Board Members
Matthew J. Hayes, P.E., Chair
Robert Tucker, Vice Chair
Sarah Raposa, A.I.C.P., Clerk
Jessica Chabot, Member
Thomas A. Gay, Associate Member

Medway Town Hall
155 Village Street
Medway, MA 02053
Phone (508) 533-3291
Fax (508) 321-4987
Email: planningboard
@townofmedway.org
www.townofmedway.org

TOWN OF MEDWAY
COMMONWEALTH OF MASSACHUSETTS

PLANNING AND ECONOMIC DEVELOPMENT BOARD

Approved – April 11, 2023

Tuesday, March 28, 2023
Medway Planning and Economic Development Board
155 Village Street
Medway, MA 02053

Member	Matt Hayes, Chair	Bob Tucker	Jessica Chabot	Sarah Raposa	Tom Gay Assoc. member
Attendance	X	Absent	X	X	Zoom

Pursuant to Chapter 107 of the Acts of 2022, this meeting was conducted in person and, as a courtesy, via remote means in accordance with applicable law. Please note that while an option for remote attendance and/or participation was provided as a courtesy to the public, applicants, and board members, the meeting/hearings was not suspended or terminated if technological problems interrupted the virtual broadcast, unless required by law. Information for participating in the meeting via Zoom was included at the end of the agenda for this meeting.

ALSO PRESENT:
Barbara J. Saint Andre, Director of Community and Economic Development (via Zoom)
Susan E. Affleck-Childs, Community and Economic Development Coordinator

The meeting was called to order by Chair Hayes at 7:00 pm.

There were no Citizen Comments.

Request for Field Change 2 Marc Road Site Plan:

The Board is in receipt of the following: **(See Attached**)
- Letter dated March 20, 2023 from project engineer Dan Merrikin, Legacy Engineering
- Field Change Request Application dated March 20, 2023
- Marc Road Grading & Utilities Plan Land revised March 20, 2023
- Report on Infiltration Basin redesign prepared by Legacy Engineering
- Tetra Tech review memo dated March 22, 2023

Legacy Engineering Representative Dan Merrikin was present on the Zoom call. It was explained that they have submitted a field change for a minor reconfiguration of Basin #4 and the minor regrading of the adjacent parking area due to slightly higher groundwater indicators found

at a new test pit. There is no change to the limit of work. The application will need to go to Conservation Commission. Consultant Bouley has no issue with this field change.

On a motion made by Jessica Chabot, seconded by Sarah Raposa, the Board voted unanimously to approve the field change for 2 Marc Road.

Construction Services Estimate for Medway Commons Chipotle/Starbucks Site Plan

The Board is in receipt of the following: (**See Attached**)

- Construction Services estimate from Tetra Tech dated 3-16-23 for $6,537.00

The Board was informed that the schedule is to endorse the site plan at the April 11, 2023 meeting.

On a motion made by Jessica Chabot, seconded by Sarah Raposa, the Board voted unanimously to approve the Tetra Tech construction services estimate for Medway Common Site Plan in the amount of $6,537.00.

Applegate Subdivision – Authorization to Transfer Balance of Construction Inspection Funds to the Subdivision Bond Default Account

The Board is in receipt of the following: (**See Attached**)

- Applegate Subdivision Construction Services accounting spreadsheet. The balance is $7,473.80.

On a motion made by Jessica Chabot seconded by Sarah Raposa, the PEDB voted unanimously to authorize the transfer of the balance of construction observation funds for the Applegate Subdivision, plus any accrued interest, to the Subdivision Bond Default account.

Medway Commons Bright Path Performance Security:

The Board is in receipt of the following: (**See Attached**)

- Tetra Tech punch list and bond estimate
- Bright Path cash performance security agreement signed by Charter Realty

The Board was informed that the project contractor will provide the cash performance security in the amount of $32,088.00 on 3-29-23. There is a punch list prepared by Tetra Tech which has been provided to all parties. The draft agreement has been reviewed. The agreement will be held until the check is received. At that time, Ms. Affleck-Childs will inform the Building Department that all is in order from the PEDB's perspective for an occupancy permit to be issued.

On a motion made by Jessica Chabot, seconded by Sarah Raposa, the Board voted unanimously to approve the performance security amount for Bright Path in the amount of $32,088.00 and to sign the performance security agreement.

Public Hearing Continuation 7 Sanford Street – Multi-Family Housing Special Permit:

The Board is in receipt of the following: (**See Attached**)

- Notice to continue public hearing to March 28, 2023
- Email communication dated March 22, 2023 from Attorney Danielle Justo requesting a continuation of the hearing to the April 11, 2023 meeting.

Prior to the opening of the hearing Member Raposa recused herself as she is an abutter to the subject property.

The Board is in receipt of an email from Attorney Danielle Justo, on behalf of the applicant, requesting a continuation of the hearing to April 11, 2023.

On a motion made by Jessica Chabot, seconded by Matt Hayes, the Board voted to continue the hearing for 7 Sanford Street to April 11, 2023 at 7:05 pm.

Member Raposa returned to the table after action. The Board is now back in session with a quorum.

Discussion of Application & Filing Fees:

The Board is in receipt of the following: (**See Attached**)

- PEDB Fee Schedule last updated 6-29-2016.

At the February PEDB meeting, the Board noted that the Board's filing fees should be reviewed. One of the items discussed was establishing a fee for field change requests. A fee of $100.00 was suggested. There was a suggestion that the time taken to do these tasks should be looked at in establishing any fee. The next item discussed was charging for lot releases for older subdivisions. The Board agrees there should be a fee and $100.00 is reasonable. The Board next discussed site plan fees. The current site plan filing fees are tied to the size (gross floor area) of a building (to be constructed or renovated), however some projects just have site work. Some examples of this include battery storage systems, wireless communication facilities, and electric vehicle stations. Staff were asked to work on this some more and come back with recommendations.

Proposed Revisions to *Site Plan Rules and Regulations:*

The Board is in receipt of the following: (**See Attached**)

- Revised draft *Site Plan Rules and Regulations* dated 3-27-23.

The Board discussed the following topics:

Definition of driveway:
The definition of driveway needs further work.

Tree Preservation and Replacement:
There is language that an applicant may propose alternative trees. For tree preservation the language provided was that unless infeasible, existing noninvasive trees of 15 inch or more in diameter as measured four and a half feet above finish (dbh) should be preserved. The trees that are in the area around construction activity that are to be retained shall be protected during

construction. The Board reviewed the size of removed trees and the options for mitigation. This includes a contribution in lieu of replanting. The tree size for removed trees requiring mitigation is 15" diameter. The Board would like to have a mapping of the trees provided with the plans et. There needs to be further clarity on the trees within the setback area. There was a suggestion to add a height for evergreen trees within a parking area. The tree size for new and replacement had language that the caliper of tree should be at least 2 inches. The language regarding hardwood trees also needs clarification. All trees with a dbh of 15" It was recommended that there be consistency with the writing of numbers (two or 2) when referring to the quantity of trees. It is inconsistent within the document. The Board reviewed the two options for tree replacement. It was noted that option B provides more flexibility, but option A provides for simplicity. A suggestion is to have the fee for removal/replacement be $400.00.

Earth Removal and Fill:
A suggestion was to require this to be tied to the amount of land which triggers a land disturbance permit. There needs to be consistency with using numbers or writing out the numbers.

Electric Vehicle ready parking spaces:
The language will be that EV parking spaces be provided to comply with Section 7.1.1.E.4 of the Zoning Bylaw. There was a concern about the language that the Board may also provide addition provisions of electric vehicle ready parking. This will be revisited.

Open Space:
A new section on open space was added. There was language added that "designated" open space needs to be shown on the submitted site plan. There should also be language noting who the land will be conveyed to.

Change of Ownership:
The Board agrees with the language added about change of ownership.

This document will be further refined for the Board to review, and a public hearing will be scheduled.

PEDB Meeting Minutes:

March 14, 2023 Regular

On a motion made by Sarah Raposa, seconded by Jessica Chabot, the Board voted to accept the minutes from the March 14, 2023 regular meeting.

March 14, 2023 Regular

On a motion made by Sarah Raposa, seconded by Jessica Chabot, the Board voted to accept the minutes of the March 14, 2023 executive session.

NEXT MEETING

- April 11, 2023

On a motion made by Sarah Raposa, seconded by Jessica Chabot, the Board voted to adjourn the meeting.

The regular meeting concluded at 8:38 p.m.

Prepared by,
Amy Sutherland
Recording Secretary

Reviewed and edited by,
Susan E. Affleck-Childs
Planning and Economic Development Coordinator
and
Barbara J. Saint Andre
Director, Community and Economic Development

March 28, 2023
Medway Planning & Economic Development Board Meeting

Request for Field Change
2 Marc Road Site Plan

- Letter dated March 20, 2023 from project engineer Dan Merrikin, Legacy Engineering
- Field Change Request Application dated March 20, 2023
- 2 Marc Road Grading & Utilities Plan Land revised March 20, 2023 (Sheet C-4 of the plan set)
- Report on Infiltration Basin Redesign prepared by Legacy Engineering
- Tetra Tech review memo dated March 22, 2023

LEGACY ENGINEERING

dan@legacy-ce.com
508-376-8883(o)
508-868-8353(c)
730 Main Street
Suite 2C
Millis, MA 02054

March 20, 2023

Medway Planning & Economic Development Board
155 Village Street
Town Offices
Medway, MA 02053

Ref: Application for a Field Change
2 Marc Road

Dear Members of the Board:

On behalf of the applicant, the Ellen Realty Trust, we are pleased to submit the enclosed Application for a Field Change. These changes consist of a minor reconfiguration of Basin #4 and minor regrading of the adjacent parking area due to slightly higher groundwater indicators found at a new test pit (OTH 23-1). Please find the following enclosed in support of the application:

- Two full-size copies of the site plan; and
- Two copies of an Infiltration Basin Redesign Narrative with supporting documents.

Please do not hesitate to contact me if you have any questions or comments.

Sincerely,

LEGACY ENGINEERING LLC

Daniel J. Merrikin, P.E.
President

cc: File

Planning & Economic Development Board
Town of Medway, MA

Request for a Field Change

March 20, 2023

PERMITTEE INFORMATION

Permittee's Name: 2 Marc Road LLC

Mailing Address: 730 Main Street, Suite 2A
Millis, MA 02054

Name of Primary Contact: Ellen Rosenfeld

Telephone:
Office: 508-376-2041 Cell: n/a

Email address: ellen@rosenfeld-law.com

PREVIOUSLY APPROVED PLAN INFORMATION

Project/Development Name: 2 Marc Road

Plan Title: 2 Marc Road Site Plan of Land in Medway, MA

Plan Date: 2/28/2022 Rev. Thr 12/28/2022

Prepared by:
Name: Daniel Merrikin
Firm: Legacy Engineering LLC
Phone #: 508-376-8883 Email: dan@legacy-ce.com

Type of Permit: Modification of Site Plan & special permits

Date of Decision: November 22, 2022

Date of Plan Endorsement: January 10,2023

PROPERTY INFORMATION

Location Address: 2 Marc Road

The land shown on the plan is shown on Medway Assessor's Map #33 as Parcel #001

SCOPE OF PROPOSED FIELD CHANGE

_____ **Attach a complete written description**. What circumstances have prompted the need for a field change? What is proposed instead?

_____ **Attach a plan or drawing showing what is proposed.**

Plan Title: See attached letter and supporting docs

Plan Date: March 20, 2023

Prepared by:
Name: Daniel Merrikin
Firm: Legacy Engineering LLC
Telephone: 508-376-8883
Email address: dan@legacy-ce.com

DESIGNATED REPRESENTATIVE INFORMATION

Name: Daniel Merrikin

Company: Legacy Engineering LLC

Telephone:
Office: 508-376-8883 Cell: 508-868-8353

Email address: dan@legacy-ce.com

SIGNATURES

The undersigned, being the Permittee, herewith submits this request for a Field Change to the Medway Planning and Economic Development Board for review and approval.

I hereby certify, under the pains and penalties of perjury, that the information contained in this request is a true, complete, and accurate representation of the facts regarding the property under consideration.

(If applicable, I hereby authorize Daniel Merrikin *to serve as my Agent/ Designated Representative to represent my interests before the Medway Planning & Economic Development Board with respect to this request.)*

In submitting this request, I authorize the Board, its consultants and agents, Town staff, and members of the Design Review Committee to access the site for review purposes.

_____ 3/20/2023
Signature of Permittee *Date*

_____ 3/20/2023
Signature of Agent/Designated Representative *Date*

GRADING NOTES:

1. SITE CUT/FILL CALCULATIONS:
   - 1.1. FILL VOLUME: 1,050 C.Y.
   - 1.2. CUT VOLUME: 150 C.Y.
   - 1.3. TOTAL FILL VOLUME: 900 C.Y.

COMMONWEALTH OF MASSACHUSETTS
DANIEL J. MERRIKIN
CIVIL
No. 43309
REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Daniel J. Merrikin, P.E.
Date: 2023.03.20 14:32:19 -04'00'

UTILITY NOTES:

1. DRAINAGE PIPING SHALL BE HDPE RATED FOR H20 LOADING. (ADS N12 OR EQUAL)
2. PLUMBERS AND DRAIN LAYERS OF ESTABLISHED REPUTATION AND EXPERIENCE WILL BE LICENSED BY THE BOARD AS DRAIN LAYERS AUTHORIZED TO PERFORM THE WORK.
3. ELECTRIC CONDUIT IS TO BE RUN TO THE PROPOSED PARKING AREA FOR FUTURE EV PARKING SPACES.

For Registry Use

SITE ADDRESS:
2 MARC ROAD

MAP AND PARCEL:
MAP 33, PARCEL 001

ZONING CLASSIFICATION:
EAST INDUSTRIAL

OVERLAY DISTRICTS:
GROUNDWATER PROTECTION DISTRICT

OWNER & APPLICANT:
2 MARC ROAD LLC
ELLEN ROSENFELD
730 MAIN STREET, SUITE 2A
MILLIS, MA 02054
508-376-2041

DEED
BOOK 40331 PAGE 234

DATE APPROVAL ISSUED:

PLAN ENDORSEMENT DATE:

MEDWAY PLANNING & ECONOMIC DEVELOPMENT BOARD

PLAN SCALE: 1" = 40'
0' 40' 80' 160'

PLAN DATE: FEBRUARY 28, 2022

DATE	REVISION	BY
2022.06.22	NEW WETLAND FLAGS	DJM
2022.08.26	CHANGES PER TOWN COMMENTS	DJM
2022.10.13	CHANGES PER TOWN COMMENTS	DJM
2022.10.20	CHANGES PER CONSERVATION COMMENTS	DJM
2022.12.28	REVISIONS PER DECISION	DJM
2023.03.20	BASIN #4 REDESIGN	DJM

I CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN CONFORMITY WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

I CERTIFY THAT THIS SURVEY AND PLAN CONFORMS TO THE ETHICAL, PROCEDURAL AND TECHNICAL STANDARDS IN THE COMMONWEALTH OF MASSACHUSETTS.

I HEREBY CERTIFY THAT THE PROPERTY LINES SHOWN ON THIS PLAN ARE THE LINES DIVIDING EXISTING OWNERSHIPS, AND THE LINES OF THE STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED, AND THAT NO NEW LINES FOR DIVISION OF EXISTING OWNERSHIP OR FOR NEW WAYS ARE SHOWN.

REGISTERED LAND SURVEYOR

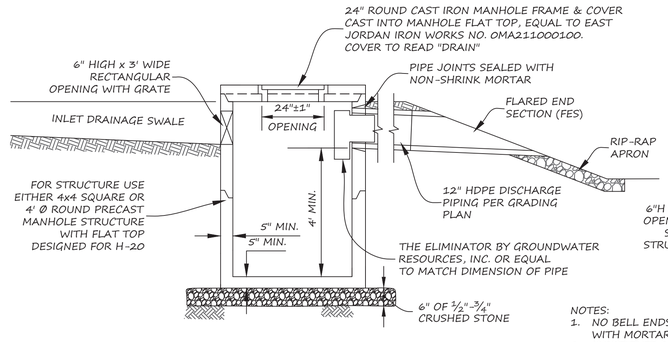
2 MARC ROAD
GRADING & UTILITIES PLAN OF LAND IN MEDWAY, MA

730 MAIN STREET
SUITE 2C
MILLIS, MA 02054
508-376-8883(o)

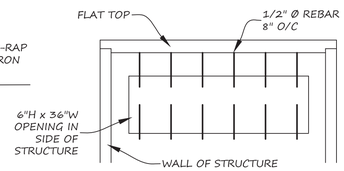
C-4

LEGACY ENGINEERING

354-D63



SECTION VIEW

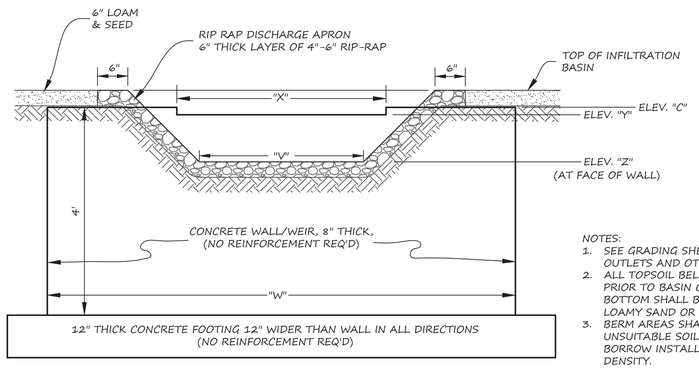


GRATE DETAIL

NOTES:
1. NO BELL ENDS IN CATCH BASIN. CONNECTIONS TO BE TIGHTLY SEALED WITH MORTAR.
2. SUBSTITUTE FRAME AND GRATE SHALL BE MADE IN USA AND SHALL BE APPROVED BY THE ENGINEERING DEPARTMENT PRIOR TO CONSTRUCTION.

PRECAST CONCRETE IN-SWALE CATCH BASIN

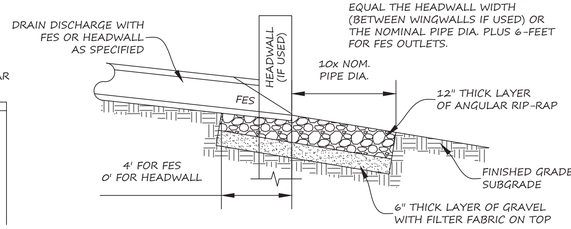
NOT TO SCALE



OUTLET WEIR AND RIP-RAP SWALE DETAIL

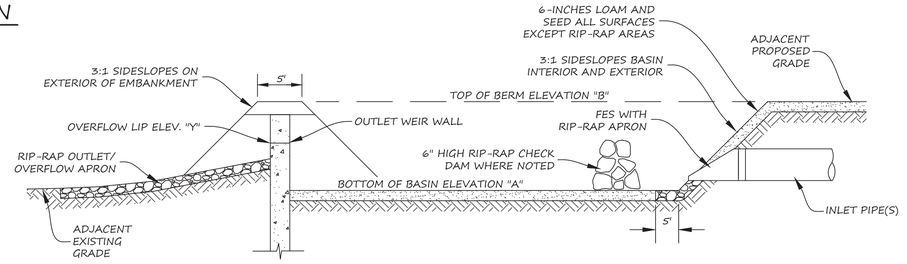
NOTES:
1. SEE GRADING SHEETS AND PROFILE SHEETS FOR SIZE OF INLETS AND OUTLETS AND OTHER DIMENSIONAL REQUIREMENTS FOR EACH BASIN.
2. ALL TOPSOIL BELOW THE BOTTOM OF THE BASIN SHALL BE REMOVED PRIOR TO BASIN CONSTRUCTION. FILL MATERIALS UNDER THE BASIN BOTTOM SHALL BE CLEAN GRAVEL. FILL FOR BERMS MAY BE SAND, LOAMY SAND OR SANDY LOAM. (TITLE V CLASSIFICATIONS).
3. BERM AREAS SHALL BE REMOVED OF ALL TOPSOIL AND OTHER UNSUITABLE SOILS. BERM CORE SHALL CONSIST OF ORDINARY BORROW INSTALLED IN 12-INCH LIFTS TO A MINIMUM 93% PROCTOR DENSITY.

NOTES:
1. RIP-RAP TO BE PLACED ON EMBANKMENTS TO A POINT 1' ABOVE TOP OF FES (WHERE APPLICABLE).
2. WIDTH OF RIP-RAP APRON SHALL EQUAL THE HEADWALL WIDTH (BETWEEN WINGWALLS IF USED) OR THE NOMINAL PIPE DIA. PLUS 6-FEET FOR FES OUTLETS.



