

**TOWN OF GRAY
PLANNING BOARD
AGENDA • JUNE 8, 2023**

**Planning Board
Regular Meeting**

**Henry Pennell Municipal Complex
24 Main St., Gray, Maine**

7:00 PM

**And via Zoom videoconferencing:
<https://us06web.zoom.us/j/88951918347>**

I. MEETING COMMENCES

Roll Call

II. MINUTES APPROVAL

- a. Planning Board - Regular Meeting - May 11, 2023

III. INFORMATION EXCHANGE

- Ordinances
- Post-approval/pending project updates
- Staff Review Committee business
- Build Maine conference follow-up

IV. NEW BUSINESS/PUBLIC HEARINGS

- a. Public Hearing: Mark Napolitano Shoreland Zoning Permit.

A request by Mark Napolitano for review of a Shoreland Zoning permit for driveway construction for his property located near 189 Birchwood Road, at Map 25, lot 08-04-01, in both the Limited Residential (Shoreland) and Lake Zoning Districts.

- b. Public Hearing: Avesta Housing Site Plan/Subdivision Amendment.

A request by Avesta Housing Development Corporation, Avesta Meadowview II LP and Gray Senior Housing, Inc., represented by Maureen McGlone of Ransom Engineering, for review of an amendment to an approved site plan and subdivision plan, for a multi-family 26-unit senior housing development located near 16 Hancock Street, Tax Map 43, lot 405-39, in the Village Center Zoning District. This application received approvals in June 2022 for site plan, conditional use, and subdivision review, as well as multi-family housing standards and village design standards.

V. ADJOURNMENT

** The Town of Gray is an equal opportunity employer and complies with all applicable equal access to public accommodations law. If you are planning to attend a Town Council or Town committee or board*

meeting and need assistance with a physical disability, please contact the Town Manager's office at least 48 hours in advance of the meeting to have the Town assist you. 657-3339. TTY 657-3931.



DRIVEWAY/ENTRANCE PERMIT APPLICATION TOWN OF GRAY MAINE

For Office Use Only

Permit No: _____
 Date Submitted: 2/3/23
 Date Paid: _____

APPLICANT

In accordance with the **Town of Gray Entrance and Culvert Policy**, the following person/s make application to construct a driveway/entrance at the location specified below.

Name	<u>MARK NAPOLITANO</u>	E-Mail Address	<u>MNAPOLITANO72@MAINE.RR.COM</u>
Street Address	<u>85 MILLRIDGE RD.</u>	City/State/Zip	<u>N. YARMOUTH ME. 04097</u>
Phone Number	<u>207-650-5230</u>	Work Phone	

LOCATION

Location/Address	<u>BIRCH WOOD RD.</u>	Property Map/Lot	<u>025-008-004-000</u>
Owner Name	<u>MARK & MELISSA NAPOLITANO</u>	Zoning District	
Number of entrances requested:	<u>1</u>	Proposed width of entrance(s):	<u>25'</u>
Entrance shall be no less than ten (10) feet from property line.		Minimum length of culvert shall be twenty-four (24) feet.	

SIGNATURES

The applicant hereby agrees:

- To pay for any culverts and/or drainage structure which may be necessary for drainage, the size type and length of culverts and size and type of other incidental structures to be as recommended by the Town Manager or Public Works Director of said Town of Gray.
- To construct said driveway approach and install culvert(s) in accordance with Town of Gray Rules and Regulations.
- To provide, erect and maintain all necessary barricades, lights, warning signs and other devices to safe guard traffic property while the work is in progress.
- That the road or street will at no time be closed to traffic.
- No building construction shall take place until Driveway Entrance has been completed and approved and all specifications met.
- A Certificate of Occupancy shall not be issued until Driveway Entrance has been approved and signed by the Road Commissioner or Public Works Director.
- Once driveway is properly staked, please call Code Officer at 657-3112 to leave message.

Further condition of the permit shall be that the applicant shall well and truly pay all damages, fines and penalties for which he shall become liable and shall indemnify and save harmless aid Town of Gray against all suits, claims, damages and proceedings of every kind arising out of the construction of said entrance.

Applicant Signature: [REDACTED] Date: 2-2-23

CODE ENFORCEMENT OFFICER APPROVAL

Signature/Title: _____ Date: _____

PUBLIC WORKS APPROVAL

Signature/Title: _____ Date: _____

Culvert(s) Needed: _____ (Qty) @ _____ inches X _____ feet

**TOWN OF GRAY
SHORELAND ZONING PERMIT APPLICATION**

For Office Use Only

Permit No: _____

Issue Date: _____

Fee Amount: _____

1. Applicant/ Owner Name Mark & Melissa Napolitano			2. Applicant/ Owner Address 85 Mill Ridge Rd North Yarmouth ME 04097			3. Applicant/ Owner Phone Number 207 650 5230		
4. Applicant/ Owner Email mnapolitano72@maine.rr.com								
5. Contractor		6. Contractor Address		7. Contractor's Phone Number & Email				
10. Location/Address of Property Birchwood Rd			11. Tax Map & Lot Number; Date Lot was created 025-008-004-001 JAN 25, 2023			12. Zoning District Lake and SZ: LR		
13. Description of property including a description of all proposed construction, e.g. Land Clearing, road, building, septic systems and wells (Please note that a site plan is required on page 4)								
14. Proposed Use of Project Driveway						15. Estimated Cost of Construction(Required): \$ 8,000		

SHORELAND PROPERTY INFORMATION

16. Lot area (sq.ft.)

17. Frontage on Road (ft.)

175'

18. Sq. Ft. of lot to be covered by non-vegetated surfaces-worksheet pg 3

19. Elevation above 100 year flood

20. Frontage on water body (ft.)

0

21. Height of proposed structure

/

22. Existing use of property

logging Road

23. Proposed use of property

DRIVEWAY

NOTE: QUESTIONS 24 & 25 APPLY ONLY TO EXPANSIONS OF PORTIONS OF EXISTING STRUCTURES WHICH ARE LESS THAN THE REQUIRED SETBACK FROM THE HIGH WATER MARK.

24. A. Total floor area of portion of structure which is less than required setback as of 1/1/89 (sq.ft.)

B. Floor area of expansions of portion of structure which is less than required setback from 1/1/89 (sq.ft.)

C. Floor area of proposed expansion of portion of structure which is less than required setback (sq.ft.)

Definition of Structure: anything temporarily or permanently located, built, constructed or erected for the support, shelter or enclosure of persons, animals, goods or property of any kind or anything constructed or erected on or in the ground. The term includes structures temporarily or permanently located, such as decks, patios, and satellite dishes. Structure does not include fences; poles and wiring and other aerial equipment normally associated with service drops, including guy wires and guy anchors; subsurface waste water disposal systems as defined in Title 30-A, section 4201, subsection 5; geothermal heat exchange wells as defined in Title 32, section 4700-E, subsection 3-C; or wells or water wells as defined in Title 32, section 4700-E, subsection 8.

To whom it may concern,

We recently purchased a piece of property that previously had a logging road. We plan on building a house on this property and will be using the old road for our driveway with some updates. The first 100 feet of the driveway does fall into the shoreland zoning. We would like to keep this area as is with as little impact possible.

Thank You,

Mark and Melissa Napolitano

The driveway will be going where the existing logging road is which is shown in the pictures. . The material is sandy gravel which drains very well. The pictures were taken May 1st after a 4" rain event and as seen in these pictures there is no standing water or puddles. I would be pulling out a couple of stumps and removing the loam. The soils are good enough so there is no need to excavate. I Would just grade the existing material to create a slight crown in the driveway with a small depression or ditch down both sides to direct any surface water to the natural low area approximately 35' from the road as shown on the map labeled as the "low point" at elevation 292.0. That low point is approximately 90' across and would serve as a storage area where the water could drain into the ground if needed. After crowning the driveway I would add 4"-6" of finish gravel to the driveway and erosion control mix the ditches to prevent washing during heavy rain events.



drivew...

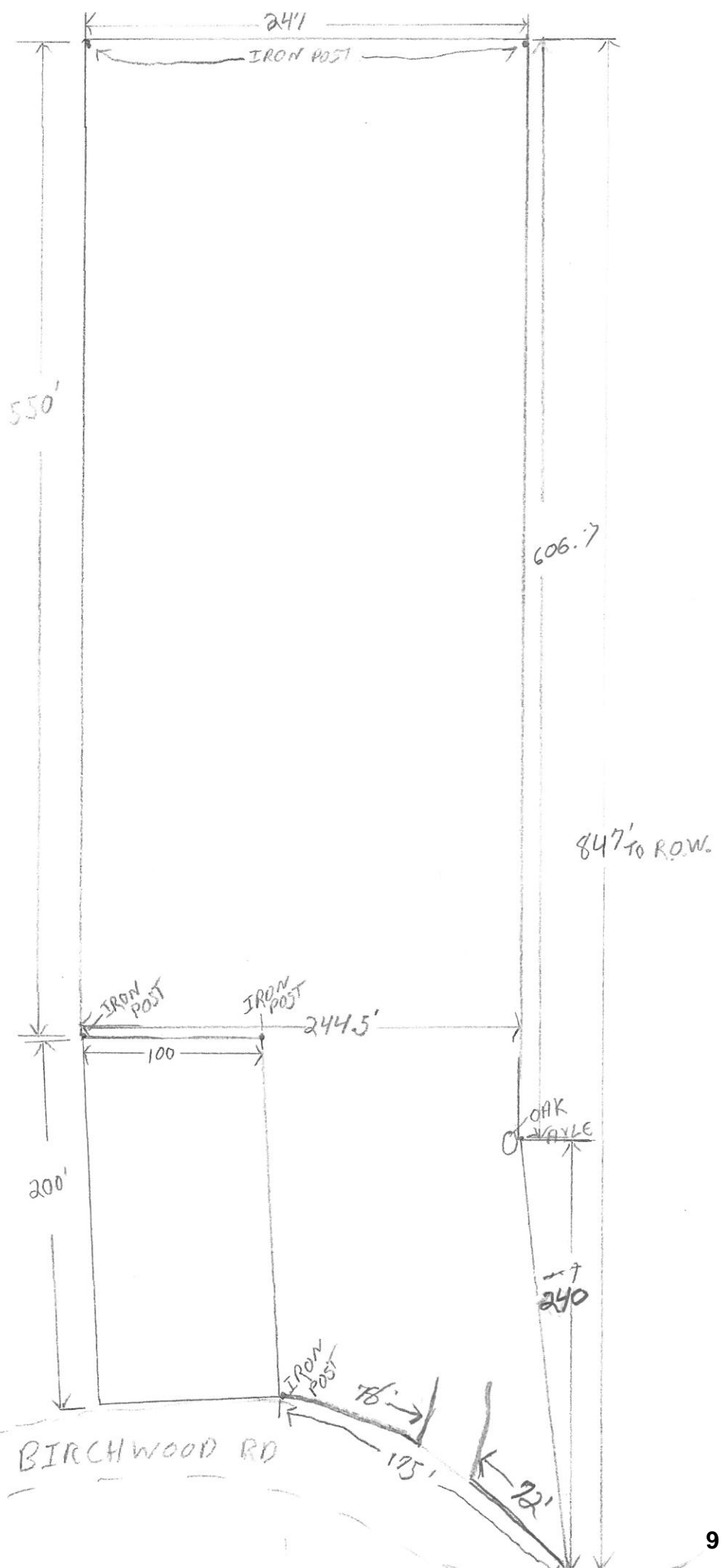


All changes sa...

The driveway will be going where the existing logging road is which is shown in the pictures.

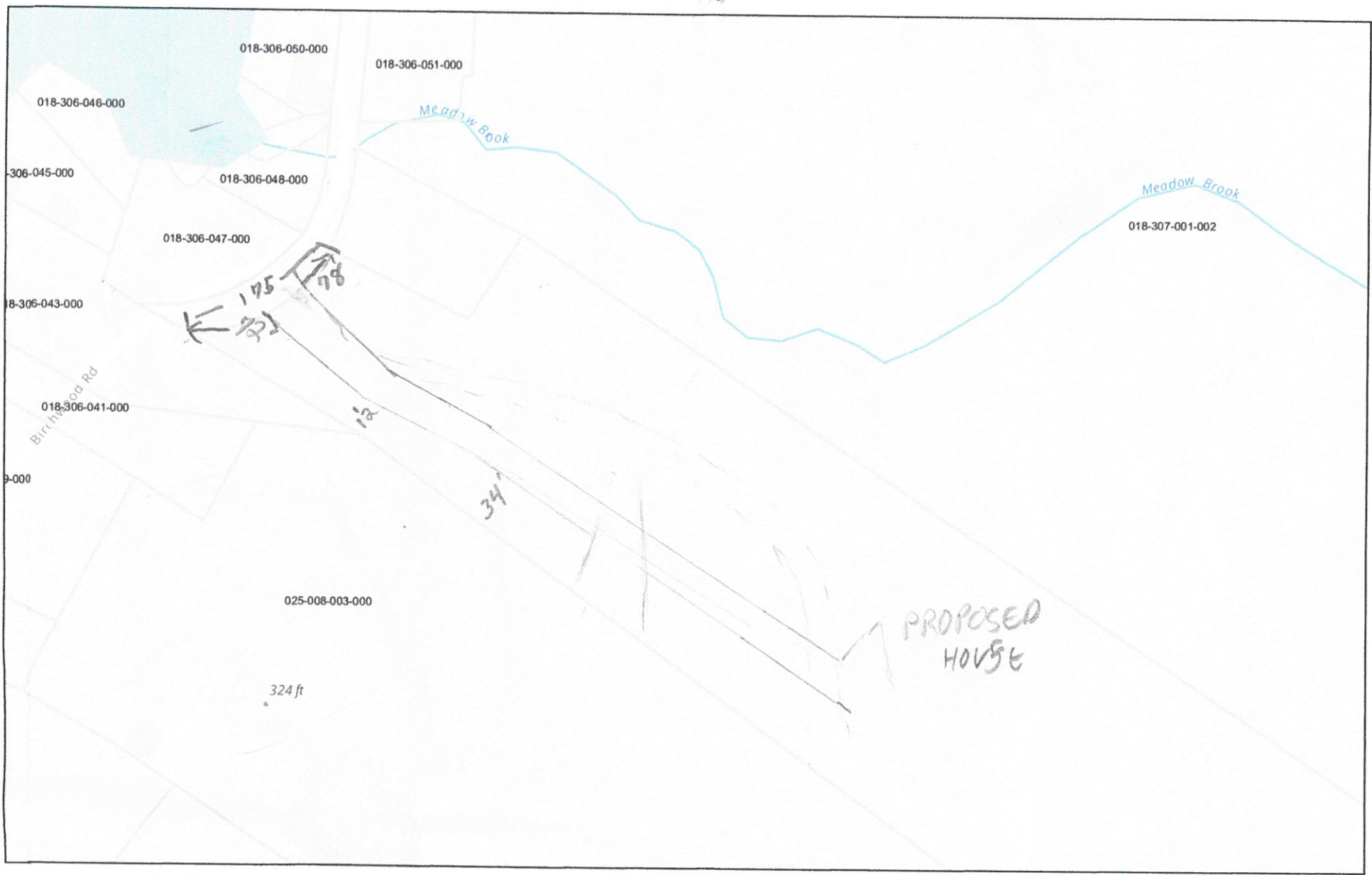
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There is no utilities on this side of the road on this lot. Any future utilities would be coming from an abutting property.



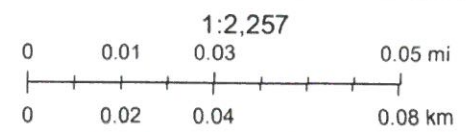
ALL MEASUREMENTS
ARE APROX.

Town of Gray Parcels



1/26/2023, 7:33:52 PM

Tax Parcels (2022)



Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS,

Town of Gray
Town of Gray







RELEASE DEED
Maine Statutory Short Form

Know all Persons by these Present,

That we, **MERRITT FOSTER and PAMELA FOSTER**, both of Gray, County of Cumberland and State of Maine, grant to:

MARK NAPOLITANO and MELISSA NAPOLITANO as joint tenants, and MURIEL E. GADE, TRUSTEE OF THE GADE TRUST

whose mailing address is 85 Mill Ridge Road, North Yarmouth, ME 04097, and 1650 E Clark #309, Santa Maria, CA 93455, respectively, a certain easement over land situated in the Town of Gray, County of Cumberland and State of Maine, more particularly described in the Exhibit A attached hereto and made a part hereof.

Witness our hands and seals this 6th day of January, 2023.

Signed, Sealed and Delivered
in the presence of

[Redacted signature]

[Redacted signature]

Merritt Foster

[Redacted signature]

[Redacted signature]

Pamela Foster

STATE OF MAINE
Cumberland, ss.

January 6, 2023

Then personally appeared before me the above named Merritt Foster and Pamela Foster and acknowledged the foregoing instrument to be their free act and deed.

[Redacted signature]

Notary Public/~~Attorney At Law~~

Printed Name:.....

Karen L. Rogers
Notary Public, State of Maine
My Commission Expires May 28, 2027

Thence northeasterly along land of said Markee a distance of 100 feet, more or less, to the southwesterly line of land now or formerly of Sean S. Libbey as described in a deed recorded in Book 26163, Page 61 of the Cumberland County Registry of Deeds;

Thence southeasterly along line of land of said Libbey a distance of 550 feet, more or less, to a 1" iron pipe;

Thence southwesterly, perpendicular with the last described course, a distance of 247 feet, more or less, to a 1" iron pipe on the northeasterly line of land of the aforementioned Gade Trust;

Thence northwesterly along line of land of said Gade Trust a distance of 847 feet, more or less, to the point of beginning.

EXCEPTING and RESERVING to Muriel E. Gade, Trustee of the Gade Trust, an easement in common with others for ingress, egress, and the installation and maintenance of utility services appurtenant to the remaining portion of the premises described in a deed recorded in Book 4157, Page 311, said easement over land described as follows:

Beginning at the intersection of the southerly sideline of Birchwood Road, so-called, and the southwesterly line of land now or formerly of Muriel E. Gade, Trustee of the Gade Trust, as described in a deed recorded in Book 4157, Page 311 of the Cumberland County Registry of Deeds, said corner marked by an iron pin;

Thence easterly and northeasterly along said Birchwood Road a distance of 50 feet to a point.

Thence southeasterly, at all times 50' distant from and parallel to the southwesterly line of the premises conveyed above, a distance of 437 feet to a point;

Thence southwesterly a distance of 50 feet to a point on the southwesterly line of the premises conveyed above, said point being 437' southeasterly of the assumed southerly sideline of Birchwood Road;

Thence along the southwesterly line of the premises conveyed above to the point of beginning.

Reference is made to a deed to Muriel E. Gade, Trustee of the Gade Trust, as described in a deed recorded in Book 10903, Page 253 and to a deed recorded in Book 4157, Page 311 of the Cumberland County Registry of Deeds.

The preparer hereof has not investigated municipal zoning ordinance or municipal and state subdivision laws and has not examined title.

Received
Recorded Register of Deeds
Jan 25, 2023 11:04:07A
Cumberland County
Jessica M. Spaulding

TRUSTEE'S DEED

Know all by these present that, MURIEL E. GADE, Trustee under the Gade Trust, whose mailing address is 1650 E Clark #309, Santa Maria, CA 93455, by the power of law and all other powers, for full value and consideration paid, grants to MARK NAPOLITANO and MELISSA NAPOLITANO, whose mailing address is 85 Mill Ridge Road, North Yarmouth, ME 04097, as joint tenants, the following real estate located in the Town of Gray, County of Cumberland and State of Maine, more particularly described in the Exhibit A attached hereto and made a part hereof.

The Trustee hereby warrants and covenants that she has full authority under the terms of the Gade Trust to execute this deed and to convey the Trust property, that no actions are pending with respect to this Trust which could affect the Trustee's ability to convey the Trust property, and on behalf of the Trust, hereby conveys the property.

Dated: January 6, 2023

MAINE REAL ESTATE TAX PAID

Witness [Redacted] Muriel E. Gade, Trustee under the Gade Trust [Redacted] Trust

STATE OF CALIFORNIA
County of

January, 2023

Personally appeared the above-named Muriel E. Gade, Trustee of the Gade Trust, and acknowledged the foregoing instrument to be her free act and deed in her capacity as Trustee.

Before me,

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California County of Santa Barbara, ss.
On 1-6-23 before me, M. Sanchez, Notary Public,
personally appeared Muriel E. Gade
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/its authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument. I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct. WITNESS my hand and official seal.

Notary Public/Attorney-At-Law

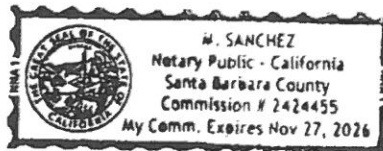


EXHIBIT A

A certain lot or parcel of land, with any buildings thereon, situated in the Town of Gray, County of Cumberland and State of Maine, more particularly described as follows:

Beginning at a point on the northeasterly shore of Little Sebago Lake, marked by an iron pipe indicated the easterly corner of a lot of land owned by Amos R. Liberty, Earl and Lewis Meguire and Howard A. Verrill;

Thence in an easterly direction along the shore of said Little Sebago Lake eighty-five (85) feet, more or less, to an iron stake or pipe, marking the boundary of a right of way to the aforesaid lake;

Thence in an easterly direction along the aforesaid right of way ninety (90) feet, more or less, to a private road;

Thence along aforesaid private road in a southwesterly direction one hundred sixty-five (165) feet, more or less, to an iron stake or pipe marking the southeasterly corner of land owned by Amos R. Liberty, Earl and Lewis Meguire and Howard A. Verrill;

Thence in a northeasterly direction along line of land of Liberty, Meguire and Verrill one hundred fifteen (115) feet, more or less, to the point of beginning.

The above-described premises being the second parcel described in a deed recorded in the Cumberland County Registry of Deeds in Book 10903, Page 253 and in Book 4157, Page 311.

ALSO CONVEYING another certain lot or parcel of land, with any buildings thereon, situated in the Town of Gray, County of Cumberland and State of Maine, more particularly described as follows:

Beginning at the intersection of the southerly sideline of Birchwood Road, so-called, and the southwesterly line of land now or formerly of Muriel E. Gade, Trustee of the Gade Trust, as described in a deed recorded in Book 4157, Page 311 of the Cumberland County Registry of Deeds, said corner marked by an iron pin;

Thence easterly and northeasterly along said Birchwood Road a distance of 175 feet, more or less, to the corner of land now or formerly of Linda W. Markee as described in a deed recorded in Book 7883, Page 153 of the Cumberland County Registry of Deeds;

Thence southeasterly along line of land of said Markee a distance of 200 feet, more or less, to a corner marked by an iron pin;

EXHIBIT A

A certain easement over land situated in the Town of Gray, County of Cumberland and State of Maine, more particularly described as follows:

An easement in common with the Grantors and others for ingress, egress, and the installation and maintenance of utility services appurtenant to the premises described in a deed recorded in Book 4157, Page 311, and appurtenant to a portion of said Gade Trust land conveyed to Mark Napolitano and Melissa Napolitano by deed recorded herewith, said easement over land described as follows:

Beginning at a point on and the southwesterly line of land now or formerly of Muriel E. Gade, Trustee of the Gade Trust, as described in a deed recorded in Book 4157, Page 311 of the Cumberland County Registry of Deeds, said point being 377 feet southeasterly from the assumed southerly sideline of Birchwood Road, so-called;

Thence southwesterly, perpendicular with said Gade Trust line, a distance of 50 feet to a point;

Thence southeasterly, parallel with and at all times 50' distant from said Gade Trust line, a distance of 530 feet to a point;

Thence northeasterly a distance of 50' to a point on said Gade Trust line, said point being 907 feet from the assumed southerly sideline of said Birchwood Road;

Thence northeasterly along said Gade Trust line a distance of 530 feet to the point of beginning.

Reference is made to a deed recorded in Book 10566, Page 94.

The preparer hereof has not investigated municipal zoning ordinance or municipal and state subdivision laws and has not examined title.

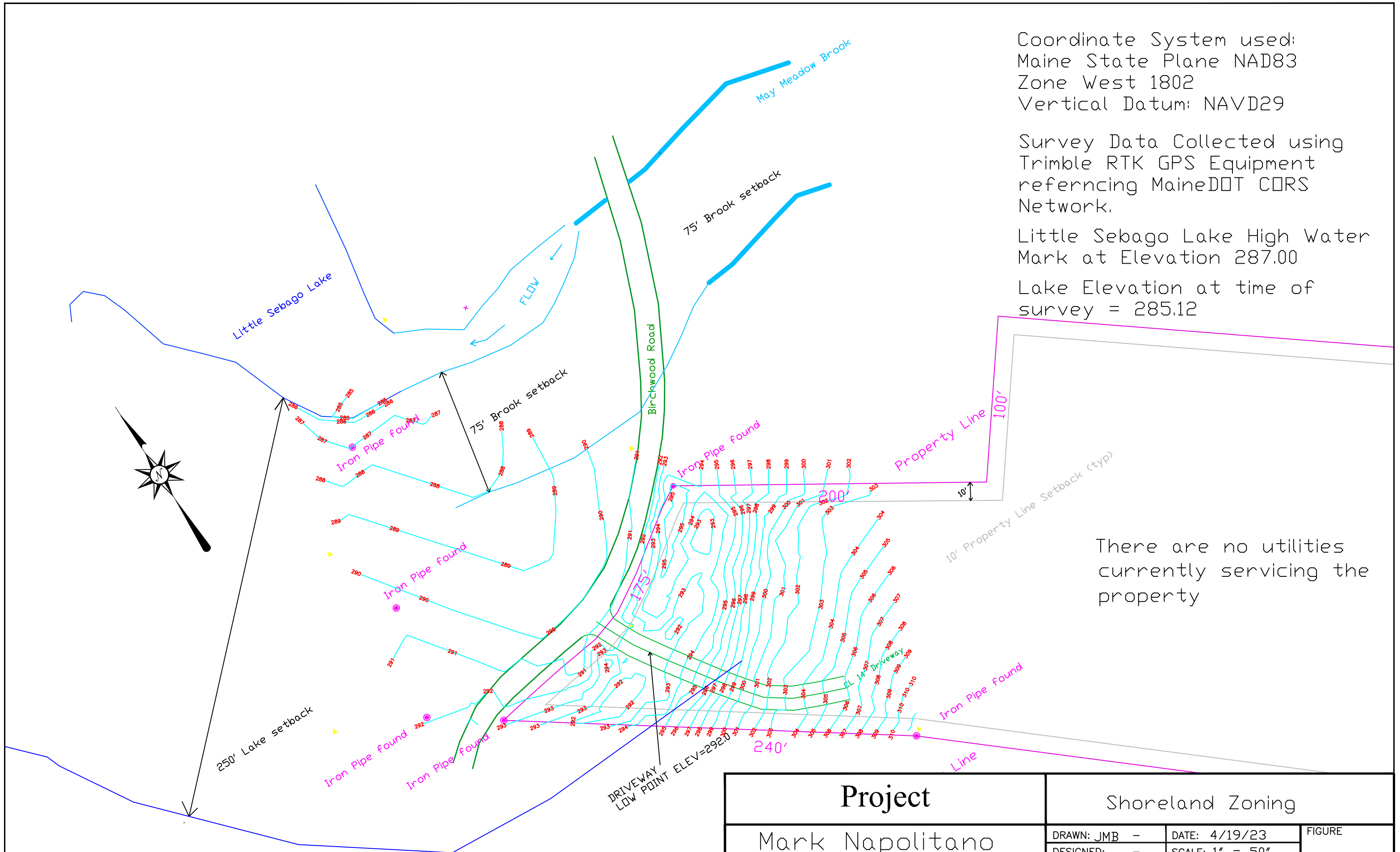
Received
Recorded Register of Deeds
Jan 25, 2023 11:05:47A
Cumberland County
Jessica M. Spaulding

Coordinate System used:
 Maine State Plane NAD83
 Zone West 1802
 Vertical Datum: NAVD29

Survey Data Collected using
 Trimble RTK GPS Equipment
 referncing MaineDOT CORS
 Network.

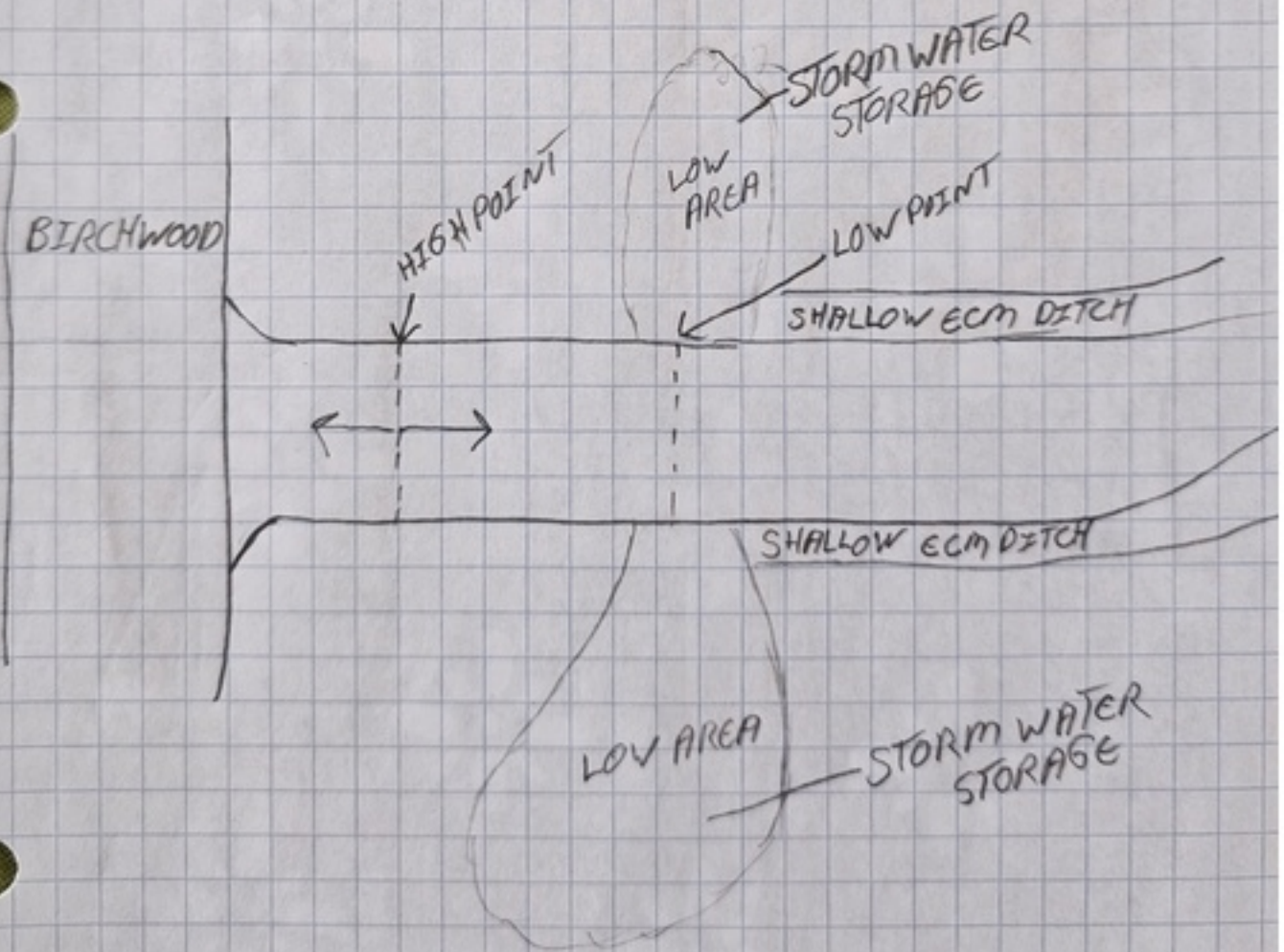
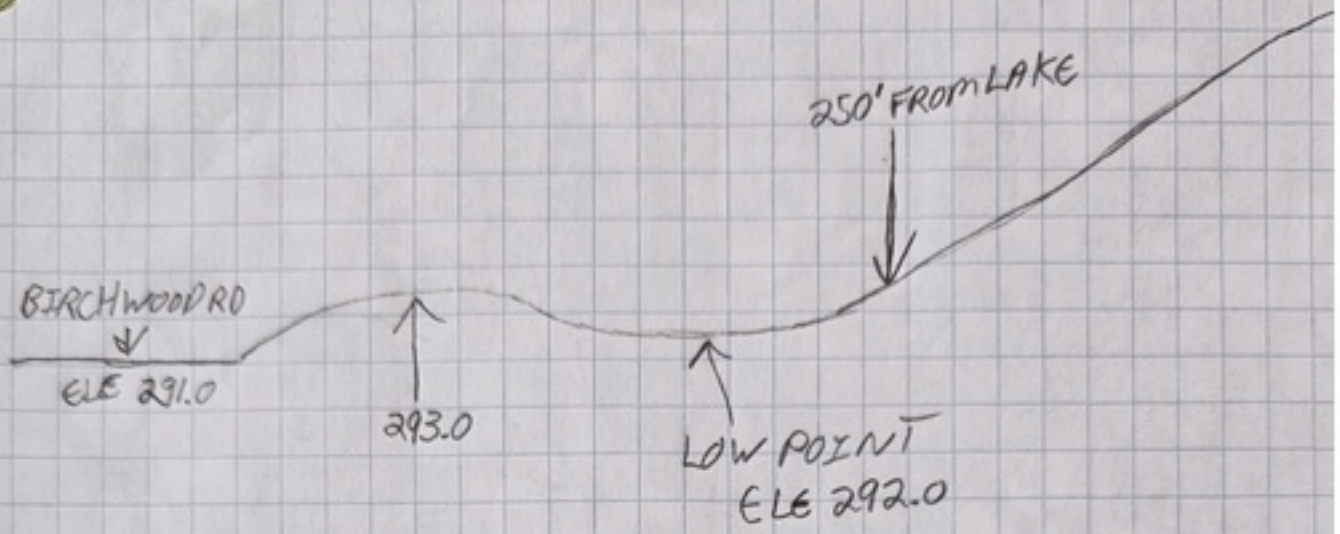
Little Sebago Lake High Water
 Mark at Elevation 287.00

Lake Elevation at time of
 survey = 285.12



There are no utilities
 currently servicing the
 property

Project Mark Napolitano Birchwood Road	Shoreland Zoning		FIGURE —
	DRAWN: JMB -	DATE: 4/19/23	
	DESIGNED: -	SCALE: 1" = 50"	
	CHECKED: -	FILE: -	
	FILE LOC: -		





400 Commercial Street, Suite 404
Portland, ME 04101
207.772.2891

May 15, 2023

Project 191.06051

Kristen Schulze Muszynski
Community Planner
Town of Gray
Municipal Complex
24 Main St., Gray, ME 04039

RE: Meadowview II
Amendment to Approved Site Plan
16 Hancock Street, Gray, Maine

Dear Kristen:

On behalf of Avesta Housing, we are pleased to submit an Amendment to the Approved Site Plan from June 9, 2022, showing changes of the orientation of the building/50' buffer, the stormwater alterations and the utilities connection. Enclosed you will also find a check for **\$350** to cover the fees associated with this Amendment.

Sincerely,

RANSOM CONSULTING, LLC.



ne, P.E.

Project Manager

In addition to the Site Plans (at the end of this packet in hardcopy and provided as a separate PDF in the electronic version), this application package includes the following:

1. Completed Application Form
2. Site Plans
3. Appendix F – Stormwater Management Plan



PLANNING BOARD/STAFF REVIEW COMMITTEE APPLICATION TOWN OF GRAY MAINE

PROPERTY TO BE DEVELOPED

Property Location/Address	Property Map/Lot
Zoning District	Lot Acreage
Owner Name	Tax Sheet
Owner Address	Owner Phone

APPLICANT

Name (IF different than owner)	Contact Phone Number
Mailing Address	Alternate Phone Number
Mailing City/State/Zip	Fax Number
Email Address	

AGENT/CONSULTANT

Name	Contact Phone Number
Mailing Address	Alternate Phone Number
Mailing City/State/Zip	Fax Number
Email Address	

PROJECT

The undersigned requests that the Town of Gray Planning Board consider the following application for:

- | | |
|--|--|
| <input type="checkbox"/> Subdivision
<input type="checkbox"/> Sketch Plan Review
<input type="checkbox"/> Preliminary Plan Review (Major)
<input type="checkbox"/> Final Plan Review (Major)
<input type="checkbox"/> Minor

<input type="checkbox"/> Site Plan Review
<input type="checkbox"/> Pre-Application Conference
<input type="checkbox"/> Minor
<input type="checkbox"/> Major

<input type="checkbox"/> Shoreland Zoning Permit | <input type="checkbox"/> Other (specify)
<input type="checkbox"/> Conditional Use
<input type="checkbox"/> Amendment
<input type="checkbox"/> Extension
<input type="checkbox"/> Workshop
<input type="checkbox"/> Contract Zone Request |
|--|--|

Project Description / Comments:

Applicant Signature	Date
----------------------------	-------------

MEADOWVIEW II AMENDMENT PROJECT NARRATIVE

Orientation of Building/50' Buffer

With the removal of easement on the adjacent parcel, a 50' buffer was no longer available with the previously approved building location. To that end, we have shifted the building further to the east and added a retaining wall to keep the required grading outside of the stream setback to the east. The egress from the building on the east side was eliminated to provide for the retaining wall. The parking was also adjusted with the building relocation. As the building was moving further eastward, the gazebo was eliminated from the plan. The fire access drive on the west side of the building, that was previously paved, will be built up using a grass paver system to provide structural support for the fire vehicles while also eliminating the pavement within the buffer. Similarly, the one-way access drive was re-aligned to maintain access for fire trucks, but keeping the paved surface outside of the 50' buffer.

Stormwater Alterations

Due to the removal of the wooded buffer for stormwater management, stormwater needed to be managed differently. The Gray ordinance allows for waiving the evaluation of pre and post development standards if a buffer is used. Since the buffer was removed, the stormwater needed to be managed for both stormwater quality (treatment) and stormwater quantity (pre- and post). The stormwater is now being proposed to be managed locally with the following:

- Roofline Drip Edge Filters
- Focal Point bioretention cells
- Grassed Underdrain Soil Filters
- Site Drip Edge Filters
- R-Tank subsurface storage systems

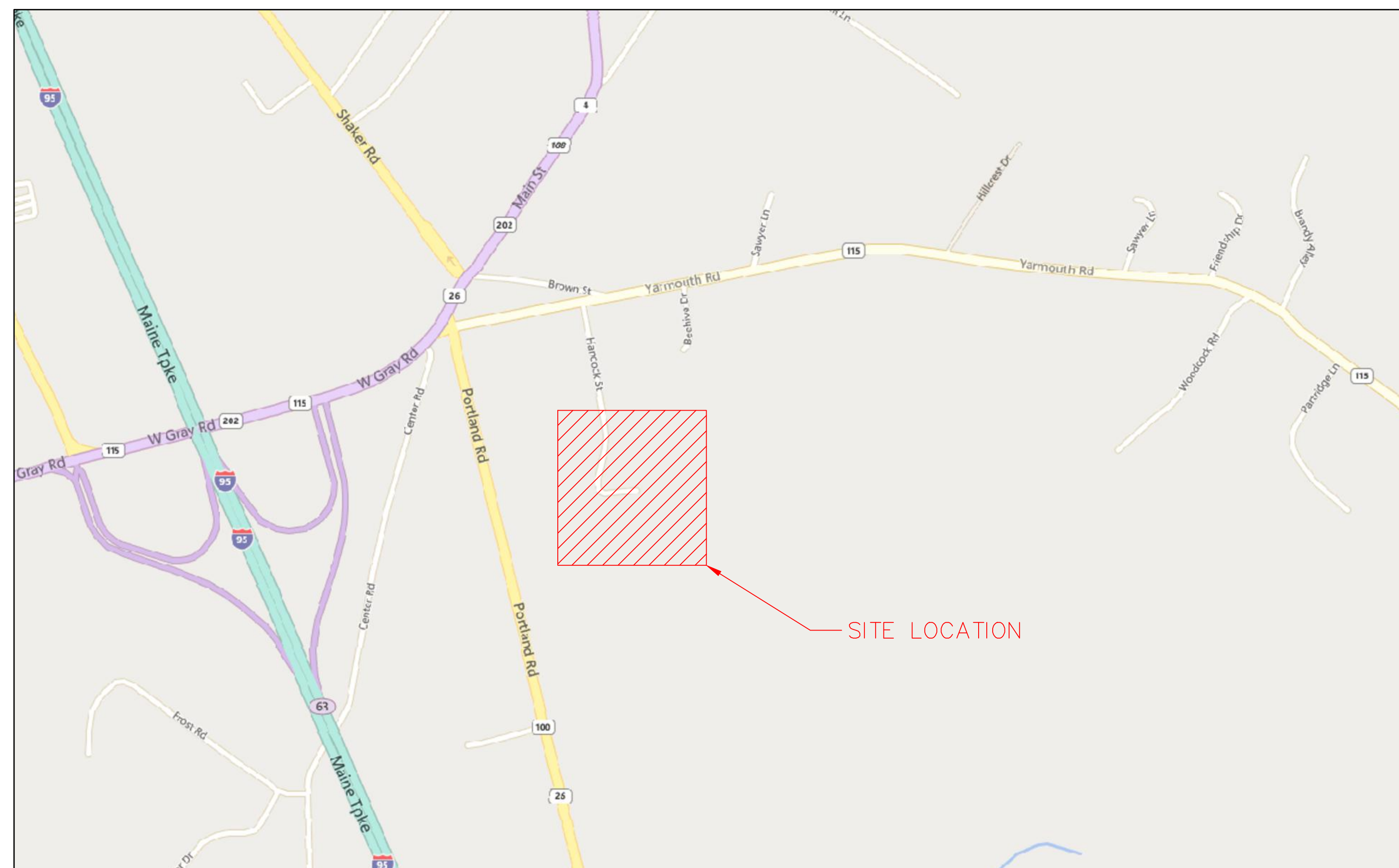
Utilities Connection

In addition to stormwater management and provisions for a 50' buffer, the previous easement agreement also allowed for 3 phase power to be brought to the site from the plaza. The elimination of the easement necessitated power to be brought in from Hancock street. This will require replacement of an existing pole and installation of new poles to bring in the 3 phase power.

MEADOWVIEW II

16 HANCOCK STREET
GRAY, MAINE

ISSUED FOR PERMITTING



SHEET INDEX:

SHEET	DESCRIPTION
	COVER SHEET
	BOUNDARY & TOPOGRAPHIC SURVEY SHEET 1
	BOUNDARY & TOPOGRAPHIC SURVEY SHEET 2
C1.0	OVERALL SITE INVENTORY PLAN
C1.1	SUBDIVISION PLAN
C1.2	SITE PLAN
C1.3	GRADING, EROSION CONTROL AND DRAINAGE PLAN
C1.4	UTILITY PLAN
C1.5	SEPTIC SECTION
C2.1	EROSION AND SEDIMENTATION CONTROL PLAN NOTES AND DETAILS
C2.2	SITE AND UTILITY DETAILS
C2.3	UTILITY DETAILS
C2.4	GRADING AND STORMWATER DETAILS
C2.5	GRADING AND STORMWATER DETAILS
C2.6	GRADING AND STORMWATER DETAILS
L-1	LANDSCAPE AND LIGHTING PLAN
	ARCHITECTURAL PLANS
	PHOTOMETRIC PLAN

OWNER:



AVESTA HOUSING DEVELOPMENT CORPORATION
307 Cumberland Avenue
Portland, ME 04101

ENGINEER:



400 Commercial Street, Suite 404
Portland, ME 04101
Tel. (207) 772-2891
Fax (207) 772-3248
www.ransomenv.com

ARCHITECT:



JSA DESIGN
273 Corporate Drive, Suite 100
Portsmouth, NH 03801

LANDSCAPE ARCHITECT:



RASOR LANDSCAPE ARCHITECTURE
87 Main Street
Yarmouth, ME 04096

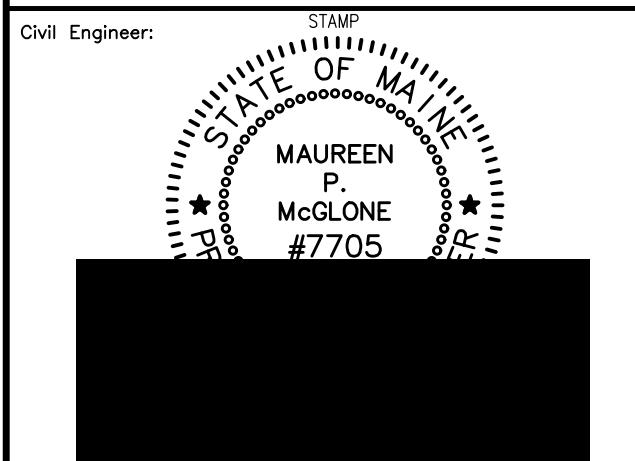
SURVEYOR:



OWEN HASKELL, INC.
390 US Route 1, Unit 10
Falmouth, ME 04105

Site:
AVESTA GRAY MEADOWVIEW II
16 HANCOCK STREET
GRAY, MAINE

Prepared for:
AVESTA HOUSING
307 CUMBERLAND AVENUE
PORTLAND, MAINE, 04101



MAUREEN P. MCGCLONE, PE #7705
RANSOM CONSULTING, LLC
400 COMMERCIAL STREET, SUITE 404
PORTLAND, ME 04101
207-772-2891

Architect:
JSA DESIGN
273 CORPORATE DRIVE, SUITE 100
PORTSMOUTH, NH, 03801

Structural/Mechanical:
ALLIED ENGINEERING, INC.
160 VERANDA STREET
PORTLAND, MAINE, 04103

Soil Scientist/Site Evaluator:
ALBERT FRICK ASSOCIATES, INC.
380B MAIN STREET
GORHAM, MAINE, 04038

Landscape Architect:
RASOR LANDSCAPE ARCHITECTURE
87 MAIN STREET
YARMOUTH, MAINE, 04096

Surveyor:
OWEN HASKELL, INC.
390 US ROUTE 1, UNIT 10
FALMOUTH, MAINE, 04105

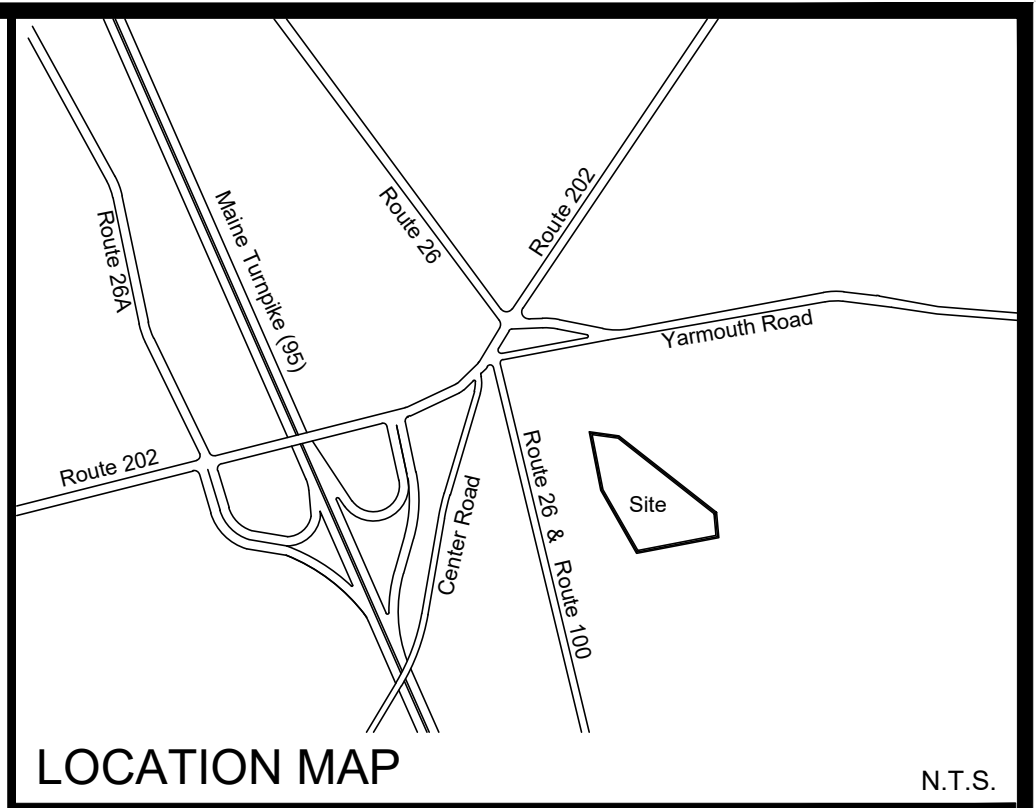
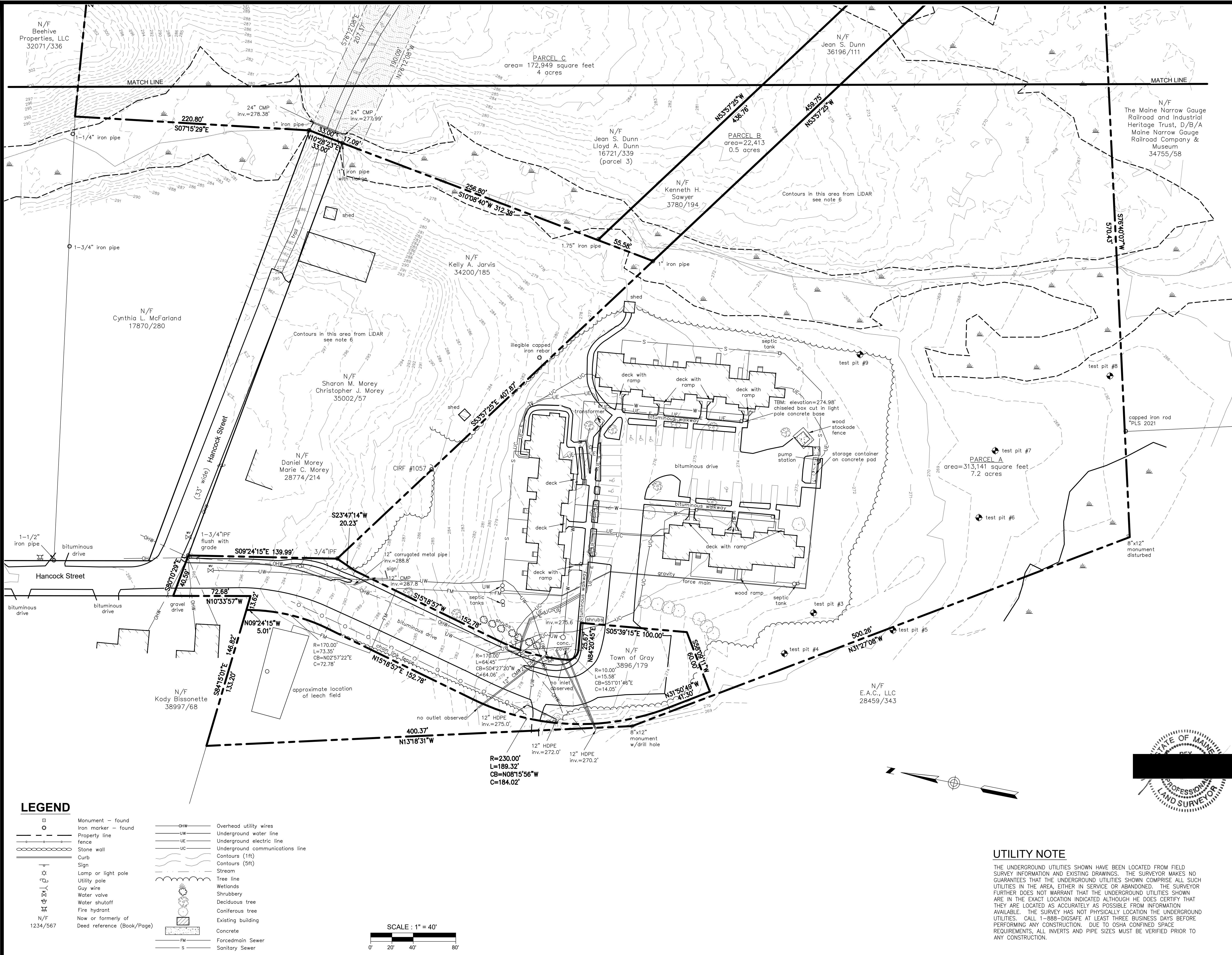


400 Commercial Street, Suite 404
Portland, ME 04101
Tel. (207) 772-2891
Fax (207) 772-3248
www.ransomenv.com

No.	Revision/Issue	Date
C	PLANNING BOARD AMMENDMENT/ MSHA REVIEW	5/11/23
B	PLANNING BOARD/DEP REVIEW	5/19/22
A	PERMITTING	1/28/22

Design by:	DJV	Checked by:	MPM
Drawn by:	DJV	Approved by:	JIM/MPM
Project:	191.06051	Date:	DECEMBER 2019

Sheet No:
COVER



PLAN REFERENCES

- BOUNDARY RETRACEMENT SURVEY OF THE GRAY MARKETPLACE OF THE PROPERTY LOCATED ALONG STATE ROUTES 26 & 100 GRAY, MAINE FOR DANIEL P. CRAFFEY BY PIONEER SURVEYING & MAPPING SERVICES, DATED FEBRUARY 2009 AND REVISED 11/23/09 & 02/02/2010 AS RECORDED IN PLAN BOOK 211, PAGE 34.
- STANDARD BOUNDARY SURVEY PROPERTY PLAN OF LOT CONFIGURATION 20-24 SKILLINGS STREET-GRAY, MAINE MADE FOR RICHARD & PATRICIA BARTER 22 HANCOCK STREET-GRAY, MAINE 04039 BY JOHN D. PALMITER, PLS 1057 DATED NOVEMBER 12, 2008 AS RECORDED IN PLAN BOOK 209, PAGE 167.
- PLAN OF PROPERTY FOR GRAY HOUSING INC. IN GRAY, MAINE BY JOHN D. PALMITER DATED JULY 1974 AS RECORDED IN PLAN BOOK 110, PAGE 9.
- PLAN OF PROPERTY FOR GRAY PLAZA INC. DATED APRIL, 1974 AND REVISED THROUGH SEPTEMBER 27, 1995 AS RECORDED IN PLAN BOOK 197, PAGE 16.
- SURVEY OF LEROY VERRILL PROPERTY IN GRAY, MAINE BY JOHN D. PALMITER R.L.S. #1057 DATED MARCH 1981 AS RECORDED IN PLAN BOOK 135, PAGE 21.
- BOUNDARY AND TOPOGRAPHIC SURVEY OF MEADOWVIEW, 16 HANCOCK STREET, GRAY, MAINE MADE FOR RANSOM CONSULTING, INC. JULY 19, 2019 BY TITCOMB ASSOCIATES.

GENERAL NOTES

- OWNERS OF RECORD:
 PARCEL A - GRAY SENIOR HOUSING, INC. C.C.R.D. BOOK 3676, PAGE 265 AND BOOK 3605, PAGE 257
 PARCEL B & B1 - JEAN S. DUNN C.C.R.D. BOOK 36196, PAGE 111
 PARCEL C AND C1 - JEAN S. DUNN AND LLOYD A. DUNN C.C.R.D. BOOK 16721, PAGE 339
- BEARINGS ARE REFERENCED TO GRID NORTH, MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE, NAD83.
- ELEVATIONS ARE BASED ON GPS OBSERVATIONS, NAVD88 DATUM. BENCHMARK IS A CHISELED BOX CUT IN SOUTHEASTERN MOST LIGHT POLE CONCRETE BASE, AS DEPICTED ON THIS PLAN. ELEVATION: 274.98'
- UTILITY INFORMATION ON THIS PLAN IS APPROXIMATE, BASED ON LOCATION OF VISIBLE FEATURES. DIGSAFE AND/OR THE APPROPRIATE UTILITIES SHOULD BE CONTACTED PRIOR TO ANY CONSTRUCTION.
- WETLAND DELINEATION BY C.C. DORIAN GEOLOGICAL SERVICES, LLC OF 200 HIGH STREET, SUITE #20 PORTLAND, MAINE 04101.
- CONTOURS IN THIS AREA HAVE BEEN GENERATED WITH MAINE OFFICE OF GIS LIDAR DATA AND HAVE NOT BEEN FIELD VERIFIED.
- SANITARY SEWER LINE LOCATIONS ARE APPROXIMATE BASED ON DESIGN PLANS AND HAVE NOT BEEN FIELD VERIFIED.

EASEMENTS / ENCUMBRANCES

- PROPERTY IS SUBJECT TO A UTILITY EASEMENT CONVEYED TO THE PINE TREE TELEPHONE AND TELEGRAPH CO. BY GRAY PLAZA, INC. RECORDED IN BOOK 3798, PAGE 166.
- PROPERTY IS SUBJECT TO A UTILITY EASEMENT CONVEYED TO CENTRAL MAINE POWER COMPANY, INC. BY GRAY SENIOR HOUSING, INC. RECORDED IN BOOK 3723, PAGE 1.

CERTIFICATE

OWEN HASKELL, INC. HEREBY CERTIFIES THAT THIS PLAN IS BASED ON, AND THE RESULT OF, AN ON THE GROUND FIELD SURVEY AND THAT TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, IT CONFORMS TO THE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS CURRENT STANDARDS OF PRACTICE.

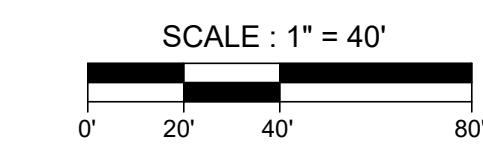
REX J. CROTEAU, PLS #2273
 DATE _____

Boundary & Topographic Survey
 Of
Meadowview
 16 Hancock Street, Gray, Maine
 Made for
Ransom Consulting, LLC
 400 Commercial St., Ste 404, Portland, Maine

OWEN HASKELL, INC.
 PROFESSIONAL LAND SURVEYORS
 390 US ROUTE 1, UNIT 10, FALMOUTH, ME 04105 TEL. 207-774-0424
 DRAWN BY: RJC/JLW DATE: JAN. 12, 2022 JOB NO. 2022-006 GR
 CHECKED BY: RJC SCALE: 1" = 40' DRWG. NO. 1

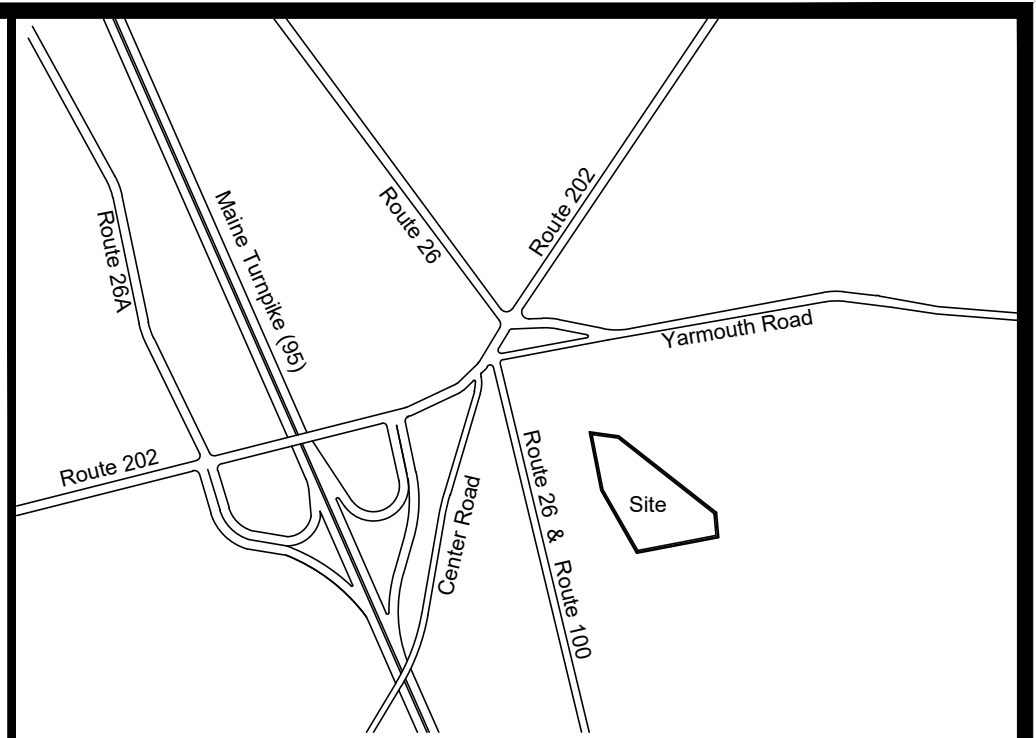
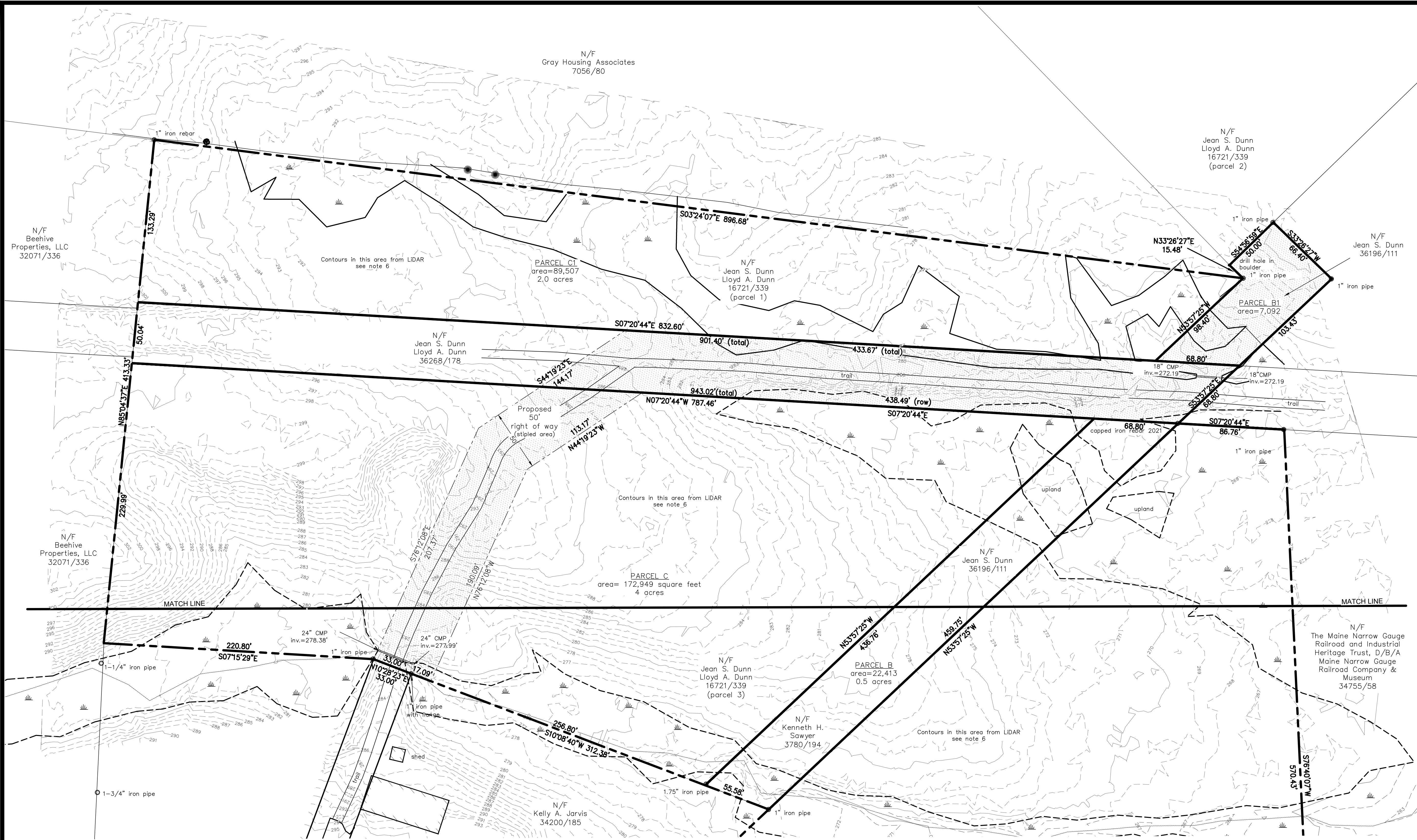
LEGEND

	Monument - found		Overhead utility wires
	Iron marker - found		Underground water line
	Property line		Underground electric line
	fence		Underground communications line
	Stone wall		Contours (1ft)
	Curb		Contours (5ft)
	Sign		Stream
	Lamp or light pole		Tree line
	Utility pole		Wetlands
	Guy wire		Shrubbery
	Water valve		Deciduous tree
	Water shutoff		Coniferous tree
	Fire hydrant		Existing building
	Now or formerly of		Concrete
	Deed reference (Book/Page)		Forcedmain Sewer
			Sanitary Sewer



UTILITY NOTE
 THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEY HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. CALL 1-888-DIGSAFE AT LEAST THREE BUSINESS DAYS BEFORE PERFORMING ANY CONSTRUCTION. DUE TO OSHA CONFINED SPACE REQUIREMENTS, ALL INVERTS AND PIPE SIZES MUST BE VERIFIED PRIOR TO ANY CONSTRUCTION.





LOCATION MAP N.T.S.

PLAN REFERENCES

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CERTIFICATE

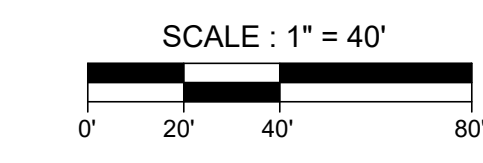
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REX J. CROTEAU, PLS #2273
 DATE



LEGEND

<ul style="list-style-type: none"> □ Monument - found ○ Iron marker - found --- Property line --- fence --- Stone wall --- Curb --- Sign ☆ Lamp or light pole ○ Utility pole --- Guy wire --- Water valve --- Water shutoff --- Fire hydrant N/F Now or formerly of 1234/567 Deed reference (Book/Page) 	<ul style="list-style-type: none"> --- OHW Overhead utility wires --- UW Underground water line --- UE Underground electric line --- UC Underground communications line --- Contours (1ft) --- Contours (5ft) --- Stream --- Tree line --- Wetlands --- Shrubby --- Deciduous tree --- Coniferous tree --- Existing building --- Concrete --- FM Forcemain Sewer --- S Sanitary Sewer
--	---

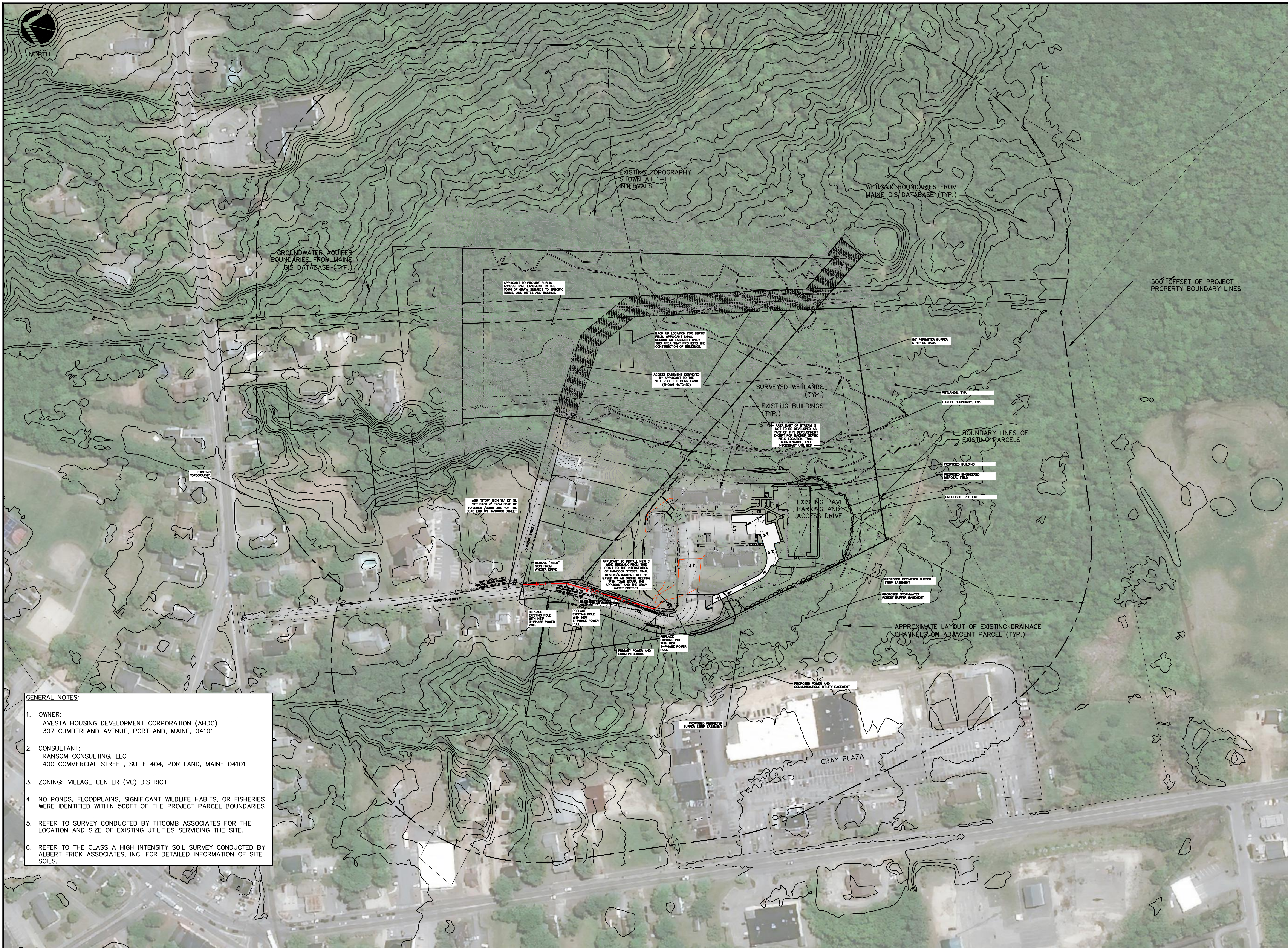


UTILITY NOTE

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Boundary & Topographic Survey
 Of
Meadowview
 16 Hancock Street, Gray, Maine
 Made for
Ransom Consulting, LLC
 400 Commercial St., Ste 404, Portland, Maine

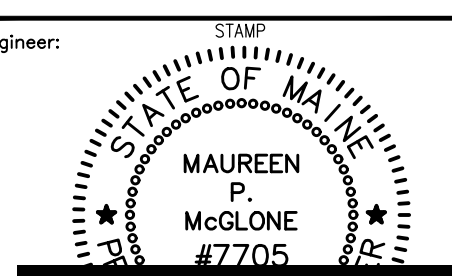
OWEN HASKELL, INC.			
PROFESSIONAL LAND SURVEYORS			
390 US ROUTE 1, UNIT 10, FALMOUTH, ME 04105 TEL. 207-774-0424			
DRAWN BY: RJC/JLW	DATE: JAN. 12, 2022	JOB NO. 2022-006 GR	
CHECKED BY: RJC	SCALE: 1" = 40'	DRWG. NO. 2	



- GENERAL NOTES:**
1. OWNER:
AVESTA HOUSING DEVELOPMENT CORPORATION (AHDC)
307 CUMBERLAND AVENUE, PORTLAND, MAINE, 04101
 2. CONSULTANT:
RANSOM CONSULTING, LLC
400 COMMERCIAL STREET, SUITE 404, PORTLAND, MAINE 04101
 3. ZONING: VILLAGE CENTER (VC) DISTRICT
 4. NO PONDS, FLOODPLAINS, SIGNIFICANT WILDLIFE HABITS, OR FISHERIES WERE IDENTIFIED WITHIN 500FT OF THE PROJECT PARCEL BOUNDARIES
 5. REFER TO SURVEY CONDUCTED BY TITCOMB ASSOCIATES FOR THE LOCATION AND SIZE OF EXISTING UTILITIES SERVICING THE SITE.
 6. REFER TO THE CLASS A HIGH INTENSITY SOIL SURVEY CONDUCTED BY ALBERT FRICK ASSOCIATES, INC. FOR DETAILED INFORMATION OF SITE SOILS.

AVESTA GRAY MEADOWVIEW II
16 HANCOCK STREET
GRAY, MAINE

Prepared for:
AVESTA HOUSING
307 CUMBERLAND AVENUE
PORTLAND, MAINE, 04101

Civil Engineer:

MAUREEN P. MCGLONE, PE #7705
 RANSOM CONSULTING, LLC
 400 COMMERCIAL STREET, SUITE 404
 PORTLAND, ME 04101
 207-772-2891

Architect:
JSA DESIGN
273 CORPORATE DRIVE, SUITE 100
PORTSMOUTH, NH, 03801

Structural/Mechanical:
ALLIED ENGINEERING, INC.
160 VERANDA STREET
PORTLAND, MAINE, 04103

Soil Scientist/Site Evaluator:
ALBERT FRICK ASSOCIATES, INC.
380B MAIN STREET
GORHAM, MAINE, 04038

Landscape Architect:
RASOR LANDSCAPE ARCHITECTURE
87 MAIN STREET
YARMOUTH, MAINE, 04096

Surveyor:
OWEN HASKELL, INC.
390 US ROUTE 1, UNIT 10
FALMOUTH, MAINE, 04105

SCALE
0 50 100 200
SCALE in FEET
1"=100'

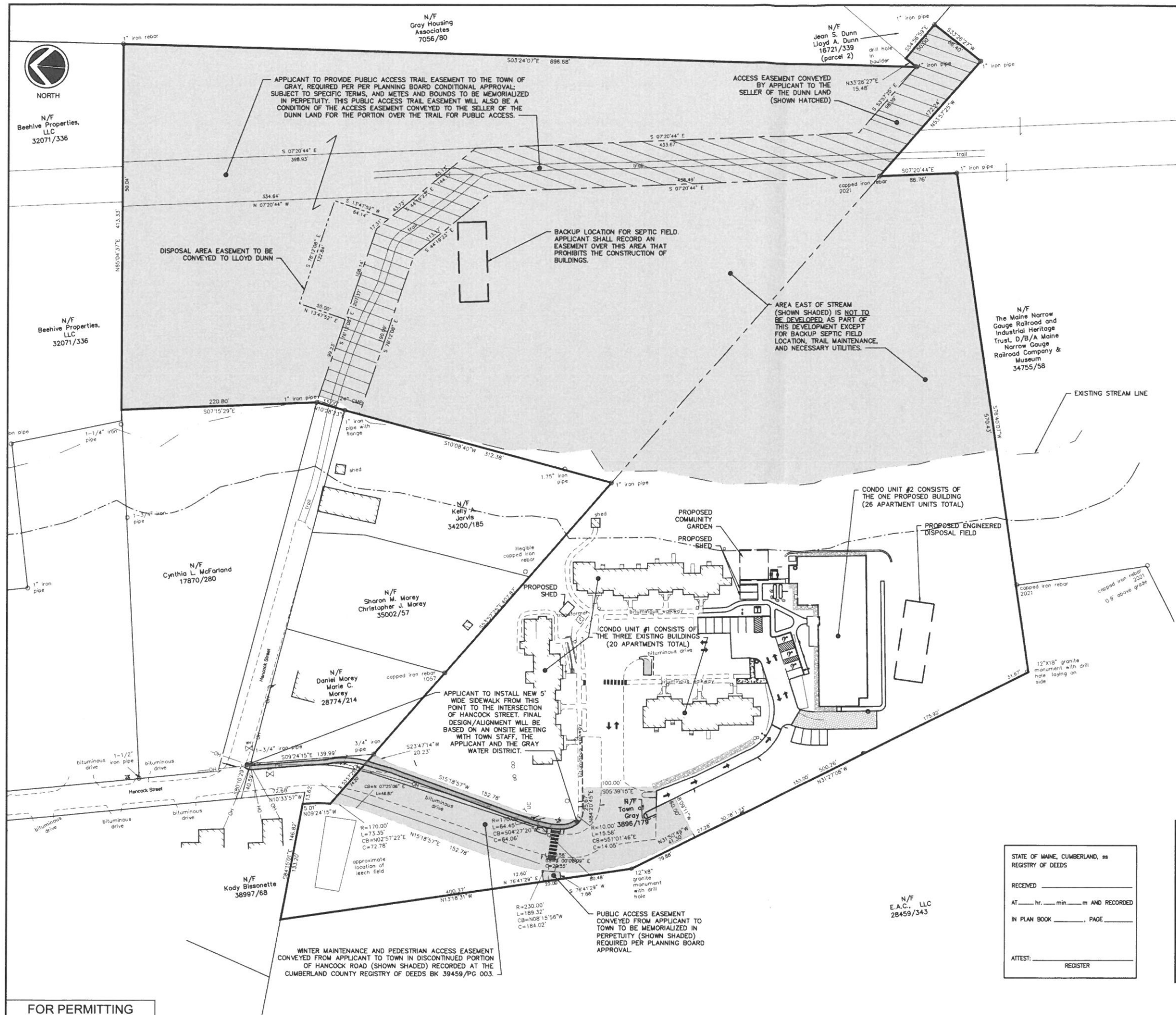
RANSOM Consulting, LLC.
400 Commercial Street, Suite 404
Portland, ME 04101
Tel. (207) 772-2891
Fax (207) 772-3248
www.ransomctv.com

SITE INVENTORY PLAN

C	PLANNING BOARD AMMENDMENT/ MSHA REVIEW	5/11/23
B	PLANNING BOARD/DEP REVIEW	5/19/22
A	PERMITTING	1/28/22
No.	Revision/Issue	Date

Design by:	DJV	Checked by:	MPM
Drawn by:	DJV	Approved by:	JIM/MPM
Project:	191.06051	Date:	DECEMBER 2019

Sheet No: **C1.0**

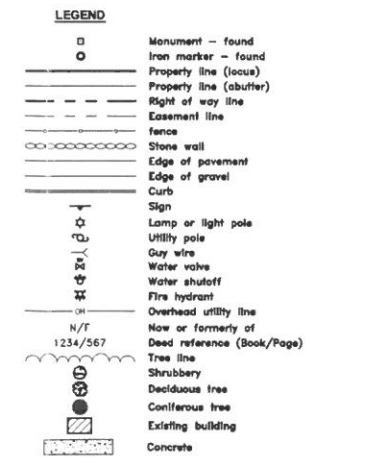


- NOTES**
- 1) Plan, Book and Page references are to the Cumberland County Registry of Deeds unless otherwise noted.
 - 2) Bearings are referenced to grid north, Maine State Plane Coordinate System, NAD83, West Zone.
 - 3) Utility information on this plan is approximate, based on location of visible features. DigSafe and/or the appropriate utilities should be contacted prior to any construction.
 - 4) Stormwater forest buffer shall be delineated in accordance with Maine DEP standards.
 - 5) The PB at its June 9, 2022 meeting voted 4-0, to approve the following waivers:
 - A. The provisions of the Town of Gray Zoning Ordinance, 401.13.12 G, requiring the stormwater management plan to comply with flooding standards of Maine DEP Chapter 500.

- EASEMENTS / ENCUMBRANCES**
- 1) Property is subject to a utility easement conveyed to the Pine Tree Telephone and Telegraph Co. by Gray Plaza, Inc. recorded in Book 379B, Page 166.
 - 2) Property is subject to a utility easement conveyed to Central Maine Power Company, Inc. by Gray Senior Housing, Inc. recorded in Book 3723, Page 1.

- PLAN REFERENCES**
- 1) Boundary Retracement Survey of the Gray Marketplace of the property located along State Routes 26 & 100 Gray, Maine for Daniel P. Craftley by Planner Surveying & Mapping Services, dated February 2009 and revised 11/23/09 & 02/02/2010 as recorded in Plan Book 211, Page 34.
 - 2) Standard Boundary Survey Property Plan of Lot Configuration 20-24 Stallings Street-Gray, Maine Made for Richard & Patricia Barter 22 Hancock Street-Gray, Maine 04039 by John D. Palmiter, PLS 1057 dated November 12, 2008 as recorded in Plan Book 209, Page 167.
 - 3) Plan of Property for Gray Housing Inc. in Gray, Maine by John D. Palmiter dated July 1974 as recorded in Plan Book 110, Page 9.
 - 4) Plan of Property for Gray Plaza Inc. dated April, 1974 and revised through September 27, 1995 as recorded in Plan Book 197, Page 16.
 - 5) Survey of Leroy Verrill Property in Gray, Maine by John D. Palmiter R.L.S. #1057 dated March 1981 as recorded in Plan Book 135, Page 21.
 - 6) Boundary and Topographic Survey made for Ransom Consulting, Inc. by Owen Haskell, Inc. dated January 12, 2022.

- OWNERS OF RECORD**
- Gray Senior Housing, Inc: Book 3676, Page 265 and Book 3605, Page 257
 Kenneth H. Sawyer Book 3780, Page 194
 Jean S. Dunn and Lloyd A. Dunn Book 16721, Page 339 and Book 36268, Page 178



STATE OF MAINE, CUMBERLAND, ss
 REGISTRY OF DEEDS

RECEIVED _____

AT _____ hr. _____ min. _____ m AND RECORDED

IN PLAN BOOK _____, PAGE _____

ATTEST: _____

REGISTER

TOWN OF GRAY PLANNING BOARD

CHAIRMAN _____

BOARD MEMBERS _____

DATE _____

"CONDITIONALLY APPROVED: TOWN OF GRAY PLANNING BOARD"

AVESTA GRAY MEADOWVIEW II
 16 HANCOCK STREET
 GRAY, MAINE

Prepared for:
AVESTA HOUSING
 307 CUMBERLAND AVENUE
 PORTLAND, MAINE, 04101

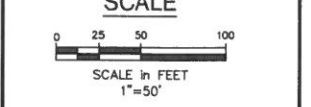
Architect:
JSA DESIGN
 273 CORPORATE DRIVE, SUITE 100
 PORTSMOUTH, NH, 03801

Structural/Mechanical:
ALLIED ENGINEERING, INC.
 160 VERANDA STREET
 PORTLAND, MAINE, 04103

Soil Scientist/Site Evaluator:
ALBERT FRICK ASSOCIATES, INC.
 380B MAIN STREET
 GORHAM, MAINE, 04038

Landscape Architect:
RASOR LANDSCAPE ARCHITECTURE
 87 MAIN STREET
 YARMOUTH, MAINE, 04096

Surveyor:
OWEN HASKELL, INC.
 390 US ROUTE 1, UNIT 10
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RANSOM
 Consulting, LLC.

800 Commercial Street, Suite 404
 Portland, ME 04101
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 Fax: (207) 772-2248
 www.ransomem.com

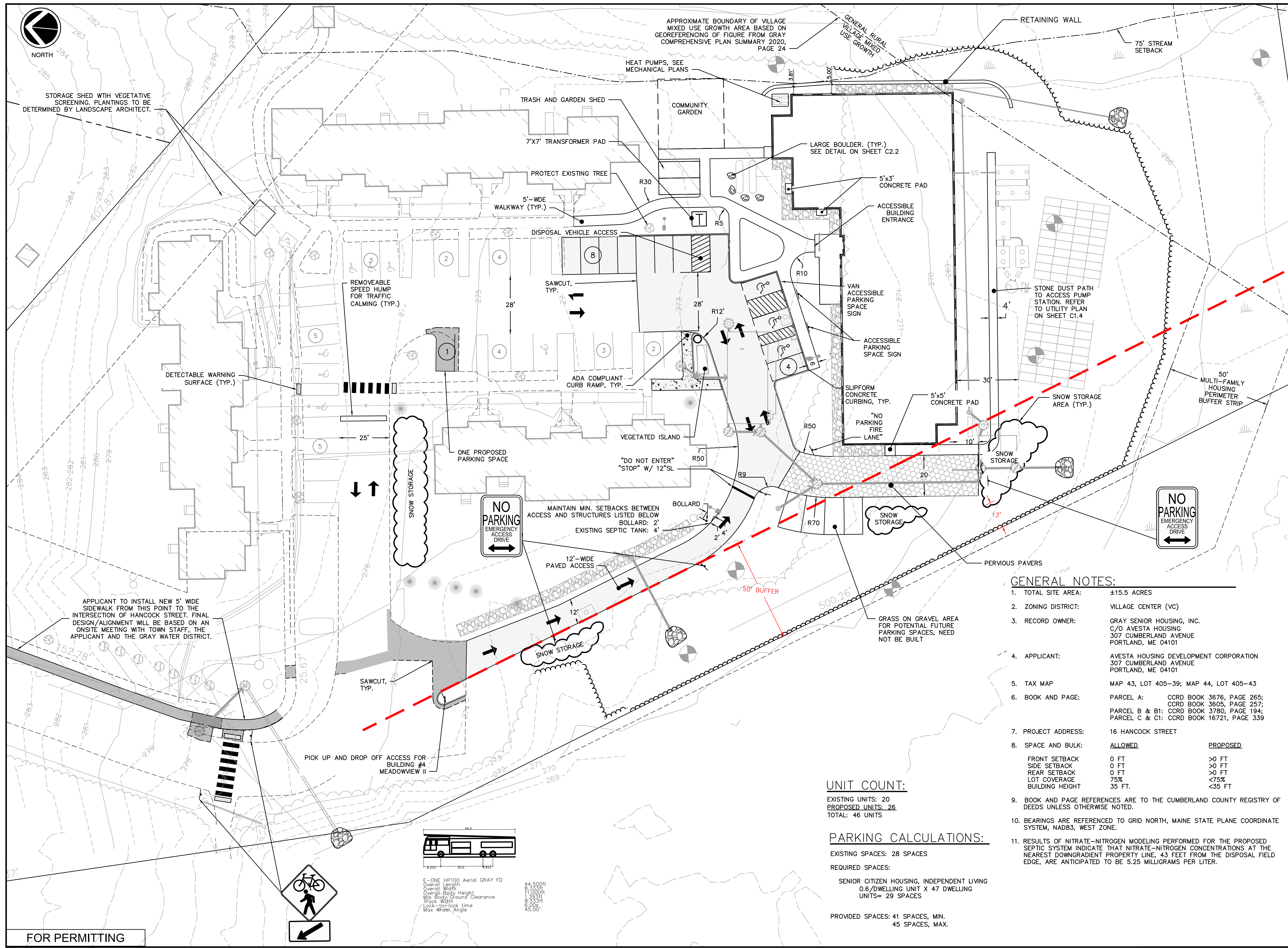
SUBDIVISION PLAN

No.	Revision/Issue	Date
C	PLANNING BOARD AMENDMENT/MSHA REVIEW	5/11/23
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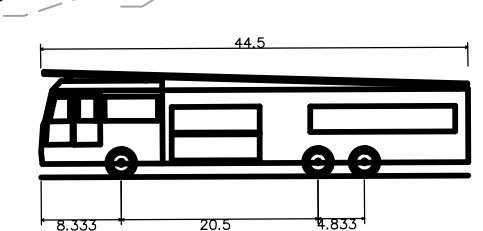
Design by:	DJV	Checked by:	MPM
Drawn by:	DJV	Approved by:	JIM/MPM
Project:	191.06051	Date:	DECEMBER 2019

C1.1

FOR PERMITTING



FOR PERMITTING



E-ONE HP100 Aerial GRAY FD
 Overall Length 44.500ft
 Overall Width 8.335ft
 Overall Body Height 11.000ft
 Min Body/Ground Clearance 8.335ft
 Track Width 6.965ft
 Lock-to-lock time
 Max Wheel Angle 45.00°

APPROXIMATE BOUNDARY OF VILLAGE MIXED USE GROWTH AREA BASED ON GEOREFERENCING OF FIGURE FROM GRAY COMPREHENSIVE PLAN SUMMARY 2020, PAGE 24

GENERAL NOTES:

- TOTAL SITE AREA: ±15.5 ACRES
- ZONING DISTRICT: VILLAGE CENTER (VC)
- RECORD OWNER: GRAY SENIOR HOUSING, INC. C/O AVESTA HOUSING 307 CUMBERLAND AVENUE PORTLAND, ME 04101
- APPLICANT: AVESTA HOUSING DEVELOPMENT CORPORATION 307 CUMBERLAND AVENUE PORTLAND, ME 04101
- TAX MAP: MAP 43, LOT 405-39; MAP 44, LOT 405-43
- BOOK AND PAGE: PARCEL A: CCRD BOOK 3676, PAGE 265; CCRD BOOK 3605, PAGE 257; PARCEL B & B1: CCRD BOOK 3780, PAGE 194; PARCEL C & C1: CCRD BOOK 16721, PAGE 339
- PROJECT ADDRESS: 16 HANCOCK STREET
- SPACE AND BULK:

	ALLOWED	PROPOSED
FRONT SETBACK	0 FT	>0 FT
SIDE SETBACK	0 FT	>0 FT
REAR SETBACK	0 FT	>0 FT
LOT COVERAGE	75%	<75%
BUILDING HEIGHT	35 FT.	<35 FT
- BOOK AND PAGE REFERENCES ARE TO THE CUMBERLAND COUNTY REGISTRY OF DEEDS UNLESS OTHERWISE NOTED.
- BEARINGS ARE REFERENCED TO GRID NORTH, MAINE STATE PLANE COORDINATE SYSTEM, NAD83, WEST ZONE.
- RESULTS OF NITRATE-NITROGEN MODELING PERFORMED FOR THE PROPOSED SEPTIC SYSTEM INDICATE THAT NITRATE-NITROGEN CONCENTRATIONS AT THE NEAREST DOWNGRADE PROPERTY LINE, 43 FEET FROM THE DISPOSAL FIELD EDGE, ARE ANTICIPATED TO BE 5.25 MILLIGRAMS PER LITER.

UNIT COUNT:

EXISTING UNITS: 20
 PROPOSED UNITS: 26
 TOTAL: 46 UNITS

PARKING CALCULATIONS:

EXISTING SPACES: 28 SPACES
 REQUIRED SPACES:
 SENIOR CITIZEN HOUSING, INDEPENDENT LIVING 0.6/DWELLING UNIT X 47 DWELLING UNITS= 29 SPACES
 PROVIDED SPACES: 41 SPACES, MIN. 45 SPACES, MAX.

AVESTA GRAY MEADOWVIEW II
 16 HANCOCK STREET GRAY, MAINE

Prepared for:
AVESTA HOUSING
 307 CUMBERLAND AVENUE
 PORTLAND, MAINE, 04101

Civil Engineer:

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SCALE
 0 10 20 40
 SCALE in FEET
 1"=20'

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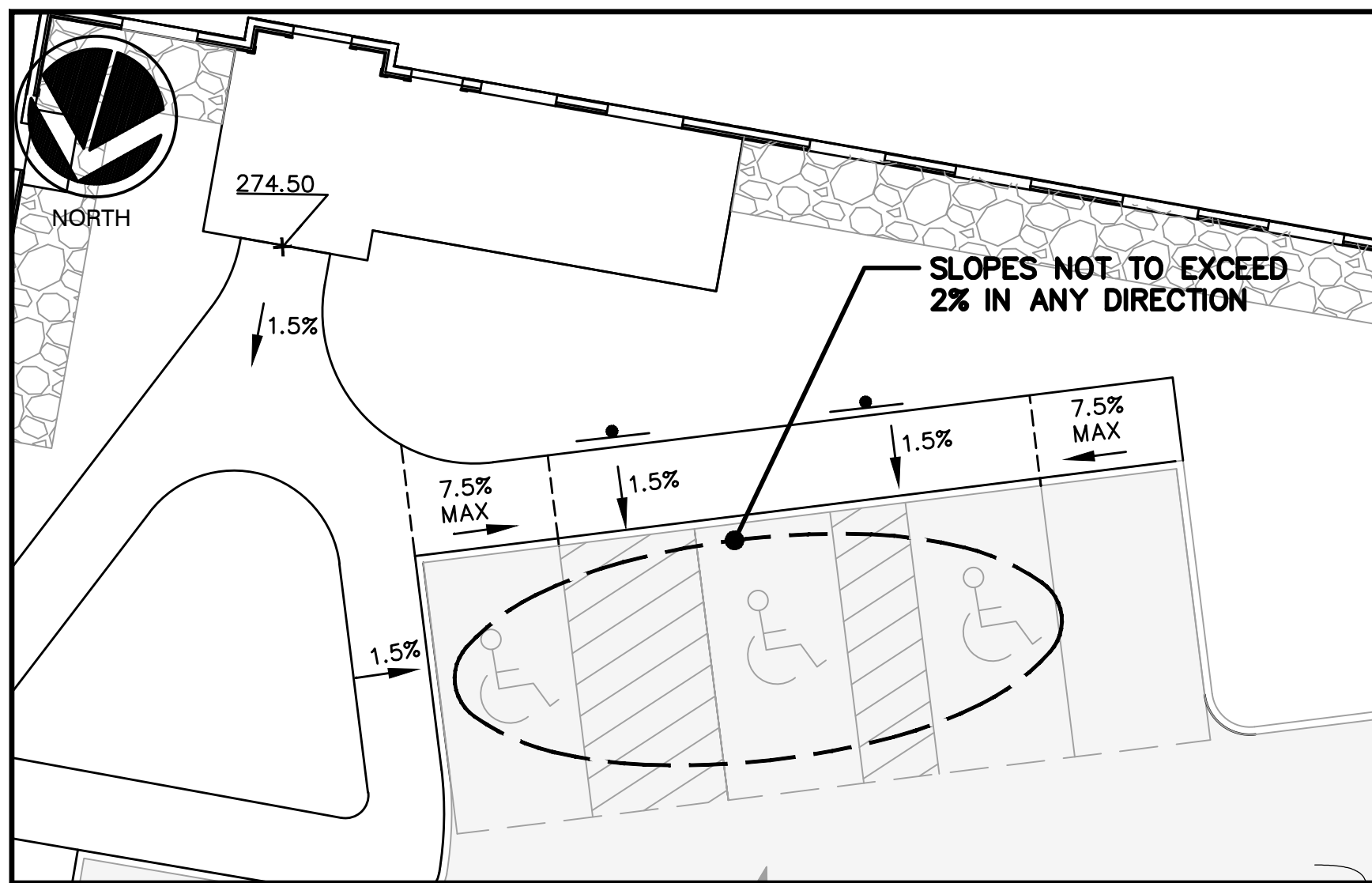
SITE PLAN

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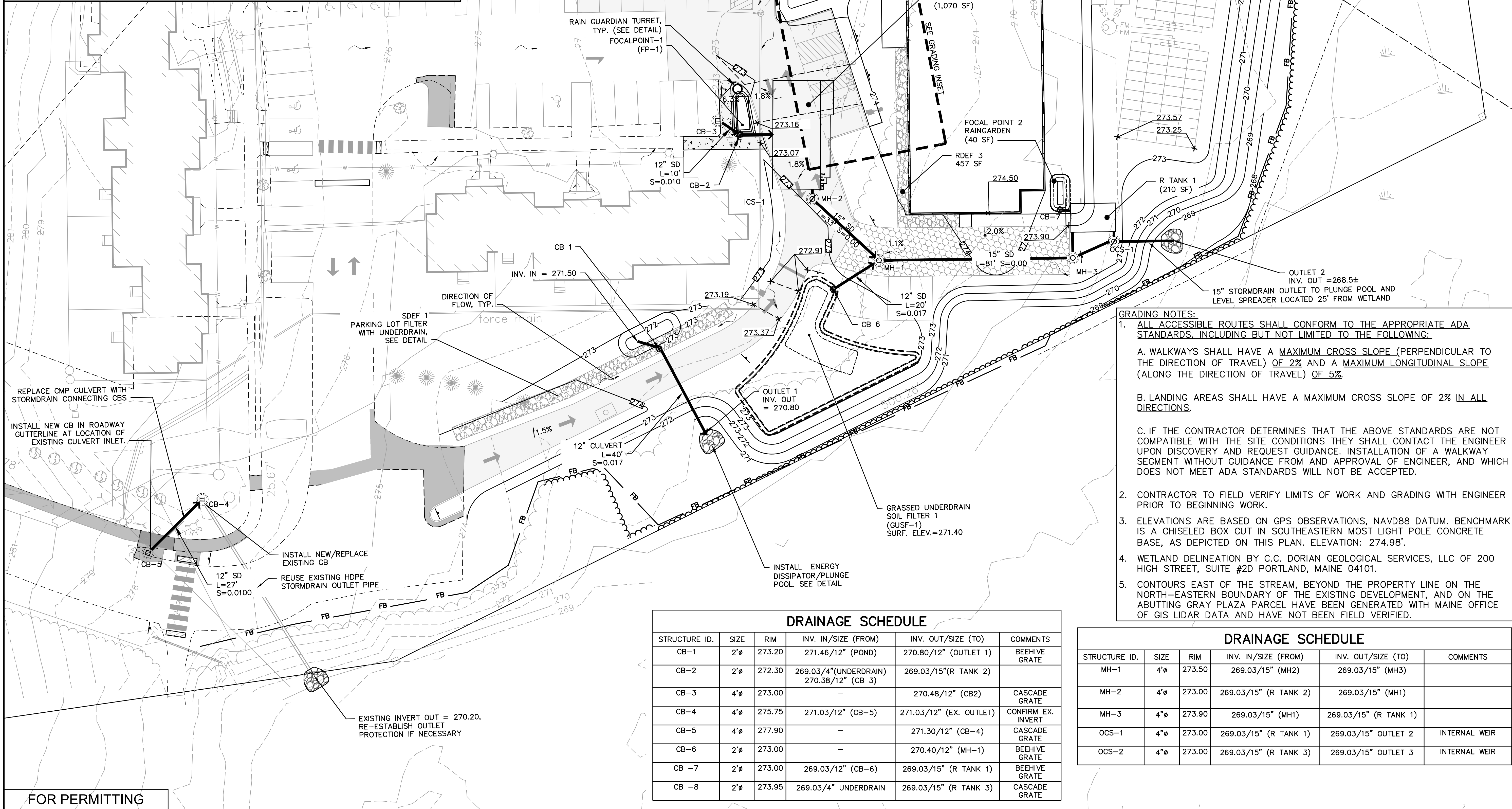
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DJV	MPM
Drawn by:	Approved by:
DJV	JIM/MPM

Project:	Date:
191.06051	DECEMBER 2019

Sheet No: **C1.2**



GRADING INSET
SCALE: 1"=10'



GRADING NOTES:

- ALL ACCESSIBLE ROUTES SHALL CONFORM TO THE APPROPRIATE ADA STANDARDS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 - A. WALKWAYS SHALL HAVE A MAXIMUM CROSS SLOPE (PERPENDICULAR TO THE DIRECTION OF TRAVEL) OF 2% AND A MAXIMUM LONGITUDINAL SLOPE (ALONG THE DIRECTION OF TRAVEL) OF 5%.
 - B. LANDING AREAS SHALL HAVE A MAXIMUM CROSS SLOPE OF 2% IN ALL DIRECTIONS.
 - C. IF THE CONTRACTOR DETERMINES THAT THE ABOVE STANDARDS ARE NOT COMPATIBLE WITH THE SITE CONDITIONS THEY SHALL CONTACT THE ENGINEER UPON DISCOVERY AND REQUEST GUIDANCE. INSTALLATION OF A WALKWAY SEGMENT WITHOUT GUIDANCE FROM AND APPROVAL OF ENGINEER, AND WHICH DOES NOT MEET ADA STANDARDS WILL NOT BE ACCEPTED.
- CONTRACTOR TO FIELD VERIFY LIMITS OF WORK AND GRADING WITH ENGINEER PRIOR TO BEGINNING WORK.
- ELEVATIONS ARE BASED ON GPS OBSERVATIONS, NAVD88 DATUM. BENCHMARK IS A CHISELED BOX CUT IN SOUTHEASTERN MOST LIGHT POLE CONCRETE BASE, AS DEPICTED ON THIS PLAN. ELEVATION: 274.98'.
- WETLAND DELINEATION BY C.C. DORIAN GEOLOGICAL SERVICES, LLC OF 200 HIGH STREET, SUITE #2D PORTLAND, MAINE 04101.
- CONTOURS EAST OF THE STREAM, BEYOND THE PROPERTY LINE ON THE NORTH-EASTERN BOUNDARY OF THE EXISTING DEVELOPMENT, AND ON THE ABUTTING GRAY PLAZA PARCEL HAVE BEEN GENERATED WITH MAINE OFFICE OF GIS LIDAR DATA AND HAVE NOT BEEN FIELD VERIFIED.

DRAINAGE SCHEDULE					
STRUCTURE ID.	SIZE	RIM	INV. IN/SIZE (FROM)	INV. OUT/SIZE (TO)	COMMENTS
CB-1	2"	273.20	271.46/12" (POND)	270.80/12" (OUTLET 1)	BEEHIVE GRATE
CB-2	2"	272.30	269.03/4" (UNDERDRAIN) 270.38/12" (CB 3)	269.03/15" (R TANK 2)	
CB-3	4"	273.00	-	270.48/12" (CB2)	CASCADE GRATE
CB-4	4"	275.75	271.03/12" (CB-5)	271.03/12" (EX. OUTLET)	CONFIRM EX. INVERT
CB-5	4"	277.90	-	271.30/12" (CB-4)	CASCADE GRATE
CB-6	2"	273.00	-	270.40/12" (MH-1)	BEEHIVE GRATE
CB-7	2"	273.00	269.03/12" (CB-6)	269.03/15" (R TANK 1)	BEEHIVE GRATE
CB-8	2"	273.95	269.03/4" UNDERDRAIN	269.03/15" (R TANK 3)	CASCADE GRATE

DRAINAGE SCHEDULE					
STRUCTURE ID.	SIZE	RIM	INV. IN/SIZE (FROM)	INV. OUT/SIZE (TO)	COMMENTS
MH-1	4"	273.50	269.03/15" (MH2)	269.03/15" (MH3)	
MH-2	4"	273.00	269.03/15" (R TANK 2)	269.03/15" (MH1)	
MH-3	4"	273.90	269.03/15" (MH1)	269.03/15" (R TANK 1)	
OCS-1	4"	273.00	269.03/15" (R TANK 1)	269.03/15" OUTLET 2	INTERNAL WEIR
OCS-2	4"	273.00	269.03/15" (R TANK 3)	269.03/15" OUTLET 3	INTERNAL WEIR

AVESTA GRAY MEADOWVIEW II
16 HANCOCK STREET
GRAY, MAINE

Prepared for:
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Architect:
JSA DESIGN
273 CORPORATE DRIVE, SUITE 100
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Soil Scientist/Site Evaluator:
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Landscape Architect:
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87 MAIN STREET
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SCALE
0 10 20 40
SCALE in FEET
1"=20'

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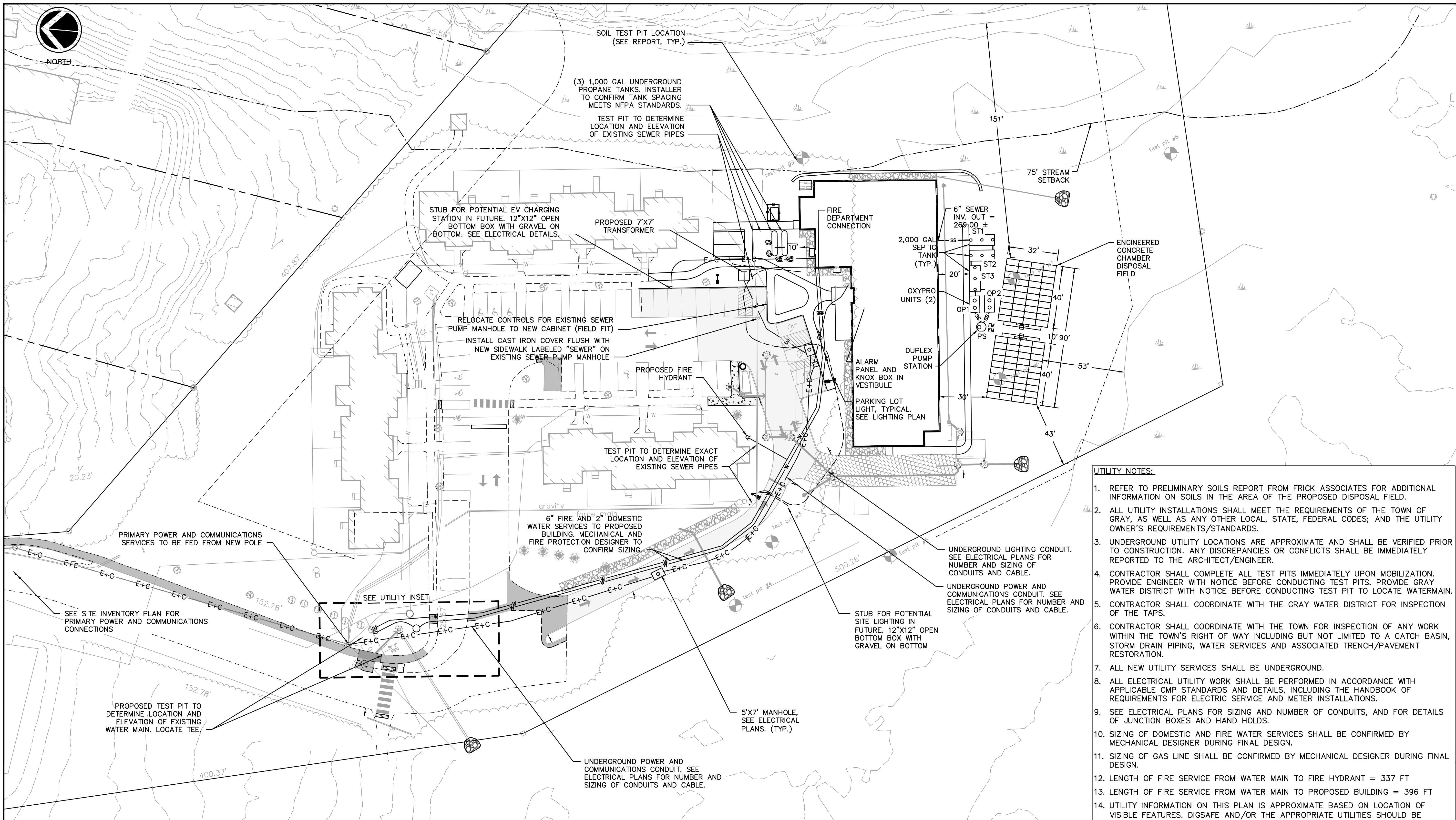
GRADING, DRAINAGE AND EROSION CONTROL PLAN

C	PLANNING BOARD AMENDMENT/MSHA REVIEW	5/11/23
B	PLANNING BOARD/DEP REVIEW	5/19/22
A	PERMITTING	1/28/22

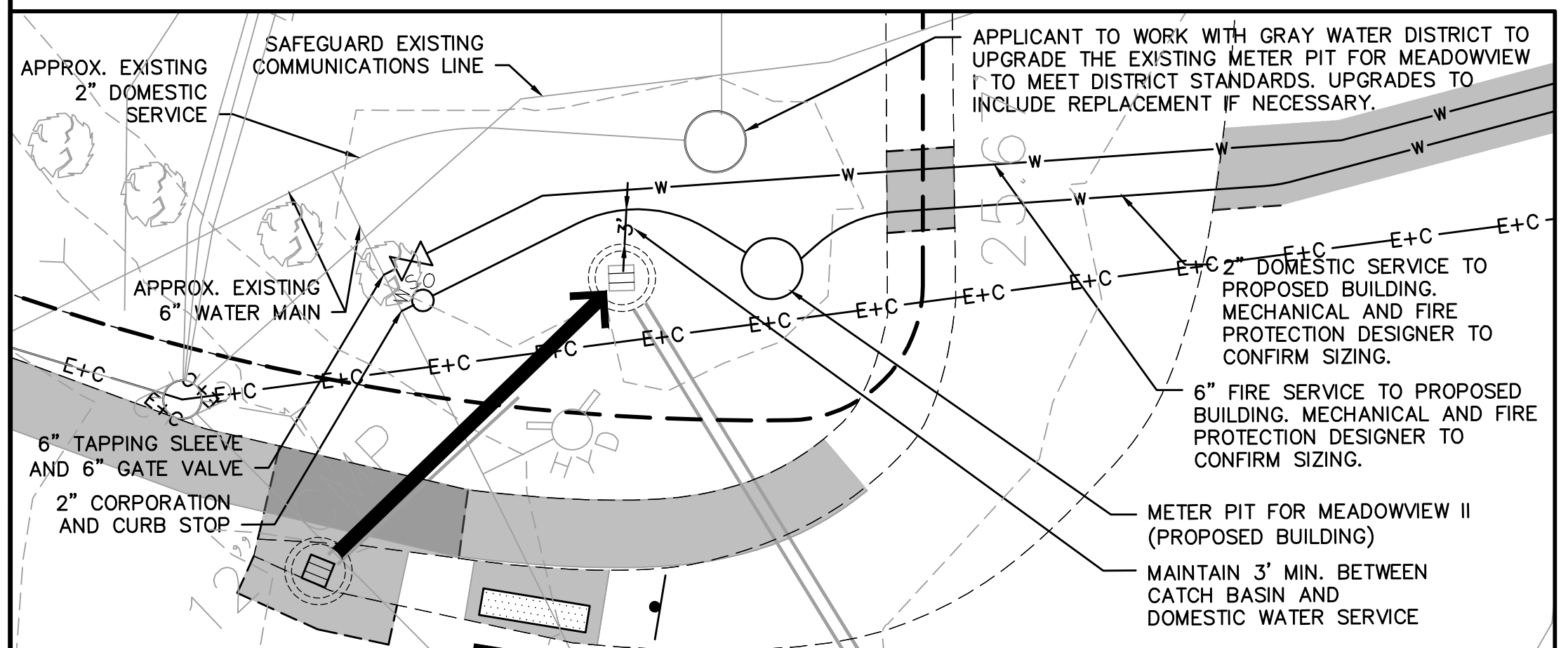
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Drawn by: DJV
Approved by: JIM/MPM
Project: 191.06051
Date: DECEMBER 2019
Sheet No: **C1.3**

FOR PERMITTING



- UTILITY NOTES:**
- REFER TO PRELIMINARY SOILS REPORT FROM FRICK ASSOCIATES FOR ADDITIONAL INFORMATION ON SOILS IN THE AREA OF THE PROPOSED DISPOSAL FIELD.
 - ALL UTILITY INSTALLATIONS SHALL MEET THE REQUIREMENTS OF THE TOWN OF GRAY, AS WELL AS ANY OTHER LOCAL, STATE, FEDERAL CODES; AND THE UTILITY OWNER'S REQUIREMENTS/STANDARDS.
 - UNDERGROUND UTILITY LOCATIONS ARE APPROXIMATE AND SHALL BE VERIFIED PRIOR TO CONSTRUCTION. ANY DISCREPANCIES OR CONFLICTS SHALL BE IMMEDIATELY REPORTED TO THE ARCHITECT/ENGINEER.
 - CONTRACTOR SHALL COMPLETE ALL TEST PITS IMMEDIATELY UPON MOBILIZATION. PROVIDE ENGINEER WITH NOTICE BEFORE CONDUCTING TEST PITS. PROVIDE GRAY WATER DISTRICT WITH NOTICE BEFORE CONDUCTING TEST PIT TO LOCATE WATERMAIN.
 - CONTRACTOR SHALL COORDINATE WITH THE GRAY WATER DISTRICT FOR INSPECTION OF THE TAPS.
 - CONTRACTOR SHALL COORDINATE WITH THE TOWN FOR INSPECTION OF ANY WORK WITHIN THE TOWN'S RIGHT OF WAY INCLUDING BUT NOT LIMITED TO A CATCH BASIN, STORM DRAIN PIPING, WATER SERVICES AND ASSOCIATED TRENCH/PAVEMENT RESTORATION.
 - ALL NEW UTILITY SERVICES SHALL BE UNDERGROUND.
 - ALL ELECTRICAL UTILITY WORK SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE CMP STANDARDS AND DETAILS, INCLUDING THE HANDBOOK OF REQUIREMENTS FOR ELECTRIC SERVICE AND METER INSTALLATIONS.
 - SEE ELECTRICAL PLANS FOR SIZING AND NUMBER OF CONDUITS, AND FOR DETAILS OF JUNCTION BOXES AND HAND HOLDS.
 - SIZING OF DOMESTIC AND FIRE WATER SERVICES SHALL BE CONFIRMED BY MECHANICAL DESIGNER DURING FINAL DESIGN.
 - SIZING OF GAS LINE SHALL BE CONFIRMED BY MECHANICAL DESIGNER DURING FINAL DESIGN.
 - LENGTH OF FIRE SERVICE FROM WATER MAIN TO FIRE HYDRANT = 337 FT
 - LENGTH OF FIRE SERVICE FROM WATER MAIN TO PROPOSED BUILDING = 396 FT
 - UTILITY INFORMATION ON THIS PLAN IS APPROXIMATE BASED ON LOCATION OF VISIBLE FEATURES. DIGSAFE AND/OR THE APPROPRIATE UTILITIES SHOULD BE CONTACTED PRIOR TO ANY CONSTRUCTION.
 - RESULTS OF NITRATE-NITROGEN MODELING PERFORMED FOR THE PROPOSED SEPTIC SYSTEM INDICATE THAT NITRATE-NITROGEN CONCENTRATIONS AT THE NEAREST DOWNGRADIENT PROPERTY LINE, 43 FEET FROM THE DISPOSAL FIELD EDGE, ARE ANTICIPATED TO BE 5.25 MILLIGRAMS PER LITER.



SANITARY SEWER SCHEDULE

STRUCTURE ID.	SIZE	RIM	INV. IN/SIZE (FROM)	INV. OUT/SIZE (TO)	COMMENTS
ST1	2,000 GAL	272.75	268.58/6" (BLDG)	268.33/6" (ST2)	
ST2	2,000 GAL	272.75	268.26/6" (ST1)	268.01/6" (ST3)	
ST3	2,000 GAL	273.00	267.94/6" (ST2)	267.69/6" (OP1) 267.69/6" (OP2)	
OP1	TBD	273.00	267.62/6" (ST3)	267.37/6" (PS)	SIZE AND INTERNAL DROP TBD
OP2	TBD	272.75	267.51/6" (ST3)	267.26/6" (PS)	SIZE AND INTERNAL DROP TBD
PUMP STA.	4"φ	273.00	267.21/6" (OP1) 267.10/6" (OP2)	267.50±/2" (DIST. BOX)	SEE DETAIL
DIST. BOX	TBD	272.25	271.25±/2" (PS)	271.25±/6" (DISP. FLD.)	FINAL INVERTS TBD

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0 15 30 60
SCALE in FEET
1"=30'

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UTILITY PLAN

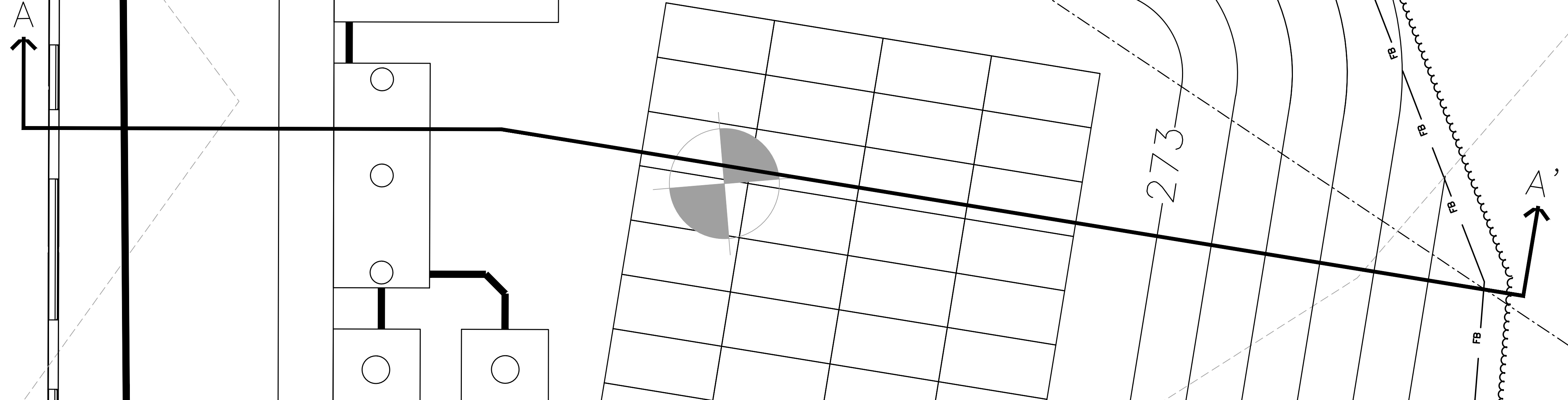
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B	PLANNING BOARD/DEP REVIEW	5/19/22
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Drawn by:	DJV	Approved by:	JIM/MPM
Project:	191.06051	Date:	DECEMBER 2019

Sheet No: **C1.4**

FOR PERMITTING

UTILITY INSET
SCALE: 1"=10'

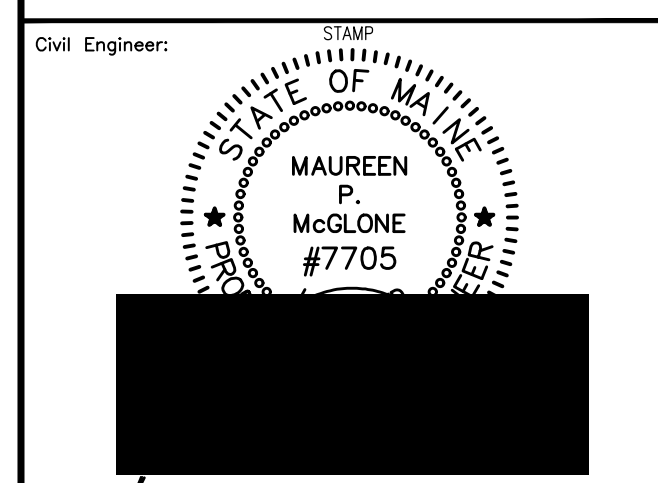


PLAN
SCALE: 1"=5'

- LEGEND:**
- SOIL BOUNDARY
 - SOIL TEST PIT NUMBER
 - GRAVELLY COARSE SAND
 - CRUSHED STONE
 - COARSE SAND
 - RE-USE NATIVE SOIL

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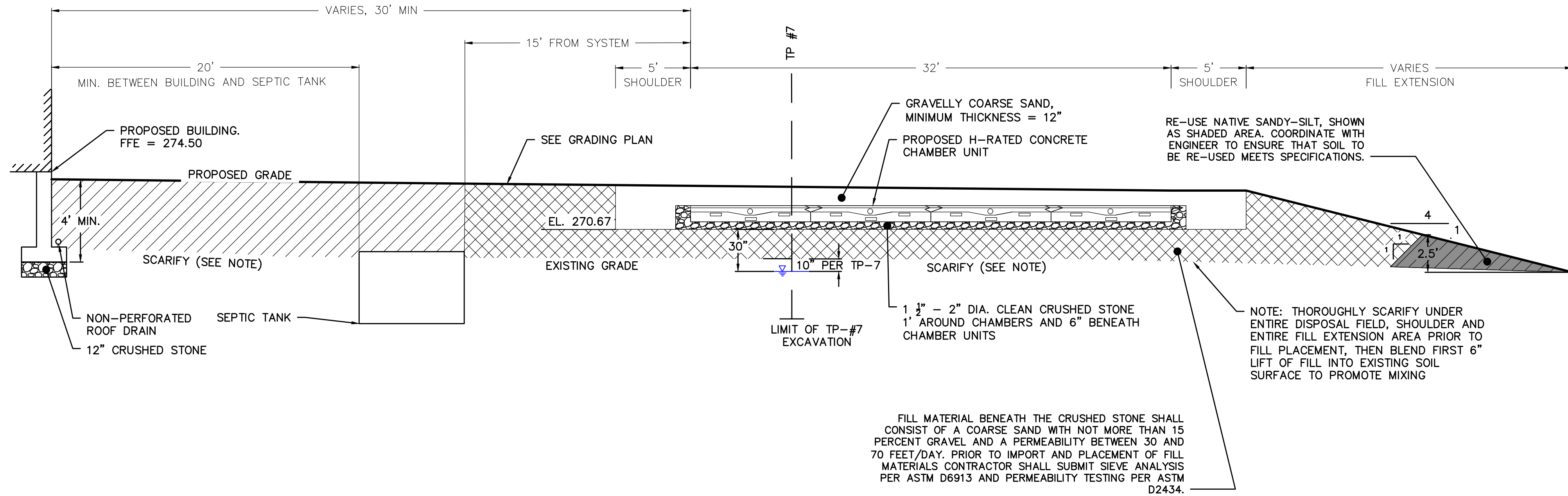
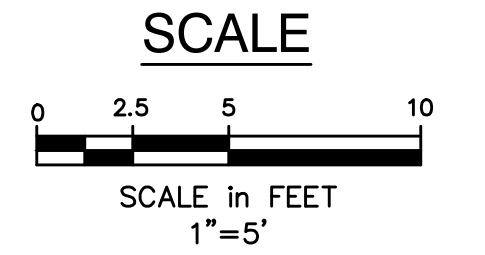
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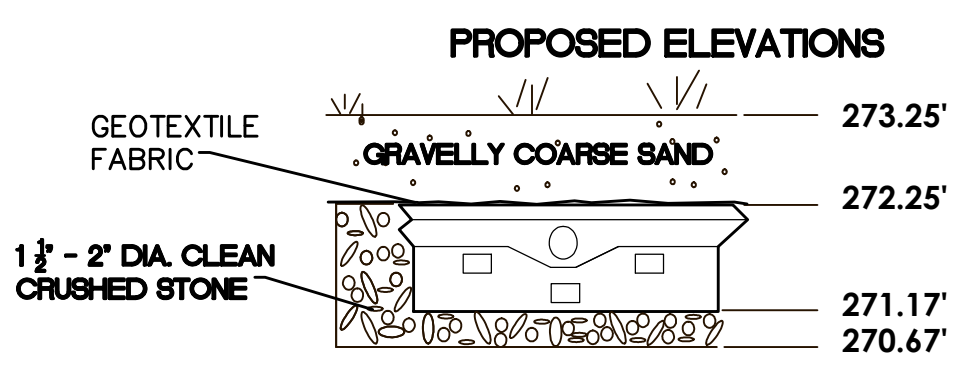
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SECTION A-A'
SCALE: 1"=5'



CONCRETE CHAMBER DETAIL
NOT TO SCALE

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SEPTIC SECTION

No.	Revision/Issue	Date
C	PLANNING BOARD AMMENDMENT/MSHA REVIEW	5/11/23
B	PLANNING BOARD/DEP REVIEW	5/19/22
A	PERMITTING	1/28/22

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Drawn by:	DJV	Approved by:	JIM/MPM
Project:	191.06051	Date:	DECEMBER 2019

Sheet No: **C1.5**

FOR PERMITTING

EROSION AND SEDIMENTATION CONTROL NOTES

INSPECTION REQUIREMENTS

CONTRACTOR SHALL INSPECT ALL EROSION AND SEDIMENTATION CONTROL MEASURES ON A WEEKLY BASIS AND AFTER RAIN/STORM EVENTS AND SHALL KEEP A LOG OF THESE INSPECTIONS. ANY ISSUES IDENTIFIED SHALL BE ADDRESSED AS SOON AS POSSIBLE AND BEFORE ADDITIONAL PRECIPITATION.

