February 3, 2021

Ref: 13421.02

Nicholas Moreno, Executive Director
Boston Conservation Commission
1 City Hall Square, Room 709
Boston, MA 02201

Re: DEP File No. 006-1490
Request for Amended OOC

Dear Mr. Moreno,

On behalf of ARE-MA Region No. 74, LLC (the "Owner") and National Development (the "Applicant"), VHB is submitting this request for an Amended Order of Conditions (OOC) for DEP File No. 006-1490 for the project known as "15 Necco Street." Proposed changes to the Project include modifications to the drainage, grading, and landscaping plans. These changes do not result in changes to the previously reviewed impacts to jurisdictional wetland resource areas. However, they do require updates to the Project's Stormwater Report.

Below is a summary of the Project's review history, a Project description, an assessment of Project impacts, and a description of how the Project complies with applicable regulations. Figures depicting the site location (Figure 1), Project area context (Figure 2), wetland resources areas (Figure 3), the FEMA Special Flood Hazard Area (Figure 4), the Previously Reviewed Project (Figure 5), the Currently Proposed Project (Figure 6), and the updated Resiliency Plan (Figure 7) are included in Attachment A, as are relevant updated engineering plans, provided in Attachment B.

Review History

On December 7, 2016, a Notice of Intent (NOI) was filed for the proposed GE Headquarters at 244-284 A Street in South Boston. The applicant was General Electric Company (GE)/Massachusetts Development Finance Agency. The Boston Conservation Commission (the "Commission") issued an Order of Conditions (OOC) for this project (DEP File No. 006-1490) on January 9, 2017. The OOC was recorded by the Suffolk County Registry of Deeds on January 18, 2017. Figure 5 depicts this Previously Reviewed Project.

On February 13, 2017, AECOMM, on behalf of GE, filed a request for a review of minor changes to the Project consisting of an expansion of the Project Site that would result in an approximately 12 percent increase in the amount of Land Subject to Coastal Storm Flowage (LSCSF) to be impacted (from 95,300 sf

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to 106,918 sf). The Commission issued an Amended OOC on August 2, 2017, which was recorded on August 21, 2017 (indicated on Figure 1 as "Project Site").

After the property was acquired by ARE-MA Region No. 71, LLC (of which the current Owner is a successor), the Commission on November 6, 2019 issued a three-year extension with an expiration date of August 2, 2023. The extension was recorded on November 19, 2019. On November 6, 2019 the Commission also issued a Partial Certificate of Compliance (COC) for work located on the entire Harborwalk within 6 Necco Street and 15 Necco Street, as well as areas directly adjacent to the building on 5 Necco Street (indicated as "Subject of Partial OOC on Figure 3). This Partial COC was recorded on November 18, 2019.

Proposed Project

The subject of this request for an Amended OOC is identified in Figure 3 as the area within the red boundary. Since the issuance of the previous OOC and the Partial COC, design within this portion of the Project Site has progressed, resulting in modifications to the grading, drainage, and landscaping design (Figure 5).

New public realm improvements provide publicly accessible open space on the Project Site and advance the buildout of the 100 Acres Master Plan. Grades have been updated to match the anticipated elevations for the surrounding parcels. The Project results in a slight decrease in impervious areas (approximately 34 sf) as compared to the previously reviewed plan.

The strategy to store and treat stormwater during rain events on the Site is similar to the previously approved plan. The Project directs site runoff to on-site rain gardens, while overflow is directed into to subsurface infiltration systems. Rooftop runoff is directed to a rainwater reuse tank and will overflow directly to the subsurface infiltration systems. Rain gardens and infiltration systems are sized appropriately to provide the required water quality treatment. During extreme storm events, stormwater will discharge to the BWSC outfall to the Fort Point Channel. The proposed design has been modified to update the layout and materials of the site infiltration systems (see Attachment C).

The Project includes the use of a geothermal heating and cooling system. The wells will be located within a jurisdictional resource area (LSCSF). Installation, which requires narrow bore drilling, will represent a temporary impact prior to final grading and landscaping installation. Appropriate erosion and sedimentation control measures will be employed during installation of the geothermal system in compliance with the currently effective OOC.

There are no changes in the amount of LSCSF or Buffer to Coastal Bank that will be impacted by the Project. The Project is entirely outside of the Waterfront Area regulated under the Boston Wetlands Ordinance.

The Project continues to promote resiliency. Site grades will be raised, and a seat wall will be constructed up to elevation 21' BCB. Consistent with the Climate Ready South Boston Report's recommendation for a continuous flood barrier at elevation 20.5' along the east side of Fort Point Channel, the design includes the ability to tie into future resiliency improvements on the adjacent parcel to the south.

Assessment of Project Impacts

The proposed Project modifications are consistent with the original purpose of the Project, which is to construct a new building with superior public access to the waterfront that contributes to the resiliency of the Fort Point neighborhood. The scope of the Project has not increased, and there continue to be no relevant performance standards to be met. Finally, there is no increased potential for adverse impacts to the protected statutory interests of the Wetlands Protection Act.

Regulatory Compliance

There are currently no performance standards for the impacted resource areas. However, the proposed work will follow the same design strategies outlined in Section 4.0 of the Notice of Intent to reduce impacts to the flood plain (i.e., overland drainage paths, oversized stormwater conveyances, etc.) and provide resiliency to the Project (i.e., use of salt tolerant plants, construction materials, etc.) and will also honor all of the conditions in the Order of Conditions for the Project (see Attachment D). In compliance with the Boston Wetlands Ordinance, abutters within 300 feet of the Project Site have been notified of this request for an Amended Order of Conditions (Attachment E), and the locally-jurisdictional Waterfront Area has been added to the wetland resources figure (Attachment A).

We respectfully request that the Commission consider this request at its next regularly scheduled public hearing. Please do not hesitate to contact me should you have any questions or need additional information.

Sincerely,

Vanasse Hangen Brustlin, Inc.

Stephanie Kruel

Stephanie Kruel

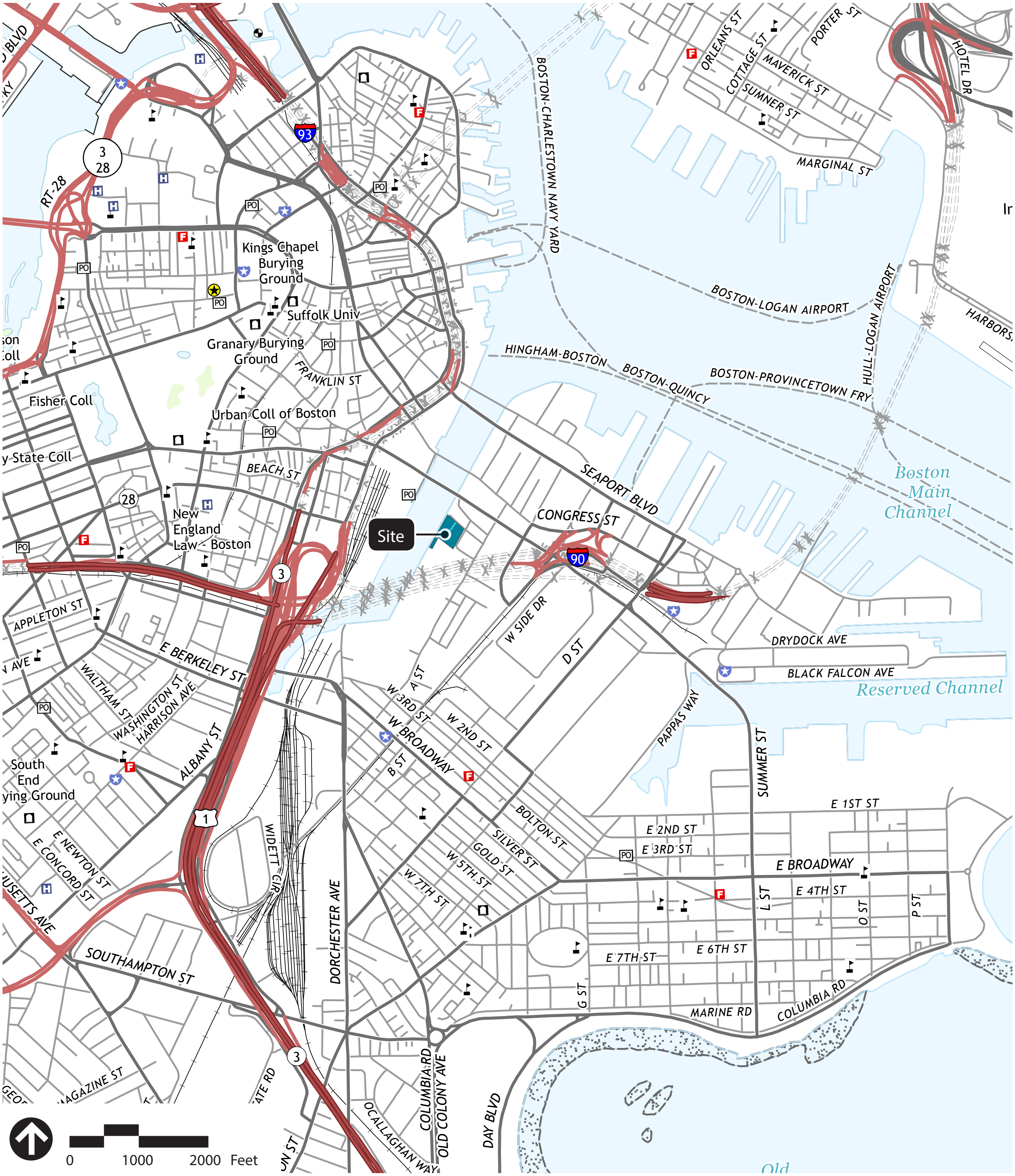
Senior Environmental Planner
skruel@vhb.com

Attachment A – Updated Figures
Attachment B – Project Plans
Attachment C – Updated Stormwater Report
Attachment D – Previously Issued Order of Conditions
Attachment E – Abutter Notification Materials
Attachment F – Filing Fee & Extension Form

Cc: MassDEP NERO - NERO_NOI@mass.gov

Attachment A
Updated Figures

- Figure 1 – Site Location Map
- Figure 2 – Project Area Context
- Figure 3 – Wetland Resource Areas
- Figure 4 – FEMA Special Flood Hazard Area
- Figure 5 – Previously Proposed Project
- Figure 6 – Currently Proposed Project
- Figure 7 – Resiliency Plan



Source: USGS 2018 Digital Topo

Project Site

Prepared By: VHB

Figure 1

Site Location Map

Boston, Massachusetts

Source: ArcGIS Online Bing Aerial

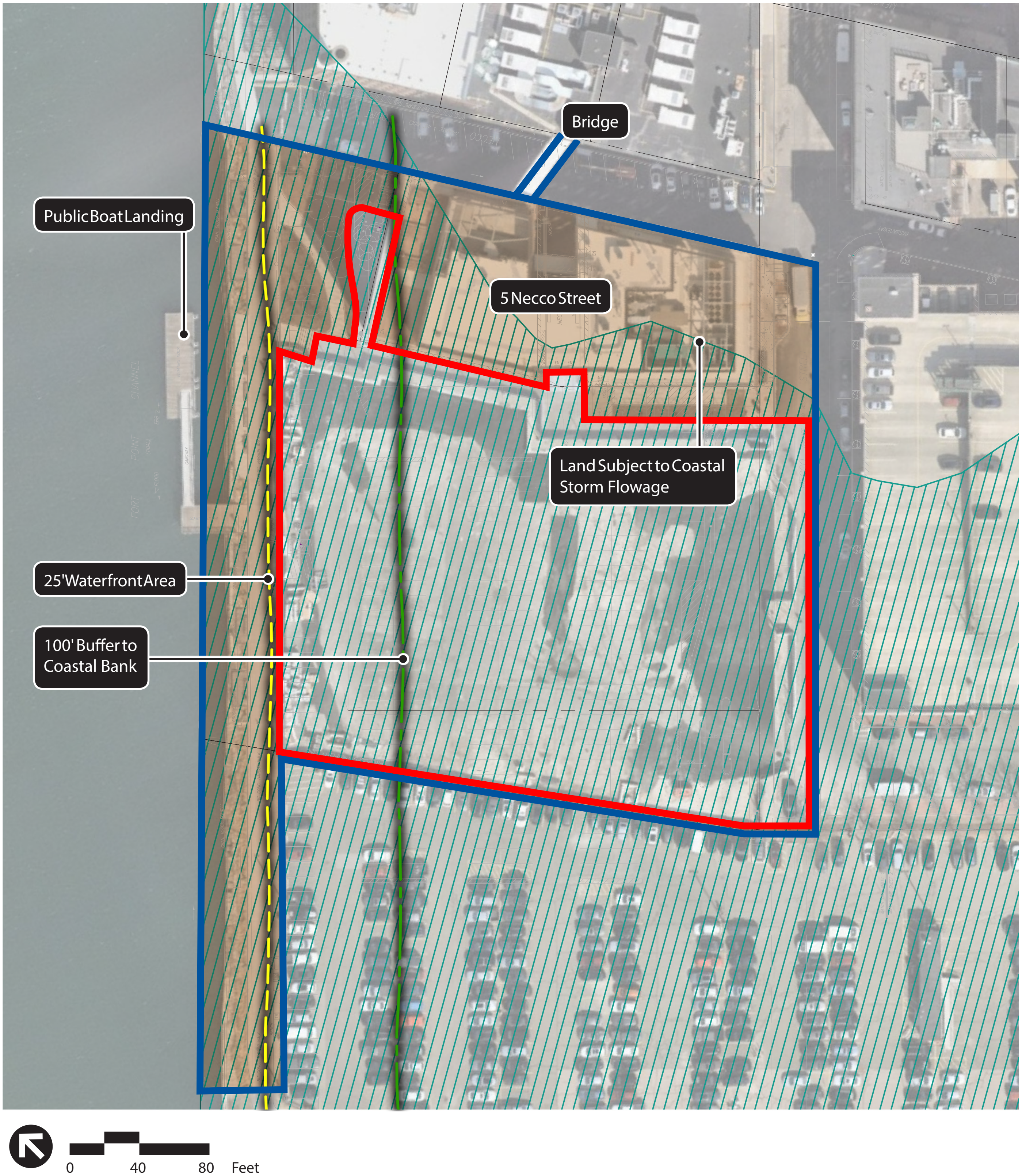
Project Site

Prepared By: VHB

Figure 2

Project Area Context

Boston, Massachusetts



Source: Feldman Land Surveyors; Nearmap Aerial 03/09/2020

- Project Site
- Subject of Amended OOC
- Subject of Partial COC
- Land Subject to Coastal Storm Flowage
- 100' Buffer to Coastal Bank
- 25' Waterfront Area

Prepared By: VHB

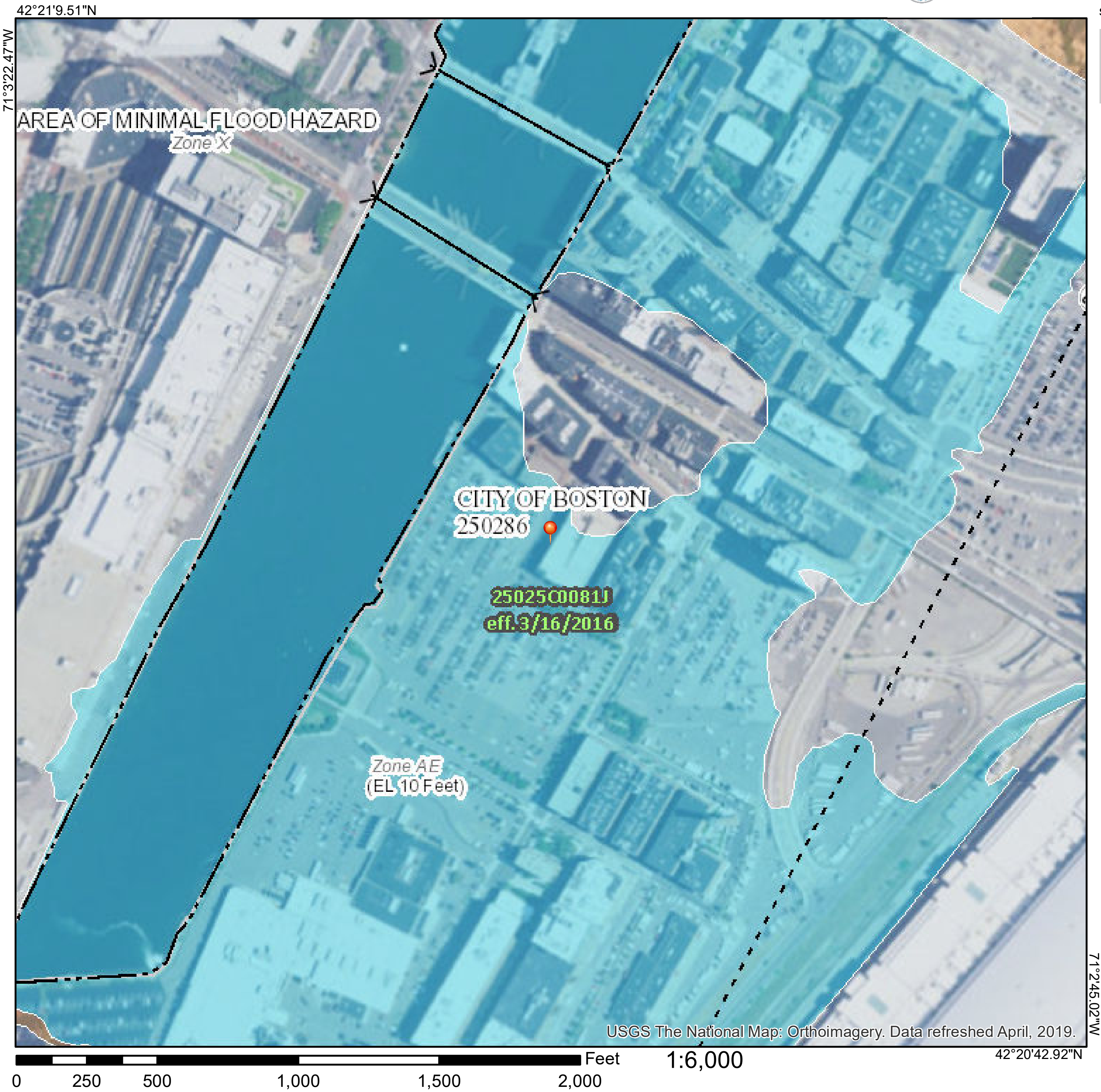
Figure 3

Wetland Resource Areas

Boston, Massachusetts

National Flood Hazard Layer FIRMette

FEMA



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

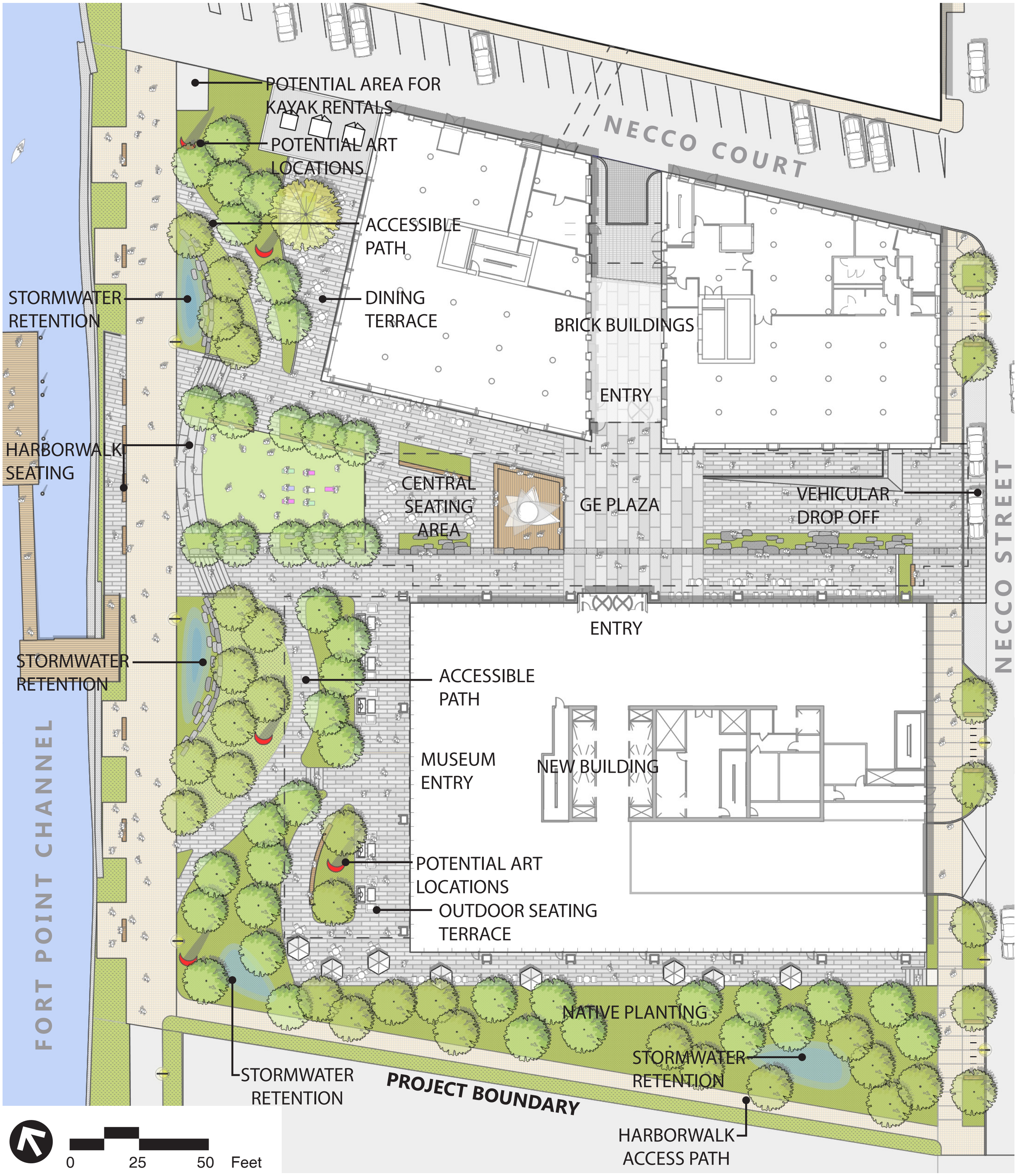
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below.
The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 5/12/2020 at 2:09:51 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Figure 4
FEMA Special Flood Hazard Area



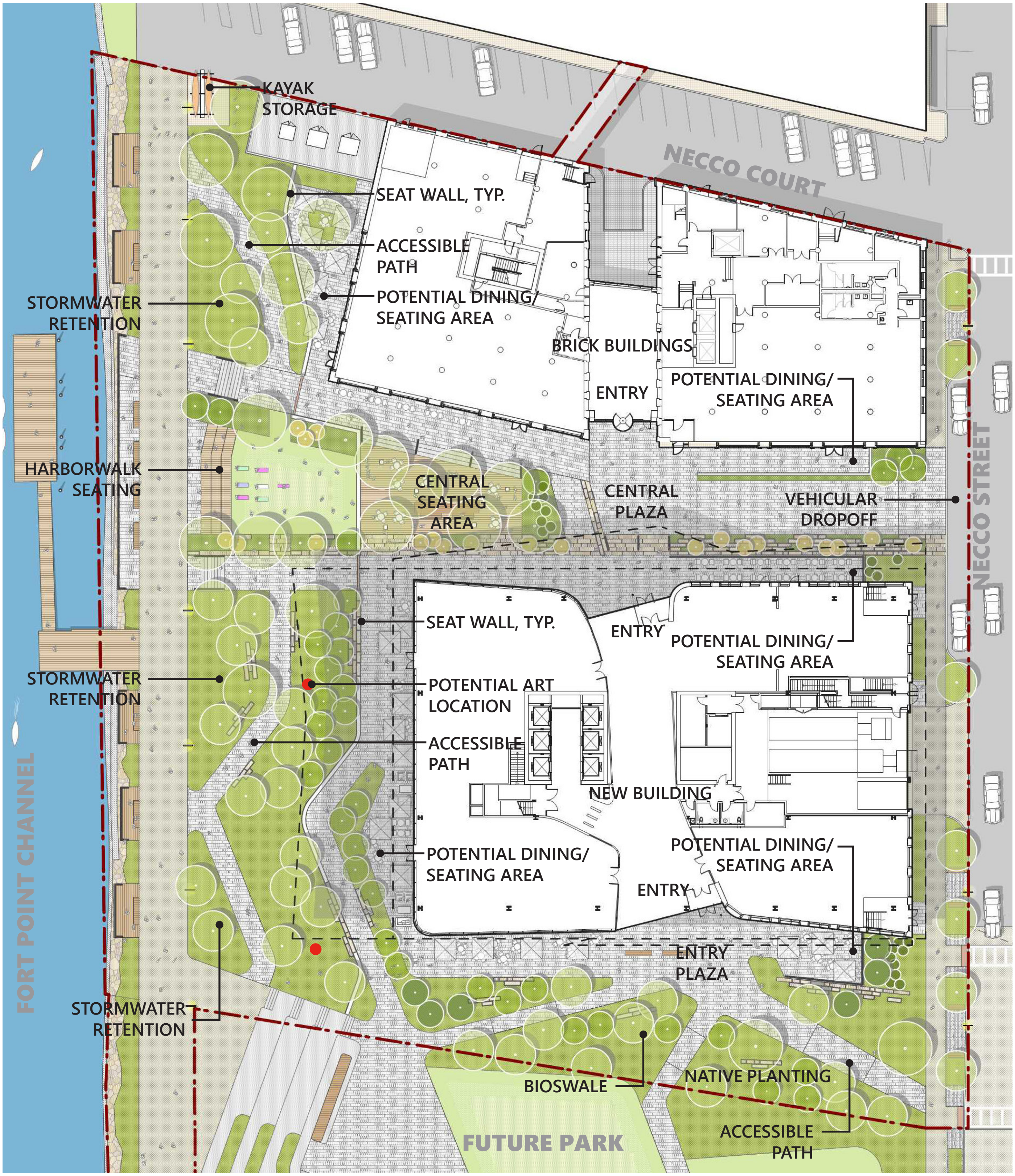
Source: OJB

Prepared By: VHB

Figure 5

Previously Approved Project

15 Necco Street Project
Boston, Massachusetts



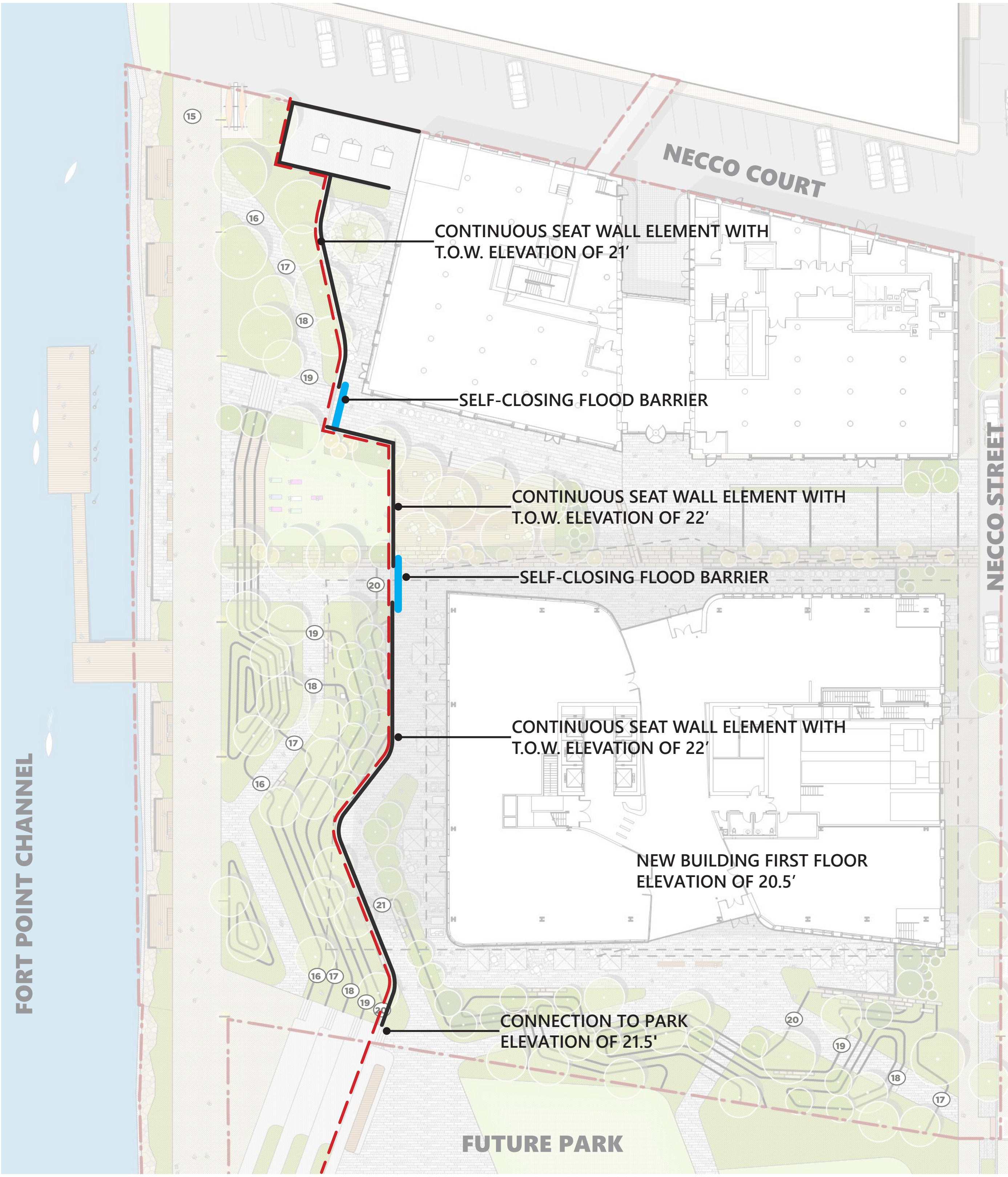
Source: OJB

Prepared By: VHB

Figure 6

Currently Proposed Project

15 Necco Street Project
Boston, Massachusetts



Source: OJB
Elevation Datum = Boston City Base

Prepared By: VHB

Figure 7

Resiliency Plan

15 Necco Street Project
Boston, Massachusetts

Attachment B
Project Plans

- Existing Conditions Plan
- Sheet C200 – Erosion and Sedimentation Controls
- Sheet C400 – Layout
- Sheet C500 – Grading & Drainage Plan
- Sheet C600 – Utility Plan
- Sheet L600A-B – Planting Schedule
- Sheet L601-602 – Planting Plan

NOTES:

1) TEMPORARY BENCH MARKS USED:

TBM-4: X-CUT ON HYDRANT BOLT IN FRONT OF 50 MELCHER STREET.
ELEVATION = 20.99 (FLS JOB NO. 13991)

TEMPORARY BENCH MARKS SET:

TBM-A: X-CUT SET SET ION THE FRONT LEFT BOLT OF A HYDRANT ON THE NORTHWESTERLY SIDE OF NECCO STREET AT THE INTERSECTION OF THE NORTHEASTERLY SIDE OF NECCO COURT, AS SHOWN HEREON.
ELEVATION = 21.11

2) ELEVATIONS REFER TO BOSTON CITY BASE (BCB).

3) CONTOUR INTERVAL EQUALS ONE (1) FOOT.

4) BY GRAPHIC PLOTTING ONLY, THE PARCEL SHOWN HEREON LIES WITHIN A ZONE "X" (UNSHADED), AN AREA OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOOD, AND A ZONE AE, AN AREA WITHIN THE 1% ANNUAL CHANCE FLOOD, AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY (F.E.M.A) FLOOD INSURANCE RATE MAP (F.I.R.M.) FOR SUFFOLK COUNTY, MASSACHUSETTS, MAP NUMBER 25025C0081J, CITY OF BOSTON, HAVING AN EFFECTIVE DATE OF MARCH 16, 2016.

5) THIS DOCUMENT IS AN INSTRUMENT OF SERVICE OF FELDMAN LAND SURVEYORS ISSUED TO OUR CLIENT FOR PURPOSES RELATED DIRECTLY AND SOLELY TO FELDMAN LAND SURVEYORS' SCOPE OF SERVICES UNDER CONTRACT TO OUR CLIENT FOR THIS PROJECT. ANY USE OR REUSE OF THIS DOCUMENT FOR ANY REASON BY ANY PARTY FOR PURPOSES UNRELATED DIRECTLY AND SOLELY TO SAID CONTRACT SHALL BE AT THE USER'S SOLE AND EXCLUSIVE RISK AND LIABILITY, INCLUDING LIABILITY FOR VIOLATION OF COPYRIGHT LAWS, UNLESS WRITTEN CONSENT IS PROVIDED BY FELDMAN LAND SURVEYORS.

6) UTILITY INFORMATION SHOWN IS BASED ON BOTH A FIELD SURVEY AND PLANS OF RECORD. THE LOCATIONS OF UNDERGROUND PIPES AND CONDUITS HAVE BEEN DETERMINED FROM THE AFOREMENTIONED RECORD PLANS AND ARE APPROXIMATE ONLY. WE CANNOT ASSUME RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES THAT ARE OMITTED OR INACCURATELY SHOWN ON SAID RECORD PLANS, SINCE SUBSURFACE UTILITIES CANNOT BE VISIBLY VERIFIED. BEFORE PLANNING FUTURE CONNECTIONS, THE PROPER UTILITY ENGINEERING DEPARTMENT SHOULD BE CONSULTED AND THE ACTUAL LOCATION OF SUBSURFACE STRUCTURES SHOULD BE DETERMINED IN THE FIELD. CALL, TOLL FREE, THE DIG SAFE CALL CENTER AT 1-888-344-7233 SEVENTY-TWO HOURS PRIOR TO EXCAVATION.

LEGEND

WATER METER
ELECTRIC METER
SEWER MANHOLE
DRAIN MANHOLE
ELECTRIC MANHOLE
TELEPHONE MANHOLE
MANHOLE
HYDRANT
WATER SHUT OFF/WATER GATE
BOSTON WATER VALVE
CATCH BASIN
TRAFFIC CONTROL BOX
LIGHT POLE
ELECTRIC HANDHOLE
SO ······ SHUT OFF (UNKNOWN)
BOLLARD
SIGN
AD ······ AREA DRAIN
ECB ······ EMERGENCY CALL BOX
CO ······ CLEAN OUT
FA ······ FIRE ALARM
PM ······ PARKING METER
WALK LIGHT
SECURITY CAMERA
SP ······ STAND PIPE/SIAMESE CONNECTION
OBSERVATION WELL
SPG ······ SPIGOT
[X.X'] ······ BUILDING DIMENSION
SQ. FT. ······ SQUARE FEET

TRANSFORMER
TR ······ TRASH RECEPTACLE
HANDICAP PARKING SPACE
DECIDUOUS TREE
HANDICAP RAMP
GP ······ GATE POST
ICV ······ IRRIGATION CONTROL VALVE
CURB RETURN
Z ······ INDICATES COMMON OWNERSHIP
—D— DRAIN
—E— ELECTRIC
—G— GAS
—S— SEWER
—T— TELEPHONE
—W— WATER
—C— CABLE TELEVISION
—SC— SECURITY AND COMMUNICATIONS
—12"D(CI)— PIPE SIZE AND MATERIAL
—PVC— POLYVINYL CHLORIDE
—RCP— REINFORCED CONCRETE PIPE
—VCP— VITRIFIED CLAY PIPE
—DI— DUCTILE IRON PIPE
—DSE— DIGSAFE ELECTRIC
—DSG— DIGSAFE GAS
—X—X— METAL FENCE
—o—o—o— WROUGHT IRON FENCE

AWN ······ AWNING
BCB ······ BIT. CONC. BERM
BIT ······ BITUMINOUS
BOT= ······ BOTTOM ELEVATION
(C) ······ CALCULATED
CHB ······ CHORD BEARING
CHD ······ CHORD DISTANCE
CLF ······ CHAIN LINK FENCE
CONC ······ CONCRETE
Δ= ······ DELTA ANGLE
DH ······ DRILL HOLE
ENT ······ ENTRANCE
FOD ······ FULL OF DEBRIS
GRW ······ GRANITE RETAINING WALL
GRN ······ GRANITE
I= ······ INVERT ELEVATION
INACC. ······ INACCESSIBLE
JBAR ······ JERSEY BARRIER
L= ······ ARC LENGTH
M&S ······ MULCH & SHRUBS
NVP ······ NO VISIBLE PIPES
NTS ······ NOT TO SCALE
R= ······ RIM ELEVATION
(R) ······ RECORD
REC ······ RECORD
TBM ······ TEMPORARY BENCH MARK
TC ······ TOP OF CURB
TOD ······ TOP OF DEBRIS
TOW ······ TOP OF WATER
TR= ······ CENTERLINE OF TROUGH
TT= ······ TOP OF TRAP
TW ······ TOP OF WALL
VGC ······ VERTICAL GRANITE CURB
WIF ······ WROUGHT IRON FENCE
BK ······ BACK
TYP. ······ TYPICAL

I CERTIFY THAT THIS PLAN IS BASED ON AN ACTUAL FIELD SURVEY.

TIMOTHY R. AGURKIS, PLS (MA# 52782)
TRA@FELDMANSURVEYORS.COM

02/04/2021
DATE

COMMONWEALTH OF MASSACHUSETTS TIMOTHY R. AGURKIS No.52782 REGISTERED PROFESSIONAL LAND SURVEYOR

EXISTING CONDITIONS PLAN
NECCO STREET AND NECCO COURT
BOSTON, MASS.

FELDMAN LAND SURVEYORS
112 SHAWMUT AVENUE
BOSTON, MASS. 02118

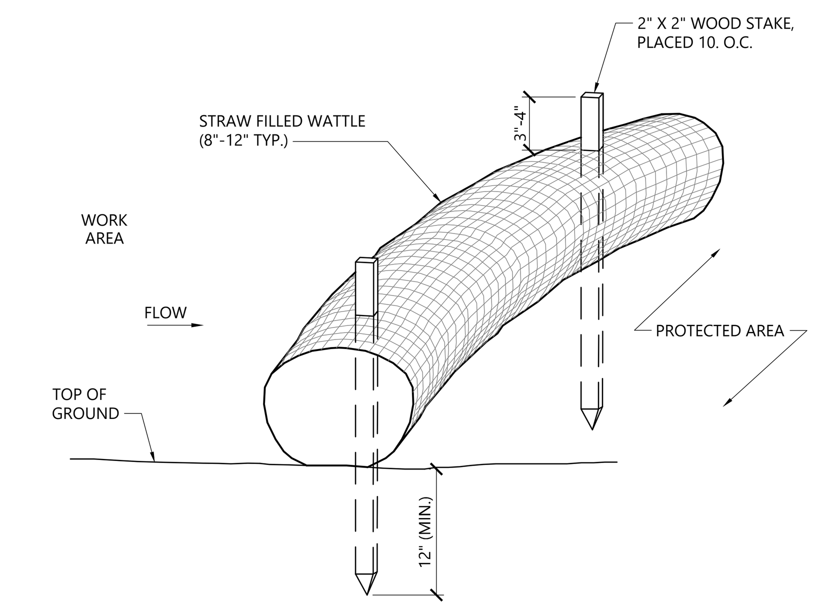
DECEMBER 23, 2020
PHONE: (617)357-9740
www.feldmansurveyors.com

FELDMAN LAND SURVEYORS

20 0 10 20 40 80
SCALE: 1"=20'

RESEARCH TRA	FIELD CHIEF JM	PROJ MGR TRA	APPROVED	SHEET NO. 1 OF 1
CALC TRA	CADD TRA/MDH	FIELD CHECKED	CRD FILE	JOB NO. 17791

FILENAME: S:\PROJECTS\17700\17791\DWG\17791-EC.dwg



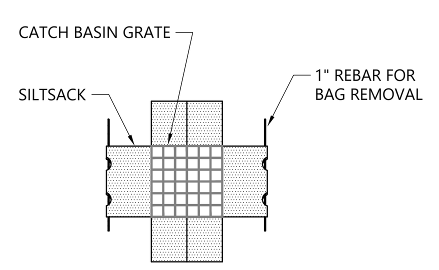
NOTES

1. STRAW WATTLE SHALL BE AS MANUFACTURED BY EARTHSAVER OR APPROVED EQUAL.
2. STRAW WATTLES SHALL OVERLAP A MINIMUM OF 12 INCHES.
3. STRAW WATTLE SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS, AND REPAIR OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED.
4. TEMPORARY STRAW WATTLES TO BE REMOVED BY CONTRACTOR. ALL OTHERS TO REMAIN IN PLACE UNLESS DIRECTED OTHERWISE BY ENGINEER.
5. IF NON BIODEGRADABLE NETTING IS USED THE NETTING SHALL BE COLLECTED AND DISPOSED OF OFFSITE.

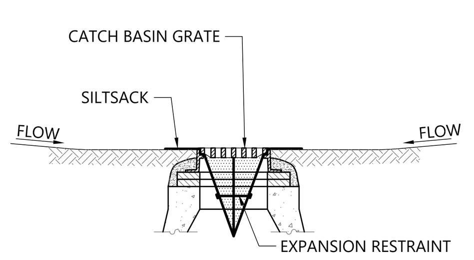
Straw Wattle - Erosion Control Barrier

1/16

N.T.S. Source: VHB LD_659



PLAN VIEW



SECTION VIEW

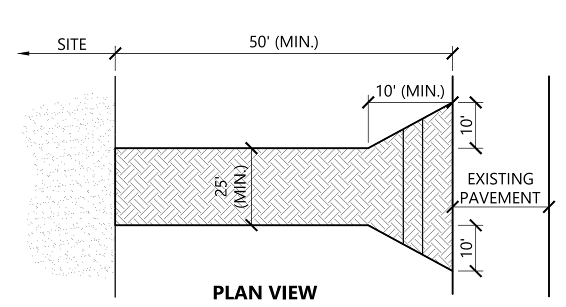
NOTES

1. INSTALL SILTSACK IN ALL CATCH BASINS WHERE INDICATED ON THE PLAN BEFORE COMMENCING WORK OR IN PAVED AREAS AFTER BINDER COURSE IS PLACED AND HAY BALES HAVE BEEN REMOVED.
2. GRATE TO BE PLACED OVER SILTSACK.
3. SILTSACK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND CLEANING OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED. MAINTAIN UNTIL UPSTREAM AREAS HAVE BEEN PERMANENTLY STABILIZED

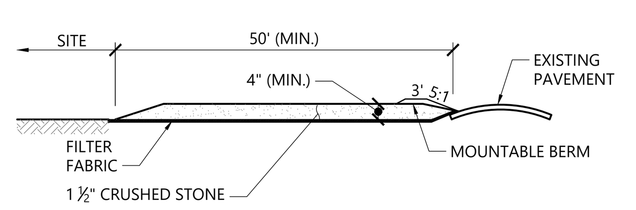
Siltsack Sediment Trap

1/16

N.T.S. Source: VHB LD_674



PLAN VIEW



CROSS-SECTION

NOTES

1. EXIT WIDTH SHALL BE A TWENTY-FIVE (25) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
2. THE EXIT SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY. BERM SHALL BE PERMITTED. PERIODIC INSPECTION AND MAINTENANCE SHALL BE PROVIDED AS NEEDED.
3. STABILIZED CONSTRUCTION EXIT SHALL BE REMOVED PRIOR TO FINAL FINISH MATERIALS BEING INSTALLED.

Stabilized Construction Exit

1/16

N.T.S. Source: VHB LD_682

General Notes

1. PRIOR TO STARTING ANY OTHER WORK ON THE SITE, THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES AND SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS IDENTIFIED IN FEDERAL, STATE, AND LOCAL APPROVAL DOCUMENTS PERTAINING TO THIS PROJECT.
2. CONTRACTOR SHALL INSPECT AND MAINTAIN EROSION CONTROL MEASURES, AND REMOVE SEDIMENT THEREFROM ON A WEEKLY BASIS AND WITHIN TWELVE HOURS AFTER EACH STORM EVENT AND DISPOSE OF SEDIMENTS IN AN UPLAND AREA SUCH THAT THEY DO NOT ENCUMBER OTHER DRAINAGE STRUCTURES AND PROTECTED AREAS.
3. CONTRACTOR SHALL BE FULLY RESPONSIBLE TO CONTROL CONSTRUCTION SUCH THAT SEDIMENTATION SHALL NOT AFFECT REGULATORY PROTECTED AREAS, WHETHER SUCH SEDIMENTATION IS CAUSED BY WATER, WIND, OR DIRECT DEPOSIT.
4. CONTRACTOR SHALL PERFORM CONSTRUCTION SEQUENCING SUCH THAT EARTH MATERIALS ARE EXPOSED FOR A MINIMUM AMOUNT OF TIME BEFORE THEY ARE COVERED, SEEDED, OR OTHERWISE STABILIZED TO PREVENT EROSION.
5. CONTRACTOR SHALL KEEP RECORDS OF CONFORMANCE WITH ALL EROSION AND SEDIMENTATION CONTROL MEASURES AS REQUIRED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA) UNDER A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) OR AS REQUIRED AS PART OF THE LEADERS IN ENERGY AND ENVIRONMENTAL DESIGN (LEED) PROCESS.
6. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER, CONTRACTOR SHALL REMOVE AND DISPOSE OF EROSION CONTROL MEASURES AND CLEAN SEDIMENT AND DEBRIS FROM ENTIRE DRAINAGE AND SEWER SYSTEMS.
7. CONTRACTOR TO COORDINATE TEMPORARY SOIL STOCKPILE LOCATIONS WITH OWNER PRIOR TO CONSTRUCTION. STOCKPILES ARE TO BE OUTSIDE LIMIT OF EXISTING DRAINAGE INLETS, LOCATED ON EXISTING PAVEMENT WITH POLY LAYER UNDERNEATH, STOCKPILE TO BE COVERED WITH POLY LAYER AND SURROUNDED WITH EROSION CONTROL BARRIER (TYP).

ELKUS | MANFREDI ARCHITECTS

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COMMONWEALTH OF MASSACHUSETTS
WILLIAM J. NICHOLS
CIVIL
NO. 52227
REGISTERED PROFESSIONAL ENGINEER

8 JANUARY 2021

Design Development Package

NOT FOR CONSTRUCTION

PROJECT NUMBER: 13421.02

DATE: 8 JANUARY 2021

REVISIONS:

SEE PREVIOUS ISSUES FOR REVISIONS NOT LISTED HERE

SCALE:

DRAWING NAME:

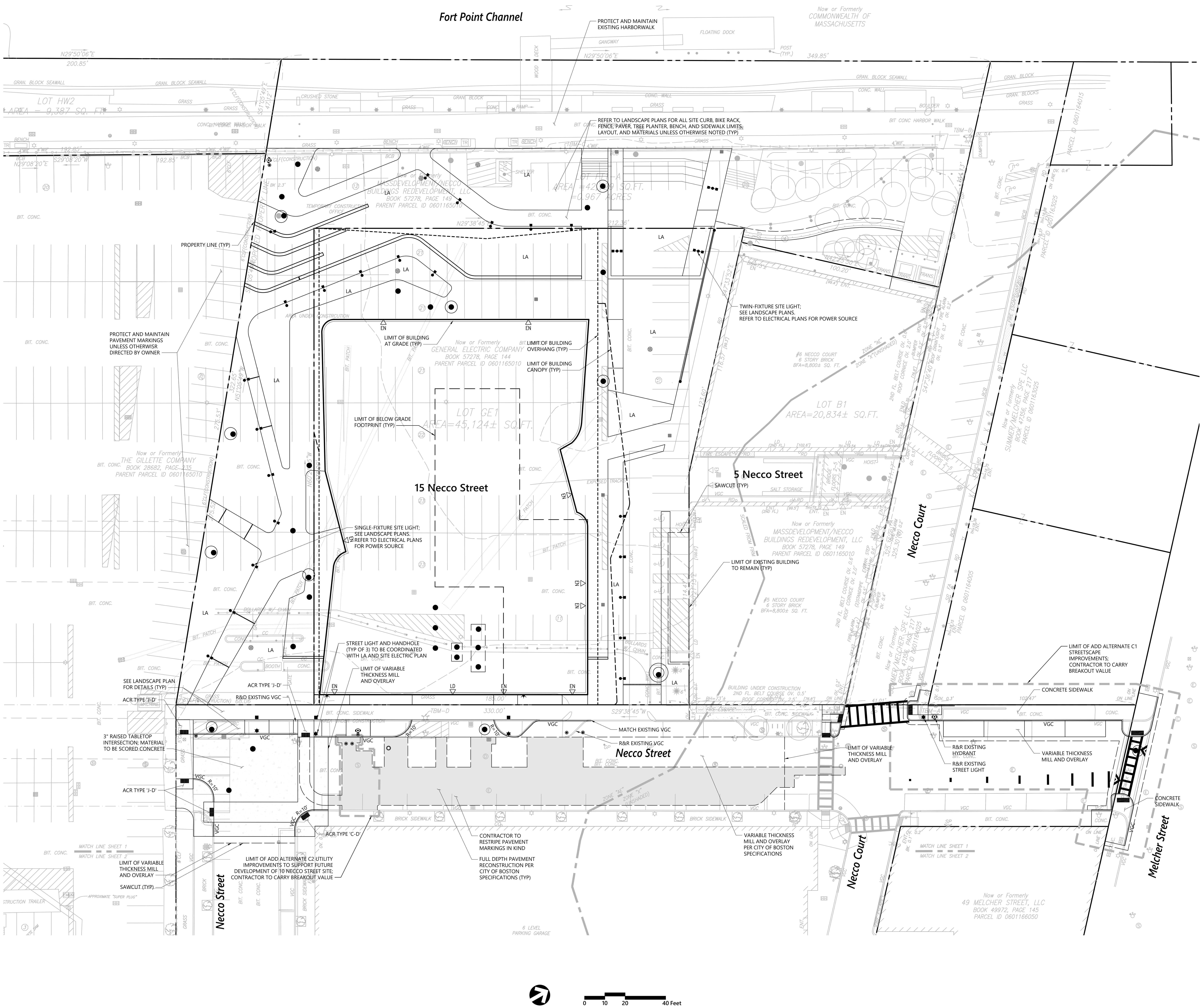
EROSION AND SEDIMENTATION CONTROL PLAN

DRAWING NUMBER:

C200

Notes:

1. PLEASE BE ADVISED THAT, AS OF THE DATE OF THIS PLAN ISSUANCE, THE SITE IMPROVEMENTS SHOWN ON THIS PLAN WITHIN THE PUBLIC RIGHT-OF-WAYS ARE SUBJECT TO FINAL DESIGN APPROVAL BY ALL RELEVANT CITY AGENCIES, BUT NOT LIMITED TO, THE BOSTON PUBLIC WORKS DEPARTMENT (BPWD), THE BOSTON WATER AND SEWER COMMISSION (BWSC), BOSTON'S INSPECTIONAL SERVICE DEPARTMENT (ISD), THE BOSTON TRANSPORTATION DEPARTMENT (BTD), AND THE BOSTON PUBLIC IMPROVEMENT COMMISSION (PIC). THE CONTRACTOR SHALL COORDINATE WITH THE PROJECT SITE/CIVIL ENGINEER PRIOR TO COMMENCEMENT OF SITE CONSTRUCTION ACTIVITIES TO ASCERTAIN ANY DESIGN UPDATES IN RESPONSE TO MUNICIPAL DESIGN REVIEWS.



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15 NECCO ST.

Boston, MA 02210

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Architect
Elkus Manfredi Architects
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Boston / MA / 02210
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MEPFP Engineer
BR+A Consulting Engineers
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8 JANUARY 2021
Design Development Package
NOT FOR CONSTRUCTION

PROJECT NUMBER: 13421.02

DATE: 8 JANUARY 2021

REVISIONS:

SEE PREVIOUS ISSUES FOR REVISIONS NOT LISTED HERE

SCALE:

DRAWING NAME:

LAYOUT AND MATERIALS PLAN

DRAWING NUMBER:

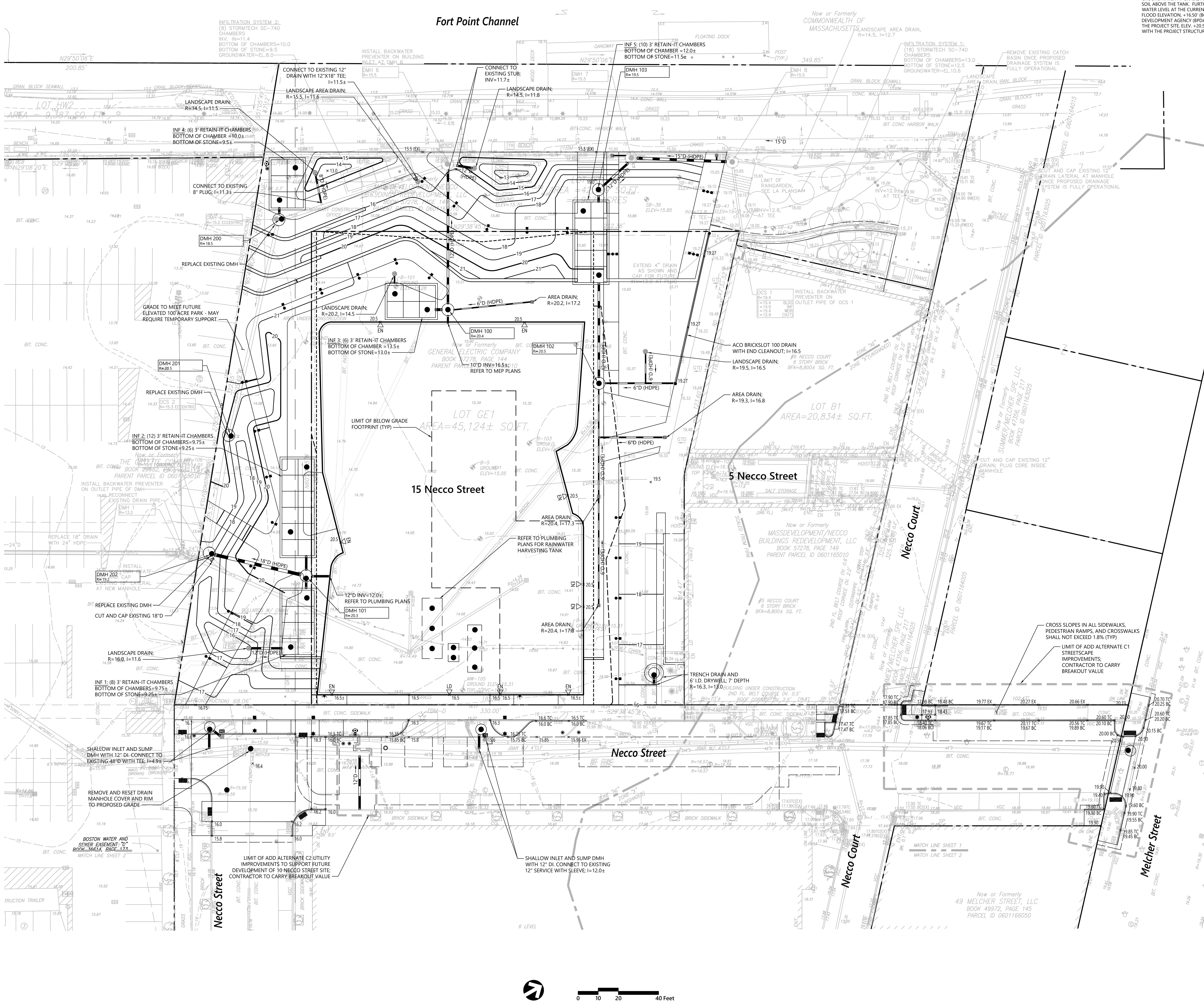
C400

10/3/2019 1:18:35 PM

Notes:

1. PLEASE BE ADVISED THAT, AS OF THE DATE OF THIS PLAN ISSUANCE, THE SITE IMPROVEMENTS SHOWN ON THIS PLAN WITHIN THE PUBLIC RIGHT-OF-WAYS ARE SUBJECT TO FINAL DESIGN APPROVAL BY ALL RELEVANT CITY AGENCIES, BUT NOT LIMITED TO, THE BOSTON PUBLIC WORKS DEPARTMENT (BPWD), THE BOSTON WATER AND SEWER COMMISSION (BWSC), BOSTON'S INSPECTIONAL SERVICE DEPARTMENT (ISD), THE BOSTON TRANSPORTATION DEPARTMENT (BTD), AND THE BOSTON PUBLIC IMPROVEMENT COMMISSION (PIC). THE CONTRACTOR SHALL COORDINATE WITH THE PROJECT SITE/CIVIL ENGINEER PRIOR TO COMMENCEMENT OF SITE CONSTRUCTION ACTIVITIES TO ASCERTAIN ANY DESIGN UPDATES IN RESPONSE TO MUNICIPAL DESIGN REVIEWS.

2. STRUCTURAL CALCULATIONS FOR ANTI-FLOTATION SLABS OR DEVICES ASSOCIATED WITH THE PROPOSED GREASE TRAP AND RAINWATER HARVESTING TANK SHALL BE FURNISHED BY THE CONTRACTOR AND/OR ITS SUBCONTRACTOR(S) FOR APPROVAL AND IN ACCORDANCE WITH SPECIFIC DESIGN CRITERIA FURNISHED. A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MASSACHUSETTS SHALL PREPARE THESE CALCULATIONS. AT A MINIMUM, CALCULATIONS SHOULD CONSIDER DEAD, LIVE, SOIL, AND HYDROSTATIC LOADS, GROUNDWATER AT GRADE, AN EMPTY TANK, AND CONSTRUCTION CONDITION WITH NO SOIL ABOVE THE TANK. FURTHER, ANTI-BUOYANCY CALCULATIONS SHOULD CONSIDER THE WATER LEVEL AT THE CURRENT FEMA SPECIAL FLOOD HAZARD AREA (SFHA) ZONE BASE FLOOD ELEVATION, +16.50' (BOSTON CITY BASE), AND THE BOSTON PLANNING & DEVELOPMENT AGENCY (BPDA) SEA LEVEL RISE - DESIGN FLOOD ELEVATION (SLR-DFE) FOR THE PROJECT SITE, ELEV. +20.5' (BOSTON CITY BASE). THE DESIGN SHALL BE COORDINATED WITH THE PROJECT STRUCTURAL AND GEOTECHNICAL ENGINEERS.



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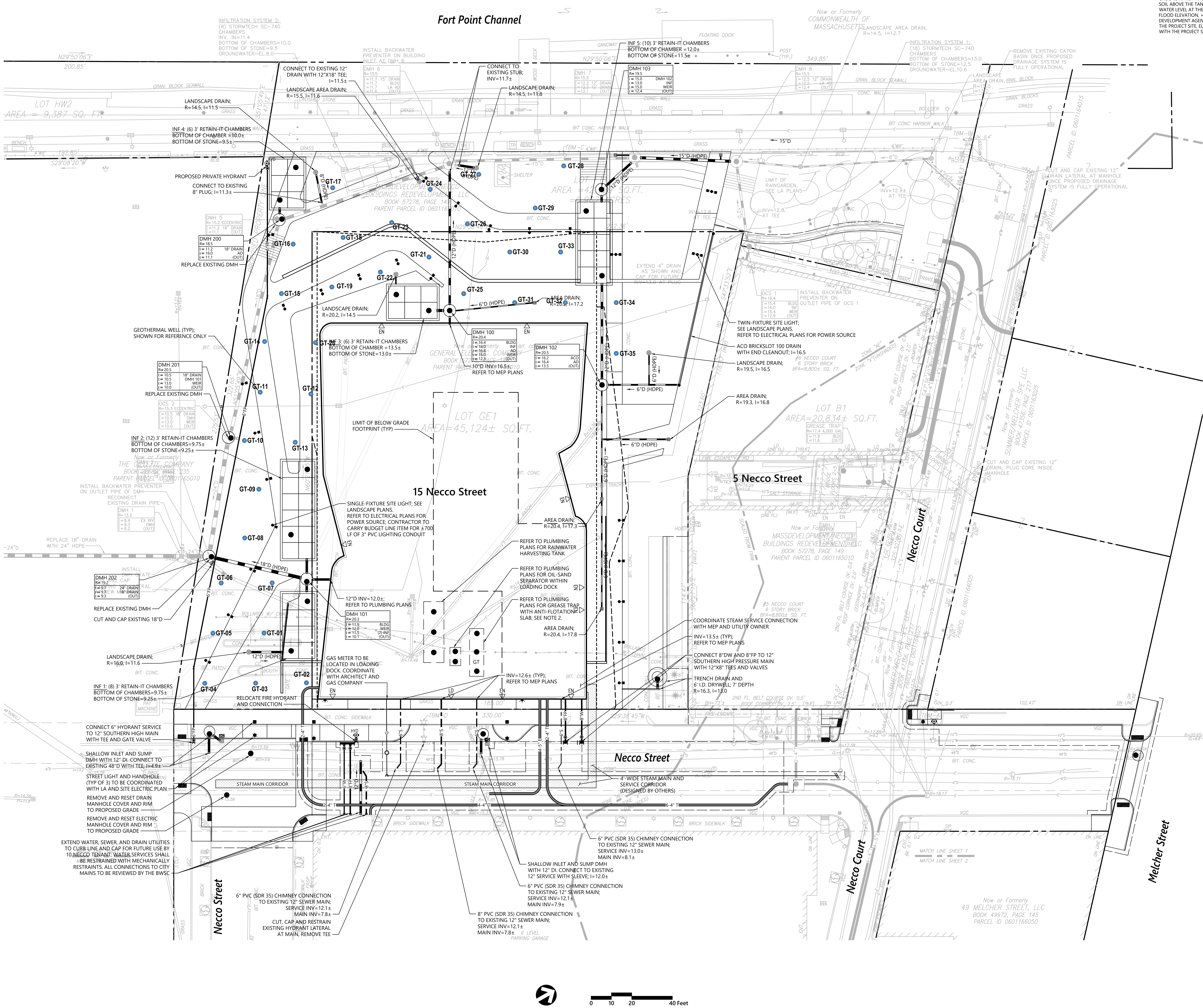
DRAWING NAME:

GRADING AND DRAINAGE PLAN

DRAWING NUMBER:

C500



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COMMONWEALTH OF MASSACHUSETTS
WILLIAM J. NICHOLS
CIVIL
NO. 52227
REGISTERED PROFESSIONAL ENGINEER

8 JANUARY 2021
Design Development Package
NOT FOR CONSTRUCTION

PROJECT NUMBER: 13421.02

DATE: 8 JANUARY 2021

REVISIONS:

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SCALE:

DRAWING NAME:
UTILITY PLAN

DRAWING NUMBER:
C600

PLANTING SCHEDULE

TREES

SYMBOL	QTY	LATIN NAME	COMMON NAME	SIZE	SPACING	CONDITION	NOTES
AA	PER PLANS	Amelanchier arborea	SERVICEBERRY	12'-14' HT	PER PLAN	B&B	MULT-STEM, MATCHED SPECIMENS, CROWN AND BRANCHING TYPICAL OF SPECIES
AC	PER PLANS	Amelanchier canadensis	SERVICEBERRY	12'-14' HT	PER PLAN	B&B	MULT-STEM, MATCHED SPECIMENS, CROWN AND BRANCHING TYPICAL OF SPECIES
AG	PER PLANS	Amelamchier x grandiflora 'Autumn Brilliance'	AUTUMN BRILLIANCE SERVICEBERRY	12'-14' HT	PER PLAN	B&B	MULT-STEM, MATCHED SPECIMENS, CROWN AND BRANCHING TYPICAL OF SPECIES
BP	PER PLANS	Betula populifolia 'Whitespire'	WHITESPIRE GREY BIRCH	12'-14' HT	PER PLAN	B&B	MULT-STEM, MATCHED SPECIMENS, CROWN AND BRANCHING TYPICAL OF SPECIES
GT	PER PLANS	Gleditsia triacanthos var. inermis 'Skyline'	SKYLINE HONEYLOCUST	4" CAL	PER PLAN	B&B	MATCHED SPECIMENS, CROWN AND BRANCHING TYPICAL OF SPECIES, LIMBED UP TO 6'
HI	PER PLANS	Hamamelis x intermedia 'Arnold Promise'	ARNOLD PROMISE WITCH HAZEL	6'-8' HT	PER PLAN	B&B	MATCHED SPECIMENS, CROWN AND BRANCHING TYPICAL OF SPECIES
JV	PER PLANS	Juniperus virginiana	COMMON JUNIPER	TBD	PER PLAN	B&B	MATCHED SPECIMENS, CROWN AND BRANCHING TYPICAL OF SPECIES
MV	PER PLANS	Magnolia virginiana	SWEETBAY MAGNOLIA	TBD	PER PLAN	B&B	MATCHED SPECIMENS, CROWN AND BRANCHING TYPICAL OF SPECIES
NS	PER PLANS	Nyssa sylvatica	BLACK TUPELO	6" CAL	PER PLAN	B&B	MATCHED SPECIMENS, CROWN AND BRANCHING TYPICAL OF SPECIES, LIMBED UP TO 6'
PR	PER PLANS	Pinus rigida	PITCH PINE	TBD	PER PLAN	B&B	MATCHED SPECIMENS, CROWN AND BRANCHING TYPICAL OF SPECIES, FULL TO GROUND
PT	PER PLANS	Pinus thunbergii	JAPANESE BLACK PINE	18'-20' HT	PER PLAN	B&B	MATCHED SPECIMENS, CROWN AND BRANCHING TYPICAL OF SPECIES, FULL TO GROUND
QB1	PER PLANS	Quercus bicolor	SWAMP WHITE OAK	6" CAL	PER PLAN	B&B	MATCHED SPECIMENS, CROWN AND BRANCHING TYPICAL OF SPECIES, LIMBED UP TO 6'
QB2	PER PLANS	Quercus bicolor	SWAMP WHITE OAK	4" CAL	PER PLAN	B&B	MATCHED SPECIMENS, CROWN AND BRANCHING TYPICAL OF SPECIES, LIMBED UP TO 6'
QP1	PER PLANS	Quercus palustris	PIN OAK	8" CAL	PER PLAN	B&B	MATCHED SPECIMENS, CROWN AND BRANCHING TYPICAL OF SPECIES, LIMBED UP TO 6'
QP2	PER PLANS	Quercus palustris	PIN OAK	5" CAL	PER PLAN	B&B	MATCHED SPECIMENS, CROWN AND BRANCHING TYPICAL OF SPECIES, LIMBED UP TO 6'

COASTAL BANK UNDERSTORY SPECIES

SHRUBS

SYMBOL	QTY	LATIN NAME	COMMON NAME	SIZE	SPACING	CONDITION	NOTES
AAR	TBD	Aronia arbutifolia	RED CHOKEBERRY	4-6' HT	PER PLAN	B&B	FULL, DENSE, MATCHED SPECIMENS
AME	TBD	Aronia melanocarpa	BLACK CHOKEBERRY	4-6' HT	PER PLAN	B&B	FULL, DENSE, MATCHED SPECIMENS
BHA	TBD	Baccaris halimifolia	EASTERN BACCHARIS	TBD	PER PLAN	CONT	FULL, DENSE, MATCHED SPECIMENS
CAL	TBD	Clethra alnifolia	SWEET PEPPERBUSH	TBD	PER PLAN	CONT	FULL, DENSE, MATCHED SPECIMENS
CAM	TBD	Ceanothus americanus	NEW JERSEY TEA	TBD	PER PLAN	CONT	FULL, DENSE, MATCHED SPECIMENS
COC	TBD	Cophalanthus occidentalis	BUTTON BUSH	TBD	PER PLAN	CONT	FULL, DENSE, MATCHED SPECIMENS
CST	TBD	Cornus sericea	REDOSIER DOGWOOD	TBD	PER PLAN	CONT	FULL, DENSE, MATCHED SPECIMENS
DLO	TBD	Diervilla lonicera	BUSH HONEYSUCKLE	TBD	PER PLAN	CONT	FULL, DENSE, MATCHED SPECIMENS
IVE	TBD	Ilex verticillata	WINTERBERRY	3-4' HT	PER PLAN	CONT	FULL, DENSE, MATCHED SPECIMENS
KLA	TBD	Kalmia latifolia	MOUNTAIN LAUREL	TBD	PER PLAN	CONT	FULL, DENSE, MATCHED SPECIMENS
LBE	TBD	Lindera benzoin	SPICE BUSH	TBD	PER PLAN	CONT	FULL, DENSE, MATCHED SPECIMENS
MPE	TBD	Myrica pensylvanica	NORTHERN BAYBERRY	TBD	PER PLAN	B&B	FULL, DENSE, MATCHED SPECIMENS, UNSHEARED
RTY	TBD	Rhus typhina	STAGHORN SUMAC	4-6' HT	PER PLAN	B&B	FULL, DENSE, MATCHED SPECIMENS
RVI	TBD	Rhododendron viscosum	SWAMP AZALEA	TBD	PER PLAN	CONT	FULL, DENSE, MATCHED SPECIMENS
SCA	TBD	Sambucus canadensis	ELDERBERRY	4-6' HT	PER PLAN	B&B	FULL, DENSE, MATCHED SPECIMENS
SLA	TBD	Spiraea latifolia	MEADOWSWEET	TBD	PER PLAN	CONT	FULL, DENSE, MATCHED SPECIMENS
TCC	TBD	Taxus cuspidata 'Capitata'	UPRIGHT JAPANESE YEW	6' HT	PER PLAN	B&B	FULL, DENSE, MATCHED SPECIMENS, UNSHEARED
VAN	TBD	Vaccinium angustifolium	LOWBUSH BLUEBERRY	TBD	PER PLAN	CONT	FULL, DENSE, MATCHED SPECIMENS
VCA	TBD	Viburnum cassinoides	WITHEROD VIBURNUM	TBD	PER PLAN	CONT	FULL, DENSE, MATCHED SPECIMENS
VCO	TBD	Vaccinium corymbossum	HIGHBUSH BLUEBERRY	TBD	PER PLAN	B&B	FULL, DENSE, MATCHED SPECIMENS
VDE	TBD	Viburnum dentatum	ARROWWOOD VIBURNUM	TBD	PER PLAN	CONT	FULL, DENSE, MATCHED SPECIMENS
VLE	TBD	Viburnum lentago	NANNYBERRY VIBURNUM	TBD	PER PLAN	CONT	FULL, DENSE, MATCHED SPECIMENS
VPR	TBD	Viburnum prunifolium	BLACKHAW VIBURNUM	8' HT	PER PLAN	B&B	FULL, DENSE, MATCHED SPECIMENS

GRASSES

SYMBOL	QTY	LATIN NAME	COMMON NAME	SIZE	SPACING	CONDITION	NOTES
BGR	TBD	Bouteloua gracilis	BLUE GRAMMA	TBD	PER PLAN	TBD	
CBI	TBD	Carex bicknellii	PRAIRIE SEDGE	TBD	PER PLAN	TBD	
CCO	TBD	Carex comosa	BRISTLY SEDGE	TBD	PER PLAN	TBD	
CCR	TBD	Carex crinita	FRINGED SEDGE	TBD	PER PLAN	TBD	
CLU	TBD	Carex lupulina	HOP SEDGE	TBD	PER PLAN	TBD	
CPE	TBD	Carex pensylvanica	PENNSYLVANIA SEDGE	TBD	PER PLAN	TBD	
CSC	TBD	Carex scoparia	BROOM SEDGE	TBD	PER PLAN	TBD	
CST	TBD	Carex stricta	TUSSOCK SEDGE	TBD	PER PLAN	TBD	
DFL	TBD	Deschampsia flexuosa	WAVY HAIR GRASS	TBD	PER PLAN	TBD	
EVI	TBD	Elymus virginicus	VIRGINIA WILD RYE	TBD	PER PLAN	TBD	
EVL	TBD	Elymus villosus	SILKY WILD RYE	TBD	PER PLAN	TBD	
FRU	TBD	Festuca rubra	RED FESCUE	TBD	PER PLAN	TBD	
JEF	TBD	Juncus effusus	COMMON RUSH	TBD	PER PLAN	TBD	
JGE	TBD	Juncus gerardii	SALTMARSH RUSH	TBD	PER PLAN	TBD	

PLANTING NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING THEMSELF FAMILIAR WITH ALL UNDERGROUND UTILITIES AND STRUCTURES. THE CONTRACTOR SHALL TAKE SOLE RESPONSIBILITY FOR ANY COST INCURRED TO DAMAGE OF SAID UTILITIES OR STRUCTURES IF PROPER VERIFICATION BY CONTRACTOR WAS NOT PERFORMED.

2. DO NOT WILLFULLY PROCEED WITH PLANTING OPERATIONS AS DESIGNED WHEN IT IS OBVIOUS THAT UNKNOWN OBSTRUCTIONS AND/OR GRADE DIFFERENCES EXIST THAT MAY NOT HAVE BEEN KNOWN DURING THE DESIGN PROCESS. SUCH CONDITIONS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE OWNER'S AUTHORIZED REPRESENTATIVE. THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR ALL NECESSARY DUE TO FAILURE TO GIVE SUCH NOTIFICATION.

3. CONTRACTOR RESPONSIBLE FOR VERIFYING PLANT, TREE AND SOD QUANTITIES AND ENSURING DESIGN INTENT OF DRAWINGS.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY COORDINATION WITH SUBCONTRACTORS AS REQUIRED TO ACCOMPLISH HIS PLANTING OPERATIONS.

5. THE CONTRACTOR IS TO RECEIVE THE ON-GRADE PORTION OF THE SITE WITHIN .1 OF AN INCH. THE CONTRACTOR SHALL OBTAIN A LETTER OF GRADE CERTIFICATION FROM THE OWNER PRIOR TO BEGINNING WORK.

6. REFER TO THE SPECIFICATIONS FOR PLANTING REQUIREMENTS, MATERIALS, AND EXECUTION.

7. ALL TREES SHALL BE TAGGED BY THE LANDSCAPE ARCHITECT AND THE OWNER'S REPRESENTATIVE.

8. FINAL LOCATION OF ALL PLANT MATERIALS SHALL BE SUBJECT TO THE APPROVAL OF THE OWNER'S AUTHORIZED REPRESENTATIVE. CONTRACTOR IS TO DO THE FOLLOWING BEFORE BEGINNING PLANTING OPERATIONS.
   - SHRUBS: LAY OUT THE ACTUAL CONTAINERS ONSITE PRIOR TO DIGGING HOLES.
   - TREES: STAKE THE LOCATIONS PRIOR TO DIGGING HOLES. ANY TREE PLANTED WITHOUT ITS FINAL LOCATION APPROVED BY THE OWNER'S AUTHORIZED REPRESENTATIVE MAY BE REQUESTED TO BE RELOCATED AT THE SOLE EXPENSE OF THE CONTRACTOR.

8. THE CONTRACTOR SHALL NOTIFY THE OWNER'S AUTHORIZED REPRESENTATIVE AT LEAST 48 HOURS IN ADVANCE PRIOR TO COMMENCEMENT OF WORK TO COORDINATE PROJECT OBSERVATION SCHEDULE.

9. IF CONFLICTS ARISE BETWEEN THE ACTUAL SIZE OF THE AREAS ON THE SITE AND THE DRAWINGS THE CONTRACTOR SHALL CONTACT THE OWNER'S AUTHORIZED REPRESENTATIVE FOR RESOLUTION. THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR ALL NECESSARY REVISIONS DUE TO FAILURE TO GIVE SUCH NOTIFICATION.

10. IT IS THE CONTRACTORS RESPONSIBILITY TO FURNISH PLANT MATERIAL FREE OF PEST OR PLANT DISEASES. PRE-SELECTED "TAGGED" PLANT MATERIAL MUST BE INSPECTED BY THE CONTRACTOR AND BE CERTIFIED PEST AND DISEASE FREE. IT IS THE CONTRACTORS OBLIGATION TO WARRANTY THE PLANT MATERIAL PER SPECIFICATIONS.

11. TREE LOCATIONS MAY ADJUST TO ACCOMMODATE UNOFRESEEN SITE CONDITIONS AND CONFLICTS, INCLUDING BUT NOT LIMITED TO UTILITIES. VERIFY NEW LOCATION WITH LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.

12. GROUND COVERS AND SHRUBS ARE TO BE TRIANGULARLY SPACED UNLESS OTHERWISE NOTED ON THE DRAWINGS.

13. ALL TREES WITHIN A SPECIES SHALL HAVE MATCHING FORM UNLESS NOTED OTHERWISE ON THE DRAWINGS.

14. ALL SHRUB AND GROUND COVER AREAS (EXCLUDING TURF AND SLOPE AREAS) ARE TO BE MULCHED WITH WOOD PER SPECIFICATIONS. REFER TO THE DRAWINGS FOR SPECIFIC LOCATIONS.

15. AFTER FINISH GRADES HAVE BEEN ESTABLISHED FOR ALL ON-GRADE PLANTING AREAS, THE CONTRACTOR SHALL HAVE SOIL SAMPLES TESTED BY A QUALIFIED SOILS TESTING LABORATORY FOR SOIL FERTILITY, AGRICULTURAL SUITABILITY, AND SOIL PREPARATION RECOMMENDATIONS. THE CONTRACTOR MAY BE REQUESTED TO AMEND THE SOIL TO CONFORM TO THE RECOMMENDATIONS HOWEVER ANY AMENDMENT THAT MIGHT BE REQUESTED OF THE CONTRACTOR SHALL ONLY BE UPON RECEIPT OF A WRITTEN CHANGE ORDER FROM THE OWNER.

16. CONTRACTOR TO INSTALL STEEL EDGING TO SEPARATE ALL PLANT VARIETIES FROM LAWN.

17. CONTRACTOR SHALL SUPPLY THE LANDSCAPE ARCHITECT WITH PICTURES OF ALL SPECIFIED PLANT MATERIAL IN ADDITION TO ALL OTHER PLANT MATERIAL.

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PROJECT NUMBER: X9023

DATE: 8 JANUARY 2021

REVISIONS:

SEE PREVIOUS ISSUES FOR REVISIONS NOT LISTED HERE

SCALE:

DRAWING NAME:

PLANTING SCHEDULE

DRAWING NUMBER:

L600A

PLANTING SCHEDULE

COASTAL BANK UNDERSTORY SPECIES

GRASSES, CONTINUED

PCL	TBD	Panicum clandestinum	DEERTONGUE	TBD	PER PLAN	TBD	
PPA	TBD	Poa palustris	FOWL BLUEGRASS	TBD	PER PLAN	TBD	
PVI	TBD	Panicum virgatum	SWITCH GRASS	TBD	PER PLAN	TBD	
SPA	TBD	Spartina patens	SALTMEADOW CORDGRASS	TBD	PER PLAN	TBD	
SSC	TBD	Schizachyrium scoparium	LITTLE BLUESTEM	TBD	PER PLAN	TBD	
PERENNIALS							
ACA	TBD	Aquilegia canadensis	RED COLUMBINE	TBD	PER PLAN	TBD	
AHU	TBD	Amsonia tabernaemontana	BLUE STAR	TBD	PER PLAN	TBD	
AIN	TBD	Asclepias incarnata	SWAMP MILKWEED	TBD	PER PLAN	TBD	
ALA	TBD	Symphyotrichum laeve	SMOOTH BLUE ASTER	TBD	PER PLAN	TBD	
ASP	TBD	Aster spectabilis	SHOWY ASTER	TBD	PER PLAN	TBD	
ATU	TBD	Asclepias tuberosa	BUTTERFLY WEED	TBD	PER PLAN	TBD	
CPE	TBD	Comptonia peregrina	SWEET FERN	TBD	PER PLAN	TBD	
DPU	TBD	Dennstaedtia punctilobula	HAY-SCENTED FERN	TBD	PER PLAN	TBD	
EDU	TBD	Eupatorium dubium 'Little Joe'	JOE PYE WEED	TBD	PER PLAN	TBD	
EPE	TBD	Eupatorium perfoliatum	BONESET	TBD	PER PLAN	TBD	
GMA	TBD	Geranium maculatum	WOODLAND GERANIUM	TBD	PER PLAN	TBD	
LCA	TBD	Lobelia cardinalis	CARDINAL FLOWER	TBD	PER PLAN	TBD	
LCL	TBD	Limonium carolinianum	SEA LAVENDAR	TBD	PER PLAN	TBD	
LPE	TBD	Lupinus perennis	WILD LUPINE	TBD	PER PLAN	TBD	
MCA	TBD	Maianthemum canadense	CANADA MAYFLOWER	TBD	PER PLAN	TBD	
MFI	TBD	Monarda fistulosa	WILD BERGAMOT	TBD	PER PLAN	TBD	
PQU	TBD	Parthenocissus quinquefolia	VIRGINIA CREEPER	TBD	PER PLAN	TBD	
RHI	TBD	Rudbeckia hirta	BLACK-EYED SUSAN	TBD	PER PLAN	TBD	
SKE	TBD	Sabatia kennedyana	PLYMOUTH GENTIAN	TBD	PER PLAN	TBD	
SRU	TBD	Solidago odora	SWEET GOLDENROD	TBD	PER PLAN	TBD	
VNO	TBD	Vernonia noveboracensis	NEW YORK IRONWEED	TBD	PER PLAN	TBD	

UNDERSTORY SPECIES FOR USE OUTSIDE COASTAL BANK

SHRUBS							
AUV	TBD	Arctostaphylos uva-ursi	COMMON BAYBERRY	TBD	PER PLAN	TBD	
HQU	TBD	Hydrangea quercifolia	OAKLEAF HYDRANGEA	TBD	PER PLAN	TBD	
IGL	TBD	Ilex glabra	INKBERRY	TBD	PER PLAN	TBD	
PFR	TBD	Potentilla fruticosa	SHRUBBY CINQUEFOIL	TBD	PER PLAN	TBD	
RAG	TBD	Rhus aromatica	FRAGRANT SUMAC	TBD	PER PLAN	TBD	
GRASSES							
CDI	TBD	Carex divulsa	EUROPEAN GREY SEDGE	TBD	PER PLAN	TBD	
PERENNIALS							
ACN	TBD	Anemone canadensis	ANEMONE	TBD	PER PLAN	TBD	
PBI	TBD	Polygonatum biflorum	SOLOMON'S SEAL	TBD	PER PLAN	TBD	
TCO	TBD	Tiarella cordifolia	FOAM FLOWER	TBD	PER PLAN	TBD	
XSI	TBD	Xanthorhiza simplicissima	YELLOW ROOT	TBD	PER PLAN	TBD	

PLANTING NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING THEMSELF FAMILIAR WITH ALL UNDERGROUND UTILITIES AND STRUCTURES. THE CONTRACTOR SHALL TAKE SOLE RESPONSIBILITY FOR ANY COST INCURRED TO DAMAGE OF SAID UTILITIES OR STRUCTURES IF PROPER VERIFICATION BY CONTRACTOR WAS NOT PERFORMED.
2. DO NOT WILLFULLY PROCEED WITH PLANTING OPERATIONS AS DESIGNED WHEN IT IS OBVIOUS THAT UNKNOWN OBSTRUCTIONS AND/OR GRADE DIFFERENCES EXIST THAT MAY NOT HAVE BEEN KNOWN DURING THE DESIGN PROCESS. SUCH CONDITIONS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE OWNER'S AUTHORIZED REPRESENTATIVE. THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR ALL NECESSARY DUE TO FAILURE TO GIVE SUCH NOTIFICATION.
3. CONTRACTOR RESPONSIBLE FOR VERIFYING PLANT, TREE AND SOD QUANTITIES AND ENSURING DESIGN INTENT OF DRAWINGS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY COORDINATION WITH SUBCONTRACTORS AS REQUIRED TO ACCOMPLISH HIS PLANTING OPERATIONS.
5. THE CONTRACTOR IS TO RECEIVE THE ON-GRADE PORTION OF THE SITE WITHIN .1 OF AN INCH. THE CONTRACTOR SHALL OBTAIN A LETTER OF GRADE CERTIFICATION FROM THE OWNER PRIOR TO BEGINNING WORK.
6. REFER TO THE SPECIFICATIONS FOR PLANTING REQUIREMENTS, MATERIALS, AND EXECUTION.
7. ALL TREES SHALL BE TAGGED BY THE LANDSCAPE ARCHITECT AND THE OWNER'S REPRESENTATIVE.
8. FINAL LOCATION OF ALL PLANT MATERIALS SHALL BE SUBJECT TO THE APPROVAL OF THE OWNER'S AUTHORIZED REPRESENTATIVE. CONTRACTOR IS TO DO THE FOLLOWING BEFORE BEGINNING PLANTING OPERATIONS.
   - SHRUBS: LAY OUT THE ACTUAL CONTAINERS ONSITE PRIOR TO DIGGING HOLES.
   - TREES: STAKE THE LOCATIONS PRIOR TO DIGGING HOLES. ANY TREE PLANTED WITHOUT ITS FINAL LOCATION APPROVED BY THE OWNER'S AUTHORIZED REPRESENTATIVE MAY BE REQUESTED TO BE RELOCATED AT THE SOLE EXPENSE OF THE CONTRACTOR.

8\. THE CONTRACTOR SHALL NOTIFY THE OWNER'S AUTHORIZED REPRESENTATIVE AT LEAST 48 HOURS IN ADVANCE PRIOR TO COMMENCEMENT OF WORK TO COORDINATE PROJECT OBSERVATION SCHEDULE.

9\. IF CONFLICTS ARISE BETWEEN THE ACTUAL SIZE OF THE AREAS ON THE SITE AND THE DRAWINGS THE CONTRACTOR SHALL CONTACT THE OWNER'S AUTHORIZED REPRESENTATIVE FOR RESOLUTION. THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR ALL NECESSARY REVISIONS DUE TO FAILURE TO GIVE SUCH NOTIFICATION.

10\. IT IS THE CONTRACTORS RESPONSIBILITY TO FURNISH PLANT MATERIAL FREE OF PEST OR PLANT DISEASES. PRE-SELECTED "TAGGED" PLANT MATERIAL MUST BE INSPECTED BY THE CONTRACTOR AND BE CERTIFIED PEST AND DISEASE FREE. IT IS THE CONTRACTORS OBLIGATION TO WARRANTY THE PLANT MATERIAL PER SPECIFICATIONS.

11\. TREE LOCATIONS MAY ADJUST TO ACCOMMODATE UNOFRESEEN SITE CONDITIONS AND CONFLICTS, INCLUDING BUT NOT LIMITED TO UTILITIES. VERIFY NEW LOCATION WITH LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.

12\. GROUND COVERS AND SHRUBS ARE TO BE TRIANGULARLY SPACED UNLESS OTHERWISE NOTED ON THE DRAWINGS.

13\. ALL TREES WITHIN A SPECIES SHALL HAVE MATCHING FORM UNLESS NOTED OTHERWISE ON THE DRAWINGS.

14\. ALL SHRUB AND GROUND COVER AREAS (EXCLUDING TURF AND SLOPE AREAS) ARE TO BE MULCHED WITH WOOD PER SPECIFICATIONS. REFER TO THE DRAWINGS FOR SPECIFIC LOCATIONS.

15\. AFTER FINISH GRADES HAVE BEEN ESTABLISHED FOR ALL ON-GRADE PLANTING AREAS, THE CONTRACTOR SHALL HAVE SOIL SAMPLES TESTED BY A QUALIFIED SOILS TESTING LABORATORY FOR SOIL FERTILITY, AGRICULTURAL SUITABILITY, AND SOIL PREPARATION RECOMMENDATIONS. THE CONTRACTOR MAY BE REQUESTED TO AMEND THE SOIL TO CONFORM TO THE RECOMMENDATIONS HOWEVER ANY AMENDMENT THAT MIGHT BE REQUESTED OF THE CONTRACTOR SHALL ONLY BE UPON RECEIPT OF A WRITTEN CHANGE ORDER FROM THE OWNER.

16\. CONTRACTOR TO INSTALL STEEL EDGING TO SEPARATE ALL PLANT VARIETIES FROM LAWN.

17\. CONTRACTOR SHALL SUPPLY THE LANDSCAPE ARCHITECT WITH PICTURES OF ALL SPECIFIED PLANT MATERIAL IN ADDITION TO ALL OTHER PLANT MATERIAL.

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8 JANUARY 2021

Design Development Package

NOT FOR CONSTRUCTION

PROJECT NUMBER: [illegible]

DATE: [illegible]

REVISIONS:

SEE PREVIOUS ISSUES FOR REVISIONS NOT LISTED HERE

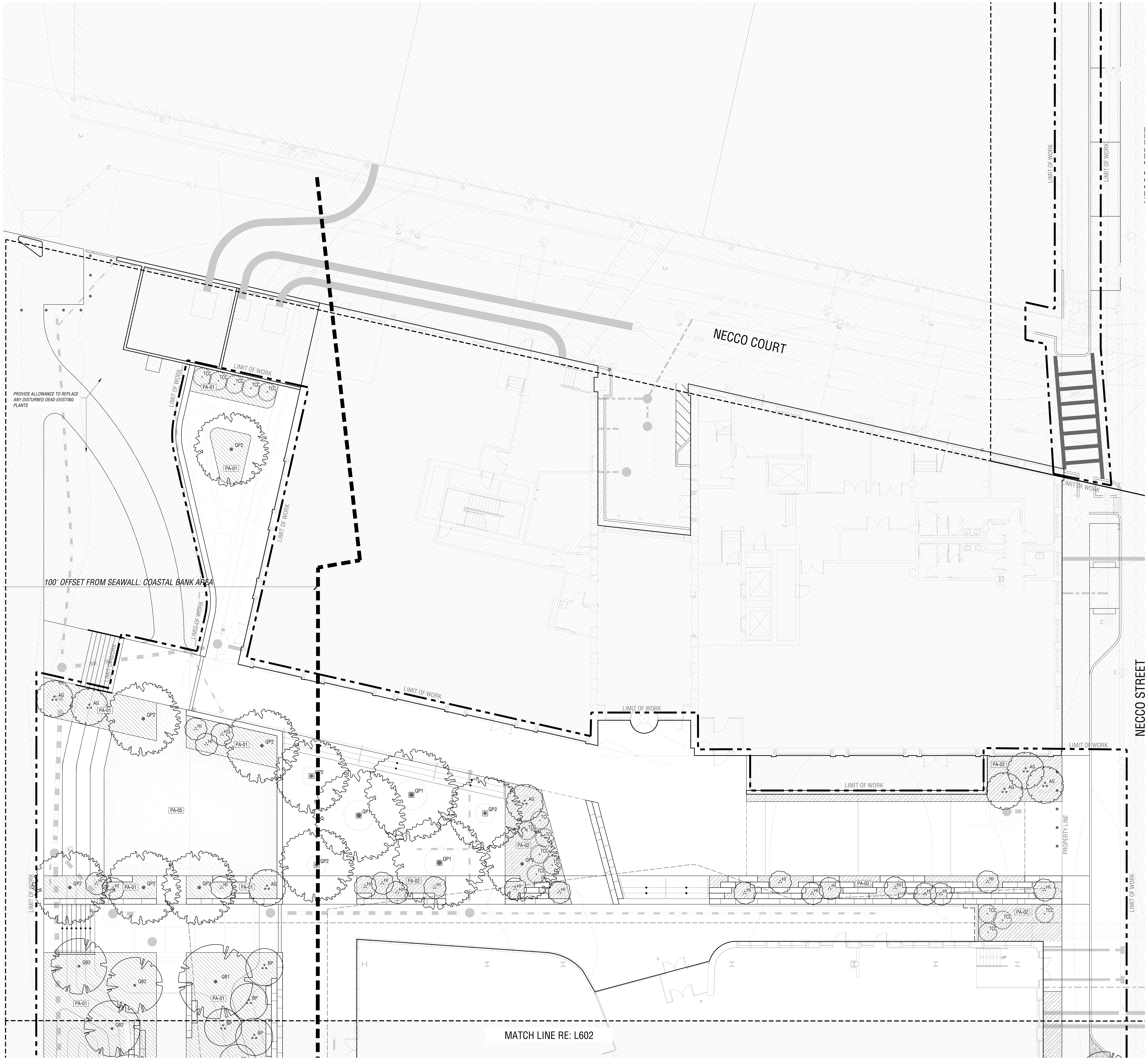
SCALE:

DRAWING NAME:

PLANTING SCHEDULE

DRAWING NUMBER:

L600B



PLANTING LEGEND

TREES

AG *Amelanchier x grandiflora 'Autumn Brilliance'*
AUTUMN BRILLIANCE SERVICEBERRY

BP *Betula populifolia 'Whitespire'*
WHITESPIRE GREY BIRCH

GT *Gleditsia triacanthos var. inermis 'Skyline'*
SKYLINE HONEYLOCUST

HI *Hamamelis x intermedia 'Arnold Promise'*
ARNOLD PROMISE WITCH HAZEL

NS *Nyssa sylvatica*
BLACK TUPELO

PT *Pinus thunbergii*
JAPANESE BLACK PINE

QB1 *Quercus bicolor*
SWAMP WHITE OAK

QB2 *Quercus bicolor*
SWAMP WHITE OAK

QP1 *Quercus palustris*
PIN OAK

QP2 *Quercus palustris*
PIN OAK

UNDERSTORY

PA-01 - COASTAL BANK PLANTING

PA-02 - ORNAMENTAL PLANTING

PA-03 - RAIN GARDEN

PA-04 - STREETSCAPE PLANTING

PA-05 - TURF

PA-06 - ROOFTOP PLANTING

NOTE:

ALL PLANTING AREAS ABOVE A 3:1 SLOPE SHALL HAVE SLOPE REINFORCEMENT TO PREVENT EROSION DURING THE ESTABLISHMENT OF NEW PLANTING

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8 JANUARY 2021
Design Development Package
NOT FOR CONSTRUCTION

PROJECT NUMBER: 19090

DATE: 8 JANUARY 2021

REVISIONS:

SEE PREVIOUS ISSUES FOR REVISIONS NOT LISTED HERE

SCALE:

DRAWING NAME:
PLANTING PLAN

DRAWING NUMBER:
L601

PLANTING LEGEND

TREES

AG *Amelanchier x grandiflora 'Autumn Brilliance'*
AUTUMN BRILLIANCE SERVICEBERRY

BP *Betula populifolia 'Whitespire'*
WHITESPIRE GREY BIRCH

GT *Gleditsia triacanthos var. inermis 'Skyline'*
SKYLINE HONEYLOCUST

HI *Hamamelis x intermedia 'Arnold Promise'*
ARNOLD PROMISE WITCH HAZEL

NS *Nyssa sylvatica*
BLACK TUPELO

PT *Pinus thunbergii*
JAPANESE BLACK PINE

QB1 *Quercus bicolor*
SWAMP WHITE OAK

QB2 *Quercus bicolor*
SWAMP WHITE OAK

QP1 *Quercus palustris*
PIN OAK

QP2 *Quercus palustris*
PIN OAK

UNDERSTORY

PA-01 - COASTAL BANK PLANTING

PA-02 - ORNAMENTAL PLANTING

PA-03 - RAIN GARDEN

PA-04 - STREETSCAPE PLANTING

PA-05 - TURF

PA-06 - ROOFTOP PLANTING

NOTE:

ALL PLANTING AREAS ABOVE A 3:1 SLOPE SHALL HAVE SLOPE REINFORCEMENT TO PREVENT EROSION DURING THE ESTABLISHMENT OF NEW PLANTING

0 5 10 20
SCALE: 1"=10'-0"

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8 JANUARY 2021
Design Development Package
NOT FOR CONSTRUCTION

PROJECT NUMBER: 19090

DATE: 8 JANUARY 2021

REVISIONS:

SEE PREVIOUS ISSUES FOR REVISIONS NOT LISTED HERE

SCALE:

DRAWING NAME:

PLANTING PLAN

DRAWING NUMBER:

L602

Attachment C
Updated Stormwater Report

- Stormwater Checklist
- Stormwater Report February 2021 – *available electronically*

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

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

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

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

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

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

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

---

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

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

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

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

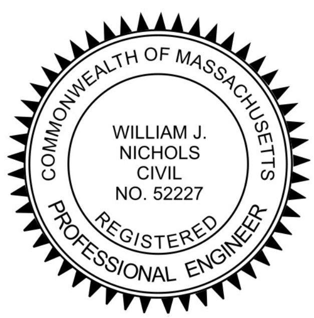
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the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

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

Registered Professional Engineer's Certification

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

Registered Professional Engineer Block and Signature



2/3/2021

Signature and Date

Checklist

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

☐ New development

☒ Redevelopment

☐ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

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

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

Standard 1: No New Untreated Discharges

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

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☒ Soil Analysis provided.

☐ Required Recharge Volume calculation provided.

☒ Required Recharge volume reduced through use of the LID site Design Credits.

☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☒ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

☒ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☐ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

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

Checklist (continued)

Standard 3: Recharge (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:
- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☐ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☒ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist (continued)

Standard 4: Water Quality (continued)

☒ The BMP is sized (and calculations provided) based on:

- ☒ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

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

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☒ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist (continued)

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

☒ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☐ Redevelopment Project
- ☒ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

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

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

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☐ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

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

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☐ Name of the stormwater management system owners;
- ☐ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☐ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☐ Description and delineation of public safety features;
- ☐ Estimated operation and maintenance budget; and
- ☐ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☐ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☐ An Illicit Discharge Compliance Statement is attached;

☒ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

Stormwater Management Report

15 Necco Street

Boston, MA

PREPARED FOR

National Development
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Newton Lower Falls, MA 02462
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February 2021

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Project Summary

National Development ("ND") are redeveloping the existing site at 15 Necco Street (the Project). The Project involves the construction of a 304,945 GFA new building. The two existing brick buildings and harborwalk have been previously renovated under a different project recently completed.

The 2.5 – acre Site is located at 15 Necco Street in Boston, MA (see Figure 1). The Site is bounded by Necco Court to the north, a private parking lot to the south, Necco Street to the east, and Fort Point Channel to the west. The Site is located within the surface watershed of Boston Harbor.

The Site is presently occupied by a private parking lot. Under existing conditions, untreated stormwater runoff drains over land to either private drainage system in the private parking lot, the BWSC drainage system in Necco Court, or directly to the Fort Point Channel.

The proposed redevelopment of the site includes the construction of the new building. Under proposed conditions, site stormwater runoff will flow to vegetated rain gardens, which will overflow to subsurface infiltration systems. Stormwater from the new building roof, will be collected in rainwater cisterns for use within the building for irrigation and rainwater reuse, and overflow directly to subsurface infiltration systems. Low impact development stormwater techniques have been incorporated into the site. Stormwater pretreatment will be accomplished by deep sump catch basins and rain gardens, while subsurface infiltration will provide the remaining required water quality treatment.

