDR, Inc

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

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Hydrograph for Subcatchment E7: Area 7 - 30" RCP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	5.00	0.00	0.0
1.00	0.05	0.00	0.0	52.00	5.00	0.00	0.0
2.00	0.10	0.00	0.0	53.00	5.00	0.00	0.0
3.00	0.15	0.00	0.0	54.00	5.00	0.00	0.0
4.00	0.22	0.00	0.0	55.00	5.00	0.00	0.0
5.00	0.28	0.00	0.0	56.00	5.00	0.00	0.0
6.00	0.36	0.00	0.0	57.00	5.00	0.00	0.0
7.00	0.45	0.00	0.0	58.00	5.00	0.00	0.0
8.00	0.57	0.00	0.0	59.00	5.00	0.00	0.0
9.00	0.73	0.00	0.0	60.00	5.00	0.00	0.0
10.00	0.95	0.00	0.0	61.00	5.00	0.00	0.0
11.00	1.25	0.00	0.0	62.00	5.00	0.00	0.0
12.00	2.50	0.00	0.0	63.00	5.00	0.00	0.0
13.00	3.75	0.00	0.0	64.00	5.00	0.00	0.0
14.00	4.06	0.00	0.0	65.00	5.00	0.00	0.0
15.00	4.27	0.00	0.0	66.00	5.00	0.00	0.0
16.00	4.43	0.00	0.0	67.00	5.00	0.00	0.0
17.00	4.55	0.00	0.0	68.00	5.00	0.00	0.0
18.00	4.64	0.00	0.0	69.00	5.00	0.00	0.0
19.00	4.72	0.00	0.0	70.00	5.00	0.00	0.0
20.00	4.79	0.00	0.0	71.00	5.00	0.00	0.0
21.00	4.85	0.00	0.0	72.00	5.00	0.00	0.0
22.00	4.90	0.00	0.0				
23.00	4.95	0.00	0.0				
24.00	5.00	0.00	0.0				
25.00	5.00	0.00	0.0				
26.00	5.00	0.00	0.0				
27.00	5.00	0.00	0.0				
28.00	5.00	0.00	0.0				
29.00	5.00	0.00	0.0				
30.00	5.00	0.00	0.0				
31.00	5.00	0.00	0.0				
32.00	5.00	0.00	0.0				
33.00	5.00	0.00	0.0				
34.00	5.00	0.00	0.0				
35.00	5.00	0.00	0.0				
36.00	5.00	0.00	0.0				
37.00	5.00	0.00	0.0				
38.00	5.00	0.00	0.0				
39.00	5.00	0.00	0.0				
40.00	5.00	0.00	0.0				
41.00	5.00	0.00	0.0				
42.00	5.00	0.00	0.0				
43.00	5.00	0.00	0.0				
44.00	5.00	0.00	0.0				
45.00	5.00	0.00	0.0				
46.00	5.00	0.00	0.0				
47.00	5.00	0.00	0.0				
48.00	5.00	0.00	0.0				
49.00	5.00	0.00	0.0				
50.00	5.00	0.00	0.0				

Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Pond OF1: Outfall 1 - 18" RCP

Inflow Area = 1.66 ac, 100.00% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 8.4 cfs @ 12.07 hrs, Volume= 0.661 af
Outflow = 8.4 cfs @ 12.07 hrs, Volume= 0.661 af, Atten= 0%, Lag= 0.0 min
Primary = 8.4 cfs @ 12.07 hrs, Volume= 0.661 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 2.41' @ 12.07 hrs

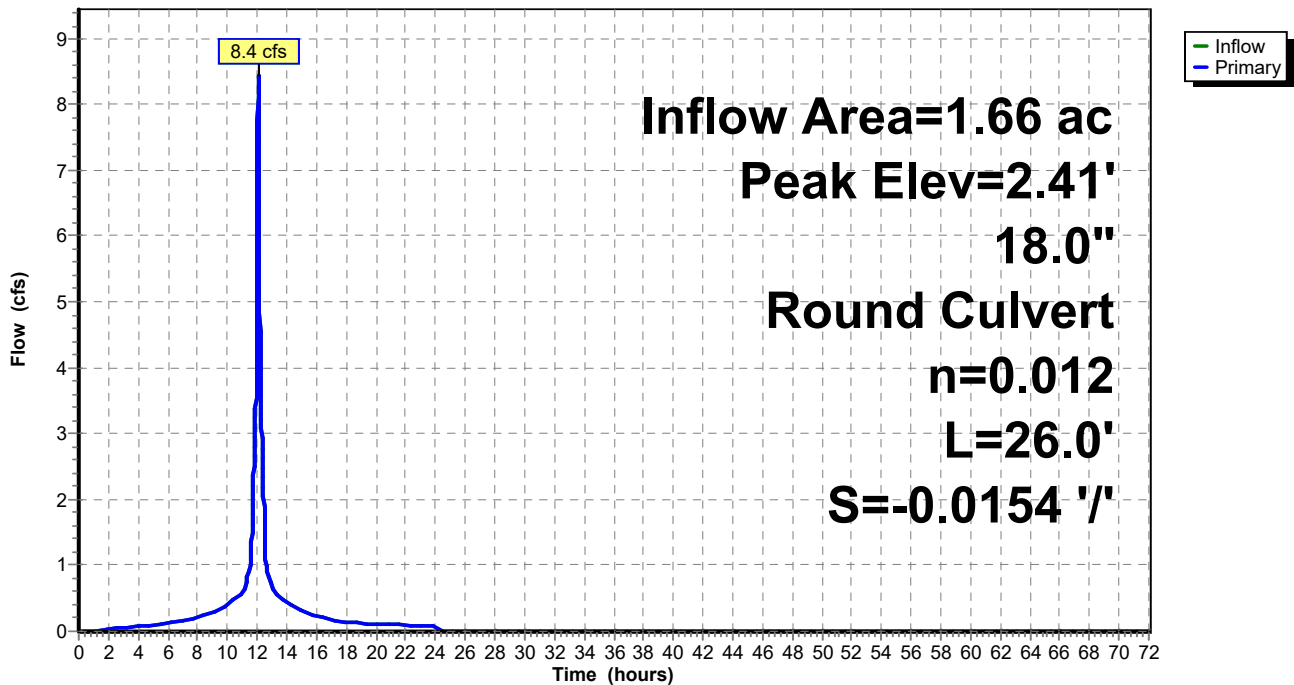
Device	Routing	Invert	Outlet Devices
#1	Primary	0.78'	18.0" Round RCP_Round 18" L= 26.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 0.38' / 0.78' S= -0.0154 '/ Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=8.4 cfs @ 12.07 hrs HW=2.41' (Free Discharge)

↑1=RCP_Round 18" (Barrel Controls 8.4 cfs @ 4.77 fps)

Pond OF1: Outfall 1 - 18" RCP

Hydrograph



Massport_M555_Backlands_PRE_LOW

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Hydrograph for Pond OF1: Outfall 1 - 18" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	0.78	0.0	51.00	0.0	0.78	0.0
1.00	0.0	0.80	0.0	52.00	0.0	0.78	0.0
2.00	0.0	0.84	0.0	53.00	0.0	0.78	0.0
3.00	0.1	0.87	0.1	54.00	0.0	0.78	0.0
4.00	0.1	0.88	0.1	55.00	0.0	0.78	0.0
5.00	0.1	0.89	0.1	56.00	0.0	0.78	0.0
6.00	0.1	0.90	0.1	57.00	0.0	0.78	0.0
7.00	0.2	0.92	0.2	58.00	0.0	0.78	0.0
8.00	0.2	0.94	0.2	59.00	0.0	0.78	0.0
9.00	0.3	0.98	0.3	60.00	0.0	0.78	0.0
10.00	0.4	1.01	0.4	61.00	0.0	0.78	0.0
11.00	0.6	1.07	0.6	62.00	0.0	0.78	0.0
12.00	5.7	1.85	5.7	63.00	0.0	0.78	0.0
13.00	0.7	1.09	0.7	64.00	0.0	0.78	0.0
14.00	0.4	1.02	0.4	65.00	0.0	0.78	0.0
15.00	0.3	0.99	0.3	66.00	0.0	0.78	0.0
16.00	0.2	0.96	0.2	67.00	0.0	0.78	0.0
17.00	0.2	0.94	0.2	68.00	0.0	0.78	0.0
18.00	0.1	0.92	0.1	69.00	0.0	0.78	0.0
19.00	0.1	0.91	0.1	70.00	0.0	0.78	0.0
20.00	0.1	0.90	0.1	71.00	0.0	0.78	0.0
21.00	0.1	0.90	0.1	72.00	0.0	0.78	0.0
22.00	0.1	0.89	0.1				
23.00	0.1	0.88	0.1				
24.00	0.1	0.88	0.1				
25.00	0.0	0.78	0.0				
26.00	0.0	0.78	0.0				
27.00	0.0	0.78	0.0				
28.00	0.0	0.78	0.0				
29.00	0.0	0.78	0.0				
30.00	0.0	0.78	0.0				
31.00	0.0	0.78	0.0				
32.00	0.0	0.78	0.0				
33.00	0.0	0.78	0.0				
34.00	0.0	0.78	0.0				
35.00	0.0	0.78	0.0				
36.00	0.0	0.78	0.0				
37.00	0.0	0.78	0.0				
38.00	0.0	0.78	0.0				
39.00	0.0	0.78	0.0				
40.00	0.0	0.78	0.0				
41.00	0.0	0.78	0.0				
42.00	0.0	0.78	0.0				
43.00	0.0	0.78	0.0				
44.00	0.0	0.78	0.0				
45.00	0.0	0.78	0.0				
46.00	0.0	0.78	0.0				
47.00	0.0	0.78	0.0				
48.00	0.0	0.78	0.0				
49.00	0.0	0.78	0.0				
50.00	0.0	0.78	0.0				

Massport_M555_Backlands_PRE_LOW

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Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Pond OF2: Outfall 2 - 18" RCP

Inflow Area = 1.81 ac, 100.00% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 9.2 cfs @ 12.07 hrs, Volume= 0.718 af
Outflow = 9.2 cfs @ 12.07 hrs, Volume= 0.718 af, Atten= 0%, Lag= 0.0 min
Primary = 9.2 cfs @ 12.07 hrs, Volume= 0.718 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 3.42' @ 12.07 hrs

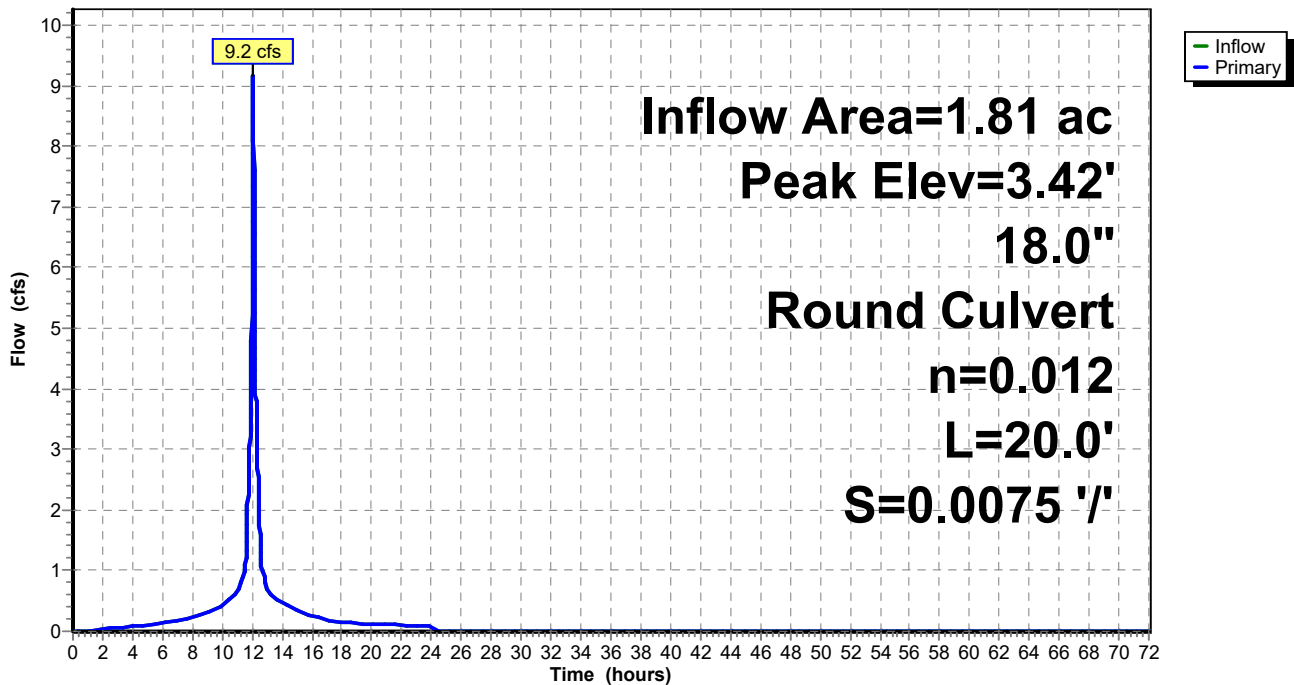
Device	Routing	Invert	Outlet Devices
#1	Primary	1.58'	18.0" Round RCP_Round 18" L= 20.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1.58' / 1.43' S= 0.0075 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=9.2 cfs @ 12.07 hrs HW=3.42' (Free Discharge)

↑1=RCP_Round 18" (Barrel Controls 9.2 cfs @ 5.39 fps)

Pond OF2: Outfall 2 - 18" RCP

Hydrograph



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Type III 24-hr 10-Year Rainfall=5.00"

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Hydrograph for Pond OF2: Outfall 2 - 18" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	1.58	0.0	51.00	0.0	1.58	0.0
1.00	0.0	1.61	0.0	52.00	0.0	1.58	0.0
2.00	0.0	1.67	0.0	53.00	0.0	1.58	0.0
3.00	0.1	1.69	0.1	54.00	0.0	1.58	0.0
4.00	0.1	1.71	0.1	55.00	0.0	1.58	0.0
5.00	0.1	1.73	0.1	56.00	0.0	1.58	0.0
6.00	0.1	1.74	0.1	57.00	0.0	1.58	0.0
7.00	0.2	1.77	0.2	58.00	0.0	1.58	0.0
8.00	0.2	1.79	0.2	59.00	0.0	1.58	0.0
9.00	0.3	1.84	0.3	60.00	0.0	1.58	0.0
10.00	0.4	1.88	0.4	61.00	0.0	1.58	0.0
11.00	0.6	1.95	0.6	62.00	0.0	1.58	0.0
12.00	6.2	2.94	6.2	63.00	0.0	1.58	0.0
13.00	0.7	1.98	0.7	64.00	0.0	1.58	0.0
14.00	0.5	1.90	0.5	65.00	0.0	1.58	0.0
15.00	0.3	1.85	0.3	66.00	0.0	1.58	0.0
16.00	0.2	1.81	0.2	67.00	0.0	1.58	0.0
17.00	0.2	1.78	0.2	68.00	0.0	1.58	0.0
18.00	0.1	1.76	0.1	69.00	0.0	1.58	0.0
19.00	0.1	1.75	0.1	70.00	0.0	1.58	0.0
20.00	0.1	1.74	0.1	71.00	0.0	1.58	0.0
21.00	0.1	1.73	0.1	72.00	0.0	1.58	0.0
22.00	0.1	1.72	0.1				
23.00	0.1	1.72	0.1				
24.00	0.1	1.71	0.1				
25.00	0.0	1.58	0.0				
26.00	0.0	1.58	0.0				
27.00	0.0	1.58	0.0				
28.00	0.0	1.58	0.0				
29.00	0.0	1.58	0.0				
30.00	0.0	1.58	0.0				
31.00	0.0	1.58	0.0				
32.00	0.0	1.58	0.0				
33.00	0.0	1.58	0.0				
34.00	0.0	1.58	0.0				
35.00	0.0	1.58	0.0				
36.00	0.0	1.58	0.0				
37.00	0.0	1.58	0.0				
38.00	0.0	1.58	0.0				
39.00	0.0	1.58	0.0				
40.00	0.0	1.58	0.0				
41.00	0.0	1.58	0.0				
42.00	0.0	1.58	0.0				
43.00	0.0	1.58	0.0				
44.00	0.0	1.58	0.0				
45.00	0.0	1.58	0.0				
46.00	0.0	1.58	0.0				
47.00	0.0	1.58	0.0				
48.00	0.0	1.58	0.0				
49.00	0.0	1.58	0.0				
50.00	0.0	1.58	0.0				

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Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Pond OF3: Outfall 3 - 24" RCP

Inflow Area = 1.79 ac, 100.00% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 9.1 cfs @ 12.07 hrs, Volume= 0.711 af
Outflow = 9.1 cfs @ 12.07 hrs, Volume= 0.711 af, Atten= 0%, Lag= 0.0 min
Primary = 9.1 cfs @ 12.07 hrs, Volume= 0.711 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 1.67' @ 12.07 hrs

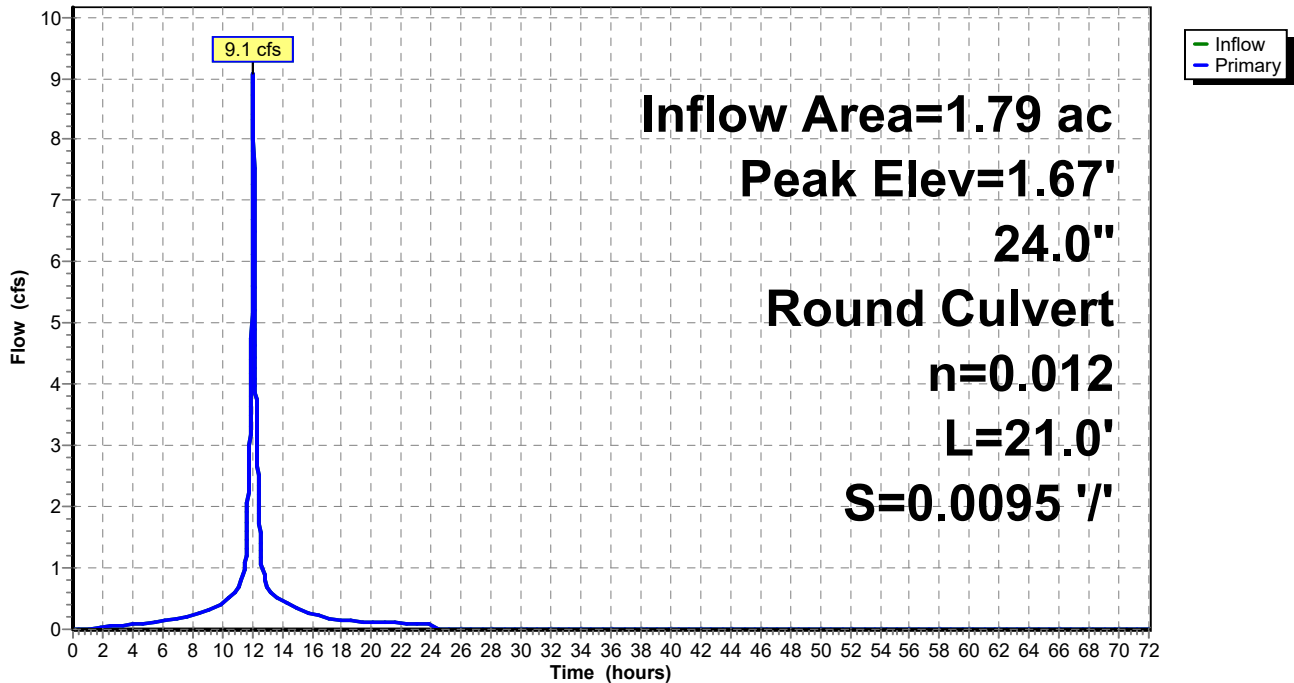
Device	Routing	Invert	Outlet Devices
#1	Primary	0.23'	24.0" Round RCP_Round 24" L= 21.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 0.23' / 0.03' S= 0.0095 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=9.1 cfs @ 12.07 hrs HW=1.67' (Free Discharge)

↑1=RCP_Round 24" (Barrel Controls 9.1 cfs @ 5.25 fps)

Pond OF3: Outfall 3 - 24" RCP

Hydrograph



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Hydrograph for Pond OF3: Outfall 3 - 24" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	0.23	0.0	51.00	0.0	0.23	0.0
1.00	0.0	0.26	0.0	52.00	0.0	0.23	0.0
2.00	0.0	0.31	0.0	53.00	0.0	0.23	0.0
3.00	0.1	0.33	0.1	54.00	0.0	0.23	0.0
4.00	0.1	0.35	0.1	55.00	0.0	0.23	0.0
5.00	0.1	0.36	0.1	56.00	0.0	0.23	0.0
6.00	0.1	0.37	0.1	57.00	0.0	0.23	0.0
7.00	0.2	0.39	0.2	58.00	0.0	0.23	0.0
8.00	0.2	0.42	0.2	59.00	0.0	0.23	0.0
9.00	0.3	0.46	0.3	60.00	0.0	0.23	0.0
10.00	0.4	0.49	0.4	61.00	0.0	0.23	0.0
11.00	0.6	0.55	0.6	62.00	0.0	0.23	0.0
12.00	6.1	1.37	6.1	63.00	0.0	0.23	0.0
13.00	0.7	0.58	0.7	64.00	0.0	0.23	0.0
14.00	0.5	0.51	0.5	65.00	0.0	0.23	0.0
15.00	0.3	0.47	0.3	66.00	0.0	0.23	0.0
16.00	0.2	0.43	0.2	67.00	0.0	0.23	0.0
17.00	0.2	0.41	0.2	68.00	0.0	0.23	0.0
18.00	0.1	0.39	0.1	69.00	0.0	0.23	0.0
19.00	0.1	0.38	0.1	70.00	0.0	0.23	0.0
20.00	0.1	0.37	0.1	71.00	0.0	0.23	0.0
21.00	0.1	0.36	0.1	72.00	0.0	0.23	0.0
22.00	0.1	0.36	0.1				
23.00	0.1	0.35	0.1				
24.00	0.1	0.34	0.1				
25.00	0.0	0.23	0.0				
26.00	0.0	0.23	0.0				
27.00	0.0	0.23	0.0				
28.00	0.0	0.23	0.0				
29.00	0.0	0.23	0.0				
30.00	0.0	0.23	0.0				
31.00	0.0	0.23	0.0				
32.00	0.0	0.23	0.0				
33.00	0.0	0.23	0.0				
34.00	0.0	0.23	0.0				
35.00	0.0	0.23	0.0				
36.00	0.0	0.23	0.0				
37.00	0.0	0.23	0.0				
38.00	0.0	0.23	0.0				
39.00	0.0	0.23	0.0				
40.00	0.0	0.23	0.0				
41.00	0.0	0.23	0.0				
42.00	0.0	0.23	0.0				
43.00	0.0	0.23	0.0				
44.00	0.0	0.23	0.0				
45.00	0.0	0.23	0.0				
46.00	0.0	0.23	0.0				
47.00	0.0	0.23	0.0				
48.00	0.0	0.23	0.0				
49.00	0.0	0.23	0.0				
50.00	0.0	0.23	0.0				

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Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Pond OF4: Outfall 4 - 24" RCP

Inflow Area = 1.65 ac, 100.00% Impervious, Inflow Depth = 4.76" for 10-Year event
 Inflow = 8.3 cfs @ 12.07 hrs, Volume= 0.654 af
 Outflow = 8.3 cfs @ 12.07 hrs, Volume= 0.654 af, Atten= 0%, Lag= 0.0 min
 Primary = 8.3 cfs @ 12.07 hrs, Volume= 0.654 af

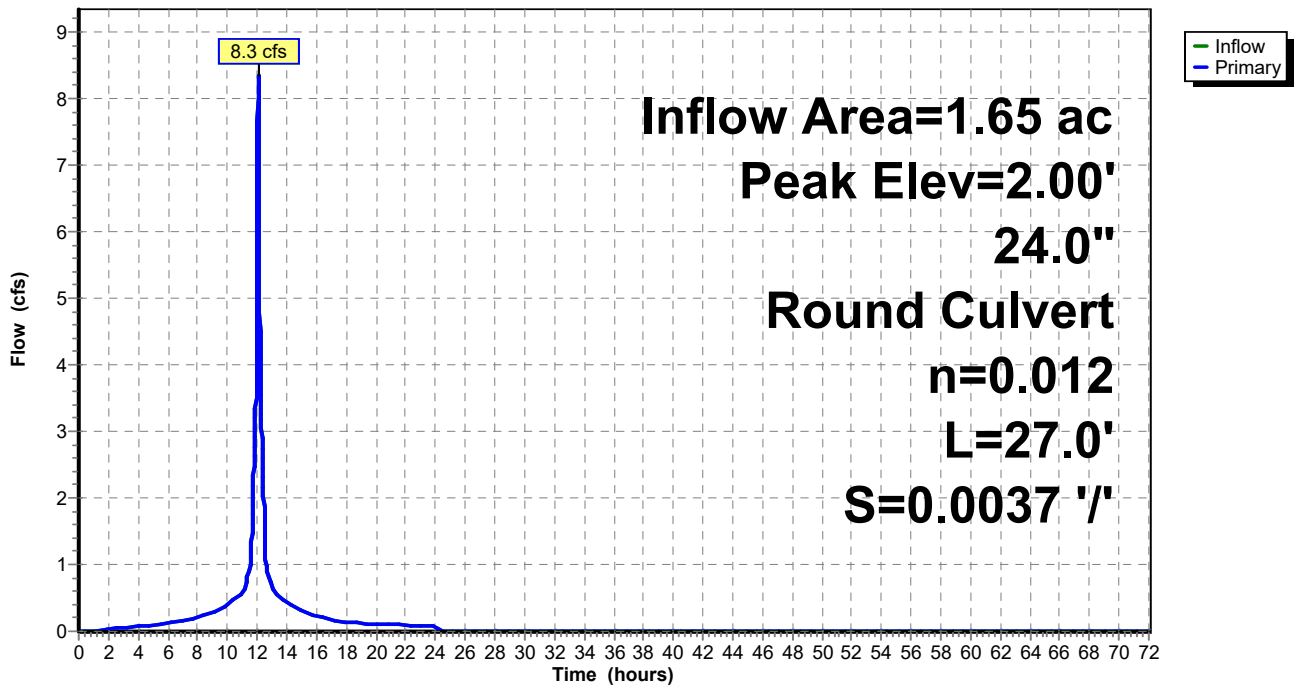
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 2.00' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.53'	24.0" Round RCP_Round 24" L= 27.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 0.53' / 0.43' S= 0.0037 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=8.3 cfs @ 12.07 hrs HW=2.00' (Free Discharge)
 ↳1=RCP_Round 24" (Barrel Controls 8.3 cfs @ 4.70 fps)

Pond OF4: Outfall 4 - 24" RCP

Hydrograph



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Hydrograph for Pond OF4: Outfall 4 - 24" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	0.53	0.0	51.00	0.0	0.53	0.0
1.00	0.0	0.56	0.0	52.00	0.0	0.53	0.0
2.00	0.0	0.62	0.0	53.00	0.0	0.53	0.0
3.00	0.1	0.65	0.1	54.00	0.0	0.53	0.0
4.00	0.1	0.66	0.1	55.00	0.0	0.53	0.0
5.00	0.1	0.68	0.1	56.00	0.0	0.53	0.0
6.00	0.1	0.69	0.1	57.00	0.0	0.53	0.0
7.00	0.2	0.72	0.2	58.00	0.0	0.53	0.0
8.00	0.2	0.74	0.2	59.00	0.0	0.53	0.0
9.00	0.3	0.78	0.3	60.00	0.0	0.53	0.0
10.00	0.4	0.82	0.4	61.00	0.0	0.53	0.0
11.00	0.6	0.89	0.6	62.00	0.0	0.53	0.0
12.00	5.6	1.71	5.6	63.00	0.0	0.53	0.0
13.00	0.7	0.91	0.7	64.00	0.0	0.53	0.0
14.00	0.4	0.84	0.4	65.00	0.0	0.53	0.0
15.00	0.3	0.80	0.3	66.00	0.0	0.53	0.0
16.00	0.2	0.76	0.2	67.00	0.0	0.53	0.0
17.00	0.2	0.73	0.2	68.00	0.0	0.53	0.0
18.00	0.1	0.71	0.1	69.00	0.0	0.53	0.0
19.00	0.1	0.70	0.1	70.00	0.0	0.53	0.0
20.00	0.1	0.69	0.1	71.00	0.0	0.53	0.0
21.00	0.1	0.68	0.1	72.00	0.0	0.53	0.0
22.00	0.1	0.68	0.1				
23.00	0.1	0.67	0.1				
24.00	0.1	0.66	0.1				
25.00	0.0	0.53	0.0				
26.00	0.0	0.53	0.0				
27.00	0.0	0.53	0.0				
28.00	0.0	0.53	0.0				
29.00	0.0	0.53	0.0				
30.00	0.0	0.53	0.0				
31.00	0.0	0.53	0.0				
32.00	0.0	0.53	0.0				
33.00	0.0	0.53	0.0				
34.00	0.0	0.53	0.0				
35.00	0.0	0.53	0.0				
36.00	0.0	0.53	0.0				
37.00	0.0	0.53	0.0				
38.00	0.0	0.53	0.0				
39.00	0.0	0.53	0.0				
40.00	0.0	0.53	0.0				
41.00	0.0	0.53	0.0				
42.00	0.0	0.53	0.0				
43.00	0.0	0.53	0.0				
44.00	0.0	0.53	0.0				
45.00	0.0	0.53	0.0				
46.00	0.0	0.53	0.0				
47.00	0.0	0.53	0.0				
48.00	0.0	0.53	0.0				
49.00	0.0	0.53	0.0				
50.00	0.0	0.53	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Pond OF5: Outfall 5 - 36" RCP

Inflow Area = 0.87 ac, 100.00% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 4.4 cfs @ 12.07 hrs, Volume= 0.345 af
Outflow = 4.4 cfs @ 12.07 hrs, Volume= 0.345 af, Atten= 0%, Lag= 0.0 min
Primary = 4.4 cfs @ 12.07 hrs, Volume= 0.345 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 3.12' @ 12.07 hrs

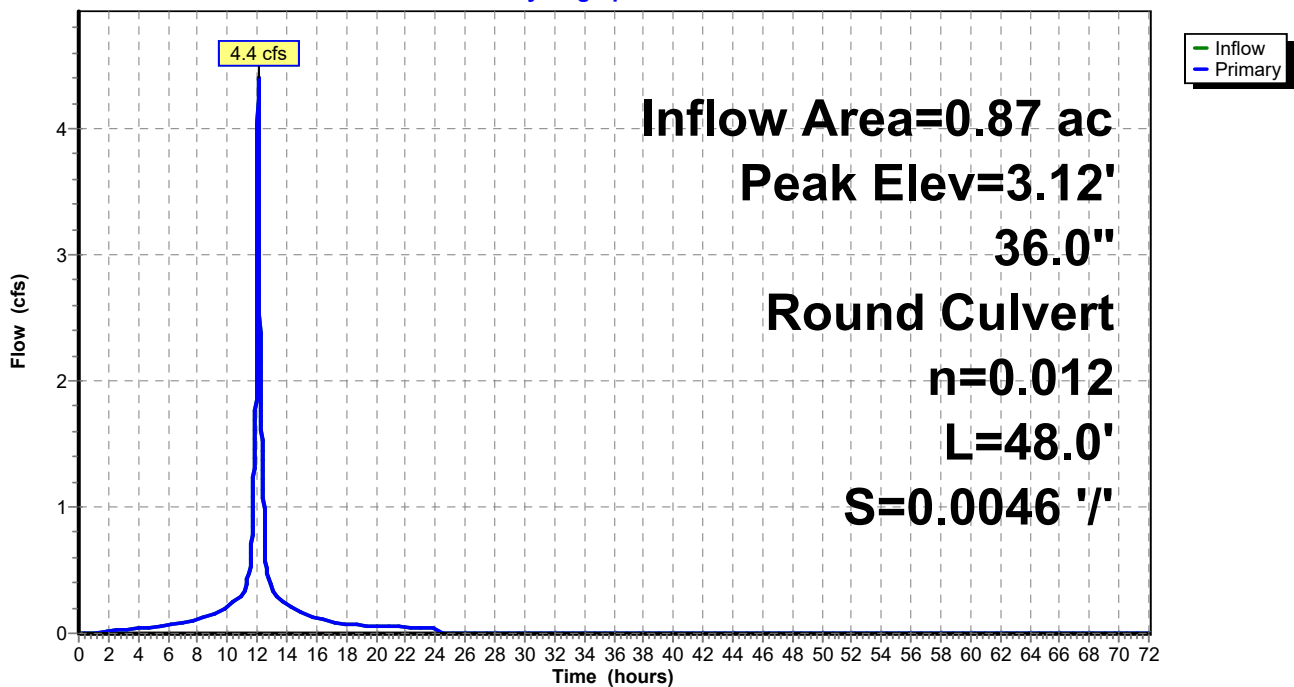
Device #	Routing	Invert	Outlet Devices
#1	Primary	2.26'	36.0" Round RCP_Round 36" L= 48.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 2.26' / 2.04' S= 0.0046 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 7.07 sf

Primary OutFlow Max=4.4 cfs @ 12.07 hrs HW=3.12' (Free Discharge)

↑1=RCP_Round 36" (Barrel Controls 4.4 cfs @ 3.93 fps)

Pond OF5: Outfall 5 - 36" RCP

Hydrograph



Massport_M555_Backlands_PRE_LOW

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Type III 24-hr 10-Year Rainfall=5.00"

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Hydrograph for Pond OF5: Outfall 5 - 36" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	2.26	0.0	51.00	0.0	2.26	0.0
1.00	0.0	2.28	0.0	52.00	0.0	2.26	0.0
2.00	0.0	2.32	0.0	53.00	0.0	2.26	0.0
3.00	0.0	2.33	0.0	54.00	0.0	2.26	0.0
4.00	0.0	2.35	0.0	55.00	0.0	2.26	0.0
5.00	0.0	2.36	0.0	56.00	0.0	2.26	0.0
6.00	0.1	2.36	0.1	57.00	0.0	2.26	0.0
7.00	0.1	2.38	0.1	58.00	0.0	2.26	0.0
8.00	0.1	2.40	0.1	59.00	0.0	2.26	0.0
9.00	0.2	2.42	0.2	60.00	0.0	2.26	0.0
10.00	0.2	2.45	0.2	61.00	0.0	2.26	0.0
11.00	0.3	2.49	0.3	62.00	0.0	2.26	0.0
12.00	3.0	2.96	3.0	63.00	0.0	2.26	0.0
13.00	0.4	2.50	0.4	64.00	0.0	2.26	0.0
14.00	0.2	2.46	0.2	65.00	0.0	2.26	0.0
15.00	0.2	2.43	0.2	66.00	0.0	2.26	0.0
16.00	0.1	2.40	0.1	67.00	0.0	2.26	0.0
17.00	0.1	2.39	0.1	68.00	0.0	2.26	0.0
18.00	0.1	2.37	0.1	69.00	0.0	2.26	0.0
19.00	0.1	2.37	0.1	70.00	0.0	2.26	0.0
20.00	0.1	2.36	0.1	71.00	0.0	2.26	0.0
21.00	0.1	2.36	0.1	72.00	0.0	2.26	0.0
22.00	0.0	2.35	0.0				
23.00	0.0	2.35	0.0				
24.00	0.0	2.34	0.0				
25.00	0.0	2.26	0.0				
26.00	0.0	2.26	0.0				
27.00	0.0	2.26	0.0				
28.00	0.0	2.26	0.0				
29.00	0.0	2.26	0.0				
30.00	0.0	2.26	0.0				
31.00	0.0	2.26	0.0				
32.00	0.0	2.26	0.0				
33.00	0.0	2.26	0.0				
34.00	0.0	2.26	0.0				
35.00	0.0	2.26	0.0				
36.00	0.0	2.26	0.0				
37.00	0.0	2.26	0.0				
38.00	0.0	2.26	0.0				
39.00	0.0	2.26	0.0				
40.00	0.0	2.26	0.0				
41.00	0.0	2.26	0.0				
42.00	0.0	2.26	0.0				
43.00	0.0	2.26	0.0				
44.00	0.0	2.26	0.0				
45.00	0.0	2.26	0.0				
46.00	0.0	2.26	0.0				
47.00	0.0	2.26	0.0				
48.00	0.0	2.26	0.0				
49.00	0.0	2.26	0.0				
50.00	0.0	2.26	0.0				

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Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Pond OF6: Outfall 6 - 42" RCP

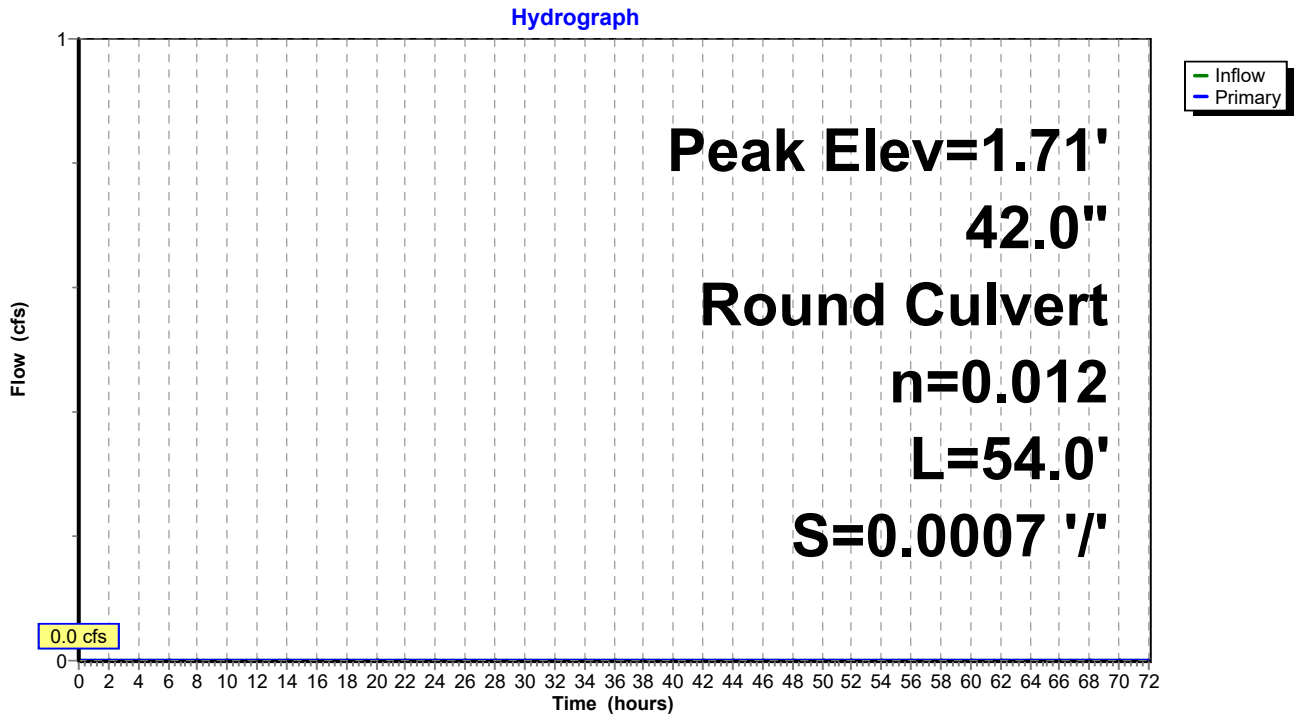
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 1.71' @ 0.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1.71'	42.0" Round RCP_Round 42" L= 54.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1.71' / 1.67' S= 0.0007 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 9.62 sf

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=1.71' (Free Discharge)
 ↳1=RCP_Round 42" (Controls 0.0 cfs)

Pond OF6: Outfall 6 - 42" RCP



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Type III 24-hr 10-Year Rainfall=5.00"

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Hydrograph for Pond OF6: Outfall 6 - 42" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	1.71	0.0	51.00	0.0	1.71	0.0
1.00	0.0	1.71	0.0	52.00	0.0	1.71	0.0
2.00	0.0	1.71	0.0	53.00	0.0	1.71	0.0
3.00	0.0	1.71	0.0	54.00	0.0	1.71	0.0
4.00	0.0	1.71	0.0	55.00	0.0	1.71	0.0
5.00	0.0	1.71	0.0	56.00	0.0	1.71	0.0
6.00	0.0	1.71	0.0	57.00	0.0	1.71	0.0
7.00	0.0	1.71	0.0	58.00	0.0	1.71	0.0
8.00	0.0	1.71	0.0	59.00	0.0	1.71	0.0
9.00	0.0	1.71	0.0	60.00	0.0	1.71	0.0
10.00	0.0	1.71	0.0	61.00	0.0	1.71	0.0
11.00	0.0	1.71	0.0	62.00	0.0	1.71	0.0
12.00	0.0	1.71	0.0	63.00	0.0	1.71	0.0
13.00	0.0	1.71	0.0	64.00	0.0	1.71	0.0
14.00	0.0	1.71	0.0	65.00	0.0	1.71	0.0
15.00	0.0	1.71	0.0	66.00	0.0	1.71	0.0
16.00	0.0	1.71	0.0	67.00	0.0	1.71	0.0
17.00	0.0	1.71	0.0	68.00	0.0	1.71	0.0
18.00	0.0	1.71	0.0	69.00	0.0	1.71	0.0
19.00	0.0	1.71	0.0	70.00	0.0	1.71	0.0
20.00	0.0	1.71	0.0	71.00	0.0	1.71	0.0
21.00	0.0	1.71	0.0	72.00	0.0	1.71	0.0
22.00	0.0	1.71	0.0				
23.00	0.0	1.71	0.0				
24.00	0.0	1.71	0.0				
25.00	0.0	1.71	0.0				
26.00	0.0	1.71	0.0				
27.00	0.0	1.71	0.0				
28.00	0.0	1.71	0.0				
29.00	0.0	1.71	0.0				
30.00	0.0	1.71	0.0				
31.00	0.0	1.71	0.0				
32.00	0.0	1.71	0.0				
33.00	0.0	1.71	0.0				
34.00	0.0	1.71	0.0				
35.00	0.0	1.71	0.0				
36.00	0.0	1.71	0.0				
37.00	0.0	1.71	0.0				
38.00	0.0	1.71	0.0				
39.00	0.0	1.71	0.0				
40.00	0.0	1.71	0.0				
41.00	0.0	1.71	0.0				
42.00	0.0	1.71	0.0				
43.00	0.0	1.71	0.0				
44.00	0.0	1.71	0.0				
45.00	0.0	1.71	0.0				
46.00	0.0	1.71	0.0				
47.00	0.0	1.71	0.0				
48.00	0.0	1.71	0.0				
49.00	0.0	1.71	0.0				
50.00	0.0	1.71	0.0				

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Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Pond OF7: Outfall 7 - 30" RCP

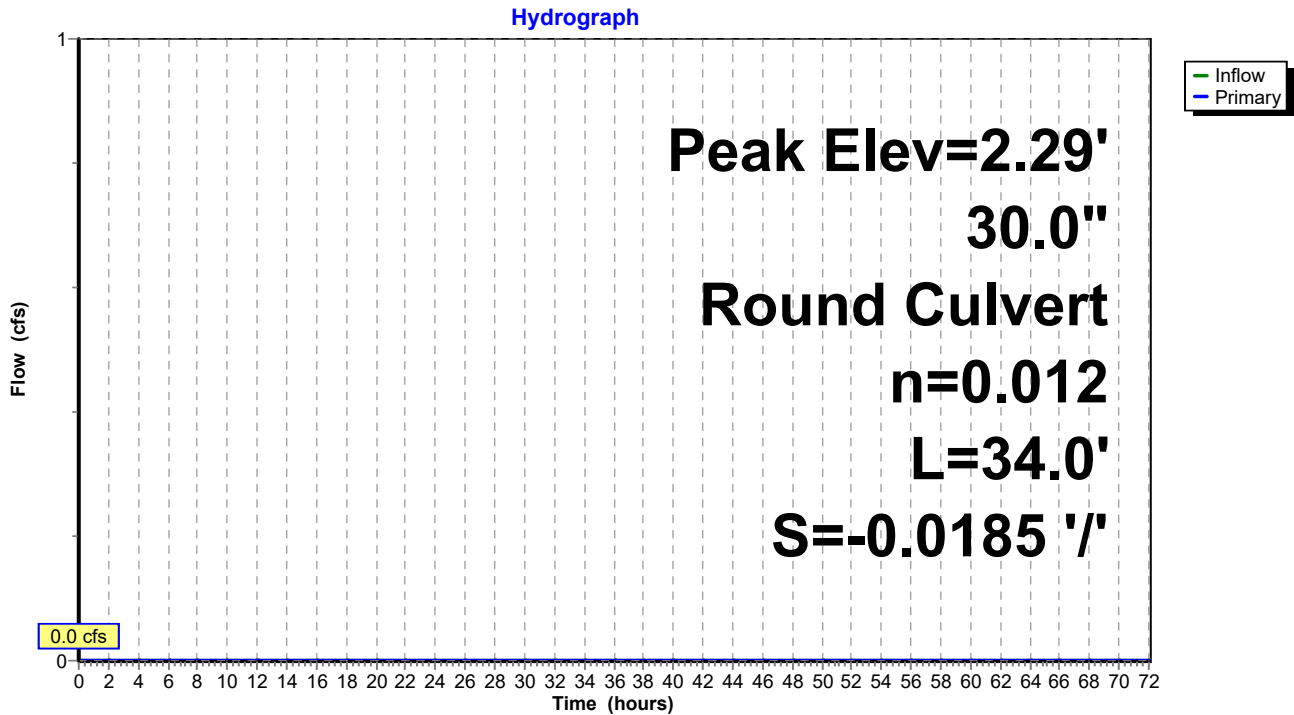
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 2.29' @ 0.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2.29'	30.0" Round RCP_Round 30" L= 34.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1.66' / 2.29' S= -0.0185 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=2.29' (Free Discharge)
↑1=RCP_Round 30" (Controls 0.0 cfs)

Pond OF7: Outfall 7 - 30" RCP



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Type III 24-hr 10-Year Rainfall=5.00"

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Hydrograph for Pond OF7: Outfall 7 - 30" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	2.29	0.0	51.00	0.0	2.29	0.0
1.00	0.0	2.29	0.0	52.00	0.0	2.29	0.0
2.00	0.0	2.29	0.0	53.00	0.0	2.29	0.0
3.00	0.0	2.29	0.0	54.00	0.0	2.29	0.0
4.00	0.0	2.29	0.0	55.00	0.0	2.29	0.0
5.00	0.0	2.29	0.0	56.00	0.0	2.29	0.0
6.00	0.0	2.29	0.0	57.00	0.0	2.29	0.0
7.00	0.0	2.29	0.0	58.00	0.0	2.29	0.0
8.00	0.0	2.29	0.0	59.00	0.0	2.29	0.0
9.00	0.0	2.29	0.0	60.00	0.0	2.29	0.0
10.00	0.0	2.29	0.0	61.00	0.0	2.29	0.0
11.00	0.0	2.29	0.0	62.00	0.0	2.29	0.0
12.00	0.0	2.29	0.0	63.00	0.0	2.29	0.0
13.00	0.0	2.29	0.0	64.00	0.0	2.29	0.0
14.00	0.0	2.29	0.0	65.00	0.0	2.29	0.0
15.00	0.0	2.29	0.0	66.00	0.0	2.29	0.0
16.00	0.0	2.29	0.0	67.00	0.0	2.29	0.0
17.00	0.0	2.29	0.0	68.00	0.0	2.29	0.0
18.00	0.0	2.29	0.0	69.00	0.0	2.29	0.0
19.00	0.0	2.29	0.0	70.00	0.0	2.29	0.0
20.00	0.0	2.29	0.0	71.00	0.0	2.29	0.0
21.00	0.0	2.29	0.0	72.00	0.0	2.29	0.0
22.00	0.0	2.29	0.0				
23.00	0.0	2.29	0.0				
24.00	0.0	2.29	0.0				
25.00	0.0	2.29	0.0				
26.00	0.0	2.29	0.0				
27.00	0.0	2.29	0.0				
28.00	0.0	2.29	0.0				
29.00	0.0	2.29	0.0				
30.00	0.0	2.29	0.0				
31.00	0.0	2.29	0.0				
32.00	0.0	2.29	0.0				
33.00	0.0	2.29	0.0				
34.00	0.0	2.29	0.0				
35.00	0.0	2.29	0.0				
36.00	0.0	2.29	0.0				
37.00	0.0	2.29	0.0				
38.00	0.0	2.29	0.0				
39.00	0.0	2.29	0.0				
40.00	0.0	2.29	0.0				
41.00	0.0	2.29	0.0				
42.00	0.0	2.29	0.0				
43.00	0.0	2.29	0.0				
44.00	0.0	2.29	0.0				
45.00	0.0	2.29	0.0				
46.00	0.0	2.29	0.0				
47.00	0.0	2.29	0.0				
48.00	0.0	2.29	0.0				
49.00	0.0	2.29	0.0				
50.00	0.0	2.29	0.0				

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Type III 24-hr 25-Year Rainfall=6.15"

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentE1N: Area 1 - north section Runoff Area=56,819 sf 100.00% Impervious Runoff Depth=5.91"
Tc=5.0 min CN=98 Runoff=8.1 cfs 0.643 af

SubcatchmentE1S: Area 1 - south section Runoff Area=15,671 sf 100.00% Impervious Runoff Depth=5.91"
Tc=5.0 min CN=98 Runoff=2.2 cfs 0.177 af

SubcatchmentE2N: Area 2 - 18" RCP Runoff Area=78,786 sf 100.00% Impervious Runoff Depth=5.91"
Tc=5.0 min CN=98 Runoff=11.3 cfs 0.891 af

SubcatchmentE3N: Area 3 - 24" RCP Runoff Area=77,980 sf 100.00% Impervious Runoff Depth=5.91"
Tc=5.0 min CN=98 Runoff=11.2 cfs 0.882 af

SubcatchmentE4N: Area 4 - 24" RCP Runoff Area=71,766 sf 100.00% Impervious Runoff Depth=5.91"
Tc=5.0 min CN=98 Runoff=10.3 cfs 0.812 af

SubcatchmentE5N: Area 5 -36" RCP Runoff Area=37,897 sf 100.00% Impervious Runoff Depth=5.91"
Tc=5.0 min CN=98 Runoff=5.4 cfs 0.429 af

SubcatchmentE6: Area 6 - 42" RCP Runoff Area=0 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=0 Runoff=0.0 cfs 0.000 af

SubcatchmentE7: Area 7 - 30" RCP Runoff Area=0 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=0 Runoff=0.0 cfs 0.000 af

Pond OF1: Outfall 1 - 18" RCP Peak Elev=2.69' Inflow=10.4 cfs 0.820 af
18.0" Round Culvert n=0.012 L=26.0' S=-0.0154 '/ Outflow=10.4 cfs 0.820 af

Pond OF2: Outfall 2 - 18" RCP Peak Elev=3.83' Inflow=11.3 cfs 0.891 af
18.0" Round Culvert n=0.012 L=20.0' S=0.0075 '/ Outflow=11.3 cfs 0.891 af

Pond OF3: Outfall 3 - 24" RCP Peak Elev=1.87' Inflow=11.2 cfs 0.882 af
24.0" Round Culvert n=0.012 L=21.0' S=0.0095 '/ Outflow=11.2 cfs 0.882 af

Pond OF4: Outfall 4 - 24" RCP Peak Elev=2.20' Inflow=10.3 cfs 0.812 af
24.0" Round Culvert n=0.012 L=27.0' S=0.0037 '/ Outflow=10.3 cfs 0.812 af

Pond OF5: Outfall 5 - 36" RCP Peak Elev=3.22' Inflow=5.4 cfs 0.429 af
36.0" Round Culvert n=0.012 L=48.0' S=0.0046 '/ Outflow=5.4 cfs 0.429 af

Pond OF6: Outfall 6 - 42" RCP Peak Elev=1.71' Inflow=0.0 cfs 0.000 af
42.0" Round Culvert n=0.012 L=54.0' S=0.0007 '/ Outflow=0.0 cfs 0.000 af

Pond OF7: Outfall 7 - 30" RCP Peak Elev=2.29' Inflow=0.0 cfs 0.000 af
30.0" Round Culvert n=0.012 L=34.0' S=-0.0185 '/ Outflow=0.0 cfs 0.000 af

**Total Runoff Area = 7.78 ac Runoff Volume = 3.833 af Average Runoff Depth = 5.91"
0.00% Pervious = 0.00 ac 100.00% Impervious = 7.78 ac**

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Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Subcatchment E1N: Area 1 - north section

Runoff = 8.1 cfs @ 12.07 hrs, Volume= 0.643 af, Depth= 5.91"

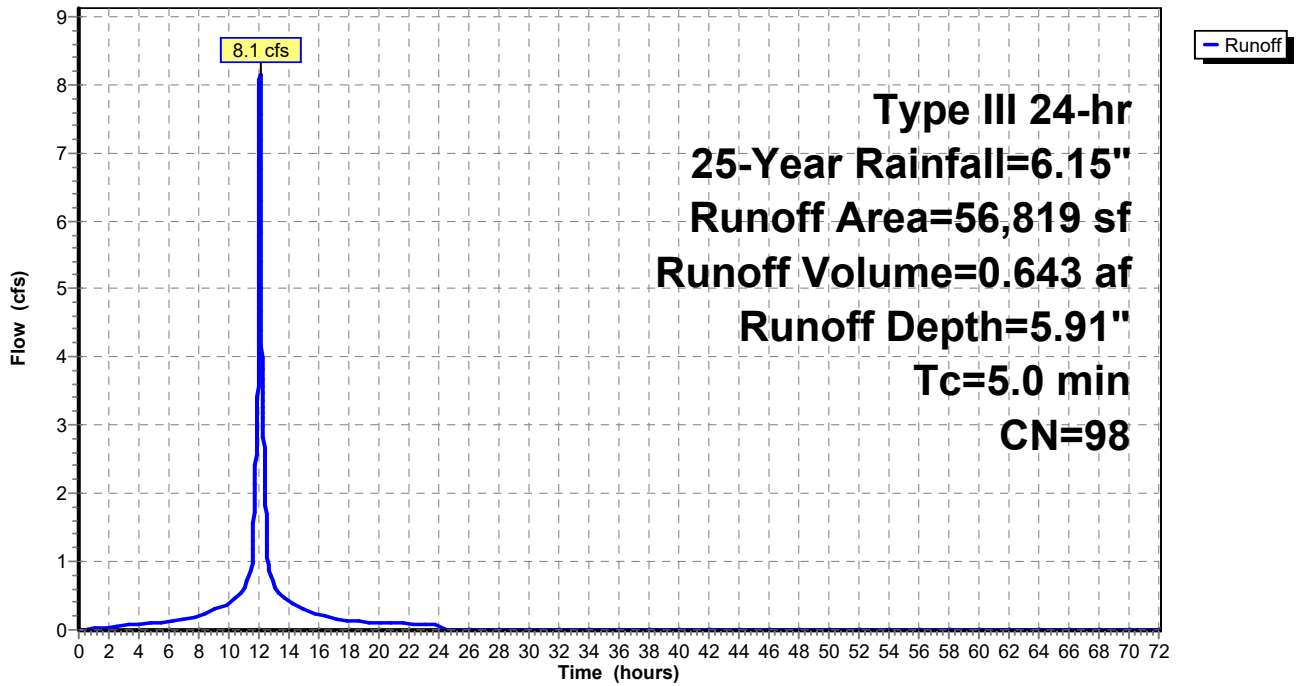
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.15"

Area (sf)	CN	Description
* 56,819	98	OF 1 paved north
56,819		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment E1N: Area 1 - north section

Hydrograph



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Type III 24-hr 25-Year Rainfall=6.15"

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Hydrograph for Subcatchment E1N: Area 1 - north section

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	6.15	5.91	0.0
1.00	0.06	0.00	0.0	52.00	6.15	5.91	0.0
2.00	0.12	0.02	0.0	53.00	6.15	5.91	0.0
3.00	0.19	0.06	0.1	54.00	6.15	5.91	0.0
4.00	0.26	0.12	0.1	55.00	6.15	5.91	0.0
5.00	0.35	0.19	0.1	56.00	6.15	5.91	0.0
6.00	0.44	0.27	0.1	57.00	6.15	5.91	0.0
7.00	0.56	0.37	0.2	58.00	6.15	5.91	0.0
8.00	0.70	0.50	0.2	59.00	6.15	5.91	0.0
9.00	0.90	0.69	0.3	60.00	6.15	5.91	0.0
10.00	1.16	0.95	0.4	61.00	6.15	5.91	0.0
11.00	1.54	1.32	0.6	62.00	6.15	5.91	0.0
12.00	3.07	2.84	5.5	63.00	6.15	5.91	0.0
13.00	4.61	4.38	0.6	64.00	6.15	5.91	0.0
14.00	4.99	4.75	0.4	65.00	6.15	5.91	0.0
15.00	5.25	5.02	0.3	66.00	6.15	5.91	0.0
16.00	5.45	5.21	0.2	67.00	6.15	5.91	0.0
17.00	5.59	5.36	0.2	68.00	6.15	5.91	0.0
18.00	5.71	5.47	0.1	69.00	6.15	5.91	0.0
19.00	5.80	5.56	0.1	70.00	6.15	5.91	0.0
20.00	5.89	5.65	0.1	71.00	6.15	5.91	0.0
21.00	5.96	5.72	0.1	72.00	6.15	5.91	0.0
22.00	6.03	5.79	0.1				
23.00	6.09	5.86	0.1				
24.00	6.15	5.91	0.1				
25.00	6.15	5.91	0.0				
26.00	6.15	5.91	0.0				
27.00	6.15	5.91	0.0				
28.00	6.15	5.91	0.0				
29.00	6.15	5.91	0.0				
30.00	6.15	5.91	0.0				
31.00	6.15	5.91	0.0				
32.00	6.15	5.91	0.0				
33.00	6.15	5.91	0.0				
34.00	6.15	5.91	0.0				
35.00	6.15	5.91	0.0				
36.00	6.15	5.91	0.0				
37.00	6.15	5.91	0.0				
38.00	6.15	5.91	0.0				
39.00	6.15	5.91	0.0				
40.00	6.15	5.91	0.0				
41.00	6.15	5.91	0.0				
42.00	6.15	5.91	0.0				
43.00	6.15	5.91	0.0				
44.00	6.15	5.91	0.0				
45.00	6.15	5.91	0.0				
46.00	6.15	5.91	0.0				
47.00	6.15	5.91	0.0				
48.00	6.15	5.91	0.0				
49.00	6.15	5.91	0.0				
50.00	6.15	5.91	0.0				

Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

Printed 7/6/2021

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Summary for Subcatchment E1S: Area 1 - south section

Runoff = 2.2 cfs @ 12.07 hrs, Volume= 0.177 af, Depth= 5.91"

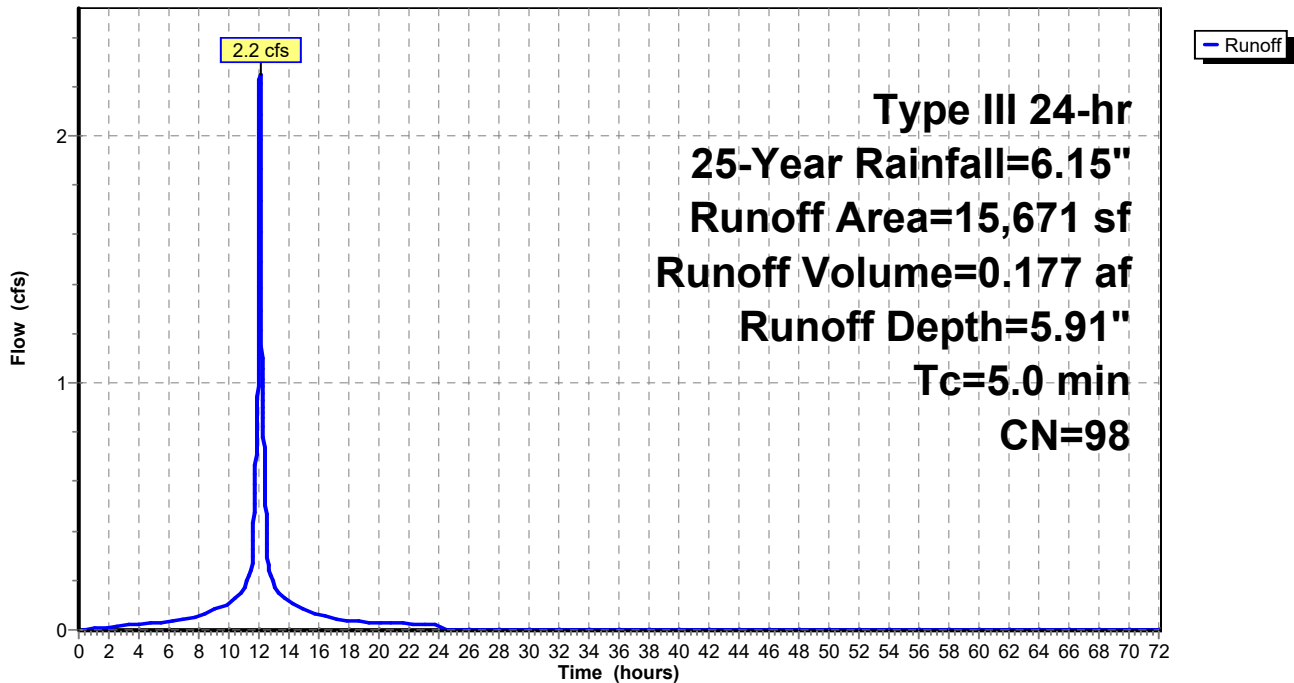
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.15"

Area (sf)	CN	Description
* 15,671	98	OF 1 paved south
15,671		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment E1S: Area 1 - south section

Hydrograph



Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

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Hydrograph for Subcatchment E1S: Area 1 - south section

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	6.15	5.91	0.0
1.00	0.06	0.00	0.0	52.00	6.15	5.91	0.0
2.00	0.12	0.02	0.0	53.00	6.15	5.91	0.0
3.00	0.19	0.06	0.0	54.00	6.15	5.91	0.0
4.00	0.26	0.12	0.0	55.00	6.15	5.91	0.0
5.00	0.35	0.19	0.0	56.00	6.15	5.91	0.0
6.00	0.44	0.27	0.0	57.00	6.15	5.91	0.0
7.00	0.56	0.37	0.0	58.00	6.15	5.91	0.0
8.00	0.70	0.50	0.1	59.00	6.15	5.91	0.0
9.00	0.90	0.69	0.1	60.00	6.15	5.91	0.0
10.00	1.16	0.95	0.1	61.00	6.15	5.91	0.0
11.00	1.54	1.32	0.2	62.00	6.15	5.91	0.0
12.00	3.07	2.84	1.5	63.00	6.15	5.91	0.0
13.00	4.61	4.38	0.2	64.00	6.15	5.91	0.0
14.00	4.99	4.75	0.1	65.00	6.15	5.91	0.0
15.00	5.25	5.02	0.1	66.00	6.15	5.91	0.0
16.00	5.45	5.21	0.1	67.00	6.15	5.91	0.0
17.00	5.59	5.36	0.0	68.00	6.15	5.91	0.0
18.00	5.71	5.47	0.0	69.00	6.15	5.91	0.0
19.00	5.80	5.56	0.0	70.00	6.15	5.91	0.0
20.00	5.89	5.65	0.0	71.00	6.15	5.91	0.0
21.00	5.96	5.72	0.0	72.00	6.15	5.91	0.0
22.00	6.03	5.79	0.0				
23.00	6.09	5.86	0.0				
24.00	6.15	5.91	0.0				
25.00	6.15	5.91	0.0				
26.00	6.15	5.91	0.0				
27.00	6.15	5.91	0.0				
28.00	6.15	5.91	0.0				
29.00	6.15	5.91	0.0				
30.00	6.15	5.91	0.0				
31.00	6.15	5.91	0.0				
32.00	6.15	5.91	0.0				
33.00	6.15	5.91	0.0				
34.00	6.15	5.91	0.0				
35.00	6.15	5.91	0.0				
36.00	6.15	5.91	0.0				
37.00	6.15	5.91	0.0				
38.00	6.15	5.91	0.0				
39.00	6.15	5.91	0.0				
40.00	6.15	5.91	0.0				
41.00	6.15	5.91	0.0				
42.00	6.15	5.91	0.0				
43.00	6.15	5.91	0.0				
44.00	6.15	5.91	0.0				
45.00	6.15	5.91	0.0				
46.00	6.15	5.91	0.0				
47.00	6.15	5.91	0.0				
48.00	6.15	5.91	0.0				
49.00	6.15	5.91	0.0				
50.00	6.15	5.91	0.0				

Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

Printed 7/6/2021

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Summary for Subcatchment E2N: Area 2 - 18" RCP

Runoff = 11.3 cfs @ 12.07 hrs, Volume= 0.891 af, Depth= 5.91"

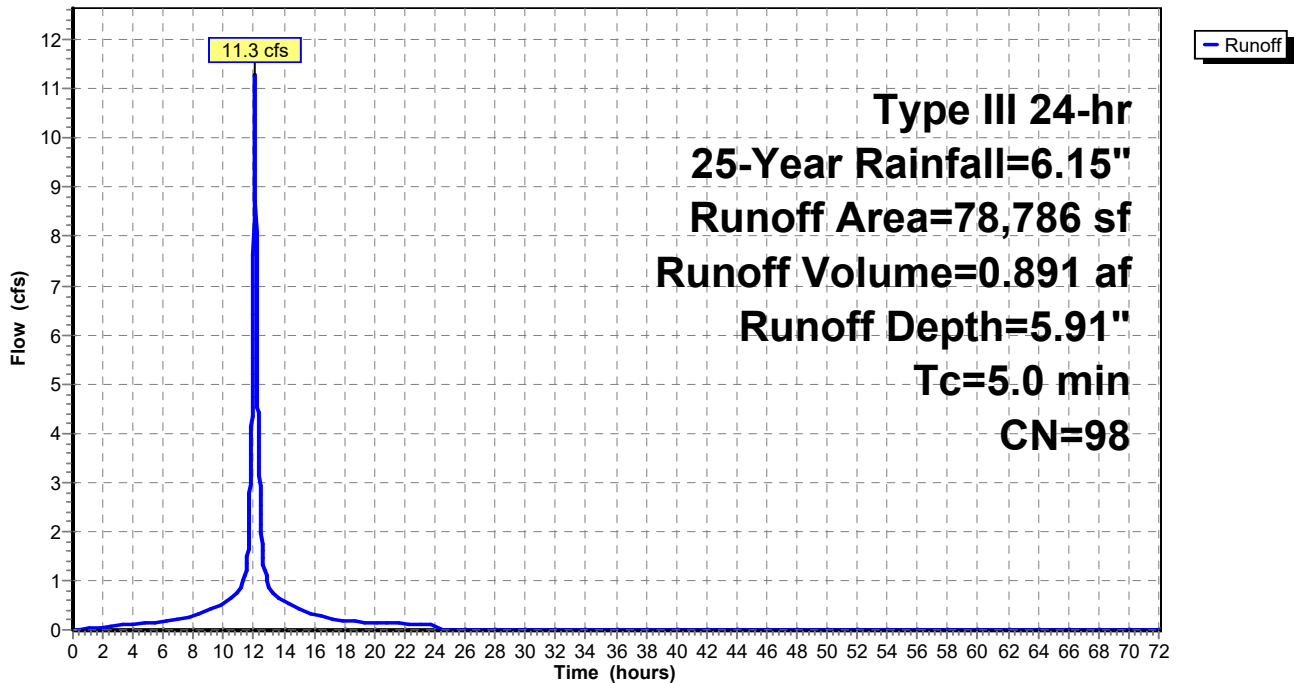
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.15"

Area (sf)	CN	Description
* 78,786	98	OF 2 paved north
78,786		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment E2N: Area 2 - 18" RCP

Hydrograph



Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

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Hydrograph for Subcatchment E2N: Area 2 - 18" RCP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	6.15	5.91	0.0
1.00	0.06	0.00	0.0	52.00	6.15	5.91	0.0
2.00	0.12	0.02	0.1	53.00	6.15	5.91	0.0
3.00	0.19	0.06	0.1	54.00	6.15	5.91	0.0
4.00	0.26	0.12	0.1	55.00	6.15	5.91	0.0
5.00	0.35	0.19	0.1	56.00	6.15	5.91	0.0
6.00	0.44	0.27	0.2	57.00	6.15	5.91	0.0
7.00	0.56	0.37	0.2	58.00	6.15	5.91	0.0
8.00	0.70	0.50	0.3	59.00	6.15	5.91	0.0
9.00	0.90	0.69	0.4	60.00	6.15	5.91	0.0
10.00	1.16	0.95	0.5	61.00	6.15	5.91	0.0
11.00	1.54	1.32	0.8	62.00	6.15	5.91	0.0
12.00	3.07	2.84	7.6	63.00	6.15	5.91	0.0
13.00	4.61	4.38	0.9	64.00	6.15	5.91	0.0
14.00	4.99	4.75	0.6	65.00	6.15	5.91	0.0
15.00	5.25	5.02	0.4	66.00	6.15	5.91	0.0
16.00	5.45	5.21	0.3	67.00	6.15	5.91	0.0
17.00	5.59	5.36	0.2	68.00	6.15	5.91	0.0
18.00	5.71	5.47	0.2	69.00	6.15	5.91	0.0
19.00	5.80	5.56	0.2	70.00	6.15	5.91	0.0
20.00	5.89	5.65	0.1	71.00	6.15	5.91	0.0
21.00	5.96	5.72	0.1	72.00	6.15	5.91	0.0
22.00	6.03	5.79	0.1				
23.00	6.09	5.86	0.1				
24.00	6.15	5.91	0.1				
25.00	6.15	5.91	0.0				
26.00	6.15	5.91	0.0				
27.00	6.15	5.91	0.0				
28.00	6.15	5.91	0.0				
29.00	6.15	5.91	0.0				
30.00	6.15	5.91	0.0				
31.00	6.15	5.91	0.0				
32.00	6.15	5.91	0.0				
33.00	6.15	5.91	0.0				
34.00	6.15	5.91	0.0				
35.00	6.15	5.91	0.0				
36.00	6.15	5.91	0.0				
37.00	6.15	5.91	0.0				
38.00	6.15	5.91	0.0				
39.00	6.15	5.91	0.0				
40.00	6.15	5.91	0.0				
41.00	6.15	5.91	0.0				
42.00	6.15	5.91	0.0				
43.00	6.15	5.91	0.0				
44.00	6.15	5.91	0.0				
45.00	6.15	5.91	0.0				
46.00	6.15	5.91	0.0				
47.00	6.15	5.91	0.0				
48.00	6.15	5.91	0.0				
49.00	6.15	5.91	0.0				
50.00	6.15	5.91	0.0				

Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

Printed 7/6/2021

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Summary for Subcatchment E3N: Area 3 - 24" RCP

Runoff = 11.2 cfs @ 12.07 hrs, Volume= 0.882 af, Depth= 5.91"

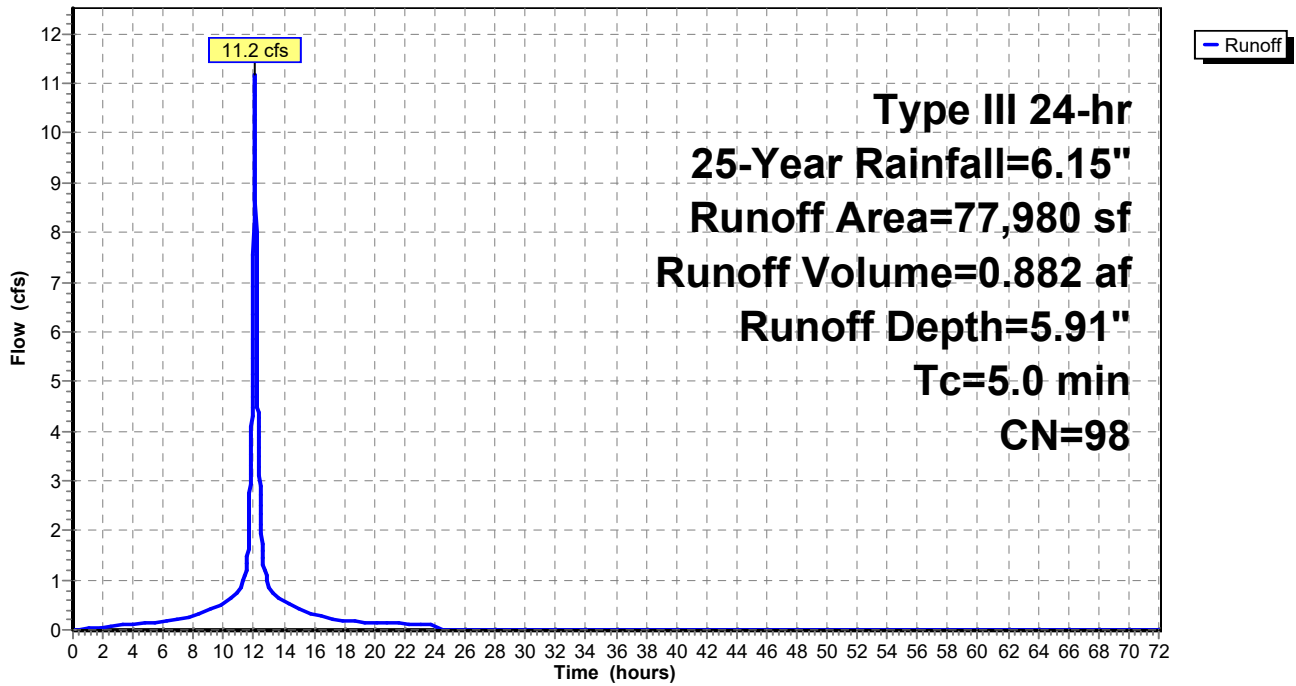
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.15"

Area (sf)	CN	Description
* 77,980	98	OF 3 paved north
77,980		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment E3N: Area 3 - 24" RCP

Hydrograph



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Type III 24-hr 25-Year Rainfall=6.15"

Printed 7/6/2021

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Hydrograph for Subcatchment E3N: Area 3 - 24" RCP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	6.15	5.91	0.0
1.00	0.06	0.00	0.0	52.00	6.15	5.91	0.0
2.00	0.12	0.02	0.1	53.00	6.15	5.91	0.0
3.00	0.19	0.06	0.1	54.00	6.15	5.91	0.0
4.00	0.26	0.12	0.1	55.00	6.15	5.91	0.0
5.00	0.35	0.19	0.1	56.00	6.15	5.91	0.0
6.00	0.44	0.27	0.2	57.00	6.15	5.91	0.0
7.00	0.56	0.37	0.2	58.00	6.15	5.91	0.0
8.00	0.70	0.50	0.3	59.00	6.15	5.91	0.0
9.00	0.90	0.69	0.4	60.00	6.15	5.91	0.0
10.00	1.16	0.95	0.5	61.00	6.15	5.91	0.0
11.00	1.54	1.32	0.8	62.00	6.15	5.91	0.0
12.00	3.07	2.84	7.6	63.00	6.15	5.91	0.0
13.00	4.61	4.38	0.9	64.00	6.15	5.91	0.0
14.00	4.99	4.75	0.6	65.00	6.15	5.91	0.0
15.00	5.25	5.02	0.4	66.00	6.15	5.91	0.0
16.00	5.45	5.21	0.3	67.00	6.15	5.91	0.0
17.00	5.59	5.36	0.2	68.00	6.15	5.91	0.0
18.00	5.71	5.47	0.2	69.00	6.15	5.91	0.0
19.00	5.80	5.56	0.2	70.00	6.15	5.91	0.0
20.00	5.89	5.65	0.1	71.00	6.15	5.91	0.0
21.00	5.96	5.72	0.1	72.00	6.15	5.91	0.0
22.00	6.03	5.79	0.1				
23.00	6.09	5.86	0.1				
24.00	6.15	5.91	0.1				
25.00	6.15	5.91	0.0				
26.00	6.15	5.91	0.0				
27.00	6.15	5.91	0.0				
28.00	6.15	5.91	0.0				
29.00	6.15	5.91	0.0				
30.00	6.15	5.91	0.0				
31.00	6.15	5.91	0.0				
32.00	6.15	5.91	0.0				
33.00	6.15	5.91	0.0				
34.00	6.15	5.91	0.0				
35.00	6.15	5.91	0.0				
36.00	6.15	5.91	0.0				
37.00	6.15	5.91	0.0				
38.00	6.15	5.91	0.0				
39.00	6.15	5.91	0.0				
40.00	6.15	5.91	0.0				
41.00	6.15	5.91	0.0				
42.00	6.15	5.91	0.0				
43.00	6.15	5.91	0.0				
44.00	6.15	5.91	0.0				
45.00	6.15	5.91	0.0				
46.00	6.15	5.91	0.0				
47.00	6.15	5.91	0.0				
48.00	6.15	5.91	0.0				
49.00	6.15	5.91	0.0				
50.00	6.15	5.91	0.0				

Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

Printed 7/6/2021

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Summary for Subcatchment E4N: Area 4 - 24" RCP

Runoff = 10.3 cfs @ 12.07 hrs, Volume= 0.812 af, Depth= 5.91"

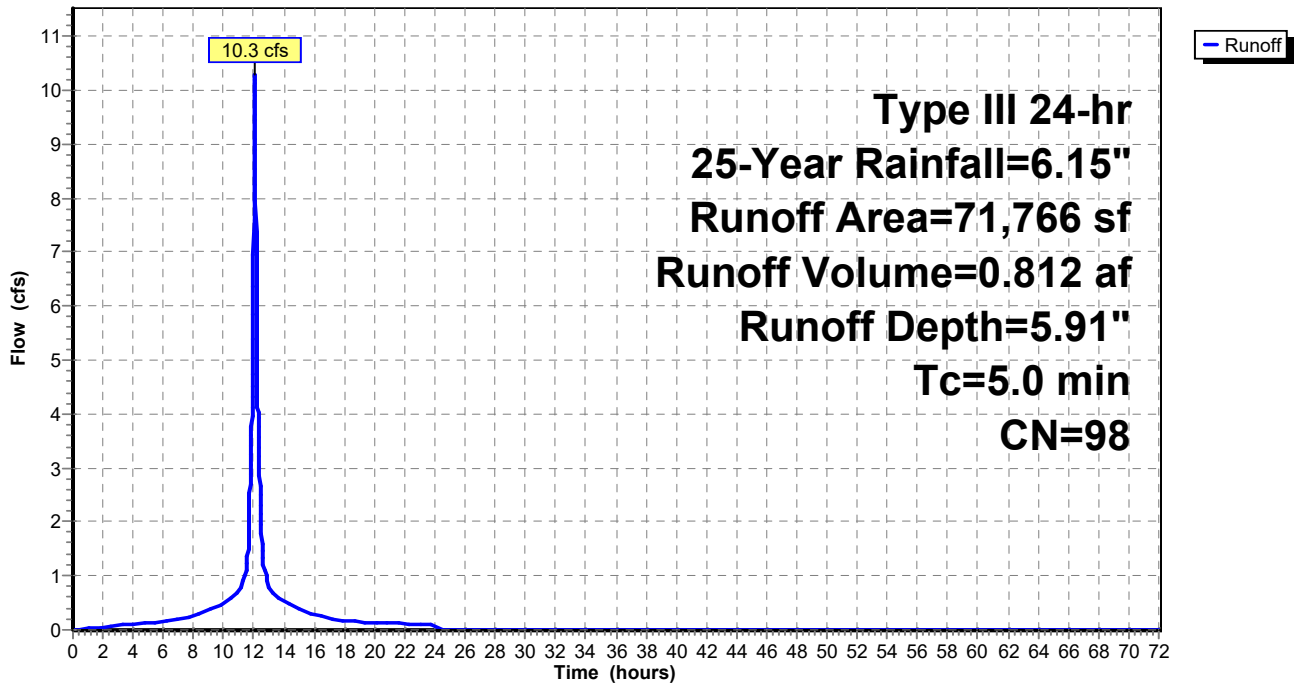
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.15"

Area (sf)	CN	Description
* 71,766	98	OF 4 paved north
71,766		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment E4N: Area 4 - 24" RCP

Hydrograph



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Type III 24-hr 25-Year Rainfall=6.15"

Printed 7/6/2021

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Hydrograph for Subcatchment E4N: Area 4 - 24" RCP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	6.15	5.91	0.0
1.00	0.06	0.00	0.0	52.00	6.15	5.91	0.0
2.00	0.12	0.02	0.0	53.00	6.15	5.91	0.0
3.00	0.19	0.06	0.1	54.00	6.15	5.91	0.0
4.00	0.26	0.12	0.1	55.00	6.15	5.91	0.0
5.00	0.35	0.19	0.1	56.00	6.15	5.91	0.0
6.00	0.44	0.27	0.1	57.00	6.15	5.91	0.0
7.00	0.56	0.37	0.2	58.00	6.15	5.91	0.0
8.00	0.70	0.50	0.2	59.00	6.15	5.91	0.0
9.00	0.90	0.69	0.4	60.00	6.15	5.91	0.0
10.00	1.16	0.95	0.5	61.00	6.15	5.91	0.0
11.00	1.54	1.32	0.7	62.00	6.15	5.91	0.0
12.00	3.07	2.84	7.0	63.00	6.15	5.91	0.0
13.00	4.61	4.38	0.8	64.00	6.15	5.91	0.0
14.00	4.99	4.75	0.5	65.00	6.15	5.91	0.0
15.00	5.25	5.02	0.4	66.00	6.15	5.91	0.0
16.00	5.45	5.21	0.3	67.00	6.15	5.91	0.0
17.00	5.59	5.36	0.2	68.00	6.15	5.91	0.0
18.00	5.71	5.47	0.2	69.00	6.15	5.91	0.0
19.00	5.80	5.56	0.1	70.00	6.15	5.91	0.0
20.00	5.89	5.65	0.1	71.00	6.15	5.91	0.0
21.00	5.96	5.72	0.1	72.00	6.15	5.91	0.0
22.00	6.03	5.79	0.1				
23.00	6.09	5.86	0.1				
24.00	6.15	5.91	0.1				
25.00	6.15	5.91	0.0				
26.00	6.15	5.91	0.0				
27.00	6.15	5.91	0.0				
28.00	6.15	5.91	0.0				
29.00	6.15	5.91	0.0				
30.00	6.15	5.91	0.0				
31.00	6.15	5.91	0.0				
32.00	6.15	5.91	0.0				
33.00	6.15	5.91	0.0				
34.00	6.15	5.91	0.0				
35.00	6.15	5.91	0.0				
36.00	6.15	5.91	0.0				
37.00	6.15	5.91	0.0				
38.00	6.15	5.91	0.0				
39.00	6.15	5.91	0.0				
40.00	6.15	5.91	0.0				
41.00	6.15	5.91	0.0				
42.00	6.15	5.91	0.0				
43.00	6.15	5.91	0.0				
44.00	6.15	5.91	0.0				
45.00	6.15	5.91	0.0				
46.00	6.15	5.91	0.0				
47.00	6.15	5.91	0.0				
48.00	6.15	5.91	0.0				
49.00	6.15	5.91	0.0				
50.00	6.15	5.91	0.0				

Massport_M555_Backlands_PRE_LOW

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Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Subcatchment E5N: Area 5 -36" RCP

Runoff = 5.4 cfs @ 12.07 hrs, Volume= 0.429 af, Depth= 5.91"

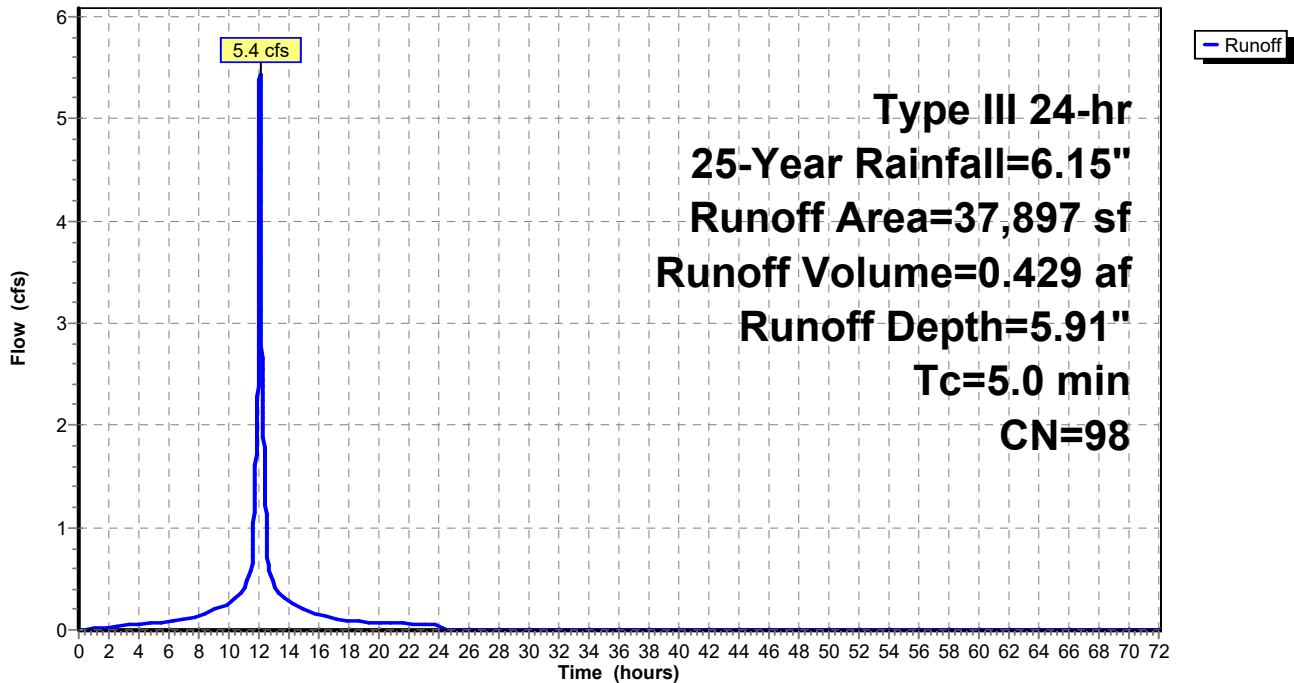
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.15"

Area (sf)	CN	Description
* 37,897	98	OF 5 paved north
37,897		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment E5N: Area 5 -36" RCP

Hydrograph



Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

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Hydrograph for Subcatchment E5N: Area 5 -36" RCP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	6.15	5.91	0.0
1.00	0.06	0.00	0.0	52.00	6.15	5.91	0.0
2.00	0.12	0.02	0.0	53.00	6.15	5.91	0.0
3.00	0.19	0.06	0.0	54.00	6.15	5.91	0.0
4.00	0.26	0.12	0.1	55.00	6.15	5.91	0.0
5.00	0.35	0.19	0.1	56.00	6.15	5.91	0.0
6.00	0.44	0.27	0.1	57.00	6.15	5.91	0.0
7.00	0.56	0.37	0.1	58.00	6.15	5.91	0.0
8.00	0.70	0.50	0.1	59.00	6.15	5.91	0.0
9.00	0.90	0.69	0.2	60.00	6.15	5.91	0.0
10.00	1.16	0.95	0.3	61.00	6.15	5.91	0.0
11.00	1.54	1.32	0.4	62.00	6.15	5.91	0.0
12.00	3.07	2.84	3.7	63.00	6.15	5.91	0.0
13.00	4.61	4.38	0.4	64.00	6.15	5.91	0.0
14.00	4.99	4.75	0.3	65.00	6.15	5.91	0.0
15.00	5.25	5.02	0.2	66.00	6.15	5.91	0.0
16.00	5.45	5.21	0.1	67.00	6.15	5.91	0.0
17.00	5.59	5.36	0.1	68.00	6.15	5.91	0.0
18.00	5.71	5.47	0.1	69.00	6.15	5.91	0.0
19.00	5.80	5.56	0.1	70.00	6.15	5.91	0.0
20.00	5.89	5.65	0.1	71.00	6.15	5.91	0.0
21.00	5.96	5.72	0.1	72.00	6.15	5.91	0.0
22.00	6.03	5.79	0.1				
23.00	6.09	5.86	0.1				
24.00	6.15	5.91	0.0				
25.00	6.15	5.91	0.0				
26.00	6.15	5.91	0.0				
27.00	6.15	5.91	0.0				
28.00	6.15	5.91	0.0				
29.00	6.15	5.91	0.0				
30.00	6.15	5.91	0.0				
31.00	6.15	5.91	0.0				
32.00	6.15	5.91	0.0				
33.00	6.15	5.91	0.0				
34.00	6.15	5.91	0.0				
35.00	6.15	5.91	0.0				
36.00	6.15	5.91	0.0				
37.00	6.15	5.91	0.0				
38.00	6.15	5.91	0.0				
39.00	6.15	5.91	0.0				
40.00	6.15	5.91	0.0				
41.00	6.15	5.91	0.0				
42.00	6.15	5.91	0.0				
43.00	6.15	5.91	0.0				
44.00	6.15	5.91	0.0				
45.00	6.15	5.91	0.0				
46.00	6.15	5.91	0.0				
47.00	6.15	5.91	0.0				
48.00	6.15	5.91	0.0				
49.00	6.15	5.91	0.0				
50.00	6.15	5.91	0.0				

Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Subcatchment E6: Area 6 - 42" RCP

Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

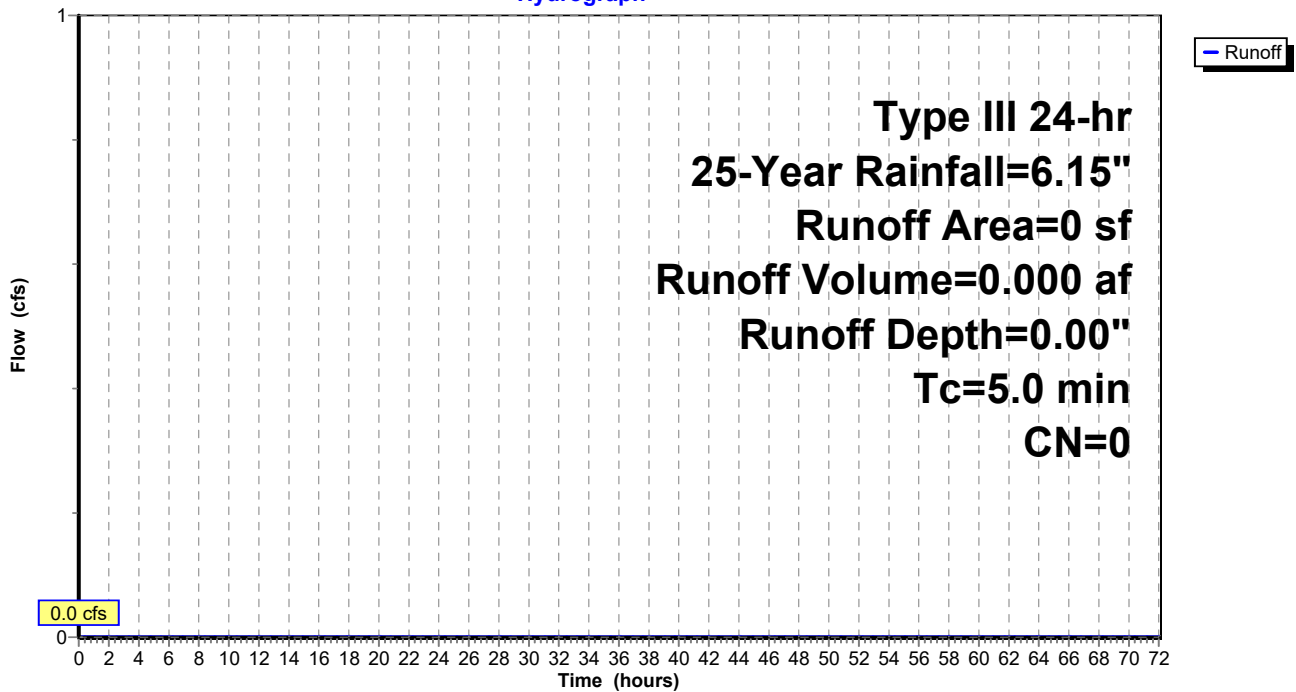
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.15"

Area (sf)	CN	Description
* 0	98	OF 6 paved north within LOW

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment E6: Area 6 - 42" RCP

Hydrograph



Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

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Hydrograph for Subcatchment E6: Area 6 - 42" RCP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	6.15	0.00	0.0
1.00	0.06	0.00	0.0	52.00	6.15	0.00	0.0
2.00	0.12	0.00	0.0	53.00	6.15	0.00	0.0
3.00	0.19	0.00	0.0	54.00	6.15	0.00	0.0
4.00	0.26	0.00	0.0	55.00	6.15	0.00	0.0
5.00	0.35	0.00	0.0	56.00	6.15	0.00	0.0
6.00	0.44	0.00	0.0	57.00	6.15	0.00	0.0
7.00	0.56	0.00	0.0	58.00	6.15	0.00	0.0
8.00	0.70	0.00	0.0	59.00	6.15	0.00	0.0
9.00	0.90	0.00	0.0	60.00	6.15	0.00	0.0
10.00	1.16	0.00	0.0	61.00	6.15	0.00	0.0
11.00	1.54	0.00	0.0	62.00	6.15	0.00	0.0
12.00	3.07	0.00	0.0	63.00	6.15	0.00	0.0
13.00	4.61	0.00	0.0	64.00	6.15	0.00	0.0
14.00	4.99	0.00	0.0	65.00	6.15	0.00	0.0
15.00	5.25	0.00	0.0	66.00	6.15	0.00	0.0
16.00	5.45	0.00	0.0	67.00	6.15	0.00	0.0
17.00	5.59	0.00	0.0	68.00	6.15	0.00	0.0
18.00	5.71	0.00	0.0	69.00	6.15	0.00	0.0
19.00	5.80	0.00	0.0	70.00	6.15	0.00	0.0
20.00	5.89	0.00	0.0	71.00	6.15	0.00	0.0
21.00	5.96	0.00	0.0	72.00	6.15	0.00	0.0
22.00	6.03	0.00	0.0				
23.00	6.09	0.00	0.0				
24.00	6.15	0.00	0.0				
25.00	6.15	0.00	0.0				
26.00	6.15	0.00	0.0				
27.00	6.15	0.00	0.0				
28.00	6.15	0.00	0.0				
29.00	6.15	0.00	0.0				
30.00	6.15	0.00	0.0				
31.00	6.15	0.00	0.0				
32.00	6.15	0.00	0.0				
33.00	6.15	0.00	0.0				
34.00	6.15	0.00	0.0				
35.00	6.15	0.00	0.0				
36.00	6.15	0.00	0.0				
37.00	6.15	0.00	0.0				
38.00	6.15	0.00	0.0				
39.00	6.15	0.00	0.0				
40.00	6.15	0.00	0.0				
41.00	6.15	0.00	0.0				
42.00	6.15	0.00	0.0				
43.00	6.15	0.00	0.0				
44.00	6.15	0.00	0.0				
45.00	6.15	0.00	0.0				
46.00	6.15	0.00	0.0				
47.00	6.15	0.00	0.0				
48.00	6.15	0.00	0.0				
49.00	6.15	0.00	0.0				
50.00	6.15	0.00	0.0				

Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

Printed 7/6/2021

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Summary for Subcatchment E7: Area 7 - 30" RCP

Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

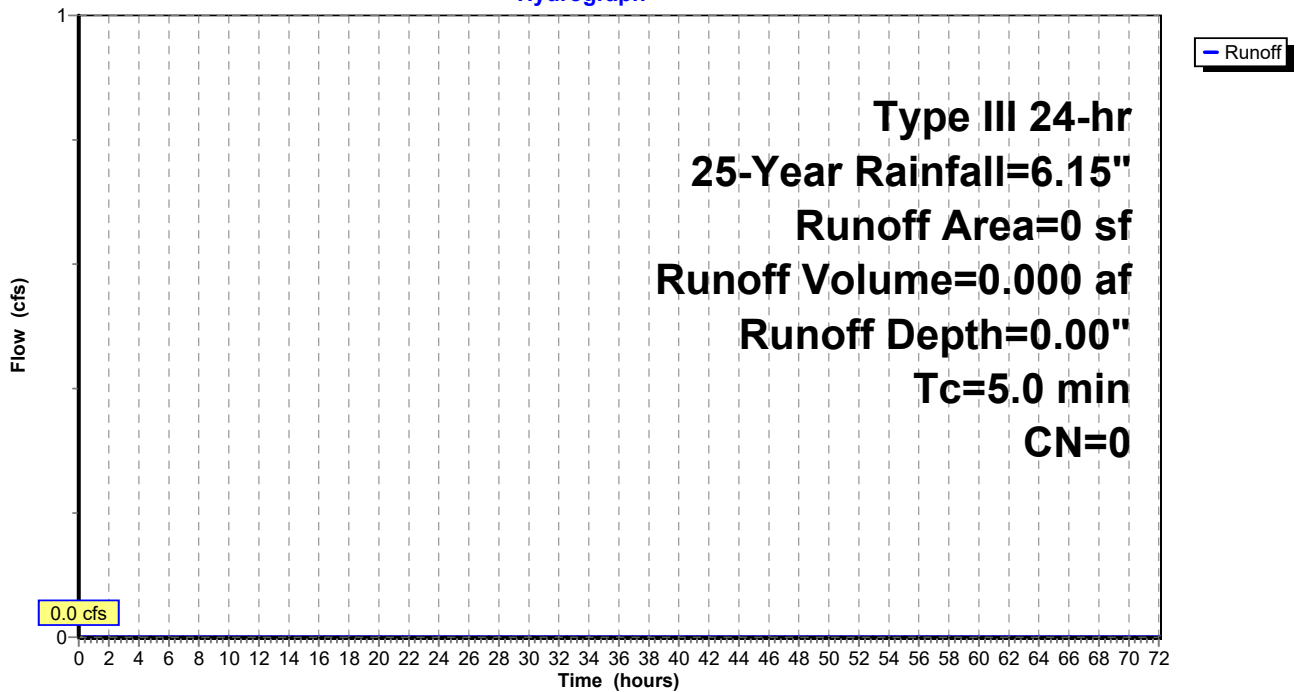
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.15"

Area (sf)	CN	Description
* 0	98	OF 7 paved north within LOW

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment E7: Area 7 - 30" RCP

Hydrograph



Massport_M555_Backlands_PRE_LOW

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Type III 24-hr 25-Year Rainfall=6.15"

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Hydrograph for Subcatchment E7: Area 7 - 30" RCP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	6.15	0.00	0.0
1.00	0.06	0.00	0.0	52.00	6.15	0.00	0.0
2.00	0.12	0.00	0.0	53.00	6.15	0.00	0.0
3.00	0.19	0.00	0.0	54.00	6.15	0.00	0.0
4.00	0.26	0.00	0.0	55.00	6.15	0.00	0.0
5.00	0.35	0.00	0.0	56.00	6.15	0.00	0.0
6.00	0.44	0.00	0.0	57.00	6.15	0.00	0.0
7.00	0.56	0.00	0.0	58.00	6.15	0.00	0.0
8.00	0.70	0.00	0.0	59.00	6.15	0.00	0.0
9.00	0.90	0.00	0.0	60.00	6.15	0.00	0.0
10.00	1.16	0.00	0.0	61.00	6.15	0.00	0.0
11.00	1.54	0.00	0.0	62.00	6.15	0.00	0.0
12.00	3.07	0.00	0.0	63.00	6.15	0.00	0.0
13.00	4.61	0.00	0.0	64.00	6.15	0.00	0.0
14.00	4.99	0.00	0.0	65.00	6.15	0.00	0.0
15.00	5.25	0.00	0.0	66.00	6.15	0.00	0.0
16.00	5.45	0.00	0.0	67.00	6.15	0.00	0.0
17.00	5.59	0.00	0.0	68.00	6.15	0.00	0.0
18.00	5.71	0.00	0.0	69.00	6.15	0.00	0.0
19.00	5.80	0.00	0.0	70.00	6.15	0.00	0.0
20.00	5.89	0.00	0.0	71.00	6.15	0.00	0.0
21.00	5.96	0.00	0.0	72.00	6.15	0.00	0.0
22.00	6.03	0.00	0.0				
23.00	6.09	0.00	0.0				
24.00	6.15	0.00	0.0				
25.00	6.15	0.00	0.0				
26.00	6.15	0.00	0.0				
27.00	6.15	0.00	0.0				
28.00	6.15	0.00	0.0				
29.00	6.15	0.00	0.0				
30.00	6.15	0.00	0.0				
31.00	6.15	0.00	0.0				
32.00	6.15	0.00	0.0				
33.00	6.15	0.00	0.0				
34.00	6.15	0.00	0.0				
35.00	6.15	0.00	0.0				
36.00	6.15	0.00	0.0				
37.00	6.15	0.00	0.0				
38.00	6.15	0.00	0.0				
39.00	6.15	0.00	0.0				
40.00	6.15	0.00	0.0				
41.00	6.15	0.00	0.0				
42.00	6.15	0.00	0.0				
43.00	6.15	0.00	0.0				
44.00	6.15	0.00	0.0				
45.00	6.15	0.00	0.0				
46.00	6.15	0.00	0.0				
47.00	6.15	0.00	0.0				
48.00	6.15	0.00	0.0				
49.00	6.15	0.00	0.0				
50.00	6.15	0.00	0.0				

Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Pond OF1: Outfall 1 - 18" RCP

Inflow Area = 1.66 ac, 100.00% Impervious, Inflow Depth = 5.91" for 25-Year event
Inflow = 10.4 cfs @ 12.07 hrs, Volume= 0.820 af
Outflow = 10.4 cfs @ 12.07 hrs, Volume= 0.820 af, Atten= 0%, Lag= 0.0 min
Primary = 10.4 cfs @ 12.07 hrs, Volume= 0.820 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 2.69' @ 12.07 hrs

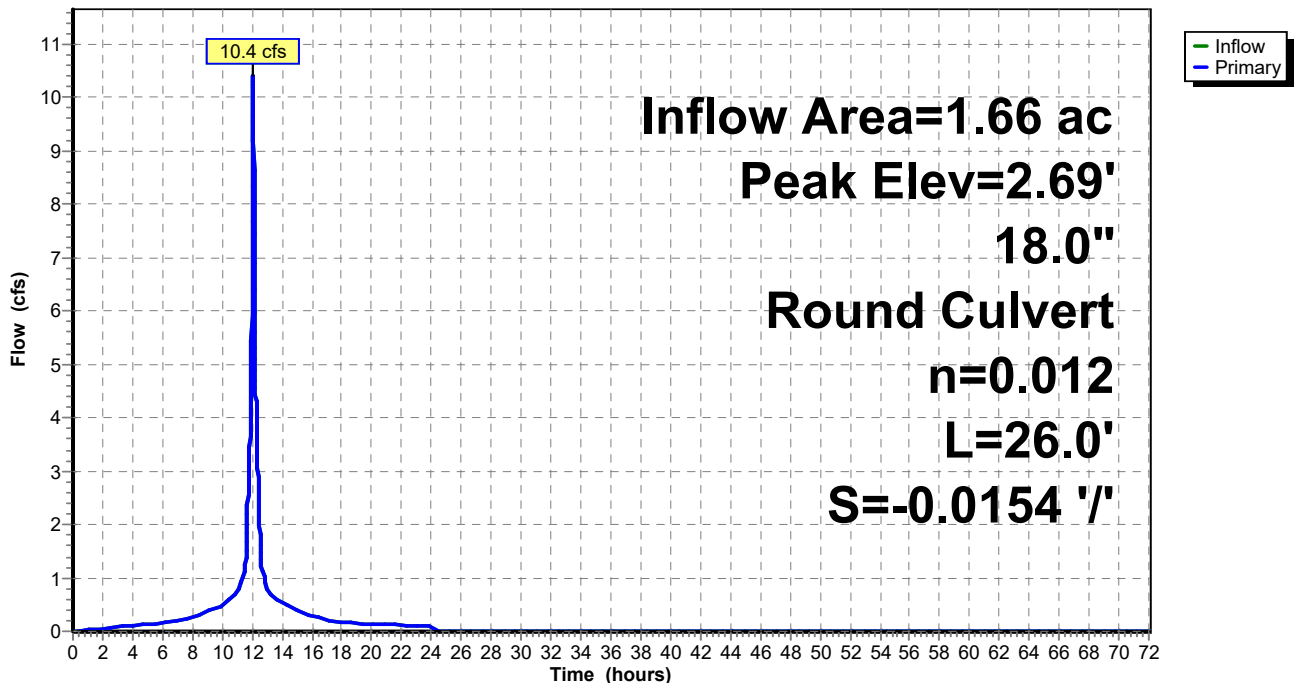
Device	Routing	Invert	Outlet Devices
#1	Primary	0.78'	18.0" Round RCP_Round 18" L= 26.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 0.38' / 0.78' S= -0.0154 '/ Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=10.4 cfs @ 12.07 hrs HW=2.69' (Free Discharge)