EROSION CONTROL MEASURES AND SITE STABILIZATION

THE PRIMARY EMPHASIS OF THE EROSION AND SEDIMENT CONTROL PLAN IS AS FOLLOWS:

- RAPID VEGETATION OF EXPOSED AREAS TO MINIMIZE THE PERIOD OF SOIL EXPOSURE.
- RAPID STABILIZATION OF DRAINAGE PATHS TO AVOID CHANNEL EROSION.
- THE USE OF ON-SITE MEASURES TO CAPTURE SEDIMENT (EROSION CONTROL BERM, STAKED HAY BALES ETC.)

THE FOLLOWING TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL DEVICES WILL BE IMPLEMENTED AS PART OF THE SITE DEVELOPMENT. THESE DEVICES SHALL BE INSTALLED AS INDICATED ON THE PLANS OR AS DESCRIBED WITHIN THIS REPORT. FOR FURTHER REFERENCE, SEE THE MAINE EROSION AND SEDIMENT CONTROL BMPs, (MOST RECENT REVISION).

TEMPORARY EROSION CONTROL MEASURES

THE FOLLOWING MEASURES ARE PLANNED AS TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES DURING CONSTRUCTION. THESE TEMPORARY EROSION CONTROL MEASURES SHOULD BE REMOVED WITHIN 30 DAYS AFTER PERMANENT STABILIZATION HAS BEEN ESTABLISHED.

1. CRUSHED STONE-STABILIZED CONSTRUCTION ENTRANCES SHALL BE PLACED AT SITE ENTRANCES.
2. WOOD WASTE COMPOST BERMS (EROSION CONTROL BERM) SHALL BE INSTALLED DOWNSTREAM OF ANY DISTURBED AREAS TO TRAP RUNOFF BORNE SEDIMENTS UNTIL THE TRIBUTARY AREAS ARE VEGETATED. THE EROSION CONTROL BERMS SHALL BE INSTALLED PER THE DETAILS PROVIDED AND INSPECTED REGULARLY, INCLUDING BEFORE AND AFTER A STORM EVENT OF 0.5 INCHES OR GREATER. REPAIRS SHALL BE MADE IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THE FENCE OR BERM LINE. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND FENCE OR BERM, THE BARRIER SHALL BE REPLACED WITH A STONE CHECK DAM.
3. STRAW, HAY MULCH AND HYDROSEEDING IS INTENDED TO PROVIDE COVER FOR BARE OR SEEDED AREAS UNTIL VEGETATION IS ESTABLISHED AND SHOULD BE APPLIED WITHIN 7 DAYS AT A RATE OF 115 POUNDS PER 1000 SQUARE FEET. MULCH PLACED BETWEEN APRIL 15TH AND OCTOBER 15TH (ON SLOPES OF LESS THEN 15 PERCENT) SHALL BE ANCHORED BY APPLYING WATER. MULCH PLACED ON SLOPES OF EQUAL TO OR STEEPER THAN 15 PERCENT SHALL BE COVERED BY FABRIC NETTING AND ANCHORED WITH STAPLES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION. SLOPES STEEPER THAN 3:1 SHALL RECEIVE EROSION CONTROL BLANKETS OR RIP RAP.
4. USE STANDARD CONSERVATION SEED MIX OF 100% ANNUAL RYE GRASS OR FIELD BROMEGRASS. SEED APPLICATION RATE SHALL BE 40 LB/ACRE.
5. TEMPORARY STOCKPILES OF STUMPS, GRUBBINGS, OR COMMON EXCAVATION WILL BE PROTECTED AS FOLLOWS:

STOCKPILES SHALL BE STABILIZED WITHIN SEVEN DAYS BY EITHER TEMPORARILY SEEDING THE STOCKPILE BY A HYDROSEED METHOD CONTAINING AN EMULSIFIED MULCH TACKIFIER OR BY COVERING THE STOCKPILE WITH MULCH, SUCH AS SHREDDED HAY, STRAW, OR EROSION CONTROL MIX.

STOCKPILES SHALL BE SURROUNDED BY SEDIMENTATION BARRIER AT THE TIME OF FORMATION.
6. ALL DISTURBED AREAS THAT ARE WITHIN 75 FEET OF AN UNDISTURBED WETLAND SHALL RECEIVE MULCH OR EROSION CONTROL MESH FABRIC WITHIN 48 HOURS OF INITIAL DISTURBANCE OF SOIL. ALL AREAS WITHIN 75 FEET OF AN UNDISTURBED WETLAND SHALL BE MULCHED PRIOR TO ANY PREDICTED RAIN EVENT REGARDLESS OF THE 48 HOUR WINDOW. IN OTHER AREAS, THE TIME PERIOD MAY BE EXTENDED TO 7 DAYS.
7. STATE AND LOCAL ROADS SHALL BE SWEEPED TO CONTROL MUD AND DUST AS NECESSARY. ADDITIONAL STONE SHALL BE ADDED TO THE STABILIZED CONSTRUCTION ENTRANCE TO MINIMIZE THE TRACKING OF MATERIAL OFF THE SITE AND ONTO THE SURROUNDING ROADWAYS.
8. WATER AND/OR CALCIUM CHLORIDE SHALL BE FURNISHED AND APPLIED IN ACCORDANCE WITH MDOT SPECIFICATIONS--SECTION 637-DUST CONTROL.
9. LOAM AND SEED IS INTENDED TO SERVE AS THE PRIMARY PERMANENT VEGETATIVE MEASURE FOR ALL BARE AREAS NOT PROVIDED WITH OTHER EROSION CONTROL MEASURES, SUCH AS RIPRAP.
10. WATER FROM CONSTRUCTION TRENCH DEWATERING OR TEMPORARY STREAM DIVERSION SHALL PASS FIRST THROUGH A FILTER BAG OR SECONDARY CONTAINMENT STRUCTURE (E.G. HAY BALE LINED POOL) PRIOR TO DISCHARGE. THE DISCHARGE SITE SHALL BE SELECTED TO AVOID FLOODING, ICING, AND SEDIMENT DISCHARGES TO A PROTECTED RESOURCE. IN NO CASE SHALL THE FILTER BAG OR CONTAINMENT STRUCTURE BE LOCATED WITHIN 75 FEET OF A PROTECTED NATURAL RESOURCE.

PERMANENT EROSION CONTROL MEASURES

THE FOLLOWING PERMANENT EROSION CONTROL MEASURES HAVE BEEN DESIGNED AS PART OF THE EROSION/SEDIMENTATION CONTROL PLAN:

ALL AREAS DISTURBED DURING CONSTRUCTION, BUT NOT SUBJECT TO OTHER RESTORATION (GRAVEL, PAVERS, RIPRAP, ETC.) WILL BE LOAMED, LIMED, FERTILIZED, MULCHED, AND SEEDED.

IMPLEMENTATION SCHEDULE

THE FOLLOWING CONSTRUCTION SEQUENCE SHALL BE REQUIRED TO INSURE THE EFFECTIVENESS OF THE EROSION AND SEDIMENTATION CONTROL MEASURES ARE OPTIMIZED:

NOTE: FOR ALL GRADING ACTIVITIES, THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION NOT TO OVEREXPOSE THE SITE BY LIMITING THE DISTURBED AREA. THE CONSTRUCTION OF BMPs SHOULD EITHER BE PERFORMED AFTER THE TRIBUTARY AREA IS STABILIZED OR TEMPORARY EROSION CONTROL MEASURES NEED TO BE IMPLEMENTED TO PROTECT THE BMPs FROM BEING CLOGGED WITH CONSTRUCTION SEDIMENT.

1. INSTALL CRUSHED STONE TO STABILIZED CONSTRUCTION ENTRANCES.
2. INSTALL PERIMETER EROSION CONTROL BERM.
3. CLEAR AND GRUB SITE WITHIN THE SPECIFIED CLEARING LIMITS.
4. COMMENCE EARTHWORK AND GRADING TO SUBGRADE.
5. COMMENCE CONSTRUCTION OF BUILDING FOUNDATION.
6. CONTINUE EARTHWORK AND GRADING TO SUBGRADE AS NECESSARY FOR CONSTRUCTION.
7. COMPLETE INSTALLATION OF DRAINAGE INFRASTRUCTURE.
8. COMPLETE INSTALLATION OF UTILITY INFRASTRUCTURE.
7. COMPLETE REMAINING EARTHWORK OPERATIONS.
8. INSTALL SUBBASE AND BASE GRAVEL WITHIN PROPOSED PARKING LOT.
9. LOAM, LIME, FERTILIZE, SEED AND MULCH DISTURBED AREAS.
11. TOUCH UP LOAM AND SEED.

NOTE: ALL BARE AREAS NOT SUBJECT TO RIPRAP, OR GRAVEL; SHALL BE VEGETATED.

PRIOR TO CONSTRUCTION OF THE PROJECT, THE CONTRACTOR SHALL SUBMIT TO THE OWNER A SCHEDULE FOR THE COMPLETION OF THE WORK, WHICH WILL SATISFY THE ABOVE CONSTRUCTION SEQUENCE IN THE SPECIFIED ORDER, HOWEVER, SEVERAL SEPARATE ITEMS MAY BE CONSTRUCTED SIMULTANEOUSLY. WORK MUST ALSO BE SCHEDULED OR PHASED TO REDUCE THE EXTENT OF THE EXPOSED AREAS AS SPECIFIED BELOW. THE INTENT OF THIS SEQUENCE IS TO PROVIDE FOR EROSION CONTROL AND TO HAVE STRUCTURAL MEASURES SUCH AS EROSION CONTROL BERM AND CONSTRUCTION ENTRANCES IN PLACE BEFORE LARGE AREAS OF LAND ARE STRIPPED.

THE WORK SHALL BE CONDUCTED IN SECTIONS WHICH SHALL:

1. LIMIT THE AMOUNT OF EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS EXPECTED TO BE UNDERTAKEN DURING THE PRECEDING 30 DAYS.
2. VEGETATE THE DISTURBED AREAS AS RAPIDLY AS POSSIBLE. ALL AREAS SHALL BE PERMANENTLY STABILIZED WITHIN SEVEN DAYS OF FINAL GRADING OR BEFORE A STORM EVENT; OR TEMPORARILY STABILIZED WITHIN 48 HOURS OF INITIAL DISTURBANCE OF SOIL FOR AREAS WITHIN 75 FEET OF AN UNDISTURBED WETLAND AND 7 DAYS FOR ALL OTHER AREAS.
3. INCORPORATE PLANNED INLETS AND DRAINAGE SYSTEM AS EARLY AS POSSIBLE INTO THE CONSTRUCTION PHASE.

WINTER STABILIZATION PLAN

THE WINTER CONSTRUCTION PERIOD IS FROM NOVEMBER 1 THROUGH APRIL 15. IF THE CONSTRUCTION SITE IS NOT STABILIZED WITH A ROAD GRAVEL BASE, 75% MATURE VEGETATION COVER OR RIPRAP BY NOVEMBER 15TH, THEN THE SITE SHALL BE PROTECTED WITH OVER-WINTER STABILIZATION.

WINTER EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT ANY AREA LEFT EXPOSED CAN BE CONTROLLED BY THE CONTRACTOR. EXPOSED AREAS SHALL BE LIMITED TO THOSE AREAS IN WHICH WORK IS EXPECTED TO COMMENCE AND COMPLETE IN THE NEXT FIFTEEN (15) DAYS AND THAT CAN BE MULCHED WITHIN ONE DAY PRIOR TO ANY SNOW EVENT.

ALL AREAS SHALL BE CONSIDERED TO BE BARE UNTIL THE SUBBASE GRAVEL IS INSTALLED WITHIN PAVEMENT/BUILDING AREAS OR THE AREAS HAVE BEEN LOAMED, SEEDED AND MULCHED. HAY AND STRAW MULCH RATE SHALL BE A MINIMUM OF 150 POUNDS PER 1,000 SQUARE FEET (3 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED.

THE CONTRACTOR SHALL INSTALL ANY ADDED MEASURES, WHICH MAY BE NECESSARY TO CONTROL EROSION/SEDIMENTATION FROM THE SITE DEPENDENT UPON THE ACTUAL SITE AND WEATHER CONDITIONS. CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED, IN ORDER TO MINIMIZE AREAS WITHOUT EROSION CONTROL PROTECTION.

1. SOIL STOCKPILES

STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR AT 150 LBS/1,000 SF. (3 TONS PER ACRE) OR WITH A FOUR-INCH LAYER OF WOODWASTE EROSION CONTROL MIX. THIS SHALL BE DONE WITHIN 24 HOURS OF STOCKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL OR SNOWFALL. ANY SOIL STOCKPILE SHALL NOT BE PLACED (EVEN COVERED WITH HAY OR STRAW) WITHIN 100 FEET FROM ANY NATURAL RESOURCES.

2. SEDIMENT BARRIERS

DURING FROZEN CONDITIONS, SEDIMENT BARRIERS SHALL CONSIST OF WOODWASTE FILTER BERMS AS FROZEN SOIL PREVENTS THE PROPER INSTALLATION OF HAY BALES AND SEDIMENT SILT FENCES.

3. MULCHING

AN AREA SHALL BE CONSIDERED BARE UNTIL AREAS OF FUTURE LOAM AND SEED HAVE BEEN LOAMED, SEEDED AND MULCHED. HAY AND STRAW MULCH SHALL BE APPLIED AT A RATE OF 150 LB. PER 1,000 SQUARE FEET OR 3 TONS/ACRE (TWICE THE NORMAL ACCEPTED RATE OF 75-LBS./1,000 SF. OR 1.5 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED. MULCH SHALL NOT BE SPREAD ON TOP OF SNOW. THE SNOW SHALL BE REMOVED DOWN TO A ONE-INCH DEPTH

OR LESS PRIOR TO APPLICATION. AFTER EACH DAY OF FINAL GRADING, THE AREA SHALL BE PROPERLY STABILIZED WITH ANCHORED HAY OR STRAW OR EROSION CONTROL MATTING. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED WITH STRAW OR HAY AT A RATE OF 150 LB. PER 1,000 SQUARE FEET (3 TONS/ACRE) AND ADEQUATELY ANCHORED THAT GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH.

BETWEEN THE DATES OF NOVEMBER 1ST AND APRIL 15TH ALL MULCH SHALL BE ANCHORED BY PEG LINE, MULCH NETTING, TRACKING, OR WOOD CELLULOSE FIBER. WHEN GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH THEN COVER IS SUFFICIENT. AFTER NOVEMBER 1ST, MULCH AND ANCHORING OF ALL BARE SOIL SHALL OCCUR AT THE END OF EACH FINAL GRADING WORKDAY.

4. MULCHING ON SLOPES AND DITCHES

SLOPES SHALL NOT BE LEFT EXPOSED FOR ANY EXTENDED TIME OF WORK SUSPENSION UNLESS FULLY MULCHED AND ANCHORED WITH PEG AND NETTING OR WITH EROSION CONTROL BLANKETS. MULCHING SHALL BE APPLIED AT A RATE OF 230 LBS/1,000 S.F. ON ALL SLOPES GREATER THAN 8%.

MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH A SLOPE GREATER THAN 3% FOR SLOPES EXPOSED TO DIRECT WINDS AND FOR ALL OTHER SLOPES GREATER THAN 8%. EROSION CONTROL BLANKETS SHALL BE USED IN LIEU OF MULCH IN ALL DRAINAGE WAYS WITH SLOPES GREATER THAN 8%. EROSION CONTROL MIX CAN BE USED TO SUBSTITUTE EROSION CONTROL BLANKETS ON ALL SLOPES EXCEPT DITCHES.

5. SEEDING

BETWEEN THE DATES OF OCTOBER 15TH AND APRIL 1ST, LOAM OR SEED WILL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES, FINISHED AREAS SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. THE DATE IS AFTER NOVEMBER 1ST AND IF THE EXPOSED AREA HAS BEEN LOAMED, FINAL GRADED WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF THREE TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED. DORMANT SEEDING MAY BE SELECTED TO BE PLACED PRIOR TO THE PLACEMENT OF MULCH AND FABRIC NETTING ANCHORED WITH STAPLES. IF DORMANT SEEDING IS USED FOR THE SITE, ALL DISTURBED AREAS SHALL RECEIVE 4" OF LOAM AND SEED AT AN APPLICATION RATE OF 5 LBS/1000 SF. ALL AREAS SEEDED DURING THE WINTER SHALL BE INSPECTED IN THE SPRING FOR ADEQUATE CATCH. ALL AREAS INSUFFICIENTLY VEGETATED (LESS THAN 90% CATCH) SHALL BE REVEGETATED BY REPLACING LOAM, SEED AND MULCH. IF DORMANT SEEDING IS NOT USED FOR THE SITE, ALL DISTURBED AREAS SHALL BE REVEGETATED IN THE SPRING.

6. DEWATERING

WATER FROM CONSTRUCTION TRENCH DEWATERING SHALL PASS FIRST THROUGH A FILTER BAG OR SECONDARY CONTAINMENT STRUCTURE (E.G. HAY BALE LINED POOL) PRIOR TO DISCHARGE. THE DISCHARGE SITE SHALL BE SELECTED TO AVOID FLOODING, ICING, AND SEDIMENT DISCHARGES TO A PROTECTED RESOURCE.

7. INSPECTION AND MONITORING

MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION SEASON. AFTER EACH RAINFALL, SNOW STORM OR PERIOD OF THAWING AND RUNOFF, THE SITE CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES AND PERFORM REPAIRS AS NEEDED TO INSURE THEIR CONTINUOUS FUNCTION. FOLLOWING THE TEMPORARY AND/OR FINAL SEEDING AND MULCHING, THE CONTRACTOR SHALL IN THE SPRING INSPECT AND REPAIR ANY DAMAGES AND/OR UNESTABLISHED SPOTS. ESTABLISHED VEGETATIVE COVER MEANS A MINIMUM OF 85% TO 90% OF AREAS VEGETATED WITH VIGOROUS GROWTH.

STANDARDS FOR TIMELY STABILIZATION OF CONSTRUCTION SITES DURING WINTER

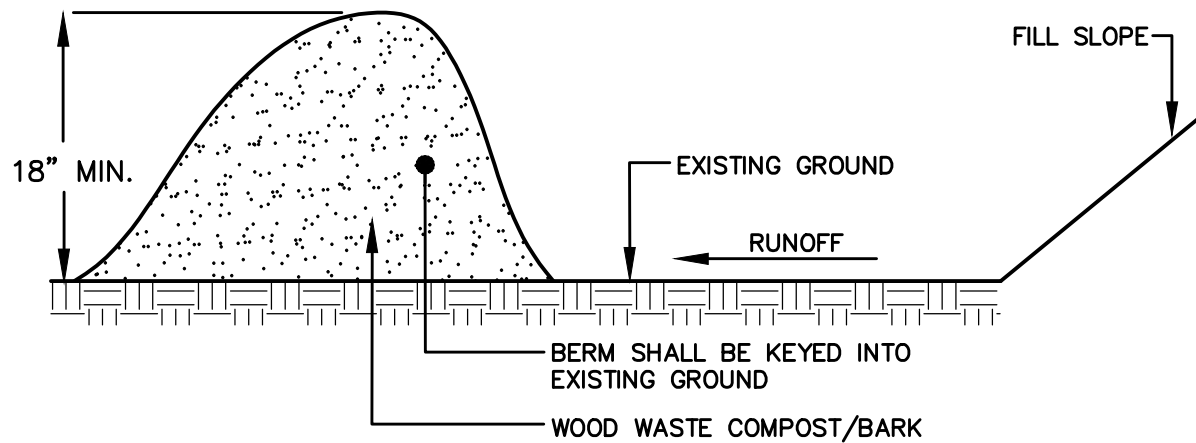
1. STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOILS

BY SEPTEMBER 15TH THE APPLICANT SHALL SEED AND MULCH ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15%. IF THE APPLICANT FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE APPLICANT SHALL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.

STABILIZE THE SOIL WITH TEMPORARY VEGETATION--BY OCTOBER 1ST THE APPLICANT SHALL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF THREE POUNDS PER 1000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE APPLICANT SHALL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 15TH, THEN THE APPLICANT SHALL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED ABOVE.

STABILIZE THE SOIL WITH SOD--THE APPLICANT SHALL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1ST. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.

STABILIZE THE SOIL WITH MULCH--BY NOVEMBER 15TH THE APPLICANT SHALL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. PRIOR TO APPLYING THE MULCH, THE APPLICANT SHALL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED AREA. IMMEDIATELY AFTER APPLYING THE MULCH, THE APPLICANT WILL ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.



EROSION CONTROL MULCH BERM

EROSION CONTROL MULCH CAN BE MANUFACTURED ON OR OFF THE PROJECT SITE. IT SHALL CONSIST PRIMARILY OF ORGANIC MATERIAL AND MAY INCLUDE: SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR ACCEPTABLE MANUFACTURED PRODUCTS. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS WILL NOT BE ACCEPTABLE AS THE ORGANIC COMPONENT OF THE MIX.

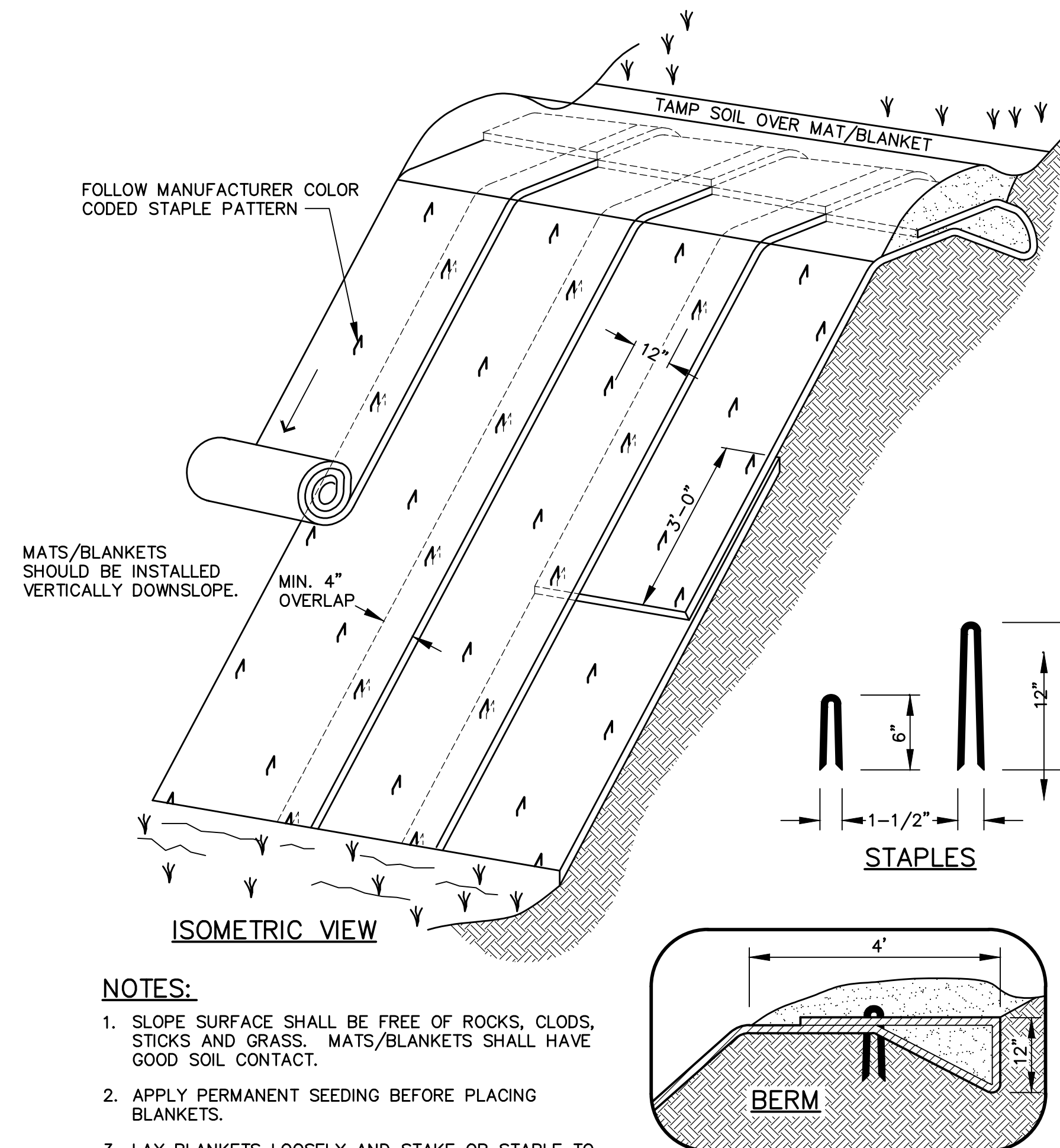
COMPOSITION

EROSION CONTROL MIX SHALL CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4" IN DIAMETER. EROSION CONTROL MIX MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS, AND MATERIAL TOXIC TO PLANT GROWTH. THE MIX COMPOSITION SHALL MEET THE FOLLOWING STANDARDS:

- THE ORGANIC MATTER CONTENT SHALL BE BETWEEN 80 AND 100%, DRY WEIGHT BASIS.
- PARTICLE SIZE BY WEIGHT SHALL BE 100 % PASSING A 6" SCREEN AND A MINIMUM OF 70%, MAXIMUM OF 85%, PASSING A 0.75" SCREEN.
- THE ORGANIC PORTION NEEDS TO BE FIBROUS AND ELONGATED.
- LARGE PORTIONS OF SILTS, CLAYS OR FINE SANDS ARE NOT ACCEPTABLE IN THE MIX.
- SOLUBLE SALTS CONTENT SHALL BE < 4.0 MMHOS/CM.
- THE PH SHOULD FALL BETWEEN 5.0 AND 8.0.
- EROSION CONTROL MULCH BERM TO BE REMOVED AFTER SITE IS STABILIZED.

EROSION CONTROL MULCH BERM

NOT TO SCALE



NOTES:

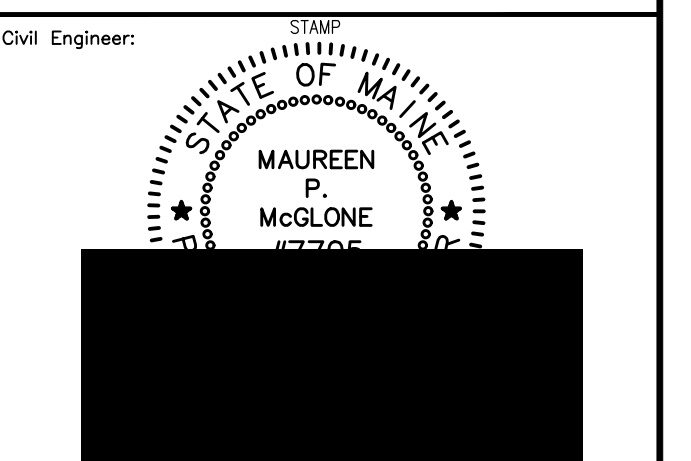
1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/BLANKETS SHALL HAVE GOOD SOIL CONTACT.
2. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
3. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
4. CHOOSE MATERIAL BASED ON SLOPE, SOILS, APPLICATION.

TYPICAL SLOPE SOIL STABILIZATION

NOT TO SCALE

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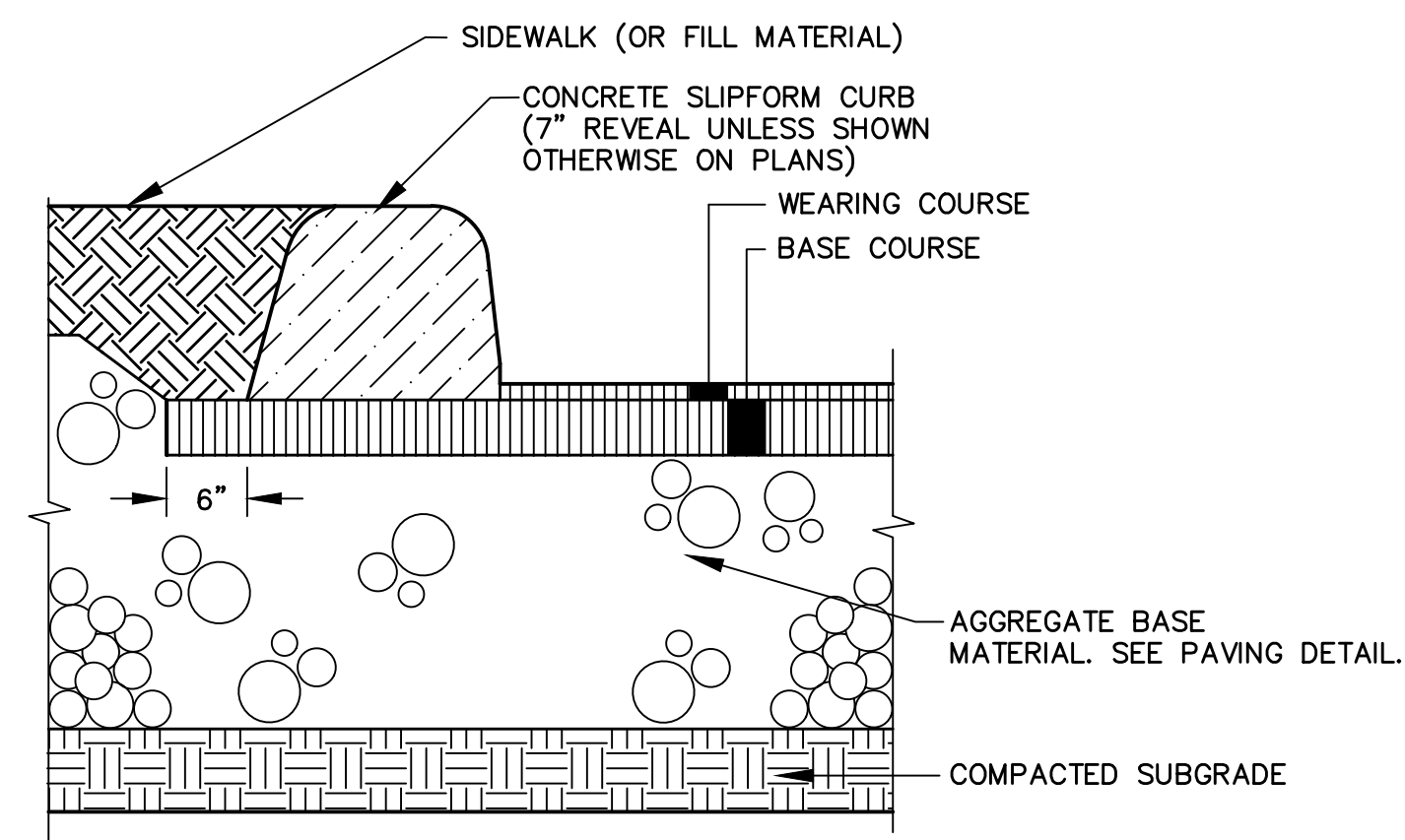
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EROSION AND SEDIMENTATION CONTROL NOTES AND DETAILS

C	PLANNING BOARD AMENDMENT/ MSHA REVIEW	5/11/23
B	PLANNING BOARD/DEP REVIEW	5/19/22
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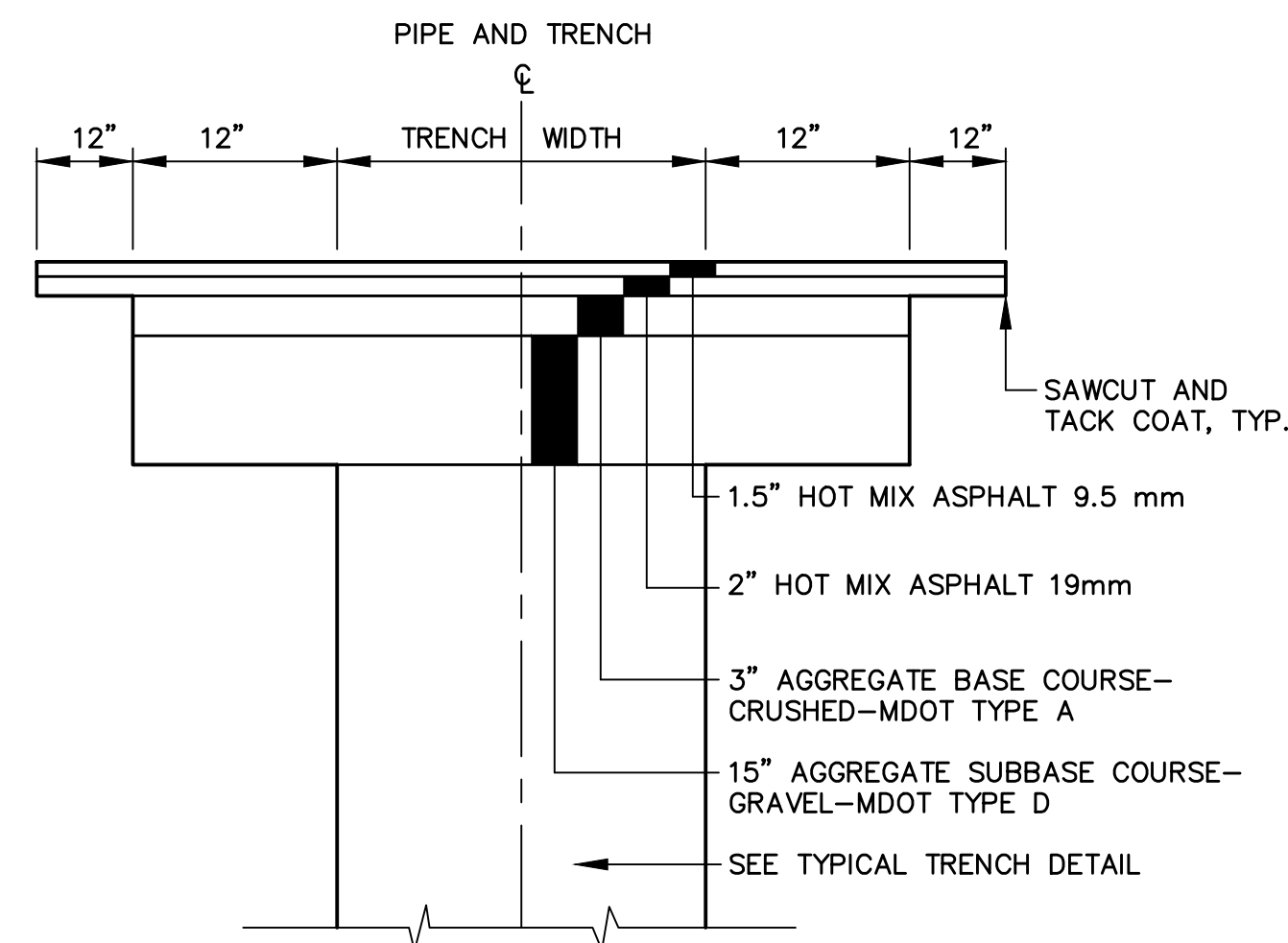
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Drawn by:	DJV	Approved by:	JIM/MPM
Project:	191.06051	Date:	DECEMBER 2019

Sheet No:
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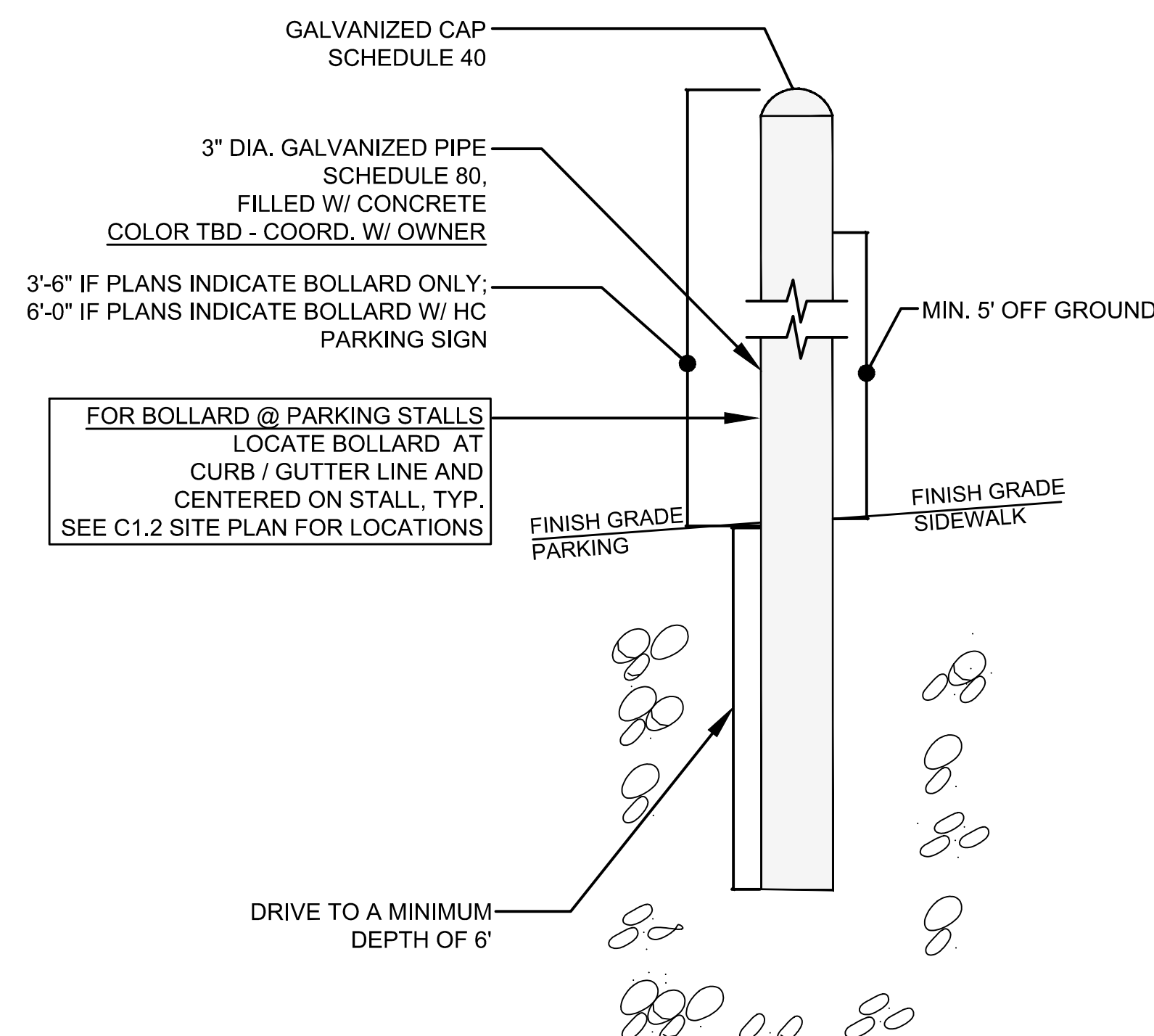
SLIPFORM CONCRETE CURBING

NOT TO SCALE



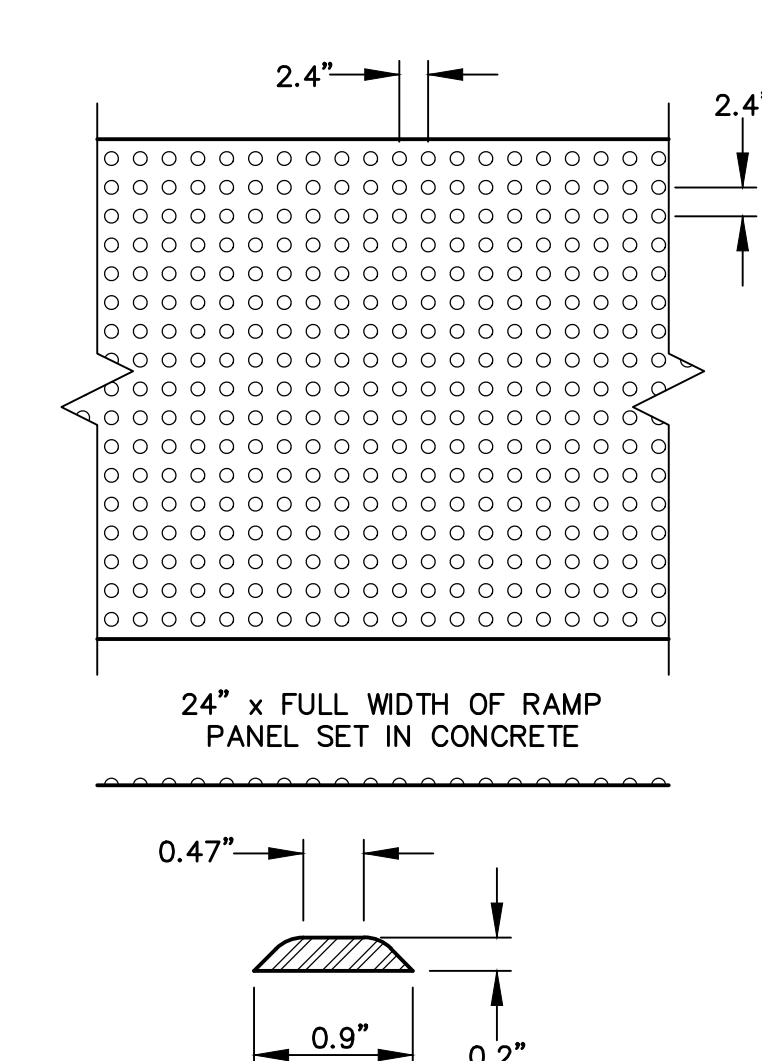
TYPICAL TRENCH PAVING IN ROW DETAIL

NOT TO SCALE



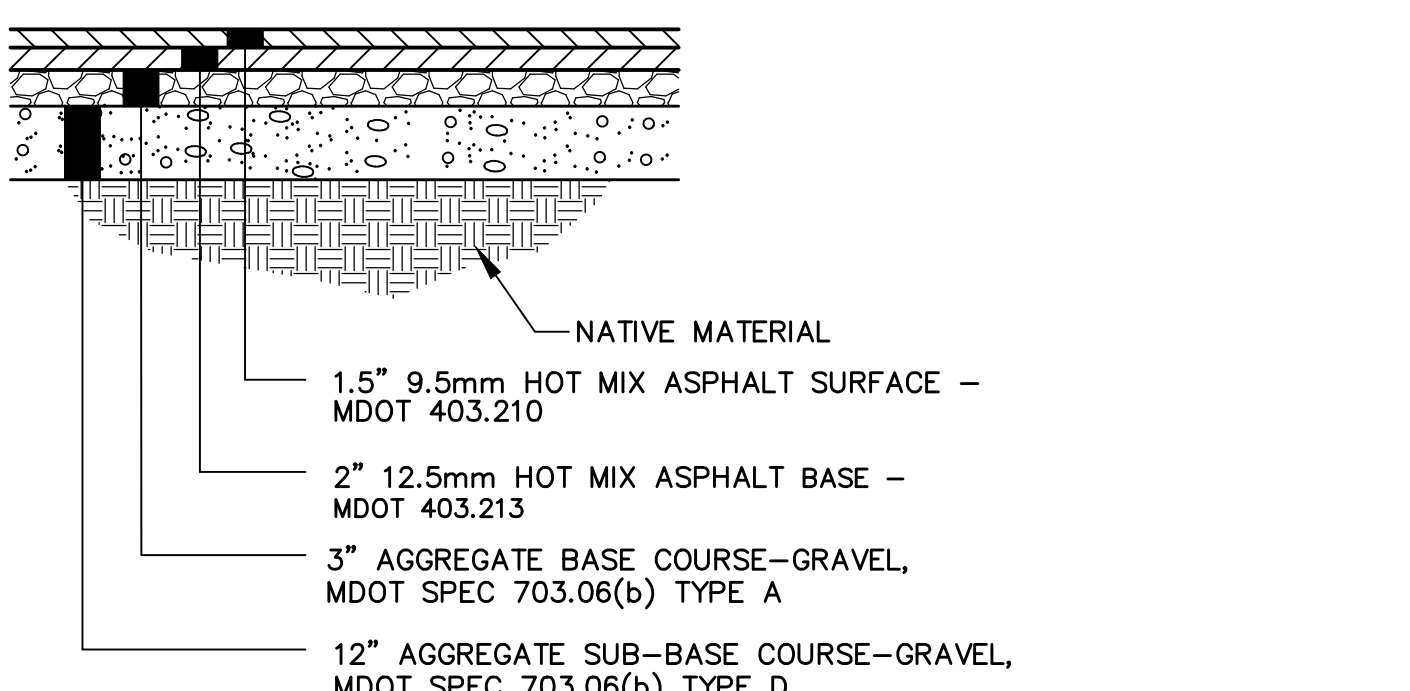
BOLLARD/ACCESSIBLE PARKING SIGN POST

NOT TO SCALE



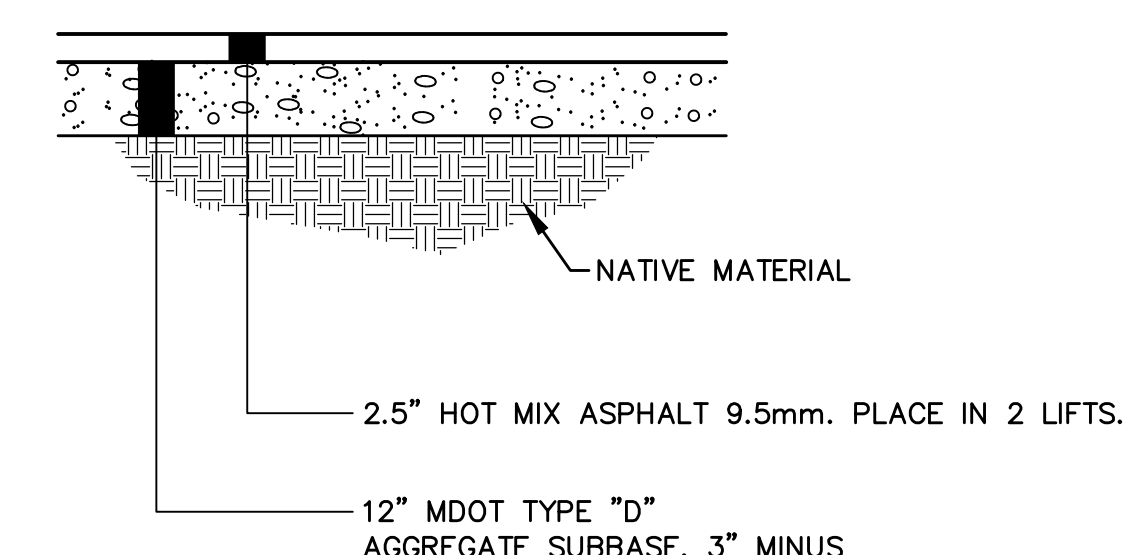
TRUNCATED DOMES DETAIL

NOT TO SCALE



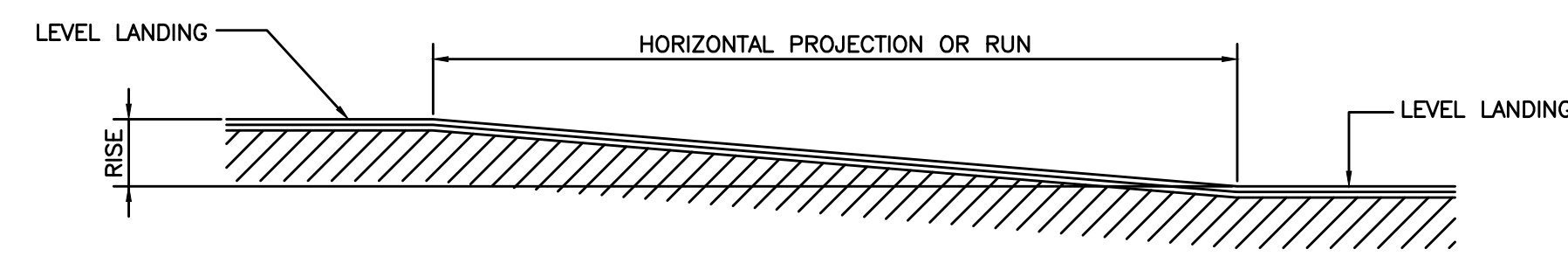
TYPICAL PARKING AREA AND ACCESS ROAD DETAIL

NOT TO SCALE



PAVED HMA WALKWAY DETAIL

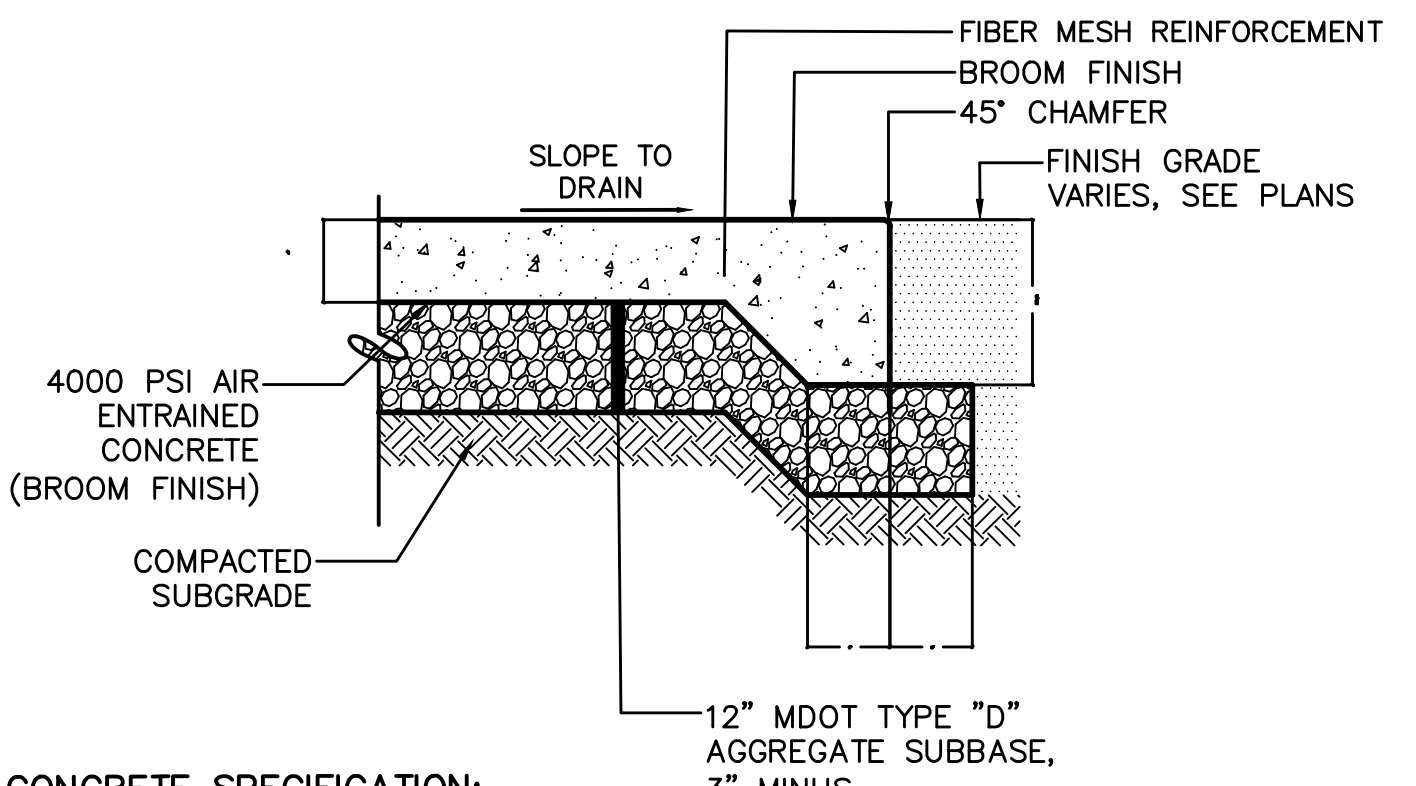
NOT TO SCALE



SLOPE	MAXIMUM RISE (INCHES)	MAX. HORIZ. PROJECTION (FEET)
1:12 TO <1:16	30	30
1:16 TO <1:20	30	40

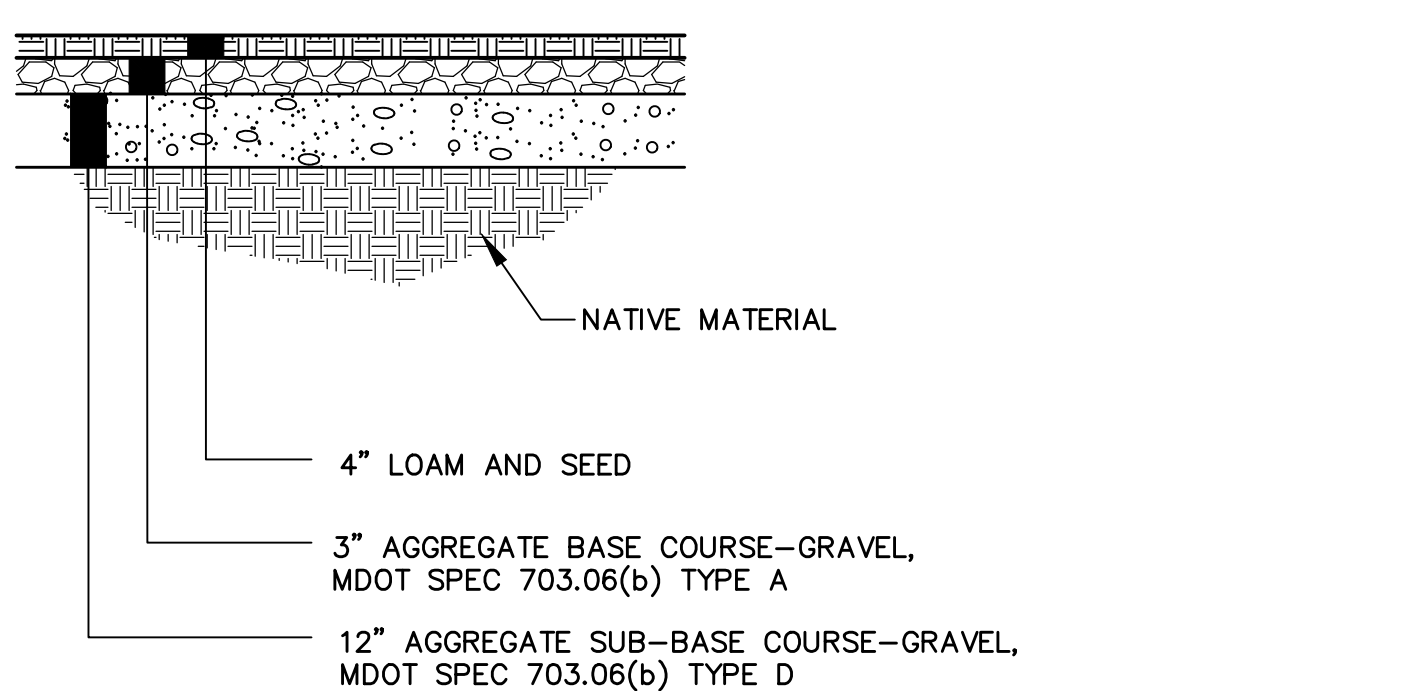
COMPONENTS OF A SINGLE ADA RAMP AND SAMPLE ADA RAMP DIMENSIONS

NOT TO SCALE



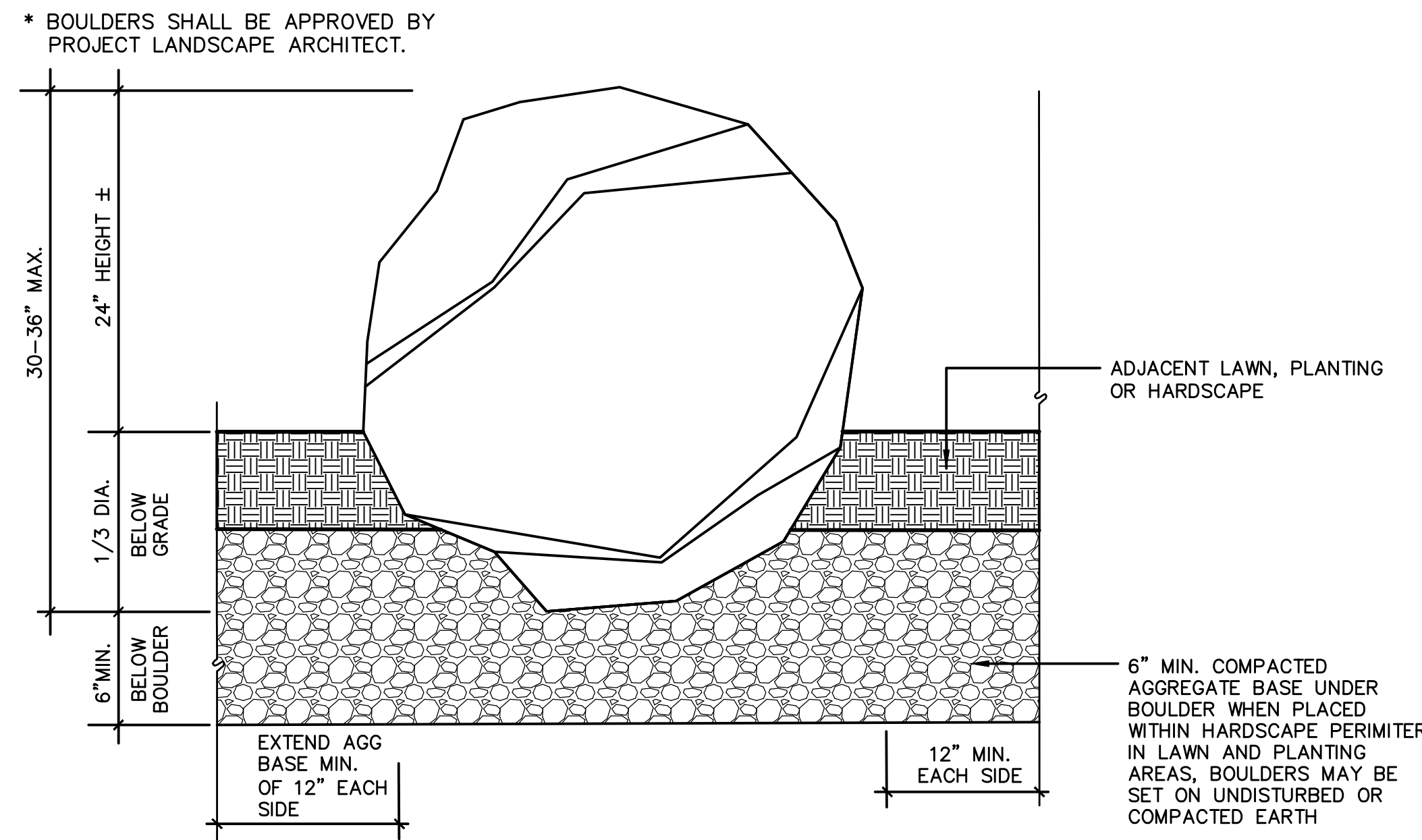
CONCRETE PAD FOR GENERATOR

NOT TO SCALE



TYPICAL GRASS ON GRAVEL PARKING SPACE DETAIL

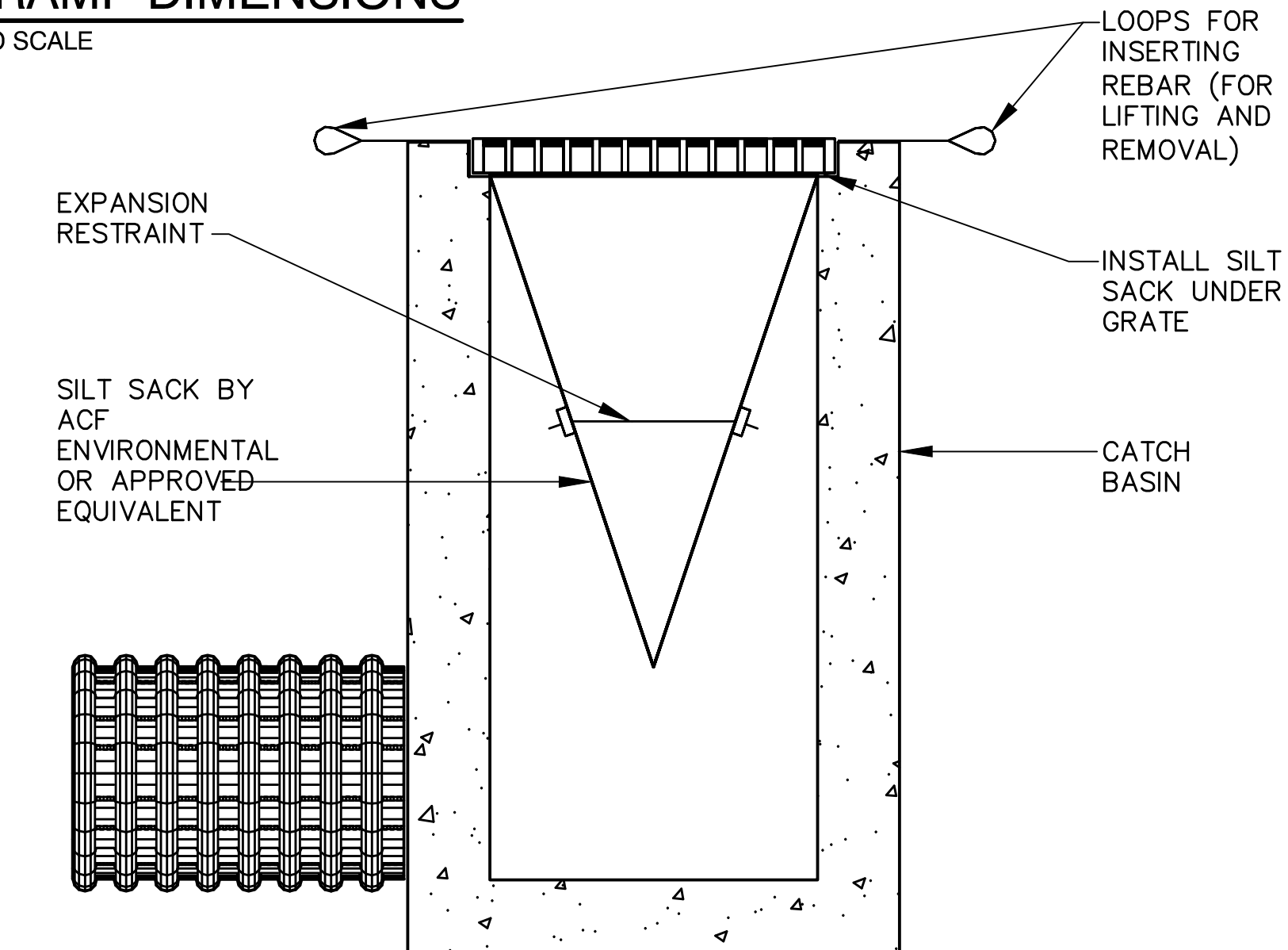
NOT TO SCALE



BOULDER PLACEMENT:
PLACE SELECTED BOULDERS AS SHOWN ON PLAN SO THEY LOOK AS IF THEY HAVE OCCURRED NATURALLY AND ARE IN A STABLE POSITION. SUBMERGE EACH BOULDER MIN. 1/3 OF THE DIAMETER INTO GROUND SO THAT NO UNDERCUTS ARE SHOWN. HANDLE WITH WOOD-LINED BUCKET OR CLOTH STRAPS TO MINIMIZE SCRATCHING.

LARGE BOULDER DETAIL

NOT TO SCALE



- NOTES:**
- INSTALL SILTSACK PER MANUFACTURER'S RECOMMENDATIONS.
 - SILTSACKS SHALL BE CHECKED FOR SEDIMENT LEVEL AND OVERALL CONDITION IMMEDIATELY AFTER EVERY RAIN EVENT AND AT LEAST EVERY DAY DURING PROLONGED RAINFALL..
 - SEDIMENT SHALL BE REMOVED WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE SILTSACK. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT WILL NOT ERODE.
 - SEDIMENT SHALL ONLY BE REMOVED BY REMOVING THE SILTSACKS FROM THE CATCH BASINS ACCORDING TO MANUFACTURER RECOMMENDATIONS.
 - CARE SHALL BE TAKEN TO AVOID SPILLING SEDIMENT WHILE REMOVING THE SILTSACK.
 - ANY DAMAGED SILTSACK SHALL BE REPLACED WITH A NEW SILTSACK.

INLET PROTECTION - SILT SACK

NOT TO SCALE

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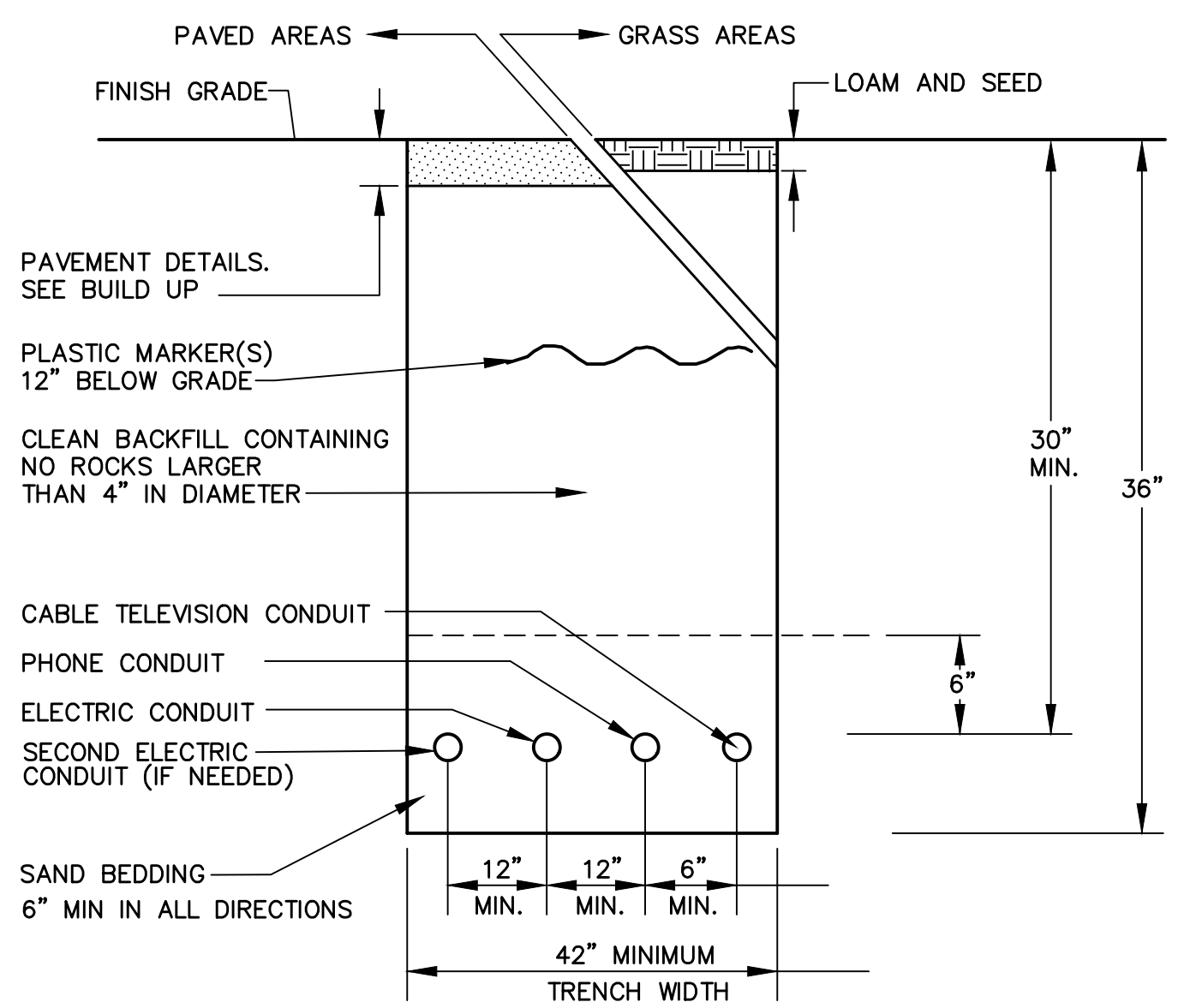
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EROSION AND SEDIMENTATION CONTROL, SITE AND UTILITY DETAILS

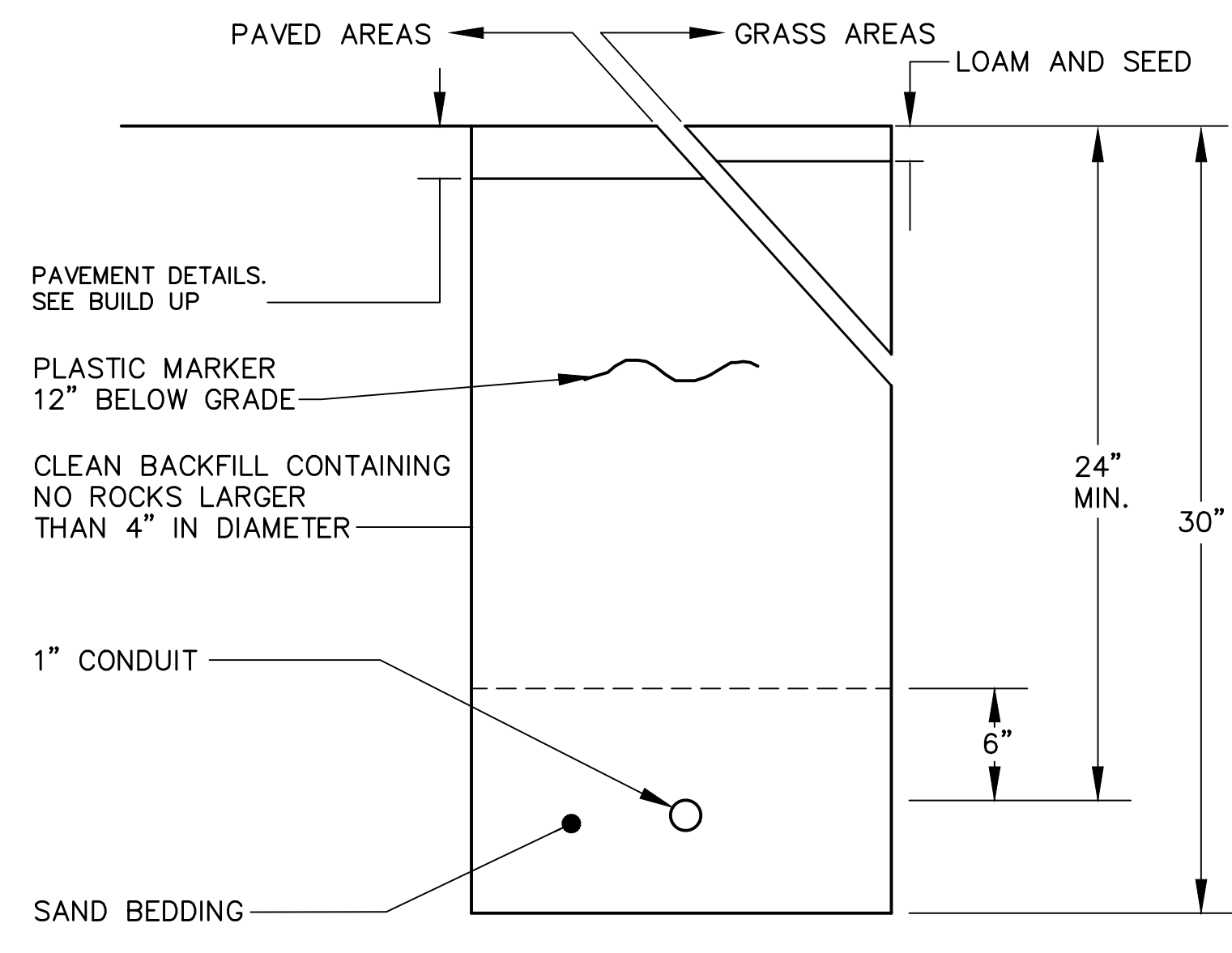
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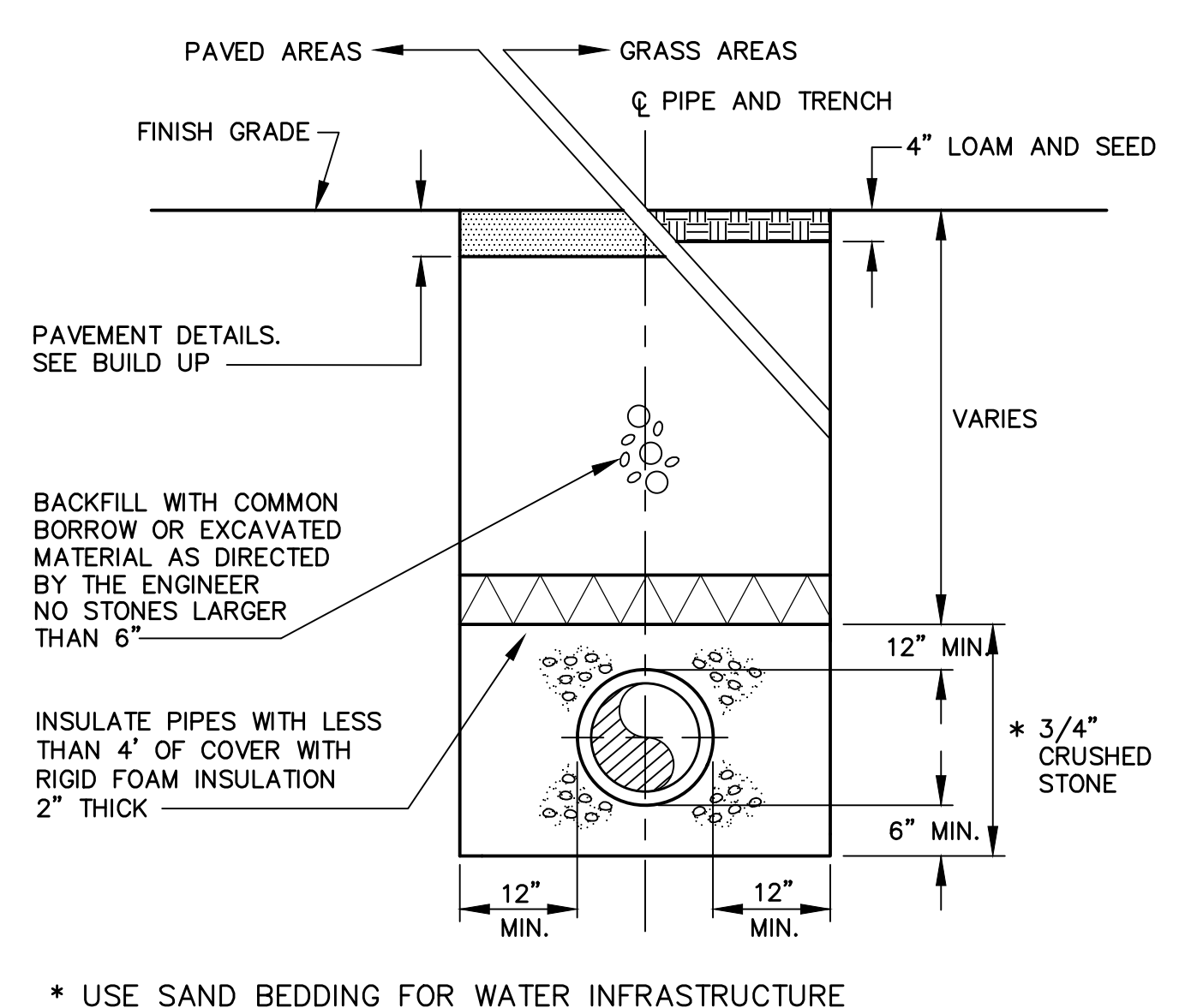
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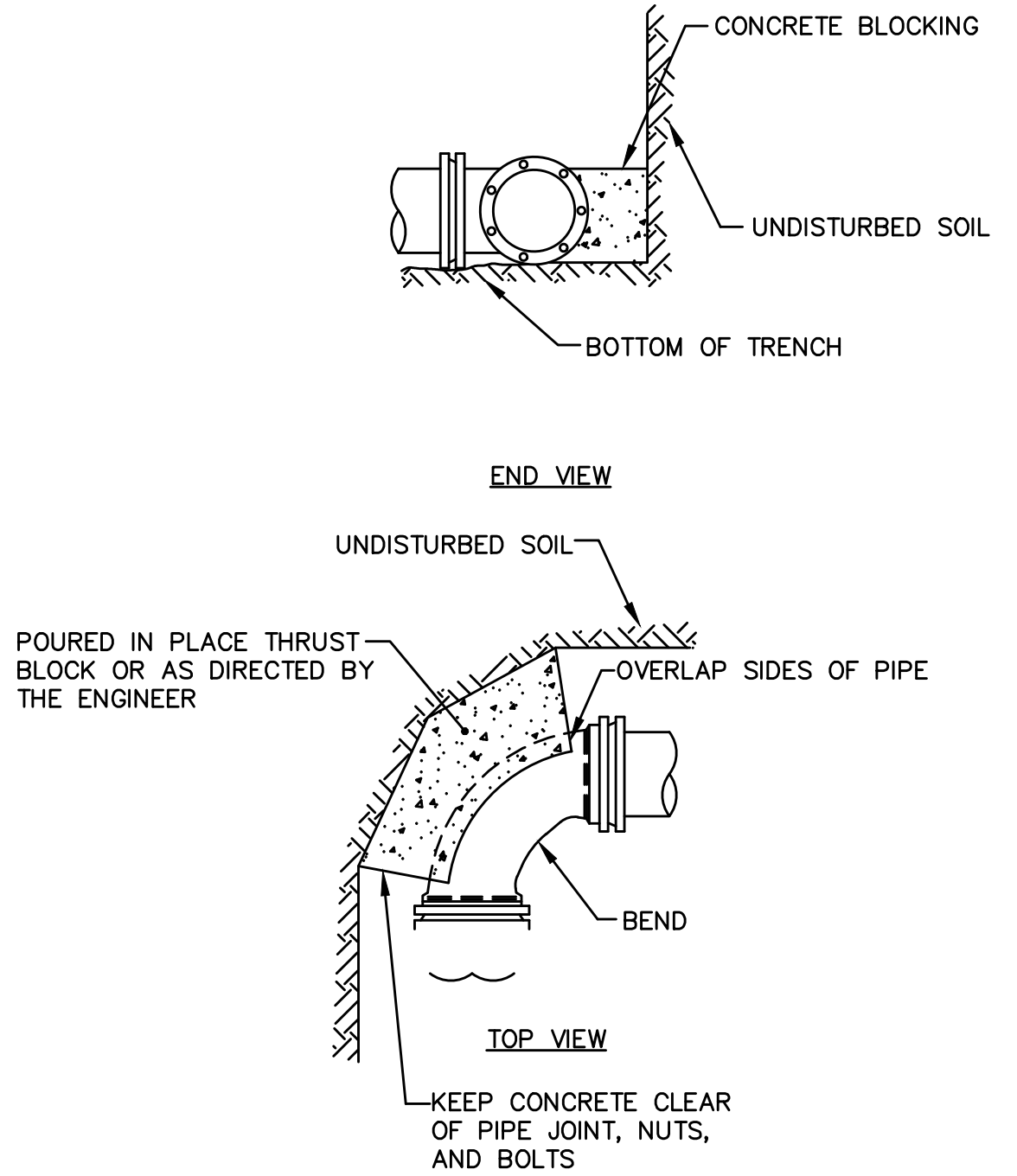
UTILITY TRENCH DETAIL
NOT TO SCALE



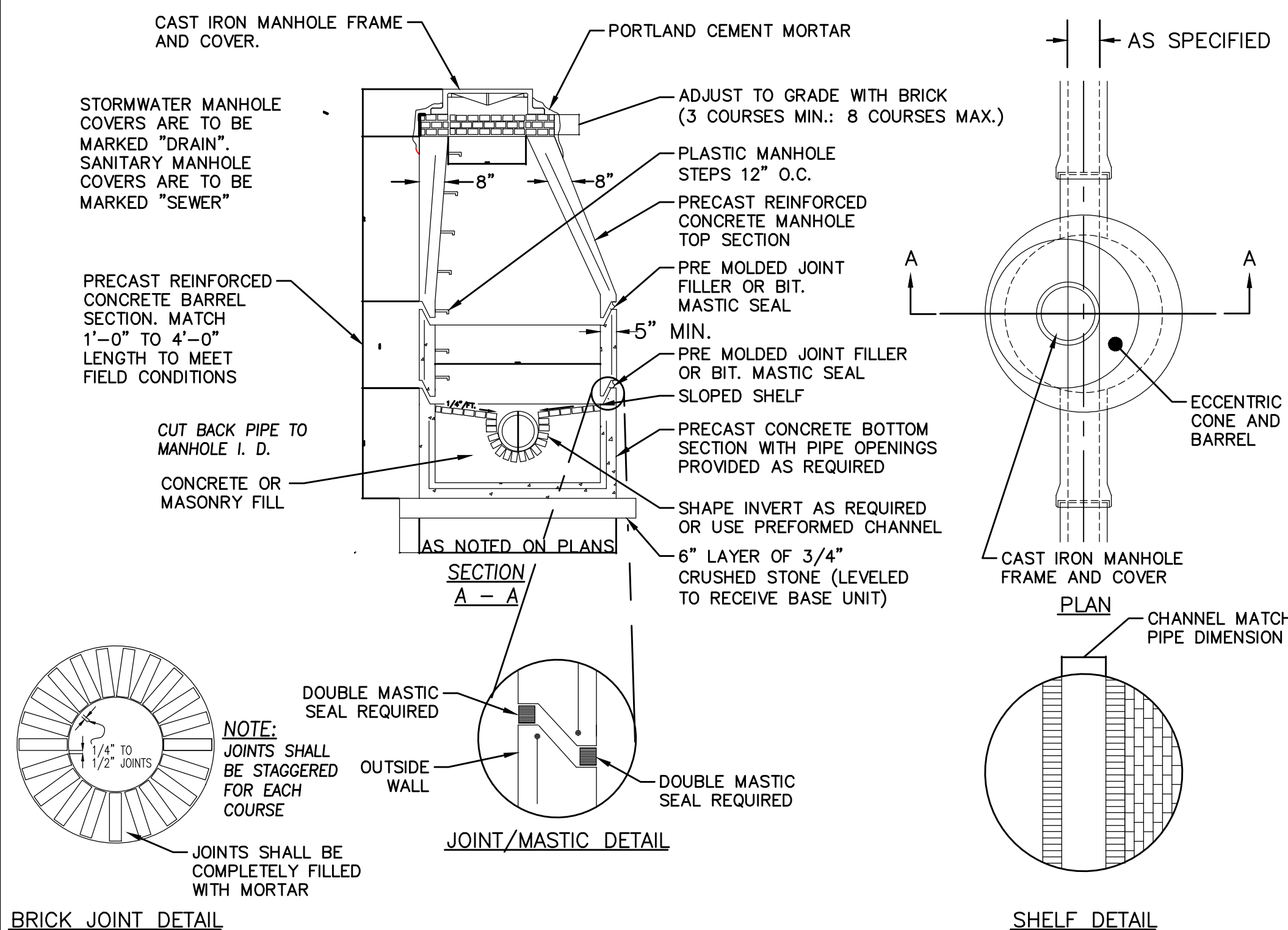
LIGHTING CONDUIT TRENCH DETAIL
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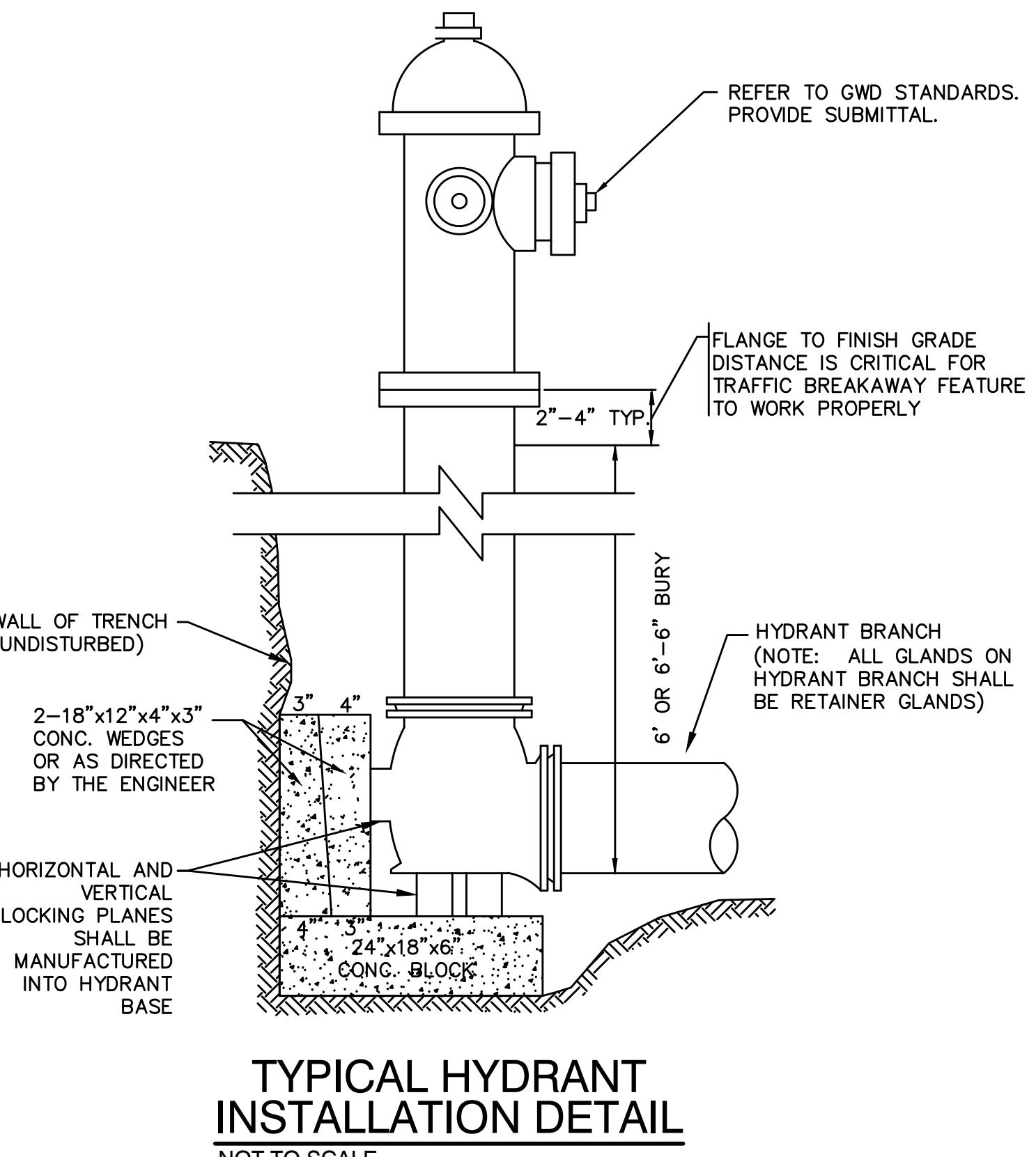
TYPICAL TRENCH DETAIL
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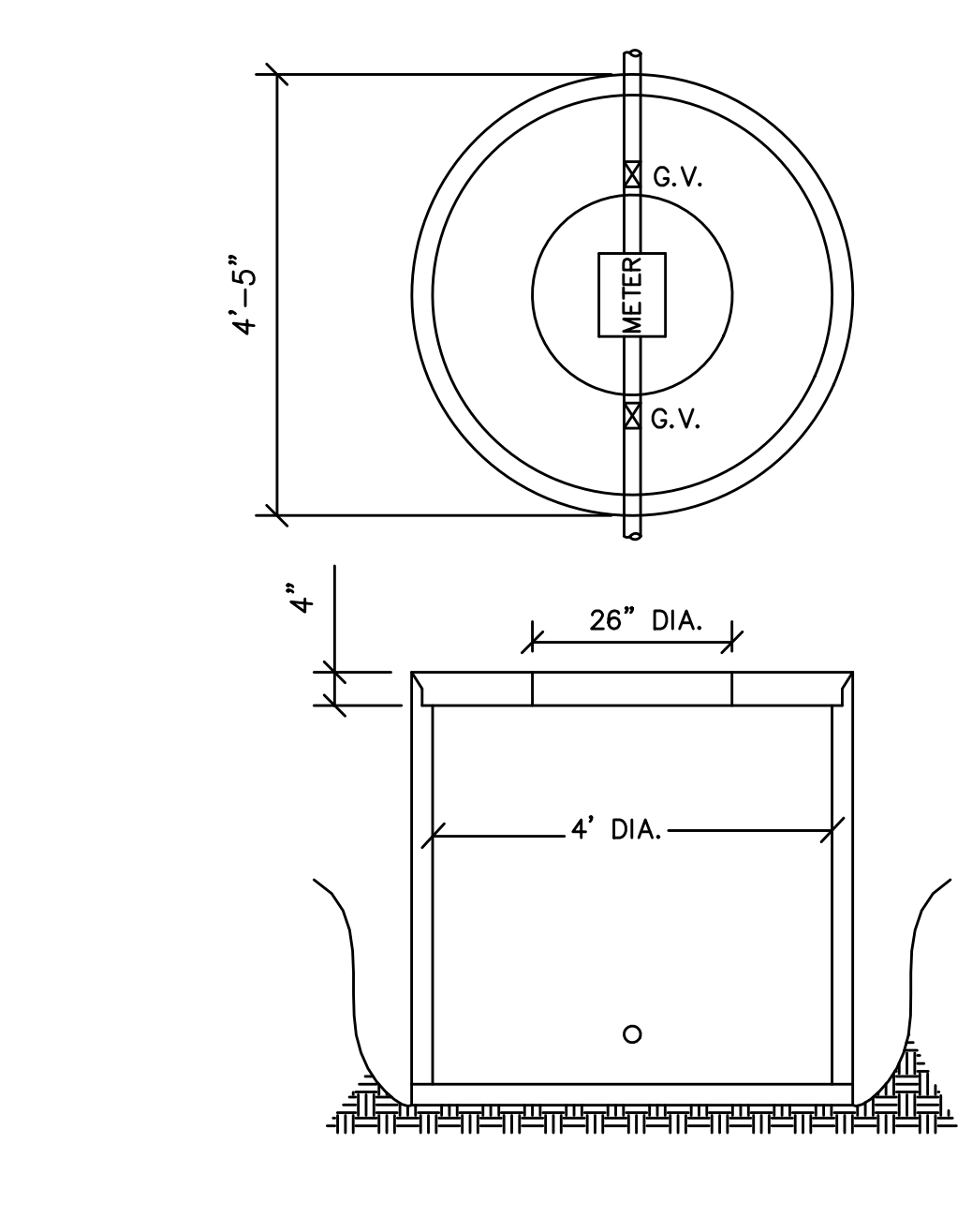
STANDARD BEND BLOCKING
NOT TO SCALE



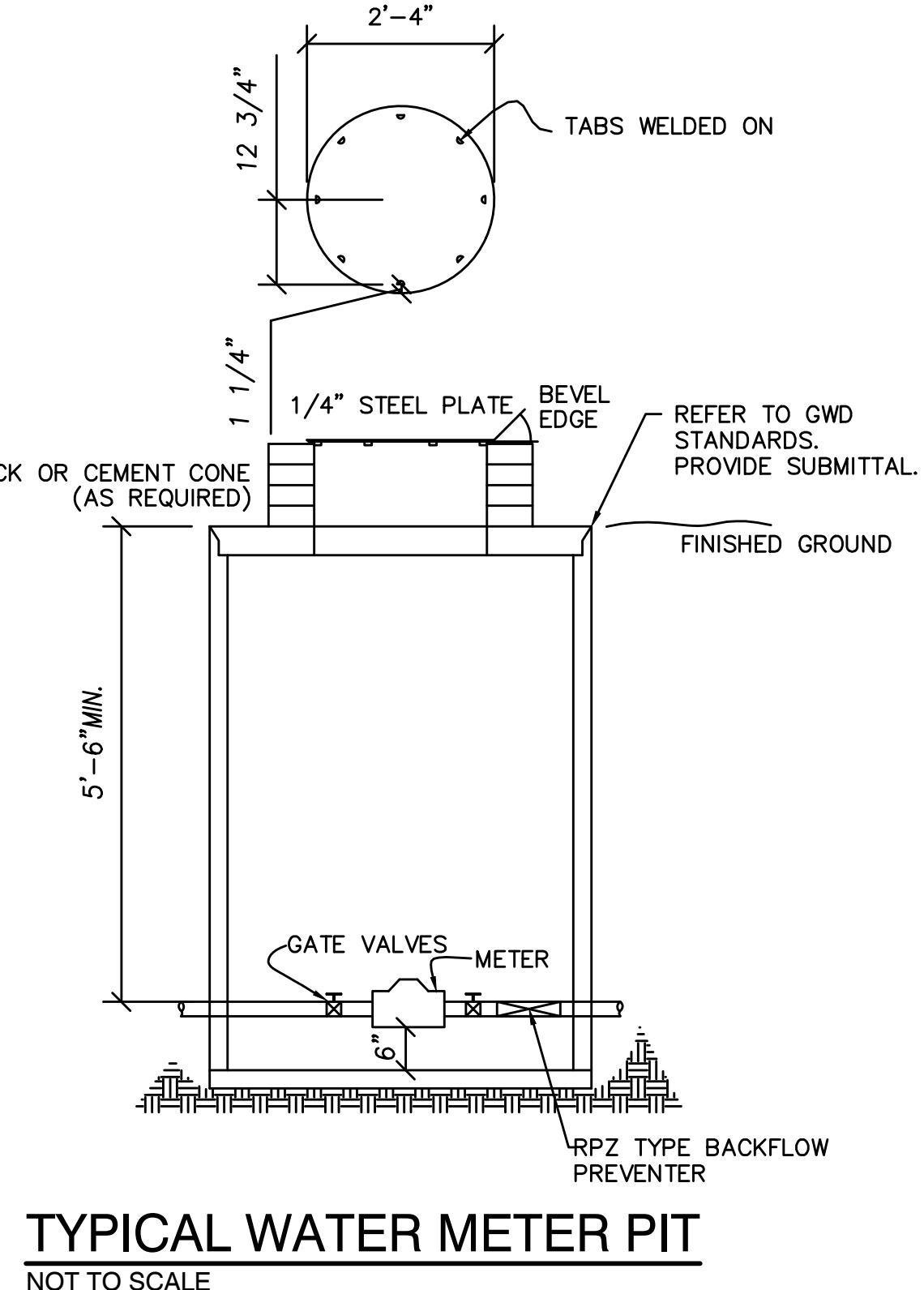
CAST IRON MANHOLE FRAME AND COVER
NOT TO SCALE



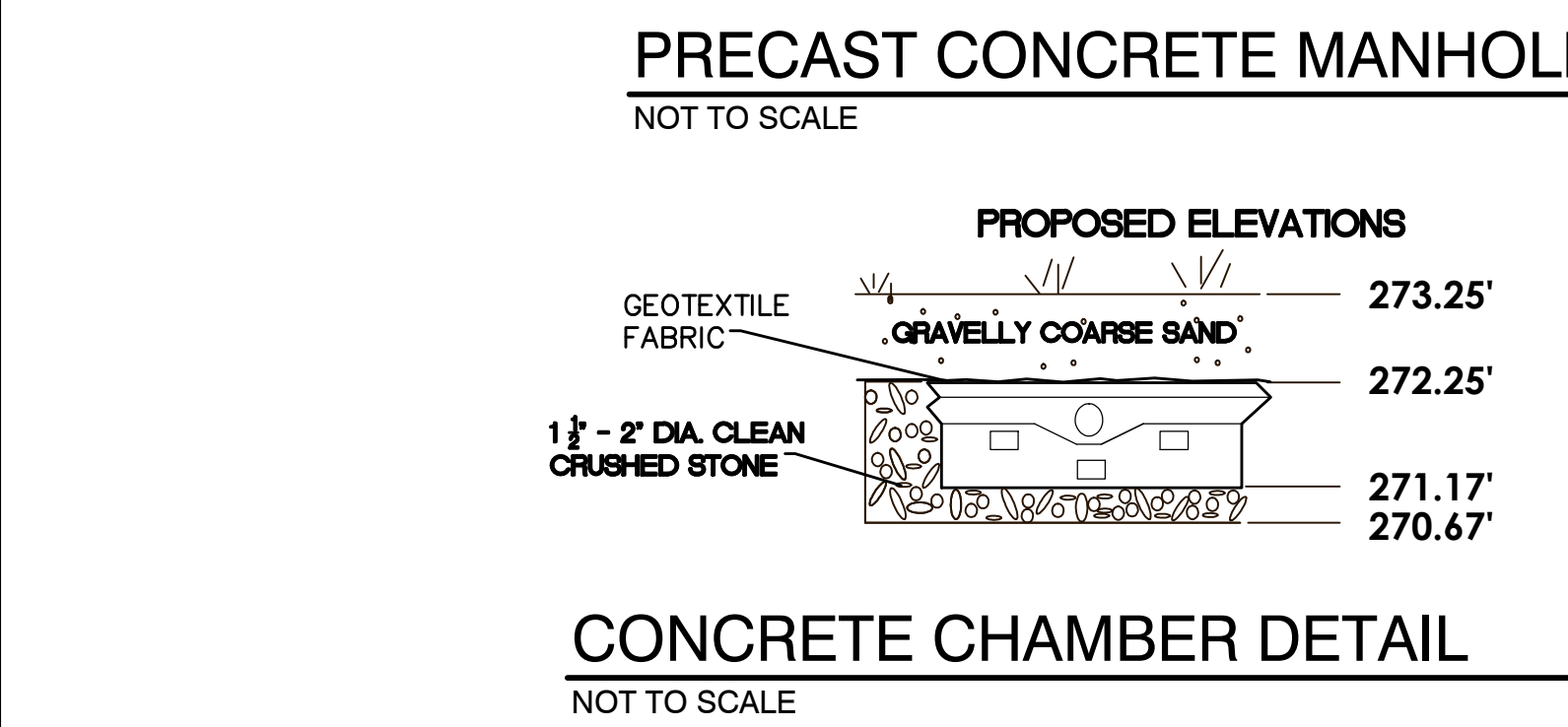
TYPICAL HYDRANT INSTALLATION DETAIL
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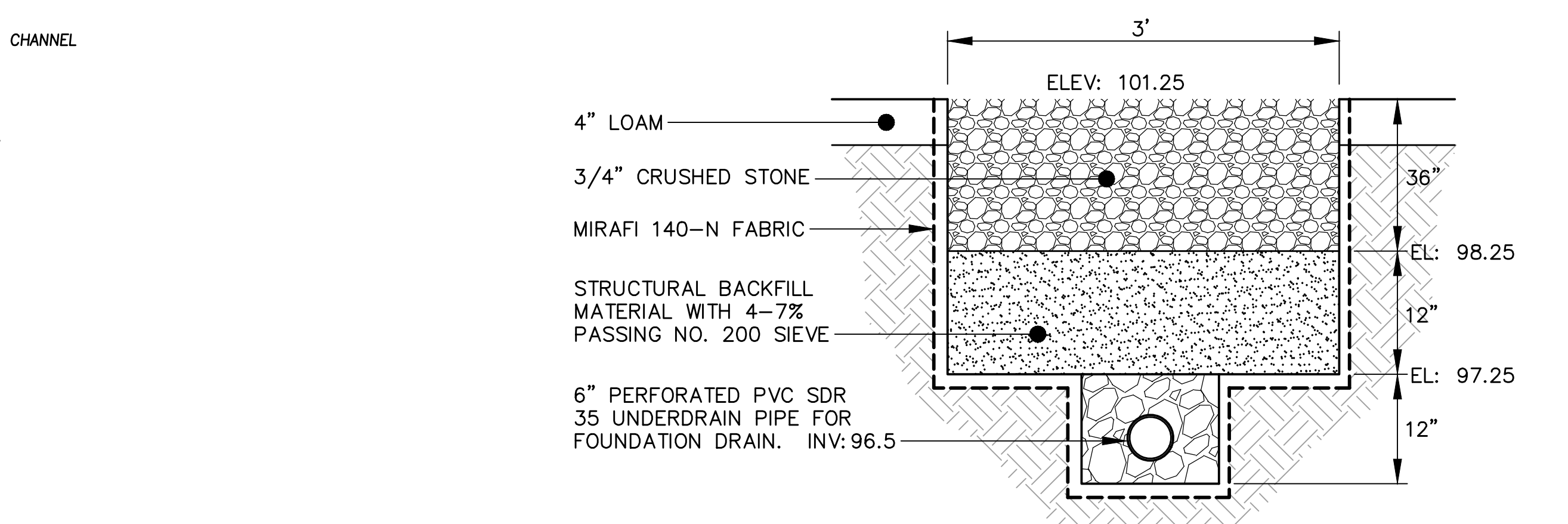
TYPICAL WATER METER PIT
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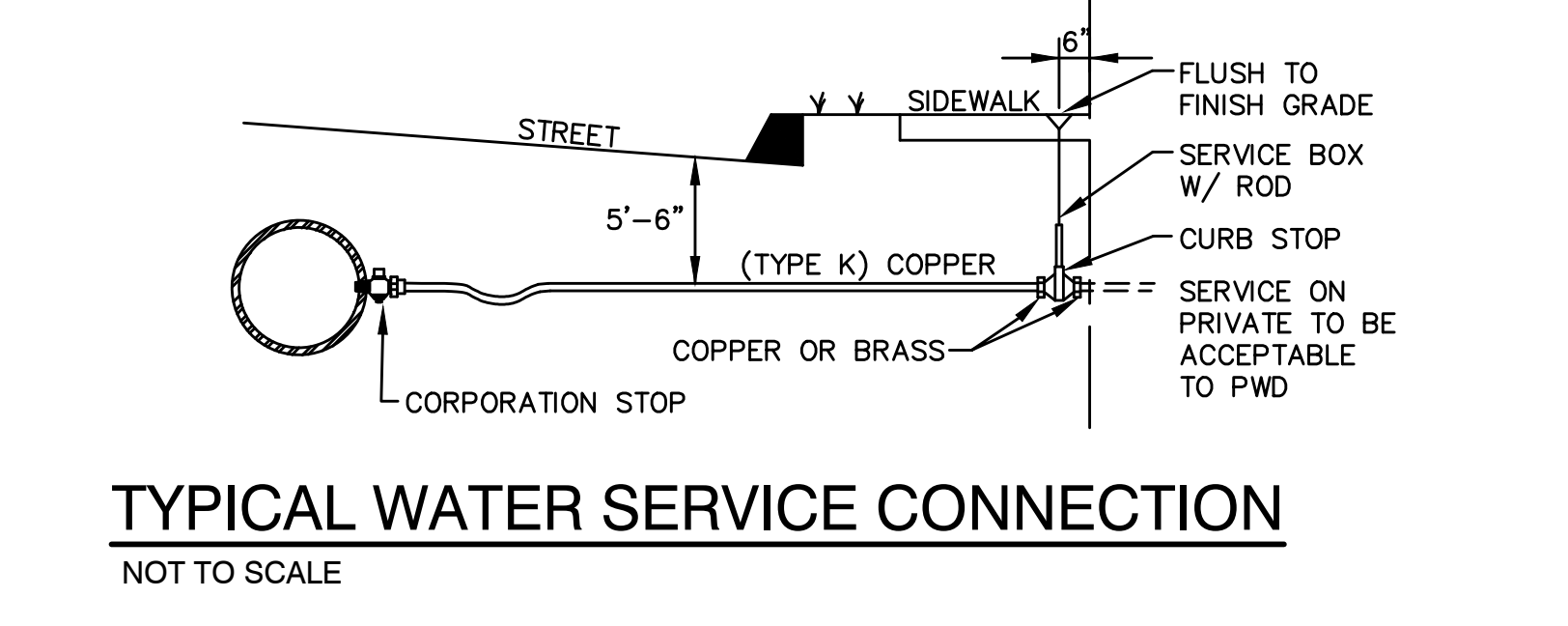
TYPICAL WATER METER PIT
NOT TO SCALE



PRECAST CONCRETE MANHOLE
NOT TO SCALE



PARKING LOT FILTER WITH UNDERDRAIN DETAIL
NOT TO SCALE



TYPICAL WATER SERVICE CONNECTION
NOT TO SCALE

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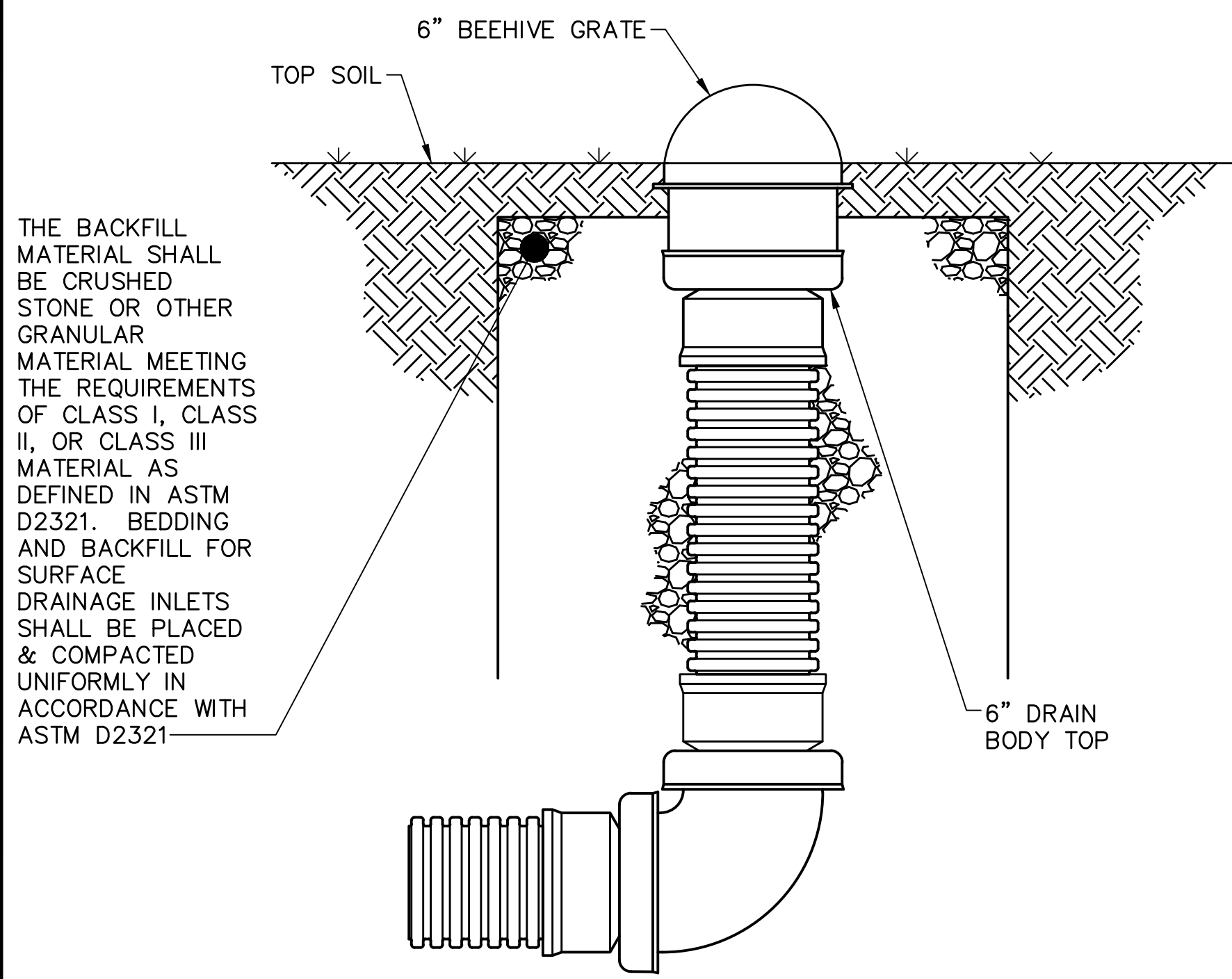
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UTILITY DETAILS

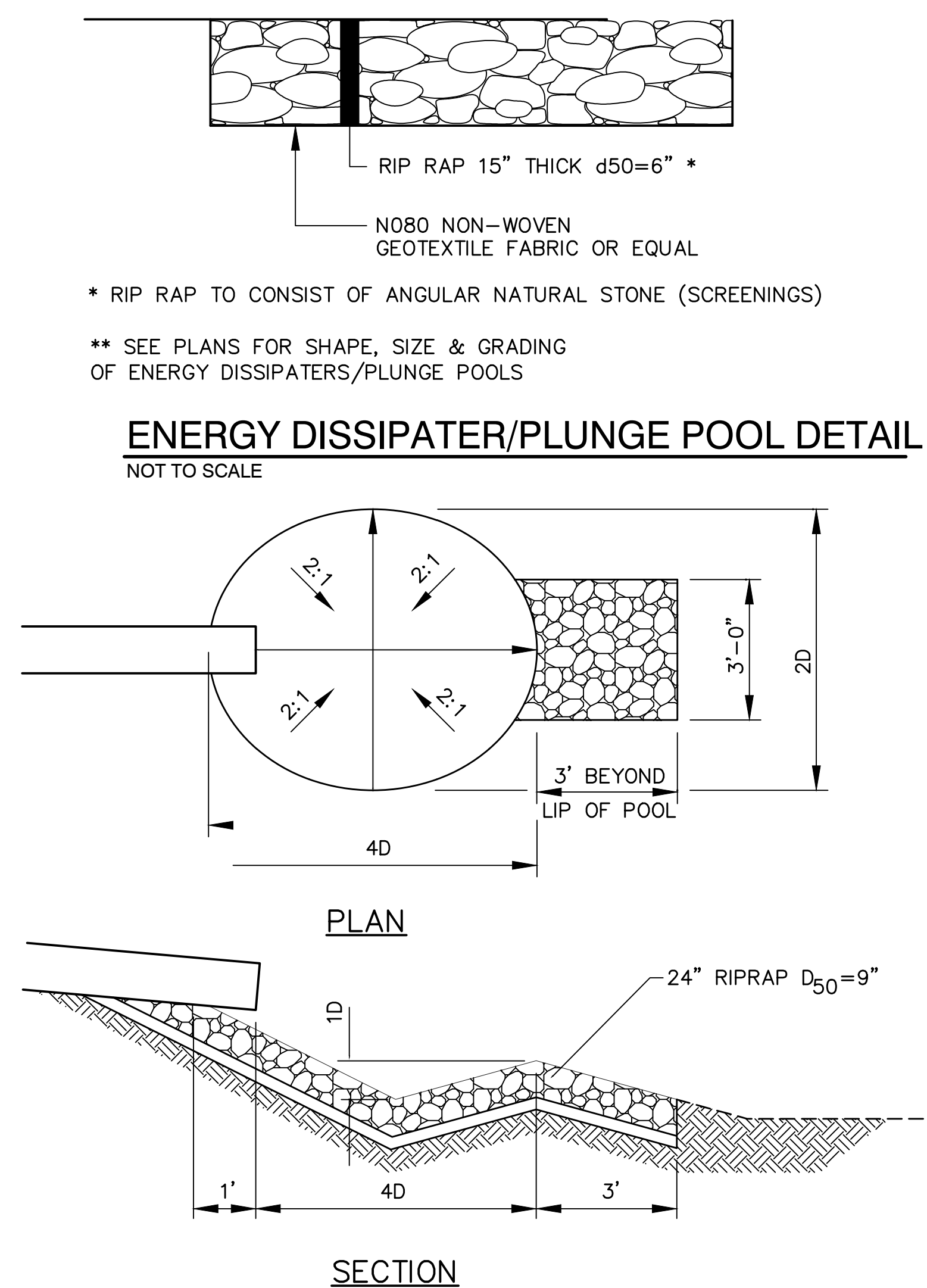
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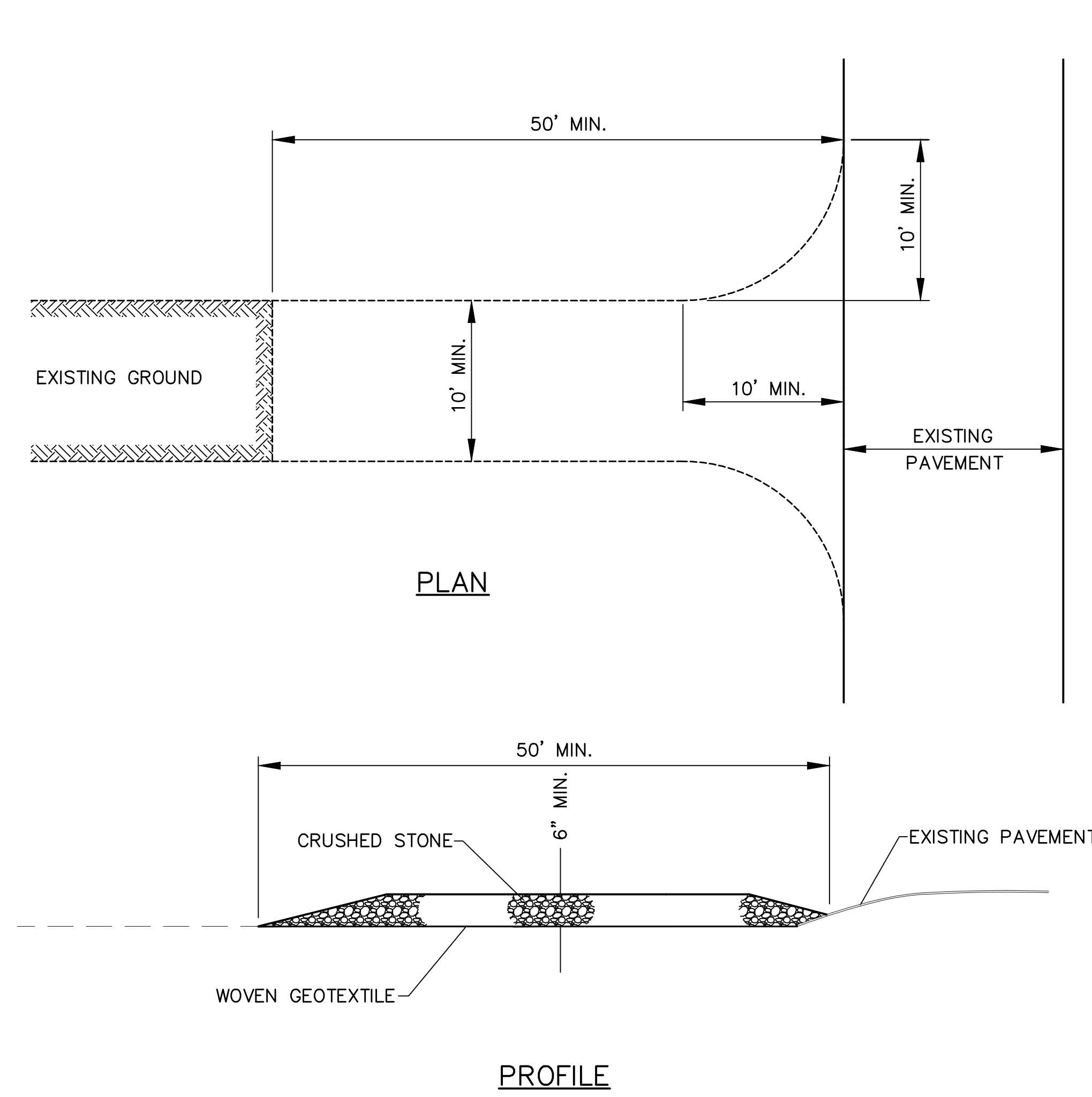