TYPICAL RIP-RAP APRON DETAIL

NOT TO SCALE



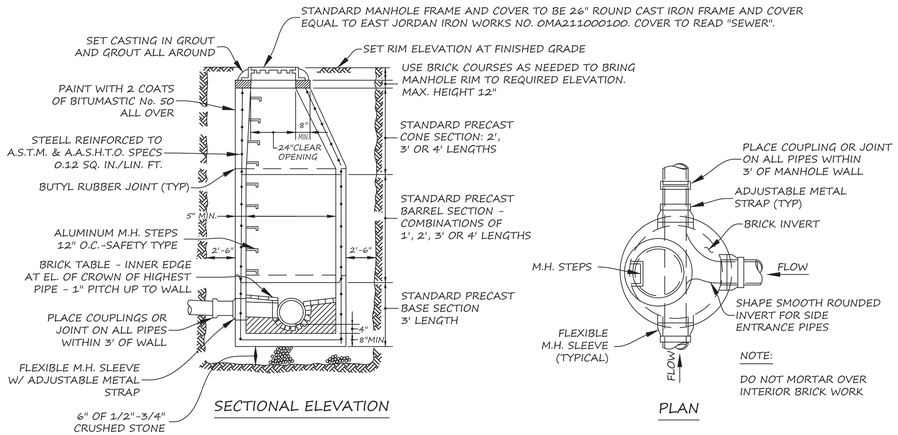
TYPICAL BASIN CROSS-SECTION

SCHEDULE OF DIMENSIONS AND ELEVATIONS

	BASIN #1	BASIN #2	BASIN #3	BASIN #4
BOTTOM OF BASIN ELEVATION "A"	142.5	142.5	143.0	**143.0**
TOP OF BERM ELEVATION "B"	144.5	144.5	144.9	**144.5**
OUTLET WEIR WALL LENGTH "W"	23'	23'	14'	**16'**
OVERFLOW WEIR NOTCH LENGTH "X"	13'	13'	6'	**9'**
OVERFLOW ELEVATION "Y"	143.10	143.75	143.40	**143.25**
TOP OF WEIR WALL "C"	143.60	144.25	143.90	**144.00**
RIP RAP SWALE OUTLET ELEV. "Z" (AT OUTSIDE FACE OF WALL)	142.5	143.0	143.0	**143.0**

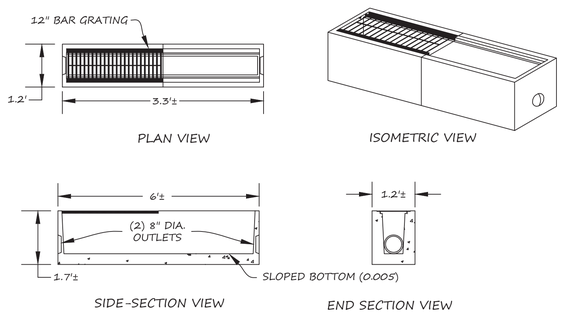
TYPICAL INFILTRATION BASIN CROSS-SECTION

NOT TO SCALE



TYPICAL PRECAST CONCRETE SEWER MANHOLE DETAILS

NOT TO SCALE



NOTES:
1. CONCRETE SHALL BE 4,000 PSI AFTER 28 DAYS.
2. SHALL CONFORM TO H-20 LOADINGS.
3. SHALL BE POWER DRAIN S300K BY ACO DRAIN OR EQUAL.

TRENCH DRAIN DETAIL

NOT TO SCALE

I CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN CONFORMITY WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

I CERTIFY THAT THIS SURVEY AND PLAN CONFORMS TO THE ETHICAL, PROCEDURAL AND TECHNICAL STANDARDS IN THE COMMONWEALTH OF MASSACHUSETTS.

I HEREBY CERTIFY THAT THE PROPERTY LINES SHOWN ON THIS PLAN ARE THE LINES DIVIDING EXISTING OWNERSHIPS, AND THE LINES OF THE STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED, AND THAT NO NEW LINES FOR DIVISION OF EXISTING OWNERSHIP OR FOR NEW WAYS ARE SHOWN.

_____
REGISTERED LAND SURVEYOR

SITE ADDRESS:
2 MARC ROAD

MAP AND PARCEL:
MAP 33, PARCEL 001

ZONING CLASSIFICATION:
EAST INDUSTRIAL

OVERLAY DISTRICTS:
GROUNDWATER PROTECTION DISTRICT

OWNER & APPLICANT:
2 MARC ROAD LLC
ELLEN ROSENFELD
730 MAIN STREET, SUITE 2A
MILLIS, MA 02054
508-376-2041

DEED
BOOK 40331 PAGE 234

DATE APPROVAL ISSUED:

PLAN ENDORSEMENT DATE:

_____
_____
_____
_____
_____
_____
MEDWAY PLANNING & ECONOMIC DEVELOPMENT BOARD

For Registry Use

PLAN SCALE: N.T.S.

PLAN DATE: FEBRUARY 28, 2022

REVISION	DATE	BY
NEW WETLAND FLAGS	2022-06-22	DJM
CHANGES PER TOWN COMMENTS	2022-08-26	DJM
CHANGES PER TOWN COMMENTS	2022-10-13	DJM
CHANGES PER CONSERVATION COMMENTS	2022-10-20	DJM
CHANGES PER PEER REVIEW	2022-12-28	DJM
REVISIONS PER DECISION	2023-03-20	DJM
BASIN #4 REDESIGN		

2 MARC ROAD
DETAIL PLAN OF LAND IN MEDWAY, MA

COMMONWEALTH OF MASSACHUSETTS
DANIEL J. MERRIKIN
CIVIL
No. 43309
REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Daniel J. Merrikin, P.E.
Date: 2023.03.20 14:34:56 -04'00'

730 MAIN STREET
SUITE 2C
MILLIS, MA 02054
508-376-8883(o)

C-7

LEGACY ENGINEERING

354-D63

2 Marc Road
Medway, MA

Infiltration Basin Redesign

INTRODUCTION

In accordance with the approved addition and parking lot expansion plan for 2 Marc Road in Medway, an additional soil test (OTH 23-1) has been completed at the location of proposed Infiltration Basin #4. The test indicated a higher groundwater elevation than originally designed for (140.5 vs. 140.0). In order to be conservative, we have raised the bottom elevation of the basin by one foot. The discussion below outlines the changes made and demonstrates continued compliance with the MA Stormwater Management Standards affected by this change.

SOILS

OTH 23-1 was conducted at the location of the proposed Infiltration Basin #4. The soil consists of sand/loamy sand for the layer in which the infiltration basin will sit. A Rawl's Rate of of 2.41 in/hr is used for all infiltration related calculations for this basin. Indicators of seasonal high groundwater were found at elevation 140.5.

STANDARD 2 – Peak Discharge Rates

Consistent with the prior conservative design, no credit is taken in the HydroCAD calculations for infiltration in the basin.

Summary of Peak Flow Rates to Design Point:

Design Storm (Year)	Peak Runoff Rate (cfs)		Volume of Runoff (ac-ft)	
	Existing	Proposed	Existing	Proposed
2	7.29	3.49	0.717	0.524
10	16.68	13.45	1.576	1.308
25	23.03	19.38	2.167	1.855
100	33.17	28.50	3.130	2.759

STANDARD 3 - Loss of Annual Recharge

STORMWATER INFILTRATION BASIN #4

Recharge required (Rv)=(Impervious coverage)*(depth to be recharged)

	Class A Soils	Class B Soils	Class C Soils	Class D Soils
On-Site Impervious Area	2,343 s.f.	14,48 s.f.	0 s.f.	0 s.f.
Required Recharge Volume (Rv)	117 c.f.	423 c.f.	0 c.f.	0 c.f.
Total Rv	540 c.f.			

Simple Dynamic Method: The Simple Dynamic method allows for a conservative inclusion of some of the recharge which occurs within the infiltration facility during the design storm in accordance with the following formula:

V – kTA = V'

Where

V is the Required Recharge Volume. If the infiltration facility also treats the Water Quality Volume, the greater of the two values is used.
k is the saturated hydraulic conductivity determined by the Rawls Rate (Table 2.3.3 of Volume 3, Chapter 1 of the Stormwater Handbook)
T is the allowable drawdown during the peak of the storm = 2 hours for this method
A is the basin bottom area
V' is the minimum required storage volume of the infiltration facility when including 2 hours of recharge

This method allows the designer to include two hours of ongoing recharge during the design storm using a permeability rate (saturated hydraulic conductivity) selected based on the classification of the soil under the infiltration facility. For Infiltration Basin #4, the required storage volume is calculated using the following values:

V – kTA = V'

V = 1,403 cubic feet (WQV)
K = 2.41 inches per hour = 0.20 feet per hour
T = 2 Hours
A = 4,132 square feet

1,403 cf – 0.20 ft/hr * 2 hr * 4,132 s.f. = -250 c.f.

The calculated recharge during the first 2 hours of the design storm exceeds the volume required to treat the WQV. The infiltration facility therefore only requires that the lowest outlet be slightly above the bottom of the basin to ensure recharge. The lowest outlet is 0.25 feet above the basin bottom.

A secondary check is required to ensure that the Rv will recharge within at least 72 hours. The required WQV exceeds the Rv and is used for this calculation. A K value of 2.41 is used for drawdown design purposes since soils testing found loamy sand soils at this location. Using the following formula, the drawdown time is calculated:

$Time_{drawdown}$ = [Rv/(K x Bottom Area)]

Where:

WQV = 1,403 c.f.
K = 2.41 inches per hour = 0.20 feet per hour
Bottom Area = 4,132 s.f.

It is concluded that the drawdown time for the infiltrated volume is 1.7 hours, which satisfies this requirement.

Mounding Analysis:

A mounding analysis has been conducted and can be found in attachment M. The bottom of Stormwater Basin #4 is at elevation 143.0, with a seasonal high groundwater elevation below the basin at 140.5. The mound for the infiltrated volume is 1.06 feet.

STANDARD 4 - TSS Removal

Sediment Forebay:

In accordance with the DEP Handbook, a forebay is sized to hold 0.1" of runoff from its tributary impervious area.

For Stormwater Infiltration Basin #4, the tributary impervious area is 16,830 s.f. for the entire basin and the minimum forebay volume is 140 cubic feet. With the water trapped behind the 6" high checkdam at the piped outlets, each forebay will contain 140 cubic feet, exceeding the requirement.

Stormwater Infiltration Basin:

Stormwater Basin #4 is designed with a total depth of 1.5 feet. Trapped infiltration water reaches a maximum depth of 0.25 feet (elevation of lowest basin outlet) and the maximum water level in the 100-year storm event is 0.48 feet, leaving 1.02 feet of freeboard.

ATTACHMENT A: Soils Data

DEEP OBSERVATION TEST HOLE SOIL LOG
2 Marc Road Medway, MA 02053

Deep Observation Hole: OTH 23-1 Date of Test Hole: February 7, 2023 Soil Evaluation By: Daniel J. Merrikin, P.E.
(Mass. Approved Soil Evaluator)

Depth (In.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
20”	Fill										
62”	C1	2.5Y6/2	28”	7.5Y6/8	5%	S/LS	1%	<1%	Massive	V. Friable	Pockets LS
90”	C2	2.5Y6/4				SL	1%	<1%	Massive	V. Friable	

Additional Notes: Ground Elev.=142.8

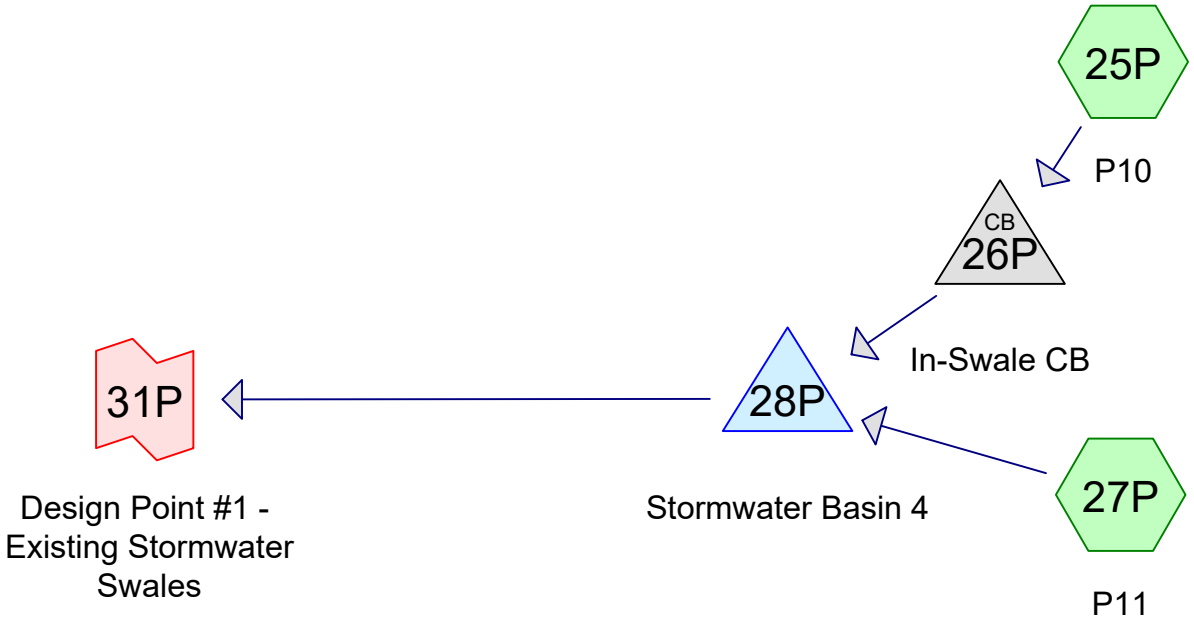
Groundwater Indicators Observed at Time of Testing:

☐ Depth observed standing water in observation hole: None

☒ Depth to soil redoximorphic features (mottles): 28” (Elev.=140.5)

☐ Depth weeping from side of observation hole: None

ATTACHMENT B: HydroCAD Hydrology Calculations



Subcat Reach Pond Link

Routing Diagram for HydroCAD3
Prepared by Legacy Engineering LLC, Printed 2/24/2023

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1"	Type III 24-hr		Default	24.00	1	1.00	2
2	2-Yr	Type III 24-hr		Default	24.00	1	3.37	2
3	10-Yr	Type III 24-hr		Default	24.00	1	5.26	2
4	25-Yr	Type III 24-hr		Default	24.00	1	6.44	2
5	100-Yr	Type III 24-hr		Default	24.00	1	8.27	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.031	39	>75% Grass cover, Good HSG A (27P)
0.101	61	>75% Grass cover, Good HSG B (27P)
0.017	61	>75% Grass cover, Good, HSG B (25P)
0.003	85	Gravel roads, HSG B (25P)
0.054	98	Paved parking, HSG A (25P)
0.333	98	Paved parking, HSG B (25P)
0.538	**86**	**TOTAL AREA**

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 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 25P: P10 Runoff Area=17,675 sf 95.22% Impervious Runoff Depth=0.63"
Flow Length=165' Tc=5.9 min CN=96 Runoff=0.30 cfs 0.021 af

Pond 26P: In-Swale CB Peak Elev=143.30' Inflow=0.30 cfs 0.021 af
12.0" Round Culvert x 2.00 n=0.011 L=10.0' S=0.0100 '/' Outflow=0.30 cfs 0.021 af

Subcatchment 27P: P11 Runoff Area=5,752 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=27' Slope=0.1500 '/' Tc=2.2 min CN=56 Runoff=0.00 cfs 0.000 af

Pond 28P: Stormwater Basin 4 Peak Elev=143.25' Storage=829 cf Inflow=0.30 cfs 0.021 af
Outflow=0.01 cfs 0.003 af

Link 31P: Design Point #1 - Existing Stormwater Swales Inflow=0.04 cfs 0.006 af
Primary=0.04 cfs 0.006 af

Total Runoff Area = 0.538 ac Runoff Volume = 0.021 af Average Runoff Depth = 0.48"
28.16% Pervious = 0.151 ac 71.84% Impervious = 0.386 ac

Summary for Subcatchment 25P: P10

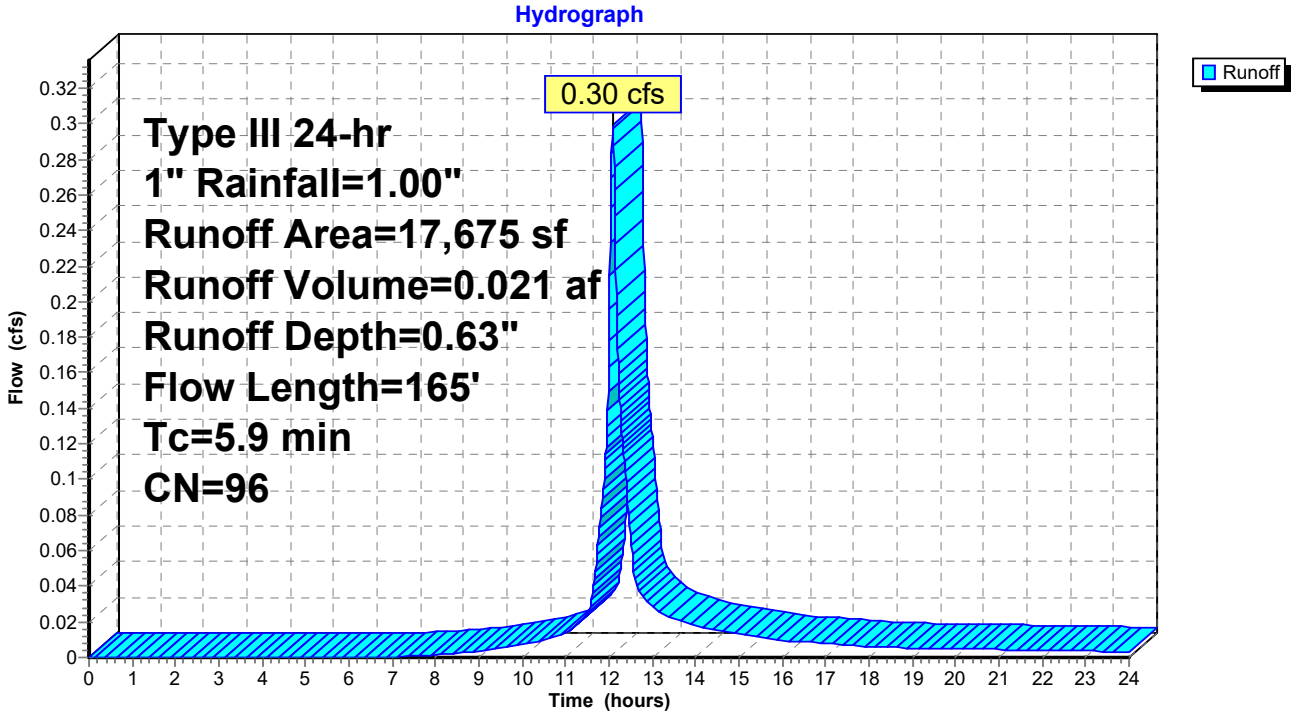
Runoff = 0.30 cfs @ 12.09 hrs, Volume= 0.021 af, Depth= 0.63"
Routed to Pond 26P : In-Swale CB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" Rainfall=1.00"

Area (sf)	CN	Description
2,343	98	Paved parking, HSG A
14,487	98	Paved parking, HSG B
725	61	>75% Grass cover, Good, HSG B
120	85	Gravel roads, HSG B
17,675	96	Weighted Average
845		4.78% Pervious Area
16,830		95.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	20	0.0200	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.37"
2.1	145	0.0100	1.15		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.37"
5.9	165	Total			

