VILLAGE OF DOBBS FERRY BOARD OF TRUSTEES AGENDA

MEETING DATE: SEPTEMBER 28, 2021	
AGENDA ITEM SECTION: DISCUSSION ITEMS	
AGENDA ITEM NO. : 5	
AGENDA ITEM: CONSIDER A RESOLUTION SETTING A PUBLIC HEARING FOR THE PROJECT AT MASTERS SCHOOL, 49 CLINTON AVENUE AFTER REVIEW OF REFERRAL MEMO FROM THE PLANNING BOARD FOR SITE PLAN APPROVAL	

ITEM BACKUP DOCUMENTATION:

1. SITE PLAN SUBMITTAL FORM FOR 49 CLINTON AVENUE
2. LETTER & ATTACHMENTS DATED SEPTEMBER 17, 2021 FROM BRAD SCHWARTZ/ZARIN & STEINMETZ
3. 49 CLINTON AVENUE DESIGN APPENDIX
4. 49 CLINTON AVENUE DRAWINGS
5. STORMWATER POLLUTION PREVENTION PLAN
6. LETTER & ATTACHMENTS DATED SEPTEMBER 21, 2021 FROM VALERIE MONASTRA, AICP TO MAYOR ROSSILLO AND THE BOARD OF TRUSTEES
7. DRAFT RESOLUTION

Plan Submittal Form

Address: 49 Clinton Avenue, Dobbs Ferry, NY 10522

Application #:

Project: Masters Innovation and Entrepreneurship Center

Name: Ed Biddle

Email: ed.biddle@mastersny.org

Phone: (914) 479-6431

Plans attached are being submitted for (check appropriate box):

- ☐ Building permit application 1 PDF copy & 2 paper copies ¼ scale
- ☐ Amendment to an application or permit, 2 sealed copies
- ☐ Final As Built to close permit, 1 sealed copy
- ☐ Final survey to close permit, 1 sealed copy

Plans attached are submitted at the direction of the Building Inspector for review by the following board (check all that apply):

- ☒ BOT- 1 PDF copy + 5 paper copies ¼ scale
- PB - 1 PDF copy + 7 paper copies ¼ scale
- ☐ ZBA - 1 PDF copy + 4 paper copies ¼ scale
- ☐ AHRB – 1 PDF copy + 2 paper copies ¼ scale

Received Stamp:

ZARIN &
STEINMETZ

Brad K. Schwartz
bschwartz@zarin-steinmetz.com

RECEIVED
SEP 17 2021
by the Village Clerk
Village of Dobbs Ferry, NY

September 17, 2021

Via Electronic and Overnight Mail

Hon. Vincent Rossillo
Mayor of the Village of Dobbs Ferry
and Members of the Board of Trustees
112 Main Street
Dobbs Ferry, New York 10522

Re: ***The Masters School***
Site Plan Application for "Innovation and Entrepreneurship Center"
49 Clinton Avenue

Dear Mayor Rossillo and Members of the Village Board of Trustees:

The Masters School is excited to return to the BOT to complete the Site Plan process for this project. We make this submission to request that the BOT place this matter on its September 28th agenda for the purpose of scheduling a Public Hearing on October 12th (Masters would be glad to appear on September 28th to make a short presentation). Masters also asks that the BOT authorize a draft resolution (with conditions) to be ready for your consideration at the October 12th meeting. Masters would like to complete the foundation work before winter temperatures become prohibitive. An approval on October 12th would allow Masters to proceed to Building Department review and hopefully stay on its planned construction schedule; even a couple additional weeks at this stage would affect the overall schedule. While this may appear aggressive, we think this request is reasonable given all the work accomplished during the Planning Board and AHRB reviews.

Since the project was last before the BOT, the Masters School has completed the following key steps in the process:

- Planning Board – positive recommendation (copy enclosed)

- AHRB – positive recommendation

- SHPO – determination of "no adverse impact" (regarding potential impacts to Estherwood Mansion and Carriage House)

- DEC – determination of "no adverse impact" (regarding potential impacts to fish in the Hudson River)

- Village Fire Department – approval of site emergency access

In addition, the Site Plan drawings and supporting materials have been updated to reflect comments received from the Planning Board, AHRB, and the Village's engineering and planning consultants. This includes: (i) a SWPPP prepared in accordance with DEC and Village requirements for stormwater management, (ii) more advanced architectural design, including regarding window width, quantity and distribution, (iii) a temporary construction access road to avoid queueing along Clinton Avenue in response to Village and neighbor comments, and (iv) various other technical engineering and planning items.

Importantly, the proposed building footprint and height have not changed. Building height was reviewed in detail with the AHRB to confirm it does not conflict with the historic Estherwood mansion or carriage house.

Masters will submit a complete updated Site Plan drawing set for the BOT's record and in advance of the Public Hearing when advised to do so by the Village.

Thank you for the BOT's continued attention to this project.

Respectfully submitted,

ZARIN & STEINMETZ

By: Brad Schwartz
Brad K. Schwartz

Encl.
cc: Ed Manley, Building Official/Land Use Officer
Dan Roemer, Assistant Building Inspector
Lori Lee Dickson, Esq.
Daniel Pozin, Esq.
Valerie Monastra, AICP
Anthony Oliveri, P.E.
The Masters School
Marvel
MFS Engineering & Surveying

VILLAGE OF DOBBS FERRY
112 Main Street
Dobbs Ferry, New York 10522
TEL: (914) 231-8500 • FAX: (914) 693-3470

RESOLUTION X-2021

VILLAGE OF DOBBS FERRY PLANNING BOARD RECOMMENDATION RESOLUTION

Property: 49 Clinton Avenue (Section Block and Lot 3.90-66-1 and EI, Educational/Institutional Zoning District)

Background

WHEREAS, the Masters School ("Applicant") is seeking Site Plan approval to construct a three-story (plus cellar), approximately 22,361 square foot Innovation and Entrepreneurship Center ("IEC") on its campus in front of the Middle School Building ("Project"). The subject property is located at 49 Clinton Avenue, Dobbs Ferry New York, Section Block and Lot 3.90-66-1 ("Project Site"). The Project Site is located in the Educational/Institutional (EI) Zoning District; and

WHEREAS, this application requires Site Plan approval by the Village Board of Trustees and a recommendation by the Planning Board per Section 300-52 of the Zoning and Land Use chapter; and

WHEREAS, The Planning Board has carefully examined the Application and the Applicant's materials as follows:

1. Site Plan Application Form dated April 1, 2021
2. Full Environmental Assessment Form February 16, 2021
3. Coastal Assessment Form dated April 1, 2021
4. Stormwater Pollution Prevention Plan by MFS Consulting Engineers & Surveyor dated August 30, 2021
5. Revised Site Plan Designs prepared by Marvel, last revised August 31, 2021
    a. G001V Sheet Index
    b. G-010 and G-011Survey, prepared BY Kenneth B. Salzmann dated January 27, 2021
    c. Z-100 Zoning Map
    d. C-101 Civil Notes
    e. C-300 Demolition and Site Clearing Plan
    f. C-400 Soil and Erosion Control Plan
    g. C-500 Site Plan
    h. C-502 Construction Access Plan
    i. C-600 Proposed Grading and Drainage Plan
    j. C-700 Utility Plan
    k. C-701 Utility Relocation Plan
    l. C-900 and C-901 Construction Details

m. L-100 Layout Plan
n. L-200 Material Plan
o. L-400 Tree Plan
p. L-410 Understory Plan
q. L-600 and L-601 Site Section
r. L-620 Site Plan
s. L-700 and L-701Typical Details
t. A-100 through A-104 Floor Plans
u. A-300 and A-301Building Elevations
v. A-320 and A-321Building Sections
w. S-501Retailing Wall Detail
x. S-505 Typical Details
y. LL-010 Site Lighting Plan
z. LL-011 Site Lighting Photometric

WHEREAS, the Planning Board has also reviewed and examined letters, reports, and memorandum from the Board's consulting engineer and planner; and

WHEREAS, the Planning Board conducted a duly noticed public hearing on July 1, 2021, at which time all those wishing to be heard were given the opportunity to be heard, and the public hearing remained open until August 5, 2021; and

WHEREAS, the Planning Board deliberated in public on the Applicant's request for recommendation.

Planning Board Determination

NOW, THEREFORE, BE IT RESOLVED, the Planning Board recommends the application for Site Plan approval with the following additional recommendations as set forth below:

1. The Village Board should require the Applicant to address to the full satisfaction of the Village Engineer, all outstanding stormwater, and engineering issues raised in the hearings and documents submitted to the Board, including the September 7, 2021, engineering review letter.

Motion By: Seconded by:

CHAIRMAN HUNTER	☐ AYE	☐ NAY	☐ ABSTAIN	☐ RECUSE	☐ ABSENT/EXCUSED
STEPHEN BROSNAHAN	☐ AYE	☐ NAY	☐ ABSTAIN	☐ RECUSE	☐ ABSENT/EXCUSED
ROB LANE	☐ AYE	☐ NAY	☐ ABSTAIN	☐ RECUSE	☐ ABSENT/EXCUSED
ALLEN HALE	☐ AYE	☐ NAY	☐ ABSTAIN	☐ RECUSE	☐ ABSENT/EXCUSED
LAURA HAUPT	☐ AYE	☐ NAY	☐ ABSTAIN	☐ RECUSE	☐ ABSENT/EXCUSED
PETER WINDER, 1ST ALTERNAATE MEMBER	☐ AYE	☐ NAY	☐ ABSTAIN	☐ RECUSE	☐ ABSENT/EXCUSED
VOTE TOTALS	☐ AYE	☐ NAY	☐ ABSTAIN	☐ RECUSE	☐ ABSENT/EXCUSED
RESULT:			**MOTION:**		

I hereby attest that the above Resolution was approved by the Planning Board at its Sepetmber 9, 2021 meeting, and that I have been authorized to sign this Resolution by decision of the Planning Board.

Chairman Hunter Date

THE MASTERS SCHOOL

INNOVATION AND ENTREPRENEURSHIP CENTER

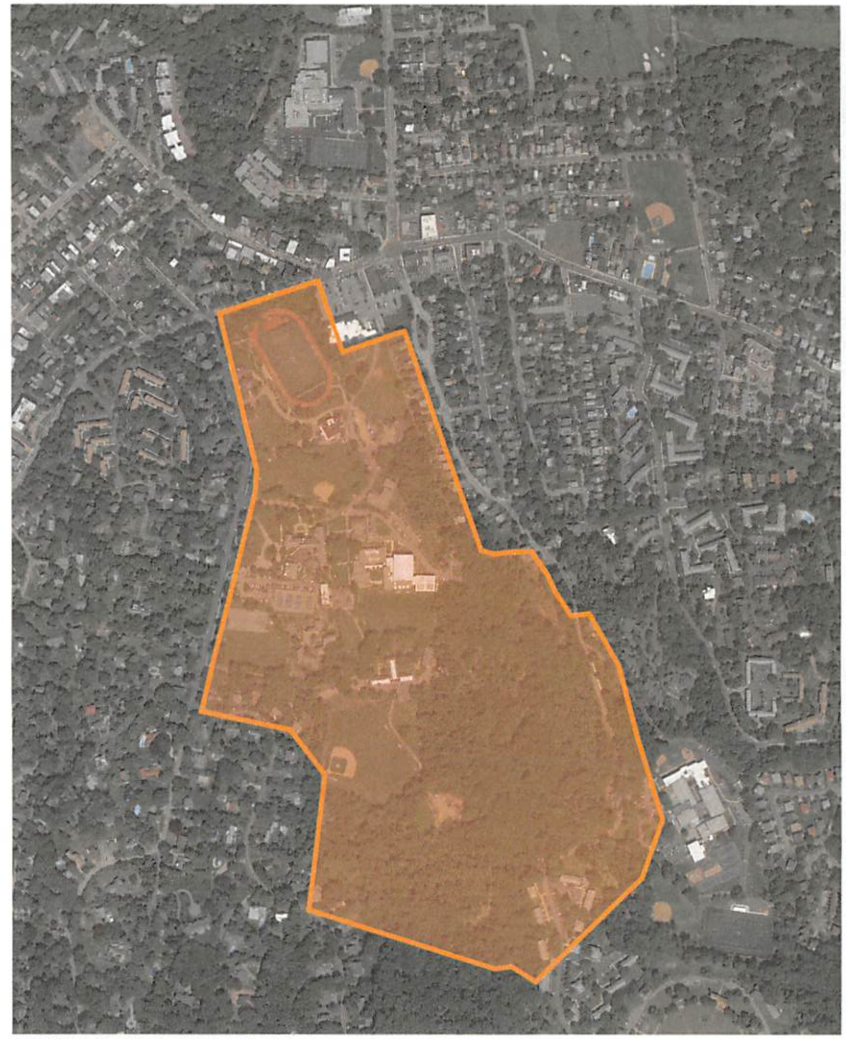
VILLAGE OF DOBBS FERRY SITE PLAN APPLICATION
BOARD OF TRUSTEES SUBMISSION
2021 0920

MARVEL

PROJECT ARCHITECT AND LANDSCAPE ARCHITECT

145 HUDSON STREET THIRD FLOOR
NEW YORK, NY 10013

EI ZONING



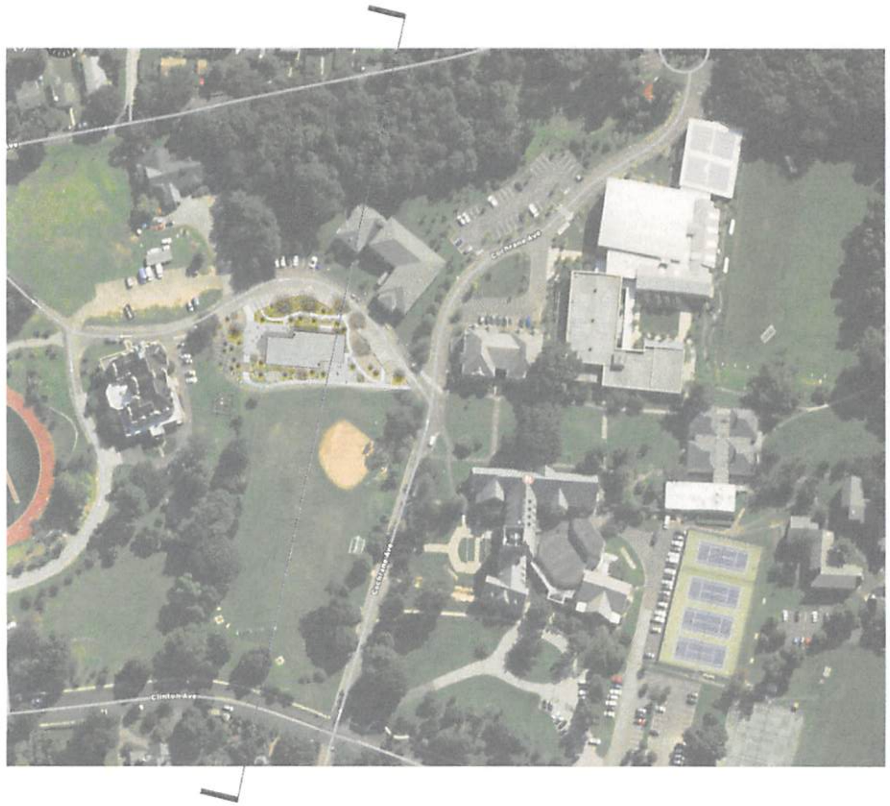
CAMPUS AERIAL PHOTOGRAPH

0 100 300 500

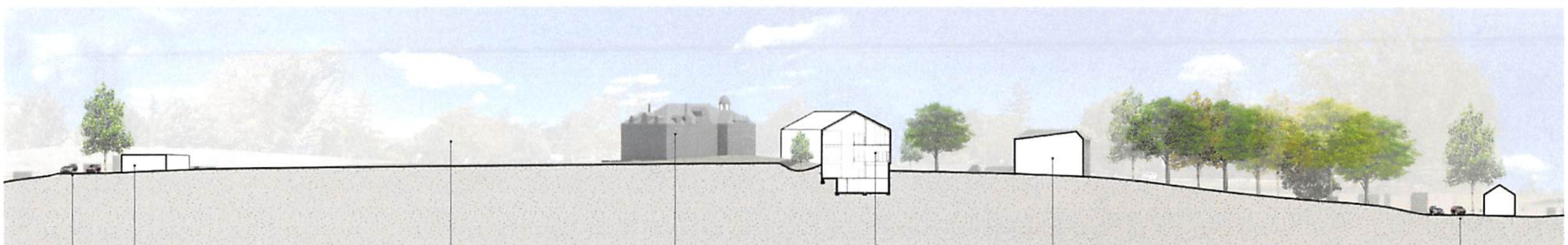
ZONING MAP

THE MASTERS SCHOOL
INNOVATION AND ENTREPRENEURSHIP CENTER
VILLAGE OF DOBBS FERRY SITE PLAN APPLICATION
BOARD OF TRUSTEES SUBMISSION
2021 0920

MARVEL



0' 100' 250' 500'



0' 100'

CAMPUS PLAN AND SITE SECTION

THE MASTERS SCHOOL
INNOVATION AND ENTREPRENEURSHIP CENTER
VILLAGE OF DOBBS FERRY SITE PLAN APPLICATION
BOARD OF TRUSTEES SUBMISSION
2021 0920

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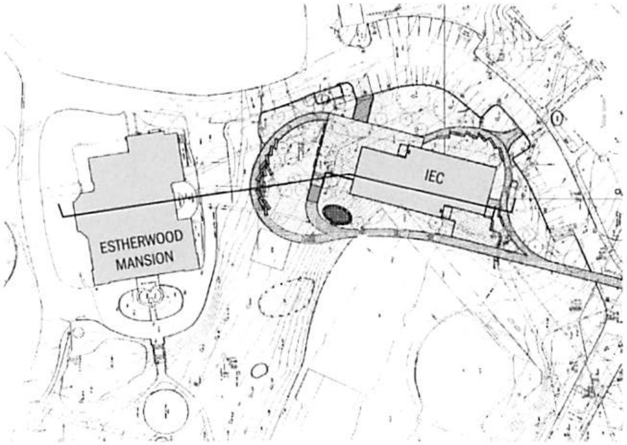
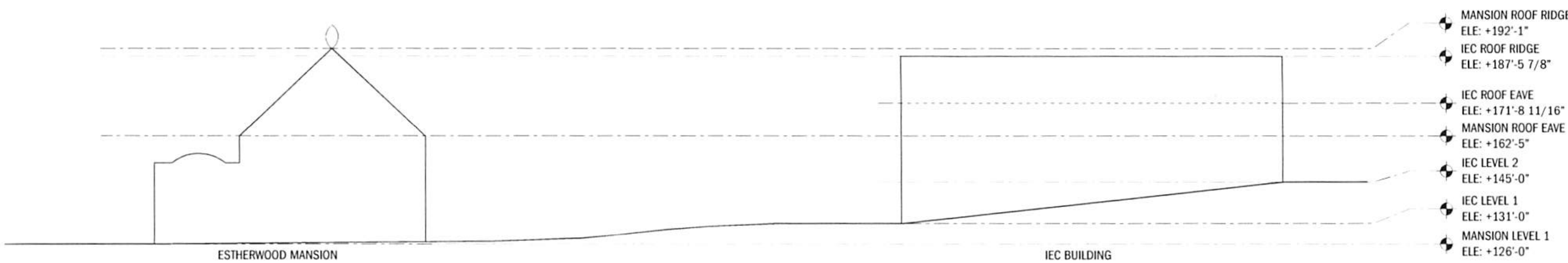
145 HUDSON STREET, THIRD FLOOR
NEW YORK, NY 10013



KEY PLAN
NTS



SECTION
1/32"=1'-0"

THE MASTERS SCHOOL
INNOVATION AND ENTREPRENEURSHIP CENTER
VILLAGE OF DOBBS FERRY SITE PLAN APPLICATION
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LANDSCAPE PLAN

THE MASTERS SCHOOL
INNOVATION AND ENTREPRENEURSHIP CENTER
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2021 0920

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WEST ELEVATION

EAST ELEVATION

BUILDING AND LANDSCAPE ELEVATIONS

THE MASTERS SCHOOL
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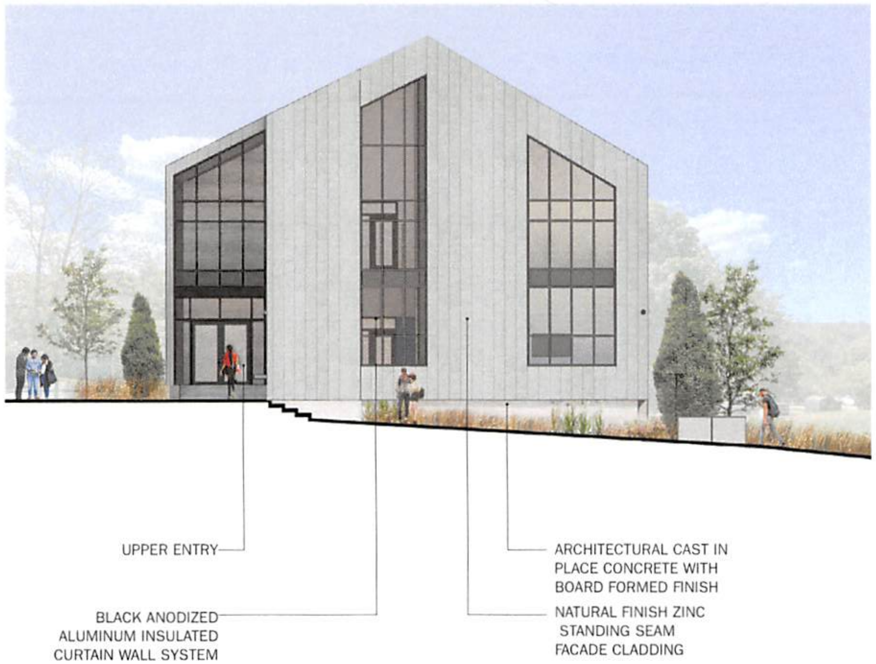
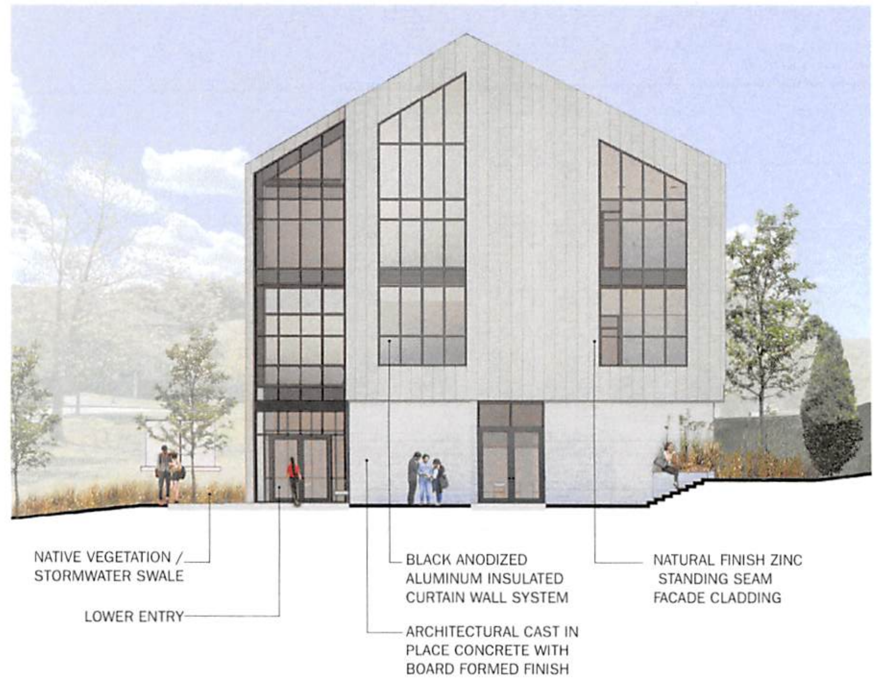
VILLAGE OF DOBBS FERRY SITE PLAN APPLICATION
BOARD OF TRUSTEES SUBMISSION
2021 0920

MARVEL

SOUTH ELEVATION



NORTH ELEVATION



BUILDING AND LANDSCAPE ELEVATIONS

THE MASTERS SCHOOL
INNOVATION AND ENTREPRENEURSHIP CENTER
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V1 - LOOKING EAST FROM CLINTON AVE AT PARK COTTAGE

V2 - LOOKING EAST FROM CLINTON AVE AT SOCCER FIELD

V3 - LOOKING EAST FROM CLINTON AVE AT COCHRANE

CAMPUS AERIAL PHOTOGRAPH

0' 100' 300' 500'

V4 - LOOKING WEST FROM ESTHERWOOD AVE

V5 - LOOKING WEST FROM ESTHERWOOD AVE

V6 - LOOKING WEST FROM ESTHERWOOD AVE

NEIGHBORHOOD CONTEXT

THE MASTERS SCHOOL
INNOVATION AND ENTREPRENEURSHIP CENTER
VILLAGE OF DOBBS FERRY SITE PLAN APPLICATION
BOARD OF TRUSTEES SUBMISSION
2021 0920

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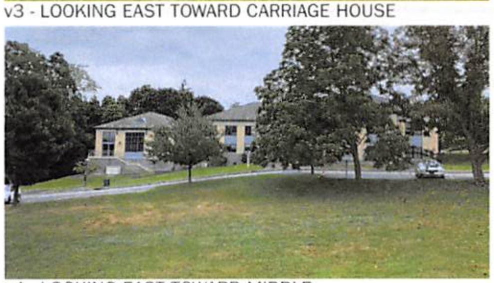
NEW YORK, NY 10013

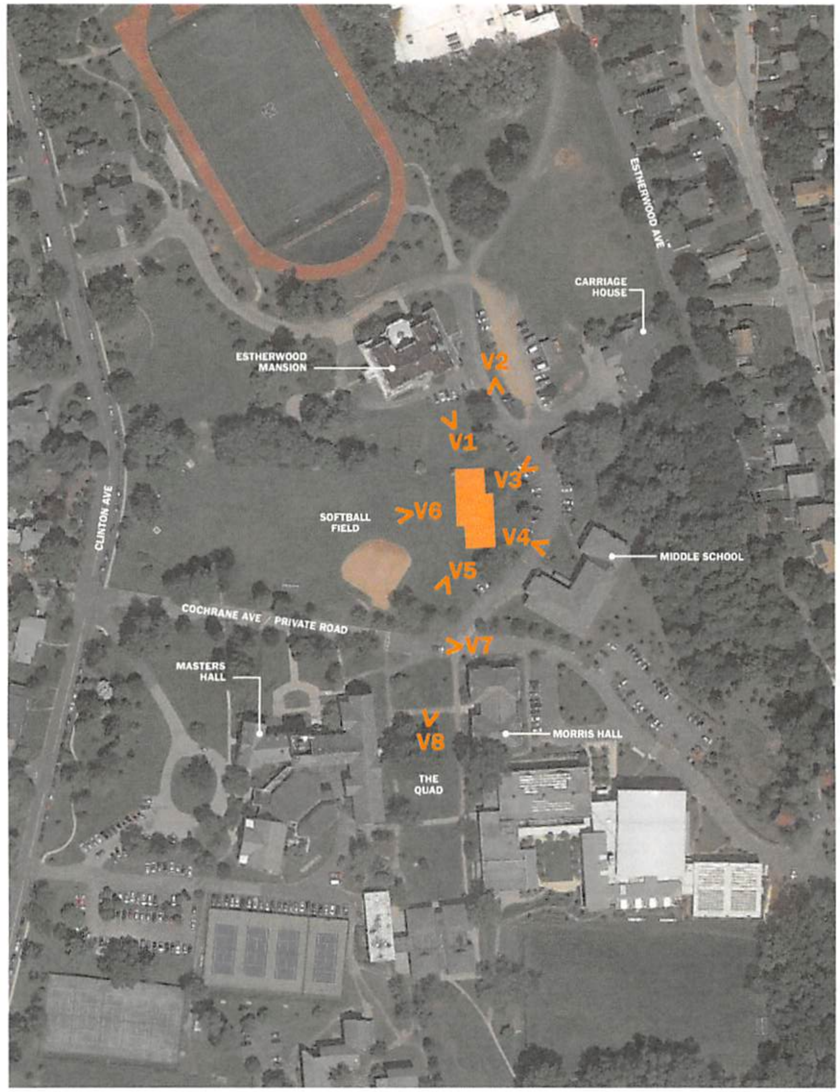
v1 - LOOKING NORTH TOWARD ESTHERWOOD MANSION

v2 - LOOKING SOUTH FROM ESTHERWOOD MANSION

v3 - LOOKING EAST TOWARD CARRIAGE HOUSE



v4 - LOOKING EAST TOWARD MIDDLE



CAMPUS AERIAL PHOTOGRAPH

0 100 300 500

V5 - LOOKING SOUTH TOWARD CAMPUS

V6 - LOOKING WEST TOWARD SOFTBALL AND CLINTON AVE

V7 - LOOKING WEST ON PRIVATE DRIVEWAY

V8 - LOOKING NORTH TOWARD SITE

BUILDING SITE CONTEXT

THE MASTERS SCHOOL
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VILLAGE OF DOBBS FERRY SITE PLAN APPLICATION
BOARD OF TRUSTEES SUBMISSION
2021 0920

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SITE CONTEXT RENDERINGS

THE MASTERS SCHOOL
INNOVATION AND ENTREPRENEURSHIP CENTER
VILLAGE OF DOBBS FERRY SITE PLAN APPLICATION
BOARD OF TRUSTEES SUBMISSION
2021 0920

MARVEL
145 HUDSON STREET THIRD FLOOR
NEW YORK NY 10013

OWNER:	**THE MASTERS SCHOOL** 49 CLINTON AVENUE DOBBS FERRY, NEW YORK 10522
PROJECT ARCHITECTS + LANDSCAPE ARCHITECTS:	**MARVEL ARCHITECTS** 145 HUDSON STREET, FLOOR 3 NEW YORK, NEW YORK 10013
GEOTECHNICAL/CIVIL ENGINEER:	**MFS ENGINEERS & SURVEYORS, DPC** 2780 HAMILTON BOULEVARD SOUTH PLANINFIELD, NEW JERSEY 07080
STRUCTURAL ENGINEER:	**SILMAN** 32 OLD SLIP, FLOOR 10 NEW YORK, NEW YORK 10005
BUILDING SYSTEMS ENGINEER:	**POLISE CONSULTING ENGINEERS, DPC** 133 WEST 19TH STREET NEW YORK, NEW YORK 10011
VERTICAL TRANSPORTATION:	**VDA** 145 WEST 30TH STREET, FLOOR 4 NEW YORK, NEW YORK 10011
AV/IT/SECURITY CONSULTANT:	**COSENTINI ASSOCIATES, INC** 498 SEVENTH AVENUE NEW YORK, NEW YORK 10018
ACOUSTICS CONSULTANT:	**LSTN CONSULTANTS** 76 BEAVER STREET NEW YORK, NEW YORK 10005
AV/IT/SECURITY CONSULTANT:	**COSENTINI ASSOCIATES, INC** 498 SEVENTH AVENUE NEW YORK, NEW YORK 10018
ENVELOPE CONSULTANT:	**MW-SKINS** 1 WHITEHALL STREET, FLOOR 14 NEW YORK, NEW YORK 10004
LIGHTING DESIGNER:	**DOT DASH LIGHTING DESIGN** 160 BROADWAY, SUITE 1215 NEW YORK, NEW YORK 10038
CODE AND ACCESSIBILITY CONSULTANT:	**CODE CONSULTANTS, INC** 440 PARK AVENUE S. NEW YORK, NEW YORK 10016
ARCHITECTURAL SPECIFICATIONS:	**CONSTRUCTION SPECIFICATIONS, INC** 22 TENNENT ROAD MORGANVILLE, NEW JERSEY 07751

THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER

49 CLINTON AVENUE, DOBBS FERRY, NEW YORK 10522
PROJECT NO. 2029

SITE APPLICATION SUBMISSION - BOT
SEPTEMBER 20, 2021

MARVEL
145 HUDSON STREET, FLR 3 NEW YORK, NY 10013
212 616 0420

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ARCHITECTURAL SPECIFICATIONS
CONSTRUCTION SPECIFICATIONS, INC
22 TENNENT ROAD
MORGANVILLE, NEW JERSEY 07751
TEL 732 970 0700

REV	DATE	DESCRIPTION
1	02/17/2021	VILLAGE OF DOBBS FERRY SITE APPLICATION
2	06/17/2021	SITE APPLICATION RESUBMISSION
3	07/22/2021	SITE APPLICATION RESUBMISSION
4	08/31/2021	SITE APPLICATION RESUBMISSION
5	09/20/2021	SITE APPLICATION SUBMISSION - BOT

09/20/2021

KEY PLAN/NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

TITLE SHEET

SCALE: 12" = 1'-0"

DOB STAMP ZONE

DRAWING #:
T-000
___ of ___
DOB JOB: -

SHEET INDEX - SITE PLAN APPLICATION -BOT

CATEGORY	SHEET #	SHEET NAME	SITE PLAN APP 02/17/2021	SITE APP RESUBMISSION 06/17/2021	SITE APP RESUBMISSION 07/22/2021	SITE APP - BOT 09/20/2021
00-TITLE						
	T-000	TITLE SHEET	X	X	X	X
01-GENERAL						
	G-001Y	SHEET INDEX - BOT				X
	G-010	BUILDING SITE SURVEY	X	X	X	X
	G-011	BUILDING SITE SURVEY	X	X	X	X
	G-031	EMERGENCY ACCESS SITE PLAN				X
02-ZONING						
	Z-100	ZONING MAP, TAX MAP, PLOT PLAN & FLOOD MAP	X	X	X	X
03-CIVIL						
	C-101	NOTES	X	X	X	X
	C-300	DEMOLITION & SITE CLEARING PLAN	X	X	X	X
	C-301	DEMOLITION & SITE CLEARING PLAN				X
	C-500	OVERALL SITE PLAN	X	X	X	X
	C-502	CONSTRUCTION ACCESS PLAN	X	X	X	X
	C-600	PROPOSED GRADING & DRAINAGE PLAN	X	X	X	X
	C-700	UTILITY PLAN	X	X	X	X
	C-701	UTILITY RELOCATION PLAN	X	X	X	X
	C-800	CONSTRUCTION DETAILS	X	X	X	X
	C-801	CONSTRUCTION DETAILS		X	X	X
04-LANDSCAPE						
	L-001	GENERAL NOTES	X	X	X	X
	L-100	LAYOUT PLAN	X	X	X	X
	L-200	MATERIALS PLAN	X	X	X	X
	L-400	TREE PLANTING PLAN	X	X	X	X
	L-410	UNDERSTORY PLANTING PLAN			X	X
	L-600	SITE PLAN		X	X	X
	L-610	SITE SECTIONS I	X	X	X	X
	L-620	SITE SECTIONS II	X	X	X	X
	L-700	TYPICAL DETAILS I	X	X	X	X
	L-710	TYPICAL DETAILS II	X	X	X	X
05-ARCH						
	A-100	BASEMENT FLOOR PLAN	X	X	X	X
	A-101	FIRST FLOOR PLAN	X	X	X	X
	A-102	SECOND FLOOR PLAN	X	X	X	X
	A-103	THIRD FLOOR PLAN	X	X	X	X
	A-104	ROOF PLAN	X	X	X	X
	A-300	BUILDING ELEVATIONS	X	X	X	X
	A-301	BUILDING ELEVATIONS	X	X	X	X
	A-320	BUILDING SECTIONS	X	X	X	X
	A-321	BUILDING SECTIONS	X	X	X	X
12-LIGHTING						
	LC-010	SITE LIGHTING PLAN	X	X	X	X
	LC-011	SITE LIGHTING PHOTOMETRIC PLAN	X	X	X	X
Total Number of Sheets: 37						

MARVEL
145 HUDSON STREET, FLR 3 NEW YORK, NY 10013
212.616.0420

OWNER
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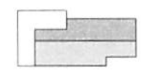
09/20/2021



KEY PLAN NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

SHEET INDEX - BOT

SCALE:

DOB STAMP ZONE

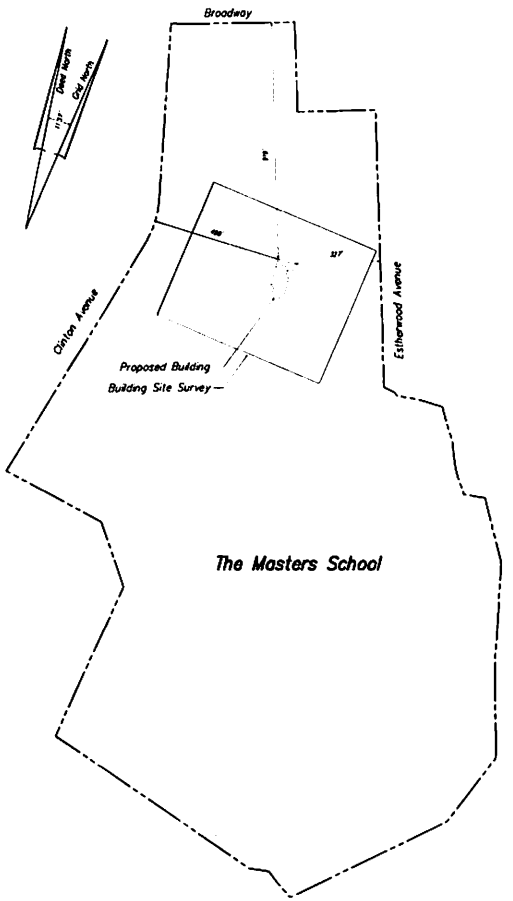
DRAWING #
G-001Y
___ of ___
DOB JOB: -

Building Site Survey
for the proposed
Innovation and Entrepreneurship Center
to be constructed at
The Masters School
located at
49 Clinton Avenue
in the
Village of Dobbs Ferry
Westchester County, New York
Scale 1" = 20' January 27, 2021

Note
Refer to Sheet 2 of 2 for Notes and Legend

Kenneth B. Salzmann, Land Surveyor, NY Lic. No. 49712
12 Hunter Lane, PO Box 498, Pawling, NY 12564 (845) 855-3695

Project No. 625



Detail Showing Map Location and Proposed Building Offsets
Scale 1" = 200'

Survey Notes:

1. This map, consisting of two sheets, is based upon field measurements completed on January 25, 2021 to update a portion of the 20 scale survey prepared by Kenneth B Salzmann, Land Surveyor, entitled

   "Topographic Map of the developed portion of The Masters School located in the Village of Dobbs Ferry, Westchester County, New York, Scale 1" = 20' [dated] January 9, 2017, Sheets 1 to 21 of 21"

2. The proposed building depicted hereon is based upon digital files received from Marvel Architects on January 7, 2021

3. The boring locations depicted hereon are based upon the disturbed soil found at the site. There may have been additional borings not depicted hereon

4. Utility locations are based upon visible structures, combined with the markings placed by Consumer Markouts, Inc. between December, 2020 and January, 2021. While a diligent effort was made to locate utilities, the actual location or absence of underground utilities cannot be guaranteed. Underground utilities may be encountered in locations other than depicted hereon. Verify the actual location of all utilities with the appropriate agencies prior to excavation or construction

5. Elevations are referenced to the datum of The Masters School, a site specific datum approximately 108.2 feet lower than NAVD 88. Refer to Note 4 below

6. Only copies of this map are marked with the land surveyor's embossed seal and original signature. Copies lacking the land surveyor's embossed seal and original signature are considered fraudulent and may contain erroneous information

7. Unauthorized alteration or addition to a map bearing the seal of a Licensed Land Surveyor is a violation of Section 7209 of the New York State Education Law, except as per Section 7209, Sub-division 2

Historical Notes:

The notes from the January 9, 2017 topographic map are provided for reference

1. This topographic map, consisting of 21 sheets, is based upon photogrammetric mapping prepared by Cosmos International, Inc., compiled for this project at a scale of 1" = 20', using aerial photography taken in April, 2008, with supplemental field measurements completed between October 4 and December 31, 2016, combined with mapping of portions of the campus previously prepared by Kenneth B Salzmann, Land Surveyor, specifically

   a. "Topographic Map of a portion of The Masters School in the vicinity of the Faculty Housing" dated January 3, 2007, Sheets 1 and 2 of 2

   b. "Topographic Map of a portion of The Masters School" dated July 13, 2007, Sheets 1 to 3 of 3

   c. "Topographic Map prepared for the proposed Tennis Court Parking Lot Improvements" dated May 12, 2008, revised May 28, 2008

   d. "As-built Location Survey depicting the Faculty Housing Building" dated July 2, 2008, revised July 14, 2008

   e. "Topographic Map of the northerly portion of The Masters School" dated July 22, 2010, Revised Oct. 08, 2010, Sheets 1 to 6 of 6

   f. "Topographic Map for the proposed Health Building Addition" dated Sept. 11, 2012

   g. "Topographic Map for the proposed Courtyard Improvements" dated June 27, 2013

   In addition, information contained in the drawing files provided by other surveyors has been added to the topographic map, specifically

   h. "As Built Survey of new Athletic Field for The Masters School" last revised 7/14/12, by Link Land Surveyors, PC

   i. "As Built Survey prepared for The Masters School, Community Athletics & Arts Center" dated Sep. 23, 2015 by Thomas C. Merritts Land Surveyors, PC

2. The approximate limits of the record maps referenced above are indicated by the following line pattern. Per contractual agreement features within the areas of record mapping may not have been updated since the last date of the record map

3. Features east of the east curb of Clinton Avenue, north of the north curb of Broadway and east of the east curb of Estherwood Avenue extend beyond the contractual mapping area. These features are provided for reference, but were not field checked and may not be complete

4. Elevations are referenced to the datum of The Masters School. However, the elevation datum of the map by Thomas C. Merritts (map reference 1-i) is approximately 108.3 feet above the Masters School datum. Contour interval is one (1) foot, except that contours are not provided at the Faculty Housing Building (map reference 1-a). The following bench marks were established for future reference

   BM "B" the center of 4 cuts set in the top of the rock knob located approximately 90 feet southeast of the southeast corner of Morris Hall, elevation 164.68 feet

   BM "E" the center of 4 cuts set in the top of the southeast corner of the concrete steps at the north gate of the tennis courts, elevation 167.88 feet

   BM "J" a NYSDOT Disk stamped "[illegible]" found set in concrete between the curb and sidewalk on the north side of Broadway, approximately 300 feet east of the centerline of Clinton Avenue, elevation 93.66 feet

   BM "K" a cross cut chiseled in the northeast corner of the concrete sidewalk at the NW corner of "Ford Hall" elevation 194.93 feet

   BM "P" a small cross cut chiseled in the southeast corner of the east grate rim approximately 12 feet west of the southwest corner of the "Cameron Hall Dining Hall," elevation 183.04 feet

   BM "Q" the center of 4 cuts set in the top of the rock knob located approximately 180 feet southwest of the southeast corner of the Thompson dorm building, elevation 229.80 feet

   BM "R" a cross cut set in the north rim of the drain manhole approximately 70 feet southwest of the southeast corner of the Fara dorm, elevation 200.42 feet

   BM "S" the center of 4 cuts set in the top of the stone curb corner located approximately 8 feet south of the southeast corner of Masters Hall, elevation 170.67 feet

   BM "T" a cross cut set in the top of the stone curb on the north side of Cochrane Avenue approximately 70 feet east of the center of the concrete sidewalk leading to the north side of Masters Hall, elevation 158.04 feet

5. The gaps in the Bench Mark designations reflect old bench marks that have not survived renovations of the site, or were set in tree roots that are now grown over and were not recovered

6. The general ground lines of buildings are depicted, unless noted otherwise. Ornamental trim, water tables, window air conditioners, security cameras, stockpiled materials and movable furniture may not be depicted hereon. Building locations and grades are not to be used for the design of structural elements without further verification. Features obscured by dense vegetation or fallen leaves are not shown

7. In areas where heavy vegetation or shadows obscured the ground approximate contours are depicted. Contours within these obscured areas should be verified before the design or construction of grade sensitive elements

8. Underground utilities are limited to the storm drains and sanitary sewers depicted hereon, as well as the water, gas, steam, communication and electric lines found to be marked at the site. Additional underground utilities, including but not limited to water, gas, telephone, steam, communication and electric lines, roof drain leader pipes, underdrains or irrigation systems are not depicted hereon. The storm drains and sanitary sewers in Broadway are not depicted due to accessibility restrictions

9. This map does not depict all underground utilities. Underground utilities may be encountered in locations other than depicted hereon. Verify the actual location of all utilities with the appropriate agencies prior to excavation or construction

10. This map depicts trees with a diameter of 6 inches and larger, estimated 4.5 feet up the trunk, as well as smaller trees deemed significant. The location of dead trees, stumps and fallen trees may be incomplete. Symbols depict the location of trees and shrubs and are not to scale. Individual trees and shrubs within wooded areas are not shown, with the exception of trees deemed to be significant and the trees located as part of the record mapping noted above. Individual shrubs within planted beds are not depicted hereon

11. Building and tract designations are based upon documents provided

12. The property lines depicted hereon are based upon the deed dated Nov. 15, 2002 from County of Westchester Industrial Development Agency to The Masters School, recorded in the Westchester County Clerk's Office as CR 4[illegible], as surveyed as part of map reference 1-a, above. An "approximate property line" is depicted at the portion of the site that was not surveyed. Said "approximate property line" is subject to the facts revealed by a search of title and a current survey. This map is not intended to be used for title purposes

Tree Index

ABBREV.	COMMON NAME
APP	Apple
ASH	Ash
BB	Black Birch
BCH	Beech
BP	Bradford Pear
BWD	Basswood
CAT	Catalpa
CED	Cedar
CH	Cherry
CHN	Chestnut
DD	Dead
DW	Dogwood
FIR	Fir
HEM	Hemlock
HIK	Hickory
HOL	Holly
LND	Linden
LOC	Locust
MAP	Maple
OAK	Oak
PN	Pine
SAS	Sassafras
SG	Sweet Gum
SPR	Spruce
STMP	Stump
SYC	Sycamore
TAM	Tamarack
TOH	Tree of Heaven
TUL	Tulip
UNK	Unknown
WB	White Birch
WNT	Walnut

3-8 tree — 3 trees, 8" diameter
10 12 tree — 10" and 12" tree

Legend

NOT FOR CONSTRUCTION

Certification:

I, Kenneth B. Salzmann, the surveyor who made this map, hereby certify that the boundary of The Masters School campus depicted hereon is based upon a field survey completed on June 23, 2020 and that this map was completed on January 27, 2021

Kenneth B. Salzmann, NY Land Surveyor Lic. No. 49712

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Scale 1" = 20' January 27, 2021

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Project No. 673

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CONSTRUCTION SPECIFICATIONS, INC
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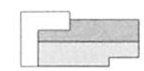
MORGANVILLE, NEW JERSEY 07751
TEL 732 970 0700

REV	DATE	DESCRIPTION
1	02/17/2021	VILLAGE OF DOBBS FERRY SITE APPLICATION
2	06/17/2021	SITE APPLICATION RESUBMISSION
3	07/22/2021	SITE APPLICATION RESUBMISSION
4	08/31/2021	SITE APPLICATION RESUBMISSION
5	09/20/2021	SITE APPLICATION SUBMISSION - BOT

09/20/2021

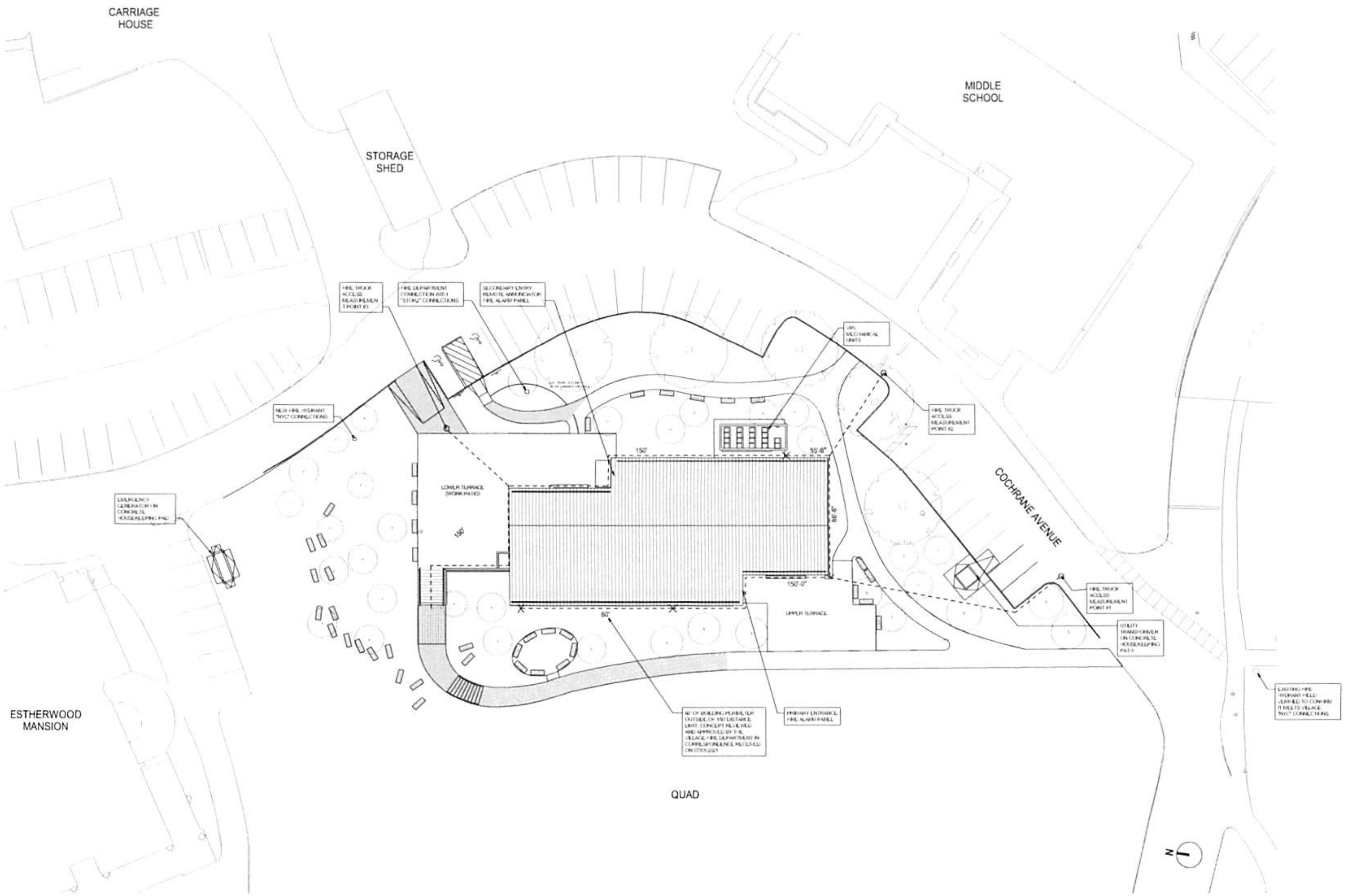


KEY PLAN NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

EMERGENCY ACCESS SITE PLAN

SCALE: As indicated

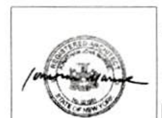


1 EMERGENCY ACCESS SITE PLAN
1/16" = 1'-0"

SITE PLAN LEGEND

DISTANCE (SF) — DISTANCE TO FIRE APPARATUS ACCESS ROADS

TRUE NORTH



DOB STAMP ZONE

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DOB JOB: -

Zoning Map

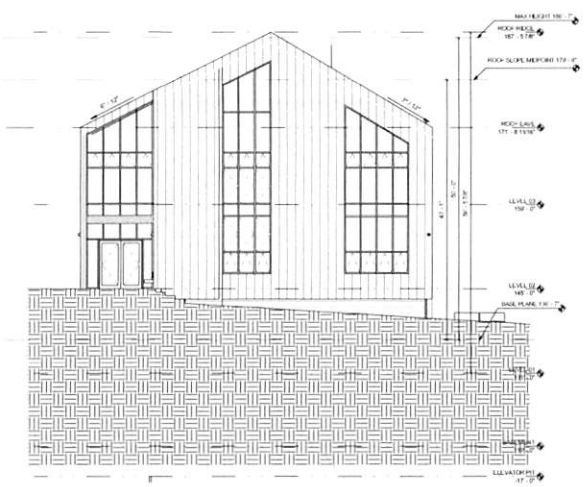
ZONING

PER TABLE B-10: CP AND EI DISTRICTS DIMENSIONAL STANDARDS

REQUIREMENT (PER TABLE B-10)		EDUCATIONAL/INSTITUTIONAL DISTRICT REQUIREMENTS	PROVIDED BY MASTERS IEC	NOTES
LOT SIZE	MINIMUM LOT SIZE	-	-	
	MAXIMUM LOT AREA PER DWELLING UNIT (SF)	40,000	N/A DUE TO CAMPUS	COMPLIES
BUILDING HEIGHT	MAX STORIES	4	3	COMPLIES
	MAX HEIGHT (FT)	50' - 0"	43' - 1"	COMPLIES
	MIN STORIES	-	-	
	MIN HEIGHT	-	-	
LOT COVERAGE	MAX LOT COVERAGE BY BUILDINGS	50%	4.9%	COMPLIES
	MAX LOT COVERAGE BY IMPERVIOUS COVER	80%	10.16%	COMPLIES
LOT COVERAGE	MIN FRONT YARD SETBACK (FEET)	25	N/A DUE TO CAMPUS	
	MAX FRONT YARD SETBACK (FEET)	-	N/A DUE TO CAMPUS	
	MIN REAR YARD SETBACK (FEET)	25	N/A DUE TO CAMPUS	
	MIN SIDE YARD SETBACK (EACH) (FEET)	10	N/A DUE TO CAMPUS	
	MIN SIDE YARD SETBACK (BOTH) (FEET)	25	N/A DUE TO CAMPUS	
	MAX SIDE YARD SETBACK (EACH) (FEET)	-	N/A DUE TO CAMPUS	

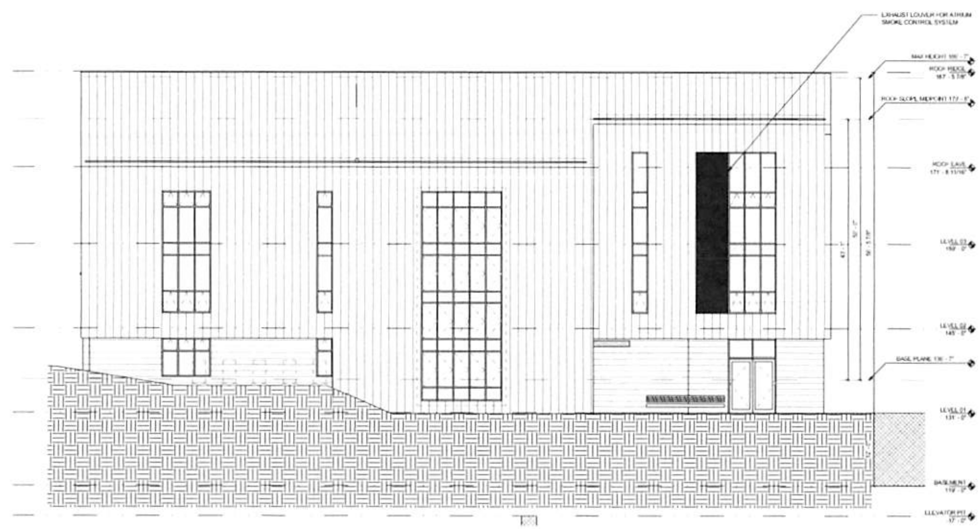
GROSS BUILDING AREA

PROPOSED GSF	
BASEMENT	3,897 GSF
FIRST FLOOR	5,979 GSF
SECOND FLOOR	5,575 GSF (less atrium)
THIRD FLOOR	5,575 GSF (less atrium)
MECHANICAL PLATFORM	283 GSF
TOTAL	21,309 GSF



2 SOUTH ELEVATION - ZONING

1/8" = 1'-0"



1 EAST ELEVATION

1/8" = 1'-0"

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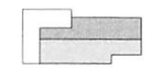


KEY PLAN NTS

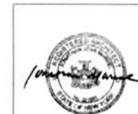
2029

THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER

49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

ZONING MAP, TAX MAP, PLOT PLAN & FLOOD MAP

SCALE: As indicated



DOB STAMP ZONE

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Z-100
___ of ___
DOB JOB -

PRIOR TO THE START OF ANY WORK. THE CONTRACTOR MUST CONTACT THE APPROPRIATE LOCAL "ONE CALL" SYSTEM TO ENSURE THAT ALL FIELD LOCATIONS AND THE PLANS SHALL BE REPORTED TO THE ENGINEER IN WRITING IMMEDIATELY. THE CONTRACTOR IS ADVISED THAT UTILITY INFORMATION SHOWN ON THE PLAN IS A COMPILATION OF FIELD LOCATIONS, ABOVE GROUND STRUCTURES THERE WERE VISIBLE AND ACCESSIBLE IN THE FIELD, AND RECORD DRAWINGS AVAILABLE AT THE TIME OF THE SURVEY AND MUST BE CONFIRMED ACCORDINGLY. THE CONTRACTOR IS ALSO ADVISED THAT ALL SUCH FACILITIES DISTURBED DURING CONSTRUCTION MUST BE REPAIRED OR REPLACED AT THE CONTRACTOR'S COSTS.
4. THE CONTRACTOR SHALL TAKE APPROPRIATE MEASURES TO PROTECT PEDESTRIANS AND VEHICULAR TRAFFIC DURING REMOVAL ACTIVITIES. ANY TRAFFIC CONTROL, ACCESS, SAFETY PROVISIONS WITH THE R.O.W (E.G ACCESSIBLE RAMPS, PEDESTRIAN CROSSWALKS, SIDEWALKS, PAVEMENT STRIPING, ETC.) SHALL BE THE CONTRACTOR'S RESPONSIBILITY. THE CONTRACTOR SHALL DETERMINE APPROPRIATENESS OF REMOVAL ACTIVITIES AND PROVIDE TEMPORARY MEASURES FOR THE PROTECTION AND SAFETY OF THE PUBLIC UNTIL PERMANENT COMPONENTS/REPLACEMENTS CAN BE INSTALLED.
5. THE CONTRACTOR SHALL EXERCISE EXTREME CARE WHEN PERFORMING ANY WORK ACTIVITIES ADJACENT TO THE STRUCTURES TO REMAIN. CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING THE APPROPRIATE MEASURES AS NECESSARY TO ENSURE THE STRUCTURAL STABILITY OF EXPOSED AND/OR BELOW GRADE FOUNDATIONS/WALLS/SIDEWALKS AND PAVEMENT TO REMAIN, AND SHALL PROVIDE A SAFE WORK AREA. ANY DAMAGE OR DISTURBANCE DUE TO SUBJECT WORKSCOPE SHALL BE REPAIRED TO LIKE-KIND CONDITIONS AT THE CONTRACTOR'S EXPENSE.
6. THE CONTRACTOR SHALL SAWCUT EXISTING PAVEMENT WITH A STRAIGHT VERTICAL EDGE FREE FROM IRREGULARITIES, WHEREVER NEW PAVEMENT JOINS EXISTING PAVEMENT.
7. EXCAVATION SHALL BE PROPERLY BACKFILLED WITH CLEAN MATERIALS AND COMPACTED WITH 8" MAX LIFTS TO 95% OF I'S MODIFIED PROCTOR DENSITY. CONTRACTOR SHALL RE-PAVE EFFECTED AREAS AS SHOWN ON DETAIL.
8. UNSUITABLE MATERIALS, CONSTRUCTION DEBRIS, EXCESS SOILS, ETC. SHALL BE PROPERLY REMOVED AND DISPOSED OF OFF-SITE IN ACCORDANCE WITH ALL APPLICABLE CODES, ORDINANCES AND LAWS.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH THE SPECIFICATIONS OF THE LOCAL AUTHORITIES REGARDING MATERIALS AND INSTALLATION OF PROPOSED WORK.
10. THE CONTRACTOR SHALL CONDUCT ALL REQUIRED TESTS TO THE SATISFACTION OF THE RESPECTIVE AGENCIES, UTILITY COMPANIES AND THE OWNER'S INSPECTING AUTHORITIES.
11. THESE PLANS ARE BASED ON INFORMATION AVAILABLE TO OUR OFFICE AT THE TIME OF PLAN PREPARATION. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND NOTIFY OUR OFFICE IF ACTUAL SITE CONDITIONS THAT DIFFER FROM THAT SHOWN ON THE PLAN, OR IF THE PROPOSED WORK WOULD BE IMPACTED BY ANY OTHER SITE FEATURES.
12. THE CONTRACTOR SHALL ENSURE THE FACILITY'S OPERATIONS ARE NOT ADVERSELY AFFECTED BY CONSTRUCTION. CONTRACTOR TO WORK WITH LANDLORD/WAREHOUSE MANAGER TO DETERMINE ADEQUATE PHASING IN ORDER TO MAINTAIN A CLEAR AND SAFE ENTRANCE, TRAVEL PATH, AND EXIT FOR VEHICLES AND PEDESTRIAN ON-SITE.

GENERAL EROSION AND SEDIMENT CONTROL NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING, CLEANING AND REPAIRING ALL SOIL EROSION CONTROL MEASURES THROUGHOUT THE WORKING PERIOD OF EACH PHASE.
2. A COPY OF THE SOIL EROSION CONTROL PLANS MUST BE AVAILABLE AT THE SITE.
3. MAINTAIN ALL EROSION CONTROL FACILITIES THROUGH THE WORKING PERIOD OF EACH AREA. CONTRACTOR SHALL REMOVE ACCUMULATED SEDIMENT TO MAINTAIN EFFECTIVENESS OF EROSION CONTROL FACILITIES WHEN CAPACITY IS REDUCED BY A MAXIMUM OF 25%.
4. TEMPORARY OR PERMANENT SEEDING SHALL BE COMPLETED ON ALL OPEN GROUND WHICH IS TO BE LEFT UNDISTURBED FOR LONGER THAN TWENTY (20) DAYS.
5. ALL EROSION CONTROL FACILITIES SHALL BE PROMPTLY INSPECTED AND REPAIRED BY CONTRACTOR AFTER EACH HEAVY RAINFALL OCCURRENCE.
6. THE CONTRACTOR SHALL SCHEDULE AND CONDUCT OPERATIONS TO MINIMIZE SOIL EROSION, SEDIMENTATION AND AIR-WATER POLLUTION. WHEN LAND IS EXPOSED DURING CONSTRUCTION, THE PERIOD OF EXPOSURE MUST BE MINIMIZED. THE CONTRACTOR SHALL STOCKPILE WOOD CHIPS, MULCHING AND/OR TEMPORARY SEEDING TO APPLY TO EXPOSED AREAS, AS NECESSARY TO CONTROL EROSION. EXCAVATION MATERIALS SHALL BE STOCKPILED ON UPPER SLOPE OF TRENCHES OF ROADWAYS SUCH THAT RUNOFF WILL BE IMPEDED FROM CROSSING THE BARE EARTH.
7. STATE AND LOCAL LAWS CONCERNING POLLUTION ABATEMENT SHALL BE FOLLOWED. SHOULD UNFORESEEN EROSION CONDITIONS DEVELOP DURING CONSTRUCTION, THE CONTRACTOR SHALL TAKE ACTION TO REMEDY SUCH CONDITIONS AND TO PREVENT DAMAGE TO ADJACENT PROPERTIES AS A RESULT OF INCREASED RUNOFF AND/OR SEDIMENT DISPLACEMENT. SPECIAL ATTENTION SHOULD BE GIVEN TO FROZEN SLOPES. STOCKPILES OF WOOD CHIPS, HAY BALES, CRUSHED STONE AND OTHER MULCHES SHALL BE HELD IN READINESS TO DEAL IMMEDIATELY WITH EMERGENCY PROBLEMS OF EROSION. THE CONTRACTOR IS ADVISED TO BECOME THOROUGHLY FAMILIAR WITH PROVISION OF APPENDIX 64, EROSION CONTROL RULES AND REGULATIONS, TITLE 25, PART 1, DEPARTMENT OF ENVIRONMENTAL RESOURCES, SUB-PART C, PROTECTION OF NATURAL RESOURCES, ARTICLE II, WATER RESOURCES, CHAPTER 102, EROSION CONTROL.
8. PRIOR TO THE SUSPENSION OF CONSTRUCTION OPERATIONS FOR APPRECIABLE LENGTHS OF TIME, THE CONTRACTOR SHALL SHAPE EARTHWORK IN A MANNER THAT WILL PERMIT STORM RUNOFF WITH A MINIMUM OF EROSION. EXPOSED SURFACES AND CUT SLOPES SHALL BE PROPERLY SEEDED AND STABILIZED.
9. LOCATIONS OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE-GROUND OBSERVATIONS AT THE SITE. COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE GUARANTEED. ALL CONTRACTORS AND OTHER PERSONS UTILIZING THIS PLAN AND THE INFORMATION CONTAINED THEREON ARE CAUTIONED TO COMPLY WITH THE REQUIREMENTS OF PENNSYLVANIA ACT 38, ENTITLED "EXCAVATION AND DEMOLITION WORK PROTECTION OF UNDERGROUND UTILITIES". EACH INDIVIDUAL USING THIS PLAN MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE STARTING WORK.
10. THIS PLAN IS SCHEMATIC AND IS NOT TO BE USED FOR CONSTRUCTION LAYOUT. REFER TO RECORD PLAN OF SUBDIVISION/LAND DEVELOPMENT REQUIRED.
11. PER PART I.B.1.b OF THE GENERAL PERMIT, IN AREAS WHERE SOIL DISTURBANCE ACTIVITY HAS TEMPORARILY OR PERMANENTLY CEASED, THE APPLICATION OF SOIL STABILIZATION MEASURES MUST BE INITIATED BY THE END OF THE NEXT BUSINESS DAY AND COMPLETED WITHIN FOURTEEN (14) DAYS FROM THE DATE THE CURRENT SOIL DISTURBANCE ACTIVITY CEASED.
12. PER PART IV.B.I OF THE GENERAL PERMIT, THE TRAINED CONTRACTOR MUST INSPECT EROSION AND SEDIMENT CONTROL PRACTICES IN ACTIVE WORK AREAS DAILY.
13. NO QUEUING ALONG CLINTON AVENUE.
14. AFTER CONSTRUCTION IS COMPLETED, THE AREA OF ASPHALT MILLINGS AND BASE COURSE SHOULD BE COMPLETELY REMOVED AND THE AREA BE COMPACTED AND RESTORED TO ORIGINAL CONDITIONS.

TEMPORARY CONTROL MEASURES

1. FOLLOW THE PROCEDURE OUTLINED IN "STAGING OF EARTHMOVING ACTIVITIES".

2. GENERAL -

2.1. EXISTING TREES AND OTHER EXISTING VEGETATION WILL BE DISRUPTED AS LITTLE AS POSSIBLE.

2.2. TREES TO BE SAVED WILL BE ROPED OFF WITH SNOW FENCE OR EQUIVALENT TO PROTECT THEM FROM DAMAGE. INSTALL FENCING AT THE DRIP LINE OF THE TREE BRANCHES.

2.3. ONLY THE AREA WHICH IS NECESSARY FOR CONSTRUCTION OF THE DWELLINGS, DRIVEWAYS AND ASSOCIATED UTILITIES BEING BUILT WILL BE EXPOSED AT ONE TIME.

2.4. ALL TOPSOIL FROM THE OVERALL SITE PREPARATIONS WILL BE STOCKPILED AND REDISTRIBUTED UNIFORMLY AT THE TIME OF FINAL GRADING. ALL STOCKPILES SHALL HAVE PERIMETER SILT FENCE INSTALLED AND BE SEEDED AND MULCHED IMMEDIATELY. STOCKPILE HEIGHT SHALL NOT EXCEED 35 FEET. SEE PLAN FOR LOCATION OF TOPSOIL STOCKPILES.

2.5. TEMPORARY SEEDING AND MULCHING SHALL BE APPLIED TO ALL AREAS WHICH WILL REMAIN OPEN OR INACTIVE FOR 20 DAYS OR MORE OR AREAS AT FINISHED GRADE THAT WILL BE DISTURBED WITHIN ONE YEAR. PERMANENT SEEDING TO BE USED IN ANY AREA THAT WILL NOT BE DISTURBED WITHIN ONE YEAR. (SEE SEEDING AND MULCHING RATES FOR DETAILS.)

2.6. SEEDING AREAS THAT WASH OUT SHALL BE REGRADED, RESEEDED AND A NETTING USED TO HOLD THE SEED AND MULCH IN PLACE. THIS IS IMPORTANT AROUND STEEP SLOPES, WATER COURSES, SWALES AND AREAS OF CONCENTRATED FLOWS.

2.7. AREAS THAT FAIL TO GERMINATE MUST BE RESEEDED.

2.8. RIP-RAP WILL BE APPLIED TO ALL AREAS WHERE HEAVY CONCENTRATIONS OF DRAINAGE ARE PREVALENT. THIS WOULD BE IN CERTAIN SWALES, AT CULVERT OUTLETS, WHERE WATER IS IN TRANSITION FROM AN OPEN CHANNEL INTO A CULVERT OR AS SPECIFIED.

2.9. ALL EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE INSPECTED DAILY AND AFTER EACH STORM EVENT. NECESSARY REPAIRS, REPLACEMENT, REGRADING, RESEEDING, REMULCHING, RENETTING AND CLEANINGS SHALL BE PERFORMED IMMEDIATELY.

2.10. ROCK FILTER OUTLETS MUST BE PROVIDED IMMEDIATELY WHERE SILT FENCING HAS BEEN UNDERMINED OR OVERTOPPED.

2.11. EROSION CONTROL FACILITIES MUST DISCHARGE INTO ADEQUATE STORM SEWERS, NATURAL WATERWAYS OR STABLE EROSION RESISTANT AREAS.

2.12. IF AT ANY TIME PRIOR TO SITE STABILIZATION, ANY EROSION AND SEDIMENT PROBLEMS OCCUR WHICH REQUIRE (ADDITIONAL) CONTROLS, IMMEDIATE ACTION MUST BE TAKEN TO CORRECT THE PROBLEMS.

2.13. NO SEDIMENT OR SEDIMENT LADEN WATER MUST BE ALLOWED TO LEAVE THE SITE/PROPERTY WITHOUT FIRST BEING FILTERED.

2.14. ANY SEDIMENT OR MUD THAT IS TRACKED ONTO THE PUBLIC ROADWAY MUST BE CLEANED OFF IMMEDIATELY BY BROOMING TO THE SATISFACTION OF THE CONSERVATION DISTRICT AT THE EXPENSE OF THE DEVELOPER AND/OR RESPONSIBLE CONTRACTOR.

UTILITY TRENCH EXCAVATION NOTES:

1. GENERAL - EXPOSED TRENCH EXCAVATIONS HAVE HIGH POTENTIAL FOR ACCELERATED EROSION AND SEDIMENT POLLUTION. SINCE THESE EXCAVATIONS ARE USUALLY LOCATED AT LOWER ELEVATIONS ALONG OR ACROSS EARTH DISTURBANCE SITES, OPEN TRENCHES SERVE TO CONCENTRATE SEDIMENT LADEN RUNOFF AND CONVEY IT TO SITE BOUNDARIES OR WATERWAYS. THE MOST IMPORTANT EROSION AND SEDIMENT POLLUTION CONTROL CONSIDERATION FOR TRENCH CONSTRUCTION IS THE LIMITING AND SPECIFIC SCHEDULING OF WORK ACTIVITIES.

2. CONSTRUCTION REQUIREMENTS

2.1. LIMIT ADVANCE CLEARING AND GRUBBING OPERATIONS TO A DISTANCE EQUAL TO TWO TIMES THE LENGTH OF PIPE INSTALLATION THAT CAN BE COMPLETED IN ONE DAY.

2.2. LIMIT DAILY TRENCH EXCAVATION TO THE LENGTH OF PIPE PLACEMENT, PLUG INSTALLATION AND BACKFILLING THAT CAN BE COMPLETED THE SAME DAY.

2.3. TRENCH PLUGS WILL BE SPACED AND CONSTRUCTED OF THE MATERIALS SHOWN IN ACCORDANCE WITH THE TRENCH PLUG DETAIL AND TABLE.

2.3.1. AT ALL CROSSINGS OF WATERS OF THE COMMONWEALTH, TRENCH PLUGS WILL BE INSTALLED AT THE BANKS AFTER TRENCH EXCAVATION. THE PLUGS MAY BE TEMPORARILY REMOVED WHEN PLACING THE PIPE, BUT THEN REPLACED.

2.3.2. CONSTRUCTION OF THE CROSSING WILL BE IN ACCORDANCE WITH THE REQUIREMENTS OF STREAM CROSSING CONSTRUCTION PROCEDURES.

2.4. WATER WHICH ACCUMULATES IN THE OPEN TRENCH WILL BE COMPLETELY REMOVED BY PUMPING BEFORE PIPE PLACEMENT AND/OR BACKFILLING BEGINS. ALL WATER MUST BE PUMPED THROUGH A STILLING BASIN.

2.5. ON THE DAY FOLLOWING PIPE PLACEMENT AND TRENCH BACKFILLING, THE DISTURBED AREA WILL BE GRADED TO ORIGINAL CONTOURS AND APPROPRIATE TEMPORARY EROSION AND SEDIMENT POLLUTION CONTROL MEASURES/FACILITIES WILL BE INSTALLED. SEEDING AND MULCHING OF ALL DISTURBED AREAS WILL BE DONE AT THE END OF EACH WEEK.

2.6. THE WETLANDS AREA SHALL BE DELINEATED AND PROTECTED BY SILT FENCE. EQUIPMENT AND MATERIALS MAY NOT BE STORED WITHIN THE WETLAND AREA.

2.7. ALL EXCAVATED TRENCH MATERIAL SHOULD BE LOCATED ON THE UPHILL SIDE OF THE TRENCH WHENEVER APPLICABLE.

3. EXCEPTIONS - IN CERTAIN CASES TRENCHES CANNOT BE BACKFILLED UNTIL THE PIPE IS HYDROSTATICALLY TESTED, OR ANCHORS AND OTHER PERMANENT FEATURES ARE INSTALLED. IN THESE CASES, ALL OF THE REQUIREMENTS LISTED UNDER ITEM 2 WILL REMAIN IN EFFECT WITH THE FOLLOWING EXCEPTIONS.

3.1. DAILY BACKFILLING OF THE TRENCH MAY BE DELAYED FOR SIX DAYS. ALL PRESSURE TESTING AND THE COMPLETE BACKFILLING OF THE OPEN TRENCH MUST BE COMPLETED BY THE SEVENTH WORKING DAY.

3.2. IF DAILY BACKFILLING IS DELAYED, THE DISTURBED AREA WILL BE GRADED TO FINAL CONTOURS, APPROPRIATE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES/FACILITIES WILL BE INSTALLED, AND THE AREAS SEEDED AND MULCHED WITHIN THE NEXT TWO CALENDAR DAYS.

VILLAGE OF DOBBS FERRY NOTES:

1. THE APPLICANT SHALL NOTIFY THE VILLAGE BUILDING INSPECTOR AT LEAST 48 HOURS BEFORE ANY OF THE FOLLOWING AS REQUIRED BY THE STORMWATER MANAGEMENT OFFICER:

1.1. START OF CONSTRUCTION

1.2. INSTALLATION OF SEDIMENT AND EROSION CONTROL MEASURES

1.3. COMPLETION OF SITE CLEARING

1.4. COMPLETION OF ROUGH GRADING

1.5. INSTALLATION OF STORMWATER MANAGEMENT FACILITIES

1.6. COMPLETION OF FINAL GRADING

1.7. CLOSE OF THE CONSTRUCTION SEASON

1.8. COMPLETION OF FINAL LANDSCAPING

1.9. SUCCESSFUL ESTABLISHMENT OF LANDSCAPING

2. THE BUILDING INSPECTOR OR VILLAGE ENGINEER MAY REQUIRE ADDITIONAL EROSION CONTROL MEASURES IF DEEMED APPROPRIATE TO MITIGATE UNFORESEEN SILTATION AND EROSION OF DISTURBED SOILS.
3. AS-BUILT DRAWINGS OF THE SITE IMPROVEMENTS SHALL BE SUBMITTED TO THE VILLAGE ENGINEER FOR REVIEW PRIOR TO OBTAINING CERTIFICATION OF OCCUPANCY.
4. STORMWATER SYSTEM ACCESS PORTS SHALL BE SHOWN ON THE AS-BUILT.
5. FILL IMPORTED TO THE SITE SHALL BE CERTIFIED IN WRITING BY A NEW YORK LICENSED PROFESSIONAL ENGINEER AS CLEAN, NON-CONTAMINATED FILL SUITABLE FOR THE INTENDED USE.
6. SHOULD ROCK BLASTING BE REQUIRED, A PERMIT APPLICATION IN ACCORDANCE WITH CHAPTER 125 - BLASTING OF THE DOBBS FERRY VILLAGE CODE MUST BE SUBMITTED TO THE VILLAGE BY THE APPLICANT FOR REVIEW/ APPROVAL.
7. BEFORE THE SITE PLANS ARE SIGNED BY THE CHAIRMAN OF THE PLANNING BOARD, THE APPLICANT SHALL BE REQUIRED TO POST A PERFORMANCE BOND OR OTHER TYPE OF ACCEPTABLE MONETARY GUARANTY WHICH SHALL BE IN AN AMOUNT DETERMINED BY THE PLANNING BOARD AND THE VILLAGE ENGINEER IN A FORM SATISFACTORY TO THE VILLAGE ATTORNEY.
8. STORMWATER MAY NOT BE CONNECTED UNTIL CONSTRUCTION IS COMPLETE AND CONTRIBUTING AREA IS STABILIZED.
9. AREA OF STORMWATER MANAGEMENT TO BE DE-COMPACTED PRIOR TO INSTALLATION.
10. THE OWNER OR OPERATOR SHALL HAVE A QUALIFIED INSPECTOR INSPECT AND DOCUMENT THE EFFECTIVENESS OF ALL EROSION AND SEDIMENTATION CONTROL PRACTICES AND PREPARE INSPECTION REPORTS AT LEAST ONCE A MONTH. THESE REPORTS MUST BE KEPT ON SITE AND AVAILABLE FOR REVIEW.

SEQUENCE OF CONSTRUCTION:

1. INSTALL TREE PROTECTION, PERIMETER SILT FENCE, TEMPORARY CHAIN LINK CONSTRUCTION FENCE, INLET PROTECTION AND TURBIDITY BARRIER. INSTALL THE STABILIZED CONSTRUCTION ENTRANCE AND OTHER SOIL EROSION AND SEDIMENT CONTROL MEASURES. PROPERLY PROTECT EXISTING ACCESS ROADWAY ALONG CLARKE DRIVE INTO THE PROPERTY.
2. PERFORM ALL SITE DEMOLITION WORK SHOWN ON CIVIL DEMOLITION PLANS, SHEETS C-100.
3. MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES IN PROPER FUNCTIONING ORDER UNTIL CONSTRUCTION IS COMPLETE AND SITE IS FULLY STABILIZED.
4. INSTALL UNDERGROUND STORM WATER INFRASTRUCTURE AND STORM WATER SEWER UTILITIES.
5. INSTALL ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES ON THE PROPOSED STORM WATER RELATED ITEMS (I.E. INLET PROTECTION FOR NEW INLETS).
6. PERFORM ON SITE GRADING.
7. START CONSTRUCTION OF THE SOUTH-EAST PARKING LOT AND OTHER SITE IMPROVEMENTS, INCLUDING PLACEMENT OF CURBING, PAVEMENT, LANDSCAPING BUFFERS AND STRIPING APPLICATION.
8. INSTALL FINAL VEGETATION INCLUDING SEEDING AND LANDSCAPING.
9. REMOVE SOIL EROSION MEASURES WHEN SITE IS RETURNED TO STABLE CONDITION.

POST CONSTRUCTION MAINTENANCE NOTES:

1. CONCRETE INLET AND OUTLET STRUCTURES

A. ALL INLET AND OUTLET STRUCTURES SHALL BE INSPECTED ANNUALLY, AT THE MINIMUM.
B. REPAIR ANY MINOR CRACKS. IF MINOR DISPLACEMENT IS OBSERVED, RE-INSPECT IN 6 MONTHS. REPLACE STRUCTURE IF MAJOR CRACKS OR SIGNIFICANT DISPLACEMENT IS OBSERVED.
C. REPAIR ANY AND ALL MINOR SPALLING (LESS THAN ONE INCH).
D. REPLACE ANY AND ALL MAJOR SPALLING (REBARS EXPOSED).
E. REPLACE ANY AND ALL JOINT FAILURES.
F. RESEAL STRUCTURE FOR WATER TIGHTNESS IF MINOR LEAKS ARE OBSERVED. REPLACE STRUCTURE IF SIGNIFICANT LEAKS ARE OBSERVED.
G. REMOVE AND PROPERLY DISPOSE OF ANY ACCUMULATED SEDIMENT WHEN AT 50% OF SUMP HEIGHT.
H. REMOVE AND PROPERLY DISPOSE OF ANY DEBRIS AND TRASH.

2. HEADER SYSTEM

A. ALL HEADER SYSTEMS SHALL BE INSPECTED ANNUALLY, AT THE MINIMUM.
B. USE A HIGH PRESSURE NOZZLE WITH REAR FACING JETS TO WASH THE SEDIMENT AND DEBRIS INTO THE UPSTREAM STRUCTURE. REMOVE SEDIMENT AND DEBRIS FROM THE SUMP OF THE UPSTREAM STRUCTURE.
C. REMOVE AND PROPERLY DISPOSE OF SEDIMENT WHEN ACCUMULATED OVER 4 INCHES. USE A HIGH PRESSURE NOZZLE WITH REAR FACING JETS TO WASH THE SEDIMENT INTO THE UPSTREAM STRUCTURE. REMOVE SEDIMENT FROM THE SUMP OF THE UPSTREAM STRUCTURE.

3. ISOLATOR/CONTAINMENT ROW

A. ALL ISOLATOR AND CONTAINMENT ROWS SHALL BE INSPECTED ANNUALLY, AT THE MINIMUM.
B. REMOVE AND PROPERLY DISPOSE OF ANY DEBRIS AND TRASH. USE A HIGH PRESSURE NOZZLE WITH REAR FACING JETS TO WASH THE DEBRIS INTO THE UPSTREAM STRUCTURE. REMOVE DEBRIS FROM THE SUMP OF THE UPSTREAM STRUCTURE.
C. REMOVE AND PROPERLY DISPOSE OF SEDIMENT WHEN ACCUMULATED OVER 4 INCHES. USE A HIGH PRESSURE NOZZLE WITH REAR FACING JETS TO WASH THE SEDIMENT INTO THE UPSTREAM STRUCTURE. REMOVE SEDIMENT FROM THE SUMP OF THE UPSTREAM STRUCTURE.

4. UNDERGROUND CHAMBERS

A. ALL UNDERGROUND CHAMBERS SHALL BE INSPECTED ANNUALLY, AT THE MINIMUM.
B. INSPECT THE INTERIOR OF THE CHAMBERS USING A CCTV OR COMPARABLE INSPECTION METHOD THROUGH THE INSPECTION PORT. IF DEFICIENCIES ARE NOTED IMMEDIATELY CONTACT A NYS LICENSED PROFESSIONAL ENGINEER.
C. REMOVE AND PROPERLY DISPOSE OF ANY DEBRIS AND TRASH. USE A HIGH PRESSURE NOZZLE WITH REAR FACING JETS TO WASH THE DEBRIS INTO THE UPSTREAM STRUCTURE. REMOVE DEBRIS FROM THE SUMP OF THE UPSTREAM STRUCTURE.
D. REMOVE AND PROPERLY DISPOSE OF SEDIMENT WHEN ACCUMULATED OVER 4 INCHES. USE A HIGH PRESSURE NOZZLE WITH REAR FACING JETS TO WASH THE SEDIMENT INTO THE UPSTREAM STRUCTURE. REMOVE SEDIMENT FROM THE SUMP OF THE UPSTREAM STRUCTURE.
E. IF STANDING WATER IS PRESENT DURING INSPECTION, RECHECK AFTER 48 HOURS. IF STANDING WATER IS STILL PRESENT, CONTACT A NYS LICENSED PROFESSIONAL ENGINEER.

5. SURROUNDING SITE

A. SURROUNDING SITE AREA SHALL BE INSPECTED MONTHLY, AT A MINIMUM.
B. ENSURE VEGETATION AND EROSION COVER IS ADEQUATE. RESEED BARE AREAS. REMOVE ANY UNAUTHORIZED PLANTS OR ANY NUISANCE WEEDS AND VEGETATION, INCLUDING THEIR ROOTS. DO NOT USE ANY HERBICIDES. TOPSOIL, RAKE AND SEED THE DISTURBED AREA BY THEIR REMOVAL.
C. IMMEDIATELY REPAIR AREA TO BE FREE FROM DEPRESSIONS. RE-GRADE AND COMPACT THE SOIL AS NECESSARY. TOPSOIL, RAKE AND SEED THE AREA. RE-INSPECT IN 6 MONTHS.
D. REMOVE ANY UNAUTHORIZED PLANTS OVER THE SYSTEM, INCLUDING ROOTS. DO NOT USE HERBICIDES. TOPSOIL, RAKE AND SEED THE AREA DISTURBED BY THEIR REMOVAL.
E. REMOVE ANY UNAUTHORIZED STRUCTURES OVER THE SYSTEM. IMMEDIATELY INSPECT THE INTERIOR OF THE CHAMBERS USING A CCTV OR COMPARABLE INSPECTION METHOD THROUGH THE INSPECTION PORT. IF DEFICIENCIES ARE NOTED IMMEDIATELY CONTACT A NYS LICENSED PROFESSIONAL ENGINEER.

6. THE SITE MUST BE RETURNED TO THE APPROVED CONDITIONS WHEN ANY REPAIRS ARE MADE.
7. ALL SEED MIXTURES SHALL MEET THE SEED MIXTURE REQUIREMENTS SPECIFIED ON THE APPROVED PLANS.

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GEOTHERMAL ENGINEER

REV	DATE	DESCRIPTION
1	02/17/2021	VILLAGE OF DOBBS FERRY SITE APPLICATION
2	05/11/2021	SITE APPLICATION RESUBMISSION
3	07/23/2021	SITE APPLICATION RESUBMISSION
4	08/31/2021	SITE APPLICATION RESUBMISSION
5	09/20/2021	SITE APPLICATION SUBMISSION - 2021

09/20/2021

KEY PLAN NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

NOTES

SCALE:

DRAWING #
C-101
1 of 10

DOB JOB: -

-PRELIMINARY-
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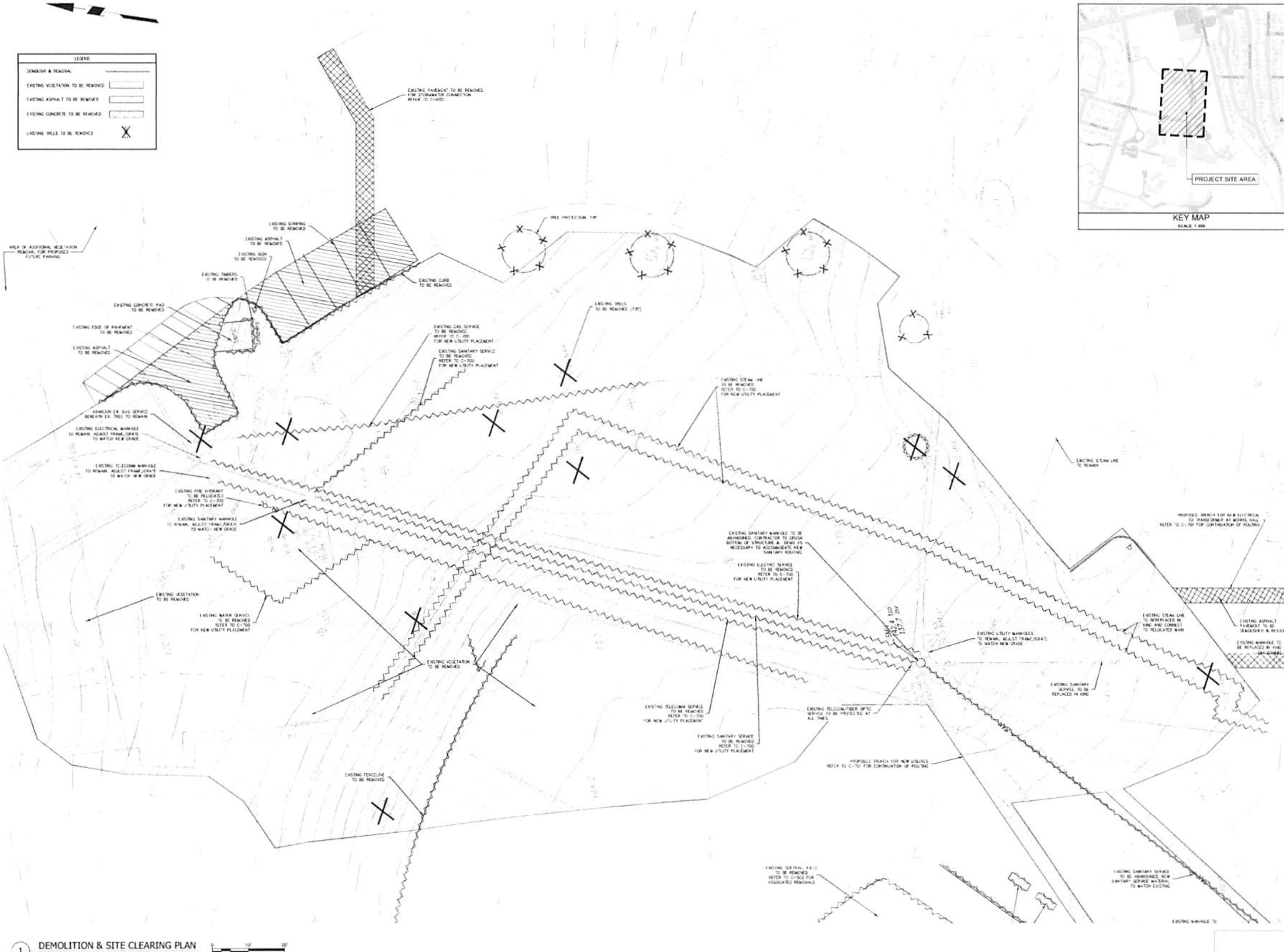
DOB STAMP ZONE



1 DEMOLITION & SITE CLEARING PLAN

EXCAVATION & FILL
CUT: 3,600 CY
FILL: 650 CY
NET: 2,950 CY CUT

-PRELIMINARY-
NOT FOR CONSTRUCTION

KEY MAP

MARVEL
145 HUDSON STREET, FLR 3 NEW YORK, NY 10013
212 616 0420

OWNER
THE MASTERS SCHOOL
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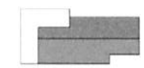
GEOTHERMAL ENGINEER

REV	DATE	DESCRIPTION
1	02/17/2021	VILLAGE OF DOBBS FERRY SITE APPLICATION
2	06/17/2021	SITE APPLICATION RESUBMISSION
3	07/22/2021	SITE APPLICATION RESUBMISSION
4	08/31/2021	SITE APPLICATION RESUBMISSION
5	09/20/2021	SITE APPLICATION SUBMISSION - BOT

09/20/2021



KEY PLAN NTS

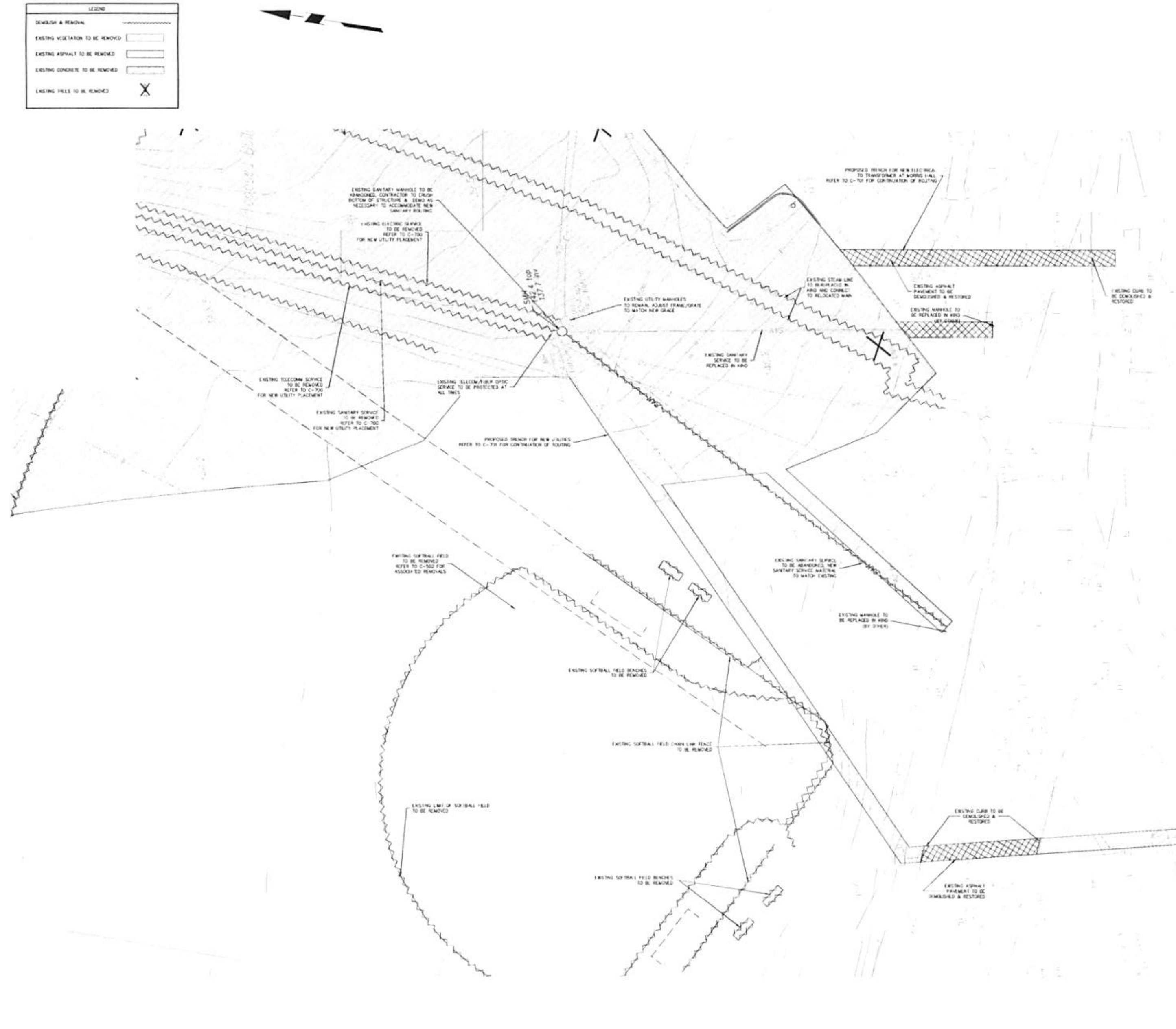
2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

DEMOLITION & SITE CLEARING PLAN

SCALE: AS NOTED

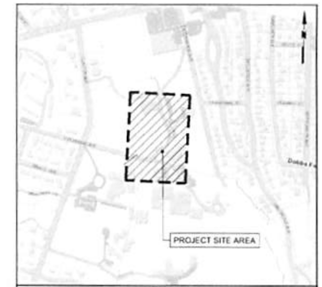
DRAWING #:
C-300
2 of 10
DOB JOB: -

DOB STAMP ZONE



1 DEMOLITION & SITE CLEARING PLAN
Scale: 1"=10'

-PRELIMINARY-
NOT FOR CONSTRUCTION



KEY MAP
SCALE: 1:400

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GEOTHERMAL ENGINEER

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KEY PLAN:NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
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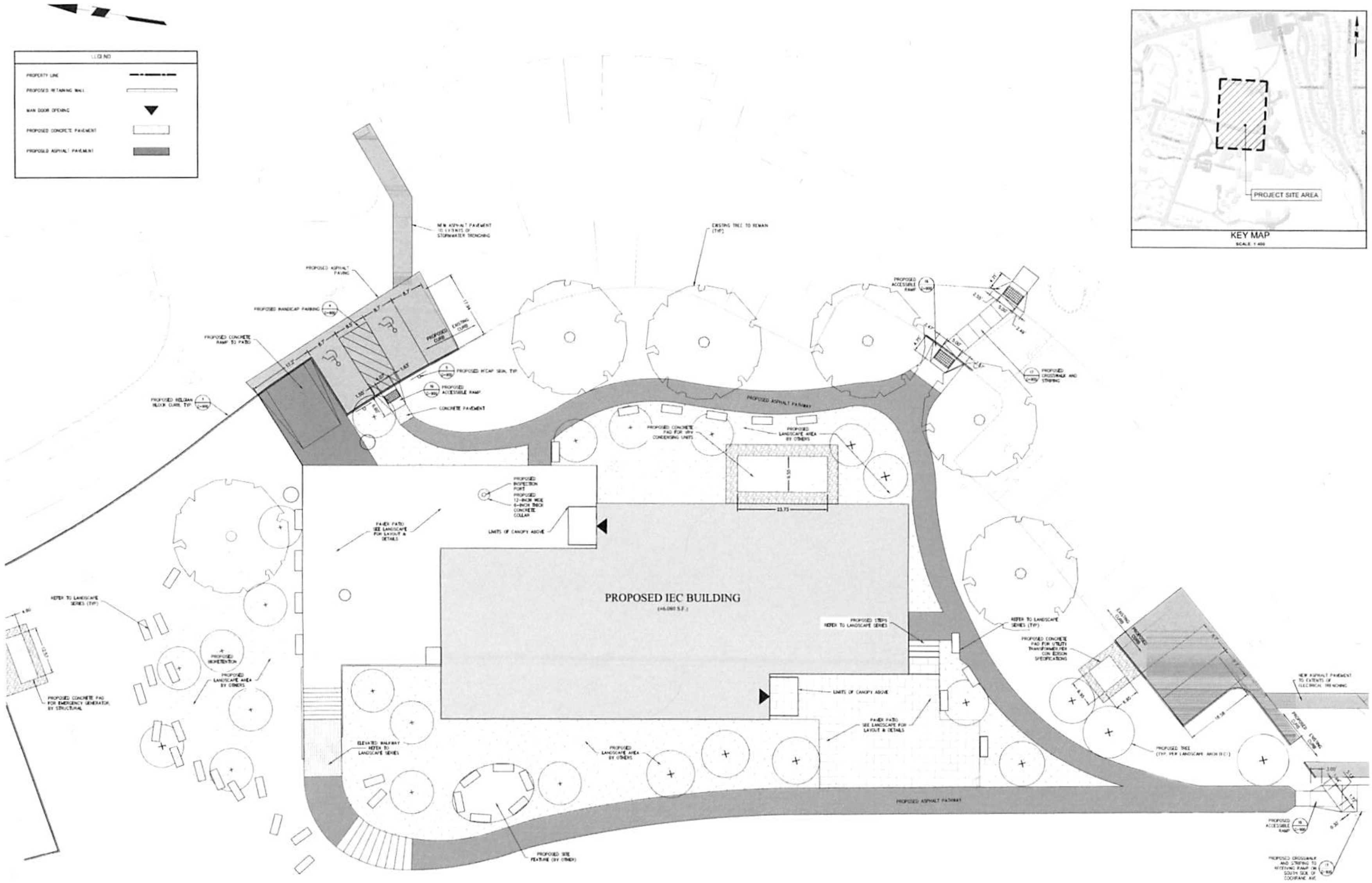
DEMOLITION & SITE CLEARING PLAN

SCALE: AS NOTED

DRAWING #:
C-301
3 of 10
DOB JOB: -

DOB STAMP ZONE



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1 SITE PLAN
Scale: 1"=10'

DOB STAMP ZONE

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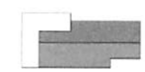
5	09/20/2021	SITE APPLICATION SUBMISSION - BOT

09/20/2021



KEY PLAN NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

OVERALL SITE PLAN

SCALE: AS NOTED

DRAWING #:
C-500
4 of 10
DOB JOB: .

LEGEND	
PROPERTY LINE	
CHAIN LINK FENCE	— X — X —
UTILITY RELOCATION FENCE	
PROPOSED ASPHALT MILLINGS	
CONSTRUCTION ENTRANCE	

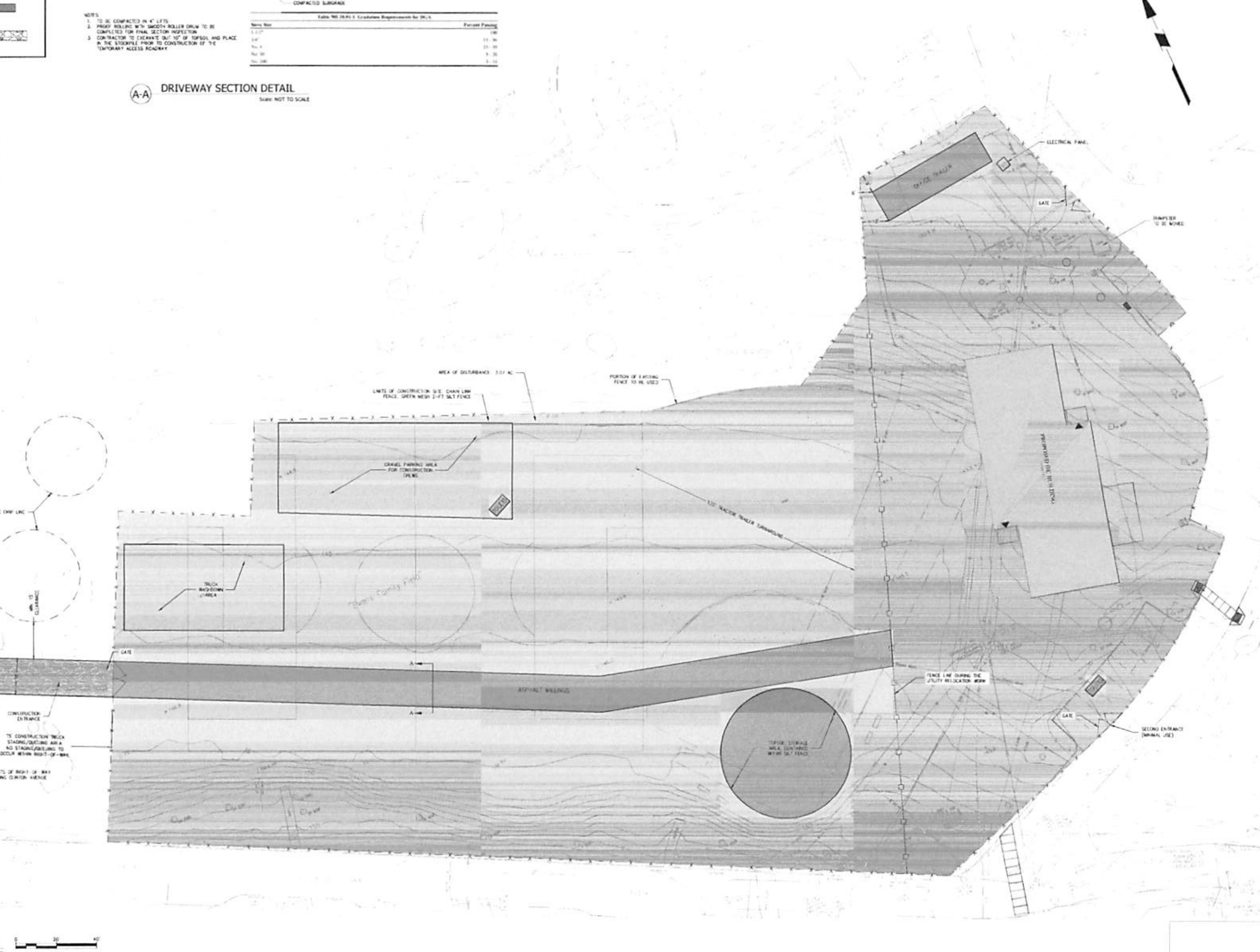
NOTES:
1. TO BE COMPACTED IN 4" LIFTS
2. PROOF ROLLING WITH SMOOTH ROLLER DRUM TO BE COMPLETED FOR FINAL SECTION INSPECTION
3. CONTRACTOR TO EXCAVATE OUT 10" OF TOPSOIL AND PLACE IN THE STOCKPILE PRIOR TO CONSTRUCTION OF THE TEMPORARY ACCESS ROADWAY.

Table 901.20.01-1 Gradation Requirements for DGA

Sieve Size	Percent Passing
1-1/2"	100
3/4"	[illegible]
No. 4	[illegible]
No. 50	[illegible]
No. 200	[illegible]

(A-A) DRIVEWAY SECTION DETAIL
Scale: NOT TO SCALE

NOTES:
1. THE EXISTING SIDEWALK AND CURB WILL LIKELY BE DISTURBED A SAVE AND ACCESSIBLE PEDESTRIAN ROUTING ACROSS THE TEMPORARY ENTRANCE SHOULD BE PROVIDED.
2. THE SIDEWALK, CURB, AND RIGHT-OF-WAY SHALL BE RESTORED TO THE SATISFACTION OF THE VILLAGE HIGHWAY DEPARTMENT



(1) CONSTRUCTION ACCESS PLAN
Scale: 1" = 20'

0 20 40

MARVEL
145 HUDSON STREET, FLR 3 NEW YORK, NY 10013
212 616 0420

OWNER
THE MASTERS SCHOOL
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522
TEL 914 479 6400

PROJECT ARCHITECTS + LANDSCAPE ARCHITECTS
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NEW YORK, NEW YORK 10013
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SOUTH PLAINFIELD, NEW JERSEY 07080
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MM-SKINS
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ARCHITECTURAL SPECIFICATIONS
CONSTRUCTION SPECIFICATIONS, INC
22 TENNENT ROAD
MORGANVILLE, NEW JERSEY 07751
TEL 732 970 3100

GEOTHERMAL ENGINEER

REV	DATE	DESCRIPTION
1	02/11/2021	VILLAGE OF DOBBS FERRY SITE APPLICATION
2	06/17/2021	SITE APPLICATION RESUBMISSION
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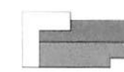
4	08/31/2021	SITE APPLICATION RESUBMISSION
5	09/20/2021	SITE APPLICATION SUBMISSION - BOT

09/20/2021



KEY PLAN:NTS

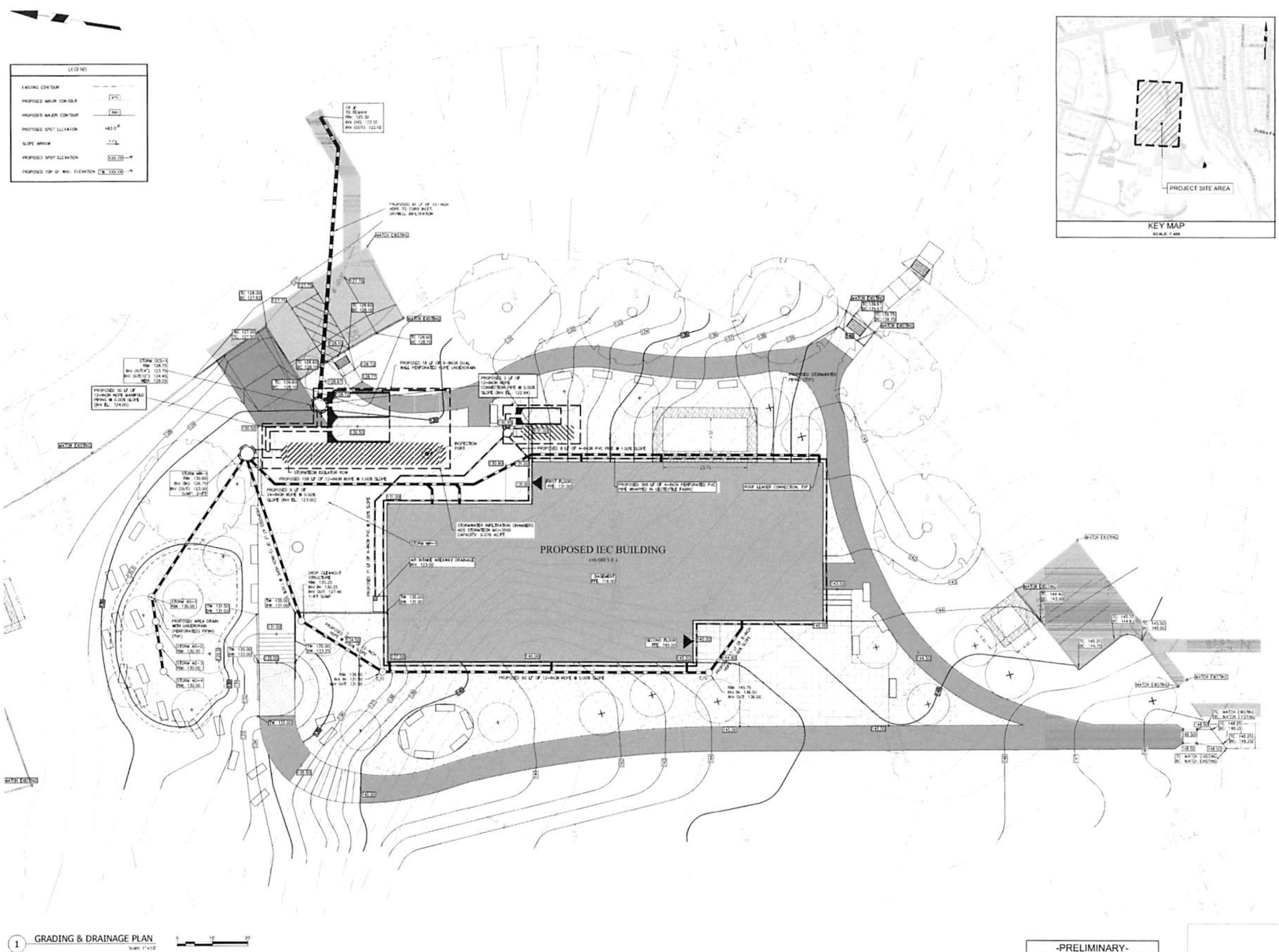
2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

CONSTRUCTION ACCESS PLAN

SCALE: AS NOTED

DOB STAMP ZONE

DRAWING #
C-502
5 of 10
DOB JOB: -



1 GRADING & DRAINAGE PLAN
Scale: 1"=10'

MARVEL
145 HUDSON STREET, FLR 3 NEW YORK, NY 10013
212 616 0420

OWNER
THE MASTERS SCHOOL
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522
TEL 914 479 6400

PROJECT ARCHITECTS + LANDSCAPE ARCHITECTS
MARVEL
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NEW YORK NEW YORK 10013
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2780 HAMILTON BOULEVARD
SOUTH PLAINFIELD, NEW JERSEY 07080
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SILMAN
32 OLD SLIP, FLOOR 10
NEW YORK NEW YORK 10005
TEL 212 620 7970

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POLISE CONSULTING ENGINEERS, DPC
133 WEST 19TH STREET
NEW YORK NEW YORK 10011
TEL 212 645 1002

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NEW YORK NEW YORK 10001
TEL 212 868 9090

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LSTN CONSULTANTS
75 BLEAKER STREET
NEW YORK NEW YORK 10005
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ENVELOPE CONSULTANT
MW-SKINS
1 WHITEHALL STREET, FLOOR 14
NEW YORK NEW YORK 10004
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DOT DASH LIGHTING DESIGN
170 WALKER STREET, SUITE 4NF
NEW YORK NEW YORK 10013
TEL 212 951 0660

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440 PARK AVENUE S
NEW YORK NEW YORK 10016
TEL 212 447 4033

ARCHITECTURAL SPECIFICATIONS
CONSTRUCTION SPECIFICATIONS, INC
22 TENNENT ROAD
MORGANVILLE, NEW JERSEY 07751
TEL 732 970 0730

GEOTHERMAL ENGINEER

REV	DATE	DESCRIPTION
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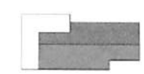
5	09/20/2021	SITE APPLICATION SUBMISSION - BOT

09/20/2021



KEY PLAN NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

PROPOSED GRADING & DRAINAGE PLAN

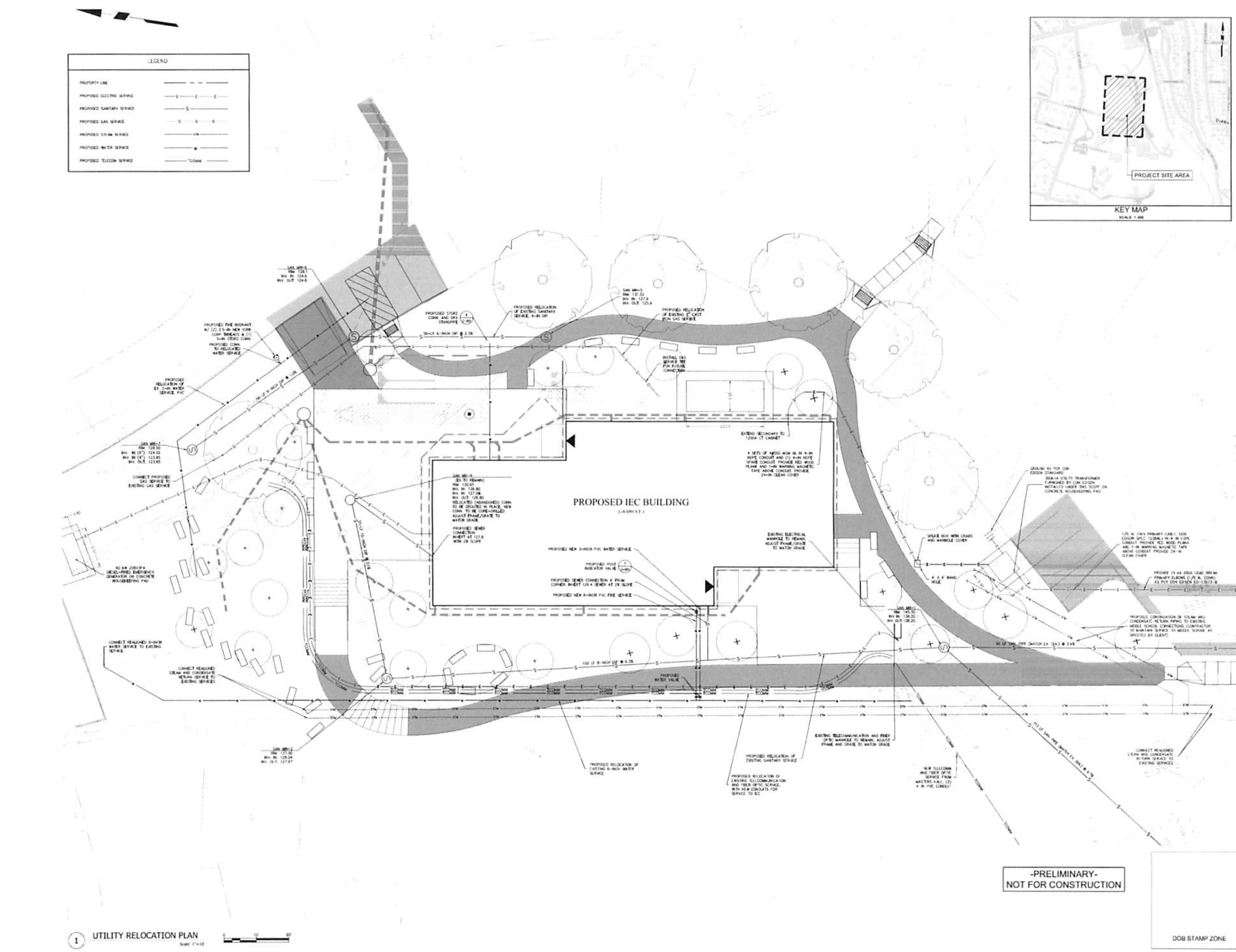
SCALE: AS NOTED

-PRELIMINARY-
NOT FOR CONSTRUCTION

DOB STAMP ZONE

DRAWING #
C-600
6 of 10

DOB JOB: -



1 UTILITY RELOCATION PLAN

MARVEL
145 HUDSON STREET, FLR 3 NEW YORK, NY 10013
212 616 0420

OWNER
THE MASTERS SCHOOL
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522
TEL 914 479 6400

PROJECT ARCHITECTS + LANDSCAPE ARCHITECTS
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NEW YORK, NEW YORK 10013
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SOUTH PLAINFIELD, NEW JERSEY 07080
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TEL 212 620 7970

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NEW YORK, NEW YORK 10011
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MW-SKINS
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DOT DASH LIGHTING DESIGN
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NEW YORK, NEW YORK 10013
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443 PARK AVENUE S
NEW YORK, NEW YORK 10016
TEL 212 447 4333

ARCHITECTURAL SPECIFICATIONS
CONSTRUCTION SPECIFICATIONS, INC
22 TENNENT ROAD
MORGANVILLE, NEW JERSEY 07751
TEL 732 970 0700

GEOTHERMAL ENGINEER

REV	DATE	DESCRIPTION
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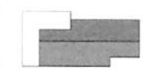
5	09/20/2021	SITE APPLICATION SUBMISSION - BOT

09/20/2021



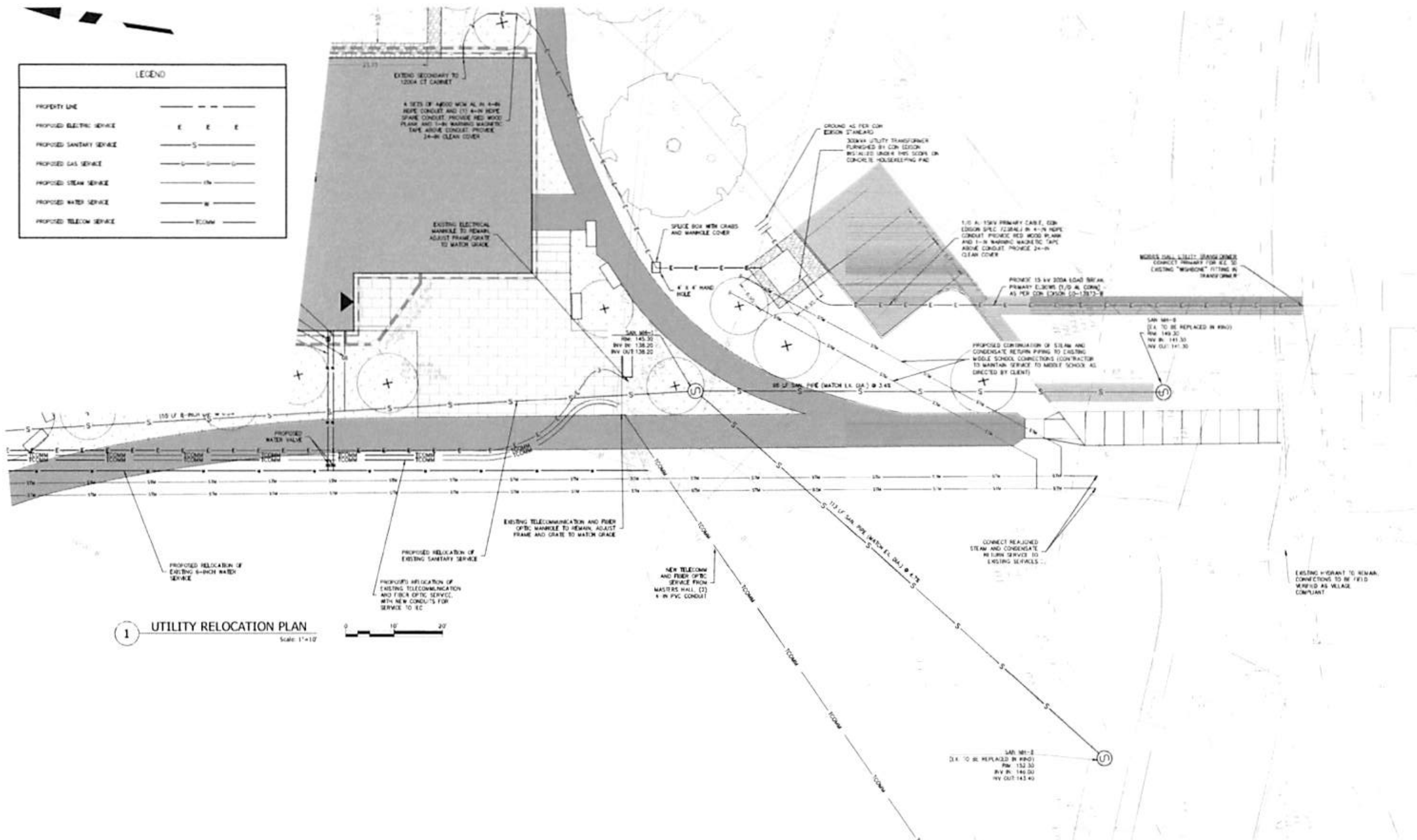
KEY PLAN NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

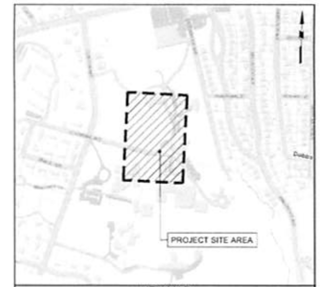
UTILITY PLAN

SCALE: AS NOTED

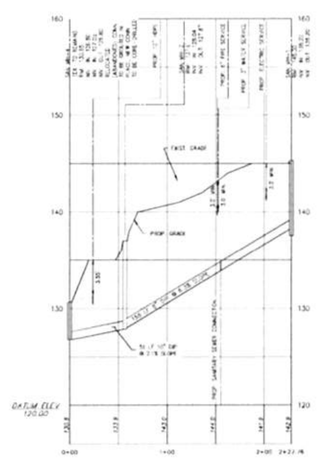
DRAWING #:
C-700
7 of 10
DOB JOB: -



1 UTILITY RELOCATION PLAN
Scale: 1"=10'



KEY MAP
SCALE: 1:400



2 SANITARY SEWER PROFILE
SCALE: VERTICAL: 1"=5', HORIZONTAL: 1"=50'

-PRELIMINARY-
NOT FOR CONSTRUCTION

DOB STAMP ZONE

MARVEL
145 HUDSON STREET, FLR 3 NEW YORK, NY 10013
212 616 0420

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NEW YORK, NEW YORK 10004
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170 WALKER STREET, SUITE #8F
NEW YORK, NEW YORK 10013
TEL 212 951 0060

CODE AND ACCESSIBILITY CONSULTANT
CODE CONSULTANTS, INC
440 PARK AVENUE S
NEW YORK, NEW YORK 10016
TEL 212 447 4033

ARCHITECTURAL SPECIFICATIONS
CONSTRUCTION SPECIFICATIONS, INC
22 TENNENT ROAD
MORGANVILLE, NEW JERSEY 07751
TEL 732 970 0700

GEOTHERMAL ENGINEER

REV	DATE	DESCRIPTION
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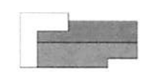
3	07/22/2021	SITE APPLICATION RESUBMISSION
4	08/31/2021	SITE APPLICATION RESUBMISSION
5	09/20/2021	SITE APPLICATION SUBMISSION - BOT

09/20/2021



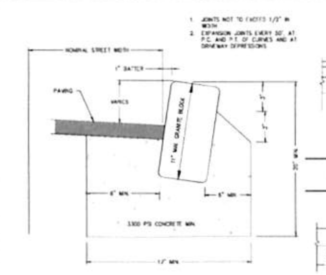
KEY PLAN NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

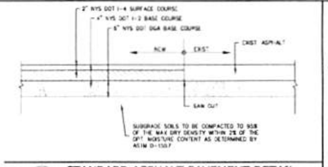
UTILITY
RELOCATION
PLAN

SCALE: AS NOTED

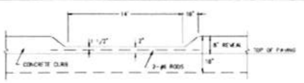
DRAWING #:
C-701
8 of 10
DOB JOB: -



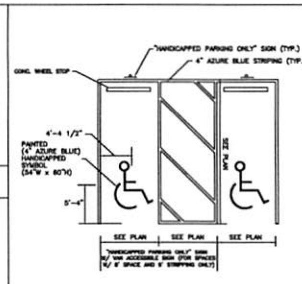
1 STANDARD BELGIAN BLOCK CURB DETAIL
Scale: N.T.S.



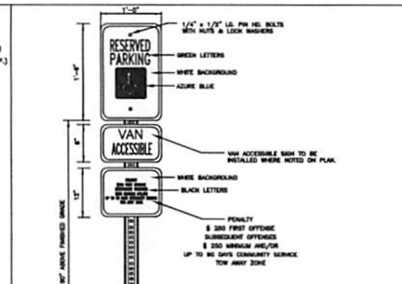
2 STANDARD ASPHALT PAVEMENT DETAIL
Scale: N.T.S.



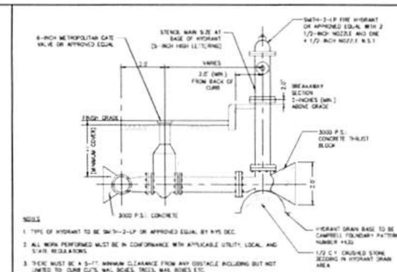
3 STANDARD CURB CUT DETAIL
Scale: N.T.S.



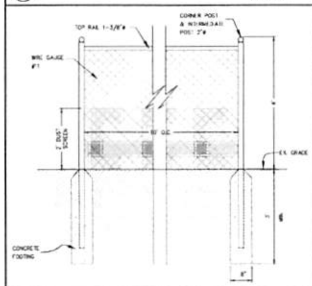
4 HANDICAP STALL MARKINGS DETAIL
Scale: N.T.S.



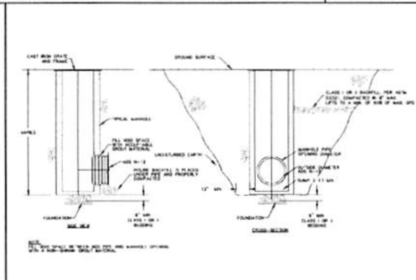
5 HANDICAP PARKING SIGN w/VAN ACCESSIBLE SIGN
Scale: N.T.S.



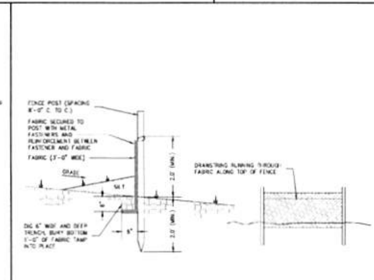
6 STANDARD FIRE HYDRANT DETAIL
Scale: N.T.S.



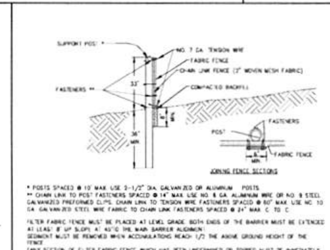
7 STANDARD CHAIN LINKED FENCE DETAIL
Scale: N.T.S.



8 STANDARD AREA DRAIN DETAIL
Scale: N.T.S.

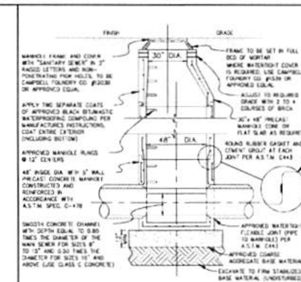


9 STANDARD SILT FENCE DETAIL
Scale: N.T.S.

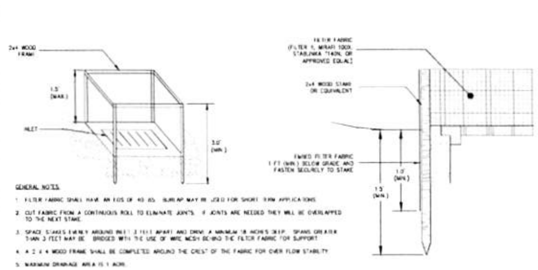


ANY SECTION OF FILTER FABRIC FENCE WHICH HAS BEEN UNDERMINED OR TOPPED MUST BE IMMEDIATELY REPLACED WITH ROCK FILTER OUTLET. SEE DETAIL.

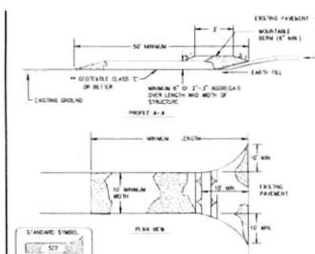
10 STANDARD SUPER SILT FENCE DETAIL
Scale: N.T.S.



11 PRECAST CONCRETE SANITARY SEWER MANHOLE DETAIL
Scale: N.T.S.



12 STANDARD FILTER FABRIC DROP INLET PROTECTION DETAIL
Scale: N.T.S.



STABILIZED CONSTRUCTION SPECIFICATION FOR STABILIZED ACCESS

1. STONE SIZE - USE ASTM C-33, SIZE NO. 2 (2 1/2 TO 1 1/2 IN). USE CLEAN CRUSHED ANGULAR STONE. CRUSHED CONCRETE OF SIMILAR SIZE MAY BE SUBSTITUTED BUT WILL REQUIRE MORE FREQUENT UPGRADING AND MAINTENANCE.
2. THICKNESS OF STABILIZED CONSTRUCTION ACCESS SHALL BE NO LESS THAN SIX (6) INCHES.
3. WIDTH OF STABILIZED CONSTRUCTION ACCESS SHALL BE NO LESS THAN THE FULL WIDTH OF POINTS OF INGRESS OR EGRESS.
4. LENGTH
   - 1. 50 FEET MINIMUM WHERE THE SOILS ARE COURSE GRAINED SANDS AND GRAVELS;
   - 2. 100 FEET MINIMUM WHERE SOILS ARE FINE GRAINED (CLAYS OR SILTS), EXCEPT WHERE THE TRAVELED LENGTH IS LESS THAN 50 TO 100 FEET RESPECTIVELY.
5. GEOTEXTILE FABRIC (FILTER FABRIC) SHALL BE PLACED OVER THE EXISTING GROUND PRIOR TO PLACING STONE.
6. A STABILIZED CONSTRUCTION ENTRANCE SHALL BE REQUIRED AT ALL POINTS WHERE CONSTRUCTION TRAFFIC ENTERS OR LEAVES THE CONSTRUCTION SITE. ALL CONSTRUCTION VEHICLES AND EQUIPMENT MUST TRAVEL OVER THE STABILIZED CONSTRUCTION ENTRANCE BEFORE LEAVING THE CONSTRUCTION SITE.
7. STORMWATER FROM UP SLOPE AREAS SHALL BE DIVERTED AWAY FROM THE STABILIZED PAD (SEE STANDARD FOR DIVERSIONS). WHERE DIVERSION IS NOT POSSIBLE, THE LENGTH OF THE STABILIZED PAD SHALL FOLLOW TABLE 28-1.
8. WHERE THE SLOPE OF THE ACCESS ROAD EXCEEDS 5%, A STABILIZED BASE COURSE OF FINE AGGREGATE BITUMINOUS CONCRETE (FABC) SHALL BE INSTALLED. THE TYPE AND THICKNESS OF THE FABC AND USE OF A DENSE GRADED AGGREGATE SUB-BASE SHALL BE AS PRESCRIBED BY LOCAL MUNICIPAL ORDINANCE OR OTHER GOVERNING AUTHORITY.

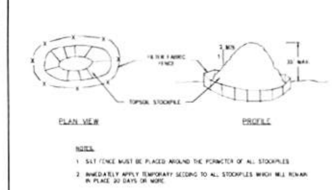
TABLE 28-1

PERCENT SLOPE OF ROADWAY	LENGTH OF STONE REQUIRED	
	COARSE GRAINED SOILS	FINE GRAINED SOILS
0 TO 2%	50 FT	100 FT
2 TO 5%	100 FT	200 FT
> 5%	ENTIRE SURFACE STABILIZED WITH FABC BASE COURSE	

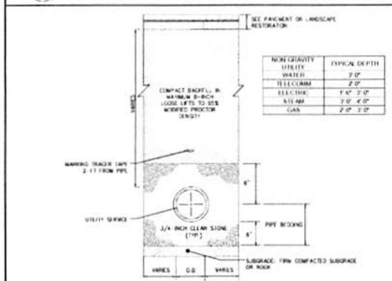
MAINTENANCE OF STABILIZED CONSTRUCTION ENTRANCE

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO ROADWAYS.
2. MAINTENANCE MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
3. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO ROADWAYS (PUBLIC OR PRIVATE) OR OTHER IMPERVIOUS SURFACES MUST BE REMOVED IMMEDIATELY.
4. WHERE ACCUMULATION OF DUST/SEDIMENT IS INADEQUATELY CLEANED OR REMOVED BY CONVENTIONAL METHODS, A POWER BROOM OR STREET SWEEPER WILL BE REQUIRED TO CLEAN PAVED OR IMPERVIOUS SURFACES.

13 STANDARD CONSTRUCTION ENTRANCE DETAIL
Scale: N.T.S.

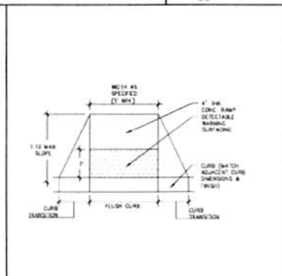


14 TOPSOIL STOCKPILE DETAIL
Scale: N.T.S.

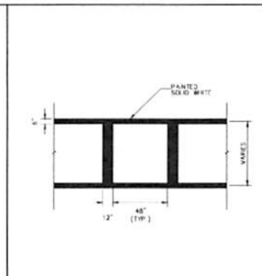


NON GRAVITY UTILITY	TYPICAL DEPTH
WATER	3'-0"
TELECOMM	2'-0"
ELECTRIC	1'-6" - 3'-0"
STEAM	3'-0" - 4'-0"
GAS	2'-0" - 3'-0"

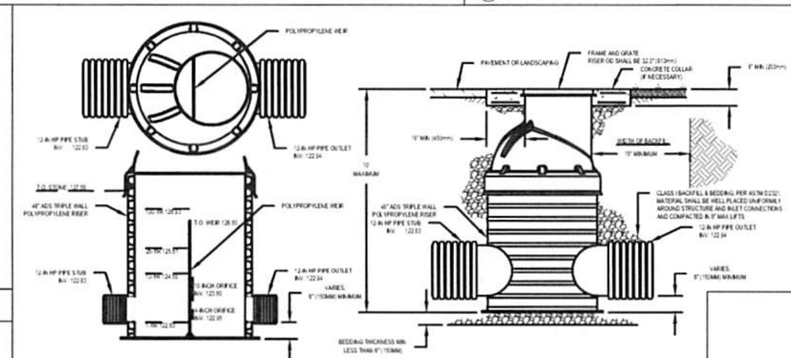
15 UTILITY TRENCHING DETAIL
Scale: N.T.S.



16 PEDESTRIAN CURB RAMP DETAIL
Scale: N.T.S.



17 CROSSWALK STRIPING DETAIL
Scale: N.T.S.



18 OUTLET CONTROL STRUCTURE DETAIL
Scale: N.T.S.

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MORGANVILLE, NEW JERSEY 07751
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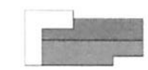
GEOTHERMAL ENGINEER

REV	DATE	DESCRIPTION
1	02/17/2021	VILLAGE OF DOBBS FERRY SITE APPLICATION
2	06/17/2021	SITE APPLICATION RESUBMISSION
3	07/22/2021	SITE APPLICATION RESUBMISSION
4	08/31/2021	SITE APPLICATION RESUBMISSION
5	09/20/2021	SITE APPLICATION SUBMISSION - BOT

09/20/2021



KEY PLAN NTS

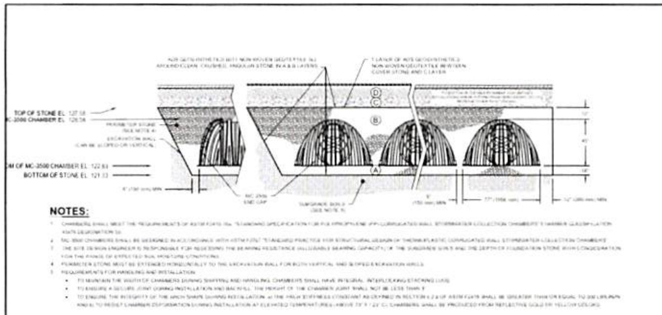
2029
THE MASTERS SCHOOL
INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

CONSTRUCTION DETAILS

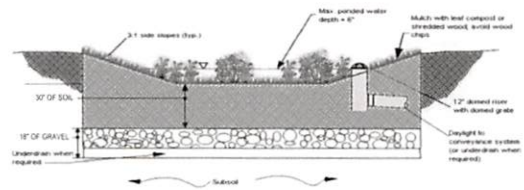
SCALE: AS NOTED

DRAWING #:
C-900
9 of 10
DOB JOB: -

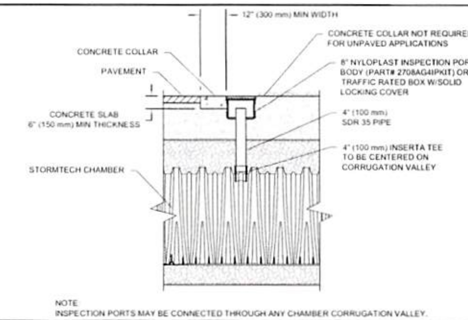
DOB STAMP ZONE



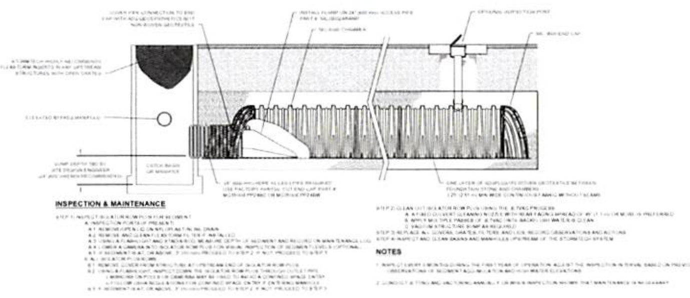
1 ADS STORMTECH MC3500 CHAMBER
Scale: N.T.S.