↑1=RCP_Round 18" (Barrel Controls 10.4 cfs @ 5.88 fps)

Pond OF1: Outfall 1 - 18" RCP

Hydrograph



Massport_M555_Backlands_PRE_LOW

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Hydrograph for Pond OF1: Outfall 1 - 18" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	0.78	0.0	51.00	0.0	0.78	0.0
1.00	0.0	0.82	0.0	52.00	0.0	0.78	0.0
2.00	0.0	0.86	0.0	53.00	0.0	0.78	0.0
3.00	0.1	0.88	0.1	54.00	0.0	0.78	0.0
4.00	0.1	0.90	0.1	55.00	0.0	0.78	0.0
5.00	0.1	0.91	0.1	56.00	0.0	0.78	0.0
6.00	0.1	0.92	0.1	57.00	0.0	0.78	0.0
7.00	0.2	0.94	0.2	58.00	0.0	0.78	0.0
8.00	0.2	0.96	0.2	59.00	0.0	0.78	0.0
9.00	0.4	1.00	0.4	60.00	0.0	0.78	0.0
10.00	0.5	1.04	0.5	61.00	0.0	0.78	0.0
11.00	0.7	1.10	0.7	62.00	0.0	0.78	0.0
12.00	7.0	2.08	7.0	63.00	0.0	0.78	0.0
13.00	0.8	1.12	0.8	64.00	0.0	0.78	0.0
14.00	0.5	1.05	0.5	65.00	0.0	0.78	0.0
15.00	0.4	1.01	0.4	66.00	0.0	0.78	0.0
16.00	0.3	0.98	0.3	67.00	0.0	0.78	0.0
17.00	0.2	0.95	0.2	68.00	0.0	0.78	0.0
18.00	0.2	0.93	0.2	69.00	0.0	0.78	0.0
19.00	0.2	0.92	0.2	70.00	0.0	0.78	0.0
20.00	0.1	0.92	0.1	71.00	0.0	0.78	0.0
21.00	0.1	0.91	0.1	72.00	0.0	0.78	0.0
22.00	0.1	0.90	0.1				
23.00	0.1	0.90	0.1				
24.00	0.1	0.89	0.1				
25.00	0.0	0.78	0.0				
26.00	0.0	0.78	0.0				
27.00	0.0	0.78	0.0				
28.00	0.0	0.78	0.0				
29.00	0.0	0.78	0.0				
30.00	0.0	0.78	0.0				
31.00	0.0	0.78	0.0				
32.00	0.0	0.78	0.0				
33.00	0.0	0.78	0.0				
34.00	0.0	0.78	0.0				
35.00	0.0	0.78	0.0				
36.00	0.0	0.78	0.0				
37.00	0.0	0.78	0.0				
38.00	0.0	0.78	0.0				
39.00	0.0	0.78	0.0				
40.00	0.0	0.78	0.0				
41.00	0.0	0.78	0.0				
42.00	0.0	0.78	0.0				
43.00	0.0	0.78	0.0				
44.00	0.0	0.78	0.0				
45.00	0.0	0.78	0.0				
46.00	0.0	0.78	0.0				
47.00	0.0	0.78	0.0				
48.00	0.0	0.78	0.0				
49.00	0.0	0.78	0.0				
50.00	0.0	0.78	0.0				

Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Pond OF2: Outfall 2 - 18" RCP

Inflow Area = 1.81 ac, 100.00% Impervious, Inflow Depth = 5.91" for 25-Year event
Inflow = 11.3 cfs @ 12.07 hrs, Volume= 0.891 af
Outflow = 11.3 cfs @ 12.07 hrs, Volume= 0.891 af, Atten= 0%, Lag= 0.0 min
Primary = 11.3 cfs @ 12.07 hrs, Volume= 0.891 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 3.83' @ 12.07 hrs

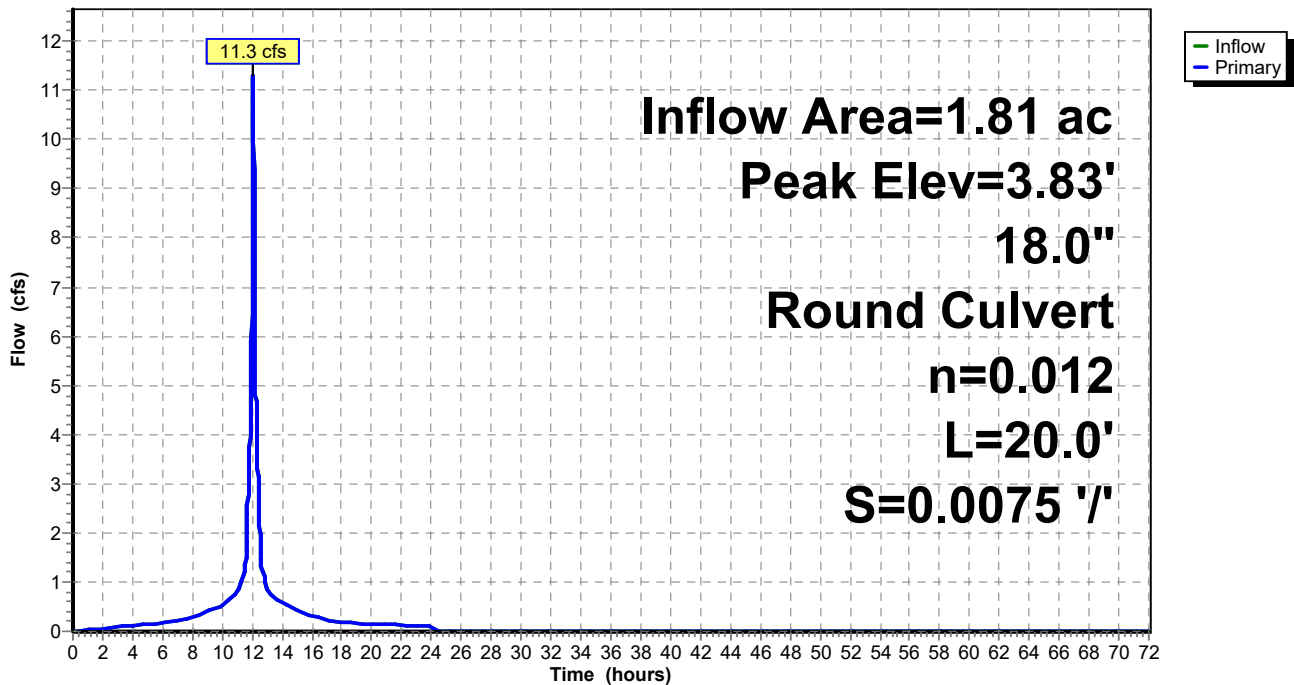
Device #	Routing	Invert	Outlet Devices
#1	Primary	1.58'	18.0" Round RCP_Round 18" L= 20.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1.58' / 1.43' S= 0.0075 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=11.3 cfs @ 12.07 hrs HW=3.83' (Free Discharge)

↑1=RCP_Round 18" (Barrel Controls 11.3 cfs @ 6.39 fps)

Pond OF2: Outfall 2 - 18" RCP

Hydrograph



Massport_M555_Backlands_PRE_LOW

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Hydrograph for Pond OF2: Outfall 2 - 18" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	1.58	0.0	51.00	0.0	1.58	0.0
1.00	0.0	1.64	0.0	52.00	0.0	1.58	0.0
2.00	0.1	1.69	0.1	53.00	0.0	1.58	0.0
3.00	0.1	1.71	0.1	54.00	0.0	1.58	0.0
4.00	0.1	1.73	0.1	55.00	0.0	1.58	0.0
5.00	0.1	1.75	0.1	56.00	0.0	1.58	0.0
6.00	0.2	1.76	0.2	57.00	0.0	1.58	0.0
7.00	0.2	1.79	0.2	58.00	0.0	1.58	0.0
8.00	0.3	1.82	0.3	59.00	0.0	1.58	0.0
9.00	0.4	1.87	0.4	60.00	0.0	1.58	0.0
10.00	0.5	1.92	0.5	61.00	0.0	1.58	0.0
11.00	0.8	2.00	0.8	62.00	0.0	1.58	0.0
12.00	7.6	3.16	7.6	63.00	0.0	1.58	0.0
13.00	0.9	2.03	0.9	64.00	0.0	1.58	0.0
14.00	0.6	1.93	0.6	65.00	0.0	1.58	0.0
15.00	0.4	1.88	0.4	66.00	0.0	1.58	0.0
16.00	0.3	1.83	0.3	67.00	0.0	1.58	0.0
17.00	0.2	1.81	0.2	68.00	0.0	1.58	0.0
18.00	0.2	1.78	0.2	69.00	0.0	1.58	0.0
19.00	0.2	1.77	0.2	70.00	0.0	1.58	0.0
20.00	0.1	1.76	0.1	71.00	0.0	1.58	0.0
21.00	0.1	1.75	0.1	72.00	0.0	1.58	0.0
22.00	0.1	1.74	0.1				
23.00	0.1	1.73	0.1				
24.00	0.1	1.72	0.1				
25.00	0.0	1.58	0.0				
26.00	0.0	1.58	0.0				
27.00	0.0	1.58	0.0				
28.00	0.0	1.58	0.0				
29.00	0.0	1.58	0.0				
30.00	0.0	1.58	0.0				
31.00	0.0	1.58	0.0				
32.00	0.0	1.58	0.0				
33.00	0.0	1.58	0.0				
34.00	0.0	1.58	0.0				
35.00	0.0	1.58	0.0				
36.00	0.0	1.58	0.0				
37.00	0.0	1.58	0.0				
38.00	0.0	1.58	0.0				
39.00	0.0	1.58	0.0				
40.00	0.0	1.58	0.0				
41.00	0.0	1.58	0.0				
42.00	0.0	1.58	0.0				
43.00	0.0	1.58	0.0				
44.00	0.0	1.58	0.0				
45.00	0.0	1.58	0.0				
46.00	0.0	1.58	0.0				
47.00	0.0	1.58	0.0				
48.00	0.0	1.58	0.0				
49.00	0.0	1.58	0.0				
50.00	0.0	1.58	0.0				

Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Pond OF3: Outfall 3 - 24" RCP

Inflow Area = 1.79 ac, 100.00% Impervious, Inflow Depth = 5.91" for 25-Year event
Inflow = 11.2 cfs @ 12.07 hrs, Volume= 0.882 af
Outflow = 11.2 cfs @ 12.07 hrs, Volume= 0.882 af, Atten= 0%, Lag= 0.0 min
Primary = 11.2 cfs @ 12.07 hrs, Volume= 0.882 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 1.87' @ 12.07 hrs

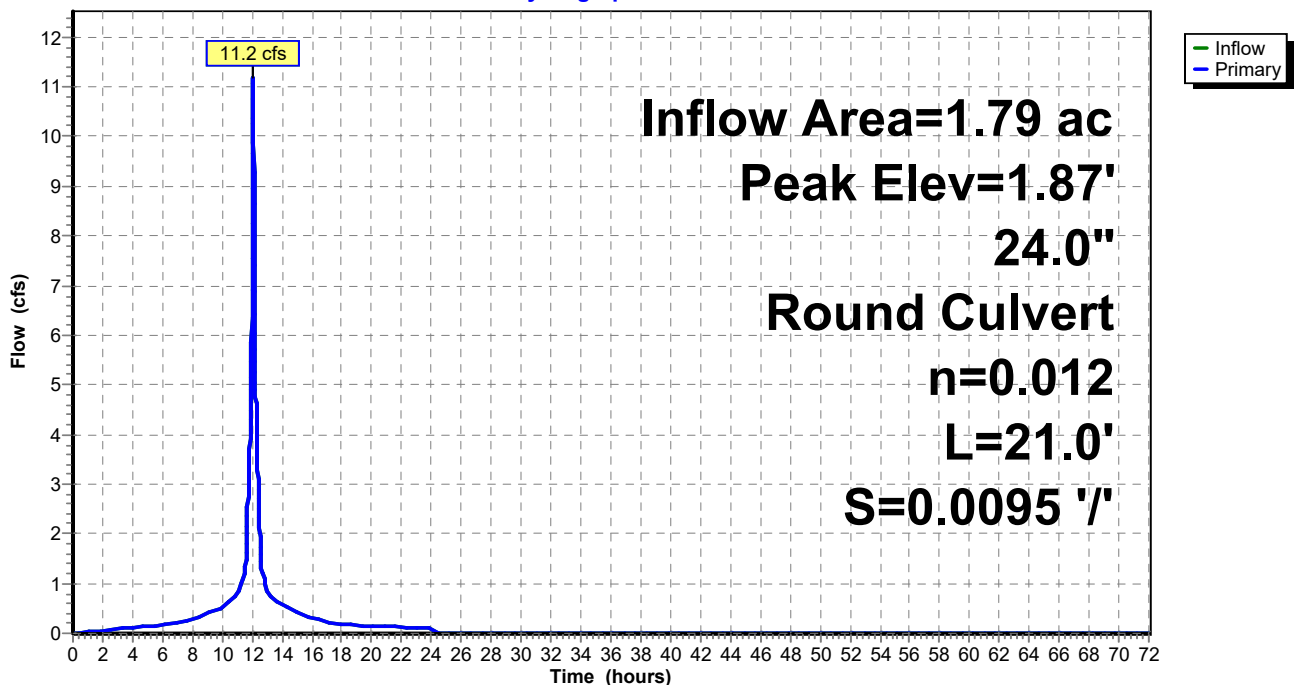
Device	Routing	Invert	Outlet Devices
#1	Primary	0.23'	24.0" Round RCP_Round 24" L= 21.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 0.23' / 0.03' S= 0.0095 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=11.2 cfs @ 12.07 hrs HW=1.87' (Free Discharge)

↑1=RCP_Round 24" (Barrel Controls 11.2 cfs @ 5.52 fps)

Pond OF3: Outfall 3 - 24" RCP

Hydrograph



Massport_M555_Backlands_PRE_LOW

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Hydrograph for Pond OF3: Outfall 3 - 24" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	0.23	0.0	51.00	0.0	0.23	0.0
1.00	0.0	0.28	0.0	52.00	0.0	0.23	0.0
2.00	0.1	0.32	0.1	53.00	0.0	0.23	0.0
3.00	0.1	0.35	0.1	54.00	0.0	0.23	0.0
4.00	0.1	0.36	0.1	55.00	0.0	0.23	0.0
5.00	0.1	0.38	0.1	56.00	0.0	0.23	0.0
6.00	0.2	0.39	0.2	57.00	0.0	0.23	0.0
7.00	0.2	0.42	0.2	58.00	0.0	0.23	0.0
8.00	0.3	0.44	0.3	59.00	0.0	0.23	0.0
9.00	0.4	0.48	0.4	60.00	0.0	0.23	0.0
10.00	0.5	0.52	0.5	61.00	0.0	0.23	0.0
11.00	0.8	0.59	0.8	62.00	0.0	0.23	0.0
12.00	7.6	1.52	7.6	63.00	0.0	0.23	0.0
13.00	0.9	0.62	0.9	64.00	0.0	0.23	0.0
14.00	0.6	0.54	0.6	65.00	0.0	0.23	0.0
15.00	0.4	0.50	0.4	66.00	0.0	0.23	0.0
16.00	0.3	0.45	0.3	67.00	0.0	0.23	0.0
17.00	0.2	0.43	0.2	68.00	0.0	0.23	0.0
18.00	0.2	0.40	0.2	69.00	0.0	0.23	0.0
19.00	0.2	0.39	0.2	70.00	0.0	0.23	0.0
20.00	0.1	0.38	0.1	71.00	0.0	0.23	0.0
21.00	0.1	0.38	0.1	72.00	0.0	0.23	0.0
22.00	0.1	0.37	0.1				
23.00	0.1	0.36	0.1				
24.00	0.1	0.36	0.1				
25.00	0.0	0.23	0.0				
26.00	0.0	0.23	0.0				
27.00	0.0	0.23	0.0				
28.00	0.0	0.23	0.0				
29.00	0.0	0.23	0.0				
30.00	0.0	0.23	0.0				
31.00	0.0	0.23	0.0				
32.00	0.0	0.23	0.0				
33.00	0.0	0.23	0.0				
34.00	0.0	0.23	0.0				
35.00	0.0	0.23	0.0				
36.00	0.0	0.23	0.0				
37.00	0.0	0.23	0.0				
38.00	0.0	0.23	0.0				
39.00	0.0	0.23	0.0				
40.00	0.0	0.23	0.0				
41.00	0.0	0.23	0.0				
42.00	0.0	0.23	0.0				
43.00	0.0	0.23	0.0				
44.00	0.0	0.23	0.0				
45.00	0.0	0.23	0.0				
46.00	0.0	0.23	0.0				
47.00	0.0	0.23	0.0				
48.00	0.0	0.23	0.0				
49.00	0.0	0.23	0.0				
50.00	0.0	0.23	0.0				

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Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Pond OF4: Outfall 4 - 24" RCP

Inflow Area = 1.65 ac, 100.00% Impervious, Inflow Depth = 5.91" for 25-Year event
Inflow = 10.3 cfs @ 12.07 hrs, Volume= 0.812 af
Outflow = 10.3 cfs @ 12.07 hrs, Volume= 0.812 af, Atten= 0%, Lag= 0.0 min
Primary = 10.3 cfs @ 12.07 hrs, Volume= 0.812 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 2.20' @ 12.07 hrs

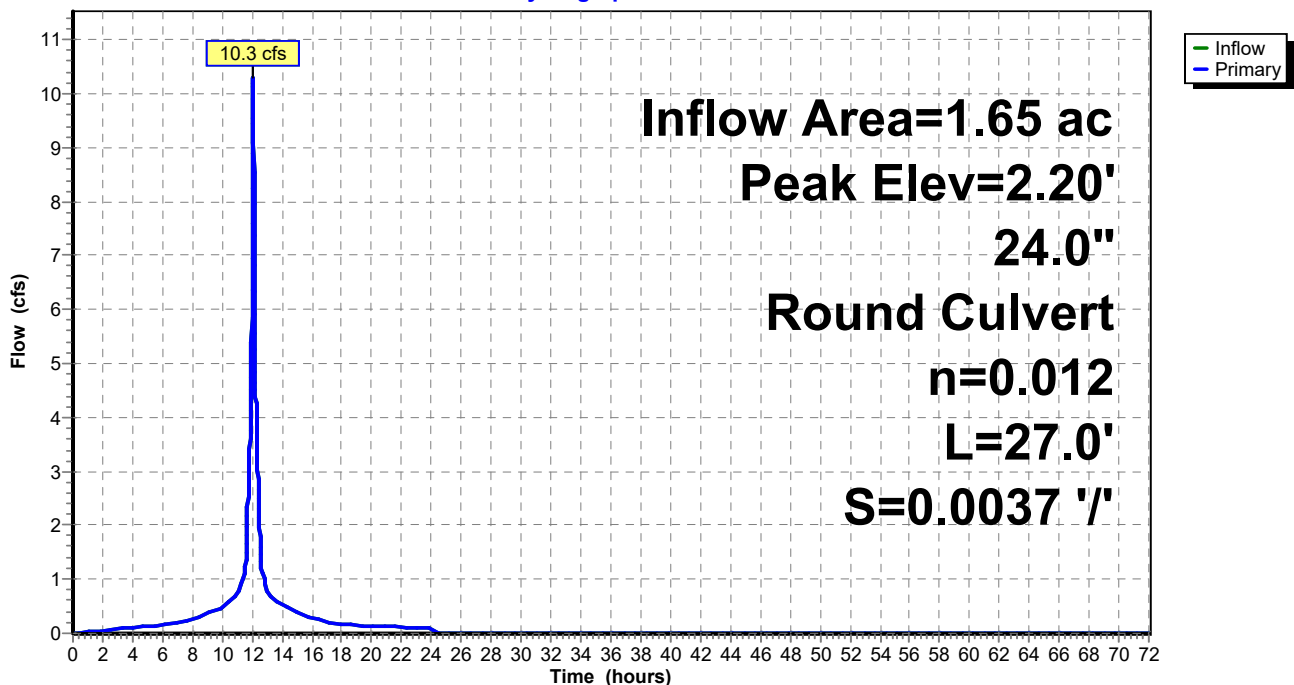
Device	Routing	Invert	Outlet Devices
#1	Primary	0.53'	24.0" Round RCP_Round 24" L= 27.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 0.53' / 0.43' S= 0.0037 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=10.3 cfs @ 12.07 hrs HW=2.20' (Free Discharge)

↑1=RCP_Round 24" (Barrel Controls 10.3 cfs @ 4.98 fps)

Pond OF4: Outfall 4 - 24" RCP

Hydrograph



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Hydrograph for Pond OF4: Outfall 4 - 24" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	0.53	0.0	51.00	0.0	0.53	0.0
1.00	0.0	0.59	0.0	52.00	0.0	0.53	0.0
2.00	0.0	0.64	0.0	53.00	0.0	0.53	0.0
3.00	0.1	0.66	0.1	54.00	0.0	0.53	0.0
4.00	0.1	0.68	0.1	55.00	0.0	0.53	0.0
5.00	0.1	0.70	0.1	56.00	0.0	0.53	0.0
6.00	0.1	0.71	0.1	57.00	0.0	0.53	0.0
7.00	0.2	0.74	0.2	58.00	0.0	0.53	0.0
8.00	0.2	0.77	0.2	59.00	0.0	0.53	0.0
9.00	0.4	0.81	0.4	60.00	0.0	0.53	0.0
10.00	0.5	0.86	0.5	61.00	0.0	0.53	0.0
11.00	0.7	0.93	0.7	62.00	0.0	0.53	0.0
12.00	7.0	1.85	7.0	63.00	0.0	0.53	0.0
13.00	0.8	0.96	0.8	64.00	0.0	0.53	0.0
14.00	0.5	0.87	0.5	65.00	0.0	0.53	0.0
15.00	0.4	0.83	0.4	66.00	0.0	0.53	0.0
16.00	0.3	0.78	0.3	67.00	0.0	0.53	0.0
17.00	0.2	0.75	0.2	68.00	0.0	0.53	0.0
18.00	0.2	0.73	0.2	69.00	0.0	0.53	0.0
19.00	0.1	0.72	0.1	70.00	0.0	0.53	0.0
20.00	0.1	0.71	0.1	71.00	0.0	0.53	0.0
21.00	0.1	0.70	0.1	72.00	0.0	0.53	0.0
22.00	0.1	0.69	0.1				
23.00	0.1	0.68	0.1				
24.00	0.1	0.67	0.1				
25.00	0.0	0.53	0.0				
26.00	0.0	0.53	0.0				
27.00	0.0	0.53	0.0				
28.00	0.0	0.53	0.0				
29.00	0.0	0.53	0.0				
30.00	0.0	0.53	0.0				
31.00	0.0	0.53	0.0				
32.00	0.0	0.53	0.0				
33.00	0.0	0.53	0.0				
34.00	0.0	0.53	0.0				
35.00	0.0	0.53	0.0				
36.00	0.0	0.53	0.0				
37.00	0.0	0.53	0.0				
38.00	0.0	0.53	0.0				
39.00	0.0	0.53	0.0				
40.00	0.0	0.53	0.0				
41.00	0.0	0.53	0.0				
42.00	0.0	0.53	0.0				
43.00	0.0	0.53	0.0				
44.00	0.0	0.53	0.0				
45.00	0.0	0.53	0.0				
46.00	0.0	0.53	0.0				
47.00	0.0	0.53	0.0				
48.00	0.0	0.53	0.0				
49.00	0.0	0.53	0.0				
50.00	0.0	0.53	0.0				

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Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Pond OF5: Outfall 5 - 36" RCP

Inflow Area = 0.87 ac, 100.00% Impervious, Inflow Depth = 5.91" for 25-Year event
Inflow = 5.4 cfs @ 12.07 hrs, Volume= 0.429 af
Outflow = 5.4 cfs @ 12.07 hrs, Volume= 0.429 af, Atten= 0%, Lag= 0.0 min
Primary = 5.4 cfs @ 12.07 hrs, Volume= 0.429 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 3.22' @ 12.07 hrs

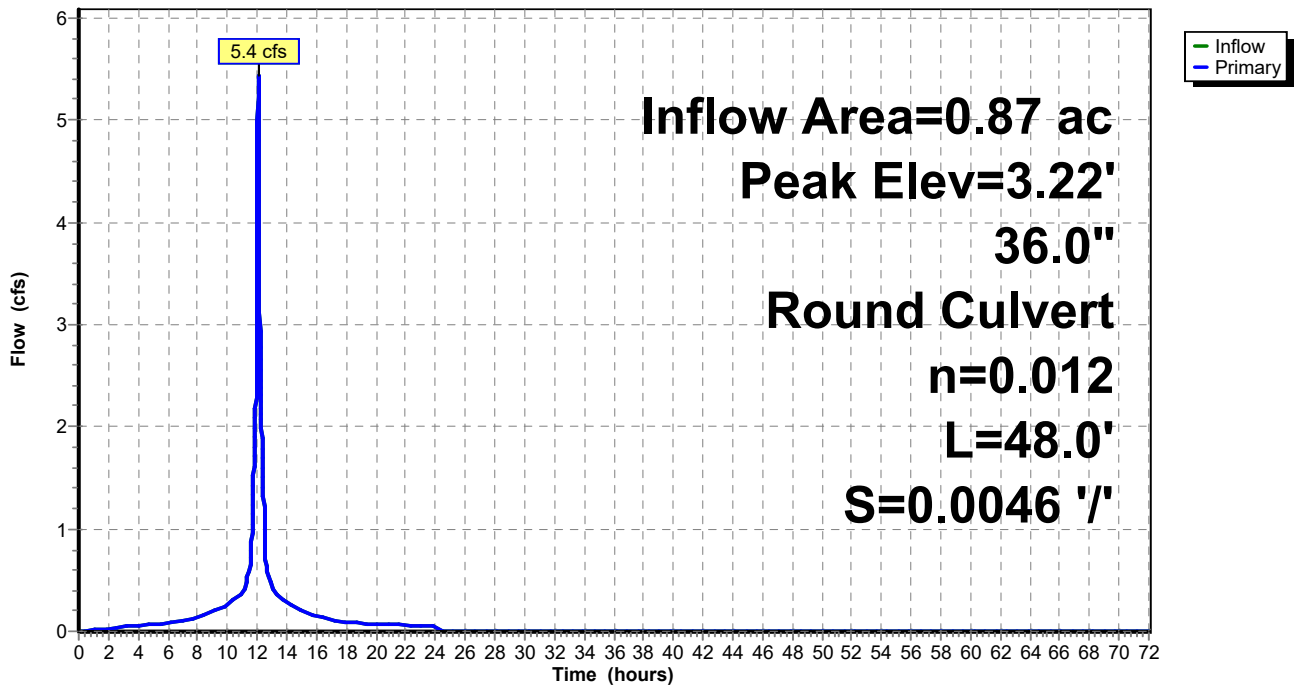
Device	Routing	Invert	Outlet Devices
#1	Primary	2.26'	36.0" Round RCP_Round 36" L= 48.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 2.26' / 2.04' S= 0.0046 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 7.07 sf

Primary OutFlow Max=5.4 cfs @ 12.07 hrs HW=3.22' (Free Discharge)

↑1=RCP_Round 36" (Barrel Controls 5.4 cfs @ 4.14 fps)

Pond OF5: Outfall 5 - 36" RCP

Hydrograph



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Hydrograph for Pond OF5: Outfall 5 - 36" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	2.26	0.0	51.00	0.0	2.26	0.0
1.00	0.0	2.30	0.0	52.00	0.0	2.26	0.0
2.00	0.0	2.33	0.0	53.00	0.0	2.26	0.0
3.00	0.0	2.35	0.0	54.00	0.0	2.26	0.0
4.00	0.1	2.36	0.1	55.00	0.0	2.26	0.0
5.00	0.1	2.37	0.1	56.00	0.0	2.26	0.0
6.00	0.1	2.38	0.1	57.00	0.0	2.26	0.0
7.00	0.1	2.39	0.1	58.00	0.0	2.26	0.0
8.00	0.1	2.41	0.1	59.00	0.0	2.26	0.0
9.00	0.2	2.44	0.2	60.00	0.0	2.26	0.0
10.00	0.3	2.47	0.3	61.00	0.0	2.26	0.0
11.00	0.4	2.51	0.4	62.00	0.0	2.26	0.0
12.00	3.7	3.04	3.7	63.00	0.0	2.26	0.0
13.00	0.4	2.53	0.4	64.00	0.0	2.26	0.0
14.00	0.3	2.48	0.3	65.00	0.0	2.26	0.0
15.00	0.2	2.45	0.2	66.00	0.0	2.26	0.0
16.00	0.1	2.42	0.1	67.00	0.0	2.26	0.0
17.00	0.1	2.40	0.1	68.00	0.0	2.26	0.0
18.00	0.1	2.39	0.1	69.00	0.0	2.26	0.0
19.00	0.1	2.38	0.1	70.00	0.0	2.26	0.0
20.00	0.1	2.37	0.1	71.00	0.0	2.26	0.0
21.00	0.1	2.37	0.1	72.00	0.0	2.26	0.0
22.00	0.1	2.36	0.1				
23.00	0.1	2.36	0.1				
24.00	0.0	2.35	0.0				
25.00	0.0	2.26	0.0				
26.00	0.0	2.26	0.0				
27.00	0.0	2.26	0.0				
28.00	0.0	2.26	0.0				
29.00	0.0	2.26	0.0				
30.00	0.0	2.26	0.0				
31.00	0.0	2.26	0.0				
32.00	0.0	2.26	0.0				
33.00	0.0	2.26	0.0				
34.00	0.0	2.26	0.0				
35.00	0.0	2.26	0.0				
36.00	0.0	2.26	0.0				
37.00	0.0	2.26	0.0				
38.00	0.0	2.26	0.0				
39.00	0.0	2.26	0.0				
40.00	0.0	2.26	0.0				
41.00	0.0	2.26	0.0				
42.00	0.0	2.26	0.0				
43.00	0.0	2.26	0.0				
44.00	0.0	2.26	0.0				
45.00	0.0	2.26	0.0				
46.00	0.0	2.26	0.0				
47.00	0.0	2.26	0.0				
48.00	0.0	2.26	0.0				
49.00	0.0	2.26	0.0				
50.00	0.0	2.26	0.0				

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Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Pond OF6: Outfall 6 - 42" RCP

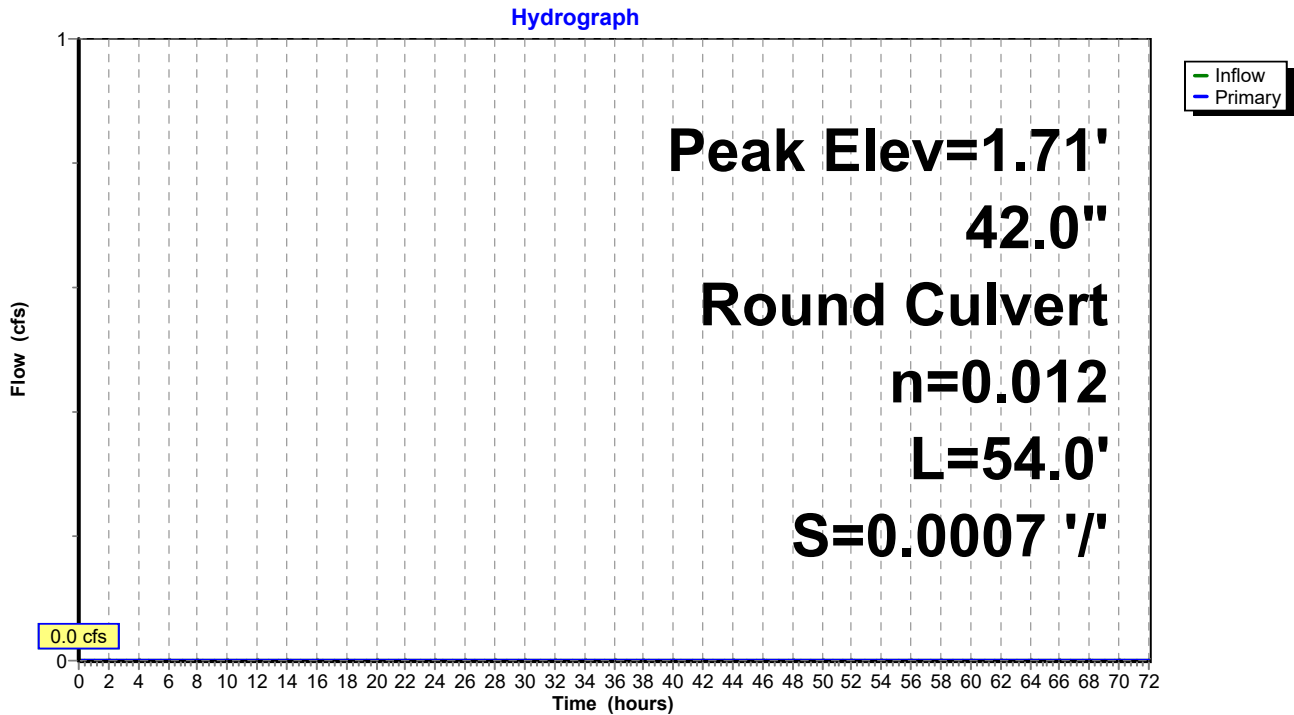
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 1.71' @ 0.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1.71'	42.0" Round RCP_Round 42" L= 54.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1.71' / 1.67' S= 0.0007 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 9.62 sf

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=1.71' (Free Discharge)
↑1=RCP_Round 42" (Controls 0.0 cfs)

Pond OF6: Outfall 6 - 42" RCP



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Type III 24-hr 25-Year Rainfall=6.15"

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Hydrograph for Pond OF6: Outfall 6 - 42" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	1.71	0.0	51.00	0.0	1.71	0.0
1.00	0.0	1.71	0.0	52.00	0.0	1.71	0.0
2.00	0.0	1.71	0.0	53.00	0.0	1.71	0.0
3.00	0.0	1.71	0.0	54.00	0.0	1.71	0.0
4.00	0.0	1.71	0.0	55.00	0.0	1.71	0.0
5.00	0.0	1.71	0.0	56.00	0.0	1.71	0.0
6.00	0.0	1.71	0.0	57.00	0.0	1.71	0.0
7.00	0.0	1.71	0.0	58.00	0.0	1.71	0.0
8.00	0.0	1.71	0.0	59.00	0.0	1.71	0.0
9.00	0.0	1.71	0.0	60.00	0.0	1.71	0.0
10.00	0.0	1.71	0.0	61.00	0.0	1.71	0.0
11.00	0.0	1.71	0.0	62.00	0.0	1.71	0.0
12.00	0.0	1.71	0.0	63.00	0.0	1.71	0.0
13.00	0.0	1.71	0.0	64.00	0.0	1.71	0.0
14.00	0.0	1.71	0.0	65.00	0.0	1.71	0.0
15.00	0.0	1.71	0.0	66.00	0.0	1.71	0.0
16.00	0.0	1.71	0.0	67.00	0.0	1.71	0.0
17.00	0.0	1.71	0.0	68.00	0.0	1.71	0.0
18.00	0.0	1.71	0.0	69.00	0.0	1.71	0.0
19.00	0.0	1.71	0.0	70.00	0.0	1.71	0.0
20.00	0.0	1.71	0.0	71.00	0.0	1.71	0.0
21.00	0.0	1.71	0.0	72.00	0.0	1.71	0.0
22.00	0.0	1.71	0.0				
23.00	0.0	1.71	0.0				
24.00	0.0	1.71	0.0				
25.00	0.0	1.71	0.0				
26.00	0.0	1.71	0.0				
27.00	0.0	1.71	0.0				
28.00	0.0	1.71	0.0				
29.00	0.0	1.71	0.0				
30.00	0.0	1.71	0.0				
31.00	0.0	1.71	0.0				
32.00	0.0	1.71	0.0				
33.00	0.0	1.71	0.0				
34.00	0.0	1.71	0.0				
35.00	0.0	1.71	0.0				
36.00	0.0	1.71	0.0				
37.00	0.0	1.71	0.0				
38.00	0.0	1.71	0.0				
39.00	0.0	1.71	0.0				
40.00	0.0	1.71	0.0				
41.00	0.0	1.71	0.0				
42.00	0.0	1.71	0.0				
43.00	0.0	1.71	0.0				
44.00	0.0	1.71	0.0				
45.00	0.0	1.71	0.0				
46.00	0.0	1.71	0.0				
47.00	0.0	1.71	0.0				
48.00	0.0	1.71	0.0				
49.00	0.0	1.71	0.0				
50.00	0.0	1.71	0.0				

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Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Pond OF7: Outfall 7 - 30" RCP

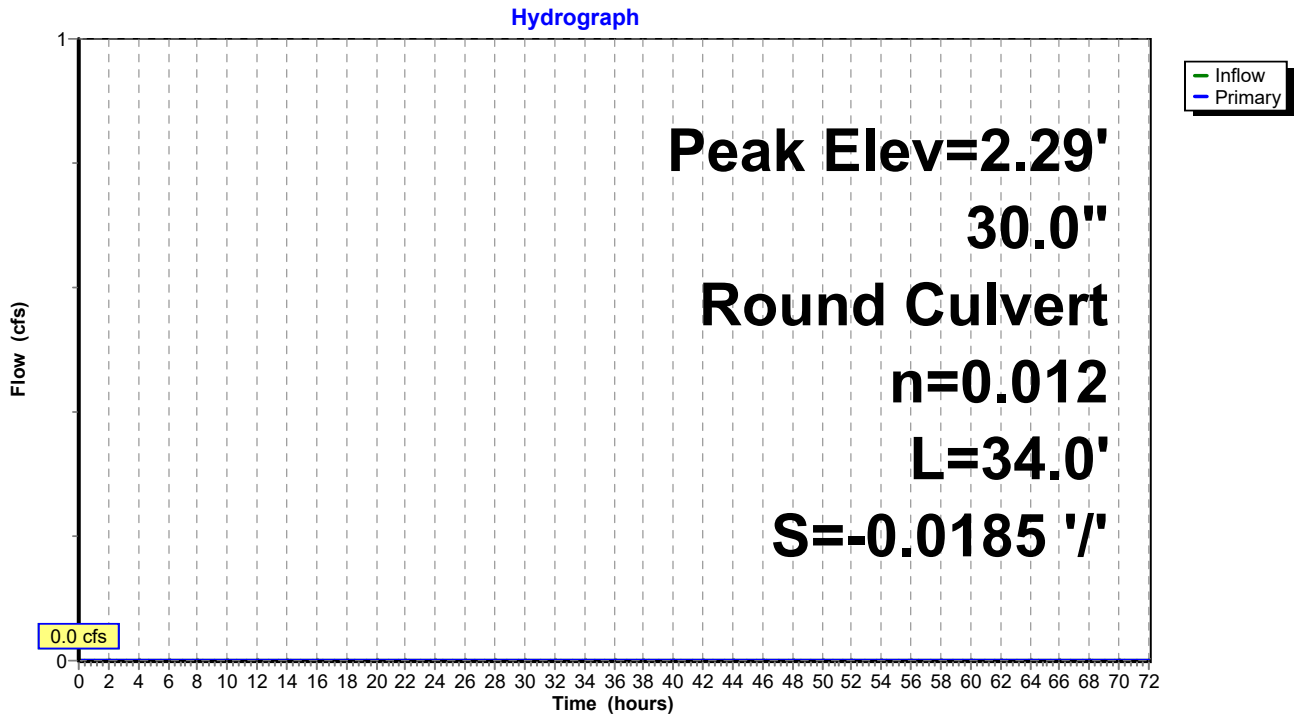
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 2.29' @ 0.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2.29'	30.0" Round RCP_Round 30" L= 34.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1.66' / 2.29' S= -0.0185 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=2.29' (Free Discharge)
↑1=RCP_Round 30" (Controls 0.0 cfs)

Pond OF7: Outfall 7 - 30" RCP



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Type III 24-hr 25-Year Rainfall=6.15"

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Hydrograph for Pond OF7: Outfall 7 - 30" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	2.29	0.0	51.00	0.0	2.29	0.0
1.00	0.0	2.29	0.0	52.00	0.0	2.29	0.0
2.00	0.0	2.29	0.0	53.00	0.0	2.29	0.0
3.00	0.0	2.29	0.0	54.00	0.0	2.29	0.0
4.00	0.0	2.29	0.0	55.00	0.0	2.29	0.0
5.00	0.0	2.29	0.0	56.00	0.0	2.29	0.0
6.00	0.0	2.29	0.0	57.00	0.0	2.29	0.0
7.00	0.0	2.29	0.0	58.00	0.0	2.29	0.0
8.00	0.0	2.29	0.0	59.00	0.0	2.29	0.0
9.00	0.0	2.29	0.0	60.00	0.0	2.29	0.0
10.00	0.0	2.29	0.0	61.00	0.0	2.29	0.0
11.00	0.0	2.29	0.0	62.00	0.0	2.29	0.0
12.00	0.0	2.29	0.0	63.00	0.0	2.29	0.0
13.00	0.0	2.29	0.0	64.00	0.0	2.29	0.0
14.00	0.0	2.29	0.0	65.00	0.0	2.29	0.0
15.00	0.0	2.29	0.0	66.00	0.0	2.29	0.0
16.00	0.0	2.29	0.0	67.00	0.0	2.29	0.0
17.00	0.0	2.29	0.0	68.00	0.0	2.29	0.0
18.00	0.0	2.29	0.0	69.00	0.0	2.29	0.0
19.00	0.0	2.29	0.0	70.00	0.0	2.29	0.0
20.00	0.0	2.29	0.0	71.00	0.0	2.29	0.0
21.00	0.0	2.29	0.0	72.00	0.0	2.29	0.0
22.00	0.0	2.29	0.0				
23.00	0.0	2.29	0.0				
24.00	0.0	2.29	0.0				
25.00	0.0	2.29	0.0				
26.00	0.0	2.29	0.0				
27.00	0.0	2.29	0.0				
28.00	0.0	2.29	0.0				
29.00	0.0	2.29	0.0				
30.00	0.0	2.29	0.0				
31.00	0.0	2.29	0.0				
32.00	0.0	2.29	0.0				
33.00	0.0	2.29	0.0				
34.00	0.0	2.29	0.0				
35.00	0.0	2.29	0.0				
36.00	0.0	2.29	0.0				
37.00	0.0	2.29	0.0				
38.00	0.0	2.29	0.0				
39.00	0.0	2.29	0.0				
40.00	0.0	2.29	0.0				
41.00	0.0	2.29	0.0				
42.00	0.0	2.29	0.0				
43.00	0.0	2.29	0.0				
44.00	0.0	2.29	0.0				
45.00	0.0	2.29	0.0				
46.00	0.0	2.29	0.0				
47.00	0.0	2.29	0.0				
48.00	0.0	2.29	0.0				
49.00	0.0	2.29	0.0				
50.00	0.0	2.29	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentE1N: Area 1 - north section Runoff Area=56,819 sf 100.00% Impervious Runoff Depth=7.68"
Tc=5.0 min CN=98 Runoff=10.5 cfs 0.835 af

SubcatchmentE1S: Area 1 - south section Runoff Area=15,671 sf 100.00% Impervious Runoff Depth=7.68"
Tc=5.0 min CN=98 Runoff=2.9 cfs 0.230 af

SubcatchmentE2N: Area 2 - 18" RCP Runoff Area=78,786 sf 100.00% Impervious Runoff Depth=7.68"
Tc=5.0 min CN=98 Runoff=14.6 cfs 1.158 af

SubcatchmentE3N: Area 3 - 24" RCP Runoff Area=77,980 sf 100.00% Impervious Runoff Depth=7.68"
Tc=5.0 min CN=98 Runoff=14.4 cfs 1.146 af

SubcatchmentE4N: Area 4 - 24" RCP Runoff Area=71,766 sf 100.00% Impervious Runoff Depth=7.68"
Tc=5.0 min CN=98 Runoff=13.3 cfs 1.054 af

SubcatchmentE5N: Area 5 -36" RCP Runoff Area=37,897 sf 100.00% Impervious Runoff Depth=7.68"
Tc=5.0 min CN=98 Runoff=7.0 cfs 0.557 af

SubcatchmentE6: Area 6 - 42" RCP Runoff Area=0 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=0 Runoff=0.0 cfs 0.000 af

SubcatchmentE7: Area 7 - 30" RCP Runoff Area=0 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=0 Runoff=0.0 cfs 0.000 af

Pond OF1: Outfall 1 - 18" RCP Peak Elev=3.22' Inflow=13.4 cfs 1.065 af
18.0" Round Culvert n=0.012 L=26.0' S=-0.0154 '/ Outflow=13.4 cfs 1.065 af

Pond OF2: Outfall 2 - 18" RCP Peak Elev=4.42' Inflow=14.6 cfs 1.158 af
18.0" Round Culvert n=0.012 L=20.0' S=0.0075 '/ Outflow=14.6 cfs 1.158 af

Pond OF3: Outfall 3 - 24" RCP Peak Elev=2.17' Inflow=14.4 cfs 1.146 af
24.0" Round Culvert n=0.012 L=21.0' S=0.0095 '/ Outflow=14.4 cfs 1.146 af

Pond OF4: Outfall 4 - 24" RCP Peak Elev=2.49' Inflow=13.3 cfs 1.054 af
24.0" Round Culvert n=0.012 L=27.0' S=0.0037 '/ Outflow=13.3 cfs 1.054 af

Pond OF5: Outfall 5 - 36" RCP Peak Elev=3.36' Inflow=7.0 cfs 0.557 af
36.0" Round Culvert n=0.012 L=48.0' S=0.0046 '/ Outflow=7.0 cfs 0.557 af

Pond OF6: Outfall 6 - 42" RCP Peak Elev=1.71' Inflow=0.0 cfs 0.000 af
42.0" Round Culvert n=0.012 L=54.0' S=0.0007 '/ Outflow=0.0 cfs 0.000 af

Pond OF7: Outfall 7 - 30" RCP Peak Elev=2.29' Inflow=0.0 cfs 0.000 af
30.0" Round Culvert n=0.012 L=34.0' S=-0.0185 '/ Outflow=0.0 cfs 0.000 af

**Total Runoff Area = 7.78 ac Runoff Volume = 4.980 af Average Runoff Depth = 7.68"
0.00% Pervious = 0.00 ac 100.00% Impervious = 7.78 ac**

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Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Subcatchment E1N: Area 1 - north section

Runoff = 10.5 cfs @ 12.07 hrs, Volume= 0.835 af, Depth= 7.68"

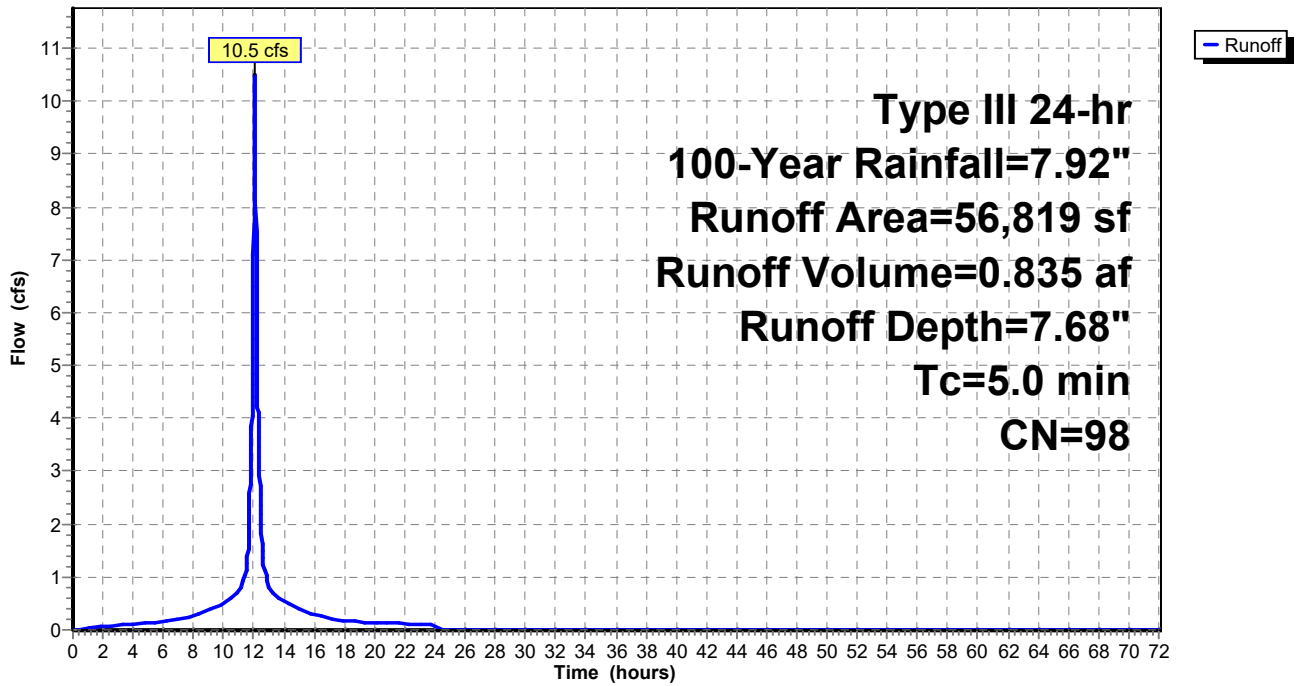
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.92"

Area (sf)	CN	Description
* 56,819	98	OF 1 paved north
56,819		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment E1N: Area 1 - north section

Hydrograph



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Type III 24-hr 100-Year Rainfall=7.92"

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Hydrograph for Subcatchment E1N: Area 1 - north section

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	7.92	7.68	0.0
1.00	0.08	0.01	0.0	52.00	7.92	7.68	0.0
2.00	0.16	0.04	0.1	53.00	7.92	7.68	0.0
3.00	0.24	0.10	0.1	54.00	7.92	7.68	0.0
4.00	0.34	0.18	0.1	55.00	7.92	7.68	0.0
5.00	0.45	0.27	0.1	56.00	7.92	7.68	0.0
6.00	0.57	0.38	0.2	57.00	7.92	7.68	0.0
7.00	0.72	0.52	0.2	58.00	7.92	7.68	0.0
8.00	0.90	0.70	0.3	59.00	7.92	7.68	0.0
9.00	1.15	0.94	0.4	60.00	7.92	7.68	0.0
10.00	1.50	1.28	0.5	61.00	7.92	7.68	0.0
11.00	1.98	1.75	0.7	62.00	7.92	7.68	0.0
12.00	3.96	3.73	7.1	63.00	7.92	7.68	0.0
13.00	5.94	5.70	0.8	64.00	7.92	7.68	0.0
14.00	6.42	6.18	0.5	65.00	7.92	7.68	0.0
15.00	6.77	6.53	0.4	66.00	7.92	7.68	0.0
16.00	7.02	6.78	0.3	67.00	7.92	7.68	0.0
17.00	7.20	6.96	0.2	68.00	7.92	7.68	0.0
18.00	7.35	7.11	0.2	69.00	7.92	7.68	0.0
19.00	7.47	7.23	0.2	70.00	7.92	7.68	0.0
20.00	7.58	7.34	0.1	71.00	7.92	7.68	0.0
21.00	7.68	7.44	0.1	72.00	7.92	7.68	0.0
22.00	7.77	7.53	0.1				
23.00	7.85	7.61	0.1				
24.00	7.92	7.68	0.1				
25.00	7.92	7.68	0.0				
26.00	7.92	7.68	0.0				
27.00	7.92	7.68	0.0				
28.00	7.92	7.68	0.0				
29.00	7.92	7.68	0.0				
30.00	7.92	7.68	0.0				
31.00	7.92	7.68	0.0				
32.00	7.92	7.68	0.0				
33.00	7.92	7.68	0.0				
34.00	7.92	7.68	0.0				
35.00	7.92	7.68	0.0				
36.00	7.92	7.68	0.0				
37.00	7.92	7.68	0.0				
38.00	7.92	7.68	0.0				
39.00	7.92	7.68	0.0				
40.00	7.92	7.68	0.0				
41.00	7.92	7.68	0.0				
42.00	7.92	7.68	0.0				
43.00	7.92	7.68	0.0				
44.00	7.92	7.68	0.0				
45.00	7.92	7.68	0.0				
46.00	7.92	7.68	0.0				
47.00	7.92	7.68	0.0				
48.00	7.92	7.68	0.0				
49.00	7.92	7.68	0.0				
50.00	7.92	7.68	0.0				

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Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Subcatchment E1S: Area 1 - south section

Runoff = 2.9 cfs @ 12.07 hrs, Volume= 0.230 af, Depth= 7.68"

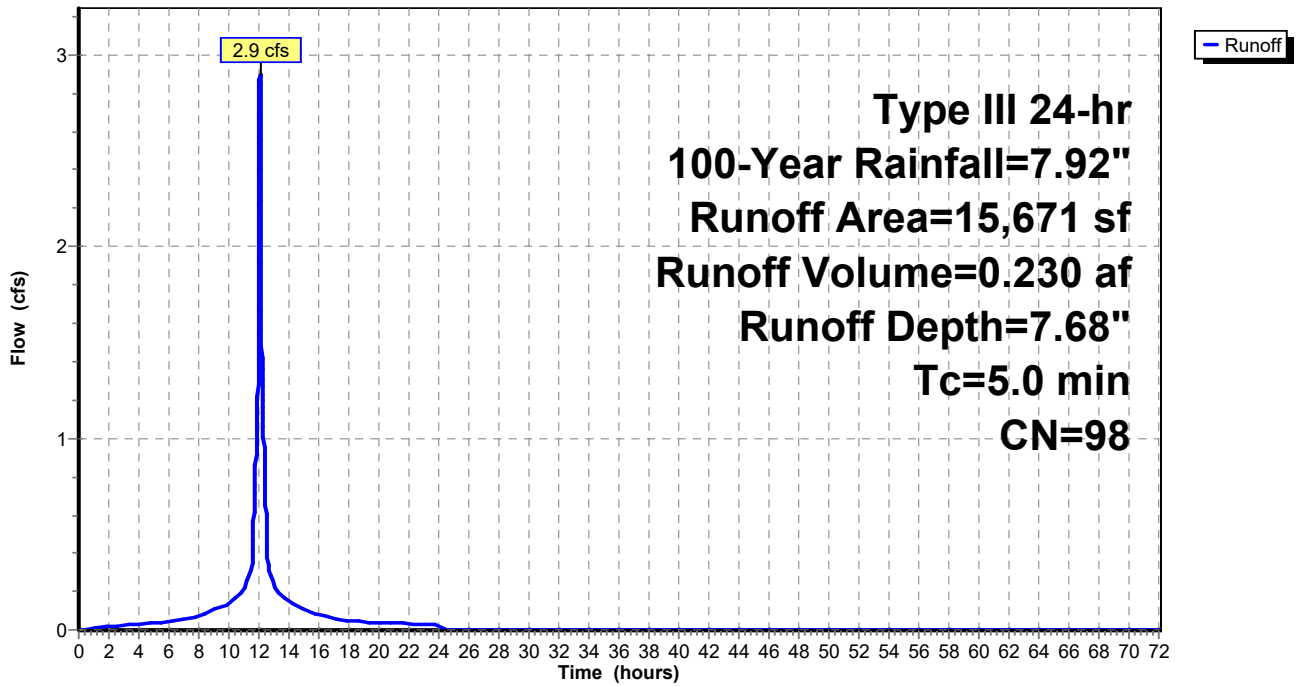
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.92"

Area (sf)	CN	Description
* 15,671	98	OF 1 paved south
15,671		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment E1S: Area 1 - south section

Hydrograph



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Type III 24-hr 100-Year Rainfall=7.92"

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Hydrograph for Subcatchment E1S: Area 1 - south section

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	7.92	7.68	0.0
1.00	0.08	0.01	0.0	52.00	7.92	7.68	0.0
2.00	0.16	0.04	0.0	53.00	7.92	7.68	0.0
3.00	0.24	0.10	0.0	54.00	7.92	7.68	0.0
4.00	0.34	0.18	0.0	55.00	7.92	7.68	0.0
5.00	0.45	0.27	0.0	56.00	7.92	7.68	0.0
6.00	0.57	0.38	0.0	57.00	7.92	7.68	0.0
7.00	0.72	0.52	0.1	58.00	7.92	7.68	0.0
8.00	0.90	0.70	0.1	59.00	7.92	7.68	0.0
9.00	1.15	0.94	0.1	60.00	7.92	7.68	0.0
10.00	1.50	1.28	0.1	61.00	7.92	7.68	0.0
11.00	1.98	1.75	0.2	62.00	7.92	7.68	0.0
12.00	3.96	3.73	2.0	63.00	7.92	7.68	0.0
13.00	5.94	5.70	0.2	64.00	7.92	7.68	0.0
14.00	6.42	6.18	0.1	65.00	7.92	7.68	0.0
15.00	6.77	6.53	0.1	66.00	7.92	7.68	0.0
16.00	7.02	6.78	0.1	67.00	7.92	7.68	0.0
17.00	7.20	6.96	0.1	68.00	7.92	7.68	0.0
18.00	7.35	7.11	0.0	69.00	7.92	7.68	0.0
19.00	7.47	7.23	0.0	70.00	7.92	7.68	0.0
20.00	7.58	7.34	0.0	71.00	7.92	7.68	0.0
21.00	7.68	7.44	0.0	72.00	7.92	7.68	0.0
22.00	7.77	7.53	0.0				
23.00	7.85	7.61	0.0				
24.00	7.92	7.68	0.0				
25.00	7.92	7.68	0.0				
26.00	7.92	7.68	0.0				
27.00	7.92	7.68	0.0				
28.00	7.92	7.68	0.0				
29.00	7.92	7.68	0.0				
30.00	7.92	7.68	0.0				
31.00	7.92	7.68	0.0				
32.00	7.92	7.68	0.0				
33.00	7.92	7.68	0.0				
34.00	7.92	7.68	0.0				
35.00	7.92	7.68	0.0				
36.00	7.92	7.68	0.0				
37.00	7.92	7.68	0.0				
38.00	7.92	7.68	0.0				
39.00	7.92	7.68	0.0				
40.00	7.92	7.68	0.0				
41.00	7.92	7.68	0.0				
42.00	7.92	7.68	0.0				
43.00	7.92	7.68	0.0				
44.00	7.92	7.68	0.0				
45.00	7.92	7.68	0.0				
46.00	7.92	7.68	0.0				
47.00	7.92	7.68	0.0				
48.00	7.92	7.68	0.0				
49.00	7.92	7.68	0.0				
50.00	7.92	7.68	0.0				

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Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Subcatchment E2N: Area 2 - 18" RCP

Runoff = 14.6 cfs @ 12.07 hrs, Volume= 1.158 af, Depth= 7.68"

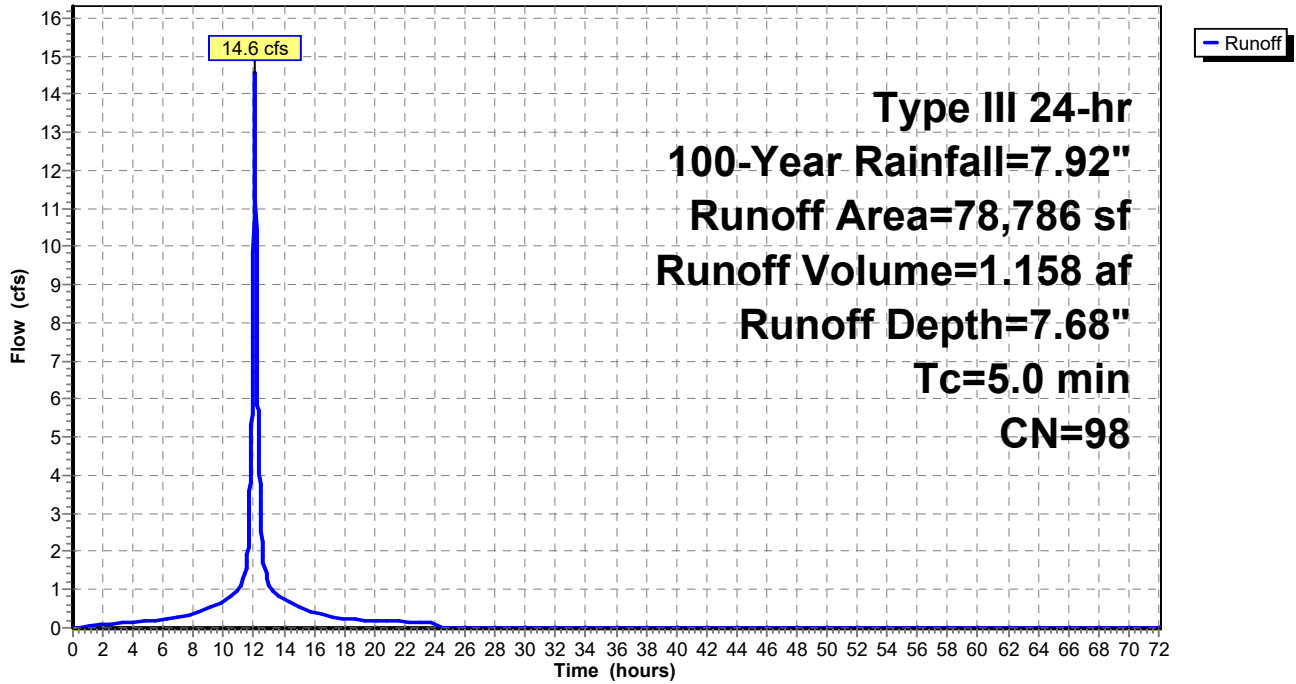
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.92"

Area (sf)	CN	Description
* 78,786	98	OF 2 paved north
78,786		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment E2N: Area 2 - 18" RCP

Hydrograph



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Type III 24-hr 100-Year Rainfall=7.92"

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Hydrograph for Subcatchment E2N: Area 2 - 18" RCP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	7.92	7.68	0.0
1.00	0.08	0.01	0.0	52.00	7.92	7.68	0.0
2.00	0.16	0.04	0.1	53.00	7.92	7.68	0.0
3.00	0.24	0.10	0.1	54.00	7.92	7.68	0.0
4.00	0.34	0.18	0.2	55.00	7.92	7.68	0.0
5.00	0.45	0.27	0.2	56.00	7.92	7.68	0.0
6.00	0.57	0.38	0.2	57.00	7.92	7.68	0.0
7.00	0.72	0.52	0.3	58.00	7.92	7.68	0.0
8.00	0.90	0.70	0.4	59.00	7.92	7.68	0.0
9.00	1.15	0.94	0.5	60.00	7.92	7.68	0.0
10.00	1.50	1.28	0.7	61.00	7.92	7.68	0.0
11.00	1.98	1.75	1.0	62.00	7.92	7.68	0.0
12.00	3.96	3.73	9.9	63.00	7.92	7.68	0.0
13.00	5.94	5.70	1.2	64.00	7.92	7.68	0.0
14.00	6.42	6.18	0.7	65.00	7.92	7.68	0.0
15.00	6.77	6.53	0.6	66.00	7.92	7.68	0.0
16.00	7.02	6.78	0.4	67.00	7.92	7.68	0.0
17.00	7.20	6.96	0.3	68.00	7.92	7.68	0.0
18.00	7.35	7.11	0.2	69.00	7.92	7.68	0.0
19.00	7.47	7.23	0.2	70.00	7.92	7.68	0.0
20.00	7.58	7.34	0.2	71.00	7.92	7.68	0.0
21.00	7.68	7.44	0.2	72.00	7.92	7.68	0.0
22.00	7.77	7.53	0.2				
23.00	7.85	7.61	0.1				
24.00	7.92	7.68	0.1				
25.00	7.92	7.68	0.0				
26.00	7.92	7.68	0.0				
27.00	7.92	7.68	0.0				
28.00	7.92	7.68	0.0				
29.00	7.92	7.68	0.0				
30.00	7.92	7.68	0.0				
31.00	7.92	7.68	0.0				
32.00	7.92	7.68	0.0				
33.00	7.92	7.68	0.0				
34.00	7.92	7.68	0.0				
35.00	7.92	7.68	0.0				
36.00	7.92	7.68	0.0				
37.00	7.92	7.68	0.0				
38.00	7.92	7.68	0.0				
39.00	7.92	7.68	0.0				
40.00	7.92	7.68	0.0				
41.00	7.92	7.68	0.0				
42.00	7.92	7.68	0.0				
43.00	7.92	7.68	0.0				
44.00	7.92	7.68	0.0				
45.00	7.92	7.68	0.0				
46.00	7.92	7.68	0.0				
47.00	7.92	7.68	0.0				
48.00	7.92	7.68	0.0				
49.00	7.92	7.68	0.0				
50.00	7.92	7.68	0.0				

Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Subcatchment E3N: Area 3 - 24" RCP

Runoff = 14.4 cfs @ 12.07 hrs, Volume= 1.146 af, Depth= 7.68"

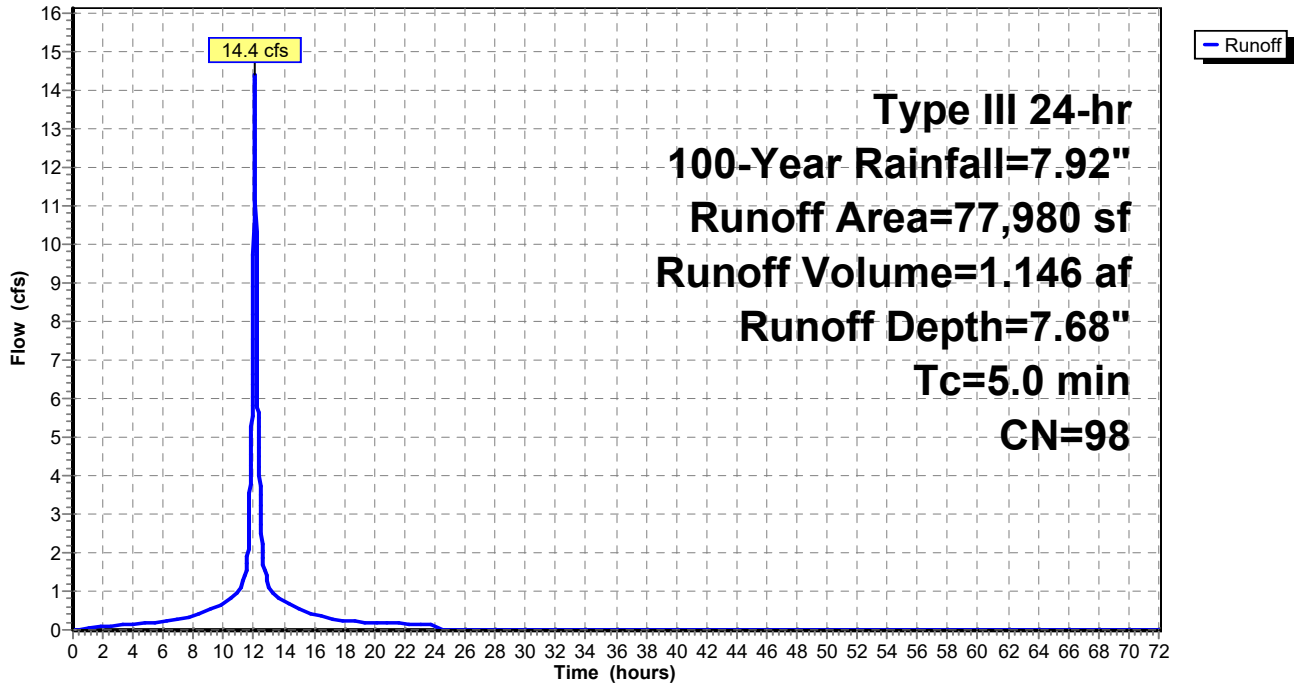
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100-Year Rainfall=7.92"

Area (sf)	CN	Description
* 77,980	98	OF 3 paved north
77,980		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment E3N: Area 3 - 24" RCP

Hydrograph



Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

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Hydrograph for Subcatchment E3N: Area 3 - 24" RCP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	7.92	7.68	0.0
1.00	0.08	0.01	0.0	52.00	7.92	7.68	0.0
2.00	0.16	0.04	0.1	53.00	7.92	7.68	0.0
3.00	0.24	0.10	0.1	54.00	7.92	7.68	0.0
4.00	0.34	0.18	0.2	55.00	7.92	7.68	0.0
5.00	0.45	0.27	0.2	56.00	7.92	7.68	0.0
6.00	0.57	0.38	0.2	57.00	7.92	7.68	0.0
7.00	0.72	0.52	0.3	58.00	7.92	7.68	0.0
8.00	0.90	0.70	0.4	59.00	7.92	7.68	0.0
9.00	1.15	0.94	0.5	60.00	7.92	7.68	0.0
10.00	1.50	1.28	0.7	61.00	7.92	7.68	0.0
11.00	1.98	1.75	1.0	62.00	7.92	7.68	0.0
12.00	3.96	3.73	9.8	63.00	7.92	7.68	0.0
13.00	5.94	5.70	1.1	64.00	7.92	7.68	0.0
14.00	6.42	6.18	0.7	65.00	7.92	7.68	0.0
15.00	6.77	6.53	0.5	66.00	7.92	7.68	0.0
16.00	7.02	6.78	0.4	67.00	7.92	7.68	0.0
17.00	7.20	6.96	0.3	68.00	7.92	7.68	0.0
18.00	7.35	7.11	0.2	69.00	7.92	7.68	0.0
19.00	7.47	7.23	0.2	70.00	7.92	7.68	0.0
20.00	7.58	7.34	0.2	71.00	7.92	7.68	0.0
21.00	7.68	7.44	0.2	72.00	7.92	7.68	0.0
22.00	7.77	7.53	0.2				
23.00	7.85	7.61	0.1				
24.00	7.92	7.68	0.1				
25.00	7.92	7.68	0.0				
26.00	7.92	7.68	0.0				
27.00	7.92	7.68	0.0				
28.00	7.92	7.68	0.0				
29.00	7.92	7.68	0.0				
30.00	7.92	7.68	0.0				
31.00	7.92	7.68	0.0				
32.00	7.92	7.68	0.0				
33.00	7.92	7.68	0.0				
34.00	7.92	7.68	0.0				
35.00	7.92	7.68	0.0				
36.00	7.92	7.68	0.0				
37.00	7.92	7.68	0.0				
38.00	7.92	7.68	0.0				
39.00	7.92	7.68	0.0				
40.00	7.92	7.68	0.0				
41.00	7.92	7.68	0.0				
42.00	7.92	7.68	0.0				
43.00	7.92	7.68	0.0				
44.00	7.92	7.68	0.0				
45.00	7.92	7.68	0.0				
46.00	7.92	7.68	0.0				
47.00	7.92	7.68	0.0				
48.00	7.92	7.68	0.0				
49.00	7.92	7.68	0.0				
50.00	7.92	7.68	0.0				

Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Subcatchment E4N: Area 4 - 24" RCP

Runoff = 13.3 cfs @ 12.07 hrs, Volume= 1.054 af, Depth= 7.68"

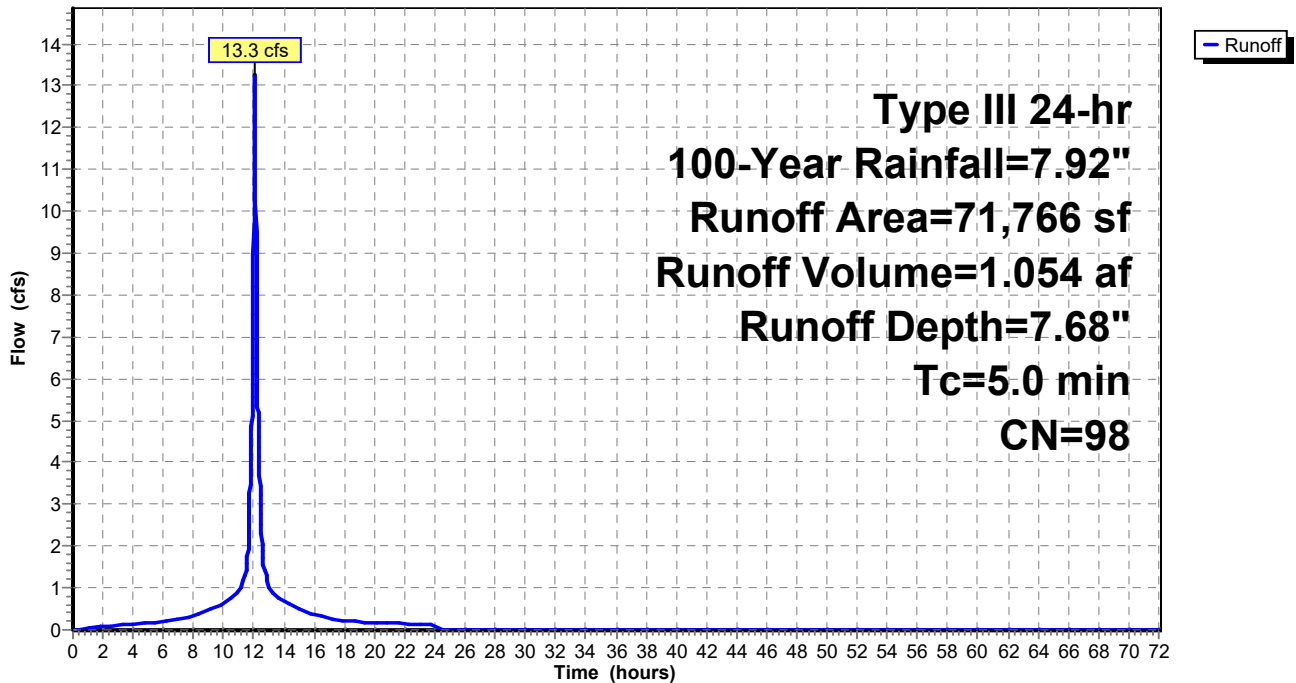
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.92"

Area (sf)	CN	Description
* 71,766	98	OF 4 paved north
71,766		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment E4N: Area 4 - 24" RCP

Hydrograph



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Type III 24-hr 100-Year Rainfall=7.92"

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Hydrograph for Subcatchment E4N: Area 4 - 24" RCP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	7.92	7.68	0.0
1.00	0.08	0.01	0.0	52.00	7.92	7.68	0.0
2.00	0.16	0.04	0.1	53.00	7.92	7.68	0.0
3.00	0.24	0.10	0.1	54.00	7.92	7.68	0.0
4.00	0.34	0.18	0.1	55.00	7.92	7.68	0.0
5.00	0.45	0.27	0.2	56.00	7.92	7.68	0.0
6.00	0.57	0.38	0.2	57.00	7.92	7.68	0.0
7.00	0.72	0.52	0.3	58.00	7.92	7.68	0.0
8.00	0.90	0.70	0.3	59.00	7.92	7.68	0.0
9.00	1.15	0.94	0.5	60.00	7.92	7.68	0.0
10.00	1.50	1.28	0.6	61.00	7.92	7.68	0.0
11.00	1.98	1.75	0.9	62.00	7.92	7.68	0.0
12.00	3.96	3.73	9.0	63.00	7.92	7.68	0.0
13.00	5.94	5.70	1.1	64.00	7.92	7.68	0.0
14.00	6.42	6.18	0.7	65.00	7.92	7.68	0.0
15.00	6.77	6.53	0.5	66.00	7.92	7.68	0.0
16.00	7.02	6.78	0.4	67.00	7.92	7.68	0.0
17.00	7.20	6.96	0.3	68.00	7.92	7.68	0.0
18.00	7.35	7.11	0.2	69.00	7.92	7.68	0.0
19.00	7.47	7.23	0.2	70.00	7.92	7.68	0.0
20.00	7.58	7.34	0.2	71.00	7.92	7.68	0.0
21.00	7.68	7.44	0.2	72.00	7.92	7.68	0.0
22.00	7.77	7.53	0.1				
23.00	7.85	7.61	0.1				
24.00	7.92	7.68	0.1				
25.00	7.92	7.68	0.0				
26.00	7.92	7.68	0.0				
27.00	7.92	7.68	0.0				
28.00	7.92	7.68	0.0				
29.00	7.92	7.68	0.0				
30.00	7.92	7.68	0.0				
31.00	7.92	7.68	0.0				
32.00	7.92	7.68	0.0				
33.00	7.92	7.68	0.0				
34.00	7.92	7.68	0.0				
35.00	7.92	7.68	0.0				
36.00	7.92	7.68	0.0				
37.00	7.92	7.68	0.0				
38.00	7.92	7.68	0.0				
39.00	7.92	7.68	0.0				
40.00	7.92	7.68	0.0				
41.00	7.92	7.68	0.0				
42.00	7.92	7.68	0.0				
43.00	7.92	7.68	0.0				
44.00	7.92	7.68	0.0				
45.00	7.92	7.68	0.0				
46.00	7.92	7.68	0.0				
47.00	7.92	7.68	0.0				
48.00	7.92	7.68	0.0				
49.00	7.92	7.68	0.0				
50.00	7.92	7.68	0.0				

Massport_M555_Backlands_PRE_LOW

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Type III 24-hr 100-Year Rainfall=7.92"

Printed 7/6/2021

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Summary for Subcatchment E5N: Area 5 -36" RCP

Runoff = 7.0 cfs @ 12.07 hrs, Volume= 0.557 af, Depth= 7.68"

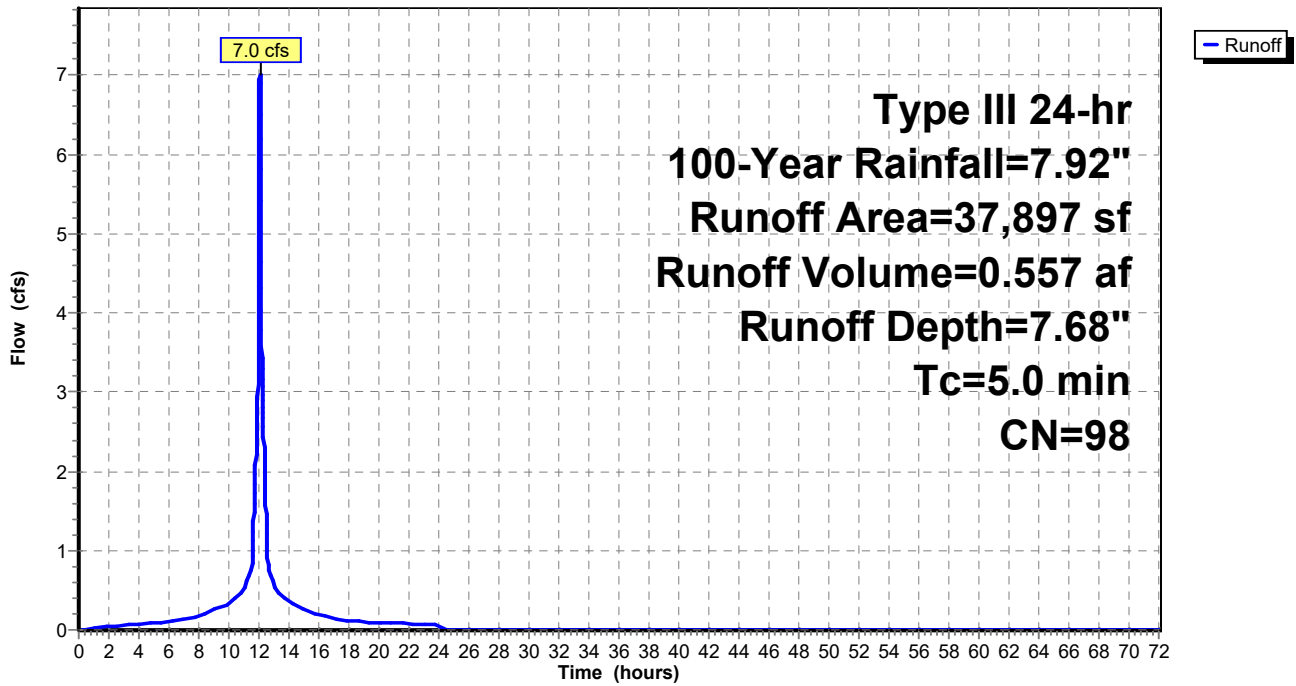
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.92"

Area (sf)	CN	Description
* 37,897	98	OF 5 paved north
37,897		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment E5N: Area 5 -36" RCP

Hydrograph



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Type III 24-hr 100-Year Rainfall=7.92"

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Hydrograph for Subcatchment E5N: Area 5 -36" RCP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	7.92	7.68	0.0
1.00	0.08	0.01	0.0	52.00	7.92	7.68	0.0
2.00	0.16	0.04	0.0	53.00	7.92	7.68	0.0
3.00	0.24	0.10	0.1	54.00	7.92	7.68	0.0
4.00	0.34	0.18	0.1	55.00	7.92	7.68	0.0
5.00	0.45	0.27	0.1	56.00	7.92	7.68	0.0
6.00	0.57	0.38	0.1	57.00	7.92	7.68	0.0
7.00	0.72	0.52	0.1	58.00	7.92	7.68	0.0
8.00	0.90	0.70	0.2	59.00	7.92	7.68	0.0
9.00	1.15	0.94	0.2	60.00	7.92	7.68	0.0
10.00	1.50	1.28	0.3	61.00	7.92	7.68	0.0
11.00	1.98	1.75	0.5	62.00	7.92	7.68	0.0
12.00	3.96	3.73	4.7	63.00	7.92	7.68	0.0
13.00	5.94	5.70	0.6	64.00	7.92	7.68	0.0
14.00	6.42	6.18	0.4	65.00	7.92	7.68	0.0
15.00	6.77	6.53	0.3	66.00	7.92	7.68	0.0
16.00	7.02	6.78	0.2	67.00	7.92	7.68	0.0
17.00	7.20	6.96	0.1	68.00	7.92	7.68	0.0
18.00	7.35	7.11	0.1	69.00	7.92	7.68	0.0
19.00	7.47	7.23	0.1	70.00	7.92	7.68	0.0
20.00	7.58	7.34	0.1	71.00	7.92	7.68	0.0
21.00	7.68	7.44	0.1	72.00	7.92	7.68	0.0
22.00	7.77	7.53	0.1				
23.00	7.85	7.61	0.1				
24.00	7.92	7.68	0.1				
25.00	7.92	7.68	0.0				
26.00	7.92	7.68	0.0				
27.00	7.92	7.68	0.0				
28.00	7.92	7.68	0.0				
29.00	7.92	7.68	0.0				
30.00	7.92	7.68	0.0				
31.00	7.92	7.68	0.0				
32.00	7.92	7.68	0.0				
33.00	7.92	7.68	0.0				
34.00	7.92	7.68	0.0				
35.00	7.92	7.68	0.0				
36.00	7.92	7.68	0.0				
37.00	7.92	7.68	0.0				
38.00	7.92	7.68	0.0				
39.00	7.92	7.68	0.0				
40.00	7.92	7.68	0.0				
41.00	7.92	7.68	0.0				
42.00	7.92	7.68	0.0				
43.00	7.92	7.68	0.0				
44.00	7.92	7.68	0.0				
45.00	7.92	7.68	0.0				
46.00	7.92	7.68	0.0				
47.00	7.92	7.68	0.0				
48.00	7.92	7.68	0.0				
49.00	7.92	7.68	0.0				
50.00	7.92	7.68	0.0				

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Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Subcatchment E6: Area 6 - 42" RCP

Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

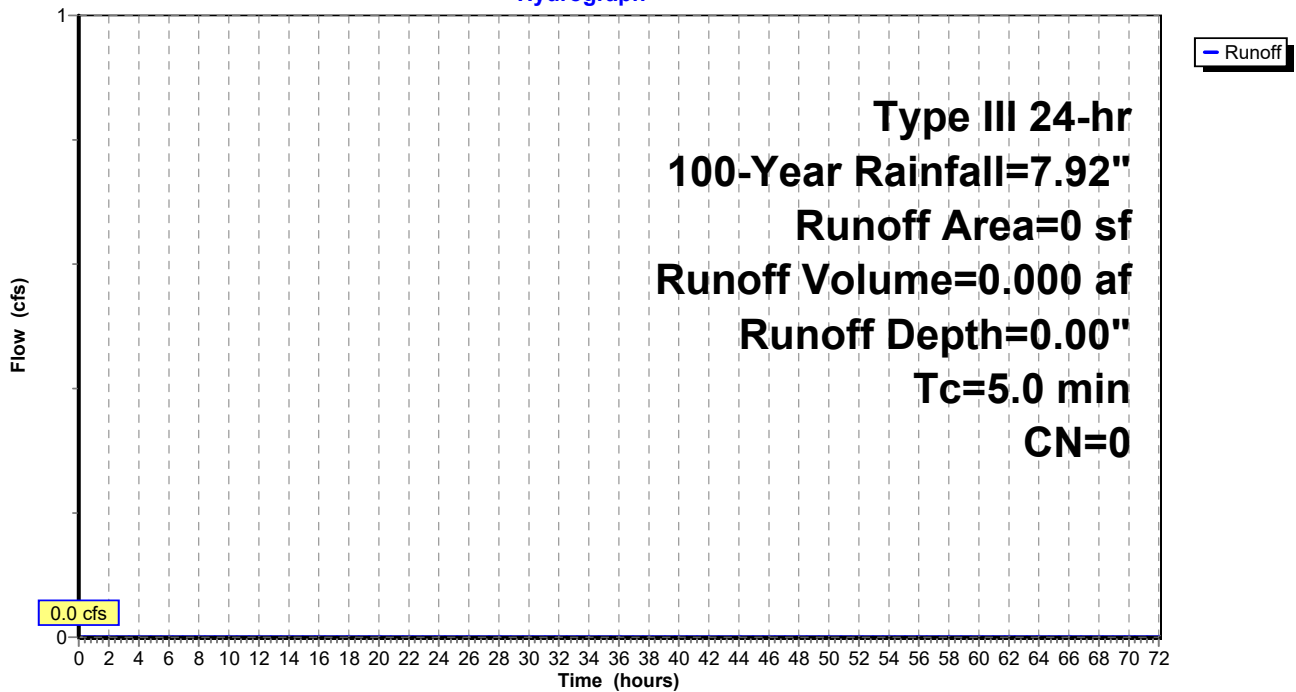
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100-Year Rainfall=7.92"

Area (sf)	CN	Description
* 0	98	OF 6 paved north within LOW

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment E6: Area 6 - 42" RCP

Hydrograph



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Type III 24-hr 100-Year Rainfall=7.92"

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Hydrograph for Subcatchment E6: Area 6 - 42" RCP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	7.92	0.00	0.0
1.00	0.08	0.00	0.0	52.00	7.92	0.00	0.0
2.00	0.16	0.00	0.0	53.00	7.92	0.00	0.0
3.00	0.24	0.00	0.0	54.00	7.92	0.00	0.0
4.00	0.34	0.00	0.0	55.00	7.92	0.00	0.0
5.00	0.45	0.00	0.0	56.00	7.92	0.00	0.0
6.00	0.57	0.00	0.0	57.00	7.92	0.00	0.0
7.00	0.72	0.00	0.0	58.00	7.92	0.00	0.0
8.00	0.90	0.00	0.0	59.00	7.92	0.00	0.0
9.00	1.15	0.00	0.0	60.00	7.92	0.00	0.0
10.00	1.50	0.00	0.0	61.00	7.92	0.00	0.0
11.00	1.98	0.00	0.0	62.00	7.92	0.00	0.0
12.00	3.96	0.00	0.0	63.00	7.92	0.00	0.0
13.00	5.94	0.00	0.0	64.00	7.92	0.00	0.0
14.00	6.42	0.00	0.0	65.00	7.92	0.00	0.0
15.00	6.77	0.00	0.0	66.00	7.92	0.00	0.0
16.00	7.02	0.00	0.0	67.00	7.92	0.00	0.0
17.00	7.20	0.00	0.0	68.00	7.92	0.00	0.0
18.00	7.35	0.00	0.0	69.00	7.92	0.00	0.0
19.00	7.47	0.00	0.0	70.00	7.92	0.00	0.0
20.00	7.58	0.00	0.0	71.00	7.92	0.00	0.0
21.00	7.68	0.00	0.0	72.00	7.92	0.00	0.0
22.00	7.77	0.00	0.0				
23.00	7.85	0.00	0.0				
24.00	7.92	0.00	0.0				
25.00	7.92	0.00	0.0				
26.00	7.92	0.00	0.0				
27.00	7.92	0.00	0.0				
28.00	7.92	0.00	0.0				
29.00	7.92	0.00	0.0				
30.00	7.92	0.00	0.0				
31.00	7.92	0.00	0.0				
32.00	7.92	0.00	0.0				
33.00	7.92	0.00	0.0				
34.00	7.92	0.00	0.0				
35.00	7.92	0.00	0.0				
36.00	7.92	0.00	0.0				
37.00	7.92	0.00	0.0				
38.00	7.92	0.00	0.0				
39.00	7.92	0.00	0.0				
40.00	7.92	0.00	0.0				
41.00	7.92	0.00	0.0				
42.00	7.92	0.00	0.0				
43.00	7.92	0.00	0.0				
44.00	7.92	0.00	0.0				
45.00	7.92	0.00	0.0				
46.00	7.92	0.00	0.0				
47.00	7.92	0.00	0.0				
48.00	7.92	0.00	0.0				
49.00	7.92	0.00	0.0				
50.00	7.92	0.00	0.0				

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Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Subcatchment E7: Area 7 - 30" RCP

Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

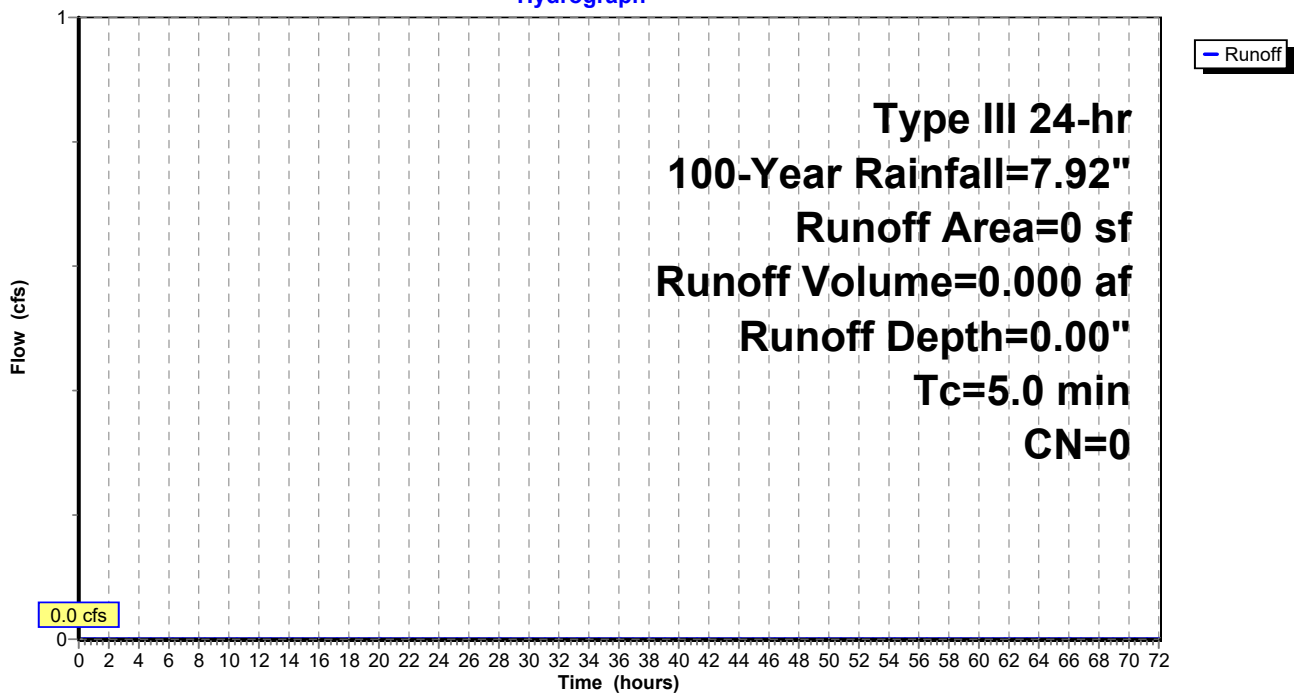
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.92"

Area (sf)	CN	Description
* 0	98	OF 7 paved north within LOW

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment E7: Area 7 - 30" RCP

Hydrograph



Massport_M555_Backlands_PRE_LOW

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Type III 24-hr 100-Year Rainfall=7.92"

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Hydrograph for Subcatchment E7: Area 7 - 30" RCP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	7.92	0.00	0.0
1.00	0.08	0.00	0.0	52.00	7.92	0.00	0.0
2.00	0.16	0.00	0.0	53.00	7.92	0.00	0.0
3.00	0.24	0.00	0.0	54.00	7.92	0.00	0.0
4.00	0.34	0.00	0.0	55.00	7.92	0.00	0.0
5.00	0.45	0.00	0.0	56.00	7.92	0.00	0.0
6.00	0.57	0.00	0.0	57.00	7.92	0.00	0.0
7.00	0.72	0.00	0.0	58.00	7.92	0.00	0.0
8.00	0.90	0.00	0.0	59.00	7.92	0.00	0.0
9.00	1.15	0.00	0.0	60.00	7.92	0.00	0.0
10.00	1.50	0.00	0.0	61.00	7.92	0.00	0.0
11.00	1.98	0.00	0.0	62.00	7.92	0.00	0.0
12.00	3.96	0.00	0.0	63.00	7.92	0.00	0.0
13.00	5.94	0.00	0.0	64.00	7.92	0.00	0.0
14.00	6.42	0.00	0.0	65.00	7.92	0.00	0.0
15.00	6.77	0.00	0.0	66.00	7.92	0.00	0.0
16.00	7.02	0.00	0.0	67.00	7.92	0.00	0.0
17.00	7.20	0.00	0.0	68.00	7.92	0.00	0.0
18.00	7.35	0.00	0.0	69.00	7.92	0.00	0.0
19.00	7.47	0.00	0.0	70.00	7.92	0.00	0.0
20.00	7.58	0.00	0.0	71.00	7.92	0.00	0.0
21.00	7.68	0.00	0.0	72.00	7.92	0.00	0.0
22.00	7.77	0.00	0.0				
23.00	7.85	0.00	0.0				
24.00	7.92	0.00	0.0				
25.00	7.92	0.00	0.0				
26.00	7.92	0.00	0.0				
27.00	7.92	0.00	0.0				
28.00	7.92	0.00	0.0				
29.00	7.92	0.00	0.0				
30.00	7.92	0.00	0.0				
31.00	7.92	0.00	0.0				
32.00	7.92	0.00	0.0				
33.00	7.92	0.00	0.0				
34.00	7.92	0.00	0.0				
35.00	7.92	0.00	0.0				
36.00	7.92	0.00	0.0				
37.00	7.92	0.00	0.0				
38.00	7.92	0.00	0.0				
39.00	7.92	0.00	0.0				
40.00	7.92	0.00	0.0				
41.00	7.92	0.00	0.0				
42.00	7.92	0.00	0.0				
43.00	7.92	0.00	0.0				
44.00	7.92	0.00	0.0				
45.00	7.92	0.00	0.0				
46.00	7.92	0.00	0.0				
47.00	7.92	0.00	0.0				
48.00	7.92	0.00	0.0				
49.00	7.92	0.00	0.0				
50.00	7.92	0.00	0.0				

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Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Pond OF1: Outfall 1 - 18" RCP

Inflow Area = 1.66 ac, 100.00% Impervious, Inflow Depth = 7.68" for 100-Year event
Inflow = 13.4 cfs @ 12.07 hrs, Volume= 1.065 af
Outflow = 13.4 cfs @ 12.07 hrs, Volume= 1.065 af, Atten= 0%, Lag= 0.0 min
Primary = 13.4 cfs @ 12.07 hrs, Volume= 1.065 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 3.22' @ 12.07 hrs

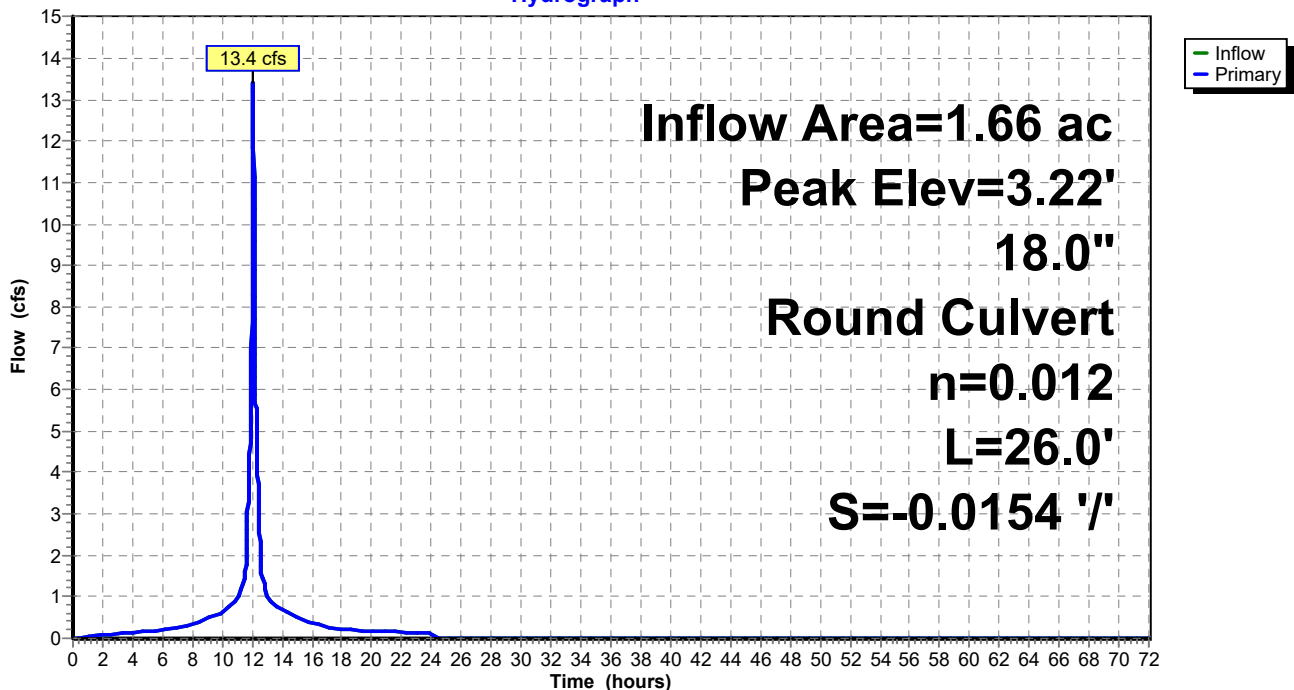
Device	Routing	Invert	Outlet Devices
#1	Primary	0.78'	18.0" Round RCP_Round 18" L= 26.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 0.38' / 0.78' S= -0.0154 '/ Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=13.4 cfs @ 12.07 hrs HW=3.22' (Free Discharge)

↑1=RCP_Round 18" (Barrel Controls 13.4 cfs @ 7.58 fps)

Pond OF1: Outfall 1 - 18" RCP

Hydrograph



Massport_M555_Backlands_PRE_LOW

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Hydrograph for Pond OF1: Outfall 1 - 18" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	0.78	0.0	51.00	0.0	0.78	0.0
1.00	0.0	0.85	0.0	52.00	0.0	0.78	0.0
2.00	0.1	0.88	0.1	53.00	0.0	0.78	0.0
3.00	0.1	0.90	0.1	54.00	0.0	0.78	0.0
4.00	0.1	0.92	0.1	55.00	0.0	0.78	0.0
5.00	0.2	0.93	0.2	56.00	0.0	0.78	0.0
6.00	0.2	0.94	0.2	57.00	0.0	0.78	0.0
7.00	0.3	0.97	0.3	58.00	0.0	0.78	0.0
8.00	0.3	0.99	0.3	59.00	0.0	0.78	0.0
9.00	0.5	1.04	0.5	60.00	0.0	0.78	0.0
10.00	0.6	1.08	0.6	61.00	0.0	0.78	0.0
11.00	0.9	1.15	0.9	62.00	0.0	0.78	0.0
12.00	9.1	2.50	9.1	63.00	0.0	0.78	0.0
13.00	1.1	1.17	1.1	64.00	0.0	0.78	0.0
14.00	0.7	1.09	0.7	65.00	0.0	0.78	0.0
15.00	0.5	1.05	0.5	66.00	0.0	0.78	0.0
16.00	0.4	1.00	0.4	67.00	0.0	0.78	0.0
17.00	0.3	0.98	0.3	68.00	0.0	0.78	0.0
18.00	0.2	0.95	0.2	69.00	0.0	0.78	0.0
19.00	0.2	0.94	0.2	70.00	0.0	0.78	0.0
20.00	0.2	0.93	0.2	71.00	0.0	0.78	0.0
21.00	0.2	0.93	0.2	72.00	0.0	0.78	0.0
22.00	0.1	0.92	0.1				
23.00	0.1	0.91	0.1				
24.00	0.1	0.90	0.1				
25.00	0.0	0.78	0.0				
26.00	0.0	0.78	0.0				
27.00	0.0	0.78	0.0				
28.00	0.0	0.78	0.0				
29.00	0.0	0.78	0.0				
30.00	0.0	0.78	0.0				
31.00	0.0	0.78	0.0				
32.00	0.0	0.78	0.0				
33.00	0.0	0.78	0.0				
34.00	0.0	0.78	0.0				
35.00	0.0	0.78	0.0				
36.00	0.0	0.78	0.0				
37.00	0.0	0.78	0.0				
38.00	0.0	0.78	0.0				
39.00	0.0	0.78	0.0				
40.00	0.0	0.78	0.0				
41.00	0.0	0.78	0.0				
42.00	0.0	0.78	0.0				
43.00	0.0	0.78	0.0				
44.00	0.0	0.78	0.0				
45.00	0.0	0.78	0.0				
46.00	0.0	0.78	0.0				
47.00	0.0	0.78	0.0				
48.00	0.0	0.78	0.0				
49.00	0.0	0.78	0.0				
50.00	0.0	0.78	0.0				

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Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Pond OF2: Outfall 2 - 18" RCP

Inflow Area = 1.81 ac, 100.00% Impervious, Inflow Depth = 7.68" for 100-Year event
Inflow = 14.6 cfs @ 12.07 hrs, Volume= 1.158 af
Outflow = 14.6 cfs @ 12.07 hrs, Volume= 1.158 af, Atten= 0%, Lag= 0.0 min
Primary = 14.6 cfs @ 12.07 hrs, Volume= 1.158 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 4.42' @ 12.07 hrs