Subcatchment 25P: P10



Summary for Pond 26P: In-Swale CB

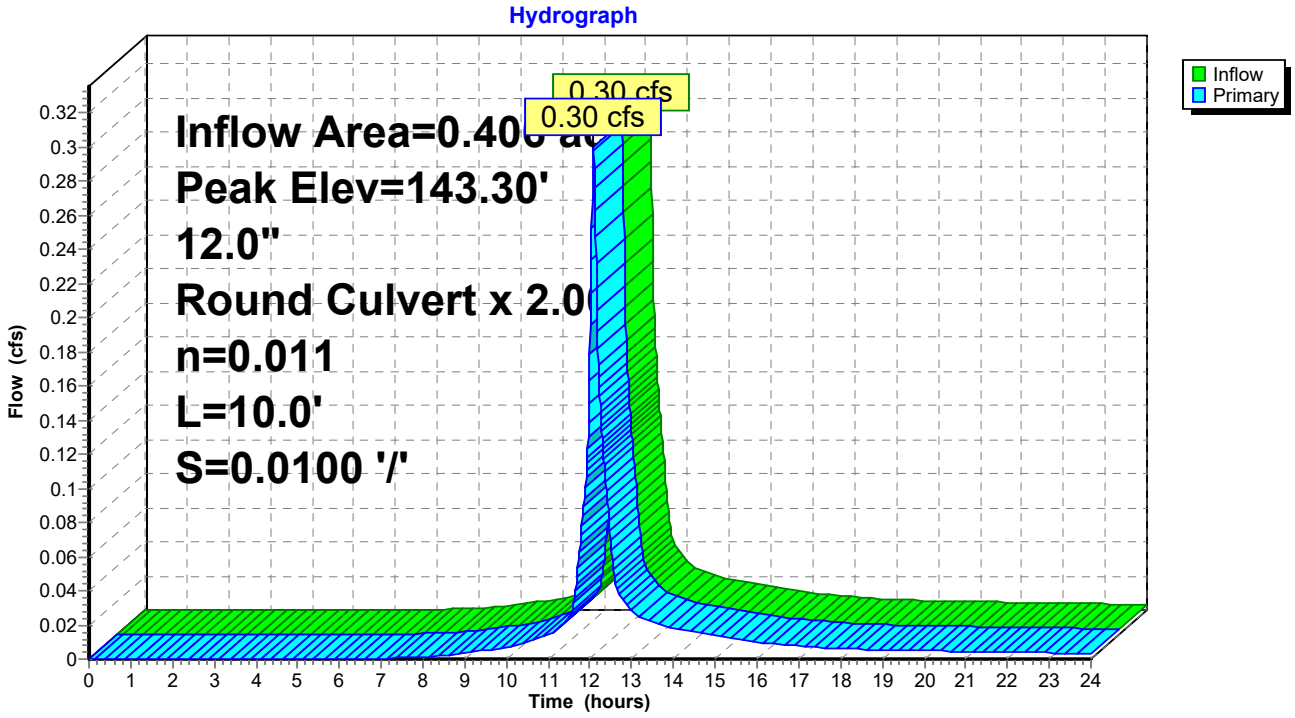
Inflow Area = 0.406 ac, 95.22% Impervious, Inflow Depth = 0.63" for 1" event
Inflow = 0.30 cfs @ 12.09 hrs, Volume= 0.021 af
Outflow = 0.30 cfs @ 12.09 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min
Primary = 0.30 cfs @ 12.09 hrs, Volume= 0.021 af
Routed to Pond 28P : Stormwater Basin 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 143.30' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	143.10'	**12.0" Round Culvert X 2.00** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 143.10' / 143.00' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=0.30 cfs @ 12.09 hrs HW=143.30' TW=143.10' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.30 cfs @ 2.03 fps)

Pond 26P: In-Swale CB



Summary for Subcatchment 27P: P11

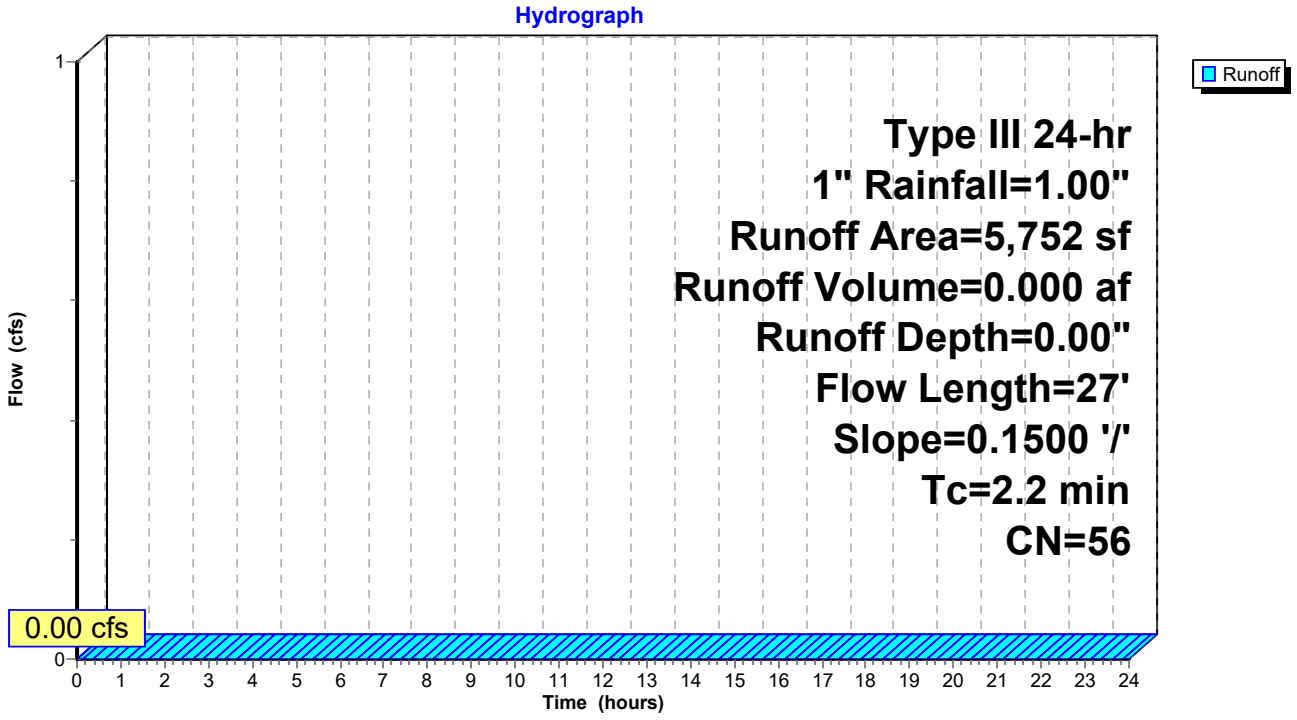
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 28P : Stormwater Basin 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" Rainfall=1.00"

Area (sf)	CN	Description
4,383	61	>75% Grass cover, Good HSG B
1,369	39	>75% Grass cover, Good HSG A
5,752	56	Weighted Average
5,752		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	27	0.1500	0.21		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.37"

Subcatchment 27P: P11



Summary for Pond 28P: Stormwater Basin 4

Inflow Area = 0.538 ac, 71.84% Impervious, Inflow Depth = 0.48" for 1" event
Inflow = 0.30 cfs @ 12.09 hrs, Volume= 0.021 af
Outflow = 0.01 cfs @ 18.90 hrs, Volume= 0.003 af, Atten= 98%, Lag= 409.0 min
Primary = 0.01 cfs @ 18.90 hrs, Volume= 0.003 af
Routed to Link 31P : Design Point #1 - Existing Stormwater Swales

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 143.25' @ 18.90 hrs Surf.Area= 3,413 sf Storage= 829 cf

Plug-Flow detention time= 631.4 min calculated for 0.003 af (12% of inflow)
Center-of-Mass det. time= 446.9 min (1,261.0 - 814.0)

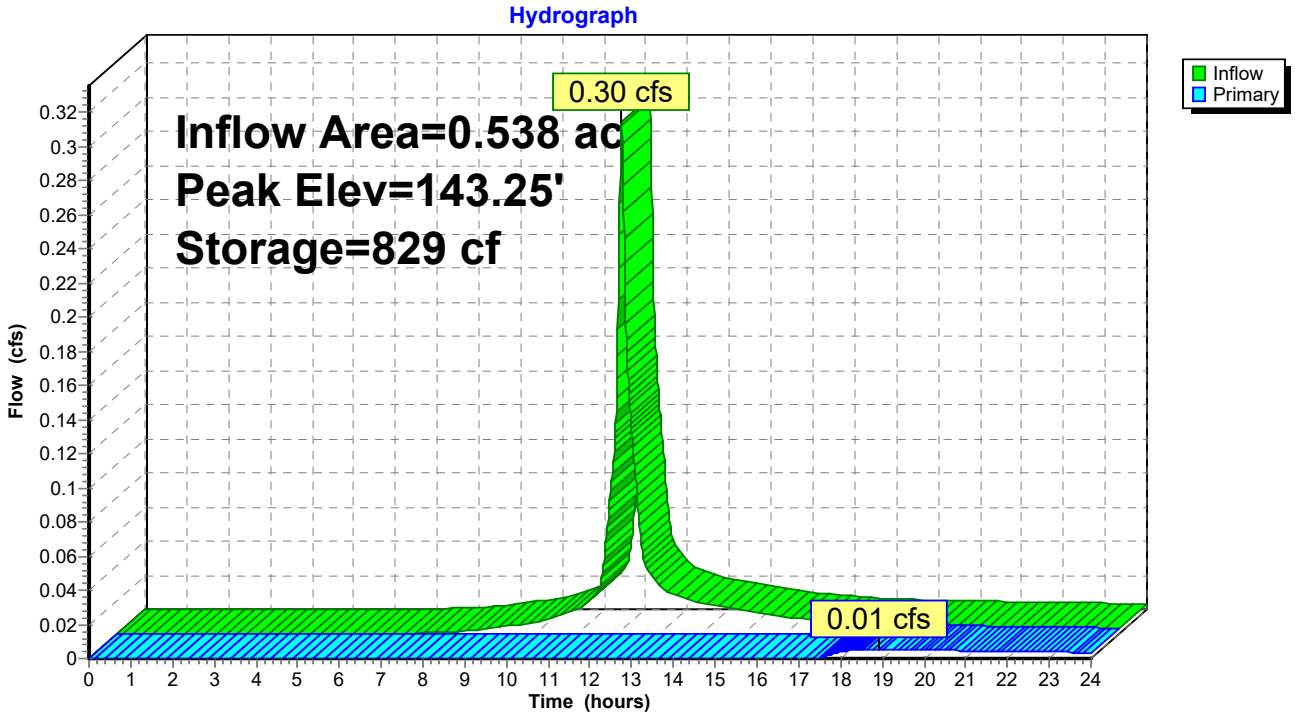
Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	6,002 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
143.00	3,138	387.0	0	0	3,138
144.50	4,932	405.0	6,002	6,002	4,419

Device	Routing	Invert	Outlet Devices
#1	Primary	143.25'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 143.25 144.00 Width (feet) 9.00 9.00

Primary OutFlow Max=0.01 cfs @ 18.90 hrs HW=143.25' TW=0.00' (Dynamic Tailwater)
↑—**1=Custom Weir/Orifice** (Weir Controls 0.01 cfs @ 0.19 fps)

Pond 28P: Stormwater Basin 4

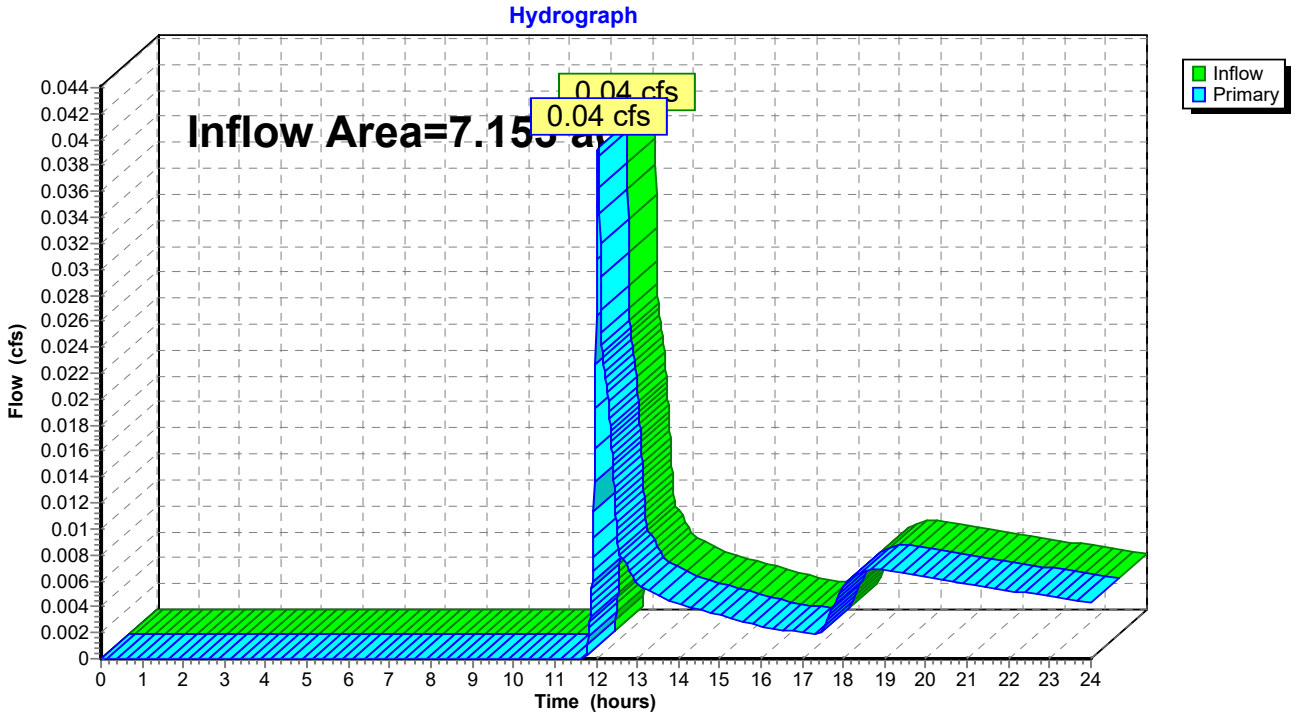


Summary for Link 31P: Design Point #1 - Existing Stormwater Swales

Inflow Area = 7.153 ac, 38.91% Impervious, Inflow Depth = 0.01" for 1" event
Inflow = 0.04 cfs @ 12.05 hrs, Volume= 0.006 af
Primary = 0.04 cfs @ 12.05 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 31P: Design Point #1 - Existing Stormwater Swales



Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 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 25P: P10 Runoff Area=17,675 sf 95.22% Impervious Runoff Depth=2.92"
Flow Length=165' Tc=5.9 min CN=96 Runoff=1.29 cfs 0.099 af

Pond 26P: In-Swale CB Peak Elev=143.56' Inflow=1.29 cfs 0.099 af
12.0" Round Culvert x 2.00 n=0.011 L=10.0' S=0.0100 '/' Outflow=1.29 cfs 0.099 af

Subcatchment 27P: P11 Runoff Area=5,752 sf 0.00% Impervious Runoff Depth=0.34"
Flow Length=27' Slope=0.1500 '/' Tc=2.2 min CN=56 Runoff=0.03 cfs 0.004 af

Pond 28P: Stormwater Basin 4 Peak Elev=143.36' Storage=1,207 cf Inflow=1.32 cfs 0.102 af
Outflow=1.10 cfs 0.084 af

Link 31P: Design Point #1 - Existing Stormwater Swales Inflow=3.49 cfs 0.524 af
Primary=3.49 cfs 0.524 af

Total Runoff Area = 0.538 ac Runoff Volume = 0.102 af Average Runoff Depth = 2.28"
28.16% Pervious = 0.151 ac 71.84% Impervious = 0.386 ac

Summary for Subcatchment 25P: P10

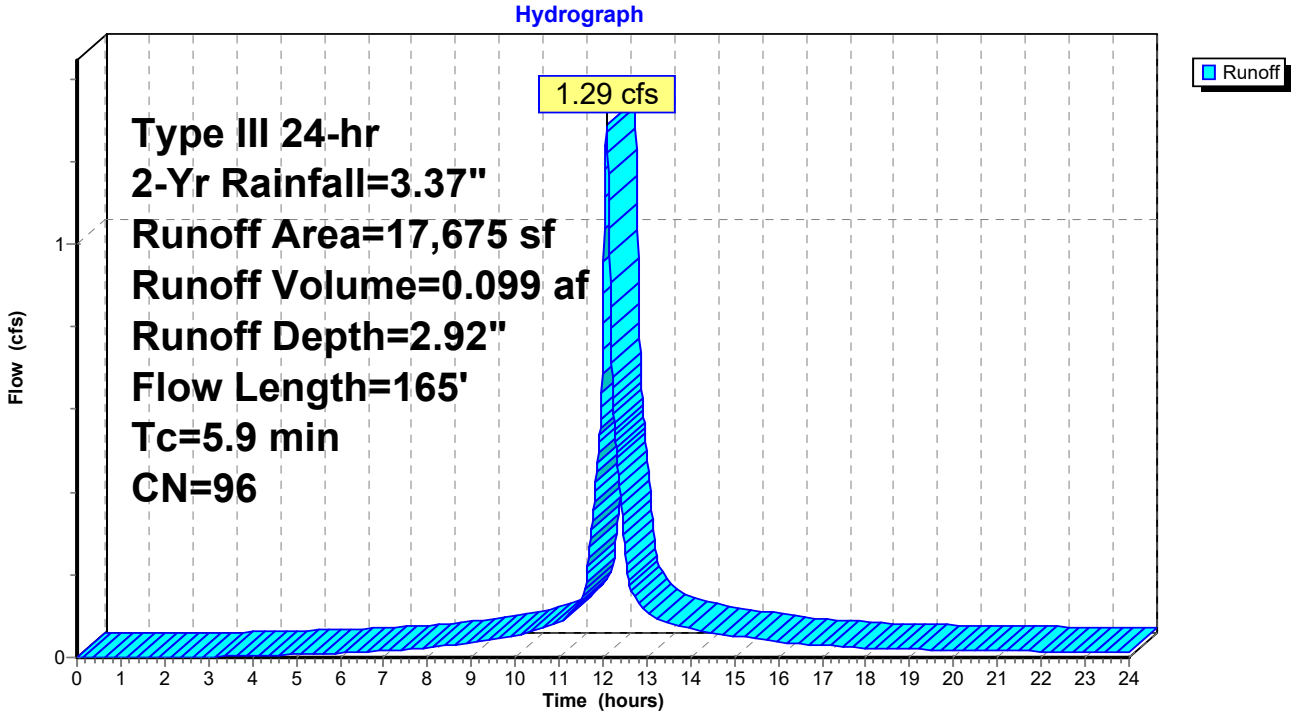
Runoff = 1.29 cfs @ 12.08 hrs, Volume= 0.099 af, Depth= 2.92"
Routed to Pond 26P : In-Swale CB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Yr Rainfall=3.37"

Area (sf)	CN	Description
2,343	98	Paved parking, HSG A
14,487	98	Paved parking, HSG B
725	61	>75% Grass cover, Good, HSG B
120	85	Gravel roads, HSG B
17,675	96	Weighted Average
845		4.78% Pervious Area
16,830		95.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	20	0.0200	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.37"
2.1	145	0.0100	1.15		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.37"
5.9	165	Total			

Subcatchment 25P: P10



Summary for Pond 26P: In-Swale CB

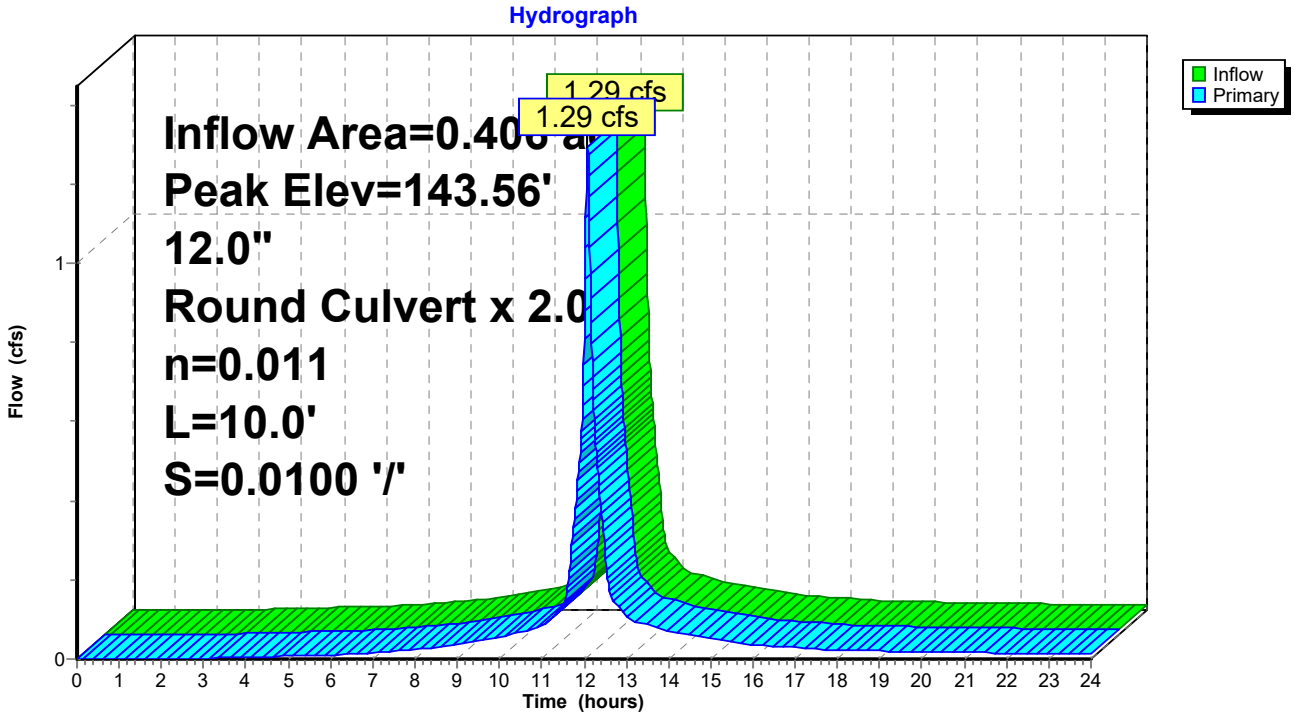
Inflow Area = 0.406 ac, 95.22% Impervious, Inflow Depth = 2.92" for 2-Yr event
Inflow = 1.29 cfs @ 12.08 hrs, Volume= 0.099 af
Outflow = 1.29 cfs @ 12.08 hrs, Volume= 0.099 af, Atten= 0%, Lag= 0.0 min
Primary = 1.29 cfs @ 12.08 hrs, Volume= 0.099 af
Routed to Pond 28P : Stormwater Basin 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 143.56' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	143.10'	**12.0" Round Culvert X 2.00** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 143.10' / 143.00' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=1.28 cfs @ 12.08 hrs HW=143.56' TW=143.35' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.28 cfs @ 2.69 fps)

