

CITY OF DOVER

PLANNING TECHNICAL REVIEW COMMITTEE –AGENDA

Meeting Type: Regular Meeting
Meeting Location: Council Chambers, City Hall, 288 Central Ave, Dover NH 03820
Meeting Date: **Thursday, October 27, 2022**
Meeting Time: **10:30 AM**

1. 10:30 AM – 11:15 AM: Site Review for JSR, LLC., Assessor's Map D, Lots 11-5 & 11-5SND, zoned IT & Wetlands Protection Districts located at Quality Way and Venture Drive. (Proposal is for construction of a 10,080 s.f. Contractor Storage Bay/Office facility consisting of four (4) separate bays with office space.) A CUP and LLA will also appear before the Planning Board. (P22-55/SITE-2022-0011) [*Previously heard on August 11, 2022*]



BERRY SURVEYING & ENGINEERING

335 Second Crown Point Road
Barrington, NH 03825
Phone: (603) 332-2863
Fax: (603) 335-4623
www.BerrySurveying.Com

City of Dover

September 1, 2022

Planning Office

Attn: Mrs. Donna Benton, Director of Planning and Community Development

288 Central Ave

Dover, NH 03820

Re: Site Plan Review
Berry Surveying & Engineering
JSR, LLC
Venture Drive & Quality Way
Tax Map D, Lots 11-5 & 11-5SND
Dover File #P22-55

Based on comments from the Technical Review Committee Minutes from August 11, 2022, we respectfully submit the following comments and revisions. Our comments are in **bold**.

PLANNING COMMENTS

1. Water and sewer investment fees.
Applicant acknowledges comment and will pay fees when due.
2. Impact Fees.
Applicant acknowledges comment and will pay fees when due.
3. Signatures needed on Site Plan Application forms.
Please find signed Site Plan application.
4. Clarify, will the contractor units be leased or sold as condominium units.
These are proposed to be leased currently, but may be sold in the future. Utilities have been provided for each unit.
5. Condo docs or lease with restrictions required.
The applicant requests that this is a condition of approval.
6. No outdoor storage of equipment or materials should be noted on plan and signage.
This has been added to the Site Plan as note #41 and signage has been added to the Site Plan, see sheet #6.

7. What type of materials will be allowed to be stored?
The applicant intends to lease or sell these units to small contractors. There may be materials and solvents in low volumes stored in the building. It is assumed that materials of 1 gallon or less would be stored in the building. The applicant is now proposing a water service for a potential sprinkler system, in an effort to address many of the speculation questions related to the use of the building.
8. Revise Plan to:
- a. Add Planning File Number P22-55.
This is now added to the Title Block.
 - b. LLS, CWS, & LLA signatures and stamps on each submission.
Please find stamped plans.
 - c. Owner's signature.
Owner's signature will be added for the final construction approval plans.
 - d. Add landscaping to streetscape rendering.
Please find revised streetscape rendering.
 - e. Legible landscape maintenance section of Landscape Plan sheet #13.
Please find revised Landscaping Plan.
 - f. Add wetland buffer placard symbol to key
Symbol has been added to the master legend and the Site plan Legend. See neighborhood Plan, sheet #1, and Site Plan, sheet #5.
 - g. Add streetscape rendering for Venture Drive.
Please find streetscape rendering.

POLICE COMMENTS

1. On-site parking seems inadequate to accommodate four separate contractors, work vehicles, employees, etc. The layout also creates the strong likelihood that customer and overflow employee parking will be on Quality Way. This is not discussed in the project narrative.
As discussed at TRC #1, it is assumed that a small contractor will use these spaces, with one or two employees, the owner and one office



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employee. The parking table does not count the overhead door space for each unit. If this is considered each unit has 4.5 spaces allocated for use.

ENGINEERING COMMENTS

- 1.) General Note: Add note to reflect that an easement is provided to the City to maintain the potable drinking water quality through the hydrant flushing program, which includes providing access to the water curb boxes.
This has been added as note #9 on the Lot Line Revision, sheet #4.
2. Sheet 5: Confirm there is 24' from the end of each parking space perpendicular to the curb.
Pavement at Sta: 2+60 +/- has been revised to be 24' between the curb line and parking space. See Site Plan, sheet #6.
3. Sheet 6: Grading is within 5' of property line; clarify if an easement will be required from adjacent property.
A temporary grading easement is now proposed with the DBIDA with the shown on the Easement Plan, sheet #5. Easement plans were sent to the Assistant City Manager for review and comment.
4. Sheet 6: Applicant shall verify if sufficient spaces is provided to construct the block wall or if an easement is required.
A temporary grading easement is now proposed with the DBIDA with the shown on the Easement Plan, sheet #5. Easement plans were sent to the Assistant City Manager for review and comment.
5. Sheet 6: It is recommended to make the two catch basins east of Station 2+00 off-line catch basins for pre- treatment of stormwater.
These structures of been made off-line structures. See Grading Plans, sheets #7 & 8.
6. Sheet 7: It is recommended to raise the grade of both driveway entrances to prevent water on Quality Way and Venture Way from entering the property.
Please find revised profiles and grading. See Grading Plans, sheets #7 & 8.
7. Sheet 11: It is strongly recommended to provide individual water and sewer services to each unit if they are to be sold separately.
Individual services are now provided to each unit. See Utility Plan, sheet #12.



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17. Sheet 26: Provide profile view of the fire truck including dimensions.
Truck has been added to the plan. See Truck Turning, sheet #27.
18. General Comment: Provide plan or other legal description showing proposed modifications to the existing drainage easement. Plan should indicate that the maintenance of the proposed detention basin will be the responsibility of the Applicant/Property Owner as indicated in the Narrative.
This has been done graphically and this note is now added to the Easement Plan, sheet #5 as note #9.
19. Drainage Report: Please provide a BMP worksheet and storage tables for detention basin #102.
Please find revised Drainage binder.

FIRE/INSPECTION SERVICES

1. Sheet 5 – ensure there is adequate separation between adjacent utilities at side of building.
The electric meters have been moved further down the building. See Site Plan sheet #6 and Utility Plan, sheet #12.
2. Clarify the type of uses and commodities of the proposed structure.
These are unknown at this time, however the applicant is preparing the building to be sprinkled with an updated utility design.
3. Provide site specific street rendering.
Please find street rendering.
4. Provide colored elevation plans of all four sides.
Please find colored elevation plans.
5. Clarify if there are loading docks.
Loading docks are called on the southern side of the building. See Site Plan, sheet #6.
6. Sprinkle building; or require that no use be permitted that requires fire suppression without an amendment to the plan.
The applicant is now providing a dedicated sprinkler line to the building for the future potential need.

BUSINESS DEVELOPMENT



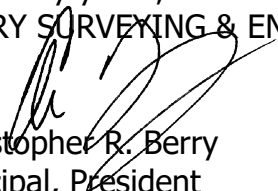
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1. How will the sending area remain protected? TDR relief?
As noted at the TRC #1, the definition of the protected area may need to be revised and approved by council as part of a condition of approval for this project.
2. Have attorney prepare legal docs for LLA.
These documents can be provided as a condition of approval.
3. Provide architectural for DBIDA review.
The applicant has met with DBIDA who approved the revised architectural drawings.

PLANNING BOARD

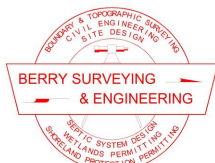
1. Does retaining wall require fencing?
This retaining wall does not require fencing since there is guard rail up slope. See Site Plan, sheet #6.
2. Please provide dumpster screening – plantings.
Shrubs have been added for screening along the dumpster. See Landscaping Plan, sheet #14.
3. Will the disposition of the stone wall be preserved?
This interior stonewall is now proposed to be relocated to the western boundary line. See Site Plan, sheet #5.

Very truly yours,
BERRY SURVEYING & ENGINEERING


Christopher R. Berry
Principal, President


Kenneth A. Berry, PE, LLS
VP – Technical Operations

Kevin R. Poulin, EIT
Design Engineer



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SURVEYOR OF RECORD: KENNETH A. BERRY, PE, LLS
CPSWQ, CPESC, CESSWI
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825
(603) 332-2863

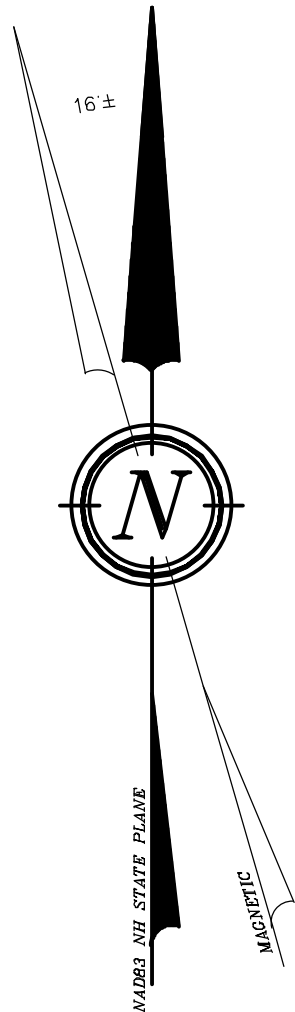
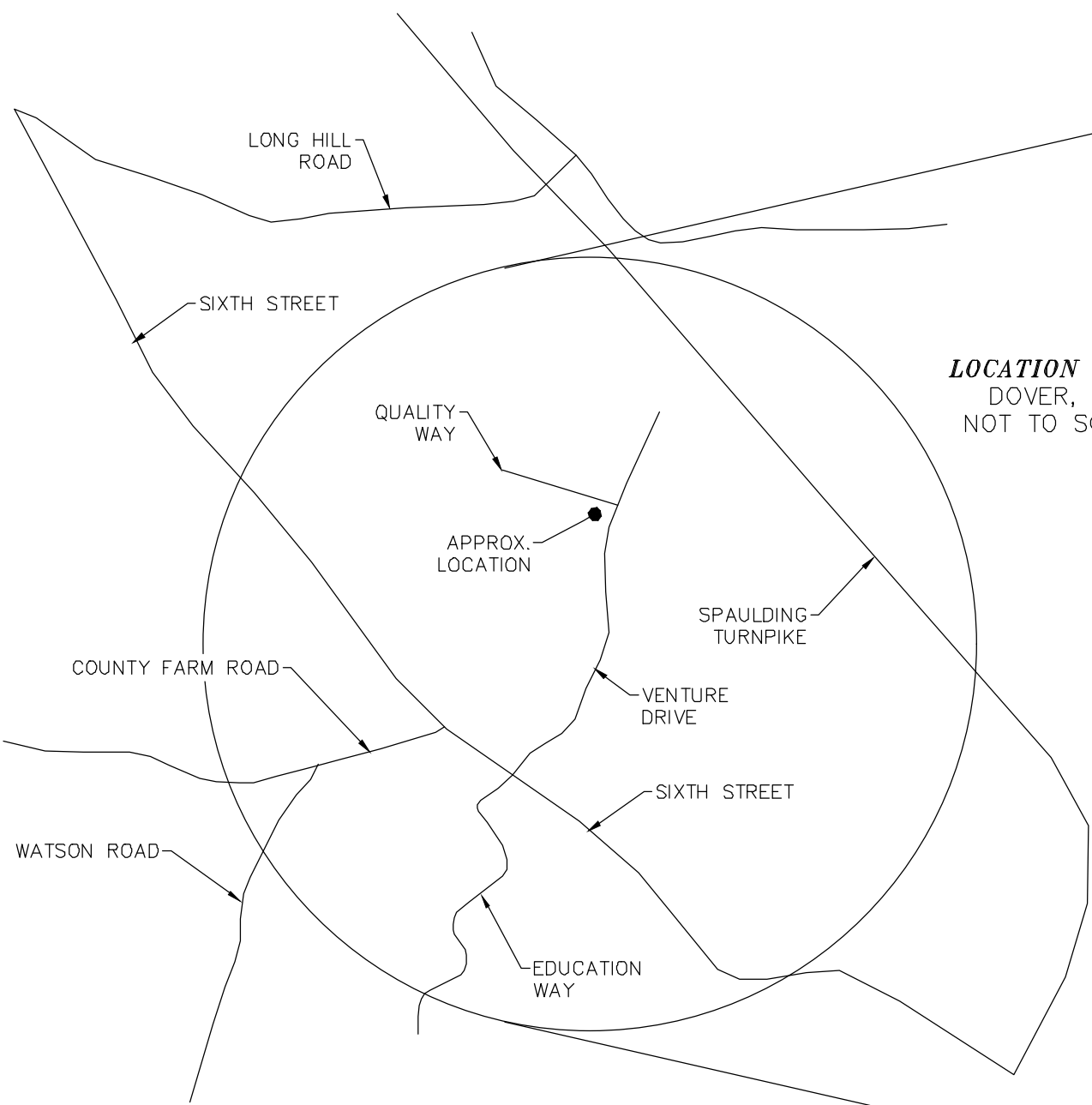
ENGINEER OF RECORD: KENNETH A. BERRY, PE, LLS
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SOIL SCIENTIST: JOHN P. HAYES, III, CSS, CWS
7 LIMESTONE WAY
NORTH HAMPTON, NH 03862

WETLAND SCIENTIST: DEIDRA L. BENJAMIN, CWS
100 LEAVITT ROAD
PITTSFIELD, NH 03263

OWNER: JSR, LLC
17 FOSTERS DRIVE
DOVER, NH 03820

APPLICANT: JSR, LLC
17 FOSTERS DRIVE
DOVER, NH 03820

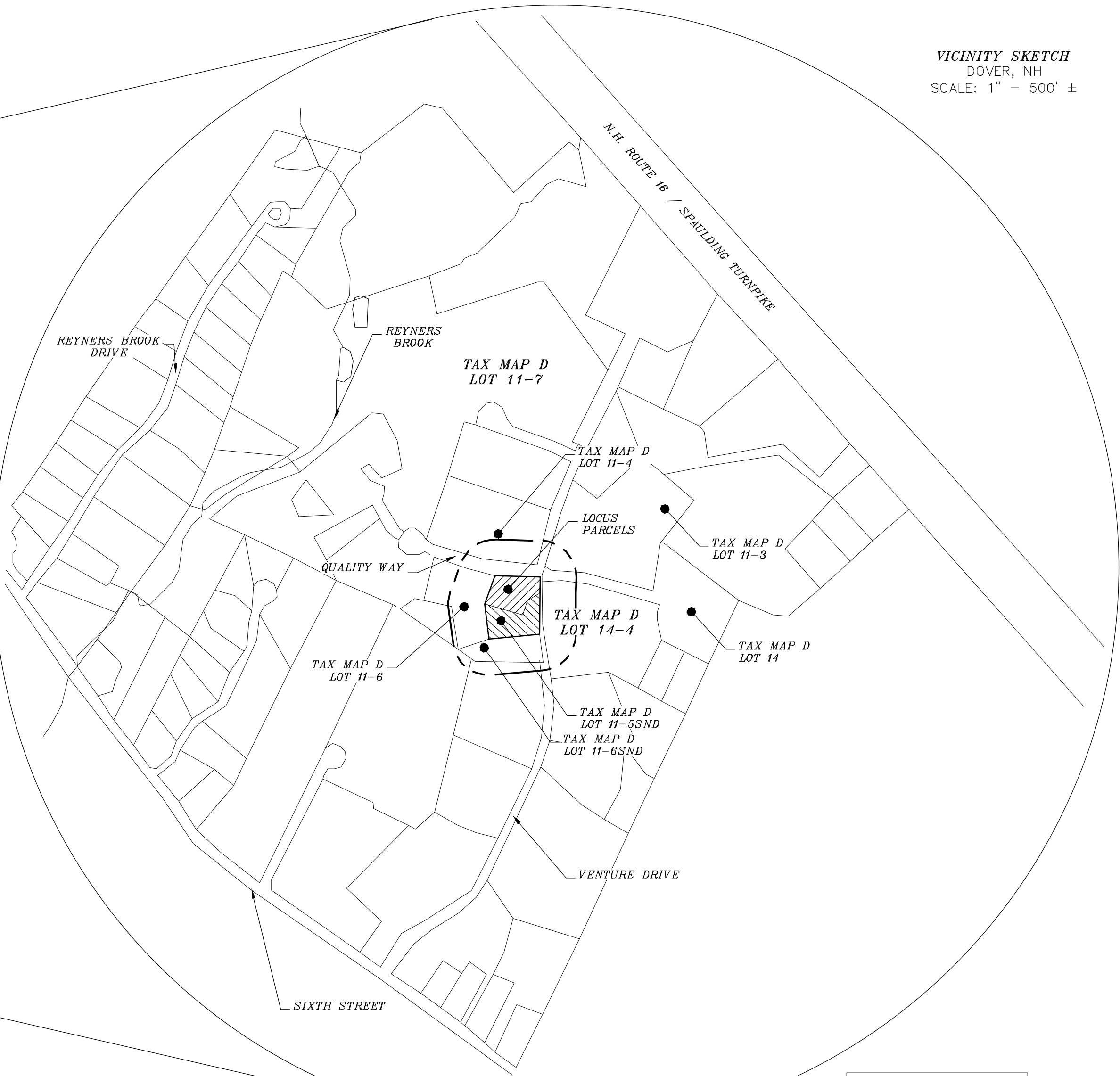


COMMERCIAL SITE PLAN
FOR
JSR, LLC
VENTURE DRIVE & QUALITY WAY
DOVER, N.H.
TAX MAP D, LOTS 11-5 & 11-5 SND

NOTE:

BERRY SURVEYING & ENGINEERING HAS PREPARED AN INSPECTION & MAINTENANCE MANUAL AS PART OF THIS PROJECTS DOCUMENTATION. ALL USERS ARE BOUND TO THIS DOCUMENT AS PART OF THE APPROVAL OF THE PLANNING BOARD. COPIES OF THE YEARLY INSPECTIONS ARE TO BE DELIVERED TO THE CITY OF DOVER COMMUNITY SERVICES DEPARTMENT.

VICINITY SKETCH
DOVER, NH
SCALE: 1" = 500' ±



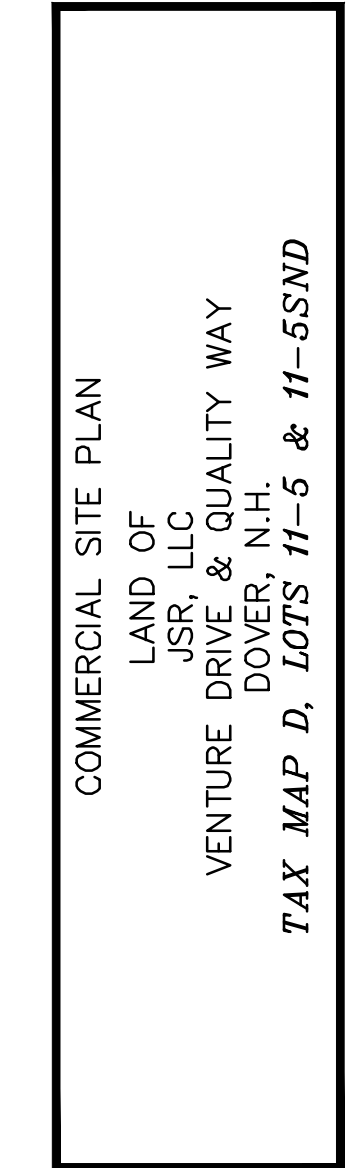
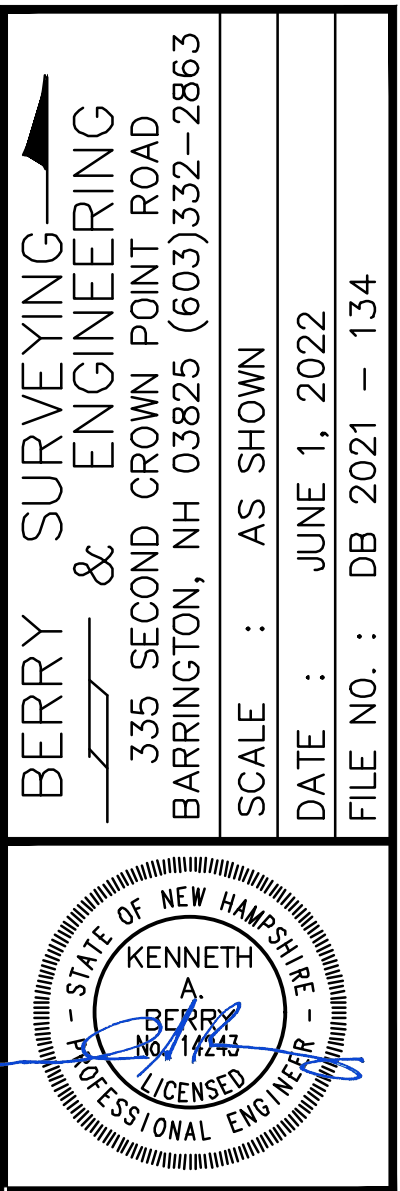
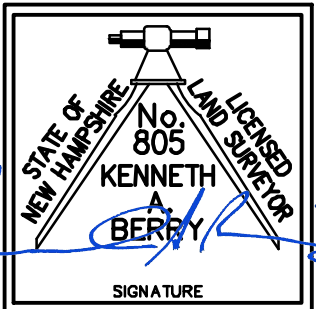
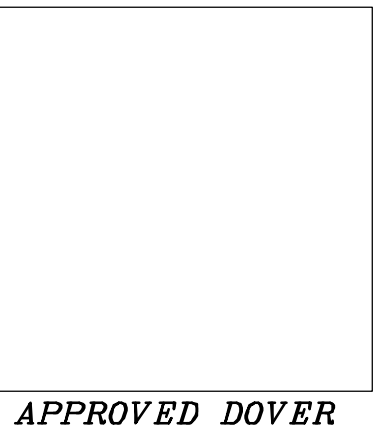
REQUIRED PERMITS:

- 1.) LOCAL SITE PLAN APPROVAL
- 2.) LOCAL CONDITIONAL USE PERMIT (BUFFERS)
- 3.) US EPA NOTICE OF INTENT / SWPPP

GENERAL PLAN SET NOTES:

- 1.) 11x17" PLANS ARE TWICE THE PUBLISHED SCALE.
- 2.) ALL PLANS ARE CONSIDERED TO BE NOT FOR CONSTRUCTION UNLESS THEY CONTAIN THE APPROVAL STAMP OF THE CITY OF DOVER.

WHETHER OR NOT OTHERWISE EXPRESSLY RECITED ON THIS SITE PLAN, THE SITE PLAN APPROVAL GRANTED IS CONDITIONED ON FAITHFUL AND DILIGENT ADHERENCE BY THE OWNER/SUBDIVIDER/DEVELOPER OF ALL TERMS, CONDITIONS, PROVISIONS AND SPECIFICATIONS OF THE CITY OF DOVER LAND SITE PLAN REGULATIONS AS AMENDED OR AS MAY LATER BE AMENDED, IN EFFECT ON THE DATE OF APPROVAL, UNLESS OR EXCEPT INsofar AS EXPRESSLY WAIVED, IN ANY PARTICULAR, BELOW. NON - ADHERENCE MAY RESULT IN A REVOCATION OF APPROVAL. ANY VARIATION FROM THE APPROVED PLAN WILL REQUIRE A RESUBMISSION FOR SITE PLAN APPROVAL.



DOVER PLANNING FILE #XXX5	
REVISION	DATE
#1	9-1-22
REVISED PER DOVER TRC COMMENT	
DESCRIPTION	

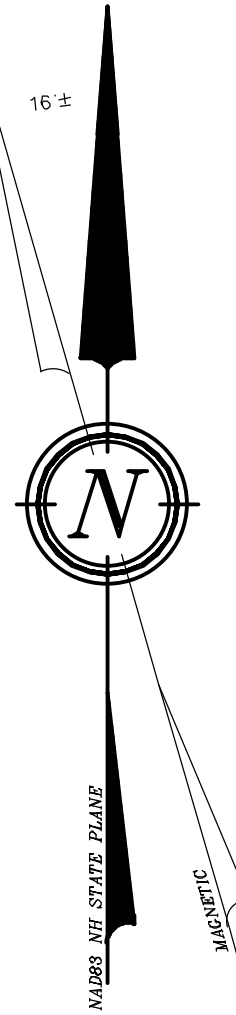
ABBREVIATION LEGEND:

E.O.P. EDGE OF PAVEMENT
V.G.C. VERTICAL GRANITE CURB
S.G.C. SLOPED GRANITE CURB
BITUM. BITUMINOUS
E.S.H.W.T. ESTIMATE SEASONAL HIGH WATER TABLE
TYP. TYPICAL
U.G.E. UNDER GROUND ELECTRIC / UTILITY
CLDI CONCRETE LINED DUCTILE IRON
DI DUCTILE IRON
F.P. FIRE PROTECTION
U.D. UNDER DRAIN
C.O. CLEAN OUT
INV. INVERT
ELEV. ELEVATION
HDPE HIGH DENSITY POLYETHYLENE
RCP REINFORCED CONCRETE PIPE
RECB ROLLED EROSION CONTROL BLANKET
F.G. FINISHED GRADE
E.G. EXISTING GRADE
E.T.W. EDGE OF TRAVELED WAY
T.B.R. TO BE REMOVED
PL. PROPERTY LINE
EL. EASEMENT LINE
CL. CENTER LINE
CF. CUBIC FEET
P.C. POINT OF CURVATURE
P.T. POINT OF TANGENCY
P.V.C. POINT OF VERTICAL CURVE
P.V.I. POINT OF VERTICAL INTERSECTION
P.V.T. POINT OF VERTICAL TANGENCY
EX. EXISTING
PROP. PROPOSED
STA. STATION
BMP BEST MANAGEMENT PRACTICE
'/ FEET / FEET
TP TEST PIT

SSL () ~ [SIZE] SINGLE SOLID LINE (COLOR W=WHITE, Y=YELLOW)
DSL () ~ [SIZE] DOUBLE SOLID LINE (COLOR W=WHITE, Y=YELLOW)
SSB () ~ [SIZE] SINGLE SOLID W/ BROKEN LINE (COLOR W=WHITE, Y=YELLOW)
SBL () ~ [SIZE] SINGLE BROKEN LINE (COLOR W=WHITE, Y=YELLOW)
DBL () ~ [SIZE] DOUBLE BROKEN LINE (COLOR W=WHITE, Y=YELLOW)

LEGEND:

3/4" REBAR W/ 1D CAP ~TBS~
GRANITE BOUND ~FND~
STEEL STAKE ~FND~
SIGNAGE
UTILITY POLE
TEST PIT
EXISTING SEWER MANHOLE W/ STRUCTURE
EXISTING/PROPOSED DRAIN MANHOLE W/ STRUCTURE
EXISTING/PROPOSED CATCH BASIN W/ STRUCTURE
PROPOSED STORMWATER BMP OUTLET STRUCTURE
TEMPORARY BENCHMARK (T.B.M.)
DETAIL SHEET / DETAIL
POORLY DRAINED JURISDICTIONAL WETLAND
50' WETLAND BUFFER
CONTOUR MINOR, EXISTING
CONTOUR MAJOR, EXISTING
CONTOUR MINOR, PROPOSED
CONTOUR MAJOR, PROPOSED
CENTER LINE
EXISTING WATER MAIN
EXISTING SEWER LINE
EXISTING DRAINAGE LINE
EXISTING GAS LINE
PROPOSED WATER MAIN
PROPOSED SEWER LINE
PROPOSED DRAINAGE LINE
PROPOSED GAS LINE
UNDERGROUND UTILITY
GATE VALVE
FIRE HYDRANT
GAS VALVE
PROPOSED LIGHT TYPE "A" MOUNTED ON POLE
PROPOSED LIGHT TYPE "B" MOUNTED ON STRUCTURE
EXISTING LIGHT TYPE "C" MOUNTED ON POLE
PROPOSED LIGHT TYPE "D" MOUNTED ON STRUCTURE
EXISTING SPOT GRADE
PROPOSED SPOT GRADE
FLOW ARROW
RIP RAP
STORMWATER BEST MANAGEMENT PRACTICE (BMP)
BERM
SNOW STORAGE
SILT FENCE / EROSION MIX BERM
FILTREXX 8" - 12" SILT SOXX AS SPECIFIED
ORANGE CONSTRUCTION PERIMETER FENCE
PERIMETER CONTROL
NRCS SOIL DELINEATION
SOIL TYPE
WETLAND BUFFER PLACARD



GIS SKETCH
DOVER, NH
SCALE: 1" = 100' ±

SIGN ID NUMBER	SIGN SIZE (WIDTH x HEIGHT)	SIGN	TEXT DIMENSIONS	NO. OF SIGNS	BACKGROUND	LEGEND	BORDER	POST SIZE & QUANTITY
R1-1	30"x30"		SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT - FHWA	2	RED	WHITE	WHITE	SQUARE (2)
R7-8	12"x18"		SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT - FHWA	1	WHITE	GREEN W/ WHITE SYMBOL ON BLUE	RED	SQUARE (1)
R7-8a	12"x6"		SEE STANDARD HIGHWAY SIGNS 2004 EDITION PUBLISHED BY USDOT - FHWA	1	WHITE	GREEN	GREEN	SQUARE (0)

ABUTTERS WITHIN 200':

N/F DOVER BUSINESS & IND. DEV. AUTHORITY
F/K/A DOVER IND. DEV. AUTHORITY
288 CENTRAL AVE.
DOVER, NH 03820
TAX MAP D, LOT 11-6
S.C.R.D. BOOK 1559, PAGE 394

N/F DOVER BUSINESS & IND. DEV. AUTHORITY
F/K/A DOVER IND. DEV. AUTHORITY
288 CENTRAL AVE.
DOVER, NH 03820
TAX MAP D, LOT 11-6-SND
S.C.R.D. BOOK 1559, PAGE 394

N/F DOVER BUSINESS & IND. DEV. AUTHORITY
F/K/A DOVER IND. DEV. AUTHORITY
288 CENTRAL AVE.
DOVER, NH 03820
TAX MAP D, LOT 11-7-SND
S.C.R.D. BOOK 1559, PAGE 394

ABUTTERS WITHIN 200' CONT.:

N/F QUALITY WAY LLC.
55 MAIN STREET
NEWMARKET, NH 03857
TAX MAP D, LOT 11-4
S.C.R.D. BOOK 3973, PAGE 254

N/F MERCHANDISE CENTRAL LLC.
111 VENTURE DRIVE
DOVER, NH 03820
TAX MAP D, LOT 11-3
S.C.R.D. BOOK 4422, PAGE 309

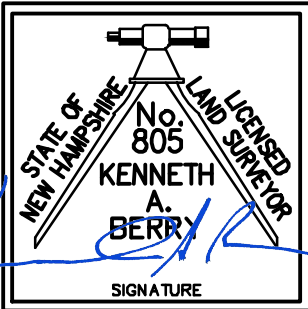
N/F DOVER BUSINESS & IND. DEV. AUTHORITY
288 CENTRAL AVE.
DOVER, NH 03820
TAX MAP D, LOT 14
S.C.R.D. BOOK 4368, PAGE 691

N/F VYCON CORPORATION,
ADVANCED MEDICAL INC.
2750 MORRIS ROAD #A200
LANSDALE, PA 19446-6083
TAX MAP D, LOT 14-4
S.C.R.D. BOOK 1351, PAGE 542

ABUTTERS WITHIN 200' CONT.:

N/F 48 VENTURE DRIVE PROPERTIES LLC.
910 DAY HILL ROAD
WINDSOR, CT 06095
TAX MAP D, LOT 11-2
S.C.R.D. BOOK 4731, PAGE 267

N/F SARNIA PROPERTIES INC.
1 HAVEN COURT
PORTSMOUTH, NH 03801
TAX MAP D, LOT 18-3
S.C.R.D. BOOK 4850, PAGE 405



DOVER FILE #P22-55

REVISION	DATE	REVISED PER DOVER TRC COMMENT	DESCRIPTION
#1	9-1-22		

NEIGHBORHOOD PLAN LAND OF JSR, LLC VENTURE DRIVE & QUALITY WAY DOVER, NH TAX MAP D, LOTS 11-5 & 11-5SND
--

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863
SCALE : AS SHOWN
DATE : JUNE 1, 2022
FILE NO. : DB 2021 - 134

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
PROFESSIONAL ENGINEER

PLAN REFERENCES:

- "SUBDIVISION PLAN DOVER INDUSTRIAL DEVELOPMENT AUTHORITY SIXTH STREET / LONG HILL ROAD EXT. DOVER, NEW HAMPSHIRE"
BY: TERRASCAN ENGINEERS SURVEYORS
DATED: JANUARY 17, 1992
S.C.R.D. PLAN 41-91
- "LOT LINE ADJUST PLAN PREPARED FOR WHITE ENTERPRISES AND DOVER INDUSTRIAL DEVELOPMENT AUTHORITY LONGHILL ROAD, DOVER, NH"
BY: MCNEANEY SURVEY ASSOCIATES
DATED: JULY 3, 1991
S.C.R.D. PLAN 39-38
- "SUBDIVISION PLAN DOVER INDUSTRIAL DEVELOPMENT AUTHORITY SIXTH STREET / LONG HILL ROAD EXT. DOVER, NEW HAMPSHIRE"
BY: TERRASCAN ENGINEERS SURVEYORS
DATED: JANUARY 17, 1992
S.C.R.D. PLAN 41-92
- "SUBDIVISION OF LAND PREPARED FOR DOVER INDUSTRIAL DEVELOPMENT AUTHORITY TAX MAP H, LOT NO. 11-1 VENTURE DRIVE DOVER, STRAFFORD COUNTY NEW HAMPSHIRE"
BY: MCNEANEY SURVEY ASSOCIATES INC.
DATED: AUGUST 4, 1994
S.C.R.D. PLAN # 45-32
- "SUBDIVISION OF LAND PREPARED FOR DOVER INDUSTRIAL DEVELOPMENT AUTHORITY TAX MAP H, LOT NO. 11-1 VENTURE DRIVE DOVER, STRAFFORD COUNTY NEW HAMPSHIRE"
BY: MCNEANEY SURVEY ASSOCIATES INC.
DATED: FEBRUARY 25, 2005
S.C.R.D. PLAN # 79-87