2 BIORETENTION
Scale: N.T.S.

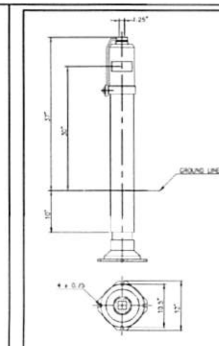


3 4" PVC INSPECTION PORT (MC SERIES CHAMBER)
Scale: N.T.S.

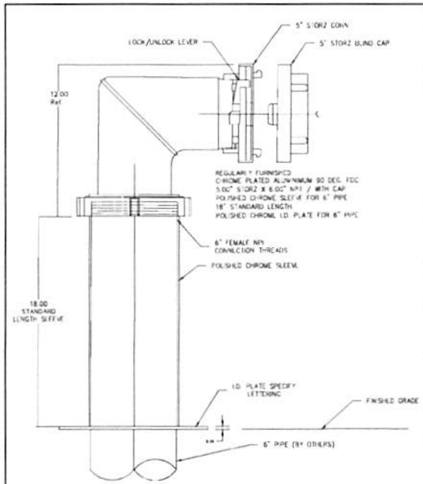


4 MC3500 ISOLATOR ROW PLUS
Scale: N.T.S.

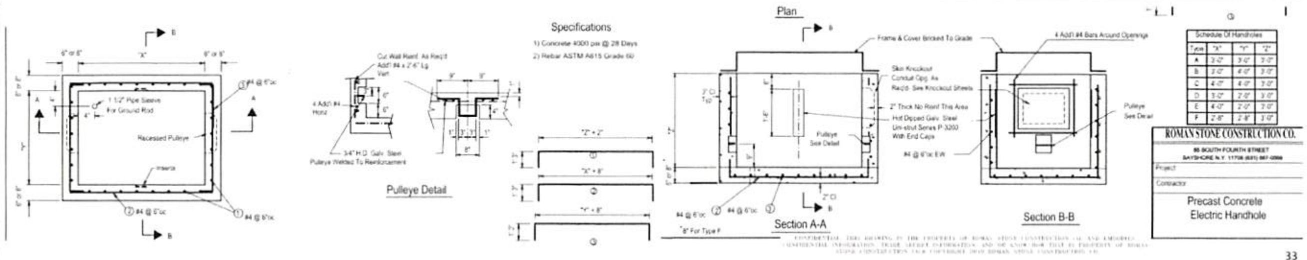
5 NOT USED
Scale: N.T.S.



6 POST INDICATOR VALVE
Scale: N.T.S.

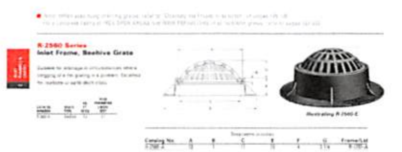


7 5" STORZ X 6" NPT 90 DEG. FDC
Scale: N.T.S.



33

8 PRECAST CONCRETE ELECTRIC HANDHOLE
Scale: N.T.S.



9 AREA DRAIN
Scale: N.T.S.

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GEOTHERMAL ENGINEER

REV	DATE	DESCRIPTION
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2	06/17/2021	SITE APPLICATION RESUBMISSION
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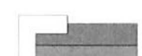
09/20/2021



KEY PLAN NTS

2029
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49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

CONSTRUCTION DETAILS

SCALE: AS NOTED

DRAWING #:
C-901
10 of 10
DOB JOB: -

DOB STAMP ZONE

GENERAL NOTES

GENERAL

1
A. DO NOT SCALE DRAWINGS. CONSULT THE LANDSCAPE ARCHITECT FOR ANSWERS TO ALL QUESTIONS REGARDING DIMENSIONS. THE CONTRACTOR IS ADVISED THAT THIS INFORMATION IS DIAGRAMMATIC AND NOT NECESSARILY COMPLETE.

B. THE CONTRACTOR IS ADVISED THAT ALL UTILITY INFORMATION INDICATED HEREIN AND/OR AVAILABLE FROM AGENCIES, PRIVATE UTILITIES AND/OR THE OWNER MAY NOT BE COMPLETE.

2
A. ALL SURVEY INFORMATION AND EXISTING CONDITIONS HAVE BEEN PROVIDED BY LAND AND CHADL SURVEYORS, D.P.C., 23 WEPPERHAN AVENUE, ELMSFORD, NY 10523, 914-347-3141.

B. ALL EXISTING CONDITIONS INFORMATION SHOWN IS FOR REFERENCE ONLY. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS. THE LANDSCAPE ARCHITECT ASSUMES NO RESPONSIBILITY FOR THE SURVEY INFORMATION SHOWN.

3. PRIOR TO COMMENCEMENT OF THE WORK, THE CONTRACTOR SHALL VERIFY STATUS OF EXISTING UTILITIES WITHIN THE PROJECT AREA AS REQUIRED BY LOCAL LAW. ALL COMMUNICATIONS AND COORDINATION MEETINGS RELATIVE TO THE PROJECT BETWEEN THE CONTRACTOR AND ANY AGENCY, UTILITY COMPANY OR ORGANIZATION WILL BE CONDUCTED AND/OR APPROVED BY THE CLIENT. THE LANDSCAPE ARCHITECT SHALL RECEIVE NOTIFICATION OF ANY MEETINGS AND COPIES OF ANY AND ALL MINUTES OR COMMUNICATIONS AS A RESULT OF THOSE COMMUNICATIONS OR COORDINATION MEETINGS.

4. THE CONTRACTOR SHALL MAKE TEST PITS AS REQUIRED TO VERIFY LOCATIONS AND ELEVATIONS OF UTILITIES AND OTHER SUBSURFACE ELEMENTS AS THE WORK PROGRESSES. SUCH WORK SHALL BE DEEMED TO BE INCLUDED IN THE LUMP SUM BID FOR THE PROJECT. ALL WORK SHALL COMPLY WITH APPLICABLE BUILDING CODE AND NEW YORK CITY LOCAL LAW 53.

5. THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CLIENT, PRIVATE UTILITY COMPANIES, AND THE CITY AGENCIES AS REQUIRED FOR THE EXPEDITIOUS EXECUTION OF WORK.

6. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES WITH ALL THE EXISTING FIELD CONDITIONS ADJACENT TO THE SITE INCLUDING BUT NOT LIMITED TO ALL STRUCTURES, UTILITIES, FENCES, PAVEMENTS, SHRUBS, TREES, LIGHT POSTS, ETC. THROUGHOUT THE DURATION OF THE WORK. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROTECT AND MAINTAIN ALL EXISTING CONDITIONS ADJACENT TO THE SITE, OR AS INDICATED ON CONTRACT DRAWINGS. IN THE EVENT THE CONTRACTOR'S OPERATIONS RESULT IN DAMAGE TO EXISTING CONDITIONS ADJACENT TO THE SITE, OR CONDITIONS INDICATED TO REMAIN ON CONTRACT DRAWINGS, THE CONTRACTOR SHALL REPAIR AND CORRECT ALL DAMAGES TO THE SATISFACTION OF THE CLIENT AT NO EXTRA COST.

7. CHANGES IN THE WORK. ALL REQUESTS FOR CHANGES AND/OR SUBSTITUTIONS IN THE WORK SHALL BE MADE IN WRITING TO THE LANDSCAPE ARCHITECT. A COPY OF ALL SUCH REQUESTS SHALL BE SENT TO THE CLIENT.

8. THE CONTRACTOR SHALL STUDY THE INTERRELATIONSHIP OF ALL THE VARIOUS ELEMENTS OF CONSTRUCTION SHOWN ON THE CONTRACT DRAWINGS AND DESCRIBED IN THE PROJECT SPECIFICATIONS AND BULLETINS, AND SHALL COORDINATE THEIR CONSTRUCTION OPERATIONS ACCORDINGLY. ANY CONFLICTS WHICH MAY BECOME APPARENT FROM THE COORDINATION STUDY SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT.

9. ALL NEW AND EXISTING INLETS, BASINS, AND CONNECTIONS WITHIN THE LIMITS OF THIS CONTRACT ARE TO BE CLEANED, FLUSHED, AND OTHERWISE MADE OPERABLE TO THE SATISFACTION OF THE CLIENT AND ARE TO BE INCLUDED IN THE LUMP SUM BID.

10. PRIOR TO COMMENCEMENT OF WORK, THE CONTRACTOR SHALL BRING CONDITIONS WHICH CONFLICT WITH PROPOSED GRADING AND SITE CONSTRUCTION TO THE ATTENTION OF THE LANDSCAPE ARCHITECT AND THE CLIENT.

11. ANY COST CAUSED BY DEFECTIVE OR ILL-TIMED WORK, IMPROPER SCHEDULING OR DELINQUENT ORDERING SHALL BE BORNE BY THE CONTRACTOR.

12. ALL CITY AGENCIES HAVING JURISDICTION, NAMELY, DEPARTMENT OF BUILDINGS AND APPROVALS OF OTHERS REQUIRED, AS WELL AS PRIVATE UTILITY COMPANIES MUST BE OBTAINED PRIOR TO ACCEPTANCE OF THE PROJECT BY THE CLIENT.

13. ALL MECHANICAL EQUIPMENT, CONCEALED WATER AND GAS VALVES, ETC. TO REMAIN UNLESS OTHERWISE SPECIFICALLY NOTED.

14. MINOR DETAILS NOT USUALLY SHOWN OR SPECIFIED, BUT NECESSARY FOR PROPER CONSTRUCTION OF ANY PART OF THE WORK SHALL BE INCLUDED AS IF THEY WERE INDICATED ON THE DRAWINGS.

15. AT ALL TIMES, THE SITE SHALL BE KEPT NEAT, AND KEPT FREE OF DEBRIS LEFT FROM ALL CONSTRUCTION OPERATIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PRESERVE AND PROTECT ALL WORK FINISHED OR IN PROGRESS, AND TO PROTECT THE PUBLIC FROM ANY INJURY THAT MAY OCCUR AS A RESULT OF THE SITE BEING ACCESSIBLE DURING PROJECT CONSTRUCTION.

16. UNLESS OTHERWISE NOTED, DETAILED DRAWINGS AND PART PLANS SHALL HAVE PRECEDENCE OVER LAYOUT DRAWINGS (I.E. SITE PLAN) FOR ACCURACY OF INFORMATION.

17. SUBMITTALS
A. ALL SUBMITTALS REQUIRING THE LANDSCAPE ARCHITECT'S APPROVAL SHALL BE TRANSMITTED (3 COPIES ARE REQUIRED) DIRECTLY TO THE LANDSCAPE ARCHITECT. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ALL FABRICATED ELEMENTS. SUBMITTAL REQUIREMENTS ARE GENERALLY INDICATED IN THE GENERAL SPECIFICATIONS.
B. SEE PROJECT SPECIFICATIONS FOR OTHER REQUIRED SUBMITTALS.

18. THE SHOP DRAWINGS SUBMITTED BY THE CONTRACTOR SHALL SHOW ALL FASTENING DEVICES AND LOCATIONS COMPLETE WITH FASTENINGS TO ALL FOUNDATION WALLS AND PAVEMENTS. THE SHOP DRAWINGS SHALL PROVIDE SUFFICIENT DETAIL TO ALLOW THE LANDSCAPE ARCHITECT TO REVIEW AND APPROVE THE SYSTEM AND PIECES.

19. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO GUARANTEE ANY AND ALL ANCHORING SYSTEMS FOR ALL WORK.

20. EXPANSION JOINTS SHALL BE PROVIDED AND INSTALLED AT ALL INTERFACES OF ADJACENT SURFACES, VERTICAL AND HORIZONTAL SURFACES, GRADE CHANGES, AND AS INDICATED ON DRAWINGS. THE TOP OF EXPANSION JOINTS SHALL BE SET ¼ INCH BELOW FINISHED GRADE AND THEN SEALED WITH A URETHANE BASED SEALER TO BE FLUSH WITH THE FINISHED GRADE AS CALLED FOR IN THE SPECIFICATIONS. THE CONTRACTOR SHALL INDICATE PROPOSED LOCATIONS ON ALL APPLICABLE SHOP DRAWINGS SUBMITTED FOR APPROVAL.

21. THE CONTRACTOR SHALL INSTALL GALVANIZED STEEL PIPE SLEEVES AS REQUIRED TO INSTALL UTILITY WORK THROUGH CONCRETE AND MASONRY FOOTINGS AND FOUNDATIONS. ALL PIPE SLEEVES SHALL BE SCHEDULE 40 PIPE AND BE TWICE THE DIAMETER OF THE UTILITY PIPE UNLESS OTHERWISE NOTED.

22. CONCRETE FOR CURBS, FOOTINGS, AND WALLS COMPLY WITH STRUCTURAL AND ARCHITECTURAL SPECIFICATIONS FOR CAST-IN-PLACE CONCRETE WORK.

23. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN SAFE ACCESS TO ALL BUILDING ENTRANCES AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

24. PAVER SYSTEMS SHALL MEET (ADJACENT) ALTERNATE MATERIAL PAVEMENTS FLUSH. THE CONTRACTOR SHALL VERIFY THE INTERIOR GRADES AND THEIR RELATIONSHIP WITH THE PROPOSED GRADES. THE CLIENT SHALL BE NOTIFIED IF THERE ARE ANY DISCREPANCIES IN THE ELEVATIONS. ADJUSTMENTS SHALL BE MADE AS NECESSARY AND SHALL BE APPROVED BY THE OWNER PRIOR TO CONSTRUCTION.

25. EXISTING DRAINS/VALVE COVERS, ETC. SHALL BE ADJUSTED AS NECESSARY IN AREAS WHERE PROPOSED WORK IS TO BE INSTALLED.

26. CONCRETE CURBS/FOOTINGS FOR ALL FENCING AND WALLS SHALL BRIDGE OVER ANY EXISTING DRAIN INLETS AND UTILITIES AND SHALL BE BROUGHT TO THE ATTENTION OF THE CLIENT AND THE LANDSCAPE ARCHITECT.

27. CONTRACTOR SHALL SUPPLY THE CLIENT WITH MANUFACTURER'S SHOP DRAWINGS AND INSTALLATION DRAWINGS PRIOR TO THE INSTALLATION OF ANY SPECIFIED ITEM.

28. CONTRACTOR IS REQUIRED TO OBTAIN ALL DEPARTMENT OF BUILDINGS AS WELL AS ANY REGULATORY AGENCY PERMITS FOR WORK UNDER THIS CONTRACT.

DEMOLITION AND REMOVALS

1. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION BETWEEN THE EXISTING CONDITIONS AND THE LANDSCAPE PLAN IN PREPARING BIDS AND EXECUTING WORK.

2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PRESERVE AND PROTECT ALL EXISTING FACILITIES NOT SPECIFICALLY STATED FOR REMOVAL WITHIN THE WORK AREA.

3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND VERIFY ELEVATIONS OF ALL UTILITY/MECHANICAL STRUCTURES AND UTILITY LINES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT THE UTILITY/MECHANICAL LINES AND CONDUITS/PIPES DURING REMOVALS AND CONSTRUCTION. DAMAGE TO UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE SUBJECT TO LANDSCAPE ARCHITECT AND THE CLIENT'S APPROVAL.

4. THE CONTRACTOR SHALL, AS PART OF THEIR CONTRACTUAL OBLIGATIONS, REMOVE AS DIRECTED, ALL BALLAST AGGREGATE AND OTHER ENCROACHMENTS THAT INTERFERE WITH LANDSCAPE WORK.

5. ALL REMOVED MATERIAL NOT STATED FOR REUSE SHALL BE REMOVED FROM THE SITE AND SHALL NOT BE MIXED WITH NEW FILL OR GRAVEL TO BE BROUGHT ON SITE.

6. REMOVE ALL EXISTING RUBBLE, DEBRIS, AND ENCROACHMENT FROM THE SITE AND DISPOSE OF LEGALLY. EVIDENCE OF LEGAL DISPOSAL SHALL BE GIVEN BY THE CONTRACTOR TO THE LANDSCAPE ARCHITECT AND THE CLIENT.

7. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY AS PART OF THIS CONTRACT TO DETERMINE THE MOST APPROPRIATE METHOD OF REMOVALS OF EXCAVATED AND/OR DEMOLITION MATERIALS FROM THE SITE WITHIN THE CONTRACT LIMIT. REMOVALS WHETHER BY MACHINE OR BY HAND SHALL BE INCLUDED IN THE CONTRACTOR'S PROPOSAL. STRIP EXISTING BALLAST AGGREGATE IN AREAS OF CONSTRUCTION AND STOCKPILE FOR FUTURE RE-USE, IF APPROVED, AS MAY BE REQUIRED.

WATER SUPPLY / MAINTENANCE WORK

1. THE CONTRACTOR SHALL LOCATE ALL EXISTING VALVE BOXES WITHIN THE CONTRACT LIMIT LINES AND SHALL INDICATE THEM IN THE FIELD TO THE SATISFACTION OF THE LANDSCAPE ARCHITECT. FURTHERMORE, THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE FACT THAT THEY WILL BE RESPONSIBLE FOR THE REPLACEMENT AND RESETTING OF ALL VALVE BOXES NOT STATED FOR REMOVAL WHICH ARE DAMAGED OR DISTURBED AS A RESULT OF THEIR OPERATIONS, SUBJECT TO APPROVAL OF THE LANDSCAPE ARCHITECT.

2. ALL EXISTING DRAIN AND WATER SUPPLY CONNECTIONS SHOULD BE CONTINUOUSLY MAINTAINED DURING CONSTRUCTION OF ANY WATER LINES. IF ANY HOUSE CONNECTION MUST BE DISCONNECTED FOR CONSTRUCTION PURPOSES, FLOW MUST BE MAINTAINED BY PLUMBING OR OTHER SUITABLE MEANS AS DIRECTED BY THE LANDSCAPE ARCHITECT, AND IN SUCH A MANNER THAT NO BACK-UPS OCCUR. ANY AND ALL EXISTING HOUSE CONNECTIONS OR OTHER SEWER APPURTENANCES WHICH ARE TO REMAIN AND WHICH MUST BE DISTURBED FOR CONSTRUCTION PURPOSES SHALL BE RESTORED TO THEIR PRESENT CONNECTIONS AFTER COMPLETION OF THE WORK SUBJECT TO APPROVAL OF LANDSCAPE ARCHITECT AND THE CLIENT. ANY DAMAGE DONE AS A RESULT OF THE WORK SHALL BE REPAIRED AT NO COST TO THE CLIENT. AN IRRIGATION SYSTEM INCLUSIVE OF ALL REQUIRED COMPONENTS AND INSTALLATION FOR A FULLY FUNCTIONAL AUTOMATIC IRRIGATION SYSTEM AT ALL PLANTED AREAS SHALL BE INCLUDED AS PART OF THE BASE BID.

DRAINAGE WORK

1. ALL PROPOSED DRAINAGE WORK SHALL BE DONE IN CONFORMANCE WITH THE LATEST STANDARDS OF THE DEPARTMENT OF BUILDINGS AND ANY OTHER APPLICABLE CODES.

2. ALL AREA DRAINS WITHIN THE CONTRACT LIMITS SHALL BE ADJUSTED AS NECESSARY, SO THAT THEY WILL BE OPERATIONAL, ACCESSIBLE, AND CONCEALED FROM PROJECTS OCCUPANTS AFTER THE COMPLETION OF THE WORK.

3. ANY DAMAGE TO EXISTING AREA DRAINS, AND CONNECTIONS CAUSED BY THE CONTRACTOR'S WORK SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO COST TO THE CLIENT, SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT AND THE CLIENT.

4. ALL EXISTING AREA DRAINS AND CONNECTIONS WITHIN THE LIMITS OF THIS CONTRACT AND CONTIGUOUS ARE TO BE CLEANED OUT, REPAIRED, AND OTHERWISE MADE OPERABLE TO THE SATISFACTION OF THE LANDSCAPE ARCHITECT.

STRUCTURAL

1. ALL CAST-IN-PLACE CONCRETE SHALL BE CONTROLLED CONCRETE HAVING A MINIMUM COMPREHENSIVE STRENGTH 4,000 PSI AT 28 DAYS UNLESS OTHERWISE NOTED.

2. ALL REINFORCING STEEL SHALL BE DEFORMED NEW BILLET STEEL CONFORMING WITH THE REQUIREMENTS OF ASTM A615, GRADE 60, CURRENT EDITION.

3. SPLICES AND REINFORCING STEEL SHALL BE STAGGERED WHERE POSSIBLE AND LOCATED SO TO LEAST IMPAIR THE STRENGTH OF THE MEMBER.

4. SPLICES, ANCHORAGES, HOOKS, AND REINFORCING DETAILS SHALL CONFORM WITH THE REQUIREMENTS OF ACI 318 UNLESS OTHERWISE NOTED.

5. MINIMUM CONCRETE COVER FOR REINFORCEMENT, UNLESS OTHERWISE NOTED, SHALL BE:

A. CONCRETE SURFACE EXPOSED TO SOIL
(1) UNFORMED SURFACE - 3"
(2) FORMED SURFACE - 2"

B. TOP AND VERTICAL CONCRETE SURFACE EXPOSED TO WEATHER
(1) SLABS - 1 ½"

6. ALL HARDWARE SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH ASTM STANDARDS UNLESS OTHERWISE SPECIFIED.

7. ALL WELDING SHALL BE PERFORMED USING E70 LOW HYDROGEN ELECTRODES IN ACCORDANCE WITH AMERICAN WELDING SOCIETY.

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TEL 732 970 0700

REV	DATE	DESCRIPTION
1	02/17/2021	VILLAGE OF DOBBS FERRY SITE APPLICATION
2	06/17/2021	SITE APPLICATION RESUBMISSION
3	07/22/2021	SITE APPLICATION RESUBMISSION
4	09/03/2021	SITE APPLICATION SUBMISSION - ROT

09/20/2021

KEY PLAN NTS

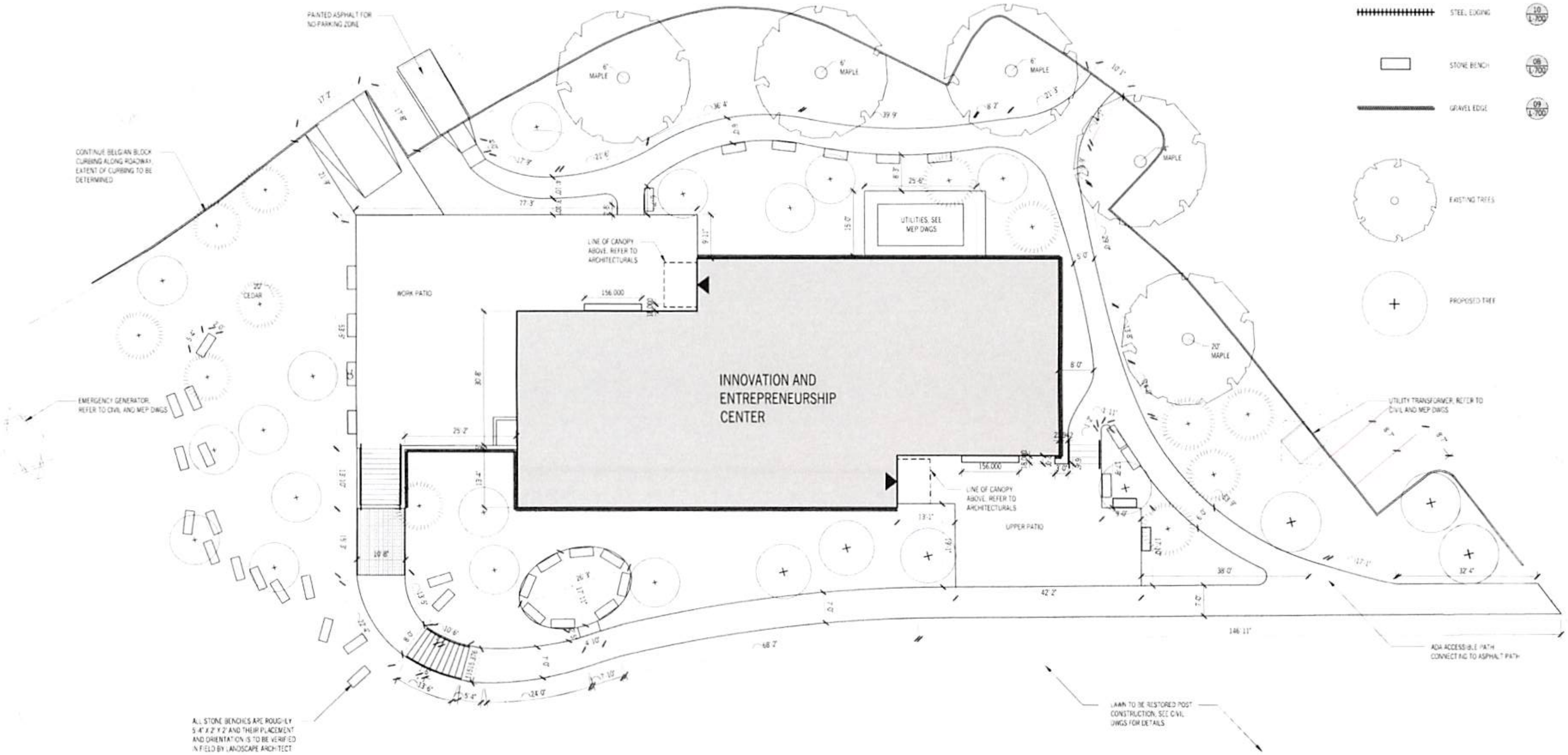
2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

GENERAL NOTES

SCALE: NTS

DRAWING #
L-001
01 of 10
DOB JOB: -

DOB STAMP ZONE



LEGEND

- CONCRETE UNIT PAVERS — 01 / L-700
- ASPHALT PATHWAY — 02 / L-700
- PLANTING AREA — 01 / L-400
- CIP CONCRETE — 03 / L-700
- STEEL EDGING — 10 / L-700
- STONE BENCH — 08 / L-700
- GRAVEL EDGE — 09 / L-700
- EXISTING TREES
- PROPOSED TREE

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09/20/2021

KEY PLAN NTS

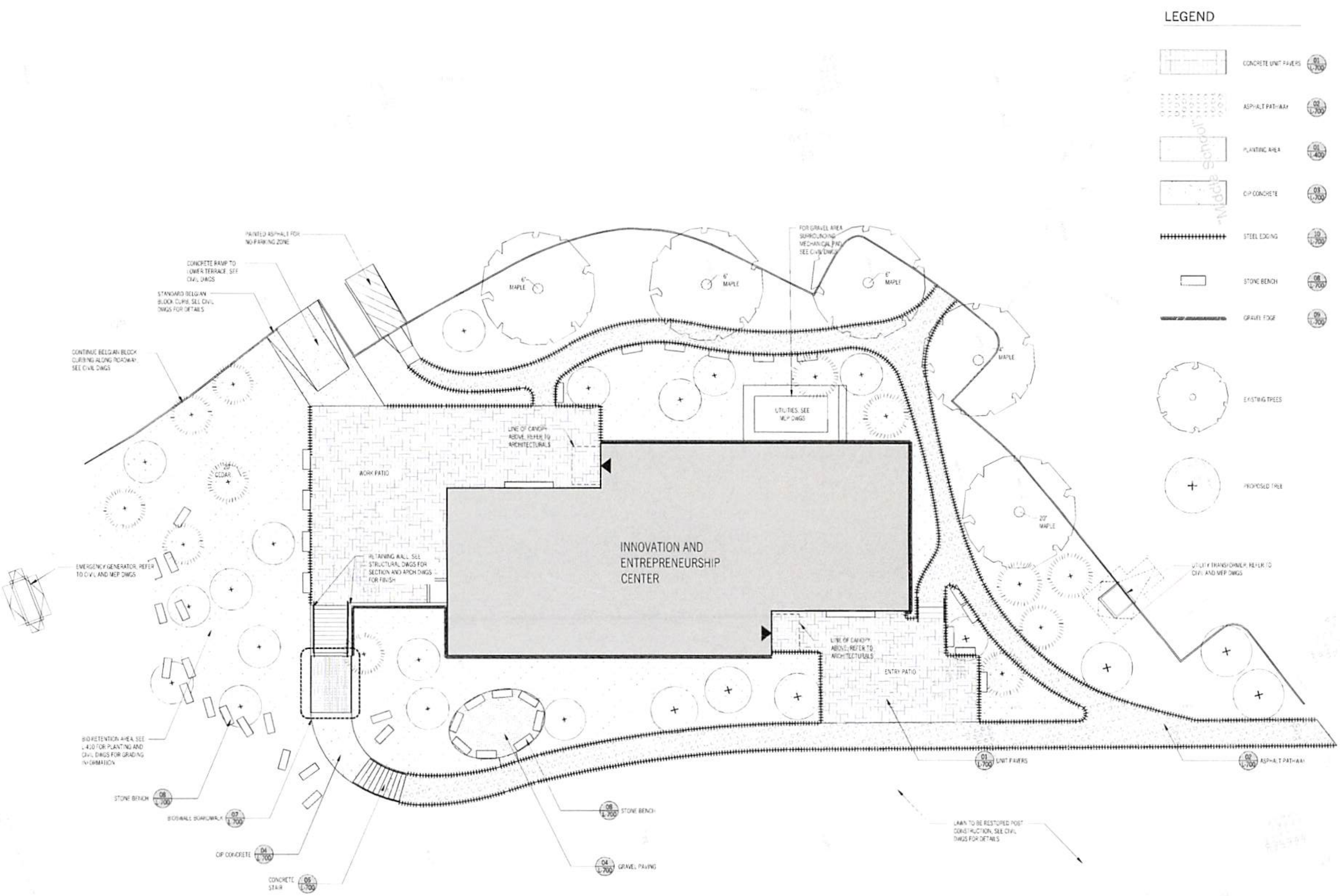
2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

LAYOUT PLAN

SCALE: 1" = 10'

DOB STAMP ZONE

DRAWING #:
L- 100
02 of 10
DOB JOB: -



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KEY PLAN NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

MATERIALS PLAN

SCALE: 1" = 10'

DROB STAMP ZONE

DRAWING #:
L- 200
03 of 10
DOB JOB: -

PLANTING PLAN

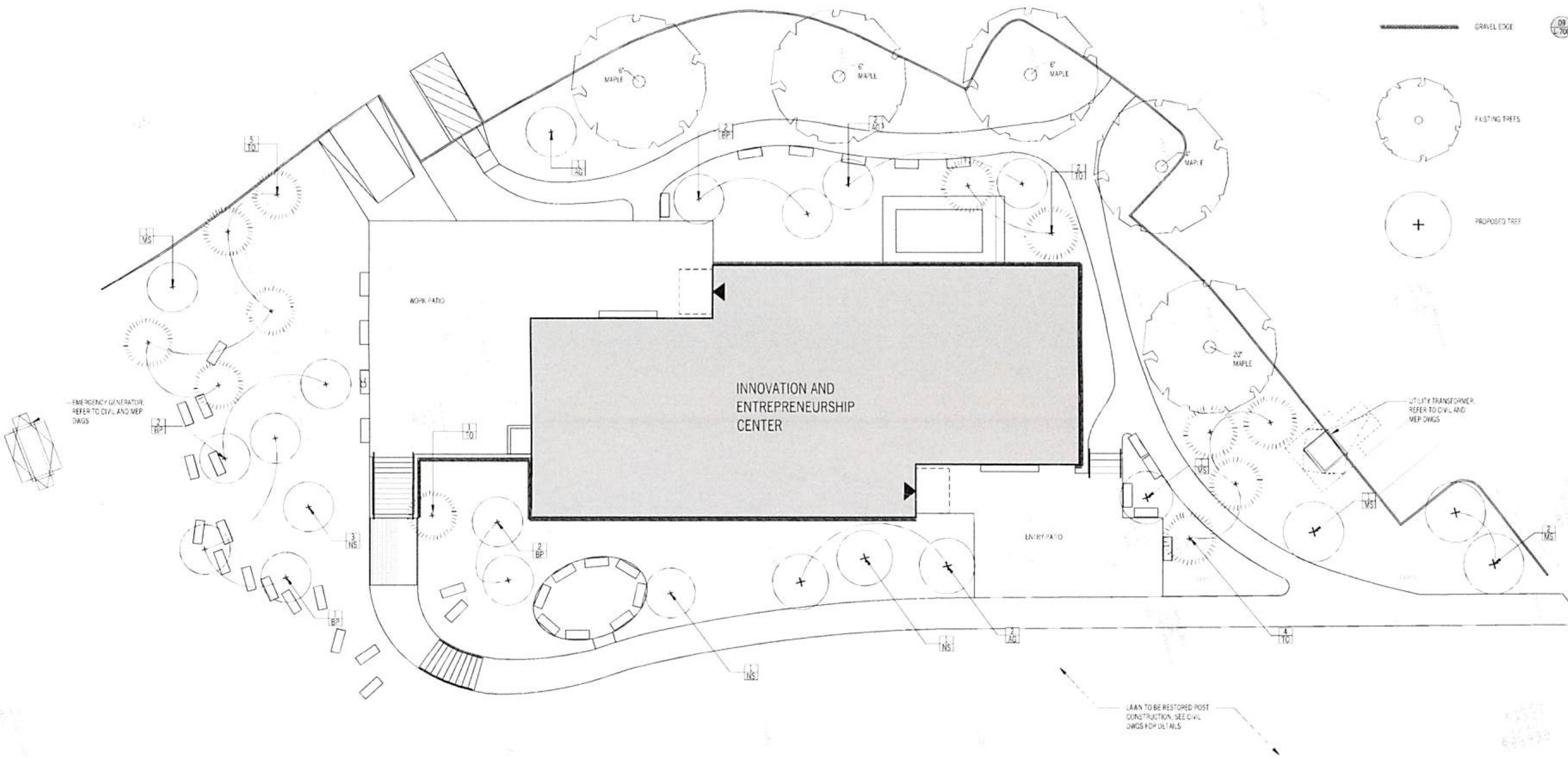
TREES					
SYM	QTY.	BOTANICAL NAME	COMMON NAME	NATIVE (Y/ N)	SIZE
AG	5	*Acer griseum*	Paperbark maple	(N)	3.5"-4" Caliper
BP	7	*Betula populifolia*	Grey Birch	(Y)	3.5"-4" Caliper
MS	6	*Magnolia x soulangeana*	Saucer Magnolia	(Y)	3.5"-4" Caliper
NS	5	*Nyssa sylvatica*	Black Tupelo	(Y)	3.5"-4" Caliper
TO	9	*Thuja occidentalis 'Hetz Wintergreen'*	Hetz Wintergreen Arborvitae	(Y)	25 Gal Cont.

IRRIGATION NOTES

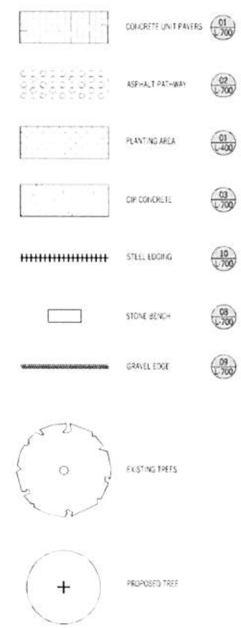
1. An irrigation system inclusive of all required components and installation for a fully functional automatic irrigation system at all planted areas shall be included as part of the base bid.
2. System shall be installed by a water sense certified professional and utilize smart irrigation controls and design.
3. Submit shop drawing for approval.

PLANTING NOTES

1. Prior to commencing planting operations the contractor shall stake out the exact location of all trees, shrubs and herbaceous plants for the landscape architect's approval. All planting operations and layout shall proceed under close coordination with the landscape architect. Tree locations may vary as directed by the landscape architect.
2. Plant material will be inspected and approved at place of growth by landscape architect. However, plant material which has become damaged or diseased or which is unacceptable to the landscape architect may be rejected upon delivery to the site.
3. The actual location of plant materials may vary due to the field conditions. Final placement of plant material shall be approved before the pits are dug. If initial placement is not satisfactory, plants shall be relocated in the field at the direction of the landscape architect at no additional cost to the owner.
4. The contractor is to use care during digging and planting to avoid disturbing or damaging any adjacent or underground utilities and built items. Repair to any damage resulting from this construction will be the contractors responsibility and shall be restored at their expense to the satisfaction of the landscape architect.
5. Should there be any discrepancies between the quantities called for on the plant list and those indicated on the plan, the greater quantity shall govern.
6. All trees shall be "deadmaned" with a minimum of three (3) CMU's per tree as shown on the planting details, unless otherwise noted.
7. At all times the site shall be kept neat, and shall be kept free of debris left from the planting operations.
8. All trees in the same planting area shall be placed and planted at the same time. If because of delivery schedule, any plant remains on the site for more than 24 hours, they shall be heeled-in on site to maintain their health and vitality. Plants shall be otherwise protected and maintained, including, but not limited to, water and shade. Any plants deemed not in satisfactory health or condition at time of planting shall be replaced at the contractors expense. All shrubs designated for reuse that cannot be replanted immediately after digging shall be heeled-in as noted.



LEGEND



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09/20/2021

KEY PLAN NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

TREE PLANTING PLAN

SCALE: 1" = 10'

DOB STAMP ZONE

DRAWING #:
L- 400
04 of 10

DOB JOB. -

PLANTING PLAN

TREES					
SYM	QTY.	BOTANICAL NAME	COMMON NAME	NATIVE (Y/ N)	SIZE
AG	5	*Acer griseum*	Paperbark maple	(N)	3.5"-4" Caliper
BP	7	*Betula populifolia*	Grey Birch	(Y)	3.5"-4" Caliper
MS	6	*Magnolia x soulangeana*	Saucer Magnolia	(Y)	3.5"-4" Caliper
NS	5	*Nyssa sylvatica*	Black Tupelo	(Y)	3.5"-4" Caliper
TO	9	*Thuja occidentalis 'Hetz Wintergreen'*	Hetz Wintergreen Arborvitae	(Y)	25 Gal Cont.

PLANTING MIX -ZONE 1 - SHRUBS & PERENNIALS - 913 SF					
SYM	QTY.	BOTANICAL NAME	COMMON NAME	NATIVE (Y/N)	SIZE
CS	16	*Cornus sericea 'Flaviramea'*	Yellow Twig Dogwood	(Y)	5 gallon
OS	132	*Onoclea sensibilis*	Sensitive Fern	(Y)	1 gallon

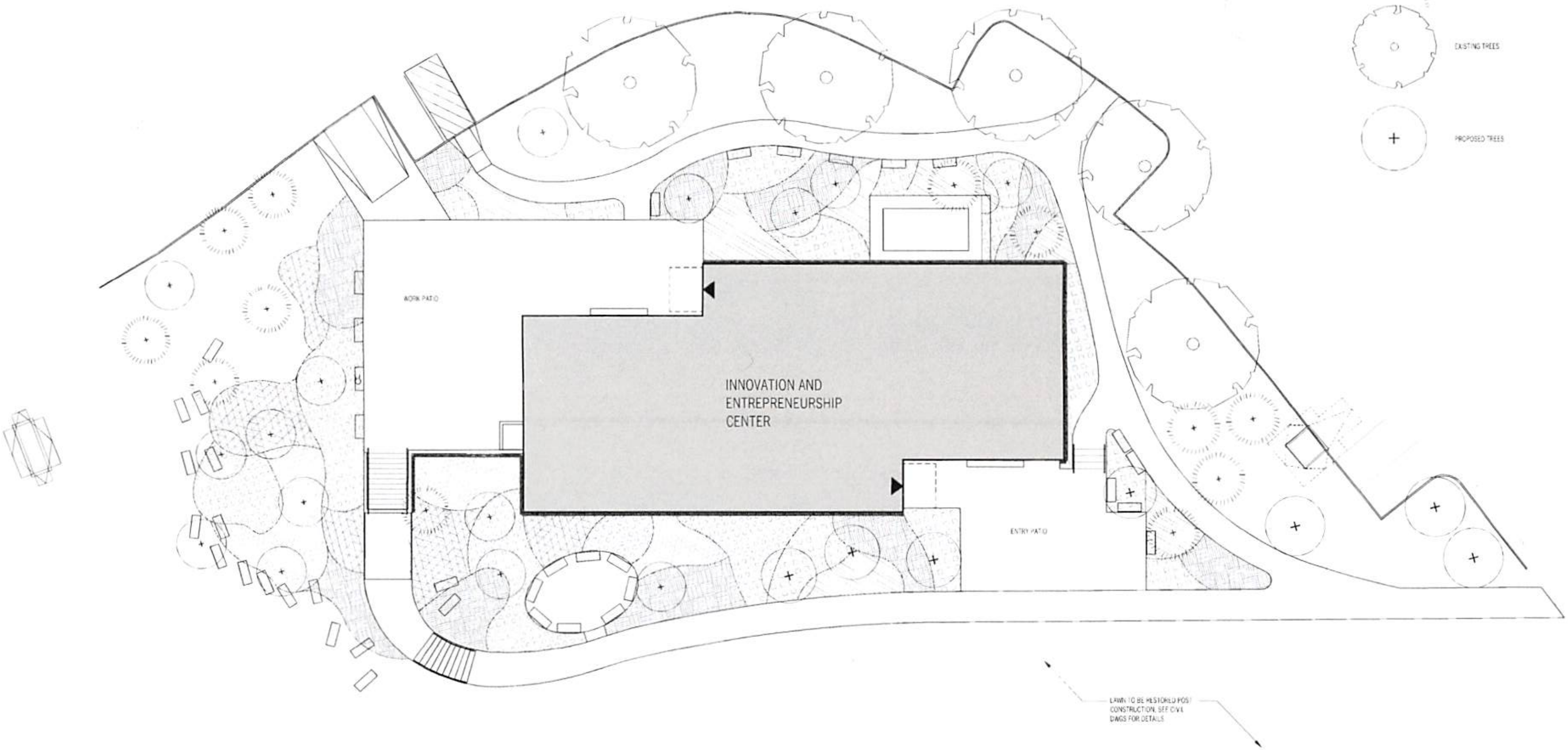
PLANTING MIX -ZONE 2 - PERENNIALS - 1010 SF					
SYM	QTY.	BOTANICAL NAME	COMMON NAME	NATIVE (Y/N)	SIZE
AS	146	*Actaea simplex 'Black Negligee'*	Black Negligee Snakeroot	(Y)	1 gallon
AC	146	*Asarum candense*	Canadian Wild Ginger	(Y)	1 gallon

PLANTING MIX -ZONE 3 - PERENNIALS - 1636 SF					
SYM	QTY.	BOTANICAL NAME	COMMON NAME	NATIVE (Y/N)	SIZE
EA	236	*Euphorbia amygdaloides*	Wood Spurge	(Y)	1 gallon
OS	236	*Onoclea sensibilis*	Sensitive Fern	(Y)	1 gallon

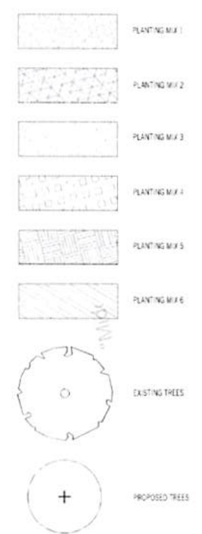
PLANTING MIX -ZONE 4 - PERENNIALS - 1517 SF					
SYM	QTY.	BOTANICAL NAME	COMMON NAME	NATIVE (Y/N)	SIZE
IV	27	*Itea virginica*	Virginia sweetspire	(Y)	5 gallon
PV	187	*Panicum virgatum 'shenandoah'*	Switchgrass	(Y)	1 gallon

PLANTING MIX -ZONE 5 - PERENNIALS - 2080 SF					
SYM	QTY.	BOTANICAL NAME	COMMON NAME	NATIVE (Y/N)	SIZE
PV	300	*Panicum virgatum 'shenandoah'*	Switchgrass	(Y)	1 gallon
AR	300	*Actaea racemosa*	Snakeroot	(Y)	1 gallon

PLANTING MIX -ZONE 6 - PERENNIALS - 1018 SF					
SYM	QTY.	BOTANICAL NAME	COMMON NAME	NATIVE (Y/N)	SIZE
DE	24	*Myrica pensylvanica*	Northern Bayberry	(Y)	5 gallon
OC	147	*Osmundastrum cinnamomeum*	Cinnamon Fern	(Y)	1 gallon



LEGEND



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KEY PLAN NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

UNDERSTORY PLANTING PLAN

SCALE: 1" = 10'

DOB STAMP ZONE

DRAWING #
L- 410
05 of 10
DOB JOB: -

GENERAL NOTES

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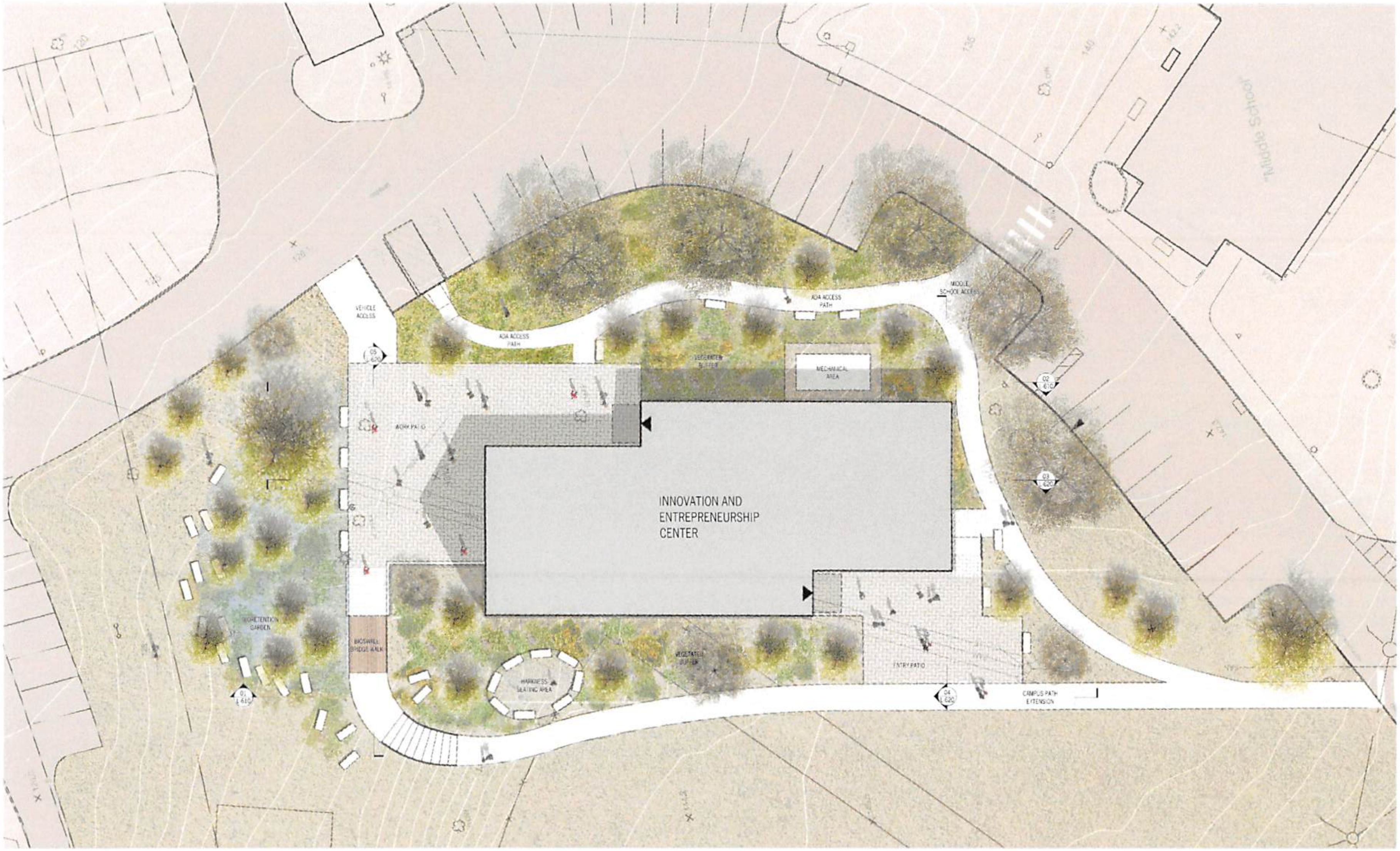

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KEY PLAN NTS

2029

THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER

49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

SITE PLAN

SCALE: 1" = 10'

DOB STAMP ZONE

DRAWING #
L- 600
06 of 10

DOB JOB: -

02 WESTERN FACADE ELEVATION
SCALE: 1/4" = 1'-0"

01 EASTERN FACADE ELEVATION
SCALE: 1/4" = 1'-0"

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KEY PLAN NTS

2029

THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER

49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

SITE SECTIONS I

SCALE: AS NOTED

DOB STAMP ZONE

DRAWING #:
L- 610
07 of 10

DOB JOB: -

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RENDERED PLAN AND ELEVATIONS ARE FOR ILLUSTRATIVE PURPOSES ONLY AND ARE NOT TO BE MEASURED OR EVALUATED FOR CONSTRUCTION AS SOME ARCHITECTURAL UTILITY OR OTHER ELEMENTS HAVE CHANGED. SEE PREVIOUS LANDSCAPE PLANS OR LANDSCAPE DETAILS FOR REFERENCES.

05 NORTHERN FACADE ELEVATION
SCALE: 1/4" = 1'-0"

04 SOUTHERN FACADE ELEVATION
SCALE: 1/4" = 1'-0"

03 SECTION AT BUILDING ROOFLINE
SCALE: 1/4" = 1'-0"

MARVEL
145 HUDSON STREET, FLR 3 NEW YORK, NY 10013
212 616 0420

OWNER
THE MASTERS SCHOOL
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522
TEL 914 479 6400

PROJECT ARCHITECTS + LANDSCAPE ARCHITECT
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145 HUDSON STREET, FLOOR 3
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2700 HAMILTON BOULEVARD
SOUTH PLAINFIELD, NEW JERSEY 07080
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SILMAN
32 OLD SLIP, FLOOR 10
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TEL 212 645 1002

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TEL 212 615 3600

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LSTN CONSULTANTS
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NEW YORK, NEW YORK 10005
TEL 347 788 0810

ENVELOPE CONSULTANT
MW-SKINS
1 WHITEHALL STREET, FLOOR 14
NEW YORK, NEW YORK 10004
TEL 347 609 6790

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DOT DASH LIGHTING DESIGN
120 WALKER STREET, SUITE 4BE
NEW YORK, NEW YORK 10013
TEL 212 951 0680

CODE AND ACCESSIBILITY CONSULTANT
CODE CONSULTANTS, INC
440 PARK AVENUE S.
NEW YORK, NEW YORK 10016
TEL 212 447 4533

ARCHITECTURAL SPECIFICATIONS
CONSTRUCTION SPECIFICATIONS, INC
22 TENNENT ROAD
MORGANVILLE, NEW JERSEY 07751
TEL 732 970 0700

REV	DATE	DESCRIPTION
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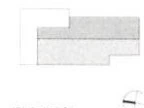
3	07/23/2021	SITE APPLICATION RESUBMISSION
4	09/20/2021	SITE APPLICATION SUBMISSION - ROT

09/20/2021



KEY PLAN NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

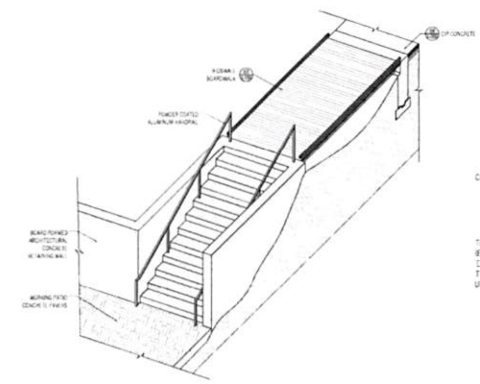
SITE SECTIONS II

SCALE: AS NOTED

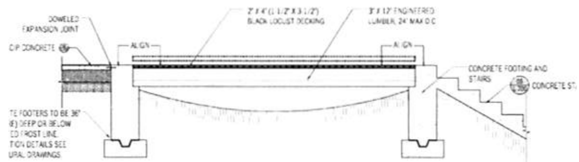
DOB STAMP ZONE

DRAWING #
L- 620
08 of 10

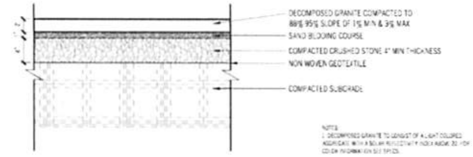
DOB JOB -



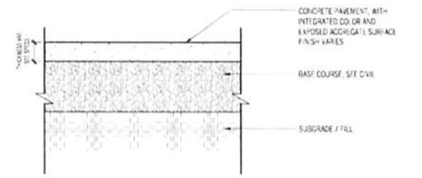
BIOSWALE BOARDWALK AXON
SCALE: NTS



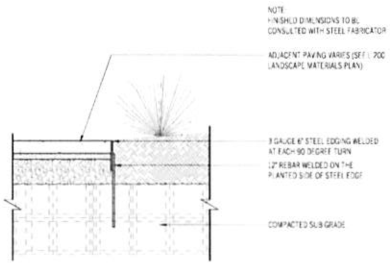
BIOSWALE BOARDWALK LONG SECTION
SCALE: 3/8" = 1'-0"



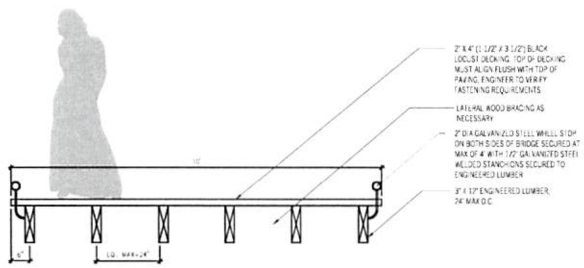
04 GRAVEL PAVING
SCALE: 1-1/2" = 1'-0"



03 CIP CONCRETE
SCALE: 1-1/2" = 1'-0"

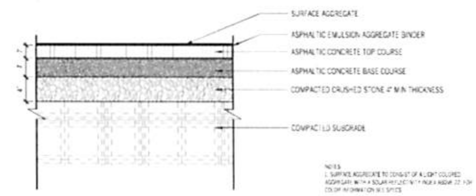


10 STEEL EDGING
SCALE: 1-1/2" = 1'-0"

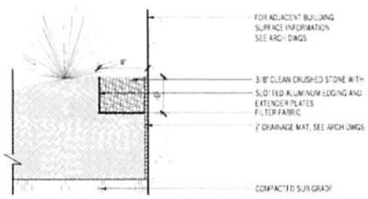


07 BIOSWALE BOARDWALK
SCALE: 3/4" = 1'-0"

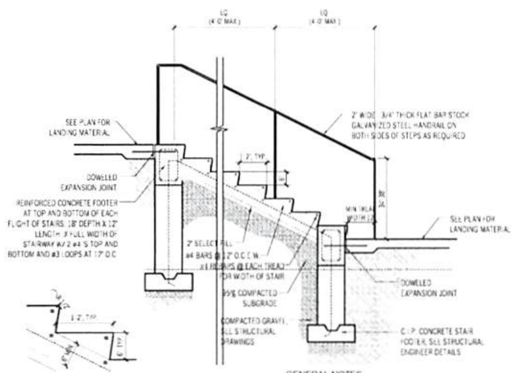
06 STEEL HANDRAIL (NOT IN THIS SUBMISSION)
SCALE: 1-1/2" = 1'-0"

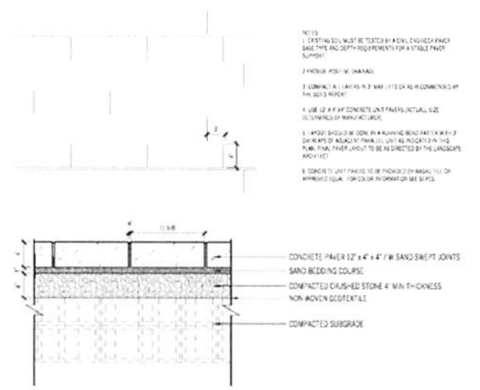


02 ASPHALT PAVEMENT
SCALE: 1-1/2" = 1'-0"

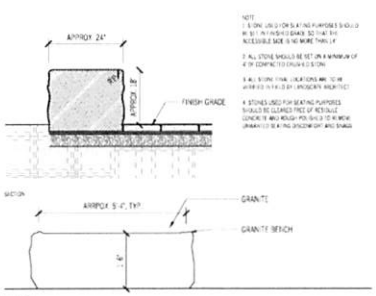


09 STONE GRAVEL COURSE
SCALE: 1-1/2" = 1'-0"





01 UNIT PAVERS
SCALE: 1-1/2" = 1'-0"



08 STONE BENCH
SCALE: 3/4" = 1'-0"

GENERAL NOTES

1. REFER TO PLAN FOR STEP TREAD AND RISER QUANTITY AND DIMENSIONS.
2. SLOPE TREAD @ 1.0% MAX FOR DRAINAGE.
3. UNLESS NOTED OTHERWISE, STAIR FINISH SHALL BE A NON-SLIP HORIZONTAL BROOM FINISH.
4. ALL DIMENSIONS AND MATERIALS FOR STAIRS SHALL COMPLY WITH SECTIONS 504 AND 505 OF THE TEXAS ACCESSIBILITY STANDARDS (MARCH 2012).
5. POSTS SHALL BE SURFACE MOUNTED, CORED, SLEEVED OR SET IN POST FOOTERS - REFERENCE TECHNICAL SPECIFICATIONS AND/OR PROJECT SPECIFIC DETAIL FOR MOUNTING.

05 CONCRETE STAIR
SCALE: 3/8" = 1'-0"

MARVEL
145 HUDSON STREET, FLR 3 NEW YORK, NY 10013
212 816 0420

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76 BEAVER STREET
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ENVELOPE CONSULTANT
MW SKINS
1 WHITEHALL STREET, FLOOR 14
NEW YORK, NEW YORK 10004
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DOT DASH LIGHTING DESIGN
120 WALKER STREET, SUITE 4NE
NEW YORK, NEW YORK 10013
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CODE CONSULTANTS, INC
440 PARK AVENUE S
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ARCHITECTURAL SPECIFICATIONS
CONSTRUCTION SPECIFICATIONS, INC
22 TENNENT ROAD
MORGANVILLE, NEW JERSEY 07751
TEL 732 970 0700

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09/20/2021

KEY PLAN NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

TYPICAL DETAILS I

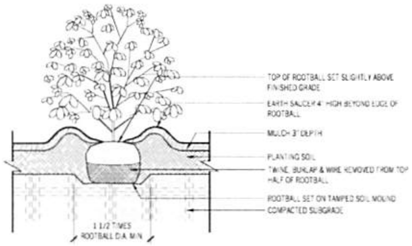
SCALE: AS NOTED

DRAWING #
L 700
09 of 10

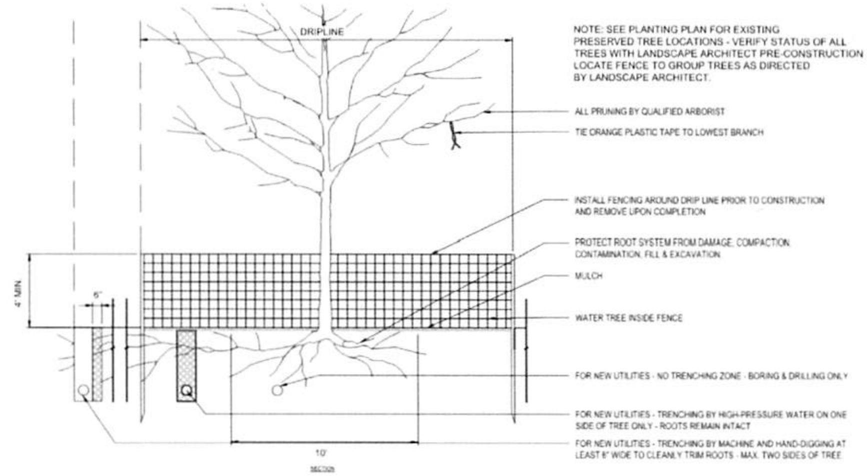
DOB JOB: -

DOB STAMP ZONE

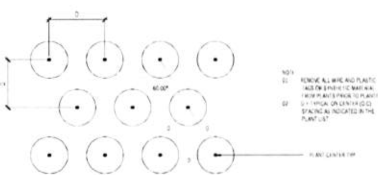
MARVEL
145 HUDSON STREET, FLR 3 NEW YORK, NY 1001[illegible]
212 616 0420

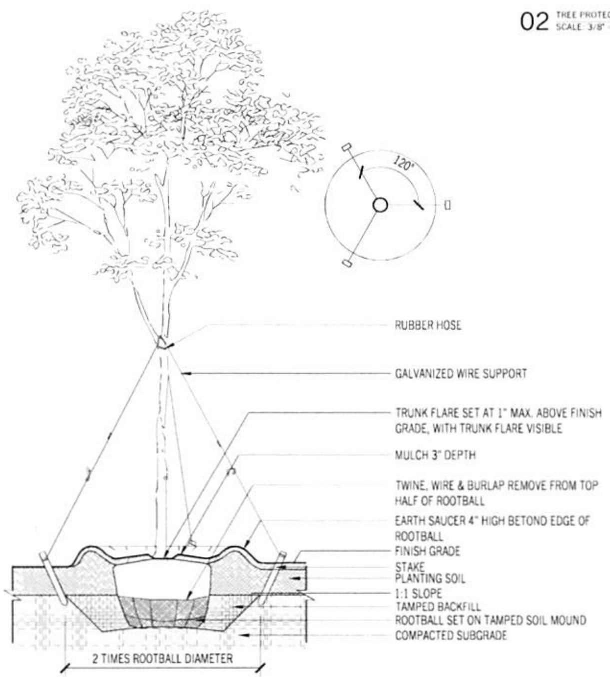


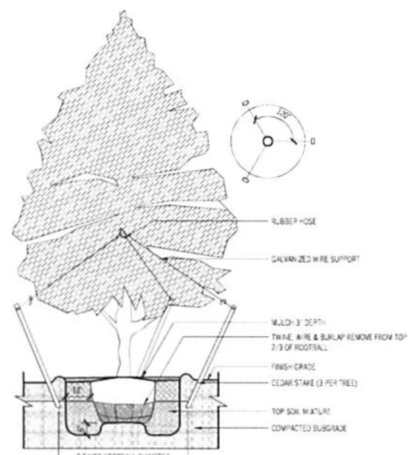
04 SHRUB PLANTING
SCALE: 3/4" = 1'-0"

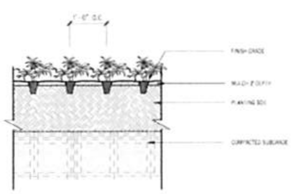


02 TREE PROTECTION
SCALE: 3/8" = 1'-0"









05 PERENNIAL PLANTING
SCALE: 3/4" = 1'-0"

03 TREE AT GRADE
SCALE: 3/4" = 1'-0"

01 EVERGREEN TREE PLANTING
SCALE: 1/2" = 1'-0"

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2780 HAMILTON BOULEVARD
SOUTH PLAINFIELD, NEW JERSEY 07080
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32 OLD SLIP, FLOOR 10
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NEW YORK, NEW YORK 10011
TEL 212 645 1302

VERTICAL TRANSPORTATION
VDA
145 WEST 30TH STREET, FLOOR 4
NEW YORK, NEW YORK 10001
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1 WHITEHALL STREET, FLOOR 14
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TEL 212 447 4033

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22 TENNENT ROAD
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TEL 732 970 0766

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09/20/2021

KEY PLAN NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

TYPICAL DETAILS II

SCALE: AS NOTED

DRAWING #
L 710
10 of 10

DOB JOB: -

DOB STAMP ZONE

MARVEL

145 HUDSON STREET, FLR 3 NEW YORK, NY 10013
212.616.0420

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49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522
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TEL 347 788 0810

ENVELOPE CONSULTANT
MW-SKINS
1 WHITEHALL STREET, FLOOR 14
NEW YORK, NEW YORK 10004
TEL 347 809 6790

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DOT DASH LIGHTING DESIGN
160 BROADWAY, SUITE 1215
NEW YORK, NEW YORK 10038
TEL 212 951 0660

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CODE CONSULTANTS, INC.
440 PARK AVENUE S
NEW YORK, NEW YORK 10016
TEL 212 447 4033

ARCHITECTURAL SPECIFICATIONS
CONSTRUCTION SPECIFICATIONS, INC
22 TENNENT ROAD
MORGANVILLE, NEW JERSEY 07751
TEL 732 970 0700

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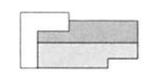
09/20/2021

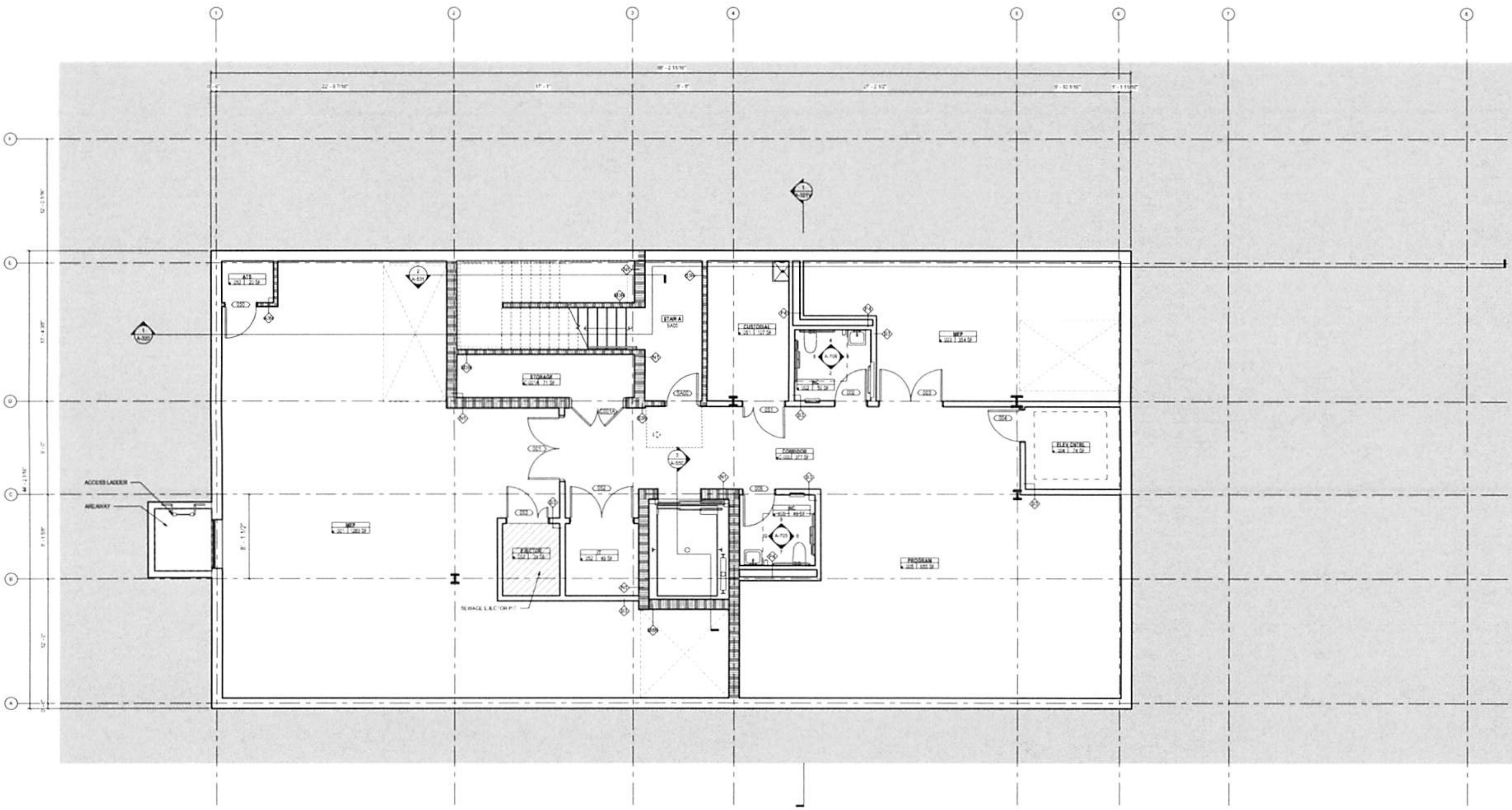


KEY PLAN NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

BASEMENT FLOOR PLAN

SCALE: 1/4" = 1'-0"

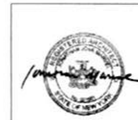


1 BASEMENT FLOOR PLAN
1/4" = 1'-0"

LEGEND

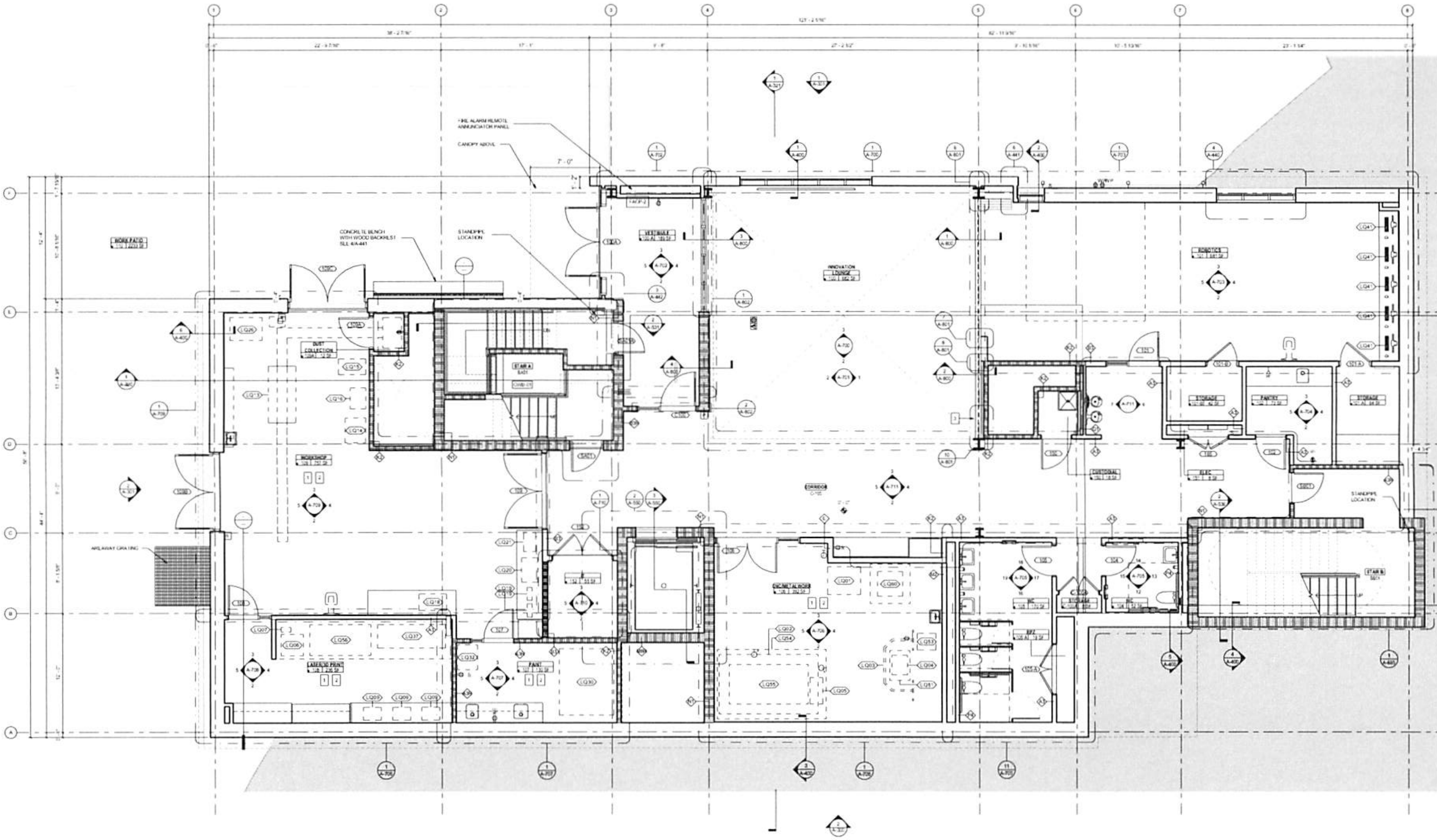
1-HR FIRE BARRIER

2-HR FIRE BARRIER



DOB STAMP ZONE

DRAWING #:
A-100
___ of ___
DOB JOB: -



1 FIRST FLOOR PLAN

1/4" = 1'-0"

LEGEND

1-HR FIRE BARRIER

2-HR FIRE BARRIER

PLAN KEYNOTES

1. HAZARDOUS WASTE SHALL NOT BE DISPOSED OF IN TRASH CANS, DUMPSTERS, SEPTIC SYSTEMS, SANITARY SEWERS, STORM DRAINS, WASH RACKS/OIL-WATER SEPARATORS, ON LAND, BY EVAPORATION, NEUTRALIZATION, DILUTION, INCINERATION AND/OR THROUGH ANY OTHER TREATMENT PROCESS, OR IN MUNICIPAL LANDFILLS. ALL WASTE SHALL BE PROPERLY HELD AND DISPOSED OF PER THE SCHOOL'S HAZARDOUS WASTE GUIDELINES, FOLLOWING THE VILLAGE AND COUNTY'S GUIDELINES FOR PROPER OFF-SITE DISPOSAL.

2. FLAMMABLE PRODUCTS AND WASTE ARE STORED WITHIN THE FLAMMABLE MATERIAL STORAGE CABINETS PROVIDED AS PART OF THE OWNER'S EQUIPMENT PACKAGE. CABINETS WILL BE LOCATED IN AREAS WHERE FLAMMABLE MATERIALS ARE USED OR WASTE IS GENERATED.

3. 8'x32' VIDEO WALL POWER, DATA, AND SHEETMETAL BLOCKING WITHIN WALL REQUIRED TO RECEIVE NEW MULTI SCREEN VIDEO WALL UNIT.

DOB STAMP ZONE

MARVEL
145 HUDSON STREET, FLR 3 NEW YORK, NY 10013
212.616.0420

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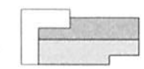
09/20/2021



KEY PLAN NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

FIRST FLOOR PLAN

SCALE: As indicated

DRAWING #
A-101
___ of ___
DOB JOB -

MARVEL

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212.616.0420

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DOBBS FERRY, NEW YORK 10522
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145 WEST 30TH STREET, FLOOR 4
NEW YORK, NEW YORK 10001
TEL 212 868 8080

AV / IT / SECURITY CONSULTANT
COSENTINI ASSOCIATES, INC.
498 SEVENTH AVENUE
NEW YORK, NEW YORK 10018
TEL 212 615 3600

ACOUSTICS CONSULTANT
LSTN CONSULTANTS
76 BEAVER STREET
NEW YORK, NEW YORK 10005
TEL 347 768 0810

ENVELOPE CONSULTANT
MN-BAINS
1 WHITEHALL STREET, FLOOR 14
NEW YORK, NEW YORK 10004
TEL 347 809 6790

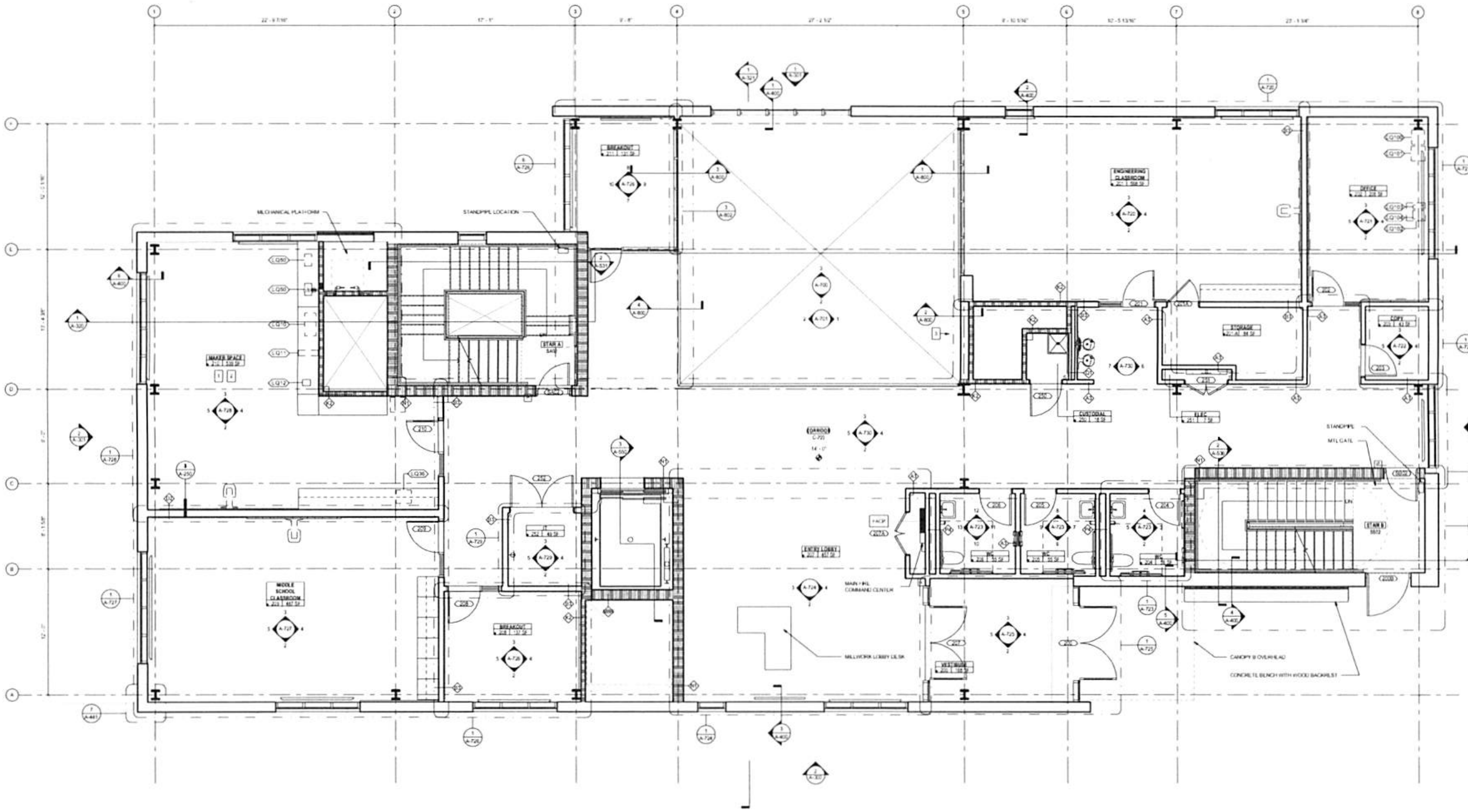
LIGHTING DESIGNER
DOT DASH LIGHTING DESIGN
160 BROADWAY, SUITE 1215
NEW YORK, NEW YORK 10038
TEL 212 951 0860

CODE AND ACCESSIBILITY CONSULTANT
CODE CONSULTANTS, INC.
440 PARK AVENUE S
NEW YORK, NEW YORK 10016
TEL 212 447 4033

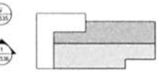
ARCHITECTURAL SPECIFICATIONS
CONSTRUCTION SPECIFICATIONS, INC
22 TENNENT ROAD
MORGANVILLE, NEW JERSEY 07751
TEL 732 970 0700

REV	DATE	DESCRIPTION
1	02/17/2021	VILLAGE OF DOBBS FERRY SITE APPLICATION
2	06/17/2021	SITE APPLICATION RESUBMISSION
3	07/22/2021	SITE APPLICATION RESUBMISSION
4	08/31/2021	SITE APPLICATION RESUBMISSION
5	09/20/2021	SITE APPLICATION SUBMISSION - BOT

09/20/2021



1 SECOND FLOOR PLAN
1/4" = 1'-0"



KEY PLAN NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

SECOND FLOOR PLAN

SCALE: As indicated

LEGEND

1-HR FIRE BARRIER

2-HR FIRE BARRIER

PLAN KEYNOTES

1. HAZARDOUS WASTE SHALL NOT BE DISPOSED OF IN TRASH CANS, DUMPSTERS, SEPTIC SYSTEMS, SANITARY SEWERS, STORM DRAINS, WASH RACKS/OIL-WATER SEPARATORS, ON LAND, BY EVAPORATION, NEUTRALIZATION, DILUTION, INCINERATION AND/OR THROUGH ANY OTHER TREATMENT PROCESS, OR IN MUNICIPAL LANDFILLS. ALL WASTE SHALL BE PROPERLY HELD AND DISPOSED OF PER THE SCHOOL'S HAZARDOUS WASTE GUIDELINES, FOLLOWING THE VILLAGE AND COUNTY'S GUIDELINES FOR PROPER OFF-SITE DISPOSAL.

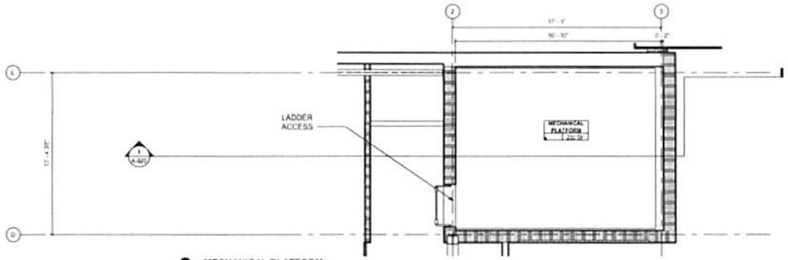
2. FLAMMABLE PRODUCTS AND WASTE ARE STORED WITHIN THE FLAMMABLE MATERIAL STORAGE CABINETS PROVIDED AS PART OF THE OWNER'S EQUIPMENT PACKAGE. CABINETS WILL BE LOCATED IN AREAS WHERE FLAMMABLE MATERIALS ARE USED OR WASTE IS GENERATED.

3. 8'x32' VIDEO WALL POWER, DATA, AND SHEETMETAL BLOCKING WITHIN WALL REQUIRED TO RECEIVE NEW MULTI SCREEN VIDEO WALL UNIT.

DOB STAMP ZONE

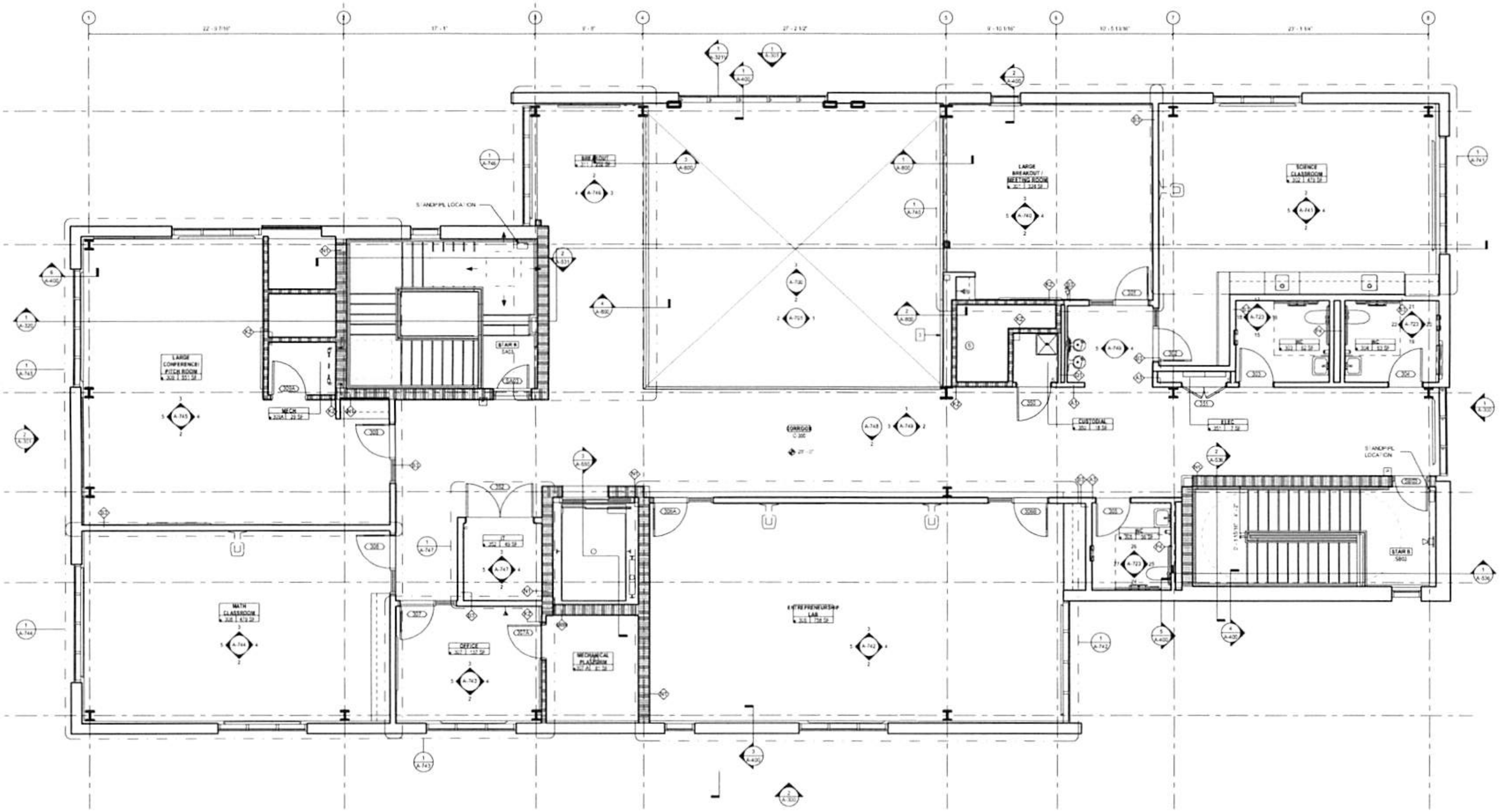
DRAWING #
A-102
___ of ___

DOB JOB -



2 MECHANICAL PLATFORM

1/4" = 1'-0"



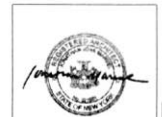
1 THIRD FLOOR PLAN

1/4" = 1'-0"

LEGEND

1 HR FIRE BARRIER

2 HR FIRE BARRIER



DOB STAMP ZONE

MARVEL

145 HUDSON STREET, FLR 3 NEW YORK, NY 10013
212.616.0420

OWNER
THE MASTERS SCHOOL
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522
TEL 914 479 6400

PROJECT ARCHITECTS + LANDSCAPE ARCHITECTS
MARVEL
145 HUDSON STREET, FLOOR 3
NEW YORK, NEW YORK 10013
TEL 212 616 0420

GEOTECHNICAL / CIVIL ENGINEER
MFS ENGINEERS & SURVEYORS, DPC
2780 HAMILTON BOULEVARD
SOUTH PLAINFIELD, NEW JERSEY 07080
TEL 908 322 4622

STRUCTURAL ENGINEER
SILMAN
32 OLD SLIP, FLOOR 10
NEW YORK, NEW YORK 10005
TEL 212 620 7970

BUILDING SYSTEMS ENGINEER
POLISE CONSULTING ENGINEERS, DPC
133 WEST 19TH STREET
NEW YORK, NEW YORK 10011
TEL 212 645 1002

VERTICAL TRANSPORTATION
VDA
145 WEST 30TH STREET, FLOOR 4
NEW YORK, NEW YORK 10001
TEL 212 868 9090

AV / IT / SECURITY CONSULTANT
COSENTINI ASSOCIATES, INC.
498 SEVENTH AVENUE
NEW YORK, NEW YORK 10018
TEL 212 615 3600

ACOUSTICS CONSULTANT
LSTN CONSULTANTS
76 BEAVER STREET
NEW YORK, NEW YORK 10005
TEL 347 788 0810

ENVELOPE CONSULTANT
WW-SKINS
1 WHITEHALL STREET, FLOOR 14
NEW YORK, NEW YORK 10004
TEL 347 809 6790

LIGHTING DESIGNER
DOT DASH LIGHTING DESIGN
160 BROADWAY, SUITE 1215
NEW YORK, NEW YORK 10038
TEL 212 951 0660

CODE AND ACCESSIBILITY CONSULTANT
CODE CONSULTANTS, INC.
440 PARK AVENUE S
NEW YORK, NEW YORK 10016
TEL 212 447 4033

ARCHITECTURAL SPECIFICATIONS
CONSTRUCTION SPECIFICATIONS, INC
22 TENNENT ROAD
MORGANVILLE, NEW JERSEY 07751
TEL 732 970 0700

REV	DATE	DESCRIPTION
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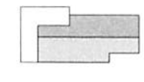
09/20/2021



KEY PLAN:NTS

2029

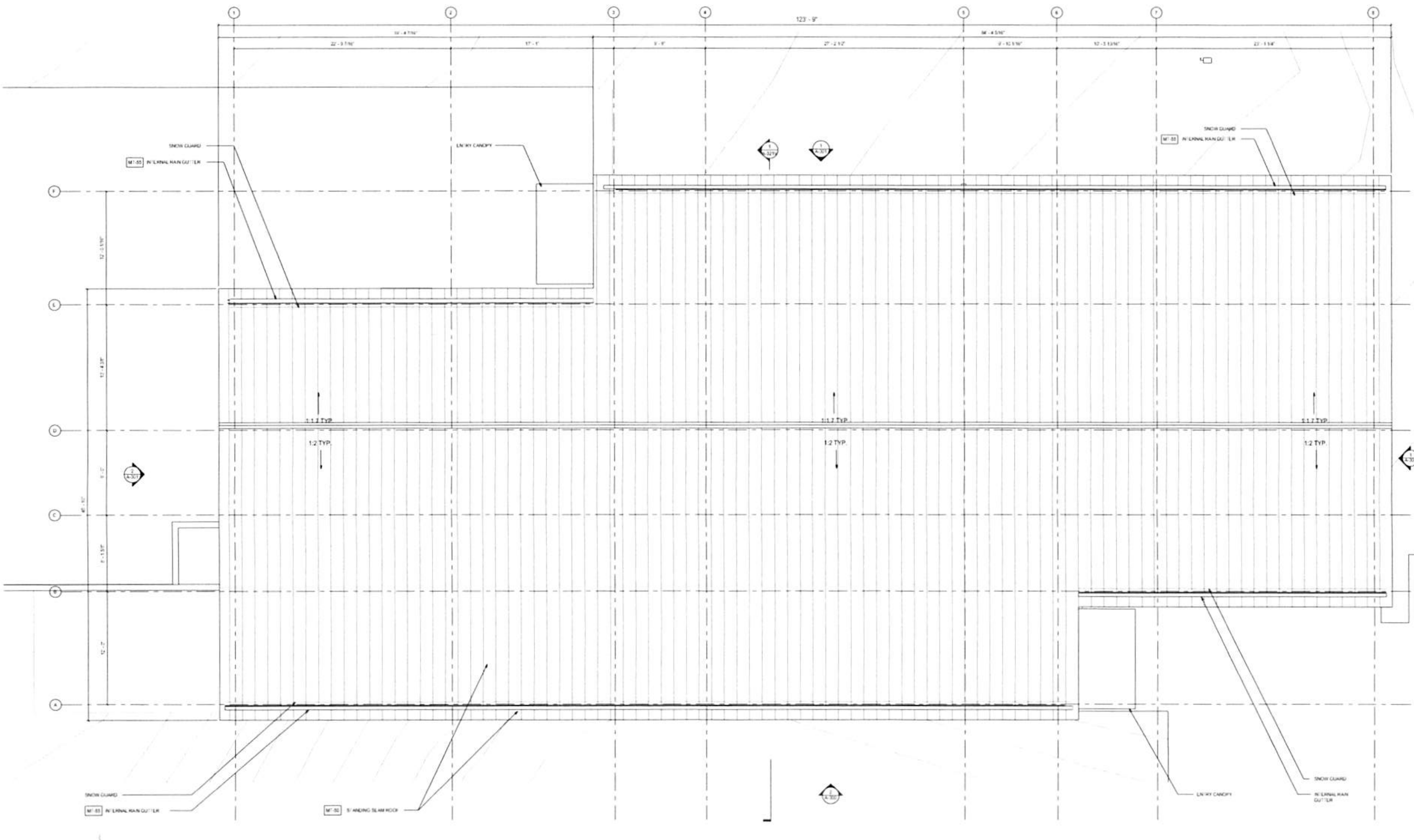
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER

49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

THIRD FLOOR PLAN

SCALE: 1/4" = 1'-0"

DRAWING #:
A-103
___ of ___
DOB JOB: -



1 **ROOF PLAN**
1/4" = 1'-0"

MATERIALS LEGEND

CONC-50	ARCHITECTURAL CAST IN PLACE CONCRETE WITH BOARD FORMED FINISH
CW-01	BLACK ANODIZED ALUMINUM INSULATED CURTAIN WALL SYSTEM
CW-02	BLACK ANODIZED ALUMINUM INSULATED PUNCHED WINDOW SYSTEM
LV-01	ANODIZED ALUMINUM ARCHITECTURAL EXHAUST LOUVER TO MATCH CURTAINWALL SYSTEM
MT-50	NATURAL FINISH ZINC STANDING SEAM FACADE CLADDING
MT-55	NATURAL FINISH ZINC TRIM
MT-40	ANODIZED ALUMINUM CLADDING OVER TOP OF STEEL FRAME STRUCTURE WITH WOOD PLANK MATERIAL AT UNDERSIDE
WD-50	SOLID WOOD PLANK MEMBERS

MARVEL
145 HUDSON STREET, FLR 3 NEW YORK, NY 10013
212.616.0420

OWNER
THE MASTERS SCHOOL
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522
TEL 914 479 6400

PROJECT ARCHITECTS + LANDSCAPE ARCHITECTS
MARVEL
145 HUDSON STREET, FLOOR 3
NEW YORK, NEW YORK 10013
TEL 212 616 0420

GEOTECHNICAL / CIVIL ENGINEER
MFS ENGINEERS & SURVEYORS, DPC
2780 HAMILTON BOULEVARD
SOUTH PLAINFIELD, NEW JERSEY 07080
TEL 908 922 4622

STRUCTURAL ENGINEER
SILMAN
32 OLD SLIP, FLOOR 10
NEW YORK, NEW YORK 10005
TEL 212 620 7970

BUILDING SYSTEMS ENGINEER
POLISE CONSULTING ENGINEERS, DPC
133 WEST 19TH STREET
NEW YORK, NEW YORK 10011
TEL 212 645 1002

VERTICAL TRANSPORTATION
VDA
145 WEST 30TH STREET, FLOOR 4
NEW YORK, NEW YORK 10001
TEL 212 868 9090

AV / IT / SECURITY CONSULTANT
COSENTINI ASSOCIATES, INC.
498 SEVENTH AVENUE
NEW YORK, NEW YORK 10018
TEL 212 615 3600

ACOUSTICS CONSULTANT
LSTN CONSULTANTS
76 BEAVER STREET
NEW YORK, NEW YORK 10005
TEL 347 788 0810

ENVELOPE CONSULTANT
MM-SKINS
1 WHITEHALL STREET, FLOOR 14
NEW YORK, NEW YORK 10004
TEL 347 809 6780

LIGHTING DESIGNER
DOT DASH LIGHTING DESIGN
160 BROADWAY, SUITE 1210
NEW YORK, NEW YORK 10038
TEL 212 351 0660

CODE AND ACCESSIBILITY CONSULTANT
CODE CONSULTANTS, INC.
440 PARK AVENUE S
NEW YORK, NEW YORK 10016
TEL 212 447 4033

ARCHITECTURAL SPECIFICATIONS
CONSTRUCTION SPECIFICATIONS, INC
22 TENNENT ROAD
MORGANVILLE, NEW JERSEY 07751
TEL 732 970 0700

REV	DATE	DESCRIPTION
1	02/17/2021	VILLAGE OF DOBBS FERRY SITE APPLICATION
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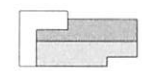
09/20/2021



KEY PLAN NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

ROOF PLAN

SCALE: 1/4" = 1'-0"

DOB STAMP ZONE

DRAWING #:
A-104
___ of ___
DOB JOB: -

MARVEL

145 HUDSON STREET, FLR 3 NEW YORK, NY 10013
212.616.0420

OWNER
THE MASTERS SCHOOL
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522
TEL 914 479 6400

PROJECT ARCHITECTS + LANDSCAPE ARCHITECTS
MARVEL
145 HUDSON STREET, FLOOR 3
NEW YORK, NEW YORK 10013
TEL 212 616 0420

GEOTECHNICAL / CIVIL ENGINEER
MFS ENGINEERS & SURVEYORS, DPC
2780 HAMILTON BOULEVARD
SOUTH PLAINFIELD, NEW JERSEY 07080
TEL 908 922 4622

STRUCTURAL ENGINEER
SILMAN
32 OLD SLIP, FLOOR 10
NEW YORK, NEW YORK 10005
TEL 212 620 7970

BUILDING SYSTEMS ENGINEER
POLISE CONSULTING ENGINEERS, DPC
133 WEST 19TH STREET
NEW YORK, NEW YORK 10011
TEL 212 645 1022

VERTICAL TRANSPORTATION
VDA
145 WEST 30TH STREET, FLOOR 4
NEW YORK, NEW YORK 10001
TEL 212 868 9090

AV / IT / SECURITY CONSULTANT
COSENTINI ASSOCIATES, INC.
498 SEVENTH AVENUE
NEW YORK, NEW YORK 10018
TEL 212 615 3600

ACOUSTICS CONSULTANT
LSTN CONSULTANTS
76 BEAVER STREET
NEW YORK, NEW YORK 10005
TEL 347 788 0810

ENVELOPE CONSULTANT
WW-SKINS
1 WHITEHALL STREET, FLOOR 14
NEW YORK, NEW YORK 10004
TEL 347 809 6790

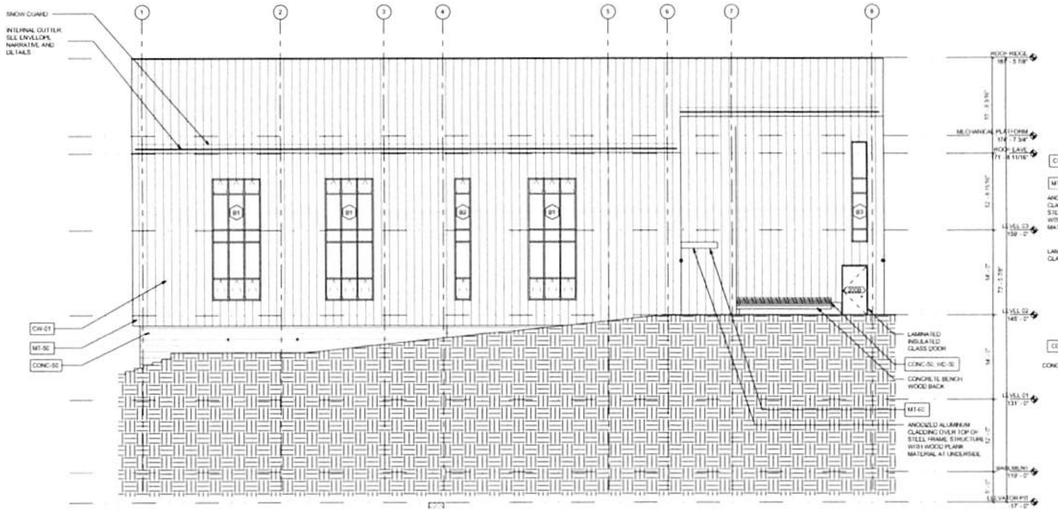
LIGHTING DESIGNER
DOT DASH LIGHTING DESIGN
160 BROADWAY, SUITE 1215
NEW YORK, NEW YORK 10038
TEL 212 951 0660

CODE AND ACCESSIBILITY CONSULTANT
CODE CONSULTANTS, INC.
440 PARK AVENUE S
NEW YORK, NEW YORK 10016
TEL 212 447 4033

ARCHITECTURAL SPECIFICATIONS
CONSTRUCTION SPECIFICATIONS, INC
22 TENNENT ROAD
MORGANVILLE, NEW JERSEY 07751
TEL 732 970 0700

MATERIALS LEGEND

CONC-50	ARCHITECTURAL CAST IN PLACE CONCRETE WITH BOARD FORMED FINISH
CW-01	BLACK ANODIZED ALUMINUM INSULATED CURTAIN WALL SYSTEM
CW-02	BLACK ANODIZED ALUMINUM INSULATED PUNCHED WINDOW SYSTEM
LV-01	ANODIZED ALUMINUM ARCHITECTURAL EXHAUST LOUVER TO MATCH CURTAINWALL SYSTEM
MT-50	NATURAL FINISH ZINC STANDING SEAM FACADE CLADDING
MT-55	NATURAL FINISH ZINC TRIM
MT-60	ANODIZED ALUMINUM CLADDING OVER TOP OF STEEL FRAME STRUCTURE WITH WOOD PLANK MATERIAL AT UNDERSIDE
WD-50	SOLID WOOD PLANK MEMBERS
⬡	WINDOW TYPE



2 WEST ELEVATION
1/8" = 1'-0"

1 SOUTH ELEVATION
1/8" = 1'-0"

REV	DATE	DESCRIPTION
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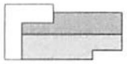
5	09/20/2021	SITE APPLICATION SUBMISSION - BOT

09/20/2021



KEY PLAN NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

BUILDING ELEVATIONS

SCALE: As indicated

DOB STAMP ZONE

DRAWING #
A-300
___ of ___
DOB JOB -

MARVEL
145 HUDSON STREET, FLR 3 NEW YORK, NY 10013
212.616.0420

OWNER
THE MASTERS SCHOOL
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522
TEL 914 479 6400

PROJECT ARCHITECTS + LANDSCAPE ARCHITECTS
MARVEL
145 HUDSON STREET, FLOOR 3
NEW YORK, NEW YORK 10013
TEL 212 616 0420

GEOTECHNICAL / CIVIL ENGINEER
MFS ENGINEERS & SURVEYORS, DPC
2780 HAMILTON BOULEVARD
SOUTH PLAINFIELD, NEW JERSEY 07080
TEL 908 322 4622

STRUCTURAL ENGINEER
SILMAN
32 OLD SLIP, FLOOR 10
NEW YORK, NEW YORK 10005
TEL 212 620 7970

BUILDING SYSTEMS ENGINEER
POLISE CONSULTING ENGINEERS, DPC
133 WEST 19TH STREET
NEW YORK, NEW YORK 10011
TEL 212 645 1002

VERTICAL TRANSPORTATION
VDA
145 WEST 30TH STREET, FLOOR 4
NEW YORK, NEW YORK 10001
TEL 212 868 9090

AV / IT / SECURITY CONSULTANT
COSENTINI ASSOCIATES, INC.
498 SEVENTH AVENUE
NEW YORK, NEW YORK 10018
TEL 212 615 3600

ACOUSTICS CONSULTANT
LSTN CONSULTANTS
75 BEAVER STREET
NEW YORK, NEW YORK 10005
TEL 347 798 0810

ENVELOPE CONSULTANT
MW-SKINS
1 WHITEHALL STREET, FLOOR 14
NEW YORK, NEW YORK 10004
TEL 347 809 6750

LIGHTING DESIGNER
DOT DASH LIGHTING DESIGN
160 BROADWAY, SUITE 1215
NEW YORK, NEW YORK 10038
TEL 212 951 0660

CODE AND ACCESSIBILITY CONSULTANT
CODE CONSULTANTS, INC.
440 PARK AVENUE S
NEW YORK, NEW YORK 10016
TEL 212 447 4033

ARCHITECTURAL SPECIFICATIONS
CONSTRUCTION SPECIFICATIONS, INC
22 TENNENT ROAD
MORGANVILLE, NEW JERSEY 07751
TEL 732 970 0700

MATERIALS LEGEND

CONC-50	ARCHITECTURAL CAST IN PLACE CONCRETE WITH BOARD FORMED FINISH
CW-01	BLACK ANODIZED ALUMINUM INSULATED CURTAIN WALL SYSTEM
CW-02	BLACK ANODIZED ALUMINUM INSULATED PUNCHED WINDOW SYSTEM
LV-01	ANODIZED ALUMINUM ARCHITECTURAL EXHAUST LOUVER TO MATCH CURTAINWALL SYSTEM
MT-50	NATURAL FINISH ZINC STANDING SEAM FACADE CLADDING
MT-55	NATURAL FINISH ZINC TRIM
MT-60	ANODIZED ALUMINUM CLADDING OVER TOP OF STEEL FRAME STRUCTURE WITH WOOD PLANK MATERIAL AT UNDERSIDE
WD-50	SOLID WOOD PLANK MEMBERS
(T)	WINDOW TYPE

REV	DATE	DESCRIPTION
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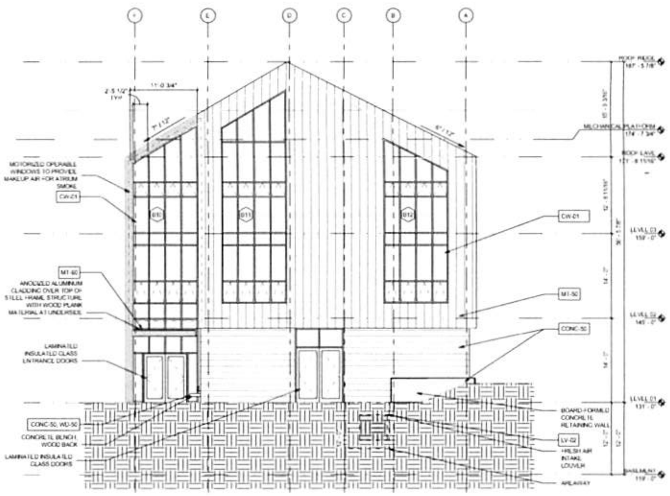
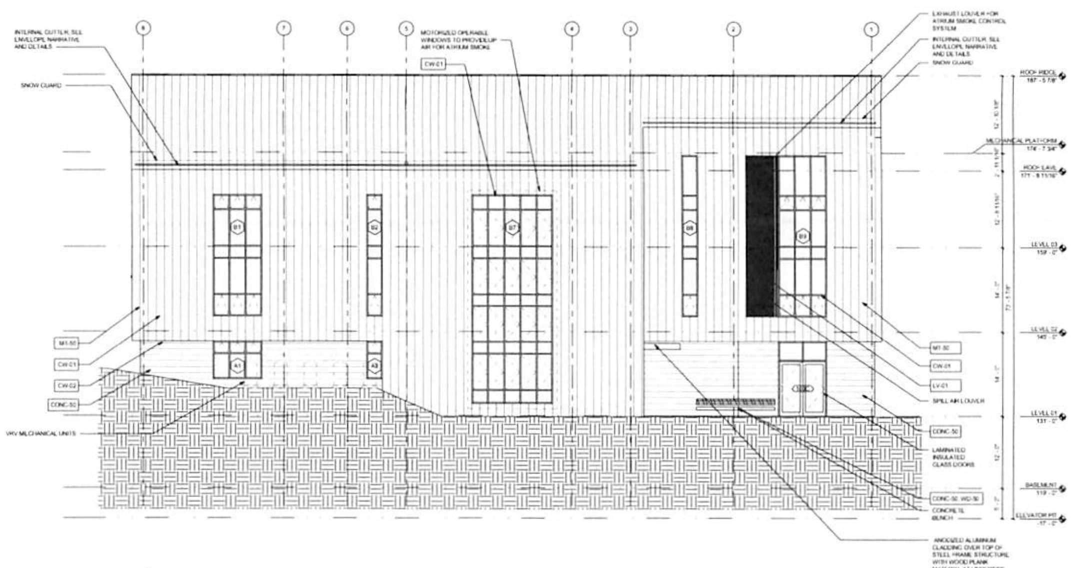
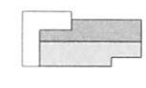
09/20/2021



2 **NORTH ELEVATION**
1/8" = 1'-0"



1 **EAST ELEVATION**
1/8" = 1'-0"

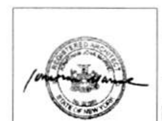


KEY PLAN NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

BUILDING ELEVATIONS

SCALE: As indicated



DOB STAMP ZONE

DRAWING #
A-301
__ of __
DOB JOB -

MARVEL

145 HUDSON STREET, FLR 3, NEW YORK, NY 10013
212 616 0420

OWNER
THE MASTERS SCHOOL
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522
TEL 914 479 6400

PROJECT ARCHITECTS + LANDSCAPE ARCHITECTS
MARVEL
145 HUDSON STREET, FLOOR 3
NEW YORK, NEW YORK 10013
TEL 212 616 0420

GEOTECHNICAL / CIVIL ENGINEER
MFS ENGINEERS & SURVEYORS, DPC
2780 HAMILTON BOULEVARD
SOUTH PLAINFIELD, NEW JERSEY 07080
TEL 908 922 4622

STRUCTURAL ENGINEER
SILMAN
32 OLD SLIP, FLOOR 10
NEW YORK, NEW YORK 10005
TEL 212 620 7970

BUILDING SYSTEMS ENGINEER
POLISE CONSULTING ENGINEERS, DPC
133 WEST 19TH STREET
NEW YORK, NEW YORK 10011
TEL 212 645 1002

VERTICAL TRANSPORTATION
VDA
145 WEST 30TH STREET, FLOOR 4
NEW YORK, NEW YORK 10001
TEL 212 868 9000

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NEW YORK, NEW YORK 10018
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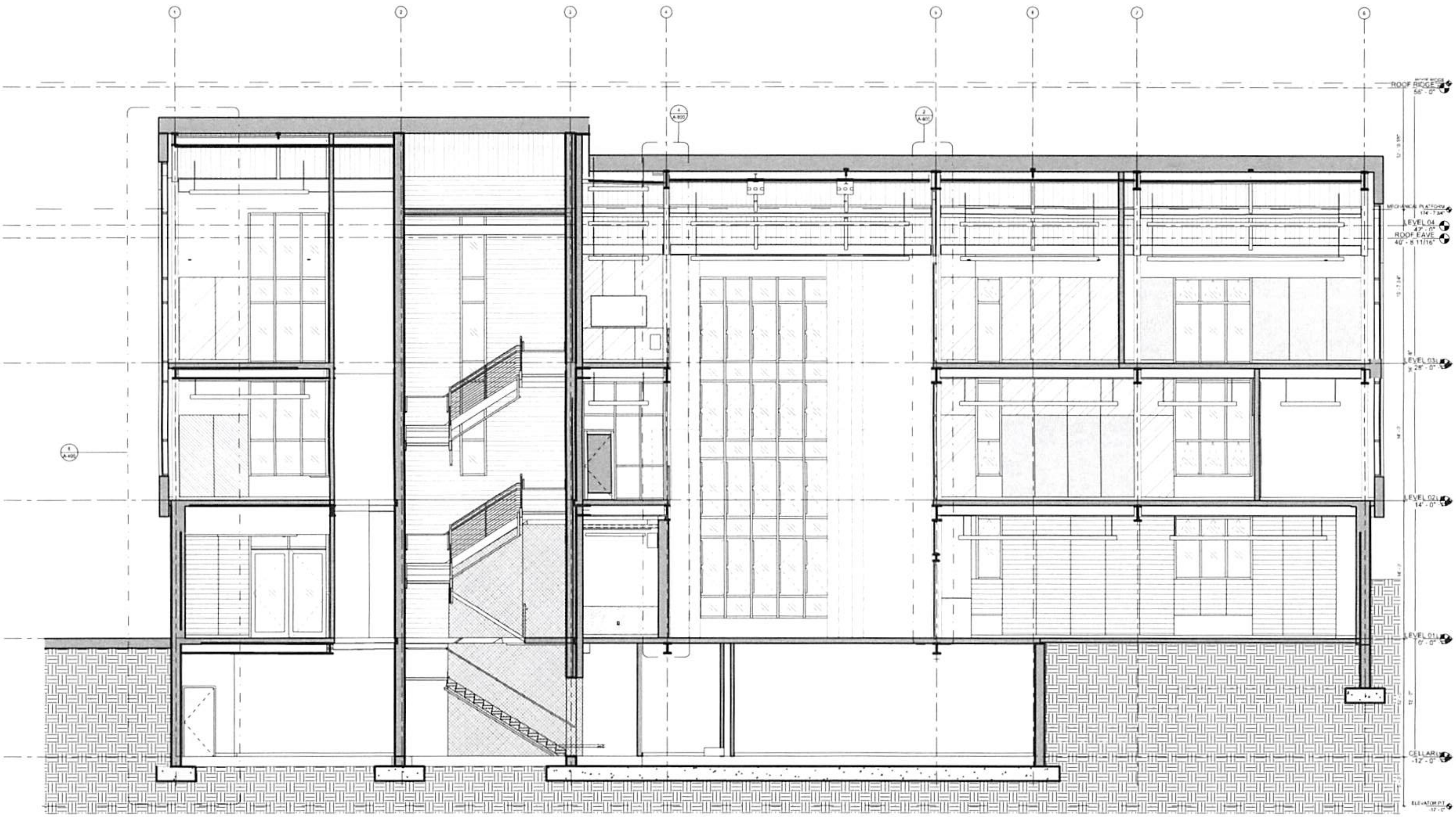
LSTN CONSULTANTS
76 BEAVER STREET
NEW YORK, NEW YORK 10005
TEL 347 766 0810

ENVELOPE CONSULTANT
MW SKINS
1 WHITEHALL STREET, FLOOR 14
NEW YORK, NEW YORK 10004
TEL 347 809 6190

LIGHTING DESIGNER
DOT DASH LIGHTING DESIGN
165 BROADWAY, SUITE 1215
NEW YORK, NEW YORK 10038
TEL 212 991 0880

CODE AND ACCESSIBILITY CONSULTANT
CODE CONSULTANTS, INC
440 PARK AVENUE S
NEW YORK, NEW YORK 10016
TEL 212 447 4033

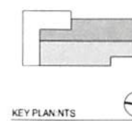
ARCHITECTURAL SPECIFICATIONS
CONSTRUCTION SPECIFICATIONS, INC
22 TENNENT ROAD
MORGANVILLE, NEW JERSEY 07751
TEL 732 970 0700



1 BUILDING SECTION - LONGITUDINAL - EAST SIDE
1/4" = 1'-0"

REV	DATE	DESCRIPTION
1	03/05/2021	100% SCHEMATIC DESIGN
2	06/17/2021	SITE APPLICATION RESUBMISSION
3	07/22/2021	SITE APPLICATION RESUBMISSION
4	08/31/2021	SITE APPLICATION RESUBMISSION
5	09/20/2021	SITE APPLICATION SUBMISSION - ROT

09/20/2021

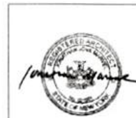


KEY PLAN NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

BUILDING SECTIONS

SCALE: 1/4" = 1'-0"



DOB STAMP ZONE

DRAWING #
A-320
___ of ___
DOB JOB: -

MARVEL

145 HUDSON STREET, FLR 3 NEW YORK, NY 10013
212 616 0420

OWNER
THE MASTERS SCHOOL
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522
TEL 914 479 6400

PROJECT ARCHITECTS + LANDSCAPE ARCHITECTS
MARVEL
145 HUDSON STREET, FLOOR 3
NEW YORK, NEW YORK 10013
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GEOTECHNICAL / CIVIL ENGINEER
MFS ENGINEERS & SURVEYORS, DPC
2780 HAMILTON BOULEVARD
SOUTH PLAINFIELD, NEW JERSEY 07080
TEL 908 922 4622

STRUCTURAL ENGINEER
SILMAN
32 OLD SLIP, FLOOR 10
NEW YORK, NEW YORK 10005
TEL 212 620 7970

BUILDING SYSTEMS ENGINEER
POLISE CONSULTING ENGINEERS, DPC
133 WEST 19TH STREET
NEW YORK, NEW YORK 10011
TEL 212 645 1002

VERTICAL TRANSPORTATION
VDA
145 WEST 30TH STREET, FLOOR 4
NEW YORK, NEW YORK 10001
TEL 212 868 9090

AV / IT / SECURITY CONSULTANT
COSENTINI ASSOCIATES, INC
498 SEVENTH AVENUE
NEW YORK, NEW YORK 10018
TEL 212 615 3600

ACOUSTICS CONSULTANT
LSTN CONSULTANTS
76 BEAVER STREET
NEW YORK, NEW YORK 10005
TEL 347 768 0810

ENVELOPE CONSULTANT
MW SKINS
1 WHITEHALL STREET, FLOOR 14
NEW YORK, NEW YORK 10004
TEL 347 809 6790

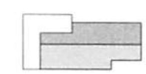
LIGHTING DESIGNER
DOT DASH LIGHTING DESIGN
160 BROADWAY, SUITE 1215
NEW YORK, NEW YORK 10038
TEL 212 967 3660

CODE AND ACCESSIBILITY CONSULTANT
CODE CONSULTANTS, INC
440 PARK AVENUE S
NEW YORK, NEW YORK 10016
TEL 212 447 4033

ARCHITECTURAL SPECIFICATIONS
CONSTRUCTION SPECIFICATIONS, INC
22 TENNENT ROAD
MORGANVILLE, NEW JERSEY 07751
TEL 732 970 0700

REV	DATE	DESCRIPTION
1	02/17/2021	VILLAGE OF DOBBS FERRY SITE APPLICATION
2	06/11/2021	SITE APPLICATION RESUBMISSION
3	07/22/2021	SITE APPLICATION RESUBMISSION
4	08/31/2021	SITE APPLICATION RESUBMISSION
5	09/20/2021	SITE APPLICATION SUBMISSION - ROT

09/20/2021

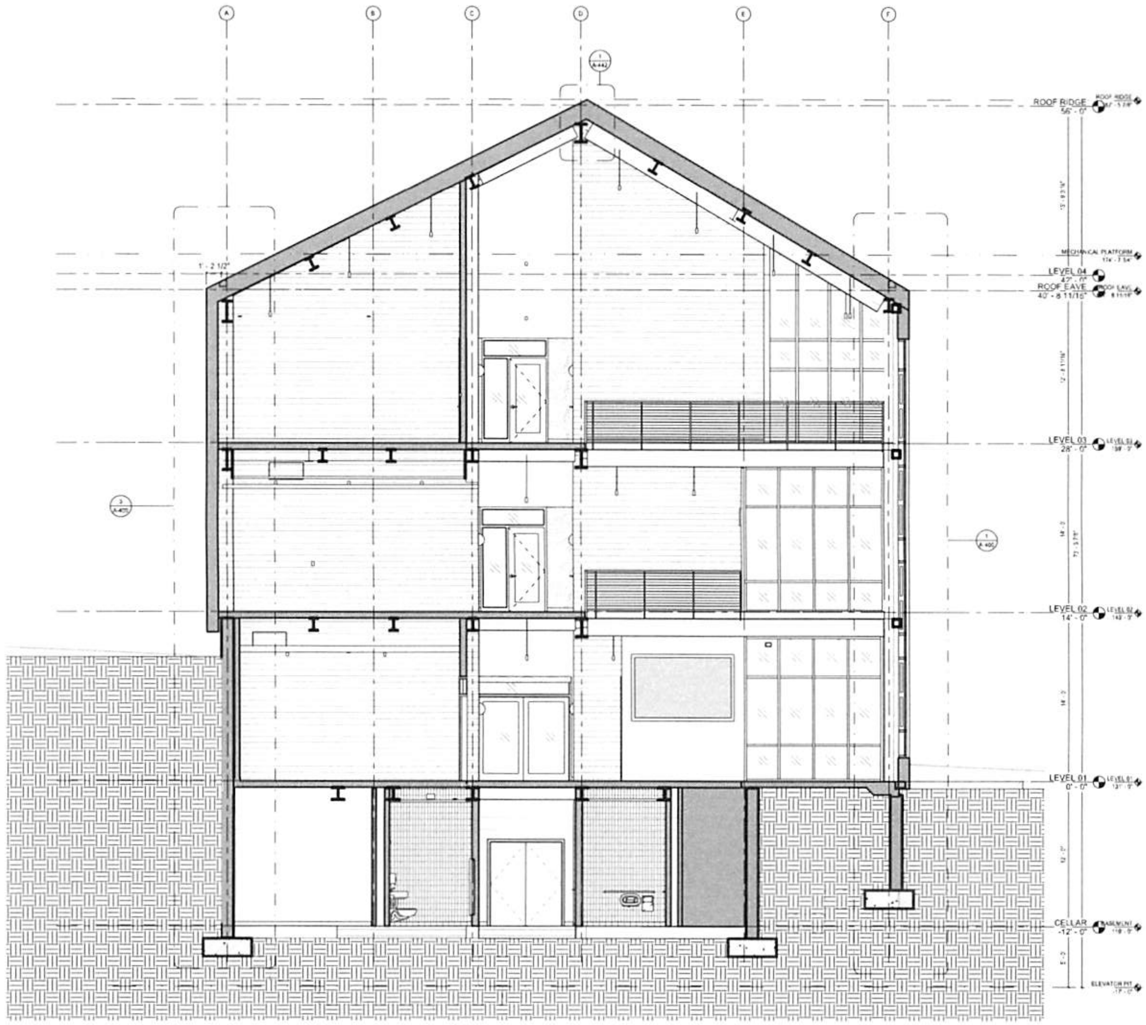


KEY PLAN NTS

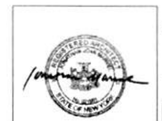
2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

BUILDING SECTIONS

SCALE: 1/4" = 1'-0"

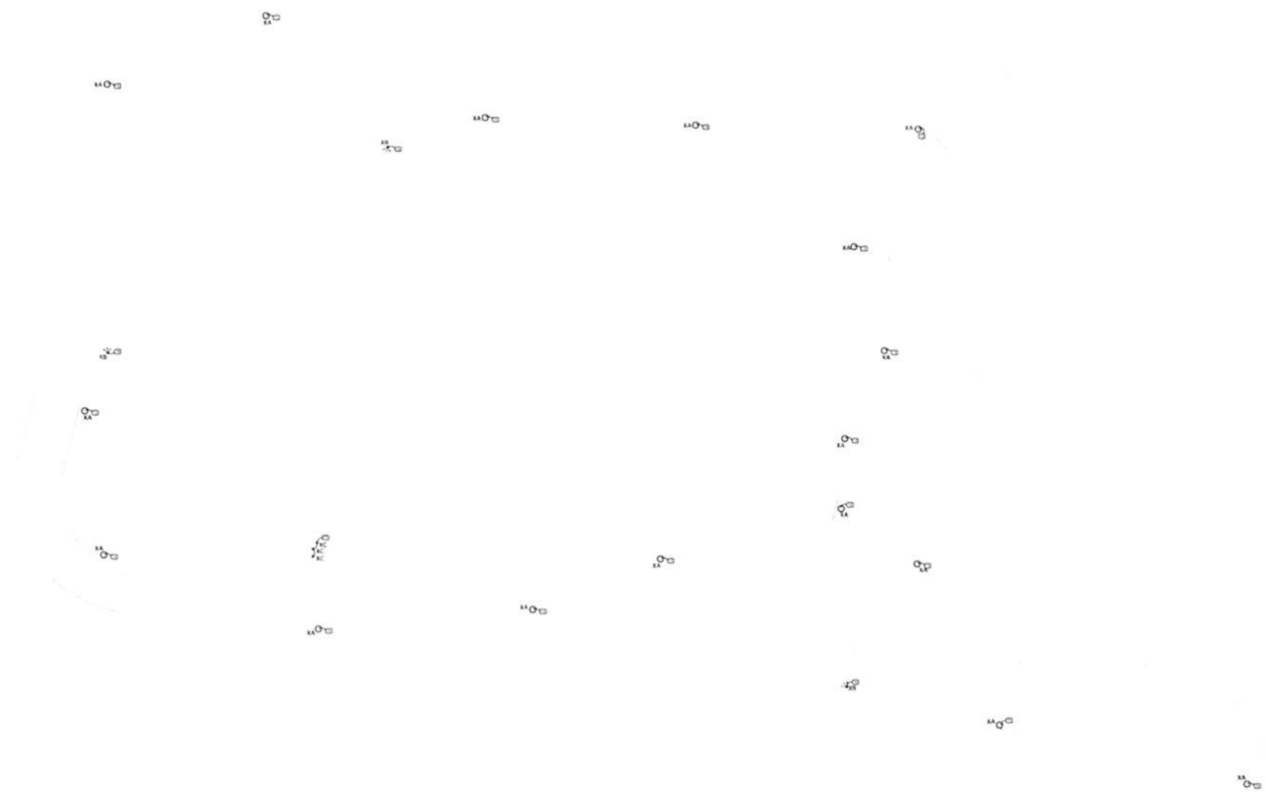


1 **BUILDING SECTION - CROSS**
1/4" = 1'-0"



DOB STAMP ZONE

DRAWING #:
A-321
___ of ___
DOB JOB: -



MARVEL
145 HUDSON STREET, FLR 3 NEW YORK, NY 10013
212.616.0420

OWNER
THE MASTERS SCHOOL
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522
TEL 914 479 6400

PROJECT ARCHITECTS + LANDSCAPE ARCHITECTS
MARVEL
145 HUDSON STREET, FLOOR 3
NEW YORK, NEW YORK 10013
TEL 212 616 0420

GEOTECHNICAL / CIVIL ENGINEER
MFS ENGINEERS & SURVEYORS, DPC
2780 HAMILTON BOULEVARD
SOUTH PLAINFIELD, NEW JERSEY 07080
TEL 908 307 4677

STRUCTURAL ENGINEER
SILMAN
32 OLD SLIP, FLOOR 10
NEW YORK, NEW YORK 10005
TEL 212 620 7970

BUILDING SYSTEMS ENGINEER
POLISE CONSULTING ENGINEERS, DPC
133 WEST 19TH STREET
NEW YORK, NEW YORK 10011
TEL 212 645 1002

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09/20/2021

KEY PLAN: NTS

2029
THE MASTERS SCHOOL
INNOVATION AND
ENTREPRENEURSHIP
CENTER

49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

LANDSCAPE
LIGHTING PLAN

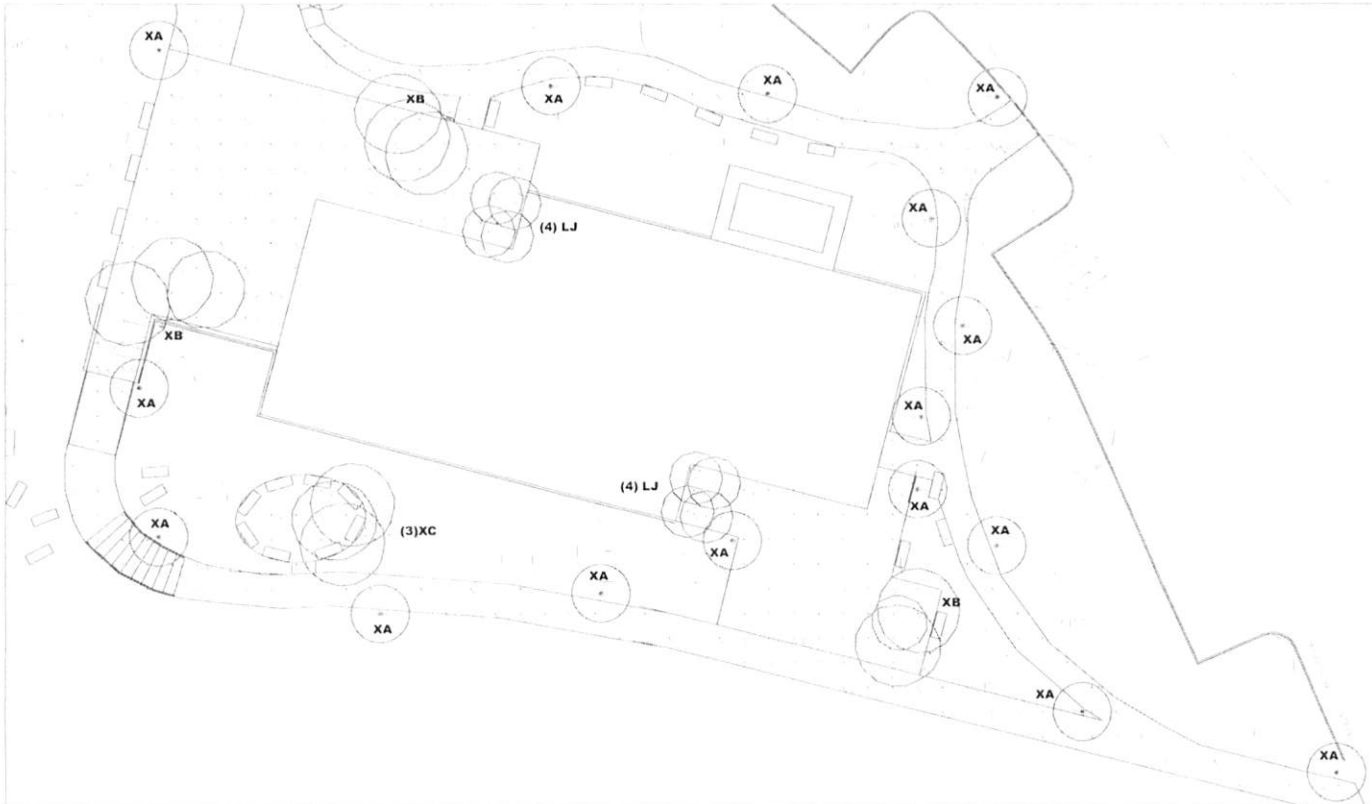
SCALE: 3/32" = 1'-0"

DRAWING #:
LC-010

___ of ___

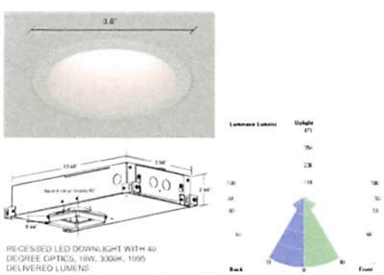
DOB JOB: -

DOB STAMP ZONE

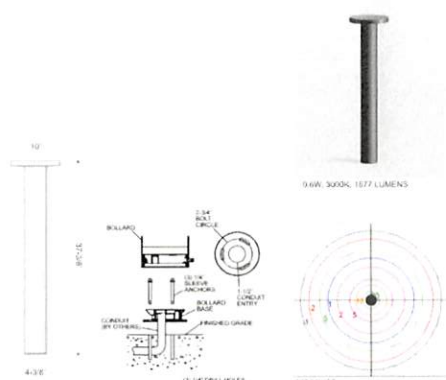


EXTERIOR LIGHTING PLAN (NTS)

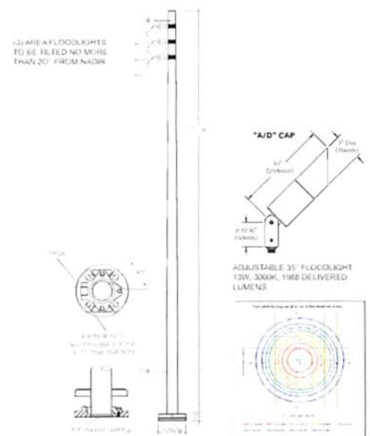
ALL EXTERIOR LIGHTING SHALL COMPLY WITH THE GENERAL STANDARDS AND MAXIMUM LIGHT LEVELS PER SECTION 300-41 OF THE ZONING CODE



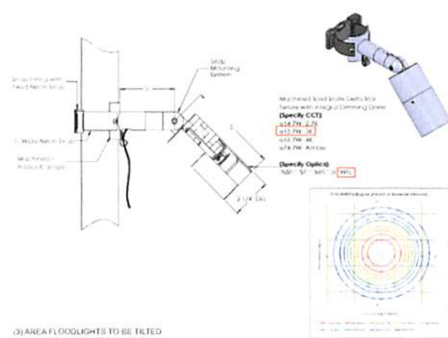
TYPE LJ CANOPY DOWNLIGHT



TYPE XA BOLLARD



TYPE XB AREA LIGHT



TYPE XC TREE STRAP MOONLIGHT

MARVEL

145 HUDSON STREET FLR 3 NEW YORK, NY 10013

THE MASTERS SCHOOL

MARVEL

WFS ENGINEERS & SURVEYORS, DPC

SILMAN

POLISE CONSULTING ENGINEERS, DPC

VDA

COSENTINI ASSOCIATES, INC

LSTN CONSULTANTS

RWDI

DOT DASH LIGHTING DESIGN

CODE CONSULTANTS, INC

CONSTRUCTION SPECIFICATIONS, INC

REV	DATE	DESCRIPTION

09/20/2021

KEY PLAN NTS

2029

THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER

49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

LANDSCAPE LIGHTING PHOTOMETRIC PLAN

SCALE: 3/32" = 1'-0"

DRAWING #
LC-011

___ of ___

DOB JOB

Stormwater Pollution Prevention Plan (SWPPP)

The Masters School
Innovation and Entrepreneurship Center

Dobbs Ferry, New York

STATE OF NEW YORK
GONZALO MATIA TRENOSKY
094858
LICENSED PROFESSIONAL ENGINEER

Gonzalo M. Trenosky, PE, LEED AP
Associate Engineer

PREPARED FOR:

Ms. Jennifer Olson, AIA, LEED AP
MARVEL
145 Hudson Street
New York, NY 10013

PREPARED BY:

MFS Consulting Engineers & Surveyor, DPC
320 Fifth Avenue, Suite 1102
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Issued for Board of Trustees Sept. 17, 2021 - Last Rev. Sept. 7, 2021
MFS Project No. 1120062

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This Stormwater Pollution Prevention Plan (SWPPP) has been prepared for the construction of the proposed site development at 49 Clinton Avenue (The Masters School Innovation and Entrepreneurship Center), a 96-acre college preparatory campus in the village of Dobbs Ferry, Westchester County, New York.

As described in Appendix B, Table 2 of the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activities (Permit No. GP-01-20-001), this SWPPP will include Cost-Construction Stormwater Management Practices.

The SWPPP describes practices and procedures required to prevent pollutants from entering the waters of the United States via stormwater runoff. The stormwater management design and erosion control plan for the project were prepared using criteria established in the New York State Standards and Specifications for Erosion and Sediment Control.

SITE OWNER

Owner

The Masters School
49 Clinton Avenue
Dobbs Ferry, NY 10522

Contact

Seth Marx
Director of Institutional Advancement
The Masters School
49 Clinton Avenue
Dobbs Ferry, NY 10522
+1 (914)-479-6527
seth.marx@mastersny.org

CONSTRUCTION MANAGER/OPERATOR

The construction manager for the construction activities is responsible to install and maintain all stormwater pollution prevention measures proposed in the plan.

Construction Manager

Yorke Construction Corporation
140 West 31st Street, 4th Floor
New York, NY 10001
+1 (212)-564-8467

Contact

Artie Pearsall
Project Manager
Yorke Construction Corporation
140 West 31st Street, 4th Floor
New York, NY 10001
+1 (212)-564-8467 ext. 117 (Office)
+1 (917)-817-5478 (Cell)
artie@yorkeconstruction.com

SWPPP DEVELOPMENT, REVIEW, AND UPDATE

SWPPP DEVELOPMENT

This SWPPP was developed in accordance with accepted engineering practices and provides the following:

- Offers protective measures to minimize sediment transport during construction activities.
- Describes the implementation of control measures that are to be used to reduce pollutant loadings from stormwater runoff during construction activities.
- Identifies potential sources of stormwater pollution from the construction site.

SWPPP REVIEW

This SWPPP will be kept on-site and will be made available for review by the designer, construction manager, subcontractors, and applicable federal, state, and local regulatory agencies that have jurisdiction over the construction site. If necessary, any of these regulatory agencies may notify the owner that the SWPPP is not in compliance with required regulations. If the SWPPP is in need of revision, the construction manager of the project will make the required revisions to the SWPPP within 7 days of notification by the regulatory agency. In addition, the construction manager will submit a written certification that the revisions have been made and will be implemented.

SWPPP UPDATE

When deemed necessary, the owner or construction manager may amend this SWPPP by making a change in design, construction, operations, maintenance, or other item that has an effect on the potential for discharge of pollutants from stormwater runoff associated with the construction activities. Amendment of the SWPPP by the owner or construction manager may also be deemed necessary under the following conditions:

- Field conditions render the erosion and sediment control measures to be ineffective in minimizing pollutants from stormwater discharges.
- To identify a new contractor that will implement any measure of the SWPPP.

The revised SWPPP should be marked as such with the revision date and shall be distributed by the owner or construction manager to the relevant parties.

EXISTING CONDITIONS

PROPERTY INFORMATION

The Masters School campus is presently comprised of several parcels. The proposed improvements ("Project Site") are located within Dobbs Ferry Parcel ID 3.90-66-1, which is bounded as listed below.