A HydroCAD model, using TR-20 methodology, was developed to evaluate the existing and proposed drainage conditions on the Site. The results of the analyses indicate that there is no increase in peak discharge rates between the pre- and post-development conditions for the 2-, 10-, 25-, and 100-year storm. The existing site is nearly 100% impervious and the proposed site will be approximately 74% impervious. The pre- and post-development peak discharge values are presented in Table 3 at the end of this report.

The Stormwater Management Plan (the Plan), including Best Management Practices (BMPs) for maintaining stormwater runoff quality both during and after construction, was prepared in accordance with the applicable local, state, and federal regulations. Details of the Plan are provided herein.

Figure 1: Site Location Map

vhb

Site Location Map

15 Necco Street
Boston, MA

Figure 1

January 2021

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Existing Conditions

Summary

The approximately 2.5 acre Site consists of two existing buildings, paved parking lots, and a predominantly impervious harborwalk. See Figure 2.

As determined by the Federal Emergency Management Agency (FEMA) preliminary Flood Insurance Rate Map Panel 25025C0081J effective March 16, 2016, the project is located within Zone AE (shaded), defined as an area of "special flood hazard areas subject to inundation by the 1% annual chance flood". The 1% annual chance flood (100 year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceed in any given year. The FEMA FIRM graphic is included in Appendix B.

The Site is almost entirely building and paved surfaces, while the soils are urban fill. Detailed soils information and soils map are included in Appendix C.

Hydrologic Information

For the existing conditions hydrologic analysis, the site was divided into three drainage areas that contribute to two design points, where peak discharge rates were evaluated (see Figure 2). Under existing conditions, the runoff from the Site flows to the private parking lot drainage system, the Necco Court BWSC drain, or sheet flows to the Fort Point Channel. Both the private drains and Necco Court drain discharge via a BWSC Storm Drain Outfall (SDO) 580 to the Fort Point Channel.

Drainage Area EX1 - This 1.50 acre area consists of an existing impervious private parking lot. This drainage system contributes to Design Point 1.

Drainage Area EX2 - This 0.41 acre area consists of an existing harborwalk which includes an impervious walkway and pervious landscaping. This drainage system contributes to Design Point 2.

Drainage Area EX3 - This 0.63 acre area consists of the existing brick buildings and a portion of the existing impervious private parking lot. This drainage system contributes to Design Point 1.

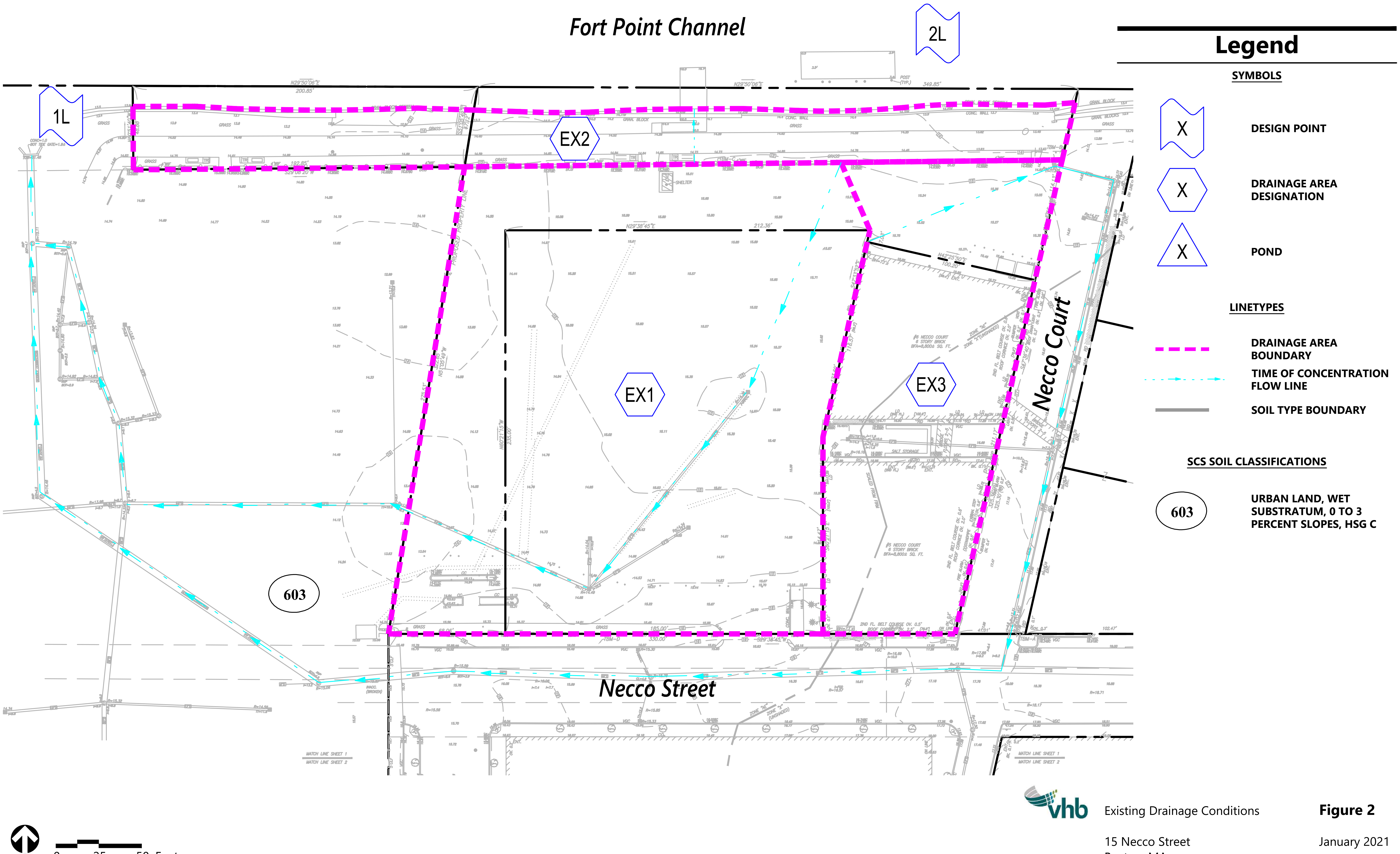
Table 1 summarizes the key hydrologic parameters for each drainage area used in the existing conditions analysis.

Table 1
Existing Conditions Hydrologic Data

Description (Drainage Area #)	Discharge Location	Design Point	Area (acres)	Curve Number	Time of Concentration (min)
EX1	SDO 580	1	1.50	98	5
EX2	Fort Point Channel	2	0.41	87	5
EX3	SDO 580	1	0.63	98	5

Figure 2: Existing Drainage Areas

\\vhb\gbl\proj\Boston\13421.02 15 Necco\cad\ld\Planmisc\Drainage\13421.02-EX-Drainage.dwg



Existing Drainage Conditions

Figure 2

15 Necco Street
Boston, MA

January 2021

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Proposed Conditions

Summary

The Project, which will include the construction of a new building, was designed to comply fully with the Massachusetts Stormwater Management Policy. Existing drainage and grading patterns were maintained to the maximum extent possible. Low impact development stormwater management techniques have been incorporated into the design. These practices are focused at decentralizing stormwater management at the site and incorporating many smaller stormwater management techniques into the design that will reduce peak runoff rates, maximizing groundwater recharge and treating for water quality. Site runoff will be directed to raingardens and overflow to subsurface infiltration systems. Rain gardens and infiltration systems are sized to provide the required water quality treatment. During extreme storms, stormwater will discharge to the existing private drainage system, which discharges to the BWSC SDO 580 to the Fort Point Channel. The existing BWSC SDO 580 is located approximately 250' southwest of the project adjacent to the private parking lot. The Boston Water & Sewer Commission (BWSC) typically requires new construction on the waterfront to establish a new storm drain outfall. The BWSC is permitting the proponent to discharge treated stormwater to an existing system as long as the Proponent's stormwater management system reduces peak rates and total volume of runoff to the existing condition.

The Project as proposed will not increase total runoff rates and quantities discharged to the Boston Harbor. The post-development rates and quantities for the 2-, 10-, 25- and 100-year storm event are lower than the pre-development rates and quantities. No new outfalls are proposed as part of the Project. All the stormwater runoff from the site will eventually discharge into the Fort Point Channel.

Water Quantity and Quality Control

Site Layout

Low impact environmentally sensitive design practices as promoted by the Massachusetts Stormwater Management Policy are included in the Site Layout. These methods include the replacement of previously impervious area with pervious materials, as well as using surface rain gardens for stormwater treatment. Surface impervious areas are disconnected, with intersecting planted areas.

Source Control

A comprehensive source control program will be implemented at the site, which includes [regular pavement sweeping, catch basin cleaning, and enclosure and maintenance of all dumpsters, compactors, and loading areas]. Further discussion of the site maintenance is included in the Stormwater Management Regulations Section 5.

Snow Management

As much as possible, snow will be stockpiled on paved surfaces that direct melted snow water to catch basins. Deicing materials and sand shall be properly stored. The proponent will be responsible for snow removal, road way plowing, tractor operations, area maintenance assignments, hand shoveling, and anti-skid operations.

Spill Prevention

Spill prevention is achieved with the proper storage and handling of hazardous materials. During construction, this is addressed in the Stormwater Pollution Prevention Plan (SWPPP) for Construction Activities to be prepared and implemented by the Site Contractor.

Catch Basins with Sumps and Oil/debris Traps

Catch basins at the site are to be constructed with sumps (minimum 4-feet) and oil/debris traps to prevent the discharge of sediments and floating contaminants. Catch basins will be cleaned twice per year.

Surface Rain Gardens

The surface rain gardens manage and treat stormwater runoff using a conditioned planting soil bed and planting materials to filter runoff stored within a shallow depression. The system consists of a shallow ponding area, a surface organic layer of mulch, a planting soil bed, plant material, and an overflow drain. The vegetation in a bioretention basin serves to filter and transpire runoff – improving water quality and reducing runoff quantity – and the root systems can enhance infiltration. The soil medium filters out pollutants and allows storage and infiltration of stormwater runoff; and the infiltration bed provides additional volume control. These will be inspected biannually for the first year and annually thereafter for sediment buildup, erosion, vegetative conditions, etc. Details are included in the Long Term Operations and Maintenance checklist in Appendix E.

Surface Infiltration System

Subsurface infiltration systems will be Retain-it prefabricated concrete chambers with crushed stone. The design of the chambers includes a permeable bottom that allows for maximum exfiltration of the treated runoff from the system to groundwater.

Hydrologic Information

For the proposed conditions hydrologic analysis, the site was divided into ten drainage areas (see Figure 3). These areas discharge to the two design points where peak discharge rates were evaluated for both existing and proposed conditions.

Drainage Area PR1 – This 0.78 acre area consists of the proposed building roof. The roof area will be separated to discharge at two different locations into the proposed drainage systems, overflowing to Design Point 1.

Drainage Area PR2 – This 0.41 acre area consists of the rehabilitated harborwalk including an expanded walkway and landscaping area. The drainage system contributes to Design Point 2.

Drainage Area PR3 – This 0.46 acre area consists of the roof of the rehabilitated brick buildings and includes new partial green roof. The roof area will discharge into the proposed drainage systems, overflowing to Design Point 1.

Drainage Area PR4 – This 0.10 acre area consists of impervious and pervious plaza area. The drainage system contributes to Design Point 1.

Drainage Area PR5 – This 0.21 acre area consists on impervious and pervious plaza area discharging to the proposed drainage systems, overflowing to Design Point 1.

Drainage Area PR6 – This 0.15 acre area consists on impervious and pervious plaza area, and vegetated rain garden discharging to the proposed drainage systems, overflowing to Design Point 1.

Drainage Area PR7 – This 0.06 acre area consists on impervious and pervious plaza area, and vegetated rain garden discharging to the proposed drainage systems, overflowing to Design Point 1.

Drainage Area PR8 – This 0.13 acre area consists on impervious and pervious plaza area, and vegetated rain garden discharging to the proposed drainage systems, overflowing to Design Point 1.

Drainage Area PR9 – This 0.24 acre area consists on impervious and pervious plaza area discharging to the proposed drainage systems, overflowing to Design Point 1.

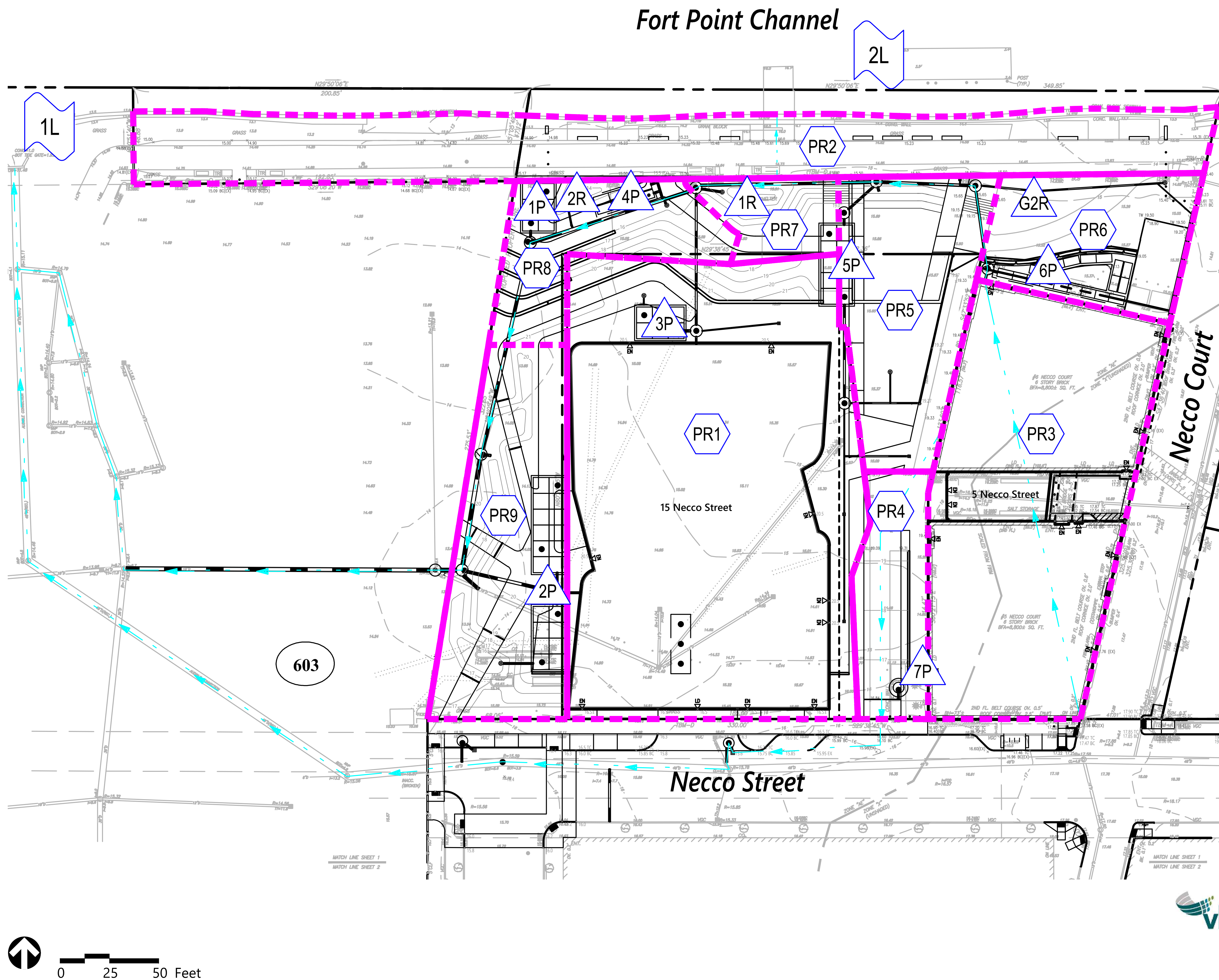
Table 2 summarizes the key hydrologic parameters for each drainage area used in the proposed conditions analyses.

Table 2
Proposed Conditions Hydrologic Data

Description (Drainage Area #)	Discharge Location	Design Point	Area (acres)	Curve Number	Time of Concentration (min)
PR1	SDO 580	1	0.78	98	5
PR2	Fort Point Channel	2	0.41	95	5
PR3	SDO 580	1	0.46	97	5
PR4	SDO 580	1	0.10	93	5
PR5	SDO 580	1	0.21	85	5
PR6	SDO 580	1	0.15	83	5
PR7	SDO 580	1	0.06	80	5
PR8	SDO 580	1	0.13	81	5
PR9	SDO 580	1	0.24	84	5

The site complies fully with the total suspended solids removal requirement of the Stormwater Management Policy. The calculated TSS removal rates for discharges from the site are shown on the Worksheets included in Appendix D.

Figure 3: Proposed Drainage Areas



Legend

SYMBOLS

X	**DESIGN POINT**
X	**DRAINAGE AREA DESIGNATION**
X	**POND**

LINETYPES

DRAINAGE AREA BOUNDARY

TIME OF CONCENTRATION FLOW LINE

SOIL TYPE BOUNDARY

SCS SOIL CLASSIFICATIONS

603	**URBAN LAND, WET SUBSTRATUM, 0 TO 3 PERCENT SLOPES, HSG C**

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Proposed Drainage Conditions

Figure 3

15 Necco Street
Boston, MA

January 2021

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Hydrologic/Hydraulic Analysis

Hydrologic Analysis

The rainfall-runoff response of the Site under existing and proposed conditions was evaluated for storm events with recurrence intervals of 2, 10, 25 and 100-years. Rainfall volumes used for this analysis were based on the Natural Resources Conservation Service (NRCS),with an NRCS Type III, 24-hour storm event. The rainfall volumes are 3.26, 4.90, 6.19, and 8.83 inches, respectively. Runoff coefficients for the pre- and post-development conditions, as previously shown in Tables 1 and 2 respectively, were determined using NRCS Technical Release 55 (TR-55) methodology as provided in HydroCAD.

Drainage areas used in the analyses were described in previous sections and shown on Figures 2 and 3. The HydroCAD model is based on the NRCS Technical Release 20 (TR-20) Model for Project Formulation Hydrology. Detailed printouts of the HydroCAD analyses are included in Appendix H. Table 3 and Table 4 presents a summary of the existing and proposed conditions peak discharge rates and total runoff volumes.

Stormwater runoff peak rates were attenuated and total volumes mitigated by extensive subsurface infiltration systems as well as surface rain gardens across the site. These ponds were modeled with their relative contributory area to determine the rates and volumes of runoff to the various design points. The infiltration systems are acting in parallel on site with equalizing pipes and manholes between them. The results of the analysis indicate that there is no increase in peak discharge rates from the pre- and post-development conditions to any of the storm drain outlet, for all extreme storms, except for a marginal increase into the Fort Point Channel due to the required expansion of the Harborwalk, in turn increasing impervious area directed to the Fort Point Channel.

Table 3
Peak Discharge Rates (cfs*)

Design Point	2-year	10-year	25-year	100-year
Design Point 1: SDO 580				
Existing	6.99	10.57	13.39	19.13
Proposed	3.55	9.77	11.14	16.36
Design Point 2: Fort Point Channel				
Existing	0.98	1.70	2.27	3.43
Proposed	1.27	1.98	2.53	3.65

* Expressed in cubic feet per second

Table 4
Stormwater Volume Analysis (cf)

Design Point	2-year	10-year	25-year	100-year
Design Point 1: SDO 580				
Existing	23,388	36,028	45,982	66,364
Proposed	8,108	19,871	29,389	49,155
Design Point 2: Fort Point Channel				
Existing	2,931	5,173	7,000	10,814
Proposed	4,027	6,436	8,343	12,258

Floodplain Information / Analysis

See Appendix B for floodplain information.

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Stormwater Management Regulations

The purpose of the Stormwater Management Plan (the Plan) is to provide long-term protection of natural resources in and around the Site. This is achieved by implementing water quality and quantity control measures designed to decrease the amount of pollutants discharged from the Site, increase the quality of stormwater recharged on the Site, and control discharge rates.

The following sections describe the regulations pertinent to stormwater management and the specific components of the Plan to be implemented.

Stormwater Regulations and Permitting

The following stormwater related regulations and guidelines apply to the proposed site development:

- Massachusetts State Stormwater Management Regulations and Performance Standards included in the Stormwater Handbook, (Department of Environmental Protection February 2008).

- Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Stormwater Permit for Construction Activities disturbing greater than one acre (EPA, Federal Register, December 8, 1999 and amendments)

Compliance with these regulations is described in the following sections.

Stormwater Management Standards and Guidelines

The methods for compliance with the ten stormwater performance standards developed by the MA DEP are summarized below.

1. No new stormwater conveyances may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

   The Project is designed to comply with Standard 1. No new outfalls will be created as a result of the Project. Proposed drainage systems will tie into existing BWSC drainage infrastructure. Untreated stormwater will not be directly discharged to, nor will erosion be caused to, wetlands or waters of the Commonwealth as a result of the Project. The Proponent is implementing surface and subsurface stormwater infiltration systems to ensure that stormwater discharge will be treated before discharge and will not cause surface erosion.

2. Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04.

   The Project is designed to comply with Standard 2. The existing discharge rate will decrease as a result of the improvements associated with the Project. Vegetated rain gardens and infiltration systems will treat greater than 1-inch of runoff over the entire Project Site. This will be a material improvement over the pre-development conditions under which the Project Site is almost entirely impervious and without infiltration systems or stormwater treatment. The Project is also designed to capture rainwater from the roofs and canopies for use in irrigation make-up water. The combination of surface material improvement, rainwater capture, and surface/subsurface infiltration techniques will ensure that the post-development peak discharge rates do not exceed the pre-development rates.

   The BWSC has agreed to allow the Proponent to overflow stormwater during extreme precipitation events to the existing BWSC infrastructure provided that the Proponent greatly reduces stormwater peak discharge for smaller design events and does not exceed existing rates from the Site for extreme design storm events. The BWSC will review stormwater mitigation in greater detail to ensure that discharge rates are reduced, given the increased catchment area discharging to the existing infrastructure.

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

   The Project stormwater design will prevent the loss of annual recharge to groundwater by incorporating groundwater recharge techniques such as the installation of subsurface infiltration chambers and surface rain gardens, which will infiltrate runoff to groundwater. The design will also meet the Groundwater Conservation Overlay District (GCOD) and BWSC infiltration requirements. Infiltration is the largest component of stormwater discharge rate reduction and will greatly promote annual recharge relative to the existing Site condition, which is almost entirely impervious paved surface.

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

   The Project is designed to remove 80 percent of the annual load of TSS by the implementation of BMPs. The Proponent is designing an environmentally sensitive Project which implements source controls and pollution prevention techniques. These include replacing existing site impervious areas with pervious cover, incorporating nonstructural stormwater treatment including rain gardens, and minimizing the need for fertilizers by using native, durable species. Stormwater overflow from the rain gardens will be collected and treated by structural means including subsurface drainage systems sized to capture the required volume. Pretreatment will be provided by the vegetated rain gardens and deep sump catch basins.

5. For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If through source control and/or pollution prevention all land uses with higher potential pollutant loads cannot be completely protected from exposure to rain, snow, snow melt, and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by the Department to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from land uses with higher potential pollutant loads shall also comply with the requirements of the

Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53 and the regulations promulgated thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.

The Project Site will be occupied by buildings and open spaces not associated with higher potential pollutant loads.

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

   The Project Site does not discharge within the Zone II or Interim Wellhead Protection Area of a public water supply or near any other critical area.

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

   The Project is considered a redevelopment project and will comply with Stormwater Management Standards 1 through 6 to the maximum extent practicable and all other requirements of the Stormwater Management Standards and will thereby materially improve upon existing conditions.

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

   Sedimentation and erosion controls are to designed to be employed to prevent construction or land disturbance impacts to surface water and groundwater. Erosion and sediment control plans have been developed. The contractor will be required to implement these measures. The implementation of these measures is also a requirement of the National Pollution Discharge Elimination System (NPDES) permit that will be obtained for the Project. A Stormwater Pollution Prevention Plan (SWPPP) has been developed for construction, and will be included in the NPDES permit.

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

   An Operation and Maintenance (O&M) Plan has been developed and will be implemented for the Project. The O&M Plan will be reviewed by the BWSC.

10. All illicit discharges to the stormwater management system are prohibited.

    There are no known illicit discharges at the site.

■

Federal NPDES Construction-Related General Stormwater Permits

The proposed project will result in the disturbance of more than one acre of land and thus requires the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) by the **site contractor** and **owner** in accordance with the Environmental Protection Agency's (EPA's) National Pollutant Discharge Elimination System (NPDES) General Permit Program for Stormwater Discharges from Construction Sites. The SWPPP is not included in this report.

Appendix A:
Existing/Proposed Conditions Plans

Legend

Exist. / Prop.	Exist. / Prop.
PROPERTY LINE	CONCRETE
PROJECT LIMIT LINE	HEAVY DUTY PAVEMENT
RIGHT-OF-WAY/PROPERTY LINE	BUILDINGS
EASEMENT	RIPRAP
BUILDING SETBACK	CONSTRUCTION EXIT
PARKING SETBACK	TOP OF CURB ELEVATION
BASELINE	BOTTOM OF CURB ELEVATION
CONSTRUCTION LAYOUT	SPOT ELEVATION
ZONING LINE	TOP & BOTTOM OF WALL ELEVATION
TOWN LINE	BORING LOCATION
LIMIT OF DISTURBANCE	TEST PIT LOCATION
WETLAND LINE WITH FLAG	MONITORING WELL
FLOODPLAIN	UNDERDRAIN
BORDERING LAND SUBJECT TO FLOODING	DRAIN
WETLAND BUFFER ZONE	ROOF DRAIN
NO DISTURB ZONE	SEWER
200' RIVERFRONT AREA	FORCE MAIN
GRAVEL ROAD	OVERHEAD WIRE
EDGE OF PAVEMENT	WATER
BITUMINOUS BERM	FIRE PROTECTION
BITUMINOUS CURB	DOMESTIC WATER
CONCRETE CURB	GAS
CURB AND GUTTER	ELECTRIC
EXTRUDED CONCRETE CURB	STEAM
MONOLITHIC CONCRETE CURB	TELEPHONE
PRECAST CONC. CURB	FIRE ALARM
SLOPED GRAN. EDGING	CABLE TV
VERT. GRAN. CURB	CATCH BASIN CONCENTRIC
LIMIT OF CURB TYPE	CATCH BASIN ECCENTRIC
SAWCUT	DOUBLE CATCH BASIN CONCENTRIC
BUILDING	DOUBLE CATCH BASIN ECCENTRIC
BUILDING ENTRANCE	GUTTER INLET
LOADING DOCK	DRAIN MANHOLE CONCENTRIC
BOLLARD	DRAIN MANHOLE ECCENTRIC
DUMPSTER PAD	TRENCH DRAIN
SIGN	PLUG OR CAP
DOUBLE SIGN	CLEANOUT
STEEL GUARDRAIL	FLARED END SECTION
WOOD GUARDRAIL	HEADWALL
PATH	SEWER MANHOLE CONCENTRIC
TREE LINE	SEWER MANHOLE ECCENTRIC
WIRE FENCE	CURB STOP & BOX
FENCE	WATER VALVE & BOX
STOCKADE FENCE	TAPPING SLEEVE, VALVE & BOX
STONE WALL	SIAMESE CONNECTION
RETAINING WALL	FIRE HYDRANT
STREAM / POND / WATER COURSE	WATER METER
DETENTION BASIN	POST INDICATOR VALVE
HAY BALES	WATER WELL
SILT FENCE	GAS GATE
SILT SOCK / STRAW WATTLE	GAS METER
MINOR CONTOUR	ELECTRIC MANHOLE
MAJOR CONTOUR	ELECTRIC METER
PARKING COUNT	LIGHT POLE
COMPACT PARKING STALLS	TELEPHONE MANHOLE
DOUBLE YELLOW LINE	TRANSFORMER PAD
STOP LINE	UTILITY POLE
CROSSWALK	GUY POLE
ACCESSIBLE CURB RAMP	GUY WIRE & ANCHOR
ACCESSIBLE PARKING	HAND HOLE
VAN-ACCESSIBLE PARKING	PULL BOX
	MATCHLINE

Abbreviations

General

ABAN	ABANDON
ACR	ACCESSIBLE CURB RAMP
ADJ	ADJUST
APPROX	APPROXIMATE
BIT	BITUMINOUS
BS	BOTTOM OF SLOPE
BWLL	BROKEN WHITE LANE LINE
CONC	CONCRETE
DYCL	DOUBLE YELLOW CENTER LINE
EL	ELEVATION
ELEV	ELEVATION
EX	EXISTING
FDN	FOUNDATION
FFE	FIRST FLOOR ELEVATION
GRAN	GRANITE
GTD	GRADE TO DRAIN
LA	LANDSCAPE AREA
LOD	LIMIT OF DISTURBANCE
MAX	MAXIMUM
MIN	MINIMUM
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
PERF	PERFORATED
PROP	PROPOSED
REM	REMOVE
RET	RETAIN
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND RESET
SWEL	SOLID WHITE EDGE LINE
SWLL	SOLID WHITE LANE LINE
TS	TOP OF SLOPE
TYP	TYPICAL

Utility

CB	CATCH BASIN
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
DCB	DOUBLE CATCH BASIN
DMH	DRAIN MANHOLE
CIP	CAST IRON PIPE
COND	CONDUIT
DIP	DUCTILE IRON PIPE
FES	FLARED END SECTION
FM	FORCE MAIN
F&G	FRAME AND GRATE
F&C	FRAME AND COVER
GI	GUTTER INLET
GT	GREASE TRAP
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HH	HANDHOLE
HW	HEADWALL
HYD	HYDRANT
INV	INVERT ELEVATION
I=	INVERT ELEVATION
LP	LIGHT POLE
MES	METAL END SECTION
PIV	POST INDICATOR VALVE
PWW	PAVED WATER WAY
PVC	POLYVINYLCHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
R=	RIM ELEVATION
RIM=	RIM ELEVATION
SMH	SEWER MANHOLE
TSV	TAPPING SLEEVE, VALVE AND BOX
UG	UNDERGROUND
UP	UTILITY POLE

Notes

General

1. CONTRACTOR SHALL NOTIFY "DIG-SAFE" (1-888-344-7233) AT LEAST 72 HOURS BEFORE EXCAVATING.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.
3. ACCESSIBLE ROUTES, PARKING SPACES, RAMPS, SIDEWALKS AND WALKWAYS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE FEDERAL AMERICANS WITH DISABILITIES ACT AND WITH STATE AND LOCAL LAWS AND REGULATIONS (WHICHEVER ARE MORE STRINGENT).
4. AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENTS, WALKS, ETC.) SHALL RECEIVE 6 INCHES LOAM AND SEED.
5. WITHIN THE LIMITS OF THE BUILDING FOOTPRINT, THE SITE CONTRACTOR SHALL PERFORM EARTHWORK OPERATIONS REQUIRED UP TO SUBGRADE ELEVATIONS.
6. WORK WITHIN THE LOCAL RIGHTS-OF-WAY SHALL CONFORM TO LOCAL MUNICIPAL STANDARDS. WORK WITHIN STATE RIGHTS-OF-WAY SHALL CONFORM TO THE LATEST EDITION OF THE STATE HIGHWAY DEPARTMENTS STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
7. UPON AWARD OF CONTRACT, CONTRACTOR SHALL MAKE NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY FEES, AND POST BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS, AND IN THE CONTRACT DOCUMENTS. DO NOT CLOSE OR OBSTRUCT ROADWAYS, SIDEWALKS, AND FIRE HYDRANTS, WITHOUT APPROPRIATE PERMITS.
8. TRAFFIC SIGNAGE AND PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
9. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
10. IN THE EVENT THAT SUSPECTED CONTAMINATED SOIL, GROUNDWATER, AND OTHER MEDIA ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACTORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL, AND SHALL NOTIFY THE OWNER IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.
11. CONTRACTOR SHALL PREVENT DUST, SEDIMENT, AND DEBRIS FROM EXITING THE SITE AND SHALL BE RESPONSIBLE FOR CLEANUP, REPAIRS AND CORRECTIVE ACTION IF SUCH OCCURS.
12. DAMAGE RESULTING FROM CONSTRUCTION LOADS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO OWNER.
13. CONTRACTOR SHALL CONTROL STORMWATER RUNOFF DURING CONSTRUCTION TO PREVENT ADVERSE IMPACTS TO OFF SITE AREAS, AND SHALL BE RESPONSIBLE TO REPAIR RESULTING DAMAGES, IF ANY, AT NO COST TO OWNER.
14. THIS PROJECT DISTURBS MORE THAN ONE ACRE OF LAND AND FALLS WITHIN THE NPDES CONSTRUCTION GENERAL PERMIT (CGP) PROGRAM AND EPA JURISDICTION. PRIOR TO THE START OF CONSTRUCTION CONTRACTOR IS TO FILE A CGP NOTICE OF INTENT WITH THE EPA AND PREPARE A STORMWATER POLLUTION PREVENTION PLAN IN ACCORDANCE WITH THE NPDES REGULATIONS. CONTRACTOR SHALL CONFIRM THE OWNER HAS ALSO FILED A NOTICE OF INTENT WITH THE EPA.

Utilities

1. THE LOCATIONS, SIZES, AND TYPES OF EXISTING UTILITIES ARE SHOWN AS AN APPROXIMATE REPRESENTATION ONLY. THE OWNER OR ITS REPRESENTATIVE(S) HAVE NOT INDEPENDENTLY VERIFIED THIS INFORMATION AS SHOWN ON THE PLANS. THE UTILITY INFORMATION SHOWN DOES NOT GUARANTEE THE ACTUAL EXISTENCE, SERVICEABILITY, OR OTHER DATA CONCERNING THE UTILITIES, NOR DOES IT GUARANTEE AGAINST THE POSSIBILITY THAT ADDITIONAL UTILITIES MAY BE PRESENT THAT ARE NOT SHOWN ON THE PLANS. PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATIONS, SIZES, AND ELEVATIONS OF THE POINTS OF CONNECTIONS TO EXISTING UTILITIES AND, SHALL CONFIRM THAT THERE ARE NO INTERFERENCES WITH EXISTING UTILITIES AND THE PROPOSED UTILITY ROUTES, INCLUDING ROUTES WITHIN THE PUBLIC RIGHTS OF WAY.
2. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, OR EXISTING CONDITIONS DIFFER FROM THOSE SHOWN SUCH THAT THE WORK CANNOT BE COMPLETED AS INTENDED, THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED IN WRITING TO THE OWNER'S REPRESENTATIVE FOR THE RESOLUTION OF THE CONFLICT AND CONTRACTOR'S FAILURE TO NOTIFY PRIOR TO PERFORMING ADDITIONAL WORK RELEASES OWNER FROM OBLIGATIONS FOR ADDITIONAL PAYMENTS WHICH OTHERWISE MAY BE WARRANTED TO RESOLVE THE CONFLICT.
3. SET CATCH BASIN RIMS, AND INVERTS OF SEWERS, DRAINS, AND DITCHES IN ACCORDANCE WITH ELEVATIONS ON THE GRADING AND UTILITY PLANS.
4. RIM ELEVATIONS FOR DRAIN AND SEWER MANHOLES, WATER VALVE COVERS, GAS GATES, ELECTRIC AND TELEPHONE PULL BOXES, AND MANHOLES, AND OTHER SUCH ITEMS, ARE APPROXIMATE AND SHALL BE SET/RESET AS FOLLOWS:
   A. PAVEMENTS AND CONCRETE SURFACES: FLUSH
   B. ALL SURFACES ALONG ACCESSIBLE ROUTES: FLUSH
   C. LANDSCAPE, LOAM AND SEED, AND OTHER EARTH SURFACE AREAS: ONE INCH ABOVE SURROUNDING AREA AND TAPER EARTH TO THE RIM ELEVATION.
5. THE LOCATION, SIZE, DEPTH, AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS PROVIDED BY, AND APPROVED BY, THE RESPECTIVE UTILITY COMPANY (GAS, TELEPHONE, ELECTRIC, FIRE ALARM, ETC.). FINAL DESIGN LOADS AND LOCATIONS TO BE COORDINATED WITH OWNER AND ARCHITECT.
6. CONTRACTOR SHALL MAKE ARRANGEMENTS FOR AND SHALL BE RESPONSIBLE FOR PAYING FEES FOR POLE RELOCATION AND FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, FIRE ALARM, AND ANY OTHER PRIVATE UTILITIES, WHETHER WORK IS PERFORMED BY CONTRACTOR OR BY THE UTILITIES COMPANY.
7. UTILITY PIPE MATERIALS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED ON THE PLAN:
   A. WATER PIPES 3" OR GREATER SHALL BE DUCTILE IRON CEMENT LINED (DICL). CLASS 56, ZINC-COATED AND CORROSIVE-RESISTANT PIPE UNLESS OTHERWISE NOTED ON THE PLAN. PROPOSED WATER PIPES LESS THAN 3" SHALL BE COPPER WATER TUBING (TYPE K) UNLESS OTHERWISE NOTED ON THE PLUMBING DRAWINGS.
   B. SANITARY SEWER PIPES SHALL BE POLYVINYL CHLORIDE (PVC) SDR 35 SEWER PIPE
   C. STORM DRAINAGE PIPES SHALL BE HIGH DENSITY POLYETHYLENE (HDPE) DRAIN PIPE, UNLESS OTHERWISE NOTED ON THE PLANS. DUCTILE IRON CEMENT LINED (DICL) PIPE SHALL BE THICKNESS CLASS 56.
   D. PIPE INSTALLATION AND MATERIALS SHALL COMPLY WITH THE STATE PLUMBING CODE WHERE APPLICABLE. CONTRACTOR SHALL COORDINATE WITH LOCAL PLUMBING INSPECTOR PRIOR TO BEGINNING WORK.
8. CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR AND SHALL FURNISH EXCAVATION, INSTALLATION, AND BACKFILL OF ELECTRICAL FURNISHED SITEWORK RELATED ITEMS SUCH AS PULL BOXES, CONDUITS, DUCT BANKS, LIGHT POLE BASES, AND CONCRETE PADS. SITE CONTRACTOR SHALL FURNISH CONCRETE ENCASEMENT OF DUCT BANKS IF REQUIRED BY THE UTILITY COMPANY AND AS INDICATED ON THE DRAWINGS.
9. CONTRACTOR SHALL EXCAVATE AND BACKFILL TRENCHES FOR GAS IN ACCORDANCE WITH GAS COMPANY'S REQUIREMENTS.
10. ALL DRAINAGE AND SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN.) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS AND LOCAL MUNICIPAL STANDARDS. FOR MANHOLES THAT ARE 20 FEET IN DEPTH AND GREATER, THE MINIMUM DIAMETER SHALL BE 5 FEET.

Layout and Materials

1. DIMENSIONS ARE FROM THE FACE OF CURB, FACE OF BUILDING, FACE OF WALL, AND CENTER LINE OF PAVEMENT MARKINGS, UNLESS OTHERWISE NOTED.
2. CURB RADII ARE 3 FEET UNLESS OTHERWISE NOTED.
3. CURBING SHALL BE PCC WITHIN THE SITE UNLESS OTHERWISE INDICATED ON THE PLANS.
4. SEE ARCHITECTURAL DRAWINGS FOR EXACT BUILDING DIMENSIONS AND DETAILS CONTIGUOUS TO THE BUILDING, INCLUDING SIDEWALKS, RAMPS, BUILDING ENTRANCES, STAIRWAYS, UTILITY PENETRATIONS, CONCRETE DOOR PADS, COMPACTOR PAD, LOADING DOCKS, BOLLARDS, ETC.
5. PROPOSED BOUNDS AND ANY EXISTING PROPERTY LINE MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE SET OR RESET BY A PROFESSIONAL LICENSED SURVEYOR.
6. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL VERIFY EXISTING PAVEMENT ELEVATIONS AT INTERFACE WITH PROPOSED PAVEMENTS, AND EXISTING GROUND ELEVATIONS ADJACENT TO DRAINAGE OUTLETS TO ASSURE PROPER TRANSITIONS BETWEEN EXISTING AND PROPOSED FACILITIES.

Demolition

1. CONTRACTOR SHALL REMOVE AND DISPOSE OF EXISTING MANMADE SURFACE FEATURES WITHIN THE LIMIT OF WORK AS NECESSARY TO CONSTRUCT PROPOSED IMPROVEMENTS.
2. EXISTING UTILITIES SHALL BE TERMINATED, AS NOTED, IN CONFORMANCE WITH LOCAL, STATE AND INDIVIDUAL UTILITY COMPANY STANDARD SPECIFICATIONS AND DETAILS. THE CONTRACTOR SHALL COORDINATE UTILITY SERVICE DISCONNECTS WITH THE UTILITY REPRESENTATIVES.
3. CONTRACTOR SHALL DISPOSE OF DEMOLITION DEBRIS IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, ORDINANCES AND STATUTES.
4 THE DEMOLITION LIMITS DEPICTED IN THE PLANS IS INTENDED TO AID THE CONTRACTOR DURING THE BIDDING AND CONSTRUCTION PROCESS AND IS NOT INTENDED TO DEPICT EACH AND EVERY ELEMENT OF DEMOLITION. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING THE DETAILED SCOPE OF DEMOLITION BEFORE SUBMITTING ITS BID/PROPOSAL TO PERFORM THE WORK AND SHALL MAKE NO CLAIMS AND SEEK NO ADDITIONAL COMPENSATION FOR CHANGED CONDITIONS OR UNFORESEEN OR LATENT SITE CONDITIONS RELATED TO ANY CONDITIONS DISCOVERED DURING EXECUTION OF THE WORK.
5. UNLESS OTHERWISE SPECIFICALLY PROVIDED ON THE PLANS OR IN THE SPECIFICATIONS, THE ENGINEER HAS NOT PREPARED DESIGNS FOR AND SHALL HAVE NO RESPONSIBILITY FOR THE PRESENCE, DISCOVERY, REMOVAL, ABATEMENT OR DISPOSAL OF HAZARDOUS MATERIALS, TOXIC WASTES OR POLLUTANTS AT THE PROJECT SITE. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR ANY CLAIMS OF LOSS, DAMAGE, EXPENSE, DELAY, INJURY OR DEATH ARISING FROM THE PRESENCE OF HAZARDOUS MATERIAL AND CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE ENGINEER FROM ANY CLAIMS MADE IN CONNECTION THEREWITH. MOREOVER, THE ENGINEER SHALL HAVE NO ADMINISTRATIVE OBLIGATIONS OF ANY TYPE WITH REGARD TO ANY CONTRACTOR AMENDMENT INVOLVING THE ISSUES OF PRESENCE, DISCOVERY, REMOVAL, ABATEMENT OR DISPOSAL OF ASBESTOS OR OTHER HAZARDOUS MATERIALS.

Erosion Control

1. PRIOR TO STARTING ANY OTHER WORK ON THE SITE, THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES AND SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS IDENTIFIED IN FEDERAL, STATE, AND LOCAL APPROVAL DOCUMENTS PERTAINING TO THIS PROJECT.
2. CONTRACTOR SHALL INSPECT AND MAINTAIN EROSION CONTROL MEASURES ON A WEEKLY BASIS (MINIMUM) OR AS REQUIRED PER THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP). THE CONTRACTOR SHALL ADDRESS DEFICIENCIES AND MAINTENANCE ITEMS WITHIN TWENTY-FOUR HOURS OF INSPECTION. CONTRACTOR SHALL PROPERLY DISPOSE OF SEDIMENT SUCH THAT IT DOES NOT ENCUMBER OTHER DRAINAGE STRUCTURES AND PROTECTED AREAS.
3. CONTRACTOR SHALL BE FULLY RESPONSIBLE TO CONTROL CONSTRUCTION SUCH THAT SEDIMENTATION SHALL NOT AFFECT REGULATORY PROTECTED AREAS, WHETHER SUCH SEDIMENTATION IS CAUSED BY WATER, WIND, OR DIRECT DEPOSIT.
4. CONTRACTOR SHALL PERFORM CONSTRUCTION SEQUENCING SUCH THAT EARTH MATERIALS ARE EXPOSED FOR A MINIMUM OF TIME BEFORE THEY ARE COVERED, SEEDED, OR OTHERWISE STABILIZED TO PREVENT EROSION.
5. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER, CONTRACTOR SHALL REMOVE AND DISPOSE OF EROSION CONTROL MEASURES AND CLEAN SEDIMENT AND DEBRIS FROM ENTIRE DRAINAGE AND SEWER SYSTEMS.

Existing Conditions Information

1. BASE PLAN: THE PROPERTY LINES SHOWN WERE DETERMINED BY AN ACTUAL FIELD SURVEY CONDUCTED BY HARRY FELDMAN, INC. DATED FEBRUARY 22, 2019 AND FROM PLANS OF RECORD. THE TOPOGRAPHY AND PHYSICAL FEATURES ARE BASED ON AN ACTUAL FIELD SURVEY PERFORMED ON THE GROUND BY HARRY FELDMAN, INC.
2. TOPOGRAPHY: ELEVATIONS ARE BASED ON BOSTON CITY BASE.

Document Use

1. THESE PLANS AND CORRESPONDING CADD DOCUMENTS ARE INSTRUMENTS OF PROFESSIONAL SERVICE, AND SHALL NOT BE USED, IN WHOLE OR IN PART, FOR ANY PURPOSE OTHER THAN FOR WHICH IT WAS CREATED WITHOUT THE EXPRESSED, WRITTEN CONSENT OF VHB. ANY UNAUTHORIZED USE, REUSE, MODIFICATION OR ALTERATION, INCLUDING AUTOMATED CONVERSION OF THIS DOCUMENT SHALL BE AT THE USER'S SOLE RISK WITHOUT LIABILITY OR LEGAL EXPOSURE TO VHB.
2. CONTRACTOR SHALL NOT RELY SOLELY ON ELECTRONIC VERSIONS OF PLANS, SPECIFICATIONS, AND DATA FILES THAT ARE OBTAINED FROM THE DESIGNERS, BUT SHALL VERIFY LOCATION OF PROJECT FEATURES IN ACCORDANCE WITH THE PAPER COPIES OF THE PLANS AND SPECIFICATIONS THAT ARE SUPPLIED AS PART OF THE CONTRACT DOCUMENTS.
3. SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SCALED TO THEIR ACTUAL DIMENSIONS OR LOCATIONS ON THE DRAWINGS. THE CONTRACTOR SHALL REFER TO THE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT FEATURES.

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NOT FOR CONSTRUCTION

PROJECT NUMBER: 13421.02

DATE: 8 JANUARY 2021

REVISIONS:

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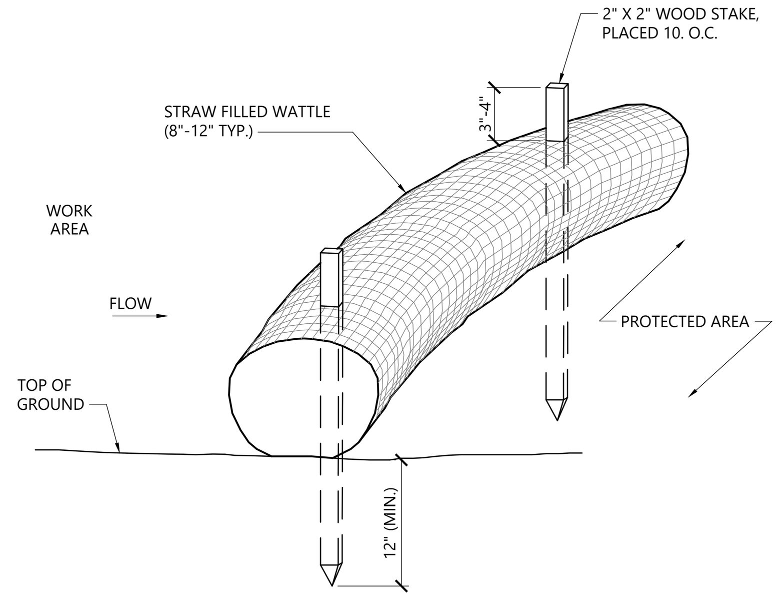
SCALE:

DRAWING NAME:

LEGEND AND GENERAL NOTES

DRAWING NUMBER:

C100



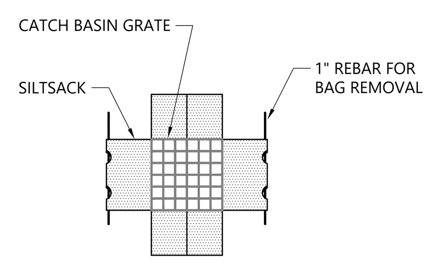
NOTES

1. STRAW WATTLE SHALL BE AS MANUFACTURED BY EARTHSAVER OR APPROVED EQUAL.
2. STRAW WATTLES SHALL OVERLAP A MINIMUM OF 12 INCHES.
3. STRAW WATTLE SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS, AND REPAIR OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED.
4. TEMPORARY STRAW WATTLES TO BE REMOVED BY CONTRACTOR. ALL OTHERS TO REMAIN IN PLACE UNLESS DIRECTED OTHERWISE BY ENGINEER.
5. IF NON BIODEGRADABLE NETTING IS USED THE NETTING SHALL BE COLLECTED AND DISPOSED OF OFFSITE.

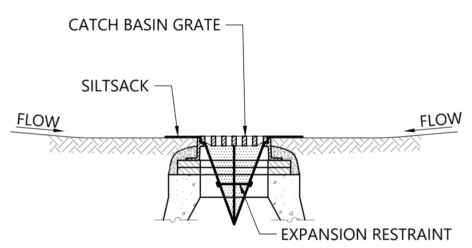
Straw Wattle - Erosion Control Barrier

1/16

N.T.S. Source: VHB LD_659



PLAN VIEW



SECTION VIEW

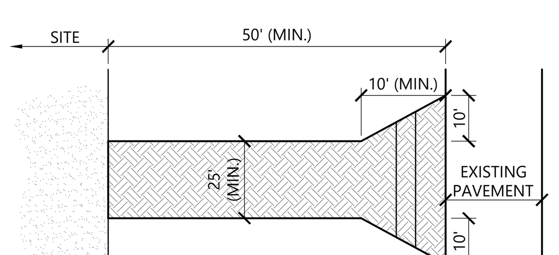
NOTES

1. INSTALL SILTSACK IN ALL CATCH BASINS WHERE INDICATED ON THE PLAN BEFORE COMMENCING WORK OR IN PAVED AREAS AFTER BINDER COURSE IS PLACED AND HAY BALES HAVE BEEN REMOVED.
2. GRATE TO BE PLACED OVER SILTSACK.
3. SILTSACK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND CLEANING OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED. MAINTAIN UNTIL UPSTREAM AREAS HAVE BEEN PERMANENTLY STABILIZED

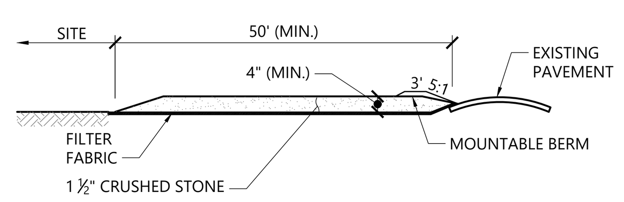
Siltsack Sediment Trap

1/16

N.T.S. Source: VHB LD_674



PLAN VIEW



CROSS-SECTION

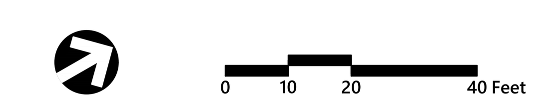
NOTES

1. EXIT WIDTH SHALL BE A TWENTY-FIVE (25) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
2. THE EXIT SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY. BERM SHALL BE PERMITTED. PERIODIC INSPECTION AND MAINTENANCE SHALL BE PROVIDED AS NEEDED.
3. STABILIZED CONSTRUCTION EXIT SHALL BE REMOVED PRIOR TO FINAL FINISH MATERIALS BEING INSTALLED.

Stabilized Construction Exit

1/16

N.T.S. Source: VHB LD_682



General Notes

1. PRIOR TO STARTING ANY OTHER WORK ON THE SITE, THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES AND SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS IDENTIFIED IN FEDERAL, STATE, AND LOCAL APPROVAL DOCUMENTS PERTAINING TO THIS PROJECT.
2. CONTRACTOR SHALL INSPECT AND MAINTAIN EROSION CONTROL MEASURES, AND REMOVE SEDIMENT THEREFROM ON A WEEKLY BASIS AND WITHIN TWELVE HOURS AFTER EACH STORM EVENT AND DISPOSE OF SEDIMENTS IN AN UPLAND AREA SUCH THAT THEY DO NOT ENCUMBER OTHER DRAINAGE STRUCTURES AND PROTECTED AREAS.
3. CONTRACTOR SHALL BE FULLY RESPONSIBLE TO CONTROL CONSTRUCTION SUCH THAT SEDIMENTATION SHALL NOT AFFECT REGULATORY PROTECTED AREAS, WHETHER SUCH SEDIMENTATION IS CAUSED BY WATER, WIND, OR DIRECT DEPOSIT.
4. CONTRACTOR SHALL PERFORM CONSTRUCTION SEQUENCING SUCH THAT EARTH MATERIALS ARE EXPOSED FOR A MINIMUM AMOUNT OF TIME BEFORE THEY ARE COVERED, SEEDED, OR OTHERWISE STABILIZED TO PREVENT EROSION.
5. CONTRACTOR SHALL KEEP RECORDS OF CONFORMANCE WITH ALL EROSION AND SEDIMENTATION CONTROL MEASURES AS REQUIRED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA) UNDER A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) OR AS REQUIRED AS PART OF THE LEADERS IN ENERGY AND ENVIRONMENTAL DESIGN (LEED) PROCESS.
6. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER, CONTRACTOR SHALL REMOVE AND DISPOSE OF EROSION CONTROL MEASURES AND CLEAN SEDIMENT AND DEBRIS FROM ENTIRE DRAINAGE AND SEWER SYSTEMS.
7. CONTRACTOR TO COORDINATE TEMPORARY SOIL STOCKPILE LOCATIONS WITH OWNER PRIOR TO CONSTRUCTION. STOCKPILES ARE TO BE OUTSIDE LIMIT OF EXISTING DRAINAGE INLETS, LOCATED ON EXISTING PAVEMENT WITH POLY LAYER UNDERNEATH, STOCKPILE TO BE COVERED WITH POLY LAYER AND SURROUNDED WITH EROSION CONTROL BARRIER (TYP).

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SCALE:

DRAWING NAME:

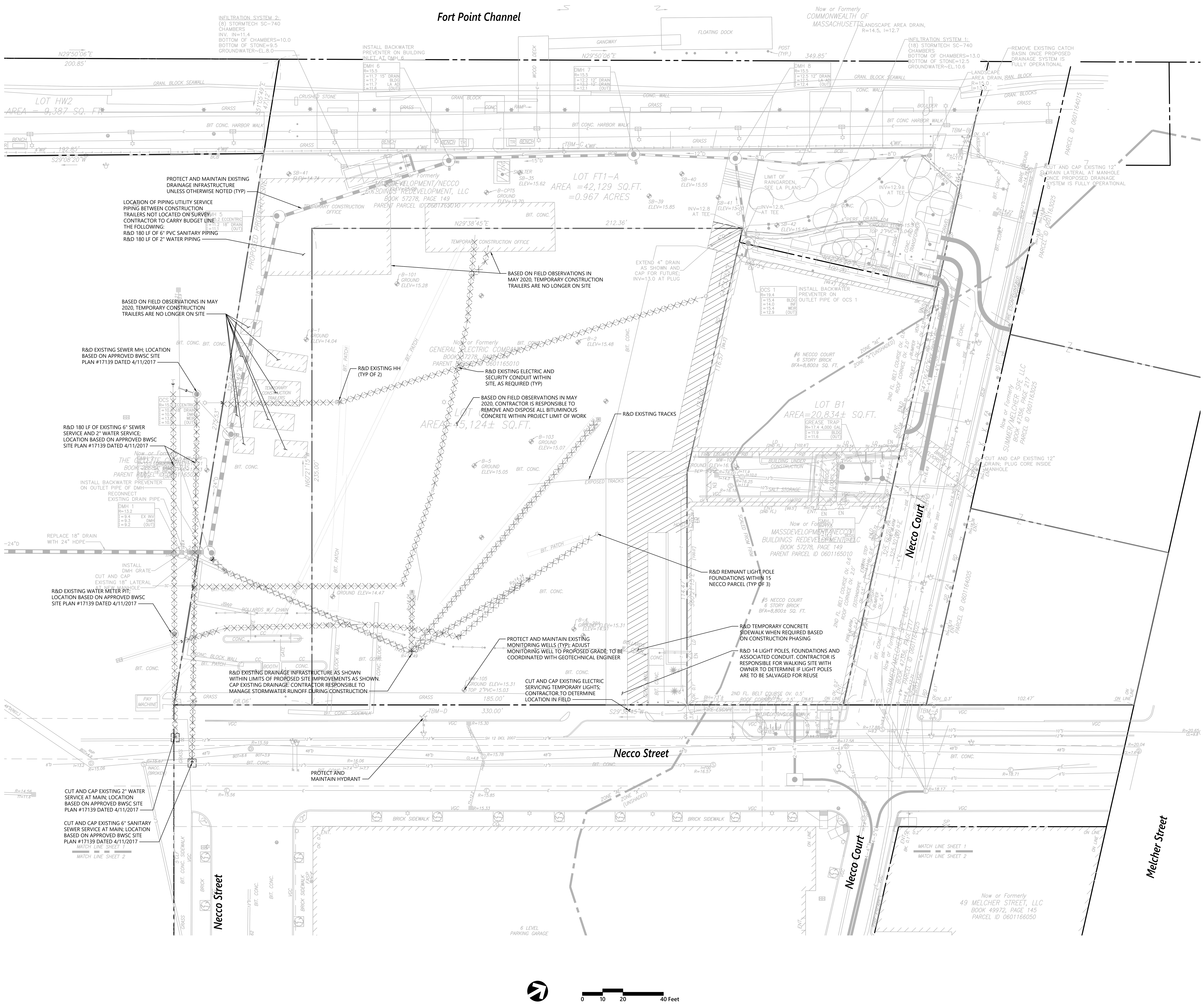
EROSION AND SEDIMENTATION CONTROL PLAN

DRAWING NUMBER:

C200

Notes:

1. PLEASE BE ADVISED THAT, AS OF THE DATE OF THIS PLAN ISSUANCE, THE SITE IMPROVEMENTS SHOWN ON THIS PLAN WITHIN THE PUBLIC RIGHT-OF-WAYS ARE SUBJECT TO FINAL DESIGN APPROVAL BY ALL RELEVANT CITY AGENCIES, BUT NOT LIMITED TO, THE BOSTON PUBLIC WORKS DEPARTMENT (BPWD), THE BOSTON WATER AND SEWER COMMISSION (BWSC), BOSTON'S INSPECTIONAL SERVICE DEPARTMENT (ISD), THE BOSTON TRANSPORTATION DEPARTMENT (BTD), AND THE BOSTON PUBLIC IMPROVEMENT COMMISSION (PIC). THE CONTRACTOR SHALL COORDINATE WITH THE PROJECT SITE/CIVIL ENGINEER PRIOR TO COMMENCEMENT OF SITE CONSTRUCTION ACTIVITIES TO ASCERTAIN ANY DESIGN UPDATES IN RESPONSE TO MUNICIPAL DESIGN REVIEWS.



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SITE PREPARATION PLAN

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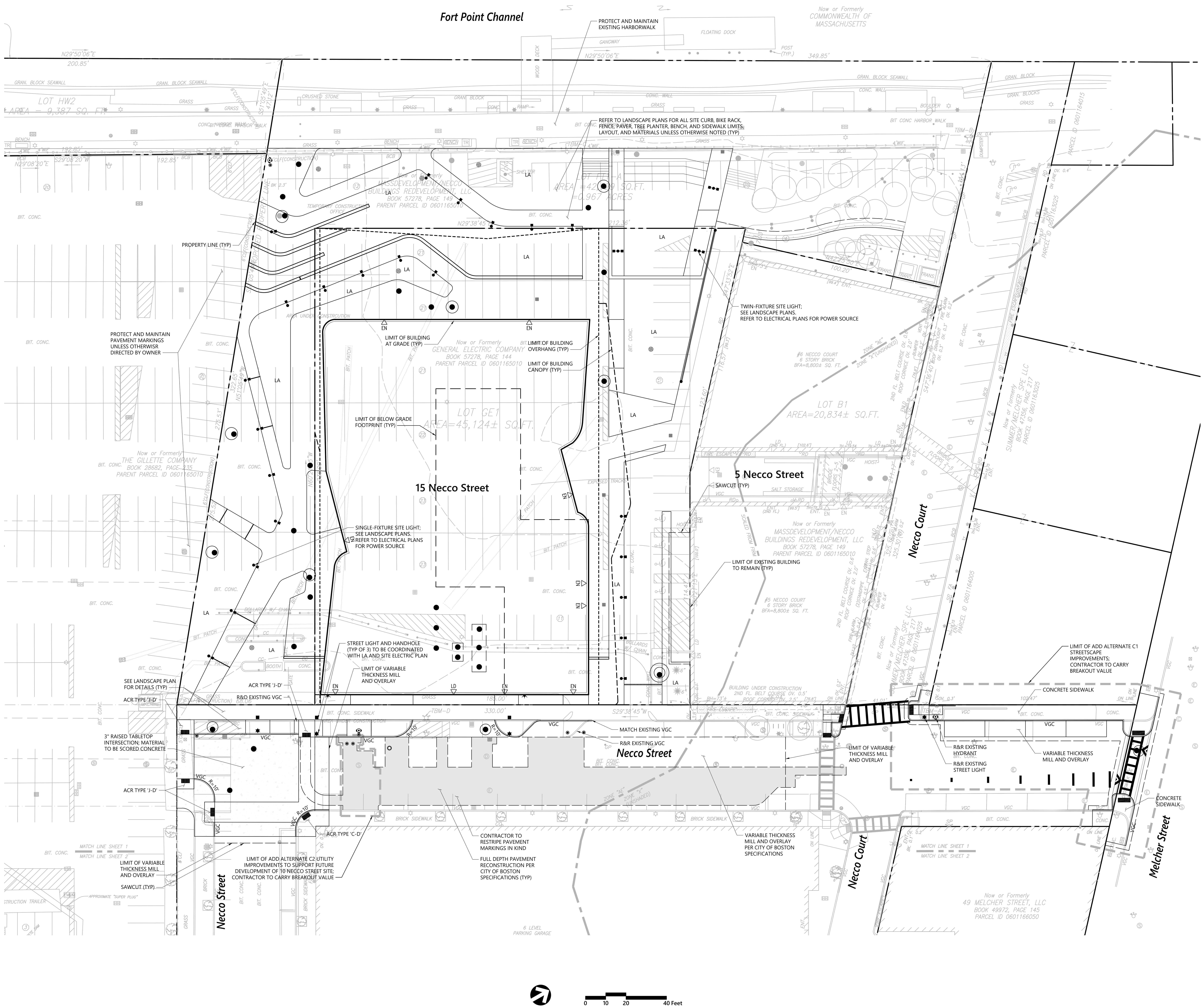

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8 JANUARY 2021
Design Development Package
NOT FOR CONSTRUCTION

PROJECT NUMBER: 13421.02

DATE: 8 JANUARY 2021

REVISIONS:

SEE PREVIOUS ISSUES FOR REVISIONS NOT LISTED HERE

SCALE:

DRAWING NAME:

LAYOUT AND MATERIALS PLAN

DRAWING NUMBER:

C400

Notes:

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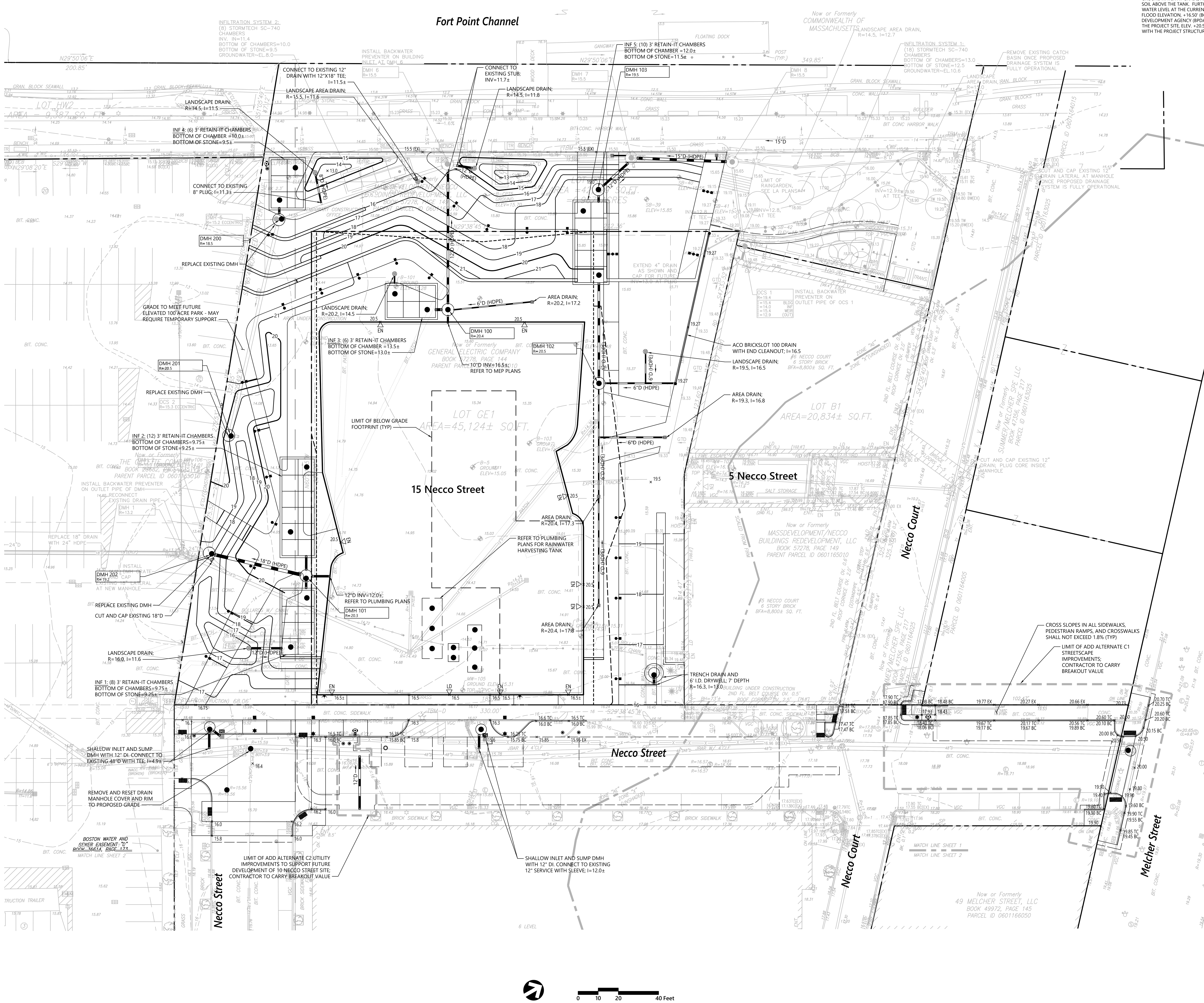
2. STRUCTURAL CALCULATIONS FOR ANTI-FLOTATION SLABS OR DEVICES ASSOCIATED WITH THE PROPOSED GREASE TRAP AND RAINWATER HARVESTING TANK SHALL BE FURNISHED BY THE CONTRACTOR AND/OR ITS SUBCONTRACTOR(S) FOR APPROVAL AND IN ACCORDANCE WITH SPECIFIC DESIGN CRITERIA FURNISHED. A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MASSACHUSETTS SHALL PREPARE THESE CALCULATIONS. AT A MINIMUM, CALCULATIONS SHOULD CONSIDER DEAD, LIVE, SOIL, AND HYDROSTATIC LOADS, GROUNDWATER AT GRADE, AN EMPTY TANK, AND CONSTRUCTION CONDITION WITH NO SOIL ABOVE THE TANK. FURTHER, ANTI-BUOYANCY CALCULATIONS SHOULD CONSIDER THE WATER LEVEL AT THE CURRENT FEMA SPECIAL FLOOD HAZARD AREA (SFHA) ZONE BASE FLOOD ELEVATION, +16.50' (BOSTON CITY BASE), AND THE BOSTON PLANNING & DEVELOPMENT AGENCY (BPDA) SEA LEVEL RISE - DESIGN FLOOD ELEVATION (SLR-DFE) FOR THE PROJECT SITE, ELEV. +20.5' (BOSTON CITY BASE). THE DESIGN SHALL BE COORDINATED WITH THE PROJECT STRUCTURAL AND GEOTECHNICAL ENGINEERS.



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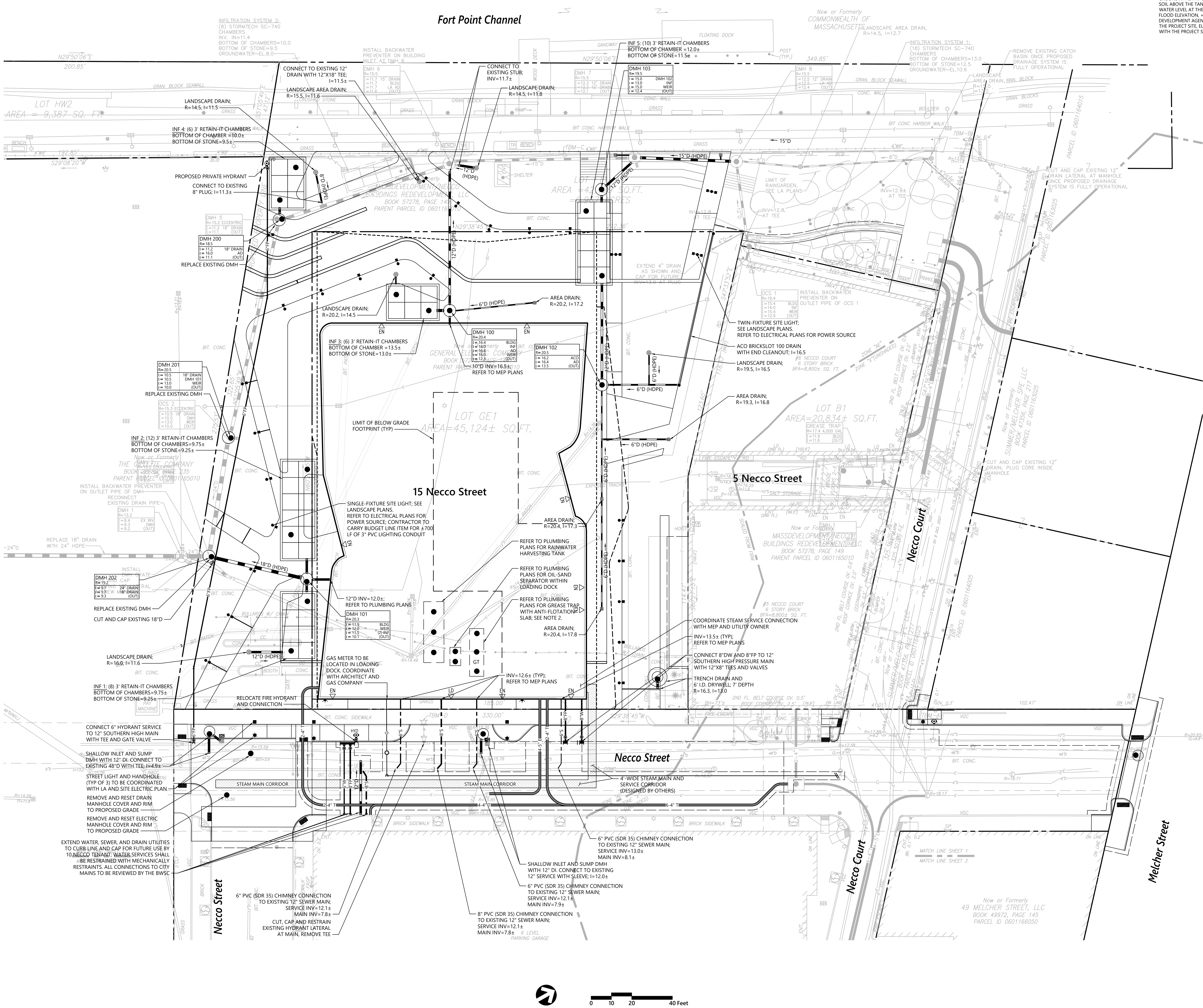

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UTILITY PLAN

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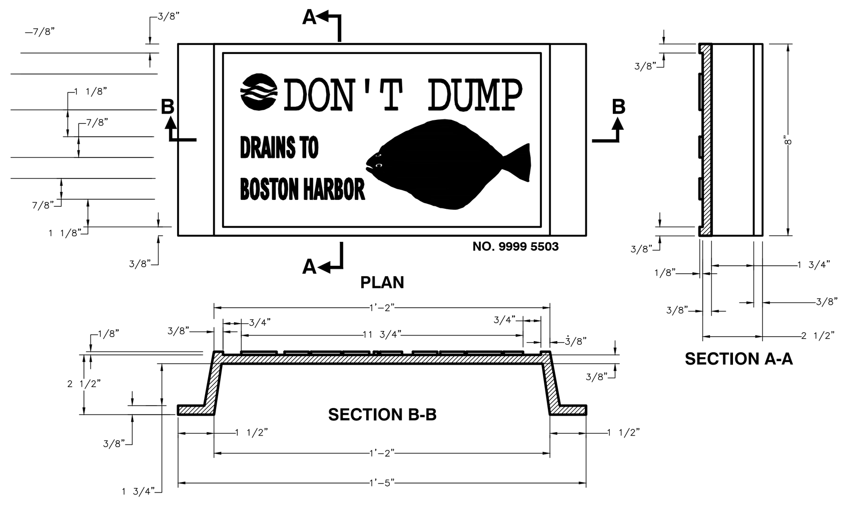
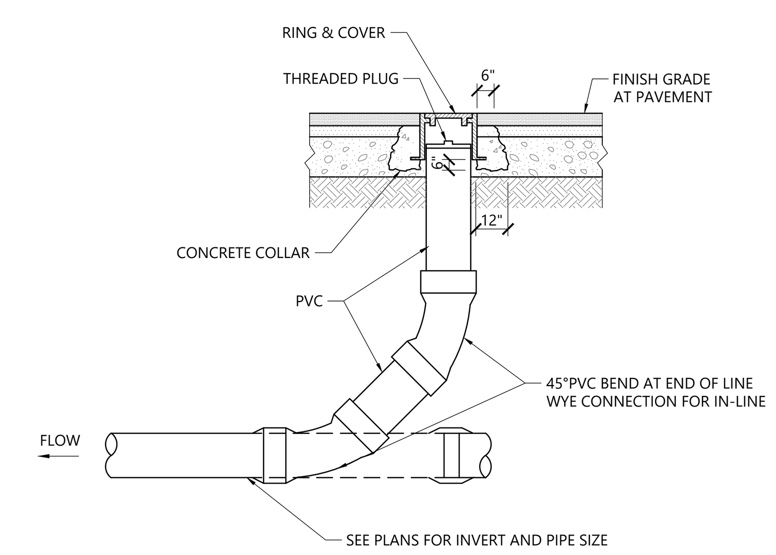
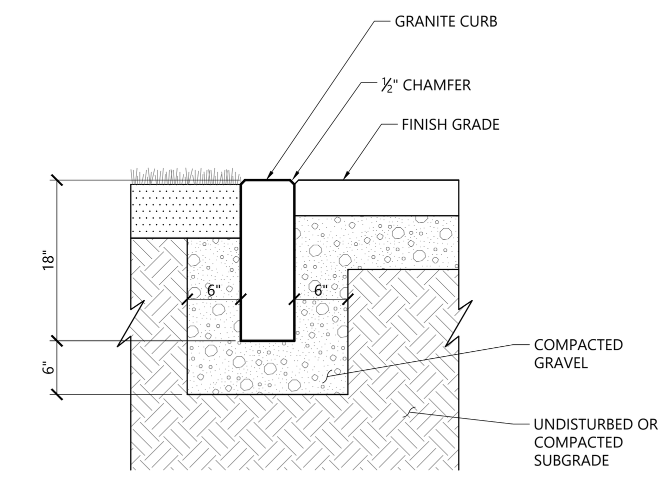
C600



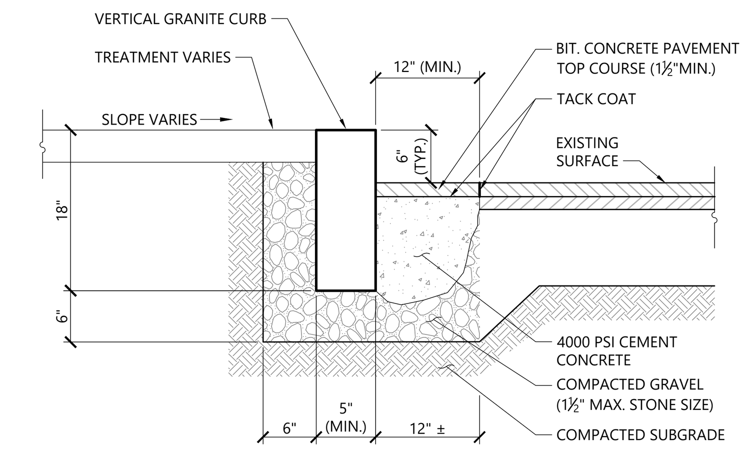
BWSC - 8" x 14" Catch Basin Sign
N.T.S. Source: BWSC F1-D23



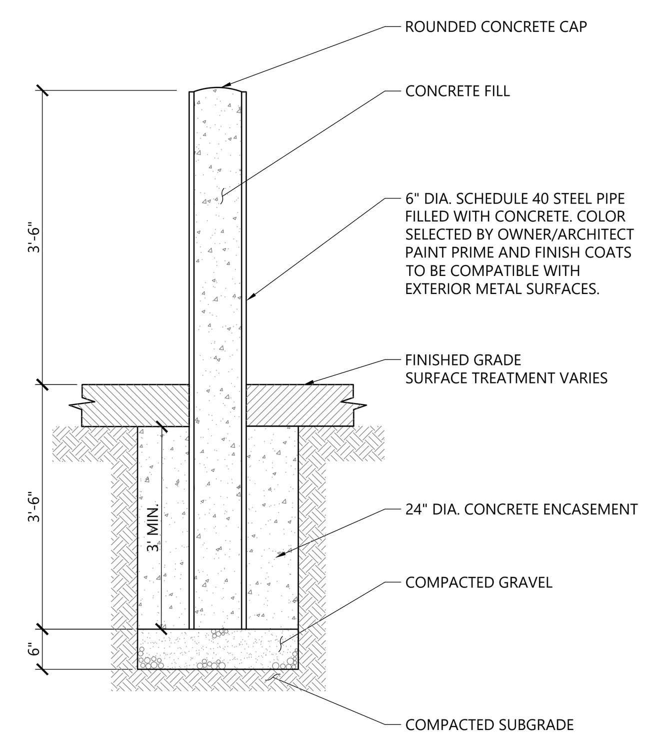
Cleanout - Paved Area 1/16
N.T.S. Source: VHB LD_303



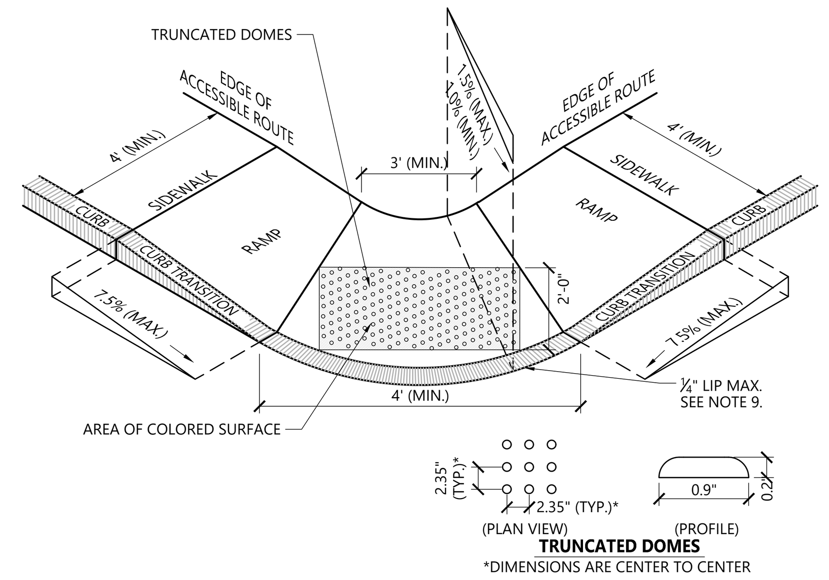
Flush Granite Curb 1/16
N.T.S. Source: VHB LD_409



Vertical Granite Curb (VGC) Set In Existing Pavement 1/16
N.T.S. Source: VHB LD_403



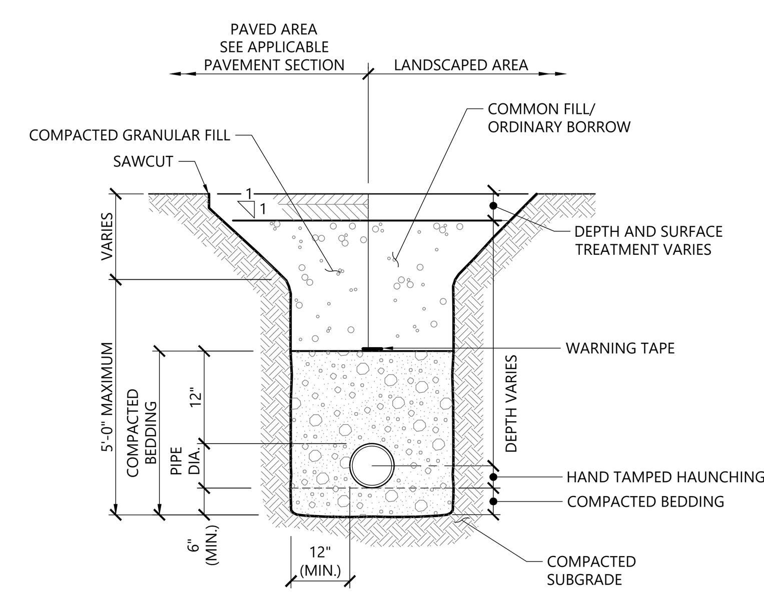
Typical Bollard 9/17
N.T.S. Source: VHB LD_700



NOTES

1. THE MAXIMUM ALLOWABLE SIDEWALK AND CURB RAMP CROSS SLOPES SHALL BE 1.5 (1% MIN.).
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE AT CURB RAMPS SHALL BE 7.5%.
4. A MINIMUM OF 3 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
6. RAMP, CURB AND ADJACENT PAVEMENTS SHALL BE GRADED TO PREVENT PONDING.
7. SEE TYPICAL SIDEWALK SECTION FOR RAMP CONSTRUCTION.
8. WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5' x 5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200 FEET.
9. ELIMINATE CURBING AT RAMP WHERE IT ABUTS ROADWAY, EXCEPT WHERE VERTICAL CURBING IS INDICATED ON THE DRAWINGS TO BE INSTALLED AND SET FLUSH.
10. DETECTABLE WARNINGS SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES.
11. DETECTABLE WARNINGS SHALL BE INSTALLED PERPENDICULAR TO THE ACCESSIBLE ROUTE.
12. CONTRACTOR TO SUBMIT R.F.I. FOR THIS TYPE OF ACCESSIBLE CURB RAMP FOR APEX ROADWAY CROSSINGS.

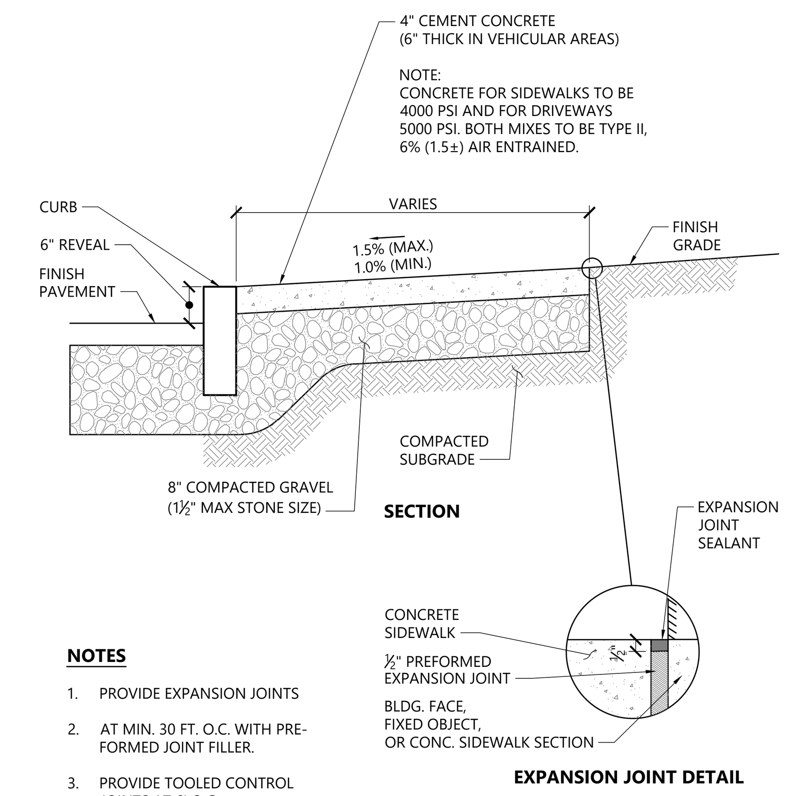
Accessible Curb Ramp (ACR) Type 'C-D' 1/16
N.T.S. Source: VHB LD_502



NOTES

1. WHERE UTILITY TRENCHES ARE CONSTRUCTED THROUGH DETENTION BASIN BERMS OR OTHER SUCH SPECIAL SECTIONS, PLACE TRENCH BACKFILL WITH MATERIALS SIMILAR TO THE SPECIAL SECTION REQUIREMENTS.
2. USE METALLIC TRACING/WARNING TAPE OVER ALL PIPES.

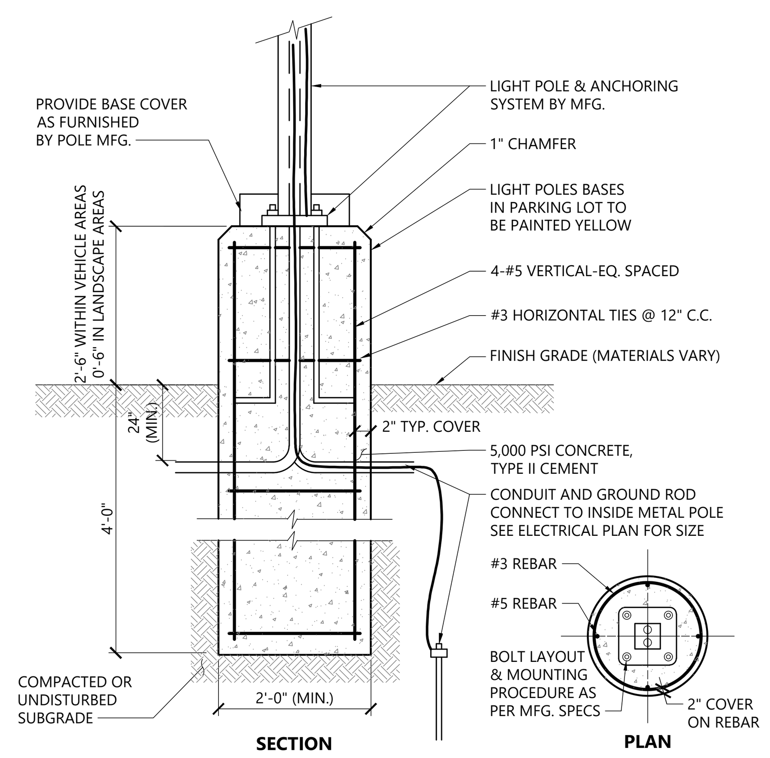
Utility Trench 1/16
N.T.S. Source: VHB LD_300



NOTES

1. PROVIDE EXPANSION JOINTS
2. AT MIN. 30 FT. O.C. WITH PRE-FORMED JOINT FILLER.
3. PROVIDE TOOLED CONTROL JOINTS AT 6' O.C.
4. PROVIDE BROOM FINISH IN DIRECTION PERPENDICULAR TO CURB.

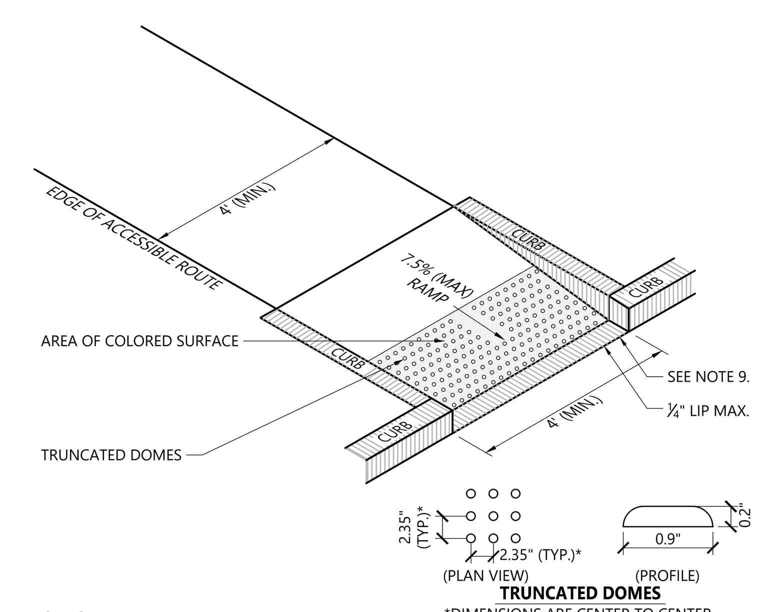
Concrete Sidewalk 1/16
N.T.S. Source: VHB LD_420



NOTES

LIGHT POLE FOUNDATION DESIGN IS SUBJECT TO CHANGE BASED ON FINAL POLE AND FIXTURE SELECTION AND GEOTECHNICAL SITE INVESTIGATION.

Light Pole Foundation Detail (Up to 15' Pole) 1/16
N.T.S. Source: VHB LD_310A



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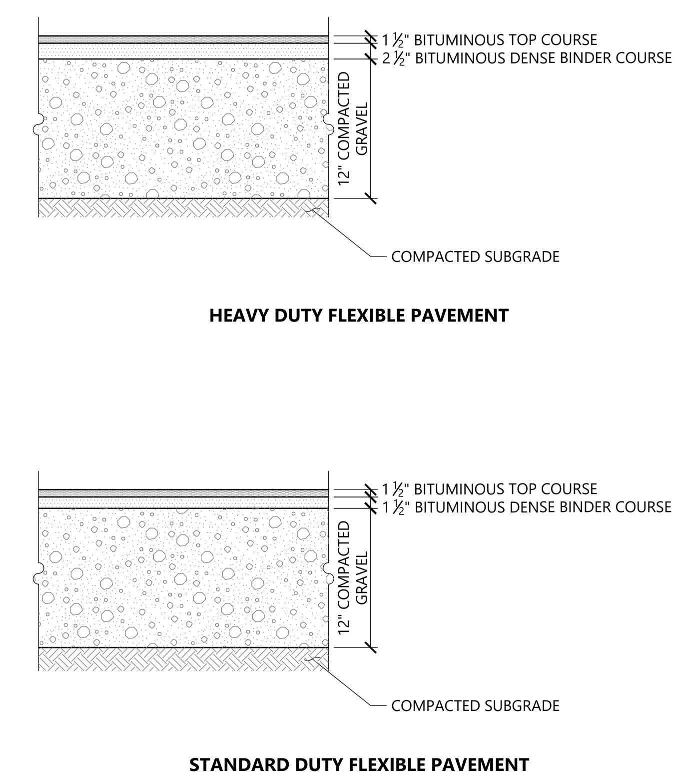
11. DETECTABLE WARNINGS SHALL BE INSTALLED PERPENDICULAR TO THE ACCESSIBLE ROUTE.

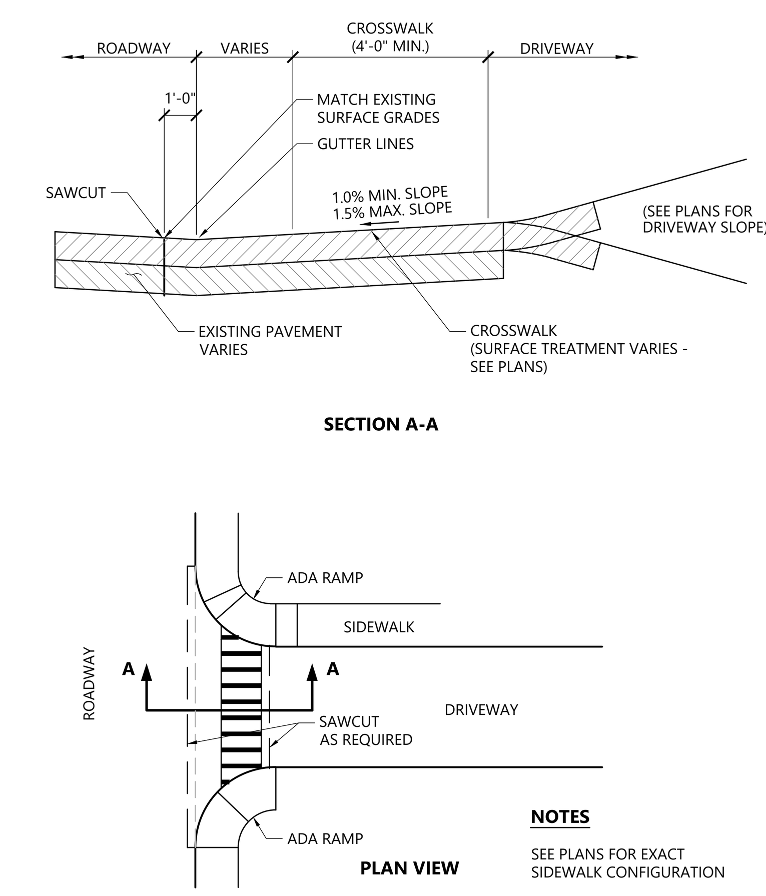
Accessible Curb Ramp (ACR) Type 'J-D' 1/16
N.T.S. Source: VHB LD_509



NOTES

PAVEMENT SECTIONS ARE SUBJECT TO CHANGE AND WILL BE BASED ON THE RESULTS OF FURTHER GEOTECHNICAL INVESTIGATIONS.