PLAN REFERENCES:

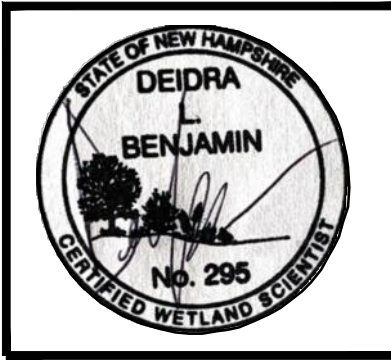
- "AMENDED SUBDIVISION AND LOT LINE ADJUSTMENT PLAN PREPARED FOR GEORGE J. FOSTER CO., INC. AND DOVER BUSINESS AND INDUSTRIAL DEVELOPMENT AUTHORITY TAX MAP D, LOT NOS. 9A & 11-1 VENTURE DRIVE AND QUALITY WAY DOVER, STRAFFORD COUNTY NEW HAMPSHIRE"
BY: MCNEANEY SURVEY ASSOCIATES INC
DATED: FEBRUARY 14, 2006
S.C.R.D. PLAN 85-99
- "AMENDED SUBDIVISION AND LOT LINE ADJUSTMENT PLAN PREPARED FOR GEORGE J. FOSTER CO., INC. AND DOVER BUSINESS AND INDUSTRIAL DEVELOPMENT AUTHORITY TAX MAP D, LOT NOS. 9A & 11-1 VENTURE DRIVE AND QUALITY WAY DOVER, STRAFFORD COUNTY NEW HAMPSHIRE"
BY: MCNEANEY SURVEY ASSOCIATES INC
DATED: FEBRUARY 14, 2006
S.C.R.D. PLAN 85-100
- "LOT LINE ADJUSTMENT AND SUBDIVISION PLAN OF LAND PREPARED FOR GEORGE J. FOSTER CO., INC. AND DOVER BUSINESS AND INDUSTRIAL DEVELOPMENT AUTHORITY TAX MAP D, LOT NOS. 9A & 11-1 VENTURE DRIVE AND QUALITY WAY DOVER, STRAFFORD COUNTY NEW HAMPSHIRE"
BY: MCNEANEY SURVEY ASSOCIATES INC
DATED: JUNE 12, 2006
S.C.R.D. PLAN 86-73

SOIL DATA:

EqB ~ ELMWOOD FINE SANDY LOAM, 3 TO 8% SLOPES
GSc ~ GLOUCESTER VERY STONY FINE SANDY LOAM, 8 TO 15% SLOPES
ScB ~ SCANTIC SILT LOAM, 3 TO 8% SLOPES

SEE USDA / NRCS WEBSITE

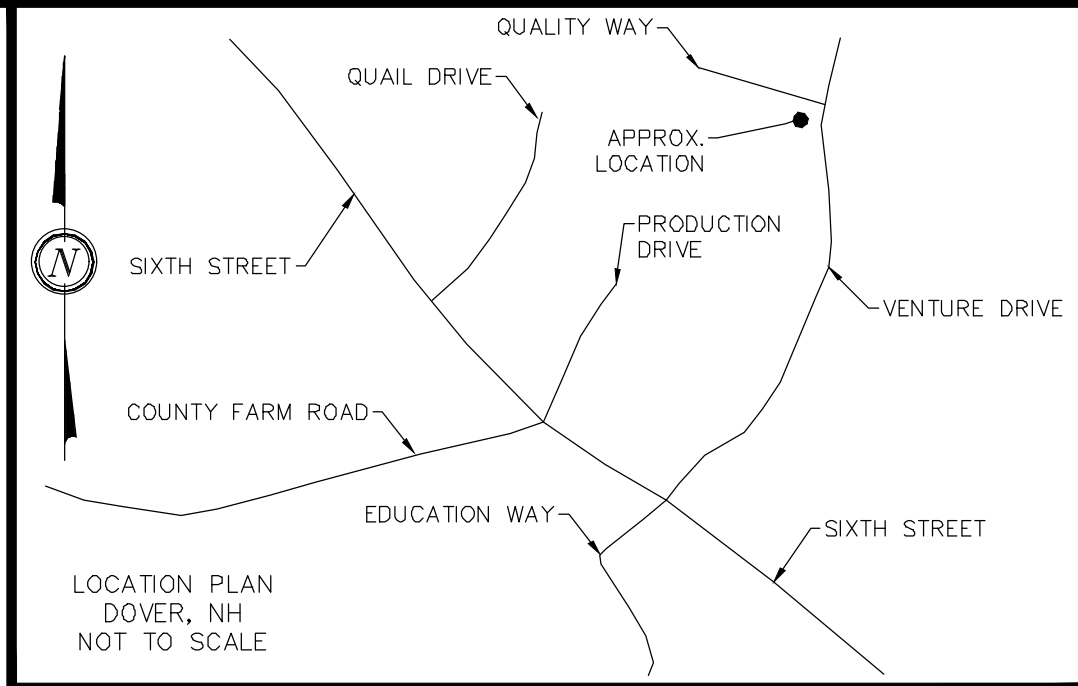
DEIDRA L.BENJAMIN, CWS



N/F QUALITY WAY LLC
1 QUALITY WAY ENTERPRISE PARK
DOVER, NH 03820
TAX MAP D, LOT 11-4
S.C.R.D. BOOK 3973, PAGE 254

WETLAND NOTE:

- WETLANDS WERE DELINEATED BY DEIDRA L. BENJAMIN, CWS, IN THE SUMMER OF 2021 USING THE FOLLOWING CRITERIA:
- USACE, REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHERN AND NORTHEAST REGION, VERSION 2.0. U.S. ARMY ENGINEER RESEARCH AND DEVELOPMENT CENTER. 2012. WICKSBURG, MS.
 - USACE, CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL ENVIRONMENTAL LABORATORY. 1987. WICKSBURG, MS.
 - UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE. 2018. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, VERSION 8.2. L.M. VASILAS, G.W. HURT, AND J.F. BERKOWITZ (EDS.). USDA, NRCS, IN COOPERATION WITH THE NATIONAL TECHNICAL COMMITTEE FOR HYDRIC SOILS.
 - NEW ENGLAND HYDRIC SOIL TECHNICAL COMMITTEE. FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, VERSION 4. NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION. 2019. LOWELL, MA.
 - U.S. ARMY CORPS OF ENGINEERS 2019. NATIONAL WETLAND PLANT LIST, VERSION 3.3. [HTTP://WETLAND-PLANTS.USACE.ARMY.MIL/](http://wetland-plants.usace.army.mil/)



NOTES:

- OWNER: JSR, LLC
17 FOSTERS DRIVE
DOVER, NH 03820
APPLICANT: JSR, LLC
17 FOSTERS DRIVE
DOVER, NH 03820
- A) TAX MAP D, LOT 11-5
B) TAX MAP D, LOT 11-5SND
- A) S.C.R.D. BOOK 4980, PAGE 632
B) S.C.R.D. BOOK 4980, PAGE 632
- A) LOT AREA: 43,314 Sq. Ft., 0.99 Ac.
B) LOT AREA: 43,517 Sq. Ft., 1.00 Ac.
- ZONING: IT - INNOVATIVE TECHNOLOGY
SETBACKS
FRONT ~ 50'
SIDE ~ 50'
REAR ~ 50'
MIN. LOT SIZE: 2 ACRES
MIN. FRONTAGE: 200'
MAX. LOT COVERAGE: 33%
MAX. BUILDING HEIGHT: 55'
- THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING BOUNDARIES AND CONDITIONS OF TAX MAP D, LOT 11-5 & 11-5SND LOCATED IN DOVER, N.H., AS OF THE FIELD SURVEY IN AUGUST 2021.
- I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS PROPERTY DOES NOT FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD REF: FEMA COMMUNITY #330145, MAP 33017C0310E, DATED: SEPTEMBER 30, 2015.
- VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE. COORDINATES GATHERED USING CARLSON BRX7 SURVEY GRADE GPS RECEIVERS.
- THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN AUGUST OF 2021 WITH AN ERROR OF CLOSURE BETTER THAN 1 PART IN 10,000.
- TOPOGRAPHY PROVIDED IS DEMARCATED AT 1' INTERVALS, AND IS THE RESULT OF A FIELD SURVEY PERFORMED IN AUGUST 2021.
- THIS SITE IS SERVICED BY MUNICIPAL SEWER AND WATER.

STRUCTURES TABLE:

SMH #4349
RIM = 172.22
INV. IN = 155.72 (SMH #4350)
INV. OUT = 155.62 (SMH #4157)

SMH #4157
RIM = 172.67
INV. IN = 156.27 (SMH #4349)
INV. IN = 156.17 (SMH #4156)
INV. OUT = 156.07 (SMH #4156)

DMH #4198
RIM = 174.05
INV. IN = 170.45 (CB #7322)
INV. IN = 168.55 (CB #3203)
INV. OUT = 168.45 (DMH #8054)

DMH #8054
RIM = 172.96
INV. IN = 168.02 (DMH #4198)
INV. IN = 167.86 (CB #7321)
INV. OUT = 167.86 (CB #7319)

CB #7325
RIM = 174.60
INV. IN = 167.36
INV. OUT = 166.90

CB #7323
RIM = 172.10
INV. OUT = 168.90 (CB #7324)

CB #7324
RIM = 172.08
INV. IN = 168.43 (CB #7323)
INV. OUT = 168.33

CB #7322
RIM = 174.15
INV. OUT = 171.40 (DMH #4198)

CB #7321
RIM = 172.97
INV. OUT = 167.17 (DMH #8054)

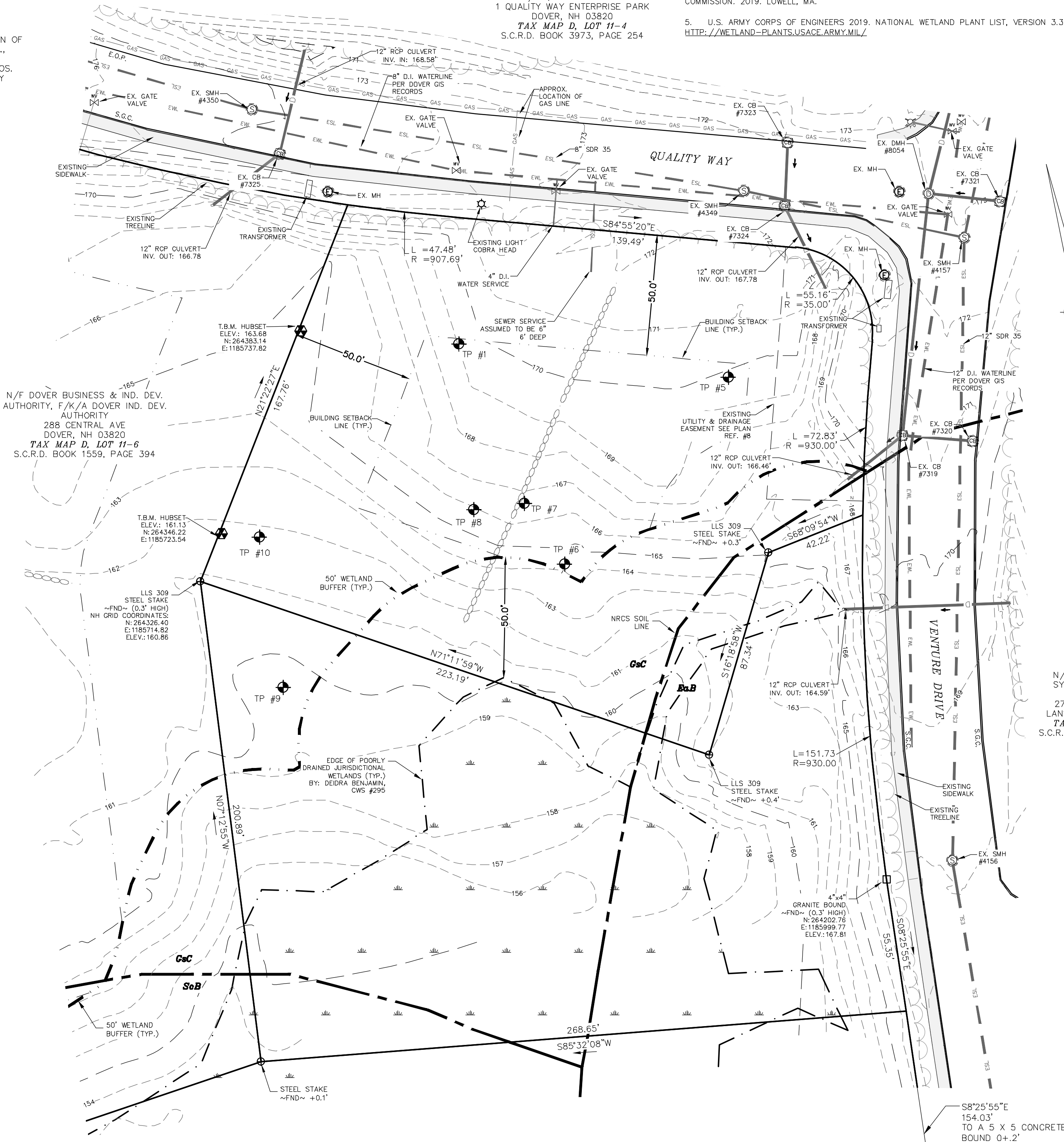
CB #3201
RIM = 177.17
INV. IN = 174.47
INV. OUT = 174.37 (CB #3202)

CB #3202
RIM = 178.15
INV. IN = 173.93 (CB #3201)
INV. OUT = 173.61 (CB #3203)

CB #3203
RIM = 178.13
INV. IN = 175.15
INV. IN = 173.31 (CB #3202)
INV. OUT = 173.21 (DMH #4198)

CB #7320
RIM = 170.63
INV. OUT = 167.11 (CB #7319)

CB #7319
RIM = 170.61
INV. IN = 166.51 (DMH #8054)
INV. IN = 166.51 (CB #7320)
INV. OUT = 166.45



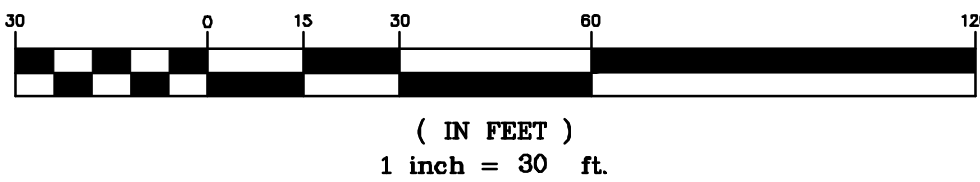
N/F CHURCHILL MEDICAL SYSTEMS INC, ADVANCED MEDICAL INC.
2750 MORRIS RD #A200
LANSDALE, PA 19446-6083
TAX MAP D, LOT 14-4
S.C.R.D. BOOK 1951, PAGE 542

EXISTING LEGEND:

- STONE BOUND (FND)
- STEEL STAKE (FND)
- UTILITY POLE / GUY WIRE
- SINGLE POST SIGN
- TEMPORARY BENCHMARK
- TEST PIT
- CURB STOP
- GATE VALVE
- FIRE HYDRANT
- CATCH BASIN
- SEWER MANHOLE

- STONE WALL
- ABUTTING PROPERTY LINE
- BUILDING SETBACK LINE
- EXISTING WATER LINE
- EXISTING SEWER LINE
- EXISTING DRAIN LINE
- OVERHEAD UTILITIES
- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- EXISTING TREELINE
- NRCS SOIL LINE/LABEL
- POORLY DRAINED WETLANDS
- 50' WETLAND BUFFER
- FND
- TYPICAL
- STRAFFORD COUNTY REGISTRY OF DEEDS

GRAPHIC SCALE



N/F DOVER BUSINESS & IND. DEV. AUTHORITY, F/K/A DOVER IND. DEV. AUTHORITY
288 CENTRAL AVE
DOVER, NH 03820
TAX MAP D, LOT 11-6 SND
S.C.R.D. BOOK 1559, PAGE 394

DOVER FILE #22-55

REVISED PER DOVER TRC COMMENT	DESCRIPTION
9-1-22	DATE
#1	REVISION

EXISTING CONDITIONS PLAN

LAND OF

JSR, LLC

VENTURE DRIVE & QUALITY WAY

DOVER, N.H.

TAX MAP D, LOTS 11-5 & 11-5SND

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863
SCALE : 1 IN. EQUALS 30 FT.
DATE : JUNE 1, 2022
FILE NO. : DB 2021 - 134

NEW HAMPSHIRE
STATE OF
No. 805
KENNETH A. BERRY
SIGNATURE

TEST PIT DATA:

TEST PIT #1
0-6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6-22 10YR 5/6 YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
22-38 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
38-68 2.5Y 5/3 LIGHT OLIVE BROWN, GRAVELLY LOAMY SAND WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. 38"
RESTRICTIVE LAYER N/A
GROUND WATER N/A
TERMINATED 68"
REFUSAL N/A
P = 10 MIN/IN

TEST PIT #2
0-5 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
5-22 10YR 5/6 YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
22-38 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
38-65 2.5Y 5/3 LIGHT OLIVE BROWN, GRAVELLY LOAMY SAND WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. 38"
RESTRICTIVE LAYER N/A
GROUND WATER N/A
TERMINATED 65"
REFUSAL N/A
P = 10 MIN/IN

TEST PIT #3
0-6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6-18 10YR 5/6 YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18-30 2.5Y 5/4 LIGHT OLIVE BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
30-55 2.5Y 5/3 LIGHT OLIVE BROWN, GRAVELLY LOAMY SAND WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. 30"
RESTRICTIVE LAYER N/A
GROUND WATER N/A
TERMINATED 55"
REFUSAL N/A
P = 10 MIN/IN

TEST PIT #4
0-6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6-24 10YR 5/6 YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
24-40 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
40-60 2.5Y 5/3 LIGHT OLIVE BROWN, GRAVELLY LOAMY SAND WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. 40"
RESTRICTIVE LAYER N/A
GROUND WATER N/A
TERMINATED 60"
REFUSAL N/A
P = 6 MIN/IN

TEST PIT #5
0-6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6-22 10YR 5/6 YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
22-38 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
38-64 2.5Y 5/3 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. 38"
RESTRICTIVE LAYER N/A
GROUND WATER N/A
TERMINATED 64"
REFUSAL N/A
P = 10 MIN/IN

TEST PIT #6
0-6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6-24 10YR 5/6 YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
E.S.H.W.T. N/A
RESTRICTIVE LAYER N/A
GROUND WATER N/A
TERMINATED 30"
REFUSAL N/A
P = 10 MIN/IN

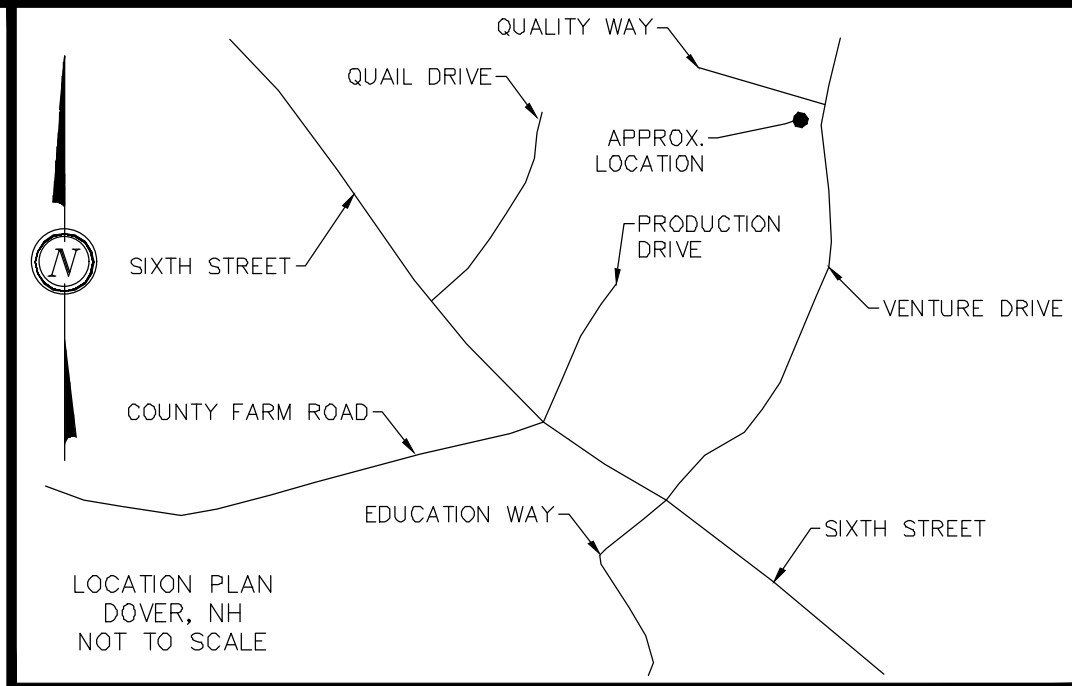
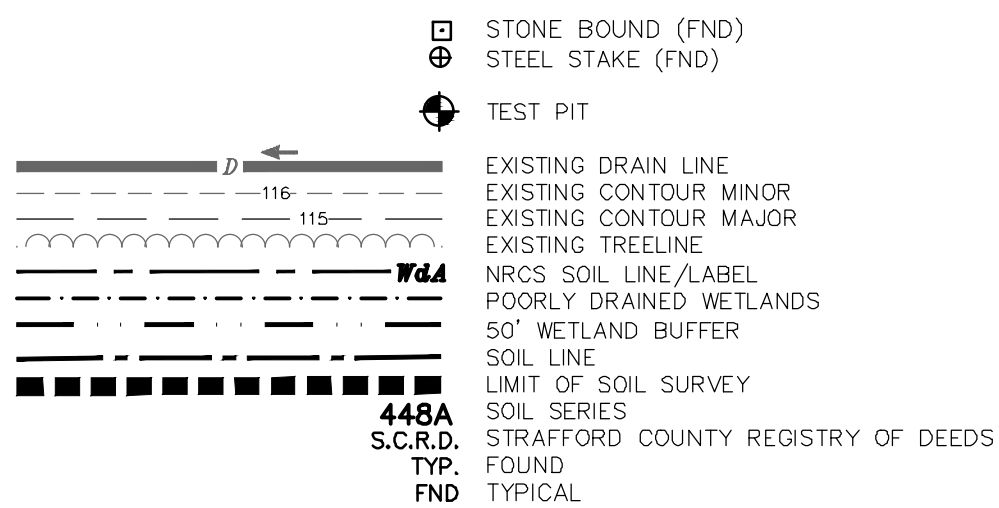
TEST PIT #7
0-6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6-22 10YR 5/6 YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
22-38 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
38-64 2.5Y 5/3 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. 38"
RESTRICTIVE LAYER N/A
GROUND WATER N/A
TERMINATED 64"
REFUSAL N/A
P = 10 MIN/IN

TEST PIT #8
0-6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6-24 10YR 5/6 YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
E.S.H.W.T. N/A
RESTRICTIVE LAYER N/A
GROUND WATER N/A
TERMINATED 24"
REFUSAL 24"
P = 10 MIN/IN

TEST PIT #9
0-5 10YR 4/2 DARK GRAYISH BROWN, SILT LOAM, GRANULAR, FRIABLE
5-12 2.5Y 4/2 DARK GRAYISH BROWN, SILT LOAM, GRANULAR, FRIABLE
12-45 5Y 5/2 OLIVE GRAY SILT LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. 12"
RESTRICTIVE LAYER 12"
GROUND WATER N/A
TERMINATED 45"
REFUSAL N/A
P = 18 MIN/IN

TEST PIT #10
0-5 10YR 4/2 DARK GRAYISH BROWN, SILT LOAM, GRANULAR, FRIABLE
5-14 2.5Y 4/2 DARK GRAYISH BROWN, SILT LOAM, GRANULAR, FRIABLE
14-45 5Y 5/2 OLIVE GRAY SILT LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. 14"
RESTRICTIVE LAYER 14"
GROUND WATER N/A
TERMINATED 45"
REFUSAL N/A
P = 18 MIN/IN

EXISTING LEGEND:



NOTES:

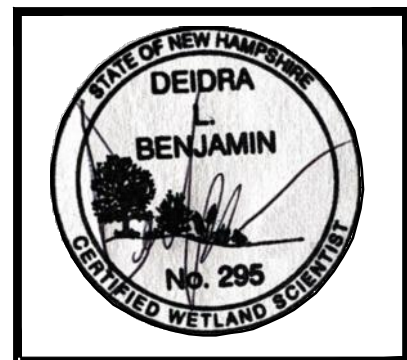
- OWNER: JSR, LLC
17 FOSTERS DRIVE
DOVER, NH 03820
- APPLICANT: JSR, LLC
17 FOSTERS DRIVE
DOVER, NH 03820
- A) TAX MAP D, LOT 11-5.
B) TAX MAP D, LOT 11-5SND
- A) LOT AREA: 43,314 Sq. Ft., 0.99 Ac.
B) LOT AREA: 43,517 Sq. Ft., 1.00 Ac.
- PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY BERRY SURVEYING AND ENGINEERING IN 2021 WITH AN ERROR OF CLOSURE BETTER THAN 1 IN 10,000.
- VERTICAL DATUM IS BASED ON USGS NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83 NH STATE PLANE COORDINATES. COORDINATES GATHERED FROM CARLSON BRX7 SURVEY GRADE GPS RECEIVERS.
- THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING ANALYZED SITE SPECIFIC SOIL CONDITIONS OF THE SITE.

SITE SPECIFIC SOILS LEGEND

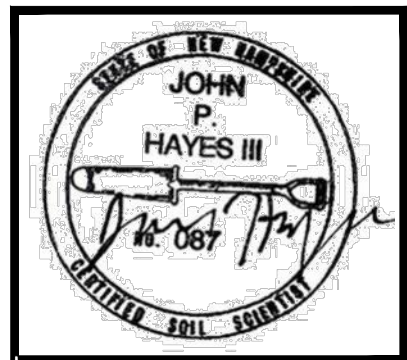
SYMBOL	SLOPES	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
Be	A	MAYBID	D
238	A,B,C,D	ELMRIDGE (VERY STONY)	C
Gs	B,C	GLOUCESTER (VERY STONY)	A
Hg	C	HOLLIS-GLOUCESTER COMPLEX (VERY ROCKY)	A/D
Sc	A,B	SCITCO	C
500	A,B,C,D,E	UDORTHENTS	C
600	B	ENDORAQUENTS	C

SLOPE: A = 0-3% B = 3-8% C = 8-15% D = 15-25% E = 25-50% F = 50%+

DENOMINATOR: /VP = VERY POORLY DRAINED /P = POORLY DRAINED /Rk = VERY ROCKY



DEIDRA BENJAMIN, CWS #295



JOHN P. HAYES, III CSS #87

WETLAND NOTE:

WETLANDS WERE DELINEATED BY DEIDRA L. BENJAMIN, CWS, IN THE SUMMER OF 2021 USING THE FOLLOWING CRITERIA:

- USACE, REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGIONAL VERSION 2.0. U.S. ARMY ENGINEER RESEARCH AND DEVELOPMENT CENTER, 2012. VICKSBURG, MS.
- USACE, CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL. ENVIRONMENTAL LABORATORY, 1987. VICKSBURG, MS.
- UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE. 2018. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, VERSION 8.2. L.M. VASILAS, G.W. HURT, AND J.F. BERNOWITZ (EDS.). USDA, NRCS, IN COOPERATION WITH THE NATIONAL TECHNICAL COMMITTEE FOR HYDRIC SOILS.
- NEW ENGLAND HYDRIC SOIL TECHNICAL COMMITTEE. FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND. VERSION 4. NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION, 2019. LOWELL, MA.
- U.S. ARMY CORPS OF ENGINEERS 2019. NATIONAL WETLAND PLANT LIST, VERSION 3.3. [HTTP://WETLAND-PLANTS.USACE.ARMY.MIL/](http://wetland-plants.usace.army.mil/)

GRAPHIC SCALE



(IN FEET)
1 inch = 30 ft.

DOVER FILE #22-55

REVISION	DATE	DESCRIPTION
#1	9-1-22	REVISED PER DOVER TRC COMMENT

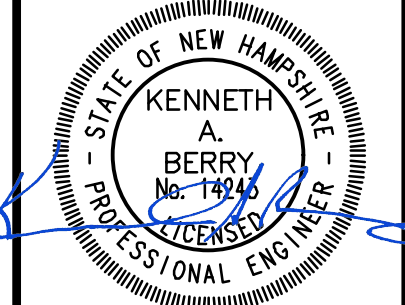
SITE SPECIFIC SOILS MAP

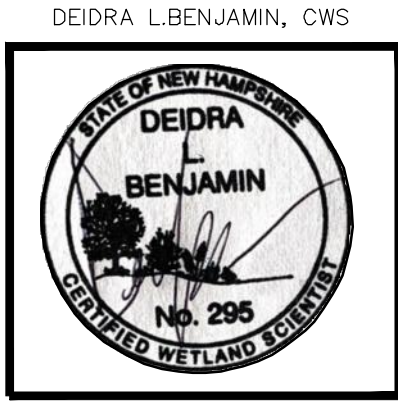
LAND OF
JSR, LLC
VENTURE DRIVE & QUALITY WAY
DOVER, NH

TAX MAP D, LOTS 11-5 & 11-5SND

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 60 FT.
DATE : JUNE 1, 2022
FILE NO. : DB 2021 - 134





WETLAND NOTE:

- WETLANDS WERE DELINEATED BY DEIDRA L. BENJAMIN, CWS, IN THE SUMMER OF 2021 USING THE FOLLOWING CRITERIA:
1. USACE, REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTH-CENTRAL AND NORTHEAST REGION, VERSION 2.0. U.S. ARMY ENGINEER RESEARCH AND DEVELOPMENT CENTER, 2012. VICKSBURG, MS.
 2. USACE, CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL, ENVIRONMENTAL LABORATORY, 1987. VICKSBURG, MS.
 3. UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2018. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, VERSION 8.2. L.M. VASILAS, G.W. HURT, AND J.F. BERKOWITZ (EDS.). USDA, NRCS, IN COOPERATION WITH THE NATIONAL TECHNICAL COMMITTEE FOR HYDRIC SOILS.
 4. NEW ENGLAND HYDRIC SOIL TECHNICAL COMMITTEE, FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, VERSION 4. NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION, 2019. LOWELL, MA.
 5. U.S. ARMY CORPS OF ENGINEERS 2019. NATIONAL WETLAND PLANT LIST, VERSION 3.3. [HTTP://WETLAND-PLANTS.USACE.ARMY.MIL/](http://wetland-plants.usace.army.mil/)

PLAN REFERENCES:

- 1.) "SUBDIVISION PLAN DOVER INDUSTRIAL DEVELOPMENT AUTHORITY SIXTH STREET / LONG HILL ROAD EXT. DOVER, NEW HAMPSHIRE"
BY: TERRASCAN ENGINEERS SURVEYORS
DATED: JANUARY 17, 1992
S.C.R.D. PLAN 41-91
- 2.) "LOT LINE ADJUST PLAN PREPARED FOR WHITE ENTERPRISES AND DOVER INDUSTRIAL DEVELOPMENT AUTHORITY LONGHILL ROAD, DOVER, NH"
BY: MCNEANEY SURVEY ASSOCIATES
DATED: JULY 3, 1991
S.C.R.D. PLAN 39-38
- 3.) "SUBDIVISION PLAN DOVER INDUSTRIAL DEVELOPMENT AUTHORITY SIXTH STREET / LONG HILL ROAD EXT. DOVER, NEW HAMPSHIRE"
BY: TERRASCAN ENGINEERS SURVEYORS
DATED: JANUARY 17, 1992
S.C.R.D. PLAN 41-92
- 4.) "SUBDIVISION OF LAND PREPARED FOR DOVER INDUSTRIAL DEVELOPMENT AUTHORITY VENTURE DRIVE DOVER, NEW HAMPSHIRE"
BY: MCNEANEY SURVEY ASSOCIATES INC.
DATED: AUGUST 4, 1994
S.C.R.D. PLAN # 45-32
- 5.) "SUBDIVISION OF LAND PREPARED FOR DOVER INDUSTRIAL DEVELOPMENT AUTHORITY TAX MAP H, LOT NO. 11-1 VENTURE DRIVE DOVER, STRAFFORD COUNTY NEW HAMPSHIRE"
BY: MCNEANEY SURVEY ASSOCIATES INC.
DATED: FEBRUARY 25, 2005
S.C.R.D. PLAN # 79-87

PLAN REFERENCES:

- 6.) "AMENDED SUBDIVISION AND LOT LINE ADJUSTMENT PLAN PREPARED FOR GEORGE J. FOSTER CO., INC. AND DOVER BUSINESS AND INDUSTRIAL DEVELOPMENT AUTHORITY TAX MAP D, LOT NOS. 9A & 11-1 VENTURE DRIVE AND QUALITY WAY DOVER, STRAFFORD COUNTY NEW HAMPSHIRE"
BY: MCNEANEY SURVEY ASSOCIATES INC
DATED: FEBRUARY 14, 2006
S.C.R.D. PLAN 85-99
- 7.) "AMENDED SUBDIVISION AND LOT LINE ADJUSTMENT PLAN PREPARED FOR GEORGE J. FOSTER CO., INC. AND DOVER BUSINESS AND INDUSTRIAL DEVELOPMENT AUTHORITY TAX MAP D, LOT NOS. 9A & 11-1 VENTURE DRIVE AND QUALITY WAY DOVER, STRAFFORD COUNTY NEW HAMPSHIRE"
BY: MCNEANEY SURVEY ASSOCIATES INC
DATED: FEBRUARY 14, 2006
S.C.R.D. PLAN 85-100
- 8.) "LOT LINE ADJUSTMENT AND SUBDIVISION PLAN OF LAND PREPARED FOR GEORGE J. FOSTER CO., INC. AND DOVER BUSINESS AND INDUSTRIAL DEVELOPMENT AUTHORITY TAX MAP D, LOT NOS. 9A & 11-1 VENTURE DRIVE AND QUALITY WAY DOVER, STRAFFORD COUNTY NEW HAMPSHIRE"
BY: MCNEANEY SURVEY ASSOCIATES INC
DATED: JUNE 12, 2006
S.C.R.D. PLAN 86-73