Pond 26P: In-Swale CB



Summary for Subcatchment 27P: P11

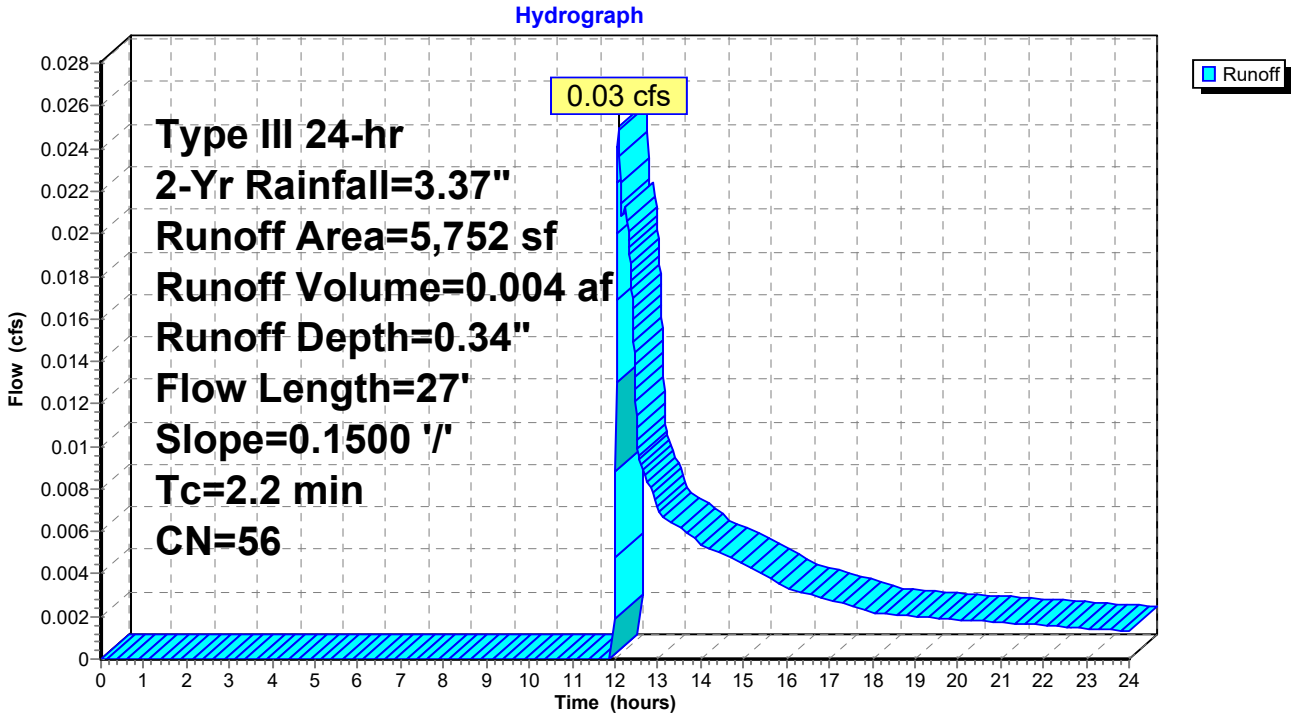
Runoff = 0.03 cfs @ 12.09 hrs, Volume= 0.004 af, Depth= 0.34"
Routed to Pond 28P : Stormwater Basin 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Yr Rainfall=3.37"

Area (sf)	CN	Description
4,383	61	>75% Grass cover, Good HSG B
1,369	39	>75% Grass cover, Good HSG A
5,752	56	Weighted Average
5,752		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	27	0.1500	0.21		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.37"

Subcatchment 27P: P11



Summary for Pond 28P: Stormwater Basin 4

Inflow Area = 0.538 ac, 71.84% Impervious, Inflow Depth = 2.28" for 2-Yr event
Inflow = 1.32 cfs @ 12.08 hrs, Volume= 0.102 af
Outflow = 1.10 cfs @ 12.13 hrs, Volume= 0.084 af, Atten= 16%, Lag= 3.1 min
Primary = 1.10 cfs @ 12.13 hrs, Volume= 0.084 af
Routed to Link 31P : Design Point #1 - Existing Stormwater Swales

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 143.36' @ 12.13 hrs Surf.Area= 3,534 sf Storage= 1,207 cf

Plug-Flow detention time= 135.0 min calculated for 0.084 af (82% of inflow)
Center-of-Mass det. time= 61.7 min (840.0 - 778.3)

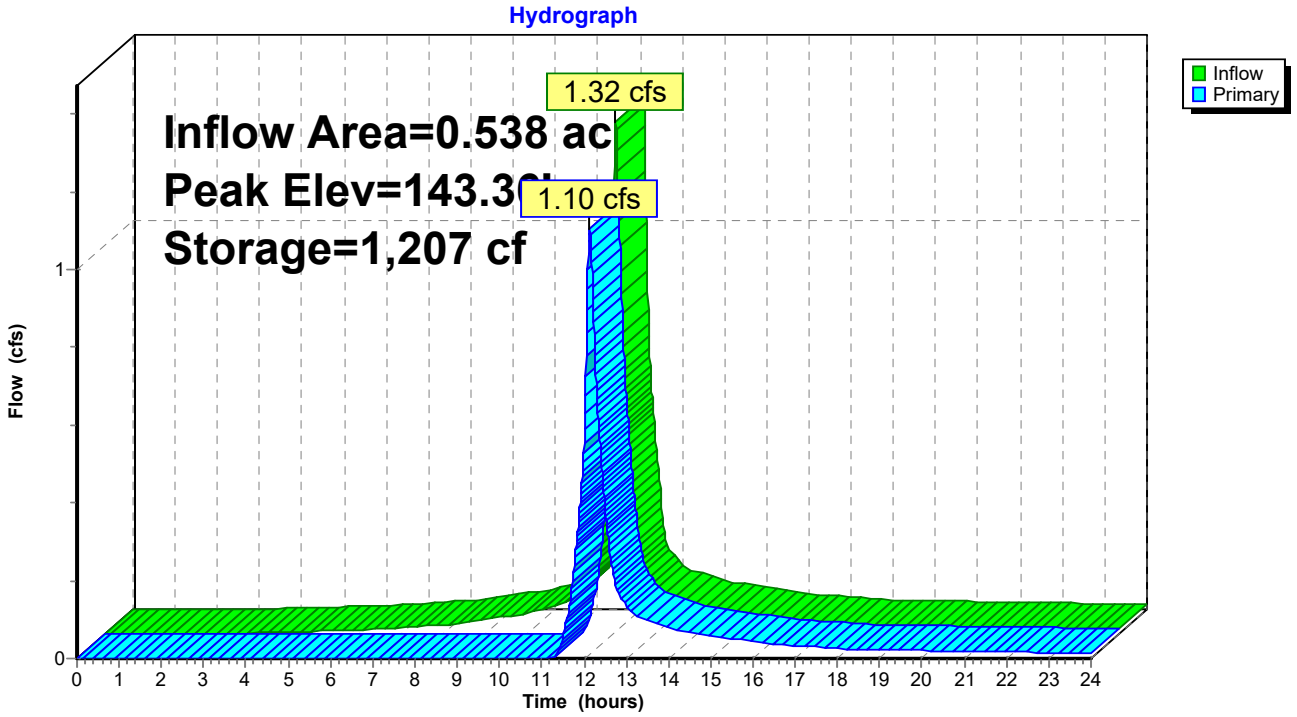
Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	6,002 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
143.00	3,138	387.0	0	0	3,138
144.50	4,932	405.0	6,002	6,002	4,419

Device	Routing	Invert	Outlet Devices
#1	Primary	143.25'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 143.25 144.00 Width (feet) 9.00 9.00

Primary OutFlow Max=1.10 cfs @ 12.13 hrs HW=143.36' TW=0.00' (Dynamic Tailwater)
↑**1=Custom Weir/Orifice** (Weir Controls 1.10 cfs @ 1.10 fps)

Pond 28P: Stormwater Basin 4

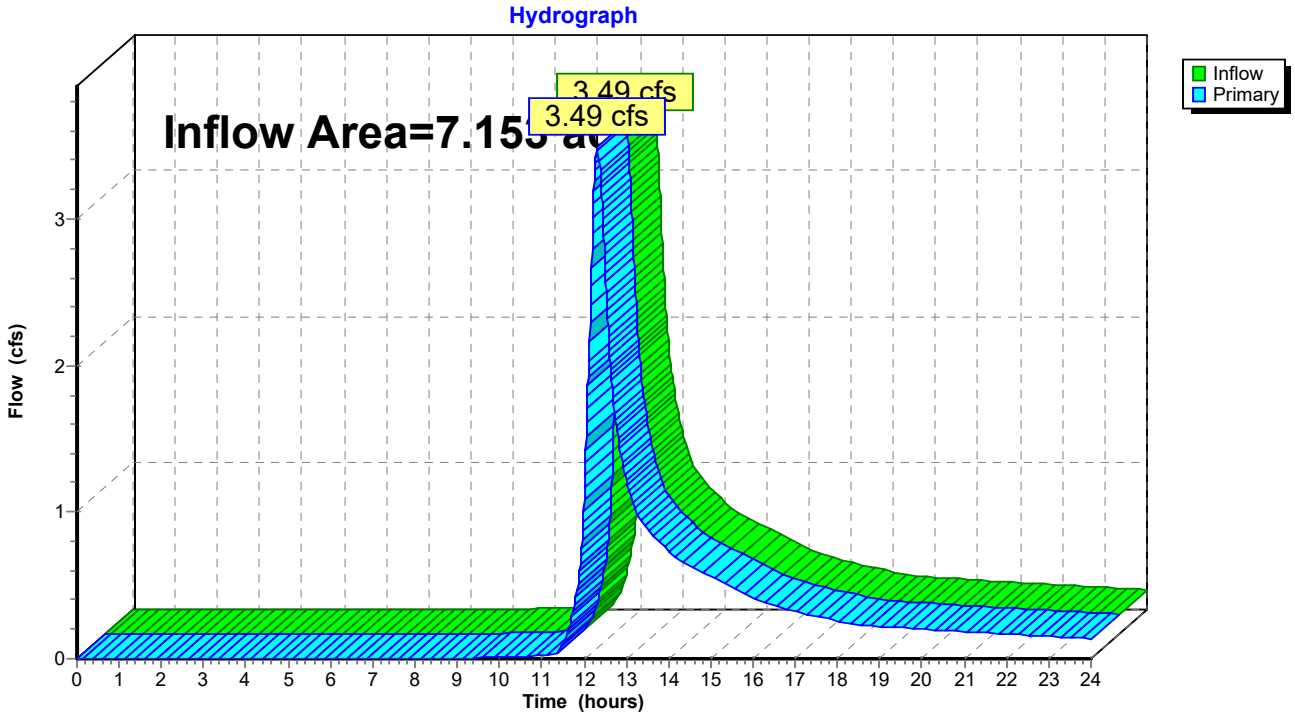


Summary for Link 31P: Design Point #1 - Existing Stormwater Swales

Inflow Area = 7.153 ac, 38.91% Impervious, Inflow Depth = 0.88" for 2-Yr event
Inflow = 3.49 cfs @ 12.31 hrs, Volume= 0.524 af
Primary = 3.49 cfs @ 12.31 hrs, Volume= 0.524 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 31P: Design Point #1 - Existing Stormwater Swales



Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 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 25P: P10 Runoff Area=17,675 sf 95.22% Impervious Runoff Depth=4.79"
Flow Length=165' Tc=5.9 min CN=96 Runoff=2.07 cfs 0.162 af

Pond 26P: In-Swale CB Peak Elev=143.70' Inflow=2.07 cfs 0.162 af
12.0" Round Culvert x 2.00 n=0.011 L=10.0' S=0.0100 '/' Outflow=2.07 cfs 0.162 af

Subcatchment 27P: P11 Runoff Area=5,752 sf 0.00% Impervious Runoff Depth=1.18"
Flow Length=27' Slope=0.1500 '/' Tc=2.2 min CN=56 Runoff=0.18 cfs 0.013 af

Pond 28P: Stormwater Basin 4 Peak Elev=143.41' Storage=1,387 cf Inflow=2.22 cfs 0.175 af
Outflow=1.93 cfs 0.156 af

Link 31P: Design Point #1 - Existing Stormwater Swales Inflow=13.45 cfs 1.308 af
Primary=13.45 cfs 1.308 af

Total Runoff Area = 0.538 ac Runoff Volume = 0.175 af Average Runoff Depth = 3.90"
28.16% Pervious = 0.151 ac 71.84% Impervious = 0.386 ac

Summary for Subcatchment 25P: P10

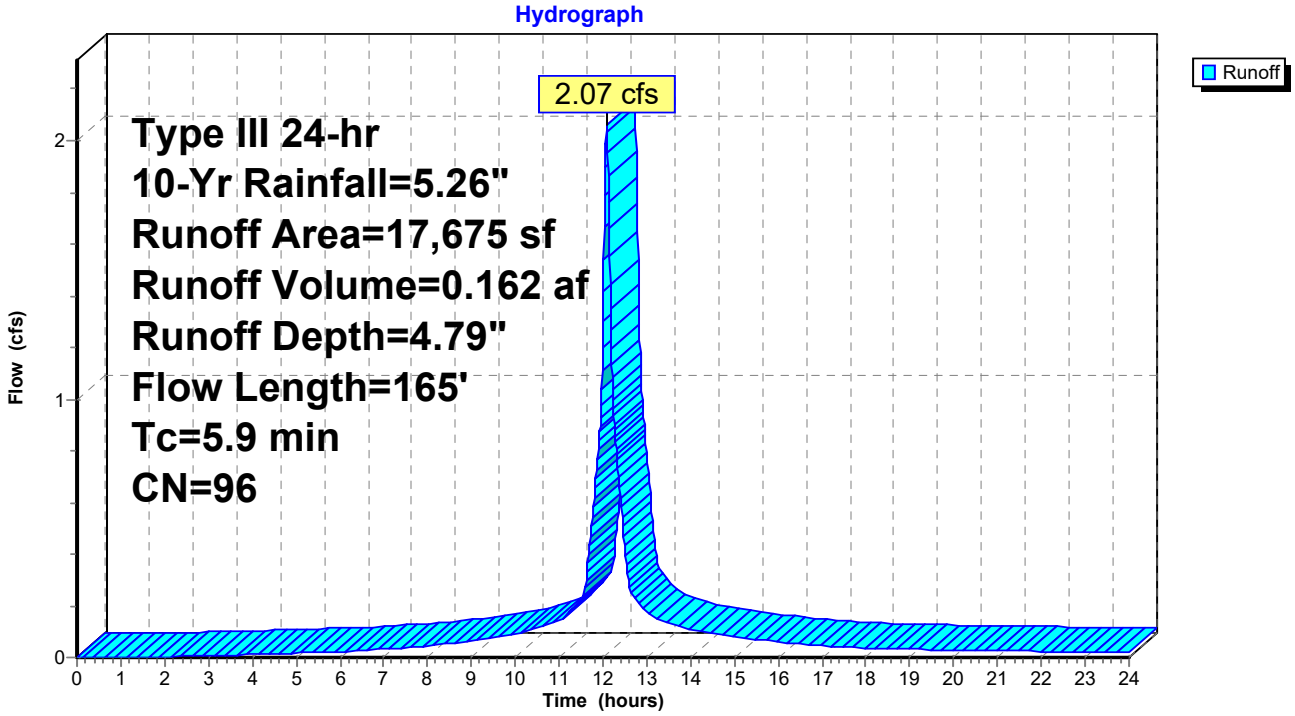
Runoff = 2.07 cfs @ 12.08 hrs, Volume= 0.162 af, Depth= 4.79"
Routed to Pond 26P : In-Swale CB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Yr Rainfall=5.26"

Area (sf)	CN	Description
2,343	98	Paved parking, HSG A
14,487	98	Paved parking, HSG B
725	61	>75% Grass cover, Good, HSG B
120	85	Gravel roads, HSG B
17,675	96	Weighted Average
845		4.78% Pervious Area
16,830		95.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	20	0.0200	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.37"
2.1	145	0.0100	1.15		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.37"
5.9	165	Total			

Subcatchment 25P: P10



Summary for Pond 26P: In-Swale CB

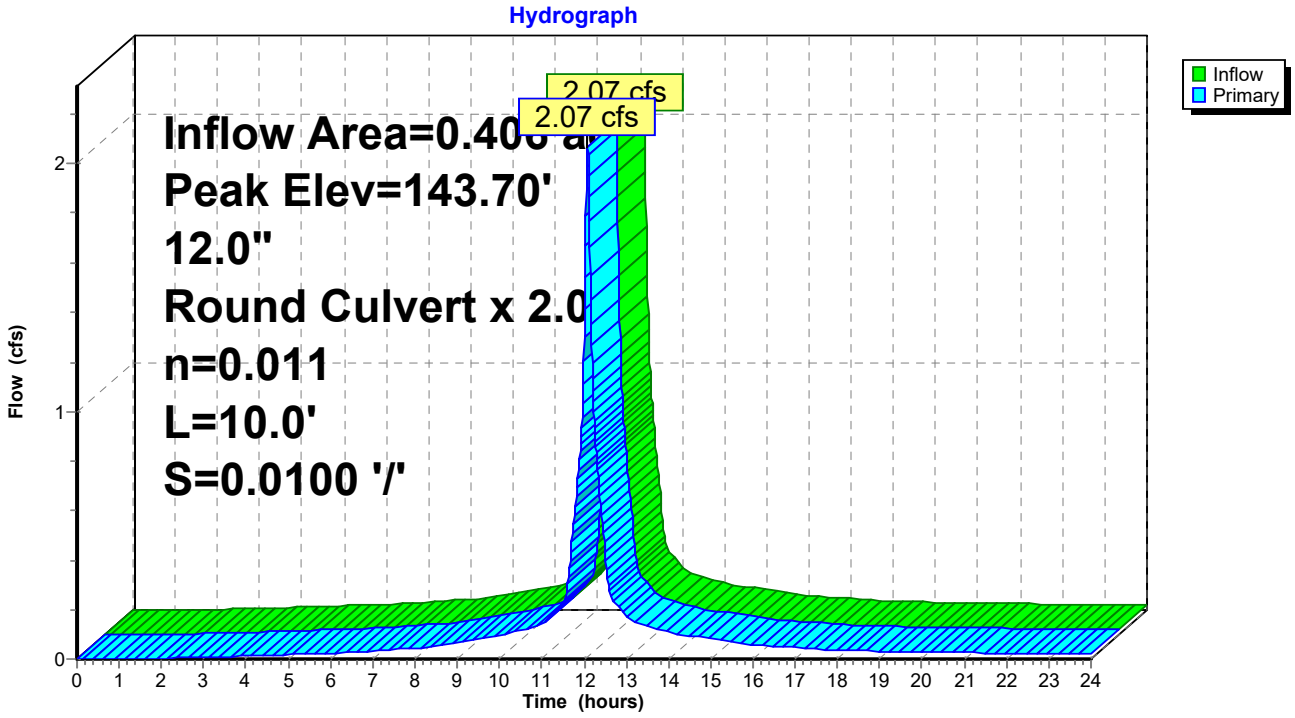
Inflow Area = 0.406 ac, 95.22% Impervious, Inflow Depth = 4.79" for 10-Yr event
Inflow = 2.07 cfs @ 12.08 hrs, Volume= 0.162 af
Outflow = 2.07 cfs @ 12.08 hrs, Volume= 0.162 af, Atten= 0%, Lag= 0.0 min
Primary = 2.07 cfs @ 12.08 hrs, Volume= 0.162 af
Routed to Pond 28P : Stormwater Basin 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 143.70' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	143.10'	**12.0" Round Culvert X 2.00** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 143.10' / 143.00' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=2.06 cfs @ 12.08 hrs HW=143.70' TW=143.40' (Dynamic Tailwater)
1=Culvert (Barrel Controls 2.06 cfs @ 3.03 fps)