- To the north, by Dobbs Ferry Parcel ID 3.80-47-4.
- To the west, by private property (including Dobbs Ferry Parcel ID 3.80-46-3, 3.80-46-2 and 3.80-46-1) and Clinton Avenue.
- To the south, by Dobbs Ferry Parcel ID 3.120-111-1 and 3.171-153-5.
- To the east, by private property (including Dobbs Ferry Parcel ID 3.90-56-5, 3.90-56-6, 3.90-56-7, 3.90-56-8, 3.90-56-9, 3.90-63-5, 3.90-63-6, 3.90-63-7, 3.90-63-8, 3.90-63-9, 3.90-63-10, 3.90-63-11 and 3.90-63-12) and Estherwood Avenue.

The project site area that will be disturbed by the proposed improvements is approximately 0.83 acres. The site receives minimal tributary waters and is tributary to the Hudson River. It has been determined through site investigations performed by a licensed professional engineer of the State of New York that no surface waters or wetlands are present at the site.

The project site is not located in a Critical Environmental Area (CEA), per the New York State Department of Environmental Conservation Westchester County. A copy of the map is included with this submission for your reference.

EXISTING SITE DESCRIPTION

The project site is primarily grassed lawn, with the following neighboring existing features.

- Athletic Field for Softball, Soccer and Shot-Put
- Athletic Field Accessories (inc. fencing, benches, metal storage containers and net cages)
- Thirty-three (33) parking spaces
- Landscaping

A survey dated January 17, 2021, and prepared by Kenneth B. Salzmann, Land Surveyor is included for your reference.

The site topography generally slopes from south to north with a man-made steep-sloped area (20% - 28% grade) to accommodate the softball outfield along the west side of the project site and gentle slopes (4%-7% grade) within the remainder of the project site.

EXISTING UTILITIES

The site has the following existing subsurface utilities.

- Steam & return service lines
- Water valves & service lines (incl. abandoned)
- Electrical manholes & service lines
- Telecommunications manholes & service lines
- Sanitary sewer manholes & service lines
- Gas service lines (incl. abandoned)
- Fire hydrant

EXISTING SOIL CONDITIONS

Based on the Web Soil Survey by the Natural Resources Conservation Society, soils at the site are generally described as Paxton fine sandy loam (±0.83 acres) encompassing the entire area. The Paxton fine sandy loam (PnB) has a hydrologic soil group designation of 'C.' A 'C' classification is defined as a material with the moderately high runoff potential and low infiltration rates. Infiltration tests performed in the location of proposed stormwater management confirm that the soils have suitable infiltration rates for management practices, see Appendix.

The Soil Survey Map is included with this submission for your reference.

PROPOSED CONDITIONS

Proposed improvements for the project site include construction a new two-story 6,080-sf academic building with two (2) entrance paver patios, site walkways, driveway, and ADA-accessible parking spaces; along with associated utilities including one (1) new transformer with concrete pad, one (1) new emergency generator with concrete pad, condensing units with concrete pad, and necessary relocation and/or realigned of existing utilities; site regrading, landscaping, bioretention, underground stormwater management chambers, and associated structures and piping. Site regrading is proposed where necessary for drainage and aesthetic purposes.

A more detailed explanation of the proposed site improvements is listed below. The work is categorized by the type of site features proposed for the project site within the limits of disturbance: Building & Access, Utilities, and Grading & Drainage.

BUILDING & ACCESS

<u>Innovation & Entrepreneurship Center (IEC)</u>

The proposed two-story building will be bounded by a footprint of approximately 6,080 square feet. Two (2) proposed paver patios will serve as access to the IEC building at the north and south entrances. A proposed asphalt walkway will encompass the perimeter of the IEC building and paver patios in order to provide ADA-compliant pedestrian access from Cochrane Avenue.

UTILITIES

Relocated Utilities

- Steam & Condensate Return – to be rerouted along the western side of the project site, between the proposed IEC Building and the western asphalt walkway.
- Sanitary Sewer – to be rerouted along the western side of the project site, from the existing manhole adjacent to the southern proposed paver patio to the existing manhole within the proposed northern patio area. Two (2) sanitary sewer manhole are proposed at the northern end of the building within the landscaping. Additionally, one (1) existing sanitary sewer service from the eastern side of the property will be relocated around the northeastern area of proposed development and tied into the existing sanitary line to the north.
- Water – to be realigned along the western side of the project site and run north, parallel to the western face of the proposed IEC building. One (1) proposed 3-inch domestic service and one (1) proposed 6-inch fire service lines are to run from the realigned service line to the southwestern corner of the IEC building.
- Electrical – to be realigned along the western side of the project site, from the existing manhole adjacent to the southern proposed paver patio, around the perimeter of the proposed IEC building, to the existing electrical manhole at the northern end of the site. Additionally, one (1) proposed electrical connection will be installed to provide service from the proposed emergency generator at the northern end of the project site to the northern face of the IEC building. Furthermore, one (1) proposed electrical connection will be installed to provide service from the proposed transformer at the southern end of the project site to the eastern face of the IEC building.
- Telecommunications – to be rerouted along the western side of the project site, from the existing manhole adjacent to the southern proposed paver patio to the existing manhole in the landscaped area at the northern end of the project site.
- Gas – to be realigned at a point from the western side of the project site to a point on the existing gas service line at the northern end of the project site.

GRADING & DRAINAGE

Stormwater Chambers

One (1) proposed ADS Stormtech stormwater infiltration chamber system below the northern paver patio will serve as the project site's stormwater detention facility. The chamber system will feature fourteen (14) infiltration chambers, with a mandatory isolation row for maintenance.

Additionally, underdrains are to be installed within the proposed bioretention area at the northern end of the project site. All stormwater from the proposed IEC building and bioretention area will collect via underground pipe to the proposed infiltration chamber system. The chamber system will include two (2) manhole structures; one (1) for all stormwater entering, and one (1) for all stormwater conveyed out to the existing corner curb inlet, east of the project site.

STORMWATER MANAGEMENT

The following information details the stormwater management systems designed to collect and infiltrate stormwater from the proposed impervious areas. Regrading is proposed to promote overland flow and minimize channeling while maintaining existing drainage courses.

Existing drainage patterns convey a tributary area of approximately 1.0 acres to the new building area, and is graded to generally split drainage between two drainage areas. Drainage area one flows overland towards the Carriage House and ultimately splits between flow into the wooded area east of the House, and flow along the circulation road towards the track and Estherwood Avenue. Drainage area two overland to a catch basin in the parking area just north of the Middle School, ultimately being conveyed via pipes to precast drywells in the adjacent lawn. Refer to Existing Drainage Area Map, attached.

Proposed drainage pattern conveys to the extent practicable a tributary area of approximately 1.19 acres, with site drainage being routed to the on-site bioretention basin, and roof drainage routed into the proposed subgrade stormwater chambers. Refer to Proposed Drainage Area Map, attached.

TABULAR SUMMARY OF STORMWATER RUNOFF CONDITIONS

PRE VS POST STORMWATER RUNOFF RATES AND VOLUMES		
	PRE *Node: Pre-Existing Composite*	POST *Node: 7L Composite*
1-YR RAINFALL = 2.93 INCHES (Type III 24-hr)		
FLOW	0.99 CFS	0.00 CFS
VOLUME	0.078 AF	0.000 AF
10-YR RAINFALL = 5.53 INCHES (Type III 24-hr)		
FLOW	3.51 CFS	2.66 CFS
VOLUME	0.258 AF	0.153 AF
25-YR RAINFALL = 6.75 INCHES (Type III 24-hr)		
FLOW	4.81 CFS	3.97 CFS
VOLUME	0.355 AF	0.247 AF
100-YR RAINFALL = 8.63 INCHES (Type III 24-hr)		
FLOW	6.88 CFS	6.64 CFS
VOLUME	0.512 AF	0.404 AF

SIX STEP PROCESS FOR STORMWATER SITE PLANNING AND PRACTICES SELECTION

The NYS Stormwater Management Design Manual (SMDM) requires a six-step process to integrated site planning, green infrastructure, and stormwater management practices.

1. **Site Planning**
   Reduction of impervious cover, preservation of natural areas...

   Preservation of Natural Resources

   - **Locating Development in Less Sensitive Areas**
     This project is designed to avoid sensitive resource areas such as nearby mature forests and critical habitats by locating development to fit within unused grass lawn.
   - **Reduction of Clearing & Grading**
     This project is design within a compact footprint for all necessary foundations, utility relocations, site utilities, and stormwater management design.

   Reduction of impervious coverage includes:

   - **Roadway Reduction**
     This project is designed within an existing campus and requires no new roadway for access, although a small driveway is provided for maintenance access.
   - **Building Footprint Reduction**
     This project is designed within a compact footprint and low elevation-view exposure by nestling into a slope and incorporating a cellar level.

2. **Calculate initial required Water Quality Volume for the site.**

P =	1.5	*In*	
A =	1.19	*ac*	
Ai =	0.28*	*ac**	*This reflects a reduction of 100sf per tree (24 trees proposed)*
I =	24	%	
Rv =	0.262		

WQv =	0.0389	*af*
	1696	*cf*

3. **Runoff Reduction Volume (RRv)**
   Provide Runoff Reduction by incorporating green infrastructure techniques and standard stormwater management practices (SMP) with Runoff Reduction Volume (RRv) capacity.

   The full WQv of 1,696-cf is proposed for infiltration through green infrastructure and standard SWPs, which are capable of infiltrating 3,474-cf.

4. **Calculate minimum RRv required.**

   The full WQv of 1,696-cf is proposed for infiltration through green infrastructure and standard SWPs, which are capable of infiltrating 3,474-cf.

5. **Provide standard SMPs**
   Provide standard SMPs to treat remaining portion of water quality volume (WQv) not addressed by green infrastructure and standard SMPs with RRv capacity.

   Bioretention infiltration and underground detention chambers are proposed for stormwater infiltration of the WQv.

6. **Provide volume and peak rate control practices where required.**

   Underground detention chambers and restricted-flow outlet control structure are proposed for peak and volume reduction of 1-, 10-, and 100-year storms.

CHANNEL PROTECTION VOLUME (CPV)

The CPv criteria is intended to protect stream banks from erosion, and will be demonstrated by provided 24 hour extended detention of the Type III 1-year, 24-hour storm event. The CPv requirement does not apply in certain conditions, including where Reduction of the entire CPv volume is achieved at a site through green infrastructure or infiltration.

This project proposes infiltration of the entire CPv (3,412-cf) via the bioretention infiltration and the underground infiltration chambers, which are capable of infiltrating 3,474-cf of stormwater.

P = 2.93" **Q** = 1.32" **CN** = 81 **Tc** = 9.1min **A** = 1.19ac **qu** = 550csm/in **qo/qi** = 0.04

OVERBANK FLOOD CONTROL (QP)

The Qp criteria is intended to prevent and increase in frequency and magnitude of out-of-bank flooding generated by new development, and will be demonstrated by attenuating the Type III 10-year, 24-hour peak discharge rate to pre-development conditions.

This project achieves attenuation of the Type III 10-year, 24-hour peak discharge rate to pre-development conditions.

Qpre = 3.51 cfs **Qpost** = 2.66 cfs

EXTREME FLOOD CONTROL (QF)

The Qf criteria is intended to prevent the increased risk of flood damage from large storm events, maintain the boundaries of pre-development conditions, and protect the physical integrity of stormwater management practices. It will be demonstrated by attenuating the Type III 100-year, 24-hour peak discharge rate to pre-development conditions.

This project achieves attenuation of the Type III 100-year, 24-hour peak discharge rate to pre-development conditions.

Qpre = 6.88 cfs **Qpost =** 6.64 cfs

SOIL EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION

Temporary soil erosion and sediment control measures have been applied to this site to minimize the amount of sediment carried by stormwater runoff and truck hauling during construction activities. The soil erosion and sediment control measures have been designed in accordance with the New York State Standards and Specifications for Erosion and Sediment Control (July 2016). The following summarizes the planned soil erosion and sediment control practices as shown on Sheet C-400.

SOIL EROSION AND SEDIMENT CONTROL PRACTICES

- Silt Fence: Silt fence shall be installed around topsoil stockpile area.
- Surface Stabilization: Surface stabilization will be accomplished with vegetation and mulch. Roadway and building base courses will be installed as soon as finished grade is reached.
- Inlet Protection: Inlet protection shall be installed at all stormwater inlets receiving runoff from disturbed areas of the site.
- Temporary Tree Protection: Where applicable, 6.0-foot-high protective fence will be erected around the dripline of trees that are to remain to prevent damage during construction.
- Stabilized Construction Entrance: A temporary stabilized construction entrance shall be installed for access to and from the construction site. Wash-down water and runoff from the construction entrance shall be directed to the appropriate soil erosion and sediment control measures.
- Staging and Laydown Areas: Staging and laydown areas for vehicles and equipment shall be located on stabilized portions of the site. Vehicles and equipment shall be washed down in stabilized areas prior to exiting the site.
- Dust Control: Should excessive dust be generated; it shall be controlled by sprinkling.

- Erosion Control Blanket: Temporary biodegradable erosion control blankets will be installed along the disturbed steep-slope areas. Install per manufacturer's specification.
- Grading: The maximum created slope is limited to 2' horizontal to 1' vertical. Refer to the Grading Plan (Sheet C-600) for details of design slopes.

CONSTRUCTION SCHEDULE

This construction schedule has been prepared to clearly outline the construction and the implementation of the soil erosion and sediment control measures.

1. Obtain all required village, town, city, county, state, and federal permits, and approvals prior to commencing earthwork.
2. Install erosion and sediment perimeter controls, such as construction fence and stabilized construction entrances, as shown on the Construction Access Plan Sheet C-502 prior to any site disturbances.
3. If required, install excavation support, and begin foundation excavation.
4. Sprinkle areas of exposed soil to control dust, as necessary.
5. Complete excavation, utility installation, and rough grading.
6. Soil erosion features shall remain in place until after construction is completed and final stabilization is reached. Only after the site is stabilized, remove temporary erosion and sediment control structural measures. "Stabilized" shall be defined as a 70% uniform perennial vegetative cover in all unpaved areas and areas not covered by permanent structure.

STAGING AREAS

Locations for contractor stockpiling and staging will be on-site. The approximate limits of these areas are shown on the Construction Access Plan (Sheet C-502).

VEGETATIVE PLAN

The contractor shall initiate surface stabilization measures as soon as practical in portions of the site where construction activities have permanently ceased and in no case more than 14 days after construction activity in that portion of the site has temporarily ceased. Areas to be seeded are referred to as disturbed areas. Refer to Landscape Planting Plan (Sheet L-400) for permanent seeding.

<u>For Temporary Seeding and Mulch:</u>

1. The altered areas that have been final-graded are to be seeded to establish a permanent ground cover with little or no maintenance. A side mixture of bluegrass (88%) and redtop (12%) or some other species shall be applied at a rate of 40lbs per acre, to a prepared ground surface which includes lime and fertilizer at a rate indicated by soils tests.
2. Rake the seed into the soil and lightly pack to establish good contact.

3. Mulching will be used as an aid in establishing vegetation. Straw or hay mulch will be applied at a rate of 3 tons per acre, in areas where mulching is required. Wood cellulose fiber will be applied at a rate of 1500lbs per acre.
4. Seed and mulch fill slopes in regular vertical increments of 15-feet immediately upon placement.
5. Planting Times
    a. Sod: May be laid at any time except during the months of June and July, provided that the ground is not frozen.
    b. Seed: May be laid between March 15 and May 1, and between August 15 and October 1.

Seeding Bed Preparation:

1. Clear the sub-soil upon which topsoil is to be placed of all stones, woody roots, rubbish, and other objectionable matter, scarify the surface thoroughly and loosen to a depth of at least 4"; spread the topsoil to a smooth even surface and to the depth required, then rake or otherwise manipulate to form smooth drainage grades to the levels shown on the Grading Plan (Sheet C-600).
2. Deposit topsoil and spread to a minimum depth of 8" over earth where seeded and sodded areas are indicated, 12" where ground cover areas are indicated, 18" over rock where seeded, sodded or ground cover areas are indicated, and to a minimum depth of 18" over earth, and 36" over rock where planted, garden or shrubbery areas are indicated on the Landscape Planting Plan (Sheet L-400).

For Permanent Seeding:

1. The altered areas that have been final-graded are to be seeded to establish a permanent ground cover with little or no maintenance. A side mixture of bluegrass (88%) and redtop (12%) or some other species shall be applied at a rate of 40 lbs. per acre, to a prepared ground surface which includes lime and fertilizer at a rate indicated by soils tests.
2. Mulching will be used as an aid in establishing vegetation. Straw or hay mulch will be applied at a rate of 3 tons per acre, in areas where mulching is required. Wood cellulose fiber will be applied at a rate of 1500lbs per acre.
3. Lime and fertilizer for all the listed seed mixes shall be applied according to the following rates (per acre) for the development. Fertilizer is to be applied at a rate of 1000 lbs./acre.
    a. 6 tons agricultural lime
    b. 100 lbs. N
    c. 200 lbs. P_2O_5
    d. 200 lbs. K_2O
4. Planting Times

a. Sod: May be laid at any time except during the months of June and July, provided that the ground is not frozen.

b. Seed: May be laid between March 15 and May 1, and between August 15 and October 1.

Maintenance:

1. The contractor may be directed to reseed any areas which, in the opinion of the engineer are unacceptable.
2. The contractor shall adequately maintain the erosion control cover, including watering, as necessary.
3. If the growth is inadequate for erosion control, the contractor shall overseed using half the rate of seed originally applied.
4. If the grass seed growth is over 60% damaged, reseed at the originally specified rate.

SOIL RESTORATION REQUIREMENTS

This project shall comply with NYS DEC requirements for soil restoration, as noted in the Stormwater Management Design Manual Table 5.3 and summarized below.

DEC STORMWATER MANAGEMENT DESIGN MANUAL TABLE 5.3 SOIL RESTORATION REQUIREMENTS		
TYPE OF SOIL DISTURBANCE	SOIL RESTORATION REQUIREMENT	COMMENTS/EXAMPLES
No soil disturbance	Restoration not permitted	Preservation of Natural Features
Minimal soil disturbance	Restoration not required	Clearing and Grubbing
Areas where topsoil is stripped only – no change in grade	HSG C: Aerate and apply 6-in of topsoil	Protect area from ongoing construction activites
Areas of cut or fill	HSG C: Apply full soil restoration (per Deep Ripping and De-compaction, DEC 2008)	
Heavy traffic areas on site (especially in a zone 5-25 feet around buildings but not wthin a 5-ft perimeter around foundation walls)	Apply full Soil Restoration (per Deep Ripping and De-compaction, DEC 2008)	
Areas where Runoff Reduction and/or Infiltration practices are applied	Restoration not required, but may be applied to enhance the reduction specified for appropriate practices.	Keep construction equipment from crossing these areas. To protect newly installed practice from any ongoing construction activities construct a single phase operation fence area
Redevelopment projects	Soil Restoration is required on redevelopment projects in areas where existing impervious area will be converted to pervious area.	

**Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler.*

MFS

MAINTENANCE PROGRAM

The construction manager shall be responsible for the installation and maintenance of all temporary erosion and sediment control measures. A log shall be kept, documenting the maintenance of the control measures. Inspections shall be done under the supervision of a licensed Professional Engineer or Landscape Architect, or a Certified Professional in Erosion and Sediment Control.

All maintenance methods described below are in direct accordance with the New York State Standards and Specifications for Erosion and Sediment Control (July 2016).

1. The contractor shall be responsible for the proper construction, stabilization, and maintenance of all temporary erosion and sedimentation control measures and related items included within this plan.
2. Soil sediment removed from any temporary soil erosion and sediment control measure during regular maintenance shall be incorporated back into the earthwork as fill on the site. Soil sediment materials shall be distributed on-site without changing drainage patterns during a specific construction stage.
3. All erosion and sediment control practices shall be inspected for stability and operation within 24 hours of every 0.5-inch or greater rainfall, but in no case less than once in a seven-day period. Any needed repairs shall be made immediately to maintain all practices as designed. A Construction Duration Inspections form is included in Appendix B and shall be completed and inserted into this SWPPP after each inspection.
4. Sediment shall be removed from behind the silt fence when it reaches 0.5-feet deep at the silt fence. The silt fence shall be repaired as necessary to maintain a barrier.
5. Debris and litter shall be removed from the site on a monthly basis, or more frequently if necessary.
6. Construction equipment and vehicles within the work area shall be properly maintained and inspected for leaking, particularly for identification of vehicles leaking petroleum products that may enter adjacent stormwater drainage facilities.
7. All seeded areas shall be fertilized, reseeded, and mulched as necessary to maintain a vigorous, dense vegetative cover.

NON-STORMWATER DISCHARGES

Possible sources of non-stormwater discharges associated with the construction activity are identified below. The following are additional stormwater pollution prevention measures for non-stormwater discharges.

- Cleaning water for construction vehicles and equipment shall be diverted to the temporary and approved erosion and sediment control measures. Chemicals and detergents shall not be used.

- The construction manager is to coordinate with the owner for identifying areas on-site for construction vehicle transit (i.e., haul roads, contractor trailers and parking areas, etc.) or equipment staging which shall be monitored and where runoff can be controlled.
- Water used for dust control measures shall be applied using proper quantities and equipment. No chemical additives shall be used.
- Water service flushing, hydrostatic test water, fire test water, and chlorination test water shall be directed to the control measures on the site. Turbid water is to be detained to allow sufficient sedimentation time (minimum of 24 hours). Chlorinated water is to be detained until the water is dechlorinated (minimum of 24 hours).
- Concrete trucks shall be washed out in an area approved of by the owner or owner's representative. All runoff from these activities shall be directed to the on-site control measures.

STORAGE PRACTICES

The following is a description of additional controls and measures that are to be implemented at the site by the general contractor to minimize pollutant transport.

- Solid waste disposal dumpsters and containers are to be covered and emptied regularly. Solid waste is to be disposed of properly in accordance with local regulations.
- Portable toilets are to be installed and cleaned regularly with their contents properly disposed of.
- Building materials are to be properly stored and contained on-site.

SPILL PREVENTION PRACTICES

The following are material management practices that are to be used by the general contractor to reduce the risk of spills or other accidental exposure of materials and substances to storm water runoff during construction. These are a minimum as per the following environmental documents in effect on site: (BUD) - Beneficial Use Determination, (HASP) - Health and Safety Plan, and (RAWP) - Remedial Action Work Plan. The stricter shall govern.

- Materials stored on-site with potential for spillage are to be stored in a neat and orderly manner in their appropriate containers. Materials with a potential for spillage shall be stored under a roof or other enclosure when possible.
- Products are to be kept in their original containers with the original manufacturer's label.
- Substances are not to be mixed with one another unless recommended by the manufacturer.

- Prior to disposal, a product is to be completely used up or its container is to be resealed whenever possible.
- Manufacturers' recommendations for proper use and disposal are to be followed.
- During periodic inspections, the proper use and disposal of materials is to be recorded on the inspection form.
- On-site vehicles are to be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage of petroleum products. Petroleum products are to be stored in closed containers that are clearly labeled. Used oils are to be disposed of properly.
- Materials are to be brought on-site in the minimum quantities required to limit on-site storage.
- Paint containers are to be tightly sealed and properly stored when not required for use.
- Excess paint, solvents, and other similar products shall not be discharged to the storm sewer system. These items are to be properly disposed of according to manufacturers' instructions or state and local regulations.
- Proper precautions are to be taken so materials do not spill onto public thoroughfares. If materials are spilled in these areas, they are to be removed immediately so that they do not enter the surface and subsurface drainage systems.
- Oil containers are to have appropriate secondary containment. If total oil storage on-site exceeds a cumulative total of 1,320 gallons, then a Spill Prevention Control and Countermeasure (SPCC) plan must be prepared by the owner.
- If necessary, the contractor is to prepare a SPCC plan to cover proposed activities.

SPILL CONTROL PRACTICES

The following practices are to be adhered to by the general contractor for spill prevention and cleanup:

- Spills of petroleum, toxins, or hazardous material are to be reported to the owner and appropriate state or local government agencies immediately, regardless of size.
- Manufacturers' recommended methods for spill cleanup are to be clearly posted at the site. Site personnel are to be made aware of the procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup are to be kept in designated material storage areas on-site. Equipment and materials are to include but not be limited to brooms, dust pans, mops, rags, gloves, goggles, spill control materials, sand, sawdust, and trash containers specifically for this purpose.

- Spills are to be cleaned up immediately after discovery.
- The spill area is to be kept well ventilated and personnel are to wear appropriate protective clothing to prevent injury from contact with hazardous substances.
- A spill report is to be completed and filed in the SWPPP and is to include a description of the spill, the cause of the spill, and the corrective actions taken.

INSPECTION DURING CONSTRUCTION

SPDES GENERAL REQUIREMENTS AND GUIDELINES

The SPDES General Permit for Construction Activity GP-0-20-001 outlines the following requirements and guidelines for inspections during construction:

The owner or operator shall have a qualified professional conduct a site inspection at least once every seven calendar days. Qualified professional means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed professional engineer, Certified Professional in Erosion and Sediment Control (CPESC), licensed Landscape Architect, or other NYSDEC (Department) endorsed individuals. It also means someone working under the direct supervision of the licensed Professional Engineer or licensed Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that an individual performing a site inspection has received four hours of training, endorsed by the Department, from a Soil and Water Conservation District, CPESP, Inc. or other Department-endorsed entity in proper erosion and sediment control principles no later than two years from date this general permit is issued. After receiving the initial training, an individual working under the direct supervision of the licensed Professional Engineer or licensed Landscape Architect shall receive four hours of training every three years.

At a minimum, the qualified professional shall inspect all soil erosion and sediment control practices to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved final stabilization, and all points of discharge from the construction site.

The qualified professional shall prepare an inspection report subsequently to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

1. Date and time of inspection;
2. Name (printed and signed) and title of the person(s) performing inspection;
3. A description of the weather and soil conditions (e.g., dry, wet, saturated) at the time of the inspection;
4. A description of the condition of the runoff at all points of discharge from the construction site. This shall include identification of any discharges of sediment from the

construction site. Include discharges from conveyance systems (i.e., pipes, culverts, ditches, etc.) and overland flow;

5. A description of the condition of all, natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the construction site which receive runoff from disturbed areas. This shall include identification of any discharges of sediment to the surface waterbody;
6. Identification of all erosion and sediment control practices that need repair or maintenance;
7. Identification of all erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;
8. Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection;
9. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;
10. Corrective action(s) that must be taken to install, repair, replace, or maintain erosion and sediment control practices; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s); and
11. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The qualified inspector shall attach paper color copies of the digital photographs to the inspection report being maintained on site within seven calendar days of the date of the inspection. The qualified inspector shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The qualified inspector shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

Within one business day of the completion of an inspection, the qualified professional shall notify the owner or operator and the appropriate contractor (or subcontractor) shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame, prior to the next weekly submission.

A typical inspection report form for conducting the inspections is included in Appendix B. If an alternate inspection form is used, it must at least provide the same information as provided on the referenced form. A monthly inspection summary for the inspections of the erosion and sediment control measures shall be prepared by the qualified professional. The general contractor is to post on site a summary of site inspection activities on a monthly basis.

Prior to the completion of work, the general contractor shall have the qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization using either vegetative or structural stabilization methods and that all temporary erosion and sediment control measures are no longer required.

WINTER CONDITIONS

During winter months, periodic inspections are to occur as described above until construction is completed and the site is stabilized. During winter operation (i.e., suspended soil disturbance, site stabilization), however, the owner may reduce inspection frequencies in accordance with the NYSDEC's Winter Site Stabilization/Site Inspections for Construction Sites. Under winter conditions, inspections are to be performed at least once every 30 days and within 24 hours of the end of a rainfall event of 0.5 inches or greater. Non-winter inspection frequencies are to resume upon resumption of construction activities, but no later than March 15th.

CERTIFICATIONS AND FORMS

The following certifications and forms are to be reviewed, understood, filled out, and signed by the appropriate personnel at the appropriate time:

- The Pre-Construction Documents and Certifications, provided in Appendix A, shall be filled out by the owner, operator, preparer, and qualified professional, as appropriately shown in the section.
- The Construction Duration Inspections form provided in Appendix B is to be filled out and signed by the qualified professional that will perform site inspections and oversee installation of erosion control measures for the project.
- The Monthly Summary of Site Inspection Activities form provided in Appendix C is to be completed by the qualified inspector.
- The Contractor's Certification Statement provided in Appendix D is to be filled out and signed by the operator/general contractor.
- The Sub-Contractor's Certification Statement provided in Appendix D is to be filled out and signed by all sub-contractors.
- The Certificate of Issuance provided in Appendix D is to be filled out and signed by the operator and preparer prior to performing any site work.
- The Erosion and Water Quality Control Identification form provided in Appendix D is to be filled out by the operator.
- Records of site work and site stabilization are to be kept on the Construction Stabilization form provided in Appendix D, to be filled out by the operator, as necessary.
- The Certificate of Change by the Contractor provided in Appendix D is to be filled out and signed by the operator upon implementation of any requested changes to the SWPPP by the owner, preparer, or any local authority having jurisdiction over the project site. Changes to the SWPPP are only to be made when the plan or contractor's implementation

proves to be ineffective in eliminating or significantly minimizing pollutants from the construction activity.

- The Final Stabilization and Retention of Records form provided in Appendix E is to be filled out and signed by the qualified professional that will perform site inspections and oversee installation of erosion control measures for the project.
- The Certificate of Return provided in Appendix E is to be filled out and signed by the operator and owner after final stabilization of the site has been completed.

RETENTION OF RECORDS

The following are to be retained by the owner at the site and for a period of three years from the date the site is finally stabilized.

- SWPPP
- Contract Documents including contract drawings and technical specifications
- Stormwater inspections and maintenance reports
- Contractor Certification
- SWPPP Certification Statement of Satisfactory Completion
- Correspondence regarding stormwater practices

REFERENCES

New York State Standards and Specifications for Erosion and Sediment Control. New York State Department of Environmental Conservation, August 2005.

APPENDIX A:
NOTICE OF INTENT

NOI for coverage under Stormwater General Permit for Construction Activity

version 1.30

(Submission #: HPA-0RM8-X53D2, version 1)

Details

Submission Alias	NOI SW General Permit - 49 Clinton Ave (IEC)
Originally Started By	Gonzalo Trenosky
Submission ID	HPA-0RM8-X53D2
Submission Reason	New
Status	Draft

Form Input

Owner/Operator Information

Owner/Operator Name (Company/Private Owner/Municipality/Agency/Institution, etc.)
The Masters School

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
Ed

Owner/Operator Contact Person First Name
Biddle

Owner/Operator Mailing Address
49 Clinton Avenue

City
Dobbs Ferry

State
NY

Zip
10522

Phone
9144796431

Email
ed.biddle@mastersny.org

Federal Tax ID
NONE PROVIDED

Project Location

Project/Site Name
The Masters School - Innovation & Entrepreneurship Center

Street Address (Not P.O. Box)
49 Clinton Avenue

Side of Street
East

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Dobbs Ferry

State
NY

Zip
10522

DEC Region
3

County
WESTCHESTER

Name of Nearest Cross Street
NONE PROVIDED

Distance to Nearest Cross Street (Feet)
NONE PROVIDED

Project In Relation to Cross Street
NONE PROVIDED

Tax Map Numbers Section-Block-Parcel
NONE PROVIDED

Tax Map Numbers
NONE PROVIDED

1. Coordinates

Provide the Geographic Coordinates for the project site. The two methods are:
- Navigate to the project location on the map (below) and click to place a marker and obtain the XY coordinates.
- The "Find Me" button will provide the lat/long for the person filling out this form. Then pan the map to the correct location and click the map to place a marker and obtain the XY coordinates.

Navigate to your location and click on the map to get the X,Y coordinates
41.012179586711795,-73.86963084664356

Project Details

2. What is the nature of this project?
New Construction

3. Select the predominant land use for both pre and post development conditions.

Pre-Development Existing Landuse
Institutional/School

Post-Development Future Land Use
Institutional/School

3a. If Single Family Subdivision was selected in question 3, enter the number of subdivision lots.
NONE PROVIDED

---

4. In accordance with the larger common plan of development or sale, enter the total project site acreage, the acreage to be disturbed and the future impervious area (acreage)within the disturbed area.

*** ROUND TO THE NEAREST TENTH OF AN ACRE. ***

Total Site Area (acres)
96

Total Area to be Disturbed (acres)
2.2

Existing Impervious Area to be Disturbed (acres)
.1

Future Impervious Area Within Disturbed Area (acres)
.3

5. Do you plan to disturb more than 5 acres of soil at any one time?
No

---

6. Indicate the percentage (%) of each Hydrologic Soil Group(HSG) at the site.

A (%)
0

B (%)
0

C (%)
100

D (%)
0

7. Is this a phased project?
No

8. Enter the planned start and end dates of the disturbance activities.

Start Date
10/1/2021

End Date
9/30/2023

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.
Hudson River

9a. Type of waterbody identified in question 9?
River Off Site

Other Waterbody Type Off Site Description
NONE PROVIDED

9b. If "wetland" was selected in 9A, how was the wetland identified?
NONE PROVIDED

10. Has the surface waterbody(ies in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001?
No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001?
No

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters?
No

If No, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey?
No

If Yes, what is the acreage to be disturbed?
NONE PROVIDED

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area?
No

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)?
Unknown

16. What is the name of the municipality/entity that owns the separate storm sewer system?
NONE PROVIDED

17. Does any runoff from the site enter a sewer classified as a Combined Sewer?
Unknown

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law?
No

19. Is this property owned by a state authority, state agency, federal government or local government?
No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.)
No

Required SWPPP Components

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)?
Yes

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)?
Yes

If you answered No in question 22, skip question 23 and the Post-construction Criteria and Post-construction SMP Identification sections.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual?
Yes

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:
Professional Engineer (P.E.)

SWPPP Preparer
Gonzalo Trenosky

Contact Name (Last, Space, First)
Trenosky Gonzalo

Mailing Address
2780 Hamilton Boulevard

City
South Plainfield

State
New Jersey

Zip
07080

Phone
9089224625

Email
gmt@mfsengineers.com

Download SWPPP Preparer Certification Form
Please take the following steps to prepare and upload your preparer certification form:

1) Click on the link below to download a blank certification form
2) The certified SWPPP preparer should sign this form

3) Scan the signed form
4) Upload the scanned document

Download SWPPP Preparer Certification Form

Please upload the SWPPP Preparer Certification

1120062_SWPPP Preparer Certification Form_signed.pdf - 07/07/2021 01:48 PM

Comment

Please see attached SWPPP Preparer Certification Form. The Owner of the Property is The Masters School.

Erosion & Sediment Control Criteria

25. Has a construction sequence schedule for the planned management practices been prepared?

Yes

26. Select all of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

Storm Drain Inlet Protection
Stabilized Construction Entrance
Silt Fence
Dust Control
Construction Road Stabilization

Biotechnical

None

Vegetative Measures

Topsoiling
Seeding

Permanent Structural

Land Grading

Other

NONE PROVIDED

Post-Construction Criteria

*** IMPORTANT: Completion of Questions 27-39 is not required if response to Question 22 is No.**

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

Locating Development in Less Sensitive Areas
Roadway Reduction

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).
All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout). (Acre-feet)
.042

29. Post-construction SMP Identification
Use the Post-construction SMP Identification section to identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity that were used to reduce the Total WQv Required (#28).

Identify the SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use the Post-Construction SMP Identification section to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29. (acre-feet)
.026

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28)?
No

If Yes, go to question 36. If No, go to question 32.

32. Provide the Minimum RRv required based on HSG. [Minimum RRv Required = (P) (0.95) (Ai) / 12, Ai=(s) (Aic)] (acre-feet)
.012

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?
Yes

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.

If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. SMPs
Use the Post-construction SMP Identification section to identify the Standard SMPs and, if applicable, the Alternative SMPs to be used to treat the remaining total WQv (=Total WQv Required in #28 - Total RRv Provided in #30).

Also, provide the total impervious area that contributes runoff to each practice selected.

NOTE: Use the Post-construction SMP Identification section to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question #29. (acre-feet)
.026

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a).
.051

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)?
Yes

If Yes, go to question 36.

If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv required and provided or select waiver (#36a), if applicable.

CPv Required (acre-feet)
.115

CPv Provided (acre-feet)
.076

36a. The need to provide channel protection has been waived because:
NONE PROVIDED

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (#37a), if applicable.

Overbank Flood Control Criteria (Qp)

Pre-Development (CFS)
3.60

Post-Development (CFS)
3.53

Total Extreme Flood Control Criteria (Qf)

Pre-Development (CFS)
7.06

Post-Development (CFS)
7.03

37a. The need to meet the Qp and Qf criteria has been waived because:
NONE PROVIDED

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed?
Yes

If Yes, Identify the entity responsible for the long term Operation and Maintenance
The Masters School

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). (See question #32a) This space can also be used for other pertinent project information.
Extensive site sloping and poor soil quality conditions.

Post-Construction SMP Identification

Runoff Reduction (RR) Techniques, Standard Stormwater Management Practices (SMPs) and Alternative SMPs
Identify the Post-construction SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

RR Techniques (Area Reduction)

Round to the nearest tenth

Total Contributing Acres for Conservation of Natural Area (RR-1)
NONE PROVIDED

Total Contributing Impervious Acres for Conservation of Natural Area (RR-1)
NONE PROVIDED

Total Contributing Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
NONE PROVIDED

Total Contributing Impervious Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
NONE PROVIDED

Total Contributing Acres for Tree Planting/Tree Pit (RR-3)
NONE PROVIDED

Total Contributing Impervious Acres for Tree Planting/Tree Pit (RR-3)
NONE PROVIDED

Total Contributing Acres for Disconnection of Rooftop Runoff (RR-4)
NONE PROVIDED

RR Techniques (Volume Reduction)

Total Contributing Impervious Acres for Disconnection of Rooftop Runoff (RR-4)
NONE PROVIDED

Total Contributing Impervious Acres for Vegetated Swale (RR-5)
NONE PROVIDED

Total Contributing Impervious Acres for Rain Garden (RR-6)
NONE PROVIDED

Total Contributing Impervious Acres for Stormwater Planter (RR-7)
NONE PROVIDED

Total Contributing Impervious Acres for Rain Barrel/Cistern (RR-8)
NONE PROVIDED

Total Contributing Impervious Acres for Porous Pavement (RR-9)
NONE PROVIDED

Total Contributing Impervious Acres for Green Roof (RR-10)
NONE PROVIDED

Standard SMPs with RRv Capacity

Total Contributing Impervious Acres for Infiltration Trench (I-1)
NONE PROVIDED

Total Contributing Impervious Acres for Infiltration Basin (I-2)
NONE PROVIDED

Total Contributing Impervious Acres for Dry Well (I-3)
NONE PROVIDED

Total Contributing Impervious Acres for Underground Infiltration System (I-4)
.29

Total Contributing Impervious Acres for Bioretention (F-5)
.19

Total Contributing Impervious Acres for Dry Swale (O-1)
NONE PROVIDED

Standard SMPs

Total Contributing Impervious Acres for Micropool Extended Detention (P-1)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Pond (P-2)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Extended Detention (P-3)
NONE PROVIDED

Total Contributing Impervious Acres for Multiple Pond System (P-4)
NONE PROVIDED

Total Contributing Impervious Acres for Pocket Pond (P-5)
NONE PROVIDED

Total Contributing Impervious Acres for Surface Sand Filter (F-1)
NONE PROVIDED

Total Contributing Impervious Acres for Underground Sand Filter (F-2)
NONE PROVIDED

Total Contributing Impervious Acres for Perimeter Sand Filter (F-3)
NONE PROVIDED

Total Contributing Impervious Acres for Organic Filter (F-4)
NONE PROVIDED

Total Contributing Impervious Acres for Shallow Wetland (W-1)
NONE PROVIDED

Total Contributing Impervious Acres for Extended Detention Wetland (W-2)
NONE PROVIDED

Total Contributing Impervious Acres for Pond/Wetland System (W-3)
NONE PROVIDED

Total Contributing Impervious Acres for Pocket Wetland (W-4)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Swale (O-2)
NONE PROVIDED

Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Total Contributing Impervious Area for Hydrodynamic
NONE PROVIDED

Total Contributing Impervious Area for Wet Vault
NONE PROVIDED

Total Contributing Impervious Area for Media Filter
NONE PROVIDED

"Other" Alternative SMP?
NONE PROVIDED

Total Contributing Impervious Area for "Other"
NONE PROVIDED

Provide the name and manufaturer of the alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

Manufacturer of Alternative SMP
NONE PROVIDED

Name of Alternative SMP
NONE PROVIDED

Other Permits

40. Identify other DEC permits, existing and new, that are required for this project/facility.
None

If SPDES Multi-Sector GP, then give permit ID
NONE PROVIDED

If Other, then identify
NONE PROVIDED

41. Does this project require a US Army Corps of Engineers Wetland Permit?
No

If "Yes," then indicate Size of Impact, in acres, to the nearest tenth
NONE PROVIDED

42. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned.
NONE PROVIDED

MS4 SWPPP Acceptance

43. Is this project subject to the requirements of a regulated, traditional land use control MS4?
Yes - Please attach the MS4 Acceptance form below

If No, skip question 44

44. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI?
No

MS4 SWPPP Acceptance Form Download
Download form from the link below. Complete, sign, and upload.
MS4 SWPPP Acceptance Form

MS4 Acceptance Form Upload

> NONE PROVIDED
> **Comment**
> NONE PROVIDED

Owner/Operator Certification

Owner/Operator Certification Form Download
Download the certification form by clicking the link below. Complete, sign, scan, and upload the form.
Owner/Operator Certification Form (PDF, 45KB)

Upload Owner/Operator Certification Form

> NONE PROVIDED
> **Comment**
> NONE PROVIDED

Attachments

Date	Attachment Name	Context	User
7/7/2021 1:48 PM	1120062_SWPPP Preparer Certification Form_signed.pdf	Attachment	Gonzalo Trenosky

APPENDIX B:
SOIL REPORT

Map Scale: 1:1,710 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0, 25, 50, 100, 150

Feet: 0, 50, 100, 200, 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Westchester County, New York
Survey Area Data: Version 16, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 22, 2020—Sep 23, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
PnB	Paxton fine sandy loam, 3 to 8 percent slopes	12.1	95.6%
PnC	Paxton fine sandy loam, 8 to 15 percent slopes	0.6	4.4%
Totals for Area of Interest		**12.6**	**100.0%**

Westchester County, New York

PnB—Paxton fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t2qp
Elevation: 0 to 1,570 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Paxton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton

Setting

Landform: Drumlins, ground moraines, hills
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: fine sandy loam
Cd - 26 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 18 to 39 inches to densic material
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s

Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Woodbridge

Percent of map unit: 9 percent
Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Ridgebury

Percent of map unit: 6 percent
Landform: Drainageways, hills, ground moraines, depressions
Landform position (two-dimensional): Backslope, footslope, toeslope
Landform position (three-dimensional): Head slope, base slope, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Charlton

Percent of map unit: 5 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Data Source Information

Soil Survey Area: Westchester County, New York
Survey Area Data: Version 16, Jun 11, 2020

APPENDIX C:
INFILTRATION TESTS SECTION FROM MFS GEOTECHNICAL REPORT, DATED 03 FEBRUARY 2021

engineering software and is provided in Appendix A.

Infiltration Tests

In addition to the borings, MFS completed 12 infiltration tests at three (3) locations, identified as IT-1 through IT-3. Each infiltration test was completed adjacent to a previously completed geotechnical boring in accordance with the NYS SMDM Appendix D (B-1 (IT) corresponds to IT-1, B-2A (IT) and B-2B (IT) corresponds to IT-2, and B-5 corresponds to IT-3). The infiltration test locations are shown in the "As-Drilled Subsurface Investigation Location Plan" located in Figure 2. The depths of the borings and infiltration tests were performed in accordance with Appendix D of the NYS SMDM based on the bottom depths of the proposed stormwater management practice (SMP) as determined by the MFS civil engineering team. The 24-hour presoak period at each infiltration testing location started on 30 December 2020 once the temperature was above freezing point. The ambient temperature remained above the freezing point for the duration of the presoak period and the durations of the infiltration tests performed.

The infiltration tests were performed adjacent to each respective boring in order to determine the permeability coefficient of the soil at the respective depths. Each of the infiltration tests were completed two (2) feet below the proposed SMP depth. The infiltration tests at IT-1 and IT-3 were completed at a depth of 8-feet below grade and the infiltration tests at IT-2 were completed at a depth of 7 feet below grade. The infiltration test logs for each of the three (3) infiltration test locations (12 total infiltration tests performed) are provided in Appendix B.

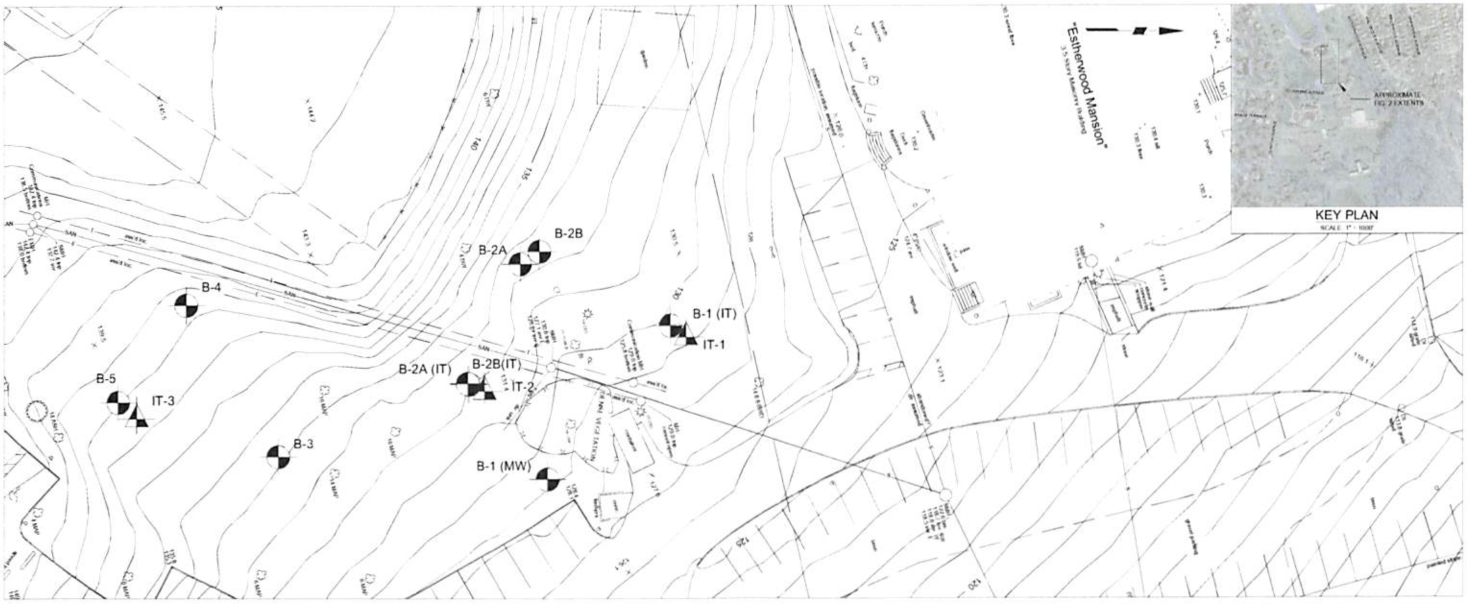
Temporary Monitoring Well

One (1) temporary monitoring well was installed in boring B-1 (MW) to a depth of 29 feet below grade (EL. +100.3±) upon completion of soil sampling on 30 December 2020. The well construction consisted of 10 feet of 2-inch diameter 0.01-inch slotted PVC screens below 20 feet of 2-inch PVC riser extending to one (1) foot above grade. The annular space between the installed monitoring well and the borehole was backfilled with No. 2 filtration sand over the entire screen length and extending two (2) feet above the screen and riser interface (17 feet below grade). Above the filter sand, a bentonite seal was used to backfill to existing grade.

Due to the drilling methods utilized during the field subsurface investigation, it was not clear if the borings were performed below the groundwater level on site. The purpose of the temporary monitoring well installation was to identify if the groundwater table was present. Upon installation of the temporary monitoring well, the water that was present in the well on the day of drilling (from the drilling operations) had infiltrated out into the existing soils the day following the well installation. As such, it was determined that the groundwater level was not encountered and is expected to be deeper than 29 feet below grade (EL. +100.3±) on site. As no groundwater was observed in the temporary monitoring well, the well was removed and the borehole was backfilled on 31 December 2020. Refer to the Well Construction Log in Appendix C for elevations, and specific well construction information.

Geotechnical Laboratory Testing

Upon completion of the field investigation, all soil samples were transported back to our office for further evaluation and selection of samples for geotechnical laboratory testing. Soil



1 AS-DRILLED SUBSURFACE INVESTIGATION LOCATION PLAN

Scale: 1" = 30'

0 30' 60'

NOTE:

1. ALL AS-DRILLED BORING, INFILTRAITON TEST, AND MONITORING WELL LOCATIONS REFERENCE THE FIELD SUBSURFACE INVESTIGATION COMPLETED BY MFS CONSTRUCTION, LLC UNDER THE FULL TIME ENGINEERING INSPECTION OF MFS CONSULTING ENGINEERS AND SURVEYOR, DPC FROM 28 DECEMBER 2020 TO 6 JANUARY 2021.
2. THE PARTIAL BACKGROUND SURVEY USED FOR THIS PLAN WAS OBTAINED FROM THE "TOPOGRAPHIC MAP OF THE DEVELOPED PORTION OF THE MASTERS SCHOOL" DATED 9 JANUARY 2017 PROVIDED IN AUTOCAD FORMAT WHICH IS BASED UPON PHOTOGRAMMETRIC MAPPING PREPARED BY GEOMAPS INTERNATIONAL, INC. USING AERIAL PHOTOGRAPHY TAKEN IN APRIL 2008 WITH SUPPLEMENTAL FIELD MEASUREMENTS COMPLETED BETWEEN 4 OCTOBER AND 31 DECEMBER 2016 COMBINED WITH MAPPING OF PORTIONS OF THE CAMPUS PREVIOUSLY PREPARED BY KENNETH B. SALZMANN, LAND SURVEYOR.
3. ALL AS-DRILLED BORING, MONITORING WELL, AND INFILTRATION TEST LOCATIONS WERE MEASURED IN THE FIELD AT THE TIME OF COMPLETION FROM FIXED OBJECTS AT THE PROJECT SITE AND THE RESPECTIVE LOCATIONS SHALL BE CONSIDERED APPROXIMATE.
4. ALL ELEVATIONS REFERENCED HEREIN ARE BASED ON THE MASTERS SCHOOL DATUM.

LEGEND

B-#/B-#(IT) — AS-DRILLED BORING LOCATION

B-# (MW) — MONITORING WELL LOCATION

IT-# — INFILTRATION TEST LOCATION

MFS ENGINEERS & SURVEYORS MFS CONSULTING ENGINEERS & SURVEYOR, DPC T: 212 943 6578 F: 888 517 7413 N.Y. CERTIFICATE OF AUTHORIZATION	PROJECT NAME THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER DOBBS FERRY WESTCHESTER COUNTY NEW YORK	DRAWING TITLE AS-DRILLED SUBSURFACE INVESTIGATION LOCATION PLAN	SHEET NO. FIG. 2

MFS Consulting Engineers and Surveyor, DPC	IT ID No. IT- 1
	Sheet 1 of 1

Prepared for:	Marvel Architects, PLLC	PROJECT:	Masters School - Innovation and Entrepreneurship Center
		LOCATION / BOROUGH :	Dobbs Ferry, NY

INSPECTOR:	Gilbert Del Orbe	DRILLER:	Danny Ninevski	Start Date:	12/31/2020	Weather:	41°F / Light Rain
CONTRACTOR:	MFS Construction, LLC	HELPER:	Tom Feaser	Start Time:	9:00 AM		
P.E./REP.:	Michael Mudalel, PE						

Depth of IT:	8 ft	Drill Bit Type:	3-7/8" TCRB	Weight of Hammer for casing:	140 lbs
Rig Type:	CME 45B	Casing Internal Diameter:	4 in	Type of Hammer:	Auto
		Casing Length:	126 in		

ASTM D-6391 – 11
PERMEABILITY COEFFICIENT (Km) FORMULA:

General Formula:

$$K_m = \pi R_t \times \frac{\left[D\left\{Ln\left(\frac{h_1}{h_2}\right)\right\}\right]}{11 \times (t_2 - t_1)}$$

Formula for 4" internal diameter casing (in/hr):

$$K_m = 1.142 R_t \times \frac{\left[Ln\left(\frac{h_1}{h_2}\right)\right]}{(t_2 - t_1)}$$

where: $R_t = {}^{2.2902(0.9842^T)}/_{T^{0.1702}}$

IT-1 @ 8 ft

TEST 1

Water temperature (°C), T: 8.2 Rt= 1.40

FIELD DATA		CALCULATED DATA			
Time (min)	Depth (in)	Height (in)	Ln (H/Ho)	$(t_1\text{-}t_2)$	*Kv (in/hr)
10	12.000	114.000	0.100	0.167	0.9637
20	22.500	103.500	0.197	0.167	0.9304
30	29.000	97.000	0.262	0.167	0.6246
40	34.000	92.000	0.314	0.167	0.5096
60	44.500	81.500	0.436	0.333	0.5835

TEST 2

Water temperature (°C), T: 7.6 Rt= 1.44

FIELD DATA		CALCULATED DATA			
Time (min)	Depth (in)	Height (in)	Ln (H/Ho)	$(t_1\text{-}t_2)$	*Kv (in/hr)
10	14.000	112.000	0.118	0.167	1.1600
20	22.875	103.125	0.200	0.167	0.8130
30	29.000	97.000	0.262	0.167	0.6030
40	34.375	91.625	0.319	0.167	0.5614
60	43.625	82.375	0.425	0.333	0.5240

TEST 3

Water temperature (°C), T: 7.5 Rt= 1.44

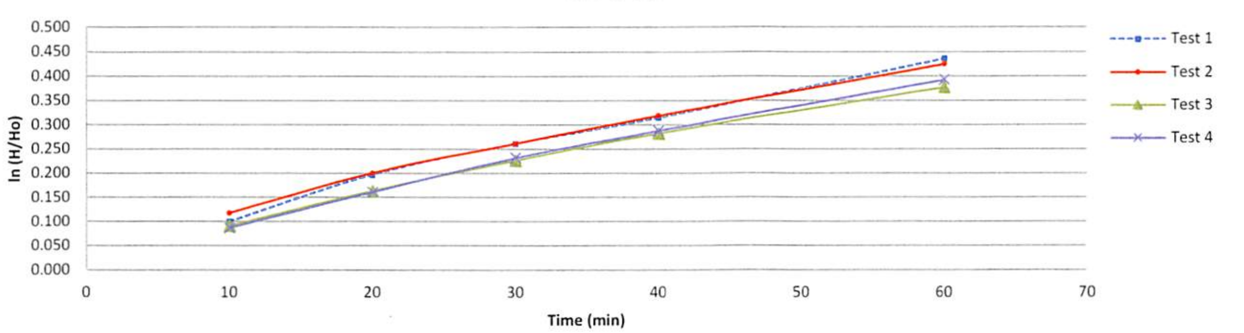
FIELD DATA		CALCULATED DATA			
Time (min)	Depth (in)	Height (in)	Ln (H/Ho)	$(t_1\text{-}t_2)$	*Kv (in/hr)
10	11.000	115.000	0.091	0.167	0.9031
20	19.000	107.000	0.163	0.167	0.7128
30	25.500	100.500	0.226	0.167	0.6196
40	31.000	95.000	0.282	0.167	0.5564
60	39.625	86.375	0.378	0.333	0.4705

TEST 4

Water temperature (°C), T: 7.4 Rt= 1.45

FIELD DATA		CALCULATED DATA			
Time (min)	Depth (in)	Height (in)	Ln (H/Ho)	$(t_1\text{-}t_2)$	*Kv (in/hr)
10	10.500	115.500	0.087	0.167	0.8636
20	18.750	107.250	0.161	0.167	0.7355
30	26.063	99.937	0.232	0.167	0.7009
40	31.500	94.500	0.288	0.167	0.5552
60	40.938	85.063	0.393	0.333	0.5221

IT-1 @ 8 ft



TEST 1 FINAL RESULTS		
Time Weighted Average Permeability Coefficient	**Km=**	0.6992 in/hr

TEST 2 FINAL RESULTS		
Time Weighted Average Permeability Coefficient	**Km=**	0.6976 in/hr

TEST 3 FINAL RESULTS		
Time Weighted Average Permeability Coefficient	**Km=**	0.6221 in/hr

TEST 4 FINAL RESULTS		
Time Weighted Average Permeability Coefficient	**Km=**	0.6499 in/hr

AVERAGE IT-1 @ 8 ft		
Time Weighted Average Permeability Coefficient	**Km=**	0.6672 in/hr

Inspectors Remarks:

24 hour pre-soak started 12/30/2020 at 9:00 AM once the temperature was above freeze point. (Note that the temperature did not drop below freezing point during the pre-soak period)

DEFINITION OF VARIABLES

*Km= Mean permeability
T = Temperature of permeant (water), in °C
Ln = Natural Logarithmic
t1 = Time at the start of the test in the same units selected for Km
Rt = Ratio of viscosity of water at test temperature to the viscositye of water at 20°C
t2= Time at the end of the test in the units selected for Km
h1= Height of the water above the bottom of the casing at the start of the test in the same units selected for Km
h2= Height of the water above the bottom of the casing at the end of the test in the same units selected for Km

MFS Consulting Engineers and Surveyor, DPC

IT ID No. IT- 2
Sheet 1 of 1

Prepared for: Marvel Architects, PLLC		PROJECT:	Masters School - Innovation and Entrepreneurship Center
		LOCATION / BOROUGH :	Dobbs Ferry, NY

INSPECTOR:	Gilbert Del Orbe	DRILLER:	Danny Ninevski	Start Date:	12/31/2020	Weather:	41°F / Light Rain
CONTRACTOR:	MFS Construction, LLC	HELPER:	Tom Feaser	Start Time:	9:03 AM		
P.E./REP.:	Michael Mudalel, PE						
Depth of IT:	7 ft	Drill Bit Type:	3-7/8" TCRB	Weight of Hammer for casing:	140 lbs		
Rig Type:	CME 45B	Casing Internal Diameter:	4 in	Type of Hammer:	Auto		
		Casing Length:	90 in				

ASTM D-6391 – 11
PERMEABILITY COEFFICIENT (Km) FORMULA:

General Formula:

$$K_m = \pi R_t \times \frac{\left[D\left\{Ln\left(\frac{h_1}{h_2}\right)\right\}\right]}{11 \times (t_2 - t_1)}$$

Formula for 4" internal diameter casing (in/hr):

$$K_m = 1.142 R_t \times \frac{\left[Ln\left(\frac{h_1}{h_2}\right)\right]}{(t_2 - t_1)}$$

where: $R_t = {2.2902(0.9842^T)}/{T^{0.1702}}$

IT-2 @ 7 ft

TEST 1

Water temperature (°C), T: 7.9 Rt= 1.42

FIELD DATA		CALCULATED DATA			
Time (min)	Depth (in)	Height (in)	Ln (H/Ho)	$(t_1\text{-}t_2)$	*Kv (in/hr)
10	6.500	83.500	0.075	0.167	0.7299
20	13.250	76.750	0.159	0.167	0.8208
30	20.000	70.000	0.251	0.167	0.8964
40	25.625	64.375	0.335	0.167	0.8157
60	35.000	55.000	0.492	0.333	0.7663

TEST 2

Water temperature (°C), T: 7.5 Rt= 1.44

FIELD DATA		CALCULATED DATA			
Time (min)	Depth (in)	Height (in)	Ln (H/Ho)	$(t_1\text{-}t_2)$	*Kv (in/hr)
10	7.000	83.000	0.081	0.167	0.8005
20	14.000	76.000	0.169	0.167	0.8711
30	20.500	69.500	0.258	0.167	0.8839
40	26.500	63.500	0.349	0.167	0.8926
60	37.250	52.750	0.534	0.333	0.9168

TEST 3

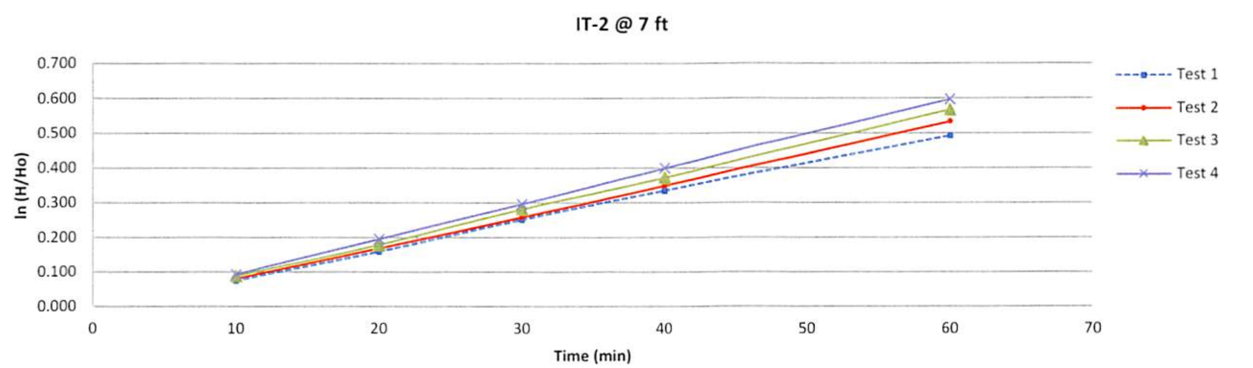
Water temperature (°C), T: 7.6 Rt= 1.44

FIELD DATA		CALCULATED DATA			
Time (min)	Depth (in)	Height (in)	Ln (H/Ho)	$(t_1\text{-}t_2)$	*Kv (in/hr)
10	7.625	82.375	0.089	0.167	0.8718
20	14.750	75.250	0.179	0.167	0.8909
30	22.125	67.875	0.282	0.167	1.0158
40	28.000	62.000	0.373	0.167	0.8916
60	39.000	51.000	0.568	0.333	0.9617

TEST 4

Water temperature (°C), T: 7.4 Rt= 1.45

FIELD DATA		CALCULATED DATA			
Time (min)	Depth (in)	Height (in)	Ln (H/Ho)	$(t_1\text{-}t_2)$	*Kv (in/hr)
10	8.000	82.000	0.093	0.167	0.9239
20	16.000	74.000	0.196	0.167	1.0188
30	23.063	66.937	0.296	0.167	0.9956
40	29.625	60.375	0.399	0.167	1.0240
60	40.500	49.500	0.598	0.333	0.9855



TEST 1 FINAL RESULTS

Time Weighted Average Permeability Coefficient **Km=** 0.7992 in/hr

TEST 2 FINAL RESULTS

Time Weighted Average Permeability Coefficient **Km=** 0.8803 in/hr

TEST 3 FINAL RESULTS

Time Weighted Average Permeability Coefficient **Km=** 0.9323 in/hr

TEST 4 FINAL RESULTS

Time Weighted Average Permeability Coefficient **Km=** 0.9889 in/hr

AVERAGE IT-2 @ 7 ft

Time Weighted Average Permeability Coefficient **Km=** 0.9002 in/hr

Inspectors Remarks:

24 hour pre-soak started 12/30/2020 at 9:00 AM once the temperature was above freeze point. (Note that the temperature did not drop below freezing point during the pre-soak period)

DEFINITION OF VARIABLES

*Km= Mean permeability
T = Temperature of permeant (water), in °C
Ln = Natural Logarithmic
t1 = Time at the start of the test in the same units selected for Km
Rt = Ratio of viscosity of water at test temperature to the viscositye of water at 20°C
t2= Time at the end of the test in the units selected for Km
h1= Height of the water above the bottom of the casing at the start of the test in the same units selected for Km
h2= Height of the water above the bottom of the casing at the end of the test in the same units selected for Km

MFS Consulting Engineers and Surveyor, DPC

IT ID No. IT- 3
Sheet 1 of 1

Prepared for: Marvel Architects, PLLC		PROJECT:	Masters School - Innovation and Entrepreneurship Center
		LOCATION / BOROUGH :	Dobbs Ferry, NY

INSPECTOR:	Gilbert Del Orbe	DRILLER:	Danny Ninevski	Start Date:	12/31/2020	Weather:	41°F / Light Rain
CONTRACTOR:	MFS Construction, LLC	HELPER:	Tom Feaser	Start Time:	9:05 AM		
P.E./REP.:	Michael Mudalel, PE						

Depth of IT:	8 ft	Drill Bit Type:	3-7/8" TCRB		Weight of Hammer for casing:	140 lbs
Rig Type:	CME 45B	Casing Internal Diameter:	4	in	Type of Hammer:	Auto
		Casing Length:	126	in		

ASTM D-6391 – 11
PERMEABILITY COEFFICIENT (Km) FORMULA:

General Formula:

$$K_m = \pi R_t \times \frac{\left[D\left\{Ln\left(\frac{h_1}{h_2}\right)\right\}\right]}{11 \times (t_2 - t_1)}$$

Formula for 4" internal diameter casing (in/hr):

$$K_m = 1.142 R_t \times \frac{\left[Ln\left(\frac{h_1}{h_2}\right)\right]}{(t_2 - t_1)}$$

where: $R_t = {2.2902(0.9842^T)}/{T^{0.1702}}$

IT-3 @ 8 ft

TEST 1

Water temperature (°C), T: 8.1 Rt= 1.41

FIELD DATA		CALCULATED DATA			
Time (min)	Depth (in)	Height (in)	Ln (H/Ho)	(t_1-t_2)	*Kv (in/hr)
10	13.000	113.000	0.109	0.167	1.0524
20	24.875	101.125	0.220	0.167	1.0731
30	35.000	91.000	0.325	0.167	1.0196
40	43.875	82.125	0.428	0.167	0.9918
60	59.000	67.000	0.632	0.333	0.9836

TEST 2

Water temperature (°C), T: 7.6 Rt= 1.44

FIELD DATA		CALCULATED DATA			
Time (min)	Depth (in)	Height (in)	Ln (H/Ho)	(t_1-t_2)	*Kv (in/hr)
10	14.125	111.875	0.119	0.167	1.1710
20	26.250	99.750	0.234	0.167	1.1297
30	37.000	89.000	0.348	0.167	1.1230
40	47.000	79.000	0.467	0.167	1.1738
60	63.000	63.000	0.693	0.333	1.1144

TEST 3

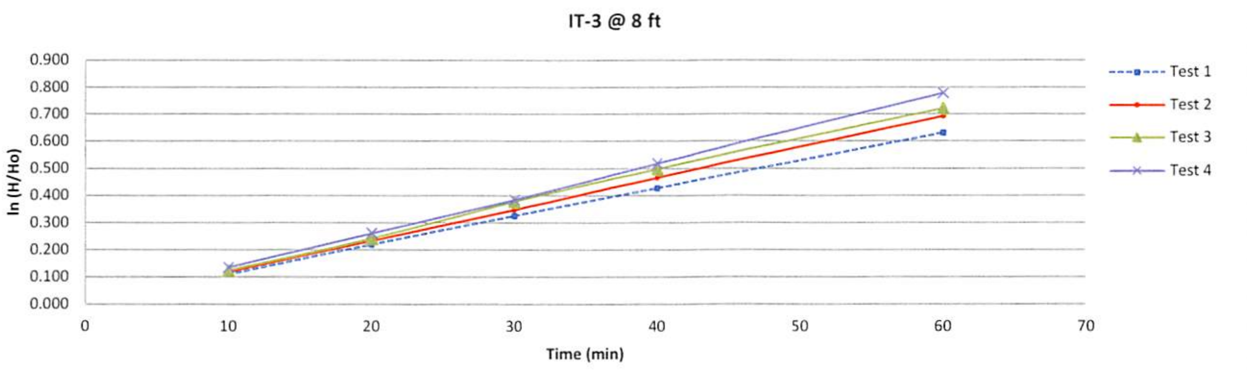
Water temperature (°C), T: 7.5 Rt= 1.44

FIELD DATA		CALCULATED DATA			
Time (min)	Depth (in)	Height (in)	Ln (H/Ho)	(t_1-t_2)	*Kv (in/hr)
10	14.750	111.250	0.125	0.167	1.2309
20	27.063	98.937	0.242	0.167	1.1596
30	39.625	86.375	0.378	0.167	1.3424
40	49.500	76.500	0.499	0.167	1.2003
60	64.875	61.125	0.723	0.333	1.1091

TEST 4

Water temperature (°C), T: 7.5 Rt= 1.44

FIELD DATA		CALCULATED DATA			
Time (min)	Depth (in)	Height (in)	Ln (H/Ho)	(t_1-t_2)	*Kv (in/hr)
10	16.000	110.000	0.136	0.167	1.3426
20	29.000	97.000	0.262	0.167	1.2434
30	40.250	85.750	0.385	0.167	1.2187
40	51.000	75.000	0.519	0.167	1.3242
60	68.250	57.750	0.780	0.333	1.2920



TEST 1 FINAL RESULTS

Time Weighted Average Permeability Coefficient Km= 1.0174 in/hr

TEST 2 FINAL RESULTS

Time Weighted Average Permeability Coefficient Km= 1.1377 in/hr

TEST 3 FINAL RESULTS

Time Weighted Average Permeability Coefficient Km= 1.1919 in/hr

TEST 4 FINAL RESULTS

Time Weighted Average Permeability Coefficient Km= 1.2855 in/hr

AVERAGE IT-3 @ 8 ft

Time Weighted Average Permeability Coefficient Km= 1.1581 in/hr

Inspectors Remarks:

24 hour pre-soak started 12/30/2020 at 9:00 AM once the temperature was above freeze point. (Note that the temperature did not drop below freezing point during the pre-soak period)

DEFINITION OF VARIABLES

*Km= Mean permeability
T = Temperature of permeant (water), in °C
Ln = Natural Logarithmic
t1 = Time at the start of the test in the same units selected for Km
Rt = Ratio of viscosity of water at test temperature to the viscosítye of water at 20°C
t2= Time at the end of the test in the units selected for Km
h1= Height of the water above the bottom of the casing at the start of the test in the same units selected for Km
h2= Height of the water above the bottom of the casing at the end of the test in the same units selected for Km

APPENDIX D:
NYS DEC CRITICAL ENVIRONMENTAL AREAS MAP

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

DECinfo Locator

Base Map: Topographical

Help

Search

Tools

DEC Information Layers

Environmental Quality | Outdoor Activity

Permits and Registrations

Environmental Cleanup

Environmental Monitoring

Public Involvement

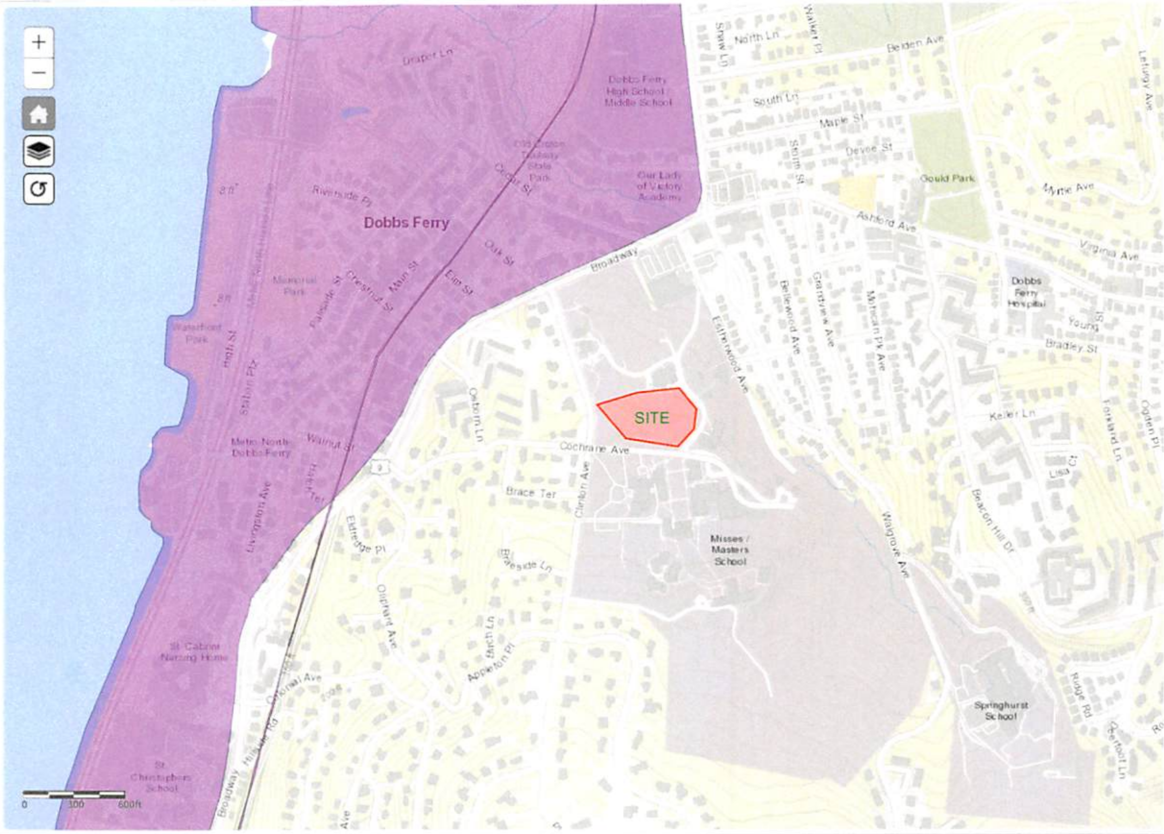
Environmentally Sensitive Areas

Check / Uncheck all

Layer Information

Critical Environmental Areas

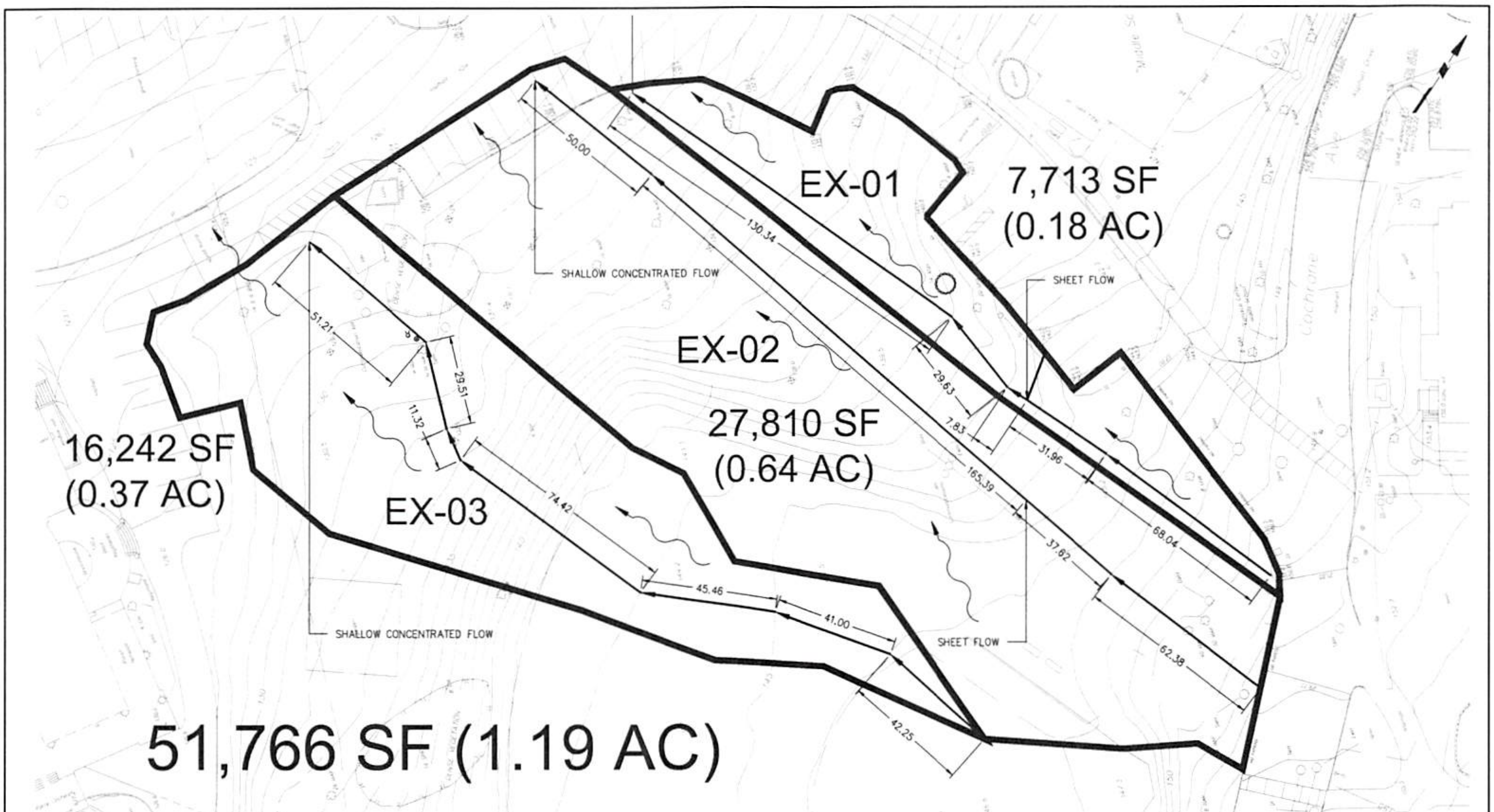
Regulatory Tidal Wetlands Areas



Legal Information

Reference Layers

APPENDIX E:
DRAWINGS



EXISTING DRAINAGE AREAS	
DRAINAGE AREA	AREA (AC)
EX-01	0.18
EX-02	0.64
EX-03	0.37
TOTAL:	1.19

LEGEND
DRAINAGE AREA BOUNDARY
FLOW ARROW
TIME OF CONCENTRATION PATH

1 EXISTING DRAINAGE AREA PLAN

Scale: 1"=30'

0 30' 60'

MFS ENGINEERS & SURVEYORS

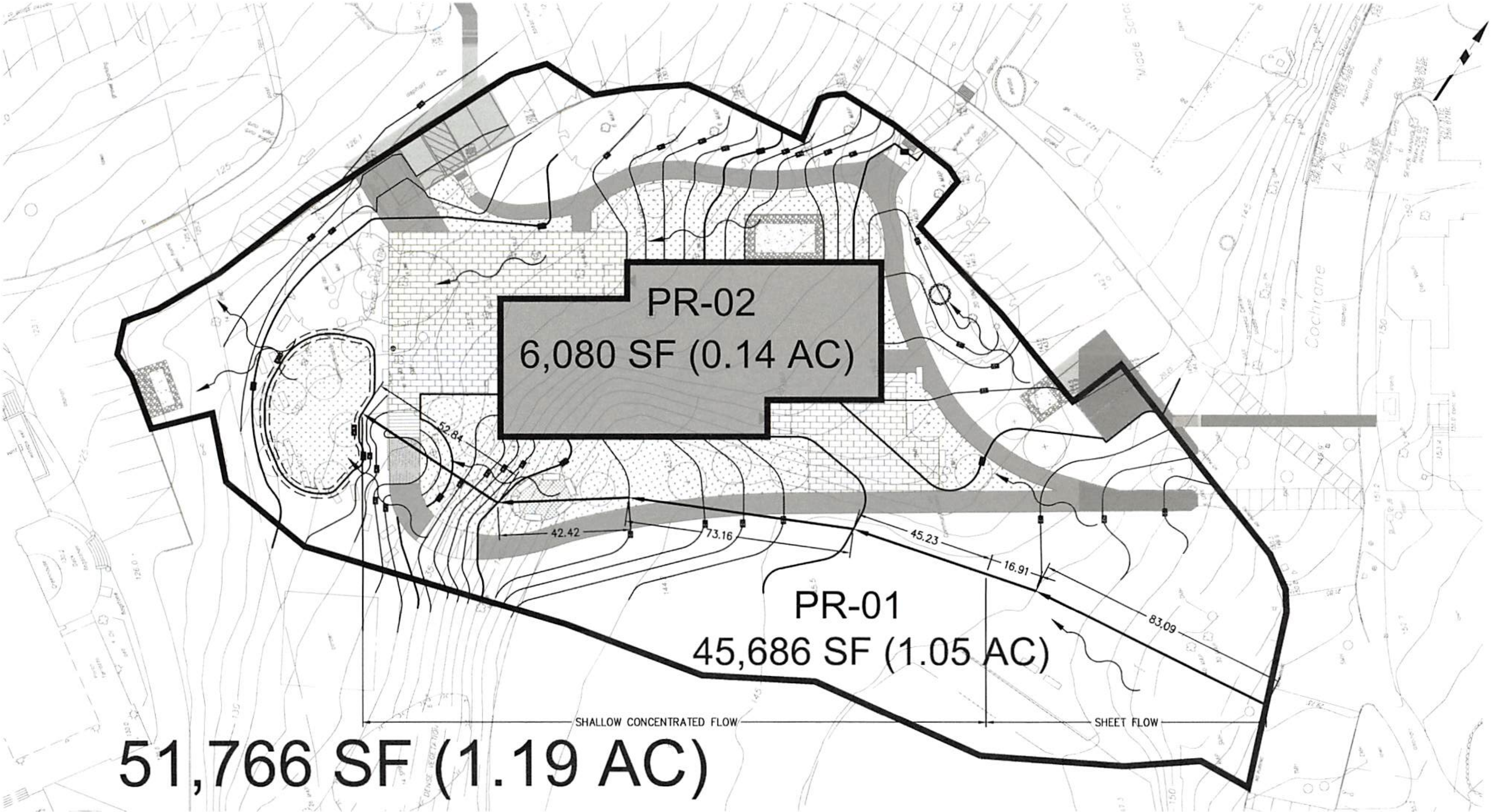
MFS CONSULTING ENGINEERS & SURVEYOR, DPC
31 W34TH ST. SUITE #7071 NEW YORK, NY 10001
T 212 943 6576 www.MFSengineers.com
F 866 517 7413
N.Y. CERTIFICATE OF AUTHORIZATION 0007564

PROJECT NAME
MASTERS SCHOOL OF ENTREPRENEURSHIP
49 CLINTON AVENUE
DOBBS FERRY WESTCHESTER COUNTY NEW YORK

DRAWING TITLE
EXISTING DRAINAGE AREA MAP

PROJECT NO	1120062
DATE	7/6/2021
SCALE	AS_NOTED
DRAWN BY	VCM
CHECKED BY	SEB

SHEET NO
DR-01
1 OF 2



PROPOSED DRAINAGE AREAS	
DRAINAGE AREA	AREA (AC)
PR-01	1.05
PR-02	0.14
TOTAL:	1.19

LEGEND

- DRAINAGE AREA BOUNDARY
- FLOW ARROW
- TIME OF CONCENTRATION PATH

1 PROPOSED DRAINAGE AREA PLAN

Scale: 1"=30'

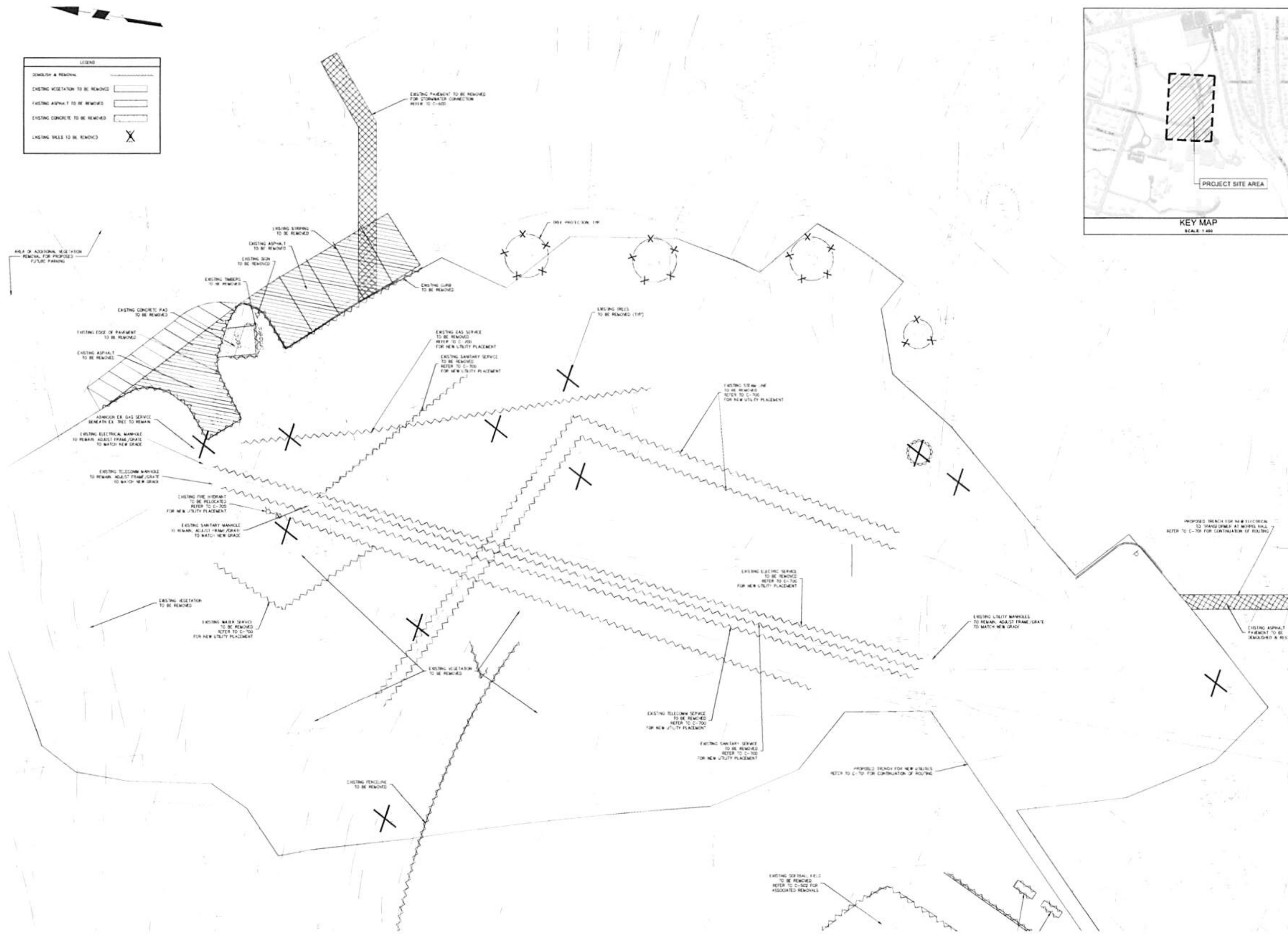
0 30' 60'

ENGINEERS & SURVEYORS
MFS CONSULTING ENGINEERS & SURVEYOR, DPC
31 W34TH ST. SUITE #7071 NEW YORK, NY 10001
T: 212 943 6576 www.MFSengineers.com
F: 866 517 7413
N.Y. CERTIFICATE OF AUTHORIZATION 0007564

PROJECT NAME
MASTERS SCHOOL OF ENTREPRENEURSHIP
49 CLINTON AVENUE
-
WESTCHESTER COUNTY
DOBBS FERRY NEW YORK

DRAWING TITLE
PROPOSED DRAINAGE AREA MAP

PROJECT NO	1120062	SHEET NO
DATE	7/6/2021	
SCALE	AS_NOTED	DR-02
DRAWN BY	VCM	
CHECKED BY	SEB	2 OF 2



1 DEMOLITION & SITE CLEARING PLAN
Scale: 1"=10'

KEY MAP
SCALE: 1:400

MARVEL
145 HUDSON STREET, FLR 3 NEW YORK, NY 10013
212 616 0420

OWNER
THE MASTERS SCHOOL
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522
TEL 914 479 6400

PROJECT ARCHITECTS + LANDSCAPE ARCHITECTS
MARVEL
145 HUDSON STREET, FLOOR 3
NEW YORK, NEW YORK 10013
TEL 212 616 0420

GEOTECHNICAL / CIVIL ENGINEER
MFS ENGINEERS & SURVEYORS, DPC
2780 HAMILTON BOULEVARD
SOUTH PLAINFIELD, NEW JERSEY 07080
TEL 908 822 4622

STRUCTURAL ENGINEER
SILMAN
32 OLD SLIP, FLOOR 10
NEW YORK, NEW YORK 10005
TEL 212 620 7970

BUILDING SYSTEMS ENGINEER
POLISE CONSULTING ENGINEERS, DPC
133 WEST 19TH STREET
NEW YORK, NEW YORK 10011
TEL 212 645 1002

VERTICAL TRANSPORTATION
VDA
145 WEST 30TH STREET, FLOOR 4
NEW YORK, NEW YORK 10001
TEL 212 868 8080

AV / IT / SECURITY CONSULTANT
COSENTINI ASSOCIATES, INC.
498 SEVENTH AVENUE
NEW YORK, NEW YORK 10018
TEL 212 615 3600

ACOUSTICS CONSULTANT
LSTN CONSULTANTS
76 BEAVER STREET
NEW YORK, NEW YORK 10005
TEL 347 788 0610

ENVELOPE CONSULTANT
MW-SKINS
1 WHITEHALL STREET, FLOOR 14
NEW YORK, NEW YORK 10004
TEL 347 808 6790

LIGHTING DESIGNER
DOT DASH LIGHTING DESIGN
120 WALKER STREET, SUITE 4RF
NEW YORK, NEW YORK 10013
TEL 212 951 0860

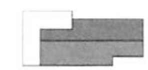
CODE AND ACCESSIBILITY CONSULTANT
CODE CONSULTANTS, INC
440 PARK AVENUE S
NEW YORK, NEW YORK 10016
TEL 212 447 4033

ARCHITECTURAL SPECIFICATIONS
CONSTRUCTION SPECIFICATIONS, INC
22 TENNENT ROAD
MORGANVILLE, NEW JERSEY 07751
TEL 732 970 3700

GEOTHERMAL ENGINEER

REV	DATE	DESCRIPTION
1	02/17/2021	VILLAGE OF DOBBS FERRY SITE APPLICATION
2	06/17/2021	SITE APPLICATION RESUBMISSION
3	07/22/2021	SITE APPLICATION RESUBMISSION
4	08/31/2021	SITE APPLICATION RESUBMISSION

08/31/2021



KEY PLAN: NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

DEMOLITION & SITE CLEARING PLAN

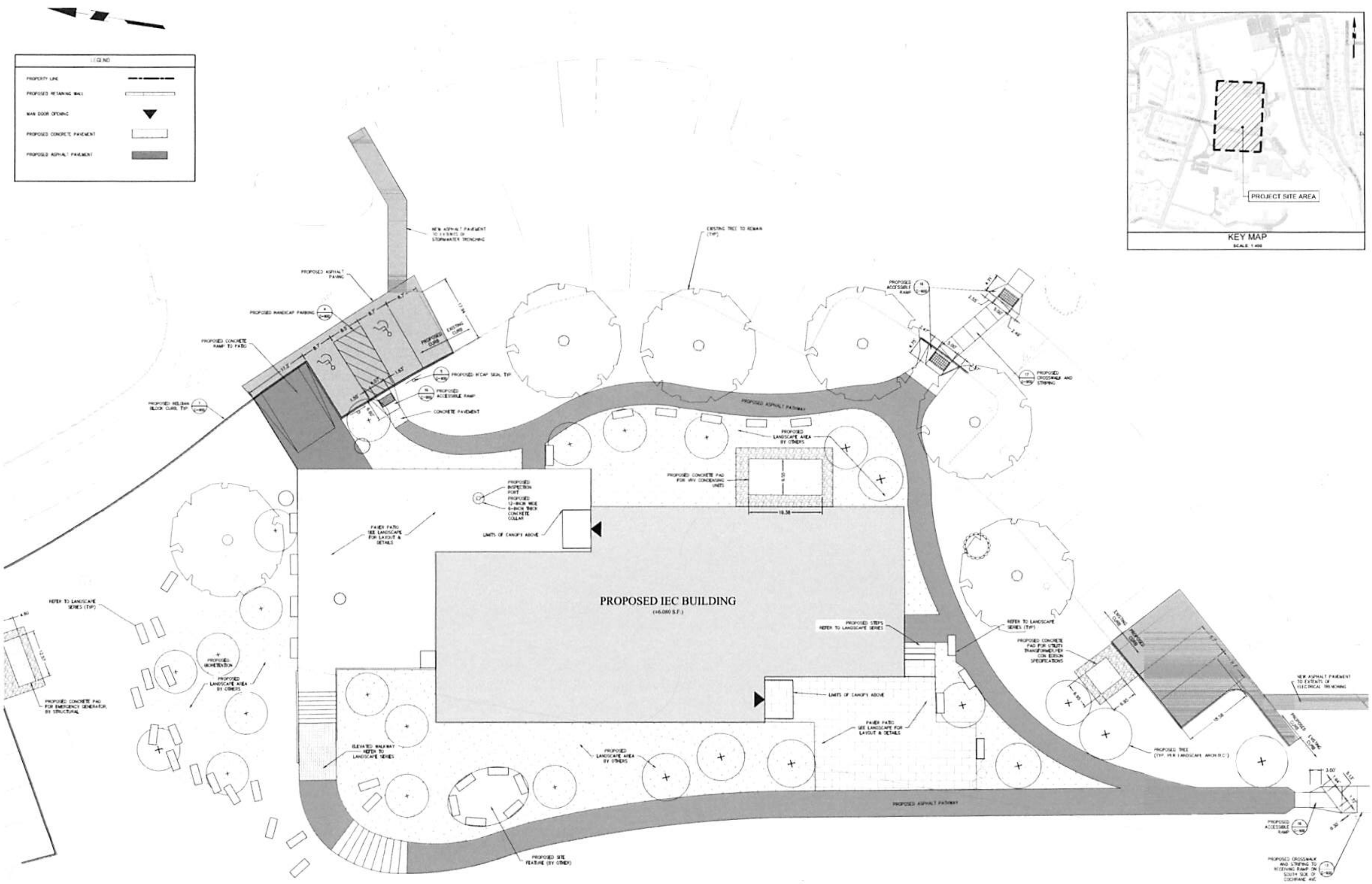
SCALE: AS NOTED

EXCAVATION & FILL
CUT: 3,600 CY
FILL: 650 CY
NET: 2,950 CY CUT

-PRELIMINARY-
NOT FOR CONSTRUCTION

DOB STAMP ZONE

DRAWING #:
C-300
2 of 10
DOB JOB: -



1 SITE PLAN
Scale: 1"=10'

KEY MAP

MARVEL
145 HUDSON STREET, FLR 3 NEW YORK, NY 10013
212 616 0420

OWNER
THE MASTERS SCHOOL
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522
TEL 914 479 6400

PROJECT ARCHITECTS + LANDSCAPE ARCHITECTS
MARVEL
145 HUDSON STREET, FLOOR 3
NEW YORK, NEW YORK 10013
TEL 212 616 0420

GEOTECHNICAL / CIVIL ENGINEER
MFS ENGINEERS & SURVEYORS, DPC
2780 HAMILTON BOULEVARD
SOUTH PLAINFIELD, NEW JERSEY 07080
TEL 908 922 4622

STRUCTURAL ENGINEER
SILMAN
32 OLD SLIP, FLOOR 10
NEW YORK, NEW YORK 10005
TEL 212 620 7970

BUILDING SYSTEMS ENGINEER
POLISE CONSULTING ENGINEERS, DPC
133 WEST 19TH STREET
NEW YORK, NEW YORK 10011
TEL 212 645 1002

VERTICAL TRANSPORTATION
VDA
145 WEST 30TH STREET, FLOOR 4
NEW YORK, NEW YORK 10001
TEL 212 868 8080

AV / IT / SECURITY CONSULTANT
COSENTINI ASSOCIATES, INC.
498 SEVENTH AVENUE
NEW YORK, NEW YORK 10018
TEL 212 615 3600

ACOUSTICS CONSULTANT
LSTN CONSULTANTS
76 BEAVER STREET
NEW YORK, NEW YORK 10005
TEL 347 788 0810

ENVELOPE CONSULTANT
MW-SKINS
1 WHITEHALL STREET, FLOOR 14
NEW YORK, NEW YORK 10004
TEL 347 809 6790

LIGHTING DESIGNER
DOT DASH LIGHTING DESIGN
120 WALKER STREET, SUITE #6F
NEW YORK, NEW YORK 10013
TEL 212 951 0960

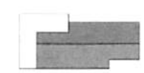
CODE AND ACCESSIBILITY CONSULTANT
CODE CONSULTANTS, INC.
440 PARK AVENUE S
NEW YORK, NEW YORK 10016
TEL 212 447 4033

ARCHITECTURAL SPECIFICATIONS
CONSTRUCTION SPECIFICATIONS, INC
22 TENNENT ROAD
MORGANVILLE, NEW JERSEY 07751
TEL 732 970 0700

GEOTHERMAL ENGINEER

REV	DATE	DESCRIPTION
1	02/17/2021	VILLAGE OF DOBBS FERRY SITE APPLICATION
2	06/17/2021	SITE APPLICATION RESUBMISSION
3	07/22/2021	SITE APPLICATION RESUBMISSION
4	08/31/2021	SITE APPLICATION RESUBMISSION

08/31/2021



KEY PLAN NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

OVERALL SITE PLAN

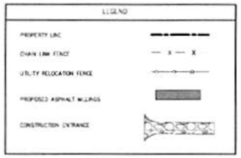
SCALE: AS NOTED

-PRELIMINARY-
NOT FOR CONSTRUCTION

DOB STAMP ZONE

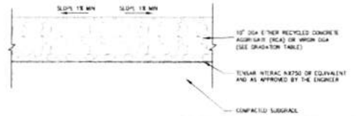
DRAWING #:
C-500
4 of 10

DOB JOB: -



LEGEND

- PROPERTY LINE
- CHAIN LINK FENCE
- UTILITY RELOCATION FENCE
- PROPOSED ASPHALT MILLINGS
- CONSTRUCTION ENTRANCE



NOTES:
1. TO BE COMPACTED IN 4" LIFTS.
2. PROOF ROLLING WITH SMOOTH ROLLER DRUM TO BE COMPLETED FOR FINAL SECTION INSPECTION.
3. CONTRACTOR TO EXCAVATE OUT 10" OF TOPSOIL AND PLACE IN THE STOCKPILE PRIOR TO CONSTRUCTION OF THE TEMPORARY ACCESS ROADWAY.

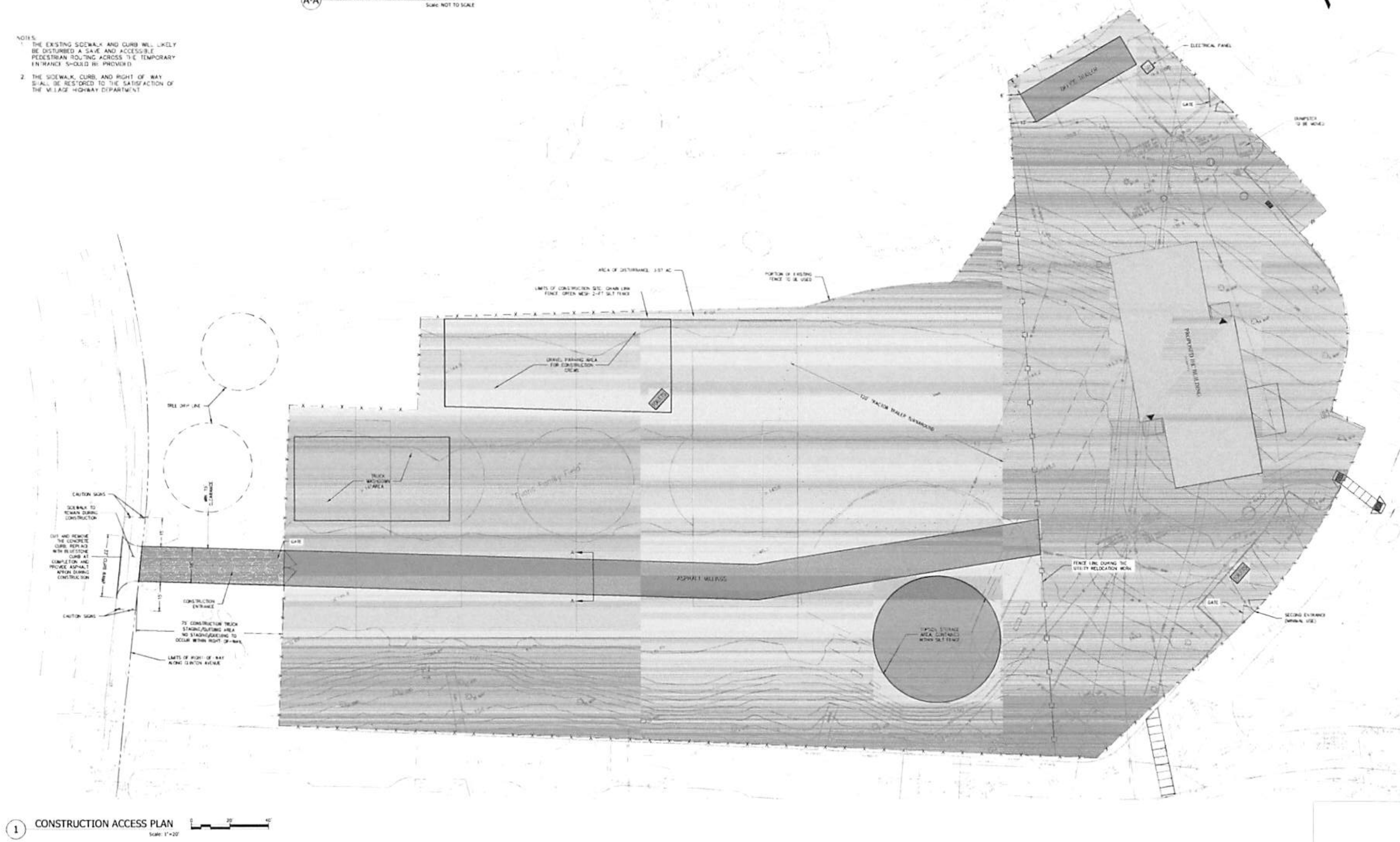
Table [illegible] Gradation Requirements for DGA

Sieve Size	Percent Passing
1-1/2"	100
3/4"	55 - 90
No. 4	25 - 50
No. 50	5 - 20
No. 200	3 - 10

(A-A) DRIVEWAY SECTION DETAIL

Scale: NOT TO SCALE

NOTES:
1. THE EXISTING SIDEWALK AND CURB WILL LIKELY BE DISTURBED. A SAFE AND ACCESSIBLE PEDESTRIAN ROUTING ACROSS THE TEMPORARY ENTRANCE SHOULD BE PROVIDED.
2. THE SIDEWALK, CURB, AND RIGHT OF WAY SHALL BE RESTORED TO THE SATISFACTION OF THE VILLAGE HIGHWAY DEPARTMENT.



(1) CONSTRUCTION ACCESS PLAN

Scale: 1"=20'

MARVEL
145 HUDSON STREET, FLR 3 NEW YORK, NY 10013
212 616 0430

OWNER
THE MASTERS SCHOOL
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522
TEL 914 479 6400

PROJECT ARCHITECTS + LANDSCAPE ARCHITECTS
MARVEL
145 HUDSON STREET, FLOOR 3
NEW YORK, NEW YORK 10013
TEL 212 616 0430

GEOTECHNICAL / CIVIL ENGINEER
MFS ENGINEERS & SURVEYORS, DPC
2780 HAMILTON BOULEVARD
SOUTH PLAINFIELD, NEW JERSEY 07080
TEL 908 822 4622

STRUCTURAL ENGINEER
SILMAN
32 OLD SLIP, FLOOR 10
NEW YORK, NEW YORK 10005
TEL 212 620 7970

BUILDING SYSTEMS ENGINEER
POLISE CONSULTING ENGINEERS, DPC
133 WEST 19TH STREET
NEW YORK, NEW YORK 10011
TEL 212 645 1007

VERTICAL TRANSPORTATION
VDA
145 WEST 30TH STREET, FLOOR 4
NEW YORK, NEW YORK 10001
TEL 212 868 9090

AV / IT / SECURITY CONSULTANT
COSENTINI ASSOCIATES, INC.
498 SEVENTH AVENUE
NEW YORK, NEW YORK 10018
TEL 212 615 3600

ACOUSTICS CONSULTANT
LSTN CONSULTANTS
76 BEAVER STREET
NEW YORK, NEW YORK 10005
TEL 347 788 0810

ENVELOPE CONSULTANT
MM-SKINS
1 WHITEHALL STREET, FLOOR 14
NEW YORK, NEW YORK 10004
TEL 347 809 6780

LIGHTING DESIGNER
DOT DASH LIGHTING DESIGN
120 WALKER STREET, SUITE 4NF
NEW YORK, NEW YORK 10013
TEL 212 951 0665

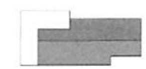
CODE AND ACCESSIBILITY CONSULTANT
CODE CONSULTANTS, INC
440 PARK AVENUE S
NEW YORK, NEW YORK 10016
TEL 212 447 4033

ARCHITECTURAL SPECIFICATIONS
CONSTRUCTION SPECIFICATIONS, INC
22 TENNENT ROAD
MORGANVILLE, NEW JERSEY 07751
TEL 732 970 0730

GEOTHERMAL ENGINEER

REV	DATE	DESCRIPTION
1	02/17/2021	VILLAGE OF DOBBS FERRY SITE APPLICATION
2	06/17/2021	SITE APPLICATION RESUBMISSION
3	07/22/2021	SITE APPLICATION RESUBMISSION
4	08/31/2021	SITE APPLICATION RESUBMISSION

08/31/2021



KEY PLAN NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

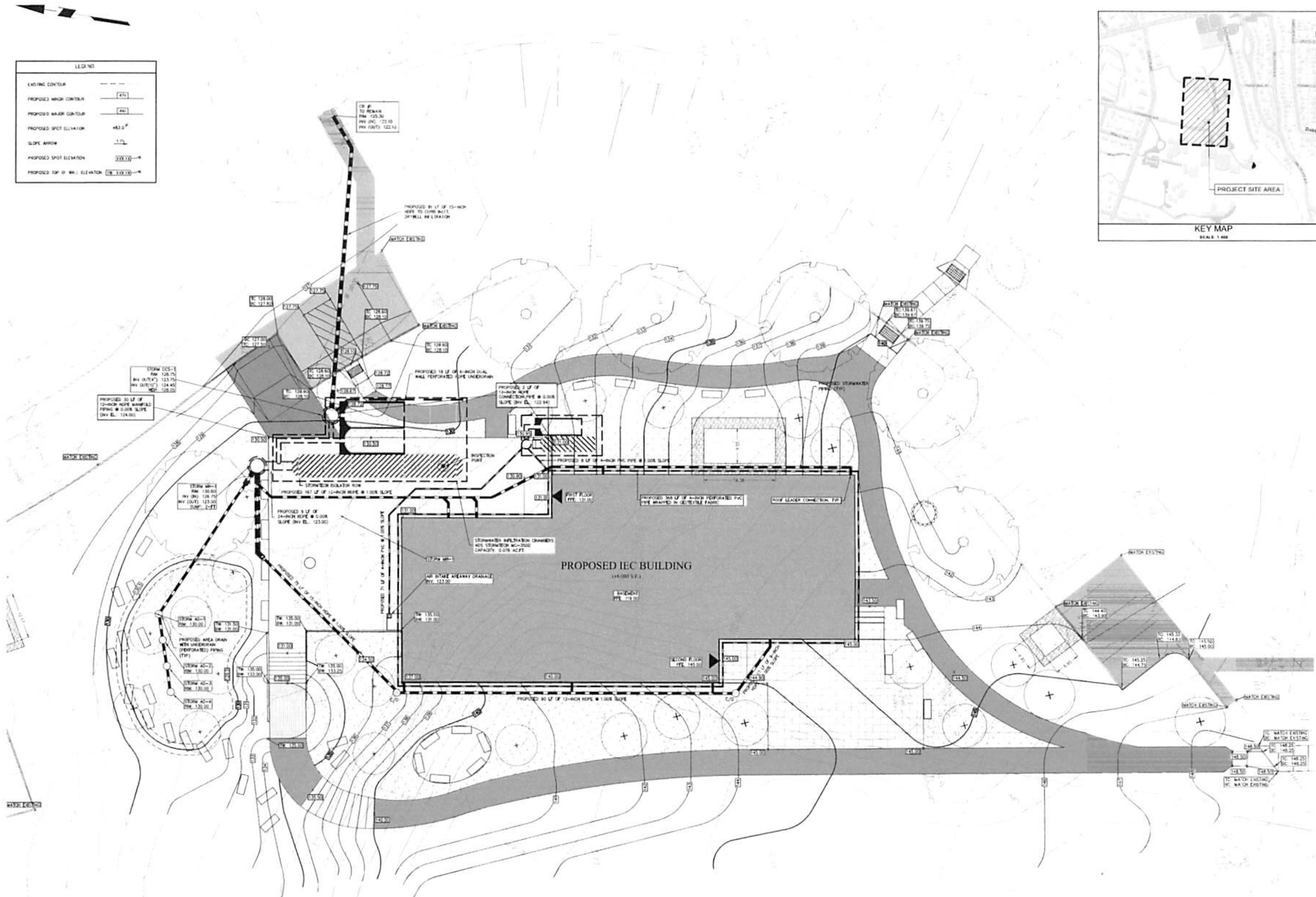
CONSTRUCTION ACCESS PLAN

SCALE: AS NOTED

DRAWING #
C-502
5 of 10

DOB JOB -

DOB STAMP ZONE



1 GRADING & DRAINAGE PLAN

MARVEL
145 HUDSON STREET, FLR 3 NEW YORK, NY 10013
212 616 0420

OWNER
THE MASTERS SCHOOL
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522
TEL 914 479 6400

PROJECT ARCHITECTS + LANDSCAPE ARCHITECTS
MARVEL
145 HUDSON STREET, FLOOR 3
NEW YORK, NEW YORK 10013
TEL 212 616 0420

GEOTECHNICAL / CIVIL ENGINEER
MFS ENGINEERS & SURVEYORS, DPC
2780 HAMILTON BOULEVARD
SOUTH PLAINFIELD, NEW JERSEY 07080
TEL 908 822 4622

STRUCTURAL ENGINEER
SILMAN
32 OLD SLIP, FLOOR 10
NEW YORK, NEW YORK 10005
TEL 212 620 7970

BUILDING SYSTEMS ENGINEER
POLISE CONSULTING ENGINEERS, DPC
133 WEST 19TH STREET
NEW YORK, NEW YORK 10011
TEL 212 645 1002

VERTICAL TRANSPORTATION
VDA
145 WEST 30TH STREET, FLOOR 4
NEW YORK, NEW YORK 10001
TEL 212 868 8080

AV / IT / SECURITY CONSULTANT
COSENTINI ASSOCIATES, INC.
498 SEVENTH AVENUE
NEW YORK, NEW YORK 10018
TEL 212 615 3600

ACOUSTICS CONSULTANT
LSTN CONSULTANTS
76 BEAVER STREET
NEW YORK, NEW YORK 10005
TEL 347 788 0810

ENVELOPE CONSULTANT
MW-SKINS
1 WHITEHALL STREET, FLOOR 14
NEW YORK, NEW YORK 10004
TEL 347 809 6790

LIGHTING DESIGNER
DOT DASH LIGHTING DESIGN
170 WALKER STREET, SUITE #6F
NEW YORK, NEW YORK 10013
TEL 212 651 0860

CODE AND ACCESSIBILITY CONSULTANT
CODE CONSULTANTS, INC.
443 PARK AVENUE S.
NEW YORK, NEW YORK 10016
TEL 212 447 4033

ARCHITECTURAL SPECIFICATIONS
CONSTRUCTION SPECIFICATIONS, INC
22 TENNENT ROAD
MORGANVILLE, NEW JERSEY 07751
TEL 732 970 0700

GEOTHERMAL ENGINEER

REV	DATE	DESCRIPTION
1	02/11/2021	VILLAGE OF DOBBS FERRY SITE APPLICATION
2	06/17/2021	SITE APPLICATION RESUBMISSION
3	07/22/2021	SITE APPLICATION RESUBMISSION
4	08/31/2021	SITE APPLICATION RESUBMISSION

08/31/2021

KEY PLAN NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

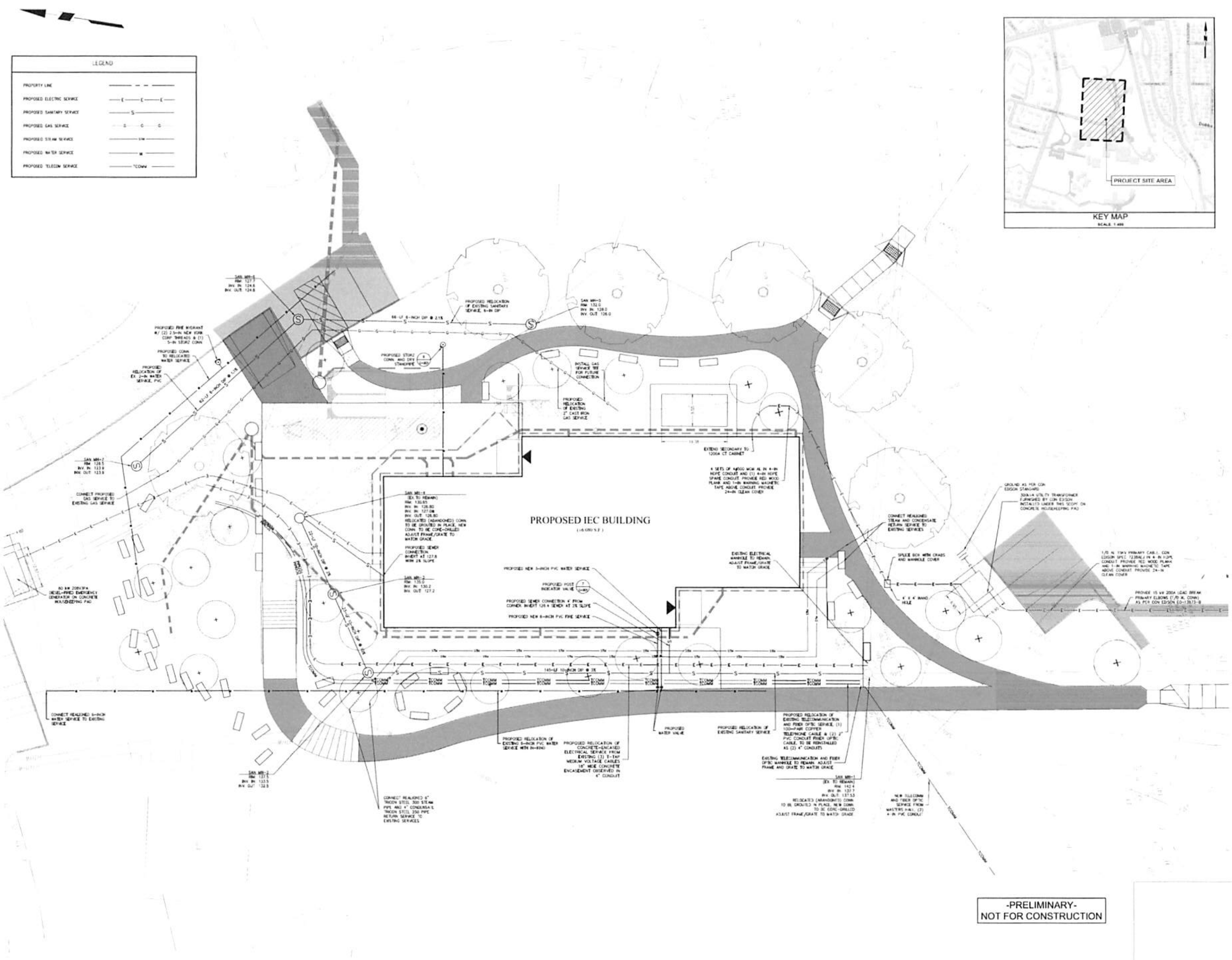
PROPOSED GRADING & DRAINAGE PLAN

SCALE: AS NOTED

-PRELIMINARY-
NOT FOR CONSTRUCTION

DOB STAMP ZONE

DRAWING #:
C-600
6 of 10
DOB JOB: -



1 UTILITY RELOCATION PLAN
Scale: 1"=10'

MARVEL
145 HUDSON STREET, FLR 3 NEW YORK, NY 10013
212 616 0420

OWNER
THE MASTERS SCHOOL
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522
TEL 914 479 6400

PROJECT ARCHITECTS + LANDSCAPE ARCHITECTS
MARVEL
145 HUDSON STREET, FLOOR 3
NEW YORK, NEW YORK 10013
TEL 212 616 0420

GEOTECHNICAL / CIVIL ENGINEER
MFS ENGINEERS & SURVEYORS, DPC
2780 HAMILTON BOULEVARD
SOUTH PLAINFIELD, NEW JERSEY 07080
TEL 908 822 4522

STRUCTURAL ENGINEER
SILMAN
32 OLD SLIP, FLOOR 10
NEW YORK, NEW YORK 10005
TEL 212 620 7970

BUILDING SYSTEMS ENGINEER
POLISE CONSULTING ENGINEERS, DPC
133 WEST 19TH STREET
NEW YORK, NEW YORK 10011
TEL 212 645 1302

VERTICAL TRANSPORTATION
VDA
145 WEST 30TH STREET, FLOOR 4
NEW YORK, NEW YORK 10001
TEL 212 868 8080

AV / IT / SECURITY CONSULTANT
COSENTINI ASSOCIATES, INC.
498 SEVENTH AVENUE
NEW YORK, NEW YORK 10018
TEL 212 615 3800

ACOUSTICS CONSULTANT
LSTN CONSULTANTS
76 SLAVER STREET
NEW YORK, NEW YORK 10005
TEL 347 788 3810

ENVELOPE CONSULTANT
MM-SKINS
1 WHITEHALL STREET, FLOOR 14
NEW YORK, NEW YORK 10004
TEL 347 809 8790

LIGHTING DESIGNER
DOT DASH LIGHTING DESIGN
120 WALKER STREET, SUITE #8F
NEW YORK, NEW YORK 10013
TEL 212 951 0660

CODE AND ACCESSIBILITY CONSULTANT
CODE CONSULTANTS, INC
440 PARK AVENUE S
NEW YORK, NEW YORK 10016
TEL 212 447 4033

ARCHITECTURAL SPECIFICATIONS
CONSTRUCTION SPECIFICATIONS, INC
22 TENNENT ROAD
MORGANVILLE, NEW JERSEY 07751
TEL 732 970 0700

GEOTHERMAL ENGINEER

REV	DATE	DESCRIPTION
1	02/17/2021	VILLAGE OF DOBBS FERRY SITE APPLICATION
2	06/17/2021	SITE APPLICATION RESUBMISSION
3	07/22/2021	SITE APPLICATION RESUBMISSION
4	08/31/2021	SITE APPLICATION RESUBMISSION

08/31/2021

KEY PLAN NTS

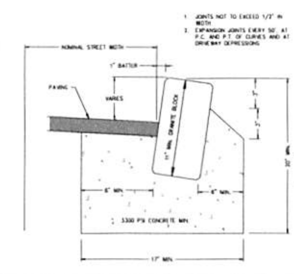
2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

UTILITY PLAN

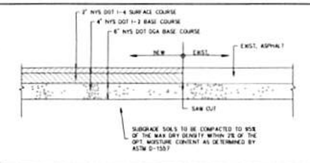
SCALE: AS NOTED

DRAWING #:
C-700
7 of 10
DOB JOB: -

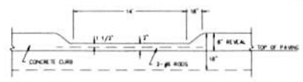
DOB STAMP ZONE



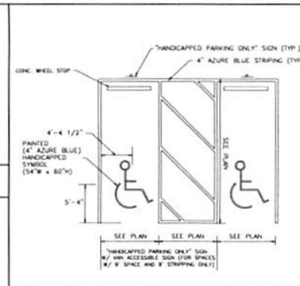
(1) STANDARD BELGIAN BLOCK CURB DETAIL
Scale: N.T.S.



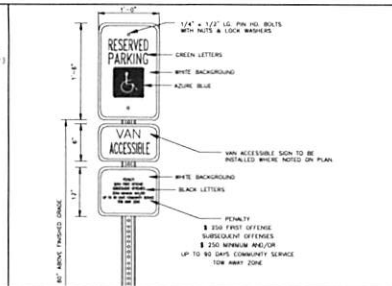
(2) STANDARD ASPHALT PAVEMENT DETAIL
Scale: N.T.S.



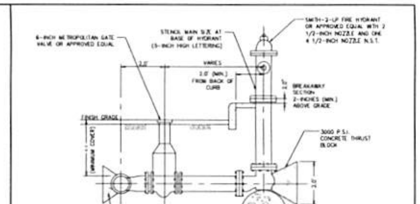
(3) STANDARD CURB CUT DETAIL
Scale: N.T.S.



(4) HANDICAP STALL MARKINGS DETAIL
Scale: N.T.S.



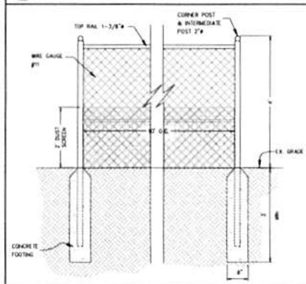
(5) HANDICAP PARKING SIGN w/VAN ACCESSIBLE SIGN
Scale: N.T.S.



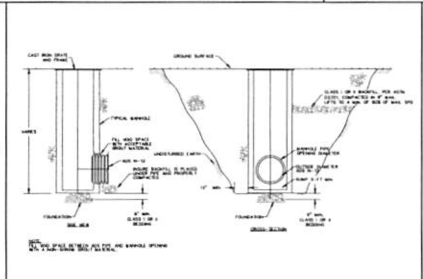
NOTES

1. TYPE OF HYDRANT TO BE SMITH-2-LP OR APPROVED EQUAL BY NYS DEC.
2. ALL WORK PERFORMED MUST BE IN CONFORMANCE WITH APPLICABLE UTILITY, LOCAL, AND STATE REGULATIONS.
3. THERE MUST BE A 5-FT. MINIMUM CLEARANCE FROM ANY OBSTACLE INCLUDING BUT NOT LIMITED TO: CURB CUTS, MAIL BOXES, TREES, MAIL BOXES ETC.

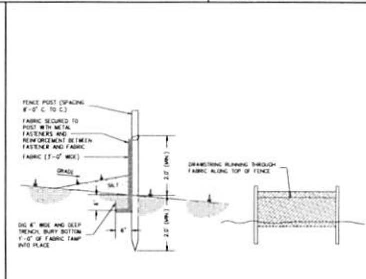
(6) STANDARD FIRE HYDRANT DETAIL
Scale: N.T.S.



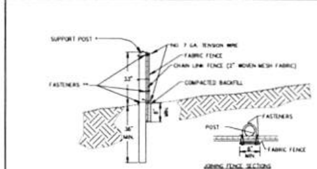
(7) STANDARD CHAIN LINKED FENCE DETAIL
Scale: N.T.S.



(8) STANDARD AREA DRAIN DETAIL
Scale: N.T.S.



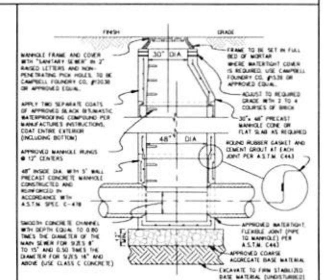
(9) STANDARD SILT FENCE DETAIL
Scale: N.T.S.



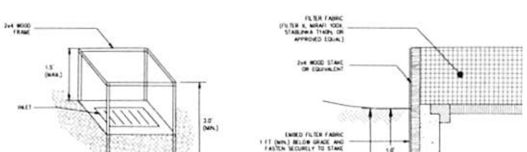
* POSTS SPACED @ 10' MAX. USE 3-1/2" DIA. GALVANIZED OR ALUMINUM POSTS.
** CHAIN LINK TO POST FASTENERS SPACED @ 14" MAX. USE NO. 8 GA. ALUMINUM WIRE OR NO. 9 STEEL GALVANIZED PREFORMED CLIPS. CHAIN LINK TO TENSION WIRE FASTENERS SPACED @ 60" MAX. USE NO. 10 GA. GALVANIZED STEEL WIRE FABRIC TO CHAIN LINK FASTENERS SPACED @ 24" MAX. C. TO. C.

FILTER FABRIC FENCE MUST BE PLACED AT LEVEL GRADE. BOTH ENDS OF THE BARRIER MUST BE EXTENDED AT LEAST 8' UP SLOPE AT 45° TO THE MAIN BARRIER ALIGNMENT.
SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE FENCE.
(ANY SECTION OF FILTER FABRIC FENCE WHICH HAS BEEN UNDERMINED OR TOPPED MUST BE IMMEDIATELY REPLACED WITH ROCK FILTER OUTLET. SEE DETAIL.)

(10) STANDARD SUPER SILT FENCE DETAIL
Scale: N.T.S.



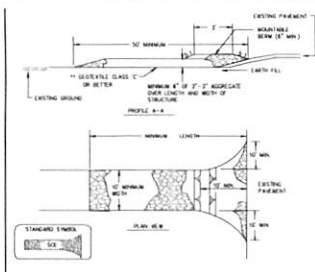
(11) PRECAST CONCRETE SANITARY SEWER MANHOLE DETAIL
Scale: N.T.S.



GENERAL NOTES:

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
4. A 2 X 4 WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.
5. MAXIMUM DRAINAGE AREA IS 1 ACRE.

(12) STANDARD FILTER FABRIC DROP INLET PROTECTION DETAIL
Scale: N.T.S.



STABILIZED CONSTRUCTION SPECIFICATION FOR STABILIZED ACCESS

1. STONE SIZE - USE ASTM C-33, SIZE NO. 2 (2 1/2 TO 1 1/2 IN). USE CLEAN CRUSHED ANGULAR STONE. CRUSHED CONCRETE OF SIMILAR SIZE MAY BE SUBSTITUTED BUT WILL REQUIRE MORE FREQUENT UPGRADING AND MAINTENANCE.
2. THICKNESS OF STABILIZED CONSTRUCTION ACCESS SHALL BE NO LESS THAN SIX (6) INCHES.
3. WIDTH OF STABILIZED CONSTRUCTION ACCESS SHALL BE NO LESS THAN THE FULL WIDTH OF POINTS OF INGRESS OR EGRESS.
4. LENGTH
   4.1. 50 FEET MINIMUM WHERE THE SOILS ARE COURSE GRAINED SANDS AND GRAVELS)
   4.2. 100 FEET MINIMUM WHERE SOILS ARE FINE GRAINED (CLAYS OR SILTS), EXCEPT WHERE THE TRAVELED LENGTH IS LESS THAN 50 TO 100 FEET RESPECTIVELY.
5. GEOTEXTILE FABRIC (FILTER FABRIC) SHALL BE PLACED OVER THE EXISTING GROUND PRIOR TO PLACING STONE.
6. A STABILIZED CONSTRUCTION ENTRANCE SHALL BE REQUIRED AT ALL POINTS WHERE CONSTRUCTION TRAFFIC ENTERS OR LEAVES THE CONSTRUCTION SITE. ALL CONSTRUCTION VEHICLES AND EQUIPMENT MUST TRAVEL OVER THE STABILIZED CONSTRUCTION ENTRANCE BEFORE LEAVING THE CONSTRUCTION SITE.
7. STORMWATER FROM UP-SLOPE AREAS SHALL BE DIVERTED AWAY FROM THE STABILIZED PAD (SEE STANDARD FOR DIVERSIONS). WHERE DIVERSION IS NOT POSSIBLE, THE LENGTH OF THE STABILIZED PAD SHALL FOLLOW TABLE 29-1.
8. WHERE THE SLOPE OF THE ACCESS ROAD EXCEEDS 5%, A STABILIZED BASE COURSE OF FINE AGGREGATE BITUMINOUS CONCRETE (FABC) SHALL BE INSTALLED. THE TYPE AND THICKNESS OF THE FABC AND USE OF A DENSE GRADED AGGREGATE SUB-BASE SHALL BE AS PRESCRIBED BY LOCAL MUNICIPAL ORDINANCE OR OTHER GOVERNING AUTHORITY.

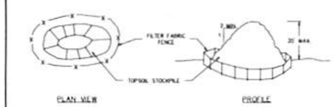
TABLE 29-1

PERCENT SLOPE OF ROADWAY	LENGTH OF STONE REQUIRED	
	COARSE GRAINED SOILS	FINE GRAINED SOILS
0 TO 2%	50 FT	100 FT
2 TO 5%	100 FT	200 FT
> 5%	ENTIRE SURFACE STABILIZED WITH FABC BASE COURSE	

MAINTENANCE OF STABILIZED CONSTRUCTION ENTRANCE

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO ROADWAYS.
2. MAINTENANCE MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
3. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO ROADWAYS (PUBLIC OR PRIVATE) OR OTHER IMPERVIOUS SURFACES MUST BE REMOVED IMMEDIATELY.
4. WHERE ACCUMULATION OF DUST/SEDIMENT IS INADEQUATELY CLEANED OR REMOVED BY CONVENTIONAL METHODS, A POWER BROOM OR STREET SWEEPER WILL BE REQUIRED TO CLEAN PAVED OR IMPERVIOUS SURFACES.

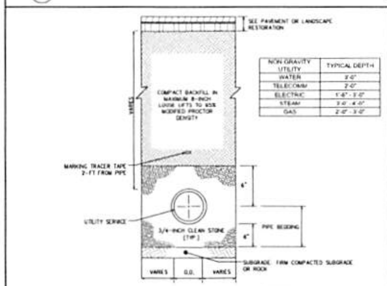
(13) STANDARD CONSTRUCTION ENTRANCE DETAIL
Scale: N.T.S.



NOTES:

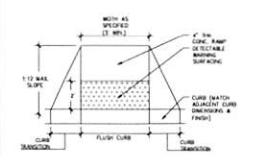
1. SILT FENCE MUST BE PLACED AROUND THE PERIMETER OF ALL STOCKPILES.
2. IMMEDIATELY APPLY TEMPORARY SEEDING TO ALL STOCKPILES WHICH WILL REMAIN IN PLACE 30 DAYS OR MORE.

(14) TOPSOIL STOCKPILE DETAIL
Scale: N.T.S.

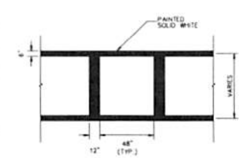


NON GRAVITY UTILITY	TYPICAL DEPTH
WATER	4'-0"
TELECOMM	2'-0"
ELECTRIC	1'-6" - 3'-0"
STEAM	3'-0" - 4'-0"
GAS	2'-0" - 3'-0"

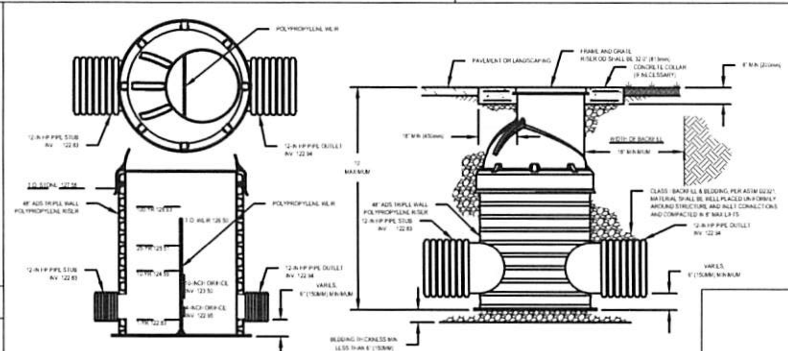
(15) UTILITY TRENCHING DETAIL
Scale: N.T.S.



(16) PEDESTRIAN CURB RAMP DETAIL
Scale: N.T.S.



(17) CROSSWALK STRIPING DETAIL
Scale: N.T.S.



(18) OUTLET CONTROL STRUCTURE DETAIL
Scale: N.T.S.

MARVEL
145 HUDSON STREET, FLR 3 NEW YORK, NY 10013
212 616 0420

OWNER
THE MASTERS SCHOOL
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

PROJECT ARCHITECTS + LANDSCAPE ARCHITECTS
MARVEL
145 HUDSON STREET, FLOOR 3
NEW YORK, NEW YORK 10013

GEOTECHNICAL / CIVIL ENGINEER
MFS ENGINEERS & SURVEYORS, DPC

STRUCTURAL ENGINEER
SILMAN

BUILDING SYSTEMS ENGINEER
POLISE CONSULTING ENGINEERS, DPC

VERTICAL TRANSPORTATION
VDA

AV / IT / SECURITY CONSULTANT
CERAMI & ASSOCIATES, INC.

ACOUSTICS CONSULTANT
LSTN CONSULTANTS

ENVELOPE CONSULTANT
MW-SKINS

LIGHTING DESIGNER
DOT DASH LIGHTING DESIGN

CODE AND ACCESSIBILITY CONSULTANT
CODE CONSULTANTS, INC.

ARCHITECTURAL SPECIFICATIONS
CONSTRUCTION SPECIFICATIONS, INC

GEOTHERMAL ENGINEER

REV	DATE	DESCRIPTION
1	02/11/2021	VILLAGE OF DOBBS FERRY SITE APPLICATION
2	06/17/2021	SITE APPLICATION RESUBMISSION
3	07/22/2021	SITE APPLICATION RESUBMISSION
4	08/31/2021	SITE APPLICATION RESUBMISSION

08/31/2021

KEY PLAN NTS

2029
THE MASTERS SCHOOL
INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

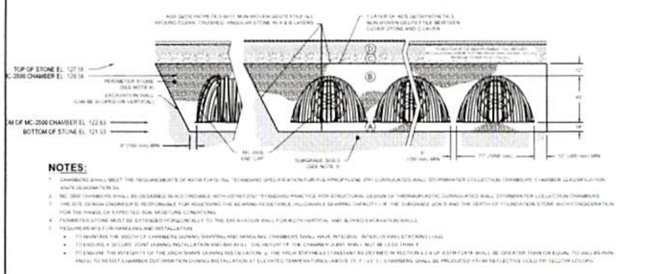
CONSTRUCTION DETAILS

SCALE: AS NOTED

DRAWING #:
C-900
9 of 10

DOB JOB: .

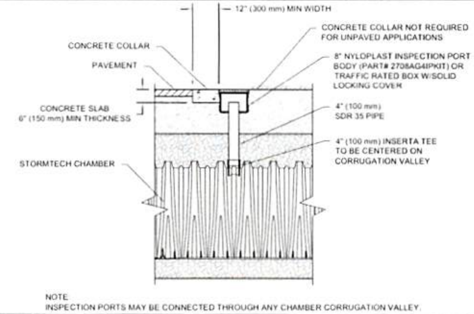
DOB STAMP ZONE



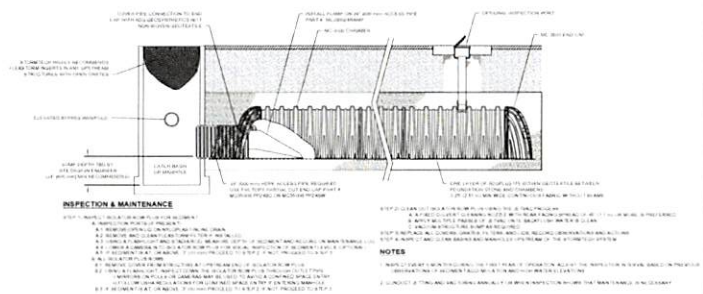
1 ADS STORMTECH MC3500 CHAMBER
Scale: N.T.S.

30" OF SOIL
18" OF GRAVEL

2 BIORETENTION
Scale: N.T.S.

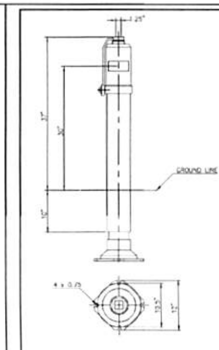


3 4" PVC INSPECTION PORT (MC SERIES CHAMBER)
Scale: N.T.S.

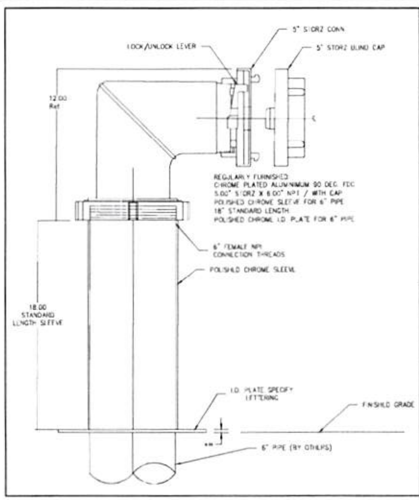


4 MC3500 ISOLATOR ROW PLUS
Scale: N.T.S.

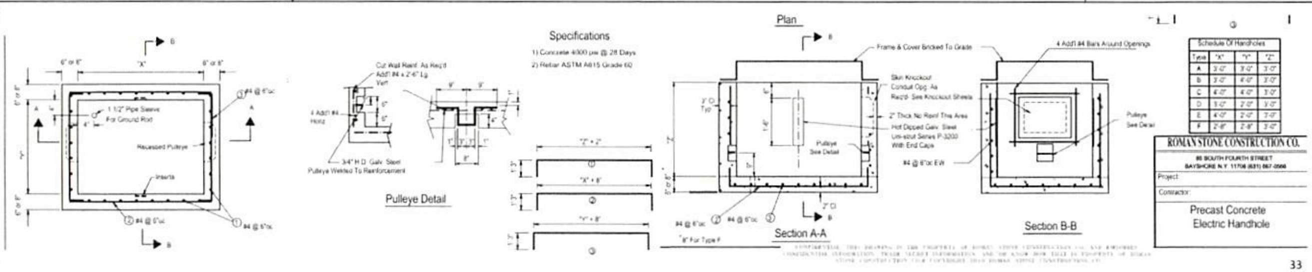
5 NOT USED
Scale: N.T.S.