Bituminous Concrete Pavement Sections 1/16
N.T.S. Source: VHB LD_430



NOTES

SEE PLANS FOR EXACT SIDEWALK CONFIGURATION

Driveway Entrance/Crosswalk Section Detail 1/16
N.T.S. Source: VHB LD_423

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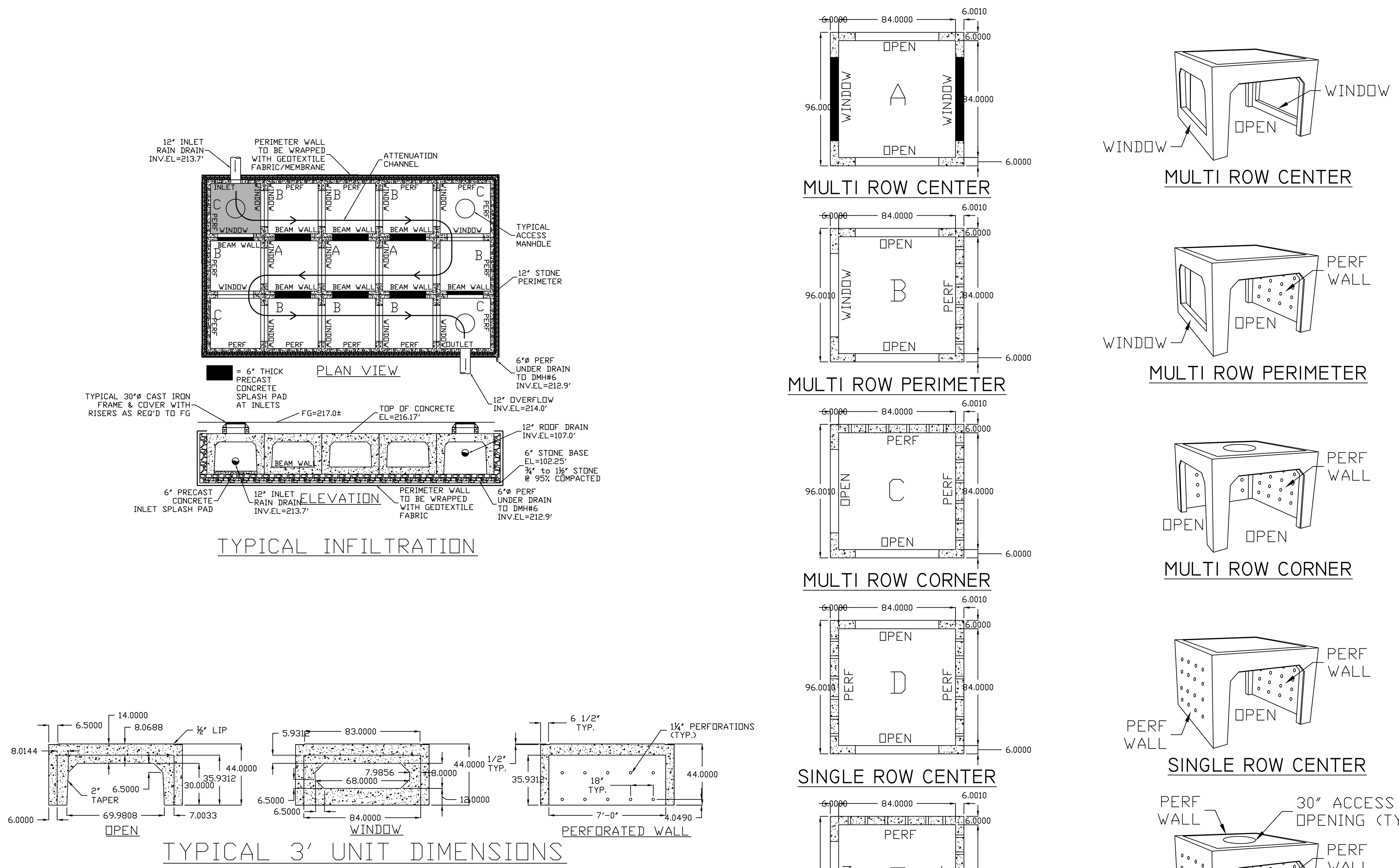
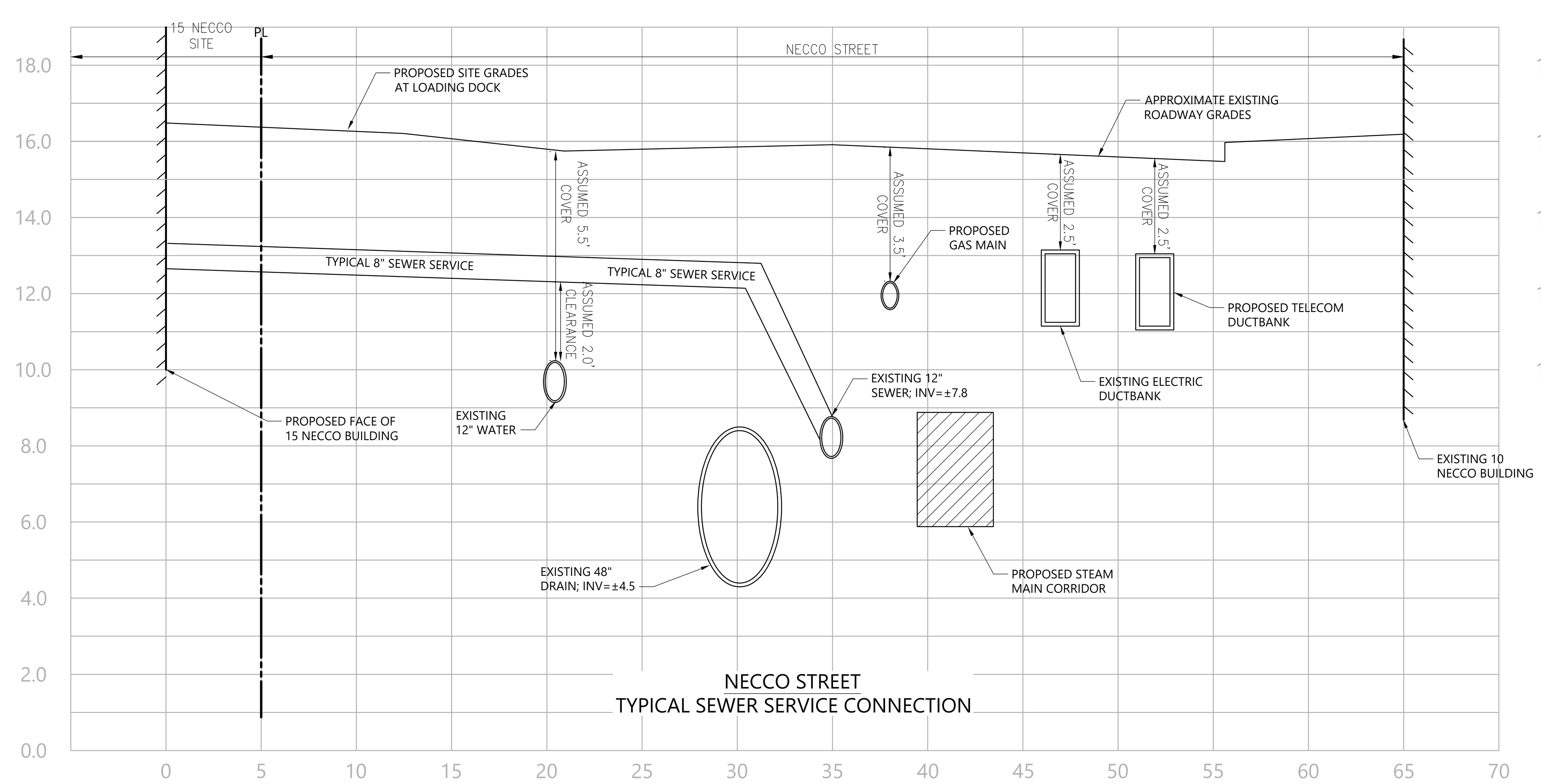


Typical Retain-It Chamber Details

N.T.S. Retain-It

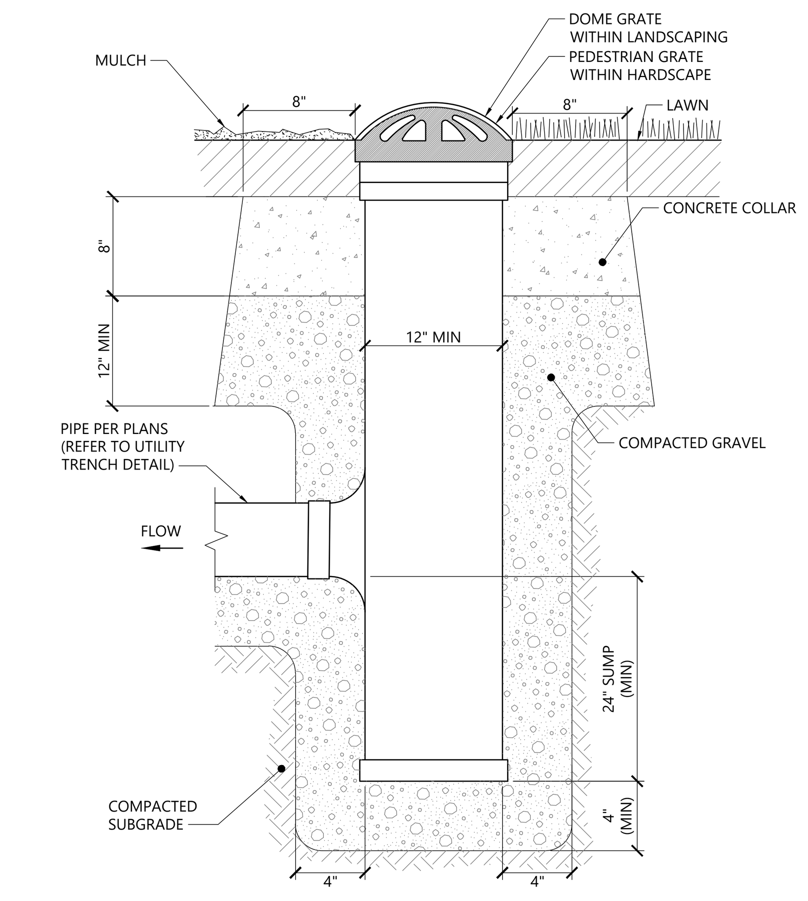


NOTES:

1. ELEVATIONS REFER TO BOSTON CITY BASE (BCB) DATUM.
2. ELECTRIC AND TELECOMMUNICATION DUCTBANK SIZES HAVE BEEN ASSUMED.
3. ALL NON-GRAVITY UTILITY SYSTEMS HAVE ASSUMED BURIED DEPTHS BASED ON TYPICAL CONDITIONS.

Vert. 0 2.5 5 Feet
Horiz. 0 5 10 Feet

Typical Necco Street Utility Section

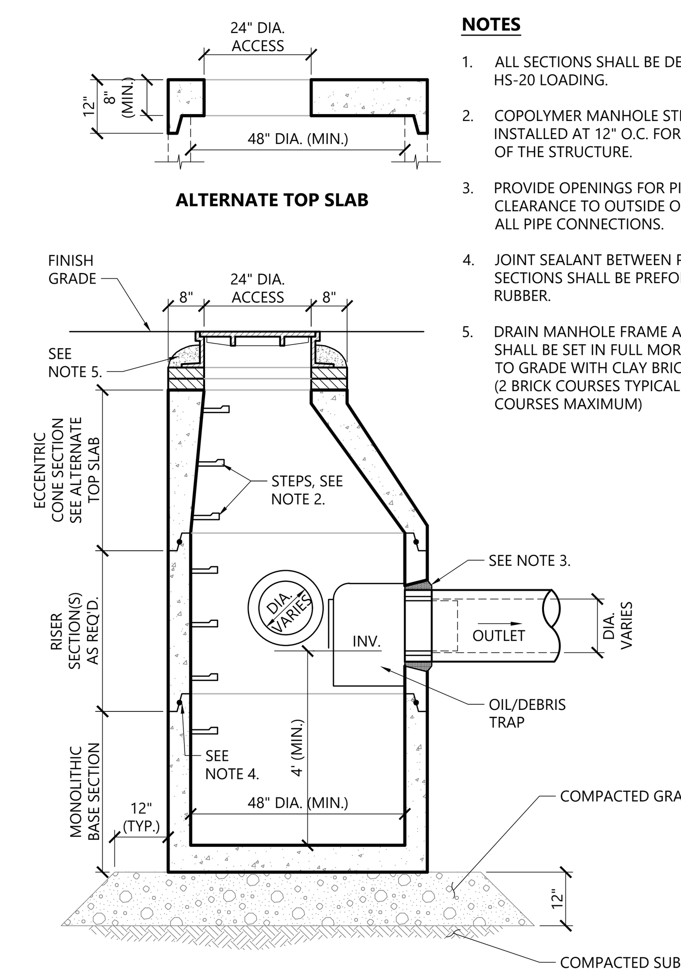


NOTES:

1. LANDSCAPE DRAINS SHALL BE NYLOPLAST 12" DRAIN BASIN, OR APPROVED EQUAL.
2. GRATES SHALL BE NYLOPLAST, 12" DOME GRATE MODEL 1299CGD OR PEDESTRIAN MODEL, OR APPROVED EQUAL AS SHOWN ON PLANS.

Landscape/Area Drain

9/17
N.T.S. Source: VHB LD_197

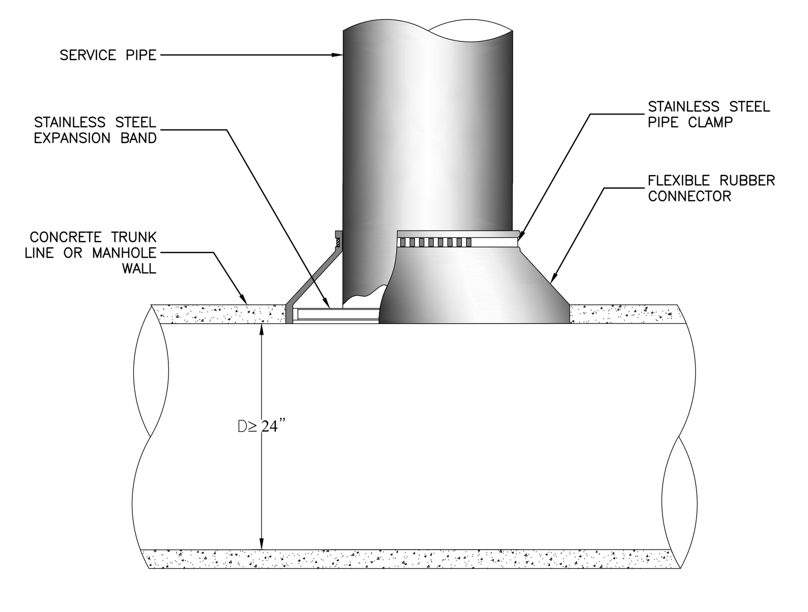


NOTES

1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
2. COPOLYMER MANHOLE STEPS SHALL BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE.
3. PROVIDE OPENINGS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
4. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
5. DRAIN MANHOLE FRAME AND COVER SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM)

Drain Manhole (DMH) with Oil Debris/Trap

1/16
N.T.S. Source: VHB LD_116

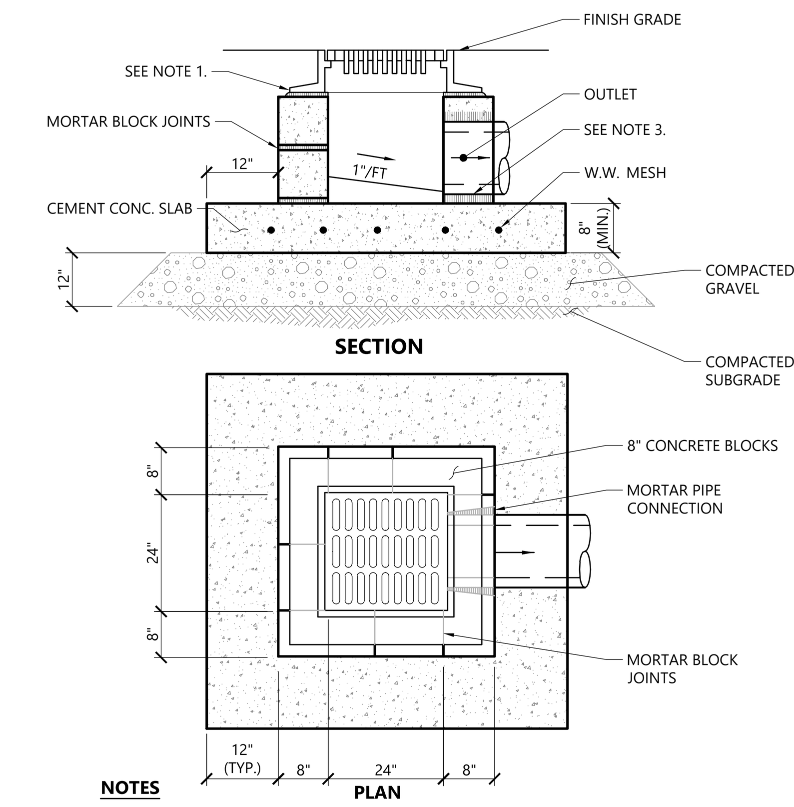


NOTES:

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

BWSC Typical Field (Boot) Connection

6/08
N.T.S. Source: VHB LD_221

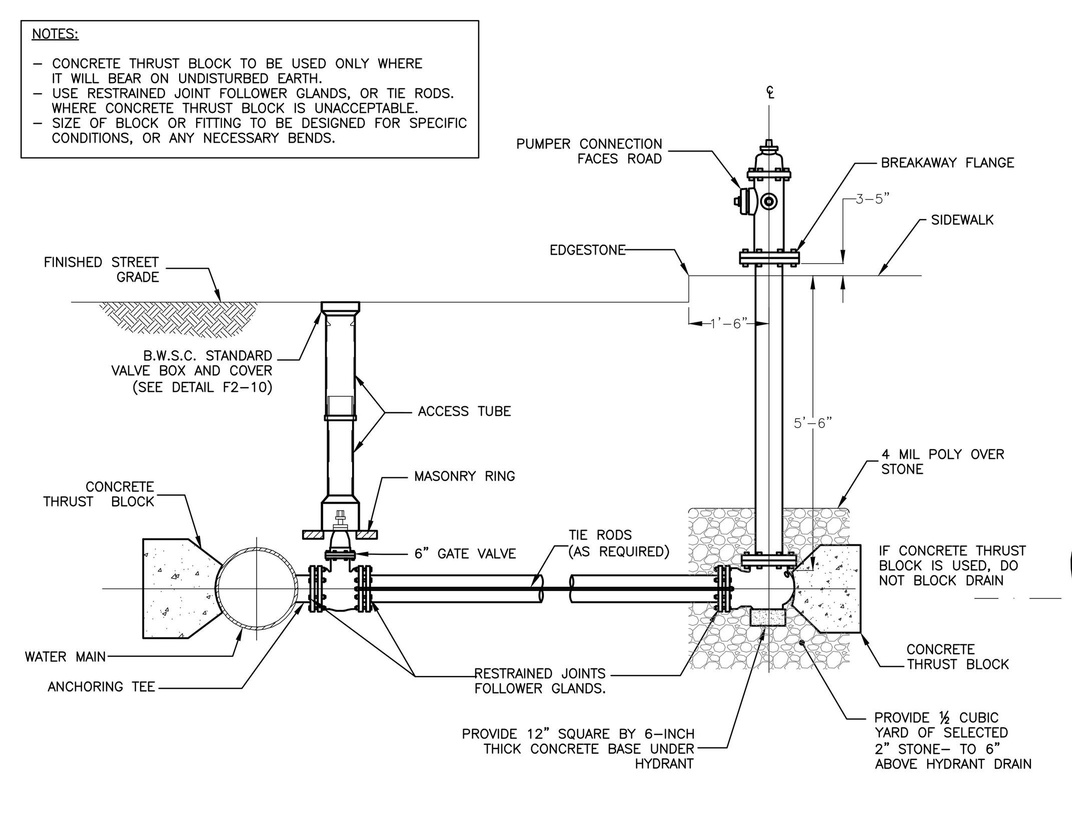


NOTES

1. FRAMES AND GRATE SHALL BE SET IN FULL BED OF MORTAR. ADJUST TO GRADE WITH CLAY BRICKS AND MORTAR AS REQUIRED.
2. CONSTRUCTION MATERIAL FOR STRUCTURE TO CONSIST OF SOLID CONCRETE BLOCK SET IN MORTAR OR PRECAST CONCRETE DESIGNED FOR H-20 LOADING.
3. PROVIDE OPENINGS FOR PIPES WITH 2" CLEARANCE TO OUTSIDE OF PIPE (IF PRECAST). MORTAR ALL PIPE CONNECTIONS.
4. MORTAR ALL JOINTS.

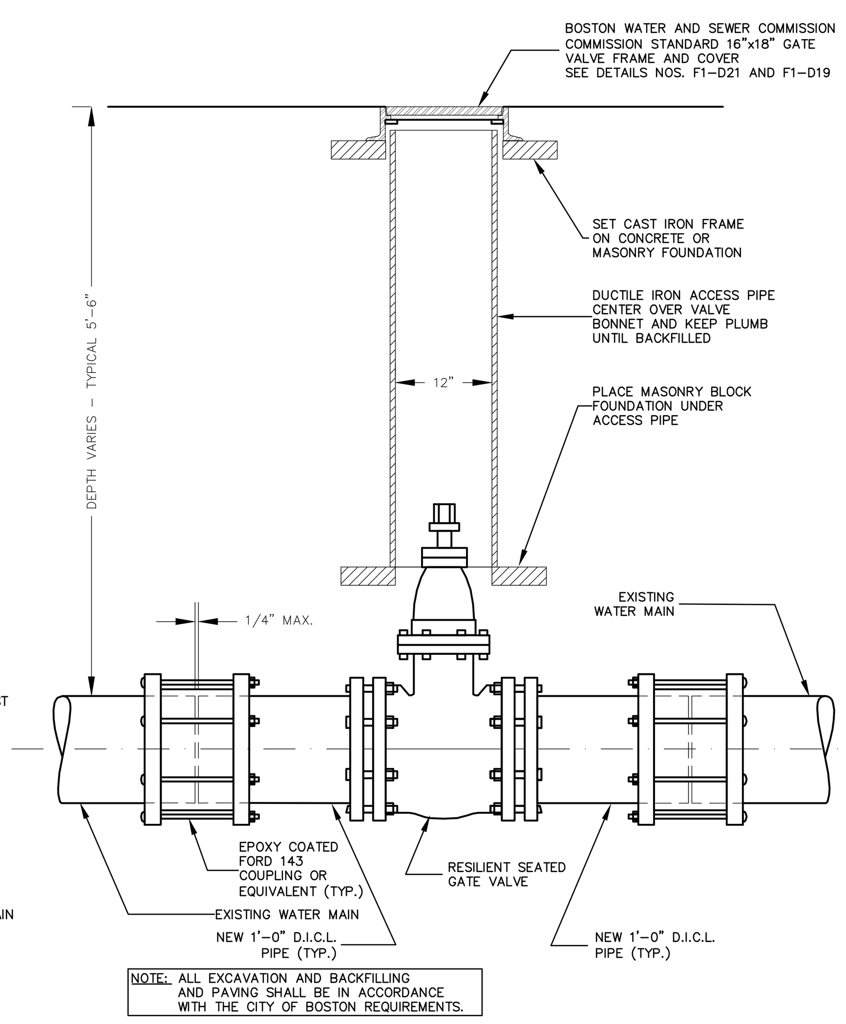
Shallow Inlet

1/16
N.T.S. Source: VHB LD_107



BWSC - Hydrant Connection

N.T.S. Source: BWSC A-07A



BWSC - Gate Valve Installation

N.T.S. Source: BWSC A-07A

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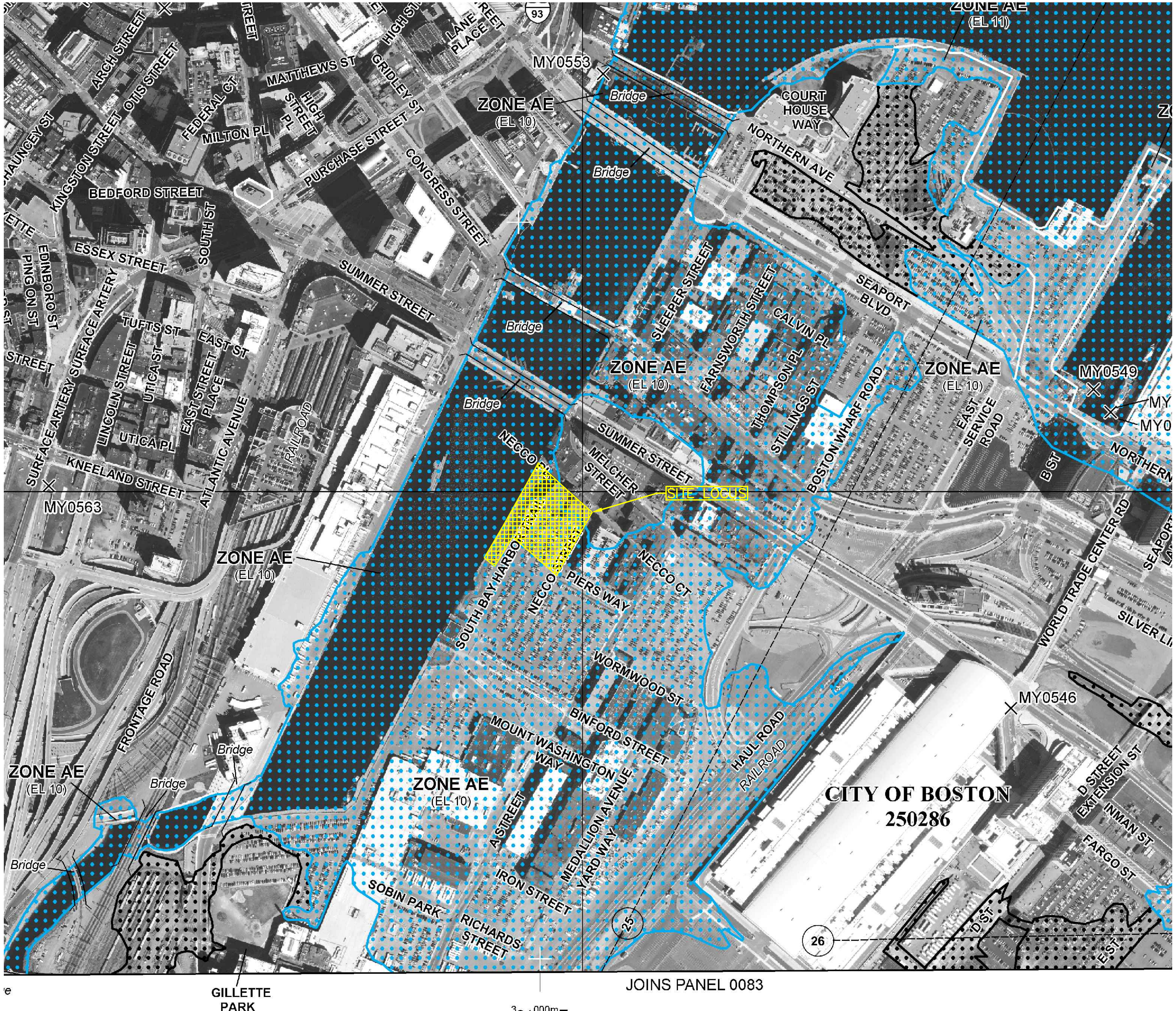
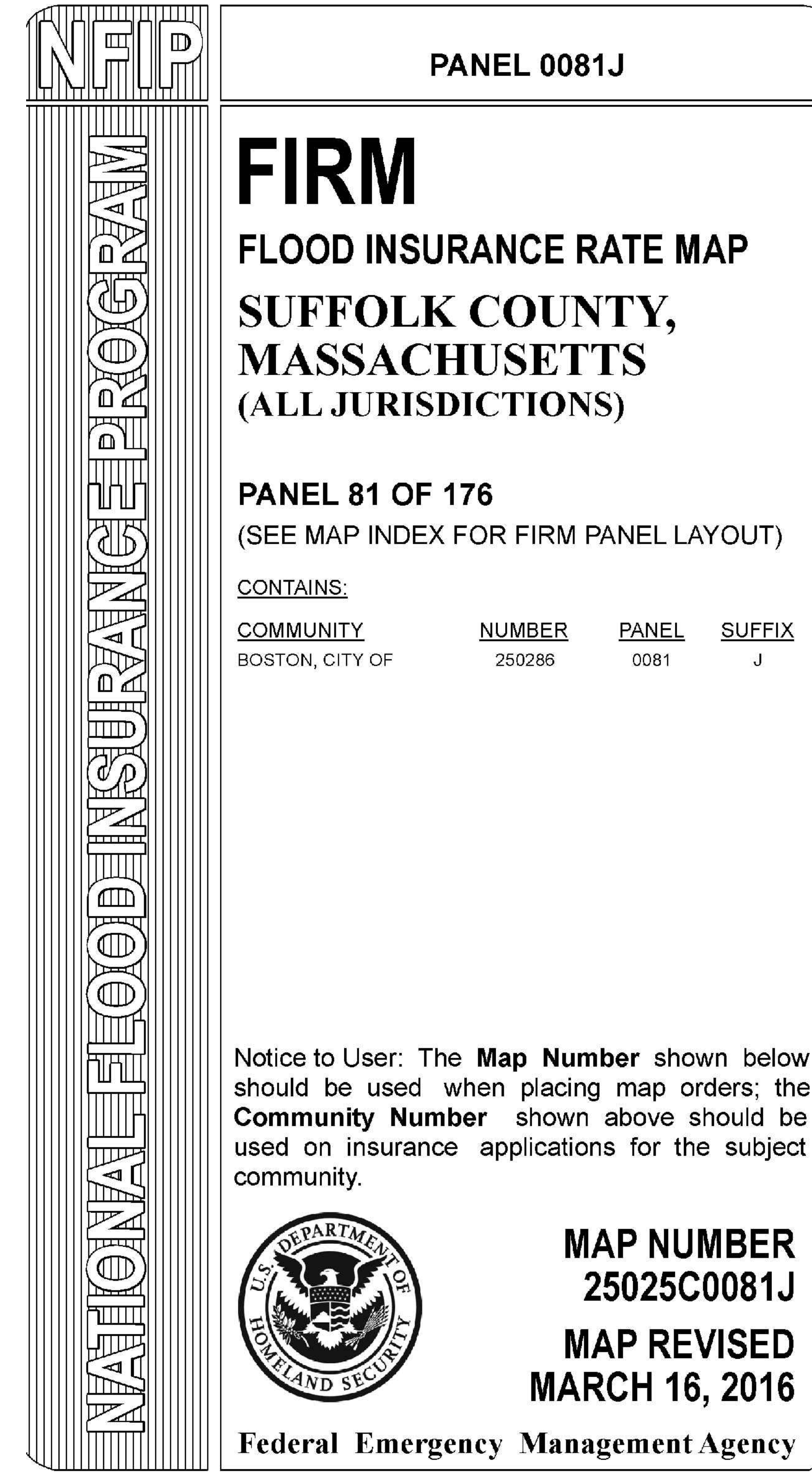
Appendix B:
FEMA Floodplain Map





Source Info: MassGIS

FEMA Panel: 25025C0081J
eff. 3/16/2016

0 250 500 1000 Feet

Effective FEMA 100 Year Floodplain
15 Necco
Boston, MA

Figure 1

January 2021

Appendix C:
NRCS Soil Survey Information

United States Department of Agriculture

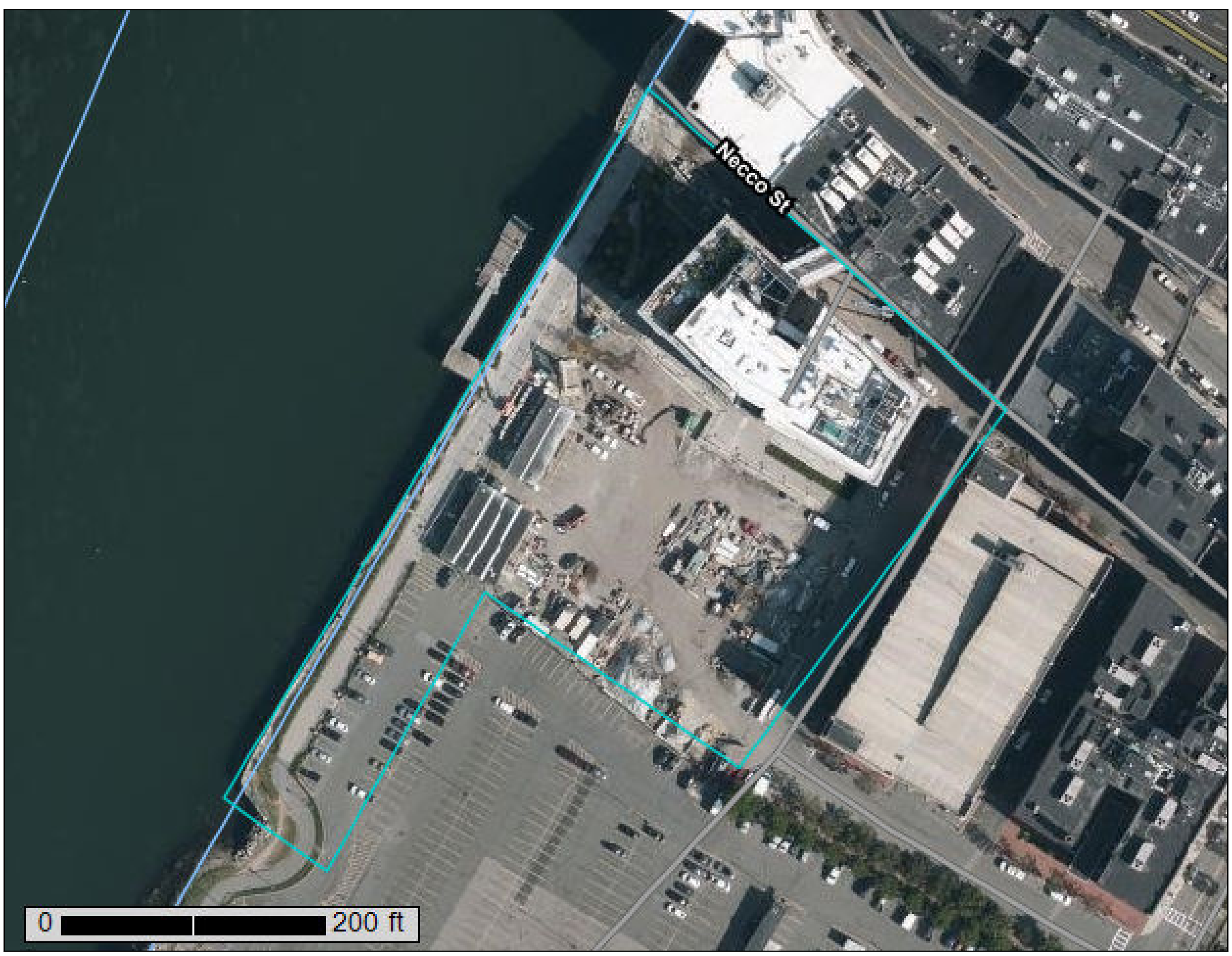
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Norfolk and Suffolk Counties, Massachusetts



May 21, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

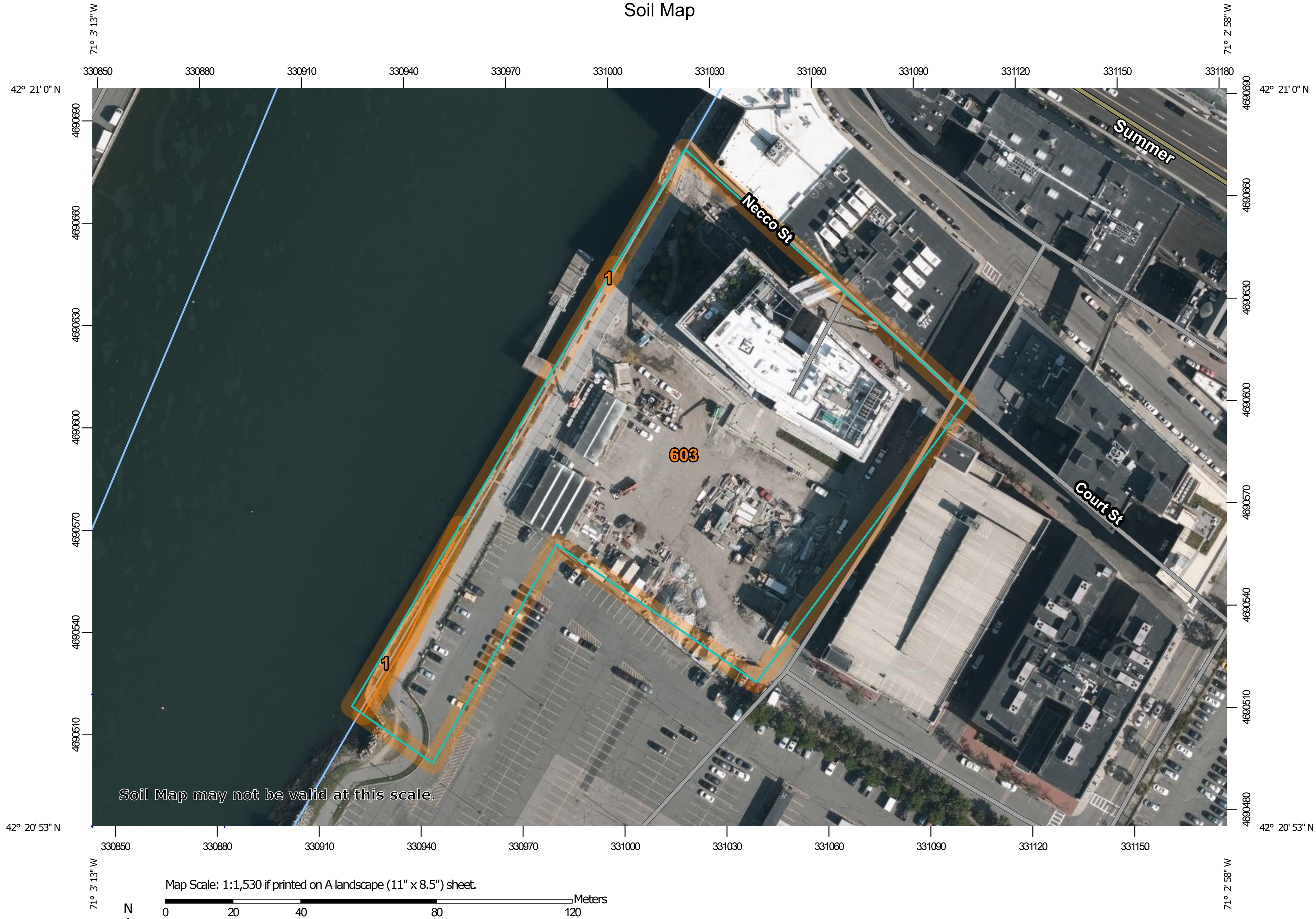
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map



Map Scale: 1:1,530 if printed on A landscape (11" x 8.5") sheet.

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N 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 1:25,000.

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

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

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

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

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

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

Soil Survey Area: Norfolk and Suffolk Counties, Massachusetts
Survey Area Data: Version 15, Sep 12, 2019

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

Date(s) aerial images were photographed: Sep 11, 2019—Oct 5, 2019

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Water	0.0	1.3%
603	Urban land, wet substratum, 0 to 3 percent slopes	3.3	98.7%
Totals for Area of Interest		**3.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Norfolk and Suffolk Counties, Massachusetts

1—Water

Map Unit Setting

National map unit symbol: vkyp
Mean annual precipitation: 32 to 50 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 120 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

603—Urban land, wet substratum, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: vkyl
Mean annual precipitation: 32 to 50 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 120 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Parent material: Excavated and filled land over herbaceous organic material and/or alluvium and/or marine deposits

Minor Components

Udorthents

Percent of map unit: 13 percent
Hydric soil rating: Unranked

Beaches

Percent of map unit: 2 percent
Hydric soil rating: Unranked

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Appendix D:
TSS Removal Worksheets

TSS Removal Calculation Worksheet

Vanasse Hangen Brustlin, Inc.
Consulting Engineers and Planners
99 High Street, 10th Floor
Boston, MA 02110
(617) 728-7777

Project Name:	**15 Necco**	Sheet:	**1 of 1**
Project Number:	**13421.02**	Date:	**June 2020**
Location:	**Boston, MA**	Computed by:	**JEM**
Discharge Point:	**BWSC System | SDO 580**	Checked by:	**WJN**
Drainage Area(s):	**Total Site**		

1. Pre-Treatment prior to Infiltration

BMP*	TSS Removal Rate*	Starting TSS Load	Amount Removed	Remaining Load
N/A	**0%**	**100%**	**0%**	**100%**

Pre-Treatment TSS Removal = 0%

2. Total TSS Removal including Pretreatment 1.

BMP*	TSS Removal Rate*	Starting TSS Load	Amount Removed	Remaining Load
Subsurface Infiltration Structure	**80%**	**100%**	**80%**	**20%**

Total TSS Removal = 80%

* BMP and TSS Removal Rate Values from the MassDEP Stormwater Handbook Vol. 1. Removal rates for proprietary devices are from approved studies and/or manufacturer data.

Appendix E:
Long Term Operation and Maintenance Measures

Project Information

Site

Project Name: ______________________

Address or Locus: ______________________

City, State & Zip: ______________________

Developer

Client Name: ______________________

Client Address: ______________________

Client City, State & Zip: ______________________

Client Telephone No.: ______________________

Client Cell Phone: ______________________

Client E-Mail: ______________________

Site Supervisor

Site Manager Name: ______________________

Site Manager Address: ______________________

Site Manager City, State & Zip: ______________________

Site Manager Telephone No.: ______________________

Site Manager Cell Phone: ______________________

Site Manager E-Mail: ______________________

Long Term Stormwater Maintenance Measures

The following maintenance program is proposed to ensure the continued effectiveness of the structural water quality controls previously described.

- Inspect stormwater basins once annually, in the spring, for cracking or erosion of side slopes, embankments, and accumulated sediment. Necessary sediment removal, earth repair, and/or reseeding will be performed immediately upon identification.
- Inspect sediment traps/forebays monthly for erosion of side slopes and accumulated sediment. Necessary sediment removal, earth repair and/or reseeding shall be performed immediately upon identification. Clean traps/ forebays approximately four times per year or as needed.
- Inspect water quality swales semi-annually; swales should be mowed once per year. Sediment and debris should be removed, at a minimum, once per year.
- Clean all catch basins twice annually to remove accumulated sand, sediment, and floatable products or as needed based on use.
- Paved areas will be swept, at a minimum, two times per year.
- Routinely pick up and remove litter from the parking areas, islands and perimeter landscape areas in addition to regular pavement sweeping.
- Routinely inspect all dumpster and compactor locations for spills. Remove all trash litter from the enclosure and dispose of properly.

Pavement Systems

Standard Asphalt Pavement

- Sweep or vacuum standard asphalt pavement areas at least four times per year with a commercial cleaning unit and properly dispose of removed material.
- Recommended sweeping schedule:
  - Oct/Nov
  - Feb/Mar
  - Apr/May
  - Aug/Sep
- More frequent sweeping of paved surfaces will result in less accumulation in catch basins, less cleaning of subsurface structures, and less disposal costs.
- Check loading docks and dumpster areas frequently for spillage and/or pavement staining and clean as necessary.

Structural Stormwater Management Devices

Catch Basins

- All catch basins shall be inspected and cleaned a minimum of at least once per year.
- Sediment (if more than six inches deep) and/or floatable pollutants shall be pumped from the basin and disposed of at an approved offsite facility in accordance with all applicable regulations.
- Any structural damage or other indication of malfunction will be reported to the site manager and repaired as necessary
- During colder periods, the catch basin grates must be kept free of snow and ice.
- During warmer periods, the catch basin grates must be kept free of leaves, litter, sand, and debris.

Subsurface Infiltration System

- The subsurface infiltration systems will be inspected at least once each year by removing the manhole/access port covers and determining the thickness of sediment that has accumulated in the sediment removal row.
- If sediment is more than six inches deep, it must be suspended via flushing with clean water and removed using a vactor truck.
- Manufacturer's specifications and instructions for cleaning the sediment removal row is provided as an attachment to this section.
- Emergency overflow pipes will be examined at least once each year and verified that no blockage has occurred.
- System will be observed after rainfalls to see if it is properly draining.

Vegetated Stormwater Management Devices

Rain Gardens

Mulching is an important part of bioretention basin maintenance. Mulch keeps the soil moist, allowing for easy infiltration of rain water. Un-mulched surfaces may develop into a hardpan, a condition in which the soil surface becomes cemented together, forming a hard, impervious layer. Mulching also protects plants and reduces weed growth.

Initial Post-Construction Inspection

- During the initial period of vegetation establishment pruning and weeding are required twice in first year by contractor.
- Any dead vegetation found after the first year must be replaced.

- Proper mulching is mandatory and regular watering may be required initially to ensure proper establishment of new vegetation.

Long-Term Maintenance

- Weeds and invasive plant species shall be removed by hand.
- Leaf litter and other detritus shall be removed twice per year.
- If needed to maintain aesthetic appearance, perennial plantings may be trimmed at the end of the growing season.
- Trees and shrubs should be inspected twice per year to evaluate health and attended to as necessary.
- Re-mulch bioretention basins with hardwood mulch to a depth of 3 inches each spring or whenever erosion is evident. The entire area may require mulch replacement once every two to three years. Mulch depth shall not exceed 3 inches.

Inspections and Cleaning

- Rain gardens shall be inspected twice during for the first year and annually thereafter for sediment buildup, erosion, vegetative conditions, etc. If sediment build-up is found, core aeration or cultivating of un-vegetated areas may be required to ensure adequate filtration.
- The inflow location should be inspected annually for clogging. Sediment build up is a common problem where runoff leaves an impervious surface and enters a vegetative or earthen surface. Any built-up sediment should be removed to prevent runoff from bypassing the facility.
- The overflow structure and underdrain standpipes should be inspected annually to ensure that they are functioning.

Long Term Best Management Practices Checklist

- The Long-Term BMP Maintenance/Evaluation Checklist is attached.

Inspection Date: ____/____/____ Inspection Performed By: _________________________

Subsurface Infiltration and Leaching Chambers– Inspect once per year.				
Basin	Inspected (Y/N)	Cleaning needed (Y/N)	Date Cleaned	Comments (Trash, Oil, Sediment, Damage)
INF-1			/ /	
INF-2				
INF-3				
INF-4				
INF-5				
INF-6				
DW-7				

Rain Gardens – Inspect twice per year.				
Basin	Inspected (Y/N)	Cleaning needed (Y/N)	Date Cleaned	Comments (Trash, Oil, Sediment, Damage)
RG-1			/ /	
RG-2				
RG-3				

Roof Runoff Downspouts – Inspect Roof Drains 4 times per year, Clean inlets draining subsurface stormwater collection system as necessary.					
Basin	Inspected (Y/N)	Sediment Depth (inches)	Cleaning needed (Y/N)	Date Cleaned	Comments (Trash, Oil, Pet waste, Lawn Debris, Damage)
Roof				/ /	

Catch Basins/Area Drains – Inspect once per year.					
Bldg #	Inspected (Y/N)	Sediment Depth (inches)	Cleaning needed (Y/N)	Date Cleaned	Comments (Trash, Oil, Pet waste, Lawn Debris, Damage)
15 Necco				/ /	

Appendix F: Erosion and Sedimentation Control Measures

Erosion and Sedimentation Control Measures

The following erosion and sedimentation controls are for use during the earthwork and construction phases of the project. The following controls are provided as recommendations for the site contractor and do not constitute or replace the final Stormwater Pollution Prevention Plan that must be fully implemented by the Contractor and owner in Compliance with EPA NPDES regulations.

Hay Bale Barriers

Hay bale barriers will be placed to trap sediment transported by runoff before it reaches the drainage system or leaves the construction site. Bales will be set at least four inches into the existing ground to minimize undercutting by runoff.

Silt Fencing

In areas where high runoff velocities or high sediment loads are expected, hay bale barriers will be backed up with silt fencing. This semi-permeable barrier made of a synthetic porous fabric will provide additional protection. The silt fences and hay bale barrier will be replaced as determined by periodic field inspections.

Compost Berms

Catch Basin Protection

Newly constructed and existing catch basins will be protected with hay bale barriers (where appropriate) or silt sacks throughout construction.

Gravel and Construction Entrance/Exit

A temporary crushed-stone construction entrance/exit will be constructed. A cross slope will be placed in the entrance to direct runoff to a protected catch basin inlet or settling area. If deemed necessary after construction begins, a wash pad may be included to wash off vehicle wheels before leaving the project site.

Diversion Channels

Diversion channels will be used to collect runoff from construction areas and discharge to either sedimentation basins or protected catch basin inlets.

Temporary Sediment Basins

Temporary sediment basins will be designed either as excavations or bermed stormwater detention structures (depending on grading) that will retain runoff for a sufficient period of time to allow suspended soil particles to settle out prior to discharge. These temporary basins will be located based on construction needs as determined by the contractor and outlet devices will be designed to control velocity and sediment. Points of discharge from sediment basins will be stabilized to minimize erosion.

Vegetative Slope Stabilization

Stabilization of open soil surfaces will be implemented within 14 days after grading or construction activities have temporarily or permanently ceased, unless there is sufficient snow cover to prohibit implementation. Vegetative slope stabilization will be used to minimize erosion on slopes of 3:1 or flatter. Annual grasses, such as annual rye, will be used to ensure rapid germination and production of root mass. Permanent stabilization will be completed with the planting of perennial grasses or legumes. Establishment of temporary and permanent vegetative cover may be established by hydro-seeding or sodding. A suitable topsoil, good seedbed preparation, and adequate lime, fertilizer and water will be provided for effective establishment of these vegetative stabilization methods. Mulch will also be used after permanent seeding to protect soil from the impact of falling rain and to increase the capacity of the soil to absorb water.

Maintenance

- The contractor or subcontractor will be responsible for implementing each control shown on the Sedimentation and Erosion Control Plan. In accordance with EPA regulations, the contractor must sign a copy of a certification to verify that a plan has been prepared and that permit regulations are understood.

- The on-site contractor will inspect all sediment and erosion control structures periodically and after each rainfall event. Records of the inspections will be prepared and maintained on-site by the contractor.

- Silt shall be removed from behind barriers if greater than 6-inches deep or as needed.

- Damaged or deteriorated items will be repaired immediately after identification.

- The underside of hay bales should be kept in close contact with the earth and reset as necessary.

- Sediment that is collected in structures shall be disposed of properly and covered if stored on-site.
- Erosion control structures shall remain in place until all disturbed earth has been securely stabilized. After removal of structures, disturbed areas shall be regraded and stabilized as necessary.

The sedimentation and erosion control plan is included in project plan set.

Appendix G:
Spill Prevention & Response

Spill Response Procedure

Initial Notification

In the event of a spill the facility and/or construction manager or supervisor will be notified immediately.

Facility Manager Name:	
Facility Manager Phone No.:	
Construction Manager Name:	
Construction Manager Phone No.:	

Assessment - Initial Containment

The supervisor or manager will assess the incident and initiate containment control measures with the appropriate spill containment equipment included in the spill kit kept on-site. The supervisor will first contact the Fire Department and then notify the Police Department, Board of Health and Conservation Commission. The fire department is ultimately responsible for matters of public health and safety and should be notified immediately.

Fire Department Telephone No.:	**911**
Police Department Telephone No.:	**911**
Board of Health Telephone No.:	
Conservation Commission Telephone:	

Further Notification

Based on the assessment from the Fire Chief, additional notification to a cleanup contractor may be made. The Massachusetts Department of Environmental Protection (DEP) and the EPA may be notified depending upon the nature and severity of the spill. The Fire Chief will be responsible for determining the level of cleanup and notification required. The attached list of emergency phone numbers shall be posted in the main construction/facility office and readily accessible to all employees.

HAZARDOUS WASTE / OIL SPILL REPORT

Date ______________________________ Time _______________ AM / PM

Exact location (Transformer #) ____

Type of equipment _________________ Make ______________ Size ____________

S / N _________________________ Weather Conditions ____________________

On or near Water ☐ Yes If Yes, name of body of Water ____________________

☐ No

Type of chemical/oil spilled ____

Amount of chemical/oil spilled ____

Cause of Spill ____

Measures taken to contain or clean up spill ________________________________

Amount of chemical/oil recovered __________________ Method ______________

Material collected as a result of cleanup:

______________ Drums containing ________________________________

______________ Drums containing ________________________________

______________ Drums containing ________________________________

Location and method of debris disposal

____

Name and address of any person, firm, or corporation suffering damages:

____

Procedures, method, and precautions instituted to prevent a similar occurrence from recurring:

____

Spill reported to General Office by __________________ Time ____________ AM / PM

Spill reported to DEP / National Response Center by ______________________________

DEP Date ____________ Time ___________ AM / PM Inspector ______________

NRC Date ____________ Time ___________ AM / PM Inspector ______________

Additional comments: ____

EMERGENCY RESPONSE EQUIPMENT INVENTORY

The following equipment and materials shall be maintained at all times and stored in a secure area for long-term emergency response need.

--	SORBENT PADS	2 BALES
--	SORBENT BOOM	100 FEET
--	SAND BAGS (empty)	50
--	SEWER PIPE PLUGS	
--	12 INCH DIAM.	1
--	SPEEDI-DRI ABSORBENT	5 40# BAGS
--	SQUARE END SHOVELS	1
--	PICK	1
--	PRY BAR	1
--	DRAIN COVERS	2

EMERGENCY NOTIFICATION PHONE NUMBERS

1. **SUPERVISOR/MANAGER**

   Name: ____________ Beeper: ____________

   Phone: ____________ Home Phone: ____________

   ALTERENATE

   Name: ____________ Beeper: ____________

   Phone: ____________ Home Phone: ____________

2. **FIRE DEPARTMENT**

   Emergency: **911**

   Business: (781) 270-1925

   POLICE DEPARTMENT

   Emergency: **911**

   Business: ____________

3. **CLEANUP CONTRACTOR:**

   Address: ____________

   Phone: ____________

4. **MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION**

   Emergency: ____________

   Northeast Region – Woburn Office: ____________

5. **NATIONAL RESPONSE CENTER**

   Phone: (800) 424-8802

   ALTERNATE: U.S. ENVIRONMENTAL PROTECTION AGENCY

   Emergency: (617) 223-7265

   Business: (617) 860-4300

6. **CONSERVATION COMMISSION**

   Contact: ____________

   BOARD OF HEALTH

   Contact: ____________

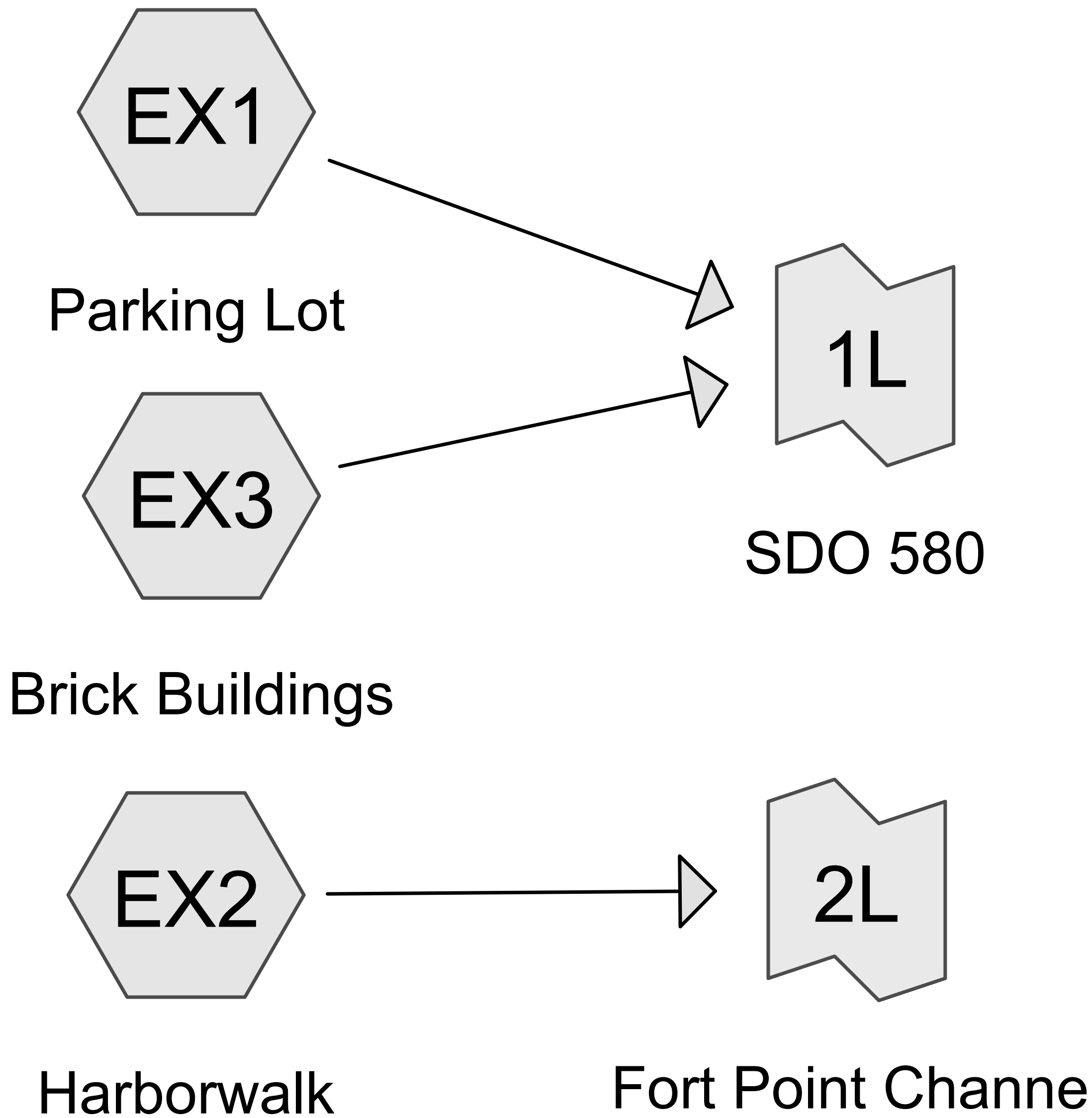
7. **FACILITY MANAGER**

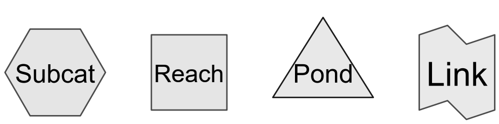
   Name: ____________

   Phone: ____________

Appendix H:
Hydrologic Analysis

HydroCAD Analysis: Existing Conditions





Routing Diagram for 13421.02-EX
Prepared by VHB, Printed 6/11/2020

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
8,236	74	>75% Grass cover, Good, HSG C (EX2)
102,423	98	Paved parking, HSG C (EX1, EX2, EX3)
110,659	**96**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
110,659	HSG C	EX1, EX2, EX3
0	HSG D	
0	Other	
110,659		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Sub Num
0	0	8,236	0	0	8,236	>75% Grass cover, Good	
0	0	102,423	0	0	102,423	Paved parking	
0	**0**	**110,659**	**0**	**0**	**110,659**	**TOTAL AREA**	

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

Subcatchment EX1: Parking Lot Runoff Area=65,437 sf 100.00% Impervious Runoff Depth>3.03"
Tc=5.0 min CN=98 Runoff=4.93 cfs 16,497 cf

Subcatchment EX2: Harborwalk Runoff Area=17,888 sf 53.96% Impervious Runoff Depth>1.97"
Tc=5.0 min CN=87 Runoff=0.98 cfs 2,931 cf

Subcatchment EX3: Brick Buildings Runoff Area=27,334 sf 100.00% Impervious Runoff Depth>3.03"
Tc=5.0 min CN=98 Runoff=2.06 cfs 6,891 cf

Link 1L: SDO 580 Inflow=6.99 cfs 23,388 cf
Primary=6.99 cfs 23,388 cf

Link 2L: Fort Point Channel Inflow=0.98 cfs 2,931 cf
Primary=0.98 cfs 2,931 cf

Total Runoff Area = 110,659 sf Runoff Volume = 26,319 cf Average Runoff Depth = 2.85"
7.44% Pervious = 8,236 sf 92.56% Impervious = 102,423 sf

Summary for Subcatchment EX1: Parking Lot

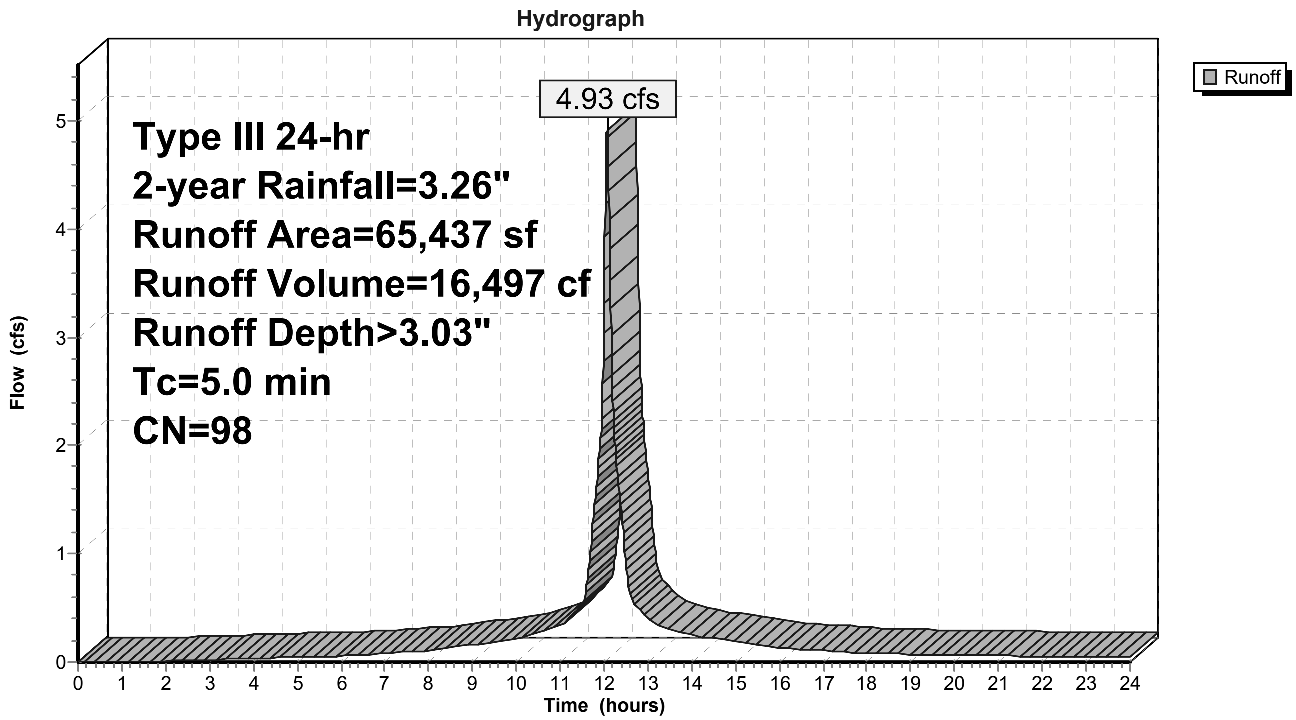
Runoff = 4.93 cfs @ 12.07 hrs, Volume= 16,497 cf, Depth> 3.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.26"

Area (sf)	CN	Description
65,437	98	Paved parking, HSG C
65,437		100.00% Impervious Area

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

Subcatchment EX1: Parking Lot



Summary for Subcatchment EX2: Harborwalk

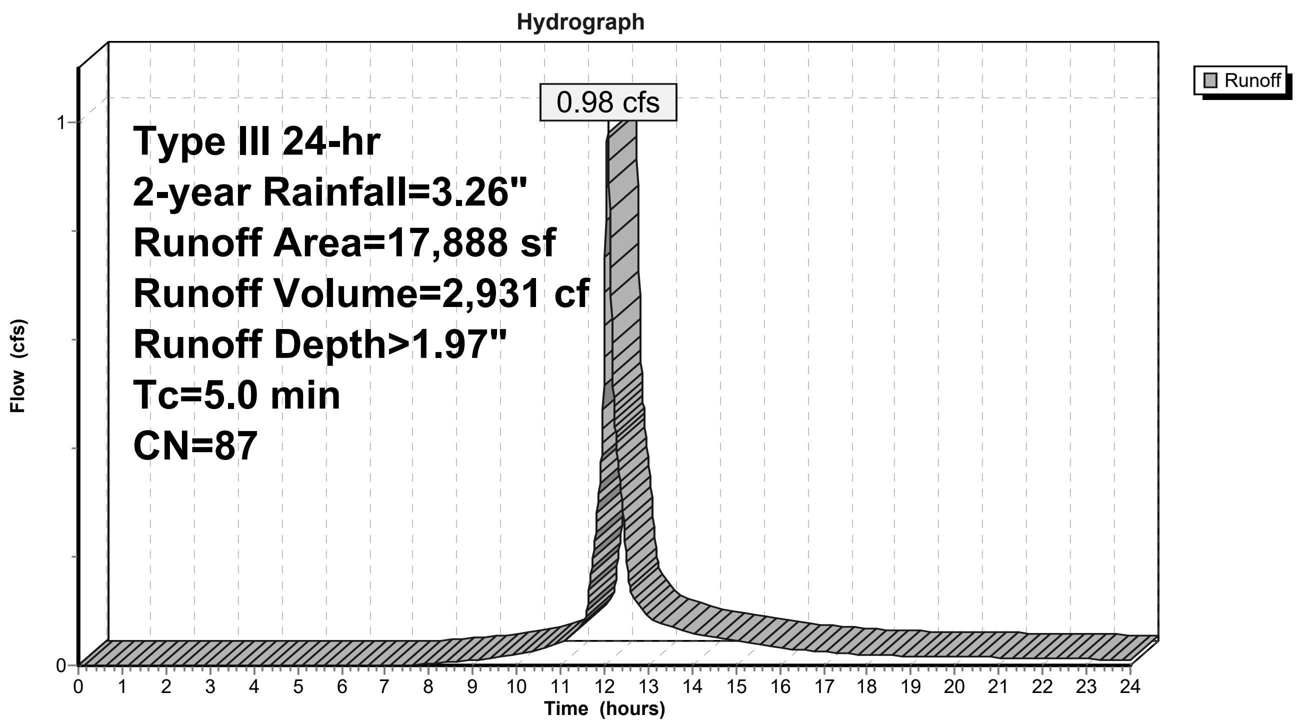
Runoff = 0.98 cfs @ 12.07 hrs, Volume= 2,931 cf, Depth> 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.26"

Area (sf)	CN	Description
9,652	98	Paved parking, HSG C
8,236	74	>75% Grass cover, Good, HSG C
17,888	87	Weighted Average
8,236		46.04% Pervious Area
9,652		53.96% Impervious Area

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

Subcatchment EX2: Harborwalk



Summary for Subcatchment EX3: Brick Buildings

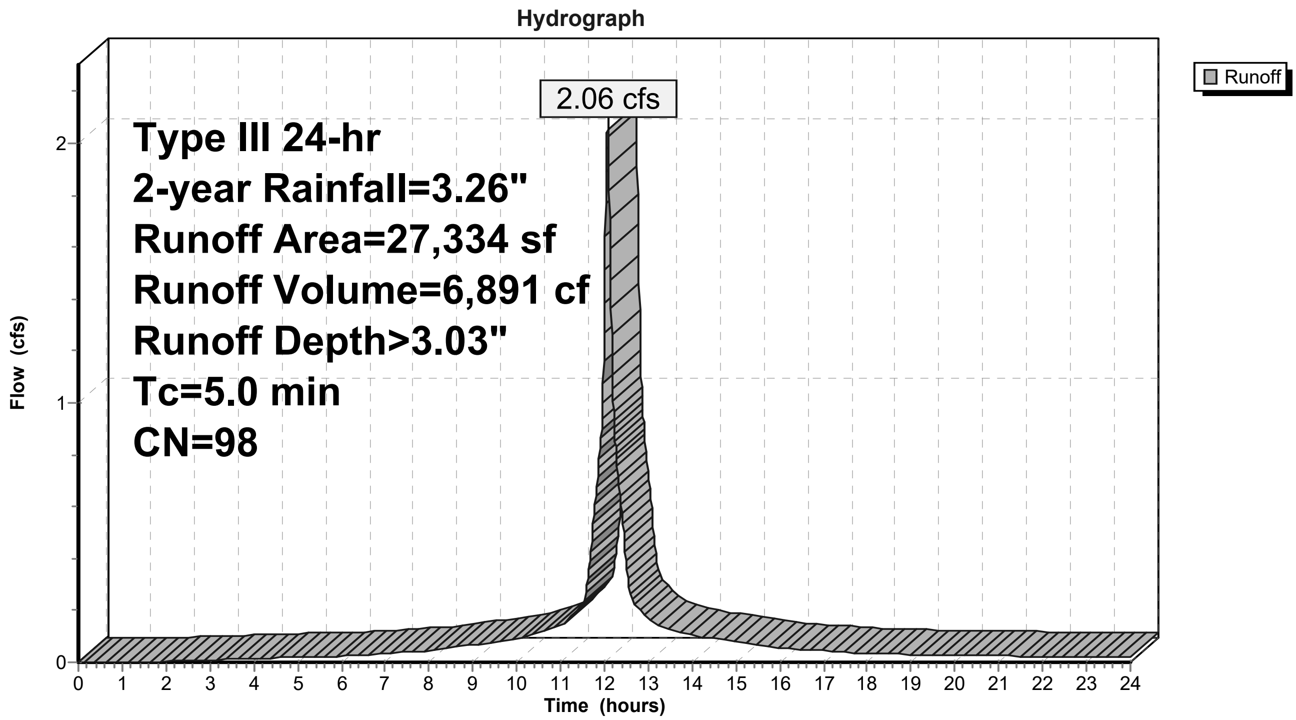
Runoff = 2.06 cfs @ 12.07 hrs, Volume= 6,891 cf, Depth> 3.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.26"

Area (sf)	CN	Description
27,334	98	Paved parking, HSG C
27,334		100.00% Impervious Area

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

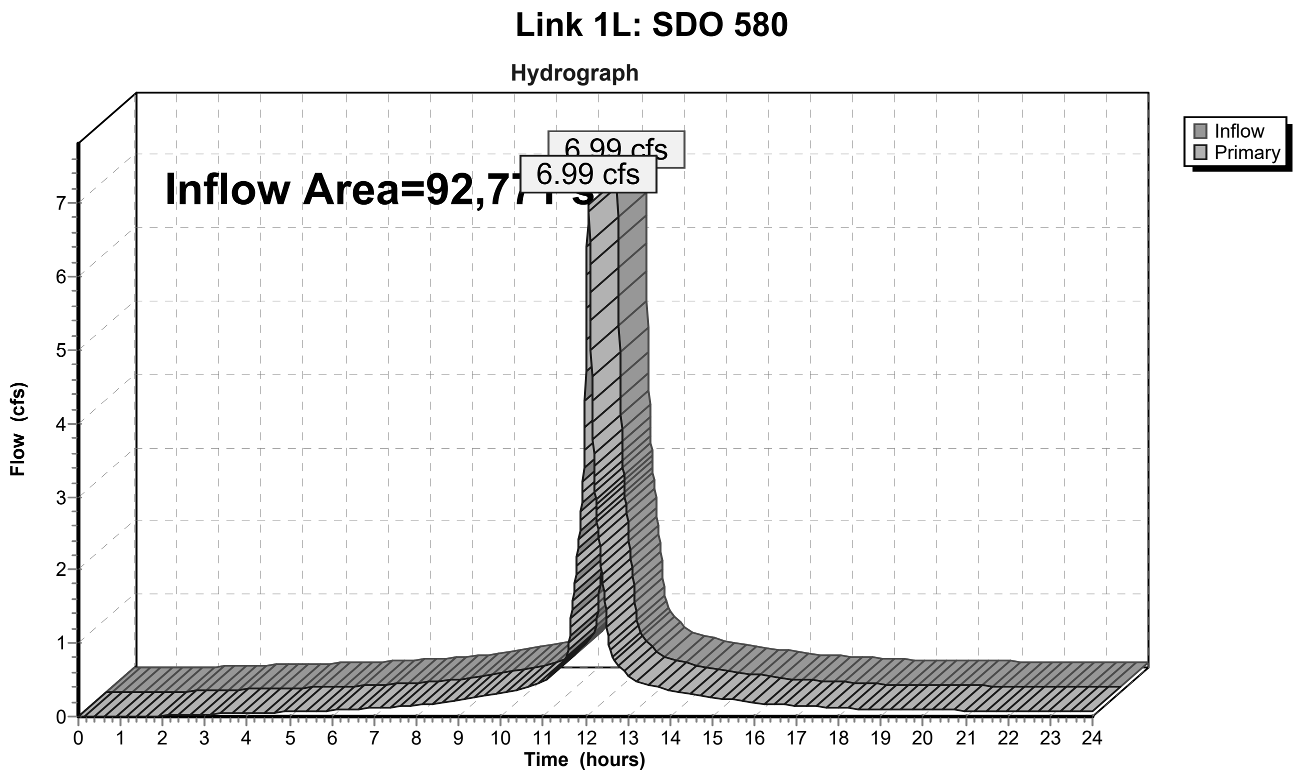
Subcatchment EX3: Brick Buildings



Summary for Link 1L: SDO 580

Inflow Area =	92,771 sf,100.00% Impervious,	Inflow Depth > 3.03"	for 2-year event	
Inflow =	6.99 cfs @ 12.07 hrs,	Volume=	23,388 cf	
Primary =	6.99 cfs @ 12.07 hrs,	Volume=	23,388 cf,	Atten= 0%, Lag= 0.0 min

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

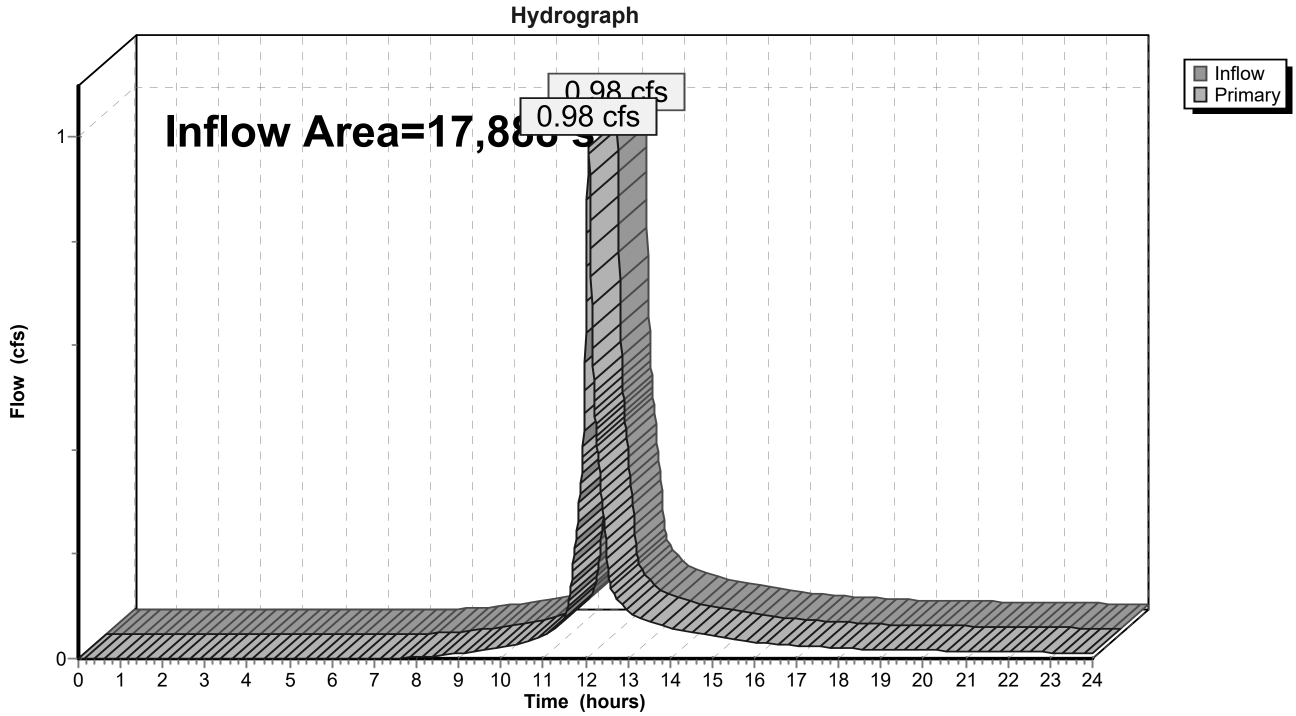


Summary for Link 2L: Fort Point Channel

Inflow Area =	17,888 sf,	53.96% Impervious,	Inflow Depth > 1.97"	for 2-year event
Inflow =	0.98 cfs @	12.07 hrs, Volume=	2,931 cf	
Primary =	0.98 cfs @	12.07 hrs, Volume=	2,931 cf,	Atten= 0%, Lag= 0.0 min

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

Link 2L: Fort Point Channel



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

Subcatchment EX1: Parking Lot Runoff Area=65,437 sf 100.00% Impervious Runoff Depth>4.66"
Tc=5.0 min CN=98 Runoff=7.46 cfs 25,413 cf

Subcatchment EX2: Harborwalk Runoff Area=17,888 sf 53.96% Impervious Runoff Depth>3.47"
Tc=5.0 min CN=87 Runoff=1.70 cfs 5,173 cf

Subcatchment EX3: Brick Buildings Runoff Area=27,334 sf 100.00% Impervious Runoff Depth>4.66"
Tc=5.0 min CN=98 Runoff=3.12 cfs 10,615 cf

Link 1L: SDO 580 Inflow=10.57 cfs 36,028 cf
Primary=10.57 cfs 36,028 cf

Link 2L: Fort Point Channel Inflow=1.70 cfs 5,173 cf
Primary=1.70 cfs 5,173 cf

Total Runoff Area = 110,659 sf Runoff Volume = 41,202 cf Average Runoff Depth = 4.47"
7.44% Pervious = 8,236 sf 92.56% Impervious = 102,423 sf

Summary for Subcatchment EX1: Parking Lot

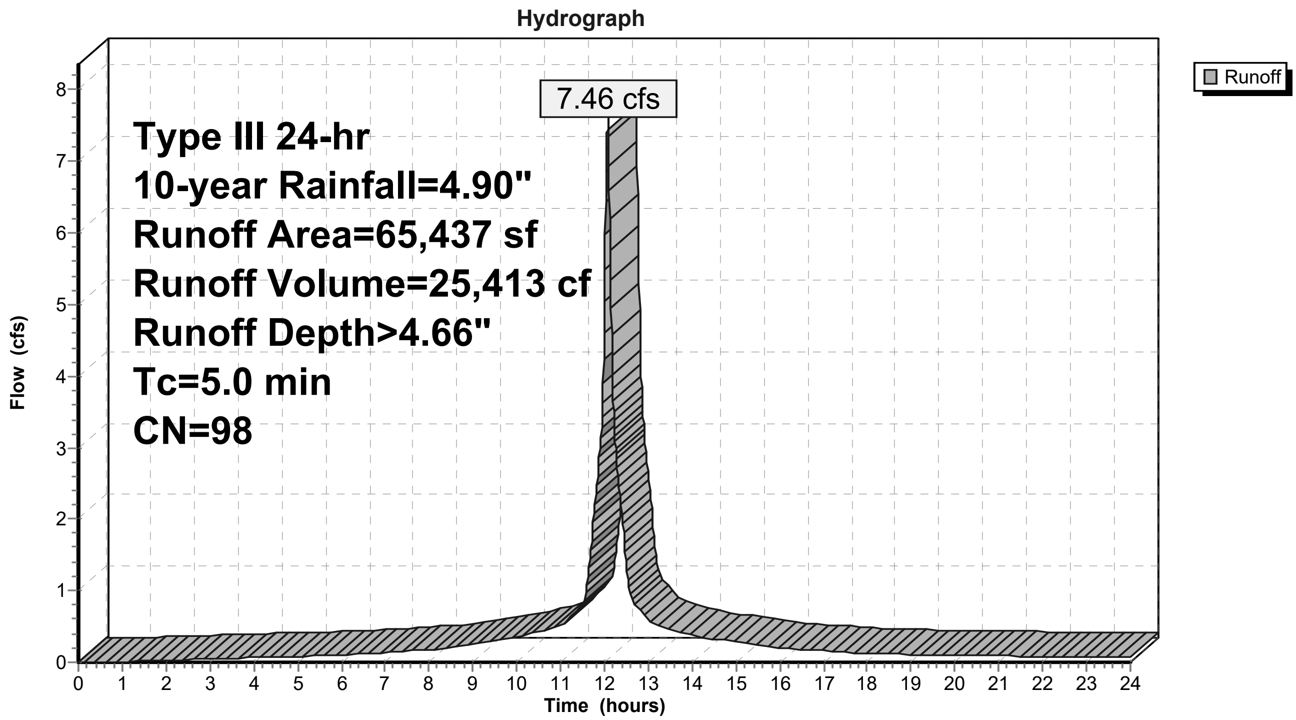
Runoff = 7.46 cfs @ 12.07 hrs, Volume= 25,413 cf, Depth> 4.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
65,437	98	Paved parking, HSG C
65,437		100.00% Impervious Area

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

Subcatchment EX1: Parking Lot



Summary for Subcatchment EX2: Harborwalk

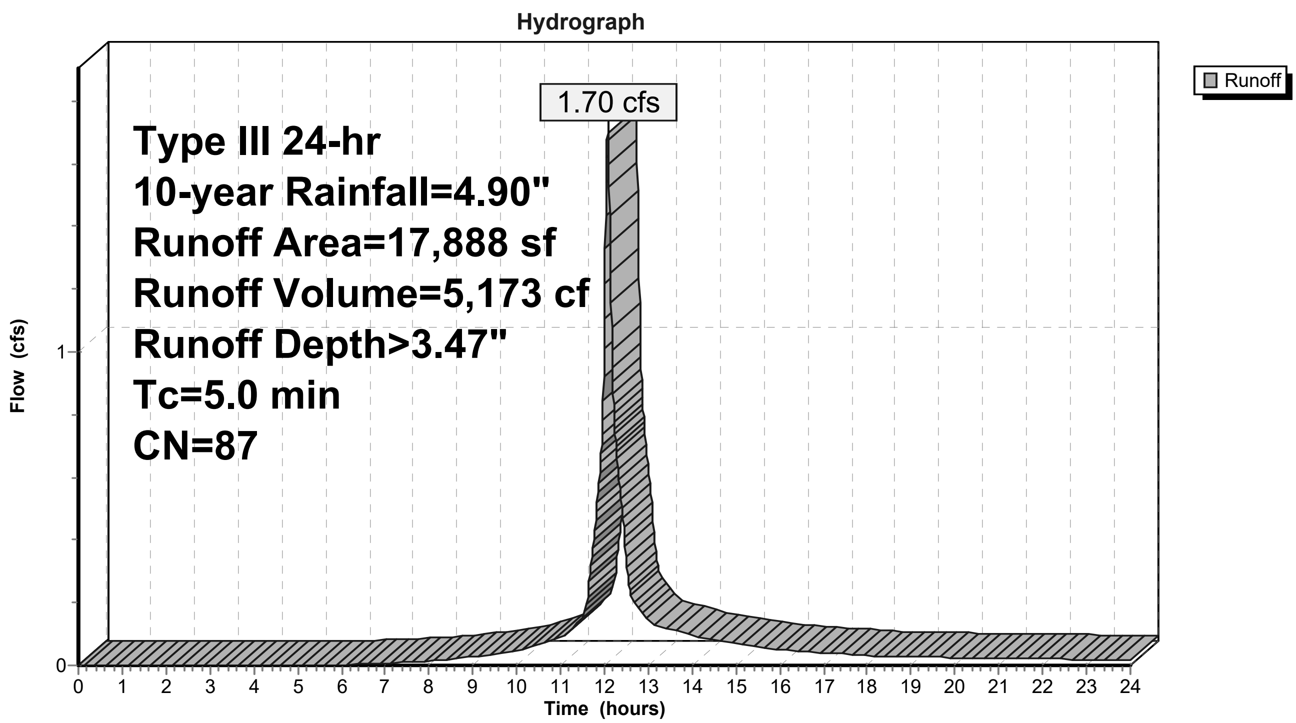
Runoff = 1.70 cfs @ 12.07 hrs, Volume= 5,173 cf, Depth> 3.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
9,652	98	Paved parking, HSG C
8,236	74	>75% Grass cover, Good, HSG C
17,888	87	Weighted Average
8,236		46.04% Pervious Area
9,652		53.96% Impervious Area

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

Subcatchment EX2: Harborwalk



Summary for Subcatchment EX3: Brick Buildings

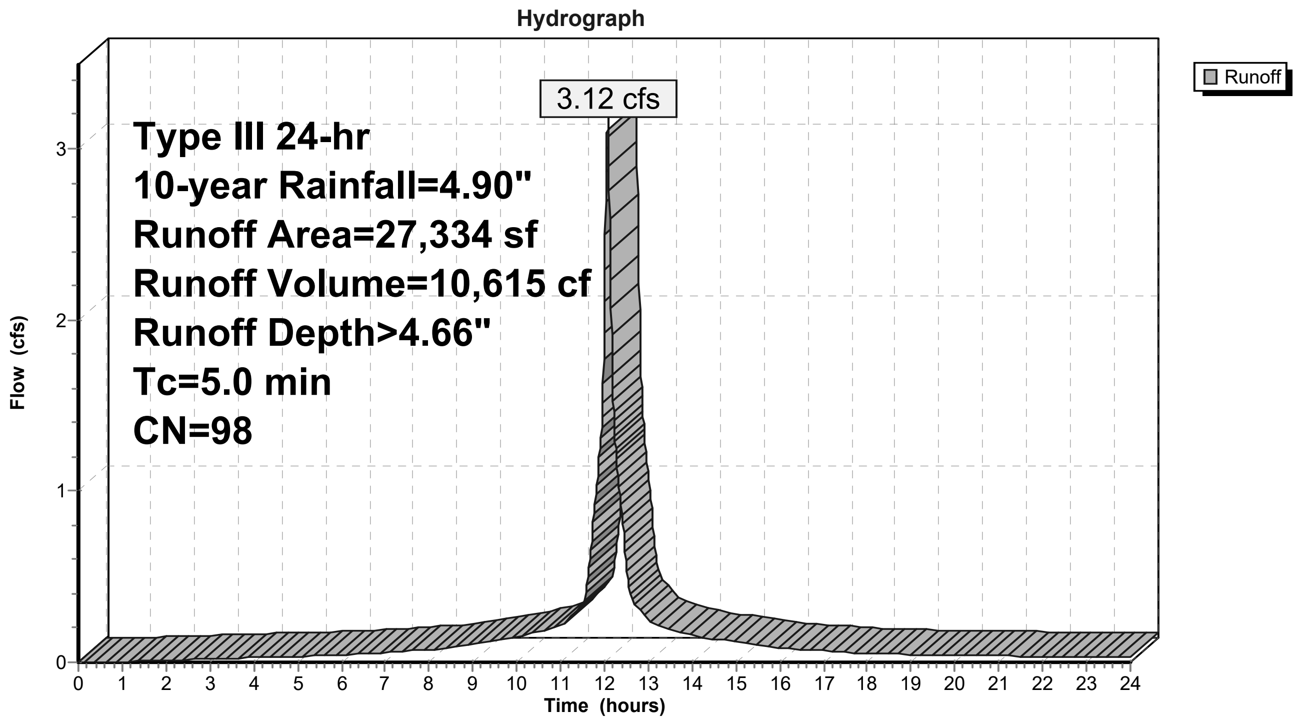
Runoff = 3.12 cfs @ 12.07 hrs, Volume= 10,615 cf, Depth> 4.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
27,334	98	Paved parking, HSG C
27,334		100.00% Impervious Area

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

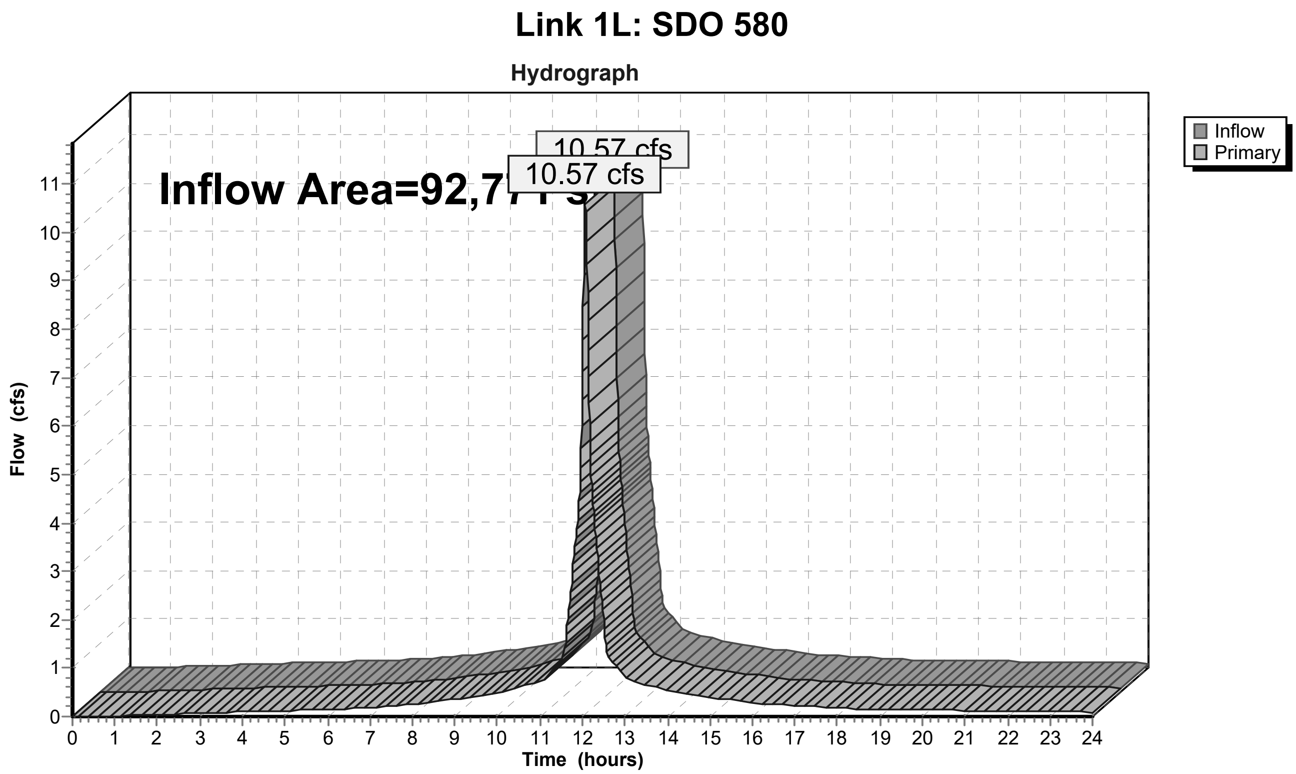
Subcatchment EX3: Brick Buildings



Summary for Link 1L: SDO 580

Inflow Area =	92,771 sf,100.00% Impervious,	Inflow Depth > 4.66"	for 10-year event	
Inflow =	10.57 cfs @	12.07 hrs, Volume=	36,028 cf	
Primary =	10.57 cfs @	12.07 hrs, Volume=	36,028 cf,	Atten= 0%, Lag= 0.0 min

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

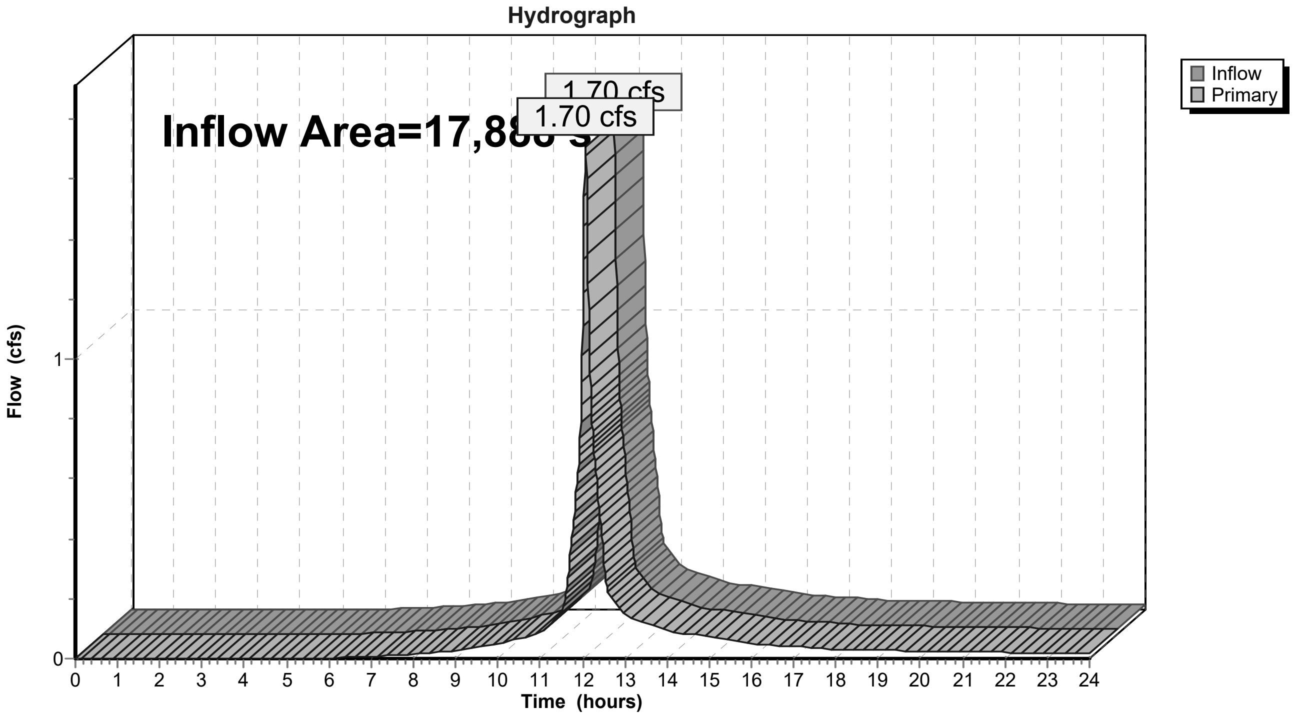


Summary for Link 2L: Fort Point Channel

Inflow Area =	17,888 sf,	53.96% Impervious,	Inflow Depth > 3.47"	for 10-year event
Inflow =	1.70 cfs @	12.07 hrs, Volume=	5,173 cf	
Primary =	1.70 cfs @	12.07 hrs, Volume=	5,173 cf,	Atten= 0%, Lag= 0.0 min

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

Link 2L: Fort Point Channel



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

Subcatchment EX1: Parking Lot Runoff Area=65,437 sf 100.00% Impervious Runoff Depth>5.95"
Tc=5.0 min CN=98 Runoff=9.44 cfs 32,434 cf

Subcatchment EX2: Harborwalk Runoff Area=17,888 sf 53.96% Impervious Runoff Depth>4.70"
Tc=5.0 min CN=87 Runoff=2.27 cfs 7,000 cf

Subcatchment EX3: Brick Buildings Runoff Area=27,334 sf 100.00% Impervious Runoff Depth>5.95"
Tc=5.0 min CN=98 Runoff=3.94 cfs 13,548 cf

Link 1L: SDO 580 Inflow=13.39 cfs 45,982 cf
Primary=13.39 cfs 45,982 cf

Link 2L: Fort Point Channel Inflow=2.27 cfs 7,000 cf
Primary=2.27 cfs 7,000 cf

Total Runoff Area = 110,659 sf Runoff Volume = 52,982 cf Average Runoff Depth = 5.75"
7.44% Pervious = 8,236 sf 92.56% Impervious = 102,423 sf

Summary for Subcatchment EX1: Parking Lot

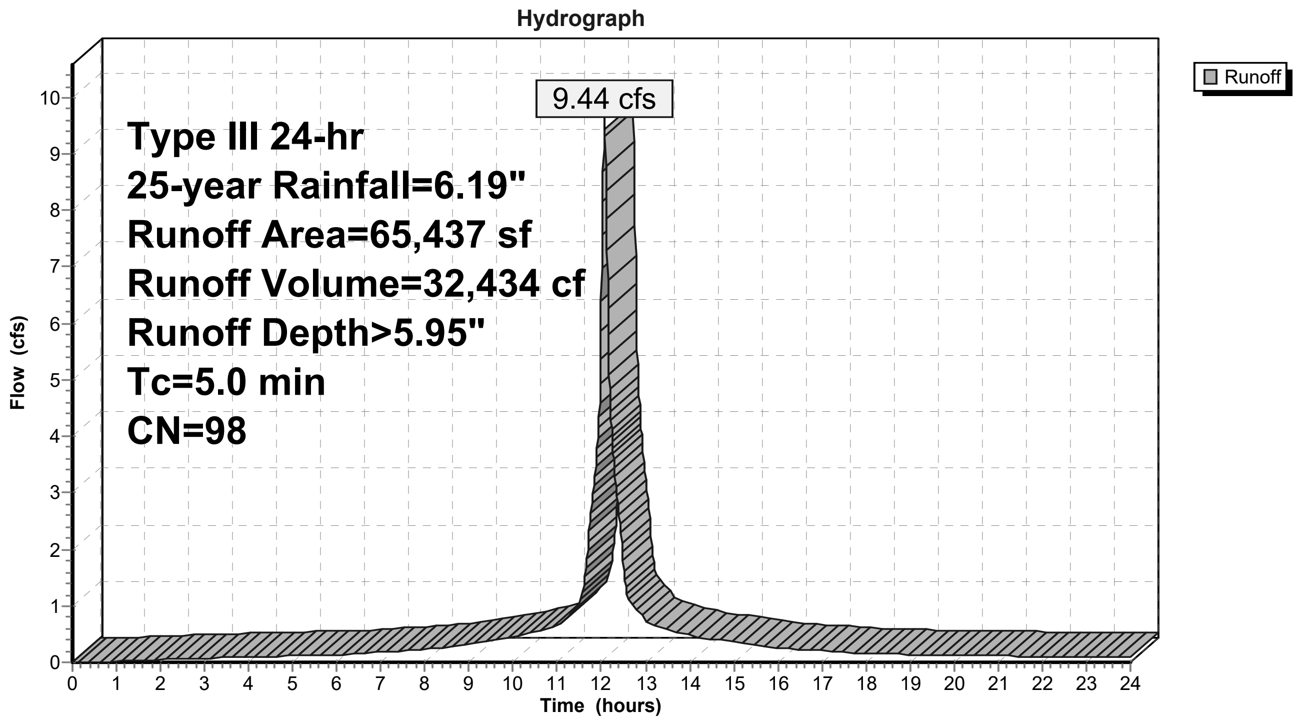
Runoff = 9.44 cfs @ 12.07 hrs, Volume= 32,434 cf, Depth> 5.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.19"

Area (sf)	CN	Description
65,437	98	Paved parking, HSG C
65,437		100.00% Impervious Area

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

Subcatchment EX1: Parking Lot



Summary for Subcatchment EX2: Harborwalk

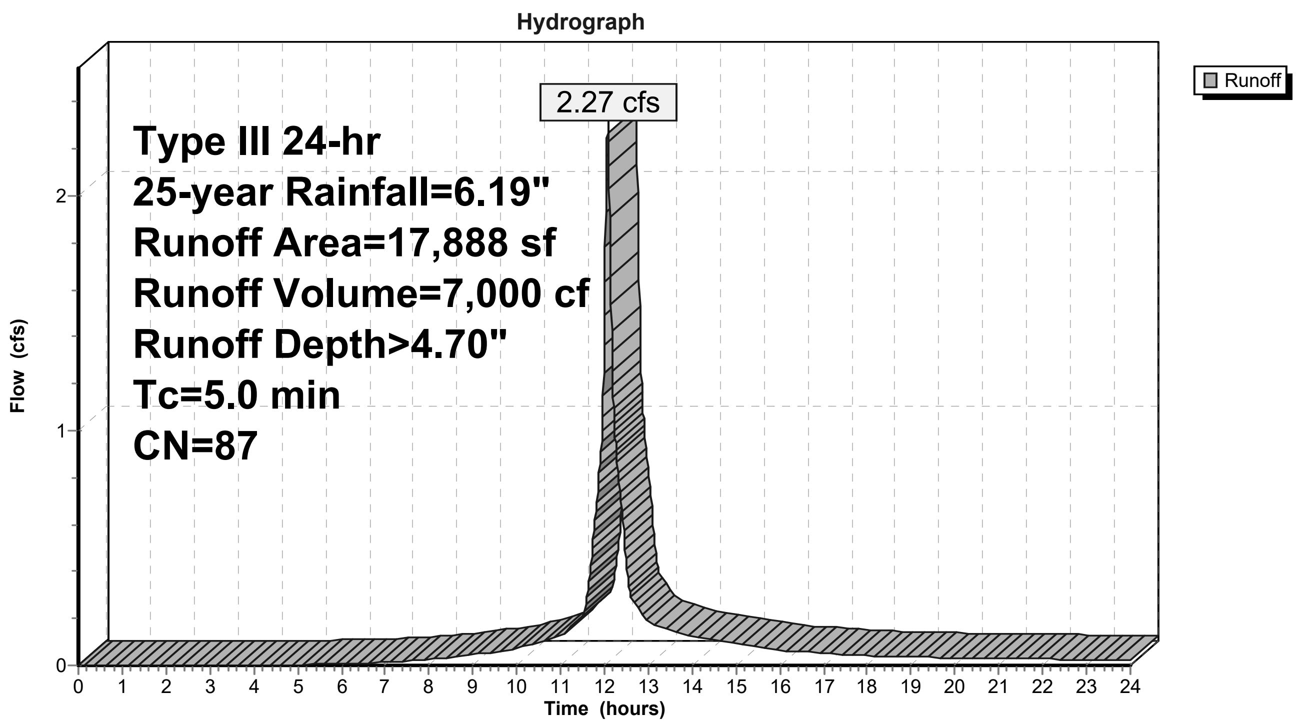
Runoff = 2.27 cfs @ 12.07 hrs, Volume= 7,000 cf, Depth> 4.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.19"

Area (sf)	CN	Description
9,652	98	Paved parking, HSG C
8,236	74	>75% Grass cover, Good, HSG C
17,888	87	Weighted Average
8,236		46.04% Pervious Area
9,652		53.96% Impervious Area