6" NYLOPLAST DRAIN DETAIL
NOT TO SCALE

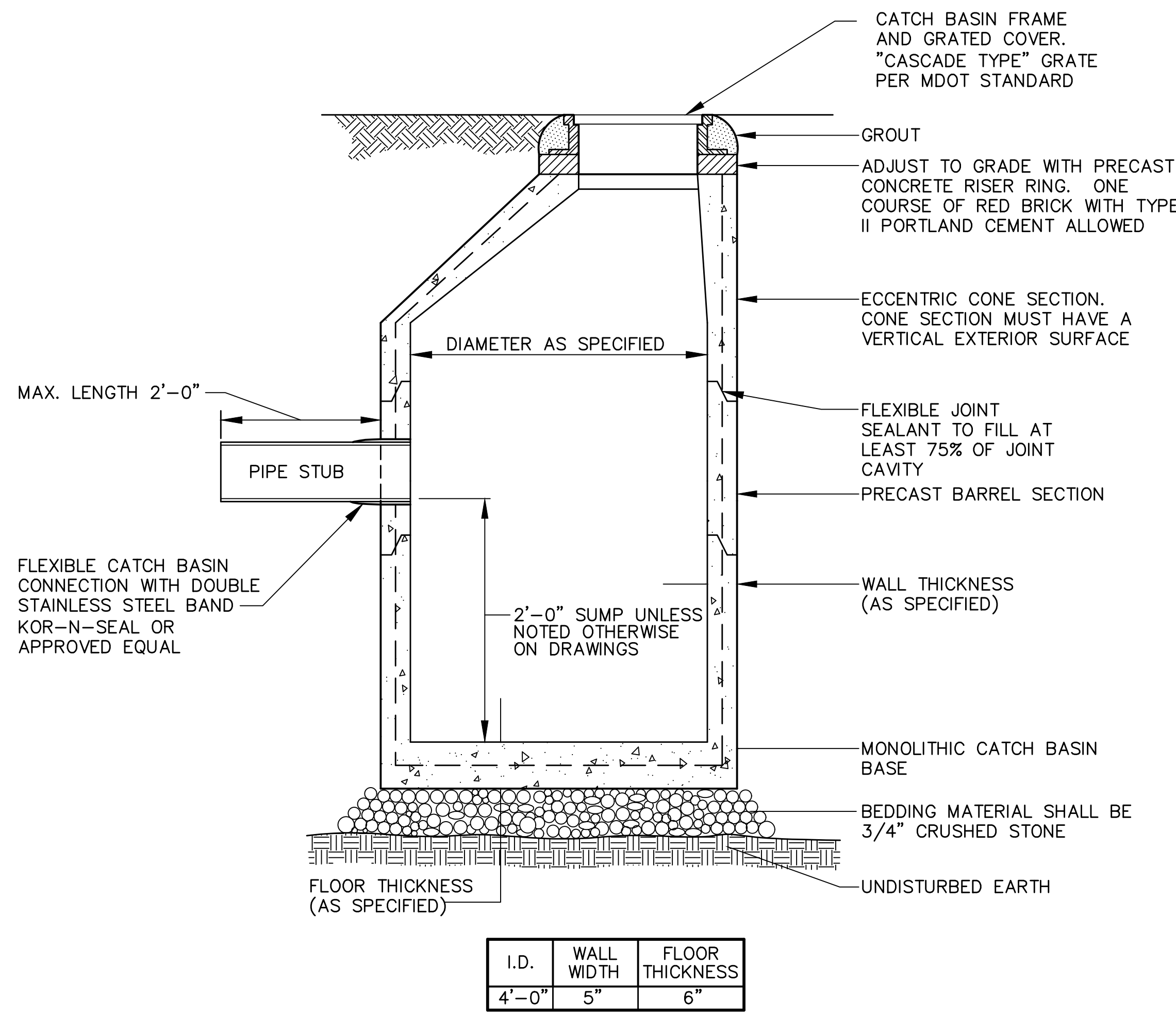


ENERGY DISSIPATER/PLUNGE POOL DETAIL
NOT TO SCALE

OUTLET PLUNGE POOL
NOT TO SCALE

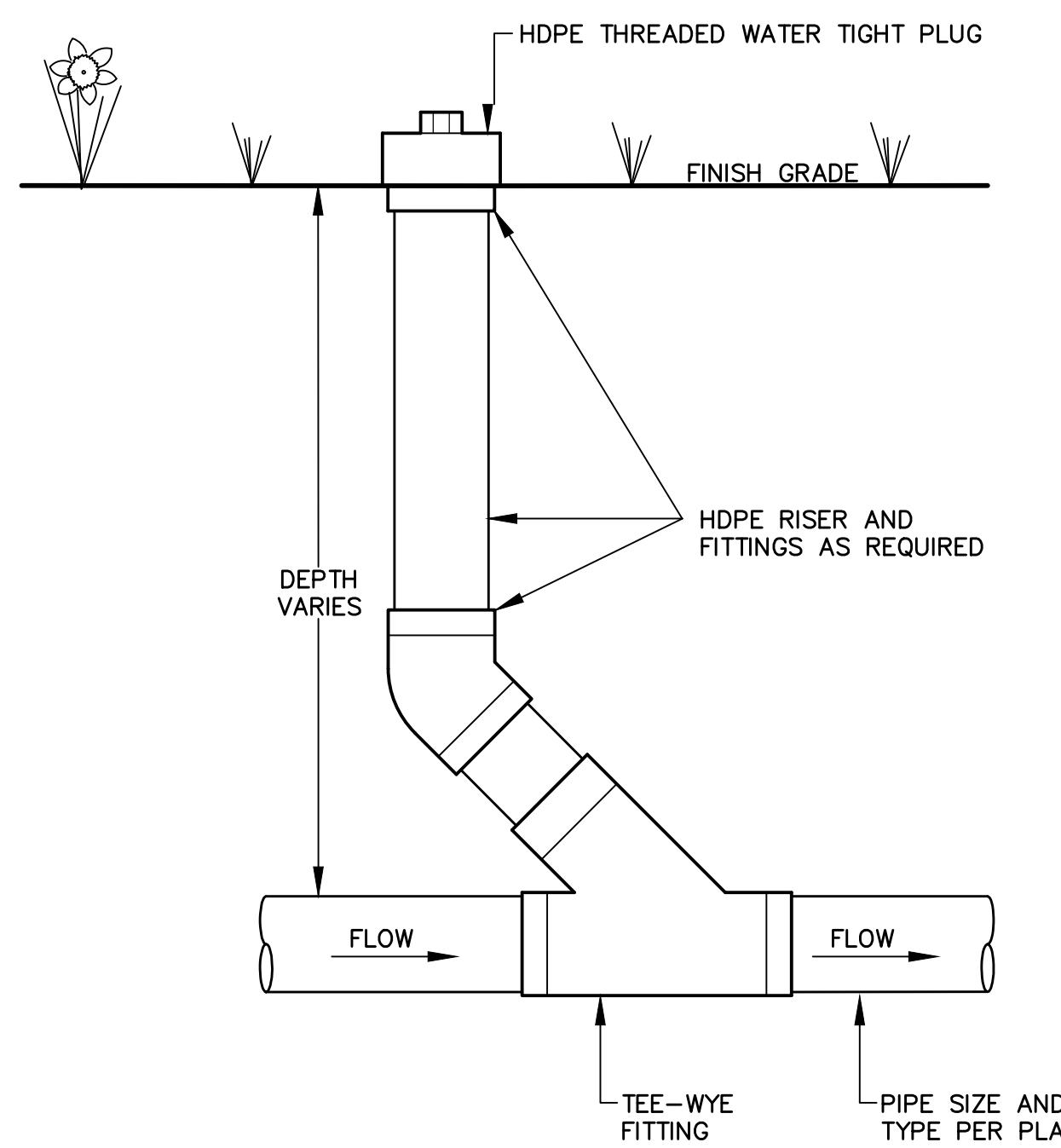


STABILIZED CONSTRUCTION ENTRANCE
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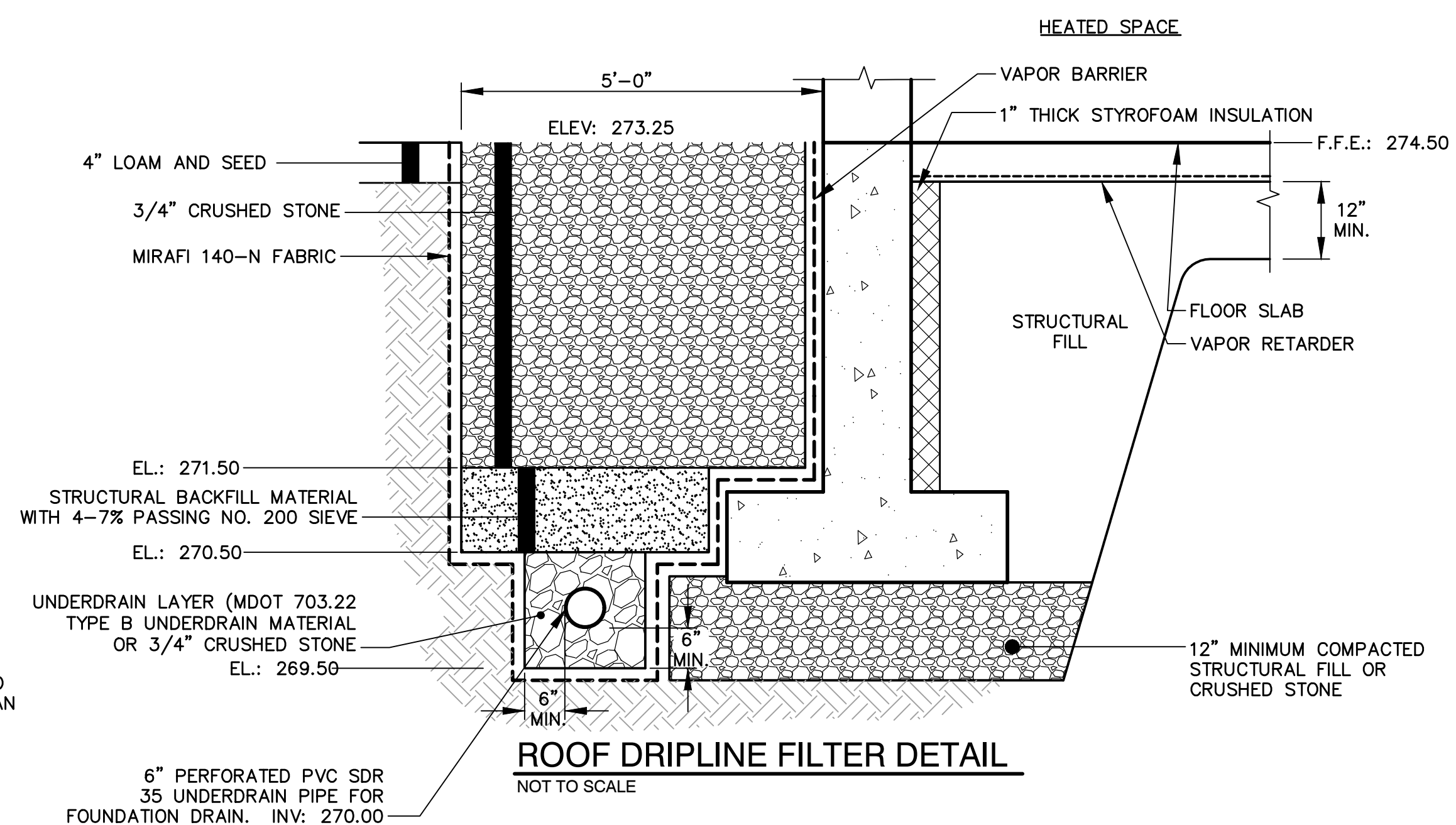


PRECAST CONCRETE CATCH BASIN
NOT TO SCALE

I.D.	WALL THICKNESS	FLOOR THICKNESS
4'-0"	5"	6"



DRAIN CLEANOUT DETAIL
NOT TO SCALE



ROOF DRIPLINE FILTER DETAIL
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GRADING AND STORMWATER DETAILS

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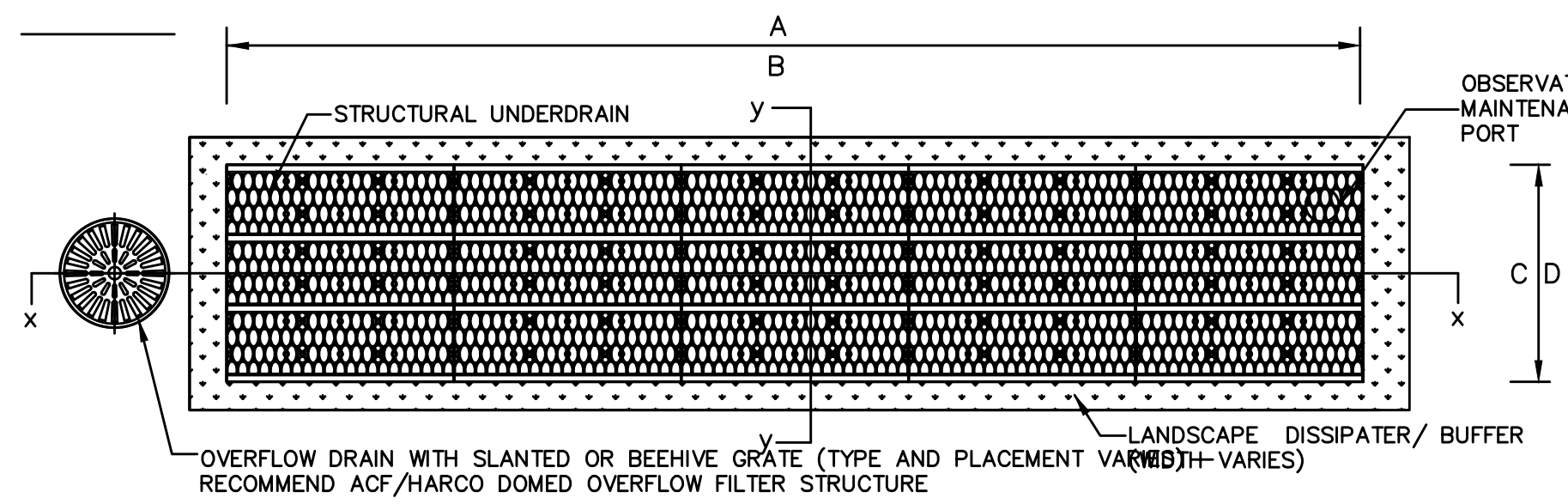
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Project:	Date:
191.06051	DECEMBER 2019

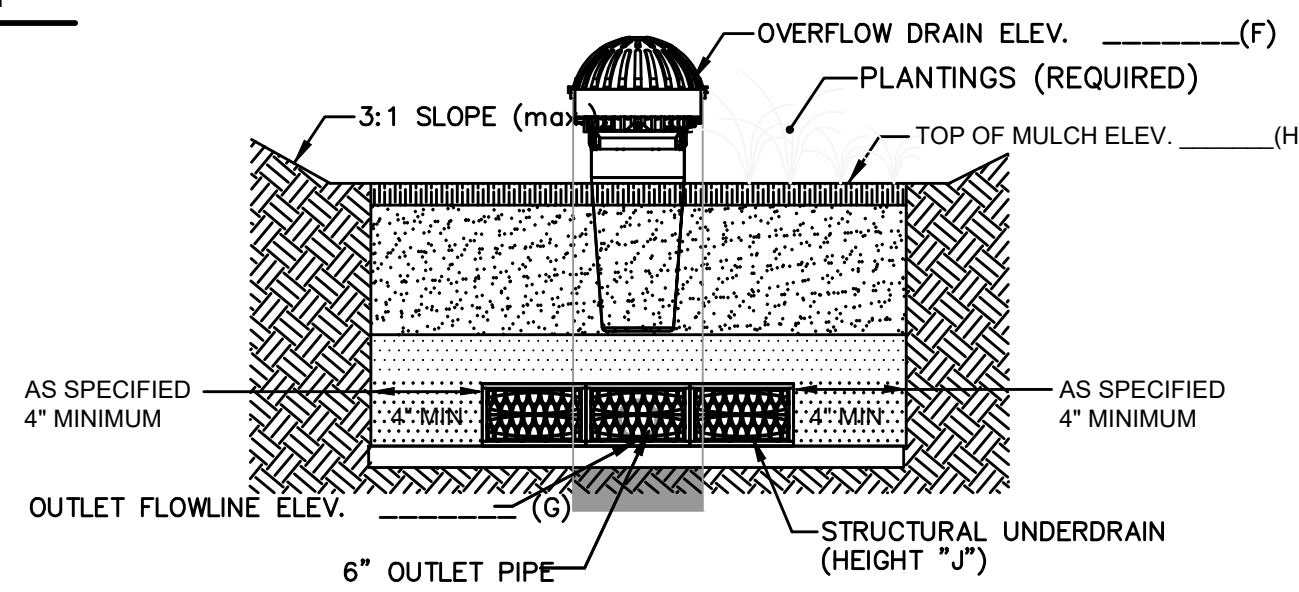
Sheet No: **C2.4**

FOCALPOINT KEY DIMENSIONAL DATA				
FOCALPOINT I.D.	FP-1	FP-2	FP-3	FP-4
A	FOCALPOINT LENGTH (FT)	VARIABLES (SEE PLAN)	9.4	9.4
B	# UNDERDRAIN LONG	7 *	4 *	4 *
C	FOCALPOINT WIDTH (FT)	VARIABLES (SEE PLAN)	2.6	2.6
D	# UNDERDRAIN WIDE	3 *	2*	2*
E	WATER QUALITY VOLUME(CF)	1,729	200	177
F	OVERFLOW ELEVATION (FT)	272.78	272.57	272.57
G	OUTLET FLOWLINE (FT)	269.05	269.05	269.05
H	TOP OF MULCH (FT)	271.78	272.07	272.07
J	UNDERDRAIN HEIGHT	XD TRIPLE	MINI	MINI

* SEE R-TANK DETAIL FOR DIMENSIONS



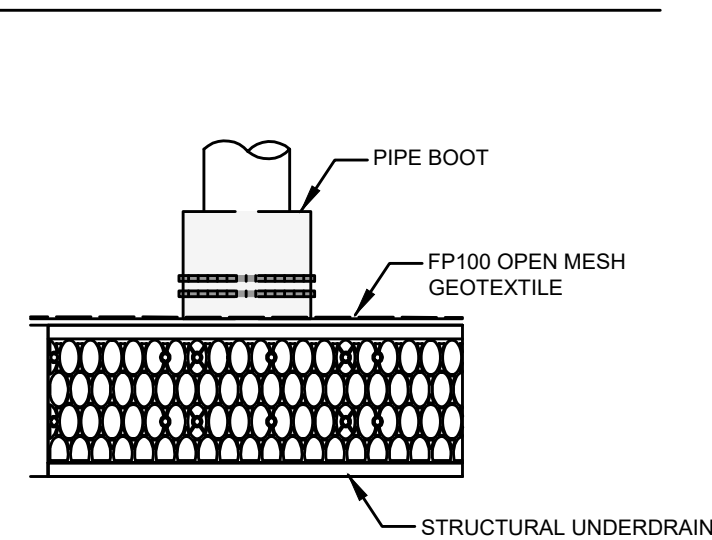
SECTION Y-Y



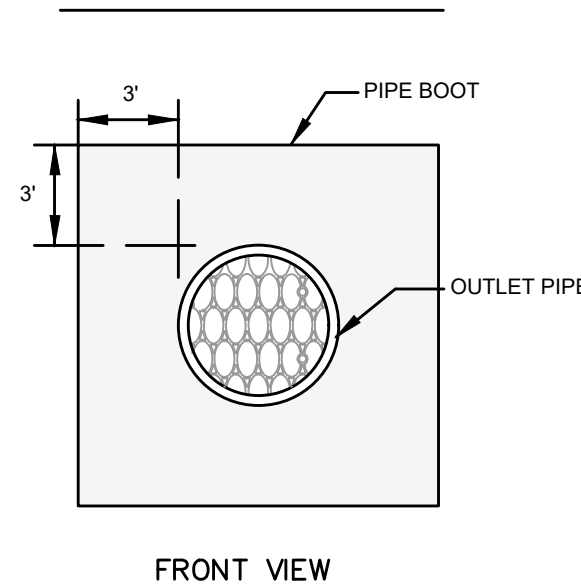
FOCALPOINT CONSTRUCTION GUIDE

NOT TO SCALE

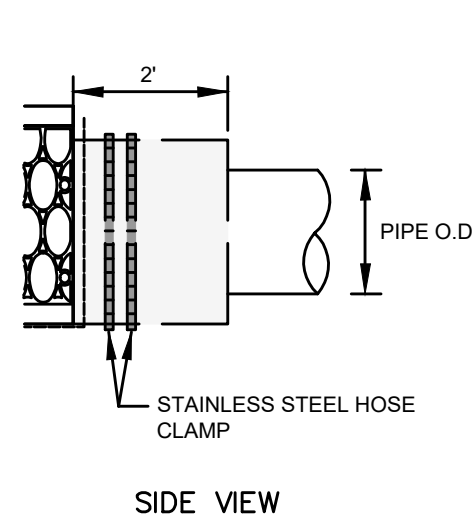
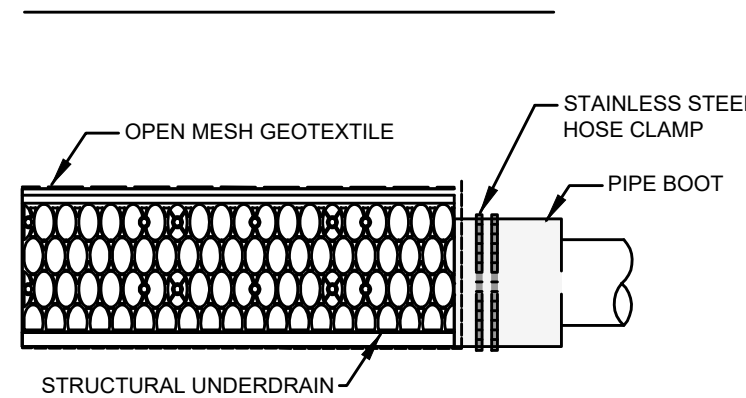
OBSERVATION/ MAINTENANCE PORT CONNECTION



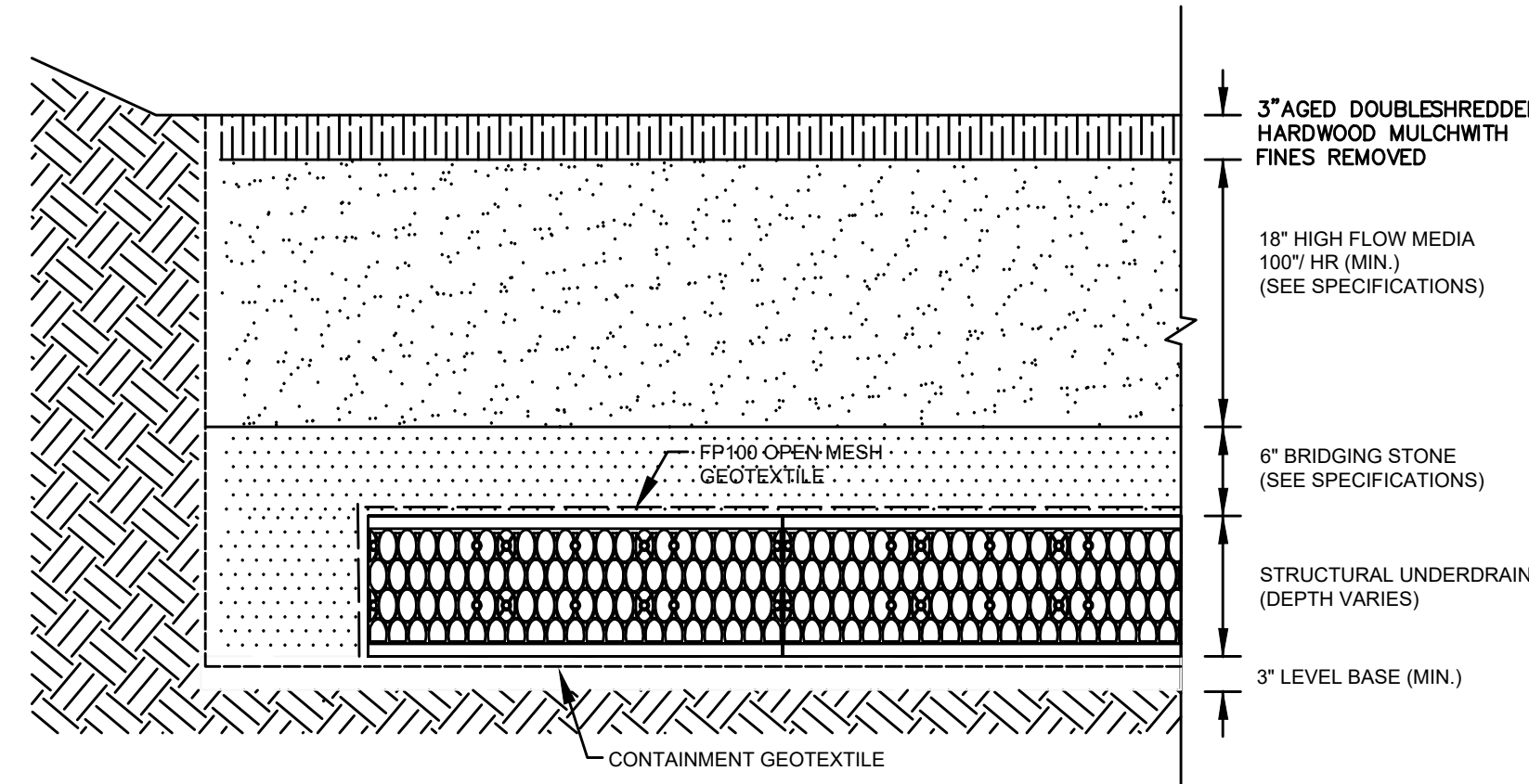
PIPE BOOT DETAIL



OUTLET/ INLET PIPE CONNECTION



FOCALPOINT PIPE CONNECTION DETAIL
NOT TO SCALE



FOCALPOINT HP PERFORMANCE SPECIFICATION:

HIGH PERFORMANCE MEDIA
HIGH PERFORMANCE MEDIA MUST MEET A MINIMUM OF 100" PER HOUR INFILTRATION RATE.

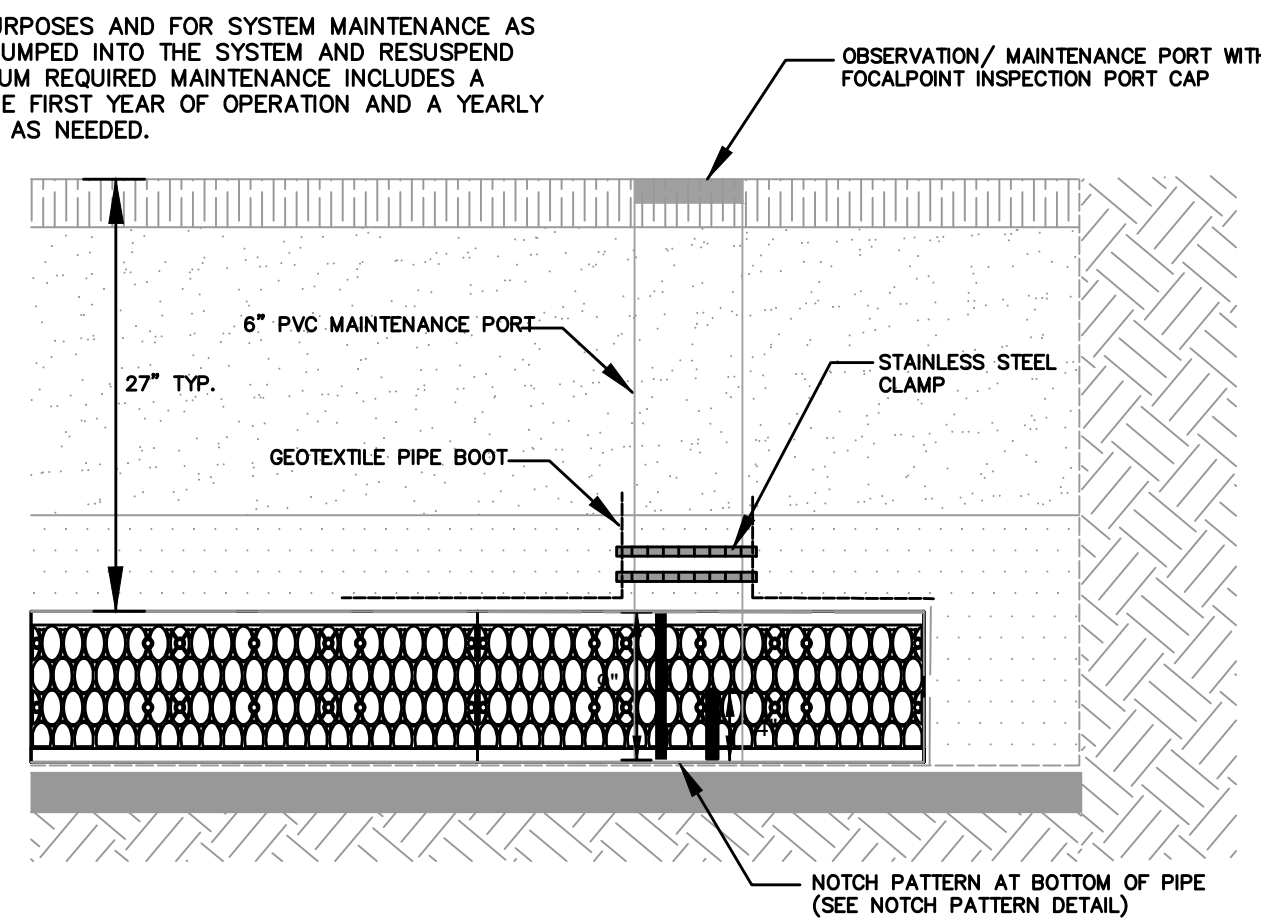
HIGH PERFORMANCE STRUCTURAL UNDERDRAIN
MUST HAVE A MINIMUM OF 19 SQUARE INCHES OF ORIFICE OPENING PER SQUARE FOOT. MUST MEET H2O LOADING REQUIREMENTS. MUST BE MODULAR IN NATURE AND ASSEMBLED ON SITE. MUST HAVE MINIMUM 90% INTERIOR VOID SPACE.

FOCALPOINT DETAILED CROSS SECTION

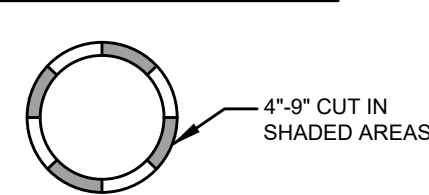
NOT TO SCALE

OBSERVATION/ MAINTENANCE PORT

PORT USED FOR INSPECTION PURPOSES AND FOR SYSTEM MAINTENANCE AS REQUIRED. WATER SHALL BE PUMPED INTO THE SYSTEM AND RESUSPENDED ACCUMULATED SEDIMENT. MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION FOR THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER FLUSH AS NEEDED.



PIPE NOTCH PATTERN DETAIL



FOCALPOINT OBSERVATION PORT DETAIL
NOT TO SCALE

FOCALPOINT HP PERFORMANCE SPECIFICATION:

HIGH PERFORMANCE MEDIA

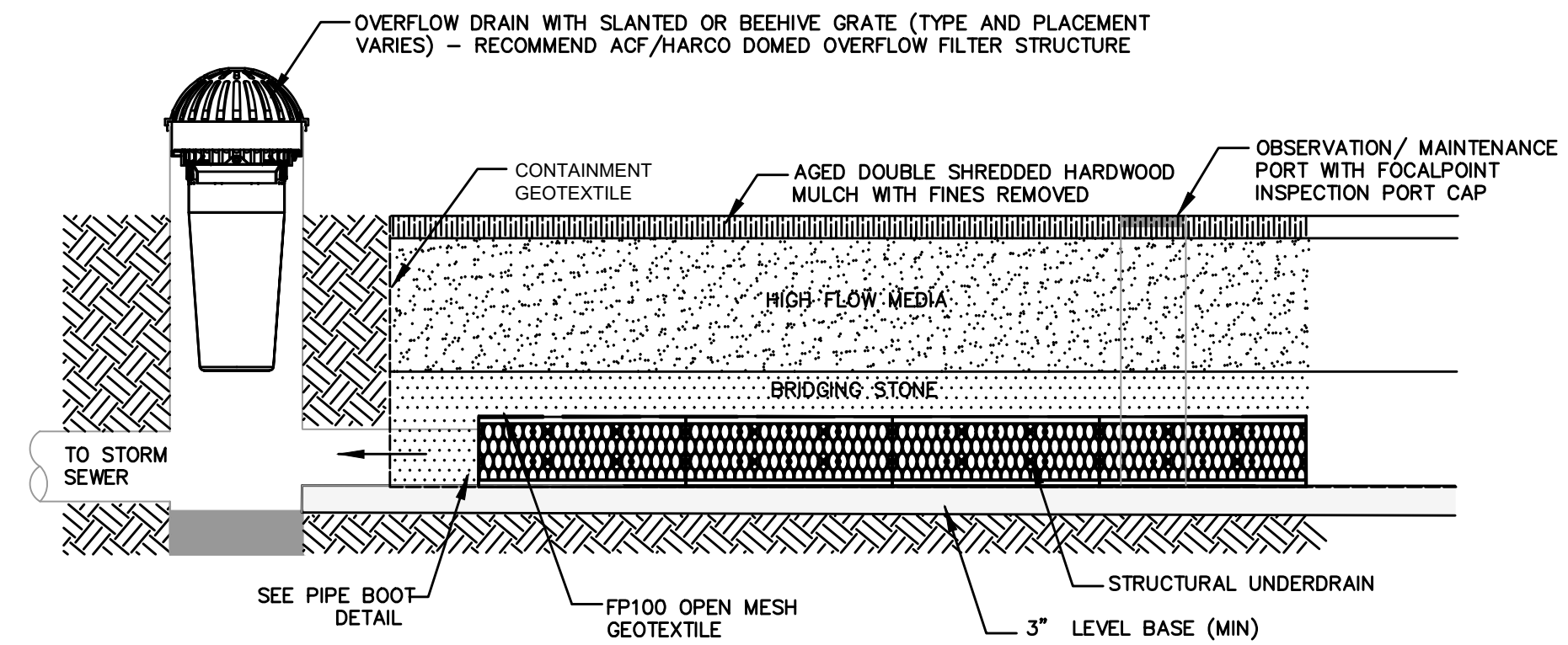
HIGH PERFORMANCE MEDIA MUST MEET A MINIMUM OF 100" PER HOUR INFILTRATION RATE. FIELD HYDRAULIC CONDUCTIVITY TESTING MUST BE CONDUCTED WITHIN 30 DAYS OF INSTALLATION. FIELD TEST MUST BE CONDUCTED WITH PROSCRIBED INFILTRMETER AND SOP (SEE SPECIFICATION). FAILURE TO MEET FIELD TESTING WILL RESULT IN THE REMOVAL OF MEDIA AND REPLACEMENT FROM ALTERNATE BATCH.

HIGH PERFORMANCE STRUCTURAL UNDERDRAIN

MUST HAVE A MINIMUM OF 19 SQUARE INCHES OF ORIFICE OPENING PER SQUARE FOOT. MUST MEET H2O LOADING REQUIREMENTS. MUST BE MODULAR IN NATURE AND ASSEMBLED ON SITE. MUST HAVE MINIMUM 90% INTERIOR VOID SPACE.

PLANT COMPONENT

SUPPLIER SHALL PROVIDE LIST OF ACCEPTABLE PLANTS IF PLANTS ARE NOT INCLUDED IN THE LANDSCAPE CONTRACT/PLANS. SITE CONTRACTOR SHALL PROVIDE PLANTS. PLANTS SHALL BE INSTALLED AT THE TIME THE SYSTEM IS COMMISSIONED FOR USE. PLANTING OUTSIDE THIS TIME REQUIRES APPROVAL BY THE ENGINEER/LANDSCAPE ARCHITECT OF RECORD. SEE FOCALPOINT INSTALLATION GUIDE FOR PLANT SPACING, PLANTING PROCEDURES ETC.



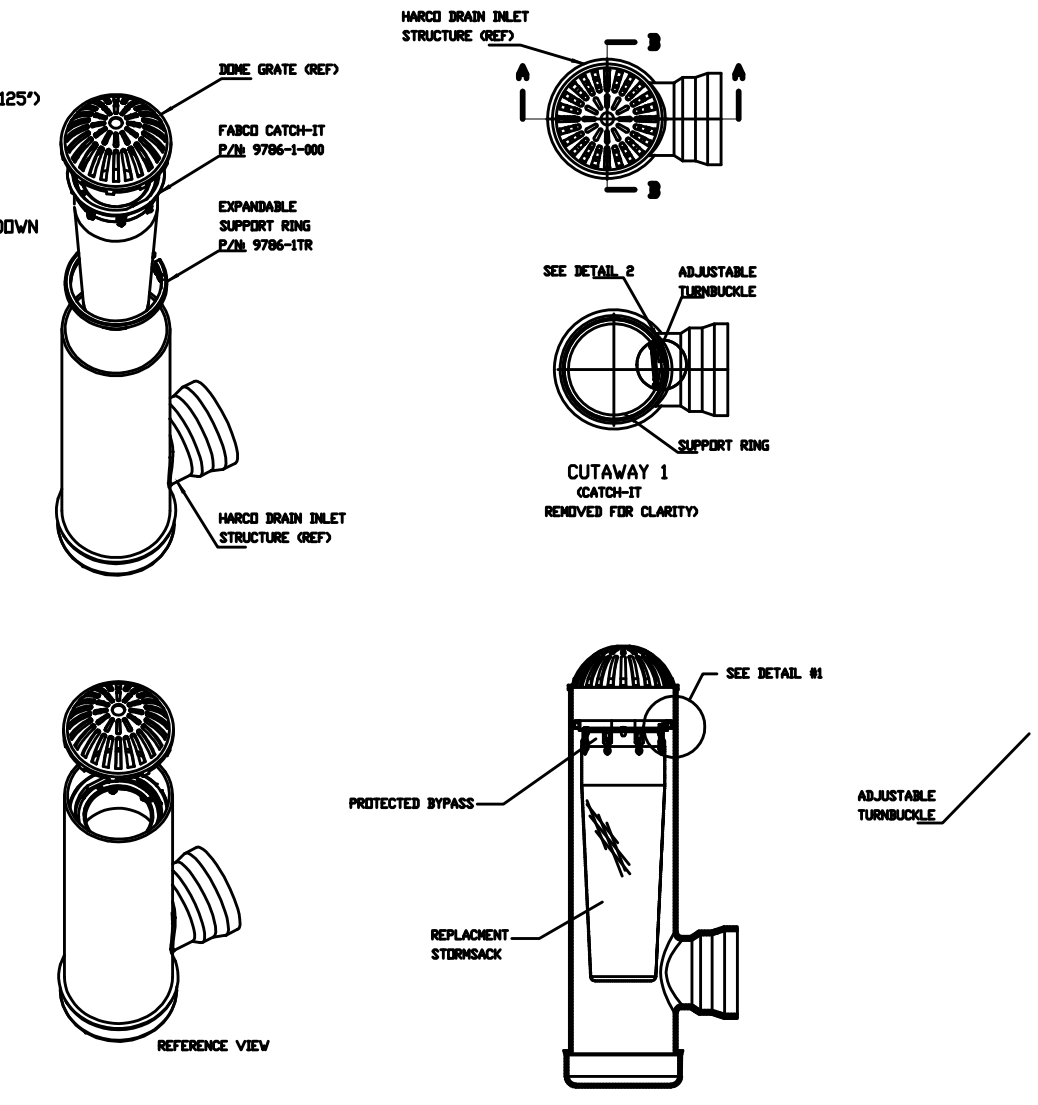
FOCALPOINT SECTION X-X

NOT TO SCALE

NOTES:

- STORMSACK WEIGHT (EMPTY) 12 LB MAX
- MATERIAL:
 - A) SHROUD HIGH DENSITY POLYETHYLENE (TYPICAL WALL THICKNESS .25")
 - B) SUPPORT HIGH DENS. POLYMER GRATED
 - C) STORMSACK VINYL POLYPROPYLENE GEOTEXTILE (GEOFLEX 1177)
 - D) HARDWARE ALUMINUM POP-RIVETS
- RECOMMENDED MINIMUM VAULT DEPTH 2-IN BELOW CARTRIDGE
- TYPICAL INSTALLATION: RAISE STORM GRATE, PUSH CATCH-IT SHROUD DOWN ON FRAME SUPPORT LEDGE UNTIL LOCKING-CLIPS CLICK IN PLACE, LOWER STORM GRATE.
- USE ONLY WITH FABRIC REPLACEABLE STORMSACK.

STRUCTURE NUMBER CHOICE	BEAMS SPACING (FT)	FILTERED FLOWRATE (GPD)	BYPASS FLOWRATE (GPD)	TOTAL SYSTEM FLOWRATE (GPD)
22	6.77	22	12	34
18	1.65	25	12	37
24	3.68	43	24	73
30	6.25	43	24	73



ACF/HARCO DOMED OVERFLOW FILTER RISER
NOT TO SCALE

AVESTA GRAY MEADOWVIEW II
16 HANCOCK STREET
GRAY, MAINE

Prepared for:
AVESTA HOUSING
307 CUMBERLAND AVENUE
PORTLAND, MAINE, 04101

Civil Engineer:

MAUREEN P. MCGLONE
#7705

Architect:
JSA DESIGN
273 CORPORATE DRIVE, SUITE 100
PORTSMOUTH, NH, 03801

Structural/Mechanical:
ALLIED ENGINEERING, INC.
160 VERANDA STREET
PORTLAND, MAINE, 04103

Soil Scientist/Site Evaluator:
ALBERT FRICK ASSOCIATES, INC.
380B MAIN STREET
GORHAM, MAINE, 04038

Landscape Architect:
RASOR LANDSCAPE ARCHITECTURE
87 MAIN STREET
YARMOUTH, MAINE, 04096

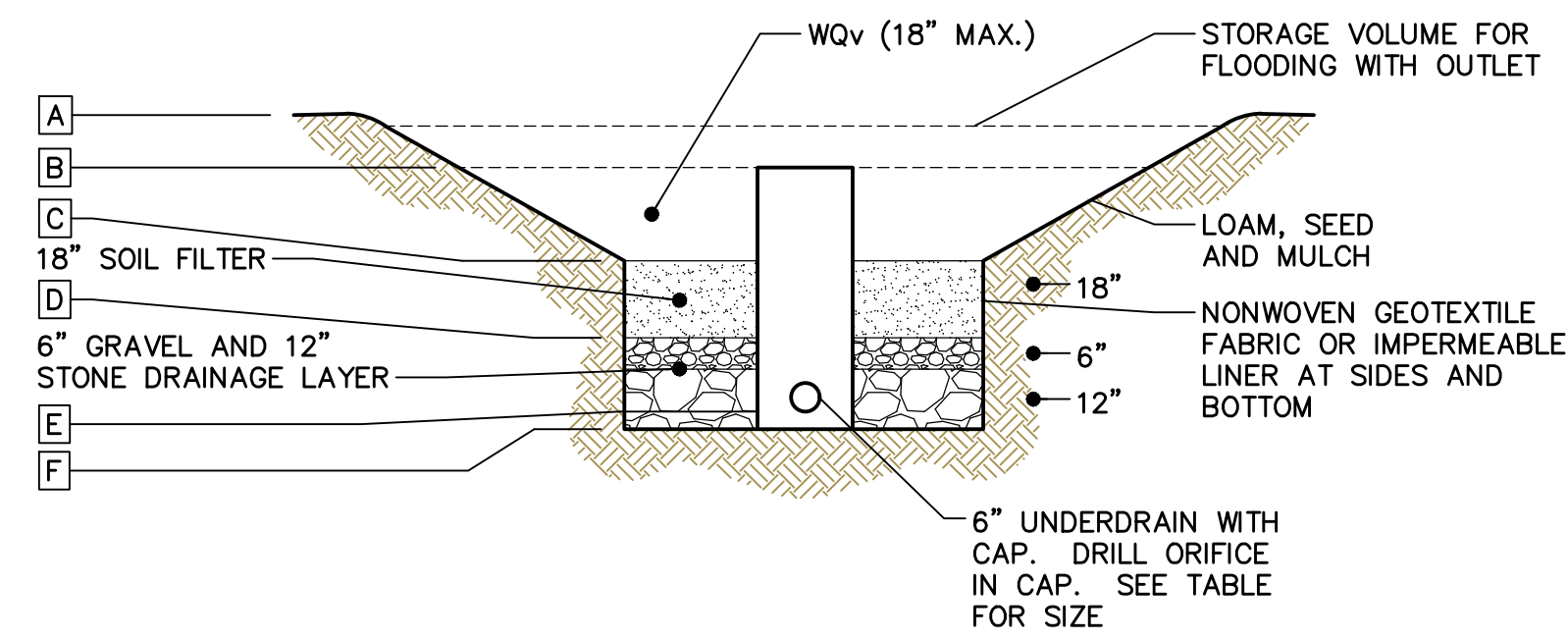
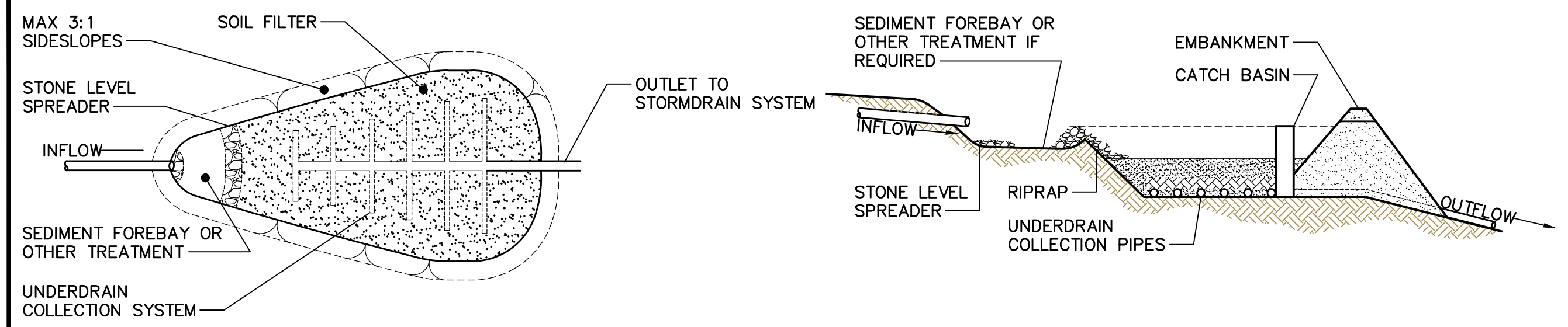
Surveyor:
OWEN HASKELL, INC.
390 US ROUTE 1, UNIT 10
FALMOUTH, MAINE, 04105

RANSOM Consulting, LLC.
400 Commercial Street, Suite 404
Portland, ME 04101
Tel. (207) 772-2891
Fax (207) 772-3248
www.ransomenv.com

GRADING AND STORMWATER DETAILS

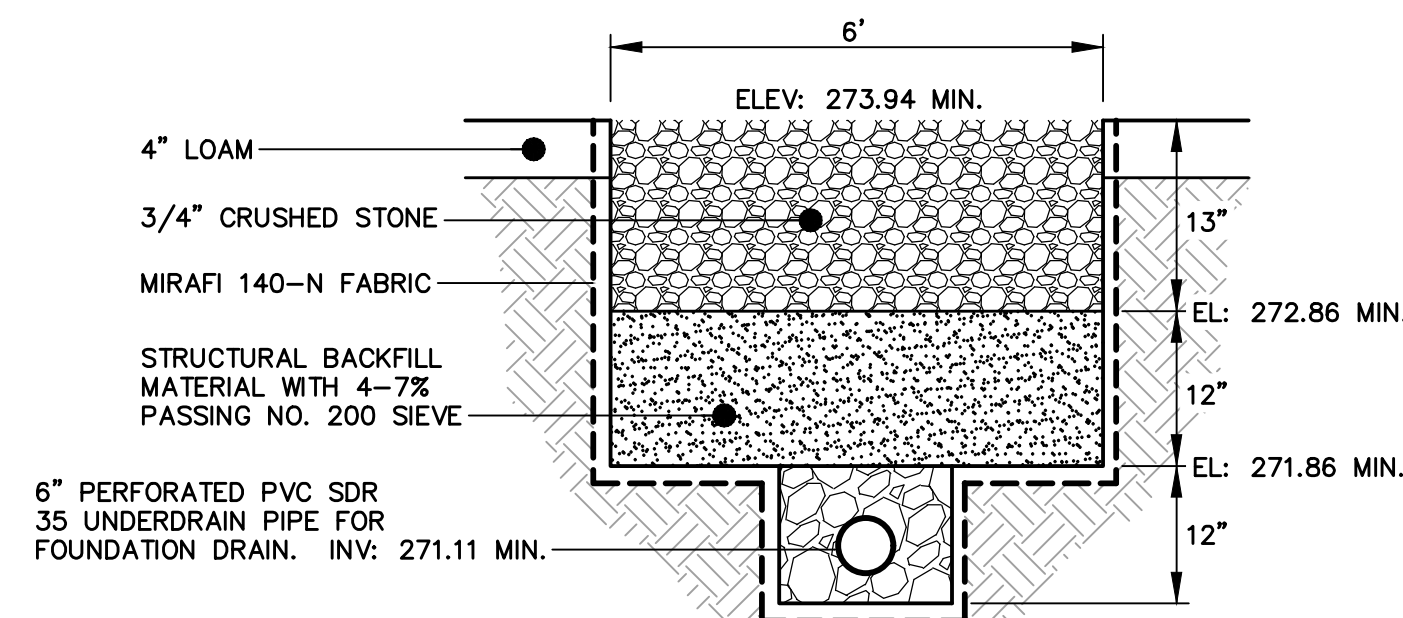
No.	Revision/Issue	Date
C	PLANNING BOARD AMENDMENT/ MSHA REVIEW	5/11/23
B	PLANNING BOARD/DEP REVIEW	5/19/22
A	PERMITTING	1/28/22

Design by: DJV
Checked by: MPM
Drawn by: DJV
Approved by: JIM/MPM
Project: 191.06051
Date: DECEMBER 2019
Sheet No: **C2.5**

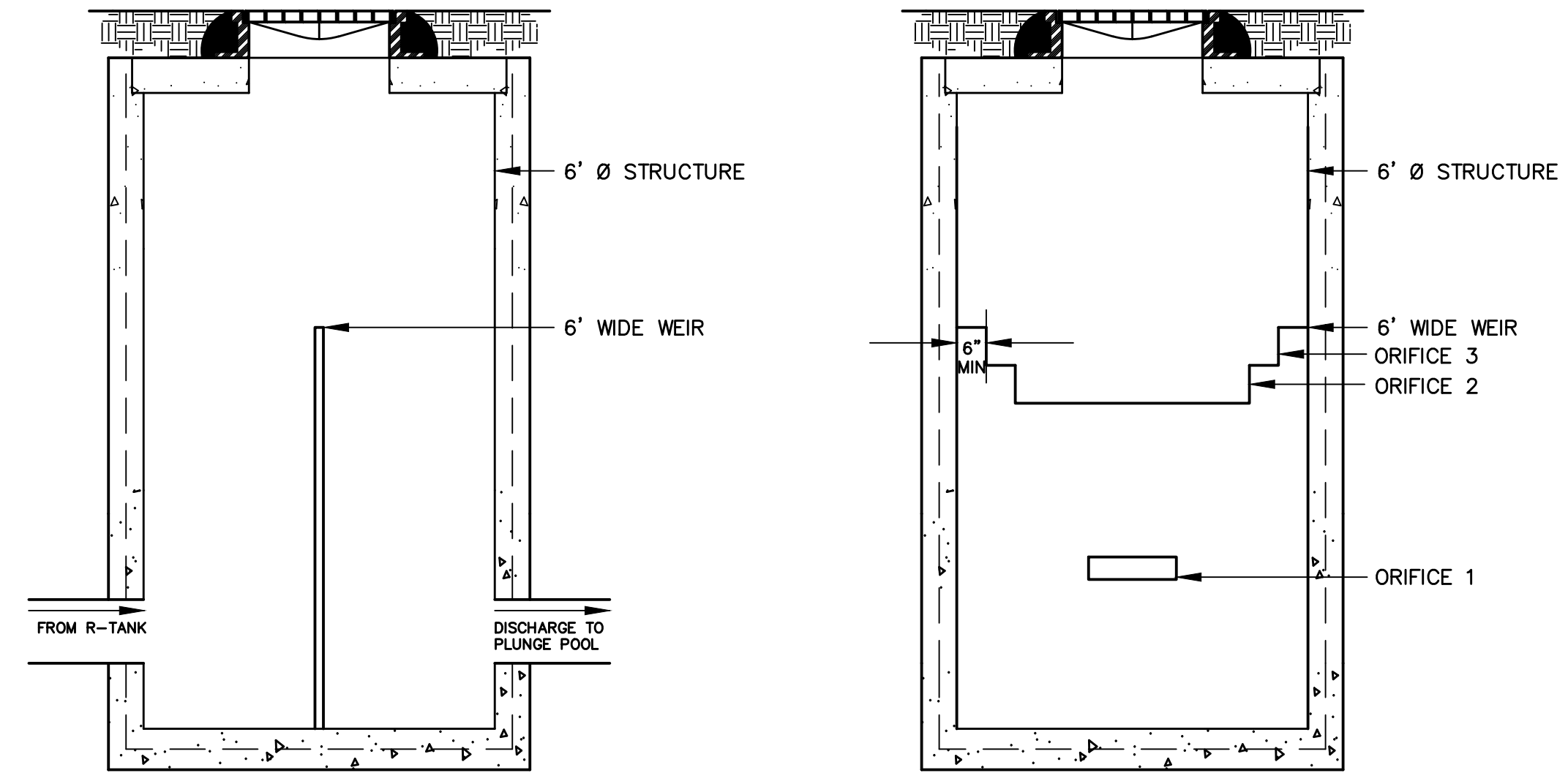


GRASSED UNDERDRAIN SOIL FILTER

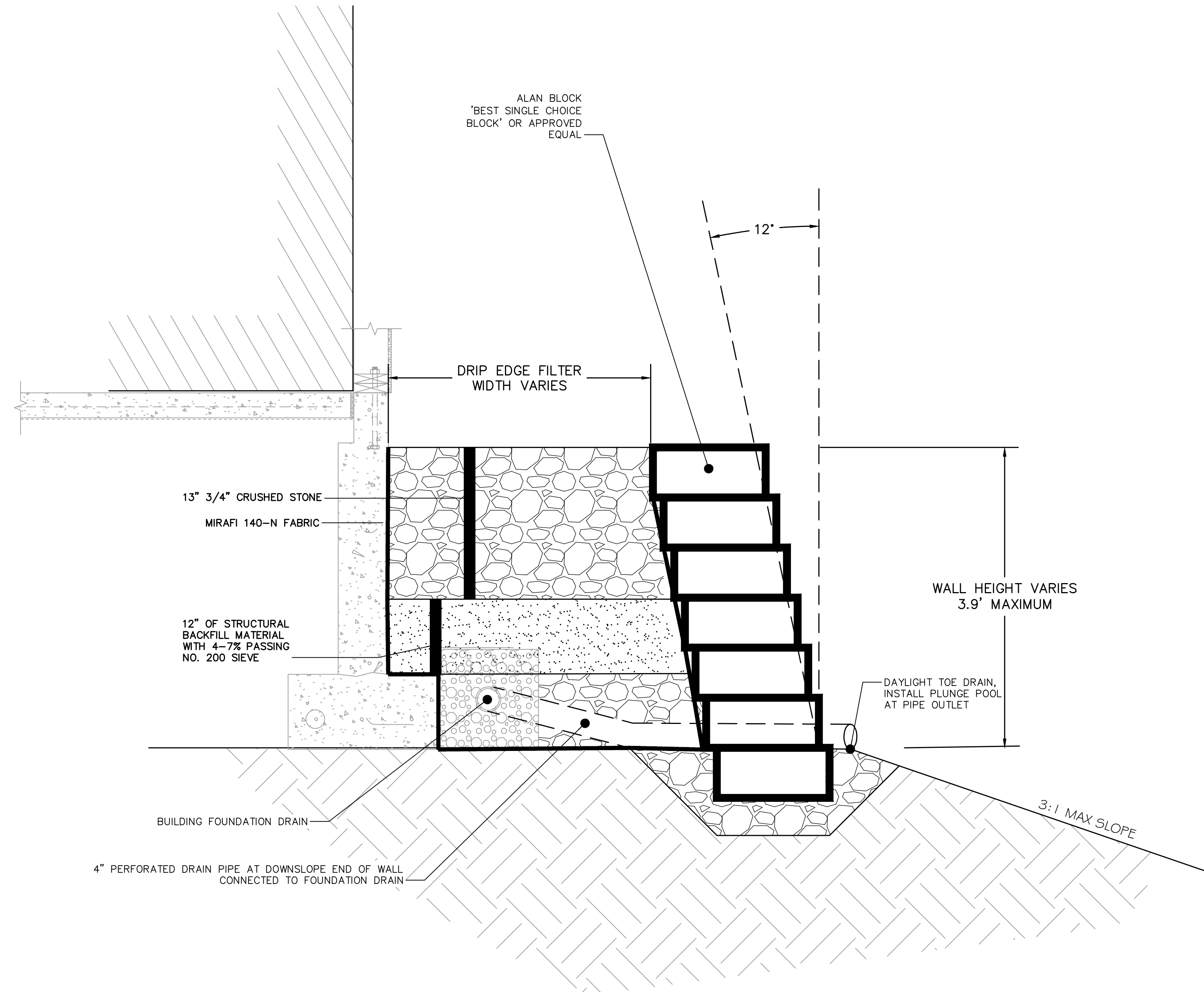
SCALE: N.T.S. SOURCE: MDEP LAST UPDATED: 05/2016



PARKING LOT FILTER WITH UNDERDRAIN DETAIL
NOT TO SCALE



OUTLET CONTROL STRUCTURE
NOT TO SCALE



RETAINING WALL & ROOFLINE DRIP EDGE DETAIL
NOT TO SCALE

Site:
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16 HANCOCK STREET
GRAY, MAINE

Prepared for:
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Civil Engineer:
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GRADING AND STORMWATER DETAILS

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B	PLANNING BOARD/DEP REVIEW	5/19/22
A	PERMITTING	1/28/22
No.	Revision/Issue	Date
Design by:	DJV	Checked by: MPM
Drawn by:	DJV	Approved by: JIM/MPM
Project:	191.06051	Date: DECEMBER 2019

Sheet No: **C2.6**



NORTH

12 EASTERN RED CEDAR
ALONG PROPERTY LINE

6 EASTERN RED CEDAR

1 COLUMNAR RED MAPLE IN LAWN AREA
PROTECT AND SAVE EXISTING TREE

2 LILAC

AREA FOR COMMUNITY GARDEN

7 COMMON WILD ROSE

3 LILAC

4 SEA GREEN JUNIPER
6 JOE PYE WEED

6 JOE PYE WEED

GRO LOW SUMAC

6 EASTERN RED CEDAR
12 MILKWEED
1 REDBUD
W/ 100 GRO LOW SUMAC
1 TULIP TREE
5 SEA GREEN JUNIPER
1 TULIP TREE

HYDROSEEDING NOTES FOR LAWN

1. PRIOR TO SEEDING, AREA IS TO BE TOPSOILED, FINE GRADED, AND RAKED OF ALL DEBRIS LARGER THAN 2" DIAMETER.
2. PRIOR TO SEEDING, CONSULT MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS.
3. SEEDING RATES:
 - PERENNIAL RYEGRASS 1/2 LB/1000 SQ FT
 - KENTUCKY BLUEGRASS 1 LB/1000 SQ FT
 - RED FESCUE 1/2 LB/1000 SQ FT
 - SPREADING FESCUE 1/2 LB/1000 SQ FT
 - FERTILIZER (16-32-16) 2 LB/1000 SQ FT
 - LIQUID LIME 1 GAL/800 GAL
 - TANK TACKIFIER 35 LB/800 GAL
 - TANK FIBER MULCH 30 LB/1000 SQ FT
4. GERMINATION RATES WILL VARY AS TO TIME OF YEAR FOR SOWING. CONTRACTOR TO IRRIGATE SEEDED AREA UNTIL AN ACCEPTABLE STAND OF COVER IS ESTABLISHED BY OWNER.

QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
1	Acer rubrum	Red Maple	3" Clp.	BB - Columnar
12	Asclepias syriaca	Common Milkweed	1 Gn.	
1	Cercis canadensis	Red Bud	6' Ht.	BB
12	Eurochium purpureum	Sweet Joe Pye Weed	1 Gn.	
2	Liriodendron tulipifera	Tulip Tree	2" Clp.	BB
24	Juniperus virginiana	Eastern Redcedar	6' Ht.	BB
9	Juniperus x pfitzeriana	Sea Green Juniper	3 Gn.	Vase shape
7	Rosa virginiana	Common Wild Rose	1 Gallon	
100	Rhus aromatica	Gro Low Sumac	1 Gn.	
5	Syringa vulgaris	Lilac	3 Gn.	

PLANTING SPECIFICATION

- Call Dig Safe prior to any excavation work. The location and maintenance of landscaping and site amenities cannot conflict with site utilities. Coordinate with all other project drawings.
- In any case where drawings or specifications vary from the Town of Gray Site Plan Review, Zoning, and Design Guidelines, municipal regulations take precedent. Report any discrepancies to Owner and Landscape Architect.
- The location of all trees, shrubs, and grasses shall be staked and approved by the Landscape Architect prior to planting.
- Flag the northern side of trees in the nursery and install trees oriented to the north. Landscape Architect to select plant material with contractor.
- All plant material shall be healthy and full-branched, true to form and specified size, free of disease, pests and physical damage.
- Employ only experienced personnel familiar with required work.
- If deciduous trees are planted in - leaf, they shall be sprayed with an anti-desiccant prior to digging operation.
- Landscape installation timeframe:
 - Balled and Burlapped: Spring 4/1 to 7/15, and Fall 8/15 to 10/15
- Specified plant material may be substituted by the use of alternate, similar plant material, with approval from the Landscape Architect.
- All plant material and lawn shall be guaranteed for a period of two years from date of occupancy. All dead and non-vigorous material shall be replaced, without cost to the Owner, with a similar species, and these replacement plants shall be guaranteed for one year from the date of acceptance by the Owner.
- Planting soil shall be 2/3 topsoil, free of debris and stones over 1" in diameter, and 1/3 peat moss. The pH shall be between 5.5 - 7.0. Ground limestone shall be added to the planting soil to achieve specified pH.
- Add compost in planting beds at a 1 part compost to 4 part existing soil ratio, tilled to a 12" depth per industry standards.
- Fertilizer shall be applied when planting pits are 2/3 full of planting soil with a 5-10-10 fertilizer. After planting, slow release fertilizer, minimum 5 year, shall be applied using a 4 oz. packet system at rates recommended by the manufacturer.
- Mulch shall be 100% fine shredded pine bark, 2" deep. Planting beds adjacent to buildings shall use 3/4" aggregate or less. Landscape and Owner to approve color.
- Tree wrap shall be Osaburg Cloth, 4 7/8" wide, unbleached, or approved equal. Cloth should only be used for material transport and installation and removed immediately following installation.
- Loam and seed disturbed lawn areas per civil engineering plans.
- Trees normally do not need to be staked and staking can be harmful to the tree and a hazard in pedestrian locations. Staking should only be done on trees that are not able to support itself. The following are reasons why trees do not remain straight:
 - Root balls placed on soft soil. Tamp soils under root ball prior to planting
 - Root balls with very sandy soil or very wet clay soil. Staking advisable
 - Trees located in a place of extremely windy conditions. Staking advisable
 - Trees located in a place where vandalism may impact tree. Staking advisable
- If tree stakes are required they shall be placed parallel to the curb. Trees will be secured with web strapping or polyester chain-lock. No wire or hose will be used. Assume that the bearing surface of the webbed strapping or poly chain lock against the trunk is a minimum of 12 MM (0.5 inches). Remove all staking as soon as the tree has grown sufficient roots to overcome the problem that required the tree to be staked. Stakes shall be in place no longer than one year or at least until the end of the growing season after planting.
- Install black, molded, modular panels manufactured with 50 percent recycled polyethylene plastic with ultraviolet inhibitors, .95 mils (2.2 mm) thick, with vertical root deflecting ribs protruding 1/2 inch (12 mm) to 3/4 inch (19 mm) out from panel, and each panel 24 inches (610 mm) wide by 18 inches in depth. Integrated zipper joining system for panel-to-panel connection.
- Planting Pits and Trenches: Excavate circular planting pits with tapered sides. Excavations with vertical sides are not acceptable. Trim perimeter of bottom leaving center area of bottom, raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify sides of planting pit sheared or smoothed during excavation. Excavate two times as wide as ball diameter. Excavate at least 12 inches (300 mm) wider than root spread and deep enough to accommodate vertical roots for bare-root stock. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball. Subsoil and topsoil removed from excavations may not be used as planting media
- Maintenance shall begin immediately after each plant is planted and shall continue until Maintenance required:
 - Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring water saucers, resetting to proper grade or vertical position, and performing other operations as required to establish healthy, viable plantings.
 - Planting areas shall be kept free of weeds, grass, and other undesired vegetative growth.
 - Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of settling. Do not place mulch within 3 inches (75 mm) of trunks or stems. A continuous, linear mulched area shall be maintained between closely spaced plants to avoid grassed strips less than 2 feet (600 mm) wide or scallops of grass that are difficult to maintain.
 - Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use practices to minimize the use of chemicals and pesticides and reduce hazards.
 - Apply pesticides and other chemical products and biological control agents in accordance with authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed. See Section V below.
 - Protect plants from damage due to landscape operations and operations of other contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings without additional cost to the Owner.
 - Prune, thin, and shape woody materials according to standard professional horticultural and arboricultural practices and in accordance with ANSI A300 (Part 3) Pruning Standards. Unless otherwise indicated by Landscape Architect, do not cut tree leaders; remove only injured, dying, or dead branches from trees and shrubs. Prune to retain natural character.
 - Pruning shall be done with clean, sharp tools. Cuts shall be made at branch collars, leaving no stubs. No tree paint shall be used.

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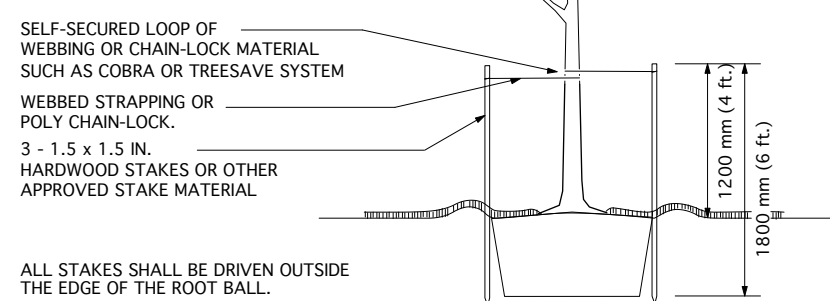
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LUMINAIRE SCHEDULE

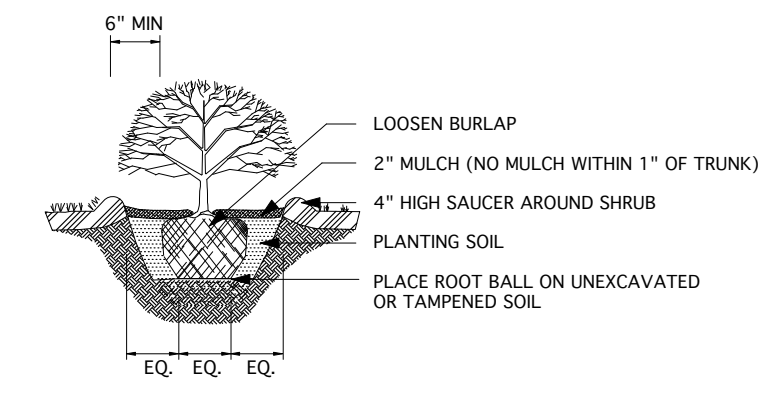
TYPE	DESCRIPTION	MFR	CATALOG NUMBER	SEE NOTE 1	MOUNTING	VOLTS	WATTS	LUMENS	TYPE	KEY NOTES
P1	LED SITE LIGHT AND POLE	KIM	FIXTURE: QUDO UR20-RL-90-4K-2M-2W		12' POLE	208	105.1	4,896	LED ARRAY	
S1	LED RECESSED SOFT LIGHTS	LITHONIA	POLE: SS-112-12-1A-33-XX		RECESSED SOFFIT	208	10.9	762	LED ARRAY	
W	WALLPACK	HUBBELL	WFL60W08W08L2TC08RW		10" Ø AFG	208	22	2,059	LED ARRAY	6

NOTES

- NOTE THAT THESE NUMBERS ARE NOT COMPLETE CATALOG NUMBERS. PROVIDE ALL REQUIREMENTS ON SCHEDULE NOTES, SPECS, AND DRAWINGS COMBINED.
- PROVIDE SPECIFIED LUMINAIRE OR APPROVED EQUAL. PROPOSED SUBSTITUTION OF ANY SPECIFIED FIXTURE MUST BE SUBMITTED FOR REVIEW AND PRE-APPROVAL WITH ITI. INDEPENDENT TESTING LABORATORY PHOTOMETRIC REPORT INCLUDED 15 DAYS PRIOR TO THE BID DATE. POINT-BY-POINT PHOTOMETRIC LAYOUTS FOR ROOMS WHERE LIGHTING IS SUBSTITUTED OR SAMPLE FIXTURES FOR REVIEW MAY BE REQUIRED FOR ANY PROPOSED EQUAL TO SPECIFIED FIXTURES. SUBSTITUTION SUBMITTAL SHALL INCLUDE VERIFICATION OF ANY CLC OR ENERGY STAR RATINGS THAT ARE REQUESTED ON THE DRAWINGS OR IN THE SPECIFICATIONS.
- PROVIDE ENERGY STAR FIXTURE.
- VERIFY CEILING STRUCTURE AND MOUNTING HEIGHT PRIOR TO ORDERING ANY LIGHT FIXTURES.
- COLOR TO BE SELECTED BY ARCHITECT FROM MANUFACTURER'S STANDARD COLORS.
- IF FIXTURE NEAR NEIGHBOR STATION TO HAVE INTEGRAL MOTION SENSOR AND BE CONTROLLED FROM PHOTOCELL.



TYPICAL TREE PLANTING DETAIL



TYPICAL SHRUB PLANTING DETAIL

FOR PERMITTING

AVESTA GRAY MEADOWVIEW II

16 HANCOCK STREET
GRAY, MAINE

Prepared for:

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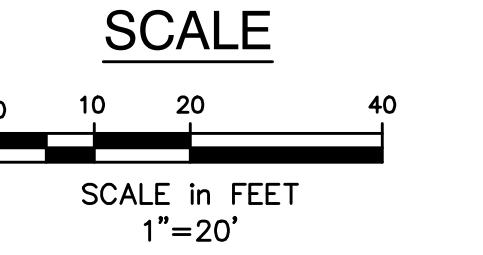
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LANDSCAPE AND LIGHTING PLAN

No.	Revision/Issue	Date
C	REVISED LANDSCAPE	4/28/23
B	PLANNING BOARD/DEP REVIEW	5/19/22
A	PERMITTING	1/28/22

Sheet No:

L-1

Meadowview II

Stormwater Management Plan

LIST OF APPENDICES:

- Appendix A: Stormwater Treatment Calculations
- Appendix B: Stormwater BMP Inspection and Maintenance Requirements
- Appendix C: Pre-Development Calculations
- Appendix D: Post-Development Calculations

SITE DESCRIPTION:

The site (refer to Site Location Map) contains three existing residential buildings comprised of 20 residential units total and a paved parking area between the buildings constructed in 1976. The project proposes the creation of a 15.5-acre parcel located off a dead end on Hancock Street in Gray. The parcel contains three existing residential buildings with a parking area between the buildings. This developed portion of the site occupies the western portion of the larger proposed parcel. The eastern portion of the parcel contains significant amount of wooded area and an unnamed stream. The soils on site are summarized in the Soil Narrative Report prepared by Albert Frick Associates, Inc dated April 16th, 2021 and are included in Appendix C of the applicant's supporting documentation for the Site Plan and Subdivision submission package. Currently, stormwater runoff flows generally from north to south across the site and discharges via overland flow to the adjacent parcels. The site is in Zone C of FEMA's Flood Insurance Rate Map (FIRM), indicating that it is in an area of minimal flooding.

DEVELOPMENT DESCRIPTION:

Avesta Housing Development Corporation (The Applicant) is proposing to construct a 26-unit building and expand the existing parking area as part of the proposed development. Walking paths are proposed around the proposed building that will connect with the existing walking paths on the site. An emergency access road is proposed to loop back to the dead end of Hancock Street. Additionally, several "grass on gravel" parking spaces are shown on the plan for future use that need not be built. For these spaces, the contractor will place loam and seed over the gravel base to accommodate for future paving, if required. The potential impervious area of these spaces has been included in the stormwater management design.

The proposed development area results in 49,432 square feet of new developed area, of which 18,030 square feet is impervious and 31,402 square feet is landscaped. Outlet control structures will discharge to the analysis points. The runoff will discharge to the same analysis points in both pre- and post-

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development conditions, with flows being reduced in the post-development conditions to the greatest extent possible.

Minimal change to the existing stormwater runoff patterns is anticipated as part of the development and the design intent is to maintain the existing conditions with the stormwater runoff generally discharging to the southern end of the site and a portion flowing to the unnamed stream to the east of the site, as it does today. The entirety of the site is ultimately tributary to the Meadow Brook to the south.

Grading of the site slopes away from the perimeter of the building, while maintaining ADA accessibility and matching into the existing landscape where possible. Guard rails may be needed along the proposed access road adjacent to the proposed detention pond area. There is approximately 474 sf of wetland impact.

STORMWATER MANAGEMENT – BASIC STANDARDS:

Erosion and sedimentation control measures during construction are detailed within the design plans. Post-Construction stormwater management practices and good housekeeping practices will be in accordance with Maine DEP Best Management Practices. A post construction stormwater management plan as well as inspection and maintenance requirements are provided in Appendix B of this Stormwater Management Plan.

STORMWATER MANAGEMENT – QUALITY (GENERAL STANDARDS):

A project must meet Maine's *Chapter 500, Stormwater Management* general standards if it results in one or more acres of impervious area, or 5 acres or more of developed area for projects that are not within the direct watershed of an urban impaired stream or a lake most at risk (as defined by Chapter 502). Although the proposed project is not required to meet Chapter 500 regulations by the Maine Department of Environmental Protection (DEP), Section 401.13.12.D of the Town of Gray's Subdivision Ordinance states that "[f]or major subdivisions outside of the watershed of a Great Pond, that require neither a SLDA permit, nor a DEP Stormwater permit a stormwater management plan shall be submitted which complies with the Basic and General Standards of DEP Chapter 500 Stormwater Management." To meet the general standards, the project's stormwater management system must include treatment measures that will provide pollutant removal or treatment (or both), mitigate for the increased frequency and duration of channel erosive flows due to runoff from smaller storms, and mitigate potential temperature impacts. To do that a project must provide treatment of 95% of the impervious area and no less than 80% of the developed area. In addition, runoff from upgradient areas must either be redirected away from the project's stormwater treatment measures or that measure must be sized to address the runoff volume of the upgradient area at 50% of the sizing requirements.

Treatment of stormwater is addressed using Maine's Best Management Practices (BMPs). These BMPs are focused on meeting the following water quality objectives:

- Effective pollutant removal – removal of fine particles that carry nutrient and heavy metal load as well as dissolved pollutants and hydrocarbons.

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- Cooling – to protect aquatic life within a river, stream, or brook watershed discharge must effectively cool down.
- Channel protection – discharge within a river, stream, or brook watershed must be released slowly to avoid destabilization and resulting sedimentation of receiving channels.
- Flood control – detention for large, infrequent storm events to avoid flooding infrastructure.

The water quality volume is the initial depth of runoff that is considered to carry the bulk of pollutants deposited since the last rain event. Studies have indicated that the first inch of runoff distributed over the watershed carries 90% of the pollutant load from a storm event. Maine's BMPs identified in Volume III of the Maine Stormwater Management Design Manual consider this when establishing the treatment volume identified within each BMP. The BMPs chosen for this site to meet the water quality objectives include:

- Grassed Underdrain Soil Filter: Filtration BMP discussed in Maine's Stormwater Management Manual, Volume III, Chapter 7.1.
- Roof Dripline: Filtration BMP discussed in Maine's Stormwater Management Manual, Volume III, Chapter 7.5, Manmade Pervious Surfaces.
- FocalPoint Bioretention Filters BMP, a proprietary system discussed in Maine's Stormwater Management Manual, Volume III, Appendix B.
- R-Tank Subsurface Storage, a proprietary system discussed in Maine's Stormwater Management Manual, Volume III, Appendix B.

PROJECT SPECIFIC WATER QUALITY TREATMENT MEASURES:

The existing site is currently a mix of existing developed area, vegetated (wooded/scrub brush) areas and wetlands. A portion of the site currently drains to the wetlands to the west of the site and the remainder of the site drains to an unnamed stream to the east. For water quality treatment, the site design incorporates a grassed underdrained soil filter, roof dripline systems, several FocalPoint bioretention filter systems, and several subsurface stormwater storage chambers.

- FocalPoint (FP): The bioretention filters consist of FocalPoint systems that collect, filter, and treat stormwater runoff using conditioned planting soil beds, gravel, underdrained beds, and vegetation within shallow depressions. They capture and retain runoff and pass it through a filter that is comprised of 2-3" of mulch, underlain by an 18" layer of proprietary soil filter media and 6" of course gravel with R-Tank storage placed below grade. The systems are designed to remove a wide range of pollutants, including suspended solids, phosphorus, nitrogen, metals, hydrocarbons, and some dissolved pollutants. The filter also provides for attenuation of discharge which provides reduction of thermal impacts to the discharge points as well as minimizing potential channel erosion. The R-Tank storage system is sized to store the treatment volume (1.0 inches times the impervious area and 0.4 inches times the

landscaped developed area). For larger storms, stormwater bypasses the filter through a riser and grate to the R-Tank system below.

- Drip Edge Filter for Roof and Site (RDEF and SDEF): The bioretention filters consist of FocalPoint systems that collect, filter, and treat stormwater runoff using conditioned planting soil beds, gravel, underdrained beds, and vegetation within shallow depressions. They capture and retain runoff and pass it through a filter that is comprised of 2-3” of mulch, underlain by an 18” layer of proprietary soil filter media and 6” of coarse gravel with and underdrain piped directly to an R-Tank storage placed below grade. The systems are designed to remove a wide range of pollutants, including suspended solids, phosphorus, nitrogen, metals, hydrocarbons, and some dissolved pollutants. The filter also provides for attenuation of discharge which provides reduction of thermal impacts to the discharge points as well as minimizing potential channel erosion. The R-Tank storage system is sized to store the treatment volume (1.0 inches times the impervious area and 0.4 inches times the landscaped developed area). For larger storms, stormwater bypasses the filter through a riser and grate and directly to the R-Tank system.
- Grassed Underdrained Soil Filters (GUSF): Grassed underdrained soil filters are used primarily for treatment of some paved areas as well as landscaped developed areas. The GUSF system proposed captures and retains runoff and passes it through a soil filter media. The media is a mixture of silty sand and organic matter to remove a range of pollutants including suspended solids, phosphorus, nitrogen, metals, hydrocarbons, and other dissolved pollutants. The filter also provides for attenuation of discharge which provides reduction of thermal impacts to downstream areas as well as minimizing potential channel erosion. The system is sized to store the treatment volume (1.0 inches times the impervious area and 0.4 inches times the landscaped developed area) above the filter with the larger volume storms bypassing the filter through a catch basin and into the closed piping system. The 18-inch thick filter media is underlain with a drainage system and perforated underdrain collection piping which ultimately discharges to the catch basin.

STORMWATER MANAGEMENT – QUANTITY (FLOODING STANDARDS):

A project must meet Maine’s *Chapter 500, Stormwater Management* flooding standards if the project results in three or more acres of impervious area, or 20 acres or more of developed area. To meet the flooding standard, the project’s stormwater management systems must:

- detain, retain, or result in the infiltration of stormwater from 24-hour storms of the 2-year, 10-year, and 25-year frequencies such that peak flow of stormwater from the project site do not exceed the peak flows of stormwater prior to undertaking the project;
- design the piped or open channel systems based on a 10-year, 24-hour storm without overloading or flooding beyond channel limits;
- not flood the primary access road to the project and any public roads bordering the project as a result of a 25-year, 24-hour storm event

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The use of the R-Tank modules by ACF Environmental will detain the stormwater runoff to below pre-development conditions to comply with the Flooding Standard. The proposed detention system consists of a series of R-Tanks located below grade in parking areas and grassed areas. The R-Tanks contributing to Outlet 2 are interconnected with corrugated polyethylene, smooth interior pipe to capture and store the larger volume storms prior to discharge. A separate R-Tank system is used to store runoff from RDEF-1.

Each storage system discharges through an outlet control structure that ultimately discharges to a plunge pool.

Stormwater runoff in the pre and post-development conditions are evaluated at Analysis Points 1 and 2. Analysis Point 3 was unchanged in the post development condition and therefore not included in the evaluation below. The runoff at all analysis points in the post-development condition are either equal to or less than the flow in the pre-development condition. Pre-Development stormwater plans and pre-development HydroCAD calculations are included in Appendix C while Post-Development stormwater plans and post-development HydroCAD calculations are included in Appendix D.

- HydroCAD Modeling Assumptions: All soils in the developed areas have a Hydrologic Soil Group (HSG) rating of C.
 - Areas of sub catchments were determined using AutoCAD.
 - Slopes of time of concentration paths were based on the existing conditions survey as well as the proposed grading plan.
 - For flow over developed impervious areas with a curve number of 98, the time of concentration was assumed to be 6 minutes in accordance with Maine DEP guidance documents.
 - Developed landscaped areas were assumed to be >75% grass cover in good condition with a curve number of 80 and paved impervious areas were assumed to have a curve number of 98.

HYDRAULIC ANALYSIS:

Stormwater runoff calculations for quantity were made using the HydroCAD 10.00 computer program, which is based on the Soil Conservation Service's TR-20 methodology. Runoff hydrographs are generated based on a standard Type III 24-hour storm for Cumberland County identified in Appendix H of *Maine DEP Chapter 500, Stormwater Management*.

Three storm events were evaluated as follows:

- 2-year frequency flood event: 3.1" rainfall
- 10-year frequency flood event: 4.6" rainfall
- 25-year frequency flood event: 5.8" rainfall

Meadowview II

Runoff Curve numbers were determined based on land coverage and hydro-geological soil types. Times of concentration were developed based on runoff flow paths for each subcatchment and shown on the Pre- and Post-Development plans. A minimum Tc of 6 minutes was used in the HydroCAD model.

Peak runoff flow rates and runoff volumes are provided at the analysis points, which are identified on the Pre- and Post-Development plans. Comparison of the runoff peak flow rates are provided at each analysis point on Tables 1-3 below:

Table 1 – 2-year, 24-hour Storm

Analysis Point	Pre-Development	Post-Development
1	3.0 cfs	2.4 cfs
2	1.2 cfs	1.0 cfs

Table 2 – 10-year, 24-hour Storm

Analysis Point	Pre-Development	Post-Development
1	5.8 cfs	4.8 cfs
2	2.8 cfs	2.3 cfs

Table 3 – 25-year, 24-hour Storm

Analysis Point	Pre-Development	Post-Development
1	8.2 cfs	7.4 cfs
2	4.2 cfs	3.4 cfs

APPENDIX A

Stormwater Treatment Calculations

Table 1: MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION GENERAL STANDARD CALCULATIONS

PROJECT # 191.06051

SUBCATCHMENT AREA ID	SUBCATCHMENT SIZE (S.F.)	EXISTING ONSITE IMPERVIOUS AREA TO REMAIN (S.F.)	NEW ONSITE IMPERVIOUS AREA (S.F.)	EXISTING ONSITE LANDSCAPED AREA TO REMAIN (S.F.)	NEW ONSITE LANDSCAPED AREA (S.F.)	NET NEW DEVELOPED AREA (S.F.)	NET EXISTING DEVELOPED AREAS (S.F.)	IS TREATMENT PROVIDED?	NEW IMPERVIOUS AREA TREATED (S.F.)	TOTAL IMPERVIOUS AREA TREATED (S.F.)	LANDSCAPED AREA TREATED (S.F.)	NEW DEVELOPED AREA TREATED (S.F.)	TOTAL DEVELOPED AREA TREATED (S.F.)	TREATMENT BMP NAME
1AS	8,449	0	1,747	1,679	5,023	6,770	1,679	YES	1,747	1,747	6,702	6,770	8,449	GUSF-1
1BS	26,395	13,626	2,870	9,899	0	2,870	23,525	YES	2,870	15,671	9,404	2,870	25,075	FP-1
1CS	12,181	8,131	162	3,888	0	162	12,019	NO	0	0	0	0	0	
1DS	21,304	9,129	0	12,175	0	0	21,304	NO	0	0	0	0	0	
1ES	4,298	510	2,037	1,751	0	2,037	2,261	YES	2,037	2,547	1,751	0	4,298	SDEF-1
1FS	8,188	0	0	0	5,702	5,702	0	NO	0	0	0	0	0	
1GS	3,515	0	2,623	0	892	3,515	0	YES	2,623	2,623	892	3,515	3,515	RDEF-2
1HS	2,510	0	1,955	0	555	2,510	0	YES	1,955	1,955	555	2,510	2,510	RDEF-3
1IS	2,886	0	2,435	0	451	2,886	0	YES	2,435	2,435	451	2,886	2,886	FP-2
1JS	23,050	0	0	9,976	13,789	13,789	9,976	NO	0	0	0	0	0	
2AS	2,588	0	2,326	0	262	2,588	0	YES	2,326	2,326	262	2,588	2,588	RDEF-1
2BS	2,472	0	1,835	0	637	2,472	0	YES	1,835	1,835	637	2,472	2,472	RDEF-1
2CS	71,696	3,074	40	24,358	4,091	4,131	27,432	NO	0	0	0	0	0	
						0	0				0	0	0	
TOTAL (S.F.)	189,532	34,470	18,030	63,726	31,402	49,432	98,196		17,828	31,139	20,654	23,611	51,793	

Parcel Area= 15.5 4.35 7%

TOTAL NEW IMPERVIOUS AREA (S.F.)	18,030	TOTAL NEW DEVELOPED AREA (S.F.)	49,432
TOTAL IMPERVIOUS AREA RECEIVING TREATMENT (S.F.)	31,139	TOTAL DEVELOPED AREA RECEIVING TREATMENT (S.F.)	51,793
% OF IMPERVIOUS AREA RECEIVING TREATMENT	172.71%	% OF AREA RECEIVING TREATMENT	104.78%
% OF IMPERVIOUS AREA REQUIRED TO BE TREATED	95.00%	% OF AREA REQUIRED TO BE TREATED	80.00%

GRASSED UNDERDRAIN SOIL FILTER 1										
Task:	Calculate water quality volume per MDEP Chapter 500 regulations									
References:										
	1. Maine DEP Chapter 500, Section 4.C.(3)(b)									
	a. "must detain a runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"									
	2. Maine DEP Best Management Practices Stormwater Manual, Section 7.1									
	a. "surface should represent 5% of impervious area and 2% of landscaped area"									
Tributary to Underdrained Filter:	GUSF-1									
Subcatchment 1AS is tributary to GUSF1										
Landscaped Area	6,702	SF								
Impervious Area	1,747	SF								
Minimum Surface Area										
Required	(2% X Landscaped + 5% X Impervious)									
Total Landscaped Area	6,702	SF	Area	134.0	SF					
Total Impervious Area	1,747	SF	Area	87.4	SF					
Required Minimum Surface Area				221.4	SF					
Provided Surface Area				424	SF					
Treatment Volume										
Required	(0.4" X Landscaped + 1.0" X Impervious)									
Landscaped Area	6,702	SF	Volume	223.4						
Impervious Area	1,747	SF	Volume	145.6						
Treatment Volume Required				369.0	CF	0.008	AF			
Provided Treatment Volume				633	CF	@ elev. 271.9				
Sediment Pre-Treatment										
Per Reference 2, Chapter 7.1		"Pretreatment devices shall be provided to minimize discharge of sediment to the soil filter"								
Annual Sediment Load:		55 cubic feet per acre per year of sanded area								
Area to be sanded:		1,747	SF							
Sediment Volume		2	CF	Stone drip edges are provided along the edge of pavement.						
Provided		250	CF	6	Inch Deep drip edge	with area of	500	sf		



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JOB 191.06051
 SHEET NO. 2 OF 6
 CALCULATED BY MPM DATE 5/9/2023
 CHECKED BY BZK
 FILE NAME PRINT DATE 5/18/2023

Note: Roof Dripline Filter is sized in general conformance with Chapter 7.5 of the Maine Department of Environmental Protection BMPs Technical Design Manual, latest revision

Treatment Calculations for Proposed Roof Dripline Filter			
Tributary to Roof Dripline Filter 1			All Building Areas per 90% roofline plan
Treatment Storage			
Contributing Roof Area	4,161	sf	
Treatment Runoff Depth=	1.0	in	
	0.08	ft	
Water Quality Volume	347	cf	
Treatment Storage Porosity=	40%		
Required Stone Volume=	866.88	cf	
Prop. Roof Dripline Filter Depth=	3.0	ft	
Req. filter surface area=	289.0	sf	
Provided surface area=	344	sf	



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 SHEET NO. 3 OF 6
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Note: Roof Dripline Filter is sized in general conformance with Chapter 7.5 of the Maine Department of Environmental Protection BMPs Technical Design Manual, latest revision

Treatment Calculations for Proposed Roof Dripline Filter			
Tributary to Roof Dripline Filter 2		All Building Areas per 90% roofline plan	
Treatment Storage			
Contributing Roof Area	2,623	sf	
Treatment Runoff Depth=	1.0	in	
	0.08	ft	
Water Quality Volume	219	cf	
Treatment Storage Porosity=	40%		
Required Stone Volume=	546.46	cf	
Prop. Roof Dripline Filter Depth=	3.0	ft	
Req. filter surface area=	182.2	sf	
Provided surface area=	288	sf	



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JOB 191.06051
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Note: Roof Dripline Filter is sized in general conformance with Chapter 7.5 of the Maine Department of Environmental Protection BMPs Technical Design Manual, latest revision

Treatment Calculations for Proposed Roof Dripline Filter			
Tributary to Roof Dripline Filter 3		All Building Areas per 90% roofline plan	
Treatment Storage			
Contributing Roof Area	1,955	sf	
Treatment Runoff Depth=	1.0	in	
	0.08	ft	
Water Quality Volume	163	cf	
Treatment Storage Porosity=	40%		
Required Stone Volume=	407.29	cf	
Prop. Roof Dripline Filter Depth=	3.0	ft	
Req. filter surface area=	135.8	sf	
Provided surface area=	457	sf	



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JOB 191.06051
 SHEET NO. 5 OF 6
 CALCULATED BY DJV DATE 1/9/2023
 CHECKED BY MPM
 FILE NAME PRINT DATE 5/18/2023

Note: Stone Dripegge Filter is sized in general conformance with Chapter 7.5 of the Maine Department of Environmental Protection BMPs Technical Design Manual, latest revision

Treatment Calculations for Proposed Stone Dripegge Filter				
Tributary to Roof Dripline Filter		Subcatchment 1DS		
Treatment Storage				
Contributing Area	2,547	sf	imp	
	1,751	sf	veg	
Treatment Runoff Depth=	1.0	in	imp	
	0.08	ft		
	0.40	in	veg	
	0.03	ft		
Water Quality Volume=	271	cf		
Treatment Storage Porosity=	40%			
Required Stone Volume=	677	cf		
Prop. Stone Drip Edge Length=	125	ft		
Prop. stone Dripline Filter Width=	6.0	ft		
Required Depth=	0.9	ft		
	11	in		
Provided Depth* =	13	in		

Water Quality Volume and Design Event			Directions
Water Quality Volume (WQv)	1,705	ft ³	Water Quality Volume calculated from previous Sheet
Design Event	1,705	ft ³	Total event volume calculated from previous sheet

System Configuration		
Is FocalPoint used?	<input type="text" value="Yes"/>	Enter Yes if FocalPoint used. Enter No if runoff flows directly into RTank and proceed to RTank Design worksheet

Step 4 - FocalPoint Configuration		
4.1 - FocalPoint Factor of Safety	<input type="text" value="1"/>	Enter optional factor-of-safety
4.2 - FocalPoint bed area	<input type="text" value="64"/> ft ²	Enter target FocalPoint footprint, 20 SF min. (See Step 4.5)
4.3 - Storage volume above FocalPoint provided	<input type="text" value="130"/> ft ³	Enter available surface storage volume (See Step 4.5)
4.4 - Desired treatment time	<input type="text" value="24"/> hours	Select 24, 48, 72 or 96 hrs from toggle
4.5 - Water Quality Volume treated prior to overflow?	<input type="text" value="No"/>	If Yes = WQv has been treated If No = larger FocalPoint bed (Step 4.2) and/or surface storage volume (Step 4.3) required
4.6 - FocalPoint drain within desired time?	<input type="text" value="Yes"/>	If Yes = time goal has been met If No = larger FocalPoint bed (Step 4.2) required
4.7 - Flow in excess of storage volume above	<input type="text" value="To RTank"/>	Select routing location for overflow/bypass vol. from toggle: Off site to disregard flow, RTank to store for retention / detention, harvesting, or infiltration

Step 5 - Evaluation of Design		
5.1 - Volume treated prior to overflow	980	ft ³ Result = Volume ft3 treated prior to overflow/bypass
5.2 - Total volume treated	1,616	ft ³ Result = Total Volume ft3 treated

Time (hrs)	Rainfall Distribution	Cumulative Rainfall (ft ³)	Incremental Runoff into FocalPoint (ft ³)	FocalPoint Test (-)	Incremental Volume thru FocalPoint (ft ³)	Incremental Volume to Storage Above (ft ³)	Total Volume in Storage Above (ft ³)	Incremental Volume Overflow (ft ³)	Cumul Through at Overflow (ft ³)
0.0	0.00	0							
0.2	0.00	3	3	Flow through	3	0	0	0	0
0.4	0.00	7	3	Flow through	3	0	0	0	0
0.6	0.01	10	3	Flow through	3	0	0	0	0
0.8	0.01	14	3	Flow through	3	0	0	0	0
1.0	0.01	17	3	Flow through	3	0	0	0	0
1.2	0.01	20	3	Flow through	3	0	0	0	0
1.4	0.01	24	3	Flow through	3	0	0	0	0
1.6	0.02	27	3	Flow through	3	0	0	0	0
1.8	0.02	31	3	Flow through	3	0	0	0	0
2.0	0.02	34	3	Flow through	3	0	0	0	0
2.2	0.02	38	3	Flow through	3	0	0	0	0
2.4	0.02	41	4	Flow through	4	0	0	0	0
2.6	0.03	45	4	Flow through	4	0	0	0	0
2.8	0.03	49	4	Flow through	4	0	0	0	0
3.0	0.03	53	4	Flow through	4	0	0	0	0
3.2	0.03	56	4	Flow through	4	0	0	0	0
3.4	0.04	61	4	Flow through	4	0	0	0	0
3.6	0.04	65	4	Flow through	4	0	0	0	0
3.8	0.04	69	4	Flow through	4	0	0	0	0
4.0	0.04	73	4	Flow through	4	0	0	0	0
4.2	0.05	78	4	Flow through	4	0	0	0	0
4.4	0.05	82	5	Flow through	5	0	0	0	0
4.6	0.05	87	5	Flow through	5	0	0	0	0
4.8	0.05	92	5	Flow through	5	0	0	0	0
5.0	0.06	97	5	Flow through	5	0	0	0	0
5.2	0.06	102	5	Flow through	5	0	0	0	0
5.4	0.06	107	5	Flow through	5	0	0	0	0
5.6	0.07	112	5	Flow through	5	0	0	0	0
5.8	0.07	117	5	Flow through	5	0	0	0	0
6.0	0.07	123	5	Flow through	5	0	0	0	0
6.2	0.08	128	6	Flow through	6	0	0	0	0
6.4	0.08	134	6	Flow through	6	0	0	0	0
6.6	0.08	141	6	Flow through	6	0	0	0	0
6.8	0.09	147	7	Flow through	7	0	0	0	0
7.0	0.09	154	7	Flow through	7	0	0	0	0
7.2	0.09	162	7	Flow through	7	0	0	0	0
7.4	0.10	169	8	Flow through	8	0	0	0	0
7.6	0.10	177	8	Flow through	8	0	0	0	0
7.8	0.11	186	8	Flow through	8	0	0	0	0
8.0	0.11	194	9	Flow through	9	0	0	0	0
8.2	0.12	204	9	Flow through	9	0	0	0	0
8.4	0.13	214	10	Flow through	10	0	0	0	0
8.6	0.13	225	11	Flow through	11	0	0	0	0
8.8	0.14	236	12	Flow through	12	0	0	0	0
9.0	0.15	249	12	Flow through	12	0	0	0	0
9.2	0.15	262	13	Flow through	13	0	0	0	0
9.4	0.16	276	14	Flow through	14	0	0	0	0
9.6	0.17	290	15	Flow through	15	0	0	0	0
9.8	0.18	306	16	Flow through	16	0	0	0	0
10.0	0.19	322	16	Flow through	16	0	0	0	0
10.2	0.20	340	18	Flow through	18	0	0	0	0
10.4	0.21	359	19	Flow through	19	0	0	0	0
10.6	0.22	380	21	Flow through	21	0	0	0	0
10.8	0.24	402	23	Flow through	23	0	0	0	0
11.0	0.25	426	24	Flow through	24	0	0	0	0
11.2	0.27	454	28	Flow through	28	0	0	0	0

11.4	0.29	489	34	Flow through	34	0	0	0	0
11.6	0.31	536	47	Flow through	47	0	0	0	0
11.8	0.37	636	101	Flow through	101	0	0	0	0
12.0	0.50	852	216	Overflow	107	109	109	0	0
12.2	0.63	1,068	216	Overflow	107	109	219	89	850
12.4	0.69	1,169	101	Overflow	107	-6	124	0	0
12.6	0.71	1,216	47	Overflow	107	-59	64	0	0
12.8	0.73	1,251	34	Flow through	99	-64	0	0	0
13.0	0.75	1,278	28	Flow through	28	0	0	0	0
13.2	0.76	1,303	24	Flow through	24	0	0	0	0
13.4	0.78	1,325	23	Flow through	23	0	0	0	0
13.6	0.79	1,346	21	Flow through	21	0	0	0	0
13.8	0.80	1,365	19	Flow through	19	0	0	0	0
14.0	0.81	1,382	18	Flow through	18	0	0	0	0
14.2	0.82	1,399	16	Flow through	16	0	0	0	0
14.4	0.83	1,414	16	Flow through	16	0	0	0	0
14.6	0.84	1,429	15	Flow through	15	0	0	0	0
14.8	0.85	1,443	14	Flow through	14	0	0	0	0
15.0	0.85	1,456	13	Flow through	13	0	0	0	0
15.2	0.86	1,469	12	Flow through	12	0	0	0	0
15.4	0.87	1,480	12	Flow through	12	0	0	0	0
15.6	0.87	1,491	11	Flow through	11	0	0	0	0
15.8	0.88	1,501	10	Flow through	10	0	0	0	0
16.0	0.89	1,510	9	Flow through	9	0	0	0	0
16.2	0.89	1,519	9	Flow through	9	0	0	0	0
16.4	0.90	1,527	8	Flow through	8	0	0	0	0
16.6	0.90	1,535	8	Flow through	8	0	0	0	0
16.8	0.91	1,543	8	Flow through	8	0	0	0	0
17.0	0.91	1,550	7	Flow through	7	0	0	0	0
17.2	0.91	1,557	7	Flow through	7	0	0	0	0
17.4	0.92	1,564	7	Flow through	7	0	0	0	0
17.6	0.92	1,570	6	Flow through	6	0	0	0	0
17.8	0.92	1,576	6	Flow through	6	0	0	0	0
18.0	0.93	1,582	6	Flow through	6	0	0	0	0
18.2	0.93	1,587	5	Flow through	5	0	0	0	0
18.4	0.93	1,593	5	Flow through	5	0	0	0	0
18.6	0.94	1,598	5	Flow through	5	0	0	0	0
18.8	0.94	1,603	5	Flow through	5	0	0	0	0
19.0	0.94	1,608	5	Flow through	5	0	0	0	0
19.2	0.95	1,613	5	Flow through	5	0	0	0	0
19.4	0.95	1,618	5	Flow through	5	0	0	0	0
19.6	0.95	1,622	5	Flow through	5	0	0	0	0
19.8	0.95	1,627	5	Flow through	5	0	0	0	0
20.0	0.96	1,631	4	Flow through	4	0	0	0	0
20.2	0.96	1,636	4	Flow through	4	0	0	0	0
20.4	0.96	1,640	4	Flow through	4	0	0	0	0
20.6	0.96	1,644	4	Flow through	4	0	0	0	0
20.8	0.97	1,648	4	Flow through	4	0	0	0	0
21.0	0.97	1,652	4	Flow through	4	0	0	0	0
21.2	0.97	1,657	4	Flow through	4	0	0	0	0
21.4	0.97	1,660	4	Flow through	4	0	0	0	0
21.6	0.98	1,664	4	Flow through	4	0	0	0	0
21.8	0.98	1,668	4	Flow through	4	0	0	0	0
22.0	0.98	1,672	4	Flow through	4	0	0	0	0
22.2	0.98	1,675	4	Flow through	4	0	0	0	0
22.4	0.99	1,679	4	Flow through	4	0	0	0	0
22.6	0.99	1,682	3	Flow through	3	0	0	0	0
22.8	0.99	1,686	3	Flow through	3	0	0	0	0
23.0	0.99	1,689	3	Flow through	3	0	0	0	0
23.2	0.99	1,692	3	Flow through	3	0	0	0	0
23.4	0.99	1,696	3	Flow through	3	0	0	0	0
23.6	1.00	1,699	3	Flow through	3	0	0	0	0
23.8	1.00	1,702	3	Flow through	3	0	0	0	0
24.0	1.00	1,705	3	Flow through	3	0	0	0	0
Totals			1,705		1,616			89	

Water Quality Volume and Design Event

Water Quality Volume (WQv)	200	ft ³
Design Event	200	ft ³

Directions

Water Quality Volume calculated from previous Sheet
Total event volume calculated from previous sheet

System Configuration

Is FocalPoint used? Yes

Enter Yes if FocalPoint used. Enter No if runoff flows directly into RTank and proceed to RTank Design worksheet

Step 4 - FocalPoint Configuration

4.1 - FocalPoint Factor of Safety	1	
4.2 - FocalPoint bed area	20	ft ²
4.3 - Storage volume above FocalPoint provided	57	ft ³
4.4 - Desired treatment time	24	hours
4.5 - Water Quality Volume treated prior to overflow?	Yes	
4.6 - FocalPoint drain within desired time?	Yes	
4.7 - Flow in excess of storage volume above	To RTank	

Enter optional factor-of-safety
Enter target FocalPoint footprint, 20 SF min. (See Step 4.5)
Enter available surface storage volume (See Step 4.5)
Select 24, 48, 72 or 96 hrs from toggle
If Yes = WQv has been treated
If No = larger FocalPoint bed (Step 4.2) and/or surface storage volume (Step 4.3) required
If Yes = time goal has been met
If No = larger FocalPoint bed (Step 4.2) required
Select routing location for overflow/bypass vol. from toggle:
Off site to disregard flow, RTank to store for retention / detention, harvesting, or infiltration

Step 5 - Evaluation of Design

5.1 - Volume treated prior to overflow	No Overflow	ft ³
5.2 - Total volume treated	200	ft ³

Result = Volume ft3 treated prior to overflow/bypass
Result = Total Volume ft3 treated

Time (hrs)	Rainfall Distribution	Cumulative Rainfall (ft ³)	Incremental Runoff into FocalPoint (ft ³)	FocalPoint Test (-)	Incremental Volume thru FocalPoint (ft ³)	Incremental Volume to Storage Above (ft ³)	Total Volume in Storage Above (ft ³)	Incremental Volume Overflow (ft ³)
0.0	0.00	0	0	Flow through	0	0	0	0
0.2	0.00	0	0	Flow through	0	0	0	0
0.4	0.00	1	0	Flow through	0	0	0	0
0.6	0.01	1	0	Flow through	0	0	0	0
0.8	0.01	2	0	Flow through	0	0	0	0
1.0	0.01	2	0	Flow through	0	0	0	0
1.2	0.01	2	0	Flow through	0	0	0	0
1.4	0.01	3	0	Flow through	0	0	0	0
1.6	0.02	3	0	Flow through	0	0	0	0
1.8	0.02	4	0	Flow through	0	0	0	0
2.0	0.02	4	0	Flow through	0	0	0	0
2.2	0.02	4	0	Flow through	0	0	0	0
2.4	0.02	5	0	Flow through	0	0	0	0
2.6	0.03	5	0	Flow through	0	0	0	0
2.8	0.03	6	0	Flow through	0	0	0	0
3.0	0.03	6	0	Flow through	0	0	0	0
3.2	0.03	7	0	Flow through	0	0	0	0
3.4	0.04	7	0	Flow through	0	0	0	0
3.6	0.04	8	0	Flow through	0	0	0	0
3.8	0.04	8	0	Flow through	0	0	0	0
4.0	0.04	9	1	Flow through	1	0	0	0
4.2	0.05	9	1	Flow through	1	0	0	0
4.4	0.05	10	1	Flow through	1	0	0	0
4.6	0.05	10	1	Flow through	1	0	0	0
4.8	0.05	11	1	Flow through	1	0	0	0
5.0	0.06	11	1	Flow through	1	0	0	0
5.2	0.06	12	1	Flow through	1	0	0	0
5.4	0.06	13	1	Flow through	1	0	0	0
5.6	0.07	13	1	Flow through	1	0	0	0
5.8	0.07	14	1	Flow through	1	0	0	0
6.0	0.07	14	1	Flow through	1	0	0	0
6.2	0.08	15	1	Flow through	1	0	0	0
6.4	0.08	16	1	Flow through	1	0	0	0
6.6	0.08	16	1	Flow through	1	0	0	0
6.8	0.09	17	1	Flow through	1	0	0	0
7.0	0.09	18	1	Flow through	1	0	0	0
7.2	0.09	19	1	Flow through	1	0	0	0
7.4	0.10	20	1	Flow through	1	0	0	0
7.6	0.10	21	1	Flow through	1	0	0	0
7.8	0.11	22	1	Flow through	1	0	0	0
8.0	0.11	23	1	Flow through	1	0	0	0
8.2	0.12	24	1	Flow through	1	0	0	0
8.4	0.13	25	1	Flow through	1	0	0	0
8.6	0.13	26	1	Flow through	1	0	0	0
8.8	0.14	28	1	Flow through	1	0	0	0
9.0	0.15	29	1	Flow through	1	0	0	0
9.2	0.15	31	2	Flow through	2	0	0	0
9.4	0.16	32	2	Flow through	2	0	0	0
9.6	0.17	34	2	Flow through	2	0	0	0
9.8	0.18	36	2	Flow through	2	0	0	0
10.0	0.19	38	2	Flow through	2	0	0	0
10.2	0.20	40	2	Flow through	2	0	0	0
10.4	0.21	42	2	Flow through	2	0	0	0
10.6	0.22	44	2	Flow through	2	0	0	0

10.8	0.24	47	3	Flow through	3	0	0	0
11.0	0.25	50	3	Flow through	3	0	0	0
11.2	0.27	53	3	Flow through	3	0	0	0
11.4	0.29	57	4	Flow through	4	0	0	0
11.6	0.31	63	6	Flow through	6	0	0	0
11.8	0.37	75	12	Flow through	12	0	0	0
12.0	0.50	100	25	Flow through	25	0	0	0
12.2	0.63	125	25	Flow through	25	0	0	0
12.4	0.69	137	12	Flow through	12	0	0	0
12.6	0.71	143	6	Flow through	6	0	0	0
12.8	0.73	147	4	Flow through	4	0	0	0
13.0	0.75	150	3	Flow through	3	0	0	0
13.2	0.76	153	3	Flow through	3	0	0	0
13.4	0.78	155	3	Flow through	3	0	0	0
13.6	0.79	158	2	Flow through	2	0	0	0
13.8	0.80	160	2	Flow through	2	0	0	0
14.0	0.81	162	2	Flow through	2	0	0	0
14.2	0.82	164	2	Flow through	2	0	0	0
14.4	0.83	166	2	Flow through	2	0	0	0
14.6	0.84	167	2	Flow through	2	0	0	0
14.8	0.85	169	2	Flow through	2	0	0	0
15.0	0.85	171	2	Flow through	2	0	0	0
15.2	0.86	172	1	Flow through	1	0	0	0
15.4	0.87	173	1	Flow through	1	0	0	0
15.6	0.87	175	1	Flow through	1	0	0	0
15.8	0.88	176	1	Flow through	1	0	0	0
16.0	0.89	177	1	Flow through	1	0	0	0
16.2	0.89	178	1	Flow through	1	0	0	0
16.4	0.90	179	1	Flow through	1	0	0	0
16.6	0.90	180	1	Flow through	1	0	0	0
16.8	0.91	181	1	Flow through	1	0	0	0
17.0	0.91	182	1	Flow through	1	0	0	0
17.2	0.91	182	1	Flow through	1	0	0	0
17.4	0.92	183	1	Flow through	1	0	0	0
17.6	0.92	184	1	Flow through	1	0	0	0
17.8	0.92	185	1	Flow through	1	0	0	0
18.0	0.93	185	1	Flow through	1	0	0	0
18.2	0.93	186	1	Flow through	1	0	0	0
18.4	0.93	187	1	Flow through	1	0	0	0
18.6	0.94	187	1	Flow through	1	0	0	0
18.8	0.94	188	1	Flow through	1	0	0	0
19.0	0.94	188	1	Flow through	1	0	0	0
19.2	0.95	189	1	Flow through	1	0	0	0
19.4	0.95	190	1	Flow through	1	0	0	0
19.6	0.95	190	1	Flow through	1	0	0	0
19.8	0.95	191	1	Flow through	1	0	0	0
20.0	0.96	191	1	Flow through	1	0	0	0
20.2	0.96	192	1	Flow through	1	0	0	0
20.4	0.96	192	0	Flow through	0	0	0	0
20.6	0.96	193	0	Flow through	0	0	0	0
20.8	0.97	193	0	Flow through	0	0	0	0
21.0	0.97	194	0	Flow through	0	0	0	0
21.2	0.97	194	0	Flow through	0	0	0	0
21.4	0.97	195	0	Flow through	0	0	0	0
21.6	0.98	195	0	Flow through	0	0	0	0
21.8	0.98	195	0	Flow through	0	0	0	0
22.0	0.98	196	0	Flow through	0	0	0	0
22.2	0.98	196	0	Flow through	0	0	0	0
22.4	0.99	197	0	Flow through	0	0	0	0
22.6	0.99	197	0	Flow through	0	0	0	0
22.8	0.99	198	0	Flow through	0	0	0	0
23.0	0.99	198	0	Flow through	0	0	0	0
23.2	0.99	198	0	Flow through	0	0	0	0
23.4	0.99	199	0	Flow through	0	0	0	0
23.6	1.00	199	0	Flow through	0	0	0	0
23.8	1.00	199	0	Flow through	0	0	0	0
24.0	1.00	200	0	Flow through	0	0	0	0
Totals			200		200	0	0	0

APPENDIX B

Stormwater BMP Inspection and Maintenance

Meadowview II

Post Construction Stormwater Inspection and Maintenance Plan

Introduction:

This Post Construction Stormwater Inspection and Maintenance Plan outlines the anticipated inspection and maintenance procedures for the stormwater management devices proposed for the project. These procedures should be followed to ensure the intended function of the designed measures and to prevent unreasonable adverse impacts to the surrounding environment. These procedures are provided as an overview of the anticipated practices to be used on this site. In some instances, additional measures may be required due to unexpected conditions. For additional detail, refer to the most recent edition of the “Maine Stormwater Best Practices Manual (BMPs)” as published by the Maine Department of Environmental Protection (MEDEP)

Inspection and Maintenance Contract:

After construction, it is the responsibility of the owner or assigned heirs to comply with the inspection and maintenance procedures outlined in this section. All measures shall be maintained in good operating condition. A person with knowledge of stormwater control, including the standards and conditions in all applicable permits, shall conduct the inspections.

Long-term inspection and maintenance by a DEP approved stormwater maintenance inspector shall be regularly provided. A legal agreement shall be established with responsibility for inspection and maintenance and should list specific maintenance responsibilities (including timetables) as well as provide for funding for the long-term inspection and maintenance.

Parking Lot and Road:

Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably in the spring. Accumulations on pavement must be removed with pure vacuum, vacuum assist, or regenerative air. Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader. Grading of gravel paths, or grading of the gravel shoulders of gravel or paved roads, must be routinely performed to ensure that stormwater drains immediately off the road surface to adjacent BMPs, and is not impeded by accumulations of graded material on the road shoulder or by excavation of false ditches in the shoulder. Snow must be removed from the road and parking lot at a location with a minimum of 25 feet from the wetlands.

Stormwater Management Devices:

During the first year of operation, filtration BMPs shall be inspected twice annually and following major storm events. Thereafter, the filter should be inspected every six months to ensure that it is draining no less than 24 hours and within 48 hours following a 1-inch storm or greater. Additionally, a storm that fills the system to overflow should be monitored to confirm in drains in no less than 36 hours and within 60 hours.

A. DRIP EDGE FILTERS:

The roof dripline filter is part of the stormwater management plan for this project and must not be paved over or altered in any way. Inspect bi-monthly during the first six months following construction, then inspect annually. Inspections should be made after significant storm events to check for surface ponding that could indicate failure due to clogging. Maintenance criteria for the roof dripline filter are as follows:

- Debris and sediment buildup shall be removed from the roof dripline filter system as needed. The removed sediments should be disposed in an appropriate manner.
- The filter should be draining within 48 hours following a 1-inch storm or greater. If the system drains too fast, an orifice may need to be added on the underdrain outlet or may need to be modified if already present.

B. FOCALPOINTS:

- A first inspection to determine if maintenance is necessary should be performed at least twice annually after storm events of greater than (1) one-inch total depth (subject to regional climate). Please refer to the maintenance checklist for specific conditions that indicate if maintenance is necessary.
- Check for standing water and that the bypass inlet is clear of debris.
- Check embankments for erosion.
- Check outlet control structure for accumulation of sediment.
- Dig out silt (if any) and mulch and remove trash & foreign items.
- After removal of mulch and debris, measure distance from the top of the FocalPoint® HPMBS engineered media soil to the flow line elevation of the adjacent overflow conveyance. If this distance is greater than that specified on the plans (typ. 6” - 12”), add media (not topsoil or other) to recharge to the distance specified.
- Replace mulch when/where necessary.
- Examine the plant’s health and replace if dead or dying. Prune as necessary to encourage growth in the correct directions.

Meadowview II

- The pond should drain in 24-48 hours. If the pond begins draining at a time approaching or exceeding 48 hours, the filter media must be removed and replaced.

C. GRASSED UNDERDRAIN SOIL FILTER:

Inspect semi-annually in the spring and fall and following major storm events.

Maintenance criteria for the grassed underdrained soil filter are as follows:

- Any bare areas or erosion rills shall be repaired with new media filter or sandy loam then seeded and mulched.
- Drainage: The filter should drain within 24 to 48 hours following a one-inch storm or greater. If the system drains too fast, an orifice may need to be added on the undrain outlet or may need to be modified if already present.
- Sediment Removal: Debris and sediment buildup shall be removed from the grassed underdrain soil filter forebay and basin as needed. The removed sediments should be disposed in an appropriate manner.
- Mowing: If mowing is desired only hand-held string trimmers or push-mowers are allowed on the filter (no tractors) and the grass bed should be mowed no more than 2 times per growing season to maintain grass heights of no less than 6 inches.
- Fertilization: Fertilization of the filter area should be avoided unless absolutely necessary to establish vegetation.
- Harvesting and Weeding: Harvesting and pruning of excessive growth should be done occasionally. Weeding to control unwanted or invasive plants may also be necessary. Add new mulch only as necessary.
- Grass Cover: Maintaining good grass cover will minimize clogging with fine sediments and if ponding exceeds 48 hours, the top of the filter bed must be tilled to reestablish the soil's filtration capacity.
- Should water pond on the surface of the filter bed for longer than 72 hours, the top several inches of the filter shall be replaced with fresh material. The removed material shall be disposed properly.

D. R-TANK STORMWATER DETENTION:

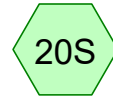
Inspection and Maintenance of the R-Tank shall be in accordance with the recommended practices of the manufacture, ACF Environmental, to provide the performance required by the design. The R-Tank system includes inspection ports and maintenance ports, each of which has a cover at the surface. A visual inspection of all ports should be used to determine the depth of sediments deposited in the R-Tank system. The system should be backflushed once the sediment accumulation has reached the manufacturer's limits. Once removed, sediment-laden water must be disposed of properly.