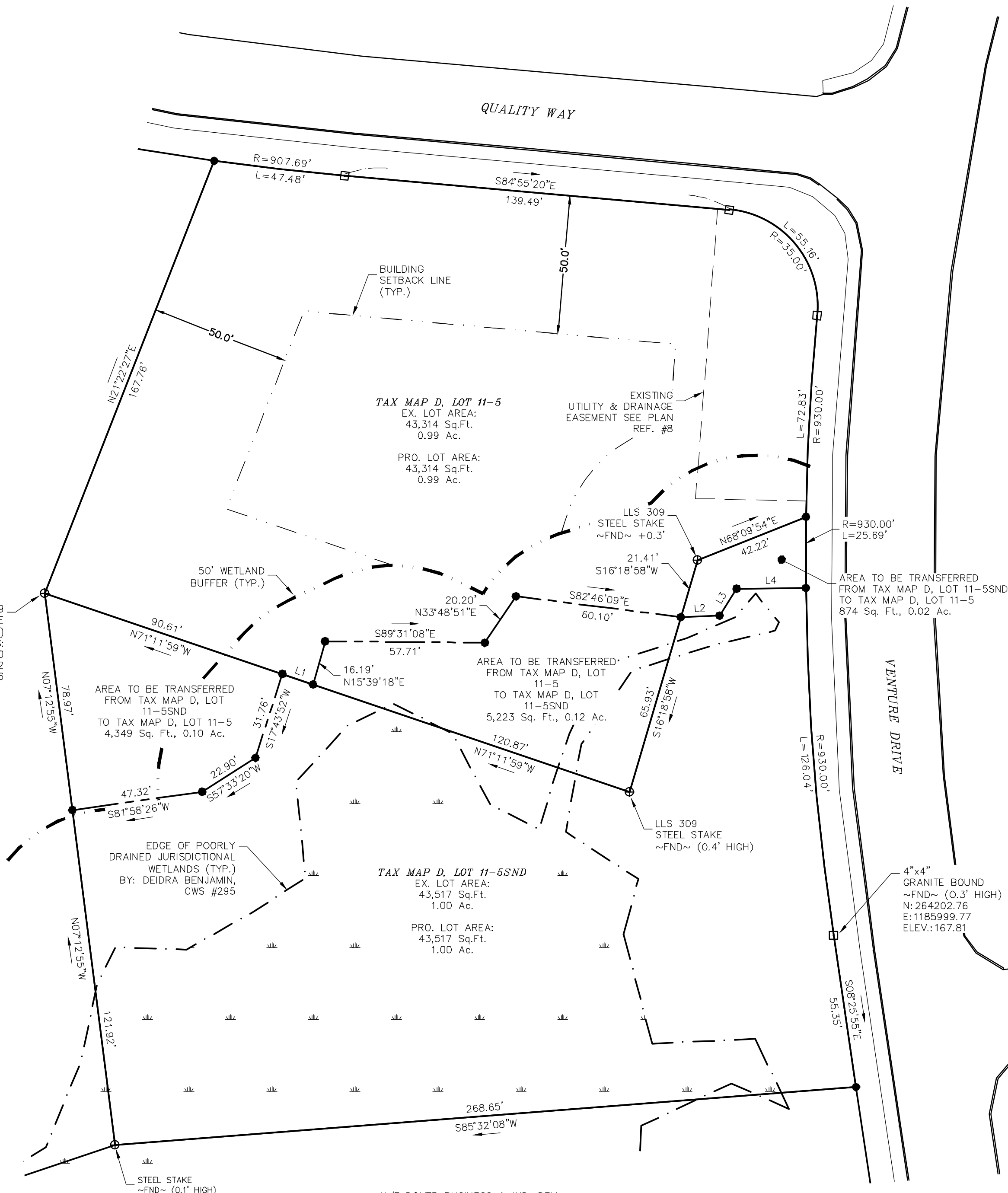
LINE	BEARING	DISTANCE
L1	N71°11'59"W	11.72'
L2	N87°42'08"E	13.96'
L3	N32°16'10"E	11.49'
L4	N89°20'00"E	25.07'

N/F DOVER BUSINESS & IND. DEV. AUTHORITY, F/K/A DOVER IND. DEV. AUTHORITY
288 CENTRAL AVE
DOVER, NH 03820
TAX MAP D, LOT 11-6
S.C.R.D. BOOK 1559, PAGE 394

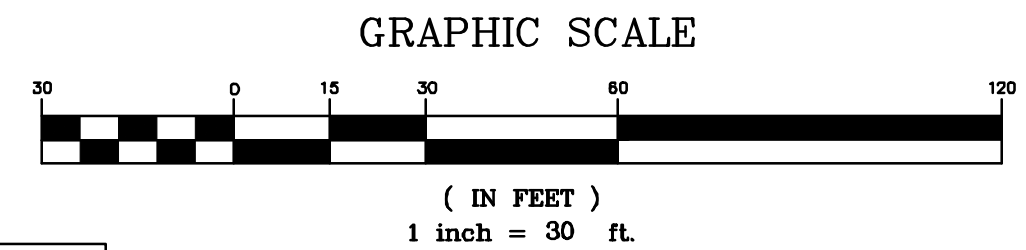
LEGEND:

- 3/4" REBAR W/ ID CAP ~TBS~
- GRANITE BOUND ~FND OR TBS~
- STEEL STAKE ~FND~
- PROPOSED BOUNDARY LINE
- BUILDING SETBACK LINE
- POORLY DRAINED WETLANDS
- 50' WETLAND BUFFER
- FND FOUND
- TYP TYPICAL
- TBS TO BE SET
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS

N/F QUALITY WAY LLC
1 QUALITY WAY ENTERPRISE PARK
DOVER, NH 03820
TAX MAP D, LOT 11-4
S.C.R.D. BOOK 3973, PAGE 254



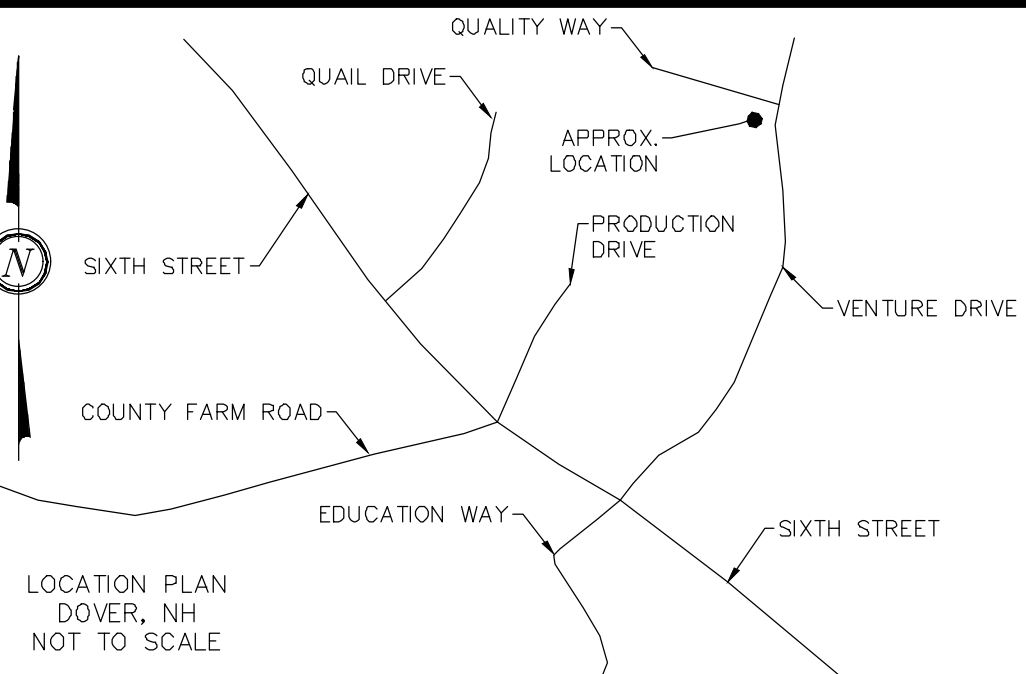
N/F CHURCHILL MEDICAL SYSTEMS INC, ADVANCED MEDICAL INC.
2750 MORRIS RD #A200
LANSDALE, PA 19446-6083
TAX MAP D, LOT 14-4
S.C.R.D. BOOK 1951, PAGE 542



I CERTIFY THAT THIS PLAT EXCEEDS THE MINIMUM REQUIREMENT FOR ACCURACY AND COMPLETENESS OF THE STATE OF N.H. AND THE CITY OF DOVER, N.H. -1:10,000-

KENNETH A. BERRY L.L.S. 805 10-17-22 DATE

DOVER APPROVAL



NOTES:

- 1.) OWNER: JSR, LLC
17 FOSTERS DRIVE
DOVER, NH 03820
A.) TAX MAP D, LOT 11-5
B.) EXISTING LOT AREA: 43,314 Sq.Ft., 0.99 Ac.
PROPOSED LOT AREA: 43,314 Sq.Ft., 0.99 Ac.
C.) S.C.R.D. BOOK 4980, PAGE 632
- 2.) OWNER: JSR, LLC
17 FOSTERS DRIVE
DOVER, NH 03820
A.) TAX MAP D, LOT 11-5SND
B.) EXISTING LOT AREA: 43,517 Sq.Ft., 1.00 Ac.
PROPOSED LOT AREA: 43,517 Sq.Ft., 1.00 Ac.
C.) S.C.R.D. BOOK 4980, PAGE 63
- 3.) ZONING: IT - INNOVATIVE TECHNOLOGY
SETBACKS
FRONT ~ 50'
SIDE ~ 50'
REAR ~ 50'
MIN. LOT SIZE: 2 ACRES
MIN. FRONTAGE: 200'
MAX. LOT COVERAGE: 33%
MAX. BUILDING HEIGHT: 55'
- 4.) THE INTENT OF THIS PLAN IS TO REVISE THE BOUNDARY LINES OF TAX MAP D, LOT 11-5 & 11-5SND. THIS IS AN EQUAL LAND SWAP AND BOTH LOTS WILL HAVE THE SAME LOT AREA AS THE EXISTING.
- 5.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS PROPERTY DOES NOT FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD REF: FEMA COMMUNITY #530145, MAP 33017C0310E, DATED: SEPTEMBER 30, 2015.
- 6.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE. COORDINATES GATHERED USING CARLSON BRX7 SURVEY GRADE GPS RECEIVERS.
- 7.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN AUGUST OF 2021 WITH AN ERROR OF CLOSURE BETTER THAN 1 PART IN 10,000.
- 8.) THIS SITE IS SERVICED BY MUNICIPAL SEWER AND WATER.
- 9.) AN EASEMENT IS PROVIDED TO THE CITY TO MAINTAIN THE POTABLE DRINKING WATER QUALITY THROUGH THE HYDRANT FLUSHING PROGRAM, WHICH INCLUDES PROVIDING ACCESS TO THE WATER CURB BOXES.

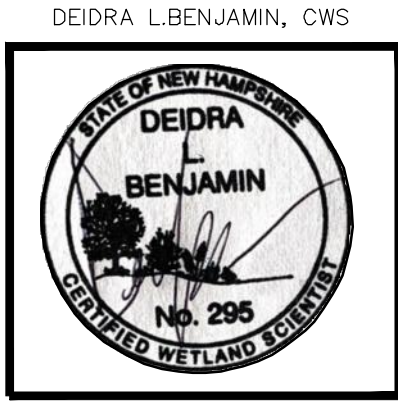
DOVER FILE #22-55

REVISION	DATE	REVISION PER DOVER TRC COMMENT	DESCRIPTION
#1	9-1-22		

LOT LINE REVISION
LAND OF
JSR, LLC
VENTURE DRIVE & QUALITY WAY
DOVER, NH
TAX MAP D, LOT 11-5 & 11-5SND

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863
SCALE : 1 IN. EQUALS 30 FT.
DATE : JUNE 1, 2022
FILE NO. : DB 2021 - 134

STATE OF NEW HAMPSHIRE
No. 805
KENNETH A. BERRY
L.L.S. 805
SIGNATURE



WETLAND NOTE:

- WETLANDS WERE DELINEATED BY DEIDRA L. BENJAMIN, CWS, IN THE SUMMER OF 2021 USING THE FOLLOWING CRITERIA:
1. USACE, REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, VERSION 2.0. U.S. ARMY ENGINEER RESEARCH AND DEVELOPMENT CENTER, 2012. VICKSBURG, MS.
 2. USACE, CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL, ENVIRONMENTAL LABORATORY, 1987. VICKSBURG, MS.
 3. UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2018. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, VERSION 8.2. L.M. VASILAS, G.W. HURT, AND J.F. BERKOWITZ (EDS.). USDA, NRCS, IN COOPERATION WITH THE NATIONAL TECHNICAL COMMITTEE FOR HYDRIC SOILS.
 4. NEW ENGLAND HYDRIC SOIL TECHNICAL COMMITTEE, FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, VERSION 4. NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION, 2019. LOWELL, MA.
 5. U.S. ARMY CORPS OF ENGINEERS 2019. NATIONAL WETLAND PLANT LIST, VERSION 3.3. [HTTP://WETLAND-PLANTS.USACE.ARMY.MIL/](http://wetland-plants.usace.army.mil/)

PLAN REFERENCES:

- 1.) "SUBDIVISION PLAN DOVER INDUSTRIAL DEVELOPMENT AUTHORITY SIXTH STREET / LONG HILL ROAD EXT. DOVER, NEW HAMPSHIRE"
BY: TERRASCAN ENGINEERS SURVEYORS
DATED: JANUARY 17, 1992
S.C.R.D. PLAN 39-38
- 2.) "LOT LINE ADJUST PLAN PREPARED FOR WHITE ENTERPRISES AND DOVER INDUSTRIAL DEVELOPMENT AUTHORITY LONGHILL ROAD, DOVER, NH"
BY: MCNEANEY SURVEY ASSOCIATES
DATED: JULY 3, 1991
S.C.R.D. PLAN 39-38
- 3.) "SUBDIVISION PLAN DOVER INDUSTRIAL DEVELOPMENT AUTHORITY SIXTH STREET / LONG HILL ROAD EXT. DOVER, NEW HAMPSHIRE"
BY: TERRASCAN ENGINEERS SURVEYORS
DATED: JANUARY 17, 1992
S.C.R.D. PLAN 41-92
- 4.) "SUBDIVISION OF LAND PREPARED FOR DOVER INDUSTRIAL DEVELOPMENT AUTHORITY VENTURE DRIVE DOVER, NEW HAMPSHIRE"
BY: MCNEANEY SURVEY ASSOCIATES INC.
DATED: AUGUST 4, 1994
S.C.R.D. PLAN # 45-32
- 5.) "SUBDIVISION OF LAND PREPARED FOR DOVER INDUSTRIAL DEVELOPMENT AUTHORITY TAX MAP H, LOT NO. 11-1 VENTURE DRIVE DOVER, STRAFFORD COUNTY NEW HAMPSHIRE"
BY: MCNEANEY SURVEY ASSOCIATES INC.
DATED: FEBRUARY 25, 2005
S.C.R.D. PLAN # 79-87

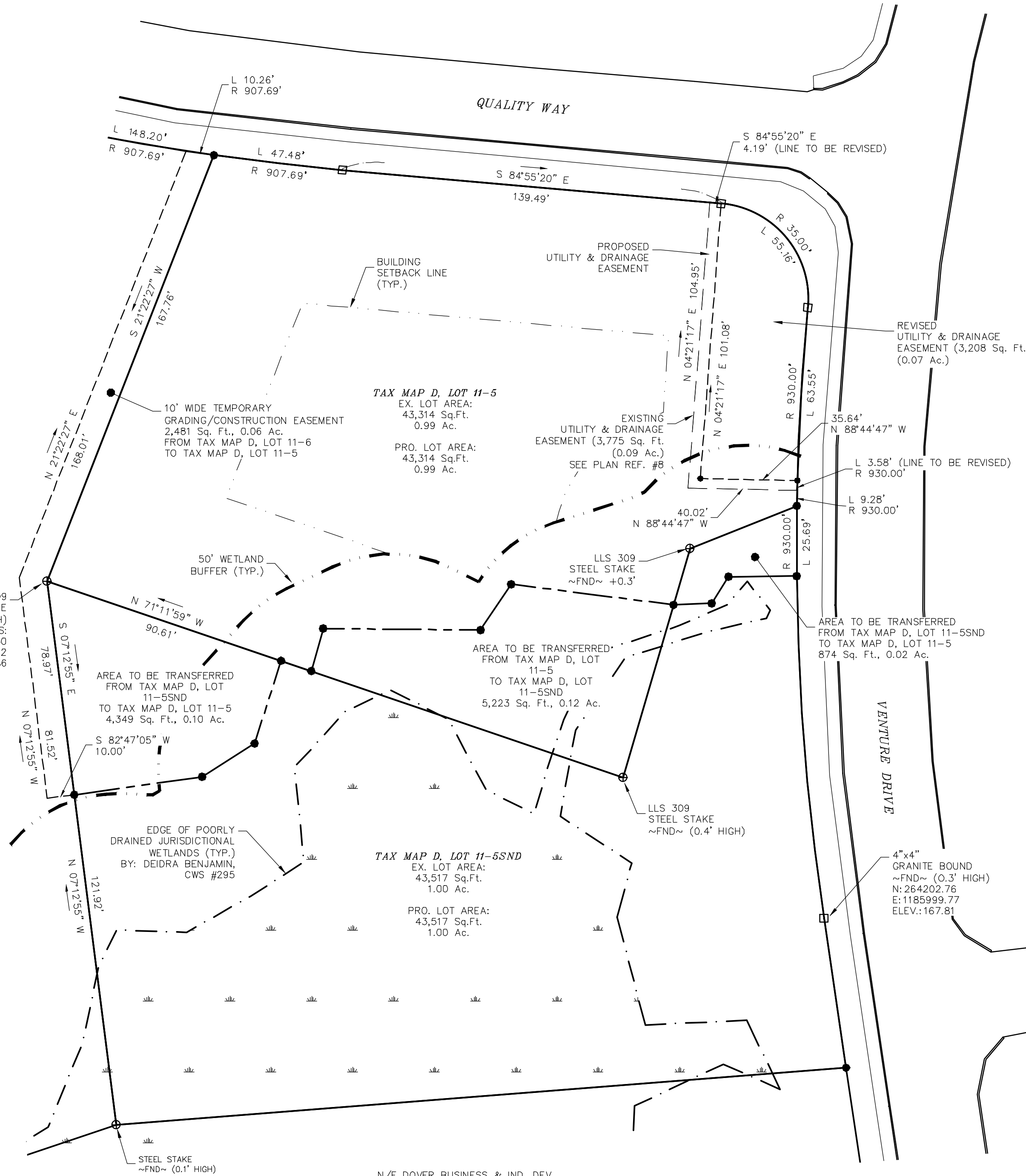
PLAN REFERENCES:

- 6.) "AMENDED SUBDIVISION AND LOT LINE ADJUSTMENT PLAN PREPARED FOR GEORGE J. FOSTER CO., INC. AND DOVER BUSINESS AND INDUSTRIAL DEVELOPMENT AUTHORITY TAX MAP D, LOT NOS. 9A & 11-1 VENTURE DRIVE AND QUALITY WAY DOVER, STRAFFORD COUNTY NEW HAMPSHIRE"
BY: MCNEANEY SURVEY ASSOCIATES INC.
DATED: FEBRUARY 14, 2006
S.C.R.D. PLAN 85-99
- 7.) "AMENDED SUBDIVISION AND LOT LINE ADJUSTMENT PLAN PREPARED FOR GEORGE J. FOSTER CO., INC. AND DOVER BUSINESS AND INDUSTRIAL DEVELOPMENT AUTHORITY TAX MAP D, LOT NOS. 9A & 11-1 VENTURE DRIVE AND QUALITY WAY DOVER, STRAFFORD COUNTY NEW HAMPSHIRE"
BY: MCNEANEY SURVEY ASSOCIATES INC.
DATED: FEBRUARY 14, 2006
S.C.R.D. PLAN 85-100
- 8.) "LOT LINE ADJUSTMENT AND SUBDIVISION PLAN OF LAND PREPARED FOR GEORGE J. FOSTER CO., INC. AND DOVER BUSINESS AND INDUSTRIAL DEVELOPMENT AUTHORITY TAX MAP D, LOT NOS. 9A & 11-1 VENTURE DRIVE AND QUALITY WAY DOVER, STRAFFORD COUNTY NEW HAMPSHIRE"
BY: MCNEANEY SURVEY ASSOCIATES INC.
DATED: JUNE 12, 2006
S.C.R.D. PLAN 86-73

N/F DOVER BUSINESS & IND. DEV. AUTHORITY, F/K/A DOVER IND. DEV. AUTHORITY
288 CENTRAL AVE
DOVER, NH 03820
TAX MAP D, LOT 11-6
S.C.R.D. BOOK 1559, PAGE 394

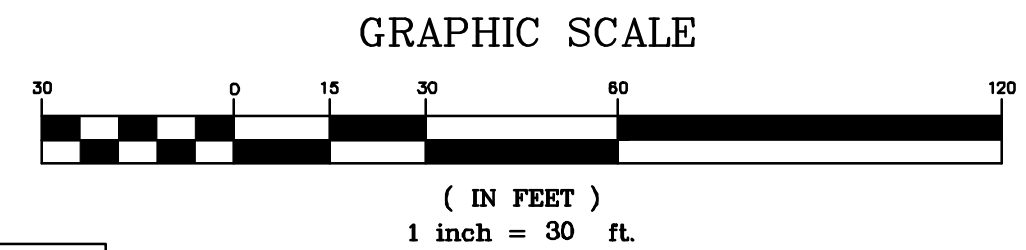
LEGEND:

- 3/4" REBAR W/ ID CAP ~TBS~
- 1/2" EASEMENT REBAR W/ ID CAP ~TBS~
- GRANITE BOUND ~FND OR TBS~
- STEEL STAKE ~FND~
- PROPOSED BOUNDARY LINE
- EXISTING EASEMENT LINE TO BE ABANDONED
- EASEMENT LINE
- BUILDING SETBACK LINE
- POORLY DRAINED WETLANDS
- 50' WETLAND BUFFER
- FND FOUND
- TYP TYPICAL
- TBS TO BE SET
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS



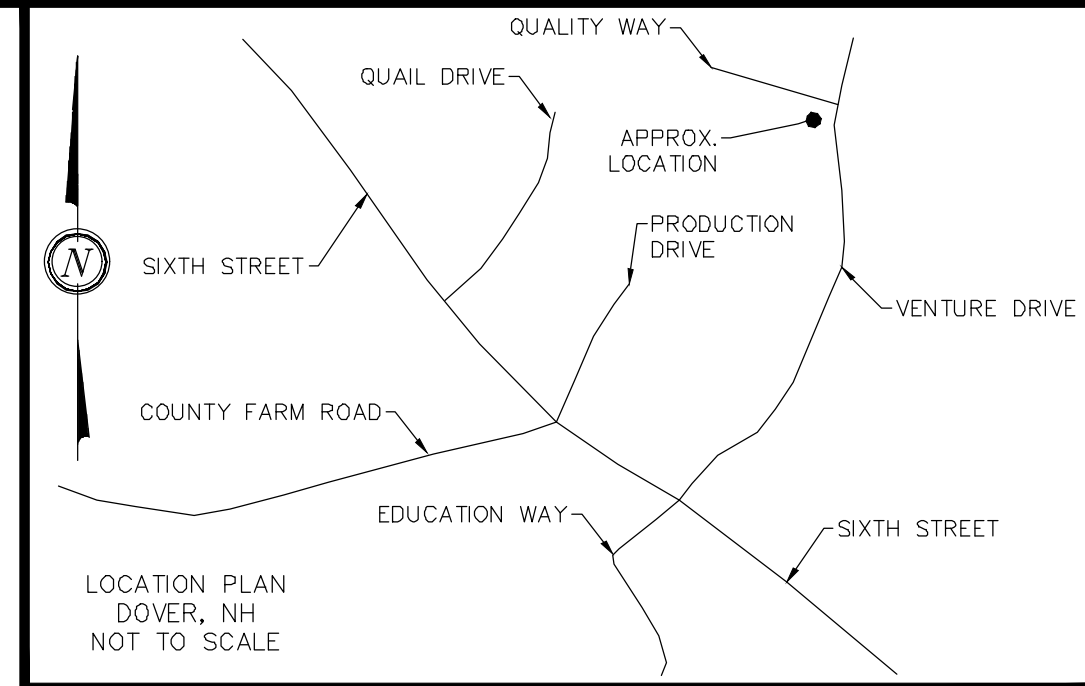
N/F DOVER BUSINESS & IND. DEV. AUTHORITY, F/K/A DOVER IND. DEV. AUTHORITY
288 CENTRAL AVE
DOVER, NH 03820
TAX MAP D, LOT 11-6 SND
S.C.R.D. BOOK 1559, PAGE 394

N/F CHURCHILL MEDICAL SYSTEMS INC, ADVANCED MEDICAL INC.
2750 MORRIS RD #A200
LANSDALE, PA 19446-6083
TAX MAP D, LOT 14-4
S.C.R.D. BOOK 1951, PAGE 542



I CERTIFY THAT THIS PLAT EXCEEDS THE MINIMUM REQUIREMENT FOR ACCURACY AND COMPLETENESS OF THE STATE OF N.H. AND THE CITY OF DOVER, N.H. -1:10,000-
Kenneth A. Berry 10-17-22
KENNETH A. BERRY L.L.S. 805 DATE

DOVER APPROVAL



NOTES:

- 1.) OWNER: JSR, LLC
17 FOSTERS DRIVE
DOVER, NH 03820
A.) TAX MAP D, LOT 11-5
B.) EXISTING LOT AREA: 43,314 Sq.Ft., 0.99 Ac.
PROPOSED LOT AREA: 43,314 Sq.Ft., 0.99 Ac.
C.) S.C.R.D. BOOK 4980, PAGE 632
- 2.) OWNER: JSR, LLC
17 FOSTERS DRIVE
DOVER, NH 03820
A.) TAX MAP D, LOT 11-5SND
B.) EXISTING LOT AREA: 43,517 Sq.Ft., 1.00 Ac.
PROPOSED LOT AREA: 43,517 Sq.Ft., 1.00 Ac.
C.) S.C.R.D. BOOK 4980, PAGE 63
- 3.) ZONING: IT - INNOVATIVE TECHNOLOGY
SETBACKS
FRONT ~ 50'
SIDE ~ 50'
REAR ~ 50'
MIN. LOT SIZE: 2 ACRES
MIN. FRONTAGE: 200'
MAX. LOT COVERAGE: 33%
MAX. BUILDING HEIGHT: 55'
- 4.) THE INTENT OF THIS PLAN IS TO SHOW THE REVISION OF A EXISTING UTILITY AND DRAINAGE EASEMENT AND A TEMPORARY GRADING AND CONSTRUCTION EASEMENT ALONG THE WESTERN BOUNDARY LINE OF THE SUBJECT PARCEL WITH TAX MAP D, LOT 11-6.
- 5.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS PROPERTY DOES NOT FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD REF: FEMA COMMUNITY #330145, MAP 33017C0310E, DATED: SEPTEMBER 30, 2015.
- 6.) VERTICAL DATUM BASED ON NAVD83 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE. COORDINATES GATHERED USING CARLSON BRX7 SURVEY GRADE GPS RECEIVERS.
- 7.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN AUGUST OF 2021 WITH AN ERROR OF CLOSURE BETTER THAN 1 PART IN 10,000.
- 8.) THIS SITE IS SERVICED BY MUNICIPAL SEWER AND WATER.
- 9.) THE MAINTENANCE OF THE DETENTION BASIN WITHIN THE REVISED UTILITY AND DRAINAGE EASEMENT IN THE RESPONSIBILITY OF THE APPLICANT/PROPERTY OWNER.

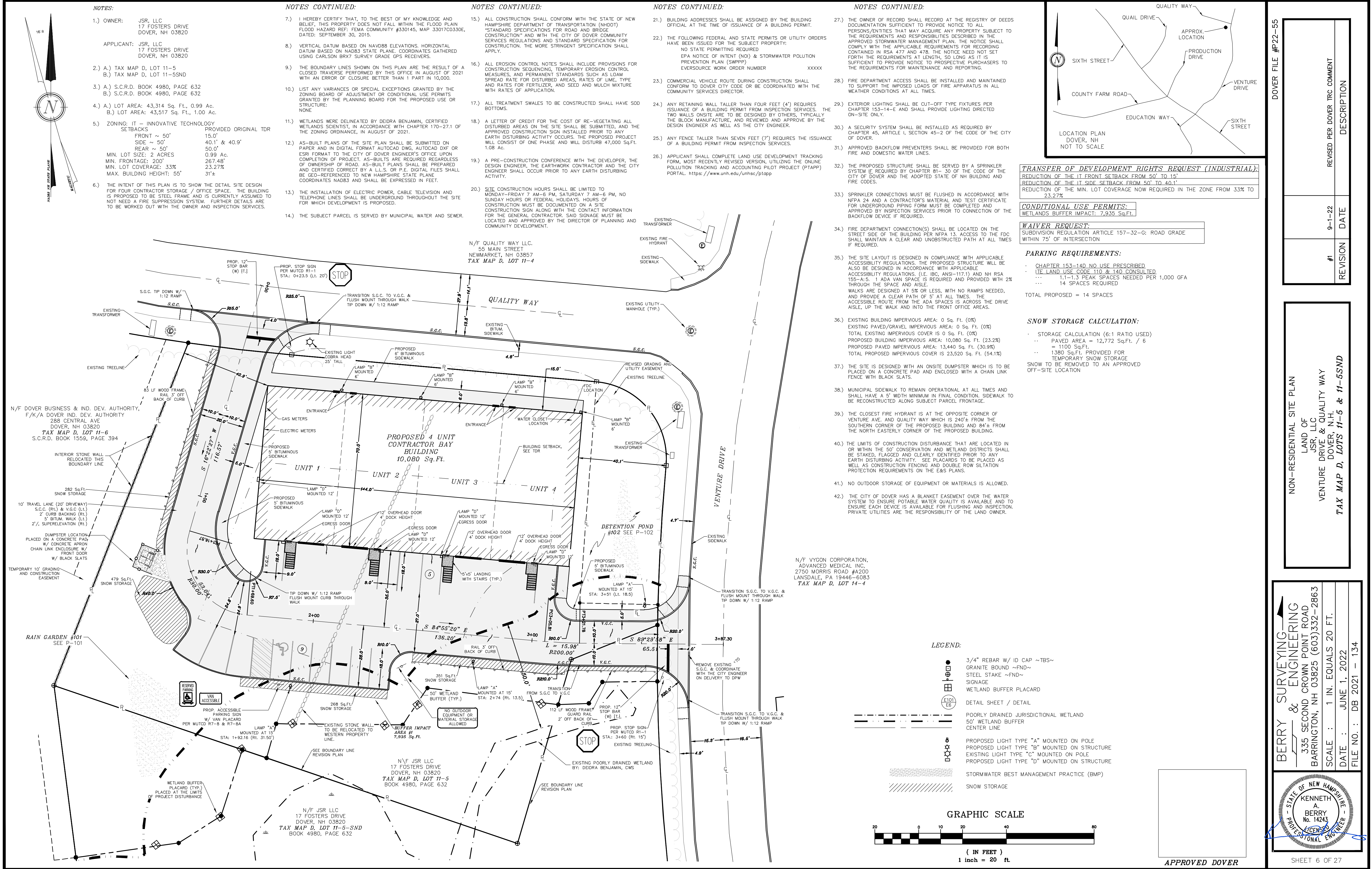
DOVER FILE #22-55

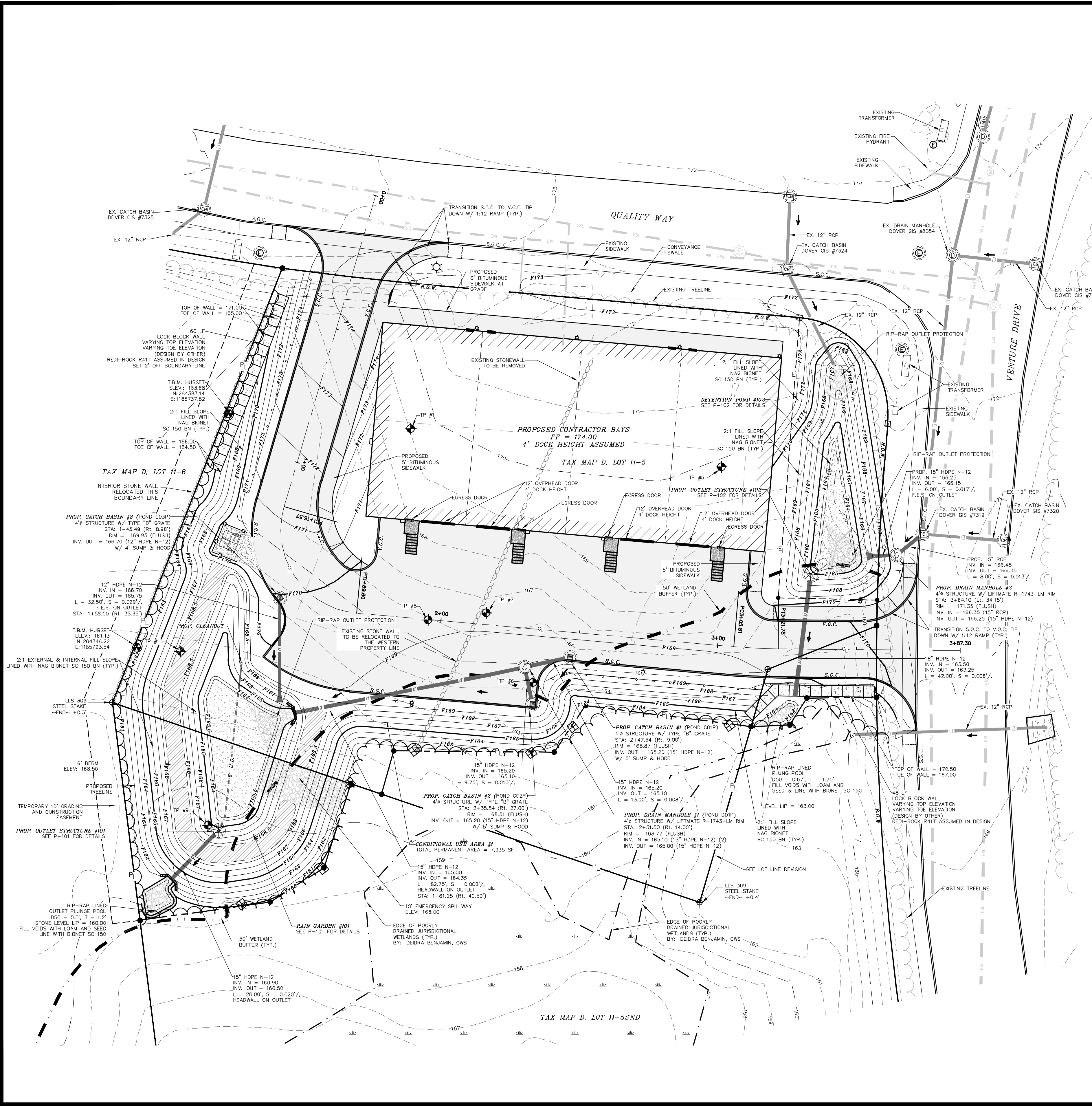
REVISION	DATE	REVISION PER DOVER TRC COMMENT	DESCRIPTION
#1	9-1-22		

EASEMENT PLAN
LAND OF
JSR, LLC
VENTURE DRIVE & QUALITY WAY
DOVER, NH
TAX MAP D, LOT 11-5 & 11-5SND

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863
SCALE : 1 IN. EQUALS 30 FT.
DATE : JUNE 1, 2022
FILE NO. : DB 2021 - 134