Pond 26P: In-Swale CB



Summary for Subcatchment 27P: P11

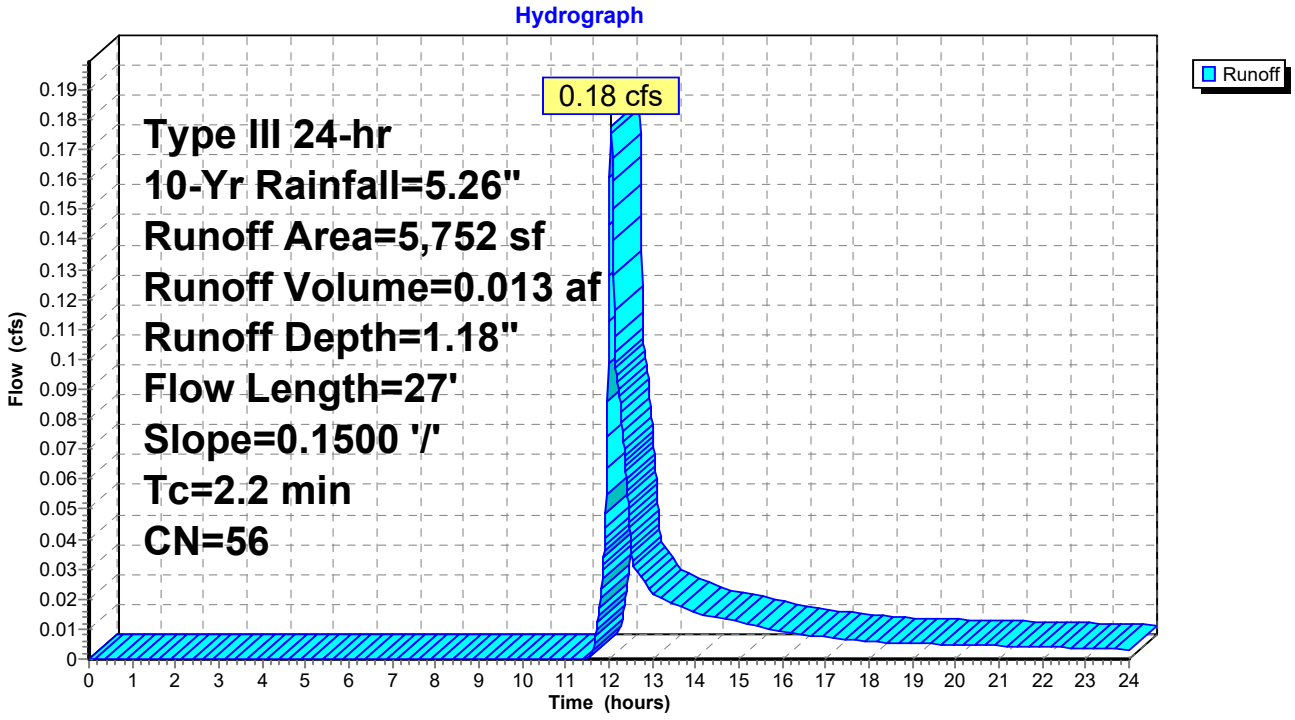
Runoff = 0.18 cfs @ 12.04 hrs, Volume= 0.013 af, Depth= 1.18"
Routed to Pond 28P : Stormwater Basin 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Yr Rainfall=5.26"

Area (sf)	CN	Description
4,383	61	>75% Grass cover, Good HSG B
1,369	39	>75% Grass cover, Good HSG A
5,752	56	Weighted Average
5,752		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	27	0.1500	0.21		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.37"

Subcatchment 27P: P11



Summary for Pond 28P: Stormwater Basin 4

Inflow Area = 0.538 ac, 71.84% Impervious, Inflow Depth = 3.90" for 10-Yr event
Inflow = 2.22 cfs @ 12.08 hrs, Volume= 0.175 af
Outflow = 1.93 cfs @ 12.12 hrs, Volume= 0.156 af, Atten= 13%, Lag= 2.7 min
Primary = 1.93 cfs @ 12.12 hrs, Volume= 0.156 af
Routed to Link 31P : Design Point #1 - Existing Stormwater Swales

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 143.41' @ 12.12 hrs Surf.Area= 3,591 sf Storage= 1,387 cf

Plug-Flow detention time= 100.7 min calculated for 0.156 af (89% of inflow)
Center-of-Mass det. time= 48.4 min (818.3 - 770.0)

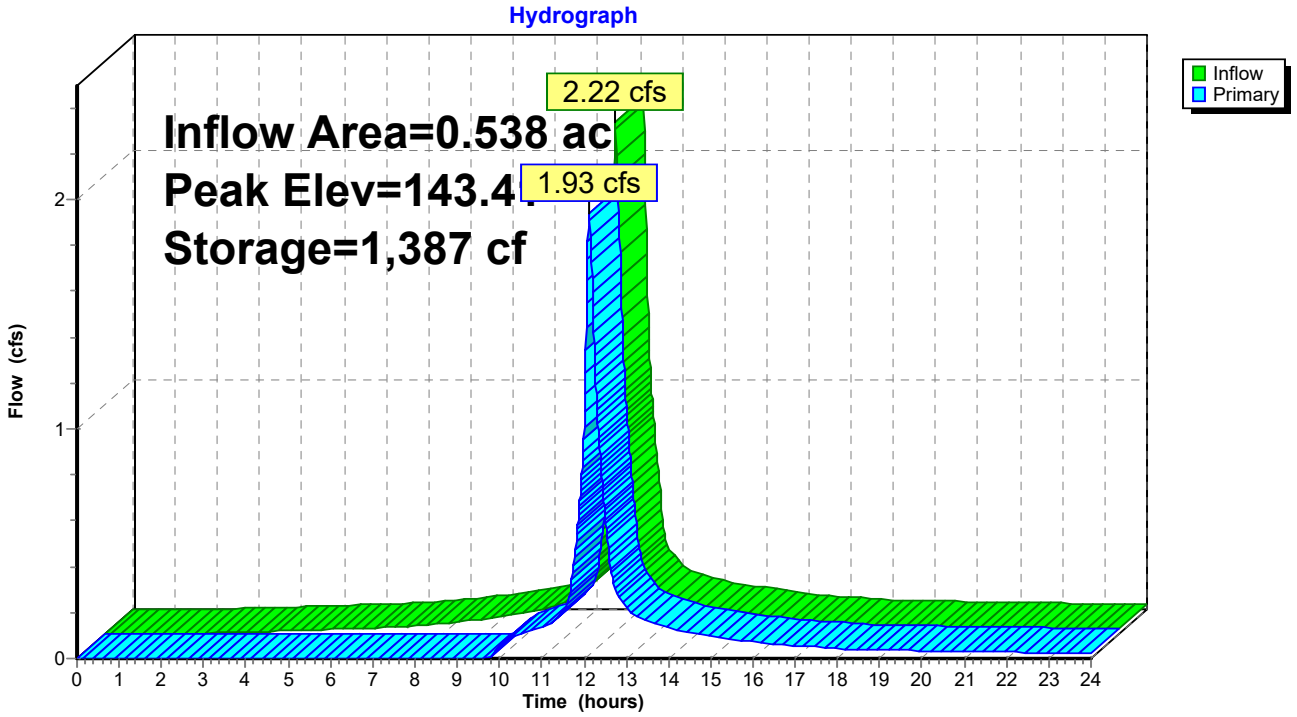
Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	6,002 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
143.00	3,138	387.0	0	0	3,138
144.50	4,932	405.0	6,002	6,002	4,419

Device	Routing	Invert	Outlet Devices
#1	Primary	143.25'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 143.25 144.00 Width (feet) 9.00 9.00

Primary OutFlow Max=1.93 cfs @ 12.12 hrs HW=143.41' TW=0.00' (Dynamic Tailwater)
↑—**1=Custom Weir/Orifice** (Weir Controls 1.93 cfs @ 1.32 fps)

Pond 28P: Stormwater Basin 4

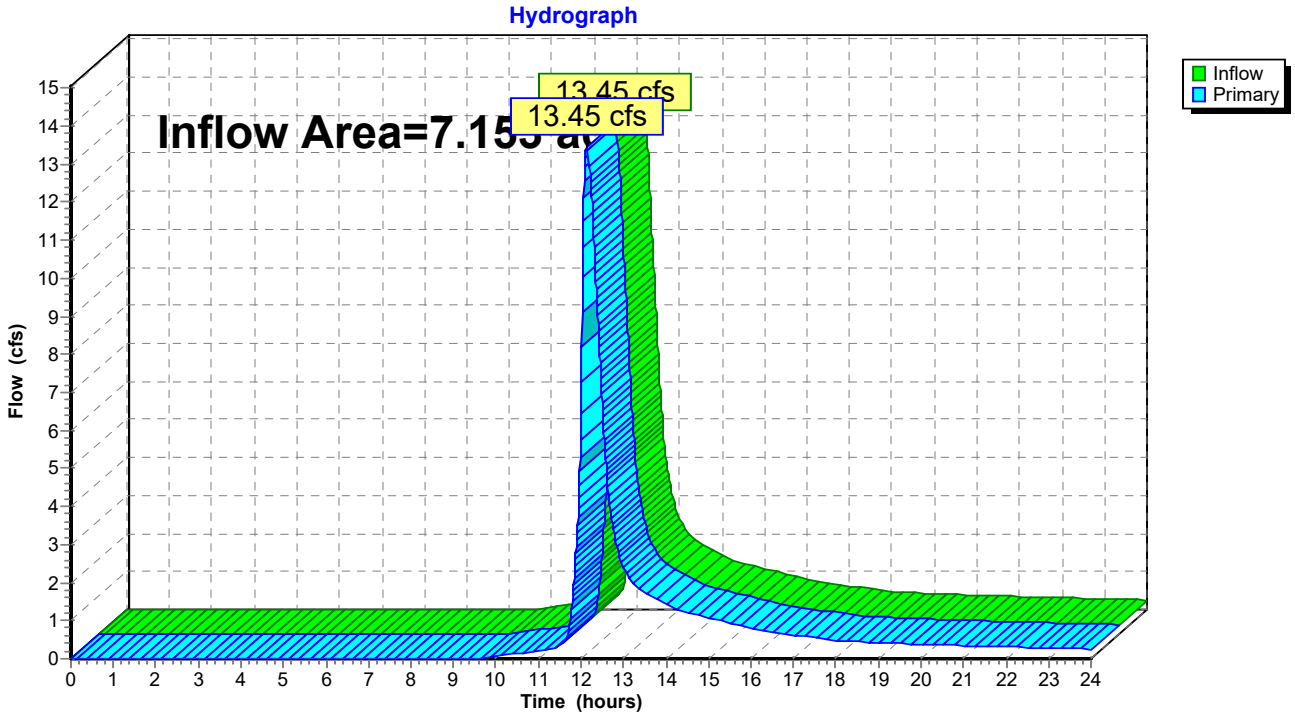


Summary for Link 31P: Design Point #1 - Existing Stormwater Swales

Inflow Area = 7.153 ac, 38.91% Impervious, Inflow Depth = 2.19" for 10-Yr event
Inflow = 13.45 cfs @ 12.13 hrs, Volume= 1.308 af
Primary = 13.45 cfs @ 12.13 hrs, Volume= 1.308 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 31P: Design Point #1 - Existing Stormwater Swales



Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 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 25P: P10 Runoff Area=17,675 sf 95.22% Impervious Runoff Depth=5.97"
Flow Length=165' Tc=5.9 min CN=96 Runoff=2.55 cfs 0.202 af

Pond 26P: In-Swale CB Peak Elev=143.78' Inflow=2.55 cfs 0.202 af
12.0" Round Culvert x 2.00 n=0.011 L=10.0' S=0.0100 '/' Outflow=2.55 cfs 0.202 af

Subcatchment 27P: P11 Runoff Area=5,752 sf 0.00% Impervious Runoff Depth=1.86"
Flow Length=27' Slope=0.1500 '/' Tc=2.2 min CN=56 Runoff=0.31 cfs 0.020 af

Pond 28P: Stormwater Basin 4 Peak Elev=143.44' Storage=1,493 cf Inflow=2.81 cfs 0.222 af
Outflow=2.48 cfs 0.203 af

Link 31P: Design Point #1 - Existing Stormwater Swales Inflow=19.38 cfs 1.855 af
Primary=19.38 cfs 1.855 af

Total Runoff Area = 0.538 ac Runoff Volume = 0.222 af Average Runoff Depth = 4.96"
28.16% Pervious = 0.151 ac 71.84% Impervious = 0.386 ac

Summary for Subcatchment 25P: P10

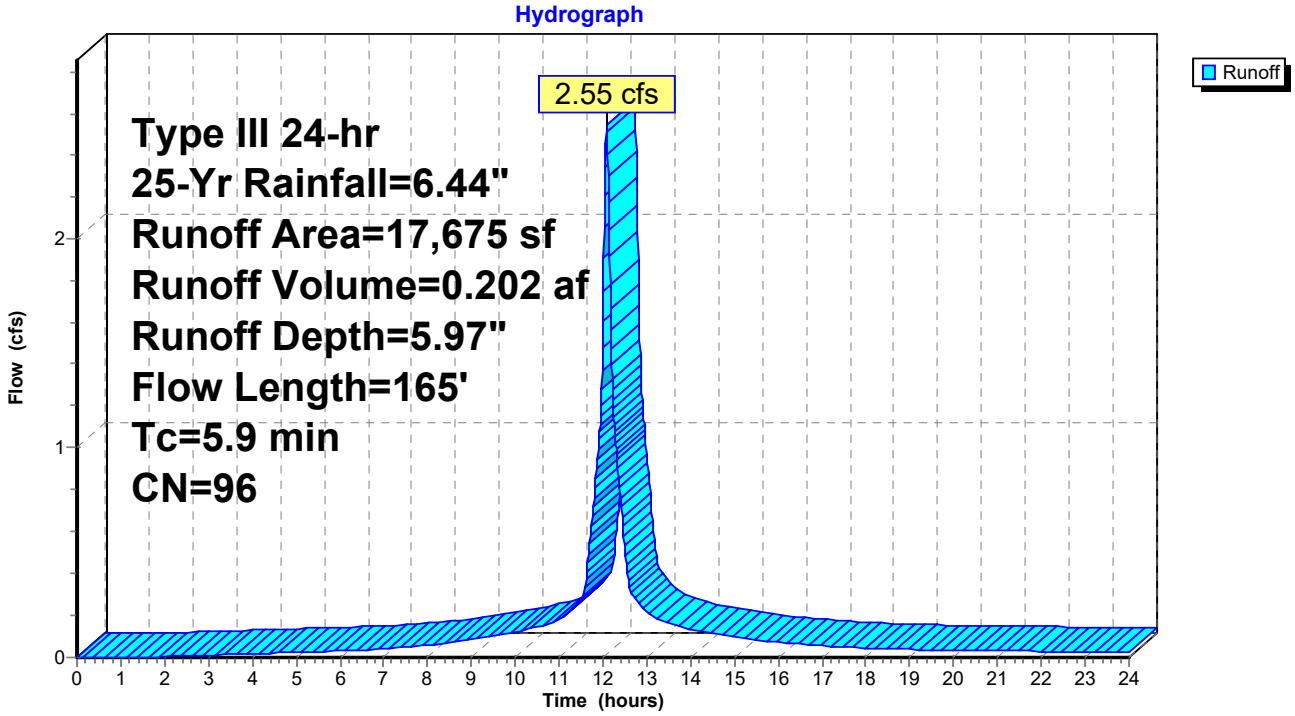
Runoff = 2.55 cfs @ 12.08 hrs, Volume= 0.202 af, Depth= 5.97"
Routed to Pond 26P : In-Swale CB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Yr Rainfall=6.44"

Area (sf)	CN	Description
2,343	98	Paved parking, HSG A
14,487	98	Paved parking, HSG B
725	61	>75% Grass cover, Good, HSG B
120	85	Gravel roads, HSG B
17,675	96	Weighted Average
845		4.78% Pervious Area
16,830		95.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	20	0.0200	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.37"
2.1	145	0.0100	1.15		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.37"
5.9	165	Total			

Subcatchment 25P: P10



Summary for Pond 26P: In-Swale CB

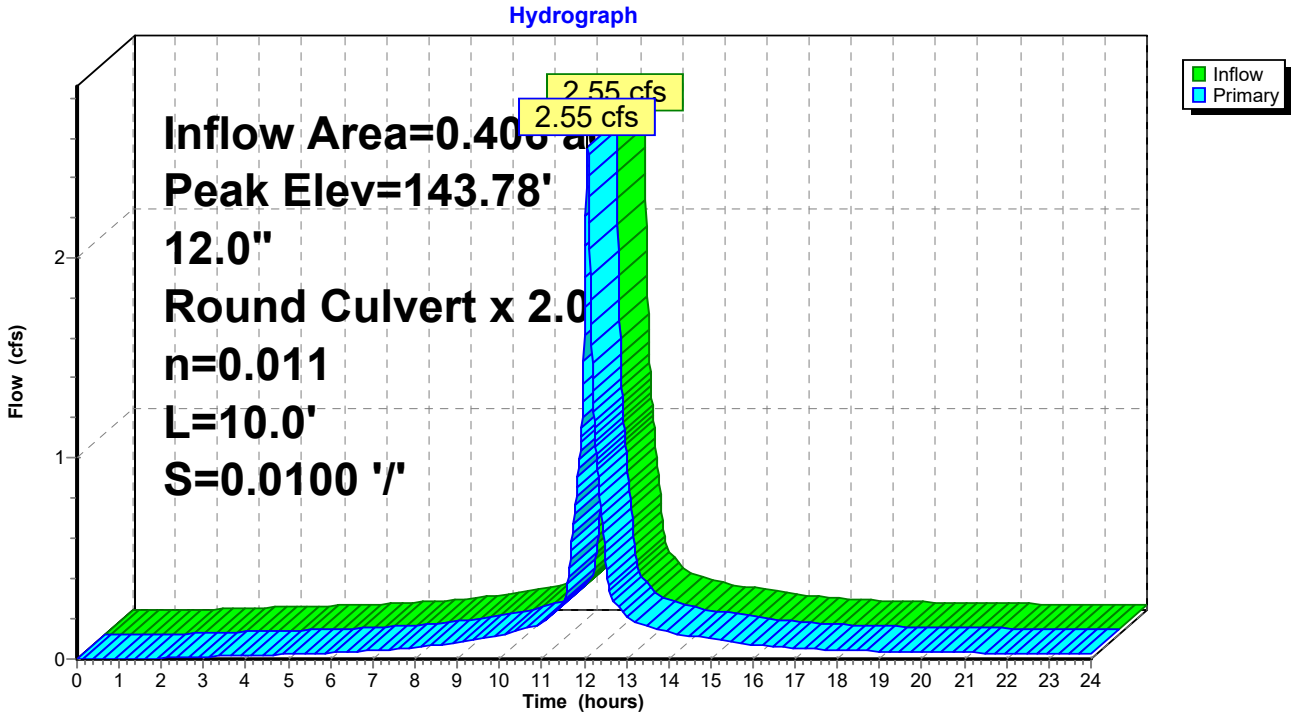
Inflow Area = 0.406 ac, 95.22% Impervious, Inflow Depth = 5.97" for 25-Yr event
Inflow = 2.55 cfs @ 12.08 hrs, Volume= 0.202 af
Outflow = 2.55 cfs @ 12.08 hrs, Volume= 0.202 af, Atten= 0%, Lag= 0.0 min
Primary = 2.55 cfs @ 12.08 hrs, Volume= 0.202 af
Routed to Pond 28P : Stormwater Basin 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 143.78' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	143.10'	**12.0" Round Culvert X 2.00** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 143.10' / 143.00' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=2.54 cfs @ 12.08 hrs HW=143.78' TW=143.43' (Dynamic Tailwater)
1=Culvert (Barrel Controls 2.54 cfs @ 3.17 fps)

Pond 26P: In-Swale CB



Summary for Subcatchment 27P: P11

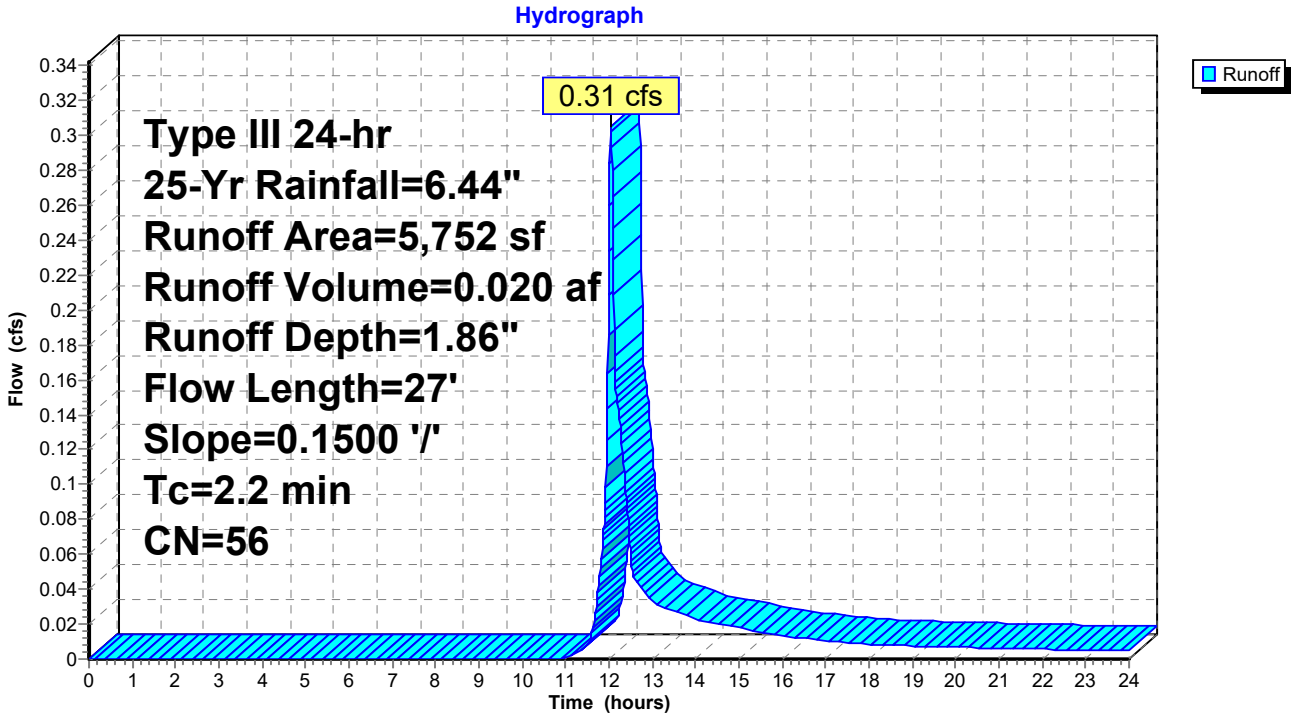
Runoff = 0.31 cfs @ 12.04 hrs, Volume= 0.020 af, Depth= 1.86"
Routed to Pond 28P : Stormwater Basin 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Yr Rainfall=6.44"