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

Subcatchment EX2: Harborwalk



Summary for Subcatchment EX3: Brick Buildings

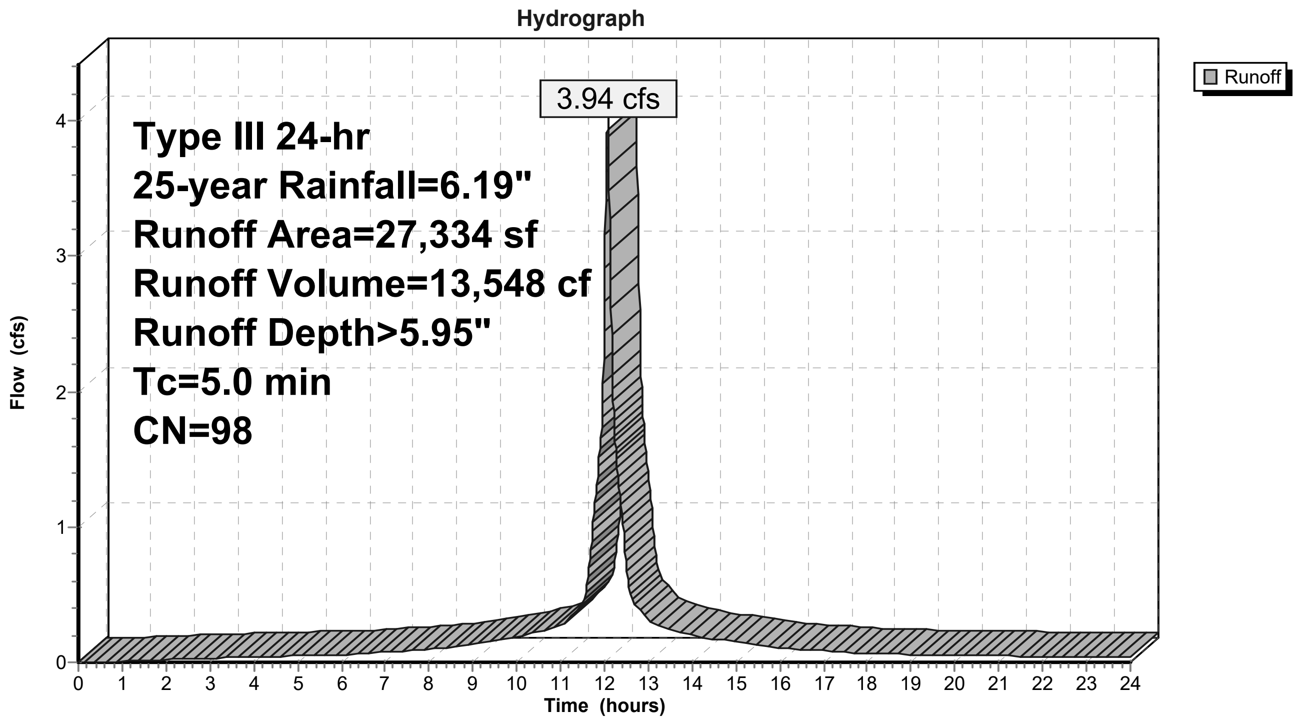
Runoff = 3.94 cfs @ 12.07 hrs, Volume= 13,548 cf, Depth> 5.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.19"

Area (sf)	CN	Description
27,334	98	Paved parking, HSG C
27,334		100.00% Impervious Area

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

Subcatchment EX3: Brick Buildings

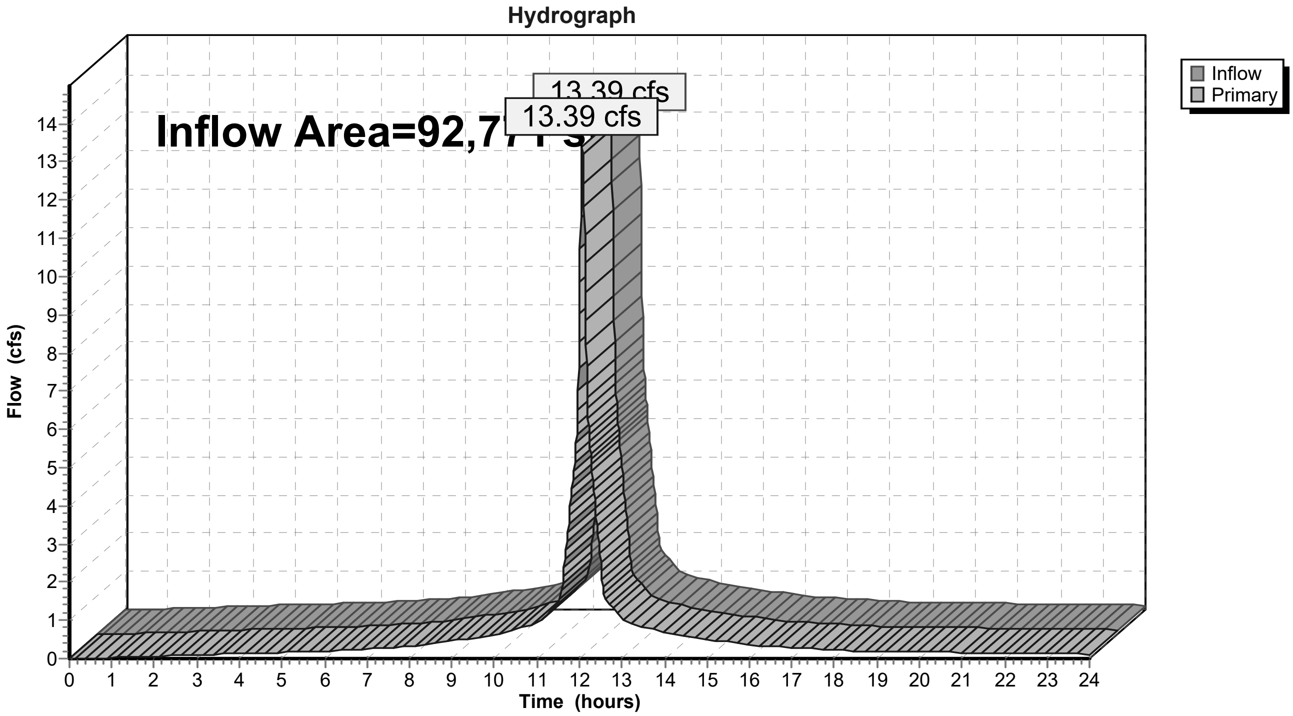


Summary for Link 1L: SDO 580

Inflow Area =	92,771 sf,100.00% Impervious,	Inflow Depth > 5.95"	for 25-year event
Inflow =	13.39 cfs @ 12.07 hrs, Volume=	45,982 cf	
Primary =	13.39 cfs @ 12.07 hrs, Volume=	45,982 cf, Atten= 0%, Lag= 0.0 min	

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

Link 1L: SDO 580

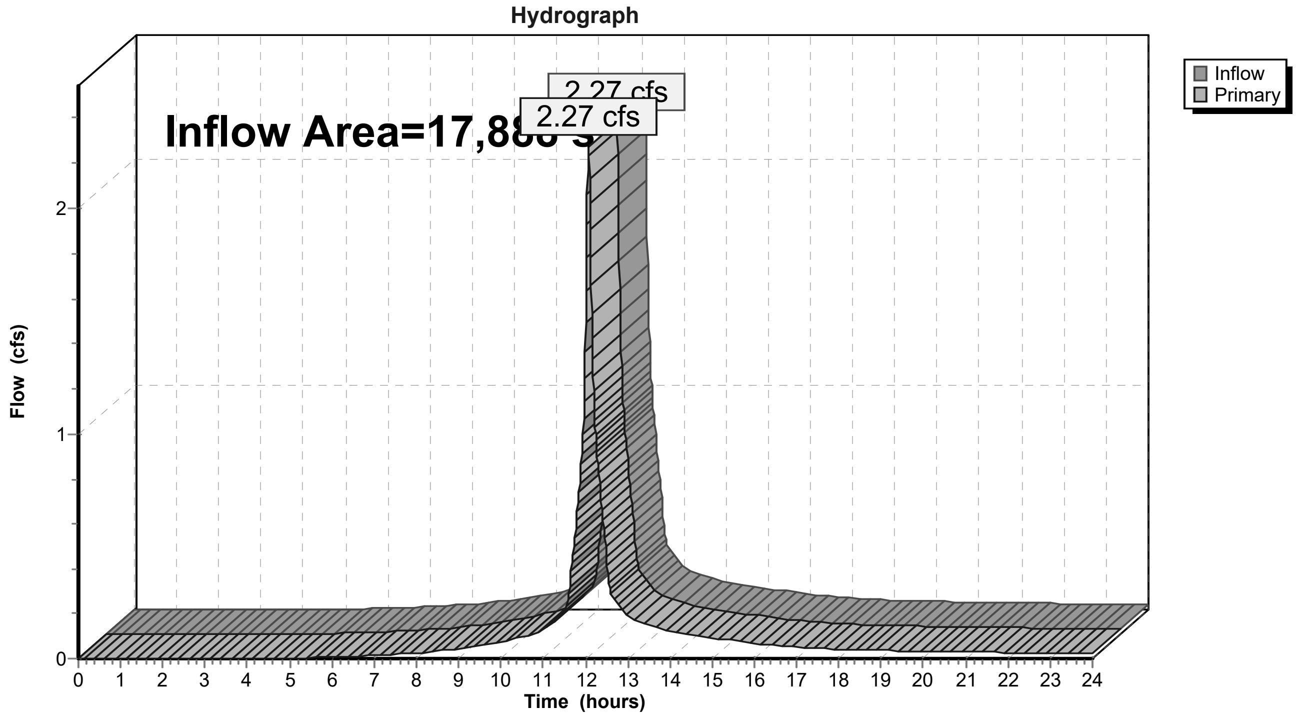


Summary for Link 2L: Fort Point Channel

Inflow Area = 17,888 sf, 53.96% Impervious, Inflow Depth > 4.70" for 25-year event
Inflow = 2.27 cfs @ 12.07 hrs, Volume= 7,000 cf
Primary = 2.27 cfs @ 12.07 hrs, Volume= 7,000 cf, Atten= 0%, Lag= 0.0 min

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

Link 2L: Fort Point Channel



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

Subcatchment EX1: Parking Lot Runoff Area=65,437 sf 100.00% Impervious Runoff Depth>8.58"
Tc=5.0 min CN=98 Runoff=13.50 cfs 46,811 cf

Subcatchment EX2: Harborwalk Runoff Area=17,888 sf 53.96% Impervious Runoff Depth>7.25"
Tc=5.0 min CN=87 Runoff=3.43 cfs 10,814 cf

Subcatchment EX3: Brick Buildings Runoff Area=27,334 sf 100.00% Impervious Runoff Depth>8.58"
Tc=5.0 min CN=98 Runoff=5.64 cfs 19,554 cf

Link 1L: SDO 580 Inflow=19.13 cfs 66,364 cf
Primary=19.13 cfs 66,364 cf

Link 2L: Fort Point Channel Inflow=3.43 cfs 10,814 cf
Primary=3.43 cfs 10,814 cf

Total Runoff Area = 110,659 sf Runoff Volume = 77,178 cf Average Runoff Depth = 8.37"
7.44% Pervious = 8,236 sf 92.56% Impervious = 102,423 sf

Summary for Subcatchment EX1: Parking Lot

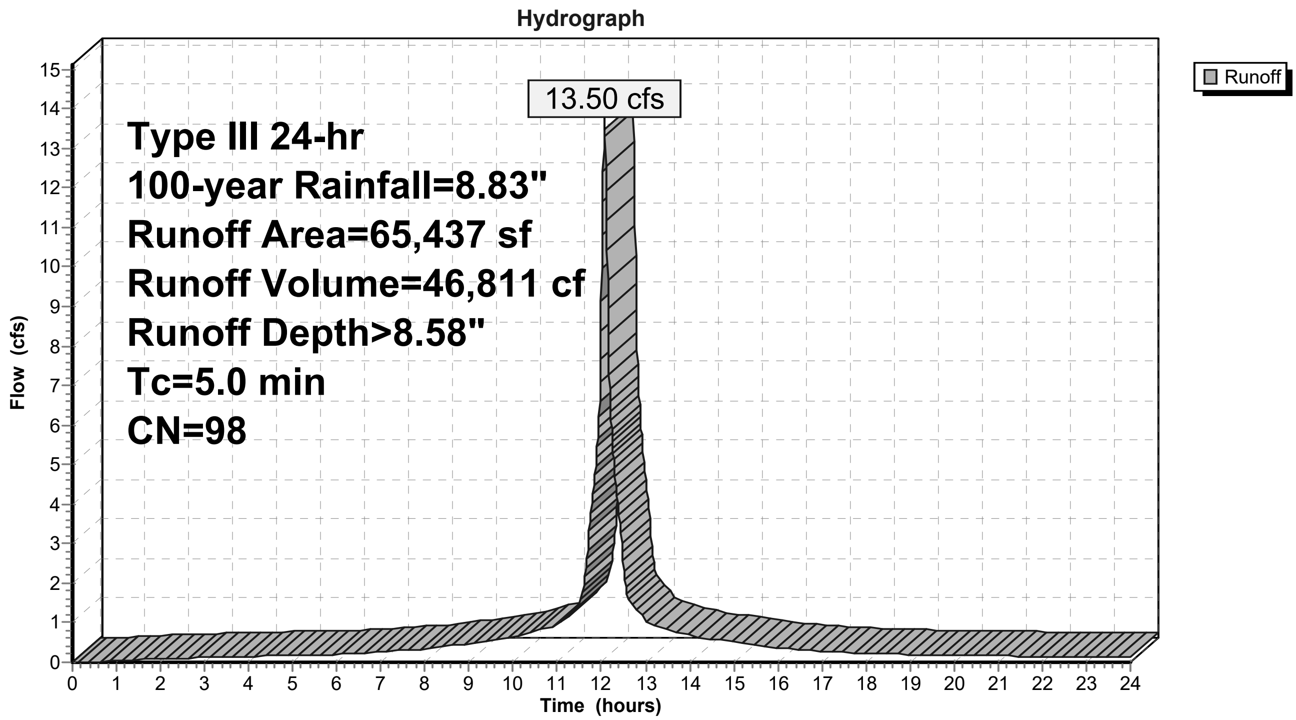
Runoff = 13.50 cfs @ 12.07 hrs, Volume= 46,811 cf, Depth> 8.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.83"

Area (sf)	CN	Description
65,437	98	Paved parking, HSG C
65,437		100.00% Impervious Area

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

Subcatchment EX1: Parking Lot



Summary for Subcatchment EX2: Harborwalk

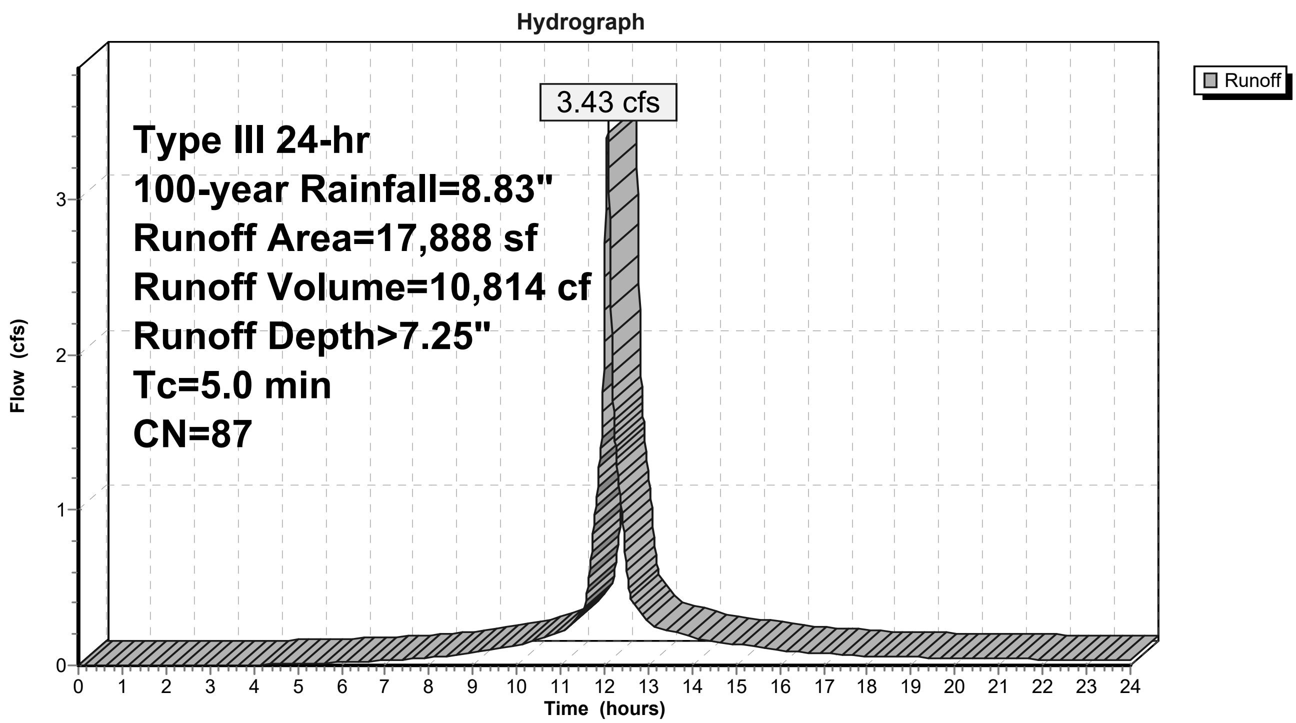
Runoff = 3.43 cfs @ 12.07 hrs, Volume= 10,814 cf, Depth> 7.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.83"

Area (sf)	CN	Description
9,652	98	Paved parking, HSG C
8,236	74	>75% Grass cover, Good, HSG C
17,888	87	Weighted Average
8,236		46.04% Pervious Area
9,652		53.96% Impervious Area

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

Subcatchment EX2: Harborwalk



Summary for Subcatchment EX3: Brick Buildings

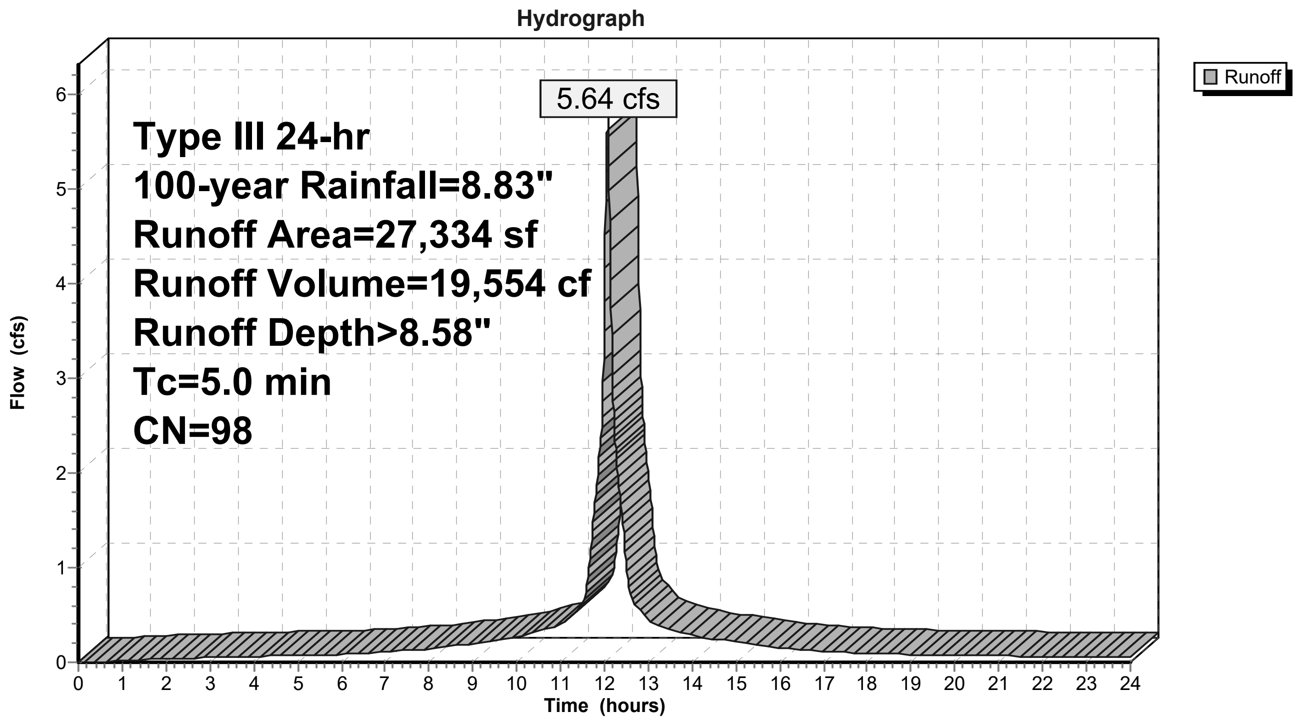
Runoff = 5.64 cfs @ 12.07 hrs, Volume= 19,554 cf, Depth> 8.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.83"

Area (sf)	CN	Description
27,334	98	Paved parking, HSG C
27,334		100.00% Impervious Area

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

Subcatchment EX3: Brick Buildings

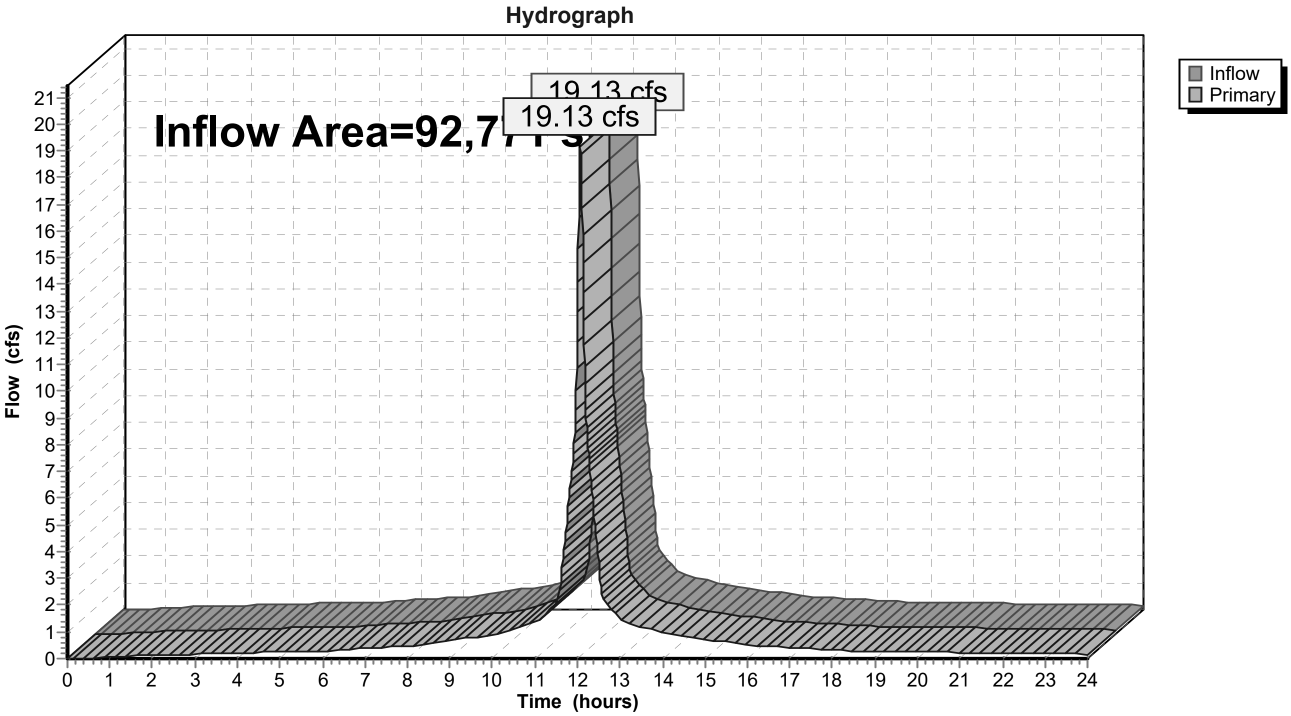


Summary for Link 1L: SDO 580

Inflow Area =	92,771 sf,100.00% Impervious,	Inflow Depth > 8.58"	for 100-year event
Inflow =	19.13 cfs @ 12.07 hrs, Volume=	66,364 cf	
Primary =	19.13 cfs @ 12.07 hrs, Volume=	66,364 cf, Atten= 0%, Lag= 0.0 min	

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

Link 1L: SDO 580

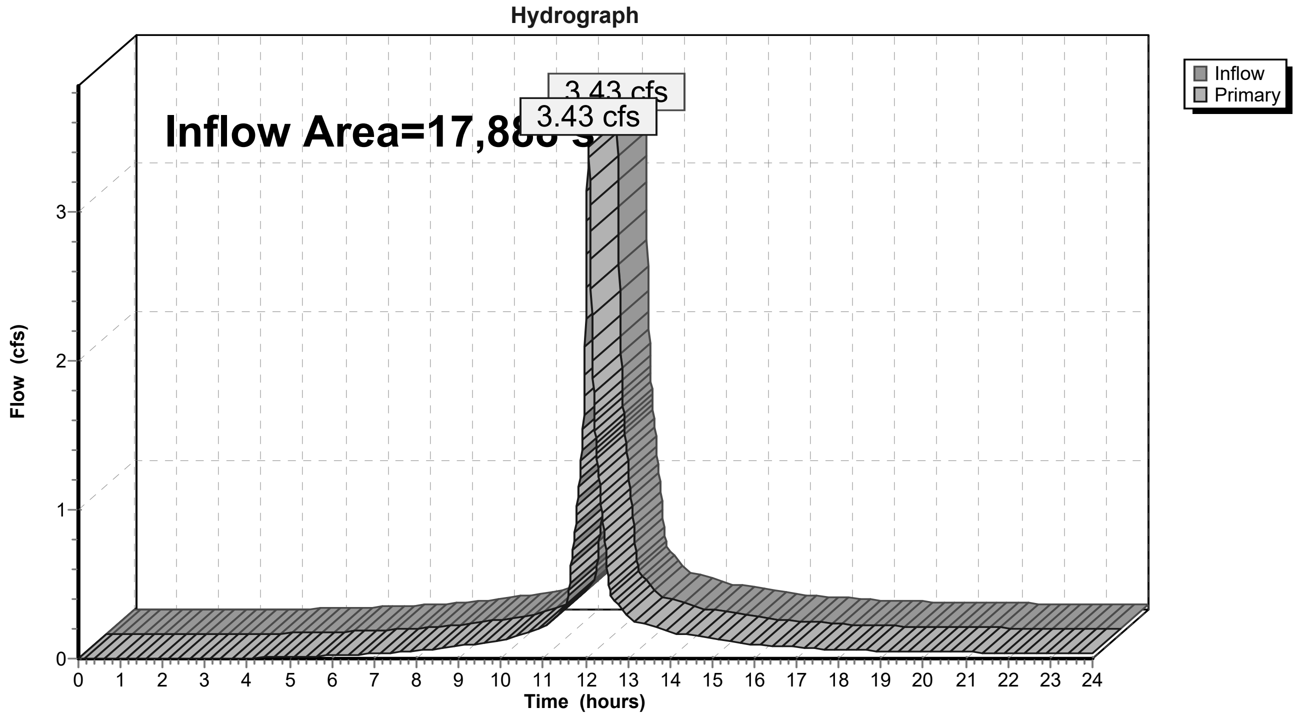


Summary for Link 2L: Fort Point Channel

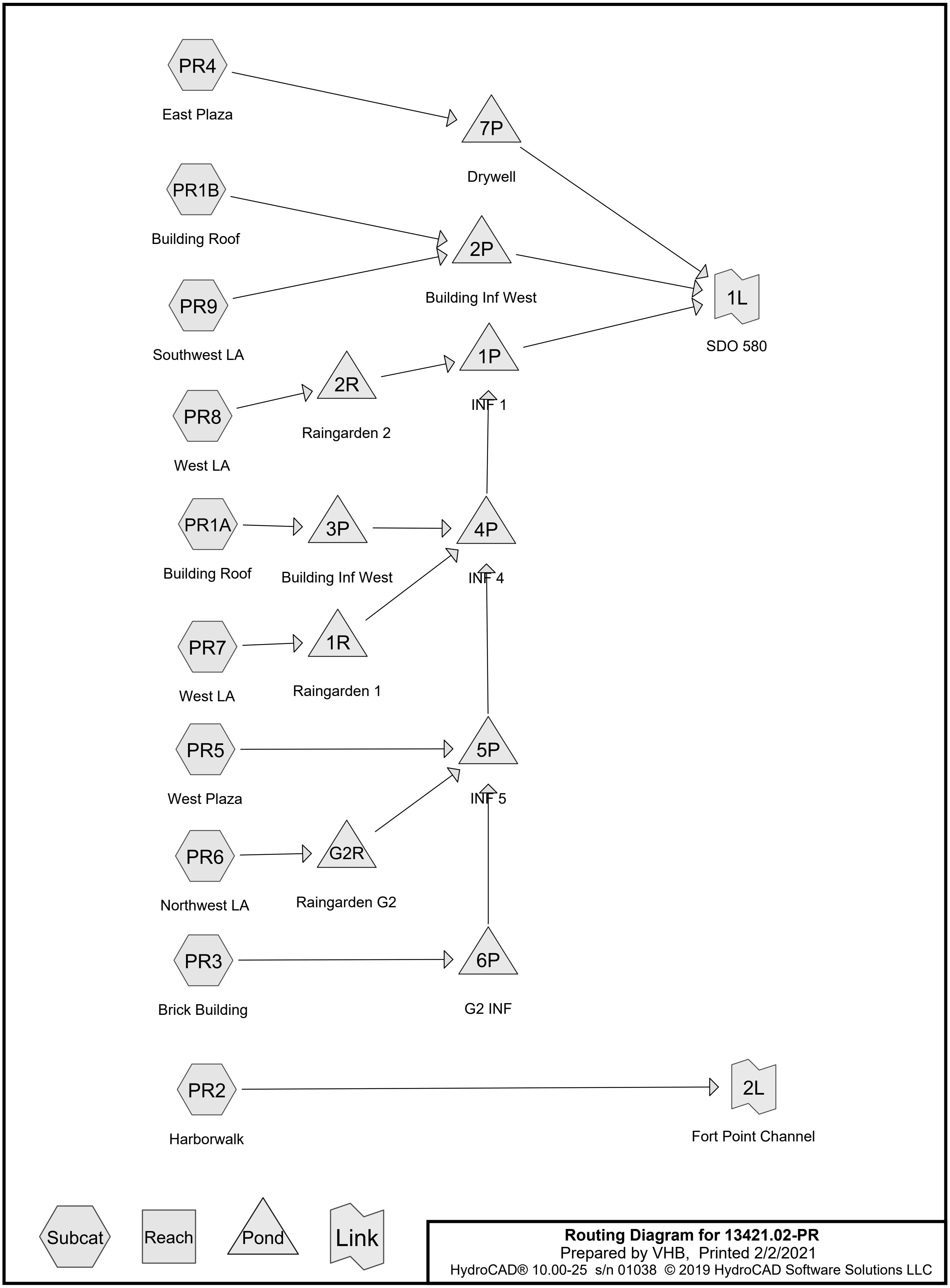
Inflow Area =	17,888 sf,	53.96% Impervious,	Inflow Depth > 7.25"	for 100-year event
Inflow =	3.43 cfs @	12.07 hrs, Volume=	10,814 cf	
Primary =	3.43 cfs @	12.07 hrs, Volume=	10,814 cf,	Atten= 0%, Lag= 0.0 min

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

Link 2L: Fort Point Channel



HydroCAD Analysis: Proposed Conditions



Routing Diagram for 13421.02-PR
Prepared by VHB, Printed 2/2/2021
HydroCAD® 10.00-25 s/n 01038 © 2019 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
24,141	74	>75% Grass cover, Good, HSG C (PR2, PR4, PR5, PR6, PR7, PR8, PR9)
19,154	98	Building Roofs, HSG C (PR3)
33,790	98	Buildings, HSG C (PR1A, PR1B)
1,060	74	Green Roof (PR3)
32,516	98	Unconnected pavement, HSG C (PR2, PR4, PR5, PR6, PR7, PR8, PR9)
110,661	**93**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
109,601	HSG C	PR1A, PR1B, PR2, PR3, PR4, PR5, PR6, PR7, PR8, PR9
0	HSG D	
1,060	Other	PR3
110,661		**TOTAL AREA**

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

SubcatchmentPR1A: Building Roof Runoff Area=11,263 sf 100.00% Impervious Runoff Depth>3.02"
Tc=10.0 min CN=98 Runoff=0.72 cfs 2,837 cf

SubcatchmentPR1B: Building Roof Runoff Area=22,527 sf 100.00% Impervious Runoff Depth>3.02"
Tc=10.0 min CN=98 Runoff=1.44 cfs 5,675 cf

SubcatchmentPR2: Harborwalk Runoff Area=17,888 sf 88.55% Impervious Runoff Depth>2.70"
Tc=5.0 min CN=95 Runoff=1.27 cfs 4,027 cf

SubcatchmentPR3: Brick Building Runoff Area=20,214 sf 94.76% Impervious Runoff Depth>2.91"
Tc=5.0 min CN=97 Runoff=1.50 cfs 4,909 cf

SubcatchmentPR4: East Plaza Runoff Area=4,406 sf 77.21% Impervious Runoff Depth>2.50"
Tc=5.0 min CN=93 Runoff=0.30 cfs 918 cf

SubcatchmentPR5: West Plaza Runoff Area=9,026 sf 45.28% Impervious Runoff Depth>1.81"
Tc=5.0 min CN=85 Runoff=0.46 cfs 1,359 cf

SubcatchmentPR6: Northwest LA Runoff Area=6,603 sf 37.32% Impervious Runoff Depth>1.66"
Tc=5.0 min CN=83 Runoff=0.31 cfs 912 cf

SubcatchmentPR7: West LA Runoff Area=2,525 sf 24.40% Impervious Runoff Depth>1.25"
Tc=5.0 min UI Adjusted CN=77 Runoff=0.09 cfs 264 cf

SubcatchmentPR8: West LA Runoff Area=5,781 sf 31.24% Impervious Runoff Depth>1.51"
Tc=5.0 min CN=81 Runoff=0.24 cfs 730 cf

SubcatchmentPR9: Southwest LA Runoff Area=10,428 sf 41.25% Impervious Runoff Depth>1.73"
Tc=5.0 min CN=84 Runoff=0.50 cfs 1,504 cf

Pond 1P: INF 1 Peak Elev=13.34' Storage=1,146 cf Inflow=2.67 cfs 4,980 cf
Discarded=0.01 cfs 250 cf Primary=2.52 cfs 3,594 cf Outflow=2.52 cfs 3,844 cf

Pond 1R: Raingarden 1 Peak Elev=14.33' Storage=217 cf Inflow=0.09 cfs 264 cf
Discarded=0.00 cfs 47 cf Primary=0.00 cfs 0 cf Outflow=0.00 cfs 47 cf

Pond 2P: Building Inf West Peak Elev=12.24' Storage=2,834 cf Inflow=1.86 cfs 7,179 cf
Discarded=0.02 cfs 853 cf Primary=1.55 cfs 3,743 cf Outflow=1.57 cfs 4,596 cf

Pond 2R: Raingarden 2 Peak Elev=14.53' Storage=345 cf Inflow=0.24 cfs 730 cf
Discarded=0.00 cfs 73 cf Primary=0.06 cfs 324 cf Outflow=0.06 cfs 397 cf

Pond 3P: Building Inf West Peak Elev=16.14' Storage=1,010 cf Inflow=0.72 cfs 2,837 cf
Discarded=0.00 cfs 175 cf Primary=0.71 cfs 1,702 cf Outflow=0.71 cfs 1,877 cf

Pond 4P: INF 4 Peak Elev=13.23' Storage=641 cf Inflow=2.60 cfs 5,430 cf
Discarded=0.00 cfs 160 cf Primary=2.67 cfs 4,656 cf Outflow=2.68 cfs 4,816 cf

Pond 5P: INF 5 Peak Elev=14.28' Storage=1,407 cf Inflow=2.24 cfs 5,401 cf
Discarded=0.01 cfs 423 cf Primary=1.91 cfs 3,728 cf Outflow=1.92 cfs 4,150 cf

Pond 6P: G2 INF Peak Elev=15.64' Storage=1,266 cf Inflow=1.50 cfs 4,909 cf
Discarded=0.01 cfs 377 cf Primary=1.49 cfs 3,318 cf Outflow=1.49 cfs 3,695 cf

Pond 7P: Drywell Peak Elev=16.09' Storage=118 cf Inflow=0.30 cfs 918 cf
Discarded=0.00 cfs 32 cf Primary=0.30 cfs 771 cf Outflow=0.30 cfs 802 cf

Pond G2R: Raingarden G2 Peak Elev=14.59' Storage=171 cf Inflow=0.31 cfs 912 cf
Discarded=0.00 cfs 35 cf Primary=0.30 cfs 724 cf Outflow=0.30 cfs 759 cf

Link 1L: SDO 580 Inflow=3.55 cfs 8,108 cf
Primary=3.55 cfs 8,108 cf

Link 2L: Fort Point Channel Inflow=1.27 cfs 4,027 cf
Primary=1.27 cfs 4,027 cf

Total Runoff Area = 110,661 sf Runoff Volume = 23,136 cf Average Runoff Depth = 2.51"
22.77% Pervious = 25,201 sf 77.23% Impervious = 85,460 sf

Summary for Subcatchment PR1A: Building Roof

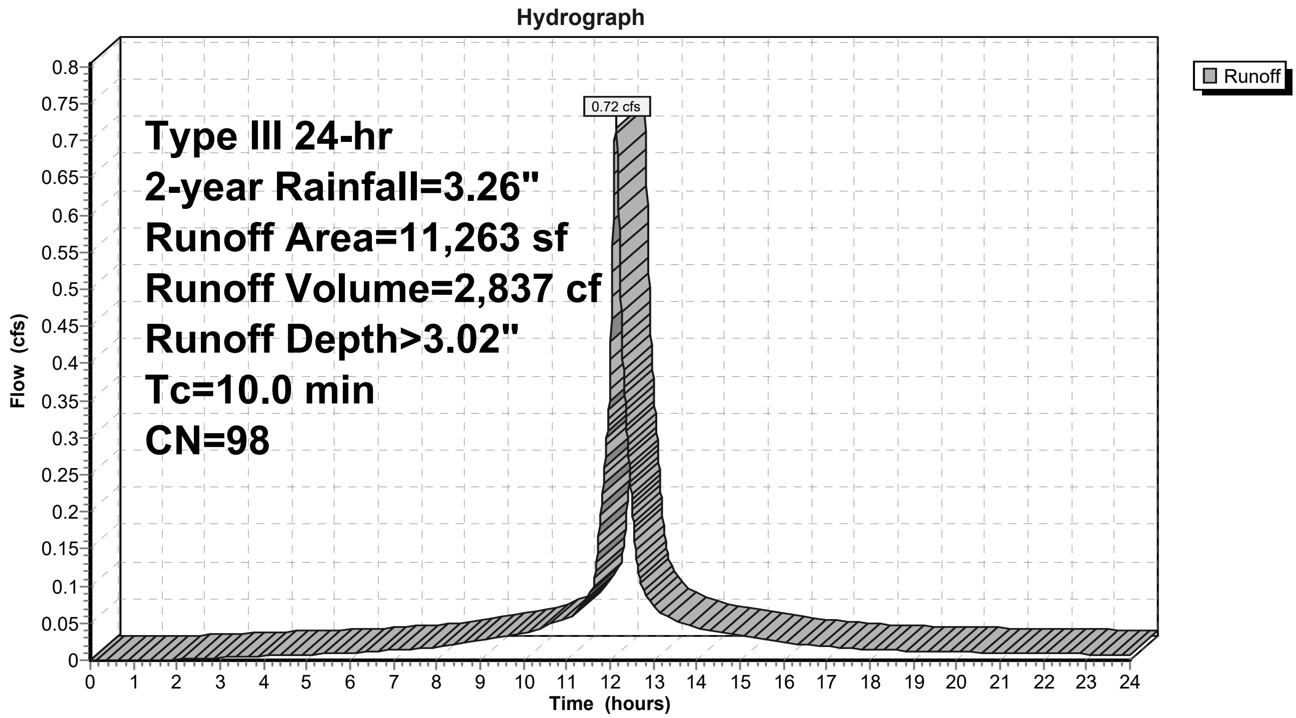
Runoff = 0.72 cfs @ 12.13 hrs, Volume= 2,837 cf, Depth> 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.26"

	Area (sf)	CN	Description
*	11,263	98	Buildings, HSG C
	11,263		100.00% Impervious Area

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

Subcatchment PR1A: Building Roof



Summary for Subcatchment PR1B: Building Roof

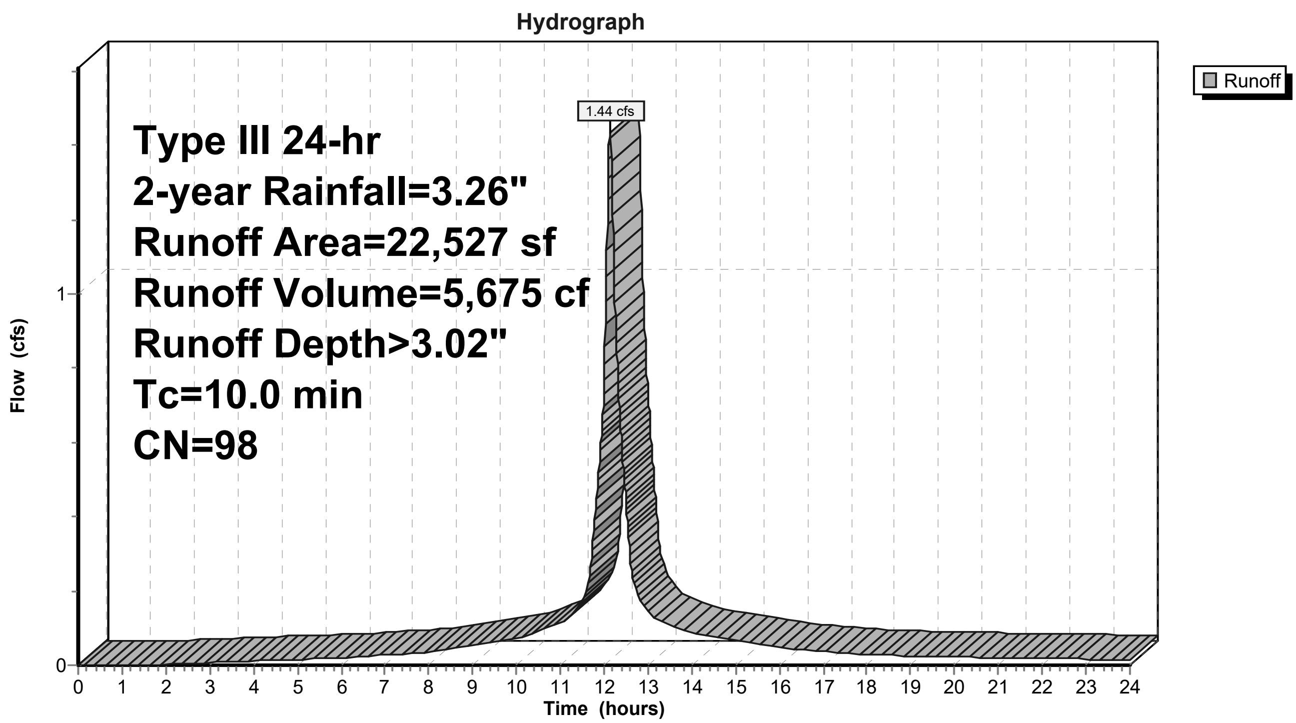
Runoff = 1.44 cfs @ 12.13 hrs, Volume= 5,675 cf, Depth> 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.26"

	Area (sf)	CN	Description
*	22,527	98	Buildings, HSG C
	22,527		100.00% Impervious Area

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

Subcatchment PR1B: Building Roof



Summary for Subcatchment PR2: Harborwalk

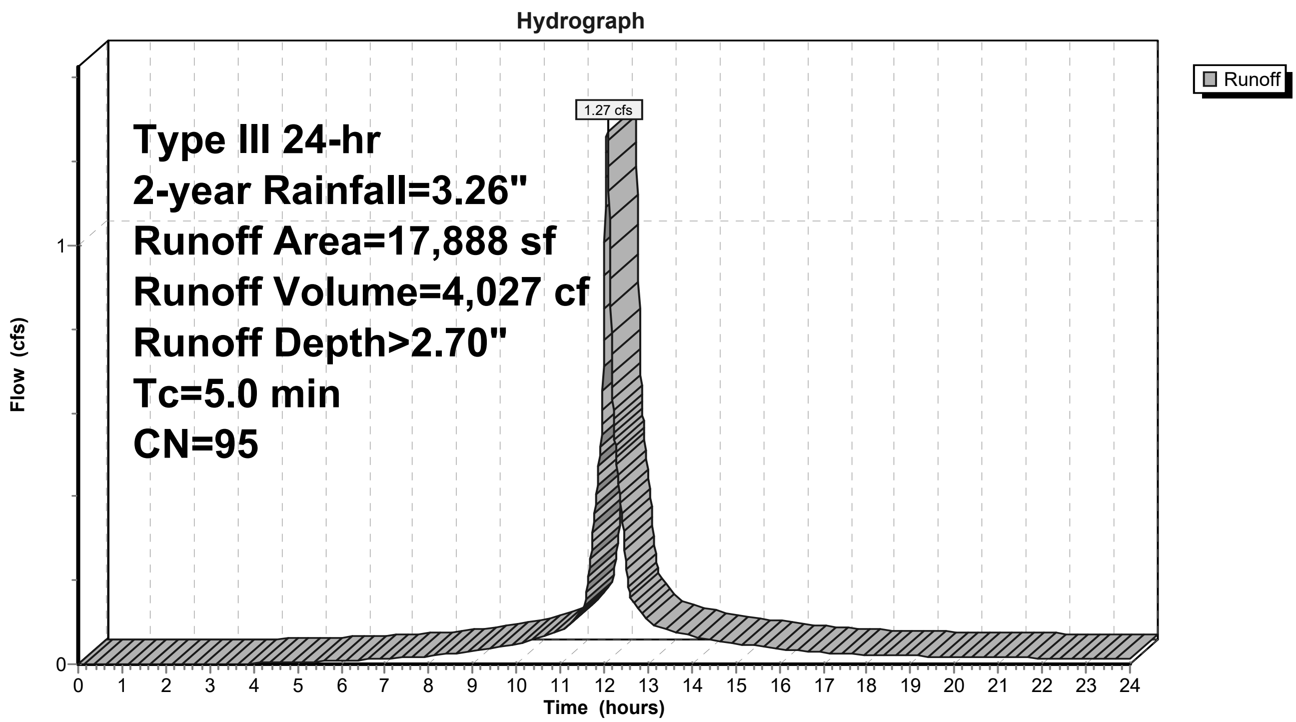
Runoff = 1.27 cfs @ 12.07 hrs, Volume= 4,027 cf, Depth> 2.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.26"

Area (sf)	CN	Description
15,839	98	Unconnected pavement, HSG C
2,049	74	>75% Grass cover, Good, HSG C
17,888	95	Weighted Average
2,049		11.45% Pervious Area
15,839		88.55% Impervious Area
15,839		100.00% Unconnected

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

Subcatchment PR2: Harborwalk



Summary for Subcatchment PR3: Brick Building

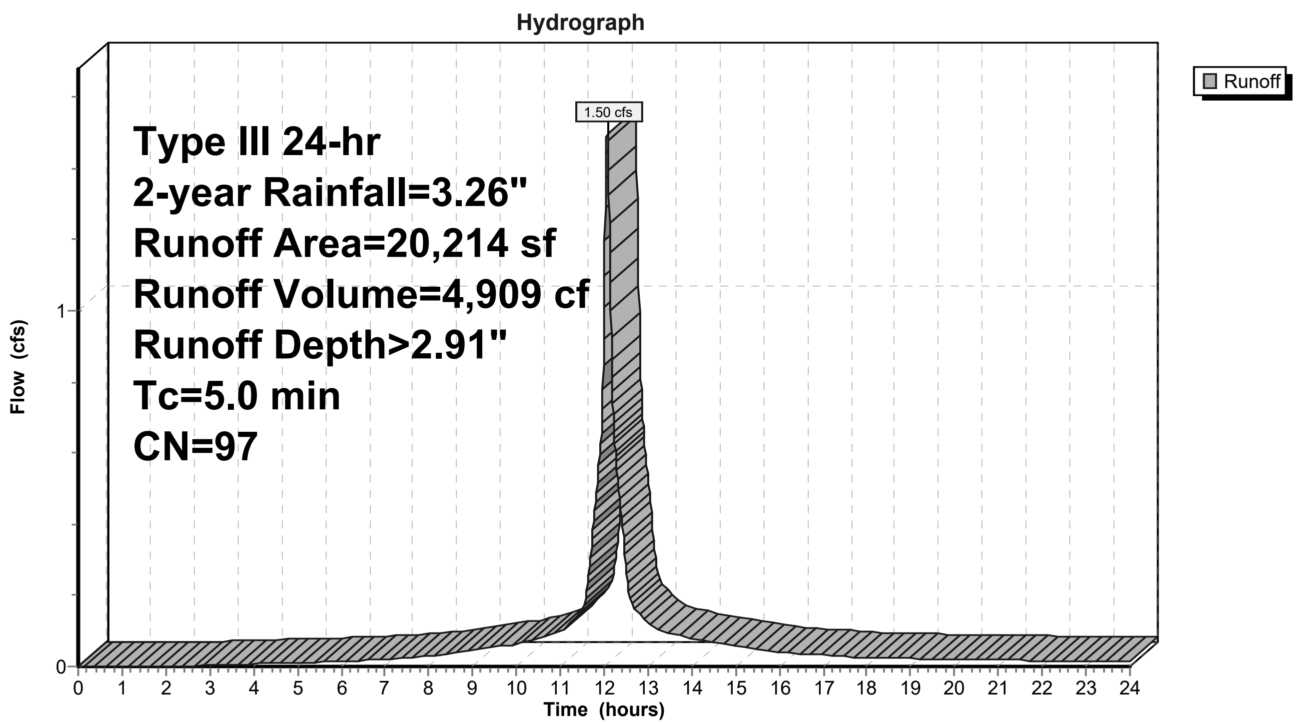
Runoff = 1.50 cfs @ 12.07 hrs, Volume= 4,909 cf, Depth> 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.26"

	Area (sf)	CN	Description
*	19,154	98	Building Roofs, HSG C
*	1,060	74	Green Roof
	20,214	97	Weighted Average
	1,060		5.24% Pervious Area
	19,154		94.76% Impervious Area

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

Subcatchment PR3: Brick Building



Summary for Subcatchment PR4: East Plaza

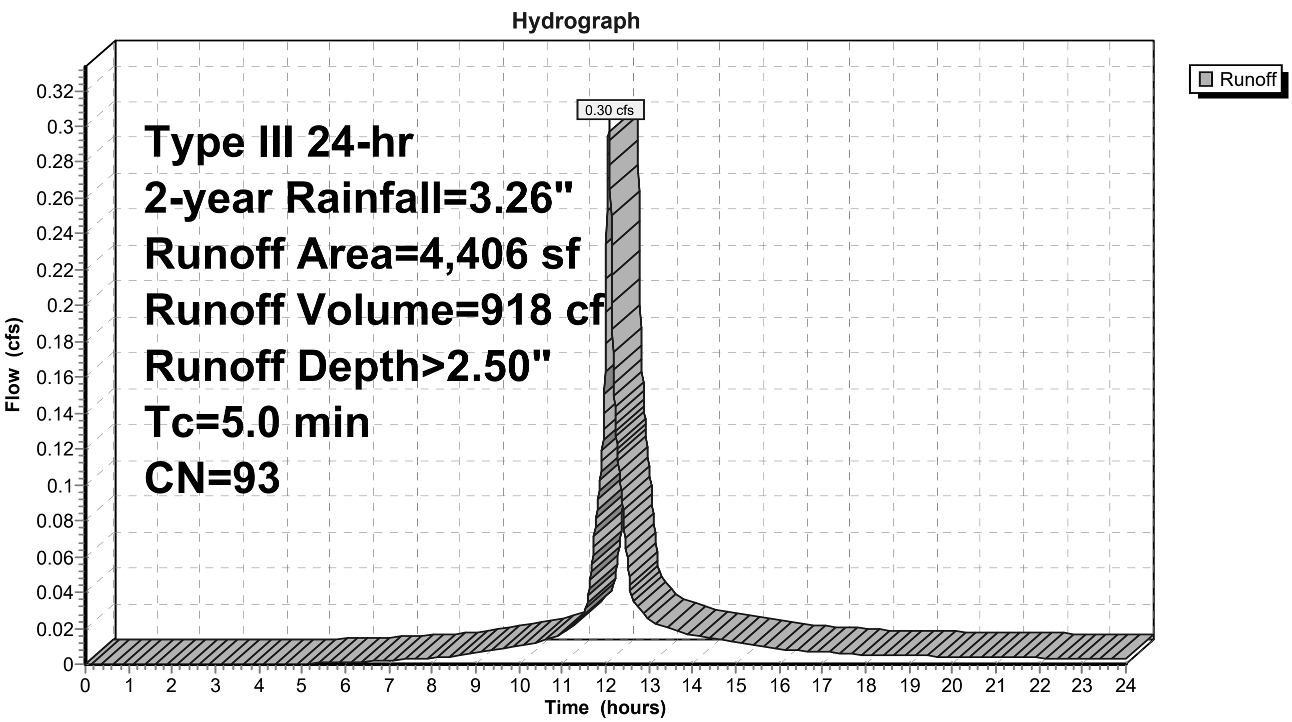
Runoff = 0.30 cfs @ 12.07 hrs, Volume= 918 cf, Depth> 2.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.26"

Area (sf)	CN	Description
1,004	74	>75% Grass cover, Good, HSG C
3,402	98	Unconnected pavement, HSG C
4,406	93	Weighted Average
1,004		22.79% Pervious Area
3,402		77.21% Impervious Area
3,402		100.00% Unconnected

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

Subcatchment PR4: East Plaza



Summary for Subcatchment PR5: West Plaza

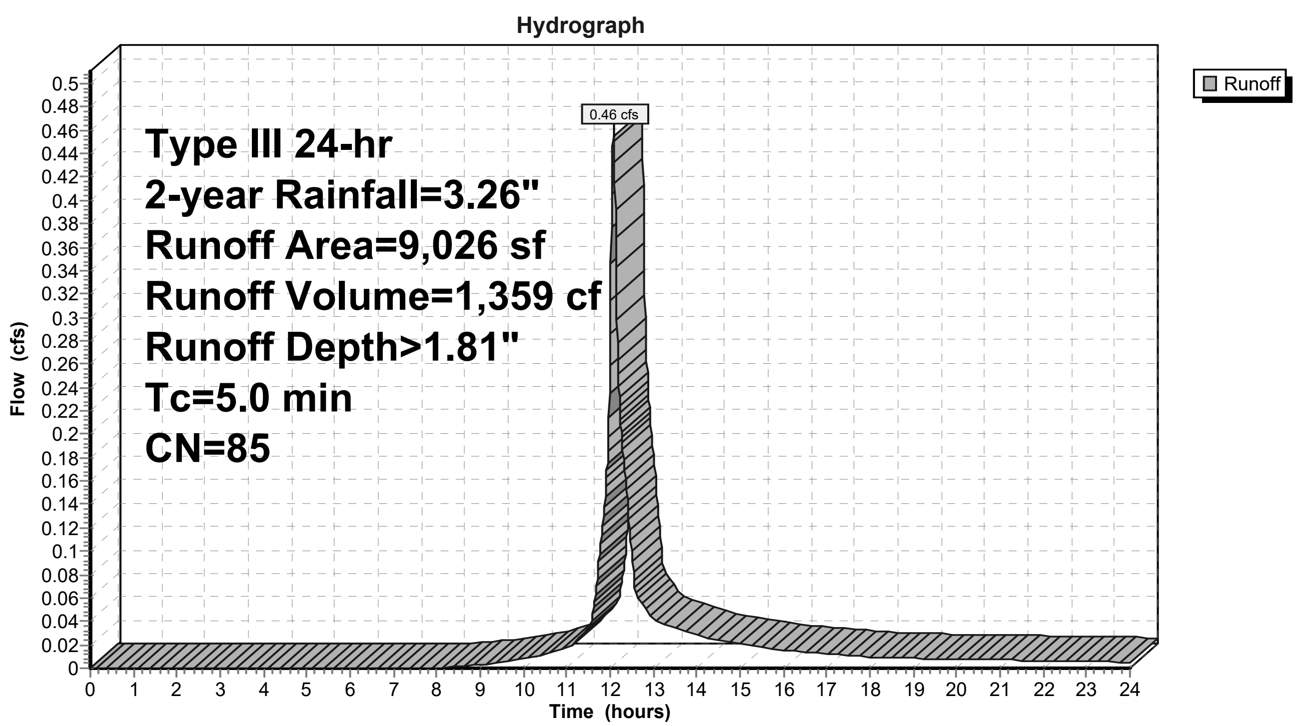
Runoff = 0.46 cfs @ 12.07 hrs, Volume= 1,359 cf, Depth> 1.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.26"

Area (sf)	CN	Description
4,939	74	>75% Grass cover, Good, HSG C
4,087	98	Unconnected pavement, HSG C
9,026	85	Weighted Average
4,939		54.72% Pervious Area
4,087		45.28% Impervious Area
4,087		100.00% Unconnected

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

Subcatchment PR5: West Plaza



Summary for Subcatchment PR6: Northwest LA

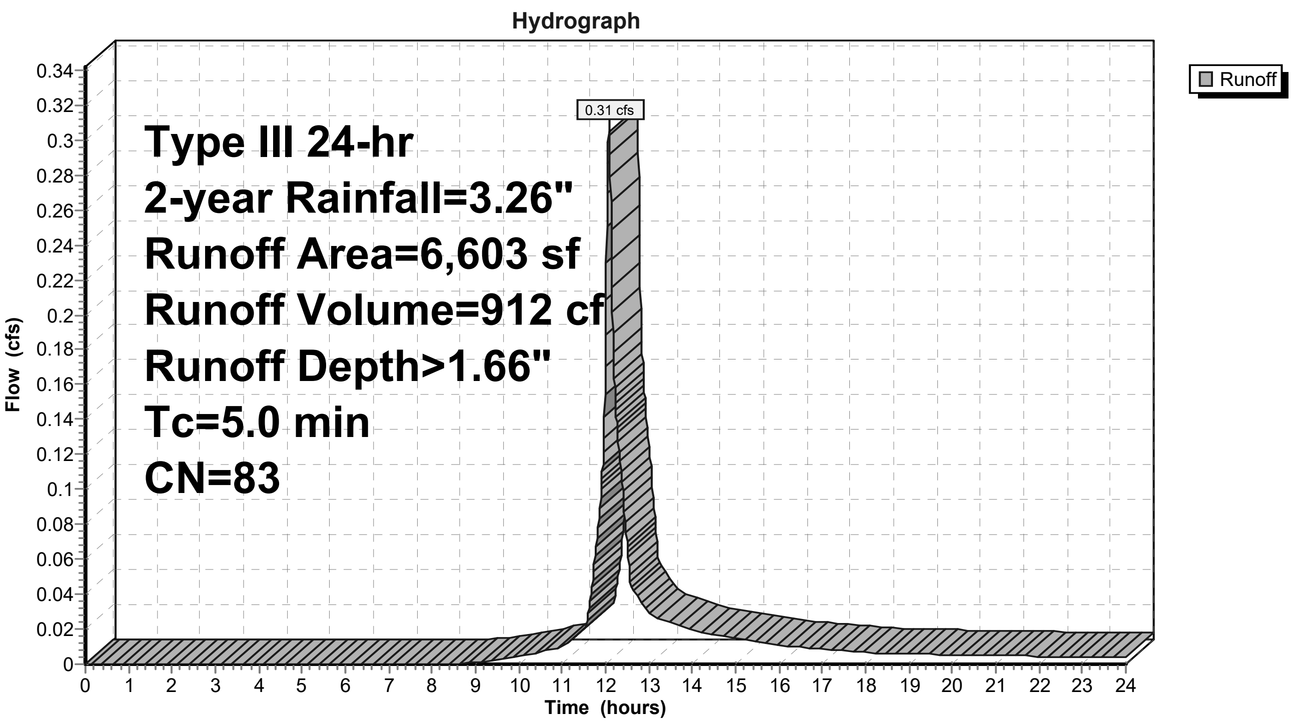
Runoff = 0.31 cfs @ 12.08 hrs, Volume= 912 cf, Depth> 1.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.26"

Area (sf)	CN	Description
4,139	74	>75% Grass cover, Good, HSG C
2,464	98	Unconnected pavement, HSG C
6,603	83	Weighted Average
4,139		62.68% Pervious Area
2,464		37.32% Impervious Area
2,464		100.00% Unconnected

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

Subcatchment PR6: Northwest LA



Summary for Subcatchment PR7: West LA

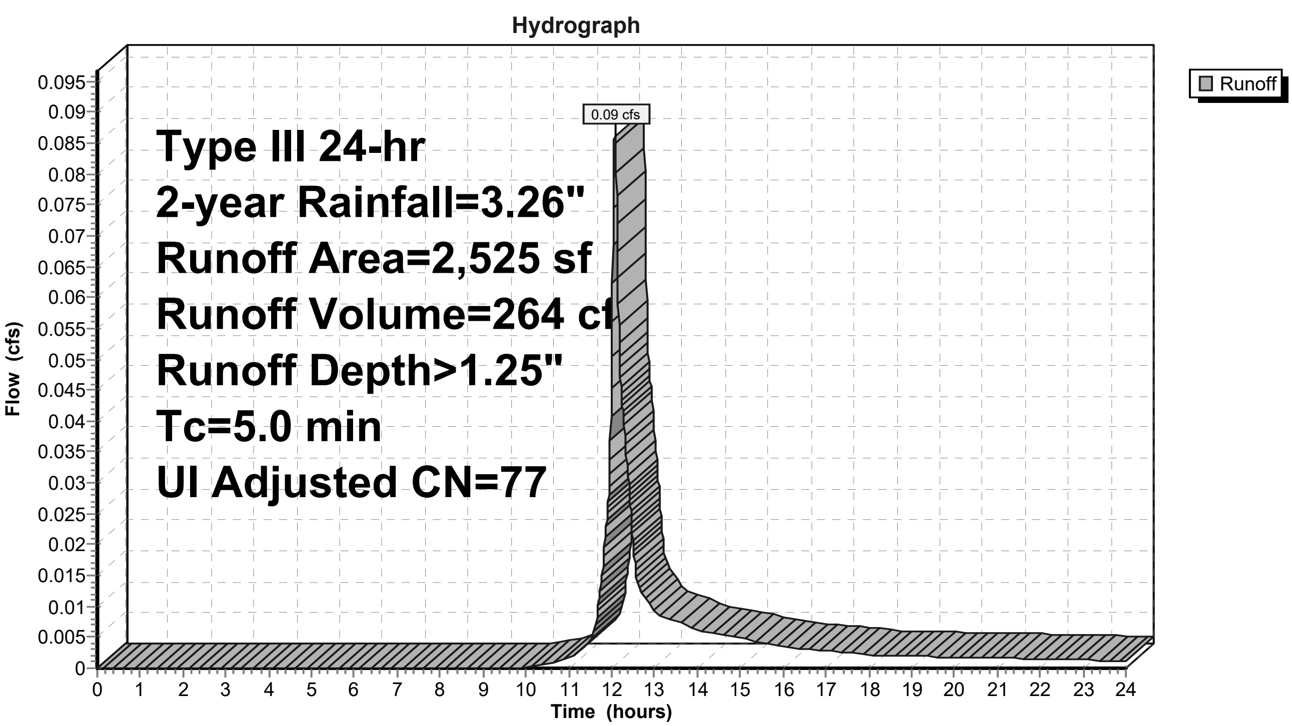
Runoff = 0.09 cfs @ 12.08 hrs, Volume= 264 cf, Depth> 1.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.26"

Area (sf)	CN	Adj	Description
1,909	74		>75% Grass cover, Good, HSG C
616	98		Unconnected pavement, HSG C
2,525	80	77	Weighted Average, UI Adjusted
1,909			75.60% Pervious Area
616			24.40% Impervious Area
616			100.00% Unconnected

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

Subcatchment PR7: West LA



Summary for Subcatchment PR8: West LA

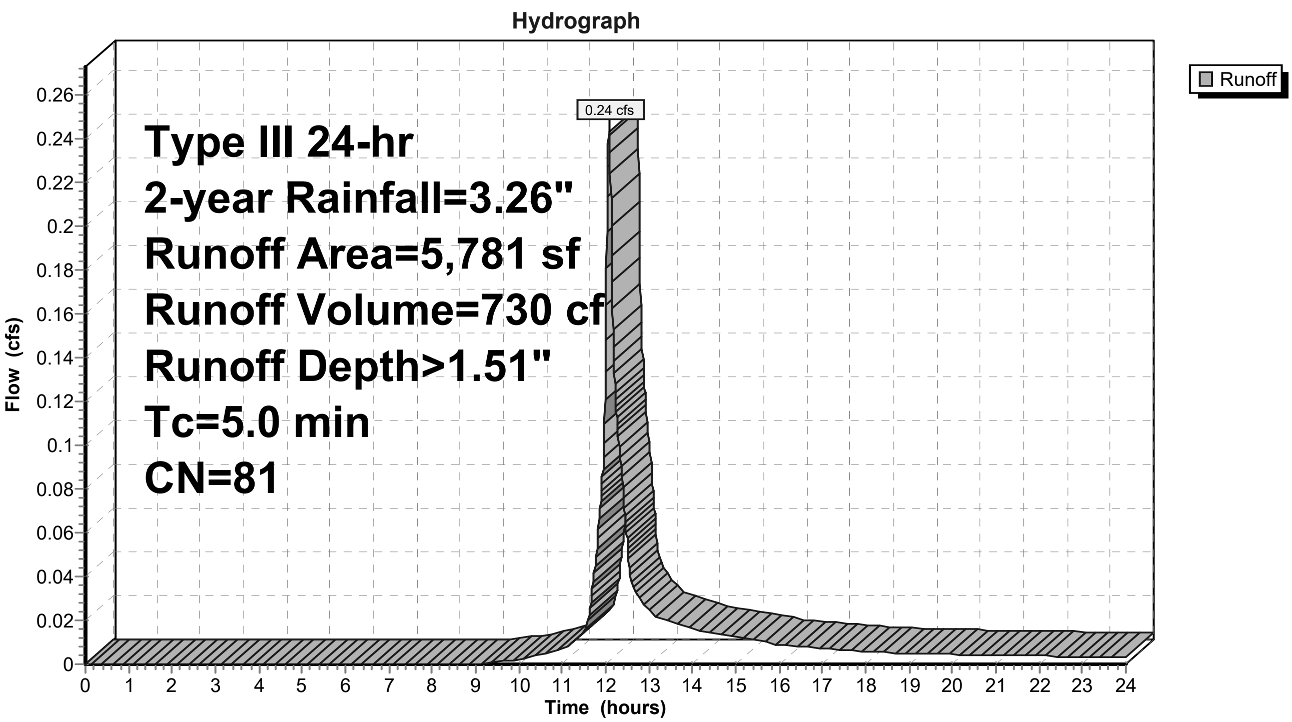
Runoff = 0.24 cfs @ 12.08 hrs, Volume= 730 cf, Depth> 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.26"

Area (sf)	CN	Description
3,975	74	>75% Grass cover, Good, HSG C
1,806	98	Unconnected pavement, HSG C
5,781	81	Weighted Average
3,975		68.76% Pervious Area
1,806		31.24% Impervious Area
1,806		100.00% Unconnected

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

Subcatchment PR8: West LA



Summary for Subcatchment PR9: Southwest LA

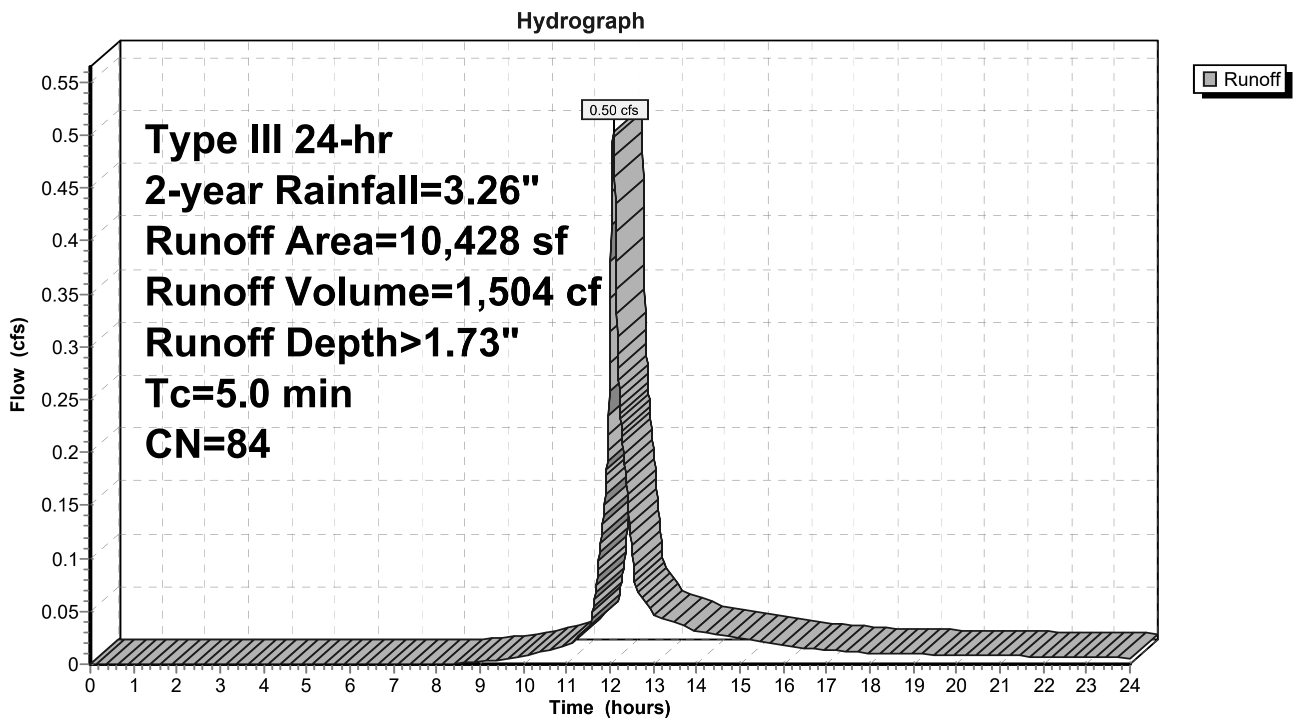
Runoff = 0.50 cfs @ 12.08 hrs, Volume= 1,504 cf, Depth> 1.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.26"

Area (sf)	CN	Description
6,126	74	>75% Grass cover, Good, HSG C
4,302	98	Unconnected pavement, HSG C
10,428	84	Weighted Average
6,126		58.75% Pervious Area
4,302		41.25% Impervious Area
4,302		100.00% Unconnected

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

Subcatchment PR9: Southwest LA



Summary for Pond 1P: INF 1

Inflow Area = 55,412 sf, 71.09% Impervious, Inflow Depth > 1.08" for 2-year event
Inflow = 2.67 cfs @ 12.36 hrs, Volume= 4,980 cf
Outflow = 2.52 cfs @ 12.36 hrs, Volume= 3,844 cf, Atten= 6%, Lag= 0.1 min
Discarded = 0.01 cfs @ 12.36 hrs, Volume= 250 cf
Primary = 2.52 cfs @ 12.36 hrs, Volume= 3,594 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 13.34' @ 12.36 hrs Surf.Area= 481 sf Storage= 1,146 cf

Plug-Flow detention time= 103.2 min calculated for 3,843 cf (77% of inflow)
Center-of-Mass det. time= 33.7 min (880.8 - 847.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	9.50'	179 cf	**18.50'W x 26.00'L x 4.17'H Field A** 2,004 cf Overall - 1,408 cf Embedded = 596 cf x 30.0% Voids
#2A	10.00'	976 cf	**retain_it retain_it 3.0'** x 6 Inside #1 Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf 2 Rows adjusted for 47.2 cf perimeter wall
		1,155 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	13.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Discarded	9.50'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 8.20' Phase-In= 0.01'

Discarded OutFlow Max=0.01 cfs @ 12.36 hrs HW=13.32' (Free Discharge)
└─**2=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=2.41 cfs @ 12.36 hrs HW=13.33' TW=0.00' (Dynamic Tailwater)
└─**1=Sharp-Crested Rectangular Weir** (Weir Controls 2.41 cfs @ 1.87 fps)

Pond 1P: INF 1 - Chamber Wizard Field A

Chamber Model = retain_it retain_it 3.0' (retain-it®)
Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
2 Rows adjusted for 47.2 cf perimeter wall

96.0" Wide + 6.0" Spacing = 102.0" C-C Row Spacing

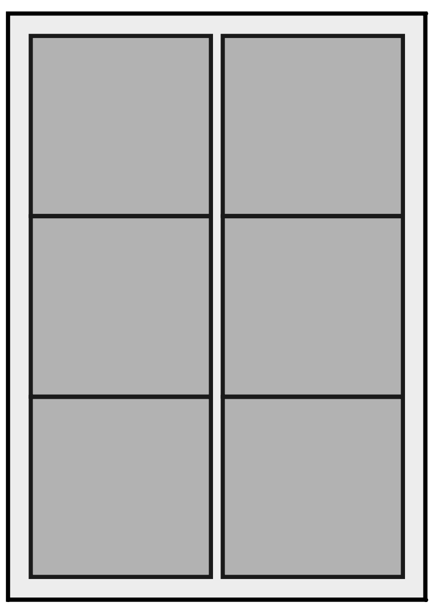
3 Chambers/Row x 8.00' Long = 24.00' Row Length +12.0" End Stone x 2 = 26.00' Base Length
2 Rows x 96.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 18.50' Base Width
6.0" Base + 44.0" Chamber Height = 4.17' Field Height

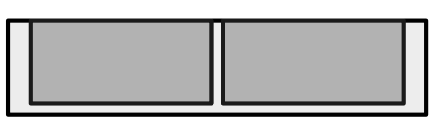
4.7 cf Sidewall x 3 x 2 + 4.7 cf Endwall x 2 x 2 = 47.2 cf Perimeter Wall
6 Chambers x 170.6 cf - 47.2 cf Perimeter wall = 976.5 cf Chamber Storage
6 Chambers x 234.7 cf = 1,408.0 cf Displacement

2,004.2 cf Field - 1,408.0 cf Chambers = 596.2 cf Stone x 30.0% Voids = 178.8 cf Stone Storage

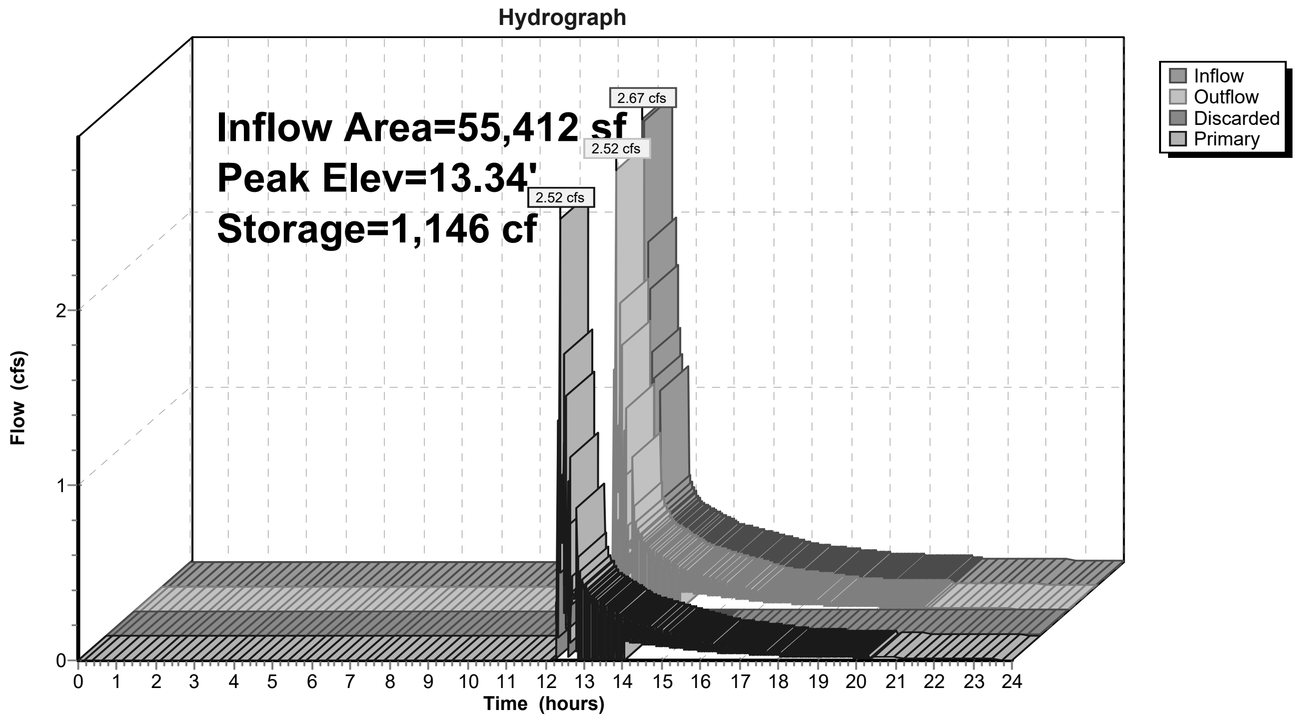
Chamber Storage + Stone Storage = 1,155.3 cf = 0.027 af
Overall Storage Efficiency = 57.6%
Overall System Size = 26.00' x 18.50' x 4.17'

6 Chambers
74.2 cy Field
22.1 cy Stone





Pond 1P: INF 1


Hydrograph
2.67 cfs
2.52 cfs
2.52 cfs
Inflow Area=55,412 sf
Peak Elev=13.34'
Storage=1,146 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
0
1
2
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time (hours)

Summary for Pond 1R: Raingarden 1

Inflow Area =	2,525 sf,	24.40% Impervious,	Inflow Depth > 1.25"	for 2-year event	
Inflow =	0.09 cfs @	12.08 hrs,	Volume=	264 cf	
Outflow =	0.00 cfs @	24.00 hrs,	Volume=	47 cf,	Atten= 99%, Lag= 715.2 min
Discarded =	0.00 cfs @	24.00 hrs,	Volume=	47 cf	
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.33' @ 24.00 hrs Surf.Area= 305 sf Storage= 217 cf

Plug-Flow detention time= 383.2 min calculated for 47 cf (18% of inflow)
Center-of-Mass det. time= 239.2 min (1,089.0 - 849.7)

Volume	Invert	Avail.Storage	Storage Description
#1	13.00'	485 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

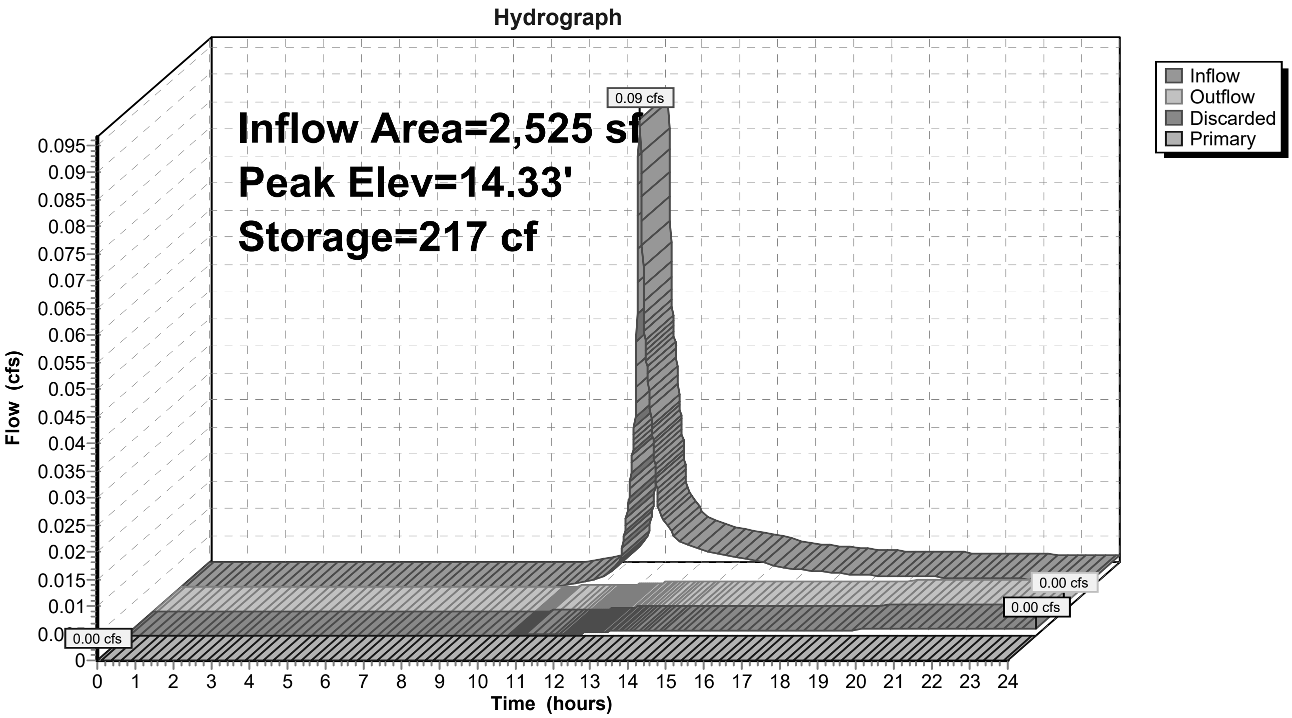
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
13.00	47	0	0
14.00	215	131	131
14.50	352	142	273
15.00	496	212	485

Device	Routing	Invert	Outlet Devices
#1	Primary	14.50'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	13.00'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 8.70' Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 24.00 hrs HW=14.33' (Free Discharge)
└—**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=13.00' TW=9.50' (Dynamic Tailwater)
└—**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 1R: Raingarden 1



Summary for Pond 2P: Building Inf West

Inflow Area =	32,955 sf,	81.41% Impervious,	Inflow Depth > 2.61"	for 2-year event	
Inflow =	1.86 cfs @	12.12 hrs,	Volume=	7,179 cf	
Outflow =	1.57 cfs @	12.19 hrs,	Volume=	4,596 cf,	Atten= 16%, Lag= 4.3 min
Discarded =	0.02 cfs @	12.19 hrs,	Volume=	853 cf	
Primary =	1.55 cfs @	12.19 hrs,	Volume=	3,743 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 12.24' @ 12.19 hrs Surf.Area= 1,369 sf Storage= 2,834 cf

Plug-Flow detention time= 179.8 min calculated for 4,594 cf (64% of inflow)
Center-of-Mass det. time= 77.1 min (850.2 - 773.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	9.25'	444 cf	**18.50'W x 74.00'L x 4.17'H Field A**
			5,704 cf Overall - 4,224 cf Embedded = 1,480 cf x 30.0% Voids
#2A	9.75'	2,967 cf	**retain_it retain_it 3.0'** x 18 Inside #1
			Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
			Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
			2 Rows adjusted for 103.9 cf perimeter wall
		3,411 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	12.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Discarded	9.25'	**0.142 in/hr Exfiltration over Surface area**
			Conductivity to Groundwater Elevation = 8.00' Phase-In= 0.01'

Discarded OutFlow Max=0.02 cfs @ 12.19 hrs HW=12.24' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=1.55 cfs @ 12.19 hrs HW=12.24' TW=0.00' (Dynamic Tailwater)
↑—**1=Sharp-Crested Rectangular Weir** (Weir Controls 1.55 cfs @ 1.61 fps)

Pond 2P: Building Inf West - Chamber Wizard Field A

Chamber Model = retain_it retain_it 3.0' (retain-it®)
Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
2 Rows adjusted for 103.9 cf perimeter wall

96.0" Wide + 6.0" Spacing = 102.0" C-C Row Spacing

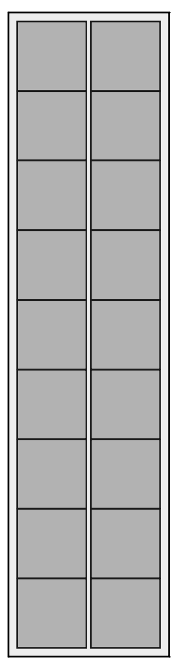
9 Chambers/Row x 8.00' Long = 72.00' Row Length +12.0" End Stone x 2 = 74.00' Base Length
2 Rows x 96.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 18.50' Base Width
6.0" Base + 44.0" Chamber Height = 4.17' Field Height

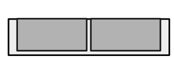
4.7 cf Sidewall x 9 x 2 + 4.7 cf Endwall x 2 x 2 = 103.9 cf Perimeter Wall
18 Chambers x 170.6 cf - 103.9 cf Perimeter wall = 2,967.1 cf Chamber Storage
18 Chambers x 234.7 cf = 4,224.0 cf Displacement

5,704.2 cf Field - 4,224.0 cf Chambers = 1,480.2 cf Stone x 30.0% Voids = 444.0 cf Stone Storage

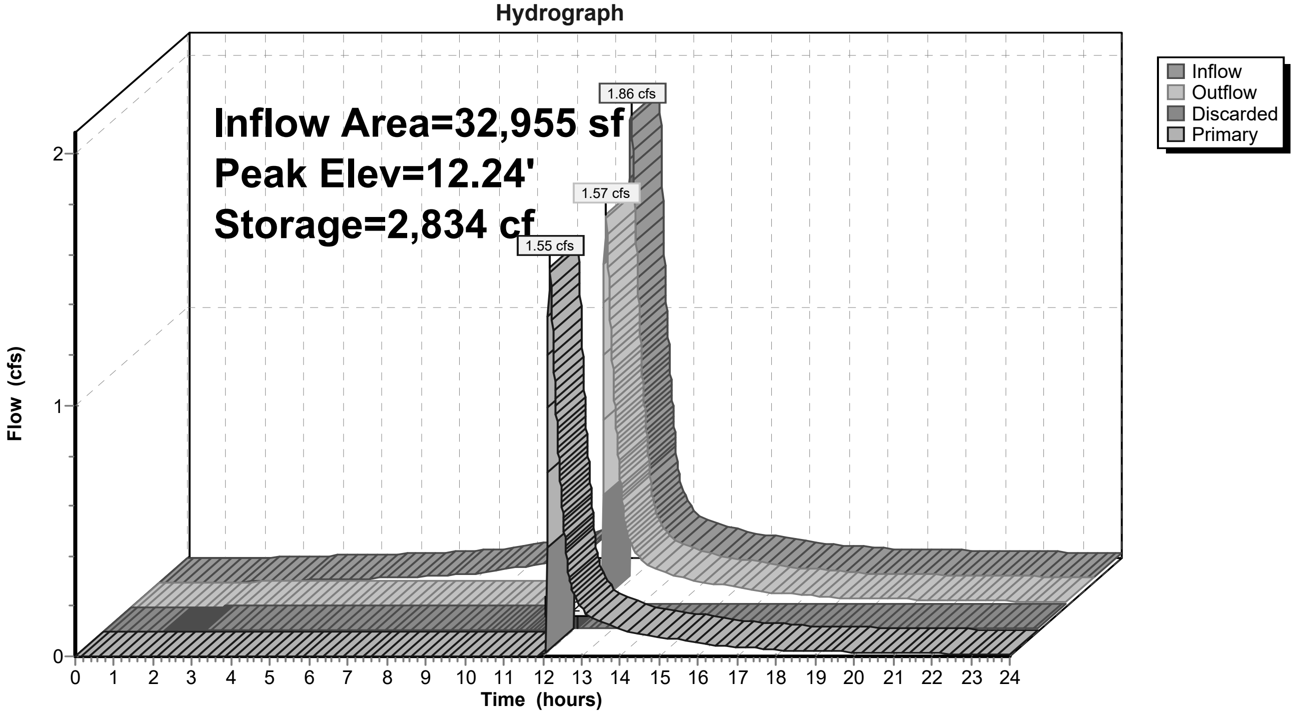
Chamber Storage + Stone Storage = 3,411.2 cf = 0.078 af
Overall Storage Efficiency = 59.8%
Overall System Size = 74.00' x 18.50' x 4.17'

18 Chambers
211.3 cy Field
54.8 cy Stone





Pond 2P: Building Inf West



Summary for Pond 2R: Raingarden 2

Inflow Area = 5,781 sf, 31.24% Impervious, Inflow Depth > 1.51" for 2-year event
Inflow = 0.24 cfs @ 12.08 hrs, Volume= 730 cf
Outflow = 0.06 cfs @ 12.48 hrs, Volume= 397 cf, Atten= 76%, Lag= 24.4 min
Discarded = 0.00 cfs @ 12.48 hrs, Volume= 73 cf
Primary = 0.06 cfs @ 12.48 hrs, Volume= 324 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.53' @ 12.48 hrs Surf.Area= 429 sf Storage= 345 cf

Plug-Flow detention time= 222.1 min calculated for 397 cf (54% of inflow)
Center-of-Mass det. time= 105.4 min (942.5 - 837.0)

Volume	Invert	Avail.Storage	Storage Description
#1	13.00'	581 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

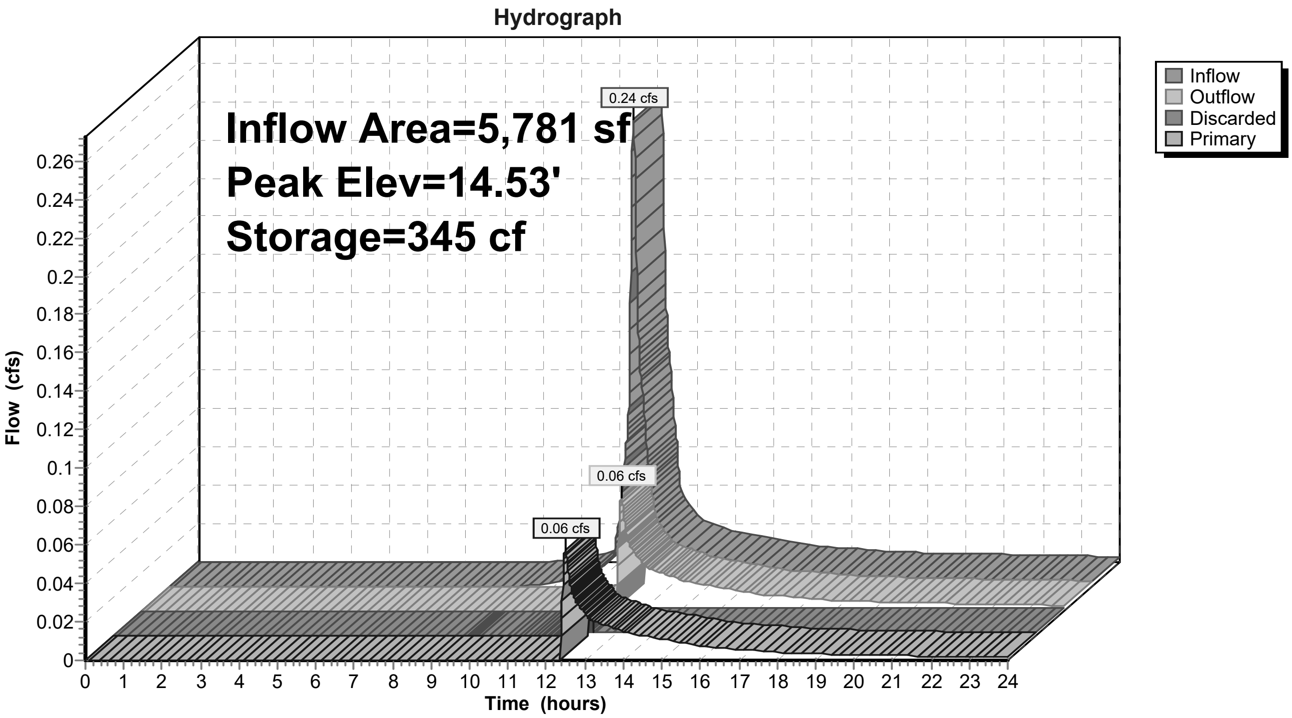
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
13.00	63	0	0
14.00	261	162	162
14.50	419	170	332
15.00	576	249	581

Device	Routing	Invert	Outlet Devices
#1	Primary	14.50'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	13.00'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 8.70' Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 12.48 hrs HW=14.53' (Free Discharge)
└─**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.06 cfs @ 12.48 hrs HW=14.53' TW=13.15' (Dynamic Tailwater)
└─**1=Orifice/Grate** (Weir Controls 0.06 cfs @ 0.58 fps)

Pond 2R: Raingarden 2



Summary for Pond 3P: Building Inf West

Inflow Area = 11,263 sf,100.00% Impervious, Inflow Depth > 3.02" for 2-year event
Inflow = 0.72 cfs @ 12.13 hrs, Volume= 2,837 cf
Outflow = 0.71 cfs @ 12.15 hrs, Volume= 1,877 cf, Atten= 1%, Lag= 0.8 min
Discarded = 0.00 cfs @ 12.15 hrs, Volume= 175 cf
Primary = 0.71 cfs @ 12.15 hrs, Volume= 1,702 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 16.14' @ 12.15 hrs Surf.Area= 481 sf Storage= 1,010 cf

Plug-Flow detention time= 176.3 min calculated for 1,877 cf (66% of inflow)
Center-of-Mass det. time= 77.7 min (836.5 - 758.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	13.00'	323 cf	**18.50'W x 26.00'L x 5.17'H Field A** 2,485 cf Overall - 1,408 cf Embedded = 1,077 cf x 30.0% Voids
#2A	13.50'	976 cf	**retain_it retain_it 3.0'** x 6 Inside #1 Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf 2 Rows adjusted for 47.2 cf perimeter wall
		1,300 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	16.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Discarded	13.00'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 8.00' Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 12.15 hrs HW=16.14' (Free Discharge)
└─**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.71 cfs @ 12.15 hrs HW=16.14' TW=12.37' (Dynamic Tailwater)
└─**1=Sharp-Crested Rectangular Weir** (Weir Controls 0.71 cfs @ 1.24 fps)

Pond 3P: Building Inf West - Chamber Wizard Field A

Chamber Model = retain_it retain_it 3.0' (retain-it®)
Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
2 Rows adjusted for 47.2 cf perimeter wall

96.0" Wide + 6.0" Spacing = 102.0" C-C Row Spacing

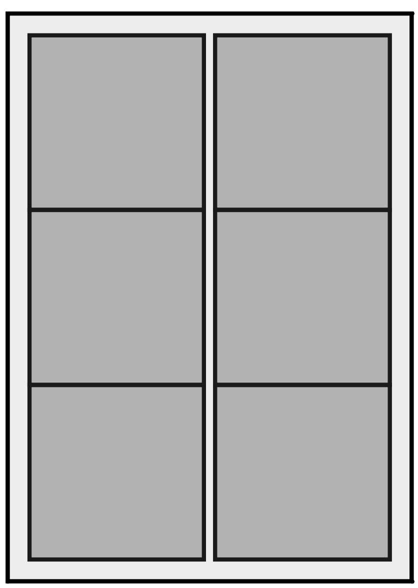
3 Chambers/Row x 8.00' Long = 24.00' Row Length +12.0" End Stone x 2 = 26.00' Base Length
2 Rows x 96.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 18.50' Base Width
6.0" Base + 44.0" Chamber Height + 12.0" Cover = 5.17' Field Height

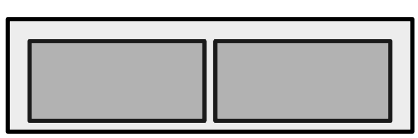
4.7 cf Sidewall x 3 x 2 + 4.7 cf Endwall x 2 x 2 = 47.2 cf Perimeter Wall
6 Chambers x 170.6 cf - 47.2 cf Perimeter wall = 976.5 cf Chamber Storage
6 Chambers x 234.7 cf = 1,408.0 cf Displacement

2,485.2 cf Field - 1,408.0 cf Chambers = 1,077.2 cf Stone x 30.0% Voids = 323.1 cf Stone Storage

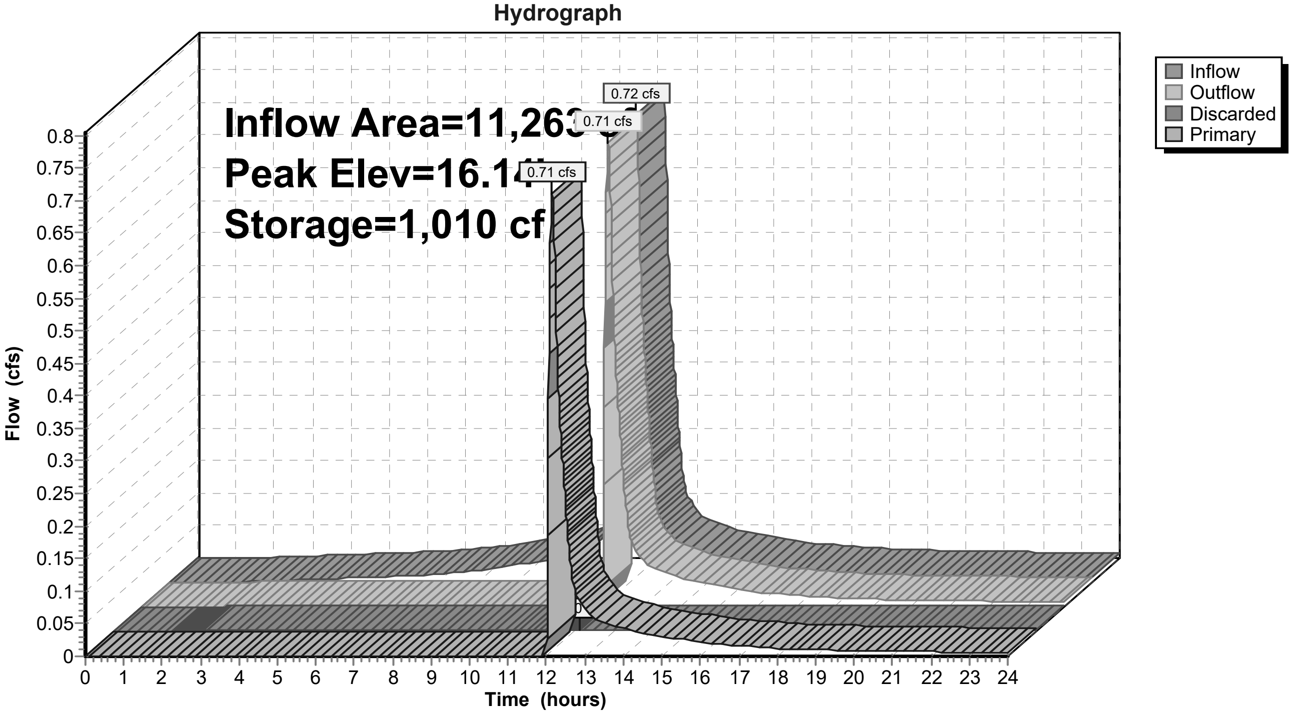
Chamber Storage + Stone Storage = 1,299.6 cf = 0.030 af
Overall Storage Efficiency = 52.3%
Overall System Size = 26.00' x 18.50' x 5.17'