APPENDIX C

Pre-Development HydroCAD and Backup Calculations



1S Alternate Tc



2S Alternate Tc



OFFSITE EXISTING



EASTERN SIDE



Stream



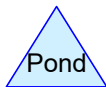
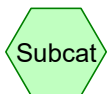
WESTERN SIDE



Wetlands



Wetlands



Routing Diagram for 191.06051 SW-PRE

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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	Type III 24-hr		Default	24.00	1	3.10	2
2	10-yr	Type III 24-hr		Default	24.00	1	4.60	2
3	25-yr	Type III 24-hr		Default	24.00	1	5.80	2

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.216	80	1/2 acre lots, 25% imp, HSG C (10S)
1.424	61	>75% Grass cover, Good, HSG B (3S)
3.294	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S, 10S, 20S)
1.573	98	Paved parking, HSG C (1S, 2S, 3S, 10S, 20S)
0.749	98	Roofs, HSG C (1S, 2S, 3S, 10S, 20S)
2.479	55	Woods, Good, HSG B (2S, 3S, 10S, 20S)
1.013	70	Woods, Good, HSG C (1S, 2S, 10S, 20S)
2.478	77	Woods, Good, HSG D (1S, 2S, 10S, 20S)
16.225	75	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
3.903	HSG B	2S, 3S, 10S, 20S
9.844	HSG C	1S, 2S, 3S, 10S, 20S
2.478	HSG D	1S, 2S, 10S, 20S
0.000	Other	
16.225		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
0.000	0.000	3.216	0.000	0.000	3.216	1/2 acre lots, 25% imp	10S
0.000	1.424	3.294	0.000	0.000	4.717	>75% Grass cover, Good	1S, 2S, 3S, 10S, 20S
0.000	0.000	1.573	0.000	0.000	1.573	Paved parking	1S, 2S, 3S, 10S, 20S
0.000	0.000	0.749	0.000	0.000	0.749	Roofs	1S, 2S, 3S, 10S, 20S
0.000	2.479	1.013	2.478	0.000	5.970	Woods, Good	1S, 2S, 3S, 10S, 20S
0.000	3.903	9.844	2.478	0.000	16.225	TOTAL AREA	

191.06051 SW-PRE

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	3S	0.00	0.00	82.0	0.0200	0.013	0.0	12.0	0.0

191.06051 SW-PRE

Type III 24-hr 2-yr Rainfall=3.10"

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: WESTERN SIDE Runoff Area=93,218 sf 24.63% Impervious Runoff Depth>1.32"
Flow Length=484' Tc=8.9 min CN=80 Runoff=2.97 cfs 0.236 af

Subcatchment 2S: EASTERN SIDE Runoff Area=96,345 sf 13.25% Impervious Runoff Depth>0.91"
Flow Length=631' Tc=31.0 min CN=73 Runoff=1.23 cfs 0.168 af

Subcatchment 3S: OFFSITE EXISTING Runoff Area=163,274 sf 18.11% Impervious Runoff Depth>0.59"
Flow Length=594' Tc=25.5 min CN=66 Runoff=1.27 cfs 0.184 af

Subcatchment 10S: 1S Alternate Tc Runoff Area=257,711 sf 22.61% Impervious Runoff Depth>1.26"
Flow Length=540' Tc=8.3 min CN=79 Runoff=7.93 cfs 0.621 af

Subcatchment 20S: 2S Alternate Tc Runoff Area=96,230 sf 13.12% Impervious Runoff Depth>0.91"
Flow Length=698' Tc=18.0 min CN=73 Runoff=1.54 cfs 0.168 af

Link AP1: Wetlands Inflow=2.97 cfs 0.236 af
Primary=2.97 cfs 0.236 af

Link AP2: Stream Inflow=1.23 cfs 0.168 af
Primary=1.23 cfs 0.168 af

Link AP3: Wetlands Inflow=1.27 cfs 0.184 af
Primary=1.27 cfs 0.184 af

Total Runoff Area = 16.225 ac Runoff Volume = 1.377 af Average Runoff Depth = 1.02"
80.73% Pervious = 13.099 ac 19.27% Impervious = 3.127 ac

Summary for Subcatchment 1S: WESTERN SIDE

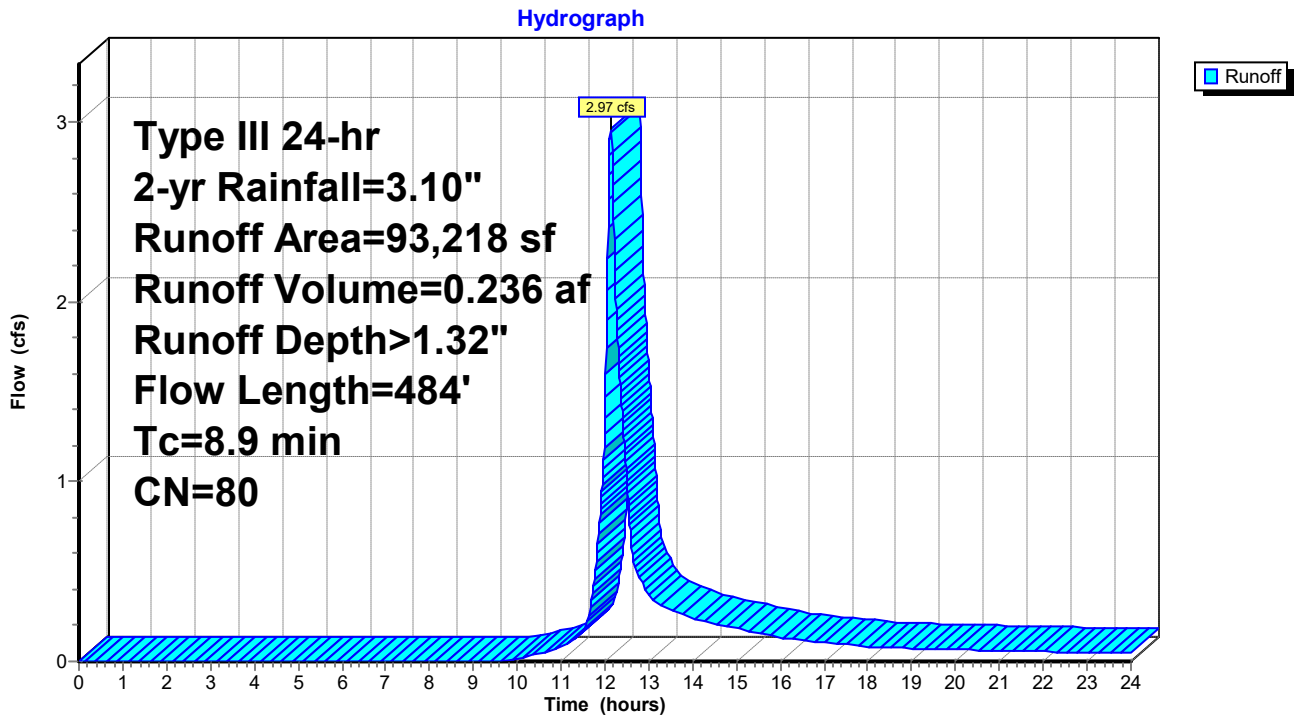
Runoff = 2.97 cfs @ 12.13 hrs, Volume= 0.236 af, Depth> 1.32"
 Routed to Link AP1 : Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
14,854	70	Woods, Good, HSG C
26,452	77	Woods, Good, HSG D
16,696	98	Paved parking, HSG C
6,268	98	Roofs, HSG C
28,948	74	>75% Grass cover, Good, HSG C
93,218	80	Weighted Average
70,254		75.37% Pervious Area
22,964		24.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	22	0.0230	0.13		Sheet Flow, A-B Grass: Short n= 0.150 P2= 3.10"
0.2	54	0.0380	3.96		Shallow Concentrated Flow, B-C Paved Kv= 20.3 fps
1.0	128	0.0190	2.22		Shallow Concentrated Flow, C-D Unpaved Kv= 16.1 fps
0.7	83	0.0170	2.10		Shallow Concentrated Flow, D-E Unpaved Kv= 16.1 fps
4.2	197	0.0250	0.79		Shallow Concentrated Flow, E-F Woodland Kv= 5.0 fps
8.9	484	Total			

Subcatchment 1S: WESTERN SIDE



Summary for Subcatchment 2S: EASTERN SIDE

Runoff = 1.23 cfs @ 12.47 hrs, Volume= 0.168 af, Depth> 0.91"
 Routed to Link AP2 : Stream

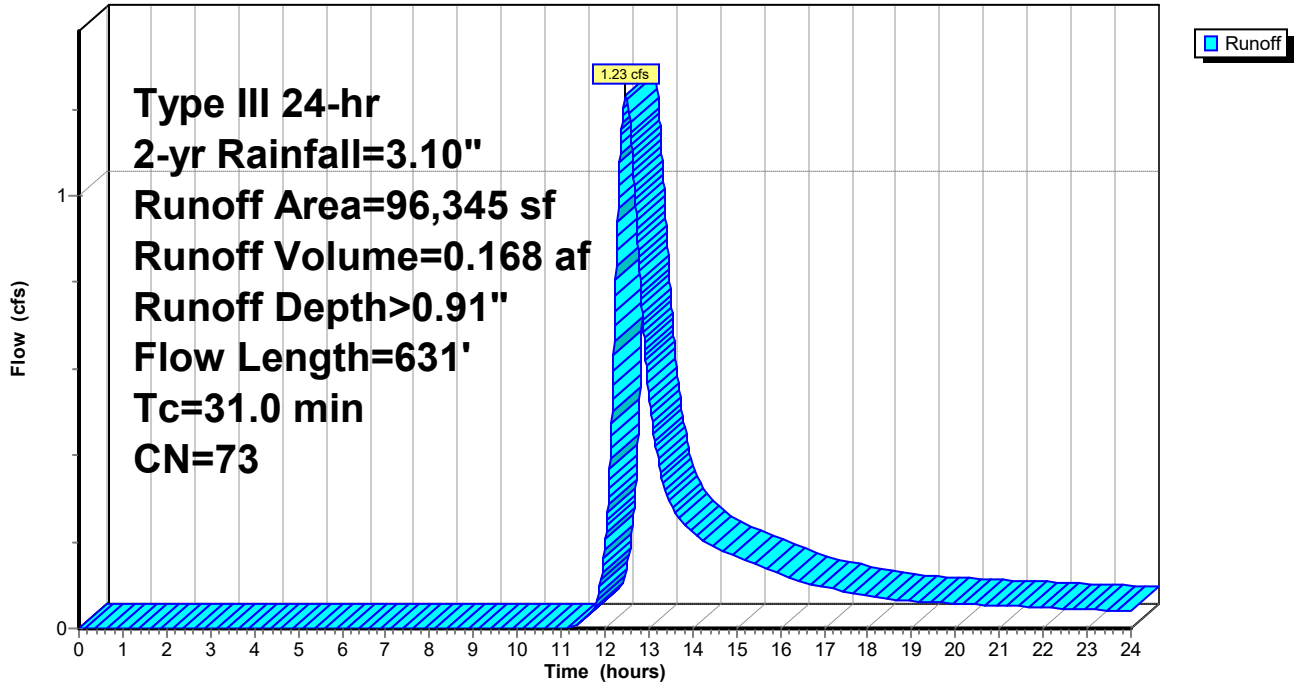
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
7,201	70	Woods, Good, HSG C
27,517	77	Woods, Good, HSG D
22,191	55	Woods, Good, HSG B
6,747	98	Roofs, HSG C
6,022	98	Paved parking, HSG C
26,667	74	>75% Grass cover, Good, HSG C
96,345	73	Weighted Average
83,576		86.75% Pervious Area
12,769		13.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.2	150	0.0300	0.10		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.10"
3.8	218	0.0360	0.95		Shallow Concentrated Flow, D-E Woodland Kv= 5.0 fps
1.0	263	0.0150	4.32	12.95	Channel Flow, C-D Area= 3.0 sf Perim= 5.0' r= 0.60' n= 0.030 Stream, clean & straight
31.0	631	Total			

Subcatchment 2S: EASTERN SIDE

Hydrograph



Summary for Subcatchment 3S: OFFSITE EXISTING

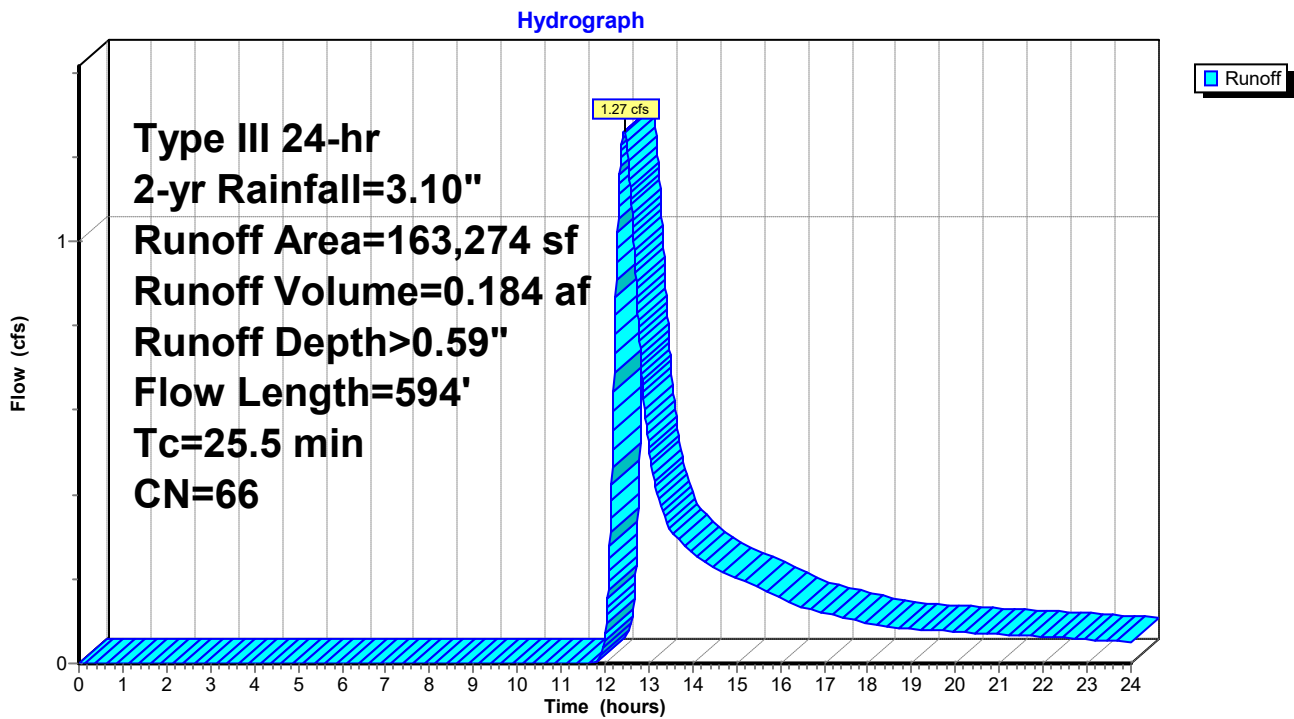
Runoff = 1.27 cfs @ 12.44 hrs, Volume= 0.184 af, Depth> 0.59"
 Routed to Link AP3 : Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
60,885	55	Woods, Good, HSG B
24,556	98	Paved parking, HSG C
5,016	98	Roofs, HSG C
62,012	61	>75% Grass cover, Good, HSG B
10,805	74	>75% Grass cover, Good, HSG C
163,274	66	Weighted Average
133,702		81.89% Pervious Area
29,572		18.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0240	0.08		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.10"
4.6	412	0.0460	1.50		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
0.2	82	0.0200	6.42	5.04	Pipe Channel, C-D 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
25.5	594	Total			

Subcatchment 3S: OFFSITE EXISTING



Summary for Subcatchment 10S: 1S Alternate Tc

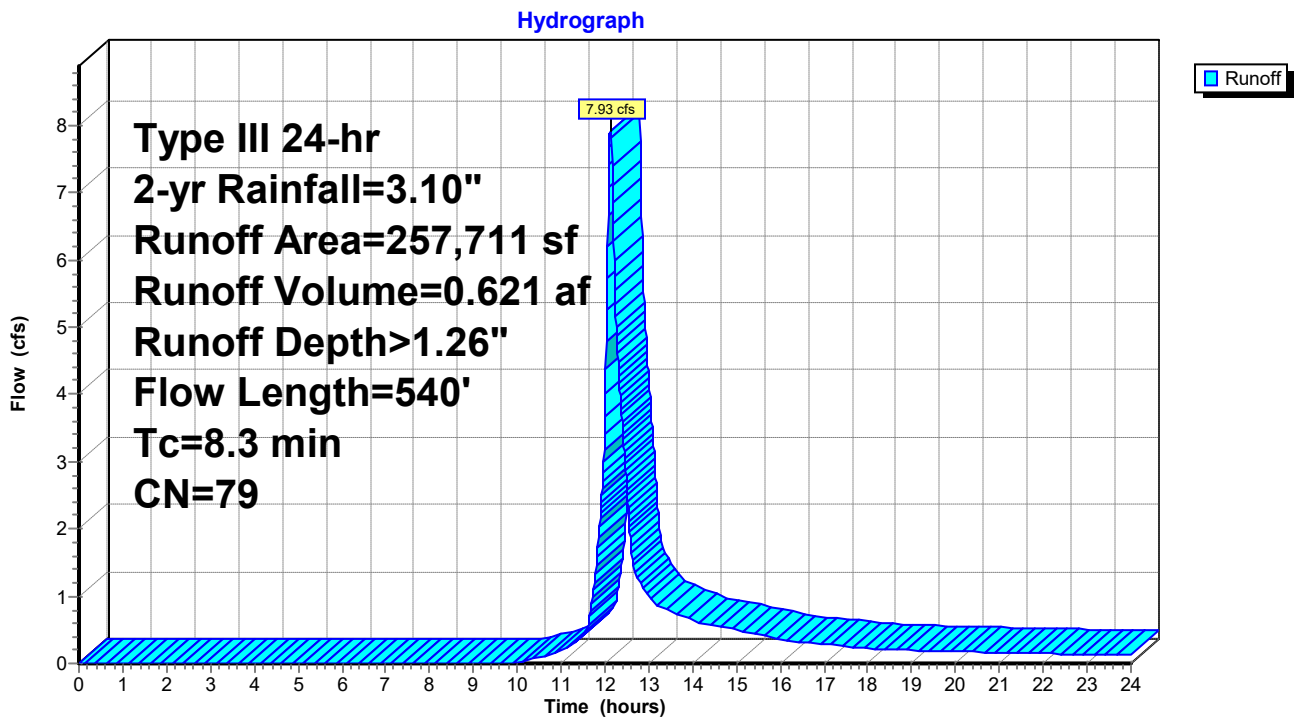
Runoff = 7.93 cfs @ 12.12 hrs, Volume= 0.621 af, Depth> 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
14,854	70	Woods, Good, HSG C
26,452	77	Woods, Good, HSG D
2,258	55	Woods, Good, HSG B
15,242	98	Paved parking, HSG C
8,005	98	Roofs, HSG C
50,823	74	>75% Grass cover, Good, HSG C
140,077	80	1/2 acre lots, 25% imp, HSG C
257,711	79	Weighted Average
199,445		77.39% Pervious Area
58,266		22.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0230	1.55		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 3.10"
1.1	67	0.0220	1.04		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
0.7	88	0.0170	1.96		Shallow Concentrated Flow, C-D Grassed Waterway Kv= 15.0 fps
4.9	235	0.0260	0.81		Shallow Concentrated Flow, D-E Woodland Kv= 5.0 fps
8.3	540	Total			

Subcatchment 10S: 1S Alternate Tc



Summary for Subcatchment 20S: 2S Alternate Tc

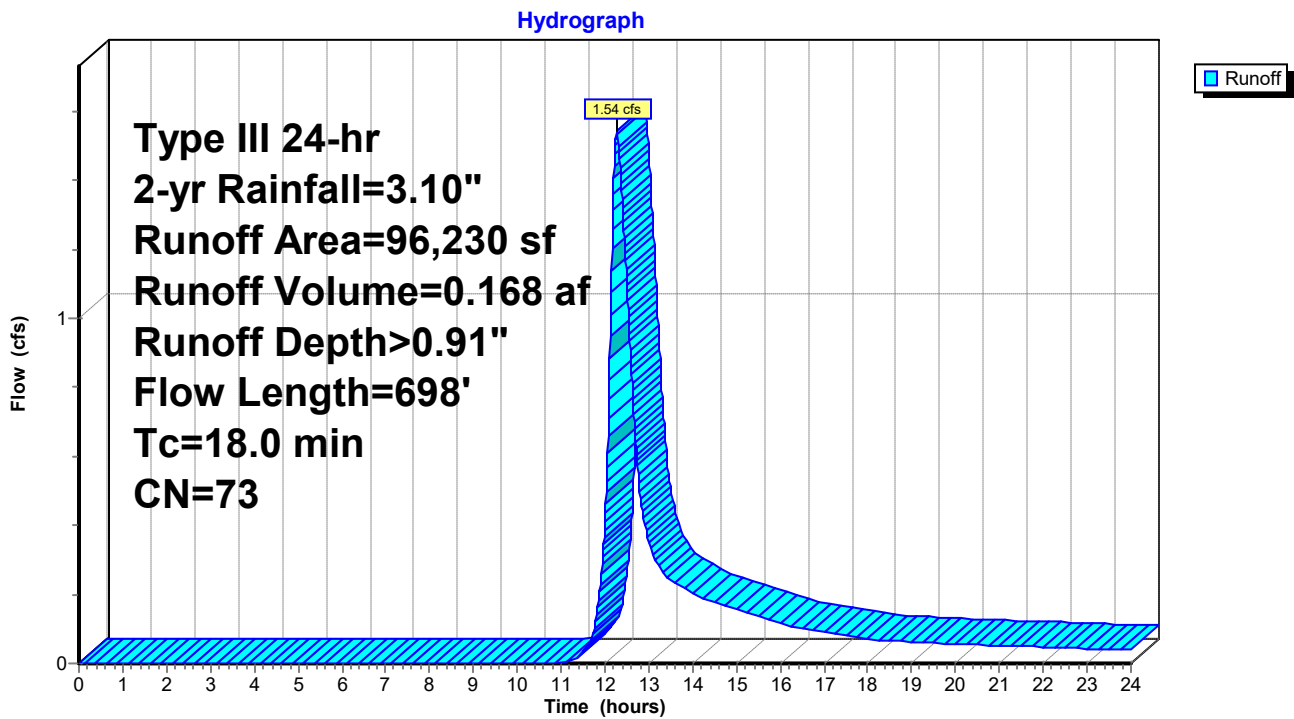
Runoff = 1.54 cfs @ 12.27 hrs, Volume= 0.168 af, Depth> 0.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
7,201	70	Woods, Good, HSG C
27,517	77	Woods, Good, HSG D
22,668	55	Woods, Good, HSG B
6,601	98	Roofs, HSG C
6,021	98	Paved parking, HSG C
26,222	74	>75% Grass cover, Good, HSG C
96,230	73	Weighted Average
83,608		86.88% Pervious Area
12,622		13.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	100	0.1000	0.14		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.10"
5.3	335	0.0450	1.06		Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
1.0	263	0.0150	4.32	12.95	Channel Flow, C-D Area= 3.0 sf Perim= 5.0' r= 0.60' n= 0.030 Stream, clean & straight
18.0	698	Total			

Subcatchment 20S: 2S Alternate Tc



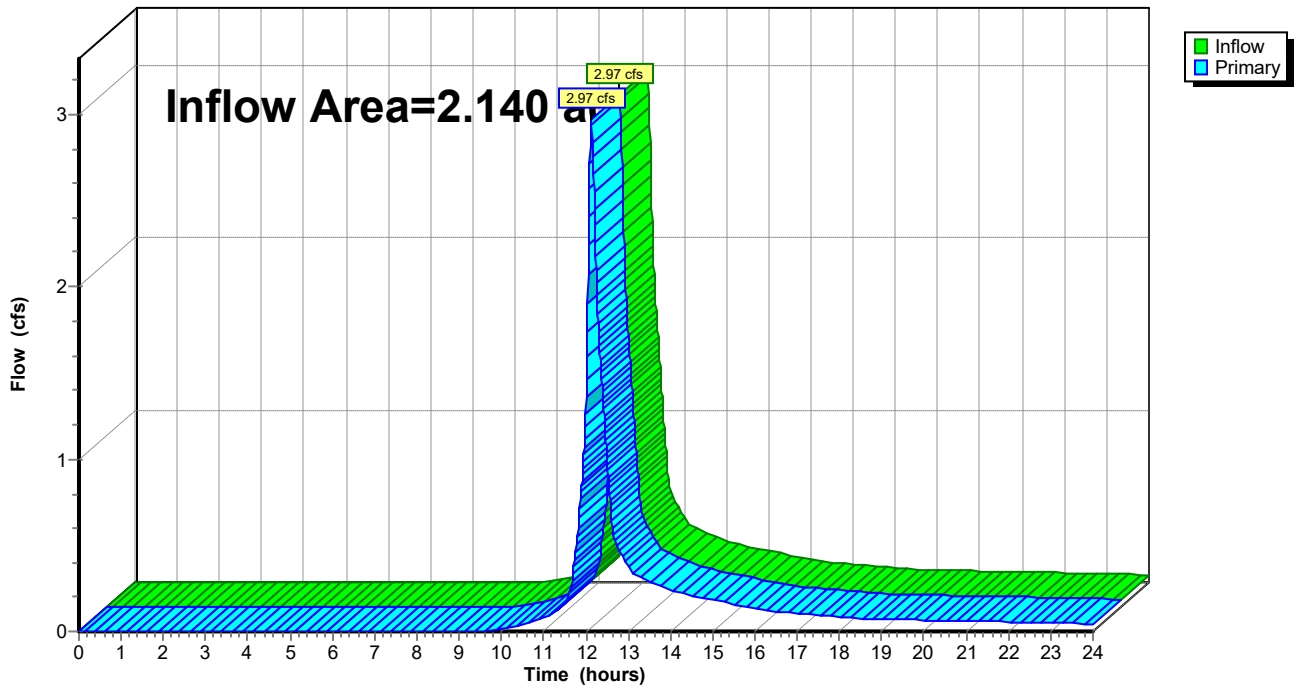
Summary for Link AP1: Wetlands

Inflow Area = 2.140 ac, 24.63% Impervious, Inflow Depth > 1.32" for 2-yr event
Inflow = 2.97 cfs @ 12.13 hrs, Volume= 0.236 af
Primary = 2.97 cfs @ 12.13 hrs, Volume= 0.236 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link AP1: Wetlands

Hydrograph



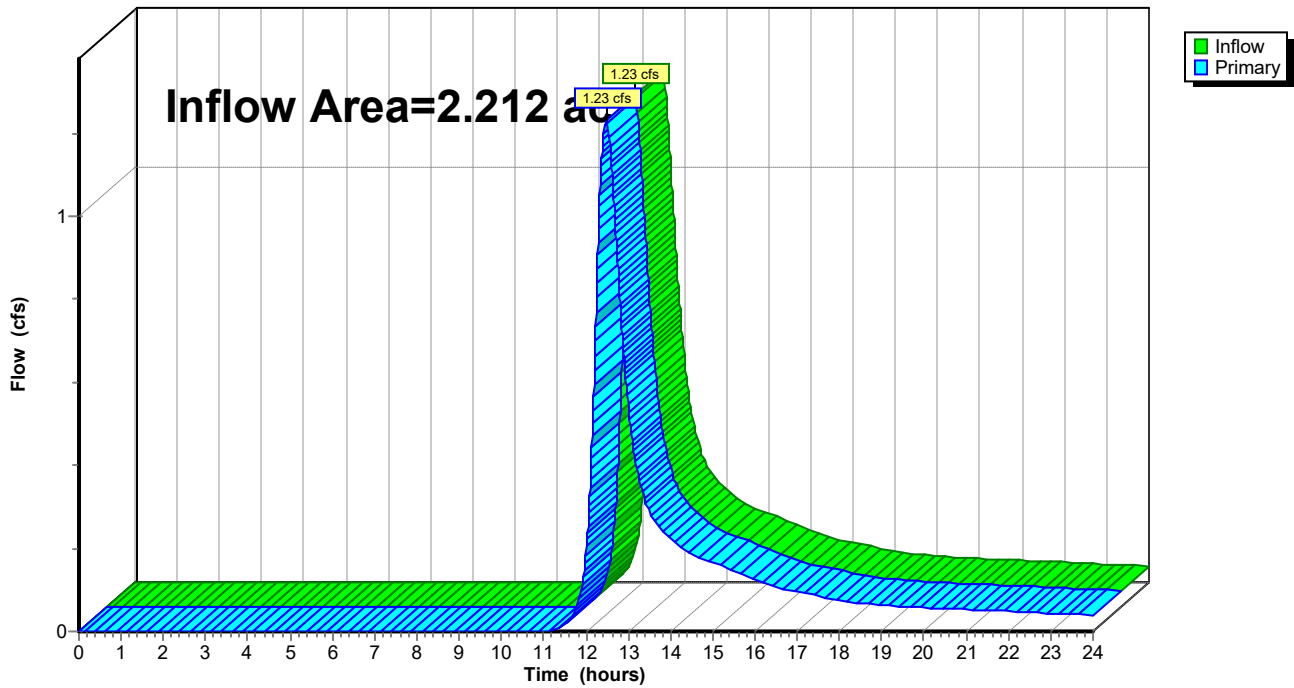
Summary for Link AP2: Stream

Inflow Area = 2.212 ac, 13.25% Impervious, Inflow Depth > 0.91" for 2-yr event
Inflow = 1.23 cfs @ 12.47 hrs, Volume= 0.168 af
Primary = 1.23 cfs @ 12.47 hrs, Volume= 0.168 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link AP2: Stream

Hydrograph



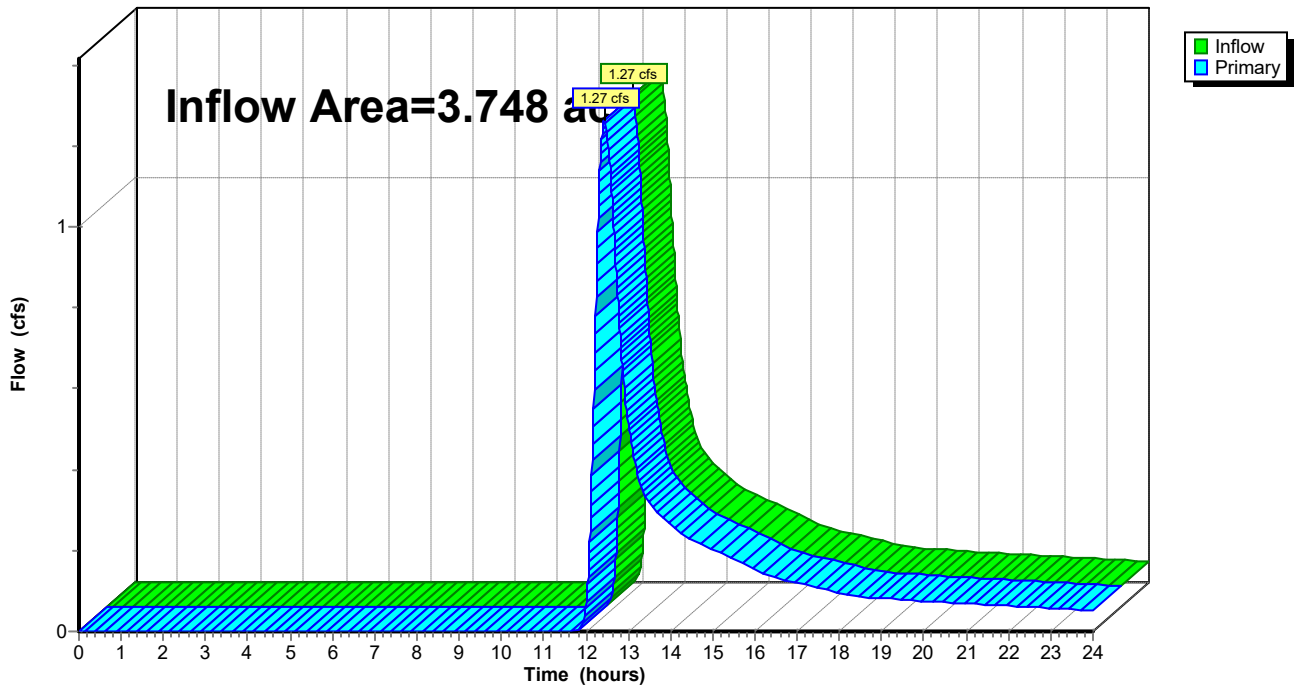
Summary for Link AP3: Wetlands

Inflow Area = 3.748 ac, 18.11% Impervious, Inflow Depth > 0.59" for 2-yr event
Inflow = 1.27 cfs @ 12.44 hrs, Volume= 0.184 af
Primary = 1.27 cfs @ 12.44 hrs, Volume= 0.184 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link AP3: Wetlands

Hydrograph



191.06051 SW-PRE

Type III 24-hr 10-yr Rainfall=4.60"

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: WESTERN SIDE Runoff Area=93,218 sf 24.63% Impervious Runoff Depth>2.54"
Flow Length=484' Tc=8.9 min CN=80 Runoff=5.79 cfs 0.453 af

Subcatchment 2S: EASTERN SIDE Runoff Area=96,345 sf 13.25% Impervious Runoff Depth>1.96"
Flow Length=631' Tc=31.0 min CN=73 Runoff=2.81 cfs 0.361 af

Subcatchment 3S: OFFSITE EXISTING Runoff Area=163,274 sf 18.11% Impervious Runoff Depth>1.45"
Flow Length=594' Tc=25.5 min CN=66 Runoff=3.67 cfs 0.453 af

Subcatchment 10S: 1S Alternate Tc Runoff Area=257,711 sf 22.61% Impervious Runoff Depth>2.46"
Flow Length=540' Tc=8.3 min CN=79 Runoff=15.76 cfs 1.211 af

Subcatchment 20S: 2S Alternate Tc Runoff Area=96,230 sf 13.12% Impervious Runoff Depth>1.96"
Flow Length=698' Tc=18.0 min CN=73 Runoff=3.54 cfs 0.361 af

Link AP1: Wetlands Inflow=5.79 cfs 0.453 af
Primary=5.79 cfs 0.453 af

Link AP2: Stream Inflow=2.81 cfs 0.361 af
Primary=2.81 cfs 0.361 af

Link AP3: Wetlands Inflow=3.67 cfs 0.453 af
Primary=3.67 cfs 0.453 af

Total Runoff Area = 16.225 ac Runoff Volume = 2.840 af Average Runoff Depth = 2.10"
80.73% Pervious = 13.099 ac 19.27% Impervious = 3.127 ac

Summary for Subcatchment 1S: WESTERN SIDE

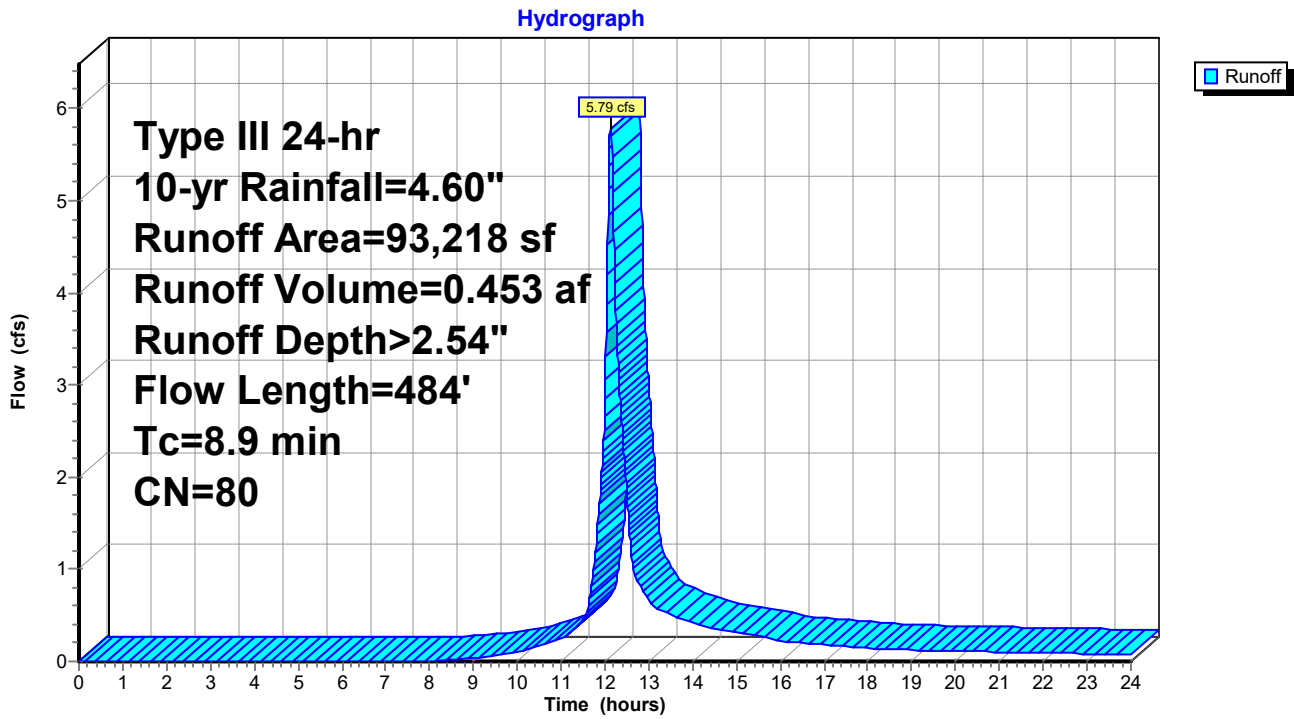
Runoff = 5.79 cfs @ 12.13 hrs, Volume= 0.453 af, Depth> 2.54"
 Routed to Link AP1 : Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-yr Rainfall=4.60"

Area (sf)	CN	Description
14,854	70	Woods, Good, HSG C
26,452	77	Woods, Good, HSG D
16,696	98	Paved parking, HSG C
6,268	98	Roofs, HSG C
28,948	74	>75% Grass cover, Good, HSG C
93,218	80	Weighted Average
70,254		75.37% Pervious Area
22,964		24.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	22	0.0230	0.13		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.10"
0.2	54	0.0380	3.96		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
1.0	128	0.0190	2.22		Shallow Concentrated Flow, C-D
					Unpaved Kv= 16.1 fps
0.7	83	0.0170	2.10		Shallow Concentrated Flow, D-E
					Unpaved Kv= 16.1 fps
4.2	197	0.0250	0.79		Shallow Concentrated Flow, E-F
					Woodland Kv= 5.0 fps
8.9	484	Total			

Subcatchment 1S: WESTERN SIDE



Summary for Subcatchment 2S: EASTERN SIDE

Runoff = 2.81 cfs @ 12.44 hrs, Volume= 0.361 af, Depth> 1.96"
 Routed to Link AP2 : Stream

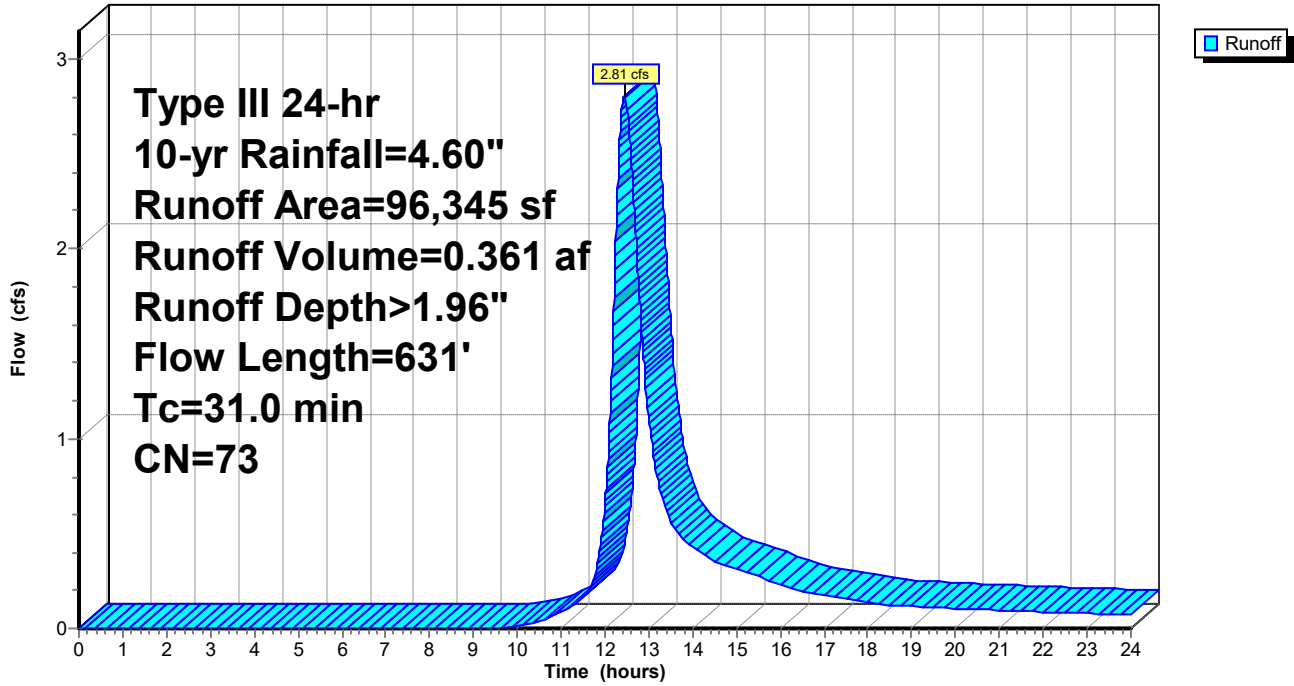
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-yr Rainfall=4.60"

Area (sf)	CN	Description
7,201	70	Woods, Good, HSG C
27,517	77	Woods, Good, HSG D
22,191	55	Woods, Good, HSG B
6,747	98	Roofs, HSG C
6,022	98	Paved parking, HSG C
26,667	74	>75% Grass cover, Good, HSG C
96,345	73	Weighted Average
83,576		86.75% Pervious Area
12,769		13.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.2	150	0.0300	0.10		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.10"
3.8	218	0.0360	0.95		Shallow Concentrated Flow, D-E Woodland Kv= 5.0 fps
1.0	263	0.0150	4.32	12.95	Channel Flow, C-D Area= 3.0 sf Perim= 5.0' r= 0.60' n= 0.030 Stream, clean & straight
31.0	631	Total			

Subcatchment 2S: EASTERN SIDE

Hydrograph



Summary for Subcatchment 3S: OFFSITE EXISTING

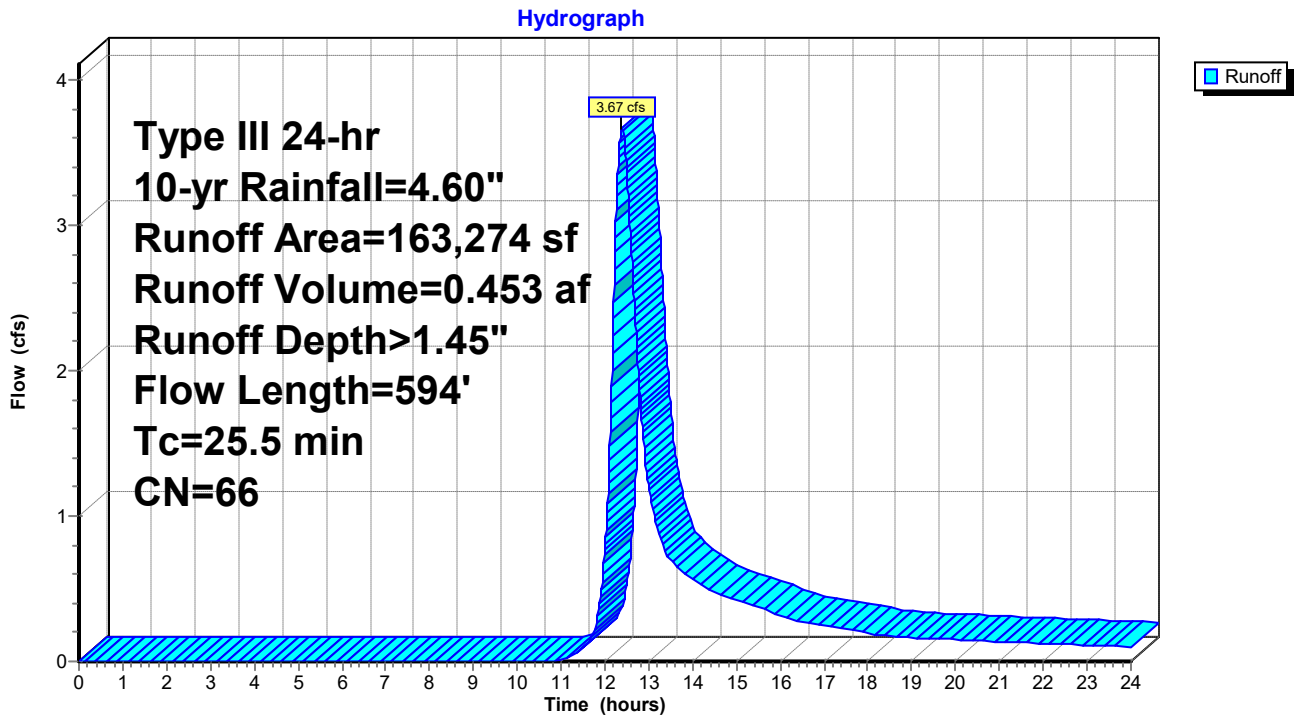
Runoff = 3.67 cfs @ 12.38 hrs, Volume= 0.453 af, Depth> 1.45"
 Routed to Link AP3 : Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-yr Rainfall=4.60"

Area (sf)	CN	Description
60,885	55	Woods, Good, HSG B
24,556	98	Paved parking, HSG C
5,016	98	Roofs, HSG C
62,012	61	>75% Grass cover, Good, HSG B
10,805	74	>75% Grass cover, Good, HSG C
163,274	66	Weighted Average
133,702		81.89% Pervious Area
29,572		18.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0240	0.08		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.10"
4.6	412	0.0460	1.50		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
0.2	82	0.0200	6.42	5.04	Pipe Channel, C-D 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
25.5	594	Total			

Subcatchment 3S: OFFSITE EXISTING



Summary for Subcatchment 10S: 1S Alternate Tc

Runoff = 15.76 cfs @ 12.12 hrs, Volume= 1.211 af, Depth> 2.46"

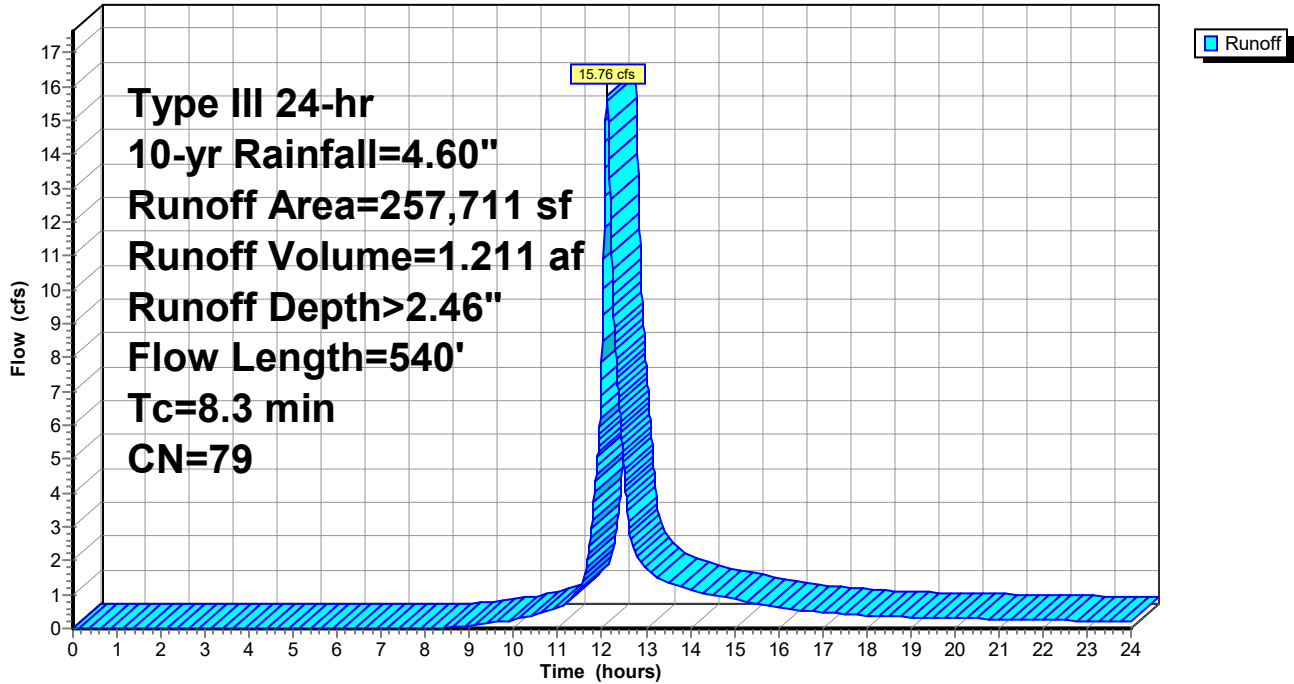
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-yr Rainfall=4.60"

Area (sf)	CN	Description
14,854	70	Woods, Good, HSG C
26,452	77	Woods, Good, HSG D
2,258	55	Woods, Good, HSG B
15,242	98	Paved parking, HSG C
8,005	98	Roofs, HSG C
50,823	74	>75% Grass cover, Good, HSG C
140,077	80	1/2 acre lots, 25% imp, HSG C
257,711	79	Weighted Average
199,445		77.39% Pervious Area
58,266		22.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0230	1.55		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 3.10"
1.1	67	0.0220	1.04		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
0.7	88	0.0170	1.96		Shallow Concentrated Flow, C-D Grassed Waterway Kv= 15.0 fps
4.9	235	0.0260	0.81		Shallow Concentrated Flow, D-E Woodland Kv= 5.0 fps
8.3	540	Total			

Subcatchment 10S: 1S Alternate Tc

Hydrograph



Summary for Subcatchment 20S: 2S Alternate Tc

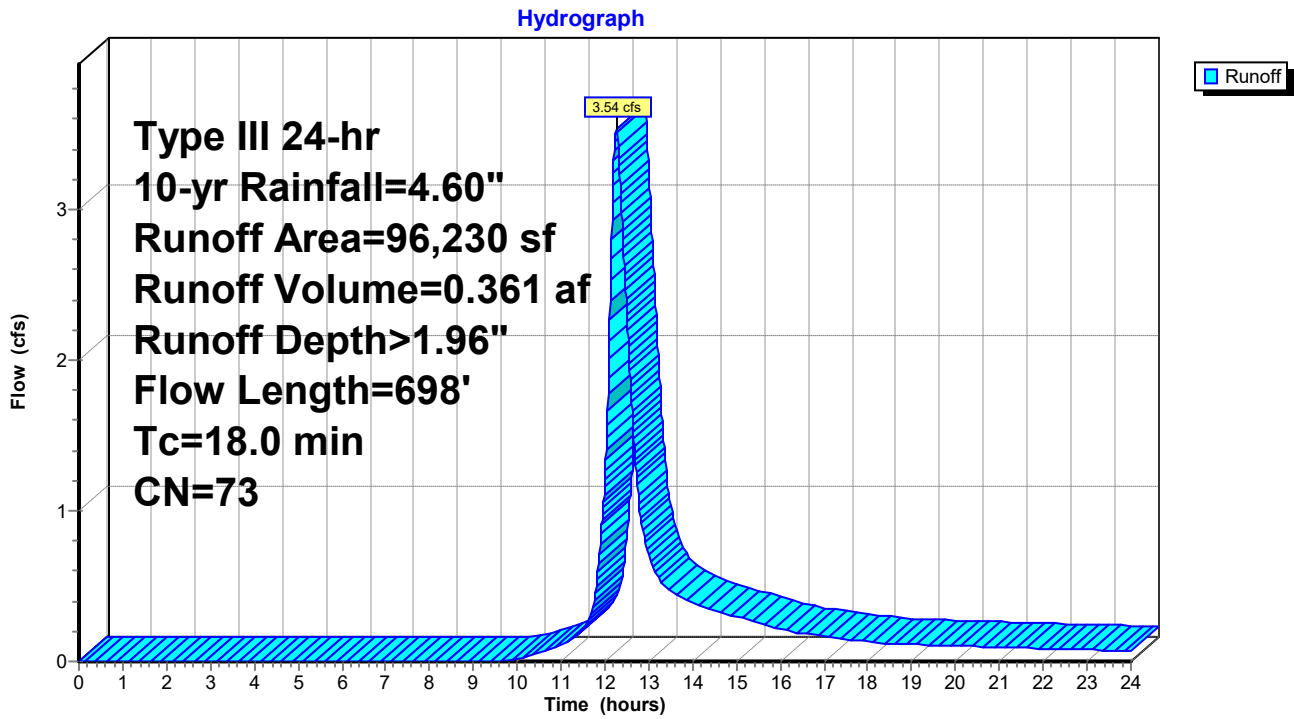
Runoff = 3.54 cfs @ 12.26 hrs, Volume= 0.361 af, Depth> 1.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-yr Rainfall=4.60"

Area (sf)	CN	Description
7,201	70	Woods, Good, HSG C
27,517	77	Woods, Good, HSG D
22,668	55	Woods, Good, HSG B
6,601	98	Roofs, HSG C
6,021	98	Paved parking, HSG C
26,222	74	>75% Grass cover, Good, HSG C
96,230	73	Weighted Average
83,608		86.88% Pervious Area
12,622		13.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	100	0.1000	0.14		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.10"
5.3	335	0.0450	1.06		Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
1.0	263	0.0150	4.32	12.95	Channel Flow, C-D Area= 3.0 sf Perim= 5.0' r= 0.60' n= 0.030 Stream, clean & straight
18.0	698	Total			

Subcatchment 20S: 2S Alternate Tc



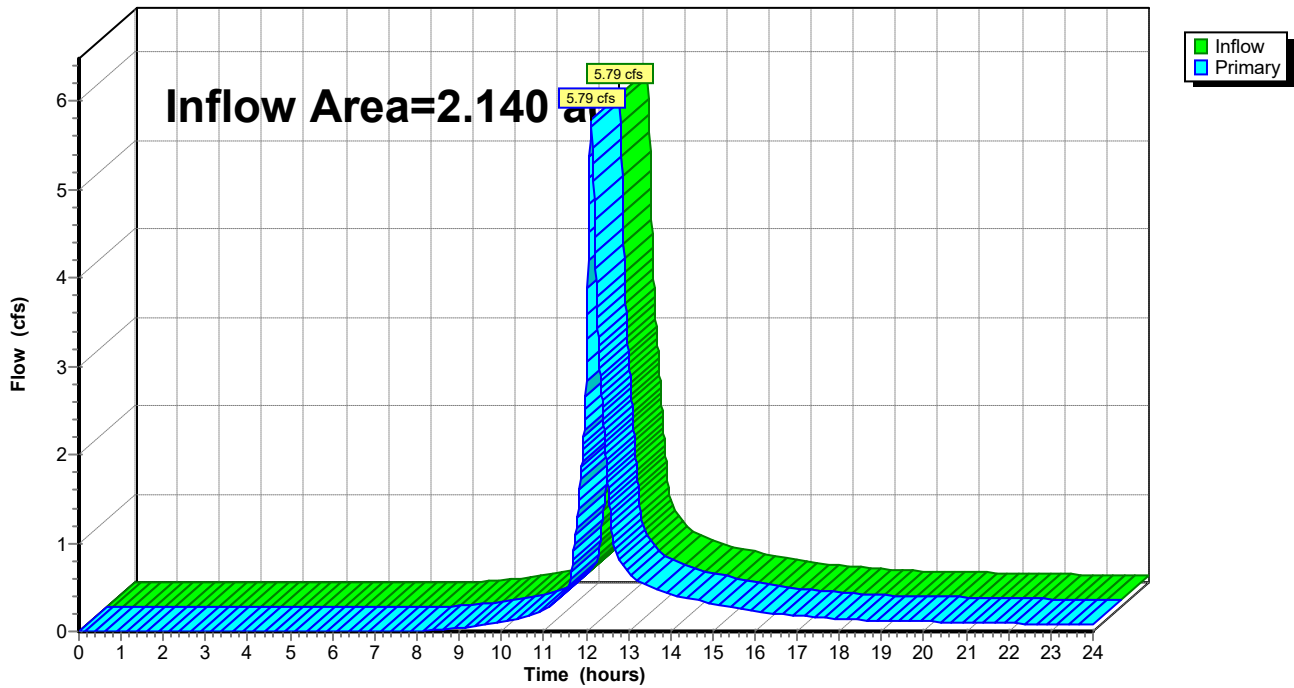
Summary for Link AP1: Wetlands

Inflow Area = 2.140 ac, 24.63% Impervious, Inflow Depth > 2.54" for 10-yr event
Inflow = 5.79 cfs @ 12.13 hrs, Volume= 0.453 af
Primary = 5.79 cfs @ 12.13 hrs, Volume= 0.453 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link AP1: Wetlands

Hydrograph



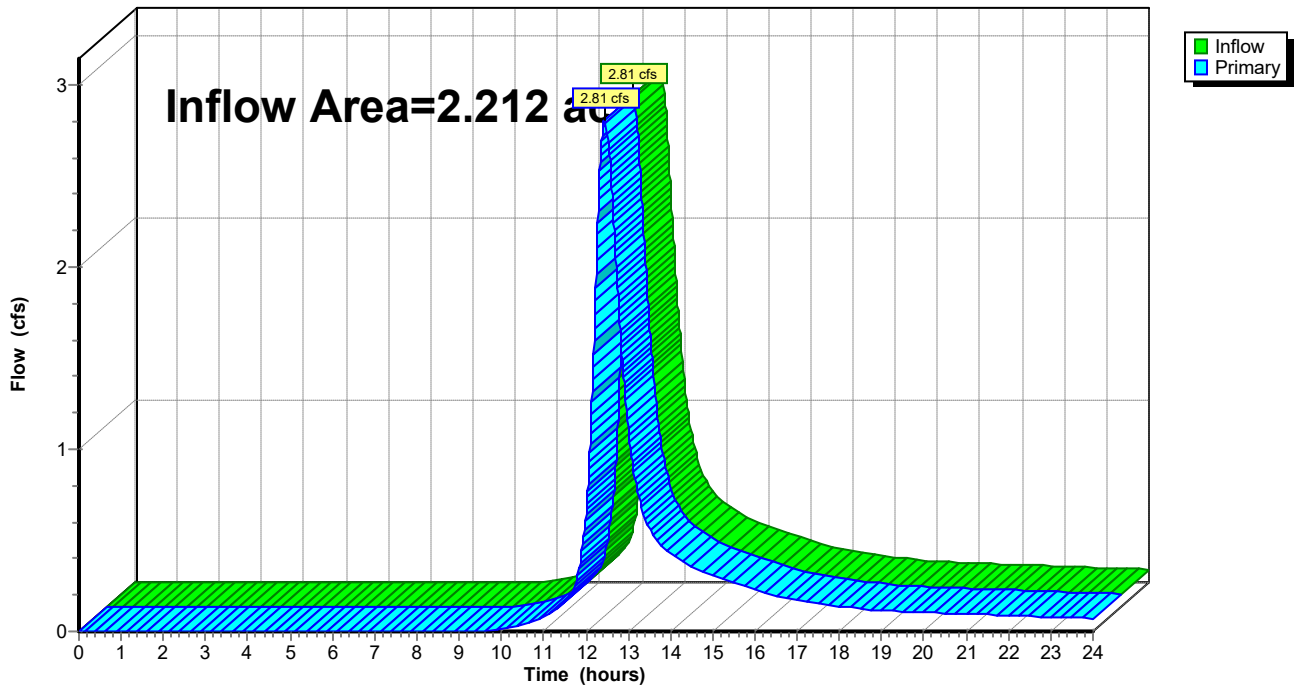
Summary for Link AP2: Stream

Inflow Area = 2.212 ac, 13.25% Impervious, Inflow Depth > 1.96" for 10-yr event
Inflow = 2.81 cfs @ 12.44 hrs, Volume= 0.361 af
Primary = 2.81 cfs @ 12.44 hrs, Volume= 0.361 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link AP2: Stream

Hydrograph



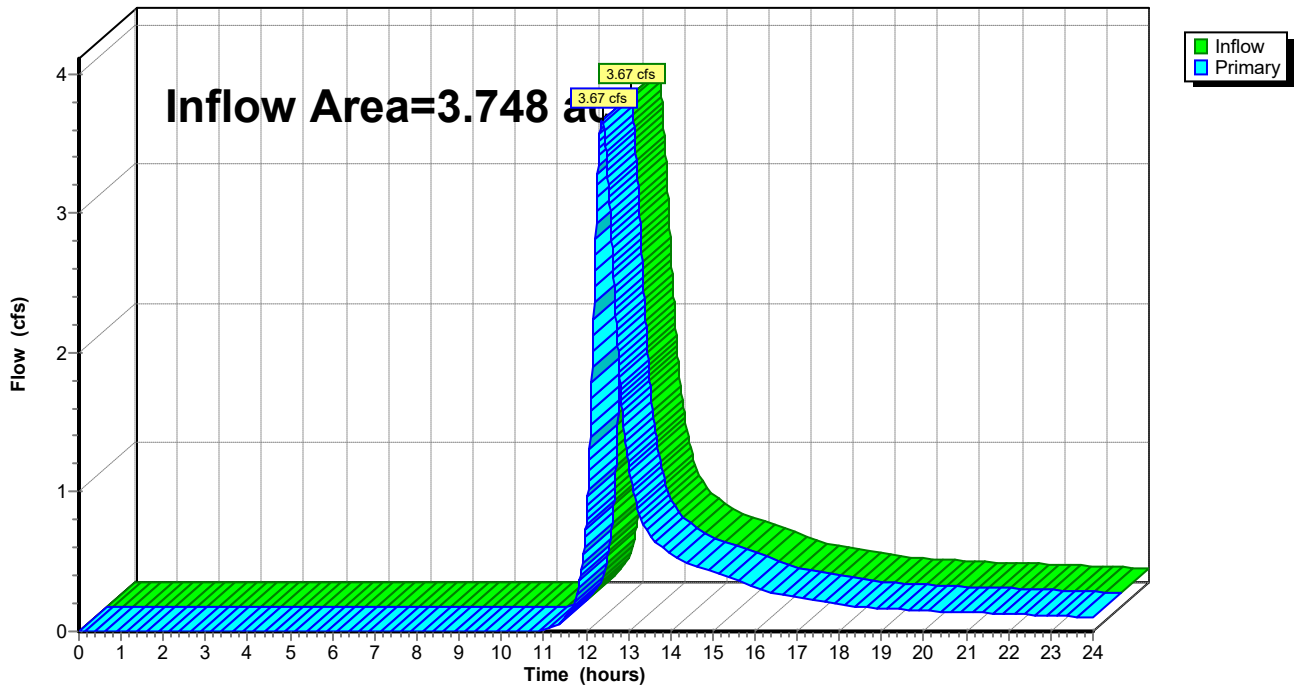
Summary for Link AP3: Wetlands

Inflow Area = 3.748 ac, 18.11% Impervious, Inflow Depth > 1.45" for 10-yr event
Inflow = 3.67 cfs @ 12.38 hrs, Volume= 0.453 af
Primary = 3.67 cfs @ 12.38 hrs, Volume= 0.453 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link AP3: Wetlands

Hydrograph



191.06051 SW-PRE

Type III 24-hr 25-yr Rainfall=5.80"

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Page 35

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: WESTERN SIDE Runoff Area=93,218 sf 24.63% Impervious Runoff Depth>3.60"
Flow Length=484' Tc=8.9 min CN=80 Runoff=8.16 cfs 0.641 af

Subcatchment 2S: EASTERN SIDE Runoff Area=96,345 sf 13.25% Impervious Runoff Depth>2.90"
Flow Length=631' Tc=31.0 min CN=73 Runoff=4.22 cfs 0.535 af

Subcatchment 3S: OFFSITE EXISTING Runoff Area=163,274 sf 18.11% Impervious Runoff Depth>2.28"
Flow Length=594' Tc=25.5 min CN=66 Runoff=5.97 cfs 0.712 af

Subcatchment 10S: 1S Alternate Tc Runoff Area=257,711 sf 22.61% Impervious Runoff Depth>3.50"
Flow Length=540' Tc=8.3 min CN=79 Runoff=22.40 cfs 1.724 af

Subcatchment 20S: 2S Alternate Tc Runoff Area=96,230 sf 13.12% Impervious Runoff Depth>2.91"
Flow Length=698' Tc=18.0 min CN=73 Runoff=5.32 cfs 0.536 af

Link AP1: Wetlands Inflow=8.16 cfs 0.641 af
Primary=8.16 cfs 0.641 af

Link AP2: Stream Inflow=4.22 cfs 0.535 af
Primary=4.22 cfs 0.535 af

Link AP3: Wetlands Inflow=5.97 cfs 0.712 af
Primary=5.97 cfs 0.712 af

Total Runoff Area = 16.225 ac Runoff Volume = 4.148 af Average Runoff Depth = 3.07"
80.73% Pervious = 13.099 ac 19.27% Impervious = 3.127 ac

Summary for Subcatchment 1S: WESTERN SIDE

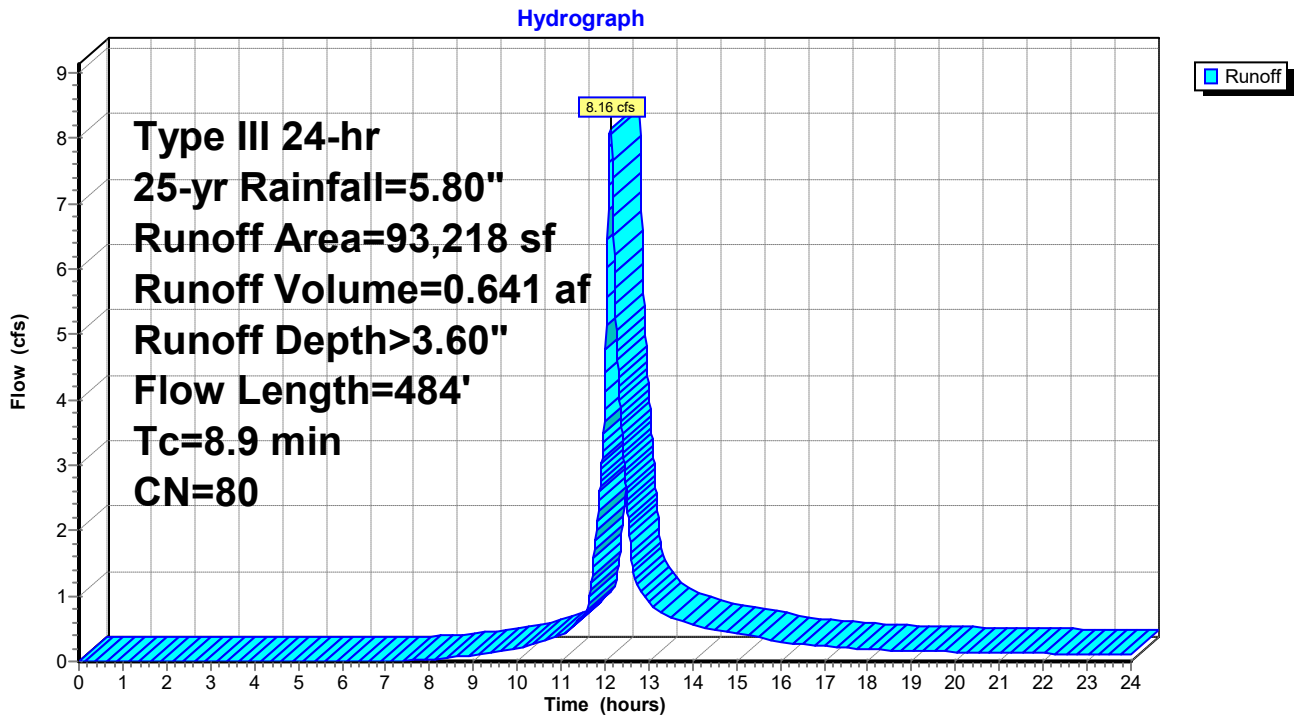
Runoff = 8.16 cfs @ 12.12 hrs, Volume= 0.641 af, Depth> 3.60"
 Routed to Link AP1 : Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
14,854	70	Woods, Good, HSG C
26,452	77	Woods, Good, HSG D
16,696	98	Paved parking, HSG C
6,268	98	Roofs, HSG C
28,948	74	>75% Grass cover, Good, HSG C
93,218	80	Weighted Average
70,254		75.37% Pervious Area
22,964		24.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	22	0.0230	0.13		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.10"
0.2	54	0.0380	3.96		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
1.0	128	0.0190	2.22		Shallow Concentrated Flow, C-D
					Unpaved Kv= 16.1 fps
0.7	83	0.0170	2.10		Shallow Concentrated Flow, D-E
					Unpaved Kv= 16.1 fps
4.2	197	0.0250	0.79		Shallow Concentrated Flow, E-F
					Woodland Kv= 5.0 fps
8.9	484	Total			

Subcatchment 1S: WESTERN SIDE



Summary for Subcatchment 2S: EASTERN SIDE

Runoff = 4.22 cfs @ 12.44 hrs, Volume= 0.535 af, Depth> 2.90"
 Routed to Link AP2 : Stream

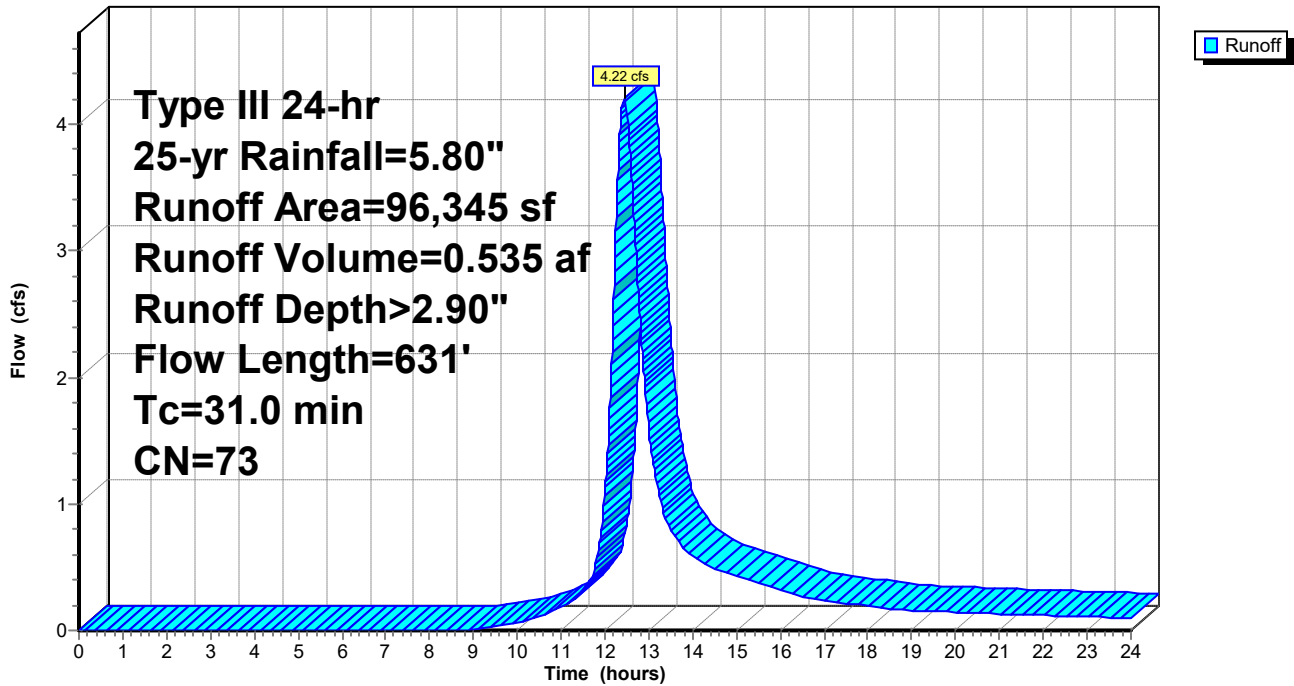
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
7,201	70	Woods, Good, HSG C
27,517	77	Woods, Good, HSG D
22,191	55	Woods, Good, HSG B
6,747	98	Roofs, HSG C
6,022	98	Paved parking, HSG C
26,667	74	>75% Grass cover, Good, HSG C
96,345	73	Weighted Average
83,576		86.75% Pervious Area
12,769		13.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.2	150	0.0300	0.10		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.10"
3.8	218	0.0360	0.95		Shallow Concentrated Flow, D-E Woodland Kv= 5.0 fps
1.0	263	0.0150	4.32	12.95	Channel Flow, C-D Area= 3.0 sf Perim= 5.0' r= 0.60' n= 0.030 Stream, clean & straight
31.0	631	Total			

Subcatchment 2S: EASTERN SIDE

Hydrograph



Summary for Subcatchment 3S: OFFSITE EXISTING

[47] Hint: Peak is 119% of capacity of segment #3

Runoff = 5.97 cfs @ 12.38 hrs, Volume= 0.712 af, Depth> 2.28"
 Routed to Link AP3 : Wetlands

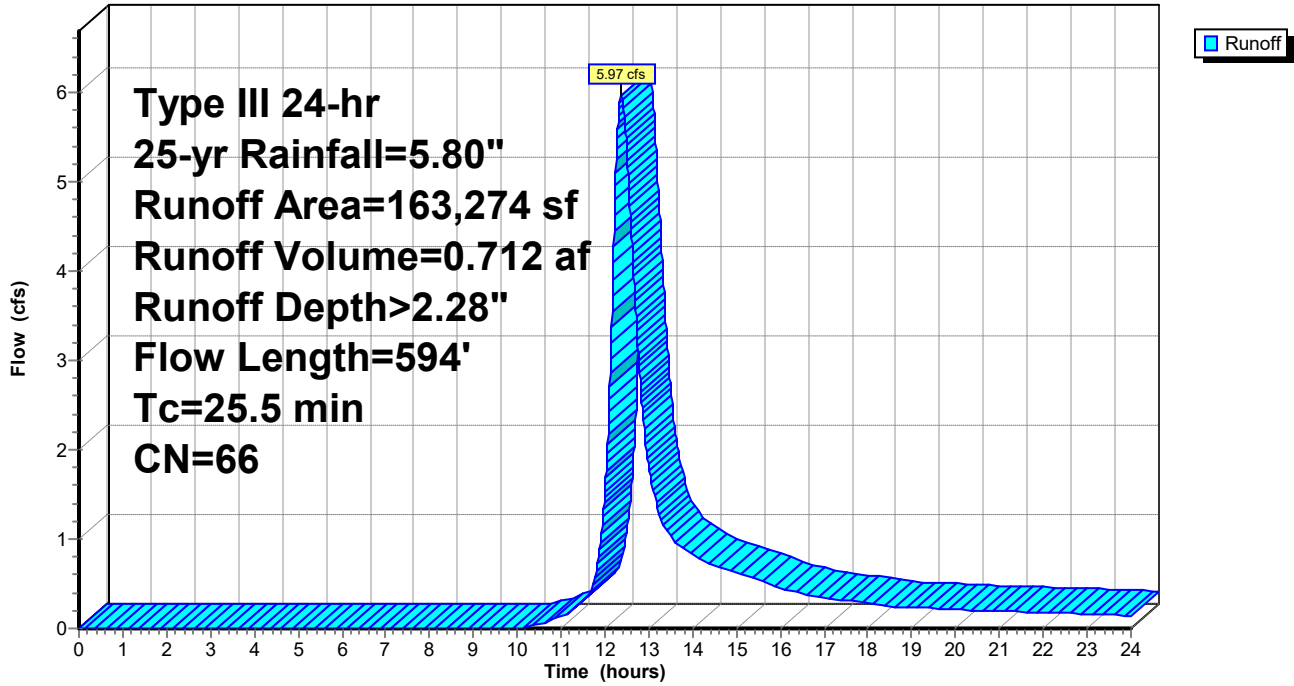
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
60,885	55	Woods, Good, HSG B
24,556	98	Paved parking, HSG C
5,016	98	Roofs, HSG C
62,012	61	>75% Grass cover, Good, HSG B
10,805	74	>75% Grass cover, Good, HSG C
163,274	66	Weighted Average
133,702		81.89% Pervious Area
29,572		18.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0240	0.08		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.10"
4.6	412	0.0460	1.50		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
0.2	82	0.0200	6.42	5.04	Pipe Channel, C-D 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
25.5	594	Total			

Subcatchment 3S: OFFSITE EXISTING

Hydrograph



Summary for Subcatchment 10S: 1S Alternate Tc

Runoff = 22.40 cfs @ 12.12 hrs, Volume= 1.724 af, Depth> 3.50"

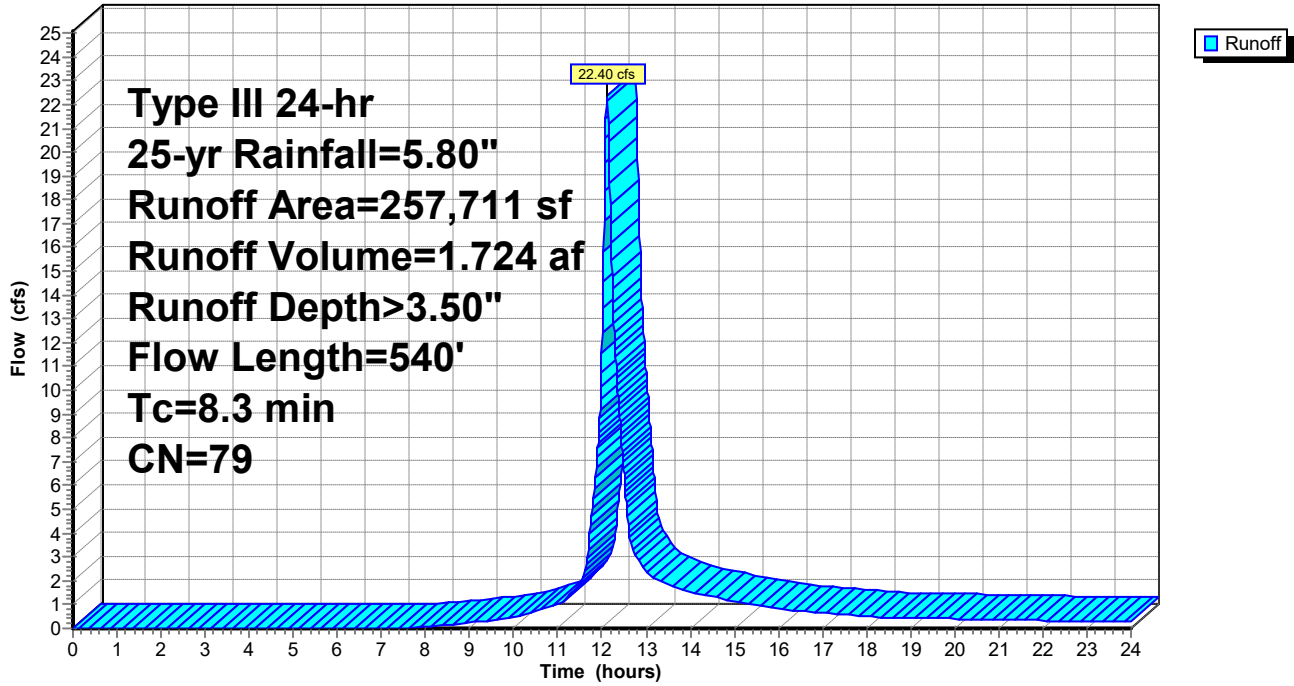
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
14,854	70	Woods, Good, HSG C
26,452	77	Woods, Good, HSG D
2,258	55	Woods, Good, HSG B
15,242	98	Paved parking, HSG C
8,005	98	Roofs, HSG C
50,823	74	>75% Grass cover, Good, HSG C
140,077	80	1/2 acre lots, 25% imp, HSG C
257,711	79	Weighted Average
199,445		77.39% Pervious Area
58,266		22.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0230	1.55		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 3.10"
1.1	67	0.0220	1.04		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
0.7	88	0.0170	1.96		Shallow Concentrated Flow, C-D Grassed Waterway Kv= 15.0 fps
4.9	235	0.0260	0.81		Shallow Concentrated Flow, D-E Woodland Kv= 5.0 fps
8.3	540	Total			

Subcatchment 10S: 1S Alternate Tc

Hydrograph



Summary for Subcatchment 20S: 2S Alternate Tc

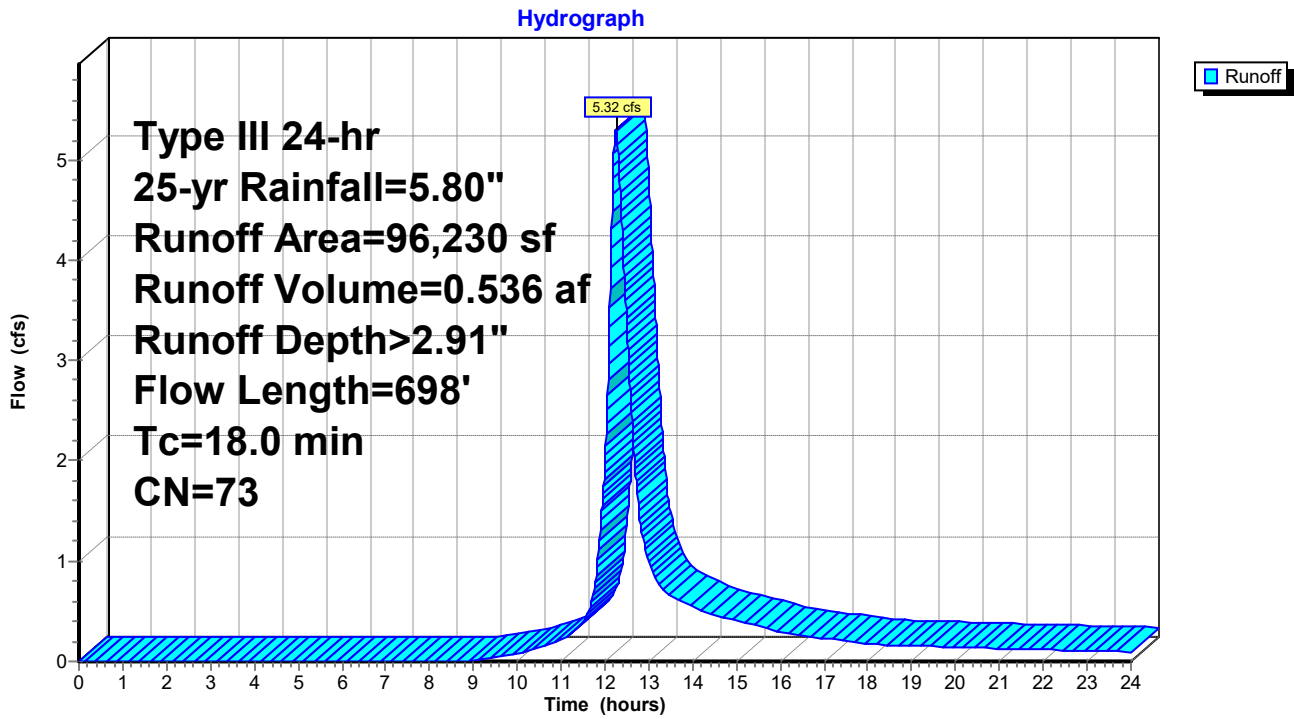
Runoff = 5.32 cfs @ 12.26 hrs, Volume= 0.536 af, Depth> 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
7,201	70	Woods, Good, HSG C
27,517	77	Woods, Good, HSG D
22,668	55	Woods, Good, HSG B
6,601	98	Roofs, HSG C
6,021	98	Paved parking, HSG C
26,222	74	>75% Grass cover, Good, HSG C
96,230	73	Weighted Average
83,608		86.88% Pervious Area
12,622		13.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	100	0.1000	0.14		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.10"
5.3	335	0.0450	1.06		Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
1.0	263	0.0150	4.32	12.95	Channel Flow, C-D Area= 3.0 sf Perim= 5.0' r= 0.60' n= 0.030 Stream, clean & straight
18.0	698	Total			

Subcatchment 20S: 2S Alternate Tc



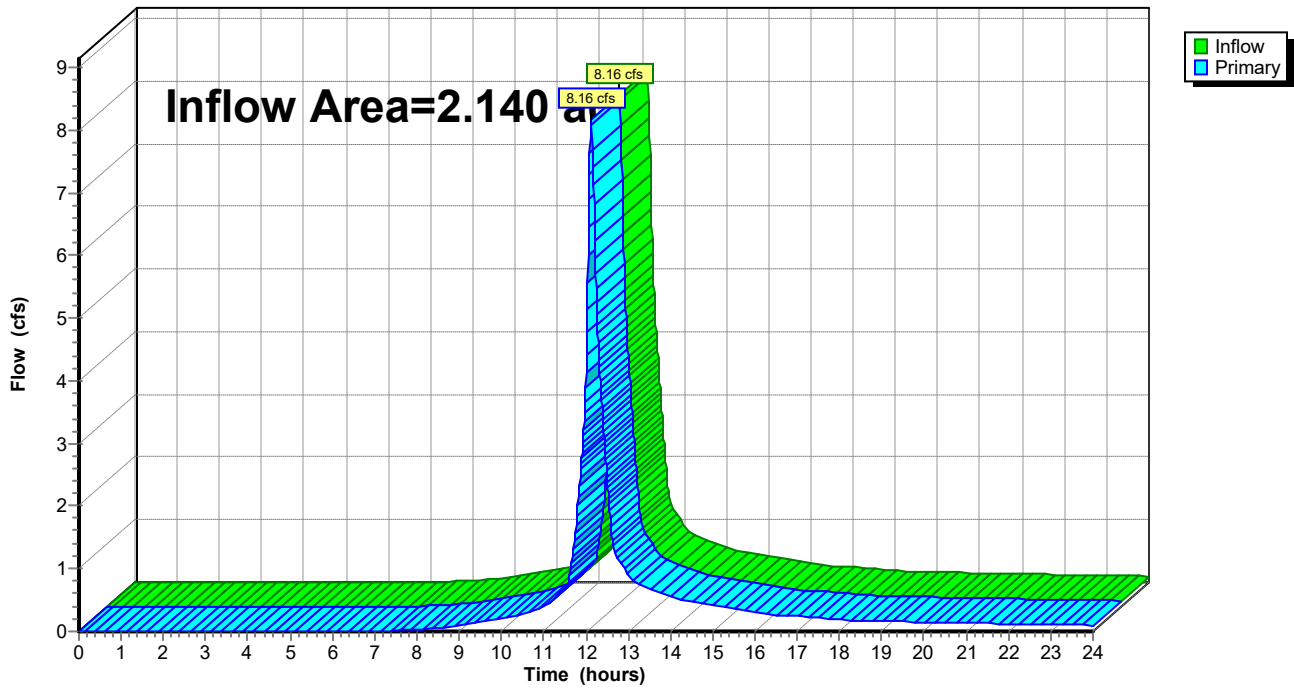
Summary for Link AP1: Wetlands

Inflow Area = 2.140 ac, 24.63% Impervious, Inflow Depth > 3.60" for 25-yr event
Inflow = 8.16 cfs @ 12.12 hrs, Volume= 0.641 af
Primary = 8.16 cfs @ 12.12 hrs, Volume= 0.641 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link AP1: Wetlands

Hydrograph



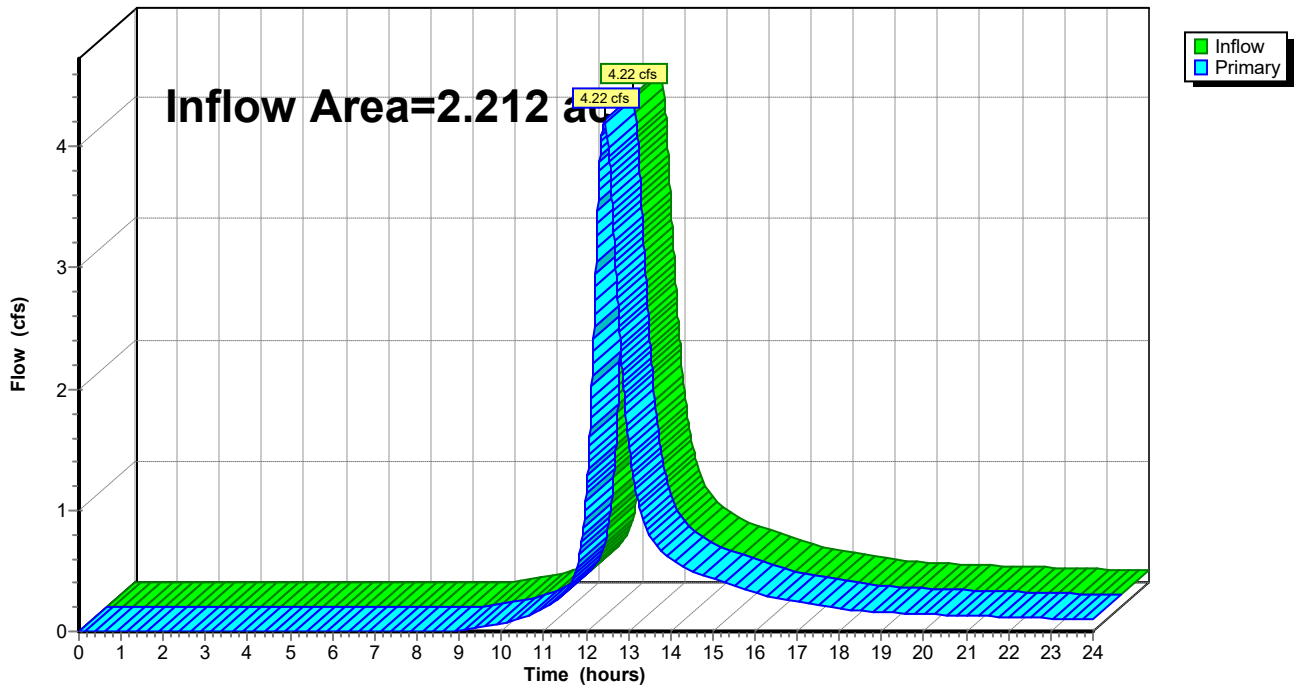
Summary for Link AP2: Stream

Inflow Area = 2.212 ac, 13.25% Impervious, Inflow Depth > 2.90" for 25-yr event
Inflow = 4.22 cfs @ 12.44 hrs, Volume= 0.535 af
Primary = 4.22 cfs @ 12.44 hrs, Volume= 0.535 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link AP2: Stream

Hydrograph



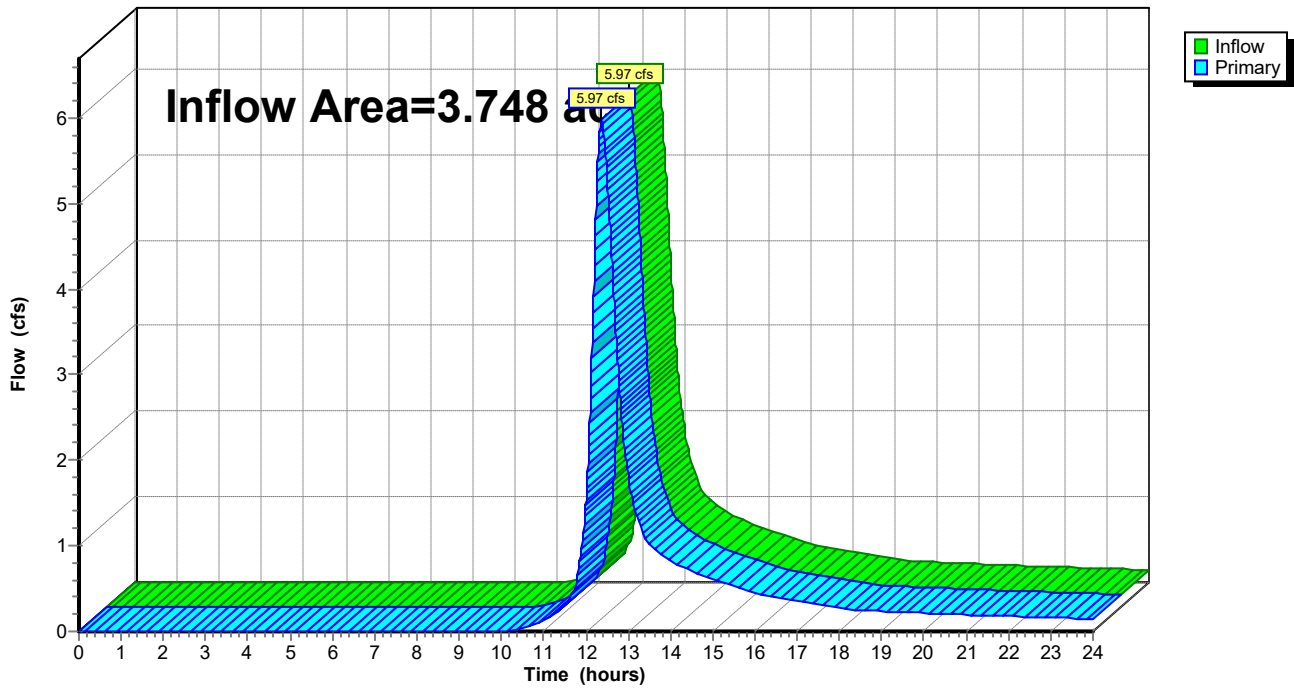
Summary for Link AP3: Wetlands

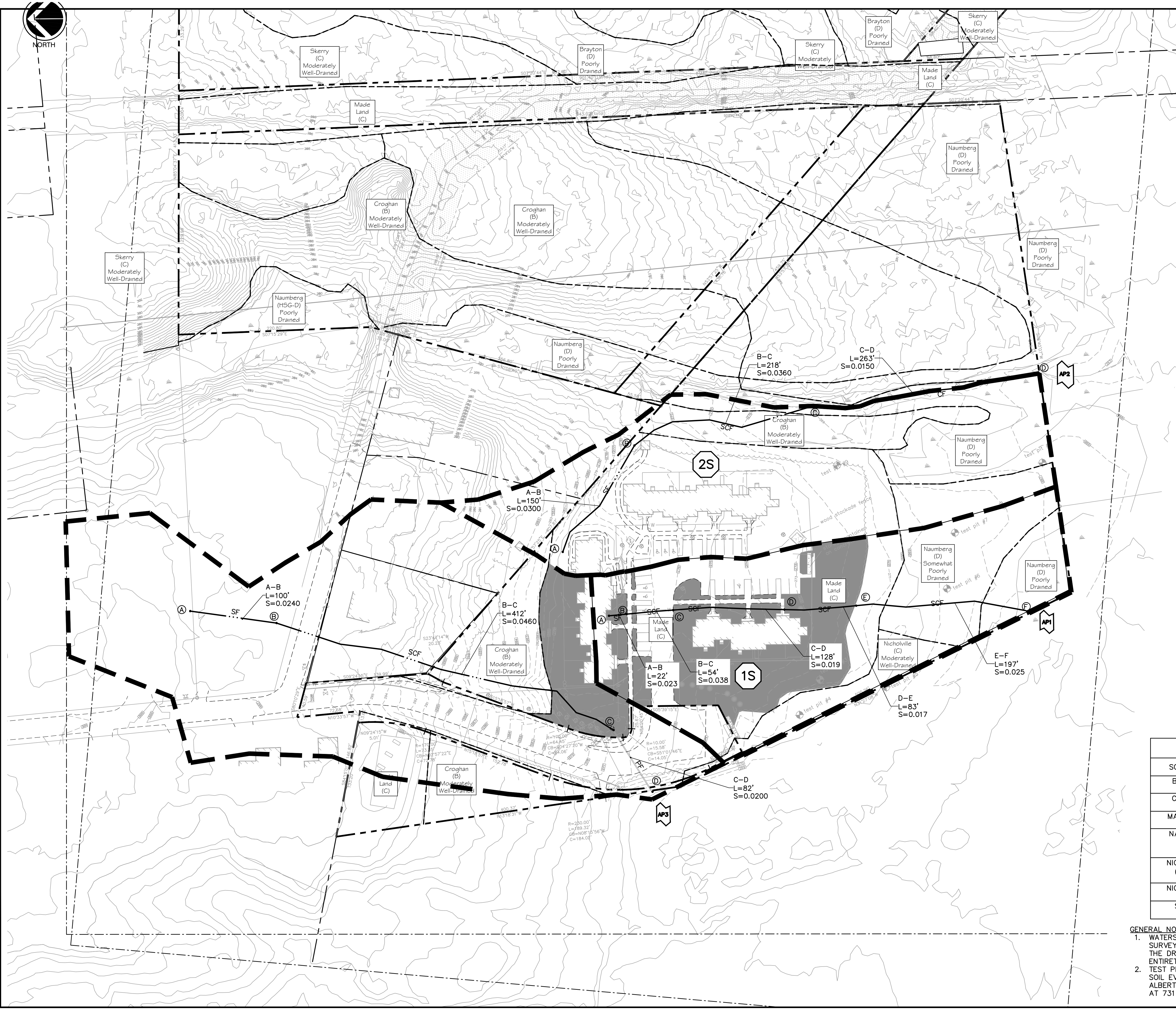
Inflow Area = 3.748 ac, 18.11% Impervious, Inflow Depth > 2.28" for 25-yr event
Inflow = 5.97 cfs @ 12.38 hrs, Volume= 0.712 af
Primary = 5.97 cfs @ 12.38 hrs, Volume= 0.712 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link AP3: Wetlands

Hydrograph





- LEGEND:**
- SUBCATCHMENT LABEL
 - ANALYSIS POINT
 - TIME OF CONCENTRATION (TC) PATH
 - SUBCATCHMENT DIVIDE
 - SOIL BOUNDARY
 - SF - SHEET FLOW
 - SCF - SHALLOW CONCENTRATED FLOW
 - CF - CHANNEL FLOW
 - SOIL TEST PIT NUMBER

AVESTA GRAY MEADOWVIEW II

16 HANCOCK STREET
GRAY, MAINE

Prepared for:

AVESTA HOUSING
307 CUMBERLAND AVENUE
PORTLAND, MAINE, 04101

Civil Engineer:

MAUREEN P. MCGLONE
#7705

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PORTSMOUTH, NH, 03801

Structural/Mechanical:

ALLIED ENGINEERING, INC.
160 VERANDA STREET
PORTLAND, MAINE, 04103

Soil Scientist/Site Evaluator:

ALBERT FRICK ASSOCIATES, INC.
380B MAIN STREET
GORHAM, MAINE, 04038

Landscape Architect:

RASOR LANDSCAPE ARCHITECTURE
87 MAIN STREET
YARMOUTH, MAINE, 04096

Surveyor:

OWEN HASKELL, INC.
390 US ROUTE 1, UNIT 10
FALMOUTH, MAINE, 04105

SCALE

SCALE in FEET
1"=50'

RANSOM
Consulting, LLC.

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PRE-DEVELOPMENT STORMWATER PLAN

No.	Revision/Issue	Date
C	PLANNING BOARD AMMENDMENT/ MSHA REVIEW	5/11/23
B	PLANNING BOARD/DEP REVIEW	5/19/22
A	PERMITTING	1/28/22

Design by:	DJV	Checked by:	MPM
Drawn by:	DJV	Approved by:	JIM/MPM
Project:	191.06051	Date:	DECEMBER 2019

Sheet No:

SW-1

Sheet 1 of 2

SOIL TABLE		
SOIL NAME	HSG CLASS	DESCRIPTION
BRAYTON	D	POORLY DRAINED
CROGHAN	B	MODERATELY WELL-DRAINED
MADE LAND	C	NONE ASSIGNED
NAUMBERG	D	SOMEWHAT POORLY TO POORLY DRAINED
NICHOLVILLE (S.W.P.)	D	SOMEWHAT POORLY DRAINED
NICHOLVILLE	C	MODERATELY WELL-DRAINED
SKERRY	C	MODERATELY WELL-DRAINED

GENERAL NOTES:

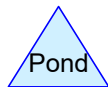
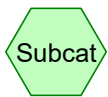
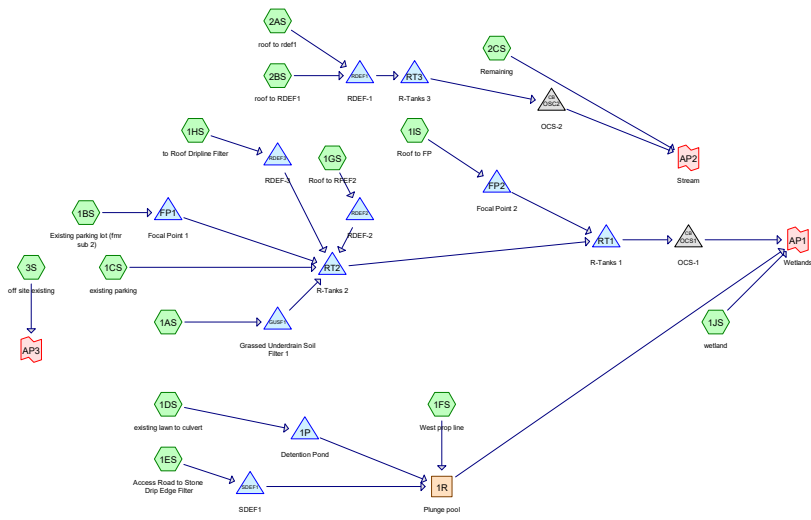
- WATERSHED AREAS EXTEND BEYOND SCOPE OF SURVEY AND WERE EXCLUDED IN THIS ANALYSIS. THE DRAINAGE AREA DELINEATED ENCOMPASSES THE ENTIRETY OF THE DEVELOPMENT AREA.
- TEST PIT ANALYSIS WAS COMPLETED BY LICENSED SOIL EVALUATOR AND CERTIFIED SOIL SCIENTIST ALBERT FRICK #66, OF ALBERT FRICK ASSOCIATES, AT 731 FOSS ROAD, LIMERICK, MAINE 04048.

APPENDIX D

Post-Development HydroCAD and Backup Calculations

With SW Mgmt

Without SW Mgmt



Routing Diagram for 191.06051 SW-POST
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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-inch	Type III 24-hr		Default	24.00	1	1.00	2
2	2-yr	Type III 24-hr		Default	24.00	1	3.10	2
3	10-yr	Type III 24-hr		Default	24.00	1	4.60	2
4	25-yr	Type III 24-hr		Default	24.00	1	5.80	2

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.424	61	>75% Grass cover, Good, HSG B (3S)
1.762	74	>75% Grass cover, Good, HSG C (1AS, 1BS, 1CS, 1DS, 1ES, 1FS, 1GS, 1HS, 1IS, 1JS, 2CS, 3S)
0.392	80	>75% Grass cover, Good, HSG D (1JS, 2CS)
0.677	98	Paved parking, HSG C (1AS, 1ES, 2CS, 3S)
0.445	98	Roofs, HSG C (1GS, 1HS, 1IS, 2AS, 2BS, 2CS, 3S)
0.055	73	Woods, Fair, HSG C (1FS)
1.690	55	Woods, Good, HSG B (2CS, 3S)
0.113	70	Woods, Good, HSG C (2CS)
0.730	77	Woods, Good, HSG D (1JS, 2CS)
0.569	98	parking and roofs (1BS, 1CS)
0.210	98	roofs and paving (1DS)
8.065	74	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
3.114	HSG B	2CS, 3S
3.051	HSG C	1AS, 1BS, 1CS, 1DS, 1ES, 1FS, 1GS, 1HS, 1IS, 1JS, 2AS, 2BS, 2CS, 3S
1.122	HSG D	1JS, 2CS
0.779	Other	1BS, 1CS, 1DS
8.065		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
0.000	1.424	1.762	0.392	0.000	3.577	>75% Grass cover, Good	1AS, 1BS, 1CS, 1DS, 1ES, 1FS, 1GS, 1HS, 1IS, 1JS, 2CS, 3S
0.000	0.000	0.677	0.000	0.000	0.677	Paved parking	1AS, 1ES, 2CS, 3S
0.000	0.000	0.445	0.000	0.000	0.445	Roofs	1GS, 1HS, 1IS, 2AS, 2BS, 2CS, 3S
0.000	0.000	0.055	0.000	0.000	0.055	Woods, Fair	1FS
0.000	1.690	0.113	0.730	0.000	2.533	Woods, Good	1JS, 2CS, 3S
0.000	0.000	0.000	0.000	0.569	0.569	parking and roofs	1BS, 1CS
0.000	0.000	0.000	0.000	0.210	0.210	roofs and paving	1DS
0.000	3.114	3.051	1.122	0.779	8.065	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	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	1JS	0.00	0.00	82.0	0.0200	0.013	0.0	12.0	0.0
2	3S	0.00	0.00	82.0	0.0200	0.013	0.0	12.0	0.0
3	1P	271.48	270.80	40.0	0.0170	0.013	0.0	12.0	0.0
4	FP1	269.03	269.03	13.0	0.0000	0.013	0.0	15.0	0.0
5	FP2	269.03	269.03	4.0	0.0000	0.013	0.0	12.0	0.0
6	GUSF1	270.40	270.06	20.0	0.0170	0.013	0.0	12.0	0.0
7	OCS1	269.03	268.50	25.0	0.0212	0.013	0.0	15.0	0.0
8	OSC2	269.03	268.50	74.0	0.0072	0.013	0.0	15.0	0.0
9	RT1	269.03	269.03	5.0	0.0000	0.013	0.0	15.0	0.0
10	RT2	269.03	269.03	5.0	0.0000	0.013	0.0	18.0	0.0
11	RT3	269.03	269.03	43.0	0.0000	0.013	0.0	12.0	0.0

191.06051 SW-POST

Type III 24-hr 1-inch Rainfall=1.00"

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1AS:	Runoff Area=8,449 sf 20.68% Impervious Runoff Depth>0.07" Tc=6.0 min CN=79 Runoff=0.01 cfs 0.001 af
Subcatchment 1BS: Existing parking lot	Runoff Area=26,395 sf 62.50% Impervious Runoff Depth>0.28" Tc=6.0 min CN=89 Runoff=0.19 cfs 0.014 af
Subcatchment 1CS: existing parking	Runoff Area=12,181 sf 68.08% Impervious Runoff Depth>0.32" Tc=6.0 min CN=90 Runoff=0.10 cfs 0.007 af
Subcatchment 1DS: existing lawn to	Runoff Area=21,304 sf 42.85% Impervious Runoff Depth>0.15" Tc=6.0 min CN=84 Runoff=0.06 cfs 0.006 af
Subcatchment 1ES: Access Road to Stone	Runoff Area=2,983 sf 83.24% Impervious Runoff Depth>0.50" Tc=6.0 min CN=94 Runoff=0.04 cfs 0.003 af
Subcatchment 1FS: West prop line	Runoff Area=8,099 sf 0.00% Impervious Runoff Depth>0.02" Tc=6.0 min CN=74 Runoff=0.00 cfs 0.000 af
Subcatchment 1GS: Roof to RFEF2	Runoff Area=3,515 sf 74.62% Impervious Runoff Depth>0.40" Tc=6.0 min CN=92 Runoff=0.04 cfs 0.003 af
Subcatchment 1HS: to Roof Dripline Filter	Runoff Area=2,510 sf 77.89% Impervious Runoff Depth>0.45" Tc=6.0 min CN=93 Runoff=0.03 cfs 0.002 af
Subcatchment 1IS: Roof to FP	Runoff Area=2,886 sf 84.37% Impervious Runoff Depth>0.50" Tc=6.0 min CN=94 Runoff=0.04 cfs 0.003 af
Subcatchment 1JS: wetland	Runoff Area=23,765 sf 0.00% Impervious Runoff Depth>0.07" Flow Length=594' Tc=25.5 min CN=79 Runoff=0.01 cfs 0.003 af
Subcatchment 2AS: roof to rdef1	Runoff Area=2,154 sf 100.00% Impervious Runoff Depth>0.79" Tc=6.0 min CN=98 Runoff=0.04 cfs 0.003 af
Subcatchment 2BS: roof to RDEF1	Runoff Area=2,117 sf 100.00% Impervious Runoff Depth>0.79" Tc=6.0 min CN=98 Runoff=0.04 cfs 0.003 af
Subcatchment 2CS: Remaining	Runoff Area=71,696 sf 5.24% Impervious Runoff Depth>0.02" Flow Length=631' Tc=31.0 min CN=73 Runoff=0.00 cfs 0.002 af
Subcatchment 3S: off site existing	Runoff Area=163,274 sf 18.11% Impervious Runoff Depth=0.00" Flow Length=594' Tc=25.5 min CN=66 Runoff=0.00 cfs 0.000 af
Reach 1R: Plunge pool	Inflow=0.04 cfs 0.003 af Outflow=0.04 cfs 0.003 af
Pond 1P: Detention Pond	Peak Elev=272.46' Storage=269 cf Inflow=0.06 cfs 0.006 af Outflow=0.00 cfs 0.000 af

191.06051 SW-POST

Type III 24-hr 1-inch Rainfall=1.00"

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Pond FP1: Focal Point 1	Peak Elev=271.79' Storage=2 cf Inflow=0.19 cfs 0.014 af Outflow=0.19 cfs 0.014 af
Pond FP2: Focal Point 2	Peak Elev=272.13' Storage=1 cf Inflow=0.04 cfs 0.003 af Outflow=0.04 cfs 0.003 af
Pond GUSF1: Grassed Underdrain Soil Filter 1	Peak Elev=269.31' Storage=49 cf Inflow=0.01 cfs 0.001 af Outflow=0.00 cfs 0.000 af
Pond OCS1: OCS-1	Peak Elev=269.16' Inflow=0.06 cfs 0.022 af Outflow=0.06 cfs 0.022 af
Pond OSC2: OCS-2	Peak Elev=269.13' Inflow=0.04 cfs 0.005 af Outflow=0.04 cfs 0.005 af
Pond RDEF1: RDEF-1	Inflow=0.09 cfs 0.006 af Primary=0.09 cfs 0.006 af
Pond RDEF2: RDEF-2	Inflow=0.04 cfs 0.003 af Primary=0.04 cfs 0.003 af
Pond RDEF3: RDEF-3	Inflow=0.03 cfs 0.002 af Primary=0.03 cfs 0.002 af
Pond RT1: R-Tanks 1	Peak Elev=269.20' Storage=74 cf Inflow=0.07 cfs 0.023 af 15.0" Round Culvert n=0.013 L=5.0' S=0.0000 '/' Outflow=0.06 cfs 0.022 af
Pond RT2: R-Tanks 2	Peak Elev=269.22' Storage=454 cf Inflow=0.35 cfs 0.027 af 18.0" Round Culvert n=0.013 L=5.0' S=0.0000 '/' Outflow=0.06 cfs 0.020 af
Pond RT3: R-Tanks 3	Peak Elev=269.21' Storage=124 cf Inflow=0.09 cfs 0.006 af 12.0" Round Culvert n=0.013 L=43.0' S=0.0000 '/' Outflow=0.04 cfs 0.005 af
Pond SDEF1: SDEF1	Inflow=0.04 cfs 0.003 af Primary=0.04 cfs 0.003 af
Link AP1: Wetlands	Inflow=0.08 cfs 0.028 af Primary=0.08 cfs 0.028 af
Link AP2: Stream	Inflow=0.04 cfs 0.007 af Primary=0.04 cfs 0.007 af
Link AP3:	Inflow=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af

Total Runoff Area = 8.065 ac Runoff Volume = 0.052 af Average Runoff Depth = 0.08"
76.44% Pervious = 6.165 ac 23.56% Impervious = 1.900 ac

Summary for Subcatchment 1AS:

Runoff = 0.01 cfs @ 12.35 hrs, Volume= 0.001 af, Depth> 0.07"

Routed to Pond GUSF1 : Grassed Underdrain Soil Filter 1

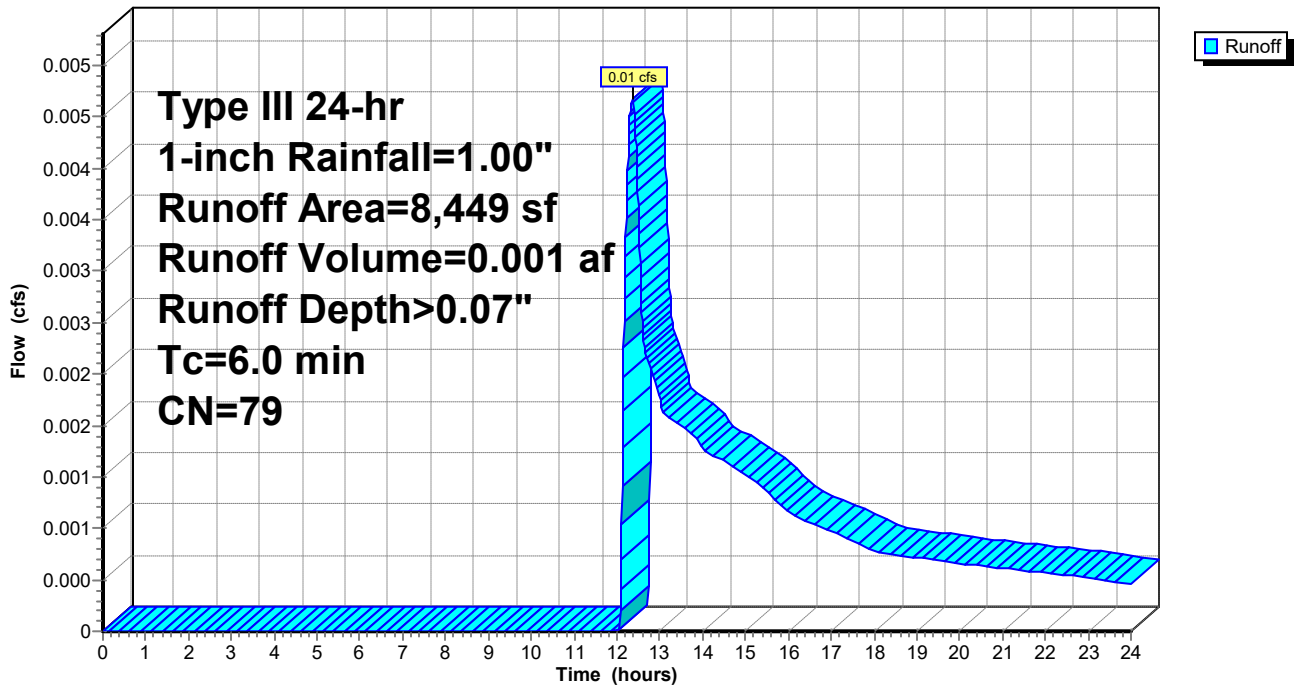
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 1-inch Rainfall=1.00"

Area (sf)	CN	Description
6,702	74	>75% Grass cover, Good, HSG C
1,747	98	Paved parking, HSG C
8,449	79	Weighted Average
6,702		79.32% Pervious Area
1,747		20.68% Impervious Area

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

Subcatchment 1AS:

Hydrograph



Summary for Subcatchment 1BS: Existing parking lot (fmr sub 2)

Runoff = 0.19 cfs @ 12.10 hrs, Volume= 0.014 af, Depth> 0.28"
 Routed to Pond FP1 : Focal Point 1

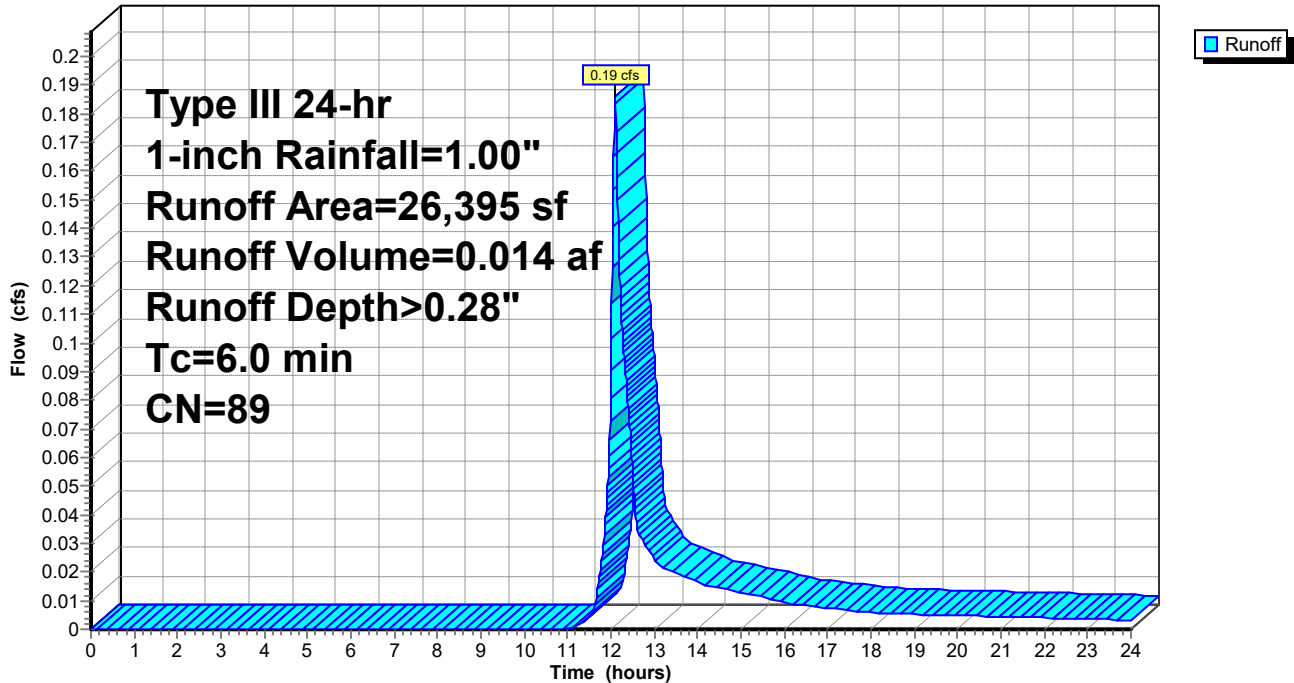
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 1-inch Rainfall=1.00"

Area (sf)	CN	Description
9,899	74	>75% Grass cover, Good, HSG C
* 16,496	98	parking and roofs
26,395	89	Weighted Average
9,899		37.50% Pervious Area
16,496		62.50% Impervious Area

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

Subcatchment 1BS: Existing parking lot (fmr sub 2)

Hydrograph



Summary for Subcatchment 1CS: existing parking

Runoff = 0.10 cfs @ 12.10 hrs, Volume= 0.007 af, Depth> 0.32"
 Routed to Pond RT2 : R-Tanks 2

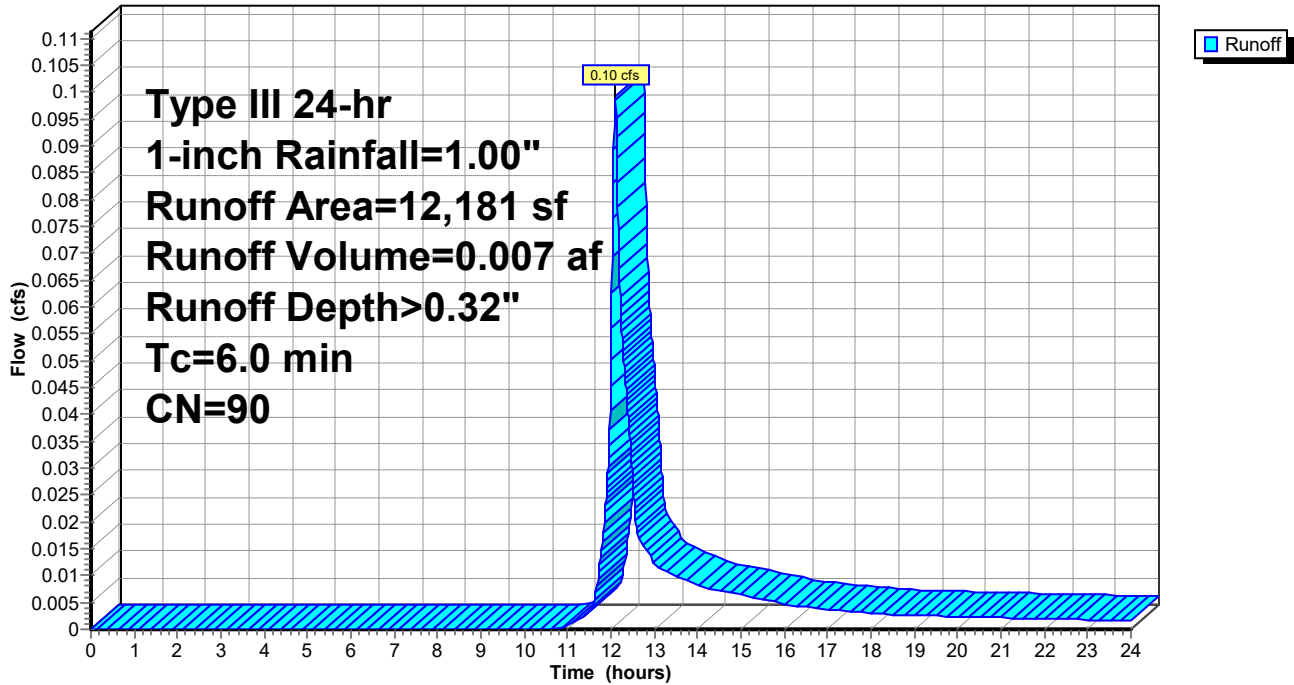
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 1-inch Rainfall=1.00"

Area (sf)	CN	Description
3,888	74	>75% Grass cover, Good, HSG C
* 8,293	98	parking and roofs
12,181	90	Weighted Average
3,888		31.92% Pervious Area
8,293		68.08% Impervious Area

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

Subcatchment 1CS: existing parking

Hydrograph



Summary for Subcatchment 1DS: existing lawn to culvert

Runoff = 0.06 cfs @ 12.12 hrs, Volume= 0.006 af, Depth> 0.15"
 Routed to Pond 1P : Detention Pond

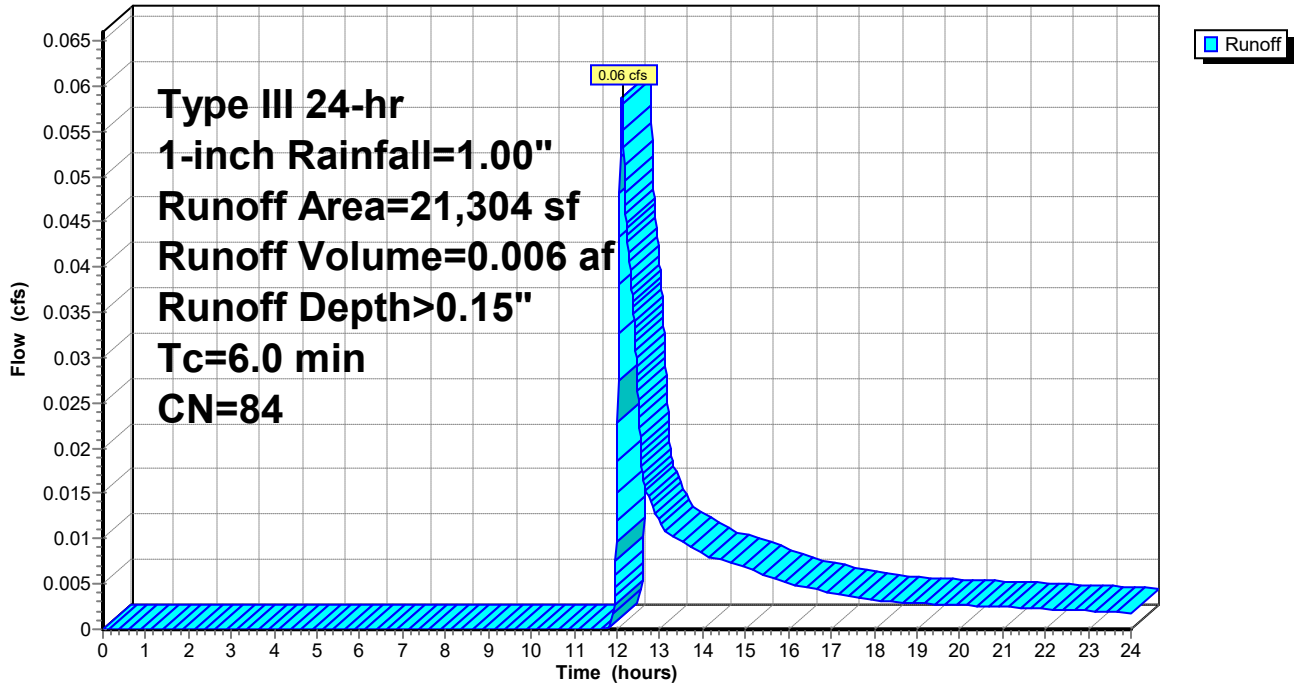
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 1-inch Rainfall=1.00"

	Area (sf)	CN	Description
*	9,129	98	roofs and paving
	12,175	74	>75% Grass cover, Good, HSG C
	21,304	84	Weighted Average
	12,175		57.15% Pervious Area
	9,129		42.85% Impervious Area

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

Subcatchment 1DS: existing lawn to culvert

Hydrograph



Summary for Subcatchment 1ES: Access Road to Stone Drip Edge Filter

Runoff = 0.04 cfs @ 12.09 hrs, Volume= 0.003 af, Depth> 0.50"
 Routed to Pond SDEF1 : SDEF1