STATE OF NEW HAMPSHIRE
No. 805
KENNETH A. BERRY
L.L.S. 805
SIGNATURE

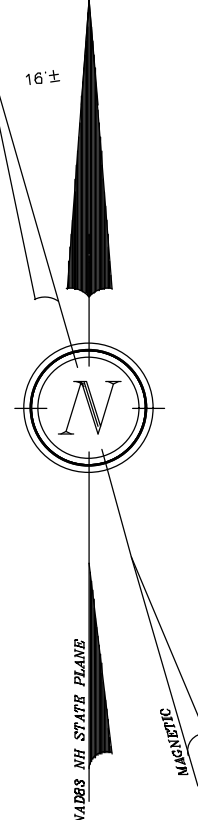




- NOTES:
- 1.) OWNER: JSR, LLC
17 FOSTERS DRIVE
DOVER, NH 03820
 - 2.) A.) TAX MAP D, LOT 11-5
B.) TAX MAP D, LOT 11-5SND
 - 3.) A.) S.C.R.D. BOOK 4980, PAGE 632
B.) S.C.R.D. BOOK 4980, PAGE 632
 - 4.) A.) LOT AREA: 43,314 Sq. Ft., 0.99 Ac.
B.) LOT AREA: 43,517 Sq. Ft., 1.00 Ac.
 - 5.) THE INTENT OF THIS PLAN IS SHOW THE OVERVIEW GRADING AND DRAINAGE DESIGN FOR THE PROPOSED DEVELOPMENT.
 - 6.) THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH NHDOT STANDARD SPECIFICATIONS DATED 2016. CURRENT STANDARD PLANS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS INCLUDED IN THE PROPOSAL.
 - 7.) CONTRACTOR SHALL TAKE SPECIAL CARE IN NOT DISTURBING EXISTING MONUMENTS BOUNDS, AND OR BENCHMARKS WITHOUT FIRST MAKING PROVISIONS FOR RELOCATION
 - 8.) THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO LOCATE EXACTLY AND TO PRESERVE ANY AND ALL UNDERGROUND UTILITIES CALL "DIG-SAFE" 1-888-DIGSAFE (344-7233) AT LEAST 72 HOURS BEFORE COMMENCING CONSTRUCTION
 - 9.) WHERE AN EXISTING UNDERGROUND UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
 - 10.) THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.
 - 11.) 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. LIMIT OF GRADING SHOULD NOT BE EXPANDED WITHOUT CONSULTING THE DESIGN ENGINEER. SEE ALSO E&SC PLAN.
 - 12.) THE TERM "PROPOSED" (PROP.) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS, OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE & RESET" (R & R).
 - 13.) ALL DISTURBED AREAS NOT DESIGNATED TO BE PAVED SHALL HAVE LOAM PLACED AND SEEDED. THE LOAM SHALL HAVE A MINIMUM DEPTH OF 1.4 INCHES AND SHALL BE PLACED FLUSH WITH THE TOP OF THE ADJACENT CURB, EDGING, BERM OR PAVEMENT SURFACE.
 - 14.) ALL ELEVATIONS TO BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. THE DESIGN ENGINEER IS TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCY. TEMPORARY BENCHMARKS (T.B.M.) ARE TO BE PROVIDED BY THE DESIGN ENGINEER.
 - 15.) PROJECT DISTURBANCE: 47,000 Sq. Ft. (1.08 Ac.) NOTE THAT THE PROJECT IS SUBJECT TO THE EPA NPDES PHASE II. THE NOTICE OF INTENT (NOI) MUST BE FILED ALONG WITH A STORMWATER POLLUTION PREVENTION PLAN (SWPPP). WEEKLY INSPECTIONS WILL BE CONDUCTED BY THE DESIGN ENGINEER OR AFTER A STORM EVENT OF GREATER THAN 0.25".
 - 16.) UPON FINAL COMPLETION AND 85% STABILIZATION THE DRAINAGE SYSTEM IS TO BE CLEANED OF ALL DEBRIS TO INCLUDE THE PUMPING OF THE BASINS. SEE SHEET E102, DETAIL E18 FOR DEFINITION OF STABLE.
 - 17.) ALL DRAINAGE PIPE IS TO BE HDPE N-12. INDIVIDUAL PIPE SIZES ARE SPECIFIED, RECYCLED PIPE IS APPROVED FOR PROJECT SITE. RECYCLED HDPE PIPE "GREEN PIPE" IS ACCEPTABLE FOR THIS PROJECT SITE.
 - 18.) ALL BASINS AND DRAINS ARE TO HAVE BOOTS INSTALLED ON ALL INLETS AND OUTLETS.
 - 19.) ALL TREATMENT SWALE TO BE CONSTRUCTED SHALL HAVE SOD BOTTOMS UNLESS OTHERWISE INSTRUCTED BY THE DESIGN ENGINEER DURING CONSTRUCTION.
 - 20.) A LETTER OF CREDIT FOR THE COST OF RE-VEGETATING ALL DISTURBED AREAS ON THE SITE SHALL BE SUBMITTED PRIOR TO ANY EARTH DISTURBING ACTIVITY OCCURS, AS MAY BE APPLICABLE.
 - 21.) A PRE-CONSTRUCTION CONFERENCE WITH THE DEVELOPER, THE DESIGN ENGINEER, THE EARTHWORK CONTRACTOR AND DOVER CITY STAFF SHALL OCCUR PRIOR TO ANY EARTH DISTURBING ACTIVITY.
 - 22.) WRITTEN DIMENSION ON THIS PLAN TAKE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN THE EVENT OF A CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWINGS AND/OR SPECIFICATIONS, THE ENGINEER SHALL BE NOTIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR IS TO CONFIRM ALL ELEVATIONS. CONFLICTS WILL BE REPORTED TO THE DESIGN ENGINEER PRIOR TO CONSTRUCTION.
 - 23.) COMMERCIAL VEHICLE ROUTE DURING CONSTRUCTION SHALL CONFORM WITH CITY OF DOVER CODE OR BE COORDINATED WITH THE COMMUNITY SERVICES DIRECTOR.
 - 24.) SEE DETAILS CONCERNING SITE LAYOUT, DRAINAGE, UTILITY, AND SEDIMENT AND EROSION CONTROLS.
 - 25.) SIDEWALK TO REMAIN USABLE AT ALL TIMES DURING RECONSTRUCTION PROCESS.

LEGEND:

- PROPOSED DRAIN MANHOLE W/ STRUCTURE
- PROPOSED CATCH BASIN W/ STRUCTURE
- PROPOSED STORMWATER BMP OUTLET STRUCTURE
- TEMPORARY BENCHMARK (T.B.M.)
- DETAIL SHEET / DETAIL
- POORLY DRAINED JURISDICTIONAL WETLAND
- 50' WETLAND BUFFER
- CONTOUR MINOR, EXISTING
- CONTOUR MAJOR, EXISTING
- CONTOUR MINOR, PROPOSED
- CONTOUR MAJOR, PROPOSED
- CENTER LINE
- EXISTING WATER MAIN
- EXISTING SEWER LINE
- EXISTING DRAINAGE LINE
- PROPOSED WATER MAIN
- PROPOSED SEWER LINE
- PROPOSED DRAINAGE LINE
- EXISTING SPOT GRADE
- PROPOSED SPOT GRADE
- FLOW ARROW
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- TEST PIT



GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.

DOVER FILE #P22-55

REVISION	DATE	REVISED PER DOVER TRC COMMENT	DESCRIPTION
#1	9-1-22		

GRADING & DRAINAGE PLAN

LAND OF

JSR, LLC

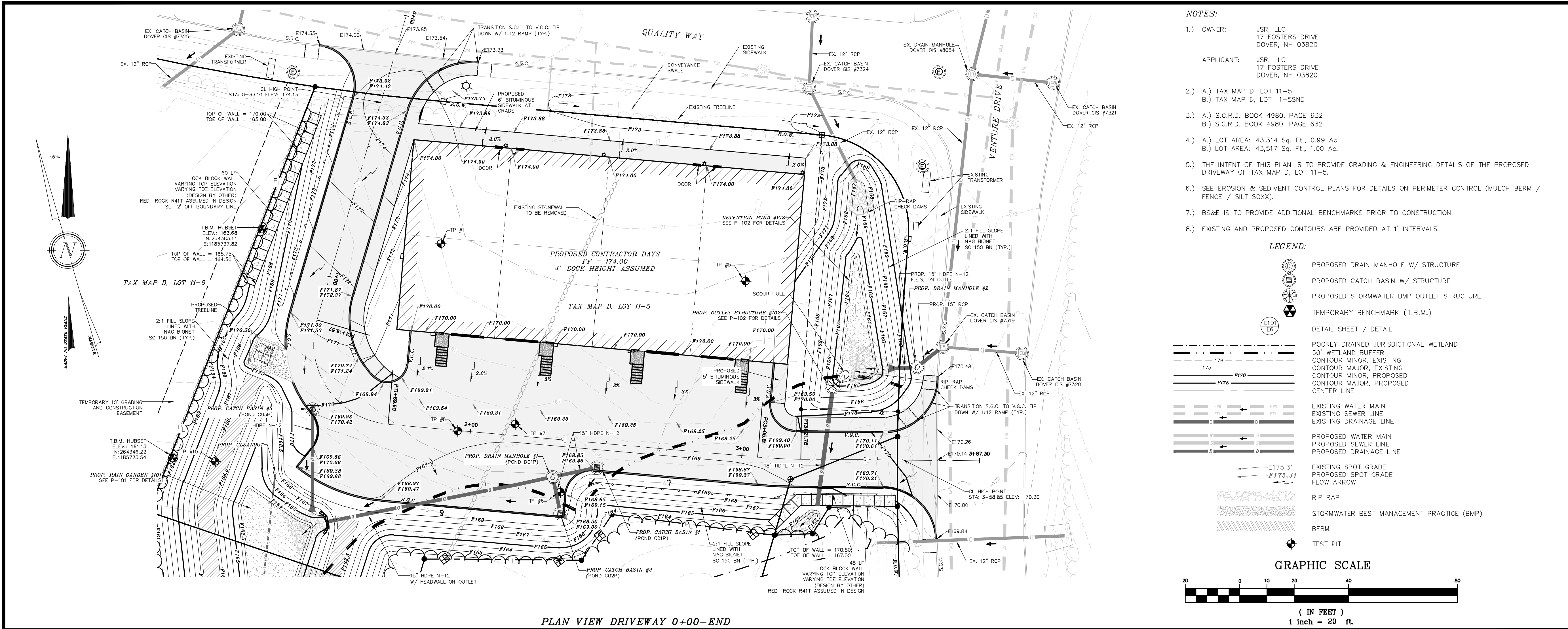
VENTURE DRIVE & QUALITY WAY

DOVER, N.H.

TAX MAP D, LOTS 11-5 & 11-5SND

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863
SCALE : 1 IN. EQUALS 20 FT.
DATE : JUNE 1, 2022
FILE NO. : DB 2021 - 134

KENNETH A. BERRY
No. 1742
LICENSED PROFESSIONAL ENGINEER



NOTES:

- 1.) OWNER: JSR, LLC
17 FOSTERS DRIVE
DOVER, NH 03820
- 2.) A.) TAX MAP D, LOT 11-5
B.) TAX MAP D, LOT 11-5SND
- 3.) A.) S.C.R.D. BOOK 4980, PAGE 632
B.) S.C.R.D. BOOK 4980, PAGE 632
- 4.) A.) LOT AREA: 43,314 Sq. Ft., 0.99 Ac.
B.) LOT AREA: 43,517 Sq. Ft., 1.00 Ac.
- 5.) THE INTENT OF THIS PLAN IS TO PROVIDE GRADING & ENGINEERING DETAILS OF THE PROPOSED DRIVEWAY OF TAX MAP D, LOT 11-5.
- 6.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX).
- 7.) BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.
- 8.) EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS.

LEGEND:

- PROPOSED DRAIN MANHOLE W/ STRUCTURE
- PROPOSED CATCH BASIN W/ STRUCTURE
- PROPOSED STORMWATER BMP OUTLET STRUCTURE
- TEMPORARY BENCHMARK (T.B.M.)
- DETAIL SHEET / DETAIL
- POORLY DRAINED JURISDICTIONAL WETLAND
- 50' WETLAND BUFFER
- CONTOUR MINOR, EXISTING
- CONTOUR MAJOR, EXISTING
- CONTOUR MAJOR, PROPOSED
- CENTER LINE
- EXISTING WATER MAIN
- EXISTING SEWER LINE
- EXISTING DRAINAGE LINE
- PROPOSED WATER MAIN
- PROPOSED SEWER LINE
- PROPOSED DRAINAGE LINE
- EXISTING SPOT GRADE
- PROPOSED SPOT GRADE
- FLOW ARROW
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- TEST PIT

DOVER FILE #22-55

REVISION	DATE	DESCRIPTION
#1	9-1-22	REVISED PER DOVER TRC COMMENT

GRADING PLAN & PROFILE

LAND OF

JSR, LLC

VENTURE DRIVE & QUALITY WAY

DOVER, NH

TAX MAP D, LOTS 11-5 & 11-5SND

BERRY SURVEYING & ENGINEERING

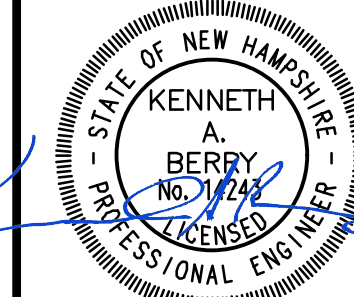
335 SECOND CROWN POINT ROAD

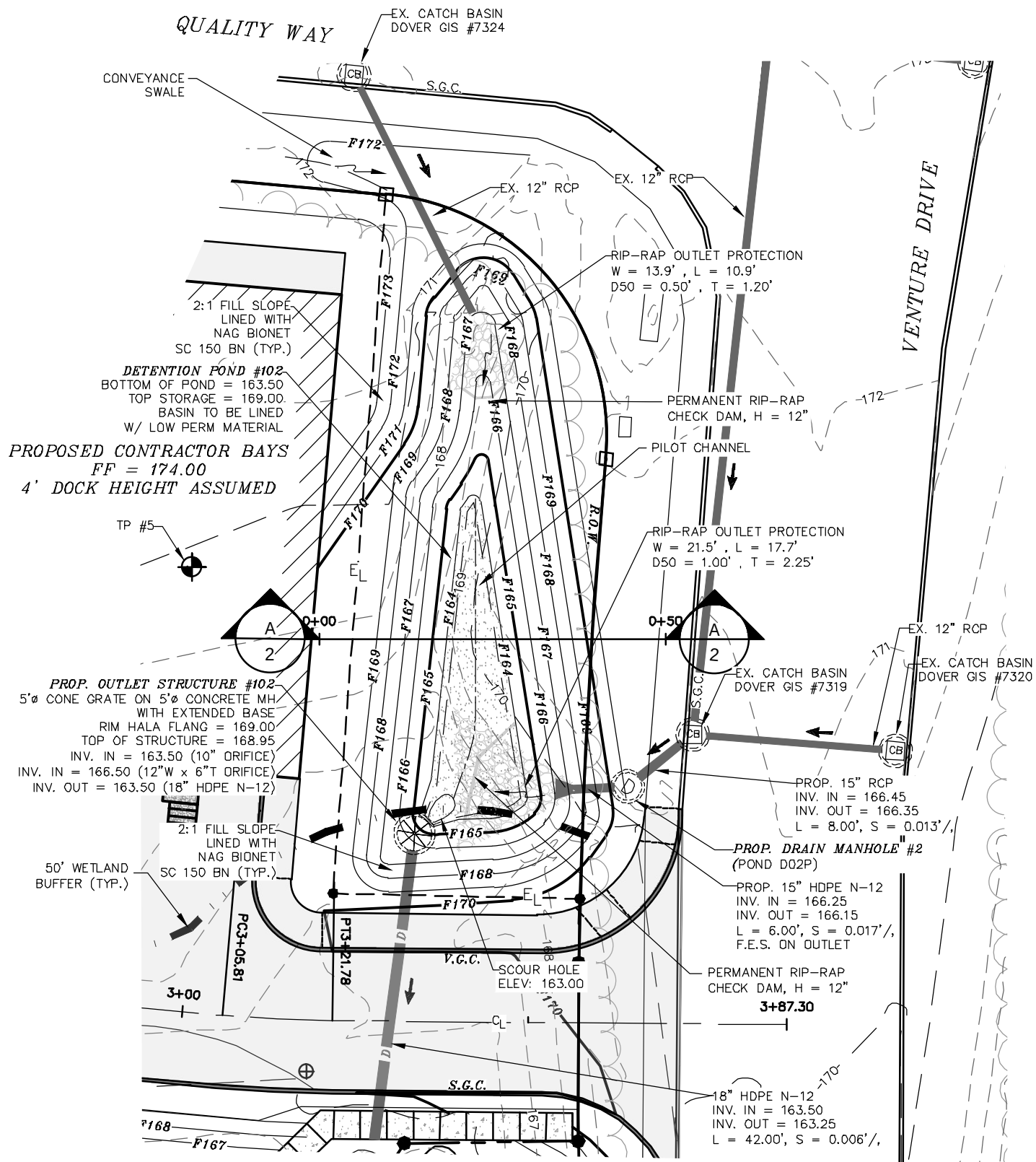
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.

DATE : JUNE 1, 2022

FILE NO. : DB 2021 - 134





NOTES

- DO NOT PLACE THE DETENTION SYSTEM INTO SERVICE UNTIL THE BMP HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
- DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF WATER FROM EXCAVATIONS) TO THE DETENTION AREA DURING ANY STAGE OF CONSTRUCTION.
- DETENTION AREA TO BE PLANTED WITH ERNMX-126 RETENTION BASIN FLOOR MIX.

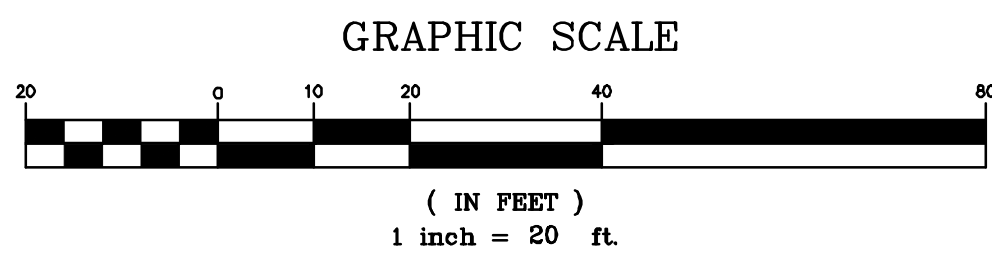
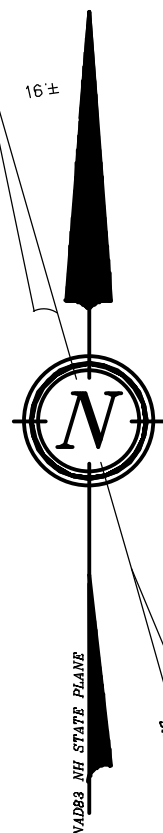
MAINTENANCE REQUIREMENTS

- SYSTEMS SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND FOLLOWING ANY RAINFALL EXCEEDING 0.25 INCHES IN A 24-HOUR PERIOD, WITH MAINTENANCE OR REHABILITATION CONDUCTED AS A WARRANTED BY SUCH INSPECTION.
- PRETREATMENT MEASURES SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND CLEANED OF ACCUMULATED SEDIMENT AS WARRANTED BY INSPECTION, BUT NO LESS THAN ONCE ANNUALLY.
- VEGETATION SHOULD BE INSPECTED AT LEAST ANNUALLY, AND MAINTAINED IN HEALTHY CONDITION, INCLUDING, PRUNING, REMOVAL, AND REPLACEMENT OF DEAD OR DISEASED VEGETATION, AND REMOVAL OF INVASIVE SPECIES.

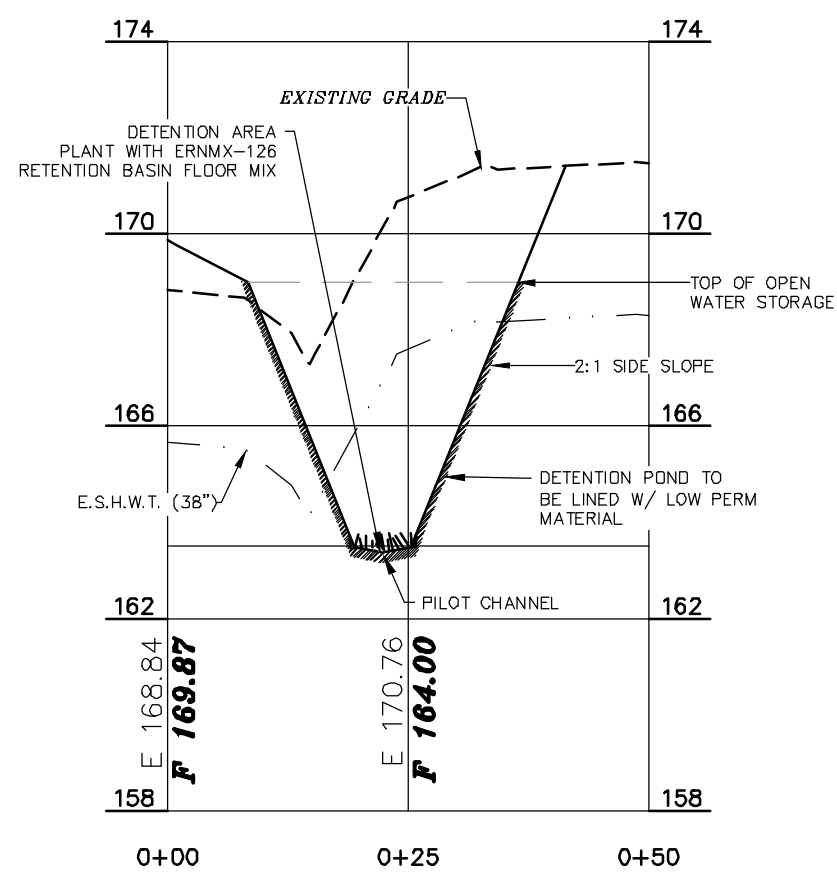
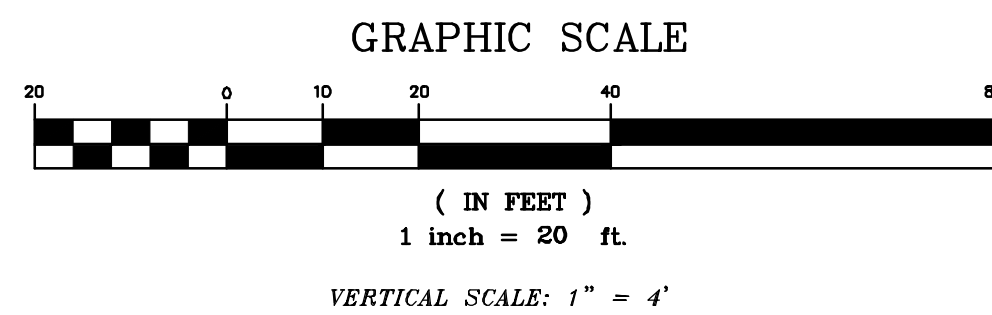
DESIGN REFERENCES

- UNH STORMWATER CENTER
- NEW HAMPSHIRE STORMWATER MANAGEMENT MANUAL, VOLUME 2, DECEMBER 2008 AS AMENDED.

STABILIZATION NOTE:
SEE NOTE #6, SHEET E-102, DETAIL E-18
SIDE SLOPES ARE TO BE STABILIZED WITHIN THREE WORKING DAY UPON COMPLETION OF FINAL GRADE.



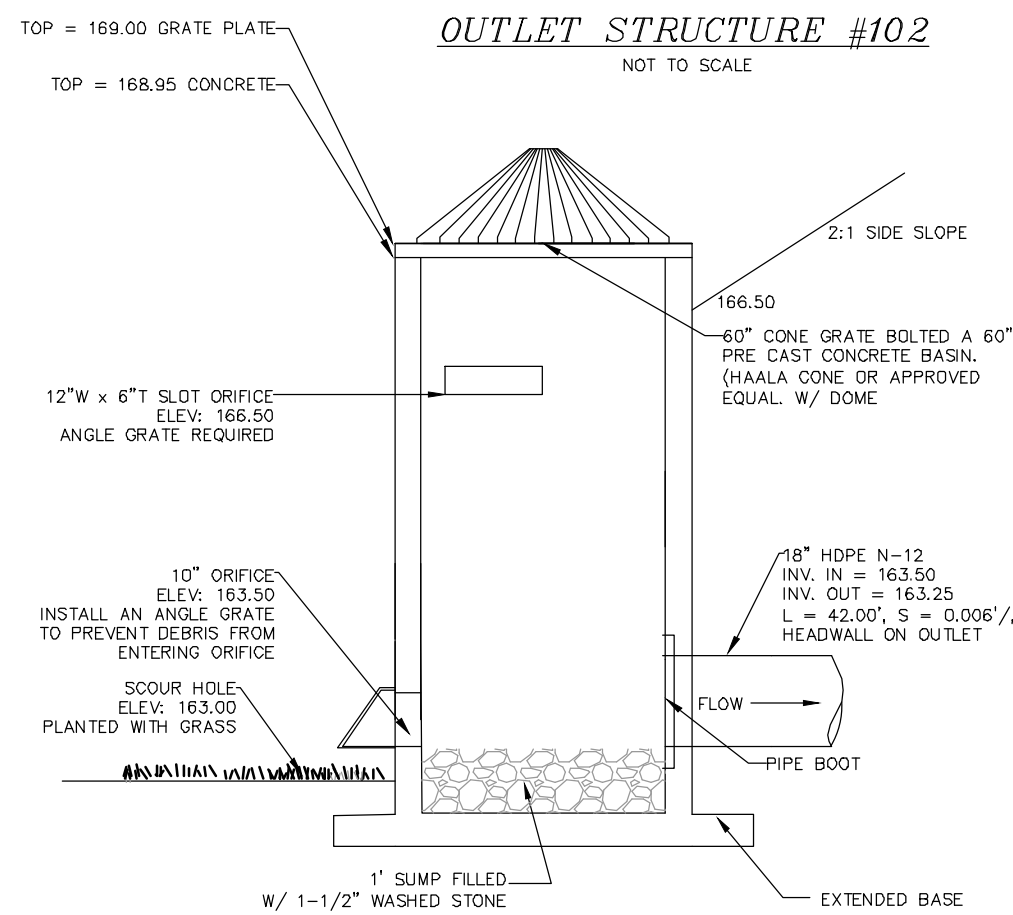
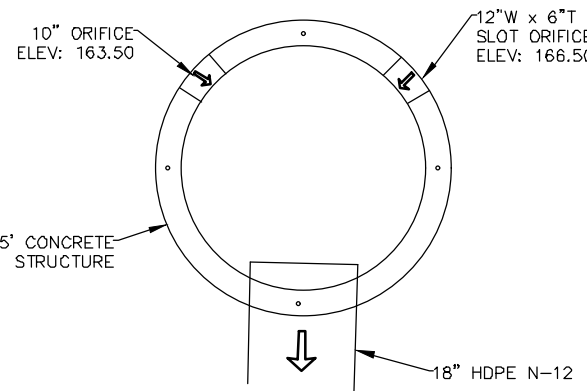
PLAN VIEW DETENTION POND #102



SECTION OF DETENTION POND #102

TABLE 7-24--RECOMMENDED RIP RAP GRADATION RANGES			
d50 SIZE=	0.67	FEET	8 INCHES
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE	SIZE OF STONE (INCHES) FROM	TO	
100%	12	16	
85%	10	14	
50%	8	12	
15%	2	4	

TOP VIEW
NOT TO SCALE



DOVER FILE #P22-55

REVISED PER DOVER TRC COMMENT		DATE	DESCRIPTION
#1	9-1-22		

DETENTION POND #102
LAND OF
JSR, LLC
VENTURE DRIVE & QUALITY WAY
DOVER, NH
TAX MAP D, LOTS 11-5 & 11-5SND

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863
SCALE : 1 IN. EQUALS 20 FT.
DATE : JUNE 1, 2022
FILE NO. : DB 2021 - 134

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 7124
LICENSED PROFESSIONAL ENGINEER

SOILS & DEWATERING:

Gs	GLOUCESTER	FINE SANDY LOAM	K= 0.17
Hg	HOLLIS-GLOUCESTER COMPLEX	FINE SANDY LOAM	K= 0.20
238	ELMRIDGE	SILT LOAM	K= 0.32
500/600	ELMWOOD	SILT LOAM	K= 0.32

SEE SITE SPECIFIC SOILS MAP (SSSM)

ERODIBILITY FACTOR - K, CPESC MANUAL, ENVIROCERT INTERNATIONAL INC. & ROCKINGHAM COUNTY SOIL SURVEY, ROCKWEB SOIL ATTRIBUTES.

CONTRACTOR TO BE AWARE OF THE SOIL PROFILES AND ENSURE THAT PROPER EROSION PREVENTION AND SEDIMENT CONTROL MEASURES ARE TAKEN AT ALL TIMES. ANY DEWATERING REQUIREMENTS IN NEW HAMPSHIRE REQUIRE SPECIAL PROVISIONS IN ACCORDANCE WITH THE CLARIFICATION OF SECTION 9.1.2 (STATE OF NEW HAMPSHIRE CONDITIONS) AND OTHER NH SPECIFIC INFORMATION FOR THE U.S. EPA 2012 NPDES CONSTRUCTION GENERAL PERMIT (CGP)" DATED MAY 3, 2012 INCLUDED IN THE SWPPP.

COVER MANAGEMENT DURING CONSTRUCTION FOR EXPOSED SOIL WILL INCLUDE HAY / STRAW APPLIED AT A RATE OF 2.0 TONS PER ACRE, TEMPORARY SEEDING OF ANNUAL RYE GRASS, AND PERMANENT SEEDING AT THE EARLIES OPPORTUNITY. SEE ADDITIONAL REQUIREMENT FOR STABILIZATION ON THE EROSION AND SEDIMENT CONTROL DETAIL SHEETS, E-101 AND E-102.

THE CONSTRUCTION SCHEDULE WILL BE MANAGED SO THAT ALL STORMWATER STRUCTURES WILL BE BUILT AND STABILIZED PRIOR TO RECEIVING SURFACE WATER RUNOFF. CONTRACTOR TO BE RESPONSIBLE FOR ALL DIVERSIONS DURING CONSTRUCTION AND FOR INTERIM SEDIMENT AND EROSION CONTROL MEASURES.