6 Chambers
92.0 cy Field
39.9 cy Stone





Pond 3P: Building Inf West



Summary for Pond 4P: INF 4

Inflow Area = 49,631 sf, 75.73% Impervious, Inflow Depth > 1.31" for 2-year event
Inflow = 2.60 cfs @ 12.13 hrs, Volume= 5,430 cf
Outflow = 2.68 cfs @ 12.36 hrs, Volume= 4,816 cf, Atten= 0%, Lag= 13.9 min
Discarded = 0.00 cfs @ 12.35 hrs, Volume= 160 cf
Primary = 2.67 cfs @ 12.36 hrs, Volume= 4,656 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 13.23' @ 12.35 hrs Surf.Area= 340 sf Storage= 641 cf

Plug-Flow detention time= 59.9 min calculated for 4,814 cf (89% of inflow)
Center-of-Mass det. time= 14.6 min (850.3 - 835.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	9.50'	296 cf	**11.00'W x 30.92'L x 4.00'H Field A** 1,360 cf Overall - 373 cf Embedded = 987 cf x 30.0% Voids
#2A	10.00'	373 cf	**ADS_StormTech SC-740** x 8 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 2 rows
		669 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	12.50'	**4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#2	Primary	11.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Discarded	9.50'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 8.00' Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 12.35 hrs HW=13.21' (Free Discharge)
└─**3=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 12.36 hrs HW=13.08' TW=13.32' (Dynamic Tailwater)
├─**1=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 4P: INF 4 - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 (ADS StormTech®SC-740 without end caps)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
Row Length Adjustment= +0.44' x 6.45 sf x 2 rows

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

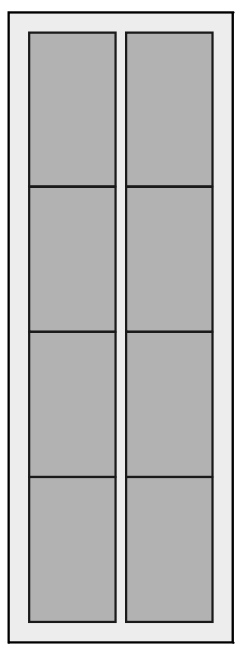
4 Chambers/Row x 7.12' Long +0.44' Row Adjustment = 28.92' Row Length +12.0" End Stone x 2 = 30.92' Base Length
2 Rows x 51.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.00' Base Width
6.0" Base + 30.0" Chamber Height + 12.0" Cover = 4.00' Field Height

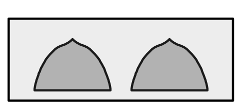
8 Chambers x 45.9 cf +0.44' Row Adjustment x 6.45 sf x 2 Rows = 373.2 cf Chamber Storage

1,360.4 cf Field - 373.2 cf Chambers = 987.2 cf Stone x 30.0% Voids = 296.2 cf Stone Storage

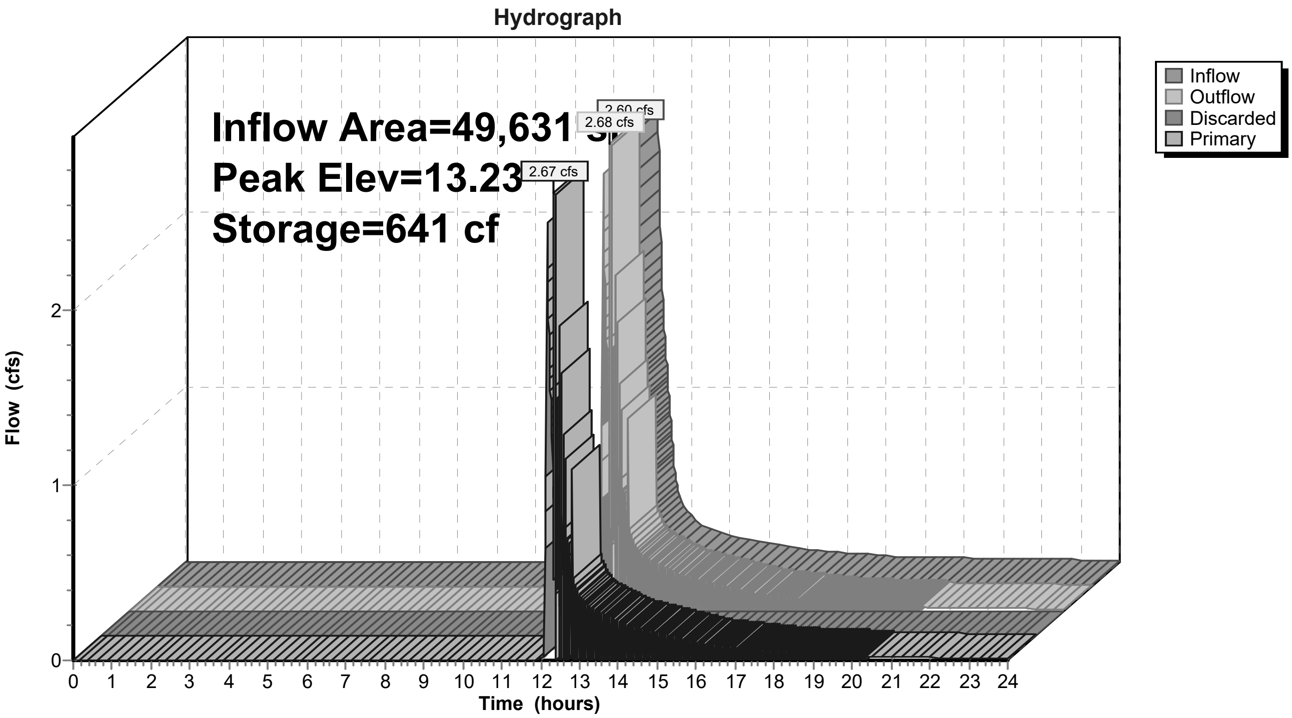
Chamber Storage + Stone Storage = 669.3 cf = 0.015 af
Overall Storage Efficiency = 49.2%
Overall System Size = 30.92' x 11.00' x 4.00'

8 Chambers
50.4 cy Field
36.6 cy Stone





Pond 4P: INF 4


Hydrograph
Inflow Area=49,631 sf
Peak Elev=13.23'
Storage=641 cf
2.60 cfs
2.68 cfs
2.67 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
0
1
2
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time (hours)

Summary for Pond 5P: INF 5

Inflow Area = 35,843 sf, 71.72% Impervious, Inflow Depth > 1.81" for 2-year event
Inflow = 2.24 cfs @ 12.08 hrs, Volume= 5,401 cf
Outflow = 1.92 cfs @ 12.12 hrs, Volume= 4,150 cf, Atten= 14%, Lag= 2.8 min
Discarded = 0.01 cfs @ 12.12 hrs, Volume= 423 cf
Primary = 1.91 cfs @ 12.12 hrs, Volume= 3,728 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.28' @ 12.12 hrs Surf.Area= 718 sf Storage= 1,407 cf

Plug-Flow detention time= 110.7 min calculated for 4,150 cf (77% of inflow)
Center-of-Mass det. time= 35.1 min (856.6 - 821.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	11.50'	193 cf	**17.50'W x 41.00'L x 4.17'H Field A** 2,990 cf Overall - 2,347 cf Embedded = 643 cf x 30.0% Voids
#2A	12.00'	1,640 cf	**retain_it retain_it 3.0'** x 10 Inside #1 Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf 2 Rows adjusted for 66.1 cf perimeter wall
		1,833 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	14.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Discarded	11.50'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 10.60' Phase-In= 0.01'

Discarded OutFlow Max=0.01 cfs @ 12.12 hrs HW=14.28' (Free Discharge)
└─**2=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=1.90 cfs @ 12.12 hrs HW=14.28' TW=11.51' (Dynamic Tailwater)
└─**1=Sharp-Crested Rectangular Weir** (Weir Controls 1.90 cfs @ 1.73 fps)

Pond 5P: INF 5 - Chamber Wizard Field A

Chamber Model = retain_it retain_it 3.0' (retain-it®)
Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
2 Rows adjusted for 66.1 cf perimeter wall

96.0" Wide + 6.0" Spacing = 102.0" C-C Row Spacing

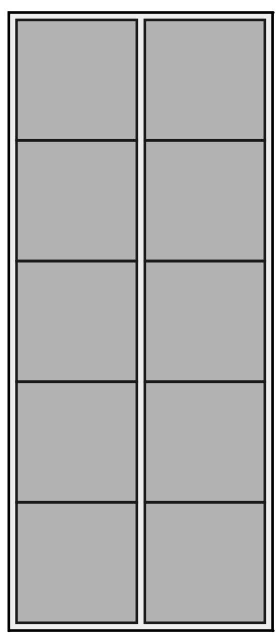
5 Chambers/Row x 8.00' Long = 40.00' Row Length +6.0" End Stone x 2 = 41.00' Base Length
2 Rows x 96.0" Wide + 6.0" Spacing x 1 + 6.0" Side Stone x 2 = 17.50' Base Width
6.0" Base + 44.0" Chamber Height = 4.17' Field Height

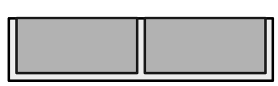
4.7 cf Sidewall x 5 x 2 + 4.7 cf Endwall x 2 x 2 = 66.1 cf Perimeter Wall
10 Chambers x 170.6 cf - 66.1 cf Perimeter wall = 1,640.0 cf Chamber Storage
10 Chambers x 234.7 cf = 2,346.7 cf Displacement

2,989.6 cf Field - 2,346.7 cf Chambers = 642.9 cf Stone x 30.0% Voids = 192.9 cf Stone Storage

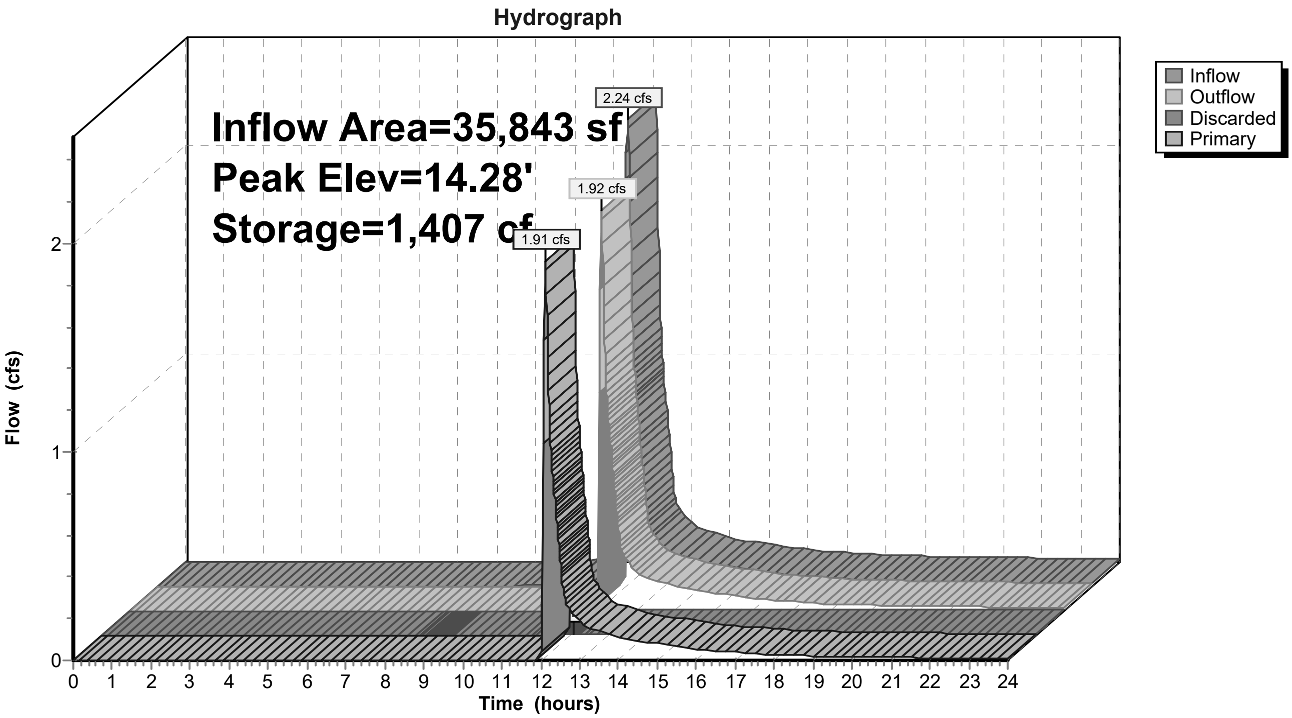
Chamber Storage + Stone Storage = 1,832.9 cf = 0.042 af
Overall Storage Efficiency = 61.3%
Overall System Size = 41.00' x 17.50' x 4.17'

10 Chambers
110.7 cy Field
23.8 cy Stone





Pond 5P: INF 5


Hydrograph
Inflow Area=35,843 sf
Peak Elev=14.28'
Storage=1,407 cf
2.24 cfs
1.92 cfs
1.91 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
0
1
2
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time (hours)

Summary for Pond 6P: G2 INF

Inflow Area =	20,214 sf,	94.76% Impervious,	Inflow Depth > 2.91"	for 2-year event	
Inflow =	1.50 cfs @	12.07 hrs,	Volume=	4,909 cf	
Outflow =	1.49 cfs @	12.08 hrs,	Volume=	3,695 cf,	Atten= 0%, Lag= 0.4 min
Discarded =	0.01 cfs @	12.08 hrs,	Volume=	377 cf	
Primary =	1.49 cfs @	12.08 hrs,	Volume=	3,318 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 15.64' @ 12.08 hrs Surf.Area= 730 sf Storage= 1,266 cf

Plug-Flow detention time= 142.3 min calculated for 3,693 cf (75% of inflow)
Center-of-Mass det. time= 58.1 min (822.3 - 764.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	12.50'	628 cf	**15.75'W x 46.34'L x 4.00'H Field A**
			2,919 cf Overall - 827 cf Embedded = 2,092 cf x 30.0% Voids
#2A	13.00'	827 cf	**ADS_StormTech SC-740 +Cap** x 18 Inside #1
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			18 Chambers in 3 Rows
		1,455 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	15.40'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Discarded	12.50'	**0.142 in/hr Exfiltration over Surface area**
			Conductivity to Groundwater Elevation = 10.60' Phase-In= 0.01'

Discarded OutFlow Max=0.01 cfs @ 12.08 hrs HW=15.64' (Free Discharge)
└─**2=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=1.48 cfs @ 12.08 hrs HW=15.64' TW=14.05' (Dynamic Tailwater)
└─**1=Sharp-Crested Rectangular Weir** (Weir Controls 1.48 cfs @ 1.59 fps)

Pond 6P: G2 INF - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

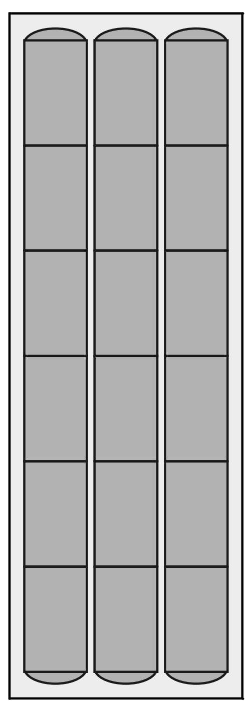
6 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 44.34' Row Length +12.0" End Stone x 2 = 46.34' Base Length
3 Rows x 51.0" Wide + 6.0" Spacing x 2 + 12.0" Side Stone x 2 = 15.75' Base Width
6.0" Base + 30.0" Chamber Height + 12.0" Cover = 4.00' Field Height

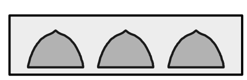
18 Chambers x 45.9 cf = 826.9 cf Chamber Storage

2,919.2 cf Field - 826.9 cf Chambers = 2,092.3 cf Stone x 30.0% Voids = 627.7 cf Stone Storage

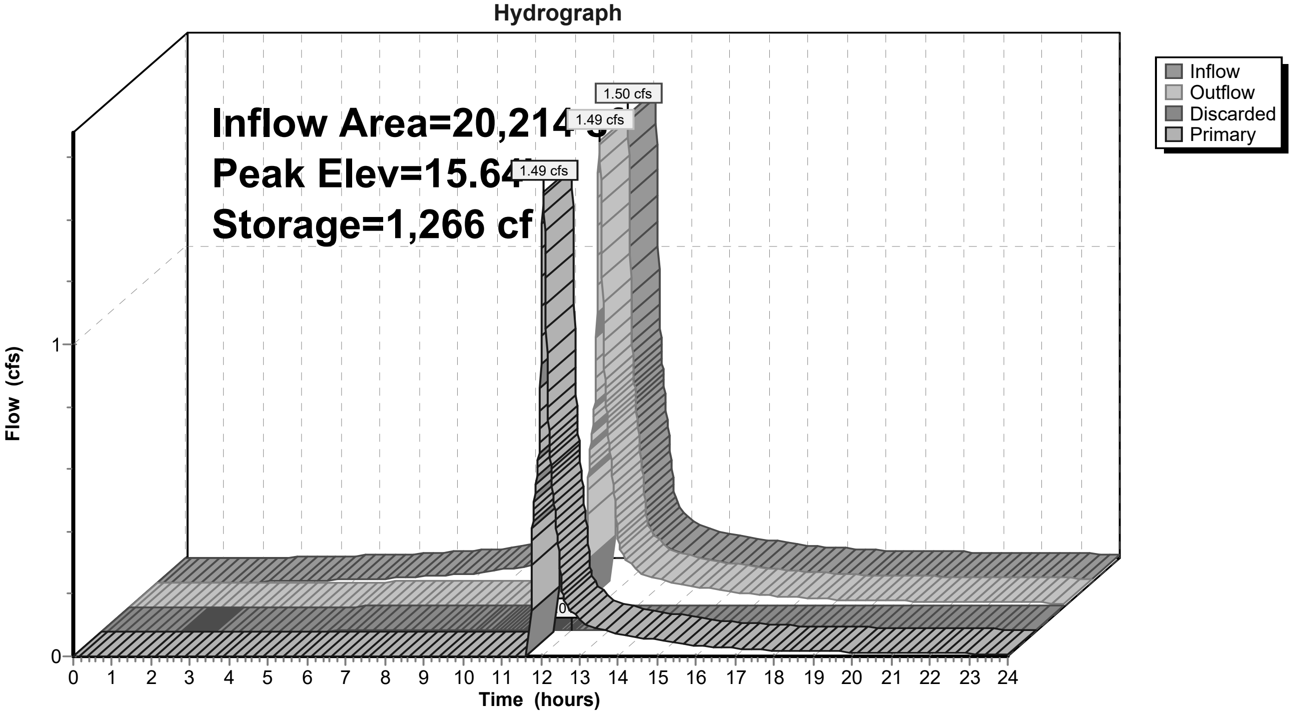
Chamber Storage + Stone Storage = 1,454.6 cf = 0.033 af
Overall Storage Efficiency = 49.8%
Overall System Size = 46.34' x 15.75' x 4.00'

18 Chambers
108.1 cy Field
77.5 cy Stone





Pond 6P: G2 INF



Summary for Pond 7P: Drywell

Inflow Area =	4,406 sf,	77.21% Impervious,	Inflow Depth > 2.50"	for 2-year event
Inflow =	0.30 cfs @	12.07 hrs, Volume=	918 cf	
Outflow =	0.30 cfs @	12.07 hrs, Volume=	802 cf,	Atten= 0%, Lag= 0.1 min
Discarded =	0.00 cfs @	12.07 hrs, Volume=	32 cf	
Primary =	0.30 cfs @	12.07 hrs, Volume=	771 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 16.09' @ 12.07 hrs Surf.Area= 28 sf Storage= 118 cf

Plug-Flow detention time= 88.0 min calculated for 802 cf (87% of inflow)
Center-of-Mass det. time= 31.3 min (821.9 - 790.6)

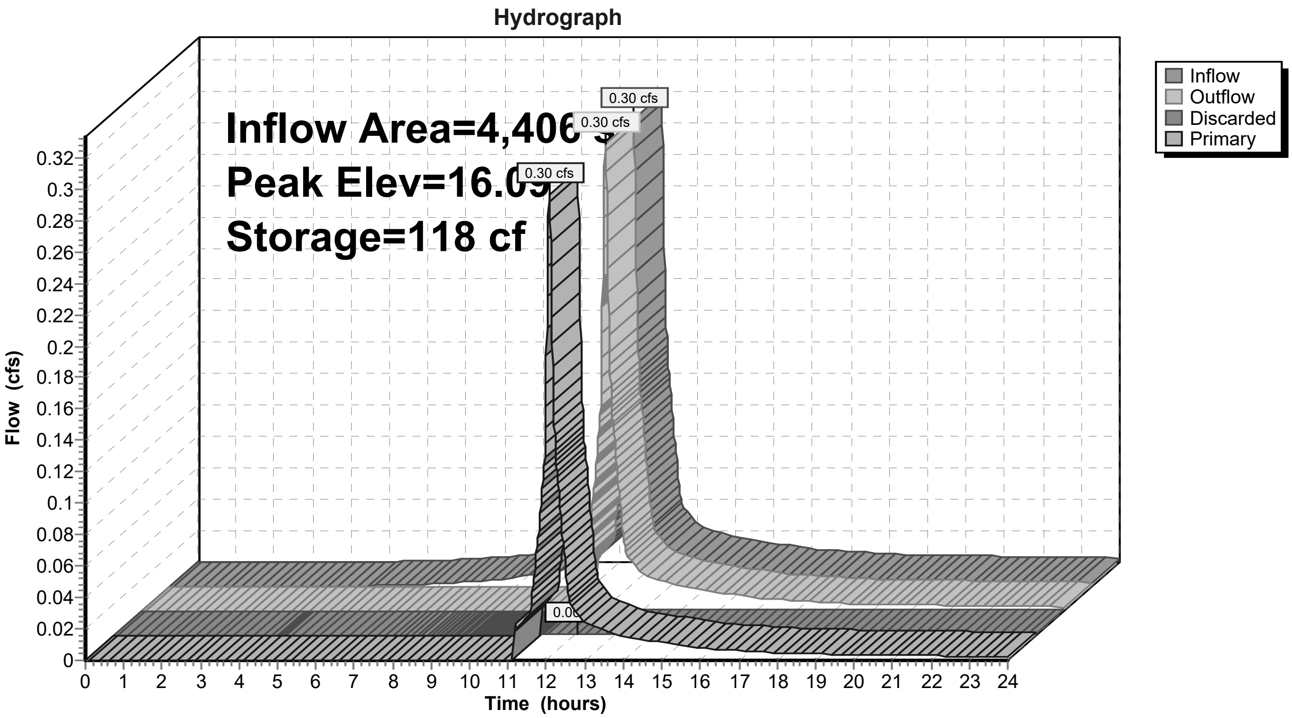
Volume	Invert	Avail.Storage	Storage Description
#1	9.30'	88 cf	**4.00'D x 7.00'H Vertical Cone/Cylinder**
#2	9.30'	33 cf	**4.50'D x 7.00'H Vertical Cone/Cylinder** 111 cf Overall x 30.0% Voids
		121 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	16.00'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	9.30'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 8.00'

Discarded OutFlow Max=0.00 cfs @ 12.07 hrs HW=16.09' (Free Discharge)
└─**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.30 cfs @ 12.07 hrs HW=16.09' TW=0.00' (Dynamic Tailwater)
└─**1=Orifice/Grate** (Weir Controls 0.30 cfs @ 1.00 fps)

Pond 7P: Drywell



Summary for Pond G2R: Raingarden G2

Inflow Area =	6,603 sf,	37.32% Impervious,	Inflow Depth > 1.66"	for 2-year event	
Inflow =	0.31 cfs @	12.08 hrs,	Volume=	912 cf	
Outflow =	0.30 cfs @	12.09 hrs,	Volume=	759 cf,	Atten= 1%, Lag= 0.8 min
Discarded =	0.00 cfs @	12.09 hrs,	Volume=	35 cf	
Primary =	0.30 cfs @	12.09 hrs,	Volume=	724 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.59' @ 12.09 hrs Surf.Area= 212 sf Storage= 171 cf

Plug-Flow detention time= 100.8 min calculated for 759 cf (83% of inflow)
Center-of-Mass det. time= 30.9 min (861.5 - 830.5)

Volume	Invert	Avail.Storage	Storage Description
#1	13.00'	276 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

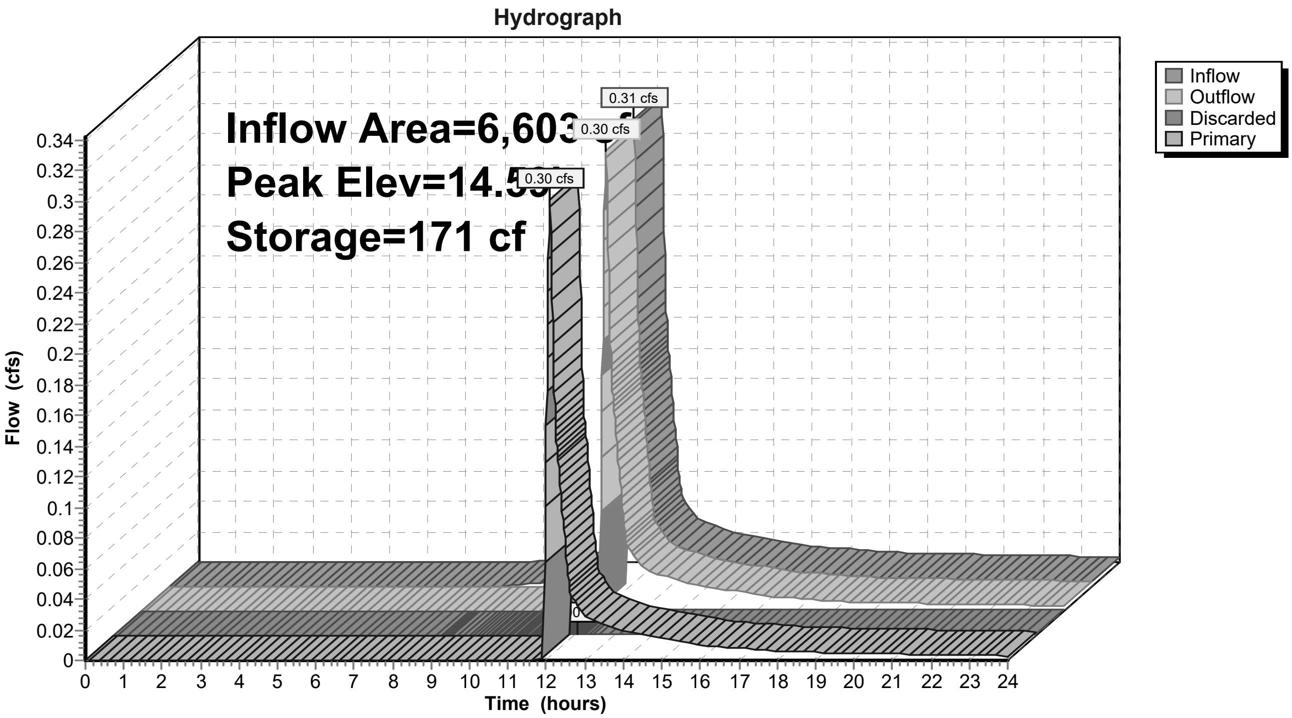
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
13.00	21	0	0
14.00	125	73	73
14.50	190	79	152
15.00	305	124	276

Device	Routing	Invert	Outlet Devices
#1	Primary	14.50'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	13.00'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 8.70' Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=14.59' (Free Discharge)
└─**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.30 cfs @ 12.09 hrs HW=14.59' TW=14.17' (Dynamic Tailwater)
└─**1=Orifice/Grate** (Weir Controls 0.30 cfs @ 1.01 fps)

Pond G2R: Raingarden G2

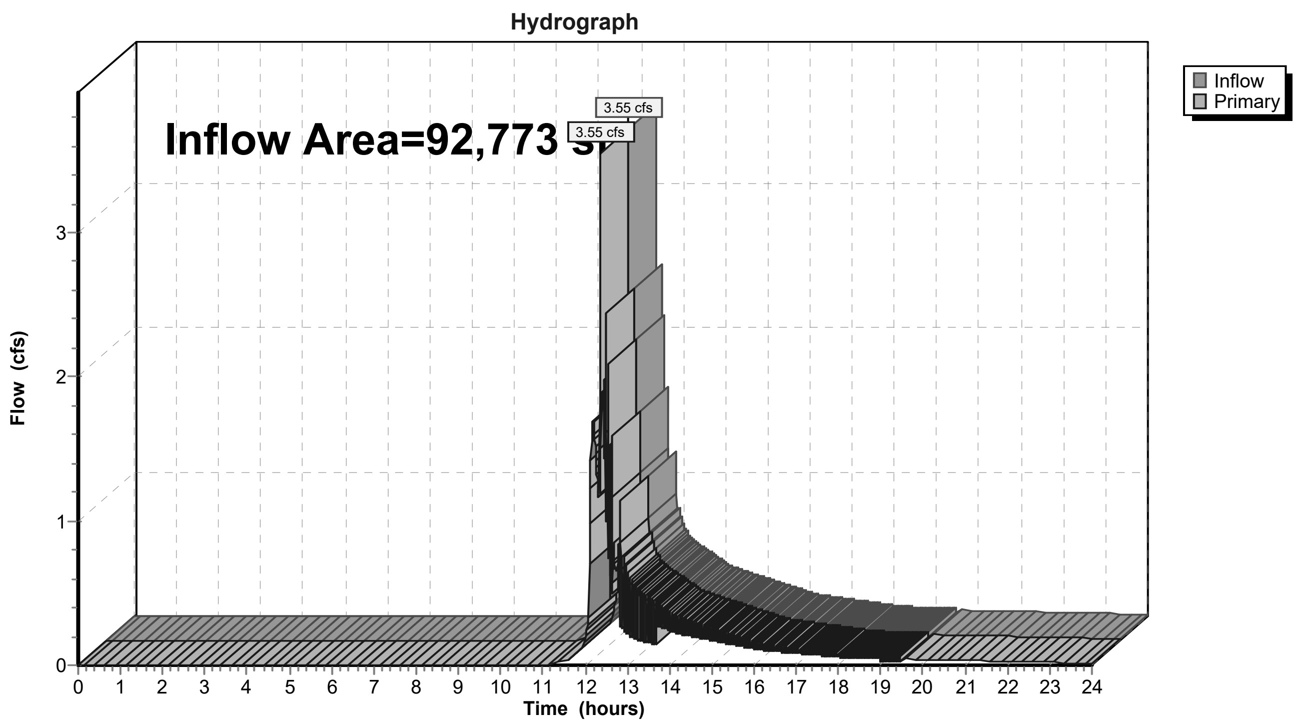


Summary for Link 1L: SDO 580

Inflow Area = 92,773 sf, 75.04% Impervious, Inflow Depth > 1.05" for 2-year event
Inflow = 3.55 cfs @ 12.36 hrs, Volume= 8,108 cf
Primary = 3.55 cfs @ 12.36 hrs, Volume= 8,108 cf, Atten= 0%, Lag= 0.0 min

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

Link 1L: SDO 580

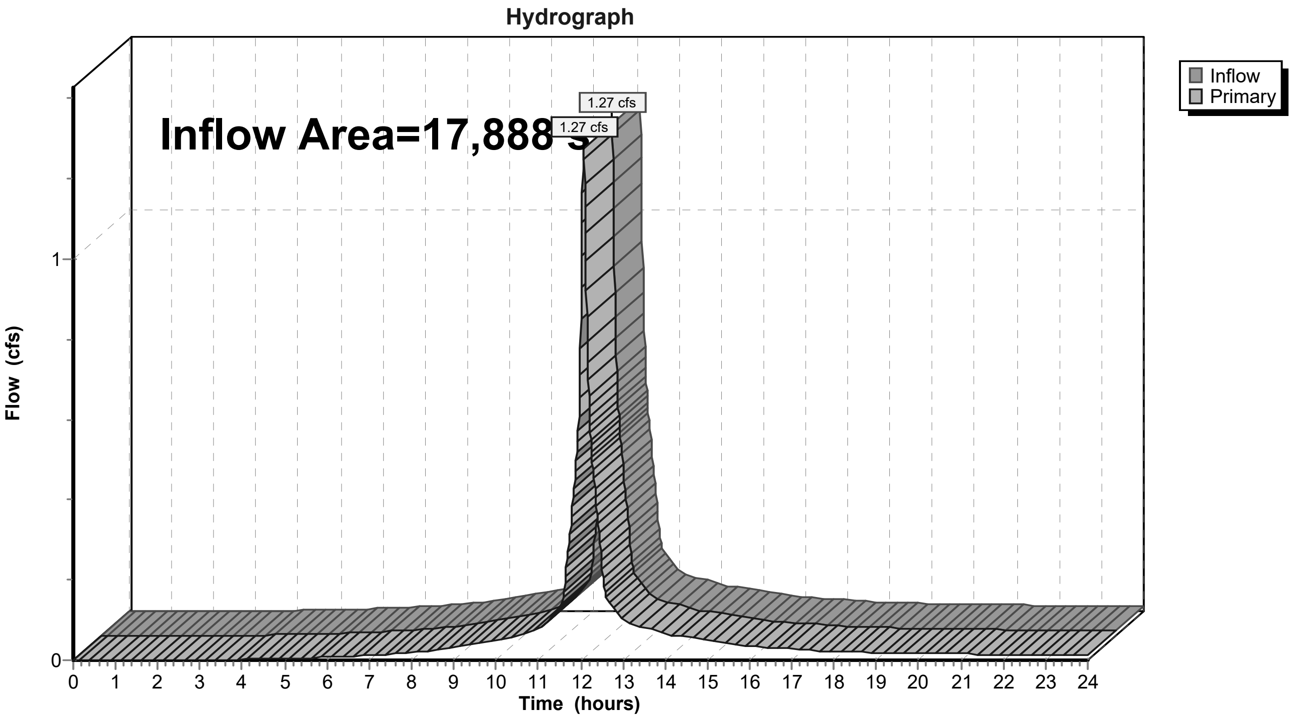


Summary for Link 2L: Fort Point Channel

Inflow Area =	17,888 sf,	88.55% Impervious,	Inflow Depth > 2.70"	for 2-year event
Inflow =	1.27 cfs @	12.07 hrs, Volume=	4,027 cf	
Primary =	1.27 cfs @	12.07 hrs, Volume=	4,027 cf,	Atten= 0%, Lag= 0.0 min

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

Link 2L: Fort Point Channel



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

SubcatchmentPR1A: Building Roof Runoff Area=11,263 sf 100.00% Impervious Runoff Depth>4.66"
Tc=10.0 min CN=98 Runoff=1.09 cfs 4,371 cf

SubcatchmentPR1B: Building Roof Runoff Area=22,527 sf 100.00% Impervious Runoff Depth>4.66"
Tc=10.0 min CN=98 Runoff=2.17 cfs 8,742 cf

SubcatchmentPR2: Harborwalk Runoff Area=17,888 sf 88.55% Impervious Runoff Depth>4.32"
Tc=5.0 min CN=95 Runoff=1.98 cfs 6,436 cf

SubcatchmentPR3: Brick Building Runoff Area=20,214 sf 94.76% Impervious Runoff Depth>4.54"
Tc=5.0 min CN=97 Runoff=2.29 cfs 7,655 cf

SubcatchmentPR4: East Plaza Runoff Area=4,406 sf 77.21% Impervious Runoff Depth>4.10"
Tc=5.0 min CN=93 Runoff=0.47 cfs 1,504 cf

SubcatchmentPR5: West Plaza Runoff Area=9,026 sf 45.28% Impervious Runoff Depth>3.27"
Tc=5.0 min CN=85 Runoff=0.82 cfs 2,462 cf

SubcatchmentPR6: Northwest LA Runoff Area=6,603 sf 37.32% Impervious Runoff Depth>3.08"
Tc=5.0 min CN=83 Runoff=0.57 cfs 1,695 cf

SubcatchmentPR7: West LA Runoff Area=2,525 sf 24.40% Impervious Runoff Depth>2.54"
Tc=5.0 min UI Adjusted CN=77 Runoff=0.18 cfs 534 cf

SubcatchmentPR8: West LA Runoff Area=5,781 sf 31.24% Impervious Runoff Depth>2.89"
Tc=5.0 min CN=81 Runoff=0.47 cfs 1,394 cf

SubcatchmentPR9: Southwest LA Runoff Area=10,428 sf 41.25% Impervious Runoff Depth>3.18"
Tc=5.0 min CN=84 Runoff=0.92 cfs 2,760 cf

Pond 1P: INF 1 Peak Elev=13.66' Storage=1,155 cf Inflow=7.96 cfs 11,910 cf
Discarded=0.01 cfs 257 cf Primary=6.73 cfs 10,518 cf Outflow=6.73 cfs 10,775 cf

Pond 1R: Raingarden 1 Peak Elev=14.52' Storage=279 cf Inflow=0.18 cfs 534 cf
Discarded=0.00 cfs 61 cf Primary=0.03 cfs 199 cf Outflow=0.03 cfs 260 cf

Pond 2P: Building Inf West Peak Elev=12.37' Storage=2,964 cf Inflow=2.95 cfs 11,503 cf
Discarded=0.02 cfs 913 cf Primary=2.85 cfs 8,000 cf Outflow=2.87 cfs 8,913 cf

Pond 2R: Raingarden 2 Peak Elev=14.62' Storage=385 cf Inflow=0.47 cfs 1,394 cf
Discarded=0.00 cfs 78 cf Primary=0.43 cfs 982 cf Outflow=0.43 cfs 1,060 cf

Pond 3P: Building Inf West Peak Elev=16.19' Storage=1,026 cf Inflow=1.09 cfs 4,371 cf
Discarded=0.00 cfs 184 cf Primary=1.08 cfs 3,226 cf Outflow=1.08 cfs 3,410 cf

Pond 4P: INF 4 Peak Elev=13.66' Storage=669 cf Inflow=4.53 cfs 11,713 cf
Discarded=0.00 cfs 166 cf Primary=7.53 cfs 10,928 cf Outflow=7.54 cfs 11,094 cf

Pond 5P: INF 5 Peak Elev=14.43' Storage=1,491 cf Inflow=3.65 cfs 10,000 cf
Discarded=0.01 cfs 458 cf Primary=3.58 cfs 8,288 cf Outflow=3.59 cfs 8,746 cf

Pond 6P: G2 INF Peak Elev=15.71' Storage=1,283 cf Inflow=2.29 cfs 7,655 cf
Discarded=0.01 cfs 405 cf Primary=2.27 cfs 6,035 cf Outflow=2.28 cfs 6,440 cf

Pond 7P: Drywell Peak Elev=16.13' Storage=118 cf Inflow=0.47 cfs 1,504 cf
Discarded=0.00 cfs 35 cf Primary=0.47 cfs 1,353 cf Outflow=0.47 cfs 1,388 cf

Pond G2R: Raingarden G2 Peak Elev=14.64' Storage=181 cf Inflow=0.57 cfs 1,695 cf
Discarded=0.00 cfs 39 cf Primary=0.56 cfs 1,504 cf Outflow=0.56 cfs 1,542 cf

Link 1L: SDO 580 Inflow=9.77 cfs 19,871 cf
Primary=9.77 cfs 19,871 cf

Link 2L: Fort Point Channel Inflow=1.98 cfs 6,436 cf
Primary=1.98 cfs 6,436 cf

Total Runoff Area = 110,661 sf Runoff Volume = 37,554 cf Average Runoff Depth = 4.07"
22.77% Pervious = 25,201 sf 77.23% Impervious = 85,460 sf

Summary for Subcatchment PR1A: Building Roof

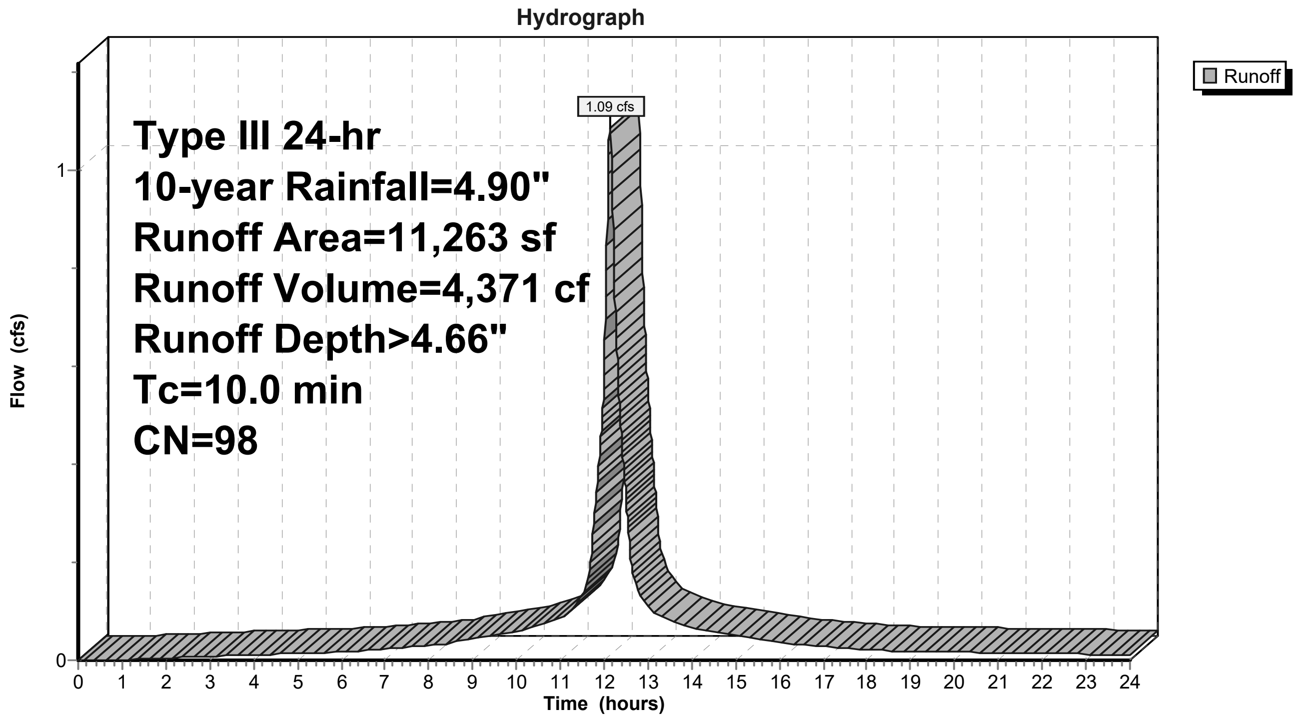
Runoff = 1.09 cfs @ 12.13 hrs, Volume= 4,371 cf, Depth> 4.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

	Area (sf)	CN	Description
*	11,263	98	Buildings, HSG C
	11,263		100.00% Impervious Area

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

Subcatchment PR1A: Building Roof



Summary for Subcatchment PR1B: Building Roof

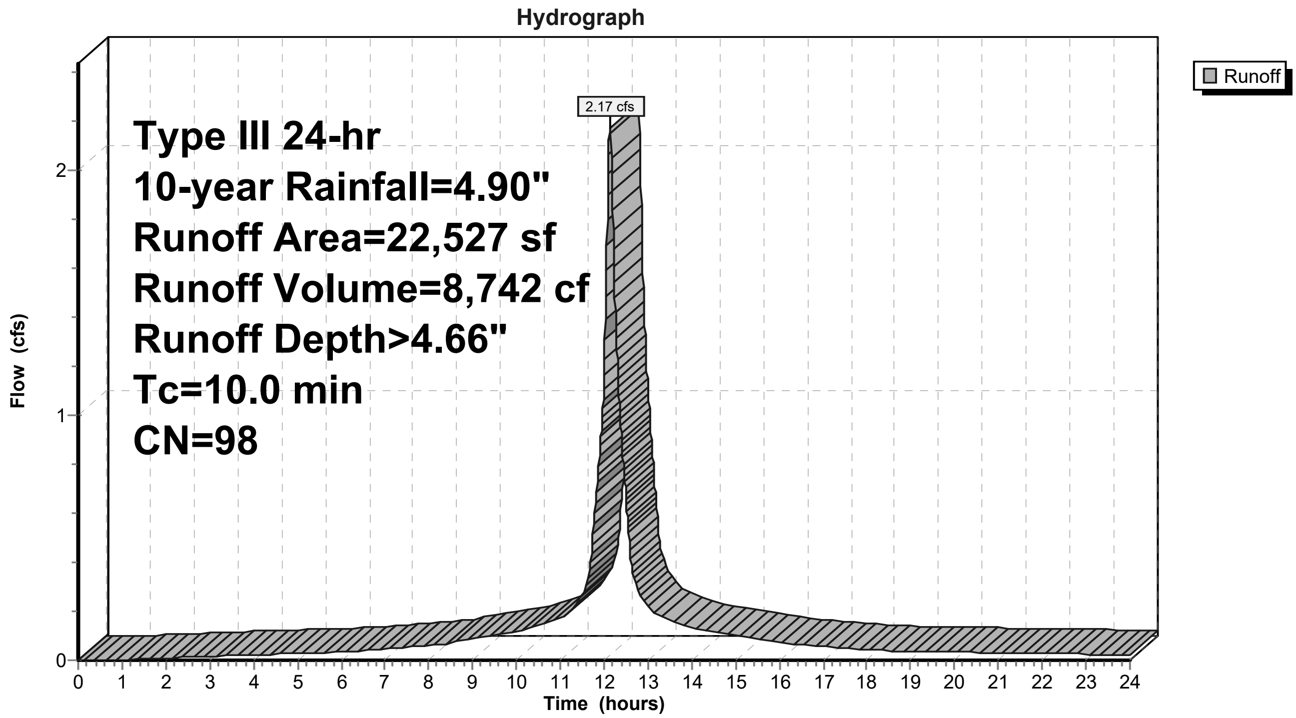
Runoff = 2.17 cfs @ 12.13 hrs, Volume= 8,742 cf, Depth> 4.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

	Area (sf)	CN	Description
*	22,527	98	Buildings, HSG C
	22,527		100.00% Impervious Area

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

Subcatchment PR1B: Building Roof



Summary for Subcatchment PR2: Harborwalk

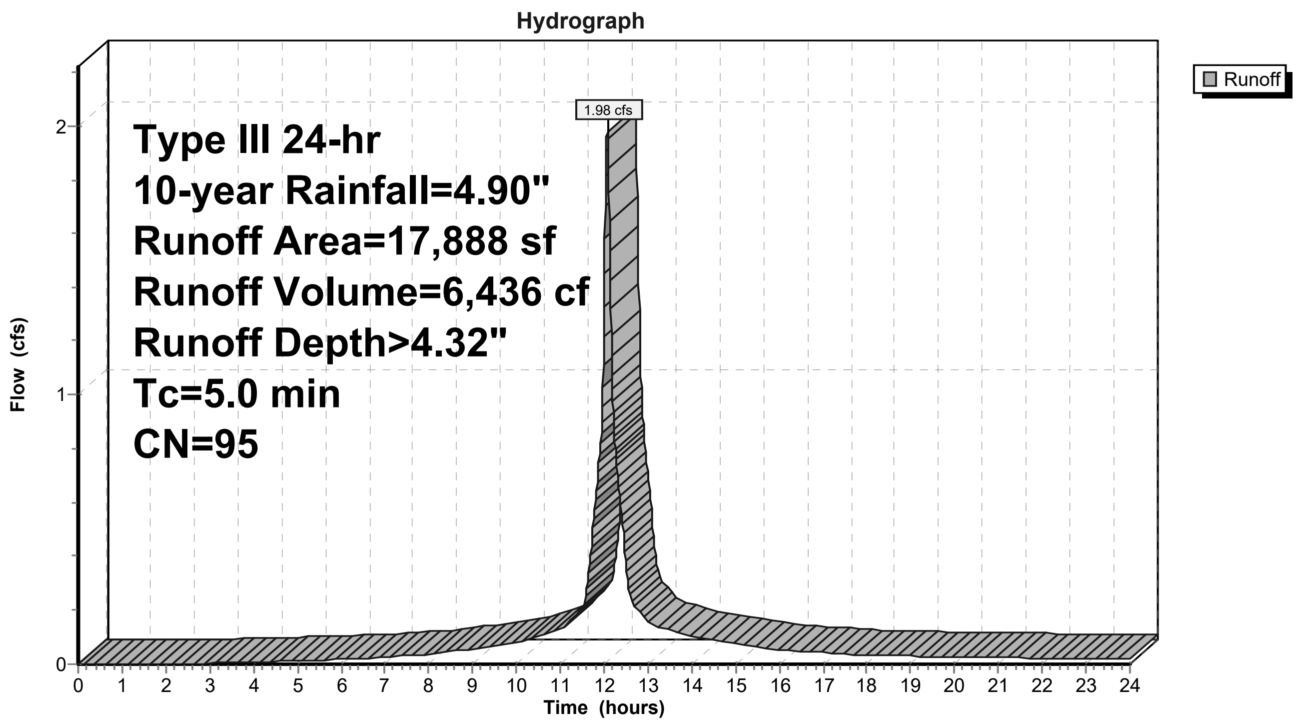
Runoff = 1.98 cfs @ 12.07 hrs, Volume= 6,436 cf, Depth> 4.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
15,839	98	Unconnected pavement, HSG C
2,049	74	>75% Grass cover, Good, HSG C
17,888	95	Weighted Average
2,049		11.45% Pervious Area
15,839		88.55% Impervious Area
15,839		100.00% Unconnected

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

Subcatchment PR2: Harborwalk



Summary for Subcatchment PR3: Brick Building

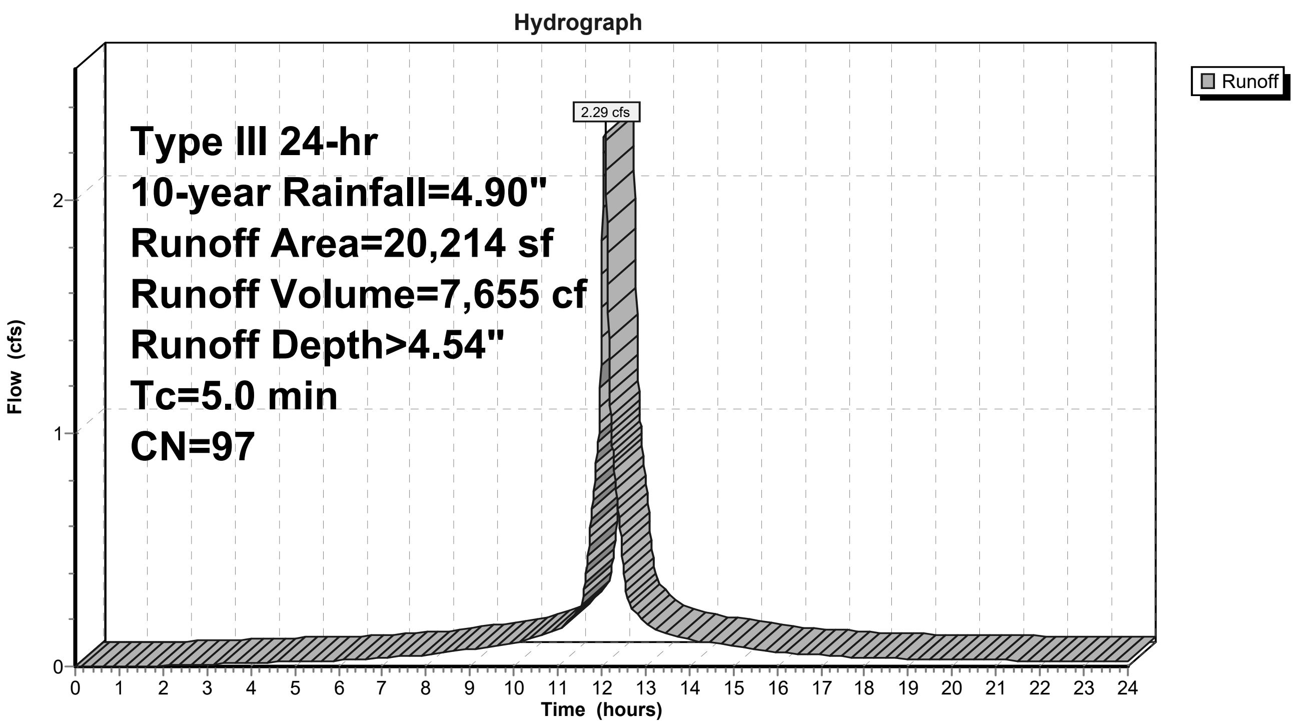
Runoff = 2.29 cfs @ 12.07 hrs, Volume= 7,655 cf, Depth> 4.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

	Area (sf)	CN	Description
*	19,154	98	Building Roofs, HSG C
*	1,060	74	Green Roof
	20,214	97	Weighted Average
	1,060		5.24% Pervious Area
	19,154		94.76% Impervious Area

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

Subcatchment PR3: Brick Building



Summary for Subcatchment PR4: East Plaza

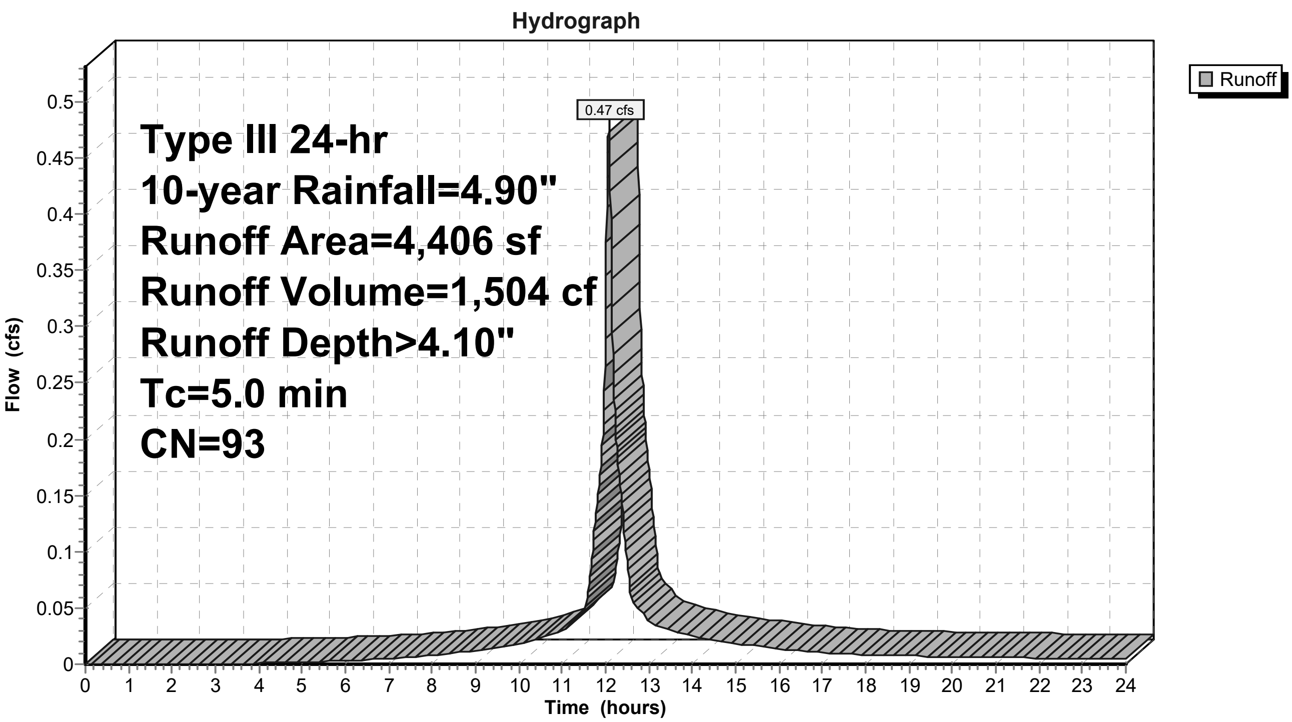
Runoff = 0.47 cfs @ 12.07 hrs, Volume= 1,504 cf, Depth> 4.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
1,004	74	>75% Grass cover, Good, HSG C
3,402	98	Unconnected pavement, HSG C
4,406	93	Weighted Average
1,004		22.79% Pervious Area
3,402		77.21% Impervious Area
3,402		100.00% Unconnected

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

Subcatchment PR4: East Plaza



Summary for Subcatchment PR5: West Plaza

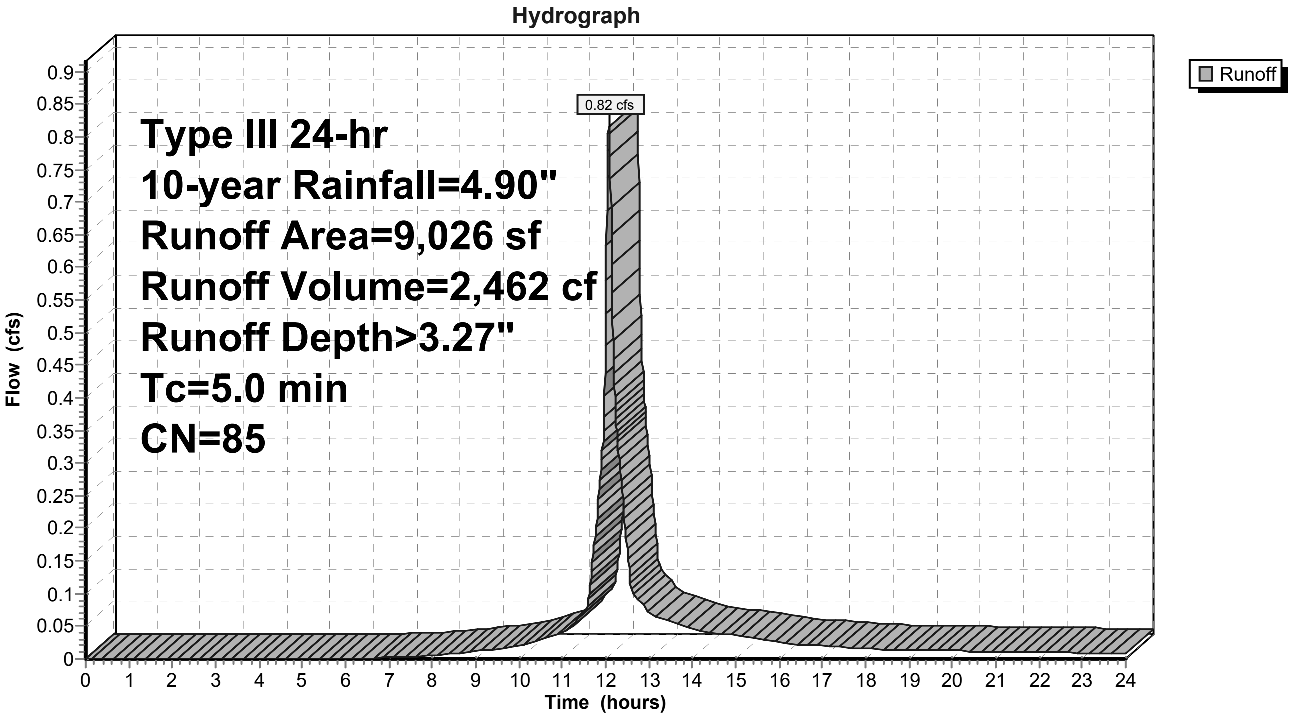
Runoff = 0.82 cfs @ 12.07 hrs, Volume= 2,462 cf, Depth> 3.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
4,939	74	>75% Grass cover, Good, HSG C
4,087	98	Unconnected pavement, HSG C
9,026	85	Weighted Average
4,939		54.72% Pervious Area
4,087		45.28% Impervious Area
4,087		100.00% Unconnected

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

Subcatchment PR5: West Plaza



Summary for Subcatchment PR6: Northwest LA

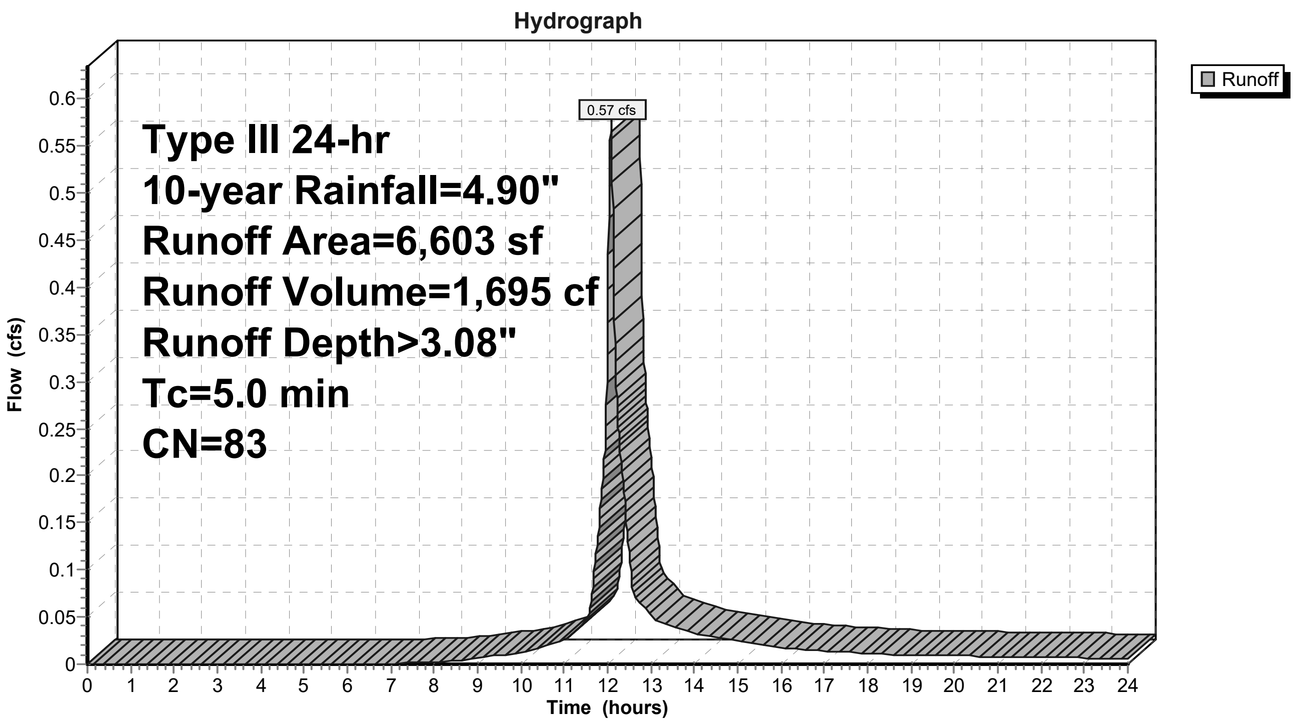
Runoff = 0.57 cfs @ 12.07 hrs, Volume= 1,695 cf, Depth> 3.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
4,139	74	>75% Grass cover, Good, HSG C
2,464	98	Unconnected pavement, HSG C
6,603	83	Weighted Average
4,139		62.68% Pervious Area
2,464		37.32% Impervious Area
2,464		100.00% Unconnected

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

Subcatchment PR6: Northwest LA



Summary for Subcatchment PR7: West LA

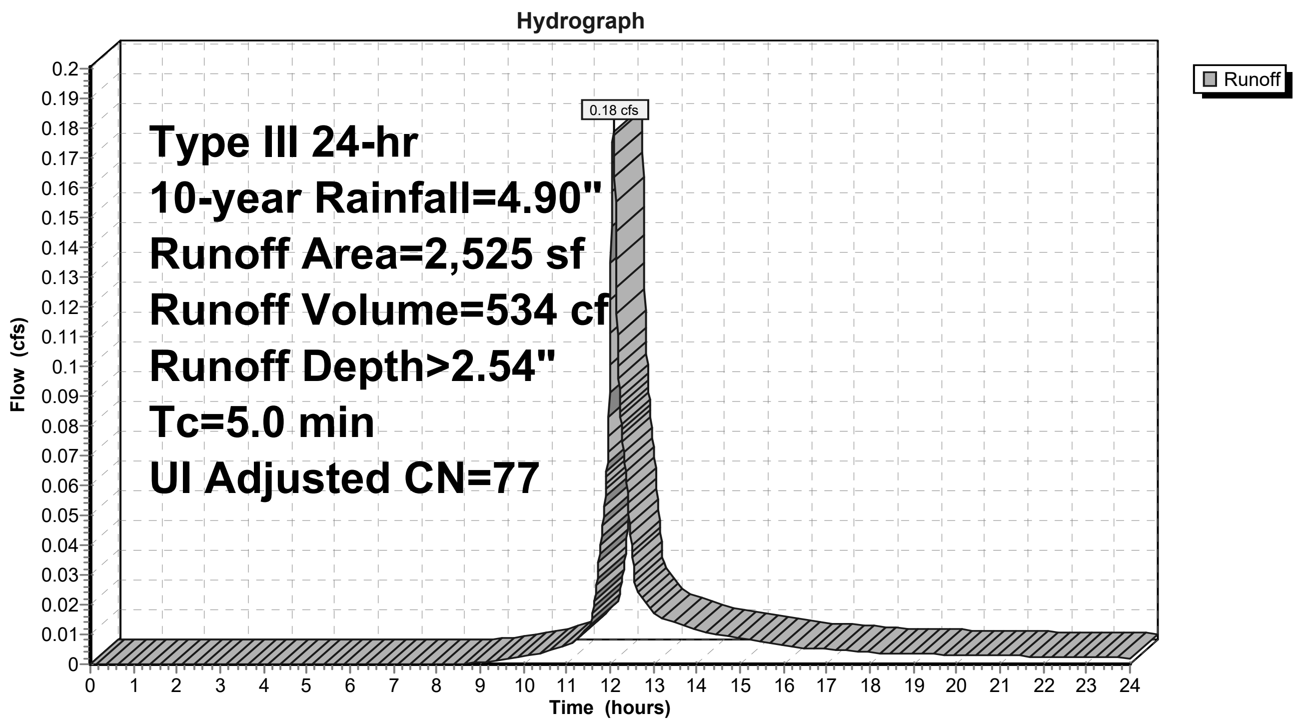
Runoff = 0.18 cfs @ 12.08 hrs, Volume= 534 cf, Depth> 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Adj	Description
1,909	74		>75% Grass cover, Good, HSG C
616	98		Unconnected pavement, HSG C
2,525	80	77	Weighted Average, UI Adjusted
1,909			75.60% Pervious Area
616			24.40% Impervious Area
616			100.00% Unconnected

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

Subcatchment PR7: West LA



Summary for Subcatchment PR8: West LA

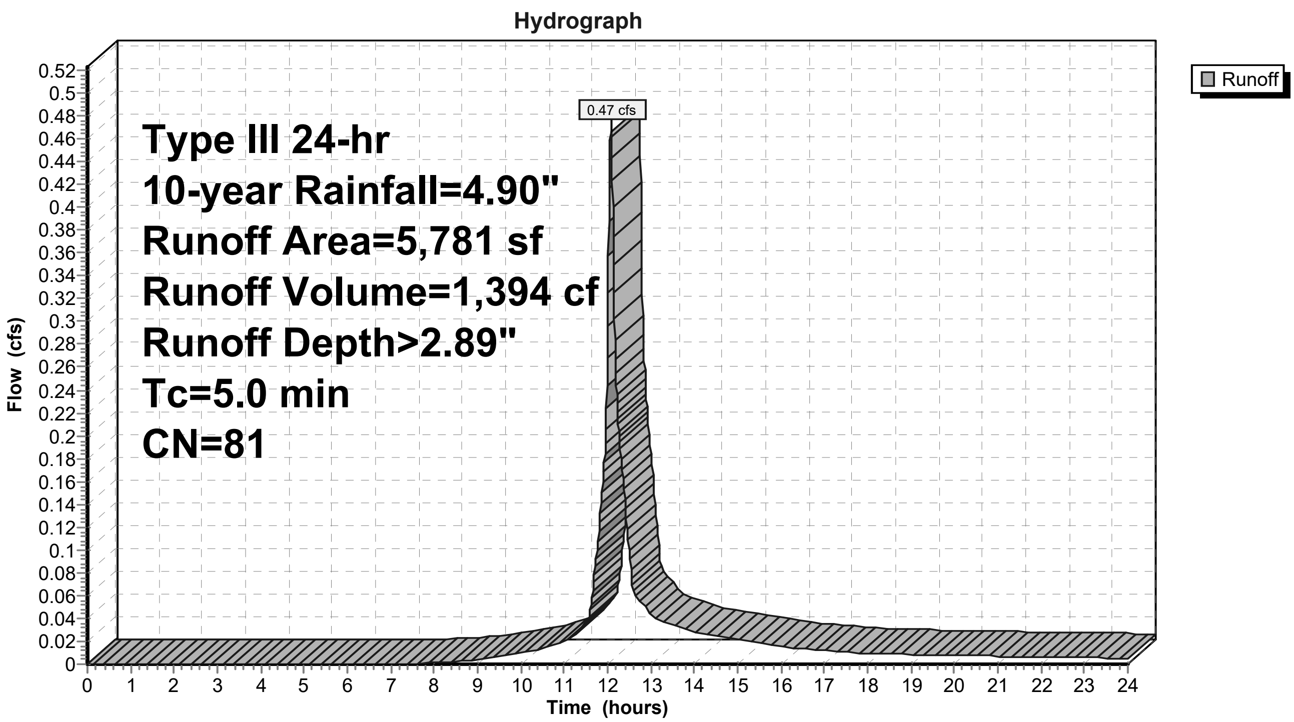
Runoff = 0.47 cfs @ 12.07 hrs, Volume= 1,394 cf, Depth> 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
3,975	74	>75% Grass cover, Good, HSG C
1,806	98	Unconnected pavement, HSG C
5,781	81	Weighted Average
3,975		68.76% Pervious Area
1,806		31.24% Impervious Area
1,806		100.00% Unconnected

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

Subcatchment PR8: West LA



Summary for Subcatchment PR9: Southwest LA

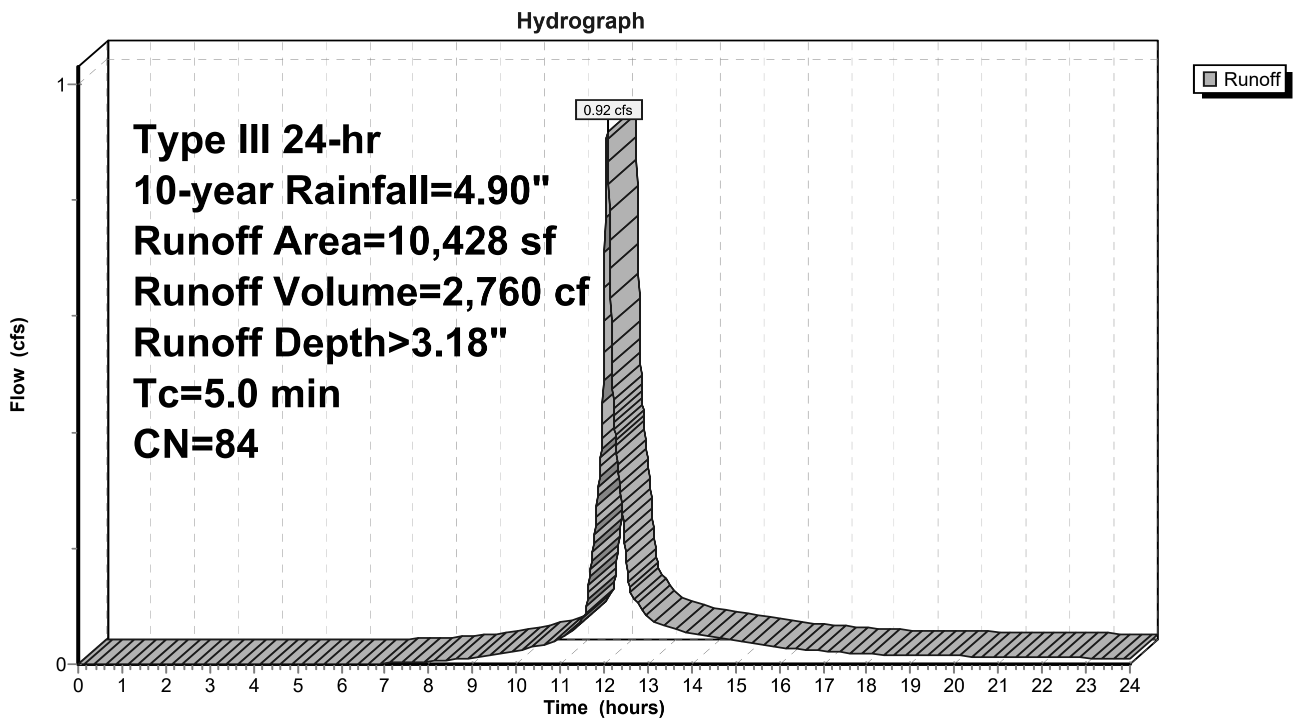
Runoff = 0.92 cfs @ 12.07 hrs, Volume= 2,760 cf, Depth> 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
6,126	74	>75% Grass cover, Good, HSG C
4,302	98	Unconnected pavement, HSG C
10,428	84	Weighted Average
6,126		58.75% Pervious Area
4,302		41.25% Impervious Area
4,302		100.00% Unconnected

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

Subcatchment PR9: Southwest LA



Summary for Pond 1P: INF 1

Inflow Area = 55,412 sf, 71.09% Impervious, Inflow Depth > 2.58" for 10-year event
Inflow = 7.96 cfs @ 12.11 hrs, Volume= 11,910 cf
Outflow = 6.73 cfs @ 12.09 hrs, Volume= 10,775 cf, Atten= 15%, Lag= 0.0 min
Discarded = 0.01 cfs @ 12.09 hrs, Volume= 257 cf
Primary = 6.73 cfs @ 12.09 hrs, Volume= 10,518 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 13.66' @ 12.09 hrs Surf.Area= 481 sf Storage= 1,155 cf

Plug-Flow detention time= 52.9 min calculated for 10,770 cf (90% of inflow)
Center-of-Mass det. time= 11.4 min (835.2 - 823.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	9.50'	179 cf	**18.50'W x 26.00'L x 4.17'H Field A** 2,004 cf Overall - 1,408 cf Embedded = 596 cf x 30.0% Voids
#2A	10.00'	976 cf	**retain_it retain_it 3.0'** x 6 Inside #1 Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf 2 Rows adjusted for 47.2 cf perimeter wall
		1,155 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	13.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Discarded	9.50'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 8.20' Phase-In= 0.01'

Discarded OutFlow Max=0.01 cfs @ 12.09 hrs HW=13.65' (Free Discharge)
└─**2=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=6.58 cfs @ 12.09 hrs HW=13.65' TW=0.00' (Dynamic Tailwater)
└─**1=Sharp-Crested Rectangular Weir** (Weir Controls 6.58 cfs @ 2.63 fps)

Pond 1P: INF 1 - Chamber Wizard Field A

Chamber Model = retain_it retain_it 3.0' (retain-it®)
Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
2 Rows adjusted for 47.2 cf perimeter wall

96.0" Wide + 6.0" Spacing = 102.0" C-C Row Spacing

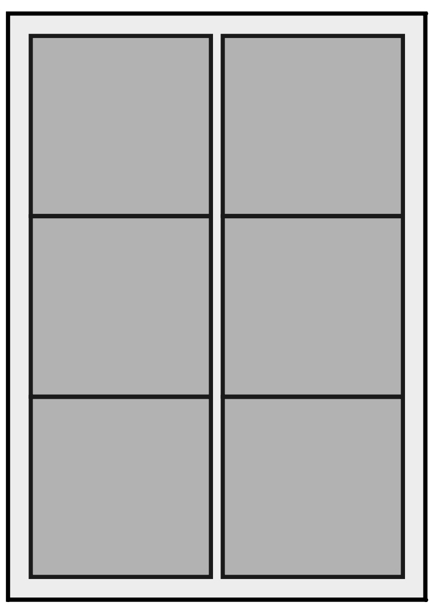
3 Chambers/Row x 8.00' Long = 24.00' Row Length +12.0" End Stone x 2 = 26.00' Base Length
2 Rows x 96.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 18.50' Base Width
6.0" Base + 44.0" Chamber Height = 4.17' Field Height

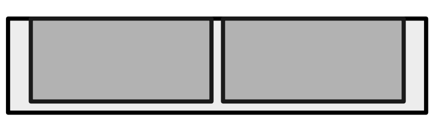
4.7 cf Sidewall x 3 x 2 + 4.7 cf Endwall x 2 x 2 = 47.2 cf Perimeter Wall
6 Chambers x 170.6 cf - 47.2 cf Perimeter wall = 976.5 cf Chamber Storage
6 Chambers x 234.7 cf = 1,408.0 cf Displacement

2,004.2 cf Field - 1,408.0 cf Chambers = 596.2 cf Stone x 30.0% Voids = 178.8 cf Stone Storage

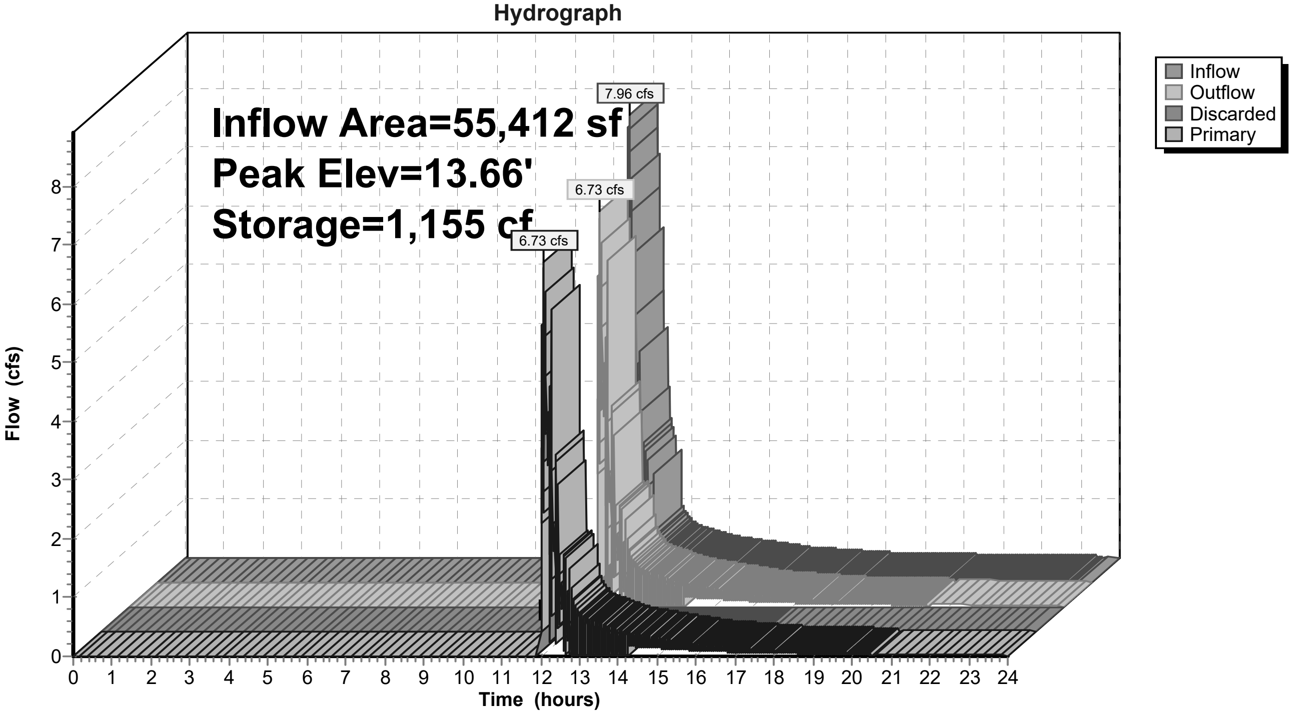
Chamber Storage + Stone Storage = 1,155.3 cf = 0.027 af
Overall Storage Efficiency = 57.6%
Overall System Size = 26.00' x 18.50' x 4.17'

6 Chambers
74.2 cy Field
22.1 cy Stone





Pond 1P: INF 1


Hydrograph
Inflow Area=55,412 sf
Peak Elev=13.66'
Storage=1,155 cf
7.96 cfs
6.73 cfs
6.73 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
0
1
2
3
4
5
6
7
8
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Summary for Pond 1R: Raingarden 1

Inflow Area = 2,525 sf, 24.40% Impervious, Inflow Depth > 2.54" for 10-year event
Inflow = 0.18 cfs @ 12.08 hrs, Volume= 534 cf
Outflow = 0.03 cfs @ 12.58 hrs, Volume= 260 cf, Atten= 85%, Lag= 30.5 min
Discarded = 0.00 cfs @ 12.58 hrs, Volume= 61 cf
Primary = 0.03 cfs @ 12.58 hrs, Volume= 199 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.52' @ 12.58 hrs Surf.Area= 357 sf Storage= 279 cf

Plug-Flow detention time= 241.2 min calculated for 260 cf (49% of inflow)
Center-of-Mass det. time= 123.8 min (952.9 - 829.1)

Volume	Invert	Avail.Storage	Storage Description
#1	13.00'	485 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

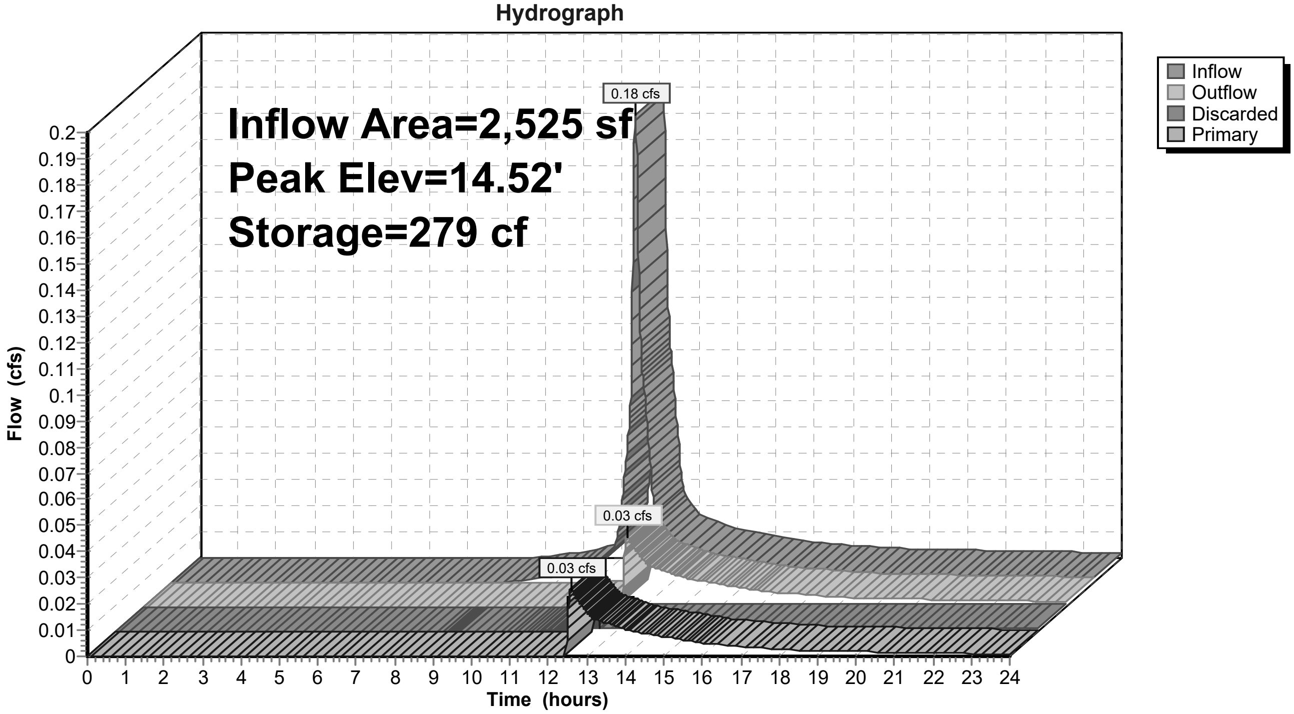
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
13.00	47	0	0
14.00	215	131	131
14.50	352	142	273
15.00	496	212	485

Device	Routing	Invert	Outlet Devices
#1	Primary	14.50'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	13.00'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 8.70' Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 12.58 hrs HW=14.52' (Free Discharge)
└─**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.03 cfs @ 12.58 hrs HW=14.52' TW=13.17' (Dynamic Tailwater)
└─**1=Orifice/Grate** (Weir Controls 0.03 cfs @ 0.44 fps)

Pond 1R: Raingarden 1



Summary for Pond 2P: Building Inf West

Inflow Area =	32,955 sf,	81.41% Impervious,	Inflow Depth > 4.19"	for 10-year event
Inflow =	2.95 cfs @	12.11 hrs, Volume=	11,503 cf	
Outflow =	2.87 cfs @	12.14 hrs, Volume=	8,913 cf,	Atten= 3%, Lag= 1.5 min
Discarded =	0.02 cfs @	12.14 hrs, Volume=	913 cf	
Primary =	2.85 cfs @	12.14 hrs, Volume=	8,000 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 12.37' @ 12.14 hrs Surf.Area= 1,369 sf Storage= 2,964 cf

Plug-Flow detention time= 141.5 min calculated for 8,909 cf (77% of inflow)
Center-of-Mass det. time= 59.7 min (825.0 - 765.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	9.25'	444 cf	**18.50'W x 74.00'L x 4.17'H Field A**
			5,704 cf Overall - 4,224 cf Embedded = 1,480 cf x 30.0% Voids
#2A	9.75'	2,967 cf	**retain_it retain_it 3.0'** x 18 Inside #1
			Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
			Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
			2 Rows adjusted for 103.9 cf perimeter wall
		3,411 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	12.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Discarded	9.25'	**0.142 in/hr Exfiltration over Surface area**
			Conductivity to Groundwater Elevation = 8.00' Phase-In= 0.01'

Discarded OutFlow Max=0.02 cfs @ 12.14 hrs HW=12.37' (Free Discharge)
└─**2=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=2.85 cfs @ 12.14 hrs HW=12.37' TW=0.00' (Dynamic Tailwater)
└─**1=Sharp-Crested Rectangular Weir** (Weir Controls 2.85 cfs @ 1.98 fps)

Pond 2P: Building Inf West - Chamber Wizard Field A

Chamber Model = retain_it retain_it 3.0' (retain-it®)
Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
2 Rows adjusted for 103.9 cf perimeter wall

96.0" Wide + 6.0" Spacing = 102.0" C-C Row Spacing

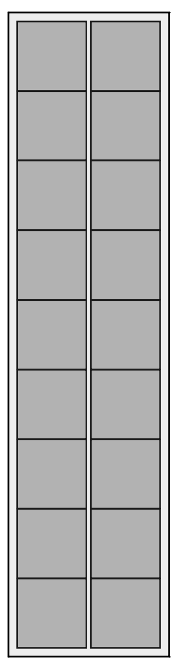
9 Chambers/Row x 8.00' Long = 72.00' Row Length +12.0" End Stone x 2 = 74.00' Base Length
2 Rows x 96.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 18.50' Base Width
6.0" Base + 44.0" Chamber Height = 4.17' Field Height

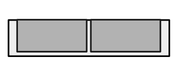
4.7 cf Sidewall x 9 x 2 + 4.7 cf Endwall x 2 x 2 = 103.9 cf Perimeter Wall
18 Chambers x 170.6 cf - 103.9 cf Perimeter wall = 2,967.1 cf Chamber Storage
18 Chambers x 234.7 cf = 4,224.0 cf Displacement

5,704.2 cf Field - 4,224.0 cf Chambers = 1,480.2 cf Stone x 30.0% Voids = 444.0 cf Stone Storage

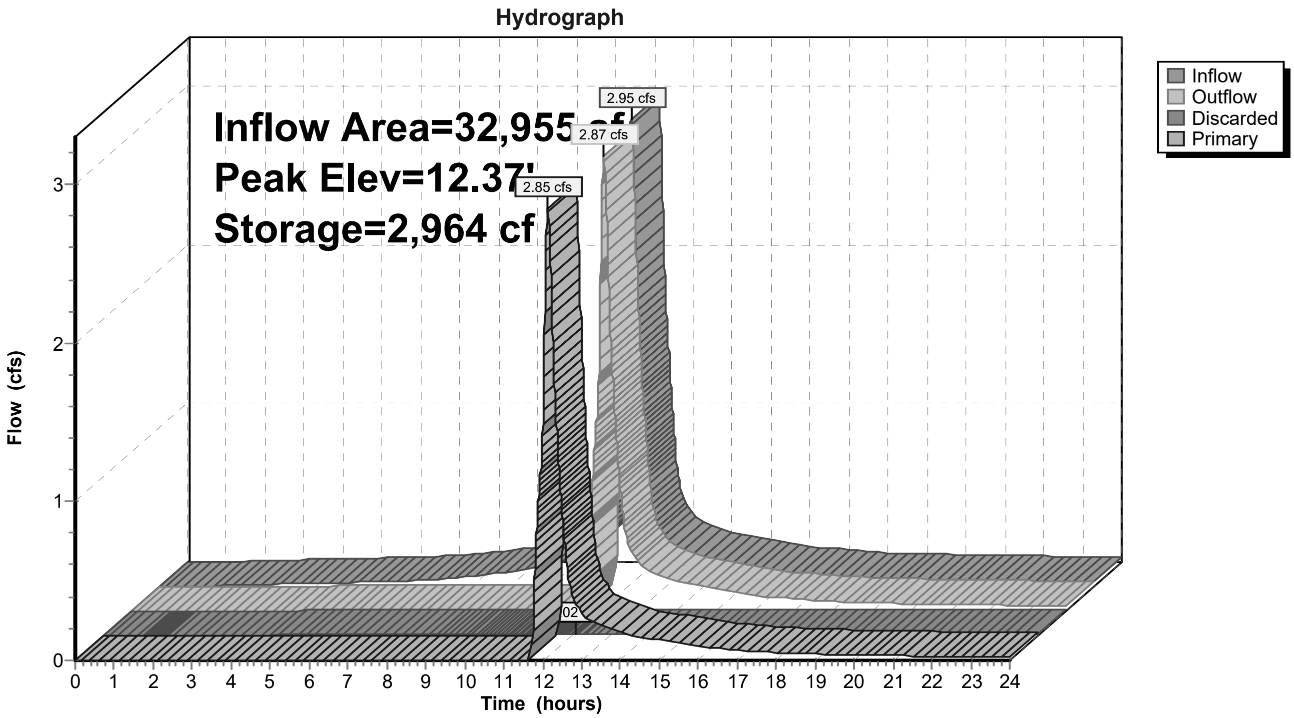
Chamber Storage + Stone Storage = 3,411.2 cf = 0.078 af
Overall Storage Efficiency = 59.8%
Overall System Size = 74.00' x 18.50' x 4.17'

18 Chambers
211.3 cy Field
54.8 cy Stone





Pond 2P: Building Inf West



Summary for Pond 2R: Raingarden 2

Inflow Area = 5,781 sf, 31.24% Impervious, Inflow Depth > 2.89" for 10-year event
Inflow = 0.47 cfs @ 12.07 hrs, Volume= 1,394 cf
Outflow = 0.43 cfs @ 12.11 hrs, Volume= 1,060 cf, Atten= 7%, Lag= 1.9 min
Discarded = 0.00 cfs @ 12.11 hrs, Volume= 78 cf
Primary = 0.43 cfs @ 12.11 hrs, Volume= 982 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.62' @ 12.11 hrs Surf.Area= 457 sf Storage= 385 cf

Plug-Flow detention time= 130.9 min calculated for 1,060 cf (76% of inflow)
Center-of-Mass det. time= 46.1 min (864.5 - 818.4)

Volume	Invert	Avail.Storage	Storage Description
#1	13.00'	581 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

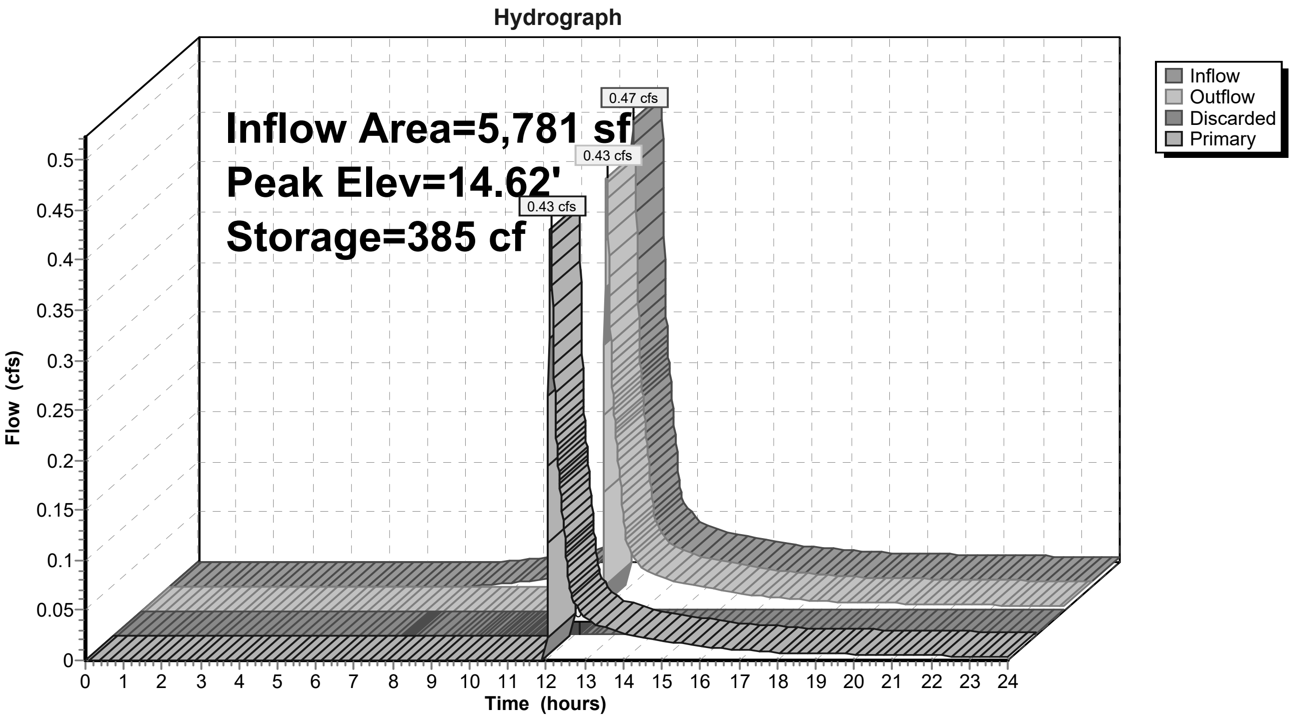
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
13.00	63	0	0
14.00	261	162	162
14.50	419	170	332
15.00	576	249	581

Device	Routing	Invert	Outlet Devices
#1	Primary	14.50'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	13.00'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 8.70' Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 12.11 hrs HW=14.62' (Free Discharge)
└—**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.43 cfs @ 12.11 hrs HW=14.62' TW=13.52' (Dynamic Tailwater)
└—**1=Orifice/Grate** (Weir Controls 0.43 cfs @ 1.14 fps)

Pond 2R: Raingarden 2



Summary for Pond 3P: Building Inf West

Inflow Area =	11,263 sf,100.00% Impervious,	Inflow Depth > 4.66" for 10-year event		
Inflow =	1.09 cfs @	12.13 hrs, Volume=	4,371 cf	
Outflow =	1.08 cfs @	12.15 hrs, Volume=	3,410 cf,	Atten= 1%, Lag= 0.7 min
Discarded =	0.00 cfs @	12.15 hrs, Volume=	184 cf	
Primary =	1.08 cfs @	12.15 hrs, Volume=	3,226 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 16.19' @ 12.15 hrs Surf.Area= 481 sf Storage= 1,026 cf

Plug-Flow detention time= 145.5 min calculated for 3,408 cf (78% of inflow)
Center-of-Mass det. time= 65.1 min (816.2 - 751.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	13.00'	323 cf	**18.50'W x 26.00'L x 5.17'H Field A**
			2,485 cf Overall - 1,408 cf Embedded = 1,077 cf x 30.0% Voids
#2A	13.50'	976 cf	**retain_it retain_it 3.0'** x 6 Inside #1
			Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
			Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
			2 Rows adjusted for 47.2 cf perimeter wall
		1,300 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	16.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Discarded	13.00'	**0.142 in/hr Exfiltration over Surface area**
			Conductivity to Groundwater Elevation = 8.00' Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 12.15 hrs HW=16.19' (Free Discharge)
└─**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=1.08 cfs @ 12.15 hrs HW=16.19' TW=13.54' (Dynamic Tailwater)
└─**1=Sharp-Crested Rectangular Weir** (Weir Controls 1.08 cfs @ 1.43 fps)

Pond 3P: Building Inf West - Chamber Wizard Field A

Chamber Model = retain_it retain_it 3.0' (retain-it®)
Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
2 Rows adjusted for 47.2 cf perimeter wall

96.0" Wide + 6.0" Spacing = 102.0" C-C Row Spacing

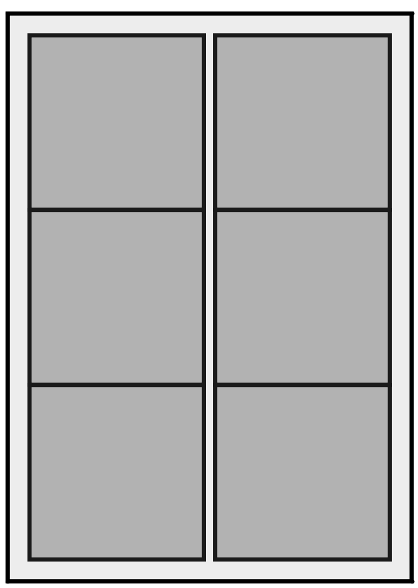
3 Chambers/Row x 8.00' Long = 24.00' Row Length +12.0" End Stone x 2 = 26.00' Base Length
2 Rows x 96.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 18.50' Base Width
6.0" Base + 44.0" Chamber Height + 12.0" Cover = 5.17' Field Height