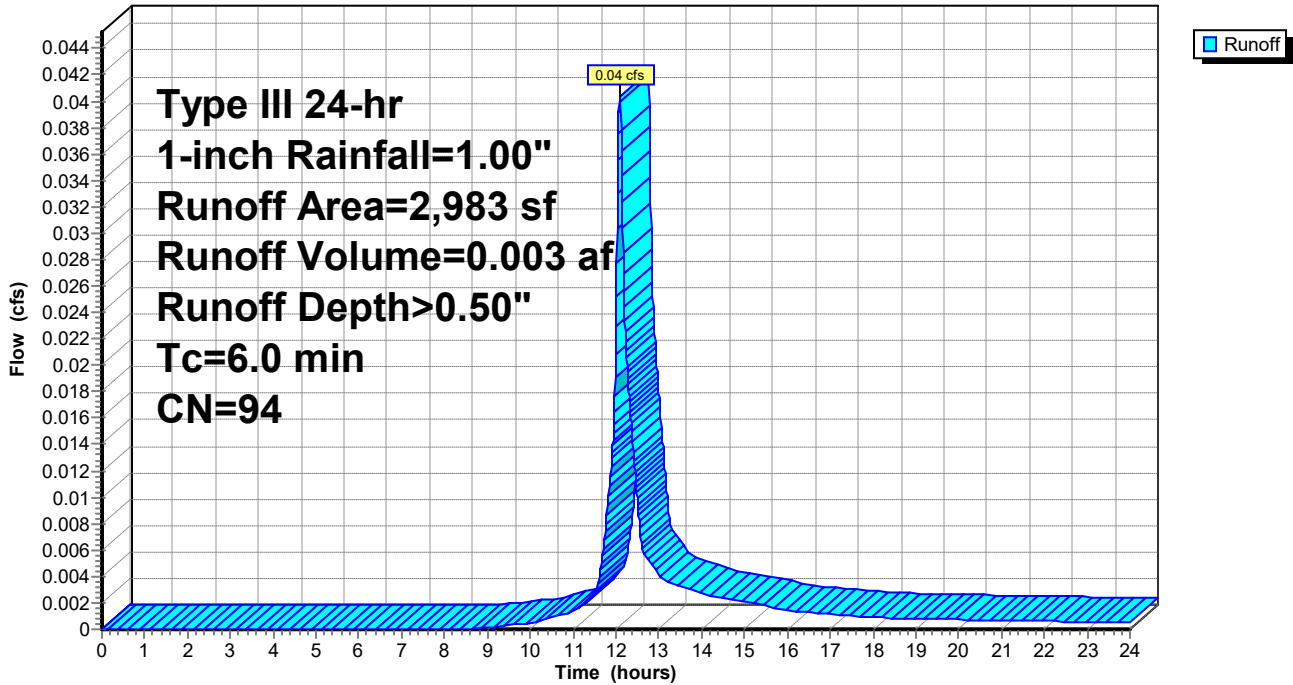
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 1-inch Rainfall=1.00"

Area (sf)	CN	Description
2,483	98	Paved parking, HSG C
500	74	>75% Grass cover, Good, HSG C
2,983	94	Weighted Average
500		16.76% Pervious Area
2,483		83.24% Impervious Area

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

Subcatchment 1ES: Access Road to Stone Drip Edge Filter

Hydrograph



Summary for Subcatchment 1FS: West prop line

Runoff = 0.00 cfs @ 14.78 hrs, Volume= 0.000 af, Depth> 0.02"

Routed to Reach 1R : Plunge pool

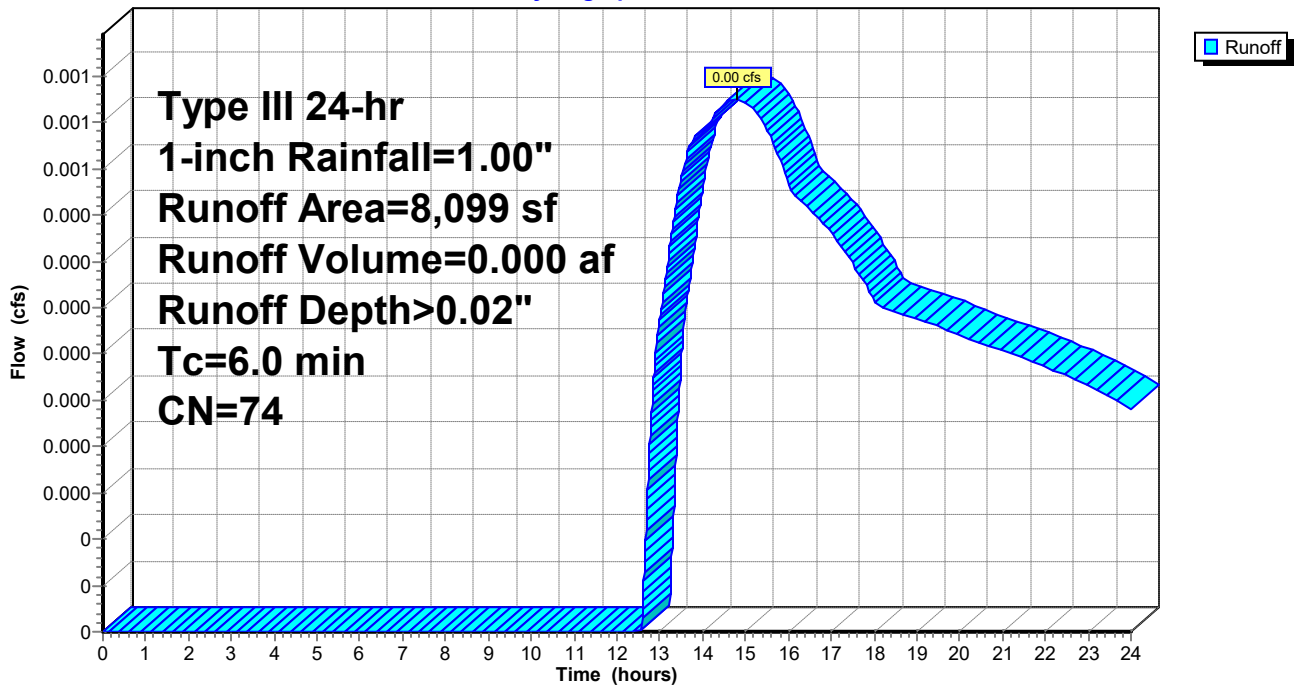
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 1-inch Rainfall=1.00"

Area (sf)	CN	Description
2,397	73	Woods, Fair, HSG C
5,702	74	>75% Grass cover, Good, HSG C
8,099	74	Weighted Average
8,099		100.00% Pervious Area

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

Subcatchment 1FS: West prop line

Hydrograph



Summary for Subcatchment 1GS: Roof to RFEF2

Runoff = 0.04 cfs @ 12.09 hrs, Volume= 0.003 af, Depth> 0.40"
 Routed to Pond RDEF2 : RDEF-2

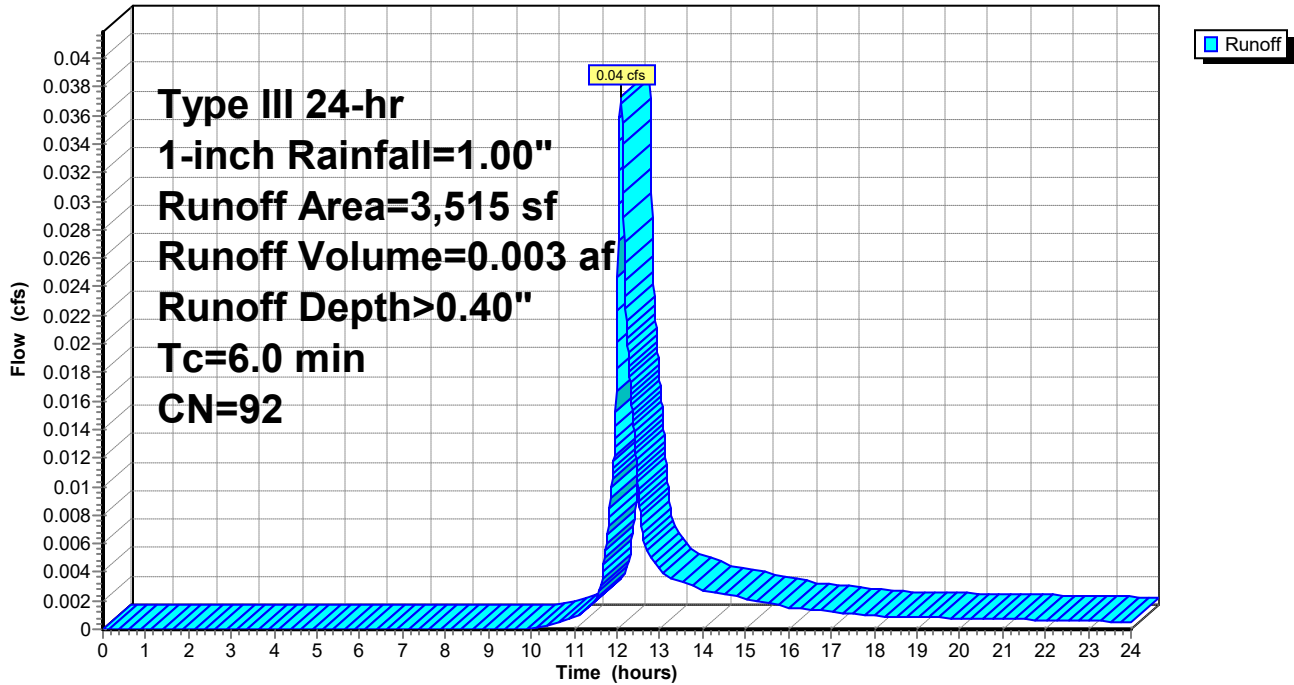
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 1-inch Rainfall=1.00"

Area (sf)	CN	Description
2,623	98	Roofs, HSG C
892	74	>75% Grass cover, Good, HSG C
3,515	92	Weighted Average
892		25.38% Pervious Area
2,623		74.62% Impervious Area

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

Subcatchment 1GS: Roof to RFEF2

Hydrograph



Summary for Subcatchment 1HS: to Roof Dripline Filter

Runoff = 0.03 cfs @ 12.09 hrs, Volume= 0.002 af, Depth> 0.45"
 Routed to Pond RDEF3 : RDEF-3

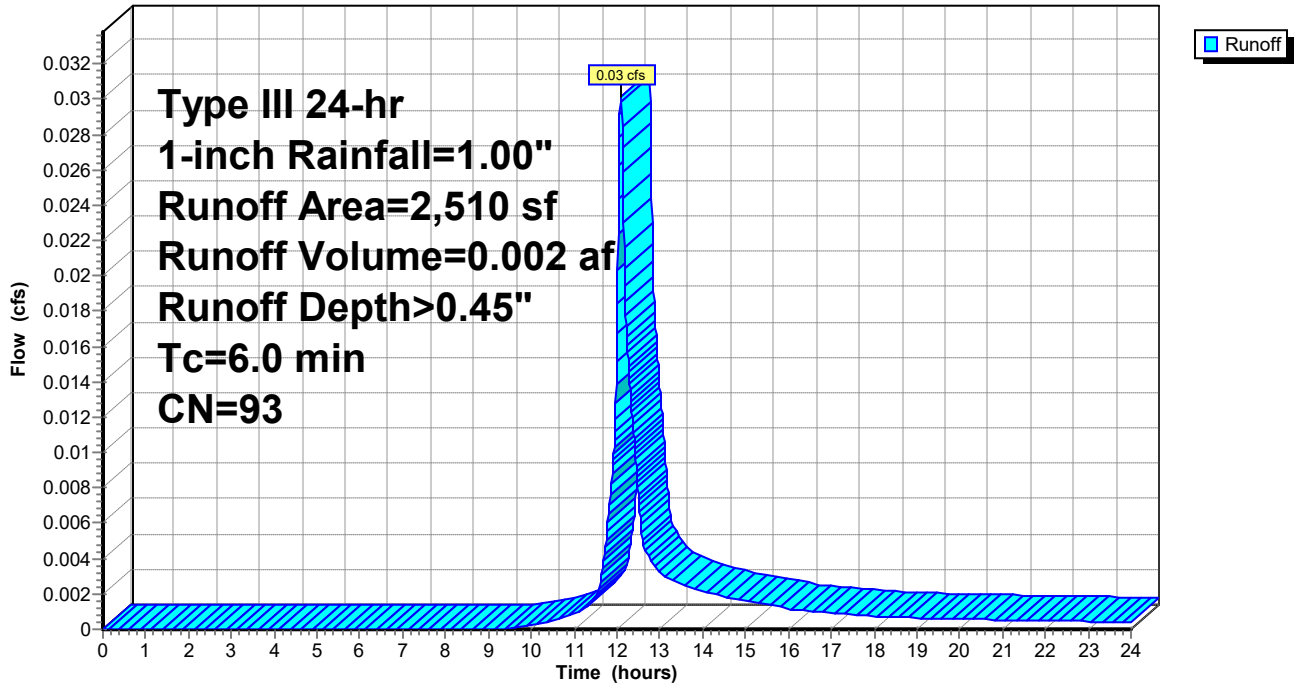
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 1-inch Rainfall=1.00"

Area (sf)	CN	Description
1,955	98	Roofs, HSG C
555	74	>75% Grass cover, Good, HSG C
2,510	93	Weighted Average
555		22.11% Pervious Area
1,955		77.89% Impervious Area

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

Subcatchment 1HS: to Roof Dripline Filter

Hydrograph



Summary for Subcatchment 1IS: Roof to FP

Runoff = 0.04 cfs @ 12.09 hrs, Volume= 0.003 af, Depth> 0.50"
 Routed to Pond FP2 : Focal Point 2

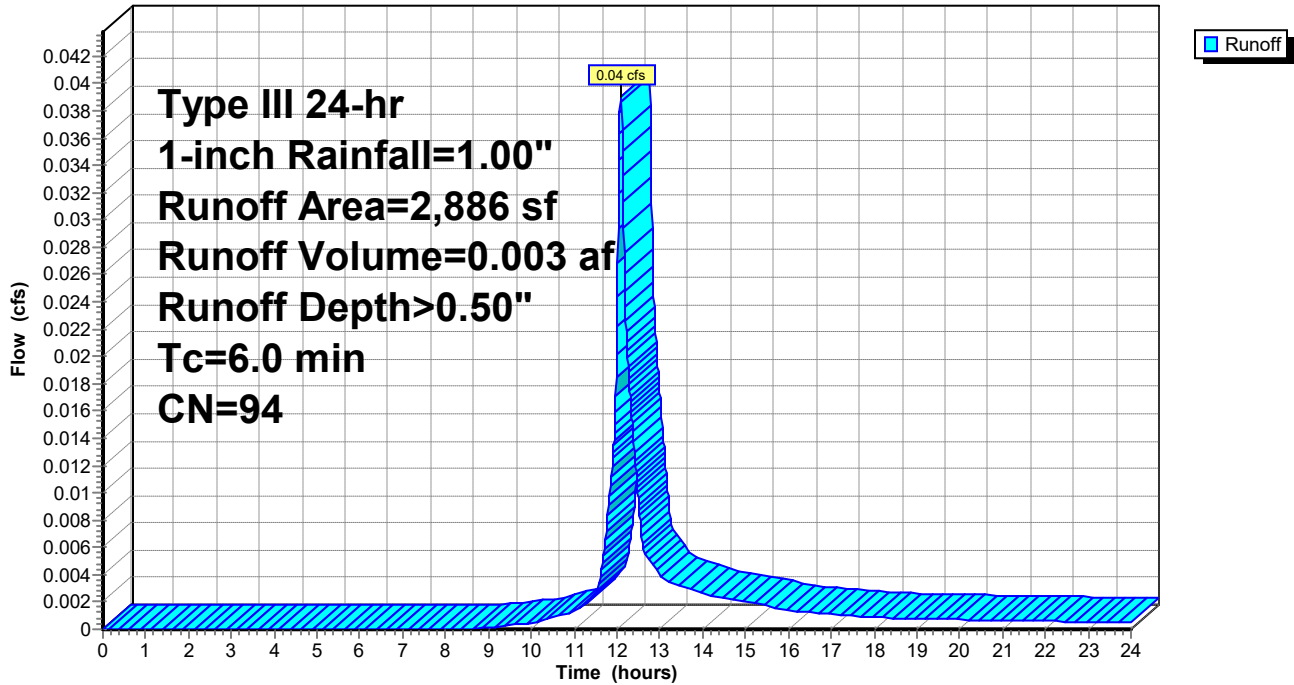
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 1-inch Rainfall=1.00"

Area (sf)	CN	Description
2,435	98	Roofs, HSG C
451	74	>75% Grass cover, Good, HSG C
2,886	94	Weighted Average
451		15.63% Pervious Area
2,435		84.37% Impervious Area

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

Subcatchment 1IS: Roof to FP

Hydrograph



Summary for Subcatchment 1JS: wetland

Runoff = 0.01 cfs @ 12.64 hrs, Volume= 0.003 af, Depth> 0.07"
 Routed to Link AP1 : Wetlands

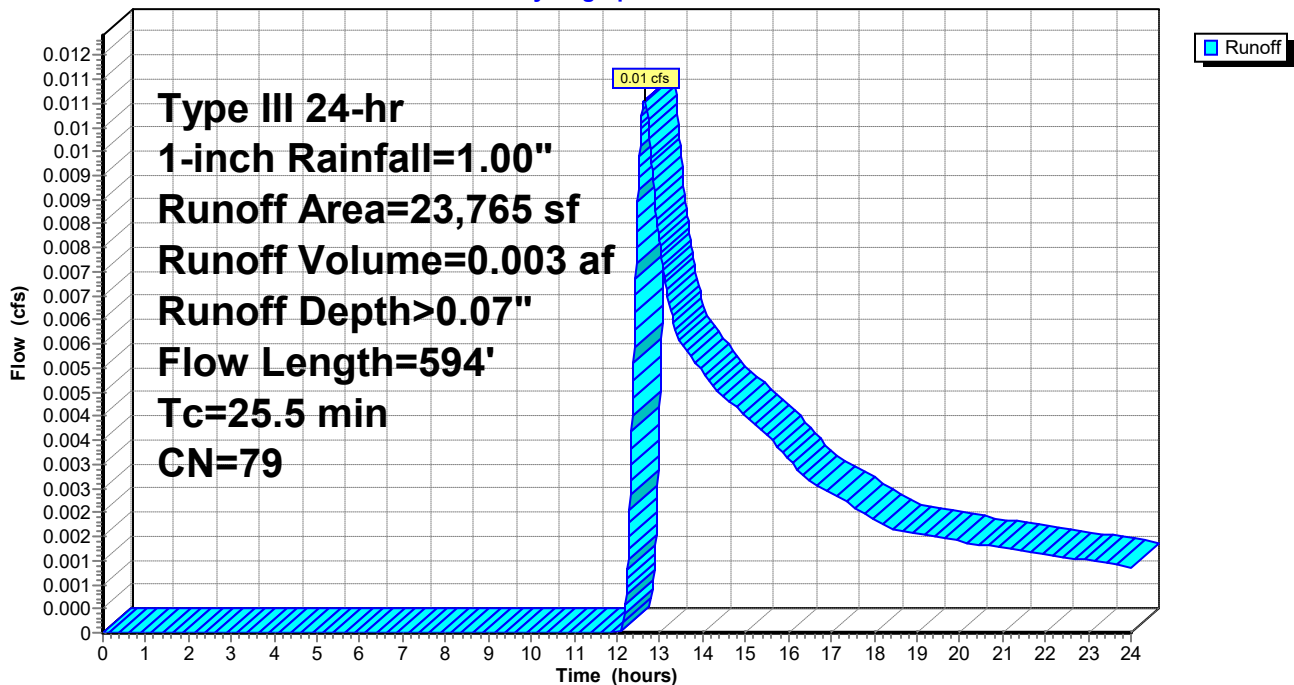
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 1-inch Rainfall=1.00"

Area (sf)	CN	Description
9,976	77	Woods, Good, HSG D
12,963	80	>75% Grass cover, Good, HSG D
826	74	>75% Grass cover, Good, HSG C
23,765	79	Weighted Average
23,765		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0240	0.08		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.10"
4.6	412	0.0460	1.50		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
0.2	82	0.0200	6.42	5.04	Pipe Channel, C-D 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
25.5	594	Total			

Subcatchment 1JS: wetland

Hydrograph



Summary for Subcatchment 2AS: roof to rdef1

Runoff = 0.04 cfs @ 12.08 hrs, Volume= 0.003 af, Depth> 0.79"
 Routed to Pond RDEF1 : RDEF-1

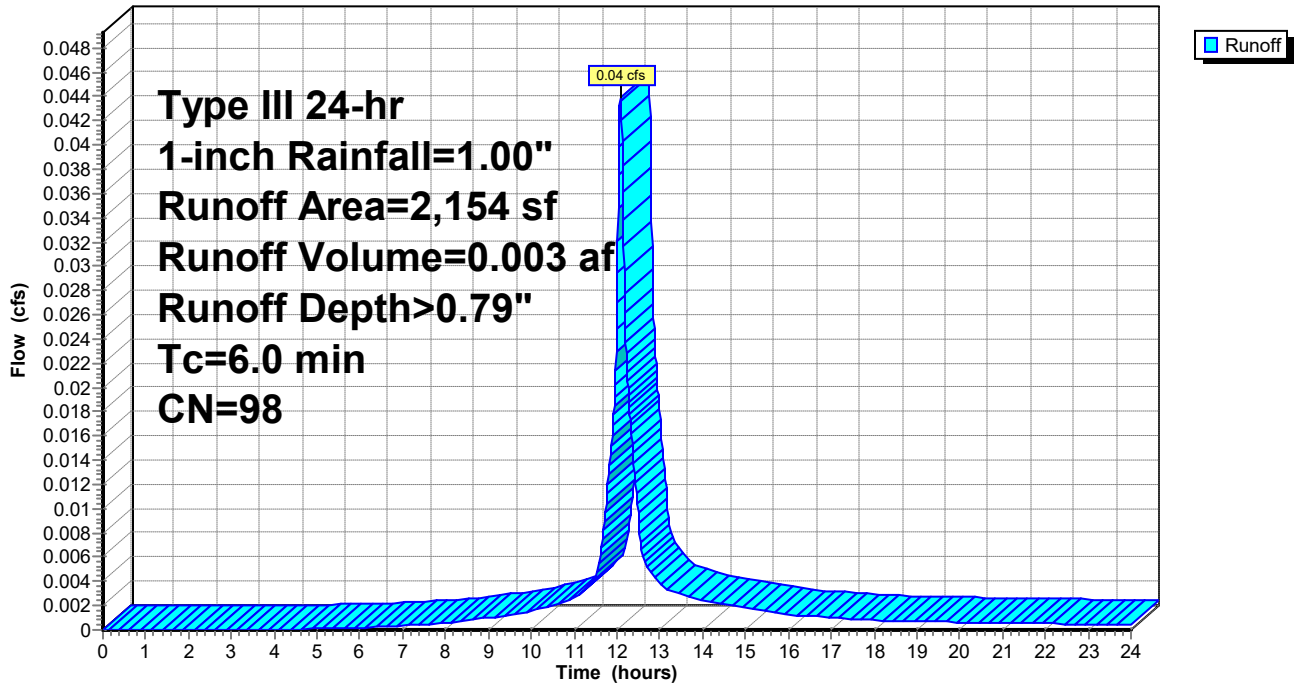
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 1-inch Rainfall=1.00"

Area (sf)	CN	Description
2,154	98	Roofs, HSG C
2,154		100.00% Impervious Area

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

Subcatchment 2AS: roof to rdef1

Hydrograph



Summary for Subcatchment 2BS: roof to RDEF1

Runoff = 0.04 cfs @ 12.08 hrs, Volume= 0.003 af, Depth> 0.79"
 Routed to Pond RDEF1 : RDEF-1

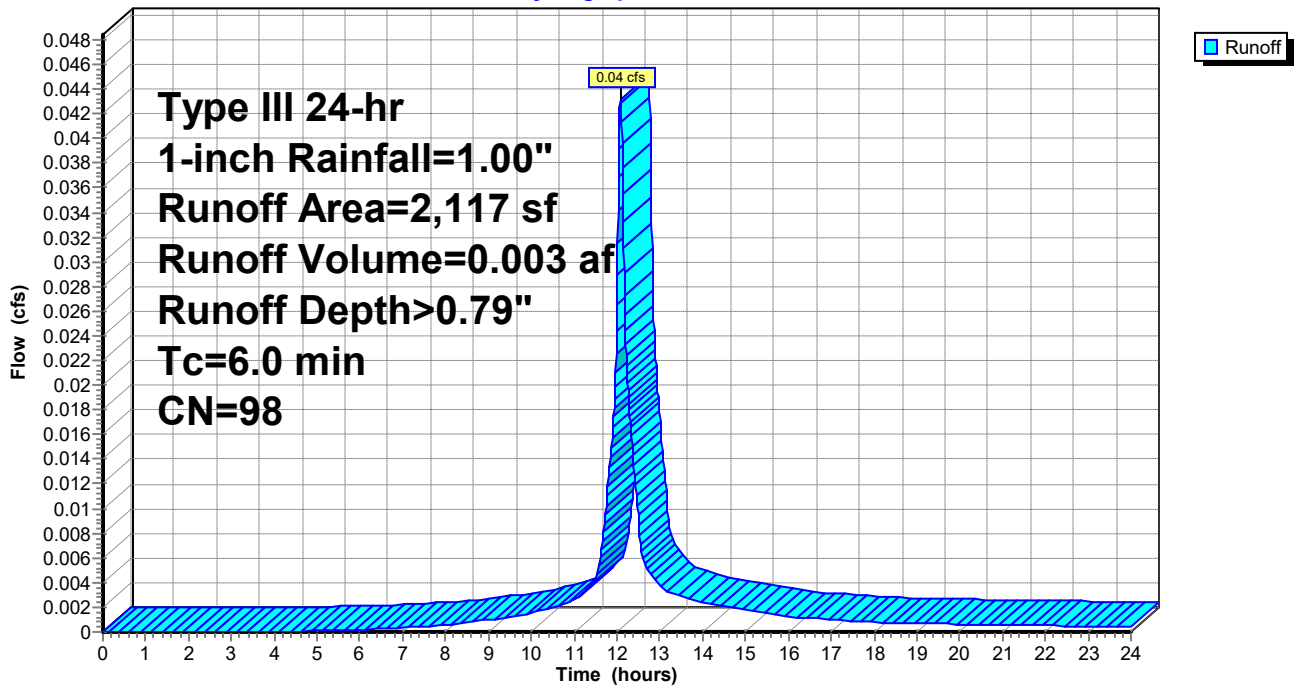
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 1-inch Rainfall=1.00"

Area (sf)	CN	Description
2,117	98	Roofs, HSG C
2,117		100.00% Impervious Area

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

Subcatchment 2BS: roof to RDEF1

Hydrograph



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Type III 24-hr 1-inch Rainfall=1.00"

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Summary for Subcatchment 2CS: Remaining

Runoff = 0.00 cfs @ 15.53 hrs, Volume= 0.002 af, Depth> 0.02"
 Routed to Link AP2 : Stream

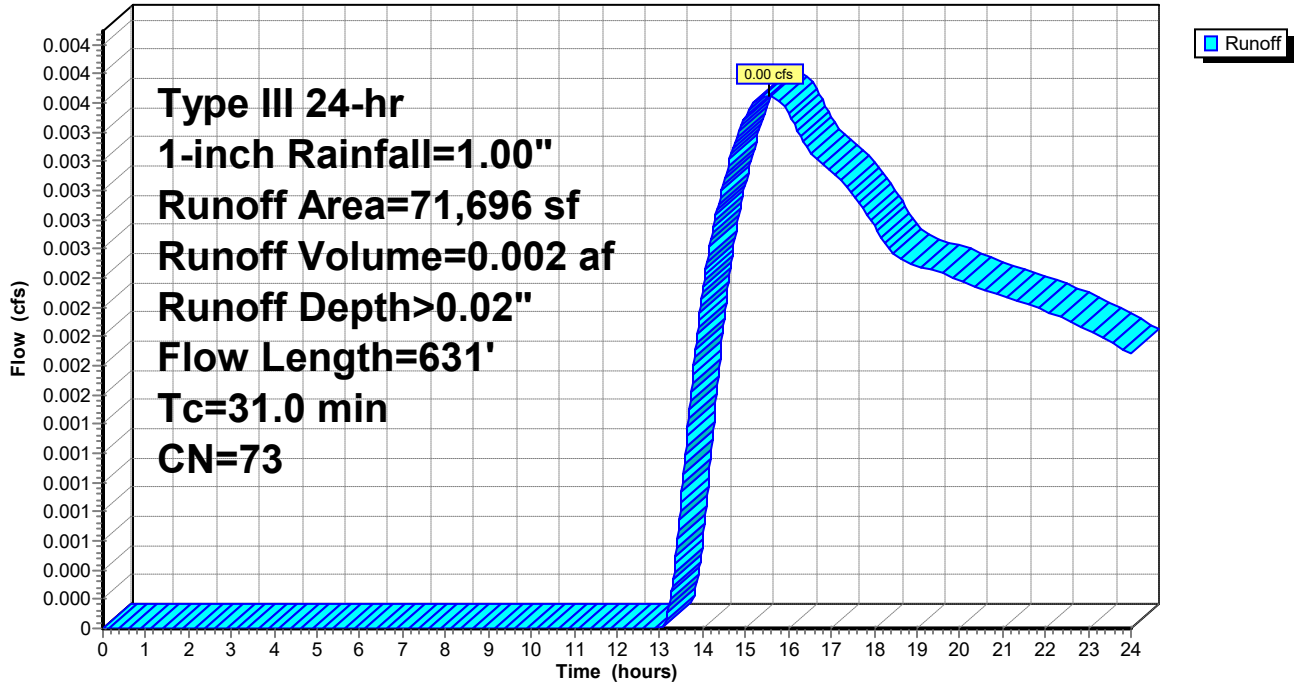
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 1-inch Rainfall=1.00"

Area (sf)	CN	Description
4,917	70	Woods, Good, HSG C
21,832	77	Woods, Good, HSG D
12,740	55	Woods, Good, HSG B
3,074	98	Roofs, HSG C
684	98	Paved parking, HSG C
24,358	74	>75% Grass cover, Good, HSG C
4,091	80	>75% Grass cover, Good, HSG D
71,696	73	Weighted Average
67,938		94.76% Pervious Area
3,758		5.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.2	150	0.0300	0.10		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.10"
3.8	218	0.0360	0.95		Shallow Concentrated Flow, D-E Woodland Kv= 5.0 fps
1.0	263	0.0150	4.32	12.95	Channel Flow, C-D Area= 3.0 sf Perim= 5.0' r= 0.60' n= 0.030 Stream, clean & straight
31.0	631	Total			

Subcatchment 2CS: Remaining

Hydrograph



Summary for Subcatchment 3S: off site existing

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
 Routed to Link AP3 :

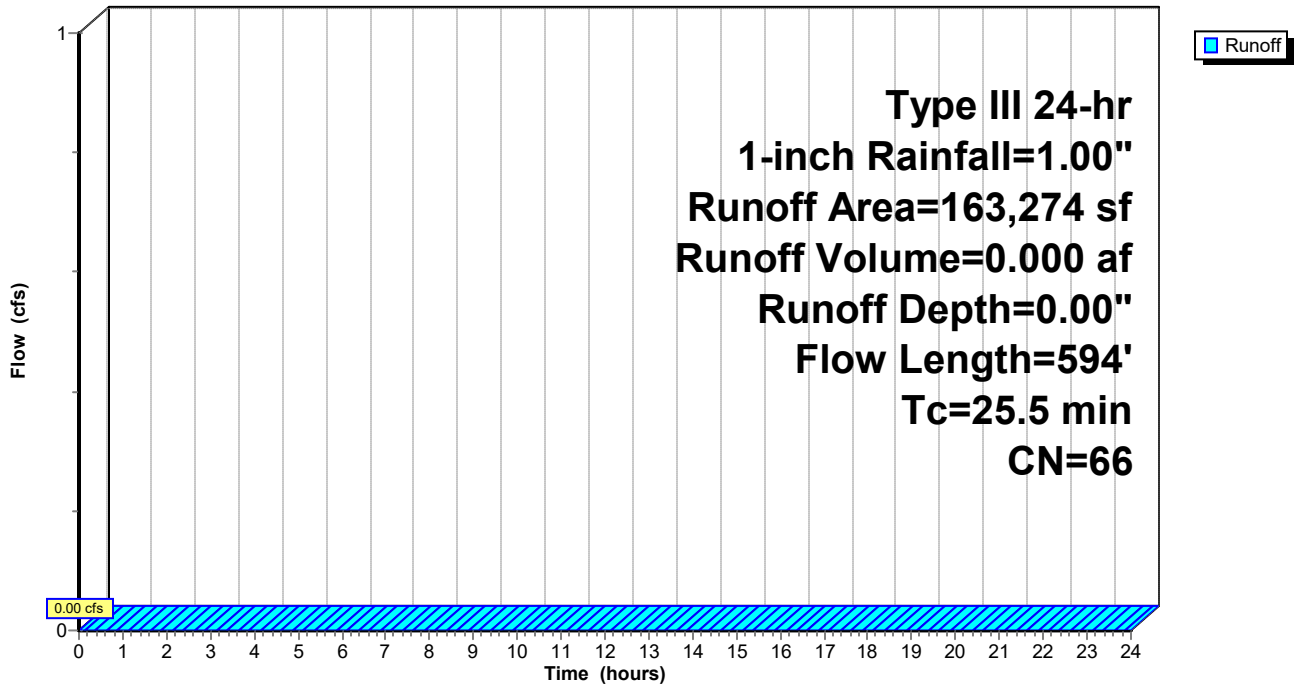
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 1-inch Rainfall=1.00"

Area (sf)	CN	Description
60,885	55	Woods, Good, HSG B
24,556	98	Paved parking, HSG C
5,016	98	Roofs, HSG C
62,012	61	>75% Grass cover, Good, HSG B
10,805	74	>75% Grass cover, Good, HSG C
163,274	66	Weighted Average
133,702		81.89% Pervious Area
29,572		18.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0240	0.08		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.10"
4.6	412	0.0460	1.50		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
0.2	82	0.0200	6.42	5.04	Pipe Channel, C-D 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
25.5	594	Total			

Subcatchment 3S: off site existing

Hydrograph



Summary for Reach 1R: Plunge pool

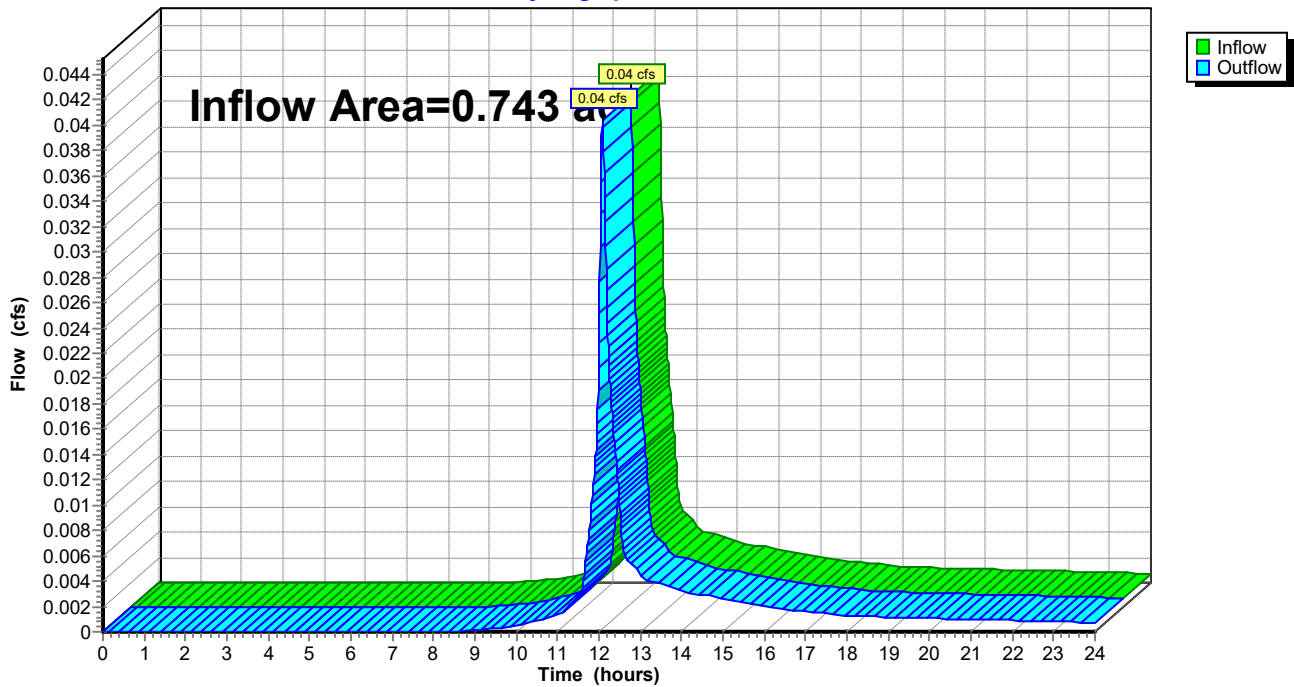
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.743 ac, 35.85% Impervious, Inflow Depth > 0.05" for 1-inch event
Inflow = 0.04 cfs @ 12.09 hrs, Volume= 0.003 af
Outflow = 0.04 cfs @ 12.09 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min
Routed to Link AP1 : Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Reach 1R: Plunge pool

Hydrograph



Summary for Pond 1P: Detention Pond

Inflow Area = 0.489 ac, 42.85% Impervious, Inflow Depth > 0.15" for 1-inch event
 Inflow = 0.06 cfs @ 12.12 hrs, Volume= 0.006 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Reach 1R : Plunge pool

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 272.46' @ 24.00 hrs Surf.Area= 1,012 sf Storage= 269 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description			
#1	272.00'	3,826 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
272.00	239	111.0	0	0	239	
273.00	2,579	277.0	1,201	1,201	5,368	
274.00	2,671	436.0	2,625	3,826	14,397	

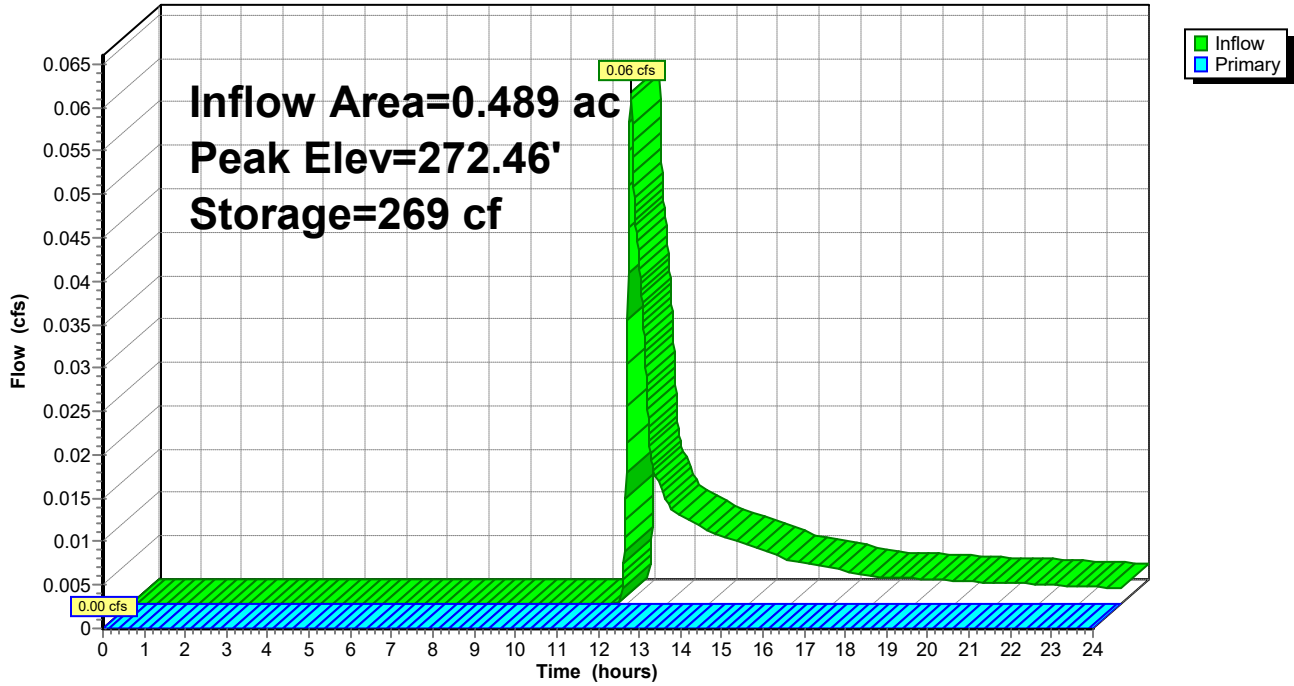
Device	Routing	Invert	Outlet Devices											
#1	Primary	271.48'	12.0" Round culvert L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 271.48' / 270.80' S= 0.0170 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf											
#2	Device 1	273.20'	2.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads											
#3	Primary	273.37'	140.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32											

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=272.00' TW=0.00' (Dynamic Tailwater)

- 1=culvert (Passes 0.00 cfs of 0.80 cfs potential flow)
- 2=Orifice/Grate (Controls 0.00 cfs)
- 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: Detention Pond

Hydrograph



Summary for Pond FP1: Focal Point 1

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=10)

Inflow Area = 0.606 ac, 62.50% Impervious, Inflow Depth > 0.28" for 1-inch event
 Inflow = 0.19 cfs @ 12.10 hrs, Volume= 0.014 af
 Outflow = 0.19 cfs @ 12.11 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.4 min
 Primary = 0.19 cfs @ 12.11 hrs, Volume= 0.014 af
 Routed to Pond RT2 : R-Tanks 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 271.79' @ 12.11 hrs Surf.Area= 129 sf Storage= 2 cf

Plug-Flow detention time= 0.1 min calculated for 0.014 af (100% of inflow)
 Center-of-Mass det. time= 0.1 min (869.1 - 869.0)

Volume	Invert	Avail.Storage	Storage Description
#1	271.78'	193 cf	Custom Stage Data (Irregular) Listed below (Recalc) 6.40'W x 10.00'L x 2.25'H FocalPoint
#2	271.73'	29 cf	
		222 cf	144 cf Overall x 20.0% Voids Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
271.78	64	38.0	0	0	64
272.28	128	48.0	47	47	136
272.78	209	60.0	83	131	242
273.00	250	64.0	50	181	284
273.05	251	65.0	13	193	295

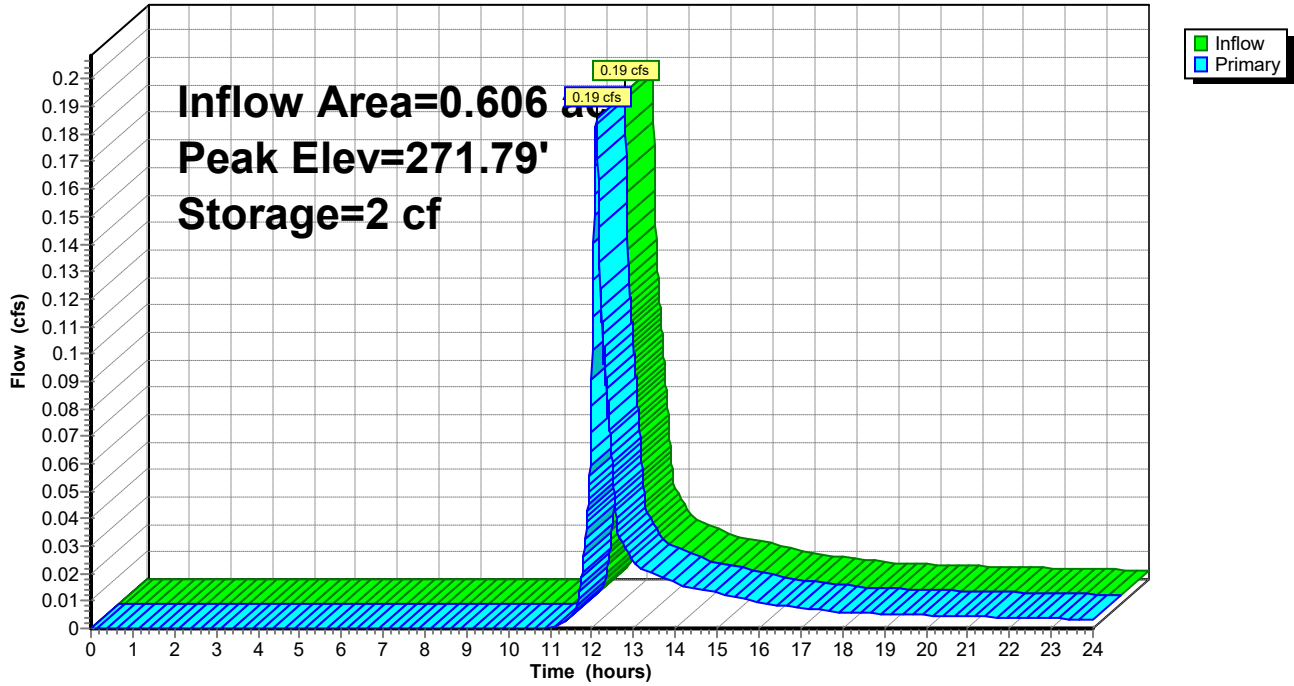
Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	15.0" Round Culvert L= 13.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 269.03' S= 0.0000 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	272.30'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	271.73'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'

Primary OutFlow Max=0.19 cfs @ 12.11 hrs HW=271.79' TW=269.06' (Dynamic Tailwater)

- ↑ 1=Culvert (Passes 0.19 cfs of 6.82 cfs potential flow)
- ↑ 2=Orifice/Grate (Controls 0.00 cfs)
- ↑ 3=Exfiltration (Exfiltration Controls 0.19 cfs)

Pond FP1: Focal Point 1

Hydrograph



191.06051 SW-POST

Type III 24-hr 1-inch Rainfall=1.00"

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Summary for Pond FP2: Focal Point 2

Inflow Area = 0.066 ac, 84.37% Impervious, Inflow Depth > 0.50" for 1-inch event
 Inflow = 0.04 cfs @ 12.09 hrs, Volume= 0.003 af
 Outflow = 0.04 cfs @ 12.10 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.4 min
 Primary = 0.04 cfs @ 12.10 hrs, Volume= 0.003 af
 Routed to Pond RT1 : R-Tanks 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 272.13' @ 12.10 hrs Surf.Area= 45 sf Storage= 1 cf

Plug-Flow detention time= 0.4 min calculated for 0.003 af (100% of inflow)
 Center-of-Mass det. time= 0.4 min (832.4 - 832.1)

Volume	Invert	Avail.Storage	Storage Description
#1	272.09'	65 cf	Custom Stage Data (Irregular) Listed below (Recalc) 2.30'W x 9.40'L x 2.25'H FocalPoint
#2	272.09'	10 cf	
		75 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
272.09	21	23.0	0	0	21
272.59	63	32.0	20	20	63
273.02	111	40.0	37	57	111
273.09	120	42.0	8	65	124

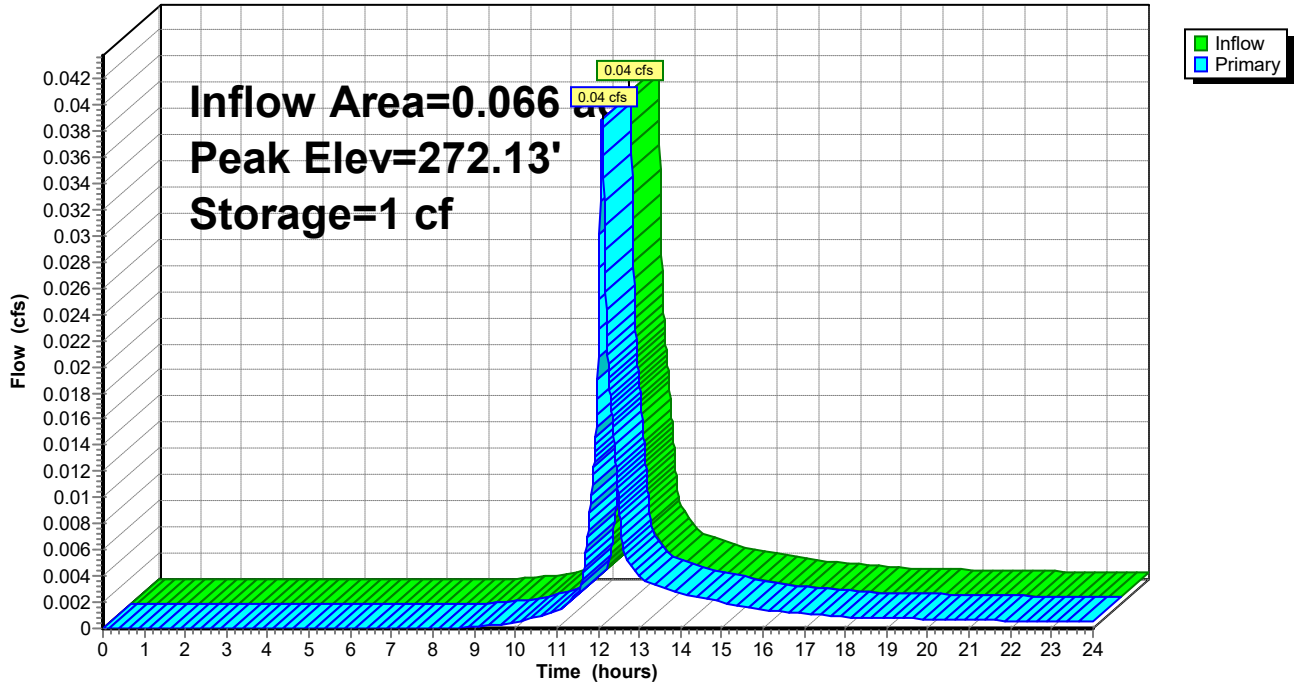
Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	12.0" Round Culvert L= 4.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 269.03' S= 0.0000 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	273.00'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	272.09'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'

Primary OutFlow Max=0.04 cfs @ 12.10 hrs HW=272.13' TW=269.04' (Dynamic Tailwater)

- ↑ 1=Culvert (Passes 0.04 cfs of 4.81 cfs potential flow)
- ↑ 2=Orifice/Grate (Controls 0.00 cfs)
- ↑ 3=Exfiltration (Exfiltration Controls 0.04 cfs)

Pond FP2: Focal Point 2

Hydrograph



191.06051 SW-POST

Type III 24-hr 1-inch Rainfall=1.00"

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Summary for Pond GUSF1: Grassed Underdrain Soil Filter 1

Inflow Area = 0.194 ac, 20.68% Impervious, Inflow Depth > 0.07" for 1-inch event
 Inflow = 0.01 cfs @ 12.35 hrs, Volume= 0.001 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Pond RT2 : R-Tanks 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 269.31' @ 24.00 hrs Surf.Area= 457 sf Storage= 49 cf
 Flood Elev= 273.30' Surf.Area= 2,449 sf Storage= 1,745 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	271.80'	1,402 cf	GUSF1 (Irregular) Listed below (Recalc)
#2	269.04'	344 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		1,745 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
271.80	424	109.0	0	0	424
272.30	1,666	212.0	488	488	3,056
272.80	1,992	221.0	913	1,402	3,385

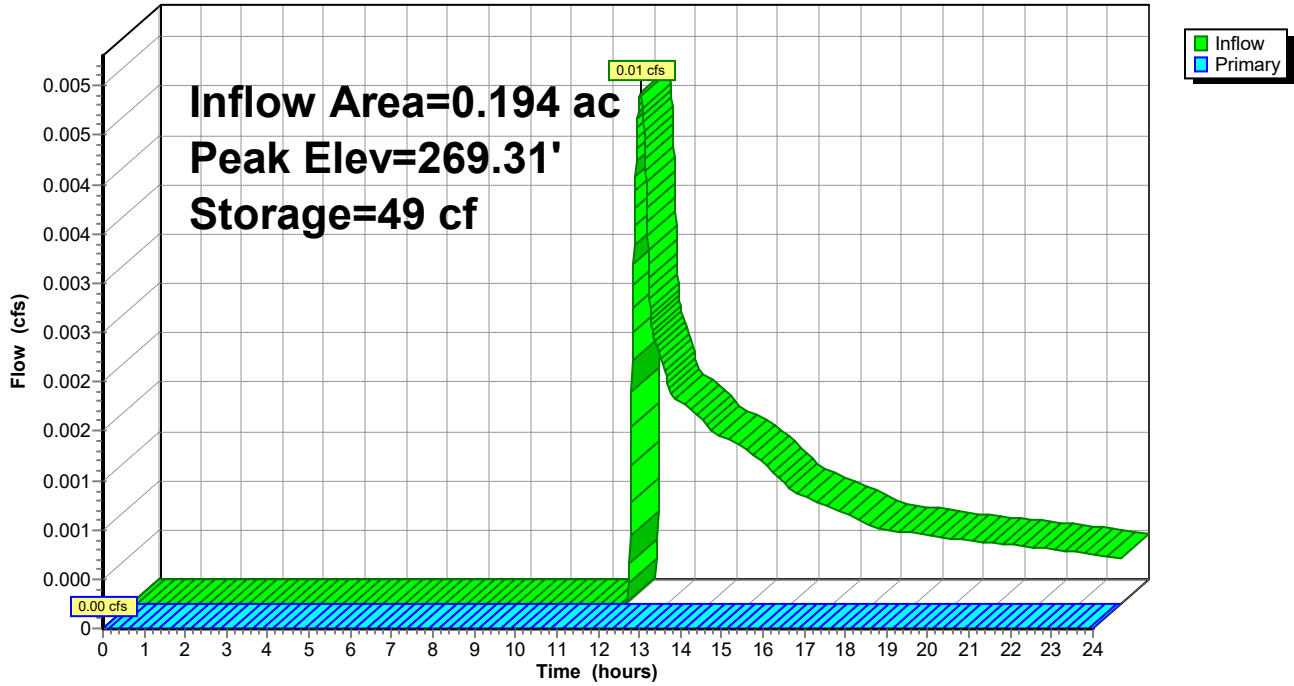
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
269.04	457	0.0	0	0
269.05	457	40.0	2	2
269.79	457	40.0	135	137
269.80	457	30.0	1	138
270.29	457	30.0	67	206
270.30	457	20.0	1	207
271.80	457	20.0	137	344

Device	Routing	Invert	Outlet Devices
#1	Primary	270.40'	12.0" Round Culvert L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 270.40' / 270.06' S= 0.0170 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	272.30'	24.0" Horiz. Beehive Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=269.04' TW=268.78' (Dynamic Tailwater)
 ↑1=Culvert (Controls 0.00 cfs)
 ↑2=Beehive Overflow (Controls 0.00 cfs)

Pond GUSF1: Grassed Underdrain Soil Filter 1

Hydrograph



Summary for Pond OCS1: OCS-1

Inflow Area = 1.284 ac, 59.98% Impervious, Inflow Depth > 0.20" for 1-inch event
 Inflow = 0.06 cfs @ 12.69 hrs, Volume= 0.022 af
 Outflow = 0.06 cfs @ 12.69 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.06 cfs @ 12.69 hrs, Volume= 0.022 af
 Routed to Link AP1 : Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 269.16' @ 12.69 hrs
 Flood Elev= 271.00'

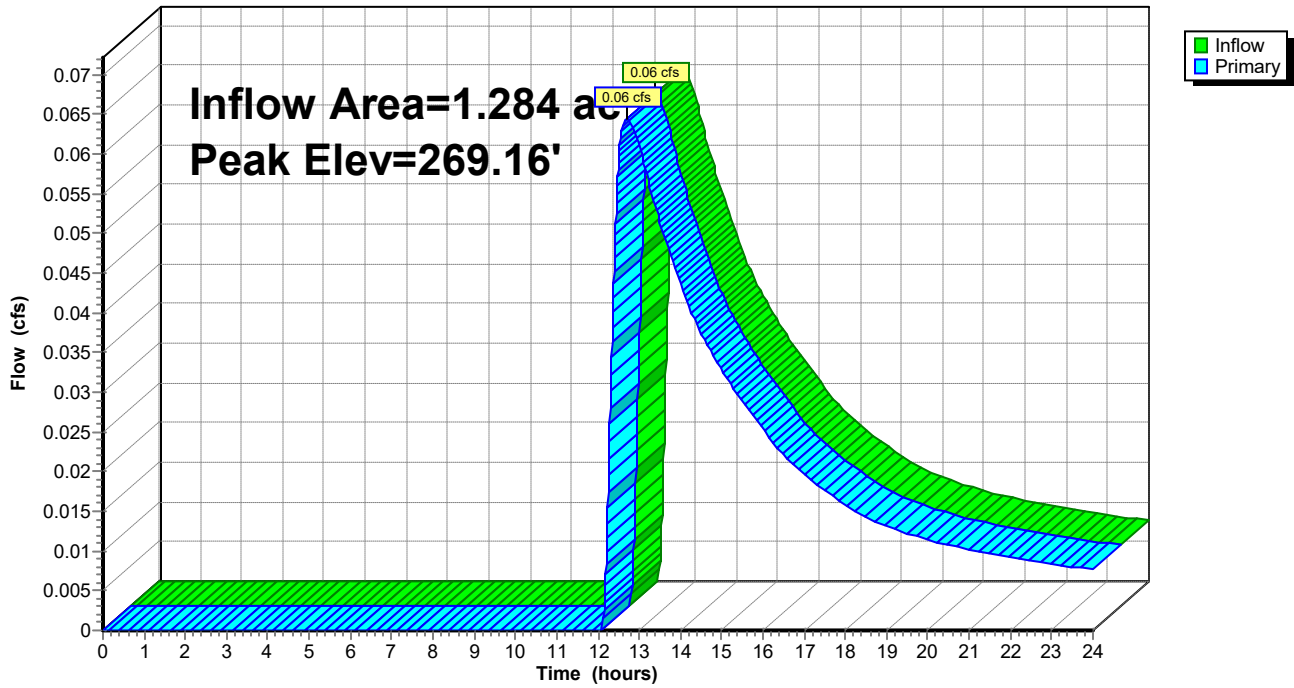
Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	15.0" Round Culvert L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 268.50' S= 0.0212 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	270.47'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Device 1	269.03'	30.0" W x 2.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	269.80'	30.0" W x 3.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.06 cfs @ 12.69 hrs HW=269.16' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 0.06 cfs @ 0.96 fps)
- 2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)
- 3=Orifice/Grate (Passes 0.06 cfs of 0.37 cfs potential flow)
- 4=Orifice/Grate (Controls 0.00 cfs)

Pond OCS1: OCS-1

Hydrograph



Summary for Pond OSC2: OCS-2

Inflow Area = 0.098 ac, 100.00% Impervious, Inflow Depth > 0.59" for 1-inch event
 Inflow = 0.04 cfs @ 12.27 hrs, Volume= 0.005 af
 Outflow = 0.04 cfs @ 12.27 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.04 cfs @ 12.27 hrs, Volume= 0.005 af
 Routed to Link AP2 : Stream

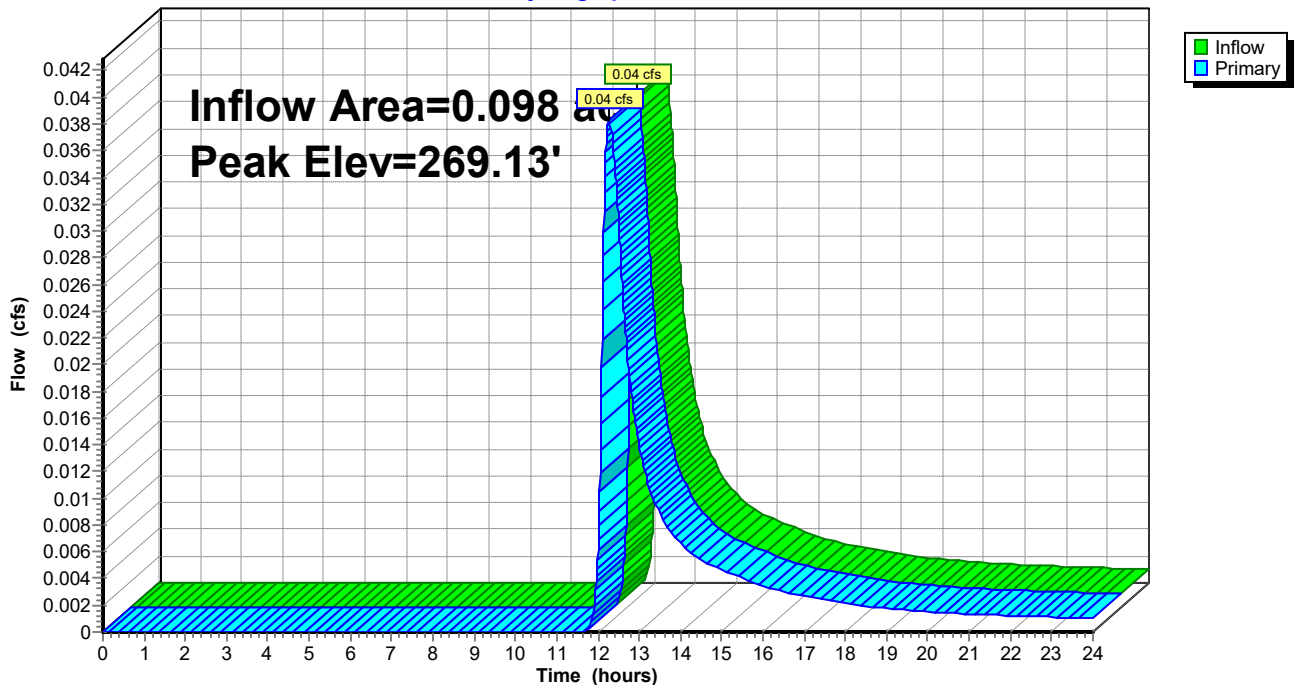
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 269.13' @ 12.27 hrs
 Flood Elev= 270.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	15.0" Round Culvert L= 74.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 268.50' S= 0.0072 ' S= 0.0072 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	270.50'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Device 1	269.03'	12.0" W x 6.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.04 cfs @ 12.27 hrs HW=269.13' TW=0.00' (Dynamic Tailwater)
 1=Culvert (Barrel Controls 0.04 cfs @ 1.26 fps)
 2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)
 3=Orifice/Grate (Passes 0.04 cfs of 0.10 cfs potential flow)

Pond OSC2: OCS-2

Hydrograph



Summary for Pond RDEF1: RDEF-1

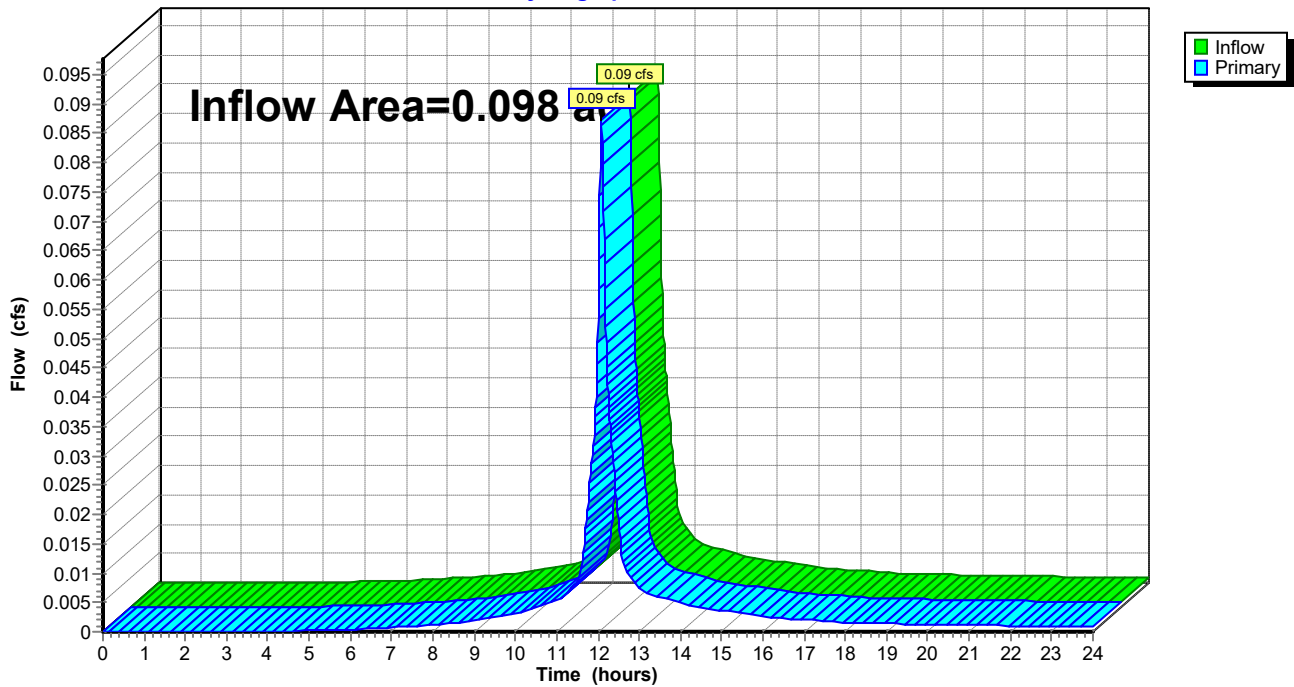
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.098 ac, 100.00% Impervious, Inflow Depth > 0.79" for 1-inch event
Inflow = 0.09 cfs @ 12.08 hrs, Volume= 0.006 af
Primary = 0.09 cfs @ 12.08 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min
Routed to Pond RT3 : R-Tanks 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Pond RDEF1: RDEF-1

Hydrograph



Summary for Pond RDEF2: RDEF-2

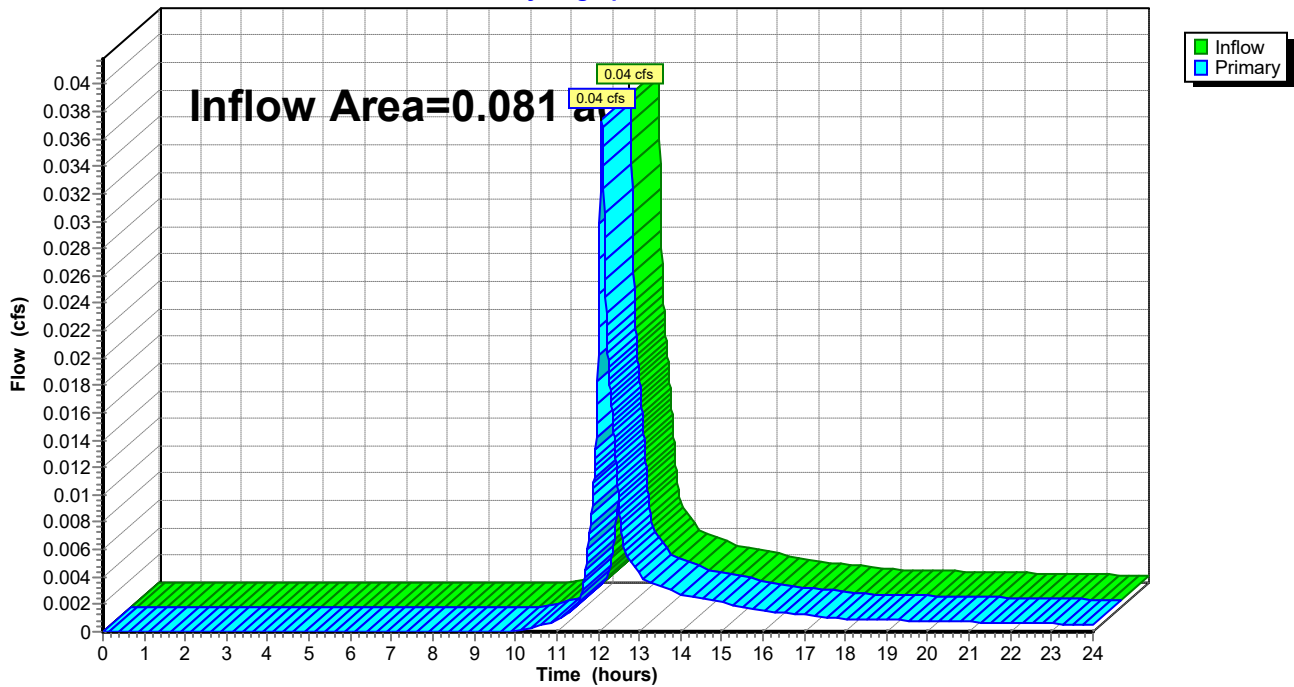
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.081 ac, 74.62% Impervious, Inflow Depth > 0.40" for 1-inch event
Inflow = 0.04 cfs @ 12.09 hrs, Volume= 0.003 af
Primary = 0.04 cfs @ 12.09 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min
Routed to Pond RT2 : R-Tanks 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Pond RDEF2: RDEF-2

Hydrograph



Summary for Pond RDEF3: RDEF-3

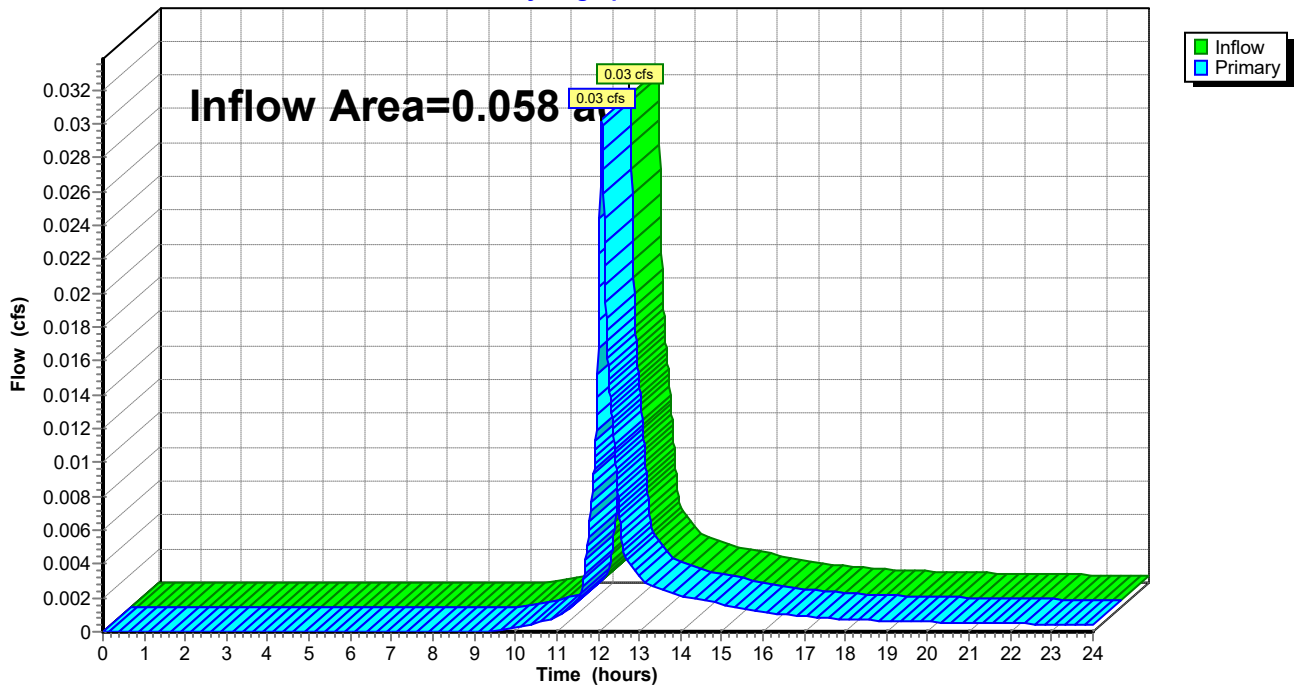
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.058 ac, 77.89% Impervious, Inflow Depth > 0.45" for 1-inch event
Inflow = 0.03 cfs @ 12.09 hrs, Volume= 0.002 af
Primary = 0.03 cfs @ 12.09 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min
Routed to Pond RT2 : R-Tanks 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Pond RDEF3: RDEF-3

Hydrograph



Summary for Pond RT1: R-Tanks 1

Inflow Area = 1.284 ac, 59.98% Impervious, Inflow Depth > 0.21" for 1-inch event
 Inflow = 0.07 cfs @ 12.51 hrs, Volume= 0.023 af
 Outflow = 0.06 cfs @ 12.69 hrs, Volume= 0.022 af, Atten= 4%, Lag= 10.9 min
 Primary = 0.06 cfs @ 12.69 hrs, Volume= 0.022 af
 Routed to Pond OCS1 : OCS-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 269.20' @ 12.69 hrs Surf.Area= 352 sf Storage= 74 cf

Plug-Flow detention time= 39.8 min calculated for 0.022 af (95% of inflow)
 Center-of-Mass det. time= 17.8 min (957.1 - 939.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	268.80'	255 cf	22.37'W x 15.73'L x 2.69'H Field A 948 cf Overall - 311 cf Embedded = 637 cf x 40.0% Voids
#2A	269.05'	296 cf	ACF R-Tank HD 1 x 70 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 70 Chambers in 14 Rows
		550 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	15.0" Round Culvert L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 269.03' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.06 cfs @ 12.69 hrs HW=269.20' TW=269.16' (Dynamic Tailwater)
 ↑**1=Culvert** (Outlet Controls 0.06 cfs @ 0.99 fps)

Pond RT1: R-Tanks 1 - Chamber Wizard Field A

Chamber Model = ACF R-Tank HD 1 (ACF Environmental R-Tank HD)

Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf

Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf

5 Chambers/Row x 2.35' Long = 11.73' Row Length +24.0" End Stone x 2 = 15.73' Base Length

14 Rows x 15.7" Wide + 24.0" Side Stone x 2 = 22.37' Base Width

3.0" Stone Base + 17.3" Chamber Height + 12.0" Stone Cover = 2.69' Field Height

70 Chambers x 4.2 cf = 295.5 cf Chamber Storage

70 Chambers x 4.4 cf = 311.1 cf Displacement

947.9 cf Field - 311.1 cf Chambers = 636.8 cf Stone x 40.0% Voids = 254.7 cf Stone Storage

Chamber Storage + Stone Storage = 550.2 cf = 0.013 af

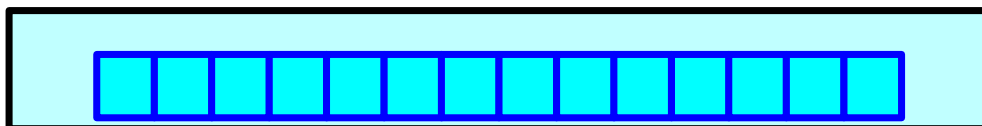
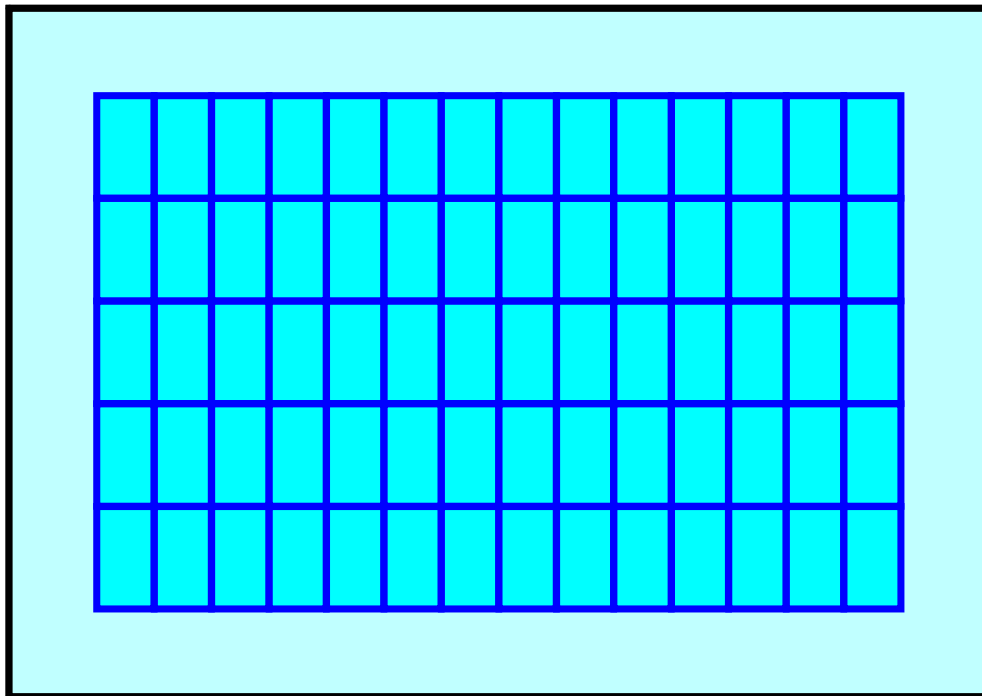
Overall Storage Efficiency = 58.1%

Overall System Size = 15.73' x 22.37' x 2.69'

70 Chambers

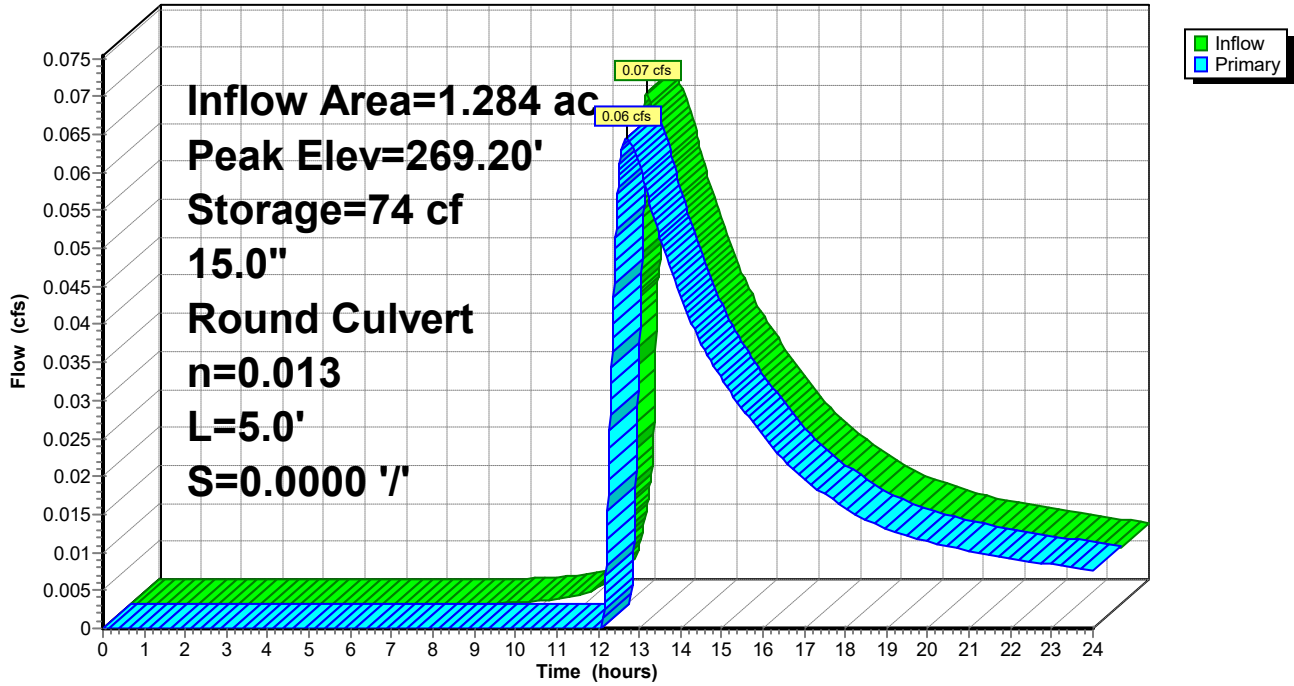
35.1 cy Field

23.6 cy Stone



Pond RT1: R-Tanks 1

Hydrograph



Summary for Pond RT2: R-Tanks 2

Inflow Area = 1.218 ac, 58.65% Impervious, Inflow Depth > 0.26" for 1-inch event
 Inflow = 0.35 cfs @ 12.10 hrs, Volume= 0.027 af
 Outflow = 0.06 cfs @ 12.60 hrs, Volume= 0.020 af, Atten= 83%, Lag= 30.1 min
 Primary = 0.06 cfs @ 12.60 hrs, Volume= 0.020 af
 Routed to Pond RT1 : R-Tanks 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 269.22' @ 12.68 hrs Surf.Area= 1,753 sf Storage= 454 cf

Plug-Flow detention time= 183.3 min calculated for 0.020 af (76% of inflow)
 Center-of-Mass det. time= 91.5 min (954.0 - 862.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	268.78'	1,071 cf	30.25'W x 57.95'L x 2.69'H Field A 4,722 cf Overall - 2,044 cf Embedded = 2,677 cf x 40.0% Voids
#2A	269.03'	1,942 cf	ACF R-Tank HD 1 x 460 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 460 Chambers in 20 Rows
		3,013 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	18.0" Round Culvert L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 269.03' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.06 cfs @ 12.60 hrs HW=269.22' TW=269.20' (Dynamic Tailwater)
 ↑1=Culvert (Outlet Controls 0.06 cfs @ 0.71 fps)

Pond RT2: R-Tanks 2 - Chamber Wizard Field A

Chamber Model = ACF R-Tank HD 1 (ACF Environmental R-Tank HD)

Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf

Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf

23 Chambers/Row x 2.35' Long = 53.95' Row Length +24.0" End Stone x 2 = 57.95' Base Length

20 Rows x 15.7" Wide + 24.0" Side Stone x 2 = 30.25' Base Width

3.0" Stone Base + 17.3" Chamber Height + 12.0" Stone Cover = 2.69' Field Height

460 Chambers x 4.2 cf = 1,942.0 cf Chamber Storage

460 Chambers x 4.4 cf = 2,044.2 cf Displacement

4,721.6 cf Field - 2,044.2 cf Chambers = 2,677.3 cf Stone x 40.0% Voids = 1,070.9 cf Stone Storage

Chamber Storage + Stone Storage = 3,013.0 cf = 0.069 af

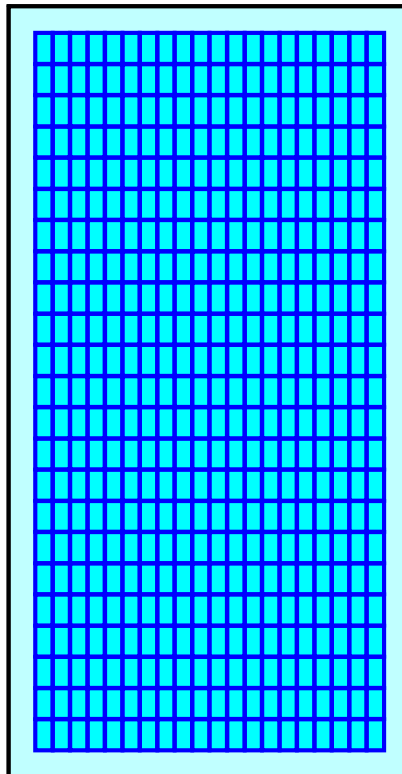
Overall Storage Efficiency = 63.8%

Overall System Size = 57.95' x 30.25' x 2.69'

460 Chambers

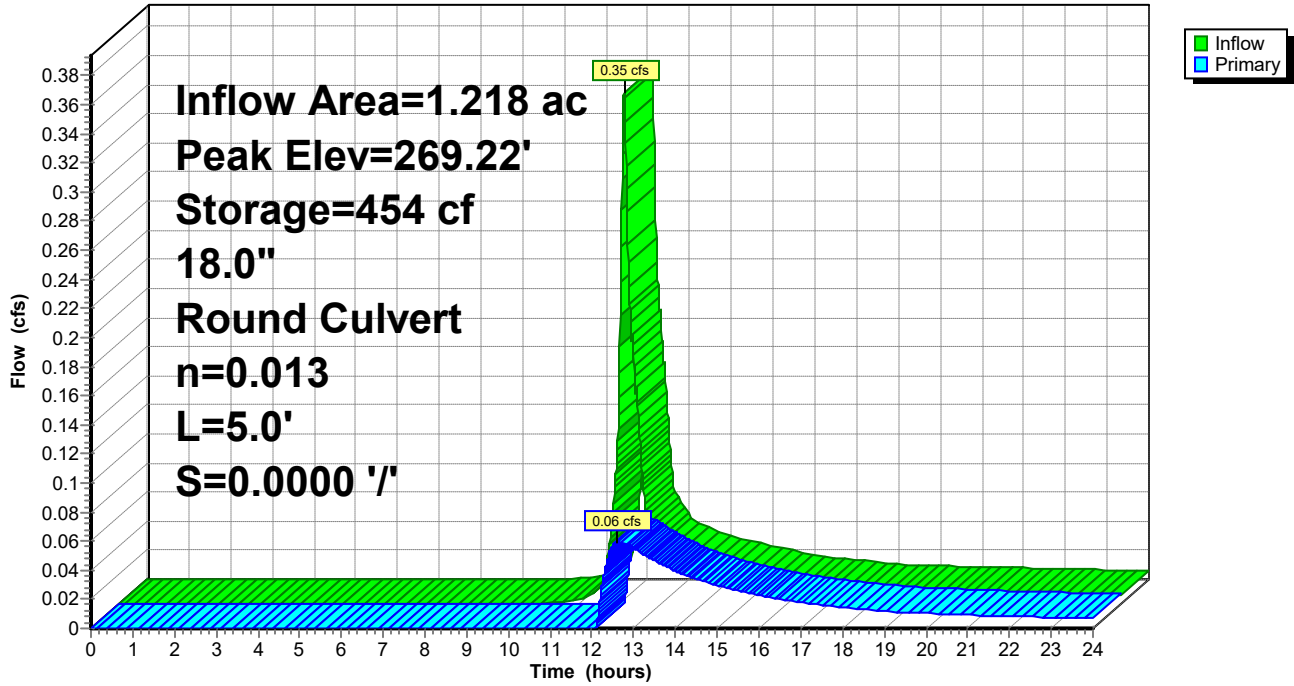
174.9 cy Field

99.2 cy Stone



Pond RT2: R-Tanks 2

Hydrograph



Summary for Pond RT3: R-Tanks 3

Inflow Area = 0.098 ac, 100.00% Impervious, Inflow Depth > 0.79" for 1-inch event
 Inflow = 0.09 cfs @ 12.08 hrs, Volume= 0.006 af
 Outflow = 0.04 cfs @ 12.27 hrs, Volume= 0.005 af, Atten= 56%, Lag= 11.2 min
 Primary = 0.04 cfs @ 12.27 hrs, Volume= 0.005 af
 Routed to Pond OSC2 : OCS-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 269.21' @ 12.27 hrs Surf.Area= 609 sf Storage= 124 cf

Plug-Flow detention time= 173.2 min calculated for 0.005 af (75% of inflow)
 Center-of-Mass det. time= 89.3 min (876.5 - 787.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	268.80'	491 cf	7.94'W x 76.72'L x 2.69'H Field A 1,640 cf Overall - 413 cf Embedded = 1,227 cf x 40.0% Voids
#2A	269.05'	393 cf	ACF R-Tank HD 1 x 93 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 93 Chambers in 3 Rows
		883 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	12.0" Round Culvert L= 43.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 269.03' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.04 cfs @ 12.27 hrs HW=269.21' TW=269.13' (Dynamic Tailwater)
 ↑1=Culvert (Barrel Controls 0.04 cfs @ 0.61 fps)

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Type III 24-hr 1-inch Rainfall=1.00"

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Pond RT3: R-Tanks 3 - Chamber Wizard Field A

Chamber Model = ACF R-Tank HD 1 (ACF Environmental R-Tank HD)

Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf

Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf

31 Chambers/Row x 2.35' Long = 72.72' Row Length +24.0" End Stone x 2 = 76.72' Base Length

3 Rows x 15.7" Wide + 24.0" Side Stone x 2 = 7.94' Base Width

3.0" Stone Base + 17.3" Chamber Height + 12.0" Stone Cover = 2.69' Field Height

93 Chambers x 4.2 cf = 392.6 cf Chamber Storage

93 Chambers x 4.4 cf = 413.3 cf Displacement

1,640.2 cf Field - 413.3 cf Chambers = 1,226.9 cf Stone x 40.0% Voids = 490.8 cf Stone Storage

Chamber Storage + Stone Storage = 883.4 cf = 0.020 af

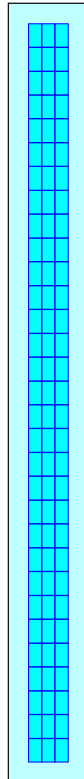
Overall Storage Efficiency = 53.9%

Overall System Size = 76.72' x 7.94' x 2.69'

93 Chambers

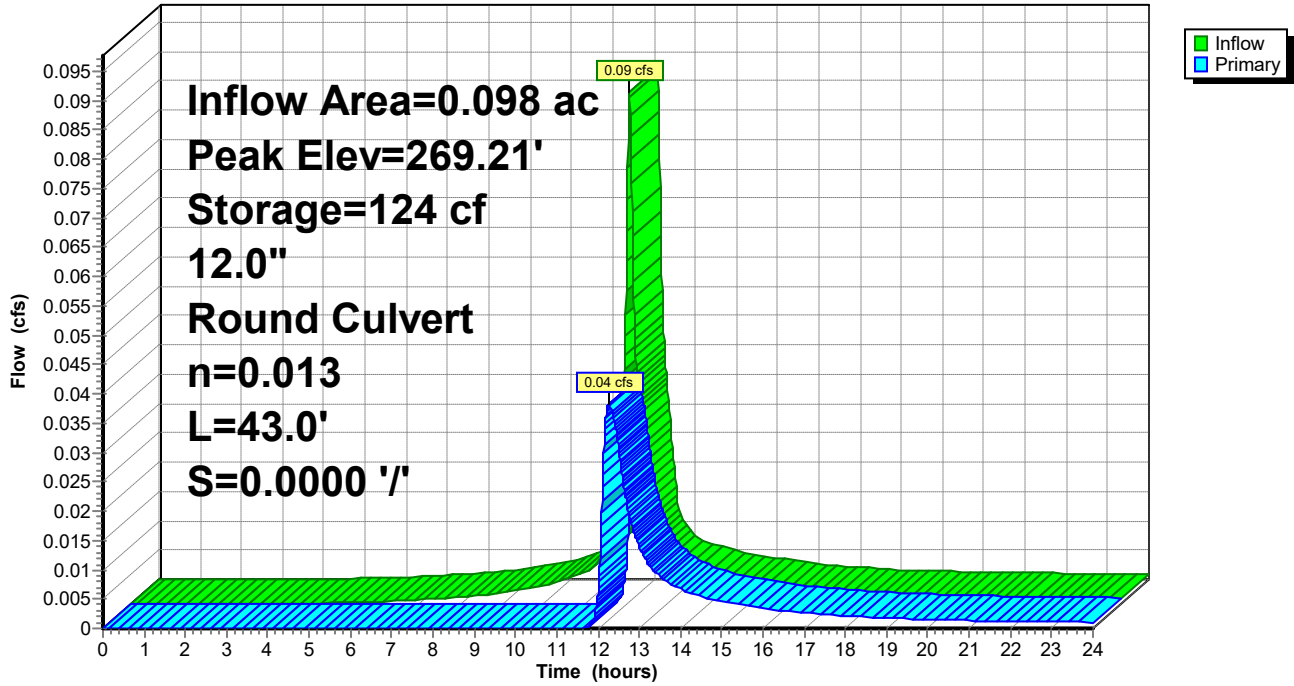
60.7 cy Field

45.4 cy Stone



Pond RT3: R-Tanks 3

Hydrograph



Summary for Pond SDEF1: SDEF1

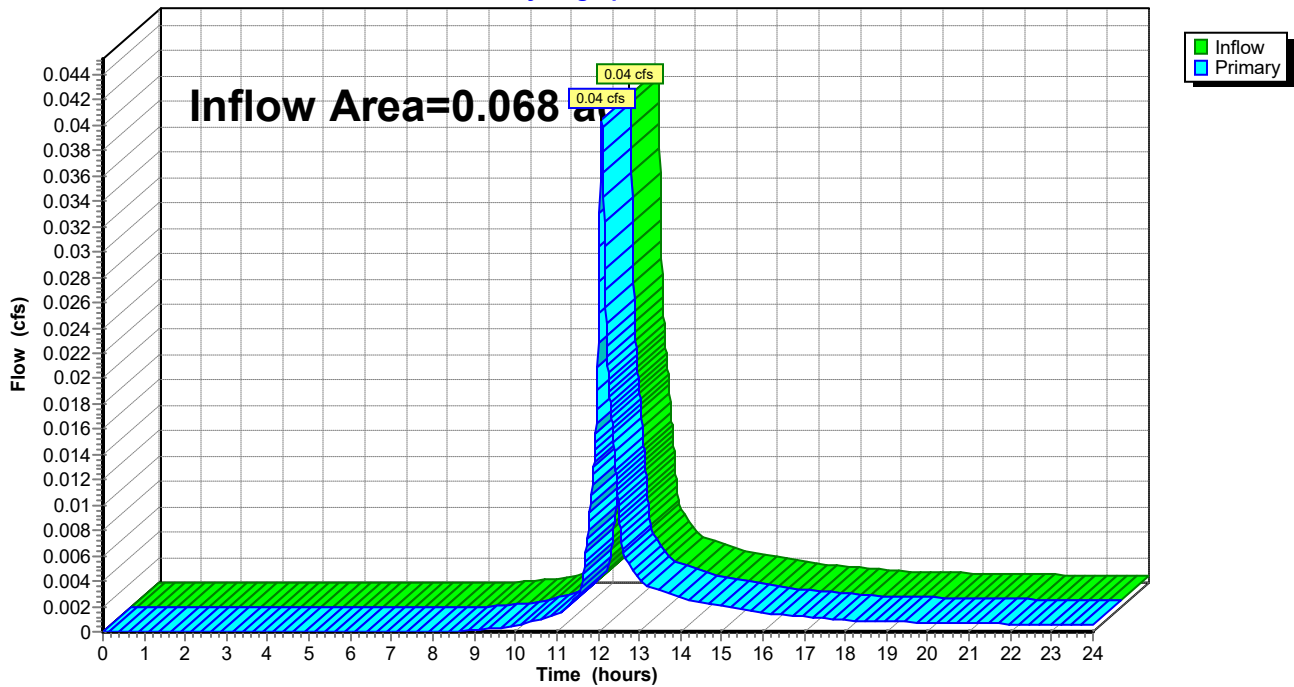
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.068 ac, 83.24% Impervious, Inflow Depth > 0.50" for 1-inch event
Inflow = 0.04 cfs @ 12.09 hrs, Volume= 0.003 af
Primary = 0.04 cfs @ 12.09 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 1R : Plunge pool

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Pond SDEF1: SDEF1

Hydrograph



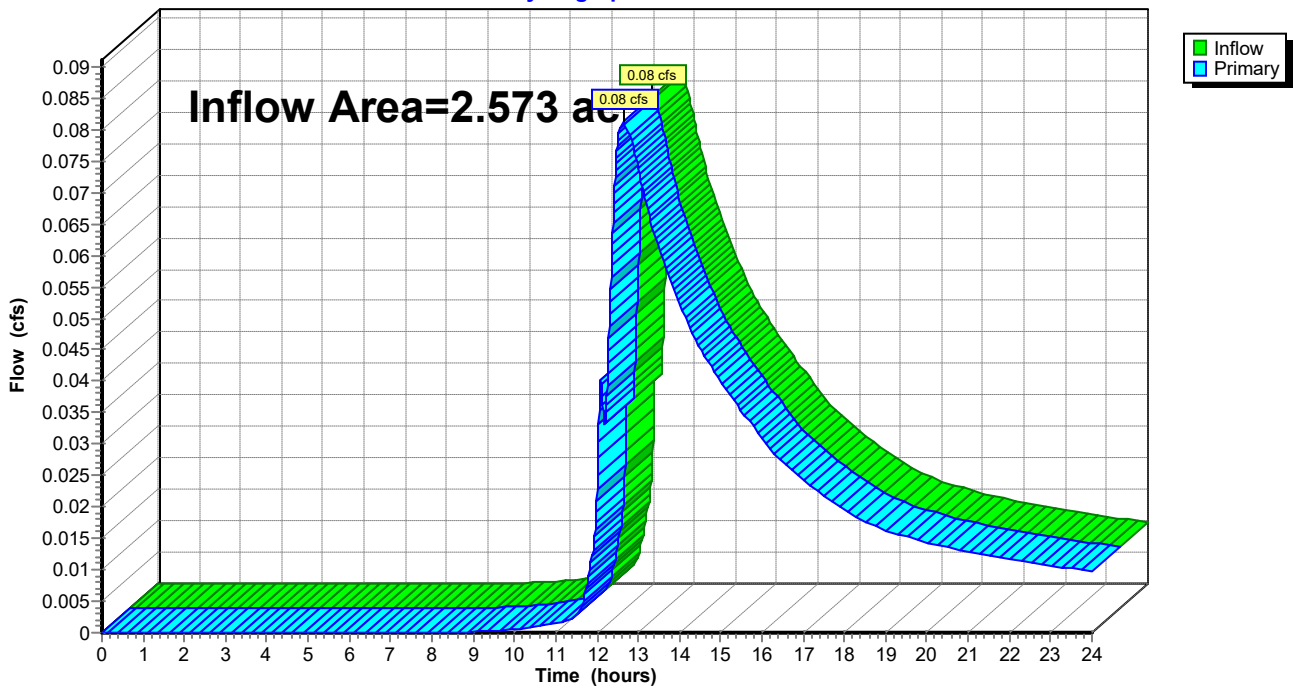
Summary for Link AP1: Wetlands

Inflow Area = 2.573 ac, 40.29% Impervious, Inflow Depth > 0.13" for 1-inch event
Inflow = 0.08 cfs @ 12.64 hrs, Volume= 0.028 af
Primary = 0.08 cfs @ 12.64 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 28P

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link AP1: Wetlands

Hydrograph



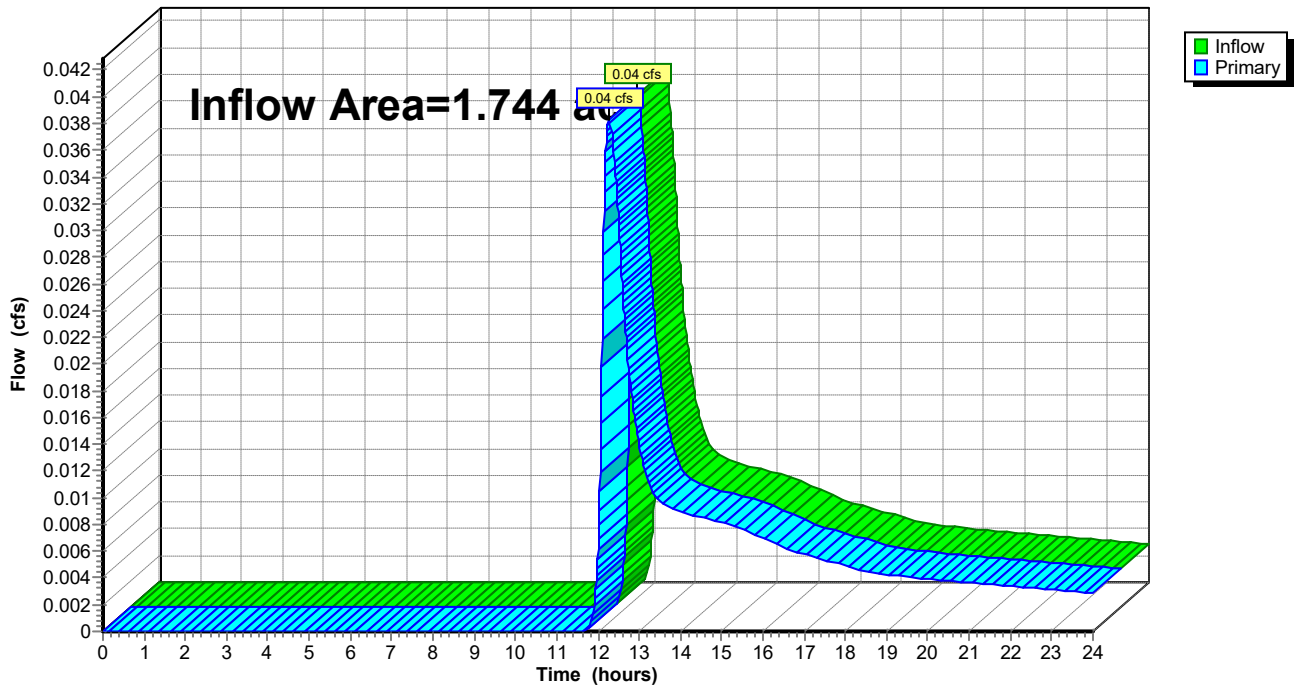
Summary for Link AP2: Stream

Inflow Area = 1.744 ac, 10.57% Impervious, Inflow Depth > 0.05" for 1-inch event
Inflow = 0.04 cfs @ 12.27 hrs, Volume= 0.007 af
Primary = 0.04 cfs @ 12.27 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link AP2: Stream

Hydrograph



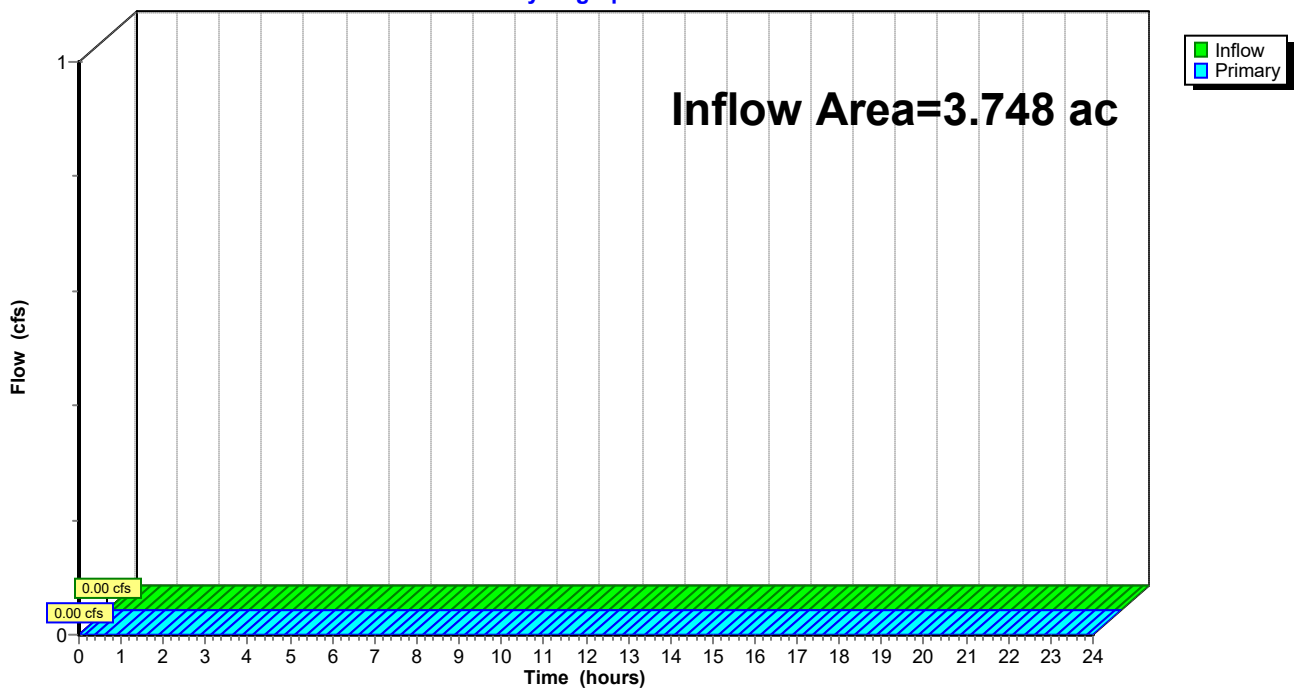
Summary for Link AP3:

Inflow Area = 3.748 ac, 18.11% Impervious, Inflow Depth = 0.00" for 1-inch event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 28P

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link AP3:

Hydrograph



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Type III 24-hr 2-yr Rainfall=3.10"

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1AS:	Runoff Area=8,449 sf 20.68% Impervious Runoff Depth>1.26" Tc=6.0 min CN=79 Runoff=0.28 cfs 0.020 af
Subcatchment 1BS: Existing parking lot	Runoff Area=26,395 sf 62.50% Impervious Runoff Depth>1.99" Tc=6.0 min CN=89 Runoff=1.41 cfs 0.100 af
Subcatchment 1CS: existing parking	Runoff Area=12,181 sf 68.08% Impervious Runoff Depth>2.07" Tc=6.0 min CN=90 Runoff=0.67 cfs 0.048 af
Subcatchment 1DS: existing lawn to	Runoff Area=21,304 sf 42.85% Impervious Runoff Depth>1.60" Tc=6.0 min CN=84 Runoff=0.92 cfs 0.065 af
Subcatchment 1ES: Access Road to Stone	Runoff Area=2,983 sf 83.24% Impervious Runoff Depth>2.44" Tc=6.0 min CN=94 Runoff=0.19 cfs 0.014 af
Subcatchment 1FS: West prop line	Runoff Area=8,099 sf 0.00% Impervious Runoff Depth>0.97" Tc=6.0 min CN=74 Runoff=0.20 cfs 0.015 af
Subcatchment 1GS: Roof to RFEF2	Runoff Area=3,515 sf 74.62% Impervious Runoff Depth>2.25" Tc=6.0 min CN=92 Runoff=0.21 cfs 0.015 af
Subcatchment 1HS: to Roof Dripline Filter	Runoff Area=2,510 sf 77.89% Impervious Runoff Depth>2.35" Tc=6.0 min CN=93 Runoff=0.15 cfs 0.011 af
Subcatchment 1IS: Roof to FP	Runoff Area=2,886 sf 84.37% Impervious Runoff Depth>2.44" Tc=6.0 min CN=94 Runoff=0.18 cfs 0.013 af
Subcatchment 1JS: wetland	Runoff Area=23,765 sf 0.00% Impervious Runoff Depth>1.25" Flow Length=594' Tc=25.5 min CN=79 Runoff=0.48 cfs 0.057 af
Subcatchment 2AS: roof to rdef1	Runoff Area=2,154 sf 100.00% Impervious Runoff Depth>2.87" Tc=6.0 min CN=98 Runoff=0.15 cfs 0.012 af
Subcatchment 2BS: roof to RDEF1	Runoff Area=2,117 sf 100.00% Impervious Runoff Depth>2.87" Tc=6.0 min CN=98 Runoff=0.15 cfs 0.012 af
Subcatchment 2CS: Remaining	Runoff Area=71,696 sf 5.24% Impervious Runoff Depth>0.91" Flow Length=631' Tc=31.0 min CN=73 Runoff=0.92 cfs 0.125 af
Subcatchment 3S: off site existing	Runoff Area=163,274 sf 18.11% Impervious Runoff Depth>0.59" Flow Length=594' Tc=25.5 min CN=66 Runoff=1.27 cfs 0.184 af
Reach 1R: Plunge pool	Inflow=0.39 cfs 0.052 af Outflow=0.39 cfs 0.052 af
Pond 1P: Detention Pond	Peak Elev=273.31' Storage=2,014 cf Inflow=0.92 cfs 0.065 af Outflow=0.04 cfs 0.023 af

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Type III 24-hr 2-yr Rainfall=3.10"

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Pond FP1: Focal Point 1	Peak Elev=272.43' Storage=76 cf Inflow=1.41 cfs 0.100 af Outflow=1.40 cfs 0.100 af
Pond FP2: Focal Point 2	Peak Elev=272.44' Storage=13 cf Inflow=0.18 cfs 0.013 af Outflow=0.16 cfs 0.013 af
Pond GUSF1: Grassed Underdrain Soil Filter 1	Peak Elev=272.30' Storage=839 cf Inflow=0.28 cfs 0.020 af Outflow=0.00 cfs 0.001 af
Pond OCS1: OCS-1	Peak Elev=269.85' Inflow=1.80 cfs 0.180 af Outflow=1.80 cfs 0.180 af
Pond OSC2: OCS-2	Peak Elev=269.28' Inflow=0.23 cfs 0.022 af Outflow=0.23 cfs 0.022 af
Pond RDEF1: RDEF-1	Inflow=0.29 cfs 0.023 af Primary=0.29 cfs 0.023 af
Pond RDEF2: RDEF-2	Inflow=0.21 cfs 0.015 af Primary=0.21 cfs 0.015 af
Pond RDEF3: RDEF-3	Inflow=0.15 cfs 0.011 af Primary=0.15 cfs 0.011 af
Pond RT1: R-Tanks 1	Peak Elev=269.94' Storage=265 cf Inflow=1.92 cfs 0.181 af 15.0" Round Culvert n=0.013 L=5.0' S=0.0000 '/' Outflow=1.80 cfs 0.180 af
Pond RT2: R-Tanks 2	Peak Elev=270.02' Storage=1,648 cf Inflow=2.44 cfs 0.176 af 18.0" Round Culvert n=0.013 L=5.0' S=0.0000 '/' Outflow=1.80 cfs 0.168 af
Pond RT3: R-Tanks 3	Peak Elev=269.42' Storage=208 cf Inflow=0.29 cfs 0.023 af 12.0" Round Culvert n=0.013 L=43.0' S=0.0000 '/' Outflow=0.23 cfs 0.022 af
Pond SDEF1: SDEF1	Inflow=0.19 cfs 0.014 af Primary=0.19 cfs 0.014 af
Link AP1: Wetlands	Inflow=2.39 cfs 0.289 af Primary=2.39 cfs 0.289 af
Link AP2: Stream	Inflow=1.02 cfs 0.147 af Primary=1.02 cfs 0.147 af
Link AP3:	Inflow=1.27 cfs 0.184 af Primary=1.27 cfs 0.184 af

Total Runoff Area = 8.065 ac Runoff Volume = 0.692 af Average Runoff Depth = 1.03"
76.44% Pervious = 6.165 ac 23.56% Impervious = 1.900 ac

Summary for Subcatchment 1AS:

Runoff = 0.28 cfs @ 12.09 hrs, Volume= 0.020 af, Depth> 1.26"

Routed to Pond GUSF1 : Grassed Underdrain Soil Filter 1

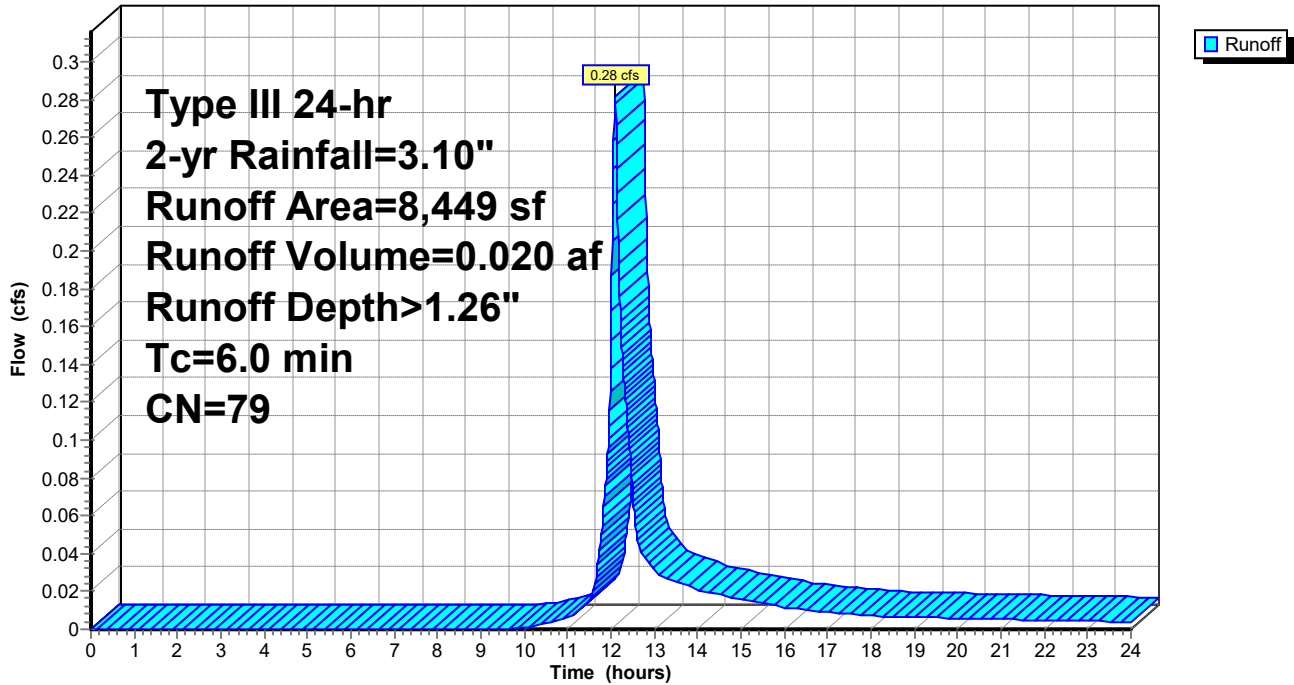
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
6,702	74	>75% Grass cover, Good, HSG C
1,747	98	Paved parking, HSG C
8,449	79	Weighted Average
6,702		79.32% Pervious Area
1,747		20.68% Impervious Area

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

Subcatchment 1AS:

Hydrograph



Summary for Subcatchment 1BS: Existing parking lot (fmr sub 2)

Runoff = 1.41 cfs @ 12.09 hrs, Volume= 0.100 af, Depth> 1.99"
 Routed to Pond FP1 : Focal Point 1

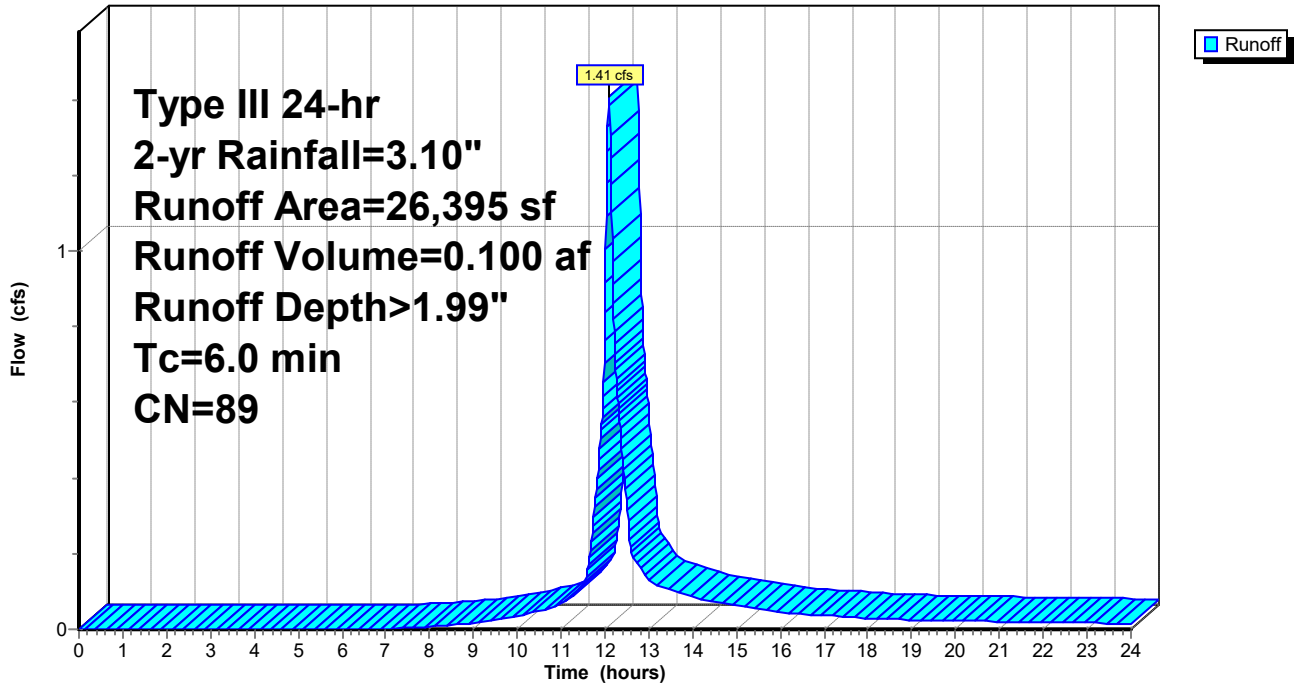
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
9,899	74	>75% Grass cover, Good, HSG C
* 16,496	98	parking and roofs
26,395	89	Weighted Average
9,899		37.50% Pervious Area
16,496		62.50% Impervious Area

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

Subcatchment 1BS: Existing parking lot (fmr sub 2)

Hydrograph



Summary for Subcatchment 1CS: existing parking

Runoff = 0.67 cfs @ 12.09 hrs, Volume= 0.048 af, Depth> 2.07"
 Routed to Pond RT2 : R-Tanks 2

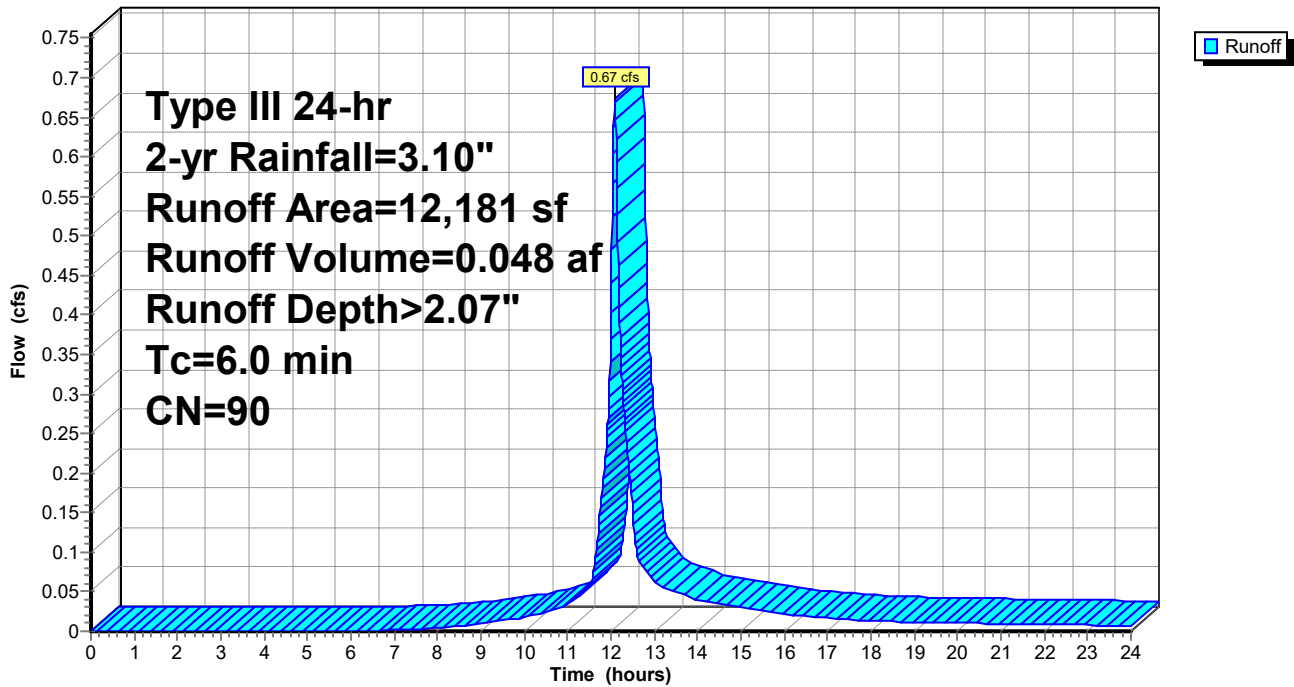
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
3,888	74	>75% Grass cover, Good, HSG C
* 8,293	98	parking and roofs
12,181	90	Weighted Average
3,888		31.92% Pervious Area
8,293		68.08% Impervious Area

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

Subcatchment 1CS: existing parking

Hydrograph



Summary for Subcatchment 1DS: existing lawn to culvert

Runoff = 0.92 cfs @ 12.09 hrs, Volume= 0.065 af, Depth> 1.60"
 Routed to Pond 1P : Detention Pond