Area (sf)	CN	Description
4,383	61	>75% Grass cover, Good HSG B
1,369	39	>75% Grass cover, Good HSG A
5,752	56	Weighted Average
5,752		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	27	0.1500	0.21		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.37"

Subcatchment 27P: P11



Summary for Pond 28P: Stormwater Basin 4

Inflow Area = 0.538 ac, 71.84% Impervious, Inflow Depth = 4.96" for 25-Yr event
Inflow = 2.81 cfs @ 12.08 hrs, Volume= 0.222 af
Outflow = 2.48 cfs @ 12.12 hrs, Volume= 0.203 af, Atten= 12%, Lag= 2.6 min
Primary = 2.48 cfs @ 12.12 hrs, Volume= 0.203 af
Routed to Link 31P : Design Point #1 - Existing Stormwater Swales

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 143.44' @ 12.12 hrs Surf.Area= 3,625 sf Storage= 1,493 cf

Plug-Flow detention time= 87.3 min calculated for 0.203 af (92% of inflow)
Center-of-Mass det. time= 43.0 min (809.6 - 766.7)

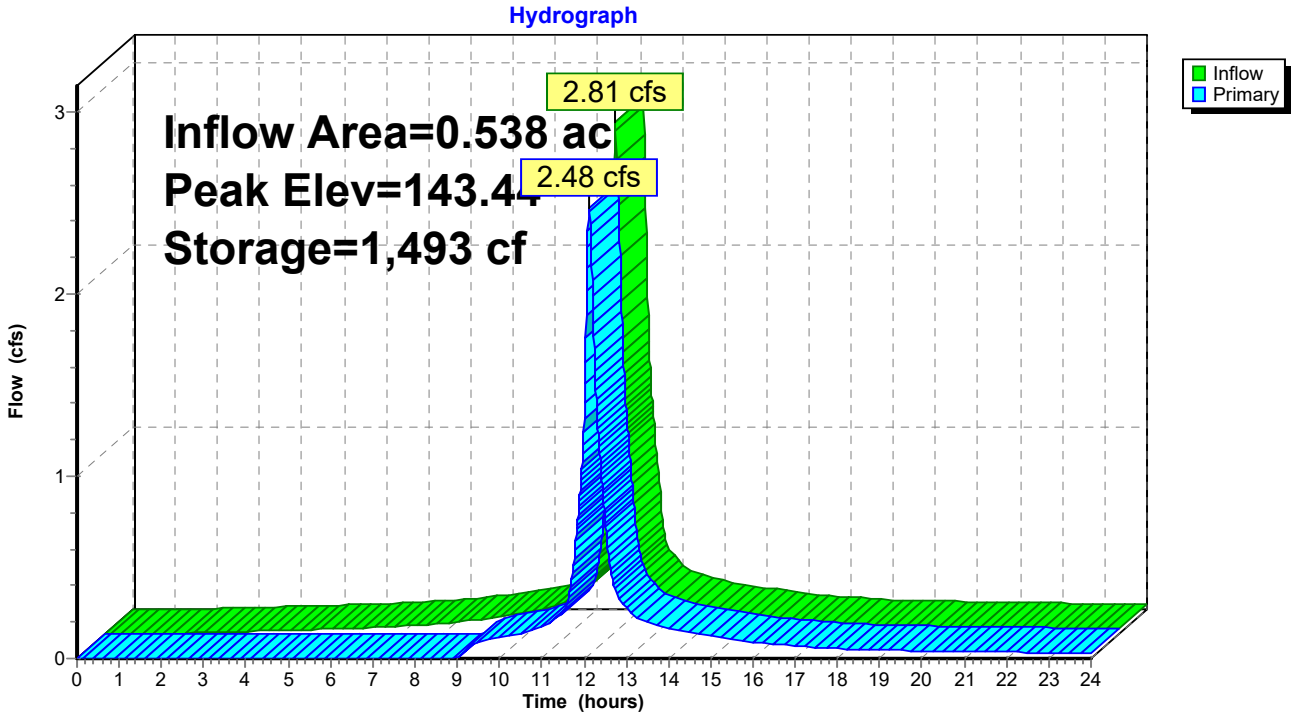
Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	6,002 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
143.00	3,138	387.0	0	0	3,138
144.50	4,932	405.0	6,002	6,002	4,419

Device	Routing	Invert	Outlet Devices
#1	Primary	143.25'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 143.25 144.00 Width (feet) 9.00 9.00

Primary OutFlow Max=2.48 cfs @ 12.12 hrs HW=143.44' TW=0.00' (Dynamic Tailwater)
↑**1=Custom Weir/Orifice** (Weir Controls 2.48 cfs @ 1.43 fps)

Pond 28P: Stormwater Basin 4

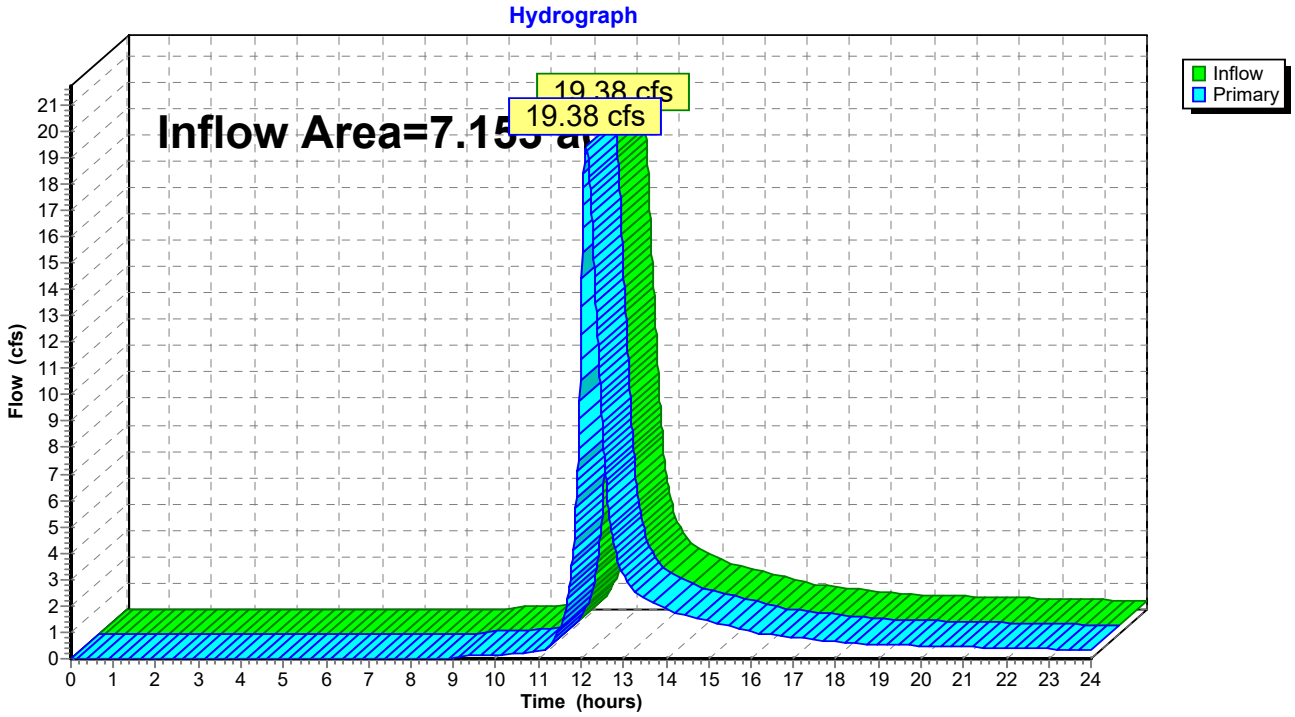


Summary for Link 31P: Design Point #1 - Existing Stormwater Swales

Inflow Area = 7.153 ac, 38.91% Impervious, Inflow Depth = 3.11" for 25-Yr event
Inflow = 19.38 cfs @ 12.11 hrs, Volume= 1.855 af
Primary = 19.38 cfs @ 12.11 hrs, Volume= 1.855 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 31P: Design Point #1 - Existing Stormwater Swales



Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 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 25P: P10 Runoff Area=17,675 sf 95.22% Impervious Runoff Depth=7.79"
Flow Length=165' Tc=5.9 min CN=96 Runoff=3.29 cfs 0.263 af

Pond 26P: In-Swale CB Peak Elev=143.89' Inflow=3.29 cfs 0.263 af
12.0" Round Culvert x 2.00 n=0.011 L=10.0' S=0.0100 '/' Outflow=3.29 cfs 0.263 af

Subcatchment 27P: P11 Runoff Area=5,752 sf 0.00% Impervious Runoff Depth=3.08"
Flow Length=27' Slope=0.1500 '/' Tc=2.2 min CN=56 Runoff=0.53 cfs 0.034 af

Pond 28P: Stormwater Basin 4 Peak Elev=143.48' Storage=1,648 cf Inflow=3.74 cfs 0.297 af
Outflow=3.35 cfs 0.279 af

Link 31P: Design Point #1 - Existing Stormwater Swales Inflow=28.50 cfs 2.759 af
Primary=28.50 cfs 2.759 af

Total Runoff Area = 0.538 ac Runoff Volume = 0.297 af Average Runoff Depth = 6.63"
28.16% Pervious = 0.151 ac 71.84% Impervious = 0.386 ac

Summary for Subcatchment 25P: P10

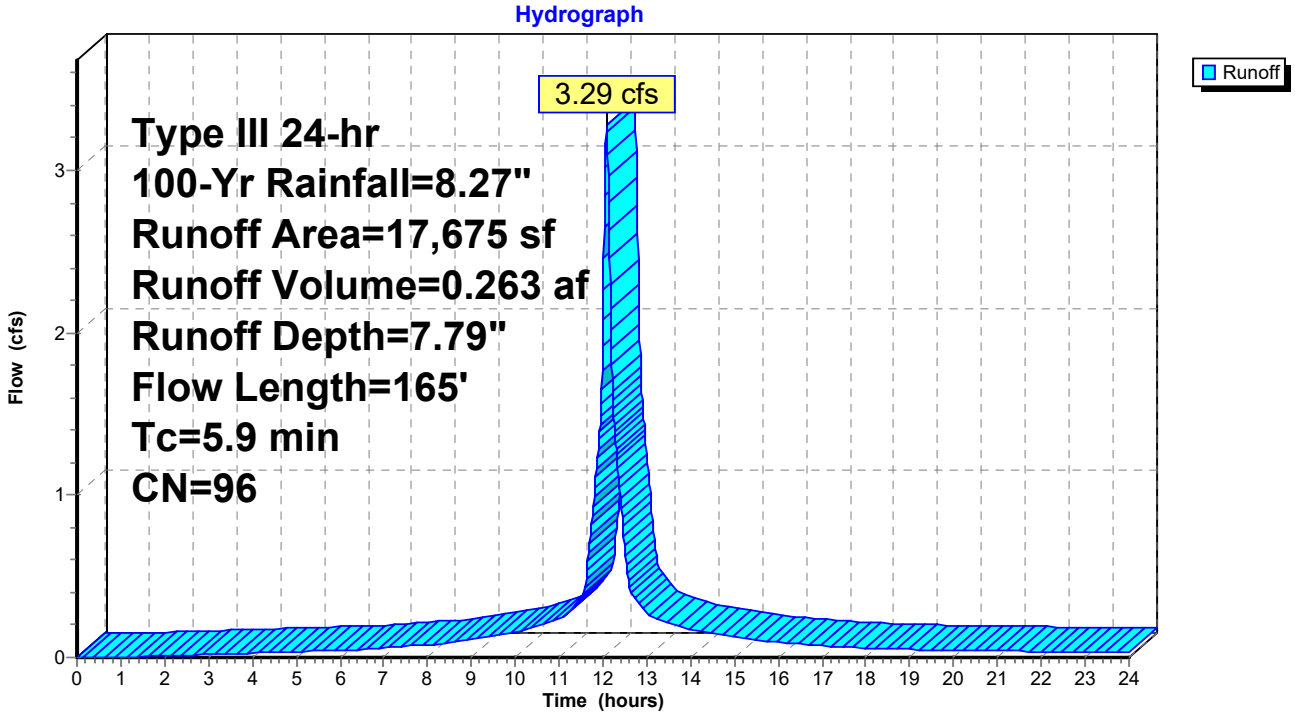
Runoff = 3.29 cfs @ 12.08 hrs, Volume= 0.263 af, Depth= 7.79"
Routed to Pond 26P : In-Swale CB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Yr Rainfall=8.27"

Area (sf)	CN	Description
2,343	98	Paved parking, HSG A
14,487	98	Paved parking, HSG B
725	61	>75% Grass cover, Good, HSG B
120	85	Gravel roads, HSG B
17,675	96	Weighted Average
845		4.78% Pervious Area
16,830		95.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	20	0.0200	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.37"
2.1	145	0.0100	1.15		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.37"
5.9	165	Total			

Subcatchment 25P: P10



Summary for Pond 26P: In-Swale CB

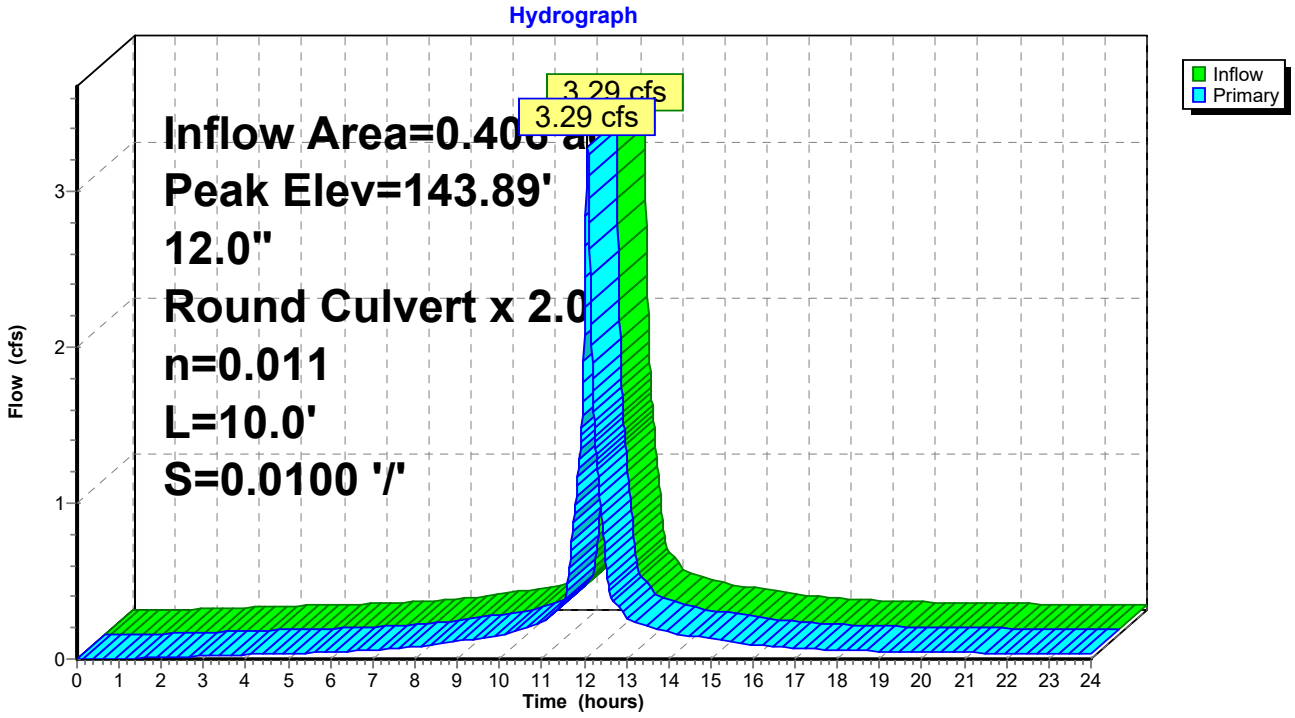
Inflow Area = 0.406 ac, 95.22% Impervious, Inflow Depth = 7.79" for 100-Yr event
Inflow = 3.29 cfs @ 12.08 hrs, Volume= 0.263 af
Outflow = 3.29 cfs @ 12.08 hrs, Volume= 0.263 af, Atten= 0%, Lag= 0.0 min
Primary = 3.29 cfs @ 12.08 hrs, Volume= 0.263 af
Routed to Pond 28P : Stormwater Basin 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 143.89' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	143.10'	**12.0" Round Culvert X 2.00** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 143.10' / 143.00' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=3.28 cfs @ 12.08 hrs HW=143.89' TW=143.47' (Dynamic Tailwater)
1=Culvert (Barrel Controls 3.28 cfs @ 3.37 fps)

Pond 26P: In-Swale CB



Summary for Subcatchment 27P: P11

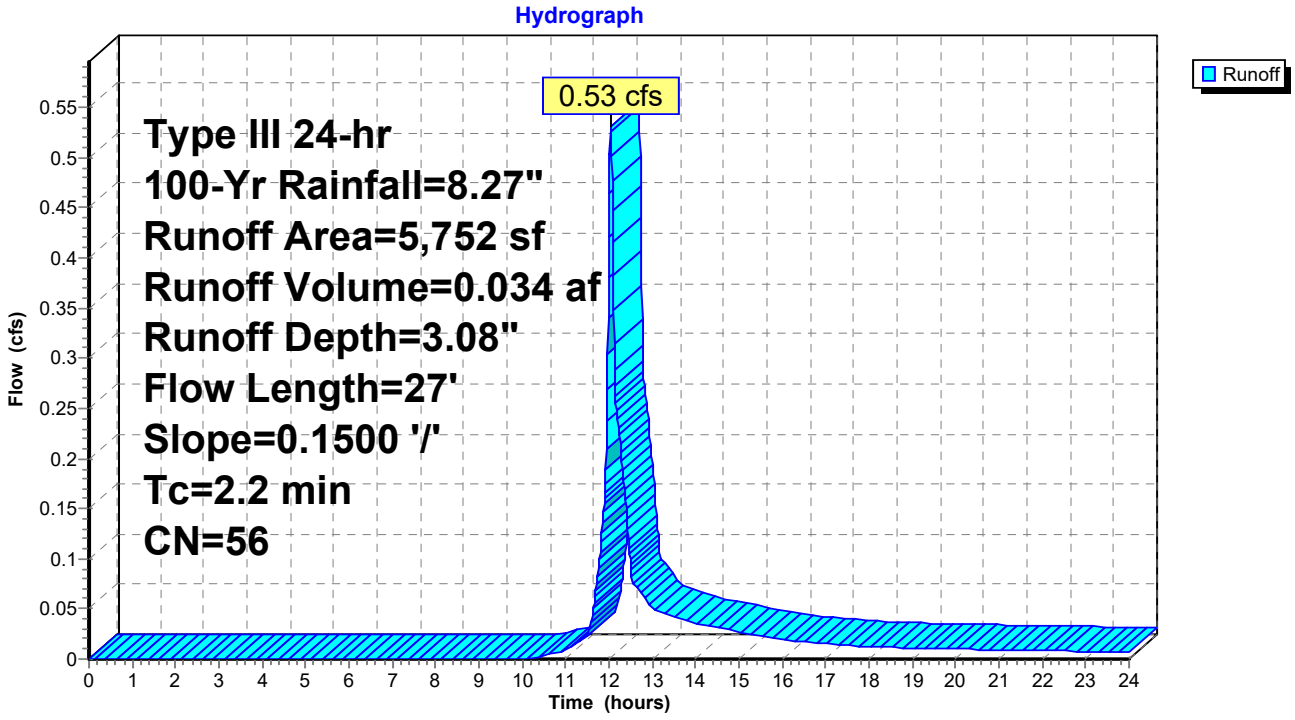
Runoff = 0.53 cfs @ 12.04 hrs, Volume= 0.034 af, Depth= 3.08"
Routed to Pond 28P : Stormwater Basin 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Yr Rainfall=8.27"