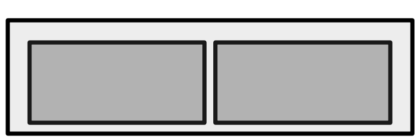
4.7 cf Sidewall x 3 x 2 + 4.7 cf Endwall x 2 x 2 = 47.2 cf Perimeter Wall
6 Chambers x 170.6 cf - 47.2 cf Perimeter wall = 976.5 cf Chamber Storage
6 Chambers x 234.7 cf = 1,408.0 cf Displacement

2,485.2 cf Field - 1,408.0 cf Chambers = 1,077.2 cf Stone x 30.0% Voids = 323.1 cf Stone Storage

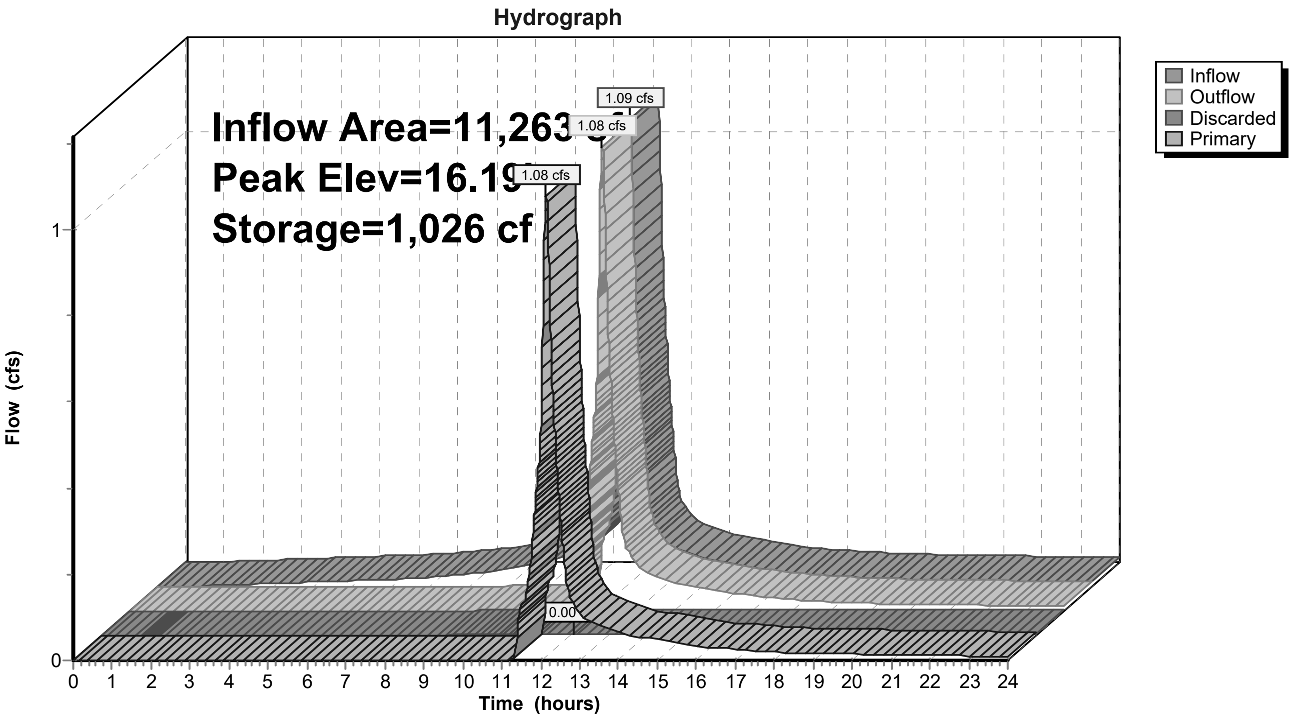
Chamber Storage + Stone Storage = 1,299.6 cf = 0.030 af
Overall Storage Efficiency = 52.3%
Overall System Size = 26.00' x 18.50' x 5.17'

6 Chambers
92.0 cy Field
39.9 cy Stone





Pond 3P: Building Inf West



Summary for Pond 4P: INF 4

Inflow Area = 49,631 sf, 75.73% Impervious, Inflow Depth > 2.83" for 10-year event
Inflow = 4.53 cfs @ 12.10 hrs, Volume= 11,713 cf
Outflow = 7.54 cfs @ 12.11 hrs, Volume= 11,094 cf, Atten= 0%, Lag= 0.8 min
Discarded = 0.00 cfs @ 12.10 hrs, Volume= 166 cf
Primary = 7.53 cfs @ 12.11 hrs, Volume= 10,928 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 13.66' @ 12.10 hrs Surf.Area= 340 sf Storage= 669 cf

Plug-Flow detention time= 33.1 min calculated for 11,094 cf (95% of inflow)
Center-of-Mass det. time= 6.3 min (825.0 - 818.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	9.50'	296 cf	**11.00'W x 30.92'L x 4.00'H Field A** 1,360 cf Overall - 373 cf Embedded = 987 cf x 30.0% Voids
#2A	10.00'	373 cf	**ADS_StormTech SC-740** x 8 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 2 rows
		669 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	12.50'	**4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#2	Primary	11.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Discarded	9.50'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 8.00' Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 12.10 hrs HW=13.65' (Free Discharge)
└─**3=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 12.11 hrs HW=13.50' TW=13.62' (Dynamic Tailwater)
├─**1=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 4P: INF 4 - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 (ADS StormTech®SC-740 without end caps)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
Row Length Adjustment= +0.44' x 6.45 sf x 2 rows

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

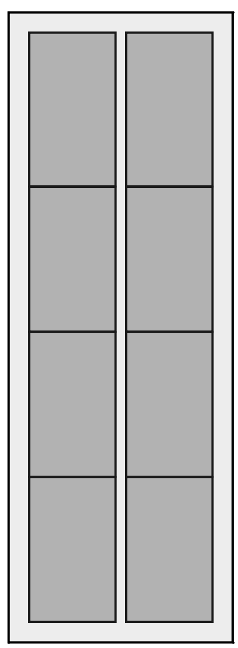
4 Chambers/Row x 7.12' Long +0.44' Row Adjustment = 28.92' Row Length +12.0" End Stone x 2 = 30.92' Base Length
2 Rows x 51.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.00' Base Width
6.0" Base + 30.0" Chamber Height + 12.0" Cover = 4.00' Field Height

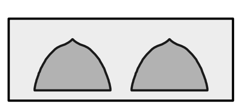
8 Chambers x 45.9 cf +0.44' Row Adjustment x 6.45 sf x 2 Rows = 373.2 cf Chamber Storage

1,360.4 cf Field - 373.2 cf Chambers = 987.2 cf Stone x 30.0% Voids = 296.2 cf Stone Storage

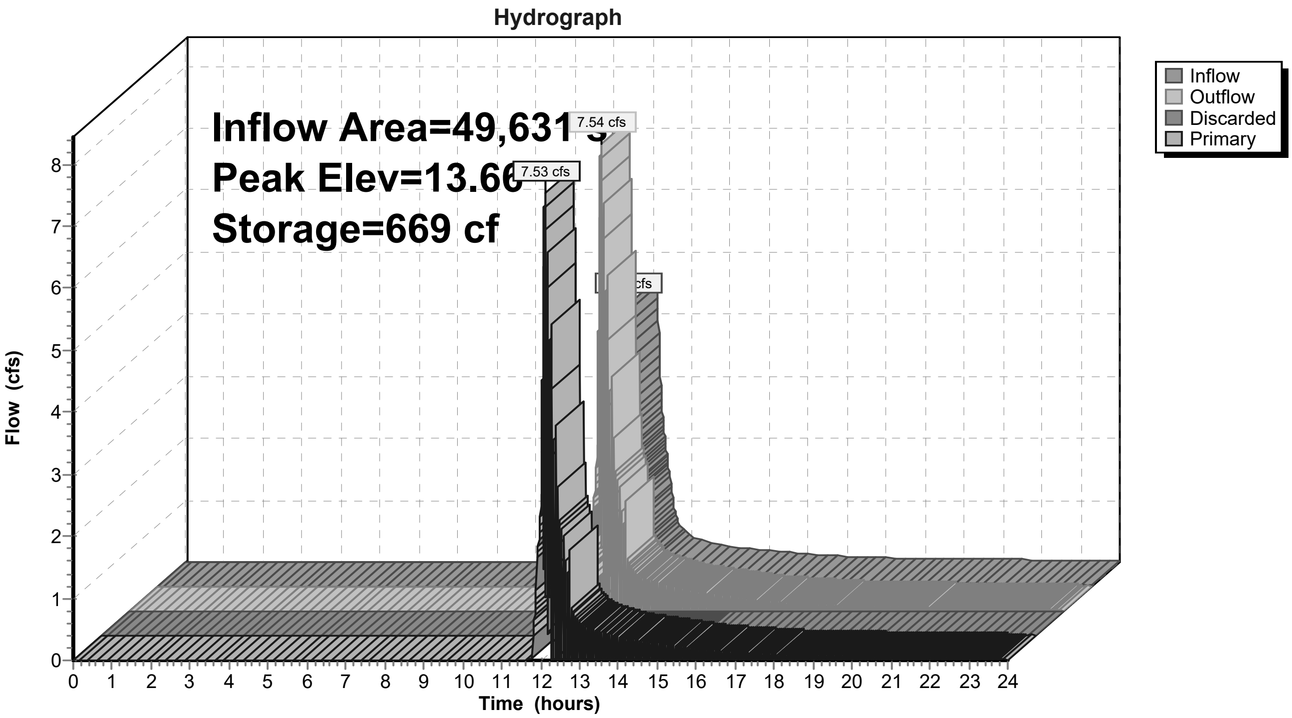
Chamber Storage + Stone Storage = 669.3 cf = 0.015 af
Overall Storage Efficiency = 49.2%
Overall System Size = 30.92' x 11.00' x 4.00'

8 Chambers
50.4 cy Field
36.6 cy Stone





Pond 4P: INF 4


Hydrograph
Inflow Area=49,631 s
Peak Elev=13.66
Storage=669 cf
7.54 cfs
7.53 cfs
cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

Summary for Pond 5P: INF 5

Inflow Area = 35,843 sf, 71.72% Impervious, Inflow Depth > 3.35" for 10-year event
Inflow = 3.65 cfs @ 12.08 hrs, Volume= 10,000 cf
Outflow = 3.59 cfs @ 12.09 hrs, Volume= 8,746 cf, Atten= 1%, Lag= 0.8 min
Discarded = 0.01 cfs @ 12.09 hrs, Volume= 458 cf
Primary = 3.58 cfs @ 12.09 hrs, Volume= 8,288 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.43' @ 12.09 hrs Surf.Area= 718 sf Storage= 1,491 cf

Plug-Flow detention time= 73.9 min calculated for 8,742 cf (87% of inflow)
Center-of-Mass det. time= 20.9 min (827.2 - 806.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	11.50'	193 cf	**17.50'W x 41.00'L x 4.17'H Field A** 2,990 cf Overall - 2,347 cf Embedded = 643 cf x 30.0% Voids
#2A	12.00'	1,640 cf	**retain_it retain_it 3.0'** x 10 Inside #1 Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf 2 Rows adjusted for 66.1 cf perimeter wall
		1,833 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	14.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Discarded	11.50'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 10.60' Phase-In= 0.01'

Discarded OutFlow Max=0.01 cfs @ 12.09 hrs HW=14.43' (Free Discharge)
└─**2=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=3.58 cfs @ 12.09 hrs HW=14.43' TW=13.46' (Dynamic Tailwater)
└─**1=Sharp-Crested Rectangular Weir** (Weir Controls 3.58 cfs @ 2.14 fps)

Pond 5P: INF 5 - Chamber Wizard Field A

Chamber Model = retain_it retain_it 3.0' (retain-it®)
Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
2 Rows adjusted for 66.1 cf perimeter wall

96.0" Wide + 6.0" Spacing = 102.0" C-C Row Spacing

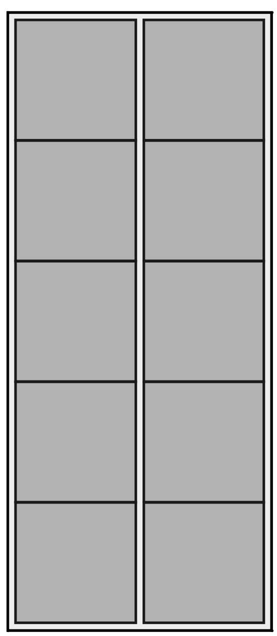
5 Chambers/Row x 8.00' Long = 40.00' Row Length +6.0" End Stone x 2 = 41.00' Base Length
2 Rows x 96.0" Wide + 6.0" Spacing x 1 + 6.0" Side Stone x 2 = 17.50' Base Width
6.0" Base + 44.0" Chamber Height = 4.17' Field Height

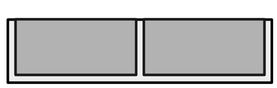
4.7 cf Sidewall x 5 x 2 + 4.7 cf Endwall x 2 x 2 = 66.1 cf Perimeter Wall
10 Chambers x 170.6 cf - 66.1 cf Perimeter wall = 1,640.0 cf Chamber Storage
10 Chambers x 234.7 cf = 2,346.7 cf Displacement

2,989.6 cf Field - 2,346.7 cf Chambers = 642.9 cf Stone x 30.0% Voids = 192.9 cf Stone Storage

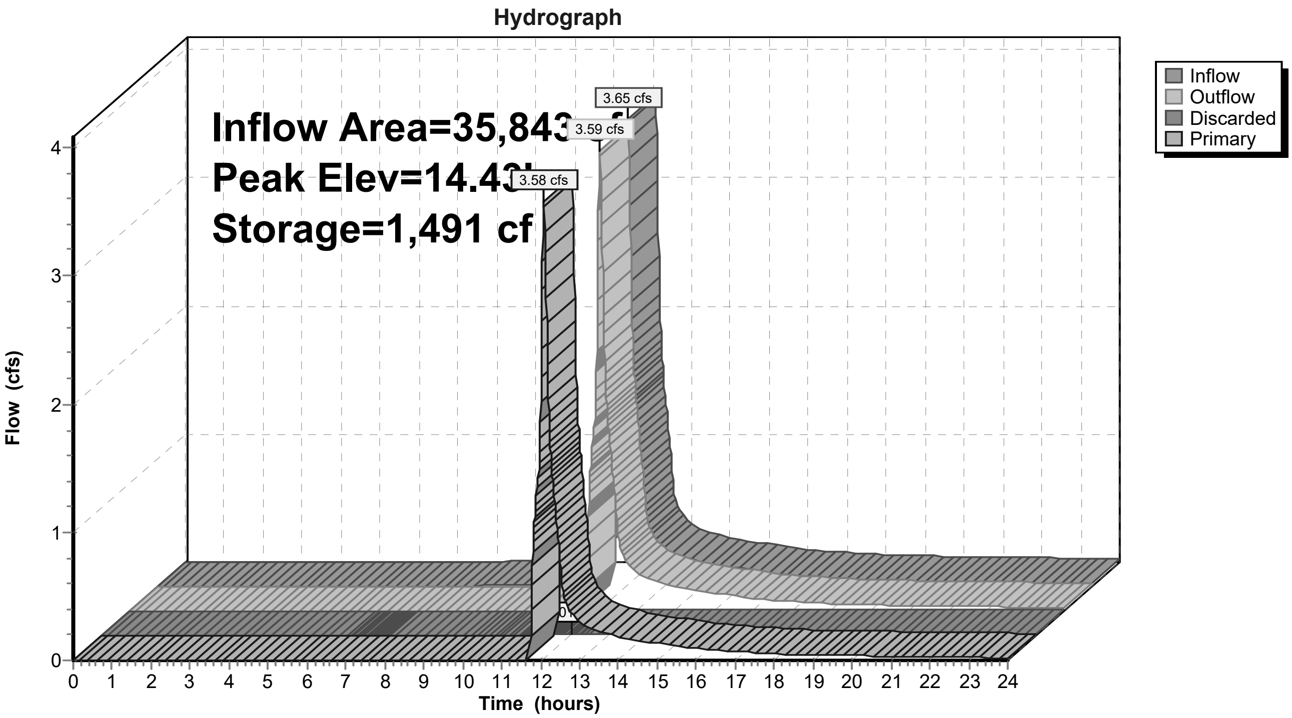
Chamber Storage + Stone Storage = 1,832.9 cf = 0.042 af
Overall Storage Efficiency = 61.3%
Overall System Size = 41.00' x 17.50' x 4.17'

10 Chambers
110.7 cy Field
23.8 cy Stone





Pond 5P: INF 5


Hydrograph
Inflow Area=35,843 sf
Peak Elev=14.43'
Storage=1,491 cf
3.65 cfs
3.59 cfs
3.58 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Pond 6P: G2 INF

Inflow Area =	20,214 sf,	94.76% Impervious,	Inflow Depth > 4.54"	for 10-year event
Inflow =	2.29 cfs @	12.07 hrs, Volume=	7,655 cf	
Outflow =	2.28 cfs @	12.08 hrs, Volume=	6,440 cf,	Atten= 0%, Lag= 0.3 min
Discarded =	0.01 cfs @	12.08 hrs, Volume=	405 cf	
Primary =	2.27 cfs @	12.08 hrs, Volume=	6,035 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 15.71' @ 12.08 hrs Surf.Area= 730 sf Storage= 1,283 cf

Plug-Flow detention time= 116.0 min calculated for 6,440 cf (84% of inflow)
Center-of-Mass det. time= 49.5 min (804.3 - 754.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	12.50'	628 cf	**15.75'W x 46.34'L x 4.00'H Field A**
			2,919 cf Overall - 827 cf Embedded = 2,092 cf x 30.0% Voids
#2A	13.00'	827 cf	**ADS_StormTech SC-740 +Cap** x 18 Inside #1
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			18 Chambers in 3 Rows
		1,455 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	15.40'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Discarded	12.50'	**0.142 in/hr Exfiltration over Surface area**
			Conductivity to Groundwater Elevation = 10.60' Phase-In= 0.01'

Discarded OutFlow Max=0.01 cfs @ 12.08 hrs HW=15.71' (Free Discharge)
└─**2=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=2.27 cfs @ 12.08 hrs HW=15.71' TW=14.42' (Dynamic Tailwater)
└─**1=Sharp-Crested Rectangular Weir** (Weir Controls 2.27 cfs @ 1.83 fps)

Pond 6P: G2 INF - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

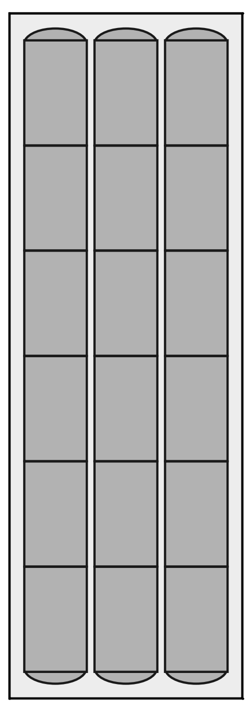
6 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 44.34' Row Length +12.0" End Stone x 2 = 46.34' Base Length
3 Rows x 51.0" Wide + 6.0" Spacing x 2 + 12.0" Side Stone x 2 = 15.75' Base Width
6.0" Base + 30.0" Chamber Height + 12.0" Cover = 4.00' Field Height

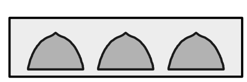
18 Chambers x 45.9 cf = 826.9 cf Chamber Storage

2,919.2 cf Field - 826.9 cf Chambers = 2,092.3 cf Stone x 30.0% Voids = 627.7 cf Stone Storage

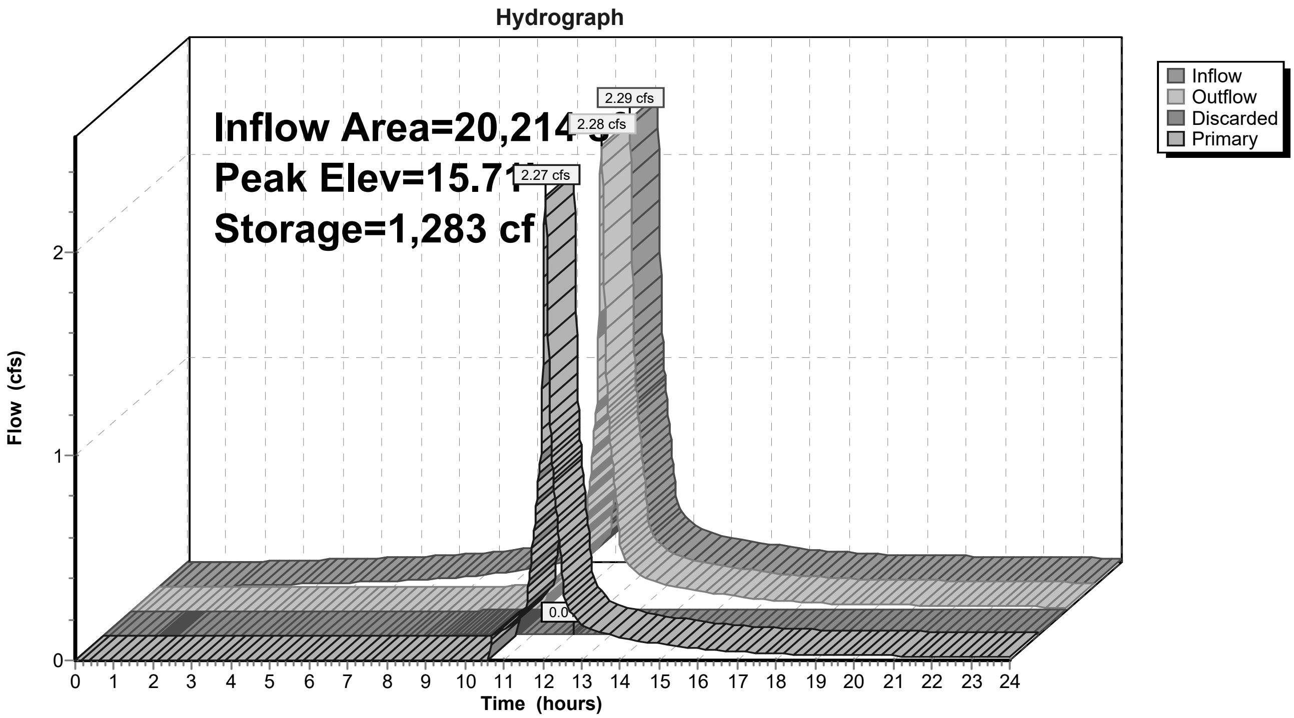
Chamber Storage + Stone Storage = 1,454.6 cf = 0.033 af
Overall Storage Efficiency = 49.8%
Overall System Size = 46.34' x 15.75' x 4.00'

18 Chambers
108.1 cy Field
77.5 cy Stone





Pond 6P: G2 INF



Summary for Pond 7P: Drywell

Inflow Area = 4,406 sf, 77.21% Impervious, Inflow Depth > 4.10" for 10-year event
Inflow = 0.47 cfs @ 12.07 hrs, Volume= 1,504 cf
Outflow = 0.47 cfs @ 12.07 hrs, Volume= 1,388 cf, Atten= 0%, Lag= 0.1 min
Discarded = 0.00 cfs @ 12.07 hrs, Volume= 35 cf
Primary = 0.47 cfs @ 12.07 hrs, Volume= 1,353 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 16.13' @ 12.07 hrs Surf.Area= 28 sf Storage= 118 cf

Plug-Flow detention time= 65.3 min calculated for 1,388 cf (92% of inflow)
Center-of-Mass det. time= 25.2 min (802.6 - 777.5)

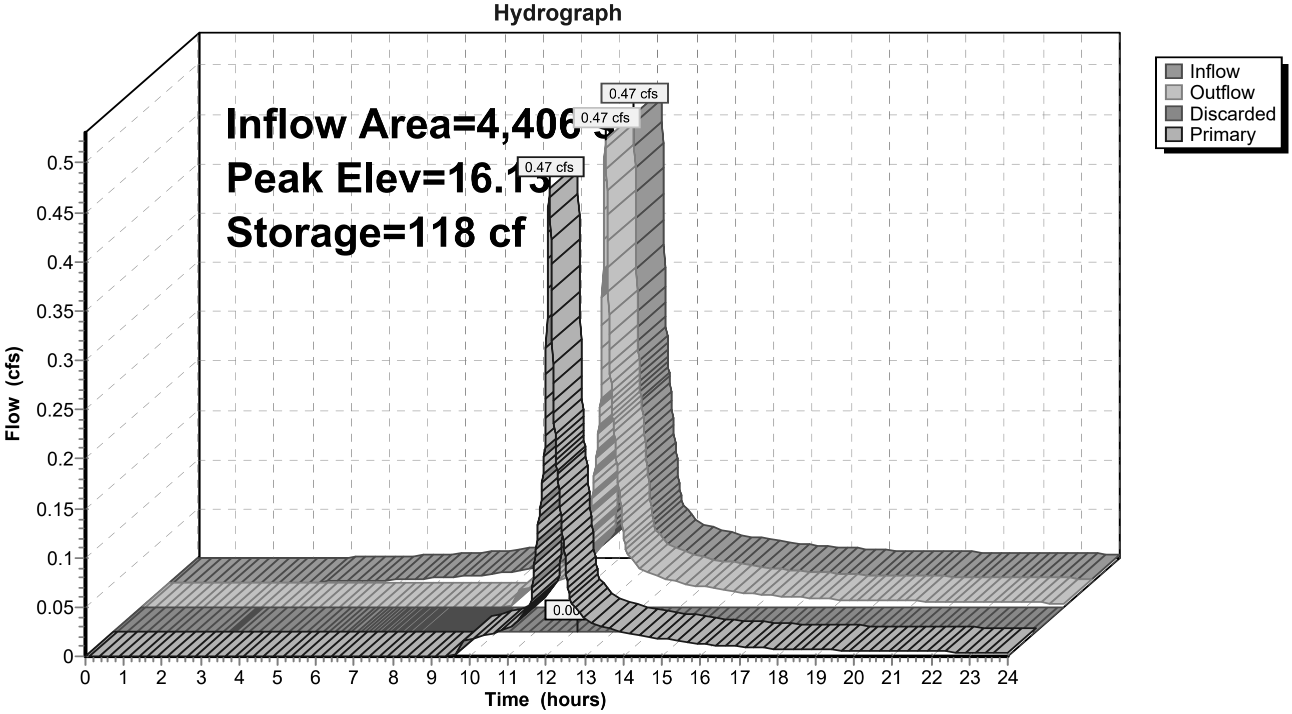
Volume	Invert	Avail.Storage	Storage Description
#1	9.30'	88 cf	**4.00'D x 7.00'H Vertical Cone/Cylinder**
#2	9.30'	33 cf	**4.50'D x 7.00'H Vertical Cone/Cylinder**
			111 cf Overall x 30.0% Voids
		121 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	16.00'	**12.0" Horiz. Orifice/Grate** C= 0.600
			Limited to weir flow at low heads
#2	Discarded	9.30'	**0.142 in/hr Exfiltration over Surface area**
			Conductivity to Groundwater Elevation = 8.00'

Discarded OutFlow Max=0.00 cfs @ 12.07 hrs HW=16.13' (Free Discharge)
└─**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.47 cfs @ 12.07 hrs HW=16.13' TW=0.00' (Dynamic Tailwater)
└─**1=Orifice/Grate** (Weir Controls 0.47 cfs @ 1.17 fps)

Pond 7P: Drywell



Summary for Pond G2R: Raingarden G2

Inflow Area = 6,603 sf, 37.32% Impervious, Inflow Depth > 3.08" for 10-year event
Inflow = 0.57 cfs @ 12.07 hrs, Volume= 1,695 cf
Outflow = 0.56 cfs @ 12.08 hrs, Volume= 1,542 cf, Atten= 1%, Lag= 0.7 min
Discarded = 0.00 cfs @ 12.08 hrs, Volume= 39 cf
Primary = 0.56 cfs @ 12.08 hrs, Volume= 1,504 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.64' @ 12.08 hrs Surf.Area= 223 sf Storage= 181 cf

Plug-Flow detention time= 65.6 min calculated for 1,542 cf (91% of inflow)
Center-of-Mass det. time= 20.9 min (833.7 - 812.8)

Volume	Invert	Avail.Storage	Storage Description
#1	13.00'	276 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

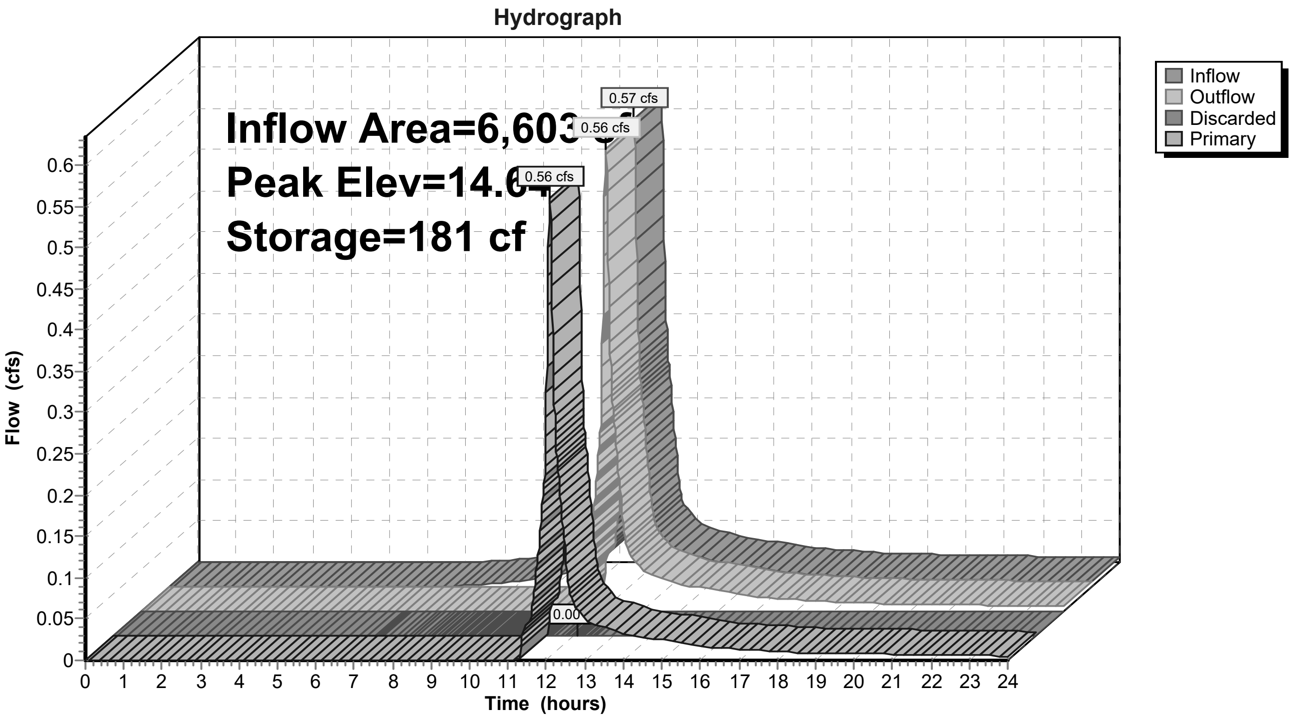
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
13.00	21	0	0
14.00	125	73	73
14.50	190	79	152
15.00	305	124	276

Device	Routing	Invert	Outlet Devices
#1	Primary	14.50'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	13.00'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 8.70' Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 12.08 hrs HW=14.64' (Free Discharge)
└─**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.56 cfs @ 12.08 hrs HW=14.64' TW=14.43' (Dynamic Tailwater)
└─**1=Orifice/Grate** (Weir Controls 0.56 cfs @ 1.24 fps)

Pond G2R: Raingarden G2

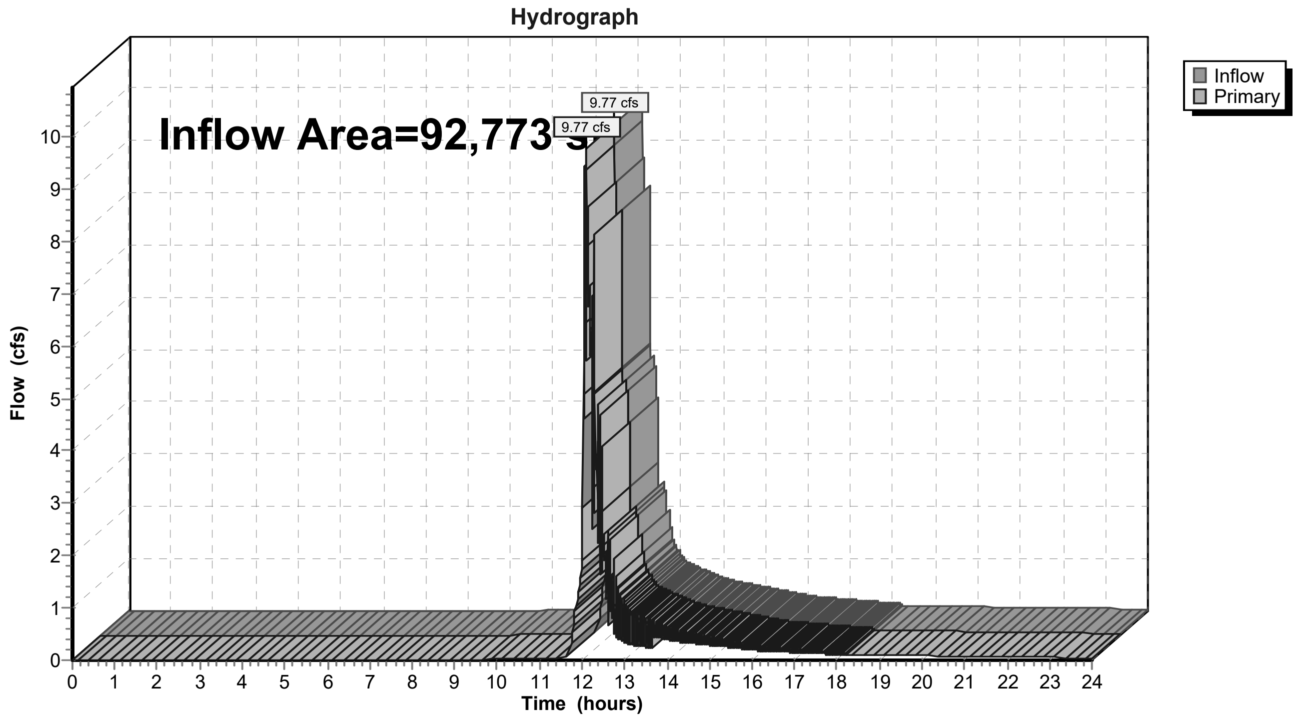


Summary for Link 1L: SDO 580

Inflow Area = 92,773 sf, 75.04% Impervious, Inflow Depth > 2.57" for 10-year event
Inflow = 9.77 cfs @ 12.09 hrs, Volume= 19,871 cf
Primary = 9.77 cfs @ 12.09 hrs, Volume= 19,871 cf, Atten= 0%, Lag= 0.0 min

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

Link 1L: SDO 580

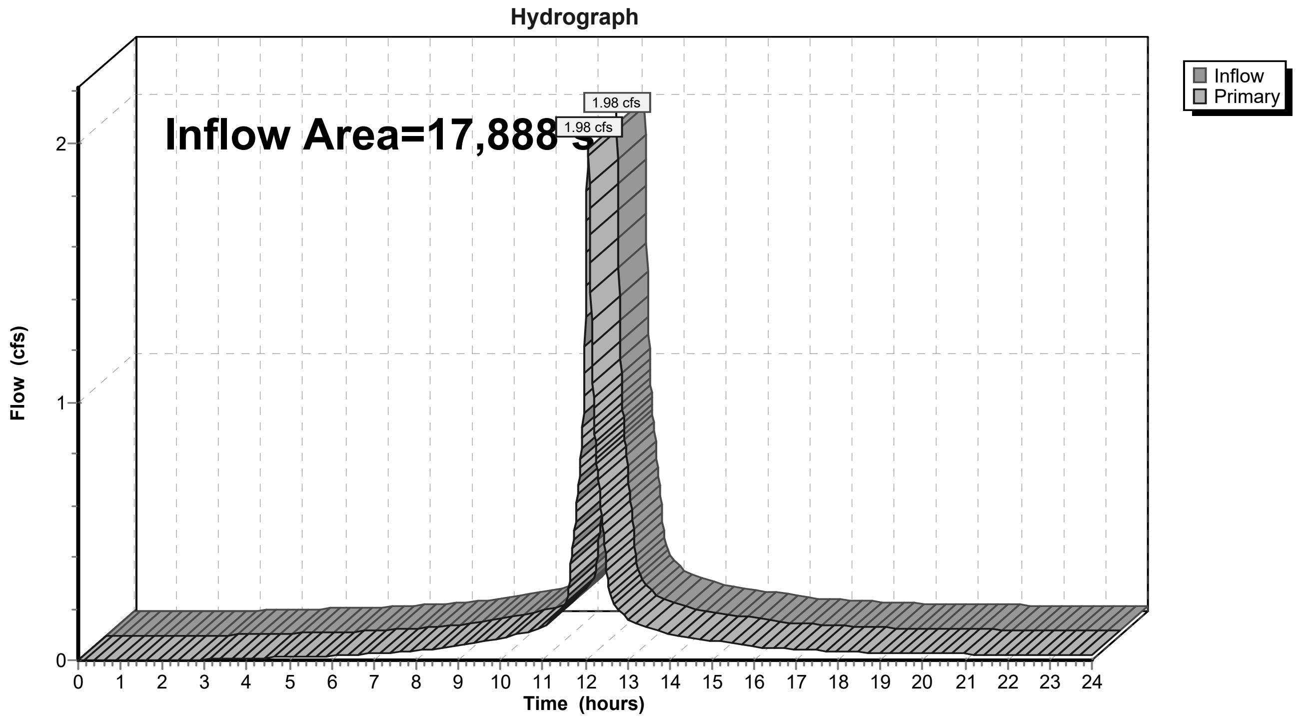


Summary for Link 2L: Fort Point Channel

Inflow Area =	17,888 sf,	88.55% Impervious,	Inflow Depth > 4.32"	for 10-year event
Inflow =	1.98 cfs @	12.07 hrs, Volume=	6,436 cf	
Primary =	1.98 cfs @	12.07 hrs, Volume=	6,436 cf,	Atten= 0%, Lag= 0.0 min

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

Link 2L: Fort Point Channel



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

SubcatchmentPR1A: Building Roof Runoff Area=11,263 sf 100.00% Impervious Runoff Depth>5.94"
Tc=10.0 min CN=98 Runoff=1.38 cfs 5,579 cf

SubcatchmentPR1B: Building Roof Runoff Area=22,527 sf 100.00% Impervious Runoff Depth>5.94"
Tc=10.0 min CN=98 Runoff=2.75 cfs 11,158 cf

SubcatchmentPR2: Harborwalk Runoff Area=17,888 sf 88.55% Impervious Runoff Depth>5.60"
Tc=5.0 min CN=95 Runoff=2.53 cfs 8,343 cf

SubcatchmentPR3: Brick Building Runoff Area=20,214 sf 94.76% Impervious Runoff Depth>5.83"
Tc=5.0 min CN=97 Runoff=2.90 cfs 9,820 cf

SubcatchmentPR4: East Plaza Runoff Area=4,406 sf 77.21% Impervious Runoff Depth>5.37"
Tc=5.0 min CN=93 Runoff=0.61 cfs 1,970 cf

SubcatchmentPR5: West Plaza Runoff Area=9,026 sf 45.28% Impervious Runoff Depth>4.48"
Tc=5.0 min CN=85 Runoff=1.11 cfs 3,369 cf

SubcatchmentPR6: Northwest LA Runoff Area=6,603 sf 37.32% Impervious Runoff Depth>4.26"
Tc=5.0 min CN=83 Runoff=0.78 cfs 2,347 cf

SubcatchmentPR7: West LA Runoff Area=2,525 sf 24.40% Impervious Runoff Depth>3.64"
Tc=5.0 min UI Adjusted CN=77 Runoff=0.26 cfs 766 cf

SubcatchmentPR8: West LA Runoff Area=5,781 sf 31.24% Impervious Runoff Depth>4.05"
Tc=5.0 min CN=81 Runoff=0.65 cfs 1,953 cf

SubcatchmentPR9: Southwest LA Runoff Area=10,428 sf 41.25% Impervious Runoff Depth>4.37"
Tc=5.0 min CN=84 Runoff=1.25 cfs 3,798 cf

Pond 1P: INF 1 Peak Elev=13.69' Storage=1,155 cf Inflow=8.23 cfs 17,564 cf
Discarded=0.01 cfs 266 cf Primary=7.20 cfs 16,161 cf Outflow=7.21 cfs 16,427 cf

Pond 1R: Raingarden 1 Peak Elev=14.56' Storage=293 cf Inflow=0.26 cfs 766 cf
Discarded=0.00 cfs 64 cf Primary=0.14 cfs 429 cf Outflow=0.14 cfs 493 cf

Pond 2P: Building Inf West Peak Elev=12.44' Storage=3,038 cf Inflow=3.81 cfs 14,956 cf
Discarded=0.02 cfs 951 cf Primary=3.70 cfs 11,411 cf Outflow=3.72 cfs 12,362 cf

Pond 2R: Raingarden 2 Peak Elev=14.65' Storage=400 cf Inflow=0.65 cfs 1,953 cf
Discarded=0.00 cfs 82 cf Primary=0.62 cfs 1,536 cf Outflow=0.63 cfs 1,618 cf

Pond 3P: Building Inf West Peak Elev=16.22' Storage=1,038 cf Inflow=1.38 cfs 5,579 cf
Discarded=0.00 cfs 188 cf Primary=1.37 cfs 4,429 cf Outflow=1.37 cfs 4,617 cf

Pond 4P: INF 4 Peak Elev=13.70' Storage=669 cf Inflow=5.88 cfs 16,819 cf
Discarded=0.00 cfs 174 cf Primary=7.61 cfs 16,028 cf Outflow=7.61 cfs 16,202 cf

Pond 5P: INF 5 Peak Elev=14.51' Storage=1,540 cf Inflow=4.76 cfs 13,704 cf
Discarded=0.01 cfs 486 cf Primary=4.69 cfs 11,961 cf Outflow=4.70 cfs 12,447 cf

Pond 6P: G2 INF Peak Elev=15.77' Storage=1,295 cf Inflow=2.90 cfs 9,820 cf
Discarded=0.01 cfs 421 cf Primary=2.89 cfs 8,184 cf Outflow=2.90 cfs 8,605 cf

Pond 7P: Drywell Peak Elev=16.15' Storage=119 cf Inflow=0.61 cfs 1,970 cf
Discarded=0.00 cfs 37 cf Primary=0.61 cfs 1,817 cf Outflow=0.61 cfs 1,854 cf

Pond G2R: Raingarden G2 Peak Elev=14.68' Storage=189 cf Inflow=0.78 cfs 2,347 cf
Discarded=0.00 cfs 41 cf Primary=0.77 cfs 2,152 cf Outflow=0.77 cfs 2,193 cf

Link 1L: SDO 580 Inflow=11.14 cfs 29,389 cf
Primary=11.14 cfs 29,389 cf

Link 2L: Fort Point Channel Inflow=2.53 cfs 8,343 cf
Primary=2.53 cfs 8,343 cf

Total Runoff Area = 110,661 sf Runoff Volume = 49,103 cf Average Runoff Depth = 5.32"
22.77% Pervious = 25,201 sf 77.23% Impervious = 85,460 sf

Summary for Subcatchment PR1A: Building Roof

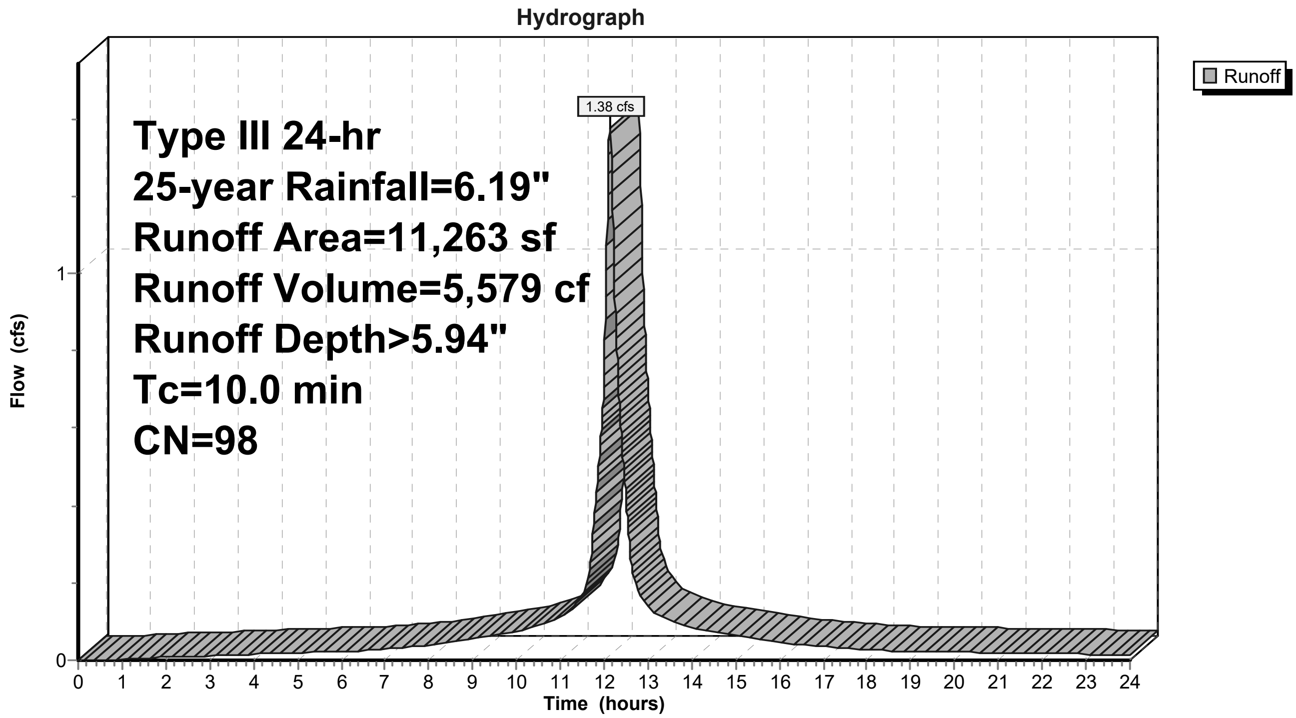
Runoff = 1.38 cfs @ 12.13 hrs, Volume= 5,579 cf, Depth> 5.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.19"

	Area (sf)	CN	Description
*	11,263	98	Buildings, HSG C
	11,263		100.00% Impervious Area

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

Subcatchment PR1A: Building Roof



Summary for Subcatchment PR1B: Building Roof

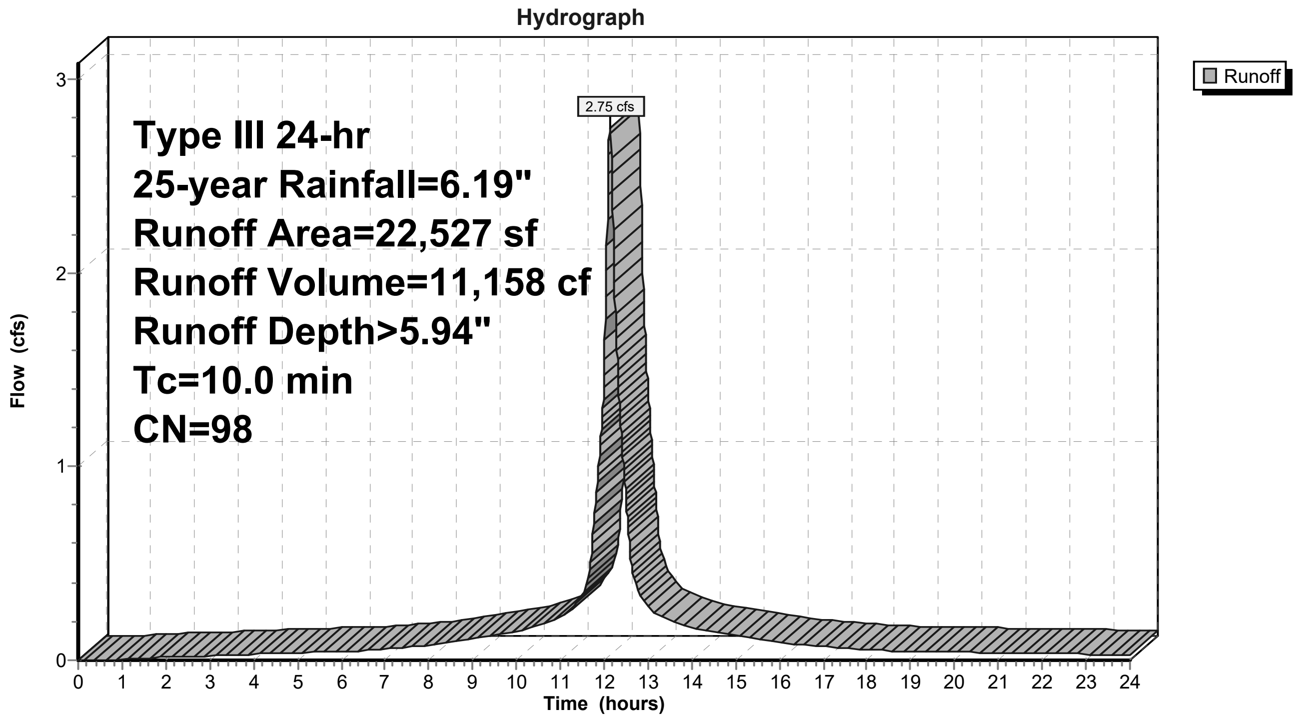
Runoff = 2.75 cfs @ 12.13 hrs, Volume= 11,158 cf, Depth> 5.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.19"

	Area (sf)	CN	Description
*	22,527	98	Buildings, HSG C
	22,527		100.00% Impervious Area

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

Subcatchment PR1B: Building Roof



Summary for Subcatchment PR2: Harborwalk

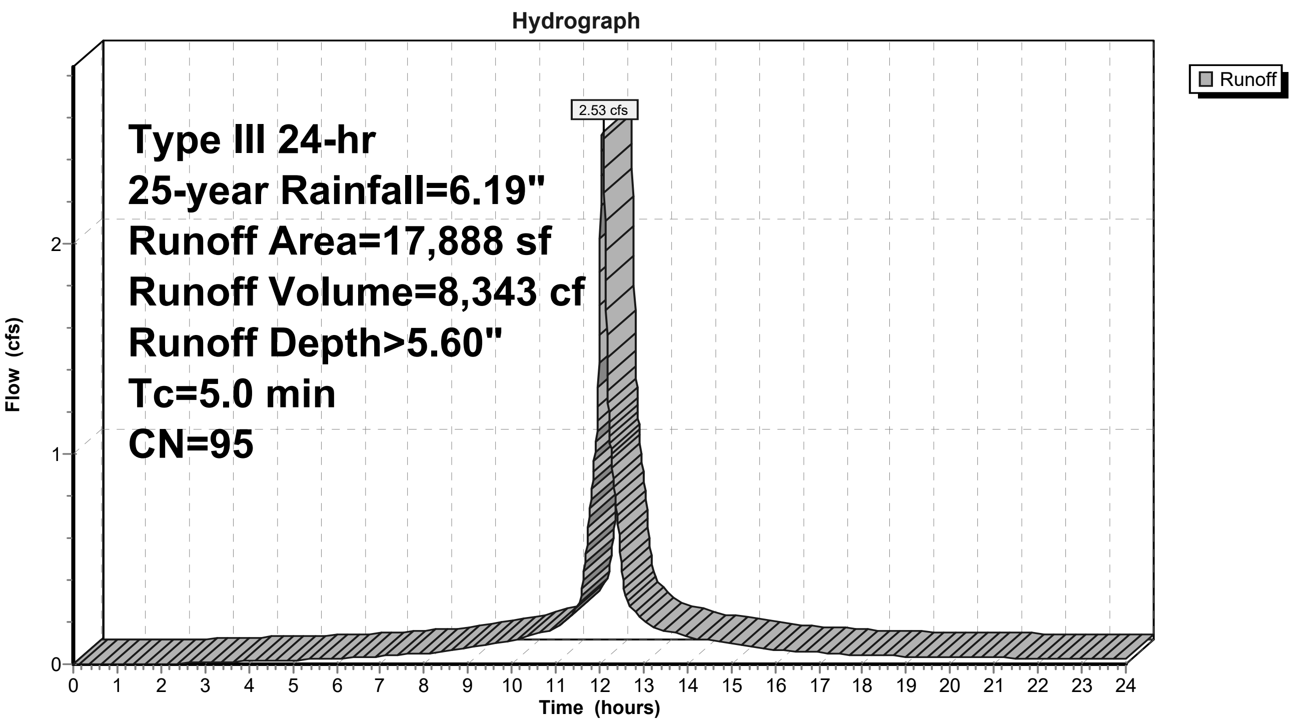
Runoff = 2.53 cfs @ 12.07 hrs, Volume= 8,343 cf, Depth> 5.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.19"

Area (sf)	CN	Description
15,839	98	Unconnected pavement, HSG C
2,049	74	>75% Grass cover, Good, HSG C
17,888	95	Weighted Average
2,049		11.45% Pervious Area
15,839		88.55% Impervious Area
15,839		100.00% Unconnected

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

Subcatchment PR2: Harborwalk



Summary for Subcatchment PR3: Brick Building

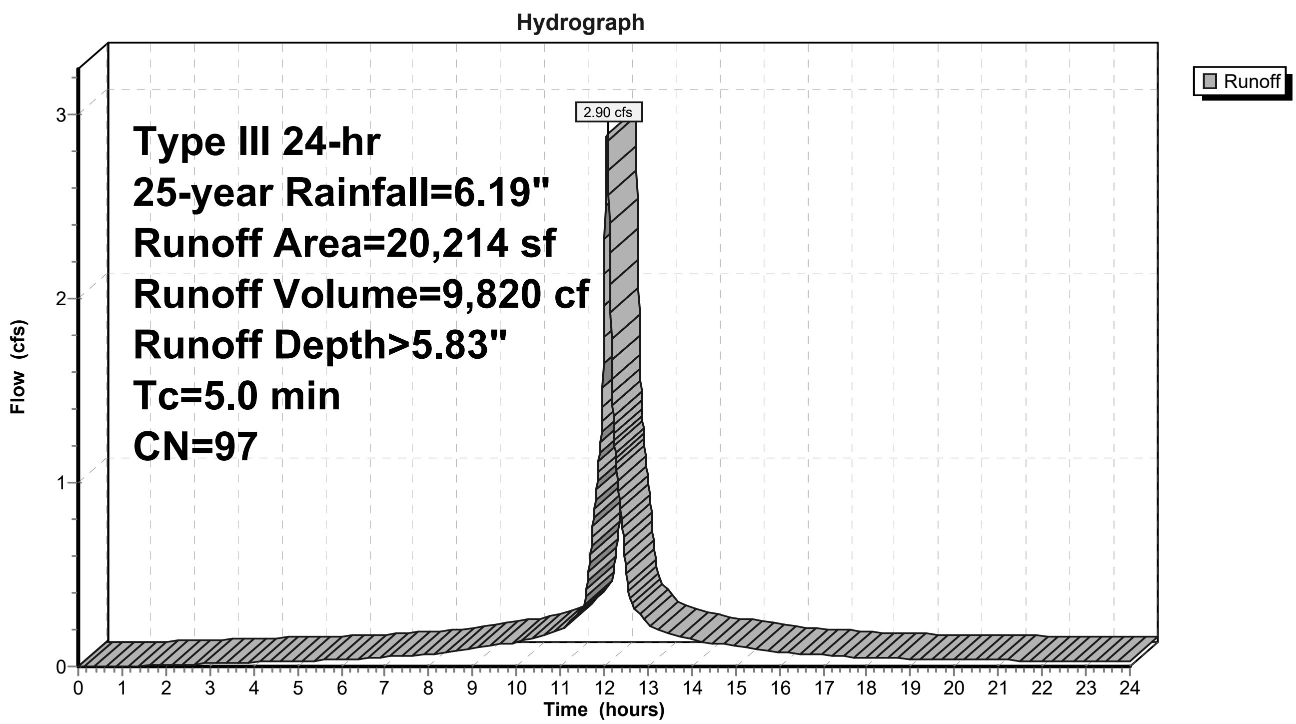
Runoff = 2.90 cfs @ 12.07 hrs, Volume= 9,820 cf, Depth> 5.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.19"

	Area (sf)	CN	Description
*	19,154	98	Building Roofs, HSG C
*	1,060	74	Green Roof
	20,214	97	Weighted Average
	1,060		5.24% Pervious Area
	19,154		94.76% Impervious Area

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

Subcatchment PR3: Brick Building



Summary for Subcatchment PR4: East Plaza

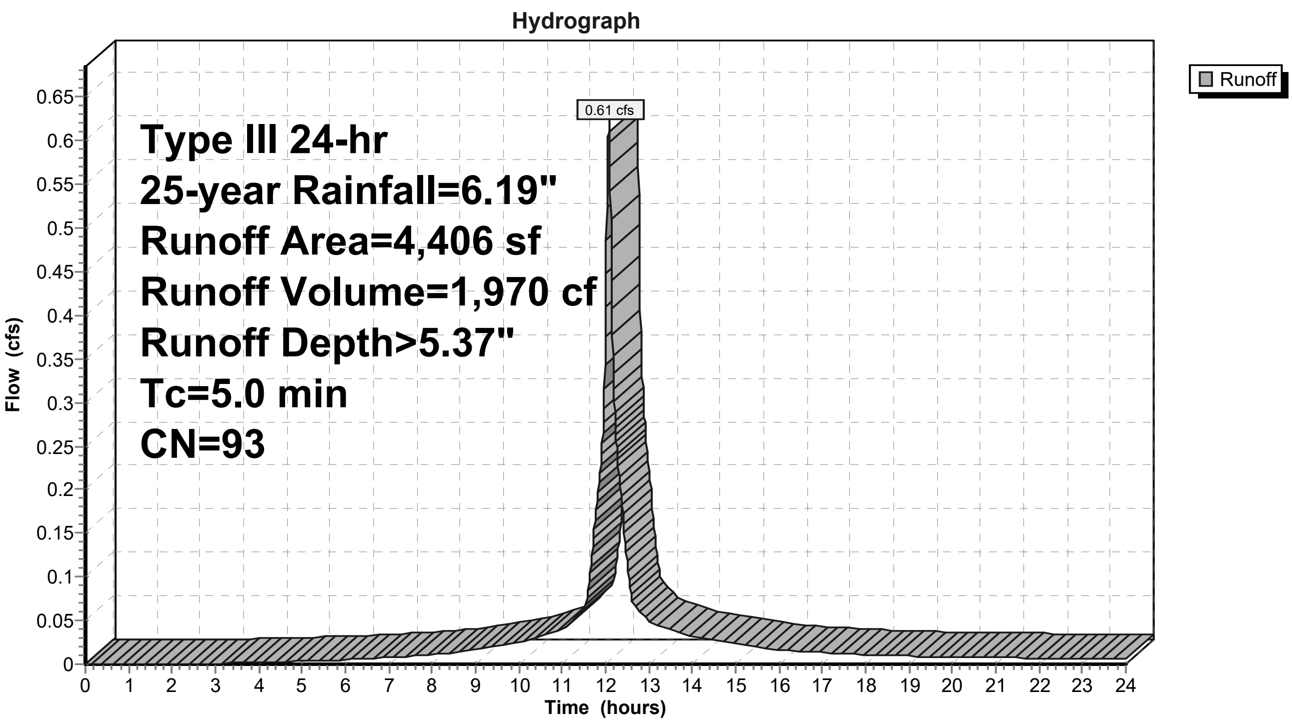
Runoff = 0.61 cfs @ 12.07 hrs, Volume= 1,970 cf, Depth> 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.19"

Area (sf)	CN	Description
1,004	74	>75% Grass cover, Good, HSG C
3,402	98	Unconnected pavement, HSG C
4,406	93	Weighted Average
1,004		22.79% Pervious Area
3,402		77.21% Impervious Area
3,402		100.00% Unconnected

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

Subcatchment PR4: East Plaza



Summary for Subcatchment PR5: West Plaza

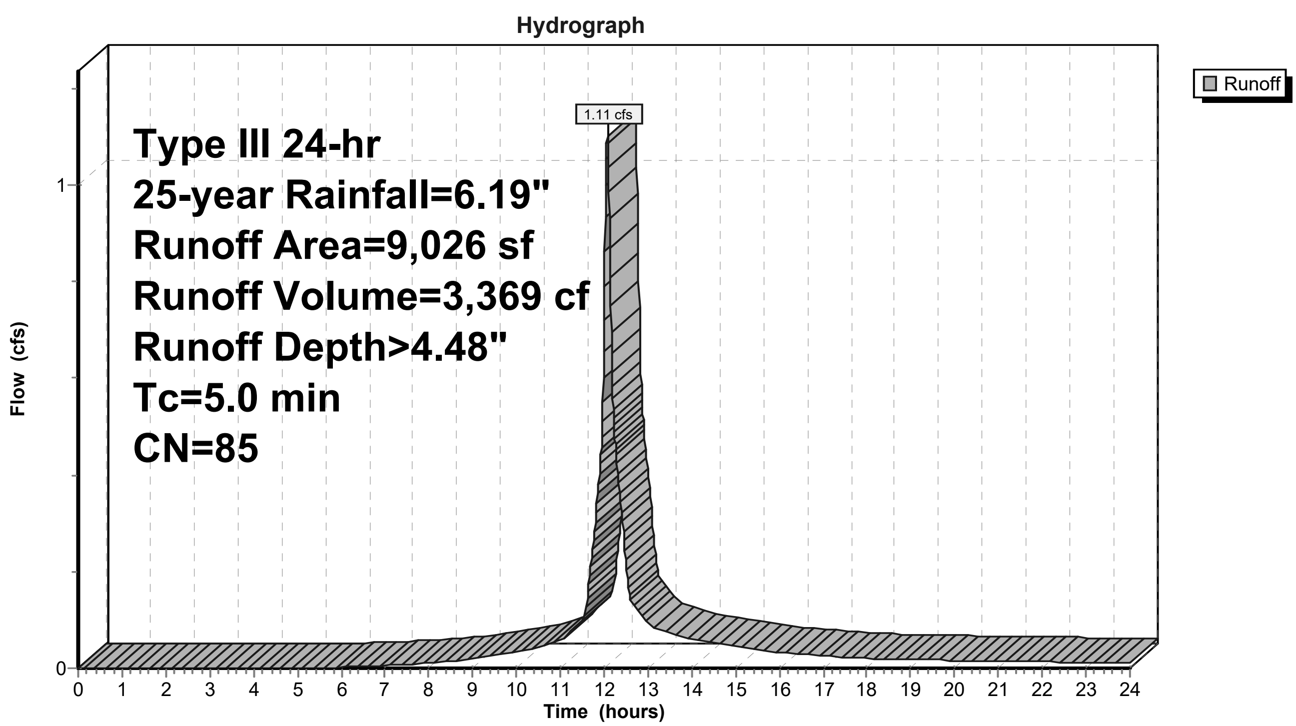
Runoff = 1.11 cfs @ 12.07 hrs, Volume= 3,369 cf, Depth> 4.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.19"

Area (sf)	CN	Description
4,939	74	>75% Grass cover, Good, HSG C
4,087	98	Unconnected pavement, HSG C
9,026	85	Weighted Average
4,939		54.72% Pervious Area
4,087		45.28% Impervious Area
4,087		100.00% Unconnected

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

Subcatchment PR5: West Plaza



Summary for Subcatchment PR6: Northwest LA

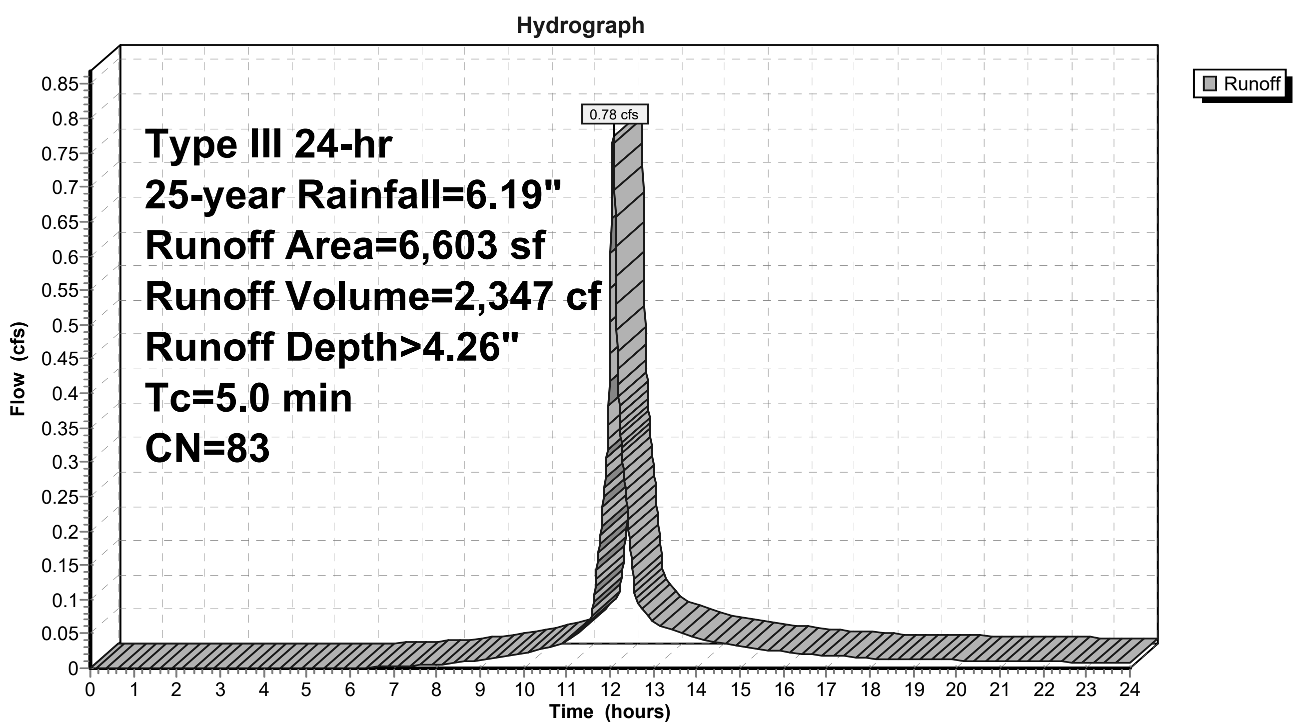
Runoff = 0.78 cfs @ 12.07 hrs, Volume= 2,347 cf, Depth> 4.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.19"

Area (sf)	CN	Description
4,139	74	>75% Grass cover, Good, HSG C
2,464	98	Unconnected pavement, HSG C
6,603	83	Weighted Average
4,139		62.68% Pervious Area
2,464		37.32% Impervious Area
2,464		100.00% Unconnected

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

Subcatchment PR6: Northwest LA



Summary for Subcatchment PR7: West LA

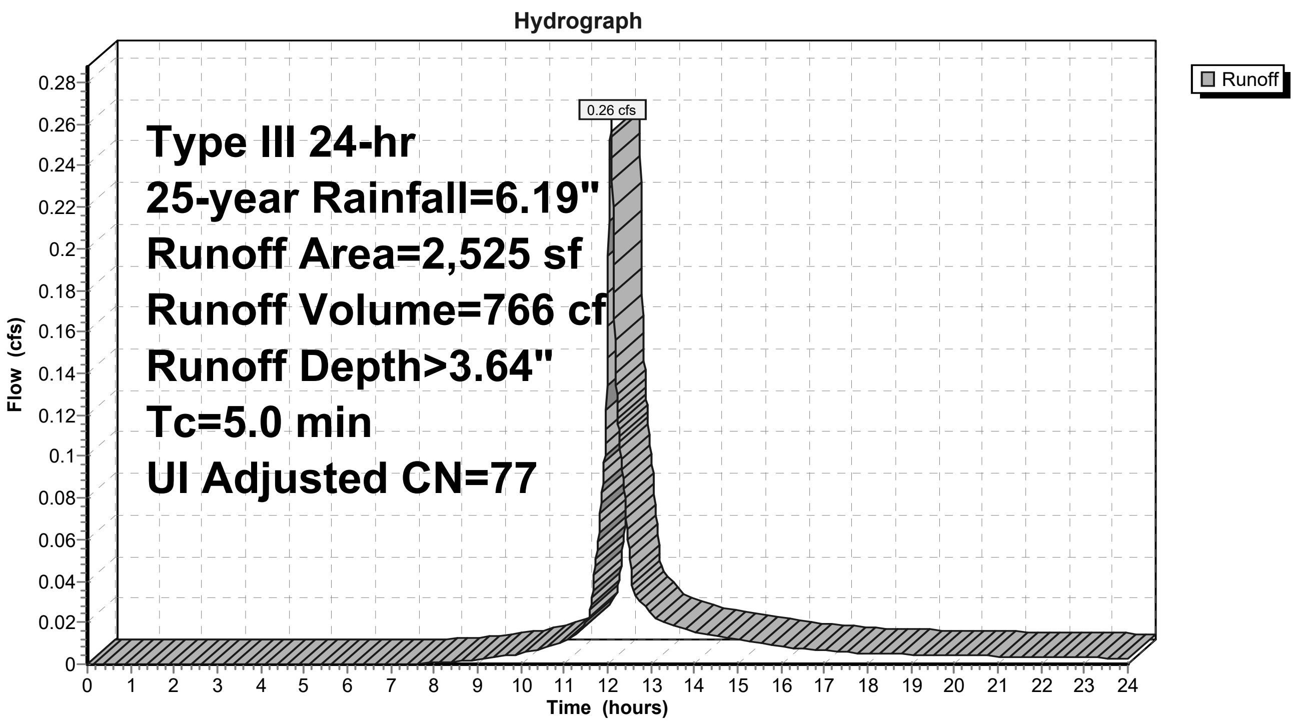
Runoff = 0.26 cfs @ 12.07 hrs, Volume= 766 cf, Depth> 3.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.19"

Area (sf)	CN	Adj	Description
1,909	74		>75% Grass cover, Good, HSG C
616	98		Unconnected pavement, HSG C
2,525	80	77	Weighted Average, UI Adjusted
1,909			75.60% Pervious Area
616			24.40% Impervious Area
616			100.00% Unconnected

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

Subcatchment PR7: West LA



Summary for Subcatchment PR8: West LA

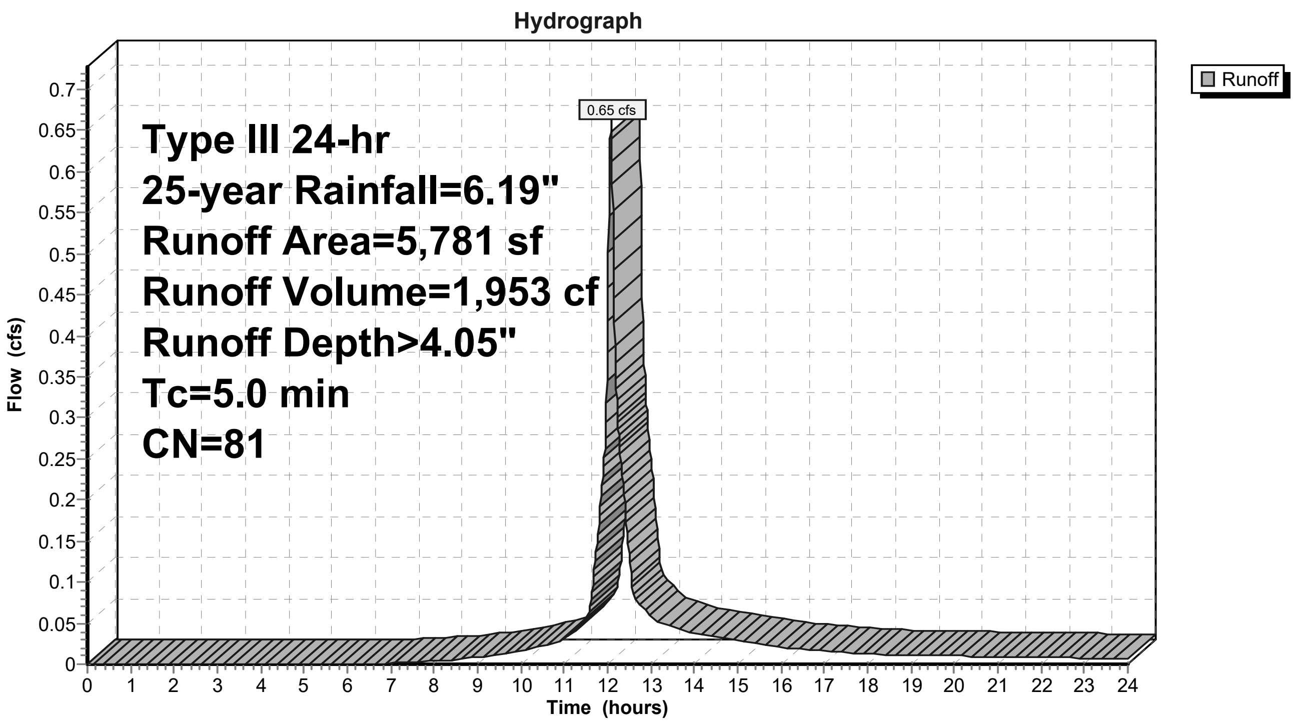
Runoff = 0.65 cfs @ 12.07 hrs, Volume= 1,953 cf, Depth> 4.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.19"

Area (sf)	CN	Description
3,975	74	>75% Grass cover, Good, HSG C
1,806	98	Unconnected pavement, HSG C
5,781	81	Weighted Average
3,975		68.76% Pervious Area
1,806		31.24% Impervious Area
1,806		100.00% Unconnected

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

Subcatchment PR8: West LA



Summary for Subcatchment PR9: Southwest LA

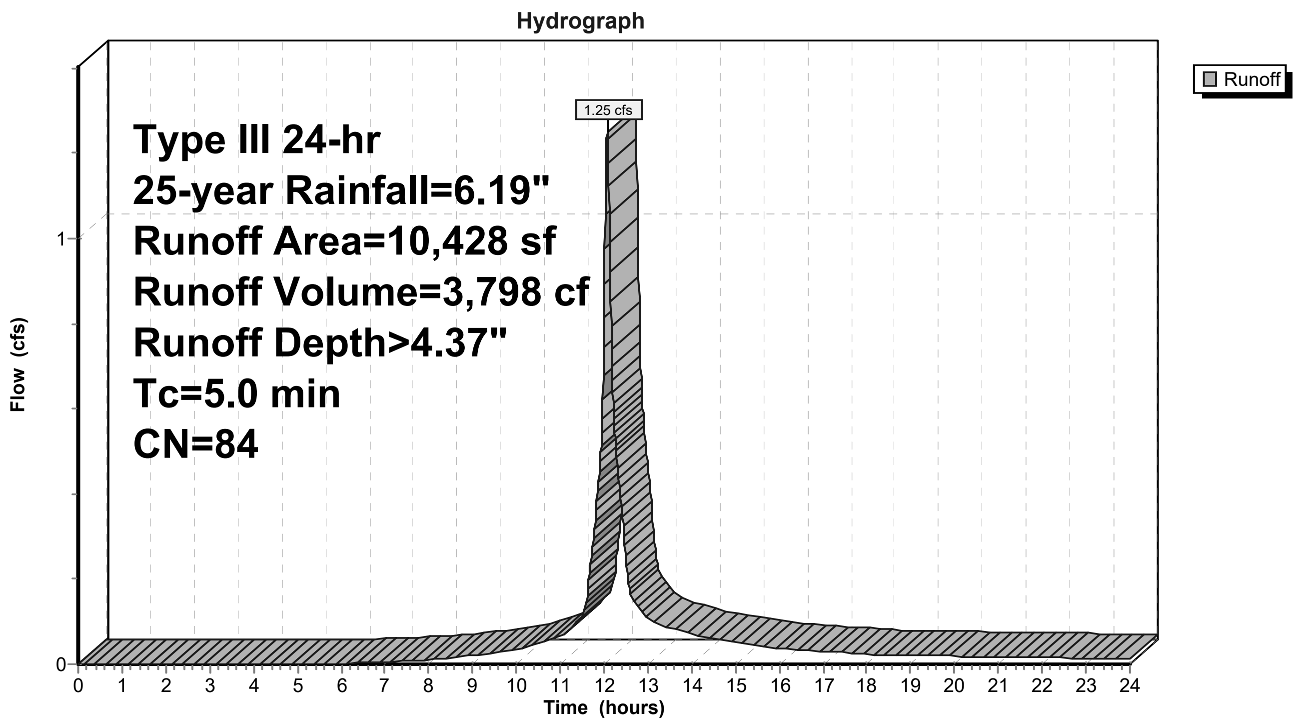
Runoff = 1.25 cfs @ 12.07 hrs, Volume= 3,798 cf, Depth> 4.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.19"

Area (sf)	CN	Description
6,126	74	>75% Grass cover, Good, HSG C
4,302	98	Unconnected pavement, HSG C
10,428	84	Weighted Average
6,126		58.75% Pervious Area
4,302		41.25% Impervious Area
4,302		100.00% Unconnected

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

Subcatchment PR9: Southwest LA



Summary for Pond 1P: INF 1

Inflow Area =	55,412 sf,	71.09% Impervious,	Inflow Depth > 3.80"	for 25-year event
Inflow =	8.23 cfs @	12.10 hrs, Volume=	17,564 cf	
Outflow =	7.21 cfs @	12.08 hrs, Volume=	16,427 cf,	Atten= 12%, Lag= 0.0 min
Discarded =	0.01 cfs @	12.08 hrs, Volume=	266 cf	
Primary =	7.20 cfs @	12.08 hrs, Volume=	16,161 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 13.69' @ 12.08 hrs Surf.Area= 481 sf Storage= 1,155 cf

Plug-Flow detention time= 39.8 min calculated for 16,420 cf (93% of inflow)
Center-of-Mass det. time= 8.2 min (823.2 - 815.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	9.50'	179 cf	**18.50'W x 26.00'L x 4.17'H Field A** 2,004 cf Overall - 1,408 cf Embedded = 596 cf x 30.0% Voids
#2A	10.00'	976 cf	**retain_it retain_it 3.0'** x 6 Inside #1 Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf 2 Rows adjusted for 47.2 cf perimeter wall
		1,155 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	13.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Discarded	9.50'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 8.20' Phase-In= 0.01'

Discarded OutFlow Max=0.01 cfs @ 12.08 hrs HW=13.68' (Free Discharge)
└─**2=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=7.06 cfs @ 12.08 hrs HW=13.68' TW=0.00' (Dynamic Tailwater)
└─**1=Sharp-Crested Rectangular Weir** (Weir Controls 7.06 cfs @ 2.69 fps)

Pond 1P: INF 1 - Chamber Wizard Field A

Chamber Model = retain_it retain_it 3.0' (retain-it®)
Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
2 Rows adjusted for 47.2 cf perimeter wall

96.0" Wide + 6.0" Spacing = 102.0" C-C Row Spacing

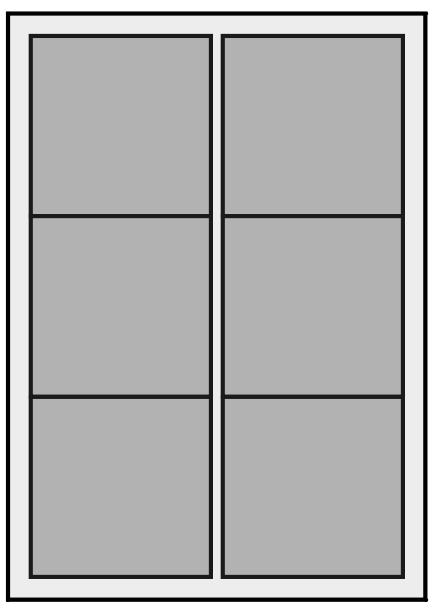
3 Chambers/Row x 8.00' Long = 24.00' Row Length +12.0" End Stone x 2 = 26.00' Base Length
2 Rows x 96.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 18.50' Base Width
6.0" Base + 44.0" Chamber Height = 4.17' Field Height

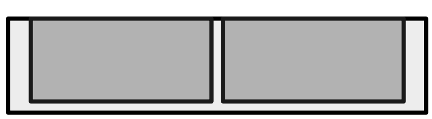
4.7 cf Sidewall x 3 x 2 + 4.7 cf Endwall x 2 x 2 = 47.2 cf Perimeter Wall
6 Chambers x 170.6 cf - 47.2 cf Perimeter wall = 976.5 cf Chamber Storage
6 Chambers x 234.7 cf = 1,408.0 cf Displacement

2,004.2 cf Field - 1,408.0 cf Chambers = 596.2 cf Stone x 30.0% Voids = 178.8 cf Stone Storage

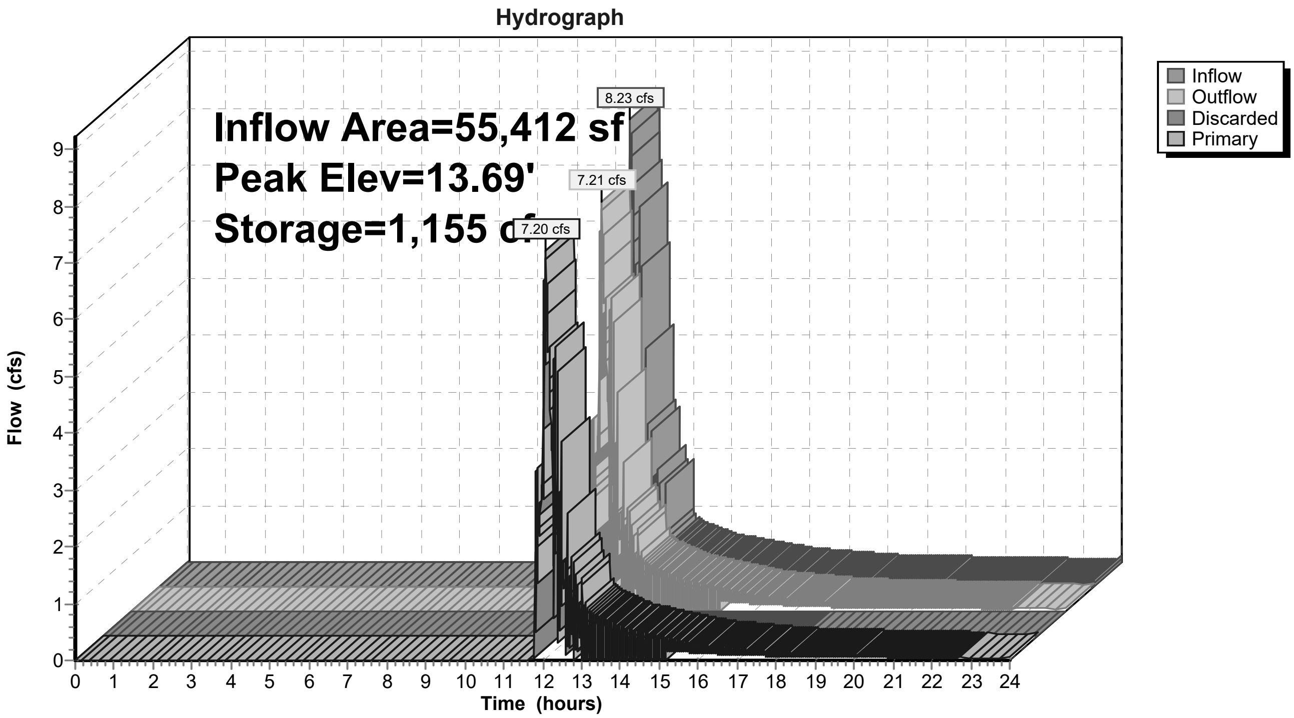
Chamber Storage + Stone Storage = 1,155.3 cf = 0.027 af
Overall Storage Efficiency = 57.6%
Overall System Size = 26.00' x 18.50' x 4.17'

6 Chambers
74.2 cy Field
22.1 cy Stone





Pond 1P: INF 1


Hydrograph
Inflow Area=55,412 sf
Peak Elev=13.69'
Storage=1,155 cf
8.23 cfs
7.21 cfs
7.20 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9

Summary for Pond 1R: Raingarden 1

Inflow Area = 2,525 sf, 24.40% Impervious, Inflow Depth > 3.64" for 25-year event
Inflow = 0.26 cfs @ 12.07 hrs, Volume= 766 cf
Outflow = 0.14 cfs @ 12.19 hrs, Volume= 493 cf, Atten= 45%, Lag= 7.0 min
Discarded = 0.00 cfs @ 12.19 hrs, Volume= 64 cf
Primary = 0.14 cfs @ 12.19 hrs, Volume= 429 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.56' @ 12.19 hrs Surf.Area= 368 sf Storage= 293 cf

Plug-Flow detention time= 173.6 min calculated for 493 cf (64% of inflow)
Center-of-Mass det. time= 71.4 min (890.2 - 818.8)

Volume	Invert	Avail.Storage	Storage Description
#1	13.00'	485 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

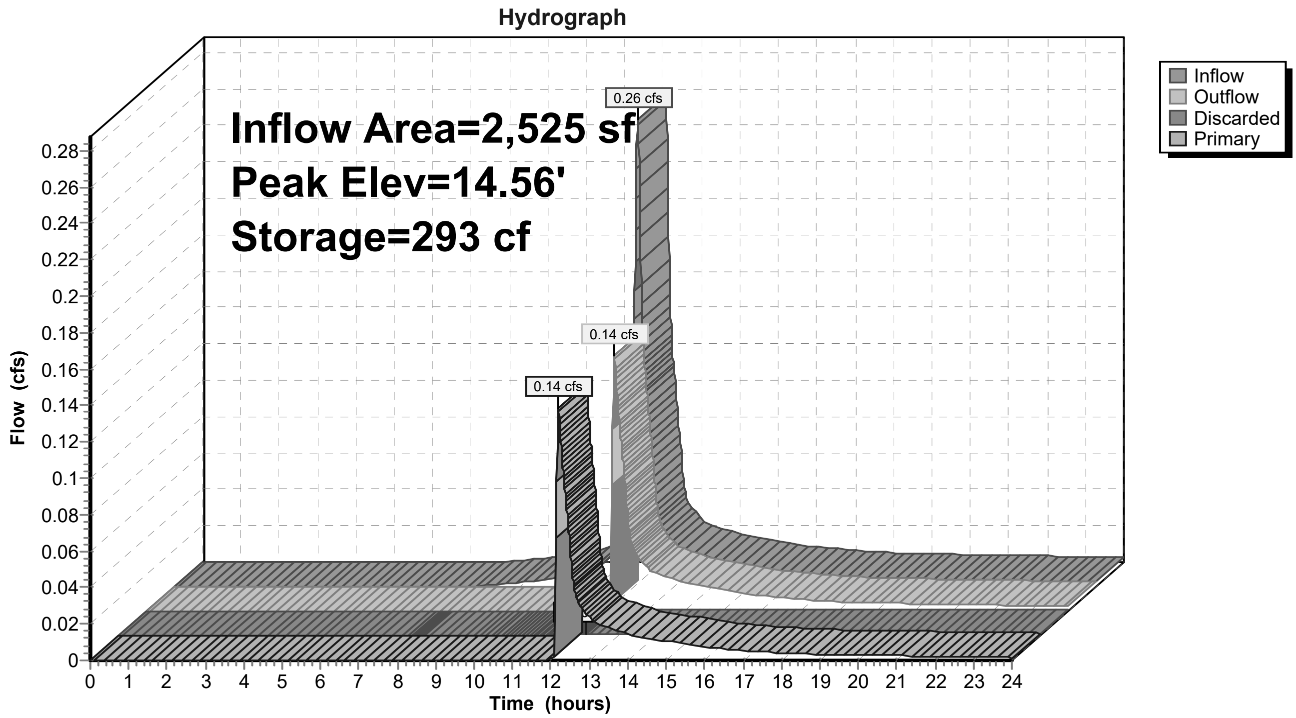
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
13.00	47	0	0
14.00	215	131	131
14.50	352	142	273
15.00	496	212	485

Device	Routing	Invert	Outlet Devices
#1	Primary	14.50'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	13.00'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 8.70' Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 12.19 hrs HW=14.56' (Free Discharge)
└─**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.14 cfs @ 12.19 hrs HW=14.56' TW=13.54' (Dynamic Tailwater)
└─**1=Orifice/Grate** (Weir Controls 0.14 cfs @ 0.78 fps)

Pond 1R: Raingarden 1



Summary for Pond 2P: Building Inf West

Inflow Area =	32,955 sf,	81.41% Impervious,	Inflow Depth > 5.45"	for 25-year event
Inflow =	3.81 cfs @	12.11 hrs, Volume=	14,956 cf	
Outflow =	3.72 cfs @	12.13 hrs, Volume=	12,362 cf,	Atten= 2%, Lag= 1.4 min
Discarded =	0.02 cfs @	12.13 hrs, Volume=	951 cf	
Primary =	3.70 cfs @	12.13 hrs, Volume=	11,411 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 12.44' @ 12.13 hrs Surf.Area= 1,369 sf Storage= 3,038 cf

Plug-Flow detention time= 124.8 min calculated for 12,362 cf (83% of inflow)
Center-of-Mass det. time= 54.0 min (815.1 - 761.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	9.25'	444 cf	**18.50'W x 74.00'L x 4.17'H Field A** 5,704 cf Overall - 4,224 cf Embedded = 1,480 cf x 30.0% Voids
#2A	9.75'	2,967 cf	**retain_it retain_it 3.0'** x 18 Inside #1 Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf 2 Rows adjusted for 103.9 cf perimeter wall
		3,411 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	12.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Discarded	9.25'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 8.00' Phase-In= 0.01'

Discarded OutFlow Max=0.02 cfs @ 12.13 hrs HW=12.44' (Free Discharge)
└─**2=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=3.70 cfs @ 12.13 hrs HW=12.44' TW=0.00' (Dynamic Tailwater)
└─**1=Sharp-Crested Rectangular Weir** (Weir Controls 3.70 cfs @ 2.16 fps)

Pond 2P: Building Inf West - Chamber Wizard Field A

Chamber Model = retain_it retain_it 3.0' (retain-it®)
Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
2 Rows adjusted for 103.9 cf perimeter wall

96.0" Wide + 6.0" Spacing = 102.0" C-C Row Spacing

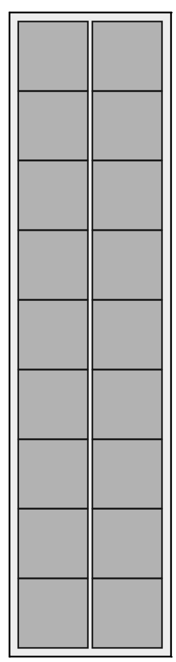
9 Chambers/Row x 8.00' Long = 72.00' Row Length +12.0" End Stone x 2 = 74.00' Base Length
2 Rows x 96.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 18.50' Base Width
6.0" Base + 44.0" Chamber Height = 4.17' Field Height

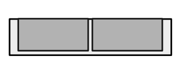
4.7 cf Sidewall x 9 x 2 + 4.7 cf Endwall x 2 x 2 = 103.9 cf Perimeter Wall
18 Chambers x 170.6 cf - 103.9 cf Perimeter wall = 2,967.1 cf Chamber Storage
18 Chambers x 234.7 cf = 4,224.0 cf Displacement

5,704.2 cf Field - 4,224.0 cf Chambers = 1,480.2 cf Stone x 30.0% Voids = 444.0 cf Stone Storage

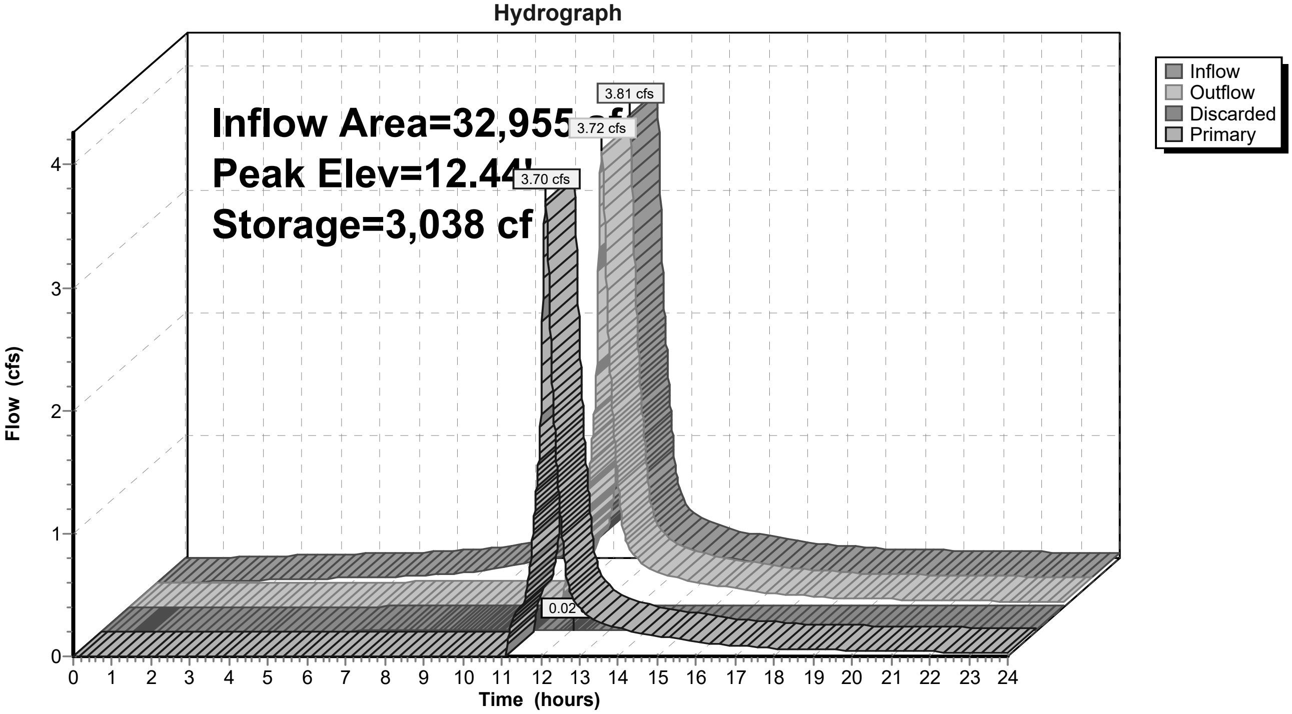
Chamber Storage + Stone Storage = 3,411.2 cf = 0.078 af
Overall Storage Efficiency = 59.8%
Overall System Size = 74.00' x 18.50' x 4.17'

18 Chambers
211.3 cy Field
54.8 cy Stone





Pond 2P: Building Inf West



Summary for Pond 2R: Raingarden 2

Inflow Area = 5,781 sf, 31.24% Impervious, Inflow Depth > 4.05" for 25-year event
Inflow = 0.65 cfs @ 12.07 hrs, Volume= 1,953 cf
Outflow = 0.63 cfs @ 12.09 hrs, Volume= 1,618 cf, Atten= 4%, Lag= 1.3 min
Discarded = 0.00 cfs @ 12.09 hrs, Volume= 82 cf
Primary = 0.62 cfs @ 12.09 hrs, Volume= 1,536 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.65' @ 12.09 hrs Surf.Area= 468 sf Storage= 400 cf

Plug-Flow detention time= 105.1 min calculated for 1,618 cf (83% of inflow)
Center-of-Mass det. time= 35.8 min (844.6 - 808.8)

Volume	Invert	Avail.Storage	Storage Description
#1	13.00'	581 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

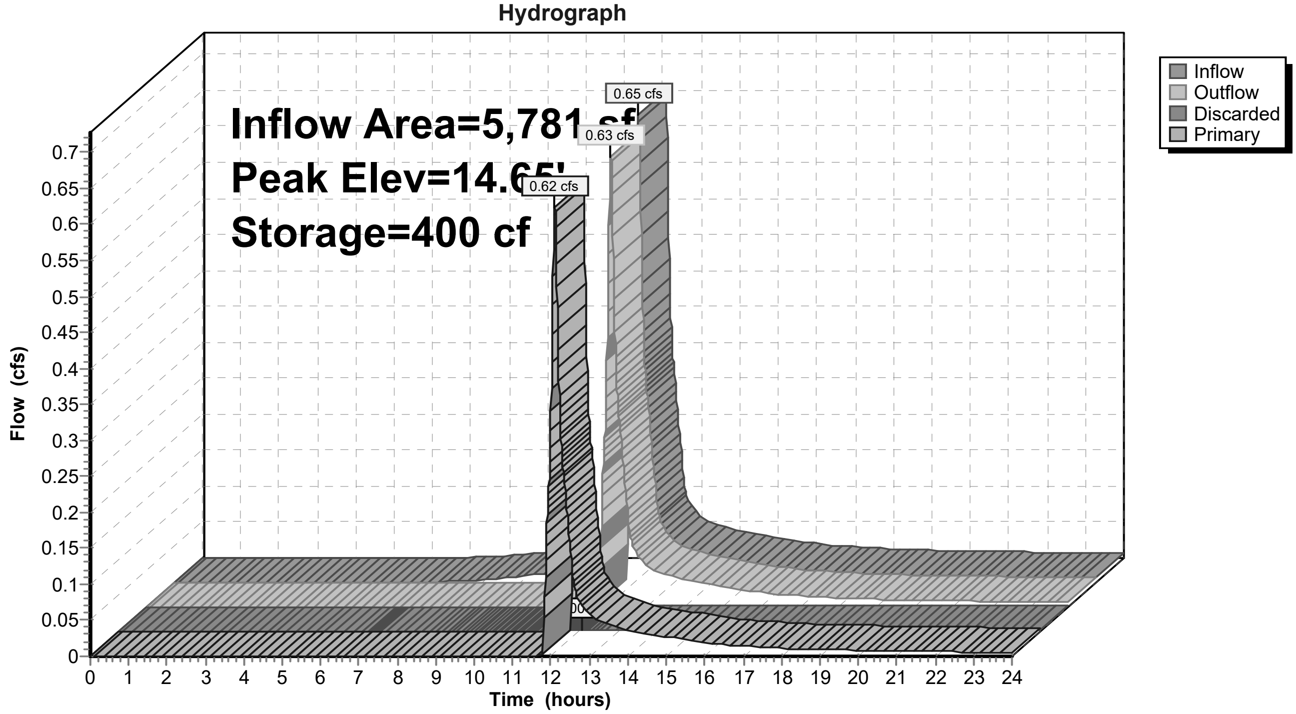
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
13.00	63	0	0
14.00	261	162	162
14.50	419	170	332
15.00	576	249	581