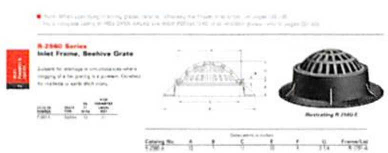
6 POST INDICATOR VALVE
Scale: N.T.S.



7 5" STORZ X 6" NPT 90 DEG. FDC
Scale: N.T.S.



8 PRECAST CONCRETE ELECTRIC HANDHOLE
Scale: N.T.S.



9 AREA DRAIN
Scale: N.T.S.

MARVEL
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212 616 0420

OWNER
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ENVELOPE CONSULTANT
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LIGHTING DESIGNER
DOT DASH LIGHTING DESIGN
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440 PARK AVENUE S
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22 TENNENT ROAD
MORGANVILLE, NEW JERSEY 07751
TEL 732 970 5100

GEOTHERMAL ENGINEER

REV	DATE	DESCRIPTION
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2	06/17/2021	SITE APPLICATION RESUBMISSION
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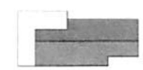
08/31/2021



KEY PLAN NTS

2029
THE MASTERS SCHOOL INNOVATION AND ENTREPRENEURSHIP CENTER
49 CLINTON AVENUE
DOBBS FERRY, NEW YORK 10522

CONSTRUCTION DETAILS

SCALE: AS NOTED

DRAWING #:
C-901
10 of 10
DOB JOB: -

DOB STAMP ZONE

APPENDIX F:
POST CONSTRUCTION INSPECTION AND MAINTENANCE CHECKLIST
UNDERGROUND INFILTRATION SYSTEM

Post Construction Inspection and Maintenance Checklist
Underground Infiltration System

1. Inlet and Outlet Structures
(Frequency: Annual) — **Yes** **No** **NA**

a. Concrete structure ☐ ☐ ☐
   i. In good condition, no need for repairs. ☐ ☐ ☐
      a. Cracks or displacement. ☐ ☐ ☐
         <u>Maintenance</u>: Repair any minor cracks. If minor displacement is observed, re-inspect in 6 months. Replace structure if major cracks or significant displacement is observed.
      b. Minor spalling (<1"). ☐ ☐ ☐
         <u>Maintenance</u>: Repair any minor spalling.
      c. Major spalling (rebars exposed). ☐ ☐ ☐
         <u>Maintenance</u>: Replace structure.
      d. Joint failures. ☐ ☐ ☐
         <u>Maintenance</u>: Replace structure.
      e. Water tightness. ☐ ☐ ☐
         <u>Maintenance</u>: Reseal structure for water tightness if minor leaks are observed. Replace structure if significant leaks are observed.
   ii. Clear of sediment. ☐ ☐ ☐
      <u>Maintenance</u>: Remove and properly dispose of any accumulated sediment when at 50% of sump height.
   iii. Clear of debris and trash. ☐ ☐ ☐
      <u>Maintenance</u>: Remove and properly dispose of any debris and trash.
   iv. Pipes free from damage, corrosion, and sediment. ☐ ☐ ☐
      <u>Maintenance</u>: Immediately repair any damaged pipes. If pipes are severely damaged and cannot be repaired, replace the pipes. Remove and properly dispose of any sediment.

2. Header System
(Frequency: Annual) — **Yes** **No** **NA**

a. Clear of debris and litter. ☐ ☐ ☐
   <u>Maintenance</u>: Use a high pressure nozzle with rear facing jets to wash the sediment and debris into the upstream structure. Remove sediment and debris from the sump of the upstream structure.
b. Clear of sediment. ☐ ☐ ☐
   <u>Maintenance</u>: Remove and properly dispose of sediment when accumulated over 4 inches. Use a high pressure nozzle with rear facing jets to wash the sediment into the upstream structure. Remove sediment from the sump of the upstream structure.

3. Isolator/Containment Row
(Frequency: Annual)

	Yes	No	NA
a. Clear of debris and litter. *Maintenance: Remove and properly dispose of any debris and trash. Use a high pressure nozzle with rear facing jets to wash the debris into the upstream structure. Remove debris from the sump of the upstream structure.*	☐	☐	☐
b. Clear of sediment. *Maintenance: Remove and properly dispose of sediment when accumulated over 4 inches. Use a high pressure nozzle with rear facing jets to wash the sediment into the upstream structure. Remove sediment from the sump of the upstream structure.*	☐	☐	☐

4. Underground Chambers
(Frequency: Annual)

	Yes	No	NA
a. Chambers are in good condition. *Maintenance: Inspect the interior of the chambers using a CCTV or comparable inspection method through the inspection port. If deficiencies are noted immediately contact a NYS licensed Professional Engineer.*	☐	☐	☐
b. Clear of debris and litter. *Maintenance: Remove and properly dispose of any debris and trash. Use a high pressure nozzle with rear facing jets to wash the debris into the upstream structure. Remove debris from the sump of the upstream structure.*	☐	☐	☐
c. Clear of sediment. *Maintenance: Remove and properly dispose of sediment when accumulated over 4 inches. Use a high pressure nozzle with rear facing jets to wash the sediment into the upstream structure. Remove sediment from the sump of the upstream structure.*	☐	☐	☐
d. Dewaters between storms. *Maintenance: If standing water during inspection, recheck after 48 hours. If standing water is still present, contact a NYS licensed Professional Engineer.*	☐	☐	☐

5. Surrounding Site
(Frequency: Monthly)

	Yes	No	NA
a. Vegetation and ground cover adequate. *Maintenance: Reseed bare areas. Remove any unauthorized plants or any nuisance weeds and vegetation, including their roots. Do not use any herbicides. Topsoil, rake and seed the disturbed area by their removal.*	☐	☐	☐
b. Area free from depressions. *Maintenance: Immediately repair. Re-grade and compact the soil. Topsoil, rake and seed the area. Re-inspect in 6 months.*	☐	☐	☐

	Yes	No	NA
c. Unauthorized plants over system. *<u>Maintenance</u>: Remove any unauthorized plants, including roots. Do not use herbicides. Topsoil, rake and seed the area disturbed by their removal.*	☐	☐	☐
d. Unauthorized structures over system. *<u>Maintenance</u>: Remove any unauthorized structures. Immediately inspect the interior of the chambers using a CCTV or comparable inspection method through the inspection port. If deficiencies are noted immediately contact a NYS licensed Professional Engineer.*	☐	☐	☐

Notes:

1. The site must be returned to the approved conditions when any repairs are made.
2. All seed mixtures shall meet the seed mixture requirements specified on the approved plans.

Comments:

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____

Actions to be taken:

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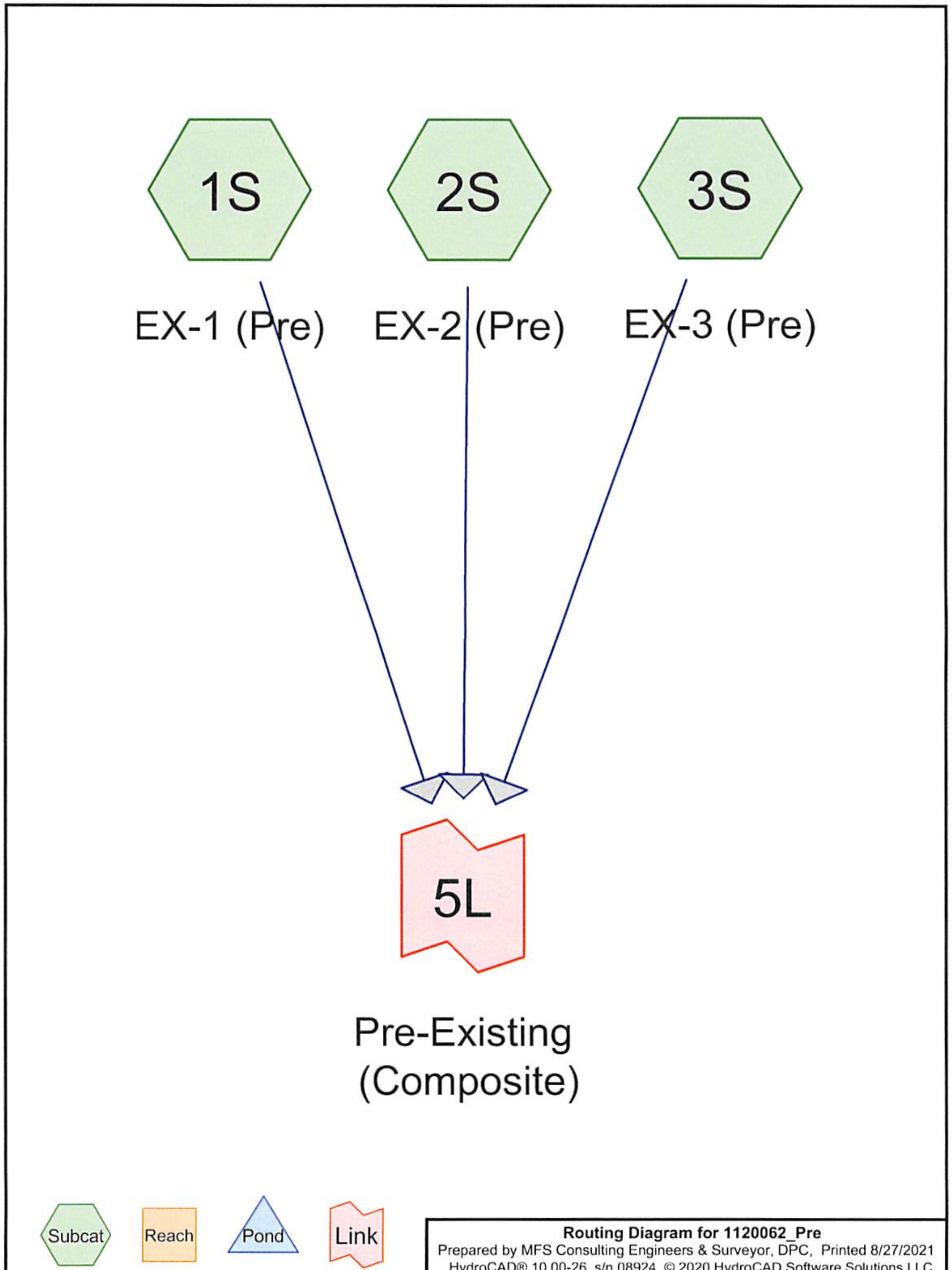
APPENDIX G:
SUPPORTING CALCULATIONS



Routing Diagram for 1120062_Pre
Prepared by MFS Consulting Engineers & Surveyor, DPC, Printed 8/27/2021

Project Notes

Defined 10 rainfall events from NY-Westchester IDF

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.193	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S)
1.193	**74**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
1.193	HSG C	1S, 2S, 3S
0.000	HSG D	
0.000	Other	
1.193		**TOTAL AREA**

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	1.193	0.000	0.000	1.193	>75% Grass cover, Good	1S, 2S, 3S
0.000	**0.000**	**1.193**	**0.000**	**0.000**	**1.193**	**TOTAL AREA**	

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: EX-1 (Pre) Runoff Area=0.180 ac 0.00% Impervious Runoff Depth>0.78"
Flow Length=260' Tc=6.6 min CN=74 Runoff=0.16 cfs 0.012 af

Subcatchment2S: EX-2 (Pre) Runoff Area=0.640 ac 0.00% Impervious Runoff Depth>0.78"
Flow Length=330' Tc=7.2 min CN=74 Runoff=0.57 cfs 0.042 af

Subcatchment3S: EX-3 (Pre) Runoff Area=0.373 ac 0.00% Impervious Runoff Depth>0.78"
Flow Length=280' Tc=10.7 min CN=74 Runoff=0.30 cfs 0.024 af

Link 5L: Pre-Existing (Composite) Inflow=0.99 cfs 0.078 af
Primary=0.99 cfs 0.078 af

Total Runoff Area = 1.193 ac Runoff Volume = 0.078 af Average Runoff Depth = 0.78"
100.00% Pervious = 1.193 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: EX-1 (Pre)

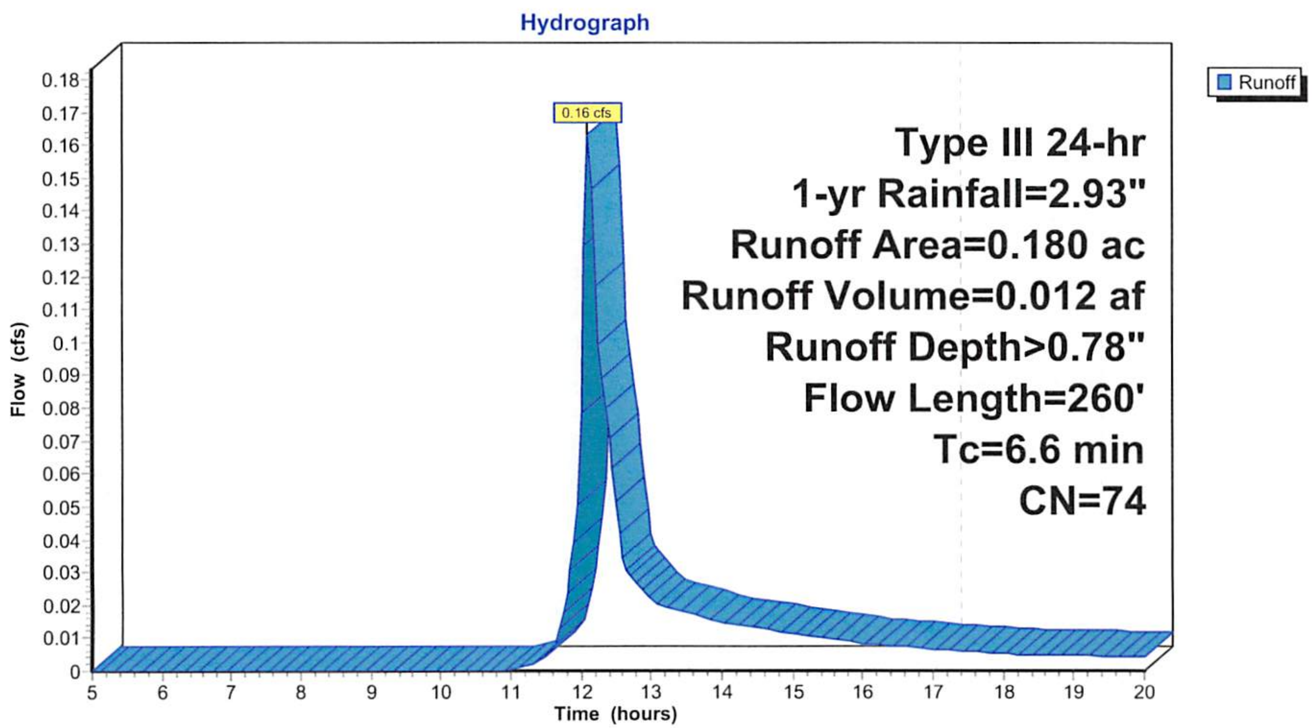
Runoff = 0.16 cfs @ 12.11 hrs, Volume= 0.012 af, Depth> 0.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.93"

Area (ac)	CN	Description
0.180	74	>75% Grass cover, Good, HSG C
0.180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0800	0.31		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
1.3	160	0.0812	1.99		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
6.6	260	Total			

Subcatchment 1S: EX-1 (Pre)



Hydrograph for Subcatchment 1S: EX-1 (Pre)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.17	0.00	0.00
5.25	0.18	0.00	0.00
5.50	0.19	0.00	0.00
5.75	0.20	0.00	0.00
6.00	0.21	0.00	0.00
6.25	0.22	0.00	0.00
6.50	0.24	0.00	0.00
6.75	0.25	0.00	0.00
7.00	0.27	0.00	0.00
7.25	0.28	0.00	0.00
7.50	0.30	0.00	0.00
7.75	0.32	0.00	0.00
8.00	0.33	0.00	0.00
8.25	0.35	0.00	0.00
8.50	0.38	0.00	0.00
8.75	0.40	0.00	0.00
9.00	0.43	0.00	0.00
9.25	0.46	0.00	0.00
9.50	0.49	0.00	0.00
9.75	0.52	0.00	0.00
10.00	0.55	0.00	0.00
10.25	0.59	0.00	0.00
10.50	0.63	0.00	0.00
10.75	0.68	0.00	0.00
11.00	0.73	0.00	0.00
11.25	0.79	0.00	0.00
11.50	0.87	0.01	0.00
11.75	1.04	0.03	0.02
12.00	1.46	0.14	**0.08**
12.25	1.89	0.30	**0.10**
12.50	2.06	0.38	0.05
12.75	2.14	0.42	0.03
13.00	2.20	0.45	0.02
13.25	2.25	0.47	0.02
13.50	2.30	0.50	0.02
13.75	2.34	0.52	0.02
14.00	2.38	0.54	0.01
14.25	2.41	0.56	0.01
14.50	2.44	0.58	0.01
14.75	2.47	0.59	0.01
15.00	2.50	0.61	0.01
15.25	2.53	0.62	0.01
15.50	2.55	0.64	0.01
15.75	2.58	0.65	0.01
16.00	2.60	0.66	0.01
16.25	2.61	0.67	0.01
16.50	2.63	0.68	0.01
16.75	2.65	0.69	0.01
17.00	2.66	0.70	0.01
17.25	2.68	0.71	0.01
17.50	2.69	0.72	0.01
17.75	2.71	0.73	0.01
18.00	2.72	0.74	0.01
18.25	2.73	0.74	0.01
18.50	2.74	0.75	0.00
18.75	2.75	0.76	0.00
19.00	2.76	0.76	0.00
19.25	2.77	0.77	0.00
19.50	2.78	0.77	0.00
19.75	2.79	0.78	0.00
20.00	**2.80**	**0.79**	0.00

Summary for Subcatchment 2S: EX-2 (Pre)

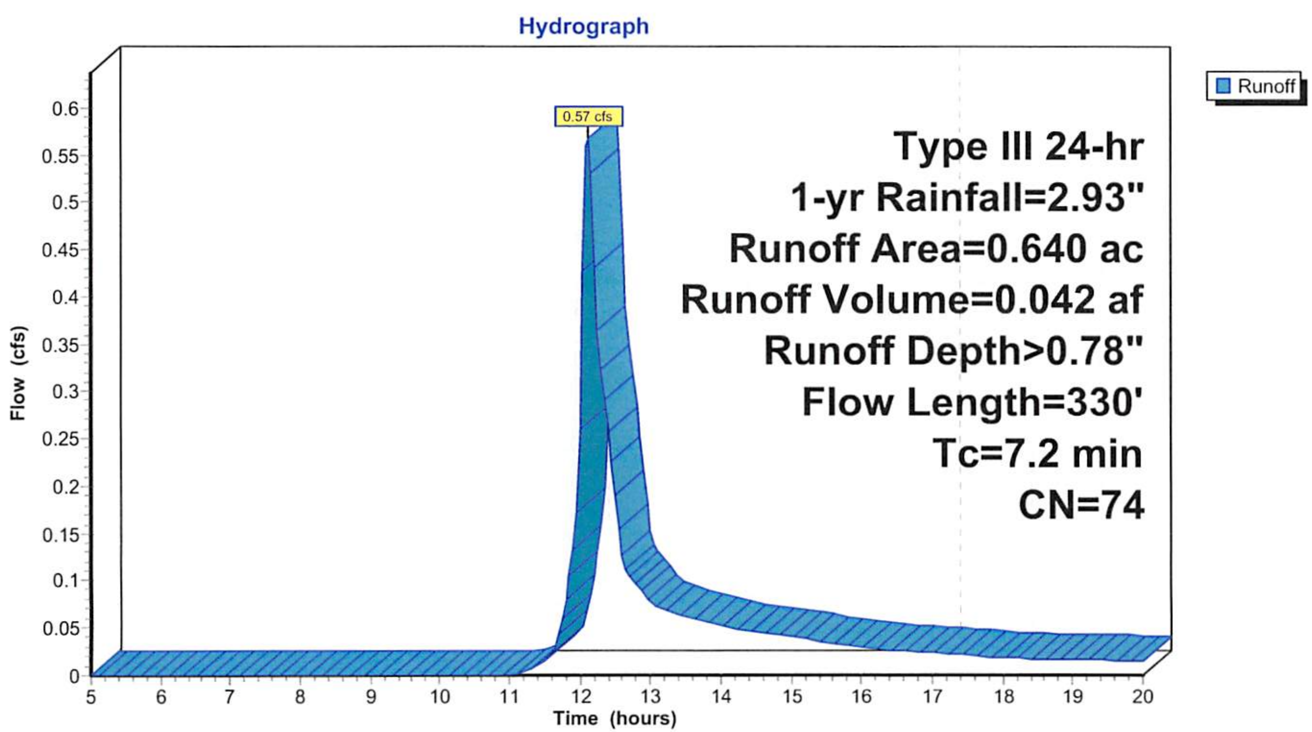
Runoff = 0.57 cfs @ 12.12 hrs, Volume= 0.042 af, Depth> 0.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.93"

Area (ac)	CN	Description
0.640	74	>75% Grass cover, Good, HSG C
0.640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0800	0.31		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
1.9	230	0.0840	2.03		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
7.2	330	Total			

Subcatchment 2S: EX-2 (Pre)



Hydrograph for Subcatchment 2S: EX-2 (Pre)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.17	0.00	0.00
5.25	0.18	0.00	0.00
5.50	0.19	0.00	0.00
5.75	0.20	0.00	0.00
6.00	0.21	0.00	0.00
6.25	0.22	0.00	0.00
6.50	0.24	0.00	0.00
6.75	0.25	0.00	0.00
7.00	0.27	0.00	0.00
7.25	0.28	0.00	0.00
7.50	0.30	0.00	0.00
7.75	0.32	0.00	0.00
8.00	0.33	0.00	0.00
8.25	0.35	0.00	0.00
8.50	0.38	0.00	0.00
8.75	0.40	0.00	0.00
9.00	0.43	0.00	0.00
9.25	0.46	0.00	0.00
9.50	0.49	0.00	0.00
9.75	0.52	0.00	0.00
10.00	0.55	0.00	0.00
10.25	0.59	0.00	0.00
10.50	0.63	0.00	0.00
10.75	0.68	0.00	0.00
11.00	0.73	0.00	0.00
11.25	0.79	0.00	0.01
11.50	0.87	0.01	0.01
11.75	1.04	0.03	0.06
12.00	1.46	0.14	**0.26**
12.25	1.89	0.30	**0.36**
12.50	2.06	0.38	0.19
12.75	2.14	0.42	0.10
13.00	2.20	0.45	0.08
13.25	2.25	0.47	0.07
13.50	2.30	0.50	0.06
13.75	2.34	0.52	0.06
14.00	2.38	0.54	0.05
14.25	2.41	0.56	0.05
14.50	2.44	0.58	0.05
14.75	2.47	0.59	0.04
15.00	2.50	0.61	0.04
15.25	2.53	0.62	0.04
15.50	2.55	0.64	0.04
15.75	2.58	0.65	0.03
16.00	2.60	0.66	0.03
16.25	2.61	0.67	0.03
16.50	2.63	0.68	0.03
16.75	2.65	0.69	0.03
17.00	2.66	0.70	0.02
17.25	2.68	0.71	0.02
17.50	2.69	0.72	0.02
17.75	2.71	0.73	0.02
18.00	2.72	0.74	0.02
18.25	2.73	0.74	0.02
18.50	2.74	0.75	0.02
18.75	2.75	0.76	0.02
19.00	2.76	0.76	0.02
19.25	2.77	0.77	0.02
19.50	2.78	0.77	0.02
19.75	2.79	0.78	0.02
20.00	**2.80**	**0.79**	0.02

Summary for Subcatchment 3S: EX-3 (Pre)

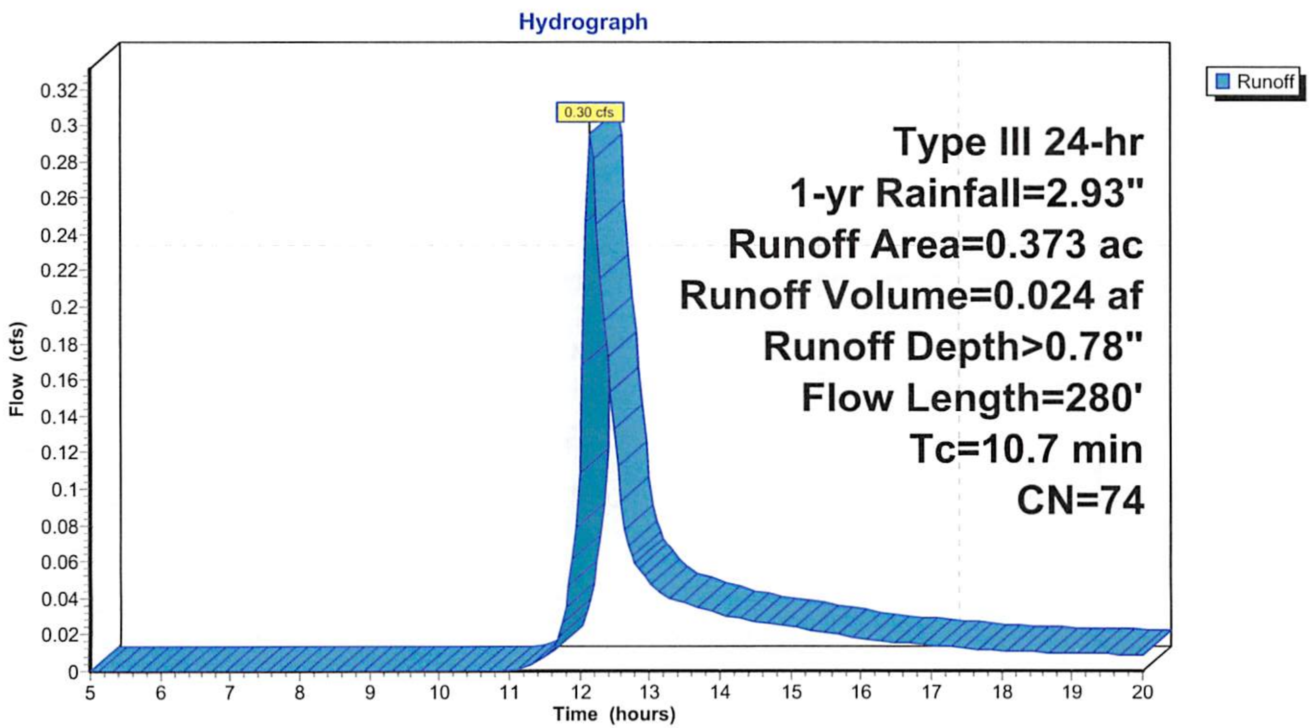
Runoff = 0.30 cfs @ 12.17 hrs, Volume= 0.024 af, Depth> 0.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.93"

Area (ac)	CN	Description
0.373	74	>75% Grass cover, Good, HSG C
0.373		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	100	0.0200	0.18		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
1.4	180	0.0972	2.18		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
10.7	280	Total			

Subcatchment 3S: EX-3 (Pre)



Hydrograph for Subcatchment 3S: EX-3 (Pre)

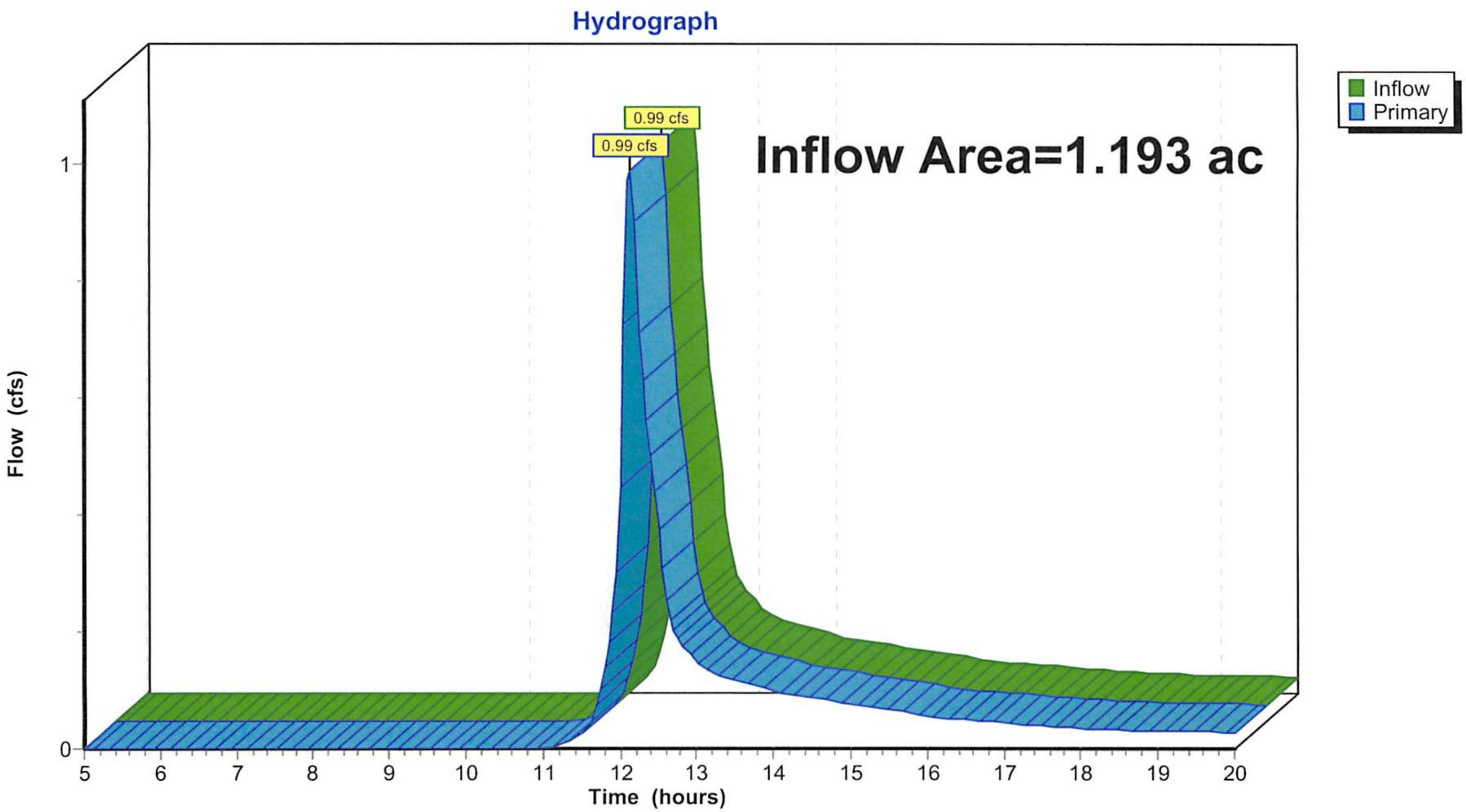
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.17	0.00	0.00
5.25	0.18	0.00	0.00
5.50	0.19	0.00	0.00
5.75	0.20	0.00	0.00
6.00	0.21	0.00	0.00
6.25	0.22	0.00	0.00
6.50	0.24	0.00	0.00
6.75	0.25	0.00	0.00
7.00	0.27	0.00	0.00
7.25	0.28	0.00	0.00
7.50	0.30	0.00	0.00
7.75	0.32	0.00	0.00
8.00	0.33	0.00	0.00
8.25	0.35	0.00	0.00
8.50	0.38	0.00	0.00
8.75	0.40	0.00	0.00
9.00	0.43	0.00	0.00
9.25	0.46	0.00	0.00
9.50	0.49	0.00	0.00
9.75	0.52	0.00	0.00
10.00	0.55	0.00	0.00
10.25	0.59	0.00	0.00
10.50	0.63	0.00	0.00
10.75	0.68	0.00	0.00
11.00	0.73	0.00	0.00
11.25	0.79	0.00	0.00
11.50	0.87	0.01	0.01
11.75	1.04	0.03	0.03
12.00	1.46	0.14	**0.11**
12.25	1.89	0.30	**0.25**
12.50	2.06	0.38	0.13
12.75	2.14	0.42	0.06
13.00	2.20	0.45	0.05
13.25	2.25	0.47	0.04
13.50	2.30	0.50	0.04
13.75	2.34	0.52	0.03
14.00	2.38	0.54	0.03
14.25	2.41	0.56	0.03
14.50	2.44	0.58	0.03
14.75	2.47	0.59	0.03
15.00	2.50	0.61	0.02
15.25	2.53	0.62	0.02
15.50	2.55	0.64	0.02
15.75	2.58	0.65	0.02
16.00	2.60	0.66	0.02
16.25	2.61	0.67	0.02
16.50	2.63	0.68	0.02
16.75	2.65	0.69	0.01
17.00	2.66	0.70	0.01
17.25	2.68	0.71	0.01
17.50	2.69	0.72	0.01
17.75	2.71	0.73	0.01
18.00	2.72	0.74	0.01
18.25	2.73	0.74	0.01
18.50	2.74	0.75	0.01
18.75	2.75	0.76	0.01
19.00	2.76	0.76	0.01
19.25	2.77	0.77	0.01
19.50	2.78	0.77	0.01
19.75	2.79	0.78	0.01
20.00	**2.80**	**0.79**	0.01

Summary for Link 5L: Pre-Existing (Composite)

Inflow Area =	1.193 ac,	0.00% Impervious, Inflow Depth > 0.78"	for 1-yr event
Inflow =	0.99 cfs @	12.13 hrs, Volume=	0.078 af
Primary =	0.99 cfs @	12.13 hrs, Volume=	0.078 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 5L: Pre-Existing (Composite)



Hydrograph for Link 5L: Pre-Existing (Composite)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
5.25	0.00	0.00	0.00
5.50	0.00	0.00	0.00
5.75	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.25	0.00	0.00	0.00
6.50	0.00	0.00	0.00
6.75	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.25	0.00	0.00	0.00
7.50	0.00	0.00	0.00
7.75	0.00	0.00	0.00
8.00	0.00	0.00	0.00
8.25	0.00	0.00	0.00
8.50	0.00	0.00	0.00
8.75	0.00	0.00	0.00
9.00	0.00	0.00	0.00
9.25	0.00	0.00	0.00
9.50	0.00	0.00	0.00
9.75	0.00	0.00	0.00
10.00	0.00	0.00	0.00
10.25	0.00	0.00	0.00
10.50	0.00	0.00	0.00
10.75	0.00	0.00	0.00
11.00	0.00	0.00	0.00
11.25	0.01	0.00	0.01
11.50	0.03	0.00	0.03
11.75	0.10	0.00	0.10
12.00	**0.45**	0.00	**0.45**
12.25	**0.71**	0.00	**0.71**
12.50	0.38	0.00	0.38
12.75	0.19	0.00	0.19
13.00	0.15	0.00	0.15
13.25	0.13	0.00	0.13
13.50	0.12	0.00	0.12
13.75	0.11	0.00	0.11
14.00	0.10	0.00	0.10
14.25	0.09	0.00	0.09
14.50	0.09	0.00	0.09
14.75	0.08	0.00	0.08
15.00	0.08	0.00	0.08
15.25	0.07	0.00	0.07
15.50	0.07	0.00	0.07
15.75	0.06	0.00	0.06
16.00	0.06	0.00	0.06
16.25	0.05	0.00	0.05
16.50	0.05	0.00	0.05
16.75	0.05	0.00	0.05
17.00	0.04	0.00	0.04
17.25	0.04	0.00	0.04
17.50	0.04	0.00	0.04
17.75	0.04	0.00	0.04
18.00	0.03	0.00	0.03
18.25	0.03	0.00	0.03
18.50	0.03	0.00	0.03
18.75	0.03	0.00	0.03
19.00	0.03	0.00	0.03
19.25	0.03	0.00	0.03
19.50	0.03	0.00	0.03
19.75	0.03	0.00	0.03
20.00	0.03	0.00	0.03

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: EX-1 (Pre) Runoff Area=0.180 ac 0.00% Impervious Runoff Depth>2.59"
Flow Length=260' Tc=6.6 min CN=74 Runoff=0.57 cfs 0.039 af

Subcatchment2S: EX-2 (Pre) Runoff Area=0.640 ac 0.00% Impervious Runoff Depth>2.59"
Flow Length=330' Tc=7.2 min CN=74 Runoff=1.98 cfs 0.138 af

Subcatchment3S: EX-3 (Pre) Runoff Area=0.373 ac 0.00% Impervious Runoff Depth>2.59"
Flow Length=280' Tc=10.7 min CN=74 Runoff=1.03 cfs 0.081 af

Link 5L: Pre-Existing (Composite) Inflow=3.51 cfs 0.258 af
Primary=3.51 cfs 0.258 af

Total Runoff Area = 1.193 ac Runoff Volume = 0.258 af Average Runoff Depth = 2.59"
100.00% Pervious = 1.193 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: EX-1 (Pre)

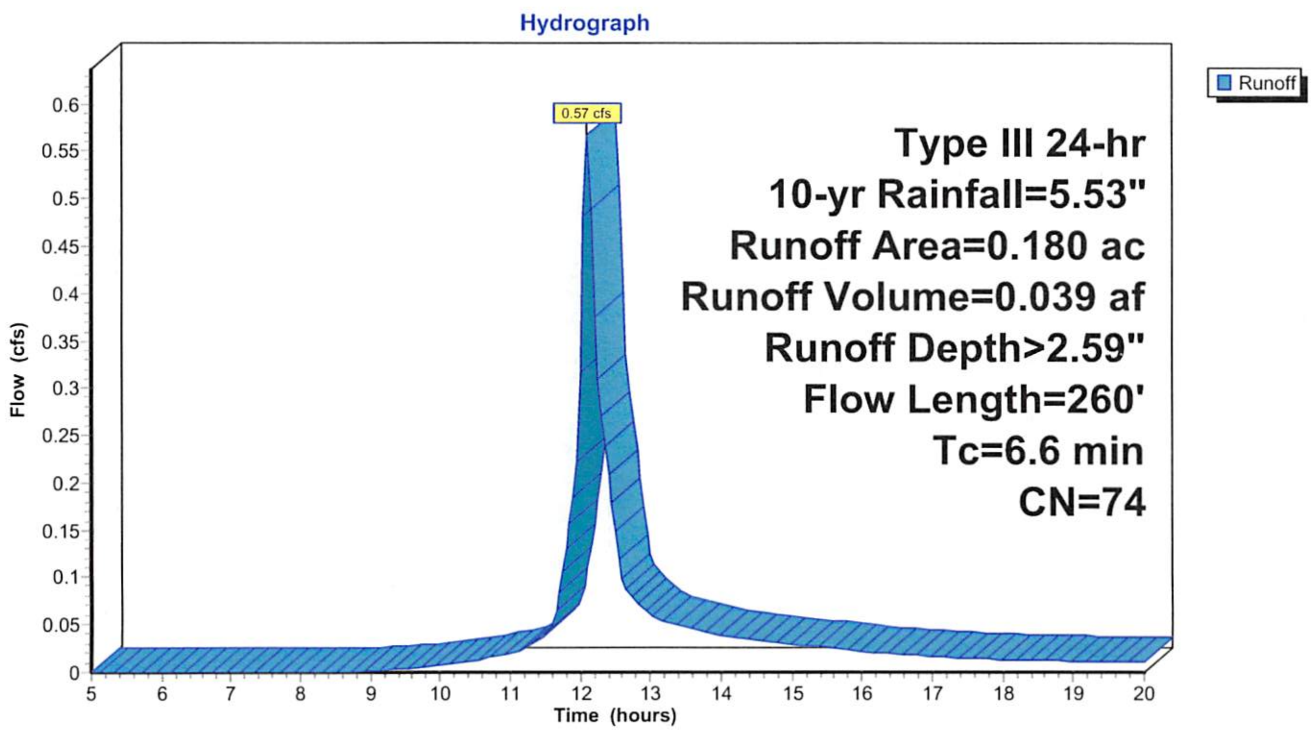
Runoff = 0.57 cfs @ 12.10 hrs, Volume= 0.039 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.53"

Area (ac)	CN	Description
0.180	74	>75% Grass cover, Good, HSG C
0.180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0800	0.31		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
1.3	160	0.0812	1.99		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
6.6	260	Total			

Subcatchment 1S: EX-1 (Pre)



Hydrograph for Subcatchment 1S: EX-1 (Pre)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.31	0.00	0.00
5.25	0.33	0.00	0.00
5.50	0.35	0.00	0.00
5.75	0.38	0.00	0.00
6.00	0.40	0.00	0.00
6.25	0.42	0.00	0.00
6.50	0.45	0.00	0.00
6.75	0.47	0.00	0.00
7.00	0.50	0.00	0.00
7.25	0.53	0.00	0.00
7.50	0.56	0.00	0.00
7.75	0.60	0.00	0.00
8.00	0.63	0.00	0.00
8.25	0.67	0.00	0.00
8.50	0.71	0.00	0.00
8.75	0.76	0.00	0.00
9.00	0.81	0.00	0.00
9.25	0.86	0.01	0.00
9.50	0.92	0.01	0.00
9.75	0.98	0.02	0.01
10.00	1.05	0.03	0.01
10.25	1.12	0.04	0.01
10.50	1.20	0.06	0.01
10.75	1.29	0.08	0.02
11.00	1.38	0.11	0.02
11.25	1.50	0.15	0.03
11.50	1.65	0.20	0.04
11.75	1.96	0.33	0.11
12.00	2.76	0.76	**0.32**
12.25	3.57	1.29	**0.31**
12.50	3.88	1.51	0.15
12.75	4.03	1.62	0.08
13.00	4.15	1.71	0.06
13.25	4.24	1.78	0.05
13.50	4.33	1.84	0.05
13.75	4.41	1.91	0.04
14.00	4.48	1.96	0.04
14.25	4.55	2.01	0.04
14.50	4.61	2.06	0.03
14.75	4.67	2.10	0.03
15.00	4.72	2.15	0.03
15.25	4.77	2.19	0.03
15.50	4.82	2.22	0.03
15.75	4.86	2.25	0.02
16.00	4.90	2.28	0.02
16.25	4.93	2.31	0.02
16.50	4.97	2.34	0.02
16.75	5.00	2.36	0.02
17.00	5.03	2.39	0.02
17.25	5.06	2.41	0.02
17.50	5.08	2.43	0.02
17.75	5.11	2.45	0.01
18.00	5.13	2.47	0.01
18.25	5.15	2.49	0.01
18.50	5.18	2.50	0.01
18.75	5.20	2.52	0.01
19.00	5.22	2.54	0.01
19.25	5.24	2.55	0.01
19.50	5.26	2.57	0.01
19.75	5.27	2.58	0.01
20.00	**5.29**	**2.60**	0.01

Summary for Subcatchment 2S: EX-2 (Pre)

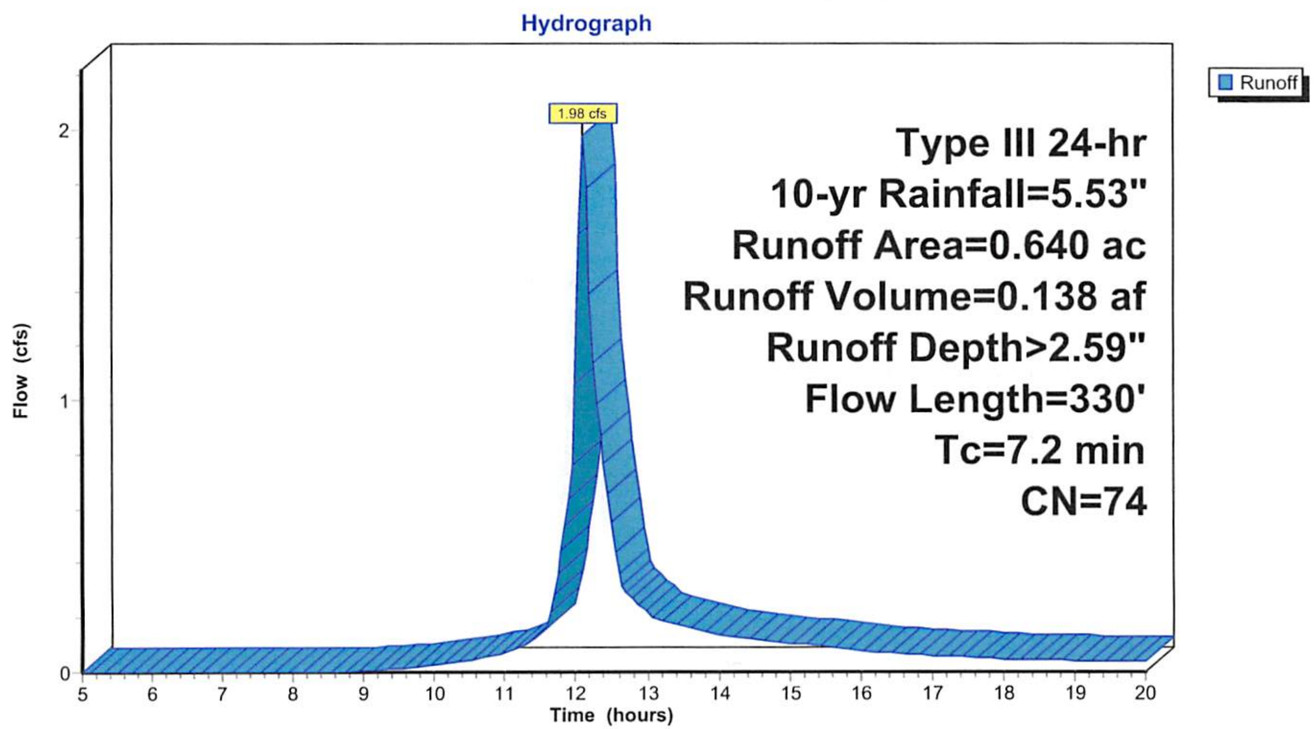
Runoff = 1.98 cfs @ 12.11 hrs, Volume= 0.138 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.53"

Area (ac)	CN	Description
0.640	74	>75% Grass cover, Good, HSG C
0.640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0800	0.31		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
1.9	230	0.0840	2.03		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
7.2	330	Total			

Subcatchment 2S: EX-2 (Pre)



Hydrograph for Subcatchment 2S: EX-2 (Pre)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.31	0.00	0.00
5.25	0.33	0.00	0.00
5.50	0.35	0.00	0.00
5.75	0.38	0.00	0.00
6.00	0.40	0.00	0.00
6.25	0.42	0.00	0.00
6.50	0.45	0.00	0.00
6.75	0.47	0.00	0.00
7.00	0.50	0.00	0.00
7.25	0.53	0.00	0.00
7.50	0.56	0.00	0.00
7.75	0.60	0.00	0.00
8.00	0.63	0.00	0.00
8.25	0.67	0.00	0.00
8.50	0.71	0.00	0.00
8.75	0.76	0.00	0.00
9.00	0.81	0.00	0.01
9.25	0.86	0.01	0.01
9.50	0.92	0.01	0.01
9.75	0.98	0.02	0.02
10.00	1.05	0.03	0.03
10.25	1.12	0.04	0.03
10.50	1.20	0.06	0.05
10.75	1.29	0.08	0.06
11.00	1.38	0.11	0.07
11.25	1.50	0.15	0.10
11.50	1.65	0.20	0.14
11.75	1.96	0.33	0.36
12.00	2.76	0.76	**1.06**
12.25	3.57	1.29	**1.14**
12.50	3.88	1.51	0.55
12.75	4.03	1.62	0.28
13.00	4.15	1.71	0.22
13.25	4.24	1.78	0.19
13.50	4.33	1.84	0.17
13.75	4.41	1.91	0.16
14.00	4.48	1.96	0.14
14.25	4.55	2.01	0.13
14.50	4.61	2.06	0.12
14.75	4.67	2.10	0.12
15.00	4.72	2.15	0.11
15.25	4.77	2.19	0.10
15.50	4.82	2.22	0.09
15.75	4.86	2.25	0.08
16.00	4.90	2.28	0.08
16.25	4.93	2.31	0.07
16.50	4.97	2.34	0.07
16.75	5.00	2.36	0.06
17.00	5.03	2.39	0.06
17.25	5.06	2.41	0.06
17.50	5.08	2.43	0.05
17.75	5.11	2.45	0.05
18.00	5.13	2.47	0.05
18.25	5.15	2.49	0.05
18.50	5.18	2.50	0.04
18.75	5.20	2.52	0.04
19.00	5.22	2.54	0.04
19.25	5.24	2.55	0.04
19.50	5.26	2.57	0.04
19.75	5.27	2.58	0.04
20.00	**5.29**	**2.60**	0.04

Summary for Subcatchment 3S: EX-3 (Pre)

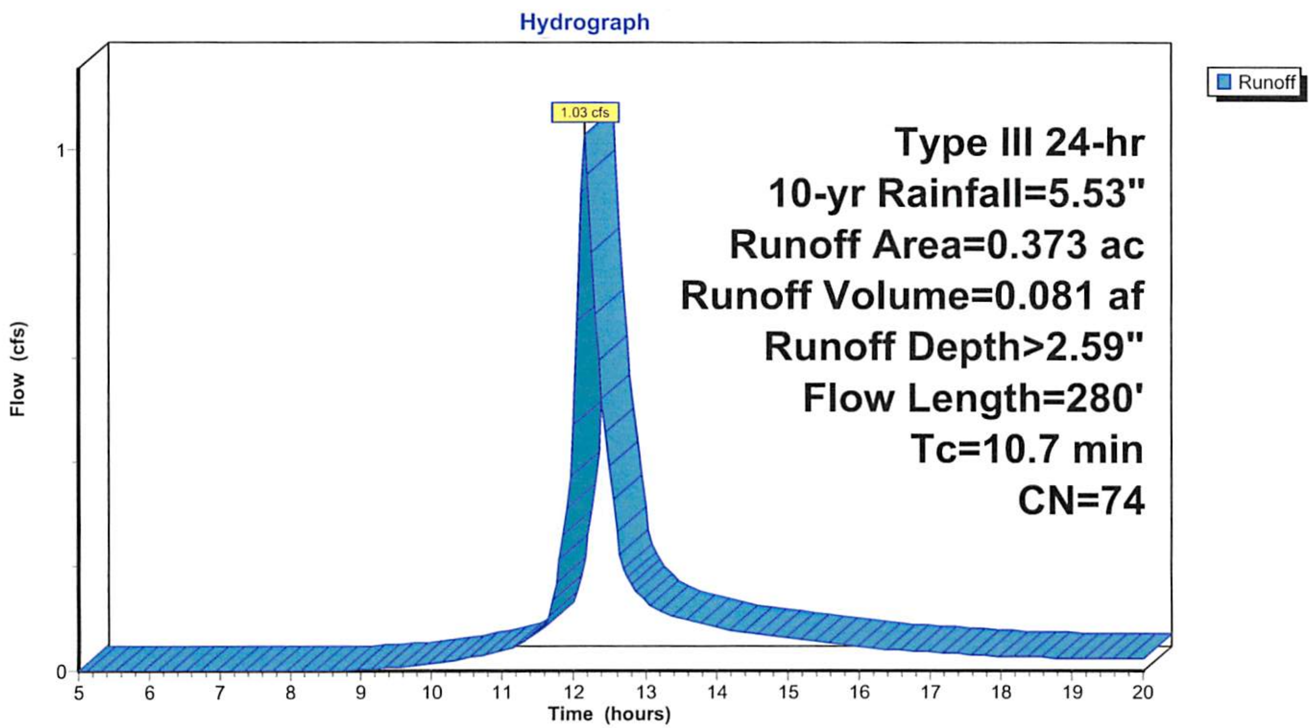
Runoff = 1.03 cfs @ 12.15 hrs, Volume= 0.081 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.53"

Area (ac)	CN	Description
0.373	74	>75% Grass cover, Good, HSG C
0.373		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	100	0.0200	0.18		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
1.4	180	0.0972	2.18		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
10.7	280	Total			

Subcatchment 3S: EX-3 (Pre)



Hydrograph for Subcatchment 3S: EX-3 (Pre)

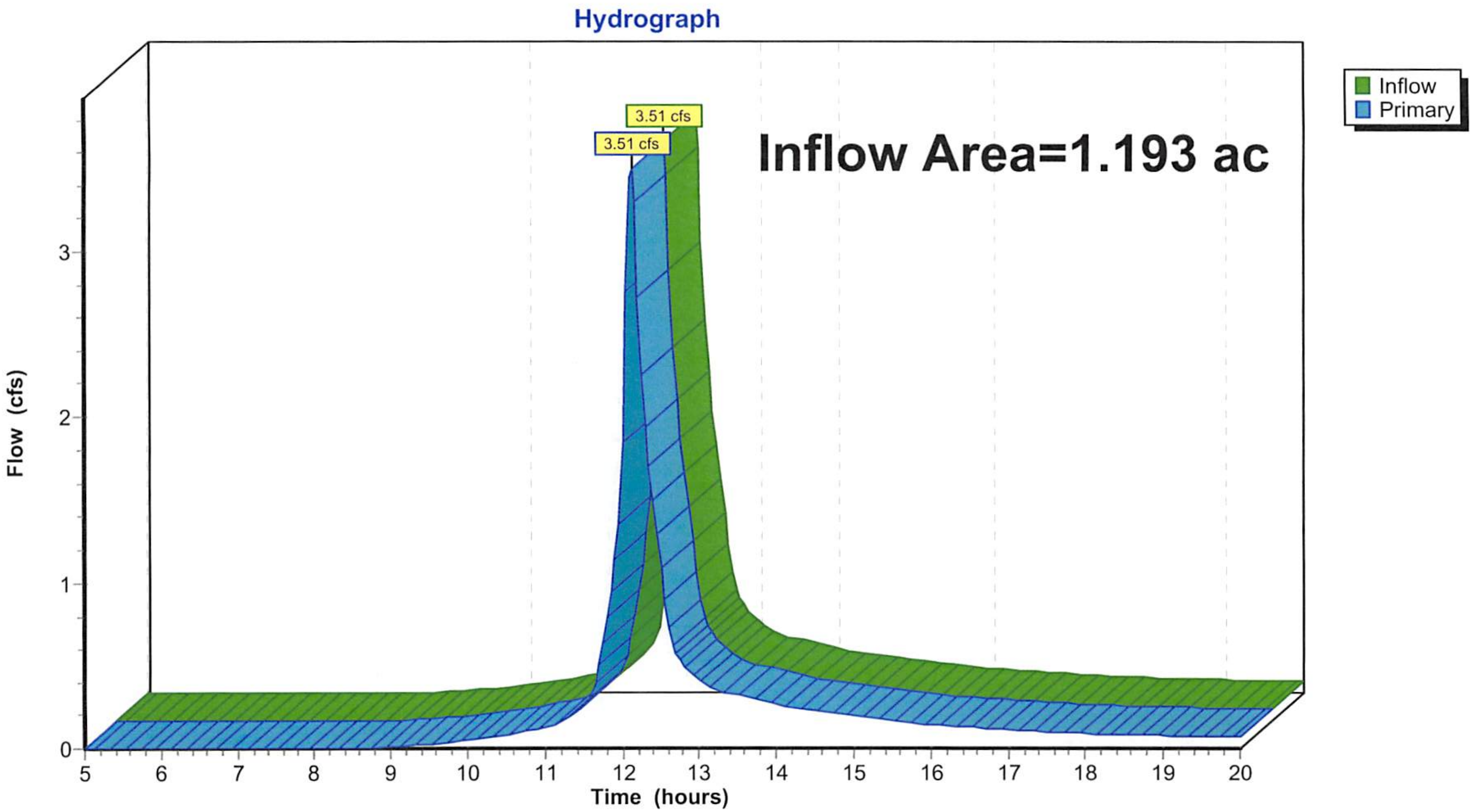
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.31	0.00	0.00
5.25	0.33	0.00	0.00
5.50	0.35	0.00	0.00
5.75	0.38	0.00	0.00
6.00	0.40	0.00	0.00
6.25	0.42	0.00	0.00
6.50	0.45	0.00	0.00
6.75	0.47	0.00	0.00
7.00	0.50	0.00	0.00
7.25	0.53	0.00	0.00
7.50	0.56	0.00	0.00
7.75	0.60	0.00	0.00
8.00	0.63	0.00	0.00
8.25	0.67	0.00	0.00
8.50	0.71	0.00	0.00
8.75	0.76	0.00	0.00
9.00	0.81	0.00	0.00
9.25	0.86	0.01	0.01
9.50	0.92	0.01	0.01
9.75	0.98	0.02	0.01
10.00	1.05	0.03	0.01
10.25	1.12	0.04	0.02
10.50	1.20	0.06	0.03
10.75	1.29	0.08	0.03
11.00	1.38	0.11	0.04
11.25	1.50	0.15	0.05
11.50	1.65	0.20	0.08
11.75	1.96	0.33	0.17
12.00	2.76	0.76	**0.47**
12.25	3.57	1.29	**0.81**
12.50	3.88	1.51	0.39
12.75	4.03	1.62	0.18
13.00	4.15	1.71	0.14
13.25	4.24	1.78	0.11
13.50	4.33	1.84	0.10
13.75	4.41	1.91	0.09
14.00	4.48	1.96	0.08
14.25	4.55	2.01	0.08
14.50	4.61	2.06	0.07
14.75	4.67	2.10	0.07
15.00	4.72	2.15	0.06
15.25	4.77	2.19	0.06
15.50	4.82	2.22	0.06
15.75	4.86	2.25	0.05
16.00	4.90	2.28	0.05
16.25	4.93	2.31	0.04
16.50	4.97	2.34	0.04
16.75	5.00	2.36	0.04
17.00	5.03	2.39	0.04
17.25	5.06	2.41	0.03
17.50	5.08	2.43	0.03
17.75	5.11	2.45	0.03
18.00	5.13	2.47	0.03
18.25	5.15	2.49	0.03
18.50	5.18	2.50	0.03
18.75	5.20	2.52	0.03
19.00	5.22	2.54	0.02
19.25	5.24	2.55	0.02
19.50	5.26	2.57	0.02
19.75	5.27	2.58	0.02
20.00	**5.29**	**2.60**	0.02

Summary for Link 5L: Pre-Existing (Composite)

Inflow Area =	1.193 ac,	0.00% Impervious,	Inflow Depth > 2.59"	for 10-yr event	
Inflow =	3.51 cfs @	12.12 hrs, Volume=	0.258 af		
Primary =	3.51 cfs @	12.12 hrs, Volume=	0.258 af,	Atten= 0%,	Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 5L: Pre-Existing (Composite)



Hydrograph for Link 5L: Pre-Existing (Composite)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
5.25	0.00	0.00	0.00
5.50	0.00	0.00	0.00
5.75	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.25	0.00	0.00	0.00
6.50	0.00	0.00	0.00
6.75	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.25	0.00	0.00	0.00
7.50	0.00	0.00	0.00
7.75	0.00	0.00	0.00
8.00	0.00	0.00	0.00
8.25	0.00	0.00	0.00
8.50	0.00	0.00	0.00
8.75	0.00	0.00	0.00
9.00	0.01	0.00	0.01
9.25	0.02	0.00	0.02
9.50	0.03	0.00	0.03
9.75	0.04	0.00	0.04
10.00	0.05	0.00	0.05
10.25	0.06	0.00	0.06
10.50	0.08	0.00	0.08
10.75	0.11	0.00	0.11
11.00	0.13	0.00	0.13
11.25	0.18	0.00	0.18
11.50	0.26	0.00	0.26
11.75	0.64	0.00	0.64
12.00	**1.85**	0.00	**1.85**
12.25	**2.26**	0.00	**2.26**
12.50	1.09	0.00	1.09
12.75	0.54	0.00	0.54
13.00	0.42	0.00	0.42
13.25	0.35	0.00	0.35
13.50	0.32	0.00	0.32
13.75	0.29	0.00	0.29
14.00	0.27	0.00	0.27
14.25	0.24	0.00	0.24
14.50	0.23	0.00	0.23
14.75	0.22	0.00	0.22
15.00	0.20	0.00	0.20
15.25	0.19	0.00	0.19
15.50	0.17	0.00	0.17
15.75	0.16	0.00	0.16
16.00	0.14	0.00	0.14
16.25	0.13	0.00	0.13
16.50	0.13	0.00	0.13
16.75	0.12	0.00	0.12
17.00	0.11	0.00	0.11
17.25	0.11	0.00	0.11
17.50	0.10	0.00	0.10
17.75	0.10	0.00	0.10
18.00	0.09	0.00	0.09
18.25	0.08	0.00	0.08
18.50	0.08	0.00	0.08
18.75	0.08	0.00	0.08
19.00	0.08	0.00	0.08
19.25	0.08	0.00	0.08
19.50	0.08	0.00	0.08
19.75	0.07	0.00	0.07
20.00	0.07	0.00	0.07

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: EX-1 (Pre) Runoff Area=0.180 ac 0.00% Impervious Runoff Depth>3.57"
Flow Length=260' Tc=6.6 min CN=74 Runoff=0.78 cfs 0.054 af

Subcatchment2S: EX-2 (Pre) Runoff Area=0.640 ac 0.00% Impervious Runoff Depth>3.57"
Flow Length=330' Tc=7.2 min CN=74 Runoff=2.72 cfs 0.190 af

Subcatchment3S: EX-3 (Pre) Runoff Area=0.373 ac 0.00% Impervious Runoff Depth>3.56"
Flow Length=280' Tc=10.7 min CN=74 Runoff=1.42 cfs 0.111 af

Link 5L: Pre-Existing (Composite) Inflow=4.81 cfs 0.355 af
Primary=4.81 cfs 0.355 af

Total Runoff Area = 1.193 ac Runoff Volume = 0.355 af Average Runoff Depth = 3.57"
100.00% Pervious = 1.193 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: EX-1 (Pre)

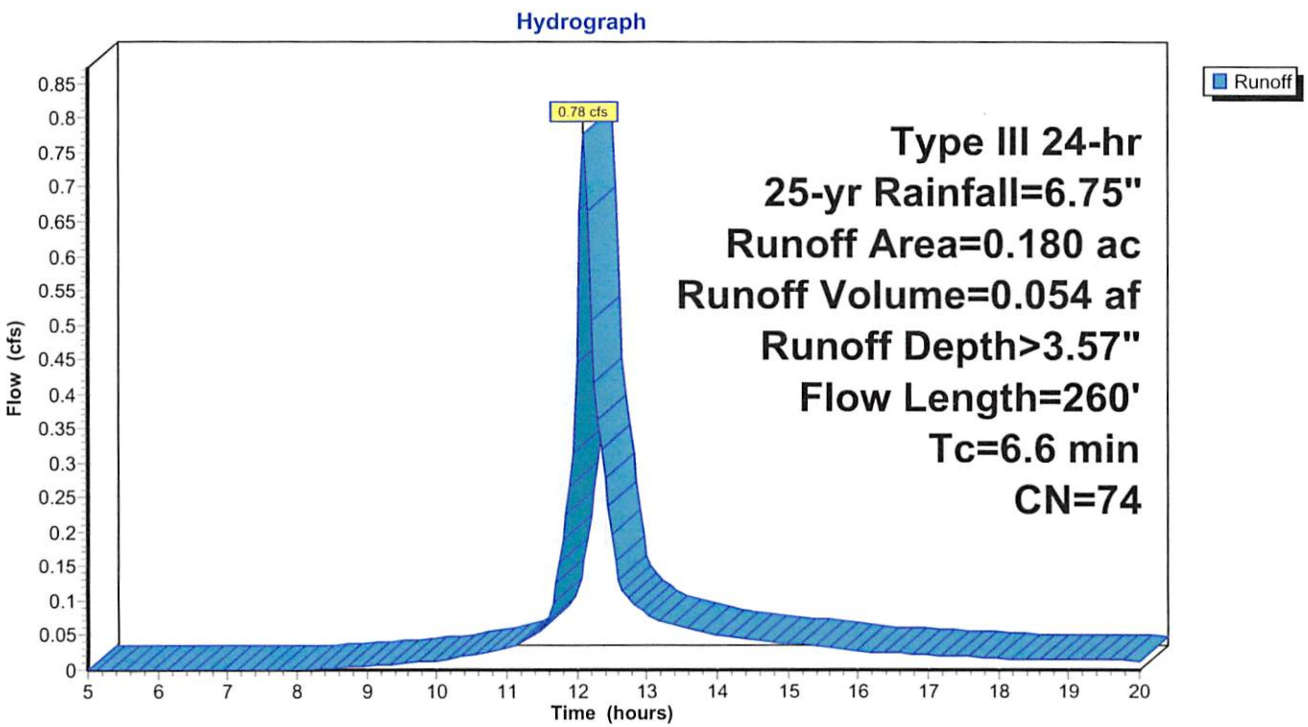
Runoff = 0.78 cfs @ 12.10 hrs, Volume= 0.054 af, Depth> 3.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=6.75"

Area (ac)	CN	Description
0.180	74	>75% Grass cover, Good, HSG C
0.180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0800	0.31		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
1.3	160	0.0812	1.99		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
6.6	260	Total			

Subcatchment 1S: EX-1 (Pre)



Hydrograph for Subcatchment 1S: EX-1 (Pre)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.38	0.00	0.00
5.25	0.41	0.00	0.00
5.50	0.43	0.00	0.00
5.75	0.46	0.00	0.00
6.00	0.49	0.00	0.00
6.25	0.51	0.00	0.00
6.50	0.54	0.00	0.00
6.75	0.58	0.00	0.00
7.00	0.61	0.00	0.00
7.25	0.65	0.00	0.00
7.50	0.69	0.00	0.00
7.75	0.73	0.00	0.00
8.00	0.77	0.00	0.00
8.25	0.82	0.00	0.00
8.50	0.87	0.01	0.00
8.75	0.92	0.01	0.00
9.00	0.98	0.02	0.01
9.25	1.05	0.03	0.01
9.50	1.12	0.04	0.01
9.75	1.20	0.06	0.01
10.00	1.28	0.08	0.01
10.25	1.36	0.10	0.02
10.50	1.46	0.13	0.02
10.75	1.57	0.17	0.03
11.00	1.69	0.22	0.03
11.25	1.83	0.27	0.04
11.50	2.01	0.36	0.06
11.75	2.40	0.55	0.16
12.00	3.37	1.15	**0.44**
12.25	4.35	1.86	**0.42**
12.50	4.74	2.16	0.20
12.75	4.92	2.30	0.10
13.00	5.06	2.41	0.08
13.25	5.18	2.51	0.07
13.50	5.29	2.60	0.06
13.75	5.39	2.68	0.06
14.00	5.47	2.75	0.05
14.25	5.55	2.81	0.05
14.50	5.63	2.88	0.04
14.75	5.70	2.93	0.04
15.00	5.77	2.99	0.04
15.25	5.83	3.04	0.04
15.50	5.88	3.09	0.03
15.75	5.93	3.13	0.03
16.00	5.98	3.17	0.03
16.25	6.02	3.20	0.03
16.50	6.06	3.24	0.02
16.75	6.10	3.27	0.02
17.00	6.14	3.30	0.02
17.25	6.17	3.33	0.02
17.50	6.21	3.36	0.02
17.75	6.24	3.38	0.02
18.00	6.26	3.41	0.02
18.25	6.29	3.43	0.02
18.50	6.32	3.45	0.02
18.75	6.34	3.47	0.02
19.00	6.37	3.50	0.02
19.25	6.39	3.52	0.01
19.50	6.41	3.54	0.01
19.75	6.44	3.56	0.01
20.00	**6.46**	**3.58**	0.01

Summary for Subcatchment 2S: EX-2 (Pre)

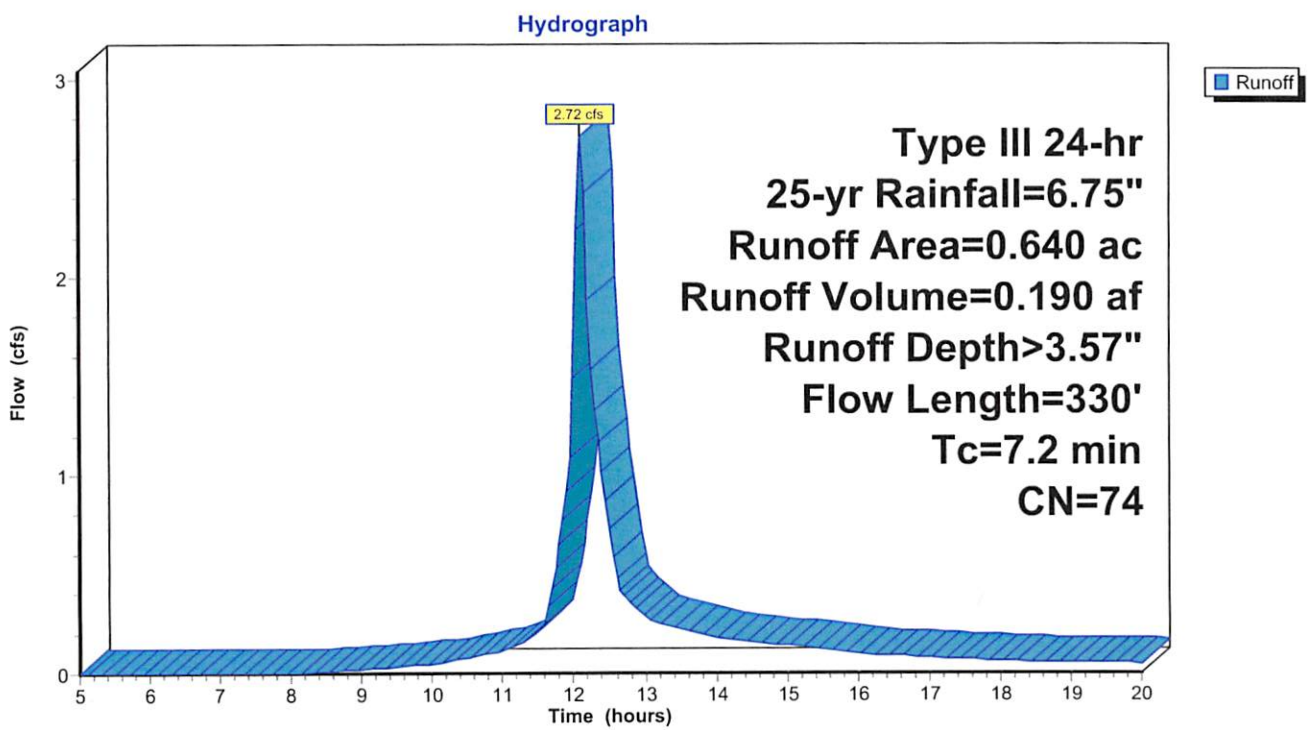
Runoff = 2.72 cfs @ 12.11 hrs, Volume= 0.190 af, Depth> 3.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=6.75"

Area (ac)	CN	Description
0.640	74	>75% Grass cover, Good, HSG C
0.640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0800	0.31		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
1.9	230	0.0840	2.03		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
7.2	330	Total			

Subcatchment 2S: EX-2 (Pre)



Hydrograph for Subcatchment 2S: EX-2 (Pre)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.38	0.00	0.00
5.25	0.41	0.00	0.00
5.50	0.43	0.00	0.00
5.75	0.46	0.00	0.00
6.00	0.49	0.00	0.00
6.25	0.51	0.00	0.00
6.50	0.54	0.00	0.00
6.75	0.58	0.00	0.00
7.00	0.61	0.00	0.00
7.25	0.65	0.00	0.00
7.50	0.69	0.00	0.00
7.75	0.73	0.00	0.00
8.00	0.77	0.00	0.00
8.25	0.82	0.00	0.01
8.50	0.87	0.01	0.01
8.75	0.92	0.01	0.01
9.00	0.98	0.02	0.02
9.25	1.05	0.03	0.03
9.50	1.12	0.04	0.03
9.75	1.20	0.06	0.04
10.00	1.28	0.08	0.05
10.25	1.36	0.10	0.06
10.50	1.46	0.13	0.08
10.75	1.57	0.17	0.10
11.00	1.69	0.22	0.11
11.25	1.83	0.27	0.15
11.50	2.01	0.36	0.21
11.75	2.40	0.55	0.54
12.00	3.37	1.15	**1.49**
12.25	4.35	1.86	**1.54**
12.50	4.74	2.16	0.73
12.75	4.92	2.30	0.37
13.00	5.06	2.41	0.29
13.25	5.18	2.51	0.24
13.50	5.29	2.60	0.22
13.75	5.39	2.68	0.20
14.00	5.47	2.75	0.18
14.25	5.55	2.81	0.17
14.50	5.63	2.88	0.16
14.75	5.70	2.93	0.15
15.00	5.77	2.99	0.14
15.25	5.83	3.04	0.13
15.50	5.88	3.09	0.12
15.75	5.93	3.13	0.11
16.00	5.98	3.17	0.10
16.25	6.02	3.20	0.09
16.50	6.06	3.24	0.09
16.75	6.10	3.27	0.08
17.00	6.14	3.30	0.08
17.25	6.17	3.33	0.07
17.50	6.21	3.36	0.07
17.75	6.24	3.38	0.07
18.00	6.26	3.41	0.06
18.25	6.29	3.43	0.06
18.50	6.32	3.45	0.06
18.75	6.34	3.47	0.06
19.00	6.37	3.50	0.05
19.25	6.39	3.52	0.05
19.50	6.41	3.54	0.05
19.75	6.44	3.56	0.05
20.00	**6.46**	**3.58**	0.05

Summary for Subcatchment 3S: EX-3 (Pre)

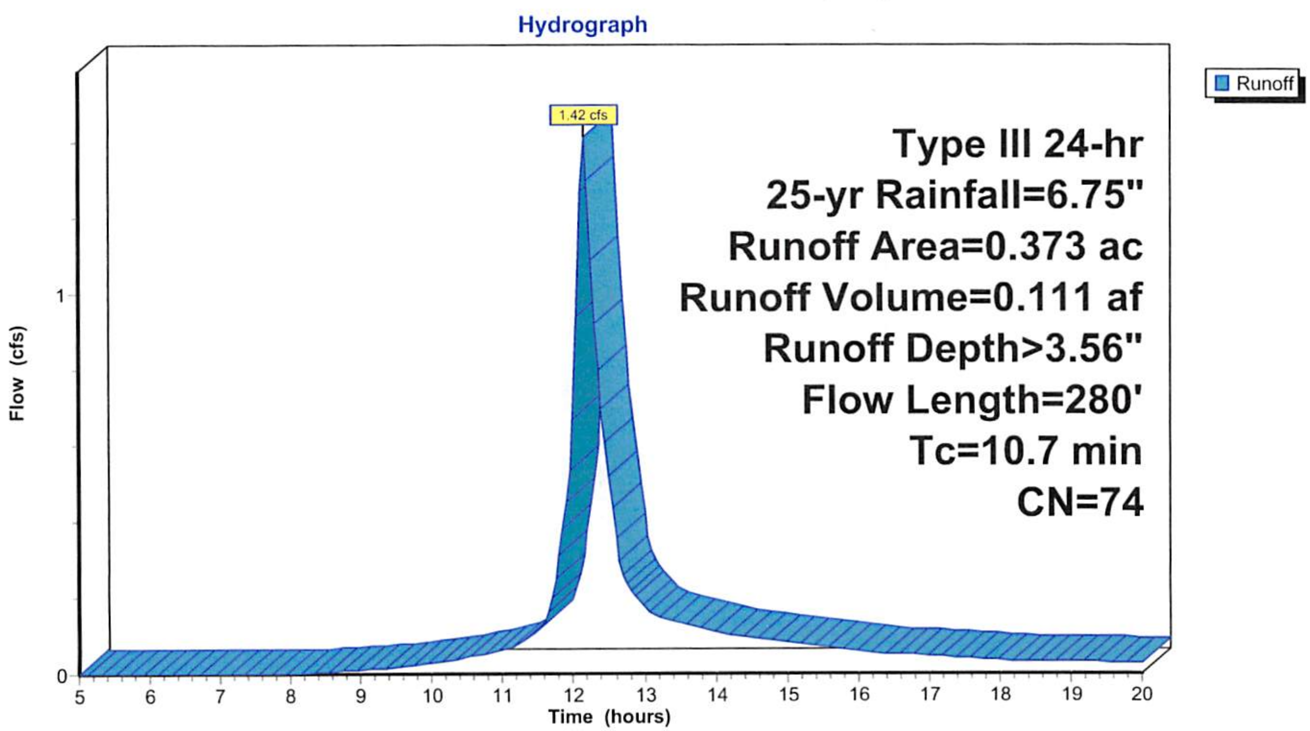
Runoff = 1.42 cfs @ 12.15 hrs, Volume= 0.111 af, Depth> 3.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=6.75"

Area (ac)	CN	Description
0.373	74	>75% Grass cover, Good, HSG C
0.373		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	100	0.0200	0.18		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
1.4	180	0.0972	2.18		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
10.7	280	Total			

Subcatchment 3S: EX-3 (Pre)



Hydrograph for Subcatchment 3S: EX-3 (Pre)

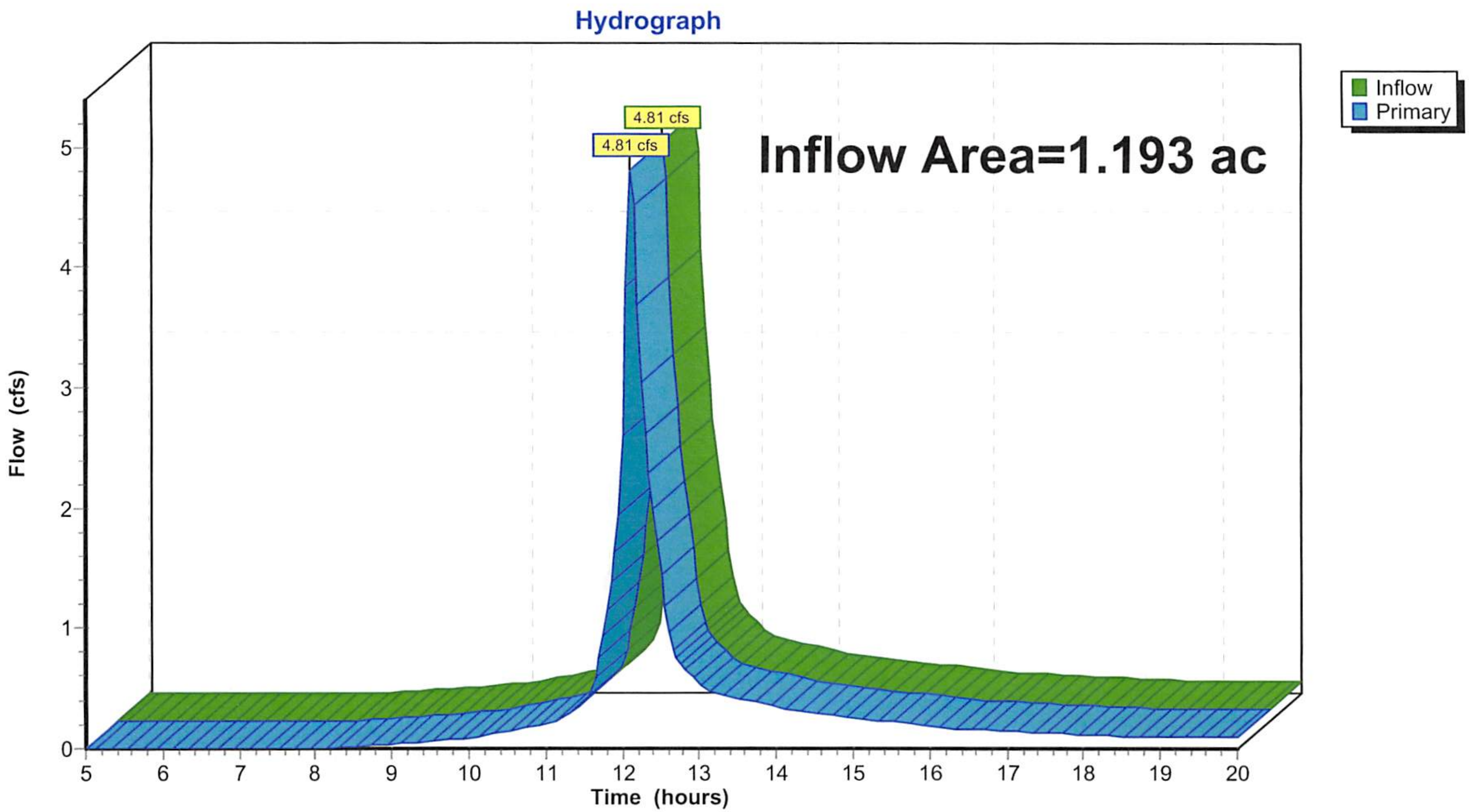
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.38	0.00	0.00
5.25	0.41	0.00	0.00
5.50	0.43	0.00	0.00
5.75	0.46	0.00	0.00
6.00	0.49	0.00	0.00
6.25	0.51	0.00	0.00
6.50	0.54	0.00	0.00
6.75	0.58	0.00	0.00
7.00	0.61	0.00	0.00
7.25	0.65	0.00	0.00
7.50	0.69	0.00	0.00
7.75	0.73	0.00	0.00
8.00	0.77	0.00	0.00
8.25	0.82	0.00	0.00
8.50	0.87	0.01	0.01
8.75	0.92	0.01	0.01
9.00	0.98	0.02	0.01
9.25	1.05	0.03	0.01
9.50	1.12	0.04	0.02
9.75	1.20	0.06	0.02
10.00	1.28	0.08	0.03
10.25	1.36	0.10	0.04
10.50	1.46	0.13	0.04
10.75	1.57	0.17	0.05
11.00	1.69	0.22	0.06
11.25	1.83	0.27	0.08
11.50	2.01	0.36	0.12
11.75	2.40	0.55	0.25
12.00	3.37	1.15	**0.67**
12.25	4.35	1.86	**1.09**
12.50	4.74	2.16	0.52
12.75	4.92	2.30	0.24
13.00	5.06	2.41	0.18
13.25	5.18	2.51	0.15
13.50	5.29	2.60	0.13
13.75	5.39	2.68	0.12
14.00	5.47	2.75	0.11
14.25	5.55	2.81	0.10
14.50	5.63	2.88	0.09
14.75	5.70	2.93	0.09
15.00	5.77	2.99	0.08
15.25	5.83	3.04	0.08
15.50	5.88	3.09	0.07
15.75	5.93	3.13	0.07
16.00	5.98	3.17	0.06
16.25	6.02	3.20	0.05
16.50	6.06	3.24	0.05
16.75	6.10	3.27	0.05
17.00	6.14	3.30	0.05
17.25	6.17	3.33	0.04
17.50	6.21	3.36	0.04
17.75	6.24	3.38	0.04
18.00	6.26	3.41	0.04
18.25	6.29	3.43	0.03
18.50	6.32	3.45	0.03
18.75	6.34	3.47	0.03
19.00	6.37	3.50	0.03
19.25	6.39	3.52	0.03
19.50	6.41	3.54	0.03
19.75	6.44	3.56	0.03
20.00	**6.46**	**3.58**	0.03

Summary for Link 5L: Pre-Existing (Composite)

Inflow Area = 1.193 ac, 0.00% Impervious, Inflow Depth > 3.57" for 25-yr event
Inflow = 4.81 cfs @ 12.11 hrs, Volume= 0.355 af
Primary = 4.81 cfs @ 12.11 hrs, Volume= 0.355 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 5L: Pre-Existing (Composite)



Hydrograph for Link 5L: Pre-Existing (Composite)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
5.25	0.00	0.00	0.00
5.50	0.00	0.00	0.00
5.75	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.25	0.00	0.00	0.00
6.50	0.00	0.00	0.00
6.75	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.25	0.00	0.00	0.00
7.50	0.00	0.00	0.00
7.75	0.00	0.00	0.00
8.00	0.01	0.00	0.01
8.25	0.01	0.00	0.01
8.50	0.02	0.00	0.02
8.75	0.03	0.00	0.03
9.00	0.04	0.00	0.04
9.25	0.05	0.00	0.05
9.50	0.06	0.00	0.06
9.75	0.08	0.00	0.08
10.00	0.09	0.00	0.09
10.25	0.12	0.00	0.12
10.50	0.14	0.00	0.14
10.75	0.18	0.00	0.18
11.00	0.21	0.00	0.21
11.25	0.28	0.00	0.28
11.50	0.39	0.00	0.39
11.75	0.95	0.00	0.95
12.00	**2.61**	0.00	**2.61**
12.25	**3.04**	0.00	**3.04**
12.50	1.45	0.00	1.45
12.75	0.71	0.00	0.71
13.00	0.55	0.00	0.55
13.25	0.46	0.00	0.46
13.50	0.42	0.00	0.42
13.75	0.38	0.00	0.38
14.00	0.35	0.00	0.35
14.25	0.32	0.00	0.32
14.50	0.30	0.00	0.30
14.75	0.28	0.00	0.28
15.00	0.26	0.00	0.26
15.25	0.24	0.00	0.24
15.50	0.23	0.00	0.23
15.75	0.21	0.00	0.21
16.00	0.19	0.00	0.19
16.25	0.17	0.00	0.17
16.50	0.17	0.00	0.17
16.75	0.16	0.00	0.16
17.00	0.15	0.00	0.15
17.25	0.14	0.00	0.14
17.50	0.13	0.00	0.13
17.75	0.12	0.00	0.12
18.00	0.11	0.00	0.11
18.25	0.11	0.00	0.11
18.50	0.11	0.00	0.11
18.75	0.10	0.00	0.10
19.00	0.10	0.00	0.10
19.25	0.10	0.00	0.10
19.50	0.10	0.00	0.10
19.75	0.09	0.00	0.09
20.00	0.09	0.00	0.09

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: EX-1 (Pre) Runoff Area=0.180 ac 0.00% Impervious Runoff Depth>5.15"
Flow Length=260' Tc=6.6 min CN=74 Runoff=1.11 cfs 0.077 af

Subcatchment2S: EX-2 (Pre) Runoff Area=0.640 ac 0.00% Impervious Runoff Depth>5.15"
Flow Length=330' Tc=7.2 min CN=74 Runoff=3.89 cfs 0.275 af

Subcatchment3S: EX-3 (Pre) Runoff Area=0.373 ac 0.00% Impervious Runoff Depth>5.14"
Flow Length=280' Tc=10.7 min CN=74 Runoff=2.03 cfs 0.160 af

Link 5L: Pre-Existing (Composite) Inflow=6.88 cfs 0.512 af
Primary=6.88 cfs 0.512 af

Total Runoff Area = 1.193 ac Runoff Volume = 0.512 af Average Runoff Depth = 5.15"
100.00% Pervious = 1.193 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: EX-1 (Pre)

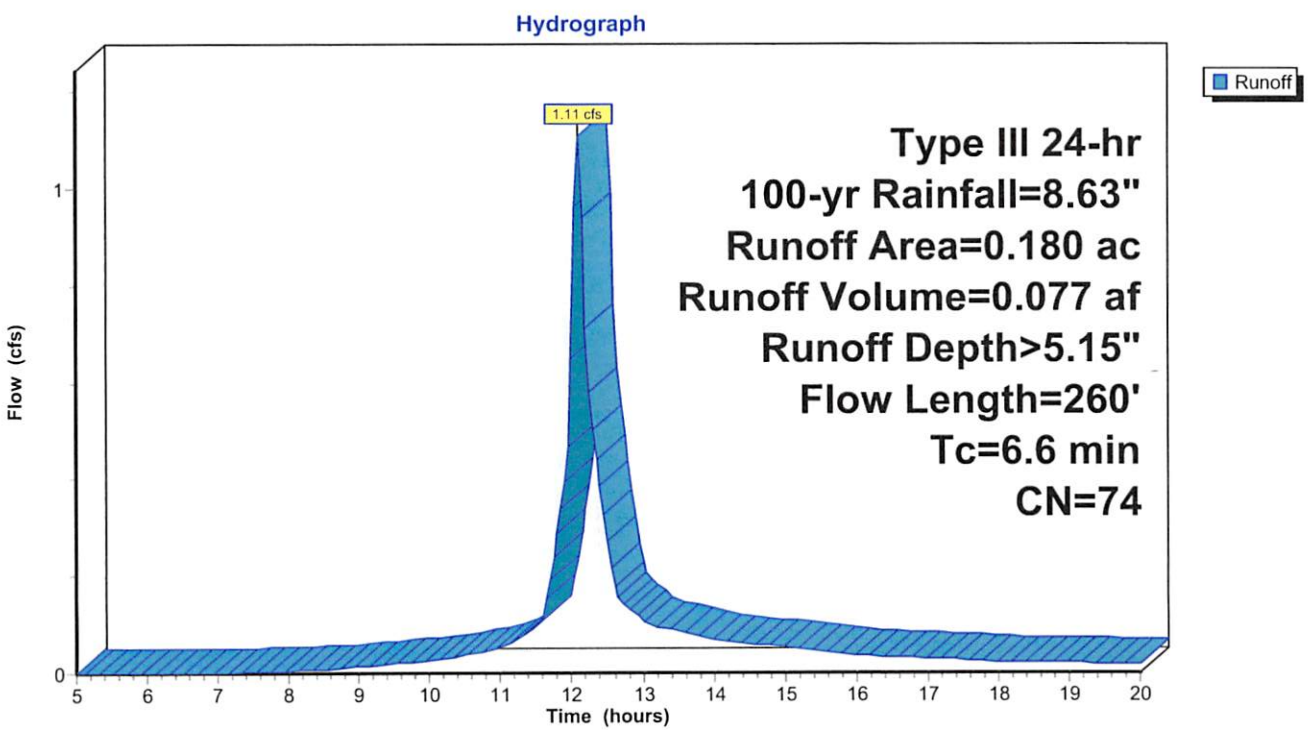
Runoff = 1.11 cfs @ 12.10 hrs, Volume= 0.077 af, Depth> 5.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.63"

Area (ac)	CN	Description
0.180	74	>75% Grass cover, Good, HSG C
0.180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0800	0.31		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
1.3	160	0.0812	1.99		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
6.6	260	Total			

Subcatchment 1S: EX-1 (Pre)



Hydrograph for Subcatchment 1S: EX-1 (Pre)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.49	0.00	0.00
5.25	0.52	0.00	0.00
5.50	0.55	0.00	0.00
5.75	0.59	0.00	0.00
6.00	0.62	0.00	0.00
6.25	0.66	0.00	0.00
6.50	0.70	0.00	0.00
6.75	0.74	0.00	0.00
7.00	0.78	0.00	0.00
7.25	0.83	0.00	0.00
7.50	0.88	0.01	0.00
7.75	0.93	0.01	0.00
8.00	0.98	0.02	0.01
8.25	1.04	0.03	0.01
8.50	1.11	0.04	0.01
8.75	1.18	0.06	0.01
9.00	1.26	0.08	0.01
9.25	1.34	0.10	0.02
9.50	1.43	0.13	0.02
9.75	1.53	0.16	0.02
10.00	1.63	0.19	0.03
10.25	1.74	0.24	0.03
10.50	1.87	0.29	0.04
10.75	2.01	0.35	0.05
11.00	2.16	0.43	0.05
11.25	2.34	0.52	0.07
11.50	2.57	0.65	0.10
11.75	3.07	0.95	0.24
12.00	4.31	1.83	**0.65**
12.25	5.56	2.82	**0.58**
12.50	6.06	3.23	0.27
12.75	6.29	3.43	0.14
13.00	6.47	3.59	0.11
13.25	6.62	3.72	0.09
13.50	6.76	3.84	0.09
13.75	6.89	3.94	0.08
14.00	7.00	4.04	0.07
14.25	7.10	4.13	0.06
14.50	7.20	4.22	0.06
14.75	7.29	4.29	0.06
15.00	7.37	4.37	0.05
15.25	7.45	4.44	0.05
15.50	7.52	4.50	0.05
15.75	7.59	4.56	0.04
16.00	7.65	4.61	0.04
16.25	7.70	4.66	0.04
16.50	7.75	4.71	0.03
16.75	7.80	4.75	0.03
17.00	7.85	4.79	0.03
17.25	7.89	4.83	0.03
17.50	7.93	4.87	0.03
17.75	7.97	4.90	0.02
18.00	8.01	4.93	0.02
18.25	8.04	4.96	0.02
18.50	8.08	4.99	0.02
18.75	8.11	5.02	0.02
19.00	8.14	5.05	0.02
19.25	8.17	5.08	0.02
19.50	8.20	5.11	0.02
19.75	8.23	5.13	0.02
20.00	**8.26**	**5.16**	0.02

Summary for Subcatchment 2S: EX-2 (Pre)

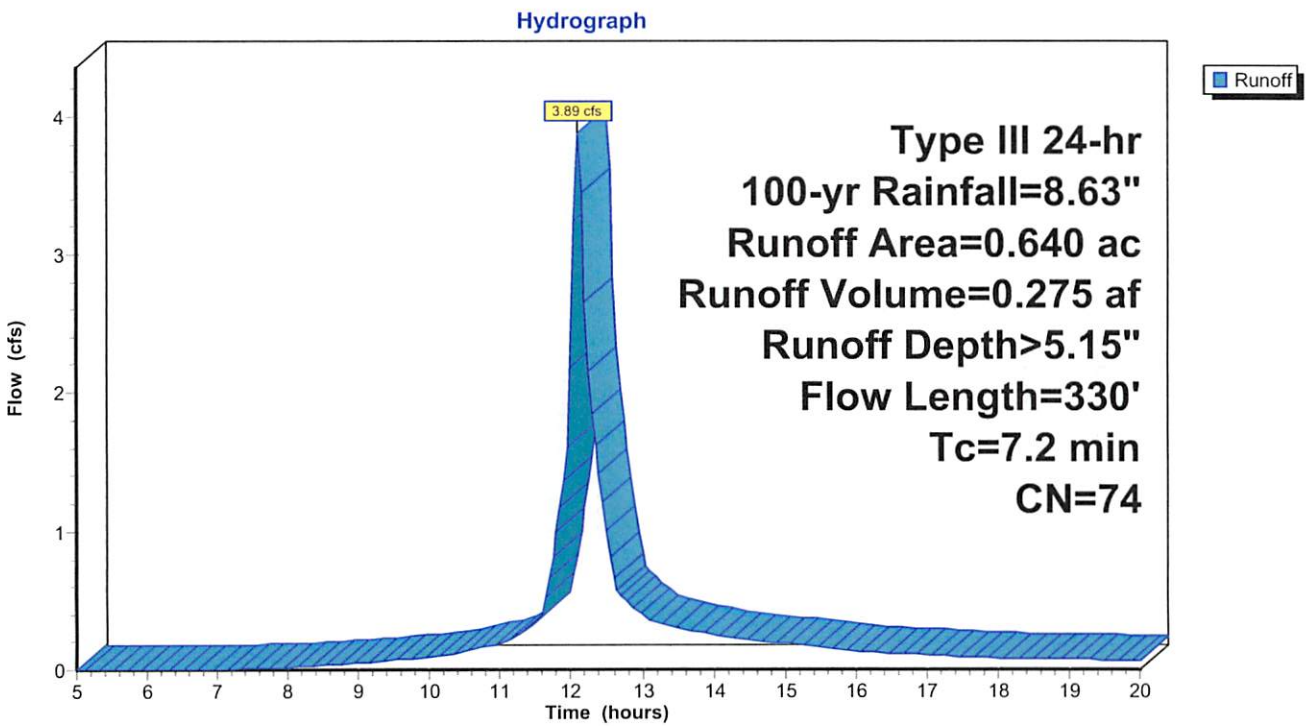
Runoff = 3.89 cfs @ 12.10 hrs, Volume= 0.275 af, Depth> 5.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.63"

Area (ac)	CN	Description
0.640	74	>75% Grass cover, Good, HSG C
0.640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0800	0.31		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
1.9	230	0.0840	2.03		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
7.2	330	Total			

Subcatchment 2S: EX-2 (Pre)



Hydrograph for Subcatchment 2S: EX-2 (Pre)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.49	0.00	0.00
5.25	0.52	0.00	0.00
5.50	0.55	0.00	0.00
5.75	0.59	0.00	0.00
6.00	0.62	0.00	0.00
6.25	0.66	0.00	0.00
6.50	0.70	0.00	0.00
6.75	0.74	0.00	0.00
7.00	0.78	0.00	0.00
7.25	0.83	0.00	0.01
7.50	0.88	0.01	0.01
7.75	0.93	0.01	0.01
8.00	0.98	0.02	0.02
8.25	1.04	0.03	0.02
8.50	1.11	0.04	0.03
8.75	1.18	0.06	0.04
9.00	1.26	0.08	0.05
9.25	1.34	0.10	0.06
9.50	1.43	0.13	0.07
9.75	1.53	0.16	0.08
10.00	1.63	0.19	0.10
10.25	1.74	0.24	0.11
10.50	1.87	0.29	0.14
10.75	2.01	0.35	0.16
11.00	2.16	0.43	0.19
11.25	2.34	0.52	0.25
11.50	2.57	0.65	0.34
11.75	3.07	0.95	0.82
12.00	4.31	1.83	**2.19**
12.25	5.56	2.82	**2.15**
12.50	6.06	3.23	1.01
12.75	6.29	3.43	0.51
13.00	6.47	3.59	0.40
13.25	6.62	3.72	0.33
13.50	6.76	3.84	0.31
13.75	6.89	3.94	0.28
14.00	7.00	4.04	0.25
14.25	7.10	4.13	0.23
14.50	7.20	4.22	0.22
14.75	7.29	4.29	0.20
15.00	7.37	4.37	0.19
15.25	7.45	4.44	0.18
15.50	7.52	4.50	0.16
15.75	7.59	4.56	0.15
16.00	7.65	4.61	0.13
16.25	7.70	4.66	0.13
16.50	7.75	4.71	0.12
16.75	7.80	4.75	0.11
17.00	7.85	4.79	0.11
17.25	7.89	4.83	0.10
17.50	7.93	4.87	0.09
17.75	7.97	4.90	0.09
18.00	8.01	4.93	0.08
18.25	8.04	4.96	0.08
18.50	8.08	4.99	0.08
18.75	8.11	5.02	0.08
19.00	8.14	5.05	0.07
19.25	8.17	5.08	0.07
19.50	8.20	5.11	0.07
19.75	8.23	5.13	0.07
20.00	**8.26**	**5.16**	0.07

Summary for Subcatchment 3S: EX-3 (Pre)

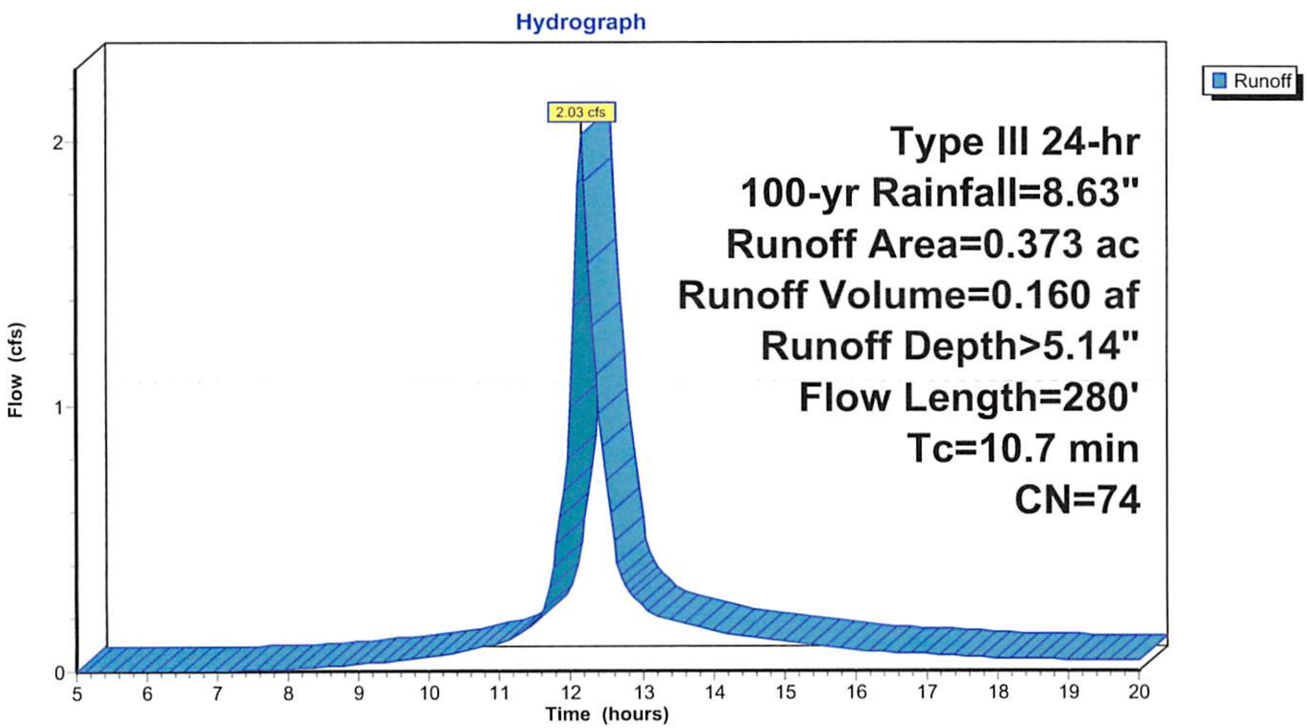
Runoff = 2.03 cfs @ 12.15 hrs, Volume= 0.160 af, Depth> 5.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.63"

Area (ac)	CN	Description
0.373	74	>75% Grass cover, Good, HSG C
0.373		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	100	0.0200	0.18		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
1.4	180	0.0972	2.18		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
10.7	280	Total			

Subcatchment 3S: EX-3 (Pre)



Hydrograph for Subcatchment 3S: EX-3 (Pre)

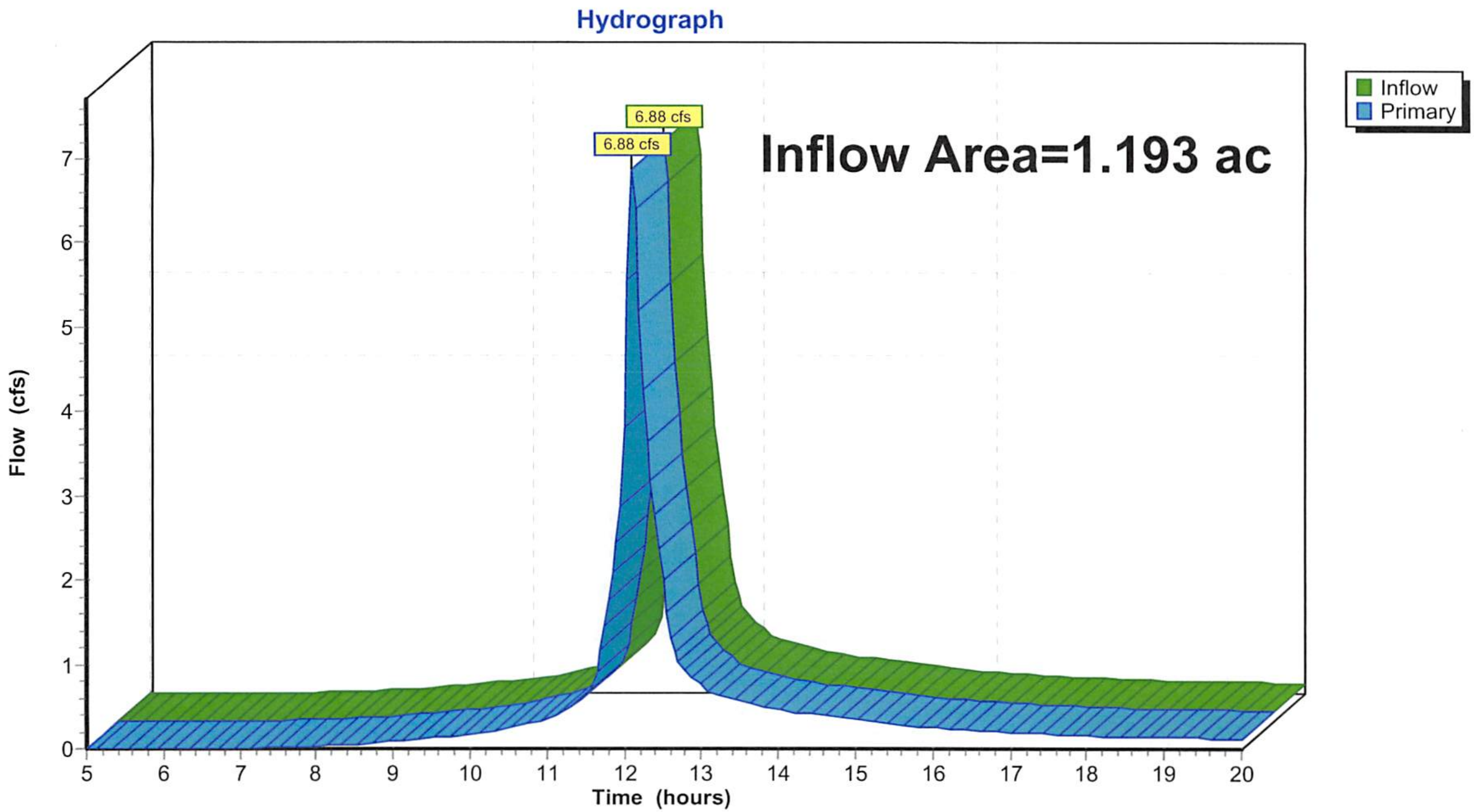
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.49	0.00	0.00
5.25	0.52	0.00	0.00
5.50	0.55	0.00	0.00
5.75	0.59	0.00	0.00
6.00	0.62	0.00	0.00
6.25	0.66	0.00	0.00
6.50	0.70	0.00	0.00
6.75	0.74	0.00	0.00
7.00	0.78	0.00	0.00
7.25	0.83	0.00	0.00
7.50	0.88	0.01	0.01
7.75	0.93	0.01	0.01
8.00	0.98	0.02	0.01
8.25	1.04	0.03	0.01
8.50	1.11	0.04	0.02
8.75	1.18	0.06	0.02
9.00	1.26	0.08	0.03
9.25	1.34	0.10	0.03
9.50	1.43	0.13	0.04
9.75	1.53	0.16	0.05
10.00	1.63	0.19	0.05
10.25	1.74	0.24	0.06
10.50	1.87	0.29	0.08
10.75	2.01	0.35	0.09
11.00	2.16	0.43	0.11
11.25	2.34	0.52	0.14
11.50	2.57	0.65	0.18
11.75	3.07	0.95	0.39
12.00	4.31	1.83	**0.99**
12.25	5.56	2.82	**1.54**
12.50	6.06	3.23	0.72
12.75	6.29	3.43	0.32
13.00	6.47	3.59	0.24
13.25	6.62	3.72	0.20
13.50	6.76	3.84	0.18
13.75	6.89	3.94	0.17
14.00	7.00	4.04	0.15
14.25	7.10	4.13	0.14
14.50	7.20	4.22	0.13
14.75	7.29	4.29	0.12
15.00	7.37	4.37	0.11
15.25	7.45	4.44	0.10
15.50	7.52	4.50	0.10
15.75	7.59	4.56	0.09
16.00	7.65	4.61	0.08
16.25	7.70	4.66	0.07
16.50	7.75	4.71	0.07
16.75	7.80	4.75	0.07
17.00	7.85	4.79	0.06
17.25	7.89	4.83	0.06
17.50	7.93	4.87	0.06
17.75	7.97	4.90	0.05
18.00	8.01	4.93	0.05
18.25	8.04	4.96	0.05
18.50	8.08	4.99	0.05
18.75	8.11	5.02	0.04
19.00	8.14	5.05	0.04
19.25	8.17	5.08	0.04
19.50	8.20	5.11	0.04
19.75	8.23	5.13	0.04
20.00	**8.26**	**5.16**	0.04

Summary for Link 5L: Pre-Existing (Composite)

Inflow Area =	1.193 ac,	0.00% Impervious, Inflow Depth > 5.15"	for 100-yr event	
Inflow =	6.88 cfs @	12.11 hrs, Volume=	0.512 af	
Primary =	6.88 cfs @	12.11 hrs, Volume=	0.512 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 5L: Pre-Existing (Composite)



Hydrograph for Link 5L: Pre-Existing (Composite)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
5.25	0.00	0.00	0.00
5.50	0.00	0.00	0.00
5.75	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.25	0.00	0.00	0.00
6.50	0.00	0.00	0.00
6.75	0.00	0.00	0.00
7.00	0.01	0.00	0.01
7.25	0.01	0.00	0.01
7.50	0.02	0.00	0.02
7.75	0.03	0.00	0.03
8.00	0.03	0.00	0.03
8.25	0.04	0.00	0.04
8.50	0.06	0.00	0.06
8.75	0.07	0.00	0.07
9.00	0.09	0.00	0.09
9.25	0.11	0.00	0.11
9.50	0.13	0.00	0.13
9.75	0.15	0.00	0.15
10.00	0.18	0.00	0.18
10.25	0.21	0.00	0.21
10.50	0.25	0.00	0.25
10.75	0.30	0.00	0.30
11.00	0.35	0.00	0.35
11.25	0.45	0.00	0.45
11.50	0.62	0.00	0.62
11.75	1.45	0.00	1.45
12.00	**3.83**	0.00	**3.83**
12.25	**4.28**	0.00	**4.28**
12.50	2.01	0.00	2.01
12.75	0.97	0.00	0.97
13.00	0.75	0.00	0.75
13.25	0.63	0.00	0.63
13.50	0.57	0.00	0.57
13.75	0.52	0.00	0.52
14.00	0.47	0.00	0.47
14.25	0.43	0.00	0.43
14.50	0.41	0.00	0.41
14.75	0.38	0.00	0.38
15.00	0.36	0.00	0.36
15.25	0.33	0.00	0.33
15.50	0.30	0.00	0.30
15.75	0.28	0.00	0.28
16.00	0.25	0.00	0.25
16.25	0.23	0.00	0.23
16.50	0.22	0.00	0.22
16.75	0.21	0.00	0.21
17.00	0.20	0.00	0.20
17.25	0.19	0.00	0.19
17.50	0.18	0.00	0.18
17.75	0.17	0.00	0.17
18.00	0.15	0.00	0.15
18.25	0.15	0.00	0.15
18.50	0.14	0.00	0.14
18.75	0.14	0.00	0.14
19.00	0.14	0.00	0.14
19.25	0.13	0.00	0.13
19.50	0.13	0.00	0.13
19.75	0.13	0.00	0.13
20.00	0.12	0.00	0.12

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: EX-1 (Pre) Runoff Area=0.180 ac 0.00% Impervious Runoff Depth>0.13"
Flow Length=260' Tc=6.6 min CN=74 Runoff=0.01 cfs 0.002 af

Subcatchment2S: EX-2 (Pre) Runoff Area=0.640 ac 0.00% Impervious Runoff Depth>0.13"
Flow Length=330' Tc=7.2 min CN=74 Runoff=0.04 cfs 0.007 af

Subcatchment3S: EX-3 (Pre) Runoff Area=0.373 ac 0.00% Impervious Runoff Depth>0.13"
Flow Length=280' Tc=10.7 min CN=74 Runoff=0.03 cfs 0.004 af

Link 5L: Pre-Existing (Composite) Inflow=0.08 cfs 0.013 af
Primary=0.08 cfs 0.013 af

Total Runoff Area = 1.193 ac Runoff Volume = 0.013 af Average Runoff Depth = 0.13"
100.00% Pervious = 1.193 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: EX-1 (Pre)

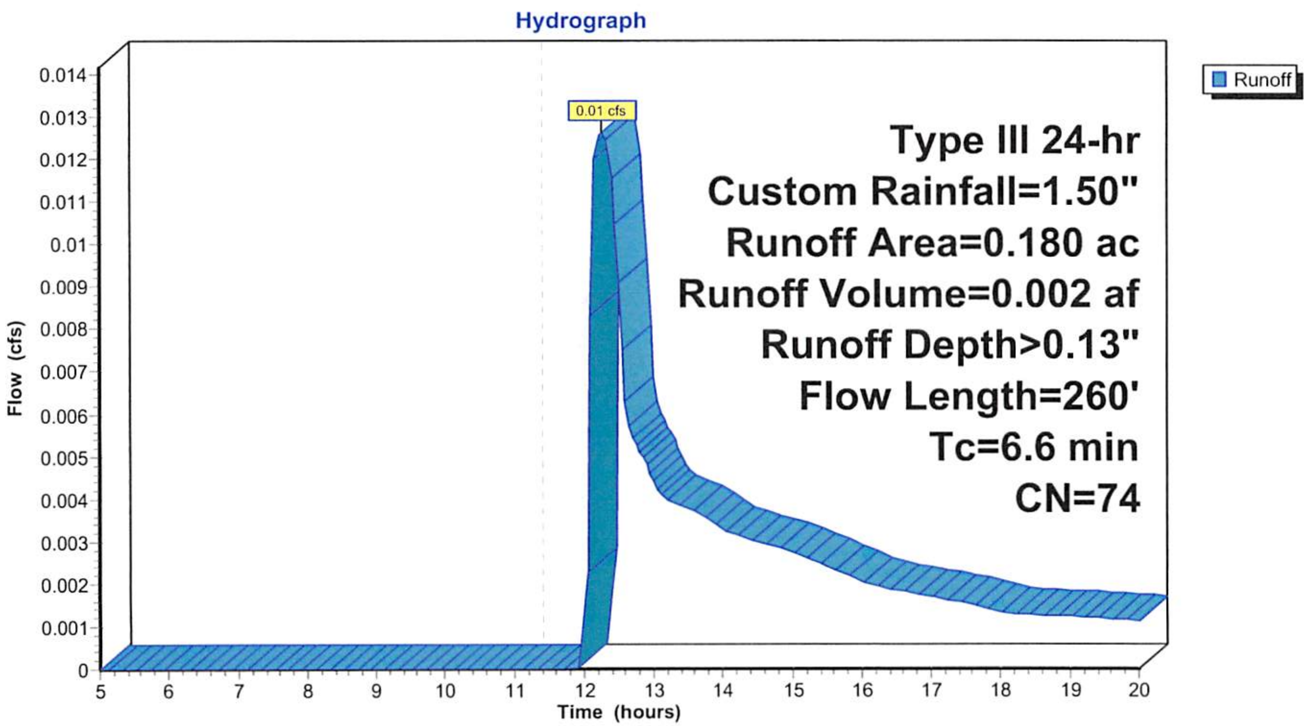
Runoff = 0.01 cfs @ 12.28 hrs, Volume= 0.002 af, Depth> 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Custom Rainfall=1.50"

Area (ac)	CN	Description
0.180	74	>75% Grass cover, Good, HSG C
0.180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0800	0.31		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
1.3	160	0.0812	1.99		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
6.6	260	Total			

Subcatchment 1S: EX-1 (Pre)



Hydrograph for Subcatchment 1S: EX-1 (Pre)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.09	0.00	0.00
5.25	0.09	0.00	0.00
5.50	0.10	0.00	0.00
5.75	0.10	0.00	0.00
6.00	0.11	0.00	0.00
6.25	0.11	0.00	0.00
6.50	0.12	0.00	0.00
6.75	0.13	0.00	0.00
7.00	0.14	0.00	0.00
7.25	0.14	0.00	0.00
7.50	0.15	0.00	0.00
7.75	0.16	0.00	0.00
8.00	0.17	0.00	0.00
8.25	0.18	0.00	0.00
8.50	0.19	0.00	0.00
8.75	0.21	0.00	0.00
9.00	0.22	0.00	0.00
9.25	0.23	0.00	0.00
9.50	0.25	0.00	0.00
9.75	0.27	0.00	0.00
10.00	0.28	0.00	0.00
10.25	0.30	0.00	0.00
10.50	0.32	0.00	0.00
10.75	0.35	0.00	0.00
11.00	0.38	0.00	0.00
11.25	0.41	0.00	0.00
11.50	0.45	0.00	0.00
11.75	0.53	0.00	0.00
12.00	0.75	0.00	0.00
12.25	0.97	0.02	**0.01**
12.50	1.05	0.03	**0.01**
12.75	1.09	0.04	0.01
13.00	1.12	0.05	0.00
13.25	1.15	0.05	0.00
13.50	1.18	0.06	0.00
13.75	1.20	0.06	0.00
14.00	1.22	0.07	0.00
14.25	1.23	0.07	0.00
14.50	1.25	0.07	0.00
14.75	1.27	0.08	0.00
15.00	1.28	0.08	0.00
15.25	1.29	0.09	0.00
15.50	1.31	0.09	0.00
15.75	1.32	0.09	0.00
16.00	1.33	0.09	0.00
16.25	1.34	0.10	0.00
16.50	1.35	0.10	0.00
16.75	1.36	0.10	0.00
17.00	1.36	0.10	0.00
17.25	1.37	0.11	0.00
17.50	1.38	0.11	0.00
17.75	1.39	0.11	0.00
18.00	1.39	0.11	0.00
18.25	1.40	0.11	0.00
18.50	1.40	0.12	0.00
18.75	1.41	0.12	0.00
19.00	1.41	0.12	0.00
19.25	1.42	0.12	0.00
19.50	1.43	0.12	0.00
19.75	1.43	0.12	0.00
20.00	**1.44**	**0.13**	0.00

Summary for Subcatchment 2S: EX-2 (Pre)

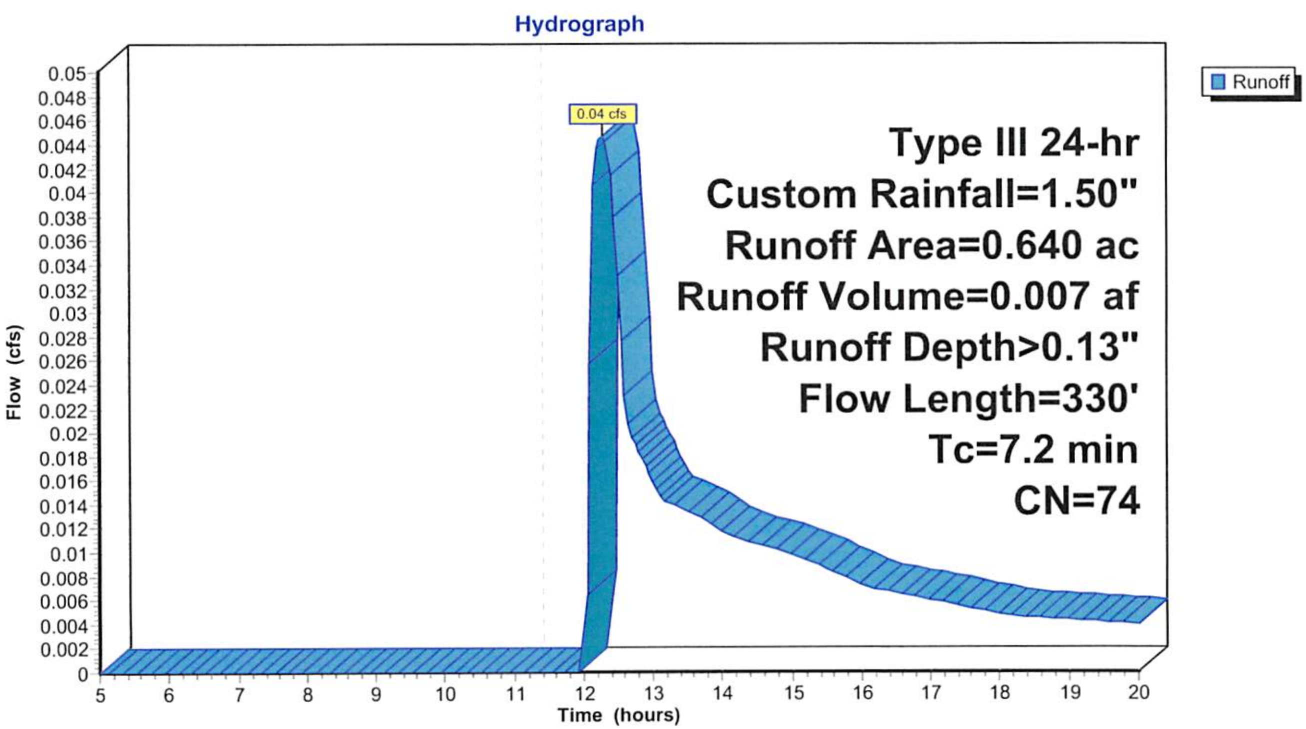
Runoff = 0.04 cfs @ 12.29 hrs, Volume= 0.007 af, Depth> 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Custom Rainfall=1.50"

Area (ac)	CN	Description
0.640	74	>75% Grass cover, Good, HSG C
0.640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0800	0.31		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
1.9	230	0.0840	2.03		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
7.2	330	Total			

Subcatchment 2S: EX-2 (Pre)



Hydrograph for Subcatchment 2S: EX-2 (Pre)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.09	0.00	0.00
5.25	0.09	0.00	0.00
5.50	0.10	0.00	0.00
5.75	0.10	0.00	0.00
6.00	0.11	0.00	0.00
6.25	0.11	0.00	0.00
6.50	0.12	0.00	0.00
6.75	0.13	0.00	0.00
7.00	0.14	0.00	0.00
7.25	0.14	0.00	0.00
7.50	0.15	0.00	0.00
7.75	0.16	0.00	0.00
8.00	0.17	0.00	0.00
8.25	0.18	0.00	0.00
8.50	0.19	0.00	0.00
8.75	0.21	0.00	0.00
9.00	0.22	0.00	0.00
9.25	0.23	0.00	0.00
9.50	0.25	0.00	0.00
9.75	0.27	0.00	0.00
10.00	0.28	0.00	0.00
10.25	0.30	0.00	0.00
10.50	0.32	0.00	0.00
10.75	0.35	0.00	0.00
11.00	0.38	0.00	0.00
11.25	0.41	0.00	0.00
11.50	0.45	0.00	0.00
11.75	0.53	0.00	0.00
12.00	0.75	0.00	0.00
12.25	0.97	0.02	**0.04**
12.50	1.05	0.03	**0.03**
12.75	1.09	0.04	0.02
13.00	1.12	0.05	0.02
13.25	1.15	0.05	0.01
13.50	1.18	0.06	0.01
13.75	1.20	0.06	0.01
14.00	1.22	0.07	0.01
14.25	1.23	0.07	0.01
14.50	1.25	0.07	0.01
14.75	1.27	0.08	0.01
15.00	1.28	0.08	0.01
15.25	1.29	0.09	0.01
15.50	1.31	0.09	0.01
15.75	1.32	0.09	0.01
16.00	1.33	0.09	0.01
16.25	1.34	0.10	0.01
16.50	1.35	0.10	0.01
16.75	1.36	0.10	0.01
17.00	1.36	0.10	0.01
17.25	1.37	0.11	0.01
17.50	1.38	0.11	0.01
17.75	1.39	0.11	0.01
18.00	1.39	0.11	0.00
18.25	1.40	0.11	0.00
18.50	1.40	0.12	0.00
18.75	1.41	0.12	0.00
19.00	1.41	0.12	0.00
19.25	1.42	0.12	0.00
19.50	1.43	0.12	0.00
19.75	1.43	0.12	0.00
20.00	**1.44**	**0.13**	0.00

Summary for Subcatchment 3S: EX-3 (Pre)

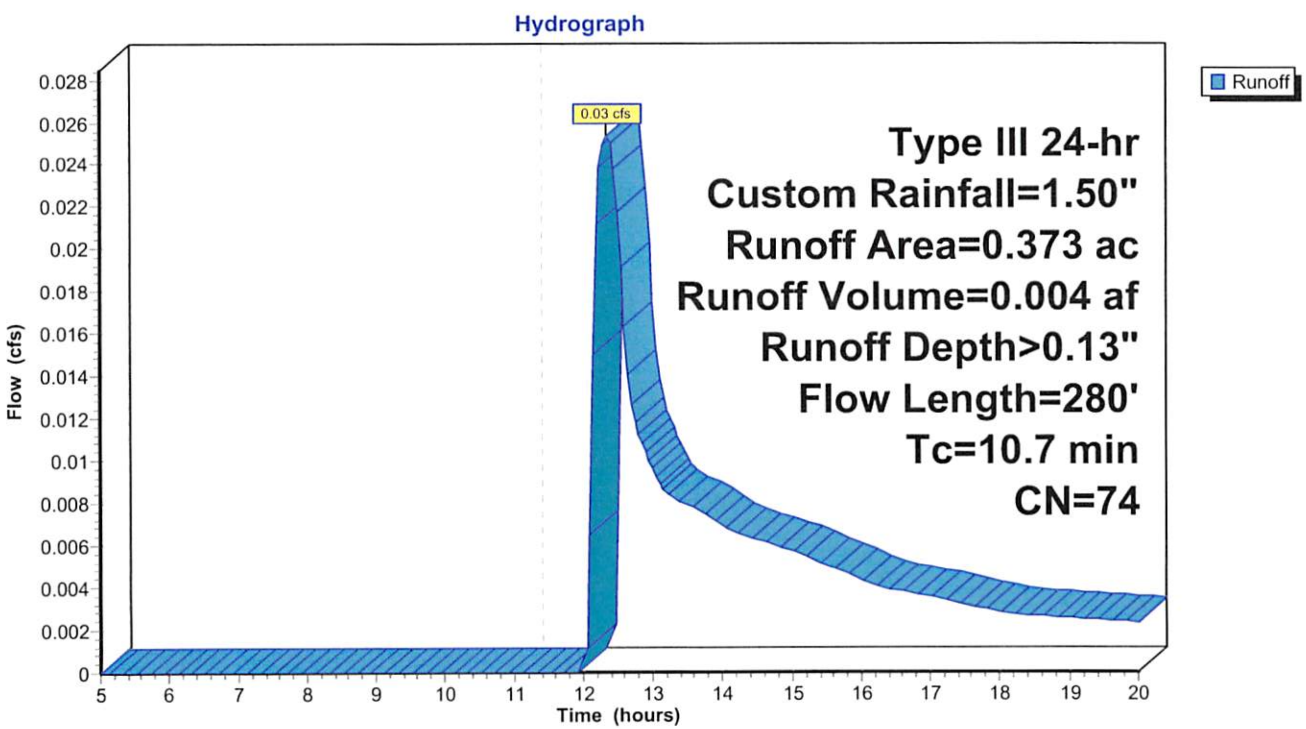
Runoff = 0.03 cfs @ 12.35 hrs, Volume= 0.004 af, Depth> 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Custom Rainfall=1.50"

Area (ac)	CN	Description
0.373	74	>75% Grass cover, Good, HSG C
0.373		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	100	0.0200	0.18		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
1.4	180	0.0972	2.18		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
10.7	280	Total			

Subcatchment 3S: EX-3 (Pre)



Hydrograph for Subcatchment 3S: EX-3 (Pre)

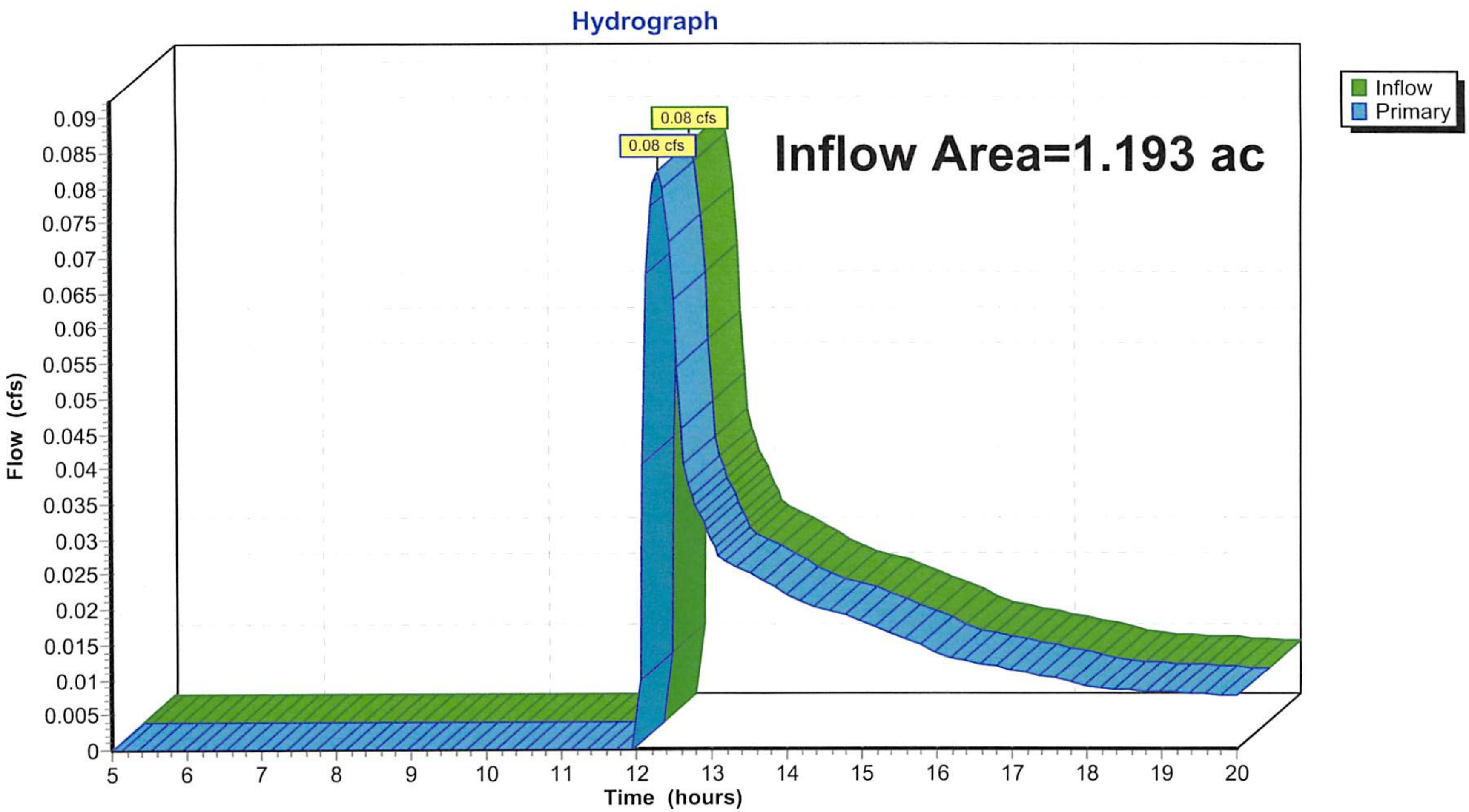
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.09	0.00	0.00
5.25	0.09	0.00	0.00
5.50	0.10	0.00	0.00
5.75	0.10	0.00	0.00
6.00	0.11	0.00	0.00
6.25	0.11	0.00	0.00
6.50	0.12	0.00	0.00
6.75	0.13	0.00	0.00
7.00	0.14	0.00	0.00
7.25	0.14	0.00	0.00
7.50	0.15	0.00	0.00
7.75	0.16	0.00	0.00
8.00	0.17	0.00	0.00
8.25	0.18	0.00	0.00
8.50	0.19	0.00	0.00
8.75	0.21	0.00	0.00
9.00	0.22	0.00	0.00
9.25	0.23	0.00	0.00
9.50	0.25	0.00	0.00
9.75	0.27	0.00	0.00
10.00	0.28	0.00	0.00
10.25	0.30	0.00	0.00
10.50	0.32	0.00	0.00
10.75	0.35	0.00	0.00
11.00	0.38	0.00	0.00
11.25	0.41	0.00	0.00
11.50	0.45	0.00	0.00
11.75	0.53	0.00	0.00
12.00	0.75	0.00	0.00
12.25	0.97	0.02	**0.02**
12.50	1.05	0.03	**0.02**
12.75	1.09	0.04	0.01
13.00	1.12	0.05	0.01
13.25	1.15	0.05	0.01
13.50	1.18	0.06	0.01
13.75	1.20	0.06	0.01
14.00	1.22	0.07	0.01
14.25	1.23	0.07	0.01
14.50	1.25	0.07	0.01
14.75	1.27	0.08	0.01
15.00	1.28	0.08	0.01
15.25	1.29	0.09	0.01
15.50	1.31	0.09	0.01
15.75	1.32	0.09	0.00
16.00	1.33	0.09	0.00
16.25	1.34	0.10	0.00
16.50	1.35	0.10	0.00
16.75	1.36	0.10	0.00
17.00	1.36	0.10	0.00
17.25	1.37	0.11	0.00
17.50	1.38	0.11	0.00
17.75	1.39	0.11	0.00
18.00	1.39	0.11	0.00
18.25	1.40	0.11	0.00
18.50	1.40	0.12	0.00
18.75	1.41	0.12	0.00
19.00	1.41	0.12	0.00
19.25	1.42	0.12	0.00
19.50	1.43	0.12	0.00
19.75	1.43	0.12	0.00
20.00	**1.44**	**0.13**	0.00

Summary for Link 5L: Pre-Existing (Composite)

Inflow Area = 1.193 ac, 0.00% Impervious, Inflow Depth > 0.13" for Custom event
Inflow = 0.08 cfs @ 12.31 hrs, Volume= 0.013 af
Primary = 0.08 cfs @ 12.31 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min

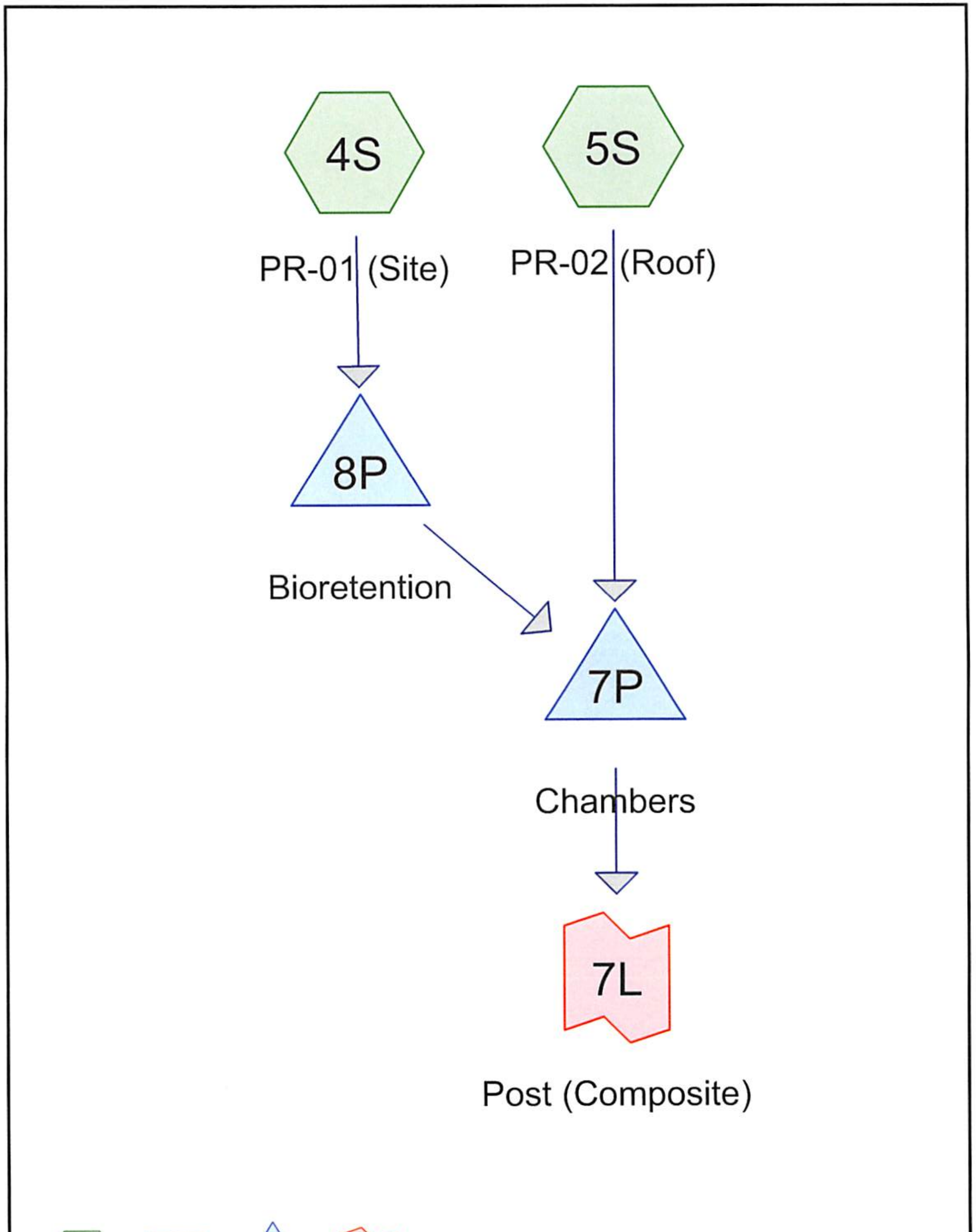
Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 5L: Pre-Existing (Composite)