Area (sf)	CN	Description
4,383	61	>75% Grass cover, Good HSG B
1,369	39	>75% Grass cover, Good HSG A
5,752	56	Weighted Average
5,752		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	27	0.1500	0.21		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.37"

Subcatchment 27P: P11



Summary for Pond 28P: Stormwater Basin 4

Inflow Area = 0.538 ac, 71.84% Impervious, Inflow Depth = 6.63" for 100-Yr event
Inflow = 3.74 cfs @ 12.08 hrs, Volume= 0.297 af
Outflow = 3.35 cfs @ 12.12 hrs, Volume= 0.279 af, Atten= 10%, Lag= 2.4 min
Primary = 3.35 cfs @ 12.12 hrs, Volume= 0.279 af
Routed to Link 31P : Design Point #1 - Existing Stormwater Swales

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 143.48' @ 12.12 hrs Surf.Area= 3,673 sf Storage= 1,648 cf

Plug-Flow detention time= 72.1 min calculated for 0.278 af (94% of inflow)
Center-of-Mass det. time= 37.0 min (799.8 - 762.8)

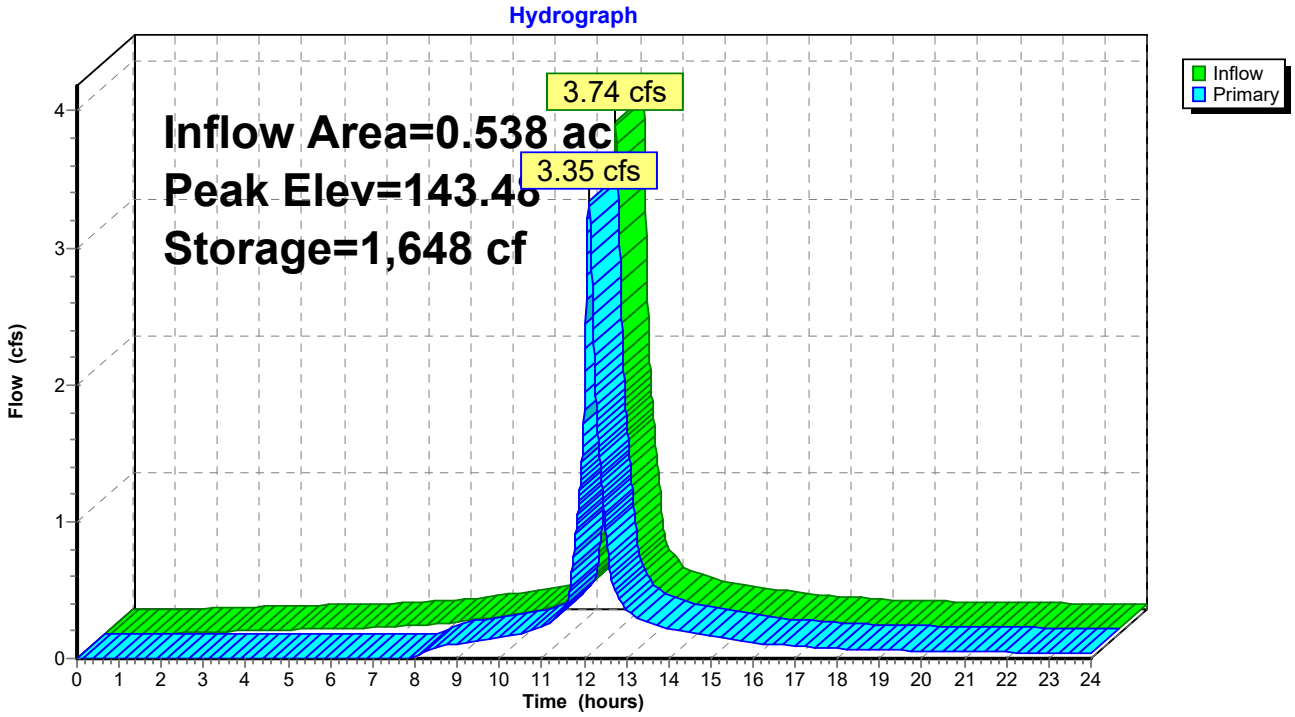
Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	6,002 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
143.00	3,138	387.0	0	0	3,138
144.50	4,932	405.0	6,002	6,002	4,419

Device	Routing	Invert	Outlet Devices
#1	Primary	143.25'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 143.25 144.00 Width (feet) 9.00 9.00

Primary OutFlow Max=3.34 cfs @ 12.12 hrs HW=143.48' TW=0.00' (Dynamic Tailwater)
↑**1=Custom Weir/Orifice** (Weir Controls 3.34 cfs @ 1.59 fps)

Pond 28P: Stormwater Basin 4

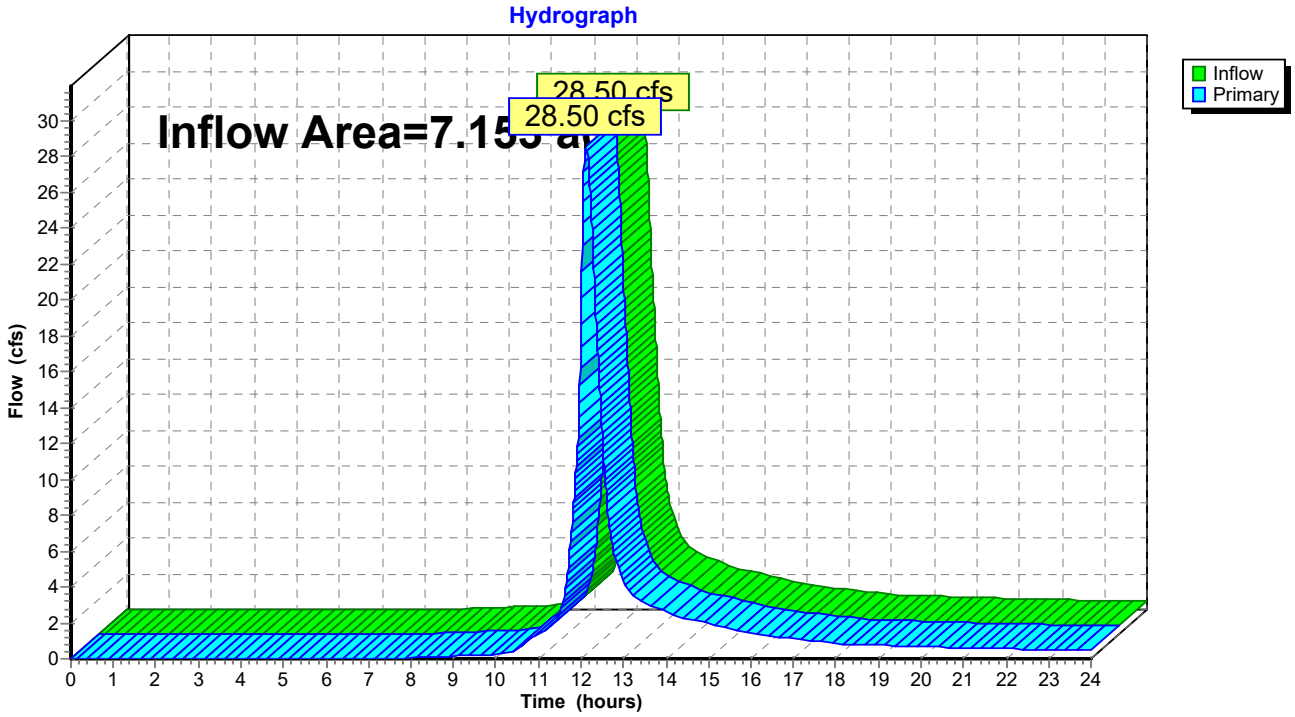


Summary for Link 31P: Design Point #1 - Existing Stormwater Swales

Inflow Area = 7.153 ac, 38.91% Impervious, Inflow Depth = 4.63" for 100-Yr event
Inflow = 28.50 cfs @ 12.11 hrs, Volume= 2.759 af
Primary = 28.50 cfs @ 12.11 hrs, Volume= 2.759 af, Atten= 0%, Lag= 0.0 min

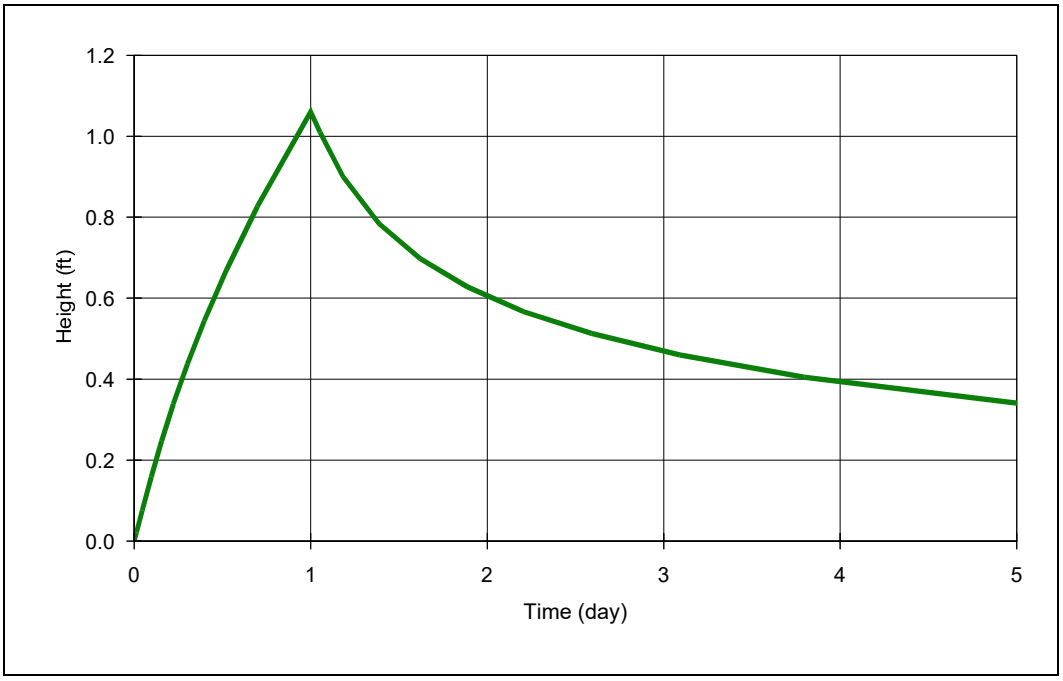
Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 31P: Design Point #1 - Existing Stormwater Swales



ATTACHMENT C: Mounding Calculations

Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)



COMPANY: Legacy Engineering

PROJECT: Infiltration Basin #4

ANALYST: Daniel J. Merrikin, P.E.

DATE: 2/7/2023 TIME: 3:45:44 PM

INPUT PARAMETERS

Application rate: 0.34 c.ft/day/sq. ft
Duration of application: 1 day
Total simulation time: 5 day
Fillable porosity: 0.2
Hydraulic conductivity: 2 ft/day
Initial saturated thickness: 20 ft
Length of application area: 185 ft
Width of application area: 22.3 ft
Constant head boundary used at: 200 ft
Groundwater mounding @
X coordinate: 0 ft
Y coordinate: 0 ft
Total volume applied: 1402.67 cft

MODEL RESULTS

Time (day)	Mound Height (ft)
0	0
0	0.02
0	0.08
0.1	0.16
0.2	0.25
0.2	0.34
0.3	0.44
0.4	0.55
0.5	0.67
0.7	0.83
1	1.06
1.1	1.01
1.2	0.9
1.4	0.78
1.6	0.7
1.9	0.63
2.2	0.57
2.6	0.51
3.1	0.46
3.8	0.4
5	0.34

TETRA TECH

MEMO

To:	Susan Affleck-Childs – Medway Planning and Economic Development Board (PEDB) Coordinator
Cc:	Barbara Saint Andre – Director, Community and Economic Development Bridget Graziano – Medway Conservation Agent Daniel J. Merrikin, P.E. – Applicant's Engineer
From:	Steven M. Bouley, P.E.
Date:	March 23, 2023
Subject:	CommCan (2 Marc Road) Field Change Review

Tetra Tech (TT) has performed a review of the field change request for the Project at the request of the Town of Medway Planning and Economic Development Board (PEDB) and Medway Conservation Commission (Commission). The Applicant conducted test pit activities at the proposed Infiltration Basin 4 (IB 4) location as required which yielded conditions that differed from those assumed during the permitting phase of the Project.

TT is in receipt of the following materials for review:

- A Cover Letter with supplemental attachments dated March 20, 2023, prepared by Legacy Engineering, LLC (LEL).
- Revised Plan Sheets C-4 and C-7 dated February 28, 2022 with revisions through March 20, 2023, prepared by LEL.

Stormwater Review

1. If approved by the PEDB, we recommend the Applicant provide the revised information in a compiled revised set of Plans and Stormwater Report for a complete record of the Project to date.
2. The Applicant shall confirm if IB 4 retains the required Water Quality Volume below the proposed weir elevation of 143.25 (lowest outlet) to meet the 80% TSS removal requirement of Standard 4. A stage-storage table from HydroCAD will suffice for this requirement.
3. The Applicant shall provide an updated "Stormwater Facilities Site Plan" in the O&M Plan as structures have been added and IB 4 has been redesigned.

These comments are offered as guides for use during the Town's review and additional comments may be generated during the course of review. The Applicant shall be advised that any absence of comment shall not relieve them of the responsibility to comply with all applicable local, state and federal regulations for the Project. If you have any questions or comments, please feel free to contact us at (508) 786-2200.

P:\21583\143-21583-22008 (PEDB 2 MARC RD MOD)\CONSTRUCTION\REVIEW-APPROVAL\2 MARC RD_FCREV_01_2023-03-23.DOCX

Infrastructure Northeast
Marlborough Technology Park, 100 Nickerson Road, Marlborough, MA 01752
Tel 508.786.2200 Fax 508.786.2201 tetratech.com

March 28, 2023
Medway Planning & Economic Development Board Meeting

Construction Services Estimate for Medway Commons Chipotle/Starbucks Site Plan

- Construction Services estimate from Tetra Tech dated 3-16-2023 for $6,537

NOTE – We are aiming for the Board to endorse the site plan at the 4-11-23 meeting. The 20 day appeal period concludes 4-5-23.

TETRA TECH

Chipotle-Starbucks
PEDB Construction Administration Budget
March 16, 2023

Item No.[1]	Inspection	Visits	Hrs/Inspection[2]	Rate	Total
1	Pre-Construction Meeting	1	4	$172	$688
2	Erosion Controls/Demolition	1	4	$107	$428
3	Subbase Gravel/Fine Grading	1	4	$107	$428
4	Binder Course Paving	1	4	$107	$428
5	Vertical Concrete Curb	1	4	$107	$428
6	Top Course Paving	1	4	$107	$428
7	Landscape/Plantings	1	4	$107	$428
8	Punch List/Bond Estimate[3]	2	4	$107	$856
9	As-Built Review[4]	1	4	$172	$688
10	Field Changes/Change Orders	1	4	$172	$688
11	Meetings	3	1	$172	$516
12	Admin	1	3	$74	$222
	Subtotal				$6,226
	Expenses			5.0%	$311
	TOTAL				**$6,537**

Notes:

[1] Each item includes site visit, inspection and written report and is based on current TT/Medway negotiated rates through June 2023. Any work completed beyond June 2023 will be billed at the then current negotiated rate.

[2] If installation schedule is longer than that assumed by engineer for any item above, or if additional inspections are required due to issues with the contract work, additional compensation will be required.

[3] This item includes a substantial completion inspection, punch list memo and bond estimate provided to the town. It also includes one final inspection to verify that comments from the list have been addressed and one revision to the list/estimate if required.

[4] This item includes review of as-built plans and review letter.

Date Approved by Medway PEDB_____

Certified by: _____ _____
Susan E. Affleck-Childs **Date**
Medway PEDB Coordinator

March 28, 2023
Medway Planning & Economic Development Board Meeting

Applegate Subdivision- Authorization to Transfer Balance of Applegate Construction Observation Funds to the Subdivision Bond Default Account

- Applegate Subdivision Construction Services accounting spreadsheet. Balance is $7,473.80.

Recommended Motion – I move that the PEDB authorize the transfer of the balance of construction observation funds for the Applegate Subdivision, plus any accrued interest, to the Subdivision Bond Default account.

NOTE – The revenue source of the Applegate CO account came from the Applegate performance security funds held by Needham Bank and provided to the Town in April 2019.

SUBDIVISION - CONSTRUCTION OBSERVATION ACCOUNTING

PROJECT NAME: Applegate Farm (NE Corner of Coffee & Ellis Streets)

DEELOPER: Ralph Costello and Needham Bank

DATE: February 12, 2021

Date Check Received	Amount	Check #	Payment Source	Date Submtd to Treasurer	Consultant's Construction Observation Fee	Consultant's Name	Consultant's Invoice Date	Invoice Number	Time Period Covered by Invoice	Date Submtd to Town Act.	Balance	Notes
1/31/2007	$11,500.00		Unique Homes								$11,500.00	
					$649.45	Petrini	2/2/2007	????			$10,850.55	Used to pay a plan review invoice - no funds left in the Applegate PR account
					$111.00	Petrini	10/5/2009	22846			$10,739.55	
					$363.32	Tetra Tech	9/25/2009	50292931			$10,376.23	
					$37.00	Petrini	11/5/2009	22955			$10,339.23	
					$222.48	Tetra Tech	12/23/2009	50318721			$10,116.75	
					$434.83	Tetra Tech	3/3/2010	50340006			$9,681.92	
					$111.24	Tetra Tech	7/8/2010	50368557			$9,570.68	
					$2,787.18	Tetra Tech	8/27/2010	50382466			$6,783.50	
					$224.03	Tetra Tech	9/3/2011	50491967	7/1 - 9/16/11		$6,559.47	
					$149.35	Tetra Tech	1/3/2012	50523835	12/1 - 12/31/11		$6,410.12	
					$78.00	Petrini	6/25/2012	27064	6/1-6/24/12		$6,332.12	
					$2,371.79	Tetra Tech	6/28/2012	50574074	5/1 - 6/22/12		$3,960.33	
					$1,097.51	Tetra Tech	7/27/2012	50582900	6/23 - 7/20/12		$2,862.82	
					$1,557.69	Tetra Tech	9/13/2012	50597189	7/20 - 8/31/12		$1,305.13	
					$346.73	Tetra Tech	10/26/2012	50615307	8/31-10/5/12		$958.40	
					$6,841.61	Tetra Tech	1/16/2013	50641211	10/6 - 12/14/12	7/11/2013	-$5,883.21	
7/11/2013	$8,883.21	108653	Town of Medway - proceeds from a bond reduction for The Meadows subdivision								$3,000.00	
					$234.00	Petrini	5/7/2013	28379	April of 2013		$2,766.00	
					$160.43	Tetra Tech	3/21/2013	50660112	January of 2013		$2,605.57	
					$775.00	Tetra Tech	11/22/2013	50756472	7/10/13 - 11/1/2013		$1,830.57	
					$160.25	Tetra Tech	3/28/2014	50780726	thru 3/14/2014	4/22/2014	$1,670.32	
8/26/2014	$12,063.68	29881	Unique Homes								$13,734.00	
					$414.00	Tetra Tech	11/20/2014	50858404	thru 11/7/2014	11/24/2014	$13,320.00	
					$2,923.88	Tetra Tech	12/18/2014	50867825	thru 12/12/14	12/29/14 (fhl)	$10,396.12	
					$87.75	Petrini	1/9/2015	31220	December of 2014	1/15/15 (TA)	$10,308.37	
					$517.50	Tetra Tech	1/20/2015	50876531	thru 1/9/15	1/29/15 (fhl)	$9,790.87	