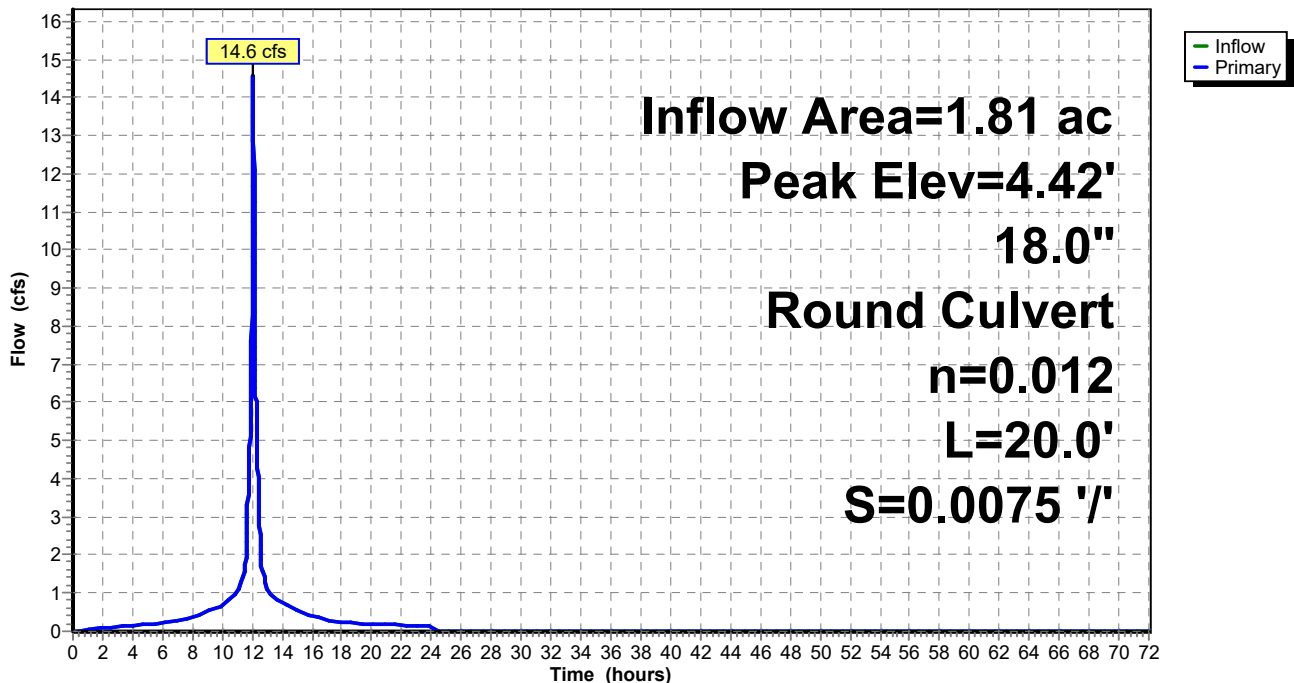
Device	Routing	Invert	Outlet Devices
#1	Primary	1.58'	18.0" Round RCP_Round 18" L= 20.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1.58' / 1.43' S= 0.0075 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=14.6 cfs @ 12.07 hrs HW=4.42' (Free Discharge)

↑1=RCP_Round 18" (Barrel Controls 14.6 cfs @ 8.24 fps)

Pond OF2: Outfall 2 - 18" RCP

Hydrograph



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Hydrograph for Pond OF2: Outfall 2 - 18" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	1.58	0.0	51.00	0.0	1.58	0.0
1.00	0.0	1.67	0.0	52.00	0.0	1.58	0.0
2.00	0.1	1.71	0.1	53.00	0.0	1.58	0.0
3.00	0.1	1.74	0.1	54.00	0.0	1.58	0.0
4.00	0.2	1.76	0.2	55.00	0.0	1.58	0.0
5.00	0.2	1.78	0.2	56.00	0.0	1.58	0.0
6.00	0.2	1.79	0.2	57.00	0.0	1.58	0.0
7.00	0.3	1.82	0.3	58.00	0.0	1.58	0.0
8.00	0.4	1.86	0.4	59.00	0.0	1.58	0.0
9.00	0.5	1.91	0.5	60.00	0.0	1.58	0.0
10.00	0.7	1.97	0.7	61.00	0.0	1.58	0.0
11.00	1.0	2.06	1.0	62.00	0.0	1.58	0.0
12.00	9.9	3.61	9.9	63.00	0.0	1.58	0.0
13.00	1.2	2.09	1.2	64.00	0.0	1.58	0.0
14.00	0.7	1.98	0.7	65.00	0.0	1.58	0.0
15.00	0.6	1.93	0.6	66.00	0.0	1.58	0.0
16.00	0.4	1.87	0.4	67.00	0.0	1.58	0.0
17.00	0.3	1.84	0.3	68.00	0.0	1.58	0.0
18.00	0.2	1.80	0.2	69.00	0.0	1.58	0.0
19.00	0.2	1.79	0.2	70.00	0.0	1.58	0.0
20.00	0.2	1.78	0.2	71.00	0.0	1.58	0.0
21.00	0.2	1.77	0.2	72.00	0.0	1.58	0.0
22.00	0.2	1.76	0.2				
23.00	0.1	1.75	0.1				
24.00	0.1	1.74	0.1				
25.00	0.0	1.58	0.0				
26.00	0.0	1.58	0.0				
27.00	0.0	1.58	0.0				
28.00	0.0	1.58	0.0				
29.00	0.0	1.58	0.0				
30.00	0.0	1.58	0.0				
31.00	0.0	1.58	0.0				
32.00	0.0	1.58	0.0				
33.00	0.0	1.58	0.0				
34.00	0.0	1.58	0.0				
35.00	0.0	1.58	0.0				
36.00	0.0	1.58	0.0				
37.00	0.0	1.58	0.0				
38.00	0.0	1.58	0.0				
39.00	0.0	1.58	0.0				
40.00	0.0	1.58	0.0				
41.00	0.0	1.58	0.0				
42.00	0.0	1.58	0.0				
43.00	0.0	1.58	0.0				
44.00	0.0	1.58	0.0				
45.00	0.0	1.58	0.0				
46.00	0.0	1.58	0.0				
47.00	0.0	1.58	0.0				
48.00	0.0	1.58	0.0				
49.00	0.0	1.58	0.0				
50.00	0.0	1.58	0.0				

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Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Pond OF3: Outfall 3 - 24" RCP

Inflow Area = 1.79 ac, 100.00% Impervious, Inflow Depth = 7.68" for 100-Year event
Inflow = 14.4 cfs @ 12.07 hrs, Volume= 1.146 af
Outflow = 14.4 cfs @ 12.07 hrs, Volume= 1.146 af, Atten= 0%, Lag= 0.0 min
Primary = 14.4 cfs @ 12.07 hrs, Volume= 1.146 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 2.17' @ 12.07 hrs

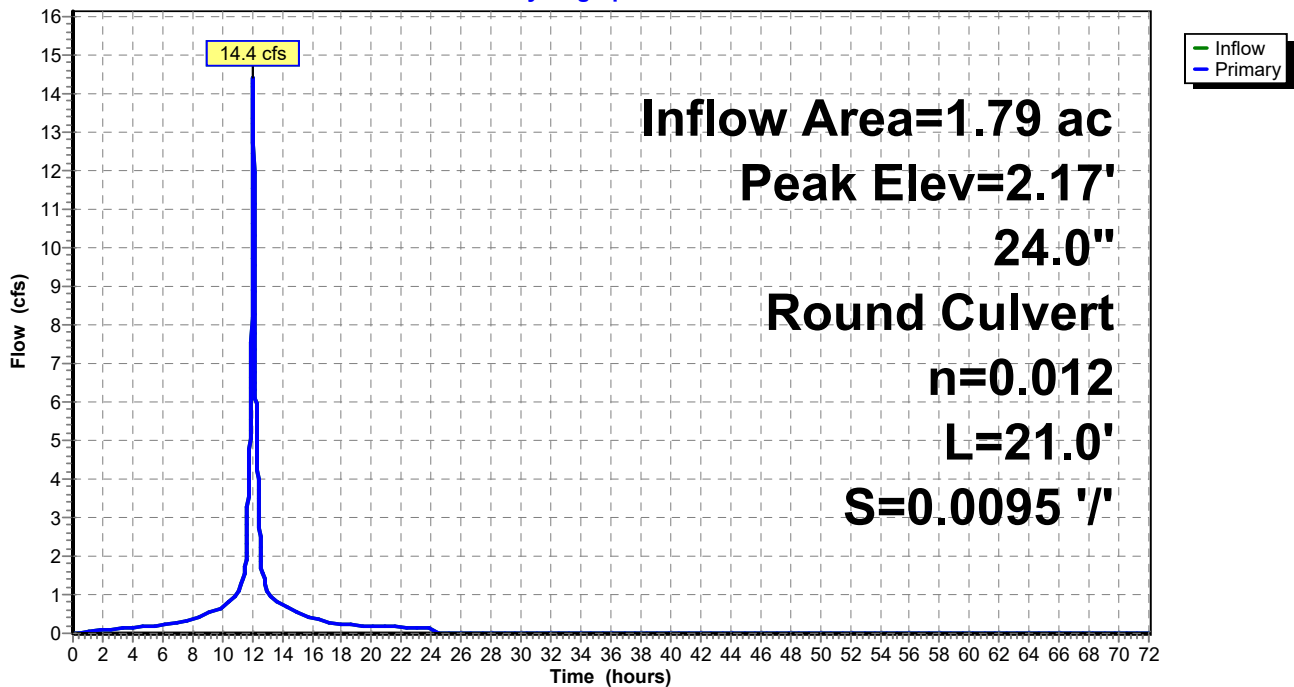
Device	Routing	Invert	Outlet Devices
#1	Primary	0.23'	24.0" Round RCP_Round 24" L= 21.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 0.23' / 0.03' S= 0.0095 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=14.4 cfs @ 12.07 hrs HW=2.17' (Free Discharge)

↑1=RCP_Round 24" (Barrel Controls 14.4 cfs @ 5.88 fps)

Pond OF3: Outfall 3 - 24" RCP

Hydrograph



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Type III 24-hr 100-Year Rainfall=7.92"

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Hydrograph for Pond OF3: Outfall 3 - 24" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	0.23	0.0	51.00	0.0	0.23	0.0
1.00	0.0	0.31	0.0	52.00	0.0	0.23	0.0
2.00	0.1	0.35	0.1	53.00	0.0	0.23	0.0
3.00	0.1	0.37	0.1	54.00	0.0	0.23	0.0
4.00	0.2	0.39	0.2	55.00	0.0	0.23	0.0
5.00	0.2	0.40	0.2	56.00	0.0	0.23	0.0
6.00	0.2	0.41	0.2	57.00	0.0	0.23	0.0
7.00	0.3	0.44	0.3	58.00	0.0	0.23	0.0
8.00	0.4	0.47	0.4	59.00	0.0	0.23	0.0
9.00	0.5	0.52	0.5	60.00	0.0	0.23	0.0
10.00	0.7	0.57	0.7	61.00	0.0	0.23	0.0
11.00	1.0	0.65	1.0	62.00	0.0	0.23	0.0
12.00	9.8	1.74	9.8	63.00	0.0	0.23	0.0
13.00	1.1	0.68	1.1	64.00	0.0	0.23	0.0
14.00	0.7	0.58	0.7	65.00	0.0	0.23	0.0
15.00	0.5	0.53	0.5	66.00	0.0	0.23	0.0
16.00	0.4	0.48	0.4	67.00	0.0	0.23	0.0
17.00	0.3	0.45	0.3	68.00	0.0	0.23	0.0
18.00	0.2	0.43	0.2	69.00	0.0	0.23	0.0
19.00	0.2	0.41	0.2	70.00	0.0	0.23	0.0
20.00	0.2	0.41	0.2	71.00	0.0	0.23	0.0
21.00	0.2	0.40	0.2	72.00	0.0	0.23	0.0
22.00	0.2	0.39	0.2				
23.00	0.1	0.38	0.1				
24.00	0.1	0.37	0.1				
25.00	0.0	0.23	0.0				
26.00	0.0	0.23	0.0				
27.00	0.0	0.23	0.0				
28.00	0.0	0.23	0.0				
29.00	0.0	0.23	0.0				
30.00	0.0	0.23	0.0				
31.00	0.0	0.23	0.0				
32.00	0.0	0.23	0.0				
33.00	0.0	0.23	0.0				
34.00	0.0	0.23	0.0				
35.00	0.0	0.23	0.0				
36.00	0.0	0.23	0.0				
37.00	0.0	0.23	0.0				
38.00	0.0	0.23	0.0				
39.00	0.0	0.23	0.0				
40.00	0.0	0.23	0.0				
41.00	0.0	0.23	0.0				
42.00	0.0	0.23	0.0				
43.00	0.0	0.23	0.0				
44.00	0.0	0.23	0.0				
45.00	0.0	0.23	0.0				
46.00	0.0	0.23	0.0				
47.00	0.0	0.23	0.0				
48.00	0.0	0.23	0.0				
49.00	0.0	0.23	0.0				
50.00	0.0	0.23	0.0				

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Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Pond OF4: Outfall 4 - 24" RCP

Inflow Area = 1.65 ac, 100.00% Impervious, Inflow Depth = 7.68" for 100-Year event
Inflow = 13.3 cfs @ 12.07 hrs, Volume= 1.054 af
Outflow = 13.3 cfs @ 12.07 hrs, Volume= 1.054 af, Atten= 0%, Lag= 0.0 min
Primary = 13.3 cfs @ 12.07 hrs, Volume= 1.054 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 2.49' @ 12.07 hrs

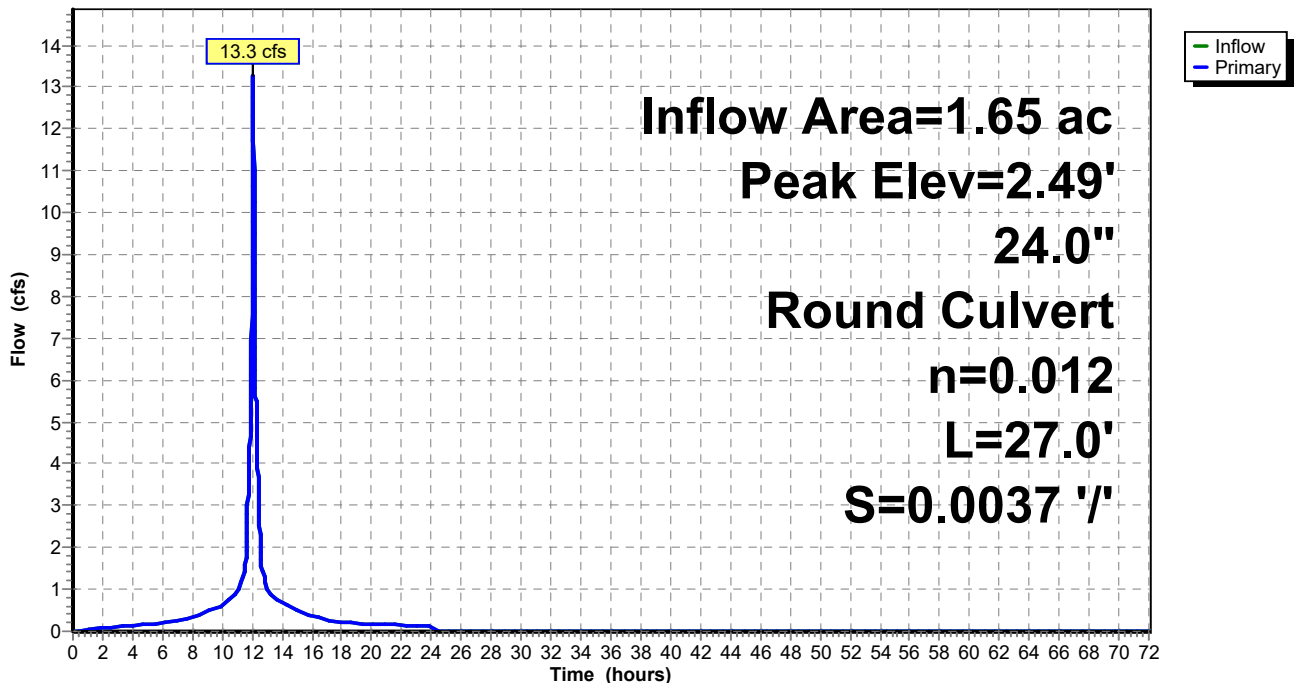
Device	Routing	Invert	Outlet Devices
#1	Primary	0.53'	24.0" Round RCP_Round 24" L= 27.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 0.53' / 0.43' S= 0.0037 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=13.3 cfs @ 12.07 hrs HW=2.49' (Free Discharge)

↑1=RCP_Round 24" (Barrel Controls 13.3 cfs @ 5.36 fps)

Pond OF4: Outfall 4 - 24" RCP

Hydrograph



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Type III 24-hr 100-Year Rainfall=7.92"

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Hydrograph for Pond OF4: Outfall 4 - 24" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	0.53	0.0	51.00	0.0	0.53	0.0
1.00	0.0	0.62	0.0	52.00	0.0	0.53	0.0
2.00	0.1	0.67	0.1	53.00	0.0	0.53	0.0
3.00	0.1	0.69	0.1	54.00	0.0	0.53	0.0
4.00	0.1	0.71	0.1	55.00	0.0	0.53	0.0
5.00	0.2	0.73	0.2	56.00	0.0	0.53	0.0
6.00	0.2	0.74	0.2	57.00	0.0	0.53	0.0
7.00	0.3	0.77	0.3	58.00	0.0	0.53	0.0
8.00	0.3	0.80	0.3	59.00	0.0	0.53	0.0
9.00	0.5	0.85	0.5	60.00	0.0	0.53	0.0
10.00	0.6	0.90	0.6	61.00	0.0	0.53	0.0
11.00	0.9	0.98	0.9	62.00	0.0	0.53	0.0
12.00	9.0	2.07	9.0	63.00	0.0	0.53	0.0
13.00	1.1	1.01	1.1	64.00	0.0	0.53	0.0
14.00	0.7	0.92	0.7	65.00	0.0	0.53	0.0
15.00	0.5	0.87	0.5	66.00	0.0	0.53	0.0
16.00	0.4	0.81	0.4	67.00	0.0	0.53	0.0
17.00	0.3	0.78	0.3	68.00	0.0	0.53	0.0
18.00	0.2	0.75	0.2	69.00	0.0	0.53	0.0
19.00	0.2	0.74	0.2	70.00	0.0	0.53	0.0
20.00	0.2	0.73	0.2	71.00	0.0	0.53	0.0
21.00	0.2	0.72	0.2	72.00	0.0	0.53	0.0
22.00	0.1	0.71	0.1				
23.00	0.1	0.70	0.1				
24.00	0.1	0.69	0.1				
25.00	0.0	0.53	0.0				
26.00	0.0	0.53	0.0				
27.00	0.0	0.53	0.0				
28.00	0.0	0.53	0.0				
29.00	0.0	0.53	0.0				
30.00	0.0	0.53	0.0				
31.00	0.0	0.53	0.0				
32.00	0.0	0.53	0.0				
33.00	0.0	0.53	0.0				
34.00	0.0	0.53	0.0				
35.00	0.0	0.53	0.0				
36.00	0.0	0.53	0.0				
37.00	0.0	0.53	0.0				
38.00	0.0	0.53	0.0				
39.00	0.0	0.53	0.0				
40.00	0.0	0.53	0.0				
41.00	0.0	0.53	0.0				
42.00	0.0	0.53	0.0				
43.00	0.0	0.53	0.0				
44.00	0.0	0.53	0.0				
45.00	0.0	0.53	0.0				
46.00	0.0	0.53	0.0				
47.00	0.0	0.53	0.0				
48.00	0.0	0.53	0.0				
49.00	0.0	0.53	0.0				
50.00	0.0	0.53	0.0				

Massport_M555_Backlands_PRE_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Pond OF5: Outfall 5 - 36" RCP

Inflow Area = 0.87 ac, 100.00% Impervious, Inflow Depth = 7.68" for 100-Year event
Inflow = 7.0 cfs @ 12.07 hrs, Volume= 0.557 af
Outflow = 7.0 cfs @ 12.07 hrs, Volume= 0.557 af, Atten= 0%, Lag= 0.0 min
Primary = 7.0 cfs @ 12.07 hrs, Volume= 0.557 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 3.36' @ 12.07 hrs

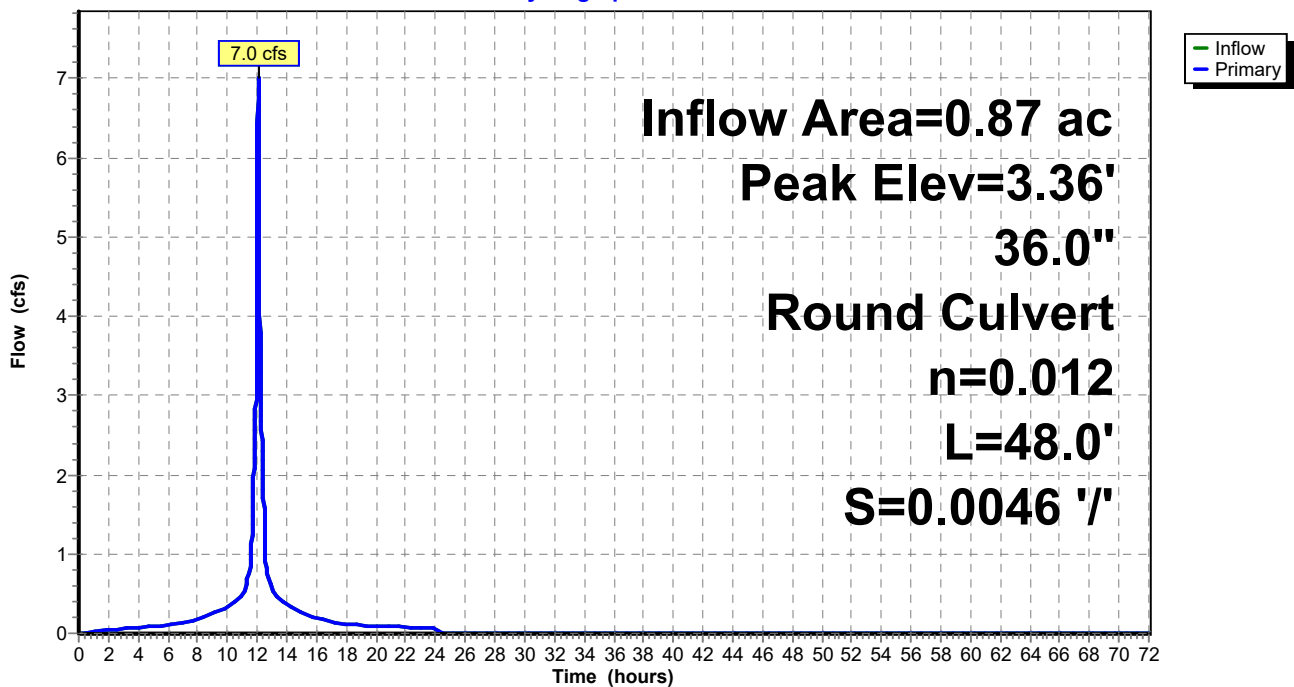
Device	Routing	Invert	Outlet Devices
#1	Primary	2.26'	36.0" Round RCP_Round 36" L= 48.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 2.26' / 2.04' S= 0.0046 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 7.07 sf

Primary OutFlow Max=7.0 cfs @ 12.07 hrs HW=3.36' (Free Discharge)

↑1=RCP_Round 36" (Barrel Controls 7.0 cfs @ 4.41 fps)

Pond OF5: Outfall 5 - 36" RCP

Hydrograph



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Type III 24-hr 100-Year Rainfall=7.92"

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Hydrograph for Pond OF5: Outfall 5 - 36" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	2.26	0.0	51.00	0.0	2.26	0.0
1.00	0.0	2.32	0.0	52.00	0.0	2.26	0.0
2.00	0.0	2.35	0.0	53.00	0.0	2.26	0.0
3.00	0.1	2.36	0.1	54.00	0.0	2.26	0.0
4.00	0.1	2.38	0.1	55.00	0.0	2.26	0.0
5.00	0.1	2.39	0.1	56.00	0.0	2.26	0.0
6.00	0.1	2.39	0.1	57.00	0.0	2.26	0.0
7.00	0.1	2.41	0.1	58.00	0.0	2.26	0.0
8.00	0.2	2.43	0.2	59.00	0.0	2.26	0.0
9.00	0.2	2.47	0.2	60.00	0.0	2.26	0.0
10.00	0.3	2.50	0.3	61.00	0.0	2.26	0.0
11.00	0.5	2.55	0.5	62.00	0.0	2.26	0.0
12.00	4.7	3.16	4.7	63.00	0.0	2.26	0.0
13.00	0.6	2.56	0.6	64.00	0.0	2.26	0.0
14.00	0.4	2.50	0.4	65.00	0.0	2.26	0.0
15.00	0.3	2.47	0.3	66.00	0.0	2.26	0.0
16.00	0.2	2.44	0.2	67.00	0.0	2.26	0.0
17.00	0.1	2.42	0.1	68.00	0.0	2.26	0.0
18.00	0.1	2.40	0.1	69.00	0.0	2.26	0.0
19.00	0.1	2.39	0.1	70.00	0.0	2.26	0.0
20.00	0.1	2.39	0.1	71.00	0.0	2.26	0.0
21.00	0.1	2.38	0.1	72.00	0.0	2.26	0.0
22.00	0.1	2.38	0.1				
23.00	0.1	2.37	0.1				
24.00	0.1	2.36	0.1				
25.00	0.0	2.26	0.0				
26.00	0.0	2.26	0.0				
27.00	0.0	2.26	0.0				
28.00	0.0	2.26	0.0				
29.00	0.0	2.26	0.0				
30.00	0.0	2.26	0.0				
31.00	0.0	2.26	0.0				
32.00	0.0	2.26	0.0				
33.00	0.0	2.26	0.0				
34.00	0.0	2.26	0.0				
35.00	0.0	2.26	0.0				
36.00	0.0	2.26	0.0				
37.00	0.0	2.26	0.0				
38.00	0.0	2.26	0.0				
39.00	0.0	2.26	0.0				
40.00	0.0	2.26	0.0				
41.00	0.0	2.26	0.0				
42.00	0.0	2.26	0.0				
43.00	0.0	2.26	0.0				
44.00	0.0	2.26	0.0				
45.00	0.0	2.26	0.0				
46.00	0.0	2.26	0.0				
47.00	0.0	2.26	0.0				
48.00	0.0	2.26	0.0				
49.00	0.0	2.26	0.0				
50.00	0.0	2.26	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Pond OF6: Outfall 6 - 42" RCP

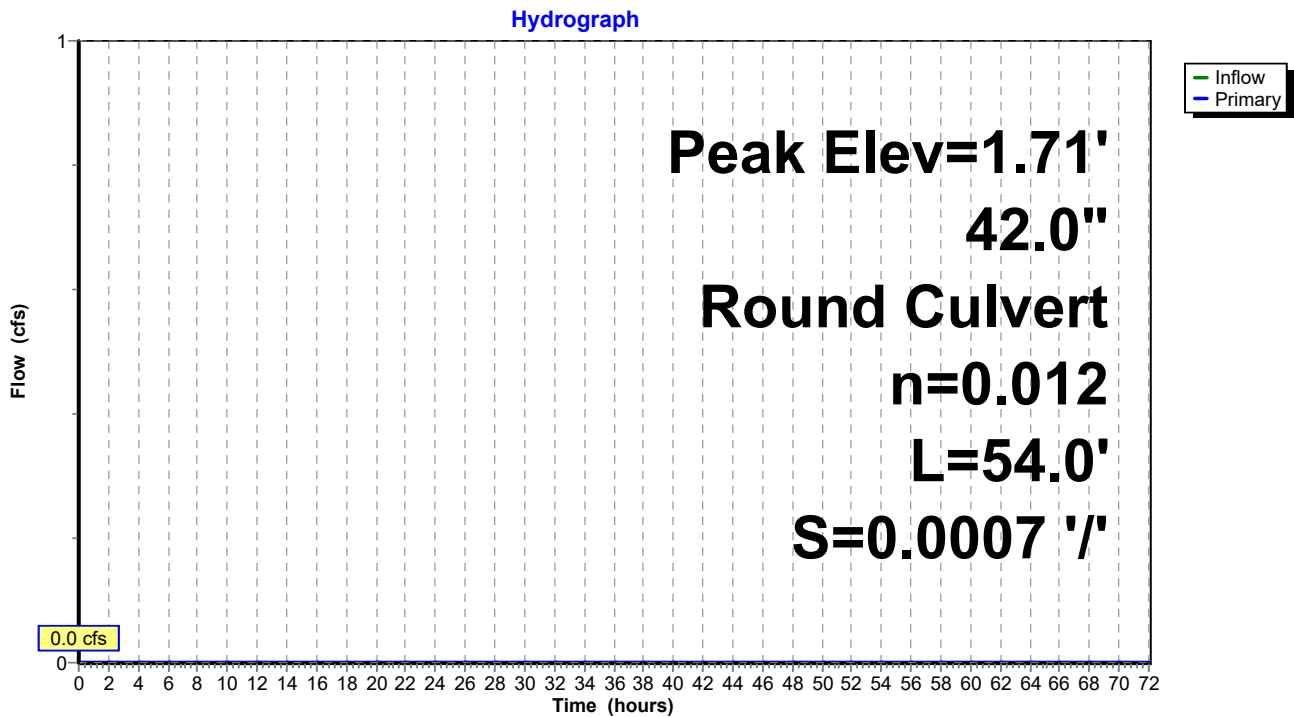
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 1.71' @ 0.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1.71'	42.0" Round RCP_Round 42" L= 54.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1.71' / 1.67' S= 0.0007 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 9.62 sf

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=1.71' (Free Discharge)
↑1=RCP_Round 42" (Controls 0.0 cfs)

Pond OF6: Outfall 6 - 42" RCP



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Hydrograph for Pond OF6: Outfall 6 - 42" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	1.71	0.0	51.00	0.0	1.71	0.0
1.00	0.0	1.71	0.0	52.00	0.0	1.71	0.0
2.00	0.0	1.71	0.0	53.00	0.0	1.71	0.0
3.00	0.0	1.71	0.0	54.00	0.0	1.71	0.0
4.00	0.0	1.71	0.0	55.00	0.0	1.71	0.0
5.00	0.0	1.71	0.0	56.00	0.0	1.71	0.0
6.00	0.0	1.71	0.0	57.00	0.0	1.71	0.0
7.00	0.0	1.71	0.0	58.00	0.0	1.71	0.0
8.00	0.0	1.71	0.0	59.00	0.0	1.71	0.0
9.00	0.0	1.71	0.0	60.00	0.0	1.71	0.0
10.00	0.0	1.71	0.0	61.00	0.0	1.71	0.0
11.00	0.0	1.71	0.0	62.00	0.0	1.71	0.0
12.00	0.0	1.71	0.0	63.00	0.0	1.71	0.0
13.00	0.0	1.71	0.0	64.00	0.0	1.71	0.0
14.00	0.0	1.71	0.0	65.00	0.0	1.71	0.0
15.00	0.0	1.71	0.0	66.00	0.0	1.71	0.0
16.00	0.0	1.71	0.0	67.00	0.0	1.71	0.0
17.00	0.0	1.71	0.0	68.00	0.0	1.71	0.0
18.00	0.0	1.71	0.0	69.00	0.0	1.71	0.0
19.00	0.0	1.71	0.0	70.00	0.0	1.71	0.0
20.00	0.0	1.71	0.0	71.00	0.0	1.71	0.0
21.00	0.0	1.71	0.0	72.00	0.0	1.71	0.0
22.00	0.0	1.71	0.0				
23.00	0.0	1.71	0.0				
24.00	0.0	1.71	0.0				
25.00	0.0	1.71	0.0				
26.00	0.0	1.71	0.0				
27.00	0.0	1.71	0.0				
28.00	0.0	1.71	0.0				
29.00	0.0	1.71	0.0				
30.00	0.0	1.71	0.0				
31.00	0.0	1.71	0.0				
32.00	0.0	1.71	0.0				
33.00	0.0	1.71	0.0				
34.00	0.0	1.71	0.0				
35.00	0.0	1.71	0.0				
36.00	0.0	1.71	0.0				
37.00	0.0	1.71	0.0				
38.00	0.0	1.71	0.0				
39.00	0.0	1.71	0.0				
40.00	0.0	1.71	0.0				
41.00	0.0	1.71	0.0				
42.00	0.0	1.71	0.0				
43.00	0.0	1.71	0.0				
44.00	0.0	1.71	0.0				
45.00	0.0	1.71	0.0				
46.00	0.0	1.71	0.0				
47.00	0.0	1.71	0.0				
48.00	0.0	1.71	0.0				
49.00	0.0	1.71	0.0				
50.00	0.0	1.71	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Pond OF7: Outfall 7 - 30" RCP

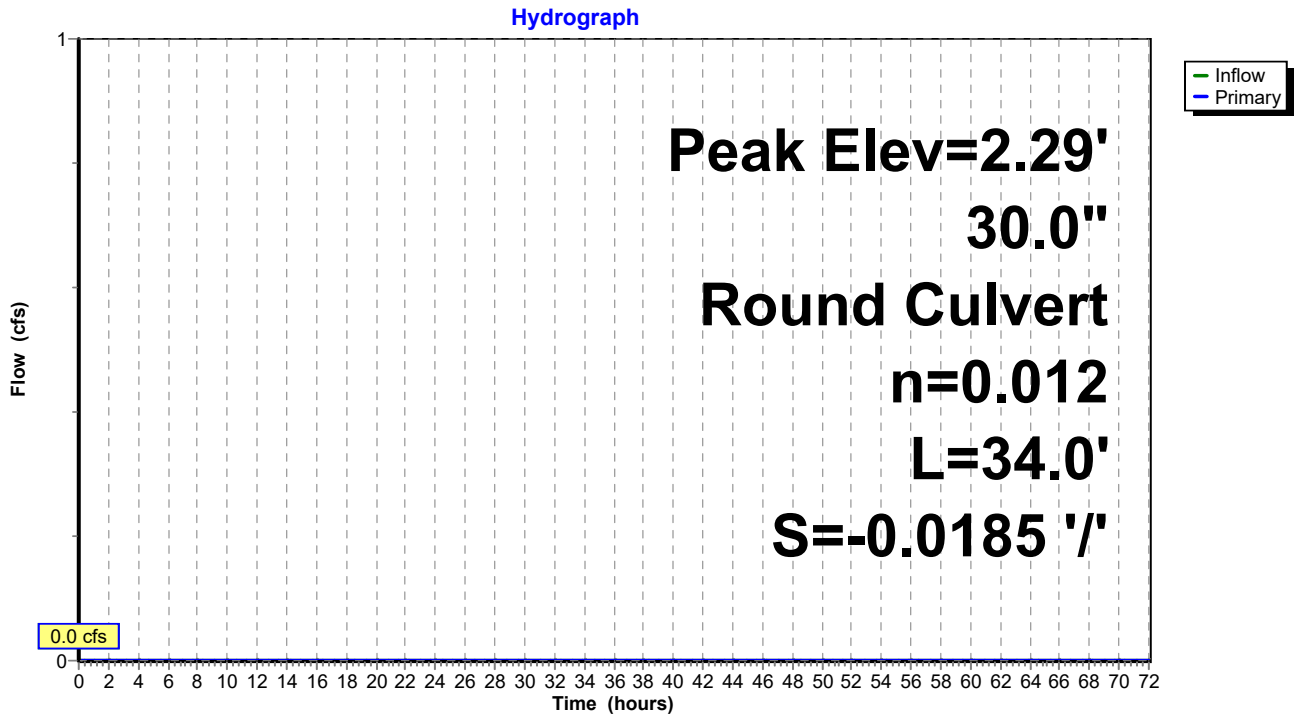
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 2.29' @ 0.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2.29'	30.0" Round RCP_Round 30" L= 34.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1.66' / 2.29' S= -0.0185 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=2.29' (Free Discharge)
 ↑1=RCP_Round 30" (Controls 0.0 cfs)

Pond OF7: Outfall 7 - 30" RCP



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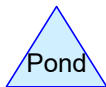
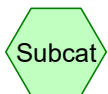
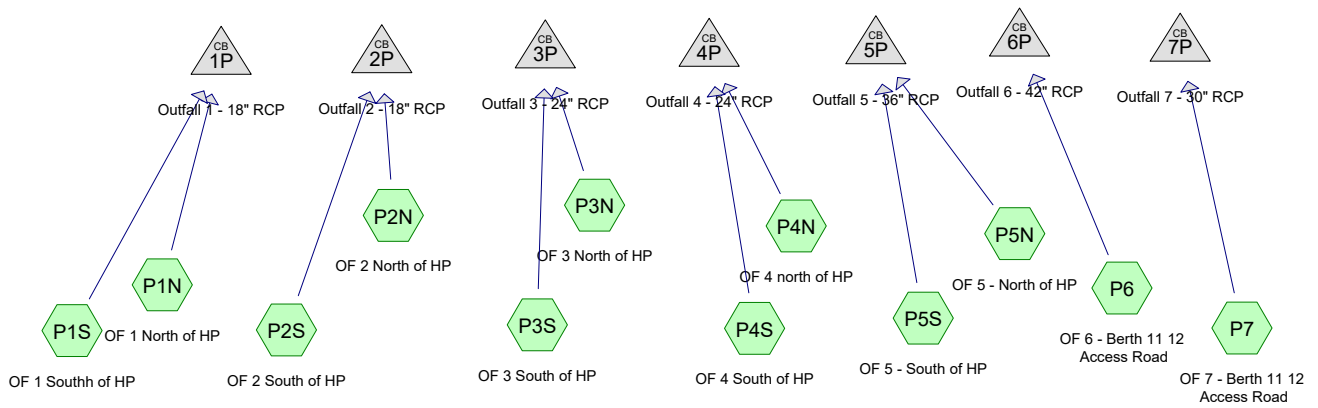
Type III 24-hr 100-Year Rainfall=7.92"

Printed 7/6/2021

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Hydrograph for Pond OF7: Outfall 7 - 30" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	2.29	0.0	51.00	0.0	2.29	0.0
1.00	0.0	2.29	0.0	52.00	0.0	2.29	0.0
2.00	0.0	2.29	0.0	53.00	0.0	2.29	0.0
3.00	0.0	2.29	0.0	54.00	0.0	2.29	0.0
4.00	0.0	2.29	0.0	55.00	0.0	2.29	0.0
5.00	0.0	2.29	0.0	56.00	0.0	2.29	0.0
6.00	0.0	2.29	0.0	57.00	0.0	2.29	0.0
7.00	0.0	2.29	0.0	58.00	0.0	2.29	0.0
8.00	0.0	2.29	0.0	59.00	0.0	2.29	0.0
9.00	0.0	2.29	0.0	60.00	0.0	2.29	0.0
10.00	0.0	2.29	0.0	61.00	0.0	2.29	0.0
11.00	0.0	2.29	0.0	62.00	0.0	2.29	0.0
12.00	0.0	2.29	0.0	63.00	0.0	2.29	0.0
13.00	0.0	2.29	0.0	64.00	0.0	2.29	0.0
14.00	0.0	2.29	0.0	65.00	0.0	2.29	0.0
15.00	0.0	2.29	0.0	66.00	0.0	2.29	0.0
16.00	0.0	2.29	0.0	67.00	0.0	2.29	0.0
17.00	0.0	2.29	0.0	68.00	0.0	2.29	0.0
18.00	0.0	2.29	0.0	69.00	0.0	2.29	0.0
19.00	0.0	2.29	0.0	70.00	0.0	2.29	0.0
20.00	0.0	2.29	0.0	71.00	0.0	2.29	0.0
21.00	0.0	2.29	0.0	72.00	0.0	2.29	0.0
22.00	0.0	2.29	0.0				
23.00	0.0	2.29	0.0				
24.00	0.0	2.29	0.0				
25.00	0.0	2.29	0.0				
26.00	0.0	2.29	0.0				
27.00	0.0	2.29	0.0				
28.00	0.0	2.29	0.0				
29.00	0.0	2.29	0.0				
30.00	0.0	2.29	0.0				
31.00	0.0	2.29	0.0				
32.00	0.0	2.29	0.0				
33.00	0.0	2.29	0.0				
34.00	0.0	2.29	0.0				
35.00	0.0	2.29	0.0				
36.00	0.0	2.29	0.0				
37.00	0.0	2.29	0.0				
38.00	0.0	2.29	0.0				
39.00	0.0	2.29	0.0				
40.00	0.0	2.29	0.0				
41.00	0.0	2.29	0.0				
42.00	0.0	2.29	0.0				
43.00	0.0	2.29	0.0				
44.00	0.0	2.29	0.0				
45.00	0.0	2.29	0.0				
46.00	0.0	2.29	0.0				
47.00	0.0	2.29	0.0				
48.00	0.0	2.29	0.0				
49.00	0.0	2.29	0.0				
50.00	0.0	2.29	0.0				



Routing Diagram for Massport_M555 Backlands_POST_LOW
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.67	98	Area draining north of high point to trench drains outfall 5 (P5N)
1.22	98	Area draining north of high point to trench drains to outfall 4 (P4N)
1.67	98	Area draining to north of high point (P2N)
0.27	98	Area east of Road for Berths 11 and 12 (P6)
1.23	98	Area north of high point drain to outfall 3 (P3N)
0.20	98	Area south of high point at Outfall 3 (P3S)
0.19	98	Area south of high point drain to outfall 4 (P4S)
0.10	98	Area south of high point drain to outfall 5 (P5S)
0.33	98	Area to South of High Point at D2 (P2S)
0.07	98	Drainage in Berth 12 discharged at Outfall 7 (P7)
1.32	98	Outfall 1 North Trench Drain (P1N)
0.51	98	Outfall 1 South CB (P1S)
7.78	98	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.00	HSG A	
0.00	HSG B	
0.00	HSG C	
0.00	HSG D	
7.78	Other	P1N, P1S, P2N, P2S, P3N, P3S, P4N, P4S, P5N, P5S, P6, P7
7.78		TOTAL AREA

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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
0.00	0.00	0.00	0.00	0.67	0.67	Area draining north of high point to trench drains outfall 5
0.00	0.00	0.00	0.00	1.22	1.22	Area draining north of high point to trench drains to outfall 4
0.00	0.00	0.00	0.00	1.67	1.67	Area draining to north of high point
0.00	0.00	0.00	0.00	0.27	0.27	Area east of Road for Berths 11 and 12
0.00	0.00	0.00	0.00	1.23	1.23	Area north of high point drain to outfall 3
0.00	0.00	0.00	0.00	0.20	0.20	Area south of high point at Outfall 3
0.00	0.00	0.00	0.00	0.19	0.19	Area south of high point drain to outfall 4
0.00	0.00	0.00	0.00	0.10	0.10	Area south of high point drain to outfall 5
0.00	0.00	0.00	0.00	0.33	0.33	Area to South of High Point at D2
0.00	0.00	0.00	0.00	0.07	0.07	Drainage in Berth 12 discharged at Outfall 7
0.00	0.00	0.00	0.00	1.32	1.32	Outfall 1 North Trench Drain
0.00	0.00	0.00	0.00	0.51	0.51	Outfall 1 South CB
0.00	0.00	0.00	0.00	7.78	7.78	TOTAL AREA

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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	1P	0.38	0.78	26.0	-0.0154	0.012	18.0	0.0	0.0
2	2P	1.58	1.43	20.0	0.0075	0.012	18.0	0.0	0.0
3	3P	0.23	0.03	21.0	0.0095	0.012	24.0	0.0	0.0
4	4P	0.53	0.43	27.0	0.0037	0.012	24.0	0.0	0.0
5	5P	2.26	2.04	48.0	0.0046	0.012	36.0	0.0	0.0
6	6P	1.71	1.67	54.0	0.0007	0.012	42.0	0.0	0.0
7	7P	1.66	2.29	34.0	-0.0185	0.012	30.0	0.0	0.0

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 2-Year Rainfall=3.17"

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentP1N: OF 1 North of HP	Runoff Area=57,569 sf 100.00% Impervious Runoff Depth=2.94" Tc=5.0 min CN=98 Runoff=4.2 cfs 0.324 af
SubcatchmentP1S: OF 1 South of HP	Runoff Area=22,320 sf 100.00% Impervious Runoff Depth=2.94" Tc=5.0 min CN=98 Runoff=1.6 cfs 0.125 af
SubcatchmentP2N: OF 2 North of HP	Runoff Area=72,840 sf 100.00% Impervious Runoff Depth=2.94" Tc=5.0 min CN=98 Runoff=5.3 cfs 0.409 af
SubcatchmentP2S: OF 2 South of HP	Runoff Area=14,495 sf 100.00% Impervious Runoff Depth=2.94" Tc=5.0 min CN=98 Runoff=1.1 cfs 0.081 af
SubcatchmentP3N: OF 3 North of HP	Runoff Area=53,466 sf 100.00% Impervious Runoff Depth=2.94" Tc=5.0 min CN=98 Runoff=3.9 cfs 0.300 af
SubcatchmentP3S: OF 3 South of HP	Runoff Area=8,537 sf 100.00% Impervious Runoff Depth=2.94" Tc=5.0 min CN=98 Runoff=0.6 cfs 0.048 af
SubcatchmentP4N: OF 4 north of HP	Runoff Area=53,231 sf 100.00% Impervious Runoff Depth=2.94" Tc=5.0 min CN=98 Runoff=3.9 cfs 0.299 af
SubcatchmentP4S: OF 4 South of HP	Runoff Area=8,145 sf 100.00% Impervious Runoff Depth=2.94" Tc=5.0 min CN=98 Runoff=0.6 cfs 0.046 af
SubcatchmentP5N: OF 5 - North of HP	Runoff Area=29,054 sf 100.00% Impervious Runoff Depth=2.94" Tc=5.0 min CN=98 Runoff=2.1 cfs 0.163 af
SubcatchmentP5S: OF 5 - South of HP	Runoff Area=4,505 sf 100.00% Impervious Runoff Depth=2.94" Tc=5.0 min CN=98 Runoff=0.3 cfs 0.025 af
SubcatchmentP6: OF 6 - Berth 11 12	Runoff Area=11,661 sf 100.00% Impervious Runoff Depth=2.94" Tc=5.0 min CN=98 Runoff=0.9 cfs 0.066 af
SubcatchmentP7: OF 7 - Berth 11 12	Runoff Area=3,096 sf 100.00% Impervious Runoff Depth=2.94" Tc=5.0 min CN=98 Runoff=0.2 cfs 0.017 af
Pond 1P: Outfall 1 - 18" RCP	Peak Elev=1.88' Inflow=5.8 cfs 0.449 af 18.0" Round Culvert n=0.012 L=26.0' S=-0.0154 '/ Outflow=5.8 cfs 0.449 af
Pond 2P: Outfall 2 - 18" RCP	Peak Elev=2.97' Inflow=6.4 cfs 0.491 af 18.0" Round Culvert n=0.012 L=20.0' S=0.0075 '/ Outflow=6.4 cfs 0.491 af
Pond 3P: Outfall 3 - 24" RCP	Peak Elev=1.19' Inflow=4.5 cfs 0.348 af 24.0" Round Culvert n=0.012 L=21.0' S=0.0095 '/ Outflow=4.5 cfs 0.348 af
Pond 4P: Outfall 4 - 24" RCP	Peak Elev=1.57' Inflow=4.5 cfs 0.345 af 24.0" Round Culvert n=0.012 L=27.0' S=0.0037 '/ Outflow=4.5 cfs 0.345 af

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Type III 24-hr 2-Year Rainfall=3.17"

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Pond 5P: Outfall 5 - 36" RCP

Peak Elev=2.90' Inflow=2.5 cfs 0.189 af
36.0" Round Culvert n=0.012 L=48.0' S=0.0046 '/ Outflow=2.5 cfs 0.189 af

Pond 6P: Outfall 6 - 42" RCP

Peak Elev=2.15' Inflow=0.9 cfs 0.066 af
42.0" Round Culvert n=0.012 L=54.0' S=0.0007 '/ Outflow=0.9 cfs 0.066 af

Pond 7P: Outfall 7 - 30" RCP

Peak Elev=2.44' Inflow=0.2 cfs 0.017 af
30.0" Round Culvert n=0.012 L=34.0' S=-0.0185 '/ Outflow=0.2 cfs 0.017 af

Total Runoff Area = 7.78 ac Runoff Volume = 1.905 af Average Runoff Depth = 2.94"
0.00% Pervious = 0.00 ac 100.00% Impervious = 7.78 ac

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Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Subcatchment P1N: OF 1 North of HP

Runoff = 4.2 cfs @ 12.07 hrs, Volume= 0.324 af, Depth= 2.94"

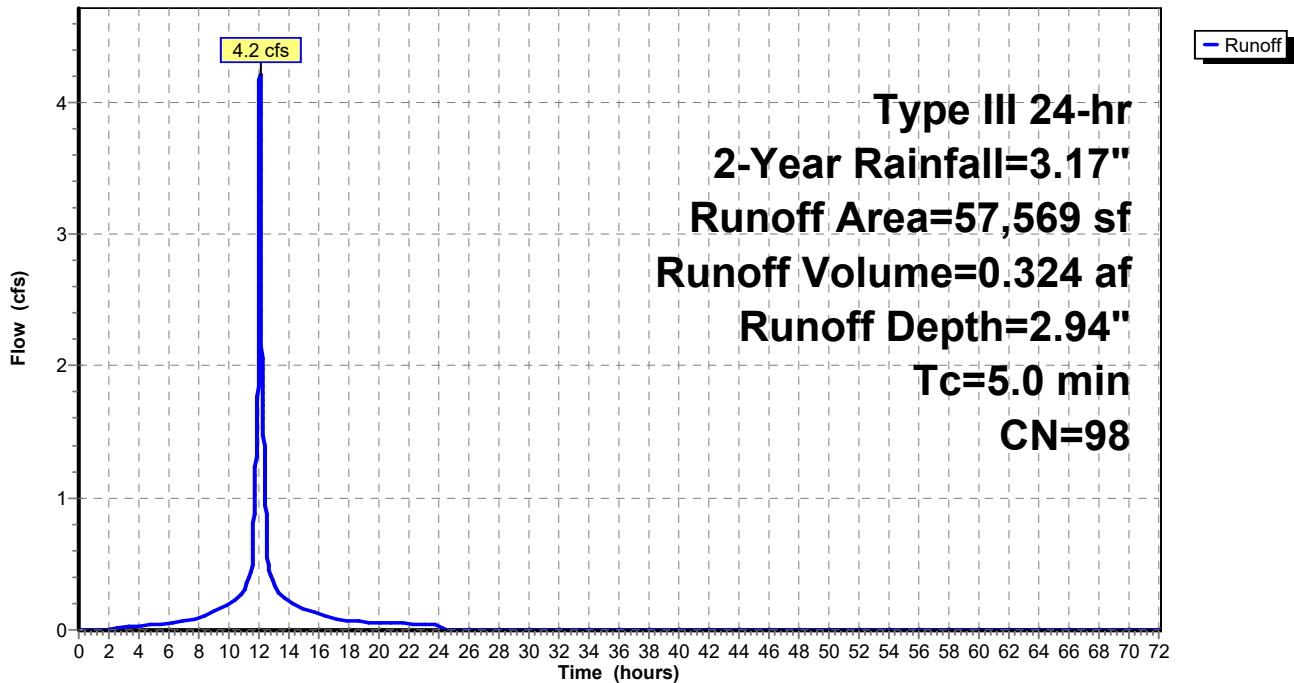
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.17"

Area (sf)	CN	Description
* 57,569	98	Outfall 1 North Trench Drain
57,569		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P1N: OF 1 North of HP

Hydrograph



Massport_M555_Backlands_POST_LOW

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Hydrograph for Subcatchment P1N: OF 1 North of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	3.17	2.94	0.0
1.00	0.03	0.00	0.0	52.00	3.17	2.94	0.0
2.00	0.06	0.00	0.0	53.00	3.17	2.94	0.0
3.00	0.10	0.01	0.0	54.00	3.17	2.94	0.0
4.00	0.14	0.03	0.0	55.00	3.17	2.94	0.0
5.00	0.18	0.06	0.0	56.00	3.17	2.94	0.0
6.00	0.23	0.09	0.0	57.00	3.17	2.94	0.0
7.00	0.29	0.13	0.1	58.00	3.17	2.94	0.0
8.00	0.36	0.20	0.1	59.00	3.17	2.94	0.0
9.00	0.46	0.28	0.1	60.00	3.17	2.94	0.0
10.00	0.60	0.41	0.2	61.00	3.17	2.94	0.0
11.00	0.79	0.59	0.3	62.00	3.17	2.94	0.0
12.00	1.58	1.36	2.8	63.00	3.17	2.94	0.0
13.00	2.38	2.15	0.3	64.00	3.17	2.94	0.0
14.00	2.57	2.34	0.2	65.00	3.17	2.94	0.0
15.00	2.71	2.48	0.2	66.00	3.17	2.94	0.0
16.00	2.81	2.58	0.1	67.00	3.17	2.94	0.0
17.00	2.88	2.65	0.1	68.00	3.17	2.94	0.0
18.00	2.94	2.71	0.1	69.00	3.17	2.94	0.0
19.00	2.99	2.76	0.1	70.00	3.17	2.94	0.0
20.00	3.03	2.80	0.1	71.00	3.17	2.94	0.0
21.00	3.07	2.84	0.1	72.00	3.17	2.94	0.0
22.00	3.11	2.88	0.0				
23.00	3.14	2.91	0.0				
24.00	3.17	2.94	0.0				
25.00	3.17	2.94	0.0				
26.00	3.17	2.94	0.0				
27.00	3.17	2.94	0.0				
28.00	3.17	2.94	0.0				
29.00	3.17	2.94	0.0				
30.00	3.17	2.94	0.0				
31.00	3.17	2.94	0.0				
32.00	3.17	2.94	0.0				
33.00	3.17	2.94	0.0				
34.00	3.17	2.94	0.0				
35.00	3.17	2.94	0.0				
36.00	3.17	2.94	0.0				
37.00	3.17	2.94	0.0				
38.00	3.17	2.94	0.0				
39.00	3.17	2.94	0.0				
40.00	3.17	2.94	0.0				
41.00	3.17	2.94	0.0				
42.00	3.17	2.94	0.0				
43.00	3.17	2.94	0.0				
44.00	3.17	2.94	0.0				
45.00	3.17	2.94	0.0				
46.00	3.17	2.94	0.0				
47.00	3.17	2.94	0.0				
48.00	3.17	2.94	0.0				
49.00	3.17	2.94	0.0				
50.00	3.17	2.94	0.0				

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Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Subcatchment P1S: OF 1 Southh of HP

Runoff = 1.6 cfs @ 12.07 hrs, Volume= 0.125 af, Depth= 2.94"

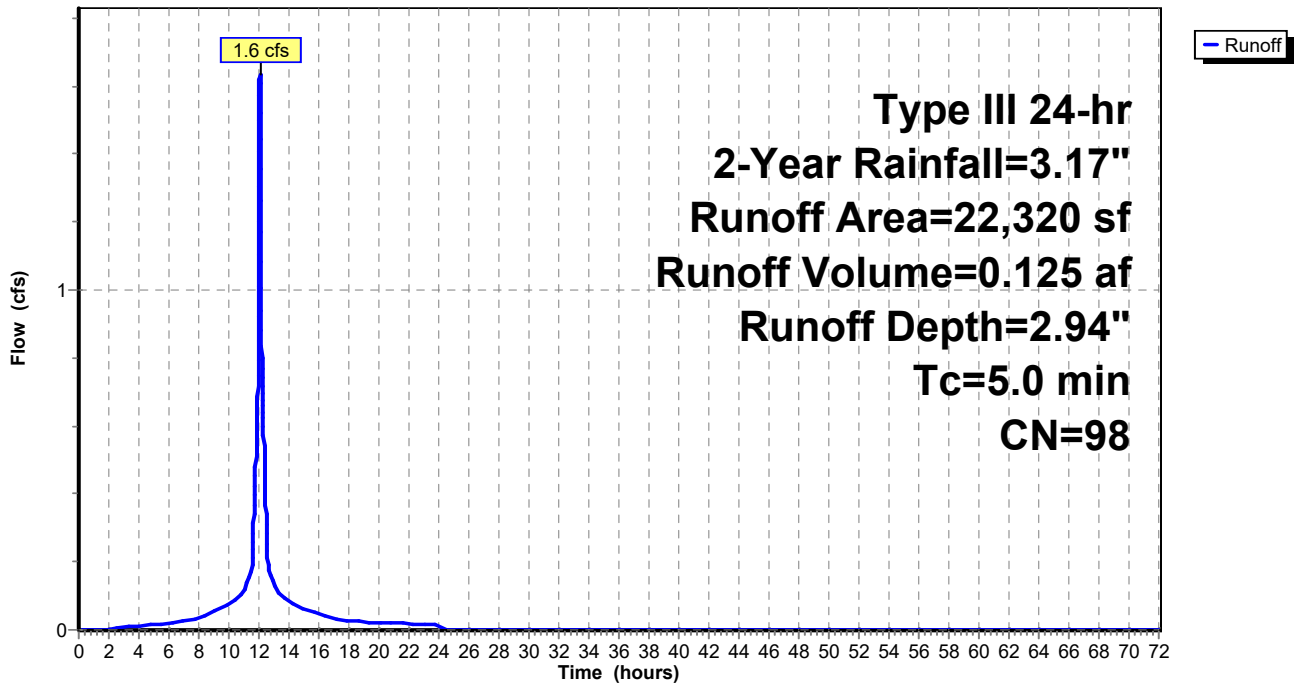
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.17"

Area (sf)	CN	Description
* 22,320	98	Outfall 1 South CB
22,320		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P1S: OF 1 Southh of HP

Hydrograph



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Hydrograph for Subcatchment P1S: OF 1 Southh of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	3.17	2.94	0.0
1.00	0.03	0.00	0.0	52.00	3.17	2.94	0.0
2.00	0.06	0.00	0.0	53.00	3.17	2.94	0.0
3.00	0.10	0.01	0.0	54.00	3.17	2.94	0.0
4.00	0.14	0.03	0.0	55.00	3.17	2.94	0.0
5.00	0.18	0.06	0.0	56.00	3.17	2.94	0.0
6.00	0.23	0.09	0.0	57.00	3.17	2.94	0.0
7.00	0.29	0.13	0.0	58.00	3.17	2.94	0.0
8.00	0.36	0.20	0.0	59.00	3.17	2.94	0.0
9.00	0.46	0.28	0.1	60.00	3.17	2.94	0.0
10.00	0.60	0.41	0.1	61.00	3.17	2.94	0.0
11.00	0.79	0.59	0.1	62.00	3.17	2.94	0.0
12.00	1.58	1.36	1.1	63.00	3.17	2.94	0.0
13.00	2.38	2.15	0.1	64.00	3.17	2.94	0.0
14.00	2.57	2.34	0.1	65.00	3.17	2.94	0.0
15.00	2.71	2.48	0.1	66.00	3.17	2.94	0.0
16.00	2.81	2.58	0.0	67.00	3.17	2.94	0.0
17.00	2.88	2.65	0.0	68.00	3.17	2.94	0.0
18.00	2.94	2.71	0.0	69.00	3.17	2.94	0.0
19.00	2.99	2.76	0.0	70.00	3.17	2.94	0.0
20.00	3.03	2.80	0.0	71.00	3.17	2.94	0.0
21.00	3.07	2.84	0.0	72.00	3.17	2.94	0.0
22.00	3.11	2.88	0.0				
23.00	3.14	2.91	0.0				
24.00	3.17	2.94	0.0				
25.00	3.17	2.94	0.0				
26.00	3.17	2.94	0.0				
27.00	3.17	2.94	0.0				
28.00	3.17	2.94	0.0				
29.00	3.17	2.94	0.0				
30.00	3.17	2.94	0.0				
31.00	3.17	2.94	0.0				
32.00	3.17	2.94	0.0				
33.00	3.17	2.94	0.0				
34.00	3.17	2.94	0.0				
35.00	3.17	2.94	0.0				
36.00	3.17	2.94	0.0				
37.00	3.17	2.94	0.0				
38.00	3.17	2.94	0.0				
39.00	3.17	2.94	0.0				
40.00	3.17	2.94	0.0				
41.00	3.17	2.94	0.0				
42.00	3.17	2.94	0.0				
43.00	3.17	2.94	0.0				
44.00	3.17	2.94	0.0				
45.00	3.17	2.94	0.0				
46.00	3.17	2.94	0.0				
47.00	3.17	2.94	0.0				
48.00	3.17	2.94	0.0				
49.00	3.17	2.94	0.0				
50.00	3.17	2.94	0.0				

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Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Subcatchment P2N: OF 2 North of HP

Runoff = 5.3 cfs @ 12.07 hrs, Volume= 0.409 af, Depth= 2.94"

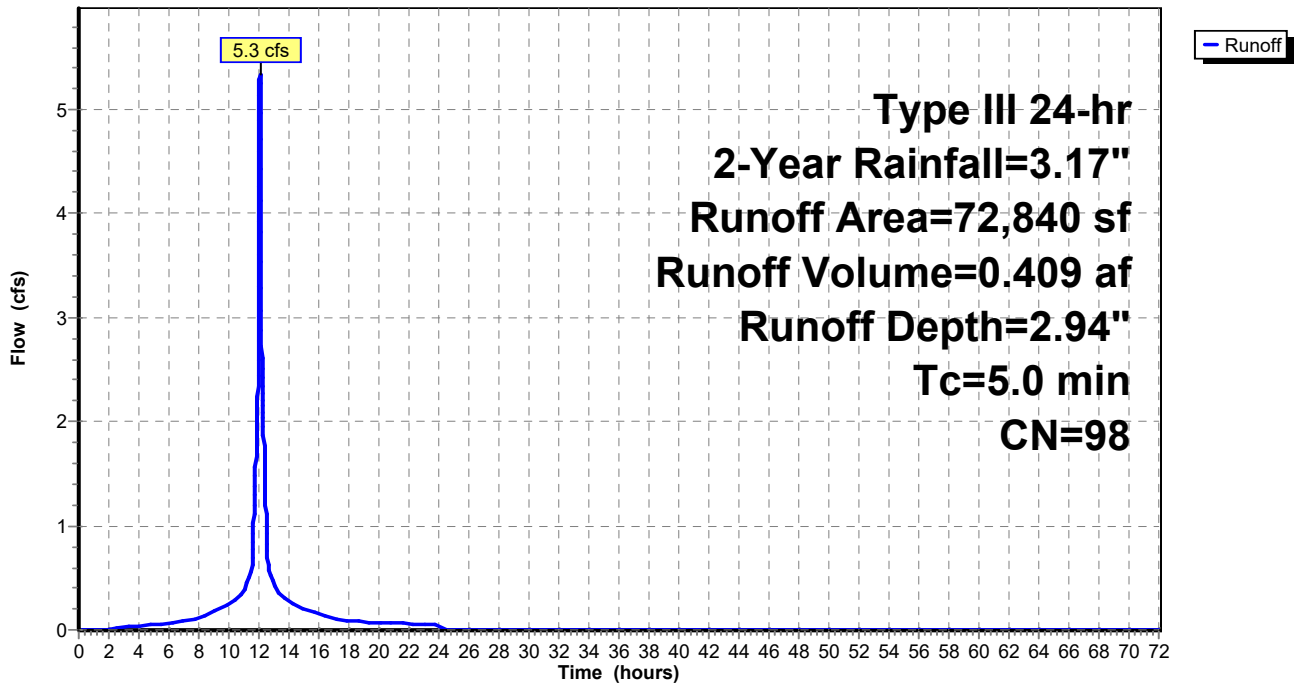
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.17"

Area (sf)	CN	Description
* 72,840	98	Area draining to north of high point
72,840		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment P2N: OF 2 North of HP

Hydrograph



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Hydrograph for Subcatchment P2N: OF 2 North of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	3.17	2.94	0.0
1.00	0.03	0.00	0.0	52.00	3.17	2.94	0.0
2.00	0.06	0.00	0.0	53.00	3.17	2.94	0.0
3.00	0.10	0.01	0.0	54.00	3.17	2.94	0.0
4.00	0.14	0.03	0.0	55.00	3.17	2.94	0.0
5.00	0.18	0.06	0.0	56.00	3.17	2.94	0.0
6.00	0.23	0.09	0.1	57.00	3.17	2.94	0.0
7.00	0.29	0.13	0.1	58.00	3.17	2.94	0.0
8.00	0.36	0.20	0.1	59.00	3.17	2.94	0.0
9.00	0.46	0.28	0.2	60.00	3.17	2.94	0.0
10.00	0.60	0.41	0.2	61.00	3.17	2.94	0.0
11.00	0.79	0.59	0.4	62.00	3.17	2.94	0.0
12.00	1.58	1.36	3.6	63.00	3.17	2.94	0.0
13.00	2.38	2.15	0.4	64.00	3.17	2.94	0.0
14.00	2.57	2.34	0.3	65.00	3.17	2.94	0.0
15.00	2.71	2.48	0.2	66.00	3.17	2.94	0.0
16.00	2.81	2.58	0.1	67.00	3.17	2.94	0.0
17.00	2.88	2.65	0.1	68.00	3.17	2.94	0.0
18.00	2.94	2.71	0.1	69.00	3.17	2.94	0.0
19.00	2.99	2.76	0.1	70.00	3.17	2.94	0.0
20.00	3.03	2.80	0.1	71.00	3.17	2.94	0.0
21.00	3.07	2.84	0.1	72.00	3.17	2.94	0.0
22.00	3.11	2.88	0.1				
23.00	3.14	2.91	0.1				
24.00	3.17	2.94	0.0				
25.00	3.17	2.94	0.0				
26.00	3.17	2.94	0.0				
27.00	3.17	2.94	0.0				
28.00	3.17	2.94	0.0				
29.00	3.17	2.94	0.0				
30.00	3.17	2.94	0.0				
31.00	3.17	2.94	0.0				
32.00	3.17	2.94	0.0				
33.00	3.17	2.94	0.0				
34.00	3.17	2.94	0.0				
35.00	3.17	2.94	0.0				
36.00	3.17	2.94	0.0				
37.00	3.17	2.94	0.0				
38.00	3.17	2.94	0.0				
39.00	3.17	2.94	0.0				
40.00	3.17	2.94	0.0				
41.00	3.17	2.94	0.0				
42.00	3.17	2.94	0.0				
43.00	3.17	2.94	0.0				
44.00	3.17	2.94	0.0				
45.00	3.17	2.94	0.0				
46.00	3.17	2.94	0.0				
47.00	3.17	2.94	0.0				
48.00	3.17	2.94	0.0				
49.00	3.17	2.94	0.0				
50.00	3.17	2.94	0.0				

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Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Subcatchment P2S: OF 2 South of HP

Runoff = 1.1 cfs @ 12.07 hrs, Volume= 0.081 af, Depth= 2.94"

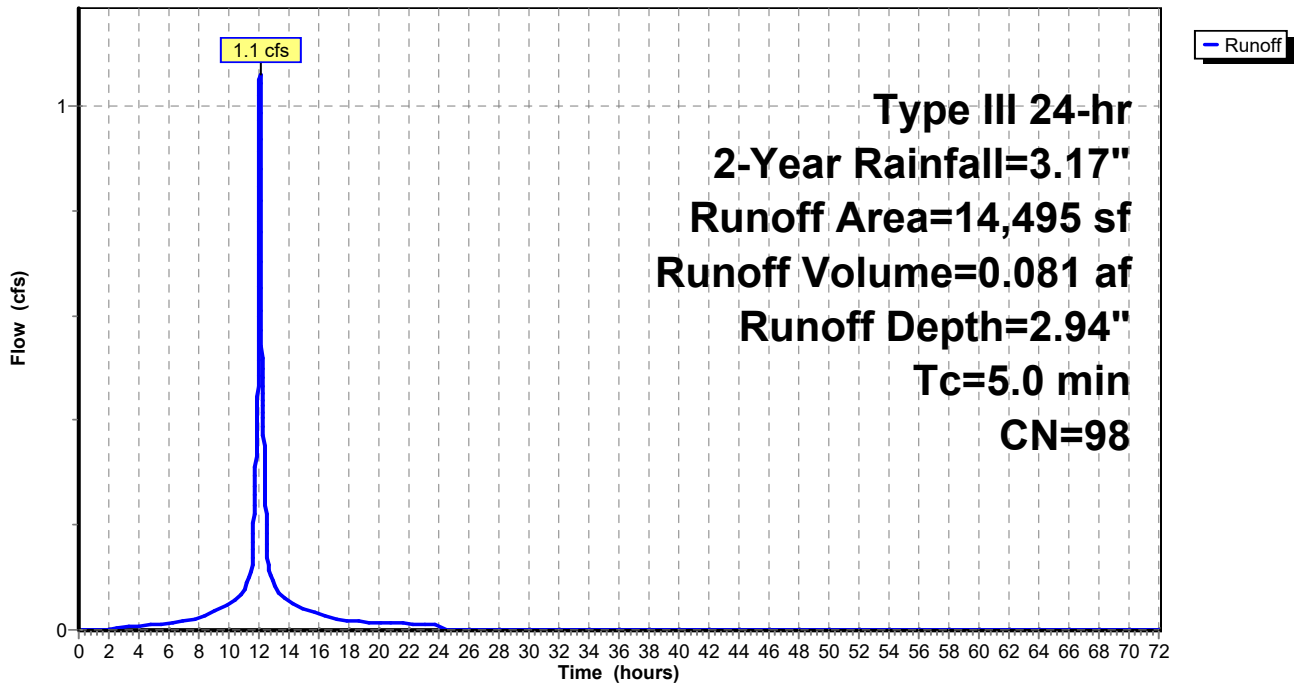
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.17"

Area (sf)	CN	Description
* 14,495	98	Area to South of High Point at D2
14,495		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P2S: OF 2 South of HP

Hydrograph



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Hydrograph for Subcatchment P2S: OF 2 South of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	3.17	2.94	0.0
1.00	0.03	0.00	0.0	52.00	3.17	2.94	0.0
2.00	0.06	0.00	0.0	53.00	3.17	2.94	0.0
3.00	0.10	0.01	0.0	54.00	3.17	2.94	0.0
4.00	0.14	0.03	0.0	55.00	3.17	2.94	0.0
5.00	0.18	0.06	0.0	56.00	3.17	2.94	0.0
6.00	0.23	0.09	0.0	57.00	3.17	2.94	0.0
7.00	0.29	0.13	0.0	58.00	3.17	2.94	0.0
8.00	0.36	0.20	0.0	59.00	3.17	2.94	0.0
9.00	0.46	0.28	0.0	60.00	3.17	2.94	0.0
10.00	0.60	0.41	0.0	61.00	3.17	2.94	0.0
11.00	0.79	0.59	0.1	62.00	3.17	2.94	0.0
12.00	1.58	1.36	0.7	63.00	3.17	2.94	0.0
13.00	2.38	2.15	0.1	64.00	3.17	2.94	0.0
14.00	2.57	2.34	0.1	65.00	3.17	2.94	0.0
15.00	2.71	2.48	0.0	66.00	3.17	2.94	0.0
16.00	2.81	2.58	0.0	67.00	3.17	2.94	0.0
17.00	2.88	2.65	0.0	68.00	3.17	2.94	0.0
18.00	2.94	2.71	0.0	69.00	3.17	2.94	0.0
19.00	2.99	2.76	0.0	70.00	3.17	2.94	0.0
20.00	3.03	2.80	0.0	71.00	3.17	2.94	0.0
21.00	3.07	2.84	0.0	72.00	3.17	2.94	0.0
22.00	3.11	2.88	0.0				
23.00	3.14	2.91	0.0				
24.00	3.17	2.94	0.0				
25.00	3.17	2.94	0.0				
26.00	3.17	2.94	0.0				
27.00	3.17	2.94	0.0				
28.00	3.17	2.94	0.0				
29.00	3.17	2.94	0.0				
30.00	3.17	2.94	0.0				
31.00	3.17	2.94	0.0				
32.00	3.17	2.94	0.0				
33.00	3.17	2.94	0.0				
34.00	3.17	2.94	0.0				
35.00	3.17	2.94	0.0				
36.00	3.17	2.94	0.0				
37.00	3.17	2.94	0.0				
38.00	3.17	2.94	0.0				
39.00	3.17	2.94	0.0				
40.00	3.17	2.94	0.0				
41.00	3.17	2.94	0.0				
42.00	3.17	2.94	0.0				
43.00	3.17	2.94	0.0				
44.00	3.17	2.94	0.0				
45.00	3.17	2.94	0.0				
46.00	3.17	2.94	0.0				
47.00	3.17	2.94	0.0				
48.00	3.17	2.94	0.0				
49.00	3.17	2.94	0.0				
50.00	3.17	2.94	0.0				

Massport_M555_Backlands_POST_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Subcatchment P3N: OF 3 North of HP

Runoff = 3.9 cfs @ 12.07 hrs, Volume= 0.300 af, Depth= 2.94"

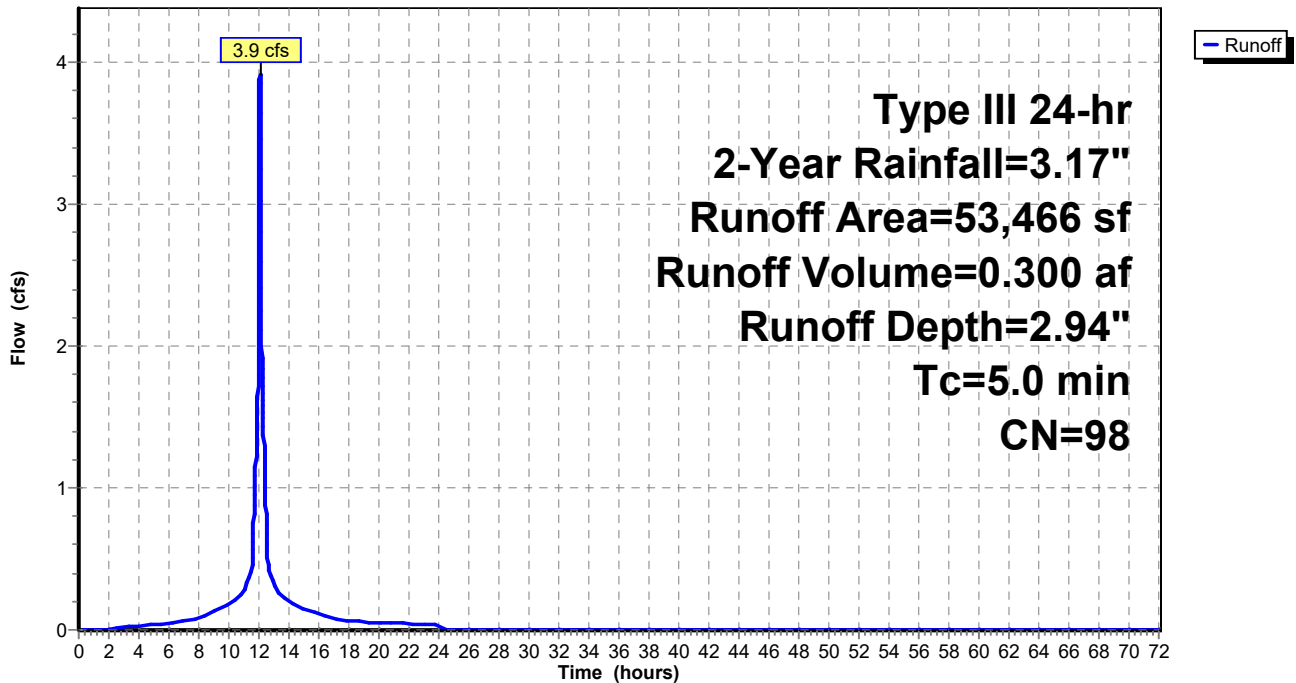
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.17"

Area (sf)	CN	Description
* 53,466	98	Area north of high point drain to outfall 4
53,466		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment P3N: OF 3 North of HP

Hydrograph



Massport_M555_Backlands_POST_LOW

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Hydrograph for Subcatchment P3N: OF 3 North of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	3.17	2.94	0.0
1.00	0.03	0.00	0.0	52.00	3.17	2.94	0.0
2.00	0.06	0.00	0.0	53.00	3.17	2.94	0.0
3.00	0.10	0.01	0.0	54.00	3.17	2.94	0.0
4.00	0.14	0.03	0.0	55.00	3.17	2.94	0.0
5.00	0.18	0.06	0.0	56.00	3.17	2.94	0.0
6.00	0.23	0.09	0.0	57.00	3.17	2.94	0.0
7.00	0.29	0.13	0.1	58.00	3.17	2.94	0.0
8.00	0.36	0.20	0.1	59.00	3.17	2.94	0.0
9.00	0.46	0.28	0.1	60.00	3.17	2.94	0.0
10.00	0.60	0.41	0.2	61.00	3.17	2.94	0.0
11.00	0.79	0.59	0.3	62.00	3.17	2.94	0.0
12.00	1.58	1.36	2.6	63.00	3.17	2.94	0.0
13.00	2.38	2.15	0.3	64.00	3.17	2.94	0.0
14.00	2.57	2.34	0.2	65.00	3.17	2.94	0.0
15.00	2.71	2.48	0.1	66.00	3.17	2.94	0.0
16.00	2.81	2.58	0.1	67.00	3.17	2.94	0.0
17.00	2.88	2.65	0.1	68.00	3.17	2.94	0.0
18.00	2.94	2.71	0.1	69.00	3.17	2.94	0.0
19.00	2.99	2.76	0.1	70.00	3.17	2.94	0.0
20.00	3.03	2.80	0.1	71.00	3.17	2.94	0.0
21.00	3.07	2.84	0.0	72.00	3.17	2.94	0.0
22.00	3.11	2.88	0.0				
23.00	3.14	2.91	0.0				
24.00	3.17	2.94	0.0				
25.00	3.17	2.94	0.0				
26.00	3.17	2.94	0.0				
27.00	3.17	2.94	0.0				
28.00	3.17	2.94	0.0				
29.00	3.17	2.94	0.0				
30.00	3.17	2.94	0.0				
31.00	3.17	2.94	0.0				
32.00	3.17	2.94	0.0				
33.00	3.17	2.94	0.0				
34.00	3.17	2.94	0.0				
35.00	3.17	2.94	0.0				
36.00	3.17	2.94	0.0				
37.00	3.17	2.94	0.0				
38.00	3.17	2.94	0.0				
39.00	3.17	2.94	0.0				
40.00	3.17	2.94	0.0				
41.00	3.17	2.94	0.0				
42.00	3.17	2.94	0.0				
43.00	3.17	2.94	0.0				
44.00	3.17	2.94	0.0				
45.00	3.17	2.94	0.0				
46.00	3.17	2.94	0.0				
47.00	3.17	2.94	0.0				
48.00	3.17	2.94	0.0				
49.00	3.17	2.94	0.0				
50.00	3.17	2.94	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 2-Year Rainfall=3.17"

Printed 6/30/2021

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Summary for Subcatchment P3S: OF 3 South of HP

Runoff = 0.6 cfs @ 12.07 hrs, Volume= 0.048 af, Depth= 2.94"

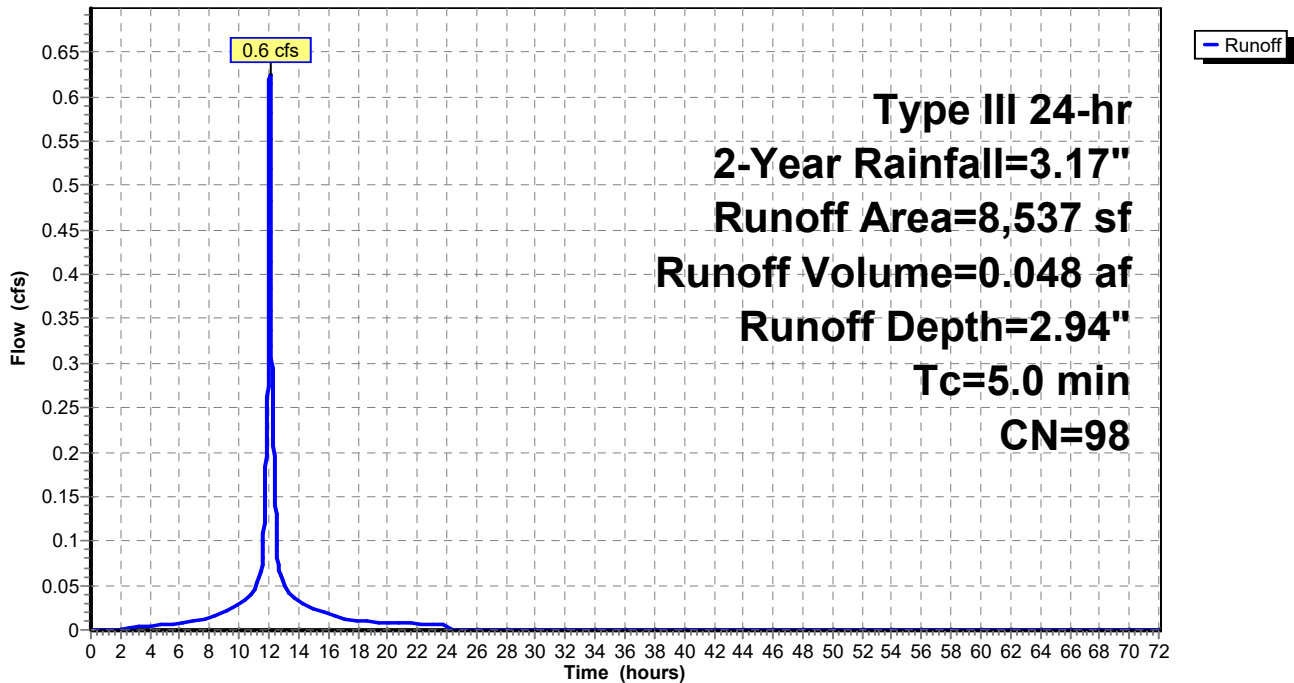
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.17"

Area (sf)	CN	Description
* 8,537	98	Area south of high point at Outfall 3
8,537		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment P3S: OF 3 South of HP

Hydrograph



Massport_M555_Backlands_POST_LOW

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Hydrograph for Subcatchment P3S: OF 3 South of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	3.17	2.94	0.0
1.00	0.03	0.00	0.0	52.00	3.17	2.94	0.0
2.00	0.06	0.00	0.0	53.00	3.17	2.94	0.0
3.00	0.10	0.01	0.0	54.00	3.17	2.94	0.0
4.00	0.14	0.03	0.0	55.00	3.17	2.94	0.0
5.00	0.18	0.06	0.0	56.00	3.17	2.94	0.0
6.00	0.23	0.09	0.0	57.00	3.17	2.94	0.0
7.00	0.29	0.13	0.0	58.00	3.17	2.94	0.0
8.00	0.36	0.20	0.0	59.00	3.17	2.94	0.0
9.00	0.46	0.28	0.0	60.00	3.17	2.94	0.0
10.00	0.60	0.41	0.0	61.00	3.17	2.94	0.0
11.00	0.79	0.59	0.0	62.00	3.17	2.94	0.0
12.00	1.58	1.36	0.4	63.00	3.17	2.94	0.0
13.00	2.38	2.15	0.0	64.00	3.17	2.94	0.0
14.00	2.57	2.34	0.0	65.00	3.17	2.94	0.0
15.00	2.71	2.48	0.0	66.00	3.17	2.94	0.0
16.00	2.81	2.58	0.0	67.00	3.17	2.94	0.0
17.00	2.88	2.65	0.0	68.00	3.17	2.94	0.0
18.00	2.94	2.71	0.0	69.00	3.17	2.94	0.0
19.00	2.99	2.76	0.0	70.00	3.17	2.94	0.0
20.00	3.03	2.80	0.0	71.00	3.17	2.94	0.0
21.00	3.07	2.84	0.0	72.00	3.17	2.94	0.0
22.00	3.11	2.88	0.0				
23.00	3.14	2.91	0.0				
24.00	3.17	2.94	0.0				
25.00	3.17	2.94	0.0				
26.00	3.17	2.94	0.0				
27.00	3.17	2.94	0.0				
28.00	3.17	2.94	0.0				
29.00	3.17	2.94	0.0				
30.00	3.17	2.94	0.0				
31.00	3.17	2.94	0.0				
32.00	3.17	2.94	0.0				
33.00	3.17	2.94	0.0				
34.00	3.17	2.94	0.0				
35.00	3.17	2.94	0.0				
36.00	3.17	2.94	0.0				
37.00	3.17	2.94	0.0				
38.00	3.17	2.94	0.0				
39.00	3.17	2.94	0.0				
40.00	3.17	2.94	0.0				
41.00	3.17	2.94	0.0				
42.00	3.17	2.94	0.0				
43.00	3.17	2.94	0.0				
44.00	3.17	2.94	0.0				
45.00	3.17	2.94	0.0				
46.00	3.17	2.94	0.0				
47.00	3.17	2.94	0.0				
48.00	3.17	2.94	0.0				
49.00	3.17	2.94	0.0				
50.00	3.17	2.94	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Subcatchment P4N: OF 4 north of HP

Runoff = 3.9 cfs @ 12.07 hrs, Volume= 0.299 af, Depth= 2.94"

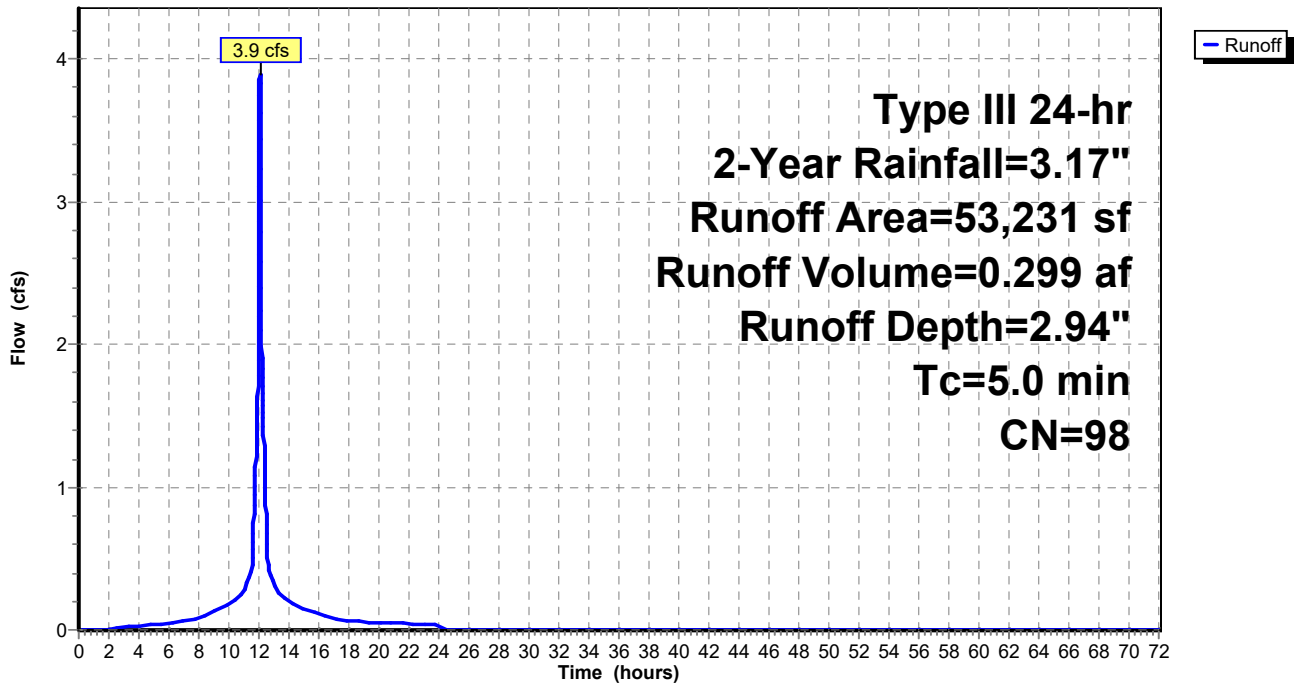
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.17"

Area (sf)	CN	Description
* 53,231	98	Area draining north of high point to trench drains
53,231		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment P4N: OF 4 north of HP

Hydrograph



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Hydrograph for Subcatchment P4N: OF 4 north of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	3.17	2.94	0.0
1.00	0.03	0.00	0.0	52.00	3.17	2.94	0.0
2.00	0.06	0.00	0.0	53.00	3.17	2.94	0.0
3.00	0.10	0.01	0.0	54.00	3.17	2.94	0.0
4.00	0.14	0.03	0.0	55.00	3.17	2.94	0.0
5.00	0.18	0.06	0.0	56.00	3.17	2.94	0.0
6.00	0.23	0.09	0.0	57.00	3.17	2.94	0.0
7.00	0.29	0.13	0.1	58.00	3.17	2.94	0.0
8.00	0.36	0.20	0.1	59.00	3.17	2.94	0.0
9.00	0.46	0.28	0.1	60.00	3.17	2.94	0.0
10.00	0.60	0.41	0.2	61.00	3.17	2.94	0.0
11.00	0.79	0.59	0.3	62.00	3.17	2.94	0.0
12.00	1.58	1.36	2.6	63.00	3.17	2.94	0.0
13.00	2.38	2.15	0.3	64.00	3.17	2.94	0.0
14.00	2.57	2.34	0.2	65.00	3.17	2.94	0.0
15.00	2.71	2.48	0.1	66.00	3.17	2.94	0.0
16.00	2.81	2.58	0.1	67.00	3.17	2.94	0.0
17.00	2.88	2.65	0.1	68.00	3.17	2.94	0.0
18.00	2.94	2.71	0.1	69.00	3.17	2.94	0.0
19.00	2.99	2.76	0.1	70.00	3.17	2.94	0.0
20.00	3.03	2.80	0.1	71.00	3.17	2.94	0.0
21.00	3.07	2.84	0.0	72.00	3.17	2.94	0.0
22.00	3.11	2.88	0.0				
23.00	3.14	2.91	0.0				
24.00	3.17	2.94	0.0				
25.00	3.17	2.94	0.0				
26.00	3.17	2.94	0.0				
27.00	3.17	2.94	0.0				
28.00	3.17	2.94	0.0				
29.00	3.17	2.94	0.0				
30.00	3.17	2.94	0.0				
31.00	3.17	2.94	0.0				
32.00	3.17	2.94	0.0				
33.00	3.17	2.94	0.0				
34.00	3.17	2.94	0.0				
35.00	3.17	2.94	0.0				
36.00	3.17	2.94	0.0				
37.00	3.17	2.94	0.0				
38.00	3.17	2.94	0.0				
39.00	3.17	2.94	0.0				
40.00	3.17	2.94	0.0				
41.00	3.17	2.94	0.0				
42.00	3.17	2.94	0.0				
43.00	3.17	2.94	0.0				
44.00	3.17	2.94	0.0				
45.00	3.17	2.94	0.0				
46.00	3.17	2.94	0.0				
47.00	3.17	2.94	0.0				
48.00	3.17	2.94	0.0				
49.00	3.17	2.94	0.0				
50.00	3.17	2.94	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Subcatchment P4S: OF 4 South of HP

Runoff = 0.6 cfs @ 12.07 hrs, Volume= 0.046 af, Depth= 2.94"

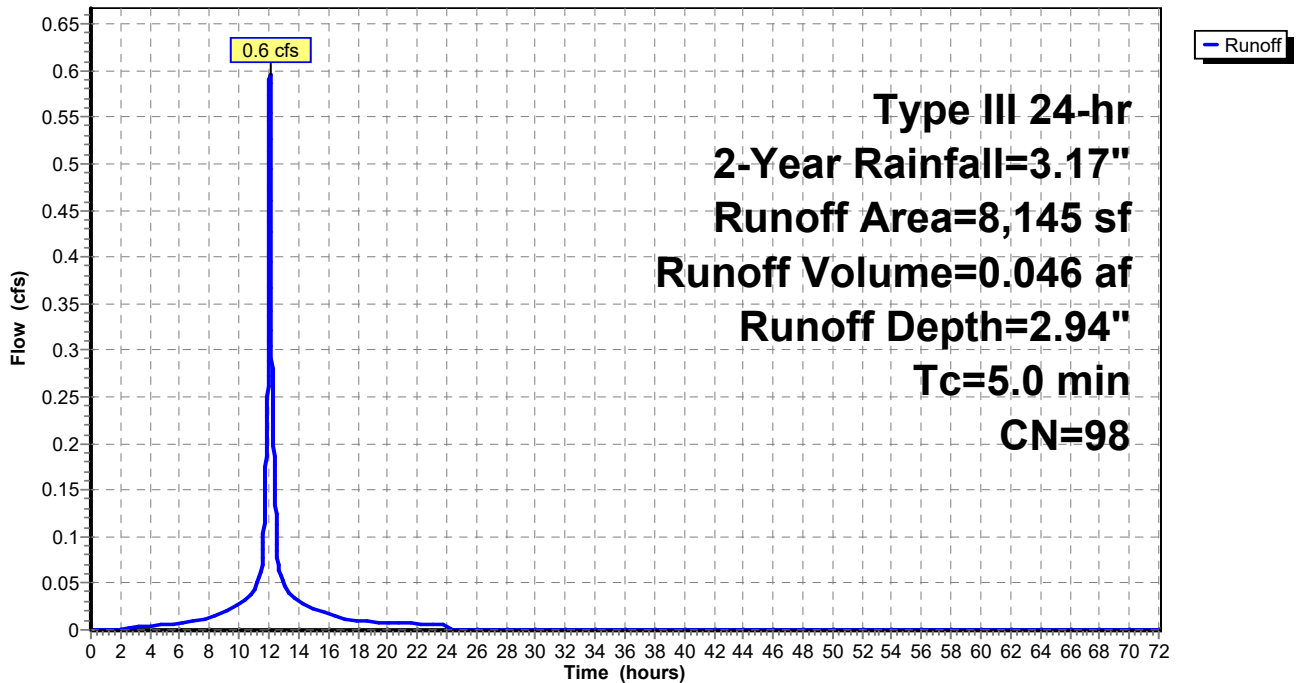
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.17"

Area (sf)	CN	Description
* 8,145	98	Area south of high point drain to outfall 4
8,145		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment P4S: OF 4 South of HP

Hydrograph



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Hydrograph for Subcatchment P4S: OF 4 South of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	3.17	2.94	0.0
1.00	0.03	0.00	0.0	52.00	3.17	2.94	0.0
2.00	0.06	0.00	0.0	53.00	3.17	2.94	0.0
3.00	0.10	0.01	0.0	54.00	3.17	2.94	0.0
4.00	0.14	0.03	0.0	55.00	3.17	2.94	0.0
5.00	0.18	0.06	0.0	56.00	3.17	2.94	0.0
6.00	0.23	0.09	0.0	57.00	3.17	2.94	0.0
7.00	0.29	0.13	0.0	58.00	3.17	2.94	0.0
8.00	0.36	0.20	0.0	59.00	3.17	2.94	0.0
9.00	0.46	0.28	0.0	60.00	3.17	2.94	0.0
10.00	0.60	0.41	0.0	61.00	3.17	2.94	0.0
11.00	0.79	0.59	0.0	62.00	3.17	2.94	0.0
12.00	1.58	1.36	0.4	63.00	3.17	2.94	0.0
13.00	2.38	2.15	0.0	64.00	3.17	2.94	0.0
14.00	2.57	2.34	0.0	65.00	3.17	2.94	0.0
15.00	2.71	2.48	0.0	66.00	3.17	2.94	0.0
16.00	2.81	2.58	0.0	67.00	3.17	2.94	0.0
17.00	2.88	2.65	0.0	68.00	3.17	2.94	0.0
18.00	2.94	2.71	0.0	69.00	3.17	2.94	0.0
19.00	2.99	2.76	0.0	70.00	3.17	2.94	0.0
20.00	3.03	2.80	0.0	71.00	3.17	2.94	0.0
21.00	3.07	2.84	0.0	72.00	3.17	2.94	0.0
22.00	3.11	2.88	0.0				
23.00	3.14	2.91	0.0				
24.00	3.17	2.94	0.0				
25.00	3.17	2.94	0.0				
26.00	3.17	2.94	0.0				
27.00	3.17	2.94	0.0				
28.00	3.17	2.94	0.0				
29.00	3.17	2.94	0.0				
30.00	3.17	2.94	0.0				
31.00	3.17	2.94	0.0				
32.00	3.17	2.94	0.0				
33.00	3.17	2.94	0.0				
34.00	3.17	2.94	0.0				
35.00	3.17	2.94	0.0				
36.00	3.17	2.94	0.0				
37.00	3.17	2.94	0.0				
38.00	3.17	2.94	0.0				
39.00	3.17	2.94	0.0				
40.00	3.17	2.94	0.0				
41.00	3.17	2.94	0.0				
42.00	3.17	2.94	0.0				
43.00	3.17	2.94	0.0				
44.00	3.17	2.94	0.0				
45.00	3.17	2.94	0.0				
46.00	3.17	2.94	0.0				
47.00	3.17	2.94	0.0				
48.00	3.17	2.94	0.0				
49.00	3.17	2.94	0.0				
50.00	3.17	2.94	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Subcatchment P5N: OF 5 - North of HP

Runoff = 2.1 cfs @ 12.07 hrs, Volume= 0.163 af, Depth= 2.94"

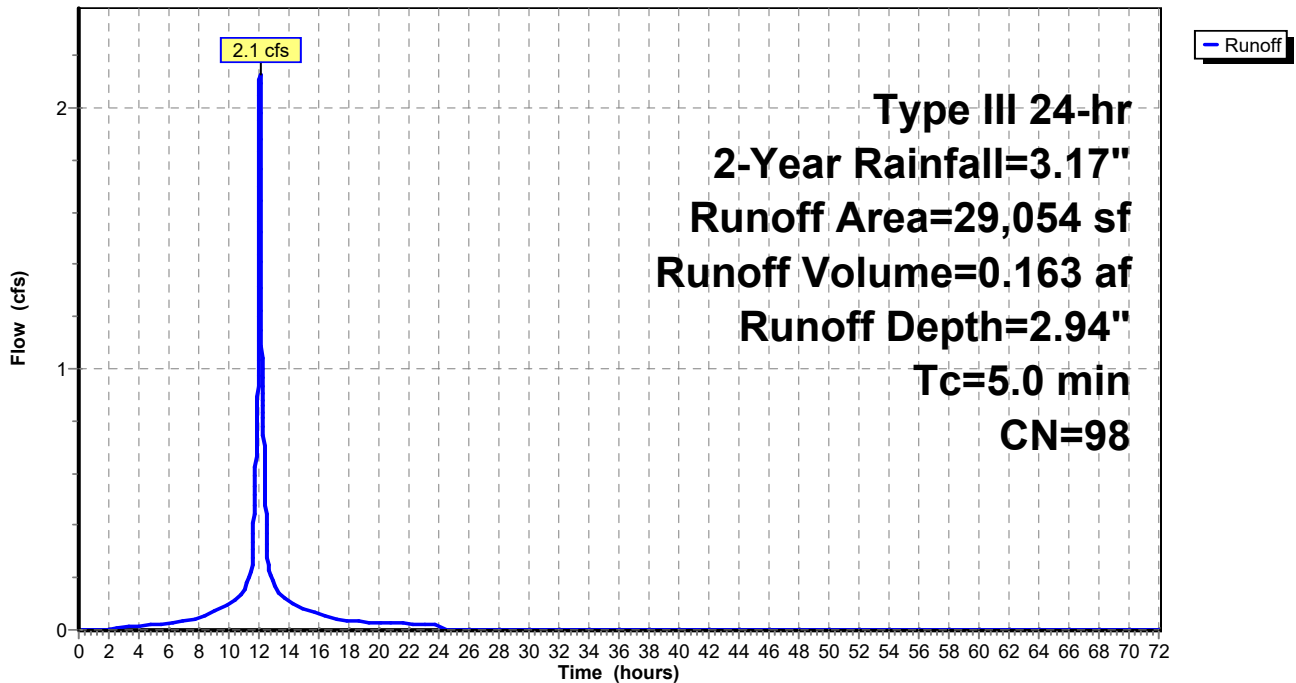
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.17"

Area (sf)	CN	Description
* 29,054	98	Area draining north of high point to trench drains
29,054		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P5N: OF 5 - North of HP

Hydrograph



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Hydrograph for Subcatchment P5N: OF 5 - North of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	3.17	2.94	0.0
1.00	0.03	0.00	0.0	52.00	3.17	2.94	0.0
2.00	0.06	0.00	0.0	53.00	3.17	2.94	0.0
3.00	0.10	0.01	0.0	54.00	3.17	2.94	0.0
4.00	0.14	0.03	0.0	55.00	3.17	2.94	0.0
5.00	0.18	0.06	0.0	56.00	3.17	2.94	0.0
6.00	0.23	0.09	0.0	57.00	3.17	2.94	0.0
7.00	0.29	0.13	0.0	58.00	3.17	2.94	0.0
8.00	0.36	0.20	0.0	59.00	3.17	2.94	0.0
9.00	0.46	0.28	0.1	60.00	3.17	2.94	0.0
10.00	0.60	0.41	0.1	61.00	3.17	2.94	0.0
11.00	0.79	0.59	0.1	62.00	3.17	2.94	0.0
12.00	1.58	1.36	1.4	63.00	3.17	2.94	0.0
13.00	2.38	2.15	0.2	64.00	3.17	2.94	0.0
14.00	2.57	2.34	0.1	65.00	3.17	2.94	0.0
15.00	2.71	2.48	0.1	66.00	3.17	2.94	0.0
16.00	2.81	2.58	0.1	67.00	3.17	2.94	0.0
17.00	2.88	2.65	0.0	68.00	3.17	2.94	0.0
18.00	2.94	2.71	0.0	69.00	3.17	2.94	0.0
19.00	2.99	2.76	0.0	70.00	3.17	2.94	0.0
20.00	3.03	2.80	0.0	71.00	3.17	2.94	0.0
21.00	3.07	2.84	0.0	72.00	3.17	2.94	0.0
22.00	3.11	2.88	0.0				
23.00	3.14	2.91	0.0				
24.00	3.17	2.94	0.0				
25.00	3.17	2.94	0.0				
26.00	3.17	2.94	0.0				
27.00	3.17	2.94	0.0				
28.00	3.17	2.94	0.0				
29.00	3.17	2.94	0.0				
30.00	3.17	2.94	0.0				
31.00	3.17	2.94	0.0				
32.00	3.17	2.94	0.0				
33.00	3.17	2.94	0.0				
34.00	3.17	2.94	0.0				
35.00	3.17	2.94	0.0				
36.00	3.17	2.94	0.0				
37.00	3.17	2.94	0.0				
38.00	3.17	2.94	0.0				
39.00	3.17	2.94	0.0				
40.00	3.17	2.94	0.0				
41.00	3.17	2.94	0.0				
42.00	3.17	2.94	0.0				
43.00	3.17	2.94	0.0				
44.00	3.17	2.94	0.0				
45.00	3.17	2.94	0.0				
46.00	3.17	2.94	0.0				
47.00	3.17	2.94	0.0				
48.00	3.17	2.94	0.0				
49.00	3.17	2.94	0.0				
50.00	3.17	2.94	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Subcatchment P5S: OF 5 - South of HP

Runoff = 0.3 cfs @ 12.07 hrs, Volume= 0.025 af, Depth= 2.94"