Hydrograph for Link 5L: Pre-Existing (Composite)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
5.25	0.00	0.00	0.00
5.50	0.00	0.00	0.00
5.75	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.25	0.00	0.00	0.00
6.50	0.00	0.00	0.00
6.75	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.25	0.00	0.00	0.00
7.50	0.00	0.00	0.00
7.75	0.00	0.00	0.00
8.00	0.00	0.00	0.00
8.25	0.00	0.00	0.00
8.50	0.00	0.00	0.00
8.75	0.00	0.00	0.00
9.00	0.00	0.00	0.00
9.25	0.00	0.00	0.00
9.50	0.00	0.00	0.00
9.75	0.00	0.00	0.00
10.00	0.00	0.00	0.00
10.25	0.00	0.00	0.00
10.50	0.00	0.00	0.00
10.75	0.00	0.00	0.00
11.00	0.00	0.00	0.00
11.25	0.00	0.00	0.00
11.50	0.00	0.00	0.00
11.75	0.00	0.00	0.00
12.00	0.00	0.00	0.00
12.25	**0.08**	0.00	**0.08**
12.50	**0.06**	0.00	**0.06**
12.75	0.04	0.00	0.04
13.00	0.03	0.00	0.03
13.25	0.03	0.00	0.03
13.50	0.03	0.00	0.03
13.75	0.02	0.00	0.02
14.00	0.02	0.00	0.02
14.25	0.02	0.00	0.02
14.50	0.02	0.00	0.02
14.75	0.02	0.00	0.02
15.00	0.02	0.00	0.02
15.25	0.02	0.00	0.02
15.50	0.02	0.00	0.02
15.75	0.02	0.00	0.02
16.00	0.01	0.00	0.01
16.25	0.01	0.00	0.01
16.50	0.01	0.00	0.01
16.75	0.01	0.00	0.01
17.00	0.01	0.00	0.01
17.25	0.01	0.00	0.01
17.50	0.01	0.00	0.01
17.75	0.01	0.00	0.01
18.00	0.01	0.00	0.01
18.25	0.01	0.00	0.01
18.50	0.01	0.00	0.01
18.75	0.01	0.00	0.01
19.00	0.01	0.00	0.01
19.25	0.01	0.00	0.01
19.50	0.01	0.00	0.01
19.75	0.01	0.00	0.01
20.00	0.01	0.00	0.01



Routing Diagram for 1120062_Post
Prepared by MFS Consulting Engineers & Surveyor, DPC, Printed 8/27/2021

Project Notes

Defined 10 rainfall events from NY-Westchester IDF

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.850	74	>75% Grass cover, Good, HSG C (4S)
0.200	98	Paved parking, HSG C (4S)
0.140	98	Roofs, HSG C (5S)
1.190	**81**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
1.190	HSG C	4S, 5S
0.000	HSG D	
0.000	Other	
1.190		**TOTAL AREA**

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	0.850	0.000	0.000	0.850	>75% Grass cover, Good	4S
0.000	0.000	0.200	0.000	0.000	0.200	Paved parking	4S
0.000	0.000	0.140	0.000	0.000	0.140	Roofs	5S
0.000	**0.000**	**1.190**	**0.000**	**0.000**	**1.190**	**TOTAL AREA**	

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment4S: PR-01 (Site) Runoff Area=1.050 ac 19.05% Impervious Runoff Depth>1.14"
Flow Length=310' Tc=9.1 min CN=79 Runoff=1.21 cfs 0.099 af

Subcatchment5S: PR-02 (Roof) Runoff Area=0.140 ac 100.00% Impervious Runoff Depth>2.70"
Tc=6.0 min CN=98 Runoff=0.39 cfs 0.031 af

Pond 7P: Chambers Peak Elev=122.83' Storage=0.015 af Inflow=0.39 cfs 0.031 af
Discarded=0.02 cfs 0.028 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.028 af

Pond 8P: Bioretention Peak Elev=129.58' Storage=0.051 af Inflow=1.21 cfs 0.099 af
Discarded=0.09 cfs 0.073 af Primary=0.00 cfs 0.000 af Outflow=0.09 cfs 0.073 af

Link 7L: Post (Composite) Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 1.190 ac Runoff Volume = 0.131 af Average Runoff Depth = 1.32"
71.43% Pervious = 0.850 ac 28.57% Impervious = 0.340 ac

Summary for Subcatchment 4S: PR-01 (Site)

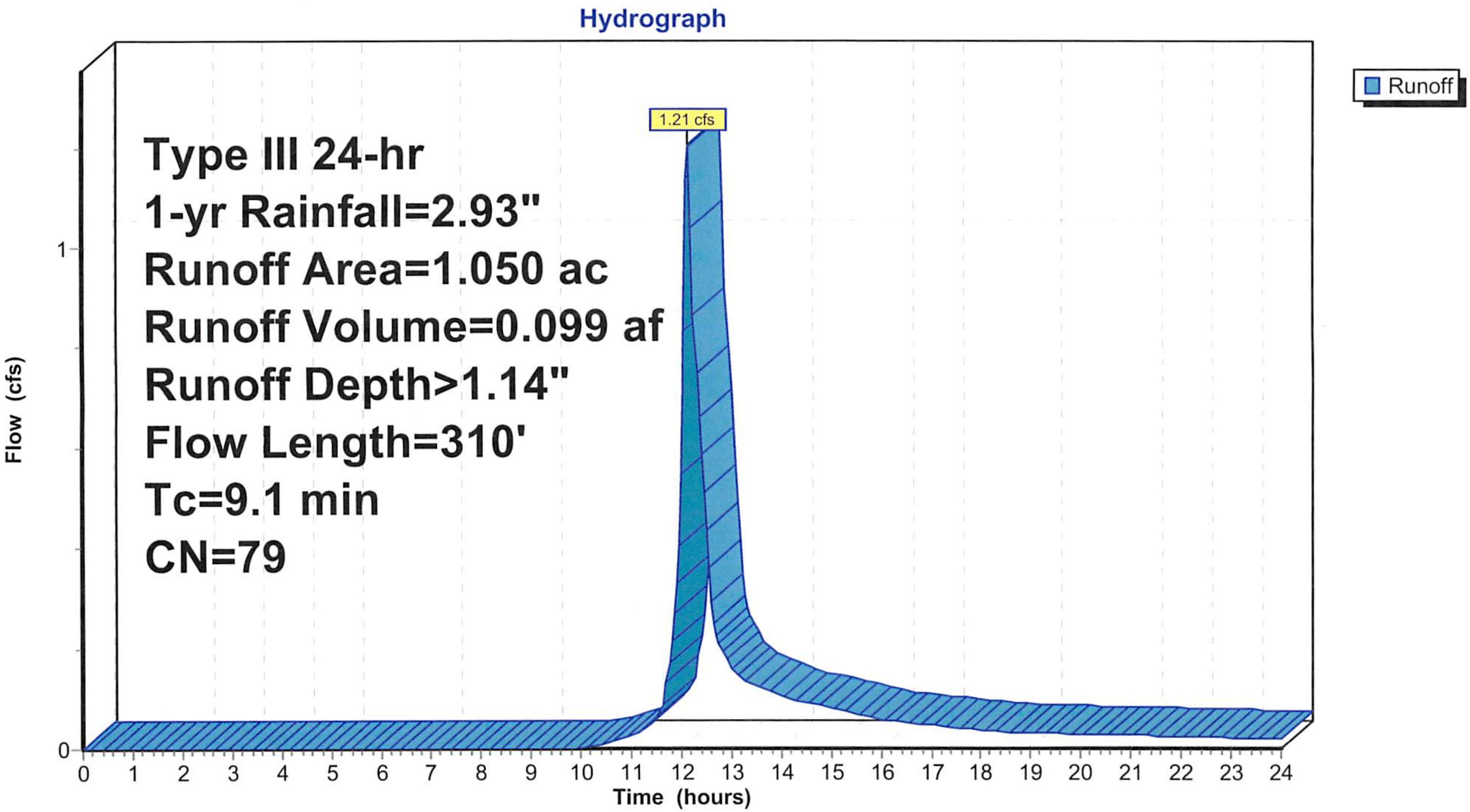
Runoff = 1.21 cfs @ 12.14 hrs, Volume= 0.099 af, Depth> 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.93"

Area (ac)	CN	Description
0.200	98	Paved parking, HSG C
0.850	74	>75% Grass cover, Good, HSG C
1.050	79	Weighted Average
0.850		80.95% Pervious Area
0.200		19.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	35	0.0700	0.24		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
1.7	28	0.1070	0.27		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
3.4	37	0.0340	0.18		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
1.0	78	0.0350	1.31		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
0.1	30	0.0500	4.54		**Shallow Concentrated Flow, Pathway** Paved Kv= 20.3 fps
0.3	52	0.0290	2.55		**Shallow Concentrated Flow, Shallow Concentrated** Grassed Waterway Kv= 15.0 fps
0.2	50	0.2000	4.47		**Shallow Concentrated Flow, Shallow Concentrated** Nearly Bare & Untilled Kv= 10.0 fps
9.1	310	Total			

Subcatchment 4S: PR-01 (Site)



Hydrograph for Subcatchment 4S: PR-01 (Site)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.01	0.00	0.00
0.50	0.01	0.00	0.00
0.75	0.02	0.00	0.00
1.00	0.03	0.00	0.00
1.25	0.04	0.00	0.00
1.50	0.04	0.00	0.00
1.75	0.05	0.00	0.00
2.00	0.06	0.00	0.00
2.25	0.07	0.00	0.00
2.50	0.07	0.00	0.00
2.75	0.08	0.00	0.00
3.00	0.09	0.00	0.00
3.25	0.10	0.00	0.00
3.50	0.11	0.00	0.00
3.75	0.12	0.00	0.00
4.00	0.13	0.00	0.00
4.25	0.14	0.00	0.00
4.50	0.15	0.00	0.00
4.75	0.16	0.00	0.00
5.00	0.17	0.00	0.00
5.25	0.18	0.00	0.00
5.50	0.19	0.00	0.00
5.75	0.20	0.00	0.00
6.00	0.21	0.00	0.00
6.25	0.22	0.00	0.00
6.50	0.24	0.00	0.00
6.75	0.25	0.00	0.00
7.00	0.27	0.00	0.00
7.25	0.28	0.00	0.00
7.50	0.30	0.00	0.00
7.75	0.32	0.00	0.00
8.00	0.33	0.00	0.00
8.25	0.35	0.00	0.00
8.50	0.38	0.00	0.00
8.75	0.40	0.00	0.00
9.00	0.43	0.00	0.00
9.25	0.46	0.00	0.00
9.50	0.49	0.00	0.00
9.75	0.52	0.00	0.00
10.00	0.55	0.00	0.00
10.25	0.59	0.00	0.00
10.50	0.63	0.00	0.01
10.75	0.68	0.01	0.02
11.00	0.73	0.01	0.03
11.25	0.79	0.02	0.04
11.50	0.87	0.04	0.06
11.75	1.04	0.08	0.17
12.00	1.46	0.24	**0.55**
12.25	1.89	0.46	**0.87**
12.50	2.06	0.56	0.44
12.75	2.14	0.60	0.21
13.00	2.20	0.64	0.16
13.25	2.25	0.67	0.14
13.50	2.30	0.70	0.13
13.75	2.34	0.73	0.12
14.00	2.38	0.76	0.11
14.25	2.41	0.78	0.10
14.50	2.44	0.80	0.09
14.75	2.47	0.82	0.09
15.00	2.50	0.84	0.08
15.25	2.53	0.86	0.08
15.50	2.55	0.87	0.07
15.75	2.58	0.89	0.06
16.00	2.60	0.90	0.06
16.25	2.61	0.92	0.05
16.50	2.63	0.93	0.05
16.75	2.65	0.94	0.05
17.00	2.66	0.95	0.05
17.25	2.68	0.96	0.04
17.50	2.69	0.97	0.04
17.75	2.71	0.98	0.04
18.00	2.72	0.99	0.04
18.25	2.73	1.00	0.03
18.50	2.74	1.00	0.03
18.75	2.75	1.01	0.03
19.00	2.76	1.02	0.03
19.25	2.77	1.03	0.03
19.50	2.78	1.03	0.03
19.75	2.79	1.04	0.03
20.00	2.80	1.05	0.03
20.25	2.81	1.05	0.03
20.50	2.82	1.06	0.03
20.75	2.83	1.07	0.03
21.00	2.84	1.07	0.03
21.25	2.85	1.08	0.03
21.50	2.86	1.09	0.03
21.75	2.87	1.09	0.02
22.00	2.87	1.10	0.02
22.25	2.88	1.10	0.02
22.50	2.89	1.11	0.02
22.75	2.90	1.11	0.02
23.00	2.90	1.12	0.02
23.25	2.91	1.12	0.02
23.50	2.92	1.13	0.02
23.75	2.92	1.13	0.02
24.00	**2.93**	**1.14**	0.02

Summary for Subcatchment 5S: PR-02 (Roof)

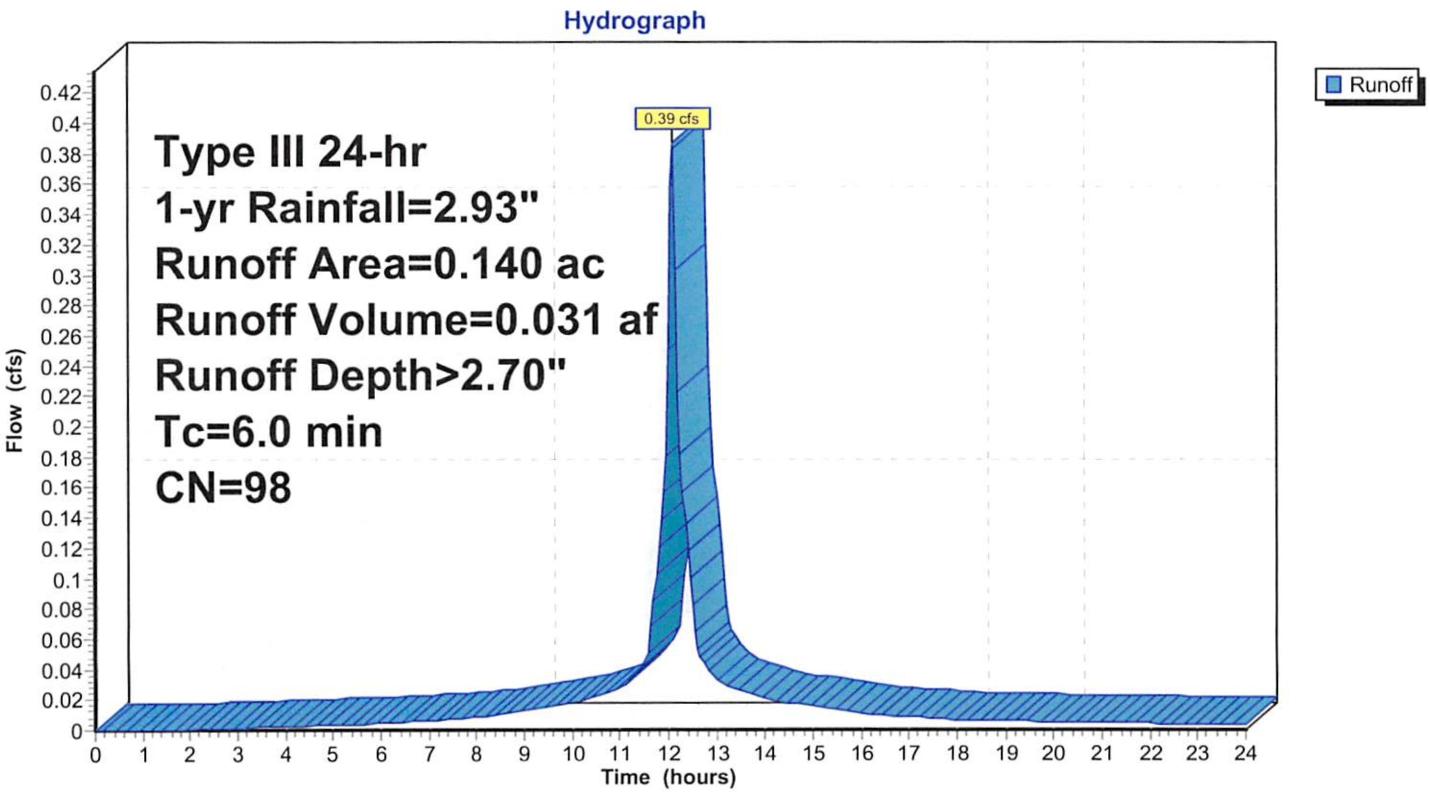
Runoff = 0.39 cfs @ 12.09 hrs, Volume= 0.031 af, Depth> 2.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.93"

Area (ac)	CN	Description
0.140	98	Roofs, HSG C
0.140		100.00% Impervious Area

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

Subcatchment 5S: PR-02 (Roof)



Hydrograph for Subcatchment 5S: PR-02 (Roof)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.01	0.00	0.00
0.50	0.01	0.00	0.00
0.75	0.02	0.00	0.00
1.00	0.03	0.00	0.00
1.25	0.04	0.00	0.00
1.50	0.04	0.00	0.00
1.75	0.05	0.00	0.00
2.00	0.06	0.00	0.00
2.25	0.07	0.00	0.00
2.50	0.07	0.00	0.00
2.75	0.08	0.01	0.00
3.00	0.09	0.01	0.00
3.25	0.10	0.01	0.00
3.50	0.11	0.02	0.00
3.75	0.12	0.02	0.00
4.00	0.13	0.03	0.00
4.25	0.14	0.03	0.00
4.50	0.15	0.04	0.00
4.75	0.16	0.04	0.00
5.00	0.17	0.05	0.00
5.25	0.18	0.05	0.00
5.50	0.19	0.06	0.00
5.75	0.20	0.07	0.00
6.00	0.21	0.08	0.00
6.25	0.22	0.09	0.00
6.50	0.24	0.10	0.01
6.75	0.25	0.11	0.01
7.00	0.27	0.12	0.01
7.25	0.28	0.13	0.01
7.50	0.30	0.14	0.01
7.75	0.32	0.16	0.01
8.00	0.33	0.17	0.01
8.25	0.35	0.19	0.01
8.50	0.38	0.21	0.01
8.75	0.40	0.23	0.01
9.00	0.43	0.25	0.01
9.25	0.46	0.28	0.01
9.50	0.49	0.31	0.02
9.75	0.52	0.34	0.02
10.00	0.55	0.37	0.02
10.25	0.59	0.40	0.02
10.50	0.63	0.44	0.02
10.75	0.68	0.49	0.03
11.00	0.73	0.53	0.03
11.25	0.79	0.59	0.03
11.50	0.87	0.67	0.04
11.75	1.04	0.83	0.10
12.00	1.46	1.25	**0.25**
12.25	1.89	1.66	**0.18**
12.50	2.06	1.83	0.08
12.75	2.14	1.91	0.04
13.00	2.20	1.97	0.03
13.25	2.25	2.02	0.03
13.50	2.30	2.07	0.03
13.75	2.34	2.11	0.02
14.00	2.38	2.15	0.02
14.25	2.41	2.18	0.02
14.50	2.44	2.21	0.02
14.75	2.47	2.25	0.02
15.00	2.50	2.27	0.02
15.25	2.53	2.30	0.01
15.50	2.55	2.32	0.01
15.75	2.58	2.35	0.01
16.00	2.60	2.37	0.01
16.25	2.61	2.38	0.01
16.50	2.63	2.40	0.01
16.75	2.65	2.42	0.01
17.00	2.66	2.43	0.01
17.25	2.68	2.45	0.01
17.50	2.69	2.46	0.01
17.75	2.71	2.48	0.01
18.00	2.72	2.49	0.01
18.25	2.73	2.50	0.01
18.50	2.74	2.51	0.01
18.75	2.75	2.52	0.01
19.00	2.76	2.53	0.01
19.25	2.77	2.54	0.01
19.50	2.78	2.55	0.01
19.75	2.79	2.56	0.01
20.00	2.80	2.57	0.01
20.25	2.81	2.58	0.01
20.50	2.82	2.59	0.01
20.75	2.83	2.60	0.01
21.00	2.84	2.61	0.00
21.25	2.85	2.62	0.00
21.50	2.86	2.63	0.00
21.75	2.87	2.63	0.00
22.00	2.87	2.64	0.00
22.25	2.88	2.65	0.00
22.50	2.89	2.66	0.00
22.75	2.90	2.67	0.00
23.00	2.90	2.67	0.00
23.25	2.91	2.68	0.00
23.50	2.92	2.69	0.00
23.75	2.92	2.69	0.00
24.00	**2.93**	**2.70**	0.00

Summary for Pond 7P: Chambers

Inflow Area = 1.190 ac, 28.57% Impervious, Inflow Depth > 0.32" for 1-yr event
Inflow = 0.39 cfs @ 12.09 hrs, Volume= 0.031 af
Outflow = 0.02 cfs @ 13.84 hrs, Volume= 0.028 af, Atten= 94%, Lag= 105.2 min
Discarded = 0.02 cfs @ 13.84 hrs, Volume= 0.028 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 122.83' @ 13.84 hrs Surf.Area= 0.024 ac Storage= 0.015 af

Plug-Flow detention time= 243.3 min calculated for 0.028 af (89% of inflow)
Center-of-Mass det. time= 189.8 min (947.6 - 757.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	121.33'	0.031 af	**17.33'W x 41.55'L x 6.25'H Field A** 0.103 af Overall - 0.027 af Embedded = 0.077 af x 40.0% Voids
#2A	122.83'	0.027 af	**ADS_StormTech MC-3500 d +Cap**x 10 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 10 Chambers in 2 Rows Cap Storage= +14.9 cf x 2 x 2 rows = 59.6 cf
#3B	121.33'	0.015 af	**9.42'W x 35.38'L x 6.25'H Field B** 0.048 af Overall - 0.011 af Embedded = 0.037 af x 40.0% Voids
#4B	122.83'	0.011 af	**ADS_StormTech MC-3500 d +Cap**x 4 Inside #3 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf
		0.083 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	121.33'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 115.00'
#2	Primary	122.95'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	123.50'	**10.0" Vert. Orifice/Grate** C= 0.600
#4	Primary	126.50'	**1.5' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.02 cfs @ 13.84 hrs HW=122.83' (Free Discharge)
└─**1=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=121.33' (Free Discharge)
├─**2=Orifice/Grate** (Controls 0.00 cfs)
├─**3=Orifice/Grate** (Controls 0.00 cfs)
└─**4=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 7P: Chambers - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= +14.9 cf x 2 x 2 rows = 59.6 cf

77.0" Wide + 18.0" Spacing = 95.0" C-C Row Spacing

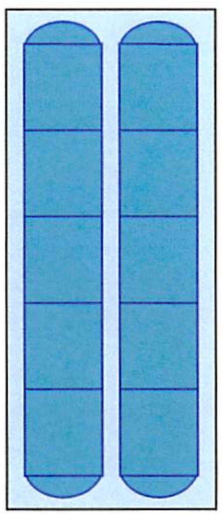
5 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 39.55' Row Length +12.0" End Stone x 2 = 41.55' Base Length
2 Rows x 77.0" Wide + 18.0" Spacing x 1 + 18.0" Side Stone x 2 = 17.33' Base Width
18.0" Base + 45.0" Chamber Height + 12.0" Cover = 6.25' Field Height

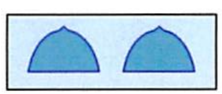
10 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 2 Rows = 1,159.1 cf Chamber Storage

4,501.2 cf Field - 1,159.1 cf Chambers = 3,342.1 cf Stone x 40.0% Voids = 1,336.9 cf Stone Storage

Chamber Storage + Stone Storage = 2,496.0 cf = 0.057 af
Overall Storage Efficiency = 55.5%
Overall System Size = 41.55' x 17.33' x 6.25'

10 Chambers
166.7 cy Field
123.8 cy Stone





Pond 7P: Chambers - Chamber Wizard Field B

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf

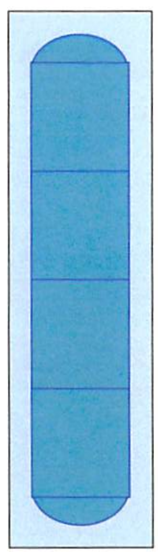
4 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 32.38' Row Length +18.0" End Stone x 2 = 35.38' Base Length
1 Rows x 77.0" Wide + 18.0" Side Stone x 2 = 9.42' Base Width
18.0" Base + 45.0" Chamber Height + 12.0" Cover = 6.25' Field Height

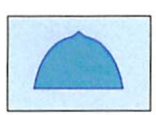
4 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 1 Rows = 469.6 cf Chamber Storage

2,082.3 cf Field - 469.6 cf Chambers = 1,612.7 cf Stone x 40.0% Voids = 645.1 cf Stone Storage

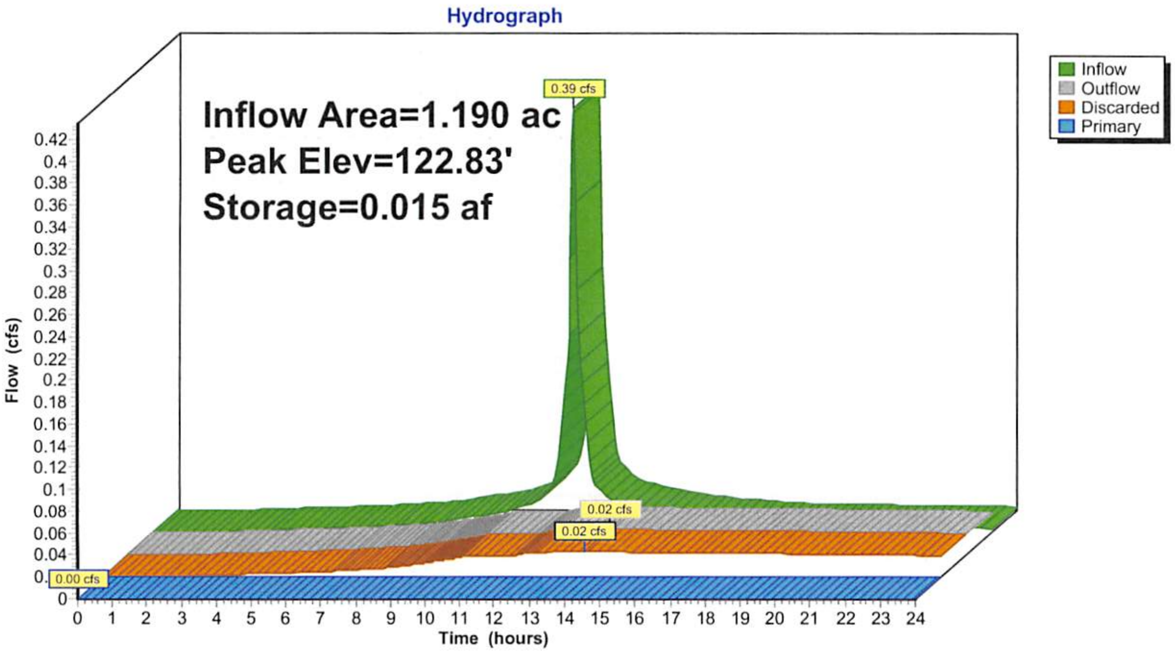
Chamber Storage + Stone Storage = 1,114.7 cf = 0.026 af
Overall Storage Efficiency = 53.5%
Overall System Size = 35.38' x 9.42' x 6.25'

4 Chambers
77.1 cy Field
59.7 cy Stone

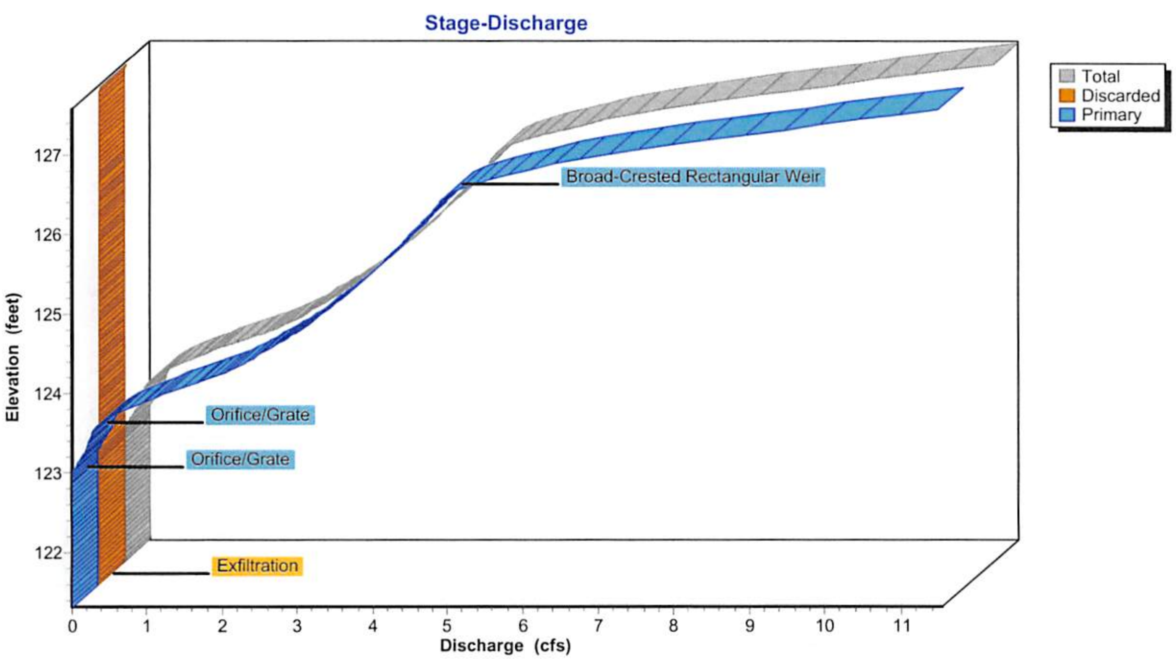




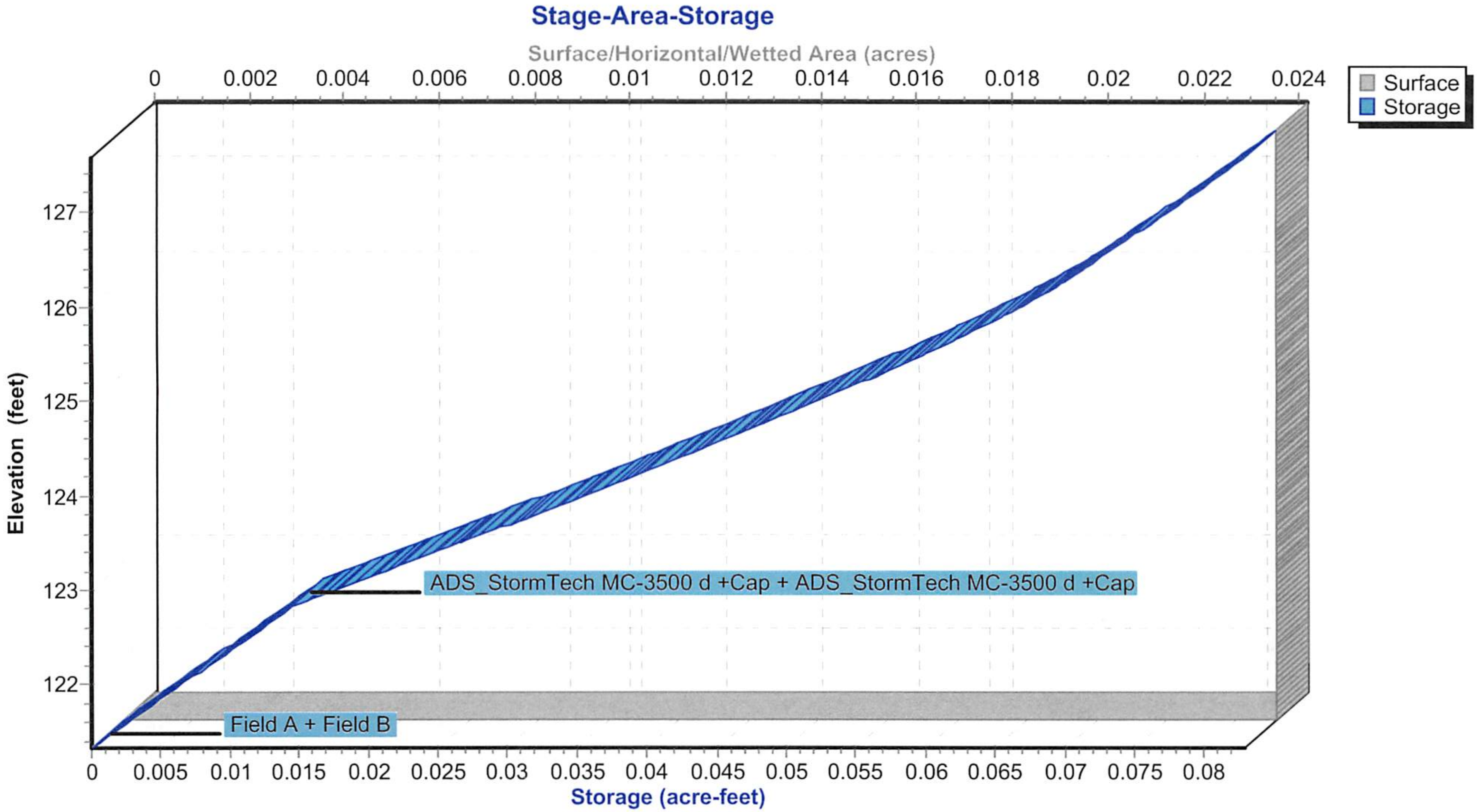
Pond 7P: Chambers



Pond 7P: Chambers



Pond 7P: Chambers



Hydrograph for Pond 7P: Chambers

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.000	121.33	0.00	0.00	**0.00**
0.50	0.00	0.000	121.33	0.00	0.00	0.00
1.00	0.00	0.000	121.33	0.00	0.00	0.00
1.50	0.00	0.000	121.33	0.00	0.00	0.00
2.00	0.00	0.000	121.33	0.00	0.00	0.00
2.50	0.00	0.000	121.33	0.00	0.00	0.00
3.00	0.00	0.000	121.33	0.00	0.00	0.00
3.50	0.00	0.000	121.34	0.00	0.00	0.00
4.00	0.00	0.000	121.34	0.00	0.00	0.00
4.50	0.00	0.000	121.34	0.00	0.00	0.00
5.00	0.00	0.000	121.34	0.00	0.00	0.00
5.50	0.00	0.000	121.34	0.00	0.00	0.00
6.00	0.00	0.000	121.34	0.00	0.00	0.00
6.50	0.01	0.000	121.35	0.00	0.00	0.00
7.00	0.01	0.000	121.35	0.01	0.01	0.00
7.50	0.01	0.000	121.35	0.01	0.01	0.00
8.00	0.01	0.000	121.36	0.01	0.01	0.00
8.50	0.01	0.000	121.36	0.01	0.01	0.00
9.00	0.01	0.000	121.37	0.01	0.01	0.00
9.50	0.02	0.000	121.38	0.01	0.01	0.00
10.00	0.02	0.001	121.38	0.02	0.02	0.00
10.50	0.02	0.001	121.40	0.02	0.02	0.00
11.00	0.03	0.001	121.42	0.02	0.02	0.00
11.50	0.04	0.002	121.49	0.02	0.02	0.00
12.00	**0.25**	0.005	121.88	0.02	0.02	0.00
12.50	**0.08**	0.013	122.70	0.02	0.02	0.00
13.00	0.03	0.014	122.80	0.02	0.02	0.00
13.50	0.03	**0.015**	**122.83**	**0.02**	**0.02**	0.00
14.00	0.02	**0.015**	**122.83**	**0.02**	**0.02**	0.00
14.50	0.02	0.014	122.82	0.02	0.02	0.00
15.00	0.02	0.014	122.80	0.02	0.02	0.00
15.50	0.01	0.014	122.76	0.02	0.02	0.00
16.00	0.01	0.013	122.72	0.02	0.02	0.00
16.50	0.01	0.013	122.67	0.02	0.02	0.00
17.00	0.01	0.012	122.62	0.02	0.02	0.00
17.50	0.01	0.012	122.56	0.02	0.02	0.00
18.00	0.01	0.011	122.50	0.02	0.02	0.00
18.50	0.01	0.011	122.43	0.02	0.02	0.00
19.00	0.01	0.010	122.37	0.02	0.02	0.00
19.50	0.01	0.009	122.30	0.02	0.02	0.00
20.00	0.01	0.009	122.24	0.02	0.02	0.00
20.50	0.01	0.008	122.17	0.02	0.02	0.00
21.00	0.00	0.007	122.10	0.02	0.02	0.00
21.50	0.00	0.007	122.04	0.02	0.02	0.00
22.00	0.00	0.006	121.97	0.02	0.02	0.00
22.50	0.00	0.006	121.90	0.02	0.02	0.00
23.00	0.00	0.005	121.84	0.02	0.02	0.00
23.50	0.00	0.004	121.77	0.02	0.02	0.00
24.00	0.00	0.004	121.70	0.02	0.02	0.00

Stage-Discharge for Pond 7P: Chambers

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
121.33	0.00	0.00	0.00
121.43	0.02	0.02	0.00
121.53	0.02	0.02	0.00
121.63	0.02	0.02	0.00
121.73	0.02	0.02	0.00
121.83	0.02	0.02	0.00
121.93	0.02	0.02	0.00
122.03	0.02	0.02	0.00
122.13	0.02	0.02	0.00
122.23	0.02	0.02	0.00
122.33	0.02	0.02	0.00
122.43	0.02	0.02	0.00
122.53	0.02	0.02	0.00
122.63	0.02	0.02	0.00
122.73	0.02	0.02	0.00
122.83	0.02	0.02	0.00
122.93	0.02	0.02	0.00
123.03	0.04	0.02	0.02
123.13	0.09	0.02	0.07
123.23	0.16	0.02	0.14
123.33	0.22	0.02	0.19
123.43	0.26	0.02	0.24
123.53	0.30	0.02	0.27
123.63	0.39	0.02	0.37
123.73	0.55	0.03	0.53
123.83	0.77	0.03	0.75
123.93	1.04	0.03	1.01
124.03	1.33	0.03	1.31
124.13	1.64	0.03	1.62
124.23	1.94	0.03	1.92
124.33	2.18	0.03	2.15
124.43	2.39	0.03	2.36
124.53	2.58	0.03	2.56
124.63	2.76	0.03	2.73
124.73	2.93	0.03	2.90
124.83	3.09	0.03	3.06
124.93	3.24	0.03	3.21
125.03	3.38	0.03	3.35
125.13	3.52	0.03	3.49
125.23	3.65	0.03	3.62
125.33	3.78	0.03	3.75
125.43	3.90	0.03	3.87
125.53	4.02	0.03	3.99
125.63	4.13	0.03	4.10
125.73	4.25	0.03	4.22
125.83	4.36	0.03	4.32
125.93	4.46	0.03	4.43
126.03	4.57	0.03	4.53
126.13	4.67	0.03	4.64
126.23	4.77	0.03	4.74
126.33	4.87	0.03	4.83
126.43	4.96	0.03	4.93
126.53	5.08	0.03	5.04
126.63	5.34	0.03	5.31
126.73	5.70	0.03	5.67
126.83	6.14	0.03	6.11
126.93	6.66	0.03	6.62
127.03	7.25	0.03	7.22
127.13	7.92	0.04	7.88
127.23	8.68	0.04	8.65
127.33	9.50	0.04	9.46
127.43	10.29	0.04	10.25
127.53	**11.12**	**0.04**	**11.08**

Stage-Area-Storage for Pond 7P: Chambers

Elevation (feet)	Surface (acres)	Storage (acre-feet)
121.33	**0.024**	0.000
121.43	0.024	0.001
121.53	0.024	0.002
121.63	0.024	0.003
121.73	0.024	0.004
121.83	0.024	0.005
121.93	0.024	0.006
122.03	0.024	0.007
122.13	0.024	0.008
122.23	0.024	0.009
122.33	0.024	0.010
122.43	0.024	0.011
122.53	0.024	0.012
122.63	0.024	0.013
122.73	0.024	0.014
122.83	0.024	0.015
122.93	0.024	0.016
123.03	0.024	0.018
123.13	0.024	0.020
123.23	0.024	0.022
123.33	0.024	0.024
123.43	0.024	0.025
123.53	0.024	0.027
123.63	0.024	0.029
123.73	0.024	0.031
123.83	0.024	0.032
123.93	0.024	0.034
124.03	0.024	0.036
124.13	0.024	0.038
124.23	0.024	0.039
124.33	0.024	0.041
124.43	0.024	0.043
124.53	0.024	0.044
124.63	0.024	0.046
124.73	0.024	0.048
124.83	0.024	0.049
124.93	0.024	0.051
125.03	0.024	0.053
125.13	0.024	0.054
125.23	0.024	0.056
125.33	0.024	0.057
125.43	0.024	0.059
125.53	0.024	0.060
125.63	0.024	0.062
125.73	0.024	0.063
125.83	0.024	0.065
125.93	0.024	0.066
126.03	0.024	0.067
126.13	0.024	0.068
126.23	0.024	0.070
126.33	0.024	0.071
126.43	0.024	0.072
126.53	0.024	0.073
126.63	0.024	0.074
126.73	0.024	0.075
126.83	0.024	0.076
126.93	0.024	0.077
127.03	0.024	0.078
127.13	0.024	0.079
127.23	0.024	0.080
127.33	0.024	0.080
127.43	0.024	0.081
127.53	0.024	**0.082**

Summary for Pond 8P: Bioretention

Inflow Area =	1.050 ac,	19.05% Impervious,	Inflow Depth > 1.14"	for 1-yr event	
Inflow =	1.21 cfs @	12.14 hrs,	Volume=	0.099 af	
Outflow =	0.09 cfs @	14.62 hrs,	Volume=	0.073 af,	Atten= 93%, Lag= 148.9 min
Discarded =	0.09 cfs @	14.62 hrs,	Volume=	0.073 af	
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 129.58' @ 14.62 hrs Surf.Area= 0.090 ac Storage= 0.051 af

Plug-Flow detention time= 291.9 min calculated for 0.073 af (74% of inflow)
Center-of-Mass det. time= 197.7 min (1,050.3 - 852.5)

Volume	Invert	Avail.Storage	Storage Description
#1	125.50'	0.020 af	**Gravel (Prismatic)** Listed below 0.050 af Overall x 40.0% Voids
#2	127.00'	0.029 af	**Soil (Prismatic)** Listed below (Recalc) 0.082 af Overall x 35.0% Voids
#3	129.50'	0.028 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		0.077 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
125.50	0.033	0.000	0.000
127.00	0.033	0.050	0.050

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
127.00	0.033	0.000	0.000
129.50	0.033	0.082	0.082

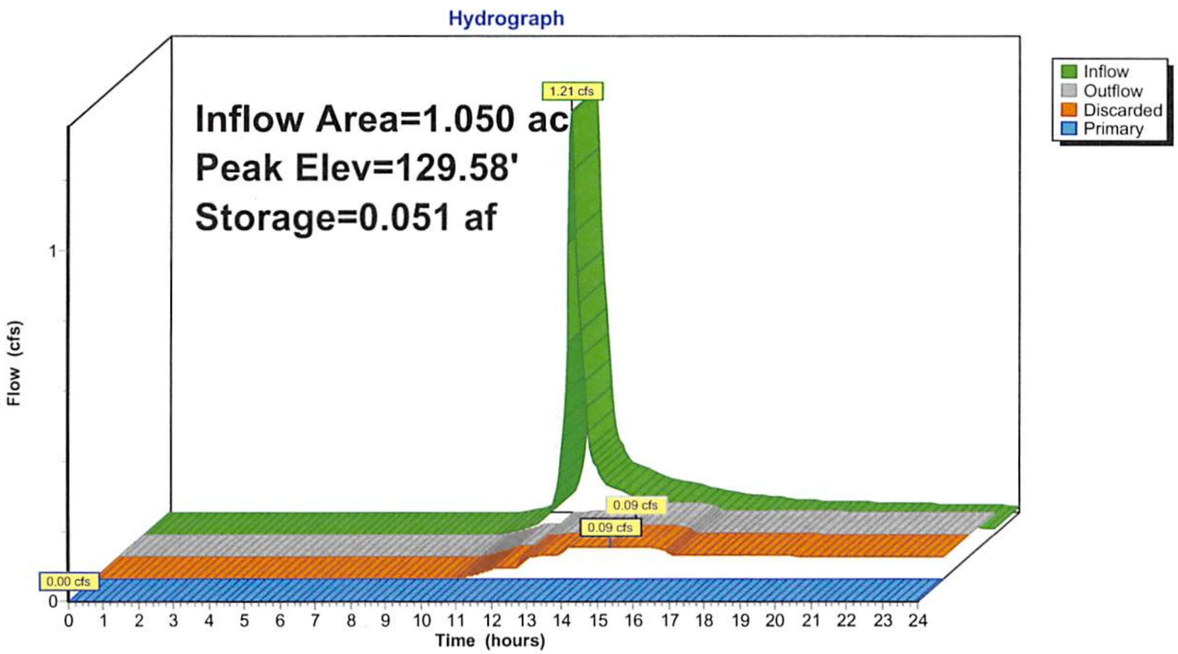
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
129.50	0.023	0.000	0.000
130.00	0.028	0.013	0.013
130.50	0.033	0.015	0.028

Device	Routing	Invert	Outlet Devices
#1	Primary	130.00'	**12.0" Horiz. Orifice/Grate** X 4 rows C= 0.600 Limited to weir flow at low heads
#2	Discarded	125.50'	**0.900 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 100.00'

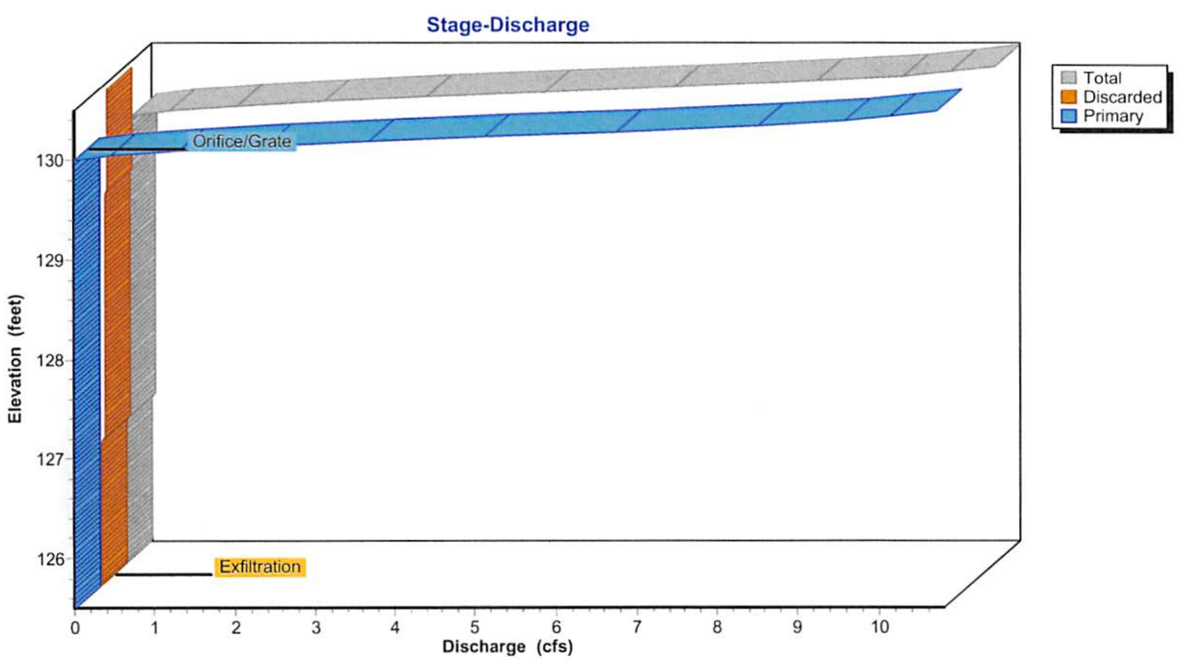
Discarded OutFlow Max=0.09 cfs @ 14.62 hrs HW=129.58' (Free Discharge)
└─**2=Exfiltration** (Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.50' (Free Discharge)
└─**1=Orifice/Grate** (Controls 0.00 cfs)

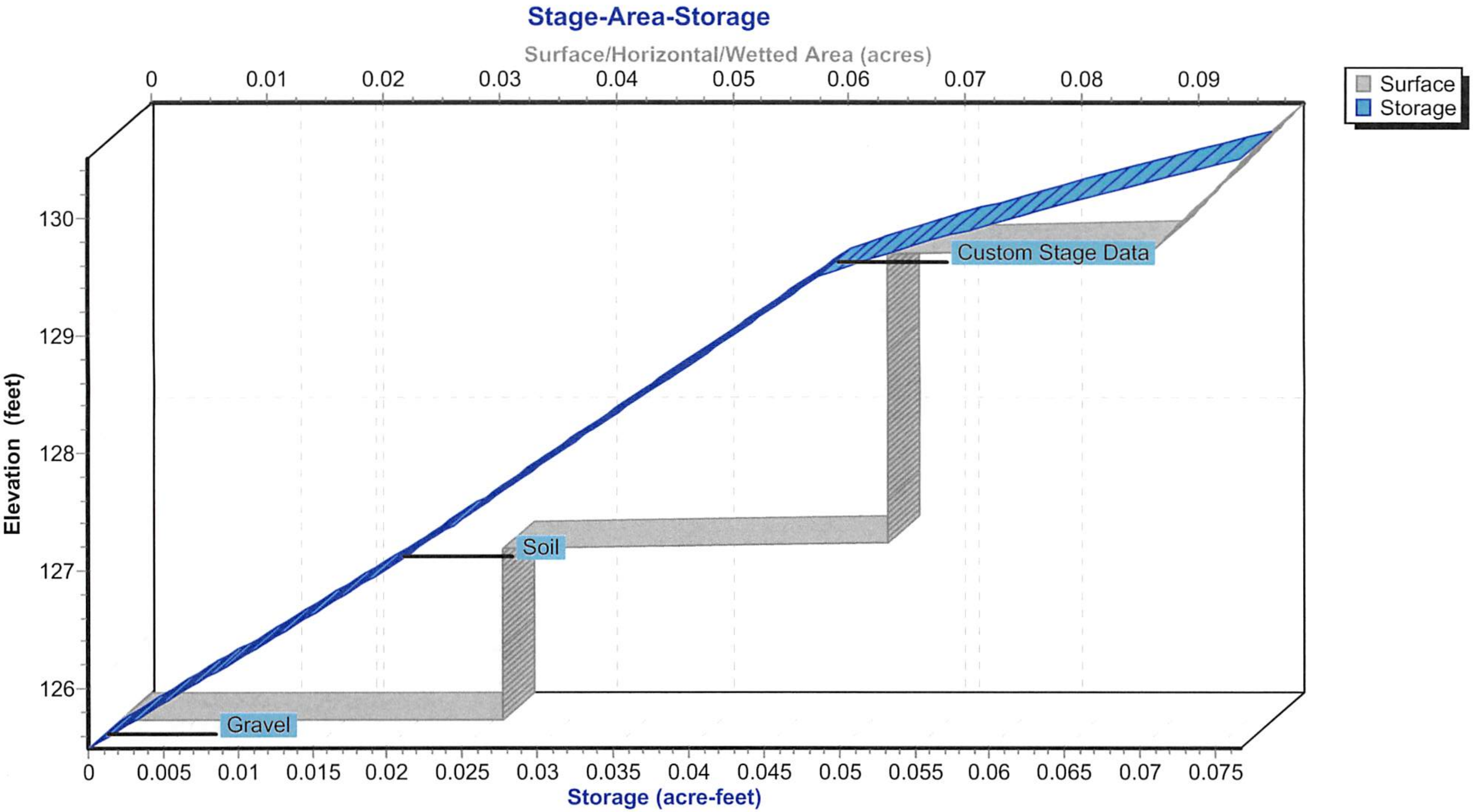
Pond 8P: Bioretention



Pond 8P: Bioretention



Pond 8P: Bioretention



Hydrograph for Pond 8P: Bioretention

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.000	125.50	0.00	0.00	**0.00**
0.50	0.00	0.000	125.50	0.00	0.00	0.00
1.00	0.00	0.000	125.50	0.00	0.00	0.00
1.50	0.00	0.000	125.50	0.00	0.00	0.00
2.00	0.00	0.000	125.50	0.00	0.00	0.00
2.50	0.00	0.000	125.50	0.00	0.00	0.00
3.00	0.00	0.000	125.50	0.00	0.00	0.00
3.50	0.00	0.000	125.50	0.00	0.00	0.00
4.00	0.00	0.000	125.50	0.00	0.00	0.00
4.50	0.00	0.000	125.50	0.00	0.00	0.00
5.00	0.00	0.000	125.50	0.00	0.00	0.00
5.50	0.00	0.000	125.50	0.00	0.00	0.00
6.00	0.00	0.000	125.50	0.00	0.00	0.00
6.50	0.00	0.000	125.50	0.00	0.00	0.00
7.00	0.00	0.000	125.50	0.00	0.00	0.00
7.50	0.00	0.000	125.50	0.00	0.00	0.00
8.00	0.00	0.000	125.50	0.00	0.00	0.00
8.50	0.00	0.000	125.50	0.00	0.00	0.00
9.00	0.00	0.000	125.50	0.00	0.00	0.00
9.50	0.00	0.000	125.50	0.00	0.00	0.00
10.00	0.00	0.000	125.50	0.00	0.00	0.00
10.50	0.01	0.000	125.51	0.01	0.01	0.00
11.00	0.03	0.000	125.53	0.02	0.02	0.00
11.50	0.06	0.001	125.58	0.03	0.03	0.00
12.00	**0.55**	0.008	126.13	0.03	0.03	0.00
12.50	**0.44**	0.039	128.70	0.07	0.07	0.00
13.00	0.16	0.047	129.31	0.07	0.07	0.00
13.50	0.13	0.049	129.52	0.09	0.09	0.00
14.00	0.11	0.050	129.57	0.09	0.09	0.00
14.50	0.09	**0.051**	**129.58**	**0.09**	**0.09**	0.00
15.00	0.08	**0.051**	**129.58**	**0.09**	**0.09**	0.00
15.50	0.07	0.050	129.55	0.09	0.09	0.00
16.00	0.06	0.049	129.51	0.09	0.09	0.00
16.50	0.05	0.048	129.44	0.07	0.07	0.00
17.00	0.05	0.047	129.38	0.07	0.07	0.00
17.50	0.04	0.046	129.29	0.07	0.07	0.00
18.00	0.04	0.045	129.19	0.07	0.07	0.00
18.50	0.03	0.044	129.08	0.07	0.07	0.00
19.00	0.03	0.042	128.96	0.07	0.07	0.00
19.50	0.03	0.041	128.84	0.07	0.07	0.00
20.00	0.03	0.040	128.71	0.07	0.07	0.00
20.50	0.03	0.038	128.58	0.07	0.07	0.00
21.00	0.03	0.036	128.44	0.06	0.06	0.00
21.50	0.03	0.035	128.30	0.06	0.06	0.00
22.00	0.02	0.033	128.16	0.06	0.06	0.00
22.50	0.02	0.032	128.02	0.06	0.06	0.00
23.00	0.02	0.030	127.87	0.06	0.06	0.00
23.50	0.02	0.028	127.72	0.06	0.06	0.00
24.00	0.02	0.026	127.56	0.06	0.06	0.00

Stage-Discharge for Pond 8P: Bioretention

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
125.50	0.00	0.00	0.00
125.55	0.03	0.03	0.00
125.60	0.03	0.03	0.00
125.65	0.03	0.03	0.00
125.70	0.03	0.03	0.00
125.75	0.03	0.03	0.00
125.80	0.03	0.03	0.00
125.85	0.03	0.03	0.00
125.90	0.03	0.03	0.00
125.95	0.03	0.03	0.00
126.00	0.03	0.03	0.00
126.05	0.03	0.03	0.00
126.10	0.03	0.03	0.00
126.15	0.03	0.03	0.00
126.20	0.03	0.03	0.00
126.25	0.03	0.03	0.00
126.30	0.03	0.03	0.00
126.35	0.03	0.03	0.00
126.40	0.03	0.03	0.00
126.45	0.03	0.03	0.00
126.50	0.03	0.03	0.00
126.55	0.03	0.03	0.00
126.60	0.03	0.03	0.00
126.65	0.03	0.03	0.00
126.70	0.03	0.03	0.00
126.75	0.03	0.03	0.00
126.80	0.03	0.03	0.00
126.85	0.03	0.03	0.00
126.90	0.03	0.03	0.00
126.95	0.03	0.03	0.00
127.00	0.06	0.06	0.00
127.05	0.06	0.06	0.00
127.10	0.06	0.06	0.00
127.15	0.06	0.06	0.00
127.20	0.06	0.06	0.00
127.25	0.06	0.06	0.00
127.30	0.06	0.06	0.00
127.35	0.06	0.06	0.00
127.40	0.06	0.06	0.00
127.45	0.06	0.06	0.00
127.50	0.06	0.06	0.00
127.55	0.06	0.06	0.00
127.60	0.06	0.06	0.00
127.65	0.06	0.06	0.00
127.70	0.06	0.06	0.00
127.75	0.06	0.06	0.00
127.80	0.06	0.06	0.00
127.85	0.06	0.06	0.00
127.90	0.06	0.06	0.00
127.95	0.06	0.06	0.00
128.00	0.06	0.06	0.00
128.05	0.06	0.06	0.00
128.10	0.06	0.06	0.00
128.15	0.06	0.06	0.00
128.20	0.06	0.06	0.00
128.25	0.06	0.06	0.00
128.30	0.06	0.06	0.00
128.35	0.06	0.06	0.00
128.40	0.06	0.06	0.00
128.45	0.06	0.06	0.00
128.50	0.07	0.07	0.00
128.55	0.07	0.07	0.00
128.60	0.07	0.07	0.00
128.65	0.07	0.07	0.00
128.70	0.07	0.07	0.00
128.75	0.07	0.07	0.00
128.80	0.07	0.07	0.00
128.85	0.07	0.07	0.00
128.90	0.07	0.07	0.00
128.95	0.07	0.07	0.00
129.00	0.07	0.07	0.00
129.05	0.07	0.07	0.00
129.10	0.07	0.07	0.00
129.15	0.07	0.07	0.00
129.20	0.07	0.07	0.00
129.25	0.07	0.07	0.00
129.30	0.07	0.07	0.00
129.35	0.07	0.07	0.00
129.40	0.07	0.07	0.00
129.45	0.07	0.07	0.00
129.50	0.09	0.09	0.00
129.55	0.09	0.09	0.00
129.60	0.09	0.09	0.00
129.65	0.09	0.09	0.00
129.70	0.09	0.09	0.00
129.75	0.09	0.09	0.00
129.80	0.09	0.09	0.00
129.85	0.09	0.09	0.00
129.90	0.09	0.09	0.00
129.95	0.09	0.09	0.00
130.00	0.09	0.09	0.00
130.05	0.55	0.09	0.46
130.10	1.39	0.10	1.30
130.15	2.48	0.10	2.39
130.20	3.77	0.10	3.68
130.25	5.23	0.10	5.14
130.30	6.85	0.10	6.75
130.35	8.61	0.10	8.51
130.40	9.67	0.10	9.57
130.45	10.25	0.10	10.15
130.50	**10.80**	**0.10**	**10.70**

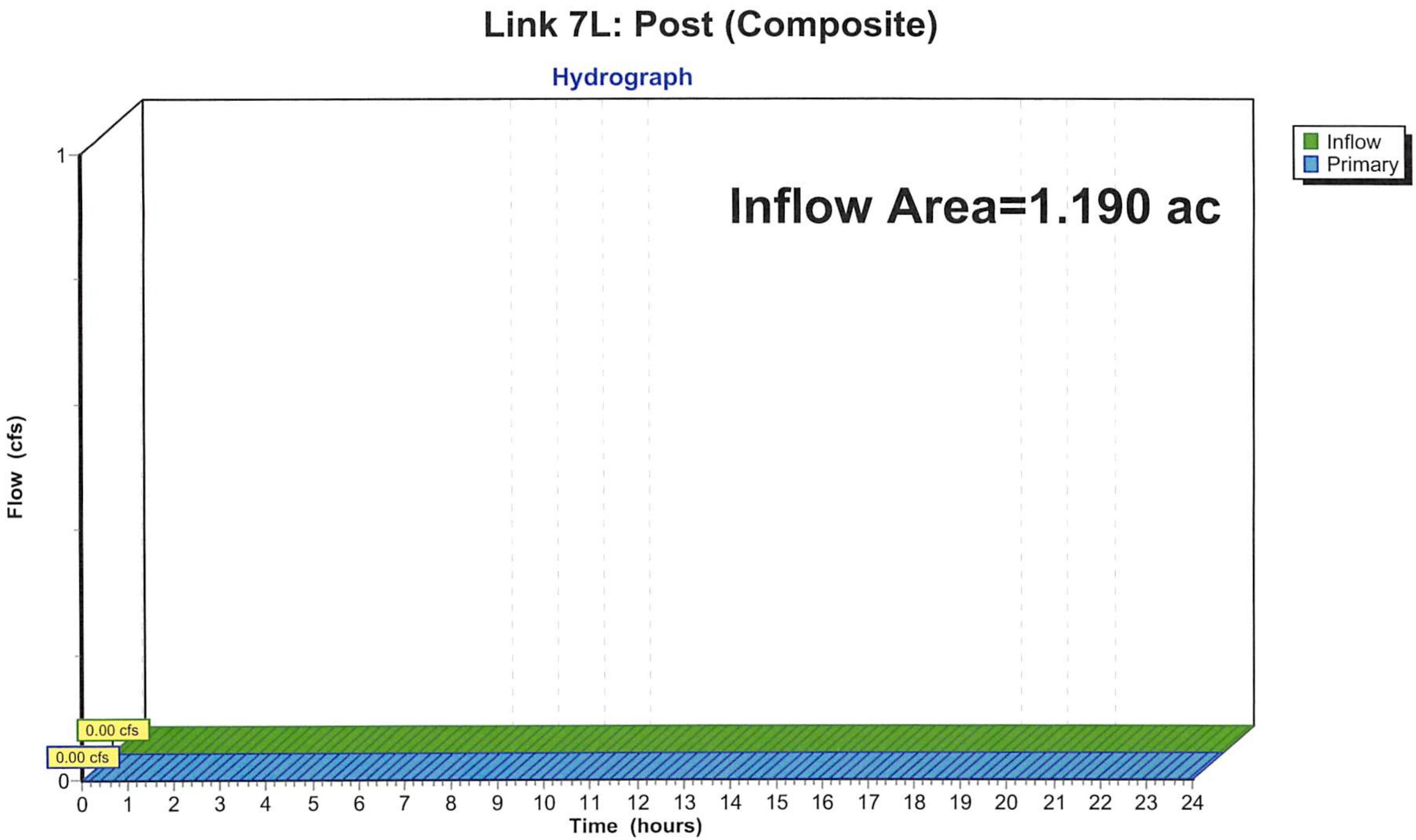
Stage-Area-Storage for Pond 8P: Bioretention

Elevation (feet)	Surface (acres)	Storage (acre-feet)	Elevation (feet)	Surface (acres)	Storage (acre-feet)
125.50	0.033	0.000	128.10	0.066	0.033
125.55	0.033	0.001	128.15	0.066	0.033
125.60	0.033	0.001	128.20	0.066	0.034
125.65	0.033	0.002	128.25	0.066	0.034
125.70	0.033	0.003	128.30	0.066	0.035
125.75	0.033	0.003	128.35	0.066	0.035
125.80	0.033	0.004	128.40	0.066	0.036
125.85	0.033	0.005	128.45	0.066	0.037
125.90	0.033	0.005	128.50	0.066	0.037
125.95	0.033	0.006	128.55	0.066	0.038
126.00	0.033	0.007	128.60	0.066	0.038
126.05	0.033	0.007	128.65	0.066	0.039
126.10	0.033	0.008	128.70	0.066	0.039
126.15	0.033	0.009	128.75	0.066	0.040
126.20	0.033	0.009	128.80	0.066	0.041
126.25	0.033	0.010	128.85	0.066	0.041
126.30	0.033	0.011	128.90	0.066	0.042
126.35	0.033	0.011	128.95	0.066	0.042
126.40	0.033	0.012	129.00	0.066	0.043
126.45	0.033	0.013	129.05	0.066	0.043
126.50	0.033	0.013	129.10	0.066	0.044
126.55	0.033	0.014	129.15	0.066	0.045
126.60	0.033	0.015	129.20	0.066	0.045
126.65	0.033	0.015	129.25	0.066	0.046
126.70	0.033	0.016	129.30	0.066	0.046
126.75	0.033	0.017	129.35	0.066	0.047
126.80	0.033	0.017	129.40	0.066	0.048
126.85	0.033	0.018	129.45	0.066	0.048
126.90	0.033	0.018	129.50	0.089	0.049
126.95	0.033	0.019	129.55	0.090	0.050
127.00	0.066	0.020	129.60	0.090	0.051
127.05	0.066	0.020	129.65	0.091	0.052
127.10	0.066	0.021	129.70	0.091	0.053
127.15	0.066	0.022	129.75	0.091	0.055
127.20	0.066	0.022	129.80	0.092	0.056
127.25	0.066	0.023	129.85	0.092	0.057
127.30	0.066	0.023	129.90	0.093	0.059
127.35	0.066	0.024	129.95	0.093	0.060
127.40	0.066	0.024	130.00	0.094	0.061
127.45	0.066	0.025	130.05	0.095	0.063
127.50	0.066	0.026	130.10	0.095	0.064
127.55	0.066	0.026	130.15	0.096	0.066
127.60	0.066	0.027	130.20	0.096	0.067
127.65	0.066	0.027	130.25	0.096	0.069
127.70	0.066	0.028	130.30	0.097	0.070
127.75	0.066	0.028	130.35	0.097	0.072
127.80	0.066	0.029	130.40	0.098	0.073
127.85	0.066	0.030	130.45	0.098	0.075
127.90	0.066	0.030	130.50	**0.099**	**0.077**
127.95	0.066	0.031			
128.00	0.066	0.031			
128.05	0.066	0.032			

Summary for Link 7L: Post (Composite)

Inflow Area = 1.190 ac, 28.57% Impervious, Inflow Depth = 0.00" for 1-yr 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

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs



Hydrograph for Link 7L: Post (Composite)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	**0.00**	**0.00**	**0.00**	13.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00	13.25	0.00	0.00	0.00
0.50	0.00	0.00	0.00	13.50	0.00	0.00	0.00
0.75	0.00	0.00	0.00	13.75	0.00	0.00	0.00
1.00	0.00	0.00	0.00	14.00	0.00	0.00	0.00
1.25	0.00	0.00	0.00	14.25	0.00	0.00	0.00
1.50	0.00	0.00	0.00	14.50	0.00	0.00	0.00
1.75	0.00	0.00	0.00	14.75	0.00	0.00	0.00
2.00	0.00	0.00	0.00	15.00	0.00	0.00	0.00
2.25	0.00	0.00	0.00	15.25	0.00	0.00	0.00
2.50	0.00	0.00	0.00	15.50	0.00	0.00	0.00
2.75	0.00	0.00	0.00	15.75	0.00	0.00	0.00
3.00	0.00	0.00	0.00	16.00	0.00	0.00	0.00
3.25	0.00	0.00	0.00	16.25	0.00	0.00	0.00
3.50	0.00	0.00	0.00	16.50	0.00	0.00	0.00
3.75	0.00	0.00	0.00	16.75	0.00	0.00	0.00
4.00	0.00	0.00	0.00	17.00	0.00	0.00	0.00
4.25	0.00	0.00	0.00	17.25	0.00	0.00	0.00
4.50	0.00	0.00	0.00	17.50	0.00	0.00	0.00
4.75	0.00	0.00	0.00	17.75	0.00	0.00	0.00
5.00	0.00	0.00	0.00	18.00	0.00	0.00	0.00
5.25	0.00	0.00	0.00	18.25	0.00	0.00	0.00
5.50	0.00	0.00	0.00	18.50	0.00	0.00	0.00
5.75	0.00	0.00	0.00	18.75	0.00	0.00	0.00
6.00	0.00	0.00	0.00	19.00	0.00	0.00	0.00
6.25	0.00	0.00	0.00	19.25	0.00	0.00	0.00
6.50	0.00	0.00	0.00	19.50	0.00	0.00	0.00
6.75	0.00	0.00	0.00	19.75	0.00	0.00	0.00
7.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
7.25	0.00	0.00	0.00	20.25	0.00	0.00	0.00
7.50	0.00	0.00	0.00	20.50	0.00	0.00	0.00
7.75	0.00	0.00	0.00	20.75	0.00	0.00	0.00
8.00	0.00	0.00	0.00	21.00	0.00	0.00	0.00
8.25	0.00	0.00	0.00	21.25	0.00	0.00	0.00
8.50	0.00	0.00	0.00	21.50	0.00	0.00	0.00
8.75	0.00	0.00	0.00	21.75	0.00	0.00	0.00
9.00	0.00	0.00	0.00	22.00	0.00	0.00	0.00
9.25	0.00	0.00	0.00	22.25	0.00	0.00	0.00
9.50	0.00	0.00	0.00	22.50	0.00	0.00	0.00
9.75	0.00	0.00	0.00	22.75	0.00	0.00	0.00
10.00	0.00	0.00	0.00	23.00	0.00	0.00	0.00
10.25	0.00	0.00	0.00	23.25	0.00	0.00	0.00
10.50	0.00	0.00	0.00	23.50	0.00	0.00	0.00
10.75	0.00	0.00	0.00	23.75	0.00	0.00	0.00
11.00	0.00	0.00	0.00	24.00	0.00	0.00	0.00
11.25	0.00	0.00	0.00				
11.50	0.00	0.00	0.00				
11.75	0.00	0.00	0.00				
12.00	0.00	0.00	0.00				
12.25	0.00	0.00	0.00				
12.50	0.00	0.00	0.00				
12.75	0.00	0.00	0.00				

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment4S: PR-01 (Site) Runoff Area=1.050 ac 19.05% Impervious Runoff Depth>3.26"
Flow Length=310' Tc=9.1 min CN=79 Runoff=3.54 cfs 0.285 af

Subcatchment5S: PR-02 (Roof) Runoff Area=0.140 ac 100.00% Impervious Runoff Depth>5.29"
Tc=6.0 min CN=98 Runoff=0.74 cfs 0.062 af

Pond 7P: Chambers Peak Elev=124.59' Storage=0.045 af Inflow=4.39 cfs 0.198 af
Discarded=0.03 cfs 0.034 af Primary=2.66 cfs 0.153 af Outflow=2.69 cfs 0.187 af

Pond 8P: Bioretention Peak Elev=130.21' Storage=0.067 af Inflow=3.54 cfs 0.285 af
Discarded=0.10 cfs 0.101 af Primary=3.84 cfs 0.136 af Outflow=3.94 cfs 0.238 af

Link 7L: Post (Composite) Inflow=2.66 cfs 0.153 af
Primary=2.66 cfs 0.153 af

Total Runoff Area = 1.190 ac Runoff Volume = 0.347 af Average Runoff Depth = 3.50"
71.43% Pervious = 0.850 ac 28.57% Impervious = 0.340 ac

Summary for Subcatchment 4S: PR-01 (Site)

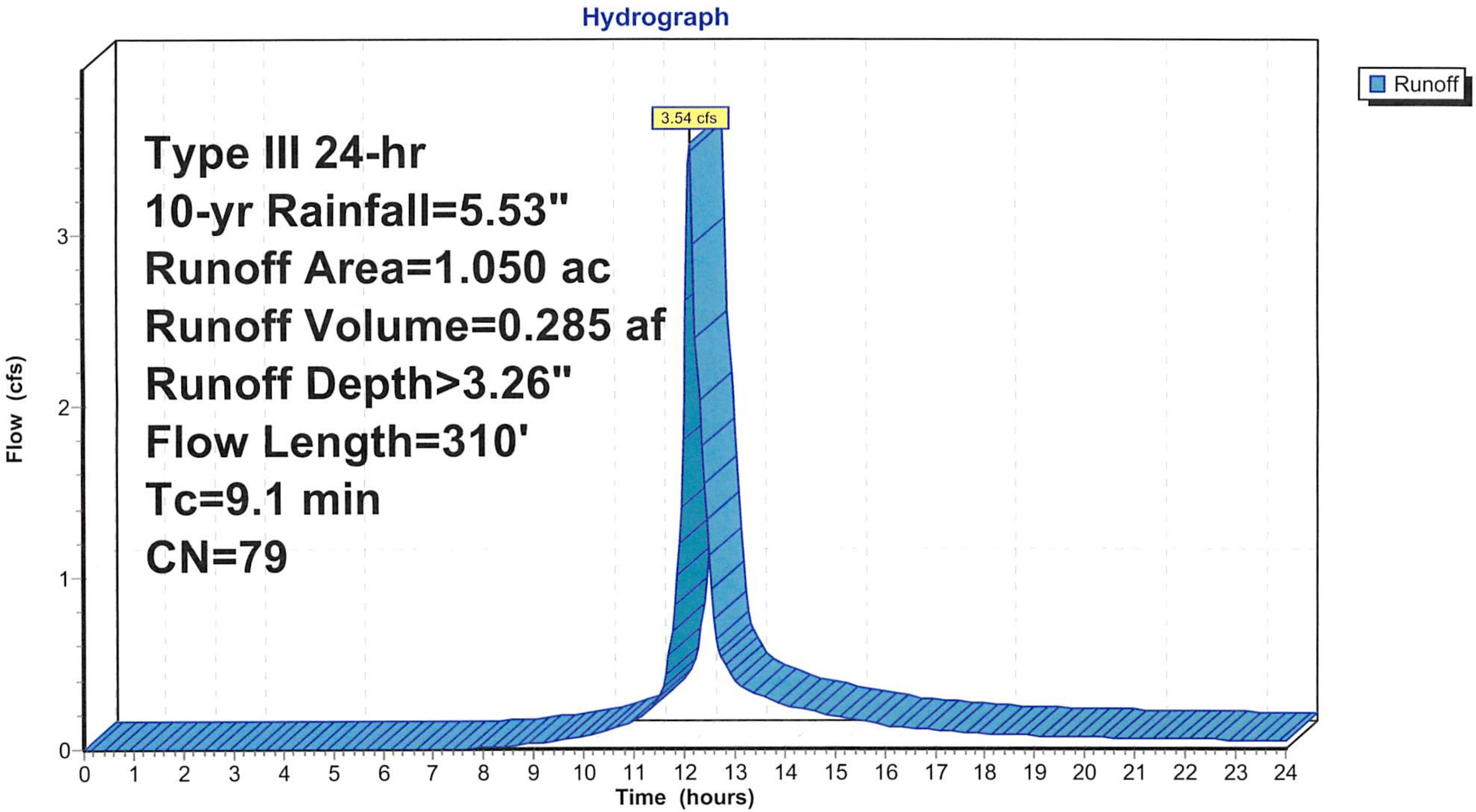
Runoff = 3.54 cfs @ 12.13 hrs, Volume= 0.285 af, Depth> 3.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.53"

Area (ac)	CN	Description
0.200	98	Paved parking, HSG C
0.850	74	>75% Grass cover, Good, HSG C
1.050	79	Weighted Average
0.850		80.95% Pervious Area
0.200		19.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	35	0.0700	0.24		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
1.7	28	0.1070	0.27		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
3.4	37	0.0340	0.18		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
1.0	78	0.0350	1.31		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
0.1	30	0.0500	4.54		**Shallow Concentrated Flow, Pathway** Paved Kv= 20.3 fps
0.3	52	0.0290	2.55		**Shallow Concentrated Flow, Shallow Concentrated** Grassed Waterway Kv= 15.0 fps
0.2	50	0.2000	4.47		**Shallow Concentrated Flow, Shallow Concentrated** Nearly Bare & Untilled Kv= 10.0 fps
9.1	310	Total			

Subcatchment 4S: PR-01 (Site)



Hydrograph for Subcatchment 4S: PR-01 (Site)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.01	0.00	0.00
0.50	0.03	0.00	0.00
0.75	0.04	0.00	0.00
1.00	0.06	0.00	0.00
1.25	0.07	0.00	0.00
1.50	0.08	0.00	0.00
1.75	0.10	0.00	0.00
2.00	0.11	0.00	0.00
2.25	0.12	0.00	0.00
2.50	0.14	0.00	0.00
2.75	0.15	0.00	0.00
3.00	0.17	0.00	0.00
3.25	0.19	0.00	0.00
3.50	0.20	0.00	0.00
3.75	0.22	0.00	0.00
4.00	0.24	0.00	0.00
4.25	0.26	0.00	0.00
4.50	0.27	0.00	0.00
4.75	0.29	0.00	0.00
5.00	0.31	0.00	0.00
5.25	0.33	0.00	0.00
5.50	0.35	0.00	0.00
5.75	0.38	0.00	0.00
6.00	0.40	0.00	0.00
6.25	0.42	0.00	0.00
6.50	0.45	0.00	0.00
6.75	0.47	0.00	0.00
7.00	0.50	0.00	0.00
7.25	0.53	0.00	0.00
7.50	0.56	0.00	0.00
7.75	0.60	0.00	0.00
8.00	0.63	0.00	0.01
8.25	0.67	0.01	0.01
8.50	0.71	0.01	0.02
8.75	0.76	0.02	0.03
9.00	0.81	0.03	0.03
9.25	0.86	0.04	0.04
9.50	0.92	0.05	0.05
9.75	0.98	0.06	0.07
10.00	1.05	0.08	0.08
10.25	1.12	0.11	0.09
10.50	1.20	0.13	0.12
10.75	1.29	0.17	0.14
11.00	1.38	0.21	0.17
11.25	1.50	0.26	0.22
11.50	1.65	0.33	0.30
11.75	1.96	0.50	0.69
12.00	2.76	1.02	**1.81**
12.25	3.57	1.62	**2.40**
12.50	3.88	1.87	1.13
12.75	4.03	1.99	0.53
13.00	4.15	2.08	0.41
13.25	4.24	2.16	0.34
13.50	4.33	2.24	0.31
13.75	4.41	2.30	0.28
14.00	4.48	2.36	0.26
14.25	4.55	2.42	0.23
14.50	4.61	2.47	0.22
14.75	4.67	2.52	0.21
15.00	4.72	2.57	0.19
15.25	4.77	2.61	0.18
15.50	4.82	2.65	0.17
15.75	4.86	2.68	0.15
16.00	4.90	2.72	0.14
16.25	4.93	2.75	0.13
16.50	4.97	2.77	0.12
16.75	5.00	2.80	0.12
17.00	5.03	2.83	0.11
17.25	5.06	2.85	0.10
17.50	5.08	2.87	0.10
17.75	5.11	2.90	0.09
18.00	5.13	2.92	0.08
18.25	5.15	2.93	0.08
18.50	5.18	2.95	0.08
18.75	5.20	2.97	0.08
19.00	5.22	2.99	0.07
19.25	5.24	3.01	0.07
19.50	5.26	3.02	0.07
19.75	5.27	3.04	0.07
20.00	5.29	3.05	0.07
20.25	5.31	3.07	0.07
20.50	5.33	3.09	0.06
20.75	5.34	3.10	0.06
21.00	5.36	3.11	0.06
21.25	5.38	3.13	0.06
21.50	5.39	3.14	0.06
21.75	5.41	3.16	0.06
22.00	5.42	3.17	0.06
22.25	5.44	3.18	0.05
22.50	5.45	3.19	0.05
22.75	5.47	3.21	0.05
23.00	5.48	3.22	0.05
23.25	5.49	3.23	0.05
23.50	5.51	3.24	0.05
23.75	5.52	3.25	0.05
24.00	**5.53**	**3.26**	0.04

Summary for Subcatchment 5S: PR-02 (Roof)

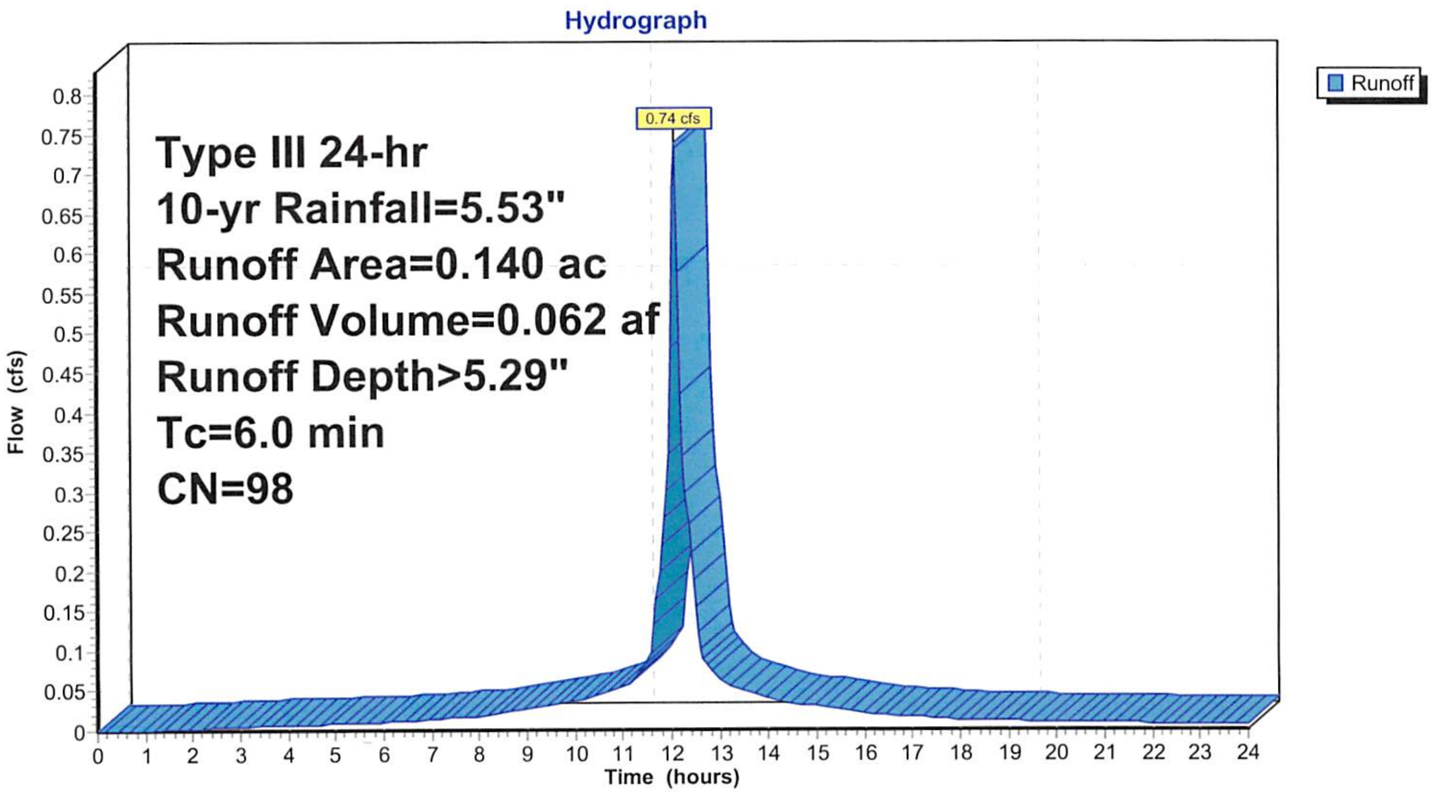
Runoff = 0.74 cfs @ 12.09 hrs, Volume= 0.062 af, Depth> 5.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.53"

Area (ac)	CN	Description
0.140	98	Roofs, HSG C
0.140		100.00% Impervious Area

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

Subcatchment 5S: PR-02 (Roof)



Hydrograph for Subcatchment 5S: PR-02 (Roof)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.01	0.00	0.00
0.50	0.03	0.00	0.00
0.75	0.04	0.00	0.00
1.00	0.06	0.00	0.00
1.25	0.07	0.00	0.00
1.50	0.08	0.01	0.00
1.75	0.10	0.01	0.00
2.00	0.11	0.02	0.00
2.25	0.12	0.02	0.00
2.50	0.14	0.03	0.00
2.75	0.15	0.04	0.00
3.00	0.17	0.05	0.01
3.25	0.19	0.06	0.01
3.50	0.20	0.07	0.01
3.75	0.22	0.08	0.01
4.00	0.24	0.10	0.01
4.25	0.26	0.11	0.01
4.50	0.27	0.12	0.01
4.75	0.29	0.14	0.01
5.00	0.31	0.16	0.01
5.25	0.33	0.17	0.01
5.50	0.35	0.19	0.01
5.75	0.38	0.21	0.01
6.00	0.40	0.23	0.01
6.25	0.42	0.25	0.01
6.50	0.45	0.27	0.01
6.75	0.47	0.29	0.01
7.00	0.50	0.32	0.01
7.25	0.53	0.35	0.02
7.50	0.56	0.37	0.02
7.75	0.60	0.41	0.02
8.00	0.63	0.44	0.02
8.25	0.67	0.47	0.02
8.50	0.71	0.51	0.02
8.75	0.76	0.56	0.02
9.00	0.81	0.60	0.03
9.25	0.86	0.66	0.03
9.50	0.92	0.71	0.03
9.75	0.98	0.77	0.03
10.00	1.05	0.83	0.04
10.25	1.12	0.90	0.04
10.50	1.20	0.98	0.04
10.75	1.29	1.07	0.05
11.00	1.38	1.16	0.05
11.25	1.50	1.28	0.07
11.50	1.65	1.43	0.09
11.75	1.96	1.74	0.20
12.00	2.76	2.53	**0.48**
12.25	3.57	3.33	**0.35**
12.50	3.88	3.65	0.16
12.75	4.03	3.80	0.08
13.00	4.15	3.91	0.06
13.25	4.24	4.01	0.05
13.50	4.33	4.10	0.05
13.75	4.41	4.18	0.04
14.00	4.48	4.25	0.04
14.25	4.55	4.31	0.04
14.50	4.61	4.38	0.03
14.75	4.67	4.43	0.03
15.00	4.72	4.49	0.03
15.25	4.77	4.54	0.03
15.50	4.82	4.58	0.03
15.75	4.86	4.63	0.02
16.00	4.90	4.66	0.02
16.25	4.93	4.70	0.02
16.50	4.97	4.73	0.02
16.75	5.00	4.76	0.02
17.00	5.03	4.79	0.02
17.25	5.06	4.82	0.02
17.50	5.08	4.85	0.01
17.75	5.11	4.87	0.01
18.00	5.13	4.89	0.01
18.25	5.15	4.92	0.01
18.50	5.18	4.94	0.01
18.75	5.20	4.96	0.01
19.00	5.22	4.98	0.01
19.25	5.24	5.00	0.01
19.50	5.26	5.02	0.01
19.75	5.27	5.04	0.01
20.00	5.29	5.05	0.01
20.25	5.31	5.07	0.01
20.50	5.33	5.09	0.01
20.75	5.34	5.11	0.01
21.00	5.36	5.12	0.01
21.25	5.38	5.14	0.01
21.50	5.39	5.16	0.01
21.75	5.41	5.17	0.01
22.00	5.42	5.19	0.01
22.25	5.44	5.20	0.01
22.50	5.45	5.22	0.01
22.75	5.47	5.23	0.01
23.00	5.48	5.24	0.01
23.25	5.49	5.26	0.01
23.50	5.51	5.27	0.01
23.75	5.52	5.28	0.01
24.00	**5.53**	**5.29**	0.01

Summary for Pond 7P: Chambers

Inflow Area = 1.190 ac, 28.57% Impervious, Inflow Depth > 1.99" for 10-yr event
Inflow = 4.39 cfs @ 12.16 hrs, Volume= 0.198 af
Outflow = 2.69 cfs @ 12.27 hrs, Volume= 0.187 af, Atten= 39%, Lag= 6.7 min
Discarded = 0.03 cfs @ 12.27 hrs, Volume= 0.034 af
Primary = 2.66 cfs @ 12.27 hrs, Volume= 0.153 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 124.59' @ 12.27 hrs Surf.Area= 0.024 ac Storage= 0.045 af

Plug-Flow detention time= 58.2 min calculated for 0.187 af (95% of inflow)
Center-of-Mass det. time= 38.7 min (804.0 - 765.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	121.33'	0.031 af	**17.33'W x 41.55'L x 6.25'H Field A** 0.103 af Overall - 0.027 af Embedded = 0.077 af x 40.0% Voids
#2A	122.83'	0.027 af	**ADS_StormTech MC-3500 d +Cap**x 10 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 10 Chambers in 2 Rows Cap Storage= +14.9 cf x 2 x 2 rows = 59.6 cf
#3B	121.33'	0.015 af	**9.42'W x 35.38'L x 6.25'H Field B** 0.048 af Overall - 0.011 af Embedded = 0.037 af x 40.0% Voids
#4B	122.83'	0.011 af	**ADS_StormTech MC-3500 d +Cap**x 4 Inside #3 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf
		0.083 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	121.33'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 115.00'
#2	Primary	122.95'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	123.50'	**10.0" Vert. Orifice/Grate** C= 0.600
#4	Primary	126.50'	**1.5' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.03 cfs @ 12.27 hrs HW=124.57' (Free Discharge)
└─**1=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=2.63 cfs @ 12.27 hrs HW=124.57' (Free Discharge)
├─**2=Orifice/Grate** (Orifice Controls 0.51 cfs @ 5.80 fps)
├─**3=Orifice/Grate** (Orifice Controls 2.12 cfs @ 3.89 fps)
└─**4=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 7P: Chambers - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= +14.9 cf x 2 x 2 rows = 59.6 cf

77.0" Wide + 18.0" Spacing = 95.0" C-C Row Spacing

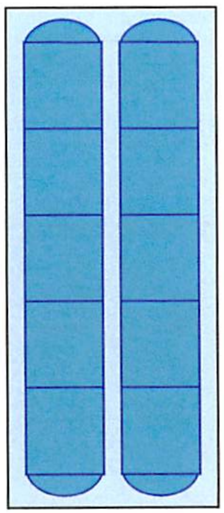
5 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 39.55' Row Length +12.0" End Stone x 2 = 41.55' Base Length
2 Rows x 77.0" Wide + 18.0" Spacing x 1 + 18.0" Side Stone x 2 = 17.33' Base Width
18.0" Base + 45.0" Chamber Height + 12.0" Cover = 6.25' Field Height

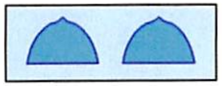
10 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 2 Rows = 1,159.1 cf Chamber Storage

4,501.2 cf Field - 1,159.1 cf Chambers = 3,342.1 cf Stone x 40.0% Voids = 1,336.9 cf Stone Storage

Chamber Storage + Stone Storage = 2,496.0 cf = 0.057 af
Overall Storage Efficiency = 55.5%
Overall System Size = 41.55' x 17.33' x 6.25'

10 Chambers
166.7 cy Field
123.8 cy Stone





Pond 7P: Chambers - Chamber Wizard Field B

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf

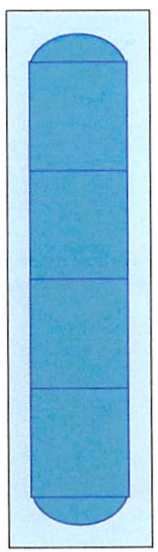
4 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 32.38' Row Length +18.0" End Stone x 2 = 35.38' Base Length
1 Rows x 77.0" Wide + 18.0" Side Stone x 2 = 9.42' Base Width
18.0" Base + 45.0" Chamber Height + 12.0" Cover = 6.25' Field Height

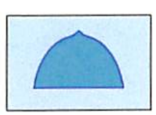
4 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 1 Rows = 469.6 cf Chamber Storage

2,082.3 cf Field - 469.6 cf Chambers = 1,612.7 cf Stone x 40.0% Voids = 645.1 cf Stone Storage

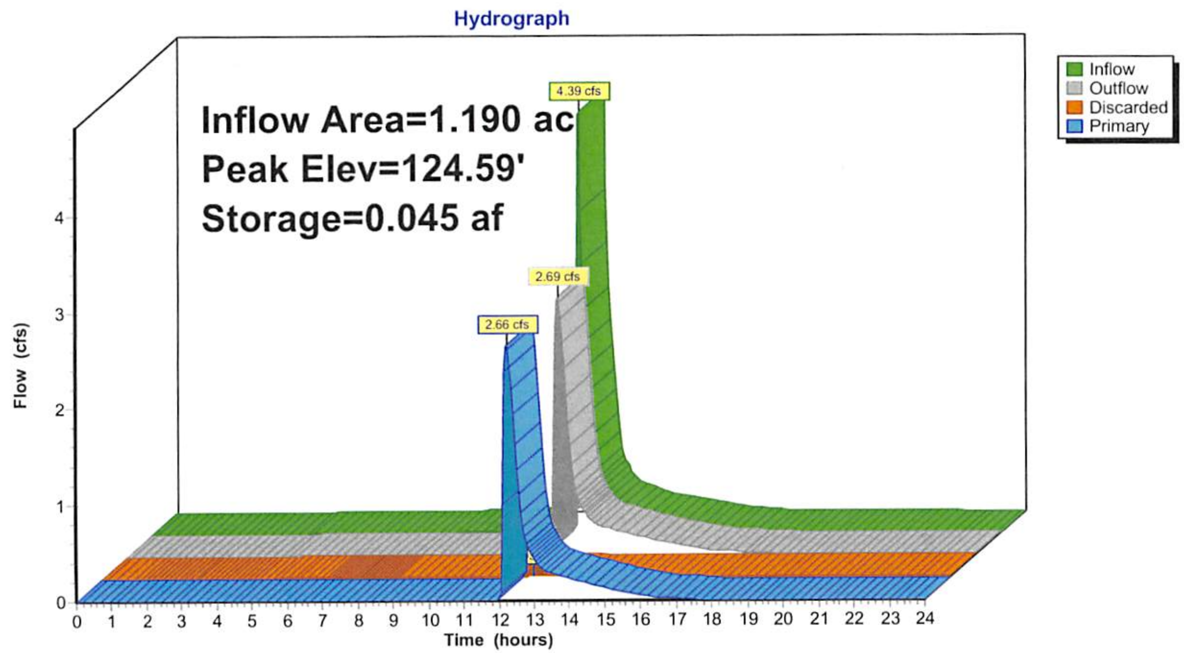
Chamber Storage + Stone Storage = 1,114.7 cf = 0.026 af
Overall Storage Efficiency = 53.5%
Overall System Size = 35.38' x 9.42' x 6.25'

4 Chambers
77.1 cy Field
59.7 cy Stone

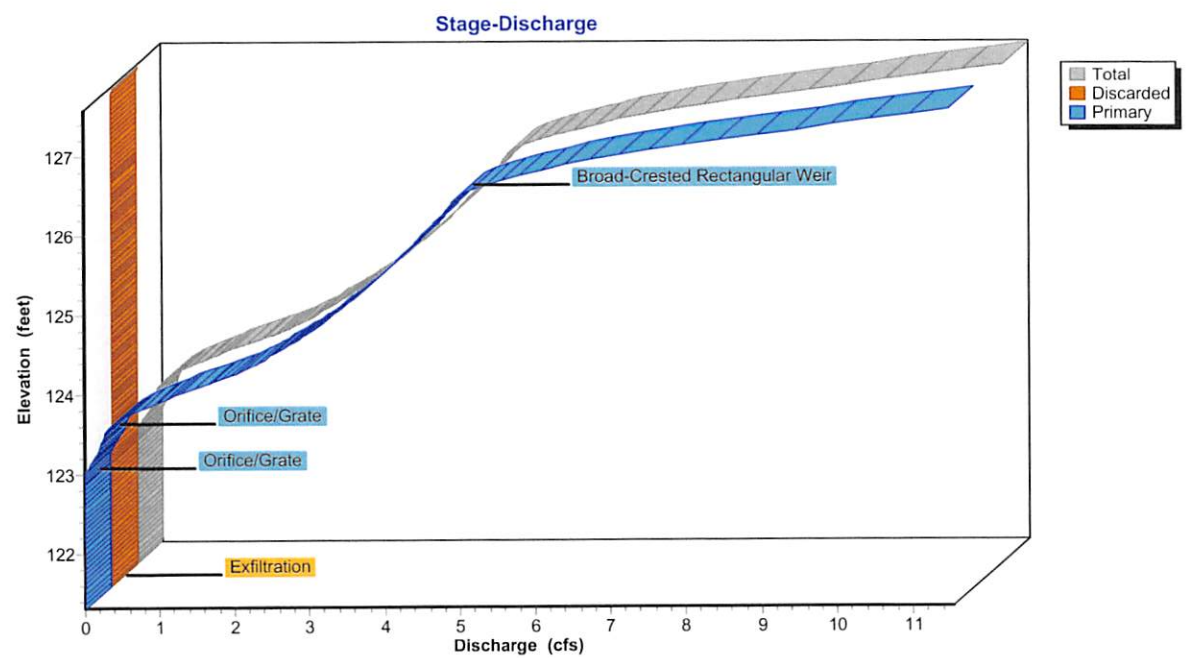




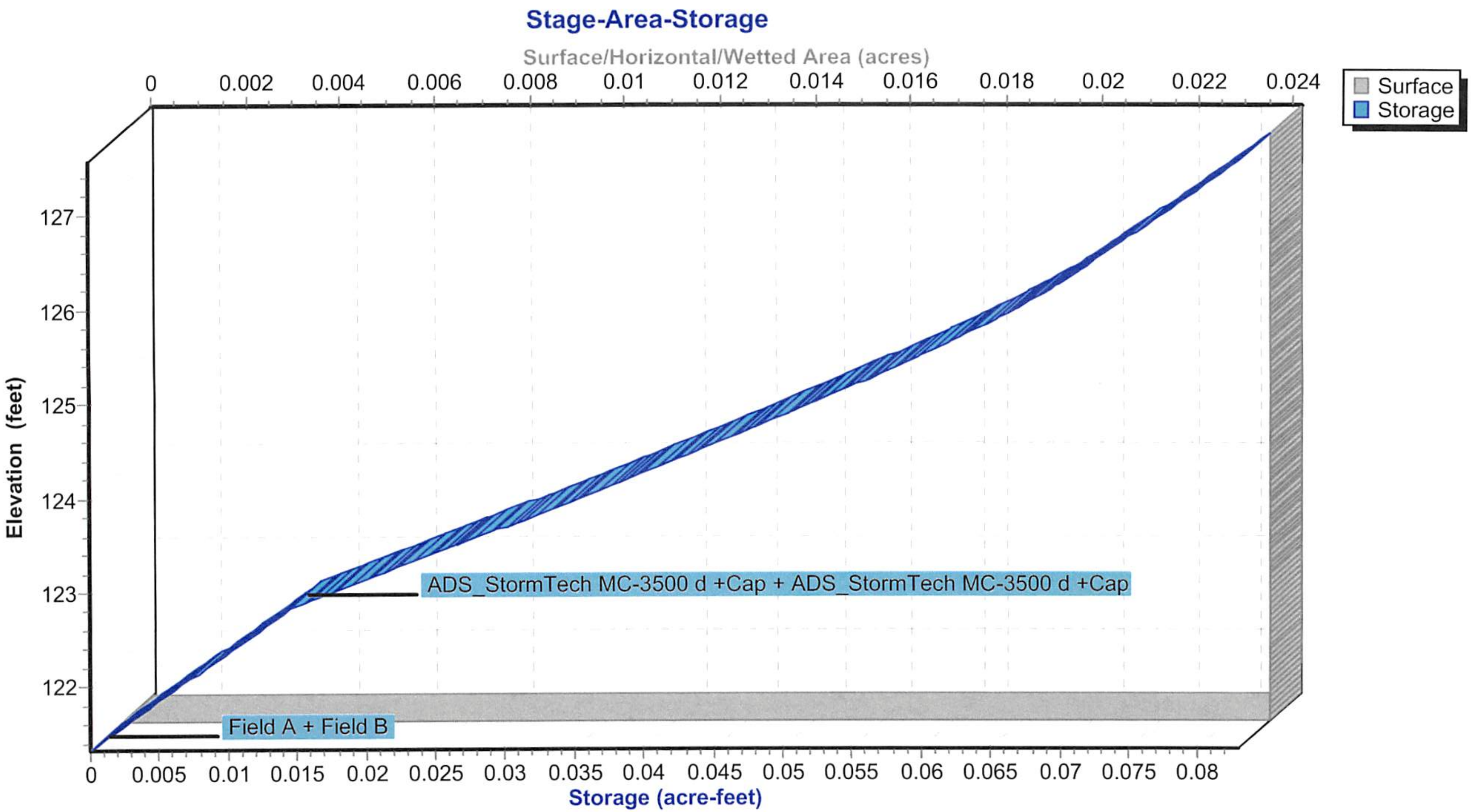
Pond 7P: Chambers



Pond 7P: Chambers



Pond 7P: Chambers



Hydrograph for Pond 7P: Chambers

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.000	121.33	0.00	0.00	0.00
0.50	0.00	0.000	121.33	0.00	0.00	0.00
1.00	0.00	0.000	121.33	0.00	0.00	0.00
1.50	0.00	0.000	121.33	0.00	0.00	0.00
2.00	0.00	0.000	121.34	0.00	0.00	0.00
2.50	0.00	0.000	121.34	0.00	0.00	0.00
3.00	0.01	0.000	121.35	0.00	0.00	0.00
3.50	0.01	0.000	121.35	0.01	0.01	0.00
4.00	0.01	0.000	121.35	0.01	0.01	0.00
4.50	0.01	0.000	121.36	0.01	0.01	0.00
5.00	0.01	0.000	121.36	0.01	0.01	0.00
5.50	0.01	0.000	121.36	0.01	0.01	0.00
6.00	0.01	0.000	121.36	0.01	0.01	0.00
6.50	0.01	0.000	121.37	0.01	0.01	0.00
7.00	0.01	0.000	121.37	0.01	0.01	0.00
7.50	0.02	0.000	121.38	0.01	0.01	0.00
8.00	0.02	0.001	121.39	0.02	0.02	0.00
8.50	0.02	0.001	121.40	0.02	0.02	0.00
9.00	0.03	0.001	121.42	0.02	0.02	0.00
9.50	0.03	0.001	121.47	0.02	0.02	0.00
10.00	0.04	0.002	121.54	0.02	0.02	0.00
10.50	0.04	0.003	121.63	0.02	0.02	0.00
11.00	0.05	0.004	121.76	0.02	0.02	0.00
11.50	0.09	0.006	121.96	0.02	0.02	0.00
12.00	**0.48**	**0.014**	**122.78**	**0.02**	**0.02**	**0.00**
12.50	**1.28**	**0.038**	**124.14**	**1.66**	**0.03**	**1.63**
13.00	0.40	0.030	123.68	0.47	0.03	0.44
13.50	0.27	0.027	123.55	0.31	0.02	0.29
14.00	0.21	0.026	123.44	0.26	0.02	0.24
14.50	0.16	0.023	123.31	0.21	0.02	0.19
15.00	0.13	0.022	123.23	0.16	0.02	0.14
15.50	0.10	0.021	123.17	0.12	0.02	0.10
16.00	0.07	0.020	123.12	0.09	0.02	0.07
16.50	0.05	0.019	123.08	0.06	0.02	0.04
17.00	0.03	0.018	123.05	0.05	0.02	0.02
17.50	0.02	0.018	123.01	0.03	0.02	0.01
18.00	0.01	0.017	122.98	0.03	0.02	0.00
18.50	0.01	0.017	122.95	0.02	0.02	0.00
19.00	0.01	0.016	122.93	0.02	0.02	0.00
19.50	0.01	0.016	122.90	0.02	0.02	0.00
20.00	0.01	0.015	122.87	0.02	0.02	0.00
20.50	0.01	0.015	122.84	0.02	0.02	0.00
21.00	0.01	0.014	122.80	0.02	0.02	0.00
21.50	0.01	0.014	122.74	0.02	0.02	0.00
22.00	0.01	0.013	122.69	0.02	0.02	0.00
22.50	0.01	0.013	122.63	0.02	0.02	0.00
23.00	0.01	0.012	122.57	0.02	0.02	0.00
23.50	0.01	0.011	122.50	0.02	0.02	0.00
24.00	0.01	0.011	122.44	0.02	0.02	0.00

Stage-Discharge for Pond 7P: Chambers

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
121.33	0.00	0.00	0.00
121.43	0.02	0.02	0.00
121.53	0.02	0.02	0.00
121.63	0.02	0.02	0.00
121.73	0.02	0.02	0.00
121.83	0.02	0.02	0.00
121.93	0.02	0.02	0.00
122.03	0.02	0.02	0.00
122.13	0.02	0.02	0.00
122.23	0.02	0.02	0.00
122.33	0.02	0.02	0.00
122.43	0.02	0.02	0.00
122.53	0.02	0.02	0.00
122.63	0.02	0.02	0.00
122.73	0.02	0.02	0.00
122.83	0.02	0.02	0.00
122.93	0.02	0.02	0.00
123.03	0.04	0.02	0.02
123.13	0.09	0.02	0.07
123.23	0.16	0.02	0.14
123.33	0.22	0.02	0.19
123.43	0.26	0.02	0.24
123.53	0.30	0.02	0.27
123.63	0.39	0.02	0.37
123.73	0.55	0.03	0.53
123.83	0.77	0.03	0.75
123.93	1.04	0.03	1.01
124.03	1.33	0.03	1.31
124.13	1.64	0.03	1.62
124.23	1.94	0.03	1.92
124.33	2.18	0.03	2.15
124.43	2.39	0.03	2.36
124.53	2.58	0.03	2.56
124.63	2.76	0.03	2.73
124.73	2.93	0.03	2.90
124.83	3.09	0.03	3.06
124.93	3.24	0.03	3.21
125.03	3.38	0.03	3.35
125.13	3.52	0.03	3.49
125.23	3.65	0.03	3.62
125.33	3.78	0.03	3.75
125.43	3.90	0.03	3.87
125.53	4.02	0.03	3.99
125.63	4.13	0.03	4.10
125.73	4.25	0.03	4.22
125.83	4.36	0.03	4.32
125.93	4.46	0.03	4.43
126.03	4.57	0.03	4.53
126.13	4.67	0.03	4.64
126.23	4.77	0.03	4.74
126.33	4.87	0.03	4.83
126.43	4.96	0.03	4.93
126.53	5.08	0.03	5.04
126.63	5.34	0.03	5.31
126.73	5.70	0.03	5.67
126.83	6.14	0.03	6.11
126.93	6.66	0.03	6.62
127.03	7.25	0.03	7.22
127.13	7.92	0.04	7.88
127.23	8.68	0.04	8.65
127.33	9.50	0.04	9.46
127.43	10.29	0.04	10.25
127.53	**11.12**	**0.04**	**11.08**

Stage-Area-Storage for Pond 7P: Chambers

Elevation (feet)	Surface (acres)	Storage (acre-feet)	Elevation (feet)	Surface (acres)	Storage (acre-feet)
121.33	**0.024**	0.000	126.53	0.024	0.073
121.43	0.024	0.001	126.63	0.024	0.074
121.53	0.024	0.002	126.73	0.024	0.075
121.63	0.024	0.003	126.83	0.024	0.076
121.73	0.024	0.004	126.93	0.024	0.077
121.83	0.024	0.005	127.03	0.024	0.078
121.93	0.024	0.006	127.13	0.024	0.079
122.03	0.024	0.007	127.23	0.024	0.080
122.13	0.024	0.008	127.33	0.024	0.080
122.23	0.024	0.009	127.43	0.024	0.081
122.33	0.024	0.010	127.53	0.024	**0.082**
122.43	0.024	0.011			
122.53	0.024	0.012			
122.63	0.024	0.013			
122.73	0.024	0.014			
122.83	0.024	0.015			
122.93	0.024	0.016			
123.03	0.024	0.018			
123.13	0.024	0.020			
123.23	0.024	0.022			
123.33	0.024	0.024			
123.43	0.024	0.025			
123.53	0.024	0.027			
123.63	0.024	0.029			
123.73	0.024	0.031			
123.83	0.024	0.032			
123.93	0.024	0.034			
124.03	0.024	0.036			
124.13	0.024	0.038			
124.23	0.024	0.039			
124.33	0.024	0.041			
124.43	0.024	0.043			
124.53	0.024	0.044			
124.63	0.024	0.046			
124.73	0.024	0.048			
124.83	0.024	0.049			
124.93	0.024	0.051			
125.03	0.024	0.053			
125.13	0.024	0.054			
125.23	0.024	0.056			
125.33	0.024	0.057			
125.43	0.024	0.059			
125.53	0.024	0.060			
125.63	0.024	0.062			
125.73	0.024	0.063			
125.83	0.024	0.065			
125.93	0.024	0.066			
126.03	0.024	0.067			
126.13	0.024	0.068			
126.23	0.024	0.070			
126.33	0.024	0.071			
126.43	0.024	0.072			

Summary for Pond 8P: Bioretention

[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 1.050 ac, 19.05% Impervious, Inflow Depth > 3.26" for 10-yr event
Inflow = 3.54 cfs @ 12.13 hrs, Volume= 0.285 af
Outflow = 3.94 cfs @ 12.16 hrs, Volume= 0.238 af, Atten= 0%, Lag= 1.8 min
Discarded = 0.10 cfs @ 12.16 hrs, Volume= 0.101 af
Primary = 3.84 cfs @ 12.16 hrs, Volume= 0.136 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 130.21' @ 12.16 hrs Surf.Area= 0.096 ac Storage= 0.067 af

Plug-Flow detention time= 129.1 min calculated for 0.237 af (83% of inflow)
Center-of-Mass det. time= 61.2 min (883.2 - 822.0)

Volume	Invert	Avail.Storage	Storage Description
#1	125.50'	0.020 af	**Gravel (Prismatic)** Listed below 0.050 af Overall x 40.0% Voids
#2	127.00'	0.029 af	**Soil (Prismatic)** Listed below (Recalc) 0.082 af Overall x 35.0% Voids
#3	129.50'	0.028 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		0.077 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
125.50	0.033	0.000	0.000
127.00	0.033	0.050	0.050

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
127.00	0.033	0.000	0.000
129.50	0.033	0.082	0.082

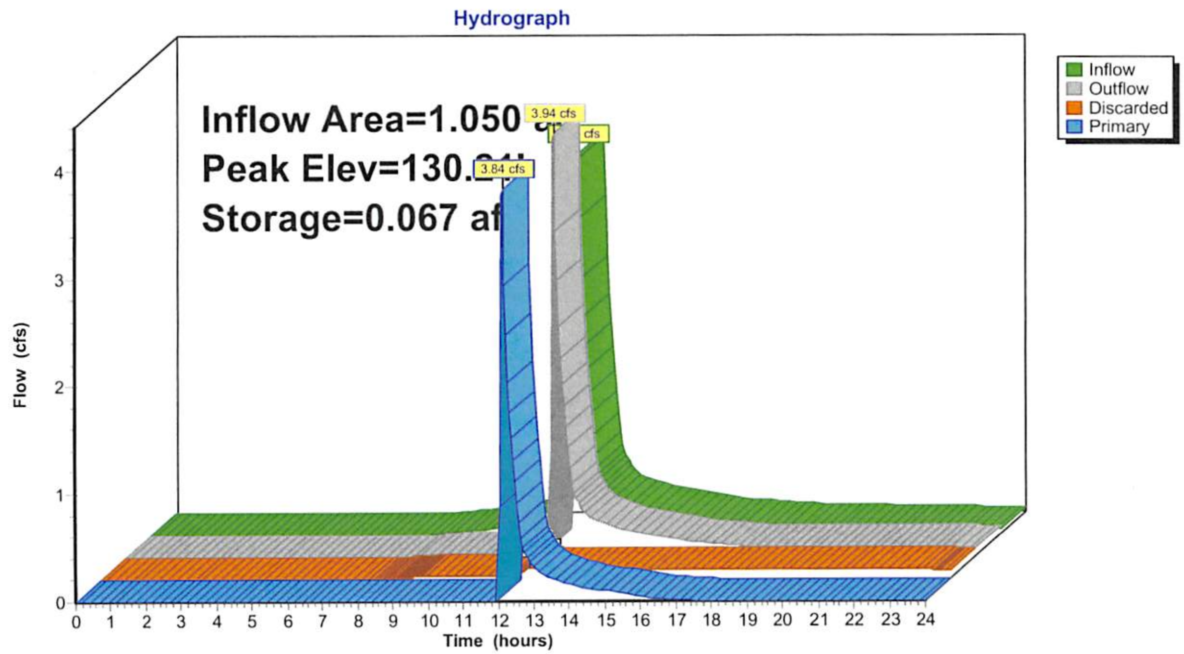
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
129.50	0.023	0.000	0.000
130.00	0.028	0.013	0.013
130.50	0.033	0.015	0.028

Device	Routing	Invert	Outlet Devices
#1	Primary	130.00'	**12.0" Horiz. Orifice/Grate** X 4 rows C= 0.600 Limited to weir flow at low heads
#2	Discarded	125.50'	**0.900 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 100.00'

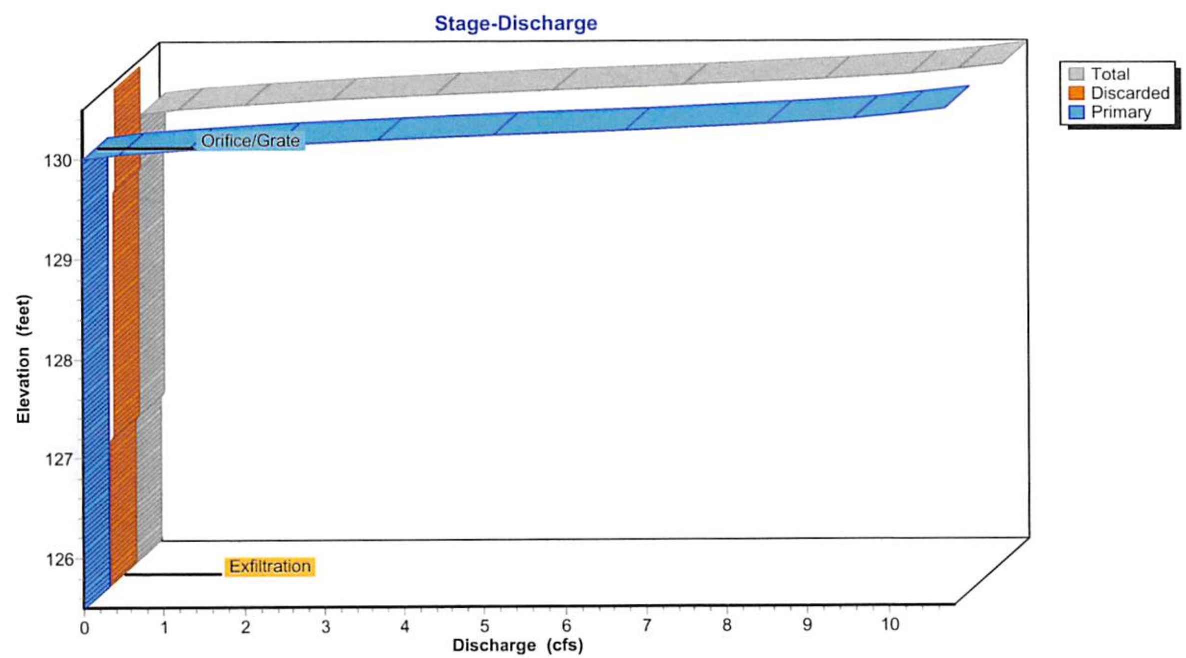
Discarded OutFlow Max=0.10 cfs @ 12.16 hrs HW=130.20' (Free Discharge)
└─**2=Exfiltration** (Controls 0.10 cfs)

Primary OutFlow Max=3.60 cfs @ 12.16 hrs HW=130.20' (Free Discharge)
└─**1=Orifice/Grate** (Weir Controls 3.60 cfs @ 1.45 fps)

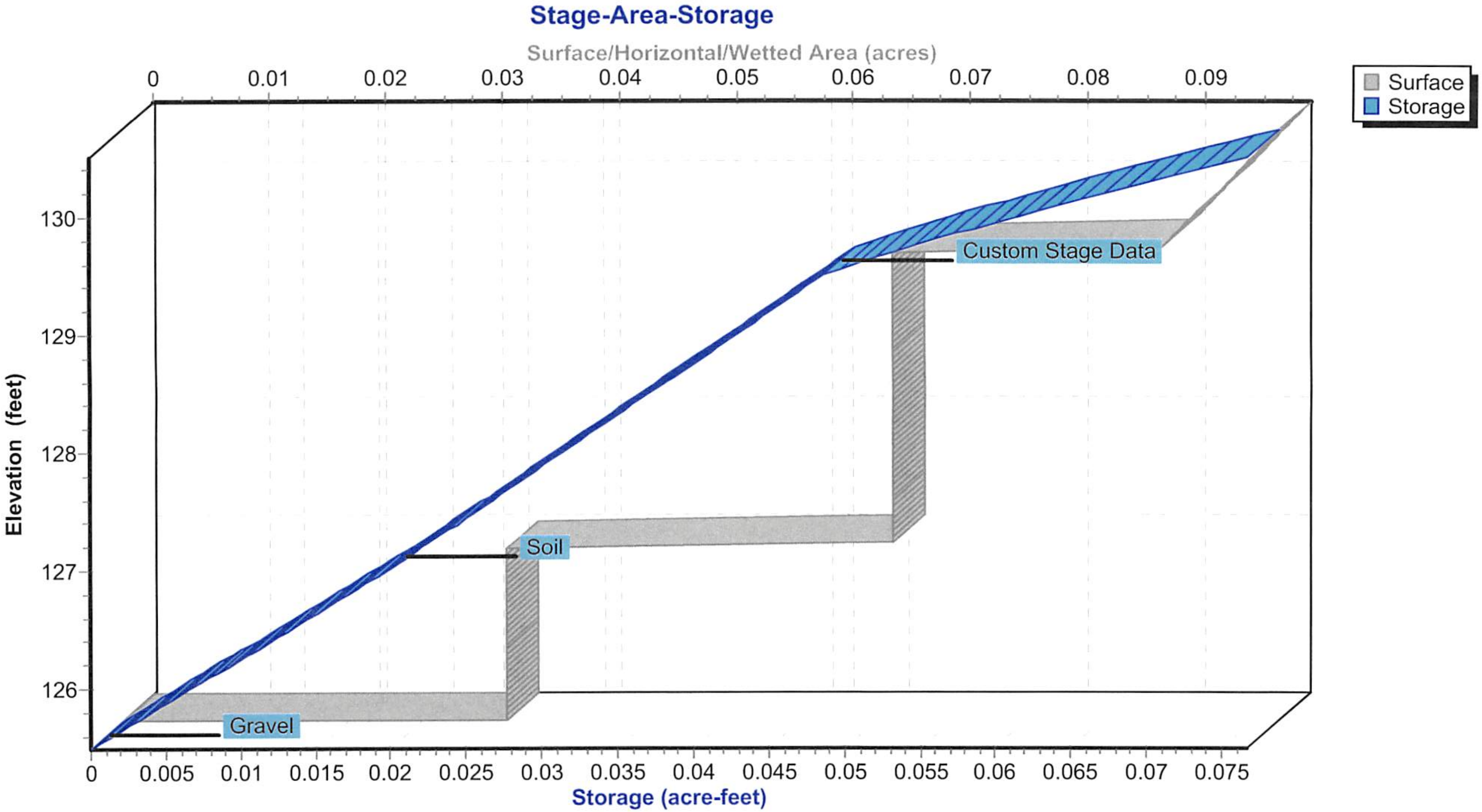
Pond 8P: Bioretention



Pond 8P: Bioretention



Pond 8P: Bioretention



Hydrograph for Pond 8P: Bioretention

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.000	125.50	0.00	0.00	0.00
0.50	0.00	0.000	125.50	0.00	0.00	0.00
1.00	0.00	0.000	125.50	0.00	0.00	0.00
1.50	0.00	0.000	125.50	0.00	0.00	0.00
2.00	0.00	0.000	125.50	0.00	0.00	0.00
2.50	0.00	0.000	125.50	0.00	0.00	0.00
3.00	0.00	0.000	125.50	0.00	0.00	0.00
3.50	0.00	0.000	125.50	0.00	0.00	0.00
4.00	0.00	0.000	125.50	0.00	0.00	0.00
4.50	0.00	0.000	125.50	0.00	0.00	0.00
5.00	0.00	0.000	125.50	0.00	0.00	0.00
5.50	0.00	0.000	125.50	0.00	0.00	0.00
6.00	0.00	0.000	125.50	0.00	0.00	0.00
6.50	0.00	0.000	125.50	0.00	0.00	0.00
7.00	0.00	0.000	125.50	0.00	0.00	0.00
7.50	0.00	0.000	125.50	0.00	0.00	0.00
8.00	0.01	0.000	125.51	0.00	0.00	0.00
8.50	0.02	0.000	125.52	0.01	0.01	0.00
9.00	0.03	0.001	125.54	0.03	0.03	0.00
9.50	0.05	0.001	125.59	0.03	0.03	0.00
10.00	0.08	0.003	125.70	0.03	0.03	0.00
10.50	0.12	0.005	125.90	0.03	0.03	0.00
11.00	0.17	0.010	126.24	0.03	0.03	0.00
11.50	0.30	0.018	126.84	0.03	0.03	0.00
12.00	**1.81**	**0.048**	**129.41**	**0.07**	**0.07**	**0.00**
12.50	**1.13**	**0.064**	**130.09**	**1.22**	**0.10**	**1.12**
13.00	0.41	0.062	130.04	0.43	0.09	0.33
13.50	0.31	0.062	130.02	0.32	0.09	0.22
14.00	0.26	0.062	130.02	0.26	0.09	0.17
14.50	0.22	0.062	130.01	0.22	0.09	0.13
15.00	0.19	0.062	130.01	0.20	0.09	0.10
15.50	0.17	0.062	130.01	0.17	0.09	0.07
16.00	0.14	0.062	130.01	0.14	0.09	0.05
16.50	0.12	0.062	130.00	0.12	0.09	0.03
17.00	0.11	0.061	130.00	0.11	0.09	0.02
17.50	0.10	0.061	130.00	0.10	0.09	0.00
18.00	0.08	0.061	129.99	0.09	0.09	0.00
18.50	0.08	0.061	129.97	0.09	0.09	0.00
19.00	0.07	0.060	129.95	0.09	0.09	0.00
19.50	0.07	0.059	129.92	0.09	0.09	0.00
20.00	0.07	0.058	129.88	0.09	0.09	0.00
20.50	0.06	0.057	129.84	0.09	0.09	0.00
21.00	0.06	0.056	129.79	0.09	0.09	0.00
21.50	0.06	0.055	129.74	0.09	0.09	0.00
22.00	0.06	0.053	129.69	0.09	0.09	0.00
22.50	0.05	0.052	129.63	0.09	0.09	0.00
23.00	0.05	0.050	129.56	0.09	0.09	0.00
23.50	0.05	0.049	129.49	0.08	0.08	0.00
24.00	0.04	0.048	129.40	0.07	0.07	0.00

Stage-Discharge for Pond 8P: Bioretention

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
125.50	0.00	0.00	0.00
125.55	0.03	0.03	0.00
125.60	0.03	0.03	0.00
125.65	0.03	0.03	0.00
125.70	0.03	0.03	0.00
125.75	0.03	0.03	0.00
125.80	0.03	0.03	0.00
125.85	0.03	0.03	0.00
125.90	0.03	0.03	0.00
125.95	0.03	0.03	0.00
126.00	0.03	0.03	0.00
126.05	0.03	0.03	0.00
126.10	0.03	0.03	0.00
126.15	0.03	0.03	0.00
126.20	0.03	0.03	0.00
126.25	0.03	0.03	0.00
126.30	0.03	0.03	0.00
126.35	0.03	0.03	0.00
126.40	0.03	0.03	0.00
126.45	0.03	0.03	0.00
126.50	0.03	0.03	0.00
126.55	0.03	0.03	0.00
126.60	0.03	0.03	0.00
126.65	0.03	0.03	0.00
126.70	0.03	0.03	0.00
126.75	0.03	0.03	0.00
126.80	0.03	0.03	0.00
126.85	0.03	0.03	0.00
126.90	0.03	0.03	0.00
126.95	0.03	0.03	0.00
127.00	0.06	0.06	0.00
127.05	0.06	0.06	0.00
127.10	0.06	0.06	0.00
127.15	0.06	0.06	0.00
127.20	0.06	0.06	0.00
127.25	0.06	0.06	0.00
127.30	0.06	0.06	0.00
127.35	0.06	0.06	0.00
127.40	0.06	0.06	0.00
127.45	0.06	0.06	0.00
127.50	0.06	0.06	0.00
127.55	0.06	0.06	0.00
127.60	0.06	0.06	0.00
127.65	0.06	0.06	0.00
127.70	0.06	0.06	0.00
127.75	0.06	0.06	0.00
127.80	0.06	0.06	0.00
127.85	0.06	0.06	0.00
127.90	0.06	0.06	0.00
127.95	0.06	0.06	0.00
128.00	0.06	0.06	0.00
128.05	0.06	0.06	0.00

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
128.10	0.06	0.06	0.00
128.15	0.06	0.06	0.00
128.20	0.06	0.06	0.00
128.25	0.06	0.06	0.00
128.30	0.06	0.06	0.00
128.35	0.06	0.06	0.00
128.40	0.06	0.06	0.00
128.45	0.06	0.06	0.00
128.50	0.07	0.07	0.00
128.55	0.07	0.07	0.00
128.60	0.07	0.07	0.00
128.65	0.07	0.07	0.00
128.70	0.07	0.07	0.00
128.75	0.07	0.07	0.00
128.80	0.07	0.07	0.00
128.85	0.07	0.07	0.00
128.90	0.07	0.07	0.00
128.95	0.07	0.07	0.00
129.00	0.07	0.07	0.00
129.05	0.07	0.07	0.00
129.10	0.07	0.07	0.00
129.15	0.07	0.07	0.00
129.20	0.07	0.07	0.00
129.25	0.07	0.07	0.00
129.30	0.07	0.07	0.00
129.35	0.07	0.07	0.00
129.40	0.07	0.07	0.00
129.45	0.07	0.07	0.00
129.50	0.09	0.09	0.00
129.55	0.09	0.09	0.00
129.60	0.09	0.09	0.00
129.65	0.09	0.09	0.00
129.70	0.09	0.09	0.00
129.75	0.09	0.09	0.00
129.80	0.09	0.09	0.00
129.85	0.09	0.09	0.00
129.90	0.09	0.09	0.00
129.95	0.09	0.09	0.00
130.00	0.09	0.09	0.00
130.05	0.55	0.09	0.46
130.10	1.39	0.10	1.30
130.15	2.48	0.10	2.39
130.20	3.77	0.10	3.68
130.25	5.23	0.10	5.14
130.30	6.85	0.10	6.75
130.35	8.61	0.10	8.51
130.40	9.67	0.10	9.57
130.45	10.25	0.10	10.15
130.50	**10.80**	**0.10**	**10.70**

Stage-Area-Storage for Pond 8P: Bioretention

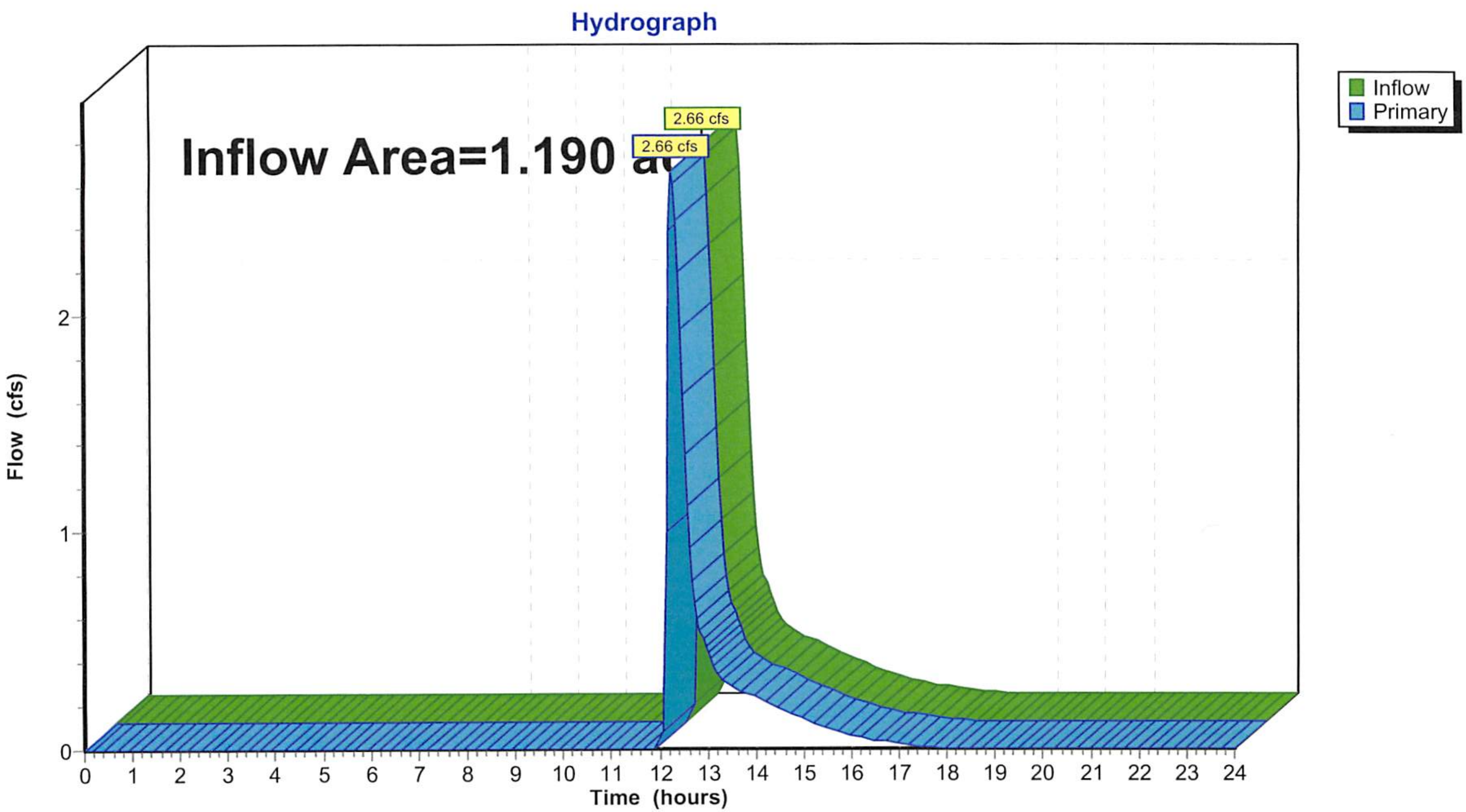
Elevation (feet)	Surface (acres)	Storage (acre-feet)	Elevation (feet)	Surface (acres)	Storage (acre-feet)
125.50	0.033	0.000	128.10	0.066	0.033
125.55	0.033	0.001	128.15	0.066	0.033
125.60	0.033	0.001	128.20	0.066	0.034
125.65	0.033	0.002	128.25	0.066	0.034
125.70	0.033	0.003	128.30	0.066	0.035
125.75	0.033	0.003	128.35	0.066	0.035
125.80	0.033	0.004	128.40	0.066	0.036
125.85	0.033	0.005	128.45	0.066	0.037
125.90	0.033	0.005	128.50	0.066	0.037
125.95	0.033	0.006	128.55	0.066	0.038
126.00	0.033	0.007	128.60	0.066	0.038
126.05	0.033	0.007	128.65	0.066	0.039
126.10	0.033	0.008	128.70	0.066	0.039
126.15	0.033	0.009	128.75	0.066	0.040
126.20	0.033	0.009	128.80	0.066	0.041
126.25	0.033	0.010	128.85	0.066	0.041
126.30	0.033	0.011	128.90	0.066	0.042
126.35	0.033	0.011	128.95	0.066	0.042
126.40	0.033	0.012	129.00	0.066	0.043
126.45	0.033	0.013	129.05	0.066	0.043
126.50	0.033	0.013	129.10	0.066	0.044
126.55	0.033	0.014	129.15	0.066	0.045
126.60	0.033	0.015	129.20	0.066	0.045
126.65	0.033	0.015	129.25	0.066	0.046
126.70	0.033	0.016	129.30	0.066	0.046
126.75	0.033	0.017	129.35	0.066	0.047
126.80	0.033	0.017	129.40	0.066	0.048
126.85	0.033	0.018	129.45	0.066	0.048
126.90	0.033	0.018	129.50	0.089	0.049
126.95	0.033	0.019	129.55	0.090	0.050
127.00	0.066	0.020	129.60	0.090	0.051
127.05	0.066	0.020	129.65	0.091	0.052
127.10	0.066	0.021	129.70	0.091	0.053
127.15	0.066	0.022	129.75	0.091	0.055
127.20	0.066	0.022	129.80	0.092	0.056
127.25	0.066	0.023	129.85	0.092	0.057
127.30	0.066	0.023	129.90	0.093	0.059
127.35	0.066	0.024	129.95	0.093	0.060
127.40	0.066	0.024	130.00	0.094	0.061
127.45	0.066	0.025	130.05	0.095	0.063
127.50	0.066	0.026	130.10	0.095	0.064
127.55	0.066	0.026	130.15	0.096	0.066
127.60	0.066	0.027	130.20	0.096	0.067
127.65	0.066	0.027	130.25	0.096	0.069
127.70	0.066	0.028	130.30	0.097	0.070
127.75	0.066	0.028	130.35	0.097	0.072
127.80	0.066	0.029	130.40	0.098	0.073
127.85	0.066	0.030	130.45	0.098	0.075
127.90	0.066	0.030	130.50	**0.099**	**0.077**
127.95	0.066	0.031			
128.00	0.066	0.031			
128.05	0.066	0.032			

Summary for Link 7L: Post (Composite)

Inflow Area = 1.190 ac, 28.57% Impervious, Inflow Depth = 1.55" for 10-yr event
Inflow = 2.66 cfs @ 12.27 hrs, Volume= 0.153 af
Primary = 2.66 cfs @ 12.27 hrs, Volume= 0.153 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 7L: Post (Composite)



Hydrograph for Link 7L: Post (Composite)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	13.00	0.44	0.00	0.44
0.25	0.00	0.00	0.00	13.25	0.34	0.00	0.34
0.50	0.00	0.00	0.00	13.50	0.29	0.00	0.29
0.75	0.00	0.00	0.00	13.75	0.26	0.00	0.26
1.00	0.00	0.00	0.00	14.00	0.24	0.00	0.24
1.25	0.00	0.00	0.00	14.25	0.21	0.00	0.21
1.50	0.00	0.00	0.00	14.50	0.19	0.00	0.19
1.75	0.00	0.00	0.00	14.75	0.16	0.00	0.16
2.00	0.00	0.00	0.00	15.00	0.14	0.00	0.14
2.25	0.00	0.00	0.00	15.25	0.12	0.00	0.12
2.50	0.00	0.00	0.00	15.50	0.10	0.00	0.10
2.75	0.00	0.00	0.00	15.75	0.08	0.00	0.08
3.00	0.00	0.00	0.00	16.00	0.07	0.00	0.07
3.25	0.00	0.00	0.00	16.25	0.05	0.00	0.05
3.50	0.00	0.00	0.00	16.50	0.04	0.00	0.04
3.75	0.00	0.00	0.00	16.75	0.03	0.00	0.03
4.00	0.00	0.00	0.00	17.00	0.02	0.00	0.02
4.25	0.00	0.00	0.00	17.25	0.02	0.00	0.02
4.50	0.00	0.00	0.00	17.50	0.01	0.00	0.01
4.75	0.00	0.00	0.00	17.75	0.01	0.00	0.01
5.00	0.00	0.00	0.00	18.00	0.00	0.00	0.00
5.25	0.00	0.00	0.00	18.25	0.00	0.00	0.00
5.50	0.00	0.00	0.00	18.50	0.00	0.00	0.00
5.75	0.00	0.00	0.00	18.75	0.00	0.00	0.00
6.00	0.00	0.00	0.00	19.00	0.00	0.00	0.00
6.25	0.00	0.00	0.00	19.25	0.00	0.00	0.00
6.50	0.00	0.00	0.00	19.50	0.00	0.00	0.00
6.75	0.00	0.00	0.00	19.75	0.00	0.00	0.00
7.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
7.25	0.00	0.00	0.00	20.25	0.00	0.00	0.00
7.50	0.00	0.00	0.00	20.50	0.00	0.00	0.00
7.75	0.00	0.00	0.00	20.75	0.00	0.00	0.00
8.00	0.00	0.00	0.00	21.00	0.00	0.00	0.00
8.25	0.00	0.00	0.00	21.25	0.00	0.00	0.00
8.50	0.00	0.00	0.00	21.50	0.00	0.00	0.00
8.75	0.00	0.00	0.00	21.75	0.00	0.00	0.00
9.00	0.00	0.00	0.00	22.00	0.00	0.00	0.00
9.25	0.00	0.00	0.00	22.25	0.00	0.00	0.00
9.50	0.00	0.00	0.00	22.50	0.00	0.00	0.00
9.75	0.00	0.00	0.00	22.75	0.00	0.00	0.00
10.00	0.00	0.00	0.00	23.00	0.00	0.00	0.00
10.25	0.00	0.00	0.00	23.25	0.00	0.00	0.00
10.50	0.00	0.00	0.00	23.50	0.00	0.00	0.00
10.75	0.00	0.00	0.00	23.75	0.00	0.00	0.00
11.00	0.00	0.00	0.00	24.00	0.00	0.00	0.00
11.25	0.00	0.00	0.00				
11.50	0.00	0.00	0.00				
11.75	0.00	0.00	0.00				
12.00	0.00	0.00	0.00				
12.25	**2.64**	0.00	**2.64**				
12.50	1.63	0.00	1.63				
12.75	0.67	0.00	0.67				

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment4S: PR-01 (Site) Runoff Area=1.050 ac 19.05% Impervious Runoff Depth>4.35"
Flow Length=310' Tc=9.1 min CN=79 Runoff=4.71 cfs 0.381 af

Subcatchment5S: PR-02 (Roof) Runoff Area=0.140 ac 100.00% Impervious Runoff Depth>6.51"
Tc=6.0 min CN=98 Runoff=0.91 cfs 0.076 af