Date Check Received	Amount	Check #	Payment Source	Date Submtd to Treasurer	Consultant's Construction Observation Fee	Consultant's Name	Consultant's Invoice Date	Invoice Number	Time Period Covered by Invoice	Date Submtd to Town Act.	Balance	Notes
					$310.50	Tetra Tech	3/5/2015	50897518	thru 3/13/15		$9,480.37	
					$1,086.75	Tetra Tech	9/25/2015	50962912	thru 9/18/15		$8,393.62	
					$64.50	Petrini	10/5/156	32576	thru 9/30/15	to kk 10/8/15	$8,329.12	
					$258.75	Tetra Tech	10/23/2015	50975834	thru 10/16/15	to fhl 11/4/16	$8,070.37	
					$103.50	Tetra Tech	1/22/2016	51009715	thru 1/15/16	to fhl 1/29/16	$7,966.87	
					$326.04	Tetra Tech	3/25/2016	52030549	thru 3/18/16	to actg 4/5/16	$7,640.83	
					$108.68	Tetra Tech	5/27/2016	52055237	thru 5/13/16	to actg 6/9/16	$7,532.15	
					$1,306.72	Tetra Tech	10/28/2016	51111098	thru 10/14/16	to ml 11/4/16	$6,225.43	
					$706.42	Tetra Tech	12/23/2016	51130536	thru 12/16/16	to ml 1/3/17	$5,519.01	
					$489.06	Tetra Tech	1/27/2017	51141931	thru 1/13/17	to ml 2/6/17	$5,029.95	
					$543.40	Tetra Tech	2/24/2017	51151142	thru 2/10/17	to ml 3/2/17	$4,486.55	
					$168.75	Tetra Tech	4/28/2017	51173842	thru 4/21/17	??	$4,317.80	
					$33.75	Tetra Tech	6/23/2017	51192759	thru 6/9/17	to ml 7/5/17	$4,284.05	
7/26/2017	$5,000.00	31706	Unique Homes	7/26/2017							$9,284.05	
					$405.00	Tetra Tech	7/7/2017	51206765	thru 7/7/17	to ml 8/24/17	$8,879.05	
					$705.00	Tetra Tech	9/6/2017	51217818	thru 9/1/17	to ml 9/19/17	$8,174.05	
					$630.00	Tetra Tech	12/6/2017	51258081	thru 12/1/17	to ml 12/14/17	$7,544.05	
					$350.00	Tetra Tech	1/19/2018	51275872	thru 12/29/17	to ml 1/29/18	$7,194.05	
					$280.00	Tetra Tech	2/23/2018	51285669	thru 2/9/18	to ml 3/6/18	$6,914.05	
					$2,100.00	Tetra Tech	3/23/2018	51296299	thru 3/23/18	to ml 4/4/18	$4,814.05	
					$350.00	Tetra Tech	5/16/2018	51312583	thru 4/27/18	to ml 5/17/18	$4,464.05	
					$1,330.00	Tetra Tech	7/11/2018	51330875	thru 7/6/18	to ml 7/12/18	$3,134.05	
					$1,120.00	Tetra Tech	8/11/2018	51343872	thru 8/3/18	to ml 8/20/18	$2,014.05	
					$912.50	Tetra Tech	9/19/2018	51354955	thru 9/7/18	to actg 9/20/18	$1,101.55	
					$175.00	Tetra Tech	10/24/2018	51369007	thru 10/5/18	to ks 11/5/18	$926.55	
					$70.00	Tetra Tech	11/21/2018	51380466	thru 11/9/18	to ks 11/29/18	$856.55	
					$423.06	Tetra Tech	3/29/2019	51424707	thru 03/15/19	to so 04/08/19	$433.49	
4/22/2019	$10,194.00	4589	Needham Bank	04/22/19 to so							$10,627.49	
					$180.00	Tetra Tech	4/26/2019	51435607	thru 04/05/19	to so 05/06/19	$10,447.49	
					$110.00	Tetra Tech	5/24/2019	51444089	thru 05/10/19	to so 07/25/19	$10,337.49	
					$1,144.00	Tetra Tech	9/27/2019	51495379	thru 09/06/19	to so 10/11/19	$9,193.49	
					$1,016.69	Tetra Tech	12/5/2019	51527181	thru 11/01/19	to so 12/23/19	$8,176.80	
					$148.00	Tetra Tech	11/6/2020	51661237	thru 10/31/20	to so 12/9/20	$8,028.80	
					$444.00	Tetra Tech	12/9/2020	51674759	thru 11/30/20	to so 12/9/20	$7,584.80	
					$74.00	Tetra Tech	1/7/2021	51684913	thru 12/31/20	to so 1/8/21	$7,510.80	
					$37.00	Tetra Tech	2/9/2021	51698070	thru 01/31/21	to SO 02/12/21	$7,473.80	
	$47,640.89				$40,167.09						$7,473.80	
	Total				**Total**						**Balance**	
	Paid by				**Cons. Obsrvtn.**							
	Applicant				**Fees**							

March 28, 2023
Medway Planning & Economic Development Board Meeting

Medway Commons
Bright Path Child Care Center
Performance Security

- Tetra Tech inspection report and punch list dated March 20, 2023 based on 3-17-23 site visit
- Tetra Tech bond estimate dated March 20, 2023 ($32,088)

NOTE – The permittee will be seeking an occupancy permit from the Building Department which is required before it can apply to the State for its childcare license. The contractor has advised that some of the work included on the TT punch list and bond estimate will be completed by the end of the week. Tetra Tech will visit the site again to update the punch list and bond estimate which we can provide to you on Monday.

TETRA TECH

Bond List

To:	Susan Affleck-Childs – Medway Planning and Economic Development Board (PEDB) Coordinator
Cc:	Barbara Saint Andre – Director, Medway Community and Economic Development Karen Johnson – Applicant Chris Mead – Contractor
From:	Steven M. Bouley, P.E. Tucker D. Paradee, E.I.T.
Date:	March 20, 2023
Subject:	Bright Path Child Care Center Bond List

At the request of the Medway PEDB, Tetra Tech (TT) conducted a bond list inspection of the Bright Path Child Care Center Project located at Medway Commons, 67C Main Street in Medway, MA. The inspection was completed on March 17, 2023. This Bond List and attached Estimate were generated of outstanding items which have not yet been completed, are deficient in quality or outstanding administrative items which remain to be submitted.

The current condition of the site was reviewed against the following documents:

- A plan (Plans) set titled "Minor Site Plan for Brightpath Child Care Center, Medway Commons", dated May 19, 2022, revised July 25, 2022, prepared by Tighe & Bond (T&B).
- A Minor Site Plan Decision (Decision) titled “Minor Site Plan Decision, BrightPath Child Care Center – 67C Main Street” dated July 18, 2022.

Missing Items

1. Install landscaping.
2. Install bollards adjacent to southwest corner of building.
3. Install top course for the proposed parking area, patching at new curb lines, etc.
4. Install parking space striping including accessible spaces.
5. Install bollard-mounted accessible signage.
6. Relocate exist triple-head light fixture to pole on north side of lot as shown on the Approved Plans.
7. Complete installation of playground artificial turf surface (not included in estimate)
8. Complete installation of playground interior fencing (not included in estimate)

Inspection/Maintenance

9. Remove erosion controls, construction fencing and final parking lot clean-up within the work area.

Administrative

10. Provide written confirmation from engineer of record detailing project’s substantial compliance with the Approved Plans.
11. Provide as-built plans of the Project.

These comments are offered as guides for use during the Town’s review. In addition to this list, we recommend the Applicant conduct their own evaluation of the site to ensure all items included on the approved documents are completed to the satisfaction of the engineer of record for the Project. If you have any questions or comments, please feel free to contact us at (508) 786-2200.

P:\21583\143-21583-22019 (PEDB BRIGHT PATH CCC)\CONSTRUCTION\PUNCH LIST\BOND LIST_01_BRIGHTPATH CCC_2023-03-20.DOC

Infrastructure Northeast
Marlborough Technology Park, 100 Nickerson Road, Marlborough, MA 01752
Tel 508.786.2200 Fax 508.786.2201 tetratech.com

TETRA TECH

Bond Estimate
BrightPath Child Care Center
Medway, Massachusetts
March 20, 2023

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST[1]	ENGINEERS ESTIMATE
001	Mobilization (3% of Const. Cost)	1	LS	$800.00	$800
002	Landscaping	1	LS	$2,500.00	$2,500
003	Bollards	3	EA	$1,000.00	$3,000
004	HMA Top Course	30	TON	$154.00	$4,620
005	Striping	1	LS	$500.00	$500
006	Bollard Mounted Signage	2	EA	$1,500.00	$3,000
007	Relocate Triple-Head Light Fixture	1	LS	$2,500.00	$2,500
008	Clean Catch Basins	3	EA	$250.00	$750
009	Remove Erosion Controls/Fence/Site Cleanup	1	LS	$2,500.00	$2,500
010	Engineering Services	1	LS	$2,500.00	$2,500
011	Legal Services	1	LS	$3,000.00	$3,000
				Subtotal	$25,670
				25% Contingency	$6,418
				Total	$32,088

Notes:

[1]Unit prices are taken from the latest information provided on the MassDOT website. They utilize the MassDOT weighted bid prices (Combined - All Districts) for the time period 03/2022 - 03/2023. Quantities which are too small for accurate representation using the weighted bid pricing were estimated based on industry construction experience.

March 28, 2023
Medway Planning & Economic Development Board Meeting

Public Hearing Continuation
7 Sanford Street Multi-Family Housing Special Permit

- Notice to continue public hearing to March 28, 2023
- Email communication dated March 22, 2023 from attorney Danielle Justo, on behalf of the applicant, requesting a continuation of the hearing to April 11, 2023.

Medway Town Hall
155 Village Street
Medway, MA 02053
Phone (508) 533-3291
Fax (508) 321-4987
Email: planningboard
@townofmedway.org
www.townofmedway.org

TOWN OF MEDWAY

COMMONWEALTH OF MASSACHUSETTS

PLANNING AND ECONOMIC DEVELOPMENT BOARD

MEMORANDUM

March 1, 2023

TO: Stefany Ohannesian, Town Clerk
Town of Medway Departments, Boards and Committees

FROM: Susy Affleck-Childs, Planning and Economic Development Coordinator

RE: ***Public Hearing Continuation for 7 Sanford Street Multi-Family Special Permit***
Continuation Date – March 28, 2023 at 7:15 p.m.

At its February 28, 2023 meeting, the Planning and Economic Development Board voted to continue the public hearing on the application of 7 Sanford Street LLC of Medfield, MA for approval of a multi-family housing special permit for the proposed, 6-unit multi-family development at 7 Sanford Street to Tuesday, March 28, 2023 at 7:15 p.m.

The applicant proposes to undertake exterior façade improvements to the main house and retain its two existing dwelling units. Also proposed is the substantial renovation of the existing attached barn building to convert it into four additional dwelling units, parking improvements, landscaping, and drainage. A total of 15 off-street parking spaces will be provided. Access will be from Sanford Street and John Street.

The site plan and associated application documents are on file with the Medway Town Clerk and the Community and Economic Development office at Medway Town Hall. The information is also posted at Board's page at: https://www.townofmedway.org/planning-economic-development-board/pages/7-sanford-street-multi-family-housing-special-permit

We do expect to receive a revised site plan and will post it to the PEDB web page upon receipt. As always, the Board welcomes your review comments. Please don't hesitate to contact me if you have any questions. Thanks.

Susan Affleck-Childs

From: Danielle Justo <djusto@richmaylaw.com>
Sent: Wednesday, March 22, 2023 10:32 AM
To: Susan Affleck-Childs
Cc: brian@donahuearchitects.com; Yana Zheng; ptibets@hotmail.com
Subject: [External] Request for Continuance

Ms. Affleck-Childs:

We are writing to request a continuance of our Planning Board hearing from March 28th to April 11th to allow for time for our civil engineer to provide the site plan with drainage information as requested. Kindly confirm.

Much appreciated.
Danielle Justo, counsel for 7 Sanford Street, LLC

Danielle Justo Shareholder
Rich May, P.C.
djusto@richmaylaw.com
Direct Dial/Fax: +1 (617) 556-3841 | Cell: +1 (617) 827-3285
176 Federal Street | Boston, MA | 02110
Bio | LinkedIn

March 28, 2023
Medway Planning & Economic Development Board Meeting

Discussion of Application & Filing Fees

- PEDB Fee Schedule – Last updated 6-29-2016

At the first meeting in February, there was some discussion about PEDB's application/filing fees. Attached is the current PEDB fee schedule, last revised in June of 2016.

There are several items which merit the Board's discussion and consideration.

1. **Field Changes** – Do you want to charge a fee to NEW permittees for Requests for Field Changes?
2. **Subdivision**
   - Add a fee to modify something in the previously approved subdivision decision (Certificate of Action), usually a condition.
   - Consider charging a fee for requests, usually from attorneys, for the Board to sign a lot release for resales in older subdivisions.
3. **Site Plan** – The current site plan fees are tied to the size (gross floor area) of a building (to be constructed). However, some site plan applications are for projects that do NOT involve building construction, but only include site work. Site plans are also required for certain ground mounted solar installations, battery energy storage systems, wireless communication facilities, and electric vehicle charging stations. What are appropriate fees for those types of site plan projects?

Medway Planning & Economic Development Board
Fees and Bond Schedule

Updated – June 29, 2016

TYPE OF PROJECT	***FEE***
LAND SUBDIVISIONS	
ANR Plan - Approval Not Required Plan (Also referred to as an 81P or Form A Plan)	$250 plus $100/lot or parcel for any project involving more than 2 lots or parcels. Maximum = $750
Informal/Pre-Application Discussion	No charge. *(1 meeting only. After that, applicant must file a preliminary or definitive subdivision plan application.)*
Preliminary Subdivision Plan/Form B	$750 *(2 meetings. After that, a second $750 filing fee is required.)* Plus a $750 advance toward expense of plan review services to be provided by outside consultants *Submit 2 checks.*
Definitive Subdivision Plan/ Form C	$2,500 plus $2.50/linear foot or street centerline proposed. *(5 meetings. After that, a second $2,500 filing fee is required.)* Plus a $2,500 advance toward expense of plan review services to be provided by outside consultants**.** *Submit 2 checks**.***
Minor Revision to Approved Def. Sub. Plan	$250 *(1 meeting)* Plus a $500 advance toward expense of plan review services to be provided by outside consultants. *Submit 2 checks.*
Major Modification to Approved Def. Sub. Plan	$750 *(2 meetings. After that, a second $750 filing fee is required.)* Plus a $1,000 advance toward the expense of plan review services to be provided by outside consultants *Submit 2 checks*.

TYPE OF PROJECT	***FEE***
SITE PLANS	
Administrative Site Plan Review	Filing/application Fee = $350
Informal/Pre-Application Meeting	No charge. *(1 meeting only)*
Minor Site Plan Project	Filing/Application Fee = $350 plus $ .25/sq. ft. gross floor area. *(2 meetings. After that, a second $350 filing fee is required.)* Plus $500 advance toward the expense of plan review services to be provided by outside consultants. *Submit 2 checks.*
Major Site Plan Project *(Up to 4,999 sq. ft. of gross floor area)*	Filing/Application Fee = $750 plus $ .25/sq. ft. gross floor area. *(3 meetings. After that, a second $750 filing fee is required.)* Plus a $1,000 advance toward the expense of plan review services to be provided by outside consultants. *Submit 2 checks*
Major Site Plan Project (*5,000 – 9,999 sq. ft. gross floor area)*	Filing/Application Fee = $1,000 plus $ .25/sq. ft gross floor area. *(4 meetings. After that, a second $1,000 filing fee is required.)* Plus a $1,500 advance toward the expense of plan review services to be provided by outside consultants. *Submit 2 checks*
Major Site Plan Project *(10,000 – 14,999 sq. ft. gross floor area)*	Filing/Application Fee = $1,500 plus $ .25 sq/ ft. gross floor area. *(5 meetings. After that, a second $1,500 filing fee is required.)* Plus a $2,000 advance toward the expense of plan review services to be provided by outside consultants. *Submit 2 checks.*
Major Site Plan Project *(15,000 sq. ft. gross floor area and over)*	Filing/Application Fee = $2,000 plus $ .25/sq. ft. gross floor area. (*6 meetings. After that, a second $2,000 filing fee is required.)* Plus a $2,500 advance toward the expense of plan review services to be provided by outside consultants. *Submit 2 checks.*

TYPE OF PROJECT	FEE
SITE PLAN MODIFICATION	
Amend/Revise Site Plan Decision	$150 (*1 meeting only)*
Modify Minor Site Plan	Filing/Application Fee = $250 *(1 meeting only.)* Plus a $500 advance toward the expense of plan review services to be provided by outside consultants. *Submit 2 checks*
Modify Major Site Plan *(Up to 4,999 sq. ft. gross floor area)*	Filling/Application Fee = $500 *(2 meetings only.)* Plus a $1,000 advance toward the expense of plan review services to be provided by outside consultants. *Submit 2 checks*
Modify Major Site Plan *(5,000 – 9,999 sq. ft. gross floor area)*	Filing/Application Fee = $750 *(3 meetings only.)* Plus a $1,000 advance toward the expense of plan review services to be provided by outside consultants *Submit 2 checks*
Modify Major Site Plan *(10,000 to 14,999 sq. ft. gross floor area)*	Filing/Application Fee = $1,000 *(4 meetings only.)* Plus a $1,000 advance toward the expense of plan review services to be provided by outside consultants *Submit 2 checks*
Modify Major Site Plan *(15,000 sq. ft. gross floor area and over)*	Filing/Application Fee = $1,500 *(5 meetings only.)* Plus a $1,000 advance toward the expense of plan review services to be provided by outside consultants. *Submit 2 checks*

TYPE OF PROJECT	***FEE***
ADULT RETIRMENT COMMUNITY PLANNED UNIT DEVELOPMENT (ARCPUD) SPECIAL PERMIT	
Informal Discussion	No charge*. (1 meeting only.)*
Pre-Application Meeting	$500 *(2 meetings.)*
ARCPUD Special Permit	Filing Fee = $2,500 plus $25 per proposed dwelling unit *(5 meetings. After that, another $2,500 filing fee is required.)* Plus a $2,500 advance toward the expense of plan review services to be provided by outside consultants*.* *Submit 2 checks.*
Amend/Revise ARCPUD Special Permit Decision	$ 250 (*1 meeting only.)*
Modify ARCPUD Special Permit Plan	Application/Filing Fee = $750 *(2 meetings)* Plus a $1,000 advance toward the expense of plan review services to be provided by outside consultants. *Submit 2 checks.*
OPEN SPACE RESIDENTIAL DEVELOPMENT (OSRD) SPECIAL PERMIT	
Informal Discussion	No charge *(1 meeting only.)*
Pre-Application Meeting	$500 *(2 meetings)*
OSRD Special Permit	Application/Filing Fee = $1,500 plus $25 per proposed dwelling unit (*4 meetings. After that, another $1,500 filing fee is required.)* *Plus a $2,500 advance toward the expense of plan review services to be provided by outside consultants.* *Submit 2 checks.*

TYPE OF PROJECT	FEE
OPEN SPACE RESIDENTIAL DEVELOPMENT (OSRD) SPECIAL PERMIT	
Amend/Revise OSRD Special Permit	Application/Filing Fee = $250 *(1 meeting. After that, another $250 fee is required.)*
Modify OSRD Concept Plan	Application/Filing Fee = $500 *(2 meetings. After that, another $500 fee is required.)* Plus a $500 advance toward the expense of plan review services to be provided by outside consultants *Submit 2 checks*
ADAPTIVE USE OVERLAY DISTRICT (AUOD) SPECIAL PERMIT	
Informal Discussion	No charge. *(1 meeting only.)*
Pre-Application Meeting	$250 *(1 meeting. After that, another $250 fee is required.)*
AUOD Special Permit *(Projects up to 2,499 sq. ft./gross floor area)*	Application/Filing Fee = $500 plus $ .25/sq. ft. gross floor area. Plus a $500 advance toward the expense of plan review services to be provided by outside consultants. *Submit 2 checks.*
AUOD Special Permit *(Projects of 2,500 – 4,999 sq. ft./gross floor area)*	Application/Filing Fee = $750 plus $ .25/sq. ft. gross floor area. Plus a $1,000 advance toward the expense of plan review services to be provided by outside consultants. *Submit 2 checks.*

TYPE OF PROJECT	***FEE***
ADAPTIVE USE OVERLAY DISTRICT (AUOD) SPECIAL PERMIT	
AUOD Special Permit *(Projects of 5,000 to 9,999 sq. ft./gross floor area*)	Application/Filing Fee = $1,000 plus $ .25/sq. ft. gross floor area. Plus a $1,500 advance toward the expense of plan review services to be provided by outside consultants. *Submit 2 checks.*
AUOD Special Permit *(Projects of 10,000 sq. ft./gross floor area & over)*	Application/Filing Fee = $1,500 plus $ .25/sq. ft. gross floor area. Plus a $2,500 advance toward the expense of plan review services to be provided by outside consultants. *Submit 2 checks.*
Amend/Revise AUOD Decision	Application/Filing Fee = $250
Modify AUOD Plan	Application/Filing Fee = $250 Plus a $500 advance toward the expense of plan review services to be provided by outside consultants. *Submit 2 checks.*
ASSISTED LIVING FACILITY SPECIAL PERMIT	Application/Filing Fee = $ 500 Plus a $500 advance toward the expense of plan review services to be provided by outside consultants. *Submit 2 checks.*

TYPE OF PROJECT	*FEE*
AFFORDABLE HOUSING SPECIAL PERMIT	Application/Filing Fee = $ 500
MULTIFAMILY HOUSING SPECIAL PERMIT	Application/Filing Fee = $500 plus $25 per proposed new dwelling unit up to 4 units Plus a $1,000 advance toward the expense of plan review services to be provided by outside consultants *Submit 2 checks*.
ZONING REPETITION Request for Planning & Economic Development Board Consent	Application/Filing Fee = $150 *(1 meeting.)*
SCENIC ROAD WORK PERMIT	Trees = $150 plus $25 per tree to be removed Stone Walls = $150
MINIMUM SUBDIVISION BOND	$40,000