Device	Routing	Invert	Outlet Devices
#1	Primary	14.50'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	13.00'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 8.70' Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=14.65' (Free Discharge)
└─**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.62 cfs @ 12.09 hrs HW=14.65' TW=13.63' (Dynamic Tailwater)
└─**1=Orifice/Grate** (Weir Controls 0.62 cfs @ 1.28 fps)

Pond 2R: Raingarden 2



Summary for Pond 3P: Building Inf West

Inflow Area =	11,263 sf,100.00% Impervious,	Inflow Depth > 5.94" for 25-year event		
Inflow =	1.38 cfs @	12.13 hrs, Volume=	5,579 cf	
Outflow =	1.37 cfs @	12.14 hrs, Volume=	4,617 cf,	Atten= 1%, Lag= 0.6 min
Discarded =	0.00 cfs @	12.14 hrs, Volume=	188 cf	
Primary =	1.37 cfs @	12.14 hrs, Volume=	4,429 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 16.22' @ 12.14 hrs Surf.Area= 481 sf Storage= 1,038 cf

Plug-Flow detention time= 129.6 min calculated for 4,615 cf (83% of inflow)
Center-of-Mass det. time= 59.2 min (806.7 - 747.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	13.00'	323 cf	**18.50'W x 26.00'L x 5.17'H Field A** 2,485 cf Overall - 1,408 cf Embedded = 1,077 cf x 30.0% Voids
#2A	13.50'	976 cf	**retain_it retain_it 3.0'** x 6 Inside #1 Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf 2 Rows adjusted for 47.2 cf perimeter wall
		1,300 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	16.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Discarded	13.00'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 8.00' Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 12.14 hrs HW=16.22' (Free Discharge)
└─**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=1.37 cfs @ 12.14 hrs HW=16.22' TW=13.64' (Dynamic Tailwater)
└─**1=Sharp-Crested Rectangular Weir** (Weir Controls 1.37 cfs @ 1.55 fps)

Pond 3P: Building Inf West - Chamber Wizard Field A

Chamber Model = retain_it retain_it 3.0' (retain-it®)
Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
2 Rows adjusted for 47.2 cf perimeter wall

96.0" Wide + 6.0" Spacing = 102.0" C-C Row Spacing

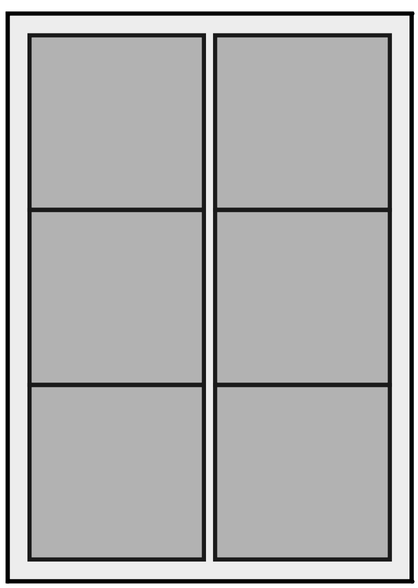
3 Chambers/Row x 8.00' Long = 24.00' Row Length +12.0" End Stone x 2 = 26.00' Base Length
2 Rows x 96.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 18.50' Base Width
6.0" Base + 44.0" Chamber Height + 12.0" Cover = 5.17' Field Height

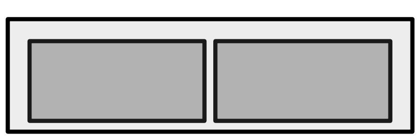
4.7 cf Sidewall x 3 x 2 + 4.7 cf Endwall x 2 x 2 = 47.2 cf Perimeter Wall
6 Chambers x 170.6 cf - 47.2 cf Perimeter wall = 976.5 cf Chamber Storage
6 Chambers x 234.7 cf = 1,408.0 cf Displacement

2,485.2 cf Field - 1,408.0 cf Chambers = 1,077.2 cf Stone x 30.0% Voids = 323.1 cf Stone Storage

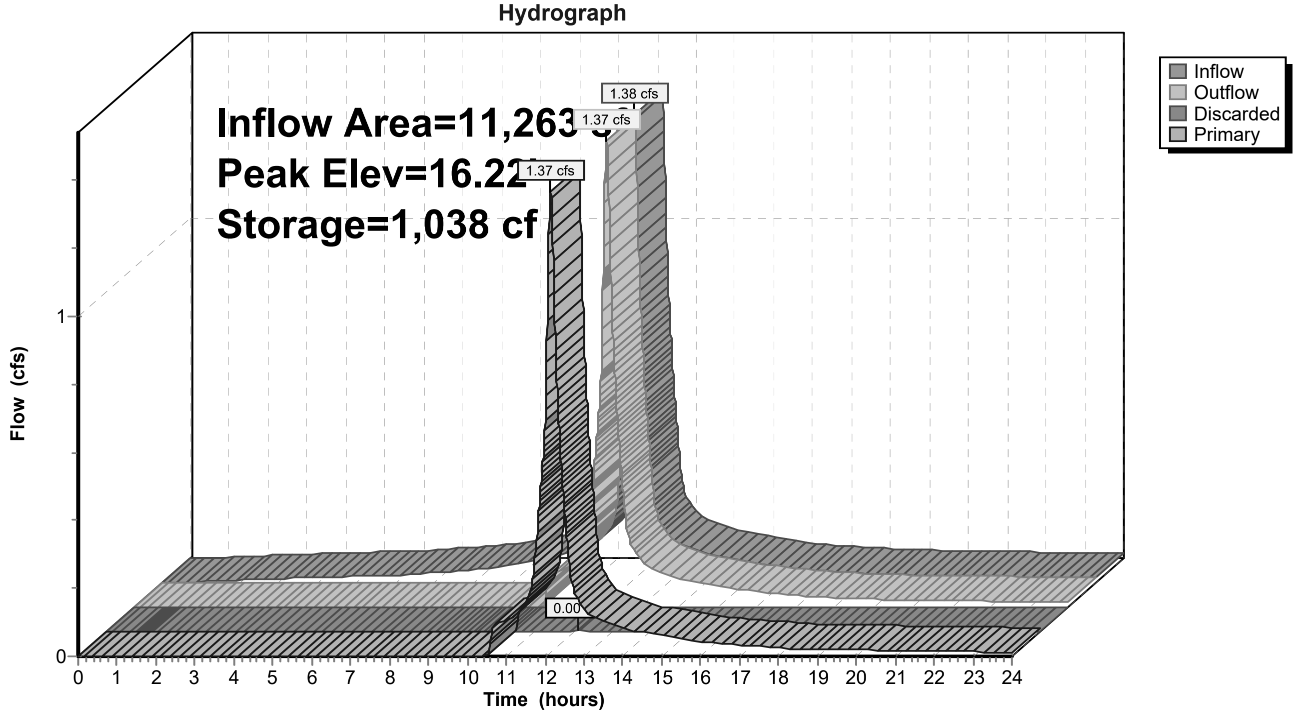
Chamber Storage + Stone Storage = 1,299.6 cf = 0.030 af
Overall Storage Efficiency = 52.3%
Overall System Size = 26.00' x 18.50' x 5.17'

6 Chambers
92.0 cy Field
39.9 cy Stone





Pond 3P: Building Inf West



Summary for Pond 4P: INF 4

Inflow Area = 49,631 sf, 75.73% Impervious, Inflow Depth > 4.07" for 25-year event
Inflow = 5.88 cfs @ 12.10 hrs, Volume= 16,819 cf
Outflow = 7.61 cfs @ 12.10 hrs, Volume= 16,202 cf, Atten= 0%, Lag= 0.3 min
Discarded = 0.00 cfs @ 12.09 hrs, Volume= 174 cf
Primary = 7.61 cfs @ 12.10 hrs, Volume= 16,028 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 13.70' @ 12.09 hrs Surf.Area= 340 sf Storage= 669 cf

Plug-Flow detention time= 25.2 min calculated for 16,202 cf (96% of inflow)
Center-of-Mass det. time= 5.2 min (815.6 - 810.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	9.50'	296 cf	**11.00'W x 30.92'L x 4.00'H Field A** 1,360 cf Overall - 373 cf Embedded = 987 cf x 30.0% Voids
#2A	10.00'	373 cf	**ADS_StormTech SC-740** x 8 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 2 rows
		669 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	12.50'	**4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#2	Primary	11.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Discarded	9.50'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 8.00' Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=13.69' (Free Discharge)
└─**3=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 12.10 hrs HW=13.66' TW=13.68' (Dynamic Tailwater)
├─**1=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 4P: INF 4 - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 (ADS StormTech®SC-740 without end caps)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
Row Length Adjustment= +0.44' x 6.45 sf x 2 rows

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

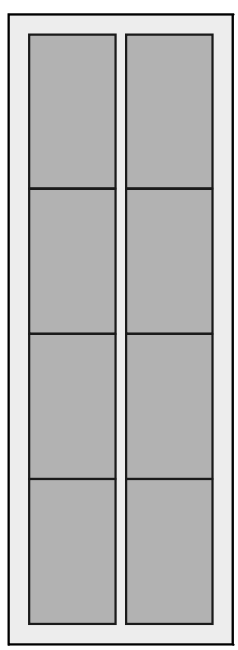
4 Chambers/Row x 7.12' Long +0.44' Row Adjustment = 28.92' Row Length +12.0" End Stone x 2 = 30.92' Base Length
2 Rows x 51.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.00' Base Width
6.0" Base + 30.0" Chamber Height + 12.0" Cover = 4.00' Field Height

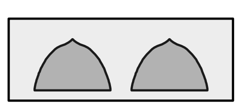
8 Chambers x 45.9 cf +0.44' Row Adjustment x 6.45 sf x 2 Rows = 373.2 cf Chamber Storage

1,360.4 cf Field - 373.2 cf Chambers = 987.2 cf Stone x 30.0% Voids = 296.2 cf Stone Storage

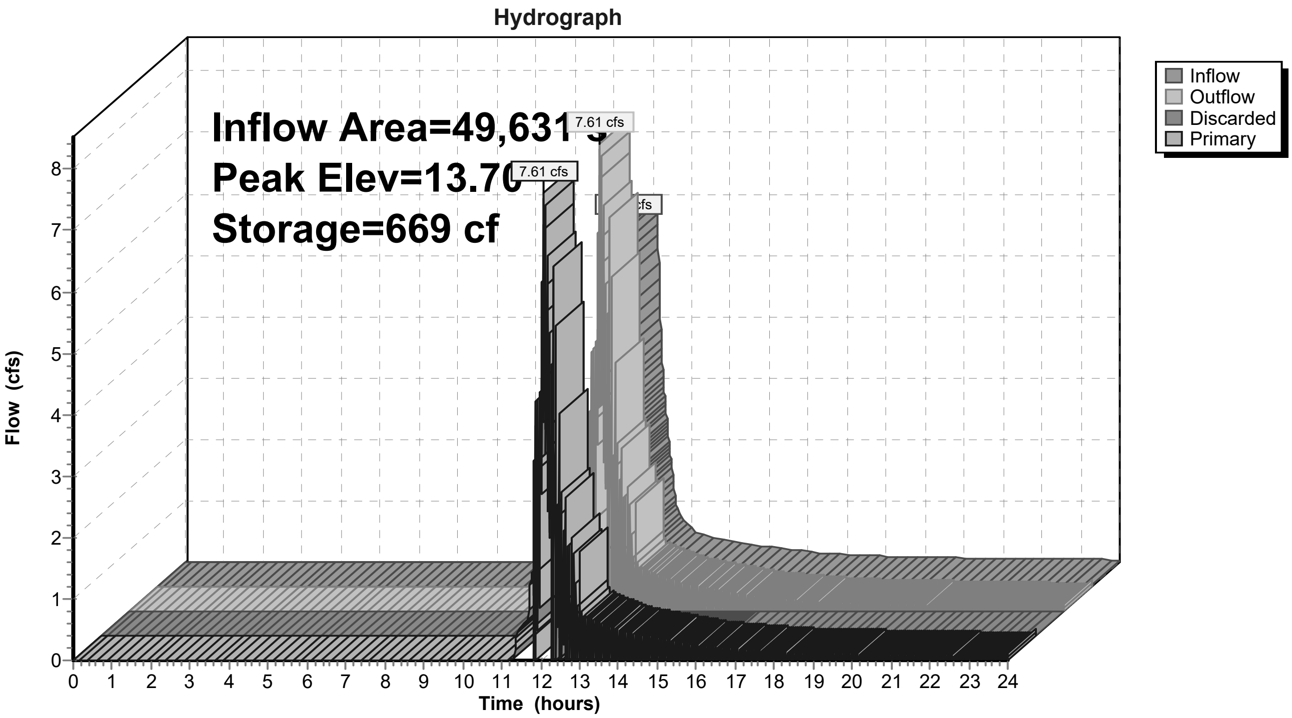
Chamber Storage + Stone Storage = 669.3 cf = 0.015 af
Overall Storage Efficiency = 49.2%
Overall System Size = 30.92' x 11.00' x 4.00'

8 Chambers
50.4 cy Field
36.6 cy Stone





Pond 4P: INF 4


Hydrograph
Inflow Area=49,631
Peak Elev=13.70
Storage=669 cf
7.61 cfs
7.61 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
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24

Summary for Pond 5P: INF 5

Inflow Area = 35,843 sf, 71.72% Impervious, Inflow Depth > 4.59" for 25-year event
Inflow = 4.76 cfs @ 12.08 hrs, Volume= 13,704 cf
Outflow = 4.70 cfs @ 12.09 hrs, Volume= 12,447 cf, Atten= 1%, Lag= 0.7 min
Discarded = 0.01 cfs @ 12.09 hrs, Volume= 486 cf
Primary = 4.69 cfs @ 12.09 hrs, Volume= 11,961 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.51' @ 12.09 hrs Surf.Area= 718 sf Storage= 1,540 cf

Plug-Flow detention time= 62.0 min calculated for 12,447 cf (91% of inflow)
Center-of-Mass det. time= 18.7 min (816.5 - 797.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	11.50'	193 cf	**17.50'W x 41.00'L x 4.17'H Field A**
			2,990 cf Overall - 2,347 cf Embedded = 643 cf x 30.0% Voids
#2A	12.00'	1,640 cf	**retain_it retain_it 3.0'** x 10 Inside #1
			Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
			Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
			2 Rows adjusted for 66.1 cf perimeter wall
		1,833 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	14.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Discarded	11.50'	**0.142 in/hr Exfiltration over Surface area**
			Conductivity to Groundwater Elevation = 10.60' Phase-In= 0.01'

Discarded OutFlow Max=0.01 cfs @ 12.09 hrs HW=14.51' (Free Discharge)
└─**2=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=4.68 cfs @ 12.09 hrs HW=14.51' TW=13.68' (Dynamic Tailwater)
└─**1=Sharp-Crested Rectangular Weir** (Weir Controls 4.68 cfs @ 2.34 fps)

Pond 5P: INF 5 - Chamber Wizard Field A

Chamber Model = retain_it retain_it 3.0' (retain-it®)
Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
2 Rows adjusted for 66.1 cf perimeter wall

96.0" Wide + 6.0" Spacing = 102.0" C-C Row Spacing

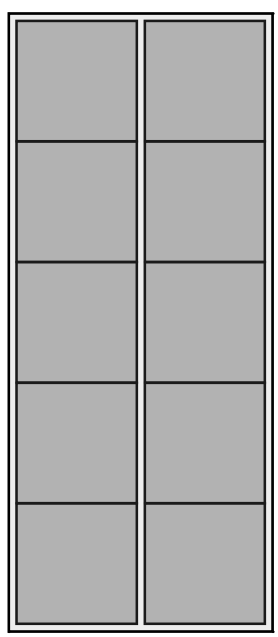
5 Chambers/Row x 8.00' Long = 40.00' Row Length +6.0" End Stone x 2 = 41.00' Base Length
2 Rows x 96.0" Wide + 6.0" Spacing x 1 + 6.0" Side Stone x 2 = 17.50' Base Width
6.0" Base + 44.0" Chamber Height = 4.17' Field Height

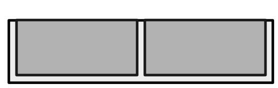
4.7 cf Sidewall x 5 x 2 + 4.7 cf Endwall x 2 x 2 = 66.1 cf Perimeter Wall
10 Chambers x 170.6 cf - 66.1 cf Perimeter wall = 1,640.0 cf Chamber Storage
10 Chambers x 234.7 cf = 2,346.7 cf Displacement

2,989.6 cf Field - 2,346.7 cf Chambers = 642.9 cf Stone x 30.0% Voids = 192.9 cf Stone Storage

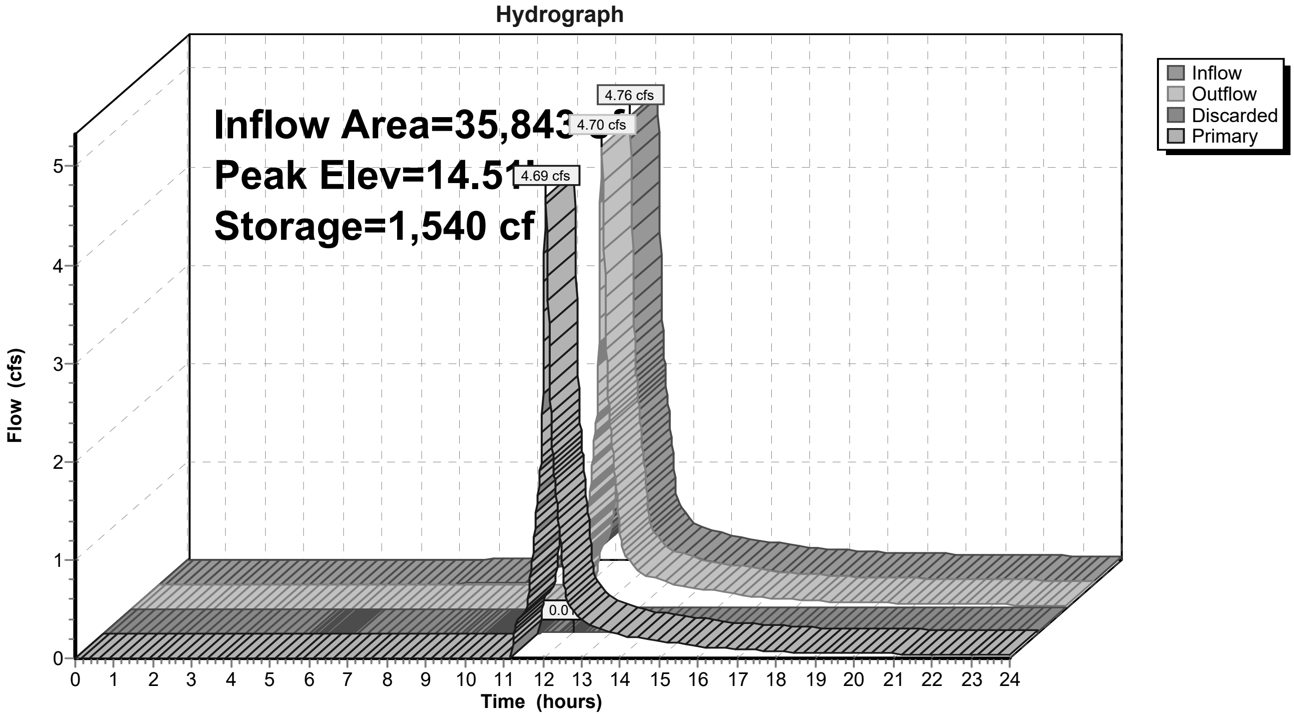
Chamber Storage + Stone Storage = 1,832.9 cf = 0.042 af
Overall Storage Efficiency = 61.3%
Overall System Size = 41.00' x 17.50' x 4.17'

10 Chambers
110.7 cy Field
23.8 cy Stone





Pond 5P: INF 5


Hydrograph
Inflow Area=35,843
Peak Elev=14.51
Storage=1,540 cf
4.76 cfs
4.70 cfs
4.69 cfs
0.0
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

Summary for Pond 6P: G2 INF

Inflow Area =	20,214 sf,	94.76% Impervious,	Inflow Depth > 5.83"	for 25-year event	
Inflow =	2.90 cfs @	12.07 hrs, Volume=	9,820 cf		
Outflow =	2.90 cfs @	12.08 hrs, Volume=	8,605 cf,	Atten= 0%,	Lag= 0.3 min
Discarded =	0.01 cfs @	12.08 hrs, Volume=	421 cf		
Primary =	2.89 cfs @	12.08 hrs, Volume=	8,184 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 15.77' @ 12.08 hrs Surf.Area= 730 sf Storage= 1,295 cf

Plug-Flow detention time= 101.8 min calculated for 8,605 cf (88% of inflow)
Center-of-Mass det. time= 44.6 min (794.8 - 750.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	12.50'	628 cf	**15.75'W x 46.34'L x 4.00'H Field A** 2,919 cf Overall - 827 cf Embedded = 2,092 cf x 30.0% Voids
#2A	13.00'	827 cf	**ADS_StormTech SC-740 +Cap** x 18 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 18 Chambers in 3 Rows
		1,455 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	15.40'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Discarded	12.50'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 10.60' Phase-In= 0.01'

Discarded OutFlow Max=0.01 cfs @ 12.08 hrs HW=15.77' (Free Discharge)
└─**2=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=2.88 cfs @ 12.08 hrs HW=15.77' TW=14.51' (Dynamic Tailwater)
└─**1=Sharp-Crested Rectangular Weir** (Weir Controls 2.88 cfs @ 1.99 fps)

Pond 6P: G2 INF - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

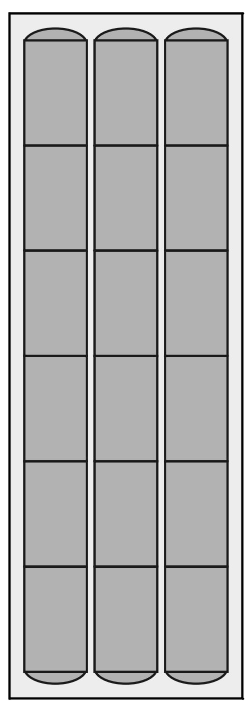
6 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 44.34' Row Length +12.0" End Stone x 2 = 46.34' Base Length
3 Rows x 51.0" Wide + 6.0" Spacing x 2 + 12.0" Side Stone x 2 = 15.75' Base Width
6.0" Base + 30.0" Chamber Height + 12.0" Cover = 4.00' Field Height

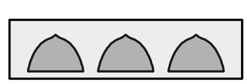
18 Chambers x 45.9 cf = 826.9 cf Chamber Storage

2,919.2 cf Field - 826.9 cf Chambers = 2,092.3 cf Stone x 30.0% Voids = 627.7 cf Stone Storage

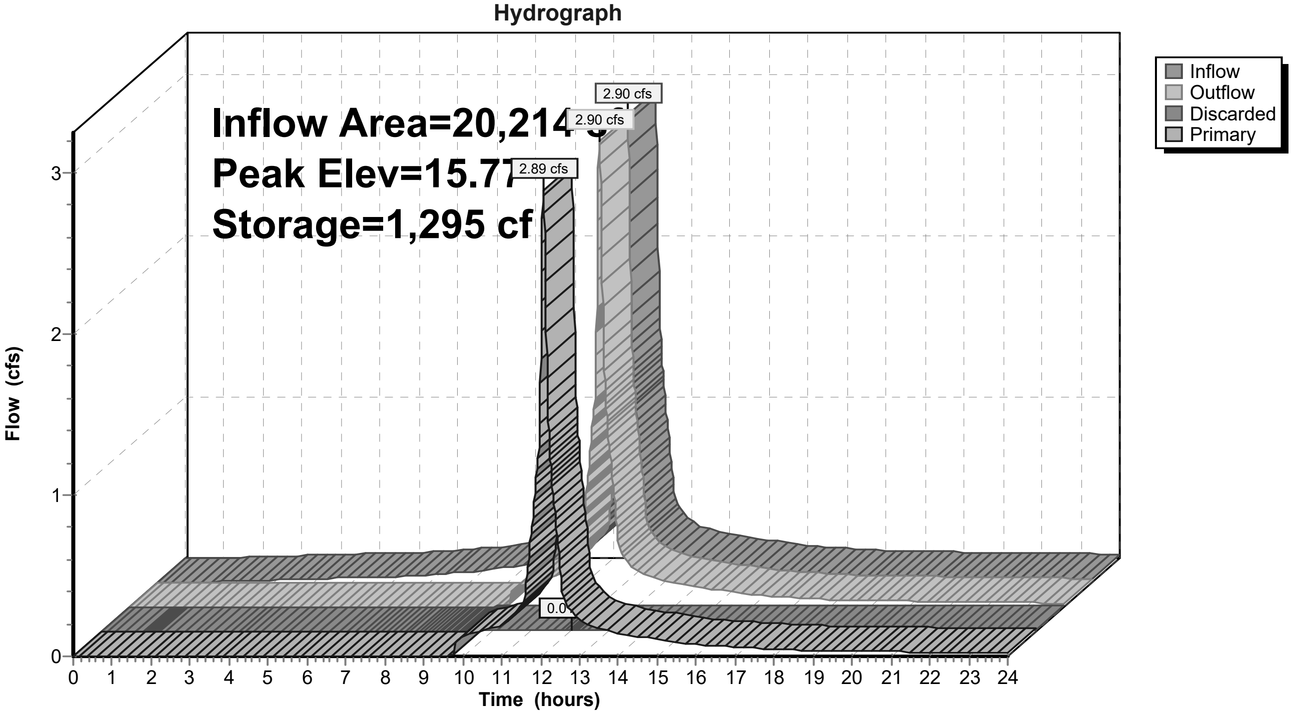
Chamber Storage + Stone Storage = 1,454.6 cf = 0.033 af
Overall Storage Efficiency = 49.8%
Overall System Size = 46.34' x 15.75' x 4.00'

18 Chambers
108.1 cy Field
77.5 cy Stone





Pond 6P: G2 INF



Summary for Pond 7P: Drywell

Inflow Area =	4,406 sf,	77.21% Impervious,	Inflow Depth > 5.37"	for 25-year event
Inflow =	0.61 cfs @	12.07 hrs, Volume=	1,970 cf	
Outflow =	0.61 cfs @	12.07 hrs, Volume=	1,854 cf,	Atten= 0%, Lag= 0.0 min
Discarded =	0.00 cfs @	12.07 hrs, Volume=	37 cf	
Primary =	0.61 cfs @	12.07 hrs, Volume=	1,817 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 16.15' @ 12.07 hrs Surf.Area= 28 sf Storage= 119 cf

Plug-Flow detention time= 54.7 min calculated for 1,854 cf (94% of inflow)
Center-of-Mass det. time= 22.1 min (792.8 - 770.7)

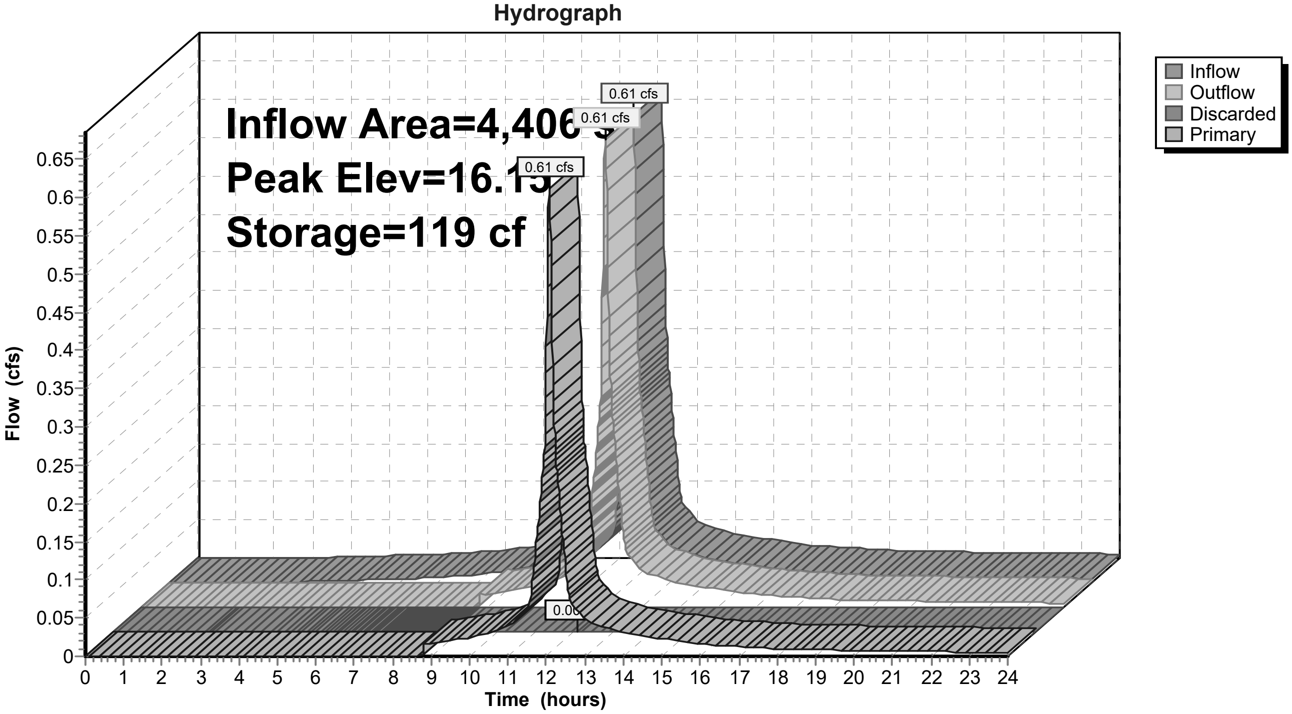
Volume	Invert	Avail.Storage	Storage Description
#1	9.30'	88 cf	**4.00'D x 7.00'H Vertical Cone/Cylinder**
#2	9.30'	33 cf	**4.50'D x 7.00'H Vertical Cone/Cylinder**
			111 cf Overall x 30.0% Voids
		121 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	16.00'	**12.0" Horiz. Orifice/Grate** C= 0.600
			Limited to weir flow at low heads
#2	Discarded	9.30'	**0.142 in/hr Exfiltration over Surface area**
			Conductivity to Groundwater Elevation = 8.00'

Discarded OutFlow Max=0.00 cfs @ 12.07 hrs HW=16.15' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.61 cfs @ 12.07 hrs HW=16.15' TW=0.00' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 0.61 cfs @ 1.28 fps)

Pond 7P: Drywell



Summary for Pond G2R: Raingarden G2

Inflow Area = 6,603 sf, 37.32% Impervious, Inflow Depth > 4.26" for 25-year event
Inflow = 0.78 cfs @ 12.07 hrs, Volume= 2,347 cf
Outflow = 0.77 cfs @ 12.08 hrs, Volume= 2,193 cf, Atten= 1%, Lag= 0.5 min
Discarded = 0.00 cfs @ 12.08 hrs, Volume= 41 cf
Primary = 0.77 cfs @ 12.08 hrs, Volume= 2,152 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.68' @ 12.08 hrs Surf.Area= 231 sf Storage= 189 cf

Plug-Flow detention time= 52.5 min calculated for 2,192 cf (93% of inflow)
Center-of-Mass det. time= 18.0 min (821.6 - 803.6)

Volume	Invert	Avail.Storage	Storage Description
#1	13.00'	276 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

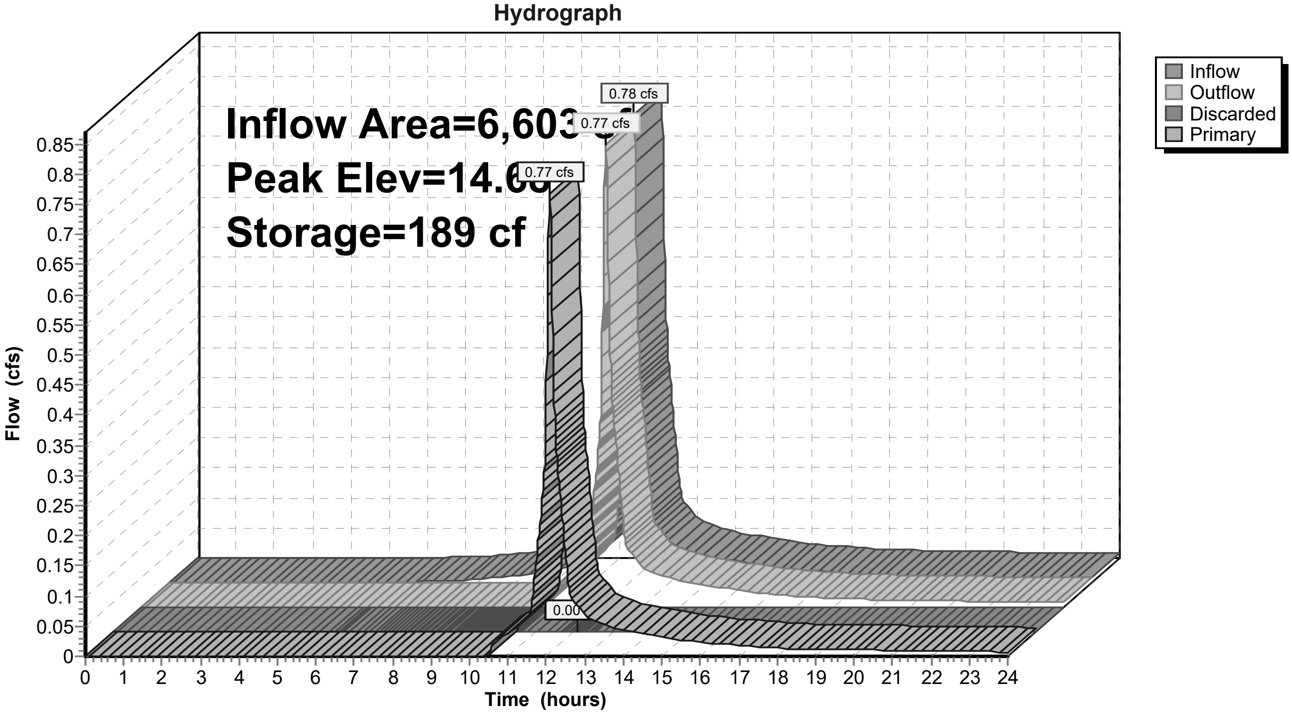
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
13.00	21	0	0
14.00	125	73	73
14.50	190	79	152
15.00	305	124	276

Device	Routing	Invert	Outlet Devices
#1	Primary	14.50'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	13.00'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 8.70' Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 12.08 hrs HW=14.68' (Free Discharge)
└─**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.76 cfs @ 12.08 hrs HW=14.68' TW=14.51' (Dynamic Tailwater)
└─**1=Orifice/Grate** (Weir Controls 0.76 cfs @ 1.37 fps)

Pond G2R: Raingarden G2

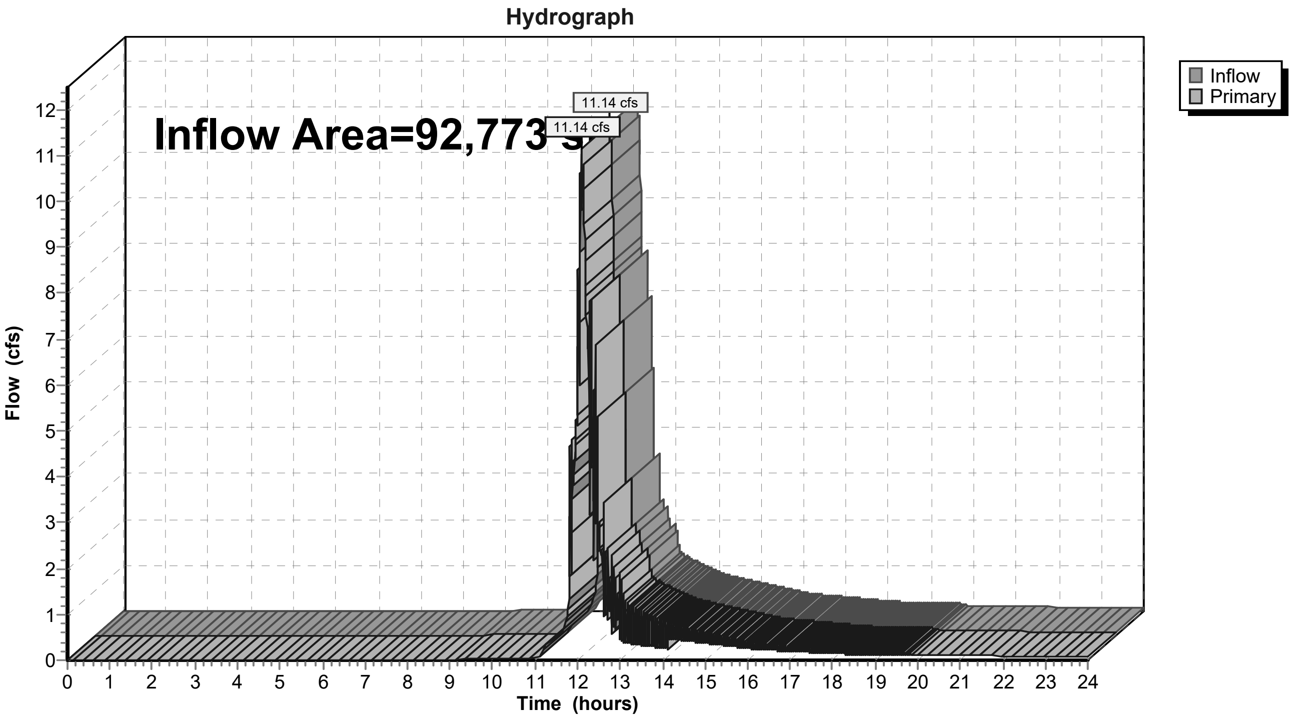


Summary for Link 1L: SDO 580

Inflow Area = 92,773 sf, 75.04% Impervious, Inflow Depth > 3.80" for 25-year event
Inflow = 11.14 cfs @ 12.10 hrs, Volume= 29,389 cf
Primary = 11.14 cfs @ 12.10 hrs, Volume= 29,389 cf, Atten= 0%, Lag= 0.0 min

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

Link 1L: SDO 580

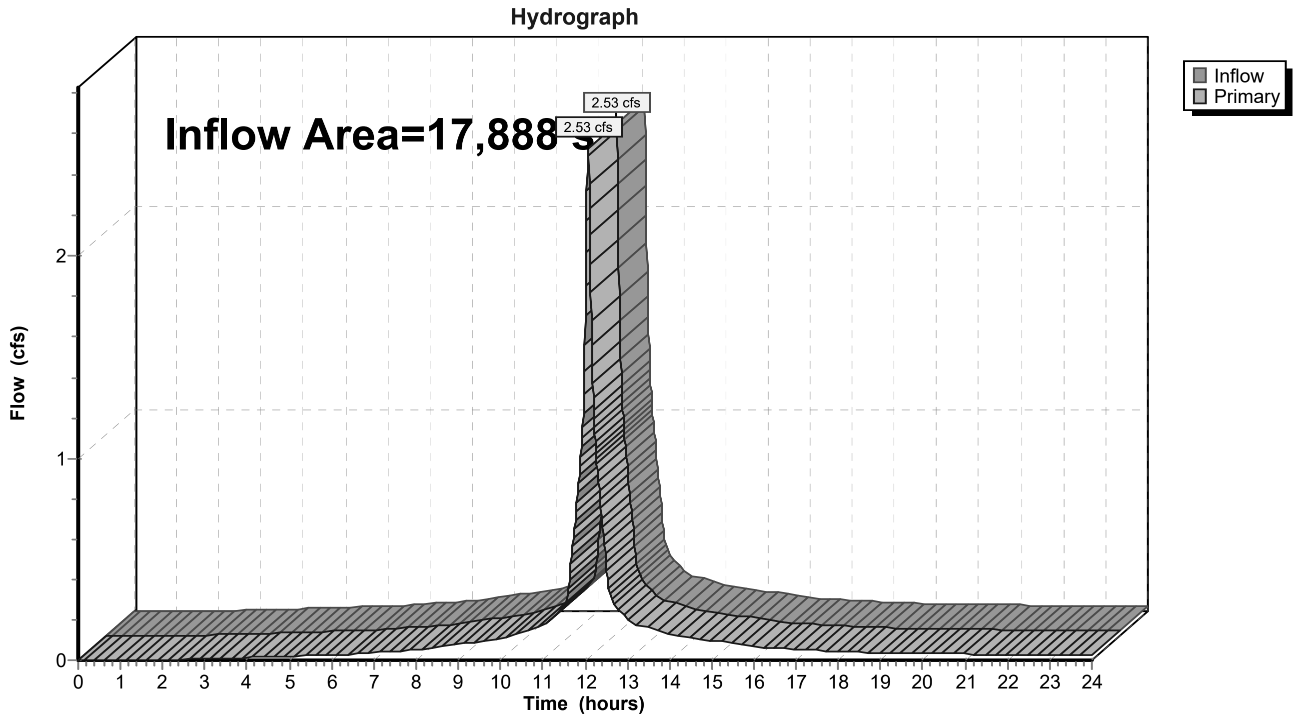


Summary for Link 2L: Fort Point Channel

Inflow Area =	17,888 sf,	88.55% Impervious,	Inflow Depth > 5.60"	for 25-year event
Inflow =	2.53 cfs @	12.07 hrs, Volume=	8,343 cf	
Primary =	2.53 cfs @	12.07 hrs, Volume=	8,343 cf,	Atten= 0%, Lag= 0.0 min

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

Link 2L: Fort Point Channel



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

SubcatchmentPR1A: Building Roof Runoff Area=11,263 sf 100.00% Impervious Runoff Depth>8.58"
Tc=10.0 min CN=98 Runoff=1.97 cfs 8,052 cf

SubcatchmentPR1B: Building Roof Runoff Area=22,527 sf 100.00% Impervious Runoff Depth>8.58"
Tc=10.0 min CN=98 Runoff=3.94 cfs 16,104 cf

SubcatchmentPR2: Harborwalk Runoff Area=17,888 sf 88.55% Impervious Runoff Depth>8.22"
Tc=5.0 min CN=95 Runoff=3.65 cfs 12,258 cf

SubcatchmentPR3: Brick Building Runoff Area=20,214 sf 94.76% Impervious Runoff Depth>8.46"
Tc=5.0 min CN=97 Runoff=4.16 cfs 14,258 cf

SubcatchmentPR4: East Plaza Runoff Area=4,406 sf 77.21% Impervious Runoff Depth>7.98"
Tc=5.0 min CN=93 Runoff=0.89 cfs 2,931 cf

SubcatchmentPR5: West Plaza Runoff Area=9,026 sf 45.28% Impervious Runoff Depth>7.01"
Tc=5.0 min CN=85 Runoff=1.69 cfs 5,274 cf

SubcatchmentPR6: Northwest LA Runoff Area=6,603 sf 37.32% Impervious Runoff Depth>6.77"
Tc=5.0 min CN=83 Runoff=1.21 cfs 3,724 cf

SubcatchmentPR7: West LA Runoff Area=2,525 sf 24.40% Impervious Runoff Depth>6.04"
Tc=5.0 min UI Adjusted CN=77 Runoff=0.42 cfs 1,270 cf

SubcatchmentPR8: West LA Runoff Area=5,781 sf 31.24% Impervious Runoff Depth>6.52"
Tc=5.0 min CN=81 Runoff=1.03 cfs 3,143 cf

SubcatchmentPR9: Southwest LA Runoff Area=10,428 sf 41.25% Impervious Runoff Depth>6.89"
Tc=5.0 min CN=84 Runoff=1.93 cfs 5,987 cf

Pond 1P: INF 1 Peak Elev=13.88' Storage=1,155 cf Inflow=13.88 cfs 29,331 cf
Discarded=0.01 cfs 292 cf Primary=10.30 cfs 27,900 cf Outflow=10.31 cfs 28,192 cf

Pond 1R: Raingarden 1 Peak Elev=14.62' Storage=315 cf Inflow=0.42 cfs 1,270 cf
Discarded=0.00 cfs 68 cf Primary=0.40 cfs 927 cf Outflow=0.41 cfs 996 cf

Pond 2P: Building Inf West Peak Elev=12.57' Storage=3,176 cf Inflow=5.56 cfs 22,091 cf
Discarded=0.02 cfs 1,009 cf Primary=5.44 cfs 18,481 cf Outflow=5.45 cfs 19,490 cf

Pond 2R: Raingarden 2 Peak Elev=14.71' Storage=427 cf Inflow=1.03 cfs 3,143 cf
Discarded=0.00 cfs 90 cf Primary=0.99 cfs 2,717 cf Outflow=1.00 cfs 2,807 cf

Pond 3P: Building Inf West Peak Elev=16.28' Storage=1,060 cf Inflow=1.97 cfs 8,052 cf
Discarded=0.00 cfs 195 cf Primary=1.96 cfs 6,894 cf Outflow=1.96 cfs 7,089 cf

Pond 4P: INF 4 Peak Elev=13.97' Storage=669 cf Inflow=9.02 cfs 27,421 cf
Discarded=0.00 cfs 191 cf Primary=12.89 cfs 26,614 cf Outflow=12.90 cfs 26,805 cf

Pond 5P: INF 5 Peak Elev=14.67' Storage=1,628 cf Inflow=6.97 cfs 21,395 cf
Discarded=0.01 cfs 534 cf Primary=6.90 cfs 19,600 cf Outflow=6.91 cfs 20,134 cf

Pond 6P: G2 INF Peak Elev=15.87' Storage=1,317 cf Inflow=4.16 cfs 14,258 cf
Discarded=0.01 cfs 444 cf Primary=4.14 cfs 12,597 cf Outflow=4.15 cfs 13,041 cf

Pond 7P: Drywell Peak Elev=16.20' Storage=120 cf Inflow=0.89 cfs 2,931 cf
Discarded=0.00 cfs 40 cf Primary=0.89 cfs 2,775 cf Outflow=0.89 cfs 2,814 cf

Pond G2R: Raingarden G2 Peak Elev=14.78' Storage=213 cf Inflow=1.21 cfs 3,724 cf
Discarded=0.00 cfs 46 cf Primary=1.16 cfs 3,525 cf Outflow=1.16 cfs 3,570 cf

Link 1L: SDO 580 Inflow=16.36 cfs 49,155 cf
Primary=16.36 cfs 49,155 cf

Link 2L: Fort Point Channel Inflow=3.65 cfs 12,258 cf
Primary=3.65 cfs 12,258 cf

Total Runoff Area = 110,661 sf Runoff Volume = 72,998 cf Average Runoff Depth = 7.92"
22.77% Pervious = 25,201 sf 77.23% Impervious = 85,460 sf

Summary for Subcatchment PR1A: Building Roof

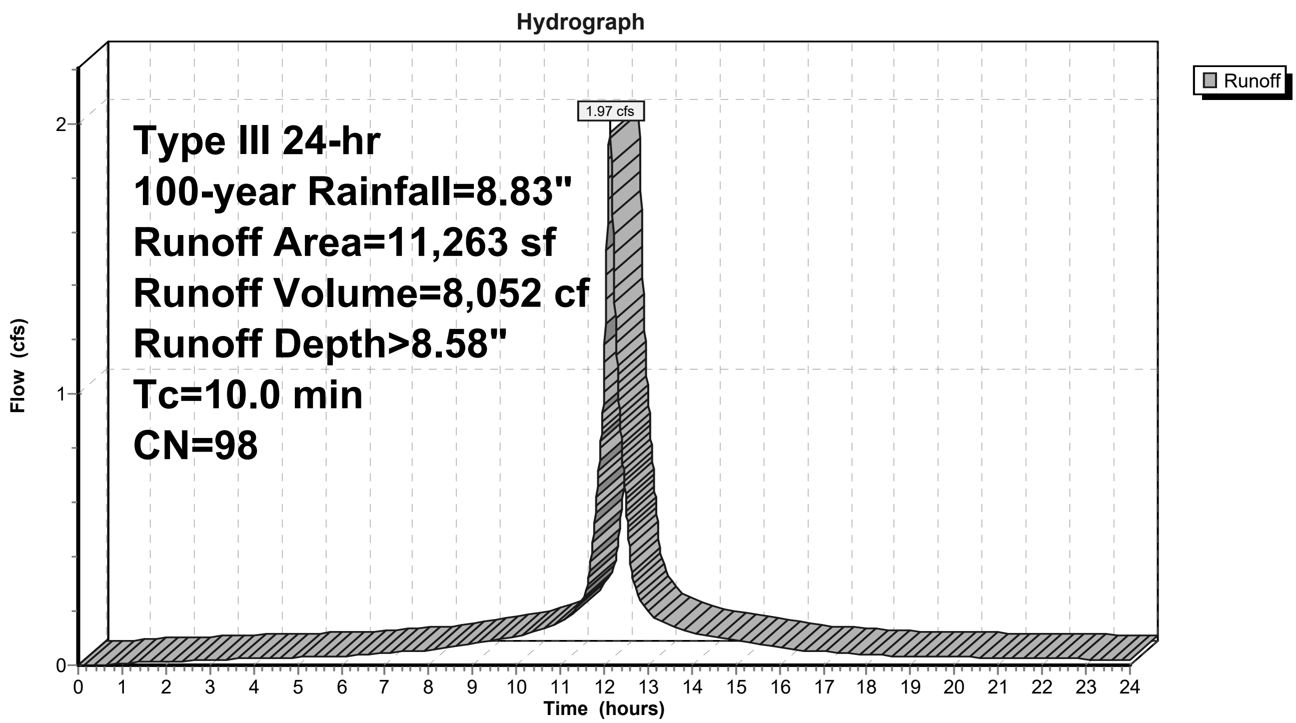
Runoff = 1.97 cfs @ 12.13 hrs, Volume= 8,052 cf, Depth> 8.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.83"

	Area (sf)	CN	Description
*	11,263	98	Buildings, HSG C
	11,263		100.00% Impervious Area

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

Subcatchment PR1A: Building Roof



Summary for Subcatchment PR1B: Building Roof

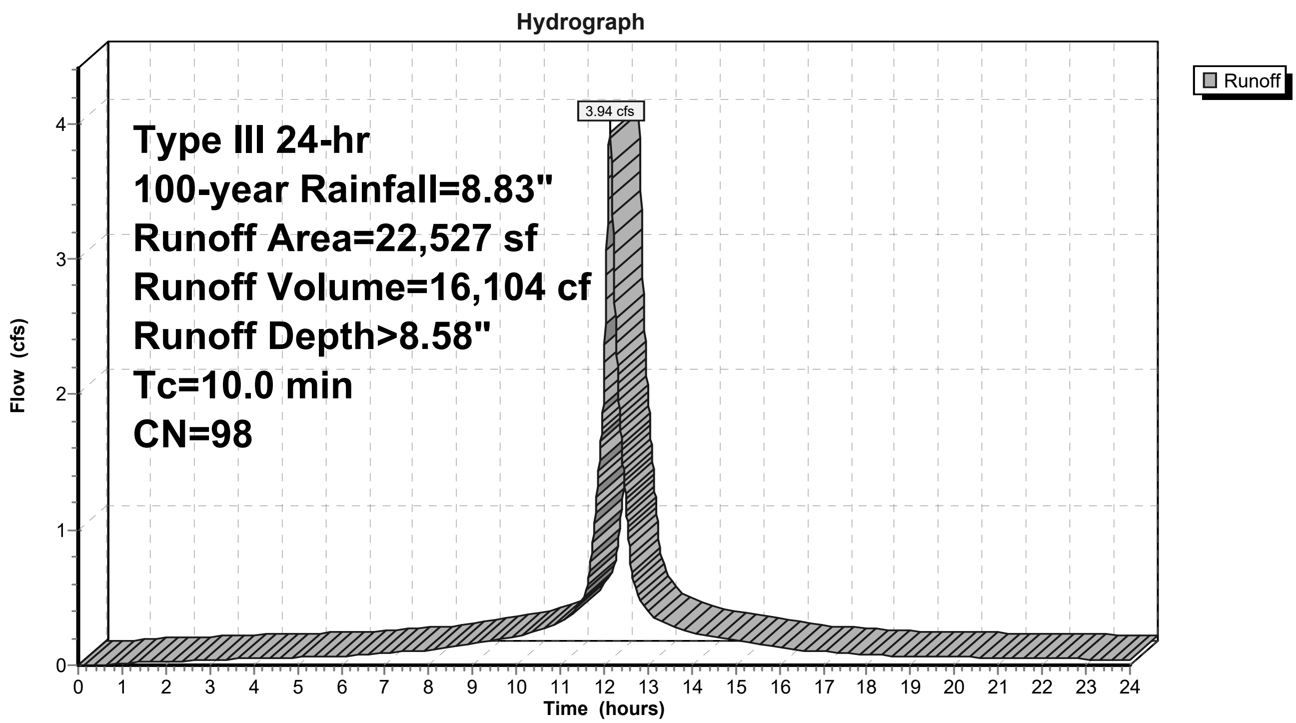
Runoff = 3.94 cfs @ 12.13 hrs, Volume= 16,104 cf, Depth> 8.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.83"

	Area (sf)	CN	Description
*	22,527	98	Buildings, HSG C
	22,527		100.00% Impervious Area

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

Subcatchment PR1B: Building Roof



Summary for Subcatchment PR2: Harborwalk

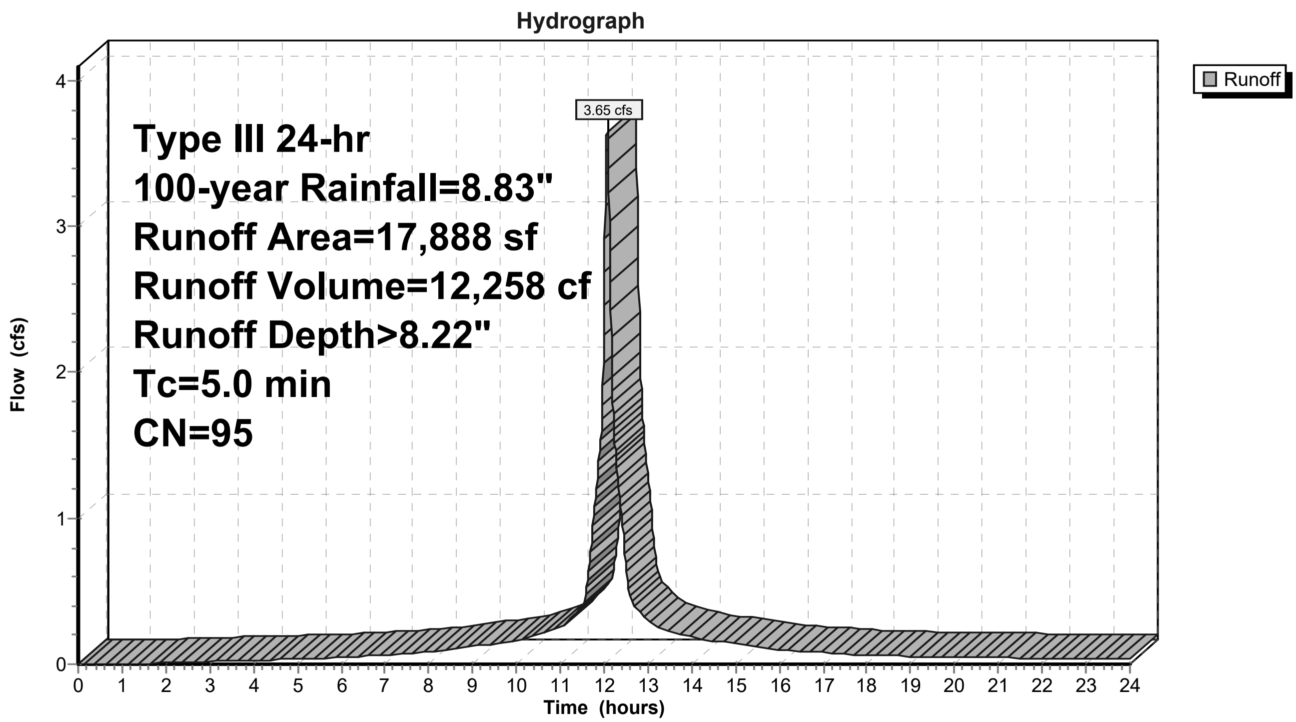
Runoff = 3.65 cfs @ 12.07 hrs, Volume= 12,258 cf, Depth> 8.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.83"

Area (sf)	CN	Description
15,839	98	Unconnected pavement, HSG C
2,049	74	>75% Grass cover, Good, HSG C
17,888	95	Weighted Average
2,049		11.45% Pervious Area
15,839		88.55% Impervious Area
15,839		100.00% Unconnected

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

Subcatchment PR2: Harborwalk



Summary for Subcatchment PR3: Brick Building

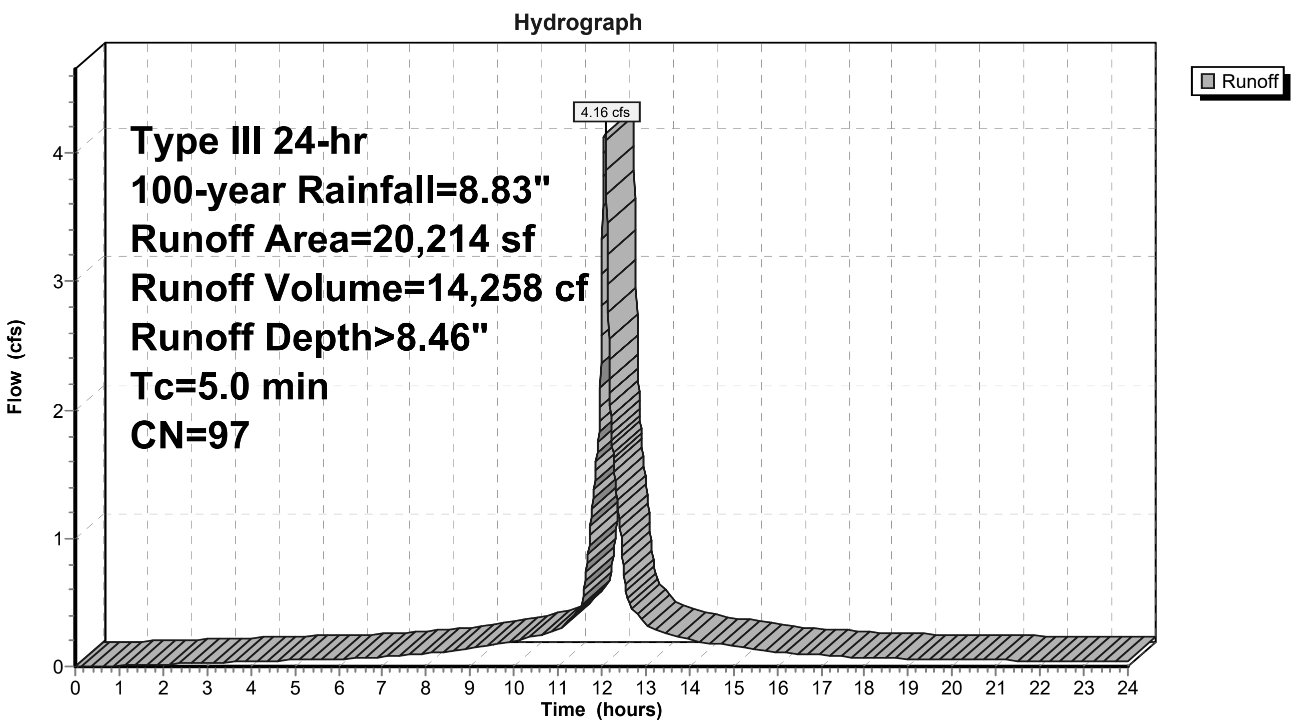
Runoff = 4.16 cfs @ 12.07 hrs, Volume= 14,258 cf, Depth> 8.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.83"

	Area (sf)	CN	Description
*	19,154	98	Building Roofs, HSG C
*	1,060	74	Green Roof
	20,214	97	Weighted Average
	1,060		5.24% Pervious Area
	19,154		94.76% Impervious Area

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

Subcatchment PR3: Brick Building



Summary for Subcatchment PR4: East Plaza

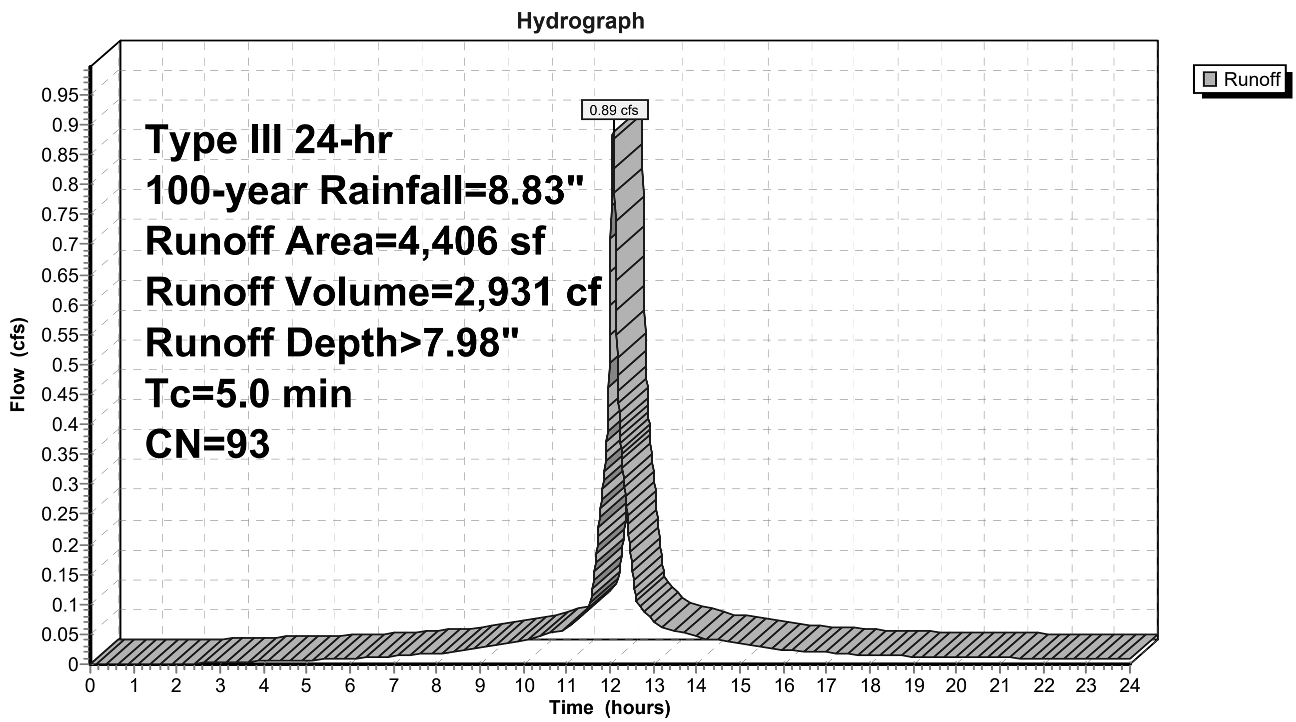
Runoff = 0.89 cfs @ 12.07 hrs, Volume= 2,931 cf, Depth> 7.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.83"

Area (sf)	CN	Description
1,004	74	>75% Grass cover, Good, HSG C
3,402	98	Unconnected pavement, HSG C
4,406	93	Weighted Average
1,004		22.79% Pervious Area
3,402		77.21% Impervious Area
3,402		100.00% Unconnected

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

Subcatchment PR4: East Plaza



Summary for Subcatchment PR5: West Plaza

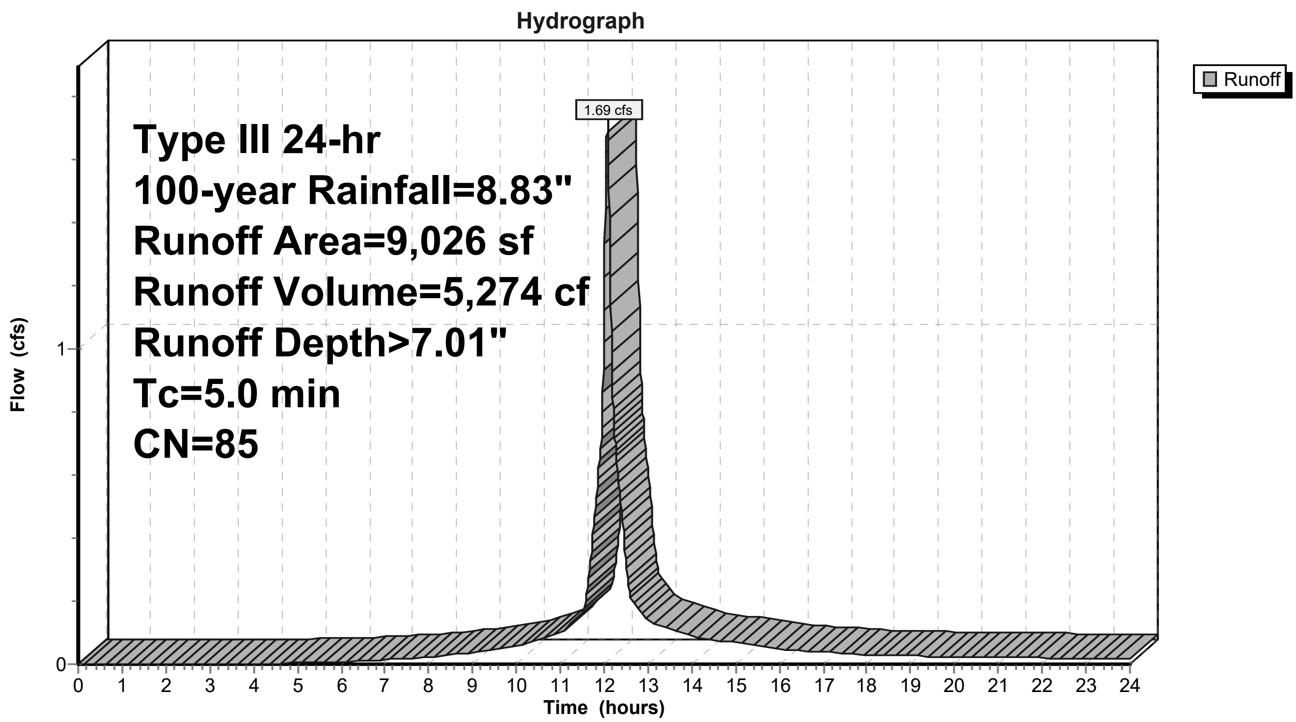
Runoff = 1.69 cfs @ 12.07 hrs, Volume= 5,274 cf, Depth> 7.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.83"

Area (sf)	CN	Description
4,939	74	>75% Grass cover, Good, HSG C
4,087	98	Unconnected pavement, HSG C
9,026	85	Weighted Average
4,939		54.72% Pervious Area
4,087		45.28% Impervious Area
4,087		100.00% Unconnected

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

Subcatchment PR5: West Plaza



Summary for Subcatchment PR6: Northwest LA

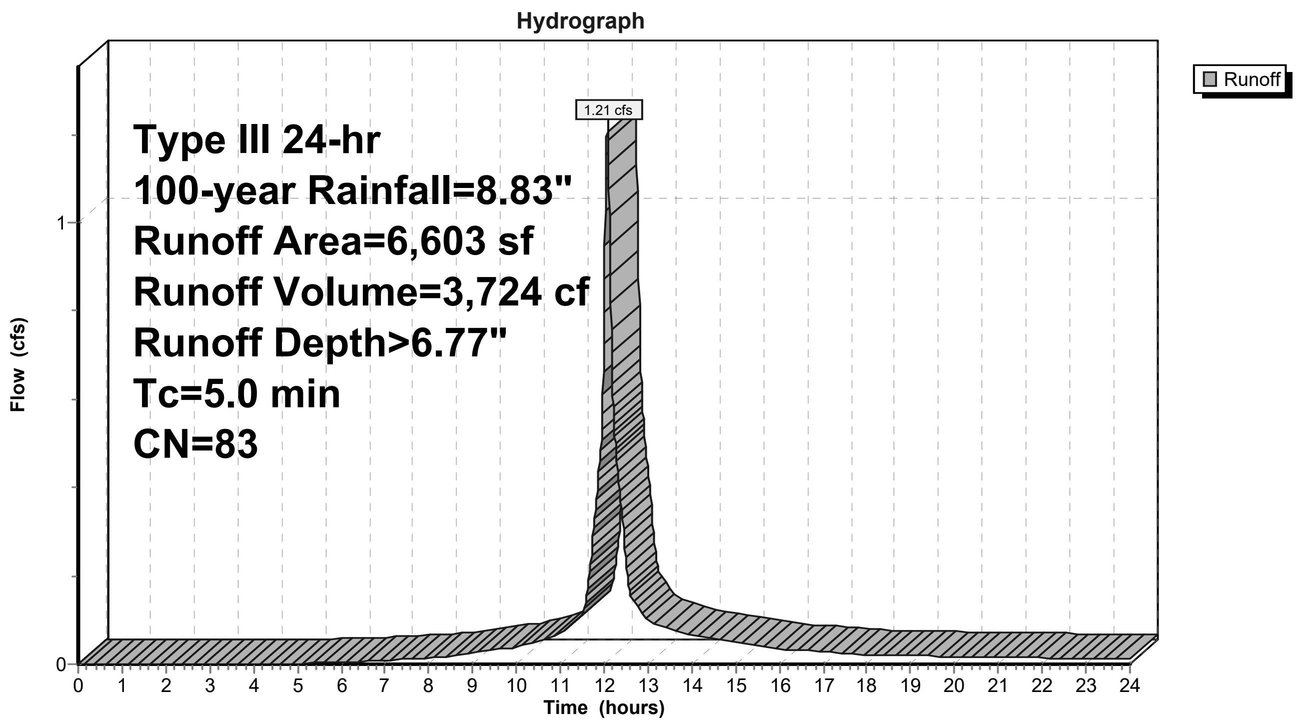
Runoff = 1.21 cfs @ 12.07 hrs, Volume= 3,724 cf, Depth> 6.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.83"

Area (sf)	CN	Description
4,139	74	>75% Grass cover, Good, HSG C
2,464	98	Unconnected pavement, HSG C
6,603	83	Weighted Average
4,139		62.68% Pervious Area
2,464		37.32% Impervious Area
2,464		100.00% Unconnected

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

Subcatchment PR6: Northwest LA



Summary for Subcatchment PR7: West LA

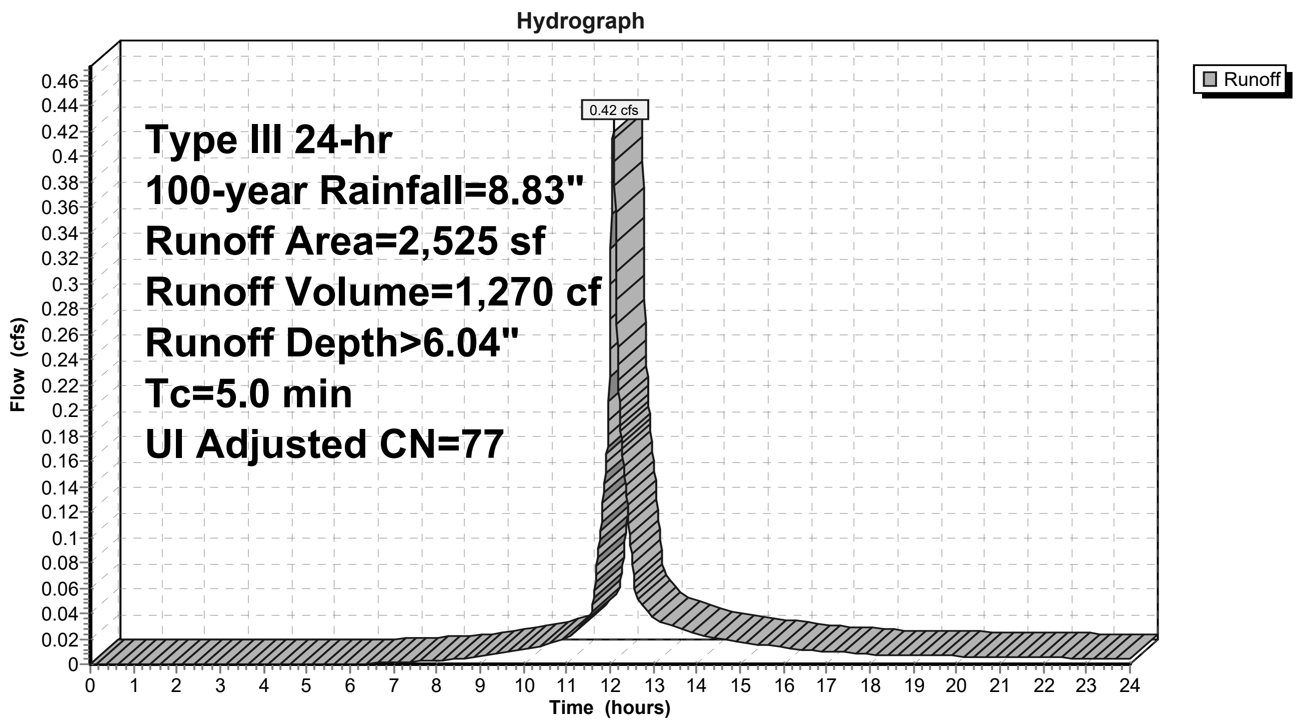
Runoff = 0.42 cfs @ 12.07 hrs, Volume= 1,270 cf, Depth> 6.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.83"

Area (sf)	CN	Adj	Description
1,909	74		>75% Grass cover, Good, HSG C
616	98		Unconnected pavement, HSG C
2,525	80	77	Weighted Average, UI Adjusted
1,909			75.60% Pervious Area
616			24.40% Impervious Area
616			100.00% Unconnected

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

Subcatchment PR7: West LA



Summary for Subcatchment PR8: West LA

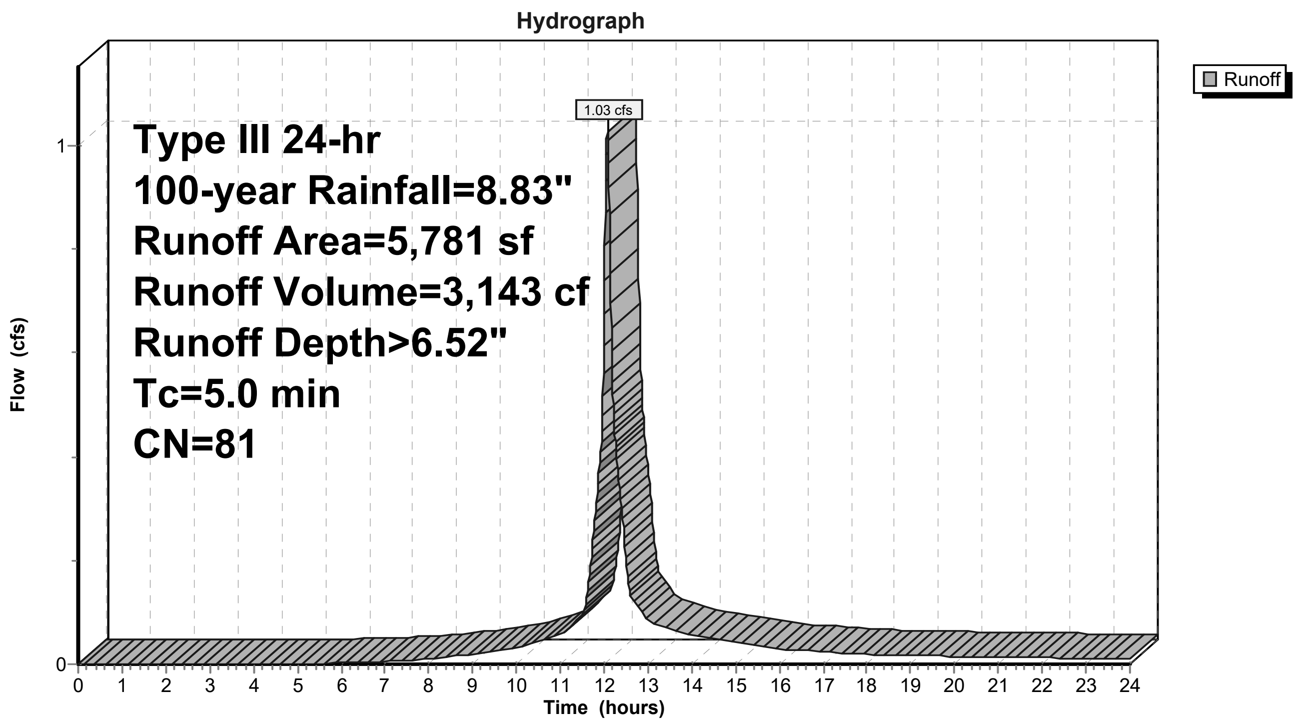
Runoff = 1.03 cfs @ 12.07 hrs, Volume= 3,143 cf, Depth> 6.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.83"

Area (sf)	CN	Description
3,975	74	>75% Grass cover, Good, HSG C
1,806	98	Unconnected pavement, HSG C
5,781	81	Weighted Average
3,975		68.76% Pervious Area
1,806		31.24% Impervious Area
1,806		100.00% Unconnected

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

Subcatchment PR8: West LA



Summary for Subcatchment PR9: Southwest LA

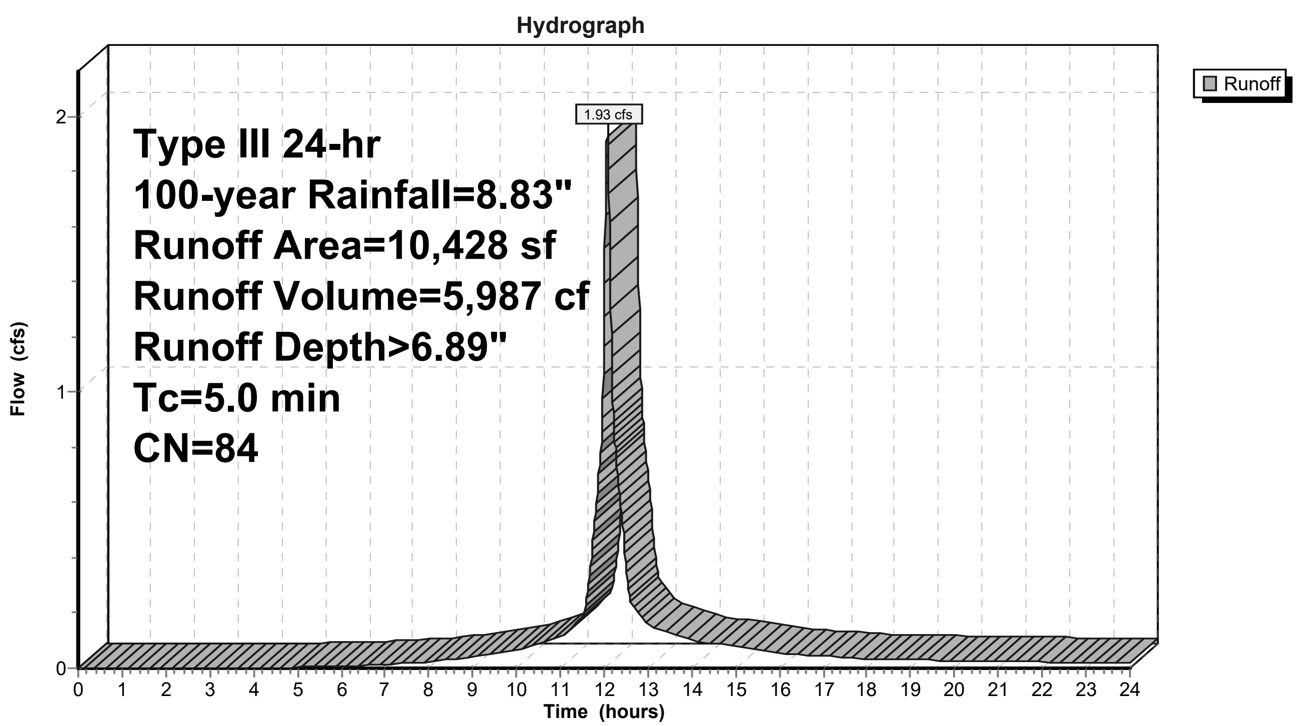
Runoff = 1.93 cfs @ 12.07 hrs, Volume= 5,987 cf, Depth> 6.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.83"

Area (sf)	CN	Description
6,126	74	>75% Grass cover, Good, HSG C
4,302	98	Unconnected pavement, HSG C
10,428	84	Weighted Average
6,126		58.75% Pervious Area
4,302		41.25% Impervious Area
4,302		100.00% Unconnected

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

Subcatchment PR9: Southwest LA



Summary for Pond 1P: INF 1

Inflow Area =	55,412 sf,	71.09% Impervious,	Inflow Depth > 6.35"	for 100-year event	
Inflow =	13.88 cfs @	12.10 hrs, Volume=	29,331 cf		
Outflow =	10.31 cfs @	12.10 hrs, Volume=	28,192 cf,	Atten= 26%,	Lag= 0.0 min
Discarded =	0.01 cfs @	12.10 hrs, Volume=	292 cf		
Primary =	10.30 cfs @	12.10 hrs, Volume=	27,900 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 13.88' @ 12.10 hrs Surf.Area= 481 sf Storage= 1,155 cf

Plug-Flow detention time= 28.2 min calculated for 28,181 cf (96% of inflow)
Center-of-Mass det. time= 6.9 min (809.5 - 802.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	9.50'	179 cf	**18.50'W x 26.00'L x 4.17'H Field A**
			2,004 cf Overall - 1,408 cf Embedded = 596 cf x 30.0% Voids
#2A	10.00'	976 cf	**retain_it retain_it 3.0'** x 6 Inside #1
			Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
			Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
			2 Rows adjusted for 47.2 cf perimeter wall
		1,155 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	13.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Discarded	9.50'	**0.142 in/hr Exfiltration over Surface area**
			Conductivity to Groundwater Elevation = 8.20' Phase-In= 0.01'

Discarded OutFlow Max=0.01 cfs @ 12.10 hrs HW=13.88' (Free Discharge)
└─**2=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=10.26 cfs @ 12.10 hrs HW=13.88' TW=0.00' (Dynamic Tailwater)
└─**1=Sharp-Crested Rectangular Weir** (Weir Controls 10.26 cfs @ 3.06 fps)

Pond 1P: INF 1 - Chamber Wizard Field A

Chamber Model = retain_it retain_it 3.0' (retain-it®)
Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
2 Rows adjusted for 47.2 cf perimeter wall

96.0" Wide + 6.0" Spacing = 102.0" C-C Row Spacing

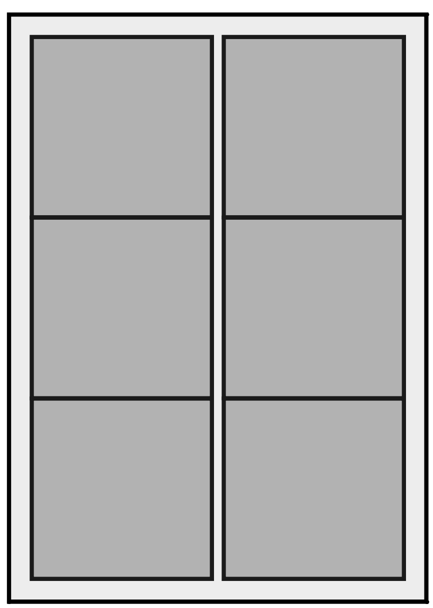
3 Chambers/Row x 8.00' Long = 24.00' Row Length +12.0" End Stone x 2 = 26.00' Base Length
2 Rows x 96.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 18.50' Base Width
6.0" Base + 44.0" Chamber Height = 4.17' Field Height

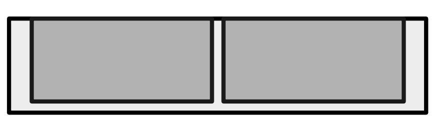
4.7 cf Sidewall x 3 x 2 + 4.7 cf Endwall x 2 x 2 = 47.2 cf Perimeter Wall
6 Chambers x 170.6 cf - 47.2 cf Perimeter wall = 976.5 cf Chamber Storage
6 Chambers x 234.7 cf = 1,408.0 cf Displacement

2,004.2 cf Field - 1,408.0 cf Chambers = 596.2 cf Stone x 30.0% Voids = 178.8 cf Stone Storage

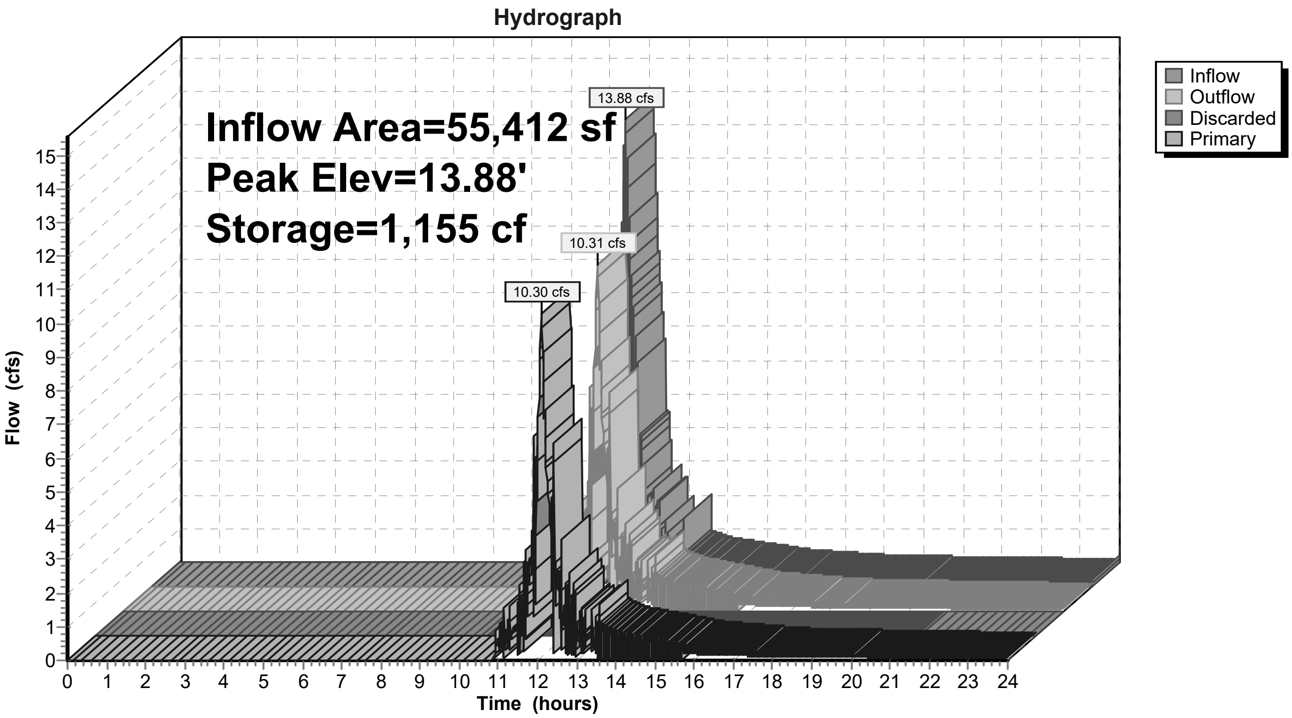
Chamber Storage + Stone Storage = 1,155.3 cf = 0.027 af
Overall Storage Efficiency = 57.6%
Overall System Size = 26.00' x 18.50' x 4.17'

6 Chambers
74.2 cy Field
22.1 cy Stone





Pond 1P: INF 1


Hydrograph
Inflow
Outflow
Discarded
Primary
13.88 cfs
10.31 cfs
10.30 cfs
Inflow Area=55,412 sf
Peak Elev=13.88'
Storage=1,155 cf
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

Summary for Pond 1R: Raingarden 1

Inflow Area = 2,525 sf, 24.40% Impervious, Inflow Depth > 6.04" for 100-year event
Inflow = 0.42 cfs @ 12.07 hrs, Volume= 1,270 cf
Outflow = 0.41 cfs @ 12.09 hrs, Volume= 996 cf, Atten= 3%, Lag= 1.2 min
Discarded = 0.00 cfs @ 12.09 hrs, Volume= 68 cf
Primary = 0.40 cfs @ 12.09 hrs, Volume= 927 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.62' @ 12.09 hrs Surf.Area= 385 sf Storage= 315 cf

Plug-Flow detention time= 123.0 min calculated for 996 cf (78% of inflow)
Center-of-Mass det. time= 43.9 min (848.4 - 804.4)

Volume	Invert	Avail.Storage	Storage Description
#1	13.00'	485 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

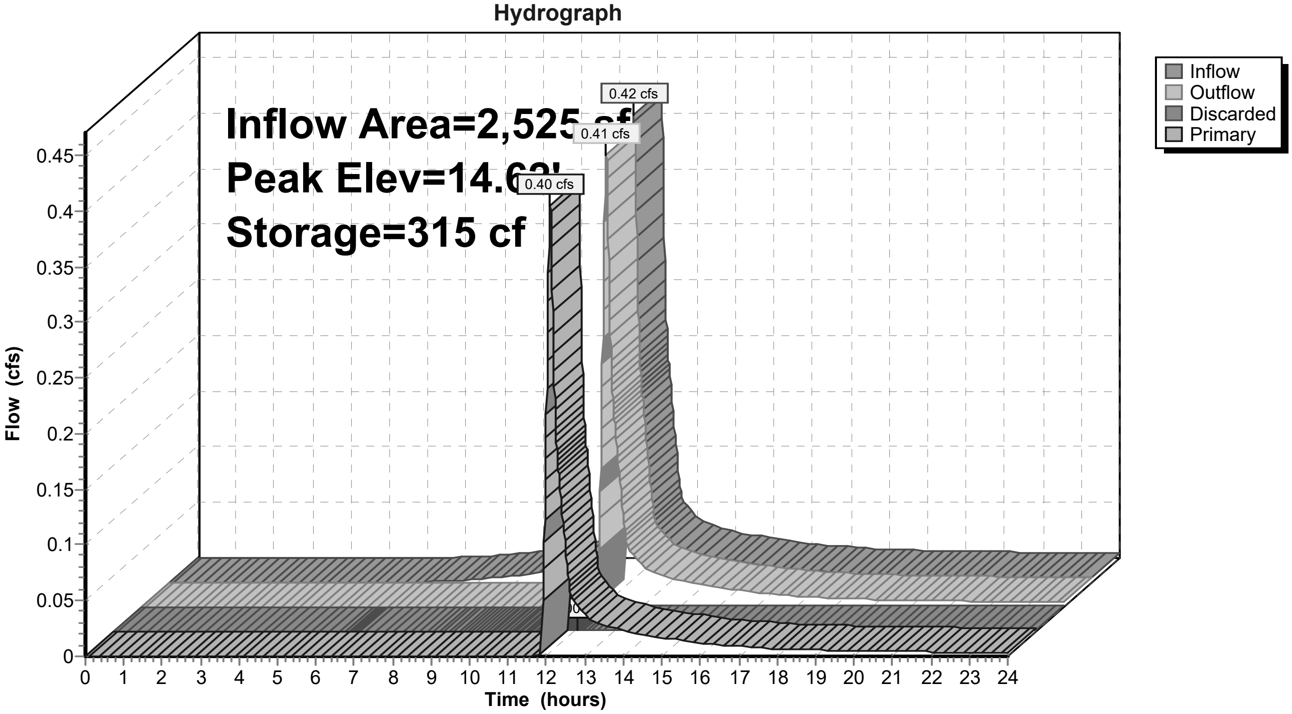
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
13.00	47	0	0
14.00	215	131	131
14.50	352	142	273
15.00	496	212	485

Device	Routing	Invert	Outlet Devices
#1	Primary	14.50'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	13.00'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 8.70' Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=14.62' (Free Discharge)
└─**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.40 cfs @ 12.09 hrs HW=14.62' TW=13.91' (Dynamic Tailwater)
└─**1=Orifice/Grate** (Weir Controls 0.40 cfs @ 1.11 fps)

Pond 1R: Raingarden 1



Summary for Pond 2P: Building Inf West

Inflow Area = 32,955 sf, 81.41% Impervious, Inflow Depth > 8.04" for 100-year event
Inflow = 5.56 cfs @ 12.11 hrs, Volume= 22,091 cf
Outflow = 5.45 cfs @ 12.13 hrs, Volume= 19,490 cf, Atten= 2%, Lag= 1.3 min
Discarded = 0.02 cfs @ 12.13 hrs, Volume= 1,009 cf
Primary = 5.44 cfs @ 12.13 hrs, Volume= 18,481 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 12.57' @ 12.13 hrs Surf.Area= 1,369 sf Storage= 3,176 cf

Plug-Flow detention time= 101.1 min calculated for 19,482 cf (88% of inflow)
Center-of-Mass det. time= 45.7 min (800.8 - 755.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	9.25'	444 cf	**18.50'W x 74.00'L x 4.17'H Field A**
			5,704 cf Overall - 4,224 cf Embedded = 1,480 cf x 30.0% Voids
#2A	9.75'	2,967 cf	**retain_it retain_it 3.0'** x 18 Inside #1
			Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
			Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
			2 Rows adjusted for 103.9 cf perimeter wall
		3,411 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	12.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Discarded	9.25'	**0.142 in/hr Exfiltration over Surface area**
			Conductivity to Groundwater Elevation = 8.00' Phase-In= 0.01'

Discarded OutFlow Max=0.02 cfs @ 12.13 hrs HW=12.57' (Free Discharge)
└─**2=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=5.44 cfs @ 12.13 hrs HW=12.57' TW=0.00' (Dynamic Tailwater)
└─**1=Sharp-Crested Rectangular Weir** (Weir Controls 5.44 cfs @ 2.46 fps)

Pond 2P: Building Inf West - Chamber Wizard Field A

Chamber Model = retain_it retain_it 3.0' (retain-it®)
Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
2 Rows adjusted for 103.9 cf perimeter wall

96.0" Wide + 6.0" Spacing = 102.0" C-C Row Spacing

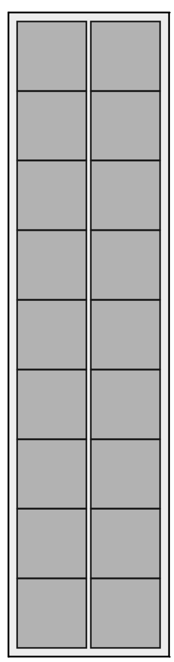
9 Chambers/Row x 8.00' Long = 72.00' Row Length +12.0" End Stone x 2 = 74.00' Base Length
2 Rows x 96.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 18.50' Base Width
6.0" Base + 44.0" Chamber Height = 4.17' Field Height

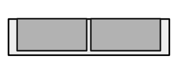
4.7 cf Sidewall x 9 x 2 + 4.7 cf Endwall x 2 x 2 = 103.9 cf Perimeter Wall
18 Chambers x 170.6 cf - 103.9 cf Perimeter wall = 2,967.1 cf Chamber Storage
18 Chambers x 234.7 cf = 4,224.0 cf Displacement

5,704.2 cf Field - 4,224.0 cf Chambers = 1,480.2 cf Stone x 30.0% Voids = 444.0 cf Stone Storage

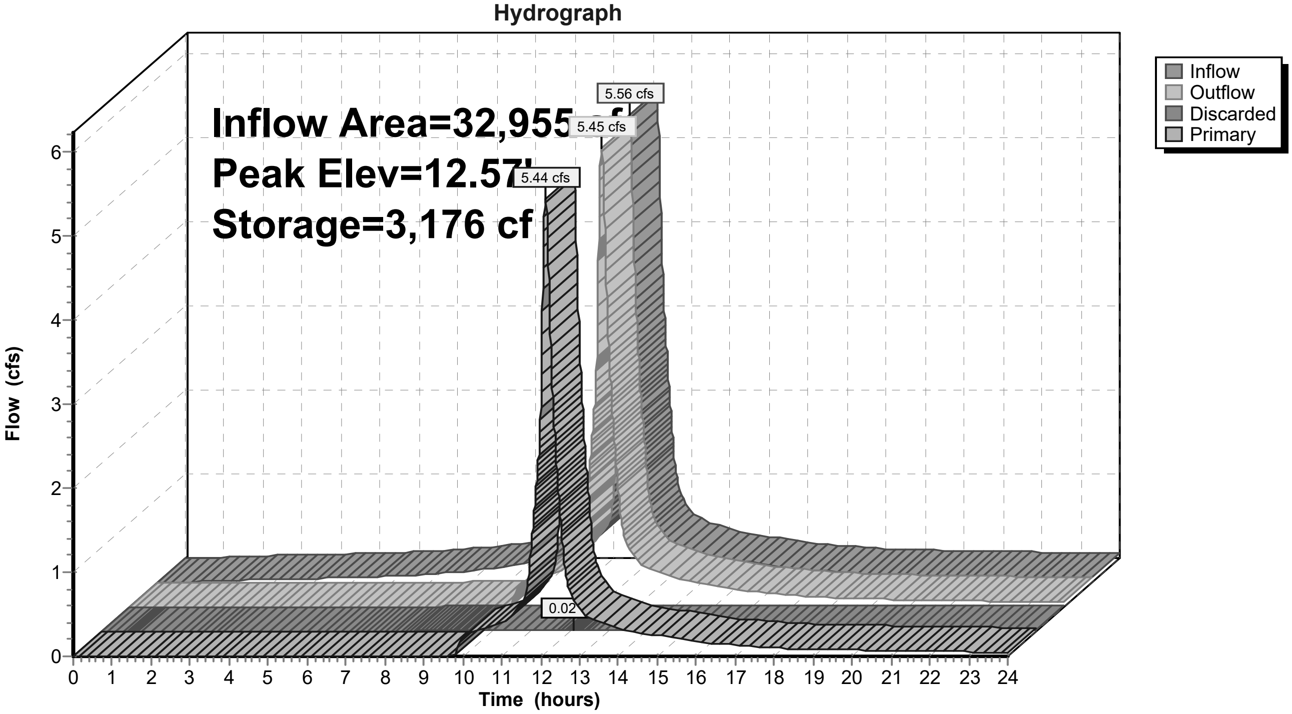
Chamber Storage + Stone Storage = 3,411.2 cf = 0.078 af
Overall Storage Efficiency = 59.8%
Overall System Size = 74.00' x 18.50' x 4.17'