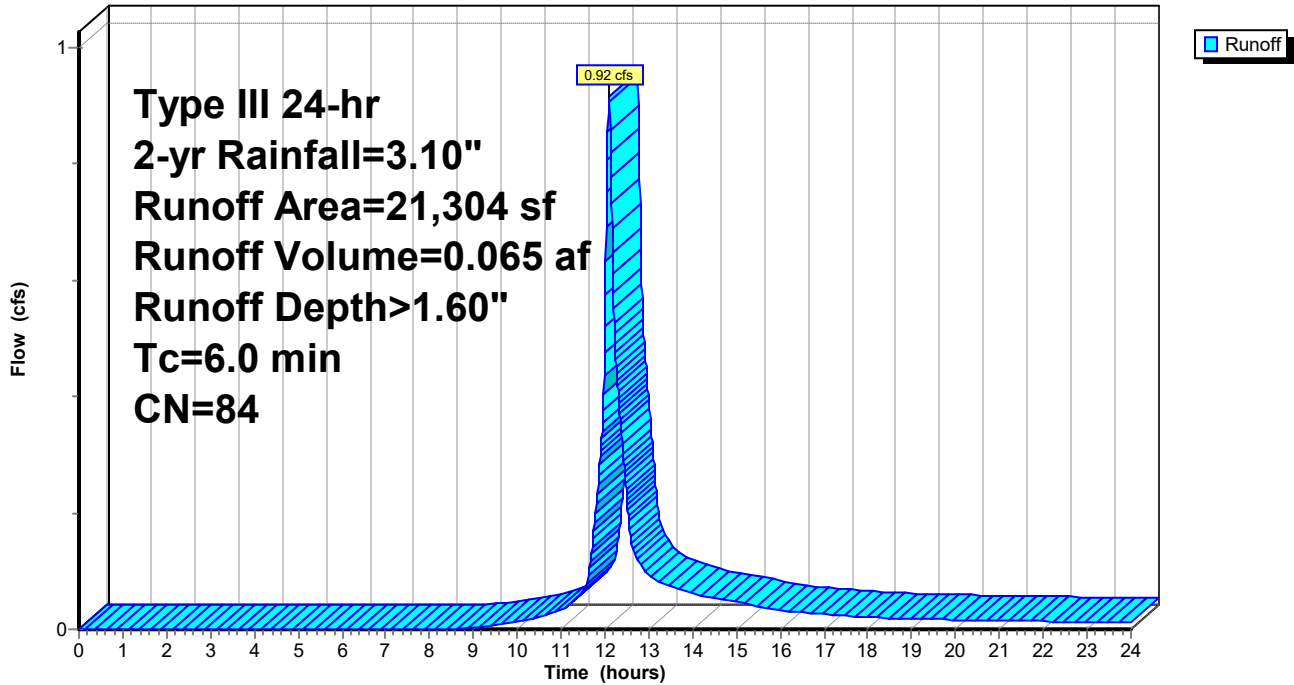
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.10"

	Area (sf)	CN	Description
*	9,129	98	roofs and paving
	12,175	74	>75% Grass cover, Good, HSG C
	21,304	84	Weighted Average
	12,175		57.15% Pervious Area
	9,129		42.85% Impervious Area

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

Subcatchment 1DS: existing lawn to culvert

Hydrograph



Summary for Subcatchment 1ES: Access Road to Stone Drip Edge Filter

Runoff = 0.19 cfs @ 12.08 hrs, Volume= 0.014 af, Depth> 2.44"
 Routed to Pond SDEF1 : SDEF1

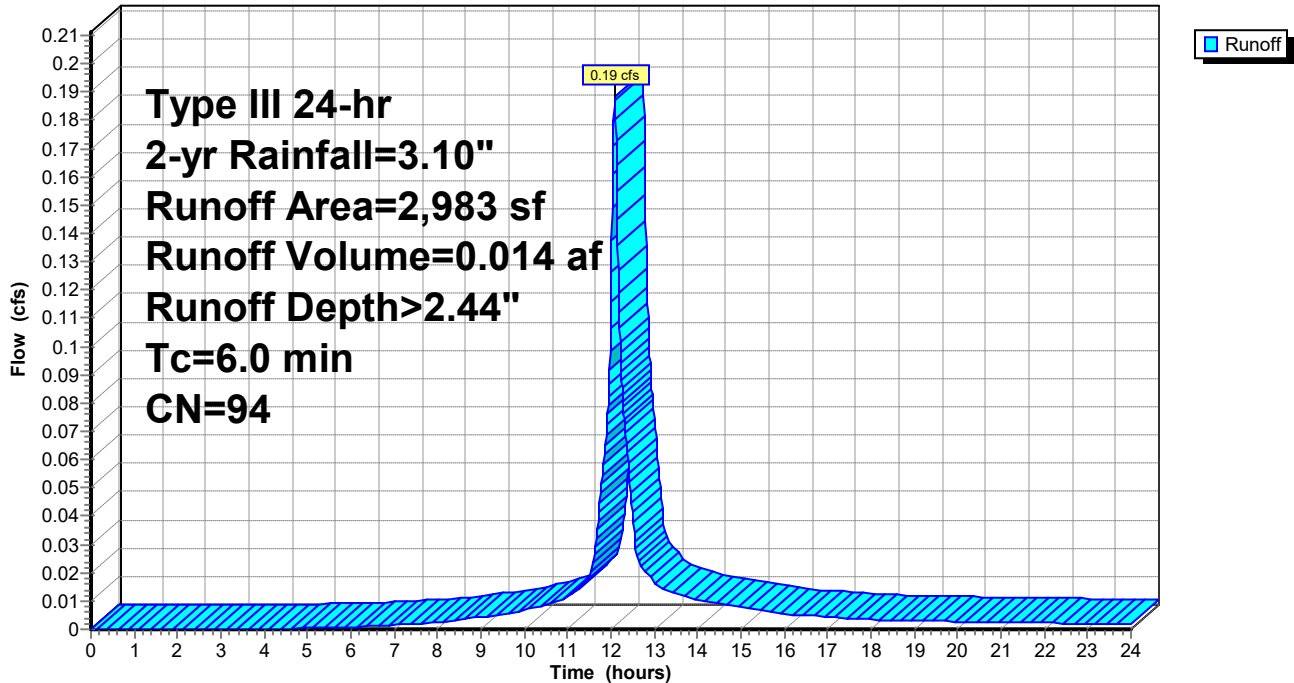
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
2,483	98	Paved parking, HSG C
500	74	>75% Grass cover, Good, HSG C
2,983	94	Weighted Average
500		16.76% Pervious Area
2,483		83.24% Impervious Area

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

Subcatchment 1ES: Access Road to Stone Drip Edge Filter

Hydrograph



Summary for Subcatchment 1FS: West prop line

Runoff = 0.20 cfs @ 12.10 hrs, Volume= 0.015 af, Depth> 0.97"

Routed to Reach 1R : Plunge pool

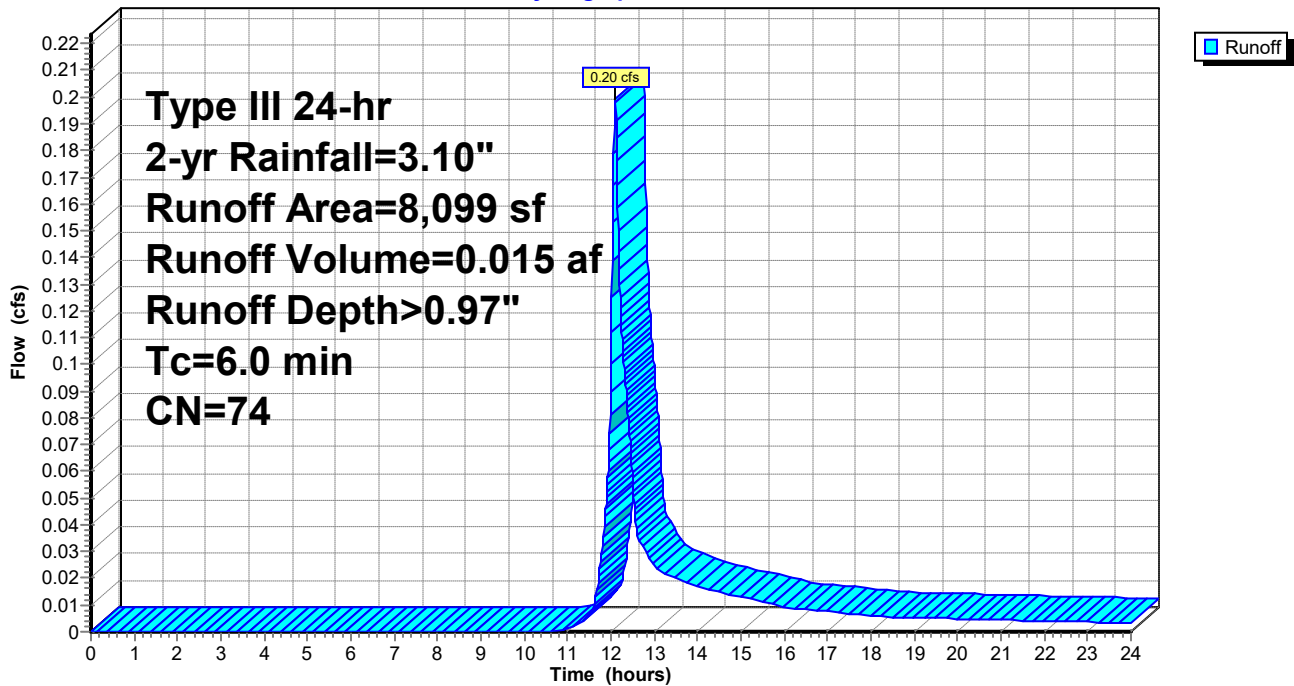
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
2,397	73	Woods, Fair, HSG C
5,702	74	>75% Grass cover, Good, HSG C
8,099	74	Weighted Average
8,099		100.00% Pervious Area

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

Subcatchment 1FS: West prop line

Hydrograph



Summary for Subcatchment 1GS: Roof to RFEF2

Runoff = 0.21 cfs @ 12.09 hrs, Volume= 0.015 af, Depth> 2.25"
 Routed to Pond RDEF2 : RDEF-2

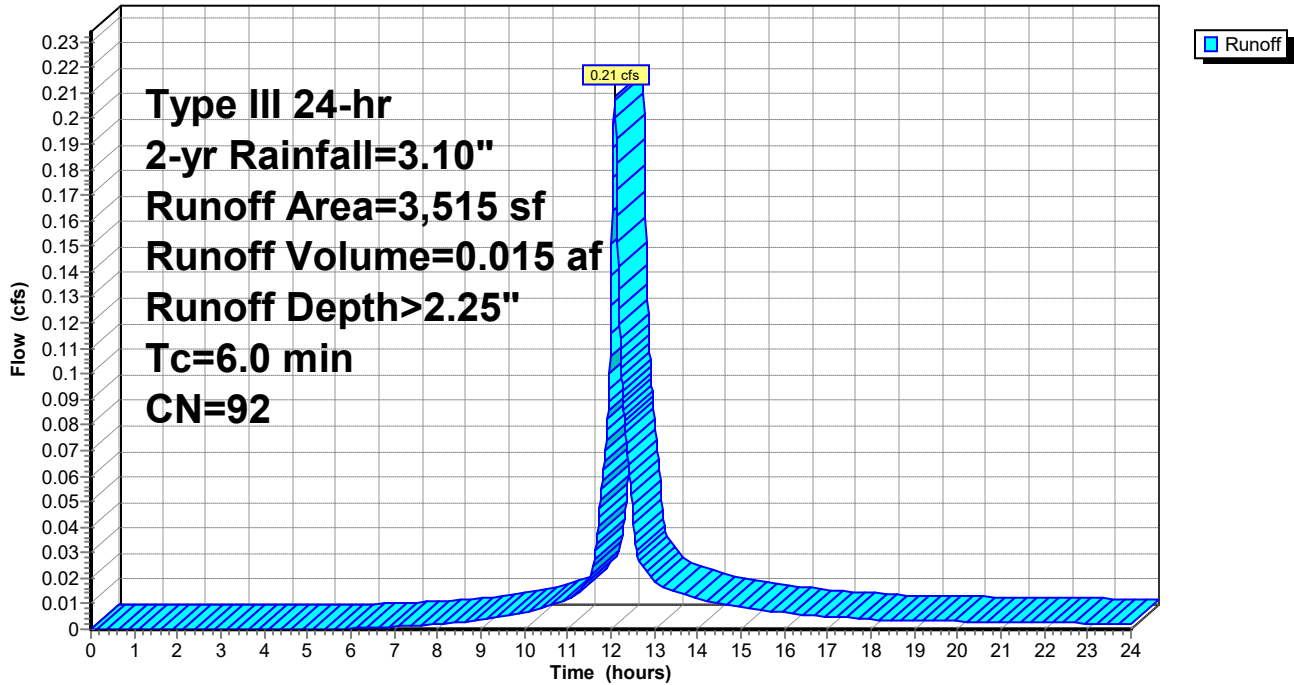
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
2,623	98	Roofs, HSG C
892	74	>75% Grass cover, Good, HSG C
3,515	92	Weighted Average
892		25.38% Pervious Area
2,623		74.62% Impervious Area

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

Subcatchment 1GS: Roof to RFEF2

Hydrograph



Summary for Subcatchment 1HS: to Roof Dripline Filter

Runoff = 0.15 cfs @ 12.09 hrs, Volume= 0.011 af, Depth> 2.35"
 Routed to Pond RDEF3 : RDEF-3

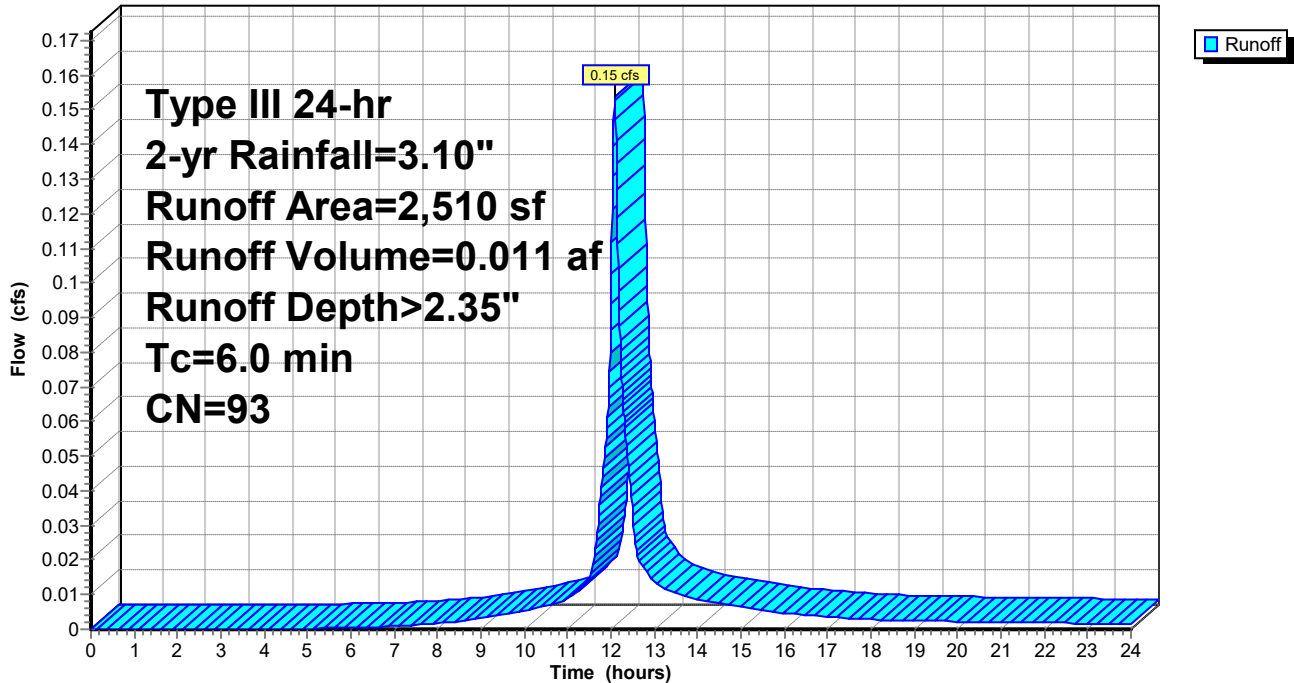
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
1,955	98	Roofs, HSG C
555	74	>75% Grass cover, Good, HSG C
2,510	93	Weighted Average
555		22.11% Pervious Area
1,955		77.89% Impervious Area

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

Subcatchment 1HS: to Roof Dripline Filter

Hydrograph



Summary for Subcatchment 1IS: Roof to FP

Runoff = 0.18 cfs @ 12.08 hrs, Volume= 0.013 af, Depth> 2.44"
 Routed to Pond FP2 : Focal Point 2

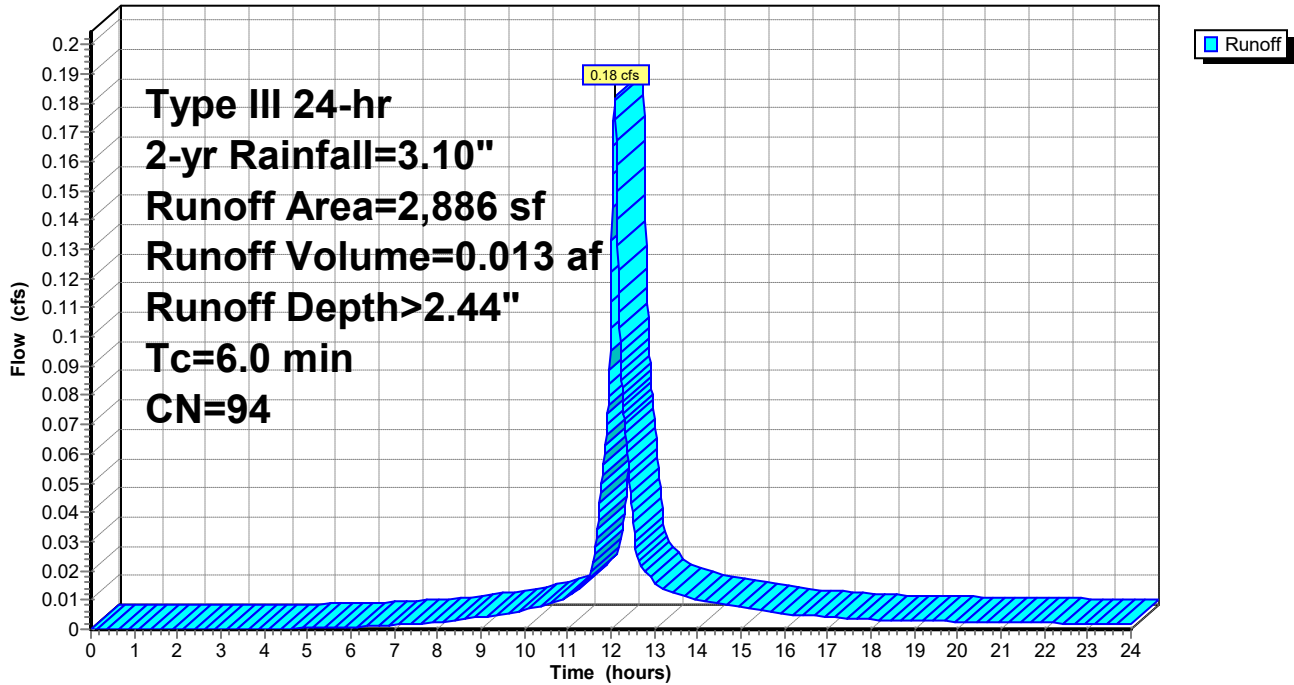
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
2,435	98	Roofs, HSG C
451	74	>75% Grass cover, Good, HSG C
2,886	94	Weighted Average
451		15.63% Pervious Area
2,435		84.37% Impervious Area

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

Subcatchment 1IS: Roof to FP

Hydrograph



Summary for Subcatchment 1JS: wetland

Runoff = 0.48 cfs @ 12.38 hrs, Volume= 0.057 af, Depth> 1.25"
 Routed to Link AP1 : Wetlands

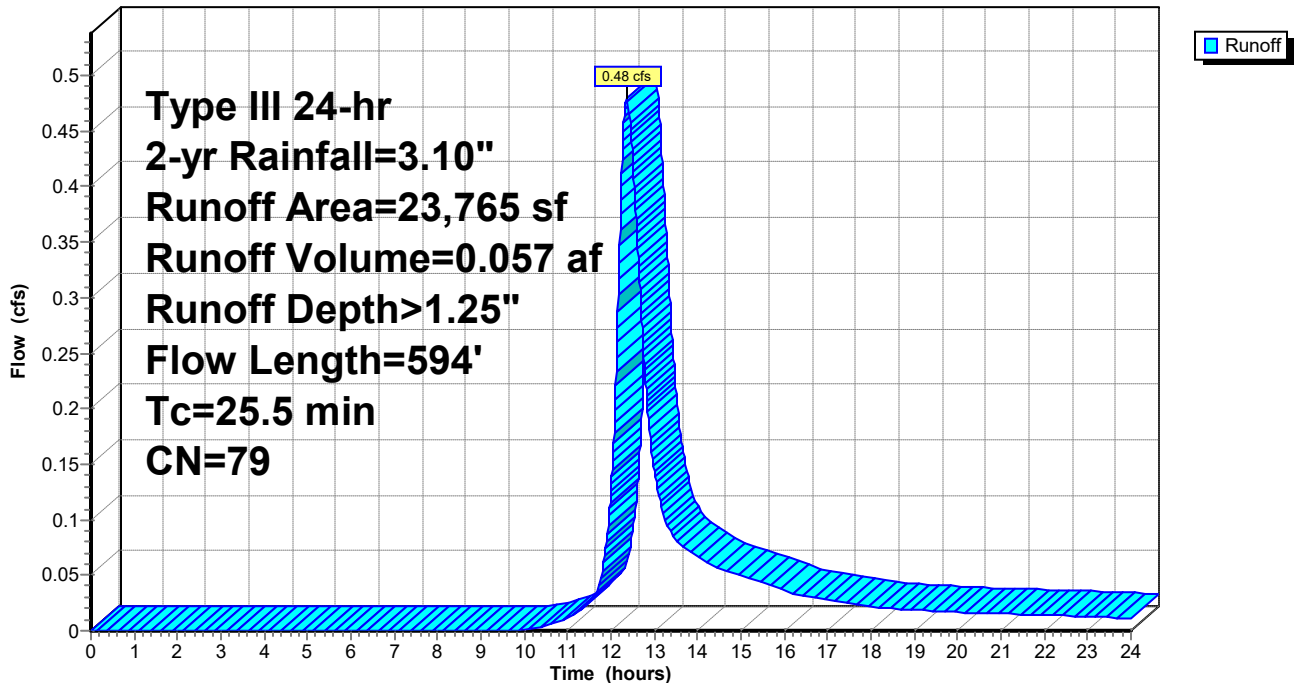
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
9,976	77	Woods, Good, HSG D
12,963	80	>75% Grass cover, Good, HSG D
826	74	>75% Grass cover, Good, HSG C
23,765	79	Weighted Average
23,765		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0240	0.08		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.10"
4.6	412	0.0460	1.50		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
0.2	82	0.0200	6.42	5.04	Pipe Channel, C-D 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
25.5	594	Total			

Subcatchment 1JS: wetland

Hydrograph



Summary for Subcatchment 2AS: roof to rdef1

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth> 2.87"
 Routed to Pond RDEF1 : RDEF-1

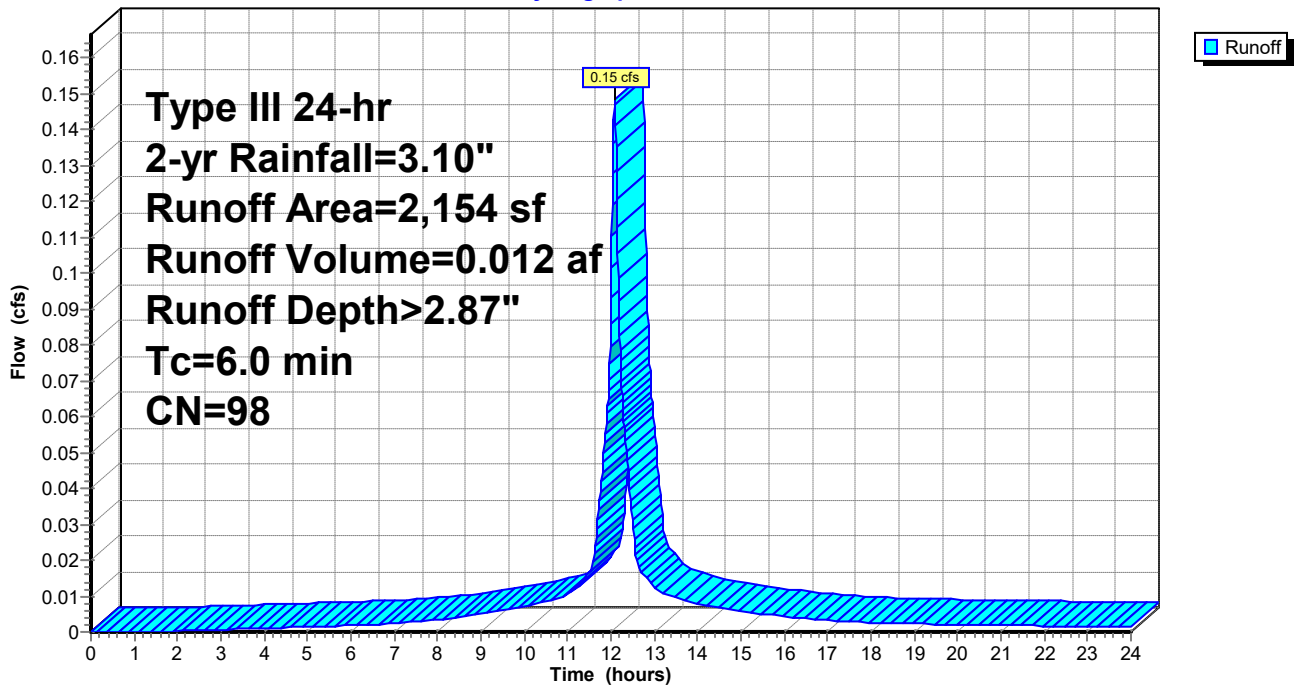
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
2,154	98	Roofs, HSG C
2,154		100.00% Impervious Area

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

Subcatchment 2AS: roof to rdef1

Hydrograph



Summary for Subcatchment 2BS: roof to RDEF1

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth> 2.87"
 Routed to Pond RDEF1 : RDEF-1

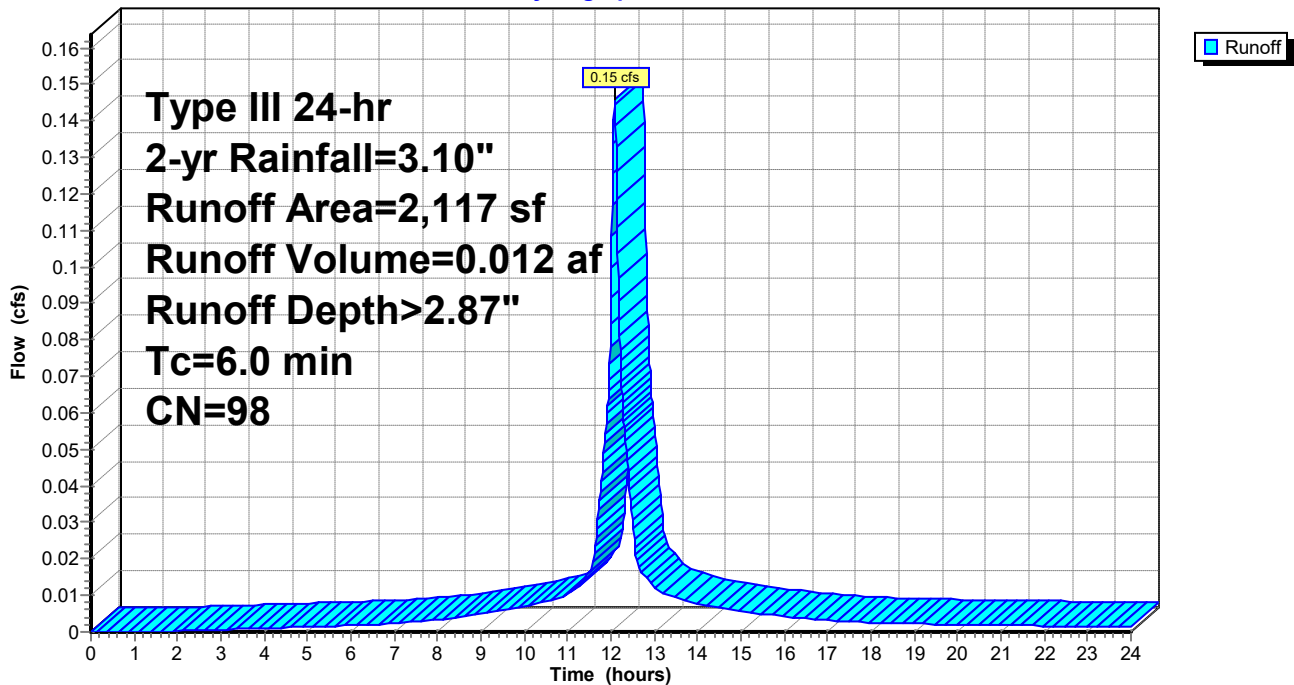
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
2,117	98	Roofs, HSG C
2,117		100.00% Impervious Area

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

Subcatchment 2BS: roof to RDEF1

Hydrograph



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Type III 24-hr 2-yr Rainfall=3.10"

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Summary for Subcatchment 2CS: Remaining

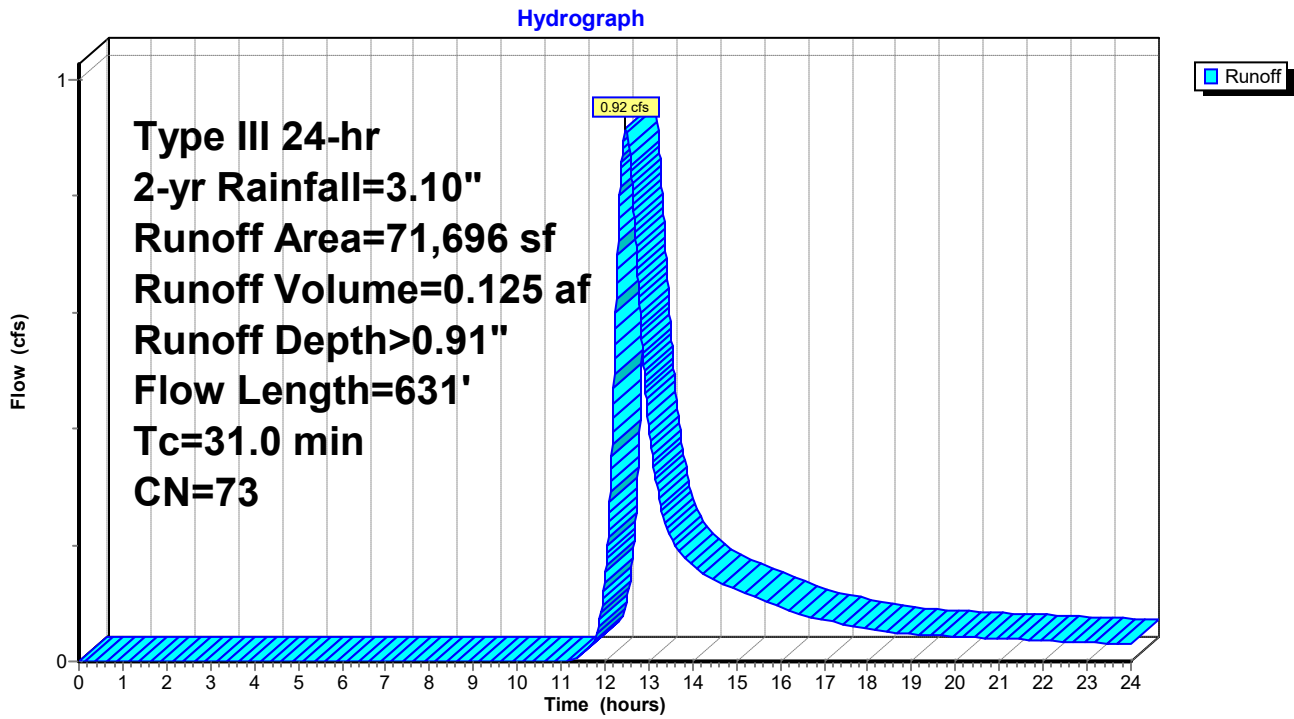
Runoff = 0.92 cfs @ 12.47 hrs, Volume= 0.125 af, Depth> 0.91"
 Routed to Link AP2 : Stream

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
4,917	70	Woods, Good, HSG C
21,832	77	Woods, Good, HSG D
12,740	55	Woods, Good, HSG B
3,074	98	Roofs, HSG C
684	98	Paved parking, HSG C
24,358	74	>75% Grass cover, Good, HSG C
4,091	80	>75% Grass cover, Good, HSG D
71,696	73	Weighted Average
67,938		94.76% Pervious Area
3,758		5.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.2	150	0.0300	0.10		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.10"
3.8	218	0.0360	0.95		Shallow Concentrated Flow, D-E Woodland Kv= 5.0 fps
1.0	263	0.0150	4.32	12.95	Channel Flow, C-D Area= 3.0 sf Perim= 5.0' r= 0.60' n= 0.030 Stream, clean & straight
31.0	631	Total			

Subcatchment 2CS: Remaining



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Type III 24-hr 2-yr Rainfall=3.10"

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Summary for Subcatchment 3S: off site existing

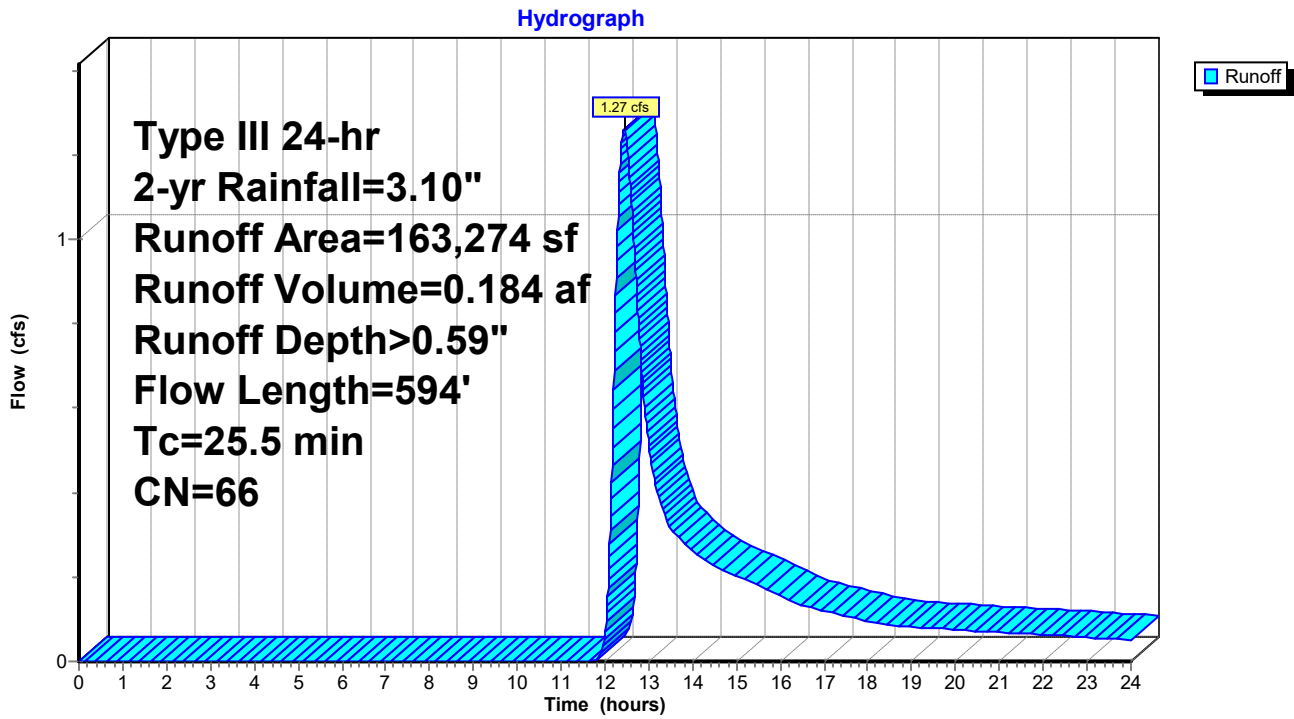
Runoff = 1.27 cfs @ 12.44 hrs, Volume= 0.184 af, Depth> 0.59"
 Routed to Link AP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
60,885	55	Woods, Good, HSG B
24,556	98	Paved parking, HSG C
5,016	98	Roofs, HSG C
62,012	61	>75% Grass cover, Good, HSG B
10,805	74	>75% Grass cover, Good, HSG C
163,274	66	Weighted Average
133,702		81.89% Pervious Area
29,572		18.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0240	0.08		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.10"
4.6	412	0.0460	1.50		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
0.2	82	0.0200	6.42	5.04	Pipe Channel, C-D 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
25.5	594	Total			

Subcatchment 3S: off site existing



Summary for Reach 1R: Plunge pool

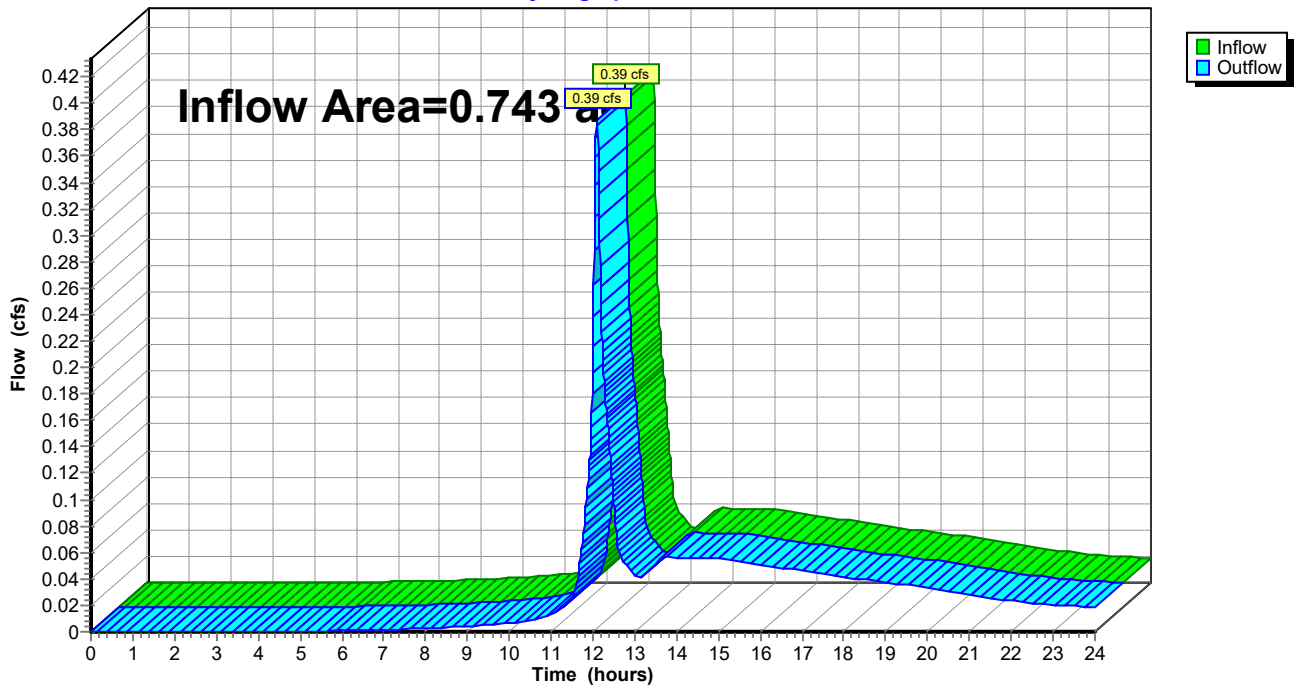
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.743 ac, 35.85% Impervious, Inflow Depth > 0.84" for 2-yr event
Inflow = 0.39 cfs @ 12.09 hrs, Volume= 0.052 af
Outflow = 0.39 cfs @ 12.09 hrs, Volume= 0.052 af, Atten= 0%, Lag= 0.0 min
Routed to Link AP1 : Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Reach 1R: Plunge pool

Hydrograph



Summary for Pond 1P: Detention Pond

Inflow Area = 0.489 ac, 42.85% Impervious, Inflow Depth > 1.60" for 2-yr event
 Inflow = 0.92 cfs @ 12.09 hrs, Volume= 0.065 af
 Outflow = 0.04 cfs @ 15.83 hrs, Volume= 0.023 af, Atten= 96%, Lag= 224.7 min
 Primary = 0.04 cfs @ 15.83 hrs, Volume= 0.023 af
 Routed to Reach 1R : Plunge pool

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 273.31' @ 15.83 hrs Surf.Area= 2,608 sf Storage= 2,014 cf

Plug-Flow detention time= 372.7 min calculated for 0.023 af (36% of inflow)
 Center-of-Mass det. time= 246.7 min (1,077.0 - 830.3)

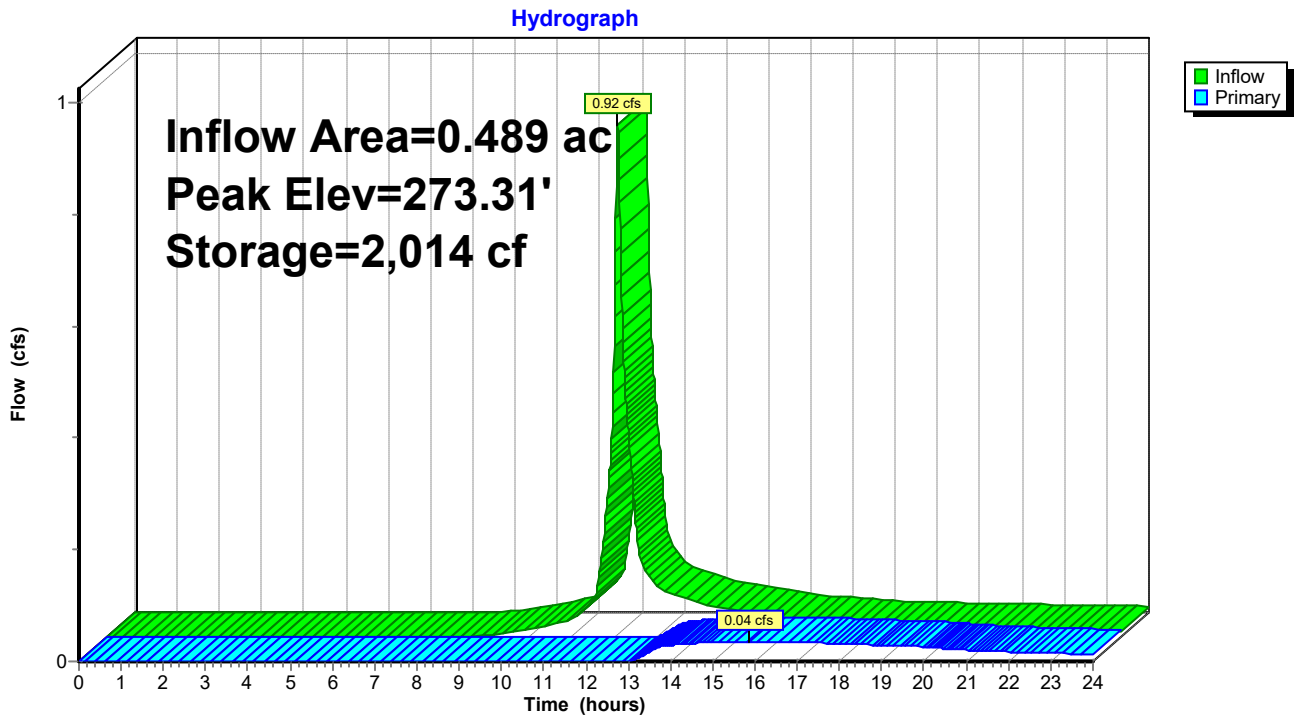
Volume	Invert	Avail.Storage	Storage Description			
#1	272.00'	3,826 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
272.00	239	111.0	0	0	239	
273.00	2,579	277.0	1,201	1,201	5,368	
274.00	2,671	436.0	2,625	3,826	14,397	

Device	Routing	Invert	Outlet Devices												
#1	Primary	271.48'	12.0" Round culvert L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 271.48' / 270.80' S= 0.0170 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf												
#2	Device 1	273.20'	2.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads												
#3	Primary	273.37'	140.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32												

Primary OutFlow Max=0.04 cfs @ 15.83 hrs HW=273.31' TW=0.00' (Dynamic Tailwater)

- 1=culvert (Passes 0.04 cfs of 3.45 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.04 cfs @ 1.62 fps)
- 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: Detention Pond



191.06051 SW-POST

Type III 24-hr 2-yr Rainfall=3.10"

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Summary for Pond FP1: Focal Point 1

Inflow Area = 0.606 ac, 62.50% Impervious, Inflow Depth > 1.99" for 2-yr event
 Inflow = 1.41 cfs @ 12.09 hrs, Volume= 0.100 af
 Outflow = 1.40 cfs @ 12.09 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.2 min
 Primary = 1.40 cfs @ 12.09 hrs, Volume= 0.100 af
 Routed to Pond RT2 : R-Tanks 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 272.43' @ 12.09 hrs Surf.Area= 213 sf Storage= 76 cf

Plug-Flow detention time= 0.6 min calculated for 0.100 af (100% of inflow)
 Center-of-Mass det. time= 0.6 min (812.3 - 811.7)

Volume	Invert	Avail.Storage	Storage Description
#1	271.78'	193 cf	Custom Stage Data (Irregular) Listed below (Recalc) 6.40'W x 10.00'L x 2.25'H FocalPoint 144 cf Overall x 20.0% Voids
#2	271.73'	29 cf	
		222 cf	Total Available Storage

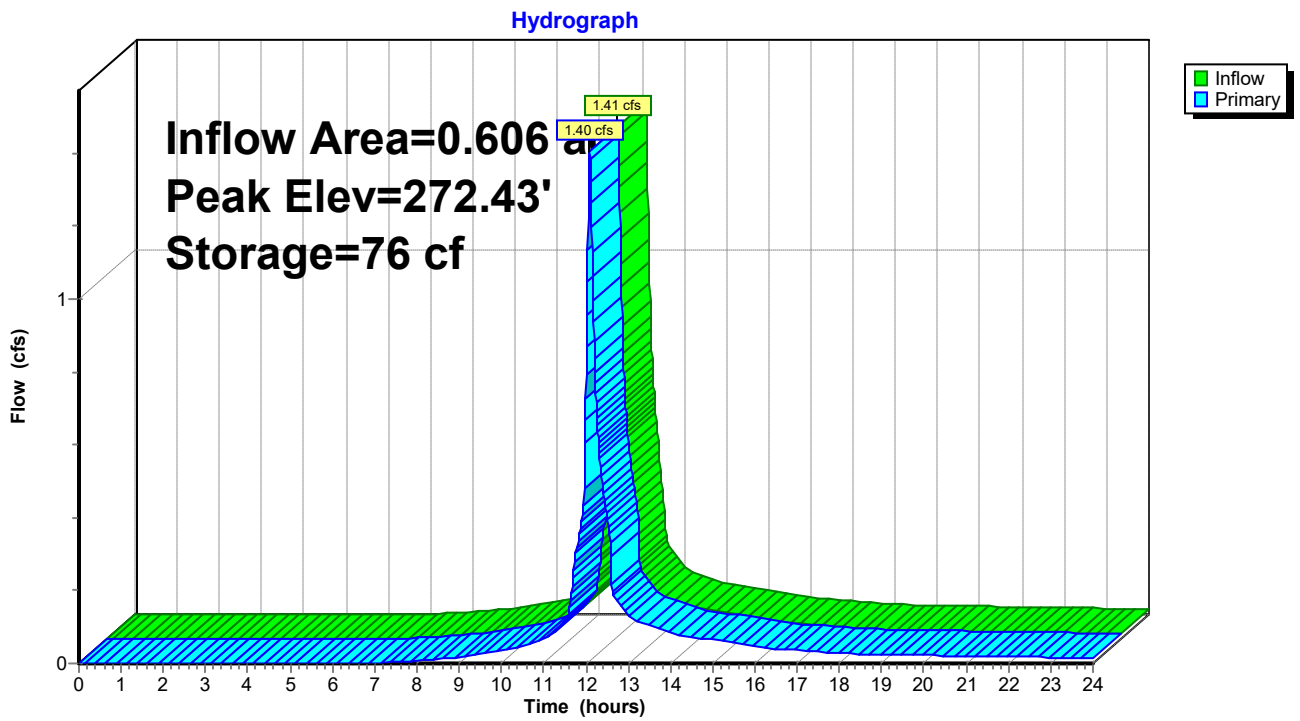
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
271.78	64	38.0	0	0	64
272.28	128	48.0	47	47	136
272.78	209	60.0	83	131	242
273.00	250	64.0	50	181	284
273.05	251	65.0	13	193	295

Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	15.0" Round Culvert L= 13.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 269.03' S= 0.0000 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	272.30'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	271.73'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'

Primary OutFlow Max=1.40 cfs @ 12.09 hrs HW=272.43' TW=269.88' (Dynamic Tailwater)

- ↑ 1=Culvert (Passes 1.40 cfs of 7.45 cfs potential flow)
- ↑ 2=Orifice/Grate (Weir Controls 0.91 cfs @ 1.16 fps)
- ↑ 3=Exfiltration (Exfiltration Controls 0.49 cfs)

Pond FP1: Focal Point 1



191.06051 SW-POST

Type III 24-hr 2-yr Rainfall=3.10"

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Summary for Pond FP2: Focal Point 2

Inflow Area = 0.066 ac, 84.37% Impervious, Inflow Depth > 2.44" for 2-yr event
 Inflow = 0.18 cfs @ 12.08 hrs, Volume= 0.013 af
 Outflow = 0.16 cfs @ 12.13 hrs, Volume= 0.013 af, Atten= 11%, Lag= 2.5 min
 Primary = 0.16 cfs @ 12.13 hrs, Volume= 0.013 af
 Routed to Pond RT1 : R-Tanks 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 272.44' @ 12.13 hrs Surf.Area= 70 sf Storage= 13 cf

Plug-Flow detention time= 0.5 min calculated for 0.013 af (100% of inflow)
 Center-of-Mass det. time= 0.5 min (788.1 - 787.6)

Volume	Invert	Avail.Storage	Storage Description
#1	272.09'	65 cf	Custom Stage Data (Irregular) Listed below (Recalc) 2.30'W x 9.40'L x 2.25'H FocalPoint
#2	272.09'	10 cf	
		75 cf	Total Available Storage

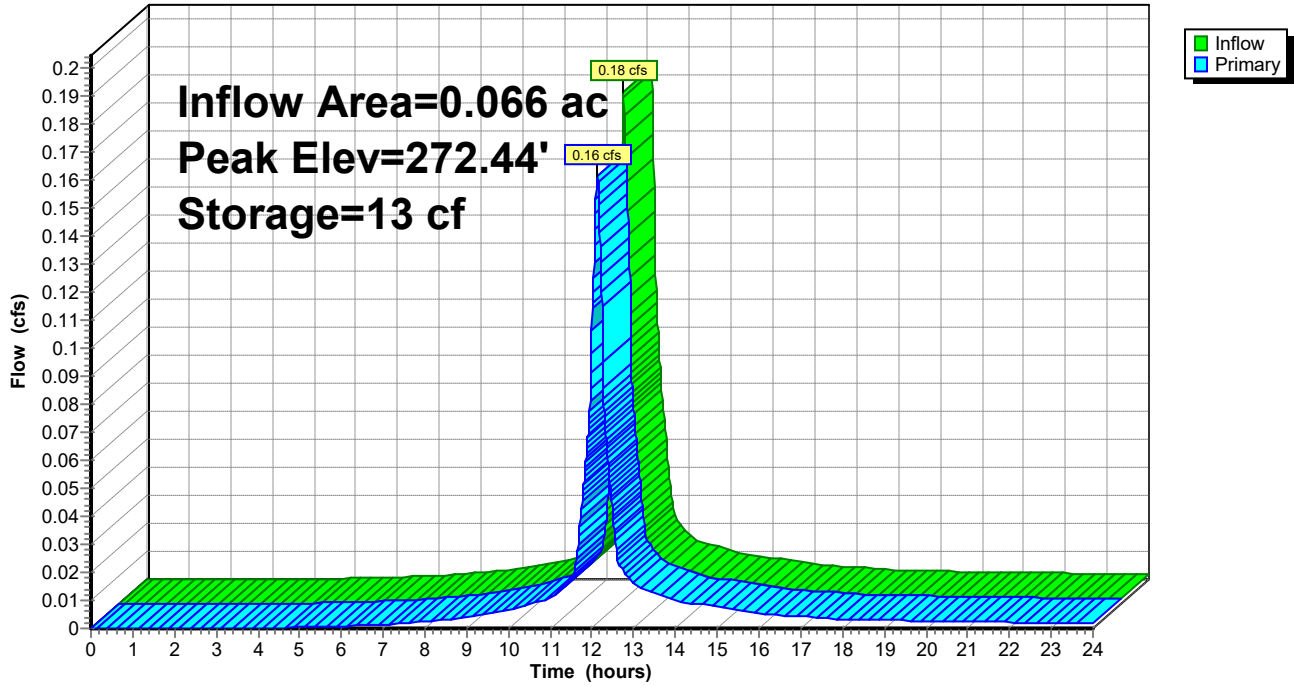
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
272.09	21	23.0	0	0	21
272.59	63	32.0	20	20	63
273.02	111	40.0	37	57	111
273.09	120	42.0	8	65	124

Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	12.0" Round Culvert L= 4.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 269.03' S= 0.0000 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	273.00'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	272.09'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'

Primary OutFlow Max=0.16 cfs @ 12.13 hrs HW=272.44' TW=269.86' (Dynamic Tailwater)
 1=Culvert (Passes 0.16 cfs of 4.80 cfs potential flow)
 2=Orifice/Grate (Controls 0.00 cfs)
 3=Exfiltration (Exfiltration Controls 0.16 cfs)

Pond FP2: Focal Point 2

Hydrograph



191.06051 SW-POST

Type III 24-hr 2-yr Rainfall=3.10"

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Summary for Pond GUSF1: Grassed Underdrain Soil Filter 1

Inflow Area = 0.194 ac, 20.68% Impervious, Inflow Depth > 1.26" for 2-yr event
 Inflow = 0.28 cfs @ 12.09 hrs, Volume= 0.020 af
 Outflow = 0.00 cfs @ 21.79 hrs, Volume= 0.001 af, Atten= 98%, Lag= 582.1 min
 Primary = 0.00 cfs @ 21.79 hrs, Volume= 0.001 af
 Routed to Pond RT2 : R-Tanks 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 272.30' @ 21.79 hrs Surf.Area= 2,125 sf Storage= 839 cf
 Flood Elev= 273.30' Surf.Area= 2,449 sf Storage= 1,745 cf

Plug-Flow detention time= 671.0 min calculated for 0.001 af (6% of inflow)
 Center-of-Mass det. time= 499.9 min (1,346.8 - 846.9)

Volume	Invert	Avail.Storage	Storage Description
#1	271.80'	1,402 cf	GUSF1 (Irregular) Listed below (Recalc)
#2	269.04'	344 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		1,745 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
271.80	424	109.0	0	0	424
272.30	1,666	212.0	488	488	3,056
272.80	1,992	221.0	913	1,402	3,385

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
269.04	457	0.0	0	0
269.05	457	40.0	2	2
269.79	457	40.0	135	137
269.80	457	30.0	1	138
270.29	457	30.0	67	206
270.30	457	20.0	1	207
271.80	457	20.0	137	344

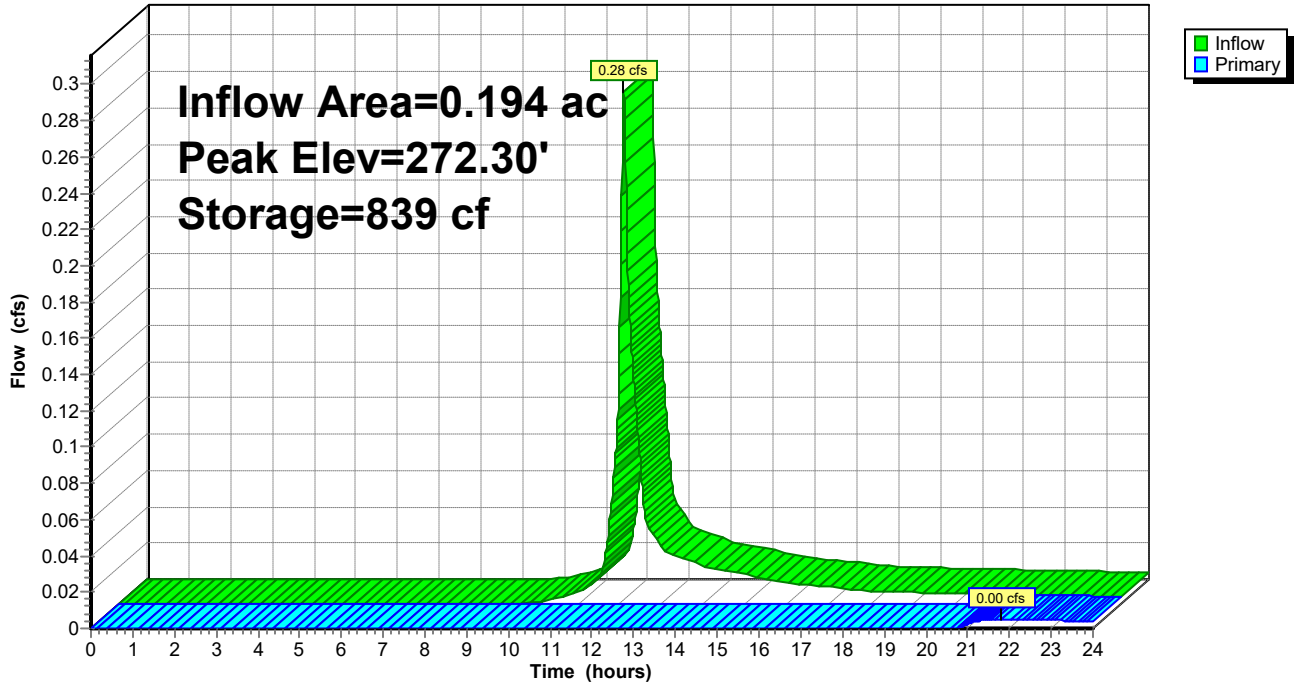
Device	Routing	Invert	Outlet Devices
#1	Primary	270.40'	12.0" Round Culvert L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 270.40' / 270.06' S= 0.0170 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	272.30'	24.0" Horiz. Beehive Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 21.79 hrs HW=272.30' TW=269.18' (Dynamic Tailwater)

- ↑ **1=Culvert** (Passes 0.00 cfs of 3.54 cfs potential flow)
- ↑ **2=Beehive Overflow** (Weir Controls 0.00 cfs @ 0.20 fps)

Pond GUSF1: Grassed Underdrain Soil Filter 1

Hydrograph



Summary for Pond OCS1: OCS-1

Inflow Area = 1.284 ac, 59.98% Impervious, Inflow Depth > 1.68" for 2-yr event
 Inflow = 1.80 cfs @ 12.21 hrs, Volume= 0.180 af
 Outflow = 1.80 cfs @ 12.21 hrs, Volume= 0.180 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.80 cfs @ 12.21 hrs, Volume= 0.180 af
 Routed to Link AP1 : Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 269.85' @ 12.21 hrs
 Flood Elev= 271.00'

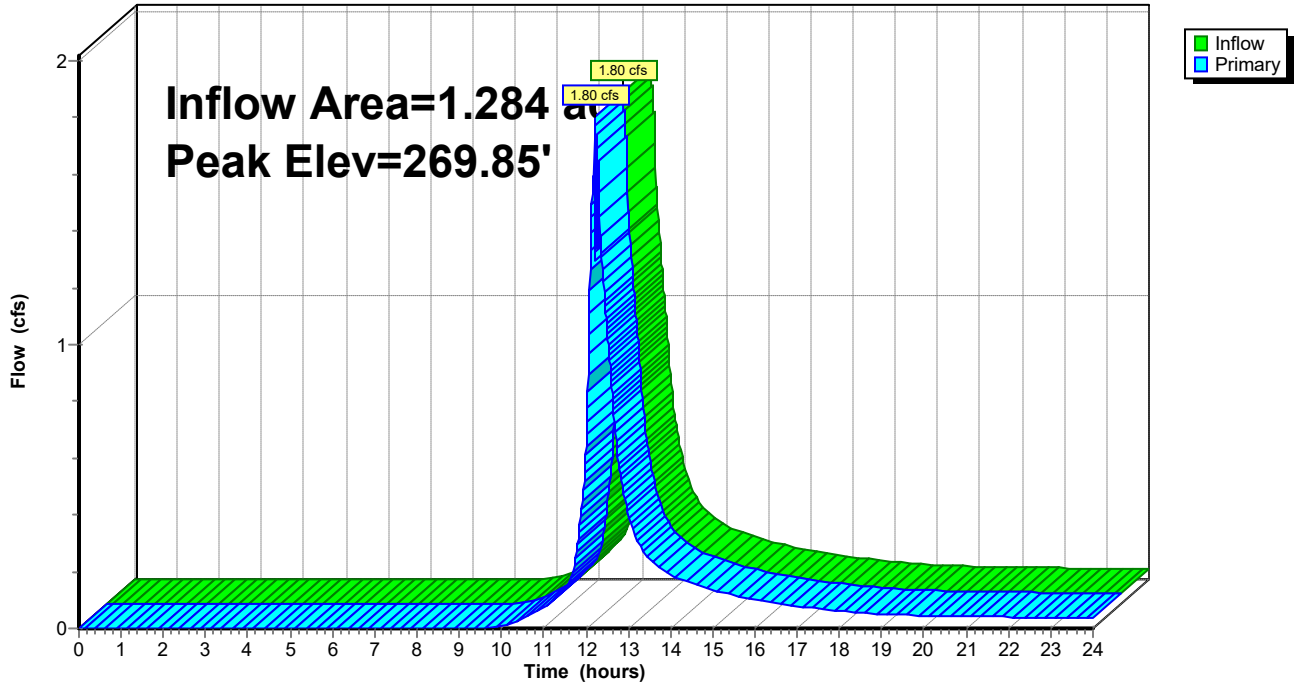
Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	15.0" Round Culvert L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 268.50' S= 0.0212 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	270.47'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Device 1	269.03'	30.0" W x 2.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	269.80'	30.0" W x 3.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.79 cfs @ 12.21 hrs HW=269.85' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 1.79 cfs of 2.06 cfs potential flow)
- 2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)
- 3=Orifice/Grate (Orifice Controls 1.72 cfs @ 4.12 fps)
- 4=Orifice/Grate (Orifice Controls 0.08 cfs @ 0.68 fps)

Pond OCS1: OCS-1

Hydrograph



Summary for Pond OSC2: OCS-2

Inflow Area = 0.098 ac, 100.00% Impervious, Inflow Depth > 2.64" for 2-yr event
 Inflow = 0.23 cfs @ 12.15 hrs, Volume= 0.022 af
 Outflow = 0.23 cfs @ 12.15 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.23 cfs @ 12.15 hrs, Volume= 0.022 af
 Routed to Link AP2 : Stream

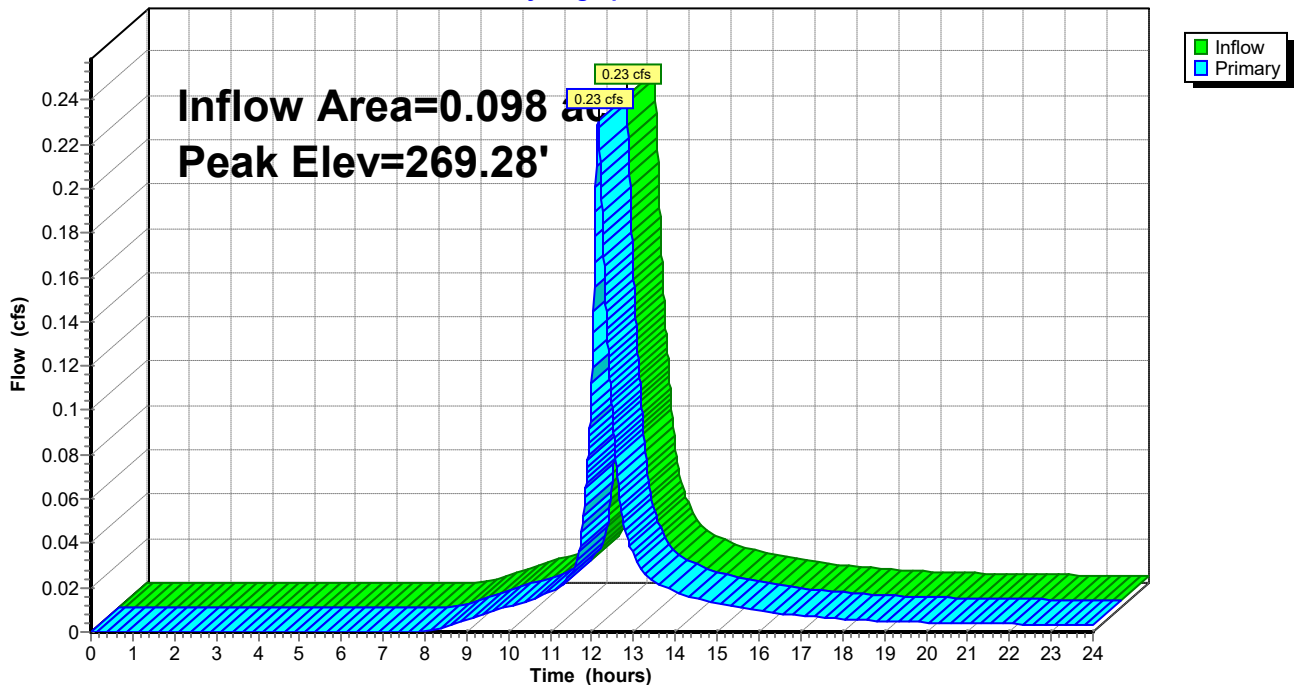
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 269.28' @ 12.15 hrs
 Flood Elev= 270.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	15.0" Round Culvert L= 74.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 268.50' S= 0.0072 ' S= 0.0072 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	270.50'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Device 1	269.03'	12.0" W x 6.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.23 cfs @ 12.15 hrs HW=269.28' TW=0.00' (Dynamic Tailwater)
 1=Culvert (Inlet Controls 0.23 cfs @ 1.34 fps)
 2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)
 3=Orifice/Grate (Passes 0.23 cfs of 0.40 cfs potential flow)

Pond OSC2: OCS-2

Hydrograph



Summary for Pond RDEF1: RDEF-1

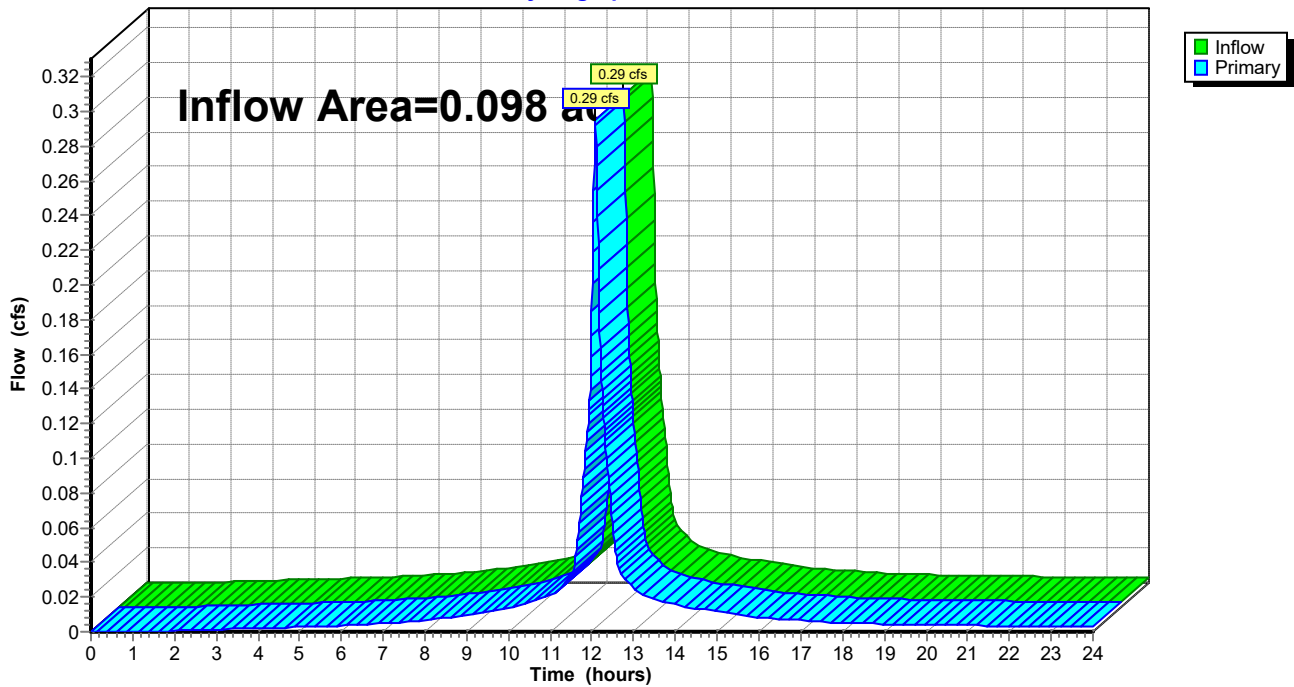
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.098 ac, 100.00% Impervious, Inflow Depth > 2.87" for 2-yr event
Inflow = 0.29 cfs @ 12.08 hrs, Volume= 0.023 af
Primary = 0.29 cfs @ 12.08 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min
Routed to Pond RT3 : R-Tanks 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Pond RDEF1: RDEF-1

Hydrograph



Summary for Pond RDEF2: RDEF-2

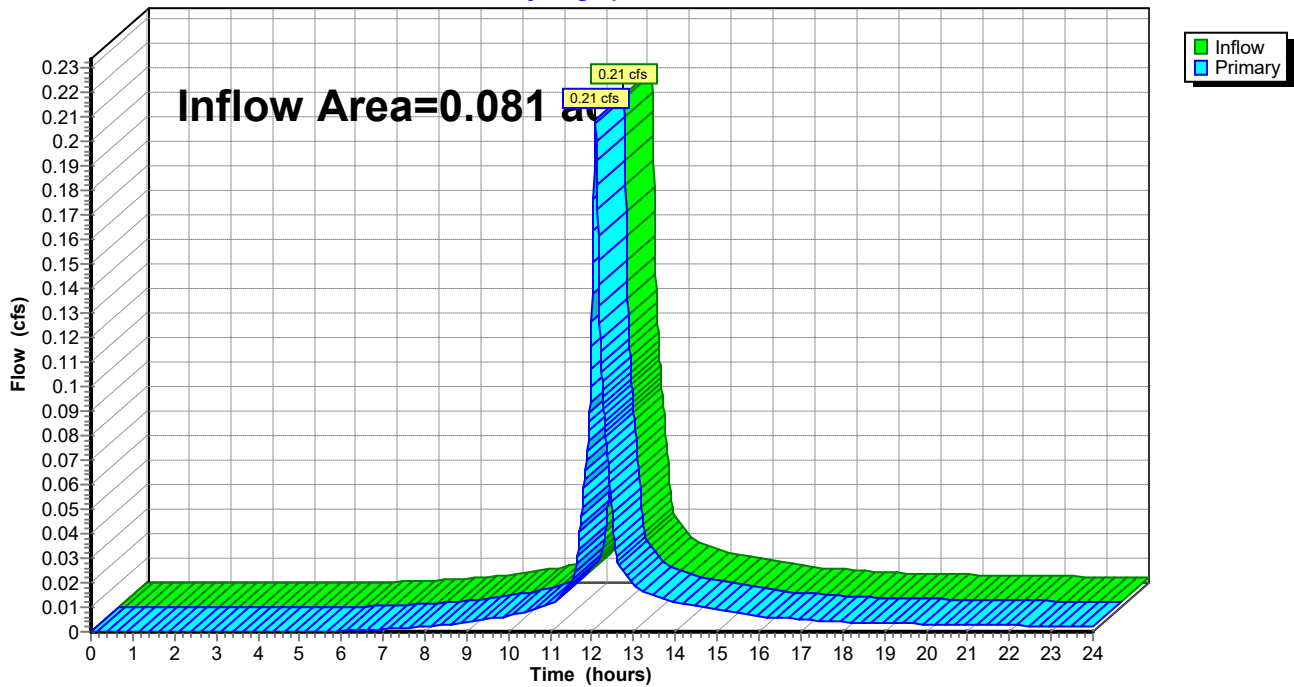
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.081 ac, 74.62% Impervious, Inflow Depth > 2.25" for 2-yr event
Inflow = 0.21 cfs @ 12.09 hrs, Volume= 0.015 af
Primary = 0.21 cfs @ 12.09 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min
Routed to Pond RT2 : R-Tanks 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Pond RDEF2: RDEF-2

Hydrograph



Summary for Pond RDEF3: RDEF-3

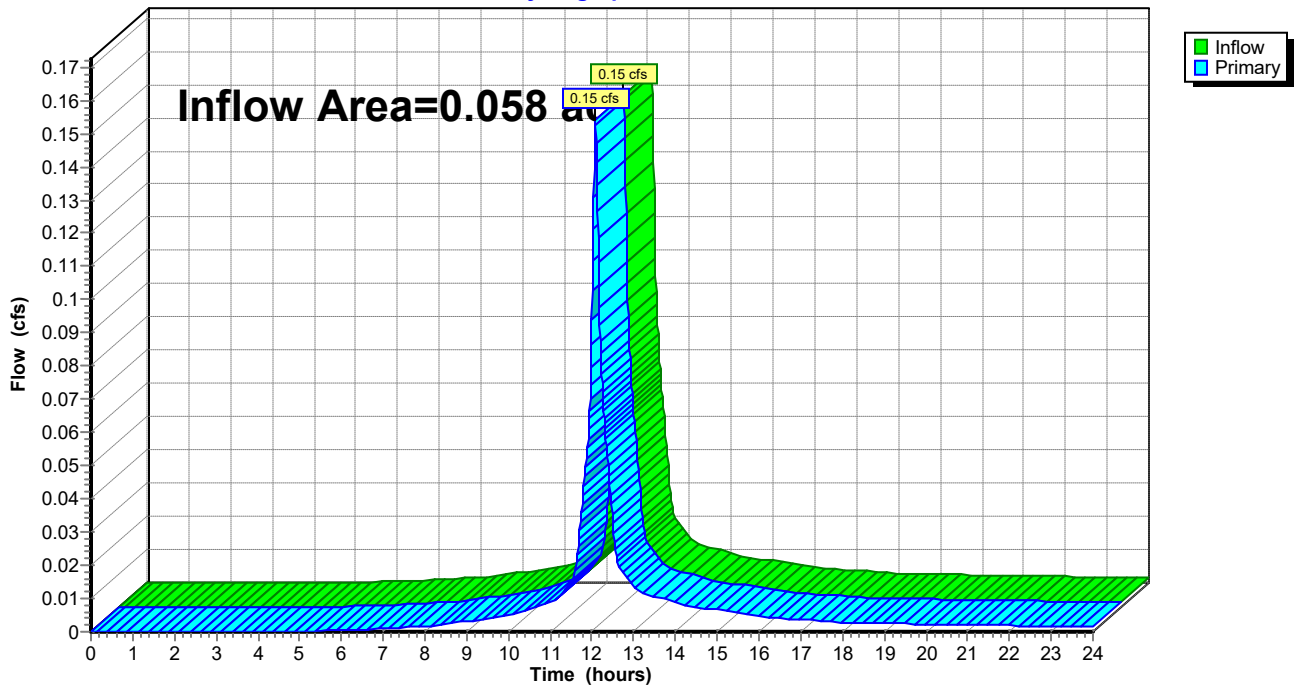
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.058 ac, 77.89% Impervious, Inflow Depth > 2.35" for 2-yr event
Inflow = 0.15 cfs @ 12.09 hrs, Volume= 0.011 af
Primary = 0.15 cfs @ 12.09 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.0 min
Routed to Pond RT2 : R-Tanks 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Pond RDEF3: RDEF-3

Hydrograph



Summary for Pond RT1: R-Tanks 1

Inflow Area = 1.284 ac, 59.98% Impervious, Inflow Depth > 1.69" for 2-yr event
 Inflow = 1.92 cfs @ 12.22 hrs, Volume= 0.181 af
 Outflow = 1.80 cfs @ 12.21 hrs, Volume= 0.180 af, Atten= 6%, Lag= 0.0 min
 Primary = 1.80 cfs @ 12.21 hrs, Volume= 0.180 af
 Routed to Pond OCS1 : OCS-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 269.94' @ 12.20 hrs Surf.Area= 352 sf Storage= 265 cf

Plug-Flow detention time= 9.8 min calculated for 0.180 af (99% of inflow)
 Center-of-Mass det. time= 5.1 min (845.1 - 839.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	268.80'	255 cf	22.37"W x 15.73"L x 2.69'H Field A 948 cf Overall - 311 cf Embedded = 637 cf x 40.0% Voids
#2A	269.05'	296 cf	ACF R-Tank HD 1 x 70 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 70 Chambers in 14 Rows
		550 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	15.0" Round Culvert L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 269.03' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.02 cfs @ 12.21 hrs HW=269.93' TW=269.85' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 1.02 cfs @ 1.08 fps)

Pond RT1: R-Tanks 1 - Chamber Wizard Field A

Chamber Model = ACF R-Tank HD 1 (ACF Environmental R-Tank HD)

Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf

Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf

5 Chambers/Row x 2.35' Long = 11.73' Row Length +24.0" End Stone x 2 = 15.73' Base Length

14 Rows x 15.7" Wide + 24.0" Side Stone x 2 = 22.37' Base Width

3.0" Stone Base + 17.3" Chamber Height + 12.0" Stone Cover = 2.69' Field Height

70 Chambers x 4.2 cf = 295.5 cf Chamber Storage

70 Chambers x 4.4 cf = 311.1 cf Displacement

947.9 cf Field - 311.1 cf Chambers = 636.8 cf Stone x 40.0% Voids = 254.7 cf Stone Storage

Chamber Storage + Stone Storage = 550.2 cf = 0.013 af

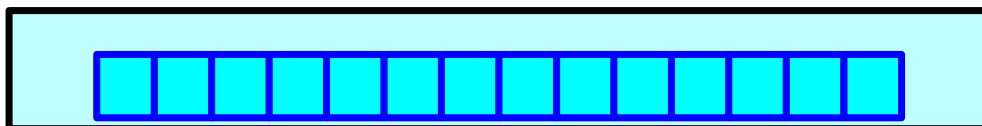
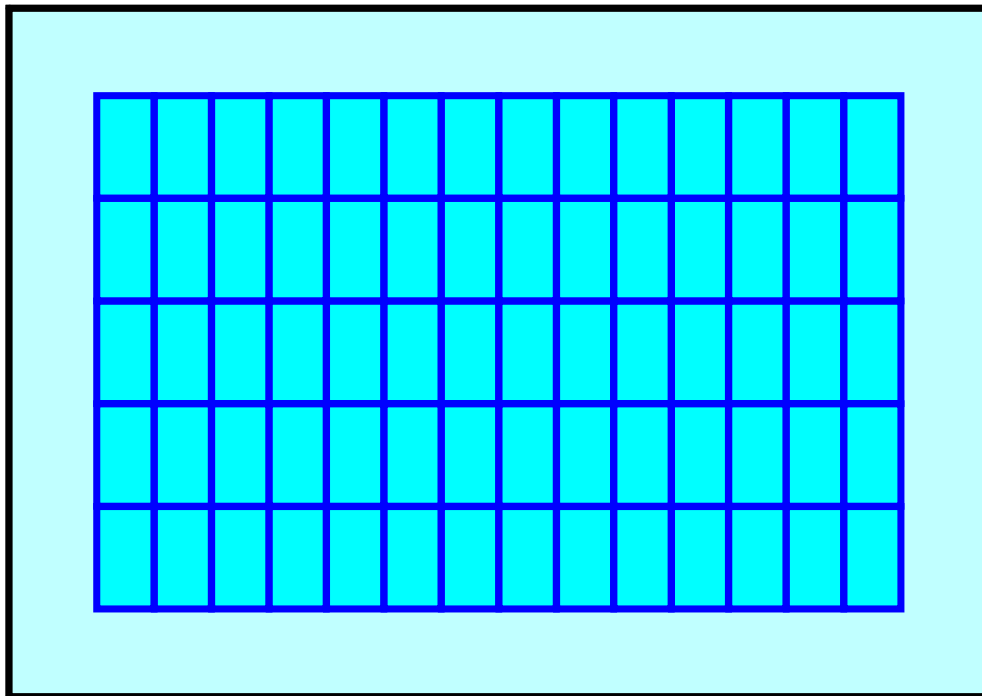
Overall Storage Efficiency = 58.1%

Overall System Size = 15.73' x 22.37' x 2.69'

70 Chambers

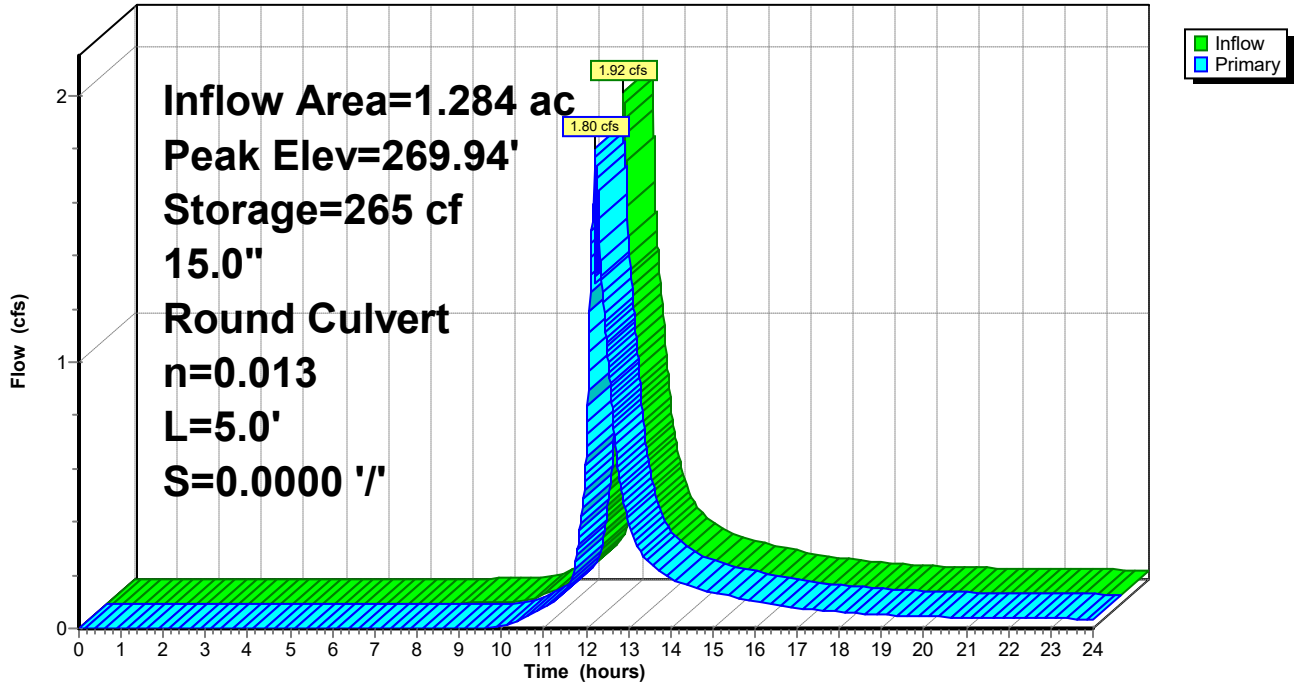
35.1 cy Field

23.6 cy Stone



Pond RT1: R-Tanks 1

Hydrograph



Summary for Pond RT2: R-Tanks 2

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=7)

Inflow Area = 1.218 ac, 58.65% Impervious, Inflow Depth > 1.74" for 2-yr event
 Inflow = 2.44 cfs @ 12.09 hrs, Volume= 0.176 af
 Outflow = 1.80 cfs @ 12.22 hrs, Volume= 0.168 af, Atten= 26%, Lag= 7.9 min
 Primary = 1.80 cfs @ 12.22 hrs, Volume= 0.168 af
 Routed to Pond RT1 : R-Tanks 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 270.02' @ 12.21 hrs Surf.Area= 1,753 sf Storage= 1,648 cf

Plug-Flow detention time= 59.9 min calculated for 0.168 af (95% of inflow)
 Center-of-Mass det. time= 32.1 min (844.1 - 812.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	268.78'	1,071 cf	30.25'W x 57.95'L x 2.69'H Field A 4,722 cf Overall - 2,044 cf Embedded = 2,677 cf x 40.0% Voids
#2A	269.03'	1,942 cf	ACF R-Tank HD 1 x 460 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 460 Chambers in 20 Rows
		3,013 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	18.0" Round Culvert L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 269.03' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.53 cfs @ 12.22 hrs HW=270.02' TW=269.92' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 1.53 cfs @ 1.23 fps)

Pond RT2: R-Tanks 2 - Chamber Wizard Field A

Chamber Model = ACF R-Tank HD 1 (ACF Environmental R-Tank HD)

Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf

Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf

23 Chambers/Row x 2.35' Long = 53.95' Row Length +24.0" End Stone x 2 = 57.95' Base Length

20 Rows x 15.7" Wide + 24.0" Side Stone x 2 = 30.25' Base Width

3.0" Stone Base + 17.3" Chamber Height + 12.0" Stone Cover = 2.69' Field Height

460 Chambers x 4.2 cf = 1,942.0 cf Chamber Storage

460 Chambers x 4.4 cf = 2,044.2 cf Displacement

4,721.6 cf Field - 2,044.2 cf Chambers = 2,677.3 cf Stone x 40.0% Voids = 1,070.9 cf Stone Storage

Chamber Storage + Stone Storage = 3,013.0 cf = 0.069 af

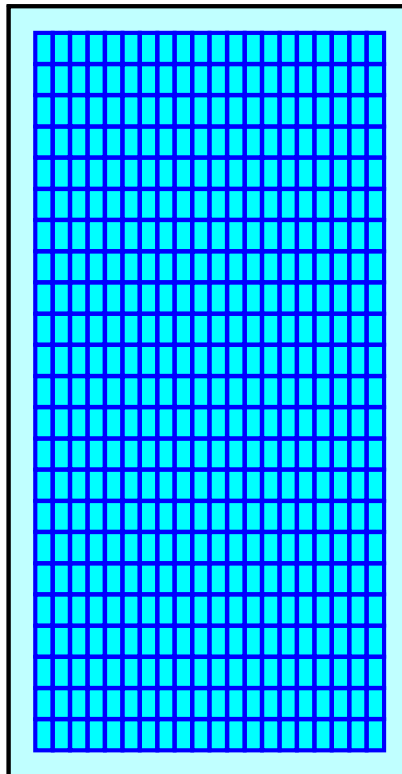
Overall Storage Efficiency = 63.8%

Overall System Size = 57.95' x 30.25' x 2.69'

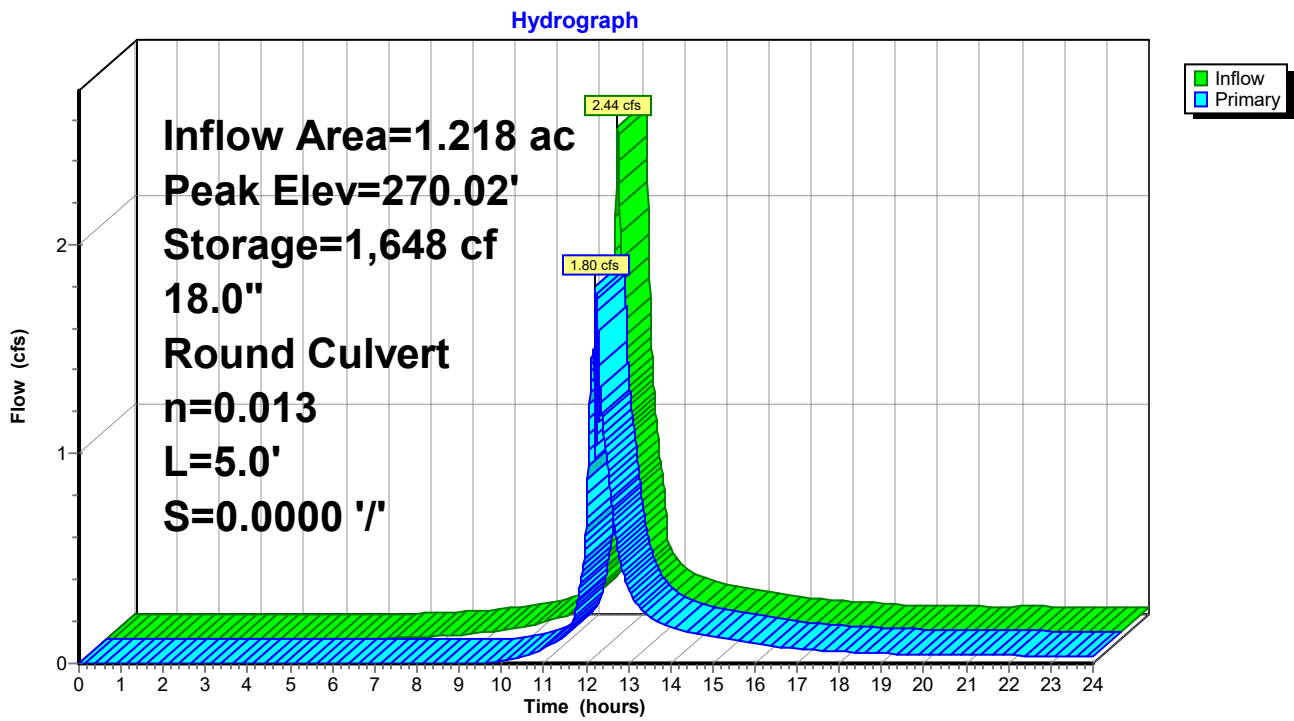
460 Chambers

174.9 cy Field

99.2 cy Stone



Pond RT2: R-Tanks 2



Summary for Pond RT3: R-Tanks 3

Inflow Area = 0.098 ac, 100.00% Impervious, Inflow Depth > 2.87" for 2-yr event
 Inflow = 0.29 cfs @ 12.08 hrs, Volume= 0.023 af
 Outflow = 0.23 cfs @ 12.15 hrs, Volume= 0.022 af, Atten= 22%, Lag= 3.7 min
 Primary = 0.23 cfs @ 12.15 hrs, Volume= 0.022 af
 Routed to Pond OSC2 : OCS-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 269.42' @ 12.15 hrs Surf.Area= 609 sf Storage= 208 cf

Plug-Flow detention time= 90.0 min calculated for 0.022 af (92% of inflow)
 Center-of-Mass det. time= 49.3 min (805.8 - 756.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	268.80'	491 cf	7.94'W x 76.72'L x 2.69'H Field A 1,640 cf Overall - 413 cf Embedded = 1,227 cf x 40.0% Voids
#2A	269.05'	393 cf	ACF R-Tank HD 1 x 93 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 93 Chambers in 3 Rows
		883 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	12.0" Round Culvert L= 43.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 269.03' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.23 cfs @ 12.15 hrs HW=269.42' TW=269.28' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 0.23 cfs @ 1.22 fps)

Pond RT3: R-Tanks 3 - Chamber Wizard Field A

Chamber Model = ACF R-Tank HD 1 (ACF Environmental R-Tank HD)

Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf

Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf

31 Chambers/Row x 2.35' Long = 72.72' Row Length +24.0" End Stone x 2 = 76.72' Base Length

3 Rows x 15.7" Wide + 24.0" Side Stone x 2 = 7.94' Base Width

3.0" Stone Base + 17.3" Chamber Height + 12.0" Stone Cover = 2.69' Field Height

93 Chambers x 4.2 cf = 392.6 cf Chamber Storage

93 Chambers x 4.4 cf = 413.3 cf Displacement

1,640.2 cf Field - 413.3 cf Chambers = 1,226.9 cf Stone x 40.0% Voids = 490.8 cf Stone Storage

Chamber Storage + Stone Storage = 883.4 cf = 0.020 af

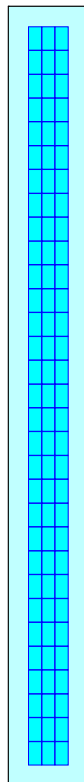
Overall Storage Efficiency = 53.9%

Overall System Size = 76.72' x 7.94' x 2.69'

93 Chambers

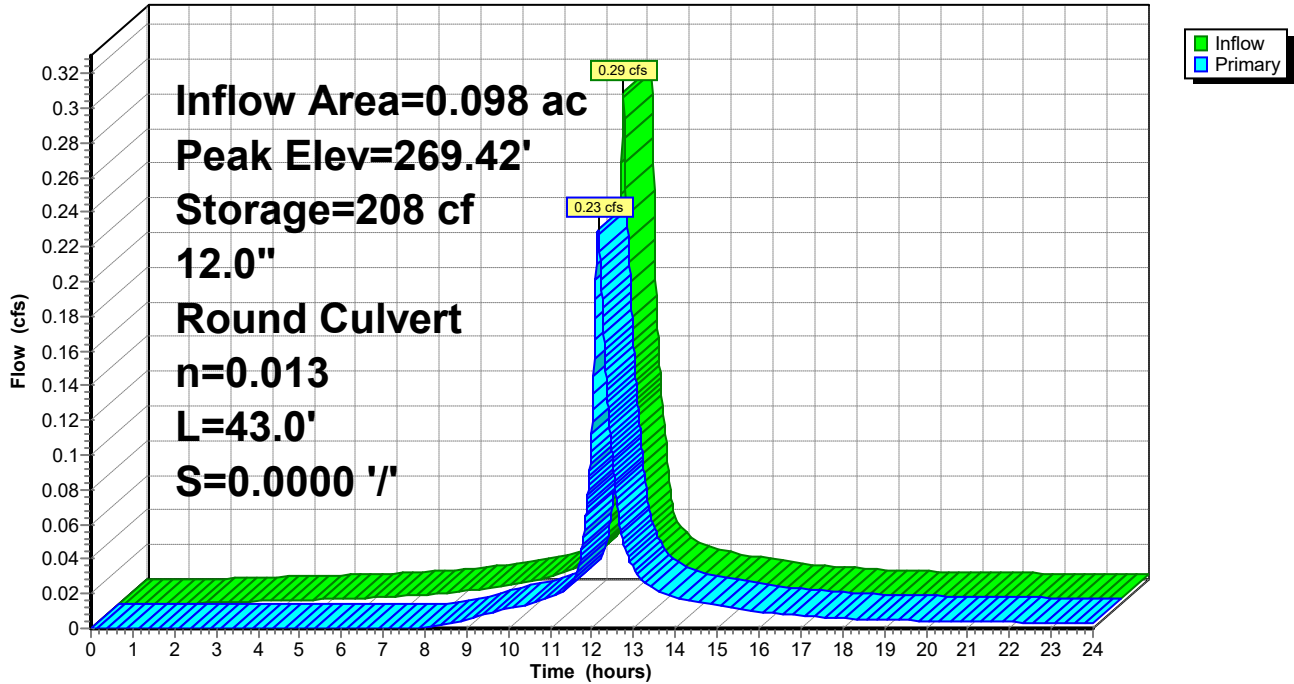
60.7 cy Field

45.4 cy Stone



Pond RT3: R-Tanks 3

Hydrograph



Summary for Pond SDEF1: SDEF1

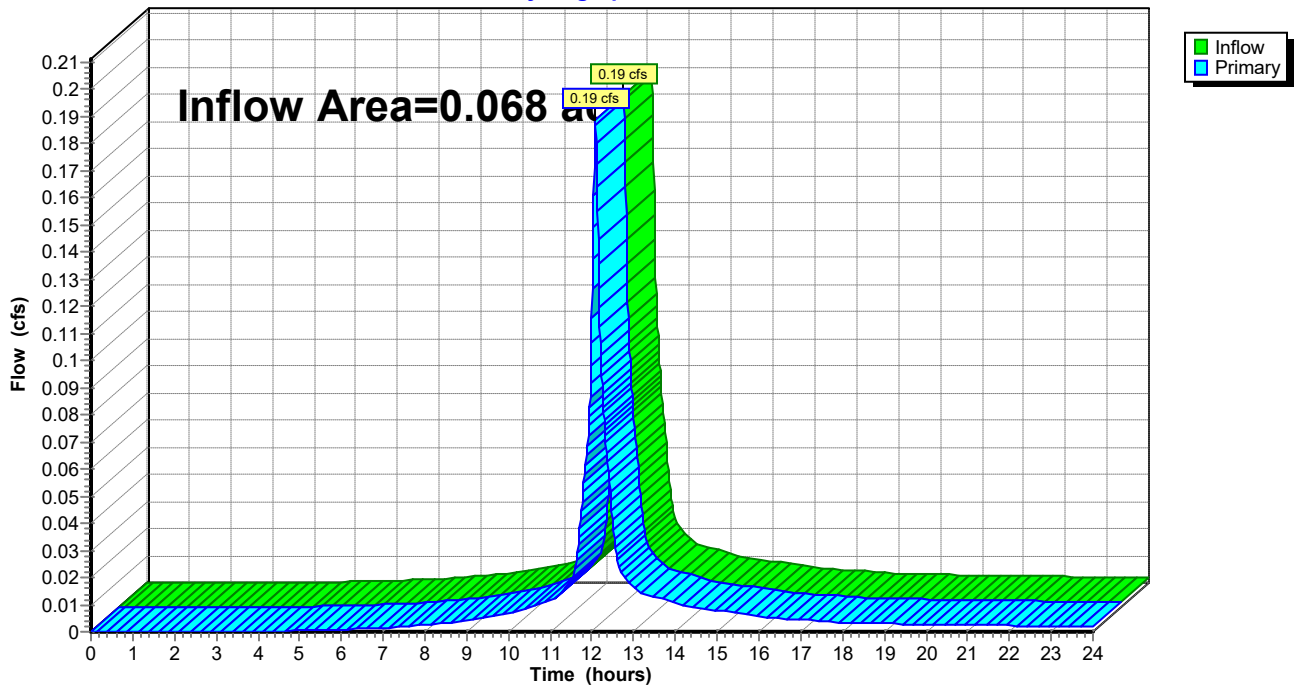
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.068 ac, 83.24% Impervious, Inflow Depth > 2.44" for 2-yr event
Inflow = 0.19 cfs @ 12.08 hrs, Volume= 0.014 af
Primary = 0.19 cfs @ 12.08 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 1R : Plunge pool

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Pond SDEF1: SDEF1

Hydrograph



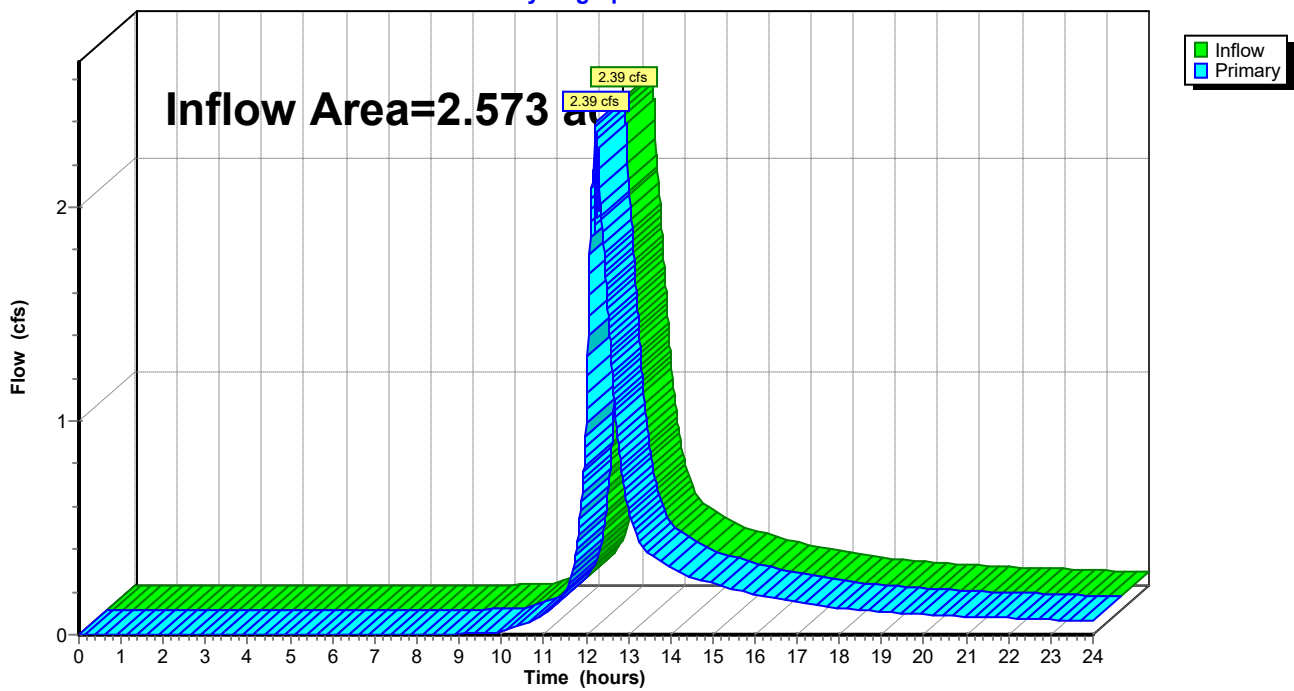
Summary for Link AP1: Wetlands

Inflow Area = 2.573 ac, 40.29% Impervious, Inflow Depth > 1.35" for 2-yr event
Inflow = 2.39 cfs @ 12.21 hrs, Volume= 0.289 af
Primary = 2.39 cfs @ 12.21 hrs, Volume= 0.289 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 28P

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link AP1: Wetlands

Hydrograph



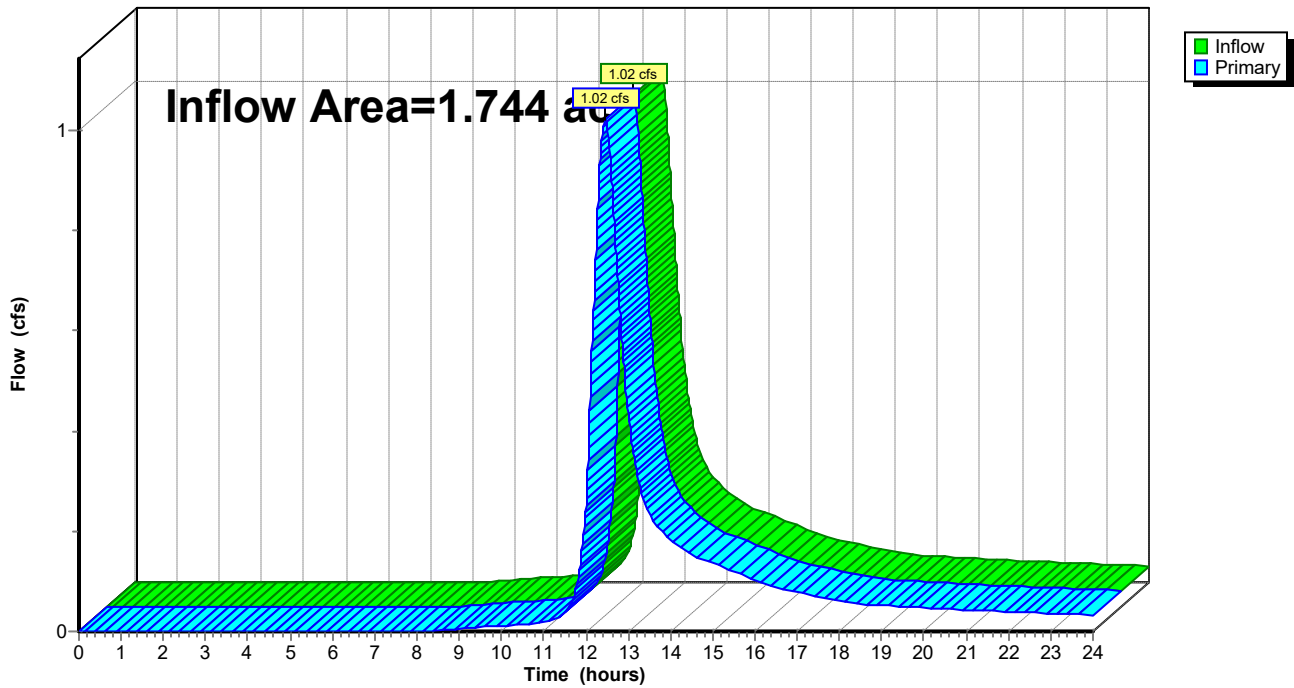
Summary for Link AP2: Stream

Inflow Area = 1.744 ac, 10.57% Impervious, Inflow Depth > 1.01" for 2-yr event
Inflow = 1.02 cfs @ 12.44 hrs, Volume= 0.147 af
Primary = 1.02 cfs @ 12.44 hrs, Volume= 0.147 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link AP2: Stream

Hydrograph

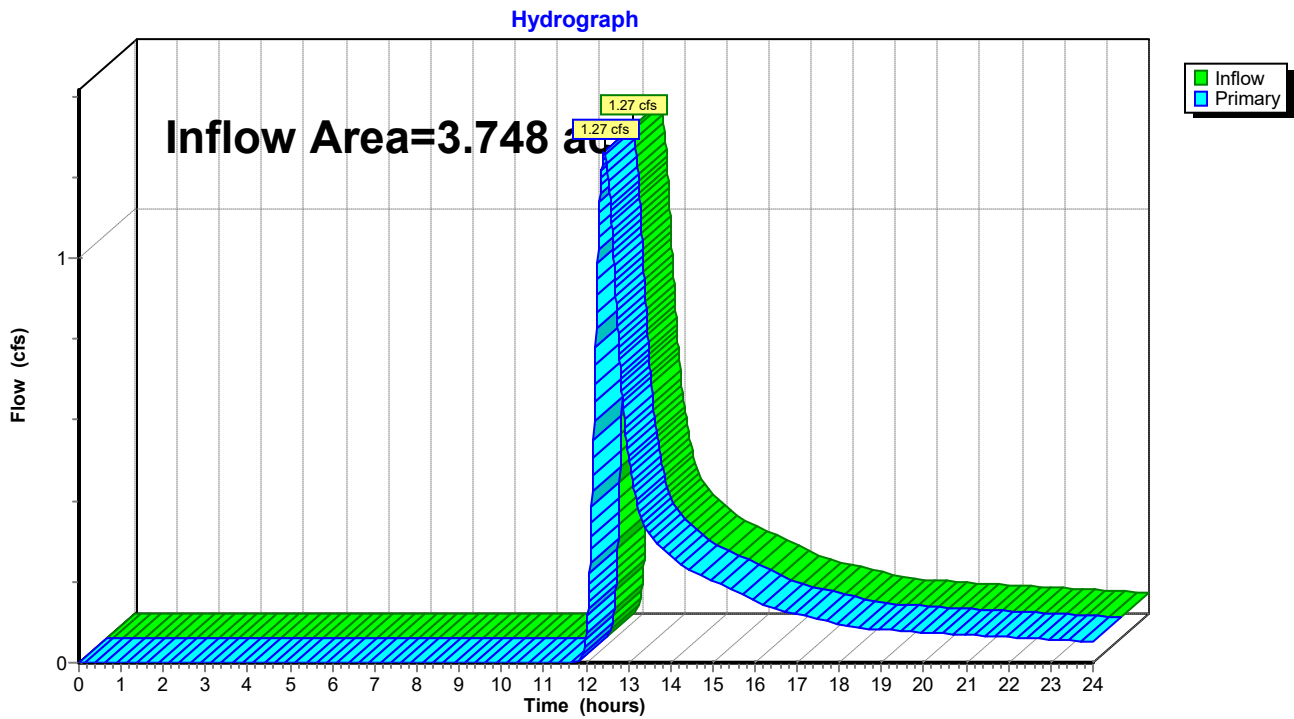


Summary for Link AP3:

Inflow Area = 3.748 ac, 18.11% Impervious, Inflow Depth > 0.59" for 2-yr event
Inflow = 1.27 cfs @ 12.44 hrs, Volume= 0.184 af
Primary = 1.27 cfs @ 12.44 hrs, Volume= 0.184 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 28P

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link AP3:



191.06051 SW-POST

Type III 24-hr 10-yr Rainfall=4.60"

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1AS:	Runoff Area=8,449 sf 20.68% Impervious Runoff Depth>2.46" Tc=6.0 min CN=79 Runoff=0.56 cfs 0.040 af
Subcatchment 1BS: Existing parking lot	Runoff Area=26,395 sf 62.50% Impervious Runoff Depth>3.39" Tc=6.0 min CN=89 Runoff=2.35 cfs 0.171 af
Subcatchment 1CS: existing parking	Runoff Area=12,181 sf 68.08% Impervious Runoff Depth>3.49" Tc=6.0 min CN=90 Runoff=1.11 cfs 0.081 af
Subcatchment 1DS: existing lawn to	Runoff Area=21,304 sf 42.85% Impervious Runoff Depth>2.90" Tc=6.0 min CN=84 Runoff=1.66 cfs 0.118 af
Subcatchment 1ES: Access Road to Stone	Runoff Area=2,983 sf 83.24% Impervious Runoff Depth>3.91" Tc=6.0 min CN=94 Runoff=0.29 cfs 0.022 af
Subcatchment 1FS: West prop line	Runoff Area=8,099 sf 0.00% Impervious Runoff Depth>2.05" Tc=6.0 min CN=74 Runoff=0.44 cfs 0.032 af
Subcatchment 1GS: Roof to RFEF2	Runoff Area=3,515 sf 74.62% Impervious Runoff Depth>3.70" Tc=6.0 min CN=92 Runoff=0.33 cfs 0.025 af
Subcatchment 1HS: to Roof Dripline Filter	Runoff Area=2,510 sf 77.89% Impervious Runoff Depth>3.80" Tc=6.0 min CN=93 Runoff=0.24 cfs 0.018 af
Subcatchment 1IS: Roof to FP	Runoff Area=2,886 sf 84.37% Impervious Runoff Depth>3.91" Tc=6.0 min CN=94 Runoff=0.28 cfs 0.022 af
Subcatchment 1JS: wetland	Runoff Area=23,765 sf 0.00% Impervious Runoff Depth>2.45" Flow Length=594' Tc=25.5 min CN=79 Runoff=0.96 cfs 0.111 af
Subcatchment 2AS: roof to rdef1	Runoff Area=2,154 sf 100.00% Impervious Runoff Depth>4.36" Tc=6.0 min CN=98 Runoff=0.22 cfs 0.018 af
Subcatchment 2BS: roof to RDEF1	Runoff Area=2,117 sf 100.00% Impervious Runoff Depth>4.36" Tc=6.0 min CN=98 Runoff=0.22 cfs 0.018 af
Subcatchment 2CS: Remaining	Runoff Area=71,696 sf 5.24% Impervious Runoff Depth>1.96" Flow Length=631' Tc=31.0 min CN=73 Runoff=2.09 cfs 0.268 af
Subcatchment 3S: off site existing	Runoff Area=163,274 sf 18.11% Impervious Runoff Depth>1.45" Flow Length=594' Tc=25.5 min CN=66 Runoff=3.67 cfs 0.453 af
Reach 1R: Plunge pool	Inflow=1.29 cfs 0.129 af Outflow=1.29 cfs 0.129 af
Pond 1P: Detention Pond	Peak Elev=273.39' Storage=2,210 cf Inflow=1.66 cfs 0.118 af Outflow=0.89 cfs 0.075 af

191.06051 SW-POST

Type III 24-hr 10-yr Rainfall=4.60"

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Pond FP1: Focal Point 1	Peak Elev=272.50' Storage=89 cf Inflow=2.35 cfs 0.171 af Outflow=2.35 cfs 0.171 af
Pond FP2: Focal Point 2	Peak Elev=272.76' Storage=35 cf Inflow=0.28 cfs 0.022 af Outflow=0.24 cfs 0.022 af
Pond GUSF1: Grassed Underdrain Soil Filter 1	Peak Elev=272.33' Storage=886 cf Inflow=0.56 cfs 0.040 af Outflow=0.12 cfs 0.020 af
Pond OCS1: OCS-1	Peak Elev=270.02' Inflow=2.73 cfs 0.326 af Outflow=2.73 cfs 0.326 af
Pond OSC2: OCS-2	Peak Elev=269.34' Inflow=0.36 cfs 0.034 af Outflow=0.36 cfs 0.034 af
Pond RDEF1: RDEF-1	Inflow=0.44 cfs 0.036 af Primary=0.44 cfs 0.036 af
Pond RDEF2: RDEF-2	Inflow=0.33 cfs 0.025 af Primary=0.33 cfs 0.025 af
Pond RDEF3: RDEF-3	Inflow=0.24 cfs 0.018 af Primary=0.24 cfs 0.018 af
Pond RT1: R-Tanks 1	Peak Elev=270.36' Storage=375 cf Inflow=2.80 cfs 0.328 af 15.0" Round Culvert n=0.013 L=5.0' S=0.0000 '/' Outflow=2.73 cfs 0.326 af
Pond RT2: R-Tanks 2	Peak Elev=270.50' Storage=2,332 cf Inflow=4.03 cfs 0.316 af 18.0" Round Culvert n=0.013 L=5.0' S=0.0000 '/' Outflow=2.57 cfs 0.306 af
Pond RT3: R-Tanks 3	Peak Elev=269.51' Storage=245 cf Inflow=0.44 cfs 0.036 af 12.0" Round Culvert n=0.013 L=43.0' S=0.0000 '/' Outflow=0.36 cfs 0.034 af
Pond SDEF1: SDEF1	Inflow=0.29 cfs 0.022 af Primary=0.29 cfs 0.022 af
Link AP1: Wetlands	Inflow=4.75 cfs 0.566 af Primary=4.75 cfs 0.566 af
Link AP2: Stream	Inflow=2.25 cfs 0.302 af Primary=2.25 cfs 0.302 af
Link AP3:	Inflow=3.67 cfs 0.453 af Primary=3.67 cfs 0.453 af

Total Runoff Area = 8.065 ac Runoff Volume = 1.398 af Average Runoff Depth = 2.08"
76.44% Pervious = 6.165 ac 23.56% Impervious = 1.900 ac

Summary for Subcatchment 1AS:

Runoff = 0.56 cfs @ 12.09 hrs, Volume= 0.040 af, Depth> 2.46"

Routed to Pond GUSF1 : Grassed Underdrain Soil Filter 1

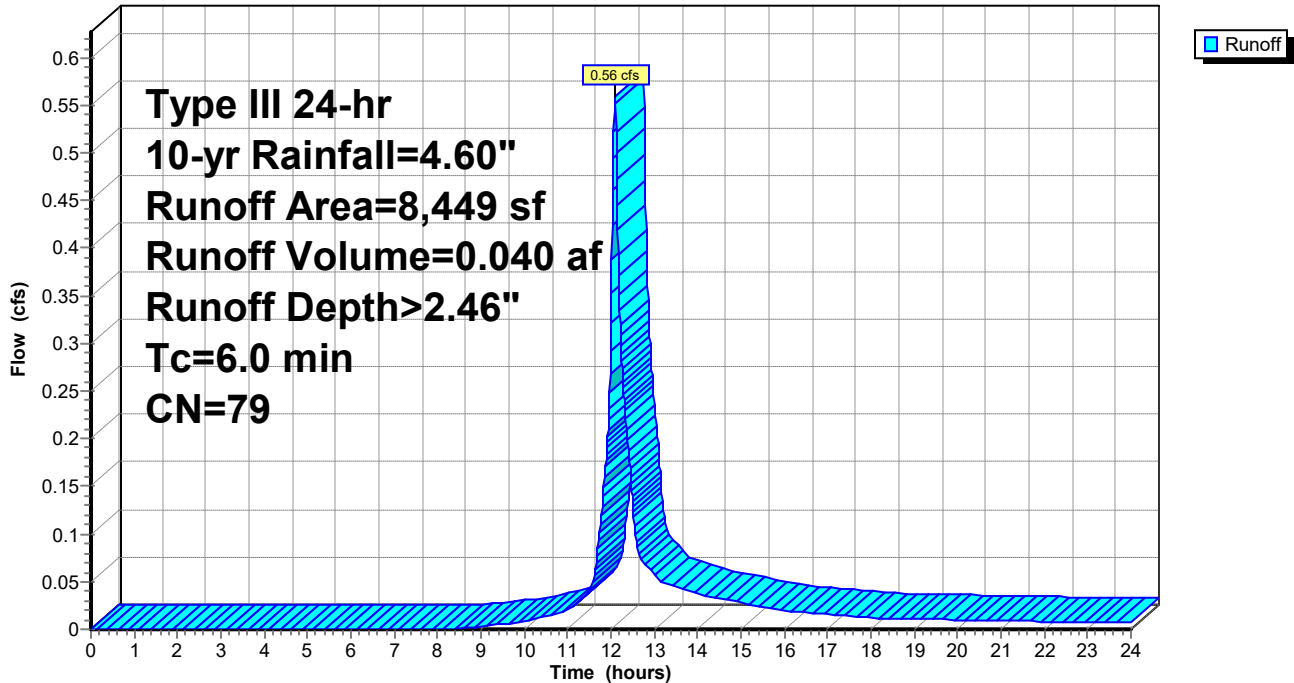
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-yr Rainfall=4.60"

Area (sf)	CN	Description
6,702	74	>75% Grass cover, Good, HSG C
1,747	98	Paved parking, HSG C
8,449	79	Weighted Average
6,702		79.32% Pervious Area
1,747		20.68% Impervious Area

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

Subcatchment 1AS:

Hydrograph



191.06051 SW-POST

Type III 24-hr 10-yr Rainfall=4.60"

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Summary for Subcatchment 1BS: Existing parking lot (fmr sub 2)

Runoff = 2.35 cfs @ 12.09 hrs, Volume= 0.171 af, Depth> 3.39"
 Routed to Pond FP1 : Focal Point 1

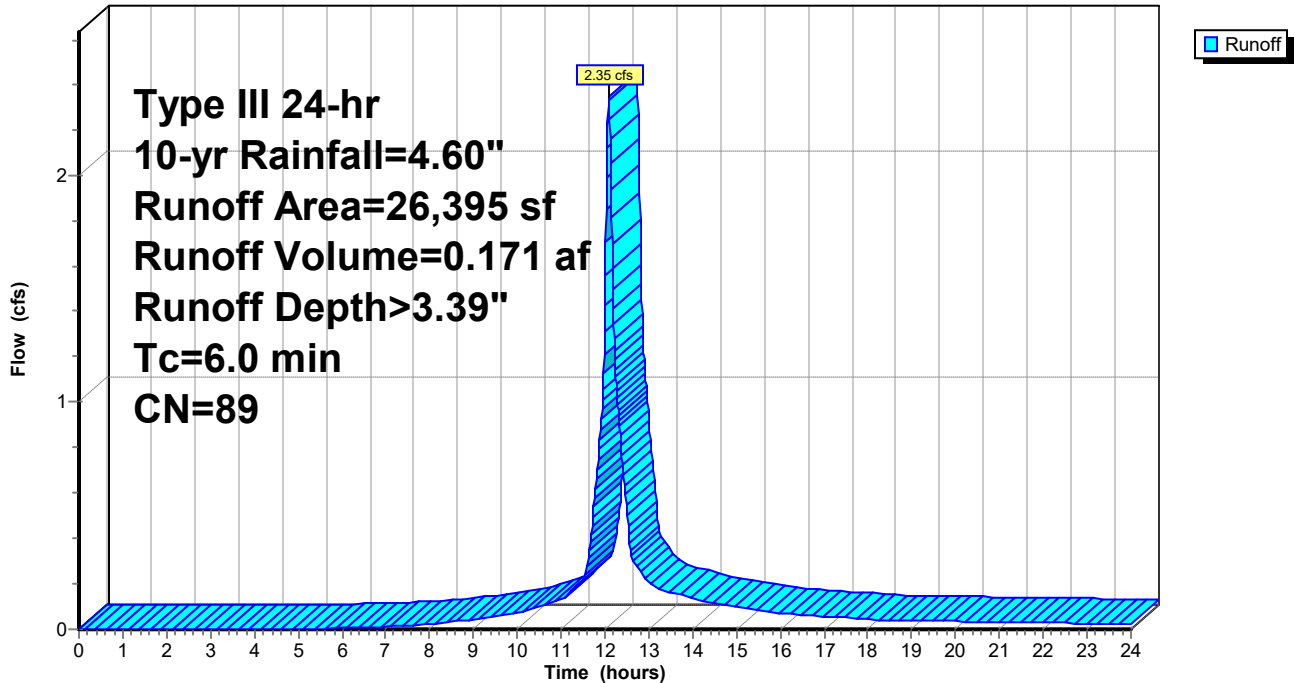
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-yr Rainfall=4.60"