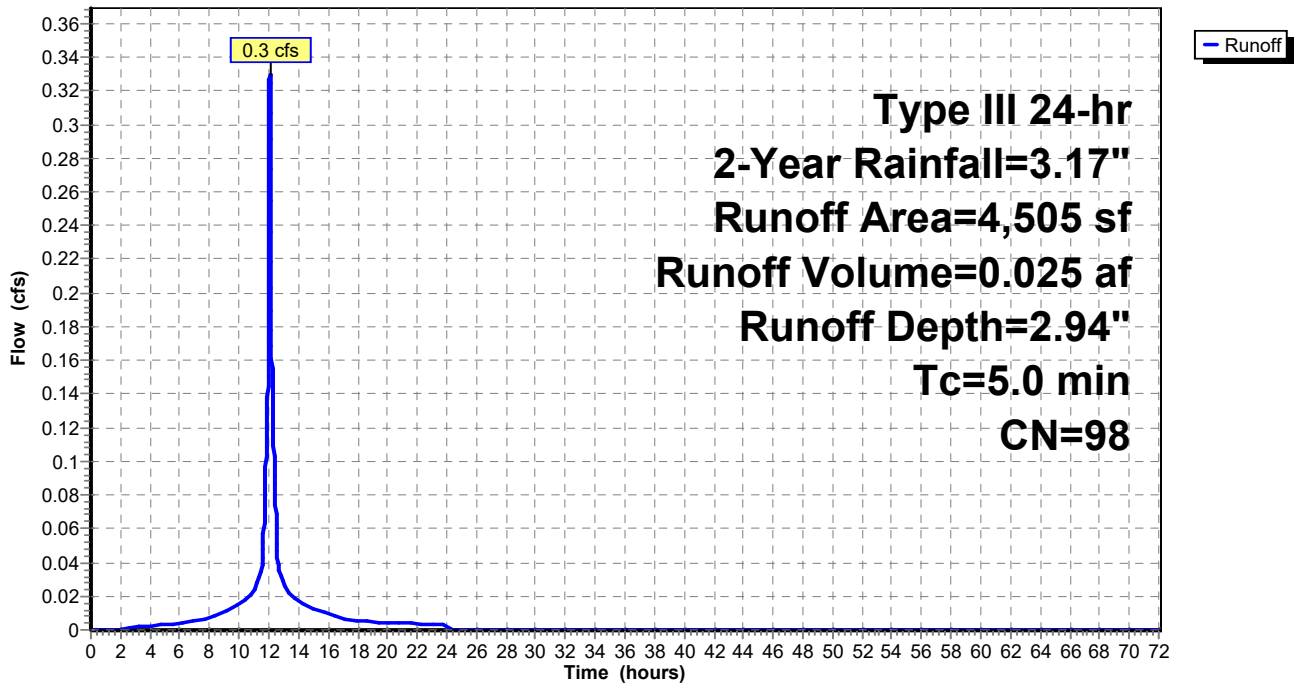
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.17"

Area (sf)	CN	Description
* 4,505	98	Area south of high point drain to outfall 5
4,505		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P5S: OF 5 - South of HP

Hydrograph



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Hydrograph for Subcatchment P5S: OF 5 - South of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	3.17	2.94	0.0
1.00	0.03	0.00	0.0	52.00	3.17	2.94	0.0
2.00	0.06	0.00	0.0	53.00	3.17	2.94	0.0
3.00	0.10	0.01	0.0	54.00	3.17	2.94	0.0
4.00	0.14	0.03	0.0	55.00	3.17	2.94	0.0
5.00	0.18	0.06	0.0	56.00	3.17	2.94	0.0
6.00	0.23	0.09	0.0	57.00	3.17	2.94	0.0
7.00	0.29	0.13	0.0	58.00	3.17	2.94	0.0
8.00	0.36	0.20	0.0	59.00	3.17	2.94	0.0
9.00	0.46	0.28	0.0	60.00	3.17	2.94	0.0
10.00	0.60	0.41	0.0	61.00	3.17	2.94	0.0
11.00	0.79	0.59	0.0	62.00	3.17	2.94	0.0
12.00	1.58	1.36	0.2	63.00	3.17	2.94	0.0
13.00	2.38	2.15	0.0	64.00	3.17	2.94	0.0
14.00	2.57	2.34	0.0	65.00	3.17	2.94	0.0
15.00	2.71	2.48	0.0	66.00	3.17	2.94	0.0
16.00	2.81	2.58	0.0	67.00	3.17	2.94	0.0
17.00	2.88	2.65	0.0	68.00	3.17	2.94	0.0
18.00	2.94	2.71	0.0	69.00	3.17	2.94	0.0
19.00	2.99	2.76	0.0	70.00	3.17	2.94	0.0
20.00	3.03	2.80	0.0	71.00	3.17	2.94	0.0
21.00	3.07	2.84	0.0	72.00	3.17	2.94	0.0
22.00	3.11	2.88	0.0				
23.00	3.14	2.91	0.0				
24.00	3.17	2.94	0.0				
25.00	3.17	2.94	0.0				
26.00	3.17	2.94	0.0				
27.00	3.17	2.94	0.0				
28.00	3.17	2.94	0.0				
29.00	3.17	2.94	0.0				
30.00	3.17	2.94	0.0				
31.00	3.17	2.94	0.0				
32.00	3.17	2.94	0.0				
33.00	3.17	2.94	0.0				
34.00	3.17	2.94	0.0				
35.00	3.17	2.94	0.0				
36.00	3.17	2.94	0.0				
37.00	3.17	2.94	0.0				
38.00	3.17	2.94	0.0				
39.00	3.17	2.94	0.0				
40.00	3.17	2.94	0.0				
41.00	3.17	2.94	0.0				
42.00	3.17	2.94	0.0				
43.00	3.17	2.94	0.0				
44.00	3.17	2.94	0.0				
45.00	3.17	2.94	0.0				
46.00	3.17	2.94	0.0				
47.00	3.17	2.94	0.0				
48.00	3.17	2.94	0.0				
49.00	3.17	2.94	0.0				
50.00	3.17	2.94	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Subcatchment P6: OF 6 - Berth 11 12 Access Road

Runoff = 0.9 cfs @ 12.07 hrs, Volume= 0.066 af, Depth= 2.94"

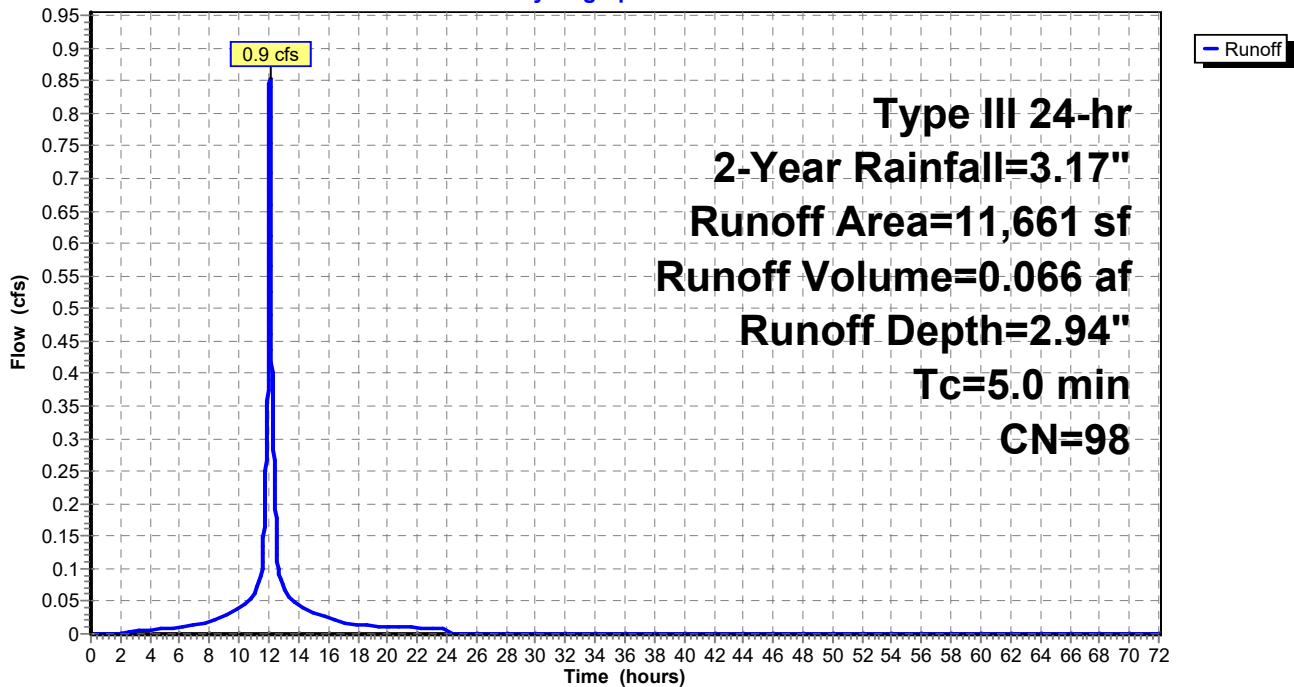
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.17"

Area (sf)	CN	Description
* 11,661	98	Area east of Road for Berths 11 and 12
11,661		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P6: OF 6 - Berth 11 12 Access Road

Hydrograph



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Hydrograph for Subcatchment P6: OF 6 - Berth 11 12 Access Road

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	3.17	2.94	0.0
1.00	0.03	0.00	0.0	52.00	3.17	2.94	0.0
2.00	0.06	0.00	0.0	53.00	3.17	2.94	0.0
3.00	0.10	0.01	0.0	54.00	3.17	2.94	0.0
4.00	0.14	0.03	0.0	55.00	3.17	2.94	0.0
5.00	0.18	0.06	0.0	56.00	3.17	2.94	0.0
6.00	0.23	0.09	0.0	57.00	3.17	2.94	0.0
7.00	0.29	0.13	0.0	58.00	3.17	2.94	0.0
8.00	0.36	0.20	0.0	59.00	3.17	2.94	0.0
9.00	0.46	0.28	0.0	60.00	3.17	2.94	0.0
10.00	0.60	0.41	0.0	61.00	3.17	2.94	0.0
11.00	0.79	0.59	0.1	62.00	3.17	2.94	0.0
12.00	1.58	1.36	0.6	63.00	3.17	2.94	0.0
13.00	2.38	2.15	0.1	64.00	3.17	2.94	0.0
14.00	2.57	2.34	0.0	65.00	3.17	2.94	0.0
15.00	2.71	2.48	0.0	66.00	3.17	2.94	0.0
16.00	2.81	2.58	0.0	67.00	3.17	2.94	0.0
17.00	2.88	2.65	0.0	68.00	3.17	2.94	0.0
18.00	2.94	2.71	0.0	69.00	3.17	2.94	0.0
19.00	2.99	2.76	0.0	70.00	3.17	2.94	0.0
20.00	3.03	2.80	0.0	71.00	3.17	2.94	0.0
21.00	3.07	2.84	0.0	72.00	3.17	2.94	0.0
22.00	3.11	2.88	0.0				
23.00	3.14	2.91	0.0				
24.00	3.17	2.94	0.0				
25.00	3.17	2.94	0.0				
26.00	3.17	2.94	0.0				
27.00	3.17	2.94	0.0				
28.00	3.17	2.94	0.0				
29.00	3.17	2.94	0.0				
30.00	3.17	2.94	0.0				
31.00	3.17	2.94	0.0				
32.00	3.17	2.94	0.0				
33.00	3.17	2.94	0.0				
34.00	3.17	2.94	0.0				
35.00	3.17	2.94	0.0				
36.00	3.17	2.94	0.0				
37.00	3.17	2.94	0.0				
38.00	3.17	2.94	0.0				
39.00	3.17	2.94	0.0				
40.00	3.17	2.94	0.0				
41.00	3.17	2.94	0.0				
42.00	3.17	2.94	0.0				
43.00	3.17	2.94	0.0				
44.00	3.17	2.94	0.0				
45.00	3.17	2.94	0.0				
46.00	3.17	2.94	0.0				
47.00	3.17	2.94	0.0				
48.00	3.17	2.94	0.0				
49.00	3.17	2.94	0.0				
50.00	3.17	2.94	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Subcatchment P7: OF 7 - Berth 11 12 Access Road

Runoff = 0.2 cfs @ 12.07 hrs, Volume= 0.017 af, Depth= 2.94"

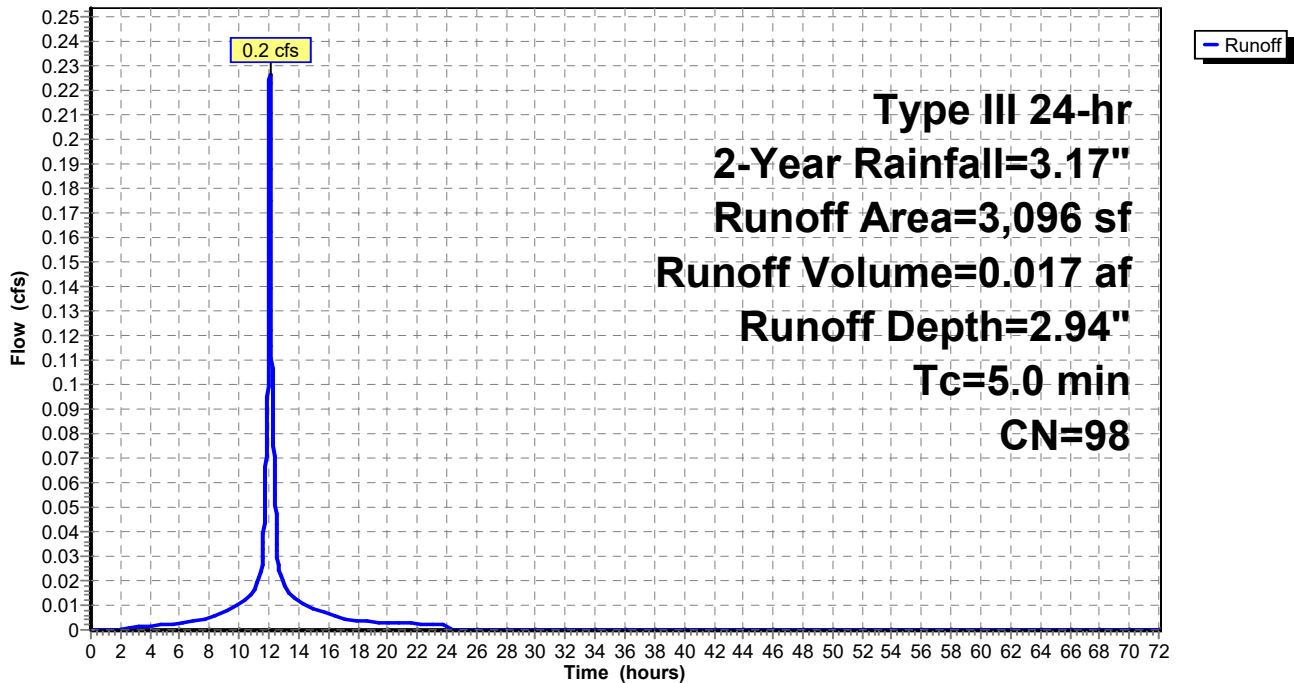
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.17"

Area (sf)	CN	Description
* 3,096	98	Drainage in Berth 12 discharged at Outfall 7
3,096		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P7: OF 7 - Berth 11 12 Access Road

Hydrograph



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Hydrograph for Subcatchment P7: OF 7 - Berth 11 12 Access Road

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	3.17	2.94	0.0
1.00	0.03	0.00	0.0	52.00	3.17	2.94	0.0
2.00	0.06	0.00	0.0	53.00	3.17	2.94	0.0
3.00	0.10	0.01	0.0	54.00	3.17	2.94	0.0
4.00	0.14	0.03	0.0	55.00	3.17	2.94	0.0
5.00	0.18	0.06	0.0	56.00	3.17	2.94	0.0
6.00	0.23	0.09	0.0	57.00	3.17	2.94	0.0
7.00	0.29	0.13	0.0	58.00	3.17	2.94	0.0
8.00	0.36	0.20	0.0	59.00	3.17	2.94	0.0
9.00	0.46	0.28	0.0	60.00	3.17	2.94	0.0
10.00	0.60	0.41	0.0	61.00	3.17	2.94	0.0
11.00	0.79	0.59	0.0	62.00	3.17	2.94	0.0
12.00	1.58	1.36	0.2	63.00	3.17	2.94	0.0
13.00	2.38	2.15	0.0	64.00	3.17	2.94	0.0
14.00	2.57	2.34	0.0	65.00	3.17	2.94	0.0
15.00	2.71	2.48	0.0	66.00	3.17	2.94	0.0
16.00	2.81	2.58	0.0	67.00	3.17	2.94	0.0
17.00	2.88	2.65	0.0	68.00	3.17	2.94	0.0
18.00	2.94	2.71	0.0	69.00	3.17	2.94	0.0
19.00	2.99	2.76	0.0	70.00	3.17	2.94	0.0
20.00	3.03	2.80	0.0	71.00	3.17	2.94	0.0
21.00	3.07	2.84	0.0	72.00	3.17	2.94	0.0
22.00	3.11	2.88	0.0				
23.00	3.14	2.91	0.0				
24.00	3.17	2.94	0.0				
25.00	3.17	2.94	0.0				
26.00	3.17	2.94	0.0				
27.00	3.17	2.94	0.0				
28.00	3.17	2.94	0.0				
29.00	3.17	2.94	0.0				
30.00	3.17	2.94	0.0				
31.00	3.17	2.94	0.0				
32.00	3.17	2.94	0.0				
33.00	3.17	2.94	0.0				
34.00	3.17	2.94	0.0				
35.00	3.17	2.94	0.0				
36.00	3.17	2.94	0.0				
37.00	3.17	2.94	0.0				
38.00	3.17	2.94	0.0				
39.00	3.17	2.94	0.0				
40.00	3.17	2.94	0.0				
41.00	3.17	2.94	0.0				
42.00	3.17	2.94	0.0				
43.00	3.17	2.94	0.0				
44.00	3.17	2.94	0.0				
45.00	3.17	2.94	0.0				
46.00	3.17	2.94	0.0				
47.00	3.17	2.94	0.0				
48.00	3.17	2.94	0.0				
49.00	3.17	2.94	0.0				
50.00	3.17	2.94	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Pond 1P: Outfall 1 - 18" RCP

[57] Hint: Peaked at 1.88' (Flood elevation advised)

Inflow Area = 1.83 ac, 100.00% Impervious, Inflow Depth = 2.94" for 2-Year event
Inflow = 5.8 cfs @ 12.07 hrs, Volume= 0.449 af
Outflow = 5.8 cfs @ 12.07 hrs, Volume= 0.449 af, Atten= 0%, Lag= 0.0 min
Primary = 5.8 cfs @ 12.07 hrs, Volume= 0.449 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 1.88' @ 12.07 hrs

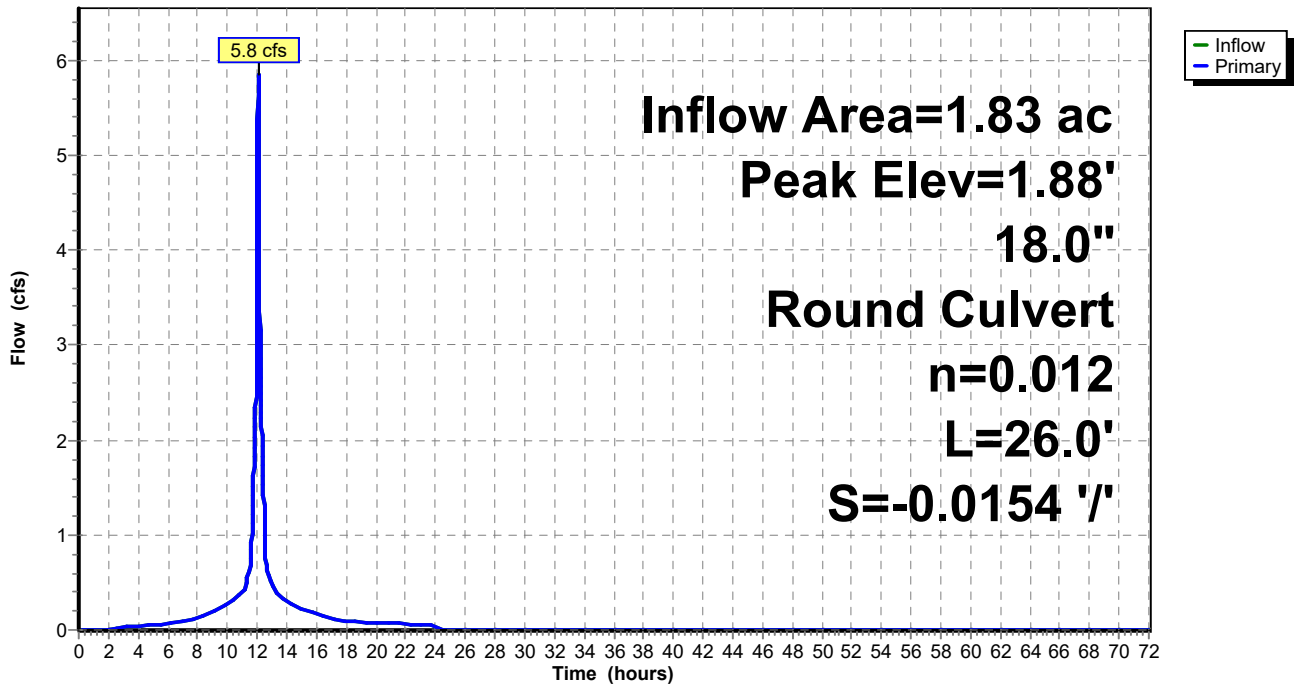
Device	Routing	Invert	Outlet Devices
#1	Primary	0.78'	18.0" Round RCP_Round 18" L= 26.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 0.38' / 0.78' S= -0.0154 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=5.8 cfs @ 12.07 hrs HW=1.88' (Free Discharge)

↑1=RCP_Round 18" (Barrel Controls 5.8 cfs @ 4.12 fps)

Pond 1P: Outfall 1 - 18" RCP

Hydrograph



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Hydrograph for Pond 1P: Outfall 1 - 18" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	0.78	0.0	51.00	0.0	0.78	0.0
1.00	0.0	0.78	0.0	52.00	0.0	0.78	0.0
2.00	0.0	0.82	0.0	53.00	0.0	0.78	0.0
3.00	0.0	0.84	0.0	54.00	0.0	0.78	0.0
4.00	0.0	0.85	0.0	55.00	0.0	0.78	0.0
5.00	0.1	0.86	0.1	56.00	0.0	0.78	0.0
6.00	0.1	0.87	0.1	57.00	0.0	0.78	0.0
7.00	0.1	0.89	0.1	58.00	0.0	0.78	0.0
8.00	0.1	0.91	0.1	59.00	0.0	0.78	0.0
9.00	0.2	0.94	0.2	60.00	0.0	0.78	0.0
10.00	0.3	0.97	0.3	61.00	0.0	0.78	0.0
11.00	0.4	1.01	0.4	62.00	0.0	0.78	0.0
12.00	3.9	1.58	3.9	63.00	0.0	0.78	0.0
13.00	0.5	1.03	0.5	64.00	0.0	0.78	0.0
14.00	0.3	0.98	0.3	65.00	0.0	0.78	0.0
15.00	0.2	0.95	0.2	66.00	0.0	0.78	0.0
16.00	0.2	0.93	0.2	67.00	0.0	0.78	0.0
17.00	0.1	0.91	0.1	68.00	0.0	0.78	0.0
18.00	0.1	0.89	0.1	69.00	0.0	0.78	0.0
19.00	0.1	0.89	0.1	70.00	0.0	0.78	0.0
20.00	0.1	0.88	0.1	71.00	0.0	0.78	0.0
21.00	0.1	0.88	0.1	72.00	0.0	0.78	0.0
22.00	0.1	0.87	0.1				
23.00	0.1	0.87	0.1				
24.00	0.1	0.86	0.1				
25.00	0.0	0.78	0.0				
26.00	0.0	0.78	0.0				
27.00	0.0	0.78	0.0				
28.00	0.0	0.78	0.0				
29.00	0.0	0.78	0.0				
30.00	0.0	0.78	0.0				
31.00	0.0	0.78	0.0				
32.00	0.0	0.78	0.0				
33.00	0.0	0.78	0.0				
34.00	0.0	0.78	0.0				
35.00	0.0	0.78	0.0				
36.00	0.0	0.78	0.0				
37.00	0.0	0.78	0.0				
38.00	0.0	0.78	0.0				
39.00	0.0	0.78	0.0				
40.00	0.0	0.78	0.0				
41.00	0.0	0.78	0.0				
42.00	0.0	0.78	0.0				
43.00	0.0	0.78	0.0				
44.00	0.0	0.78	0.0				
45.00	0.0	0.78	0.0				
46.00	0.0	0.78	0.0				
47.00	0.0	0.78	0.0				
48.00	0.0	0.78	0.0				
49.00	0.0	0.78	0.0				
50.00	0.0	0.78	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Pond 2P: Outfall 2 - 18" RCP

[57] Hint: Peaked at 2.97' (Flood elevation advised)

Inflow Area = 2.00 ac, 100.00% Impervious, Inflow Depth = 2.94" for 2-Year event
Inflow = 6.4 cfs @ 12.07 hrs, Volume= 0.491 af
Outflow = 6.4 cfs @ 12.07 hrs, Volume= 0.491 af, Atten= 0%, Lag= 0.0 min
Primary = 6.4 cfs @ 12.07 hrs, Volume= 0.491 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 2.97' @ 12.07 hrs

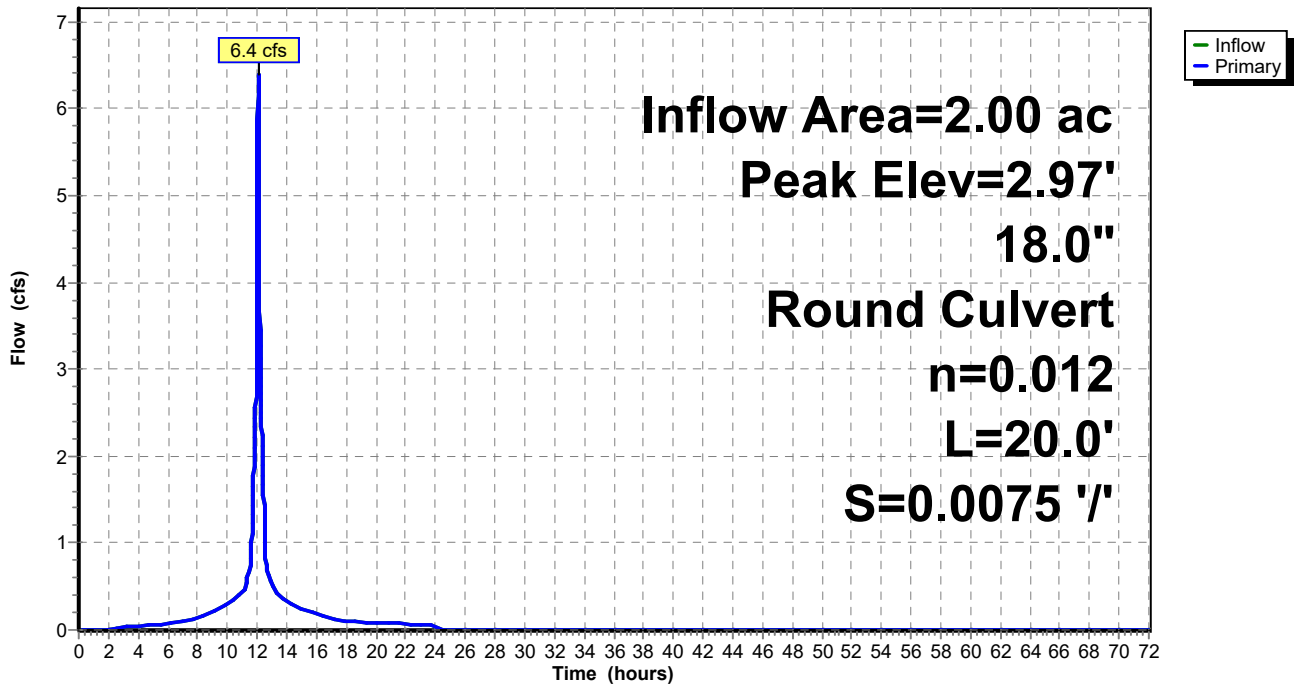
Device	Routing	Invert	Outlet Devices
#1	Primary	1.58'	18.0" Round RCP_Round 18" L= 20.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1.58' / 1.43' S= 0.0075 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=6.4 cfs @ 12.07 hrs HW=2.97' (Free Discharge)

↑1=RCP_Round 18" (Barrel Controls 6.4 cfs @ 4.87 fps)

Pond 2P: Outfall 2 - 18" RCP

Hydrograph



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Hydrograph for Pond 2P: Outfall 2 - 18" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	1.58	0.0	51.00	0.0	1.58	0.0
1.00	0.0	1.58	0.0	52.00	0.0	1.58	0.0
2.00	0.0	1.63	0.0	53.00	0.0	1.58	0.0
3.00	0.0	1.66	0.0	54.00	0.0	1.58	0.0
4.00	0.0	1.68	0.0	55.00	0.0	1.58	0.0
5.00	0.1	1.69	0.1	56.00	0.0	1.58	0.0
6.00	0.1	1.71	0.1	57.00	0.0	1.58	0.0
7.00	0.1	1.73	0.1	58.00	0.0	1.58	0.0
8.00	0.1	1.75	0.1	59.00	0.0	1.58	0.0
9.00	0.2	1.79	0.2	60.00	0.0	1.58	0.0
10.00	0.3	1.83	0.3	61.00	0.0	1.58	0.0
11.00	0.4	1.89	0.4	62.00	0.0	1.58	0.0
12.00	4.3	2.66	4.3	63.00	0.0	1.58	0.0
13.00	0.5	1.91	0.5	64.00	0.0	1.58	0.0
14.00	0.3	1.84	0.3	65.00	0.0	1.58	0.0
15.00	0.2	1.81	0.2	66.00	0.0	1.58	0.0
16.00	0.2	1.77	0.2	67.00	0.0	1.58	0.0
17.00	0.1	1.75	0.1	68.00	0.0	1.58	0.0
18.00	0.1	1.73	0.1	69.00	0.0	1.58	0.0
19.00	0.1	1.72	0.1	70.00	0.0	1.58	0.0
20.00	0.1	1.71	0.1	71.00	0.0	1.58	0.0
21.00	0.1	1.71	0.1	72.00	0.0	1.58	0.0
22.00	0.1	1.70	0.1				
23.00	0.1	1.70	0.1				
24.00	0.1	1.69	0.1				
25.00	0.0	1.58	0.0				
26.00	0.0	1.58	0.0				
27.00	0.0	1.58	0.0				
28.00	0.0	1.58	0.0				
29.00	0.0	1.58	0.0				
30.00	0.0	1.58	0.0				
31.00	0.0	1.58	0.0				
32.00	0.0	1.58	0.0				
33.00	0.0	1.58	0.0				
34.00	0.0	1.58	0.0				
35.00	0.0	1.58	0.0				
36.00	0.0	1.58	0.0				
37.00	0.0	1.58	0.0				
38.00	0.0	1.58	0.0				
39.00	0.0	1.58	0.0				
40.00	0.0	1.58	0.0				
41.00	0.0	1.58	0.0				
42.00	0.0	1.58	0.0				
43.00	0.0	1.58	0.0				
44.00	0.0	1.58	0.0				
45.00	0.0	1.58	0.0				
46.00	0.0	1.58	0.0				
47.00	0.0	1.58	0.0				
48.00	0.0	1.58	0.0				
49.00	0.0	1.58	0.0				
50.00	0.0	1.58	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Pond 3P: Outfall 3 - 24" RCP

[57] Hint: Peaked at 1.19' (Flood elevation advised)

Inflow Area = 1.42 ac, 100.00% Impervious, Inflow Depth = 2.94" for 2-Year event
Inflow = 4.5 cfs @ 12.07 hrs, Volume= 0.348 af
Outflow = 4.5 cfs @ 12.07 hrs, Volume= 0.348 af, Atten= 0%, Lag= 0.0 min
Primary = 4.5 cfs @ 12.07 hrs, Volume= 0.348 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 1.19' @ 12.07 hrs

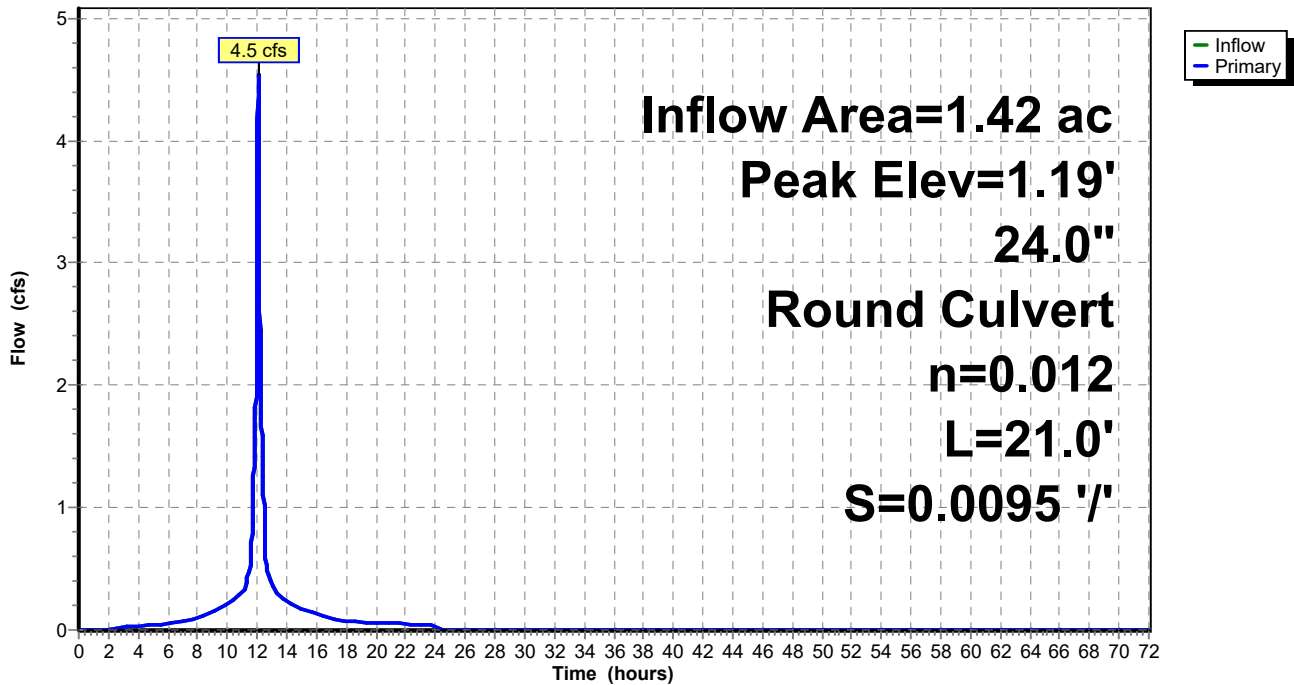
Device	Routing	Invert	Outlet Devices
#1	Primary	0.23'	24.0" Round RCP_Round 24" L= 21.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 0.23' / 0.03' S= 0.0095 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=4.5 cfs @ 12.07 hrs HW=1.19' (Free Discharge)

↑1=RCP_Round 24" (Barrel Controls 4.5 cfs @ 4.48 fps)

Pond 3P: Outfall 3 - 24" RCP

Hydrograph



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Hydrograph for Pond 3P: Outfall 3 - 24" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	0.23	0.0	51.00	0.0	0.23	0.0
1.00	0.0	0.23	0.0	52.00	0.0	0.23	0.0
2.00	0.0	0.27	0.0	53.00	0.0	0.23	0.0
3.00	0.0	0.29	0.0	54.00	0.0	0.23	0.0
4.00	0.0	0.30	0.0	55.00	0.0	0.23	0.0
5.00	0.0	0.31	0.0	56.00	0.0	0.23	0.0
6.00	0.1	0.32	0.1	57.00	0.0	0.23	0.0
7.00	0.1	0.34	0.1	58.00	0.0	0.23	0.0
8.00	0.1	0.36	0.1	59.00	0.0	0.23	0.0
9.00	0.1	0.39	0.1	60.00	0.0	0.23	0.0
10.00	0.2	0.41	0.2	61.00	0.0	0.23	0.0
11.00	0.3	0.45	0.3	62.00	0.0	0.23	0.0
12.00	3.1	0.99	3.1	63.00	0.0	0.23	0.0
13.00	0.4	0.47	0.4	64.00	0.0	0.23	0.0
14.00	0.2	0.42	0.2	65.00	0.0	0.23	0.0
15.00	0.2	0.40	0.2	66.00	0.0	0.23	0.0
16.00	0.1	0.37	0.1	67.00	0.0	0.23	0.0
17.00	0.1	0.36	0.1	68.00	0.0	0.23	0.0
18.00	0.1	0.34	0.1	69.00	0.0	0.23	0.0
19.00	0.1	0.33	0.1	70.00	0.0	0.23	0.0
20.00	0.1	0.33	0.1	71.00	0.0	0.23	0.0
21.00	0.1	0.33	0.1	72.00	0.0	0.23	0.0
22.00	0.0	0.32	0.0				
23.00	0.0	0.32	0.0				
24.00	0.0	0.31	0.0				
25.00	0.0	0.23	0.0				
26.00	0.0	0.23	0.0				
27.00	0.0	0.23	0.0				
28.00	0.0	0.23	0.0				
29.00	0.0	0.23	0.0				
30.00	0.0	0.23	0.0				
31.00	0.0	0.23	0.0				
32.00	0.0	0.23	0.0				
33.00	0.0	0.23	0.0				
34.00	0.0	0.23	0.0				
35.00	0.0	0.23	0.0				
36.00	0.0	0.23	0.0				
37.00	0.0	0.23	0.0				
38.00	0.0	0.23	0.0				
39.00	0.0	0.23	0.0				
40.00	0.0	0.23	0.0				
41.00	0.0	0.23	0.0				
42.00	0.0	0.23	0.0				
43.00	0.0	0.23	0.0				
44.00	0.0	0.23	0.0				
45.00	0.0	0.23	0.0				
46.00	0.0	0.23	0.0				
47.00	0.0	0.23	0.0				
48.00	0.0	0.23	0.0				
49.00	0.0	0.23	0.0				
50.00	0.0	0.23	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Pond 4P: Outfall 4 - 24" RCP

[57] Hint: Peaked at 1.57' (Flood elevation advised)

Inflow Area = 1.41 ac, 100.00% Impervious, Inflow Depth = 2.94" for 2-Year event
Inflow = 4.5 cfs @ 12.07 hrs, Volume= 0.345 af
Outflow = 4.5 cfs @ 12.07 hrs, Volume= 0.345 af, Atten= 0%, Lag= 0.0 min
Primary = 4.5 cfs @ 12.07 hrs, Volume= 0.345 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 1.57' @ 12.07 hrs

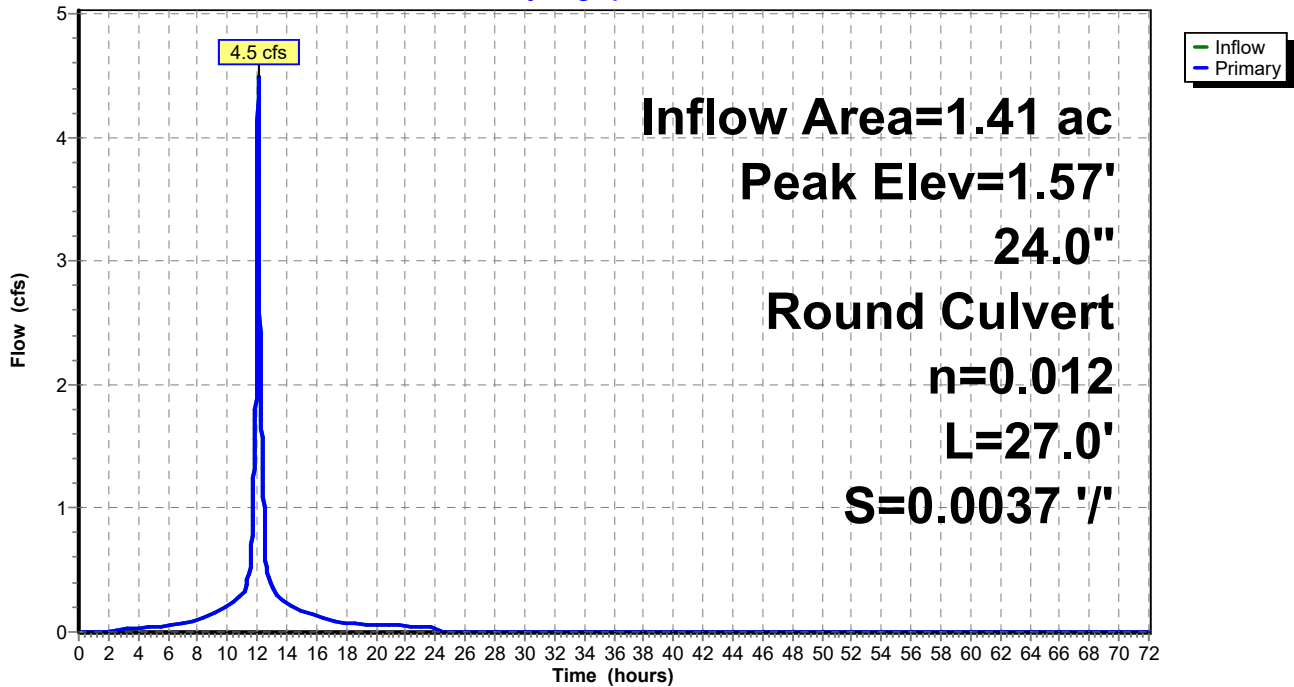
Device	Routing	Invert	Outlet Devices
#1	Primary	0.53'	24.0" Round RCP_Round 24" L= 27.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 0.53' / 0.43' S= 0.0037 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=4.5 cfs @ 12.07 hrs HW=1.57' (Free Discharge)

↑1=RCP_Round 24" (Barrel Controls 4.5 cfs @ 3.98 fps)

Pond 4P: Outfall 4 - 24" RCP

Hydrograph



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Hydrograph for Pond 4P: Outfall 4 - 24" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	0.53	0.0	51.00	0.0	0.53	0.0
1.00	0.0	0.53	0.0	52.00	0.0	0.53	0.0
2.00	0.0	0.58	0.0	53.00	0.0	0.53	0.0
3.00	0.0	0.60	0.0	54.00	0.0	0.53	0.0
4.00	0.0	0.62	0.0	55.00	0.0	0.53	0.0
5.00	0.0	0.63	0.0	56.00	0.0	0.53	0.0
6.00	0.1	0.64	0.1	57.00	0.0	0.53	0.0
7.00	0.1	0.66	0.1	58.00	0.0	0.53	0.0
8.00	0.1	0.68	0.1	59.00	0.0	0.53	0.0
9.00	0.1	0.71	0.1	60.00	0.0	0.53	0.0
10.00	0.2	0.74	0.2	61.00	0.0	0.53	0.0
11.00	0.3	0.79	0.3	62.00	0.0	0.53	0.0
12.00	3.0	1.37	3.0	63.00	0.0	0.53	0.0
13.00	0.4	0.81	0.4	64.00	0.0	0.53	0.0
14.00	0.2	0.76	0.2	65.00	0.0	0.53	0.0
15.00	0.2	0.73	0.2	66.00	0.0	0.53	0.0
16.00	0.1	0.70	0.1	67.00	0.0	0.53	0.0
17.00	0.1	0.68	0.1	68.00	0.0	0.53	0.0
18.00	0.1	0.66	0.1	69.00	0.0	0.53	0.0
19.00	0.1	0.66	0.1	70.00	0.0	0.53	0.0
20.00	0.1	0.65	0.1	71.00	0.0	0.53	0.0
21.00	0.1	0.64	0.1	72.00	0.0	0.53	0.0
22.00	0.0	0.64	0.0				
23.00	0.0	0.63	0.0				
24.00	0.0	0.63	0.0				
25.00	0.0	0.53	0.0				
26.00	0.0	0.53	0.0				
27.00	0.0	0.53	0.0				
28.00	0.0	0.53	0.0				
29.00	0.0	0.53	0.0				
30.00	0.0	0.53	0.0				
31.00	0.0	0.53	0.0				
32.00	0.0	0.53	0.0				
33.00	0.0	0.53	0.0				
34.00	0.0	0.53	0.0				
35.00	0.0	0.53	0.0				
36.00	0.0	0.53	0.0				
37.00	0.0	0.53	0.0				
38.00	0.0	0.53	0.0				
39.00	0.0	0.53	0.0				
40.00	0.0	0.53	0.0				
41.00	0.0	0.53	0.0				
42.00	0.0	0.53	0.0				
43.00	0.0	0.53	0.0				
44.00	0.0	0.53	0.0				
45.00	0.0	0.53	0.0				
46.00	0.0	0.53	0.0				
47.00	0.0	0.53	0.0				
48.00	0.0	0.53	0.0				
49.00	0.0	0.53	0.0				
50.00	0.0	0.53	0.0				

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Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Pond 5P: Outfall 5 - 36" RCP

[57] Hint: Peaked at 2.90' (Flood elevation advised)

Inflow Area = 0.77 ac, 100.00% Impervious, Inflow Depth = 2.94" for 2-Year event
Inflow = 2.5 cfs @ 12.07 hrs, Volume= 0.189 af
Outflow = 2.5 cfs @ 12.07 hrs, Volume= 0.189 af, Atten= 0%, Lag= 0.0 min
Primary = 2.5 cfs @ 12.07 hrs, Volume= 0.189 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 2.90' @ 12.07 hrs

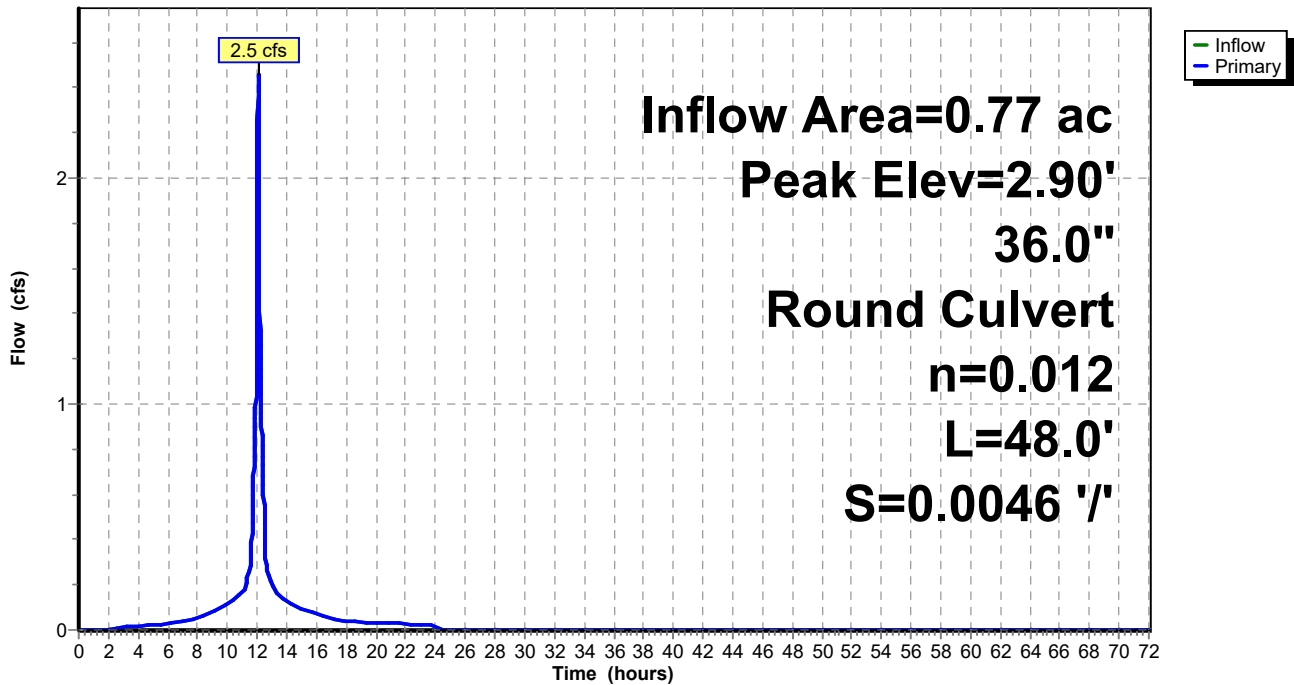
Device	Routing	Invert	Outlet Devices
#1	Primary	2.26'	36.0" Round RCP_Round 36" L= 48.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 2.26' / 2.04' S= 0.0046 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 7.07 sf

Primary OutFlow Max=2.5 cfs @ 12.07 hrs HW=2.90' (Free Discharge)

↑1=RCP_Round 36" (Barrel Controls 2.5 cfs @ 3.38 fps)

Pond 5P: Outfall 5 - 36" RCP

Hydrograph



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Hydrograph for Pond 5P: Outfall 5 - 36" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	2.26	0.0	51.00	0.0	2.26	0.0
1.00	0.0	2.26	0.0	52.00	0.0	2.26	0.0
2.00	0.0	2.29	0.0	53.00	0.0	2.26	0.0
3.00	0.0	2.30	0.0	54.00	0.0	2.26	0.0
4.00	0.0	2.32	0.0	55.00	0.0	2.26	0.0
5.00	0.0	2.33	0.0	56.00	0.0	2.26	0.0
6.00	0.0	2.33	0.0	57.00	0.0	2.26	0.0
7.00	0.0	2.35	0.0	58.00	0.0	2.26	0.0
8.00	0.1	2.36	0.1	59.00	0.0	2.26	0.0
9.00	0.1	2.38	0.1	60.00	0.0	2.26	0.0
10.00	0.1	2.40	0.1	61.00	0.0	2.26	0.0
11.00	0.2	2.43	0.2	62.00	0.0	2.26	0.0
12.00	1.7	2.78	1.7	63.00	0.0	2.26	0.0
13.00	0.2	2.44	0.2	64.00	0.0	2.26	0.0
14.00	0.1	2.41	0.1	65.00	0.0	2.26	0.0
15.00	0.1	2.39	0.1	66.00	0.0	2.26	0.0
16.00	0.1	2.37	0.1	67.00	0.0	2.26	0.0
17.00	0.1	2.36	0.1	68.00	0.0	2.26	0.0
18.00	0.0	2.35	0.0	69.00	0.0	2.26	0.0
19.00	0.0	2.34	0.0	70.00	0.0	2.26	0.0
20.00	0.0	2.34	0.0	71.00	0.0	2.26	0.0
21.00	0.0	2.33	0.0	72.00	0.0	2.26	0.0
22.00	0.0	2.33	0.0				
23.00	0.0	2.33	0.0				
24.00	0.0	2.32	0.0				
25.00	0.0	2.26	0.0				
26.00	0.0	2.26	0.0				
27.00	0.0	2.26	0.0				
28.00	0.0	2.26	0.0				
29.00	0.0	2.26	0.0				
30.00	0.0	2.26	0.0				
31.00	0.0	2.26	0.0				
32.00	0.0	2.26	0.0				
33.00	0.0	2.26	0.0				
34.00	0.0	2.26	0.0				
35.00	0.0	2.26	0.0				
36.00	0.0	2.26	0.0				
37.00	0.0	2.26	0.0				
38.00	0.0	2.26	0.0				
39.00	0.0	2.26	0.0				
40.00	0.0	2.26	0.0				
41.00	0.0	2.26	0.0				
42.00	0.0	2.26	0.0				
43.00	0.0	2.26	0.0				
44.00	0.0	2.26	0.0				
45.00	0.0	2.26	0.0				
46.00	0.0	2.26	0.0				
47.00	0.0	2.26	0.0				
48.00	0.0	2.26	0.0				
49.00	0.0	2.26	0.0				
50.00	0.0	2.26	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Pond 6P: Outfall 6 - 42" RCP

[57] Hint: Peaked at 2.15' (Flood elevation advised)

Inflow Area = 0.27 ac, 100.00% Impervious, Inflow Depth = 2.94" for 2-Year event
Inflow = 0.9 cfs @ 12.07 hrs, Volume= 0.066 af
Outflow = 0.9 cfs @ 12.07 hrs, Volume= 0.066 af, Atten= 0%, Lag= 0.0 min
Primary = 0.9 cfs @ 12.07 hrs, Volume= 0.066 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 2.15' @ 12.07 hrs

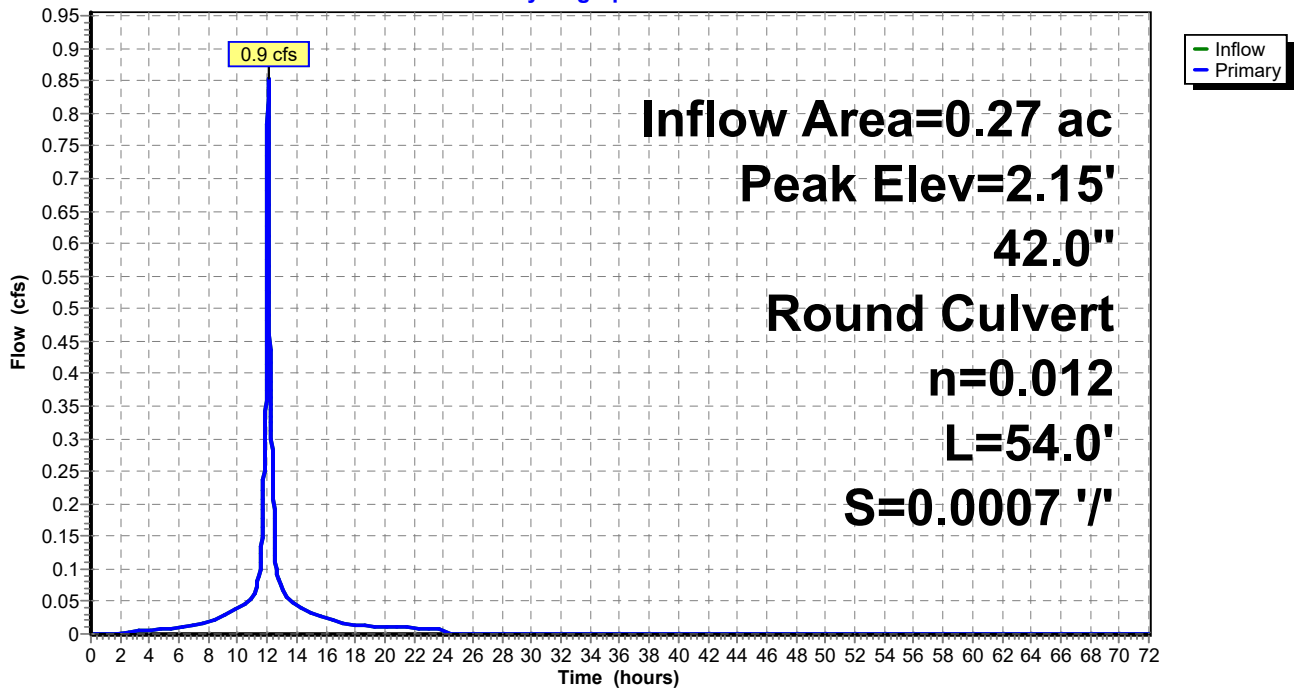
Device #	Routing	Invert	Outlet Devices
#1	Primary	1.71'	42.0" Round RCP_Round 42" L= 54.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1.71' / 1.67' S= 0.0007 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 9.62 sf

Primary OutFlow Max=0.9 cfs @ 12.07 hrs HW=2.15' (Free Discharge)

↑1=RCP_Round 42" (Barrel Controls 0.9 cfs @ 1.83 fps)

Pond 6P: Outfall 6 - 42" RCP

Hydrograph



Massport_M555_Backlands_POST_LOW

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Hydrograph for Pond 6P: Outfall 6 - 42" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	1.71	0.0	51.00	0.0	1.71	0.0
1.00	0.0	1.71	0.0	52.00	0.0	1.71	0.0
2.00	0.0	1.73	0.0	53.00	0.0	1.71	0.0
3.00	0.0	1.75	0.0	54.00	0.0	1.71	0.0
4.00	0.0	1.76	0.0	55.00	0.0	1.71	0.0
5.00	0.0	1.76	0.0	56.00	0.0	1.71	0.0
6.00	0.0	1.77	0.0	57.00	0.0	1.71	0.0
7.00	0.0	1.78	0.0	58.00	0.0	1.71	0.0
8.00	0.0	1.79	0.0	59.00	0.0	1.71	0.0
9.00	0.0	1.81	0.0	60.00	0.0	1.71	0.0
10.00	0.0	1.82	0.0	61.00	0.0	1.71	0.0
11.00	0.1	1.85	0.1	62.00	0.0	1.71	0.0
12.00	0.6	2.08	0.6	63.00	0.0	1.71	0.0
13.00	0.1	1.86	0.1	64.00	0.0	1.71	0.0
14.00	0.0	1.83	0.0	65.00	0.0	1.71	0.0
15.00	0.0	1.82	0.0	66.00	0.0	1.71	0.0
16.00	0.0	1.80	0.0	67.00	0.0	1.71	0.0
17.00	0.0	1.79	0.0	68.00	0.0	1.71	0.0
18.00	0.0	1.78	0.0	69.00	0.0	1.71	0.0
19.00	0.0	1.78	0.0	70.00	0.0	1.71	0.0
20.00	0.0	1.78	0.0	71.00	0.0	1.71	0.0
21.00	0.0	1.77	0.0	72.00	0.0	1.71	0.0
22.00	0.0	1.77	0.0				
23.00	0.0	1.77	0.0				
24.00	0.0	1.76	0.0				
25.00	0.0	1.71	0.0				
26.00	0.0	1.71	0.0				
27.00	0.0	1.71	0.0				
28.00	0.0	1.71	0.0				
29.00	0.0	1.71	0.0				
30.00	0.0	1.71	0.0				
31.00	0.0	1.71	0.0				
32.00	0.0	1.71	0.0				
33.00	0.0	1.71	0.0				
34.00	0.0	1.71	0.0				
35.00	0.0	1.71	0.0				
36.00	0.0	1.71	0.0				
37.00	0.0	1.71	0.0				
38.00	0.0	1.71	0.0				
39.00	0.0	1.71	0.0				
40.00	0.0	1.71	0.0				
41.00	0.0	1.71	0.0				
42.00	0.0	1.71	0.0				
43.00	0.0	1.71	0.0				
44.00	0.0	1.71	0.0				
45.00	0.0	1.71	0.0				
46.00	0.0	1.71	0.0				
47.00	0.0	1.71	0.0				
48.00	0.0	1.71	0.0				
49.00	0.0	1.71	0.0				
50.00	0.0	1.71	0.0				

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Type III 24-hr 2-Year Rainfall=3.17"

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Summary for Pond 7P: Outfall 7 - 30" RCP

[57] Hint: Peaked at 2.44' (Flood elevation advised)

Inflow Area = 0.07 ac, 100.00% Impervious, Inflow Depth = 2.94" for 2-Year event
Inflow = 0.2 cfs @ 12.07 hrs, Volume= 0.017 af
Outflow = 0.2 cfs @ 12.07 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min
Primary = 0.2 cfs @ 12.07 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 2.44' @ 12.07 hrs

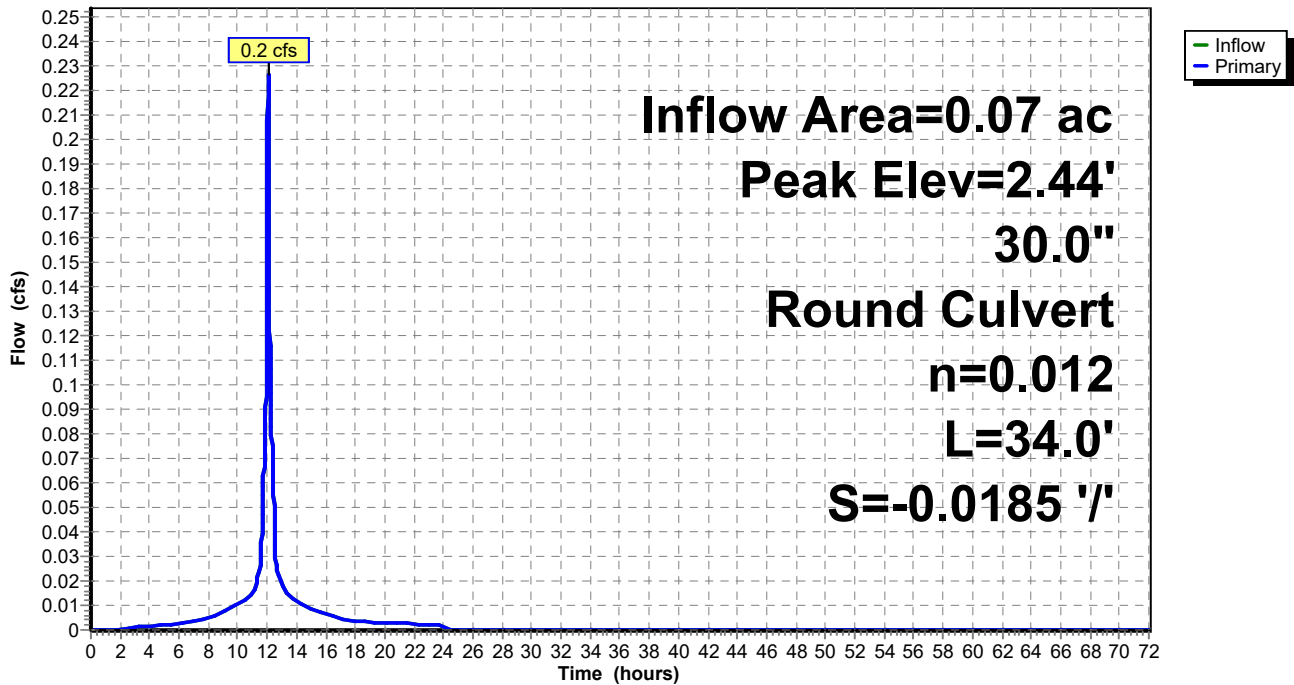
Device	Routing	Invert	Outlet Devices
#1	Primary	2.29'	30.0" Round RCP_Round 30" L= 34.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1.66' / 2.29' S= -0.0185 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf

Primary OutFlow Max=0.2 cfs @ 12.07 hrs HW=2.44' (Free Discharge)

↑1=RCP_Round 30" (Inlet Controls 0.2 cfs @ 1.82 fps)

Pond 7P: Outfall 7 - 30" RCP

Hydrograph



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Hydrograph for Pond 7P: Outfall 7 - 30" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	2.29	0.0	51.00	0.0	2.29	0.0
1.00	0.0	2.29	0.0	52.00	0.0	2.29	0.0
2.00	0.0	2.29	0.0	53.00	0.0	2.29	0.0
3.00	0.0	2.29	0.0	54.00	0.0	2.29	0.0
4.00	0.0	2.30	0.0	55.00	0.0	2.29	0.0
5.00	0.0	2.30	0.0	56.00	0.0	2.29	0.0
6.00	0.0	2.30	0.0	57.00	0.0	2.29	0.0
7.00	0.0	2.31	0.0	58.00	0.0	2.29	0.0
8.00	0.0	2.31	0.0	59.00	0.0	2.29	0.0
9.00	0.0	2.32	0.0	60.00	0.0	2.29	0.0
10.00	0.0	2.32	0.0	61.00	0.0	2.29	0.0
11.00	0.0	2.33	0.0	62.00	0.0	2.29	0.0
12.00	0.2	2.42	0.2	63.00	0.0	2.29	0.0
13.00	0.0	2.33	0.0	64.00	0.0	2.29	0.0
14.00	0.0	2.32	0.0	65.00	0.0	2.29	0.0
15.00	0.0	2.32	0.0	66.00	0.0	2.29	0.0
16.00	0.0	2.31	0.0	67.00	0.0	2.29	0.0
17.00	0.0	2.31	0.0	68.00	0.0	2.29	0.0
18.00	0.0	2.31	0.0	69.00	0.0	2.29	0.0
19.00	0.0	2.30	0.0	70.00	0.0	2.29	0.0
20.00	0.0	2.30	0.0	71.00	0.0	2.29	0.0
21.00	0.0	2.30	0.0	72.00	0.0	2.29	0.0
22.00	0.0	2.30	0.0				
23.00	0.0	2.30	0.0				
24.00	0.0	2.30	0.0				
25.00	0.0	2.29	0.0				
26.00	0.0	2.29	0.0				
27.00	0.0	2.29	0.0				
28.00	0.0	2.29	0.0				
29.00	0.0	2.29	0.0				
30.00	0.0	2.29	0.0				
31.00	0.0	2.29	0.0				
32.00	0.0	2.29	0.0				
33.00	0.0	2.29	0.0				
34.00	0.0	2.29	0.0				
35.00	0.0	2.29	0.0				
36.00	0.0	2.29	0.0				
37.00	0.0	2.29	0.0				
38.00	0.0	2.29	0.0				
39.00	0.0	2.29	0.0				
40.00	0.0	2.29	0.0				
41.00	0.0	2.29	0.0				
42.00	0.0	2.29	0.0				
43.00	0.0	2.29	0.0				
44.00	0.0	2.29	0.0				
45.00	0.0	2.29	0.0				
46.00	0.0	2.29	0.0				
47.00	0.0	2.29	0.0				
48.00	0.0	2.29	0.0				
49.00	0.0	2.29	0.0				
50.00	0.0	2.29	0.0				

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Type III 24-hr 10-Year Rainfall=5.00"

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentP1N: OF 1 North of HP	Runoff Area=57,569 sf 100.00% Impervious Runoff Depth=4.76" Tc=5.0 min CN=98 Runoff=6.7 cfs 0.525 af
SubcatchmentP1S: OF 1 South of HP	Runoff Area=22,320 sf 100.00% Impervious Runoff Depth=4.76" Tc=5.0 min CN=98 Runoff=2.6 cfs 0.203 af
SubcatchmentP2N: OF 2 North of HP	Runoff Area=72,840 sf 100.00% Impervious Runoff Depth=4.76" Tc=5.0 min CN=98 Runoff=8.5 cfs 0.664 af
SubcatchmentP2S: OF 2 South of HP	Runoff Area=14,495 sf 100.00% Impervious Runoff Depth=4.76" Tc=5.0 min CN=98 Runoff=1.7 cfs 0.132 af
SubcatchmentP3N: OF 3 North of HP	Runoff Area=53,466 sf 100.00% Impervious Runoff Depth=4.76" Tc=5.0 min CN=98 Runoff=6.2 cfs 0.487 af
SubcatchmentP3S: OF 3 South of HP	Runoff Area=8,537 sf 100.00% Impervious Runoff Depth=4.76" Tc=5.0 min CN=98 Runoff=1.0 cfs 0.078 af
SubcatchmentP4N: OF 4 north of HP	Runoff Area=53,231 sf 100.00% Impervious Runoff Depth=4.76" Tc=5.0 min CN=98 Runoff=6.2 cfs 0.485 af
SubcatchmentP4S: OF 4 South of HP	Runoff Area=8,145 sf 100.00% Impervious Runoff Depth=4.76" Tc=5.0 min CN=98 Runoff=0.9 cfs 0.074 af
SubcatchmentP5N: OF 5 - North of HP	Runoff Area=29,054 sf 100.00% Impervious Runoff Depth=4.76" Tc=5.0 min CN=98 Runoff=3.4 cfs 0.265 af
SubcatchmentP5S: OF 5 - South of HP	Runoff Area=4,505 sf 100.00% Impervious Runoff Depth=4.76" Tc=5.0 min CN=98 Runoff=0.5 cfs 0.041 af
SubcatchmentP6: OF 6 - Berth 11 12	Runoff Area=11,661 sf 100.00% Impervious Runoff Depth=4.76" Tc=5.0 min CN=98 Runoff=1.4 cfs 0.106 af
SubcatchmentP7: OF 7 - Berth 11 12	Runoff Area=3,096 sf 100.00% Impervious Runoff Depth=4.76" Tc=5.0 min CN=98 Runoff=0.4 cfs 0.028 af
Pond 1P: Outfall 1 - 18" RCP	Peak Elev=2.53' Inflow=9.3 cfs 0.728 af 18.0" Round Culvert n=0.012 L=26.0' S=-0.0154 '/ Outflow=9.3 cfs 0.728 af
Pond 2P: Outfall 2 - 18" RCP	Peak Elev=3.65' Inflow=10.2 cfs 0.796 af 18.0" Round Culvert n=0.012 L=20.0' S=0.0075 '/ Outflow=10.2 cfs 0.796 af
Pond 3P: Outfall 3 - 24" RCP	Peak Elev=1.48' Inflow=7.2 cfs 0.565 af 24.0" Round Culvert n=0.012 L=21.0' S=0.0095 '/ Outflow=7.2 cfs 0.565 af
Pond 4P: Outfall 4 - 24" RCP	Peak Elev=1.87' Inflow=7.1 cfs 0.559 af 24.0" Round Culvert n=0.012 L=27.0' S=0.0037 '/ Outflow=7.1 cfs 0.559 af

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Type III 24-hr 10-Year Rainfall=5.00"

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Pond 5P: Outfall 5 - 36" RCP

Peak Elev=3.07' Inflow=3.9 cfs 0.306 af
36.0" Round Culvert n=0.012 L=48.0' S=0.0046 '/ Outflow=3.9 cfs 0.306 af

Pond 6P: Outfall 6 - 42" RCP

Peak Elev=2.26' Inflow=1.4 cfs 0.106 af
42.0" Round Culvert n=0.012 L=54.0' S=0.0007 '/ Outflow=1.4 cfs 0.106 af

Pond 7P: Outfall 7 - 30" RCP

Peak Elev=2.48' Inflow=0.4 cfs 0.028 af
30.0" Round Culvert n=0.012 L=34.0' S=-0.0185 '/ Outflow=0.4 cfs 0.028 af

Total Runoff Area = 7.78 ac Runoff Volume = 3.088 af Average Runoff Depth = 4.76"
0.00% Pervious = 0.00 ac 100.00% Impervious = 7.78 ac

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Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Subcatchment P1N: OF 1 North of HP

Runoff = 6.7 cfs @ 12.07 hrs, Volume= 0.525 af, Depth= 4.76"

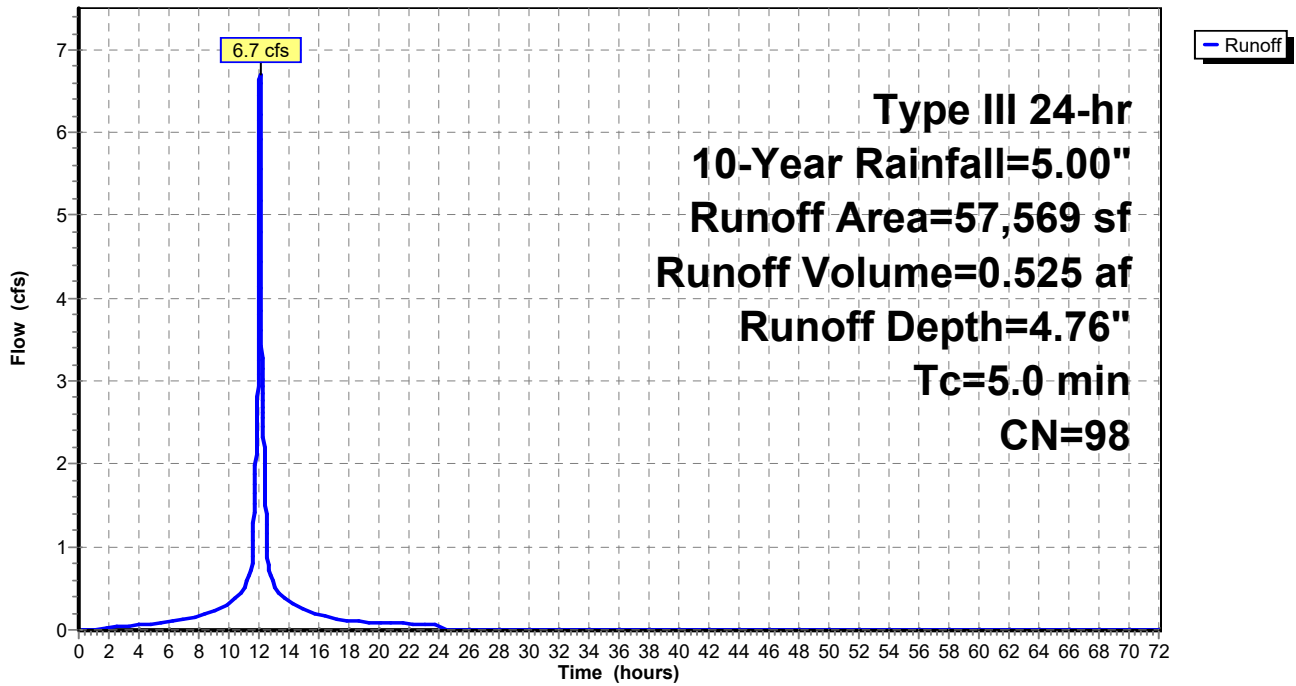
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.00"

Area (sf)	CN	Description
* 57,569	98	Outfall 1 North Trench Drain
57,569		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P1N: OF 1 North of HP

Hydrograph



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Type III 24-hr 10-Year Rainfall=5.00"

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Hydrograph for Subcatchment P1N: OF 1 North of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	5.00	4.76	0.0
1.00	0.05	0.00	0.0	52.00	5.00	4.76	0.0
2.00	0.10	0.01	0.0	53.00	5.00	4.76	0.0
3.00	0.15	0.04	0.0	54.00	5.00	4.76	0.0
4.00	0.22	0.08	0.1	55.00	5.00	4.76	0.0
5.00	0.28	0.13	0.1	56.00	5.00	4.76	0.0
6.00	0.36	0.19	0.1	57.00	5.00	4.76	0.0
7.00	0.45	0.28	0.1	58.00	5.00	4.76	0.0
8.00	0.57	0.38	0.2	59.00	5.00	4.76	0.0
9.00	0.73	0.53	0.2	60.00	5.00	4.76	0.0
10.00	0.95	0.74	0.3	61.00	5.00	4.76	0.0
11.00	1.25	1.03	0.5	62.00	5.00	4.76	0.0
12.00	2.50	2.27	4.5	63.00	5.00	4.76	0.0
13.00	3.75	3.52	0.5	64.00	5.00	4.76	0.0
14.00	4.06	3.82	0.3	65.00	5.00	4.76	0.0
15.00	4.27	4.04	0.3	66.00	5.00	4.76	0.0
16.00	4.43	4.19	0.2	67.00	5.00	4.76	0.0
17.00	4.55	4.31	0.1	68.00	5.00	4.76	0.0
18.00	4.64	4.40	0.1	69.00	5.00	4.76	0.0
19.00	4.72	4.48	0.1	70.00	5.00	4.76	0.0
20.00	4.79	4.55	0.1	71.00	5.00	4.76	0.0
21.00	4.85	4.61	0.1	72.00	5.00	4.76	0.0
22.00	4.90	4.67	0.1				
23.00	4.95	4.72	0.1				
24.00	5.00	4.76	0.1				
25.00	5.00	4.76	0.0				
26.00	5.00	4.76	0.0				
27.00	5.00	4.76	0.0				
28.00	5.00	4.76	0.0				
29.00	5.00	4.76	0.0				
30.00	5.00	4.76	0.0				
31.00	5.00	4.76	0.0				
32.00	5.00	4.76	0.0				
33.00	5.00	4.76	0.0				
34.00	5.00	4.76	0.0				
35.00	5.00	4.76	0.0				
36.00	5.00	4.76	0.0				
37.00	5.00	4.76	0.0				
38.00	5.00	4.76	0.0				
39.00	5.00	4.76	0.0				
40.00	5.00	4.76	0.0				
41.00	5.00	4.76	0.0				
42.00	5.00	4.76	0.0				
43.00	5.00	4.76	0.0				
44.00	5.00	4.76	0.0				
45.00	5.00	4.76	0.0				
46.00	5.00	4.76	0.0				
47.00	5.00	4.76	0.0				
48.00	5.00	4.76	0.0				
49.00	5.00	4.76	0.0				
50.00	5.00	4.76	0.0				

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Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Subcatchment P1S: OF 1 Southh of HP

Runoff = 2.6 cfs @ 12.07 hrs, Volume= 0.203 af, Depth= 4.76"

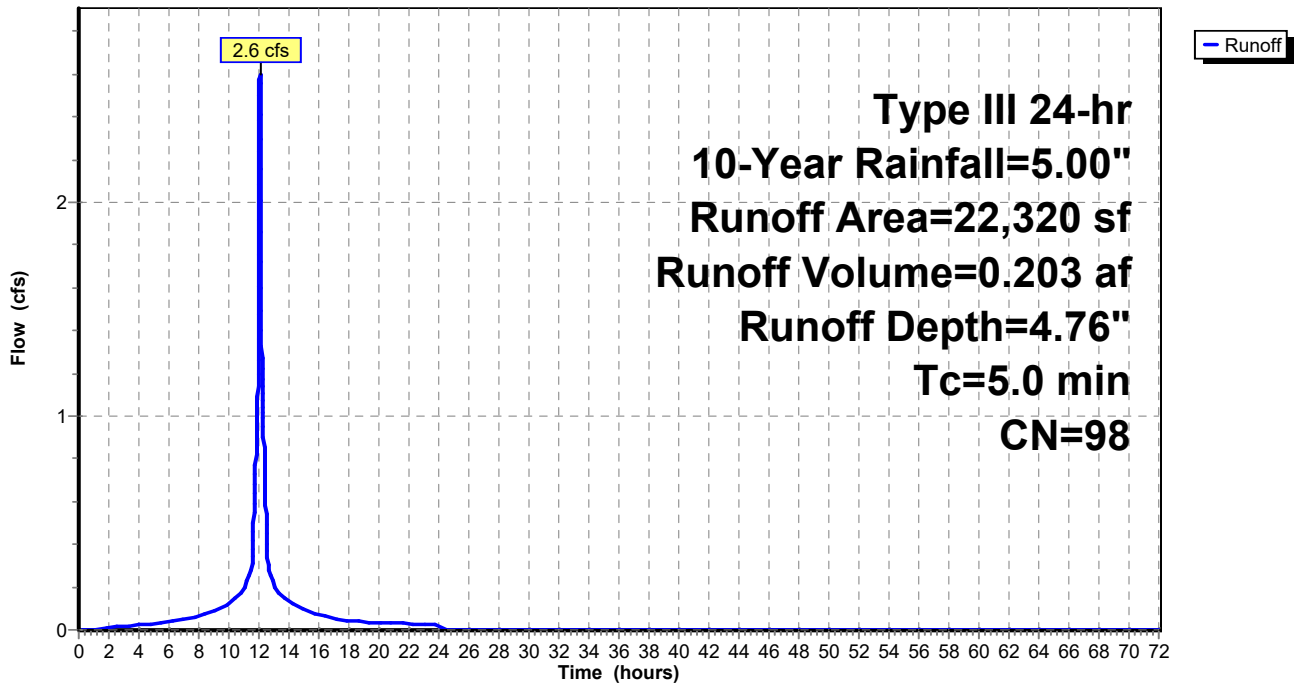
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.00"

Area (sf)	CN	Description
* 22,320	98	Outfall 1 South CB
22,320		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P1S: OF 1 Southh of HP

Hydrograph



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Type III 24-hr 10-Year Rainfall=5.00"

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Hydrograph for Subcatchment P1S: OF 1 Southh of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	5.00	4.76	0.0
1.00	0.05	0.00	0.0	52.00	5.00	4.76	0.0
2.00	0.10	0.01	0.0	53.00	5.00	4.76	0.0
3.00	0.15	0.04	0.0	54.00	5.00	4.76	0.0
4.00	0.22	0.08	0.0	55.00	5.00	4.76	0.0
5.00	0.28	0.13	0.0	56.00	5.00	4.76	0.0
6.00	0.36	0.19	0.0	57.00	5.00	4.76	0.0
7.00	0.45	0.28	0.0	58.00	5.00	4.76	0.0
8.00	0.57	0.38	0.1	59.00	5.00	4.76	0.0
9.00	0.73	0.53	0.1	60.00	5.00	4.76	0.0
10.00	0.95	0.74	0.1	61.00	5.00	4.76	0.0
11.00	1.25	1.03	0.2	62.00	5.00	4.76	0.0
12.00	2.50	2.27	1.8	63.00	5.00	4.76	0.0
13.00	3.75	3.52	0.2	64.00	5.00	4.76	0.0
14.00	4.06	3.82	0.1	65.00	5.00	4.76	0.0
15.00	4.27	4.04	0.1	66.00	5.00	4.76	0.0
16.00	4.43	4.19	0.1	67.00	5.00	4.76	0.0
17.00	4.55	4.31	0.1	68.00	5.00	4.76	0.0
18.00	4.64	4.40	0.0	69.00	5.00	4.76	0.0
19.00	4.72	4.48	0.0	70.00	5.00	4.76	0.0
20.00	4.79	4.55	0.0	71.00	5.00	4.76	0.0
21.00	4.85	4.61	0.0	72.00	5.00	4.76	0.0
22.00	4.90	4.67	0.0				
23.00	4.95	4.72	0.0				
24.00	5.00	4.76	0.0				
25.00	5.00	4.76	0.0				
26.00	5.00	4.76	0.0				
27.00	5.00	4.76	0.0				
28.00	5.00	4.76	0.0				
29.00	5.00	4.76	0.0				
30.00	5.00	4.76	0.0				
31.00	5.00	4.76	0.0				
32.00	5.00	4.76	0.0				
33.00	5.00	4.76	0.0				
34.00	5.00	4.76	0.0				
35.00	5.00	4.76	0.0				
36.00	5.00	4.76	0.0				
37.00	5.00	4.76	0.0				
38.00	5.00	4.76	0.0				
39.00	5.00	4.76	0.0				
40.00	5.00	4.76	0.0				
41.00	5.00	4.76	0.0				
42.00	5.00	4.76	0.0				
43.00	5.00	4.76	0.0				
44.00	5.00	4.76	0.0				
45.00	5.00	4.76	0.0				
46.00	5.00	4.76	0.0				
47.00	5.00	4.76	0.0				
48.00	5.00	4.76	0.0				
49.00	5.00	4.76	0.0				
50.00	5.00	4.76	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Subcatchment P2N: OF 2 North of HP

Runoff = 8.5 cfs @ 12.07 hrs, Volume= 0.664 af, Depth= 4.76"

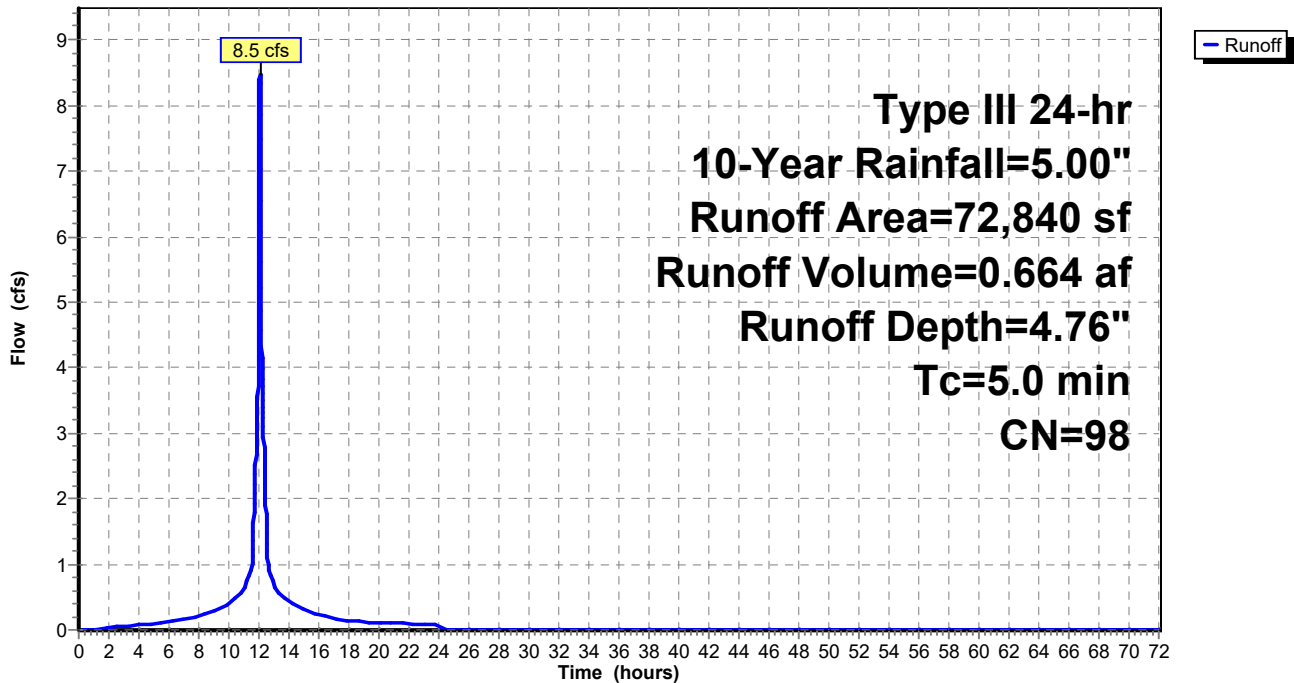
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.00"

Area (sf)	CN	Description
* 72,840	98	Area draining to north of high point
72,840		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment P2N: OF 2 North of HP

Hydrograph



Massport_M555_Backlands_POST_LOW

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Type III 24-hr 10-Year Rainfall=5.00"

Printed 6/30/2021

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Hydrograph for Subcatchment P2N: OF 2 North of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	5.00	4.76	0.0
1.00	0.05	0.00	0.0	52.00	5.00	4.76	0.0
2.00	0.10	0.01	0.0	53.00	5.00	4.76	0.0
3.00	0.15	0.04	0.1	54.00	5.00	4.76	0.0
4.00	0.22	0.08	0.1	55.00	5.00	4.76	0.0
5.00	0.28	0.13	0.1	56.00	5.00	4.76	0.0
6.00	0.36	0.19	0.1	57.00	5.00	4.76	0.0
7.00	0.45	0.28	0.2	58.00	5.00	4.76	0.0
8.00	0.57	0.38	0.2	59.00	5.00	4.76	0.0
9.00	0.73	0.53	0.3	60.00	5.00	4.76	0.0
10.00	0.95	0.74	0.4	61.00	5.00	4.76	0.0
11.00	1.25	1.03	0.6	62.00	5.00	4.76	0.0
12.00	2.50	2.27	5.7	63.00	5.00	4.76	0.0
13.00	3.75	3.52	0.7	64.00	5.00	4.76	0.0
14.00	4.06	3.82	0.4	65.00	5.00	4.76	0.0
15.00	4.27	4.04	0.3	66.00	5.00	4.76	0.0
16.00	4.43	4.19	0.2	67.00	5.00	4.76	0.0
17.00	4.55	4.31	0.2	68.00	5.00	4.76	0.0
18.00	4.64	4.40	0.1	69.00	5.00	4.76	0.0
19.00	4.72	4.48	0.1	70.00	5.00	4.76	0.0
20.00	4.79	4.55	0.1	71.00	5.00	4.76	0.0
21.00	4.85	4.61	0.1	72.00	5.00	4.76	0.0
22.00	4.90	4.67	0.1				
23.00	4.95	4.72	0.1				
24.00	5.00	4.76	0.1				
25.00	5.00	4.76	0.0				
26.00	5.00	4.76	0.0				
27.00	5.00	4.76	0.0				
28.00	5.00	4.76	0.0				
29.00	5.00	4.76	0.0				
30.00	5.00	4.76	0.0				
31.00	5.00	4.76	0.0				
32.00	5.00	4.76	0.0				
33.00	5.00	4.76	0.0				
34.00	5.00	4.76	0.0				
35.00	5.00	4.76	0.0				
36.00	5.00	4.76	0.0				
37.00	5.00	4.76	0.0				
38.00	5.00	4.76	0.0				
39.00	5.00	4.76	0.0				
40.00	5.00	4.76	0.0				
41.00	5.00	4.76	0.0				
42.00	5.00	4.76	0.0				
43.00	5.00	4.76	0.0				
44.00	5.00	4.76	0.0				
45.00	5.00	4.76	0.0				
46.00	5.00	4.76	0.0				
47.00	5.00	4.76	0.0				
48.00	5.00	4.76	0.0				
49.00	5.00	4.76	0.0				
50.00	5.00	4.76	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Subcatchment P2S: OF 2 South of HP

Runoff = 1.7 cfs @ 12.07 hrs, Volume= 0.132 af, Depth= 4.76"

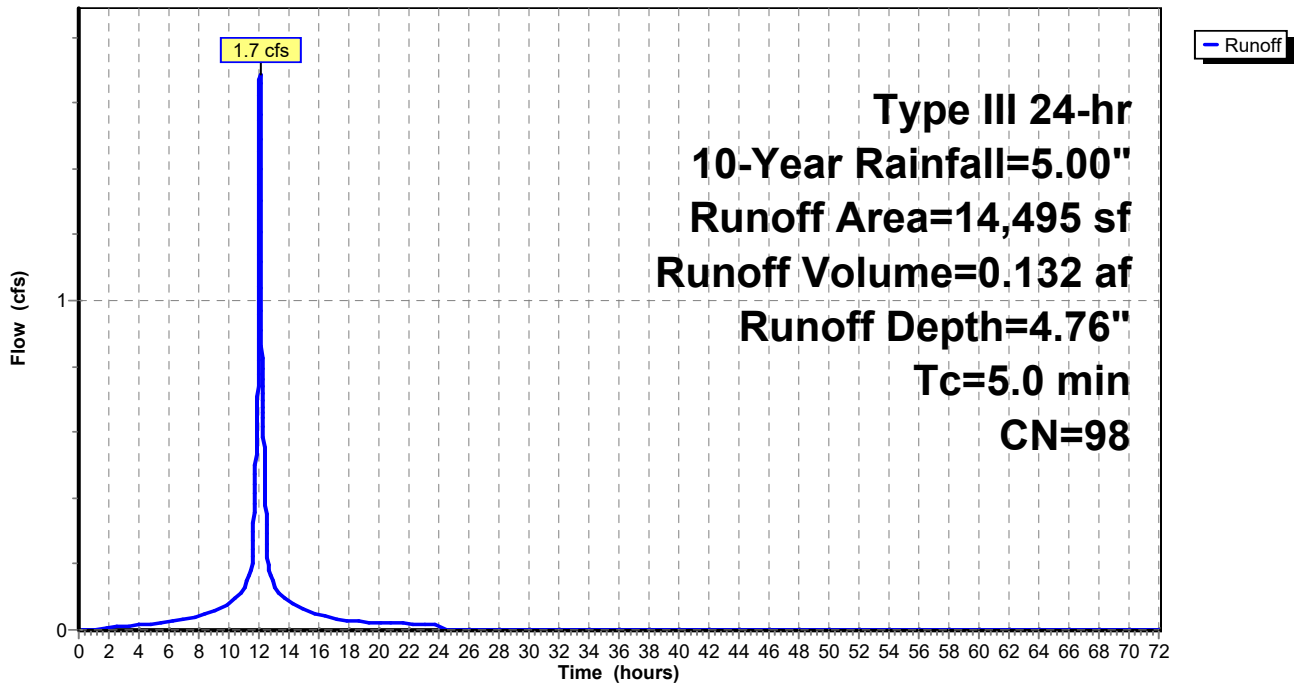
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.00"

Area (sf)	CN	Description
* 14,495	98	Area to South of High Point at D2
14,495		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P2S: OF 2 South of HP

Hydrograph



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Type III 24-hr 10-Year Rainfall=5.00"

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Hydrograph for Subcatchment P2S: OF 2 South of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	5.00	4.76	0.0
1.00	0.05	0.00	0.0	52.00	5.00	4.76	0.0
2.00	0.10	0.01	0.0	53.00	5.00	4.76	0.0
3.00	0.15	0.04	0.0	54.00	5.00	4.76	0.0
4.00	0.22	0.08	0.0	55.00	5.00	4.76	0.0
5.00	0.28	0.13	0.0	56.00	5.00	4.76	0.0
6.00	0.36	0.19	0.0	57.00	5.00	4.76	0.0
7.00	0.45	0.28	0.0	58.00	5.00	4.76	0.0
8.00	0.57	0.38	0.0	59.00	5.00	4.76	0.0
9.00	0.73	0.53	0.1	60.00	5.00	4.76	0.0
10.00	0.95	0.74	0.1	61.00	5.00	4.76	0.0
11.00	1.25	1.03	0.1	62.00	5.00	4.76	0.0
12.00	2.50	2.27	1.1	63.00	5.00	4.76	0.0
13.00	3.75	3.52	0.1	64.00	5.00	4.76	0.0
14.00	4.06	3.82	0.1	65.00	5.00	4.76	0.0
15.00	4.27	4.04	0.1	66.00	5.00	4.76	0.0
16.00	4.43	4.19	0.0	67.00	5.00	4.76	0.0
17.00	4.55	4.31	0.0	68.00	5.00	4.76	0.0
18.00	4.64	4.40	0.0	69.00	5.00	4.76	0.0
19.00	4.72	4.48	0.0	70.00	5.00	4.76	0.0
20.00	4.79	4.55	0.0	71.00	5.00	4.76	0.0
21.00	4.85	4.61	0.0	72.00	5.00	4.76	0.0
22.00	4.90	4.67	0.0				
23.00	4.95	4.72	0.0				
24.00	5.00	4.76	0.0				
25.00	5.00	4.76	0.0				
26.00	5.00	4.76	0.0				
27.00	5.00	4.76	0.0				
28.00	5.00	4.76	0.0				
29.00	5.00	4.76	0.0				
30.00	5.00	4.76	0.0				
31.00	5.00	4.76	0.0				
32.00	5.00	4.76	0.0				
33.00	5.00	4.76	0.0				
34.00	5.00	4.76	0.0				
35.00	5.00	4.76	0.0				
36.00	5.00	4.76	0.0				
37.00	5.00	4.76	0.0				
38.00	5.00	4.76	0.0				
39.00	5.00	4.76	0.0				
40.00	5.00	4.76	0.0				
41.00	5.00	4.76	0.0				
42.00	5.00	4.76	0.0				
43.00	5.00	4.76	0.0				
44.00	5.00	4.76	0.0				
45.00	5.00	4.76	0.0				
46.00	5.00	4.76	0.0				
47.00	5.00	4.76	0.0				
48.00	5.00	4.76	0.0				
49.00	5.00	4.76	0.0				
50.00	5.00	4.76	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Subcatchment P3N: OF 3 North of HP

Runoff = 6.2 cfs @ 12.07 hrs, Volume= 0.487 af, Depth= 4.76"

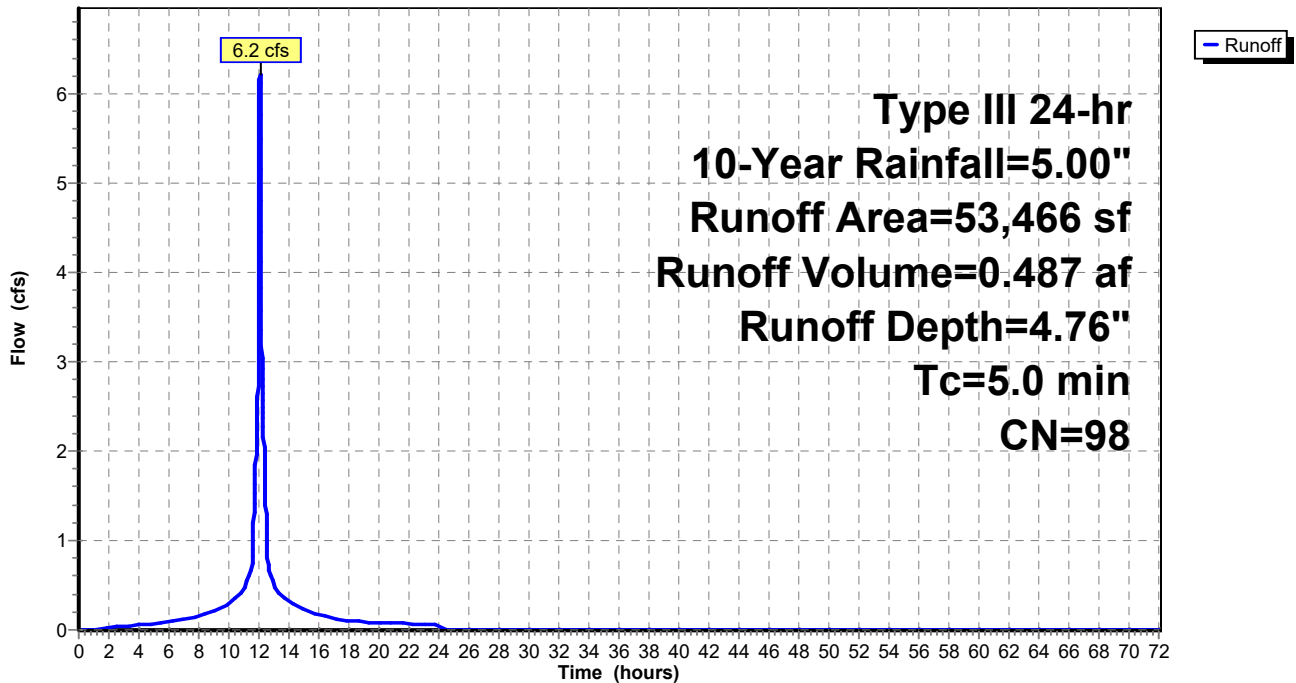
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.00"

Area (sf)	CN	Description
* 53,466	98	Area north of high point drain to outfall 4
53,466		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment P3N: OF 3 North of HP

Hydrograph



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Hydrograph for Subcatchment P3N: OF 3 North of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	5.00	4.76	0.0
1.00	0.05	0.00	0.0	52.00	5.00	4.76	0.0
2.00	0.10	0.01	0.0	53.00	5.00	4.76	0.0
3.00	0.15	0.04	0.0	54.00	5.00	4.76	0.0
4.00	0.22	0.08	0.1	55.00	5.00	4.76	0.0
5.00	0.28	0.13	0.1	56.00	5.00	4.76	0.0
6.00	0.36	0.19	0.1	57.00	5.00	4.76	0.0
7.00	0.45	0.28	0.1	58.00	5.00	4.76	0.0
8.00	0.57	0.38	0.1	59.00	5.00	4.76	0.0
9.00	0.73	0.53	0.2	60.00	5.00	4.76	0.0
10.00	0.95	0.74	0.3	61.00	5.00	4.76	0.0
11.00	1.25	1.03	0.4	62.00	5.00	4.76	0.0
12.00	2.50	2.27	4.2	63.00	5.00	4.76	0.0
13.00	3.75	3.52	0.5	64.00	5.00	4.76	0.0
14.00	4.06	3.82	0.3	65.00	5.00	4.76	0.0
15.00	4.27	4.04	0.2	66.00	5.00	4.76	0.0
16.00	4.43	4.19	0.2	67.00	5.00	4.76	0.0
17.00	4.55	4.31	0.1	68.00	5.00	4.76	0.0
18.00	4.64	4.40	0.1	69.00	5.00	4.76	0.0
19.00	4.72	4.48	0.1	70.00	5.00	4.76	0.0
20.00	4.79	4.55	0.1	71.00	5.00	4.76	0.0
21.00	4.85	4.61	0.1	72.00	5.00	4.76	0.0
22.00	4.90	4.67	0.1				
23.00	4.95	4.72	0.1				
24.00	5.00	4.76	0.1				
25.00	5.00	4.76	0.0				
26.00	5.00	4.76	0.0				
27.00	5.00	4.76	0.0				
28.00	5.00	4.76	0.0				
29.00	5.00	4.76	0.0				
30.00	5.00	4.76	0.0				
31.00	5.00	4.76	0.0				
32.00	5.00	4.76	0.0				
33.00	5.00	4.76	0.0				
34.00	5.00	4.76	0.0				
35.00	5.00	4.76	0.0				
36.00	5.00	4.76	0.0				
37.00	5.00	4.76	0.0				
38.00	5.00	4.76	0.0				
39.00	5.00	4.76	0.0				
40.00	5.00	4.76	0.0				
41.00	5.00	4.76	0.0				
42.00	5.00	4.76	0.0				
43.00	5.00	4.76	0.0				
44.00	5.00	4.76	0.0				
45.00	5.00	4.76	0.0				
46.00	5.00	4.76	0.0				
47.00	5.00	4.76	0.0				
48.00	5.00	4.76	0.0				
49.00	5.00	4.76	0.0				
50.00	5.00	4.76	0.0				

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Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Subcatchment P3S: OF 3 South of HP

Runoff = 1.0 cfs @ 12.07 hrs, Volume= 0.078 af, Depth= 4.76"

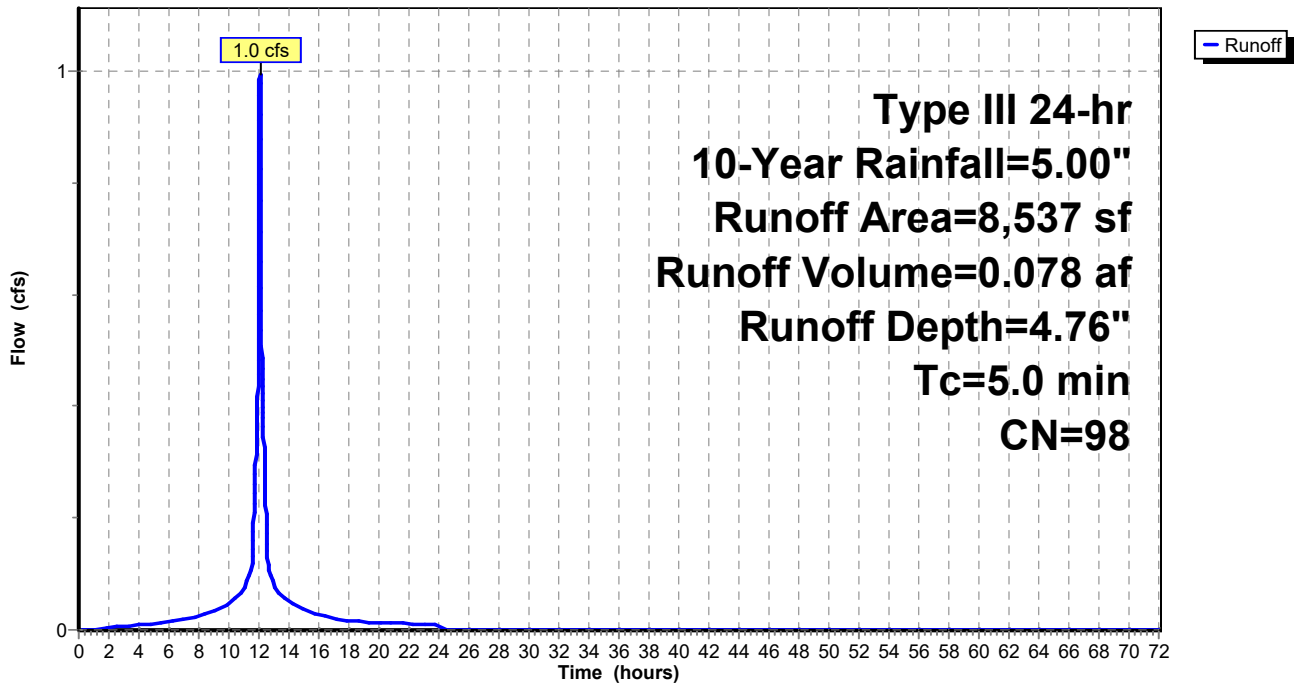
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.00"

Area (sf)	CN	Description
* 8,537	98	Area south of high point at Outfall 3
8,537		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment P3S: OF 3 South of HP

Hydrograph



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Type III 24-hr 10-Year Rainfall=5.00"