Pond 7P: Chambers Peak Elev=125.51' Storage=0.060 af Inflow=5.35 cfs 0.295 af
Discarded=0.03 cfs 0.036 af Primary=3.97 cfs 0.247 af Outflow=4.00 cfs 0.283 af

Pond 8P: Bioretention Peak Elev=130.23' Storage=0.068 af Inflow=4.71 cfs 0.381 af
Discarded=0.10 cfs 0.107 af Primary=4.60 cfs 0.220 af Outflow=4.70 cfs 0.327 af

Link 7L: Post (Composite) Inflow=3.97 cfs 0.247 af
Primary=3.97 cfs 0.247 af

Total Runoff Area = 1.190 ac Runoff Volume = 0.457 af Average Runoff Depth = 4.60"
71.43% Pervious = 0.850 ac 28.57% Impervious = 0.340 ac

Summary for Subcatchment 4S: PR-01 (Site)

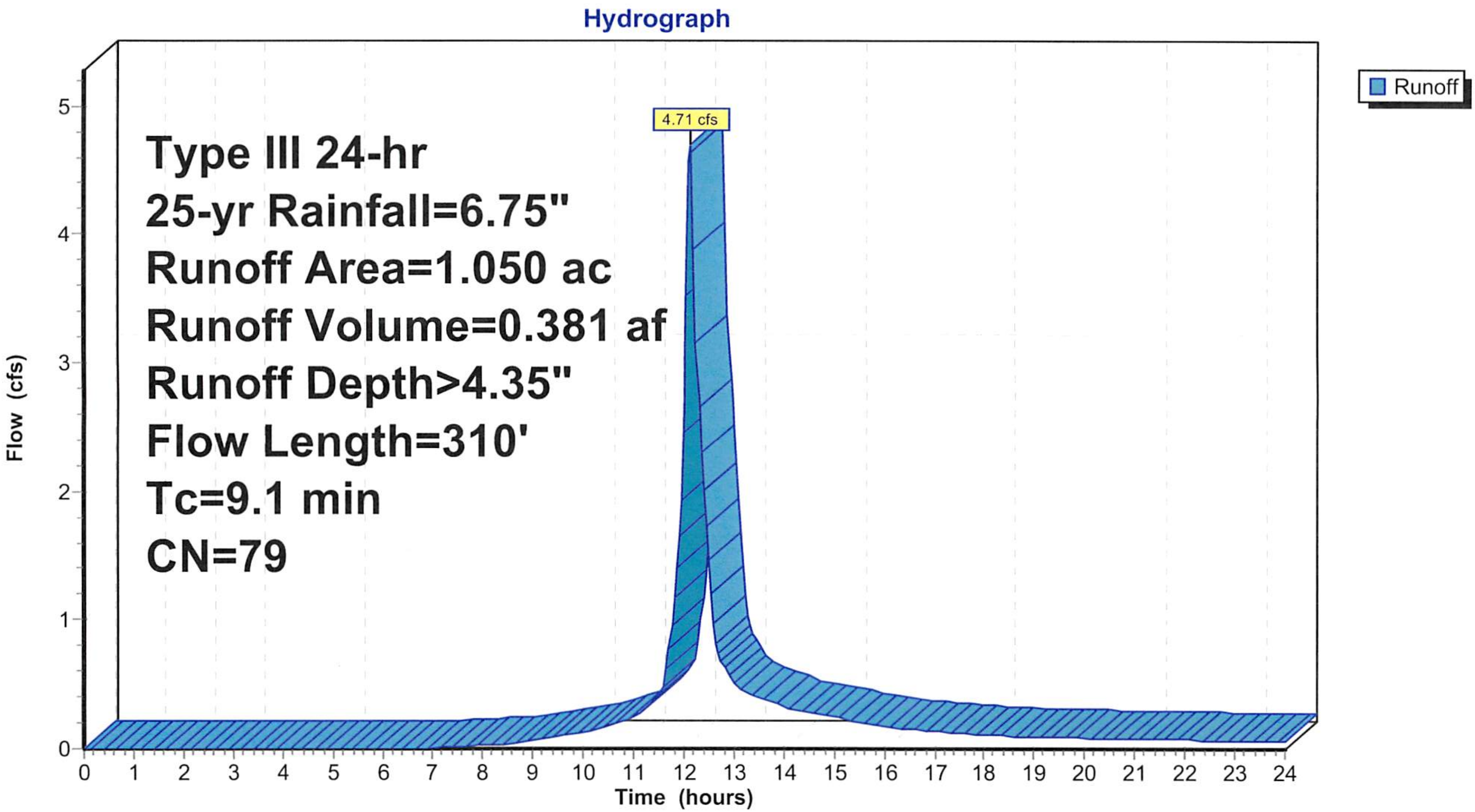
Runoff = 4.71 cfs @ 12.13 hrs, Volume= 0.381 af, Depth> 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=6.75"

Area (ac)	CN	Description
0.200	98	Paved parking, HSG C
0.850	74	>75% Grass cover, Good, HSG C
1.050	79	Weighted Average
0.850		80.95% Pervious Area
0.200		19.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	35	0.0700	0.24		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
1.7	28	0.1070	0.27		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
3.4	37	0.0340	0.18		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
1.0	78	0.0350	1.31		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
0.1	30	0.0500	4.54		**Shallow Concentrated Flow, Pathway** Paved Kv= 20.3 fps
0.3	52	0.0290	2.55		**Shallow Concentrated Flow, Shallow Concentrated** Grassed Waterway Kv= 15.0 fps
0.2	50	0.2000	4.47		**Shallow Concentrated Flow, Shallow Concentrated** Nearly Bare & Untilled Kv= 10.0 fps
9.1	310	Total			

Subcatchment 4S: PR-01 (Site)



Hydrograph for Subcatchment 4S: PR-01 (Site)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.02	0.00	0.00
0.50	0.03	0.00	0.00
0.75	0.05	0.00	0.00
1.00	0.07	0.00	0.00
1.25	0.08	0.00	0.00
1.50	0.10	0.00	0.00
1.75	0.12	0.00	0.00
2.00	0.14	0.00	0.00
2.25	0.15	0.00	0.00
2.50	0.17	0.00	0.00
2.75	0.19	0.00	0.00
3.00	0.21	0.00	0.00
3.25	0.23	0.00	0.00
3.50	0.25	0.00	0.00
3.75	0.27	0.00	0.00
4.00	0.29	0.00	0.00
4.25	0.31	0.00	0.00
4.50	0.34	0.00	0.00
4.75	0.36	0.00	0.00
5.00	0.38	0.00	0.00
5.25	0.41	0.00	0.00
5.50	0.43	0.00	0.00
5.75	0.46	0.00	0.00
6.00	0.49	0.00	0.00
6.25	0.51	0.00	0.00
6.50	0.54	0.00	0.00
6.75	0.58	0.00	0.00
7.00	0.61	0.00	0.01
7.25	0.65	0.00	0.01
7.50	0.69	0.01	0.02
7.75	0.73	0.01	0.02
8.00	0.77	0.02	0.03
8.25	0.82	0.03	0.03
8.50	0.87	0.04	0.04
8.75	0.92	0.05	0.05
9.00	0.98	0.07	0.06
9.25	1.05	0.08	0.08
9.50	1.12	0.11	0.09
9.75	1.20	0.13	0.11
10.00	1.28	0.16	0.13
10.25	1.36	0.20	0.15
10.50	1.46	0.24	0.18
10.75	1.57	0.29	0.21
11.00	1.69	0.35	0.25
11.25	1.83	0.43	0.32
11.50	2.01	0.53	0.43
11.75	2.40	0.77	0.96
12.00	3.37	1.47	**2.46**
12.25	4.35	2.25	**3.15**
12.50	4.74	2.58	1.46
12.75	4.92	2.73	0.68
13.00	5.06	2.86	0.53
13.25	5.18	2.96	0.44
13.50	5.29	3.05	0.40
13.75	5.39	3.14	0.36
14.00	5.47	3.21	0.33
14.25	5.55	3.28	0.30
14.50	5.63	3.35	0.28
14.75	5.70	3.41	0.27
15.00	5.77	3.47	0.25
15.25	5.83	3.53	0.23
15.50	5.88	3.58	0.21
15.75	5.93	3.62	0.19
16.00	5.98	3.66	0.18
16.25	6.02	3.70	0.16
16.50	6.06	3.74	0.15
16.75	6.10	3.77	0.15
17.00	6.14	3.80	0.14
17.25	6.17	3.83	0.13
17.50	6.21	3.86	0.12
17.75	6.24	3.89	0.12
18.00	6.26	3.92	0.11
18.25	6.29	3.94	0.10
18.50	6.32	3.96	0.10
18.75	6.34	3.99	0.10
19.00	6.37	4.01	0.09
19.25	6.39	4.03	0.09
19.50	6.41	4.05	0.09
19.75	6.44	4.07	0.09
20.00	6.46	4.09	0.09
20.25	6.48	4.11	0.08
20.50	6.50	4.13	0.08
20.75	6.52	4.15	0.08
21.00	6.54	4.17	0.08
21.25	6.56	4.19	0.08
21.50	6.58	4.20	0.07
21.75	6.60	4.22	0.07
22.00	6.62	4.24	0.07
22.25	6.64	4.25	0.07
22.50	6.66	4.27	0.07
22.75	6.67	4.29	0.07
23.00	6.69	4.30	0.06
23.25	6.70	4.32	0.06
23.50	6.72	4.33	0.06
23.75	6.74	4.34	0.06
24.00	**6.75**	**4.36**	0.06

Summary for Subcatchment 5S: PR-02 (Roof)

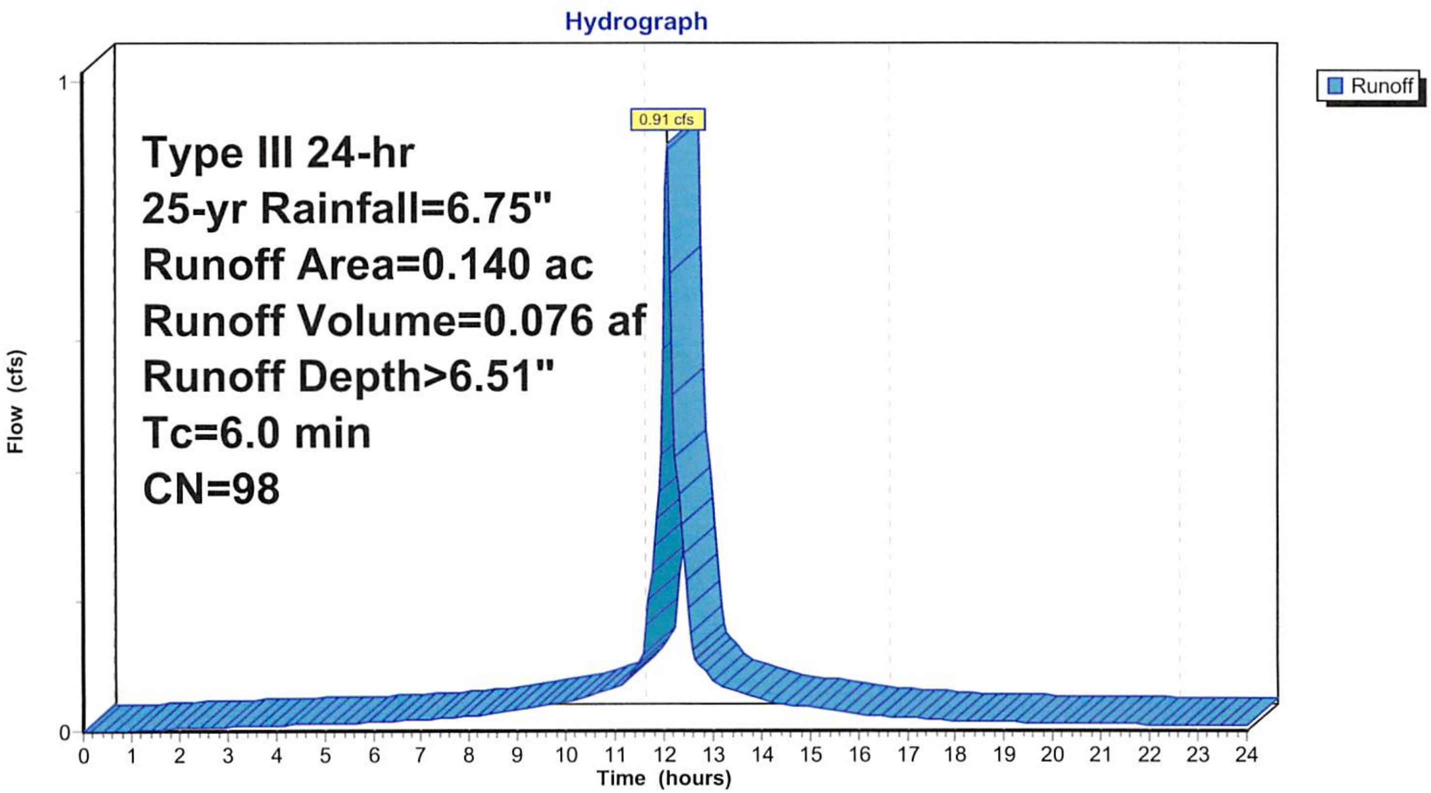
Runoff = 0.91 cfs @ 12.09 hrs, Volume= 0.076 af, Depth> 6.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=6.75"

Area (ac)	CN	Description
0.140	98	Roofs, HSG C
0.140		100.00% Impervious Area

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

Subcatchment 5S: PR-02 (Roof)



Hydrograph for Subcatchment 5S: PR-02 (Roof)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.02	0.00	0.00
0.50	0.03	0.00	0.00
0.75	0.05	0.00	0.00
1.00	0.07	0.00	0.00
1.25	0.08	0.01	0.00
1.50	0.10	0.01	0.00
1.75	0.12	0.02	0.00
2.00	0.14	0.03	0.00
2.25	0.15	0.04	0.01
2.50	0.17	0.05	0.01
2.75	0.19	0.06	0.01
3.00	0.21	0.07	0.01
3.25	0.23	0.09	0.01
3.50	0.25	0.10	0.01
3.75	0.27	0.12	0.01
4.00	0.29	0.14	0.01
4.25	0.31	0.16	0.01
4.50	0.34	0.17	0.01
4.75	0.36	0.19	0.01
5.00	0.38	0.21	0.01
5.25	0.41	0.24	0.01
5.50	0.43	0.26	0.01
5.75	0.46	0.28	0.01
6.00	0.49	0.31	0.01
6.25	0.51	0.33	0.01
6.50	0.54	0.36	0.02
6.75	0.58	0.39	0.02
7.00	0.61	0.42	0.02
7.25	0.65	0.45	0.02
7.50	0.69	0.49	0.02
7.75	0.73	0.53	0.02
8.00	0.77	0.57	0.02
8.25	0.82	0.61	0.03
8.50	0.87	0.66	0.03
8.75	0.92	0.72	0.03
9.00	0.98	0.78	0.03
9.25	1.05	0.84	0.04
9.50	1.12	0.91	0.04
9.75	1.20	0.98	0.04
10.00	1.28	1.06	0.04
10.25	1.36	1.15	0.05
10.50	1.46	1.24	0.06
10.75	1.57	1.35	0.06
11.00	1.69	1.47	0.07
11.25	1.83	1.61	0.08
11.50	2.01	1.79	0.10
11.75	2.40	2.17	0.24
12.00	3.37	3.14	**0.59**
12.25	4.35	4.12	**0.42**
12.50	4.74	4.50	0.19
12.75	4.92	4.68	0.10
13.00	5.06	4.83	0.08
13.25	5.18	4.94	0.07
13.50	5.29	5.05	0.06
13.75	5.39	5.15	0.05
14.00	5.47	5.24	0.05
14.25	5.55	5.32	0.04
14.50	5.63	5.39	0.04
14.75	5.70	5.46	0.04
15.00	5.77	5.53	0.04
15.25	5.83	5.59	0.03
15.50	5.88	5.65	0.03
15.75	5.93	5.70	0.03
16.00	5.98	5.74	0.03
16.25	6.02	5.79	0.02
16.50	6.06	5.83	0.02
16.75	6.10	5.86	0.02
17.00	6.14	5.90	0.02
17.25	6.17	5.94	0.02
17.50	6.21	5.97	0.02
17.75	6.24	6.00	0.02
18.00	6.26	6.03	0.02
18.25	6.29	6.05	0.02
18.50	6.32	6.08	0.01
18.75	6.34	6.10	0.01
19.00	6.37	6.13	0.01
19.25	6.39	6.15	0.01
19.50	6.41	6.18	0.01
19.75	6.44	6.20	0.01
20.00	6.46	6.22	0.01
20.25	6.48	6.24	0.01
20.50	6.50	6.26	0.01
20.75	6.52	6.28	0.01
21.00	6.54	6.31	0.01
21.25	6.56	6.32	0.01
21.50	6.58	6.34	0.01
21.75	6.60	6.36	0.01
22.00	6.62	6.38	0.01
22.25	6.64	6.40	0.01
22.50	6.66	6.42	0.01
22.75	6.67	6.43	0.01
23.00	6.69	6.45	0.01
23.25	6.70	6.47	0.01
23.50	6.72	6.48	0.01
23.75	6.74	6.50	0.01
24.00	**6.75**	**6.51**	0.01

Summary for Pond 7P: Chambers

Inflow Area = 1.190 ac, 28.57% Impervious, Inflow Depth > 2.98" for 25-yr event
Inflow = 5.35 cfs @ 12.13 hrs, Volume= 0.295 af
Outflow = 4.00 cfs @ 12.23 hrs, Volume= 0.283 af, Atten= 25%, Lag= 6.0 min
Discarded = 0.03 cfs @ 12.24 hrs, Volume= 0.036 af
Primary = 3.97 cfs @ 12.23 hrs, Volume= 0.247 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 125.51' @ 12.24 hrs Surf.Area= 0.024 ac Storage= 0.060 af

Plug-Flow detention time= 44.2 min calculated for 0.283 af (96% of inflow)
Center-of-Mass det. time= 28.2 min (794.5 - 766.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	121.33'	0.031 af	**17.33'W x 41.55'L x 6.25'H Field A** 0.103 af Overall - 0.027 af Embedded = 0.077 af x 40.0% Voids
#2A	122.83'	0.027 af	**ADS_StormTech MC-3500 d +Cap**x 10 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 10 Chambers in 2 Rows Cap Storage= +14.9 cf x 2 x 2 rows = 59.6 cf
#3B	121.33'	0.015 af	**9.42'W x 35.38'L x 6.25'H Field B** 0.048 af Overall - 0.011 af Embedded = 0.037 af x 40.0% Voids
#4B	122.83'	0.011 af	**ADS_StormTech MC-3500 d +Cap**x 4 Inside #3 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf
		0.083 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	121.33'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 115.00'
#2	Primary	122.95'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	123.50'	**10.0" Vert. Orifice/Grate** C= 0.600
#4	Primary	126.50'	**1.5' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.03 cfs @ 12.24 hrs HW=125.49' (Free Discharge)
└─**1=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=3.94 cfs @ 12.23 hrs HW=125.49' (Free Discharge)
├─**2=Orifice/Grate** (Orifice Controls 0.65 cfs @ 7.42 fps)
├─**3=Orifice/Grate** (Orifice Controls 3.29 cfs @ 6.04 fps)
└─**4=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 7P: Chambers - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= +14.9 cf x 2 x 2 rows = 59.6 cf

77.0" Wide + 18.0" Spacing = 95.0" C-C Row Spacing

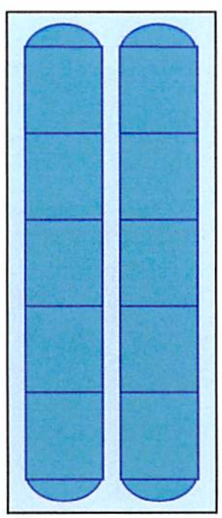
5 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 39.55' Row Length +12.0" End Stone x 2 = 41.55' Base Length
2 Rows x 77.0" Wide + 18.0" Spacing x 1 + 18.0" Side Stone x 2 = 17.33' Base Width
18.0" Base + 45.0" Chamber Height + 12.0" Cover = 6.25' Field Height

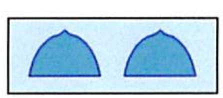
10 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 2 Rows = 1,159.1 cf Chamber Storage

4,501.2 cf Field - 1,159.1 cf Chambers = 3,342.1 cf Stone x 40.0% Voids = 1,336.9 cf Stone Storage

Chamber Storage + Stone Storage = 2,496.0 cf = 0.057 af
Overall Storage Efficiency = 55.5%
Overall System Size = 41.55' x 17.33' x 6.25'

10 Chambers
166.7 cy Field
123.8 cy Stone





Pond 7P: Chambers - Chamber Wizard Field B

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf

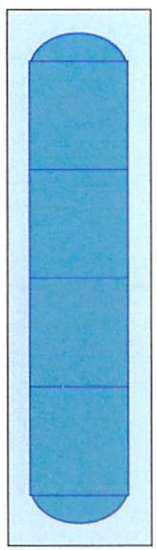
4 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 32.38' Row Length +18.0" End Stone x 2 = 35.38' Base Length
1 Rows x 77.0" Wide + 18.0" Side Stone x 2 = 9.42' Base Width
18.0" Base + 45.0" Chamber Height + 12.0" Cover = 6.25' Field Height

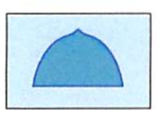
4 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 1 Rows = 469.6 cf Chamber Storage

2,082.3 cf Field - 469.6 cf Chambers = 1,612.7 cf Stone x 40.0% Voids = 645.1 cf Stone Storage

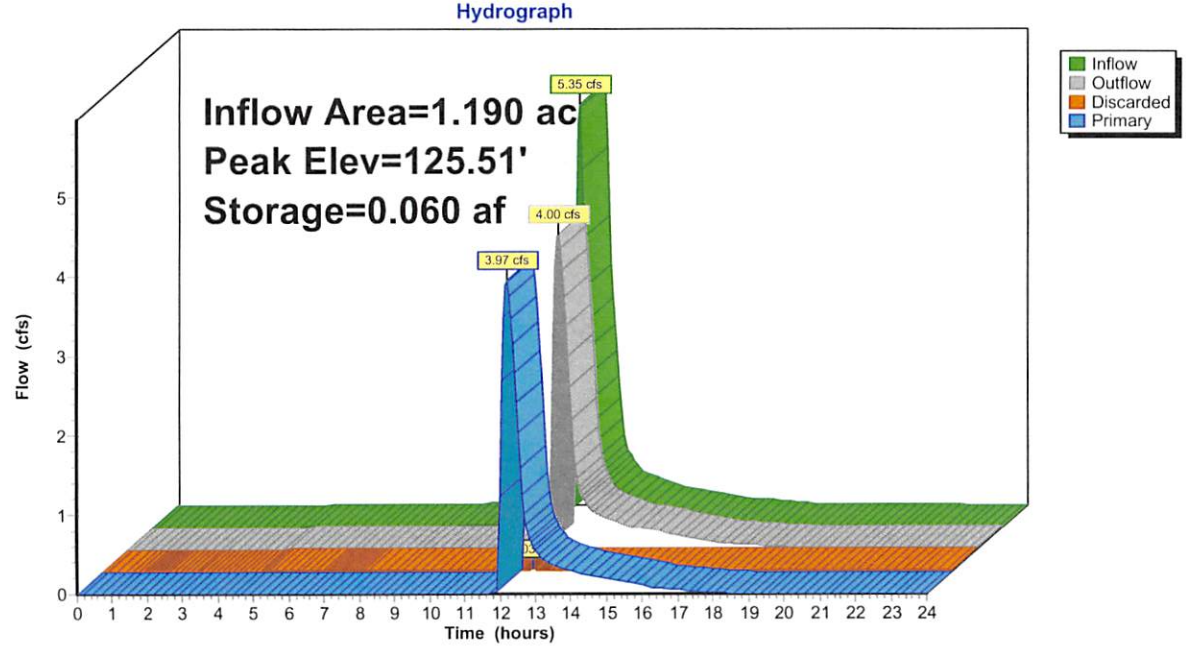
Chamber Storage + Stone Storage = 1,114.7 cf = 0.026 af
Overall Storage Efficiency = 53.5%
Overall System Size = 35.38' x 9.42' x 6.25'

4 Chambers
77.1 cy Field
59.7 cy Stone

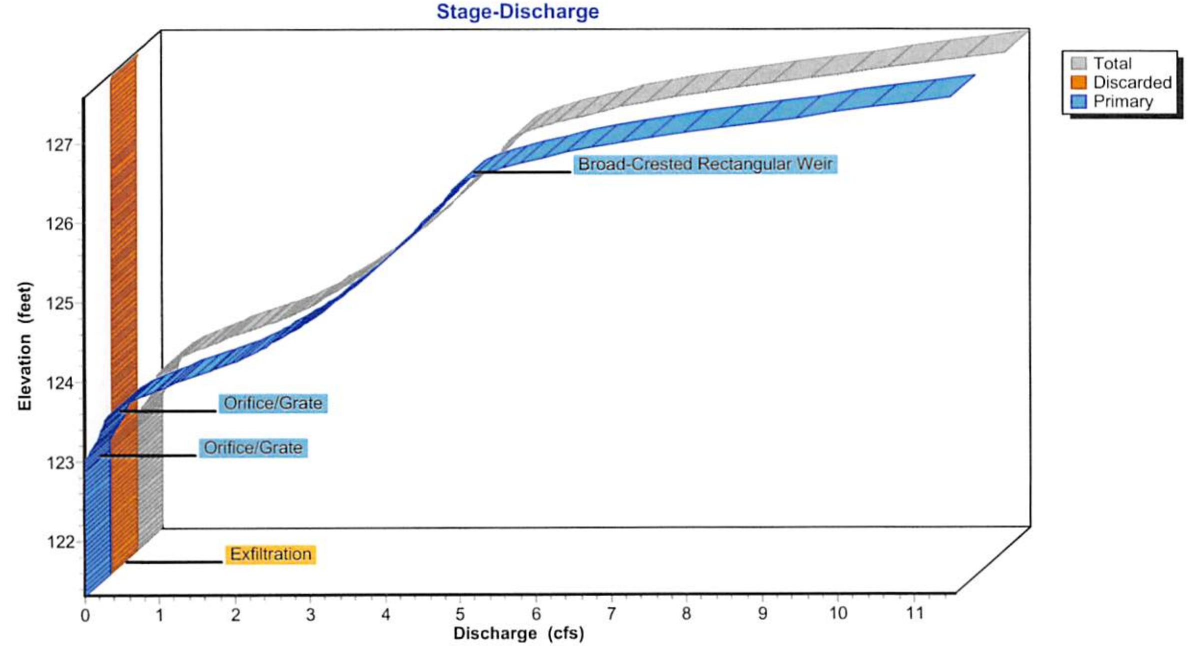




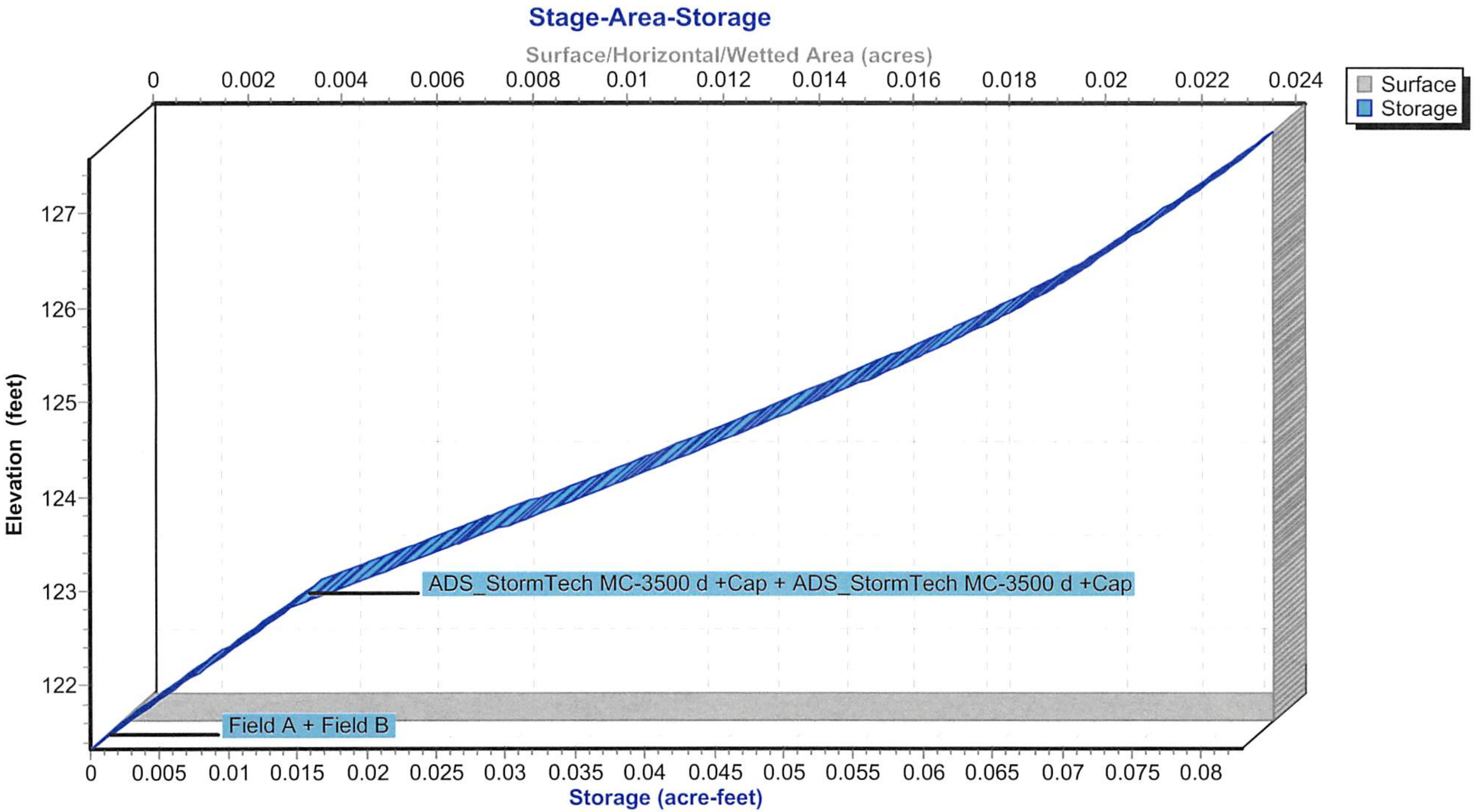
Pond 7P: Chambers



Pond 7P: Chambers



Pond 7P: Chambers



Hydrograph for Pond 7P: Chambers

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.000	121.33	0.00	0.00	0.00
0.50	0.00	0.000	121.33	0.00	0.00	0.00
1.00	0.00	0.000	121.33	0.00	0.00	0.00
1.50	0.00	0.000	121.34	0.00	0.00	0.00
2.00	0.00	0.000	121.34	0.00	0.00	0.00
2.50	0.01	0.000	121.35	0.01	0.01	0.00
3.00	0.01	0.000	121.35	0.01	0.01	0.00
3.50	0.01	0.000	121.36	0.01	0.01	0.00
4.00	0.01	0.000	121.36	0.01	0.01	0.00
4.50	0.01	0.000	121.36	0.01	0.01	0.00
5.00	0.01	0.000	121.37	0.01	0.01	0.00
5.50	0.01	0.000	121.37	0.01	0.01	0.00
6.00	0.01	0.000	121.37	0.01	0.01	0.00
6.50	0.02	0.000	121.38	0.01	0.01	0.00
7.00	0.02	0.001	121.39	0.02	0.02	0.00
7.50	0.02	0.001	121.39	0.02	0.02	0.00
8.00	0.02	0.001	121.41	0.02	0.02	0.00
8.50	0.03	0.001	121.44	0.02	0.02	0.00
9.00	0.03	0.002	121.49	0.02	0.02	0.00
9.50	0.04	0.002	121.56	0.02	0.02	0.00
10.00	0.04	0.003	121.66	0.02	0.02	0.00
10.50	0.06	0.004	121.79	0.02	0.02	0.00
11.00	0.07	0.006	121.96	0.02	0.02	0.00
11.50	0.10	0.009	122.23	0.02	0.02	0.00
12.00	**2.92**	**0.025**	**123.39**	**0.24**	**0.02**	**0.22**
12.50	**1.65**	**0.043**	**124.46**	**2.45**	**0.03**	**2.43**
13.00	0.53	0.031	123.75	0.60	0.03	0.57
13.50	0.37	0.029	123.64	0.40	0.02	0.38
14.00	0.29	0.028	123.56	0.32	0.02	0.30
14.50	0.23	0.026	123.47	0.27	0.02	0.25
15.00	0.19	0.024	123.37	0.24	0.02	0.21
15.50	0.15	0.023	123.27	0.19	0.02	0.17
16.00	0.11	0.021	123.19	0.14	0.02	0.12
16.50	0.08	0.020	123.14	0.10	0.02	0.08
17.00	0.07	0.020	123.11	0.08	0.02	0.06
17.50	0.05	0.019	123.08	0.06	0.02	0.04
18.00	0.03	0.018	123.04	0.05	0.02	0.02
18.50	0.02	0.018	123.01	0.03	0.02	0.01
19.00	0.01	0.017	122.98	0.03	0.02	0.00
19.50	0.01	0.017	122.96	0.02	0.02	0.00
20.00	0.01	0.016	122.94	0.02	0.02	0.00
20.50	0.01	0.016	122.91	0.02	0.02	0.00
21.00	0.01	0.016	122.89	0.02	0.02	0.00
21.50	0.01	0.015	122.86	0.02	0.02	0.00
22.00	0.01	0.015	122.83	0.02	0.02	0.00
22.50	0.01	0.014	122.78	0.02	0.02	0.00
23.00	0.01	0.013	122.73	0.02	0.02	0.00
23.50	0.01	0.013	122.67	0.02	0.02	0.00
24.00	0.01	0.012	122.61	0.02	0.02	0.00

Stage-Discharge for Pond 7P: Chambers

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
121.33	0.00	0.00	0.00
121.43	0.02	0.02	0.00
121.53	0.02	0.02	0.00
121.63	0.02	0.02	0.00
121.73	0.02	0.02	0.00
121.83	0.02	0.02	0.00
121.93	0.02	0.02	0.00
122.03	0.02	0.02	0.00
122.13	0.02	0.02	0.00
122.23	0.02	0.02	0.00
122.33	0.02	0.02	0.00
122.43	0.02	0.02	0.00
122.53	0.02	0.02	0.00
122.63	0.02	0.02	0.00
122.73	0.02	0.02	0.00
122.83	0.02	0.02	0.00
122.93	0.02	0.02	0.00
123.03	0.04	0.02	0.02
123.13	0.09	0.02	0.07
123.23	0.16	0.02	0.14
123.33	0.22	0.02	0.19
123.43	0.26	0.02	0.24
123.53	0.30	0.02	0.27
123.63	0.39	0.02	0.37
123.73	0.55	0.03	0.53
123.83	0.77	0.03	0.75
123.93	1.04	0.03	1.01
124.03	1.33	0.03	1.31
124.13	1.64	0.03	1.62
124.23	1.94	0.03	1.92
124.33	2.18	0.03	2.15
124.43	2.39	0.03	2.36
124.53	2.58	0.03	2.56
124.63	2.76	0.03	2.73
124.73	2.93	0.03	2.90
124.83	3.09	0.03	3.06
124.93	3.24	0.03	3.21
125.03	3.38	0.03	3.35
125.13	3.52	0.03	3.49
125.23	3.65	0.03	3.62
125.33	3.78	0.03	3.75
125.43	3.90	0.03	3.87
125.53	4.02	0.03	3.99
125.63	4.13	0.03	4.10
125.73	4.25	0.03	4.22
125.83	4.36	0.03	4.32
125.93	4.46	0.03	4.43
126.03	4.57	0.03	4.53
126.13	4.67	0.03	4.64
126.23	4.77	0.03	4.74
126.33	4.87	0.03	4.83
126.43	4.96	0.03	4.93
126.53	5.08	0.03	5.04
126.63	5.34	0.03	5.31
126.73	5.70	0.03	5.67
126.83	6.14	0.03	6.11
126.93	6.66	0.03	6.62
127.03	7.25	0.03	7.22
127.13	7.92	0.04	7.88
127.23	8.68	0.04	8.65
127.33	9.50	0.04	9.46
127.43	10.29	0.04	10.25
127.53	**11.12**	**0.04**	**11.08**

Stage-Area-Storage for Pond 7P: Chambers

Elevation (feet)	Surface (acres)	Storage (acre-feet)
121.33	**0.024**	0.000
121.43	0.024	0.001
121.53	0.024	0.002
121.63	0.024	0.003
121.73	0.024	0.004
121.83	0.024	0.005
121.93	0.024	0.006
122.03	0.024	0.007
122.13	0.024	0.008
122.23	0.024	0.009
122.33	0.024	0.010
122.43	0.024	0.011
122.53	0.024	0.012
122.63	0.024	0.013
122.73	0.024	0.014
122.83	0.024	0.015
122.93	0.024	0.016
123.03	0.024	0.018
123.13	0.024	0.020
123.23	0.024	0.022
123.33	0.024	0.024
123.43	0.024	0.025
123.53	0.024	0.027
123.63	0.024	0.029
123.73	0.024	0.031
123.83	0.024	0.032
123.93	0.024	0.034
124.03	0.024	0.036
124.13	0.024	0.038
124.23	0.024	0.039
124.33	0.024	0.041
124.43	0.024	0.043
124.53	0.024	0.044
124.63	0.024	0.046
124.73	0.024	0.048
124.83	0.024	0.049
124.93	0.024	0.051
125.03	0.024	0.053
125.13	0.024	0.054
125.23	0.024	0.056
125.33	0.024	0.057
125.43	0.024	0.059
125.53	0.024	0.060
125.63	0.024	0.062
125.73	0.024	0.063
125.83	0.024	0.065
125.93	0.024	0.066
126.03	0.024	0.067
126.13	0.024	0.068
126.23	0.024	0.070
126.33	0.024	0.071
126.43	0.024	0.072
126.53	0.024	0.073
126.63	0.024	0.074
126.73	0.024	0.075
126.83	0.024	0.076
126.93	0.024	0.077
127.03	0.024	0.078
127.13	0.024	0.079
127.23	0.024	0.080
127.33	0.024	0.080
127.43	0.024	0.081
127.53	0.024	**0.082**

Summary for Pond 8P: Bioretention

Inflow Area = 1.050 ac, 19.05% Impervious, Inflow Depth > 4.35" for 25-yr event
Inflow = 4.71 cfs @ 12.13 hrs, Volume= 0.381 af
Outflow = 4.70 cfs @ 12.14 hrs, Volume= 0.327 af, Atten= 0%, Lag= 0.9 min
Discarded = 0.10 cfs @ 12.14 hrs, Volume= 0.107 af
Primary = 4.60 cfs @ 12.14 hrs, Volume= 0.220 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 130.23' @ 12.14 hrs Surf.Area= 0.096 ac Storage= 0.068 af

Plug-Flow detention time= 101.0 min calculated for 0.326 af (86% of inflow)
Center-of-Mass det. time= 40.5 min (854.3 - 813.8)

Volume	Invert	Avail.Storage	Storage Description
#1	125.50'	0.020 af	**Gravel (Prismatic)** Listed below 0.050 af Overall x 40.0% Voids
#2	127.00'	0.029 af	**Soil (Prismatic)** Listed below (Recalc) 0.082 af Overall x 35.0% Voids
#3	129.50'	0.028 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		0.077 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
125.50	0.033	0.000	0.000
127.00	0.033	0.050	0.050

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
127.00	0.033	0.000	0.000
129.50	0.033	0.082	0.082

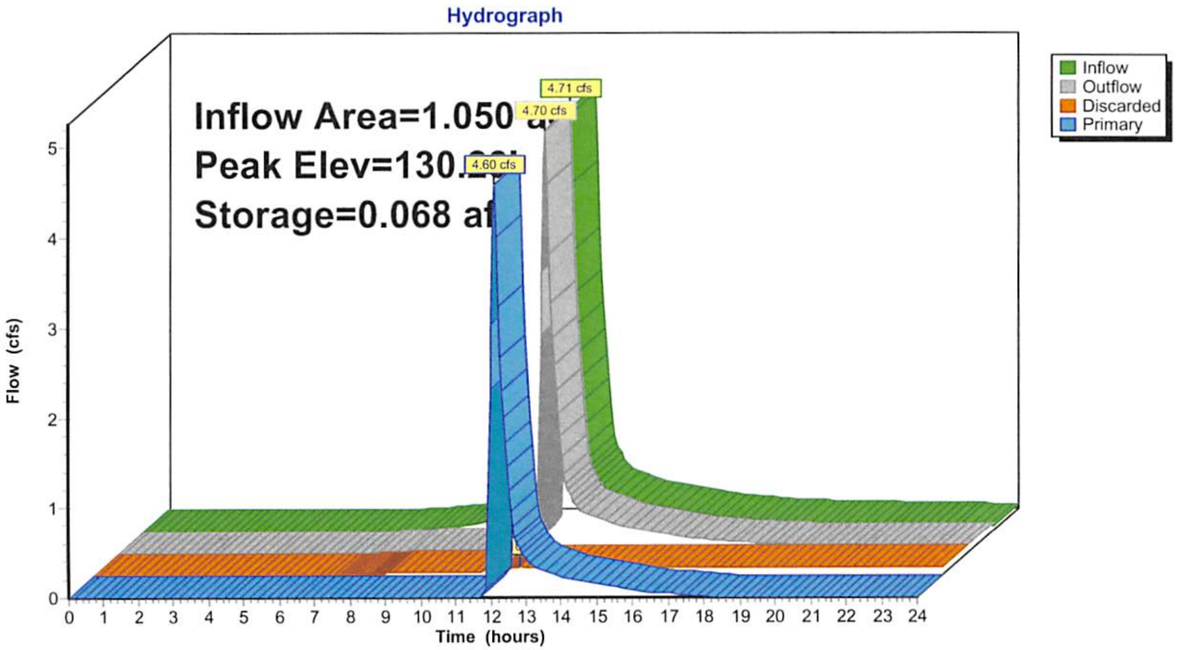
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
129.50	0.023	0.000	0.000
130.00	0.028	0.013	0.013
130.50	0.033	0.015	0.028

Device	Routing	Invert	Outlet Devices
#1	Primary	130.00'	**12.0" Horiz. Orifice/Grate** X 4 rows C= 0.600 Limited to weir flow at low heads
#2	Discarded	125.50'	**0.900 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 100.00'

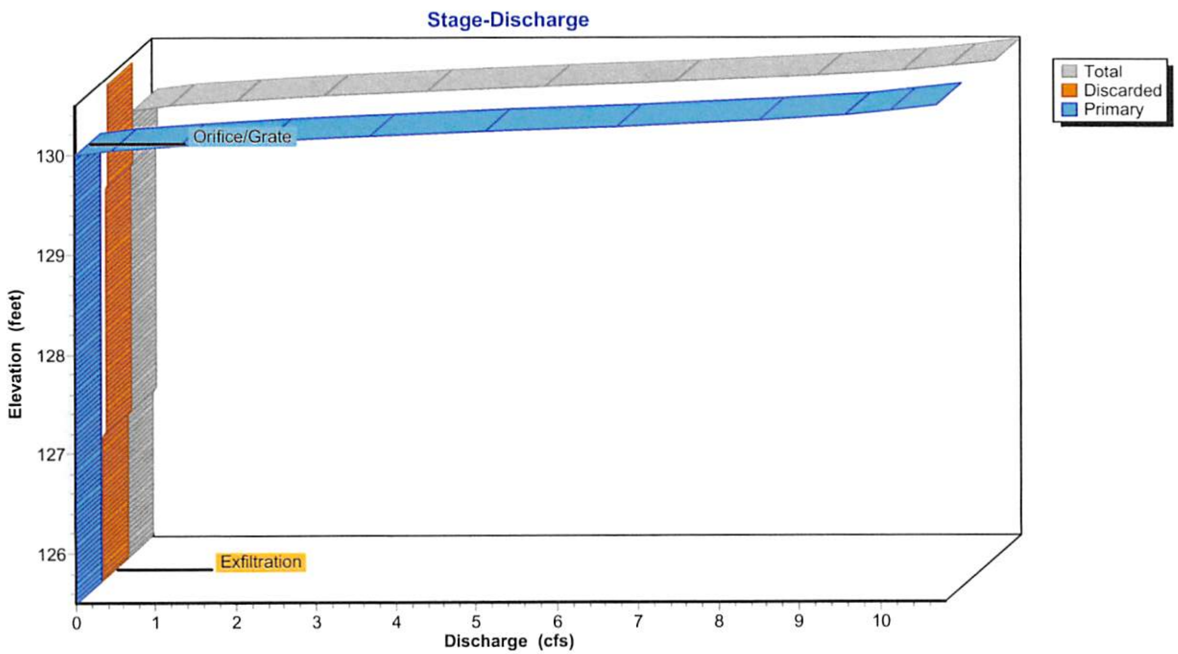
Discarded OutFlow Max=0.10 cfs @ 12.14 hrs HW=130.23' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.10 cfs)

Primary OutFlow Max=4.54 cfs @ 12.14 hrs HW=130.23' (Free Discharge)
↑—**1=Orifice/Grate** (Weir Controls 4.54 cfs @ 1.57 fps)

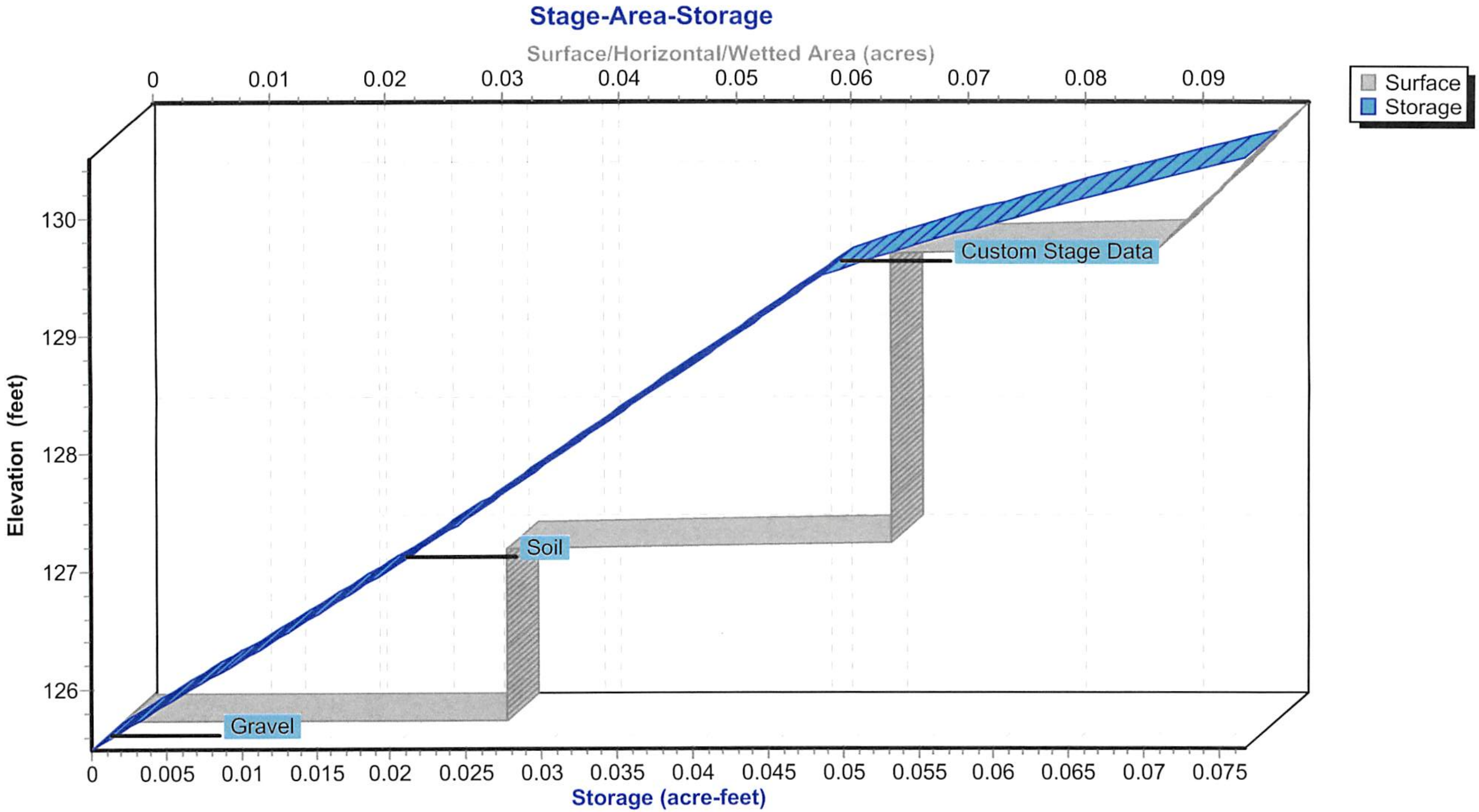
Pond 8P: Bioretention



Pond 8P: Bioretention



Pond 8P: Bioretention



Hydrograph for Pond 8P: Bioretention

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.000	125.50	0.00	0.00	0.00
0.50	0.00	0.000	125.50	0.00	0.00	0.00
1.00	0.00	0.000	125.50	0.00	0.00	0.00
1.50	0.00	0.000	125.50	0.00	0.00	0.00
2.00	0.00	0.000	125.50	0.00	0.00	0.00
2.50	0.00	0.000	125.50	0.00	0.00	0.00
3.00	0.00	0.000	125.50	0.00	0.00	0.00
3.50	0.00	0.000	125.50	0.00	0.00	0.00
4.00	0.00	0.000	125.50	0.00	0.00	0.00
4.50	0.00	0.000	125.50	0.00	0.00	0.00
5.00	0.00	0.000	125.50	0.00	0.00	0.00
5.50	0.00	0.000	125.50	0.00	0.00	0.00
6.00	0.00	0.000	125.50	0.00	0.00	0.00
6.50	0.00	0.000	125.50	0.00	0.00	0.00
7.00	0.01	0.000	125.51	0.00	0.00	0.00
7.50	0.02	0.000	125.52	0.01	0.01	0.00
8.00	0.03	0.000	125.53	0.02	0.02	0.00
8.50	0.04	0.001	125.56	0.03	0.03	0.00
9.00	0.06	0.002	125.63	0.03	0.03	0.00
9.50	0.09	0.004	125.78	0.03	0.03	0.00
10.00	0.13	0.007	126.03	0.03	0.03	0.00
10.50	0.18	0.012	126.40	0.03	0.03	0.00
11.00	0.25	0.019	126.96	0.04	0.04	0.00
11.50	0.43	0.030	127.89	0.06	0.06	0.00
12.00	**2.46**	**0.066**	**130.15**	**2.43**	**0.10**	**2.33**
12.50	**1.46**	**0.064**	**130.11**	**1.55**	**0.10**	**1.46**
13.00	0.53	0.063	130.05	0.54	0.09	0.45
13.50	0.40	0.062	130.03	0.41	0.09	0.31
14.00	0.33	0.062	130.03	0.33	0.09	0.24
14.50	0.28	0.062	130.02	0.29	0.09	0.19
15.00	0.25	0.062	130.02	0.25	0.09	0.16
15.50	0.21	0.062	130.01	0.21	0.09	0.12
16.00	0.18	0.062	130.01	0.18	0.09	0.08
16.50	0.15	0.062	130.01	0.16	0.09	0.06
17.00	0.14	0.062	130.00	0.14	0.09	0.05
17.50	0.12	0.062	130.00	0.12	0.09	0.03
18.00	0.11	0.061	130.00	0.11	0.09	0.01
18.50	0.10	0.061	130.00	0.10	0.09	0.01
19.00	0.09	0.061	130.00	0.10	0.09	0.00
19.50	0.09	0.061	130.00	0.09	0.09	0.00
20.00	0.09	0.061	129.99	0.09	0.09	0.00
20.50	0.08	0.061	129.97	0.09	0.09	0.00
21.00	0.08	0.060	129.95	0.09	0.09	0.00
21.50	0.07	0.059	129.92	0.09	0.09	0.00
22.00	0.07	0.058	129.89	0.09	0.09	0.00
22.50	0.07	0.058	129.86	0.09	0.09	0.00
23.00	0.06	0.056	129.81	0.09	0.09	0.00
23.50	0.06	0.055	129.77	0.09	0.09	0.00
24.00	0.06	0.054	129.71	0.09	0.09	0.00

Stage-Discharge for Pond 8P: Bioretention

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
125.50	0.00	0.00	0.00
125.55	0.03	0.03	0.00
125.60	0.03	0.03	0.00
125.65	0.03	0.03	0.00
125.70	0.03	0.03	0.00
125.75	0.03	0.03	0.00
125.80	0.03	0.03	0.00
125.85	0.03	0.03	0.00
125.90	0.03	0.03	0.00
125.95	0.03	0.03	0.00
126.00	0.03	0.03	0.00
126.05	0.03	0.03	0.00
126.10	0.03	0.03	0.00
126.15	0.03	0.03	0.00
126.20	0.03	0.03	0.00
126.25	0.03	0.03	0.00
126.30	0.03	0.03	0.00
126.35	0.03	0.03	0.00
126.40	0.03	0.03	0.00
126.45	0.03	0.03	0.00
126.50	0.03	0.03	0.00
126.55	0.03	0.03	0.00
126.60	0.03	0.03	0.00
126.65	0.03	0.03	0.00
126.70	0.03	0.03	0.00
126.75	0.03	0.03	0.00
126.80	0.03	0.03	0.00
126.85	0.03	0.03	0.00
126.90	0.03	0.03	0.00
126.95	0.03	0.03	0.00
127.00	0.06	0.06	0.00
127.05	0.06	0.06	0.00
127.10	0.06	0.06	0.00
127.15	0.06	0.06	0.00
127.20	0.06	0.06	0.00
127.25	0.06	0.06	0.00
127.30	0.06	0.06	0.00
127.35	0.06	0.06	0.00
127.40	0.06	0.06	0.00
127.45	0.06	0.06	0.00
127.50	0.06	0.06	0.00
127.55	0.06	0.06	0.00
127.60	0.06	0.06	0.00
127.65	0.06	0.06	0.00
127.70	0.06	0.06	0.00
127.75	0.06	0.06	0.00
127.80	0.06	0.06	0.00
127.85	0.06	0.06	0.00
127.90	0.06	0.06	0.00
127.95	0.06	0.06	0.00
128.00	0.06	0.06	0.00
128.05	0.06	0.06	0.00
128.10	0.06	0.06	0.00
128.15	0.06	0.06	0.00
128.20	0.06	0.06	0.00
128.25	0.06	0.06	0.00
128.30	0.06	0.06	0.00
128.35	0.06	0.06	0.00
128.40	0.06	0.06	0.00
128.45	0.06	0.06	0.00
128.50	0.07	0.07	0.00
128.55	0.07	0.07	0.00
128.60	0.07	0.07	0.00
128.65	0.07	0.07	0.00
128.70	0.07	0.07	0.00
128.75	0.07	0.07	0.00
128.80	0.07	0.07	0.00
128.85	0.07	0.07	0.00
128.90	0.07	0.07	0.00
128.95	0.07	0.07	0.00
129.00	0.07	0.07	0.00
129.05	0.07	0.07	0.00
129.10	0.07	0.07	0.00
129.15	0.07	0.07	0.00
129.20	0.07	0.07	0.00
129.25	0.07	0.07	0.00
129.30	0.07	0.07	0.00
129.35	0.07	0.07	0.00
129.40	0.07	0.07	0.00
129.45	0.07	0.07	0.00
129.50	0.09	0.09	0.00
129.55	0.09	0.09	0.00
129.60	0.09	0.09	0.00
129.65	0.09	0.09	0.00
129.70	0.09	0.09	0.00
129.75	0.09	0.09	0.00
129.80	0.09	0.09	0.00
129.85	0.09	0.09	0.00
129.90	0.09	0.09	0.00
129.95	0.09	0.09	0.00
130.00	0.09	0.09	0.00
130.05	0.55	0.09	0.46
130.10	1.39	0.10	1.30
130.15	2.48	0.10	2.39
130.20	3.77	0.10	3.68
130.25	5.23	0.10	5.14
130.30	6.85	0.10	6.75
130.35	8.61	0.10	8.51
130.40	9.67	0.10	9.57
130.45	10.25	0.10	10.15
130.50	**10.80**	**0.10**	**10.70**

Stage-Area-Storage for Pond 8P: Bioretention

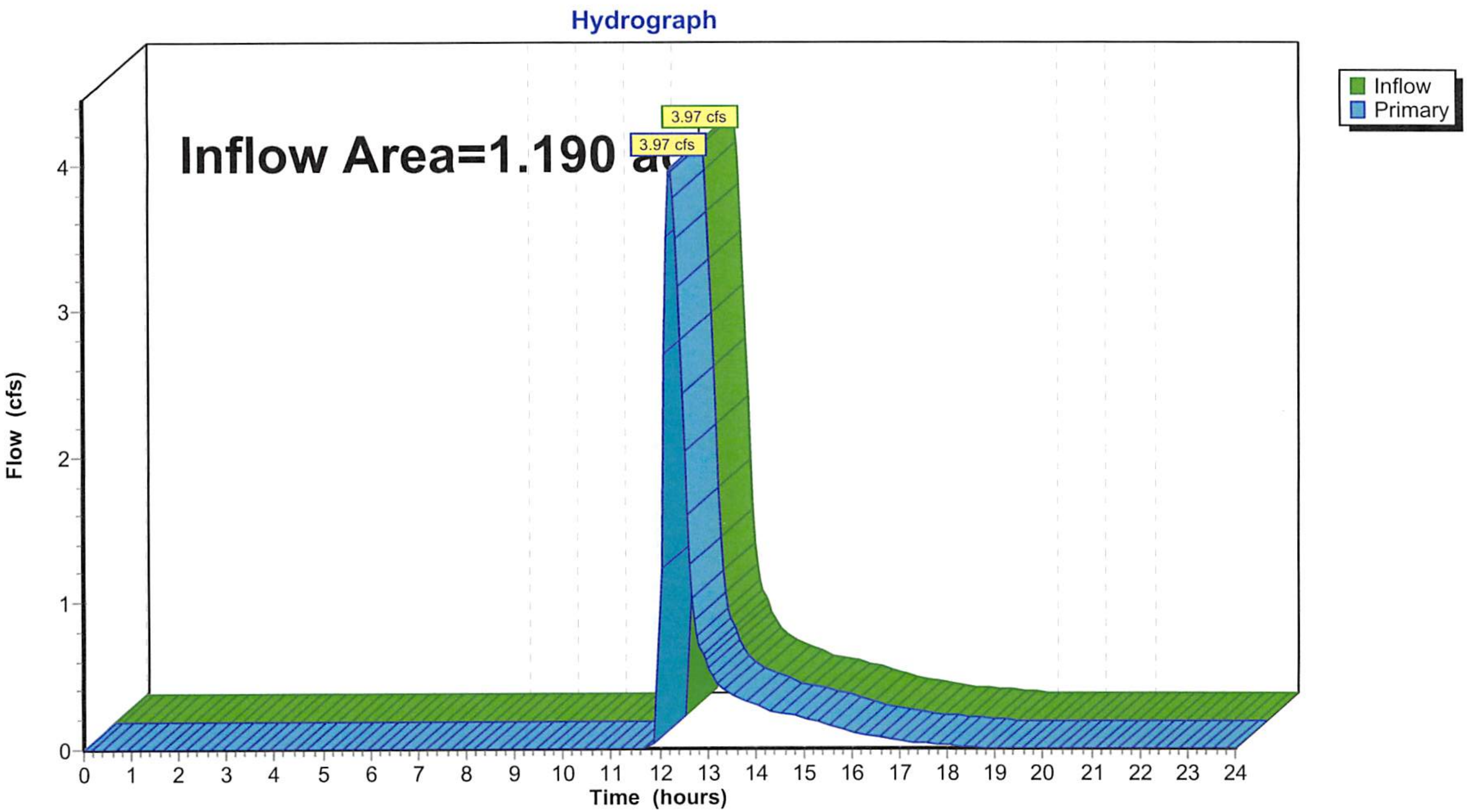
Elevation (feet)	Surface (acres)	Storage (acre-feet)	Elevation (feet)	Surface (acres)	Storage (acre-feet)
125.50	0.033	0.000	128.10	0.066	0.033
125.55	0.033	0.001	128.15	0.066	0.033
125.60	0.033	0.001	128.20	0.066	0.034
125.65	0.033	0.002	128.25	0.066	0.034
125.70	0.033	0.003	128.30	0.066	0.035
125.75	0.033	0.003	128.35	0.066	0.035
125.80	0.033	0.004	128.40	0.066	0.036
125.85	0.033	0.005	128.45	0.066	0.037
125.90	0.033	0.005	128.50	0.066	0.037
125.95	0.033	0.006	128.55	0.066	0.038
126.00	0.033	0.007	128.60	0.066	0.038
126.05	0.033	0.007	128.65	0.066	0.039
126.10	0.033	0.008	128.70	0.066	0.039
126.15	0.033	0.009	128.75	0.066	0.040
126.20	0.033	0.009	128.80	0.066	0.041
126.25	0.033	0.010	128.85	0.066	0.041
126.30	0.033	0.011	128.90	0.066	0.042
126.35	0.033	0.011	128.95	0.066	0.042
126.40	0.033	0.012	129.00	0.066	0.043
126.45	0.033	0.013	129.05	0.066	0.043
126.50	0.033	0.013	129.10	0.066	0.044
126.55	0.033	0.014	129.15	0.066	0.045
126.60	0.033	0.015	129.20	0.066	0.045
126.65	0.033	0.015	129.25	0.066	0.046
126.70	0.033	0.016	129.30	0.066	0.046
126.75	0.033	0.017	129.35	0.066	0.047
126.80	0.033	0.017	129.40	0.066	0.048
126.85	0.033	0.018	129.45	0.066	0.048
126.90	0.033	0.018	129.50	0.089	0.049
126.95	0.033	0.019	129.55	0.090	0.050
127.00	0.066	0.020	129.60	0.090	0.051
127.05	0.066	0.020	129.65	0.091	0.052
127.10	0.066	0.021	129.70	0.091	0.053
127.15	0.066	0.022	129.75	0.091	0.055
127.20	0.066	0.022	129.80	0.092	0.056
127.25	0.066	0.023	129.85	0.092	0.057
127.30	0.066	0.023	129.90	0.093	0.059
127.35	0.066	0.024	129.95	0.093	0.060
127.40	0.066	0.024	130.00	0.094	0.061
127.45	0.066	0.025	130.05	0.095	0.063
127.50	0.066	0.026	130.10	0.095	0.064
127.55	0.066	0.026	130.15	0.096	0.066
127.60	0.066	0.027	130.20	0.096	0.067
127.65	0.066	0.027	130.25	0.096	0.069
127.70	0.066	0.028	130.30	0.097	0.070
127.75	0.066	0.028	130.35	0.097	0.072
127.80	0.066	0.029	130.40	0.098	0.073
127.85	0.066	0.030	130.45	0.098	0.075
127.90	0.066	0.030	130.50	**0.099**	**0.077**
127.95	0.066	0.031			
128.00	0.066	0.031			
128.05	0.066	0.032			

Summary for Link 7L: Post (Composite)

Inflow Area = 1.190 ac, 28.57% Impervious, Inflow Depth = 2.50" for 25-yr event
Inflow = 3.97 cfs @ 12.23 hrs, Volume= 0.247 af
Primary = 3.97 cfs @ 12.23 hrs, Volume= 0.247 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 7L: Post (Composite)



Hydrograph for Link 7L: Post (Composite)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00
0.25	0.00	0.00	0.00
0.50	0.00	0.00	0.00
0.75	0.00	0.00	0.00
1.00	0.00	0.00	0.00
1.25	0.00	0.00	0.00
1.50	0.00	0.00	0.00
1.75	0.00	0.00	0.00
2.00	0.00	0.00	0.00
2.25	0.00	0.00	0.00
2.50	0.00	0.00	0.00
2.75	0.00	0.00	0.00
3.00	0.00	0.00	0.00
3.25	0.00	0.00	0.00
3.50	0.00	0.00	0.00
3.75	0.00	0.00	0.00
4.00	0.00	0.00	0.00
4.25	0.00	0.00	0.00
4.50	0.00	0.00	0.00
4.75	0.00	0.00	0.00
5.00	0.00	0.00	0.00
5.25	0.00	0.00	0.00
5.50	0.00	0.00	0.00
5.75	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.25	0.00	0.00	0.00
6.50	0.00	0.00	0.00
6.75	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.25	0.00	0.00	0.00
7.50	0.00	0.00	0.00
7.75	0.00	0.00	0.00
8.00	0.00	0.00	0.00
8.25	0.00	0.00	0.00
8.50	0.00	0.00	0.00
8.75	0.00	0.00	0.00
9.00	0.00	0.00	0.00
9.25	0.00	0.00	0.00
9.50	0.00	0.00	0.00
9.75	0.00	0.00	0.00
10.00	0.00	0.00	0.00
10.25	0.00	0.00	0.00
10.50	0.00	0.00	0.00
10.75	0.00	0.00	0.00
11.00	0.00	0.00	0.00
11.25	0.00	0.00	0.00
11.50	0.00	0.00	0.00
11.75	0.00	0.00	0.00
12.00	0.22	0.00	0.22
12.25	**3.96**	0.00	**3.96**
12.50	2.43	0.00	2.43
12.75	0.88	0.00	0.88
13.00	0.57	0.00	0.57
13.25	0.44	0.00	0.44
13.50	0.38	0.00	0.38
13.75	0.34	0.00	0.34
14.00	0.30	0.00	0.30
14.25	0.27	0.00	0.27
14.50	0.25	0.00	0.25
14.75	0.23	0.00	0.23
15.00	0.21	0.00	0.21
15.25	0.19	0.00	0.19
15.50	0.17	0.00	0.17
15.75	0.14	0.00	0.14
16.00	0.12	0.00	0.12
16.25	0.09	0.00	0.09
16.50	0.08	0.00	0.08
16.75	0.07	0.00	0.07
17.00	0.06	0.00	0.06
17.25	0.05	0.00	0.05
17.50	0.04	0.00	0.04
17.75	0.03	0.00	0.03
18.00	0.02	0.00	0.02
18.25	0.01	0.00	0.01
18.50	0.01	0.00	0.01
18.75	0.01	0.00	0.01
19.00	0.00	0.00	0.00
19.25	0.00	0.00	0.00
19.50	0.00	0.00	0.00
19.75	0.00	0.00	0.00
20.00	0.00	0.00	0.00
20.25	0.00	0.00	0.00
20.50	0.00	0.00	0.00
20.75	0.00	0.00	0.00
21.00	0.00	0.00	0.00
21.25	0.00	0.00	0.00
21.50	0.00	0.00	0.00
21.75	0.00	0.00	0.00
22.00	0.00	0.00	0.00
22.25	0.00	0.00	0.00
22.50	0.00	0.00	0.00
22.75	0.00	0.00	0.00
23.00	0.00	0.00	0.00
23.25	0.00	0.00	0.00
23.50	0.00	0.00	0.00
23.75	0.00	0.00	0.00
24.00	0.00	0.00	0.00

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment4S: PR-01 (Site) Runoff Area=1.050 ac 19.05% Impervious Runoff Depth>6.09"
Flow Length=310' Tc=9.1 min CN=79 Runoff=6.52 cfs 0.533 af

Subcatchment5S: PR-02 (Roof) Runoff Area=0.140 ac 100.00% Impervious Runoff Depth>8.38"
Tc=6.0 min CN=98 Runoff=1.16 cfs 0.098 af

Pond 7P: Chambers Peak Elev=126.93' Storage=0.077 af Inflow=7.38 cfs 0.457 af
Discarded=0.03 cfs 0.038 af Primary=6.64 cfs 0.404 af Outflow=6.67 cfs 0.442 af

Pond 8P: Bioretention Peak Elev=130.29' Storage=0.070 af Inflow=6.52 cfs 0.533 af
Discarded=0.10 cfs 0.114 af Primary=6.42 cfs 0.359 af Outflow=6.52 cfs 0.473 af

Link 7L: Post (Composite) Inflow=6.64 cfs 0.404 af
Primary=6.64 cfs 0.404 af

Total Runoff Area = 1.190 ac Runoff Volume = 0.631 af Average Runoff Depth = 6.36"
71.43% Pervious = 0.850 ac 28.57% Impervious = 0.340 ac

Summary for Subcatchment 4S: PR-01 (Site)

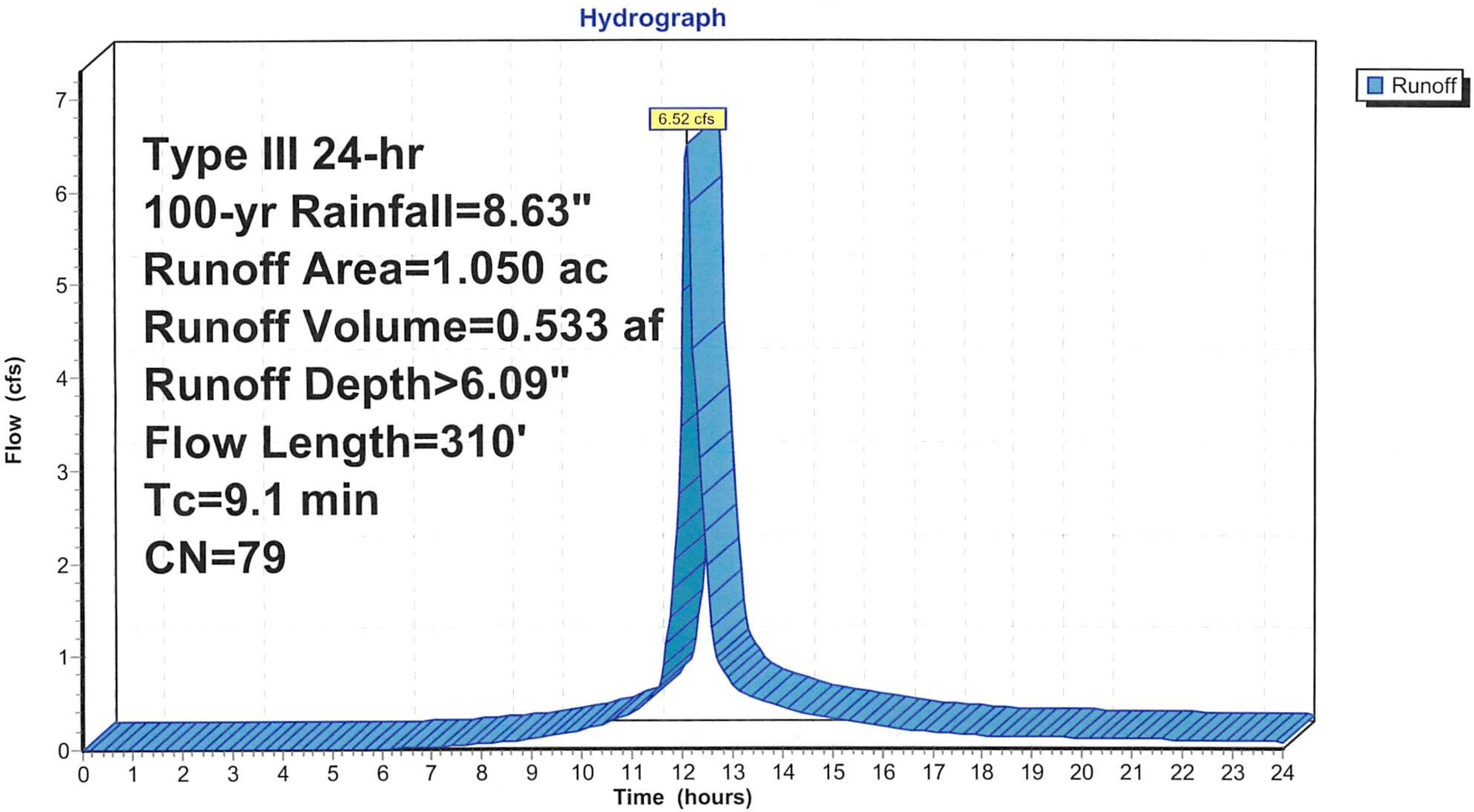
Runoff = 6.52 cfs @ 12.13 hrs, Volume= 0.533 af, Depth> 6.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.63"

Area (ac)	CN	Description
0.200	98	Paved parking, HSG C
0.850	74	>75% Grass cover, Good, HSG C
1.050	79	Weighted Average
0.850		80.95% Pervious Area
0.200		19.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	35	0.0700	0.24		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
1.7	28	0.1070	0.27		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
3.4	37	0.0340	0.18		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
1.0	78	0.0350	1.31		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
0.1	30	0.0500	4.54		**Shallow Concentrated Flow, Pathway** Paved Kv= 20.3 fps
0.3	52	0.0290	2.55		**Shallow Concentrated Flow, Shallow Concentrated** Grassed Waterway Kv= 15.0 fps
0.2	50	0.2000	4.47		**Shallow Concentrated Flow, Shallow Concentrated** Nearly Bare & Untilled Kv= 10.0 fps
9.1	310	Total			

Subcatchment 4S: PR-01 (Site)



Hydrograph for Subcatchment 4S: PR-01 (Site)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.02	0.00	0.00
0.50	0.04	0.00	0.00
0.75	0.06	0.00	0.00
1.00	0.09	0.00	0.00
1.25	0.11	0.00	0.00
1.50	0.13	0.00	0.00
1.75	0.15	0.00	0.00
2.00	0.17	0.00	0.00
2.25	0.19	0.00	0.00
2.50	0.22	0.00	0.00
2.75	0.24	0.00	0.00
3.00	0.27	0.00	0.00
3.25	0.29	0.00	0.00
3.50	0.32	0.00	0.00
3.75	0.34	0.00	0.00
4.00	0.37	0.00	0.00
4.25	0.40	0.00	0.00
4.50	0.43	0.00	0.00
4.75	0.46	0.00	0.00
5.00	0.49	0.00	0.00
5.25	0.52	0.00	0.00
5.50	0.55	0.00	0.00
5.75	0.59	0.00	0.00
6.00	0.62	0.00	0.01
6.25	0.66	0.01	0.01
6.50	0.70	0.01	0.02
6.75	0.74	0.01	0.02
7.00	0.78	0.02	0.03
7.25	0.83	0.03	0.03
7.50	0.88	0.04	0.04
7.75	0.93	0.05	0.05
8.00	0.98	0.07	0.06
8.25	1.04	0.08	0.07
8.50	1.11	0.10	0.09
8.75	1.18	0.13	0.10
9.00	1.26	0.16	0.12
9.25	1.34	0.19	0.14
9.50	1.43	0.23	0.16
9.75	1.53	0.27	0.18
10.00	1.63	0.32	0.21
10.25	1.74	0.38	0.24
10.50	1.87	0.45	0.28
10.75	2.01	0.53	0.33
11.00	2.16	0.62	0.38
11.25	2.34	0.73	0.48
11.50	2.57	0.89	0.64
11.75	3.07	1.24	1.41
12.00	4.31	2.22	**3.48**
12.25	5.56	3.29	**4.30**
12.50	6.06	3.73	1.98
12.75	6.29	3.94	0.92
13.00	6.47	4.10	0.71
13.25	6.62	4.24	0.58
13.50	6.76	4.37	0.53
13.75	6.89	4.48	0.49
14.00	7.00	4.58	0.44
14.25	7.10	4.68	0.40
14.50	7.20	4.77	0.38
14.75	7.29	4.85	0.35
15.00	7.37	4.93	0.33
15.25	7.45	5.00	0.31
15.50	7.52	5.06	0.28
15.75	7.59	5.12	0.26
16.00	7.65	5.18	0.23
16.25	7.70	5.23	0.22
16.50	7.75	5.28	0.21
16.75	7.80	5.32	0.19
17.00	7.85	5.37	0.18
17.25	7.89	5.41	0.17
17.50	7.93	5.45	0.16
17.75	7.97	5.48	0.15
18.00	8.01	5.52	0.14
18.25	8.04	5.55	0.13
18.50	8.08	5.58	0.13
18.75	8.11	5.61	0.13
19.00	8.14	5.64	0.13
19.25	8.17	5.67	0.12
19.50	8.20	5.70	0.12
19.75	8.23	5.72	0.12
20.00	8.26	5.75	0.11
20.25	8.29	5.78	0.11
20.50	8.31	5.80	0.11
20.75	8.34	5.83	0.11
21.00	8.37	5.85	0.10
21.25	8.39	5.87	0.10
21.50	8.42	5.90	0.10
21.75	8.44	5.92	0.10
22.00	8.46	5.94	0.09
22.25	8.49	5.96	0.09
22.50	8.51	5.98	0.09
22.75	8.53	6.00	0.09
23.00	8.55	6.02	0.08
23.25	8.57	6.04	0.08
23.50	8.59	6.06	0.08
23.75	8.61	6.08	0.08
24.00	**8.63**	**6.10**	0.07

Summary for Subcatchment 5S: PR-02 (Roof)

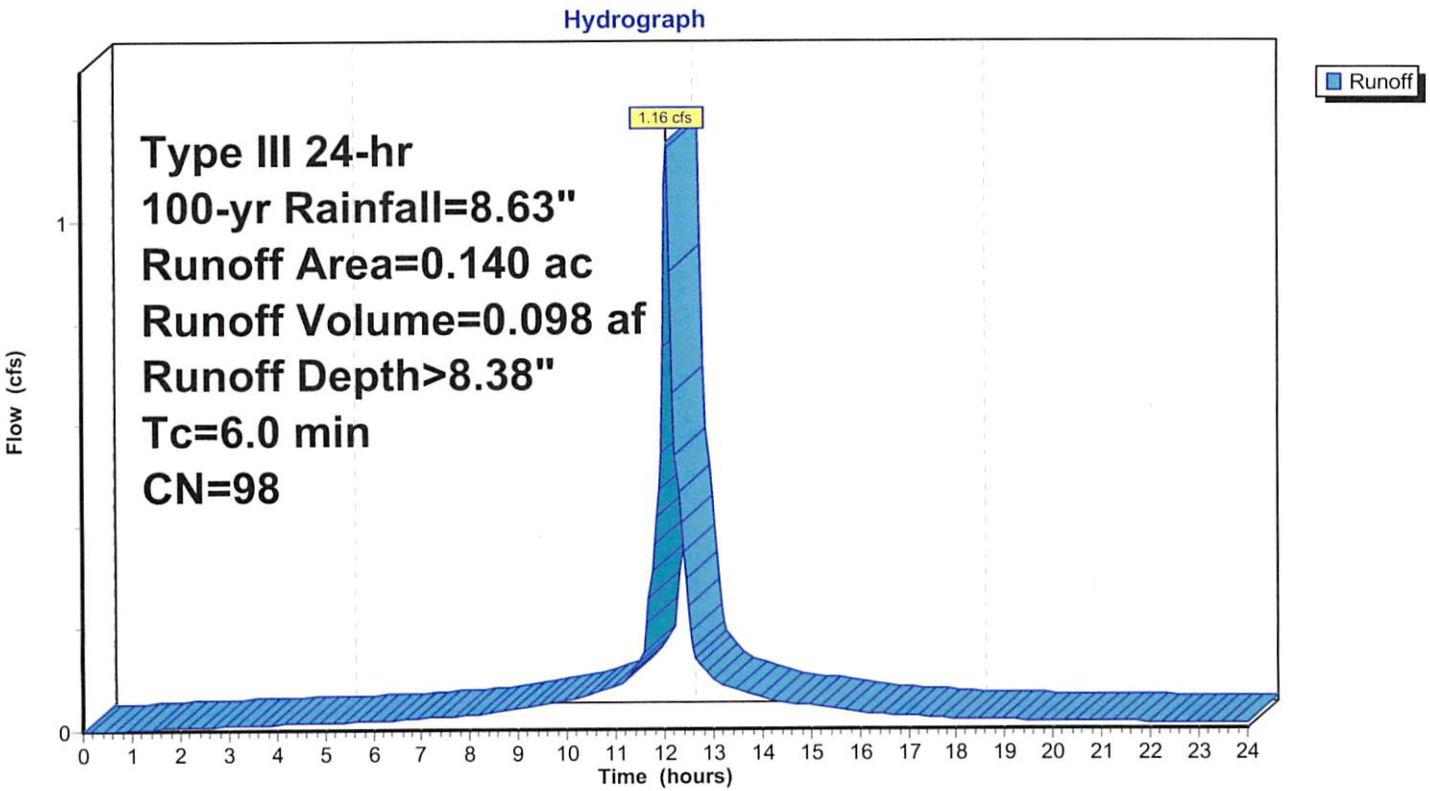
Runoff = 1.16 cfs @ 12.09 hrs, Volume= 0.098 af, Depth> 8.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.63"

Area (ac)	CN	Description
0.140	98	Roofs, HSG C
0.140		100.00% Impervious Area

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

Subcatchment 5S: PR-02 (Roof)



Hydrograph for Subcatchment 5S: PR-02 (Roof)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.02	0.00	0.00
0.50	0.04	0.00	0.00
0.75	0.06	0.00	0.00
1.00	0.09	0.01	0.00
1.25	0.11	0.02	0.00
1.50	0.13	0.03	0.01
1.75	0.15	0.04	0.01
2.00	0.17	0.05	0.01
2.25	0.19	0.07	0.01
2.50	0.22	0.08	0.01
2.75	0.24	0.10	0.01
3.00	0.27	0.12	0.01
3.25	0.29	0.14	0.01
3.50	0.32	0.16	0.01
3.75	0.34	0.18	0.01
4.00	0.37	0.20	0.01
4.25	0.40	0.23	0.01
4.50	0.43	0.25	0.01
4.75	0.46	0.28	0.02
5.00	0.49	0.31	0.02
5.25	0.52	0.34	0.02
5.50	0.55	0.37	0.02
5.75	0.59	0.40	0.02
6.00	0.62	0.43	0.02
6.25	0.66	0.46	0.02
6.50	0.70	0.50	0.02
6.75	0.74	0.54	0.02
7.00	0.78	0.58	0.02
7.25	0.83	0.62	0.03
7.50	0.88	0.67	0.03
7.75	0.93	0.72	0.03
8.00	0.98	0.78	0.03
8.25	1.04	0.83	0.03
8.50	1.11	0.90	0.04
8.75	1.18	0.97	0.04
9.00	1.26	1.04	0.04
9.25	1.34	1.12	0.05
9.50	1.43	1.21	0.05
9.75	1.53	1.31	0.05
10.00	1.63	1.41	0.06
10.25	1.74	1.52	0.06
10.50	1.87	1.64	0.07
10.75	2.01	1.78	0.08
11.00	2.16	1.93	0.09
11.25	2.34	2.11	0.11
11.50	2.57	2.34	0.13
11.75	3.07	2.83	0.31
12.00	4.31	4.08	**0.75**
12.25	5.56	5.33	**0.54**
12.50	6.06	5.82	0.24
12.75	6.29	6.05	0.13
13.00	6.47	6.23	0.10
13.25	6.62	6.38	0.08
13.50	6.76	6.52	0.08
13.75	6.89	6.65	0.07
14.00	7.00	6.76	0.06
14.25	7.10	6.86	0.06
14.50	7.20	6.96	0.05
14.75	7.29	7.05	0.05
15.00	7.37	7.13	0.05
15.25	7.45	7.21	0.04
15.50	7.52	7.28	0.04
15.75	7.59	7.35	0.04
16.00	7.65	7.41	0.03
16.25	7.70	7.46	0.03
16.50	7.75	7.51	0.03
16.75	7.80	7.56	0.03
17.00	7.85	7.61	0.03
17.25	7.89	7.65	0.02
17.50	7.93	7.69	0.02
17.75	7.97	7.73	0.02
18.00	8.01	7.77	0.02
18.25	8.04	7.80	0.02
18.50	8.08	7.84	0.02
18.75	8.11	7.87	0.02
19.00	8.14	7.90	0.02
19.25	8.17	7.93	0.02
19.50	8.20	7.96	0.02
19.75	8.23	7.99	0.02
20.00	8.26	8.02	0.02
20.25	8.29	8.05	0.02
20.50	8.31	8.07	0.02
20.75	8.34	8.10	0.01
21.00	8.37	8.13	0.01
21.25	8.39	8.15	0.01
21.50	8.42	8.18	0.01
21.75	8.44	8.20	0.01
22.00	8.46	8.22	0.01
22.25	8.49	8.25	0.01
22.50	8.51	8.27	0.01
22.75	8.53	8.29	0.01
23.00	8.55	8.31	0.01
23.25	8.57	8.33	0.01
23.50	8.59	8.35	0.01
23.75	8.61	8.37	0.01
24.00	**8.63**	**8.39**	0.01

Summary for Pond 7P: Chambers

Inflow Area = 1.190 ac, 28.57% Impervious, Inflow Depth > 4.61" for 100-yr event
Inflow = 7.38 cfs @ 12.13 hrs, Volume= 0.457 af
Outflow = 6.67 cfs @ 12.20 hrs, Volume= 0.442 af, Atten= 10%, Lag= 4.3 min
Discarded = 0.03 cfs @ 12.21 hrs, Volume= 0.038 af
Primary = 6.64 cfs @ 12.20 hrs, Volume= 0.404 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 126.93' @ 12.21 hrs Surf.Area= 0.024 ac Storage= 0.077 af

Plug-Flow detention time= 34.3 min calculated for 0.441 af (96% of inflow)
Center-of-Mass det. time= 20.6 min (790.8 - 770.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	121.33'	0.031 af	**17.33'W x 41.55'L x 6.25'H Field A** 0.103 af Overall - 0.027 af Embedded = 0.077 af x 40.0% Voids
#2A	122.83'	0.027 af	**ADS_StormTech MC-3500 d +Cap**x 10 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 10 Chambers in 2 Rows Cap Storage= +14.9 cf x 2 x 2 rows = 59.6 cf
#3B	121.33'	0.015 af	**9.42'W x 35.38'L x 6.25'H Field B** 0.048 af Overall - 0.011 af Embedded = 0.037 af x 40.0% Voids
#4B	122.83'	0.011 af	**ADS_StormTech MC-3500 d +Cap**x 4 Inside #3 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf
		0.083 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	121.33'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 115.00'
#2	Primary	122.95'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	123.50'	**10.0" Vert. Orifice/Grate** C= 0.600
#4	Primary	126.50'	**1.5' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.03 cfs @ 12.21 hrs HW=126.91' (Free Discharge)
└─**1=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=6.53 cfs @ 12.20 hrs HW=126.91' (Free Discharge)
├─**2=Orifice/Grate** (Orifice Controls 0.82 cfs @ 9.38 fps)
├─**3=Orifice/Grate** (Orifice Controls 4.55 cfs @ 8.33 fps)
└─**4=Broad-Crested Rectangular Weir**(Weir Controls 1.17 cfs @ 1.88 fps)

Pond 7P: Chambers - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= +14.9 cf x 2 x 2 rows = 59.6 cf

77.0" Wide + 18.0" Spacing = 95.0" C-C Row Spacing

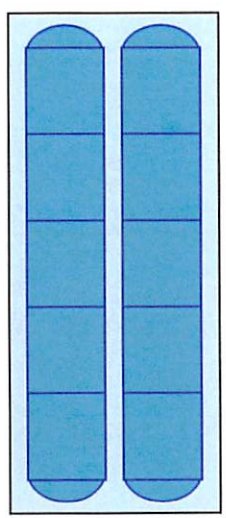
5 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 39.55' Row Length +12.0" End Stone x 2 = 41.55' Base Length
2 Rows x 77.0" Wide + 18.0" Spacing x 1 + 18.0" Side Stone x 2 = 17.33' Base Width
18.0" Base + 45.0" Chamber Height + 12.0" Cover = 6.25' Field Height

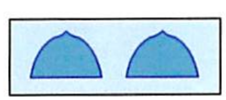
10 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 2 Rows = 1,159.1 cf Chamber Storage

4,501.2 cf Field - 1,159.1 cf Chambers = 3,342.1 cf Stone x 40.0% Voids = 1,336.9 cf Stone Storage

Chamber Storage + Stone Storage = 2,496.0 cf = 0.057 af
Overall Storage Efficiency = 55.5%
Overall System Size = 41.55' x 17.33' x 6.25'

10 Chambers
166.7 cy Field
123.8 cy Stone





Pond 7P: Chambers - Chamber Wizard Field B

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf

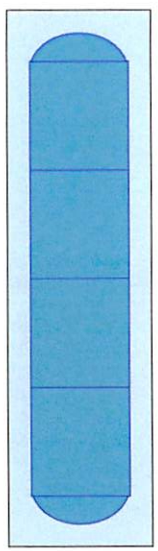
4 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 32.38' Row Length +18.0" End Stone x 2 = 35.38' Base Length
1 Rows x 77.0" Wide + 18.0" Side Stone x 2 = 9.42' Base Width
18.0" Base + 45.0" Chamber Height + 12.0" Cover = 6.25' Field Height

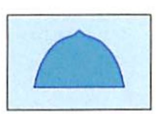
4 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 1 Rows = 469.6 cf Chamber Storage

2,082.3 cf Field - 469.6 cf Chambers = 1,612.7 cf Stone x 40.0% Voids = 645.1 cf Stone Storage

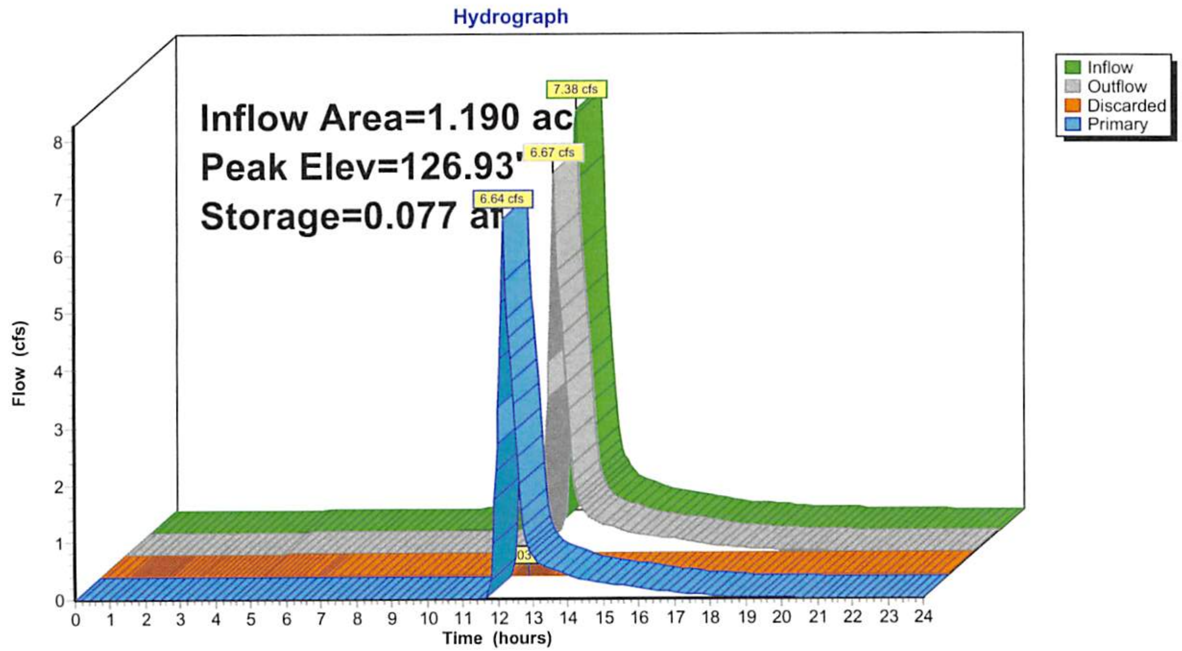
Chamber Storage + Stone Storage = 1,114.7 cf = 0.026 af
Overall Storage Efficiency = 53.5%
Overall System Size = 35.38' x 9.42' x 6.25'

4 Chambers
77.1 cy Field
59.7 cy Stone

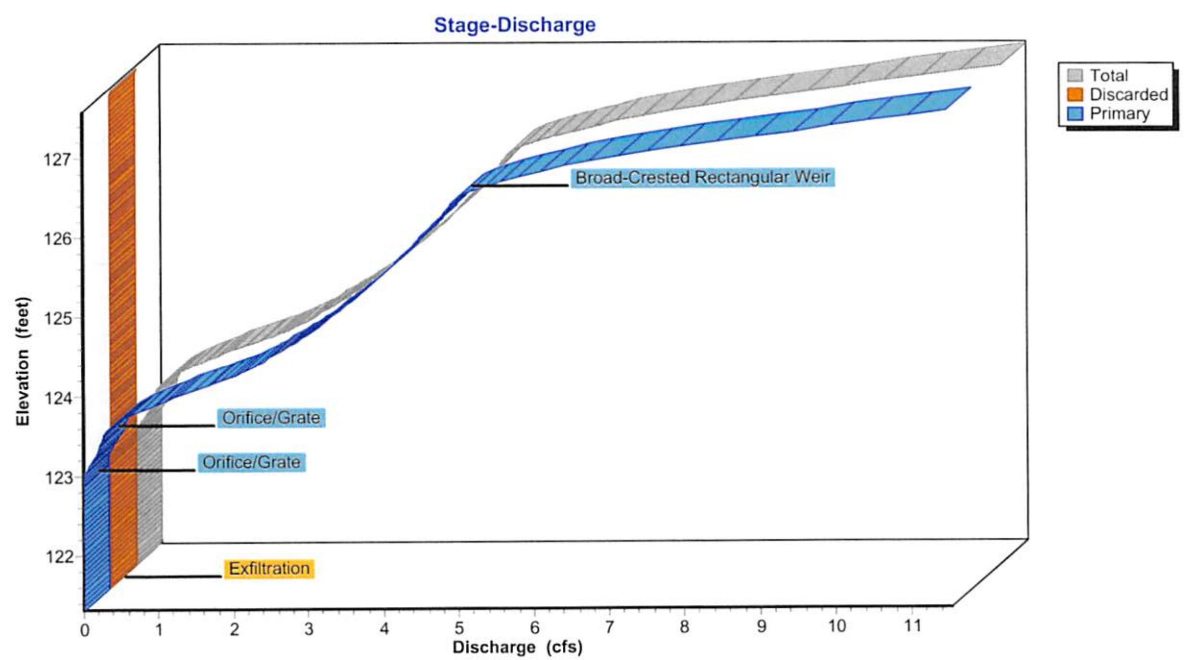




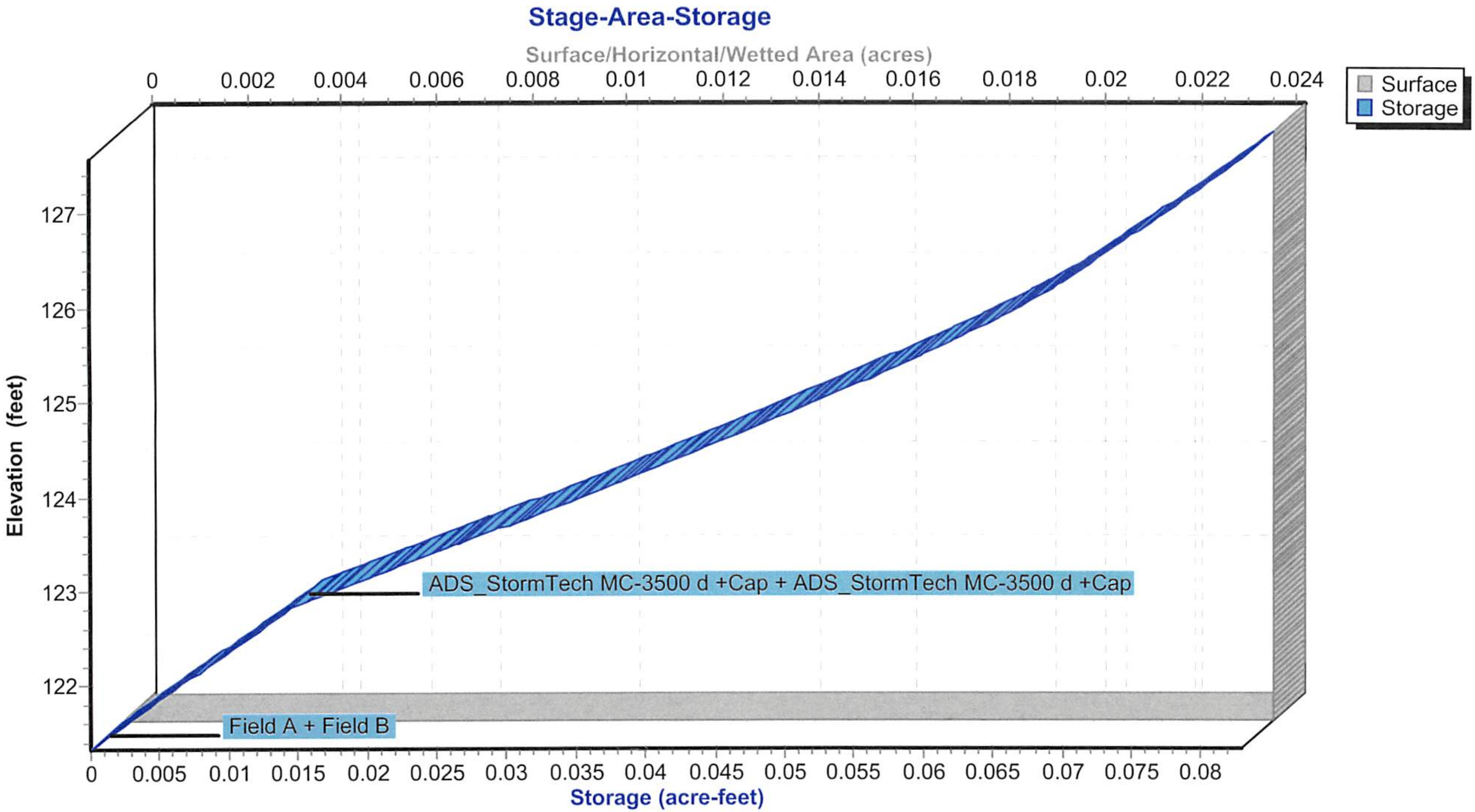
Pond 7P: Chambers



Pond 7P: Chambers



Pond 7P: Chambers



Hydrograph for Pond 7P: Chambers

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.000	121.33	0.00	0.00	0.00
0.50	0.00	0.000	121.33	0.00	0.00	0.00
1.00	0.00	0.000	121.33	0.00	0.00	0.00
1.50	0.01	0.000	121.34	0.00	0.00	0.00
2.00	0.01	0.000	121.35	0.01	0.01	0.00
2.50	0.01	0.000	121.36	0.01	0.01	0.00
3.00	0.01	0.000	121.36	0.01	0.01	0.00
3.50	0.01	0.000	121.37	0.01	0.01	0.00
4.00	0.01	0.000	121.37	0.01	0.01	0.00
4.50	0.01	0.000	121.38	0.01	0.01	0.00
5.00	0.02	0.000	121.38	0.01	0.01	0.00
5.50	0.02	0.001	121.38	0.02	0.02	0.00
6.00	0.02	0.001	121.39	0.02	0.02	0.00
6.50	0.02	0.001	121.39	0.02	0.02	0.00
7.00	0.02	0.001	121.41	0.02	0.02	0.00
7.50	0.03	0.001	121.44	0.02	0.02	0.00
8.00	0.03	0.001	121.48	0.02	0.02	0.00
8.50	0.04	0.002	121.54	0.02	0.02	0.00
9.00	0.04	0.003	121.63	0.02	0.02	0.00
9.50	0.05	0.004	121.75	0.02	0.02	0.00
10.00	0.06	0.005	121.90	0.02	0.02	0.00
10.50	0.07	0.007	122.08	0.02	0.02	0.00
11.00	0.09	0.010	122.33	0.02	0.02	0.00
11.50	0.13	0.013	122.69	0.02	0.02	0.00
12.00	**3.91**	**0.046**	**124.62**	**2.74**	**0.03**	**2.71**
12.50	**2.25**	**0.053**	**125.07**	**3.44**	**0.03**	**3.41**
13.00	0.73	0.033	123.84	0.81	0.03	0.78
13.50	0.52	0.031	123.73	0.55	0.03	0.52
14.00	0.41	0.030	123.66	0.44	0.03	0.42
14.50	0.34	0.028	123.60	0.36	0.02	0.34
15.00	0.29	0.027	123.55	0.31	0.02	0.29
15.50	0.23	0.026	123.47	0.27	0.02	0.25
16.00	0.18	0.024	123.35	0.23	0.02	0.20
16.50	0.14	0.022	123.25	0.18	0.02	0.15
17.00	0.12	0.021	123.19	0.14	0.02	0.11
17.50	0.09	0.020	123.15	0.11	0.02	0.09
18.00	0.07	0.020	123.12	0.09	0.02	0.06
18.50	0.06	0.019	123.09	0.07	0.02	0.04
19.00	0.05	0.019	123.07	0.06	0.02	0.03
19.50	0.04	0.019	123.05	0.05	0.02	0.03
20.00	0.03	0.018	123.04	0.04	0.02	0.02
20.50	0.03	0.018	123.02	0.04	0.02	0.01
21.00	0.02	0.018	123.00	0.03	0.02	0.01
21.50	0.02	0.017	122.99	0.03	0.02	0.00
22.00	0.01	0.017	122.96	0.02	0.02	0.00
22.50	0.01	0.017	122.94	0.02	0.02	0.00
23.00	0.01	0.016	122.92	0.02	0.02	0.00
23.50	0.01	0.016	122.89	0.02	0.02	0.00
24.00	0.01	0.015	122.86	0.02	0.02	0.00

Stage-Discharge for Pond 7P: Chambers

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
121.33	0.00	0.00	0.00
121.43	0.02	0.02	0.00
121.53	0.02	0.02	0.00
121.63	0.02	0.02	0.00
121.73	0.02	0.02	0.00
121.83	0.02	0.02	0.00
121.93	0.02	0.02	0.00
122.03	0.02	0.02	0.00
122.13	0.02	0.02	0.00
122.23	0.02	0.02	0.00
122.33	0.02	0.02	0.00
122.43	0.02	0.02	0.00
122.53	0.02	0.02	0.00
122.63	0.02	0.02	0.00
122.73	0.02	0.02	0.00
122.83	0.02	0.02	0.00
122.93	0.02	0.02	0.00
123.03	0.04	0.02	0.02
123.13	0.09	0.02	0.07
123.23	0.16	0.02	0.14
123.33	0.22	0.02	0.19
123.43	0.26	0.02	0.24
123.53	0.30	0.02	0.27
123.63	0.39	0.02	0.37
123.73	0.55	0.03	0.53
123.83	0.77	0.03	0.75
123.93	1.04	0.03	1.01
124.03	1.33	0.03	1.31
124.13	1.64	0.03	1.62
124.23	1.94	0.03	1.92
124.33	2.18	0.03	2.15
124.43	2.39	0.03	2.36
124.53	2.58	0.03	2.56
124.63	2.76	0.03	2.73
124.73	2.93	0.03	2.90
124.83	3.09	0.03	3.06
124.93	3.24	0.03	3.21
125.03	3.38	0.03	3.35
125.13	3.52	0.03	3.49
125.23	3.65	0.03	3.62
125.33	3.78	0.03	3.75
125.43	3.90	0.03	3.87
125.53	4.02	0.03	3.99
125.63	4.13	0.03	4.10
125.73	4.25	0.03	4.22
125.83	4.36	0.03	4.32
125.93	4.46	0.03	4.43
126.03	4.57	0.03	4.53
126.13	4.67	0.03	4.64
126.23	4.77	0.03	4.74
126.33	4.87	0.03	4.83
126.43	4.96	0.03	4.93
126.53	5.08	0.03	5.04
126.63	5.34	0.03	5.31
126.73	5.70	0.03	5.67
126.83	6.14	0.03	6.11
126.93	6.66	0.03	6.62
127.03	7.25	0.03	7.22
127.13	7.92	0.04	7.88
127.23	8.68	0.04	8.65
127.33	9.50	0.04	9.46
127.43	10.29	0.04	10.25
127.53	**11.12**	**0.04**	**11.08**

Stage-Area-Storage for Pond 7P: Chambers

Elevation (feet)	Surface (acres)	Storage (acre-feet)
121.33	**0.024**	0.000
121.43	0.024	0.001
121.53	0.024	0.002
121.63	0.024	0.003
121.73	0.024	0.004
121.83	0.024	0.005
121.93	0.024	0.006
122.03	0.024	0.007
122.13	0.024	0.008
122.23	0.024	0.009
122.33	0.024	0.010
122.43	0.024	0.011
122.53	0.024	0.012
122.63	0.024	0.013
122.73	0.024	0.014
122.83	0.024	0.015
122.93	0.024	0.016
123.03	0.024	0.018
123.13	0.024	0.020
123.23	0.024	0.022
123.33	0.024	0.024
123.43	0.024	0.025
123.53	0.024	0.027
123.63	0.024	0.029
123.73	0.024	0.031
123.83	0.024	0.032
123.93	0.024	0.034
124.03	0.024	0.036
124.13	0.024	0.038
124.23	0.024	0.039
124.33	0.024	0.041
124.43	0.024	0.043
124.53	0.024	0.044
124.63	0.024	0.046
124.73	0.024	0.048
124.83	0.024	0.049
124.93	0.024	0.051
125.03	0.024	0.053
125.13	0.024	0.054
125.23	0.024	0.056
125.33	0.024	0.057
125.43	0.024	0.059
125.53	0.024	0.060
125.63	0.024	0.062
125.73	0.024	0.063
125.83	0.024	0.065
125.93	0.024	0.066
126.03	0.024	0.067
126.13	0.024	0.068
126.23	0.024	0.070
126.33	0.024	0.071
126.43	0.024	0.072
126.53	0.024	0.073
126.63	0.024	0.074
126.73	0.024	0.075
126.83	0.024	0.076
126.93	0.024	0.077
127.03	0.024	0.078
127.13	0.024	0.079
127.23	0.024	0.080
127.33	0.024	0.080
127.43	0.024	0.081
127.53	0.024	**0.082**

Summary for Pond 8P: Bioretention

Inflow Area = 1.050 ac, 19.05% Impervious, Inflow Depth > 6.09" for 100-yr event
Inflow = 6.52 cfs @ 12.13 hrs, Volume= 0.533 af
Outflow = 6.52 cfs @ 12.14 hrs, Volume= 0.473 af, Atten= 0%, Lag= 0.9 min
Discarded = 0.10 cfs @ 12.14 hrs, Volume= 0.114 af
Primary = 6.42 cfs @ 12.14 hrs, Volume= 0.359 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 130.29' @ 12.14 hrs Surf.Area= 0.097 ac Storage= 0.070 af

Plug-Flow detention time= 78.4 min calculated for 0.473 af (89% of inflow)
Center-of-Mass det. time= 26.1 min (830.5 - 804.4)

Volume	Invert	Avail.Storage	Storage Description
#1	125.50'	0.020 af	**Gravel (Prismatic)** Listed below 0.050 af Overall x 40.0% Voids
#2	127.00'	0.029 af	**Soil (Prismatic)** Listed below (Recalc) 0.082 af Overall x 35.0% Voids
#3	129.50'	0.028 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		0.077 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
125.50	0.033	0.000	0.000
127.00	0.033	0.050	0.050

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
127.00	0.033	0.000	0.000
129.50	0.033	0.082	0.082

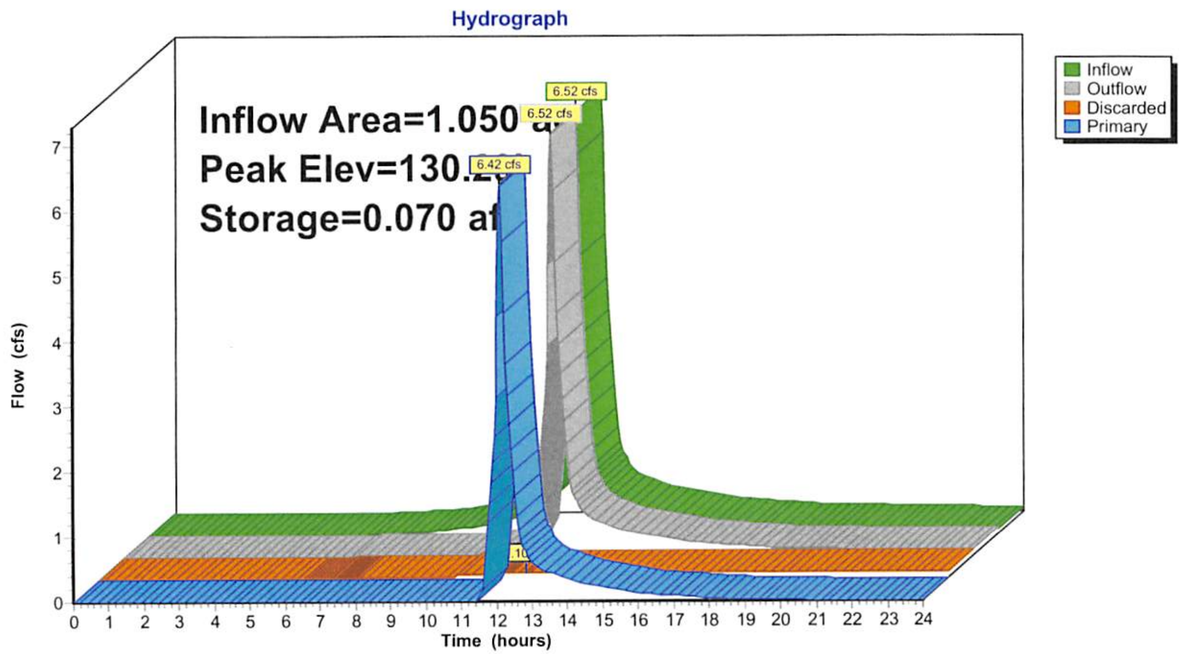
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
129.50	0.023	0.000	0.000
130.00	0.028	0.013	0.013
130.50	0.033	0.015	0.028

Device	Routing	Invert	Outlet Devices
#1	Primary	130.00'	**12.0" Horiz. Orifice/Grate** X 4 rows C= 0.600 Limited to weir flow at low heads
#2	Discarded	125.50'	**0.900 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 100.00'

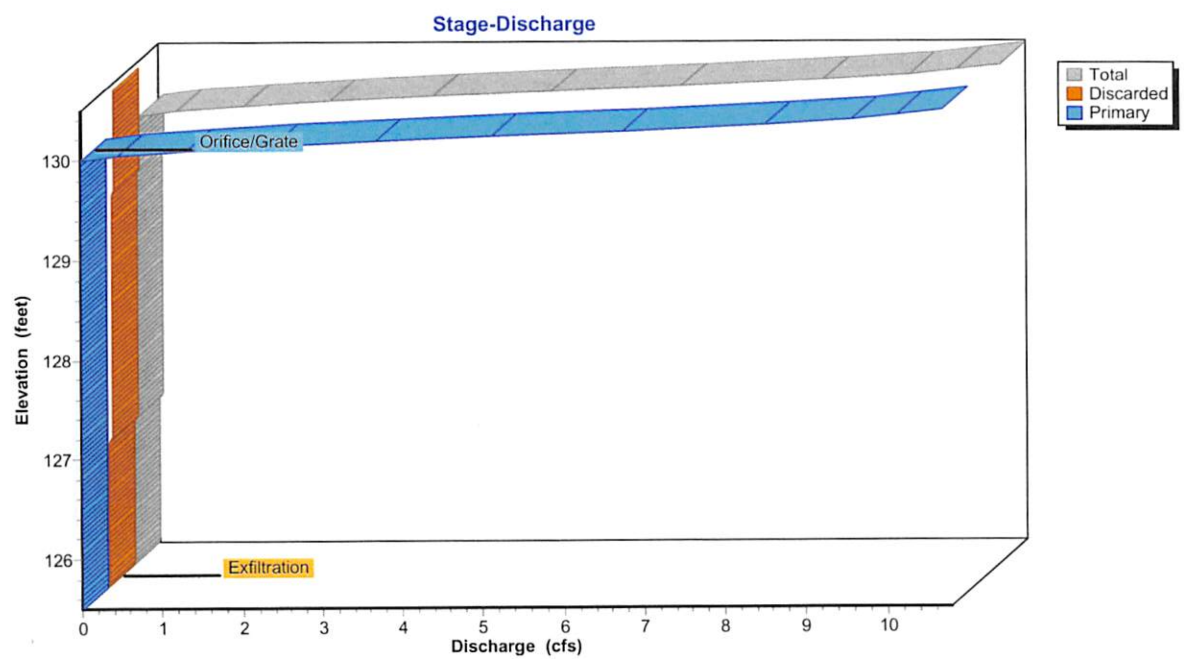
Discarded OutFlow Max=0.10 cfs @ 12.14 hrs HW=130.29' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.10 cfs)

Primary OutFlow Max=6.32 cfs @ 12.14 hrs HW=130.29' (Free Discharge)
↑—**1=Orifice/Grate** (Weir Controls 6.32 cfs @ 1.75 fps)

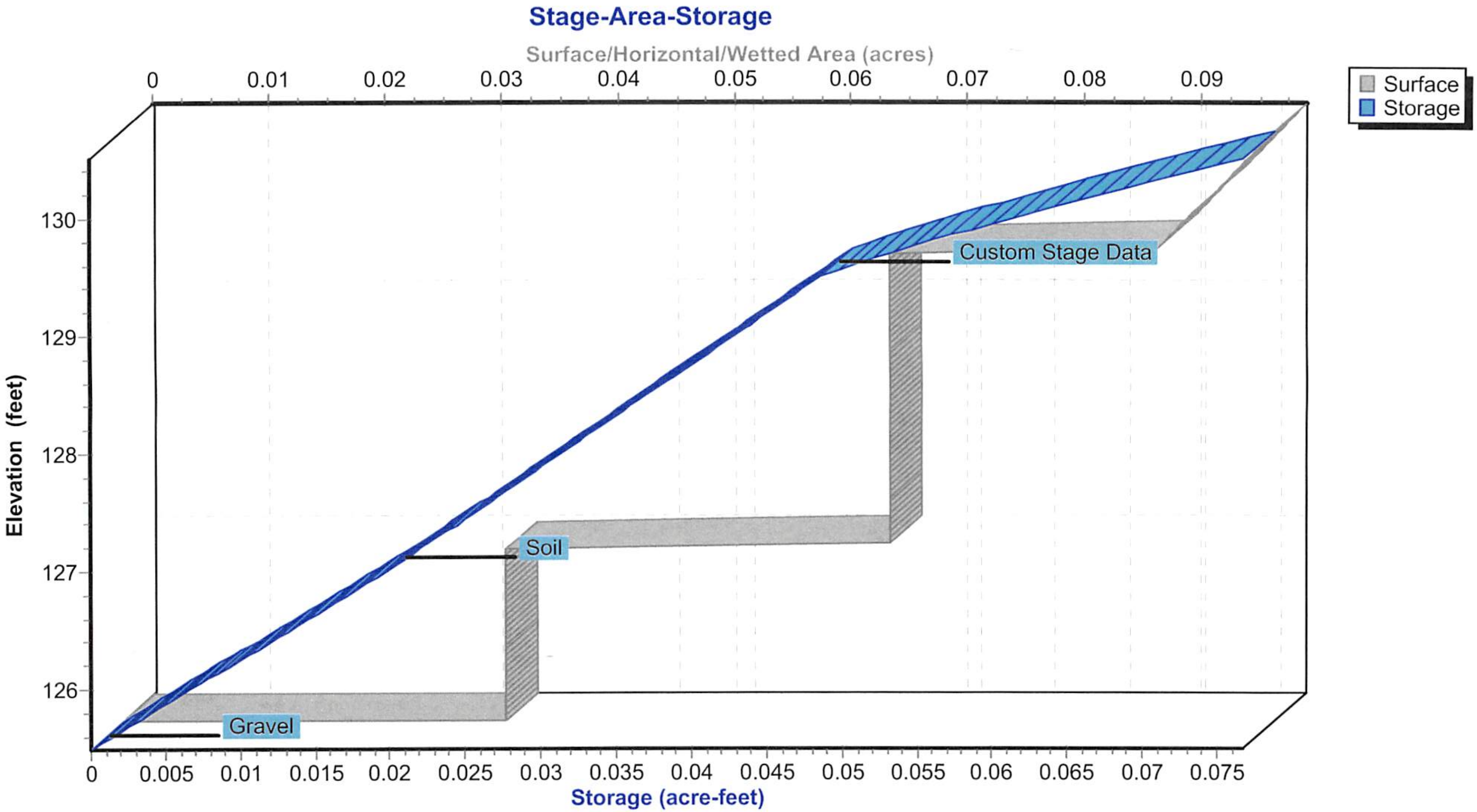
Pond 8P: Bioretention



Pond 8P: Bioretention



Pond 8P: Bioretention



Hydrograph for Pond 8P: Bioretention

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.000	125.50	0.00	0.00	0.00
0.50	0.00	0.000	125.50	0.00	0.00	0.00
1.00	0.00	0.000	125.50	0.00	0.00	0.00
1.50	0.00	0.000	125.50	0.00	0.00	0.00
2.00	0.00	0.000	125.50	0.00	0.00	0.00
2.50	0.00	0.000	125.50	0.00	0.00	0.00
3.00	0.00	0.000	125.50	0.00	0.00	0.00
3.50	0.00	0.000	125.50	0.00	0.00	0.00
4.00	0.00	0.000	125.50	0.00	0.00	0.00
4.50	0.00	0.000	125.50	0.00	0.00	0.00
5.00	0.00	0.000	125.50	0.00	0.00	0.00
5.50	0.00	0.000	125.50	0.00	0.00	0.00
6.00	0.01	0.000	125.51	0.00	0.00	0.00
6.50	0.02	0.000	125.52	0.01	0.01	0.00
7.00	0.03	0.000	125.54	0.02	0.02	0.00
7.50	0.04	0.001	125.56	0.03	0.03	0.00
8.00	0.06	0.002	125.62	0.03	0.03	0.00
8.50	0.09	0.003	125.75	0.03	0.03	0.00
9.00	0.12	0.006	125.97	0.03	0.03	0.00
9.50	0.16	0.011	126.32	0.03	0.03	0.00
10.00	0.21	0.017	126.80	0.03	0.03	0.00
10.50	0.28	0.025	127.46	0.06	0.06	0.00
11.00	0.38	0.036	128.42	0.06	0.06	0.00
11.50	0.64	0.053	129.70	0.09	0.09	0.00
12.00	**3.48**	**0.067**	**130.18**	**3.25**	**0.10**	**3.15**
12.50	**1.98**	**0.065**	**130.13**	**2.10**	**0.10**	**2.00**
13.00	0.71	0.063	130.06	0.72	0.09	0.63
13.50	0.53	0.063	130.05	0.54	0.09	0.45
14.00	0.44	0.063	130.04	0.44	0.09	0.35
14.50	0.38	0.062	130.03	0.38	0.09	0.29
15.00	0.33	0.062	130.03	0.33	0.09	0.24
15.50	0.28	0.062	130.02	0.29	0.09	0.19
16.00	0.23	0.062	130.02	0.24	0.09	0.14
16.50	0.21	0.062	130.01	0.21	0.09	0.11
17.00	0.18	0.062	130.01	0.19	0.09	0.09
17.50	0.16	0.062	130.01	0.16	0.09	0.07
18.00	0.14	0.062	130.01	0.14	0.09	0.05
18.50	0.13	0.062	130.00	0.13	0.09	0.04
19.00	0.13	0.062	130.00	0.13	0.09	0.03
19.50	0.12	0.062	130.00	0.12	0.09	0.03
20.00	0.11	0.061	130.00	0.11	0.09	0.02
20.50	0.11	0.061	130.00	0.11	0.09	0.01
21.00	0.10	0.061	130.00	0.10	0.09	0.01
21.50	0.10	0.061	130.00	0.10	0.09	0.00
22.00	0.09	0.061	130.00	0.09	0.09	0.00
22.50	0.09	0.061	130.00	0.09	0.09	0.00
23.00	0.08	0.061	129.98	0.09	0.09	0.00
23.50	0.08	0.060	129.96	0.09	0.09	0.00
24.00	0.07	0.060	129.94	0.09	0.09	0.00

Stage-Discharge for Pond 8P: Bioretention

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
125.50	0.00	0.00	0.00	128.10	0.06	0.06	0.00
125.55	0.03	0.03	0.00	128.15	0.06	0.06	0.00
125.60	0.03	0.03	0.00	128.20	0.06	0.06	0.00
125.65	0.03	0.03	0.00	128.25	0.06	0.06	0.00
125.70	0.03	0.03	0.00	128.30	0.06	0.06	0.00
125.75	0.03	0.03	0.00	128.35	0.06	0.06	0.00
125.80	0.03	0.03	0.00	128.40	0.06	0.06	0.00
125.85	0.03	0.03	0.00	128.45	0.06	0.06	0.00
125.90	0.03	0.03	0.00	128.50	0.07	0.07	0.00
125.95	0.03	0.03	0.00	128.55	0.07	0.07	0.00
126.00	0.03	0.03	0.00	128.60	0.07	0.07	0.00
126.05	0.03	0.03	0.00	128.65	0.07	0.07	0.00
126.10	0.03	0.03	0.00	128.70	0.07	0.07	0.00
126.15	0.03	0.03	0.00	128.75	0.07	0.07	0.00
126.20	0.03	0.03	0.00	128.80	0.07	0.07	0.00
126.25	0.03	0.03	0.00	128.85	0.07	0.07	0.00
126.30	0.03	0.03	0.00	128.90	0.07	0.07	0.00
126.35	0.03	0.03	0.00	128.95	0.07	0.07	0.00
126.40	0.03	0.03	0.00	129.00	0.07	0.07	0.00
126.45	0.03	0.03	0.00	129.05	0.07	0.07	0.00
126.50	0.03	0.03	0.00	129.10	0.07	0.07	0.00
126.55	0.03	0.03	0.00	129.15	0.07	0.07	0.00
126.60	0.03	0.03	0.00	129.20	0.07	0.07	0.00
126.65	0.03	0.03	0.00	129.25	0.07	0.07	0.00
126.70	0.03	0.03	0.00	129.30	0.07	0.07	0.00
126.75	0.03	0.03	0.00	129.35	0.07	0.07	0.00
126.80	0.03	0.03	0.00	129.40	0.07	0.07	0.00
126.85	0.03	0.03	0.00	129.45	0.07	0.07	0.00
126.90	0.03	0.03	0.00	129.50	0.09	0.09	0.00
126.95	0.03	0.03	0.00	129.55	0.09	0.09	0.00
127.00	0.06	0.06	0.00	129.60	0.09	0.09	0.00
127.05	0.06	0.06	0.00	129.65	0.09	0.09	0.00
127.10	0.06	0.06	0.00	129.70	0.09	0.09	0.00
127.15	0.06	0.06	0.00	129.75	0.09	0.09	0.00
127.20	0.06	0.06	0.00	129.80	0.09	0.09	0.00
127.25	0.06	0.06	0.00	129.85	0.09	0.09	0.00
127.30	0.06	0.06	0.00	129.90	0.09	0.09	0.00
127.35	0.06	0.06	0.00	129.95	0.09	0.09	0.00
127.40	0.06	0.06	0.00	130.00	0.09	0.09	0.00
127.45	0.06	0.06	0.00	130.05	0.55	0.09	0.46
127.50	0.06	0.06	0.00	130.10	1.39	0.10	1.30
127.55	0.06	0.06	0.00	130.15	2.48	0.10	2.39
127.60	0.06	0.06	0.00	130.20	3.77	0.10	3.68
127.65	0.06	0.06	0.00	130.25	5.23	0.10	5.14
127.70	0.06	0.06	0.00	130.30	6.85	0.10	6.75
127.75	0.06	0.06	0.00	130.35	8.61	0.10	8.51
127.80	0.06	0.06	0.00	130.40	9.67	0.10	9.57
127.85	0.06	0.06	0.00	130.45	10.25	0.10	10.15
127.90	0.06	0.06	0.00	130.50	**10.80**	**0.10**	**10.70**
127.95	0.06	0.06	0.00				
128.00	0.06	0.06	0.00				
128.05	0.06	0.06	0.00				

Stage-Area-Storage for Pond 8P: Bioretention

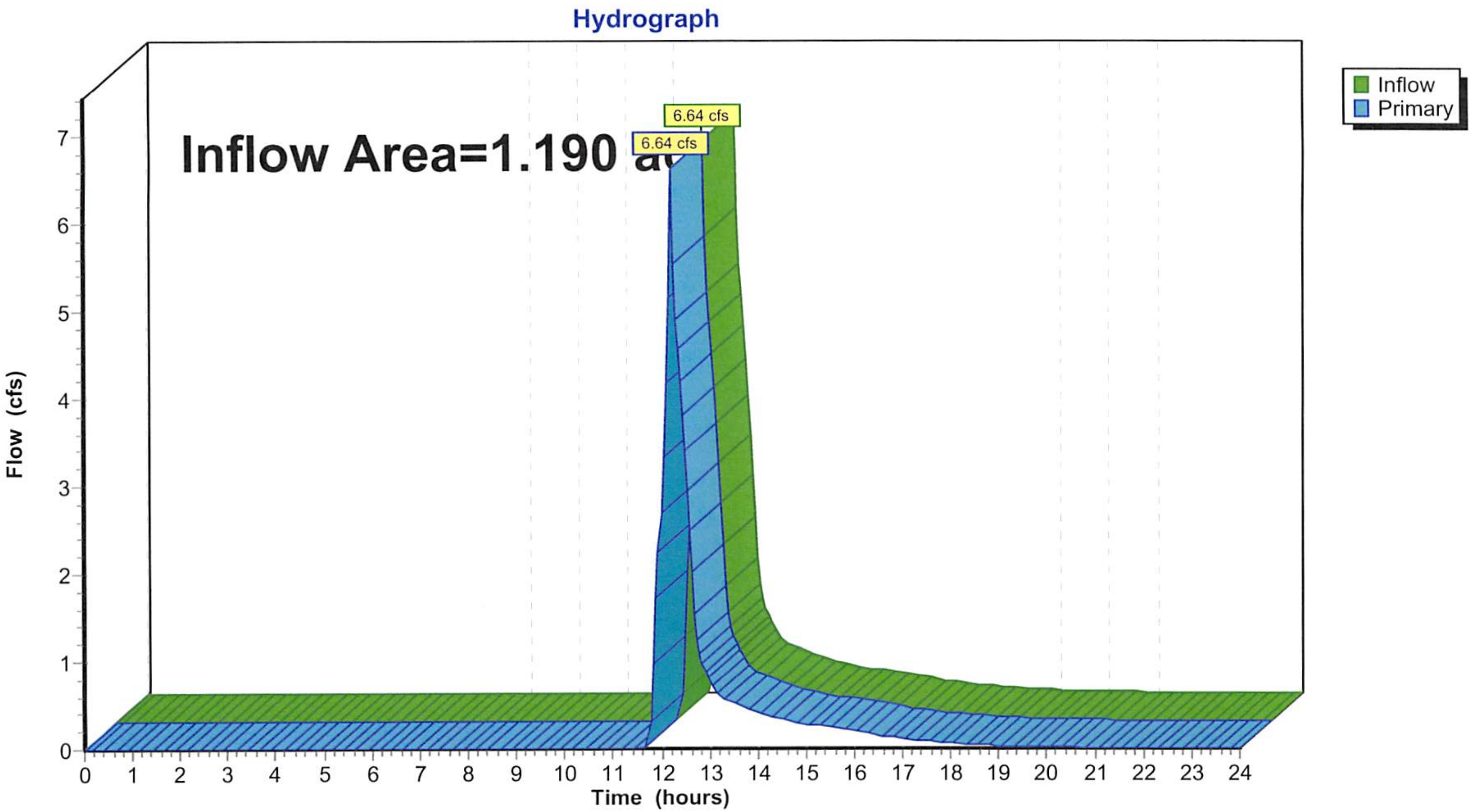
Elevation (feet)	Surface (acres)	Storage (acre-feet)	Elevation (feet)	Surface (acres)	Storage (acre-feet)
125.50	0.033	0.000	128.10	0.066	0.033
125.55	0.033	0.001	128.15	0.066	0.033
125.60	0.033	0.001	128.20	0.066	0.034
125.65	0.033	0.002	128.25	0.066	0.034
125.70	0.033	0.003	128.30	0.066	0.035
125.75	0.033	0.003	128.35	0.066	0.035
125.80	0.033	0.004	128.40	0.066	0.036
125.85	0.033	0.005	128.45	0.066	0.037
125.90	0.033	0.005	128.50	0.066	0.037
125.95	0.033	0.006	128.55	0.066	0.038
126.00	0.033	0.007	128.60	0.066	0.038
126.05	0.033	0.007	128.65	0.066	0.039
126.10	0.033	0.008	128.70	0.066	0.039
126.15	0.033	0.009	128.75	0.066	0.040
126.20	0.033	0.009	128.80	0.066	0.041
126.25	0.033	0.010	128.85	0.066	0.041
126.30	0.033	0.011	128.90	0.066	0.042
126.35	0.033	0.011	128.95	0.066	0.042
126.40	0.033	0.012	129.00	0.066	0.043
126.45	0.033	0.013	129.05	0.066	0.043
126.50	0.033	0.013	129.10	0.066	0.044
126.55	0.033	0.014	129.15	0.066	0.045
126.60	0.033	0.015	129.20	0.066	0.045
126.65	0.033	0.015	129.25	0.066	0.046
126.70	0.033	0.016	129.30	0.066	0.046
126.75	0.033	0.017	129.35	0.066	0.047
126.80	0.033	0.017	129.40	0.066	0.048
126.85	0.033	0.018	129.45	0.066	0.048
126.90	0.033	0.018	129.50	0.089	0.049
126.95	0.033	0.019	129.55	0.090	0.050
127.00	0.066	0.020	129.60	0.090	0.051
127.05	0.066	0.020	129.65	0.091	0.052
127.10	0.066	0.021	129.70	0.091	0.053
127.15	0.066	0.022	129.75	0.091	0.055
127.20	0.066	0.022	129.80	0.092	0.056
127.25	0.066	0.023	129.85	0.092	0.057
127.30	0.066	0.023	129.90	0.093	0.059
127.35	0.066	0.024	129.95	0.093	0.060
127.40	0.066	0.024	130.00	0.094	0.061
127.45	0.066	0.025	130.05	0.095	0.063
127.50	0.066	0.026	130.10	0.095	0.064
127.55	0.066	0.026	130.15	0.096	0.066
127.60	0.066	0.027	130.20	0.096	0.067
127.65	0.066	0.027	130.25	0.096	0.069
127.70	0.066	0.028	130.30	0.097	0.070
127.75	0.066	0.028	130.35	0.097	0.072
127.80	0.066	0.029	130.40	0.098	0.073
127.85	0.066	0.030	130.45	0.098	0.075
127.90	0.066	0.030	130.50	**0.099**	**0.077**
127.95	0.066	0.031			
128.00	0.066	0.031			
128.05	0.066	0.032			

Summary for Link 7L: Post (Composite)

Inflow Area =	1.190 ac, 28.57% Impervious,	Inflow Depth = 4.07"	for 100-yr event	
Inflow =	6.64 cfs @ 12.20 hrs,	Volume=	0.404 af	
Primary =	6.64 cfs @ 12.20 hrs,	Volume=	0.404 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 7L: Post (Composite)



Hydrograph for Link 7L: Post (Composite)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00
0.25	0.00	0.00	0.00
0.50	0.00	0.00	0.00
0.75	0.00	0.00	0.00
1.00	0.00	0.00	0.00
1.25	0.00	0.00	0.00
1.50	0.00	0.00	0.00
1.75	0.00	0.00	0.00
2.00	0.00	0.00	0.00
2.25	0.00	0.00	0.00
2.50	0.00	0.00	0.00
2.75	0.00	0.00	0.00
3.00	0.00	0.00	0.00
3.25	0.00	0.00	0.00
3.50	0.00	0.00	0.00
3.75	0.00	0.00	0.00
4.00	0.00	0.00	0.00
4.25	0.00	0.00	0.00
4.50	0.00	0.00	0.00
4.75	0.00	0.00	0.00
5.00	0.00	0.00	0.00
5.25	0.00	0.00	0.00
5.50	0.00	0.00	0.00
5.75	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.25	0.00	0.00	0.00
6.50	0.00	0.00	0.00
6.75	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.25	0.00	0.00	0.00
7.50	0.00	0.00	0.00
7.75	0.00	0.00	0.00
8.00	0.00	0.00	0.00
8.25	0.00	0.00	0.00
8.50	0.00	0.00	0.00
8.75	0.00	0.00	0.00
9.00	0.00	0.00	0.00
9.25	0.00	0.00	0.00
9.50	0.00	0.00	0.00
9.75	0.00	0.00	0.00
10.00	0.00	0.00	0.00
10.25	0.00	0.00	0.00
10.50	0.00	0.00	0.00
10.75	0.00	0.00	0.00
11.00	0.00	0.00	0.00
11.25	0.00	0.00	0.00
11.50	0.00	0.00	0.00
11.75	0.16	0.00	0.16
12.00	**2.71**	0.00	**2.71**
12.25	**5.56**	0.00	**5.56**
12.50	3.41	0.00	3.41
12.75	1.26	0.00	1.26
13.00	0.78	0.00	0.78
13.25	0.60	0.00	0.60
13.50	0.52	0.00	0.52
13.75	0.47	0.00	0.47
14.00	0.42	0.00	0.42
14.25	0.37	0.00	0.37
14.50	0.34	0.00	0.34
14.75	0.31	0.00	0.31
15.00	0.29	0.00	0.29
15.25	0.27	0.00	0.27
15.50	0.25	0.00	0.25
15.75	0.23	0.00	0.23
16.00	0.20	0.00	0.20
16.25	0.18	0.00	0.18
16.50	0.15	0.00	0.15
16.75	0.13	0.00	0.13
17.00	0.11	0.00	0.11
17.25	0.10	0.00	0.10
17.50	0.09	0.00	0.09
17.75	0.07	0.00	0.07
18.00	0.06	0.00	0.06
18.25	0.05	0.00	0.05
18.50	0.04	0.00	0.04
18.75	0.04	0.00	0.04
19.00	0.03	0.00	0.03
19.25	0.03	0.00	0.03
19.50	0.03	0.00	0.03
19.75	0.02	0.00	0.02
20.00	0.02	0.00	0.02
20.25	0.02	0.00	0.02
20.50	0.01	0.00	0.01
20.75	0.01	0.00	0.01
21.00	0.01	0.00	0.01
21.25	0.01	0.00	0.01
21.50	0.00	0.00	0.00
21.75	0.00	0.00	0.00
22.00	0.00	0.00	0.00
22.25	0.00	0.00	0.00
22.50	0.00	0.00	0.00
22.75	0.00	0.00	0.00
23.00	0.00	0.00	0.00
23.25	0.00	0.00	0.00
23.50	0.00	0.00	0.00
23.75	0.00	0.00	0.00
24.00	0.00	0.00	0.00

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment4S: PR-01 (Site) Runoff Area=1.050 ac 19.05% Impervious Runoff Depth>0.26"
Flow Length=310' Tc=9.1 min CN=79 Runoff=0.21 cfs 0.023 af

Subcatchment5S: PR-02 (Roof) Runoff Area=0.140 ac 100.00% Impervious Runoff Depth>1.28"
Tc=6.0 min CN=98 Runoff=0.19 cfs 0.015 af

Pond 7P: Chambers Peak Elev=121.92' Storage=0.006 af Inflow=0.19 cfs 0.015 af
Discarded=0.02 cfs 0.015 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.015 af

Pond 8P: Bioretention Peak Elev=126.03' Storage=0.007 af Inflow=0.21 cfs 0.023 af
Discarded=0.03 cfs 0.022 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.022 af

Link 7L: Post (Composite) Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 1.190 ac Runoff Volume = 0.037 af Average Runoff Depth = 0.38"
71.43% Pervious = 0.850 ac 28.57% Impervious = 0.340 ac

Summary for Subcatchment 4S: PR-01 (Site)