Area (sf)	CN	Description
9,899	74	>75% Grass cover, Good, HSG C
* 16,496	98	parking and roofs
26,395	89	Weighted Average
9,899		37.50% Pervious Area
16,496		62.50% Impervious Area

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

Subcatchment 1BS: Existing parking lot (fmr sub 2)

Hydrograph



Summary for Subcatchment 1CS: existing parking

Runoff = 1.11 cfs @ 12.09 hrs, Volume= 0.081 af, Depth> 3.49"
 Routed to Pond RT2 : R-Tanks 2

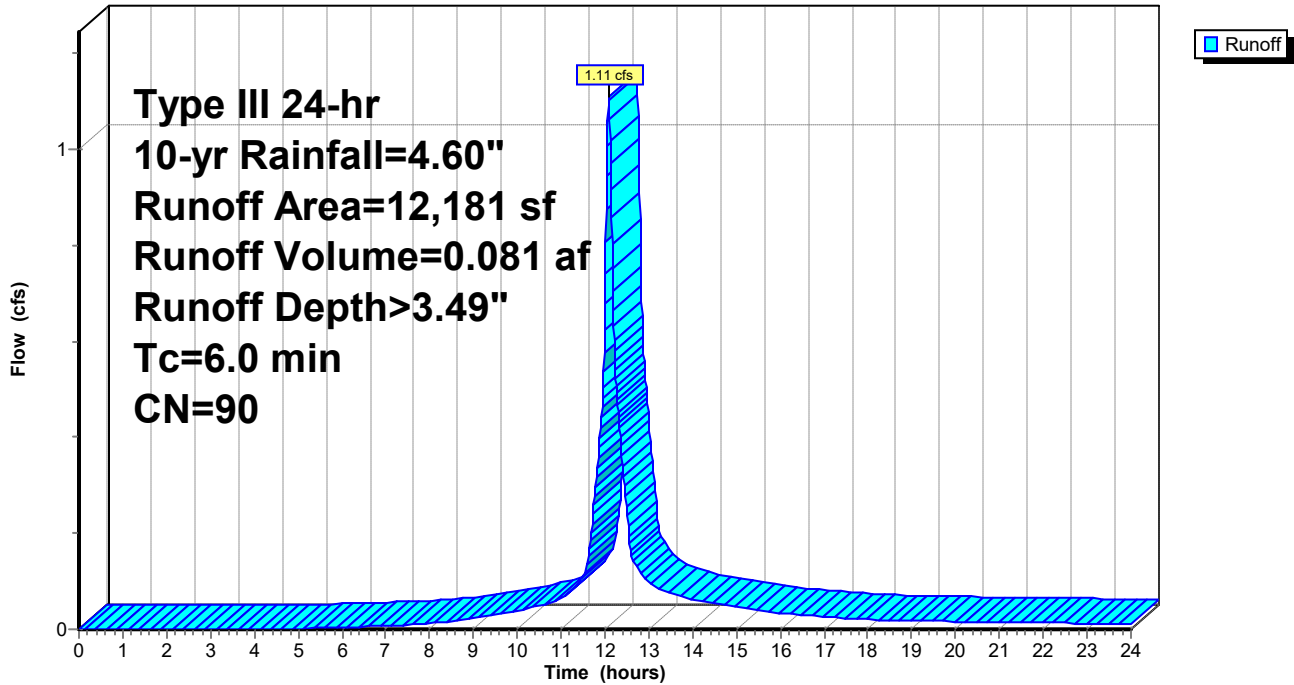
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-yr Rainfall=4.60"

Area (sf)	CN	Description
3,888	74	>75% Grass cover, Good, HSG C
* 8,293	98	parking and roofs
12,181	90	Weighted Average
3,888		31.92% Pervious Area
8,293		68.08% Impervious Area

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

Subcatchment 1CS: existing parking

Hydrograph



Summary for Subcatchment 1DS: existing lawn to culvert

Runoff = 1.66 cfs @ 12.09 hrs, Volume= 0.118 af, Depth> 2.90"
 Routed to Pond 1P : Detention Pond

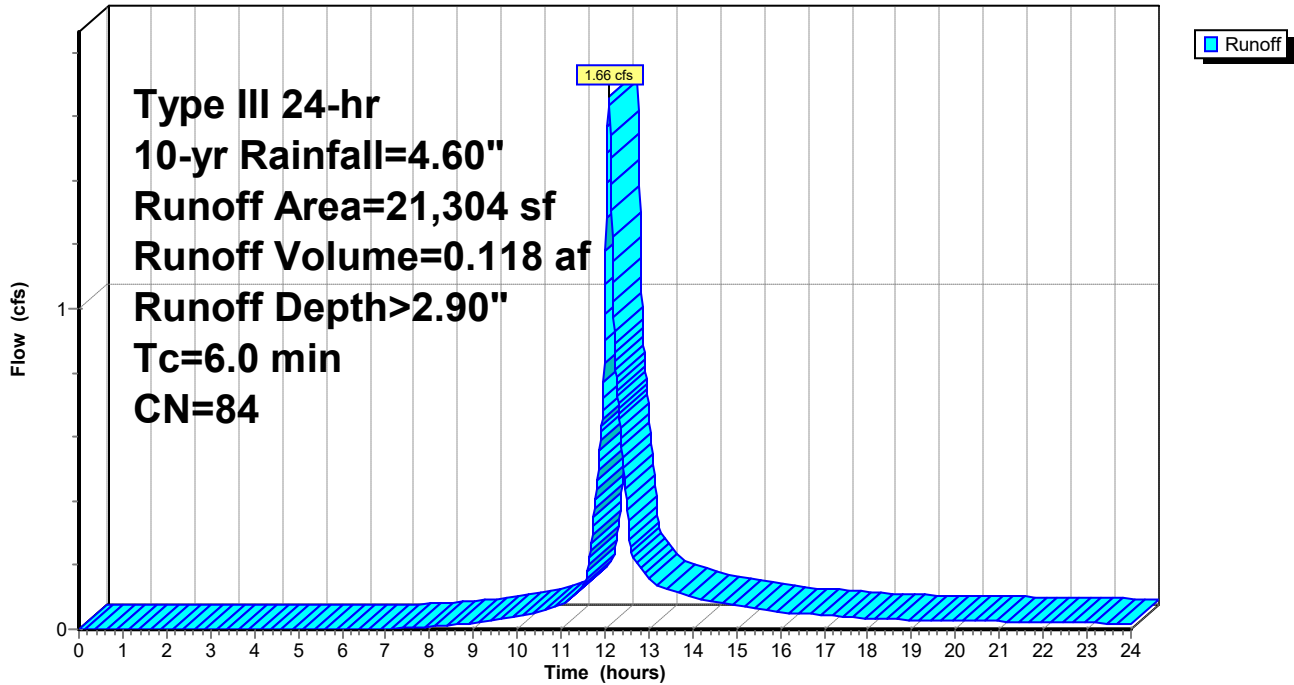
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-yr Rainfall=4.60"

Area (sf)	CN	Description
* 9,129	98	roofs and paving
12,175	74	>75% Grass cover, Good, HSG C
21,304	84	Weighted Average
12,175		57.15% Pervious Area
9,129		42.85% Impervious Area

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

Subcatchment 1DS: existing lawn to culvert

Hydrograph



Summary for Subcatchment 1ES: Access Road to Stone Drip Edge Filter

Runoff = 0.29 cfs @ 12.08 hrs, Volume= 0.022 af, Depth> 3.91"
 Routed to Pond SDEF1 : SDEF1

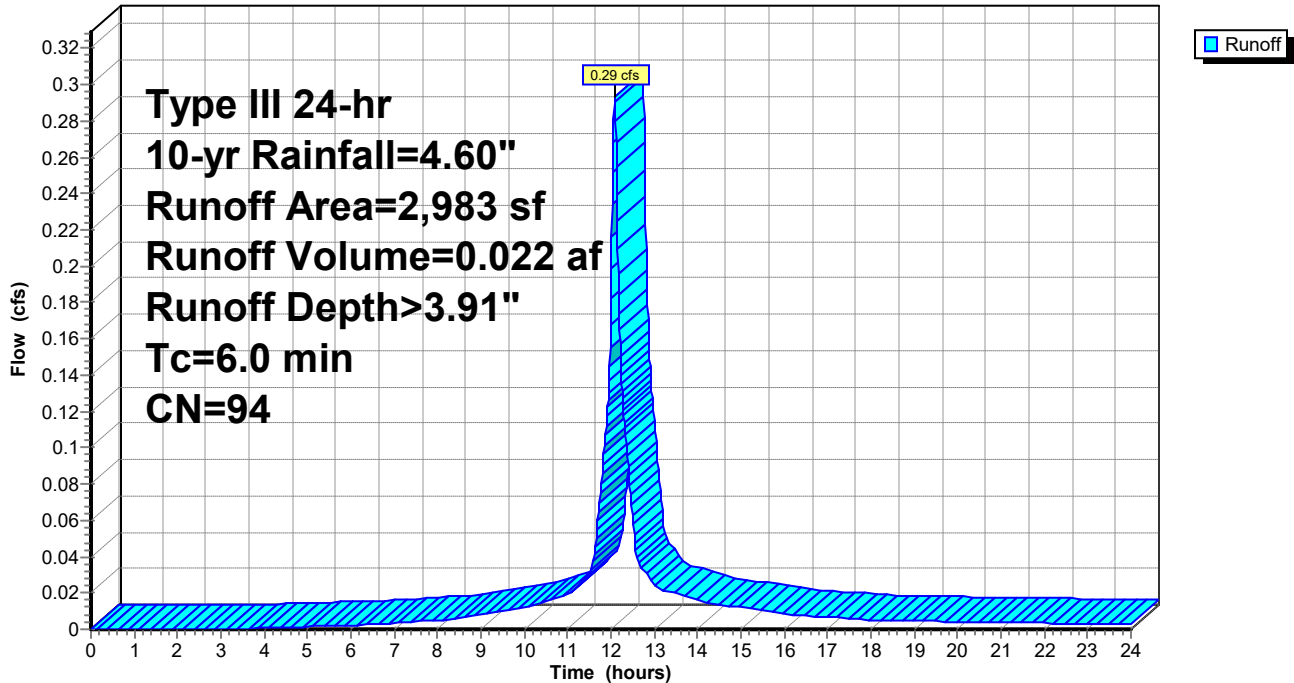
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-yr Rainfall=4.60"

Area (sf)	CN	Description
2,483	98	Paved parking, HSG C
500	74	>75% Grass cover, Good, HSG C
2,983	94	Weighted Average
500		16.76% Pervious Area
2,483		83.24% Impervious Area

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

Subcatchment 1ES: Access Road to Stone Drip Edge Filter

Hydrograph



Summary for Subcatchment 1FS: West prop line

Runoff = 0.44 cfs @ 12.09 hrs, Volume= 0.032 af, Depth> 2.05"

Routed to Reach 1R : Plunge pool

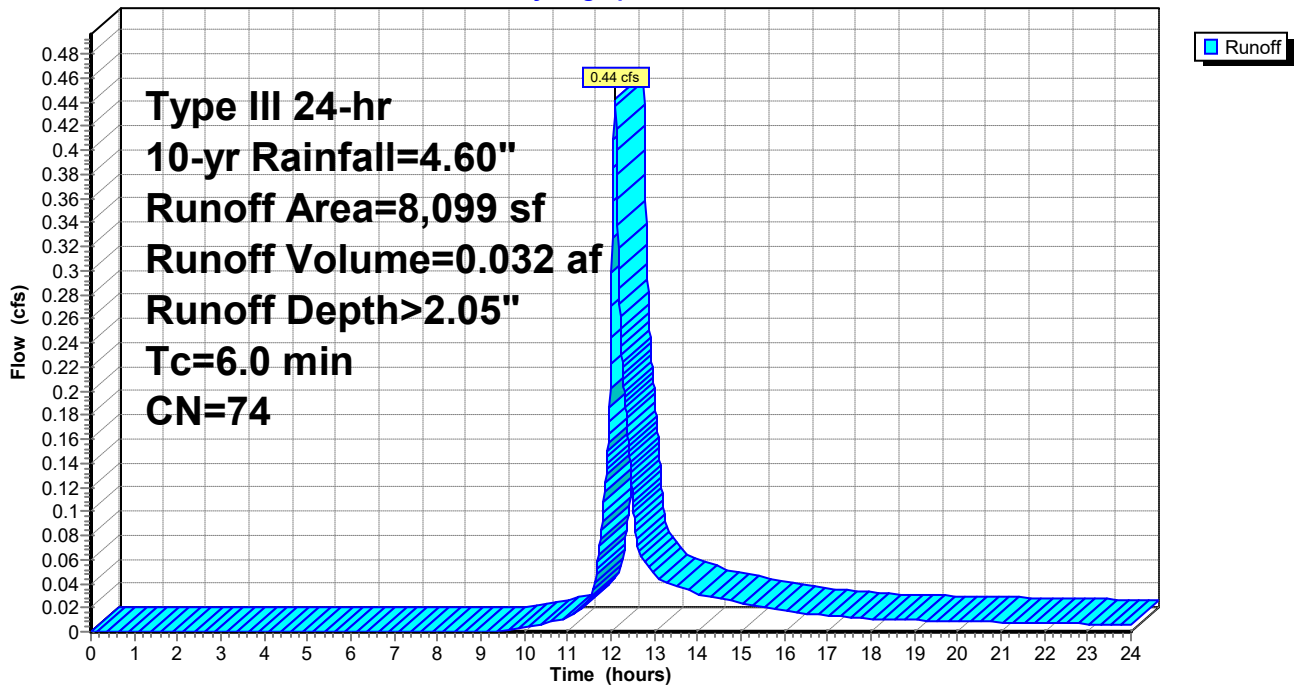
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-yr Rainfall=4.60"

Area (sf)	CN	Description
2,397	73	Woods, Fair, HSG C
5,702	74	>75% Grass cover, Good, HSG C
8,099	74	Weighted Average
8,099		100.00% Pervious Area

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

Subcatchment 1FS: West prop line

Hydrograph



Summary for Subcatchment 1GS: Roof to RFEF2

Runoff = 0.33 cfs @ 12.08 hrs, Volume= 0.025 af, Depth> 3.70"
 Routed to Pond RDEF2 : RDEF-2

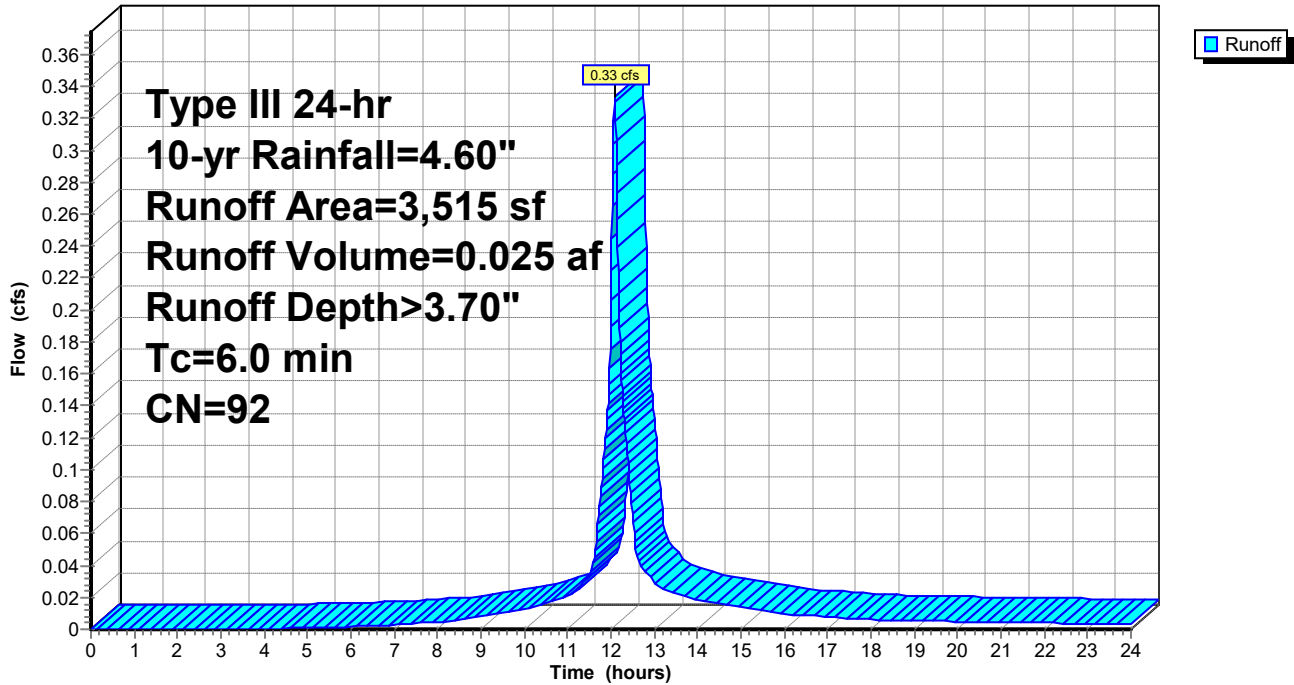
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-yr Rainfall=4.60"

Area (sf)	CN	Description
2,623	98	Roofs, HSG C
892	74	>75% Grass cover, Good, HSG C
3,515	92	Weighted Average
892		25.38% Pervious Area
2,623		74.62% Impervious Area

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

Subcatchment 1GS: Roof to RFEF2

Hydrograph



Summary for Subcatchment 1HS: to Roof Dripline Filter

Runoff = 0.24 cfs @ 12.08 hrs, Volume= 0.018 af, Depth> 3.80"
 Routed to Pond RDEF3 : RDEF-3

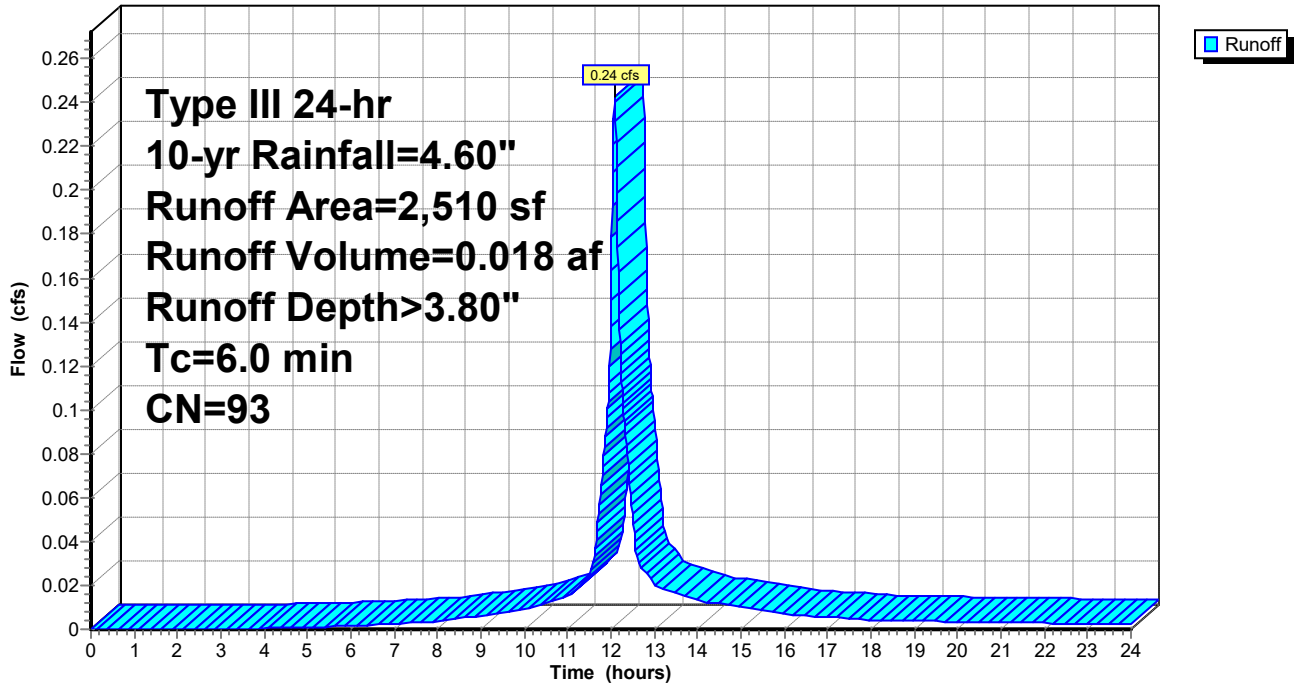
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-yr Rainfall=4.60"

Area (sf)	CN	Description
1,955	98	Roofs, HSG C
555	74	>75% Grass cover, Good, HSG C
2,510	93	Weighted Average
555		22.11% Pervious Area
1,955		77.89% Impervious Area

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

Subcatchment 1HS: to Roof Dripline Filter

Hydrograph



Summary for Subcatchment 1IS: Roof to FP

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.022 af, Depth> 3.91"
 Routed to Pond FP2 : Focal Point 2

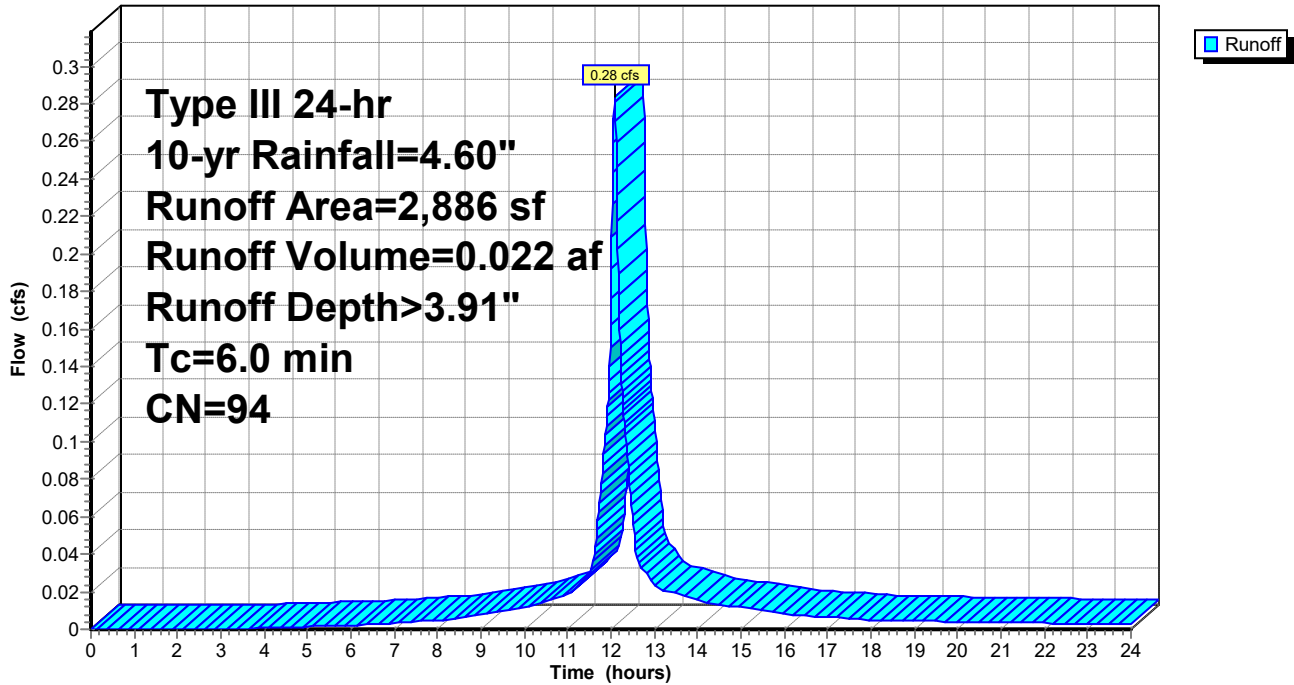
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-yr Rainfall=4.60"

Area (sf)	CN	Description
2,435	98	Roofs, HSG C
451	74	>75% Grass cover, Good, HSG C
2,886	94	Weighted Average
451		15.63% Pervious Area
2,435		84.37% Impervious Area

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

Subcatchment 1IS: Roof to FP

Hydrograph



Summary for Subcatchment 1JS: wetland

Runoff = 0.96 cfs @ 12.35 hrs, Volume= 0.111 af, Depth> 2.45"
 Routed to Link AP1 : Wetlands

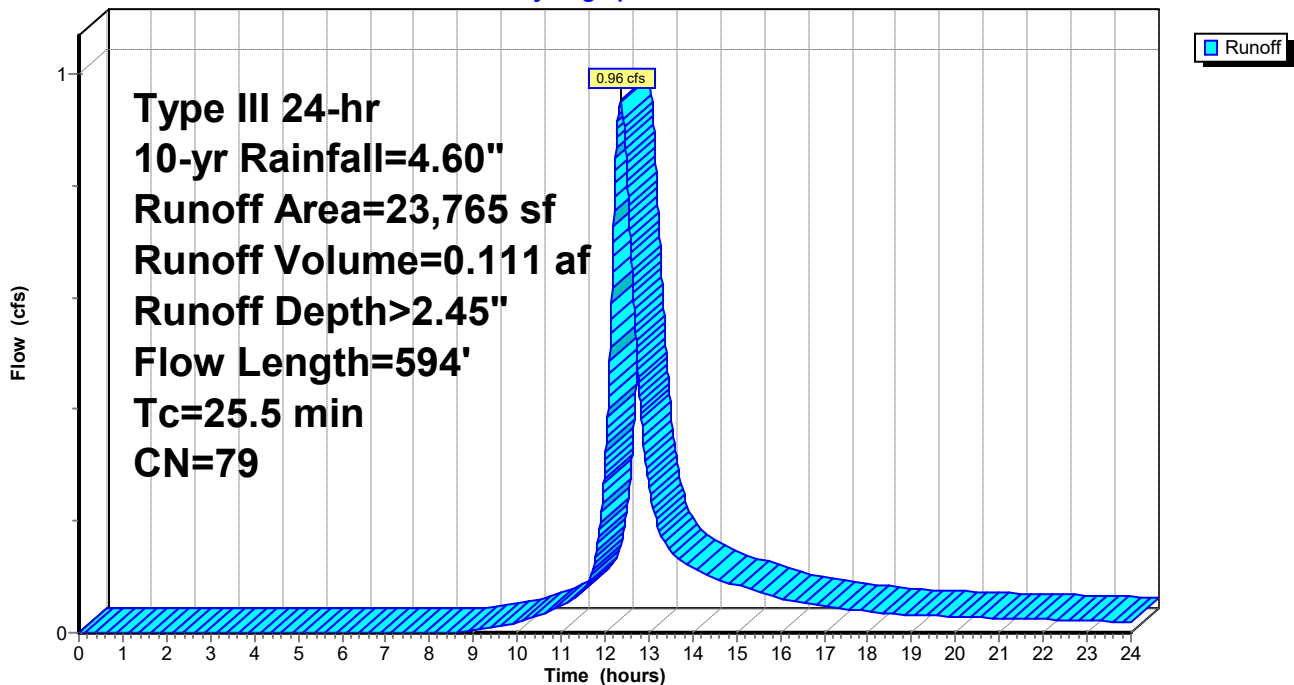
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-yr Rainfall=4.60"

Area (sf)	CN	Description
9,976	77	Woods, Good, HSG D
12,963	80	>75% Grass cover, Good, HSG D
826	74	>75% Grass cover, Good, HSG C
23,765	79	Weighted Average
23,765		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0240	0.08		Sheet Flow, A-B
					Grass: Bermuda n= 0.410 P2= 3.10"
4.6	412	0.0460	1.50		Shallow Concentrated Flow, B-C
					Short Grass Pasture Kv= 7.0 fps
0.2	82	0.0200	6.42	5.04	Pipe Channel, C-D
					12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'
					n= 0.013 Corrugated PE, smooth interior
25.5	594	Total			

Subcatchment 1JS: wetland

Hydrograph



Summary for Subcatchment 2AS: roof to rdef1

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth> 4.36"
 Routed to Pond RDEF1 : RDEF-1

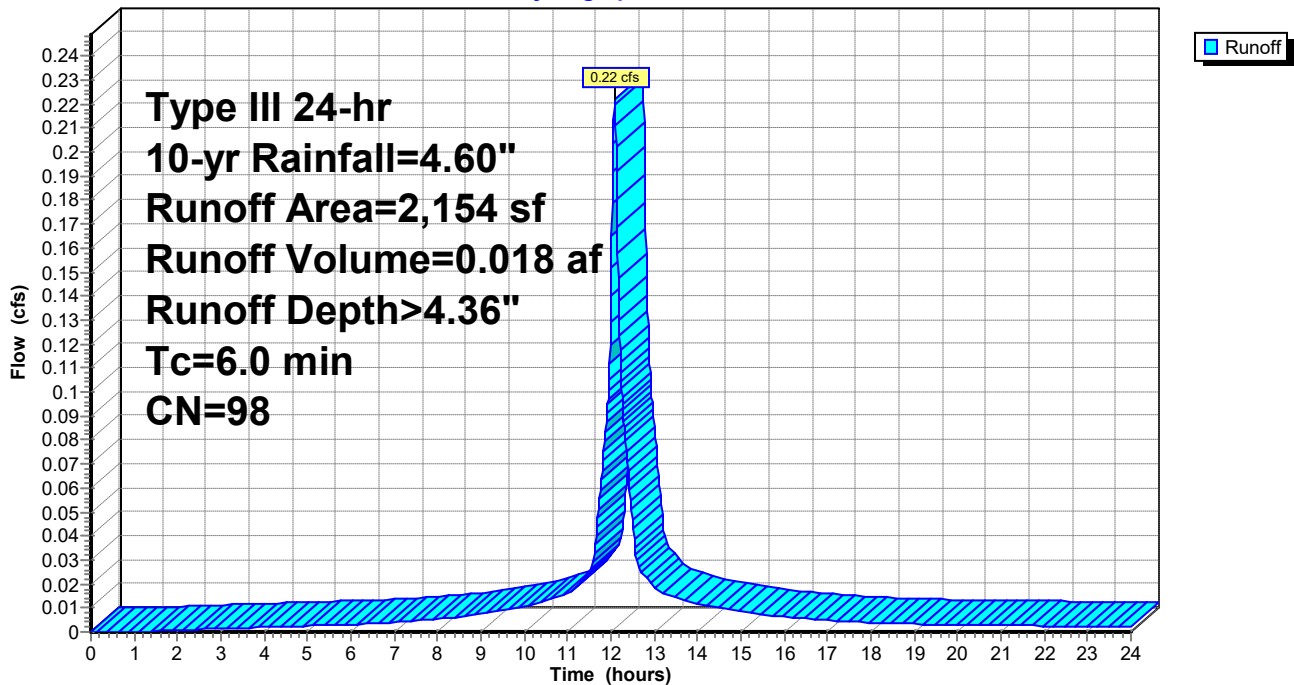
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-yr Rainfall=4.60"

Area (sf)	CN	Description
2,154	98	Roofs, HSG C
2,154		100.00% Impervious Area

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

Subcatchment 2AS: roof to rdef1

Hydrograph



Summary for Subcatchment 2BS: roof to RDEF1

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.018 af, Depth> 4.36"
 Routed to Pond RDEF1 : RDEF-1

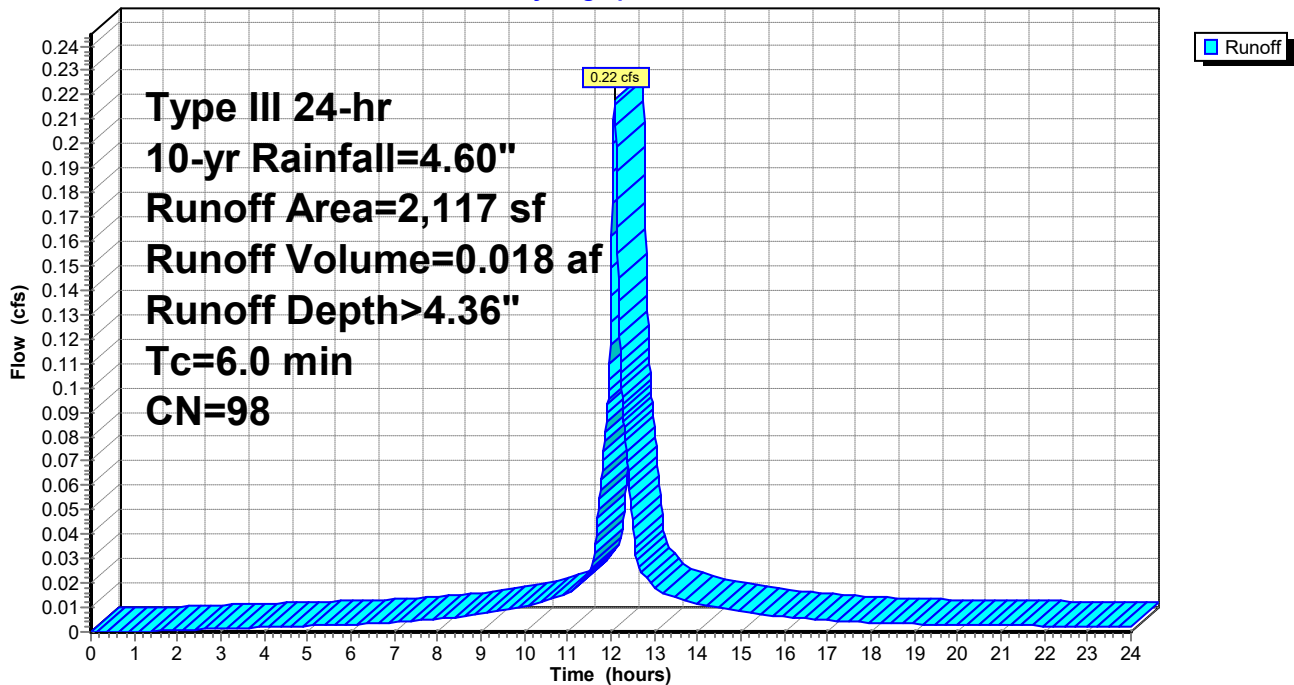
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-yr Rainfall=4.60"

Area (sf)	CN	Description
2,117	98	Roofs, HSG C
2,117		100.00% Impervious Area

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

Subcatchment 2BS: roof to RDEF1

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.60"

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Summary for Subcatchment 2CS: Remaining

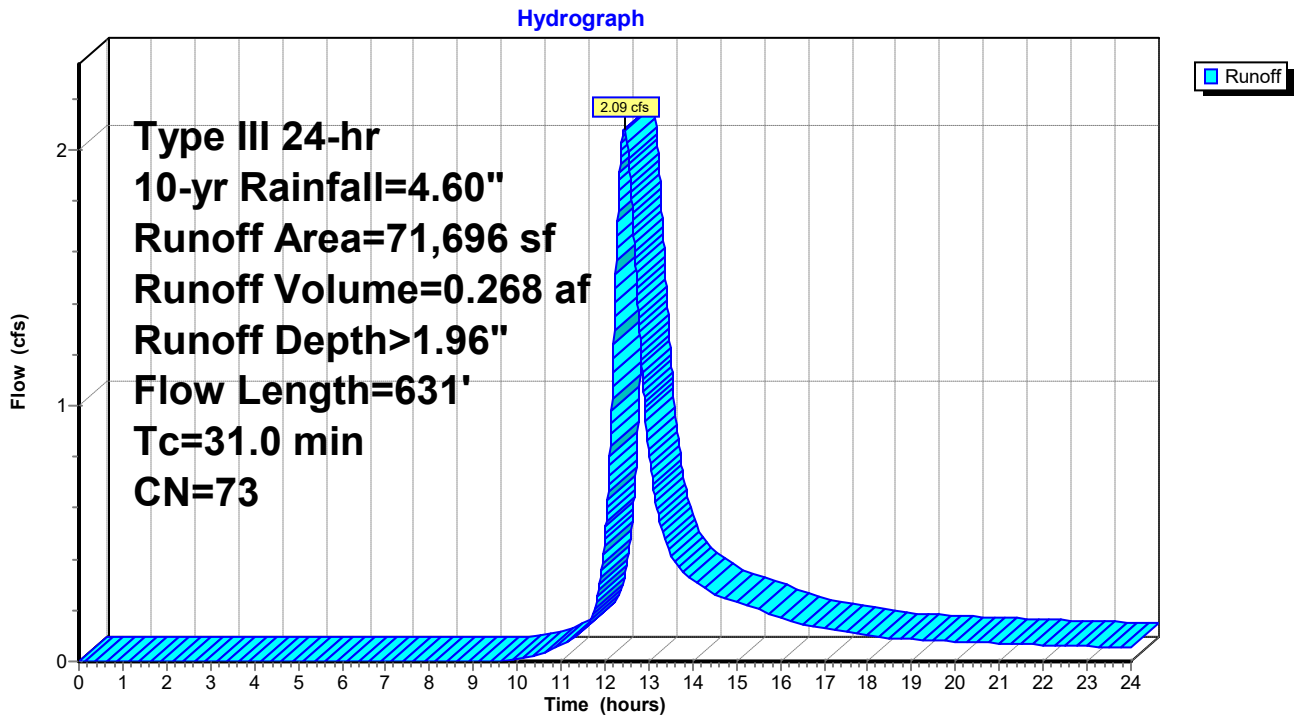
Runoff = 2.09 cfs @ 12.44 hrs, Volume= 0.268 af, Depth> 1.96"
 Routed to Link AP2 : Stream

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-yr Rainfall=4.60"

Area (sf)	CN	Description
4,917	70	Woods, Good, HSG C
21,832	77	Woods, Good, HSG D
12,740	55	Woods, Good, HSG B
3,074	98	Roofs, HSG C
684	98	Paved parking, HSG C
24,358	74	>75% Grass cover, Good, HSG C
4,091	80	>75% Grass cover, Good, HSG D
71,696	73	Weighted Average
67,938		94.76% Pervious Area
3,758		5.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.2	150	0.0300	0.10		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.10"
3.8	218	0.0360	0.95		Shallow Concentrated Flow, D-E Woodland Kv= 5.0 fps
1.0	263	0.0150	4.32	12.95	Channel Flow, C-D Area= 3.0 sf Perim= 5.0' r= 0.60' n= 0.030 Stream, clean & straight
31.0	631	Total			

Subcatchment 2CS: Remaining



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Type III 24-hr 10-yr Rainfall=4.60"

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Summary for Subcatchment 3S: off site existing

Runoff = 3.67 cfs @ 12.38 hrs, Volume= 0.453 af, Depth> 1.45"
 Routed to Link AP3 :

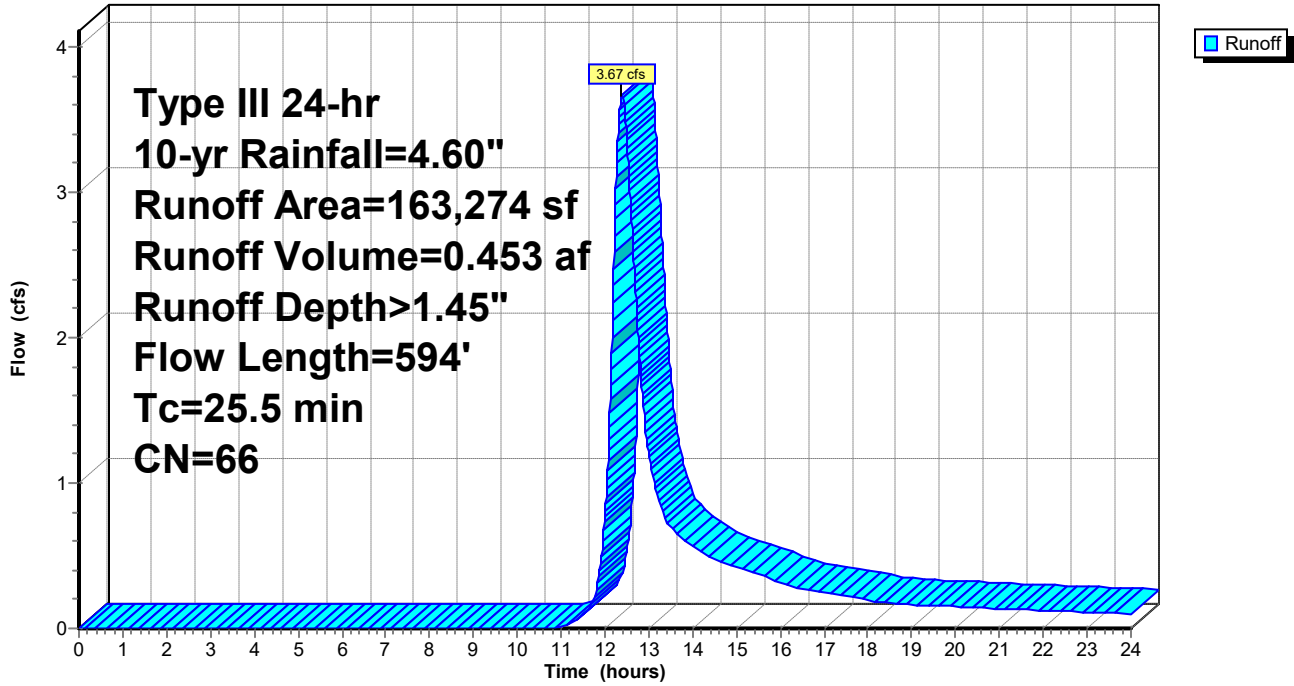
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-yr Rainfall=4.60"

Area (sf)	CN	Description
60,885	55	Woods, Good, HSG B
24,556	98	Paved parking, HSG C
5,016	98	Roofs, HSG C
62,012	61	>75% Grass cover, Good, HSG B
10,805	74	>75% Grass cover, Good, HSG C
163,274	66	Weighted Average
133,702		81.89% Pervious Area
29,572		18.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0240	0.08		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.10"
4.6	412	0.0460	1.50		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
0.2	82	0.0200	6.42	5.04	Pipe Channel, C-D 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
25.5	594	Total			

Subcatchment 3S: off site existing

Hydrograph



Summary for Reach 1R: Plunge pool

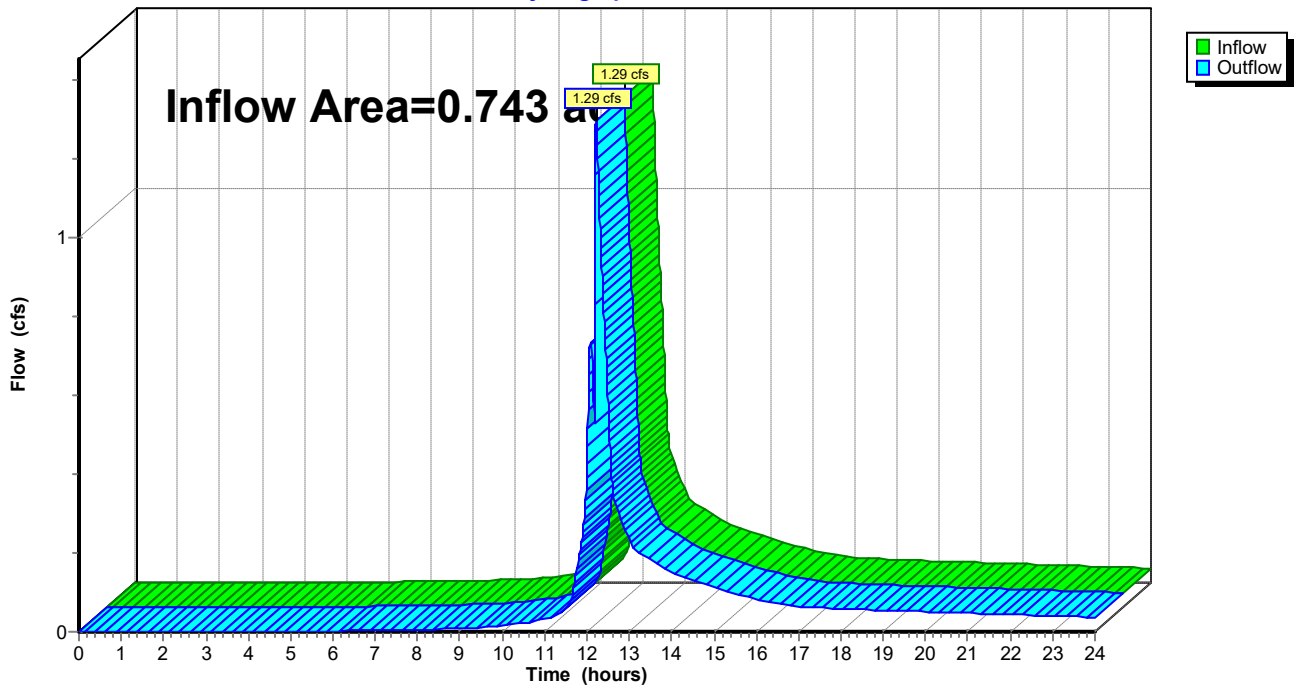
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.743 ac, 35.85% Impervious, Inflow Depth > 2.08" for 10-yr event
Inflow = 1.29 cfs @ 12.22 hrs, Volume= 0.129 af
Outflow = 1.29 cfs @ 12.22 hrs, Volume= 0.129 af, Atten= 0%, Lag= 0.0 min
Routed to Link AP1 : Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Reach 1R: Plunge pool

Hydrograph



Summary for Pond 1P: Detention Pond

Inflow Area = 0.489 ac, 42.85% Impervious, Inflow Depth > 2.90" for 10-yr event
 Inflow = 1.66 cfs @ 12.09 hrs, Volume= 0.118 af
 Outflow = 0.89 cfs @ 12.22 hrs, Volume= 0.075 af, Atten= 46%, Lag= 8.1 min
 Primary = 0.89 cfs @ 12.22 hrs, Volume= 0.075 af
 Routed to Reach 1R : Plunge pool

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 273.39' @ 12.22 hrs Surf.Area= 2,615 sf Storage= 2,210 cf

Plug-Flow detention time= 216.4 min calculated for 0.075 af (63% of inflow)
 Center-of-Mass det. time= 114.5 min (927.7 - 813.2)

Volume	Invert	Avail.Storage	Storage Description			
#1	272.00'	3,826 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
272.00	239	111.0	0	0	239	
273.00	2,579	277.0	1,201	1,201	5,368	
274.00	2,671	436.0	2,625	3,826	14,397	

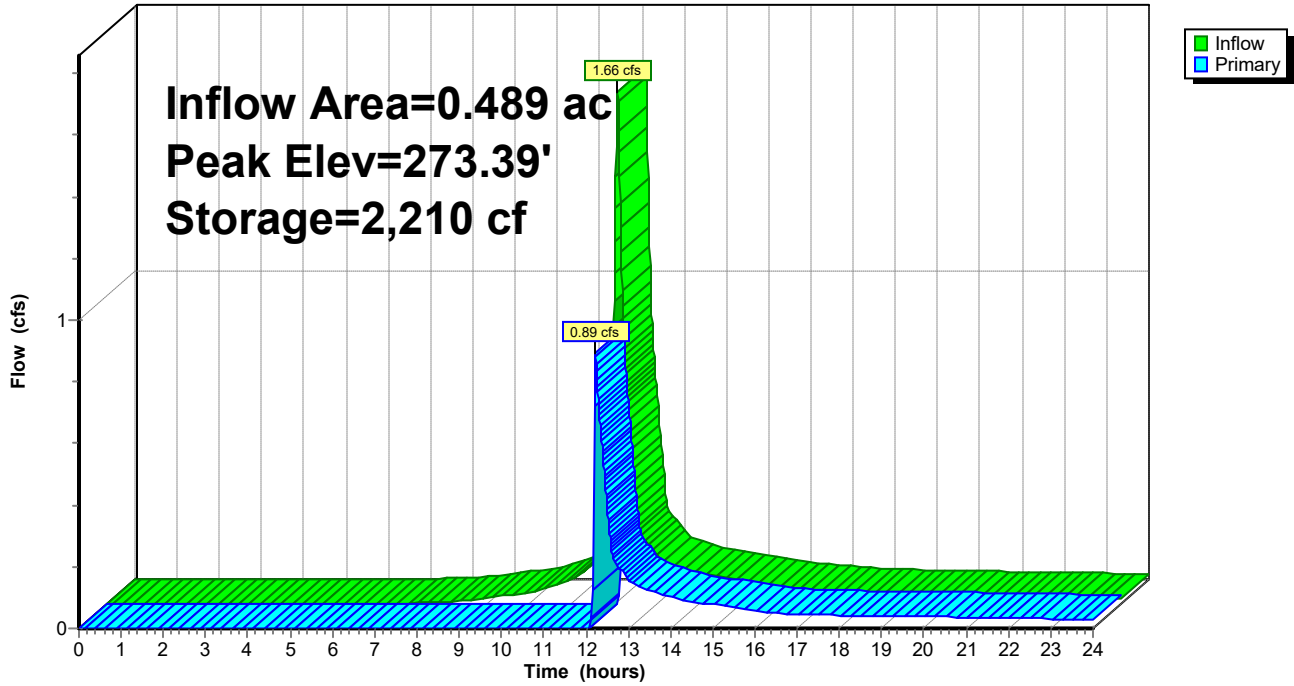
Device	Routing	Invert	Outlet Devices															
#1	Primary	271.48'	12.0" Round culvert L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 271.48' / 270.80' S= 0.0170 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf															
#2	Device 1	273.20'	2.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads															
#3	Primary	273.37'	140.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32															

Primary OutFlow Max=0.89 cfs @ 12.22 hrs HW=273.39' TW=0.00' (Dynamic Tailwater)

- 1=culvert (Passes 0.05 cfs of 3.54 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.05 cfs @ 2.09 fps)
- 3=Broad-Crested Rectangular Weir (Weir Controls 0.84 cfs @ 0.32 fps)

Pond 1P: Detention Pond

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.60"

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Summary for Pond FP1: Focal Point 1

Inflow Area = 0.606 ac, 62.50% Impervious, Inflow Depth > 3.39" for 10-yr event
 Inflow = 2.35 cfs @ 12.09 hrs, Volume= 0.171 af
 Outflow = 2.35 cfs @ 12.09 hrs, Volume= 0.171 af, Atten= 0%, Lag= 0.2 min
 Primary = 2.35 cfs @ 12.09 hrs, Volume= 0.171 af
 Routed to Pond RT2 : R-Tanks 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 272.50' @ 12.09 hrs Surf.Area= 225 sf Storage= 89 cf

Plug-Flow detention time= 0.6 min calculated for 0.171 af (100% of inflow)
 Center-of-Mass det. time= 0.6 min (797.3 - 796.7)

Volume	Invert	Avail.Storage	Storage Description
#1	271.78'	193 cf	Custom Stage Data (Irregular) Listed below (Recalc) 6.40'W x 10.00'L x 2.25'H FocalPoint 144 cf Overall x 20.0% Voids
#2	271.73'	29 cf	
		222 cf	Total Available Storage

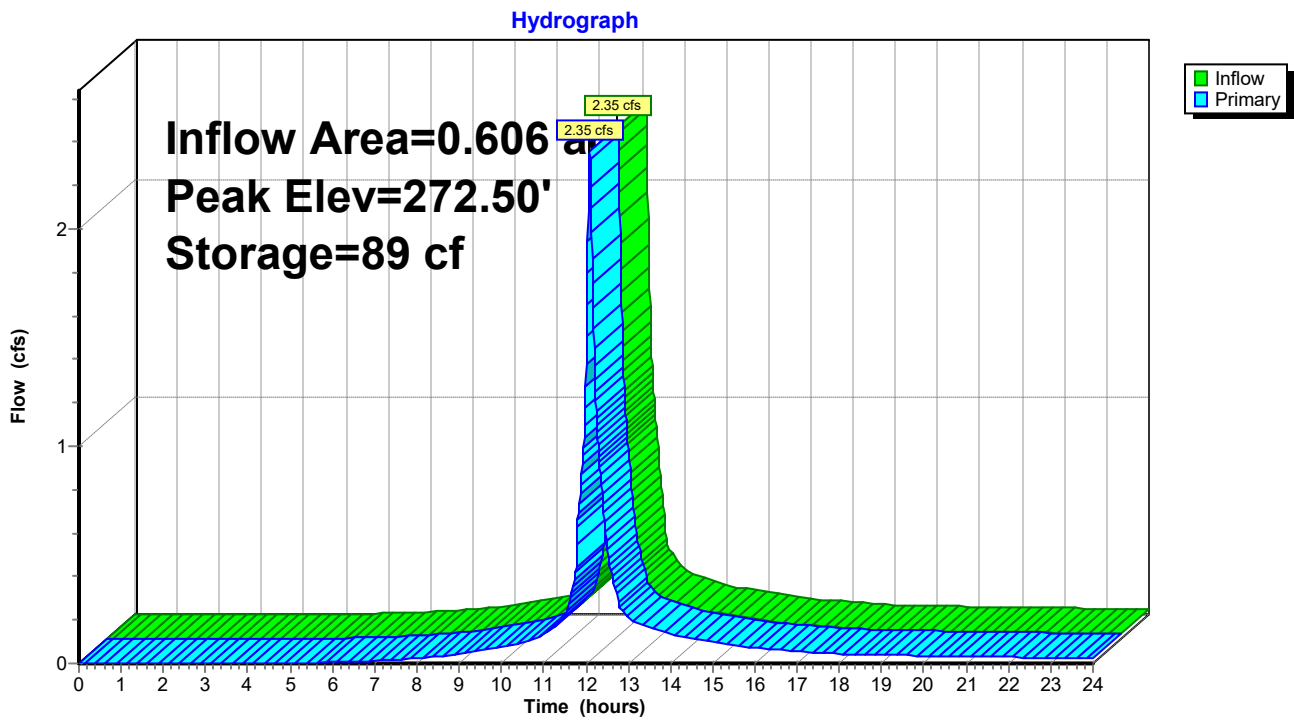
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
271.78	64	38.0	0	0	64
272.28	128	48.0	47	47	136
272.78	209	60.0	83	131	242
273.00	250	64.0	50	181	284
273.05	251	65.0	13	193	295

Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	15.0" Round Culvert L= 13.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 269.03' S= 0.0000 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	272.30'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	271.73'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'

Primary OutFlow Max=2.35 cfs @ 12.09 hrs HW=272.50' TW=270.28' (Dynamic Tailwater)

- ↑ 1=Culvert (Passes 2.35 cfs of 6.95 cfs potential flow)
- ↑ 2=Orifice/Grate (Weir Controls 1.83 cfs @ 1.46 fps)
- ↑ 3=Exfiltration (Exfiltration Controls 0.52 cfs)

Pond FP1: Focal Point 1



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Type III 24-hr 10-yr Rainfall=4.60"

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Summary for Pond FP2: Focal Point 2

Inflow Area = 0.066 ac, 84.37% Impervious, Inflow Depth > 3.91" for 10-yr event
 Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.022 af
 Outflow = 0.24 cfs @ 12.14 hrs, Volume= 0.022 af, Atten= 17%, Lag= 3.2 min
 Primary = 0.24 cfs @ 12.14 hrs, Volume= 0.022 af
 Routed to Pond RT1 : R-Tanks 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 272.76' @ 12.14 hrs Surf.Area= 102 sf Storage= 35 cf

Plug-Flow detention time= 0.8 min calculated for 0.022 af (100% of inflow)
 Center-of-Mass det. time= 0.7 min (776.0 - 775.3)

Volume	Invert	Avail.Storage	Storage Description
#1	272.09'	65 cf	Custom Stage Data (Irregular) Listed below (Recalc) 2.30'W x 9.40'L x 2.25'H FocalPoint 49 cf Overall x 20.0% Voids
#2	272.09'	10 cf	
		75 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
272.09	21	23.0	0	0	21
272.59	63	32.0	20	20	63
273.02	111	40.0	37	57	111
273.09	120	42.0	8	65	124

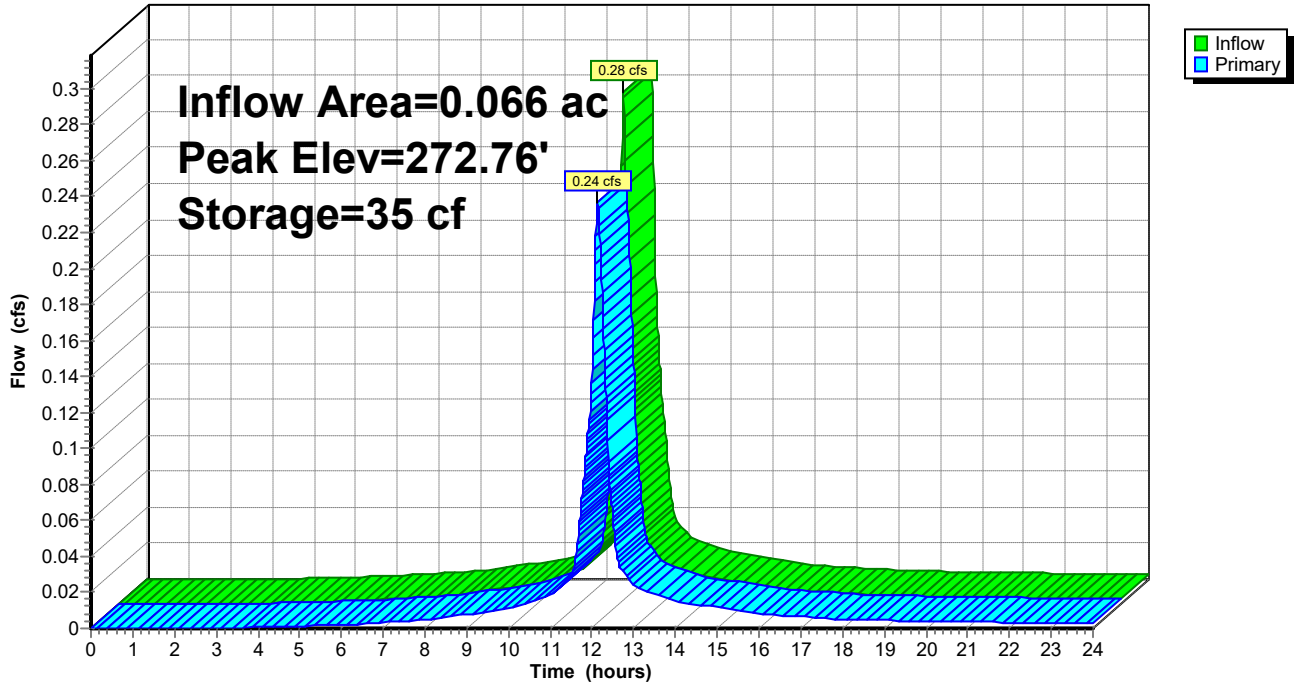
Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	12.0" Round Culvert L= 4.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 269.03' S= 0.0000 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	273.00'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	272.09'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'

Primary OutFlow Max=0.24 cfs @ 12.14 hrs HW=272.76' TW=270.29' (Dynamic Tailwater)

- ↑ 1=Culvert (Passes 0.24 cfs of 4.69 cfs potential flow)
- ↑ 2=Orifice/Grate (Controls 0.00 cfs)
- ↑ 3=Exfiltration (Exfiltration Controls 0.24 cfs)

Pond FP2: Focal Point 2

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.60"

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Summary for Pond GUSF1: Grassed Underdrain Soil Filter 1

Inflow Area = 0.194 ac, 20.68% Impervious, Inflow Depth > 2.46" for 10-yr event
 Inflow = 0.56 cfs @ 12.09 hrs, Volume= 0.040 af
 Outflow = 0.12 cfs @ 12.53 hrs, Volume= 0.020 af, Atten= 79%, Lag= 26.3 min
 Primary = 0.12 cfs @ 12.53 hrs, Volume= 0.020 af
 Routed to Pond RT2 : R-Tanks 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 272.33' @ 12.53 hrs Surf.Area= 2,143 sf Storage= 886 cf
 Flood Elev= 273.30' Surf.Area= 2,449 sf Storage= 1,745 cf

Plug-Flow detention time= 231.4 min calculated for 0.020 af (51% of inflow)
 Center-of-Mass det. time= 116.5 min (944.0 - 827.5)

Volume	Invert	Avail.Storage	Storage Description
#1	271.80'	1,402 cf	GUSF1 (Irregular) Listed below (Recalc)
#2	269.04'	344 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		1,745 cf	Total Available Storage

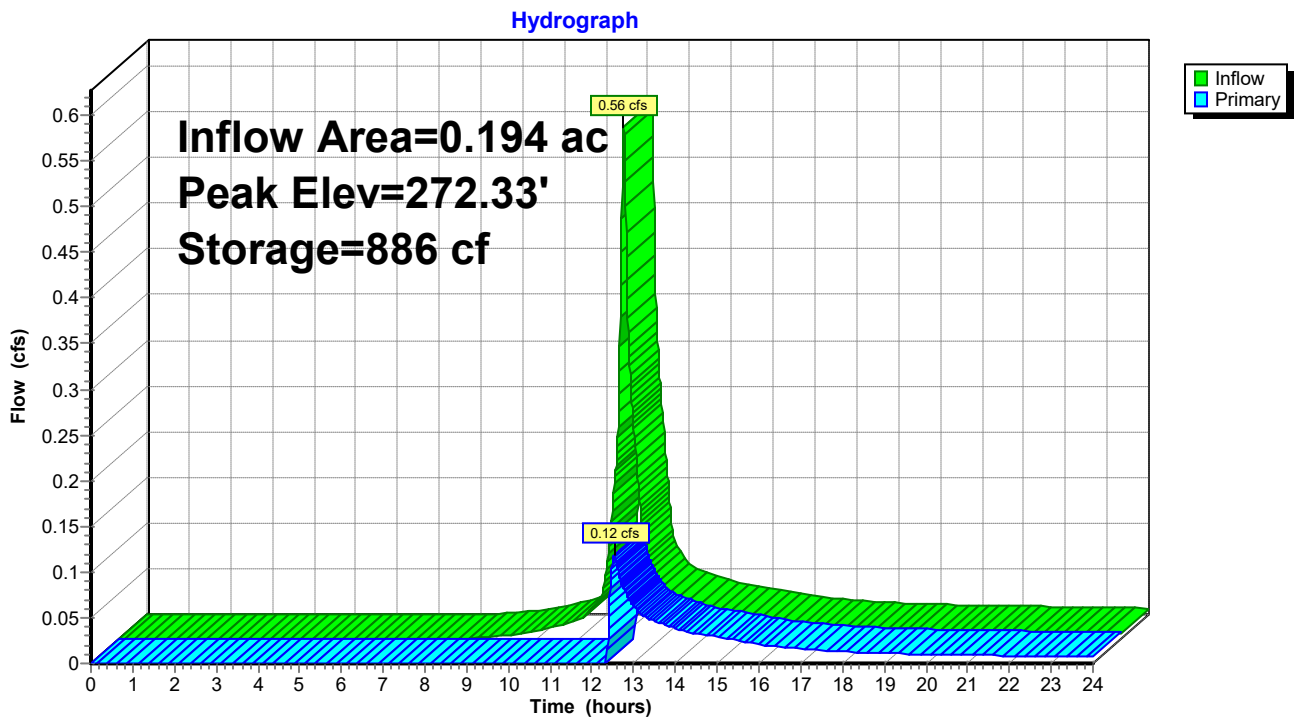
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
271.80	424	109.0	0	0	424
272.30	1,666	212.0	488	488	3,056
272.80	1,992	221.0	913	1,402	3,385

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
269.04	457	0.0	0	0
269.05	457	40.0	2	2
269.79	457	40.0	135	137
269.80	457	30.0	1	138
270.29	457	30.0	67	206
270.30	457	20.0	1	207
271.80	457	20.0	137	344

Device	Routing	Invert	Outlet Devices
#1	Primary	270.40'	12.0" Round Culvert L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 270.40' / 270.06' S= 0.0170 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	272.30'	24.0" Horiz. Beehive Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.12 cfs @ 12.53 hrs HW=272.33' TW=270.07' (Dynamic Tailwater)
 ↑ **1=Culvert** (Passes 0.12 cfs of 3.57 cfs potential flow)
 ↑ **2=Beehive Overflow** (Weir Controls 0.12 cfs @ 0.59 fps)

Pond GUSF1: Grassed Underdrain Soil Filter 1



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Type III 24-hr 10-yr Rainfall=4.60"

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Summary for Pond OCS1: OCS-1

Inflow Area = 1.284 ac, 59.98% Impervious, Inflow Depth > 3.05" for 10-yr event
 Inflow = 2.73 cfs @ 12.19 hrs, Volume= 0.326 af
 Outflow = 2.73 cfs @ 12.19 hrs, Volume= 0.326 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.73 cfs @ 12.19 hrs, Volume= 0.326 af
 Routed to Link AP1 : Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 270.02' @ 12.19 hrs
 Flood Elev= 271.00'

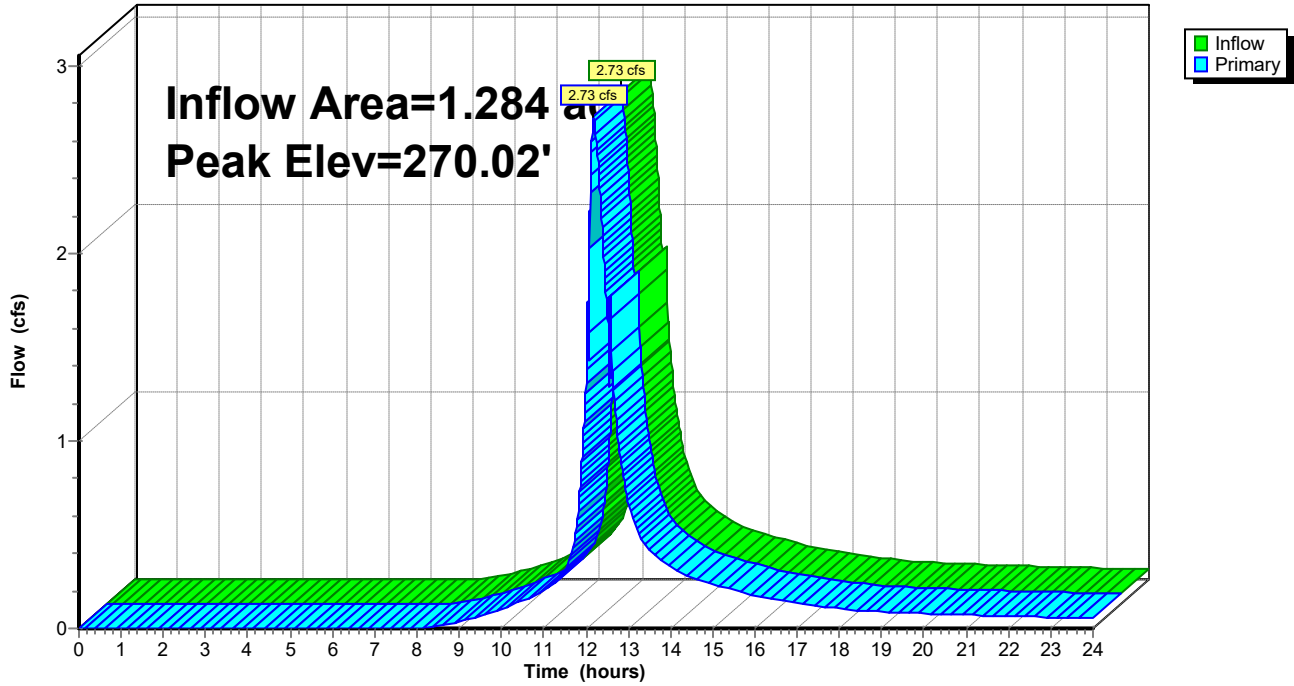
Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	15.0" Round Culvert L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 268.50' S= 0.0212 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	270.47'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Device 1	269.03'	30.0" W x 2.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	269.80'	30.0" W x 3.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.73 cfs @ 12.19 hrs HW=270.02' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 2.73 cfs of 2.78 cfs potential flow)
- 2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)
- 3=Orifice/Grate (Orifice Controls 1.91 cfs @ 4.58 fps)
- 4=Orifice/Grate (Orifice Controls 0.82 cfs @ 1.50 fps)

Pond OCS1: OCS-1

Hydrograph



Summary for Pond OSC2: OCS-2

Inflow Area = 0.098 ac, 100.00% Impervious, Inflow Depth > 4.13" for 10-yr event
 Inflow = 0.36 cfs @ 12.14 hrs, Volume= 0.034 af
 Outflow = 0.36 cfs @ 12.14 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.36 cfs @ 12.14 hrs, Volume= 0.034 af
 Routed to Link AP2 : Stream

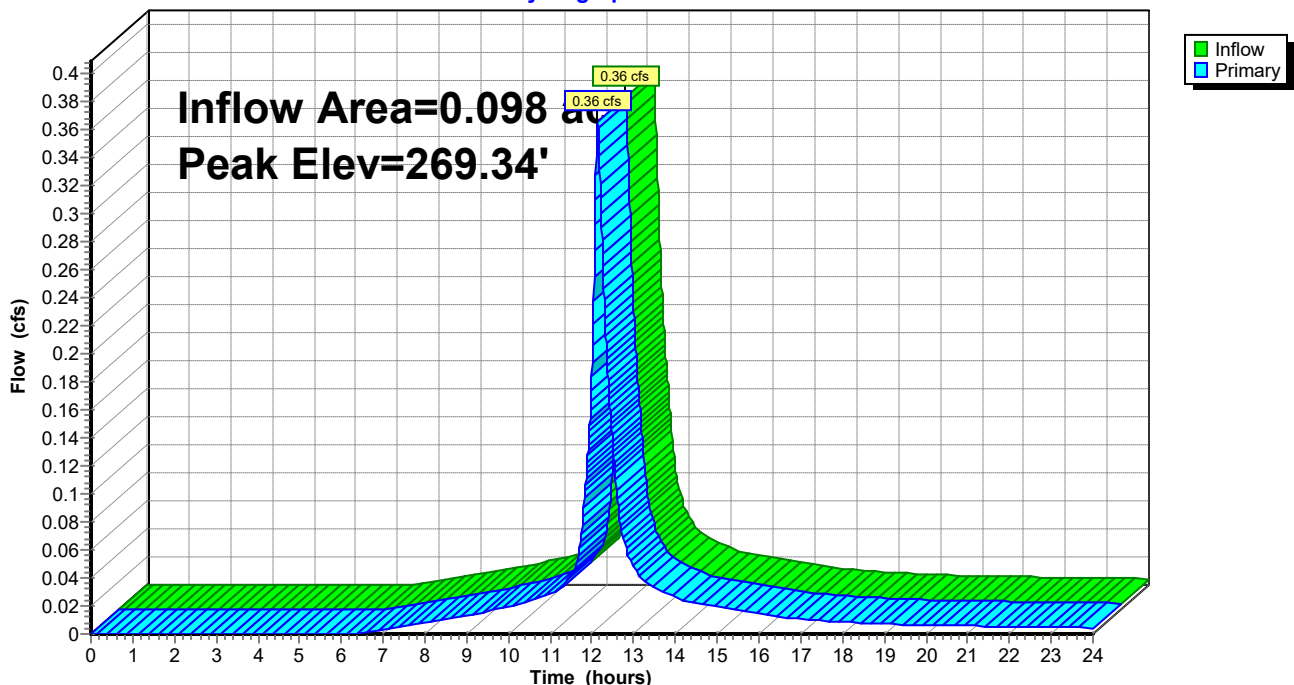
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 269.34' @ 12.14 hrs
 Flood Elev= 270.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	15.0" Round Culvert L= 74.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 268.50' S= 0.0072 ' S= 0.0072 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	270.50'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Device 1	269.03'	12.0" W x 6.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.36 cfs @ 12.14 hrs HW=269.34' TW=0.00' (Dynamic Tailwater)
 1=Culvert (Inlet Controls 0.36 cfs @ 1.51 fps)
 2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)
 3=Orifice/Grate (Passes 0.36 cfs of 0.57 cfs potential flow)

Pond OSC2: OCS-2

Hydrograph



Summary for Pond RDEF1: RDEF-1

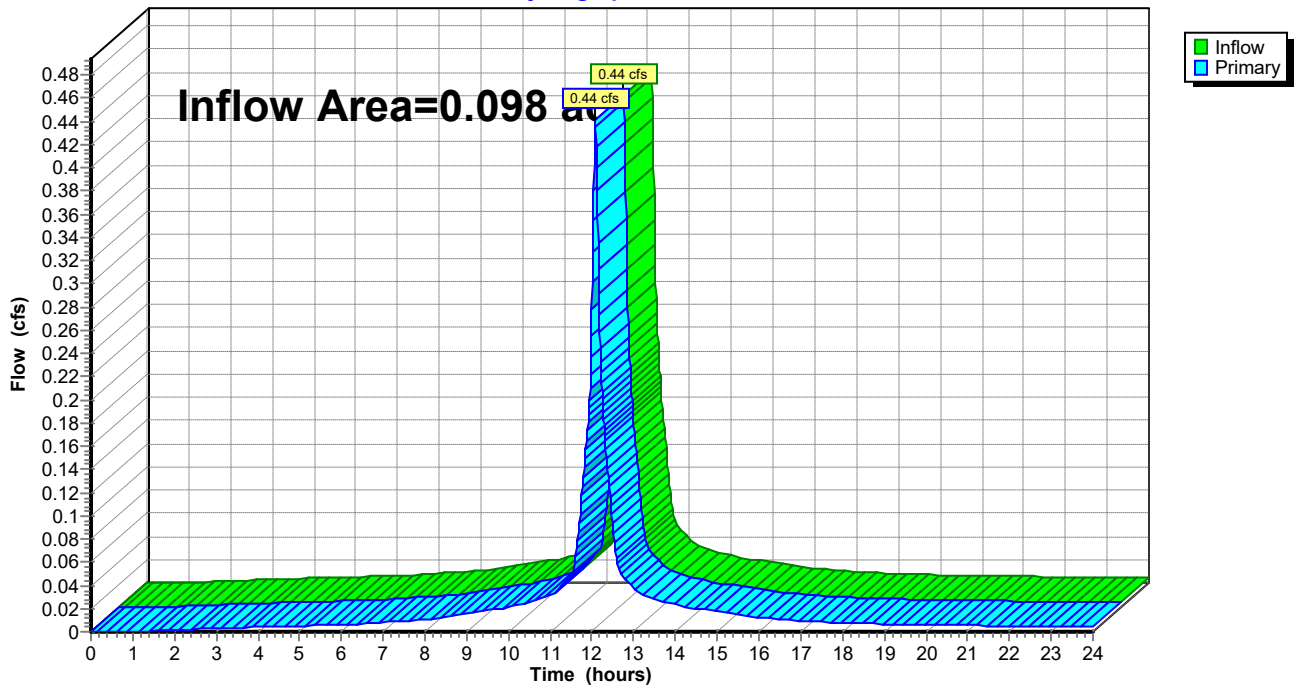
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.098 ac, 100.00% Impervious, Inflow Depth > 4.36" for 10-yr event
Inflow = 0.44 cfs @ 12.08 hrs, Volume= 0.036 af
Primary = 0.44 cfs @ 12.08 hrs, Volume= 0.036 af, Atten= 0%, Lag= 0.0 min
Routed to Pond RT3 : R-Tanks 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Pond RDEF1: RDEF-1

Hydrograph



Summary for Pond RDEF2: RDEF-2

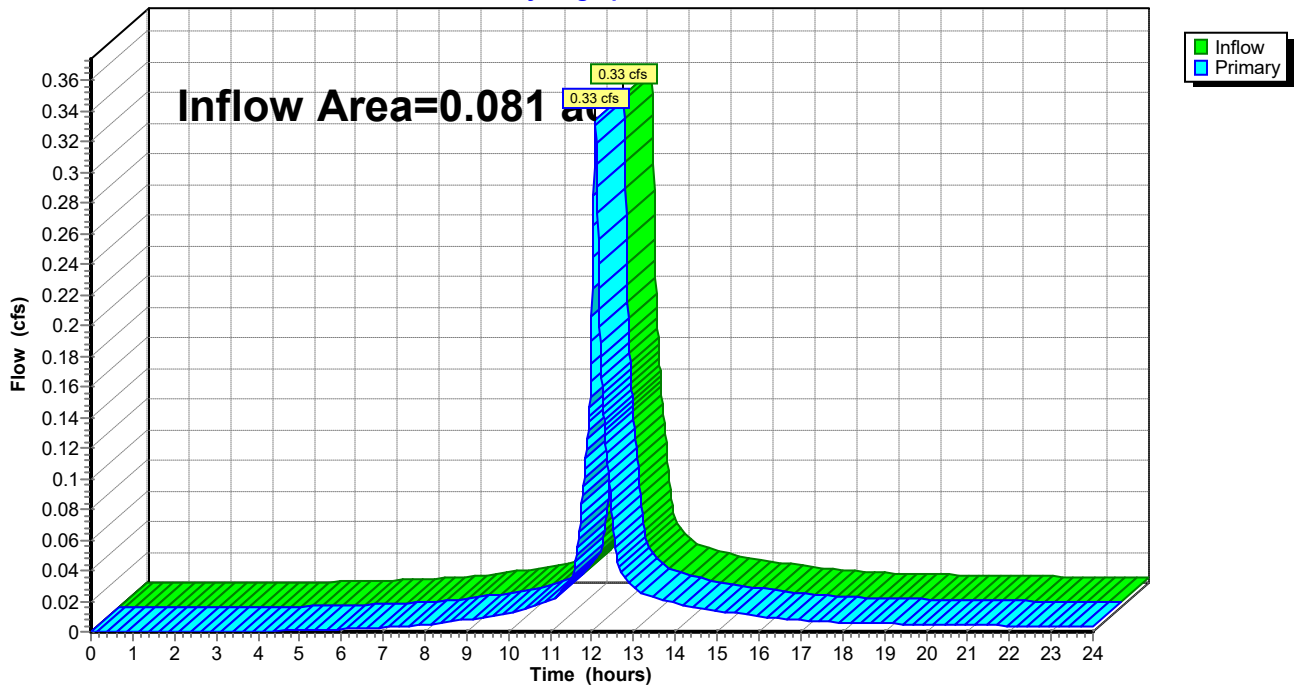
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.081 ac, 74.62% Impervious, Inflow Depth > 3.70" for 10-yr event
Inflow = 0.33 cfs @ 12.08 hrs, Volume= 0.025 af
Primary = 0.33 cfs @ 12.08 hrs, Volume= 0.025 af, Atten= 0%, Lag= 0.0 min
Routed to Pond RT2 : R-Tanks 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Pond RDEF2: RDEF-2

Hydrograph



Summary for Pond RDEF3: RDEF-3

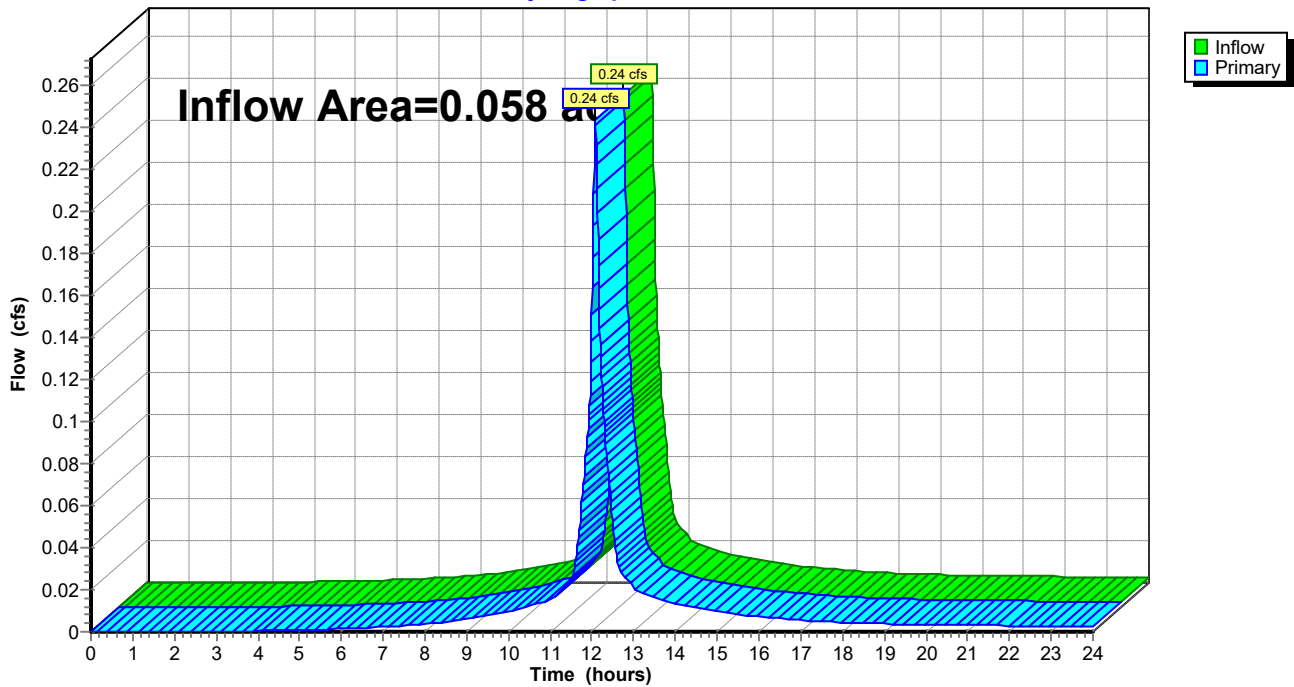
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.058 ac, 77.89% Impervious, Inflow Depth > 3.80" for 10-yr event
Inflow = 0.24 cfs @ 12.08 hrs, Volume= 0.018 af
Primary = 0.24 cfs @ 12.08 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min
Routed to Pond RT2 : R-Tanks 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Pond RDEF3: RDEF-3

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.60"

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Summary for Pond RT1: R-Tanks 1

Inflow Area = 1.284 ac, 59.98% Impervious, Inflow Depth > 3.06" for 10-yr event
 Inflow = 2.80 cfs @ 12.17 hrs, Volume= 0.328 af
 Outflow = 2.73 cfs @ 12.19 hrs, Volume= 0.326 af, Atten= 3%, Lag= 1.0 min
 Primary = 2.73 cfs @ 12.19 hrs, Volume= 0.326 af
 Routed to Pond OCS1 : OCS-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 270.36' @ 12.19 hrs Surf.Area= 352 sf Storage= 375 cf

Plug-Flow detention time= 7.1 min calculated for 0.326 af (100% of inflow)
 Center-of-Mass det. time= 4.2 min (830.8 - 826.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	268.80'	255 cf	22.37'W x 15.73'L x 2.69'H Field A 948 cf Overall - 311 cf Embedded = 637 cf x 40.0% Voids
#2A	269.05'	296 cf	ACF R-Tank HD 1 x 70 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 70 Chambers in 14 Rows
		550 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	15.0" Round Culvert L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 269.03' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.72 cfs @ 12.19 hrs HW=270.36' TW=270.02' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 2.72 cfs @ 2.22 fps)

191.06051 SW-POST

Type III 24-hr 10-yr Rainfall=4.60"

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Pond RT1: R-Tanks 1 - Chamber Wizard Field A

Chamber Model = ACF R-Tank HD 1 (ACF Environmental R-Tank HD)

Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf

Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf

5 Chambers/Row x 2.35' Long = 11.73' Row Length +24.0" End Stone x 2 = 15.73' Base Length

14 Rows x 15.7" Wide + 24.0" Side Stone x 2 = 22.37' Base Width

3.0" Stone Base + 17.3" Chamber Height + 12.0" Stone Cover = 2.69' Field Height

70 Chambers x 4.2 cf = 295.5 cf Chamber Storage

70 Chambers x 4.4 cf = 311.1 cf Displacement

947.9 cf Field - 311.1 cf Chambers = 636.8 cf Stone x 40.0% Voids = 254.7 cf Stone Storage

Chamber Storage + Stone Storage = 550.2 cf = 0.013 af

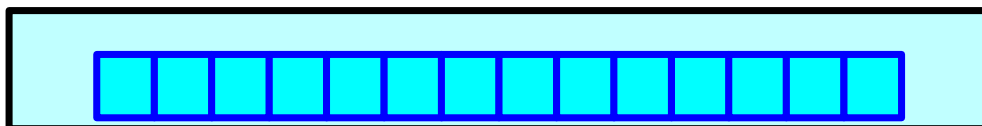
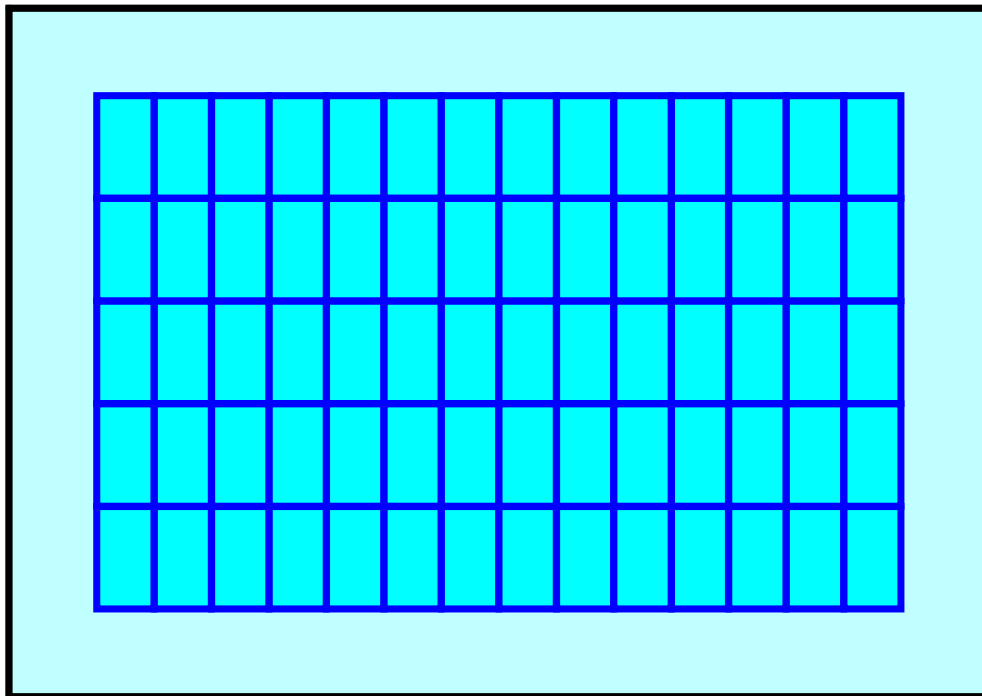
Overall Storage Efficiency = 58.1%

Overall System Size = 15.73' x 22.37' x 2.69'

70 Chambers

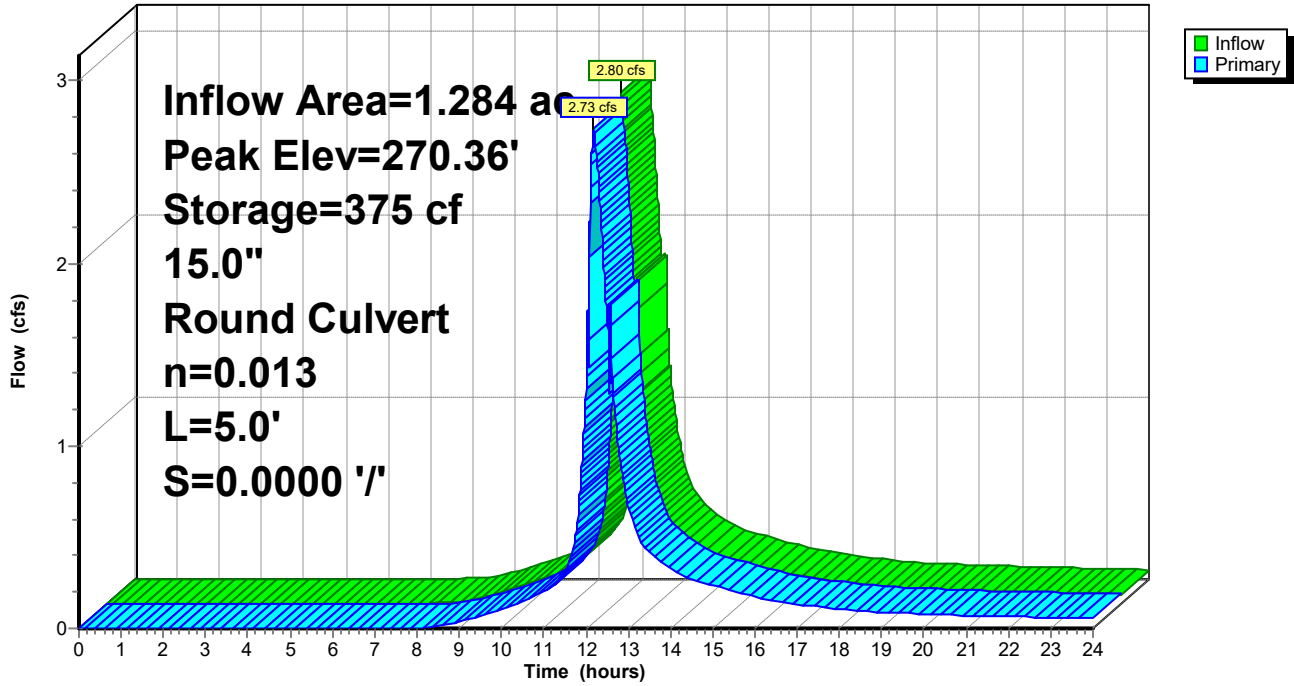
35.1 cy Field

23.6 cy Stone



Pond RT1: R-Tanks 1

Hydrograph



Summary for Pond RT2: R-Tanks 2

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=7)

Inflow Area = 1.218 ac, 58.65% Impervious, Inflow Depth > 3.11" for 10-yr event
 Inflow = 4.03 cfs @ 12.09 hrs, Volume= 0.316 af
 Outflow = 2.57 cfs @ 12.17 hrs, Volume= 0.306 af, Atten= 36%, Lag= 5.0 min
 Primary = 2.57 cfs @ 12.17 hrs, Volume= 0.306 af
 Routed to Pond RT1 : R-Tanks 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 270.50' @ 12.18 hrs Surf.Area= 1,753 sf Storage= 2,332 cf

Plug-Flow detention time= 44.7 min calculated for 0.306 af (97% of inflow)
 Center-of-Mass det. time= 26.5 min (830.2 - 803.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	268.78'	1,071 cf	30.25'W x 57.95'L x 2.69'H Field A 4,722 cf Overall - 2,044 cf Embedded = 2,677 cf x 40.0% Voids
#2A	269.03'	1,942 cf	ACF R-Tank HD 1 x 460 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 460 Chambers in 20 Rows
		3,013 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	18.0" Round Culvert L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 269.03' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.57 cfs @ 12.17 hrs HW=270.50' TW=270.35' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 2.57 cfs @ 1.46 fps)

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Type III 24-hr 10-yr Rainfall=4.60"

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Pond RT2: R-Tanks 2 - Chamber Wizard Field A

Chamber Model = ACF R-Tank HD 1 (ACF Environmental R-Tank HD)

Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf

Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf

23 Chambers/Row x 2.35' Long = 53.95' Row Length +24.0" End Stone x 2 = 57.95' Base Length

20 Rows x 15.7" Wide + 24.0" Side Stone x 2 = 30.25' Base Width

3.0" Stone Base + 17.3" Chamber Height + 12.0" Stone Cover = 2.69' Field Height

460 Chambers x 4.2 cf = 1,942.0 cf Chamber Storage

460 Chambers x 4.4 cf = 2,044.2 cf Displacement

4,721.6 cf Field - 2,044.2 cf Chambers = 2,677.3 cf Stone x 40.0% Voids = 1,070.9 cf Stone Storage

Chamber Storage + Stone Storage = 3,013.0 cf = 0.069 af

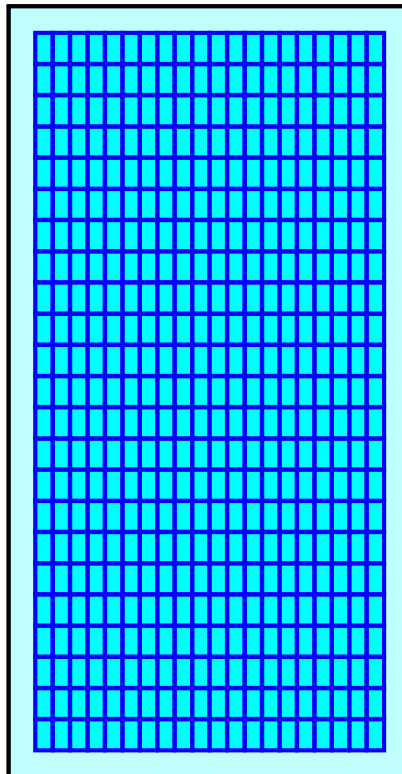
Overall Storage Efficiency = 63.8%

Overall System Size = 57.95' x 30.25' x 2.69'

460 Chambers

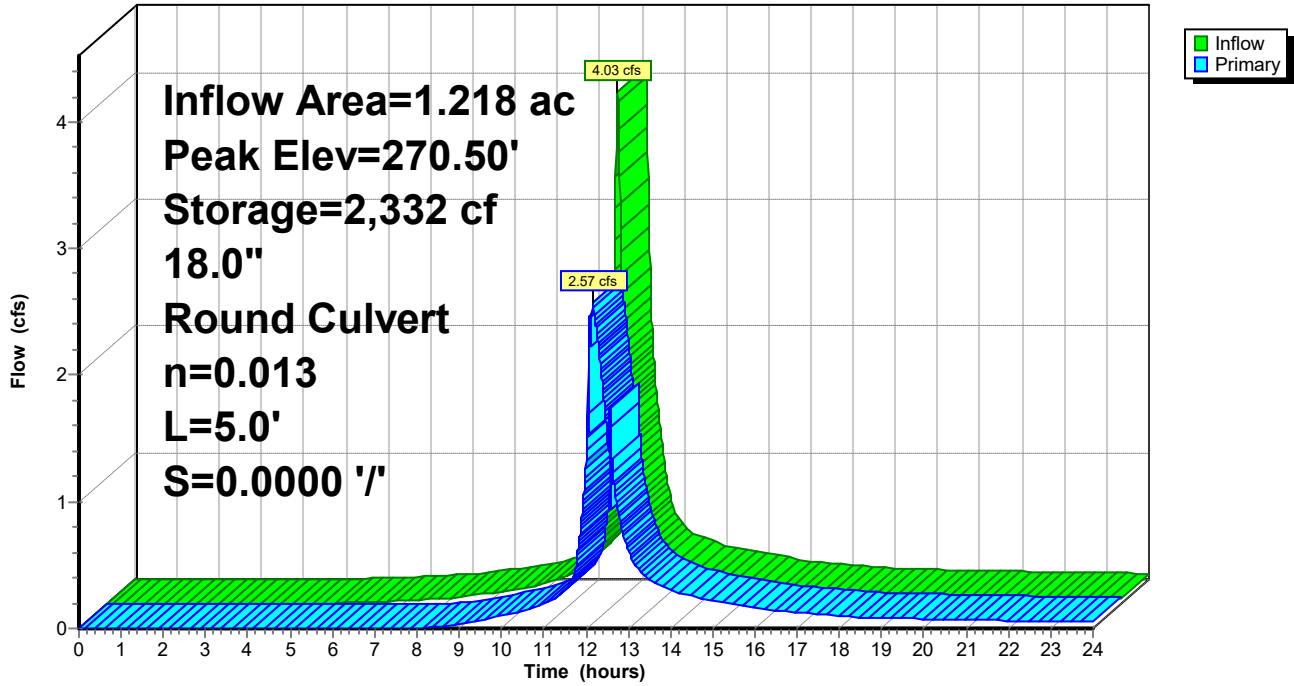
174.9 cy Field

99.2 cy Stone



Pond RT2: R-Tanks 2

Hydrograph



Summary for Pond RT3: R-Tanks 3

Inflow Area = 0.098 ac, 100.00% Impervious, Inflow Depth > 4.36" for 10-yr event
 Inflow = 0.44 cfs @ 12.08 hrs, Volume= 0.036 af
 Outflow = 0.36 cfs @ 12.14 hrs, Volume= 0.034 af, Atten= 17%, Lag= 3.2 min
 Primary = 0.36 cfs @ 12.14 hrs, Volume= 0.034 af
 Routed to Pond OSC2 : OCS-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 269.51' @ 12.14 hrs Surf.Area= 609 sf Storage= 245 cf

Plug-Flow detention time= 70.5 min calculated for 0.034 af (95% of inflow)
 Center-of-Mass det. time= 40.0 min (788.8 - 748.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	268.80'	491 cf	7.94'W x 76.72'L x 2.69'H Field A 1,640 cf Overall - 413 cf Embedded = 1,227 cf x 40.0% Voids
#2A	269.05'	393 cf	ACF R-Tank HD 1 x 93 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 93 Chambers in 3 Rows
		883 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	12.0" Round Culvert L= 43.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 269.03' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.36 cfs @ 12.14 hrs HW=269.51' TW=269.34' (Dynamic Tailwater)
 ↑1=Culvert (Barrel Controls 0.36 cfs @ 1.43 fps)

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Type III 24-hr 10-yr Rainfall=4.60"

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Pond RT3: R-Tanks 3 - Chamber Wizard Field A

Chamber Model = ACF R-Tank HD 1 (ACF Environmental R-Tank HD)

Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf

Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf

31 Chambers/Row x 2.35' Long = 72.72' Row Length +24.0" End Stone x 2 = 76.72' Base Length

3 Rows x 15.7" Wide + 24.0" Side Stone x 2 = 7.94' Base Width

3.0" Stone Base + 17.3" Chamber Height + 12.0" Stone Cover = 2.69' Field Height

93 Chambers x 4.2 cf = 392.6 cf Chamber Storage

93 Chambers x 4.4 cf = 413.3 cf Displacement

1,640.2 cf Field - 413.3 cf Chambers = 1,226.9 cf Stone x 40.0% Voids = 490.8 cf Stone Storage

Chamber Storage + Stone Storage = 883.4 cf = 0.020 af

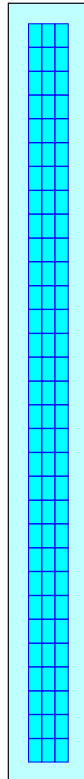
Overall Storage Efficiency = 53.9%

Overall System Size = 76.72' x 7.94' x 2.69'

93 Chambers

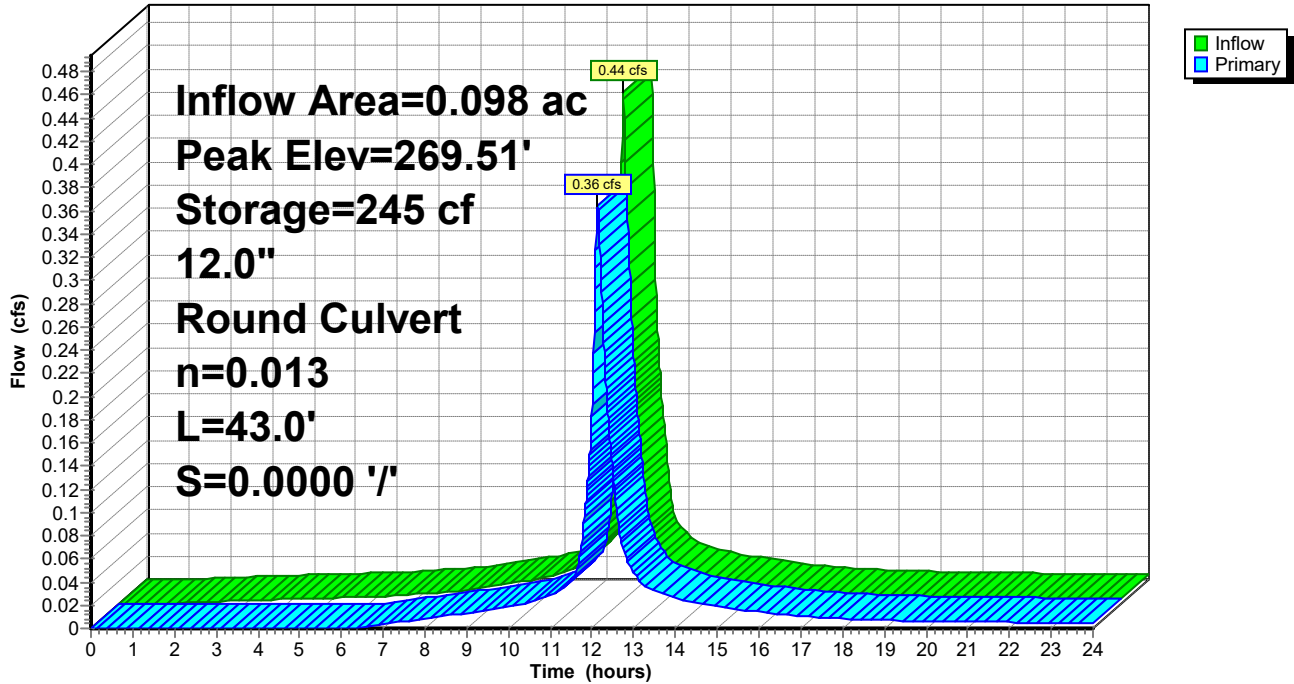
60.7 cy Field

45.4 cy Stone



Pond RT3: R-Tanks 3

Hydrograph



Summary for Pond SDEF1: SDEF1

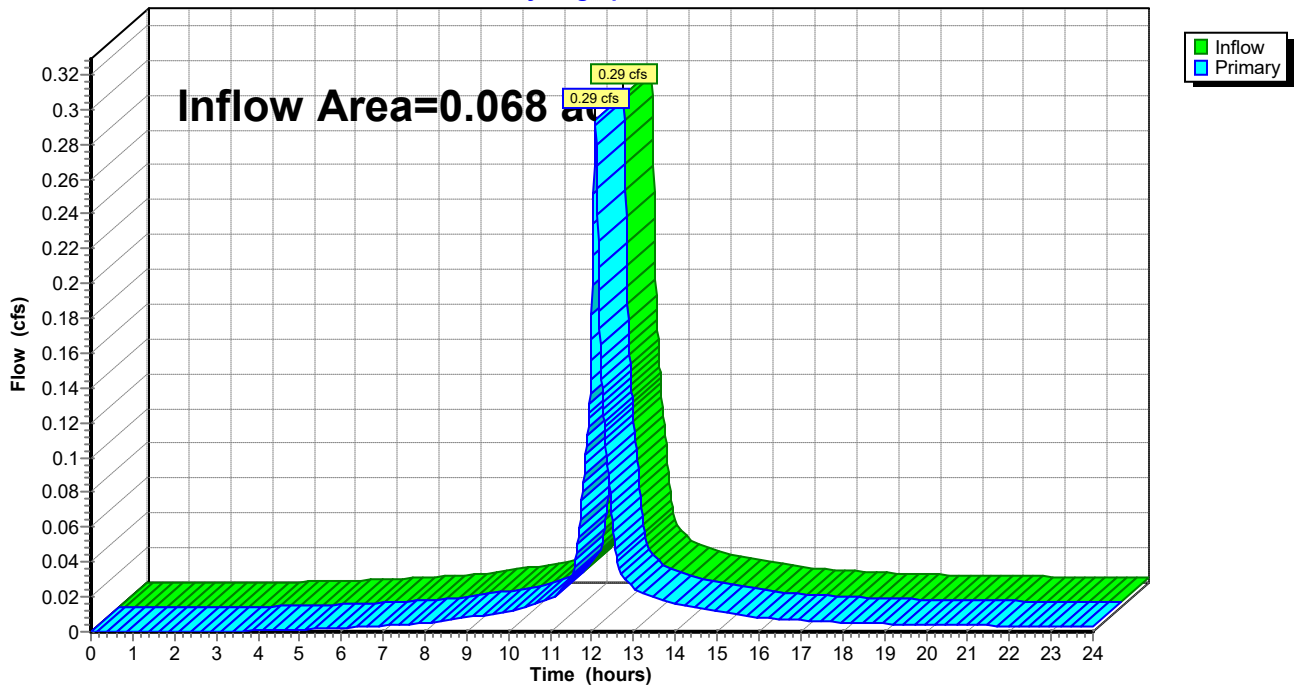
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.068 ac, 83.24% Impervious, Inflow Depth > 3.91" for 10-yr event
Inflow = 0.29 cfs @ 12.08 hrs, Volume= 0.022 af
Primary = 0.29 cfs @ 12.08 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 1R : Plunge pool

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Pond SDEF1: SDEF1

Hydrograph



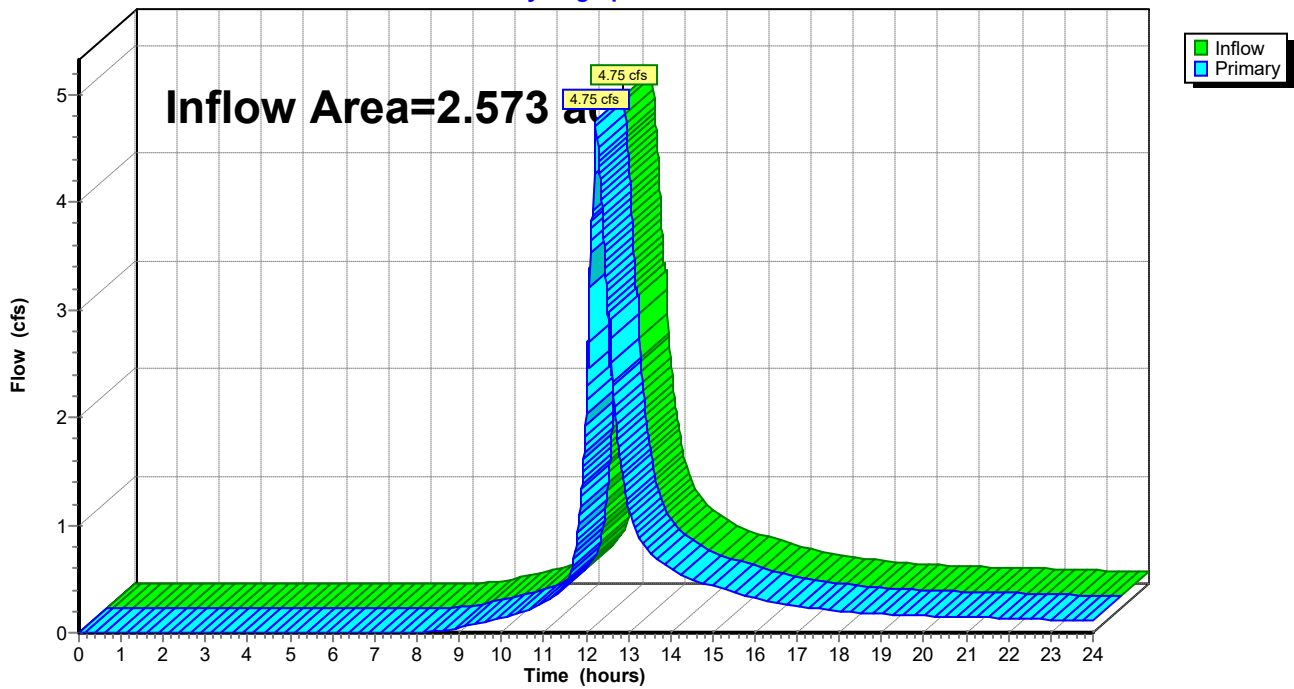
Summary for Link AP1: Wetlands

Inflow Area = 2.573 ac, 40.29% Impervious, Inflow Depth > 2.64" for 10-yr event
Inflow = 4.75 cfs @ 12.22 hrs, Volume= 0.566 af
Primary = 4.75 cfs @ 12.22 hrs, Volume= 0.566 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 28P

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link AP1: Wetlands

Hydrograph



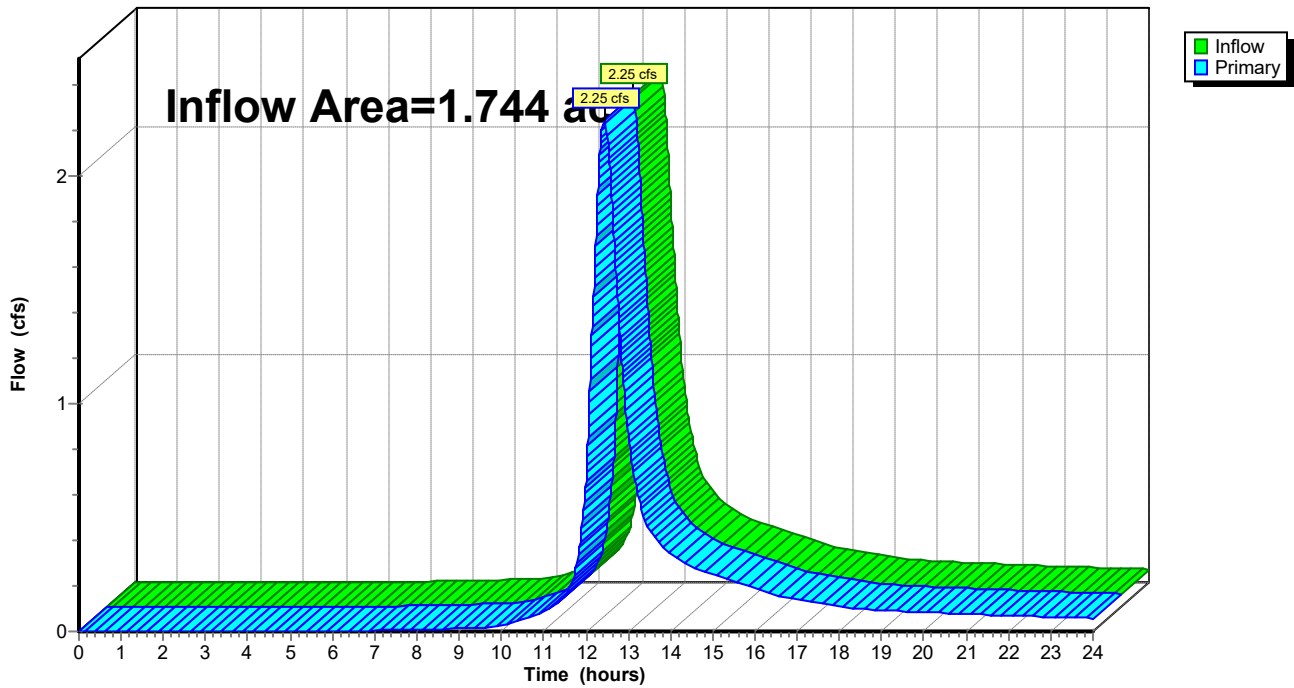
Summary for Link AP2: Stream

Inflow Area = 1.744 ac, 10.57% Impervious, Inflow Depth > 2.08" for 10-yr event
Inflow = 2.25 cfs @ 12.43 hrs, Volume= 0.302 af
Primary = 2.25 cfs @ 12.43 hrs, Volume= 0.302 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link AP2: Stream

Hydrograph



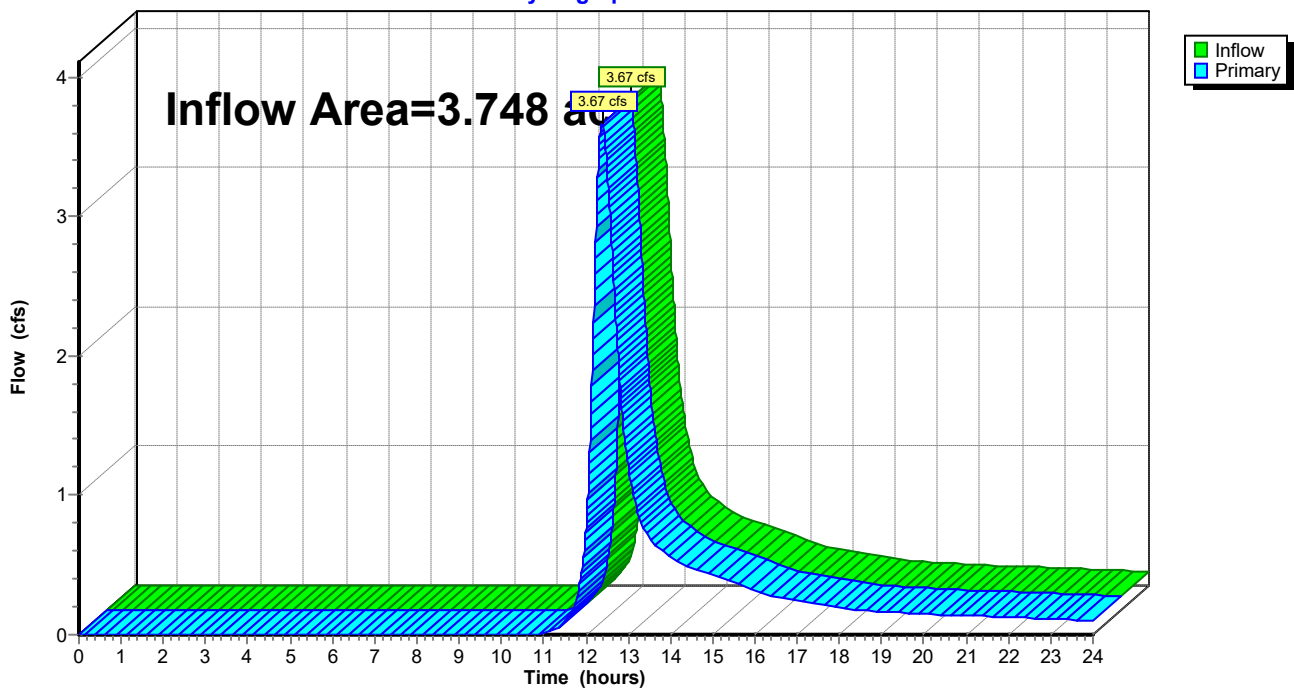
Summary for Link AP3:

Inflow Area = 3.748 ac, 18.11% Impervious, Inflow Depth > 1.45" for 10-yr event
Inflow = 3.67 cfs @ 12.38 hrs, Volume= 0.453 af
Primary = 3.67 cfs @ 12.38 hrs, Volume= 0.453 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 28P

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link AP3:

Hydrograph



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Type III 24-hr 25-yr Rainfall=5.80"

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1AS:	Runoff Area=8,449 sf 20.68% Impervious Runoff Depth>3.50" Tc=6.0 min CN=79 Runoff=0.80 cfs 0.057 af
Subcatchment 1BS: Existing parking lot	Runoff Area=26,395 sf 62.50% Impervious Runoff Depth>4.54" Tc=6.0 min CN=89 Runoff=3.10 cfs 0.229 af
Subcatchment 1CS: existing parking	Runoff Area=12,181 sf 68.08% Impervious Runoff Depth>4.65" Tc=6.0 min CN=90 Runoff=1.46 cfs 0.108 af
Subcatchment 1DS: existing lawn to	Runoff Area=21,304 sf 42.85% Impervious Runoff Depth>4.01" Tc=6.0 min CN=84 Runoff=2.27 cfs 0.163 af
Subcatchment 1ES: Access Road to Stone	Runoff Area=2,983 sf 83.24% Impervious Runoff Depth>5.09" Tc=6.0 min CN=94 Runoff=0.38 cfs 0.029 af
Subcatchment 1FS: West prop line	Runoff Area=8,099 sf 0.00% Impervious Runoff Depth>3.01" Tc=6.0 min CN=74 Runoff=0.66 cfs 0.047 af
Subcatchment 1GS: Roof to RFEF2	Runoff Area=3,515 sf 74.62% Impervious Runoff Depth>4.87" Tc=6.0 min CN=92 Runoff=0.43 cfs 0.033 af
Subcatchment 1HS: to Roof Dripline Filter	Runoff Area=2,510 sf 77.89% Impervious Runoff Depth>4.98" Tc=6.0 min CN=93 Runoff=0.31 cfs 0.024 af
Subcatchment 1IS: Roof to FP	Runoff Area=2,886 sf 84.37% Impervious Runoff Depth>5.09" Tc=6.0 min CN=94 Runoff=0.36 cfs 0.028 af
Subcatchment 1JS: wetland	Runoff Area=23,765 sf 0.00% Impervious Runoff Depth>3.48" Flow Length=594' Tc=25.5 min CN=79 Runoff=1.36 cfs 0.158 af
Subcatchment 2AS: roof to rdef1	Runoff Area=2,154 sf 100.00% Impervious Runoff Depth>5.56" Tc=6.0 min CN=98 Runoff=0.28 cfs 0.023 af
Subcatchment 2BS: roof to RDEF1	Runoff Area=2,117 sf 100.00% Impervious Runoff Depth>5.56" Tc=6.0 min CN=98 Runoff=0.28 cfs 0.023 af
Subcatchment 2CS: Remaining	Runoff Area=71,696 sf 5.24% Impervious Runoff Depth>2.90" Flow Length=631' Tc=31.0 min CN=73 Runoff=3.14 cfs 0.398 af
Subcatchment 3S: off site existing	Runoff Area=163,274 sf 18.11% Impervious Runoff Depth>2.28" Flow Length=594' Tc=25.5 min CN=66 Runoff=5.97 cfs 0.712 af
Reach 1R: Plunge pool	Inflow=3.29 cfs 0.193 af Outflow=3.29 cfs 0.193 af
Pond 1P: Detention Pond	Peak Elev=273.41' Storage=2,254 cf Inflow=2.27 cfs 0.163 af Outflow=2.26 cfs 0.117 af

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Type III 24-hr 25-yr Rainfall=5.80"

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Pond FP1: Focal Point 1	Peak Elev=272.55' Storage=98 cf Inflow=3.10 cfs 0.229 af Outflow=3.10 cfs 0.229 af
Pond FP2: Focal Point 2	Peak Elev=272.97' Storage=56 cf Inflow=0.36 cfs 0.028 af Outflow=0.29 cfs 0.028 af
Pond GUSF1: Grassed Underdrain Soil Filter 1	Peak Elev=272.38' Storage=959 cf Inflow=0.80 cfs 0.057 af Outflow=0.42 cfs 0.037 af
Pond OCS1: OCS-1	Peak Elev=270.31' Inflow=3.77 cfs 0.447 af Outflow=3.77 cfs 0.447 af
Pond OSC2: OCS-2	Peak Elev=269.39' Inflow=0.47 cfs 0.043 af Outflow=0.47 cfs 0.043 af
Pond RDEF1: RDEF-1	Inflow=0.56 cfs 0.045 af Primary=0.56 cfs 0.045 af
Pond RDEF2: RDEF-2	Inflow=0.43 cfs 0.033 af Primary=0.43 cfs 0.033 af
Pond RDEF3: RDEF-3	Inflow=0.31 cfs 0.024 af Primary=0.31 cfs 0.024 af
Pond RT1: R-Tanks 1	Peak Elev=270.96' Storage=474 cf Inflow=3.90 cfs 0.449 af 15.0" Round Culvert n=0.013 L=5.0' S=0.0000 '/' Outflow=3.77 cfs 0.447 af
Pond RT2: R-Tanks 2	Peak Elev=271.22' Storage=2,838 cf Inflow=5.30 cfs 0.431 af 18.0" Round Culvert n=0.013 L=5.0' S=0.0000 '/' Outflow=3.60 cfs 0.421 af
Pond RT3: R-Tanks 3	Peak Elev=269.57' Storage=271 cf Inflow=0.56 cfs 0.045 af 12.0" Round Culvert n=0.013 L=43.0' S=0.0000 '/' Outflow=0.47 cfs 0.043 af
Pond SDEF1: SDEF1	Inflow=0.38 cfs 0.029 af Primary=0.38 cfs 0.029 af
Link AP1: Wetlands	Inflow=7.37 cfs 0.799 af Primary=7.37 cfs 0.799 af
Link AP2: Stream	Inflow=3.34 cfs 0.442 af Primary=3.34 cfs 0.442 af
Link AP3:	Inflow=5.97 cfs 0.712 af Primary=5.97 cfs 0.712 af

Total Runoff Area = 8.065 ac Runoff Volume = 2.032 af Average Runoff Depth = 3.02"
76.44% Pervious = 6.165 ac 23.56% Impervious = 1.900 ac

Summary for Subcatchment 1AS:

Runoff = 0.80 cfs @ 12.09 hrs, Volume= 0.057 af, Depth> 3.50"
 Routed to Pond GUSF1 : Grassed Underdrain Soil Filter 1