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Hydrograph for Subcatchment P3S: OF 3 South of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	5.00	4.76	0.0
1.00	0.05	0.00	0.0	52.00	5.00	4.76	0.0
2.00	0.10	0.01	0.0	53.00	5.00	4.76	0.0
3.00	0.15	0.04	0.0	54.00	5.00	4.76	0.0
4.00	0.22	0.08	0.0	55.00	5.00	4.76	0.0
5.00	0.28	0.13	0.0	56.00	5.00	4.76	0.0
6.00	0.36	0.19	0.0	57.00	5.00	4.76	0.0
7.00	0.45	0.28	0.0	58.00	5.00	4.76	0.0
8.00	0.57	0.38	0.0	59.00	5.00	4.76	0.0
9.00	0.73	0.53	0.0	60.00	5.00	4.76	0.0
10.00	0.95	0.74	0.0	61.00	5.00	4.76	0.0
11.00	1.25	1.03	0.1	62.00	5.00	4.76	0.0
12.00	2.50	2.27	0.7	63.00	5.00	4.76	0.0
13.00	3.75	3.52	0.1	64.00	5.00	4.76	0.0
14.00	4.06	3.82	0.1	65.00	5.00	4.76	0.0
15.00	4.27	4.04	0.0	66.00	5.00	4.76	0.0
16.00	4.43	4.19	0.0	67.00	5.00	4.76	0.0
17.00	4.55	4.31	0.0	68.00	5.00	4.76	0.0
18.00	4.64	4.40	0.0	69.00	5.00	4.76	0.0
19.00	4.72	4.48	0.0	70.00	5.00	4.76	0.0
20.00	4.79	4.55	0.0	71.00	5.00	4.76	0.0
21.00	4.85	4.61	0.0	72.00	5.00	4.76	0.0
22.00	4.90	4.67	0.0				
23.00	4.95	4.72	0.0				
24.00	5.00	4.76	0.0				
25.00	5.00	4.76	0.0				
26.00	5.00	4.76	0.0				
27.00	5.00	4.76	0.0				
28.00	5.00	4.76	0.0				
29.00	5.00	4.76	0.0				
30.00	5.00	4.76	0.0				
31.00	5.00	4.76	0.0				
32.00	5.00	4.76	0.0				
33.00	5.00	4.76	0.0				
34.00	5.00	4.76	0.0				
35.00	5.00	4.76	0.0				
36.00	5.00	4.76	0.0				
37.00	5.00	4.76	0.0				
38.00	5.00	4.76	0.0				
39.00	5.00	4.76	0.0				
40.00	5.00	4.76	0.0				
41.00	5.00	4.76	0.0				
42.00	5.00	4.76	0.0				
43.00	5.00	4.76	0.0				
44.00	5.00	4.76	0.0				
45.00	5.00	4.76	0.0				
46.00	5.00	4.76	0.0				
47.00	5.00	4.76	0.0				
48.00	5.00	4.76	0.0				
49.00	5.00	4.76	0.0				
50.00	5.00	4.76	0.0				

Massport_M555_Backlands_POST_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Subcatchment P4N: OF 4 north of HP

Runoff = 6.2 cfs @ 12.07 hrs, Volume= 0.485 af, Depth= 4.76"

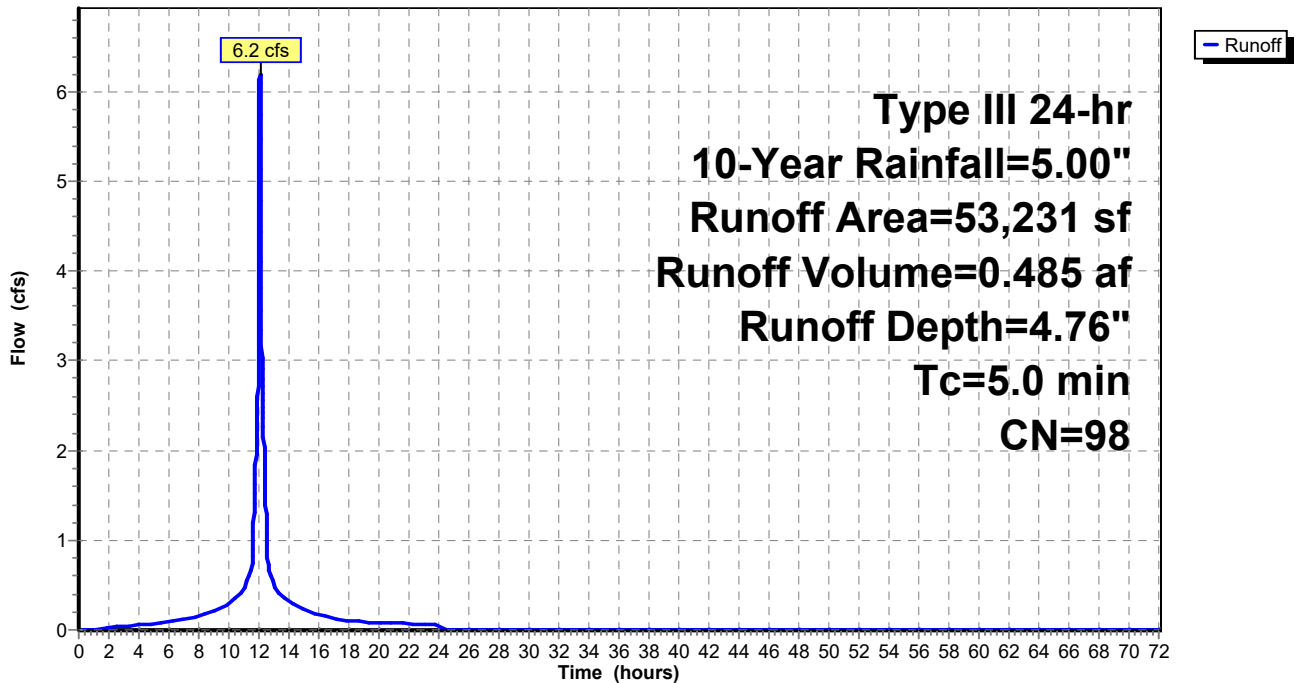
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.00"

Area (sf)	CN	Description
* 53,231	98	Area draining north of high point to trench drains
53,231		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment P4N: OF 4 north of HP

Hydrograph



Massport_M555_Backlands_POST_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

Printed 6/30/2021

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Hydrograph for Subcatchment P4N: OF 4 north of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	5.00	4.76	0.0
1.00	0.05	0.00	0.0	52.00	5.00	4.76	0.0
2.00	0.10	0.01	0.0	53.00	5.00	4.76	0.0
3.00	0.15	0.04	0.0	54.00	5.00	4.76	0.0
4.00	0.22	0.08	0.1	55.00	5.00	4.76	0.0
5.00	0.28	0.13	0.1	56.00	5.00	4.76	0.0
6.00	0.36	0.19	0.1	57.00	5.00	4.76	0.0
7.00	0.45	0.28	0.1	58.00	5.00	4.76	0.0
8.00	0.57	0.38	0.1	59.00	5.00	4.76	0.0
9.00	0.73	0.53	0.2	60.00	5.00	4.76	0.0
10.00	0.95	0.74	0.3	61.00	5.00	4.76	0.0
11.00	1.25	1.03	0.4	62.00	5.00	4.76	0.0
12.00	2.50	2.27	4.2	63.00	5.00	4.76	0.0
13.00	3.75	3.52	0.5	64.00	5.00	4.76	0.0
14.00	4.06	3.82	0.3	65.00	5.00	4.76	0.0
15.00	4.27	4.04	0.2	66.00	5.00	4.76	0.0
16.00	4.43	4.19	0.2	67.00	5.00	4.76	0.0
17.00	4.55	4.31	0.1	68.00	5.00	4.76	0.0
18.00	4.64	4.40	0.1	69.00	5.00	4.76	0.0
19.00	4.72	4.48	0.1	70.00	5.00	4.76	0.0
20.00	4.79	4.55	0.1	71.00	5.00	4.76	0.0
21.00	4.85	4.61	0.1	72.00	5.00	4.76	0.0
22.00	4.90	4.67	0.1				
23.00	4.95	4.72	0.1				
24.00	5.00	4.76	0.1				
25.00	5.00	4.76	0.0				
26.00	5.00	4.76	0.0				
27.00	5.00	4.76	0.0				
28.00	5.00	4.76	0.0				
29.00	5.00	4.76	0.0				
30.00	5.00	4.76	0.0				
31.00	5.00	4.76	0.0				
32.00	5.00	4.76	0.0				
33.00	5.00	4.76	0.0				
34.00	5.00	4.76	0.0				
35.00	5.00	4.76	0.0				
36.00	5.00	4.76	0.0				
37.00	5.00	4.76	0.0				
38.00	5.00	4.76	0.0				
39.00	5.00	4.76	0.0				
40.00	5.00	4.76	0.0				
41.00	5.00	4.76	0.0				
42.00	5.00	4.76	0.0				
43.00	5.00	4.76	0.0				
44.00	5.00	4.76	0.0				
45.00	5.00	4.76	0.0				
46.00	5.00	4.76	0.0				
47.00	5.00	4.76	0.0				
48.00	5.00	4.76	0.0				
49.00	5.00	4.76	0.0				
50.00	5.00	4.76	0.0				

Massport_M555_Backlands_POST_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Subcatchment P4S: OF 4 South of HP

Runoff = 0.9 cfs @ 12.07 hrs, Volume= 0.074 af, Depth= 4.76"

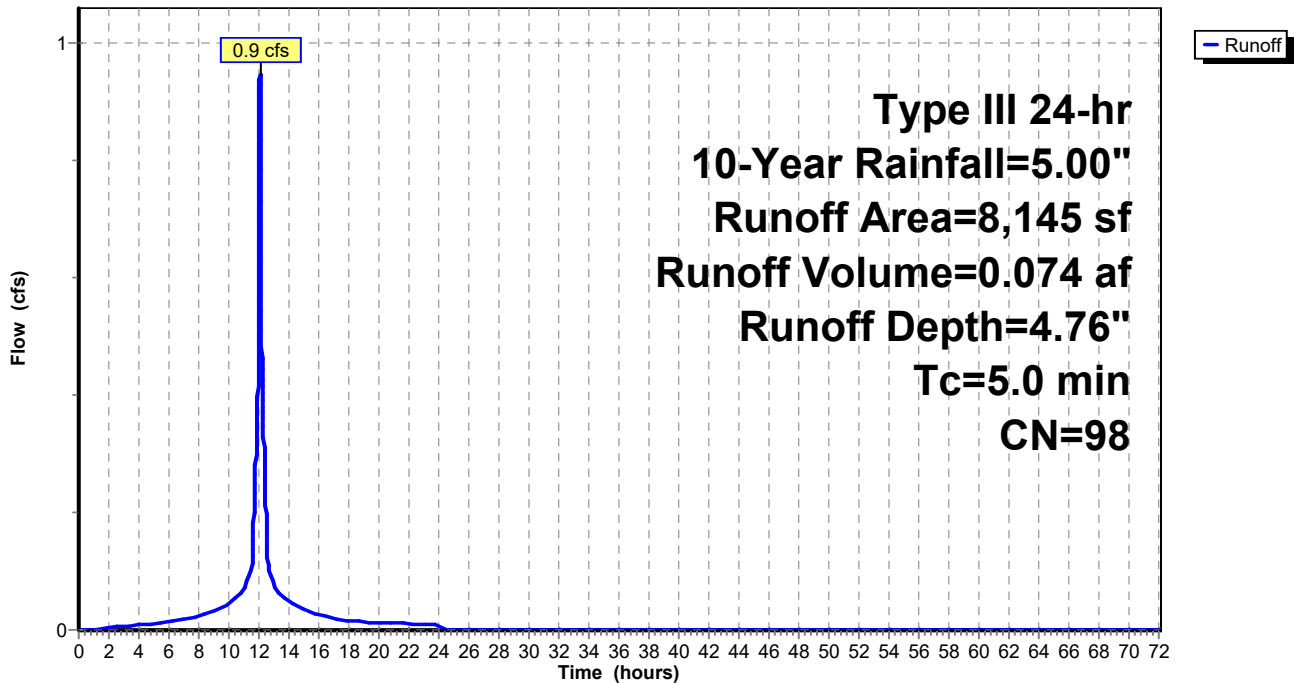
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.00"

Area (sf)	CN	Description
* 8,145	98	Area south of high point drain to outfall 4
8,145		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment P4S: OF 4 South of HP

Hydrograph



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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

Printed 6/30/2021

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Hydrograph for Subcatchment P4S: OF 4 South of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	5.00	4.76	0.0
1.00	0.05	0.00	0.0	52.00	5.00	4.76	0.0
2.00	0.10	0.01	0.0	53.00	5.00	4.76	0.0
3.00	0.15	0.04	0.0	54.00	5.00	4.76	0.0
4.00	0.22	0.08	0.0	55.00	5.00	4.76	0.0
5.00	0.28	0.13	0.0	56.00	5.00	4.76	0.0
6.00	0.36	0.19	0.0	57.00	5.00	4.76	0.0
7.00	0.45	0.28	0.0	58.00	5.00	4.76	0.0
8.00	0.57	0.38	0.0	59.00	5.00	4.76	0.0
9.00	0.73	0.53	0.0	60.00	5.00	4.76	0.0
10.00	0.95	0.74	0.0	61.00	5.00	4.76	0.0
11.00	1.25	1.03	0.1	62.00	5.00	4.76	0.0
12.00	2.50	2.27	0.6	63.00	5.00	4.76	0.0
13.00	3.75	3.52	0.1	64.00	5.00	4.76	0.0
14.00	4.06	3.82	0.0	65.00	5.00	4.76	0.0
15.00	4.27	4.04	0.0	66.00	5.00	4.76	0.0
16.00	4.43	4.19	0.0	67.00	5.00	4.76	0.0
17.00	4.55	4.31	0.0	68.00	5.00	4.76	0.0
18.00	4.64	4.40	0.0	69.00	5.00	4.76	0.0
19.00	4.72	4.48	0.0	70.00	5.00	4.76	0.0
20.00	4.79	4.55	0.0	71.00	5.00	4.76	0.0
21.00	4.85	4.61	0.0	72.00	5.00	4.76	0.0
22.00	4.90	4.67	0.0				
23.00	4.95	4.72	0.0				
24.00	5.00	4.76	0.0				
25.00	5.00	4.76	0.0				
26.00	5.00	4.76	0.0				
27.00	5.00	4.76	0.0				
28.00	5.00	4.76	0.0				
29.00	5.00	4.76	0.0				
30.00	5.00	4.76	0.0				
31.00	5.00	4.76	0.0				
32.00	5.00	4.76	0.0				
33.00	5.00	4.76	0.0				
34.00	5.00	4.76	0.0				
35.00	5.00	4.76	0.0				
36.00	5.00	4.76	0.0				
37.00	5.00	4.76	0.0				
38.00	5.00	4.76	0.0				
39.00	5.00	4.76	0.0				
40.00	5.00	4.76	0.0				
41.00	5.00	4.76	0.0				
42.00	5.00	4.76	0.0				
43.00	5.00	4.76	0.0				
44.00	5.00	4.76	0.0				
45.00	5.00	4.76	0.0				
46.00	5.00	4.76	0.0				
47.00	5.00	4.76	0.0				
48.00	5.00	4.76	0.0				
49.00	5.00	4.76	0.0				
50.00	5.00	4.76	0.0				

Massport_M555_Backlands_POST_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

Printed 6/30/2021

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Summary for Subcatchment P5N: OF 5 - North of HP

Runoff = 3.4 cfs @ 12.07 hrs, Volume= 0.265 af, Depth= 4.76"

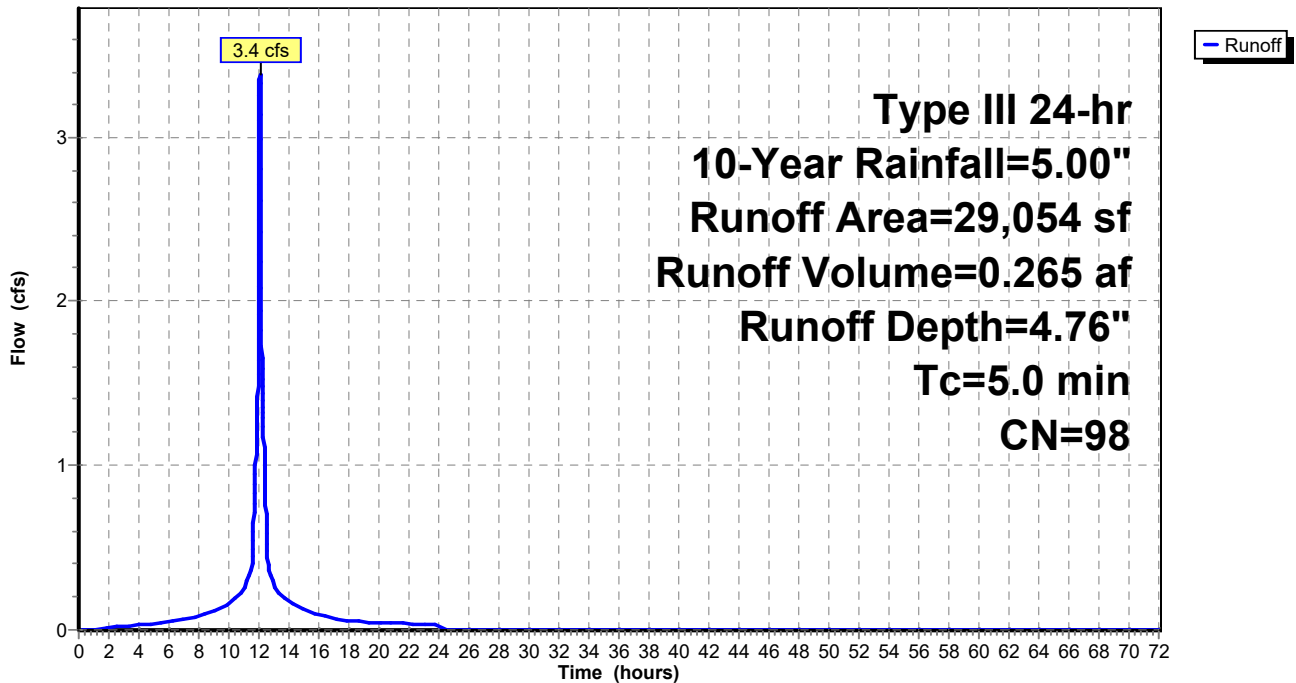
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-Year Rainfall=5.00"

Area (sf)	CN	Description
* 29,054	98	Area draining north of high point to trench drains
29,054		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P5N: OF 5 - North of HP

Hydrograph



Massport_M555_Backlands_POST_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

Printed 6/30/2021

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Hydrograph for Subcatchment P5N: OF 5 - North of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	5.00	4.76	0.0
1.00	0.05	0.00	0.0	52.00	5.00	4.76	0.0
2.00	0.10	0.01	0.0	53.00	5.00	4.76	0.0
3.00	0.15	0.04	0.0	54.00	5.00	4.76	0.0
4.00	0.22	0.08	0.0	55.00	5.00	4.76	0.0
5.00	0.28	0.13	0.0	56.00	5.00	4.76	0.0
6.00	0.36	0.19	0.0	57.00	5.00	4.76	0.0
7.00	0.45	0.28	0.1	58.00	5.00	4.76	0.0
8.00	0.57	0.38	0.1	59.00	5.00	4.76	0.0
9.00	0.73	0.53	0.1	60.00	5.00	4.76	0.0
10.00	0.95	0.74	0.2	61.00	5.00	4.76	0.0
11.00	1.25	1.03	0.2	62.00	5.00	4.76	0.0
12.00	2.50	2.27	2.3	63.00	5.00	4.76	0.0
13.00	3.75	3.52	0.3	64.00	5.00	4.76	0.0
14.00	4.06	3.82	0.2	65.00	5.00	4.76	0.0
15.00	4.27	4.04	0.1	66.00	5.00	4.76	0.0
16.00	4.43	4.19	0.1	67.00	5.00	4.76	0.0
17.00	4.55	4.31	0.1	68.00	5.00	4.76	0.0
18.00	4.64	4.40	0.1	69.00	5.00	4.76	0.0
19.00	4.72	4.48	0.0	70.00	5.00	4.76	0.0
20.00	4.79	4.55	0.0	71.00	5.00	4.76	0.0
21.00	4.85	4.61	0.0	72.00	5.00	4.76	0.0
22.00	4.90	4.67	0.0				
23.00	4.95	4.72	0.0				
24.00	5.00	4.76	0.0				
25.00	5.00	4.76	0.0				
26.00	5.00	4.76	0.0				
27.00	5.00	4.76	0.0				
28.00	5.00	4.76	0.0				
29.00	5.00	4.76	0.0				
30.00	5.00	4.76	0.0				
31.00	5.00	4.76	0.0				
32.00	5.00	4.76	0.0				
33.00	5.00	4.76	0.0				
34.00	5.00	4.76	0.0				
35.00	5.00	4.76	0.0				
36.00	5.00	4.76	0.0				
37.00	5.00	4.76	0.0				
38.00	5.00	4.76	0.0				
39.00	5.00	4.76	0.0				
40.00	5.00	4.76	0.0				
41.00	5.00	4.76	0.0				
42.00	5.00	4.76	0.0				
43.00	5.00	4.76	0.0				
44.00	5.00	4.76	0.0				
45.00	5.00	4.76	0.0				
46.00	5.00	4.76	0.0				
47.00	5.00	4.76	0.0				
48.00	5.00	4.76	0.0				
49.00	5.00	4.76	0.0				
50.00	5.00	4.76	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

Printed 6/30/2021

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Summary for Subcatchment P5S: OF 5 - South of HP

Runoff = 0.5 cfs @ 12.07 hrs, Volume= 0.041 af, Depth= 4.76"

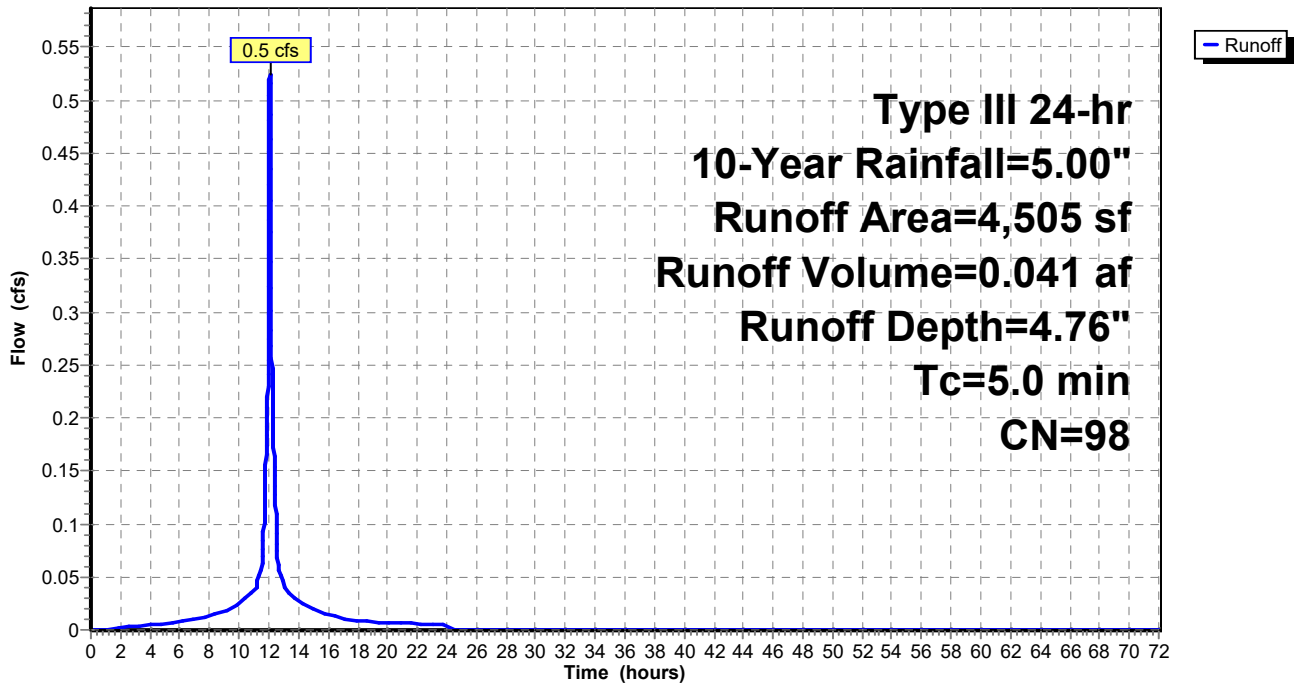
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.00"

Area (sf)	CN	Description
* 4,505	98	Area south of high point drain to outfall 5
4,505		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P5S: OF 5 - South of HP

Hydrograph



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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

Printed 6/30/2021

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Hydrograph for Subcatchment P5S: OF 5 - South of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	5.00	4.76	0.0
1.00	0.05	0.00	0.0	52.00	5.00	4.76	0.0
2.00	0.10	0.01	0.0	53.00	5.00	4.76	0.0
3.00	0.15	0.04	0.0	54.00	5.00	4.76	0.0
4.00	0.22	0.08	0.0	55.00	5.00	4.76	0.0
5.00	0.28	0.13	0.0	56.00	5.00	4.76	0.0
6.00	0.36	0.19	0.0	57.00	5.00	4.76	0.0
7.00	0.45	0.28	0.0	58.00	5.00	4.76	0.0
8.00	0.57	0.38	0.0	59.00	5.00	4.76	0.0
9.00	0.73	0.53	0.0	60.00	5.00	4.76	0.0
10.00	0.95	0.74	0.0	61.00	5.00	4.76	0.0
11.00	1.25	1.03	0.0	62.00	5.00	4.76	0.0
12.00	2.50	2.27	0.4	63.00	5.00	4.76	0.0
13.00	3.75	3.52	0.0	64.00	5.00	4.76	0.0
14.00	4.06	3.82	0.0	65.00	5.00	4.76	0.0
15.00	4.27	4.04	0.0	66.00	5.00	4.76	0.0
16.00	4.43	4.19	0.0	67.00	5.00	4.76	0.0
17.00	4.55	4.31	0.0	68.00	5.00	4.76	0.0
18.00	4.64	4.40	0.0	69.00	5.00	4.76	0.0
19.00	4.72	4.48	0.0	70.00	5.00	4.76	0.0
20.00	4.79	4.55	0.0	71.00	5.00	4.76	0.0
21.00	4.85	4.61	0.0	72.00	5.00	4.76	0.0
22.00	4.90	4.67	0.0				
23.00	4.95	4.72	0.0				
24.00	5.00	4.76	0.0				
25.00	5.00	4.76	0.0				
26.00	5.00	4.76	0.0				
27.00	5.00	4.76	0.0				
28.00	5.00	4.76	0.0				
29.00	5.00	4.76	0.0				
30.00	5.00	4.76	0.0				
31.00	5.00	4.76	0.0				
32.00	5.00	4.76	0.0				
33.00	5.00	4.76	0.0				
34.00	5.00	4.76	0.0				
35.00	5.00	4.76	0.0				
36.00	5.00	4.76	0.0				
37.00	5.00	4.76	0.0				
38.00	5.00	4.76	0.0				
39.00	5.00	4.76	0.0				
40.00	5.00	4.76	0.0				
41.00	5.00	4.76	0.0				
42.00	5.00	4.76	0.0				
43.00	5.00	4.76	0.0				
44.00	5.00	4.76	0.0				
45.00	5.00	4.76	0.0				
46.00	5.00	4.76	0.0				
47.00	5.00	4.76	0.0				
48.00	5.00	4.76	0.0				
49.00	5.00	4.76	0.0				
50.00	5.00	4.76	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Subcatchment P6: OF 6 - Berth 11 12 Access Road

Runoff = 1.4 cfs @ 12.07 hrs, Volume= 0.106 af, Depth= 4.76"

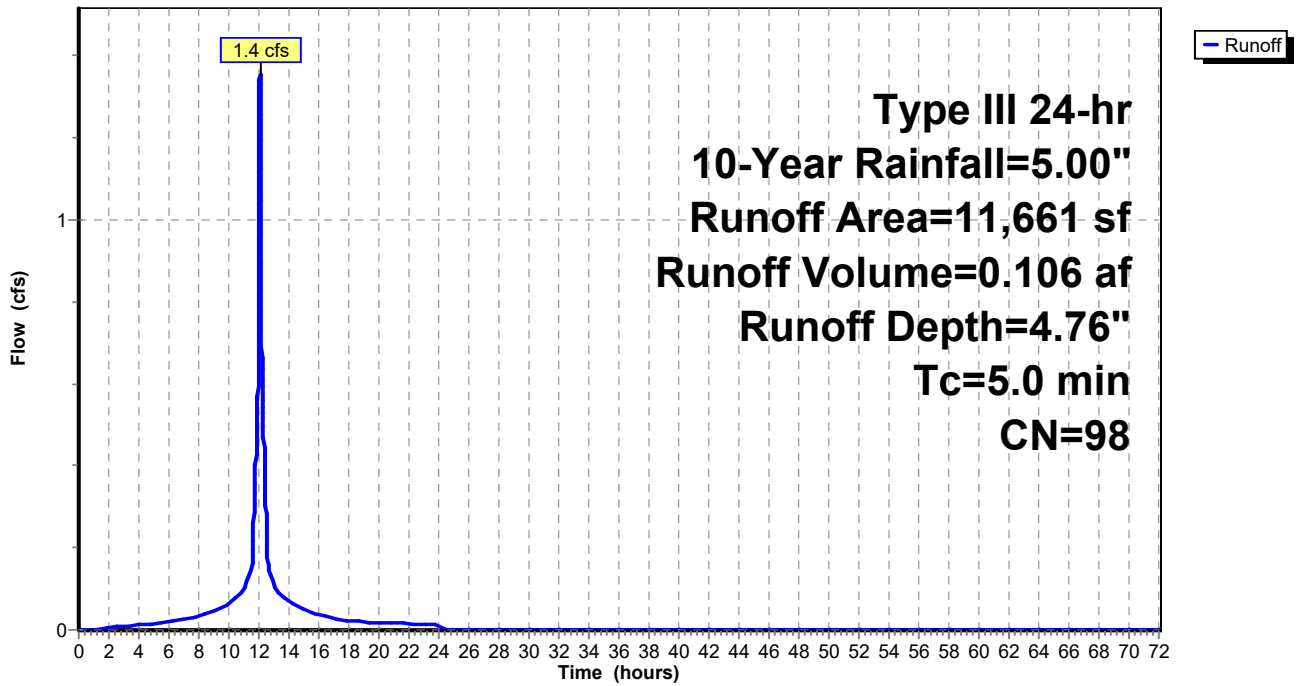
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.00"

Area (sf)	CN	Description
* 11,661	98	Area east of Road for Berths 11 and 12
11,661		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P6: OF 6 - Berth 11 12 Access Road

Hydrograph



Massport_M555_Backlands_POST_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

Printed 6/30/2021

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Hydrograph for Subcatchment P6: OF 6 - Berth 11 12 Access Road

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	5.00	4.76	0.0
1.00	0.05	0.00	0.0	52.00	5.00	4.76	0.0
2.00	0.10	0.01	0.0	53.00	5.00	4.76	0.0
3.00	0.15	0.04	0.0	54.00	5.00	4.76	0.0
4.00	0.22	0.08	0.0	55.00	5.00	4.76	0.0
5.00	0.28	0.13	0.0	56.00	5.00	4.76	0.0
6.00	0.36	0.19	0.0	57.00	5.00	4.76	0.0
7.00	0.45	0.28	0.0	58.00	5.00	4.76	0.0
8.00	0.57	0.38	0.0	59.00	5.00	4.76	0.0
9.00	0.73	0.53	0.0	60.00	5.00	4.76	0.0
10.00	0.95	0.74	0.1	61.00	5.00	4.76	0.0
11.00	1.25	1.03	0.1	62.00	5.00	4.76	0.0
12.00	2.50	2.27	0.9	63.00	5.00	4.76	0.0
13.00	3.75	3.52	0.1	64.00	5.00	4.76	0.0
14.00	4.06	3.82	0.1	65.00	5.00	4.76	0.0
15.00	4.27	4.04	0.1	66.00	5.00	4.76	0.0
16.00	4.43	4.19	0.0	67.00	5.00	4.76	0.0
17.00	4.55	4.31	0.0	68.00	5.00	4.76	0.0
18.00	4.64	4.40	0.0	69.00	5.00	4.76	0.0
19.00	4.72	4.48	0.0	70.00	5.00	4.76	0.0
20.00	4.79	4.55	0.0	71.00	5.00	4.76	0.0
21.00	4.85	4.61	0.0	72.00	5.00	4.76	0.0
22.00	4.90	4.67	0.0				
23.00	4.95	4.72	0.0				
24.00	5.00	4.76	0.0				
25.00	5.00	4.76	0.0				
26.00	5.00	4.76	0.0				
27.00	5.00	4.76	0.0				
28.00	5.00	4.76	0.0				
29.00	5.00	4.76	0.0				
30.00	5.00	4.76	0.0				
31.00	5.00	4.76	0.0				
32.00	5.00	4.76	0.0				
33.00	5.00	4.76	0.0				
34.00	5.00	4.76	0.0				
35.00	5.00	4.76	0.0				
36.00	5.00	4.76	0.0				
37.00	5.00	4.76	0.0				
38.00	5.00	4.76	0.0				
39.00	5.00	4.76	0.0				
40.00	5.00	4.76	0.0				
41.00	5.00	4.76	0.0				
42.00	5.00	4.76	0.0				
43.00	5.00	4.76	0.0				
44.00	5.00	4.76	0.0				
45.00	5.00	4.76	0.0				
46.00	5.00	4.76	0.0				
47.00	5.00	4.76	0.0				
48.00	5.00	4.76	0.0				
49.00	5.00	4.76	0.0				
50.00	5.00	4.76	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Subcatchment P7: OF 7 - Berth 11 12 Access Road

Runoff = 0.4 cfs @ 12.07 hrs, Volume= 0.028 af, Depth= 4.76"

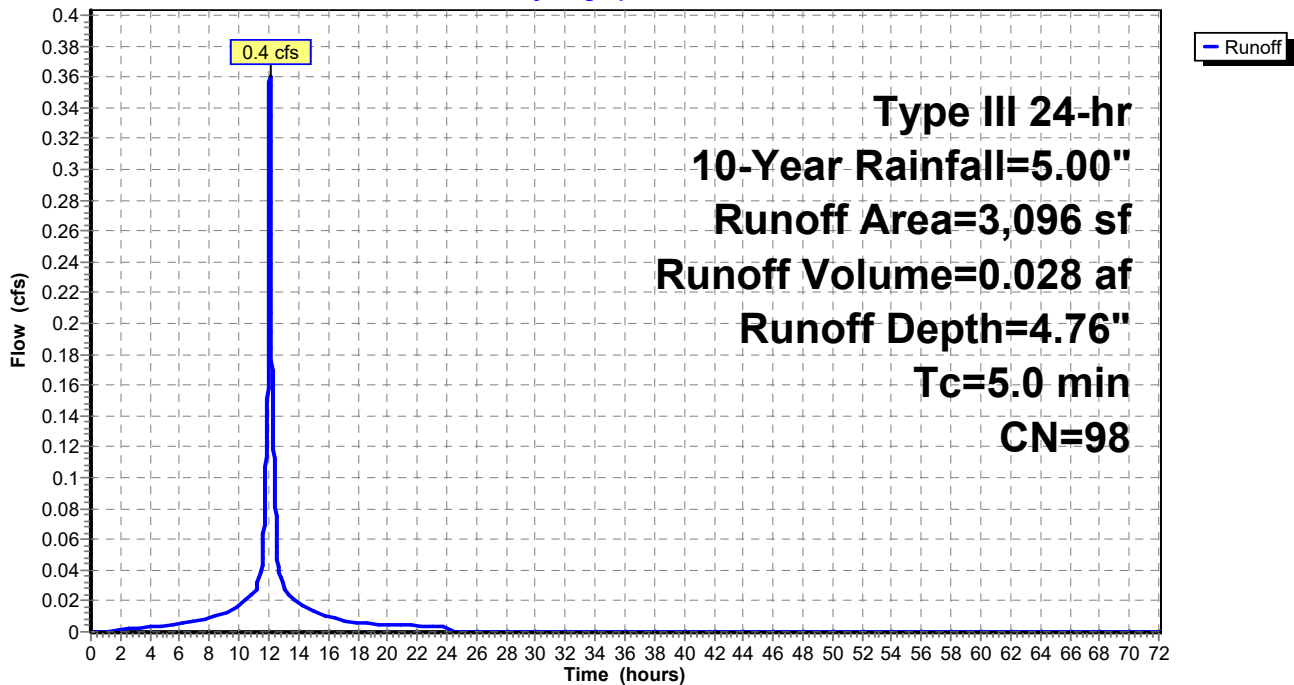
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.00"

Area (sf)	CN	Description
* 3,096	98	Drainage in Berth 12 discharged at Outfall 7
3,096		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P7: OF 7 - Berth 11 12 Access Road

Hydrograph



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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

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Hydrograph for Subcatchment P7: OF 7 - Berth 11 12 Access Road

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	5.00	4.76	0.0
1.00	0.05	0.00	0.0	52.00	5.00	4.76	0.0
2.00	0.10	0.01	0.0	53.00	5.00	4.76	0.0
3.00	0.15	0.04	0.0	54.00	5.00	4.76	0.0
4.00	0.22	0.08	0.0	55.00	5.00	4.76	0.0
5.00	0.28	0.13	0.0	56.00	5.00	4.76	0.0
6.00	0.36	0.19	0.0	57.00	5.00	4.76	0.0
7.00	0.45	0.28	0.0	58.00	5.00	4.76	0.0
8.00	0.57	0.38	0.0	59.00	5.00	4.76	0.0
9.00	0.73	0.53	0.0	60.00	5.00	4.76	0.0
10.00	0.95	0.74	0.0	61.00	5.00	4.76	0.0
11.00	1.25	1.03	0.0	62.00	5.00	4.76	0.0
12.00	2.50	2.27	0.2	63.00	5.00	4.76	0.0
13.00	3.75	3.52	0.0	64.00	5.00	4.76	0.0
14.00	4.06	3.82	0.0	65.00	5.00	4.76	0.0
15.00	4.27	4.04	0.0	66.00	5.00	4.76	0.0
16.00	4.43	4.19	0.0	67.00	5.00	4.76	0.0
17.00	4.55	4.31	0.0	68.00	5.00	4.76	0.0
18.00	4.64	4.40	0.0	69.00	5.00	4.76	0.0
19.00	4.72	4.48	0.0	70.00	5.00	4.76	0.0
20.00	4.79	4.55	0.0	71.00	5.00	4.76	0.0
21.00	4.85	4.61	0.0	72.00	5.00	4.76	0.0
22.00	4.90	4.67	0.0				
23.00	4.95	4.72	0.0				
24.00	5.00	4.76	0.0				
25.00	5.00	4.76	0.0				
26.00	5.00	4.76	0.0				
27.00	5.00	4.76	0.0				
28.00	5.00	4.76	0.0				
29.00	5.00	4.76	0.0				
30.00	5.00	4.76	0.0				
31.00	5.00	4.76	0.0				
32.00	5.00	4.76	0.0				
33.00	5.00	4.76	0.0				
34.00	5.00	4.76	0.0				
35.00	5.00	4.76	0.0				
36.00	5.00	4.76	0.0				
37.00	5.00	4.76	0.0				
38.00	5.00	4.76	0.0				
39.00	5.00	4.76	0.0				
40.00	5.00	4.76	0.0				
41.00	5.00	4.76	0.0				
42.00	5.00	4.76	0.0				
43.00	5.00	4.76	0.0				
44.00	5.00	4.76	0.0				
45.00	5.00	4.76	0.0				
46.00	5.00	4.76	0.0				
47.00	5.00	4.76	0.0				
48.00	5.00	4.76	0.0				
49.00	5.00	4.76	0.0				
50.00	5.00	4.76	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Pond 1P: Outfall 1 - 18" RCP

[57] Hint: Peaked at 2.53' (Flood elevation advised)

Inflow Area = 1.83 ac, 100.00% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 9.3 cfs @ 12.07 hrs, Volume= 0.728 af
Outflow = 9.3 cfs @ 12.07 hrs, Volume= 0.728 af, Atten= 0%, Lag= 0.0 min
Primary = 9.3 cfs @ 12.07 hrs, Volume= 0.728 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 2.53' @ 12.07 hrs

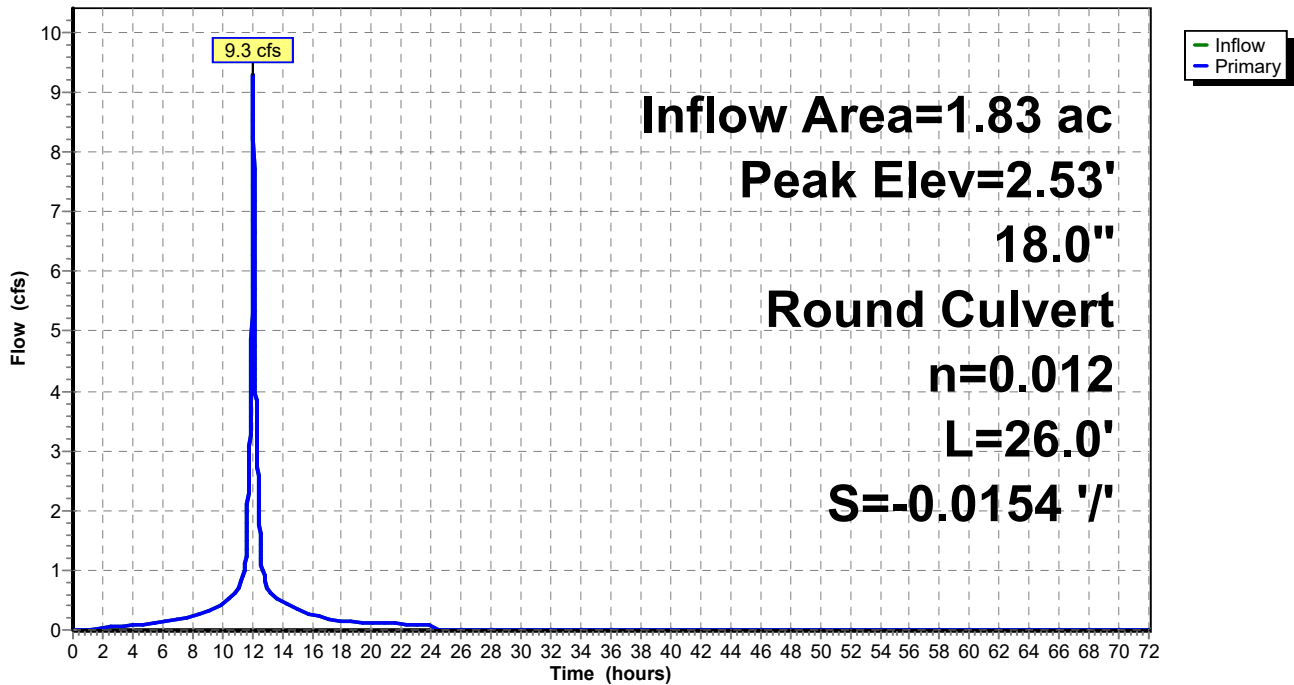
Device #	Routing	Invert	Outlet Devices
1	Primary	0.78'	18.0" Round RCP_Round 18" L= 26.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 0.38' / 0.78' S= -0.0154 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=9.3 cfs @ 12.07 hrs HW=2.53' (Free Discharge)

↑1=RCP_Round 18" (Barrel Controls 9.3 cfs @ 5.26 fps)

Pond 1P: Outfall 1 - 18" RCP

Hydrograph



Massport_M555_Backlands_POST_LOW

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Hydrograph for Pond 1P: Outfall 1 - 18" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	0.78	0.0	51.00	0.0	0.78	0.0
1.00	0.0	0.80	0.0	52.00	0.0	0.78	0.0
2.00	0.0	0.85	0.0	53.00	0.0	0.78	0.0
3.00	0.1	0.87	0.1	54.00	0.0	0.78	0.0
4.00	0.1	0.89	0.1	55.00	0.0	0.78	0.0
5.00	0.1	0.90	0.1	56.00	0.0	0.78	0.0
6.00	0.1	0.91	0.1	57.00	0.0	0.78	0.0
7.00	0.2	0.93	0.2	58.00	0.0	0.78	0.0
8.00	0.2	0.95	0.2	59.00	0.0	0.78	0.0
9.00	0.3	0.99	0.3	60.00	0.0	0.78	0.0
10.00	0.4	1.02	0.4	61.00	0.0	0.78	0.0
11.00	0.6	1.08	0.6	62.00	0.0	0.78	0.0
12.00	6.3	1.95	6.3	63.00	0.0	0.78	0.0
13.00	0.7	1.10	0.7	64.00	0.0	0.78	0.0
14.00	0.5	1.04	0.5	65.00	0.0	0.78	0.0
15.00	0.4	1.00	0.4	66.00	0.0	0.78	0.0
16.00	0.2	0.96	0.2	67.00	0.0	0.78	0.0
17.00	0.2	0.94	0.2	68.00	0.0	0.78	0.0
18.00	0.2	0.92	0.2	69.00	0.0	0.78	0.0
19.00	0.1	0.92	0.1	70.00	0.0	0.78	0.0
20.00	0.1	0.91	0.1	71.00	0.0	0.78	0.0
21.00	0.1	0.90	0.1	72.00	0.0	0.78	0.0
22.00	0.1	0.90	0.1				
23.00	0.1	0.89	0.1				
24.00	0.1	0.88	0.1				
25.00	0.0	0.78	0.0				
26.00	0.0	0.78	0.0				
27.00	0.0	0.78	0.0				
28.00	0.0	0.78	0.0				
29.00	0.0	0.78	0.0				
30.00	0.0	0.78	0.0				
31.00	0.0	0.78	0.0				
32.00	0.0	0.78	0.0				
33.00	0.0	0.78	0.0				
34.00	0.0	0.78	0.0				
35.00	0.0	0.78	0.0				
36.00	0.0	0.78	0.0				
37.00	0.0	0.78	0.0				
38.00	0.0	0.78	0.0				
39.00	0.0	0.78	0.0				
40.00	0.0	0.78	0.0				
41.00	0.0	0.78	0.0				
42.00	0.0	0.78	0.0				
43.00	0.0	0.78	0.0				
44.00	0.0	0.78	0.0				
45.00	0.0	0.78	0.0				
46.00	0.0	0.78	0.0				
47.00	0.0	0.78	0.0				
48.00	0.0	0.78	0.0				
49.00	0.0	0.78	0.0				
50.00	0.0	0.78	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Pond 2P: Outfall 2 - 18" RCP

[57] Hint: Peaked at 3.65' (Flood elevation advised)

Inflow Area = 2.00 ac, 100.00% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 10.2 cfs @ 12.07 hrs, Volume= 0.796 af
Outflow = 10.2 cfs @ 12.07 hrs, Volume= 0.796 af, Atten= 0%, Lag= 0.0 min
Primary = 10.2 cfs @ 12.07 hrs, Volume= 0.796 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 3.65' @ 12.07 hrs

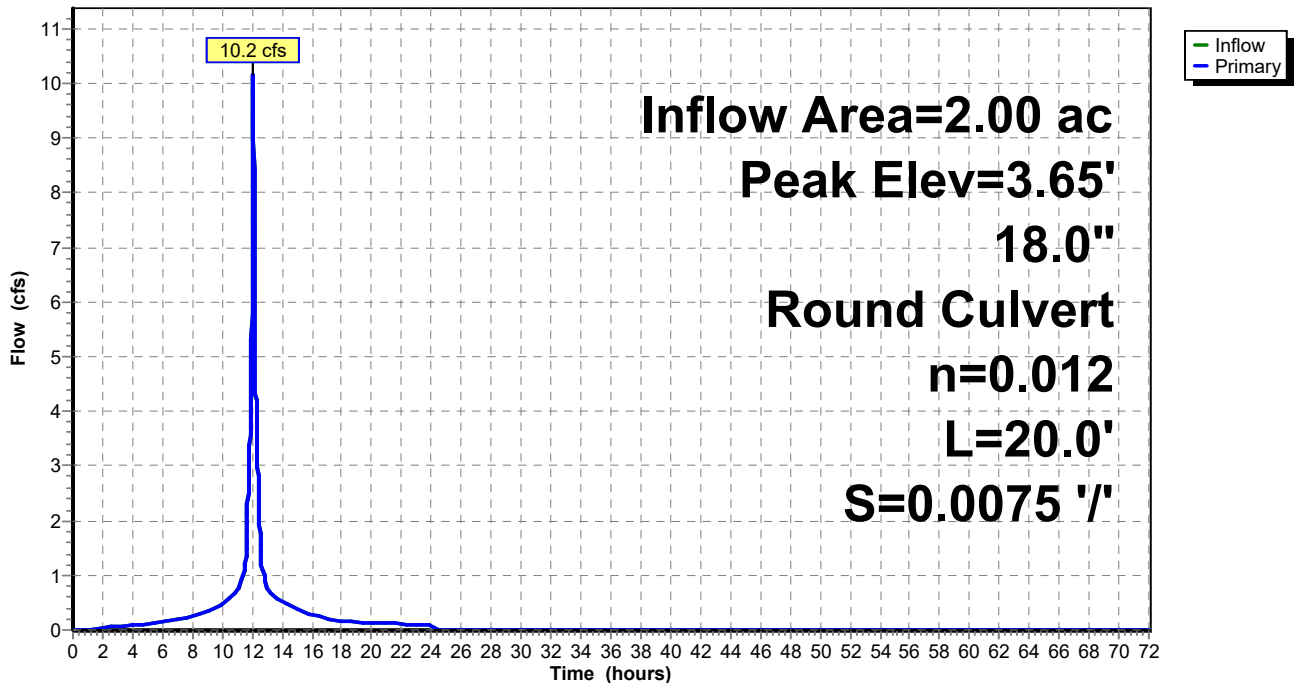
Device #	Routing	Invert	Outlet Devices
1	Primary	1.58'	18.0" Round RCP_Round 18" L= 20.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1.58' / 1.43' S= 0.0075 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=10.2 cfs @ 12.07 hrs HW=3.65' (Free Discharge)

1=RCP_Round 18" (Barrel Controls 10.2 cfs @ 5.75 fps)

Pond 2P: Outfall 2 - 18" RCP

Hydrograph



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Hydrograph for Pond 2P: Outfall 2 - 18" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	1.58	0.0	51.00	0.0	1.58	0.0
1.00	0.0	1.61	0.0	52.00	0.0	1.58	0.0
2.00	0.0	1.67	0.0	53.00	0.0	1.58	0.0
3.00	0.1	1.70	0.1	54.00	0.0	1.58	0.0
4.00	0.1	1.72	0.1	55.00	0.0	1.58	0.0
5.00	0.1	1.74	0.1	56.00	0.0	1.58	0.0
6.00	0.1	1.75	0.1	57.00	0.0	1.58	0.0
7.00	0.2	1.78	0.2	58.00	0.0	1.58	0.0
8.00	0.2	1.80	0.2	59.00	0.0	1.58	0.0
9.00	0.4	1.85	0.4	60.00	0.0	1.58	0.0
10.00	0.5	1.90	0.5	61.00	0.0	1.58	0.0
11.00	0.7	1.97	0.7	62.00	0.0	1.58	0.0
12.00	6.9	3.04	6.9	63.00	0.0	1.58	0.0
13.00	0.8	2.00	0.8	64.00	0.0	1.58	0.0
14.00	0.5	1.91	0.5	65.00	0.0	1.58	0.0
15.00	0.4	1.87	0.4	66.00	0.0	1.58	0.0
16.00	0.3	1.82	0.3	67.00	0.0	1.58	0.0
17.00	0.2	1.79	0.2	68.00	0.0	1.58	0.0
18.00	0.2	1.77	0.2	69.00	0.0	1.58	0.0
19.00	0.1	1.76	0.1	70.00	0.0	1.58	0.0
20.00	0.1	1.75	0.1	71.00	0.0	1.58	0.0
21.00	0.1	1.74	0.1	72.00	0.0	1.58	0.0
22.00	0.1	1.73	0.1				
23.00	0.1	1.72	0.1				
24.00	0.1	1.72	0.1				
25.00	0.0	1.58	0.0				
26.00	0.0	1.58	0.0				
27.00	0.0	1.58	0.0				
28.00	0.0	1.58	0.0				
29.00	0.0	1.58	0.0				
30.00	0.0	1.58	0.0				
31.00	0.0	1.58	0.0				
32.00	0.0	1.58	0.0				
33.00	0.0	1.58	0.0				
34.00	0.0	1.58	0.0				
35.00	0.0	1.58	0.0				
36.00	0.0	1.58	0.0				
37.00	0.0	1.58	0.0				
38.00	0.0	1.58	0.0				
39.00	0.0	1.58	0.0				
40.00	0.0	1.58	0.0				
41.00	0.0	1.58	0.0				
42.00	0.0	1.58	0.0				
43.00	0.0	1.58	0.0				
44.00	0.0	1.58	0.0				
45.00	0.0	1.58	0.0				
46.00	0.0	1.58	0.0				
47.00	0.0	1.58	0.0				
48.00	0.0	1.58	0.0				
49.00	0.0	1.58	0.0				
50.00	0.0	1.58	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Pond 3P: Outfall 3 - 24" RCP

[57] Hint: Peaked at 1.48' (Flood elevation advised)

Inflow Area = 1.42 ac, 100.00% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 7.2 cfs @ 12.07 hrs, Volume= 0.565 af
Outflow = 7.2 cfs @ 12.07 hrs, Volume= 0.565 af, Atten= 0%, Lag= 0.0 min
Primary = 7.2 cfs @ 12.07 hrs, Volume= 0.565 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 1.48' @ 12.07 hrs

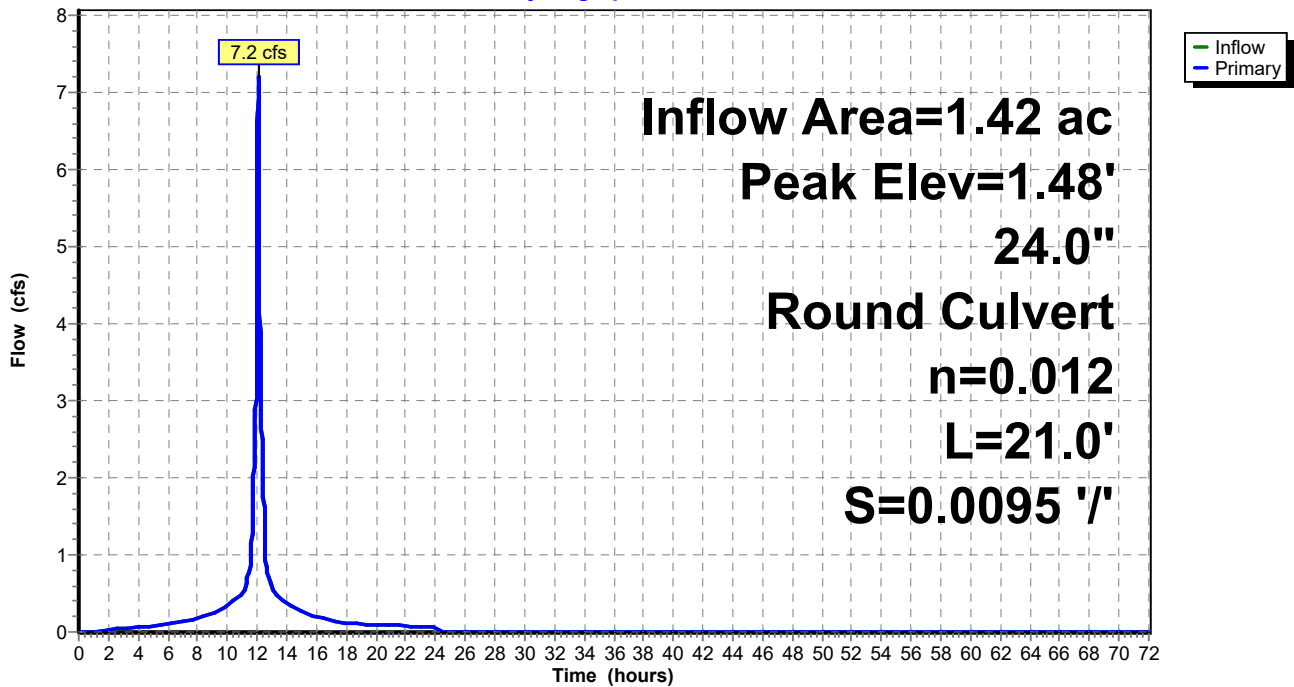
Device #	Routing	Invert	Outlet Devices
1	Primary	0.23'	24.0" Round RCP_Round 24" L= 21.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 0.23' / 0.03' S= 0.0095 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=7.2 cfs @ 12.07 hrs HW=1.48' (Free Discharge)

1=RCP_Round 24" (Barrel Controls 7.2 cfs @ 4.97 fps)

Pond 3P: Outfall 3 - 24" RCP

Hydrograph



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Hydrograph for Pond 3P: Outfall 3 - 24" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	0.23	0.0	51.00	0.0	0.23	0.0
1.00	0.0	0.26	0.0	52.00	0.0	0.23	0.0
2.00	0.0	0.30	0.0	53.00	0.0	0.23	0.0
3.00	0.0	0.32	0.0	54.00	0.0	0.23	0.0
4.00	0.1	0.33	0.1	55.00	0.0	0.23	0.0
5.00	0.1	0.35	0.1	56.00	0.0	0.23	0.0
6.00	0.1	0.36	0.1	57.00	0.0	0.23	0.0
7.00	0.1	0.38	0.1	58.00	0.0	0.23	0.0
8.00	0.2	0.40	0.2	59.00	0.0	0.23	0.0
9.00	0.2	0.43	0.2	60.00	0.0	0.23	0.0
10.00	0.3	0.46	0.3	61.00	0.0	0.23	0.0
11.00	0.5	0.52	0.5	62.00	0.0	0.23	0.0
12.00	4.9	1.23	4.9	63.00	0.0	0.23	0.0
13.00	0.6	0.54	0.6	64.00	0.0	0.23	0.0
14.00	0.4	0.47	0.4	65.00	0.0	0.23	0.0
15.00	0.3	0.44	0.3	66.00	0.0	0.23	0.0
16.00	0.2	0.41	0.2	67.00	0.0	0.23	0.0
17.00	0.2	0.39	0.2	68.00	0.0	0.23	0.0
18.00	0.1	0.37	0.1	69.00	0.0	0.23	0.0
19.00	0.1	0.36	0.1	70.00	0.0	0.23	0.0
20.00	0.1	0.35	0.1	71.00	0.0	0.23	0.0
21.00	0.1	0.35	0.1	72.00	0.0	0.23	0.0
22.00	0.1	0.34	0.1				
23.00	0.1	0.34	0.1				
24.00	0.1	0.33	0.1				
25.00	0.0	0.23	0.0				
26.00	0.0	0.23	0.0				
27.00	0.0	0.23	0.0				
28.00	0.0	0.23	0.0				
29.00	0.0	0.23	0.0				
30.00	0.0	0.23	0.0				
31.00	0.0	0.23	0.0				
32.00	0.0	0.23	0.0				
33.00	0.0	0.23	0.0				
34.00	0.0	0.23	0.0				
35.00	0.0	0.23	0.0				
36.00	0.0	0.23	0.0				
37.00	0.0	0.23	0.0				
38.00	0.0	0.23	0.0				
39.00	0.0	0.23	0.0				
40.00	0.0	0.23	0.0				
41.00	0.0	0.23	0.0				
42.00	0.0	0.23	0.0				
43.00	0.0	0.23	0.0				
44.00	0.0	0.23	0.0				
45.00	0.0	0.23	0.0				
46.00	0.0	0.23	0.0				
47.00	0.0	0.23	0.0				
48.00	0.0	0.23	0.0				
49.00	0.0	0.23	0.0				
50.00	0.0	0.23	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

Printed 6/30/2021

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Summary for Pond 4P: Outfall 4 - 24" RCP

[57] Hint: Peaked at 1.87' (Flood elevation advised)

Inflow Area = 1.41 ac, 100.00% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 7.1 cfs @ 12.07 hrs, Volume= 0.559 af
Outflow = 7.1 cfs @ 12.07 hrs, Volume= 0.559 af, Atten= 0%, Lag= 0.0 min
Primary = 7.1 cfs @ 12.07 hrs, Volume= 0.559 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 1.87' @ 12.07 hrs

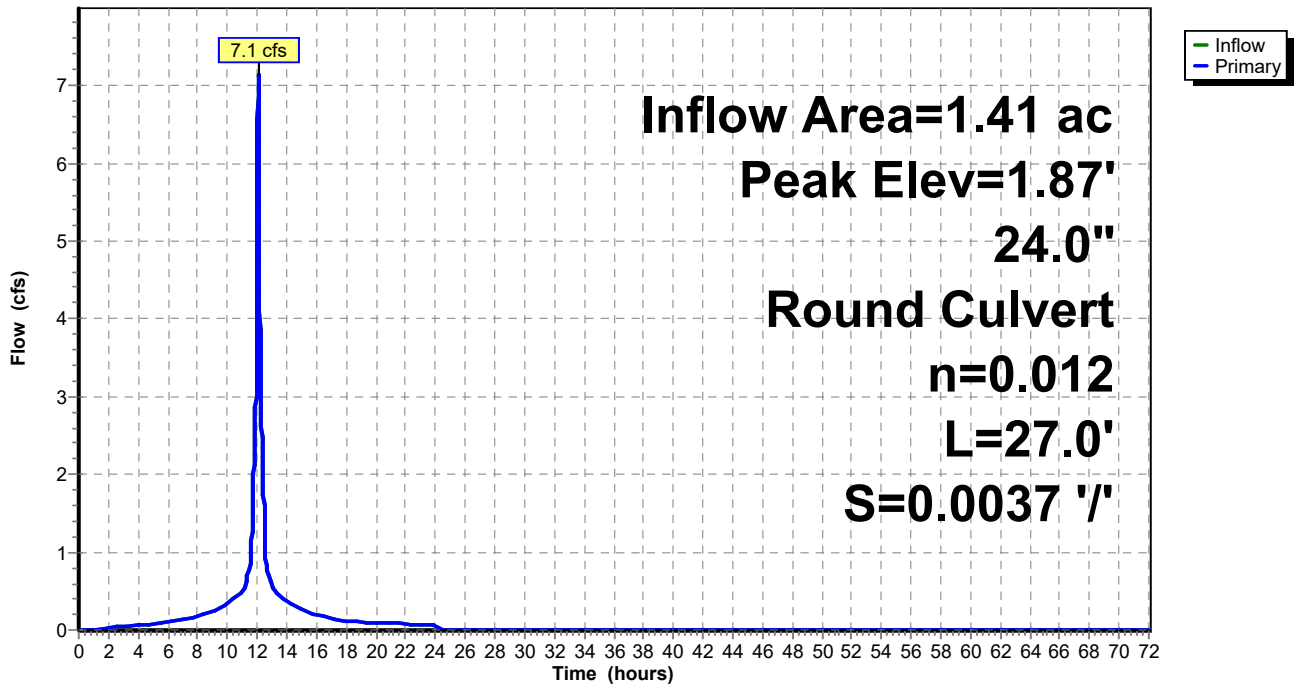
Device #	Routing	Invert	Outlet Devices
#1	Primary	0.53'	24.0" Round RCP_Round 24" L= 27.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 0.53' / 0.43' S= 0.0037 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=7.1 cfs @ 12.07 hrs HW=1.87' (Free Discharge)

↑1=RCP_Round 24" (Barrel Controls 7.1 cfs @ 4.50 fps)

Pond 4P: Outfall 4 - 24" RCP

Hydrograph



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Type III 24-hr 10-Year Rainfall=5.00"

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Hydrograph for Pond 4P: Outfall 4 - 24" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	0.53	0.0	51.00	0.0	0.53	0.0
1.00	0.0	0.56	0.0	52.00	0.0	0.53	0.0
2.00	0.0	0.61	0.0	53.00	0.0	0.53	0.0
3.00	0.0	0.64	0.0	54.00	0.0	0.53	0.0
4.00	0.1	0.65	0.1	55.00	0.0	0.53	0.0
5.00	0.1	0.67	0.1	56.00	0.0	0.53	0.0
6.00	0.1	0.68	0.1	57.00	0.0	0.53	0.0
7.00	0.1	0.70	0.1	58.00	0.0	0.53	0.0
8.00	0.2	0.73	0.2	59.00	0.0	0.53	0.0
9.00	0.2	0.77	0.2	60.00	0.0	0.53	0.0
10.00	0.3	0.80	0.3	61.00	0.0	0.53	0.0
11.00	0.5	0.86	0.5	62.00	0.0	0.53	0.0
12.00	4.8	1.61	4.8	63.00	0.0	0.53	0.0
13.00	0.6	0.89	0.6	64.00	0.0	0.53	0.0
14.00	0.4	0.81	0.4	65.00	0.0	0.53	0.0
15.00	0.3	0.78	0.3	66.00	0.0	0.53	0.0
16.00	0.2	0.74	0.2	67.00	0.0	0.53	0.0
17.00	0.2	0.72	0.2	68.00	0.0	0.53	0.0
18.00	0.1	0.69	0.1	69.00	0.0	0.53	0.0
19.00	0.1	0.69	0.1	70.00	0.0	0.53	0.0
20.00	0.1	0.68	0.1	71.00	0.0	0.53	0.0
21.00	0.1	0.67	0.1	72.00	0.0	0.53	0.0
22.00	0.1	0.67	0.1				
23.00	0.1	0.66	0.1				
24.00	0.1	0.65	0.1				
25.00	0.0	0.53	0.0				
26.00	0.0	0.53	0.0				
27.00	0.0	0.53	0.0				
28.00	0.0	0.53	0.0				
29.00	0.0	0.53	0.0				
30.00	0.0	0.53	0.0				
31.00	0.0	0.53	0.0				
32.00	0.0	0.53	0.0				
33.00	0.0	0.53	0.0				
34.00	0.0	0.53	0.0				
35.00	0.0	0.53	0.0				
36.00	0.0	0.53	0.0				
37.00	0.0	0.53	0.0				
38.00	0.0	0.53	0.0				
39.00	0.0	0.53	0.0				
40.00	0.0	0.53	0.0				
41.00	0.0	0.53	0.0				
42.00	0.0	0.53	0.0				
43.00	0.0	0.53	0.0				
44.00	0.0	0.53	0.0				
45.00	0.0	0.53	0.0				
46.00	0.0	0.53	0.0				
47.00	0.0	0.53	0.0				
48.00	0.0	0.53	0.0				
49.00	0.0	0.53	0.0				
50.00	0.0	0.53	0.0				

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Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Pond 5P: Outfall 5 - 36" RCP

[57] Hint: Peaked at 3.07' (Flood elevation advised)

Inflow Area = 0.77 ac, 100.00% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 3.9 cfs @ 12.07 hrs, Volume= 0.306 af
Outflow = 3.9 cfs @ 12.07 hrs, Volume= 0.306 af, Atten= 0%, Lag= 0.0 min
Primary = 3.9 cfs @ 12.07 hrs, Volume= 0.306 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 3.07' @ 12.07 hrs

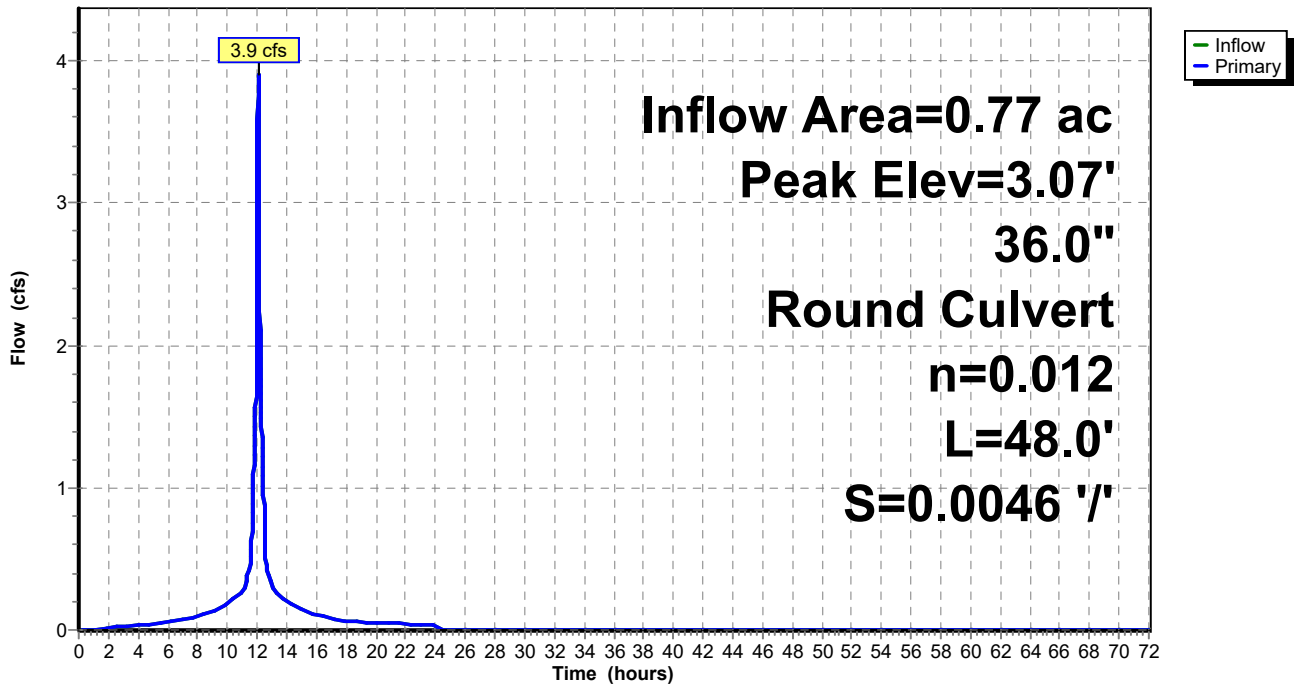
Device #	Routing	Invert	Outlet Devices
1	Primary	2.26'	36.0" Round RCP_Round 36" L= 48.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 2.26' / 2.04' S= 0.0046 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 7.07 sf

Primary OutFlow Max=3.9 cfs @ 12.07 hrs HW=3.07' (Free Discharge)

1=RCP_Round 36" (Barrel Controls 3.9 cfs @ 3.81 fps)

Pond 5P: Outfall 5 - 36" RCP

Hydrograph



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Hydrograph for Pond 5P: Outfall 5 - 36" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	2.26	0.0	51.00	0.0	2.26	0.0
1.00	0.0	2.27	0.0	52.00	0.0	2.26	0.0
2.00	0.0	2.31	0.0	53.00	0.0	2.26	0.0
3.00	0.0	2.33	0.0	54.00	0.0	2.26	0.0
4.00	0.0	2.34	0.0	55.00	0.0	2.26	0.0
5.00	0.0	2.35	0.0	56.00	0.0	2.26	0.0
6.00	0.1	2.36	0.1	57.00	0.0	2.26	0.0
7.00	0.1	2.37	0.1	58.00	0.0	2.26	0.0
8.00	0.1	2.39	0.1	59.00	0.0	2.26	0.0
9.00	0.1	2.41	0.1	60.00	0.0	2.26	0.0
10.00	0.2	2.44	0.2	61.00	0.0	2.26	0.0
11.00	0.3	2.47	0.3	62.00	0.0	2.26	0.0
12.00	2.6	2.92	2.6	63.00	0.0	2.26	0.0
13.00	0.3	2.49	0.3	64.00	0.0	2.26	0.0
14.00	0.2	2.44	0.2	65.00	0.0	2.26	0.0
15.00	0.1	2.42	0.1	66.00	0.0	2.26	0.0
16.00	0.1	2.40	0.1	67.00	0.0	2.26	0.0
17.00	0.1	2.38	0.1	68.00	0.0	2.26	0.0
18.00	0.1	2.37	0.1	69.00	0.0	2.26	0.0
19.00	0.1	2.36	0.1	70.00	0.0	2.26	0.0
20.00	0.1	2.36	0.1	71.00	0.0	2.26	0.0
21.00	0.0	2.35	0.0	72.00	0.0	2.26	0.0
22.00	0.0	2.35	0.0				
23.00	0.0	2.34	0.0				
24.00	0.0	2.34	0.0				
25.00	0.0	2.26	0.0				
26.00	0.0	2.26	0.0				
27.00	0.0	2.26	0.0				
28.00	0.0	2.26	0.0				
29.00	0.0	2.26	0.0				
30.00	0.0	2.26	0.0				
31.00	0.0	2.26	0.0				
32.00	0.0	2.26	0.0				
33.00	0.0	2.26	0.0				
34.00	0.0	2.26	0.0				
35.00	0.0	2.26	0.0				
36.00	0.0	2.26	0.0				
37.00	0.0	2.26	0.0				
38.00	0.0	2.26	0.0				
39.00	0.0	2.26	0.0				
40.00	0.0	2.26	0.0				
41.00	0.0	2.26	0.0				
42.00	0.0	2.26	0.0				
43.00	0.0	2.26	0.0				
44.00	0.0	2.26	0.0				
45.00	0.0	2.26	0.0				
46.00	0.0	2.26	0.0				
47.00	0.0	2.26	0.0				
48.00	0.0	2.26	0.0				
49.00	0.0	2.26	0.0				
50.00	0.0	2.26	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Pond 6P: Outfall 6 - 42" RCP

[57] Hint: Peaked at 2.26' (Flood elevation advised)

Inflow Area = 0.27 ac, 100.00% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 1.4 cfs @ 12.07 hrs, Volume= 0.106 af
Outflow = 1.4 cfs @ 12.07 hrs, Volume= 0.106 af, Atten= 0%, Lag= 0.0 min
Primary = 1.4 cfs @ 12.07 hrs, Volume= 0.106 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 2.26' @ 12.07 hrs

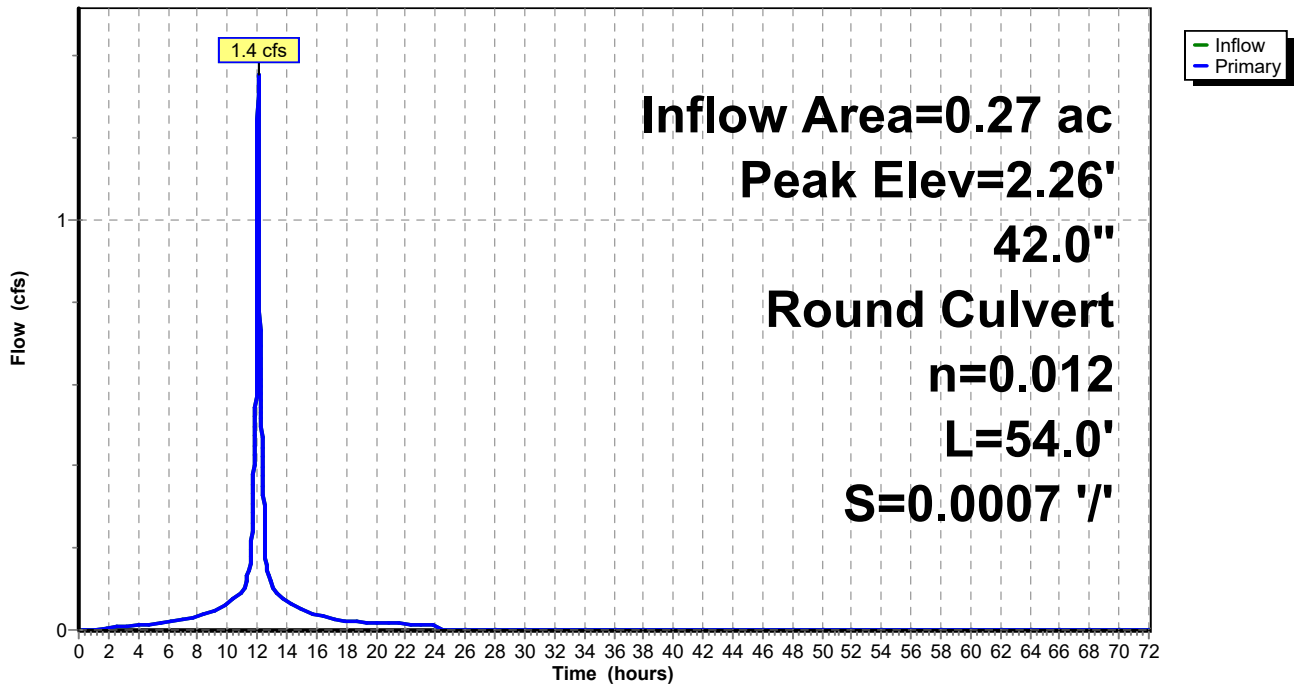
Device	Routing	Invert	Outlet Devices
#1	Primary	1.71'	42.0" Round RCP_Round 42" L= 54.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1.71' / 1.67' S= 0.0007 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 9.62 sf

Primary OutFlow Max=1.4 cfs @ 12.07 hrs HW=2.26' (Free Discharge)

↑1=RCP_Round 42" (Barrel Controls 1.4 cfs @ 2.14 fps)

Pond 6P: Outfall 6 - 42" RCP

Hydrograph



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Hydrograph for Pond 6P: Outfall 6 - 42" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	1.71	0.0	51.00	0.0	1.71	0.0
1.00	0.0	1.72	0.0	52.00	0.0	1.71	0.0
2.00	0.0	1.75	0.0	53.00	0.0	1.71	0.0
3.00	0.0	1.77	0.0	54.00	0.0	1.71	0.0
4.00	0.0	1.78	0.0	55.00	0.0	1.71	0.0
5.00	0.0	1.79	0.0	56.00	0.0	1.71	0.0
6.00	0.0	1.79	0.0	57.00	0.0	1.71	0.0
7.00	0.0	1.80	0.0	58.00	0.0	1.71	0.0
8.00	0.0	1.82	0.0	59.00	0.0	1.71	0.0
9.00	0.0	1.83	0.0	60.00	0.0	1.71	0.0
10.00	0.1	1.85	0.1	61.00	0.0	1.71	0.0
11.00	0.1	1.88	0.1	62.00	0.0	1.71	0.0
12.00	0.9	2.17	0.9	63.00	0.0	1.71	0.0
13.00	0.1	1.89	0.1	64.00	0.0	1.71	0.0
14.00	0.1	1.86	0.1	65.00	0.0	1.71	0.0
15.00	0.1	1.84	0.1	66.00	0.0	1.71	0.0
16.00	0.0	1.82	0.0	67.00	0.0	1.71	0.0
17.00	0.0	1.81	0.0	68.00	0.0	1.71	0.0
18.00	0.0	1.80	0.0	69.00	0.0	1.71	0.0
19.00	0.0	1.79	0.0	70.00	0.0	1.71	0.0
20.00	0.0	1.79	0.0	71.00	0.0	1.71	0.0
21.00	0.0	1.79	0.0	72.00	0.0	1.71	0.0
22.00	0.0	1.78	0.0				
23.00	0.0	1.78	0.0				
24.00	0.0	1.78	0.0				
25.00	0.0	1.71	0.0				
26.00	0.0	1.71	0.0				
27.00	0.0	1.71	0.0				
28.00	0.0	1.71	0.0				
29.00	0.0	1.71	0.0				
30.00	0.0	1.71	0.0				
31.00	0.0	1.71	0.0				
32.00	0.0	1.71	0.0				
33.00	0.0	1.71	0.0				
34.00	0.0	1.71	0.0				
35.00	0.0	1.71	0.0				
36.00	0.0	1.71	0.0				
37.00	0.0	1.71	0.0				
38.00	0.0	1.71	0.0				
39.00	0.0	1.71	0.0				
40.00	0.0	1.71	0.0				
41.00	0.0	1.71	0.0				
42.00	0.0	1.71	0.0				
43.00	0.0	1.71	0.0				
44.00	0.0	1.71	0.0				
45.00	0.0	1.71	0.0				
46.00	0.0	1.71	0.0				
47.00	0.0	1.71	0.0				
48.00	0.0	1.71	0.0				
49.00	0.0	1.71	0.0				
50.00	0.0	1.71	0.0				

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Type III 24-hr 10-Year Rainfall=5.00"

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Summary for Pond 7P: Outfall 7 - 30" RCP

[57] Hint: Peaked at 2.48' (Flood elevation advised)

Inflow Area = 0.07 ac, 100.00% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 0.4 cfs @ 12.07 hrs, Volume= 0.028 af
Outflow = 0.4 cfs @ 12.07 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min
Primary = 0.4 cfs @ 12.07 hrs, Volume= 0.028 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 2.48' @ 12.07 hrs

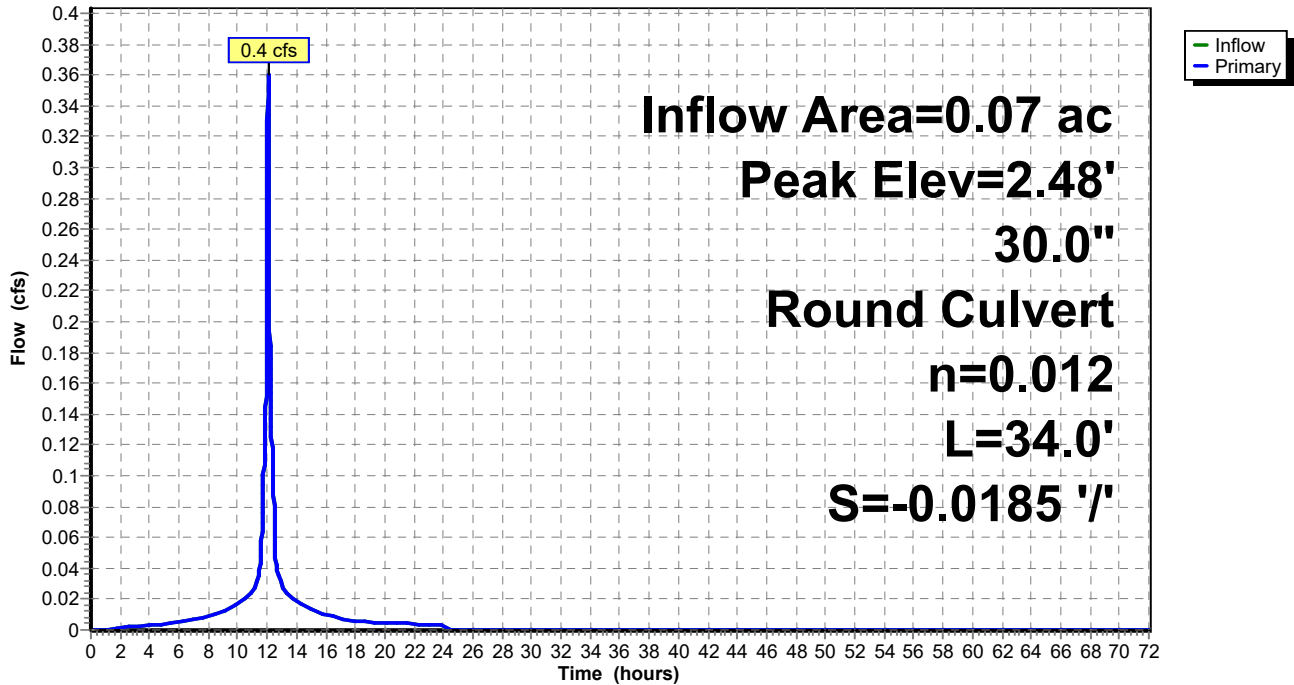
Device #	Routing	Invert	Outlet Devices
#1	Primary	2.29'	30.0" Round RCP_Round 30" L= 34.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1.66' / 2.29' S= -0.0185 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf

Primary OutFlow Max=0.4 cfs @ 12.07 hrs HW=2.48' (Free Discharge)

↑1=RCP_Round 30" (Inlet Controls 0.4 cfs @ 2.04 fps)

Pond 7P: Outfall 7 - 30" RCP

Hydrograph



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Hydrograph for Pond 7P: Outfall 7 - 30" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	2.29	0.0	51.00	0.0	2.29	0.0
1.00	0.0	2.29	0.0	52.00	0.0	2.29	0.0
2.00	0.0	2.30	0.0	53.00	0.0	2.29	0.0
3.00	0.0	2.30	0.0	54.00	0.0	2.29	0.0
4.00	0.0	2.30	0.0	55.00	0.0	2.29	0.0
5.00	0.0	2.31	0.0	56.00	0.0	2.29	0.0
6.00	0.0	2.31	0.0	57.00	0.0	2.29	0.0
7.00	0.0	2.32	0.0	58.00	0.0	2.29	0.0
8.00	0.0	2.32	0.0	59.00	0.0	2.29	0.0
9.00	0.0	2.32	0.0	60.00	0.0	2.29	0.0
10.00	0.0	2.33	0.0	61.00	0.0	2.29	0.0
11.00	0.0	2.34	0.0	62.00	0.0	2.29	0.0
12.00	0.2	2.45	0.2	63.00	0.0	2.29	0.0
13.00	0.0	2.34	0.0	64.00	0.0	2.29	0.0
14.00	0.0	2.33	0.0	65.00	0.0	2.29	0.0
15.00	0.0	2.33	0.0	66.00	0.0	2.29	0.0
16.00	0.0	2.32	0.0	67.00	0.0	2.29	0.0
17.00	0.0	2.32	0.0	68.00	0.0	2.29	0.0
18.00	0.0	2.31	0.0	69.00	0.0	2.29	0.0
19.00	0.0	2.31	0.0	70.00	0.0	2.29	0.0
20.00	0.0	2.31	0.0	71.00	0.0	2.29	0.0
21.00	0.0	2.31	0.0	72.00	0.0	2.29	0.0
22.00	0.0	2.31	0.0				
23.00	0.0	2.30	0.0				
24.00	0.0	2.30	0.0				
25.00	0.0	2.29	0.0				
26.00	0.0	2.29	0.0				
27.00	0.0	2.29	0.0				
28.00	0.0	2.29	0.0				
29.00	0.0	2.29	0.0				
30.00	0.0	2.29	0.0				
31.00	0.0	2.29	0.0				
32.00	0.0	2.29	0.0				
33.00	0.0	2.29	0.0				
34.00	0.0	2.29	0.0				
35.00	0.0	2.29	0.0				
36.00	0.0	2.29	0.0				
37.00	0.0	2.29	0.0				
38.00	0.0	2.29	0.0				
39.00	0.0	2.29	0.0				
40.00	0.0	2.29	0.0				
41.00	0.0	2.29	0.0				
42.00	0.0	2.29	0.0				
43.00	0.0	2.29	0.0				
44.00	0.0	2.29	0.0				
45.00	0.0	2.29	0.0				
46.00	0.0	2.29	0.0				
47.00	0.0	2.29	0.0				
48.00	0.0	2.29	0.0				
49.00	0.0	2.29	0.0				
50.00	0.0	2.29	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentP1N: OF 1 North of HP	Runoff Area=57,569 sf 100.00% Impervious Runoff Depth=5.91" Tc=5.0 min CN=98 Runoff=8.3 cfs 0.651 af
SubcatchmentP1S: OF 1 South of HP	Runoff Area=22,320 sf 100.00% Impervious Runoff Depth=5.91" Tc=5.0 min CN=98 Runoff=3.2 cfs 0.252 af
SubcatchmentP2N: OF 2 North of HP	Runoff Area=72,840 sf 100.00% Impervious Runoff Depth=5.91" Tc=5.0 min CN=98 Runoff=10.4 cfs 0.824 af
SubcatchmentP2S: OF 2 South of HP	Runoff Area=14,495 sf 100.00% Impervious Runoff Depth=5.91" Tc=5.0 min CN=98 Runoff=2.1 cfs 0.164 af
SubcatchmentP3N: OF 3 North of HP	Runoff Area=53,466 sf 100.00% Impervious Runoff Depth=5.91" Tc=5.0 min CN=98 Runoff=7.7 cfs 0.605 af
SubcatchmentP3S: OF 3 South of HP	Runoff Area=8,537 sf 100.00% Impervious Runoff Depth=5.91" Tc=5.0 min CN=98 Runoff=1.2 cfs 0.097 af
SubcatchmentP4N: OF 4 north of HP	Runoff Area=53,231 sf 100.00% Impervious Runoff Depth=5.91" Tc=5.0 min CN=98 Runoff=7.6 cfs 0.602 af
SubcatchmentP4S: OF 4 South of HP	Runoff Area=8,145 sf 100.00% Impervious Runoff Depth=5.91" Tc=5.0 min CN=98 Runoff=1.2 cfs 0.092 af
SubcatchmentP5N: OF 5 - North of HP	Runoff Area=29,054 sf 100.00% Impervious Runoff Depth=5.91" Tc=5.0 min CN=98 Runoff=4.2 cfs 0.329 af
SubcatchmentP5S: OF 5 - South of HP	Runoff Area=4,505 sf 100.00% Impervious Runoff Depth=5.91" Tc=5.0 min CN=98 Runoff=0.6 cfs 0.051 af
SubcatchmentP6: OF 6 - Berth 11 12	Runoff Area=11,661 sf 100.00% Impervious Runoff Depth=5.91" Tc=5.0 min CN=98 Runoff=1.7 cfs 0.132 af
SubcatchmentP7: OF 7 - Berth 11 12	Runoff Area=3,096 sf 100.00% Impervious Runoff Depth=5.91" Tc=5.0 min CN=98 Runoff=0.4 cfs 0.035 af
Pond 1P: Outfall 1 - 18" RCP	Peak Elev=2.86' Inflow=11.5 cfs 0.904 af 18.0" Round Culvert n=0.012 L=26.0' S=-0.0154 '/' Outflow=11.5 cfs 0.904 af
Pond 2P: Outfall 2 - 18" RCP	Peak Elev=4.03' Inflow=12.5 cfs 0.988 af 18.0" Round Culvert n=0.012 L=20.0' S=0.0075 '/' Outflow=12.5 cfs 0.988 af
Pond 3P: Outfall 3 - 24" RCP	Peak Elev=1.65' Inflow=8.9 cfs 0.701 af 24.0" Round Culvert n=0.012 L=21.0' S=0.0095 '/' Outflow=8.9 cfs 0.701 af
Pond 4P: Outfall 4 - 24" RCP	Peak Elev=2.05' Inflow=8.8 cfs 0.694 af 24.0" Round Culvert n=0.012 L=27.0' S=0.0037 '/' Outflow=8.8 cfs 0.694 af

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Type III 24-hr 25-Year Rainfall=6.15"

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Pond 5P: Outfall 5 - 36" RCP

Peak Elev=3.16' Inflow=4.8 cfs 0.380 af
36.0" Round Culvert n=0.012 L=48.0' S=0.0046 '/ Outflow=4.8 cfs 0.380 af

Pond 6P: Outfall 6 - 42" RCP

Peak Elev=2.31' Inflow=1.7 cfs 0.132 af
42.0" Round Culvert n=0.012 L=54.0' S=0.0007 '/ Outflow=1.7 cfs 0.132 af

Pond 7P: Outfall 7 - 30" RCP

Peak Elev=2.51' Inflow=0.4 cfs 0.035 af
30.0" Round Culvert n=0.012 L=34.0' S=-0.0185 '/ Outflow=0.4 cfs 0.035 af

Total Runoff Area = 7.78 ac Runoff Volume = 3.833 af Average Runoff Depth = 5.91"
0.00% Pervious = 0.00 ac 100.00% Impervious = 7.78 ac

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Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Subcatchment P1N: OF 1 North of HP

Runoff = 8.3 cfs @ 12.07 hrs, Volume= 0.651 af, Depth= 5.91"

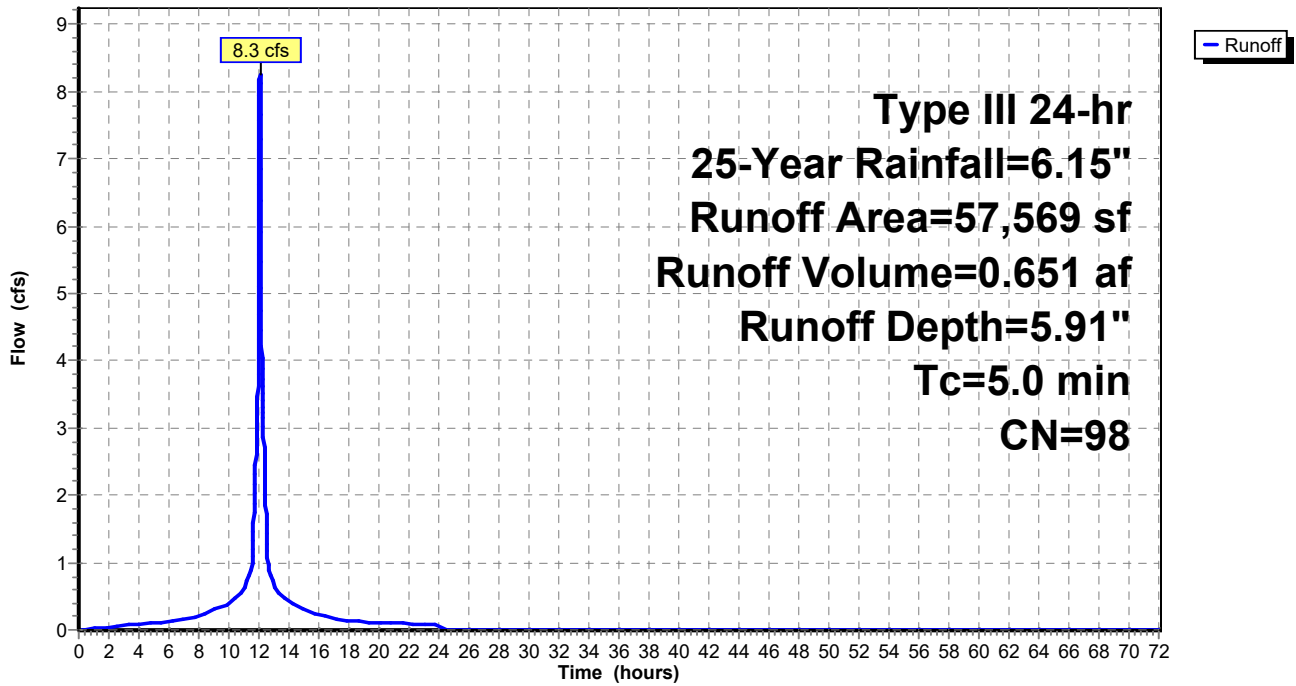
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.15"

Area (sf)	CN	Description
* 57,569	98	Outfall 1 North Trench Drain
57,569		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P1N: OF 1 North of HP

Hydrograph



Massport_M555_Backlands_POST_LOW

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Hydrograph for Subcatchment P1N: OF 1 North of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	6.15	5.91	0.0
1.00	0.06	0.00	0.0	52.00	6.15	5.91	0.0
2.00	0.12	0.02	0.0	53.00	6.15	5.91	0.0
3.00	0.19	0.06	0.1	54.00	6.15	5.91	0.0
4.00	0.26	0.12	0.1	55.00	6.15	5.91	0.0
5.00	0.35	0.19	0.1	56.00	6.15	5.91	0.0
6.00	0.44	0.27	0.1	57.00	6.15	5.91	0.0
7.00	0.56	0.37	0.2	58.00	6.15	5.91	0.0
8.00	0.70	0.50	0.2	59.00	6.15	5.91	0.0
9.00	0.90	0.69	0.3	60.00	6.15	5.91	0.0
10.00	1.16	0.95	0.4	61.00	6.15	5.91	0.0
11.00	1.54	1.32	0.6	62.00	6.15	5.91	0.0
12.00	3.07	2.84	5.6	63.00	6.15	5.91	0.0
13.00	4.61	4.38	0.7	64.00	6.15	5.91	0.0
14.00	4.99	4.75	0.4	65.00	6.15	5.91	0.0
15.00	5.25	5.02	0.3	66.00	6.15	5.91	0.0
16.00	5.45	5.21	0.2	67.00	6.15	5.91	0.0
17.00	5.59	5.36	0.2	68.00	6.15	5.91	0.0
18.00	5.71	5.47	0.1	69.00	6.15	5.91	0.0
19.00	5.80	5.56	0.1	70.00	6.15	5.91	0.0
20.00	5.89	5.65	0.1	71.00	6.15	5.91	0.0
21.00	5.96	5.72	0.1	72.00	6.15	5.91	0.0
22.00	6.03	5.79	0.1				
23.00	6.09	5.86	0.1				
24.00	6.15	5.91	0.1				
25.00	6.15	5.91	0.0				
26.00	6.15	5.91	0.0				
27.00	6.15	5.91	0.0				
28.00	6.15	5.91	0.0				
29.00	6.15	5.91	0.0				
30.00	6.15	5.91	0.0				
31.00	6.15	5.91	0.0				
32.00	6.15	5.91	0.0				
33.00	6.15	5.91	0.0				
34.00	6.15	5.91	0.0				
35.00	6.15	5.91	0.0				
36.00	6.15	5.91	0.0				
37.00	6.15	5.91	0.0				
38.00	6.15	5.91	0.0				
39.00	6.15	5.91	0.0				
40.00	6.15	5.91	0.0				
41.00	6.15	5.91	0.0				
42.00	6.15	5.91	0.0				
43.00	6.15	5.91	0.0				
44.00	6.15	5.91	0.0				
45.00	6.15	5.91	0.0				
46.00	6.15	5.91	0.0				
47.00	6.15	5.91	0.0				
48.00	6.15	5.91	0.0				
49.00	6.15	5.91	0.0				
50.00	6.15	5.91	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Subcatchment P1S: OF 1 Southh of HP

Runoff = 3.2 cfs @ 12.07 hrs, Volume= 0.252 af, Depth= 5.91"

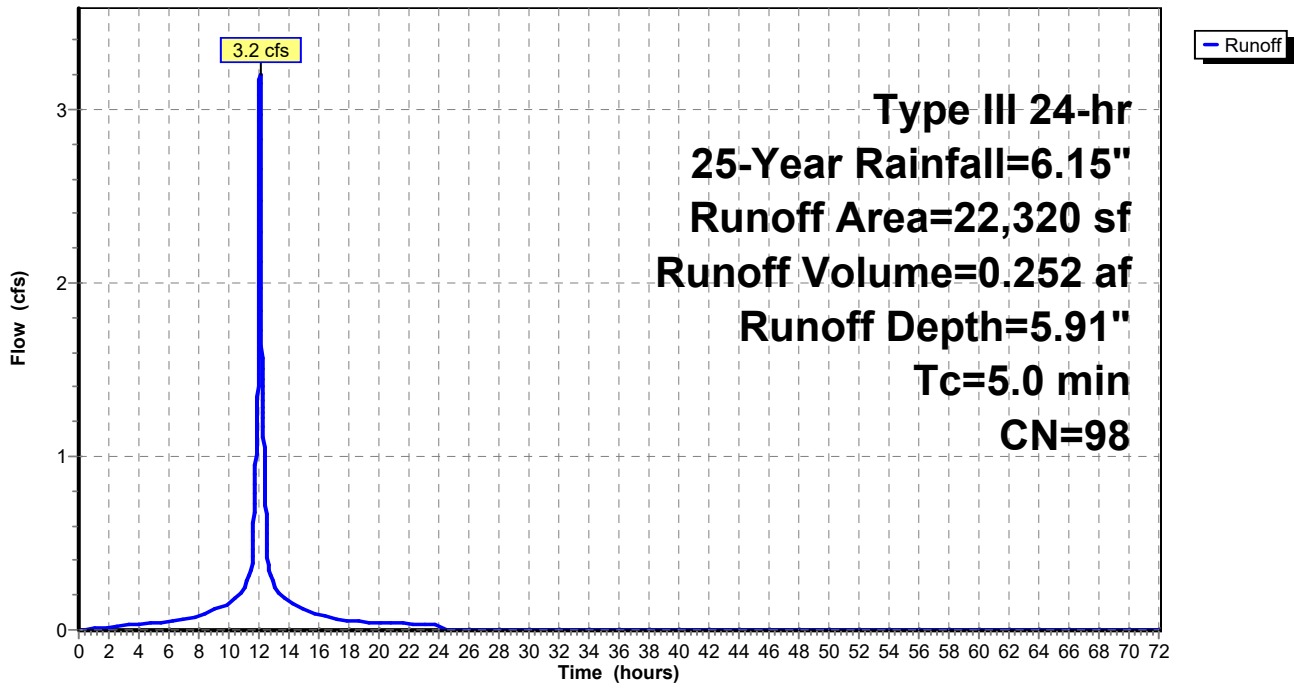
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.15"

Area (sf)	CN	Description
* 22,320	98	Outfall 1 South CB
22,320		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P1S: OF 1 Southh of HP

Hydrograph



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Type III 24-hr 25-Year Rainfall=6.15"

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Hydrograph for Subcatchment P1S: OF 1 Southh of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	6.15	5.91	0.0
1.00	0.06	0.00	0.0	52.00	6.15	5.91	0.0
2.00	0.12	0.02	0.0	53.00	6.15	5.91	0.0
3.00	0.19	0.06	0.0	54.00	6.15	5.91	0.0
4.00	0.26	0.12	0.0	55.00	6.15	5.91	0.0
5.00	0.35	0.19	0.0	56.00	6.15	5.91	0.0
6.00	0.44	0.27	0.0	57.00	6.15	5.91	0.0
7.00	0.56	0.37	0.1	58.00	6.15	5.91	0.0
8.00	0.70	0.50	0.1	59.00	6.15	5.91	0.0
9.00	0.90	0.69	0.1	60.00	6.15	5.91	0.0
10.00	1.16	0.95	0.1	61.00	6.15	5.91	0.0
11.00	1.54	1.32	0.2	62.00	6.15	5.91	0.0
12.00	3.07	2.84	2.2	63.00	6.15	5.91	0.0
13.00	4.61	4.38	0.3	64.00	6.15	5.91	0.0
14.00	4.99	4.75	0.2	65.00	6.15	5.91	0.0
15.00	5.25	5.02	0.1	66.00	6.15	5.91	0.0
16.00	5.45	5.21	0.1	67.00	6.15	5.91	0.0
17.00	5.59	5.36	0.1	68.00	6.15	5.91	0.0
18.00	5.71	5.47	0.1	69.00	6.15	5.91	0.0
19.00	5.80	5.56	0.0	70.00	6.15	5.91	0.0
20.00	5.89	5.65	0.0	71.00	6.15	5.91	0.0
21.00	5.96	5.72	0.0	72.00	6.15	5.91	0.0
22.00	6.03	5.79	0.0				
23.00	6.09	5.86	0.0				
24.00	6.15	5.91	0.0				
25.00	6.15	5.91	0.0				
26.00	6.15	5.91	0.0				
27.00	6.15	5.91	0.0				
28.00	6.15	5.91	0.0				
29.00	6.15	5.91	0.0				
30.00	6.15	5.91	0.0				
31.00	6.15	5.91	0.0				
32.00	6.15	5.91	0.0				
33.00	6.15	5.91	0.0				
34.00	6.15	5.91	0.0				
35.00	6.15	5.91	0.0				
36.00	6.15	5.91	0.0				
37.00	6.15	5.91	0.0				
38.00	6.15	5.91	0.0				
39.00	6.15	5.91	0.0				
40.00	6.15	5.91	0.0				
41.00	6.15	5.91	0.0				
42.00	6.15	5.91	0.0				
43.00	6.15	5.91	0.0				
44.00	6.15	5.91	0.0				
45.00	6.15	5.91	0.0				
46.00	6.15	5.91	0.0				
47.00	6.15	5.91	0.0				
48.00	6.15	5.91	0.0				
49.00	6.15	5.91	0.0				
50.00	6.15	5.91	0.0				

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Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Subcatchment P2N: OF 2 North of HP

Runoff = 10.4 cfs @ 12.07 hrs, Volume= 0.824 af, Depth= 5.91"