18 Chambers
211.3 cy Field
54.8 cy Stone





Pond 2P: Building Inf West



Summary for Pond 2R: Raingarden 2

Inflow Area = 5,781 sf, 31.24% Impervious, Inflow Depth > 6.52" for 100-year event
Inflow = 1.03 cfs @ 12.07 hrs, Volume= 3,143 cf
Outflow = 1.00 cfs @ 12.09 hrs, Volume= 2,807 cf, Atten= 3%, Lag= 1.1 min
Discarded = 0.00 cfs @ 12.09 hrs, Volume= 90 cf
Primary = 0.99 cfs @ 12.09 hrs, Volume= 2,717 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.71' @ 12.09 hrs Surf.Area= 485 sf Storage= 427 cf

Plug-Flow detention time= 79.0 min calculated for 2,806 cf (89% of inflow)
Center-of-Mass det. time= 28.5 min (824.0 - 795.5)

Volume	Invert	Avail.Storage	Storage Description
#1	13.00'	581 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

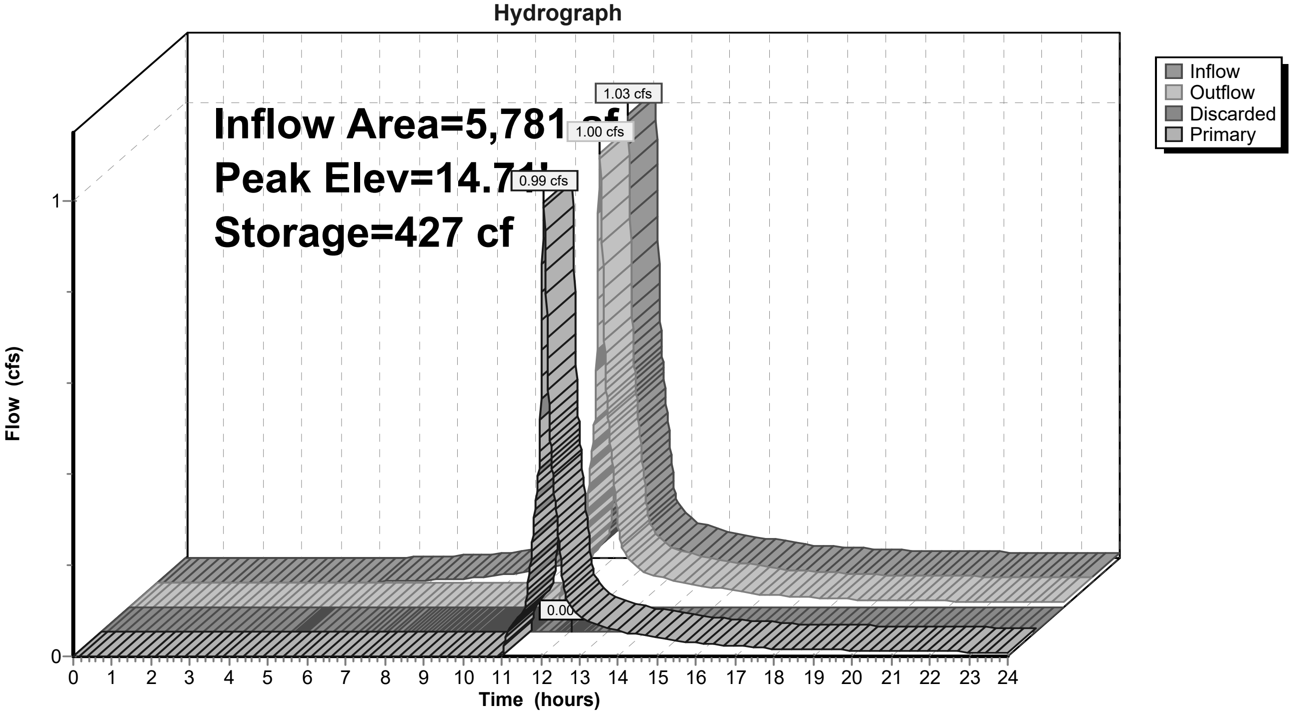
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
13.00	63	0	0
14.00	261	162	162
14.50	419	170	332
15.00	576	249	581

Device	Routing	Invert	Outlet Devices
#1	Primary	14.50'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	13.00'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 8.70' Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=14.71' (Free Discharge)
└─**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.99 cfs @ 12.09 hrs HW=14.71' TW=13.84' (Dynamic Tailwater)
└─**1=Orifice/Grate** (Weir Controls 0.99 cfs @ 1.50 fps)

Pond 2R: Raingarden 2



Summary for Pond 3P: Building Inf West

Inflow Area = 11,263 sf,100.00% Impervious, Inflow Depth > 8.58" for 100-year event
Inflow = 1.97 cfs @ 12.13 hrs, Volume= 8,052 cf
Outflow = 1.96 cfs @ 12.14 hrs, Volume= 7,089 cf, Atten= 0%, Lag= 0.6 min
Discarded = 0.00 cfs @ 12.14 hrs, Volume= 195 cf
Primary = 1.96 cfs @ 12.14 hrs, Volume= 6,894 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 16.28' @ 12.14 hrs Surf.Area= 481 sf Storage= 1,060 cf

Plug-Flow detention time= 106.1 min calculated for 7,086 cf (88% of inflow)
Center-of-Mass det. time= 49.9 min (792.7 - 742.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	13.00'	323 cf	**18.50'W x 26.00'L x 5.17'H Field A** 2,485 cf Overall - 1,408 cf Embedded = 1,077 cf x 30.0% Voids
#2A	13.50'	976 cf	**retain_it retain_it 3.0'** x 6 Inside #1 Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf 2 Rows adjusted for 47.2 cf perimeter wall
		1,300 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	16.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Discarded	13.00'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 8.00' Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 12.14 hrs HW=16.28' (Free Discharge)
└─**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=1.96 cfs @ 12.14 hrs HW=16.28' TW=13.88' (Dynamic Tailwater)
└─**1=Sharp-Crested Rectangular Weir** (Weir Controls 1.96 cfs @ 1.74 fps)

Pond 3P: Building Inf West - Chamber Wizard Field A

Chamber Model = retain_it retain_it 3.0' (retain-it®)
Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
2 Rows adjusted for 47.2 cf perimeter wall

96.0" Wide + 6.0" Spacing = 102.0" C-C Row Spacing

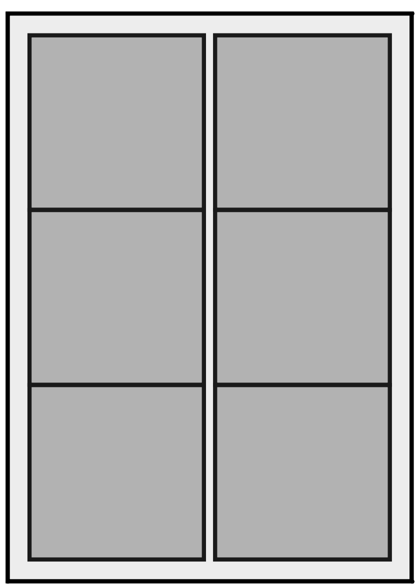
3 Chambers/Row x 8.00' Long = 24.00' Row Length +12.0" End Stone x 2 = 26.00' Base Length
2 Rows x 96.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 18.50' Base Width
6.0" Base + 44.0" Chamber Height + 12.0" Cover = 5.17' Field Height

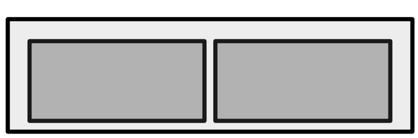
4.7 cf Sidewall x 3 x 2 + 4.7 cf Endwall x 2 x 2 = 47.2 cf Perimeter Wall
6 Chambers x 170.6 cf - 47.2 cf Perimeter wall = 976.5 cf Chamber Storage
6 Chambers x 234.7 cf = 1,408.0 cf Displacement

2,485.2 cf Field - 1,408.0 cf Chambers = 1,077.2 cf Stone x 30.0% Voids = 323.1 cf Stone Storage

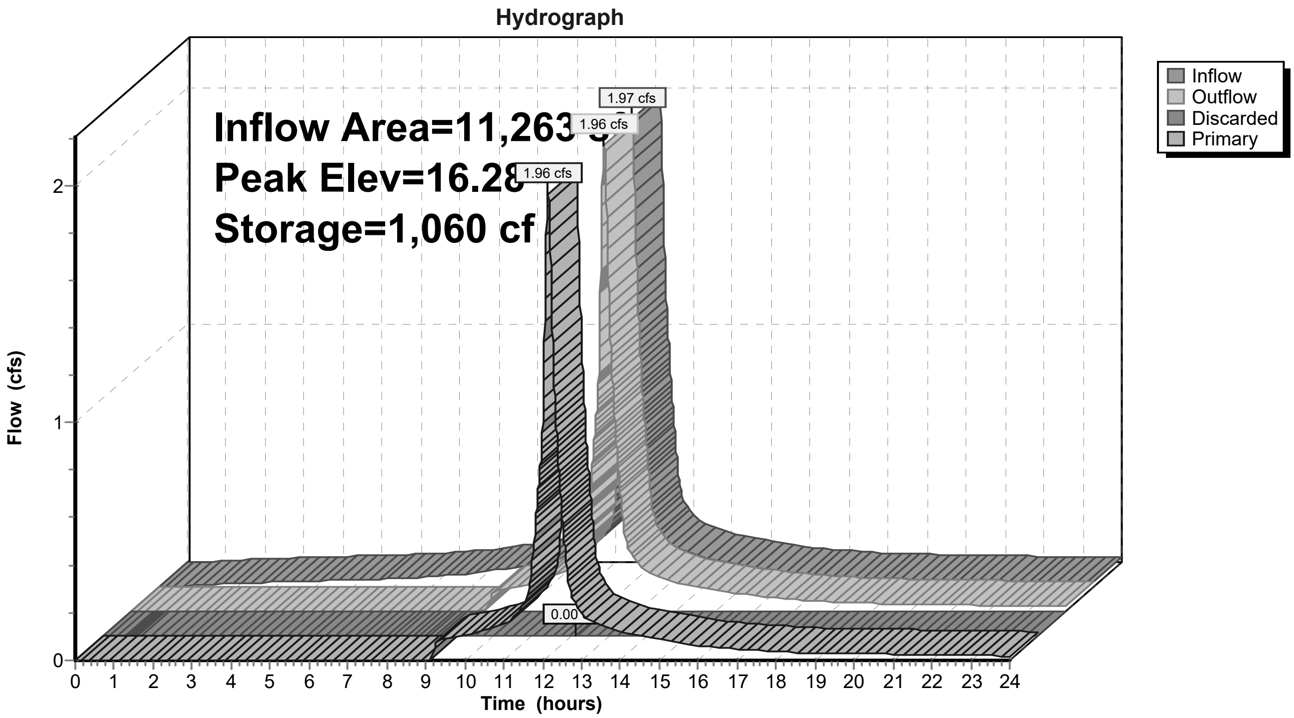
Chamber Storage + Stone Storage = 1,299.6 cf = 0.030 af
Overall Storage Efficiency = 52.3%
Overall System Size = 26.00' x 18.50' x 5.17'

6 Chambers
92.0 cy Field
39.9 cy Stone





Pond 3P: Building Inf West



Summary for Pond 4P: INF 4

Inflow Area = 49,631 sf, 75.73% Impervious, Inflow Depth > 6.63" for 100-year event
Inflow = 9.02 cfs @ 12.09 hrs, Volume= 27,421 cf
Outflow = 12.90 cfs @ 12.10 hrs, Volume= 26,805 cf, Atten= 0%, Lag= 0.4 min
Discarded = 0.00 cfs @ 12.10 hrs, Volume= 191 cf
Primary = 12.89 cfs @ 12.10 hrs, Volume= 26,614 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 13.97' @ 12.10 hrs Surf.Area= 340 sf Storage= 669 cf

Plug-Flow detention time= 17.8 min calculated for 26,805 cf (98% of inflow)
Center-of-Mass det. time= 4.6 min (802.4 - 797.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	9.50'	296 cf	**11.00'W x 30.92'L x 4.00'H Field A** 1,360 cf Overall - 373 cf Embedded = 987 cf x 30.0% Voids
#2A	10.00'	373 cf	**ADS_StormTech SC-740** x 8 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 2 rows
		669 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	12.50'	**4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#2	Primary	11.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Discarded	9.50'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 8.00' Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 12.10 hrs HW=13.97' (Free Discharge)
└─**3=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=11.31 cfs @ 12.10 hrs HW=13.97' TW=13.88' (Dynamic Tailwater)
├─**1=Sharp-Crested Vee/Trap Weir** (Weir Controls 11.03 cfs @ 1.88 fps)
└─**2=Orifice/Grate** (Orifice Controls 0.28 cfs @ 1.43 fps)

Pond 4P: INF 4 - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 (ADS StormTech®SC-740 without end caps)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
Row Length Adjustment= +0.44' x 6.45 sf x 2 rows

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

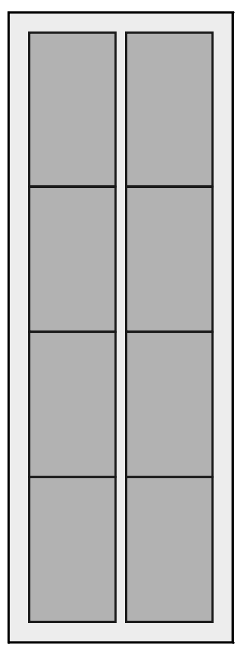
4 Chambers/Row x 7.12' Long +0.44' Row Adjustment = 28.92' Row Length +12.0" End Stone x 2 = 30.92' Base Length
2 Rows x 51.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.00' Base Width
6.0" Base + 30.0" Chamber Height + 12.0" Cover = 4.00' Field Height

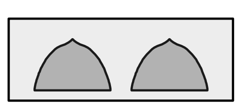
8 Chambers x 45.9 cf +0.44' Row Adjustment x 6.45 sf x 2 Rows = 373.2 cf Chamber Storage

1,360.4 cf Field - 373.2 cf Chambers = 987.2 cf Stone x 30.0% Voids = 296.2 cf Stone Storage

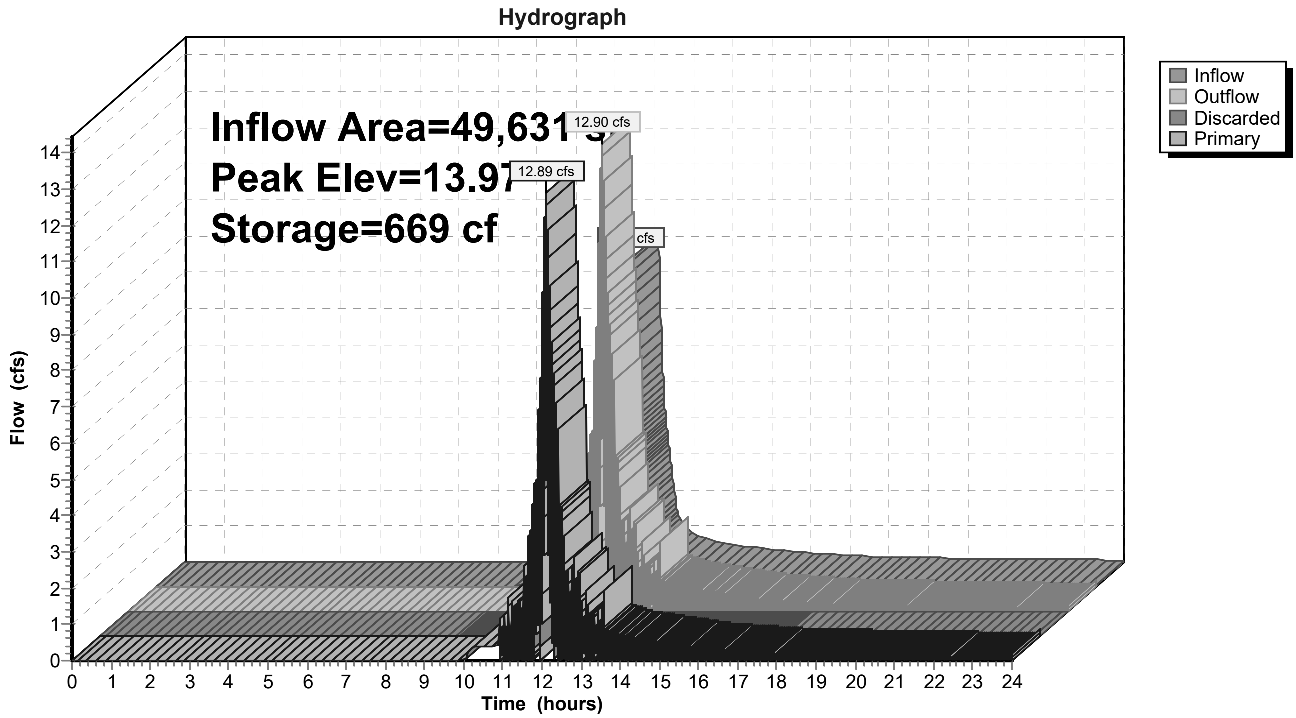
Chamber Storage + Stone Storage = 669.3 cf = 0.015 af
Overall Storage Efficiency = 49.2%
Overall System Size = 30.92' x 11.00' x 4.00'

8 Chambers
50.4 cy Field
36.6 cy Stone





Pond 4P: INF 4


Hydrograph
Inflow Area=49,631
Peak Elev=13.97
Storage=669 cf
12.90 cfs
12.89 cfs
cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Summary for Pond 5P: INF 5

Inflow Area =	35,843 sf,	71.72% Impervious,	Inflow Depth > 7.16"	for 100-year event	
Inflow =	6.97 cfs @	12.08 hrs,	Volume=	21,395 cf	
Outflow =	6.91 cfs @	12.09 hrs,	Volume=	20,134 cf,	Atten= 1%, Lag= 0.6 min
Discarded =	0.01 cfs @	12.09 hrs,	Volume=	534 cf	
Primary =	6.90 cfs @	12.09 hrs,	Volume=	19,600 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.67' @ 12.09 hrs Surf.Area= 718 sf Storage= 1,628 cf

Plug-Flow detention time= 47.6 min calculated for 20,126 cf (94% of inflow)
Center-of-Mass det. time= 16.3 min (801.6 - 785.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	11.50'	193 cf	**17.50'W x 41.00'L x 4.17'H Field A** 2,990 cf Overall - 2,347 cf Embedded = 643 cf x 30.0% Voids
#2A	12.00'	1,640 cf	**retain_it retain_it 3.0'** x 10 Inside #1 Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf 2 Rows adjusted for 66.1 cf perimeter wall
		1,833 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	14.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Discarded	11.50'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 10.60' Phase-In= 0.01'

Discarded OutFlow Max=0.01 cfs @ 12.09 hrs HW=14.67' (Free Discharge)
└─**2=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=6.89 cfs @ 12.09 hrs HW=14.67' TW=13.91' (Dynamic Tailwater)
└─**1=Sharp-Crested Rectangular Weir** (Weir Controls 6.89 cfs @ 2.67 fps)

Pond 5P: INF 5 - Chamber Wizard Field A

Chamber Model = retain_it retain_it 3.0' (retain-it®)
Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
2 Rows adjusted for 66.1 cf perimeter wall

96.0" Wide + 6.0" Spacing = 102.0" C-C Row Spacing

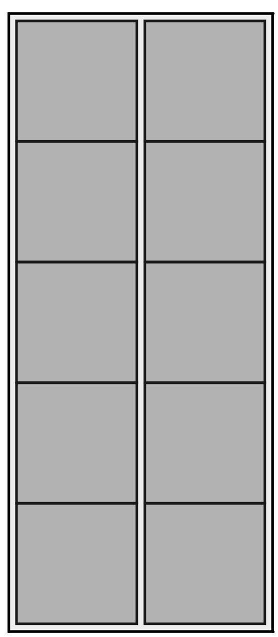
5 Chambers/Row x 8.00' Long = 40.00' Row Length +6.0" End Stone x 2 = 41.00' Base Length
2 Rows x 96.0" Wide + 6.0" Spacing x 1 + 6.0" Side Stone x 2 = 17.50' Base Width
6.0" Base + 44.0" Chamber Height = 4.17' Field Height

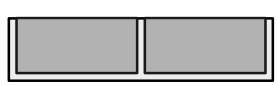
4.7 cf Sidewall x 5 x 2 + 4.7 cf Endwall x 2 x 2 = 66.1 cf Perimeter Wall
10 Chambers x 170.6 cf - 66.1 cf Perimeter wall = 1,640.0 cf Chamber Storage
10 Chambers x 234.7 cf = 2,346.7 cf Displacement

2,989.6 cf Field - 2,346.7 cf Chambers = 642.9 cf Stone x 30.0% Voids = 192.9 cf Stone Storage

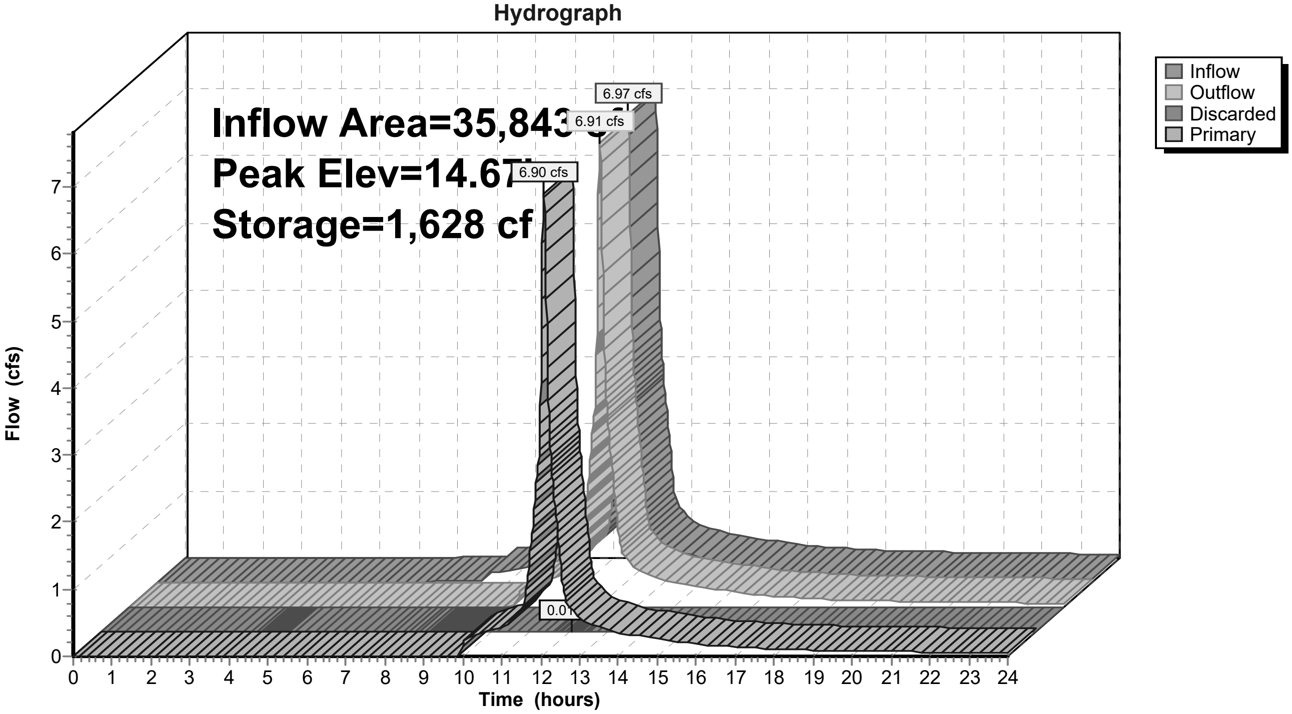
Chamber Storage + Stone Storage = 1,832.9 cf = 0.042 af
Overall Storage Efficiency = 61.3%
Overall System Size = 41.00' x 17.50' x 4.17'

10 Chambers
110.7 cy Field
23.8 cy Stone





Pond 5P: INF 5


Hydrograph
Inflow Area=35,843 sf
Peak Elev=14.67'
Storage=1,628 cf
6.97 cfs
6.91 cfs
6.90 cfs
0.01
Inflow
Outflow
Discarded
Primary
Flow (cfs)
0
1
2
3
4
5
6
7
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time (hours)

Summary for Pond 6P: G2 INF

Inflow Area =	20,214 sf,	94.76% Impervious,	Inflow Depth > 8.46"	for 100-year event
Inflow =	4.16 cfs @	12.07 hrs, Volume=	14,258 cf	
Outflow =	4.15 cfs @	12.07 hrs, Volume=	13,041 cf,	Atten= 0%, Lag= 0.3 min
Discarded =	0.01 cfs @	12.07 hrs, Volume=	444 cf	
Primary =	4.14 cfs @	12.07 hrs, Volume=	12,597 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 15.87' @ 12.07 hrs Surf.Area= 730 sf Storage= 1,317 cf

Plug-Flow detention time= 81.6 min calculated for 13,035 cf (91% of inflow)
Center-of-Mass det. time= 37.2 min (781.4 - 744.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	12.50'	628 cf	**15.75'W x 46.34'L x 4.00'H Field A**
			2,919 cf Overall - 827 cf Embedded = 2,092 cf x 30.0% Voids
#2A	13.00'	827 cf	**ADS_StormTech SC-740 +Cap** x 18 Inside #1
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			18 Chambers in 3 Rows
		1,455 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	15.40'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Discarded	12.50'	**0.142 in/hr Exfiltration over Surface area**
			Conductivity to Groundwater Elevation = 10.60' Phase-In= 0.01'

Discarded OutFlow Max=0.01 cfs @ 12.07 hrs HW=15.87' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=4.13 cfs @ 12.07 hrs HW=15.87' TW=14.66' (Dynamic Tailwater)
↑—**1=Sharp-Crested Rectangular Weir** (Weir Controls 4.13 cfs @ 2.25 fps)

Pond 6P: G2 INF - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

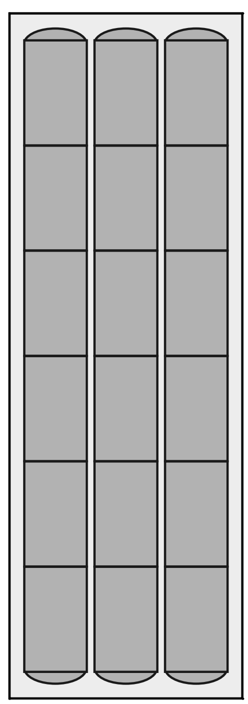
6 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 44.34' Row Length +12.0" End Stone x 2 = 46.34' Base Length
3 Rows x 51.0" Wide + 6.0" Spacing x 2 + 12.0" Side Stone x 2 = 15.75' Base Width
6.0" Base + 30.0" Chamber Height + 12.0" Cover = 4.00' Field Height

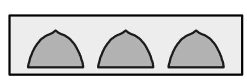
18 Chambers x 45.9 cf = 826.9 cf Chamber Storage

2,919.2 cf Field - 826.9 cf Chambers = 2,092.3 cf Stone x 30.0% Voids = 627.7 cf Stone Storage

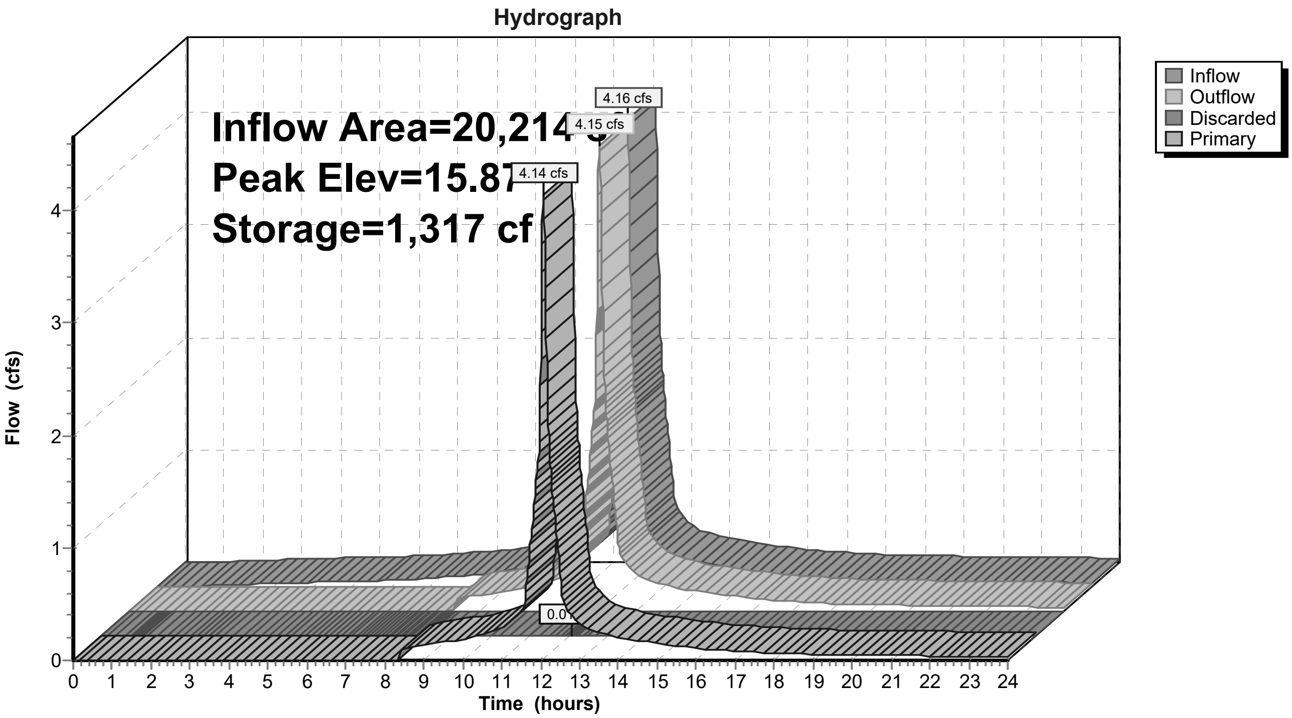
Chamber Storage + Stone Storage = 1,454.6 cf = 0.033 af
Overall Storage Efficiency = 49.8%
Overall System Size = 46.34' x 15.75' x 4.00'

18 Chambers
108.1 cy Field
77.5 cy Stone





Pond 6P: G2 INF



Summary for Pond 7P: Drywell

Inflow Area = 4,406 sf, 77.21% Impervious, Inflow Depth > 7.98" for 100-year event
Inflow = 0.89 cfs @ 12.07 hrs, Volume= 2,931 cf
Outflow = 0.89 cfs @ 12.07 hrs, Volume= 2,814 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 12.07 hrs, Volume= 40 cf
Primary = 0.89 cfs @ 12.07 hrs, Volume= 2,775 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 16.20' @ 12.07 hrs Surf.Area= 28 sf Storage= 120 cf

Plug-Flow detention time= 41.3 min calculated for 2,813 cf (96% of inflow)
Center-of-Mass det. time= 17.8 min (779.4 - 761.5)

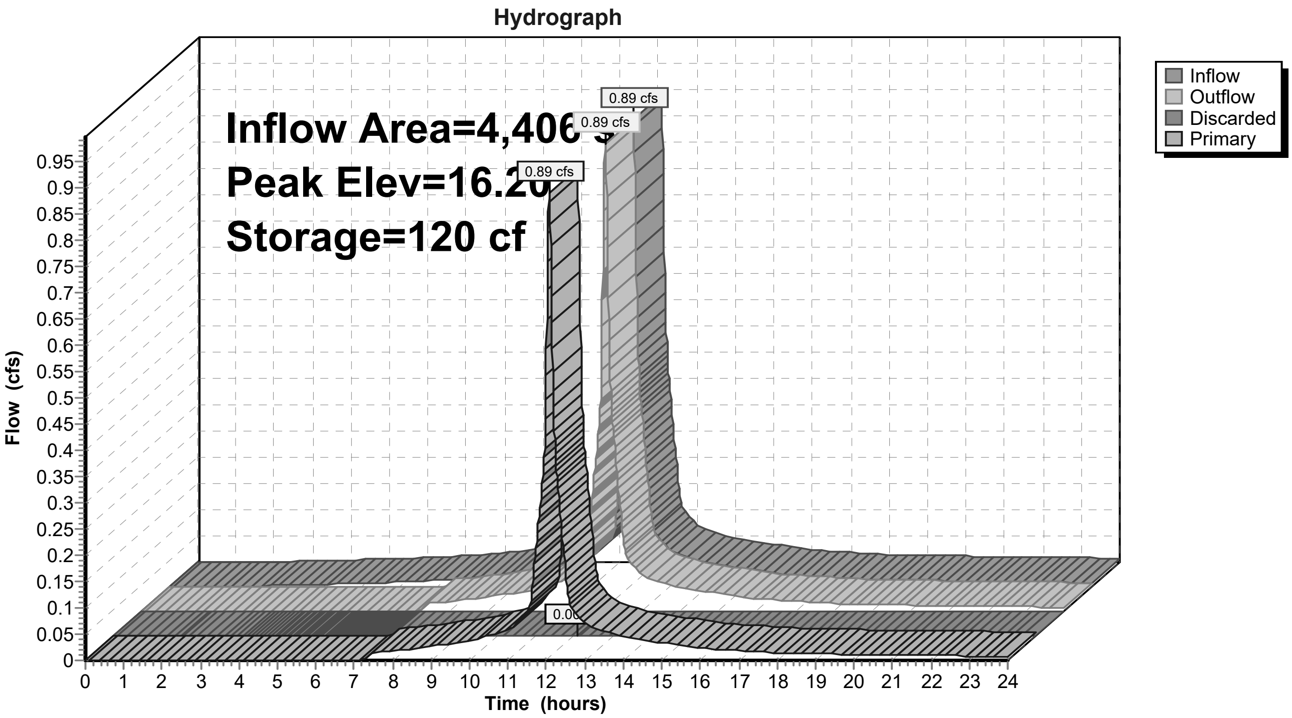
Volume	Invert	Avail.Storage	Storage Description
#1	9.30'	88 cf	**4.00'D x 7.00'H Vertical Cone/Cylinder**
#2	9.30'	33 cf	**4.50'D x 7.00'H Vertical Cone/Cylinder** 111 cf Overall x 30.0% Voids
		121 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	16.00'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	9.30'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 8.00'

Discarded OutFlow Max=0.00 cfs @ 12.07 hrs HW=16.20' (Free Discharge)
└─**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.89 cfs @ 12.07 hrs HW=16.20' TW=0.00' (Dynamic Tailwater)
└─**1=Orifice/Grate** (Weir Controls 0.89 cfs @ 1.45 fps)

Pond 7P: Drywell



Summary for Pond G2R: Raingarden G2

Inflow Area = 6,603 sf, 37.32% Impervious, Inflow Depth > 6.77" for 100-year event
Inflow = 1.21 cfs @ 12.07 hrs, Volume= 3,724 cf
Outflow = 1.16 cfs @ 12.09 hrs, Volume= 3,570 cf, Atten= 4%, Lag= 1.1 min
Discarded = 0.00 cfs @ 12.09 hrs, Volume= 46 cf
Primary = 1.16 cfs @ 12.09 hrs, Volume= 3,525 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.78' @ 12.09 hrs Surf.Area= 253 sf Storage= 213 cf

Plug-Flow detention time= 38.1 min calculated for 3,569 cf (96% of inflow)
Center-of-Mass det. time= 14.6 min (805.3 - 790.8)

Volume	Invert	Avail.Storage	Storage Description
#1	13.00'	276 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

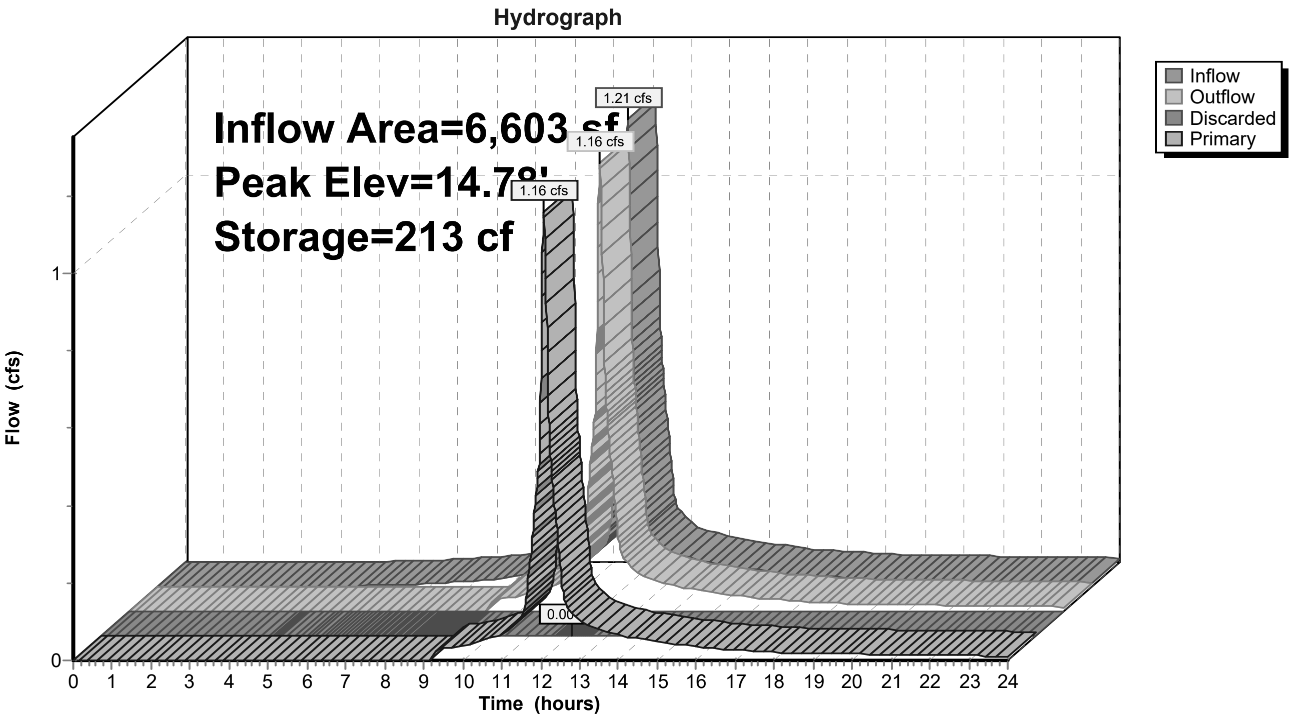
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
13.00	21	0	0
14.00	125	73	73
14.50	190	79	152
15.00	305	124	276

Device	Routing	Invert	Outlet Devices
#1	Primary	14.50'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	13.00'	**0.142 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 8.70' Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=14.77' (Free Discharge)
└─**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=1.15 cfs @ 12.09 hrs HW=14.77' TW=14.67' (Dynamic Tailwater)
└─**1=Orifice/Grate** (Weir Controls 1.15 cfs @ 1.34 fps)

Pond G2R: Raingarden G2

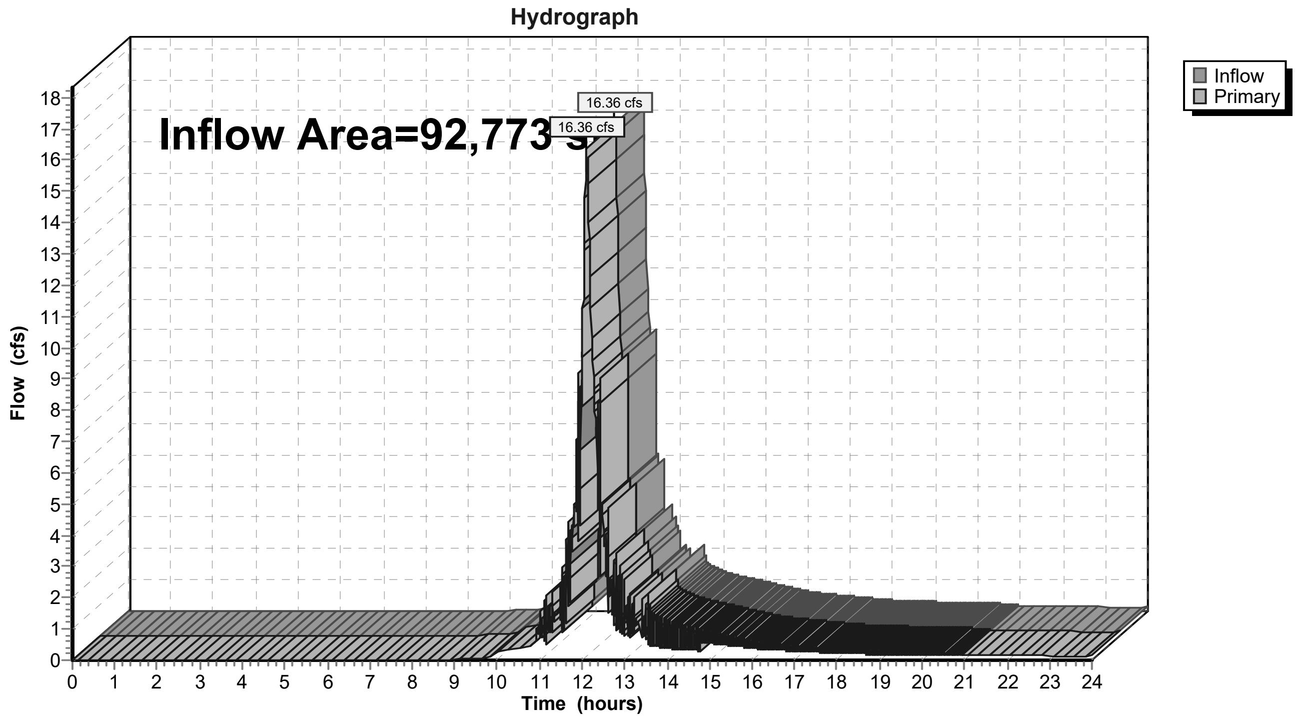


Summary for Link 1L: SDO 580

Inflow Area =	92,773 sf,	75.04% Impervious,	Inflow Depth > 6.36"	for 100-year event
Inflow =	16.36 cfs @	12.10 hrs, Volume=	49,155 cf	
Primary =	16.36 cfs @	12.10 hrs, Volume=	49,155 cf,	Atten= 0%, Lag= 0.0 min

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

Link 1L: SDO 580

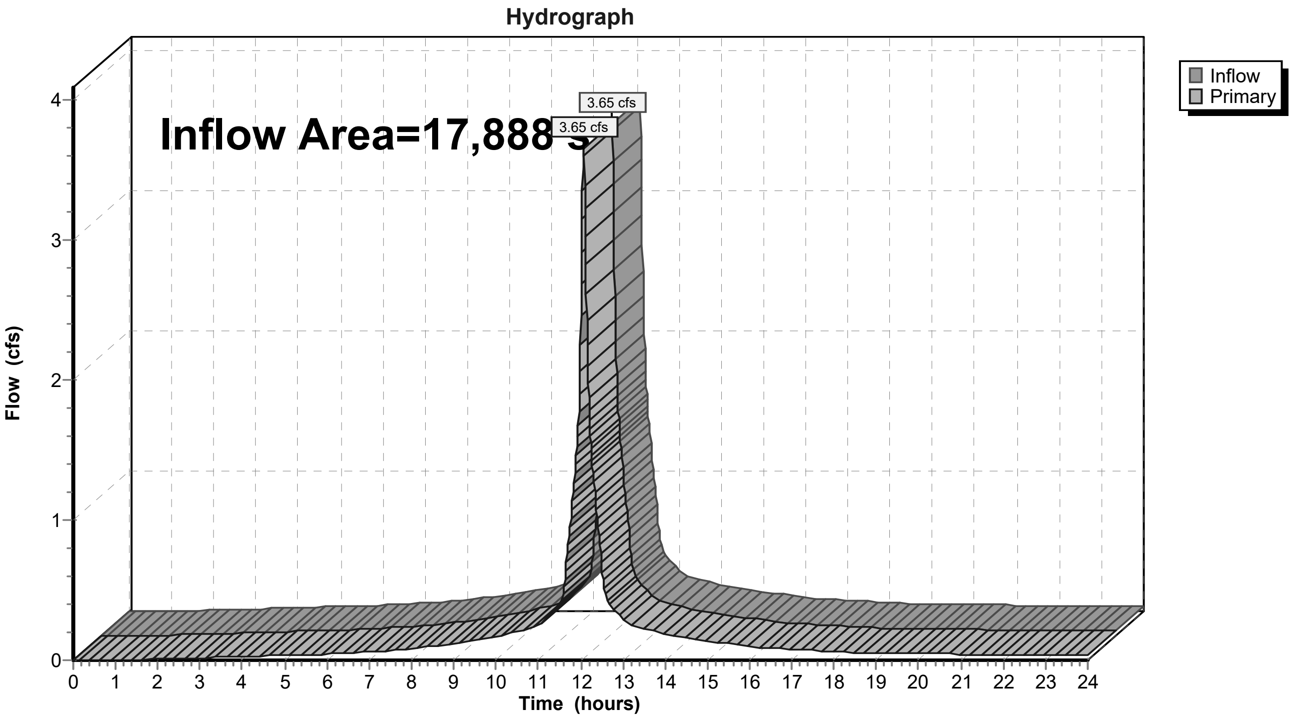


Summary for Link 2L: Fort Point Channel

Inflow Area =	17,888 sf,	88.55% Impervious,	Inflow Depth > 8.22"	for 100-year event
Inflow =	3.65 cfs @	12.07 hrs, Volume=	12,258 cf	
Primary =	3.65 cfs @	12.07 hrs, Volume=	12,258 cf,	Atten= 0%, Lag= 0.0 min

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

Link 2L: Fort Point Channel



Attachment D
Previously Issued OOC

16

2017 00074112
Bk: 58409 Pg: 6 Page: 1 of 16
Recorded: 08/21/2017 03:50 PM
ATTEST:Stephen J. Murphy, Register
Suffolk County Registry of Deeds

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:006-1490
eDEP Transaction #:948645
City/Town:BOSTON

A. General Information

1. Conservation Commission BOSTON
2. Issuance a. ☐ OOC b. ☑ Amended OOC
3. Applicant Details
   - a. First Name ANN b. Last Name KLEE
   - c. Organization GENERAL ELECTRIC COMPANY (GE)
   - d. Mailing Address 31 - 43 FARNSWORTH STREET
   - e. City/Town BOSTON f. State MA g. Zip Code 02210
4. Property Owner
   - a. First Name b. Last Name
   - c. Organization 15 Necco Street: Same; 5 Necco Street: MassDevelopment/Necco Buildings Redevelopment, LLC
   - d. Mailing Address
   - e. City/Town f. State g. Zip Code
5. Project Location
   - a.Street Address 15 Necco Street/ 5 Necco Street
   - b.City/Town BOSTON c. Zip Code 02110
   - d. Assessors Map/Plat# 0601165010 e. Parcel/Lot# N/A
   - f. Latitude 42.34916N g. Longitude 71.05139W
6. Property recorded at the Registry of Deed for:
   - a. County b. Certificate c. Book d. Page
7. Dates
   - a. Date NOI Filed : 12/9/2016 b. Date Public Hearing Closed: 8/2/2017 c. Date Of Issuance: 8/3/2017
8. Final Approved Plans and Other Documents
   - a. Plan Title: b. Plan Prepared by: c. Plan Signed/Stamped by: d. Revised Final Date: e. Scale:

B. Findings

1. Findings pursuant to the Massachusetts Wetlands Protection Act

Following the review of the the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act.

Check all that apply:

a. ☐ Public Water Supply	b. ☐ Land Containing Shellfish	c. ☑ Prevention of Pollution
d. ☐ Private Water Supply	e. ☐ Fisheries	f. ☑ Protection of Wildlife Habitat
g. ☐ Ground Water Supply	h. ☑ Storm Damage Prevention	i. ☑ Flood Control

2. Commission hereby finds the project, as proposed, is:

Approved subject to:

214-284 A Street + 5+15 Necco Street, Boston

Marginal Ref. 37662 · 321

Please return to:
Chicago Title
Commonwealth Land Title
265 Franklin Street, 8th Floor
Boston, MA 02110
For 1621-0008-DSD

wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.

Denied because:

b.☐ The proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect interests of the Act, and a final Order of Conditions is issued. **A description of the performance standards which the proposed work cannot meet is attached to this Order.**

c.☐ The information submitted by the applicant is not sufficient to describe the site, the work or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the interests of the Act, and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**

3.☐ Buffer Zone Impacts:Shortest distance between limit of project disturbance and the wetland resource area specified in 310CMR10.02(1)(a). ______ a. linear feet

Inland Resource Area Impacts:(For Approvals Only):

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. ☐ Bank	a. linear feet	b. linear feet	c. linear feet	d. linear feet
5.☐ Bordering Vegetated Wetland	a. square feet	b. square feet	c. square feet	d. square feet
6. ☐ Land under Waterbodies and Waterways	a. square feet	b. square feet	c. square feet	d. square feet
	e. c/y dredged	f. c/y dredged		
7.☐ Bordering Land Subject to Flooding	a. square feet	b. square feet	c. square feet	d. square feet
Cubic Feet Flood Storage	e. cubic feet	f. cubic feet	g. cubic feet	h. cubic feet
8.☐ Isolated Land Subject to Flooding	a. square feet	b. square feet		
Cubic Feet Flood Storage	c. cubic feet	d. cubic feet	e. cubic feet	f. cubic feet
9.☐ Riverfront Area	a. total sq. feet	b. total sq. feet		
Sq ft within 100 ft				

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:006-1490
eDEP Transaction #:946008
City/Town:BOSTON

Sq ft between 100-200 ft	c. square feet	d. square feet	e. square feet	f. square feet
	g. square feet	h. square feet	i. square feet	j. square feet

Coastal Resource Area Impacts:

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
10.☐ Designated Port Areas	Indicate size under Land Under the Ocean, below			
11.☐ Land Under the Ocean	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
12.☐ Barrier Beaches	Indicate size under Coastal Beaches and/or Coastal Dunes below			
13.☐ Coastal Beaches	a. square feet	b. square feet	c. c/y nourishment	d. c/y nourishment
14.☐ Coastal Dunes	a. square feet	b. square feet	c. c/y nourishment	d. c/y nourishment
15.☐ Coastal Banks	a. linear feet	b. linear feet		
16.☐ Rocky Intertidal Shores	a. square feet	b. square feet		
17.☐ Salt Marshes	a. square feet	b. square feet	c. square feet	d. square feet
18.☐ Land Under Salt Ponds	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
19.☐ Land Containing Shellfish	a. square feet	b. square feet	c. square feet	d. square feet
20.☐ Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above			
	c. c/y dredged	d. c/y dredged		
21.☑ Land Subject to Coastal Storm Flowage	106300 a. square feet	b. square feet		

22.

☐ Restoration/Enhancement (For Approvals Only)

If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.5.c & d or B.17.c & d above, please entered the additional amount here.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:006-1490
eDEP Transaction #:946008
City/Town:BOSTON

a. square feet of BVW

b. square feet of Salt Marsh

23.

☐ Streams Crossing(s)

If the project involves Stream Crossings, please enter the number of new stream crossings/number of replacement stream crossings.

a. number of new stream crossings

b. number of replacement stream crossings

C. General Conditions Under Massachusetts Wetlands Protection Act

The following conditions are only applicable to Approved projects

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
   a. the work is a maintenance dredging project as provided for in the Act; or
   b. the time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order.
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not exceed the issuance date of the original Final Order of Conditions.
7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.
8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.
9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work..
10. A sign shall be displayed at the site not less then two square feet or more than three square feet in size bearing the words,

" Massachusetts Department of Environmental Protection"
[or 'MassDEP"]
File Number :"006-1490"

11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before Mass DEP.
12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.
13. The work shall conform to the plans and special conditions referenced in this order.
14. Any change to the plans identified in Condition #13 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.
15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.
16. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.
17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.
18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.

NOTICE OF STORMWATER CONTROL AND MAINTENANCE REQUIREMENTS

19. The work associated with this Order(the "Project") is (1) ☑ is not (2)☐ subject to the Massachusetts Stormwater Standards. If the work is subject to Stormwater Standards, then the project is subject to the following conditions;
   a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollutant Discharge Elimination System Construction General Permit as required by Stormwater Standard 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.
   b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that: *i.* all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures; *ii..* as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized; *iii.* any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10; *iv.* all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been

inspected to ensure that they are not damaged and that they are in proper working condition; *v.* any vegetation associated with post-construction BMPs is suitably established to withstand erosion.

c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 19(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement") for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following: i.) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and ii.) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.

d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollutant Discharge Elimination System Multi-Sector General Permit.

e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 19(f) through 19(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 19(f) through 19(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.

f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.

g) The responsible party shall:
1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and
3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.

h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.

i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.

j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.

k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.

1) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions:
SEE ATTACHMENT

January 4, 2017 BCC PUBLIC HEARING
Attachment – Special Conditions
General Electric Company Headquarters, 5 and 6 Necco Court and Necco Street
South Boston, Fort Point Channel (Buffer to Coastal Bank, LSCSF)
DEP File No. 006-1490

20. The term "Applicant" as used in this Order of Conditions refers to the owner, any successor in interest or successor in control of the property referenced in the Notice of Intent, supporting documents and this Order of Conditions. The Commission must be notified in writing within 30 days of all transfers of title of any portion of property that take place prior to the issuance of the Certificate of Compliance.
21. The property that is the subject of this Order and upon which the project is located will be referred hereinafter as "the subject property" or the "project site".
22. A member of the Conservation Commission or its agent may enter and inspect the property and the activities that are the subjects of this Order of Conditions (OOC) at all reasonable times, with or without probable cause or prior notice, and until a Certificate of Compliance (COC) is issued, for the limited purpose of evaluating compliance with this OOC.
23. The Applicant is hereby instructed to review such conditions with all contractors and workers involved in on site operations prior to the commencement of construction on this project. Any contractors and workers arriving after construction commences must also be apprised of these conditions.
24. The Applicant must attach a copy of this Final Order of Conditions (hereinafter "the Order") to the contract documents associated with this project.
25. The Commission reserves the right to impose additional conditions or require the submittal of additional information as necessary to protect the interests of the Act.
26. If at any time during the implementation of the project a fish kill or significant water quality problem occurs in the vicinity of the project, all site related activities impacting the water must cease until the source of the problem is identified and adequate mitigating measures employed to the satisfaction of the Boston Conservation Commission (hereinafter "the Commission").
27. Where relevant, all facilities and equipment will be continually operated and maintained so as to comply with the conditions and the Massachusetts Wetlands Protection Act (hereinafter "the Act"). The Applicant, owner, successor or assigns will be responsible for maintaining all on-site drainage structures and outfalls, assuring the lasting integrity of the surface cover on the site and site activities so as to prevent erosion, siltation, sedimentation, chemical contamination or other detrimental impact to the on-site and/or off-site wetland resource areas. This condition is a **maintenance** condition, and will not expire upon the issuance of a Certificate of Compliance.
28. A copy of the Order, including all referenced documents and plans, and all other subsequent approvals and directives issued by the Commission, must be available for inspection at the work area.
29. All project generated discharges, including stormwater, authorized by a NPDES permit, will be subject to the terms of the NPDES permit which is incorporated herein by reference pursuant to 310 CMR 10.03 (4). The Applicant must submit the NPDES permit to the Commission.
30. There may be no discharge or spillage of fuel, oil, or any other pollutant from this project into adjacent wetland resource areas or 100-foot Buffer Zone (hereinafter "buffer zone") associated with those resource areas. Any equipment used in any wetland resource area or buffer zone that uses fuel, oil or hydraulic fluid must be inspected daily for leakage. Any equipment, other than that related to dewatering, that requires repair must be repaired at least 25 feet from the Coastal Bank. Any equipment that uses fuel, oil and/or hydraulic fluid must be staffed at all times while operational within wetland resource areas or buffer zone. Equipment must not be re-fueled within 25 feet of the Coastal Bank.
31. The Applicant must inform the Commission of any violation of this Order and any other project related spill or accident that may impact wetland resource areas as soon as possible and at least by the end of the business day, and must take appropriate action to mitigate impacts from such spill or accident. The Applicant or site supervisor must notify the City of any emergency by calling Commission staff at 617-635-3850 from 9:00 AM - 5:00 PM, Monday - Friday and, at all other times, by calling the Mayor's

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Office's 24-hour Hotline at 617-635-4500. On the date of the issuance of this Order, the appropriate contact is Carl Spector, Commissioner: cc@boston.gov

32. Any mitigation measures required by federal, state, or other local agencies that may impact wetlands resource areas must be submitted to Commission staff for review to determine what level of permitting or authorization will be necessary.

33. All project related correspondence and submittals to the Boston Conservation Commission regarding this Final Order must indicate the DEP File number: 006-1490.

Prior to Construction

34. In advance of construction start-up on any section of this project, the Applicant must notify the Commission and, at the request of the Commission, may arrange an on-site conference of representatives of the Commission, the contractor, the project engineer and the Applicant to ensure that all the conditions of this Order are understood. The Commission must be notified at least 48 hours in advance of the date upon which construction activities on the site are to proceed. All appropriate construction impact mitigation measures must be in place prior to initiation of work on the project site.

35. The Applicant and/or their contractor must provide to the Commission written notification of the name, title, address and telephone numbers of the person or persons designated by the project proponent to be responsible for compliance with the Order on site. An emergency telephone number must be provided in the event that action is required during non-working hours.

36. The project supervisor overseeing daily operations at the site must read this Order and sign a copy of each page, indicating that each condition has been read and understood. These signed pages must be submitted to Commission staff.

37. Before work outside of the two existing buildings commences, the Applicant or their contractor must submit a final erosion and sediment control plan for review and approval by Commission staff. Final plans showing the points of discharge, wheel wash stations, sedimentation tanks and basins, oil separating equipment and other engineering structures should be provided to the Commission with a certified engineer's stamp and signature. To satisfy this condition the Applicant may submit a Storm Water Pollution Prevention Plan (SWPPP) required under the NPDES Construction General Permit for Storm Water Discharges for Construction Activities. The approved plan will be a condition of this Order by reference herein.

38. Prior to the commencement of construction and site clearing, an erosion and sediment control barrier must be installed along the limit of activity between all work areas and wetland resource areas. Hay bales or straw bales should be double staked (where possible) with bales butted against each other. If straw wattles or filter sox are used, they should be anchored in place. If specified, geotextile siltation fence should be installed no further than twelve (12) inches from the down-gradient side of the barrier. These barriers must be inspected daily and after significant rain events (greater than 0.5 inches of precipitation) and maintained as necessary, including the removal of accumulated sediments. The contractor must ensure that additional erosion and sediment control materials are available for immediate installation to replace those that are damaged or degraded. Erosion control measures should be removed upon completion of work and after disturbed areas are stabilized. The geotextile fence will constitute a limit-of-work line, beyond which no work or clearing of vegetation may occur.

39. The contractor must submit a construction materials and equipment staging plan 14 days prior to construction for Commission staff review and approval. Project related staging areas will be subject to all conditions herein. Staging areas located outside the project footprint, as indicated on the approved project plan of record, that are within wetland resource areas and the buffer zone may be subject to further Commission review.

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40. The Applicant must submit to Commission staff notice of approval by the Boston Water and Sewer Commission (BWSC) of the plans for this project. Any modifications required by BWSC to the plans approved by this Order must be detailed in writing with this submittal so that Commission staff can determine if further conditions are required.

41. Ninety days prior to commencement of construction on the Harborwalk and associated landscaping, the Applicant must submit to Commission Staff for their review and approval a landscaping plan that provides native coastal bank vegetation along the Harborwalk; finished details for the Harborwalk including additional signage; and a maintenance plan for these structures and amenities. These submittals will be incorporated into this Order by reference herein.

42. The Applicant must submit a construction and post-construction snow management plan for Commission staff review and approval. Snow from landside areas may not be plowed or otherwise deposited into the waters of Fort Point Channel or adjacent coastal banks. Snow must be stockpiled on paved surfaces that direct melted snow water to catch basins. Deicing material and sand must be stored and contained in areas that will not allow for their migration into wetland resource areas. Prior to April 1st, all sand and salt from winter application must be removed from the site. The approved snow management plan will be a perpetual maintenance condition that will not expire upon issuance of a Certificate of Compliance.

43. The Applicant must submit a flood contingency plan detailing the steps that will be taken to secure or remove equipment and/or unconsolidated materials from Land Subject to Coastal Storm Flowage in advance of any forecasted flooding event.

During Construction

44. The Applicant, owner, successor or assigns must regularly remove and dispose of debris on all wetland resources areas on the project site. This is a perpetual **maintenance** condition that will not expire upon issuance of a Certificate of Compliance.

45. The Applicant must maintain the project site free of trash and debris during any down time or hiatus in the project during the term of this Order.

46. The Applicant and/or their contractor must clean the work area at the end of each workday to prevent wind deposition of fugitive dust and accumulation of debris in the buffer zone or wetland resource areas. All stored excavate or fill must be contained with appropriate best management practices when not in use. Special attention should be given by the contractor to securing covers on stored excavate, fill, dumpsters and roll-off containers over the weekend or during down time.

47. Disposal of all construction materials, demolition debris and excess fill must be done in accordance with applicable federal, state, and local laws. Proof of proper disposal must be provided in the form of copies of bills of lading, disposal receipts or manifests to Commission staff upon request.

48. On-site discharge of untreated, decanted water from construction dewatering to resource areas is prohibited. If on-site discharge becomes necessary, the Applicant must submit a plan indicating dewatering methodology, water quality monitoring measures, and staging location of dewatering equipment for Commission staff review and approval. Any approved dewatering must treat decanted water according to additional conditions deemed necessary by Commission staff.

49. The Applicant, owner, successor or assigns will ensure the cleanliness of all catch basins on the project site or affected by project related activity. Catch basins will be protected with hay bales and/ or silt sacks during the construction period. The proponent must inspect and, as necessary, clean all catch basins at least weekly during construction and more frequently after a significant rain event. Upon completion of the project, the inspection and cleaning of catch basins on the subject property must occur twice a year: once between March 1st and April 30th and once between November 1st and November 30th of each year, and more often if necessary. This **maintenance** condition is perpetual and will not expire upon issuance of a Certificate of Compliance.

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50. All sheet flow from areas where vehicles drive or park must be directed toward catch basins that meet Boston Water and Sewer Specifications.

51. Any new or reconstructed catch basins, or any new or replaced sections of sidewalk or pavement adjacent to surface drains on the project site, must have a permanent plaque within one foot of the structure that states "Don't Dump - Drains to Boston Harbor."

52. Trucks entering and leaving the site must have their loads completely covered in compliance with M.G.L. Chapter 85 § 36. Vehicles that accumulate soil or any unconsolidated material on their tires due to exposed ground conditions at the site must be thoroughly washed to avoid tracking of material onto the public way.

53. The contractor must have designated washout areas for concrete equipment that will be comprised of impermeable material and sized to contain project concrete wastes and wash water. Washout areas may not be located in the vicinity of storm drain inlets, stormwater conveyance, surface waters or wetlands.

54. There may be no parking of contractor or laborer vehicles in any resource area or associated buffer zone without proper stormwater controls or best management practices installed.

55. Construction activity will be confined within the limits of work as represented on the final plan of record. There may be no staging of construction materials, storage of construction equipment, clearing or disturbance to land beyond the limit of work.

56. There may be no overnight stockpiling or storage of construction material including unconsolidated material, piles, debris, petroleum products or hydraulic fluids (or equipment containing these products or fluids) within 25 feet of the coastal bank. Erosion and sediment control containment measures must be installed and maintained between the coastal bank and any stored construction materials or staged construction equipment. Under no circumstances may the project contractor store, stage or locate unconsolidated material or construction equipment not directly associated with the project and subject site within resource areas or the buffer zone. At the request of the Applicant, Commission staff may authorize construction lay-down areas within 25 feet of the Coastal Bank for storage of equipment *during the construction period only.*

57. All land-side areas disturbed during construction must be stabilized as soon as possible upon completion of construction. Loaming and seeding should occur within (5 - 30) days of final grading. Disturbed resource areas landward of the high water line and buffer zone mark should be secured by a biodegradable erosion control mats while vegetation establishes. Barren areas should be stabilized with a temporary cover of rye or other grass if work on the project is interrupted for more than 30 days. If the season is not appropriate for plant growth, then exposed surfaces may be stabilized by straw, snow fence, or other U.S. Natural Resources Conservation Service - recommended methods. The Applicant or their contractor will ensure a mature cover of vegetation is established on previously disturbed or exposed areas.

Additional Conditions

58. In the interest of prevention of pollution and storm damage prevention, the Applicant should give consideration to future sea level rise over the design life of the project in determining the ground-level floor elevation for buildings, as well as the location of building mechanical equipment, utilities, storage areas for hazardous materials, underground garage portals, exhaust and ventilation infrastructure, and building entry points.

59. The useful life of storm water management infrastructure places currently conceived systems well within the time period when climate change impacts will manifest. The applicant must demonstrate how the project has been prepared for forecasted changes to rainfall intensity and watershed runoff.

60. The project site, or some portion of it, may have been subject to conditions in Orders of Conditions numbered 006-612, 006-643, 006-725, 006-1044, 006-1128, 006-1229 and 006-1422issued to prior owners of the project site or some portion of it (collectively the "prior Order of Conditions"). To the

extent any conditions in the Prior Orders of Conditions remained effective as of the date of the Applicant's Notice of Intent; the Commission supersedes any such conditions with respect to the project site with the conditions in this Order.

Project Description from NOI:

The Project is the redevelopment of an approximately 2.4 acre site located on the Fort Point Channel including the rehabilitation of two existing buildings at 5 and 6 Necco Court, the construction of a new 12-story building that will be connected to the existing buildings by a pedestrian bridge and GE Plaza, a new pedestrian walkway running from Necco Street to the Fort Point Channel, and the construction of public realm improvements including an inviting Harborwalk, green space, interpretive signage and amenities. The Project will impact 95,300 sf of LSCSF (AE Zone Elevation 10' NAVD88), and is within the buffer to Coastal Bank. The Project is subject to the MA Stormwater Management Standards, and a portion of the site constitutes redevelopment. The Project will implement LID measures such a green roofs, grey water re-use, rain gardens, and subsurface infiltration structures, the latter two of which will promote infiltration. The FFE of the existing and proposed buildings will be set at elevation 13' NAVD88. Erosion and sediment controls will be provided during construction.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
6-1490
MassDEP File #

eDEP Transaction #
Boston
City/Town

E. Signatures

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

This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.

8/2/2017
1. Date of Issuance

Please indicate the number of members who will sign this form.
This Order must be signed by a majority of the Conservation Commission.

4
2. Number of Signers

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy must be mailed, hand delivered or filed electronically at the same time with the appropriate MassDEP Regional Office.

Signatures:

☐ by hand delivery on

Date

☒ by certified mail, return receipt requested, on
8/3/2017
Date

F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request of Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:006-1490
eDEP Transaction #:946008
City/Town:BOSTON

D. Findings Under Municipal Wetlands Bylaw or Ordinance

1.Is a municipal wetlands bylaw or ordinance applicable? ☐ Yes ☑ No

2.The Conservation Commission hereby(check one that applies):

a. ☐ DENIES the proposed work which cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw specifically:

1. Municipal Ordinance or Bylaw ________ 2. Citation ________

Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order or Conditions is issued. Which are necessary to comply with a municipal ordinance or bylaw:

b. ☐ APPROVES the proposed work, subject to the following additional conditions.

1. Municipal Ordinance or Bylaw ________ 2. Citation ________

3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.

The special conditions relating to municipal ordinance or bylaw are as follows:

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:006-1490
eDEP Transaction #:946008
City/Town:BOSTON

(M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

G. Recording Information

This Order of Conditions must be recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

BOSTON
Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:

BOSTON
Conservation Commission

Please be advised that the Order of Conditions for the Project at:

244 - 284 A STREET	006-1490
Project Location	MassDEP File Number

Has been recorded at the Registry of Deeds of:

County	Book	Page

for:

Property Owner

and has been noted in the chain of title of the affected property in:

Book	Page

In accordance with the Order of Conditions issued on:

Date

If recorded land, the instrument number identifying this transaction is:

Instrument Number

If registered land, the document number identifying this transaction is:

Document Number

Signature of Applicant

Attachment E
Abutter Notification Materials

- List of Abutters
- Abutter Notification Form (COVID 19)
- Chinese Abutter Notification Form
- Babel Notice
- Affidavit of Service
- Certificates of Mailing

Request for Amended OOC - 15 Necco Abutters within 300 feet

PID	ADDRESSEE	MLG_ADDRESS	MLG_CITYSTATE	MLG_ZIPCODE
602706032, 602706034	AGOOS PETER S A	326 A ST #6-A	SO BOSTON MA	02210
602706020	BASTIEN PETER	20 NORTH AVENUE	BURLINGTON MA	01803
601166040	BOS OFFICE 2 LLC	3520 PIEDMONT RD NE STE 410	ATLANTA GA	30305
601165040	BOSTON REDEVELOPMENT	1 CITY HALL PLAZA 9TH FLOOR	BOSTON MA	02201
602706012	FORT POINT ENTERPRISES LLC	23 DUTTON RD	PELHAM NH	03076
601166050	FOURTY-9 MELCHER ST LLC	133 PEARL ST SUITE #400	BOSTON MA	02110
601165010	GILLETTE COMPANY	PO BOX 599 - ATTN: TAX DIVIS	CINCINNATI OH	45201
602706030	JACOBSON MARJORY A	326 A ST #5-C	SOUTH BOSTON MA	02127
601166030	JSIP 63 MELCHER LLC	127 BLAKE ST	NEWTON MA	02460
601165020, 601165050, 601165030	MASSDEVELOPMENT/NECCO	99 HIGH ST 11TH FLOOR	BOSTON MA	02110
601166070, 601166060	MEPT NECCO STREET GARAGE LLC	PO BOX 92129	SOUTHLAKE TX	76092
602706016, 602706022	MEYER TERRY F ETAL	326 A ST #3-B	SO BOSTON MA	02210
602706026, 602706028	MILLYARD HARRY	6 CLAYBROOK ROAD	DOVER MA	02030
602706004	ORNSTEIN JEFFREY B TS	326 A ST #1B	BOSTON MA	02210
602706036	REEVE EMMA TS	326 A ST 6-C	BOSTON MA	02210
602706024	SHULEVICH VIKTORIA	326 A ST #4C	BOSTON MA	02127
601163015, 601163025, 601163005, 601164005, 601164015	SUMMER MELCHER SPE LLC	100 FRANKLIN ST 2ND FLOOR	BOSTON MA	02110
602706014	SWARTZ LINDA	69 CENTRE ST	BROOKLINE MA	02446
602706008, 602706010	SZE CHIA-MING	44 PINCKNEY ST	BOSTON MA	02114
602706000	THREE 26 A STREET CONDO TR	326 A ST	BOSTON MA	02210
602707000	THREE-24 A STREET LLC	351 NEWBURY ST	BOSTON MA	02115
602706018	TUNNARD ROBERTA B	326 A ST #3-C	SO BOSTON MA	02210
602703000, 602704000	TWO 81 SUMMER ST LLC	PO BOX 4900 - DEPT 207	SCOTTSDALE AZ	85261
602706006	VAN DER MUDE ALANA	326 A STREET #1C	BOSTON MA	02210
602706002	WOOHOO! HOLDINGS LLC	326 A ST UNIT 1A	BOSTON MA	02210

Source: Boston Assessor's Database, accessed 1/22/21

NOTIFICATION TO ABUTTERS
BOSTON CONSERVATION COMMISSION

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

A. **NATIONAL DEVELOPMENT** has filed a Notice of Intent with the Boston Conservation Commission seeking permission to alter an Area Subject to Protection under the Wetlands Protection Act (General Laws Chapter 131, section 40) and Boston Wetlands Ordinance.

B. The address of the lot where the activity is proposed is **15 NECCO STREET.**

C. The project involves **A REQUEST FOR AN AMENDED ORDER OF CONDITIONS RELATED TO DRAINAGE, GRADING AND LANDSCAPING.**

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

E. Copies of the Notice of Intent may be obtained from **STEPHANIE KRUEL, SKRUEL@VHB.COM; 617-607-2972** between the hours of **9:00-4:00, MONDAY-FRIDAY.**

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

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

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

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

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

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

波士顿湿地保护委员会
项目邻近住户通知

根据《马萨诸塞州湿地保护法》、《马萨诸塞州普通法》第 131 章第 40 节以及《波士顿湿地条例》的规定，我们特此向您，即向波士顿湿地保护委员会提出申请的项目的邻近住户，发出以下通知。

A. **NATIONAL DEVELOPMENT** 已向波士顿湿地保护委员会提出申请，请求批准改建一块受《湿地保护法》（ 《普通法》第 131 章第 40 节）和《波士顿湿地条例》保护的地块。

B. 拟开展改建活动的地块地址为：**15 NECCO STREET**。

C. 该项目涉及以下建设内容：**A REQUEST FOR AN AMENDED ORDER OF CONDITIONS RELATED TO DRAINAGE, GRADING AND LANDSCAPING**。

D. 可通過聯繫波士頓保護委員會取得意向通知書的副本， 電子郵件是 CC@boston.gov。

E. 您可于 **9:00AM - 4:00PM** 在 **STEPHANIEKRUEL,SKRUEL@VHB.COM, 617-607-2972** 处获取意向通知的副本。

F. 根據《馬薩諸塞州行政命令》（暫緩執行《公開會議法》聽證會將在網上 https://zoom.us/j/6864582044 進行。 如果無法上互聯網 (Internet)，則可致電 1-929-205-6099，輸入會議編號(ID) 686 458 2044＃， 然後使用＃作為您參與的編號(ID.)

G. 您可于**周一至周五上午 9 点到下午 5 点**联系**波士顿湿地保护委员会**，咨询公开听证会举行的日期和时间，邮箱地址：**CC@boston.gov**，电话：**(617) 635-4416**。

注：公开听证会的通知（包括其举行日期、时间和地点）将提前至少五天在**《波士顿先驱报》**上予以公布。

注：公开听证会的通知（包括其举行日期、时间和地点）将提前至少四十八（48）小时发布在以下网页之上以及波士顿市政厅内：www.boston.gov/public-notices。如果您想提出意见或建议，您可以参加该公开听证会或将书面形式的意见或建议发送至 CC@boston.gov 或邮寄至以下地址：Boston City Hall, Environment Department, Room 709, 1 City Hall Square, Boston, MA 02201。

注：您也可以联系波士顿湿地保护委员会或环境保护部东北地区办公室，咨询有关此项申请或《湿地保护法》的更多信息。如要联系环境保护部，请致电：东北地区：（978）694-3200。

注：如果您准备参加该公开听证会并需要口译服务，则请在听证会举行前一天中午 12 点前通过以下电子邮箱地址告知工作人员：CC@boston.gov。

BABEL NOTICE

English:

IMPORTANT! This document or application contains **important information** about your rights, responsibilities and/or benefits. It is crucial that you understand the information in this document and/or application, and we will provide the information in your preferred language at no cost to you. If you need them, please contact us at cc@boston.gov or 617-635-3850.

Spanish:

¡IMPORTANTE! Este documento o solicitud contiene **información importante** sobre sus derechos, responsabilidades y/o beneficios. Es fundamental que usted entienda la información contenida en este documento y/o solicitud, y le proporcionaremos la información en su idioma preferido sin costo alguno para usted. Si los necesita, póngase en contacto con nosotros en el correo electrónico cc@boston.gov o llamando al 617-635-3850.

Haitian Creole:

AVI ENPÒTAN! Dokiman oubyen aplikasyon sa genyen **enfòmasyon ki enpòtan** konsènan dwa, responsablite, ak/oswa benefis ou yo. Li enpòtan ke ou konprann enfòmasyon ki nan dokiman ak/oubyen aplikasyon sa, e n ap bay enfòmasyon an nan lang ou prefere a, san ou pa peye anyen. Si w bezwen yo, tanpri kontakte nou nan cc@boston.gov oswa 617-635-3850.

Traditional Chinese:

非常重要！這份文件或是申請表格包含關於您的權利，責任，和／或福利的重要信息。請您務必完全理解這份文件或申請表格的全部信息，這對我們來說十分重要。我們會免費給您提供翻譯服務。如果您有需要請聯糸我們的郵箱 cc@boston.gov 電話# 617-635-3850..

Vietnamese:

QUAN TRỌNG! Tài liệu hoặc đơn yêu cầu này chứa **thông tin quan trọng** về các quyền, trách nhiệm và/hoặc lợi ích của bạn. Việc bạn hiểu rõ thông tin trong tài liệu và/hoặc đơn yêu cầu này rất quan trọng, và chúng tôi sẽ cung cấp thông tin bằng ngôn ngữ bạn muốn mà không tính phí. Nếu quý vị cần những dịch vụ này, vui lòng liên lạc với chúng tôi theo địa chỉ cc@boston.gov hoặc số điện thoại 617-635-3850.

Simplified Chinese:

非常重要！这份文件或是申请表格包含关于您的权利，责任，和／或福利的重要信息。请您务必完全理解这份文件或申请表格的全部信息，这对我们来说十分重要。我们会免费给您提供翻译服务。如果您有需要请联糸我们的邮箱 cc@boston.gov 电话# 617-635-3850.

Cape Verdean Creole:

INPURTANTI! Es dukumentu ó aplikason ten **informason inpurtanti** sobri bu direitus, rasponsabilidadis i/ó benefísius. Ê krusial ki bu intendi informason na es dukumentu i/ó aplikason ó nu ta da informason na língua di bu preferênsia sen ninhun kustu pa bó. Si bu prisiza del, kontata-nu na cc@boston.gov ó 617-635-3850.

Arabic:

مهم! يحتوي هذا المستند أو التطبيق على معلومات مهمة حول حقوقك ومسؤولياتك أو فوائدك. من الأهمية أن تفهم المعلومات الواردة في هذا المستند أو التطبيق. سوف نقدم المعلومات بلغتك المفضلة دون أي تكلفة عليك. إذا كنت في حاجة إليها، يرجى الاتصال بنا على cc@boston.gov أو 617-635-3850.

Russian:

ВАЖНО! В этом документе или заявлении содержится **важная информация** о ваших правах, обязанностях и/или льготах. Для нас очень важно, чтобы вы понимали приведенную в этом документе и/или заявлении информацию, и мы готовы бесплатно предоставить вам информацию на предпочитаемом вами языке. Если Вам они нужны, просьба связаться с нами по адресу электронной почты cc@boston.gov, либо по телефону 617-635-3850.

Portuguese:

IMPORTANTE! Este documento ou aplicativo contém **Informações importantes** sobre os seus direitos, responsabilidades e/ou benefícios. É importante que você compreenda as informações contidas neste documento e/ou aplicativo, e nós iremos fornecer as informações em seu idioma de preferência sem nenhum custo para você. Se precisar deles, fale conosco: cc@boston.gov ou 617-635-3850.

French:

IMPORTANT ! Ce document ou cette demande contient des **informations importantes** concernant vos droits, responsabilités et/ou avantages. Il est essentiel que vous compreniez les informations contenues dans ce document et/ou cette demande, que nous pouvons vous communiquer gratuitement dans la langue de votre choix. Si vous en avez besoin, veuillez nous contacter à cc@boston.gov ou au 617-635-3850.

Certification of Translation

COUNTY OF SUFFOLK
COMMONWEALTH OF MASSACHUSETTS

February 5, 2021

This is to certify that the attached **bold text within the translation** is, to the best of my knowledge and belief, a true and accurate translation from English into Chinese of the attached document:

Chinese Abutter Notification Form 2020_15 Necco.docx

Linguistic Systems, Inc. adheres to an ISO-certified quality management system that ensures best practices are always followed in the selection of linguists skilled in both the languages and subject matters necessary for every translation.

Patrick Evanson

Patrick Evanson
Production Manager
Linguistic Systems

波士頓濕地保護委員會
專案鄰近住戶通知

根據《麻塞諸塞州濕地保護法》、《麻塞諸塞州普通法》第131章第40節及《波士頓濕地條例》之規定，我們特此向您，即向波士頓濕地保護委員會提出申請的專案的鄰近住戶，發出以下通知：

A. **NATIONAL DEVELOPMENT** 已向波士頓濕地保護委員會提出申請，請求批准改建一塊受《濕地保護法》（《普通法》第131章第40節）和《波士頓濕地條例》保護的地塊。

B. 擬開展改建活動的地塊地址為：**15 NECCO STREET**。

C. 該專案涉及以下建設內容：請求修改與廢水排放、分級及地貌相關條件的指令。

D. 可透過聯繫波士頓保護委員會取得意向通知書的副本，電子郵件：CC@boston.gov。

E. 您可於週一至週五上午**9**點到下午**4**點從**STEPHANIEKRUEL**（**SKRUEL@VHB.COM**、**617-607-2972**）處獲取意向通知的副本。

F. 根據《馬薩諸塞州行政命令》（暫緩執行《公開會議法》聽證會將在綫上https://zoom.us/j/6864582044進行。若無法接入互聯網（Internet），則可致電1-929-205-6099，輸入會議編號(ID) 686 458 2044＃，然後使用＃作為您參與的編號(ID)

G. 您可於週一至週五上午**9**點到下午**5**點聯繫波士頓濕地保護委員會，諮詢公開聽證會舉行的日期和時間，郵箱地址：**CC@boston.gov**，電話：**(617) 635-4416**。

注：公開聽證會的通知（包括其舉行日期、時間和地點）將提前至少五天在《波士頓先驅報》上予以公佈。

注：公開聽證會的通知（包括其舉行日期、時間和地點）將提前至少四十八（48）小時發佈在以下網頁之上以及波士頓市政廳內：www.boston.gov/public-notices。若您想提出意見或建議，您可以參加該公開聽證會或將書面形式的意見或建議發送至CC@boston.gov或郵寄至以下地址：
Boston City Hall,
Environment Department, Room 709, 1 City Hall Square, Boston, MA 02201。

注：您也可以聯繫波士頓濕地保護委員會或環境保護部東北地區辦公室，諮詢有關此項申請或《濕地保護法》的更多資訊。如要聯繫環境保護部，請致電：東北地區：（978）694-3200。

注：若您準備參加該公開聽證會並需要口譯服務，則請在聽證會舉行前一天中午12點前通過以下電郵地址告知工作人員：CC@boston.gov。

City of Boston
Environment

City of Boston
Mayor Martin J. Walsh

AFFIDAVIT OF SERVICE
FOR ABUTTER NOTIFICATION

Under the Massachusetts Wetlands Protection Act
and Boston Wetlands Ordinance

I, Stephanie Kruel___________________, hereby certify under pains and penalties of perjury that that at least one week prior to the public hearing, I gave notice to abutters in compliance with the second paragraph of Massachusetts General Laws Chapter 131, section 40, and the DEP Guide to Abutter Notification dated April 8, 1994, in connection with the following matter:

> A Request for an Amendment was filed under the Massachusetts Wetlands Protection Act and/or the Boston Wetlands Ordinance by ARE-MA Region No. 74, LLC and National Development for 15 Necco Street____ located at 15 Necco Street, Boston, MA____________________________________.

The Abutter Notification For, the list of abutters to whom it was given, and their addresses are attached to this Affidavit of Service.

__________________ February 5, 2021
Name Date

City of Boston
Environment

City of Boston
Mayor Martin J. Walsh

AFFIDAVIT OF SERVICE
FOR ABUTTER NOTIFICATION

Under the Massachusetts Wetlands Protection Act
and Boston Wetlands Ordinance

I, Stephanie Kruel___________________, hereby certify under pains and penalties of perjury that that at least one week prior to the public hearing, I gave notice to abutters in compliance with the second paragraph of Massachusetts General Laws Chapter 131, section 40, and the DEP Guide to Abutter Notification dated April 8, 1994, in connection with the following matter:

A Request for an Amendment was filed under the Massachusetts Wetlands Protection Act and/or the Boston Wetlands Ordinance by ARE-MA Region No. 74, LLC and National Development for 15 Necco Street____ located at 15 Necco Street, Boston, MA____________________________________.

The Abutter Notification For, the list of abutters to whom it was given, and their addresses are attached to this Affidavit of Service.

___________________ February 5, 2021

Name Date

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S. KRUEL 10421.02

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Check type of mail or service

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- ☐ Certified Mail Restricted Delivery
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- ☐ Insured Mail
- ☐ Priority Mail
- ☐ Priority Mail Express
- ☐ Registered Mail
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WATERTOWN MA 0
FEB 01 2021

	USPS Tracking/Article Number	Addressee (Name, Street, City, State, & ZIP Code™)	Postage	(Extra Service) Fee	Handling Charge	Actual Value if Registered	Insured Value	Due Sender if COD	ASR Fee	ASRD Fee	RD Fee	RR Fee	SC Fee	SCRD Fee	SH Fee
1.	7020 3160 0000 5982 1606	WOOHOO! HOLDINGS LLC 326 A ST UNIT 1A BOSTON MA 02210	0.51	3.60								2.85			
2.															
3.															
4.															
5.															
6.															
7.															
8.															

Handling Charge - if Registered and over $50,000 in value

Adult Signature Required

Adult Signature Restricted Delivery

Restricted Delivery

Return Receipt

Signature Confirmation

Signature Confirmation Restricted Delivery

Special Handling

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1 OF 25	25	

PS Form **3877**, January 2017 *(Page 1 of 2)*
PSN 7530-02-000-9098

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7 OF 7

D. KRUEL 13421.02

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- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery (COD)
- ☐ Insured Mail
- ☐ Priority Mail
- ☐ Priority Mail Express
- ☐ Registered Mail
- ☐ Return Receipt for Merchandise
- ☐ Signature Confirmation
- ☐ Signature Confirmation Restricted Delivery

Affix Stamp Here
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Postmark with Date of Receipt.

WATERTOWN
FEB 01 2021

	USPS Tracking/Article Number	Addressee (Name, Street, City, State, & ZIP Code™)	Postage	(Extra Service) Fee	Handling Charge	Actual Value if Registered	Insured Value	Due Sender if COD	ASR Fee	ASRD Fee	RD Fee	RR Fee	SC Fee	SCRD Fee	SH Fee
1.	7020 3160 0000 5982 1569	THREE-24 A STREET LLC 351 NEWBURY ST BOSTON MA 02115	0.51	3.60								2.85			
2.															
3.	7020 3160 0000 5982 1576	TUNNARD ROBERTA B 326 A ST #3-C SO BOSTON MA 02210													
4.															
5.	7020 3160 0000 5982 1583	TWO 81 SUMMER ST LLC PO BOX 4900 - DEPT 207 SCOTTSDALE AZ 85261													
6.															
7.	7020 3160 0000 5982 1590	VAN DER MUDE ALANA 326 A STREET #1C BOSTON MA 02210													
8.															

Handling Charge - if Registered and over $50,000 in value

Adult Signature Required · Adult Signature Restricted Delivery · Restricted Delivery · Return Receipt · Signature Confirmation · Signature Confirmation Restricted Delivery · Special Handling

Total Number of Pieces Listed by Sender	Total Number of Pieces Received at Post Office	Postmaster, Per *(Name of receiving employee)*
4 OF 25		

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6 OF 7

S. KRUEL 13421.02

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WATERTOWN MA FEB 01 2021

Name and Address of Sender	Check type of mail or service	
	☐ Adult Signature Required ☐ Adult Signature Restricted Delivery ☐ Certified Mail ☐ Certified Mail Restricted Delivery ☐ Collect on Delivery (COD) ☐ Insured Mail ☐ Priority Mail ☐ Priority Mail Express ☐ Registered Mail ☐ Return Receipt for Merchandise ☐ Signature Confirmation ☐ Signature Confirmation Restricted Delivery	Affix Stamp Here *(for additional copies of this receipt).* ***Postmark with Date of Receipt.***

	USPS Tracking/Article Number	Addressee (Name, Street, City, State, & ZIP Code™)	Postage	(Extra Service) Fee	Handling Charge	Actual Value if Registered	Insured Value	Due Sender if COD	ASR Fee	ASRD Fee	RD Fee	RR Fee	SC Fee	SCRD Fee	SH Fee
1.	7020 3160 0000 5982 1644	SUMMER MELCHER SPE LLC 100 FRANKLIN ST 2ND FLOOR BOSTON MA 02110	0.51	3.60								2.85			
2.															
3.	7020 3160 0000 5982 1538	SWARTZ LINDA 69 CENTRE ST BROOKLINE MA 02446													
4.															
5.	7020 3160 0000 5982 1545	SZE CHIA-MING 44 PINCKNEY ST BOSTON MA 02114													
6.															
7.	7020 3160 0000 5982 1552	THREE 26 A STREET CONDO TR 326 A ST BOSTON MA 02210													
8.															

Handling Charge - if Registered and over $50,000 in value

Adult Signature Required

Adult Signature Restricted Delivery

Restricted Delivery

Return Receipt

Signature Confirmation

Signature Confirmation Restricted Delivery

Special Handling

Total Number of Pieces Listed by Sender	Total Number of Pieces Received at Post Office	Postmaster, Per *(Name of receiving employee)*
4 OF 25		

PS Form **3877**, January 2017 *(Page 1 of 2)* **Complete in Ink** **Privacy Notice: For more information on USPS privacy policies, visit *usps.com/privacypolicy.***

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5 OF 7

D. KRUEL 13421.02

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- ☐ Certified Mail
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery (COD)
- ☐ Insured Mail
- ☐ Priority Mail
- ☐ Priority Mail Express
- ☐ Registered Mail
- ☐ Return Receipt for Merchandise
- ☐ Signature Confirmation
- ☐ Signature Confirmation Restricted Delivery

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USPS Tracking/Article Number	Addressee (Name, Street, City, State, & ZIP Code™)	Postage	(Extra Service) Fee	Handling Charge	Actual Value if Registered	Insured Value	Due Sender if COD	ASR Fee	ASRD Fee	RD Fee	RR Fee	SC Fee	SCRD Fee	SH Fee
1. 7020 3160 0000 5982 1688	MILLYARD HARRY 6 CLAYBROOK ROAD DOVER MA 02030	0.51	3.60								2.85			
2.														
3. 7020 3160 0000 5982 1613	ORNSTEIN JEFFREY B TS 326 A ST #1B BOSTON MA 02210													
4.														
5. 7020 3160 0000 5982 1620	REEVE EMMA TS 326 A ST 6-C BOSTON MA 02210													
6.														
7. 7020 3160 0000 5982 1637	SHULEVICH VIKTORIA 326 A ST #4C BOSTON MA 02127													
8.														

Handling Charge - if Registered and over $50,000 in value

Adult Signature Required | Adult Signature Restricted Delivery | Restricted Delivery | Return Receipt | Signature Confirmation | Signature Confirmation Restricted Delivery | Special Handling

Total Number of Pieces Listed by Sender	Total Number of Pieces Received at Post Office	Postmaster, Per *(Name of receiving employee)*
4 OF 25		

S. KRUEL 13421.02

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WATERTOWN MA
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Name and Address of Sender	Check type of mail or service	Affix Stamp Here
	☐ Adult Signature Required ☐ Adult Signature Restricted Delivery ☐ Certified Mail ☐ Certified Mail Restricted Delivery ☐ Collect on Delivery (COD) ☐ Insured Mail ☐ Priority Mail ☐ Priority Mail Express ☐ Registered Mail ☐ Return Receipt for Merchandise ☐ Signature Confirmation ☐ Signature Confirmation Restricted Delivery	Affix Stamp Here *(for additional copies of this receipt).* ***Postmark with Date of Receipt.***

	USPS Tracking/Article Number	Addressee (Name, Street, City, State, & ZIP Code™)	Postage	(Extra Service) Fee	Handling Charge	Actual Value if Registered	Insured Value	Due Sender if COD	ASR Fee	ASRD Fee	RD Fee	RR Fee	SC Fee	SCRD Fee	SH Fee
1.	7020 3160 0000 5982 1699	JSIP 63 MELCHER LLC 127 BLAKE ST NEWTON MA 02460	0.51	3.60								2.85			
2.															
3.	7020 3160 0000 5982 1682	MASSDEVELOPMENT/NECCO 99 HIGH ST 11TH FLOOR BOSTON MA 02110													
4.															
5.	7020 3160 0000 5982 1675	MEPT NECCO STREET GARAGE LLC PO BOX 92129 SOUTHLAKE TX 76092													
6.															
7.	7020 3160 0000 5982 1651	MEYER TERRY F ETAL 326 A ST #3-B SO BOSTON MA 02210													
8.															

Handling Charge - if Registered and over $50,000 in value

Adult Signature Required

Adult Signature Restricted Delivery

Restricted Delivery

Return Receipt

Signature Confirmation

Signature Confirmation Restricted Delivery

Special Handling

Total Number of Pieces Listed by Sender	Total Number of Pieces Received at Post Office	Postmaster, Per *(Name of receiving employee)*
4 OF 25		

PS Form **3877**, January 2017 *(Page 1 of 2)* **Complete in Ink** **Privacy Notice: For more information on USPS privacy policies, visit *usps.com/privacypolicy*.**

PSN 7530-02-000-9098

UNITED STATES POSTAL SERVICE ® J. KRUEL 13421.02

WATERTOWN MA
FEB 01 2021

Firm Mailing Book For Accountable Mail

Name and Address of Sender

Check type of mail or service
- ☐ Adult Signature Required
- ☐ Adult Signature Restricted Delivery
- ☐ Certified Mail
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery (COD)
- ☐ Insured Mail
- ☐ Priority Mail
- ☐ Priority Mail Express
- ☐ Registered Mail
- ☐ Return Receipt for Merchandise
- ☐ Signature Confirmation
- ☐ Signature Confirmation Restricted Delivery

Affix Stamp Here
(for additional copies of this receipt).
Postmark with Date of Receipt.

USPS Tracking/Article Number	Addressee (Name, Street, City, State, & ZIP Code™)	Postage	(Extra Service) Fee	Handling Charge	Actual Value if Registered	Insured Value	Due Sender if COD	ASR Fee	ASRD Fee	RD Fee	RR Fee	SC Fee	SCRD Fee	SH Fee
1. 7020 3160 0000 5982 1736	FORT POINT ENTERPRISES LLC 23 DUTTON RD PELHAM NH 03076	0.51	3.60								2.85			
2.														
3. 7020 3160 0000 5982 1729	FOURTY-9 MELCHER ST LLC 133 PEARL ST SUITE #400 BOSTON MA 02110													
4.														
5. 7020 3160 0000 5982 1712	GILLETTE COMPANY PO BOX 599 - ATTN: TAX DIVIS CINCINNATI OH 45201													
6.														
7. 7020 3160 0000 5982 1705	JACOBSON MARJORY A 326 A ST #5-C SOUTH BOSTON MA 02127													
8.														

Handling Charge - if Registered and over $50,000 in value

Adult Signature Required

Adult Signature Restricted Delivery

Restricted Delivery

Return Receipt

Signature Confirmation

Signature Confirmation Restricted Delivery

Special Handling

Total Number of Pieces Listed by Sender	Total Number of Pieces Received at Post Office	Postmaster, Per *(Name of receiving employee)*
4 OF 25		

PS Form **3877**, January 2017 *(Page 1 of 2)*
PSN 7530-02-000-9098

Complete in Ink

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S. KRUEL 13421.02

UNITED STATES POSTAL SERVICE®

WATERTOWN MA FEB 01 2021

Firm Mailing Book For Accountable Mail

Name and Address of Sender

Check type of mail or service

- ☐ Adult Signature Required
- ☐ Adult Signature Restricted Delivery
- ☐ Certified Mail
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery (COD)
- ☐ Insured Mail
- ☐ Priority Mail
- ☐ Priority Mail Express
- ☐ Registered Mail
- ☐ Return Receipt for Merchandise
- ☐ Signature Confirmation
- ☐ Signature Confirmation Restricted Delivery

Affix Stamp Here
(for additional copies of this receipt).
Postmark with Date of Receipt.

USPS Tracking/Article Number	Addressee (Name, Street, City, State, & ZIP Code™)	Postage	(Extra Service) Fee	Handling Charge	Actual Value if Registered	Insured Value	Due Sender if COD	ASR Fee	ASRD Fee	RD Fee	RR Fee	SC Fee	SCRD Fee	SH Fee
1. 7020 3160 0000 5982 1507	AGOOS PETER S A 326 A ST #6-A SO BOSTON MA 02210	0.51	3.60								2.85			
2.														
3. 7020 3160 0000 5982 1767	BASTIEN PETER 20 NORTH AVENUE BURLINGTON MA 01803													
4.														
5. 7020 3160 0000 5982 1750	BOS OFFICE 2 LLC 3520 PIEDMONT RD NE STE 410 ATLANTA GA 30305													
6.														
7. 7020 3160 0000 5982 1743	BOSTON REDEVELOPMENT 1 CITY HALL PLAZA 9TH FLOOR BOSTON MA 02201													
8.														

Handling Charge - if Registered and over $50,000 in value

Adult Signature Required

Adult Signature Restricted Delivery

Restricted Delivery

Return Receipt

Signature Confirmation

Signature Confirmation Restricted Delivery

Special Handling

Total Number of Pieces Listed by Sender	Total Number of Pieces Received at Post Office	Postmaster, Per *(Name of receiving employee)*
4 OF 25		

PS Form **3877**, January 2017 *(Page 1 of 2)* **Complete in Ink** **Privacy Notice: For more information on USPS privacy policies, visit *usps.com/privacypolicy*.**

PSN 7530-02-000-9098

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Attachment F
Filing Fee & Extension Form

City of Boston Environment

City of Boston Mayor Martin J. Walsh

EXTENSION FORM

The undersigned hereby allows the **Boston Conservation Commission** an extension of time, beyond the statutory limit, to review an application or issue a final decision under the Massachusetts Wetlands Protection Act, M.G.L. Chapter 131, Section 40, and the Boston Wetlands Ordinance, Boston City Code, Ordinances, Chapter 7-1.4d during the state of emergency declared by the Governor on March 10, 2020.

Applicant:

a. First Name	b. Last Name	c. Company
Sherry	Clancy	National Development

d. Mailing Address: 2310 Washington Street

e. City/Town	f. State	g. Zip Code
Newton Lower Falls	MA	02462

h. Phone Number	i. Fax Number	j. Email address
617-559-5080	n/a	sclancy@natdev.com

Signature of Applicant

Date: February 5, 2021

Property Owner (if different):

a. First Name	b. Last Name	c. Company
		ARE-MA Region No. 74, LLC

d. Mailing Address: c/o National Development, 2310 Washington Street

e. City/Town	f. State	g. Zip Code
Newton Lower Falls	MA	02462

h. Phone Number	i. Fax Number	j. Email address
617-559-5080	N/A	sclancy@natdev.com

Signature of Property Owner (if different)

Date: January 29, 2021

Applications will only be accepted when submitted with a properly executed Extension Form.