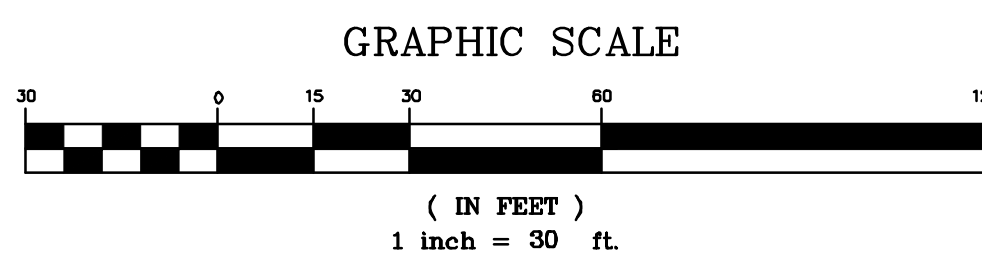
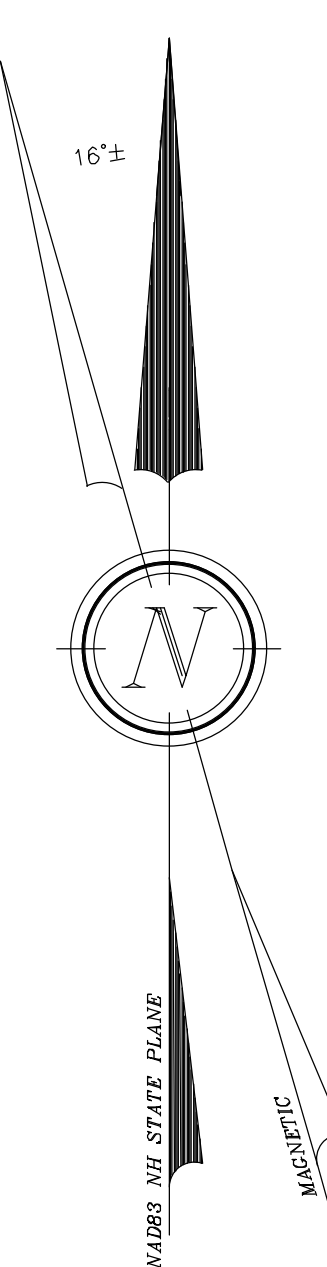
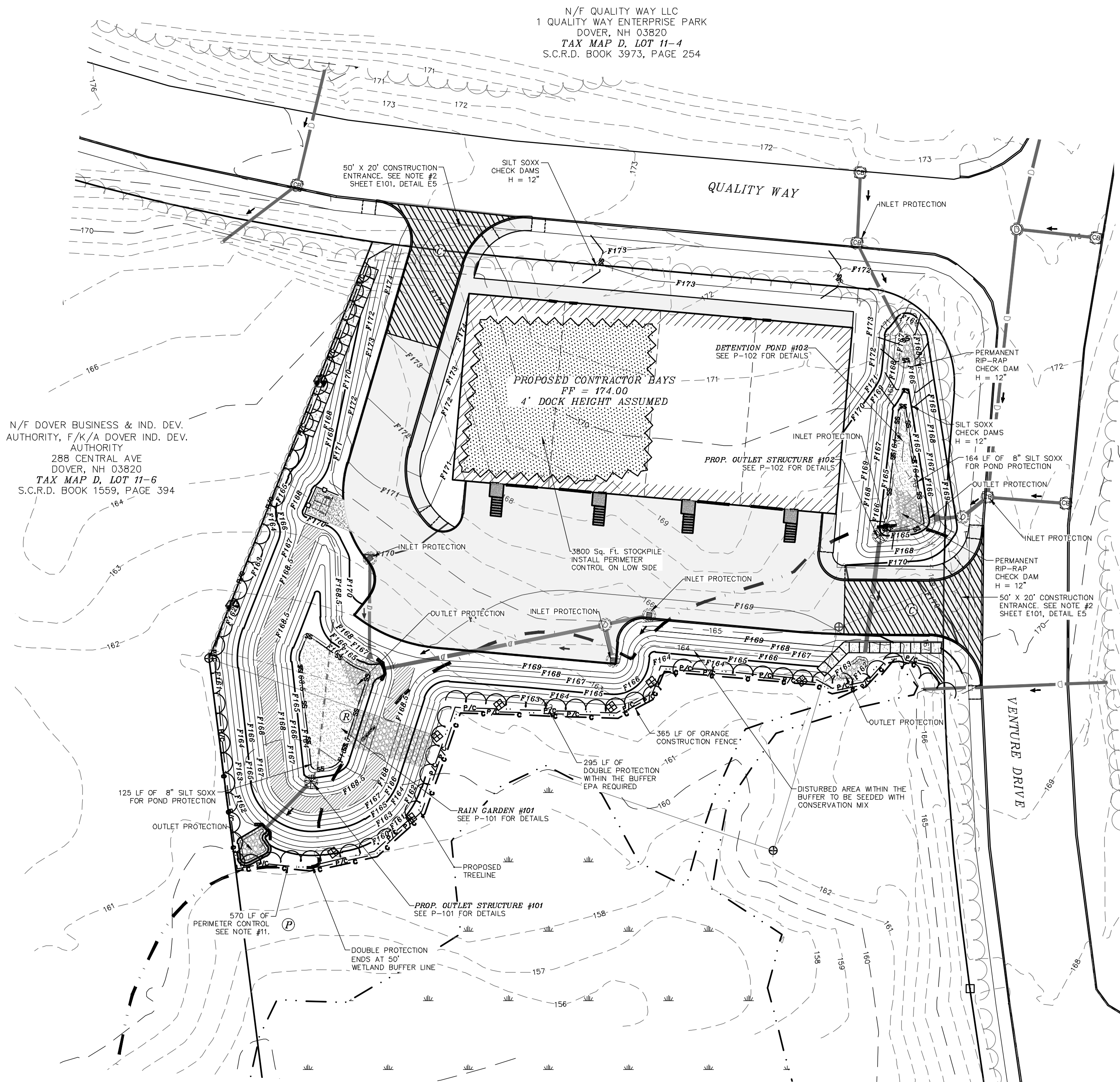
LEGEND:

- 3/4" REBAR W/ ID CAP ~TBS~
- GRANITE BOUND ~FND~
- STEEL STAKE ~FND~
- EXISTING/PROPOSED CATCH BASIN W/ STRUCTURE
- PROPOSED STORMWATER BMP OUTLET STRUCTURE
- TEMPORARY BENCHMARK (T.B.M.)
- DETAIL SHEET / DETAIL
- POORLY DRAINED JURISDICTIONAL WETLAND
- 50' WETLAND BUFFER
- CONTOUR MINOR, EXISTING
- CONTOUR MAJOR, EXISTING
- CONTOUR MINOR, PROPOSED
- CONTOUR MAJOR, PROPOSED
- CENTER LINE
- EXISTING DRAINAGE LINE
- PROPOSED DRAINAGE LINE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- SILT FENCE / EROSION MIX BERM
- FILTREXX 8" - 12" SILT SOXX AS SPECIFIED
- ORANGE CONSTRUCTION PERIMETER FENCE
- PERIMETER CONTROL
- RAIN GARDEN BIO-MEDIA PROTECTION
- PERIMETER CONTROL
- RESIDENTIAL/ROADWAY CONSTRUCTION

NOTES:

- 1.) OWNER: JSR, LLC
17 FOSTERS DRIVE
DOVER, NH 03820
APPLICANT: JSR, LLC
17 FOSTERS DRIVE
DOVER, NH 03820
- 2.) A.) TAX MAP D, LOT 11-5
B.) TAX MAP D, LOT 11-5SND
- 3.) A.) S.C.R.D. BOOK 4980, PAGE 632
B.) S.C.R.D. BOOK 4980, PAGE 632
- 4.) A.) LOT AREA: 43,314 Sq. Ft., 0.99 Ac.
B.) LOT AREA: 43,517 Sq. Ft., 1.00 Ac.
- 5.) THE INTENT OF THIS PLAN IS TO SHOW THE EASTERN EROSION AND SEDIMENT CONTROL DETAIL.
- 6.) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVE AND BELOW GROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. ANY UTILITY CONFLICTS SHOULD BE REPORTED IMMEDIATELY TO THE DESIGN ENGINEER.
- 7.) THE CONTRACTOR SHALL CALL AND COORDINATE WITH DIGSAFE AT 1-888-344-7233 AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.
- 8.) ALL DRAINAGE PIPE IS TO BE HDPE N-12. INDIVIDUAL PIPE SIZES ARE SPECIFIED ON GRADING AND DETAIL PLAN SHEETS, GREEN PIPE.
- 9.) ALL ELEVATIONS TO BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. THE DESIGN ENGINEER IS TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCY. TEMPORARY BENCHMARKS (T.B.M.) ARE TO BE PROVIDED BY THE DESIGN ENGINEER.
- 10.) UPON FINAL COMPLETION AND 85% STABILIZATION, THE DRAINAGE SYSTEM IS TO BE CLEANED OF ALL DEBRIS. SEDIMENT CONTROL PRACTICES REMOVED AND DISPOSED OF PROPERLY, AND ANNUAL MAINTENANCE PERFORMED ON ALL DRAINAGE PRACTICES.
- 11.) EROSION AND SEDIMENT CONTROL INSPECTIONS TO BE CONDUCTED ONCE PER EVERY SEVEN DAYS AND AT AN INCREASED FREQUENCY INCLUDING WITHIN 24-HOURS OF A 0.25 INCH RAIN EVENT. INSPECTIONS TO BE CONDUCTED BY A "QUALIFIED PERSON" AS DEFINED BY EPA CGP SECTION 6.3. PLEASE NOTE THAT SPECIFIC STORMWATER, EROSION PREVENTION AND SEDIMENT CONTROL TRAINING AND CERTIFICATION IS REQUIRED. INSPECTION REPORTS TO BE SUBMITTED TO THE CITY OF DOVER, NH, ENGINEERING DEPARTMENT WITHIN 24 HOURS IN ACCORDANCE WITH CGP 4.1.7 AND MAINTAINED BY THE OWNER FOR A PERIOD OF THREE YEARS AFTER THE PROJECT IS COMPLETED. SEE ALSO CITY OF DOVER ADDITIONAL INSPECTION REQUIREMENTS BELOW.
- 12.) CONTRACTOR MAY USE, SILT SOXX OR MULCH BERM FOR PERIMETER CONTROL.
- 13.) PER EPA CGP 2.1.2.2 (INSTALL PERIMETER CONTROL), "YOU MUST INSTALL SEDIMENT CONTROLS ALONG THOSE PERIMETER AREAS OF YOUR SITE THAT WILL RECEIVE STORMWATER FROM EARTH DISTURBING ACTIVITIES." AS A RESULT OF SWPPP INSPECTIONS, THE CONTRACTOR MAY HAVE TO EXPAND PERIMETER CONTROLS TO MEET THIS REQUIREMENT. THE E&SC PLAN IS INITIATING GUIDANCE AS TO THE ANTICIPATED REQUIREMENTS AND IT THE CONTRACTORS RESPONSIBILITY TO ENSURE THAT STORMWATER VIOLATION DO NOT OCCUR.
- 14.) CONTRACTOR IS REQUIRED TO INSTALL A CONSTRUCTION ENTRANCE PRIOR TO ANY EARTH DISTURBING ACTIVITIES.
- 15.) CONTRACTOR IS RESPONSIBLE FOR SWEEPING THE PARKING LOT, SIDEWALKS AND ANYTHING DISTURBED TO ENSURE THAT NO SEDIMENT IS BEING TRACKED ONTO VENTURE DRIVE OR QUALITY WAY.
- 16.) CONTRACTOR IS RESPONSIBLE FOR CLEANING AND MAINTAINING THE INLET PROTECTION ONCE INSTALLED.
- 17.) FUGITIVE DUST IS TO BE CONTROLLED THROUGHOUT THE CONSTRUCTION PROCESS IN ACCORDANCE WITH ENV-A 1000.
- 18.) CONTRACTOR IS TO MEET THE REQUIREMENTS SPECIFIED IN RSA 430:51-57 AND AGR 3800, RELATING TO INVASIVE SPECIES.
- 19.) CONTRACTOR IS RESPONSIBLE FOR PROTECTING THE WATER QUALITY FROM ANY RUN OFF DURING THE CONSTRUCTION PROCESS, IN ACCORDANCE WITH ENV-WQ 1507, IN ORDER TO PREVENT VIOLATIONS OF THE STORM WATER QUALITY STANDARDS.
- 20.) CITY OF DOVER: IN ACCORDANCE WITH SITE PLAN REVIEW REGULATIONS (153-14) THE FOLLOWING STORMWATER MEASURES ARE REQUIRED.

- A.) ALL PROPOSED BMPs WILL CONFORM TO THE NH STORMWATER MANUAL VOLUME 3.
- B.) EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY SOIL LAND DISTURBANCE AND MUST BE REVIEWED AND APPROVED BY COMMUNITY SERVICE.
- C.) TEMPORARY STABILIZATION MEASURES SHOULD BE IN PLACE WITHIN SEVEN CALENDAR DAYS FOR EXPOSED SOILS AREAS THAT ARE WITHIN ONE HUNDRED FEET OF A SURFACE WATER BODY OR A WETLAND AND NO MORE THAN 14 CALENDAR DAYS FOR ALL OTHER AREAS. PERMANENT STABILIZATION SHOULD BE IN PLACE WITHIN THREE CALENDAR DAYS FOLLOWING COMPLETION OF FINAL GRADING OF EXPOSED SOIL AREAS.
- D.) ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN FUNCTIONING CONDITION UNTIL FINAL STABILIZATION IS ACCOMPLISHED.
- E.) COMMUNITY SERVICES DEPARTMENT OR THEIR DESIGNATED AGENT SHALL HAVE ACCESS TO THE SITE TO COMPLETE ROUTINE INSPECTIONS AND SHALL BE NOTIFIED 24-HOURS PRIOR TO INSTALLATION OF A STORMWATER BMP IN ORDER TO SCHEDULE AN INSPECTION, DURING NORMAL WORKING HOURS.
- F.) THE PLANNING BOARD OR COMMUNITY SERVICES MAY REQUIRE THE DESIGN ENGINEER AND/OR AN INDEPENDENT, THIRD-PARTY INSPECTION AND OVERSIGHT OF THE CONSTRUCTION OF STORMWATER MANAGEMENT FACILITIES AND EROSION AND SEDIMENT CONTROL AT THEIR DISCRETION. THE OWNER / APPLICANT IS RESPONSIBLE FOR ALL FEES ASSOCIATED WITH INSPECTIONS.
- G.) ALL SWPPP INSPECTIONS MUST BE CONDUCTED BY A QUALIFIED PROFESSIONAL SUCH AS A PROFESSIONAL ENGINEER (PE), A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC), A CERTIFIED EROSION SEDIMENT AND STORMWATER INSPECTOR (CESSWI), OR A CERTIFIED PROFESSIONAL IN STORMWATER QUALITY (CPSWQ). INSPECTION REPORTS WILL BE SUBMITTED TO THE COMMUNITY SERVICES DEPARTMENT.

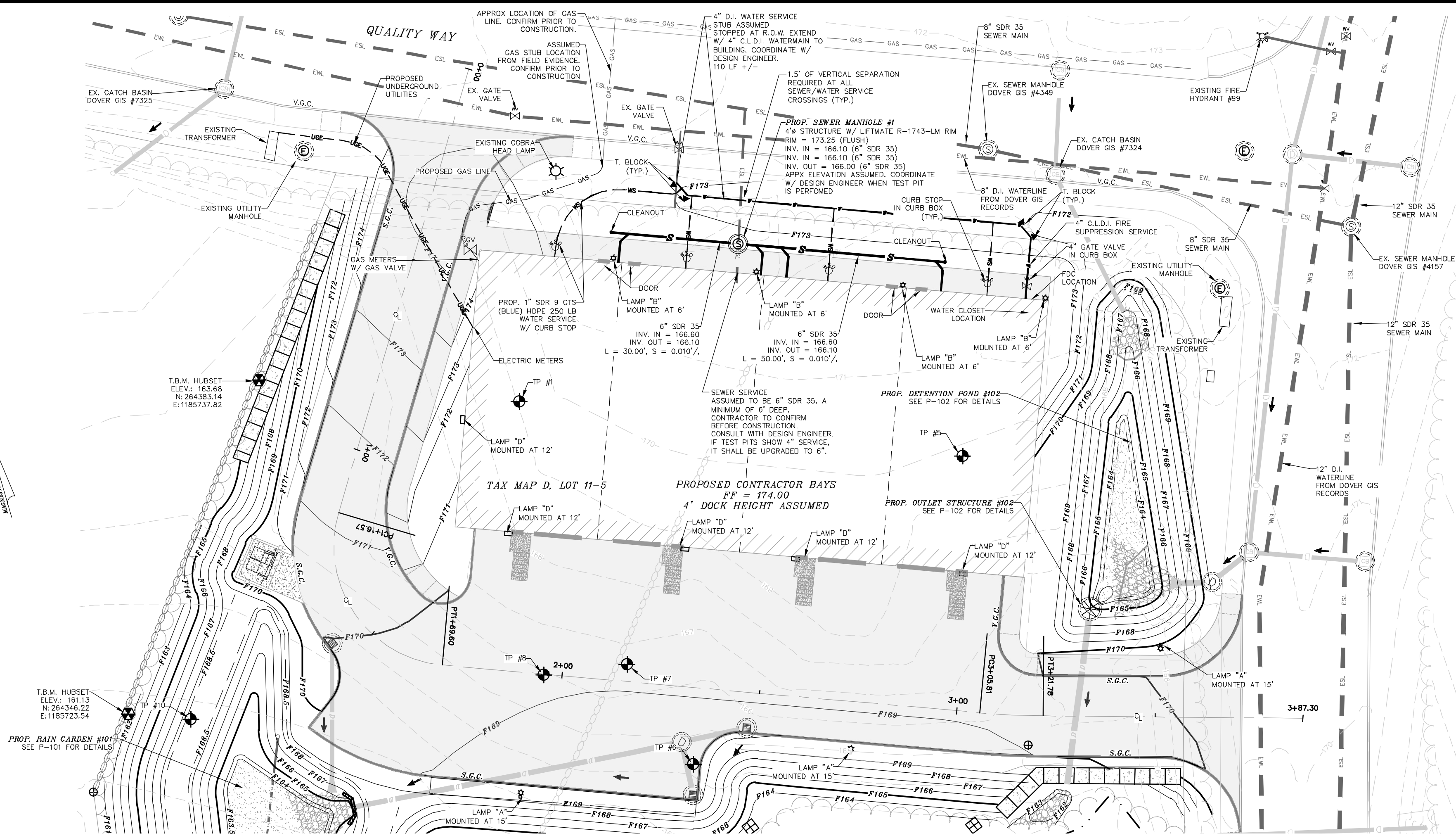
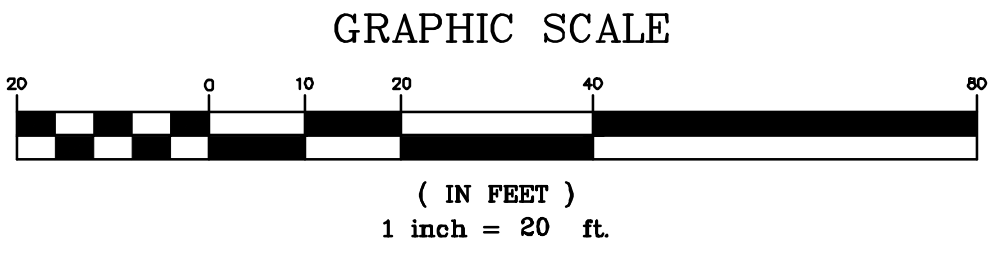
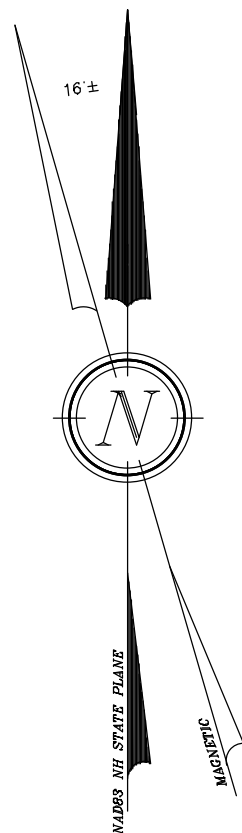


DOVER FILE #22-55	
REVISION	DATE
#1	9-1-22
REVISED PER DOVER TRC COMMENT	
DESCRIPTION	

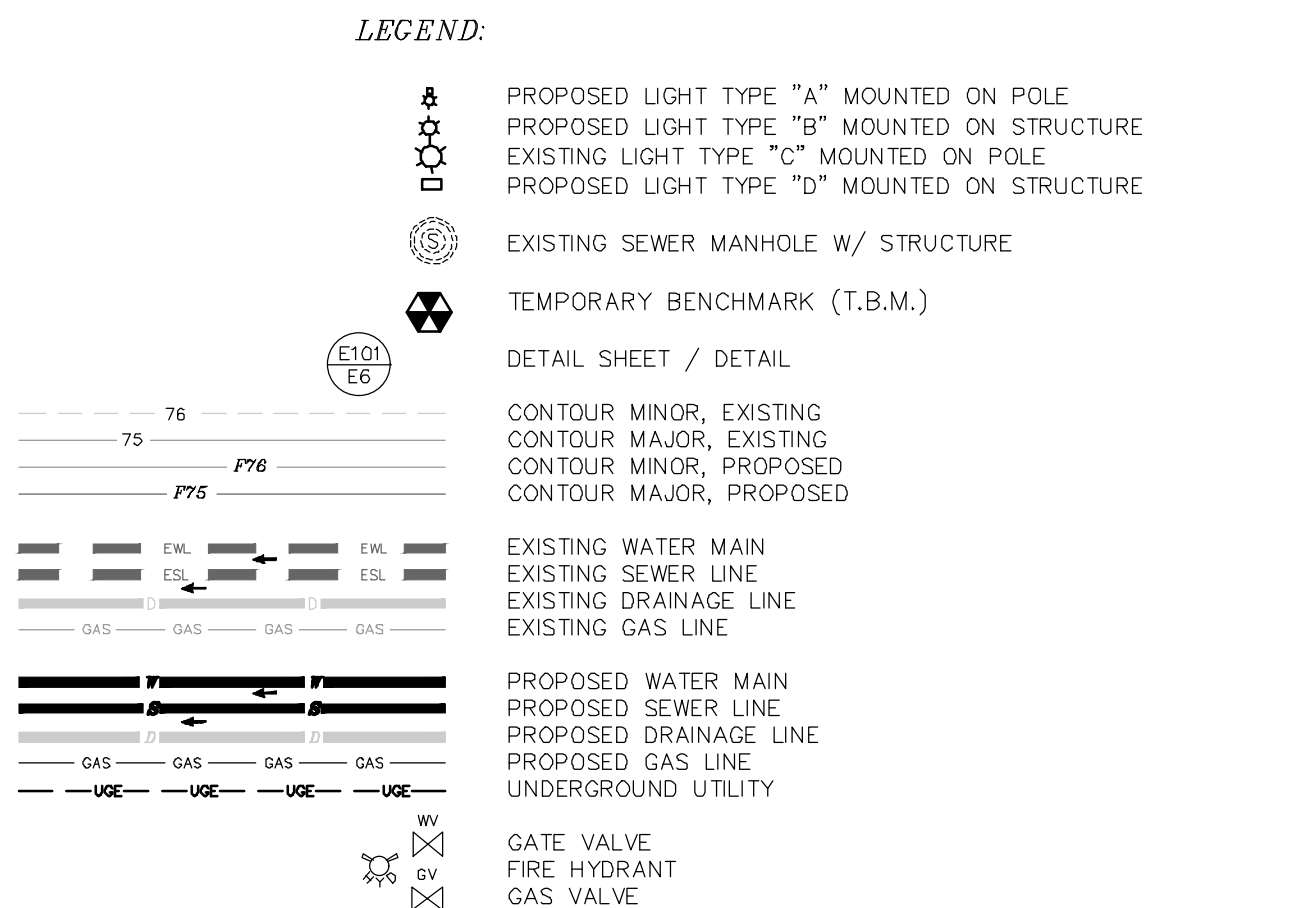
EROSION AND SEDIMENT CONTROL PLAN	
LAND OF JSR, LLC	
VENTURE DRIVE & QUALITY WAY	
DOVER, N.H.	
TAX MAP D, LOTS 11-5 & 11-5SND	

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863
SCALE : 1 IN. EQUALS 30 FT.
DATE : JUNE 1, 2022
FILE NO. : DB 2021 - 134

KENNETH A. BERRY
No. 1242
LICENSED PROFESSIONAL ENGINEER



- NOTES:**
- 1.) OWNER: JSR, LLC
17 FOSTERS DRIVE
DOVER, NH 03820
 - 2.) A.) TAX MAP D, LOT 11-5
B.) TAX MAP D, LOT 11-SSND
 - 3.) A.) S.C.R.D. BOOK 4980, PAGE 632
B.) S.C.R.D. BOOK 4980, PAGE 632
 - 4.) A.) LOT AREA: 43,314 Sq. Ft., 0.99 Ac.
B.) LOT AREA: 43,517 Sq. Ft., 1.00 Ac.
 - 5.) THE INTENT OF THIS PLAN IS TO PROVIDE UTILITY & ENGINEERING DETAILS OF THE PROPOSED SITE DEVELOPMENT OF TAX MAP D, LOT 11-5.
 - 6.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX).
 - 7.) BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.
 - 8.) EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS.



- UTILITY NOTES:**
- 1.) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVE AND BELOW GROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. ANY UTILITY CONFLICTS SHOULD BE REPORTED IMMEDIATELY TO THE DESIGN ENGINEER.
 - 2.) THE CONTRACTOR SHALL CALL AND COORDINATE WITH DIGSAFE 1-888-344-7233 AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.
 - 3.) PROTECTION OF SUBGRADE: THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN STABLE, DEWATERED SUBGRADES, TRENCHES, AND OTHER AREAS DURING CONSTRUCTION. SUBGRADE DISTURBANCE MAY BE INFLUENCED BY EXCAVATION METHODS, MOISTURE, PRECIPITATION, GROUNDWATER CONTROL, AND CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PREVENT SUBGRADE DISTURBANCE. SUCH PRECAUTIONS MAY INCLUDE DIVERTING STORMWATER RUNOFF AWAY FROM CONSTRUCTION AREAS, REDUCING TRAFFIC IN SENSITIVE AREAS, AND MAINTAINING AN EFFECTIVE DEWATERING PROGRAM. SOILS EXHIBITING HEAVING OR INSTABILITY SHALL BE OVER EXCAVATED TO MORE COMPETENT BEARING SOIL AND REPLACED WITH FREE DRAINING STRUCTURAL FILL MEETING THE ENGINEERS SPECIFIC RECOMMENDED CRITERIA.
 - 4.) IF THE EARTHWORK IS PERFORMED DURING FREEZING WEATHER (NOT ALLOWED IN CITY R.O.W.), EXPOSED SUBGRADES ARE SUSCEPTIBLE TO FROST. NO FILL OR UTILITIES SHALL BE PLACED ON FROZEN GROUND. THIS WILL LIKELY REQUIRE REMOVAL OF A FROZEN SOIL CRUST AT THE COMMENCEMENT OF EACH DAY'S OPERATION. THE FINAL SUBGRADE ELEVATION WOULD ALSO REQUIRE AN APPROPRIATE DEGREE OF INSULATION AGAINST FREEZING.
 - 5.) PLACEMENT OF BORROW MATERIALS SHALL BE PERFORMED IN A MANNER THAT PREVENTS LONG TERM DIFFERENTIAL SETTLEMENT. EXCESSIVELY WET MATERIALS SHALL BE STOCKPILED AND ALLOWED TO DRAIN BEFORE PLACEMENT. FROZEN MATERIAL SHALL NOT BE USED FOR CONSTRUCTION. VOIDS BETWEEN STONES AND CLUMPS OF MATERIAL SHALL BE FILLED WITH FINE MATERIALS.
 - 6.) FINAL UTILITY LOCATIONS TO BE COORDINATED BETWEEN THE CONTRACTOR, ALL APPROPRIATE UTILITY COMPANIES AND THE DOVER DPW.
 - 7.) CONTRACTOR TO CONTACT DOVER DPW A MINIMUM OF TWO WEEKS PRIOR TO ANY CONSTRUCTION TO COORDINATE ALL WORK CONCERNING INSTALLATION OF ANY PROPOSED WATER LINE IMPROVEMENTS.
 - 8.) ALL WATER MAIN AND SERVICE INSTALLATIONS SHALL CONFORM TO CITY OF DOVER STANDARDS. ALL HIGHWAY CONSTRUCTION WILL MEET THE CITY OF DOVER STANDARDS.
 - 9.) CONTRACTOR SHALL COORDINATE ALL ELECTRICAL INSTALLATIONS WITH EVERSOURCE AT (800) 662-7764. ALL ELECTRIC CONDUIT INSTALLATION SHALL BE INSPECTED BY EVERSOURCE PRIOR TO BACKFILL. A 48-HOUR MINIMUM NOTICE IS REQUIRED.
 - 10.) CONTRACTOR SHALL COORDINATE ALL TELECOMMUNICATIONS INSTALLATIONS WITH FAIRPOINT COMMUNICATIONS AT (603) 427-5525.
 - 11.) CONTRACTOR SHALL COORDINATE ALL CABLE INSTALLATIONS WITH COMCAST.
 - 12.) CURB BOXES SHOULD BE PLACED IN THE LAWN AREA, OR IF PLACED IN PAVEMENT, A ROAD BOX IS REQUIRED.
 - 13.) SEE EXISTING CONDITIONS PLAN FOR DATUM. VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS.
 - 14.) MINIMUM SLOPE FOR ALL SEWER SERVICE CONNECTIONS IS TO BE NO LESS THAN 0.02 FT/FT.
 - 15.) ALL SEWER INSTALLATIONS SHALL CONFORM TO THE REQUIREMENTS OF NHDES & DOVER DPW SEWER DIVISION STANDARDS. ALL PVC SEWER PIPE IS TO CONFORM WITH ENV-WQ 704.05 (c)-(e) FOR SDR 35 GRAVITY SEWER PIPE, CONFORM WITH ENV-WQ 704.08 FOR SDR 21 / 11 / 9 FORCE MAIN PRESSURE PIPE, AND CONFORM WITH ASTM D3034. PVC JOINT SEALS SHALL CONFORM WITH ASTM D3121. THE FORCE MAIN SHALL BE TESTED IN ACCORDANCE WITH ENV-WQ 704.09.
 - 16.) CONTRACTOR TO TRANSFER TEMPORARY BENCHMARK TO A SUITABLE BENCHMARK TO CONTROL CONSTRUCTION. ANY ELEVATION DISCREPANCIES ARE TO BE REPORTED TO THE THE DESIGN ENGINEER IMMEDIATELY.
 - 17.) ALL SEWER AND WATER CROSSINGS ARE TO MAINTAIN A 1.5' OF SEPARATION.
 - 18.) THERE IS TO BE A MINIMUM OF 4' COVER OVER THE SEWER SERVICE AND 5' COVER OVER THE WATER SERVICE. THE CONTRACTOR IS TO REVIEW THE PROPOSED COVER ON UTILITIES AT THE ONSET OF THE PROJECT ONCE THE UTILITY ELEVATIONS ARE ESTABLISHED BEYOND THE CURRENT DESIGN ASSUMPTIONS. IF ADJUSTMENTS ARE NEEDED THE DESIGN ENGINEER IS TO BE NOTIFIED IMMEDIATELY FOR CONSULTATION WITH THE CITY OF DOVER ENGINEERING DEPARTMENT.
 - 19.) THE WATER SERVICE SHALL BE TESTED IN ACCORDANCE WITH CITY OF DOVER STANDARDS.