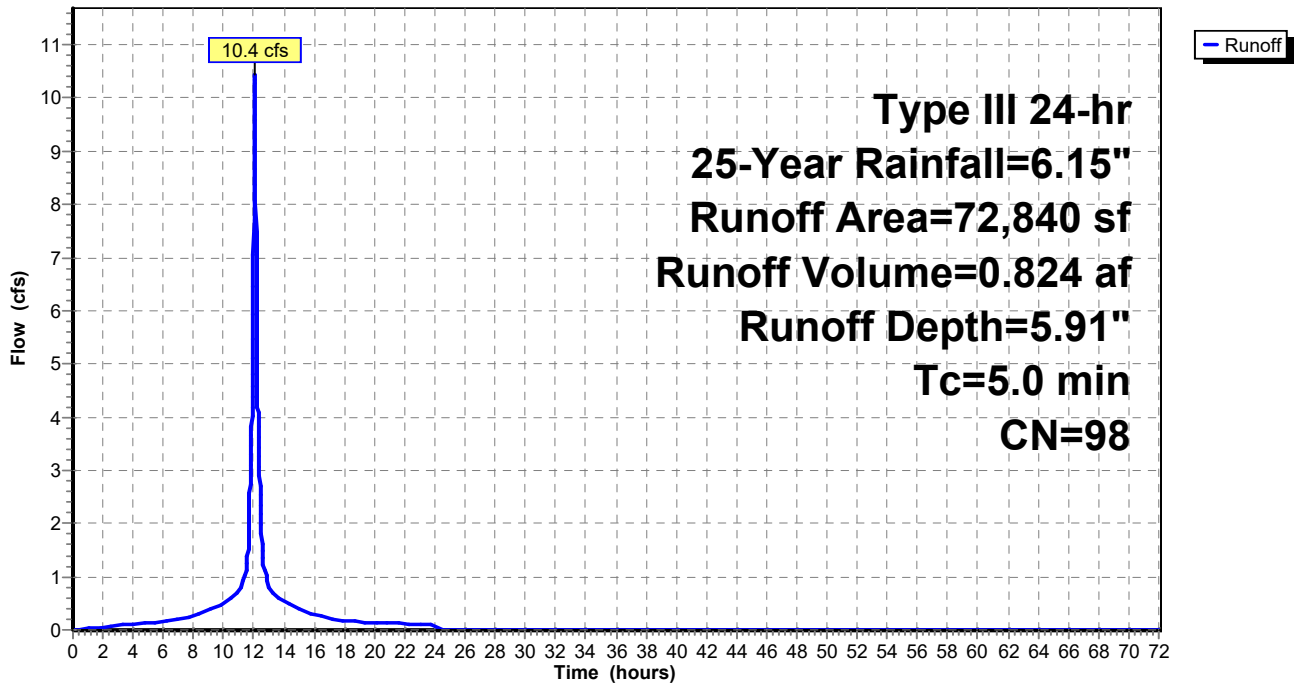
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.15"

Area (sf)	CN	Description
* 72,840	98	Area draining to north of high point
72,840		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment P2N: OF 2 North of HP

Hydrograph



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Type III 24-hr 25-Year Rainfall=6.15"

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Hydrograph for Subcatchment P2N: OF 2 North of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	6.15	5.91	0.0
1.00	0.06	0.00	0.0	52.00	6.15	5.91	0.0
2.00	0.12	0.02	0.0	53.00	6.15	5.91	0.0
3.00	0.19	0.06	0.1	54.00	6.15	5.91	0.0
4.00	0.26	0.12	0.1	55.00	6.15	5.91	0.0
5.00	0.35	0.19	0.1	56.00	6.15	5.91	0.0
6.00	0.44	0.27	0.1	57.00	6.15	5.91	0.0
7.00	0.56	0.37	0.2	58.00	6.15	5.91	0.0
8.00	0.70	0.50	0.3	59.00	6.15	5.91	0.0
9.00	0.90	0.69	0.4	60.00	6.15	5.91	0.0
10.00	1.16	0.95	0.5	61.00	6.15	5.91	0.0
11.00	1.54	1.32	0.7	62.00	6.15	5.91	0.0
12.00	3.07	2.84	7.1	63.00	6.15	5.91	0.0
13.00	4.61	4.38	0.8	64.00	6.15	5.91	0.0
14.00	4.99	4.75	0.5	65.00	6.15	5.91	0.0
15.00	5.25	5.02	0.4	66.00	6.15	5.91	0.0
16.00	5.45	5.21	0.3	67.00	6.15	5.91	0.0
17.00	5.59	5.36	0.2	68.00	6.15	5.91	0.0
18.00	5.71	5.47	0.2	69.00	6.15	5.91	0.0
19.00	5.80	5.56	0.2	70.00	6.15	5.91	0.0
20.00	5.89	5.65	0.1	71.00	6.15	5.91	0.0
21.00	5.96	5.72	0.1	72.00	6.15	5.91	0.0
22.00	6.03	5.79	0.1				
23.00	6.09	5.86	0.1				
24.00	6.15	5.91	0.1				
25.00	6.15	5.91	0.0				
26.00	6.15	5.91	0.0				
27.00	6.15	5.91	0.0				
28.00	6.15	5.91	0.0				
29.00	6.15	5.91	0.0				
30.00	6.15	5.91	0.0				
31.00	6.15	5.91	0.0				
32.00	6.15	5.91	0.0				
33.00	6.15	5.91	0.0				
34.00	6.15	5.91	0.0				
35.00	6.15	5.91	0.0				
36.00	6.15	5.91	0.0				
37.00	6.15	5.91	0.0				
38.00	6.15	5.91	0.0				
39.00	6.15	5.91	0.0				
40.00	6.15	5.91	0.0				
41.00	6.15	5.91	0.0				
42.00	6.15	5.91	0.0				
43.00	6.15	5.91	0.0				
44.00	6.15	5.91	0.0				
45.00	6.15	5.91	0.0				
46.00	6.15	5.91	0.0				
47.00	6.15	5.91	0.0				
48.00	6.15	5.91	0.0				
49.00	6.15	5.91	0.0				
50.00	6.15	5.91	0.0				

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Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Subcatchment P2S: OF 2 South of HP

Runoff = 2.1 cfs @ 12.07 hrs, Volume= 0.164 af, Depth= 5.91"

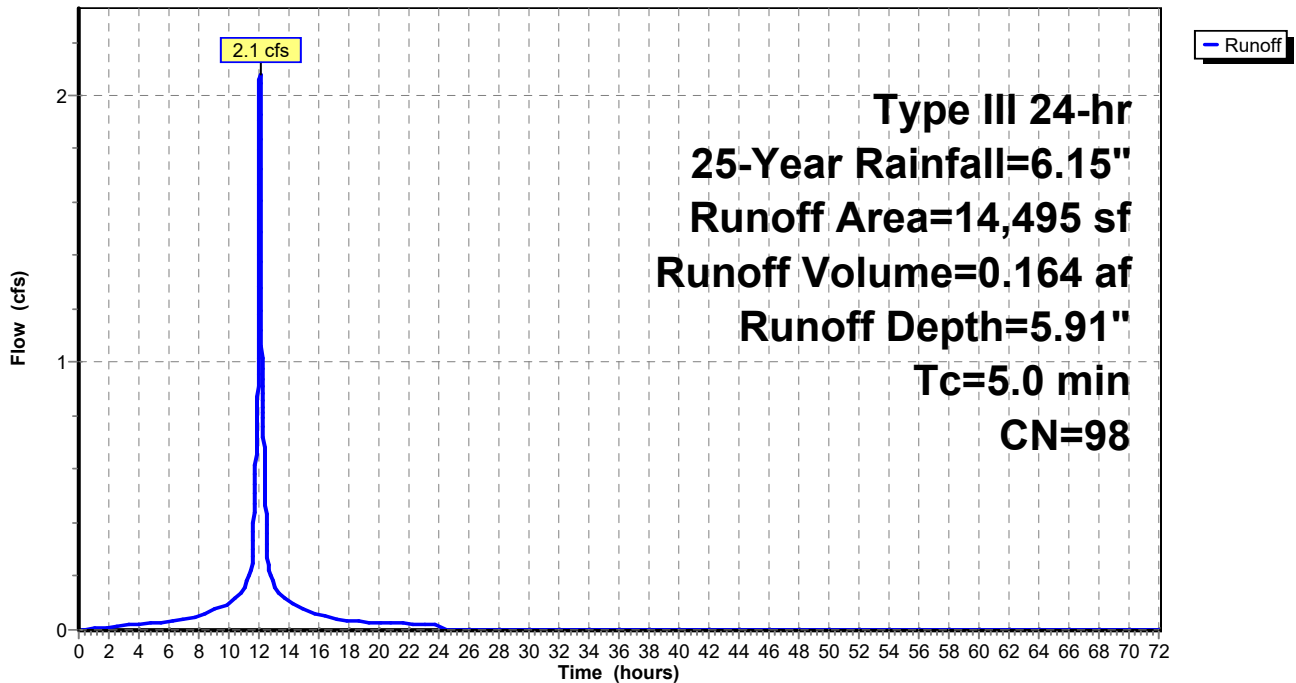
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-Year Rainfall=6.15"

Area (sf)	CN	Description
* 14,495	98	Area to South of High Point at D2
14,495		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P2S: OF 2 South of HP

Hydrograph



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Type III 24-hr 25-Year Rainfall=6.15"

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Hydrograph for Subcatchment P2S: OF 2 South of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	6.15	5.91	0.0
1.00	0.06	0.00	0.0	52.00	6.15	5.91	0.0
2.00	0.12	0.02	0.0	53.00	6.15	5.91	0.0
3.00	0.19	0.06	0.0	54.00	6.15	5.91	0.0
4.00	0.26	0.12	0.0	55.00	6.15	5.91	0.0
5.00	0.35	0.19	0.0	56.00	6.15	5.91	0.0
6.00	0.44	0.27	0.0	57.00	6.15	5.91	0.0
7.00	0.56	0.37	0.0	58.00	6.15	5.91	0.0
8.00	0.70	0.50	0.0	59.00	6.15	5.91	0.0
9.00	0.90	0.69	0.1	60.00	6.15	5.91	0.0
10.00	1.16	0.95	0.1	61.00	6.15	5.91	0.0
11.00	1.54	1.32	0.1	62.00	6.15	5.91	0.0
12.00	3.07	2.84	1.4	63.00	6.15	5.91	0.0
13.00	4.61	4.38	0.2	64.00	6.15	5.91	0.0
14.00	4.99	4.75	0.1	65.00	6.15	5.91	0.0
15.00	5.25	5.02	0.1	66.00	6.15	5.91	0.0
16.00	5.45	5.21	0.1	67.00	6.15	5.91	0.0
17.00	5.59	5.36	0.0	68.00	6.15	5.91	0.0
18.00	5.71	5.47	0.0	69.00	6.15	5.91	0.0
19.00	5.80	5.56	0.0	70.00	6.15	5.91	0.0
20.00	5.89	5.65	0.0	71.00	6.15	5.91	0.0
21.00	5.96	5.72	0.0	72.00	6.15	5.91	0.0
22.00	6.03	5.79	0.0				
23.00	6.09	5.86	0.0				
24.00	6.15	5.91	0.0				
25.00	6.15	5.91	0.0				
26.00	6.15	5.91	0.0				
27.00	6.15	5.91	0.0				
28.00	6.15	5.91	0.0				
29.00	6.15	5.91	0.0				
30.00	6.15	5.91	0.0				
31.00	6.15	5.91	0.0				
32.00	6.15	5.91	0.0				
33.00	6.15	5.91	0.0				
34.00	6.15	5.91	0.0				
35.00	6.15	5.91	0.0				
36.00	6.15	5.91	0.0				
37.00	6.15	5.91	0.0				
38.00	6.15	5.91	0.0				
39.00	6.15	5.91	0.0				
40.00	6.15	5.91	0.0				
41.00	6.15	5.91	0.0				
42.00	6.15	5.91	0.0				
43.00	6.15	5.91	0.0				
44.00	6.15	5.91	0.0				
45.00	6.15	5.91	0.0				
46.00	6.15	5.91	0.0				
47.00	6.15	5.91	0.0				
48.00	6.15	5.91	0.0				
49.00	6.15	5.91	0.0				
50.00	6.15	5.91	0.0				

Massport_M555_Backlands_POST_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Subcatchment P3N: OF 3 North of HP

Runoff = 7.7 cfs @ 12.07 hrs, Volume= 0.605 af, Depth= 5.91"

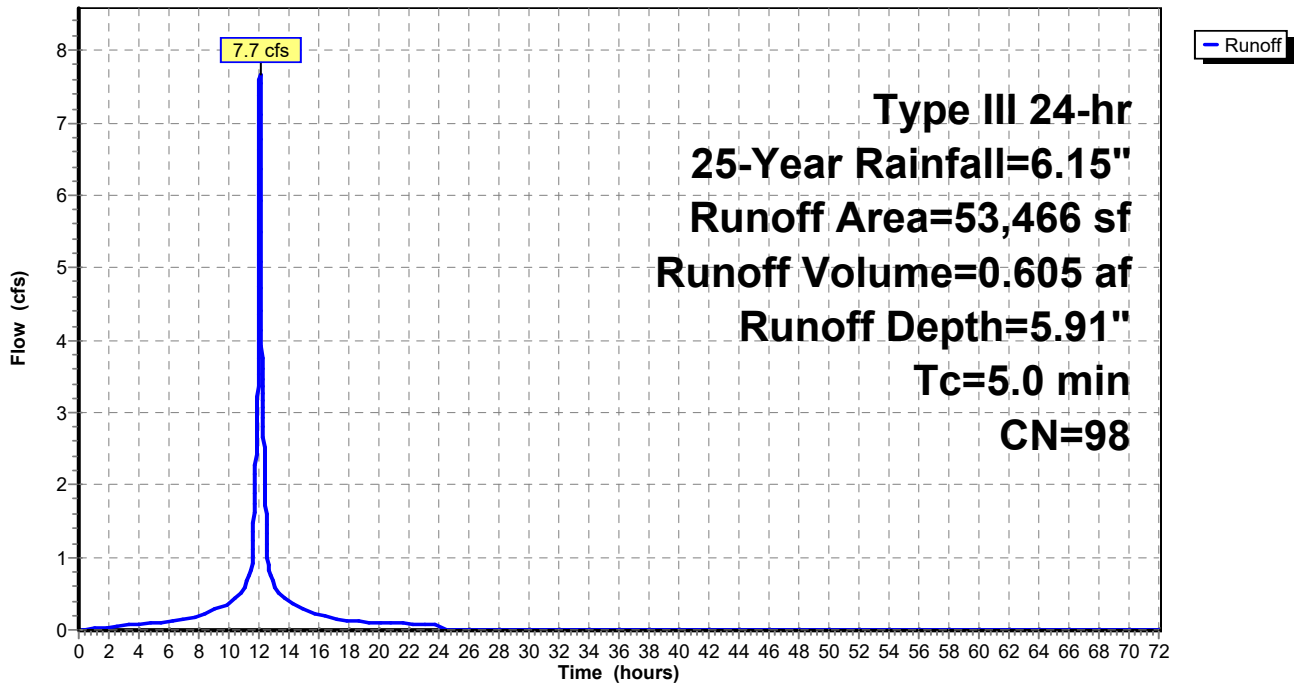
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.15"

Area (sf)	CN	Description
* 53,466	98	Area north of high point drain to outfall 4
53,466		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment P3N: OF 3 North of HP

Hydrograph



Massport_M555_Backlands_POST_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

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Hydrograph for Subcatchment P3N: OF 3 North of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	6.15	5.91	0.0
1.00	0.06	0.00	0.0	52.00	6.15	5.91	0.0
2.00	0.12	0.02	0.0	53.00	6.15	5.91	0.0
3.00	0.19	0.06	0.1	54.00	6.15	5.91	0.0
4.00	0.26	0.12	0.1	55.00	6.15	5.91	0.0
5.00	0.35	0.19	0.1	56.00	6.15	5.91	0.0
6.00	0.44	0.27	0.1	57.00	6.15	5.91	0.0
7.00	0.56	0.37	0.1	58.00	6.15	5.91	0.0
8.00	0.70	0.50	0.2	59.00	6.15	5.91	0.0
9.00	0.90	0.69	0.3	60.00	6.15	5.91	0.0
10.00	1.16	0.95	0.4	61.00	6.15	5.91	0.0
11.00	1.54	1.32	0.5	62.00	6.15	5.91	0.0
12.00	3.07	2.84	5.2	63.00	6.15	5.91	0.0
13.00	4.61	4.38	0.6	64.00	6.15	5.91	0.0
14.00	4.99	4.75	0.4	65.00	6.15	5.91	0.0
15.00	5.25	5.02	0.3	66.00	6.15	5.91	0.0
16.00	5.45	5.21	0.2	67.00	6.15	5.91	0.0
17.00	5.59	5.36	0.2	68.00	6.15	5.91	0.0
18.00	5.71	5.47	0.1	69.00	6.15	5.91	0.0
19.00	5.80	5.56	0.1	70.00	6.15	5.91	0.0
20.00	5.89	5.65	0.1	71.00	6.15	5.91	0.0
21.00	5.96	5.72	0.1	72.00	6.15	5.91	0.0
22.00	6.03	5.79	0.1				
23.00	6.09	5.86	0.1				
24.00	6.15	5.91	0.1				
25.00	6.15	5.91	0.0				
26.00	6.15	5.91	0.0				
27.00	6.15	5.91	0.0				
28.00	6.15	5.91	0.0				
29.00	6.15	5.91	0.0				
30.00	6.15	5.91	0.0				
31.00	6.15	5.91	0.0				
32.00	6.15	5.91	0.0				
33.00	6.15	5.91	0.0				
34.00	6.15	5.91	0.0				
35.00	6.15	5.91	0.0				
36.00	6.15	5.91	0.0				
37.00	6.15	5.91	0.0				
38.00	6.15	5.91	0.0				
39.00	6.15	5.91	0.0				
40.00	6.15	5.91	0.0				
41.00	6.15	5.91	0.0				
42.00	6.15	5.91	0.0				
43.00	6.15	5.91	0.0				
44.00	6.15	5.91	0.0				
45.00	6.15	5.91	0.0				
46.00	6.15	5.91	0.0				
47.00	6.15	5.91	0.0				
48.00	6.15	5.91	0.0				
49.00	6.15	5.91	0.0				
50.00	6.15	5.91	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Subcatchment P3S: OF 3 South of HP

Runoff = 1.2 cfs @ 12.07 hrs, Volume= 0.097 af, Depth= 5.91"

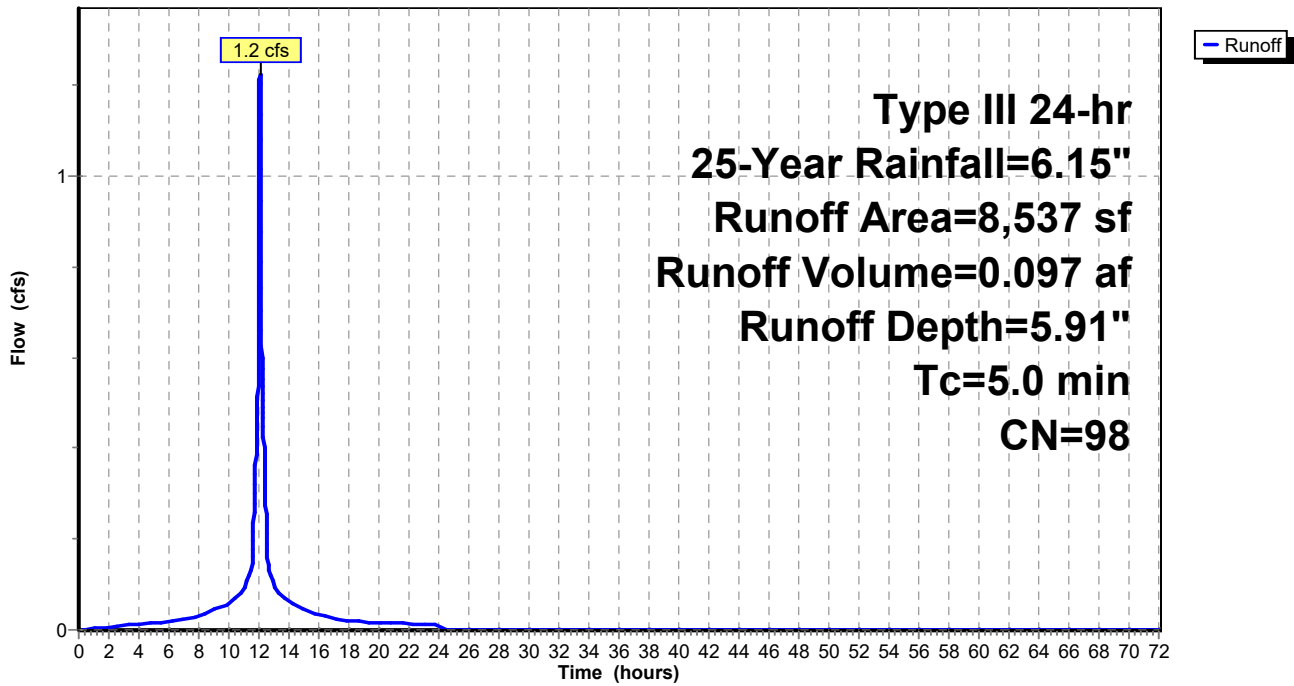
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.15"

Area (sf)	CN	Description
* 8,537	98	Area south of high point at Outfall 3
8,537		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment P3S: OF 3 South of HP

Hydrograph



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Type III 24-hr 25-Year Rainfall=6.15"

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Hydrograph for Subcatchment P3S: OF 3 South of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	6.15	5.91	0.0
1.00	0.06	0.00	0.0	52.00	6.15	5.91	0.0
2.00	0.12	0.02	0.0	53.00	6.15	5.91	0.0
3.00	0.19	0.06	0.0	54.00	6.15	5.91	0.0
4.00	0.26	0.12	0.0	55.00	6.15	5.91	0.0
5.00	0.35	0.19	0.0	56.00	6.15	5.91	0.0
6.00	0.44	0.27	0.0	57.00	6.15	5.91	0.0
7.00	0.56	0.37	0.0	58.00	6.15	5.91	0.0
8.00	0.70	0.50	0.0	59.00	6.15	5.91	0.0
9.00	0.90	0.69	0.0	60.00	6.15	5.91	0.0
10.00	1.16	0.95	0.1	61.00	6.15	5.91	0.0
11.00	1.54	1.32	0.1	62.00	6.15	5.91	0.0
12.00	3.07	2.84	0.8	63.00	6.15	5.91	0.0
13.00	4.61	4.38	0.1	64.00	6.15	5.91	0.0
14.00	4.99	4.75	0.1	65.00	6.15	5.91	0.0
15.00	5.25	5.02	0.0	66.00	6.15	5.91	0.0
16.00	5.45	5.21	0.0	67.00	6.15	5.91	0.0
17.00	5.59	5.36	0.0	68.00	6.15	5.91	0.0
18.00	5.71	5.47	0.0	69.00	6.15	5.91	0.0
19.00	5.80	5.56	0.0	70.00	6.15	5.91	0.0
20.00	5.89	5.65	0.0	71.00	6.15	5.91	0.0
21.00	5.96	5.72	0.0	72.00	6.15	5.91	0.0
22.00	6.03	5.79	0.0				
23.00	6.09	5.86	0.0				
24.00	6.15	5.91	0.0				
25.00	6.15	5.91	0.0				
26.00	6.15	5.91	0.0				
27.00	6.15	5.91	0.0				
28.00	6.15	5.91	0.0				
29.00	6.15	5.91	0.0				
30.00	6.15	5.91	0.0				
31.00	6.15	5.91	0.0				
32.00	6.15	5.91	0.0				
33.00	6.15	5.91	0.0				
34.00	6.15	5.91	0.0				
35.00	6.15	5.91	0.0				
36.00	6.15	5.91	0.0				
37.00	6.15	5.91	0.0				
38.00	6.15	5.91	0.0				
39.00	6.15	5.91	0.0				
40.00	6.15	5.91	0.0				
41.00	6.15	5.91	0.0				
42.00	6.15	5.91	0.0				
43.00	6.15	5.91	0.0				
44.00	6.15	5.91	0.0				
45.00	6.15	5.91	0.0				
46.00	6.15	5.91	0.0				
47.00	6.15	5.91	0.0				
48.00	6.15	5.91	0.0				
49.00	6.15	5.91	0.0				
50.00	6.15	5.91	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Subcatchment P4N: OF 4 north of HP

Runoff = 7.6 cfs @ 12.07 hrs, Volume= 0.602 af, Depth= 5.91"

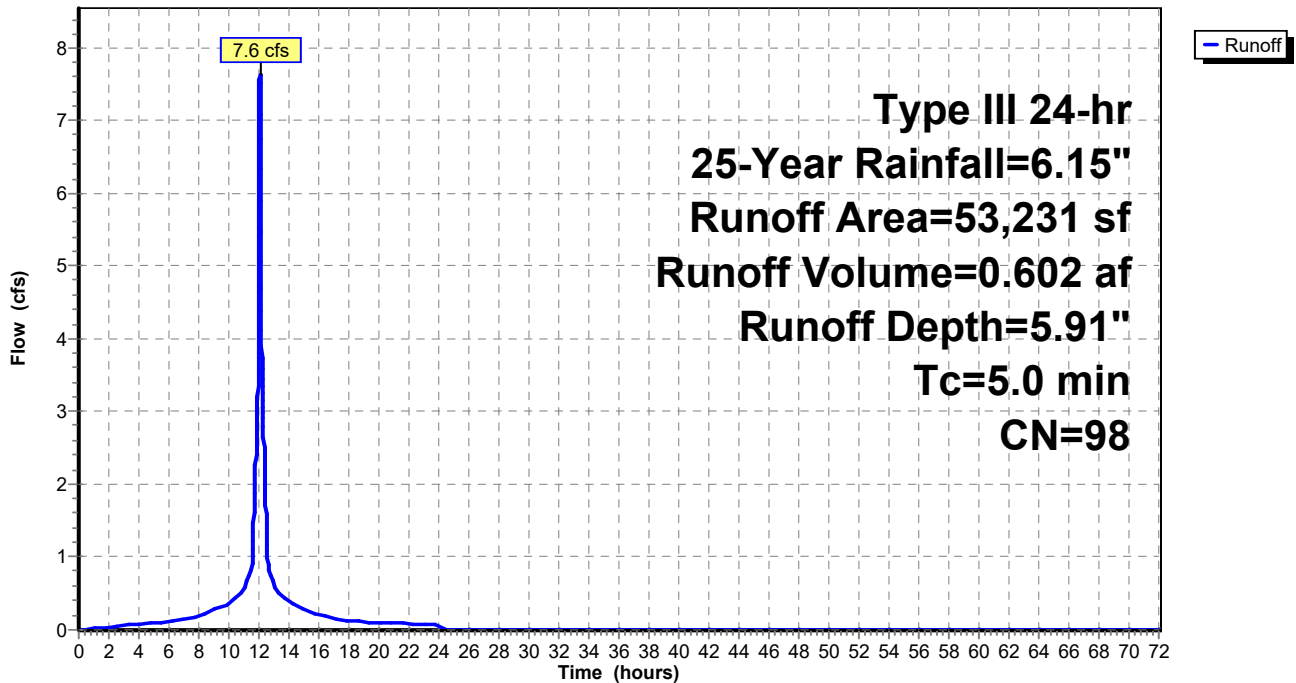
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.15"

Area (sf)	CN	Description
* 53,231	98	Area draining north of high point to trench drains
53,231		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment P4N: OF 4 north of HP

Hydrograph



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Type III 24-hr 25-Year Rainfall=6.15"

Printed 6/30/2021

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Hydrograph for Subcatchment P4N: OF 4 north of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	6.15	5.91	0.0
1.00	0.06	0.00	0.0	52.00	6.15	5.91	0.0
2.00	0.12	0.02	0.0	53.00	6.15	5.91	0.0
3.00	0.19	0.06	0.1	54.00	6.15	5.91	0.0
4.00	0.26	0.12	0.1	55.00	6.15	5.91	0.0
5.00	0.35	0.19	0.1	56.00	6.15	5.91	0.0
6.00	0.44	0.27	0.1	57.00	6.15	5.91	0.0
7.00	0.56	0.37	0.1	58.00	6.15	5.91	0.0
8.00	0.70	0.50	0.2	59.00	6.15	5.91	0.0
9.00	0.90	0.69	0.3	60.00	6.15	5.91	0.0
10.00	1.16	0.95	0.4	61.00	6.15	5.91	0.0
11.00	1.54	1.32	0.5	62.00	6.15	5.91	0.0
12.00	3.07	2.84	5.2	63.00	6.15	5.91	0.0
13.00	4.61	4.38	0.6	64.00	6.15	5.91	0.0
14.00	4.99	4.75	0.4	65.00	6.15	5.91	0.0
15.00	5.25	5.02	0.3	66.00	6.15	5.91	0.0
16.00	5.45	5.21	0.2	67.00	6.15	5.91	0.0
17.00	5.59	5.36	0.2	68.00	6.15	5.91	0.0
18.00	5.71	5.47	0.1	69.00	6.15	5.91	0.0
19.00	5.80	5.56	0.1	70.00	6.15	5.91	0.0
20.00	5.89	5.65	0.1	71.00	6.15	5.91	0.0
21.00	5.96	5.72	0.1	72.00	6.15	5.91	0.0
22.00	6.03	5.79	0.1				
23.00	6.09	5.86	0.1				
24.00	6.15	5.91	0.1				
25.00	6.15	5.91	0.0				
26.00	6.15	5.91	0.0				
27.00	6.15	5.91	0.0				
28.00	6.15	5.91	0.0				
29.00	6.15	5.91	0.0				
30.00	6.15	5.91	0.0				
31.00	6.15	5.91	0.0				
32.00	6.15	5.91	0.0				
33.00	6.15	5.91	0.0				
34.00	6.15	5.91	0.0				
35.00	6.15	5.91	0.0				
36.00	6.15	5.91	0.0				
37.00	6.15	5.91	0.0				
38.00	6.15	5.91	0.0				
39.00	6.15	5.91	0.0				
40.00	6.15	5.91	0.0				
41.00	6.15	5.91	0.0				
42.00	6.15	5.91	0.0				
43.00	6.15	5.91	0.0				
44.00	6.15	5.91	0.0				
45.00	6.15	5.91	0.0				
46.00	6.15	5.91	0.0				
47.00	6.15	5.91	0.0				
48.00	6.15	5.91	0.0				
49.00	6.15	5.91	0.0				
50.00	6.15	5.91	0.0				

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Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Subcatchment P4S: OF 4 South of HP

Runoff = 1.2 cfs @ 12.07 hrs, Volume= 0.092 af, Depth= 5.91"

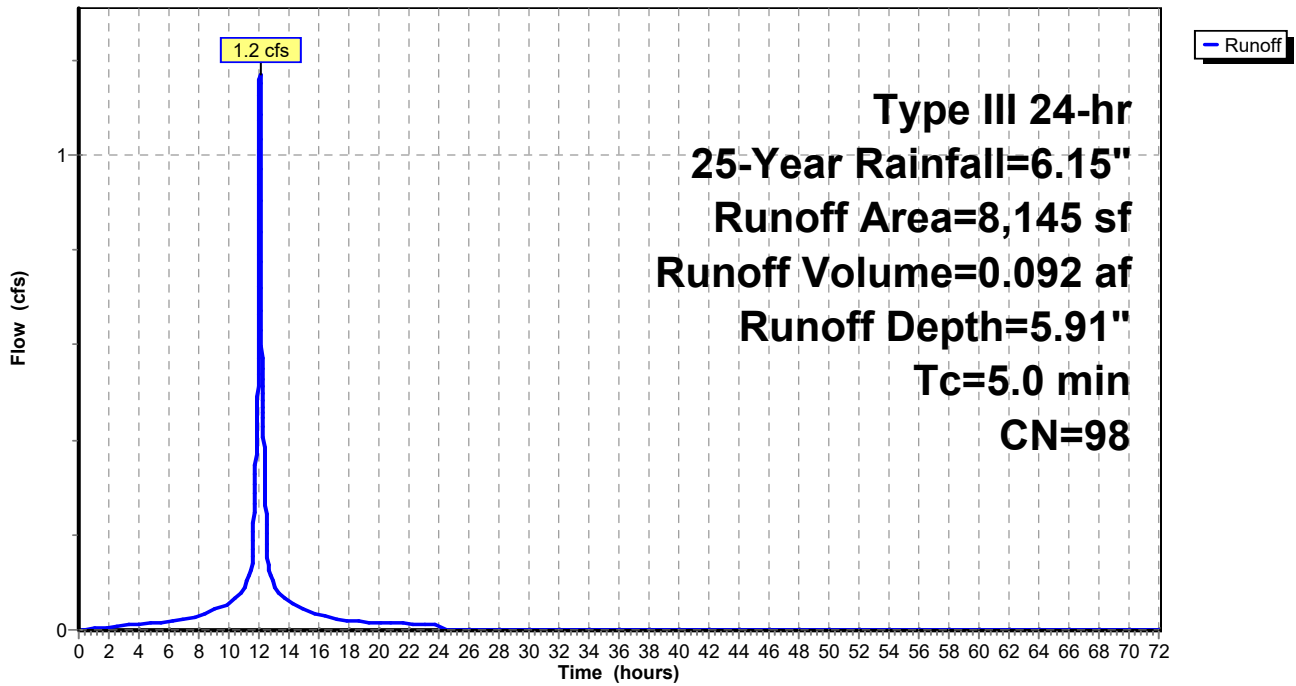
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.15"

Area (sf)	CN	Description
* 8,145	98	Area south of high point drain to outfall 4
8,145		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment P4S: OF 4 South of HP

Hydrograph



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Type III 24-hr 25-Year Rainfall=6.15"

Printed 6/30/2021

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Hydrograph for Subcatchment P4S: OF 4 South of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	6.15	5.91	0.0
1.00	0.06	0.00	0.0	52.00	6.15	5.91	0.0
2.00	0.12	0.02	0.0	53.00	6.15	5.91	0.0
3.00	0.19	0.06	0.0	54.00	6.15	5.91	0.0
4.00	0.26	0.12	0.0	55.00	6.15	5.91	0.0
5.00	0.35	0.19	0.0	56.00	6.15	5.91	0.0
6.00	0.44	0.27	0.0	57.00	6.15	5.91	0.0
7.00	0.56	0.37	0.0	58.00	6.15	5.91	0.0
8.00	0.70	0.50	0.0	59.00	6.15	5.91	0.0
9.00	0.90	0.69	0.0	60.00	6.15	5.91	0.0
10.00	1.16	0.95	0.1	61.00	6.15	5.91	0.0
11.00	1.54	1.32	0.1	62.00	6.15	5.91	0.0
12.00	3.07	2.84	0.8	63.00	6.15	5.91	0.0
13.00	4.61	4.38	0.1	64.00	6.15	5.91	0.0
14.00	4.99	4.75	0.1	65.00	6.15	5.91	0.0
15.00	5.25	5.02	0.0	66.00	6.15	5.91	0.0
16.00	5.45	5.21	0.0	67.00	6.15	5.91	0.0
17.00	5.59	5.36	0.0	68.00	6.15	5.91	0.0
18.00	5.71	5.47	0.0	69.00	6.15	5.91	0.0
19.00	5.80	5.56	0.0	70.00	6.15	5.91	0.0
20.00	5.89	5.65	0.0	71.00	6.15	5.91	0.0
21.00	5.96	5.72	0.0	72.00	6.15	5.91	0.0
22.00	6.03	5.79	0.0				
23.00	6.09	5.86	0.0				
24.00	6.15	5.91	0.0				
25.00	6.15	5.91	0.0				
26.00	6.15	5.91	0.0				
27.00	6.15	5.91	0.0				
28.00	6.15	5.91	0.0				
29.00	6.15	5.91	0.0				
30.00	6.15	5.91	0.0				
31.00	6.15	5.91	0.0				
32.00	6.15	5.91	0.0				
33.00	6.15	5.91	0.0				
34.00	6.15	5.91	0.0				
35.00	6.15	5.91	0.0				
36.00	6.15	5.91	0.0				
37.00	6.15	5.91	0.0				
38.00	6.15	5.91	0.0				
39.00	6.15	5.91	0.0				
40.00	6.15	5.91	0.0				
41.00	6.15	5.91	0.0				
42.00	6.15	5.91	0.0				
43.00	6.15	5.91	0.0				
44.00	6.15	5.91	0.0				
45.00	6.15	5.91	0.0				
46.00	6.15	5.91	0.0				
47.00	6.15	5.91	0.0				
48.00	6.15	5.91	0.0				
49.00	6.15	5.91	0.0				
50.00	6.15	5.91	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Subcatchment P5N: OF 5 - North of HP

Runoff = 4.2 cfs @ 12.07 hrs, Volume= 0.329 af, Depth= 5.91"

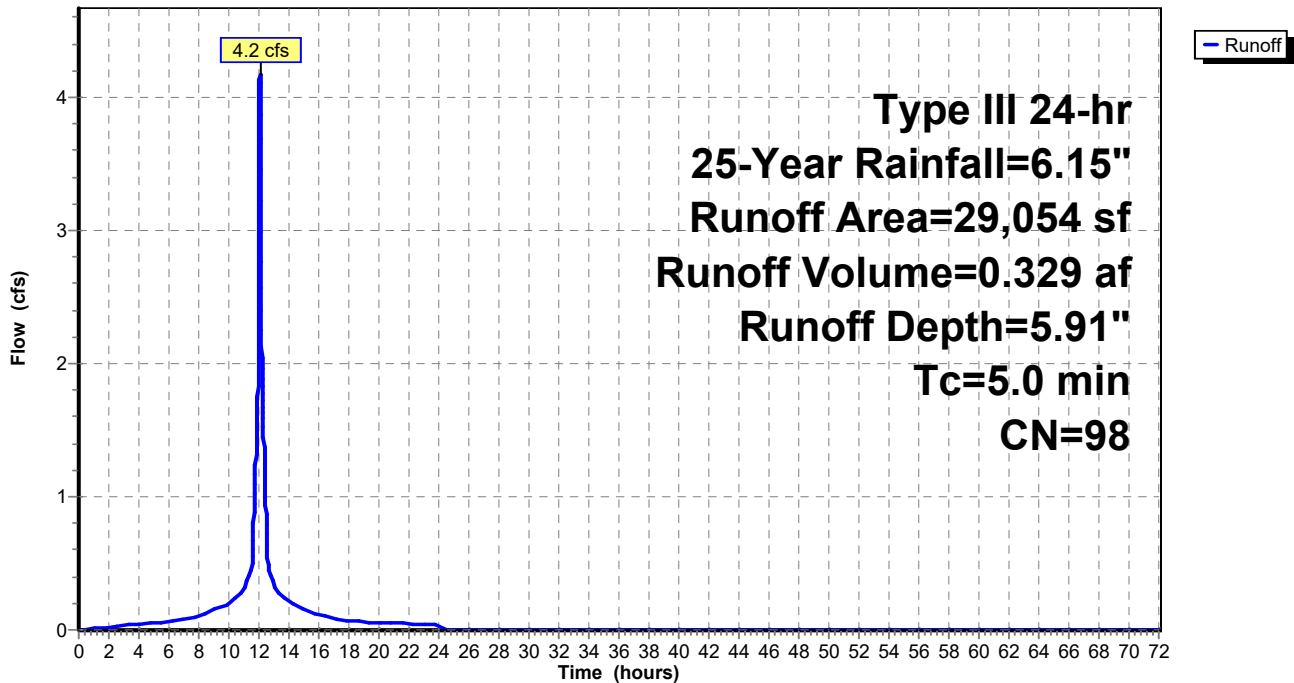
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.15"

Area (sf)	CN	Description
* 29,054	98	Area draining north of high point to trench drains
29,054		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P5N: OF 5 - North of HP

Hydrograph



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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

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Hydrograph for Subcatchment P5N: OF 5 - North of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	6.15	5.91	0.0
1.00	0.06	0.00	0.0	52.00	6.15	5.91	0.0
2.00	0.12	0.02	0.0	53.00	6.15	5.91	0.0
3.00	0.19	0.06	0.0	54.00	6.15	5.91	0.0
4.00	0.26	0.12	0.0	55.00	6.15	5.91	0.0
5.00	0.35	0.19	0.0	56.00	6.15	5.91	0.0
6.00	0.44	0.27	0.1	57.00	6.15	5.91	0.0
7.00	0.56	0.37	0.1	58.00	6.15	5.91	0.0
8.00	0.70	0.50	0.1	59.00	6.15	5.91	0.0
9.00	0.90	0.69	0.1	60.00	6.15	5.91	0.0
10.00	1.16	0.95	0.2	61.00	6.15	5.91	0.0
11.00	1.54	1.32	0.3	62.00	6.15	5.91	0.0
12.00	3.07	2.84	2.8	63.00	6.15	5.91	0.0
13.00	4.61	4.38	0.3	64.00	6.15	5.91	0.0
14.00	4.99	4.75	0.2	65.00	6.15	5.91	0.0
15.00	5.25	5.02	0.2	66.00	6.15	5.91	0.0
16.00	5.45	5.21	0.1	67.00	6.15	5.91	0.0
17.00	5.59	5.36	0.1	68.00	6.15	5.91	0.0
18.00	5.71	5.47	0.1	69.00	6.15	5.91	0.0
19.00	5.80	5.56	0.1	70.00	6.15	5.91	0.0
20.00	5.89	5.65	0.1	71.00	6.15	5.91	0.0
21.00	5.96	5.72	0.0	72.00	6.15	5.91	0.0
22.00	6.03	5.79	0.0				
23.00	6.09	5.86	0.0				
24.00	6.15	5.91	0.0				
25.00	6.15	5.91	0.0				
26.00	6.15	5.91	0.0				
27.00	6.15	5.91	0.0				
28.00	6.15	5.91	0.0				
29.00	6.15	5.91	0.0				
30.00	6.15	5.91	0.0				
31.00	6.15	5.91	0.0				
32.00	6.15	5.91	0.0				
33.00	6.15	5.91	0.0				
34.00	6.15	5.91	0.0				
35.00	6.15	5.91	0.0				
36.00	6.15	5.91	0.0				
37.00	6.15	5.91	0.0				
38.00	6.15	5.91	0.0				
39.00	6.15	5.91	0.0				
40.00	6.15	5.91	0.0				
41.00	6.15	5.91	0.0				
42.00	6.15	5.91	0.0				
43.00	6.15	5.91	0.0				
44.00	6.15	5.91	0.0				
45.00	6.15	5.91	0.0				
46.00	6.15	5.91	0.0				
47.00	6.15	5.91	0.0				
48.00	6.15	5.91	0.0				
49.00	6.15	5.91	0.0				
50.00	6.15	5.91	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Subcatchment P5S: OF 5 - South of HP

Runoff = 0.6 cfs @ 12.07 hrs, Volume= 0.051 af, Depth= 5.91"

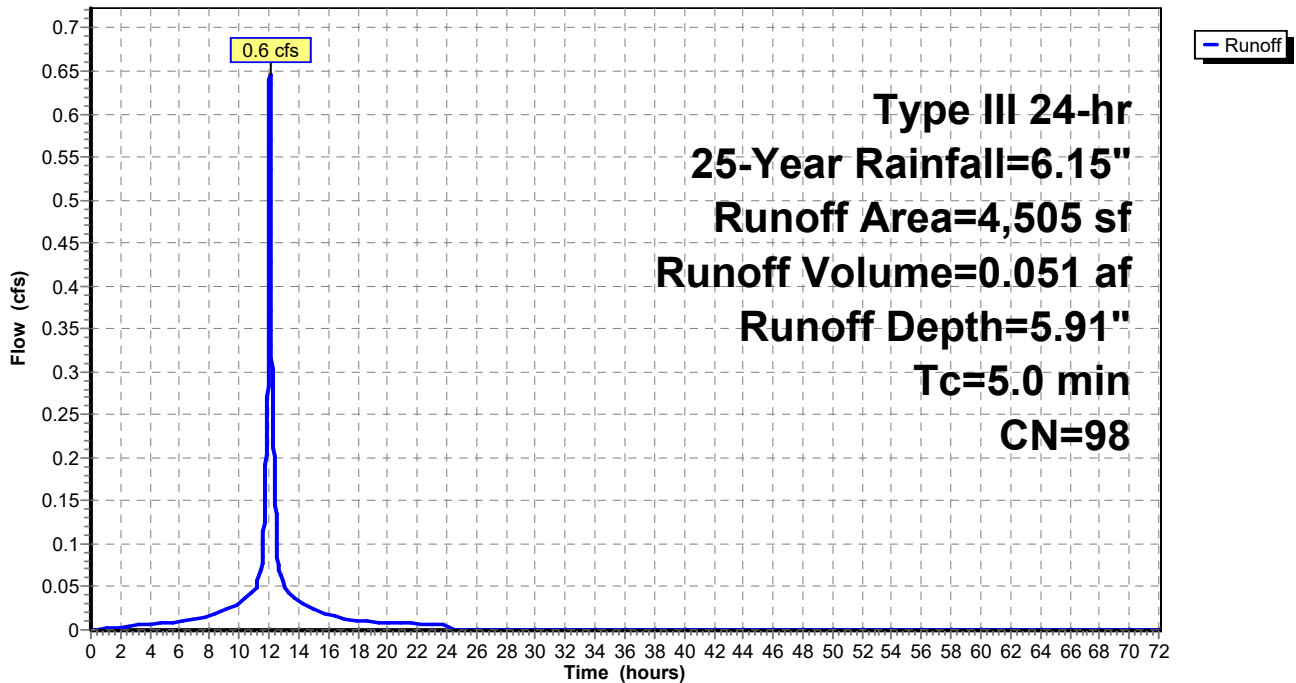
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-Year Rainfall=6.15"

Area (sf)	CN	Description
* 4,505	98	Area south of high point drain to outfall 5
4,505		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P5S: OF 5 - South of HP

Hydrograph



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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

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Hydrograph for Subcatchment P5S: OF 5 - South of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	6.15	5.91	0.0
1.00	0.06	0.00	0.0	52.00	6.15	5.91	0.0
2.00	0.12	0.02	0.0	53.00	6.15	5.91	0.0
3.00	0.19	0.06	0.0	54.00	6.15	5.91	0.0
4.00	0.26	0.12	0.0	55.00	6.15	5.91	0.0
5.00	0.35	0.19	0.0	56.00	6.15	5.91	0.0
6.00	0.44	0.27	0.0	57.00	6.15	5.91	0.0
7.00	0.56	0.37	0.0	58.00	6.15	5.91	0.0
8.00	0.70	0.50	0.0	59.00	6.15	5.91	0.0
9.00	0.90	0.69	0.0	60.00	6.15	5.91	0.0
10.00	1.16	0.95	0.0	61.00	6.15	5.91	0.0
11.00	1.54	1.32	0.0	62.00	6.15	5.91	0.0
12.00	3.07	2.84	0.4	63.00	6.15	5.91	0.0
13.00	4.61	4.38	0.1	64.00	6.15	5.91	0.0
14.00	4.99	4.75	0.0	65.00	6.15	5.91	0.0
15.00	5.25	5.02	0.0	66.00	6.15	5.91	0.0
16.00	5.45	5.21	0.0	67.00	6.15	5.91	0.0
17.00	5.59	5.36	0.0	68.00	6.15	5.91	0.0
18.00	5.71	5.47	0.0	69.00	6.15	5.91	0.0
19.00	5.80	5.56	0.0	70.00	6.15	5.91	0.0
20.00	5.89	5.65	0.0	71.00	6.15	5.91	0.0
21.00	5.96	5.72	0.0	72.00	6.15	5.91	0.0
22.00	6.03	5.79	0.0				
23.00	6.09	5.86	0.0				
24.00	6.15	5.91	0.0				
25.00	6.15	5.91	0.0				
26.00	6.15	5.91	0.0				
27.00	6.15	5.91	0.0				
28.00	6.15	5.91	0.0				
29.00	6.15	5.91	0.0				
30.00	6.15	5.91	0.0				
31.00	6.15	5.91	0.0				
32.00	6.15	5.91	0.0				
33.00	6.15	5.91	0.0				
34.00	6.15	5.91	0.0				
35.00	6.15	5.91	0.0				
36.00	6.15	5.91	0.0				
37.00	6.15	5.91	0.0				
38.00	6.15	5.91	0.0				
39.00	6.15	5.91	0.0				
40.00	6.15	5.91	0.0				
41.00	6.15	5.91	0.0				
42.00	6.15	5.91	0.0				
43.00	6.15	5.91	0.0				
44.00	6.15	5.91	0.0				
45.00	6.15	5.91	0.0				
46.00	6.15	5.91	0.0				
47.00	6.15	5.91	0.0				
48.00	6.15	5.91	0.0				
49.00	6.15	5.91	0.0				
50.00	6.15	5.91	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Subcatchment P6: OF 6 - Berth 11 12 Access Road

Runoff = 1.7 cfs @ 12.07 hrs, Volume= 0.132 af, Depth= 5.91"

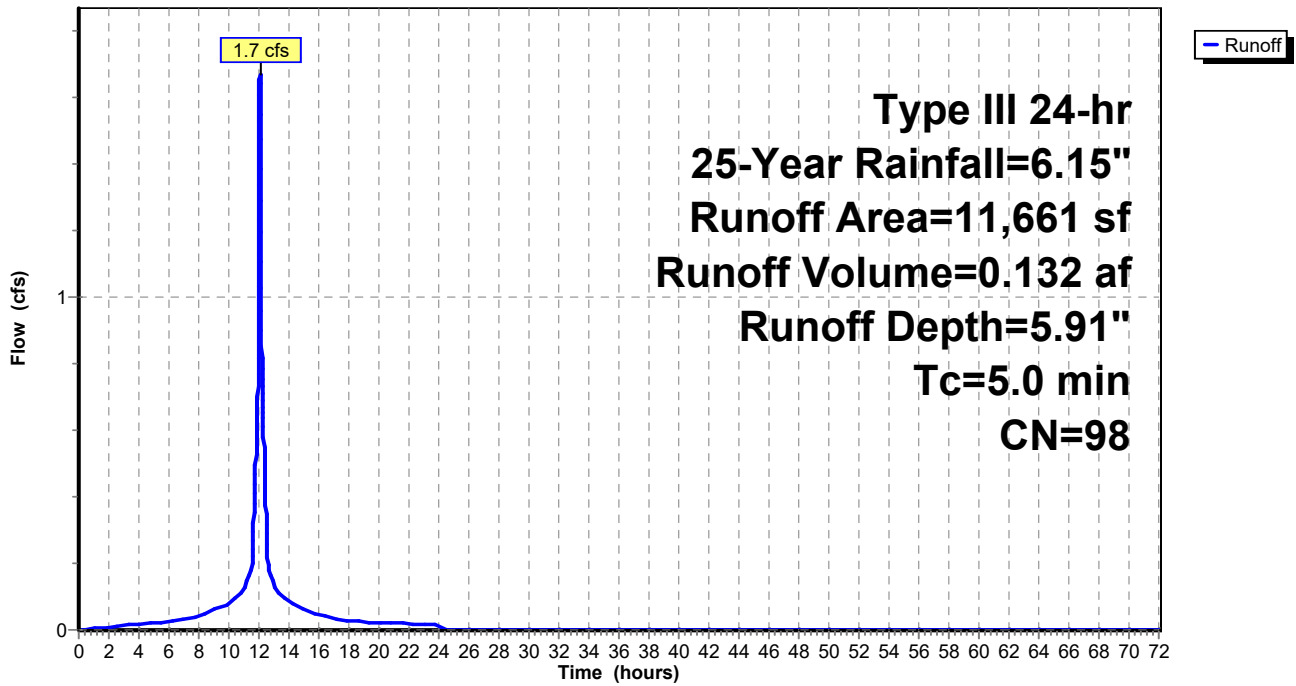
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.15"

Area (sf)	CN	Description
* 11,661	98	Area east of Road for Berths 11 and 12
11,661		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P6: OF 6 - Berth 11 12 Access Road

Hydrograph



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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

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Hydrograph for Subcatchment P6: OF 6 - Berth 11 12 Access Road

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	6.15	5.91	0.0
1.00	0.06	0.00	0.0	52.00	6.15	5.91	0.0
2.00	0.12	0.02	0.0	53.00	6.15	5.91	0.0
3.00	0.19	0.06	0.0	54.00	6.15	5.91	0.0
4.00	0.26	0.12	0.0	55.00	6.15	5.91	0.0
5.00	0.35	0.19	0.0	56.00	6.15	5.91	0.0
6.00	0.44	0.27	0.0	57.00	6.15	5.91	0.0
7.00	0.56	0.37	0.0	58.00	6.15	5.91	0.0
8.00	0.70	0.50	0.0	59.00	6.15	5.91	0.0
9.00	0.90	0.69	0.1	60.00	6.15	5.91	0.0
10.00	1.16	0.95	0.1	61.00	6.15	5.91	0.0
11.00	1.54	1.32	0.1	62.00	6.15	5.91	0.0
12.00	3.07	2.84	1.1	63.00	6.15	5.91	0.0
13.00	4.61	4.38	0.1	64.00	6.15	5.91	0.0
14.00	4.99	4.75	0.1	65.00	6.15	5.91	0.0
15.00	5.25	5.02	0.1	66.00	6.15	5.91	0.0
16.00	5.45	5.21	0.0	67.00	6.15	5.91	0.0
17.00	5.59	5.36	0.0	68.00	6.15	5.91	0.0
18.00	5.71	5.47	0.0	69.00	6.15	5.91	0.0
19.00	5.80	5.56	0.0	70.00	6.15	5.91	0.0
20.00	5.89	5.65	0.0	71.00	6.15	5.91	0.0
21.00	5.96	5.72	0.0	72.00	6.15	5.91	0.0
22.00	6.03	5.79	0.0				
23.00	6.09	5.86	0.0				
24.00	6.15	5.91	0.0				
25.00	6.15	5.91	0.0				
26.00	6.15	5.91	0.0				
27.00	6.15	5.91	0.0				
28.00	6.15	5.91	0.0				
29.00	6.15	5.91	0.0				
30.00	6.15	5.91	0.0				
31.00	6.15	5.91	0.0				
32.00	6.15	5.91	0.0				
33.00	6.15	5.91	0.0				
34.00	6.15	5.91	0.0				
35.00	6.15	5.91	0.0				
36.00	6.15	5.91	0.0				
37.00	6.15	5.91	0.0				
38.00	6.15	5.91	0.0				
39.00	6.15	5.91	0.0				
40.00	6.15	5.91	0.0				
41.00	6.15	5.91	0.0				
42.00	6.15	5.91	0.0				
43.00	6.15	5.91	0.0				
44.00	6.15	5.91	0.0				
45.00	6.15	5.91	0.0				
46.00	6.15	5.91	0.0				
47.00	6.15	5.91	0.0				
48.00	6.15	5.91	0.0				
49.00	6.15	5.91	0.0				
50.00	6.15	5.91	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Subcatchment P7: OF 7 - Berth 11 12 Access Road

Runoff = 0.4 cfs @ 12.07 hrs, Volume= 0.035 af, Depth= 5.91"

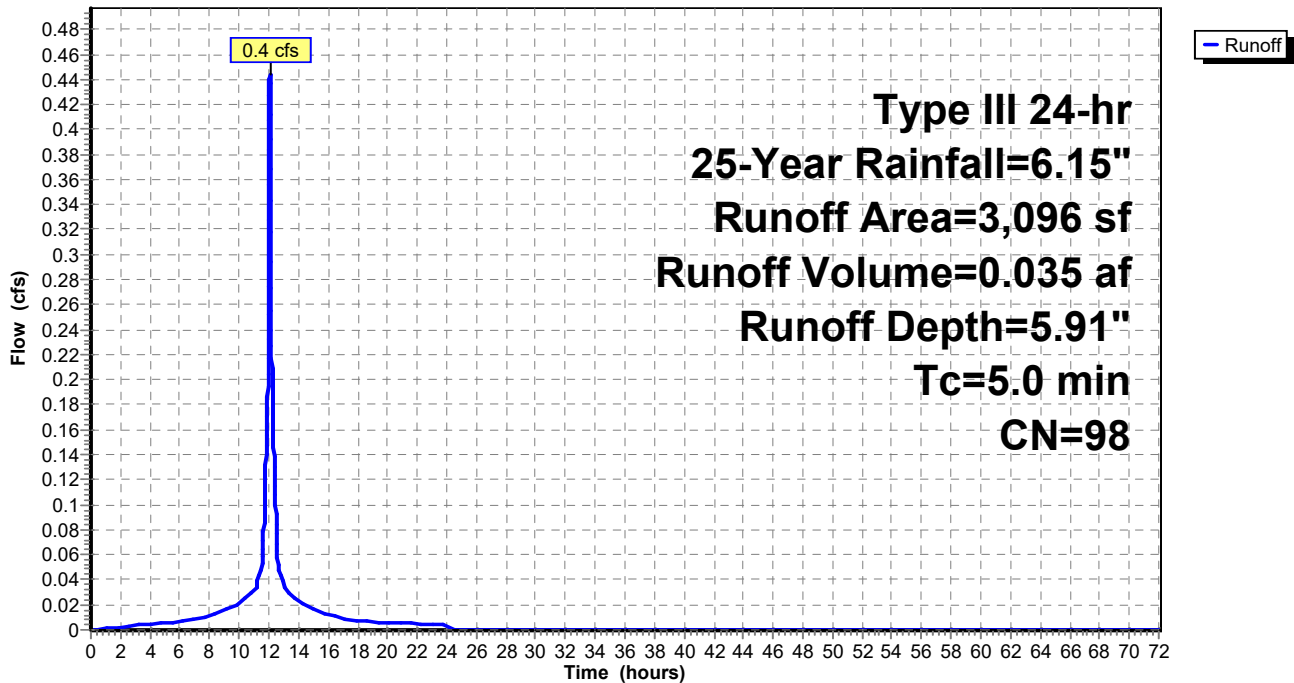
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-Year Rainfall=6.15"

Area (sf)	CN	Description
* 3,096	98	Drainage in Berth 12 discharged at Outfall 7
3,096		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P7: OF 7 - Berth 11 12 Access Road

Hydrograph



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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

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Hydrograph for Subcatchment P7: OF 7 - Berth 11 12 Access Road

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	6.15	5.91	0.0
1.00	0.06	0.00	0.0	52.00	6.15	5.91	0.0
2.00	0.12	0.02	0.0	53.00	6.15	5.91	0.0
3.00	0.19	0.06	0.0	54.00	6.15	5.91	0.0
4.00	0.26	0.12	0.0	55.00	6.15	5.91	0.0
5.00	0.35	0.19	0.0	56.00	6.15	5.91	0.0
6.00	0.44	0.27	0.0	57.00	6.15	5.91	0.0
7.00	0.56	0.37	0.0	58.00	6.15	5.91	0.0
8.00	0.70	0.50	0.0	59.00	6.15	5.91	0.0
9.00	0.90	0.69	0.0	60.00	6.15	5.91	0.0
10.00	1.16	0.95	0.0	61.00	6.15	5.91	0.0
11.00	1.54	1.32	0.0	62.00	6.15	5.91	0.0
12.00	3.07	2.84	0.3	63.00	6.15	5.91	0.0
13.00	4.61	4.38	0.0	64.00	6.15	5.91	0.0
14.00	4.99	4.75	0.0	65.00	6.15	5.91	0.0
15.00	5.25	5.02	0.0	66.00	6.15	5.91	0.0
16.00	5.45	5.21	0.0	67.00	6.15	5.91	0.0
17.00	5.59	5.36	0.0	68.00	6.15	5.91	0.0
18.00	5.71	5.47	0.0	69.00	6.15	5.91	0.0
19.00	5.80	5.56	0.0	70.00	6.15	5.91	0.0
20.00	5.89	5.65	0.0	71.00	6.15	5.91	0.0
21.00	5.96	5.72	0.0	72.00	6.15	5.91	0.0
22.00	6.03	5.79	0.0				
23.00	6.09	5.86	0.0				
24.00	6.15	5.91	0.0				
25.00	6.15	5.91	0.0				
26.00	6.15	5.91	0.0				
27.00	6.15	5.91	0.0				
28.00	6.15	5.91	0.0				
29.00	6.15	5.91	0.0				
30.00	6.15	5.91	0.0				
31.00	6.15	5.91	0.0				
32.00	6.15	5.91	0.0				
33.00	6.15	5.91	0.0				
34.00	6.15	5.91	0.0				
35.00	6.15	5.91	0.0				
36.00	6.15	5.91	0.0				
37.00	6.15	5.91	0.0				
38.00	6.15	5.91	0.0				
39.00	6.15	5.91	0.0				
40.00	6.15	5.91	0.0				
41.00	6.15	5.91	0.0				
42.00	6.15	5.91	0.0				
43.00	6.15	5.91	0.0				
44.00	6.15	5.91	0.0				
45.00	6.15	5.91	0.0				
46.00	6.15	5.91	0.0				
47.00	6.15	5.91	0.0				
48.00	6.15	5.91	0.0				
49.00	6.15	5.91	0.0				
50.00	6.15	5.91	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Pond 1P: Outfall 1 - 18" RCP

[57] Hint: Peaked at 2.86' (Flood elevation advised)

Inflow Area = 1.83 ac, 100.00% Impervious, Inflow Depth = 5.91" for 25-Year event
Inflow = 11.5 cfs @ 12.07 hrs, Volume= 0.904 af
Outflow = 11.5 cfs @ 12.07 hrs, Volume= 0.904 af, Atten= 0%, Lag= 0.0 min
Primary = 11.5 cfs @ 12.07 hrs, Volume= 0.904 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 2.86' @ 12.07 hrs

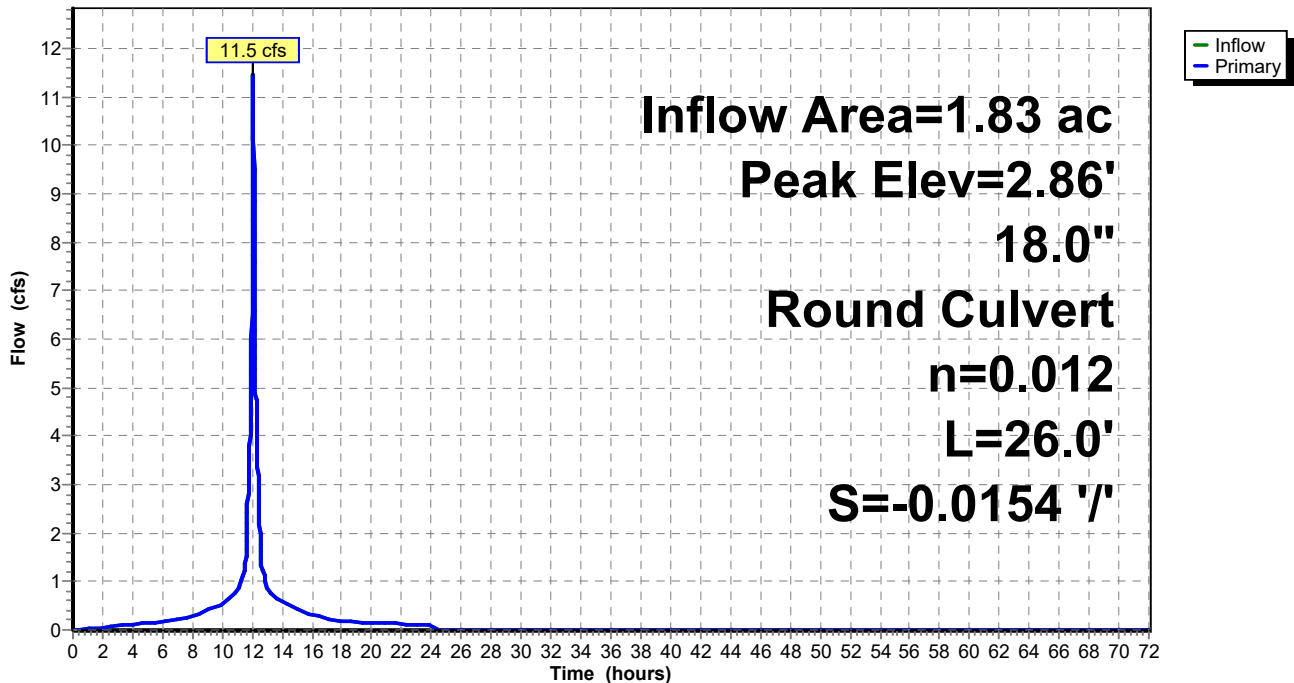
Device #	Routing	Invert	Outlet Devices
1	Primary	0.78'	18.0" Round RCP_Round 18" L= 26.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 0.38' / 0.78' S= -0.0154 '/ Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=11.5 cfs @ 12.07 hrs HW=2.86' (Free Discharge)

1=RCP_Round 18" (Barrel Controls 11.5 cfs @ 6.48 fps)

Pond 1P: Outfall 1 - 18" RCP

Hydrograph



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Hydrograph for Pond 1P: Outfall 1 - 18" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	0.78	0.0	51.00	0.0	0.78	0.0
1.00	0.0	0.83	0.0	52.00	0.0	0.78	0.0
2.00	0.1	0.86	0.1	53.00	0.0	0.78	0.0
3.00	0.1	0.89	0.1	54.00	0.0	0.78	0.0
4.00	0.1	0.90	0.1	55.00	0.0	0.78	0.0
5.00	0.1	0.92	0.1	56.00	0.0	0.78	0.0
6.00	0.2	0.93	0.2	57.00	0.0	0.78	0.0
7.00	0.2	0.95	0.2	58.00	0.0	0.78	0.0
8.00	0.3	0.97	0.3	59.00	0.0	0.78	0.0
9.00	0.4	1.02	0.4	60.00	0.0	0.78	0.0
10.00	0.5	1.05	0.5	61.00	0.0	0.78	0.0
11.00	0.8	1.12	0.8	62.00	0.0	0.78	0.0
12.00	7.7	2.22	7.7	63.00	0.0	0.78	0.0
13.00	0.9	1.14	0.9	64.00	0.0	0.78	0.0
14.00	0.6	1.06	0.6	65.00	0.0	0.78	0.0
15.00	0.4	1.03	0.4	66.00	0.0	0.78	0.0
16.00	0.3	0.98	0.3	67.00	0.0	0.78	0.0
17.00	0.2	0.96	0.2	68.00	0.0	0.78	0.0
18.00	0.2	0.94	0.2	69.00	0.0	0.78	0.0
19.00	0.2	0.93	0.2	70.00	0.0	0.78	0.0
20.00	0.1	0.92	0.1	71.00	0.0	0.78	0.0
21.00	0.1	0.92	0.1	72.00	0.0	0.78	0.0
22.00	0.1	0.91	0.1				
23.00	0.1	0.90	0.1				
24.00	0.1	0.89	0.1				
25.00	0.0	0.78	0.0				
26.00	0.0	0.78	0.0				
27.00	0.0	0.78	0.0				
28.00	0.0	0.78	0.0				
29.00	0.0	0.78	0.0				
30.00	0.0	0.78	0.0				
31.00	0.0	0.78	0.0				
32.00	0.0	0.78	0.0				
33.00	0.0	0.78	0.0				
34.00	0.0	0.78	0.0				
35.00	0.0	0.78	0.0				
36.00	0.0	0.78	0.0				
37.00	0.0	0.78	0.0				
38.00	0.0	0.78	0.0				
39.00	0.0	0.78	0.0				
40.00	0.0	0.78	0.0				
41.00	0.0	0.78	0.0				
42.00	0.0	0.78	0.0				
43.00	0.0	0.78	0.0				
44.00	0.0	0.78	0.0				
45.00	0.0	0.78	0.0				
46.00	0.0	0.78	0.0				
47.00	0.0	0.78	0.0				
48.00	0.0	0.78	0.0				
49.00	0.0	0.78	0.0				
50.00	0.0	0.78	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Pond 2P: Outfall 2 - 18" RCP

[57] Hint: Peaked at 4.03' (Flood elevation advised)

Inflow Area = 2.00 ac, 100.00% Impervious, Inflow Depth = 5.91" for 25-Year event
 Inflow = 12.5 cfs @ 12.07 hrs, Volume= 0.988 af
 Outflow = 12.5 cfs @ 12.07 hrs, Volume= 0.988 af, Atten= 0%, Lag= 0.0 min
 Primary = 12.5 cfs @ 12.07 hrs, Volume= 0.988 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 4.03' @ 12.07 hrs

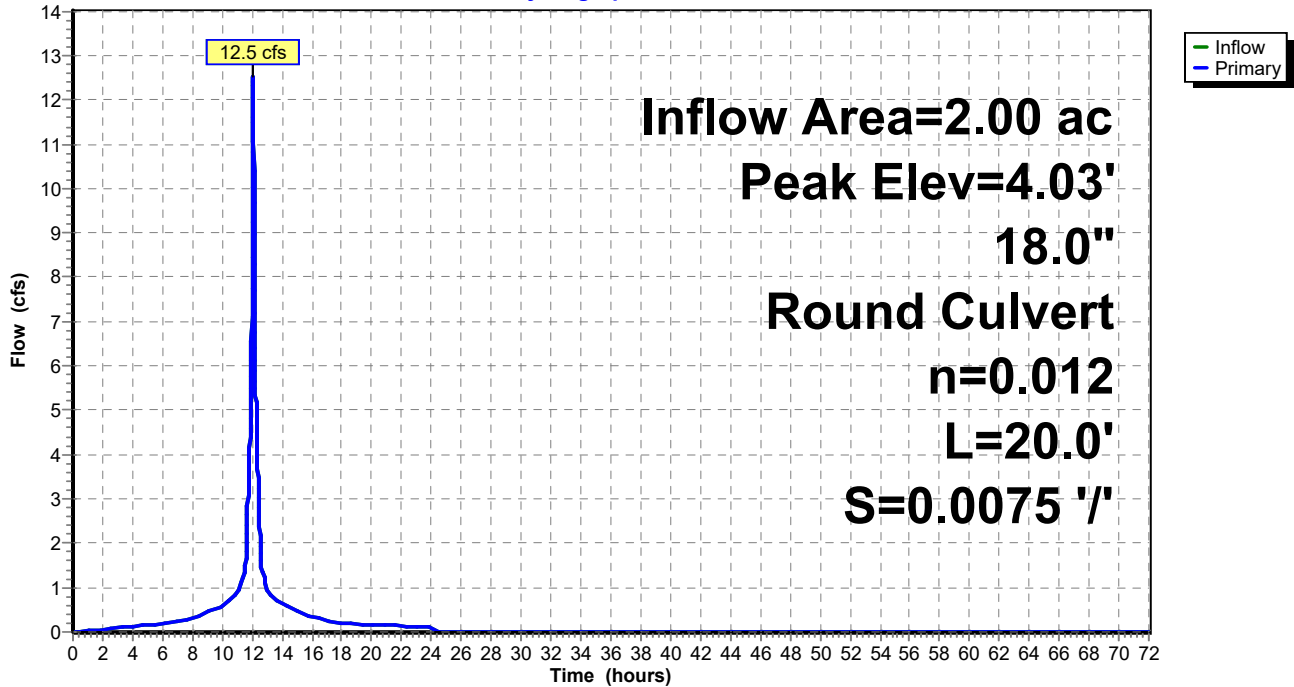
Device #	Routing	Invert	Outlet Devices
1	Primary	1.58'	18.0" Round RCP_Round 18" L= 20.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1.58' / 1.43' S= 0.0075 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=12.5 cfs @ 12.07 hrs HW=4.03' (Free Discharge)

1=RCP_Round 18" (Barrel Controls 12.5 cfs @ 7.08 fps)

Pond 2P: Outfall 2 - 18" RCP

Hydrograph



Massport_M555_Backlands_POST_LOW

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Hydrograph for Pond 2P: Outfall 2 - 18" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	1.58	0.0	51.00	0.0	1.58	0.0
1.00	0.0	1.64	0.0	52.00	0.0	1.58	0.0
2.00	0.1	1.69	0.1	53.00	0.0	1.58	0.0
3.00	0.1	1.72	0.1	54.00	0.0	1.58	0.0
4.00	0.1	1.74	0.1	55.00	0.0	1.58	0.0
5.00	0.1	1.76	0.1	56.00	0.0	1.58	0.0
6.00	0.2	1.77	0.2	57.00	0.0	1.58	0.0
7.00	0.2	1.80	0.2	58.00	0.0	1.58	0.0
8.00	0.3	1.83	0.3	59.00	0.0	1.58	0.0
9.00	0.4	1.89	0.4	60.00	0.0	1.58	0.0
10.00	0.6	1.94	0.6	61.00	0.0	1.58	0.0
11.00	0.9	2.02	0.9	62.00	0.0	1.58	0.0
12.00	8.5	3.29	8.5	63.00	0.0	1.58	0.0
13.00	1.0	2.05	1.0	64.00	0.0	1.58	0.0
14.00	0.6	1.95	0.6	65.00	0.0	1.58	0.0
15.00	0.5	1.90	0.5	66.00	0.0	1.58	0.0
16.00	0.3	1.85	0.3	67.00	0.0	1.58	0.0
17.00	0.3	1.82	0.3	68.00	0.0	1.58	0.0
18.00	0.2	1.79	0.2	69.00	0.0	1.58	0.0
19.00	0.2	1.78	0.2	70.00	0.0	1.58	0.0
20.00	0.2	1.77	0.2	71.00	0.0	1.58	0.0
21.00	0.1	1.76	0.1	72.00	0.0	1.58	0.0
22.00	0.1	1.75	0.1				
23.00	0.1	1.74	0.1				
24.00	0.1	1.73	0.1				
25.00	0.0	1.58	0.0				
26.00	0.0	1.58	0.0				
27.00	0.0	1.58	0.0				
28.00	0.0	1.58	0.0				
29.00	0.0	1.58	0.0				
30.00	0.0	1.58	0.0				
31.00	0.0	1.58	0.0				
32.00	0.0	1.58	0.0				
33.00	0.0	1.58	0.0				
34.00	0.0	1.58	0.0				
35.00	0.0	1.58	0.0				
36.00	0.0	1.58	0.0				
37.00	0.0	1.58	0.0				
38.00	0.0	1.58	0.0				
39.00	0.0	1.58	0.0				
40.00	0.0	1.58	0.0				
41.00	0.0	1.58	0.0				
42.00	0.0	1.58	0.0				
43.00	0.0	1.58	0.0				
44.00	0.0	1.58	0.0				
45.00	0.0	1.58	0.0				
46.00	0.0	1.58	0.0				
47.00	0.0	1.58	0.0				
48.00	0.0	1.58	0.0				
49.00	0.0	1.58	0.0				
50.00	0.0	1.58	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

Printed 6/30/2021

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Summary for Pond 3P: Outfall 3 - 24" RCP

[57] Hint: Peaked at 1.65' (Flood elevation advised)

Inflow Area = 1.42 ac, 100.00% Impervious, Inflow Depth = 5.91" for 25-Year event
Inflow = 8.9 cfs @ 12.07 hrs, Volume= 0.701 af
Outflow = 8.9 cfs @ 12.07 hrs, Volume= 0.701 af, Atten= 0%, Lag= 0.0 min
Primary = 8.9 cfs @ 12.07 hrs, Volume= 0.701 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 1.65' @ 12.07 hrs

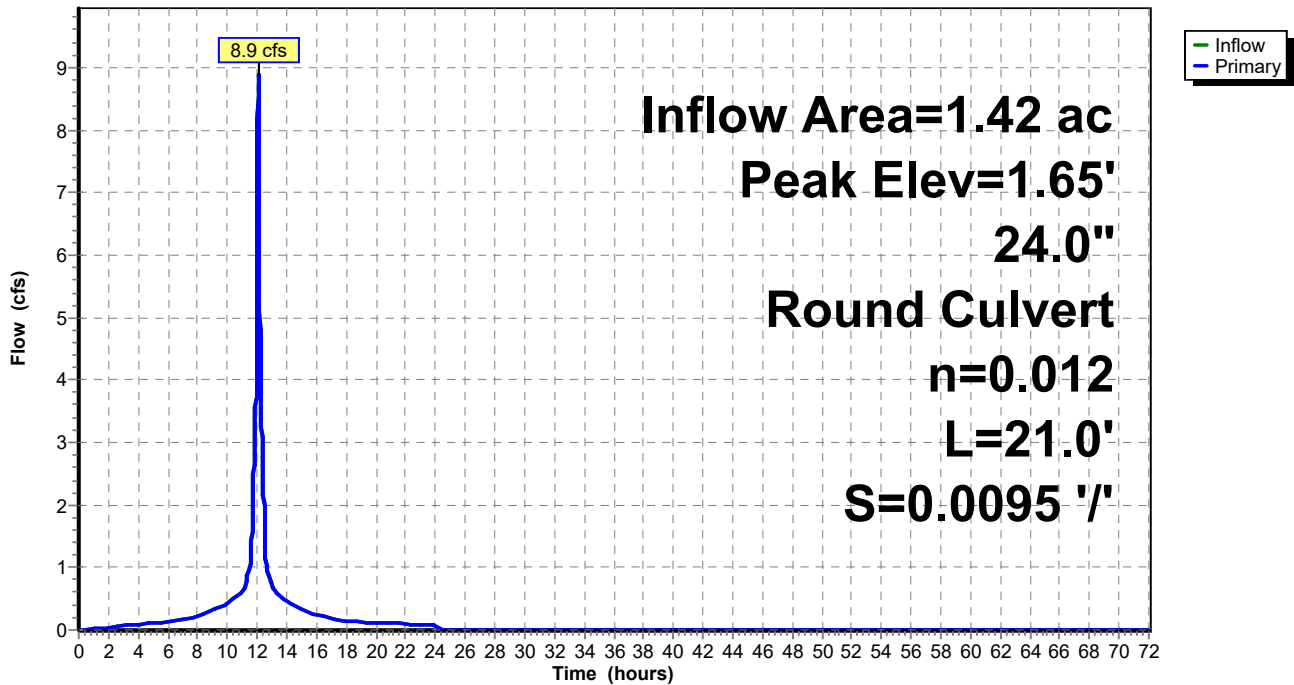
Device	Routing	Invert	Outlet Devices
#1	Primary	0.23'	24.0" Round RCP_Round 24" L= 21.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 0.23' / 0.03' S= 0.0095 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=8.9 cfs @ 12.07 hrs HW=1.65' (Free Discharge)

↑1=RCP_Round 24" (Barrel Controls 8.9 cfs @ 5.22 fps)

Pond 3P: Outfall 3 - 24" RCP

Hydrograph



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Hydrograph for Pond 3P: Outfall 3 - 24" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	0.23	0.0	51.00	0.0	0.23	0.0
1.00	0.0	0.28	0.0	52.00	0.0	0.23	0.0
2.00	0.0	0.31	0.0	53.00	0.0	0.23	0.0
3.00	0.1	0.33	0.1	54.00	0.0	0.23	0.0
4.00	0.1	0.35	0.1	55.00	0.0	0.23	0.0
5.00	0.1	0.36	0.1	56.00	0.0	0.23	0.0
6.00	0.1	0.37	0.1	57.00	0.0	0.23	0.0
7.00	0.2	0.40	0.2	58.00	0.0	0.23	0.0
8.00	0.2	0.42	0.2	59.00	0.0	0.23	0.0
9.00	0.3	0.46	0.3	60.00	0.0	0.23	0.0
10.00	0.4	0.49	0.4	61.00	0.0	0.23	0.0
11.00	0.6	0.55	0.6	62.00	0.0	0.23	0.0
12.00	6.0	1.35	6.0	63.00	0.0	0.23	0.0
13.00	0.7	0.57	0.7	64.00	0.0	0.23	0.0
14.00	0.4	0.50	0.4	65.00	0.0	0.23	0.0
15.00	0.3	0.47	0.3	66.00	0.0	0.23	0.0
16.00	0.2	0.43	0.2	67.00	0.0	0.23	0.0
17.00	0.2	0.41	0.2	68.00	0.0	0.23	0.0
18.00	0.1	0.38	0.1	69.00	0.0	0.23	0.0
19.00	0.1	0.38	0.1	70.00	0.0	0.23	0.0
20.00	0.1	0.37	0.1	71.00	0.0	0.23	0.0
21.00	0.1	0.36	0.1	72.00	0.0	0.23	0.0
22.00	0.1	0.36	0.1				
23.00	0.1	0.35	0.1				
24.00	0.1	0.34	0.1				
25.00	0.0	0.23	0.0				
26.00	0.0	0.23	0.0				
27.00	0.0	0.23	0.0				
28.00	0.0	0.23	0.0				
29.00	0.0	0.23	0.0				
30.00	0.0	0.23	0.0				
31.00	0.0	0.23	0.0				
32.00	0.0	0.23	0.0				
33.00	0.0	0.23	0.0				
34.00	0.0	0.23	0.0				
35.00	0.0	0.23	0.0				
36.00	0.0	0.23	0.0				
37.00	0.0	0.23	0.0				
38.00	0.0	0.23	0.0				
39.00	0.0	0.23	0.0				
40.00	0.0	0.23	0.0				
41.00	0.0	0.23	0.0				
42.00	0.0	0.23	0.0				
43.00	0.0	0.23	0.0				
44.00	0.0	0.23	0.0				
45.00	0.0	0.23	0.0				
46.00	0.0	0.23	0.0				
47.00	0.0	0.23	0.0				
48.00	0.0	0.23	0.0				
49.00	0.0	0.23	0.0				
50.00	0.0	0.23	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

Printed 6/30/2021

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Summary for Pond 4P: Outfall 4 - 24" RCP

[57] Hint: Peaked at 2.05' (Flood elevation advised)

Inflow Area = 1.41 ac, 100.00% Impervious, Inflow Depth = 5.91" for 25-Year event
Inflow = 8.8 cfs @ 12.07 hrs, Volume= 0.694 af
Outflow = 8.8 cfs @ 12.07 hrs, Volume= 0.694 af, Atten= 0%, Lag= 0.0 min
Primary = 8.8 cfs @ 12.07 hrs, Volume= 0.694 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 2.05' @ 12.07 hrs

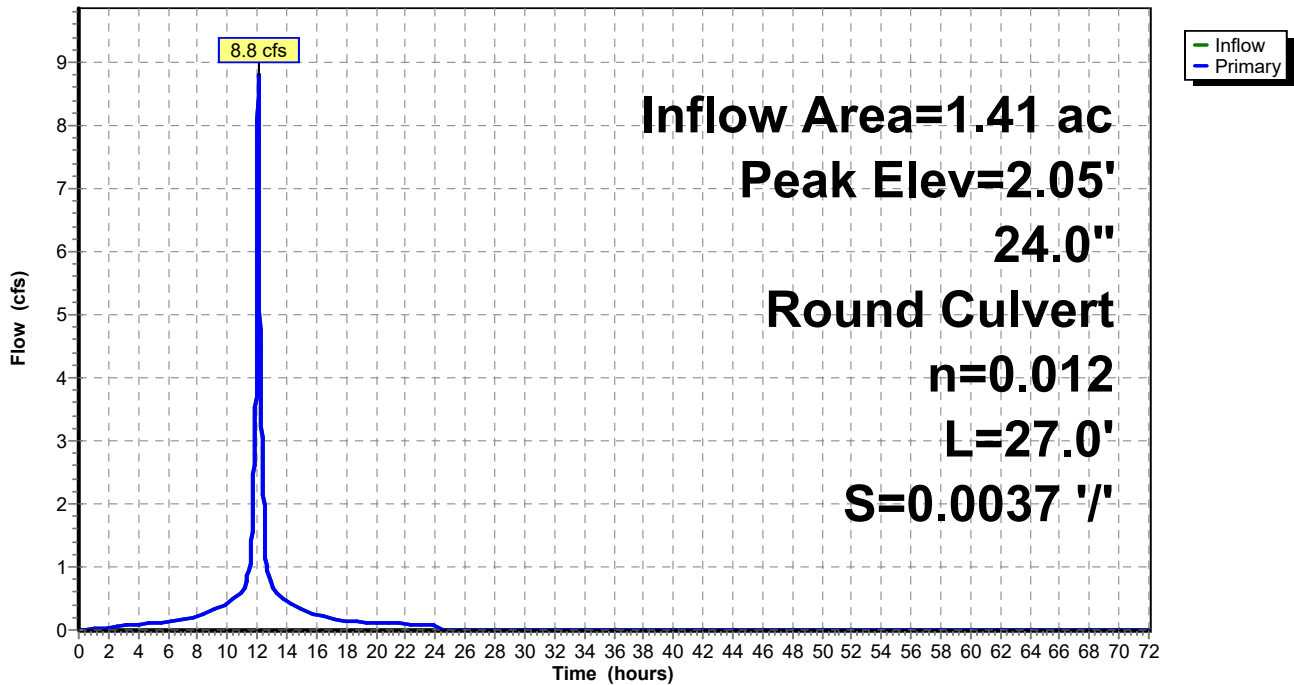
Device #	Routing	Invert	Outlet Devices
#1	Primary	0.53'	24.0" Round RCP_Round 24" L= 27.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 0.53' / 0.43' S= 0.0037 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=8.8 cfs @ 12.07 hrs HW=2.05' (Free Discharge)

↑1=RCP_Round 24" (Barrel Controls 8.8 cfs @ 4.77 fps)

Pond 4P: Outfall 4 - 24" RCP

Hydrograph



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Hydrograph for Pond 4P: Outfall 4 - 24" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	0.53	0.0	51.00	0.0	0.53	0.0
1.00	0.0	0.59	0.0	52.00	0.0	0.53	0.0
2.00	0.0	0.63	0.0	53.00	0.0	0.53	0.0
3.00	0.1	0.66	0.1	54.00	0.0	0.53	0.0
4.00	0.1	0.67	0.1	55.00	0.0	0.53	0.0
5.00	0.1	0.69	0.1	56.00	0.0	0.53	0.0
6.00	0.1	0.70	0.1	57.00	0.0	0.53	0.0
7.00	0.2	0.73	0.2	58.00	0.0	0.53	0.0
8.00	0.2	0.75	0.2	59.00	0.0	0.53	0.0
9.00	0.3	0.79	0.3	60.00	0.0	0.53	0.0
10.00	0.4	0.83	0.4	61.00	0.0	0.53	0.0
11.00	0.6	0.90	0.6	62.00	0.0	0.53	0.0
12.00	6.0	1.74	6.0	63.00	0.0	0.53	0.0
13.00	0.7	0.92	0.7	64.00	0.0	0.53	0.0
14.00	0.4	0.84	0.4	65.00	0.0	0.53	0.0
15.00	0.3	0.80	0.3	66.00	0.0	0.53	0.0
16.00	0.2	0.76	0.2	67.00	0.0	0.53	0.0
17.00	0.2	0.74	0.2	68.00	0.0	0.53	0.0
18.00	0.1	0.71	0.1	69.00	0.0	0.53	0.0
19.00	0.1	0.70	0.1	70.00	0.0	0.53	0.0
20.00	0.1	0.69	0.1	71.00	0.0	0.53	0.0
21.00	0.1	0.69	0.1	72.00	0.0	0.53	0.0
22.00	0.1	0.68	0.1				
23.00	0.1	0.67	0.1				
24.00	0.1	0.66	0.1				
25.00	0.0	0.53	0.0				
26.00	0.0	0.53	0.0				
27.00	0.0	0.53	0.0				
28.00	0.0	0.53	0.0				
29.00	0.0	0.53	0.0				
30.00	0.0	0.53	0.0				
31.00	0.0	0.53	0.0				
32.00	0.0	0.53	0.0				
33.00	0.0	0.53	0.0				
34.00	0.0	0.53	0.0				
35.00	0.0	0.53	0.0				
36.00	0.0	0.53	0.0				
37.00	0.0	0.53	0.0				
38.00	0.0	0.53	0.0				
39.00	0.0	0.53	0.0				
40.00	0.0	0.53	0.0				
41.00	0.0	0.53	0.0				
42.00	0.0	0.53	0.0				
43.00	0.0	0.53	0.0				
44.00	0.0	0.53	0.0				
45.00	0.0	0.53	0.0				
46.00	0.0	0.53	0.0				
47.00	0.0	0.53	0.0				
48.00	0.0	0.53	0.0				
49.00	0.0	0.53	0.0				
50.00	0.0	0.53	0.0				

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Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Pond 5P: Outfall 5 - 36" RCP

[57] Hint: Peaked at 3.16' (Flood elevation advised)

Inflow Area = 0.77 ac, 100.00% Impervious, Inflow Depth = 5.91" for 25-Year event
Inflow = 4.8 cfs @ 12.07 hrs, Volume= 0.380 af
Outflow = 4.8 cfs @ 12.07 hrs, Volume= 0.380 af, Atten= 0%, Lag= 0.0 min
Primary = 4.8 cfs @ 12.07 hrs, Volume= 0.380 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 3.16' @ 12.07 hrs

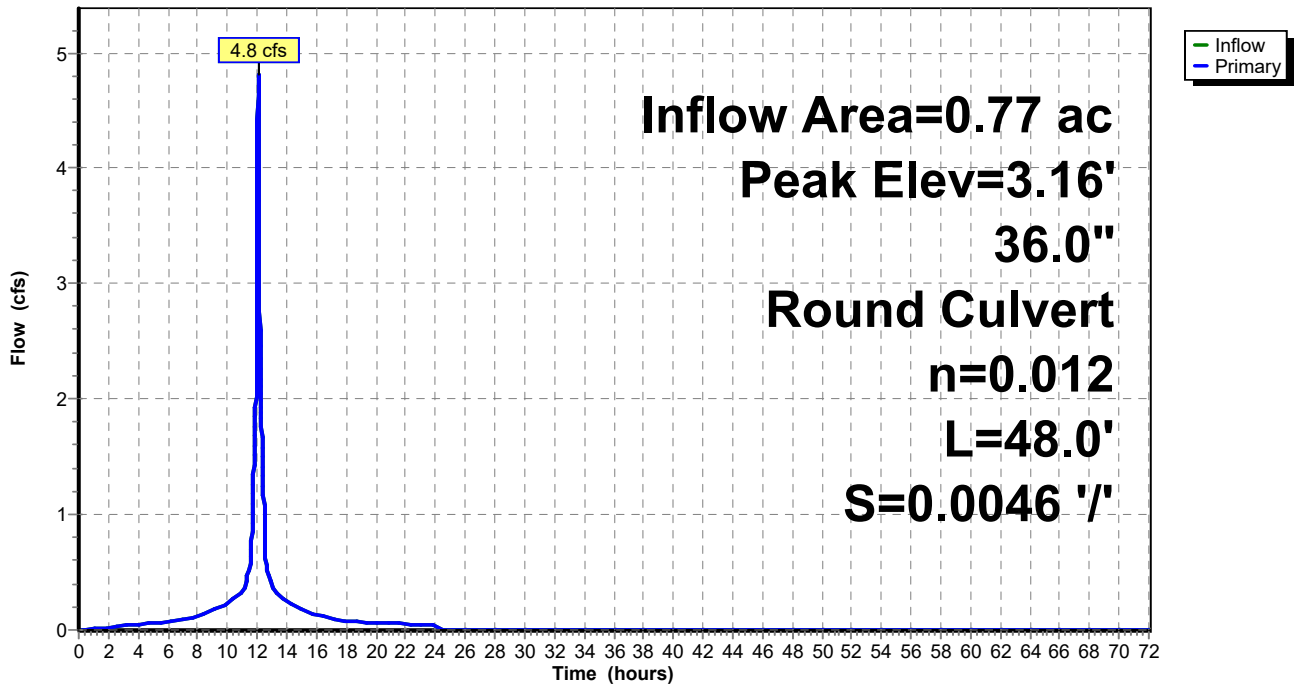
Device #	Routing	Invert	Outlet Devices
#1	Primary	2.26'	36.0" Round RCP_Round 36" L= 48.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 2.26' / 2.04' S= 0.0046 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 7.07 sf

Primary OutFlow Max=4.8 cfs @ 12.07 hrs HW=3.16' (Free Discharge)

↑1=RCP_Round 36" (Barrel Controls 4.8 cfs @ 4.02 fps)

Pond 5P: Outfall 5 - 36" RCP

Hydrograph



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Hydrograph for Pond 5P: Outfall 5 - 36" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	2.26	0.0	51.00	0.0	2.26	0.0
1.00	0.0	2.30	0.0	52.00	0.0	2.26	0.0
2.00	0.0	2.33	0.0	53.00	0.0	2.26	0.0
3.00	0.0	2.34	0.0	54.00	0.0	2.26	0.0
4.00	0.0	2.35	0.0	55.00	0.0	2.26	0.0
5.00	0.1	2.36	0.1	56.00	0.0	2.26	0.0
6.00	0.1	2.37	0.1	57.00	0.0	2.26	0.0
7.00	0.1	2.39	0.1	58.00	0.0	2.26	0.0
8.00	0.1	2.40	0.1	59.00	0.0	2.26	0.0
9.00	0.2	2.43	0.2	60.00	0.0	2.26	0.0
10.00	0.2	2.46	0.2	61.00	0.0	2.26	0.0
11.00	0.3	2.50	0.3	62.00	0.0	2.26	0.0
12.00	3.3	3.00	3.3	63.00	0.0	2.26	0.0
13.00	0.4	2.51	0.4	64.00	0.0	2.26	0.0
14.00	0.2	2.46	0.2	65.00	0.0	2.26	0.0
15.00	0.2	2.44	0.2	66.00	0.0	2.26	0.0
16.00	0.1	2.41	0.1	67.00	0.0	2.26	0.0
17.00	0.1	2.39	0.1	68.00	0.0	2.26	0.0
18.00	0.1	2.38	0.1	69.00	0.0	2.26	0.0
19.00	0.1	2.37	0.1	70.00	0.0	2.26	0.0
20.00	0.1	2.37	0.1	71.00	0.0	2.26	0.0
21.00	0.1	2.36	0.1	72.00	0.0	2.26	0.0
22.00	0.1	2.36	0.1				
23.00	0.0	2.35	0.0				
24.00	0.0	2.35	0.0				
25.00	0.0	2.26	0.0				
26.00	0.0	2.26	0.0				
27.00	0.0	2.26	0.0				
28.00	0.0	2.26	0.0				
29.00	0.0	2.26	0.0				
30.00	0.0	2.26	0.0				
31.00	0.0	2.26	0.0				
32.00	0.0	2.26	0.0				
33.00	0.0	2.26	0.0				
34.00	0.0	2.26	0.0				
35.00	0.0	2.26	0.0				
36.00	0.0	2.26	0.0				
37.00	0.0	2.26	0.0				
38.00	0.0	2.26	0.0				
39.00	0.0	2.26	0.0				
40.00	0.0	2.26	0.0				
41.00	0.0	2.26	0.0				
42.00	0.0	2.26	0.0				
43.00	0.0	2.26	0.0				
44.00	0.0	2.26	0.0				
45.00	0.0	2.26	0.0				
46.00	0.0	2.26	0.0				
47.00	0.0	2.26	0.0				
48.00	0.0	2.26	0.0				
49.00	0.0	2.26	0.0				
50.00	0.0	2.26	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

Printed 6/30/2021

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Summary for Pond 6P: Outfall 6 - 42" RCP

[57] Hint: Peaked at 2.31' (Flood elevation advised)

Inflow Area = 0.27 ac, 100.00% Impervious, Inflow Depth = 5.91" for 25-Year event
Inflow = 1.7 cfs @ 12.07 hrs, Volume= 0.132 af
Outflow = 1.7 cfs @ 12.07 hrs, Volume= 0.132 af, Atten= 0%, Lag= 0.0 min
Primary = 1.7 cfs @ 12.07 hrs, Volume= 0.132 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 2.31' @ 12.07 hrs

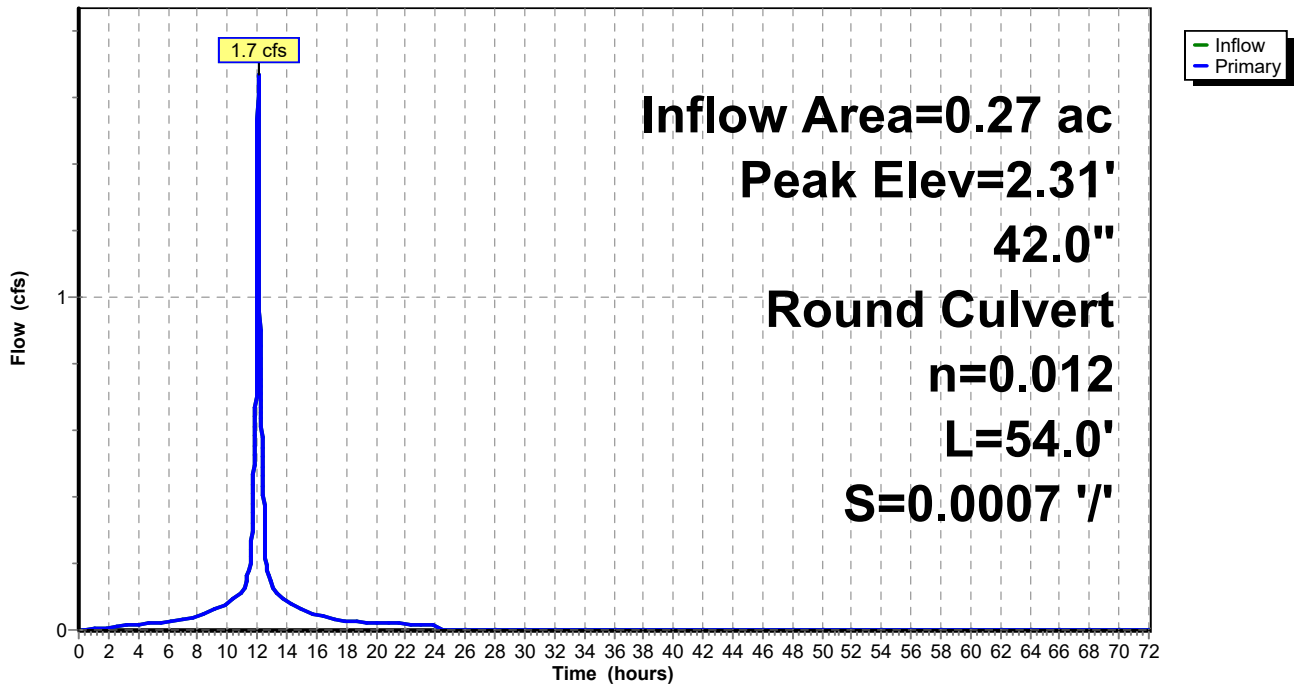
Device #	Routing	Invert	Outlet Devices
#1	Primary	1.71'	42.0" Round RCP_Round 42" L= 54.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1.71' / 1.67' S= 0.0007 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 9.62 sf

Primary OutFlow Max=1.7 cfs @ 12.07 hrs HW=2.31' (Free Discharge)

↑1=RCP_Round 42" (Barrel Controls 1.7 cfs @ 2.30 fps)

Pond 6P: Outfall 6 - 42" RCP

Hydrograph



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Hydrograph for Pond 6P: Outfall 6 - 42" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	1.71	0.0	51.00	0.0	1.71	0.0
1.00	0.0	1.74	0.0	52.00	0.0	1.71	0.0
2.00	0.0	1.76	0.0	53.00	0.0	1.71	0.0
3.00	0.0	1.78	0.0	54.00	0.0	1.71	0.0
4.00	0.0	1.79	0.0	55.00	0.0	1.71	0.0
5.00	0.0	1.79	0.0	56.00	0.0	1.71	0.0
6.00	0.0	1.80	0.0	57.00	0.0	1.71	0.0
7.00	0.0	1.81	0.0	58.00	0.0	1.71	0.0
8.00	0.0	1.83	0.0	59.00	0.0	1.71	0.0
9.00	0.1	1.85	0.1	60.00	0.0	1.71	0.0
10.00	0.1	1.86	0.1	61.00	0.0	1.71	0.0
11.00	0.1	1.89	0.1	62.00	0.0	1.71	0.0
12.00	1.1	2.21	1.1	63.00	0.0	1.71	0.0
13.00	0.1	1.91	0.1	64.00	0.0	1.71	0.0
14.00	0.1	1.87	0.1	65.00	0.0	1.71	0.0
15.00	0.1	1.85	0.1	66.00	0.0	1.71	0.0
16.00	0.0	1.83	0.0	67.00	0.0	1.71	0.0
17.00	0.0	1.82	0.0	68.00	0.0	1.71	0.0
18.00	0.0	1.81	0.0	69.00	0.0	1.71	0.0
19.00	0.0	1.80	0.0	70.00	0.0	1.71	0.0
20.00	0.0	1.80	0.0	71.00	0.0	1.71	0.0
21.00	0.0	1.79	0.0	72.00	0.0	1.71	0.0
22.00	0.0	1.79	0.0				
23.00	0.0	1.79	0.0				
24.00	0.0	1.78	0.0				
25.00	0.0	1.71	0.0				
26.00	0.0	1.71	0.0				
27.00	0.0	1.71	0.0				
28.00	0.0	1.71	0.0				
29.00	0.0	1.71	0.0				
30.00	0.0	1.71	0.0				
31.00	0.0	1.71	0.0				
32.00	0.0	1.71	0.0				
33.00	0.0	1.71	0.0				
34.00	0.0	1.71	0.0				
35.00	0.0	1.71	0.0				
36.00	0.0	1.71	0.0				
37.00	0.0	1.71	0.0				
38.00	0.0	1.71	0.0				
39.00	0.0	1.71	0.0				
40.00	0.0	1.71	0.0				
41.00	0.0	1.71	0.0				
42.00	0.0	1.71	0.0				
43.00	0.0	1.71	0.0				
44.00	0.0	1.71	0.0				
45.00	0.0	1.71	0.0				
46.00	0.0	1.71	0.0				
47.00	0.0	1.71	0.0				
48.00	0.0	1.71	0.0				
49.00	0.0	1.71	0.0				
50.00	0.0	1.71	0.0				

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Type III 24-hr 25-Year Rainfall=6.15"

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Summary for Pond 7P: Outfall 7 - 30" RCP

[57] Hint: Peaked at 2.51' (Flood elevation advised)

Inflow Area = 0.07 ac, 100.00% Impervious, Inflow Depth = 5.91" for 25-Year event
Inflow = 0.4 cfs @ 12.07 hrs, Volume= 0.035 af
Outflow = 0.4 cfs @ 12.07 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min
Primary = 0.4 cfs @ 12.07 hrs, Volume= 0.035 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 2.51' @ 12.07 hrs

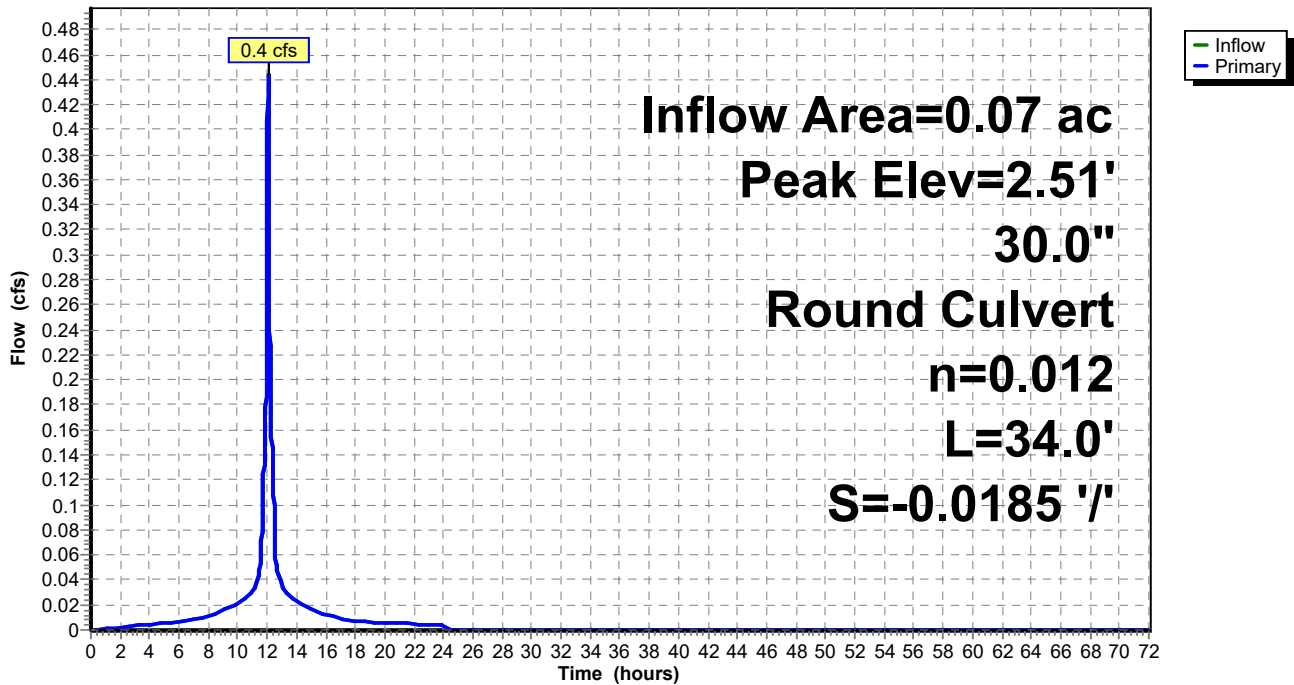
Device #	Routing	Invert	Outlet Devices
#1	Primary	2.29'	30.0" Round RCP_Round 30" L= 34.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1.66' / 2.29' S= -0.0185 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf

Primary OutFlow Max=0.4 cfs @ 12.07 hrs HW=2.51' (Free Discharge)

↑1=RCP_Round 30" (Inlet Controls 0.4 cfs @ 2.16 fps)

Pond 7P: Outfall 7 - 30" RCP

Hydrograph



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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 25-Year Rainfall=6.15"

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Hydrograph for Pond 7P: Outfall 7 - 30" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	2.29	0.0	51.00	0.0	2.29	0.0
1.00	0.0	2.29	0.0	52.00	0.0	2.29	0.0
2.00	0.0	2.30	0.0	53.00	0.0	2.29	0.0
3.00	0.0	2.30	0.0	54.00	0.0	2.29	0.0
4.00	0.0	2.31	0.0	55.00	0.0	2.29	0.0
5.00	0.0	2.31	0.0	56.00	0.0	2.29	0.0
6.00	0.0	2.32	0.0	57.00	0.0	2.29	0.0
7.00	0.0	2.32	0.0	58.00	0.0	2.29	0.0
8.00	0.0	2.32	0.0	59.00	0.0	2.29	0.0
9.00	0.0	2.33	0.0	60.00	0.0	2.29	0.0
10.00	0.0	2.34	0.0	61.00	0.0	2.29	0.0
11.00	0.0	2.35	0.0	62.00	0.0	2.29	0.0
12.00	0.3	2.47	0.3	63.00	0.0	2.29	0.0
13.00	0.0	2.35	0.0	64.00	0.0	2.29	0.0
14.00	0.0	2.34	0.0	65.00	0.0	2.29	0.0
15.00	0.0	2.33	0.0	66.00	0.0	2.29	0.0
16.00	0.0	2.32	0.0	67.00	0.0	2.29	0.0
17.00	0.0	2.32	0.0	68.00	0.0	2.29	0.0
18.00	0.0	2.32	0.0	69.00	0.0	2.29	0.0
19.00	0.0	2.32	0.0	70.00	0.0	2.29	0.0
20.00	0.0	2.31	0.0	71.00	0.0	2.29	0.0
21.00	0.0	2.31	0.0	72.00	0.0	2.29	0.0
22.00	0.0	2.31	0.0				
23.00	0.0	2.31	0.0				
24.00	0.0	2.31	0.0				
25.00	0.0	2.29	0.0				
26.00	0.0	2.29	0.0				
27.00	0.0	2.29	0.0				
28.00	0.0	2.29	0.0				
29.00	0.0	2.29	0.0				
30.00	0.0	2.29	0.0				
31.00	0.0	2.29	0.0				
32.00	0.0	2.29	0.0				
33.00	0.0	2.29	0.0				
34.00	0.0	2.29	0.0				
35.00	0.0	2.29	0.0				
36.00	0.0	2.29	0.0				
37.00	0.0	2.29	0.0				
38.00	0.0	2.29	0.0				
39.00	0.0	2.29	0.0				
40.00	0.0	2.29	0.0				
41.00	0.0	2.29	0.0				
42.00	0.0	2.29	0.0				
43.00	0.0	2.29	0.0				
44.00	0.0	2.29	0.0				
45.00	0.0	2.29	0.0				
46.00	0.0	2.29	0.0				
47.00	0.0	2.29	0.0				
48.00	0.0	2.29	0.0				
49.00	0.0	2.29	0.0				
50.00	0.0	2.29	0.0				

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Type III 24-hr 100-Year Rainfall=7.92"

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentP1N: OF 1 North of HP	Runoff Area=57,569 sf 100.00% Impervious Runoff Depth=7.68" Tc=5.0 min CN=98 Runoff=10.6 cfs 0.846 af
SubcatchmentP1S: OF 1 South of HP	Runoff Area=22,320 sf 100.00% Impervious Runoff Depth=7.68" Tc=5.0 min CN=98 Runoff=4.1 cfs 0.328 af
SubcatchmentP2N: OF 2 North of HP	Runoff Area=72,840 sf 100.00% Impervious Runoff Depth=7.68" Tc=5.0 min CN=98 Runoff=13.5 cfs 1.070 af
SubcatchmentP2S: OF 2 South of HP	Runoff Area=14,495 sf 100.00% Impervious Runoff Depth=7.68" Tc=5.0 min CN=98 Runoff=2.7 cfs 0.213 af
SubcatchmentP3N: OF 3 North of HP	Runoff Area=53,466 sf 100.00% Impervious Runoff Depth=7.68" Tc=5.0 min CN=98 Runoff=9.9 cfs 0.786 af
SubcatchmentP3S: OF 3 South of HP	Runoff Area=8,537 sf 100.00% Impervious Runoff Depth=7.68" Tc=5.0 min CN=98 Runoff=1.6 cfs 0.125 af
SubcatchmentP4N: OF 4 north of HP	Runoff Area=53,231 sf 100.00% Impervious Runoff Depth=7.68" Tc=5.0 min CN=98 Runoff=9.8 cfs 0.782 af
SubcatchmentP4S: OF 4 South of HP	Runoff Area=8,145 sf 100.00% Impervious Runoff Depth=7.68" Tc=5.0 min CN=98 Runoff=1.5 cfs 0.120 af
SubcatchmentP5N: OF 5 - North of HP	Runoff Area=29,054 sf 100.00% Impervious Runoff Depth=7.68" Tc=5.0 min CN=98 Runoff=5.4 cfs 0.427 af
SubcatchmentP5S: OF 5 - South of HP	Runoff Area=4,505 sf 100.00% Impervious Runoff Depth=7.68" Tc=5.0 min CN=98 Runoff=0.8 cfs 0.066 af
SubcatchmentP6: OF 6 - Berth 11 12	Runoff Area=11,661 sf 100.00% Impervious Runoff Depth=7.68" Tc=5.0 min CN=98 Runoff=2.2 cfs 0.171 af
SubcatchmentP7: OF 7 - Berth 11 12	Runoff Area=3,096 sf 100.00% Impervious Runoff Depth=7.68" Tc=5.0 min CN=98 Runoff=0.6 cfs 0.045 af
Pond 1P: Outfall 1 - 18" RCP	Peak Elev=3.51' Inflow=14.8 cfs 1.174 af 18.0" Round Culvert n=0.012 L=26.0' S=-0.0154 '/' Outflow=14.8 cfs 1.174 af
Pond 2P: Outfall 2 - 18" RCP	Peak Elev=4.76' Inflow=16.1 cfs 1.283 af 18.0" Round Culvert n=0.012 L=20.0' S=0.0075 '/' Outflow=16.1 cfs 1.283 af
Pond 3P: Outfall 3 - 24" RCP	Peak Elev=1.90' Inflow=11.5 cfs 0.911 af 24.0" Round Culvert n=0.012 L=21.0' S=0.0095 '/' Outflow=11.5 cfs 0.911 af
Pond 4P: Outfall 4 - 24" RCP	Peak Elev=2.30' Inflow=11.3 cfs 0.902 af 24.0" Round Culvert n=0.012 L=27.0' S=0.0037 '/' Outflow=11.3 cfs 0.902 af

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Type III 24-hr 100-Year Rainfall=7.92"

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Pond 5P: Outfall 5 - 36" RCP

Peak Elev=3.29' Inflow=6.2 cfs 0.493 af
36.0" Round Culvert n=0.012 L=48.0' S=0.0046 '/ Outflow=6.2 cfs 0.493 af

Pond 6P: Outfall 6 - 42" RCP

Peak Elev=2.39' Inflow=2.2 cfs 0.171 af
42.0" Round Culvert n=0.012 L=54.0' S=0.0007 '/ Outflow=2.2 cfs 0.171 af

Pond 7P: Outfall 7 - 30" RCP

Peak Elev=2.54' Inflow=0.6 cfs 0.045 af
30.0" Round Culvert n=0.012 L=34.0' S=-0.0185 '/ Outflow=0.6 cfs 0.045 af

Total Runoff Area = 7.78 ac Runoff Volume = 4.980 af Average Runoff Depth = 7.68"
0.00% Pervious = 0.00 ac 100.00% Impervious = 7.78 ac

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Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Subcatchment P1N: OF 1 North of HP

Runoff = 10.6 cfs @ 12.07 hrs, Volume= 0.846 af, Depth= 7.68"

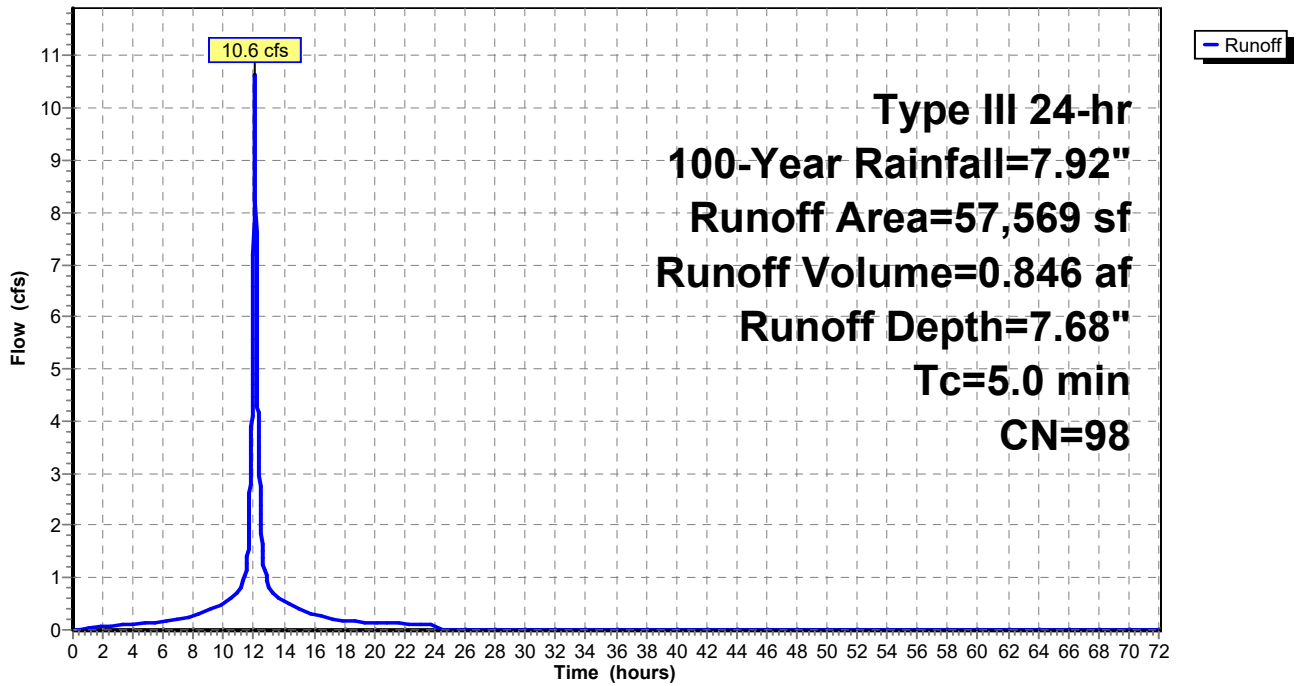
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.92"

Area (sf)	CN	Description
* 57,569	98	Outfall 1 North Trench Drain
57,569		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P1N: OF 1 North of HP

Hydrograph



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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

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Hydrograph for Subcatchment P1N: OF 1 North of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	7.92	7.68	0.0
1.00	0.08	0.01	0.0	52.00	7.92	7.68	0.0
2.00	0.16	0.04	0.1	53.00	7.92	7.68	0.0
3.00	0.24	0.10	0.1	54.00	7.92	7.68	0.0
4.00	0.34	0.18	0.1	55.00	7.92	7.68	0.0
5.00	0.45	0.27	0.1	56.00	7.92	7.68	0.0
6.00	0.57	0.38	0.2	57.00	7.92	7.68	0.0
7.00	0.72	0.52	0.2	58.00	7.92	7.68	0.0
8.00	0.90	0.70	0.3	59.00	7.92	7.68	0.0
9.00	1.15	0.94	0.4	60.00	7.92	7.68	0.0
10.00	1.50	1.28	0.5	61.00	7.92	7.68	0.0
11.00	1.98	1.75	0.7	62.00	7.92	7.68	0.0
12.00	3.96	3.73	7.2	63.00	7.92	7.68	0.0
13.00	5.94	5.70	0.8	64.00	7.92	7.68	0.0
14.00	6.42	6.18	0.5	65.00	7.92	7.68	0.0
15.00	6.77	6.53	0.4	66.00	7.92	7.68	0.0
16.00	7.02	6.78	0.3	67.00	7.92	7.68	0.0
17.00	7.20	6.96	0.2	68.00	7.92	7.68	0.0
18.00	7.35	7.11	0.2	69.00	7.92	7.68	0.0
19.00	7.47	7.23	0.2	70.00	7.92	7.68	0.0
20.00	7.58	7.34	0.1	71.00	7.92	7.68	0.0
21.00	7.68	7.44	0.1	72.00	7.92	7.68	0.0
22.00	7.77	7.53	0.1				
23.00	7.85	7.61	0.1				
24.00	7.92	7.68	0.1				
25.00	7.92	7.68	0.0				
26.00	7.92	7.68	0.0				
27.00	7.92	7.68	0.0				
28.00	7.92	7.68	0.0				
29.00	7.92	7.68	0.0				
30.00	7.92	7.68	0.0				
31.00	7.92	7.68	0.0				
32.00	7.92	7.68	0.0				
33.00	7.92	7.68	0.0				
34.00	7.92	7.68	0.0				
35.00	7.92	7.68	0.0				
36.00	7.92	7.68	0.0				
37.00	7.92	7.68	0.0				
38.00	7.92	7.68	0.0				
39.00	7.92	7.68	0.0				
40.00	7.92	7.68	0.0				
41.00	7.92	7.68	0.0				
42.00	7.92	7.68	0.0				
43.00	7.92	7.68	0.0				
44.00	7.92	7.68	0.0				
45.00	7.92	7.68	0.0				
46.00	7.92	7.68	0.0				
47.00	7.92	7.68	0.0				
48.00	7.92	7.68	0.0				
49.00	7.92	7.68	0.0				
50.00	7.92	7.68	0.0				

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Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Subcatchment P1S: OF 1 Southh of HP

Runoff = 4.1 cfs @ 12.07 hrs, Volume= 0.328 af, Depth= 7.68"

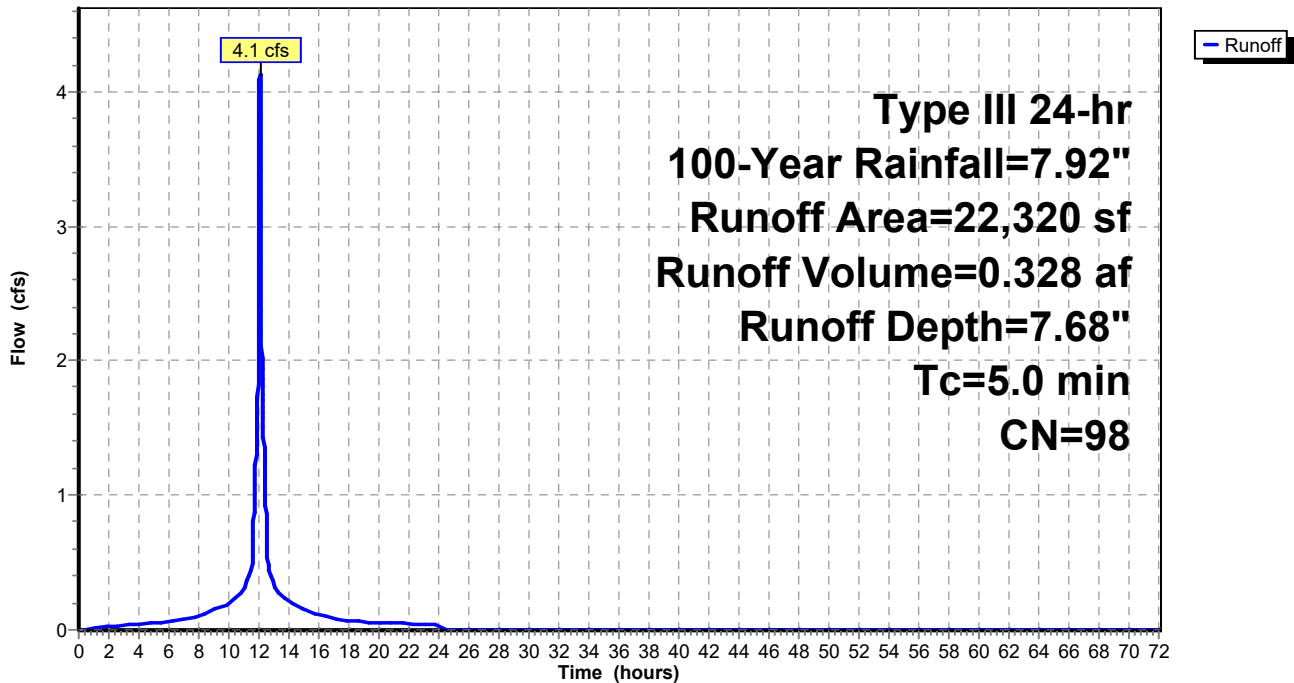
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.92"

Area (sf)	CN	Description
* 22,320	98	Outfall 1 South CB
22,320		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P1S: OF 1 Southh of HP

Hydrograph



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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

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Hydrograph for Subcatchment P1S: OF 1 Southh of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	7.92	7.68	0.0
1.00	0.08	0.01	0.0	52.00	7.92	7.68	0.0
2.00	0.16	0.04	0.0	53.00	7.92	7.68	0.0
3.00	0.24	0.10	0.0	54.00	7.92	7.68	0.0
4.00	0.34	0.18	0.0	55.00	7.92	7.68	0.0
5.00	0.45	0.27	0.1	56.00	7.92	7.68	0.0
6.00	0.57	0.38	0.1	57.00	7.92	7.68	0.0
7.00	0.72	0.52	0.1	58.00	7.92	7.68	0.0
8.00	0.90	0.70	0.1	59.00	7.92	7.68	0.0
9.00	1.15	0.94	0.1	60.00	7.92	7.68	0.0
10.00	1.50	1.28	0.2	61.00	7.92	7.68	0.0
11.00	1.98	1.75	0.3	62.00	7.92	7.68	0.0
12.00	3.96	3.73	2.8	63.00	7.92	7.68	0.0
13.00	5.94	5.70	0.3	64.00	7.92	7.68	0.0
14.00	6.42	6.18	0.2	65.00	7.92	7.68	0.0
15.00	6.77	6.53	0.2	66.00	7.92	7.68	0.0
16.00	7.02	6.78	0.1	67.00	7.92	7.68	0.0
17.00	7.20	6.96	0.1	68.00	7.92	7.68	0.0
18.00	7.35	7.11	0.1	69.00	7.92	7.68	0.0
19.00	7.47	7.23	0.1	70.00	7.92	7.68	0.0
20.00	7.58	7.34	0.1	71.00	7.92	7.68	0.0
21.00	7.68	7.44	0.0	72.00	7.92	7.68	0.0
22.00	7.77	7.53	0.0				
23.00	7.85	7.61	0.0				
24.00	7.92	7.68	0.0				
25.00	7.92	7.68	0.0				
26.00	7.92	7.68	0.0				
27.00	7.92	7.68	0.0				
28.00	7.92	7.68	0.0				
29.00	7.92	7.68	0.0				
30.00	7.92	7.68	0.0				
31.00	7.92	7.68	0.0				
32.00	7.92	7.68	0.0				
33.00	7.92	7.68	0.0				
34.00	7.92	7.68	0.0				
35.00	7.92	7.68	0.0				
36.00	7.92	7.68	0.0				
37.00	7.92	7.68	0.0				
38.00	7.92	7.68	0.0				
39.00	7.92	7.68	0.0				
40.00	7.92	7.68	0.0				
41.00	7.92	7.68	0.0				
42.00	7.92	7.68	0.0				
43.00	7.92	7.68	0.0				
44.00	7.92	7.68	0.0				
45.00	7.92	7.68	0.0				
46.00	7.92	7.68	0.0				
47.00	7.92	7.68	0.0				
48.00	7.92	7.68	0.0				
49.00	7.92	7.68	0.0				
50.00	7.92	7.68	0.0				

Massport_M555_Backlands_POST_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

Printed 6/30/2021

Page 132

Summary for Subcatchment P2N: OF 2 North of HP

Runoff = 13.5 cfs @ 12.07 hrs, Volume= 1.070 af, Depth= 7.68"

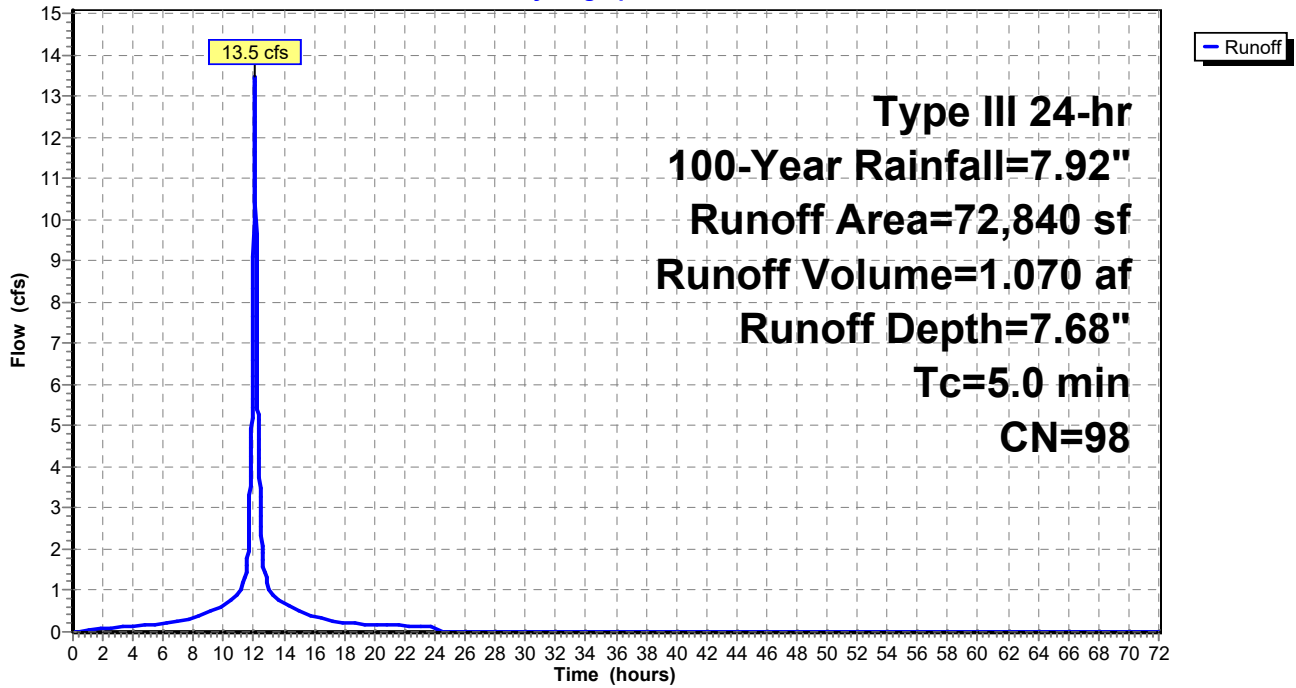
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.92"

Area (sf)	CN	Description
* 72,840	98	Area draining to north of high point
72,840		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment P2N: OF 2 North of HP

Hydrograph



Massport_M555_Backlands_POST_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

Printed 6/30/2021

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Hydrograph for Subcatchment P2N: OF 2 North of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	7.92	7.68	0.0
1.00	0.08	0.01	0.0	52.00	7.92	7.68	0.0
2.00	0.16	0.04	0.1	53.00	7.92	7.68	0.0
3.00	0.24	0.10	0.1	54.00	7.92	7.68	0.0
4.00	0.34	0.18	0.1	55.00	7.92	7.68	0.0
5.00	0.45	0.27	0.2	56.00	7.92	7.68	0.0
6.00	0.57	0.38	0.2	57.00	7.92	7.68	0.0
7.00	0.72	0.52	0.3	58.00	7.92	7.68	0.0
8.00	0.90	0.70	0.3	59.00	7.92	7.68	0.0
9.00	1.15	0.94	0.5	60.00	7.92	7.68	0.0
10.00	1.50	1.28	0.6	61.00	7.92	7.68	0.0
11.00	1.98	1.75	0.9	62.00	7.92	7.68	0.0
12.00	3.96	3.73	9.1	63.00	7.92	7.68	0.0
13.00	5.94	5.70	1.1	64.00	7.92	7.68	0.0
14.00	6.42	6.18	0.7	65.00	7.92	7.68	0.0
15.00	6.77	6.53	0.5	66.00	7.92	7.68	0.0
16.00	7.02	6.78	0.4	67.00	7.92	7.68	0.0
17.00	7.20	6.96	0.3	68.00	7.92	7.68	0.0
18.00	7.35	7.11	0.2	69.00	7.92	7.68	0.0
19.00	7.47	7.23	0.2	70.00	7.92	7.68	0.0
20.00	7.58	7.34	0.2	71.00	7.92	7.68	0.0
21.00	7.68	7.44	0.2	72.00	7.92	7.68	0.0
22.00	7.77	7.53	0.1				
23.00	7.85	7.61	0.1				
24.00	7.92	7.68	0.1				
25.00	7.92	7.68	0.0				
26.00	7.92	7.68	0.0				
27.00	7.92	7.68	0.0				
28.00	7.92	7.68	0.0				
29.00	7.92	7.68	0.0				
30.00	7.92	7.68	0.0				
31.00	7.92	7.68	0.0				
32.00	7.92	7.68	0.0				
33.00	7.92	7.68	0.0				
34.00	7.92	7.68	0.0				
35.00	7.92	7.68	0.0				
36.00	7.92	7.68	0.0				
37.00	7.92	7.68	0.0				
38.00	7.92	7.68	0.0				
39.00	7.92	7.68	0.0				
40.00	7.92	7.68	0.0				
41.00	7.92	7.68	0.0				
42.00	7.92	7.68	0.0				
43.00	7.92	7.68	0.0				
44.00	7.92	7.68	0.0				
45.00	7.92	7.68	0.0				
46.00	7.92	7.68	0.0				
47.00	7.92	7.68	0.0				
48.00	7.92	7.68	0.0				
49.00	7.92	7.68	0.0				
50.00	7.92	7.68	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

Printed 6/30/2021

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Summary for Subcatchment P2S: OF 2 South of HP

Runoff = 2.7 cfs @ 12.07 hrs, Volume= 0.213 af, Depth= 7.68"

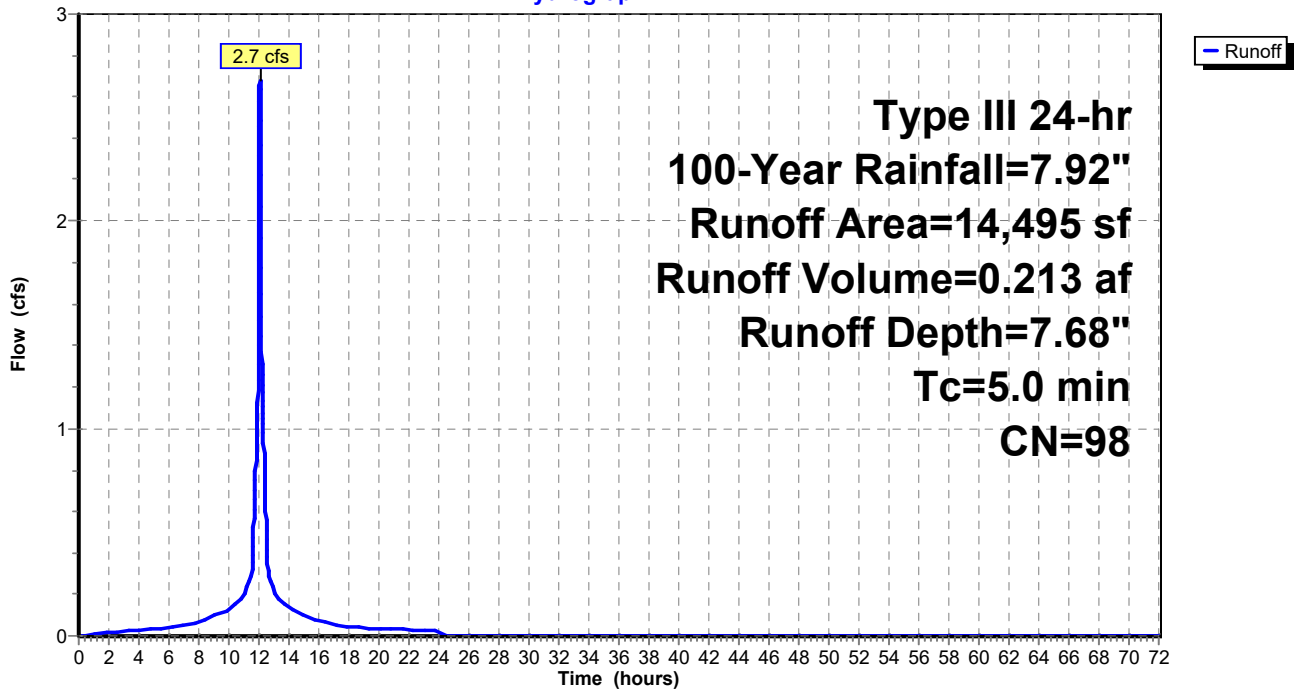
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.92"

Area (sf)	CN	Description
* 14,495	98	Area to South of High Point at D2
14,495		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P2S: OF 2 South of HP

Hydrograph



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Type III 24-hr 100-Year Rainfall=7.92"

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Hydrograph for Subcatchment P2S: OF 2 South of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	7.92	7.68	0.0
1.00	0.08	0.01	0.0	52.00	7.92	7.68	0.0
2.00	0.16	0.04	0.0	53.00	7.92	7.68	0.0
3.00	0.24	0.10	0.0	54.00	7.92	7.68	0.0
4.00	0.34	0.18	0.0	55.00	7.92	7.68	0.0
5.00	0.45	0.27	0.0	56.00	7.92	7.68	0.0
6.00	0.57	0.38	0.0	57.00	7.92	7.68	0.0
7.00	0.72	0.52	0.1	58.00	7.92	7.68	0.0
8.00	0.90	0.70	0.1	59.00	7.92	7.68	0.0
9.00	1.15	0.94	0.1	60.00	7.92	7.68	0.0
10.00	1.50	1.28	0.1	61.00	7.92	7.68	0.0
11.00	1.98	1.75	0.2	62.00	7.92	7.68	0.0
12.00	3.96	3.73	1.8	63.00	7.92	7.68	0.0
13.00	5.94	5.70	0.2	64.00	7.92	7.68	0.0
14.00	6.42	6.18	0.1	65.00	7.92	7.68	0.0
15.00	6.77	6.53	0.1	66.00	7.92	7.68	0.0
16.00	7.02	6.78	0.1	67.00	7.92	7.68	0.0
17.00	7.20	6.96	0.1	68.00	7.92	7.68	0.0
18.00	7.35	7.11	0.0	69.00	7.92	7.68	0.0
19.00	7.47	7.23	0.0	70.00	7.92	7.68	0.0
20.00	7.58	7.34	0.0	71.00	7.92	7.68	0.0
21.00	7.68	7.44	0.0	72.00	7.92	7.68	0.0
22.00	7.77	7.53	0.0				
23.00	7.85	7.61	0.0				
24.00	7.92	7.68	0.0				
25.00	7.92	7.68	0.0				
26.00	7.92	7.68	0.0				
27.00	7.92	7.68	0.0				
28.00	7.92	7.68	0.0				
29.00	7.92	7.68	0.0				
30.00	7.92	7.68	0.0				
31.00	7.92	7.68	0.0				
32.00	7.92	7.68	0.0				
33.00	7.92	7.68	0.0				
34.00	7.92	7.68	0.0				
35.00	7.92	7.68	0.0				
36.00	7.92	7.68	0.0				
37.00	7.92	7.68	0.0				
38.00	7.92	7.68	0.0				
39.00	7.92	7.68	0.0				
40.00	7.92	7.68	0.0				
41.00	7.92	7.68	0.0				
42.00	7.92	7.68	0.0				
43.00	7.92	7.68	0.0				
44.00	7.92	7.68	0.0				
45.00	7.92	7.68	0.0				
46.00	7.92	7.68	0.0				
47.00	7.92	7.68	0.0				
48.00	7.92	7.68	0.0				
49.00	7.92	7.68	0.0				
50.00	7.92	7.68	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Subcatchment P3N: OF 3 North of HP

Runoff = 9.9 cfs @ 12.07 hrs, Volume= 0.786 af, Depth= 7.68"

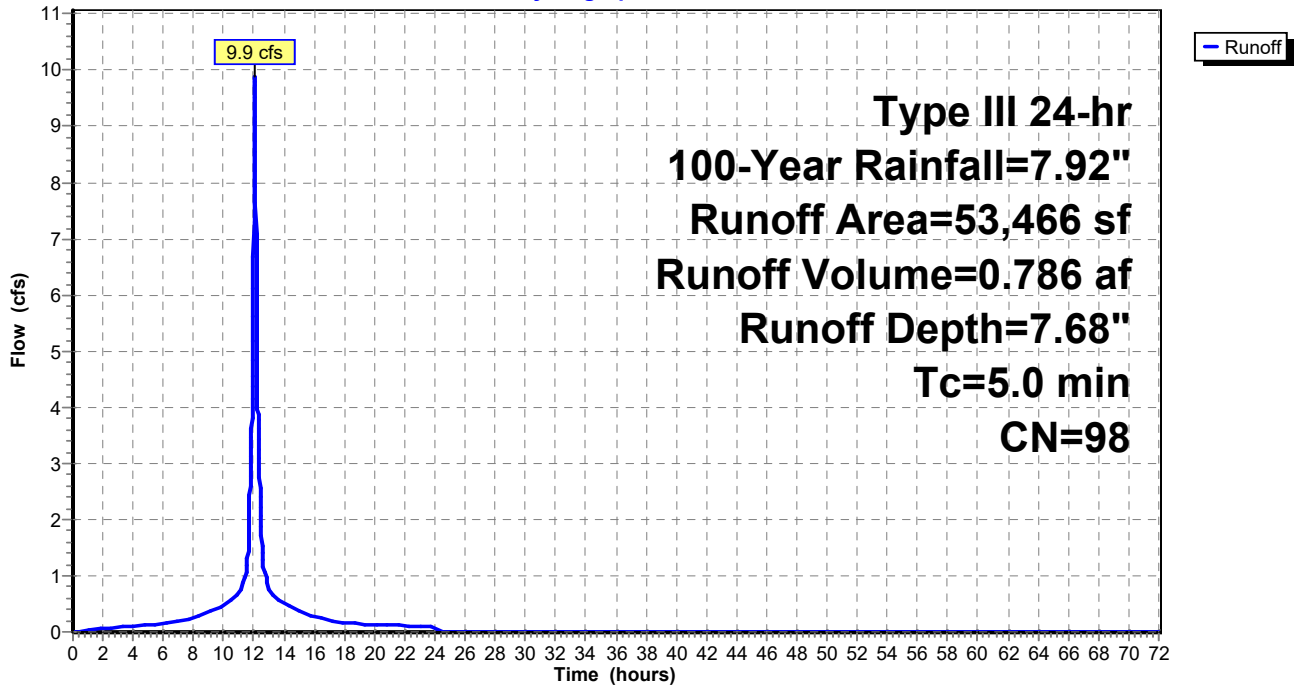
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.92"

Area (sf)	CN	Description
* 53,466	98	Area north of high point drain to outfall 4
53,466		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment P3N: OF 3 North of HP

Hydrograph



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Type III 24-hr 100-Year Rainfall=7.92"

Printed 6/30/2021

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Hydrograph for Subcatchment P3N: OF 3 North of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	7.92	7.68	0.0
1.00	0.08	0.01	0.0	52.00	7.92	7.68	0.0
2.00	0.16	0.04	0.1	53.00	7.92	7.68	0.0
3.00	0.24	0.10	0.1	54.00	7.92	7.68	0.0
4.00	0.34	0.18	0.1	55.00	7.92	7.68	0.0
5.00	0.45	0.27	0.1	56.00	7.92	7.68	0.0
6.00	0.57	0.38	0.1	57.00	7.92	7.68	0.0
7.00	0.72	0.52	0.2	58.00	7.92	7.68	0.0
8.00	0.90	0.70	0.2	59.00	7.92	7.68	0.0
9.00	1.15	0.94	0.3	60.00	7.92	7.68	0.0
10.00	1.50	1.28	0.5	61.00	7.92	7.68	0.0
11.00	1.98	1.75	0.7	62.00	7.92	7.68	0.0
12.00	3.96	3.73	6.7	63.00	7.92	7.68	0.0
13.00	5.94	5.70	0.8	64.00	7.92	7.68	0.0
14.00	6.42	6.18	0.5	65.00	7.92	7.68	0.0
15.00	6.77	6.53	0.4	66.00	7.92	7.68	0.0
16.00	7.02	6.78	0.3	67.00	7.92	7.68	0.0
17.00	7.20	6.96	0.2	68.00	7.92	7.68	0.0
18.00	7.35	7.11	0.2	69.00	7.92	7.68	0.0
19.00	7.47	7.23	0.1	70.00	7.92	7.68	0.0
20.00	7.58	7.34	0.1	71.00	7.92	7.68	0.0
21.00	7.68	7.44	0.1	72.00	7.92	7.68	0.0
22.00	7.77	7.53	0.1				
23.00	7.85	7.61	0.1				
24.00	7.92	7.68	0.1				
25.00	7.92	7.68	0.0				
26.00	7.92	7.68	0.0				
27.00	7.92	7.68	0.0				
28.00	7.92	7.68	0.0				
29.00	7.92	7.68	0.0				
30.00	7.92	7.68	0.0				
31.00	7.92	7.68	0.0				
32.00	7.92	7.68	0.0				
33.00	7.92	7.68	0.0				
34.00	7.92	7.68	0.0				
35.00	7.92	7.68	0.0				
36.00	7.92	7.68	0.0				
37.00	7.92	7.68	0.0				
38.00	7.92	7.68	0.0				
39.00	7.92	7.68	0.0				
40.00	7.92	7.68	0.0				
41.00	7.92	7.68	0.0				
42.00	7.92	7.68	0.0				
43.00	7.92	7.68	0.0				
44.00	7.92	7.68	0.0				
45.00	7.92	7.68	0.0				
46.00	7.92	7.68	0.0				
47.00	7.92	7.68	0.0				
48.00	7.92	7.68	0.0				
49.00	7.92	7.68	0.0				
50.00	7.92	7.68	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

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Page 138

Summary for Subcatchment P3S: OF 3 South of HP

Runoff = 1.6 cfs @ 12.07 hrs, Volume= 0.125 af, Depth= 7.68"

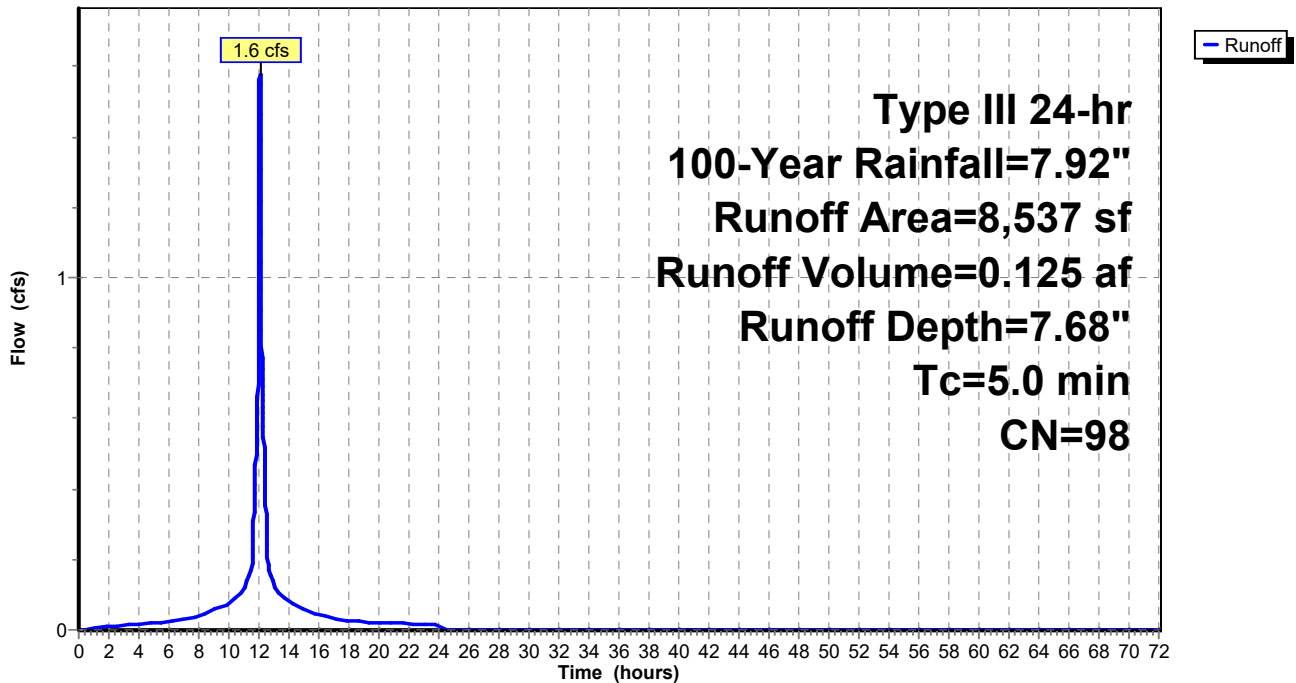
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.92"

Area (sf)	CN	Description
* 8,537	98	Area south of high point at Outfall 3
8,537		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment P3S: OF 3 South of HP

Hydrograph



Massport_M555_Backlands_POST_LOW

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Type III 24-hr 100-Year Rainfall=7.92"

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Hydrograph for Subcatchment P3S: OF 3 South of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	7.92	7.68	0.0
1.00	0.08	0.01	0.0	52.00	7.92	7.68	0.0
2.00	0.16	0.04	0.0	53.00	7.92	7.68	0.0
3.00	0.24	0.10	0.0	54.00	7.92	7.68	0.0
4.00	0.34	0.18	0.0	55.00	7.92	7.68	0.0
5.00	0.45	0.27	0.0	56.00	7.92	7.68	0.0
6.00	0.57	0.38	0.0	57.00	7.92	7.68	0.0
7.00	0.72	0.52	0.0	58.00	7.92	7.68	0.0
8.00	0.90	0.70	0.0	59.00	7.92	7.68	0.0
9.00	1.15	0.94	0.1	60.00	7.92	7.68	0.0
10.00	1.50	1.28	0.1	61.00	7.92	7.68	0.0
11.00	1.98	1.75	0.1	62.00	7.92	7.68	0.0
12.00	3.96	3.73	1.1	63.00	7.92	7.68	0.0
13.00	5.94	5.70	0.1	64.00	7.92	7.68	0.0
14.00	6.42	6.18	0.1	65.00	7.92	7.68	0.0
15.00	6.77	6.53	0.1	66.00	7.92	7.68	0.0
16.00	7.02	6.78	0.0	67.00	7.92	7.68	0.0
17.00	7.20	6.96	0.0	68.00	7.92	7.68	0.0
18.00	7.35	7.11	0.0	69.00	7.92	7.68	0.0
19.00	7.47	7.23	0.0	70.00	7.92	7.68	0.0
20.00	7.58	7.34	0.0	71.00	7.92	7.68	0.0
21.00	7.68	7.44	0.0	72.00	7.92	7.68	0.0
22.00	7.77	7.53	0.0				
23.00	7.85	7.61	0.0				
24.00	7.92	7.68	0.0				
25.00	7.92	7.68	0.0				
26.00	7.92	7.68	0.0				
27.00	7.92	7.68	0.0				
28.00	7.92	7.68	0.0				
29.00	7.92	7.68	0.0				
30.00	7.92	7.68	0.0				
31.00	7.92	7.68	0.0				
32.00	7.92	7.68	0.0				
33.00	7.92	7.68	0.0				
34.00	7.92	7.68	0.0				
35.00	7.92	7.68	0.0				
36.00	7.92	7.68	0.0				
37.00	7.92	7.68	0.0				
38.00	7.92	7.68	0.0				
39.00	7.92	7.68	0.0				
40.00	7.92	7.68	0.0				
41.00	7.92	7.68	0.0				
42.00	7.92	7.68	0.0				
43.00	7.92	7.68	0.0				
44.00	7.92	7.68	0.0				
45.00	7.92	7.68	0.0				
46.00	7.92	7.68	0.0				
47.00	7.92	7.68	0.0				
48.00	7.92	7.68	0.0				
49.00	7.92	7.68	0.0				
50.00	7.92	7.68	0.0				

Massport_M555_Backlands_POST_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Subcatchment P4N: OF 4 north of HP

Runoff = 9.8 cfs @ 12.07 hrs, Volume= 0.782 af, Depth= 7.68"

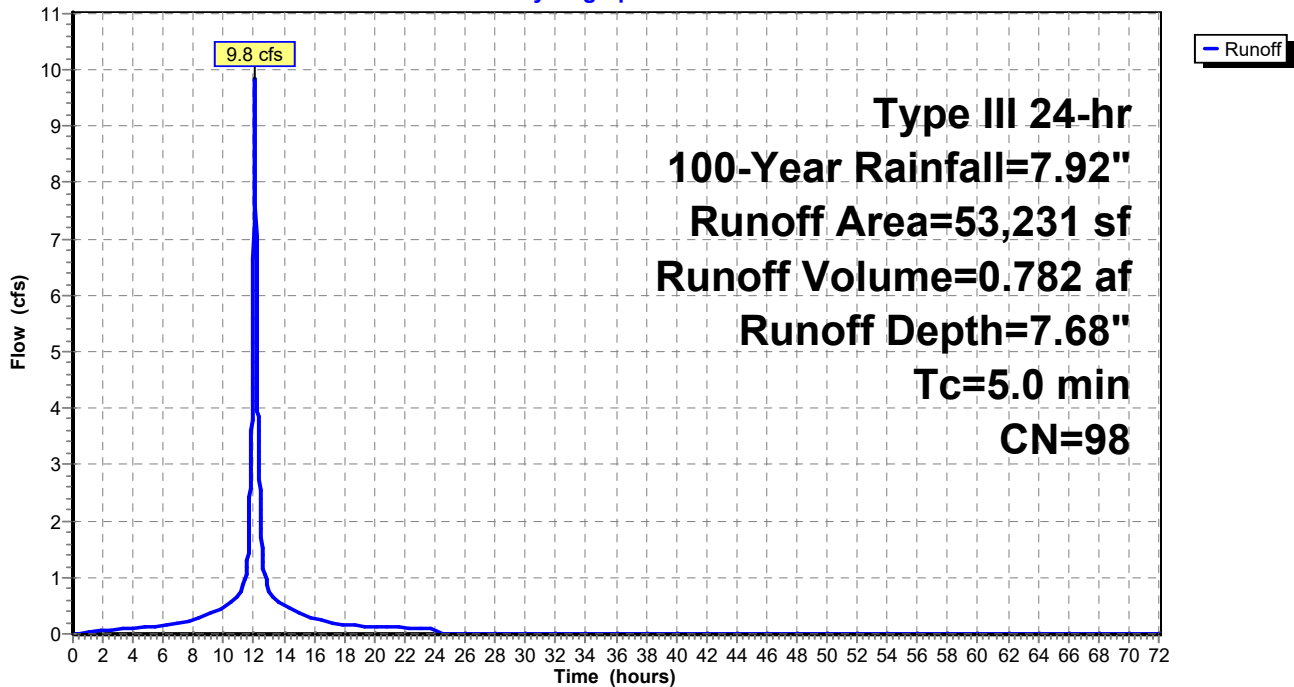
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.92"

Area (sf)	CN	Description
* 53,231	98	Area draining north of high point to trench drains
53,231		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment P4N: OF 4 north of HP

Hydrograph



Massport_M555_Backlands_POST_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

Printed 6/30/2021

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Hydrograph for Subcatchment P4N: OF 4 north of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	7.92	7.68	0.0
1.00	0.08	0.01	0.0	52.00	7.92	7.68	0.0
2.00	0.16	0.04	0.1	53.00	7.92	7.68	0.0
3.00	0.24	0.10	0.1	54.00	7.92	7.68	0.0
4.00	0.34	0.18	0.1	55.00	7.92	7.68	0.0
5.00	0.45	0.27	0.1	56.00	7.92	7.68	0.0
6.00	0.57	0.38	0.1	57.00	7.92	7.68	0.0
7.00	0.72	0.52	0.2	58.00	7.92	7.68	0.0
8.00	0.90	0.70	0.2	59.00	7.92	7.68	0.0
9.00	1.15	0.94	0.3	60.00	7.92	7.68	0.0
10.00	1.50	1.28	0.5	61.00	7.92	7.68	0.0
11.00	1.98	1.75	0.7	62.00	7.92	7.68	0.0
12.00	3.96	3.73	6.7	63.00	7.92	7.68	0.0
13.00	5.94	5.70	0.8	64.00	7.92	7.68	0.0
14.00	6.42	6.18	0.5	65.00	7.92	7.68	0.0
15.00	6.77	6.53	0.4	66.00	7.92	7.68	0.0
16.00	7.02	6.78	0.3	67.00	7.92	7.68	0.0
17.00	7.20	6.96	0.2	68.00	7.92	7.68	0.0
18.00	7.35	7.11	0.2	69.00	7.92	7.68	0.0
19.00	7.47	7.23	0.1	70.00	7.92	7.68	0.0
20.00	7.58	7.34	0.1	71.00	7.92	7.68	0.0
21.00	7.68	7.44	0.1	72.00	7.92	7.68	0.0
22.00	7.77	7.53	0.1				
23.00	7.85	7.61	0.1				
24.00	7.92	7.68	0.1				
25.00	7.92	7.68	0.0				
26.00	7.92	7.68	0.0				
27.00	7.92	7.68	0.0				
28.00	7.92	7.68	0.0				
29.00	7.92	7.68	0.0				
30.00	7.92	7.68	0.0				
31.00	7.92	7.68	0.0				
32.00	7.92	7.68	0.0				
33.00	7.92	7.68	0.0				
34.00	7.92	7.68	0.0				
35.00	7.92	7.68	0.0				
36.00	7.92	7.68	0.0				
37.00	7.92	7.68	0.0				
38.00	7.92	7.68	0.0				
39.00	7.92	7.68	0.0				
40.00	7.92	7.68	0.0				
41.00	7.92	7.68	0.0				
42.00	7.92	7.68	0.0				
43.00	7.92	7.68	0.0				
44.00	7.92	7.68	0.0				
45.00	7.92	7.68	0.0				
46.00	7.92	7.68	0.0				
47.00	7.92	7.68	0.0				
48.00	7.92	7.68	0.0				
49.00	7.92	7.68	0.0				
50.00	7.92	7.68	0.0				

Massport_M555_Backlands_POST_LOW

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Subcatchment P4S: OF 4 South of HP

Runoff = 1.5 cfs @ 12.07 hrs, Volume= 0.120 af, Depth= 7.68"

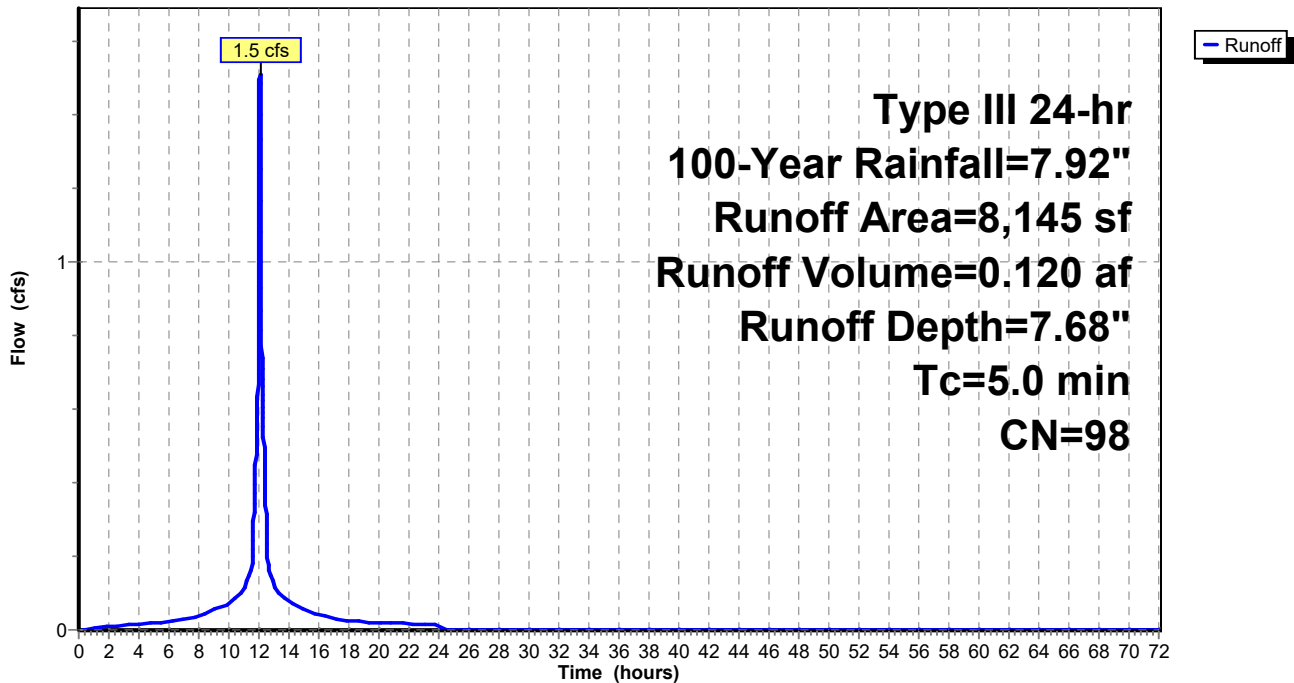
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.92"

Area (sf)	CN	Description
* 8,145	98	Area south of high point drain to outfall 4
8,145		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Area to Collection to Outfall (through pipes)

Subcatchment P4S: OF 4 South of HP

Hydrograph



Massport_M555_Backlands_POST_LOW

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Type III 24-hr 100-Year Rainfall=7.92"

Printed 6/30/2021

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Hydrograph for Subcatchment P4S: OF 4 South of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	7.92	7.68	0.0
1.00	0.08	0.01	0.0	52.00	7.92	7.68	0.0
2.00	0.16	0.04	0.0	53.00	7.92	7.68	0.0
3.00	0.24	0.10	0.0	54.00	7.92	7.68	0.0
4.00	0.34	0.18	0.0	55.00	7.92	7.68	0.0
5.00	0.45	0.27	0.0	56.00	7.92	7.68	0.0
6.00	0.57	0.38	0.0	57.00	7.92	7.68	0.0
7.00	0.72	0.52	0.0	58.00	7.92	7.68	0.0
8.00	0.90	0.70	0.0	59.00	7.92	7.68	0.0
9.00	1.15	0.94	0.1	60.00	7.92	7.68	0.0
10.00	1.50	1.28	0.1	61.00	7.92	7.68	0.0
11.00	1.98	1.75	0.1	62.00	7.92	7.68	0.0
12.00	3.96	3.73	1.0	63.00	7.92	7.68	0.0
13.00	5.94	5.70	0.1	64.00	7.92	7.68	0.0
14.00	6.42	6.18	0.1	65.00	7.92	7.68	0.0
15.00	6.77	6.53	0.1	66.00	7.92	7.68	0.0
16.00	7.02	6.78	0.0	67.00	7.92	7.68	0.0
17.00	7.20	6.96	0.0	68.00	7.92	7.68	0.0
18.00	7.35	7.11	0.0	69.00	7.92	7.68	0.0
19.00	7.47	7.23	0.0	70.00	7.92	7.68	0.0
20.00	7.58	7.34	0.0	71.00	7.92	7.68	0.0
21.00	7.68	7.44	0.0	72.00	7.92	7.68	0.0
22.00	7.77	7.53	0.0				
23.00	7.85	7.61	0.0				
24.00	7.92	7.68	0.0				
25.00	7.92	7.68	0.0				
26.00	7.92	7.68	0.0				
27.00	7.92	7.68	0.0				
28.00	7.92	7.68	0.0				
29.00	7.92	7.68	0.0				
30.00	7.92	7.68	0.0				
31.00	7.92	7.68	0.0				
32.00	7.92	7.68	0.0				
33.00	7.92	7.68	0.0				
34.00	7.92	7.68	0.0				
35.00	7.92	7.68	0.0				
36.00	7.92	7.68	0.0				
37.00	7.92	7.68	0.0				
38.00	7.92	7.68	0.0				
39.00	7.92	7.68	0.0				
40.00	7.92	7.68	0.0				
41.00	7.92	7.68	0.0				
42.00	7.92	7.68	0.0				
43.00	7.92	7.68	0.0				
44.00	7.92	7.68	0.0				
45.00	7.92	7.68	0.0				
46.00	7.92	7.68	0.0				
47.00	7.92	7.68	0.0				
48.00	7.92	7.68	0.0				
49.00	7.92	7.68	0.0				
50.00	7.92	7.68	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

Printed 6/30/2021

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Summary for Subcatchment P5N: OF 5 - North of HP

Runoff = 5.4 cfs @ 12.07 hrs, Volume= 0.427 af, Depth= 7.68"

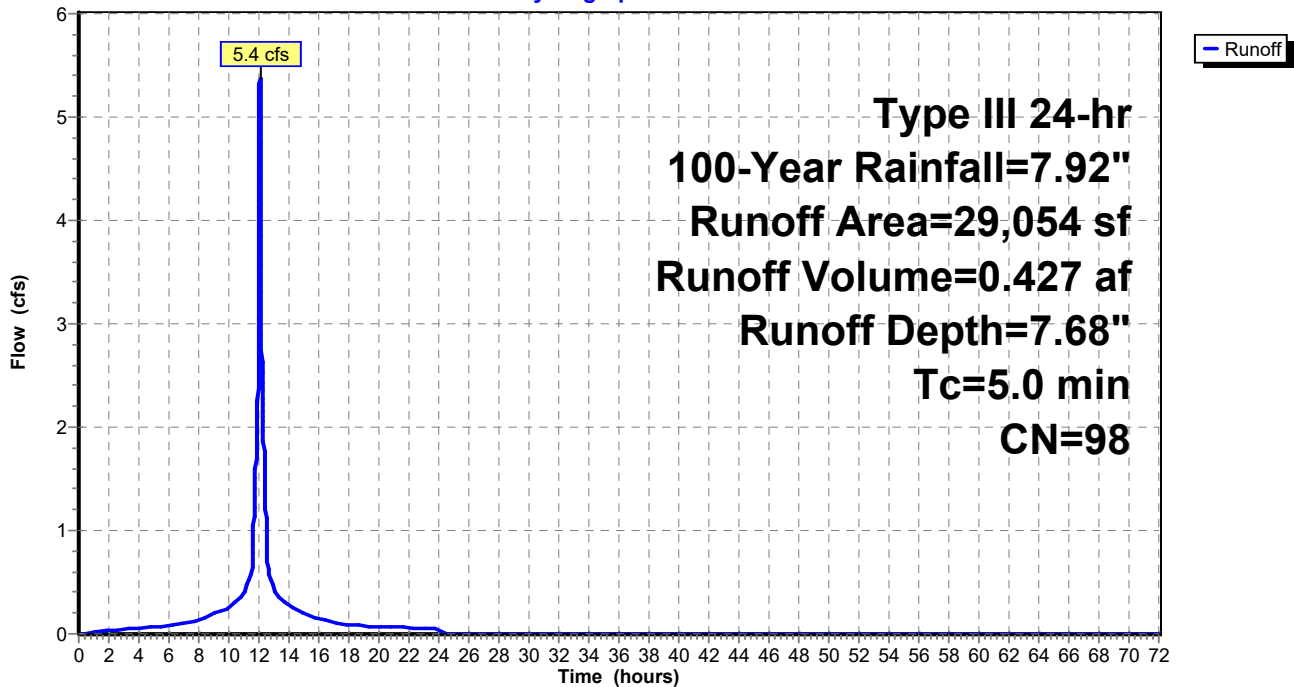
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.92"

Area (sf)	CN	Description
* 29,054	98	Area draining north of high point to trench drains
29,054		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P5N: OF 5 - North of HP

Hydrograph



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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

Printed 6/30/2021

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Hydrograph for Subcatchment P5N: OF 5 - North of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	7.92	7.68	0.0
1.00	0.08	0.01	0.0	52.00	7.92	7.68	0.0
2.00	0.16	0.04	0.0	53.00	7.92	7.68	0.0
3.00	0.24	0.10	0.0	54.00	7.92	7.68	0.0
4.00	0.34	0.18	0.1	55.00	7.92	7.68	0.0
5.00	0.45	0.27	0.1	56.00	7.92	7.68	0.0
6.00	0.57	0.38	0.1	57.00	7.92	7.68	0.0
7.00	0.72	0.52	0.1	58.00	7.92	7.68	0.0
8.00	0.90	0.70	0.1	59.00	7.92	7.68	0.0
9.00	1.15	0.94	0.2	60.00	7.92	7.68	0.0
10.00	1.50	1.28	0.3	61.00	7.92	7.68	0.0
11.00	1.98	1.75	0.4	62.00	7.92	7.68	0.0
12.00	3.96	3.73	3.6	63.00	7.92	7.68	0.0
13.00	5.94	5.70	0.4	64.00	7.92	7.68	0.0
14.00	6.42	6.18	0.3	65.00	7.92	7.68	0.0
15.00	6.77	6.53	0.2	66.00	7.92	7.68	0.0
16.00	7.02	6.78	0.1	67.00	7.92	7.68	0.0
17.00	7.20	6.96	0.1	68.00	7.92	7.68	0.0
18.00	7.35	7.11	0.1	69.00	7.92	7.68	0.0
19.00	7.47	7.23	0.1	70.00	7.92	7.68	0.0
20.00	7.58	7.34	0.1	71.00	7.92	7.68	0.0
21.00	7.68	7.44	0.1	72.00	7.92	7.68	0.0
22.00	7.77	7.53	0.1				
23.00	7.85	7.61	0.1				
24.00	7.92	7.68	0.0				
25.00	7.92	7.68	0.0				
26.00	7.92	7.68	0.0				
27.00	7.92	7.68	0.0				
28.00	7.92	7.68	0.0				
29.00	7.92	7.68	0.0				
30.00	7.92	7.68	0.0				
31.00	7.92	7.68	0.0				
32.00	7.92	7.68	0.0				
33.00	7.92	7.68	0.0				
34.00	7.92	7.68	0.0				
35.00	7.92	7.68	0.0				
36.00	7.92	7.68	0.0				
37.00	7.92	7.68	0.0				
38.00	7.92	7.68	0.0				
39.00	7.92	7.68	0.0				
40.00	7.92	7.68	0.0				
41.00	7.92	7.68	0.0				
42.00	7.92	7.68	0.0				
43.00	7.92	7.68	0.0				
44.00	7.92	7.68	0.0				
45.00	7.92	7.68	0.0				
46.00	7.92	7.68	0.0				
47.00	7.92	7.68	0.0				
48.00	7.92	7.68	0.0				
49.00	7.92	7.68	0.0				
50.00	7.92	7.68	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Subcatchment P5S: OF 5 - South of HP

Runoff = 0.8 cfs @ 12.07 hrs, Volume= 0.066 af, Depth= 7.68"

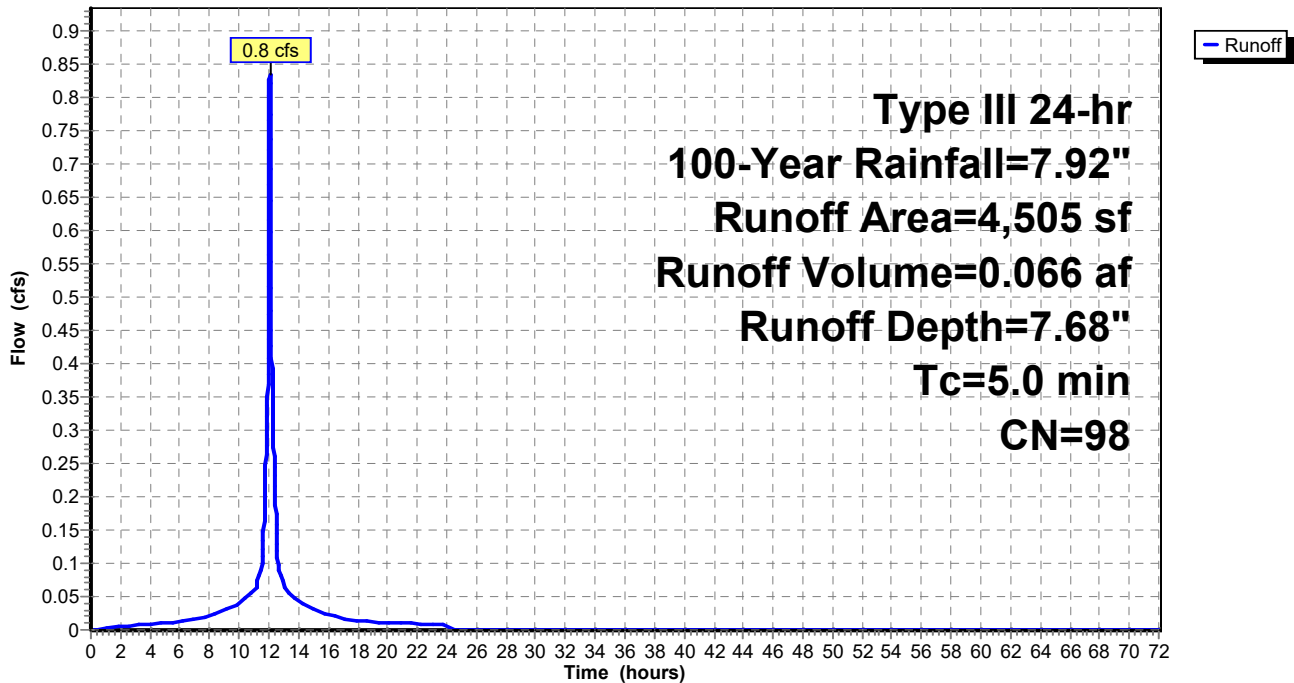
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.92"

Area (sf)	CN	Description
* 4,505	98	Area south of high point drain to outfall 5
4,505		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P5S: OF 5 - South of HP

Hydrograph



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Type III 24-hr 100-Year Rainfall=7.92"

Printed 6/30/2021

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Hydrograph for Subcatchment P5S: OF 5 - South of HP

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	7.92	7.68	0.0
1.00	0.08	0.01	0.0	52.00	7.92	7.68	0.0
2.00	0.16	0.04	0.0	53.00	7.92	7.68	0.0
3.00	0.24	0.10	0.0	54.00	7.92	7.68	0.0
4.00	0.34	0.18	0.0	55.00	7.92	7.68	0.0
5.00	0.45	0.27	0.0	56.00	7.92	7.68	0.0
6.00	0.57	0.38	0.0	57.00	7.92	7.68	0.0
7.00	0.72	0.52	0.0	58.00	7.92	7.68	0.0
8.00	0.90	0.70	0.0	59.00	7.92	7.68	0.0
9.00	1.15	0.94	0.0	60.00	7.92	7.68	0.0
10.00	1.50	1.28	0.0	61.00	7.92	7.68	0.0
11.00	1.98	1.75	0.1	62.00	7.92	7.68	0.0
12.00	3.96	3.73	0.6	63.00	7.92	7.68	0.0
13.00	5.94	5.70	0.1	64.00	7.92	7.68	0.0
14.00	6.42	6.18	0.0	65.00	7.92	7.68	0.0
15.00	6.77	6.53	0.0	66.00	7.92	7.68	0.0
16.00	7.02	6.78	0.0	67.00	7.92	7.68	0.0
17.00	7.20	6.96	0.0	68.00	7.92	7.68	0.0
18.00	7.35	7.11	0.0	69.00	7.92	7.68	0.0
19.00	7.47	7.23	0.0	70.00	7.92	7.68	0.0
20.00	7.58	7.34	0.0	71.00	7.92	7.68	0.0
21.00	7.68	7.44	0.0	72.00	7.92	7.68	0.0
22.00	7.77	7.53	0.0				
23.00	7.85	7.61	0.0				
24.00	7.92	7.68	0.0				
25.00	7.92	7.68	0.0				
26.00	7.92	7.68	0.0				
27.00	7.92	7.68	0.0				
28.00	7.92	7.68	0.0				
29.00	7.92	7.68	0.0				
30.00	7.92	7.68	0.0				
31.00	7.92	7.68	0.0				
32.00	7.92	7.68	0.0				
33.00	7.92	7.68	0.0				
34.00	7.92	7.68	0.0				
35.00	7.92	7.68	0.0				
36.00	7.92	7.68	0.0				
37.00	7.92	7.68	0.0				
38.00	7.92	7.68	0.0				
39.00	7.92	7.68	0.0				
40.00	7.92	7.68	0.0				
41.00	7.92	7.68	0.0				
42.00	7.92	7.68	0.0				
43.00	7.92	7.68	0.0				
44.00	7.92	7.68	0.0				
45.00	7.92	7.68	0.0				
46.00	7.92	7.68	0.0				
47.00	7.92	7.68	0.0				
48.00	7.92	7.68	0.0				
49.00	7.92	7.68	0.0				
50.00	7.92	7.68	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Subcatchment P6: OF 6 - Berth 11 12 Access Road

Runoff = 2.2 cfs @ 12.07 hrs, Volume= 0.171 af, Depth= 7.68"

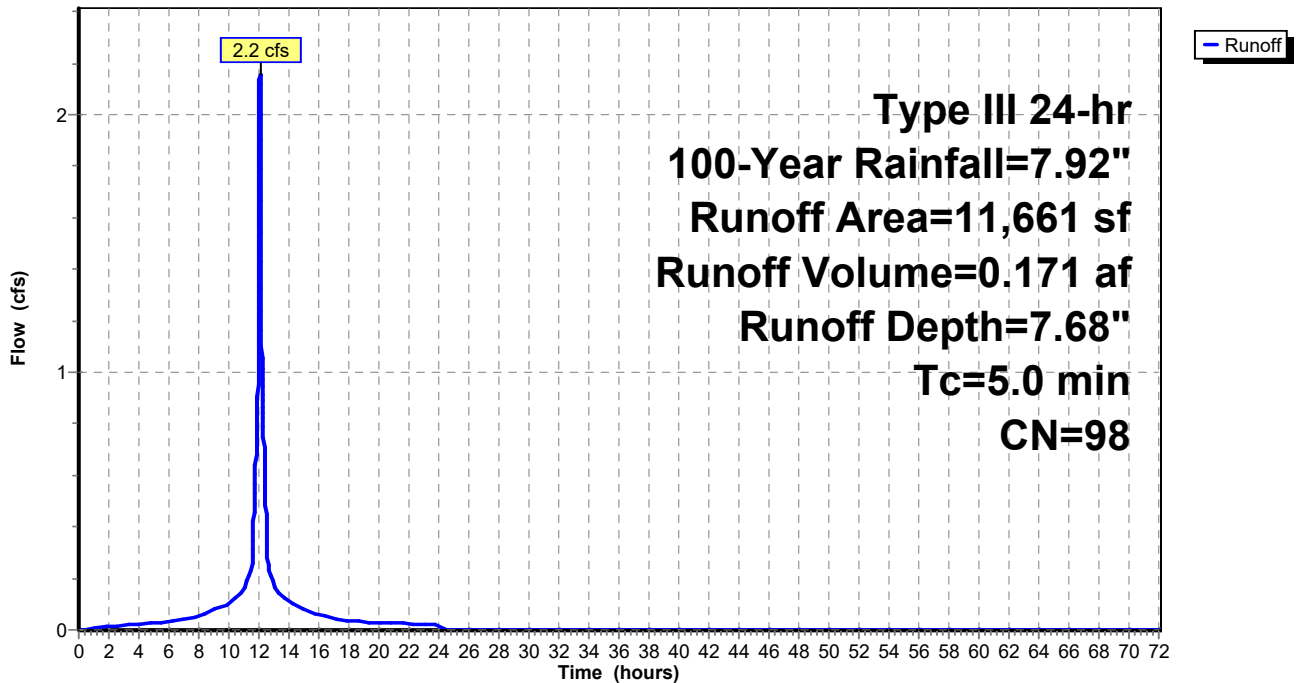
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.92"

Area (sf)	CN	Description
* 11,661	98	Area east of Road for Berths 11 and 12
11,661		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P6: OF 6 - Berth 11 12 Access Road

Hydrograph



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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

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Hydrograph for Subcatchment P6: OF 6 - Berth 11 12 Access Road

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	7.92	7.68	0.0
1.00	0.08	0.01	0.0	52.00	7.92	7.68	0.0
2.00	0.16	0.04	0.0	53.00	7.92	7.68	0.0
3.00	0.24	0.10	0.0	54.00	7.92	7.68	0.0
4.00	0.34	0.18	0.0	55.00	7.92	7.68	0.0
5.00	0.45	0.27	0.0	56.00	7.92	7.68	0.0
6.00	0.57	0.38	0.0	57.00	7.92	7.68	0.0
7.00	0.72	0.52	0.0	58.00	7.92	7.68	0.0
8.00	0.90	0.70	0.1	59.00	7.92	7.68	0.0
9.00	1.15	0.94	0.1	60.00	7.92	7.68	0.0
10.00	1.50	1.28	0.1	61.00	7.92	7.68	0.0
11.00	1.98	1.75	0.2	62.00	7.92	7.68	0.0
12.00	3.96	3.73	1.5	63.00	7.92	7.68	0.0
13.00	5.94	5.70	0.2	64.00	7.92	7.68	0.0
14.00	6.42	6.18	0.1	65.00	7.92	7.68	0.0
15.00	6.77	6.53	0.1	66.00	7.92	7.68	0.0
16.00	7.02	6.78	0.1	67.00	7.92	7.68	0.0
17.00	7.20	6.96	0.0	68.00	7.92	7.68	0.0
18.00	7.35	7.11	0.0	69.00	7.92	7.68	0.0
19.00	7.47	7.23	0.0	70.00	7.92	7.68	0.0
20.00	7.58	7.34	0.0	71.00	7.92	7.68	0.0
21.00	7.68	7.44	0.0	72.00	7.92	7.68	0.0
22.00	7.77	7.53	0.0				
23.00	7.85	7.61	0.0				
24.00	7.92	7.68	0.0				
25.00	7.92	7.68	0.0				
26.00	7.92	7.68	0.0				
27.00	7.92	7.68	0.0				
28.00	7.92	7.68	0.0				
29.00	7.92	7.68	0.0				
30.00	7.92	7.68	0.0				
31.00	7.92	7.68	0.0				
32.00	7.92	7.68	0.0				
33.00	7.92	7.68	0.0				
34.00	7.92	7.68	0.0				
35.00	7.92	7.68	0.0				
36.00	7.92	7.68	0.0				
37.00	7.92	7.68	0.0				
38.00	7.92	7.68	0.0				
39.00	7.92	7.68	0.0				
40.00	7.92	7.68	0.0				
41.00	7.92	7.68	0.0				
42.00	7.92	7.68	0.0				
43.00	7.92	7.68	0.0				
44.00	7.92	7.68	0.0				
45.00	7.92	7.68	0.0				
46.00	7.92	7.68	0.0				
47.00	7.92	7.68	0.0				
48.00	7.92	7.68	0.0				
49.00	7.92	7.68	0.0				
50.00	7.92	7.68	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

Printed 6/30/2021

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Summary for Subcatchment P7: OF 7 - Berth 11 12 Access Road

Runoff = 0.6 cfs @ 12.07 hrs, Volume= 0.045 af, Depth= 7.68"

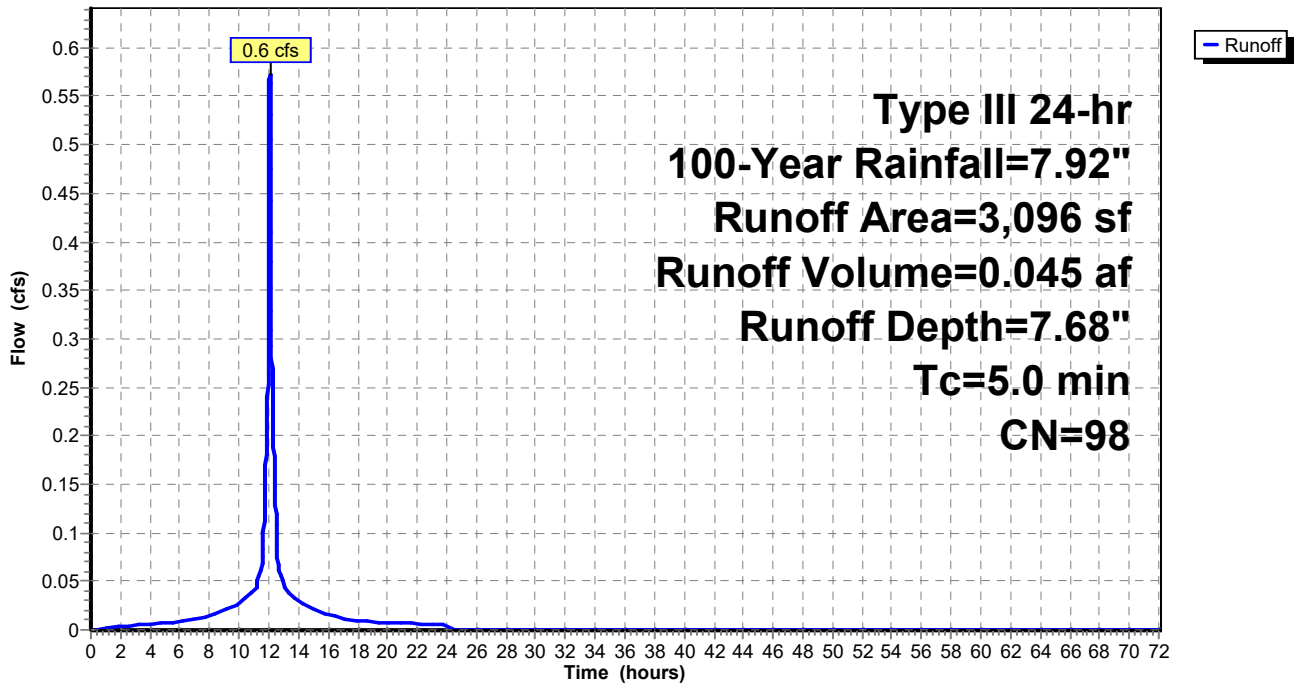
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.92"

Area (sf)	CN	Description
* 3,096	98	Drainage in Berth 12 discharged at Outfall 7
3,096		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

Subcatchment P7: OF 7 - Berth 11 12 Access Road

Hydrograph



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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

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Hydrograph for Subcatchment P7: OF 7 - Berth 11 12 Access Road

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.0	51.00	7.92	7.68	0.0
1.00	0.08	0.01	0.0	52.00	7.92	7.68	0.0
2.00	0.16	0.04	0.0	53.00	7.92	7.68	0.0
3.00	0.24	0.10	0.0	54.00	7.92	7.68	0.0
4.00	0.34	0.18	0.0	55.00	7.92	7.68	0.0
5.00	0.45	0.27	0.0	56.00	7.92	7.68	0.0
6.00	0.57	0.38	0.0	57.00	7.92	7.68	0.0
7.00	0.72	0.52	0.0	58.00	7.92	7.68	0.0
8.00	0.90	0.70	0.0	59.00	7.92	7.68	0.0
9.00	1.15	0.94	0.0	60.00	7.92	7.68	0.0
10.00	1.50	1.28	0.0	61.00	7.92	7.68	0.0
11.00	1.98	1.75	0.0	62.00	7.92	7.68	0.0
12.00	3.96	3.73	0.4	63.00	7.92	7.68	0.0
13.00	5.94	5.70	0.0	64.00	7.92	7.68	0.0
14.00	6.42	6.18	0.0	65.00	7.92	7.68	0.0
15.00	6.77	6.53	0.0	66.00	7.92	7.68	0.0
16.00	7.02	6.78	0.0	67.00	7.92	7.68	0.0
17.00	7.20	6.96	0.0	68.00	7.92	7.68	0.0
18.00	7.35	7.11	0.0	69.00	7.92	7.68	0.0
19.00	7.47	7.23	0.0	70.00	7.92	7.68	0.0
20.00	7.58	7.34	0.0	71.00	7.92	7.68	0.0
21.00	7.68	7.44	0.0	72.00	7.92	7.68	0.0
22.00	7.77	7.53	0.0				
23.00	7.85	7.61	0.0				
24.00	7.92	7.68	0.0				
25.00	7.92	7.68	0.0				
26.00	7.92	7.68	0.0				
27.00	7.92	7.68	0.0				
28.00	7.92	7.68	0.0				
29.00	7.92	7.68	0.0				
30.00	7.92	7.68	0.0				
31.00	7.92	7.68	0.0				
32.00	7.92	7.68	0.0				
33.00	7.92	7.68	0.0				
34.00	7.92	7.68	0.0				
35.00	7.92	7.68	0.0				
36.00	7.92	7.68	0.0				
37.00	7.92	7.68	0.0				
38.00	7.92	7.68	0.0				
39.00	7.92	7.68	0.0				
40.00	7.92	7.68	0.0				
41.00	7.92	7.68	0.0				
42.00	7.92	7.68	0.0				
43.00	7.92	7.68	0.0				
44.00	7.92	7.68	0.0				
45.00	7.92	7.68	0.0				
46.00	7.92	7.68	0.0				
47.00	7.92	7.68	0.0				
48.00	7.92	7.68	0.0				
49.00	7.92	7.68	0.0				
50.00	7.92	7.68	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

Printed 6/30/2021

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Summary for Pond 1P: Outfall 1 - 18" RCP

[57] Hint: Peaked at 3.51' (Flood elevation advised)

Inflow Area = 1.83 ac, 100.00% Impervious, Inflow Depth = 7.68" for 100-Year event
Inflow = 14.8 cfs @ 12.07 hrs, Volume= 1.174 af
Outflow = 14.8 cfs @ 12.07 hrs, Volume= 1.174 af, Atten= 0%, Lag= 0.0 min
Primary = 14.8 cfs @ 12.07 hrs, Volume= 1.174 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 3.51' @ 12.07 hrs

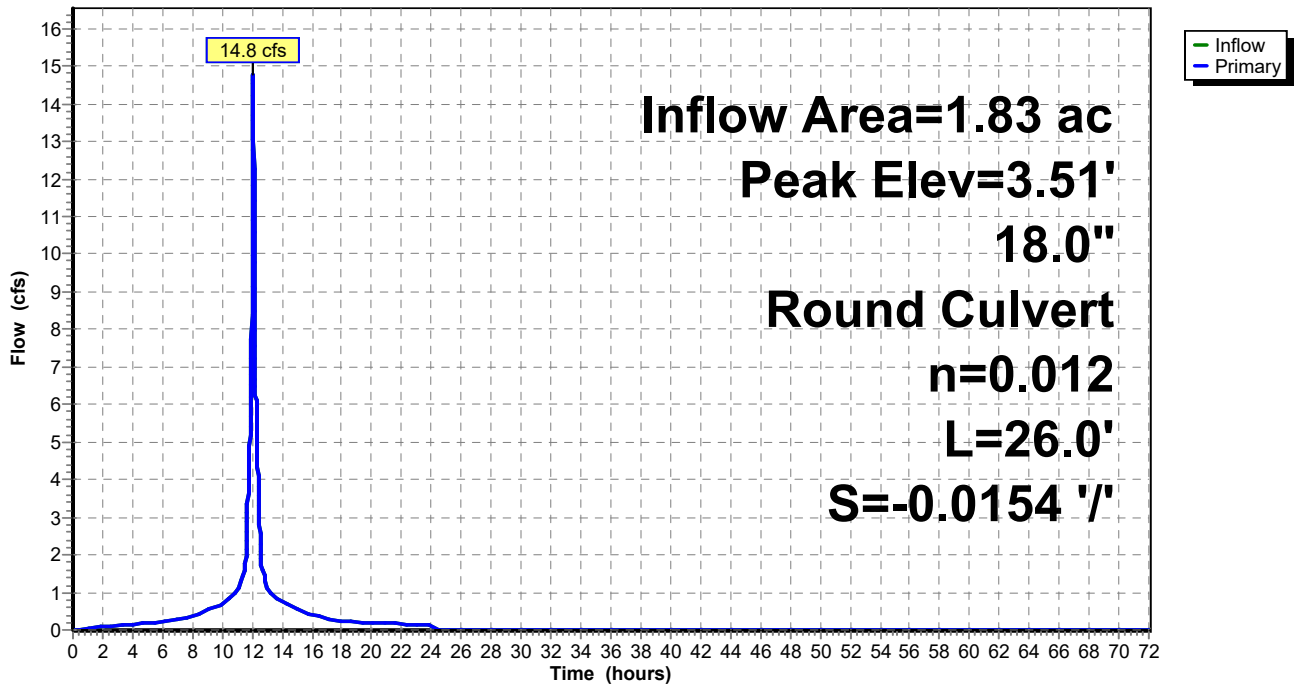
Device #	Routing	Invert	Outlet Devices
1	Primary	0.78'	18.0" Round RCP_Round 18" L= 26.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 0.38' / 0.78' S= -0.0154 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=14.8 cfs @ 12.07 hrs HW=3.51' (Free Discharge)

↑1=RCP_Round 18" (Barrel Controls 14.8 cfs @ 8.36 fps)

Pond 1P: Outfall 1 - 18" RCP

Hydrograph



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Hydrograph for Pond 1P: Outfall 1 - 18" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	0.78	0.0	51.00	0.0	0.78	0.0
1.00	0.0	0.85	0.0	52.00	0.0	0.78	0.0
2.00	0.1	0.89	0.1	53.00	0.0	0.78	0.0
3.00	0.1	0.91	0.1	54.00	0.0	0.78	0.0
4.00	0.2	0.93	0.2	55.00	0.0	0.78	0.0
5.00	0.2	0.94	0.2	56.00	0.0	0.78	0.0
6.00	0.2	0.95	0.2	57.00	0.0	0.78	0.0
7.00	0.3	0.98	0.3	58.00	0.0	0.78	0.0
8.00	0.4	1.00	0.4	59.00	0.0	0.78	0.0
9.00	0.5	1.05	0.5	60.00	0.0	0.78	0.0
10.00	0.7	1.09	0.7	61.00	0.0	0.78	0.0
11.00	1.0	1.16	1.0	62.00	0.0	0.78	0.0
12.00	10.0	2.63	10.0	63.00	0.0	0.78	0.0
13.00	1.2	1.19	1.2	64.00	0.0	0.78	0.0
14.00	0.7	1.10	0.7	65.00	0.0	0.78	0.0
15.00	0.6	1.06	0.6	66.00	0.0	0.78	0.0
16.00	0.4	1.01	0.4	67.00	0.0	0.78	0.0
17.00	0.3	0.99	0.3	68.00	0.0	0.78	0.0
18.00	0.2	0.96	0.2	69.00	0.0	0.78	0.0
19.00	0.2	0.95	0.2	70.00	0.0	0.78	0.0
20.00	0.2	0.94	0.2	71.00	0.0	0.78	0.0
21.00	0.2	0.93	0.2	72.00	0.0	0.78	0.0
22.00	0.2	0.93	0.2				
23.00	0.1	0.92	0.1				
24.00	0.1	0.91	0.1				
25.00	0.0	0.78	0.0				
26.00	0.0	0.78	0.0				
27.00	0.0	0.78	0.0				
28.00	0.0	0.78	0.0				
29.00	0.0	0.78	0.0				
30.00	0.0	0.78	0.0				
31.00	0.0	0.78	0.0				
32.00	0.0	0.78	0.0				
33.00	0.0	0.78	0.0				
34.00	0.0	0.78	0.0				
35.00	0.0	0.78	0.0				
36.00	0.0	0.78	0.0				
37.00	0.0	0.78	0.0				
38.00	0.0	0.78	0.0				
39.00	0.0	0.78	0.0				
40.00	0.0	0.78	0.0				
41.00	0.0	0.78	0.0				
42.00	0.0	0.78	0.0				
43.00	0.0	0.78	0.0				
44.00	0.0	0.78	0.0				
45.00	0.0	0.78	0.0				
46.00	0.0	0.78	0.0				
47.00	0.0	0.78	0.0				
48.00	0.0	0.78	0.0				
49.00	0.0	0.78	0.0				
50.00	0.0	0.78	0.0				

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M555 - Berths 11 12 Backlands Reconstruction

Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Pond 2P: Outfall 2 - 18" RCP

[57] Hint: Peaked at 4.76' (Flood elevation advised)

Inflow Area = 2.00 ac, 100.00% Impervious, Inflow Depth = 7.68" for 100-Year event
Inflow = 16.1 cfs @ 12.07 hrs, Volume= 1.283 af
Outflow = 16.1 cfs @ 12.07 hrs, Volume= 1.283 af, Atten= 0%, Lag= 0.0 min
Primary = 16.1 cfs @ 12.07 hrs, Volume= 1.283 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 4.76' @ 12.07 hrs

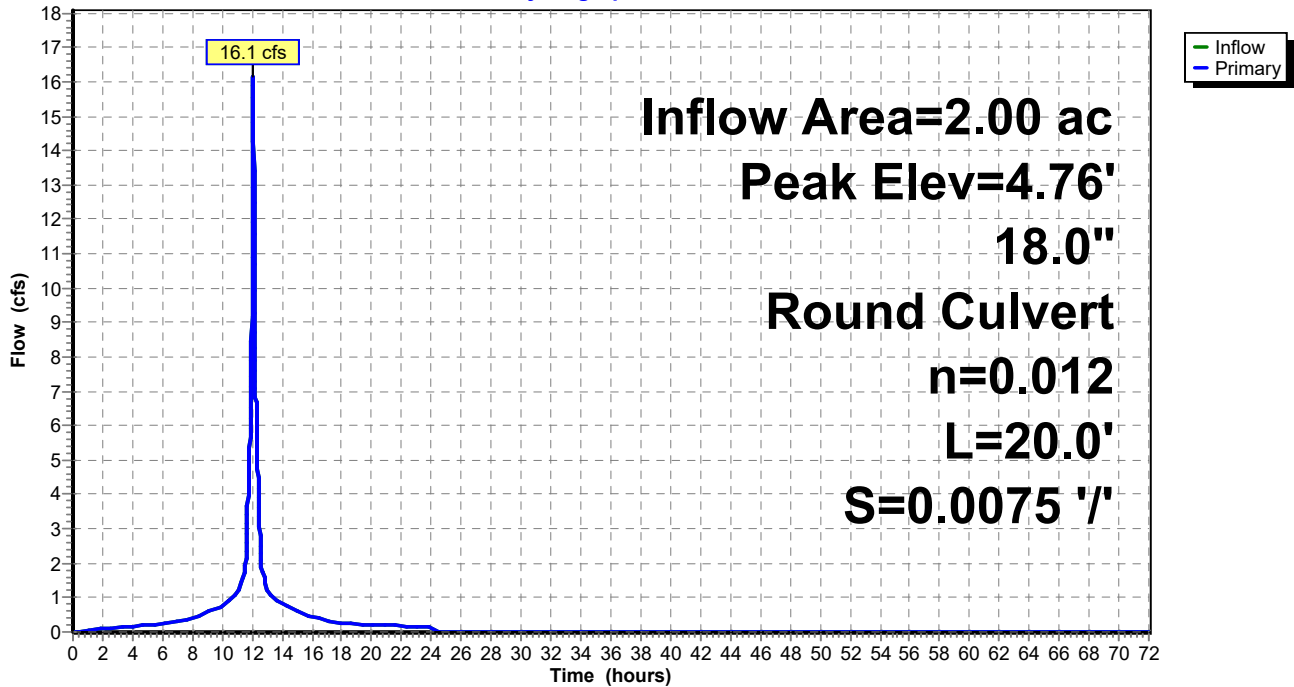
Device #	Routing	Invert	Outlet Devices
#1	Primary	1.58'	18.0" Round RCP_Round 18" L= 20.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1.58' / 1.43' S= 0.0075 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=16.1 cfs @ 12.07 hrs HW=4.76' (Free Discharge)

↑1=RCP_Round 18" (Barrel Controls 16.1 cfs @ 9.14 fps)

Pond 2P: Outfall 2 - 18" RCP

Hydrograph



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Hydrograph for Pond 2P: Outfall 2 - 18" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	1.58	0.0	51.00	0.0	1.58	0.0
1.00	0.0	1.67	0.0	52.00	0.0	1.58	0.0
2.00	0.1	1.72	0.1	53.00	0.0	1.58	0.0
3.00	0.1	1.75	0.1	54.00	0.0	1.58	0.0
4.00	0.2	1.77	0.2	55.00	0.0	1.58	0.0
5.00	0.2	1.79	0.2	56.00	0.0	1.58	0.0
6.00	0.2	1.80	0.2	57.00	0.0	1.58	0.0
7.00	0.3	1.84	0.3	58.00	0.0	1.58	0.0
8.00	0.4	1.87	0.4	59.00	0.0	1.58	0.0
9.00	0.6	1.93	0.6	60.00	0.0	1.58	0.0
10.00	0.8	1.99	0.8	61.00	0.0	1.58	0.0
11.00	1.1	2.09	1.1	62.00	0.0	1.58	0.0
12.00	10.9	3.77	10.9	63.00	0.0	1.58	0.0
13.00	1.3	2.12	1.3	64.00	0.0	1.58	0.0
14.00	0.8	2.00	0.8	65.00	0.0	1.58	0.0
15.00	0.6	1.95	0.6	66.00	0.0	1.58	0.0
16.00	0.4	1.88	0.4	67.00	0.0	1.58	0.0
17.00	0.3	1.85	0.3	68.00	0.0	1.58	0.0
18.00	0.3	1.82	0.3	69.00	0.0	1.58	0.0
19.00	0.2	1.80	0.2	70.00	0.0	1.58	0.0
20.00	0.2	1.79	0.2	71.00	0.0	1.58	0.0
21.00	0.2	1.78	0.2	72.00	0.0	1.58	0.0
22.00	0.2	1.77	0.2				
23.00	0.2	1.76	0.2				
24.00	0.1	1.75	0.1				
25.00	0.0	1.58	0.0				
26.00	0.0	1.58	0.0				
27.00	0.0	1.58	0.0				
28.00	0.0	1.58	0.0				
29.00	0.0	1.58	0.0				
30.00	0.0	1.58	0.0				
31.00	0.0	1.58	0.0				
32.00	0.0	1.58	0.0				
33.00	0.0	1.58	0.0				
34.00	0.0	1.58	0.0				
35.00	0.0	1.58	0.0				
36.00	0.0	1.58	0.0				
37.00	0.0	1.58	0.0				
38.00	0.0	1.58	0.0				
39.00	0.0	1.58	0.0				
40.00	0.0	1.58	0.0				
41.00	0.0	1.58	0.0				
42.00	0.0	1.58	0.0				
43.00	0.0	1.58	0.0				
44.00	0.0	1.58	0.0				
45.00	0.0	1.58	0.0				
46.00	0.0	1.58	0.0				
47.00	0.0	1.58	0.0				
48.00	0.0	1.58	0.0				
49.00	0.0	1.58	0.0				
50.00	0.0	1.58	0.0				

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Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Pond 3P: Outfall 3 - 24" RCP

[57] Hint: Peaked at 1.90' (Flood elevation advised)

Inflow Area = 1.42 ac, 100.00% Impervious, Inflow Depth = 7.68" for 100-Year event
Inflow = 11.5 cfs @ 12.07 hrs, Volume= 0.911 af
Outflow = 11.5 cfs @ 12.07 hrs, Volume= 0.911 af, Atten= 0%, Lag= 0.0 min
Primary = 11.5 cfs @ 12.07 hrs, Volume= 0.911 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 1.90' @ 12.07 hrs

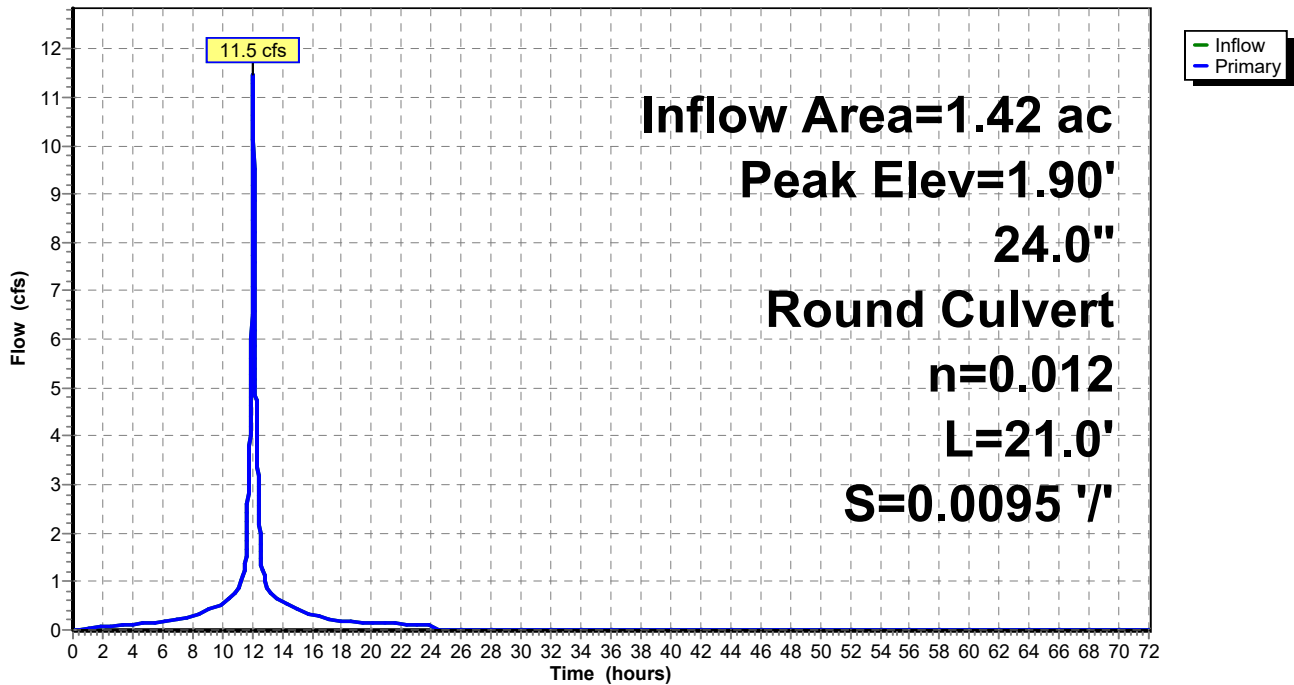
Device #	Routing	Invert	Outlet Devices
1	Primary	0.23'	24.0" Round RCP_Round 24" L= 21.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 0.23' / 0.03' S= 0.0095 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=11.5 cfs @ 12.07 hrs HW=1.90' (Free Discharge)

1=RCP_Round 24" (Barrel Controls 11.5 cfs @ 5.55 fps)

Pond 3P: Outfall 3 - 24" RCP

Hydrograph



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Type III 24-hr 100-Year Rainfall=7.92"

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Hydrograph for Pond 3P: Outfall 3 - 24" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	0.23	0.0	51.00	0.0	0.23	0.0
1.00	0.0	0.30	0.0	52.00	0.0	0.23	0.0
2.00	0.1	0.33	0.1	53.00	0.0	0.23	0.0
3.00	0.1	0.36	0.1	54.00	0.0	0.23	0.0
4.00	0.1	0.37	0.1	55.00	0.0	0.23	0.0
5.00	0.1	0.38	0.1	56.00	0.0	0.23	0.0
6.00	0.2	0.39	0.2	57.00	0.0	0.23	0.0
7.00	0.2	0.42	0.2	58.00	0.0	0.23	0.0
8.00	0.3	0.44	0.3	59.00	0.0	0.23	0.0
9.00	0.4	0.49	0.4	60.00	0.0	0.23	0.0
10.00	0.5	0.53	0.5	61.00	0.0	0.23	0.0
11.00	0.8	0.60	0.8	62.00	0.0	0.23	0.0
12.00	7.8	1.54	7.8	63.00	0.0	0.23	0.0
13.00	0.9	0.62	0.9	64.00	0.0	0.23	0.0
14.00	0.6	0.54	0.6	65.00	0.0	0.23	0.0
15.00	0.4	0.50	0.4	66.00	0.0	0.23	0.0
16.00	0.3	0.45	0.3	67.00	0.0	0.23	0.0
17.00	0.2	0.43	0.2	68.00	0.0	0.23	0.0
18.00	0.2	0.40	0.2	69.00	0.0	0.23	0.0
19.00	0.2	0.39	0.2	70.00	0.0	0.23	0.0
20.00	0.1	0.39	0.1	71.00	0.0	0.23	0.0
21.00	0.1	0.38	0.1	72.00	0.0	0.23	0.0
22.00	0.1	0.37	0.1				
23.00	0.1	0.36	0.1				
24.00	0.1	0.36	0.1				
25.00	0.0	0.23	0.0				
26.00	0.0	0.23	0.0				
27.00	0.0	0.23	0.0				
28.00	0.0	0.23	0.0				
29.00	0.0	0.23	0.0				
30.00	0.0	0.23	0.0				
31.00	0.0	0.23	0.0				
32.00	0.0	0.23	0.0				
33.00	0.0	0.23	0.0				
34.00	0.0	0.23	0.0				
35.00	0.0	0.23	0.0				
36.00	0.0	0.23	0.0				
37.00	0.0	0.23	0.0				
38.00	0.0	0.23	0.0				
39.00	0.0	0.23	0.0				
40.00	0.0	0.23	0.0				
41.00	0.0	0.23	0.0				
42.00	0.0	0.23	0.0				
43.00	0.0	0.23	0.0				
44.00	0.0	0.23	0.0				
45.00	0.0	0.23	0.0				
46.00	0.0	0.23	0.0				
47.00	0.0	0.23	0.0				
48.00	0.0	0.23	0.0				
49.00	0.0	0.23	0.0				
50.00	0.0	0.23	0.0				

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Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Pond 4P: Outfall 4 - 24" RCP

[57] Hint: Peaked at 2.30' (Flood elevation advised)

Inflow Area = 1.41 ac, 100.00% Impervious, Inflow Depth = 7.68" for 100-Year event
Inflow = 11.3 cfs @ 12.07 hrs, Volume= 0.902 af
Outflow = 11.3 cfs @ 12.07 hrs, Volume= 0.902 af, Atten= 0%, Lag= 0.0 min
Primary = 11.3 cfs @ 12.07 hrs, Volume= 0.902 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 2.30' @ 12.07 hrs