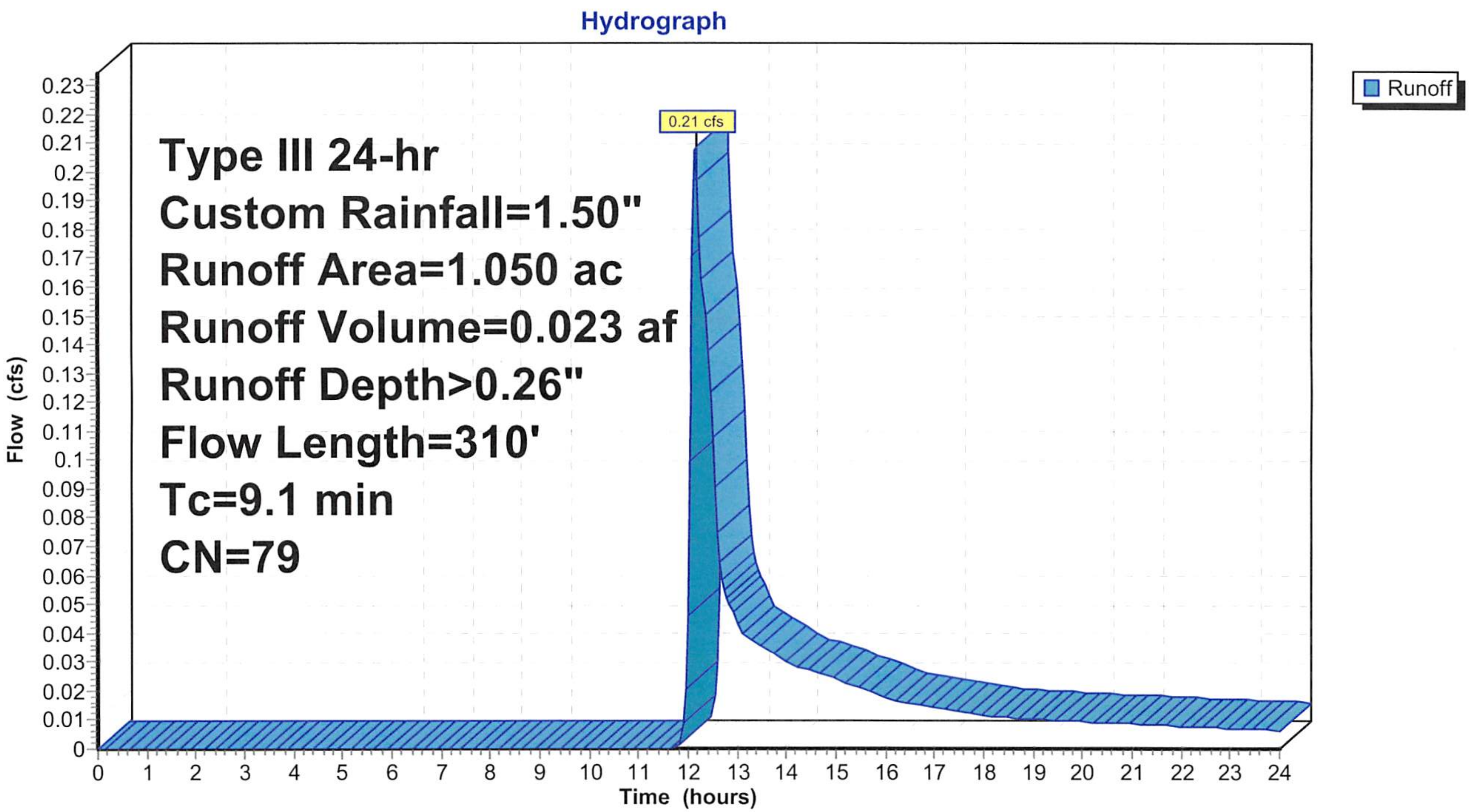
Runoff = 0.21 cfs @ 12.16 hrs, Volume= 0.023 af, Depth> 0.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Custom Rainfall=1.50"

Area (ac)	CN	Description
0.200	98	Paved parking, HSG C
0.850	74	>75% Grass cover, Good, HSG C
1.050	79	Weighted Average
0.850		80.95% Pervious Area
0.200		19.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	35	0.0700	0.24		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
1.7	28	0.1070	0.27		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
3.4	37	0.0340	0.18		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.58"
1.0	78	0.0350	1.31		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
0.1	30	0.0500	4.54		**Shallow Concentrated Flow, Pathway** Paved Kv= 20.3 fps
0.3	52	0.0290	2.55		**Shallow Concentrated Flow, Shallow Concentrated** Grassed Waterway Kv= 15.0 fps
0.2	50	0.2000	4.47		**Shallow Concentrated Flow, Shallow Concentrated** Nearly Bare & Untilled Kv= 10.0 fps
9.1	310	Total			

Subcatchment 4S: PR-01 (Site)



Hydrograph for Subcatchment 4S: PR-01 (Site)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00
0.50	0.01	0.00	0.00
0.75	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.25	0.02	0.00	0.00
1.50	0.02	0.00	0.00
1.75	0.03	0.00	0.00
2.00	0.03	0.00	0.00
2.25	0.03	0.00	0.00
2.50	0.04	0.00	0.00
2.75	0.04	0.00	0.00
3.00	0.05	0.00	0.00
3.25	0.05	0.00	0.00
3.50	0.06	0.00	0.00
3.75	0.06	0.00	0.00
4.00	0.06	0.00	0.00
4.25	0.07	0.00	0.00
4.50	0.07	0.00	0.00
4.75	0.08	0.00	0.00
5.00	0.09	0.00	0.00
5.25	0.09	0.00	0.00
5.50	0.10	0.00	0.00
5.75	0.10	0.00	0.00
6.00	0.11	0.00	0.00
6.25	0.11	0.00	0.00
6.50	0.12	0.00	0.00
6.75	0.13	0.00	0.00
7.00	0.14	0.00	0.00
7.25	0.14	0.00	0.00
7.50	0.15	0.00	0.00
7.75	0.16	0.00	0.00
8.00	0.17	0.00	0.00
8.25	0.18	0.00	0.00
8.50	0.19	0.00	0.00
8.75	0.21	0.00	0.00
9.00	0.22	0.00	0.00
9.25	0.23	0.00	0.00
9.50	0.25	0.00	0.00
9.75	0.27	0.00	0.00
10.00	0.28	0.00	0.00
10.25	0.30	0.00	0.00
10.50	0.32	0.00	0.00
10.75	0.35	0.00	0.00
11.00	0.38	0.00	0.00
11.25	0.41	0.00	0.00
11.50	0.45	0.00	0.00
11.75	0.53	0.00	0.00
12.00	0.75	0.02	**0.05**
12.25	0.97	0.06	**0.18**
12.50	1.05	0.09	0.11
12.75	1.09	0.10	0.05
13.00	1.12	0.11	0.04
13.25	1.15	0.12	0.04
13.50	1.18	0.13	0.04
13.75	1.20	0.13	0.03
14.00	1.22	0.14	0.03
14.25	1.23	0.15	0.03
14.50	1.25	0.15	0.03
14.75	1.27	0.16	0.03
15.00	1.28	0.16	0.02
15.25	1.29	0.17	0.02
15.50	1.31	0.18	0.02
15.75	1.32	0.18	0.02
16.00	1.33	0.18	0.02
16.25	1.34	0.19	0.02
16.50	1.35	0.19	0.02
16.75	1.36	0.20	0.02
17.00	1.36	0.20	0.01
17.25	1.37	0.20	0.01
17.50	1.38	0.20	0.01
17.75	1.39	0.21	0.01
18.00	1.39	0.21	0.01
18.25	1.40	0.21	0.01
18.50	1.40	0.22	0.01
18.75	1.41	0.22	0.01
19.00	1.41	0.22	0.01
19.25	1.42	0.22	0.01
19.50	1.43	0.22	0.01
19.75	1.43	0.23	0.01
20.00	1.44	0.23	0.01
20.25	1.44	0.23	0.01
20.50	1.45	0.23	0.01
20.75	1.45	0.24	0.01
21.00	1.45	0.24	0.01
21.25	1.46	0.24	0.01
21.50	1.46	0.24	0.01
21.75	1.47	0.24	0.01
22.00	1.47	0.25	0.01
22.25	1.48	0.25	0.01
22.50	1.48	0.25	0.01
22.75	1.48	0.25	0.01
23.00	1.49	0.25	0.01
23.25	1.49	0.25	0.01
23.50	1.49	0.26	0.01
23.75	1.50	0.26	0.01
24.00	**1.50**	**0.26**	0.01

Summary for Subcatchment 5S: PR-02 (Roof)

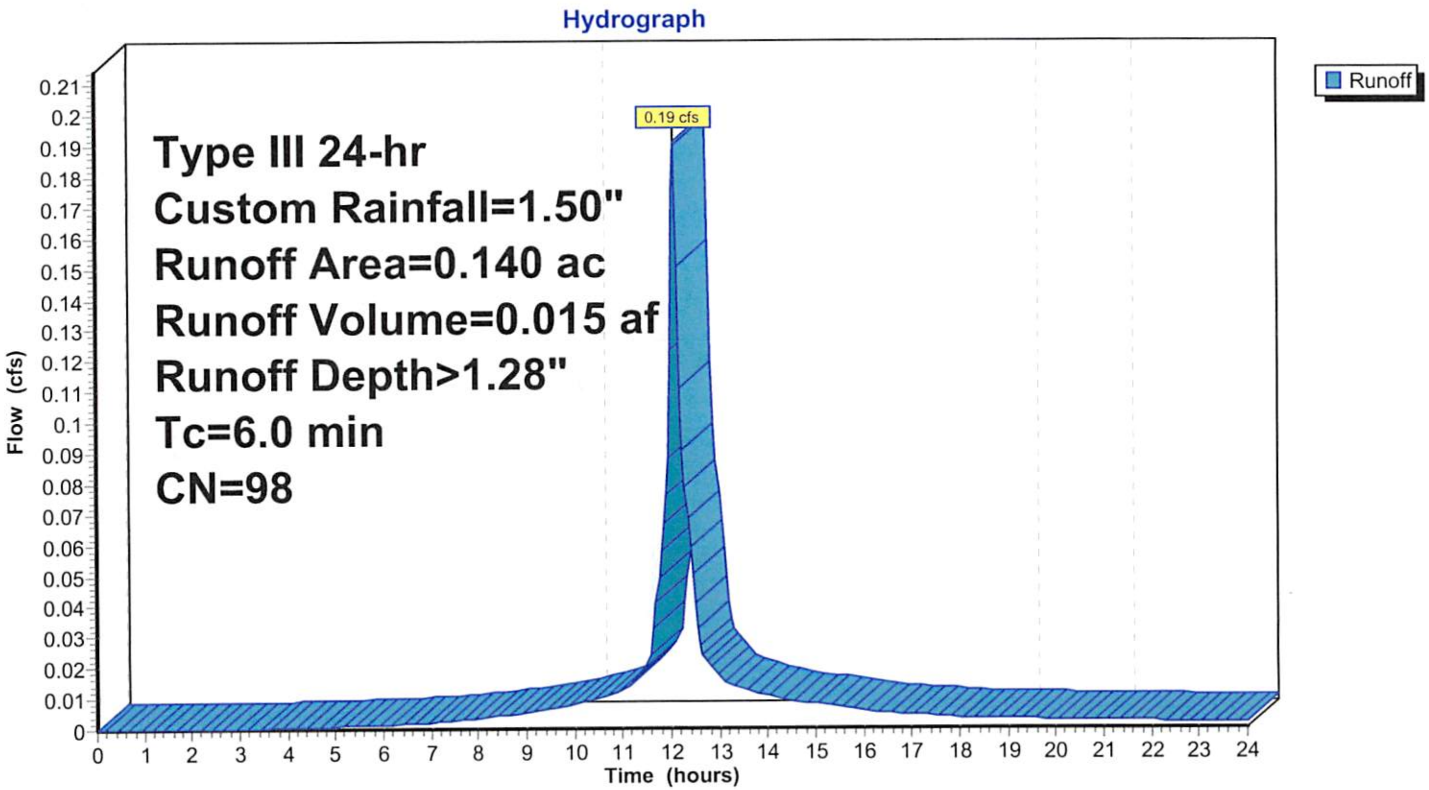
Runoff = 0.19 cfs @ 12.09 hrs, Volume= 0.015 af, Depth> 1.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Custom Rainfall=1.50"

Area (ac)	CN	Description
0.140	98	Roofs, HSG C
0.140		100.00% Impervious Area

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

Subcatchment 5S: PR-02 (Roof)



Hydrograph for Subcatchment 5S: PR-02 (Roof)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00
0.50	0.01	0.00	0.00
0.75	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.25	0.02	0.00	0.00
1.50	0.02	0.00	0.00
1.75	0.03	0.00	0.00
2.00	0.03	0.00	0.00
2.25	0.03	0.00	0.00
2.50	0.04	0.00	0.00
2.75	0.04	0.00	0.00
3.00	0.05	0.00	0.00
3.25	0.05	0.00	0.00
3.50	0.06	0.00	0.00
3.75	0.06	0.00	0.00
4.00	0.06	0.00	0.00
4.25	0.07	0.00	0.00
4.50	0.07	0.00	0.00
4.75	0.08	0.01	0.00
5.00	0.09	0.01	0.00
5.25	0.09	0.01	0.00
5.50	0.10	0.01	0.00
5.75	0.10	0.01	0.00
6.00	0.11	0.02	0.00
6.25	0.11	0.02	0.00
6.50	0.12	0.02	0.00
6.75	0.13	0.03	0.00
7.00	0.14	0.03	0.00
7.25	0.14	0.03	0.00
7.50	0.15	0.04	0.00
7.75	0.16	0.04	0.00
8.00	0.17	0.05	0.00
8.25	0.18	0.06	0.00
8.50	0.19	0.06	0.00
8.75	0.21	0.07	0.00
9.00	0.22	0.08	0.01
9.25	0.23	0.09	0.01
9.50	0.25	0.11	0.01
9.75	0.27	0.12	0.01
10.00	0.28	0.13	0.01
10.25	0.30	0.15	0.01
10.50	0.32	0.17	0.01
10.75	0.35	0.19	0.01
11.00	0.38	0.21	0.01
11.25	0.41	0.23	0.02
11.50	0.45	0.27	0.02
11.75	0.53	0.35	0.05
12.00	0.75	0.55	**0.12**
12.25	0.97	0.76	**0.09**
12.50	1.05	0.84	0.04
12.75	1.09	0.88	0.02
13.00	1.12	0.91	0.02
13.25	1.15	0.94	0.01
13.50	1.18	0.96	0.01
13.75	1.20	0.98	0.01
14.00	1.22	1.00	0.01
14.25	1.23	1.02	0.01
14.50	1.25	1.04	0.01
14.75	1.27	1.05	0.01
15.00	1.28	1.07	0.01
15.25	1.29	1.08	0.01
15.50	1.31	1.09	0.01
15.75	1.32	1.10	0.01
16.00	1.33	1.11	0.01
16.25	1.34	1.12	0.01
16.50	1.35	1.13	0.00
16.75	1.36	1.14	0.00
17.00	1.36	1.15	0.00
17.25	1.37	1.15	0.00
17.50	1.38	1.16	0.00
17.75	1.39	1.17	0.00
18.00	1.39	1.17	0.00
18.25	1.40	1.18	0.00
18.50	1.40	1.19	0.00
18.75	1.41	1.19	0.00
19.00	1.41	1.20	0.00
19.25	1.42	1.20	0.00
19.50	1.43	1.21	0.00
19.75	1.43	1.21	0.00
20.00	1.44	1.22	0.00
20.25	1.44	1.22	0.00
20.50	1.45	1.23	0.00
20.75	1.45	1.23	0.00
21.00	1.45	1.24	0.00
21.25	1.46	1.24	0.00
21.50	1.46	1.24	0.00
21.75	1.47	1.25	0.00
22.00	1.47	1.25	0.00
22.25	1.48	1.26	0.00
22.50	1.48	1.26	0.00
22.75	1.48	1.26	0.00
23.00	1.49	1.27	0.00
23.25	1.49	1.27	0.00
23.50	1.49	1.27	0.00
23.75	1.50	1.28	0.00
24.00	**1.50**	**1.28**	0.00

Summary for Pond 7P: Chambers

Inflow Area = 1.190 ac, 28.57% Impervious, Inflow Depth > 0.15" for Custom event
Inflow = 0.19 cfs @ 12.09 hrs, Volume= 0.015 af
Outflow = 0.02 cfs @ 12.83 hrs, Volume= 0.015 af, Atten= 90%, Lag= 44.7 min
Discarded = 0.02 cfs @ 12.83 hrs, Volume= 0.015 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 121.92' @ 12.83 hrs Surf.Area= 0.024 ac Storage= 0.006 af

Plug-Flow detention time= 101.1 min calculated for 0.015 af (100% of inflow)
Center-of-Mass det. time= 98.4 min (873.2 - 774.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	121.33'	0.031 af	**17.33'W x 41.55'L x 6.25'H Field A** 0.103 af Overall - 0.027 af Embedded = 0.077 af x 40.0% Voids
#2A	122.83'	0.027 af	**ADS_StormTech MC-3500 d +Cap**x 10 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 10 Chambers in 2 Rows Cap Storage= +14.9 cf x 2 x 2 rows = 59.6 cf
#3B	121.33'	0.015 af	**9.42'W x 35.38'L x 6.25'H Field B** 0.048 af Overall - 0.011 af Embedded = 0.037 af x 40.0% Voids
#4B	122.83'	0.011 af	**ADS_StormTech MC-3500 d +Cap**x 4 Inside #3 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf
		0.083 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	121.33'	**0.750 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 115.00'
#2	Primary	122.95'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	123.50'	**10.0" Vert. Orifice/Grate** C= 0.600
#4	Primary	126.50'	**1.5' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.02 cfs @ 12.83 hrs HW=121.92' (Free Discharge)
└─**1=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=121.33' (Free Discharge)
├─**2=Orifice/Grate** (Controls 0.00 cfs)
├─**3=Orifice/Grate** (Controls 0.00 cfs)
└─**4=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 7P: Chambers - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= +14.9 cf x 2 x 2 rows = 59.6 cf

77.0" Wide + 18.0" Spacing = 95.0" C-C Row Spacing

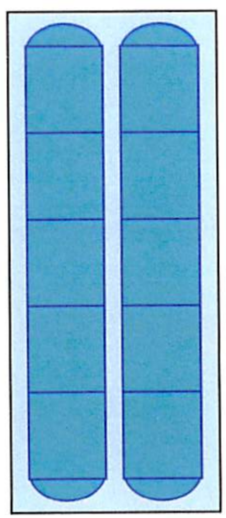
5 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 39.55' Row Length +12.0" End Stone x 2 = 41.55' Base Length
2 Rows x 77.0" Wide + 18.0" Spacing x 1 + 18.0" Side Stone x 2 = 17.33' Base Width
18.0" Base + 45.0" Chamber Height + 12.0" Cover = 6.25' Field Height

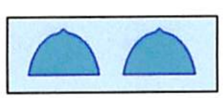
10 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 2 Rows = 1,159.1 cf Chamber Storage

4,501.2 cf Field - 1,159.1 cf Chambers = 3,342.1 cf Stone x 40.0% Voids = 1,336.9 cf Stone Storage

Chamber Storage + Stone Storage = 2,496.0 cf = 0.057 af
Overall Storage Efficiency = 55.5%
Overall System Size = 41.55' x 17.33' x 6.25'

10 Chambers
166.7 cy Field
123.8 cy Stone





Pond 7P: Chambers - Chamber Wizard Field B

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf

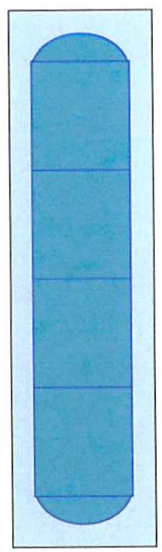
4 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 32.38' Row Length +18.0" End Stone x 2 = 35.38' Base Length
1 Rows x 77.0" Wide + 18.0" Side Stone x 2 = 9.42' Base Width
18.0" Base + 45.0" Chamber Height + 12.0" Cover = 6.25' Field Height

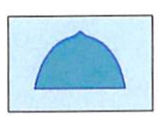
4 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 1 Rows = 469.6 cf Chamber Storage

2,082.3 cf Field - 469.6 cf Chambers = 1,612.7 cf Stone x 40.0% Voids = 645.1 cf Stone Storage

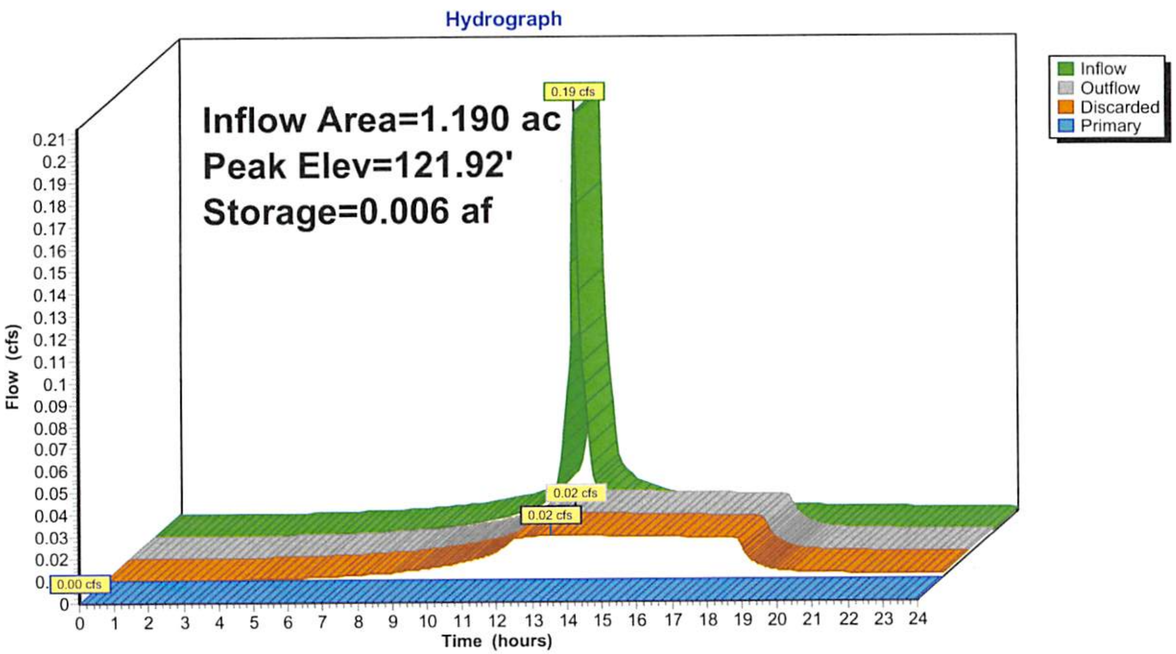
Chamber Storage + Stone Storage = 1,114.7 cf = 0.026 af
Overall Storage Efficiency = 53.5%
Overall System Size = 35.38' x 9.42' x 6.25'

4 Chambers
77.1 cy Field
59.7 cy Stone

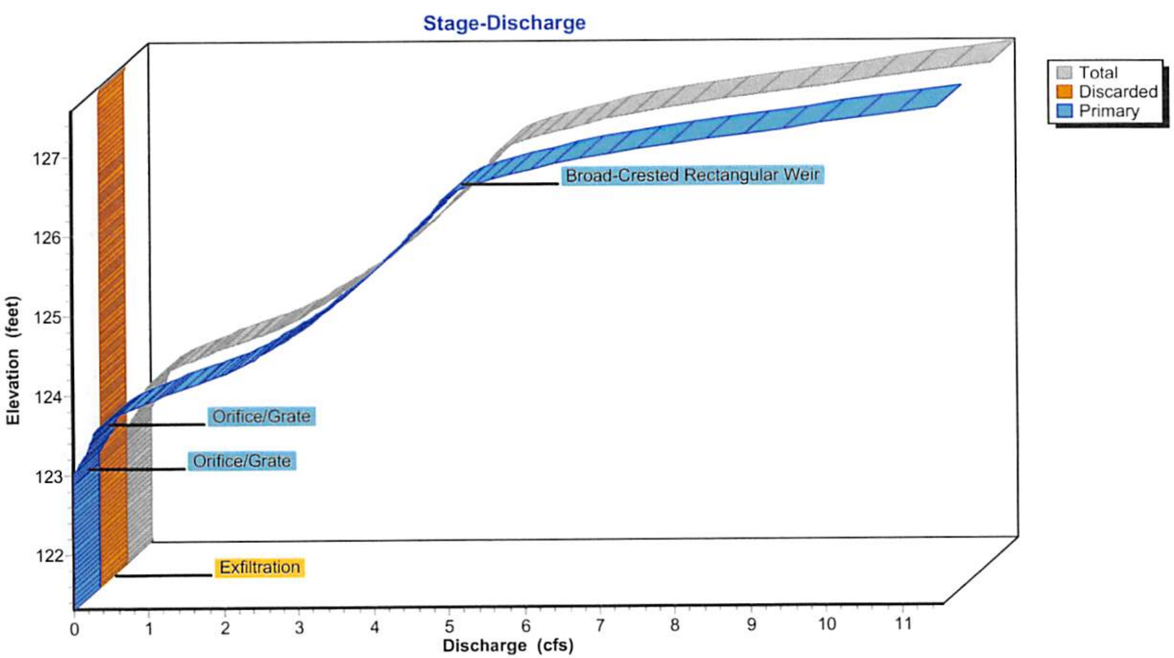




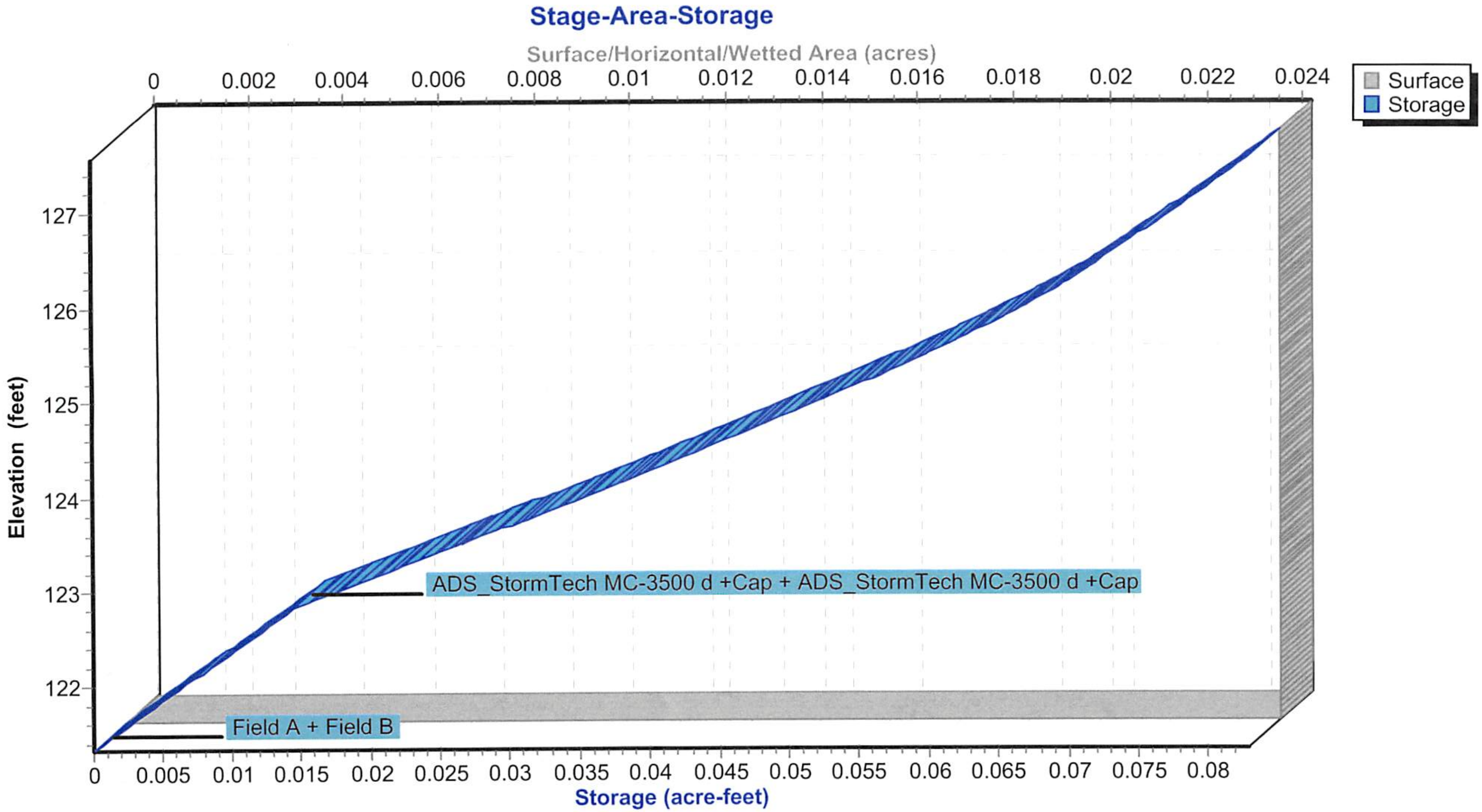
Pond 7P: Chambers



Pond 7P: Chambers



Pond 7P: Chambers



Hydrograph for Pond 7P: Chambers

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.000	121.33	0.00	0.00	**0.00**
0.50	0.00	0.000	121.33	0.00	0.00	0.00
1.00	0.00	0.000	121.33	0.00	0.00	0.00
1.50	0.00	0.000	121.33	0.00	0.00	0.00
2.00	0.00	0.000	121.33	0.00	0.00	0.00
2.50	0.00	0.000	121.33	0.00	0.00	0.00
3.00	0.00	0.000	121.33	0.00	0.00	0.00
3.50	0.00	0.000	121.33	0.00	0.00	0.00
4.00	0.00	0.000	121.33	0.00	0.00	0.00
4.50	0.00	0.000	121.33	0.00	0.00	0.00
5.00	0.00	0.000	121.33	0.00	0.00	0.00
5.50	0.00	0.000	121.33	0.00	0.00	0.00
6.00	0.00	0.000	121.33	0.00	0.00	0.00
6.50	0.00	0.000	121.34	0.00	0.00	0.00
7.00	0.00	0.000	121.34	0.00	0.00	0.00
7.50	0.00	0.000	121.34	0.00	0.00	0.00
8.00	0.00	0.000	121.34	0.00	0.00	0.00
8.50	0.00	0.000	121.34	0.00	0.00	0.00
9.00	0.01	0.000	121.35	0.00	0.00	0.00
9.50	0.01	0.000	121.35	0.01	0.01	0.00
10.00	0.01	0.000	121.35	0.01	0.01	0.00
10.50	0.01	0.000	121.36	0.01	0.01	0.00
11.00	0.01	0.000	121.37	0.01	0.01	0.00
11.50	0.02	0.001	121.38	0.02	0.02	0.00
12.00	**0.12**	0.002	121.53	0.02	0.02	0.00
12.50	**0.04**	**0.006**	**121.90**	**0.02**	**0.02**	0.00
13.00	0.02	**0.006**	**121.91**	**0.02**	**0.02**	0.00
13.50	0.01	0.005	121.89	0.02	0.02	0.00
14.00	0.01	0.005	121.86	0.02	0.02	0.00
14.50	0.01	0.005	121.81	0.02	0.02	0.00
15.00	0.01	0.004	121.77	0.02	0.02	0.00
15.50	0.01	0.004	121.72	0.02	0.02	0.00
16.00	0.01	0.003	121.66	0.02	0.02	0.00
16.50	0.00	0.003	121.60	0.02	0.02	0.00
17.00	0.00	0.002	121.54	0.02	0.02	0.00
17.50	0.00	0.001	121.48	0.02	0.02	0.00
18.00	0.00	0.001	121.41	0.02	0.02	0.00
18.50	0.00	0.000	121.36	0.01	0.01	0.00
19.00	0.00	0.000	121.35	0.00	0.00	0.00
19.50	0.00	0.000	121.34	0.00	0.00	0.00
20.00	0.00	0.000	121.34	0.00	0.00	0.00
20.50	0.00	0.000	121.34	0.00	0.00	0.00
21.00	0.00	0.000	121.34	0.00	0.00	0.00
21.50	0.00	0.000	121.34	0.00	0.00	0.00
22.00	0.00	0.000	121.34	0.00	0.00	0.00
22.50	0.00	0.000	121.34	0.00	0.00	0.00
23.00	0.00	0.000	121.34	0.00	0.00	0.00
23.50	0.00	0.000	121.34	0.00	0.00	0.00
24.00	0.00	0.000	121.34	0.00	0.00	0.00

Stage-Discharge for Pond 7P: Chambers

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
121.33	0.00	0.00	0.00
121.43	0.02	0.02	0.00
121.53	0.02	0.02	0.00
121.63	0.02	0.02	0.00
121.73	0.02	0.02	0.00
121.83	0.02	0.02	0.00
121.93	0.02	0.02	0.00
122.03	0.02	0.02	0.00
122.13	0.02	0.02	0.00
122.23	0.02	0.02	0.00
122.33	0.02	0.02	0.00
122.43	0.02	0.02	0.00
122.53	0.02	0.02	0.00
122.63	0.02	0.02	0.00
122.73	0.02	0.02	0.00
122.83	0.02	0.02	0.00
122.93	0.02	0.02	0.00
123.03	0.04	0.02	0.02
123.13	0.09	0.02	0.07
123.23	0.16	0.02	0.14
123.33	0.22	0.02	0.19
123.43	0.26	0.02	0.24
123.53	0.30	0.02	0.27
123.63	0.39	0.02	0.37
123.73	0.55	0.03	0.53
123.83	0.77	0.03	0.75
123.93	1.04	0.03	1.01
124.03	1.33	0.03	1.31
124.13	1.64	0.03	1.62
124.23	1.94	0.03	1.92
124.33	2.18	0.03	2.15
124.43	2.39	0.03	2.36
124.53	2.58	0.03	2.56
124.63	2.76	0.03	2.73
124.73	2.93	0.03	2.90
124.83	3.09	0.03	3.06
124.93	3.24	0.03	3.21
125.03	3.38	0.03	3.35
125.13	3.52	0.03	3.49
125.23	3.65	0.03	3.62
125.33	3.78	0.03	3.75
125.43	3.90	0.03	3.87
125.53	4.02	0.03	3.99
125.63	4.13	0.03	4.10
125.73	4.25	0.03	4.22
125.83	4.36	0.03	4.32
125.93	4.46	0.03	4.43
126.03	4.57	0.03	4.53
126.13	4.67	0.03	4.64
126.23	4.77	0.03	4.74
126.33	4.87	0.03	4.83
126.43	4.96	0.03	4.93
126.53	5.08	0.03	5.04
126.63	5.34	0.03	5.31
126.73	5.70	0.03	5.67
126.83	6.14	0.03	6.11
126.93	6.66	0.03	6.62
127.03	7.25	0.03	7.22
127.13	7.92	0.04	7.88
127.23	8.68	0.04	8.65
127.33	9.50	0.04	9.46
127.43	10.29	0.04	10.25
127.53	**11.12**	**0.04**	**11.08**

Stage-Area-Storage for Pond 7P: Chambers

Elevation (feet)	Surface (acres)	Storage (acre-feet)
121.33	**0.024**	0.000
121.43	0.024	0.001
121.53	0.024	0.002
121.63	0.024	0.003
121.73	0.024	0.004
121.83	0.024	0.005
121.93	0.024	0.006
122.03	0.024	0.007
122.13	0.024	0.008
122.23	0.024	0.009
122.33	0.024	0.010
122.43	0.024	0.011
122.53	0.024	0.012
122.63	0.024	0.013
122.73	0.024	0.014
122.83	0.024	0.015
122.93	0.024	0.016
123.03	0.024	0.018
123.13	0.024	0.020
123.23	0.024	0.022
123.33	0.024	0.024
123.43	0.024	0.025
123.53	0.024	0.027
123.63	0.024	0.029
123.73	0.024	0.031
123.83	0.024	0.032
123.93	0.024	0.034
124.03	0.024	0.036
124.13	0.024	0.038
124.23	0.024	0.039
124.33	0.024	0.041
124.43	0.024	0.043
124.53	0.024	0.044
124.63	0.024	0.046
124.73	0.024	0.048
124.83	0.024	0.049
124.93	0.024	0.051
125.03	0.024	0.053
125.13	0.024	0.054
125.23	0.024	0.056
125.33	0.024	0.057
125.43	0.024	0.059
125.53	0.024	0.060
125.63	0.024	0.062
125.73	0.024	0.063
125.83	0.024	0.065
125.93	0.024	0.066
126.03	0.024	0.067
126.13	0.024	0.068
126.23	0.024	0.070
126.33	0.024	0.071
126.43	0.024	0.072
126.53	0.024	0.073
126.63	0.024	0.074
126.73	0.024	0.075
126.83	0.024	0.076
126.93	0.024	0.077
127.03	0.024	0.078
127.13	0.024	0.079
127.23	0.024	0.080
127.33	0.024	0.080
127.43	0.024	0.081
127.53	0.024	**0.082**

Summary for Pond 8P: Bioretention

Inflow Area =	1.050 ac, 19.05% Impervious,	Inflow Depth > 0.26"	for Custom event
Inflow =	0.21 cfs @ 12.16 hrs,	Volume=	0.023 af
Outflow =	0.03 cfs @ 13.97 hrs,	Volume=	0.022 af, Atten= 85%, Lag= 108.4 min
Discarded =	0.03 cfs @ 13.97 hrs,	Volume=	0.022 af
Primary =	0.00 cfs @ 0.00 hrs,	Volume=	0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 126.03' @ 13.97 hrs Surf.Area= 0.033 ac Storage= 0.007 af

Plug-Flow detention time= 100.6 min calculated for 0.022 af (99% of inflow)
Center-of-Mass det. time= 97.2 min (999.4 - 902.1)

Volume	Invert	Avail.Storage	Storage Description
#1	125.50'	0.020 af	**Gravel (Prismatic)** Listed below 0.050 af Overall x 40.0% Voids
#2	127.00'	0.029 af	**Soil (Prismatic)** Listed below (Recalc) 0.082 af Overall x 35.0% Voids
#3	129.50'	0.028 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		0.077 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
125.50	0.033	0.000	0.000
127.00	0.033	0.050	0.050

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
127.00	0.033	0.000	0.000
129.50	0.033	0.082	0.082

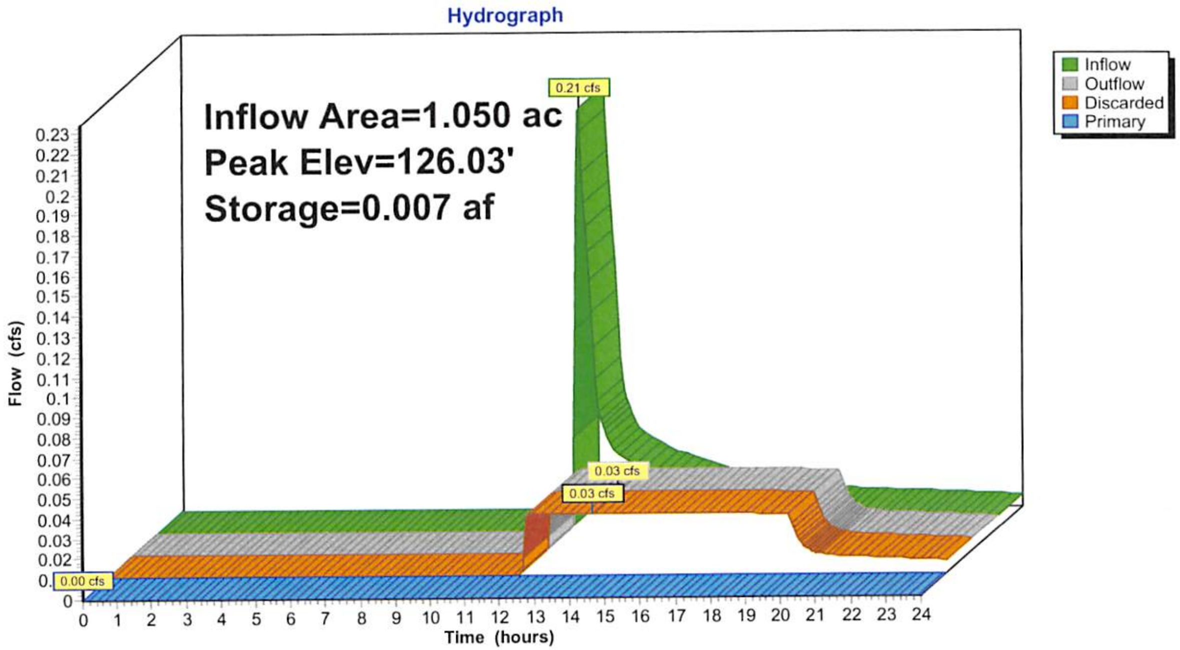
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
129.50	0.023	0.000	0.000
130.00	0.028	0.013	0.013
130.50	0.033	0.015	0.028

Device	Routing	Invert	Outlet Devices
#1	Primary	130.00'	**12.0" Horiz. Orifice/Grate** X 4 rows C= 0.600 Limited to weir flow at low heads
#2	Discarded	125.50'	**0.900 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 100.00'

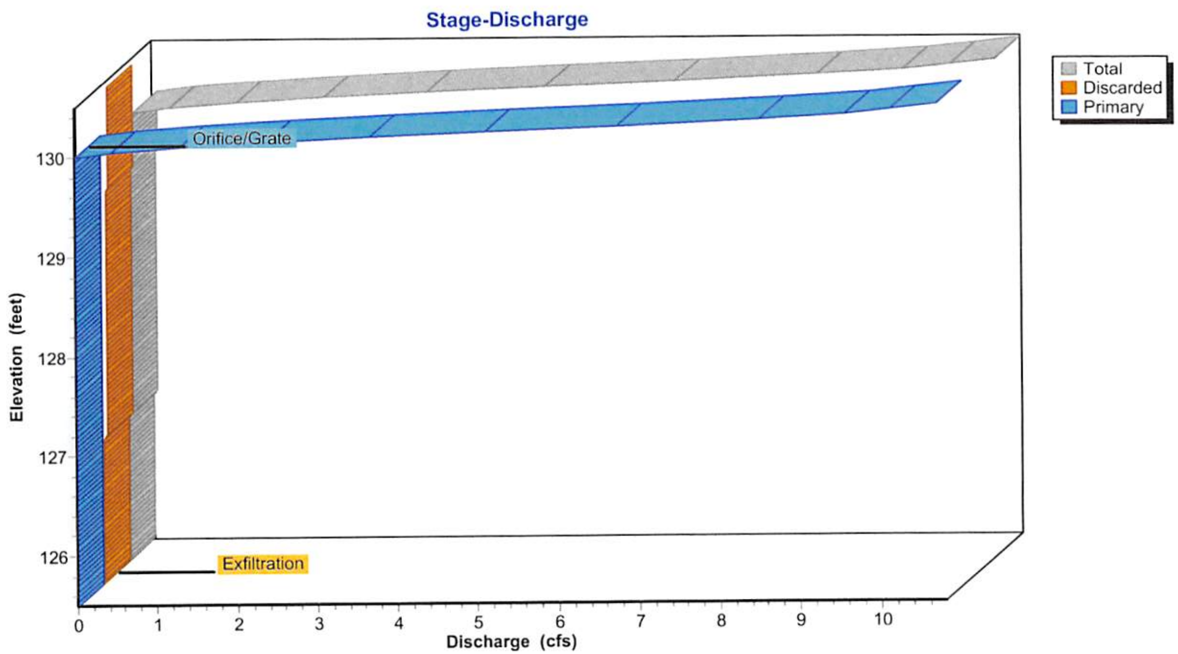
Discarded OutFlow Max=0.03 cfs @ 13.97 hrs HW=126.03' (Free Discharge)
↑**2=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.50' (Free Discharge)
↑**1=Orifice/Grate** (Controls 0.00 cfs)

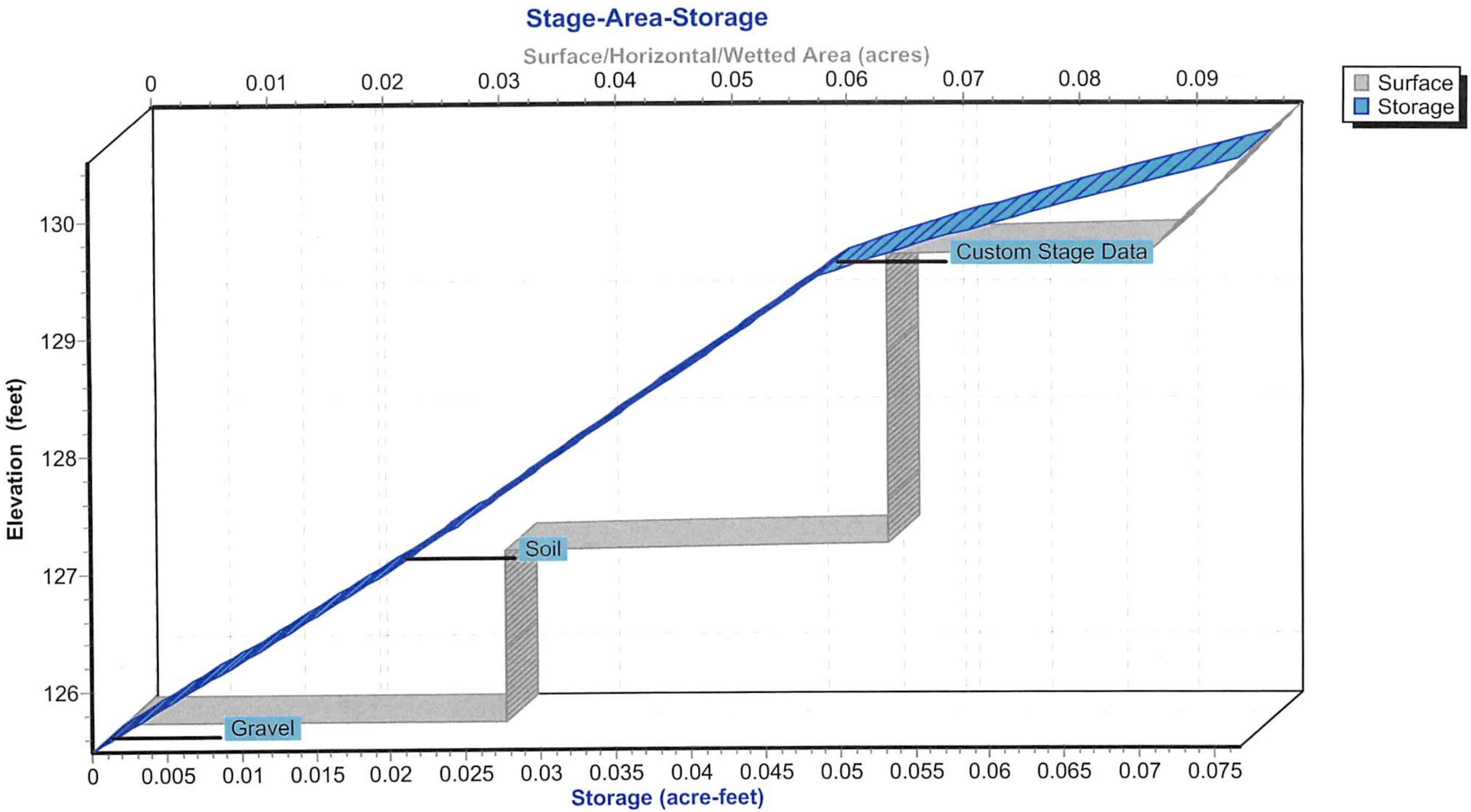
Pond 8P: Bioretention



Pond 8P: Bioretention



Pond 8P: Bioretention



Hydrograph for Pond 8P: Bioretention

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.000	125.50	0.00	0.00	**0.00**
0.50	0.00	0.000	125.50	0.00	0.00	0.00
1.00	0.00	0.000	125.50	0.00	0.00	0.00
1.50	0.00	0.000	125.50	0.00	0.00	0.00
2.00	0.00	0.000	125.50	0.00	0.00	0.00
2.50	0.00	0.000	125.50	0.00	0.00	0.00
3.00	0.00	0.000	125.50	0.00	0.00	0.00
3.50	0.00	0.000	125.50	0.00	0.00	0.00
4.00	0.00	0.000	125.50	0.00	0.00	0.00
4.50	0.00	0.000	125.50	0.00	0.00	0.00
5.00	0.00	0.000	125.50	0.00	0.00	0.00
5.50	0.00	0.000	125.50	0.00	0.00	0.00
6.00	0.00	0.000	125.50	0.00	0.00	0.00
6.50	0.00	0.000	125.50	0.00	0.00	0.00
7.00	0.00	0.000	125.50	0.00	0.00	0.00
7.50	0.00	0.000	125.50	0.00	0.00	0.00
8.00	0.00	0.000	125.50	0.00	0.00	0.00
8.50	0.00	0.000	125.50	0.00	0.00	0.00
9.00	0.00	0.000	125.50	0.00	0.00	0.00
9.50	0.00	0.000	125.50	0.00	0.00	0.00
10.00	0.00	0.000	125.50	0.00	0.00	0.00
10.50	0.00	0.000	125.50	0.00	0.00	0.00
11.00	0.00	0.000	125.50	0.00	0.00	0.00
11.50	0.00	0.000	125.50	0.00	0.00	0.00
12.00	**0.05**	0.000	125.51	0.01	0.01	0.00
12.50	**0.11**	0.005	125.90	0.03	0.03	0.00
13.00	0.04	0.007	125.99	0.03	0.03	0.00
13.50	0.04	**0.007**	**126.02**	**0.03**	**0.03**	0.00
14.00	0.03	**0.007**	**126.03**	**0.03**	**0.03**	0.00
14.50	0.03	0.007	126.02	0.03	0.03	0.00
15.00	0.02	0.007	126.00	0.03	0.03	0.00
15.50	0.02	0.006	125.98	0.03	0.03	0.00
16.00	0.02	0.006	125.94	0.03	0.03	0.00
16.50	0.02	0.005	125.90	0.03	0.03	0.00
17.00	0.01	0.005	125.85	0.03	0.03	0.00
17.50	0.01	0.004	125.80	0.03	0.03	0.00
18.00	0.01	0.003	125.74	0.03	0.03	0.00
18.50	0.01	0.002	125.68	0.03	0.03	0.00
19.00	0.01	0.002	125.62	0.03	0.03	0.00
19.50	0.01	0.001	125.56	0.03	0.03	0.00
20.00	0.01	0.000	125.52	0.01	0.01	0.00
20.50	0.01	0.000	125.52	0.01	0.01	0.00
21.00	0.01	0.000	125.51	0.01	0.01	0.00
21.50	0.01	0.000	125.51	0.01	0.01	0.00
22.00	0.01	0.000	125.51	0.01	0.01	0.00
22.50	0.01	0.000	125.51	0.01	0.01	0.00
23.00	0.01	0.000	125.51	0.01	0.01	0.00
23.50	0.01	0.000	125.51	0.01	0.01	0.00
24.00	0.01	0.000	125.51	0.01	0.01	0.00

Stage-Discharge for Pond 8P: Bioretention

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
125.50	0.00	0.00	0.00
125.55	0.03	0.03	0.00
125.60	0.03	0.03	0.00
125.65	0.03	0.03	0.00
125.70	0.03	0.03	0.00
125.75	0.03	0.03	0.00
125.80	0.03	0.03	0.00
125.85	0.03	0.03	0.00
125.90	0.03	0.03	0.00
125.95	0.03	0.03	0.00
126.00	0.03	0.03	0.00
126.05	0.03	0.03	0.00
126.10	0.03	0.03	0.00
126.15	0.03	0.03	0.00
126.20	0.03	0.03	0.00
126.25	0.03	0.03	0.00
126.30	0.03	0.03	0.00
126.35	0.03	0.03	0.00
126.40	0.03	0.03	0.00
126.45	0.03	0.03	0.00
126.50	0.03	0.03	0.00
126.55	0.03	0.03	0.00
126.60	0.03	0.03	0.00
126.65	0.03	0.03	0.00
126.70	0.03	0.03	0.00
126.75	0.03	0.03	0.00
126.80	0.03	0.03	0.00
126.85	0.03	0.03	0.00
126.90	0.03	0.03	0.00
126.95	0.03	0.03	0.00
127.00	0.06	0.06	0.00
127.05	0.06	0.06	0.00
127.10	0.06	0.06	0.00
127.15	0.06	0.06	0.00
127.20	0.06	0.06	0.00
127.25	0.06	0.06	0.00
127.30	0.06	0.06	0.00
127.35	0.06	0.06	0.00
127.40	0.06	0.06	0.00
127.45	0.06	0.06	0.00
127.50	0.06	0.06	0.00
127.55	0.06	0.06	0.00
127.60	0.06	0.06	0.00
127.65	0.06	0.06	0.00
127.70	0.06	0.06	0.00
127.75	0.06	0.06	0.00
127.80	0.06	0.06	0.00
127.85	0.06	0.06	0.00
127.90	0.06	0.06	0.00
127.95	0.06	0.06	0.00
128.00	0.06	0.06	0.00
128.05	0.06	0.06	0.00
128.10	0.06	0.06	0.00
128.15	0.06	0.06	0.00
128.20	0.06	0.06	0.00
128.25	0.06	0.06	0.00
128.30	0.06	0.06	0.00
128.35	0.06	0.06	0.00
128.40	0.06	0.06	0.00
128.45	0.06	0.06	0.00
128.50	0.07	0.07	0.00
128.55	0.07	0.07	0.00
128.60	0.07	0.07	0.00
128.65	0.07	0.07	0.00
128.70	0.07	0.07	0.00
128.75	0.07	0.07	0.00
128.80	0.07	0.07	0.00
128.85	0.07	0.07	0.00
128.90	0.07	0.07	0.00
128.95	0.07	0.07	0.00
129.00	0.07	0.07	0.00
129.05	0.07	0.07	0.00
129.10	0.07	0.07	0.00
129.15	0.07	0.07	0.00
129.20	0.07	0.07	0.00
129.25	0.07	0.07	0.00
129.30	0.07	0.07	0.00
129.35	0.07	0.07	0.00
129.40	0.07	0.07	0.00
129.45	0.07	0.07	0.00
129.50	0.09	0.09	0.00
129.55	0.09	0.09	0.00
129.60	0.09	0.09	0.00
129.65	0.09	0.09	0.00
129.70	0.09	0.09	0.00
129.75	0.09	0.09	0.00
129.80	0.09	0.09	0.00
129.85	0.09	0.09	0.00
129.90	0.09	0.09	0.00
129.95	0.09	0.09	0.00
130.00	0.09	0.09	0.00
130.05	0.55	0.09	0.46
130.10	1.39	0.10	1.30
130.15	2.48	0.10	2.39
130.20	3.77	0.10	3.68
130.25	5.23	0.10	5.14
130.30	6.85	0.10	6.75
130.35	8.61	0.10	8.51
130.40	9.67	0.10	9.57
130.45	10.25	0.10	10.15
130.50	**10.80**	**0.10**	**10.70**

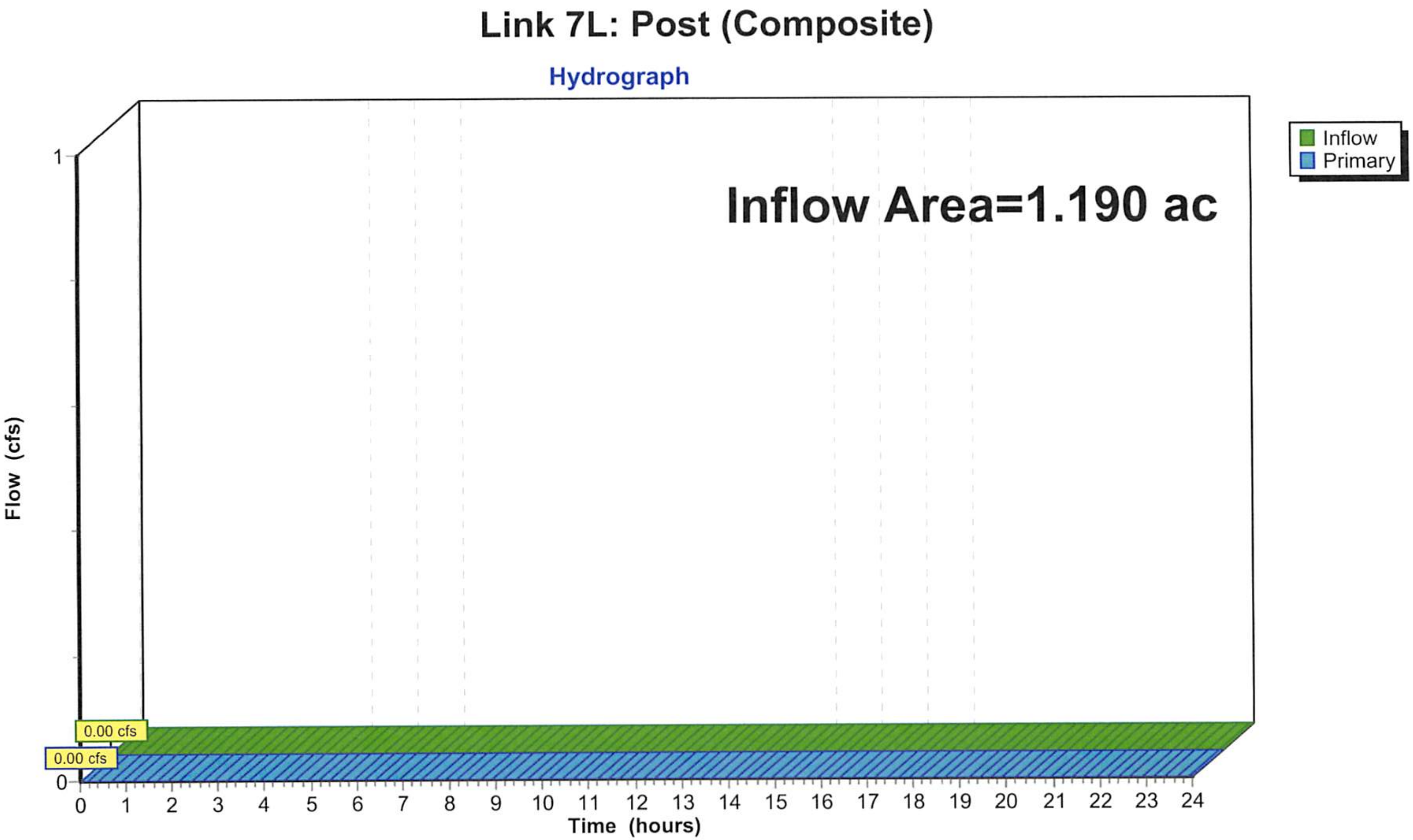
Stage-Area-Storage for Pond 8P: Bioretention

Elevation (feet)	Surface (acres)	Storage (acre-feet)	Elevation (feet)	Surface (acres)	Storage (acre-feet)
125.50	0.033	0.000	128.10	0.066	0.033
125.55	0.033	0.001	128.15	0.066	0.033
125.60	0.033	0.001	128.20	0.066	0.034
125.65	0.033	0.002	128.25	0.066	0.034
125.70	0.033	0.003	128.30	0.066	0.035
125.75	0.033	0.003	128.35	0.066	0.035
125.80	0.033	0.004	128.40	0.066	0.036
125.85	0.033	0.005	128.45	0.066	0.037
125.90	0.033	0.005	128.50	0.066	0.037
125.95	0.033	0.006	128.55	0.066	0.038
126.00	0.033	0.007	128.60	0.066	0.038
126.05	0.033	0.007	128.65	0.066	0.039
126.10	0.033	0.008	128.70	0.066	0.039
126.15	0.033	0.009	128.75	0.066	0.040
126.20	0.033	0.009	128.80	0.066	0.041
126.25	0.033	0.010	128.85	0.066	0.041
126.30	0.033	0.011	128.90	0.066	0.042
126.35	0.033	0.011	128.95	0.066	0.042
126.40	0.033	0.012	129.00	0.066	0.043
126.45	0.033	0.013	129.05	0.066	0.043
126.50	0.033	0.013	129.10	0.066	0.044
126.55	0.033	0.014	129.15	0.066	0.045
126.60	0.033	0.015	129.20	0.066	0.045
126.65	0.033	0.015	129.25	0.066	0.046
126.70	0.033	0.016	129.30	0.066	0.046
126.75	0.033	0.017	129.35	0.066	0.047
126.80	0.033	0.017	129.40	0.066	0.048
126.85	0.033	0.018	129.45	0.066	0.048
126.90	0.033	0.018	129.50	0.089	0.049
126.95	0.033	0.019	129.55	0.090	0.050
127.00	0.066	0.020	129.60	0.090	0.051
127.05	0.066	0.020	129.65	0.091	0.052
127.10	0.066	0.021	129.70	0.091	0.053
127.15	0.066	0.022	129.75	0.091	0.055
127.20	0.066	0.022	129.80	0.092	0.056
127.25	0.066	0.023	129.85	0.092	0.057
127.30	0.066	0.023	129.90	0.093	0.059
127.35	0.066	0.024	129.95	0.093	0.060
127.40	0.066	0.024	130.00	0.094	0.061
127.45	0.066	0.025	130.05	0.095	0.063
127.50	0.066	0.026	130.10	0.095	0.064
127.55	0.066	0.026	130.15	0.096	0.066
127.60	0.066	0.027	130.20	0.096	0.067
127.65	0.066	0.027	130.25	0.096	0.069
127.70	0.066	0.028	130.30	0.097	0.070
127.75	0.066	0.028	130.35	0.097	0.072
127.80	0.066	0.029	130.40	0.098	0.073
127.85	0.066	0.030	130.45	0.098	0.075
127.90	0.066	0.030	130.50	**0.099**	**0.077**
127.95	0.066	0.031			
128.00	0.066	0.031			
128.05	0.066	0.032			

Summary for Link 7L: Post (Composite)

Inflow Area = 1.190 ac, 28.57% Impervious, Inflow Depth = 0.00" for Custom 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

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs



Hydrograph for Link 7L: Post (Composite)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	**0.00**	**0.00**	**0.00**
0.25	0.00	0.00	0.00
0.50	0.00	0.00	0.00
0.75	0.00	0.00	0.00
1.00	0.00	0.00	0.00
1.25	0.00	0.00	0.00
1.50	0.00	0.00	0.00
1.75	0.00	0.00	0.00
2.00	0.00	0.00	0.00
2.25	0.00	0.00	0.00
2.50	0.00	0.00	0.00
2.75	0.00	0.00	0.00
3.00	0.00	0.00	0.00
3.25	0.00	0.00	0.00
3.50	0.00	0.00	0.00
3.75	0.00	0.00	0.00
4.00	0.00	0.00	0.00
4.25	0.00	0.00	0.00
4.50	0.00	0.00	0.00
4.75	0.00	0.00	0.00
5.00	0.00	0.00	0.00
5.25	0.00	0.00	0.00
5.50	0.00	0.00	0.00
5.75	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.25	0.00	0.00	0.00
6.50	0.00	0.00	0.00
6.75	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.25	0.00	0.00	0.00
7.50	0.00	0.00	0.00
7.75	0.00	0.00	0.00
8.00	0.00	0.00	0.00
8.25	0.00	0.00	0.00
8.50	0.00	0.00	0.00
8.75	0.00	0.00	0.00
9.00	0.00	0.00	0.00
9.25	0.00	0.00	0.00
9.50	0.00	0.00	0.00
9.75	0.00	0.00	0.00
10.00	0.00	0.00	0.00
10.25	0.00	0.00	0.00
10.50	0.00	0.00	0.00
10.75	0.00	0.00	0.00
11.00	0.00	0.00	0.00
11.25	0.00	0.00	0.00
11.50	0.00	0.00	0.00
11.75	0.00	0.00	0.00
12.00	0.00	0.00	0.00
12.25	0.00	0.00	0.00
12.50	0.00	0.00	0.00
12.75	0.00	0.00	0.00
13.00	0.00	0.00	0.00
13.25	0.00	0.00	0.00
13.50	0.00	0.00	0.00
13.75	0.00	0.00	0.00
14.00	0.00	0.00	0.00
14.25	0.00	0.00	0.00
14.50	0.00	0.00	0.00
14.75	0.00	0.00	0.00
15.00	0.00	0.00	0.00
15.25	0.00	0.00	0.00
15.50	0.00	0.00	0.00
15.75	0.00	0.00	0.00
16.00	0.00	0.00	0.00
16.25	0.00	0.00	0.00
16.50	0.00	0.00	0.00
16.75	0.00	0.00	0.00
17.00	0.00	0.00	0.00
17.25	0.00	0.00	0.00
17.50	0.00	0.00	0.00
17.75	0.00	0.00	0.00
18.00	0.00	0.00	0.00
18.25	0.00	0.00	0.00
18.50	0.00	0.00	0.00
18.75	0.00	0.00	0.00
19.00	0.00	0.00	0.00
19.25	0.00	0.00	0.00
19.50	0.00	0.00	0.00
19.75	0.00	0.00	0.00
20.00	0.00	0.00	0.00
20.25	0.00	0.00	0.00
20.50	0.00	0.00	0.00
20.75	0.00	0.00	0.00
21.00	0.00	0.00	0.00
21.25	0.00	0.00	0.00
21.50	0.00	0.00	0.00
21.75	0.00	0.00	0.00
22.00	0.00	0.00	0.00
22.25	0.00	0.00	0.00
22.50	0.00	0.00	0.00
22.75	0.00	0.00	0.00
23.00	0.00	0.00	0.00
23.25	0.00	0.00	0.00
23.50	0.00	0.00	0.00
23.75	0.00	0.00	0.00
24.00	0.00	0.00	0.00

APPENDIX H:
PRE-CONSTRUCTION DOCUMENTS & CERTIFICATIONS

PRE-CONSTRUCTION DOCUMENTS

Project Name: The Masters School Innovation and Entrepreneurship Center
Name of Owner: The Masters School
Name of Operator: Yorke Construction Corporation
Name of Preparer: Gonzalo Trenosky, P.E.
Name of Qualified Professional: Gonzalo Trenosky, P.E.

PREAMBLE TO SITE ASSESSMENT AND INSPECTIONS

The Following Information to Be Read by All Person's Involved in The Construction of Stormwater Related Activities:

A qualified professional1 shall conduct an assessment of the site prior to the commencement of construction activities2,3 and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Preparer shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements.

When construction starts, site inspections shall be conducted by the qualified professional at least every seven (7) calendar days (Construction Duration Inspections), except as otherwise

[1] "Qualified Professional" means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), licensed Landscape Architect, or other NYSDEC (Department) endorsed individual(s). It also means someone working under the direct supervision of the licensed Professional Engineer or licensed Landscape Architect, if person has training in the principles and practices of erosion and sediment control. Training in that principles and practices of erosion and sediment control means that an individual performing a site inspection has received four (4) hours of training, endorsed by the Department, from a Soil and Water Conservation District, CPESC, Inc. or other Department endorsed entity in proper erosion and sediment control principles no later than two (2) years from date this general permit is issued. After receiving the initial training, an individual working under the direct supervision of the licensed Professional Engineer or licensed Landscape Architect shall receive four (4) hours of training every three (3) years.

[2] "Commencement of Construction Activities" means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for "Construction Activity(ies)" also.

[3] "Construction Activity(ies)" means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

required during "winter frequency". The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request. The Operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis (Monthly Summary Report).

A qualified professional shall perform a final site inspection. The qualified professional shall certify that the site had undergone final stabilization[4] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Preparer must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

[4] "Final stabilization" means that all soil-disturbing activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

PRE-CONSTRUCTION CERTIFICATIONS

PREPARER'S CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated in the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. Further, I hereby certify that the SWPPP meets all Federal, State, and local erosion and sediment control requirements. I am aware that false statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law."

Name (please print): Gonzalo Trenosky, P.E.

Title: Associate Engineer \ MFS **Date:** ____________________________

Address: 320 Fifth Avenue, Suite 1102 New York, NY 10001

Phone: (212)-943-6576 **Email:** gmt@mfsengineers.com

Signature:

OWNER'S CERTIFICATION

"I certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP for the construction site identified in such SWPPP as a condition of authorization to discharge storm water. I also understand that the operator must comply with the terms and conditions of the New York State Pollutant Discharge Elimination System (SPDES) general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards.

I certify that the storm water control measures as shown in the SWPPP will be in place before commencement of construction of any segment of the project that requires each measure."

Name (please print): Mr. Seth Marx

Title: Director of Institutional Advancement **Date:** ____________________________

Address: 49 Clinton Avenue, Dobbs Ferry, NY 10522

Phone: +1 (914)-479-6527 **Email:** seth.marx@mastersny.org

Signature:

OPERATOR'S CERTIFICATION

"I certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP for the construction site identified in such SWPPP as a condition of authorization to discharge stormwater. I also understand that the operator must comply with the terms and conditions of the New York State Pollutant Discharge Elimination System (SPDES) general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards.

I certify that the stormwater control measure as shown in the SWPPP will be in place before commencement of construction of any segment of the project that requires each measure."

Name (please print): Yorke Construction Corporation

Title: ______________________________ **Date:** ______________________________

Address: ____

Phone: ______________________________ **Email:** ______________________________

Signature:

____

PREPARER'S CERTIFICATION

"I hereby certify that I meet the criteria set forth in the SWPPP to conduct site inspections for this project and that appropriate erosion and sediment controls described in the SWPPP and as described in the following Pre-Construction site assessment Checklsit have been adequately installed or implemented, ensuring the overall preparedness of this site for the commencement of construction."

Name (please print): Gonzalo Trenosky, P.E.

Title: Associate Engineer \ MFS **Date:** ______________________________

Address: 320 Fifth Avenue, Suite 1102 New York, NY 10001

Phone: (212)-943-6576 **Email:** gmt@mfsengineers.com

Signature:

APPENDIX I:
CONSTRUCTION DURATION INSPECTIONS

CONSTRUCTION DURATION INSPECTIONS

Directions:

Inspection Forms will be filled out during the entire construction phase of the project. Required Elements:

On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated risers pipes to pass water; and

Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

SITE PLAN/SKETCH

Inspector(Printname) | Date of Inspection

Qualified Professional (print name) | Qualified Professional Signature

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete

MAINTAINING WATER QUALITY				
Yes	**No**	**N/A**	**Item**	**Comments**
			Is there an increase in turbidity causing a substantial visible contrast to natural conditions?	
			Is there residue from oil and floating substances, visible oil film, or globules or grease?	
			All disturbances are within the limits of the approved plans?	
			Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?	

HOUSEKEEPING				
Yes	**No**	**N/A**	**Item**	**Comments**
			Is construction site litter and debris appropriately managed?	
			Are facilities and equipment necessary for implementation or erosion and sediment control in working order and/or properly maintained?	
			Is construction impacting the adjacent property?	
			Is dust adequately controlled?	

RUNOFF CONTROL PRACTICES				
Yes	**No**	**N/A**	**Item**	**Comments**
			Is sediment laden water from work area being discharged to silt trapping device(s)?	

SOIL STABILIZATION				
Yes	**No**	**N/A**	**Item**	**Comments**
			Are stockpiles are stabilized with vegetation and/or mulch?	
			Do stockpiles have silt fence at base?	
			Is sediment control installed at the toe of the slope?	
			Is silt fence installed off-mound areas only?	
			Have temporary seedings and mulch been applied to idle areas?	
			Has 4 inches minimum of topsoil been applied under permanent seedings?	

SEDIMENT CONTROL PRACTICES				
Stabilized Construction Entrance				
Yes	**No**	**N/A**	**Item**	**Comments**
			Stone is clean enough to effectively remove mud from vehicles?	
			Installed per standards and specifications?	
			Does all traffic use the stabilized entrance to enter and leave site?	
			Is adequate drainage provided to prevent ponding at entrance?	
Silt Fence/Straw Bale Dike				
Yes	**No**	**N/A**	**Item**	**Comments**
			Installed on contour, 10 feet from toe of slope (not across conveyance channels)?	
			Installed per standards and specifications?	
			Silt Fence: joints constructed by wrapping the two ends together for continuous support?	
			Silt Fence: fabric buried 6 inches minimum?	
			Straw Bale: embedded 4 inches minimum?	
			Silt Fence: posts are stable, fabric is tight and without rips or frayed areas?	
			Straw Bale: securely anchored in place?	
Sediment accumulation is _______% of design capacity.				
Sediment Trap				
Yes	**No**	**N/A**	**Item**	**Comments**
			Drainage area is 5 acre or less?	
			Installed per standards and specifications?	

CONDITIONS OF OUTFALLS (ANNUAL AND AFTER MAJOR STORM EVENTS)				
Yes	No	N/A	Item	Comments
			Riprap failure?	
			Slope Erosion?	
			Storm drain pipe condition?	
			Headwall Structure condition?	

Note: Not all erosion and sediment control practices are included in this document. Additional pages shall be included as required for this project. Construction inspection checklists for post-development stormwater management practices can be found in Appendix F and G of the New York State Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS - MODIFICATIONS

Modifications to the SWPPP (To be completed as described below) The Operator shall amend the SWPPP whenever:

There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or

The SWPPP proves to be ineffective in;

Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or

Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and

Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

APPENDIX J:
MONTHLY SUMMARY OF SITE INSPECTION ACTIVITIES

MONTHLY SUMMARY OF SITE INSPECTION ACTIVITIES

Name of Facility:	Today's Date:	Reporting Month:
Location:		
Name and Telephone Number of Site Inspector:		

Date Of Inspection	Regular / Rainfall Based Inspection	Name of Inspector	Items of Concern

Qualified Professional's Certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

______________________________ Signature of Qualified Professional

______________________________ Name of Qualified Professional

APPENDIX K:
CONTRACTOR'S CERTIFICATIONS AND FORMS

CONTRACTOR'S CERTIFICATION STATEMENT

I. SITE INFORMATION

Construction Site Name: The Masters School Innovation and Entrepreneurship Center

Site Location: 49 Clinton Avenue, Dobbs Ferry, NY 10522

II. CONTRACTOR'S INFORMATION

Contracting Firm: Yorke Construction Corporation

Contracting Firm Address: 140 West 31st Street, 4th Floor, New York, NY 10001

Contact: ____

Telephone Number: ____

III. STORMWATER MEASURES

Contractor is responsible for but not limited to the following stormwater measures.

1. Piping	4. ________________	7. ________________
2. Underground Detention	5. ________________	8. ________________
3. Landscaping	6. ________________	9. ________________

IV. CERTIFICATION

"I certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP for the construction site identified in such SWPPP as a condition of authorization to discharge stormwater. I also understand that the operator must comply with the terms and conditions of the New York State Pollutant Discharge Elimination System (SPDES) general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards."

V. SIGNATURE: ___________________________________ DATE: ___________________

Name (print): ____

Title: ____

SUB-CONTRACTOR'S CERTIFICATION STATEMENT

The General Contractor, ____shall have this statement completed and signed by all subcontractors of the project that will be responsible for any measure outlined in this stormwater pollution prevention plan.

I. SITE INFORMATION

Construction Site Name: ____

Site Location: ____

II. SUB-CONTRACTORS INFORMATION

Sub-Contracting Firm: ____

Sub-Contracting Firm: ____

Telephone Number(s): ____

Contact(s): 1) ____
2) ____

III. STORMWATER MEASURES

Sub-Contractor is responsible for but not limited to the following storm water measures.

1. _______________ 4. _______________ 7. _______________

2. _______________ 5. _______________ 8. _______________

3. _______________ 6. _______________ 9. _______________

IV. STORMWATER MEASURES

"I certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP for the construction site identified in such SWPPP as a condition of authorization to discharge storm water. I also understand that the operator must comply with the terms and conditions of the New York State Pollutant Discharge Elimination System (SPDES) general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards."

V. SIGNATURE: ________________________________ **DATE:** ___________________

Name (print): ____

Title: ____

CERTIFICATE OF ISSUANCE

As directed by the Operator, a copy of the storm water pollution prevention plan will be retained at the site, along with all signed statements, reports and schedules contained herein for completion by the contractor. Upon completion the storm water pollution prevention plan and all records shall be returned to the operator.

Date of Issuance: ____

Name: ____

Title: ____

Firm: ____

Signature:

Received from:

Name: ____

Title: ____

Firm: ____

Address/ Phone No: ____

____

____

Signature:

Inquiries in regards to copies of pollution prevention plan by either the State Director or any local agency having jurisdiction to be directed to owner's project representative.

EROSION AND WATER QUALITY CONTROL IDENTIFICATION

The contractor and/or subcontractors that will implement each erosion control measure must be identified:

IDENTIFICATION

NAME OF CONTRACTOR AND/OR SUBCONTRACTOR	MEASURE TO BE IMPLEMENTED

Each contractor and subcontractor identified must sign a copy of the certification statement.

This identification does not reassign or remove responsibility for all measures as agreed to the contract documents. The contractor is responsible for all subcontractors.

CONSTRUCTION STABILIZATION

The Contractor shall initiate stabilization measures as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. When construction activity is precluded by snow cover, stabilization measures shall be initiated as soon as practicable. When construction activity will resume within 21 days from when activity ceased, then stabilization measures do not have to be initiated on that portion of the site by the 14th day after construction activity temporarily ceased.

THE CONTRACTOR IS RESPONSIBLE TO KEEP THE FOLLOWING RECORDS:

MAJOR GRAVITY ACTIVITY	PORTION OF THE SITE	DATE COMMENCED	DATE CEASED (PERMANENTLY OR TEMPORARILY)	DATE STABILIZATION MEASURES INITITATED

THESE MUST BE KEPT UP TO DATE AND ON-SITE FOR INSPECTION AT ANYTIME.

CERTIFICATE OF CHANGE BY CONTRACTOR

To: ________________________________
____
____

Project: ____

Site Address: ____

Enclosed, please find your written notification of the following provision(s) of the SWPPP not being met:

____
____
____
____

Provisions of the plan requiring modification:

____
____
____
____

Action taken to modify plan to bring project into compliance:

____
____
____
____

Date Completed: _____________________

Name: _____________________
Title: _____________________

Contracting Firm: _____________________
Address: _____________________
____
____
Phone Number: _____________________
Signature: _____________________

Received By: _____________________

Name: _____________________
Title: _____________________

Firm: _____________________
Address: _____________________
____
____
Phone Number: _____________________
Signature: _____________________

APPENDIX L:
END OF CONSTRUCTION DOCUMENTS

FINAL STABILIZATION AND RETENTION OF RECORDS

A. Qualified Professional Certification - A qualified professional shall perform a final site inspection.

Yes	No	NA	
[ ]	[ ]	[ ]	Final site drainage will prevent erosion, concentrated flows to adjacent properties, uncontrolled overflow, and ponding.
[ ]	[ ]	[ ]	Conveyance systems are stabilized.
[ ]	[ ]	[ ]	Channels and stream banks are seeded at the outlet points.

"I hereby certify that the site has undergone final stabilization. Final stabilization means that all soil disturbing activities have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures. Further, all temporary erosion and sediment controls (such as silt fence) not specified for permanent erosion control have been removed."

Name of Qualified Professional:

____

Signature: ____

B. Retention of Records - The Operator shall retain copies of SWPPPs and any reports and records of all data for a period of at least three years from the date that the site is finally stabilized.

C. Maintenance of SWPPP and any reports at the construction site – The Operator shall retain a copy of the SWPPP at the construction site from the data of initiation of construction activities to the date of final stabilization.

CERTIFICATE OF RETURN

As directed by the Owner's representative, the copy of the storm water pollution prevention plan retained at the site, along with all signed statements, reports and schedules contained herein for completion by the contractor are to be returned to the owner. The owner shall retain the plan, reports and records of all data for a period of three years from the date that the site is stabilized. This period may be extended by the State director at any time upon written notification.

Date of site stabilization: ____

Name: ____

Title: ____

Firm: ____

Signature: ____

Received by: ____

Name/ Title: ____

Address/ Phone No: ____

Signature: ____

Inquiries in regards to copies of pollution prevention plan by either the State Director or any local agency having jurisdiction to be directed to owner's project representative.

APPENDIX M:
EROSION AND SEDIMENT CONTROL MATERIAL SPECS

PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER:	JUSTIN PICCILLO 917-716-6420 JUSTIN.PICCILLO@ADS-PIPE.COM
ADS SALES REP:	TIMOTHY KUZIO 315-525-7760 TIMOTHY.KUZIO@ADS-PIPE.COM
PROJECT NO:	S254171

Advanced Drainage Systems, Inc.

SiteASSIST™
FOR STORMTECH INSTRUCTIONS, DOWNLOAD THE INSTALLATION APP

THE MASTERS SCHOOL

DOBBS FERRY, NY

MC-3500 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH MC-3500.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 45x76 DESIGNATION SS.
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 450 LBS/IN/IN. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-3500 CHAMBER SYSTEM

1. STORMTECH MC-3500 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
8. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
9. STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
10. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
11. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
2. THE USE OF EQUIPMENT OVER MC-3500 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

PROPOSED LAYOUT

14	STORMTECH MC-3500 CHAMBERS
6	STORMTECH MC-3500 END CAPS
12	STONE ABOVE (in)
9	STONE BELOW (in)
40	% STONE VOID
3,316	**INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED)**
1,063	SYSTEM AREA (ft²)
151	SYSTEM PERIMETER (ft)

PROPOSED ELEVATIONS

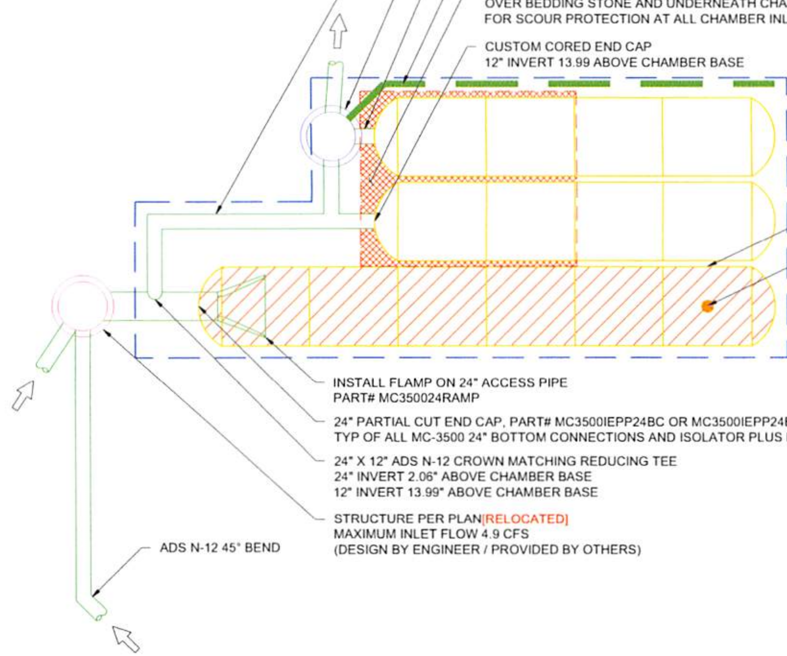
134.58	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)
128.58	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC)
128.08	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)
128.08	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT)
128.08	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT)
127.58	TOP OF STONE
126.58	TOP OF MC-3500 CHAMBER
124.00	12" MANIFOLD INVERT
123.00	24" ISOLATOR ROW PLUS CONNECTION INVERT
122.94	12" BOTTOM CONNECTION INVERT
122.83	BOTTOM OF MC-3500 CHAMBER
122.08	UNDERDRAIN INVERT
121.33	BOTTOM OF STONE

EXPECTED ELEVATIONS FOR MODELLED STORM EVENTS

122.83	1-YR STORM
124.59	10-YR STORM
125.51	25-YR STORM
126.93	100-YR STORM

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECHNICAL NOTE 6.32 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.



THE MASTERS SCHOOL
DOBBS FERRY, NY

DATE:	08-19-21	DRAWN:	TSG
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HILLIARD, OH 43026
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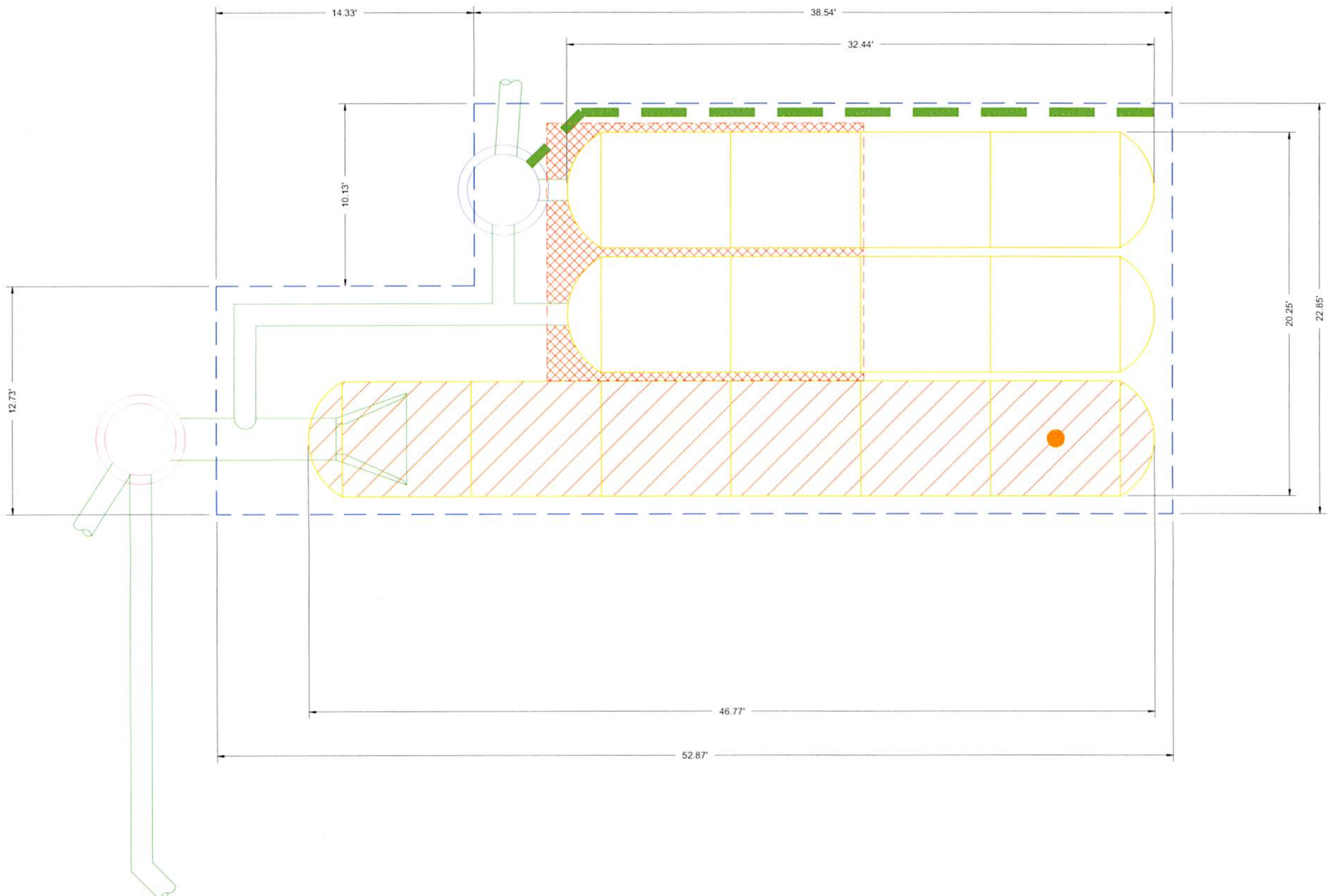
0 10' 20'



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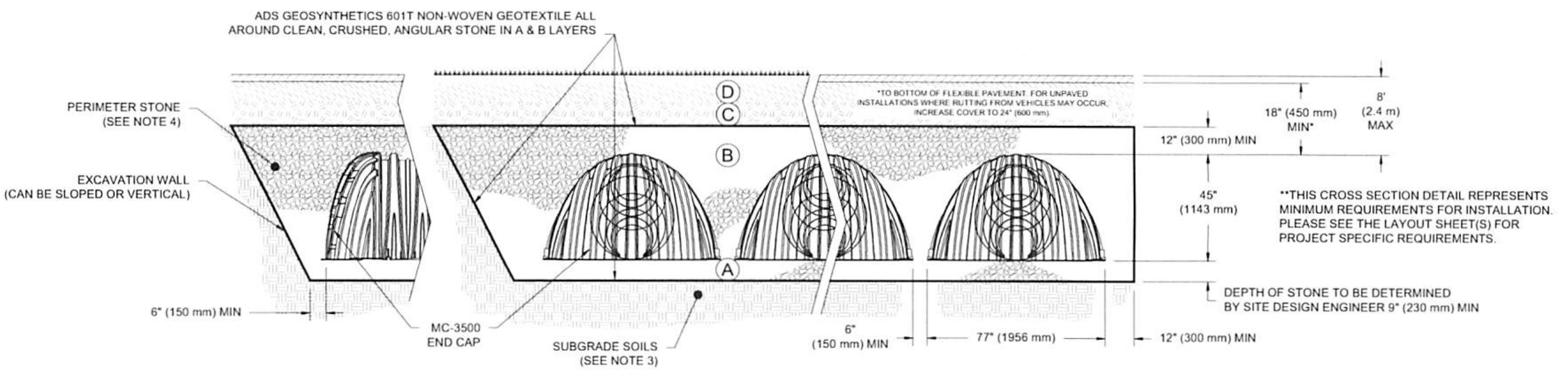
SHEET 3 OF 6

ACCEPTABLE FILL MATERIALS: STORMTECH MC-3500 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 45x76 DESIGNATION SS.
2. MC-3500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 500 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

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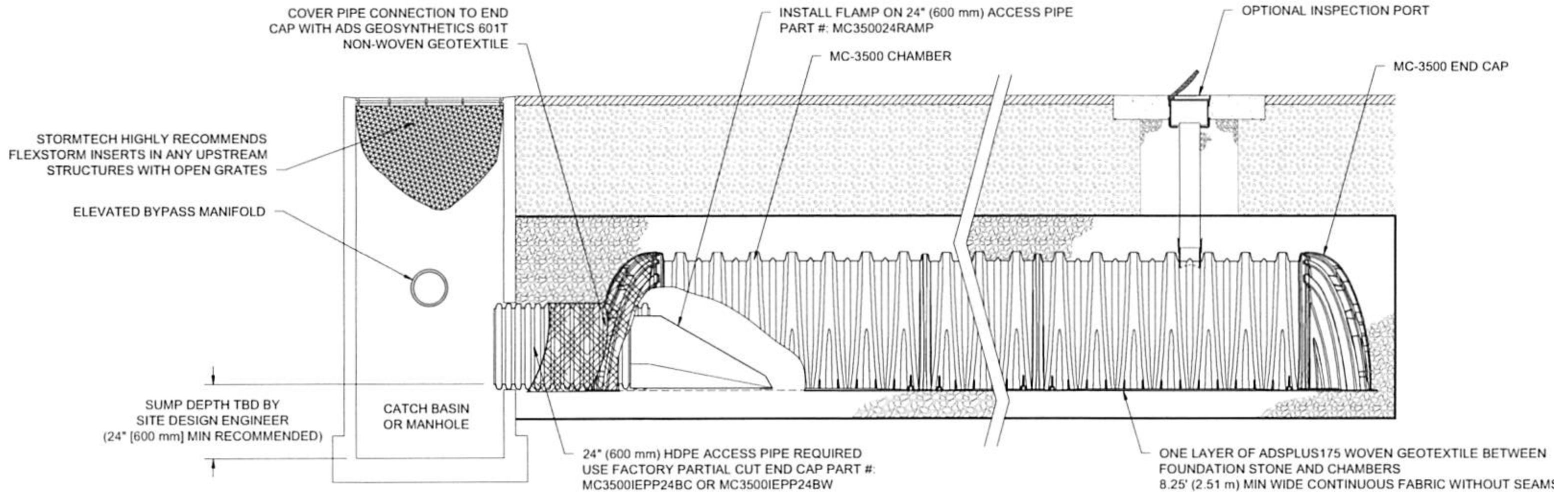


MC-3500 ISOLATOR ROW PLUS DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

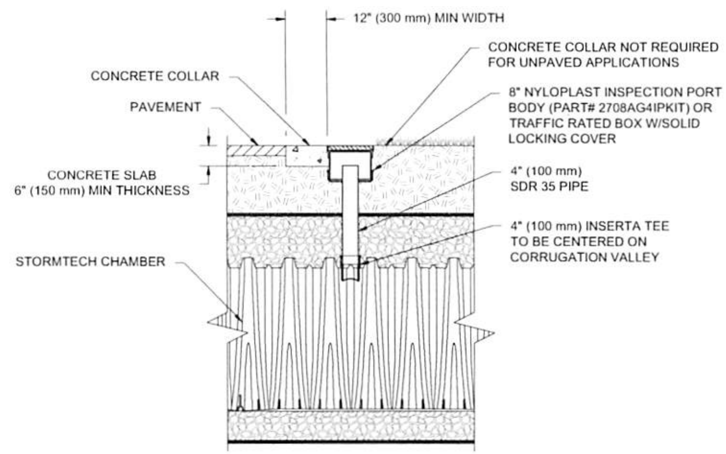
STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



NOTE:
INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION VALLEY.

4" PVC INSPECTION PORT DETAIL (MC SERIES CHAMBER)
NTS

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UNDERDRAIN DETAIL

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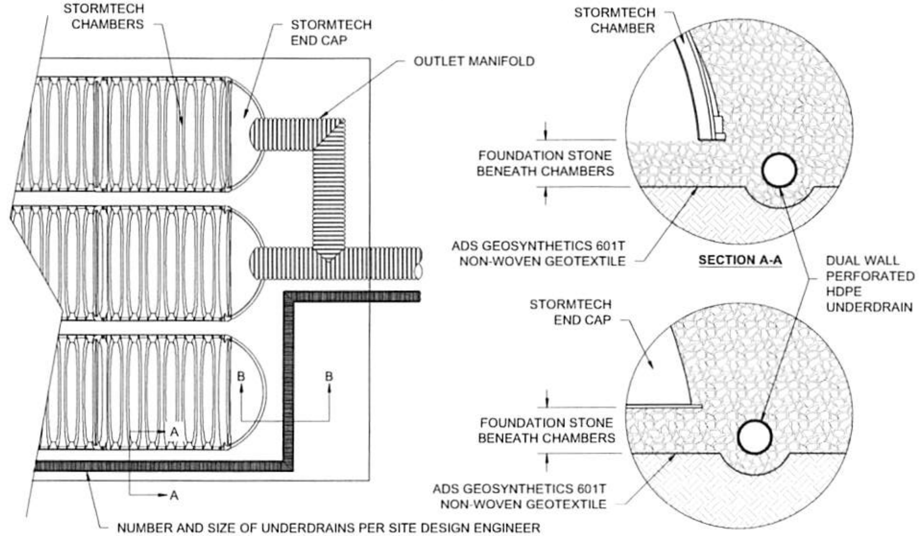
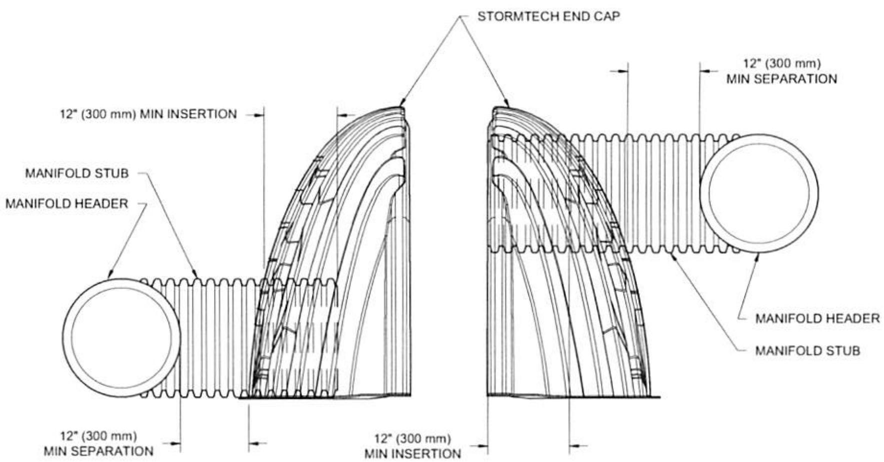


NUMBER AND SIZE OF UNDERDRAINS PER SITE DESIGN ENGINEER
4" (100 mm) TYP FOR SC-310 & SC-160LP SYSTEMS
6" (150 mm) TYP FOR SC-740, DC-780, MC-3500 & MC-4500 SYSTEMS

SECTION B-B

MC-SERIES END CAP INSERTION DETAIL

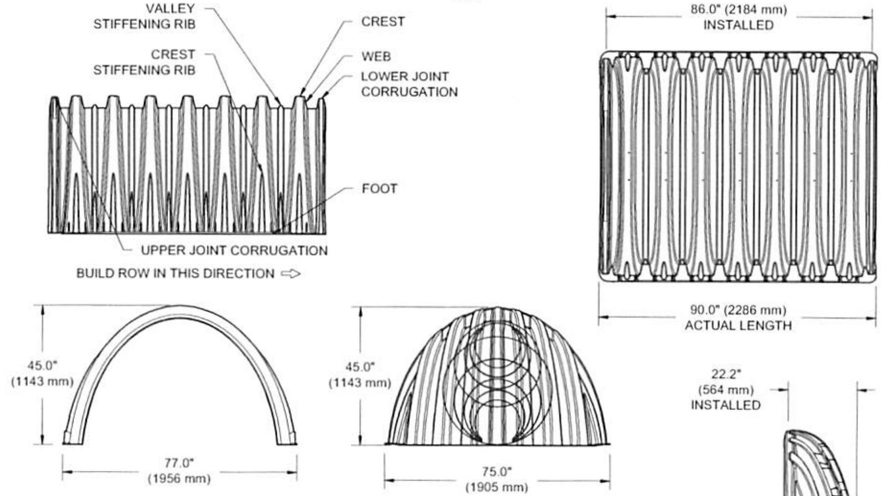
NTS

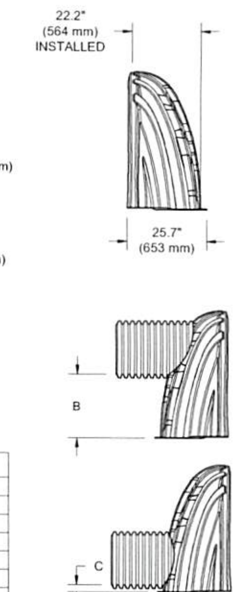


NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

MC-3500 TECHNICAL SPECIFICATION

NTS





NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	77.0" X 45.0" X 86.0"	(1956 mm X 1143 mm X 2184 mm)
CHAMBER STORAGE	109.9 CUBIC FEET	(3.11 m³)
MINIMUM INSTALLED STORAGE*	175.0 CUBIC FEET	(4.96 m³)
WEIGHT	134 lbs.	(60.8 kg)

NOMINAL END CAP SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	75.0" X 45.0" X 22.2"	(1905 mm X 1143 mm X 564 mm)
END CAP STORAGE	14.9 CUBIC FEET	(0.42 m³)
MINIMUM INSTALLED STORAGE*	45.1 CUBIC FEET	(1.28 m³)
WEIGHT	49 lbs.	(22.2 kg)

*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION, 6" (152 mm) STONE BETWEEN CHAMBERS, 6" (152 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.

PARTIAL CUT HOLES AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PARTIAL CUT HOLES AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"
END CAPS WITH A WELDED CROWN PLATE END WITH "C"

PART #	STUB	B	C
MC3500IEPP06T	6" (150 mm)	33.21" (844 mm)	---
MC3500IEPP06B		---	0.66" (17 mm)
MC3500IEPP08T	8" (200 mm)	31.16" (791 mm)	---
MC3500IEPP08B		---	0.81" (21 mm)
MC3500IEPP10T	10" (250 mm)	29.04" (738 mm)	---
MC3500IEPP10B		---	0.93" (24 mm)
MC3500IEPP12T	12" (300 mm)	26.36" (670 mm)	---
MC3500IEPP12B		---	1.35" (34 mm)
MC3500IEPP15T	15" (375 mm)	23.39" (594 mm)	---
MC3500IEPP15B		---	1.50" (38 mm)
MC3500IEPP18TC	18" (450 mm)	20.03" (509 mm)	---
MC3500IEPP18TW			
MC3500IEPP18BC		---	1.77" (45 mm)
MC3500IEPP18BW			
MC3500IEPP24TC	24" (600 mm)	14.48" (368 mm)	---
MC3500IEPP24TW			
MC3500IEPP24BC		---	2.06" (52 mm)
MC3500IEPP24BW			
MC3500IEPP30BC	30" (750 mm)	---	2.75" (70 mm)

NOTE: ALL DIMENSIONS ARE NOMINAL

CUSTOM PARTIAL CUT INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-3500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

THE MASTERS SCHOOL

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ADS SALES REP	
PROJECT NO.	

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THE MASTERS SCHOOL - PERIMETER DRAIN

DOBB'S FERRY, NY

DC-780 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH DC-780.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE DC-780 CHAMBER SYSTEM

1. STORMTECH DC-780 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH DC-780 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4-2" (20-50 mm).
8. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
9. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH DC-780 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
2. THE USE OF CONSTRUCTION EQUIPMENT OVER DC-780 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

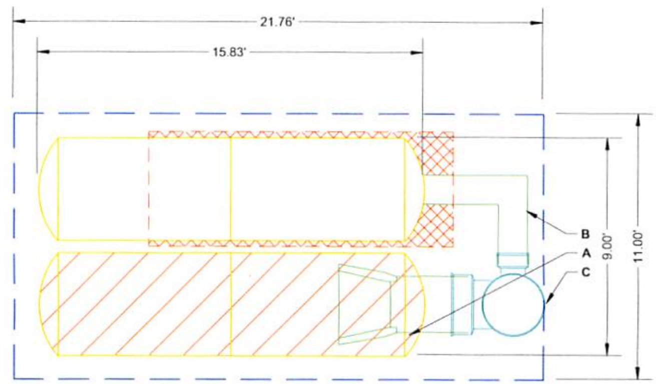
USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

PROPOSED LAYOUT		CONCEPTUAL ELEVATIONS	
4	STORMTECH DC-780 CHAMBERS	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	15.25
4	STORMTECH DC-780 END CAPS	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	5.25
6	STONE ABOVE (in)	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):	4.75
9	STONE BELOW (in)	MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT):	4.75
40	STONE VOID	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	4.75
470	INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED) (COVER STONE INCLUDED) (BASE STONE INCLUDED)	TOP OF STONE:	3.75
		TOP OF DC-780 CHAMBER:	3.25
		12" x 12" TOP MANIFOLD INVERT:	1.79
		24" ISOLATOR ROW PLUS INVERT:	0.76
239	SYSTEM AREA (SF)	BOTTOM OF DC-780 CHAMBER:	0.75
65.5	SYSTEM PERIMETER (ft)	BOTTOM OF STONE:	0.00

*INVERT ABOVE BASE OF CHAMBER

PART TYPE	ITEM ON LAYOUT	DESCRIPTION	INVERT*	MAX FLOW
PREFABRICATED END CAP	A	24" BOTTOM PREFABRICATED END CAP, PART#: SC740EPE24BR / TYP OF ALL 24" ISOLATOR ROW PLUS CONNECTIONS	0.10"	
MANIFOLD	B	12" x 12" TOP MANIFOLD, ADS N-12	12.50"	
NYLOPLAST (INLET W/ ISO PLUS ROW)	C	30" DIAMETER (24.00" SUMP MIN)		2.3 CFS IN



ISOLATOR ROW PLUS (SEE DETAIL)

PLACE MINIMUM 12.50' OF ADSPLUS125 WOVEN GEOTEXTILE OVER BEDDING STONE AND UNDERNEATH CHAMBER FEET FOR SCOUR PROTECTION AT ALL CHAMBER INLET ROWS

BED LIMITS

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH NOTE #6.32 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.
- **NOT FOR CONSTRUCTION:** THIS LAYOUT IS FOR DIMENSIONAL PURPOSES ONLY TO PROVE CONCEPT & THE REQUIRED STORAGE VOLUME CAN BE ACHIEVED ON SITE.

THE MASTERS SCHOOL - PERIMETER DRAIN
DOBB'S FERRY, NY

DATE: | DRAWN: JP
PROJECT #: | CHECKED: N/A

REV	DRW	CHK	DESCRIPTION

ADS
4640 TRUEMAN BLVD
HILLIARD, OH 43026
1-800-733-7473

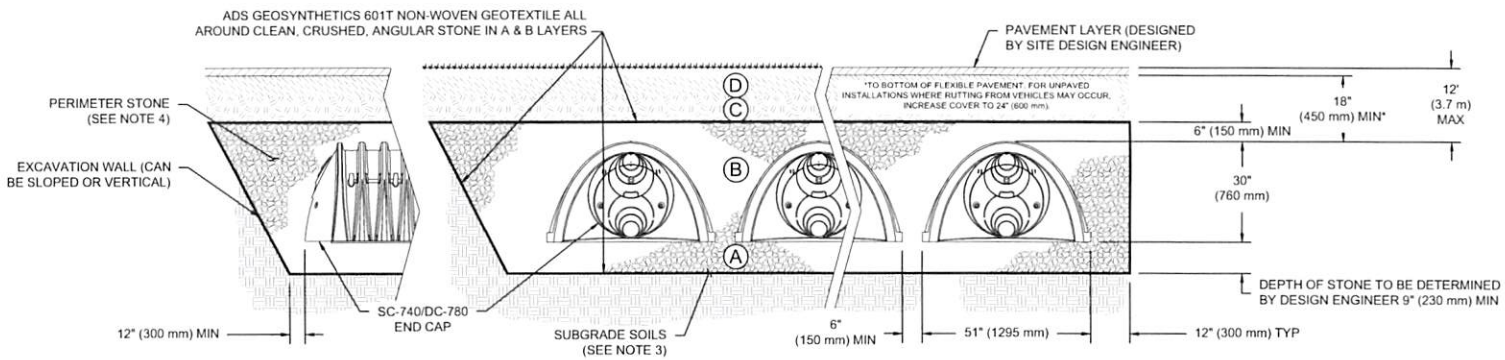
StormTech®
Chamber System
888-892-2694 | WWW.STORMTECH.COM

0 5' 10'

ACCEPTABLE FILL MATERIALS: STORMTECH DC-780 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. DC-780 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

THE MASTERS SCHOOL - PERIMETER DRAIN
DOBB'S FERRY, NY

DATE:
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PROJECT #:
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REV	DRW	CHK	DESCRIPTION

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Chamber System
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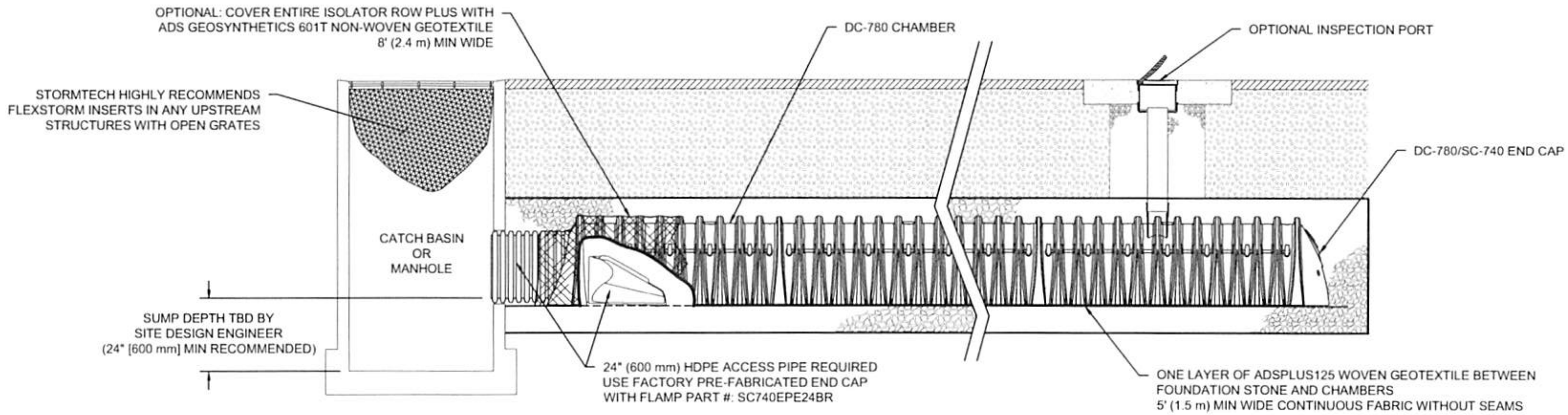

DC-780 ISOLATOR ROW PLUS DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

THE MASTERS SCHOOL - PERIMETER DRAIN
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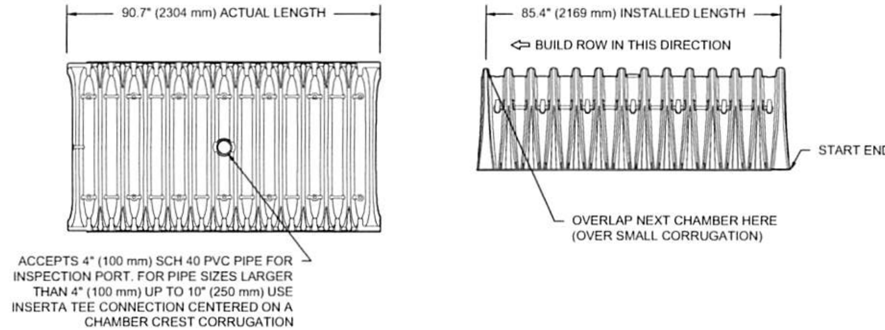
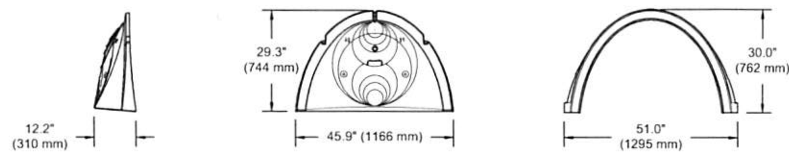
DC-780 TECHNICAL SPECIFICATION

NTS

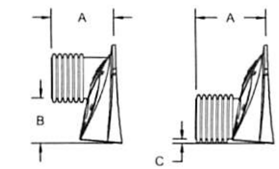




NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	51.0" X 30.0" X 85.4"	(1295 mm X 762 mm X 2169 mm)
CHAMBER STORAGE	46.2 CUBIC FEET	(1.30 m³)
MINIMUM INSTALLED STORAGE*	78.4 CUBIC FEET	(2.20 m³)
WEIGHT	75.0 lbs.	(33.6 kg)

*ASSUMES 6" (152 mm) STONE ABOVE, 9" (229 mm) BELOW, AND 6" (152 mm) BETWEEN CHAMBERS



STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"

PART #	STUB	A	B	C
SC740EPE06T / SC740EPE06TPC	6" (150 mm)	10.9" (277 mm)	18.5" (470 mm)	---
SC740EPE06B / SC740EPE06BPC			---	0.5" (13 mm)
SC740EPE08T / SC740EPE08TPC	8" (200 mm)	12.2" (310 mm)	16.5" (419 mm)	---
SC740EPE08B / SC740EPE08BPC			---	0.6" (15 mm)
SC740EPE10T / SC740EPE10TPC	10" (250 mm)	13.4" (340 mm)	14.5" (368 mm)	---
SC740EPE10B / SC740EPE10BPC			---	0.7" (18 mm)
SC740EPE12T / SC740EPE12TPC	12" (300 mm)	14.7" (373 mm)	12.5" (318 mm)	---
SC740EPE12B / SC740EPE12BPC			---	1.2" (30 mm)
SC740EPE15T / SC740EPE15TPC	15" (375 mm)	18.4" (467 mm)	9.0" (229 mm)	---
SC740EPE15B / SC740EPE15BPC			---	1.3" (33 mm)
SC740EPE18T/ SC740EPE18TPC	18" (450 mm)	19.7" (500 mm)	5.0" (127 mm)	---
SC740EPE18B / SC740EPE18BPC			---	1.6" (41 mm)
SC740EPE24B*	24" (600 mm)	18.5" (470 mm)	---	0.1" (3 mm)

ALL STUBS, EXCEPT FOR THE SC740EPE24B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

* FOR THE SC740EPE24B THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" (44 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL

THE MASTERS SCHOOL - PERIMETER DRAIN
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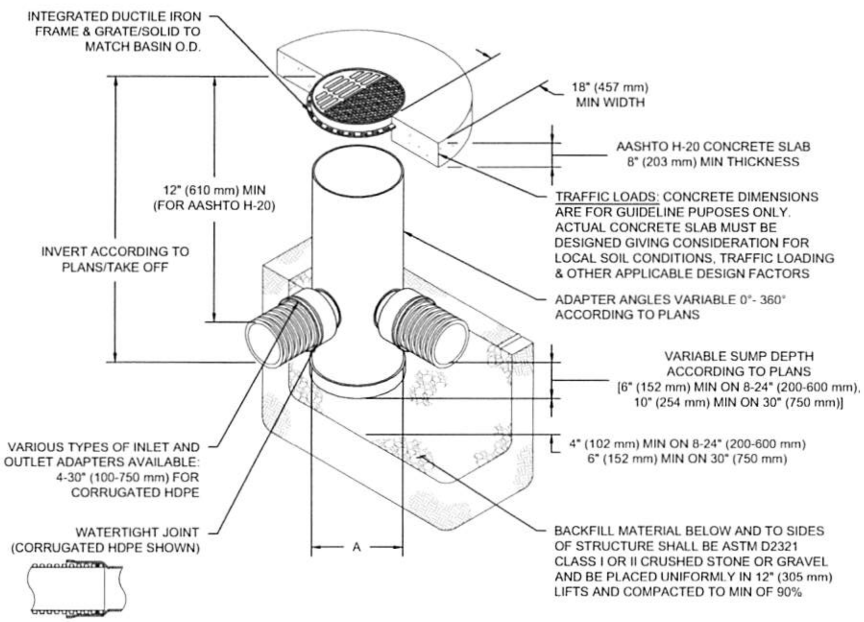
NYLOPLAST DRAIN BASIN

NTS



NOTES

1. 8-30" (200-750 mm) GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
2. 12-30" (300-750 mm) FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
5. FOR COMPLETE DESIGN AND PRODUCT INFORMATION: **WWW.NYLOPLAST-US.COM**
6. TO ORDER CALL: **800-821-6710**

A	PART #	GRATE/SOLID COVER OPTIONS		
8" (200 mm)	2808AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
10" (250 mm)	2810AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
12" (300 mm)	2812AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
15" (375 mm)	2815AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
18" (450 mm)	2818AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
24" (600 mm)	2824AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
30" (750 mm)	2830AG	PEDESTRIAN AASHTO H-20	STANDARD AASHTO H-20	SOLID AASHTO H-20

THE MASTERS SCHOOL - PERIMETER DRAIN
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STORMTECH MC-3500 CHAMBER

Designed to meet the most stringent industry performance standards for superior structural integrity while providing designers with a cost-effective method to save valuable land and protect water resources. The StormTech system is designed primarily to be used under parking lots, thus maximizing land usage for private (commercial) and public applications. StormTech chambers can also be used in conjunction with Green Infrastructure, thus enhancing the performance and extending the service life of these practices.

STORMTECH MC-3500 CHAMBER
(not to scale)

Nominal Chamber Specifications

Size (L x W x H)
90" x 77" x 45"
2,286 mm x 1,956 mm x 1,143 mm

Chamber Storage
109.9 ft³ (3.11 m³)

Min. Installed Storage*
175.0 ft³ (4.96 m³)

Weight
134 lbs (60.8 kg)

Shipping
15 chambers/pallet
7 end caps/pallet
7 pallets/truck

*Assumes a minimum of 12" (300 mm) of stone above, 9" (230 mm) of stone below chambers, 6" (150 mm) of stone between chambers/end caps and 40% stone porosity.

STORMTECH MC-3500 END CAP
(not to scale)

Nominal End Cap Specifications

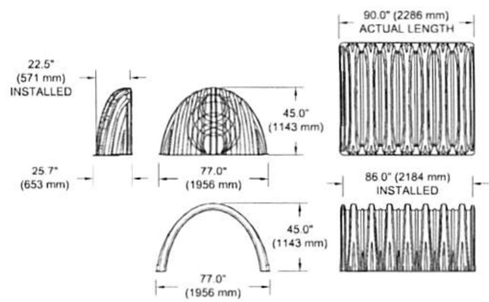
Size (L x W x H)
26.5" x 71" x 45.1"
673 mm x 1,803 mm x 1,145 mm

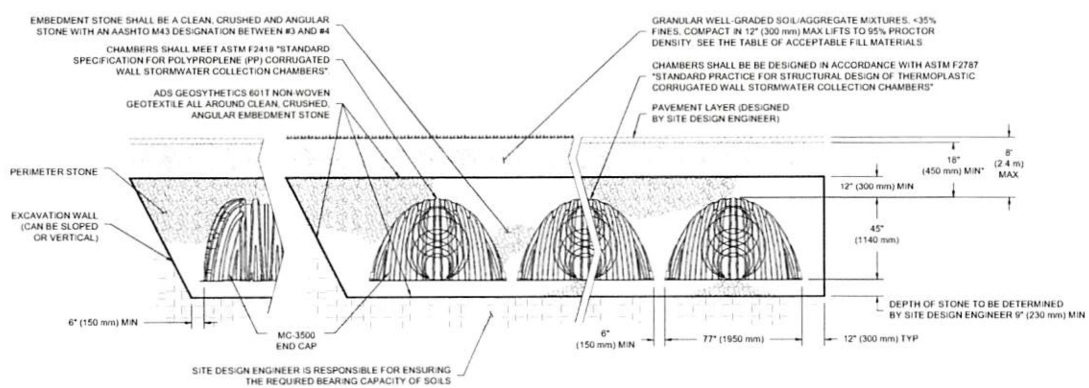
End Cap Storage
14.9 ft³ (0.42 m³)

Min. Installed Storage*
45.1ft³ (1.28 m³)

Weight
49 lbs (22.2 kg)

*Assumes a minimum of 12" (300 mm) of stone above, 9" (230 mm) of stone below, 6" (150 mm) of stone perimeter, 6" (150 mm) of stone between chambers/end caps and 40% stone porosity.





*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 24" (600 mm)

MC-3500 CHAMBER SPECIFICATION

STORAGE VOLUME PER CHAMBER FT³ (M³)

	Bare Chamber Storage ft^3 (m^3)	Chamber and Stone Foundation Depth in. (mm)			
		9" (230 mm)	12" (300 mm)	15" (375 mm)	18" (450 mm)
MC-3500 Chamber	109.9 (3.11)	175.0 (4.96)	179.9 (5.09)	184.9 (5.24)	189.9 (5.38)
MC-3500 End Cap	14.9 (.42)	45.1 (1.28)	46.6 (1.32)	48.3 (1.37)	49.9 (1.41)

Note: Assumes 6" (150 mm) row spacing, 40% stone porosity, 12" (300 mm) stone above and includes the bare chamber/end cap volume.

AMOUNT OF STONE PER CHAMBER

ENGLISH TONS (yds^3)	Stone Foundation Depth			
	9"	12"	15"	18"
MC-3500 Chamber	8.5 (6.0)	9.1 (6.5)	9.7 (6.9)	10.4 (7.4)
MC-3500 End Cap	3.9 (2.8)	4.1 (2.9)	4.3 (3.1)	4.5 (3.2)
METRIC KILOGRAMS (m^3)	230 mm	300 mm	375 mm	450 mm
MC-3500 Chamber	7711 (4.6)	8255 (5.0)	8800 (5.3)	9435 (5.7)
MC-3500 End Cap	3538 (2.1)	3719 (2.2)	3901 (2.4)	4082 (2.5)

Note: Assumes 12" (300 mm) of stone above and 6" (150 mm) row spacing and 6" (150 mm) of perimeter stone in front of end caps.

VOLUME EXCAVATION PER CHAMBER YD³ (M³)

	Stone Foundation Depth			
	9" (230 mm)	12" (300 mm)	15" (375mm)	18" (450 mm)
MC-3500 Chamber	11.9 (9.1)	12.4 (9.5)	12.8(9.8)	13.3 (10.2)
MC-3500 End Cap	4.0 (3.1)	4.1 (3.2)	4.3 (3.3)	4.4 (3.4)

Note: Assumes 6" (150 mm) of separation between chamber rows and 24" (600 mm) of cover. The volume of excavation will vary as depth of cover increases.

Working on a project?
Visit us at www.stormtech.com
and utilize the StormTech Design Tool

For more information on the StormTech MC-3500 Chamber and other ADS products, please contact our Customer Service Representatives at 1-800-821-6710

THE MOST ADVANCED NAME IN WATER MANAGEMENT SOLUTIONS®

Advanced Drainage Systems, Inc.
4640 Trueman Blvd., Hilliard, OH 43026
1-800-821-6710 www.ads-pipe.com

StormTech®

MC-3500 & MC-4500 Design Manual

StormTech® Chamber Systems for Stormwater Management

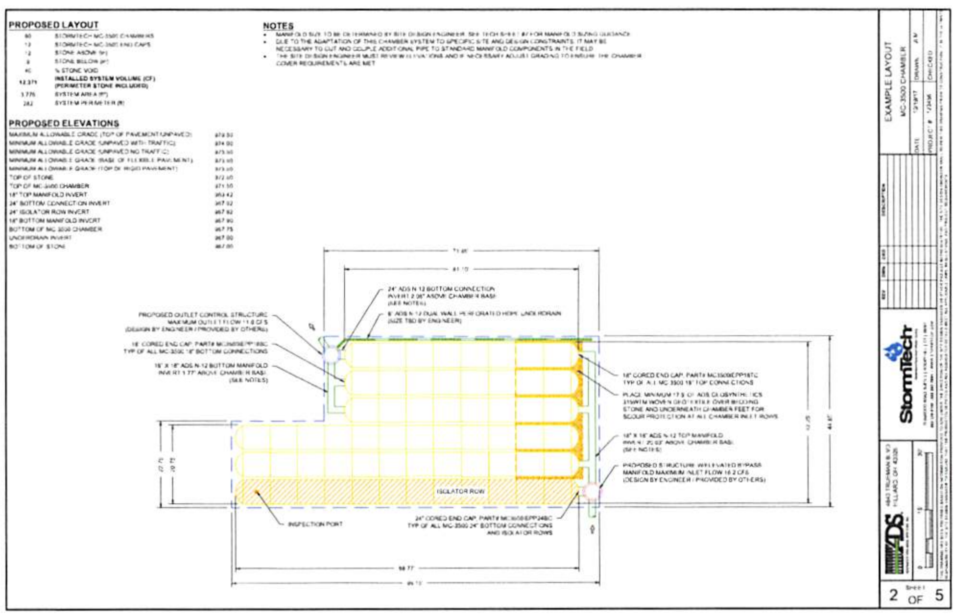
THE MOST **ADVANCED** NAME IN WATER MANAGEMENT SOLUTIONS®

ADS®

Table of Contents

***For SC-160LP, SC-310, SC-740 & DC-780 designs, please refer to the SC-160LP/SC-310/SC-740/DC-780 Design Manual.**

StormTech Engineering Services assists design professionals in specifying StormTech stormwater systems. This assistance includes the layout of chambers to meet the engineer's volume requirements and the connections to and from the chambers. They can also assist converting and cost engineering projects currently specified with ponds, pipe, concrete vaults and other manufactured stormwater detention/retention products. Please note that it is the responsibility of the site design engineer to ensure that the chamber bed layout meets all design requirements and is in compliance with applicable laws and regulations governing a project.

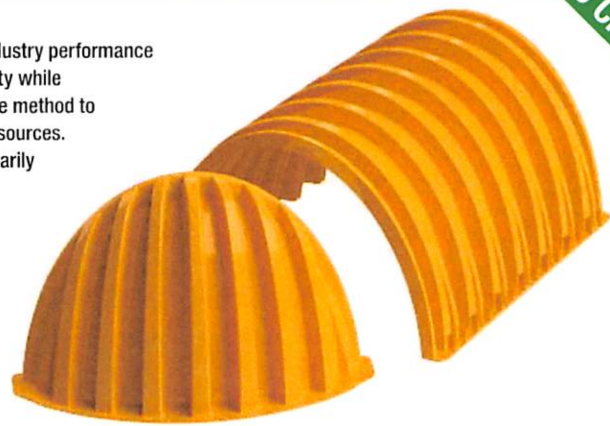


This manual is exclusively intended to assist engineers in the design of subsurface stormwater systems using StormTech chambers.

MC-3500 Chamber

StormTech MC-3500 Chamber

Designed to meet the most stringent industry performance standards for superior structural integrity while providing designers with a cost-effective method to save valuable land and protect water resources. The StormTech system is designed primarily to be used under parking lots, thus maximizing land usage for commercial and municipal applications.



StormTech MC-3500 Chamber (not to scale)

Nominal Chamber Specifications

Size (L x W x H)	90" (2286 mm) x 77" (1956 mm) x 45" (1143 mm)
Chamber Storage	109.9 ft³ (3.11 m³)
Min. Installed Storage*	175.0 ft³ (4.96 m³)
Weight	134 lbs (60.8 kg)

*This assumes a minimum of 12" (300 mm) of stone above, 6" (150 mm) of stone between chambers/end caps and 40% stone porosity.

StormTech MC-3500 End Cap (not to scale)

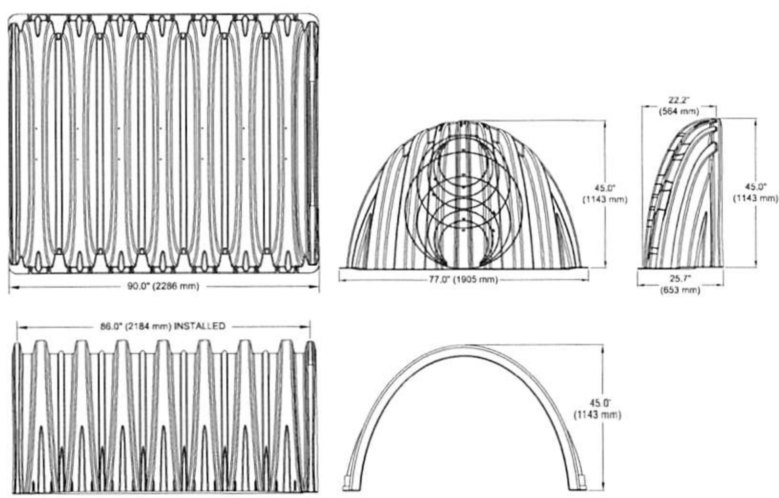
Nominal Chamber Specifications

Size (L x W x H)	26.5" (673 mm) x 71" (1803 mm) x 45.1" (1145 mm)
Chamber Storage	14.9 ft³ (0.42 m³)
Min. Installed Storage*	45.1 ft³ (1.28 m³)
Weight	49 lbs (22.2 kg)

*This assumes a minimum of 12" (300 mm) of stone above, 9" (230 mm) of stone below, 6" (150 mm) of stone perimeter, 6" (150 mm) between chambers/end caps and 40% stone porosity.

Shipping

- 15 chambers/pallet
- 16 end caps/pallet
- 7 pallets/truck



StormTech MC-3500 Chamber

Storage Volume Per Chamber/End Cap ft³ (m³)

	Bare Unit Storage ft³ (m³)	Chamber/End Cap and Stone Volume — Stone Foundation Depth in. (mm)			
		9 (230)	12 (300)	15 (375)	18 (450)
MC-3500 Chamber	109.9 (3.11)	175.0 (4.96)	179.9 (5.09)	184.9 (5.24)	189.9 (5.38)
MC-3500 End Cap	14.9 (0.42)	45.1 (1.28)	46.6 (1.32)	48.3 (1.37)	49.9 (1.41)

NOTE: Assumes 6" (150 mm) row spacing, 40% stone porosity, 12" (300 mm) stone above and includes the bare chamber/end cap volume. End cap volume assumes 6" (150 mm) stone perimeter.

Amount of Stone Per Chamber

ENGLISH tons (yd³)	Stone Foundation Depth			
	9"	12"	15"	18"
MC-3500	8.5 (6.0)	9.1 (6.5)	9.7 (6.9)	10.4 (7.4)
End Cap	3.9 (2.8)	4.1 (2.9)	4.3 (3.1)	4.5 (3.2)
METRIC kg (m³)	230 mm	300 mm	375 mm	450 mm
MC-3500	7711 (4.6)	8255 (5.0)	8800 (5.3)	9435 (5.7)
End Cap	3538 (2.1)	3719 (2.2)	3901 (2.4)	4082 (2.5)

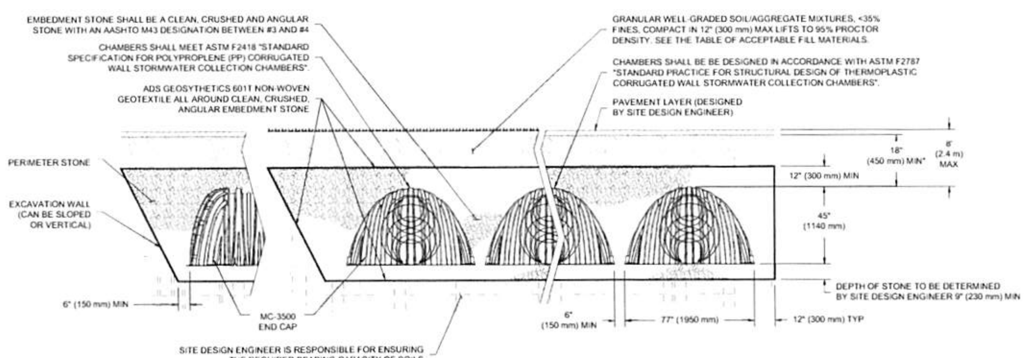
NOTE: Assumes 12" (300 mm) of stone above, and 6" (150 mm) row spacing, and 6" (150 mm) of perimeter stone in front of end caps.

Volume of Excavation Per Chamber/End Cap yd³ (m³)

	Stone Foundation Depth			
	9" (230 mm)	12" (300 mm)	15"(375 mm)	18"(450 mm)
MC-3500	11.9 (9.1)	12.4 (9.5)	12.8 (9.8)	13.3 (10.2)
End Cap	4.0 (3.1)	4.1 (3.2)	4.3 (3.3)	4.4 (3.4)

NOTE: Assumes 6" (2150 mm) separation between chamber rows and 24" (600 mm) of cover. The volume of excavation will vary as the depth of cover increases.

General Cross Section



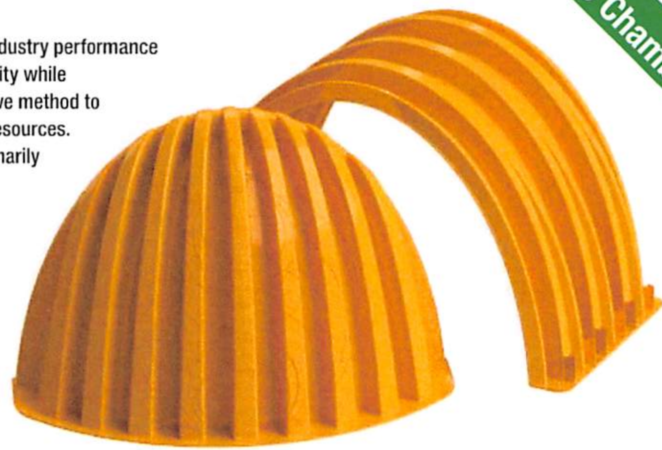
*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 24" (600 mm).

Special applications will be considered on a project by project basis. Please contact our application department should you have a unique application for our team to evaluate.

StormTech MC-4500 Chamber

MC-4500 Chamber

Designed to meet the most stringent industry performance standards for superior structural integrity while providing designers with a cost-effective method to save valuable land and protect water resources. The StormTech system is designed primarily to be used under parking lots, thus maximizing land usage for commercial and municipal applications.



StormTech MC-4500 Chamber (not to scale)

Nominal Chamber Specifications

Size (L x W x H)	52" (1321 mm) x 100" (2540 mm) x 60" (1524 mm)
Chamber Storage	106.5 ft³ (3.01 m³)
Min. Installed Storage*	162.6 ft³ (4.60 m³)
Weight	120 lbs (54.4 kg)

*This assumes a minimum of 12" (300 mm) of stone above, 9" (230 mm) of stone below chambers, 9" (230)mm between chambers/end caps and 40% stone porosity.

StormTech MC-4500 End Cap (not to scale)

Nominal Chamber Specifications

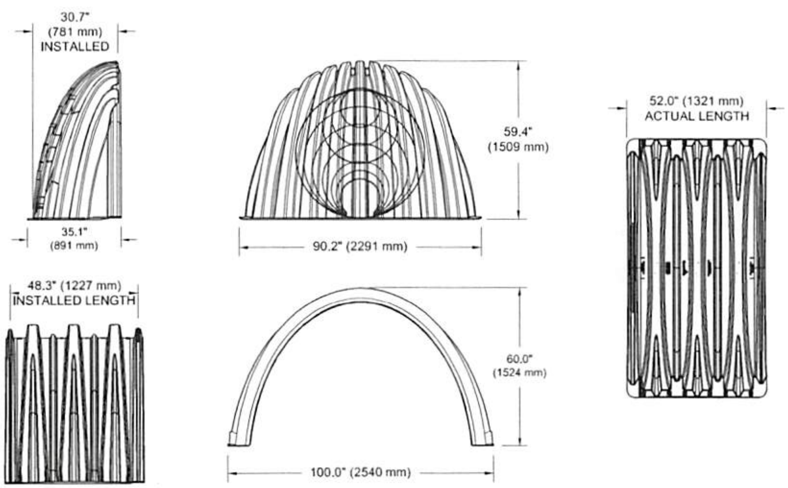
Size (L x W x H)	35.1" (891 mm) x 90.2" (2291 mm) x 59.4" (1509 mm)
Chamber Storage	35.7 ft³ (1.01 m³)
Min. Installed Storage*	108.7 ft³ (3.08 m³)
Weight	120 lbs (54.4 kg)

*This assumes a minimum of 12" (300 mm) of stone above, 9" (230 mm) of stone below, 6" (150 mm) of stone perimeter, 9" (230 mm) between chambers/end caps and 40% stone porosity.

Shipping

7 chambers/pallet

11 pallets/truck



StormTech MC-4500 Chamber

Storage Volume Per Chamber/End Cap ft³ (m³)

	Bare Unit Storage ft³ (m³)	Chamber/End Cap and Stone Volume — Stone Foundation Depth in. (mm)			
		9 (230)	12 (300)	15 (375)	18 (450)
MC-4500 Chamber	106.5 (3.02)	162.6 (4.60)	166.3 (4.71)	169.9 (4.81)	173.6 (4.91)
MC-4500 End Cap	35.7 (1.01)	108.7 (3.08)	111.9 (3.17)	115.2 (3.26)	118.4 (3.35)

NOTE: Assumes 9" (230 mm) row spacing, 40% stone porosity, 12" (300 mm) stone above and includes the bare chamber/end cap volume. End cap volume assumes 12" (300 mm) stone perimeter.

Amount of Stone Per Chamber

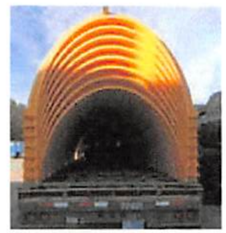
ENGLISH tons (yd³)	Stone Foundation Depth			
	9"	12"	15"	18"
MC-4500	7.4 (5.2)	7.8 (5.5)	8.3 (5.9)	8.8 (6.2)
End Cap	9.6 (6.8)	10.0 (7.1)	10.4 (7.4)	10.9 (7.7)
METRIC kg (m³)	230 mm	300 mm	375 mm	450 mm
MC-4500	6681 (4.0)	7117 (4.2)	7552 (4.5)	7987 (4.7)
End Cap	8691 (5.2)	9075 (5.4)	9460 (5.6)	9845 (5.9)

NOTE: Assumes 12" (300 mm) of stone above, and 9" (230 mm) row spacing, and 12" (300 mm) of perimeter stone in front of end caps.

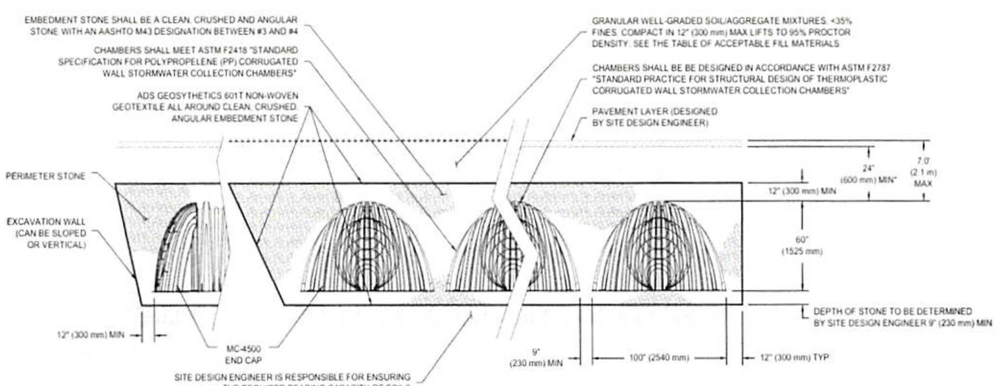
Volume of Excavation Per Chamber/End Cap yd³ (m³)

	Stone Foundation Depth			
	9" (230 mm)	12" (300 mm)	15"(375 mm)	18"(450 mm)
MC-4500	10.5 (8.0)	10.8 (8.3)	11.2 (8.5)	11.5 (8.8)
End Cap	9.3 (7.1)	9.6 (7.3)	9.9 (7.6)	10.2 (7.8)

NOTE: Assumes 9" (230 mm) separation between chamber rows, 12" (300 mm) of perimeter in front of end caps, and 24" (600 mm) of cover. The volume of excavation will vary as the depth of cover increases.



General Cross Section



*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 30" (750 mm).

Special applications will be considered on a project by project basis. Please contact our application department should you have a unique application for our team to evaluate.

1.1 PRODUCT DESIGN

StormTech's commitment to thorough product testing programs, materials evaluation and adherence to national standards has resulted in two more superior products. Like other StormTech chambers, the MC-3500 and MC-4500 are designed to meet the full scope of design requirements of the American Society of Testing Materials (ASTM) International specification F2787 "Standard Practice for Structural Design of Thermoplastic Corrugated Wall Stormwater Collection Chambers" and produced to the requirements of the ASTM F 2418 "Standard Specification for Polypropylene (PP) Corrugated Stormwater Collection Chambers".