DOVER FILE #P22-55

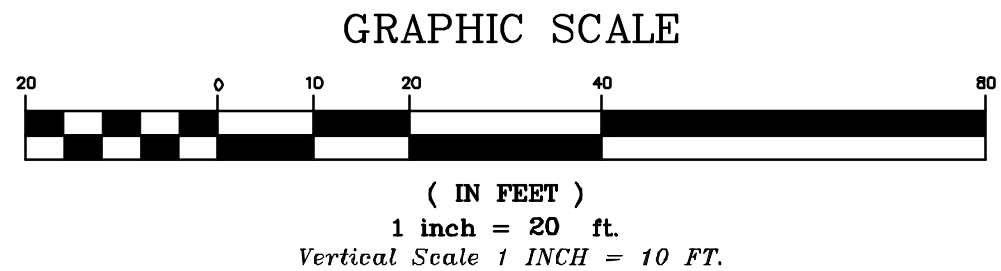
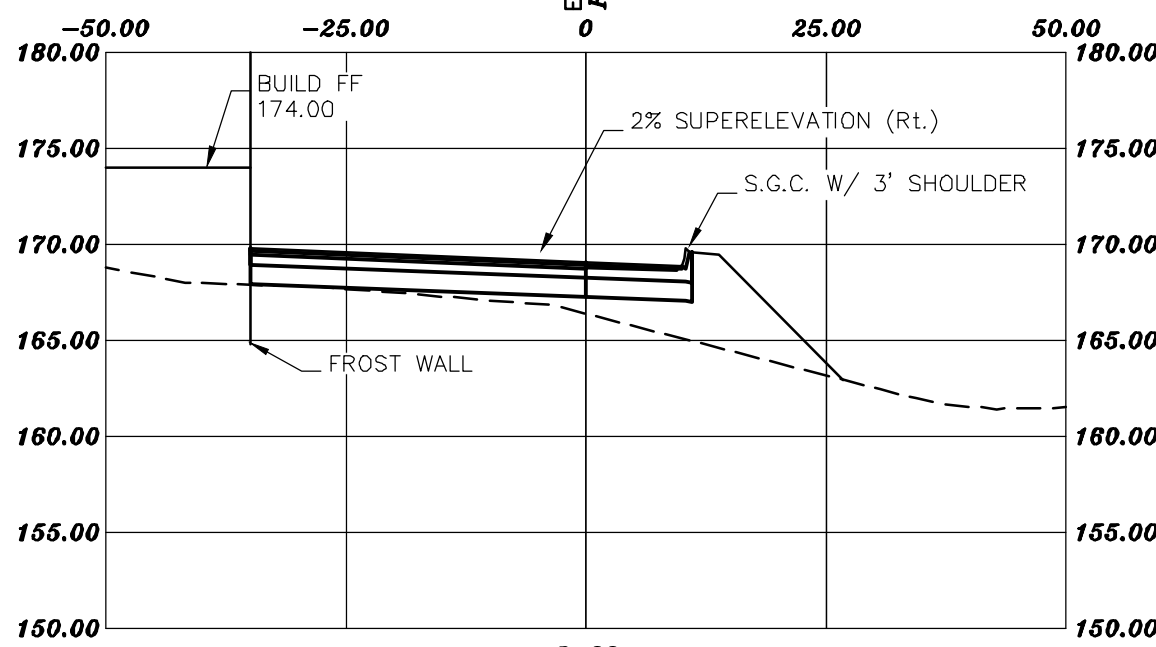
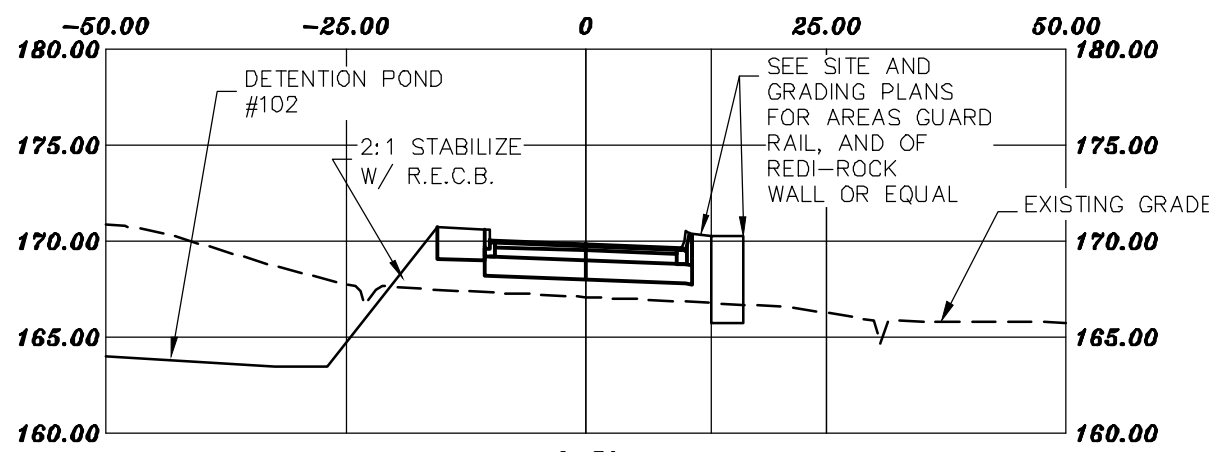
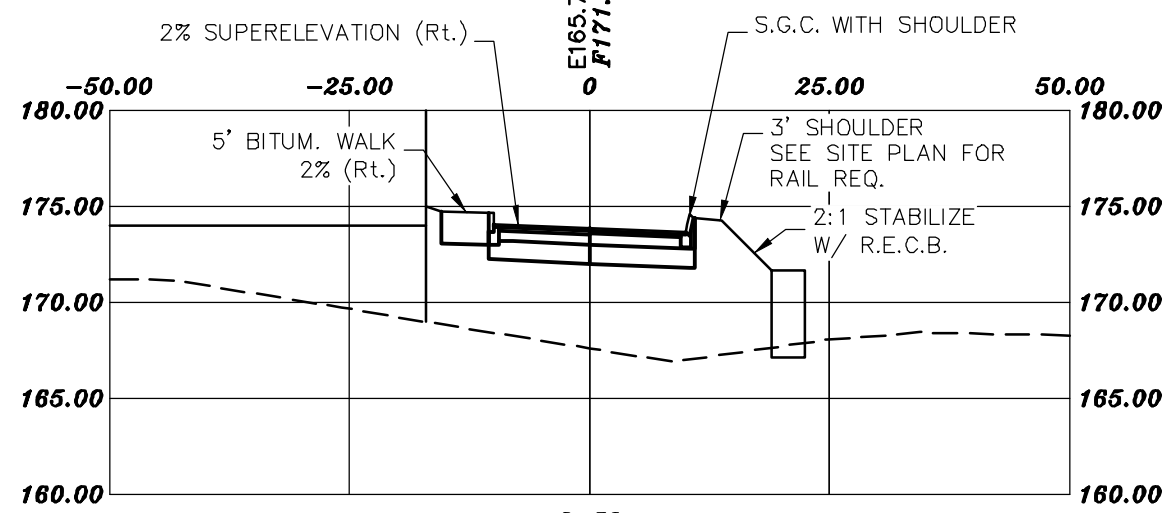
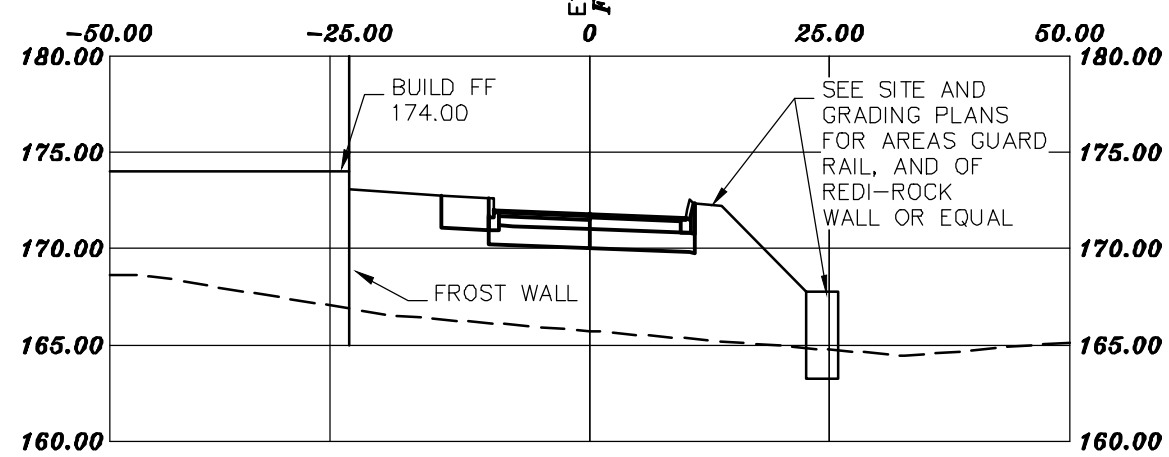
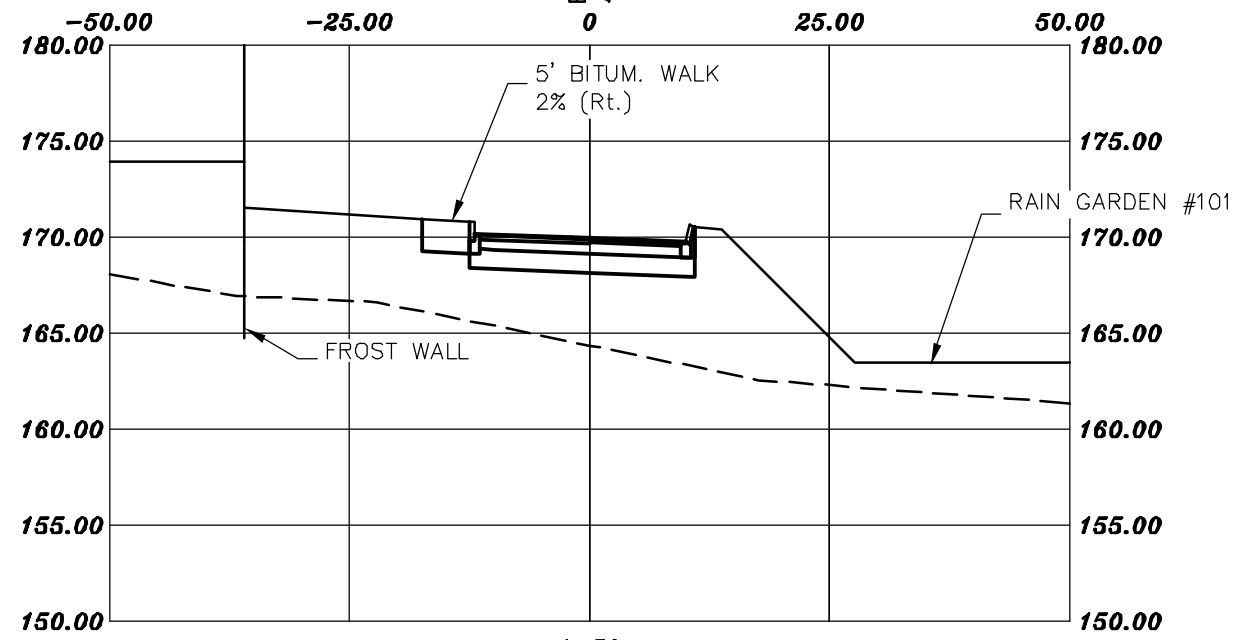
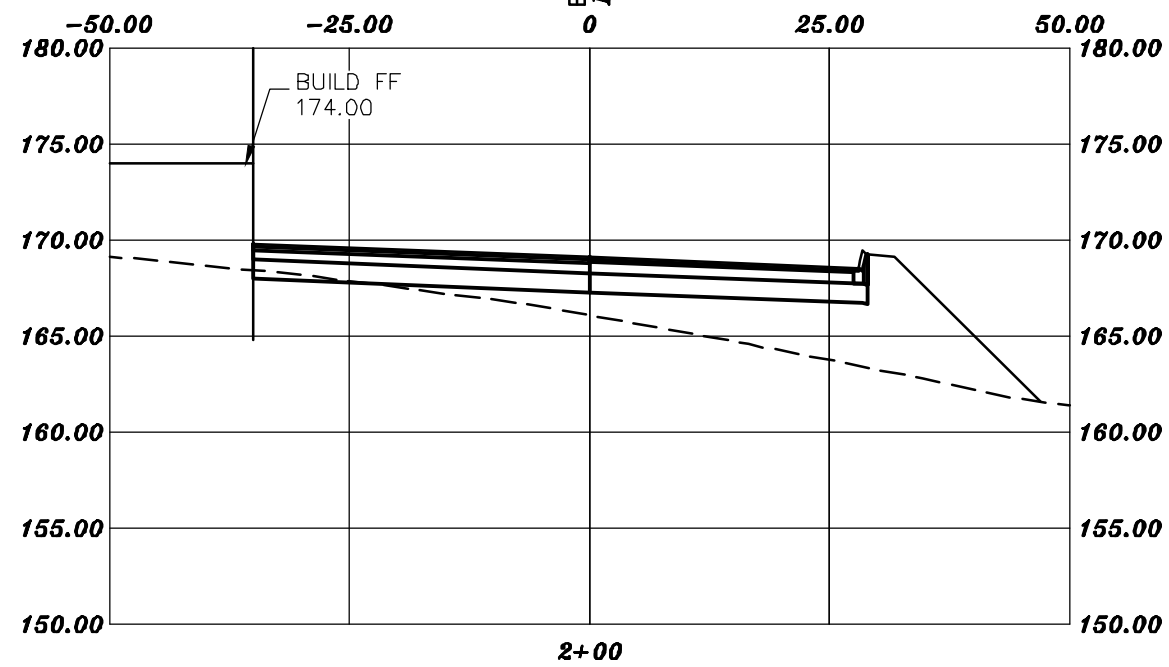
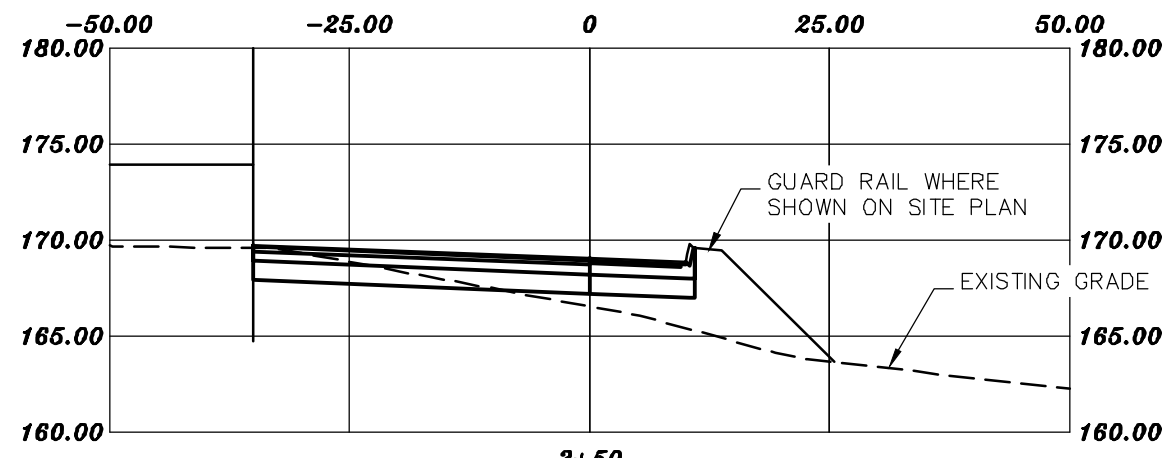
REVISION	DATE	REVISED PER DOVER TRC COMMENT	DESCRIPTION
#1	9-1-22		

UTILITY PLAN
LAND OF
JSR, LLC
VENTURE DRIVE & QUALITY WAY
DOVER, N.H.
TAX MAP D, LOTS 11-5 & 11-SSND

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863
SCALE : 1 IN. EQUALS 20 FT.
DATE : JUNE 1, 2022
FILE NO. : DB 2021 - 134

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 1944
LICENSED PROFESSIONAL ENGINEER

SHEET 12 OF 27

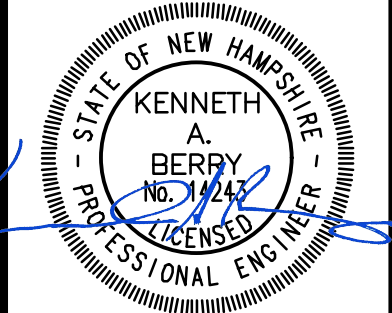


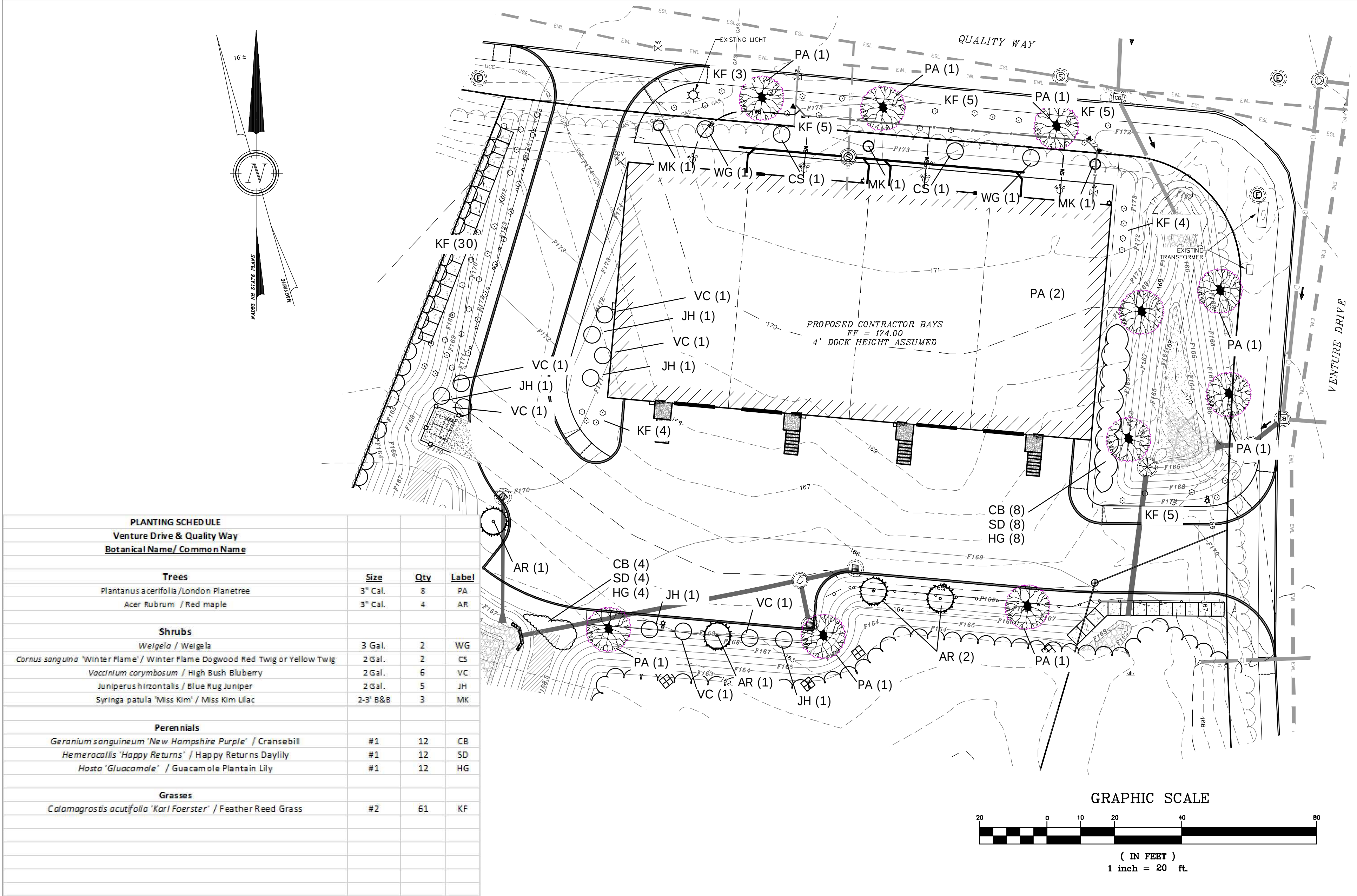
DOVER FILE #P22-55

REVISION	DATE	DESCRIPTION
#1	9-1-22	REVISED PER DOVER TRC COMMENT

CROSS SECTIONS 0+00 - 3+50
LAND OF
JSR, LLC
VENTURE DRIVE & QUALITY WAY
DOVER, NH
TAX MAP D, LOTS 11-5 & 11-5SND

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863
SCALE : 1 IN. EQUALS 20 FT.
DATE : JUNE 1, 2022
FILE NO. : DB 2021 - 134





- NOTES:**
- CALL DIG SAFE PRIOR TO BEGINNING WORK. (1-888-344-7233). THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF THE SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES, PAVING, WALKS, CURBING, ETC DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO THE OWNER OR GENERAL CONTRACTOR.
 - CONTRACTOR SHALL THOROUGHLY FAMILIARIZE THEMSELVES WITH ALL SITE CONDITIONS PRIOR TO CONSTRUCTION BIDDING.
 - THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTINGS SHOWN ON THE DRAWINGS. VARIATIONS IN QUANTITIES ARE TO BE APPROVED BY THE DESIGN ENGINEER.
 - PROVIDED SMOOTH TRANSITION WHERE NEW WORK MEETS EXISTING CONDITIONS.
 - ALL PLANT MATERIAL INSTALLED SHALL MEET THE SPECIFICATIONS OF "AMERICAN STANDARD FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN
 - ALL PLANT MATERIALS SHALL BE FREE FROM INSECTS AND DISEASE.
 - ALL PLANTINGS SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING STAKING OR GUYING, WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE FROM OWNER.
 - ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.
 - THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING AND NEWLY PLANTED TREES AND SHRUBS DURING THE CONSTRUCTION PROCESS. WHERE REQUIRED, THE CONTRACTOR SHALL INSTALL TEMPORARY FENCING (SNOW OR EQUAL) AROUND EXISTING TREES AND SHRUBS THAT COULD BE IMPACTED BY THE CONSTRUCTION PROCESS. STORAGE OF CONSTRUCTION EQUIPMENT, CONSTRUCTION MATERIALS, SNOW STORAGE AND OR VEHICLE PARKING SHALL NOT BE PERMITTED WITHIN THE DRIP LINE OF TREES OR TWENTY FEET WHICH EVER IS GREATER.
 - NEW PLANTINGS SHALL BE INSTALLED PER PROJECT DRAWINGS AND SPECIFICATION THAT INCLUDE FERTILIZATION AND MULCHING AS REQUIRED.
 - ALL SHRUB BEDS AND TREE PITS SHALL BE MULCHED WITH 3" CLEAN SHREDDED BLACK MULCH
 - WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR GROUND COVER AND PERENNIAL BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL-ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.
 - MAINTENANCE OF NEW PLANTINGS AND LAWNS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND OR LANDSCAPE SUBCONTRACTOR UNTIL ACCEPTANCE BY THE OWNER. RESPONSIBILITIES SHALL INCLUDE WATERING WEEDING AND MOWING AS NECESSARY. ALL PLANT MATERIAL SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE. REPLACEMENT MATERIAL SHALL BE GUARANTEED FOR AND ADDITIONAL YEAR FROM TIME OF INSTALLATION.
 - THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY EROSION CONTROL MEASURES DURING THE CONSTRUCTION PHASE AND UNTIL ALL AREAS HAVE BEEN STABILIZED AND ACCEPTED BY THE OWNER. THE GENERAL CONTRACTOR SHALL PROVIDE WEEKLY INSPECTIONS OF EROSION MEASURE AND IMMEDIATELY AFTER STORM EVENTS AND REPAIR AS NECESSARY.
 - THE GENERAL CONTRACTOR AND OR THE LANDSCAPE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL THREE GUYING MATERIAL ONCE PLANT MATERIAL HAS BEEN ESTABLISHED. (MINIMUM OF ONE GROWING SEASON). ALL TEMPORARY EROSION CONTROL MEASURE SHALL BE REMOVED ONCE STABILIZATION OF DISTURBANCE HAS BEEN ACCEPTED BY OWNER.
 - THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR A MINIMUM OF TWO MOWINGS FOR ALL TURF AREAS OR UNTIL ACCEPTANCE BY THE OWNER. A MINIMUM UNIFORM 75% CATCH OF TURF IS REQUIRED FOR ACCEPTANCE.
 - ALL PLANTINGS SHALL BE WATERED REGULARLY DURING THEIR FIRST YEAR AND MAINTAINED PERMANENTLY IN GOOD GROWING CONDITION AS AN EFFECTIVE VISUAL SCREEN.
 - SHRUBS OR TREES WHICH DIE SHALL BE REPLACED WITHIN ONE GROWING SEASON WITH NEW SHRUBS OR TREES TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE LANDSCAPING REQUIREMENTS.
 - ALL REQUIRED LANDSCAPING SHALL BE INSTALLED BEFORE OCCUPANCY, OR WITHIN SIX MONTHS IF OCCUPANCY OCCURS DURING WINTER CONDITIONS.
 - TREES ARE TO BE 6' TALL AT PLANTING.
 - ALL PLANT STOCK SHALL CONFORM TO ANSI Z260.1 – NURSERY STOCK, LATEST EDITIONS (AMERICAN ASSOCIATION OF NURSERYMEN, INC.)
 - 4" AGED PINEBARK MULCH AND A WEED BARRIER (TY-PAR FABRIC OR APPROVED EQUAL)

- PLANTING NOTES**
- CONTRACTOR SHALL OBTAIN APPROVAL FROM L.A. PRIOR TO PURCHASING &/OR INSTALLING SUBSTITUTE PLANT MATERIAL PRIOR TO PURCHASE OF ANY SUBSTITUTE MATERIALS.
 - CONSTRUCTION ACCESS WILL BE AS DIRECTED BY L.A. CONTRACTOR IS RESPONSIBLE FOR RESTORATION OF ACCESS ROUTE AND ALL AREAS DISTURBED BY PLANTING OPERATIONS UPON COMPLETION OF CONSTRUCTION OPERATIONS, AT NO ADDITIONAL COST TO THE OWNER.
 - LAYOUT OF ALL PLANTING BEDS AND LOCATION OF PLANTS TO BE APPROVED BY L.A. ON SITE PRIOR TO CONSTRUCTION AND INSTALLATION.
 - CONTRACTOR TO REMOVE ALL DEBRIS GENERATED BY PLANT INSTALLATION. DEBRIS TO BE DISPOSED OF IN A LEGAL MANNER.
 - ALL PLANT MATERIAL SHALL BE GUARANTEED TO BE IN GOOD, HEALTHY & FLOURISHING CONDITION FOR ONE YEAR FROM THE DATE OF FINAL INSTALLATION APPROVAL BY L.A. CONTRACTOR SHALL REPLACE, WITHOUT COST TO OWNER, AND AS SOON AS WEATHER CONDITIONS PERMIT, ALL DEAD AND NON-FLOURISHING PLANTS AS DETERMINED BY THE L.A. REPLACEMENT PLANTS SHALL BE GUARANTEED IDENTICALLY TO ORIGINAL PLANTS, TIME PERIOD COMMENCING FROM DATE OF REPLACEMENT PLANTING APPROVAL BY L.A.
 - ALL BEDS TO BE MULCHED WITH 3" DEPTH SHREDDED BARK MULCH UNLESS NOTED OTHERWISE.
 - CONTRACTOR TO PROVIDE NECESSARY TEMPORARY IRRIGATION IF NEEDED BASED ON TIME OF YEAR THE PROJECT IS IMPLEMENTED.
 - ALL PLANT MATERIAL TO COMPLY WITH THE CITY OF DOVER'S SITE REVIEW REGULATIONS, 149-14(C), SUCH THAT THERE SHALL BE DECIDUOUS SHADE TREES PLANTED 40 FEET O.C. ALONG THE PERIMETER OF THE PARKING LOTS AND SHRUBS PLANTED 5 FEET O.C. WITHIN THE PERIMETER BUFFER. SEE PLANT LIST FOR SPECIES AND SIZE OF PLANTS.

- TEMPORARY WATERING NOTES**
- CONTRACTOR IS RESPONSIBLE FOR MAKING SURE ALL PLANT MATERIAL HAS ADEQUATE WATER DURING THE ESTABLISHMENT PERIOD.
 - THE USE OF GATOR BAGS, SOAKER HOSE, HAND WATERING AND OTHER TECHNIQUES SHOULD BE USED TO ASSURE PROPER HYDRATION OF THE PLANTINGS IS MAINTAINED.
 - TEMPORARY IRRIGATION SYSTEMS CAN BE SET UP TO ASSIST IN WATERING ACTIVITIES.



General Plant Maintenance Guide

- General Plant Bed Maintenance:**
- All plant maintenance should be performed by a qualified horticulturalist or licensed arborist. Cleaning the dead material out of the planting bed in the fall helps keep litter from building up around the plants and in some cases killing the plants. Watering the first year during dry periods will help get the plants established. Mulching every year is not necessary. Raking the old mulch and turning it over is all that is needed. When necessary only install one inch of mulch and do not place the mulch closer than 3" to the trunks or stems of woody plants.

Trees

- The first year watering during dry periods will be necessary.
- 3" inches of mulch maybe used. The mulch should be kept 3 inches from the trunk.
- Fertilizing is not necessary for the first year. Fertilizing in subsequent years only when and if the foliage is looking weak.
- Fertilization should occur prior to Mat 31st or after trees have dropped their leaves for the year.
- Prune dead wood once a year.
- Depending on the amount of compaction the bed area receives, deep root aeration may be needed over time

Woody Shrubs

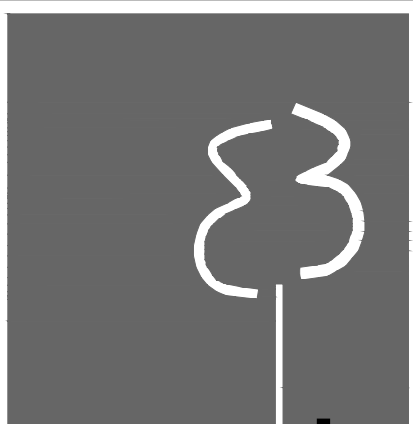
- The first year watering during dry periods will be necessary.
- 3" inches of mulch maybe used. The mulch should be kept 3 inches from the stems.
- Fertilizing is not necessary for the first year. Fertilizing in subsequent years only when and if the foliage is looking weak.
- Fertilization should occur prior to Mat 31st or after shrubs have dropped their leaves or gone dormant for the year.
- Prune dead wood once a year.

Grasses

- Grasses only need to be clipped back at the end of the growing season and all the clippings removed from the area.
- Do not over mulch. Too much mulch will prohibit the grass from developing into a strong clump.

Perennials

- All perennials need to be pruned back after the first or second hard frost. A two-step method; first dead head all the flower heads and let drop to the ground for re-seeding. Second cut the stems back to 3" above the ground and remove the stem and leaf litter and place in compost. Do not over mulch. Too much mulch will prohibit the growth and development
- Fertilizing perennials once in the spring with a low phosphate fertilizer will help the plants to get started in the spring.



terrain
planning & design llc

311 kast hill road
hopkinton, nh 03229
603. 491. 2322
terrainplanning.com

VENTURE DRIVE & QUALITY WAY

Site Location:
Venture Drive & Quality Way
Dover, NH
Tax Map: D
Lots: 11-5 & 11-5SND

Prepared For:
Berry Surveying & Engineering
335 Second Crown Point Rd
Barrington, NH 03825

LANDSCAPE PLAN

DATE:

SCALE: 1" = 20'

PROJECT #: 1802

Drawn By: ID

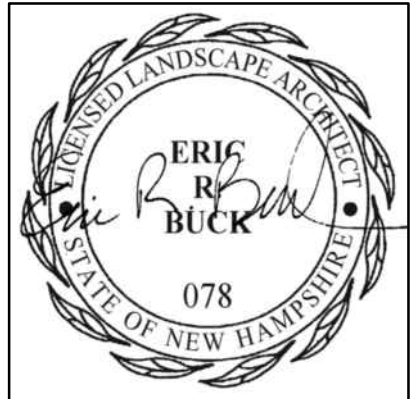
Checked By: ERB

REVISIONS: DATE:
Issued for Client Review

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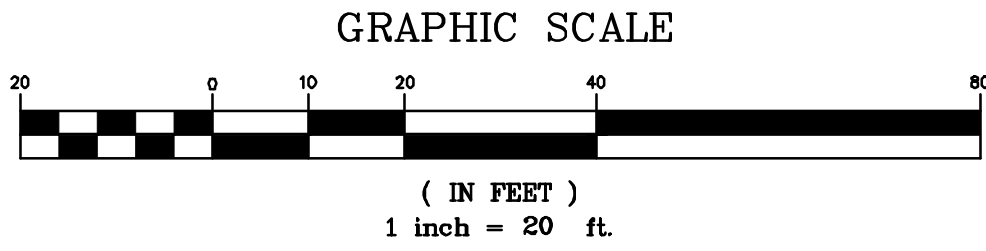
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SHEET 14 OF 27

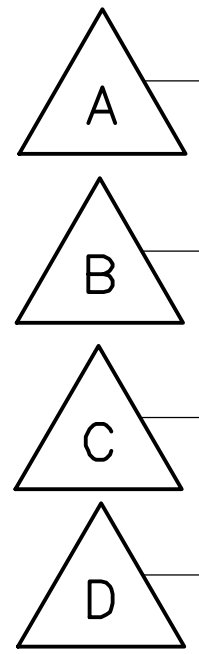


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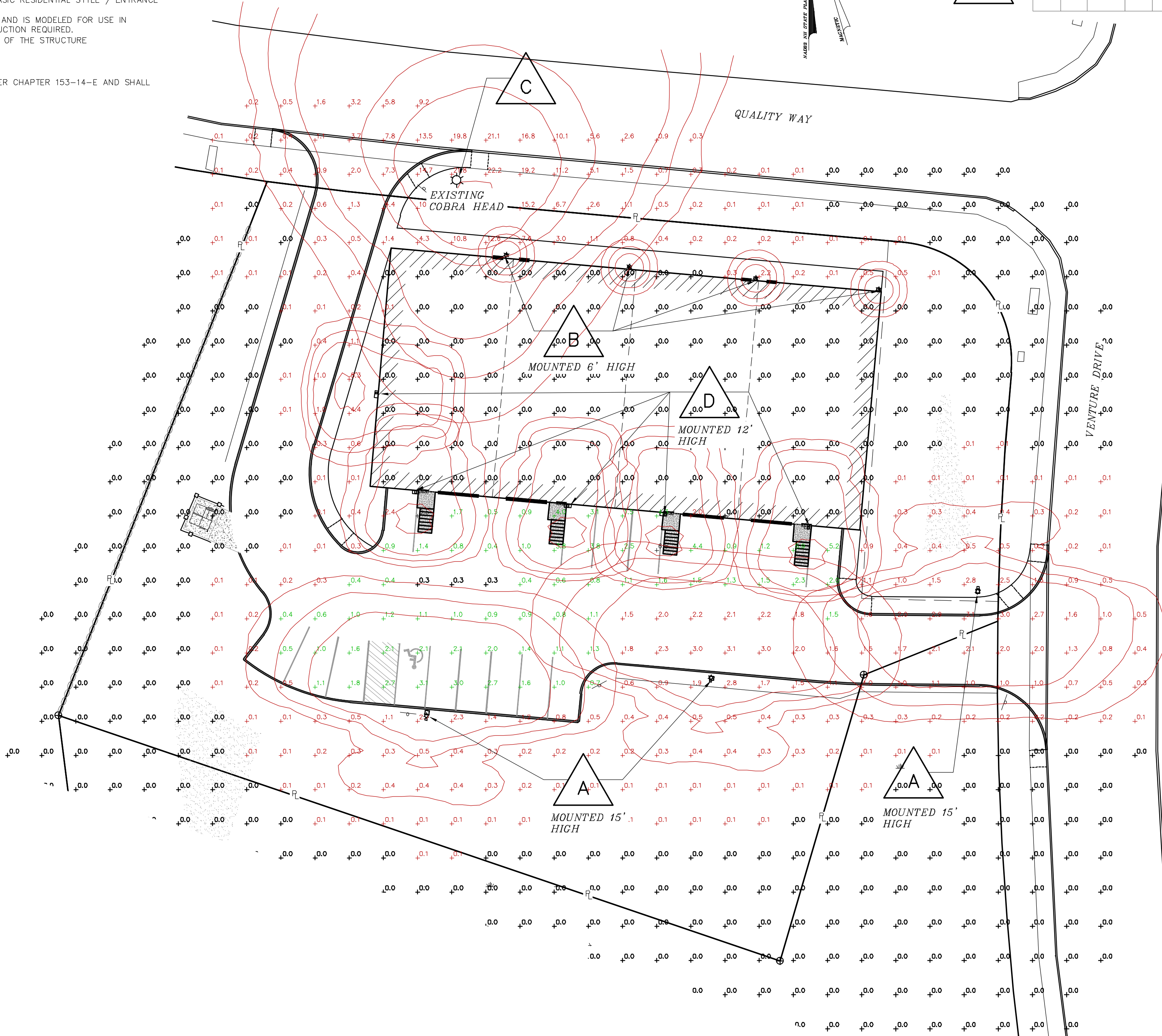
- 1.) OWNER: JSR, LLC
17 FOSTERS DRIVE
DOVER, NH 03820
- APPLICANT: JSR, LLC
17 FOSTERS DRIVE
DOVER, NH 03820
- 2.) A.) TAX MAP D, LOT 11-5
B.) TAX MAP D, LOT 11-5SND
- 3.) A.) S.C.R.D. BOOK 4980, PAGE 632
B.) S.C.R.D. BOOK 4980, PAGE 632
- 4.) A.) LOT AREA: 43,314 Sq. Ft., 0.99 Ac.
B.) LOT AREA: 43,517 Sq. Ft., 1.00 Ac.
- 5.) THE INTENT OF THIS PLAN IS TO SHOW THE PROPOSED LIGHTING PLAN FOR THE PROPOSED DEVELOPMENT.
- 6.) LAMP "A" WILL BE MOUNTED 15' ABOVE GRADE. THESE LAMPS ARE SOLAR.
LAMP "B" WILL BE MOUNTED 6' ON THE UNITS AND ARE BASIC RESIDENTIAL STYLE / ENTRANCE LAMPS
LAMP "C" IS THE COBRA HEAD LAMP ALONG QUALITY WAY AND IS MODELED FOR USE IN DETERMINING NEED AND IMPACT OF LIGHTING. NO CONSTRUCTION REQUIRED.
LAMP "D" ARE WALL MOUNTED 12' ABOVE EXTERIOR GRADE OF THE STRUCTURE.
- 7.) SEE CONSTRUCTION DETAILS FOR LIGHT CUT SHEETS.
- 8.) EXTERIOR LIGHTING SHALL BE CUT-OFF TYPE FIXTURES PER CHAPTER 153-14-E AND SHALL PROVIDE LIGHTING DIRECTED ON-SITE ONLY.



Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Calc Zone #1	+	0.8 fc	24.4 fc	0.0 fc	N/A	N/A
Stat Zone # 1	X	1.8 fc	6.5 fc	0.3 fc	21.7:1	6.0:1



Symbol	Label	Image	Quantity	Manufacturer	Catalog Number	Description	Number Lamps	Lumens Per Lamp	Light Loss Factor	Wattage	Plot
☼			3	Lithonia Lighting	DSX LED P1 30K TSM MVOLT	DSX LED P1 30K TSM MVOLT	1	6279	1	54	
☆	B		4	Lithonia Lighting	QDS10 SRC	CRAFTSTON WALL MOUNTED SMALL DECORATIVE LANTERN, ONE LAMP 12W SPIRAL COMPACT FLUORESCENT, WHITE GLASS DIFFUSER 4.5" DIA. X 6.5" HIGH, ELECTRONIC BALLAST	1	900	1	12.6	
☼	C		1	Lithonia Lighting	NLA LED P3 50K 17TM MVOLT R80	HIGH LUMEN AREA PERFORMANCE PACKAGE 3, 5000 K, FORWARD THROW MEDIUM 132-277V, NIGHT ROTATED OPTICS	1	59055	1	598	
□	D		5	Lithonia Lighting	NSM 70M MD	MINIATURE TRAPEZOID ARCHITECTURAL SOURCE, 70-WATT METAL HALIDE, MEDIUM DISTRIBUTION, MONOFORM REFLECTOR CLEAR PLAT GLASS LENS MEETS THE NIGHTTIME FRIENDLY CRITERIA	1	5500	0.85	70	

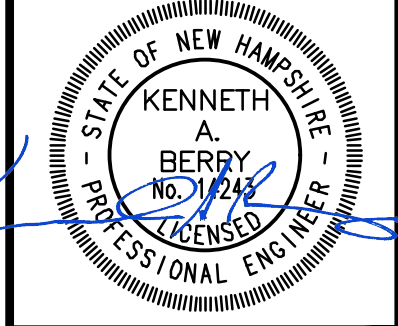


DOVER FILE #22-55

REVISION		DATE	DESCRIPTION
#1	9-1-22		REVISED PER DOVER TRC COMMENT

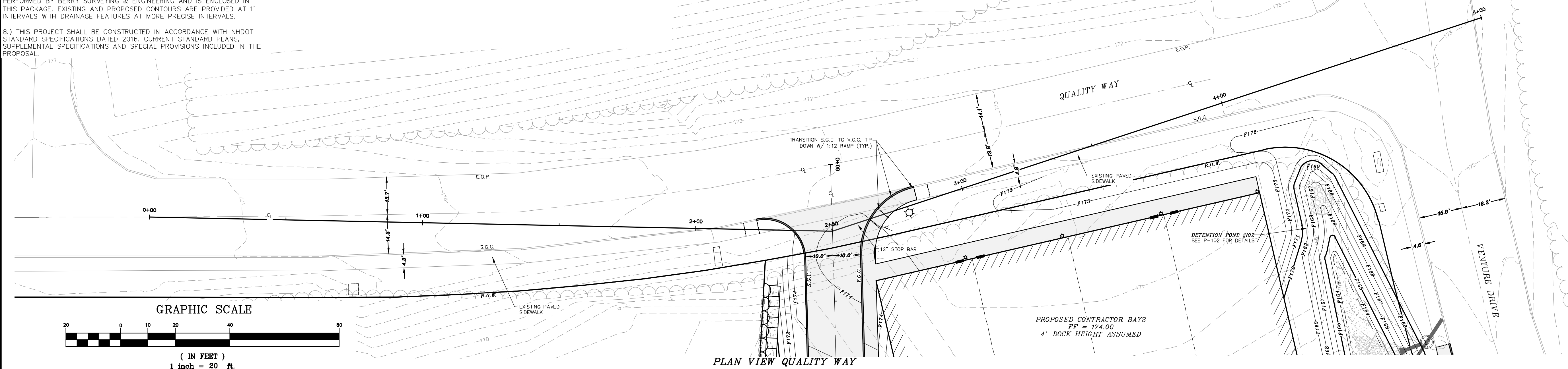
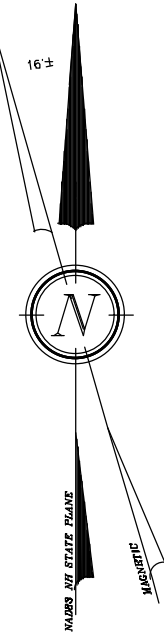
LIGHTING PLAN LAND OF JSR, LLC VENTURE DRIVE & QUALITY WAY DOVER, NH TAX MAP D, LOTS 11-5 & 11-5SND	
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BERRY SURVEYING & ENGINEERING 335 SECOND CROWN POINT ROAD BARRINGTON, NH 03825 (603)332-2863	
SCALE : 1 IN. EQUALS 20 FT.	DATE : JUNE 1, 2022
FILE NO. : DB 2021 - 134	



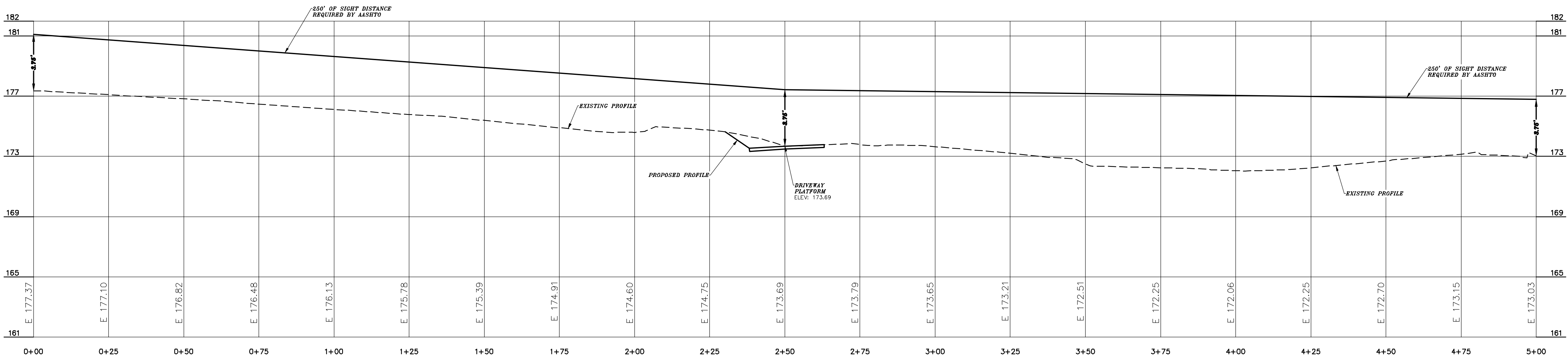
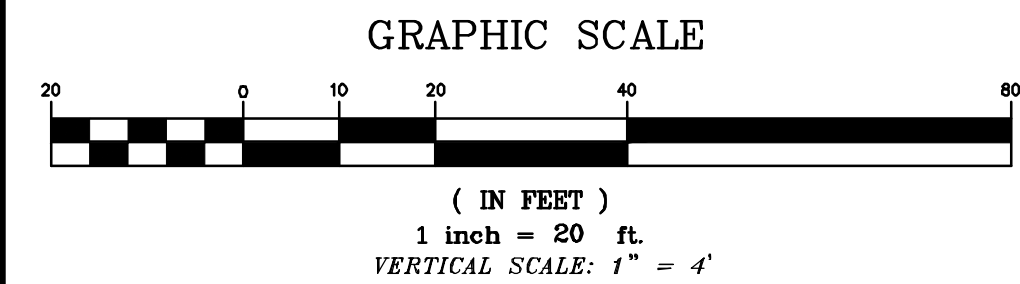
NOTES:

- 1.) OWNER: JSR, LLC
17 FOSTERS DRIVE
DOVER, NH 03820
- APPLICANT: JSR, LLC
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- 2.) A.) TAX MAP D, LOT 11-5
B.) TAX MAP D, LOT 11-5SND
- 3.) A.) S.C.R.D. BOOK 4980, PAGE 632
B.) S.C.R.D. BOOK 4980, PAGE 632
- 4.) A.) LOT AREA: 43,314 Sq. Ft., 0.99 Ac.
B.) LOT AREA: 43,517 Sq. Ft., 1.00 Ac.
- 5.) THIS IS A COMMERCIAL INDUSTRIAL BUILDING.
- 6.) THE INTENT OF THIS PLAN IS TO DEMONSTRATE THE AVAILABLE SIGHT DISTANCE FROM THE PROPOSED DRIVEWAY ONTO QUALITY WAY.
- 7.) EXISTING CONDITIONS INFORMATION IS BASED ON A SURVEY PERFORMED BY BERRY SURVEYING & ENGINEERING AND IS ENCLOSED IN THIS PACKAGE. EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.
- 8.) THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH NHDOT STANDARD SPECIFICATIONS DATED 2016, CURRENT STANDARD PLANS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS INCLUDED IN THE PROPOSAL.



PLAN VIEW QUALITY WAY

PROFILE VIEW SIGHT LINE



HWY-1

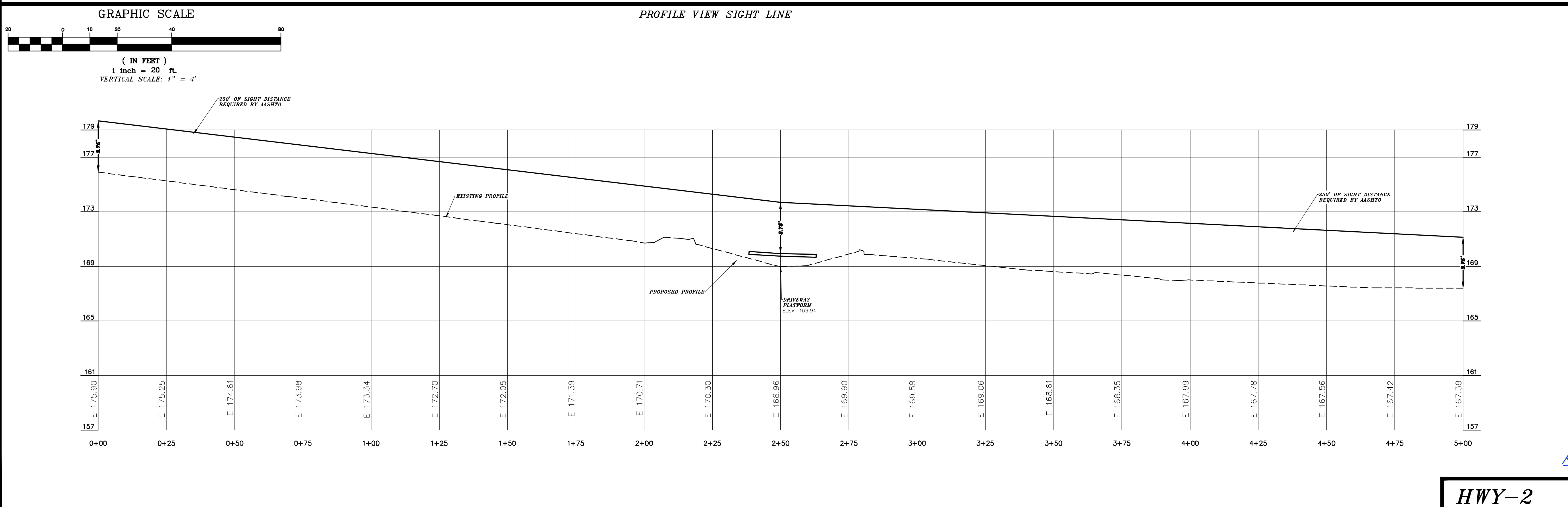
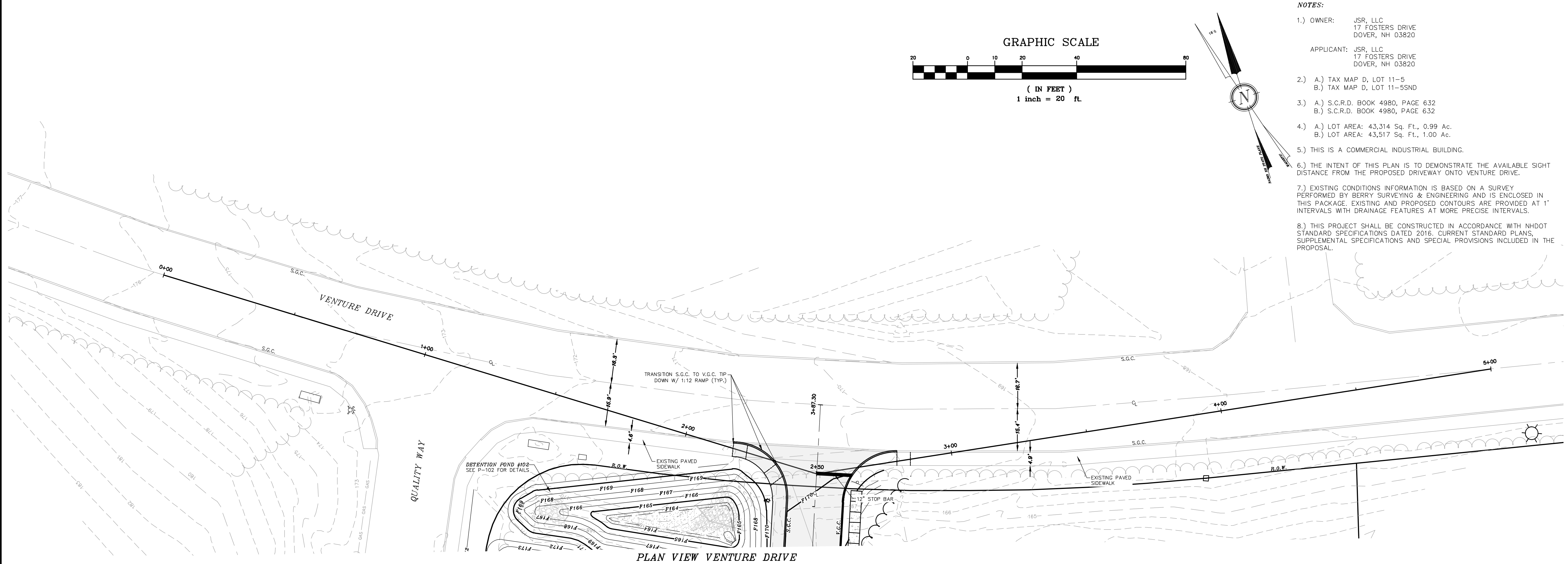
DOVER FILE #P22-55

REVISION	DATE	DESCRIPTION
#1	9-1-22	REVISED PER DOVER TRC COMMENT

ACCESS PLAN QUALITY WAY
LAND OF
JSR, LLC
VENTURE DRIVE & QUALITY WAY
DOVER, NH
TAX MAP D, LOTS 11-5 & 11-5SND

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863
SCALE : 1 IN. EQUALS 20 FT.
DATE : JUNE 1, 2022
FILE NO. : DB 2021 - 134

KENNETH A. BERRY
No. 7124
LICENSED PROFESSIONAL ENGINEER



HWY-2

DOVER FILE #22-55

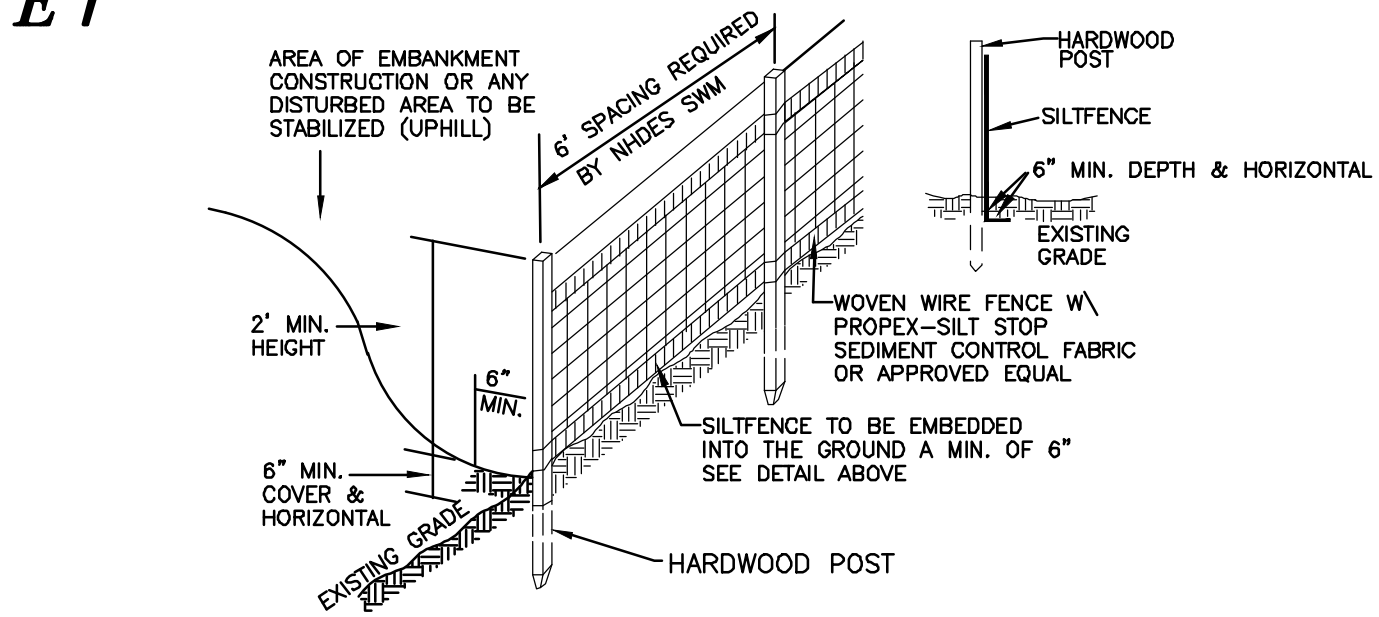
REVISION	DATE	REVISOR	DESCRIPTION
#1	9-1-22		

ACCESS PLAN VENTURE DRIVE
LAND OF
JSR, LLC
VENTURE DRIVE & QUALITY WAY
DOVER, NH
TAX MAP D, LOTS 11-5 & 11-5SND

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863
SCALE : 1 IN. EQUALS 20 FT.
DATE : JUNE 1, 2022
FILE NO. : DB 2021 - 134

KENNETH A. BERRY
LICENSED PROFESSIONAL ENGINEER
No. 7142

E1

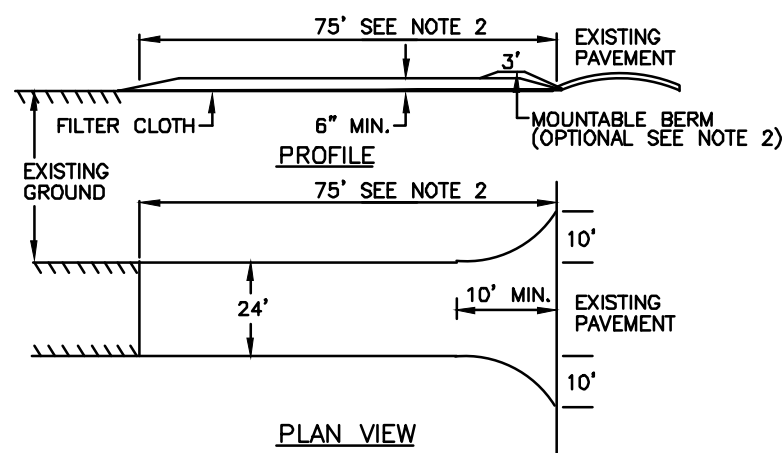


SILT FENCE CONSTRUCTION SPECIFICATIONS

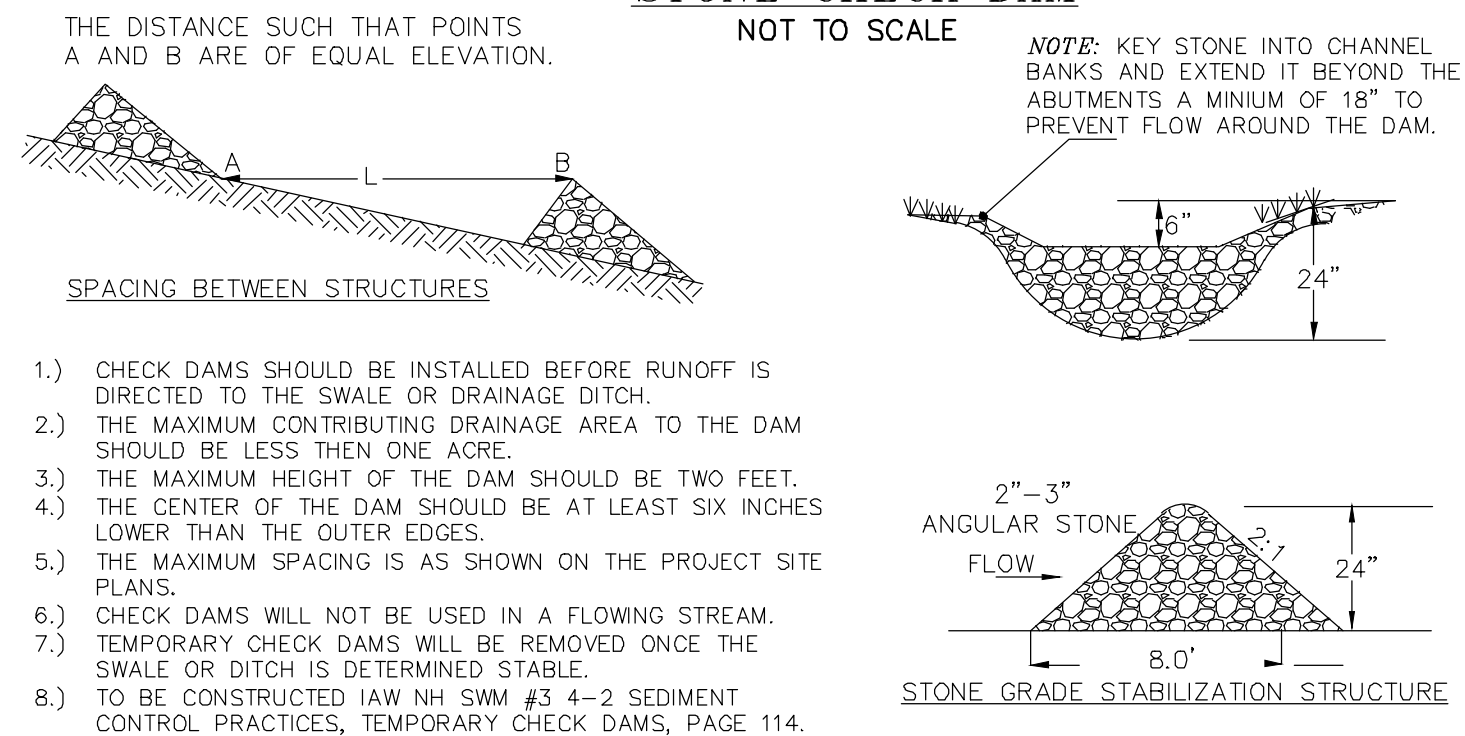
- WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES AND FILTER CLOTH SHALL BE FASTENED TO WOVEN WIRE EVERY 24" AT TOP MID AND BOTTOM SECTIONS AND BE EMBEDDED INTO GROUND A MINIMUM OF 8" THE FENCE POSTS SHALL BE A MINIMUM 48" LONG, SPACED A MAXIMUM 6' APART, AND DRIVEN A MINIMUM OF 16" INTO THE GROUND.
- WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THE ENDS OF THE FABRIC SHALL BE OVERLAPPED BY SIX INCHES, FOLDED AND STAPLED TO PREVENT SEDIMENT FROM BY-PASSING.
- MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SEDIMENT REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE AND PROPERLY DISPOSED OF. SEE MAINTENANCE NOTE BELOW, REMOVAL OF SEDIMENT REQUIRED AT A DEPTH OF 6-INCHES.
- PLACE THE ENDS OF THE SILT FENCE UP CONTOUR TO PROVIDE FOR SEDIMENT STORAGE.
- SILT FENCES SHALL BE REMOVED WHEN NO LONGER NEEDED AND THE SEDIMENT COLLECTED SHALL BE DISPOSED AS DIRECTED BY THE ENGINEER.
- THE AREA DISTURBED BY THE REMOVAL SHALL BE SMOOTHED AND RE-VEGETATED.
- TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, SILT FENCE, PAGE 90.

SILT FENCE MAINTENANCE

- SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.
- IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
- SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN THEY REACH SIX-INCHES IN DEPTH.
- SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

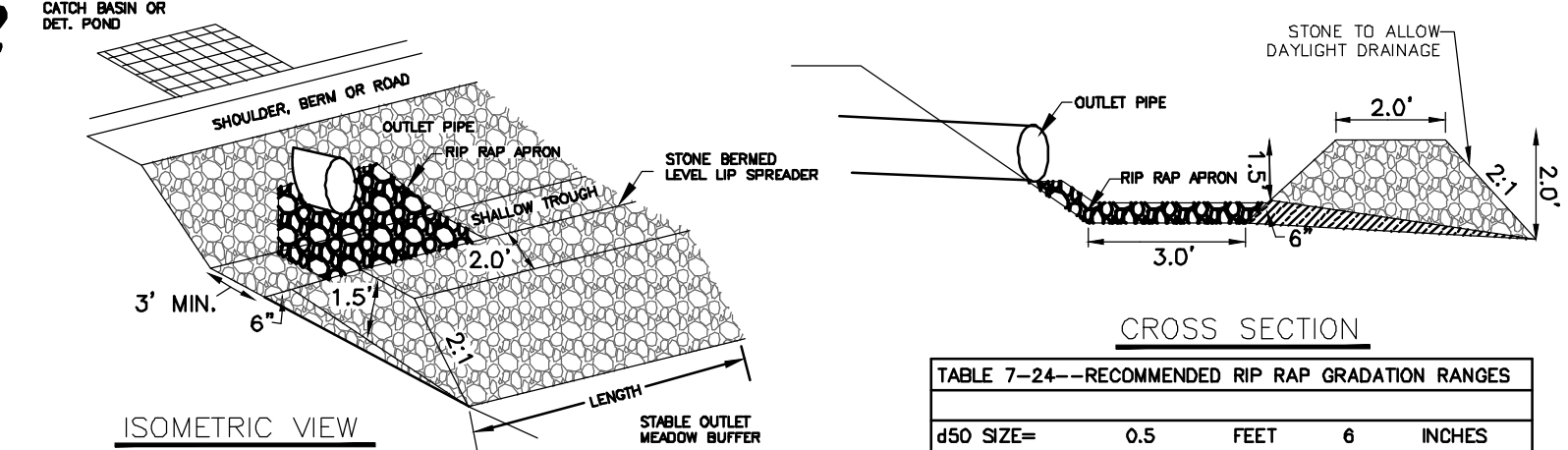
SILT FENCE DETAIL
NOT TO SCALEE5 STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE

- STONE FOR A STABILIZED CONSTRUCTION ENTRANCE SHALL BE 3 INCH ANGULAR STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
- THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 75 FEET, EXCEPT THAT THE MINIMUM LENGTH MAY BE REDUCED TO 50 FEET IF A 3-INCH TO 6-INCH BERM IS INSTALLED AT THE ENTRANCE OF THE PROJECT SITE.
- THE THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 6 INCHES.
- THE WIDTH OF THE ENTRANCE SHALL NOT BE LESS THAN THE FULL WIDTH OF THE ENTRANCE WHERE INGRESS OR EGRESS OCCURS OR 10 FEET, WHICHEVER IS GREATER.
- GEOTEXTILE FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING.
- ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPING THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOW OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED, OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED PROMPTLY.
- TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, TEMPORARY CONSTRUCTION EXIT, PAGE 124.

STONE CHECK DAM
NOT TO SCALE

- CHECK DAMS SHOULD BE INSTALLED BEFORE RUNOFF IS DIRECTED TO THE SWALE OR DRAINAGE DITCH.
- THE MAXIMUM CONTRIBUTING DRAINAGE AREA TO THE DAM SHOULD BE LESS THAN ONE ACRE.
- THE MAXIMUM HEIGHT OF THE DAM SHOULD BE TWO FEET.
- THE CENTER OF THE DAM SHOULD BE AT LEAST SIX INCHES LOWER THAN THE OUTER EDGES.
- THE MAXIMUM SPACING IS AS SHOWN ON THE PROJECT SITE PLANS.
- CHECK DAMS WILL NOT BE USED IN A FLOWING STREAM.
- TEMPORARY CHECK DAMS WILL BE REMOVED ONCE THE SWALE OR DITCH IS DETERMINED STABLE.
- TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, TEMPORARY CHECK DAMS, PAGE 114.