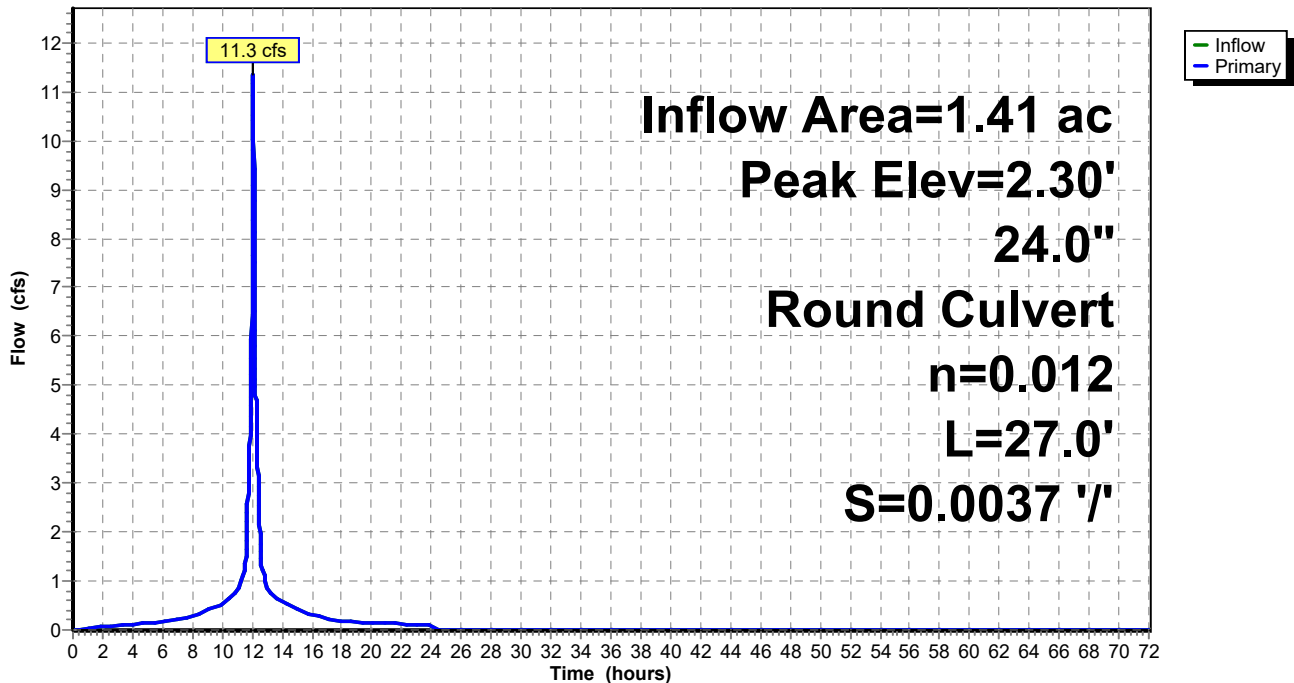
Device #	Routing	Invert	Outlet Devices
1	Primary	0.53'	24.0" Round RCP_Round 24" L= 27.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 0.53' / 0.43' S= 0.0037 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=11.3 cfs @ 12.07 hrs HW=2.30' (Free Discharge)

↑1=RCP_Round 24" (Barrel Controls 11.3 cfs @ 5.12 fps)

Pond 4P: Outfall 4 - 24" RCP

Hydrograph



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Type III 24-hr 100-Year Rainfall=7.92"

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Hydrograph for Pond 4P: Outfall 4 - 24" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	0.53	0.0	51.00	0.0	0.53	0.0
1.00	0.0	0.62	0.0	52.00	0.0	0.53	0.0
2.00	0.1	0.66	0.1	53.00	0.0	0.53	0.0
3.00	0.1	0.68	0.1	54.00	0.0	0.53	0.0
4.00	0.1	0.70	0.1	55.00	0.0	0.53	0.0
5.00	0.1	0.71	0.1	56.00	0.0	0.53	0.0
6.00	0.2	0.72	0.2	57.00	0.0	0.53	0.0
7.00	0.2	0.75	0.2	58.00	0.0	0.53	0.0
8.00	0.3	0.78	0.3	59.00	0.0	0.53	0.0
9.00	0.4	0.83	0.4	60.00	0.0	0.53	0.0
10.00	0.5	0.87	0.5	61.00	0.0	0.53	0.0
11.00	0.8	0.95	0.8	62.00	0.0	0.53	0.0
12.00	7.7	1.93	7.7	63.00	0.0	0.53	0.0
13.00	0.9	0.98	0.9	64.00	0.0	0.53	0.0
14.00	0.6	0.89	0.6	65.00	0.0	0.53	0.0
15.00	0.4	0.84	0.4	66.00	0.0	0.53	0.0
16.00	0.3	0.79	0.3	67.00	0.0	0.53	0.0
17.00	0.2	0.76	0.2	68.00	0.0	0.53	0.0
18.00	0.2	0.74	0.2	69.00	0.0	0.53	0.0
19.00	0.2	0.72	0.2	70.00	0.0	0.53	0.0
20.00	0.1	0.71	0.1	71.00	0.0	0.53	0.0
21.00	0.1	0.71	0.1	72.00	0.0	0.53	0.0
22.00	0.1	0.70	0.1				
23.00	0.1	0.69	0.1				
24.00	0.1	0.68	0.1				
25.00	0.0	0.53	0.0				
26.00	0.0	0.53	0.0				
27.00	0.0	0.53	0.0				
28.00	0.0	0.53	0.0				
29.00	0.0	0.53	0.0				
30.00	0.0	0.53	0.0				
31.00	0.0	0.53	0.0				
32.00	0.0	0.53	0.0				
33.00	0.0	0.53	0.0				
34.00	0.0	0.53	0.0				
35.00	0.0	0.53	0.0				
36.00	0.0	0.53	0.0				
37.00	0.0	0.53	0.0				
38.00	0.0	0.53	0.0				
39.00	0.0	0.53	0.0				
40.00	0.0	0.53	0.0				
41.00	0.0	0.53	0.0				
42.00	0.0	0.53	0.0				
43.00	0.0	0.53	0.0				
44.00	0.0	0.53	0.0				
45.00	0.0	0.53	0.0				
46.00	0.0	0.53	0.0				
47.00	0.0	0.53	0.0				
48.00	0.0	0.53	0.0				
49.00	0.0	0.53	0.0				
50.00	0.0	0.53	0.0				

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Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Pond 5P: Outfall 5 - 36" RCP

[57] Hint: Peaked at 3.29' (Flood elevation advised)

Inflow Area = 0.77 ac, 100.00% Impervious, Inflow Depth = 7.68" for 100-Year event
Inflow = 6.2 cfs @ 12.07 hrs, Volume= 0.493 af
Outflow = 6.2 cfs @ 12.07 hrs, Volume= 0.493 af, Atten= 0%, Lag= 0.0 min
Primary = 6.2 cfs @ 12.07 hrs, Volume= 0.493 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 3.29' @ 12.07 hrs

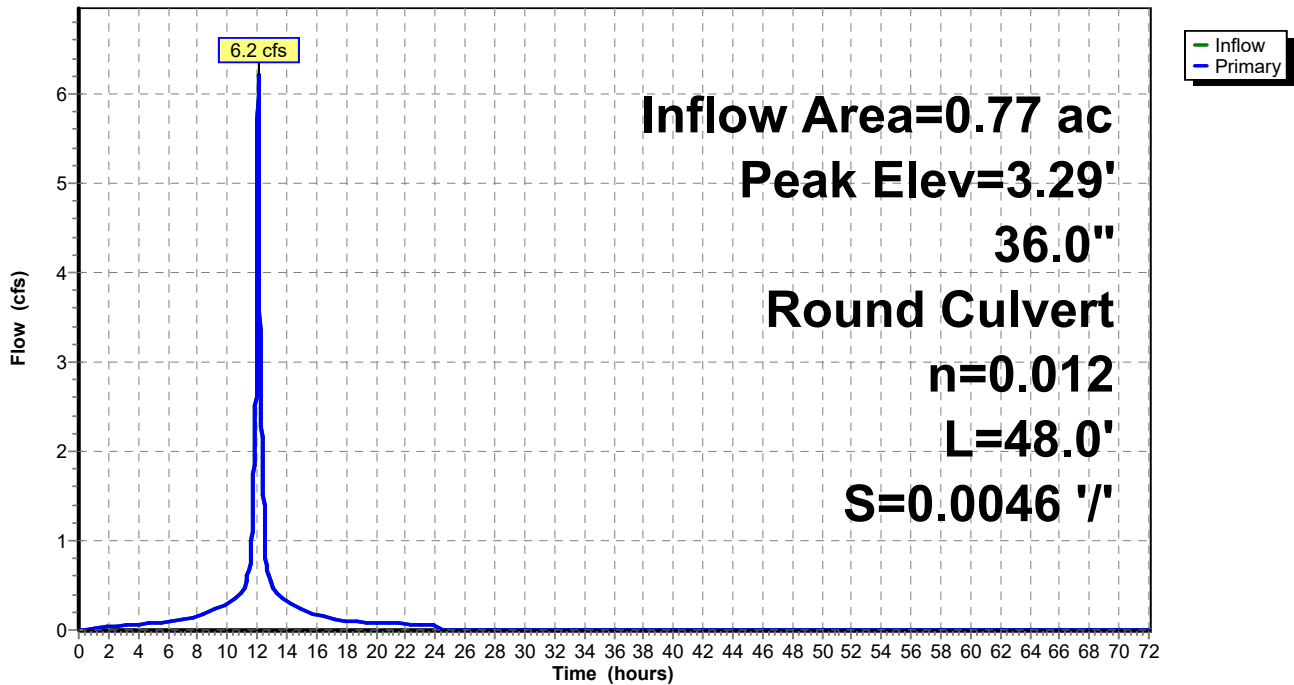
Device #	Routing	Invert	Outlet Devices
#1	Primary	2.26'	36.0" Round RCP_Round 36" L= 48.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 2.26' / 2.04' S= 0.0046 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 7.07 sf

Primary OutFlow Max=6.2 cfs @ 12.07 hrs HW=3.29' (Free Discharge)

↑1=RCP_Round 36" (Barrel Controls 6.2 cfs @ 4.28 fps)

Pond 5P: Outfall 5 - 36" RCP

Hydrograph



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Type III 24-hr 100-Year Rainfall=7.92"

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Hydrograph for Pond 5P: Outfall 5 - 36" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	2.26	0.0	51.00	0.0	2.26	0.0
1.00	0.0	2.32	0.0	52.00	0.0	2.26	0.0
2.00	0.0	2.34	0.0	53.00	0.0	2.26	0.0
3.00	0.1	2.36	0.1	54.00	0.0	2.26	0.0
4.00	0.1	2.37	0.1	55.00	0.0	2.26	0.0
5.00	0.1	2.38	0.1	56.00	0.0	2.26	0.0
6.00	0.1	2.39	0.1	57.00	0.0	2.26	0.0
7.00	0.1	2.41	0.1	58.00	0.0	2.26	0.0
8.00	0.2	2.42	0.2	59.00	0.0	2.26	0.0
9.00	0.2	2.45	0.2	60.00	0.0	2.26	0.0
10.00	0.3	2.48	0.3	61.00	0.0	2.26	0.0
11.00	0.4	2.53	0.4	62.00	0.0	2.26	0.0
12.00	4.2	3.10	4.2	63.00	0.0	2.26	0.0
13.00	0.5	2.55	0.5	64.00	0.0	2.26	0.0
14.00	0.3	2.49	0.3	65.00	0.0	2.26	0.0
15.00	0.2	2.46	0.2	66.00	0.0	2.26	0.0
16.00	0.2	2.43	0.2	67.00	0.0	2.26	0.0
17.00	0.1	2.41	0.1	68.00	0.0	2.26	0.0
18.00	0.1	2.39	0.1	69.00	0.0	2.26	0.0
19.00	0.1	2.39	0.1	70.00	0.0	2.26	0.0
20.00	0.1	2.38	0.1	71.00	0.0	2.26	0.0
21.00	0.1	2.38	0.1	72.00	0.0	2.26	0.0
22.00	0.1	2.37	0.1				
23.00	0.1	2.36	0.1				
24.00	0.1	2.36	0.1				
25.00	0.0	2.26	0.0				
26.00	0.0	2.26	0.0				
27.00	0.0	2.26	0.0				
28.00	0.0	2.26	0.0				
29.00	0.0	2.26	0.0				
30.00	0.0	2.26	0.0				
31.00	0.0	2.26	0.0				
32.00	0.0	2.26	0.0				
33.00	0.0	2.26	0.0				
34.00	0.0	2.26	0.0				
35.00	0.0	2.26	0.0				
36.00	0.0	2.26	0.0				
37.00	0.0	2.26	0.0				
38.00	0.0	2.26	0.0				
39.00	0.0	2.26	0.0				
40.00	0.0	2.26	0.0				
41.00	0.0	2.26	0.0				
42.00	0.0	2.26	0.0				
43.00	0.0	2.26	0.0				
44.00	0.0	2.26	0.0				
45.00	0.0	2.26	0.0				
46.00	0.0	2.26	0.0				
47.00	0.0	2.26	0.0				
48.00	0.0	2.26	0.0				
49.00	0.0	2.26	0.0				
50.00	0.0	2.26	0.0				

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Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Pond 6P: Outfall 6 - 42" RCP

[57] Hint: Peaked at 2.39' (Flood elevation advised)

Inflow Area = 0.27 ac, 100.00% Impervious, Inflow Depth = 7.68" for 100-Year event
Inflow = 2.2 cfs @ 12.07 hrs, Volume= 0.171 af
Outflow = 2.2 cfs @ 12.07 hrs, Volume= 0.171 af, Atten= 0%, Lag= 0.0 min
Primary = 2.2 cfs @ 12.07 hrs, Volume= 0.171 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 2.39' @ 12.07 hrs

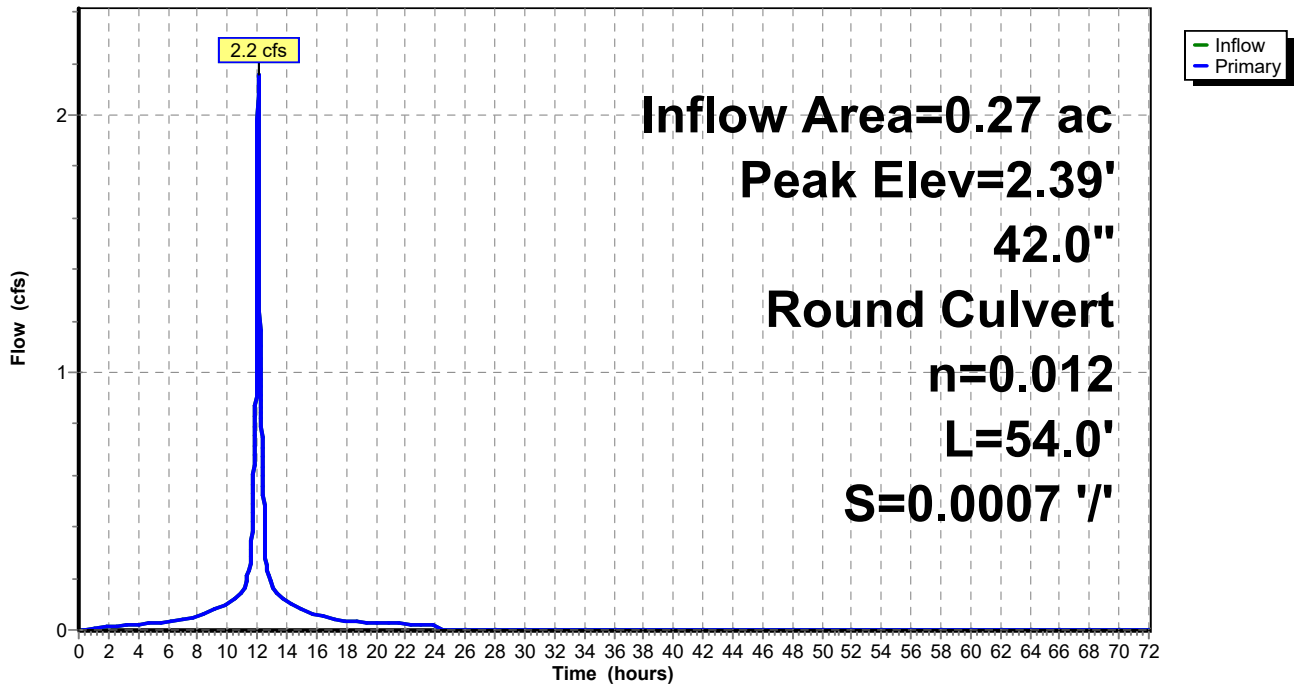
Device #	Routing	Invert	Outlet Devices
#1	Primary	1.71'	42.0" Round RCP_Round 42" L= 54.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1.71' / 1.67' S= 0.0007 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 9.62 sf

Primary OutFlow Max=2.2 cfs @ 12.07 hrs HW=2.39' (Free Discharge)

↑1=RCP_Round 42" (Barrel Controls 2.2 cfs @ 2.50 fps)

Pond 6P: Outfall 6 - 42" RCP

Hydrograph



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Type III 24-hr 100-Year Rainfall=7.92"

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Hydrograph for Pond 6P: Outfall 6 - 42" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	1.71	0.0	51.00	0.0	1.71	0.0
1.00	0.0	1.75	0.0	52.00	0.0	1.71	0.0
2.00	0.0	1.78	0.0	53.00	0.0	1.71	0.0
3.00	0.0	1.79	0.0	54.00	0.0	1.71	0.0
4.00	0.0	1.80	0.0	55.00	0.0	1.71	0.0
5.00	0.0	1.81	0.0	56.00	0.0	1.71	0.0
6.00	0.0	1.81	0.0	57.00	0.0	1.71	0.0
7.00	0.0	1.83	0.0	58.00	0.0	1.71	0.0
8.00	0.1	1.84	0.1	59.00	0.0	1.71	0.0
9.00	0.1	1.86	0.1	60.00	0.0	1.71	0.0
10.00	0.1	1.88	0.1	61.00	0.0	1.71	0.0
11.00	0.2	1.92	0.2	62.00	0.0	1.71	0.0
12.00	1.5	2.28	1.5	63.00	0.0	1.71	0.0
13.00	0.2	1.93	0.2	64.00	0.0	1.71	0.0
14.00	0.1	1.89	0.1	65.00	0.0	1.71	0.0
15.00	0.1	1.87	0.1	66.00	0.0	1.71	0.0
16.00	0.1	1.85	0.1	67.00	0.0	1.71	0.0
17.00	0.0	1.83	0.0	68.00	0.0	1.71	0.0
18.00	0.0	1.82	0.0	69.00	0.0	1.71	0.0
19.00	0.0	1.81	0.0	70.00	0.0	1.71	0.0
20.00	0.0	1.81	0.0	71.00	0.0	1.71	0.0
21.00	0.0	1.80	0.0	72.00	0.0	1.71	0.0
22.00	0.0	1.80	0.0				
23.00	0.0	1.80	0.0				
24.00	0.0	1.79	0.0				
25.00	0.0	1.71	0.0				
26.00	0.0	1.71	0.0				
27.00	0.0	1.71	0.0				
28.00	0.0	1.71	0.0				
29.00	0.0	1.71	0.0				
30.00	0.0	1.71	0.0				
31.00	0.0	1.71	0.0				
32.00	0.0	1.71	0.0				
33.00	0.0	1.71	0.0				
34.00	0.0	1.71	0.0				
35.00	0.0	1.71	0.0				
36.00	0.0	1.71	0.0				
37.00	0.0	1.71	0.0				
38.00	0.0	1.71	0.0				
39.00	0.0	1.71	0.0				
40.00	0.0	1.71	0.0				
41.00	0.0	1.71	0.0				
42.00	0.0	1.71	0.0				
43.00	0.0	1.71	0.0				
44.00	0.0	1.71	0.0				
45.00	0.0	1.71	0.0				
46.00	0.0	1.71	0.0				
47.00	0.0	1.71	0.0				
48.00	0.0	1.71	0.0				
49.00	0.0	1.71	0.0				
50.00	0.0	1.71	0.0				

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Type III 24-hr 100-Year Rainfall=7.92"

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Summary for Pond 7P: Outfall 7 - 30" RCP

[57] Hint: Peaked at 2.54' (Flood elevation advised)

Inflow Area = 0.07 ac, 100.00% Impervious, Inflow Depth = 7.68" for 100-Year event
Inflow = 0.6 cfs @ 12.07 hrs, Volume= 0.045 af
Outflow = 0.6 cfs @ 12.07 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min
Primary = 0.6 cfs @ 12.07 hrs, Volume= 0.045 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 2.54' @ 12.07 hrs

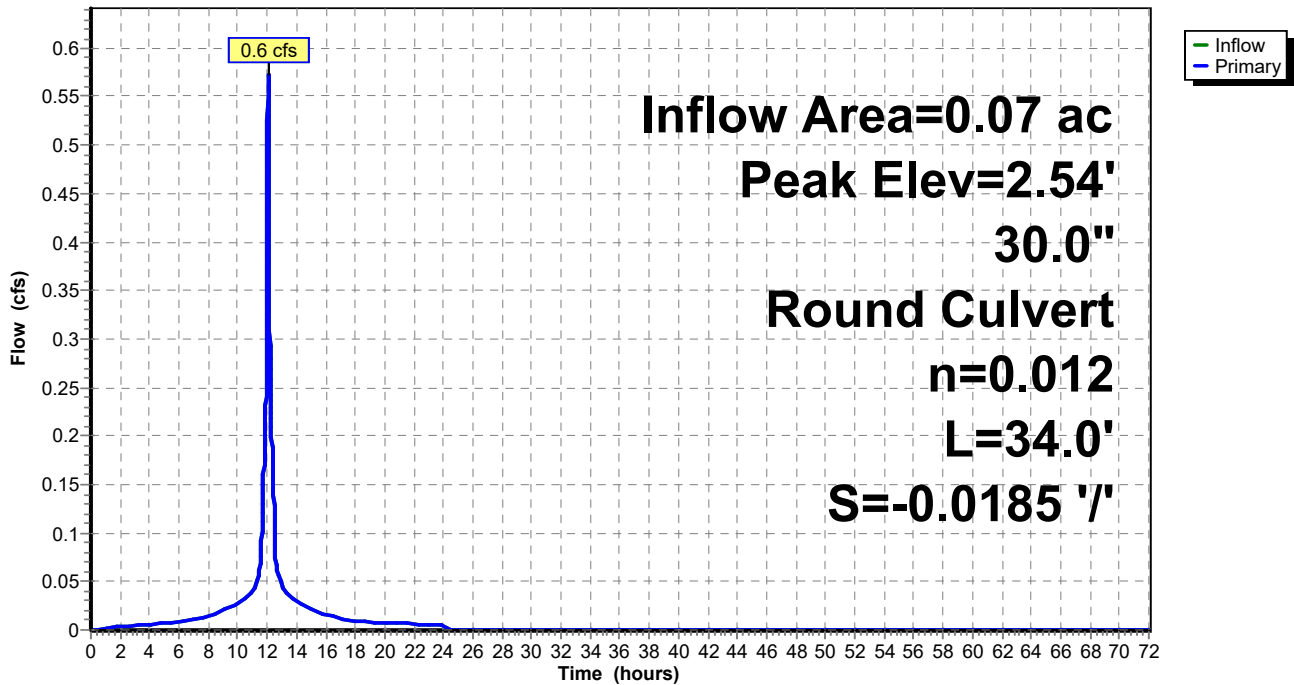
Device #	Routing	Invert	Outlet Devices
1	Primary	2.29'	30.0" Round RCP_Round 30" L= 34.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1.66' / 2.29' S= -0.0185 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf

Primary OutFlow Max=0.6 cfs @ 12.07 hrs HW=2.54' (Free Discharge)

1=RCP_Round 30" (Inlet Controls 0.6 cfs @ 2.30 fps)

Pond 7P: Outfall 7 - 30" RCP

Hydrograph



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Hydrograph for Pond 7P: Outfall 7 - 30" RCP

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.0	2.29	0.0	51.00	0.0	2.29	0.0
1.00	0.0	2.30	0.0	52.00	0.0	2.29	0.0
2.00	0.0	2.30	0.0	53.00	0.0	2.29	0.0
3.00	0.0	2.31	0.0	54.00	0.0	2.29	0.0
4.00	0.0	2.31	0.0	55.00	0.0	2.29	0.0
5.00	0.0	2.32	0.0	56.00	0.0	2.29	0.0
6.00	0.0	2.32	0.0	57.00	0.0	2.29	0.0
7.00	0.0	2.32	0.0	58.00	0.0	2.29	0.0
8.00	0.0	2.33	0.0	59.00	0.0	2.29	0.0
9.00	0.0	2.33	0.0	60.00	0.0	2.29	0.0
10.00	0.0	2.34	0.0	61.00	0.0	2.29	0.0
11.00	0.0	2.35	0.0	62.00	0.0	2.29	0.0
12.00	0.4	2.49	0.4	63.00	0.0	2.29	0.0
13.00	0.0	2.36	0.0	64.00	0.0	2.29	0.0
14.00	0.0	2.34	0.0	65.00	0.0	2.29	0.0
15.00	0.0	2.34	0.0	66.00	0.0	2.29	0.0
16.00	0.0	2.33	0.0	67.00	0.0	2.29	0.0
17.00	0.0	2.32	0.0	68.00	0.0	2.29	0.0
18.00	0.0	2.32	0.0	69.00	0.0	2.29	0.0
19.00	0.0	2.32	0.0	70.00	0.0	2.29	0.0
20.00	0.0	2.32	0.0	71.00	0.0	2.29	0.0
21.00	0.0	2.32	0.0	72.00	0.0	2.29	0.0
22.00	0.0	2.32	0.0				
23.00	0.0	2.31	0.0				
24.00	0.0	2.31	0.0				
25.00	0.0	2.29	0.0				
26.00	0.0	2.29	0.0				
27.00	0.0	2.29	0.0				
28.00	0.0	2.29	0.0				
29.00	0.0	2.29	0.0				
30.00	0.0	2.29	0.0				
31.00	0.0	2.29	0.0				
32.00	0.0	2.29	0.0				
33.00	0.0	2.29	0.0				
34.00	0.0	2.29	0.0				
35.00	0.0	2.29	0.0				
36.00	0.0	2.29	0.0				
37.00	0.0	2.29	0.0				
38.00	0.0	2.29	0.0				
39.00	0.0	2.29	0.0				
40.00	0.0	2.29	0.0				
41.00	0.0	2.29	0.0				
42.00	0.0	2.29	0.0				
43.00	0.0	2.29	0.0				
44.00	0.0	2.29	0.0				
45.00	0.0	2.29	0.0				
46.00	0.0	2.29	0.0				
47.00	0.0	2.29	0.0				
48.00	0.0	2.29	0.0				
49.00	0.0	2.29	0.0				
50.00	0.0	2.29	0.0				



2

OPERATION AND MAINTENANCE PLAN



OPERATION AND MAINTENANCE PLAN

CONLEY TERMINAL BERTH 11 12 BACKLANDS RECONSTRUCTION

SOUTH BOSTON, MASSACHUSETTS

Existing Conditions

The project site is located at the Massachusetts Port Authority's (Massport) Paul W. Conley Container Terminal in South Boston (Suffolk County), Massachusetts. The terminal and project site are bordered by the Boston Harbor Reserved Channel to the north and Row E of the container yard to the south. The work is located within Berths 11 and 12 with a portion of work occurring within the access roadways between Berths 10 and 11 and between 11 and 12. The work being performed for this project will be contained to this area and no other sites are included for this project. This site is owned by Massport and no other entities.

Site topography within the project area is generally sloping southerly from the Reserved Channel to a low point at Row C. The site then increases elevation to the Dedicated Freight Corridor to the south. Surface gradients are generally flat, indicative of prior and current marine/industrial land uses. Appropriate temporary erosion control measures will be utilized throughout the project construction duration.

Proposed Design

The Backlands Reconstruction project will occur within Berths 11 and 12 and extend primarily from Row C to Row D within the Conley Terminal Container yard. The project's purpose is to rehabilitate existing infrastructure. The Backlands Reconstruction project is scheduled to be substantially complete in late 2022.

The Berth 11 and 12 Reconstruction project will provide rehabilitated pavements within the container yard and improved stormwater quality through the addition of deep sump catch basins and water quality treatment structures where appropriate. In addition, tide gate valves will be placed at existing outfalls to enhance stormwater flow during tidal events.

SEDIMENTATION CONTROLS

The first phase of construction will consist of the placement of sedimentation controls in accordance with the detail and at the location indicated on the plans. No further construction activity will take place until the sedimentation controls are inspected and approved. No encroachment or alteration shall occur beyond the erosion control barriers. Erosion control barriers shall be maintained and replaced, if necessary, throughout the course of construction.

SITE CONSTRUCTION

Exposed earthworks onsite are to be kept to a minimum. Prior to construction the proposed location of earth stockpiles shall be shown on a plan and shall be approved by the Engineer. Stockpiles that are to be left for more than fourteen (14) days shall be shaped and secured by siltation controls around the downstream perimeter and shall be stabilized by temporary seeding or netting. The site pavement rehabilitation operation will then commence. The site will be graded to subgrade with the excess soil and fill stockpiled in the designated areas and the utilities installed.



There are no vegetated areas within the site. The site is completely covered in pavements.

During the construction of the drainage system, care must be taken to prevent sedimentation from entering the system. Drainage pipes in open excavations shall not remain open overnight. Compost filter tubes shall be staked around the catch basins and/or a woven geotextile material shall be placed in the catch basins until the binder course has been placed. Any silt, sand or debris, which may accumulate around the catch basins, shall be removed after every rainstorm. Catch basins shall be set to binder grade until immediately prior to placement of the top course, at which time they will be set at final grade. The drainage system shall be cleaned prior to acceptance.

INSPECTION AND MAINTENANCE

Prior to construction, the Contractor shall formulate a schedule for inspection and maintenance of the erosion control measures. This schedule shall establish, at a minimum, the weekly inspections of the sedimentation controls, stockpiles, catch basins, unstabilized areas within the site and a report of any required maintenance. The schedule will also appoint an individual who will be responsible for performing the weekly inspections.

During the weekly inspection, and at any time during the course of construction, the Engineer, the Owner or the individual responsible for the erosion control measures may direct the Contractor to take immediate action to correct a deficiency or to increase the erosion control measures.

ADDITIONAL REQUIREMENTS

The Contractor shall employ measures to control dust during construction. All debris shall be properly contained and disposed of.

The entrance to and exit from the stockpile area and site shall be swept clean of any soils tracked onto the pavement from vehicles exiting the site.

A supply of compost filter tubes and siltation fence shall be kept on site to provide for additional siltation control, as may be required. Any construction equipment observed leaking or dripping oil shall be removed from the site. No construction equipment shall be re-fueled within 100 feet of any resource areas.

CONSTRUCTION SCHEDULE

1. Prior to construction, compost filter tubes and siltation fence will be placed at the limits of work, as indicated on the site drawings.
2. The construction area will then be cleared with subbase fill materials stockpiled on site. Site excavation work will then commence.
3. The site utility work will then commence.
4. The drainage systems are to be completed prior to any site paving.



5. Additional siltation fence or compost filter tubes will be added as construction proceeds where required to control erosion. Sedimentation controls shall be installed along the downhill side of all subsurface material stockpiles and also surround the project work site.
6. Catch basins in the immediate vicinity of the construction shall have either compost filter tubes placed around the grate or have a geotextile bag or silt sack installed until the gates/roadway is paved.
7. The pavement subgrade will then be graded, and the gravel and the bituminous base course placed. This shall be completed as soon as practical after the site clearing.
8. The drainage system shall be completely operational prior to any paving.
9. All drainage structures will be cleaned upon completion of construction.
10. The sedimentation controls shall be removed after the site has stabilized.

BMP MAINTENANCE SCHEDULE

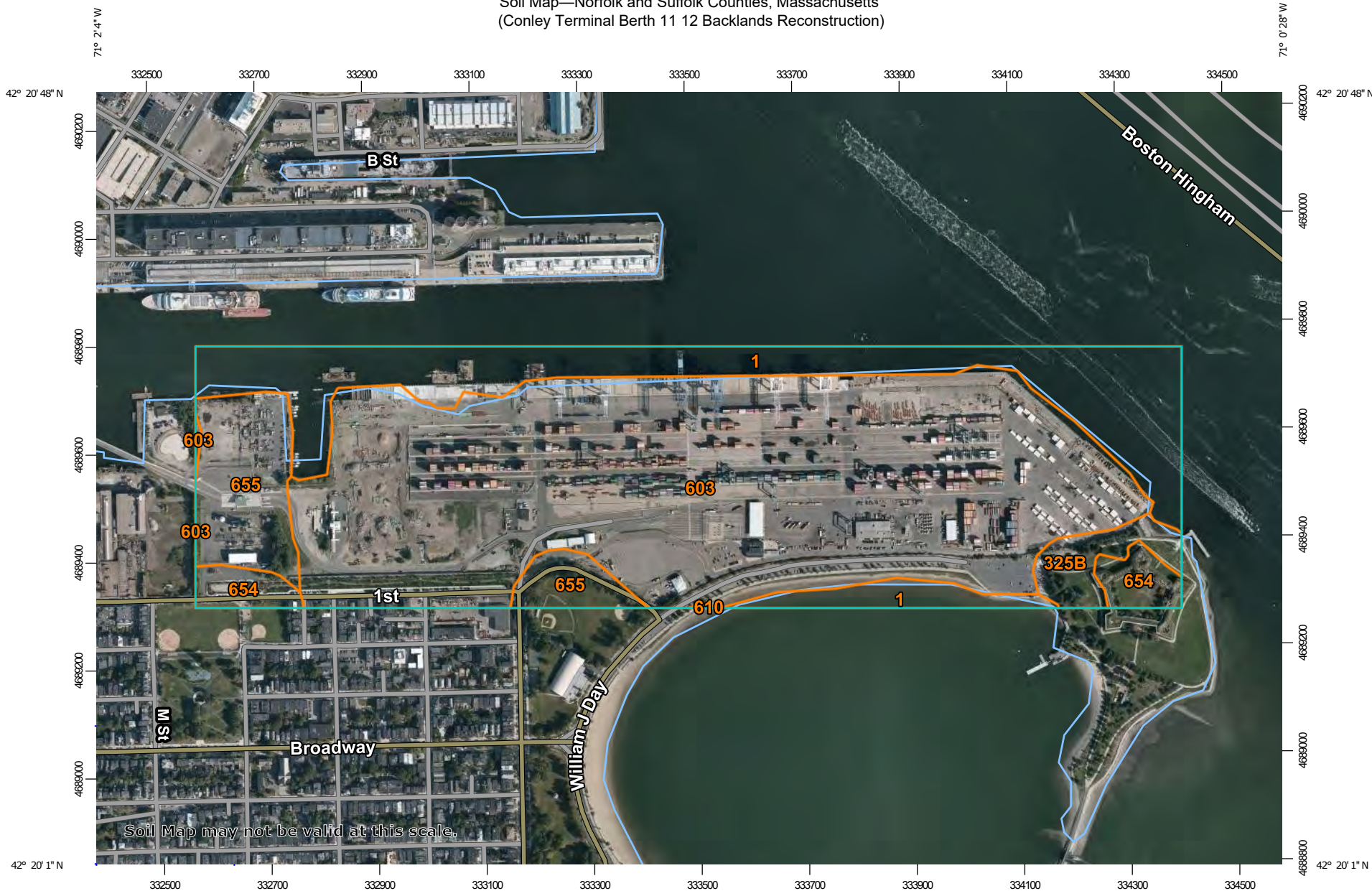
1. Inspect catch basins quarterly and clean out if more than 1/4 full of sediment (1 foot deep in a 4-foot sump). Inspect and clean as necessary after intense rainfall and as soon as practical after winter sanding.
2. Inspect the hydrodynamic treatment chambers quarterly. Follow the Manufacturer's recommendations for maintenance.
3. Keep any stockpiled earth covered.
4. Sweep parking areas and roadways twice annually, once after winter sanding season is over, the second time during the fall.
5. It is anticipated that **Massport** will be the owner and responsible for the operation and maintenance of the terminal area to support Backlands Reconstruction Project.



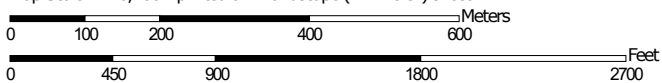
3

SOILS MAP

Soil Map—Norfolk and Suffolk Counties, Massachusetts
(Conley Terminal Berth 11 12 Backlands Reconstruction)



Map Scale: 1:10,100 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

11/5/2020
Page 1 of 3

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

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: Norfolk and Suffolk Counties, Massachusetts

Survey Area Data: Version 16, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 11, 2019—Oct 5, 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.

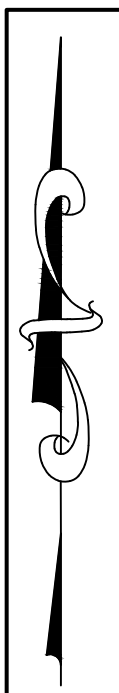
Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Water	48.0	21.8%
325B	Newport silt loam, 3 to 8 percent slopes	5.9	2.7%
603	Urban land, wet substratum, 0 to 3 percent slopes	140.8	63.8%
610	Beaches, sand	0.1	0.0%
654	Udorthents, loamy	6.9	3.1%
655	Udorthents, wet substratum	19.0	8.6%
Totals for Area of Interest		220.7	100.0%



4

PRE-DEVELOPMENT WATERSHED PLAN



DRAINAGE AREA SUMMARY PRE CONDITION

PRE Area		TOTAL (SF)	PERV (SF)	IMPERV (SF)
E1	N	56,819	0	56,819
E2	N	78,786	0	78,786
E3	N	77,980	0	77,980
E4	N	71,766	0	71,766
E5	N	37,897	0	37,897
E6				
E7				
E1	S	15,671	0	15,671
OUTFALL				
1		72,490		72,490
2		78,786		78,786
3		77,980		77,980
4		71,766		71,766
5		37,897		37,897
6				
7				



MASSACHUSETTS PORT AUTHORITY
EAST BOSTON, MASSACHUSETTS 02128

PROJECT LOCATION:
CONLEY TERMINAL
SOUTH BOSTON, MASSACHUSETTS

MPA CONTRACT NO.: M555-C1 LOCATION CODE: 4300

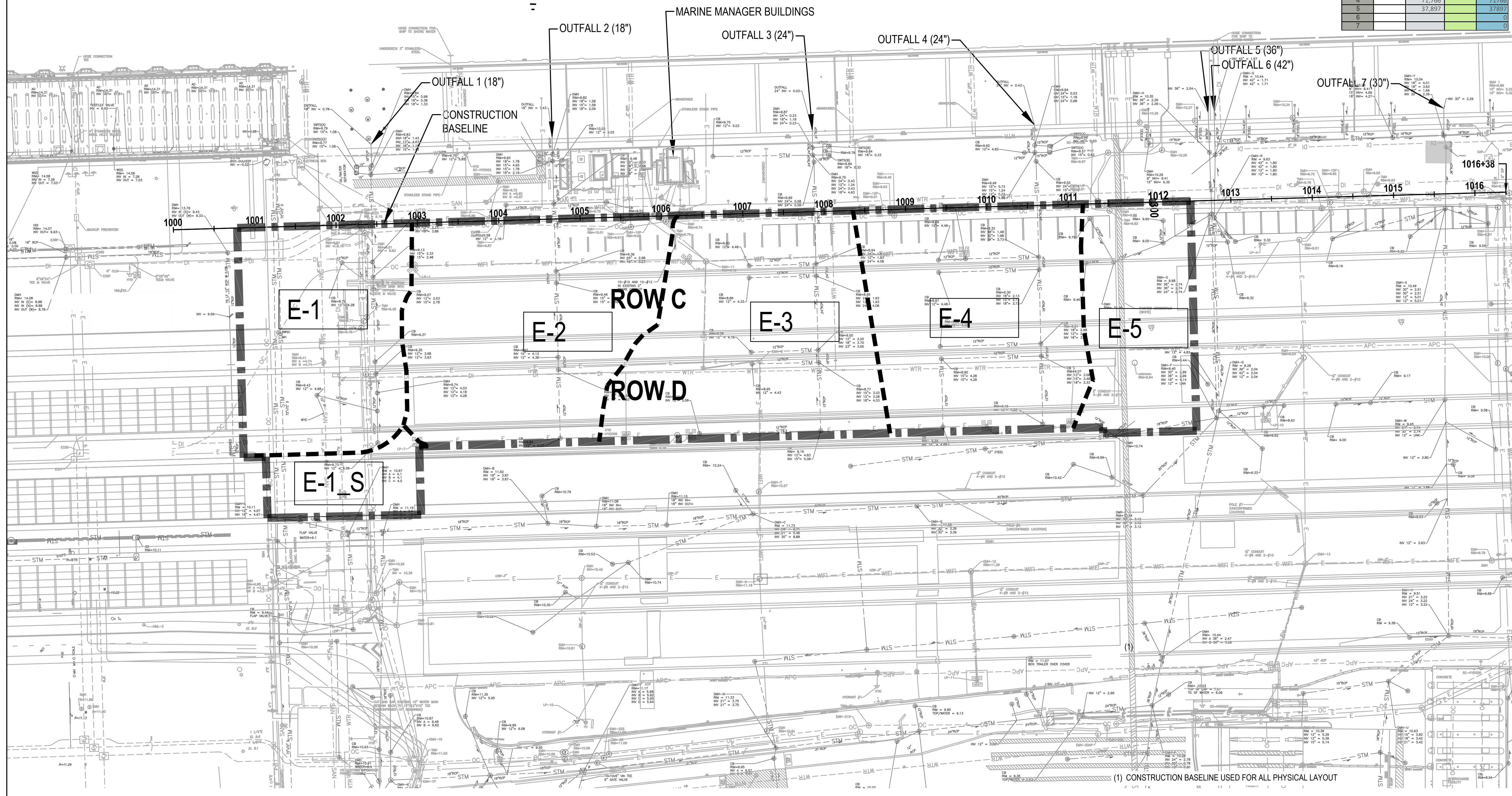
PROJECT SUBMISSION PHASE:
100% PLANS

REGISTRATION STAMP:

RESERVED CHANNEL

BERTH 10 BERTH 11

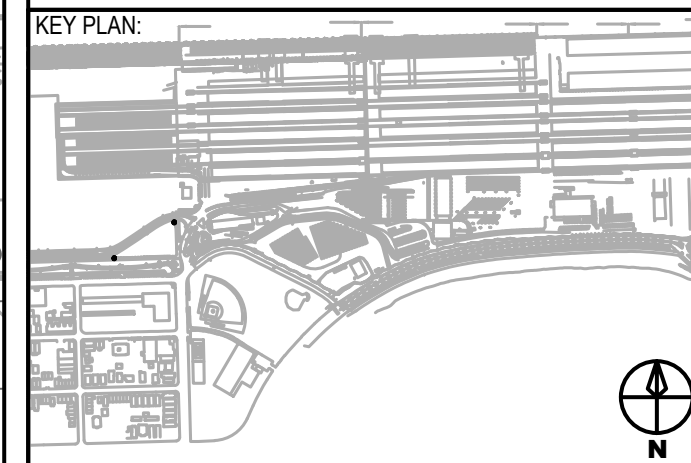
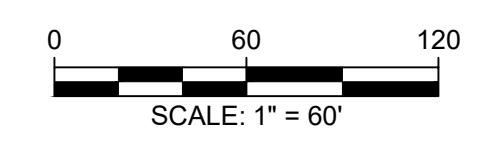
BERTH 11 BERTH 12



(1) CONSTRUCTION BASELINE USED FOR ALL PHYSICAL LAYOUT

LEGEND:

PROPOSED PAVEMENT LIMITS



REVISIONS:

REV NO.	DATE	DESCRIPTION	BY:



CONSULTANT:

PROJECT NUMBER AND TITLE:
M555-C1
BERTH 11 & 12
BACKLANDS
RECONSTRUCTION

SHEET TITLE:
DRAINAGE BOUNDARY EXHIBIT
PRE CONDITION

DISCIPLINE:
CIVIL

DRAWN BY: KLH CHECKED BY: RDL APPROVED BY: BNJ

SCALE: 1" = 60' DATE: JUNE 2021

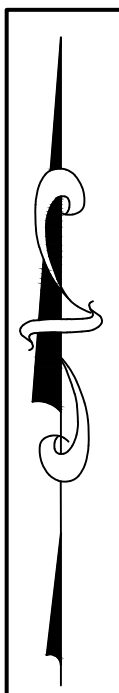
DRAWING NAME: SHEET 4 OF 35

PRE



5

POST-DEVELOPMENT WATERSHED PLAN



DRAINAGE AREA SUMMARY POST CONDITION

POST	Area	TOTAL (SF)	PERV (SF)	IMPERV (SF)
P1	N	57,569	0	57,569
P2	N	72,840	0	72,840
P3	N	53,466	0	53,466
P4	N	53,231	0	53,231
P5	N	29,054	0	29,054
P6	N	11,661	0	11,661
P7	N	3,096	0	3,096
P1	S	22,320	0	22,320
P2	S	14,495	0	14,495
P3	S	8,537	0	8,537
P4	S	8,145	0	8,145
P5	S	4,505	0	4,505
OUTFALL		79,889	0	79,889
1		87,335	0	87,335
2		62,003	0	62,003
3		61,376	0	61,376
4		33,559	0	33,559
5		11,661	0	11,661
6		3,096	0	3,096
7				



MASSACHUSETTS PORT AUTHORITY
EAST BOSTON, MASSACHUSETTS 02128

PROJECT LOCATION:
CONLEY TERMINAL
SOUTH BOSTON, MASSACHUSETTS

MPA CONTRACT NO.: M555-C1
LOCATION CODE: 4300

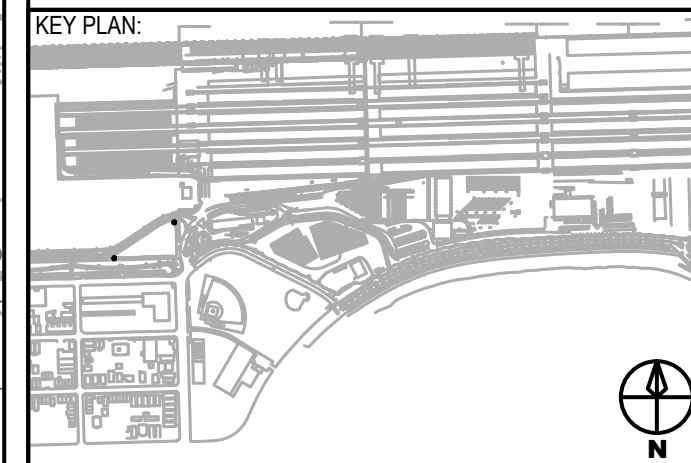
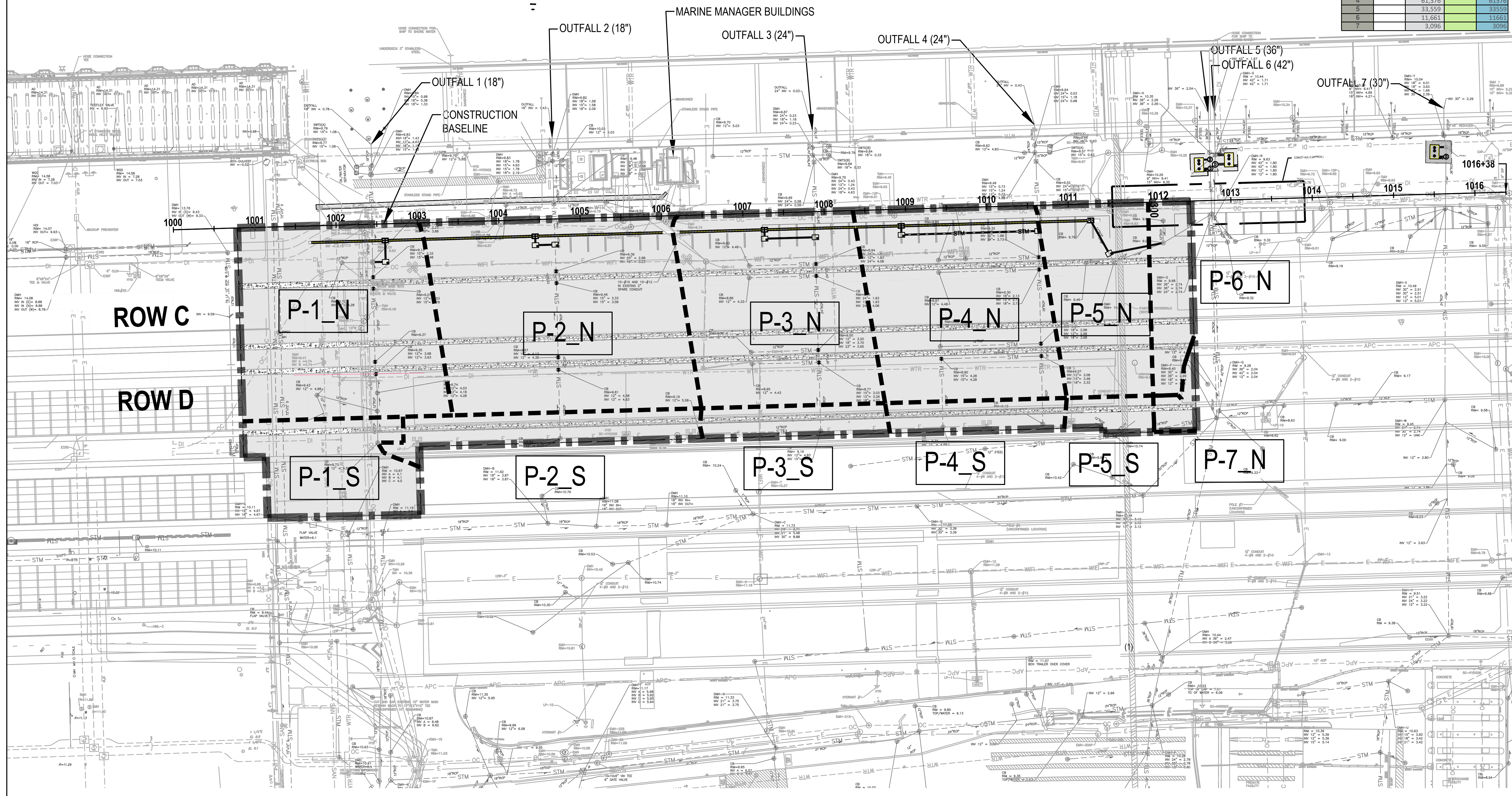
PROJECT SUBMISSION PHASE:
100% PLANS

REGISTRATION STAMP:

RESERVED CHANNEL

BERTH 10 BERTH 11

BERTH 11 BERTH 12



REVISIONS:

REV NO.	DATE	DESCRIPTION	BY:

PRIMARY:

99 HIGH STREET, SUITE 2300,
BOSTON, MA 02110-2378
(617) 357-7700

CONSULTANT:

PROJECT NUMBER AND TITLE:
M555-C1
BERTH 11 & 12
BACKLANDS
RECONSTRUCTION

SHEET TITLE:
DRAINAGE BOUNDARY EXHIBIT
POST CONDITION

DISCIPLINE:
CIVIL

DRAWN BY:	CHECKED BY:	APPROVED BY:
KLH	RDL	BNJ

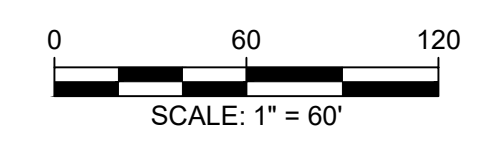
SCALE: 1" = 60'
DATE: JUNE 2021

DRAWING NAME: SHEET 4 OF 35

POST

LEGEND:

PROPOSED PAVEMENT LIMITS



6

STORMWATER SYSTEM SIZING

A. RATIONAL METHOD PIPE SIZING

B. WATER QUALITY STRUCTURE SIZING

10 YR DESIGN STORM																				
Location	C	Area		A x C		Flow Time		I	Q	Design							Profile			
		C	A (Increm)	A (Total)	A x C (Increm)	A x C (Total)	Thru Pipe			Time of Conc.	I	Q (Total)	Pipe Type	Pipe Dia.	Pipe Slope	N	Q (Full)	V (Full)	V (Part)	Pipe Length
From Structure To Structure		acre	acre			min.	min.	in/hr	cfs		in.	ft/ft		cfs	fps	fps	ft	ft		
CB-HD 1	0.3	0.00		0.00																
	0.9	1.32		1.19																
DMH-HD 1			1.32		1.19	0.07	5.00	5.3	6.3	RCP	18	1.30%	0.013	12.0	6.8	5.0	20	0.26	9.39	4.79
DMH-HD 1	0.3	0.00		0.00																
	0.9	0.00		0.00																
EX ST 1			1.32		1.19	0.05	5.07	5.3	6.3	RCP	18	1.60%	0.013	13.3	7.5	3.5	10	0.16	9.49	4.43
CB-HD 2	0.3	0.00		0.00																
	0.9	1.67		1.50																
DMH-HD 2			1.67		1.50	0.02	5.00	5.3	8.0	RCP	18	2.40%	0.013	16.3	9.2	5.0	5	0.12	9.44	4.78
DMH-HD 2	0.3	0.00		0.00																
	0.9	0.00		0.00																
DMH-HD 3			1.67		1.50	0.07	5.02	5.3	8.0	RCP	18	2.00%	0.013	14.9	8.4	4.0	16	0.32	9.48	4.66
CB-HD 3	0.3	0.00		0.00																
	0.9	1.23		1.10																
DMH-HD 4			1.23		1.10	0.02	5.00	5.3	5.9	RCP	18	2.20%	0.013	15.6	8.8	4.0	5	0.11	9.52	4.81
DMH-HD 4	0.3	0.00		0.00																
	0.9	0.00		0.00																
DMH-HD 5			1.23		1.10	0.29	5.02	5.3	5.9	RCP	18	1.15%	0.013	11.3	6.4	3.1	54	0.62	9.56	4.60

HDR ENGINEERING, INC.
 99 HIGH STREET, SUITE 2300
 BOSTON, MA 02110

STORMWATER SYSTEM DESIGN CALCULATIONS
M555 - CONLEY BACKLANDS BERTHS 11 and 12
 SOUTH BOSTON, MASS.

CALC. BY : AKB
 CHECK BY : HN

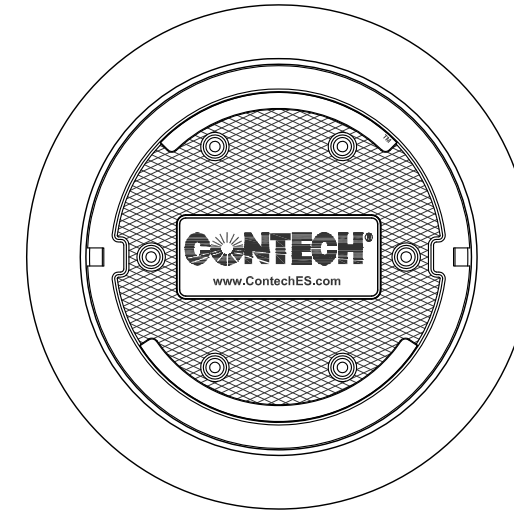
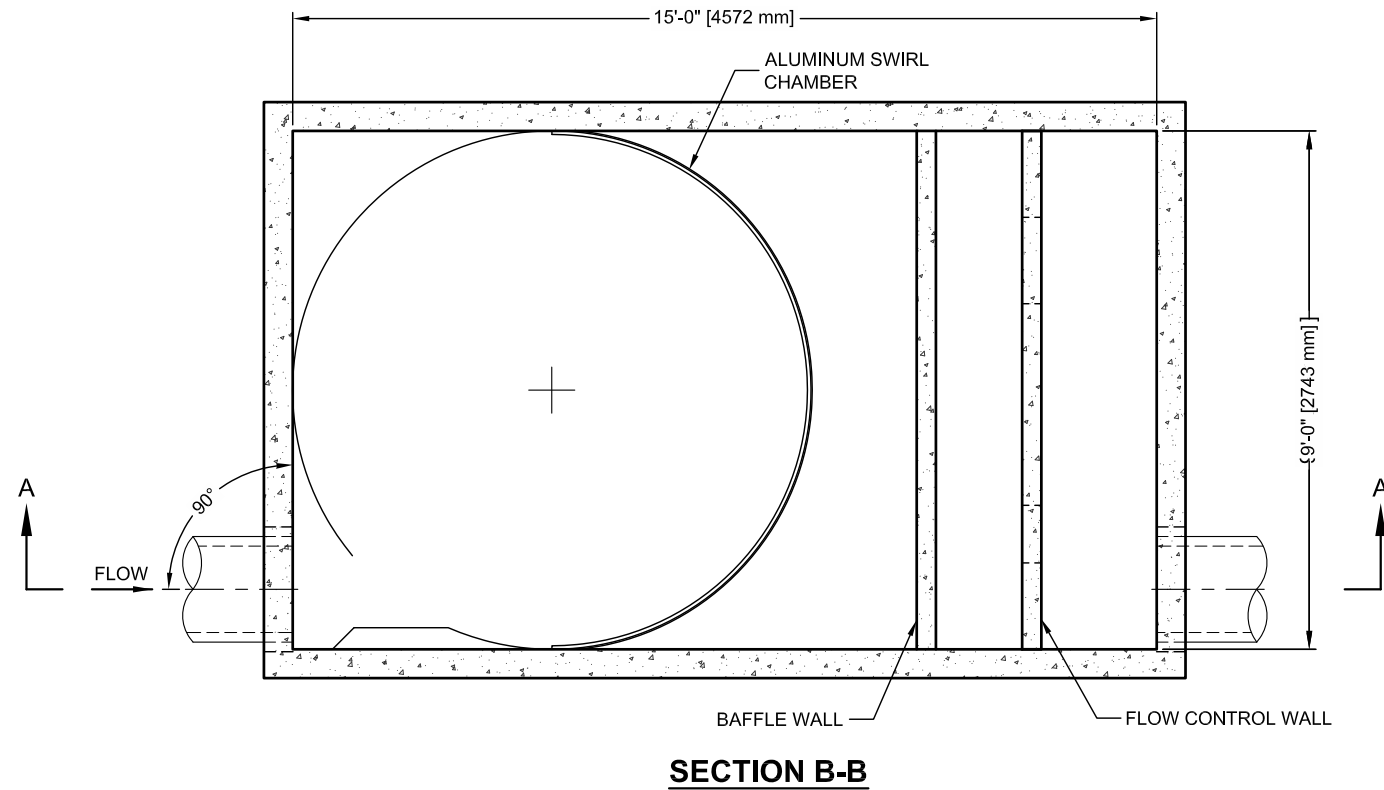
DATE : 05 25 2021
 REVISED : 06 30 2021
 OF 2

10 YR DESIGN STORM																				
Location	C	Area		A x C		Flow Time		I	Q	Design							Profile			
From Structure To Structure	C	A (Increm)	A (Total)	A x C (Increm)	A x C (Total)	Thru Pipe	Time of Conc.	I	Q (Total)	Pipe Type	Pipe Dia.	Pipe Slope	N	Q (Full)	V (Full)	V (Part)	Pipe Length	Drop	Rim (Elev)	Invert (Elev)
		acre	acre			min.	min.	in/hr	cfs		in.	ft/ft		cfs	fps	fps	ft	ft		
CB-HD 4 DMH-HD 6	0.3	0.00		0.00																
	0.9	1.22		1.10						P 7									9.56	4.86
			1.22		1.10	0.02	5.00	5.3	5.8	RCP	18	2.00%	0.013	14.9	8.4	4.0	5	0.10	9.61	4.76
DMH-HD 6 DMH-HD 7	0.3	0.00		0.00																
	0.9	0.00		0.00						P 8									9.61	4.66
			1.22		1.10	0.85	5.02	5.3	5.8	RCP	18	0.98%	0.013	10.4	5.9	3.1	160	1.56	9.65	3.10
CB-HD 5 DMH-HD 8	0.3	0.00		0.00																
	0.9	0.67		0.60						P 9									9.63	5.90
			0.67		0.60	0.17	5.00	5.3	3.2	RCP	18	1.00%	0.013	10.5	6.0	4.0	40	0.40	9.80	5.50
DMH-HD 8 EX-ST 2	0.3	0.00		0.00																
	0.9	0.00		0.00						P 10									9.80	5.40
			0.67		0.60	0.32	5.17	5.3	3.2	RCP	18	1.15%	0.013	11.3	6.4	3.1	61	0.70	9.05	4.70

VORTECHS 9000 DESIGN NOTES

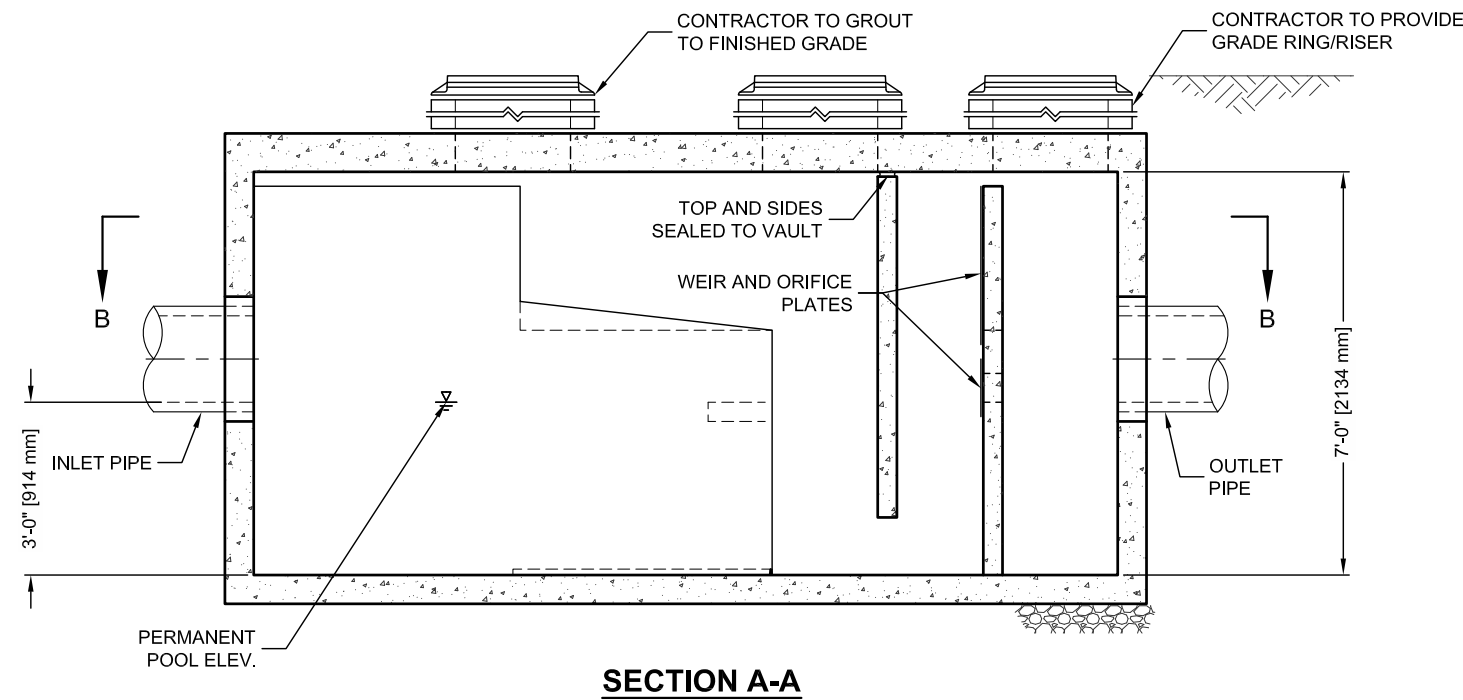
VORTECHS 9000 RATED TREATMENT CAPACITY IS 14 CFS, OR PER LOCAL REGULATIONS. IF THE SITE CONDITIONS EXCEED RATED TREATMENT CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

THE STANDARD INLET/OUTLET CONFIGURATION IS SHOWN. FOR OTHER CONFIGURATION OPTIONS, PLEASE CONTACT YOUR CONTECH REPRESENTATIVE. www.ContechES.com



SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID		*	
WATER QUALITY FLOW RATE (CFS)		*	
PEAK FLOW RATE (CFS)		*	
RETURN PERIOD OF PEAK FLOW (YRS)		*	
PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*
RIM ELEVATION		*	
ANTI-FLOTATION BALLAST	WIDTH	HEIGHT	
	*	*	
NOTES/SPECIAL REQUIREMENTS:			
* PER ENGINEER OF RECORD			



GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH () ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH REPRESENTATIVE. www.ContechES.com
4. VORTECHS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET AASHTO M306 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
6. INLET PIPE(S) MUST BE PERPENDICULAR TO THE VAULT AND AT THE CORNER TO INTRODUCE THE FLOW TANGENTIALLY TO THE SWIRL CHAMBER. DUAL INLETS NOT TO HAVE OPPOSING TANGENTIAL FLOW DIRECTIONS.
7. OUTLET PIPE(S) MUST BE DOWN STREAM OF THE FLOW CONTROL BAFFLE AND MAY BE LOCATED ON THE SIDE OR END OF THE VAULT. THE FLOW CONTROL WALL MAY BE TURNED TO ACCOMMODATE OUTLET PIPE KNOCKOUTS ON THE SIDE OF THE VAULT.

INSTALLATION NOTES

- A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE VORTECHS STRUCTURE (LIFTING CLUTCHES PROVIDED).
- C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
- D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
- E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

I:\COMMON\CAD\TREATMENT\20 VORTECHS\40 STANDARD DRAWINGS\DWG\IX-9000-DTL.DWG 8/6/2014 2:26 PM



CONTECH
ENGINEERED SOLUTIONS LLC
www.ContechES.com

9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

VORTECHS 9000
STANDARD DETAIL



VORTECHS SYSTEM® FLOW CALCULATIONS

MPA - CONLEY TERMINAL - M555

BOSTON, MA

MODEL NAME VORTECHS 9000

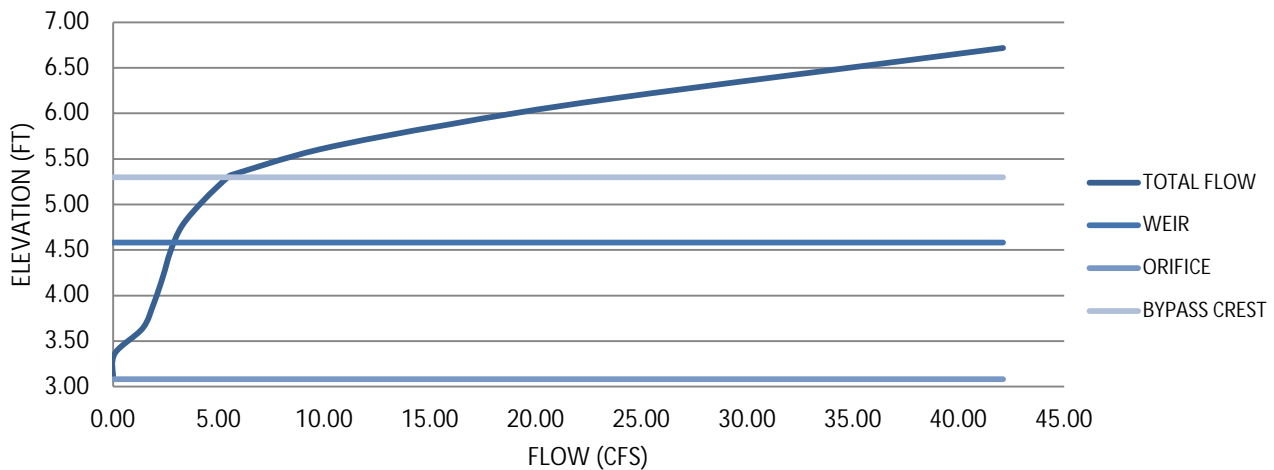
SITE DESIGNATION WQB_05

<u>Vortechs Orifice</u>		<u>Vortechs Weir</u>		<u>Bypass Weir</u>	
Cd = 0.56		Cd = 3.37		Cd = 3.3	
A (ft ²) = 0.56		Weir Crest Length (ft) = 0.92		Crest Length (ft) = 5	
Crest Elevation (ft) = 3.08		Crest Elevation (ft) = 4.58		Crest Elev. (ft) = 5.30	

Head (ft)	Elevation (ft)	Orifice Flow (cfs)	Weir Flow (cfs)	Bypass Flow (cfs)	Total Flow (cfs)
0.00	3.08	0.00	0.00	0.00	0.00
0.28	3.36	0.08	0.00	0.00	0.08
0.56	3.64	1.41	0.00	0.00	1.41
0.84	3.92	1.94	0.00	0.00	1.94
1.12	4.20	2.36	0.00	0.00	2.36
1.40	4.48	2.71	0.00	0.00	2.71
1.68	4.76	3.02	0.24	0.00	3.26
1.96	5.04	3.30	0.97	0.00	4.27
2.22	5.30	3.54	1.88	0.00	5.42
2.24	5.32	3.56	1.97	0.06	5.59
2.52	5.60	3.81	3.19	2.75	9.75
2.80	5.88	4.03	4.59	7.34	15.97
3.08	6.16	4.25	6.16	13.23	23.63
3.63	6.72	4.65	9.66	27.80	42.10

Calculated by: DRA 6/9/2021

VORTECHS STAGE DISCHARGE CURVE



VORTECHS SYSTEM® ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION



**MPA - CONLEY TERMINAL - M555
BOSTON, MA
MODEL NAME VORTECHS 9000
SITE DESIGNATION WQB_05**

Design Ratio¹ = $\frac{(8.9 \text{ acres}) \times (0.9) \times (449 \text{ gpm/cfs})}{(63.6 \text{ sf})} = 56.5$

Bypass occurs at an elevation of 5.3' (at approximately 38 gpm/sf)

<u>Rainfall Intensity</u> ("/hr)	<u>Operating Rate</u> ² (gpm/sf)	<u>Treated Flow</u> (cfs)	<u>% Total Rainfall</u> <u>Volume</u> ³	<u>Rmvl. Effic</u> (%)	<u>Rel. Effic</u> (%)
0.02	1.1	0.16	10.2%	99.0%	10.1%
0.04	2.3	0.32	9.6%	98.5%	9.5%
0.06	3.4	0.47	9.4%	97.9%	9.2%
0.08	4.5	0.63	7.7%	97.1%	7.5%
0.10	5.7	0.79	8.6%	96.3%	8.3%
0.12	6.8	0.95	6.3%	95.6%	6.0%
0.14	7.9	1.11	4.7%	95.0%	4.4%
0.16	9.0	1.27	4.6%	92.6%	4.3%
0.18	10.2	1.42	3.5%	91.9%	3.3%
0.20	11.3	1.58	4.3%	91.0%	4.0%
0.25	14.1	1.98	8.0%	87.6%	7.0%
0.30	17.0	2.37	5.6%	85.4%	4.8%
0.35	19.8	2.77	4.4%	82.5%	3.6%
0.40	22.6	3.16	2.5%	79.5%	2.0%
0.45	25.4	3.56	2.5%	77.0%	1.9%
0.50	28.3	3.96	1.4%	74.8%	1.0%
0.75	23.7	3.31	2.8%	78.7%	2.2%
1.00	26.0	3.64	0.5%	75.9%	0.4%
1.50	32.7	4.58	0.0%	71.5%	0.0%
2.00	41.8	5.85	0.0%	65.5%	0.0%
3.00	57.8	8.09	0.2%	44.2%	0.1%
					89.6%
					3.1%
					0.0%
					6.5%
					83%

1 - Design Ratio = (Total Drainage Area) x (Runoff Coefficient) x (cfs to gpm conversion) / Grit Chamber Area

2 - Operating Rate (gpm/sf) = intensity ("/hr) x Design Ratio.

3 - Based on 10 years of hourly precipitation data from NCDC Station 770, Boston WSFO AP, Suffolk County, MA

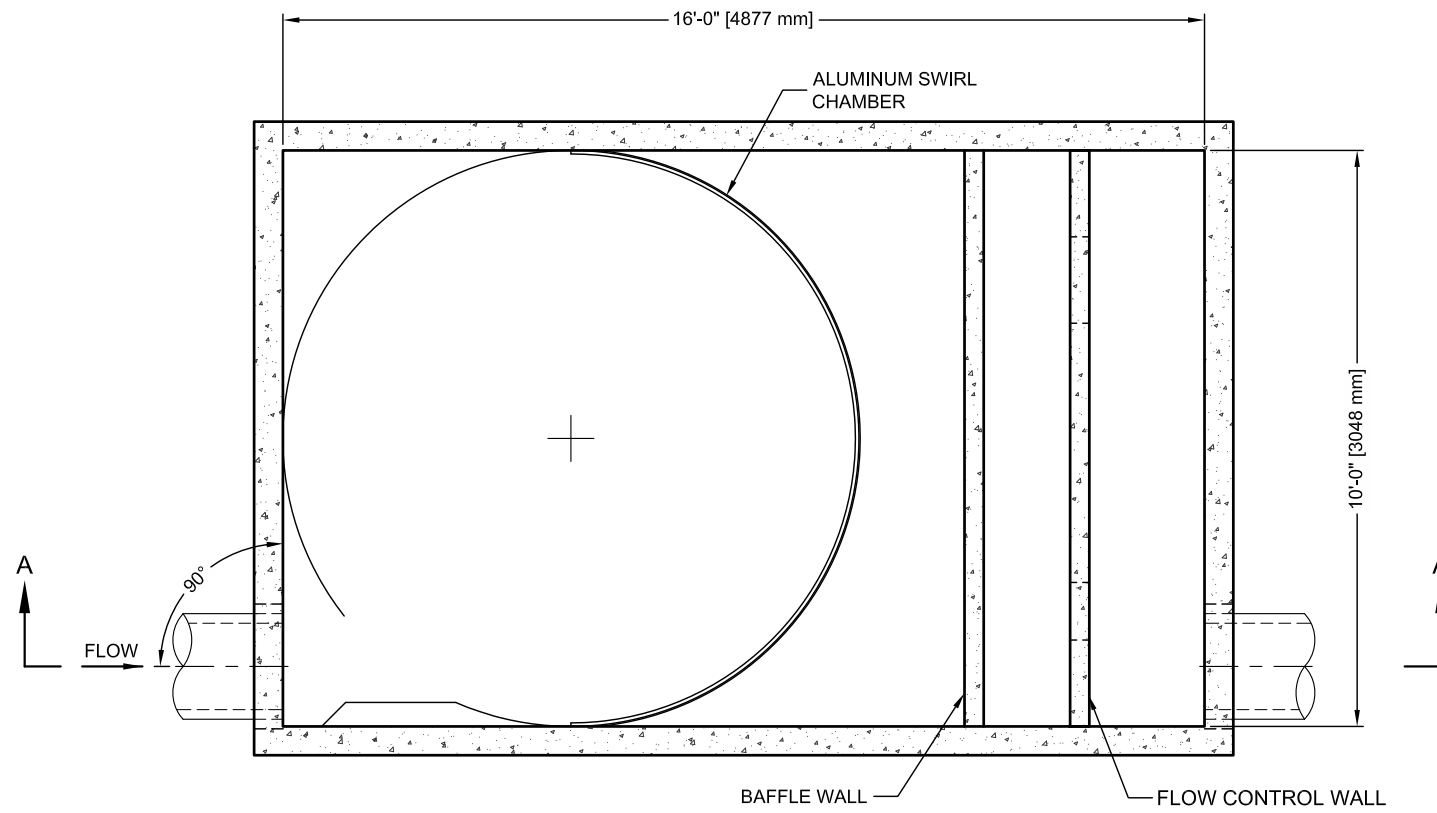
5- Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

Calculated by: DRA 6/9/2021

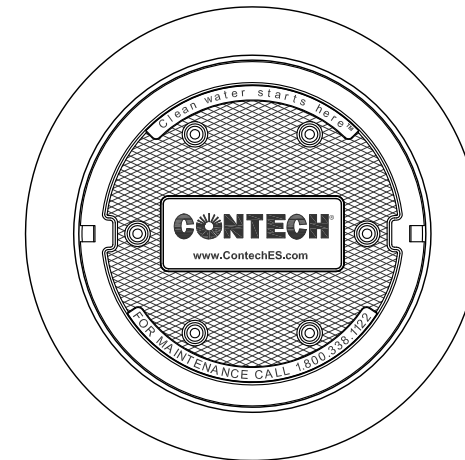
VORTECHS 11000 DESIGN NOTES

VORTECHS 11000 RATED TREATMENT CAPACITY IS 17.5 CFS, OR PER LOCAL REGULATIONS. IF THE SITE CONDITIONS EXCEED RATED TREATMENT CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

THE STANDARD INLET/OUTLET CONFIGURATION IS SHOWN. FOR OTHER CONFIGURATION OPTIONS, PLEASE CONTACT YOUR CONTECH CONSTRUCTION PRODUCTS REPRESENTATIVE. www.ContechES.com

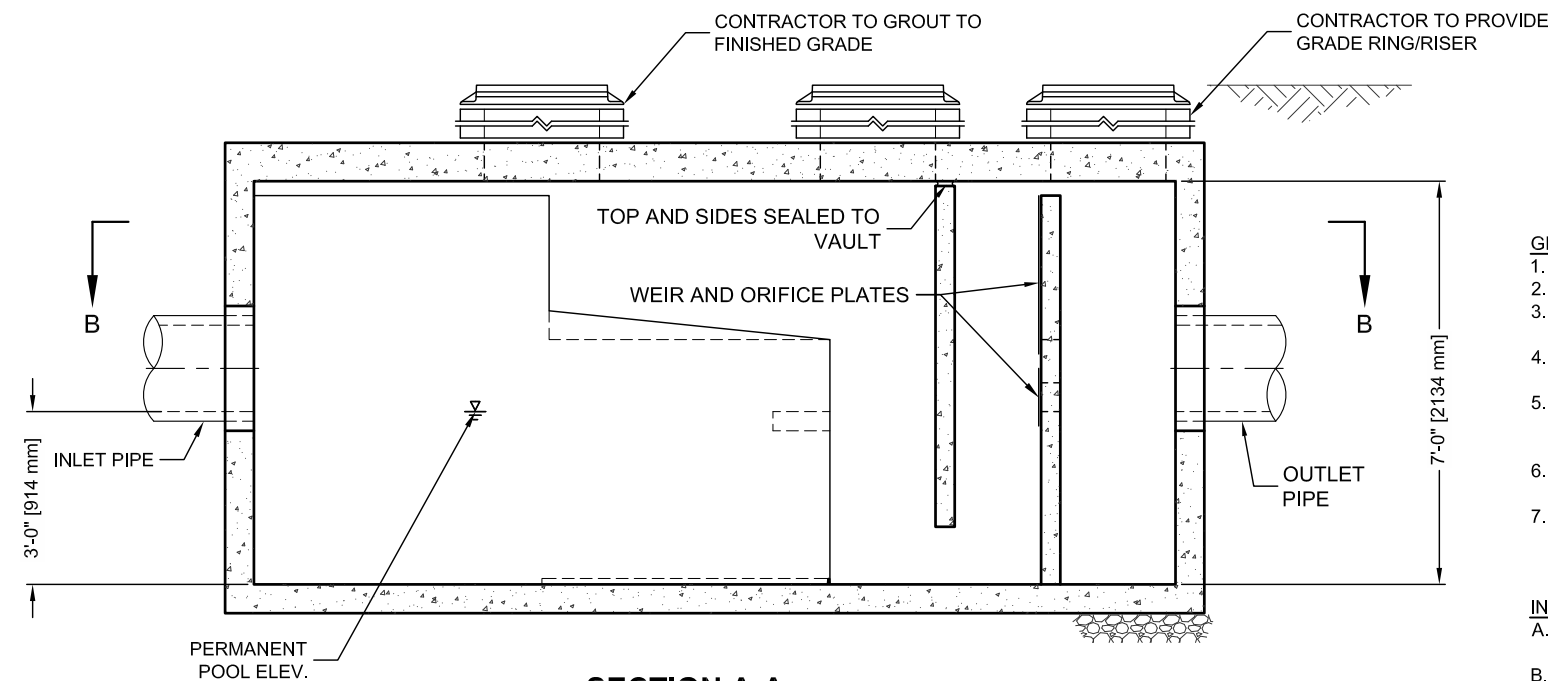


SECTION B-B



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS			
STRUCTURE ID			*
WATER QUALITY FLOW RATE (CFS)			*
PEAK FLOW RATE (CFS)			*
RETURN PERIOD OF PEAK FLOW (YRS)			*
PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*
RIM ELEVATION			*
ANTI-FLOTATION BALLAST	WIDTH	HEIGHT	
	*	*	
NOTES/SPECIAL REQUIREMENTS:			
* PER ENGINEER OF RECORD			



SECTION A-A

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH () ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. VORTECHS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET AASHTO M306 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
6. INLET PIPE(S) MUST BE PERPENDICULAR TO THE VAULT AND AT THE CORNER TO INTRODUCE THE FLOW TANGENTIALLY TO THE SWIRL CHAMBER. DUAL INLETS NOT TO HAVE OPPOSING TANGENTIAL FLOW DIRECTIONS.
7. OUTLET PIPE(S) MUST BE DOWN STREAM OF THE FLOW CONTROL BAFFLE AND MAY BE LOCATED ON THE SIDE OR END OF THE VAULT. THE FLOW CONTROL WALL MAY BE TURNED TO ACCOMMODATE OUTLET PIPE KNOCKOUTS ON THE SIDE OF THE VAULT.

INSTALLATION NOTES

- A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE VORTSENTRY HS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
- C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
- D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
- E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

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THIS PRODUCT MAY BE PROTECTED BY THE FOLLOWING U.S. PATENT: 5,759,415; RELATED FOREIGN PATENTS.



www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

VORTECHS 11000
STANDARD DETAIL



VORTECHS SYSTEM® FLOW CALCULATIONS

MPA - CONLEY TERMINAL - M555

BOSTON, MA

MODEL NAME VORTECHS 11000

SITE DESIGNATION WQB_06

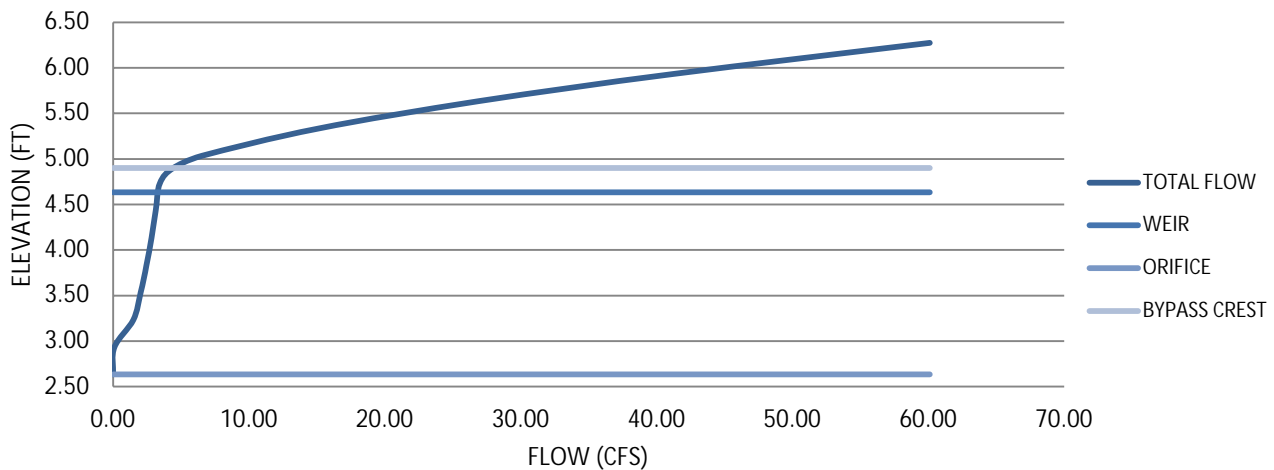
<u>Vortechs Orifice</u>		<u>Vortechs Weir</u>		<u>Bypass Weir</u>	
Cd = 0.56		Cd = 3.37		Cd = 3.3	
A (ft ²) = 0.56		Weir Crest Length (ft) = 1.83		Crest Length (ft) = 8	
Crest Elevation (ft) = 2.63		Crest Elevation (ft) = 4.63		Crest Elev. (ft) = 4.90	

Head (ft)	Elevation (ft)	Orifice Flow (cfs)	Weir Flow (cfs)	Bypass Flow (cfs)	Total Flow (cfs)
0.00	2.63	0.00	0.00	0.00	0.00
0.30	2.93	0.09	0.00	0.00	0.09
0.60	3.23	1.49	0.00	0.00	1.49
0.90	3.53	2.04	0.00	0.00	2.04
1.20	3.83	2.46	0.00	0.00	2.46
1.50	4.13	2.82	0.00	0.00	2.82
1.80	4.43	3.14	0.00	0.00	3.14
2.10	4.73	3.44	0.00	0.00	3.44
2.27	4.90	3.59	0.85	0.00	4.44
2.40	5.03	3.70	1.56	1.28	6.54
2.70	5.33	3.95	3.61	7.52	15.08
3.00	5.63	4.19	6.16	16.57	26.92
3.30	5.93	4.41	9.14	27.72	41.27
3.64	6.27	4.65	12.95	42.50	60.10

Calculated by: DRA

6/9/2021

VORTECHS STAGE DISCHARGE CURVE



VORTECHS SYSTEM® ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION



**MPA - CONLEY TERMINAL - M555
BOSTON, MA
MODEL NAME VORTECHS 11000
SITE DESIGNATION WQB_06**

Design Ratio¹ =
$$\frac{(12.71 \text{ acres}) \times (0.9) \times (449 \text{ gpm/cfs})}{(78.5 \text{ sf})} = 65.4$$

Bypass occurs at an elevation of 4.9' (at approximately 25 gpm/sf)

<u>Rainfall Intensity</u> "/hr	<u>Operating Rate</u> ² gpm/sf	<u>Treated Flow</u> cfs	<u>% Total Rainfall</u> Volume ³	<u>Rmvl. Effic</u> (%)	<u>Rel. Effic</u> (%)
0.02	1.3	0.23	10.2%	98.0%	10.0%
0.04	2.6	0.46	9.6%	98.0%	9.5%
0.06	3.9	0.69	9.4%	98.0%	9.3%
0.08	5.2	0.92	7.7%	98.0%	7.6%
0.10	6.5	1.14	8.6%	98.0%	8.4%
0.12	7.8	1.37	6.3%	97.6%	6.1%
0.14	9.2	1.60	4.7%	96.3%	4.5%
0.16	10.5	1.83	4.6%	96.0%	4.5%
0.18	11.8	2.06	3.5%	95.3%	3.4%
0.20	13.1	2.29	4.3%	93.8%	4.1%
0.25	16.4	2.86	8.0%	90.6%	7.2%
0.30	19.6	3.43	5.6%	88.0%	4.9%
0.35	22.9	4.01	4.4%	86.1%	3.8%
0.40	12.2	2.14	1.2%	84.3%	1.0%
0.45	12.0	2.10	1.0%	82.6%	0.9%
0.50	13.3	2.33	0.6%	81.1%	0.5%
0.75	18.4	3.23	1.9%	65.6%	1.2%
1.00	21.0	3.68	0.3%	54.0%	0.2%
1.50	29.1	5.09	0.0%	10.0%	0.0%
2.00	35.2	6.16	0.0%	8.0%	0.0%
3.00	49.9	8.74	0.1%	8.0%	0.0%
					86.9%
					7.9%
					0.0%
					6.5%
					80%

1 - Design Ratio = (Total Drainage Area) x (Runoff Coefficient) x (cfs to gpm conversion) / Grit Chamber Area

2 - Operating Rate (gpm/sf) = intensity ("/hr) x Design Ratio.

3 - Based on 10 years of hourly precipitation data from NCDC Station 770, Boston WSFO AP, Suffolk County, MA

5- Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

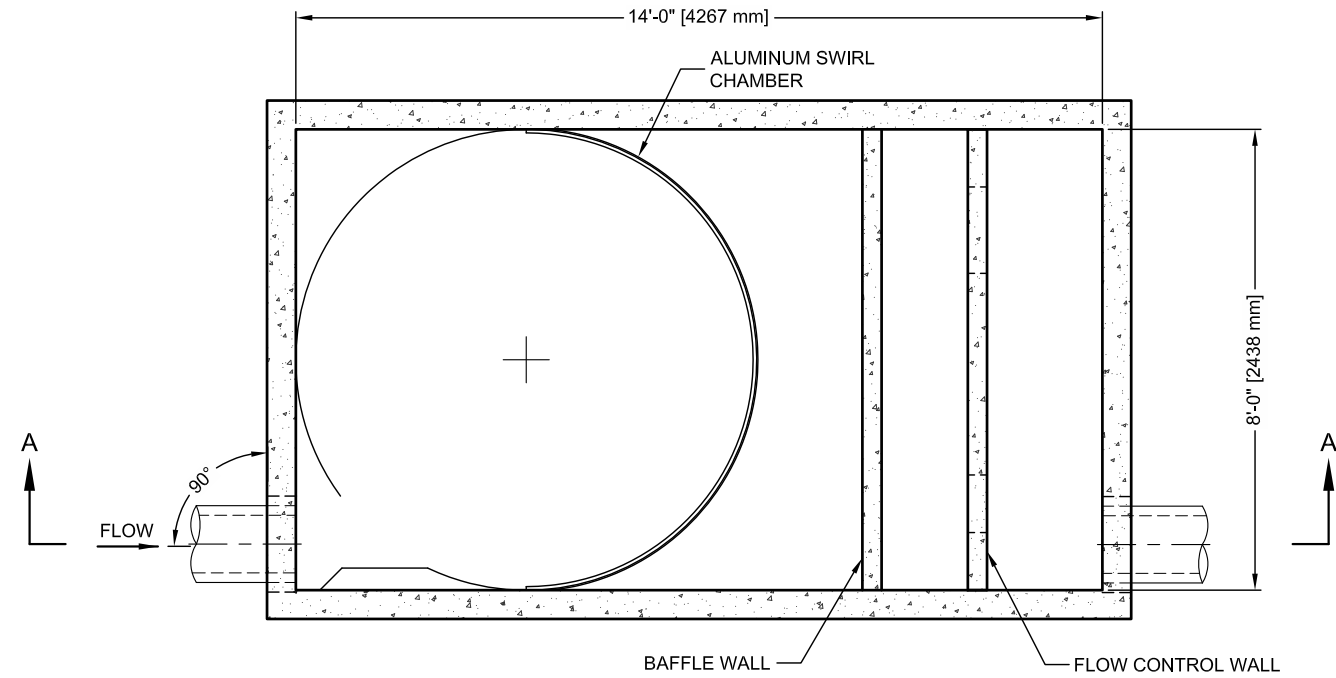
Calculated by: DRA 6/9/2021

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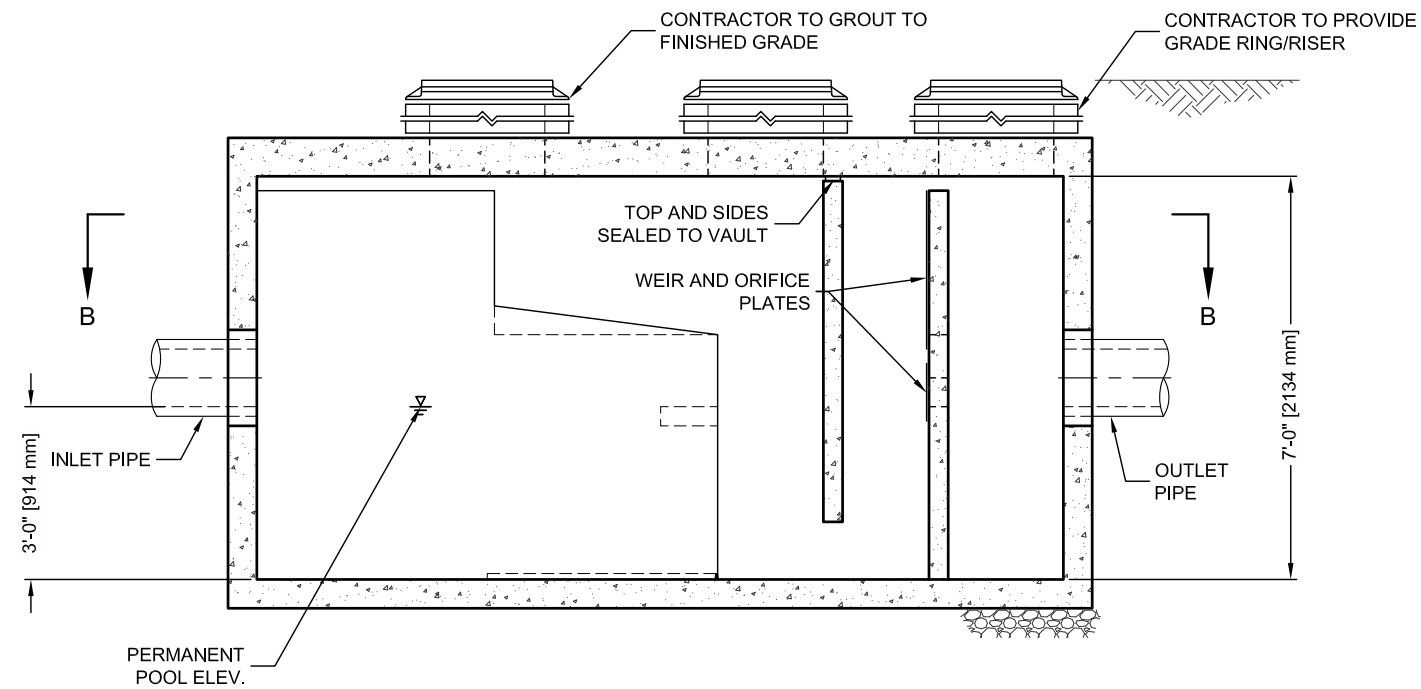
VORTECHS 7000 DESIGN NOTES

VORTECHS 7000 RATED TREATMENT CAPACITY IS 11 CFS, OR PER LOCAL REGULATIONS. IF THE SITE CONDITIONS EXCEED RATED TREATMENT CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

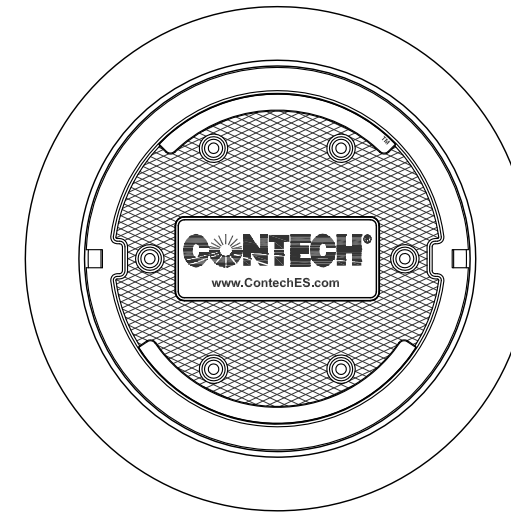
THE STANDARD INLET/OUTLET CONFIGURATION IS SHOWN. FOR OTHER CONFIGURATION OPTIONS, PLEASE CONTACT YOUR CONTECH REPRESENTATIVE. www.ContechES.com



SECTION B-B



SECTION A-A



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	*
WATER QUALITY FLOW RATE (CFS)	*
PEAK FLOW RATE (CFS)	*
RETURN PERIOD OF PEAK FLOW (YRS)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*

RIM ELEVATION _____ *

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
*	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES

- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- DIMENSIONS MARKED WITH () ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
- FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH REPRESENTATIVE. www.ContechES.com
- VORTECHS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
- STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET AASHTO M306 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
- INLET PIPE(S) MUST BE PERPENDICULAR TO THE VAULT AND AT THE CORNER TO INTRODUCE THE FLOW TANGENTIALLY TO THE SWIRL CHAMBER. DUAL INLETS NOT TO HAVE OPPOSING TANGENTIAL FLOW DIRECTIONS.
- OUTLET PIPE(S) MUST BE DOWN STREAM OF THE FLOW CONTROL BAFFLE AND MAY BE LOCATED ON THE SIDE OR END OF THE VAULT. THE FLOW CONTROL WALL MAY BE TURNED TO ACCOMMODATE OUTLET PIPE KNOCKOUTS ON THE SIDE OF THE VAULT.

INSTALLATION NOTES

- ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE VORTECHS STRUCTURE (LIFTING CLUTCHES PROVIDED).
- CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
- CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.



THIS PRODUCT MAY BE PROTECTED BY THE FOLLOWING U.S. PATENT: 5,759,415; RELATED FOREIGN PATENTS.

CONTECH
ENGINEERED SOLUTIONS LLC

www.ContechES.com

9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069

800-338-1122 513-645-7000 513-645-7993 FAX

VORTECHS 7000
STANDARD DETAIL



VORTECHS SYSTEM® FLOW CALCULATIONS

MPA - CONLEY TERMINAL - M555

BOSTON, MA

MODEL NAME VORTECHS 7000

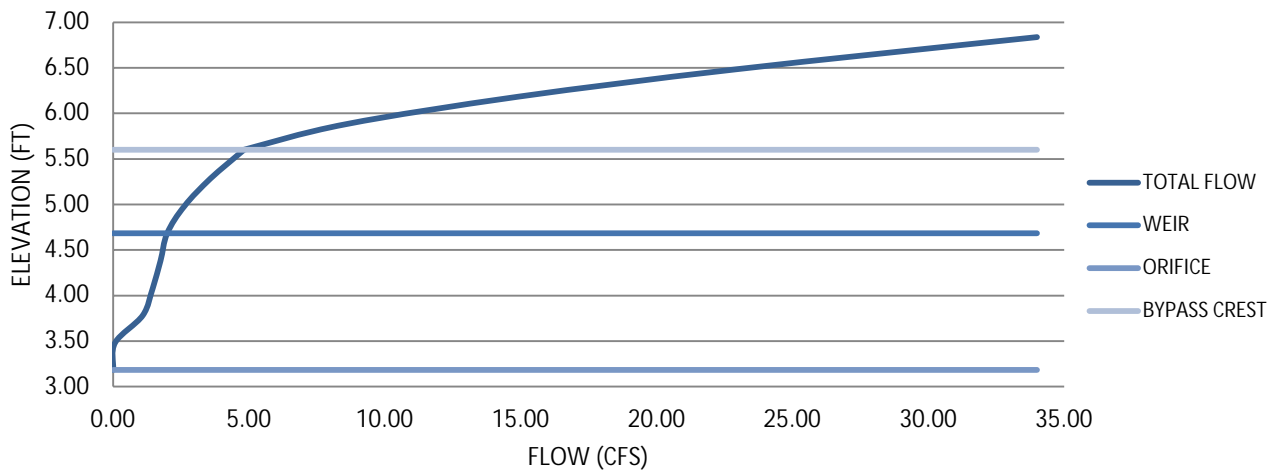
SITE DESIGNATION WQB-07

<u>Vortechs Orifice</u>		<u>Vortechs Weir</u>		<u>Bypass Weir</u>	
Cd = 0.56		Cd = 3.37		Cd = 3.3	
A (ft ²) = 0.39		Weir Crest Length (ft) = 0.75		Crest Length (ft) = 5	
Crest Elevation (ft) = 3.18		Crest Elevation (ft) = 4.68		Crest Elev. (ft) = 5.60	
Head (ft)	Elevation (ft)	Orifice Flow (cfs)	Weir Flow (cfs)	Bypass Flow (cfs)	Total Flow (cfs)
0.00	3.18	0.00	0.00	0.00	0.00
0.30	3.48	0.08	0.00	0.00	0.08
0.60	3.78	1.10	0.00	0.00	1.10
0.90	4.08	1.46	0.00	0.00	1.46
1.20	4.38	1.75	0.00	0.00	1.75
1.50	4.68	1.99	0.00	0.00	1.99
1.80	4.98	2.21	0.41	0.00	2.63
2.10	5.28	2.41	1.17	0.00	3.59
2.40	5.58	2.60	2.16	0.00	4.75
2.42	5.60	2.61	2.22	0.00	4.83
2.70	5.88	2.77	3.32	2.48	8.57
3.00	6.18	2.93	4.64	7.34	14.92
3.30	6.48	3.08	6.10	13.69	22.88
3.66	6.84	3.26	8.00	22.75	34.00

Calculated by: DRA

6/9/2021

VORTECHS STAGE DISCHARGE CURVE



VORTECHS SYSTEM® ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION



**MPA - CONLEY TERMINAL - M555
BOSTON, MA
MODEL NAME VORTECHS 7000
SITE DESIGNATION WQB-07**

Design Ratio¹ =
$$\frac{(7.2 \text{ acres}) \times (0.9) \times (449 \text{ gpm/cfs})}{(50.3 \text{ sf})} = 57.8$$

Bypass occurs at an elevation of 5.6' (at approximately 43 gpm/sf)

<u>Rainfall Intensity</u> "/hr	<u>Operating Rate</u> ² gpm/sf	<u>Treated Flow</u> cfs	<u>% Total Rainfall</u> Volume ³	<u>Rmvl. Effic</u> (%)	<u>Rel. Effic</u> (%)
0.02	1.2	0.13	10.2%	99.0%	10.1%
0.04	2.3	0.25	9.6%	98.5%	9.5%
0.06	3.5	0.38	9.4%	97.9%	9.2%
0.08	4.6	0.51	7.7%	97.1%	7.5%
0.10	5.8	0.64	8.6%	96.3%	8.3%
0.12	6.9	0.76	6.3%	95.6%	6.0%
0.14	8.1	0.89	4.7%	93.7%	4.4%
0.16	9.2	1.02	4.6%	92.6%	4.3%
0.18	10.4	1.14	3.5%	91.9%	3.3%
0.20	11.6	1.27	4.3%	91.0%	4.0%
0.25	14.5	1.59	8.0%	87.6%	7.0%
0.30	17.3	1.91	5.6%	84.5%	4.7%
0.35	20.2	2.23	4.4%	81.4%	3.6%
0.40	23.1	2.54	2.5%	78.7%	2.0%
0.45	26.0	2.86	2.5%	75.9%	1.9%
0.50	28.9	3.18	1.4%	74.8%	1.0%
0.75	28.6	3.15	3.3%	74.8%	2.5%
1.00	32.7	3.59	0.6%	71.5%	0.4%
1.50	41.0	4.51	0.0%	65.5%	0.0%
2.00	49.6	5.46	0.0%	56.8%	0.0%
3.00	63.4	6.97	0.2%	37.5%	0.1%
					89.7%
					2.5%
					0.0%
					6.5%
					83%

1 - Design Ratio = (Total Drainage Area) x (Runoff Coefficient) x (cfs to gpm conversion) / Grit Chamber Area

2 - Operating Rate (gpm/sf) = intensity ("/hr) x Design Ratio.

3 - Based on 10 years of hourly precipitation data from NCDC Station 770, Boston WSFO AP, Suffolk County, MA

5- Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

Calculated by: DRA 6/9/2021



Appendix F - Mailing to Division of Marine Fisheries



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Henke, Nicholas

From: Henke, Nicholas
Sent: Wednesday, July 7, 2021 7:44 AM
To: 'dmf.envreview-north@mass.gov'
Subject: Massport Berth 11 & 12 Backlands Reconstruction Project

Good morning,

On behalf of the Massachusetts Port Authority (Massport), I am pleased to submit to you the Notice of Intent for the Massport Berth 11 & 12 Backlands Reconstruction Project located in Boston, MA scheduled to be filed with the Boston Conservation Commission today. Due to file size, the NOI has been posted for your retrieval at the link below. Thank you for your consideration of this matter. Should you have any questions or comments regarding this submittal, or if you require any additional information, please do not hesitate to contact Peter DeBruin, at pdebruin@massport.com, (617) 568-3583, or me at nicholas.henke@hdrinc.com, (617) 357-7705.

Link: https://hdrinc-my.sharepoint.com/:b:/p/nhenke/EcmZROBpjLJMug8Y2c-WerQB5dyIQ1SwzHISjv_EpuYjsQ?email=dmf.envreview-north%40mass.gov&e=oDeV8T

Thanks,

Nick Henke

Environmental Project Manager

HDR

99 High Street, Suite 2300

Boston, MA 02110-2378

D 617.357.7705

Nicholas.Henke@hdrinc.com

hdrinc.com/follow-us



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