The StormTech MC-3500 and MC-4500 chambers provide the full AASHTO safety factors for live loads and permanent earth loads. The ASTM F 2787 standard provides specific guidance on how to design thermoplastic chambers in accordance with AASHTO Section 12.12. of the AASHTO LRFD Bridge Design Specifications. ASTM F 2787 requires that the safety factors included in the AASHTO guidance are achieved as a prerequisite to meeting ASTM F 2418. The three standards provide both the assurance of product quality and safe structural design.

The design of larger chambers in the same tradition of our other chambers required the collaboration of experts in soil-structure interaction, plastics and manufacturing. Years of extensive research, including laboratory testing and field verification, were required to produce chambers that are ready to meet both the rigors of installation and the longevity expected by engineers and owners.

This Design Manual provides the details and specifications necessary for consulting engineers to design stormwater management systems using the MC-3500 and MC-4500 chambers. It provides specifications for storage capacities, layout dimensions as well as requirements for design to ensure a long service life. The basic design concepts for foundation and backfill materials, subgrade bearing capacities and row spacing remain equally as pertinent for the MC-3500 and MC-4500 as the SC-740, SC-310 and DC-780 chamber systems. However, since many design values and dimensional requirements are different for these larger chambers than the SC-740, SC-310 and DC-780 chambers, design manuals and installation instructions are not interchangeable.

This manual includes only those details, dimensions, cover limits, etc for the MC-3500 and MC-4500 and is intended to be a stand-alone design guide for the MC-3500 and MC-4500 chambers. A Construction Guide specifically for these two chamber models has also been published.

1.2 TECHNICAL SUPPORT

The StormTech Technical Services Department is available to assist the engineer with the layout of MC-3500 and MC-4500 chamber systems and answer questions regarding all the StormTech chamber models. Call the Technical Services Department, email us at info@stormtech.com or contact your local StormTech representative.

1.3 MC-3500 AND MC-4500 CHAMBERS

All StormTech chambers are designed to the full scope of AASHTO requirements without repeating end walls or other structural reinforcing. StormTech's continuously curved, elliptical arch and the surrounding angular backfill are the key components of the structural system. With the addition of patent pending integral stiffening ribs **(Figure 5)**, the MC-3500 and MC-4500 are assured to provide a long, safe service life. Like other StormTech chambers, the MC-3500 and MC-4500 are produced from high quality, impact modified resins which are tested for short-term and long-term mechanical properties.

With all StormTech chambers, one chamber type is used for the start, middle and end of rows. Rows are formed by overlapping the upper joint corrugation of the next chamber over the lower joint corrugation of the previous chamber **(Figure 6)**.

1.4 CHAMBER JOINTS

All StormTech chambers are designed with an optimized joining system. The height and width of the end corrugations have been designed to provide the required structural safety factors while providing an unobstructed flow path down each row.

To assist the contractor, StormTech chambers are molded with simple assembly instructions and arrows that indicate the direction in which to build rows. The corrugation valley immediately adjacent to the lower joint corrugation is marked "Overlap Here - Lower Joint." The corrugation valley immediately adjacent to the upper joint corrugation is marked "Build This Direction - Upper Joint."

Two people can safely and efficiently carry and place chambers without cumbersome connectors, special tools or heavy equipment. Each row of chambers must begin and end with a joint corrugation. Since joint corrugations are of a different size than the corrugations along the body of the chamber, chambers cannot be field cut and installed. Only whole MC-3500 and MC-4500 chambers can be used. For system layout assistance contact StormTech.

1.5 MC-3500 AND MC-4500 END CAPS

The MC-3500 and MC-4500 end caps are easy to install. These end caps are designed with a corrugation joint that fits over the top of either end of the chamber. The end cap joint is simply set over the top of either of the upper or lower chamber joint corrugations **(Figure 7)**.

The MC-3500 end cap has pipe cutting guides for 12"–24" (300 mm–600 mm) top inverts **(Figure 9)**.

The MC-4500 end cap has pipe cutting guides for 12"–42" (300 mm–1050 mm) bottom inverts and 12"–24" (300 mm–600 mm) top inverts **(Figure 8)**.

Standard and custom pre-cored end caps are available. Pre-cored end caps, 18" in diameter and larger include a welded crown plate.

FIGURE 5—Chamber and End Cap Components

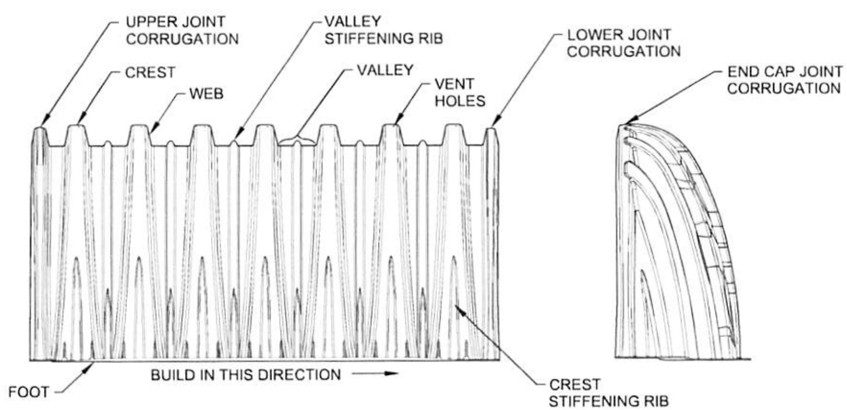


FIGURE 6—Chamber Joint Overlap

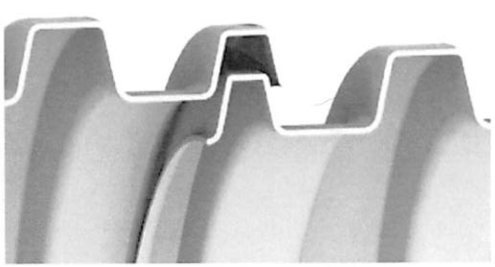


FIGURE 7—End Cap Joint Overlap

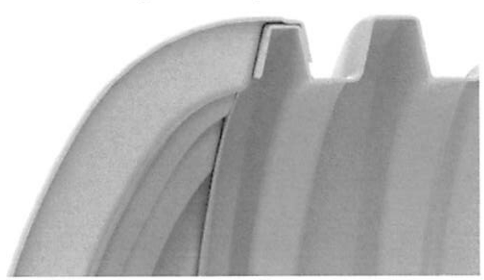


FIGURE 8—MC-4500 End Cap Inverts

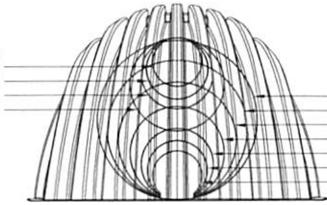
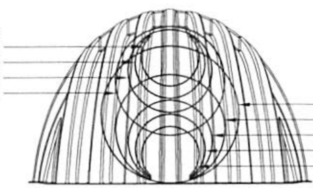


FIGURE 9—MC-3500 End Cap Inverts

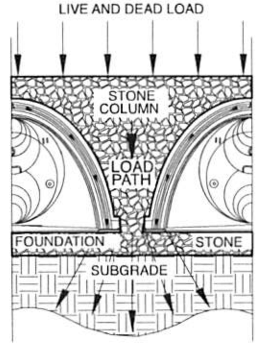


2.0 Foundations for Chambers

2.1 FOUNDATION REQUIREMENTS

StormTech chamber systems can be installed in various soil types. The subgrade bearing capacity and the cover height over the chambers determine the required depth of clean, crushed, angular foundation stone below the chambers. Foundation stone, also called bedding, is the stone between the subgrade soils and the feet of the chamber. Flexible structures are designed to transfer a significant portion of both live and dead loads through the surrounding soils. Chamber systems accomplish this by creating load paths through the columns of embedment stone between and around the rows of chambers. This creates load concentrations at the base of the columns between the rows. The foundation stone spreads out the concentrated loads to distributed loads that can be supported by the subgrade soils.

Since increasing the cover height (top of chamber to finished grade) causes increasing soil load, a greater depth of foundation stone is necessary to distribute the load to the subgrade soils. **Table 1** and **2** specify the minimum required foundation depths for varying cover heights and allowable subgrade bearing capacities. These tables are based on StormTech service loads. The minimum required foundation depth is 9" (230 mm) for both chambers.



2.2 WEAKER SOILS

StormTech has not provided guidance for subgrade bearing capacities less than 2000 pounds per square foot [(2.0 ksf) (96 kPa)]. These soils are often highly variable, may contain organic materials and could be more sensitive to moisture. A geotechnical engineer must be consulted if soils with bearing capacities less than 2000 psf (96 kPa) are present.

2.0 Foundations for Chambers

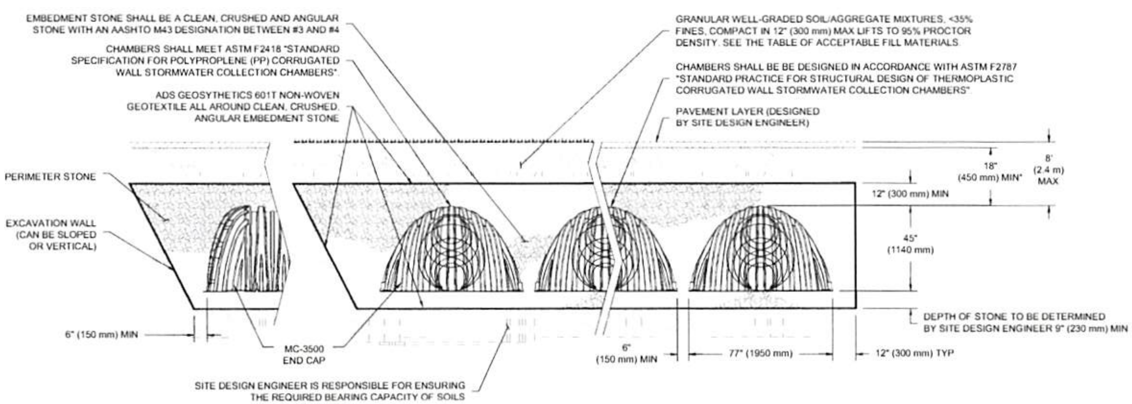
TABLE 1—MC-3500 Minimum Required Foundation Depth in inches (millimeters)

Assumes 9" (230 mm) row spacing.

Cover Hgt. ft. (m)	Minimum Bearing Resistance for Service Loads ksf (kPa)																								
	4.4 (211)	4.3 (206)	4.2 (201)	4.1 (196)	4.0 (192)	3.9 (187)	3.8 (182)	3.7 (177)	3.6 (172)	3.5 (168)	3.4 (163)	3.3 (158)	3.2 (153)	3.1 (148)	3.0 (144)	2.9 (139)	2.8 (134)	2.7 (129)	2.6 (124)	2.5 (120)	2.4 (115)	2.3 (110)	2.2 (105)	2.1 (101)	2.0 (96)
2.0 (0.61)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	12 (300)	12 (300)	12 (300)	15 (375)	15 (375)	15 (375)
2.5 (0.76)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	12 (300)	12 (300)	12 (300)	12 (300)	15 (375)	15 (375)	15 (375)	18 (450)
3.0 (0.91)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	12 (300)	12 (300)	12 (300)	15 (375)	15 (375)	15 (375)	18 (450)	18 (450)	18 (450)
3.5 (1.07)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	12 (300)	12 (300)	12 (300)	12 (300)	15 (375)	15 (375)	15 (375)	18 (450)	18 (450)	24 (600)	24 (600)
4.0 (1.22)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	12 (300)	12 (300)	12 (300)	12 (300)	15 (375)	15 (375)	15 (375)	15 (375)	18 (450)	18 (450)	24 (600)	24 (600)	24 (600)
4.5 (1.37)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	12 (300)	12 (300)	12 (300)	12 (300)	15 (375)	15 (375)	15 (375)	18 (450)	18 (450)	18 (450)	24 (600)	24 (600)	24 (600)	30 (750)
5.0 (1.52)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	12 (300)	12 (300)	12 (300)	12 (300)	15 (375)	15 (375)	15 (375)	15 (375)	18 (450)	18 (450)	18 (450)	24 (600)	24 (600)	24 (600)	24 (600)	30 (750)
5.5 (1.68)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	12 (300)	12 (300)	12 (300)	12 (300)	12 (300)	15 (375)	15 (375)	15 (375)	18 (450)	18 (450)	18 (450)	24 (600)	24 (600)	24 (600)	24 (600)	24 (600)	30 (750)	30 (750)
6.0 (1.83)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	12 (300)	12 (300)	12 (300)	12 (300)	12 (300)	15 (375)	15 (375)	15 (375)	15 (375)	18 (450)	18 (450)	18 (450)	24 (600)	24 (600)	24 (600)	24 (600)	30 (750)	30 (750)	30 (750)
6.5 (1.98)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	12 (300)	12 (300)	12 (300)	12 (300)	12 (300)	15 (375)	15 (375)	15 (375)	15 (375)	18 (450)	18 (450)	18 (450)	24 (600)	24 (600)	24 (600)	24 (600)	30 (750)	30 (750)	30 (750)	30 (750)
7.0 (2.13)	9 (230)	9 (230)	9 (230)	9 (230)	12 (300)	12 (300)	12 (300)	12 (300)	12 (300)	12 (300)	15 (375)	15 (375)	15 (375)	18 (450)	18 (450)	18 (450)	24 (600)	24 (600)	24 (600)	24 (600)	30 (750)	30 (750)	30 (750)	30 (750)	36 (900)
7.5 (2.30)	9 (230)	9 (230)	12 (300)	12 (300)	12 (300)	12 (300)	12 (300)	15 (375)	15 (375)	15 (375)	15 (375)	18 (450)	18 (450)	18 (450)	18 (450)	24 (600)	24 (600)	24 (600)	24 (600)	24 (600)	30 (750)	30 (750)	30 (750)	36 (900)	36 (900)
8.0 (2.44)	9 (230)	12 (300)	12 (300)	12 (300)	12 (300)	12 (300)	15 (375)	15 (375)	15 (375)	15 (375)	18 (450)	18 (450)	18 (450)	18 (450)	24 (600)	24 (600)	24 (600)	24 (600)	24 (600)	30 (750)	30 (750)	30 (750)	36 (900)	36 (900)	36 (900)

NOTE: The design engineer is solely responsible for assessing the bearing resistance (allowable bearing capacity) of the subgrade soils and determining the depth of foundation stone. Subgrade bearing resistance should be assessed with consideration for the range of soil moisture conditions expected under a stormwater system.

FIGURE 10A—MC-3500 Structural Cross Section Detail (Not to Scale)



*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 24" (600 mm).

Special applications will be considered on a project by project basis. Please contact our applications department should you have a unique application for our team to evaluate.

2.0 Foundations for Chambers

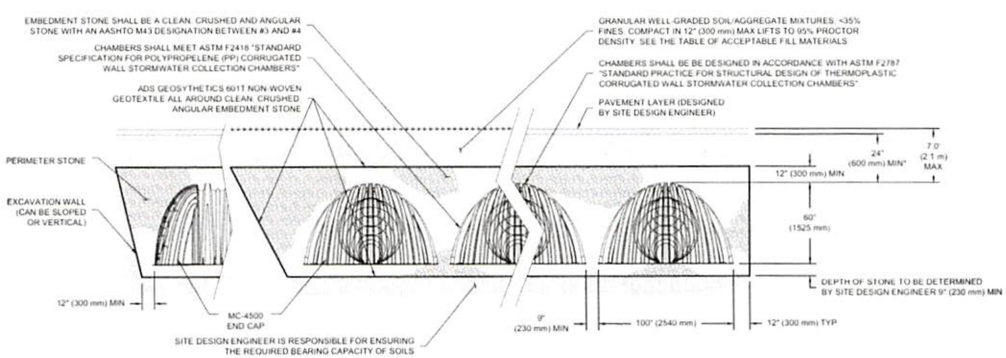
TABLE 2—MC-4500 Minimum Required Foundation Depth in inches (millimeters)

Assumes 9" (230 mm) row spacing.

Cover Hgt. ft. (m)	Minimum Bearing Resistance for Service Loads ksf (kPa)																								
	4.4 (211)	4.3 (206)	4.2 (201)	4.1 (196)	4.0 (192)	3.9 (187)	3.8 (182)	3.7 (177)	3.6 (172)	3.5 (168)	3.4 (163)	3.3 (158)	3.2 (153)	3.1 (148)	3.0 (144)	2.9 (139)	2.8 (134)	2.7 (129)	2.6 (124)	2.5 (120)	2.4 (115)	2.3 (110)	2.2 (105)	2.1 (101)	2.0 (96)
2.0 (0.61)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	12 (300)	12 (300)	12 (300)	15 (375)	15 (375)	15 (375)	18 (450)
2.5 (0.76)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	12 (300)	12 (300)	12 (300)	15 (375)	15 (375)	18 (450)	18 (450)	24 (600)
3.0 (0.91)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	12 (300)	12 (300)	12 (300)	15 (375)	15 (375)	18 (450)	18 (450)	18 (450)	24 (600)	24 (600)
3.5 (1.07)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	12 (300)	12 (300)	12 (300)	15 (375)	15 (375)	15 (375)	18 (450)	18 (450)	24 (600)	24 (600)	24 (600)	24 (600)
4.0 (1.22)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	12 (300)	12 (300)	12 (300)	15 (375)	15 (375)	15 (375)	18 (450)	18 (450)	18 (450)	24 (600)	24 (600)	24 (600)	24 (600)	30 (750)
4.5 (1.37)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	12 (300)	12 (300)	12 (300)	12 (300)	15 (375)	15 (375)	15 (375)	18 (450)	18 (450)	24 (600)	24 (600)	24 (600)	24 (600)	30 (750)	30 (750)	30 (750)
5.0 (1.52)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	12 (300)	12 (300)	12 (300)	12 (300)	15 (375)	15 (375)	15 (375)	18 (450)	18 (450)	18 (450)	24 (600)	24 (600)	24 (600)	24 (600)	30 (750)	30 (750)	30 (750)	36 (900)
5.5 (1.68)	9 (230)	9 (230)	9 (230)	9 (230)	9 (230)	12 (300)	12 (300)	12 (300)	12 (300)	15 (375)	15 (375)	15 (375)	18 (450)	18 (450)	18 (450)	24 (600)	24 (600)	24 (600)	24 (600)	24 (600)	30 (750)	30 (750)	30 (750)	36 (900)	36 (900)
6.0 (1.83)	9 (230)	9 (230)	9 (230)	12 (300)	12 (300)	12 (300)	12 (300)	15 (375)	15 (375)	15 (375)	15 (375)	18 (450)	18 (450)	18 (450)	24 (600)	24 (600)	24 (600)	24 (600)	30 (750)	30 (750)	30 (750)	30 (750)	36 (900)	36 (900)	36 (900)
6.5 (1.98)	9 (230)	12 (300)	12 (300)	12 (300)	12 (300)	15 (375)	15 (375)	15 (375)	15 (375)	18 (450)	18 (450)	18 (450)	24 (600)	24 (600)	24 (600)	24 (600)	24 (600)	30 (750)	30 (750)	30 (750)	30 (750)	36 (900)	36 (900)	36 (900)	42 (1050)
7.0 (2.13)	12 (300)	12 (300)	12 (300)	12 (300)	15 (375)	15 (375)	15 (375)	15 (375)	18 (450)	18 (450)	18 (450)	24 (600)	24 (600)	24 (600)	24 (600)	24 (600)	30 (750)	30 (750)	30 (750)	30 (750)	36 (900)	36 (900)	36 (900)	42 (1050)	42 (1050)

NOTE: The design engineer is solely responsible for assessing the bearing resistance (allowable bearing capacity) of the subgrade soils and determining the depth of foundation stone. Subgrade bearing resistance should be assessed with consideration for the range of soil moisture conditions expected under a stormwater system.

FIGURE 10B—MC-4500 Structural Cross Section Detail (Not to Scale)



*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 30" (750 mm).

Special applications will be considered on a project by project basis. Please contact our applications department should you have a unique application for our team to evaluate.

3.1 Foundation and Embedment Stone

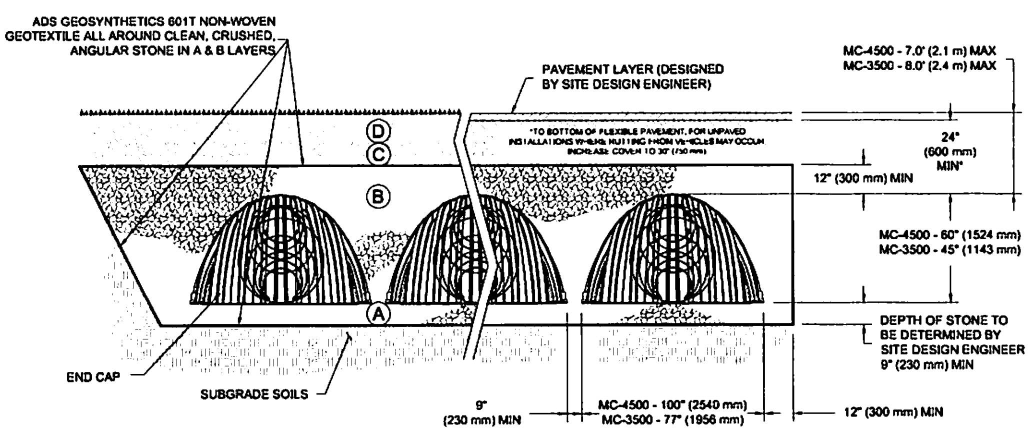
The stone surrounding the chambers consists of the foundation stone below the chambers and embedment stone surrounding the chambers. The foundation stone and embedment stone are important components of the structural system and also provide open void space for stormwater storage. **Table 3** provides the stone specifications that achieve both structural requirements and a porosity of 40% for stormwater storage. **Figure 11** specifies the extents of each backfill stone location.

TABLE 3—Acceptable Fill Materials

MATERIAL LOCATION		DESCRIPTION	AASHTO DESIGNATION	COMPACTION/DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145' A-1,A-2-4,A-3 OR AASHTO M43' 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTOINS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDTIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL-GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FORM THE FOUDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43' 3, 4	NO COMPACTION REQUIRED
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43' 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. ²³

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.

FIGURE 11—Fill Material Locations



Once layer 'C' is placed, any soil/material can be placed in layer 'D' up to the finished grade. Most pavement subbase soils can be used to replace the materials of layer 'C' or 'D' at the design engineer's discretion.

3.0 Required Materials/Row Separation

3.2 FILL ABOVE CHAMBERS

Refer to **Table 3** and **Figure 11** for acceptable fill material above the clean, crushed, angular stone. StormTech requires a minimum of 24" (600 mm) from the top of the chamber to the bottom of flexible pavement. For non-paved installations where rutting from vehicles may occur StormTech requires a minimum of 30" (750 mm) from top of chamber to finished grade.

3.3 GEOTEXTILE SEPARATION

A non-woven geotextile meeting AASHTO M288 Class 2 separation requirements must be installed to completely envelope the system and prevent soil intrusion into the crushed, angular stone. Overlap adjacent geotextile rolls per AASHTO M288 separation guidelines. Contact StormTech for a list of acceptable geotextiles.

3.4 PARALLEL ROW SEPARATION/ PERPENDICULAR BED SEPARATION

Parallel Row Separation

The minimum installed spacing between parallel rows after backfilling is 9" (230 mm) for the MC-4500 chambers and 6" (150mm) for the MC-3500 (measurement taken between the outside edges of the feet). Spacers may be used for layout convenience. Row spacing wider than the minimum spacing above may be specified.

Perpendicular Bed Separation

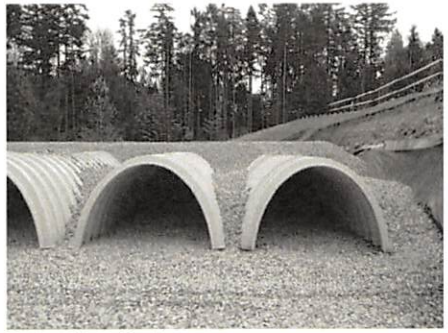
When beds are laid perpendicular to each other, a minimum installed spacing of 36" (900 mm) between beds is required.

3.5 Special Structural Designs

StormTech engineers may provide special structural designs to enable deeper cover depths or increase the capacity to carry higher live loads. Special designs may utilize the additional strength that can be achieved by compaction of embedment stone or by increasing the spacing between rows.

Increasing the spacing between chamber rows may also facilitate the application of StormTech chambers with either less foundation stone or with weaker subgrade soils. This may be a good option where vertical restrictions on site prevent the use of a deeper foundation.

Contact ADS Engineering Services for more information on special structural designs.



System Cross Section

Minimum Row Spacing

4.1 GENERAL

StormTech subsurface chamber systems offer the flexibility for a variety of inlet and outlet configurations. Contact the StormTech Technical Services Department or your local StormTech representative for assistance configuring inlet and outlet connections.

The open graded stone around and under the chambers provides a significant conveyance capacity ranging from approximately 0.8 cfs (23 l/s) to 13 cfs (368 l/s) per MC-3500 chamber and 0.54 cfs (15 l/s) to 8.5 cfs (240 l/s) for the MC-4500 chamber. The actual conveyance capacity is dependent upon stone size, depth of foundation stone and head of water. Although the high conveyance capacity of the open graded stone is an important component of the flow network, StormTech recommends that a system of inlet and outlet manifolds be designed to distribute and convey the peak flow through the chamber system.

It is the responsibility of the design engineer to provide the design flow rates and storage volumes for the stormwater system and to ensure that the final design meets all conveyance and storage requirements. However, StormTech will work with the design engineer to assist with manifold and chamber layouts that meet the design objectives.

4.2 THE ISOLATOR® ROW

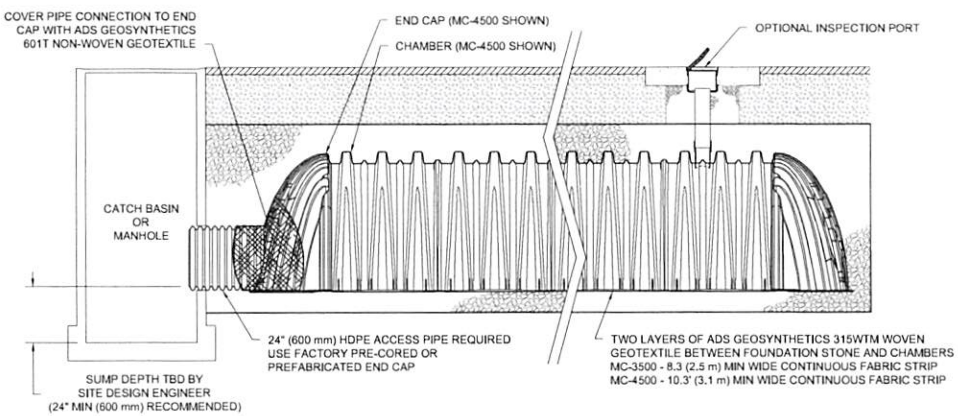
The Isolator Row is a patented system that inexpensively captures total suspended solids (TSS) and debris and provides easy access for inspection and maintenance. A double layer of woven geotextile between the bottom of the chambers and the foundation stone provides the filter media that satisfies most contaminant removal objectives. Each installed MC-3500 chamber and MC-3500 end cap provides 42.9 ft2 (4.0 m2) and 7.5 ft2 (0.7 m2) of bottom filter area respectively. Each installed MC-4500 chamber and MC-4500 end cap provides 30.1 ft^2 (2.80 m^2) and 12.8 ft^2 (1.19 m^2) of bottom filter area respectively.

The Isolator Row can be configured for maintenance objectives or, in some regulatory jurisdictions, for water quality objectives. For water quality applications, Isolator Rows can be sized based on water quality volume or flow rate.

All Isolator Rows require: 1) a manhole for maintenance access, 2) a means of diversion of flows to the Isolator Row and 3) a high flow bypass. Flow diversion can be accomplished by either a weir in the upstream access manhole or simply by feeding the Isolator Row at a lower elevation than the high flow bypass. Contact StormTech for assistance sizing Isolator Rows.

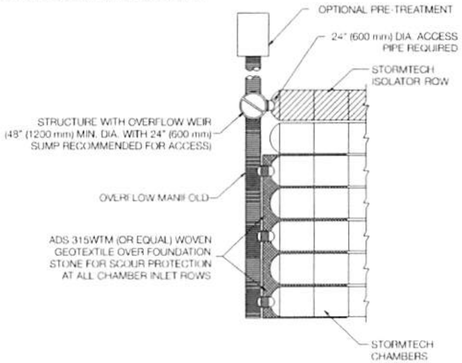
When additional stormwater treatment is required, StormTech systems can be configured using a treatment train approach where other stormwater BMPs are located in series.

FIGURE 12—StormTech Isolator Row Detail



4.0 Hydraulics

FIGURE 13—Typical Inlet Configuration With Isolator Row and Scour Protection



4.3 INLET MANIFOLDS

The primary function of the inlet manifold is to convey and distribute flows to a sufficient number of rows in the chamber bed such that there is ample conveyance capacity to pass the peak flows without creating an unacceptable backwater condition in upstream piping or scour the foundation stone under the chambers.

Manifolds are connected to the end caps either at the top or bottom of the end cap. Standard distances from the base of chamber to the invert of inlet and outlet manifolds connecting to StormTech end caps can be found in table 6. High inlet flow rates from either connection location produce a shear scour potential of the foundation stone. Inlet flows from top inlets also produce impingement scour potential. Scour potential is reduced when standing water is present over the foundation stone. However, for safe design across the wide range of applications, StormTech assumes minimal standing water at the time the design flow occurs.

To minimize scour potential, StormTech recommends the installation of woven scour protection fabric at each inlet row. This enables a protected transition zone from the concentrated flow coming out of the inlet pipe to a uniform flow across the entire width of the chamber for both top and bottom connections.

Allowable flow rates for design are dependent upon: the elevation of inlet pipe, foundation stone size and scour protection. With an appropriate scour protection geotextile installed from the end cap to at least 14.5 ft (4.42 m) in front of the inlet pipe for the MC-3500 and for the MC-4500, for both top and bottom feeds, the flow rates listed in **Table 4** can be used for all StormTech specified foundation stone gradations.

***See StormTech's Tech Sheet #7 for manifold sizing guidance.**

Table 4—Allowable Inlet Flows*

Inlet Pipe Diameter Inches (mm)	Allowable Maximum Flow Rate cfs (l/s)
12 (300)	2.48 (70)
15 (375)	3.5 (99)
18 (450)	5.5 (156)
24 (600)	8.5 (241) [MC-3500]
24 (600)	9.5 (269) [MC-4500]

*Assumes appropriate length of scour fabric per section 4.3

Table 5—Maximum Outlet Flow Rate Capacities From StormTech Oulet Manifolds

PIPE DIA.	FLOW (CFS)	FLOW (L/S)
6" (150 mm)	0.4	11.3
8" (200 mm)	0.7	19.8
10" (250 mm)	1.0	28.3
12" (300 mm)	2.0	56.6
15" (375 mm)	2.7	76.5
18" (450 mm)	4.0	113.3
24" (600 mm)	7.0	198.2
30" (750 mm)	11.0	311.5
36" (900 mm)	16.0	453.1
42" (1050 mm)	22.0	623.0
48" (1200 mm)	28.0	792.9

Table 6—Standard Distances From Base of Chamber to Invert of Inlet and Outlet Manifolds on StormTech End Caps

MC-3500 ENDCAPS

	PIPE DIA.	INV. (IN)	INV. (MM)
TOP	6" (150 mm)	33.21	841
TOP	8" (200 mm)	31.16	789
TOP	10" (250 mm)	29.04	738
TOP	12" (300 mm)	26.36	671
TOP	15" (375 mm)	23.39	594
TOP	18" (450 mm)	20.03	509
TOP	24" (600 mm)	14.48	369
BOTTOM	12" (750 mm)	1.35	34
BOTTOM	15" (900 mm)	1.5	40
BOTTOM	18" (1050 mm)	1.77	46
BOTTOM	24" (1200 mm)	2.06	52

MC-4500 ENDCAPS

	PIPE DIA.	INV. (IN)	INV. (MM)
	12" (300 mm)	35.69	907
	15" (375 mm)	32.72	831
	18" (450 mm)	29.36	746
	24" (600 mm)	23.05	585
BOTTOM	12" (750 mm)	1.55	34
BOTTOM	15" (900 mm)	1.7	43
BOTTOM	18" (1050 mm)	1.97	50
BOTTOM	24" (1200 mm)	2.26	57

4.4 OUTLET MANIFOLDS

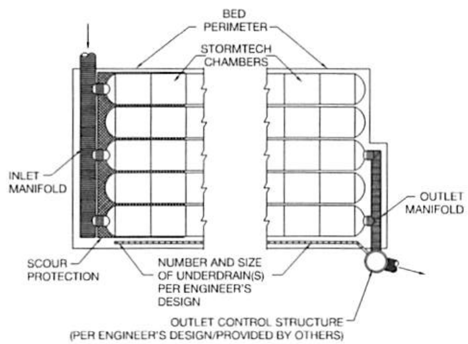
The primary function of the outlet manifold is to convey peak flows from the chamber system to the outlet control structure. Outlet manifolds are often sized for attenuated flows. They may be smaller in diameter and have fewer row connections than inlet manifolds. In some applications however, the intent of the outlet piping is to convey an unattenuated bypass flow rate and manifolds may be sized similar to inlet manifolds.

Since chambers are generally flowing at or near full at the time of the peak outlet flow rate, scour is generally not governing and outlet manifold sizing is based on pipe flow equations. In most cases, StormTech recommends that outlet manifolds connect the same rows that are connected to an inlet manifold. This provides a continuous flow path through open conduits to pass the peak flow without dependence on passing peak flows through stone.

The primary function of the underdrains is to draw down water stored in the stone below the invert of the manifold. Underdrains are generally not sized for conveyance of the peak flow.

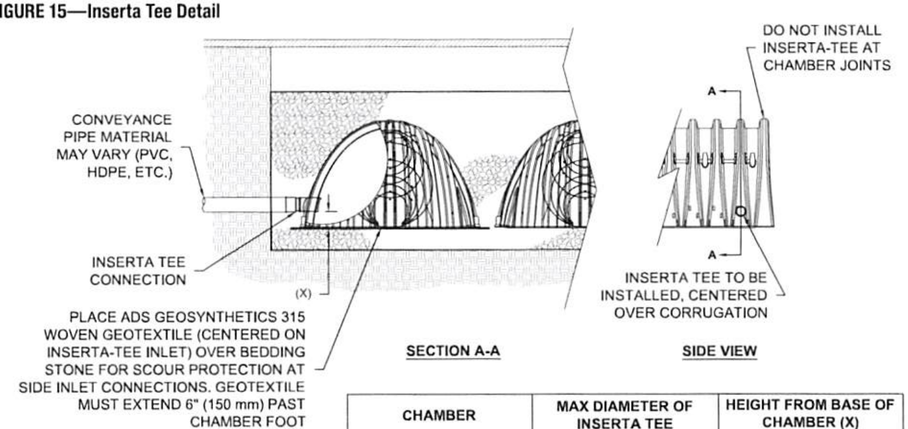
The maximum outlet flow rate capacities from StormTech outlet manifolds can be found in **Table 5.**

FIGURE 14—Typical Inlet, Outlet and Underdrain Configuration



4.5 INSERTA TEE INLET CONNECTIONS

FIGURE 15—Inserta Tee Detail



CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
MC-3500	12" (250 mm)	6" (150 mm)
MC-4500	12" (250 mm)	8" (200 mm)
INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON		

NOTE:
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

Tables 7 and **8** provide cumulative storage volumes for the MC-3500 chamber and end cap. These tables can be used to calculate the stage-storage relationship for the retention or detention system. Digital spreadsheets in which the number of chambers and end caps can be input for quick cumulative storage calculations are available at www.stormtech.com. For assistance with site-specific calculations or input into routing software, contact the StormTech Technical Services Department.

TABLE 7 – MC-3500 Incremental Storage Volume Per Chamber

Assumes 40% stone porosity. Calculations are based upon a 9" (230 mm) stone base under the chambers, 12" (300 mm) of stone above chambers, and 6" (150 mm) of spacing between chambers.

Depth of Water in System Inches (mm)	Cumulative Chamber Storage ft^3 (m^3)	Total System Cumulative Storage ft^3 (m^3)
66 (1676)	0.00	175.02 (4.956)
65 (1651)	0.00	173.36 (4.909)
64 (1626)	0.00	171.71 (4.862)
63 (1600)	Stone 0.00	170.06 (4.816)
62 (1575)	Cover 0.00	168.41 (4.769)
61 (1549)	0.00	166.76 (4.722)
60 (1524)	0.00	165.10 (4.675)
59 (1499)	0.00	163.45 (4.628)
58 (1473)	0.00	161.80 (4.582)
57 (1448)	0.00	160.15 (4.535)
56 (1422)	0.00	158.49 (4.488)
55 (1397)	0.00	156.84 (4.441)
54 (1372)	109.95 (3.113)	155.19 (4.394)
53 (1346)	109.89 (3.112)	153.50 (4.347)
52 (1321)	109.69 (3.106)	151.73 (4.297)
51 (1295)	109.40 (3.098)	149.91 (4.245)
50 (1270)	109.00 (3.086)	148.01 (4.191)
49 (1245)	108.31 (3.067)	145.95 (4.133)
48 (1219)	107.28 (3.038)	143.68 (4.068)
47 (1194)	106.03 (3.003)	141.28 (4.000)
46 (1168)	104.61 (2.962)	138.77 (3.930)
45 (1143)	103.04 (2.918)	136.17 (3.856)
44 (1118)	101.33 (2.869)	133.50 (3.780)
43 (1092)	99.50 (2.818)	130.75 (3.702)
42 (1067)	97.56 (2.763)	127.93 (3.623)
41 (1041)	95.52 (2.705)	125.06 (3.541)
40 (1016)	93.39 (2.644)	122.12 (3.458)
39 (991)	91.16 (2.581)	119.14 (3.374)
38 (965)	88.86 (2.516)	116.10 (3.288)
37 (948)	86.47 (2.449)	113.02 (3.200)
36 (914)	84.01 (2.379)	109.89 (3.112)
35 (889)	81.49 (2.307)	106.72 (3.022)
34 (864)	78.89 (2.234)	103.51 (2.931)
33 (838)	76.24 (2.159)	100.27 (2.839)
32 (813)	73.52 (2.082)	96.98 (2.746)
31 (787)	70.75 (2.003)	93.67 (2.652)
30 (762)	67.92 (1.923)	90.32 (2.558)
29 (737)	65.05 (1.842)	86.94 (2.462)
28 (711)	62.12 (1.759)	83.54 (2.366)
27 (686)	59.15 (1.675)	80.10 (2.268)
26 (680)	56.14 (1.590)	76.64 (2.170)
25 (635)	53.09 (1.503)	73.16 (2.072)
24 (610)	49.99 (1.416)	69.65 (1.972)
23 (584)	46.86 (1.327)	66.12 (1.872)
22 (559)	43.70 (1.237)	62.57 (1.772)
21 (533)	40.50 (1.147)	59.00 (1.671)
20 (508)	37.27 (1.055)	55.41 (1.569)
19 (483)	34.01 (0.963)	51.80 (1.467)
18 (457)	30.72 (0.870)	48.17 (1.364)
17 (432)	27.40 (0.776)	44.53 (1.261)
16 (406)	24.05 (0.681)	40.87 (1.157)
15 (381)	20.69 (0.586)	37.20 (1.053)
14 (356)	17.29 (0.490)	33.51 (0.949)
13 (330)	13.88 (0.393)	29.81 (0.844)
12 (305)	10.44 (0.296)	26.09 (0.739)
11 (279)	6.98 (0.198)	22.37 (0.633)
10 (254)	3.51 (0.099)	18.63 (0.527)
9 (229)	0.00	14.87 (0.421)
8 (203)	0.00	13.22 (0.374)
7 (178)	0.00	11.57 (0.328)
6 (152)	Stone 0.00	9.91 (0.281)
5 (127)	Foundation 0.00	8.26 (0.234)
4 (102)	0.00	6.61 (0.187)
3 (76)	0.00	4.96 (0.140)
2 (51)	0.00	3.30 (0.094)
1 (25)	0.00	1.65 (0.047)

NOTE: Add 1.65 ft^3 (0.047 m^3) of storage for each additional inch (25 mm) of stone foundation. Contact StormTech for cumulative volume spreadsheets in digital format.

TABLE 8 – MC-3500 Incremental Storage Volume Per End Cap

Assumes 40% stone porosity. Calculations are based upon a 9" (230 mm) stone base under the chambers, 12" (300 mm) of stone above end caps, and 6" (150 mm) of spacing between end caps and 6" (150 mm) of stone perimeter.

Depth of Water in System Inches (mm)	Cumulative End Cap Storage ft^3 (m^3)	Total System Cumulative Storage ft^3 (m^3)
66 (1676)	0.00	45.10 (1.277)
65 (1651)	0.00	44.55 (1.262)
64 (1626)	0.00	44.00 (1.246)
63 (1600)	Stone 0.00	43.46 (1.231)
62 (1575)	Cover 0.00	42.91 (1.2.15)
61 (1549)	0.00	42.36 (1.200)
60 (1524)	0.00	41.81 (1.184)
59 (1499)	0.00	41.27 (1.169)
58 (1473)	0.00	40.72 (1.153)
57 (1448)	0.00	40.17 (1.138)
56 (1422)	0.00	39.62 (1.122)
55 (1397)	0.00	39.08 (1.107)
54 (1372)	15.64 (0.443)	38.53 (1.091)
53 (1346)	15.64 (0.443)	37.98 (1.076)
52 (1321)	15.63 (0.443)	37.42 (1.060)
51 (1295)	15.62 (0.442)	36.85 (1.043)
50 (1270)	15.60 (0.442)	36.27 (1.027)
49 (1245)	15.56 (0.441)	35.68 (1.010)
48 (1219)	15.51 (0.439)	35.08 (0.993)
47 (1194)	15.44 (0.437)	34.47 (0.976)
46 (1168)	15.35 (0.435)	33.85 (0.959)
45 (1143)	15.25 (0.432)	33.22 (0.941)
44 (1118)	15.13 (0.428)	32.57 (0.922)
43 (1092)	14.99 (0.424)	31.91 (0.904)
42 (1067)	14.83 (0.420)	31.25 (0.885)
41 (1041)	14.65 (0.415)	30.57 (0.866)
40 (1016)	14.45 (0.409)	29.88 (0.846)
39 (991)	14.24 (0.403)	29.18 (0.826)
38 (965)	14.00 (0.396)	28.48 (0.806)
37 (948)	13.74 (0.389)	27.76 (0.786)
36 (914)	13.47 (0.381)	27.04 (0.766)
35 (889)	13.18 (0.373)	26.30 (0.745)
34 (864)	12.86 (0.364)	25.56 (0.724)

Depth of Water in System Inches (mm)	Cumulative Chamber Storage ft^3 (m^3)	Total System Cumulative Storage ft^3 (m^3)
33 (838)	12.53 (0.355)	24.82 (0.703)
32 (813)	12.18 (0.345)	24.06 (0.681)
31 (787)	11.81 (0.335)	23.30 (0.660)
30 (762)	11.42 (0.323)	22.53 (0.638)
29 (737)	11.01 (0.312)	21.75 (0.616)
28 (711)	10.58 (0.300)	20.96 (0.594)
27 (686)	10.13 (0.287)	20.17 (0.571)
26 (680)	9.67 (0.274)	19.37 (0.549)
25 (635)	9.19 (0.260)	18.57 (0.526)
24 (610)	8.70 (0.246)	17.76 (0.503)
23 (584)	8.19 (0.232)	16.94 (0.480)
22 (559)	7.67 (0.217)	16.12 (0.456)
21 (533)	7.13 (0.202)	15.29 (0.433)
20 (508)	6.59 (0.187)	14.45 (0.409)
19 (483)	6.03 (0.171)	13.61 (0.385)
18 (457)	5.46 (0.155)	12.76 (0.361)
17 (432)	4.88 (0.138)	11.91 (0.337)
16 (406)	4.30 (0.122)	11.06 (0.313)
15 (381)	3.70 (0.105)	10.20 (0.289)
14 (356)	3.10 (0.088)	9.33 (0.264)
13 (330)	2.49 (0.071)	8.46 (0.240)
12 (305)	1.88 (0.053)	7.59 (0.215)
11 (279)	1.26 (0.036)	6.71 (0.190)
10 (254)	0.63 (0.018)	5.83 (0.165)
9 (229)	0.00	4.93 (0.139)
8 (203)	0.00	4.38 (0.124)
7 (178)	0.00	3.83 (0.108)
6 (152)	Stone 0.00	3.28 (0.093)
5 (127)	Foundation 0.00	2.74 (0.077)
4 (102)	0.00	2.19 (0.062)
3 (76)	0.00	1.64 (0.046)
2 (51)	0.00	1.09 (0.031)
1 (25)	0.00	0.55 (0.015)

NOTE: Add 0.56 ft^3 (0.016 m^3) of storage for each additional inch (25 mm) of stone foundation.
Contact StormTech for cumulative volume spreadsheets in digital format.

5.0 Cumulative Storage Volumes

Tables 9 and **10** provide cumulative storage volumes for the MC-4500 chamber and end cap. These tables can be used to calculate the stage-storage relationship for the retention or detention system. Digital spreadsheets in which the number of chambers and end caps can be input for quick cumulative storage calculations are available at www.stormtech.com. For assistance with site-specific calculations or input into routing software, contact the StormTech Technical Services Department.

TABLE 9 – MC-4500 Incremental Storage Volume Per Chamber

Assumes 40% stone porosity. Calculations are based upon a 9" (230 mm) stone base under the chambers, 12" (300 mm) of stone above chambers, and 9" (230 mm) of spacing between chambers.

Depth of Water in System Inches (mm)	Cumulative Chamber Storage ft^3 (m^3)	Total System Cumulative Storage ft^3 (m^3)
81 (2057)	0.00	162.62 (4.065)
80 (2032)	0.00	161.40 (4.570)
79 (2007)	0.00	160.18 (4.536)
78 (1981)	Stone 0.00	158.98 (4.501)
77 (1956)	Cover 0.00	157.74 (4.467)
76 (1930)	0.00	156.62 (4.432)
75 (1905)	0.00	155.30 (4.398)
74 (1880)	0.00	154.09 (4.363)
73 (1854)	0.00	152.87 (4.329)
72 (1829)	0.00	151.65 (4.294)
71 (1803)	0.00	150.43 (4.294)
70 (1778)	0.00	149.21 (4.225)
69 (1753)	106.51 (3.016)	147.99 (4.191)
68 (1727)	106.47 (3.015)	146.75 (4.156)
67 (1702)	106.35 (3.012)	145.46 (4.119)
66 (1676)	106.18 (3.007)	144.14 (4.082)
65 (1651)	105.98 (3.001)	142.80 (4.044)
64 (1626)	105.71 (2.993)	141.42 (4.005)
63 (1600)	105.25 (2.981)	139.93 (3.962)
62 (1575)	104.59 (2.962)	138.31 (3.917)
61 (1549)	103.79 (2.939)	136.61 (3.869)
60 (1524)	102.88 (2.913)	134.85 (3.819)
59 (1499)	101.88 (2.885)	133.03 (3.767)
58 (1473)	100.79 (2.854)	131.16 (3.714)
57 (1448)	99.63 (2.821)	129.24 (3.660)
56 (1422)	98.39 (2.786)	127.28 (3.604)
55 (1397)	97.10 (2.749)	125.28 (3.548)
54 (1372)	95.73 (2.711)	123.25 (3.490)
53 (1346)	94.32 (2.671)	121.18 (3.490)
52 (1321)	92.84 (2.629)	119.08 (3.372)
51 (1295)	91.32 (2.586)	116.94 (3.311)
50 (1270)	89.74 (2.541)	114.78 (3.250)
49 (1245)	88.12 (2.495)	112.59 (3.188)
48 (1219)	86.45 (2.448)	110.37 (3.125)
47 (1194)	84.75 (2.400)	108.13 (3.062)
46 (1168)	83.00 (2.350)	105.86 (2.998)
45 (1143)	81.21 (2.300)	103.56 (2.933)
44 (1118)	79.38 (2.248)	101.25 (2.867)
43 (1092)	77.52 (2.195)	98.91 (2.801)
42 (1067)	75.62 (2.141)	96.55 (2.734)
41 (1041)	73.69 (2.087)	94.18 (2.667)
40 (1016)	71.72 (2.031)	91.78 (2.599)
39 (991)	69.73 (1.974)	89.36 (2.531)
38 (965)	67.70 (1.917)	86.93 (2.462)
37 (948)	65.65 (1.859)	84.48 (2.392)
36 (914)	63.57 (1.800)	82.01 (2.322)
35 (889)	61.46 (1.740)	79.53 (2.252)
34 (864)	59.32 (1.680)	77.03 (2.181)
33 (838)	57.17 (1.619)	74.52 (2.110)
32 (813)	54.98 (1.557)	71.99 (2.038)
31 (787)	52.78 (1.495)	69.45 (1.966)
30 (762)	50.55 (1.431)	66.89 (1.894)
29 (737)	48.30 (1.368)	64.32 (1.821)
28 (711)	46.03 (1.303)	61.74 (1.748)
27 (686)	43.74 (1.239)	59.19 (1.675)
26 (680)	41.43 (1.173)	56.55 (1.601)
25 (610)	39.11 (1.107)	53.93 (1.527)
24 (609)	36.77 (1.041)	51.31 (1.453)
23 (584)	34.41 (0.974)	48.67 (1.378)
22 (559)	32.03 (0.907)	46.03 (1.303)
21 (533)	29.64 (0.839)	43.38 (1.228)
20 (508)	27.23 (0.771)	40.71 (1.153)
19 (483)	24.81 (0.703)	38.04 (1.077)
18 (457)	22.38 (0.634)	35.37 (1.001)
17 (432)	19.94 (0.565)	32.68 (0.925)
16 (406)	17.48 (0.495)	29.99 (0.849)
15 (381)	15.01 (0.425)	27.29 (0.773)
14 (356)	12.53 (0.355)	24.58 (0.696)
13 (330)	10.05 (0.284)	21.87 (0.619)
12 (305)	7.55 (0.214)	19.15 (0.542)
11 (279)	5.04 (0.143)	16.43 (0.465)
10 (254)	2.53 (0.072)	13.70 (0.388)
9 (229)	0.00	10.97 (0.311)
8 (203)	0.00	9.75 (0.276)
7 (178)	0.00	8.53 (0.242)
6 (152)	Stone 0.00	7.31 (0.207)
5 (127)	Foundation 0.00	6.09 (0.173)
4 (102)	0.00	4.87 (0.138)
3 (76)	0.00	3.66 (0.104)
2 (51)	0.00	2.44 (0.069)
1 (25)	0.00	1.22 (0.035)

NOTE: Add 1.22 ft^3 (0.035 m^3) of storage for each additional inch (25 mm) of stone foundation. Contact StormTech for cumulative volume spreadsheets in digital format.

TABLE 10 – MC-4500 Incremental Storage Volume Per End Cap

Assumes 40% stone porosity. Calculations are based upon a 9" (230 mm) stone base under the chambers, 12" (300 mm) of stone above end caps, and 9" (230 mm) of spacing between end caps and 6" (150 mm) of stone perimeter.

Depth of Water in System Inches (mm)	Cumulative End Cap Storage ft^3 (m^3)	Total System Cumulative Storage ft^3 (m^3)
81 (2057)	0.00	108.69 (3.078)
80 (2032)	0.00	107.62 (3.047)
79 (2007)	0.00	106.54 (3.017)
78 (1981)	Stone 0.00	105.46 (2.986)
77 (1956)	Cover 0.00	104.38 (2.956)
76 (1930)	0.00	103.31 (2.925)
75 (1905)	0.00	102.23 (2.895)
74 (1880)	0.00	101.15 (2.864)
73 (1854)	0.00	100.07 (2.834)
72 (1829)	0.00	99.00 (2.803)
71 (1803)	0.00	97.92 (2.773)
70 (1778)	0.00	96.84 (2.742)
69 (1753)	35.71 (1.011)	95.76 (2.712)
68 (1727)	35.71 (1.011)	94.69 (2.681)
67 (1702)	35.70 (1.011)	93.60 (2.651)
66 (1676)	35.67 (1.010)	92.51 (2.620)
65 (1651)	35.62 (1.009)	91.40 (2.588)
64 (1626)	35.56 (1.007)	90.29 (2.557)
63 (1600)	35.47 (1.004)	89.16 (2.525)
62 (1575)	35.36 (1.001)	88.01 (2.492)
61 (1549)	35.21 (0.997)	86.85 (2.459)
60 (1524)	35.05 (0.992)	85.67 (2.426)
59 (1499)	34.86 (0.987)	84.48 (2.392)
58 (1473)	34.64 (0.981)	83.27 (2.358)
57 (1448)	34.40 (0.974)	82.05 (2.323)
56 (1422)	34.13 (0.966)	80.81 (2.288)
55 (1397)	33.83 (0.958)	79.55 (2.253)
54 (1372)	33.51 (0.949)	78.28 (2.217)
53 (1346)	33.16 (0.939)	77.00 (2.180)
52 (1321)	32.79 (0.928)	75.70 (2.144)
51 (1295)	32.39 (0.917)	74.38 (2.106)
50 (1270)	31.98 (0.906)	73.06 (2.069)
49 (1245)	31.54 (0.893)	71.71 (2.031)
48 (1219)	31.07 (0.880)	70.36 (1.992)
47 (1194)	30.59 (0.866)	68.99 (1.954)
46 (1168)	30.09 (0.852)	67.61 (1.915)
45 (1143)	29.56 (0.837)	66.22 (1.875)
44 (1118)	29.02 (0.822)	64.81 (1.835)
43 (1092)	28.45 (0.806)	63.40 (1.795)

NOTE: Add 1.08 ft^3 (0.031 m^3) of storage for each additional inch (25 mm) of stone foundation. Contact StormTech for cumulative volume spreadsheets in digital format.

Depth of Water in System Inches (mm)	Cumulative Chamber Storage ft^3 (m^3)	Total System Cumulative Storage ft^3 (m^3)
42 (1067)	27.87 (0.789)	61.97 (1.755)
41 (1041)	27.27 (0.772)	60.53 (1.714)
40 (1016)	26.65 (0.755)	59.08 (1.673)
39 (991)	26.01 (0.736)	57.62 (1.632)
38 (965)	25.35 (0.718)	56.15 (1.590)
37 (948)	24.68 (0.699)	54.67 (1.548)
36 (914)	23.99 (0.679)	53.18 (1.506)
35 (889)	23.28 (0.659)	51.68 (1.463)
34 (864)	22.56 (0.639)	50.17 (1.421)
33 (838)	21.82 (0.618)	48.64 (1.377)
32 (813)	21.06 (0.596)	47.11 (1.334)
31 (787)	20.29 (0.575)	45.57 (1.290)
30 (762)	19.50 (0.552)	44.02 (1.247)
29 (737)	18.70 (0.530)	42.46 (1.202)
28 (711)	17.88 (0.506)	40.89 (1.158)
27 (686)	17.04 (0.483)	39.31 (1.113)
26 (680)	16.19 (0.459)	37.73 (1.068)
25 (610)	15.33 (0.434)	36.14 (1.023)
24 (609)	14.46 (0.410)	34.53 (.0978)
23 (584)	13.58 (0.384)	32.93 (0.932)
22 (559)	12.68 (0.359)	31.31 (0.887)
21 (533)	11.77 (0.333)	29.69 (0.841)
20 (508)	10.85 (0.307)	26.06 (0.794)
19 (483)	9.91 (0.281)	26.42 (0.748)
18 (457)	8.97 (0.254)	24.77 (0.702)
17 (432)	8.01 (0.227)	23.12 (0.655)
16 (406)	7.04 (0.199)	21.46 (0.608)
15 (381)	6.07 (0.172)	19.80 (0.561)
14 (356)	5.08 (0.144)	18.13 (0.513)
13 (330)	4.08 (0.116)	16.45 (0.466)
12 (305)	3.07 (0.087)	14.77 (0.418)
11 (279)	2.06 (0.058)	13.09 (0.371)
10 (254)	1.03 (0.029)	11.39 (0.323)
9 (229)	0.00	9.70 (0.275)
8 (203)	0.00	8.62 (0.244)
7 (178)	0.00	7.54 (0.214)
6 (152)	Stone 0.00	6.46 (0.183)
5 (127)	Foundation 0.00	5.39 (0.153)
4 (102)	0.00	4.31 (0.122)
3 (76)	0.00	3.23 (0.092)
2 (51)	0.00	2.15 (0.061)
1 (25)	0.00	1.08 (0.031)

The following steps provide the calculations necessary for preliminary sizing of an MC-3500 chamber system. For custom bed configurations to fit specific sites, contact the StormTech Technical Services Department or your local StormTech representative.

1) Determine the amount of storage volume (VS) required. It is the design engineer's sole responsibility to determine the storage volume required.

TABLE 11—Storage Volume Per Chamber/End Cap ft³ (m³)

	Bare Unit Storage ft³ (m³)	Chamber/End Cap and Stone Volume — Stone Foundation Depth in. (mm)			
		9 (230)	12 (300)	15 (375)	18 (450)
MC-3500 Chamber	109.9 (3.11)	175.0 (4.96)	179.9 (5.09)	184.9 (5.24)	189.9 (5.38)
MC-3500 End Cap	14.9 (0.42)	45.1 (1.28)	46.6 (1.32)	48.3 (1.37)	49.9 (1.41)

NOTE: Assumes 6" (150 mm) row spacing, 40% stone porosity, 12" (300 mm) stone above and includes the bare chamber/end cap volume. End cap volume assumes 6" (150 mm) stone perimeter.

2) Determine the number of chambers (C) required. To calculate the number of chambers required for adequate storage, divide the storage volume (Vs) by the storage volume of the chamber (from **Table 11**), as follows: **C = Vs / Storage Volume per Chamber**

3) Determine the number of end caps required. The number of end caps (EC) required depends on the number of rows required by the project. Once the number of chamber rows is determined, multiply the number of chamber rows by 2 to determine the number of end caps required. **EC = No. of Chamber Rows x 2**

NOTE: Additional end caps may be required for systems having inlet locations within the chamber bed.

4) Determine additional storage provided by end caps. End Caps will provide additional storage to the project. Multiply the number of end caps (EC) by the storage volume per end cap (ECS) to determine the additional storage (As) provided by the end caps. **As = EC x ECs**

5) Adjust number of chambers (C) to account for additional end cap storage (As). The original number of chambers (C) can now be reduced due to the additional storage in the end caps. Divide the additional storage (As) by the storage volume per chamber to determine the number of chambers that can be removed. **Number of chambers to remove = As/ volume per chamber**

NOTE: Additional storage exists in the stone perimeter as well as in the inlet and outlet manifold systems. Contact StormTech's Technical Services Department for assistance with determining the number of chambers and end caps required for your project.

6) Determine the required bed size (S). The size of the bed will depend on the number of chambers and end caps required:

MC-3500 area per chamber = 49.6 ft² (4.6 m²)
MC-3500 area per end cap = 16.4 ft² (1.5 m²)

S = (C x area per chamber) + (EC x area per end cap)

NOTE: It is necessary to add 12" (300 mm) of stone perimeter parallel to the chamber rows and 6" (150 mm) of stone perimeter from the base of all end caps. The additional area due to perimeter stone is not included in the area numbers above.

7) Determine the amount of stone (Vst) required. To calculate the total amount of clean, crushed, angular stone required, multiply the number of chambers (C) and the number of end caps (EC) by the selected weight of stone from **Table 12**.

NOTE: Clean, crushed, angular stone is also required around the perimeter of the system.

TABLE 12—Amount of Stone Per Chamber/End Cap

ENGLISH tons (yd³)	Stone Foundation Depth			
	9"	12"	15"	18"
MC-3500	8.5 (6.0)	9.1 (6.5)	9.7 (6.9)	10.4 (7.4)
End Cap	3.9 (2.8)	4.1 (2.9)	4.3 (3.1)	4.5 (3.2)
METRIC kg (m³)	230 mm	300 mm	375 mm	450 mm
MC-3500	7711 (4.6)	8255 (5.0)	8800 (5.3)	9435 (5.7)
End Cap	3538 (2.1)	3719 (2.2)	3901 (2.4)	4082 (2.5)

NOTE: Assumes 12" (300 mm) of stone above, and 6" (150 mm) row spacing, and 6" (150 mm) of perimeter stone in front of end caps.

8) Determine the volume of excavation (Ex) required. Each additional foot of cover will add a volume of excavation of 1.9 yd³ (1.5 m³) per MC-3500 chamber and 0.6 yd³ (0.5 m³) per MC-3500 end cap.

TABLE 13—Volume of Excavation Per Chamber/End Cap yd³ (m³)

	Stone Foundation Depth			
	9" (230 mm)	12" (300 mm)	15"(375 mm)	18"(450 mm)
MC-3500	11.9 (9.1)	12.4 (9.5)	12.8 (9.8)	13.3 (10.2)
End Cap	4.0 (3.1)	4.1 (3.2)	4.3 (3.3)	4.4 (3.4)

NOTE: Assumes 6" (150 mm) separation between chamber rows, 6" (150 mm) of perimeter in front of end caps, and 24" (600 mm) of cover. The volume of excavation will vary as the depth of cover increases.

9) Determine the area of geotextile (F) required. The bottom, top and sides of the bed must be covered with a non-woven geotextile (filter fabric) that meets AASHTO M288 Class 2 requirements. The area of the sidewalls must be calculated and a 24" (600 mm) overlap must be included for all seams. Geotextiles typically come in 15 foot (4.57 m) wide rolls.

The following steps provide the calculations necessary for preliminary sizing of an MC-4500 chamber system. For custom bed configurations to fit specific sites, contact the StormTech Technical Services Department or your local StormTech representative.

1) Determine the amount of storage volume (VS) required. It is the design engineer's sole responsibility to determine the storage volume required.

TABLE 14—Storage Volume Per Chamber/End Cap ft³ (m³)

	Bare Unit Storage ft³ (m³)	Chamber/End Cap and Stone Volume — Stone Foundation Depth in. (mm)			
		9 (230)	12 (300)	15 (375)	18 (450)
MC-4500 Chamber	106.5 (3.01)	162.6 (4.60)	166.3 (4.71)	169.9 (4.81)	173.6 (4.91)
MC-4500 End Cap	35.7 (1.01)	108.7 (3.08)	111.9 (3.17)	115.2 (3.26)	118.4 (3.35)

NOTE: Assumes 9" (230 mm) row spacing, 40% stone porosity, 12" (300 mm) stone above and includes the bare chamber/end cap volume. End cap volume assumes 12" (300 mm) stone perimeter.

2) Determine the number of chambers (C) required. To calculate the number of chambers required for adequate storage, divide the storage volume (Vs) by the storage volume of the chamber (from **Table 14**), as follows: **C = Vs / Storage Volume per Chamber**

3) Determine the number of end caps required. The number of end caps (EC) required depends on the number of rows required by the project. Once the number of chamber rows is determined, multiply the number of chamber rows by 2 to determine the number of end caps required. **EC = No. of Chamber Rows x 2**

NOTE: Additional end caps may be required for systems having inlet locations within the chamber bed.

4) Determine additional storage provided by end caps.
End Caps will provide additional storage to the project. Multiply the number of end caps (EC) by the storage volume per end cap (ECS) to determine the additional storage (As) provided by the end caps. **As = EC x ECs**

5) Adjust number of chambers (C) to account for additional end cap storage (As). The original number of chambers (C) can now be reduced due to the additional storage in the end caps. Divide the additional storage (As) by the storage volume per chamber to determine the number of chambers that can be removed. **Number of chambers to remove = As/ volume per chamber**

NOTE: Additional storage exists in the stone perimeter as well as in the inlet and outlet manifold systems. Contact StormTech's Technical Services Department for assistance with determining the number of chambers and end caps required for your project.

6) Determine the required bed size (S).
The size of the bed will depend on the number of chambers and end caps required:

MC-4500 area per chamber = 36.6 ft² (3.4 m²)
MC-4500 area per end cap = 23.2 ft² (2.2 m²)

S = (C x area per chamber) + (EC x area per end cap)

NOTE: It is necessary to add 12" (300 mm) of stone perimeter parallel to the chamber rows and 6" (150 mm) of stone perimeter from the base of all end caps. The additional area due to perimeter stone is not included in the area numbers above.

7) Determine the amount of stone (Vst) required.
To calculate the total amount of clean, crushed, angular stone required, multiply the number of chambers (C) and the number of end caps (EC) by the selected weight of stone from **Table 15.**

NOTE: Clean, crushed, angular stone is also required around the perimeter of the system.

TABLE 15—Amount of Stone Per Chamber

	Stone Foundation Depth			
ENGLISH tons (yd³)	9"	12"	15"	18"
MC-4500	7.4 (5.2)	7.8 (5.5)	8.3 (5.9)	8.8 (6.2)
End Cap	9.6 (6.8)	10.0 (7.1)	10.4 (7.4)	10.9 (7.7)
METRIC kg (m³)	230 mm	300 mm	375 mm	450 mm
MC-4500	6681 (4.0)	7117 (4.2)	7552 (4.5)	7987 (4.7)
End Cap	8691 (5.2)	9075 (5.4)	9460 (5.6)	9845 (5.9)

NOTE: Assumes 12" (300 mm) of stone above, and 9" (230 mm) row spacing, and 12" (300 mm) of perimeter stone in front of end caps.

8) Determine the volume of excavation (Ex) required.
Each additional foot of cover will add a volume of excavation of 1.4 yd³ (1.0 m³) per MC-4500 chamber and 1.4 yd³ (0.8 m³) per MC-4500 end cap.

TABLE 16—Volume of Excavation Per Chamber/End Cap yd³ (m³)

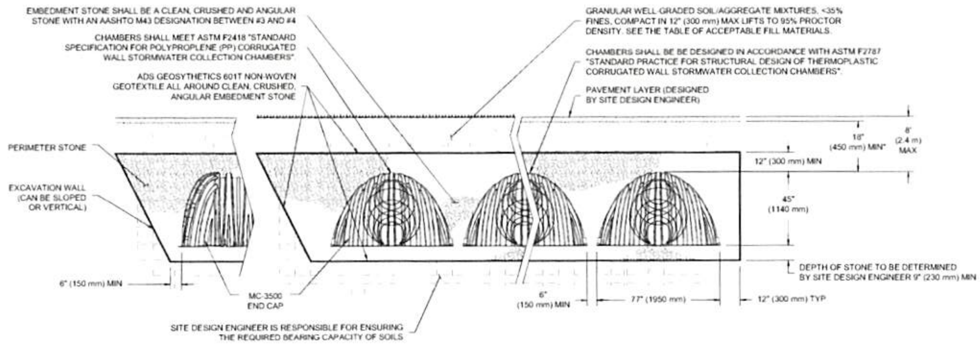
	Stone Foundation Depth			
	9" (230 mm)	12" (300 mm)	15"(375 mm)	18"(450 mm)
MC-4500	10.5 (8.0)	10.8 (8.3)	11.2 (8.5)	11.5 (8.8)
End Cap	9.3 (7.1)	9.6 (7.3)	9.9 (7.6)	10.2 (7.8)

NOTE: Assumes 9" (230 mm) separation between chamber rows, 12" (300 mm) of perimeter in front of end caps, and 24" (600 mm) of cover. The volume of excavation will vary as the depth of cover increases.

9) Determine the area of geotextile (F) required.
The bottom, top and sides of the bed must be covered with a non-woven geotextile (filter fabric) that meets AASHTO M288 Class 2 requirements. The area of the sidewalls must be calculated and a 24" (600 mm) overlap must be included for all seams. Geotextiles typically come in 15 foot (4.57 m) wide rolls.

7.0 Structural Cross Sections and Specifications

FIGURE 16—MC-3500 Structural Cross Section Detail (Not to Scale)



*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 24" (600 mm).

Special applications will be considered on a project by project basis. Please contact our application department should you have a unique application for our team to evaluate.

MC-3500 STORMWATER CHAMBER SPECIFICATIONS

1. Chambers shall be StormTech MC-3500 or approved equal.

2. Chambers shall be made from virgin, impact-modified polypropylene copolymers.

3. Chamber rows shall provide continuous, unobstructed internal space with no internal panels that would impede flow.

4. The structural design of the chambers, the structural backfill and the installation requirements shall ensure that the load factors specified in the AASHTO LRFD Bridge Design Specifications, Section 12.12 are met for: 1) long-duration dead loads and 2) short-duration live loads, based on the AASHTO Design Truck with consideration for impact and multiple vehicle presences.

5. Chambers shall meet the requirements of ASTM F 2418, "Standard Specification for Polypropylene (PP) Corrugated Wall Stormwater Collection Chambers."

6. Chambers shall conform to the requirements of ASTM F 2787, "Standard Practice for Structural Design of Thermoplastic Corrugated Wall Stormwater Collection Chambers."

7. Only chambers that are approved by the engineer will be allowed. The contractor shall submit (3 sets) of the following to the engineer for approval before delivering chambers to the project site:

   - A structural evaluation by a registered structural engineer that demonstrates that the load factors specified in the AASHTO LRFD Bridge Design Specifications, Section 12.12 are met. The 50-year creep modulus data specified in ASTM F 2418 must be used as part of the AASHTO structural evaluation to verify long-term performance.

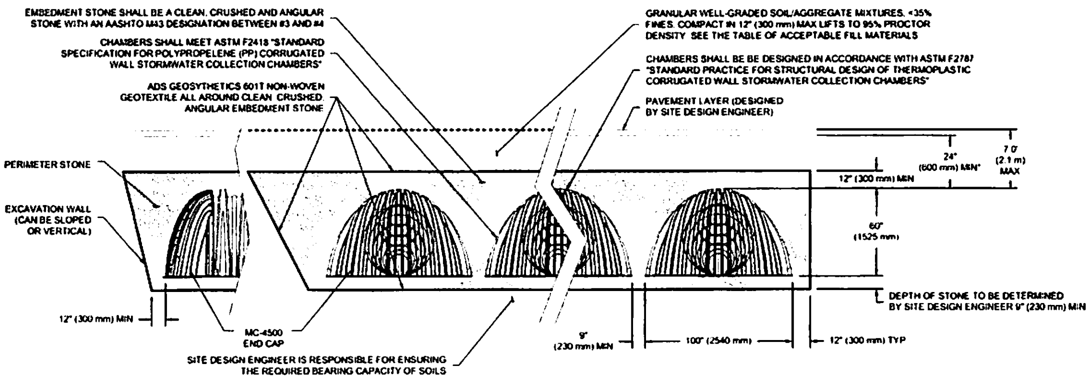
   - Structural cross section detail on which the structural cross section is based.

8. The installation of chambers shall be in accordance with the manufacturer's latest Construction Guide.

Detail drawings available in Cad Rev. 2000 format at www.stormtech.com

7.0 Structural Cross Sections and Specifications

FIGURE 16—MC-4500 Structural Cross Section Detail (Not to Scale)



*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 30" (750 mm)

Special applications will be considered on a project by project basis. Please contact our application department should you have a unique application for our team to evaluate.

MC-4500 STORMWATER CHAMBER SPECIFICATIONS

1. Chambers shall be StormTech MC-4500 or approved equal.
2. Chambers shall be made from virgin, impact-modified polypropylene copolymers.
3. Chamber rows shall provide continuous, unobstructed internal space with no internal panels that would impede flow.
4. The structural design of the chambers, the structural backfill and the installation requirements shall ensure that the load factors specified in the AASHTO LRFD Bridge Design Specifications, Section 12.12 are met for: 1) long-duration dead loads and 2) short-duration live loads, based on the AASHTO Design Truck with consideration for impact and multiple vehicle presences.
5. Chambers shall meet the requirements of ASTM F 2418, "Standard Specification for Polypropylene (PP) Corrugated Wall Stormwater Collection Chambers."
6. Chambers shall conform to the requirements of ASTM F 2787, "Standard Practice for Structural Design of Thermoplastic Corrugated Wall Stormwater Collection Chambers."
7. Only chambers that are approved by the engineer will be allowed. The contractor shall submit (3 sets) of the following to the engineer for approval before delivering chambers to the project site:
   - A structural evaluation by a registered structural engineer that demonstrates that the load factors specified in the AASHTO LRFD Bridge Design Specifications, Section 12.12 are met. The 50-year creep modulus data specified in ASTM F 2418 must be used as part of the AASHTO structural evaluation to verify long-term performance.
   - Structural cross section detail on which the structural cross section is based.
8. The installation of chambers shall be in accordance with the manufacturer's latest Construction Guide.

Detail drawings available in Cad Rev. 2000 format at www.stormtech.com

8.0 General Notes

StormTech

1. StormTech requires installing contractors to use and understand the latest **StormTech MC-3500 and MC-4500 Construction Guide** prior to beginning system installation.

2. StormTech offers installation consultations to installing contractors. Contact our Technical Service Department or local StormTech representative at least 30 days prior to system installation to arrange a pre-installation consultation. Our representatives can then answer questions or address comments on the StormTech chamber system and inform the installing contractor of the minimum installation requirements before beginning the system's construction. Call 860-529-8188 to speak to a Technical Service Representative or visit www.stormtech.com to receive a copy of our Construction Guide.

3. StormTech requirements for systems with pavement design (asphalt, concrete pavers, etc.): Minimum cover is 18" (450mm) for the MC-3500 and 24"(600mm) for the MC-4500 not including pavement; MC-3500 maximum cover is 8.0' (1.98 m) and MC-4500 maximum cover is 7.0' (2.43 m) both including pavement. For designs with cover depths deeper than these maximums, please contact Stormtech. For installations that do not include pavement, where rutting from vehicles may occur, minimum required cover is increased to 30" (762 mm).

4. The contractor must report any discrepancies with the bearing capacity of the subgrade materials to the design engineer.

5. AASHTO M288 Class 2 non-woven geotextile (ADS601 or equal) (filter fabric) must be used as indicated in the project plans.

6. Stone placement between chamber rows and around perimeter must follow instructions as indicated in the most current version of StormTech MC-3500 / MC-4500 Construction Guide.

7. Backfilling over the chambers must follow requirements as indicated in the most current version of StormTech MC-3500 / MC-4500 Construction Guide.

8. The contractor must refer to StormTech MC-3500 / MC-4500 Construction Guide for a Table of Acceptable Vehicle Loads at various depths of cover. This information is also available at the StormTech website: www.stormtech.com. The contractor is responsible for preventing vehicles that exceed StormTech requirements from traveling across or parking over the stormwater system. Temporary fencing, warning tape and appropriately located signs are commonly used to prevent unauthorized vehicles from entering sensitive construction areas.

9. The contractor must apply erosion and sediment control measures to protect the stormwater system during all phases of site construction per local codes and design engineer's specifications.

10. STORMTECH PRODUCT WARRANTY IS LIMITED. Contact StormTech for warranty information.

9.1 ISOLATOR ROW INSPECTION

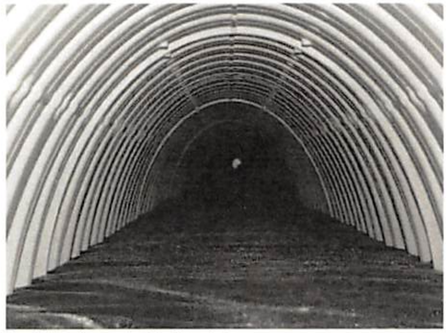
Regular inspection and maintenance are essential to assure a properly functioning stormwater system. Inspection is easily accomplished through the manhole or optional inspection ports of an Isolator Row. Please follow local and OSHA rules for a confined space entry.

Inspection ports can allow inspection to be accomplished completely from the surface without the need for a confined space entry. Inspection ports provide visual access to the system with the use of a flashlight. A stadia rod may be inserted to determine the depth of sediment. If upon visual inspection it is found that sediment has accumulated to an average depth exceeding 3" (76 mm), cleanout is required.

A StormTech Isolator Row should initially be inspected immediately after completion of the site's construction. While every effort should be made to prevent sediment from entering the system during construction, it is during this time that excess amounts of sediments are most likely to enter any stormwater system. Inspection and maintenance, if necessary, should be performed prior to passing responsibility over to the site's owner. Once in normal service, a StormTech Isolator Row should be inspected bi-annually until an understanding of the sites characteristics is developed. The site's maintenance manager can then revise the inspection schedule based on experience or local requirements.

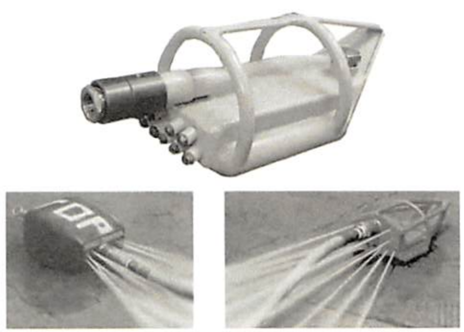
9.2 ISOLATOR ROW MAINTENANCE

JetVac maintenance is recommended if sediment has been collected to an average depth of 3" (76 mm) inside the Isolator Row. More frequent maintenance may be required to maintain minimum flow rates through the Isolator Row. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row while scouring and suspending sediments. As the nozzle is retrieved, a wave of suspended sediments is flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/ JetVac combination vehicles. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45" (1143 mm) are best. The JetVac process shall only be performed on StormTech Rows that have AASHTO class 1 woven geotextile over their foundation stone (ADS 315WTM or equal).



Looking down the Isolator Row

A typical JetVac truck (This is not a StormTech product.)



Examples of culvert cleaning nozzles appropriate for Isolator Row maintenance. (These are not StormTech products).

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MC-3500/MC-4500

StormTech Construction Guide

REQUIRED MATERIALS AND EQUIPMENT LIST

- Acceptable fill materials per Table 1
- Woven and non-woven geotextiles
- StormTech solid end caps, pre-cored and pre-fabricated end caps
- StormTech chambers, manifolds and fittings

NOTE: MC-3500 chamber pallets are 77" x 90" (2.0 m x 2.3 m) and weigh about 2010 lbs. (912 kg) and MC-4500 pallets are 100" x 52" (2.5 m x 1.3 m) and weigh about 840 lbs. (381 kg). Unloading chambers requires 72" (1.8 m) (min.) forks and/or tie downs (straps, chains, etc).

IMPORTANT NOTES:

A. This installation guide provides the minimum requirements for proper installation of chambers. Nonadherence to this guide may result in damage to chambers during installation. Replacement of damaged chambers during or after backfilling is costly and very time consuming. It is recommended that all installers are familiar with this guide, and that the contractor inspects the chambers for distortion, damage and joint integrity as work progresses.

B. Use of a dozer to push embedment stone between the rows of chambers may cause damage to chambers and is not an acceptable backfill method. Any chambers damaged by using the "dump and push" method are not covered under the StormTech standard warranty.

C. Care should be taken in the handling of chambers and end caps. End caps must be stored standing upright. Avoid dropping, prying or excessive force on chambers during removal from pallet and initial placement.

Requirements for System Installation

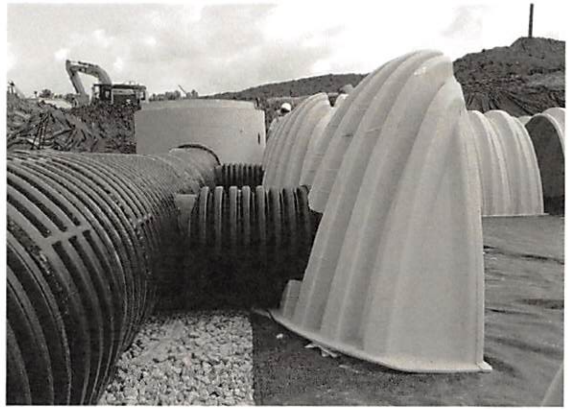
Excavate bed and prepare subgrade per engineer's plans.

Place non-woven geotextile over prepared soils and up excavation walls.

Place clean, crushed, angular stone foundation 9" (230 mm) min. Install underdrains if required. Compact to achieve a flat surface.

Manifold, Scour Fabric and Chamber Assembly

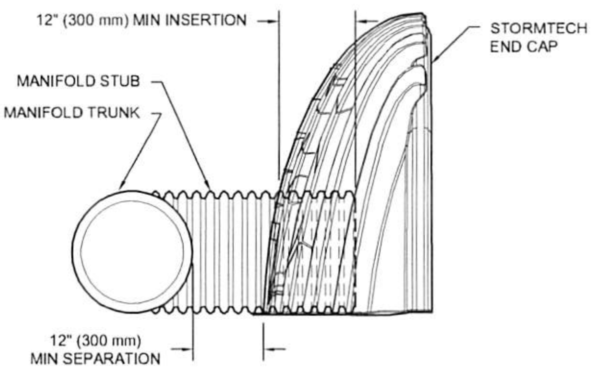
Install manifolds and lay out woven scour geotextile at inlet rows [min. 17.5 ft (5.33 m)] at each inlet end cap. Place a continuous piece (no seams) along entire length of Isolator® Row(s) in two layers.



Align the first chamber and end cap of each row with inlet pipes. Contractor may choose to postpone stone placement around end chambers and leave ends of rows open for easy inspection of chambers during the backfill process.

Continue installing chambers by overlapping chamber end corrugations. Chamber joints are labeled "Lower Joint – Overlap Here" and "Build this direction – Upper Joint" Be sure that the chamber placement does not exceed the reach of the construction equipment used to place the stone. Maintain minimum 6" (150 mm) spacing between MC-3500 rows and 9" (230 mm) spacing between MC-4500 rows. For the Isolator Row place two continuous layers of ADS Woven fabric between the foundation stone and the isolator row chambers, making sure the fabric lays flat and extends the entire width of the chamber feet.

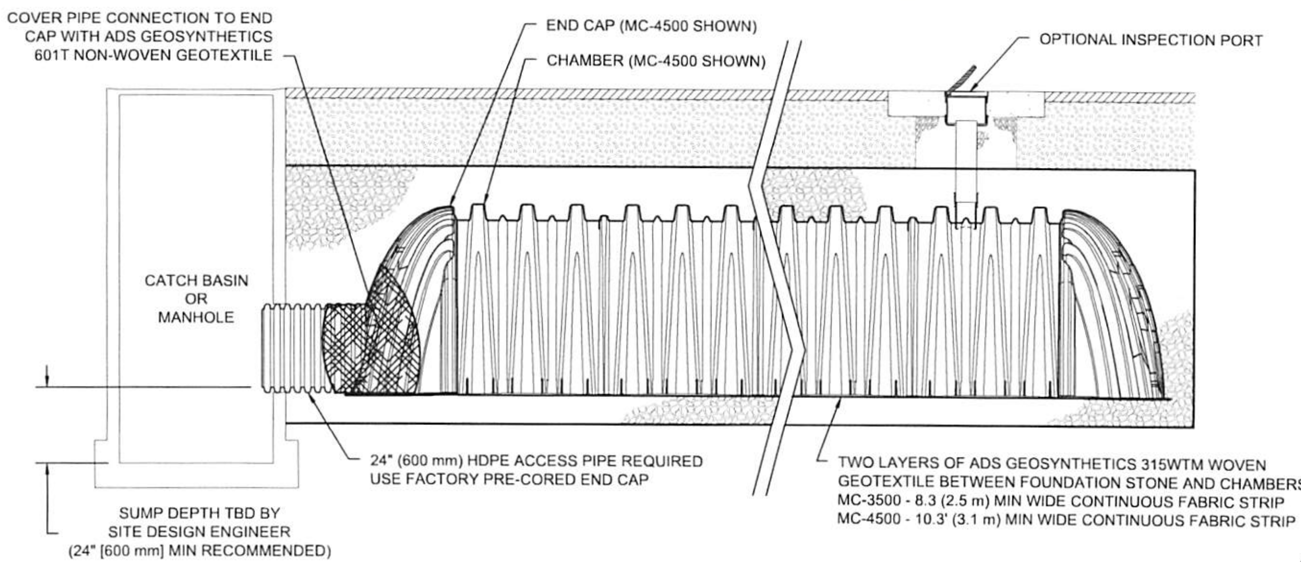
Manifold Insertion



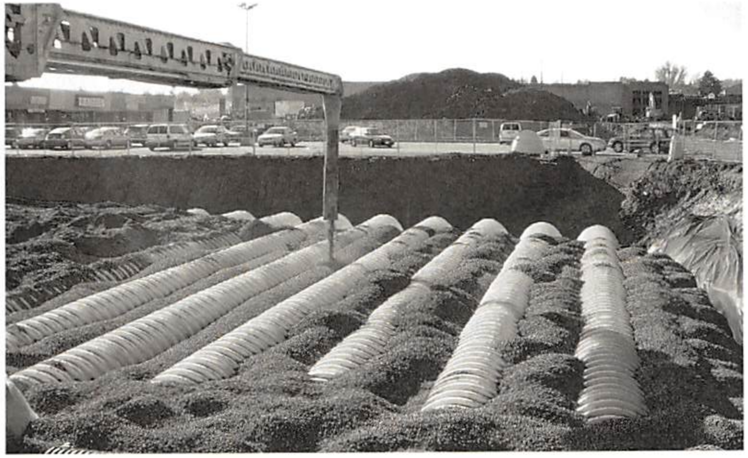
NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

Insert inlet and outlet manifolds a minimum 12" (300 mm) into chamber end caps. Manifold header should be a minimum 12" (300 mm) from base of end cap.

StormTech Isolator Row Detail



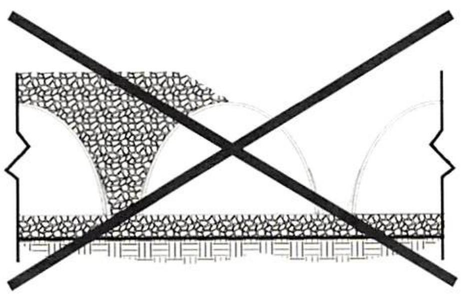
Initial Anchoring of Chambers – Embedment Stone



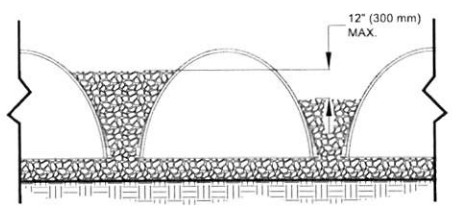
Initial embedment shall be spotted along the centerline of the chamber evenly anchoring the lower portion of the chamber. This is best accomplished with a stone conveyor or excavator reaching along the row.

No equipment shall be operated on the bed at this stage of the installation. Excavators must be located off the bed. Dump trucks shall not dump stone directly on to the bed. Dozers or loaders are not allowed on the bed at this time.

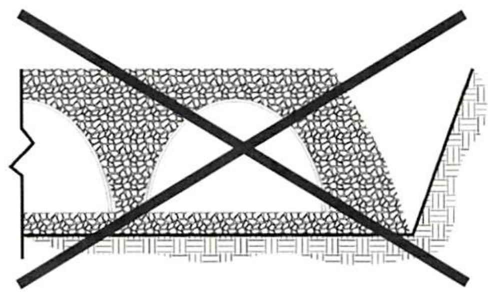
Backfill of Chambers – Embedment Stone



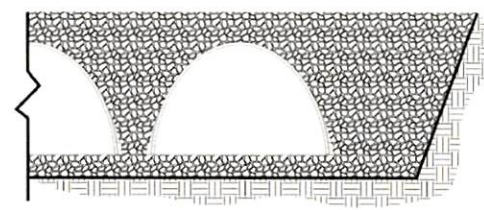
UNEVEN BACKFILL



EVEN BACKFILL



PERIMETER NOT BACKFILLED



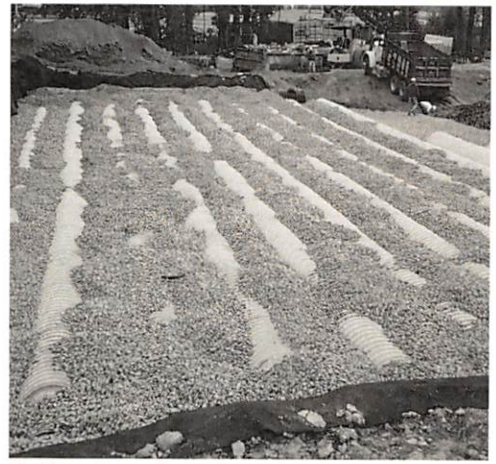
PERIMETER FULLY BACKFILLED

Backfill chambers evenly. Stone column height should never differ by more than 12" (300 mm) between adjacent chamber rows or between chamber rows and perimeter.

Perimeter stone must be brought up evenly with chamber rows. Perimeter must be fully backfilled, with stone extended horizontally to the excavation wall.

Backfill of Chambers – Embedment Stone and Cover Stone

Continue evenly backfilling between rows and around perimeter until embedment stone reaches tops of chambers and a minimum 12" (300 mm) of cover stone is in place. Perimeter stone must extend horizontally to the excavation wall for both straight or sloped sidewalls. The recommended backfill methods are with a stone conveyor outside of the bed or build as you go with an excavator inside the bed reaching along the rows. Backfilling while assembling chambers rows as shown in the picture will help to ensure that equipment reach is not exceeded.

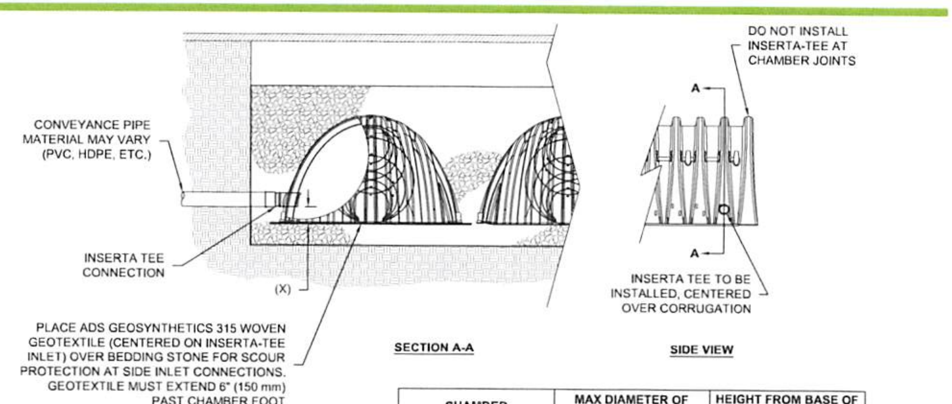


Only after chambers have been backfilled to top of chamber and with a minimum 12" (300 mm) of cover stone on top of chambers can skid loaders and small LGP dozers be used to final grade cover stone and backfill material in accordance with ground pressure limits in Table 2. Equipment must push material parallel to rows only. Never push perpendicular to rows. StormTech recommends the contractor inspect chamber rows before placing final backfill. Any chambers damaged by construction equipment shall be removed and replaced.

Final Backfill of Chambers – Fill Material

Install non-woven geotextile over stone. Geotextile must overlap 24" (600 mm) where edges meet. Compact at 24" (600 mm) of fill. Roller travel parallel with rows.

Inserta Tee Detail



CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
MC-3500	12" (300 mm)	6" (150 mm)
MC-4500	12" (300 mm)	8" (200 mm)
INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON		

NOTE:
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

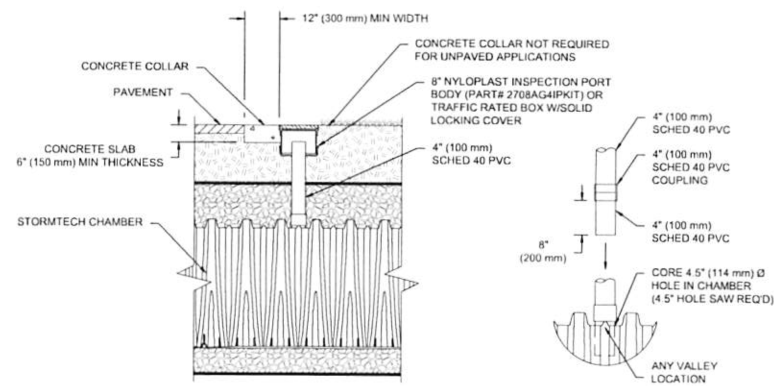
Table 1- Acceptable Fill Materials

Material Location	Description	AASHTO M43 Designation[1]	Compaction/Density Requirement
Ⓓ **Final Fill:** Fill Material for layer 'D' starts from the top of the 'C' layer to the bottom of flexible pavement or unpaved finished grade above. Note that the pavement subbase may be part of the 'D' layer.	Any soil/rock materials, native soils or per engineer's plans. Check plans for pavement subgrade requirements.	N/A	Prepare per site design engineer's plans. Paved installations may have stringent material and preparation requirements.
Ⓒ **Initial Fill:** Fill Material for layer 'C' starts from the top of the embedment stone ('B' layer) to 24" (600 mm) above the top of the chamber. Note that pavement subbase may be part of the 'C' layer.	Granular well-graded soil/aggregate mixtures, <35% fines or processed aggregate. Most pavement subbase materials can be used in lieu of this layer.	AASHTO M145 A-1, A-2-4, A-3 or AASHTO M431 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	Begin compaction after min. 24" (600 mm) of material over the chambers is reached. Compact additional layers in 12" (300 mm) max. lifts to a min. 95% Proctor density for well-graded material and 95% relative density for processed aggregate materials.
Ⓑ **Embedment Stone:** Fill the surrounding chambers from the foundation stone ('A' layer) to the 'C' layer above.	Clean, crushed, angular stone	AASHTO M43[1] 3, 357, 4	No compaction required.
Ⓐ **Foundation Stone:** Fill below chambers from the subgrade up to the foot (bottom) of the chamber.	Clean, crushed, angular stone,	AASHTO M43[1] 3, 357, 4	Place and compact in 9" (230 mm) max lifts using two full coverages with a vibratory compactor.[2,3]

PLEASE NOTE:

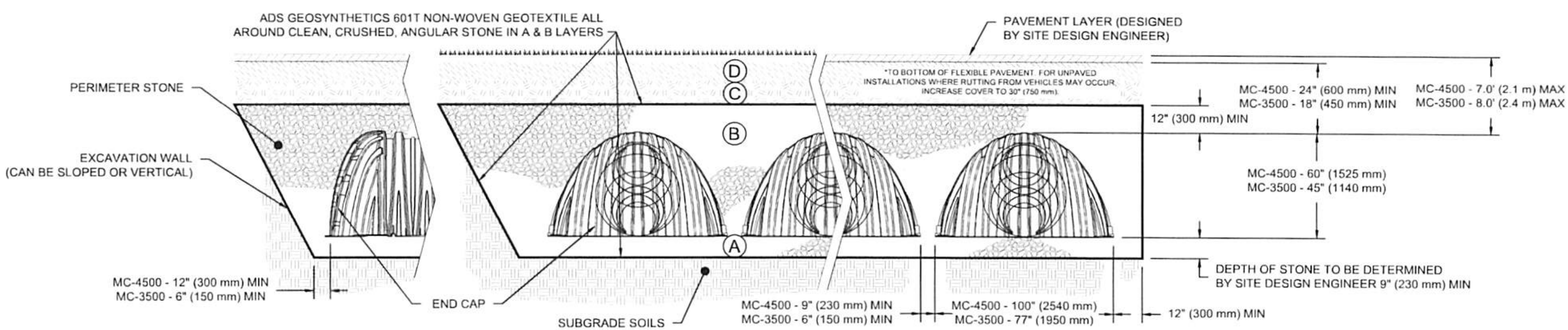
1. *The listed AASHTO designations are for gradations only. The stone must also be clean, crushed, angular. For example, a specification for #4 stone would state: "clean, crushed, angular no. 4 (AASHTO M43) stone".*
2. *StormTech compaction requirements are met for 'A' location materials when placed and compacted in 9" (230 mm) (max) lifts using two full coverages with a vibratory compactor.*
3. *Where infiltration surfaces may be comprised by compaction, for standard installations and standard design load conditions, a flat surface may be achieved by raking or dragging without compaction equipment. For special load designs, contact StormTech for compaction requirements.*

Figure 1- Inspection Port Detail



NOTES:
1. INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION VALLEY.
2. ALL SCHEDULE 40 FITTINGS TO BE SOLVENT CEMENTED (4" PVC NOT PROVIDED BY ADS)

Figure 2 - Fill Material Locations



NOTES:

1. *36" (900 mm) of stabilized cover materials over the chambers is required for full dump truck travel and dumping.*
2. *During paving operations, dump truck axle loads on 24" (600mm) of cover may be necessary. Precautions should be taken to avoid rutting of the road base layer, to ensure that compaction requirements have been met, and that a minimum of 24" (600 mm) of cover exists over the chambers. Contact StormTech for additional guidance on allowable axle loads during paving.*
3. *Ground pressure for track dozers is the vehicle operating weight divided by total ground contact area for both tracks. Excavators will exert higher ground pressures based on loaded bucket weight and boom extension.*
4. *Mini-excavators (<8,000lbs/3,628 kg) can be used with at least 12" (300 mm) of stone over the chambers and are limited by the maximum ground pressures in Table 2 based on a full bucket at maximum boom extension.*
5. *StormTech does not require compaction of initial fill at 18" (450 mm) of cover. However, requirements by others for 6" (150 mm) lifts may necessitate the use of small compactors at 18" (450 mm) of cover.*
6. *Storage of materials such as construction materials, equipment, spoils, etc. should not be located over the StormTech system. The use of equipment over the StormTech system not covered in Table 2 (ex. soil mixing equipment, cranes, etc) is limited. Please contact StormTech for more information.*
7. *Allowable track loads based on vehicle travel only. Excavators shall not operate on chamber beds until the total backfill reaches 3 feet (900 mm) over the entire bed.Excavators shall not operate on chamber beds until the total backfill reaches 3 feet (900 mm) over the entire bed.*

#10816 05/19 CS

Table 2 - Maximum Allowable Construction Vehicle Loads[6]

Material Location	Fill Depth over Chambers in. [mm]	Maximum Allowable Wheel Loads		Maximum Allowable Track Loads[6]		Maximum Allowable Roller Loads
		Max Axle Load for Trucks lbs [kN]	Max Wheel Load for Loaders lbs [kN]	Track Width in. [mm]	Max Ground Pressure psf [kPa]	Max Drum Weight or Dynamic Force lbs [kN]
Ⓓ Final Fill Material	36" [900] Compacted	32,000 [142]	16,000 [71]	12" [305] 18" [457] 24" [610] 30" [762] 36" [914]	3420 [164] 2350 [113] 1850 [89] 1510 [72] 1310 [63]	38,000 [169]
Ⓒ Initial Fill Material	24" [600] Compacted	32,000 [142]	16,000 [71]	12" [305] 18" [457] 24" [610] 30" [762] 36" [914]	2480 [119] 1770 [85] 1430 [68] 1210 [58] 1070 [51]	20,000 [89]
	24" [600] Loose/Dumped	24,000 [107]	12,000 [53]	12" [305] 18" [457] 24" [610] 30" [762] 36" [914]	2245 [107] 1625 [78] 1325 [63] 1135 [54] 1010 [48]	16,000 [71]
	18" [450]	24,000 [107]	12,000 [53]	12" [305] 18" [457] 24" [610] 30" [762]	2010 [96] 1480 [71] 1220 [58] 1060 [51]	5,000 [22] (static loads only)[5]
Ⓑ Embedment Stone	12" [300]	NOT ALLOWED	NOT ALLOWED	12" [305] 18" [457] 24" [610] 30" [762]	1100 [53] 715 [34] 660 [32] 580 [28]	NOT ALLOWED
	6" [150]	NOT ALLOWED	NOT ALLOWED	NOT ALLOWED	NOT ALLOWED	NOT ALLOWED

Table 3 - Placement Methods and Descriptions

Material Location	Placement Methods/ Restrictions	Wheel Load Restrictions	Track Load Restrictions	Roller Load Restrictions
		See Table 2 for Maximum Construction Loads		
Ⓓ Final Fill Material	A variety of placement methods may be used. All construction loads must not exceed the maximum limits in Table 2.	36" (900 mm) minimum cover required for dump trucks to dump over chambers.	Dozers to push parallel to rows.[4]	Roller travel parallel to rows only until 36" (900 mm) compacted cover is reached.
Ⓒ Initial Fill Material	Excavator positioned off bed recommended. Small excavator allowed over chambers. Small dozer allowed.	Asphalt can be dumped into paver when compacted pavement subbase reaches 24" (600 mm) above top of chambers.	Small LGP track dozers & skid loaders allowed to grade cover stone with at least 12" (300 mm) stone under tracks at all times. Equipment must push parallel to rows at all times.	Use dynamic force of roller only after compacted fill depth reaches 24" (600 mm) over chambers. Roller travel parallel to chamber rows only.
Ⓑ Embedment Stone	No equipment allowed on bare chambers. Use excavator or stone conveyor positioned off bed or on foundation stone to evenly fill around all chambers to at least the top of chambers.	No wheel loads allowed. Material must be placed outside the limits of the chamber bed.	No tracked equipment is allowed on chambers until a min. 12" (300 mm) cover stone is in place.	No rollers allowed.
Ⓐ Foundation Stone	No StormTech restrictions. Contractor responsible for any conditions or requirements by others relative to subgrade bearing capacity, dewatering or protection of subgrade.			

MEMORANDUM

TO: Mayor Rossillo and Members of the Village Board of Trustees

FROM: Valerie Monastra, AICP

CC: Richard Leins, Esq. Village Administrator
Lori Lee Dickson Esq. Village Attorney
Ed Manley, Building Inspector

DATE: September 21, 2021

RE: 49 Clinton Avenue

The Masters School ("Applicant") is seeking Site Plan approval to construct a three-story (plus cellar), approximately 22,361 square foot Innovation and Entrepreneurship Center ("IEC") on its campus in front of the Middle School Building. The IEC would be a new, educational and workshop building for the school's engineering and computer science curriculum. The engineering and computer science classes are already offered at the Masters School, and therefore, the development of IEC is for existing students and the project would not increase the student body population or faculty. The project would not require additional new parking because the building is being built to centralize these classes into one building.

The project would also include the installation of green stormwater management practices, including a bioretention pond and subsurface controlled-flow stormwater detention. The project proposes new landscaping and a vegetated buffer along the nearby parking area. Views to and from the nearby historically designated Estherwood Mansion and Carriage House would be preserved.

The project also proposes to merge the six (6) tax lots comprising the property into a single tax lot, and this is being undertaken administratively by the Town of Greenburgh.

The property is located at 49 Clinton Avenue, Section Block and Lot 3.90-66-1 ("Project Site") and is located in the EI, Educational/Institutional, zoning district.

This Application was before the Planning Board for a recommendation, and one was issued at the September 9, 2021, Planning Board meeting. The recommendation and supporting information are attached to the end of this memorandum, including the Village Engineer's comment letter.

GENERAL AND PROCEDURAL COMMENTS

1. **SEQR.** The Village Board declared itself Lead Agency and designated the project as an Unlisted action under SEQRA at its April 13, 2021, Village Board meeting. See SEQR comments below.

2. **Site Plan Approval**. This application requires Site Plan approval by the Village Board of Trustees. A public hearing conducted by the Village Board will be required for Site Plan approval.

3. **Zoning**. The Applicant provided a zoning table demonstrating compliance with the Zoning chapter.

4. **Local Waterfront Revitalization Consistency**. The Village Board will need to make a consistency determination with the Village's LWRP per §300-52(D) as part of the final Site Plan approval. The Applicant has provided a Coastal Consistency Form.

SEQR/ENVIRONMENTAL REVIEW COMMENTS

Part I of the EAF is complete and Part II of the EAF is being provided to the Village Board for your consideration. There were a few topics on the EAF Part I that required additional information from the Applicant and those topic areas are summarized below. The Applicant has provided all outstanding information.

1. **Threatened or Endangered Species**. The EAF identified the following threatened or endangered species: Shortnose Sturgeon and Atlantic Sturgeon. These species are related to the Hudson River and not the Project Site. A consultation with the NYS DEC was undertaken, and an email dated July 30, 2021, was sent by NYS DEC (see attachment) that stated that they did not anticipate any impacts to either sturgeon species.

2. **Archaeological Site**. The Project Site is substantially contiguous to the Estherwood and Carriage House and is within an archaeologically sensitive area. The Applicant undertook consultation with SHPO, and a response in the form of a letter dated July 16, 2021, was received (see attachment). SHPO concluded that the project would have No Adverse Impact on the historic or archaeological resources.

3. **Construction**. The construction schedule estimates an average of 15 daily construction truck trips per day during months 2-5, with a peak of 30 truck trips per day. The Applicant anticipates that there will be a peak of 15 daily truck trips from months 6-12. The truck traffic for months 12-18 will average about 4-8 daily trips. The construction staging area and all construction equipment will be located on the Project Site. It is anticipated that construction trucks will travel to the Project Site using Broadway and Clinton Avenue, and there will be no queuing of construction vehicles on Clinton Avenue.

VILLAGE OF DOBBS FERRY
112 Main Street
Dobbs Ferry, New York 10522
TEL: (914) 231-8500 • FAX: (914) 693-3470

RESOLUTION 12-2021

VILLAGE OF DOBBS FERRY PLANNING BOARD RECOMMENDATION RESOLUTION
Property: 49 Clinton Avenue (Section Block and Lot 3.90-66-1 and EI, Educational/Institutional Zoning District)

Background

WHEREAS, the Masters School ("Applicant") is seeking Site Plan approval to construct a three-story (plus cellar), approximately 22,361 square foot Innovation and Entrepreneurship Center ("IEC") on its campus in front of the Middle School Building ("Project"). The subject property is located at 49 Clinton Avenue, Dobbs Ferry New York, Section Block and Lot 3.90-66-1 ("Project Site"). The Project Site is located in the Educational/Institutional (EI) Zoning District; and

WHEREAS, this application requires Site Plan approval by the Village Board of Trustees and a recommendation by the Planning Board per Section 300-52 of the Zoning and Land Use chapter; and

WHEREAS, The Planning Board has carefully examined the Application and the Applicant's materials as follows:

1. Site Plan Application Form dated April 1, 2021
2. Full Environmental Assessment Form February 16, 2021
3. Coastal Assessment Form dated April 1, 2021
4. Stormwater Pollution Prevention Plan by MFS Consulting Engineers & Surveyor dated August 30, 2021
5. Revised Site Plan Designs prepared by Marvel, last revised August 31, 2021
   a. G001V Sheet Index
   b. G-010 and G-011Survey, prepared BY Kenneth B. Salzmann dated January 27, 2021
   c. Z-100 Zoning Map
   d. C-101 Civil Notes
   e. C-300 Demolition and Site Clearing Plan
   f. C-400 Soil and Erosion Control Plan
   g. C-500 Site Plan
   h. C-502 Construction Access Plan
   i. C-600 Proposed Grading and Drainage Plan
   j. C-700 Utility Plan
   k. C-701 Utility Relocation Plan
   l. C-900 and C-901 Construction Details
   m. L-100 Layout Plan
   n. L-200 Material Plan

o. L-400 Tree Plan
p. L-410 Understory Plan
q. L-600 and L-601 Site Section
r. L-620 Site Plan
s. L-700 and L-701Typical Details
t. A-100 through A-104 Floor Plans
u. A-300 and A-301Building Elevations
v. A-320 and A-321Building Sections
w. S-501Retailing Wall Detail
x. S-505 Typical Details
y. LL-010 Site Lighting Plan
z. LL-011 Site Lighting Photometric

WHEREAS, the Planning Board has also reviewed and examined letters, reports, and memorandum from the Board's consulting engineer and planner; and

WHEREAS, the Planning Board conducted a duly noticed public hearing on July 1, 2021, at which time all those wishing to be heard were given the opportunity to be heard, and the public hearing remained open until August 5, 2021; and

WHEREAS, the Planning Board deliberated in public on the Applicant's request for recommendation.

Planning Board Determination

NOW, THEREFORE, BE IT RESOLVED, the Planning Board recommends the application for Site Plan approval with the following additional recommendations as set forth below:

1. The Village Board should require the Applicant to address to the full satisfaction of the Village Engineer, all outstanding stormwater, and engineering issues raised in the hearings and documents submitted to the Board, including the September 7, 2021, engineering review letter.

Motion by: Chairman Hunter Seconded by: Mr. Brosnahan

CHAIRMAN HUNTER	☒ AYE	☐ NAY	☐ ABSTAIN	☐ RECUSE	☐ ABSENT/EXCUSED
STEPHEN BROSNAHAN	☒ AYE	☐ NAY	☐ ABSTAIN	☐ RECUSE	☐ ABSENT/EXCUSED
ROB LANE	☒ AYE	☐ NAY	☐ ABSTAIN	☐ RECUSE	☐ ABSENT/EXCUSED
ALLEN HALE	☒ AYE	☐ NAY	☐ ABSTAIN	☐ RECUSE	☐ ABSENT/EXCUSED
LAURA HAUPT	☒ AYE	☐ NAY	☐ ABSTAIN	☐ RECUSE	☐ ABSENT/EXCUSED
PETER WINDER, 1ST ALTERNAATE MEMBER	☐ AYE	☐ NAY	☐ ABSTAIN	☐ RECUSE	☒ ABSENT/EXCUSED
VOTE TOTALS	5 AYE	0 NAY	0 ABSTAIN	0 RECUSE	1 ABSENT/EXCUSED
RESULT:	**MOTION: PASSES**				

I hereby attest that the above Resolution was approved by the Planning Board at its September 9, 2021 meeting, and that I have been authorized to sign this Resolution by decision of the Planning Board.

Chairman Hunter

Date: September 9, 2021

570 Taxter Road, Suite 300
Elmsford, NY 10523
(914) 631-8600 phone
(914) 631-5769 fax
www.drepc.com
www.aiengineers.com

MEMORANDUM

To: **Stephen Hunter, Planning Board Chairman**

C: **Planning Board Members**
Richard Leins, Interim Village Administrator
Ed Manley, Building Inspector
Dan Pozin, Planning Board Attorney,
Valerie Monastra, Village Planner

From: **Anthony Oliveri, P.E.**

Date: **September 7, 2021**

Re: **Site Plan**
The Masters School
49 Clinton Avenue
Village of Dobbs Ferry

With regard to the above mentioned project, this office has reviewed the following plans and submittals:

- Plans entitled: "The Masters School Innovation and Entrepreneurship Center", prepared by Marvel, last dated 8/31/2021;
- Stormwater Pollution Prevention Plan (SWPPP), prepared by MFS Consulting Engineers & Surveyor, DPC, dated 8/30/2021;

Our remaining comments are as follows:

1. It is our understanding that the applicant's engineer is waiting for determination from the Westchester County Health Department regarding permitting requirements for the relocation of the existing 10" sanitary sewer. This should be made a condition of any approval.
2. Pipe crossings and clearances should be shown on the sanitary sewer profile; as noted previously, standard leakage testing requirements in conformance with current Health Department standards should also be noted.
3. Bioretention pond details seem to be missing from the site plan.
4. A final review of the SWPPP will be conducted prior to acceptance and NYSDEC general permit coverage, however our previous comments have been substantially addressed.

Thank you

Full Environmental Assessment Form
Part 2 - Identification of Potential Project Impacts

Part 2 is to be completed by the lead agency. Part 2 is designed to help the lead agency inventory all potential resources that could be affected by a proposed project or action. We recognize that the lead agency's reviewer(s) will not necessarily be environmental professionals. So, the questions are designed to walk a reviewer through the assessment process by providing a series of questions that can be answered using the information found in Part 1. To further assist the lead agency in completing Part 2, the form identifies the most relevant questions in Part 1 that will provide the information needed to answer the Part 2 question. When Part 2 is completed, the lead agency will have identified the relevant environmental areas that may be impacted by the proposed activity.

If the lead agency is a state agency **and** the action is in any Coastal Area, complete the Coastal Assessment Form before proceeding with this assessment.

Tips for completing Part 2:

- Review all of the information provided in Part 1.
- Review any application, maps, supporting materials and the Full EAF Workbook.
- Answer each of the 18 questions in Part 2.
- If you answer "**Yes**" to a numbered question, please complete all the questions that follow in that section.
- If you answer "**No**" to a numbered question, move on to the next numbered question.
- Check appropriate column to indicate the anticipated size of the impact.
- Proposed projects that would exceed a numeric threshold contained in a question should result in the reviewing agency checking the box "Moderate to large impact may occur."
- The reviewer is not expected to be an expert in environmental analysis.
- If you are not sure or undecided about the size of an impact, it may help to review the sub-questions for the general question and consult the workbook.
- When answering a question consider all components of the proposed activity, that is, the "whole action".
- Consider the possibility for long-term and cumulative impacts as well as direct impacts.
- Answer the question in a reasonable manner considering the scale and context of the project.

1. Impact on Land
Proposed action may involve construction on, or physical alteration of, the land surface of the proposed site. (See Part 1. D.1) ☐ NO ☑ YES
If "Yes", answer questions a - j. If "No", move on to Section 2.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may involve construction on land where depth to water table is less than 3 feet.	E2d	☑	☐
b. The proposed action may involve construction on slopes of 15% or greater.	E2f	☑	☐
c. The proposed action may involve construction on land where bedrock is exposed, or generally within 5 feet of existing ground surface.	E2a	☑	☐
d. The proposed action may involve the excavation and removal of more than 1,000 tons of natural material. 2,950 cubic yards of fill will be excavated from the site	D2a	☐	☑
e. The proposed action may involve construction that continues for more than one year or in multiple phases. Construction is anticipated for 18 months	D1e	☐	☑
f. The proposed action may result in increased erosion, whether from physical disturbance or vegetation removal (including from treatment by herbicides).	D2e, D2q	☑	☐
g. The proposed action is, or may be, located within a Coastal Erosion hazard area.	B1i	☑	☐
h. Other impacts: ______________________		☐	☐

2. Impact on Geological Features The proposed action may result in the modification or destruction of, or inhibit access to, any unique or unusual land forms on the site (e.g., cliffs, dunes, minerals, fossils, caves). (See Part 1. E.2.g) *If "Yes", answer questions a - c. If "No", move on to Section 3.*	☑NO	☐YES	
	Relevant Part I Question(s)	**No, or small impact may occur**	**Moderate to large impact may occur**
a. Identify the specific land form(s) attached: ______________________	E2g	☐	☐
b. The proposed action may affect or is adjacent to a geological feature listed as a registered National Natural Landmark. Specific feature: ______________________	E3c	☐	☐
c. Other impacts: ______________________		☐	☐

3. Impacts on Surface Water The proposed action may affect one or more wetlands or other surface water bodies (e.g., streams, rivers, ponds or lakes). (See Part 1. D.2, E.2.h) *If "Yes", answer questions a - l. If "No", move on to Section 4.*	☑NO	☐YES	
	Relevant Part I Question(s)	**No, or small impact may occur**	**Moderate to large impact may occur**
a. The proposed action may create a new water body.	D2b, D1h	☐	☐
b. The proposed action may result in an increase or decrease of over 10% or more than a 10 acre increase or decrease in the surface area of any body of water.	D2b	☐	☐
c. The proposed action may involve dredging more than 100 cubic yards of material from a wetland or water body.	D2a	☐	☐
d. The proposed action may involve construction within or adjoining a freshwater or tidal wetland, or in the bed or banks of any other water body.	E2h	☐	☐
e. The proposed action may create turbidity in a waterbody, either from upland erosion, runoff or by disturbing bottom sediments.	D2a, D2h	☐	☐
f. The proposed action may include construction of one or more intake(s) for withdrawal of water from surface water.	D2c	☐	☐
g. The proposed action may include construction of one or more outfall(s) for discharge of wastewater to surface water(s).	D2d	☐	☐
h. The proposed action may cause soil erosion, or otherwise create a source of stormwater discharge that may lead to siltation or other degradation of receiving water bodies.	D2e	☐	☐
i. The proposed action may affect the water quality of any water bodies within or downstream of the site of the proposed action.	E2h	☐	☐
j. The proposed action may involve the application of pesticides or herbicides in or around any water body.	D2q, E2h	☐	☐
k. The proposed action may require the construction of new, or expansion of existing, wastewater treatment facilities.	D1a, D2d	☐	☐

l. Other impacts: ______________________________ ______________________________		☐	☐

4. Impact on groundwater
The proposed action may result in new or additional use of ground water, or may have the potential to introduce contaminants to ground water or an aquifer. (See Part 1. D.2.a, D.2.c, D.2.d, D.2.p, D.2.q, D.2.t)
If "Yes", answer questions a - h. If "No", move on to Section 5.

☐ NO ☑ YES

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may require new water supply wells, or create additional demand on supplies from existing water supply wells.	D2c	☑	☐
b. Water supply demand from the proposed action may exceed safe and sustainable withdrawal capacity rate of the local supply or aquifer. Cite Source: ______________________________	D2c	☑	☐
c. The proposed action may allow or result in residential uses in areas without water and sewer services.	D1a, D2c	☑	☐
d. The proposed action may include or require wastewater discharged to groundwater.	D2d, E2l	☑	☐
e. The proposed action may result in the construction of water supply wells in locations where groundwater is, or is suspected to be, contaminated.	D2c, E1f, E1g, E1h	☑	☐
f. The proposed action may require the bulk storage of petroleum or chemical products over ground water or an aquifer.	D2p, E2l	☑	☐
g. The proposed action may involve the commercial application of pesticides within 100 feet of potable drinking water or irrigation sources.	E2h, D2q, E2l, D2c	☑	☐
h. Other impacts: ______________________________ ______________________________		☐	☐

5. Impact on Flooding
The proposed action may result in development on lands subject to flooding. (See Part 1. E.2)
If "Yes", answer questions a - g. If "No", move on to Section 6.

☑ NO ☐ YES

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may result in development in a designated floodway.	E2i	☐	☐
b. The proposed action may result in development within a 100 year floodplain.	E2j	☐	☐
c. The proposed action may result in development within a 500 year floodplain.	E2k	☐	☐
d. The proposed action may result in, or require, modification of existing drainage patterns.	D2b, D2e	☐	☐
e. The proposed action may change flood water flows that contribute to flooding.	D2b, E2i, E2j, E2k	☐	☐
f. If there is a dam located on the site of the proposed action, is the dam in need of repair, or upgrade?	E1e	☐	☐

g. Other impacts: ____ ____		☐	☐

6. Impacts on Air

The proposed action may include a state regulated air emission source. ☑ NO ☐ YES
(See Part 1. D.2.f., D.2.h, D.2.g)
If "Yes", answer questions a - f. If "No", move on to Section 7.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. If the proposed action requires federal or state air emission permits, the action may also emit one or more greenhouse gases at or above the following levels:			
i. More than 1000 tons/year of carbon dioxide (CO_2)	D2g	☐	☐
ii. More than 3.5 tons/year of nitrous oxide (N_2O)	D2g	☐	☐
iii. More than 1000 tons/year of carbon equivalent of perfluorocarbons (PFCs)	D2g	☐	☐
iv. More than .045 tons/year of sulfur hexafluoride (SF_6)	D2g	☐	☐
v. More than 1000 tons/year of carbon dioxide equivalent of hydrochloroflourocarbons (HFCs) emissions	D2g	☐	☐
vi. 43 tons/year or more of methane	D2h	☐	☐
b. The proposed action may generate 10 tons/year or more of any one designated hazardous air pollutant, or 25 tons/year or more of any combination of such hazardous air pollutants.	D2g	☐	☐
c. The proposed action may require a state air registration, or may produce an emissions rate of total contaminants that may exceed 5 lbs. per hour, or may include a heat source capable of producing more than 10 million BTU's per hour.	D2f, D2g	☐	☐
d. The proposed action may reach 50% of any of the thresholds in "a" through "c", above.	D2g	☐	☐
e. The proposed action may result in the combustion or thermal treatment of more than 1 ton of refuse per hour.	D2s	☐	☐
f. Other impacts: ____ ____		☐	☐

7. Impact on Plants and Animals

The proposed action may result in a loss of flora or fauna. (See Part 1. E.2. m.-q.) ☑ NO ☐ YES
If "Yes", answer questions a - j. If "No", move on to Section 8.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may cause reduction in population or loss of individuals of any threatened or endangered species, as listed by New York State or the Federal government, that use the site, or are found on, over, or near the site.	E2o	☐	☐
b. The proposed action may result in a reduction or degradation of any habitat used by any rare, threatened or endangered species, as listed by New York State or the federal government.	E2o	☐	☐
c. The proposed action may cause reduction in population, or loss of individuals, of any species of special concern or conservation need, as listed by New York State or the Federal government, that use the site, or are found on, over, or near the site.	E2p	☐	☐
d. The proposed action may result in a reduction or degradation of any habitat used by any species of special concern and conservation need, as listed by New York State or the Federal government.	E2p	☐	☐

e. The proposed action may diminish the capacity of a registered National Natural Landmark to support the biological community it was established to protect.	E3c	☐	☐
f. The proposed action may result in the removal of, or ground disturbance in, any portion of a designated significant natural community. Source: ________________	E2n	☐	☐
g. The proposed action may substantially interfere with nesting/breeding, foraging, or over-wintering habitat for the predominant species that occupy or use the project site.	E2m	☐	☐
h. The proposed action requires the conversion of more than 10 acres of forest, grassland or any other regionally or locally important habitat. Habitat type & information source: ________________	E1b	☐	☐
i. Proposed action (commercial, industrial or recreational projects, only) involves use of herbicides or pesticides.	D2q	☐	☐
j. Other impacts: ________________		☐	☐

8. Impact on Agricultural Resources

The proposed action may impact agricultural resources. (See Part 1. E.3.a. and b.) ☑NO ☐YES

If "Yes", answer questions a - h. If "No", move on to Section 9.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may impact soil classified within soil group 1 through 4 of the NYS Land Classification System.	E2c, E3b	☐	☐
b. The proposed action may sever, cross or otherwise limit access to agricultural land (includes cropland, hayfields, pasture, vineyard, orchard, etc).	E1a, Elb	☐	☐
c. The proposed action may result in the excavation or compaction of the soil profile of active agricultural land.	E3b	☐	☐
d. The proposed action may irreversibly convert agricultural land to non-agricultural uses, either more than 2.5 acres if located in an Agricultural District, or more than 10 acres if not within an Agricultural District.	E1b, E3a	☐	☐
e. The proposed action may disrupt or prevent installation of an agricultural land management system.	El a, E1b	☐	☐
f. The proposed action may result, directly or indirectly, in increased development potential or pressure on farmland.	C2c, C3, D2c, D2d	☐	☐
g. The proposed project is not consistent with the adopted municipal Farmland Protection Plan.	C2c	☐	☐
h. Other impacts: ________________		☐	☐

9. Impact on Aesthetic Resources The land use of the proposed action are obviously different from, or are in sharp contrast to, current land use patterns between the proposed project and a scenic or aesthetic resource. (Part 1. E.1.a, E.1.b, E.3.h.) *If "Yes", answer questions a - g. If "No", go to Section 10.*	☐ NO	☑ YES	
	Relevant Part I Question(s)	**No, or small impact may occur**	**Moderate to large impact may occur**
a. Proposed action may be visible from any officially designated federal, state, or local scenic or aesthetic resource.	E3h	☑	☐
b. The proposed action may result in the obstruction, elimination or significant screening of one or more officially designated scenic views.	E3h, C2b	☑	☐
c. The proposed action may be visible from publicly accessible vantage points: i. Seasonally (e.g., screened by summer foliage, but visible during other seasons) ii. Year round	E3h	 ☑ ☑	 ☐ ☐
d. The situation or activity in which viewers are engaged while viewing the proposed action is: i. Routine travel by residents, including travel to and from work ii. Recreational or tourism based activities	E3h E2q, E1c	 ☑ ☑	 ☐ ☐
e. The proposed action may cause a diminishment of the public enjoyment and appreciation of the designated aesthetic resource.	E3h	☑	☐
f. There are similar projects visible within the following distance of the proposed project: 0-1/2 mile ½ -3 mile 3-5 mile 5+ mile	D1a, E1a, D1f, D1g	☑	☐
g. Other impacts: ______________________________		☐	☐

10. Impact on Historic and Archeological Resources The proposed action may occur in or adjacent to a historic or archaeological resource. (Part 1. E.3.e, f. and g.) *If "Yes", answer questions a - e. If "No", go to Section 11.*	☐ NO	☑ YES	
	Relevant Part I Question(s)	**No, or small impact may occur**	**Moderate to large impact may occur**
a. The proposed action may occur wholly or partially within, or substantially contiguous to, any buildings, archaeological site or district which is listed on the National or State Register of Historical Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places.	E3e	☑	☐
b. The proposed action may occur wholly or partially within, or substantially contiguous to, an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory.	E3f	☑	☐
c. The proposed action may occur wholly or partially within, or substantially contiguous to, an archaeological site not included on the NY SHPO inventory. Source: ______________________________	E3g	☑	☐

d. Other impacts: ______________________________		☐	☐
e. If any of the above (a-d) are answered "Moderate to large impact may occur", continue with the following questions to help support conclusions in Part 3:			
i. The proposed action may result in the destruction or alteration of all or part of the site or property.	E3e, E3g, E3f	☑	☐
ii. The proposed action may result in the alteration of the property's setting or integrity.	E3e, E3f, E3g, E1a, E1b	☑	☐
iii. The proposed action may result in the introduction of visual elements which are out of character with the site or property, or may alter its setting.	E3e, E3f, E3g, E3h, C2, C3	☑	☐

11. Impact on Open Space and Recreation

The proposed action may result in a loss of recreational opportunities or a reduction of an open space resource as designated in any adopted municipal open space plan.
(See Part 1. C.2.c, E.1.c., E.2.q.)

☑ NO ☐ YES

If "Yes", answer questions a - e. If "No", go to Section 12.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may result in an impairment of natural functions, or "ecosystem services", provided by an undeveloped area, including but not limited to stormwater storage, nutrient cycling, wildlife habitat.	D2e, E1b E2h, E2m, E2o, E2n, E2p	☐	☐
b. The proposed action may result in the loss of a current or future recreational resource.	C2a, E1c, C2c, E2q	☐	☐
c. The proposed action may eliminate open space or recreational resource in an area with few such resources.	C2a, C2c E1c, E2q	☐	☐
d. The proposed action may result in loss of an area now used informally by the community as an open space resource.	C2c, E1c	☐	☐
e. Other impacts: ______________________________		☐	☐

12. Impact on Critical Environmental Areas

The proposed action may be located within or adjacent to a critical environmental area (CEA). (See Part 1. E.3.d)

☑ NO ☐ YES

If "Yes", answer questions a - c. If "No", go to Section 13.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may result in a reduction in the quantity of the resource or characteristic which was the basis for designation of the CEA.	E3d	☐	☐
b. The proposed action may result in a reduction in the quality of the resource or characteristic which was the basis for designation of the CEA.	E3d	☐	☐
c. Other impacts: ______________________________		☐	☐

13. Impact on Transportation

The proposed action may result in a change to existing transportation systems. ☑ NO ☐ YES
(See Part 1. D.2.j)

If "Yes", answer questions a - f. If "No", go to Section 14.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. Projected traffic increase may exceed capacity of existing road network.	D2j	☐	☐
b. The proposed action may result in the construction of paved parking area for 500 or more vehicles.	D2j	☐	☐
c. The proposed action will degrade existing transit access.	D2j	☐	☐
d. The proposed action will degrade existing pedestrian or bicycle accommodations.	D2j	☐	☐
e. The proposed action may alter the present pattern of movement of people or goods.	D2j	☐	☐
f. Other impacts: ______________________________		☐	☐

14. Impact on Energy

The proposed action may cause an increase in the use of any form of energy. ☐ NO ☑ YES
(See Part 1. D.2.k)

If "Yes", answer questions a - e. If "No", go to Section 15.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action will require a new, or an upgrade to an existing, substation.	D2k	☑	☐
b. The proposed action will require the creation or extension of an energy transmission or supply system to serve more than 50 single or two-family residences or to serve a commercial or industrial use.	D1f, D1q, D2k	☑	☐
c. The proposed action may utilize more than 2,500 MWhrs per year of electricity.	D2k	☑	☐
d. The proposed action may involve heating and/or cooling of more than 100,000 square feet of building area when completed.	D1g	☑	☐
e. Other Impacts: ______________________________		☐	☐

15. Impact on Noise, Odor, and Light

The proposed action may result in an increase in noise, odors, or outdoor lighting. ☐ NO ☑ YES
(See Part 1. D.2.m., n., and o.)

If "Yes", answer questions a - f. If "No", go to Section 16.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may produce sound above noise levels established by local regulation.	D2m	☑	☐
b. The proposed action may result in blasting within 1,500 feet of any residence, hospital, school, licensed day care center, or nursing home.	D2m, E1d	☑	☐
c. The proposed action may result in routine odors for more than one hour per day.	D2o	☑	☐

d. The proposed action may result in light shining onto adjoining properties.	D2n	☑	☐
e. The proposed action may result in lighting creating sky-glow brighter than existing area conditions.	D2n, E1a	☑	☐
f. Other impacts: ______		☐	☐

16. Impact on Human Health
The proposed action may have an impact on human health from exposure to new or existing sources of contaminants. (See Part 1.D.2.q., E.1. d. f. g. and h.) ☑ NO ☐ YES
If "Yes", answer questions a - m. If "No", go to Section 17.

	Relevant Part I Question(s)	No,or small impact may cccur	Moderate to large impact may occur
a. The proposed action is located within 1500 feet of a school, hospital, licensed day care center, group home, nursing home or retirement community.	E1d	☐	☐
b. The site of the proposed action is currently undergoing remediation.	E1g, E1h	☐	☐
c. There is a completed emergency spill remediation, or a completed environmental site remediation on, or adjacent to, the site of the proposed action.	E1g, E1h	☐	☐
d. The site of the action is subject to an institutional control limiting the use of the property (e.g., easementor deed restriction).	E1g, E1h	☐	☐
e. The proposed action may affect institutional control measures that were put in place to ensure that the site remains protective of the environment and human health.	E1g, E1h	☐	☐
f. The proposed action has adequate control measures in place to ensure that future generation, treatment and/or disposal of hazardous wastes will be protective of the environment and human health.	D2t	☐	☐
g. The proposed action involves construction or modification of a solid waste management facility.	D2q, E1f	☐	☐
h. The proposed action may result in the unearthing of solid or hazardous waste.	D2q, E1f	☐	☐
i. The proposed action may result in an increase in the rate of disposal, or processing, of solid waste.	D2r, D2s	☐	☐
j. The proposed action may result in excavation or other disturbance within 2000 feet of a site used for the disposal of solid or hazardous waste.	E1f, E1g E1h	☐	☐
k. The proposed action may result in the migration of explosive gases from a landfill site to adjacent off site structures.	E1f, E1g	☐	☐
l. The proposed action may result in the release of contaminated leachate from the project site.	D2s, E1f, D2r	☐	☐
m. Other impacts: ______			

17. Consistency with Community Plans The proposed action is not consistent with adopted land use plans. ☑ NO ☐ YES (See Part 1. C.1, C.2. and C.3.) *If "Yes", answer questions a - h. If "No", go to Section 18.*			
	Relevant Part I Question(s)	**No, or small impact may occur**	**Moderate to large impact may occur**
a. The proposed action's land use components may be different from, or in sharp contrast to, current surrounding land use pattern(s).	C2, C3, D1a E1a, E1b	☐	☐
b. The proposed action will cause the permanent population of the city, town or village in which the project is located to grow by more than 5%.	C2	☐	☐
c. The proposed action is inconsistent with local land use plans or zoning regulations.	C2, C2, C3	☐	☐
d. The proposed action is inconsistent with any County plans, or other regional land use plans.	C2, C2	☐	☐
e. The proposed action may cause a change in the density of development that is not supported by existing infrastructure or is distant from existing infrastructure.	C3, D1c, D1d, D1f, D1d, Elb	☐	☐
f. The proposed action is located in an area characterized by low density development that will require new or expanded public infrastructure.	C4, D2c, D2d D2j	☐	☐
g. The proposed action may induce secondary development impacts (e.g., residential or commercial development not included in the proposed action)	C2a	☐	☐
h. Other: ______		☐	☐

18. Consistency with Community Character The proposed project is inconsistent with the existing community character. ☑ NO ☐ YES (See Part 1. C.2, C.3, D.2, E.3) *If "Yes", answer questions a - g. If "No", proceed to Part 3.*			
	Relevant Part I Question(s)	**No, or small impact may occur**	**Moderate to large impact may occur**
a. The proposed action may replace or eliminate existing facilities, structures, or areas of historic importance to the community.	E3e, E3f, E3g	☐	☐
b. The proposed action may create a demand for additional community services (e.g. schools, police and fire)	C4	☐	☐
c. The proposed action may displace affordable or low-income housing in an area where there is a shortage of such housing.	C2, C3, D1f D1g, E1a	☐	☐
d. The proposed action may interfere with the use or enjoyment of officially recognized or designated public resources.	C2, E3	☐	☐
e. The proposed action is inconsistent with the predominant architectural scale and character.	C2, C3	☐	☐
f. Proposed action is inconsistent with the character of the existing natural landscape.	C2, C3 E1a, E1b E2g, E2h	☐	☐
g. Other impacts: ______		☐	☐

PRINT FULL FORM

NEW YORK STATE OF OPPORTUNITY. | Parks, Recreation, and Historic Preservation

ANDREW M. CUOMO
Governor

ERIK KULLESEID
Commissioner

July 16, 2021

Mr. Charles Vandrei
Agency Historic Preservation Officer
NYS Environmental Conservation
Division of Lands and Forests
625 Broadway
Albany, NY 12233-4255

Re: DEC
The Masters School Innovation and Entrepreneurship Center
49 Clinton Ave, Dobbs Ferry, NY 10522
21PR04192

Dear Mr. Vandrei:

Thank you for requesting the comments of the Division for Historic Preservation of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the submitted materials in accordance with the New York State Historic Preservation Act of 1980 (section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the Division for Historic Preservation and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6NYCRR Part 617).

We note that the proposed new construction is within the boundaries of the Estherwood Mansion and Carriage House, which is listed in the State and National Registers of Historic Places. Our office has reviewed the materials submitted for the proposed Innovation and Entrepreneurship Center building received on June 22, 2021. Based upon our review, it is the OPRHP's opinion that the project will have No Adverse Impact on historic or archaeological resources.

If there are substantive changes to the project or to the design of the new construction, consultation with our office should resume. If you have any questions, I am best reached by email.

Sincerely,

Derek Rohde
Historic Site Restoration Coordinator
e-mail: derek.rohde@parks.ny.gov

via e-mail only

From: Jennifer Olson
To: dep.r3@dec.ny.gov
Cc: Valerie Monastra; Biddle, Ed; Marx, Seth; Brad Schwartz; Lissa So
Subject: NYSDEC review request - The Masters School IEC
Date: Friday, July 16, 2021 1:10:21 PM
Attachments: image001.png
6.17.21 Masters School IEC Site Plan Application - EAF.pdf
2029 2021 0716 Masters IEC NYSDEC EAF review memo.pdf

Hello Mr. Petronella –
We are the project architects for The Masters School in connection with its proposed construction of a new educational building called the Innovation and Entrepreneurship Center ("IEC") on an approximately 10-acre site located at 49 Clinton Avenue, Dobbs Ferry, New York 10522 ("Site"). The Site comprises a portion of the School's overall approximately 91-acre campus.

The purpose of this letter is to request a consultation with your Department as part of the SEQRA process for the IEC, which is being led by the Village of Dobbs Ferry Board of Trustees. In our team's preparation of the Full Environmental Assessment Form ("EAF") for the Project, the EAF Mapper identified two endangered species, Atlantic Sturgeon and Shortnose Sturgeon, on Section E.2.(o)(i) of the EAF (copy enclosed). These species were identified as a result of the Site being located in the Hudson River Estuary. These species are not found on the Site, which is approximately 0.57 miles upgradient from the River.

The Village asked that we initiate this consultation to determine if this project poses a potential threat to the Shortnose Sturgeon and Atlantic Sturgeon. We hope that you will agree that this proposed educational building far from the River does not pose such a threat, and that you will issue a No Adverse Impact or similar letter that we can provide to the Village. We copied the Village's planning consultant on this submission.

Attached to this email you will find a letter from our office stating this request, a copy of our full EAF submitted to the Village of Dobbs Ferry Planning Board, and a below link to applicable project drawings.

2021-07-16_Masters IEC DEC drawings

We appreciate if you could please acknowledge receipt of this request, and confirm if you will in fact be able to review the project.

Thank you very much,
Jennifer

Jennifer Olson, AIA, LEED AP
Director

MARVEL
145 Hudson Street, New York, NY 10013
646 237 4149 direct
919 434 5751 mobile

<u>MASTERS SCHOOL SITE PLAN APPLICATION – SCHEDULE PUBLIC HEARING</u>

WHEREAS, on April 13, 2021 the Board of Trustees of the Village of Dobbs Ferry acknowledged receipt of a site plan application for construction of a proposed 22,361 s.f. Innovation and Entrepreneurship Center educational building and related site improvements on an undeveloped portion of the 90-acre Masters School campus (the "Project"), declared itself Lead Agency for purposes of SEQRA and directed referral of the matter to the Dobbs Ferry and County Planning Boards and the Dobbs Ferry AHRB in accordance with legal requirements; and

WHEREAS, the matter having now been returned to the Board's agenda by the Dobbs Ferry Planning Board, it is necessary to schedule a public hearing in advance of further review and action.

NOW BE IT RESOLVED, that, the Board of Trustees of the Village of Dobbs Ferry hereby calls for a public hearing to be scheduled on Tuesday, October 12, 2021 at 6:30 p.m., or as soon thereafter as the matter may be heard, to receive public comment and consider the request for site plan approval for the Project on the Masters School campus at 49 Clinton Avenue.