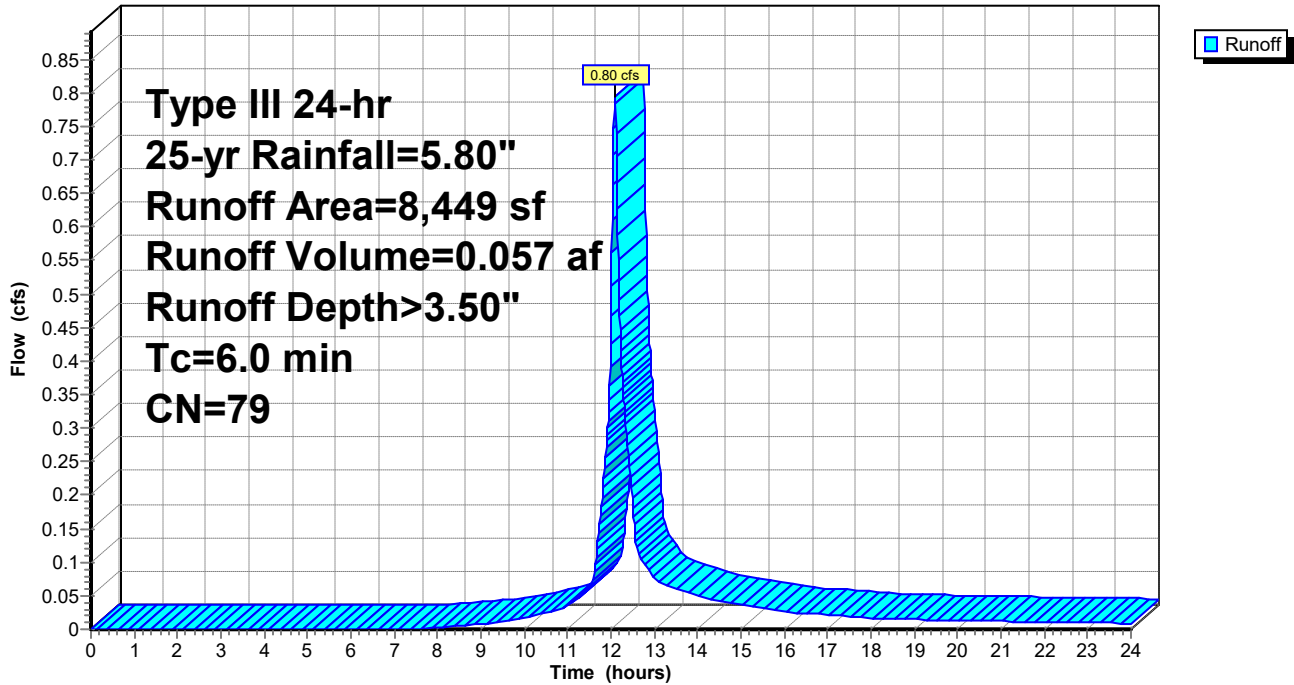
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
6,702	74	>75% Grass cover, Good, HSG C
1,747	98	Paved parking, HSG C
8,449	79	Weighted Average
6,702		79.32% Pervious Area
1,747		20.68% Impervious Area

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

Subcatchment 1AS:

Hydrograph



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Type III 24-hr 25-yr Rainfall=5.80"

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Summary for Subcatchment 1BS: Existing parking lot (fmr sub 2)

Runoff = 3.10 cfs @ 12.08 hrs, Volume= 0.229 af, Depth> 4.54"
 Routed to Pond FP1 : Focal Point 1

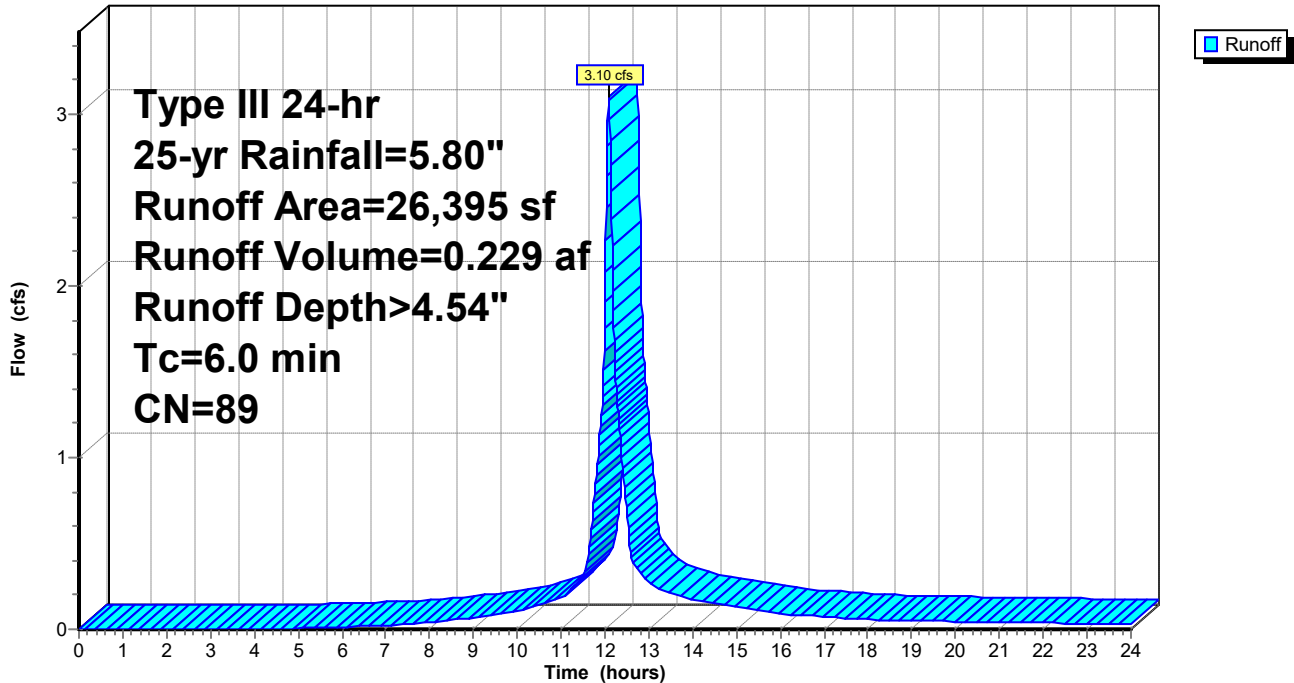
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
9,899	74	>75% Grass cover, Good, HSG C
* 16,496	98	parking and roofs
26,395	89	Weighted Average
9,899		37.50% Pervious Area
16,496		62.50% Impervious Area

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

Subcatchment 1BS: Existing parking lot (fmr sub 2)

Hydrograph



Summary for Subcatchment 1CS: existing parking

Runoff = 1.46 cfs @ 12.08 hrs, Volume= 0.108 af, Depth> 4.65"
 Routed to Pond RT2 : R-Tanks 2

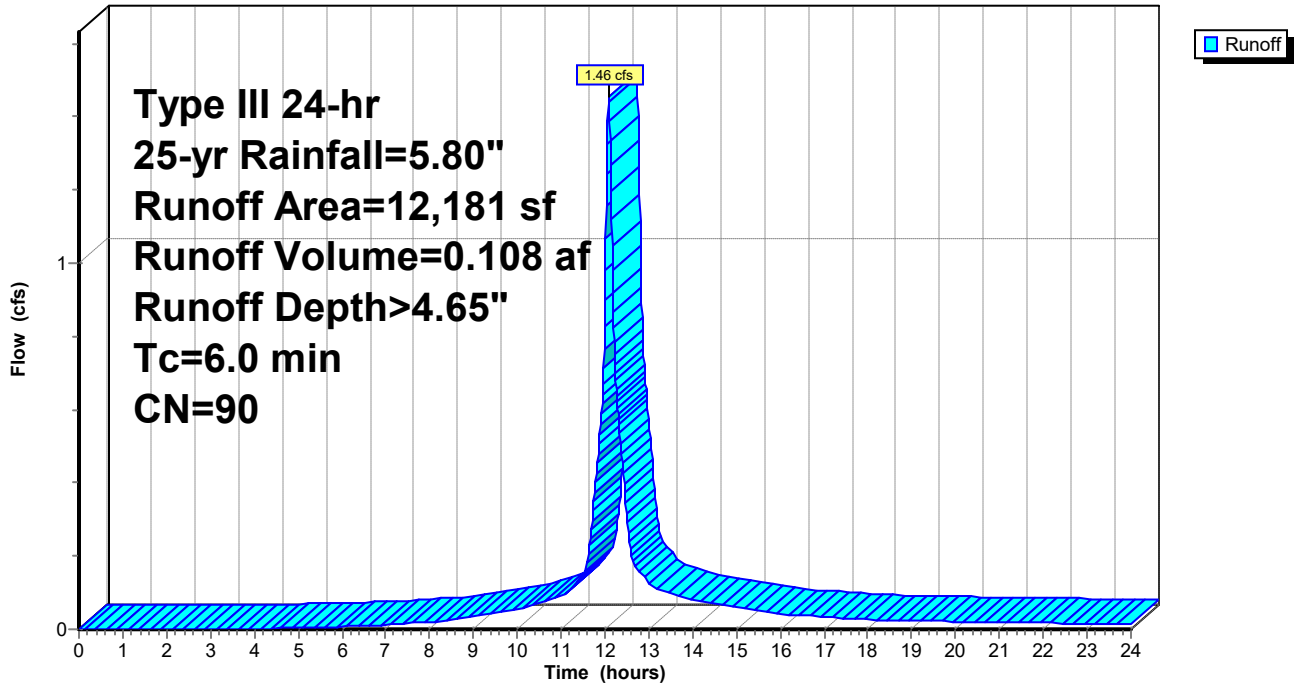
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
3,888	74	>75% Grass cover, Good, HSG C
* 8,293	98	parking and roofs
12,181	90	Weighted Average
3,888		31.92% Pervious Area
8,293		68.08% Impervious Area

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

Subcatchment 1CS: existing parking

Hydrograph



Summary for Subcatchment 1DS: existing lawn to culvert

Runoff = 2.27 cfs @ 12.09 hrs, Volume= 0.163 af, Depth> 4.01"
 Routed to Pond 1P : Detention Pond

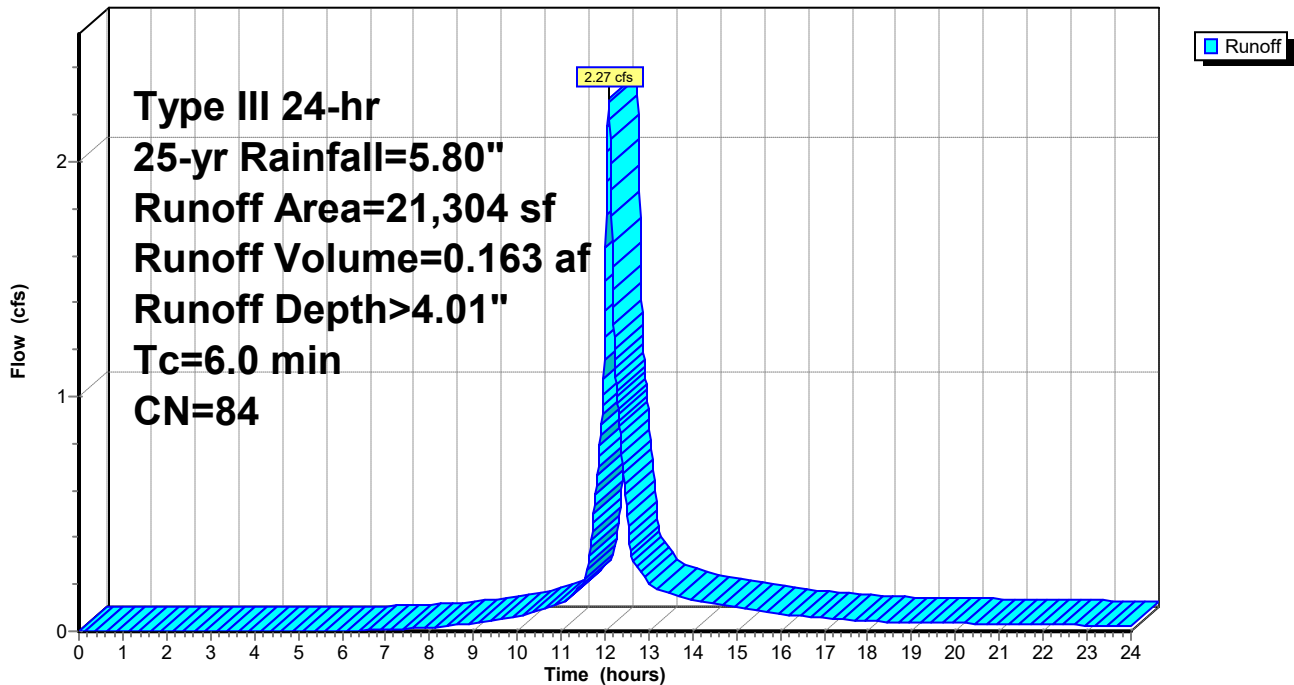
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
9,129	98	roofs and paving
12,175	74	>75% Grass cover, Good, HSG C
21,304	84	Weighted Average
12,175		57.15% Pervious Area
9,129		42.85% Impervious Area

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

Subcatchment 1DS: existing lawn to culvert

Hydrograph



Summary for Subcatchment 1ES: Access Road to Stone Drip Edge Filter

Runoff = 0.38 cfs @ 12.08 hrs, Volume= 0.029 af, Depth> 5.09"
 Routed to Pond SDEF1 : SDEF1

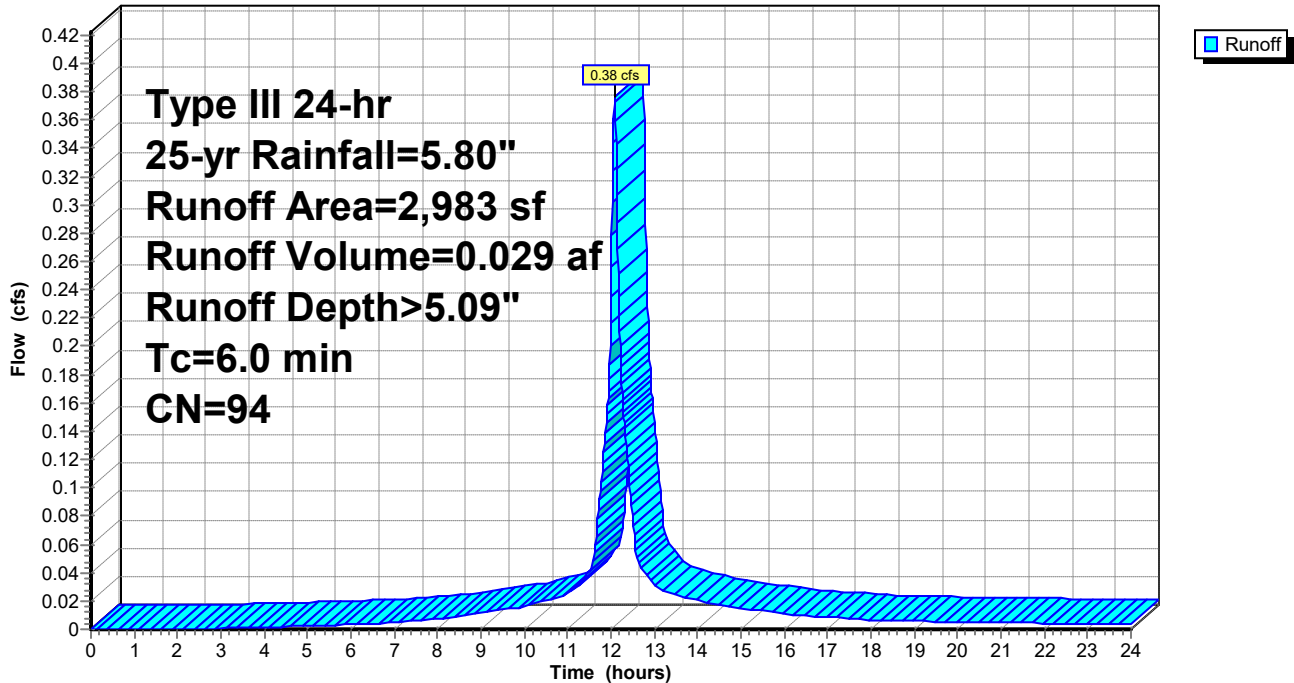
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
2,483	98	Paved parking, HSG C
500	74	>75% Grass cover, Good, HSG C
2,983	94	Weighted Average
500		16.76% Pervious Area
2,483		83.24% Impervious Area

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

Subcatchment 1ES: Access Road to Stone Drip Edge Filter

Hydrograph



Summary for Subcatchment 1FS: West prop line

Runoff = 0.66 cfs @ 12.09 hrs, Volume= 0.047 af, Depth> 3.01"

Routed to Reach 1R : Plunge pool

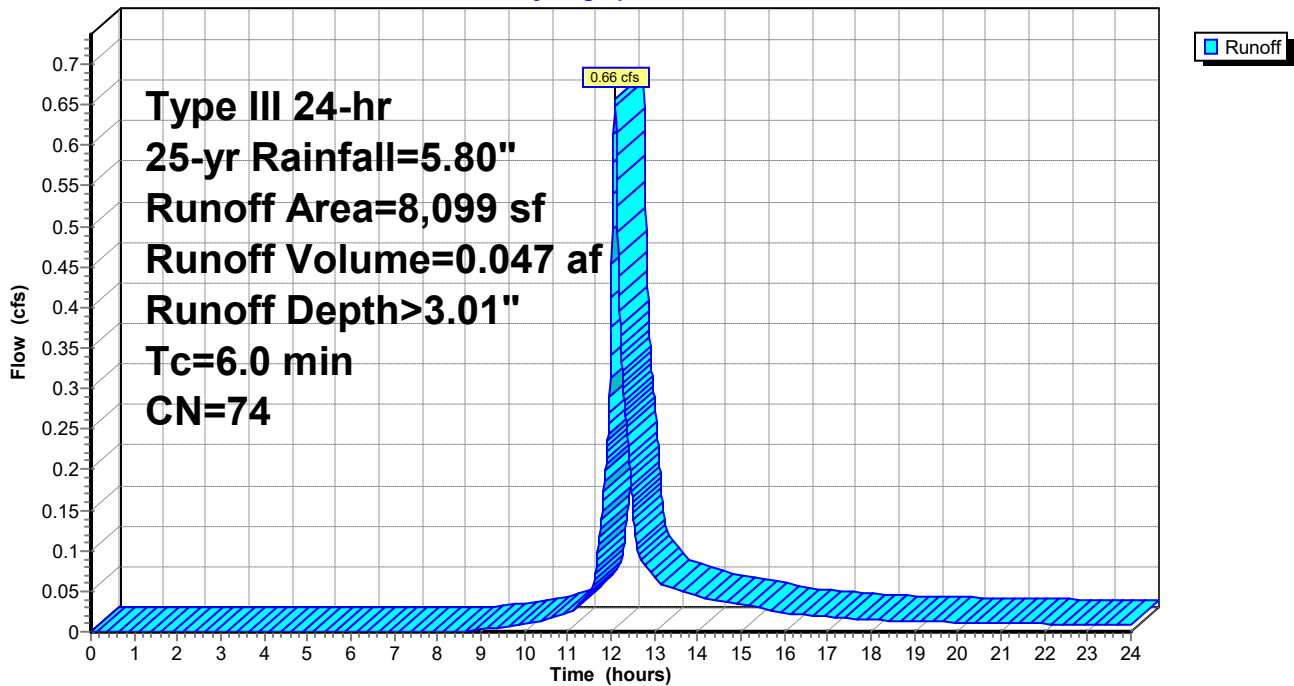
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
2,397	73	Woods, Fair, HSG C
5,702	74	>75% Grass cover, Good, HSG C
8,099	74	Weighted Average
8,099		100.00% Pervious Area

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

Subcatchment 1FS: West prop line

Hydrograph



Summary for Subcatchment 1GS: Roof to RFEF2

Runoff = 0.43 cfs @ 12.08 hrs, Volume= 0.033 af, Depth> 4.87"
 Routed to Pond RDEF2 : RDEF-2

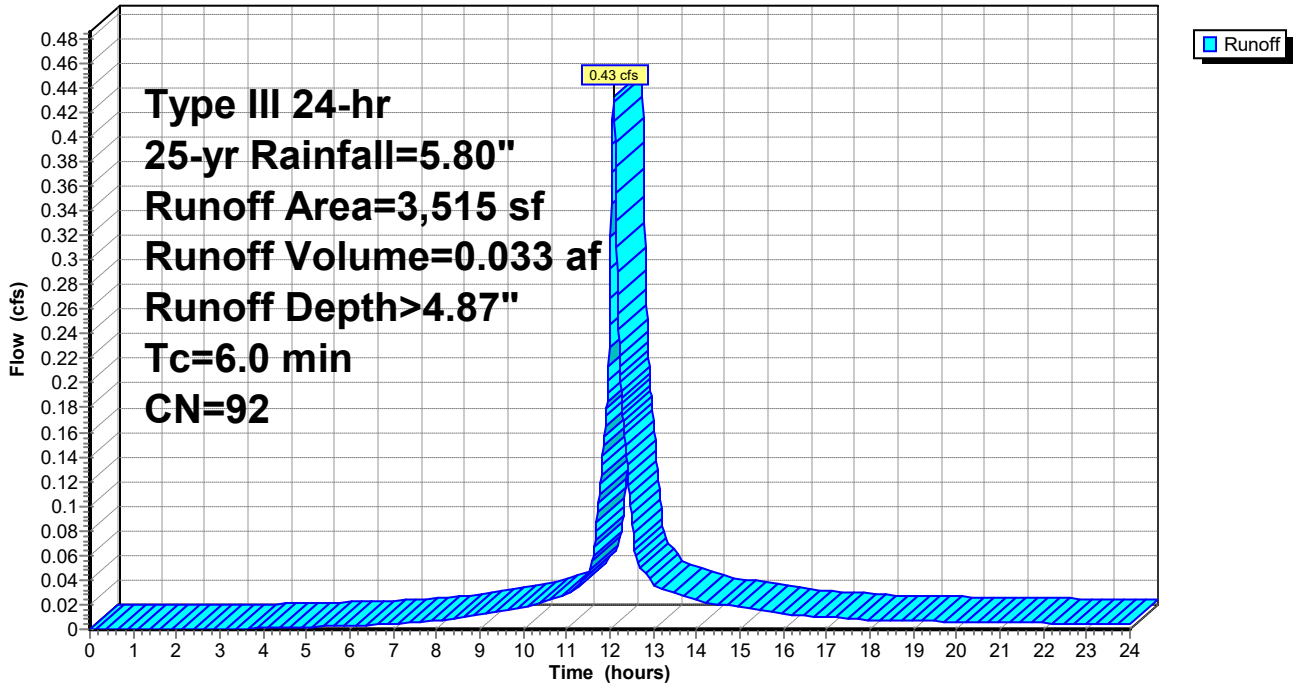
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
2,623	98	Roofs, HSG C
892	74	>75% Grass cover, Good, HSG C
3,515	92	Weighted Average
892		25.38% Pervious Area
2,623		74.62% Impervious Area

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

Subcatchment 1GS: Roof to RFEF2

Hydrograph



Summary for Subcatchment 1HS: to Roof Dripline Filter

Runoff = 0.31 cfs @ 12.08 hrs, Volume= 0.024 af, Depth> 4.98"
 Routed to Pond RDEF3 : RDEF-3

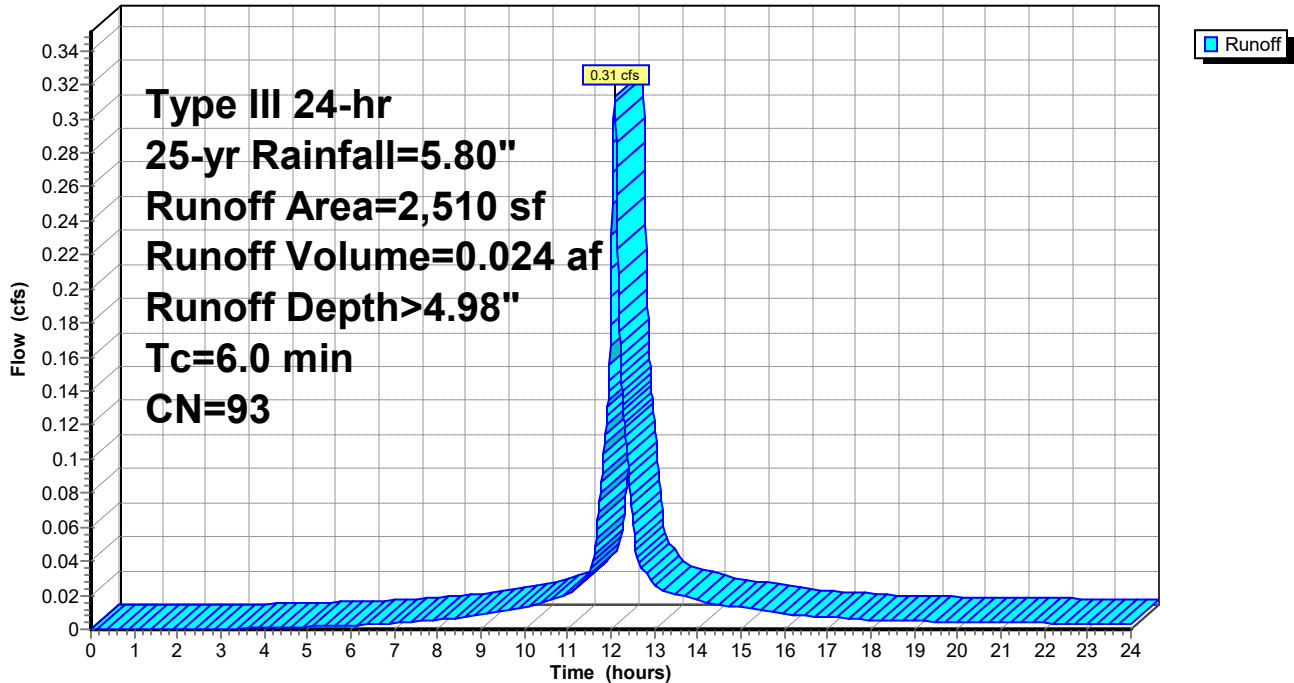
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
1,955	98	Roofs, HSG C
555	74	>75% Grass cover, Good, HSG C
2,510	93	Weighted Average
555		22.11% Pervious Area
1,955		77.89% Impervious Area

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

Subcatchment 1HS: to Roof Dripline Filter

Hydrograph



Summary for Subcatchment 1IS: Roof to FP

Runoff = 0.36 cfs @ 12.08 hrs, Volume= 0.028 af, Depth> 5.09"
 Routed to Pond FP2 : Focal Point 2

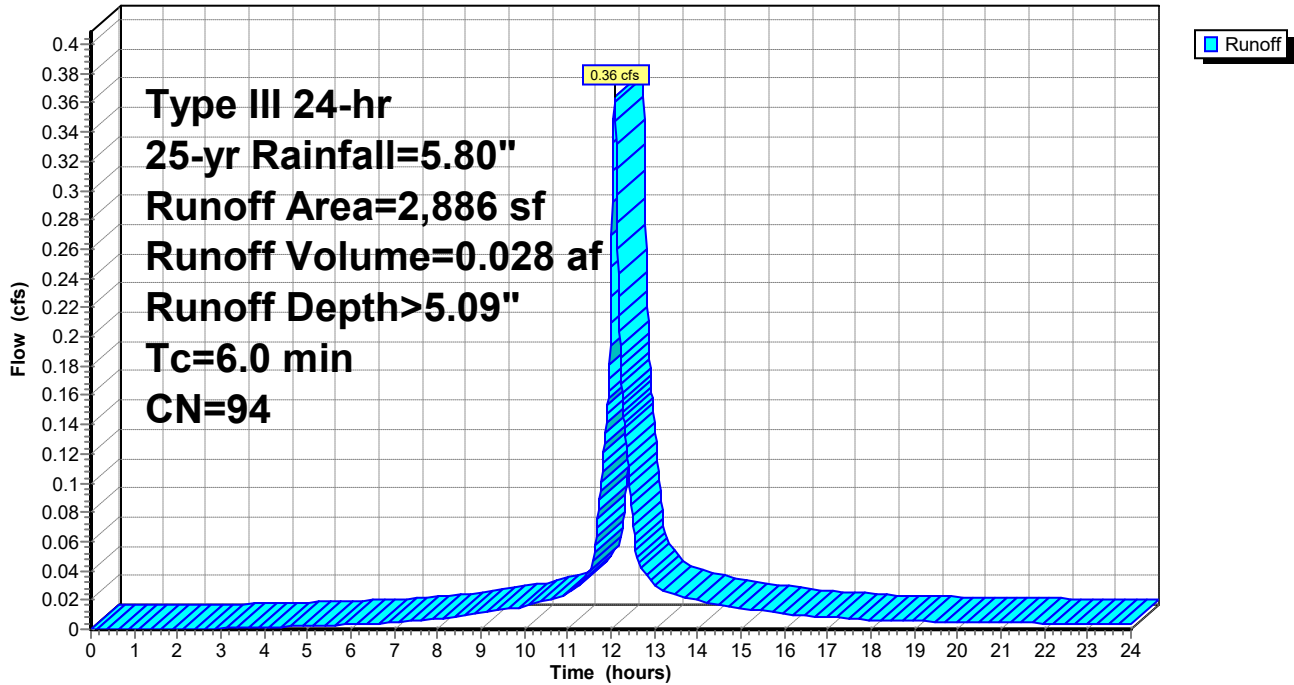
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
2,435	98	Roofs, HSG C
451	74	>75% Grass cover, Good, HSG C
2,886	94	Weighted Average
451		15.63% Pervious Area
2,435		84.37% Impervious Area

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

Subcatchment 1IS: Roof to FP

Hydrograph



Summary for Subcatchment 1JS: wetland

Runoff = 1.36 cfs @ 12.35 hrs, Volume= 0.158 af, Depth> 3.48"
 Routed to Link AP1 : Wetlands

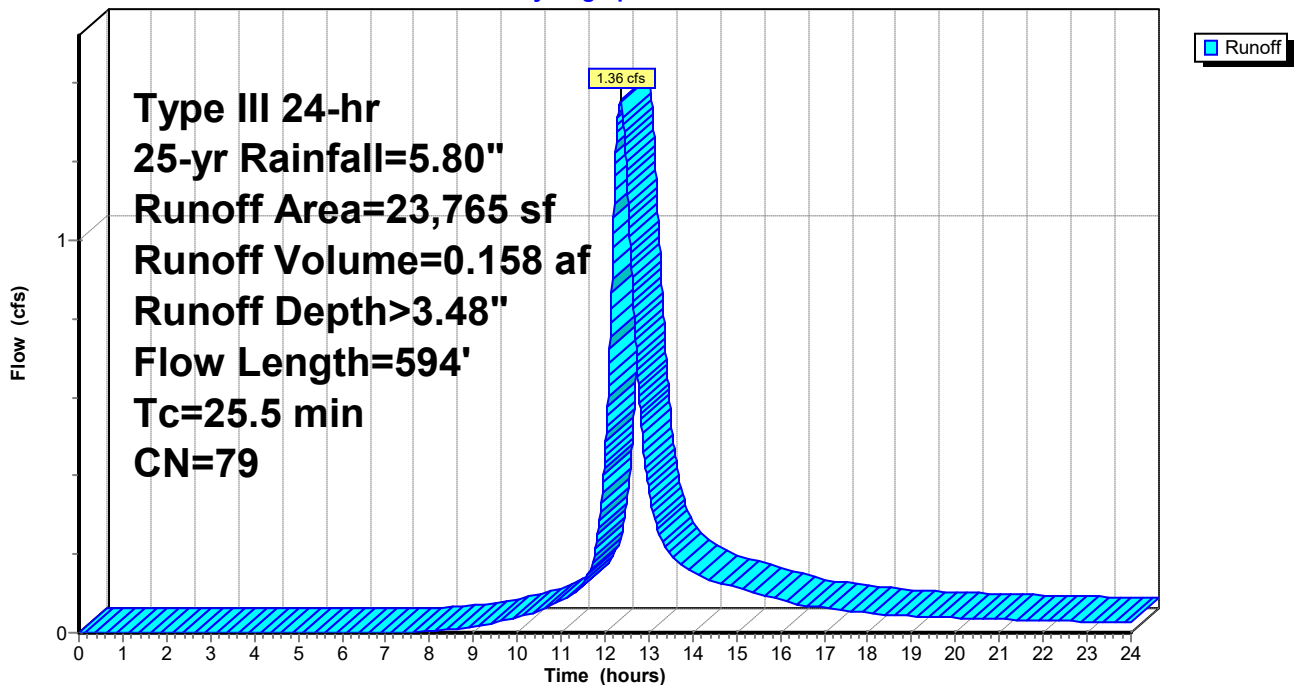
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
9,976	77	Woods, Good, HSG D
12,963	80	>75% Grass cover, Good, HSG D
826	74	>75% Grass cover, Good, HSG C
23,765	79	Weighted Average
23,765		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0240	0.08		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.10"
4.6	412	0.0460	1.50		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
0.2	82	0.0200	6.42	5.04	Pipe Channel, C-D 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
25.5	594	Total			

Subcatchment 1JS: wetland

Hydrograph



Summary for Subcatchment 2AS: roof to rdef1

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth> 5.56"
 Routed to Pond RDEF1 : RDEF-1

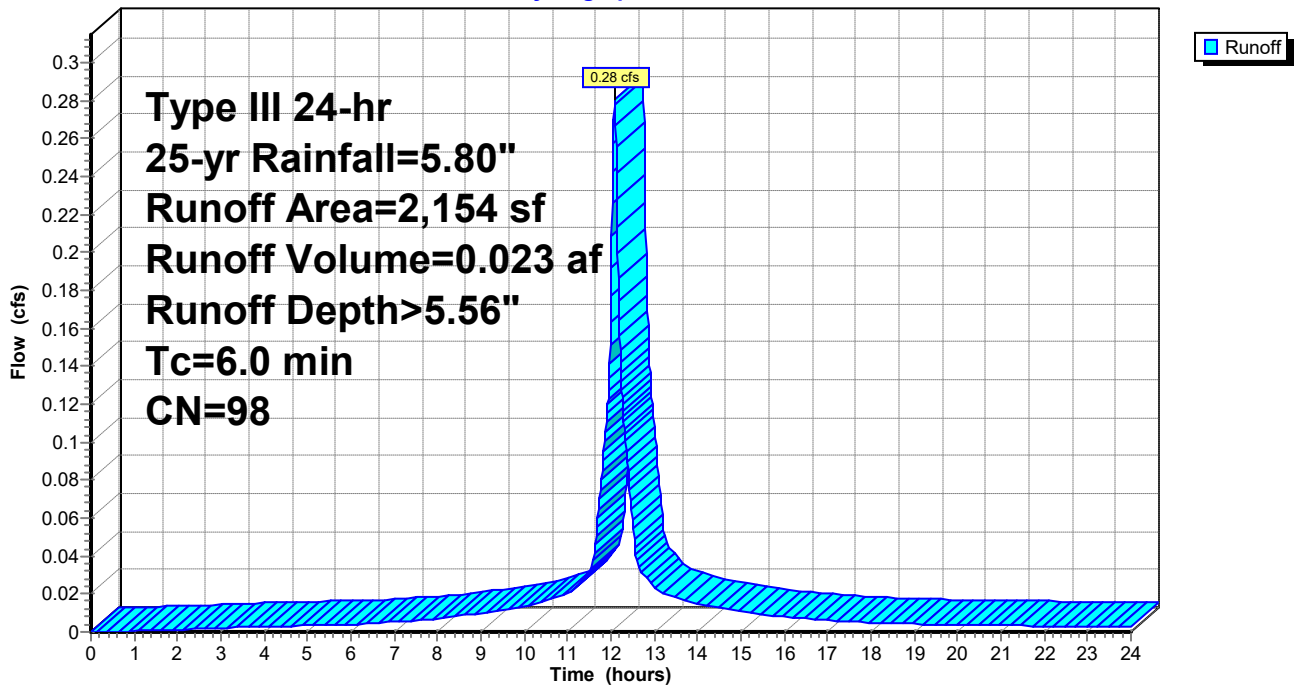
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
2,154	98	Roofs, HSG C
2,154		100.00% Impervious Area

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

Subcatchment 2AS: roof to rdef1

Hydrograph



Summary for Subcatchment 2BS: roof to RDEF1

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth> 5.56"
 Routed to Pond RDEF1 : RDEF-1

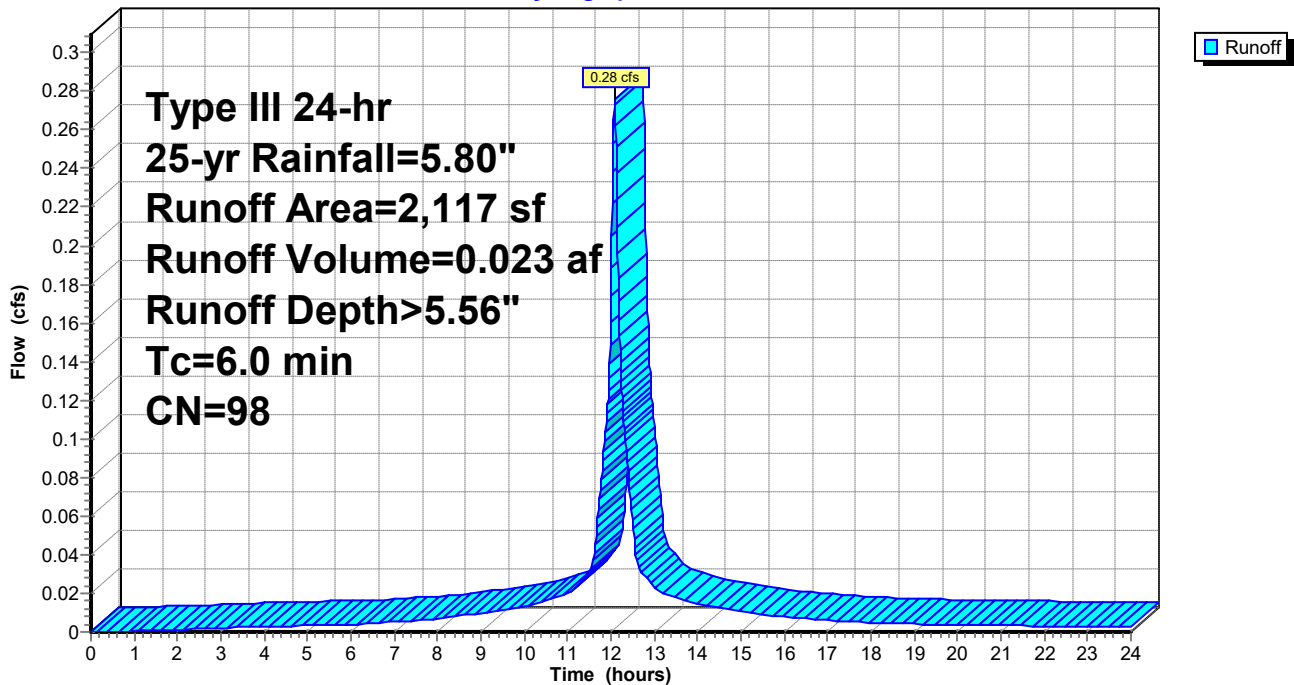
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
2,117	98	Roofs, HSG C
2,117		100.00% Impervious Area

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

Subcatchment 2BS: roof to RDEF1

Hydrograph



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Type III 24-hr 25-yr Rainfall=5.80"

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Summary for Subcatchment 2CS: Remaining

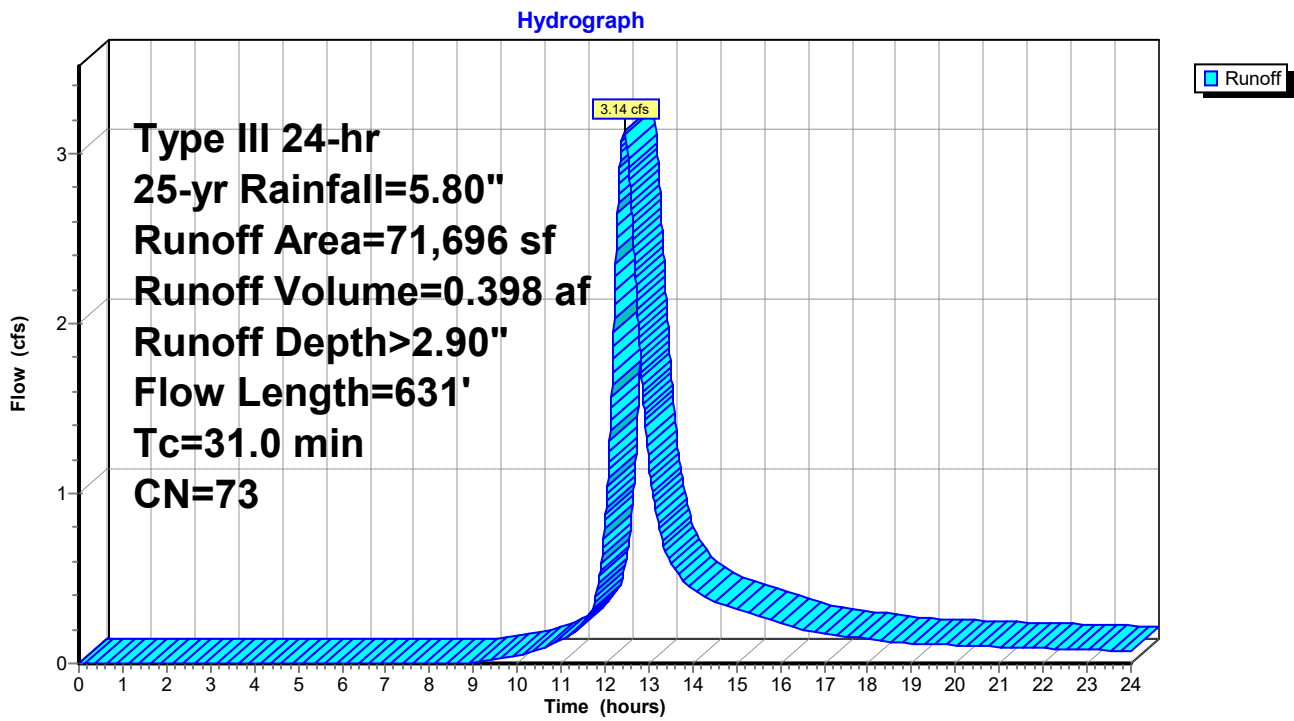
Runoff = 3.14 cfs @ 12.44 hrs, Volume= 0.398 af, Depth> 2.90"
 Routed to Link AP2 : Stream

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
4,917	70	Woods, Good, HSG C
21,832	77	Woods, Good, HSG D
12,740	55	Woods, Good, HSG B
3,074	98	Roofs, HSG C
684	98	Paved parking, HSG C
24,358	74	>75% Grass cover, Good, HSG C
4,091	80	>75% Grass cover, Good, HSG D
71,696	73	Weighted Average
67,938		94.76% Pervious Area
3,758		5.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.2	150	0.0300	0.10		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.10"
3.8	218	0.0360	0.95		Shallow Concentrated Flow, D-E Woodland Kv= 5.0 fps
1.0	263	0.0150	4.32	12.95	Channel Flow, C-D Area= 3.0 sf Perim= 5.0' r= 0.60' n= 0.030 Stream, clean & straight
31.0	631	Total			

Subcatchment 2CS: Remaining



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Type III 24-hr 25-yr Rainfall=5.80"

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Summary for Subcatchment 3S: off site existing

[47] Hint: Peak is 119% of capacity of segment #3

Runoff = 5.97 cfs @ 12.38 hrs, Volume= 0.712 af, Depth> 2.28"
 Routed to Link AP3 :

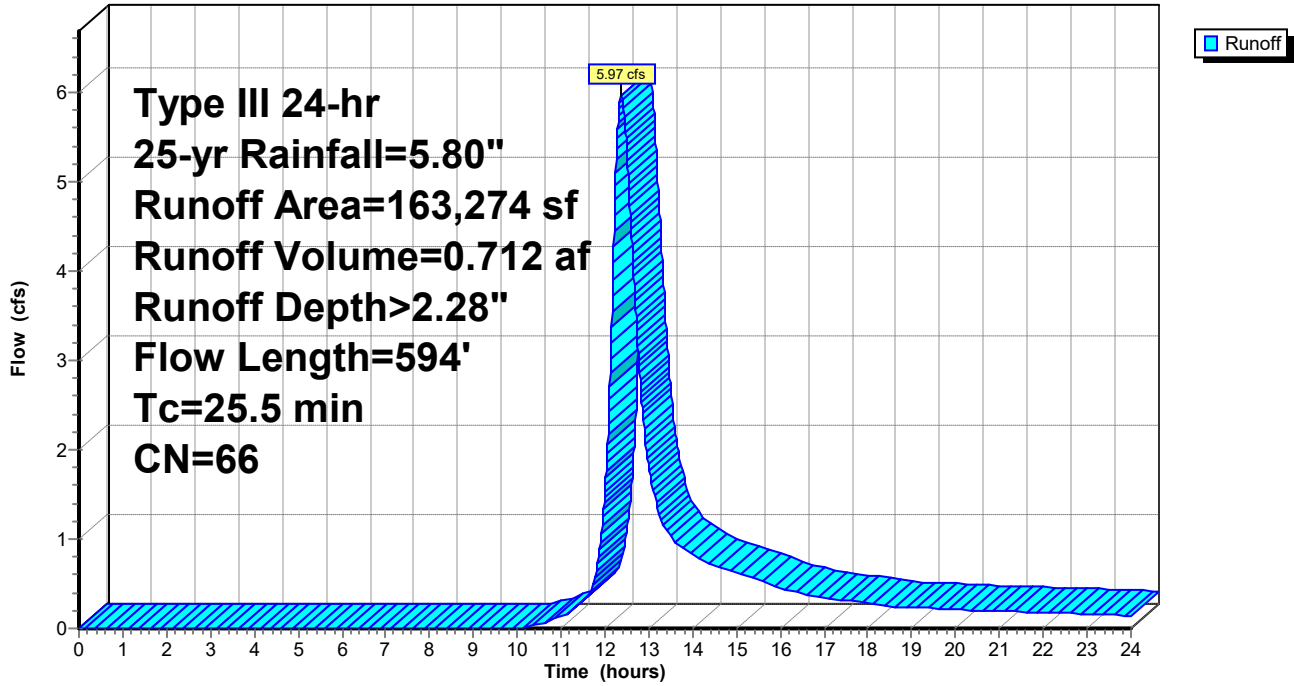
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
60,885	55	Woods, Good, HSG B
24,556	98	Paved parking, HSG C
5,016	98	Roofs, HSG C
62,012	61	>75% Grass cover, Good, HSG B
10,805	74	>75% Grass cover, Good, HSG C
163,274	66	Weighted Average
133,702		81.89% Pervious Area
29,572		18.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0240	0.08		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.10"
4.6	412	0.0460	1.50		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
0.2	82	0.0200	6.42	5.04	Pipe Channel, C-D 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
25.5	594	Total			

Subcatchment 3S: off site existing

Hydrograph



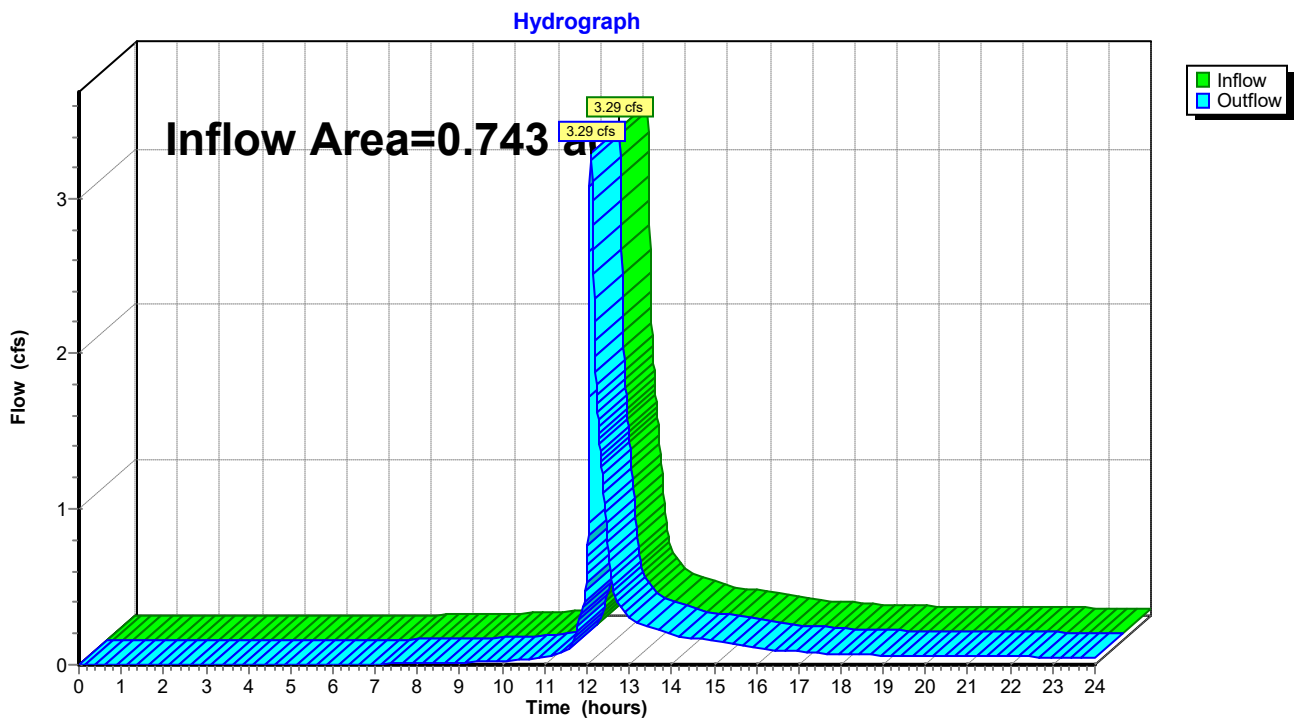
Summary for Reach 1R: Plunge pool

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.743 ac, 35.85% Impervious, Inflow Depth > 3.12" for 25-yr event
Inflow = 3.29 cfs @ 12.09 hrs, Volume= 0.193 af
Outflow = 3.29 cfs @ 12.09 hrs, Volume= 0.193 af, Atten= 0%, Lag= 0.0 min
Routed to Link AP1 : Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Reach 1R: Plunge pool



Summary for Pond 1P: Detention Pond

Inflow Area = 0.489 ac, 42.85% Impervious, Inflow Depth > 4.01" for 25-yr event
 Inflow = 2.27 cfs @ 12.09 hrs, Volume= 0.163 af
 Outflow = 2.26 cfs @ 12.10 hrs, Volume= 0.117 af, Atten= 1%, Lag= 0.5 min
 Primary = 2.26 cfs @ 12.10 hrs, Volume= 0.117 af
 Routed to Reach 1R : Plunge pool

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 273.41' @ 12.10 hrs Surf.Area= 2,616 sf Storage= 2,254 cf

Plug-Flow detention time= 164.1 min calculated for 0.117 af (72% of inflow)
 Center-of-Mass det. time= 74.2 min (878.4 - 804.1)

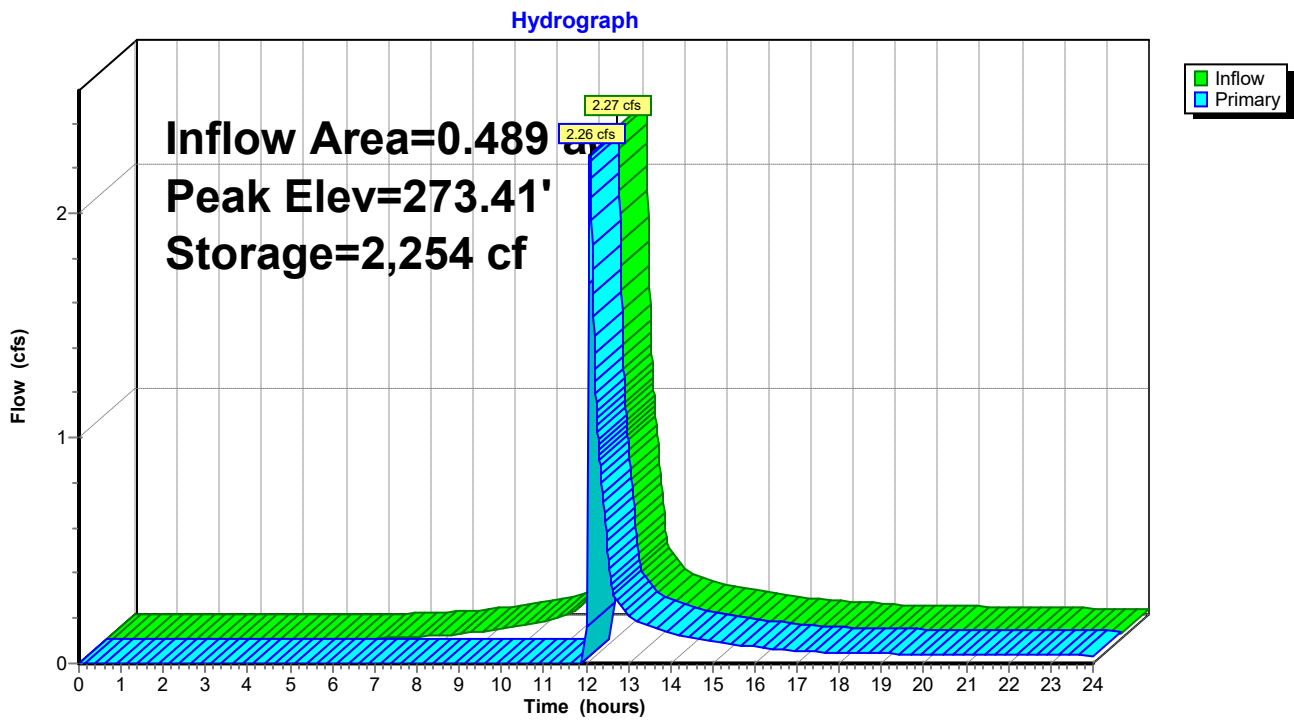
Volume	Invert	Avail.Storage	Storage Description			
#1	272.00'	3,826 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
272.00	239	111.0	0	0	239	
273.00	2,579	277.0	1,201	1,201	5,368	
274.00	2,671	436.0	2,625	3,826	14,397	

Device	Routing	Invert	Outlet Devices															
#1	Primary	271.48'	12.0" Round culvert L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 271.48' / 270.80' S= 0.0170 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf															
#2	Device 1	273.20'	2.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads															
#3	Primary	273.37'	140.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32															

Primary OutFlow Max=2.25 cfs @ 12.10 hrs HW=273.41' TW=0.00' (Dynamic Tailwater)

- 1=culvert (Passes 0.05 cfs of 3.56 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.05 cfs @ 2.18 fps)
- 3=Broad-Crested Rectangular Weir (Weir Controls 2.20 cfs @ 0.45 fps)

Pond 1P: Detention Pond



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Type III 24-hr 25-yr Rainfall=5.80"

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Summary for Pond FP1: Focal Point 1

Inflow Area = 0.606 ac, 62.50% Impervious, Inflow Depth > 4.54" for 25-yr event
 Inflow = 3.10 cfs @ 12.08 hrs, Volume= 0.229 af
 Outflow = 3.10 cfs @ 12.09 hrs, Volume= 0.229 af, Atten= 0%, Lag= 0.2 min
 Primary = 3.10 cfs @ 12.09 hrs, Volume= 0.229 af
 Routed to Pond RT2 : R-Tanks 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 272.55' @ 12.09 hrs Surf.Area= 233 sf Storage= 98 cf

Plug-Flow detention time= 0.6 min calculated for 0.229 af (100% of inflow)
 Center-of-Mass det. time= 0.5 min (789.2 - 788.7)

Volume	Invert	Avail.Storage	Storage Description
#1	271.78'	193 cf	Custom Stage Data (Irregular) Listed below (Recalc) 6.40'W x 10.00'L x 2.25'H FocalPoint 144 cf Overall x 20.0% Voids
#2	271.73'	29 cf	
		222 cf	Total Available Storage

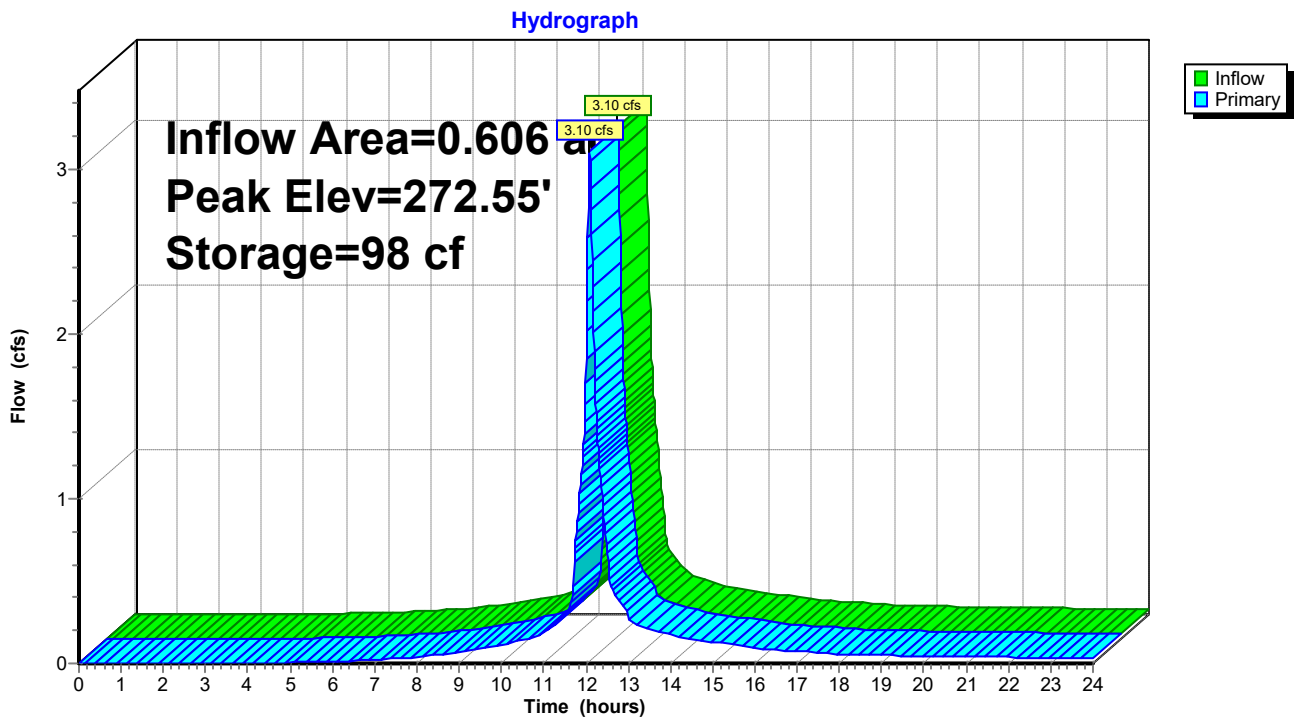
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
271.78	64	38.0	0	0	64
272.28	128	48.0	47	47	136
272.78	209	60.0	83	131	242
273.00	250	64.0	50	181	284
273.05	251	65.0	13	193	295

Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	15.0" Round Culvert L= 13.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 269.03' S= 0.0000 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	272.30'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	271.73'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'

Primary OutFlow Max=3.10 cfs @ 12.09 hrs HW=272.55' TW=270.67' (Dynamic Tailwater)

- ↑ 1=Culvert (Passes 3.10 cfs of 6.40 cfs potential flow)
- ↑ 2=Orifice/Grate (Weir Controls 2.56 cfs @ 1.63 fps)
- ↑ 3=Exfiltration (Exfiltration Controls 0.54 cfs)

Pond FP1: Focal Point 1



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Type III 24-hr 25-yr Rainfall=5.80"

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Summary for Pond FP2: Focal Point 2

Inflow Area = 0.066 ac, 84.37% Impervious, Inflow Depth > 5.09" for 25-yr event
 Inflow = 0.36 cfs @ 12.08 hrs, Volume= 0.028 af
 Outflow = 0.29 cfs @ 12.14 hrs, Volume= 0.028 af, Atten= 20%, Lag= 3.5 min
 Primary = 0.29 cfs @ 12.14 hrs, Volume= 0.028 af
 Routed to Pond RT1 : R-Tanks 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 272.97' @ 12.14 hrs Surf.Area= 127 sf Storage= 56 cf

Plug-Flow detention time= 1.0 min calculated for 0.028 af (100% of inflow)
 Center-of-Mass det. time= 1.0 min (769.8 - 768.8)

Volume	Invert	Avail.Storage	Storage Description
#1	272.09'	65 cf	Custom Stage Data (Irregular) Listed below (Recalc) 2.30'W x 9.40'L x 2.25'H FocalPoint 49 cf Overall x 20.0% Voids
#2	272.09'	10 cf	
		75 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
272.09	21	23.0	0	0	21
272.59	63	32.0	20	20	63
273.02	111	40.0	37	57	111
273.09	120	42.0	8	65	124

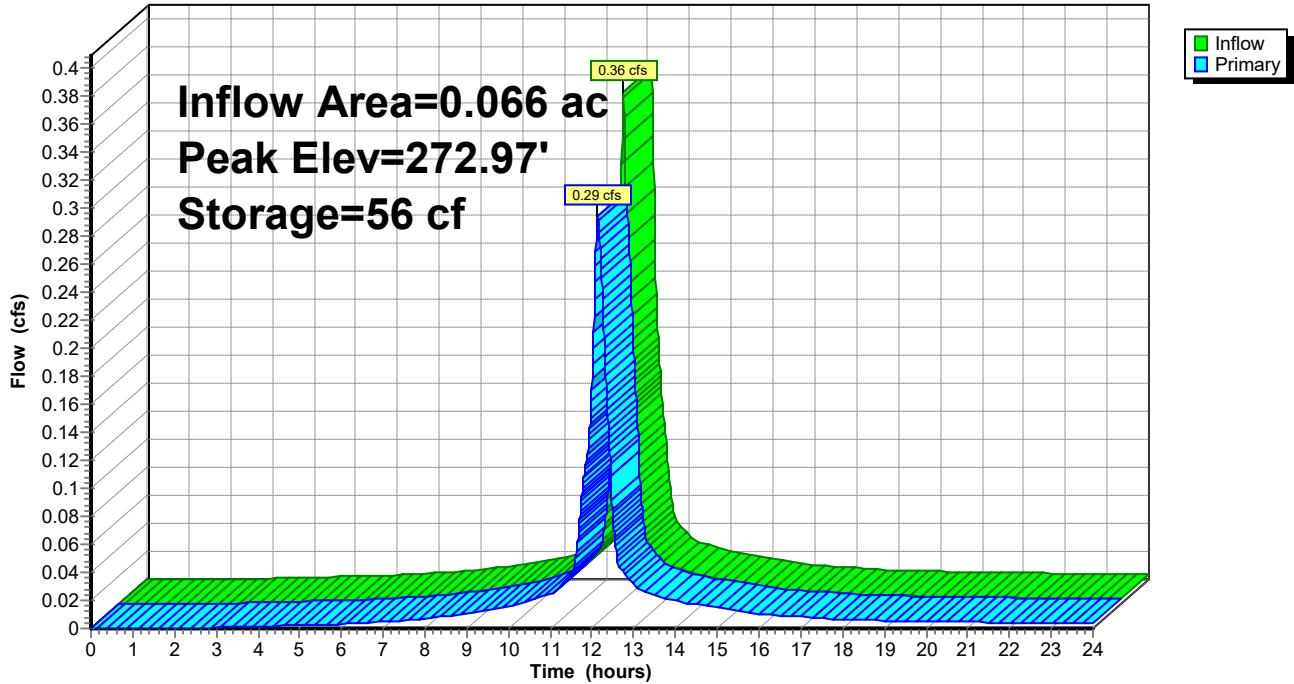
Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	12.0" Round Culvert L= 4.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 269.03' S= 0.0000 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	273.00'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	272.09'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'

Primary OutFlow Max=0.29 cfs @ 12.14 hrs HW=272.97' TW=270.82' (Dynamic Tailwater)

- 1=Culvert (Passes 0.29 cfs of 4.38 cfs potential flow)
- 2=Orifice/Grate (Controls 0.00 cfs)
- 3=Exfiltration (Exfiltration Controls 0.29 cfs)

Pond FP2: Focal Point 2

Hydrograph



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Type III 24-hr 25-yr Rainfall=5.80"

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Summary for Pond GUSF1: Grassed Underdrain Soil Filter 1

Inflow Area = 0.194 ac, 20.68% Impervious, Inflow Depth > 3.50" for 25-yr event
 Inflow = 0.80 cfs @ 12.09 hrs, Volume= 0.057 af
 Outflow = 0.42 cfs @ 12.22 hrs, Volume= 0.037 af, Atten= 47%, Lag= 8.2 min
 Primary = 0.42 cfs @ 12.22 hrs, Volume= 0.037 af
 Routed to Pond RT2 : R-Tanks 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 272.38' @ 12.22 hrs Surf.Area= 2,170 sf Storage= 959 cf
 Flood Elev= 273.30' Surf.Area= 2,449 sf Storage= 1,745 cf

Plug-Flow detention time= 171.1 min calculated for 0.037 af (66% of inflow)
 Center-of-Mass det. time= 71.3 min (888.7 - 817.4)

Volume	Invert	Avail.Storage	Storage Description
#1	271.80'	1,402 cf	GUSF1 (Irregular) Listed below (Recalc)
#2	269.04'	344 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		1,745 cf	Total Available Storage

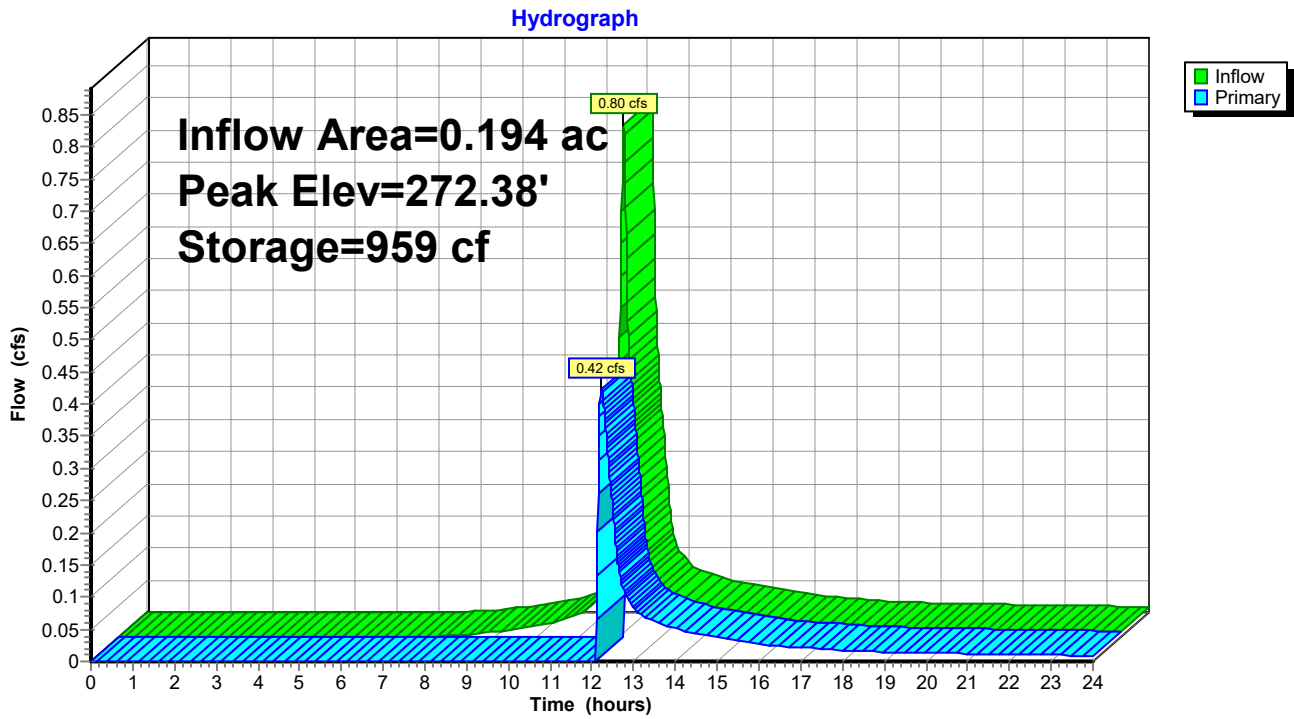
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
271.80	424	109.0	0	0	424
272.30	1,666	212.0	488	488	3,056
272.80	1,992	221.0	913	1,402	3,385

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
269.04	457	0.0	0	0
269.05	457	40.0	2	2
269.79	457	40.0	135	137
269.80	457	30.0	1	138
270.29	457	30.0	67	206
270.30	457	20.0	1	207
271.80	457	20.0	137	344

Device	Routing	Invert	Outlet Devices
#1	Primary	270.40'	12.0" Round Culvert L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 270.40' / 270.06' S= 0.0170 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	272.30'	24.0" Horiz. Beehive Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.42 cfs @ 12.22 hrs HW=272.38' TW=271.20' (Dynamic Tailwater)
 ↑ **1=Culvert** (Passes 0.42 cfs of 3.23 cfs potential flow)
 ↑ **2=Beehive Overflow** (Weir Controls 0.42 cfs @ 0.90 fps)

Pond GUSF1: Grassed Underdrain Soil Filter 1



Summary for Pond OCS1: OCS-1

Inflow Area = 1.284 ac, 59.98% Impervious, Inflow Depth > 4.18" for 25-yr event
 Inflow = 3.77 cfs @ 12.19 hrs, Volume= 0.447 af
 Outflow = 3.77 cfs @ 12.19 hrs, Volume= 0.447 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.77 cfs @ 12.19 hrs, Volume= 0.447 af
 Routed to Link AP1 : Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 270.31' @ 12.19 hrs
 Flood Elev= 271.00'

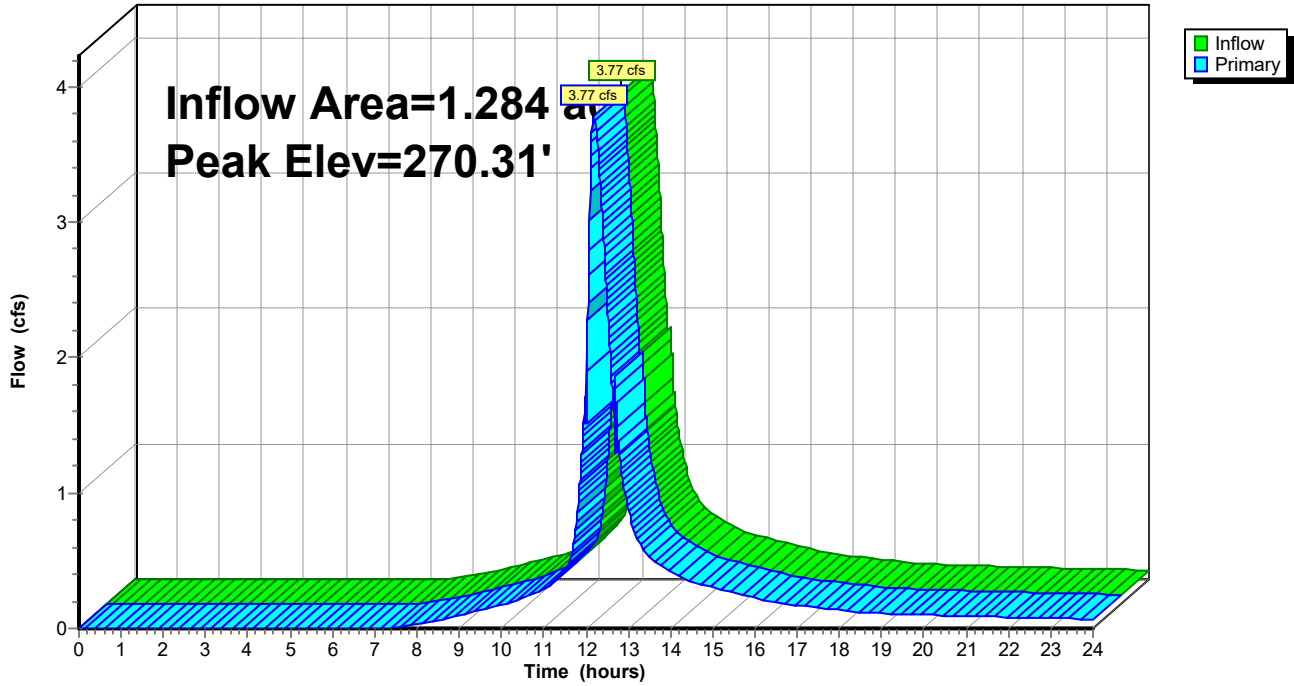
Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	15.0" Round Culvert L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 268.50' S= 0.0212 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	270.47'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Device 1	269.03'	30.0" W x 2.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	269.80'	30.0" W x 3.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.77 cfs @ 12.19 hrs HW=270.31' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 3.77 cfs @ 3.07 fps)
- 2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)
- 3=Orifice/Grate (Passes < 2.19 cfs potential flow)
- 4=Orifice/Grate (Passes < 1.86 cfs potential flow)

Pond OCS1: OCS-1

Hydrograph



Summary for Pond OSC2: OCS-2

Inflow Area = 0.098 ac, 100.00% Impervious, Inflow Depth > 5.32" for 25-yr event
 Inflow = 0.47 cfs @ 12.13 hrs, Volume= 0.043 af
 Outflow = 0.47 cfs @ 12.13 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.47 cfs @ 12.13 hrs, Volume= 0.043 af
 Routed to Link AP2 : Stream

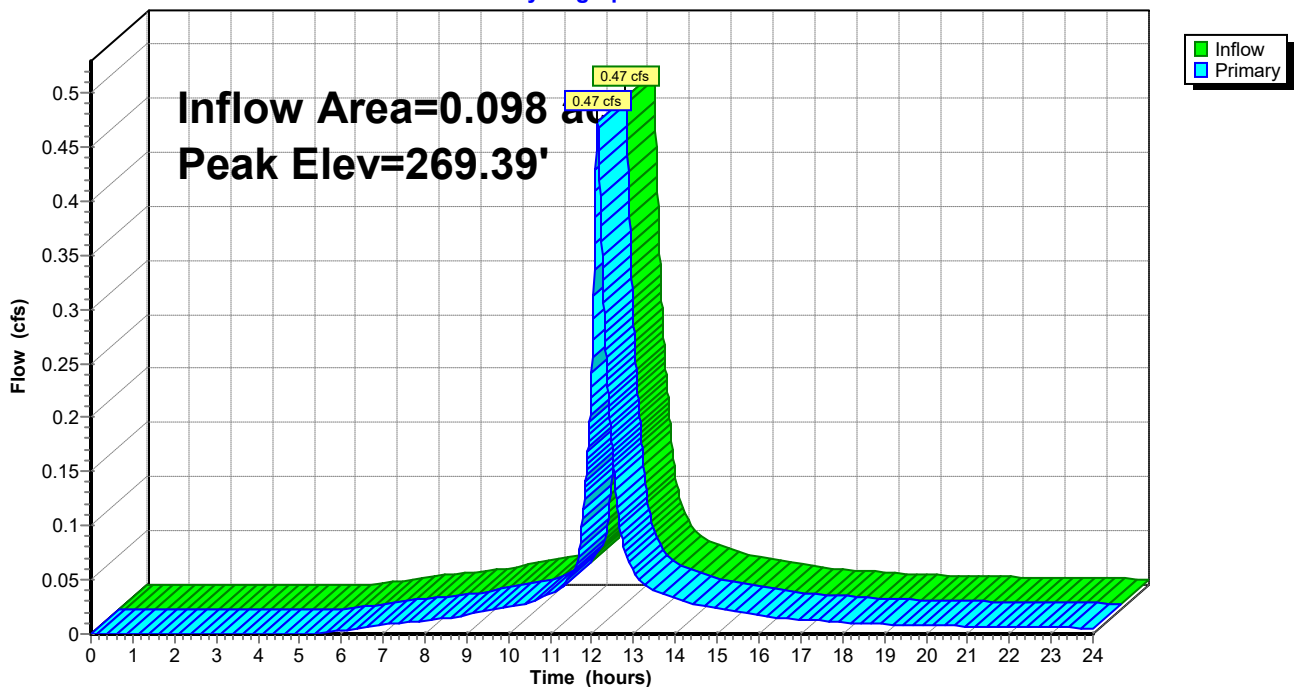
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 269.39' @ 12.13 hrs
 Flood Elev= 270.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	15.0" Round Culvert L= 74.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 268.50' S= 0.0072 ' S= 0.0072 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	270.50'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Device 1	269.03'	12.0" W x 6.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.47 cfs @ 12.13 hrs HW=269.39' TW=0.00' (Dynamic Tailwater)
 1=Culvert (Inlet Controls 0.47 cfs @ 1.61 fps)
 2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)
 3=Orifice/Grate (Passes 0.47 cfs of 0.69 cfs potential flow)

Pond OSC2: OCS-2

Hydrograph



Summary for Pond RDEF1: RDEF-1

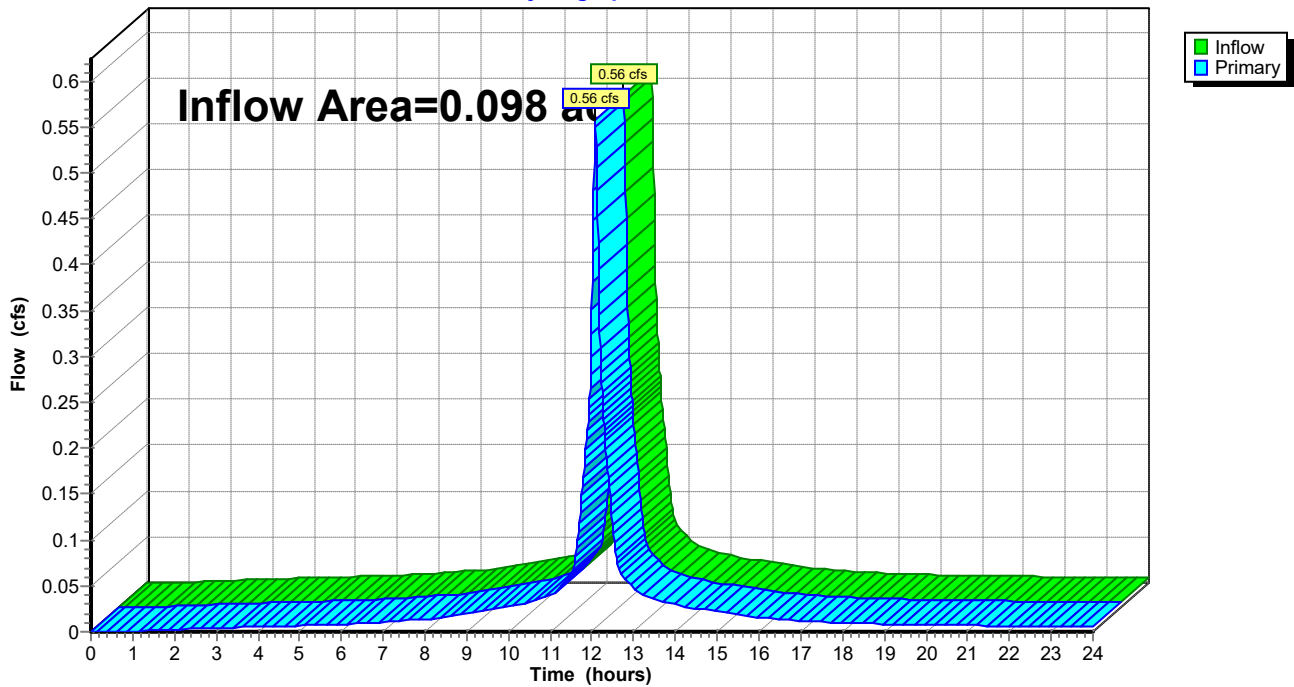
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.098 ac, 100.00% Impervious, Inflow Depth > 5.56" for 25-yr event
Inflow = 0.56 cfs @ 12.08 hrs, Volume= 0.045 af
Primary = 0.56 cfs @ 12.08 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min
Routed to Pond RT3 : R-Tanks 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Pond RDEF1: RDEF-1

Hydrograph



Summary for Pond RDEF2: RDEF-2

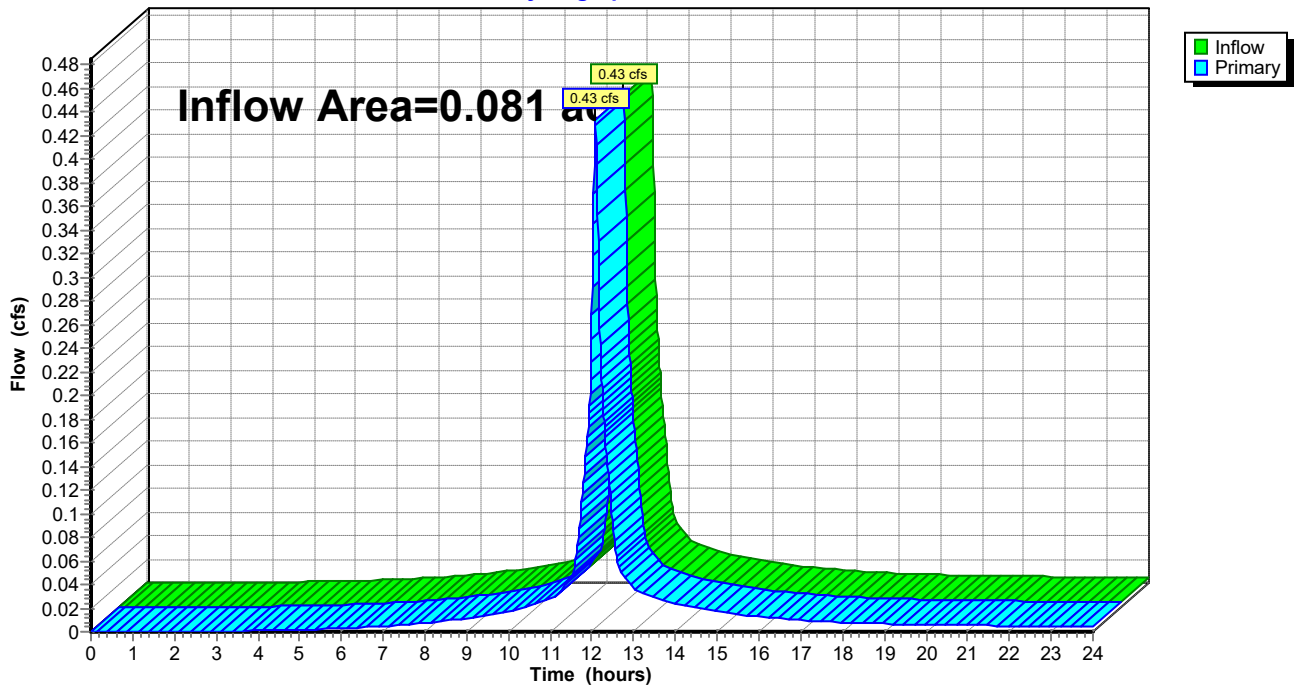
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.081 ac, 74.62% Impervious, Inflow Depth > 4.87" for 25-yr event
Inflow = 0.43 cfs @ 12.08 hrs, Volume= 0.033 af
Primary = 0.43 cfs @ 12.08 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.0 min
Routed to Pond RT2 : R-Tanks 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Pond RDEF2: RDEF-2

Hydrograph



Summary for Pond RDEF3: RDEF-3

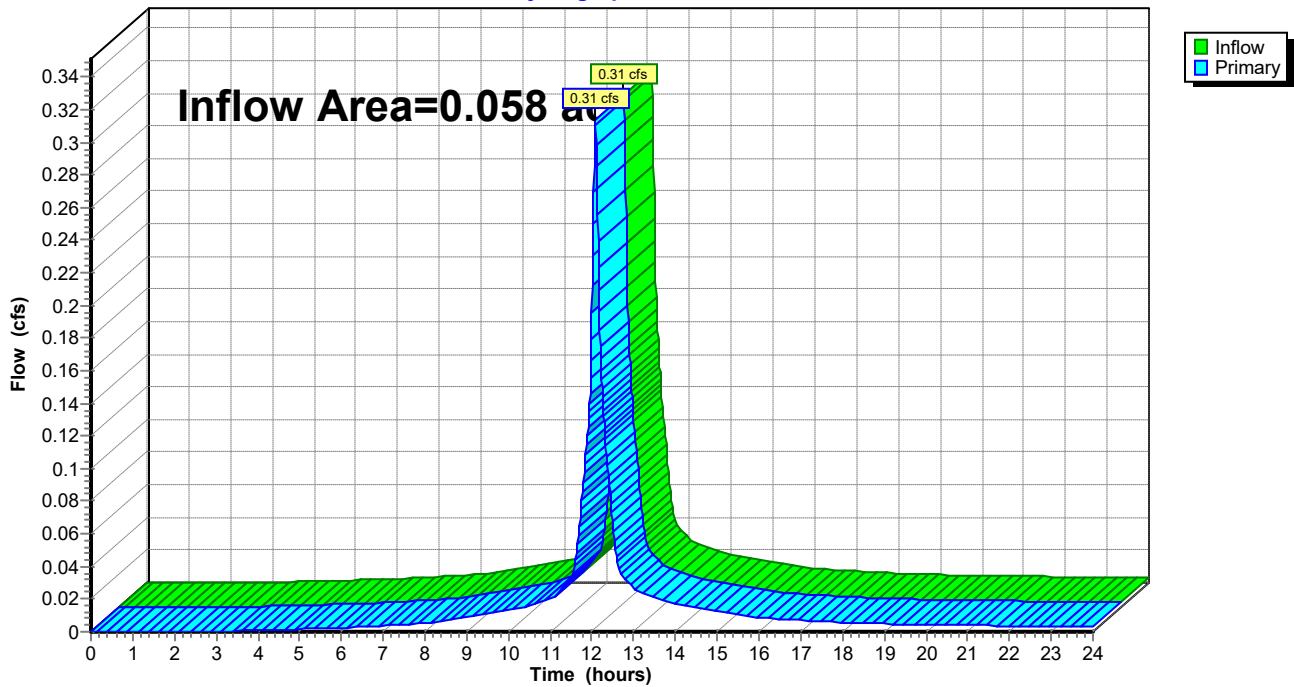
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.058 ac, 77.89% Impervious, Inflow Depth > 4.98" for 25-yr event
Inflow = 0.31 cfs @ 12.08 hrs, Volume= 0.024 af
Primary = 0.31 cfs @ 12.08 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.0 min
Routed to Pond RT2 : R-Tanks 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Pond RDEF3: RDEF-3

Hydrograph



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Type III 24-hr 25-yr Rainfall=5.80"

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Summary for Pond RT1: R-Tanks 1

Inflow Area = 1.284 ac, 59.98% Impervious, Inflow Depth > 4.19" for 25-yr event
 Inflow = 3.90 cfs @ 12.16 hrs, Volume= 0.449 af
 Outflow = 3.77 cfs @ 12.19 hrs, Volume= 0.447 af, Atten= 3%, Lag= 1.8 min
 Primary = 3.77 cfs @ 12.19 hrs, Volume= 0.447 af
 Routed to Pond OCS1 : OCS-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 270.96' @ 12.20 hrs Surf.Area= 352 sf Storage= 474 cf

Plug-Flow detention time= 6.0 min calculated for 0.447 af (100% of inflow)
 Center-of-Mass det. time= 3.7 min (819.2 - 815.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	268.80'	255 cf	22.37'W x 15.73'L x 2.69'H Field A 948 cf Overall - 311 cf Embedded = 637 cf x 40.0% Voids
#2A	269.05'	296 cf	ACF R-Tank HD 1 x 70 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 70 Chambers in 14 Rows
		550 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	15.0" Round Culvert L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 269.03' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.74 cfs @ 12.19 hrs HW=270.95' TW=270.31' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 3.74 cfs @ 3.05 fps)

191.06051 SW-POST

Type III 24-hr 25-yr Rainfall=5.80"

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Pond RT1: R-Tanks 1 - Chamber Wizard Field A

Chamber Model = ACF R-Tank HD 1 (ACF Environmental R-Tank HD)

Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf

Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf

5 Chambers/Row x 2.35' Long = 11.73' Row Length +24.0" End Stone x 2 = 15.73' Base Length

14 Rows x 15.7" Wide + 24.0" Side Stone x 2 = 22.37' Base Width

3.0" Stone Base + 17.3" Chamber Height + 12.0" Stone Cover = 2.69' Field Height

70 Chambers x 4.2 cf = 295.5 cf Chamber Storage

70 Chambers x 4.4 cf = 311.1 cf Displacement

947.9 cf Field - 311.1 cf Chambers = 636.8 cf Stone x 40.0% Voids = 254.7 cf Stone Storage

Chamber Storage + Stone Storage = 550.2 cf = 0.013 af

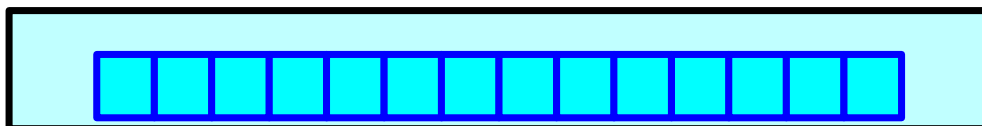
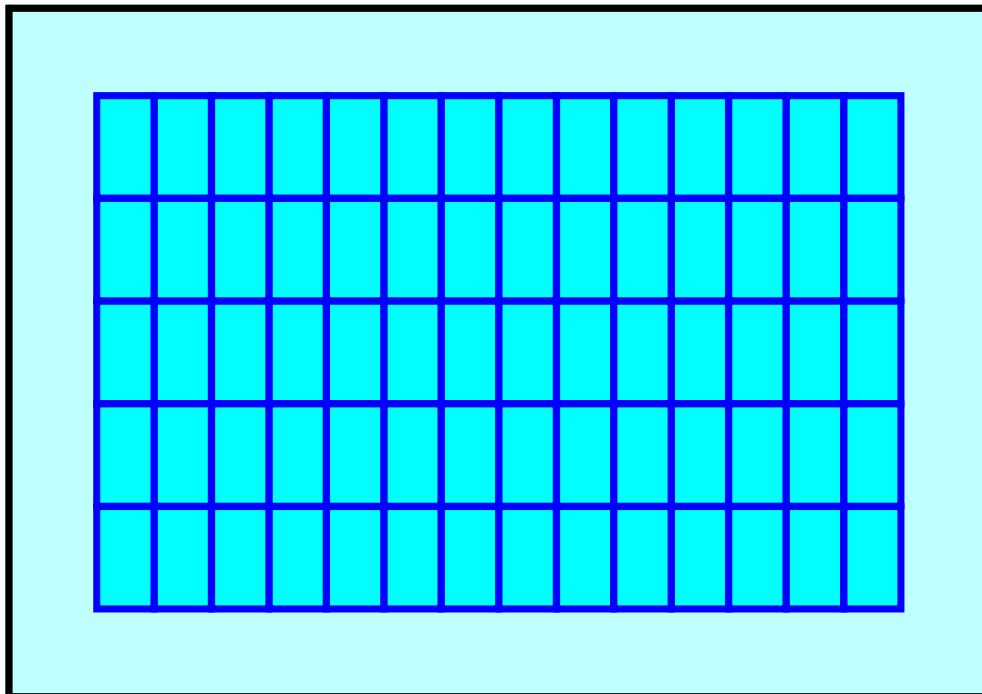
Overall Storage Efficiency = 58.1%

Overall System Size = 15.73' x 22.37' x 2.69'

70 Chambers

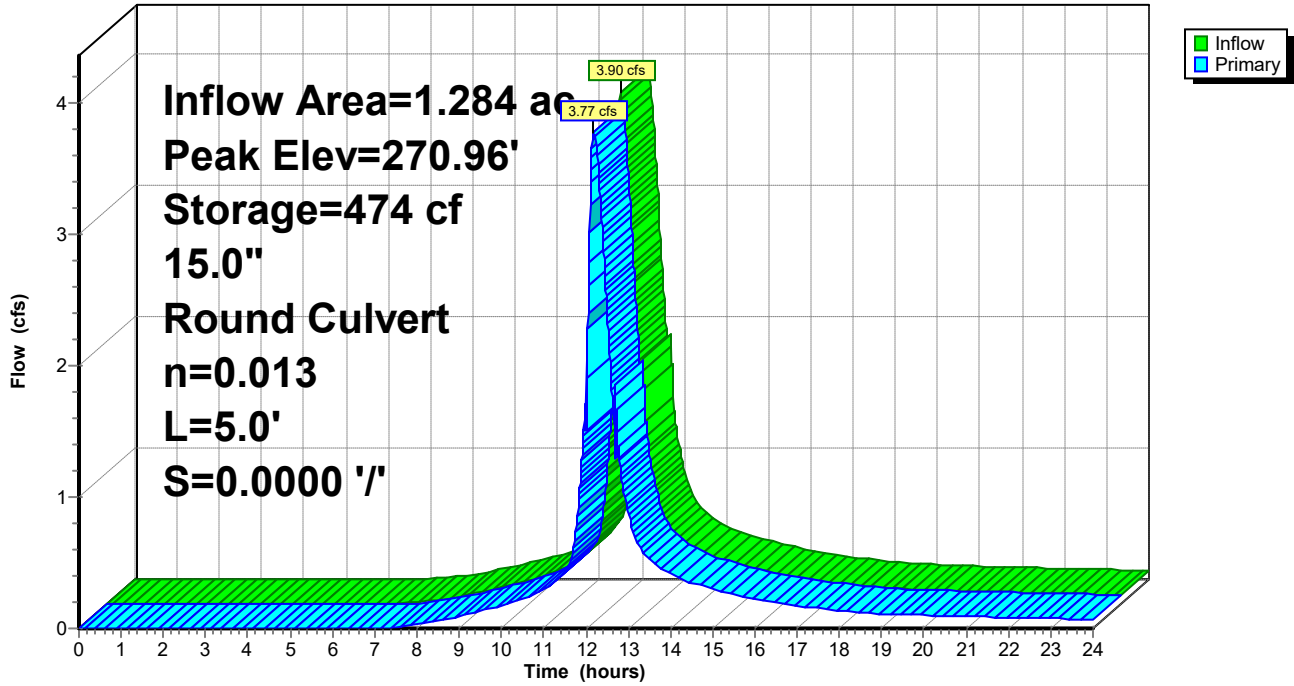
35.1 cy Field

23.6 cy Stone



Pond RT1: R-Tanks 1

Hydrograph



Summary for Pond RT2: R-Tanks 2

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=8)

Inflow Area = 1.218 ac, 58.65% Impervious, Inflow Depth > 4.25" for 25-yr event
 Inflow = 5.30 cfs @ 12.09 hrs, Volume= 0.431 af
 Outflow = 3.60 cfs @ 12.16 hrs, Volume= 0.421 af, Atten= 32%, Lag= 4.4 min
 Primary = 3.60 cfs @ 12.16 hrs, Volume= 0.421 af
 Routed to Pond RT1 : R-Tanks 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 271.22' @ 12.20 hrs Surf.Area= 1,753 sf Storage= 2,838 cf

Plug-Flow detention time= 38.2 min calculated for 0.421 af (98% of inflow)
 Center-of-Mass det. time= 23.6 min (818.6 - 795.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	268.78'	1,071 cf	30.25'W x 57.95'L x 2.69'H Field A 4,722 cf Overall - 2,044 cf Embedded = 2,677 cf x 40.0% Voids
#2A	269.03'	1,942 cf	ACF R-Tank HD 1 x 460 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 460 Chambers in 20 Rows
		3,013 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	18.0" Round Culvert L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 269.03' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.55 cfs @ 12.16 hrs HW=271.17' TW=270.89' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 3.55 cfs @ 2.01 fps)

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Type III 24-hr 25-yr Rainfall=5.80"

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Pond RT2: R-Tanks 2 - Chamber Wizard Field A

Chamber Model = ACF R-Tank HD 1 (ACF Environmental R-Tank HD)

Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf

Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf

23 Chambers/Row x 2.35' Long = 53.95' Row Length +24.0" End Stone x 2 = 57.95' Base Length

20 Rows x 15.7" Wide + 24.0" Side Stone x 2 = 30.25' Base Width

3.0" Stone Base + 17.3" Chamber Height + 12.0" Stone Cover = 2.69' Field Height

460 Chambers x 4.2 cf = 1,942.0 cf Chamber Storage

460 Chambers x 4.4 cf = 2,044.2 cf Displacement

4,721.6 cf Field - 2,044.2 cf Chambers = 2,677.3 cf Stone x 40.0% Voids = 1,070.9 cf Stone Storage

Chamber Storage + Stone Storage = 3,013.0 cf = 0.069 af

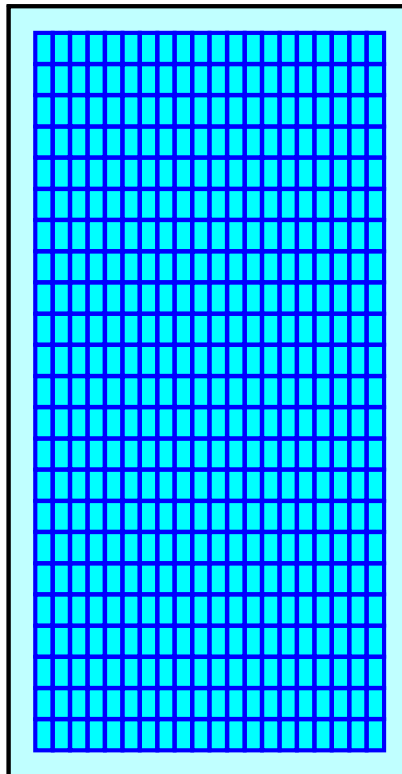
Overall Storage Efficiency = 63.8%

Overall System Size = 57.95' x 30.25' x 2.69'

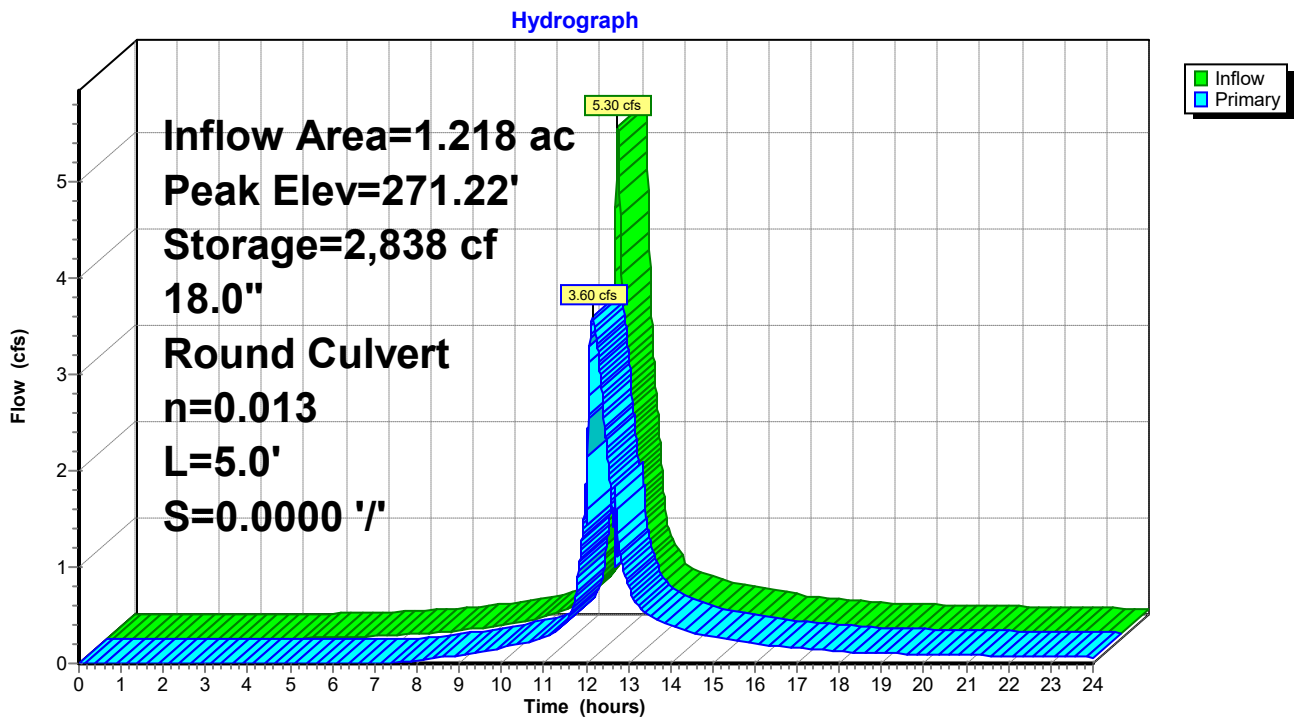
460 Chambers

174.9 cy Field

99.2 cy Stone



Pond RT2: R-Tanks 2



Summary for Pond RT3: R-Tanks 3

Inflow Area = 0.098 ac, 100.00% Impervious, Inflow Depth > 5.56" for 25-yr event
 Inflow = 0.56 cfs @ 12.08 hrs, Volume= 0.045 af
 Outflow = 0.47 cfs @ 12.13 hrs, Volume= 0.043 af, Atten= 15%, Lag= 3.0 min
 Primary = 0.47 cfs @ 12.13 hrs, Volume= 0.043 af
 Routed to Pond OSC2 : OCS-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 269.57' @ 12.13 hrs Surf.Area= 609 sf Storage= 271 cf

Plug-Flow detention time= 60.7 min calculated for 0.043 af (96% of inflow)
 Center-of-Mass det. time= 35.0 min (780.1 - 745.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	268.80'	491 cf	7.94'W x 76.72'L x 2.69'H Field A 1,640 cf Overall - 413 cf Embedded = 1,227 cf x 40.0% Voids
#2A	269.05'	393 cf	ACF R-Tank HD 1 x 93 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 93 Chambers in 3 Rows
		883 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	269.03'	12.0" Round Culvert L= 43.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.03' / 269.03' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.47 cfs @ 12.13 hrs HW=269.57' TW=269.39' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 0.47 cfs @ 1.57 fps)

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Type III 24-hr 25-yr Rainfall=5.80"

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Pond RT3: R-Tanks 3 - Chamber Wizard Field A

Chamber Model = ACF R-Tank HD 1 (ACF Environmental R-Tank HD)

Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf

Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf

31 Chambers/Row x 2.35' Long = 72.72' Row Length +24.0" End Stone x 2 = 76.72' Base Length

3 Rows x 15.7" Wide + 24.0" Side Stone x 2 = 7.94' Base Width

3.0" Stone Base + 17.3" Chamber Height + 12.0" Stone Cover = 2.69' Field Height

93 Chambers x 4.2 cf = 392.6 cf Chamber Storage

93 Chambers x 4.4 cf = 413.3 cf Displacement

1,640.2 cf Field - 413.3 cf Chambers = 1,226.9 cf Stone x 40.0% Voids = 490.8 cf Stone Storage

Chamber Storage + Stone Storage = 883.4 cf = 0.020 af

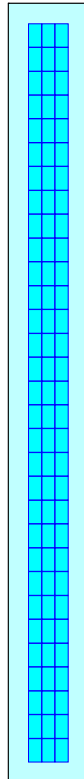
Overall Storage Efficiency = 53.9%

Overall System Size = 76.72' x 7.94' x 2.69'

93 Chambers

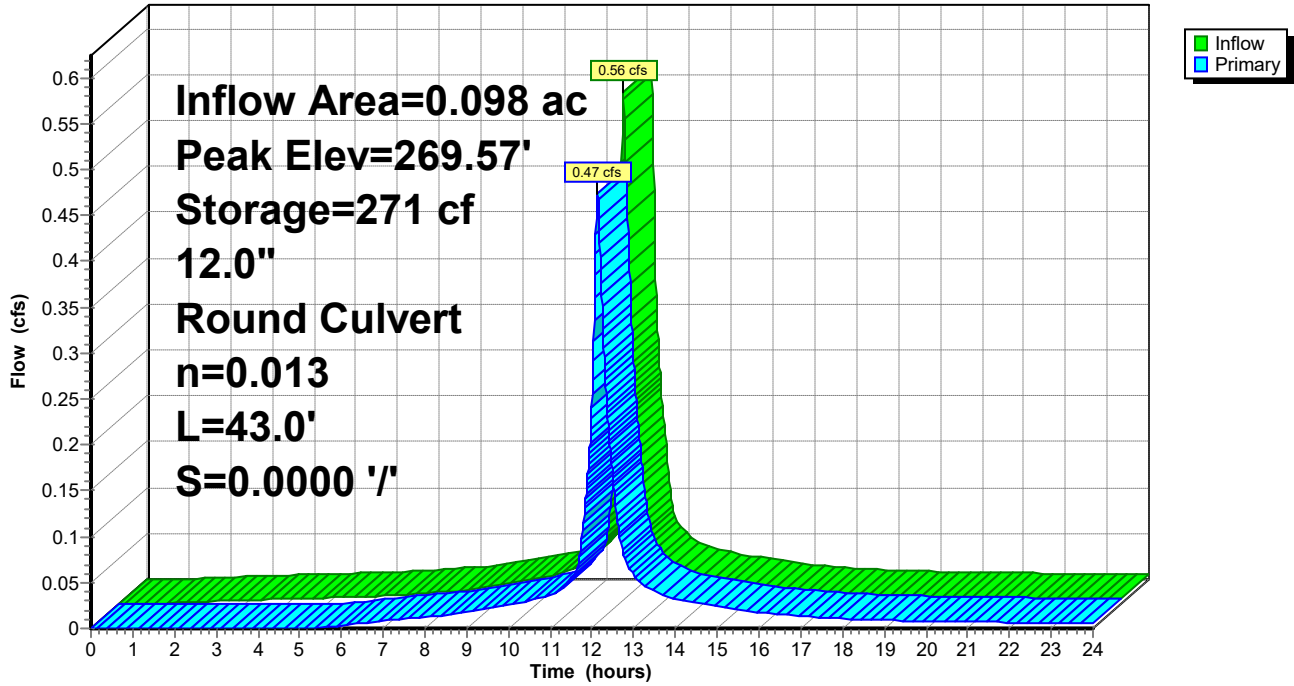
60.7 cy Field

45.4 cy Stone



Pond RT3: R-Tanks 3

Hydrograph



Summary for Pond SDEF1: SDEF1

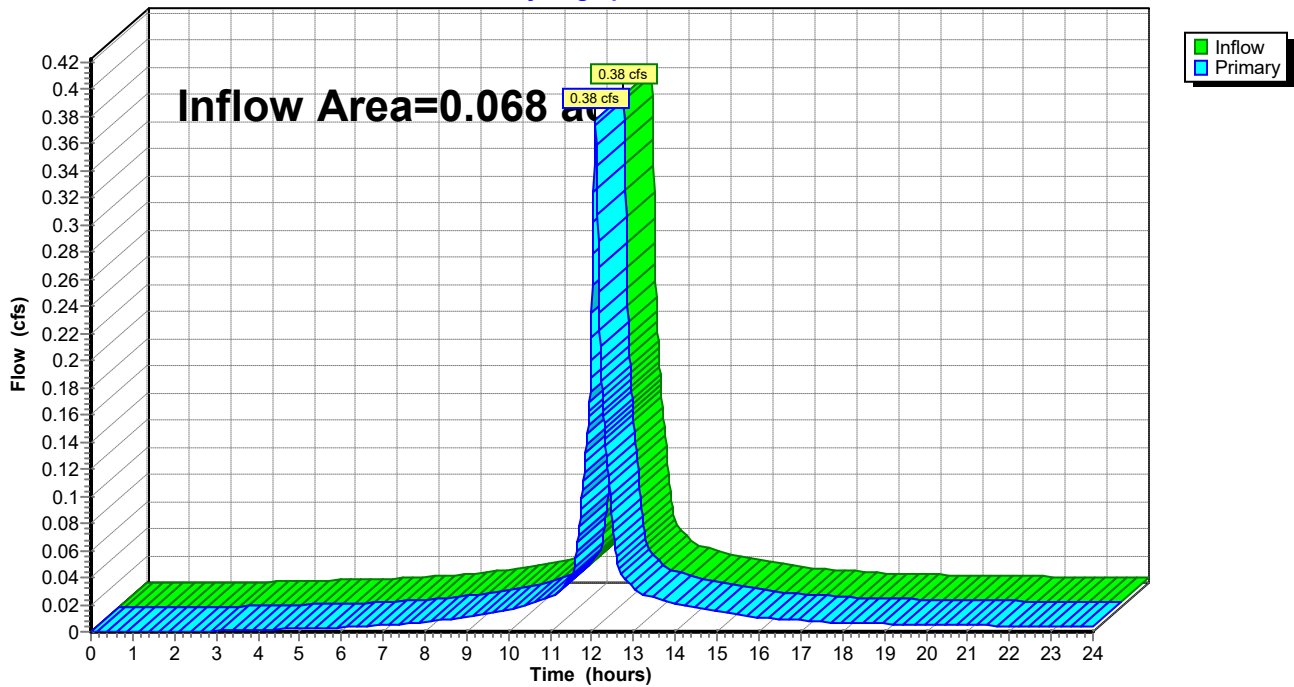
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.068 ac, 83.24% Impervious, Inflow Depth > 5.09" for 25-yr event
Inflow = 0.38 cfs @ 12.08 hrs, Volume= 0.029 af
Primary = 0.38 cfs @ 12.08 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 1R : Plunge pool

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Pond SDEF1: SDEF1

Hydrograph



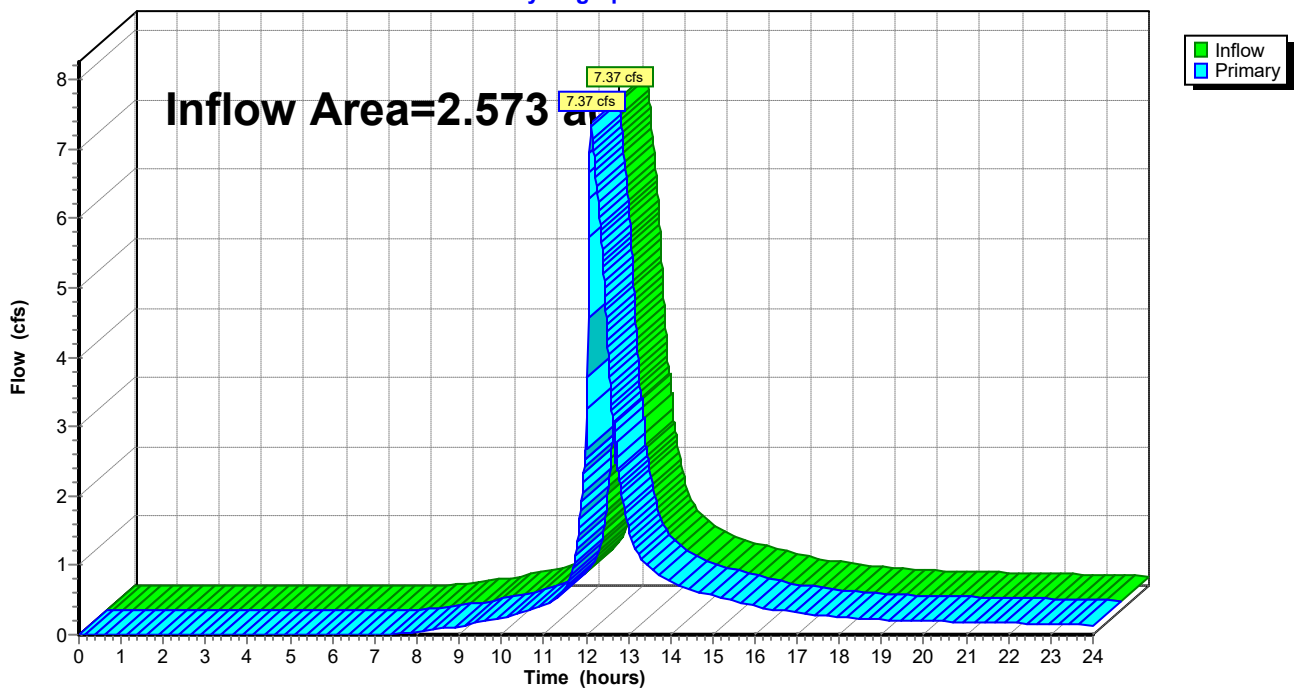
Summary for Link AP1: Wetlands

Inflow Area = 2.573 ac, 40.29% Impervious, Inflow Depth > 3.72" for 25-yr event
Inflow = 7.37 cfs @ 12.13 hrs, Volume= 0.799 af
Primary = 7.37 cfs @ 12.13 hrs, Volume= 0.799 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 28P

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link AP1: Wetlands

Hydrograph



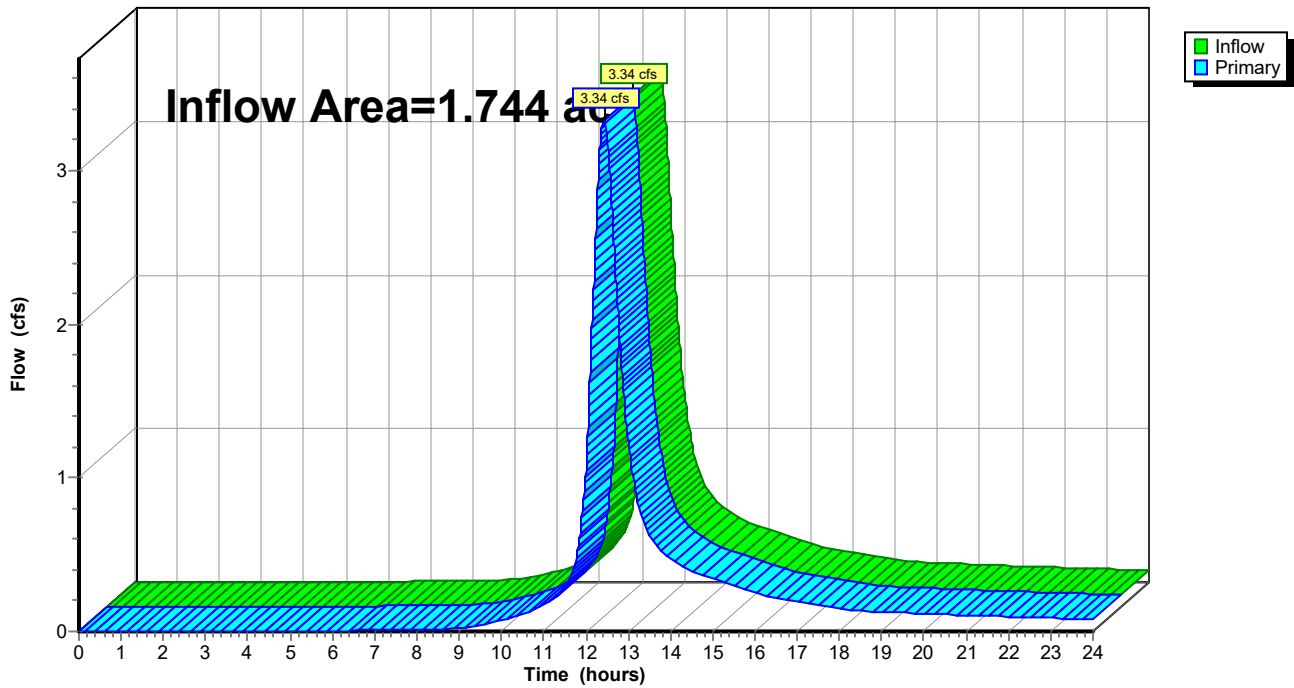
Summary for Link AP2: Stream

Inflow Area = 1.744 ac, 10.57% Impervious, Inflow Depth > 3.04" for 25-yr event
Inflow = 3.34 cfs @ 12.43 hrs, Volume= 0.442 af
Primary = 3.34 cfs @ 12.43 hrs, Volume= 0.442 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link AP2: Stream

Hydrograph



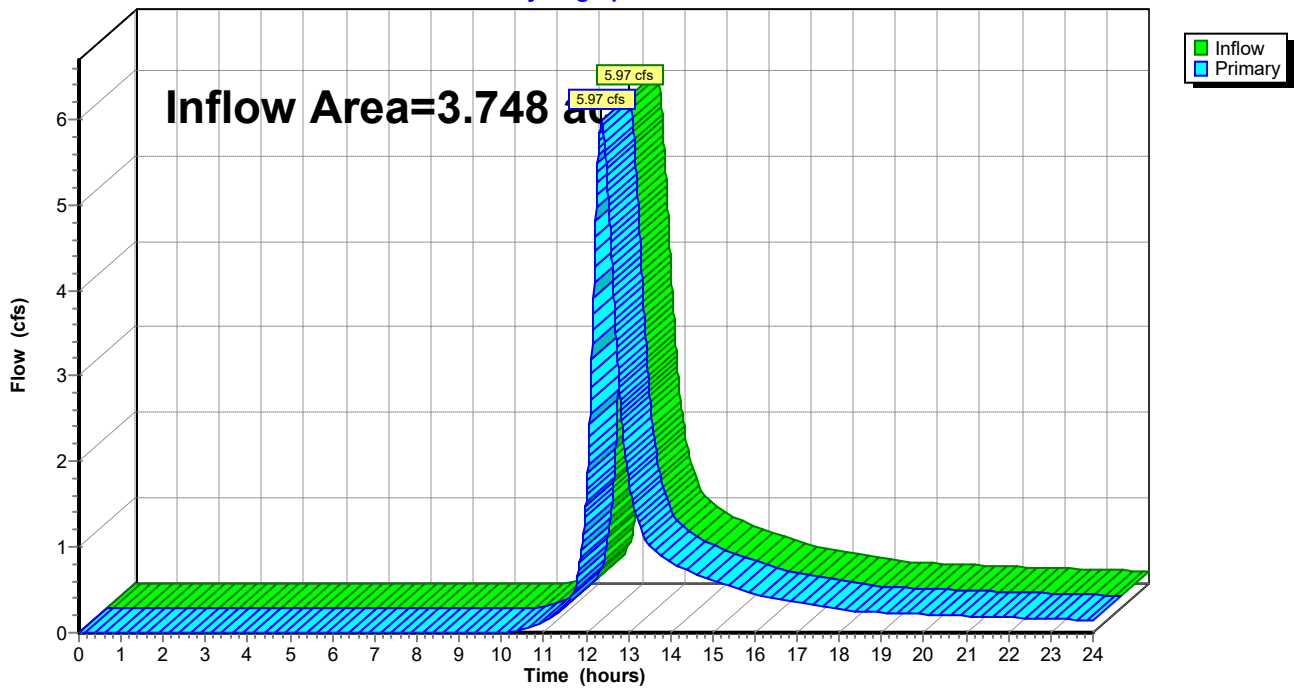
Summary for Link AP3:

Inflow Area = 3.748 ac, 18.11% Impervious, Inflow Depth > 2.28" for 25-yr event
Inflow = 5.97 cfs @ 12.38 hrs, Volume= 0.712 af
Primary = 5.97 cfs @ 12.38 hrs, Volume= 0.712 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 28P

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link AP3:

Hydrograph





- LEGEND:**
- SUBCATCHMENT LABEL
 - ANALYSIS POINT
 - TIME OF CONCENTRATION (TC) PATH
 - SUBCATCHMENT DIVIDE
 - SOIL BOUNDARY
 - SF - SHEET FLOW
 - SCF - SHALLOW CONCENTRATED FLOW
 - CF - CHANNEL FLOW
 - test pit #4
 - SOIL TEST PIT NUMBER

AVESTA GRAY MEADOWVIEW II
16 HANCOCK STREET
GRAY, MAINE

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POST-DEVELOPMENT STORMWATER PLAN

No.	Revision/Issue	Date
C	PLANNING BOARD AMMENDMENT/ MSHA REVIEW	5/11/23
B	PLANNING BOARD/DEP REVIEW	5/19/22
A	PERMITTING	1/28/22

Design by: DJV	Checked by: MPM
Drawn by: DJV	Approved by: JIM/MPM
Project: 191.06051	Date: DECEMBER 2019

Sheet No: **SW-2**

SOIL TABLE		
SOIL NAME	HSG CLASS	DESCRIPTION
BRAYTON	D	POORLY DRAINED
CROGHAN	B	MODERATELY WELL-DRAINED
MADE LAND	C	NONE ASSIGNED
NAUMBERG	D	SOMEWHAT POORLY TO POORLY DRAINED
NICHOLVILLE (S.W.P.)	D	SOMEWHAT POORLY DRAINED
NICHOLVILLE	C	MODERATELY WELL-DRAINED
SKERRY	C	MODERATELY WELL-DRAINED

- GENERAL NOTES:**
- WATERSHED AREAS EXTEND BEYOND SCOPE OF SURVEY AND WERE EXCLUDED IN THIS ANALYSIS. THE DRAINAGE AREA DELINEATED ENCOMPASSES THE ENTIRETY OF THE DEVELOPED AREA.
 - TEST PIT ANALYSIS WAS COMPLETED BY LICENSED SOIL EVALUATOR AND CERTIFIED SOIL SCIENTIST ALBERT FRICK #66. OF ALBERT FRICK ASSOCIATES. AT 731 FOSS ROAD, LIMERICK, MAINE 04048.