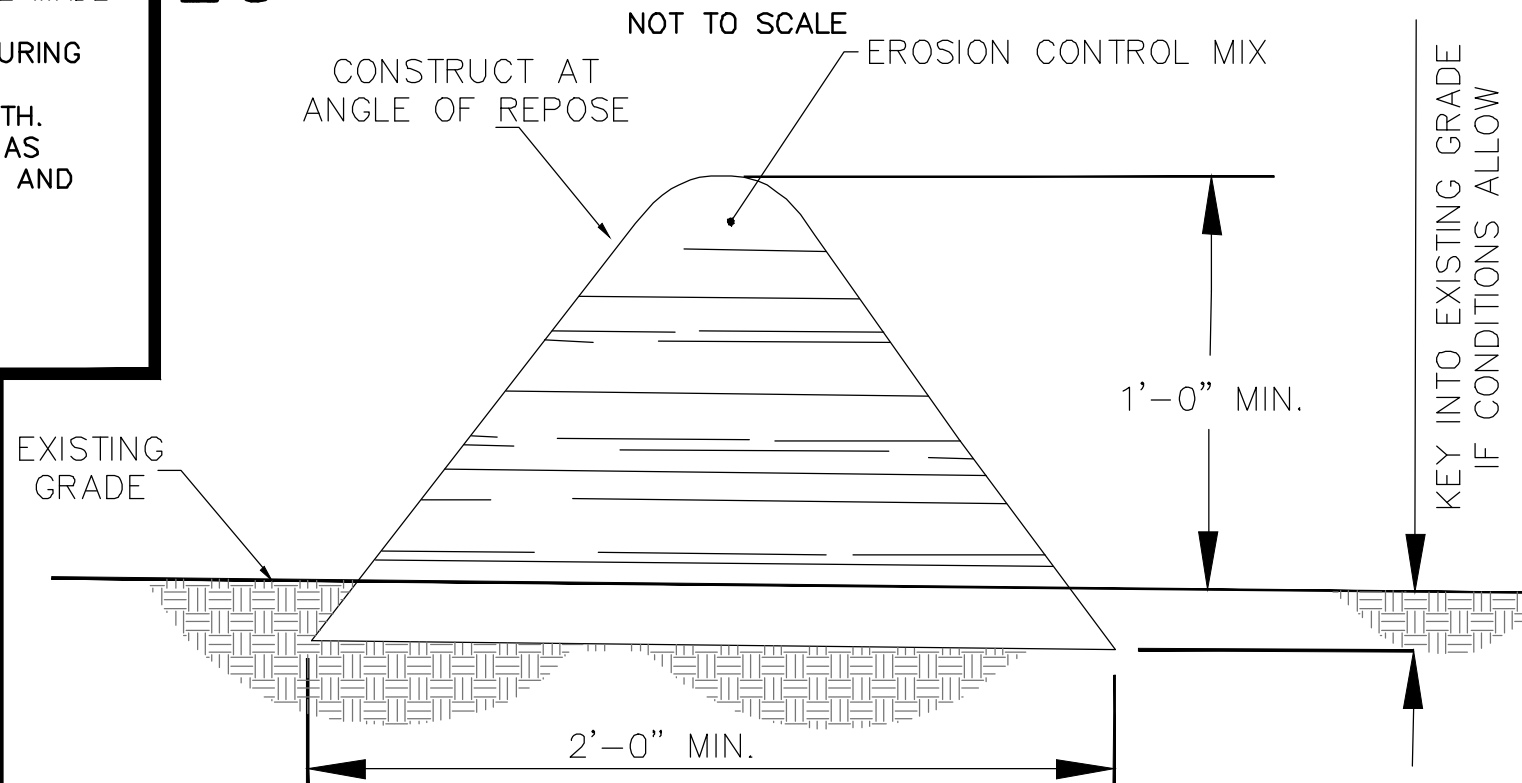
E2



CROSS SECTION

DESIGN SIZE	0.5 FEET	6 INCHES
% OF WEIGHT SMALLER THAN THE GIVEN DESIGN SIZE	SIZE OF STONE (INCHES) FROM	SIZE OF STONE (INCHES) TO
100%	9	12
85%	8	11
50%	6	9
15%	2	3

- CONSTRUCT THE LEVEL SPREADER LIP ON A 0% GRADE TO INSURE UNIFORM SPREADING OF RUNOFF.
- LEVEL SPREADER SHALL BE CONSTRUCTED ON UNDISTURBED SOIL AND NOT ON FILL.
- THE ENTIRE LEVEL LIP AREA SHALL BE PROTECTED BY PLACING EXCELSIOR ENFORCER MATTING BENEATH THE STONE. EACH STRIP SHALL OVERLAP BY AT LEAST SIX INCHES.
- THE FLOW FROM THE LEVEL SPREADER SHALL OUTLET ONTO STABILIZED AREAS. WATER SHOULD NOT RE-CONCENTRATE IMMEDIATELY BELOW THE SPREADER.
- MAINTENANCE: THE LEVEL SPREADER SHOULD BE CHECKED PERIODICALLY AND AFTER EVERY MAJOR STORM TO DETERMINE IF THE LIP HAS BEEN DAMAGED AND THE DESIGN CONDITIONS HAVE NOT CHANGED. ANY DETRIMENTAL SEDIMENT ACCUMULATION SHOULD BE REMOVED. IF STONE REMOVAL HAS TAKEN PLACE ON THE LIP, THEN THE DAMAGE SHOULD BE REPAIRED.
- REFERENCE IS MADE TO NHDES SWM VOL. 2, 4-6, STONE BERM LEVEL SPREADERS, PAGE 162

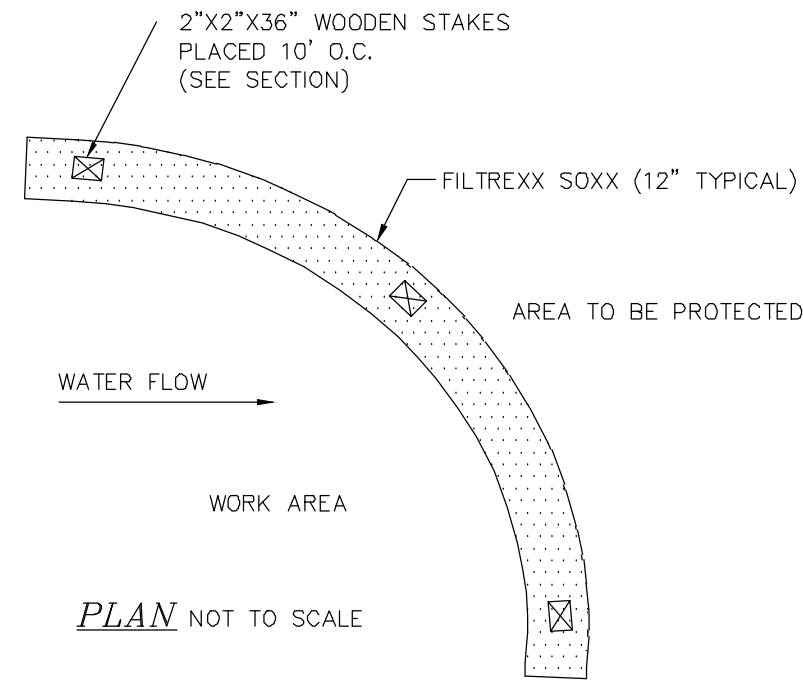
STONE BERM LEVEL SPREADER
NOT TO SCALEE6 EROSION CONTROL MIX BERM
NOT TO SCALE

EROSION CONTROL MIX BERMS SHALL BE USED ONLY AS FOLLOWS:

- BERMS SHALL BE USED IN AREAS WHERE EROSION WILL OCCUR ONLY IN THE FORM OF SHEET EROSION AND THERE IS NO CONCENTRATION OF WATER IN A CHANNEL OR DRAINAGE WAY ABOVE THE BERM.
- THE BERMS SHALL BE INSTALLED FOLLOWING THE CONTOUR OF THE LAND AS CLOSELY AS POSSIBLE.
- THE BERMS SHALL BE INSTALLED ON SLOPES LESS THAN 5%.
- SUBJECT TO (E), BELOW, THE MIX SHALL HAVE AN ORGANIC PORTION BETWEEN 80 AND 100% DRY WEIGHT BASIS, AND BE FIBROUS AND ELONGATED SUCH AS FROM SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR EQUIVALENT MANUFACTURED PRODUCTS. WOOD AND BARK FROM GROUND CONSTRUCTION DEBRIS, OR REPROCESSED WOOD PRODUCTS SHALL NOT BE USED AS ORGANIC MATERIAL.
- THE MIX SHALL NOT CONTAIN SILTS, CLAY, OR FINE SANDS.
- THE MIX SHALL HAVE A PARTICLE SIZE BY WEIGHT OF 70 TO 85% PASSING A 6-INCH SCREEN AND A MAXIMUM OF 85% PASSING THE 0.75-INCH SCREEN.
- THE MIX PH SHALL BE BETWEEN 5.0 AND 8.0.
- THE BERM SHALL BE AT LEAST 12 INCHES HIGH AND AT LEAST 2 FEET WIDE.
- TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, EROSION CONTROL MIX BERMS, PAGE 106.

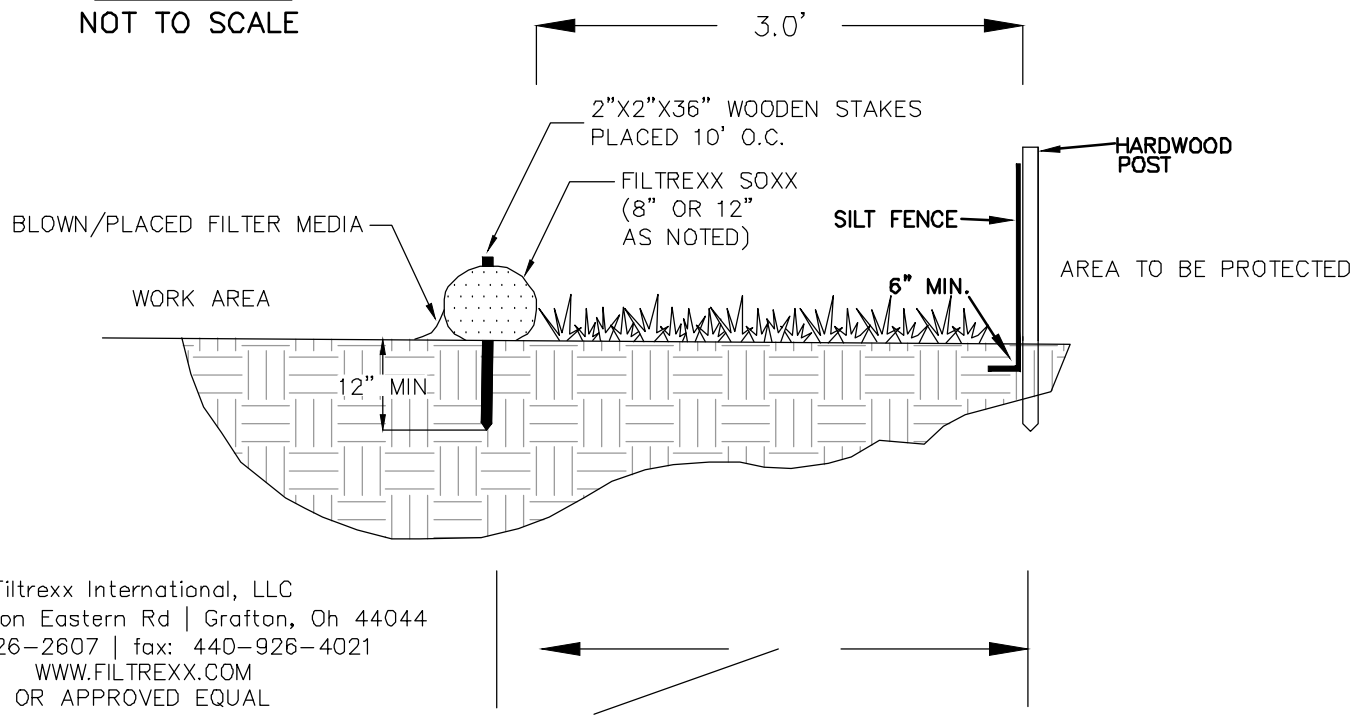
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E10



NOTES

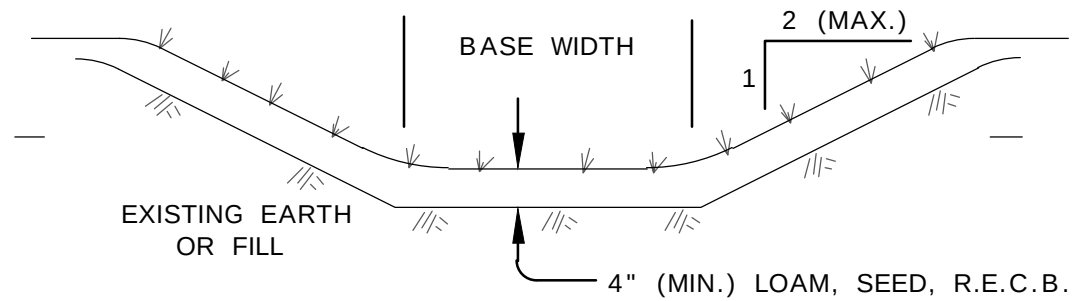
- ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
- FILTER MEDIA FILL TO MEET APPLICATION REQUIREMENTS.
- COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.
- SILT/STOCK MAY BE USED IN PLACE OF SILT FENCE OR OTHER SEDIMENT BARRIERS.
- SILT/STOCK COMPOST/SOIL/ROCK/SEED FILL MATERIAL SHALL BE ADJUSTED AS NECESSARY TO MEET THE REQUIREMENTS OF THE SPECIFIC APPLICATION.
- FILTREXX SOXX IS A REGISTERED TRADEMARK OF FILTREXX INTERNATIONAL, LLC.
- SILT FENCE IS NOT A SUBSTITUTION FOR SILT SOXX AND ANY EQUAL SUBSTITUTION TO BE APPROVED.
- TO BE CONSTRUCTED IAW FILTREXX, SECTION 1: EROSION & SEDIMENT CONTROL (PAGE 323) - CONSTRUCTION ACTIVITIES, SWPPP CUT SHEET: FILTREXX SEDIMENT CONTROL.

FILTREXX SEDIMENT CONTROL
NOT TO SCALE

NOTE: FOR AREAS REQUIRING DOUBLE PERIMETER CONTROL WITHIN 50' OF JURISDICTIONAL WETLANDS AND NOT FOR ALL SILT SOXX APPLICATIONS. THIS DUPLICATION MAY BE SPECIFIED AS 12" SILT SOXX OR ORANGE CONSTRUCTION FENCE AS NOTED.

SECTION NOT TO SCALE

E3

GRASS CONVEYANCE SWALE
NOT TO SCALE

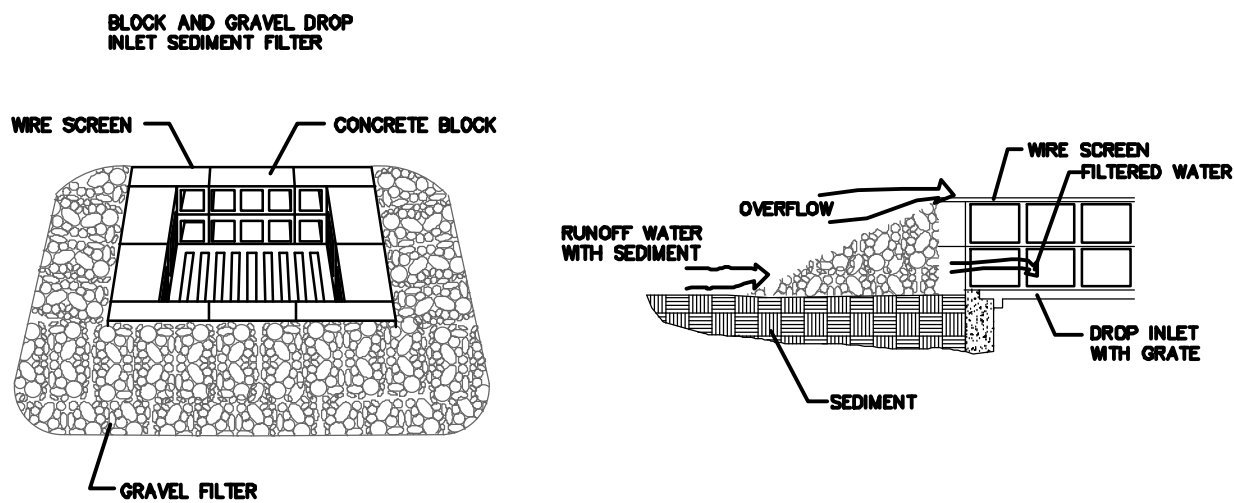
INSPECT ANNUALLY FOR EROSION, SEDIMENT ACCUMULATIONS, VEGETATION LOSS, & INVASIVE SPECIES. REPAIR AS NECESSARY.

MOW GRASS ANNUALLY TO A DEPTH OF 4".

INSTALL STABILIZATION MATTING DURING CONSTRUCTION

TO BE CONSTRUCTED IAW NH SWM #2 CHAPTER 4, #5 TREATMENT SWALES, PAGE 123.

E7



MAINTENANCE

ALL STRUCTURES SHOULD BE INSPECTED AFTER EVERY RAIN STORM AND REPAIRS MADE AS NECESSARY. SEDIMENT SHOULD BE REMOVED FROM TRAPPING DEVICES AFTER THE SEDIMENT HAS REACHED A MAXIMUM OF ONE HALF THE DEPTH OF THE TRAP. THE SEDIMENT SHOULD BE DISPOSED OF IN A SUITABLE AREA AND PROTECTED FROM EROSION BY EITHER STRUCTURE OR VEGETATIVE MEANS. THE TEMPORARY TRAPS SHOULD BE REMOVED AND THE AREA REPAIRED AS SOON AS THE CONTRIBUTING DRAINAGE AREA TO THE INLET HAS BEEN COMPLETELY STABILIZED.

BLOCK & GRAVEL DROP INLET SEDIMENT FILTER
NOT TO SCALE

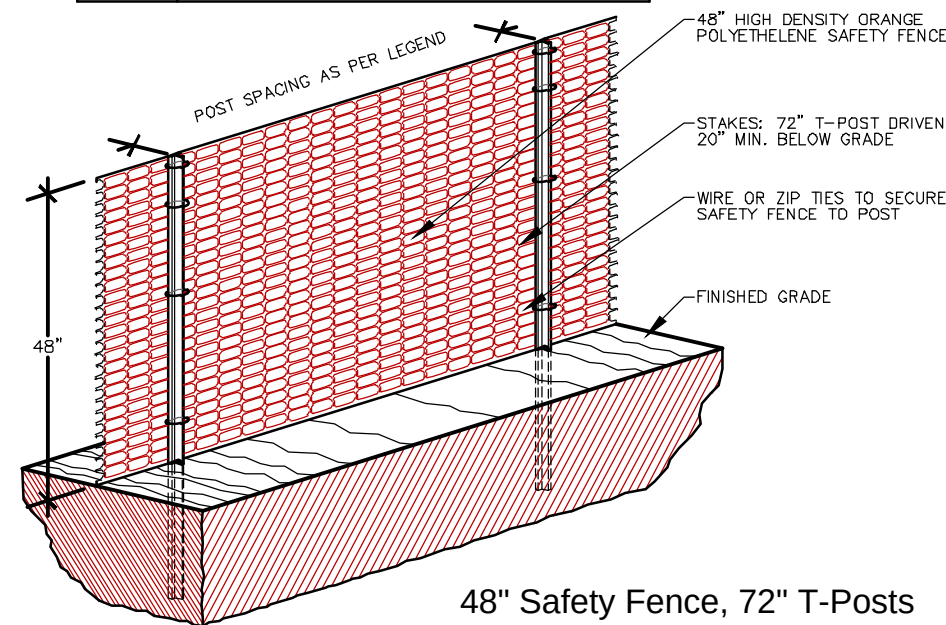
TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, TEMPORARY STORM DRAIN INLET PROTECTION, PAGE 118.

TO BE USED IN ALL AREAS WHERE THERE WILL BE NO TRAFFIC.

E4

CONSTRUCTION SAFETY FENCE
NOT TO SCALE

LEGEND	
SAF12	48" ORANGE FENCE, 12 FEET O.C.
SAF11	48" ORANGE FENCE, 11 FEET O.C.
SAF10	48" ORANGE FENCE, 10 FEET O.C.
SAF9	48" ORANGE FENCE, 9 FEET O.C.
SAF8	48" ORANGE FENCE, 8 FEET O.C.
SAF7	48" ORANGE FENCE, 7 FEET O.C.
SAF6	48" ORANGE FENCE, 6 FEET O.C.



48" Safety Fence, 72" T-Posts

- ALL SENSITIVE AREAS SHALL BE PROTECTED AS PER PLAN.
- ALL TREES IN THE CONSTRUCTION AREA NOT SPECIFICALLY DESIGNATED FOR REMOVAL SHALL BE PRESERVED AND PROTECTED WITH HIGH VISIBILITY FENCE AS PER PLAN.
- WHEN PRACTICABLE, INSTALL HIGH VISIBILITY 3 FEET OUTSIDE OF THE DRIP LINE OF THE TREE.
- SAFETY FENCE SHOULD BE FASTENED SECURELY TO THE T-POSTS.
- THE FENCING MUST REMAIN IN PLACE DURING ALL PHASES OF CONSTRUCTION; ANY CHANGE OF THE PROTECTIVE FENCING MUST BE APPROVED.

E8

TEMPORARY EROSION CONTROL MEASURES

- THE SMALLEST PRACTICAL AREA OF LAND SHALL BE EXPOSED AT ANY ONE TIME.
- EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND AT LOCATIONS AS REQUIRED, DIRECTED BY THE ENGINEER.
- ALL DISTURBED AREAS SHALL BE RETURNED TO ORIGINAL GRADES AND ELEVATIONS. DISTURBED AREAS SHALL BE LOAMED WITH A MINIMUM OF 4" OF LOAM AND SEEDING WITH NOT LESS THAN ONE POUND OF SEED PER 50 SQUARE YARDS OF AREA. (SEE SEED SPECIFICATIONS THIS SHEET)
- ALL DISTURBED AREAS WILL BE RESTABILIZED WITHIN 45 DAYS. AT ANY ONE TIME, NO MORE THAN 5 ACRES, (217,800 Sq. Ft.) WILL BE DISTURBED.
- SILT FENCES AND PERIMETER BARRIERS SHALL BE INSPECTED PERIODICALLY AND AFTER EVERY RAIN DURING THE LIFE OF THE PROJECT. ALL DAMAGED AREAS SHALL BE REPAIRED, SEDIMENT DEPOSITS SHALL PERIODICALLY BE REMOVED AND DISPOSED OF.
- AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE REMOVED AND THE AREA DISTURBED BY THE REMOVAL SMOOTHED AND RE-VEGETATED.
- PER THE EPA CGP REQUIREMENTS THERE WILL BE REPORTS OF THE EROSION CONTROL INSPECTIONS IAW SWPPP PREPARED BY BS&E. ALL EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER 0.25" OR GREATER RAIN EVENT.
- DITCHES, SWALES, AND BASINS SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
- DO NOT TRAFFIC EXPOSED SOIL SURFACES WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION SYSTEM.
- ROADWAYS, DRIVEWAYS AND CUT AND FILL SLOPES MUST BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINAL GRADE.
- STABILIZATION MEANS:
 - A MINIMUM OF 85% OF VEGETATIVE COVER HAS BEEN ESTABLISHED.
 - A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED, OR
 - EROSION CONTROL BLANKETS HAVE BEEN INSTALLED.
- THIS PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 5800 RELATIVE TO INVASIVE SPECIES.
- THE NHDES STORMWATER MANUAL, IN THREE VOLUMES, DATED DECEMBER 2008, IS A PART OF THIS PLAN SET AND THE MORE RESTRICTIVE WILL GOVERN. (NH SWM)

DOVER FILE #22-55

REVISION	DATE	DESCRIPTION
#1	9-1-22	REVISED PER DOVER TRC COMMENT

EROSION & SEDIMENT CONTROL DETAILS

LAND OF JSR, LLC

VENTURE DRIVE & QUALITY WAY

DOVER, NH

TAX MAP D, LOTS 11-5 & 11-5SND

BERRY SURVEYING & ENGINEERING

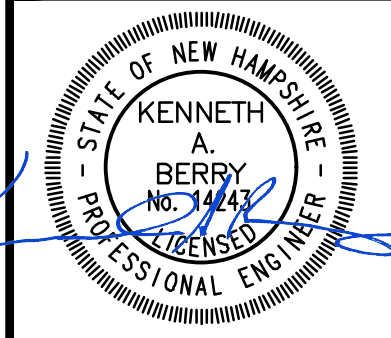
335 SECOND CROWN POINT ROAD

BARRINGTON, NH 03825 (603)332-2863

AS NOTED

DATE : JUNE 1, 2022

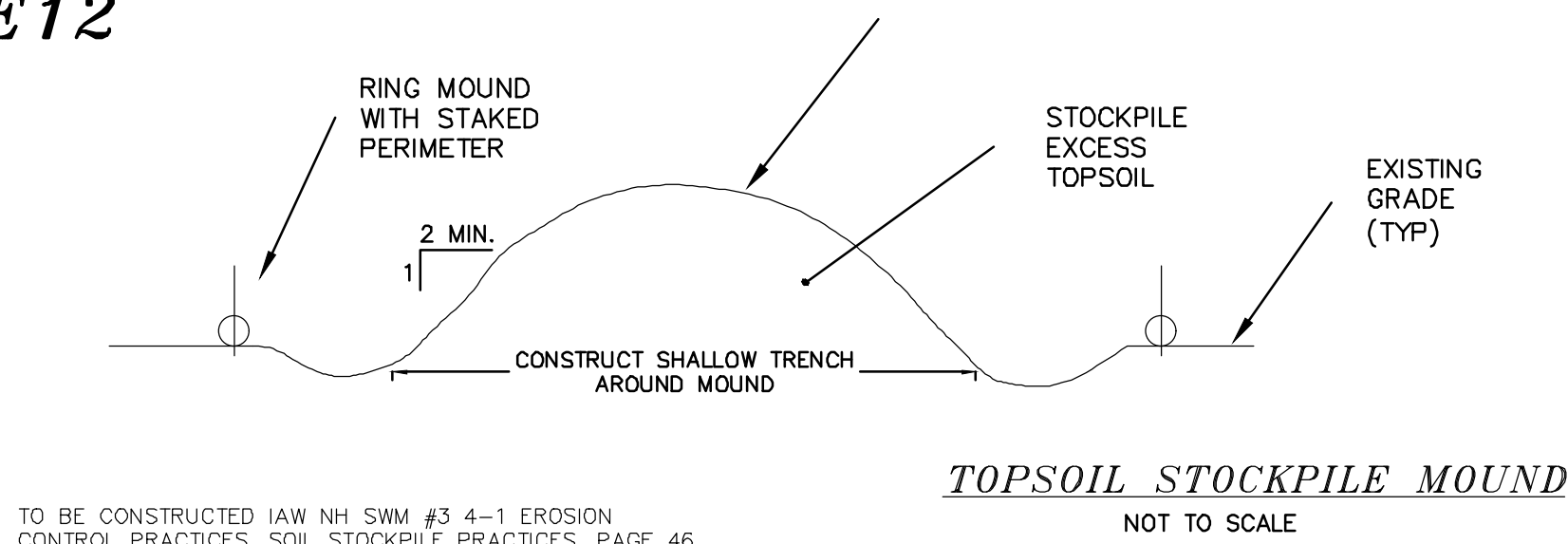
FILE NO. : DB 2021 - 134

SILTSACK DETAIL
NOT TO SCALE

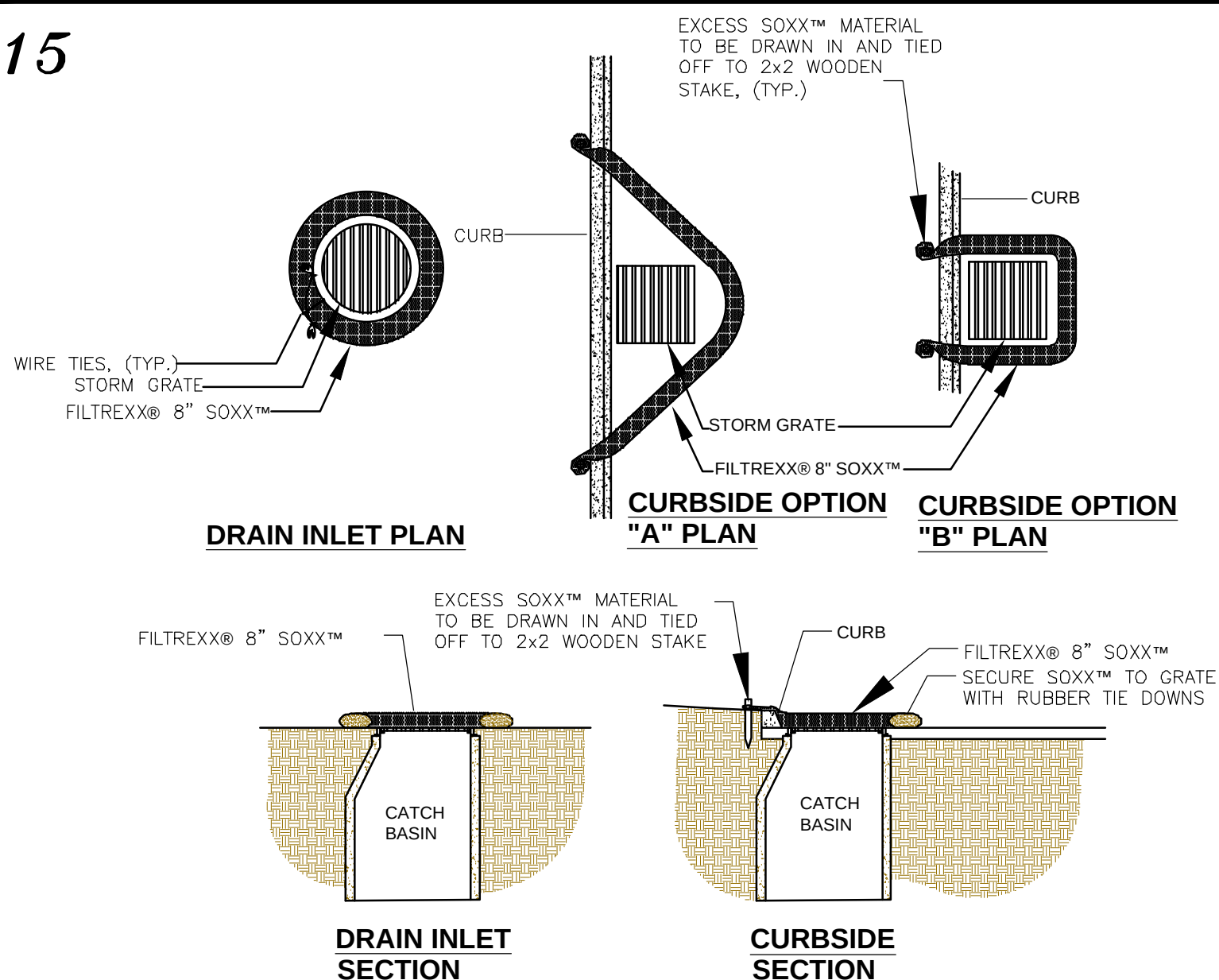
E-101

SHEET 18 OF 27

E12



E15

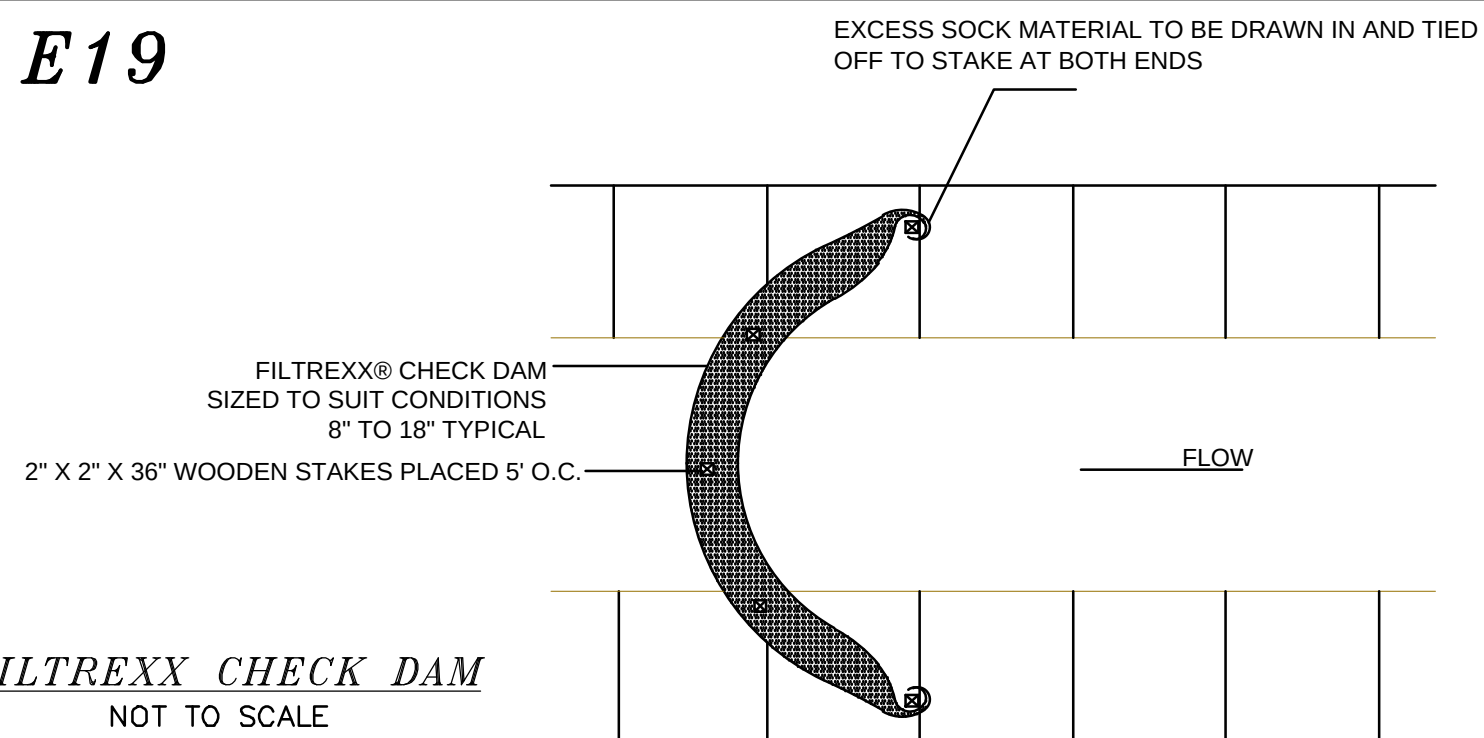


- NOTES:
1. ALL MATERIAL TO MEET FILTREX® SPECIFICATIONS.
 2. FILTER MEDIA™ FILL TO MEET APPLICATION REQUIREMENTS.
 3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

FILTREX INLET PROTECTION

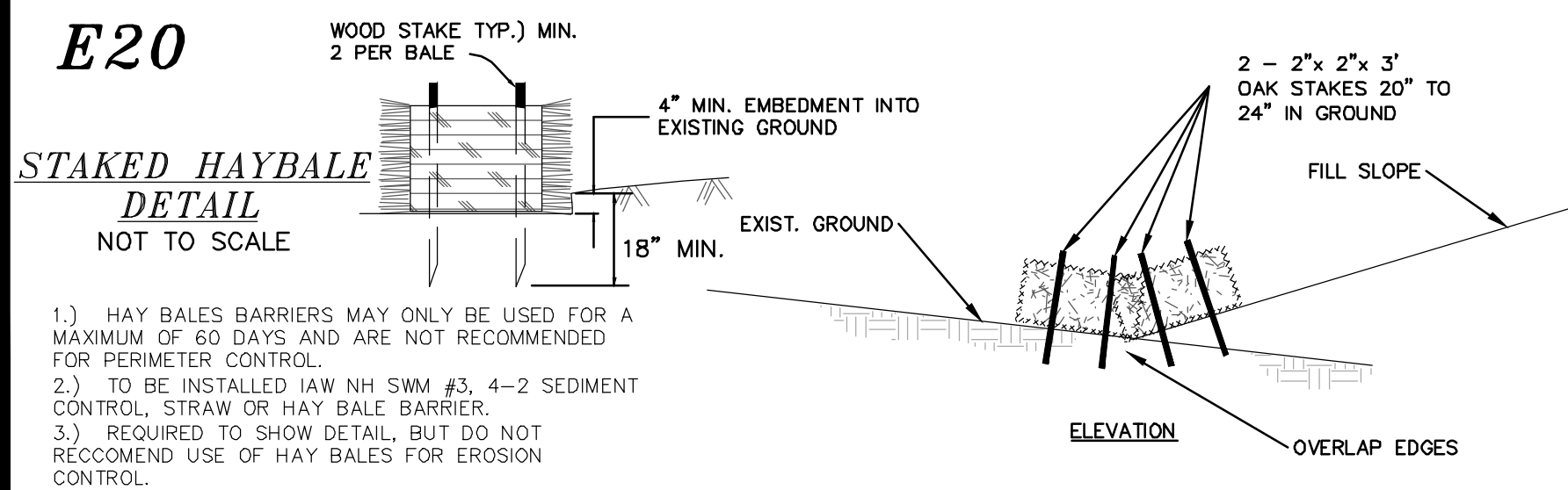
NOT TO SCALE

E19



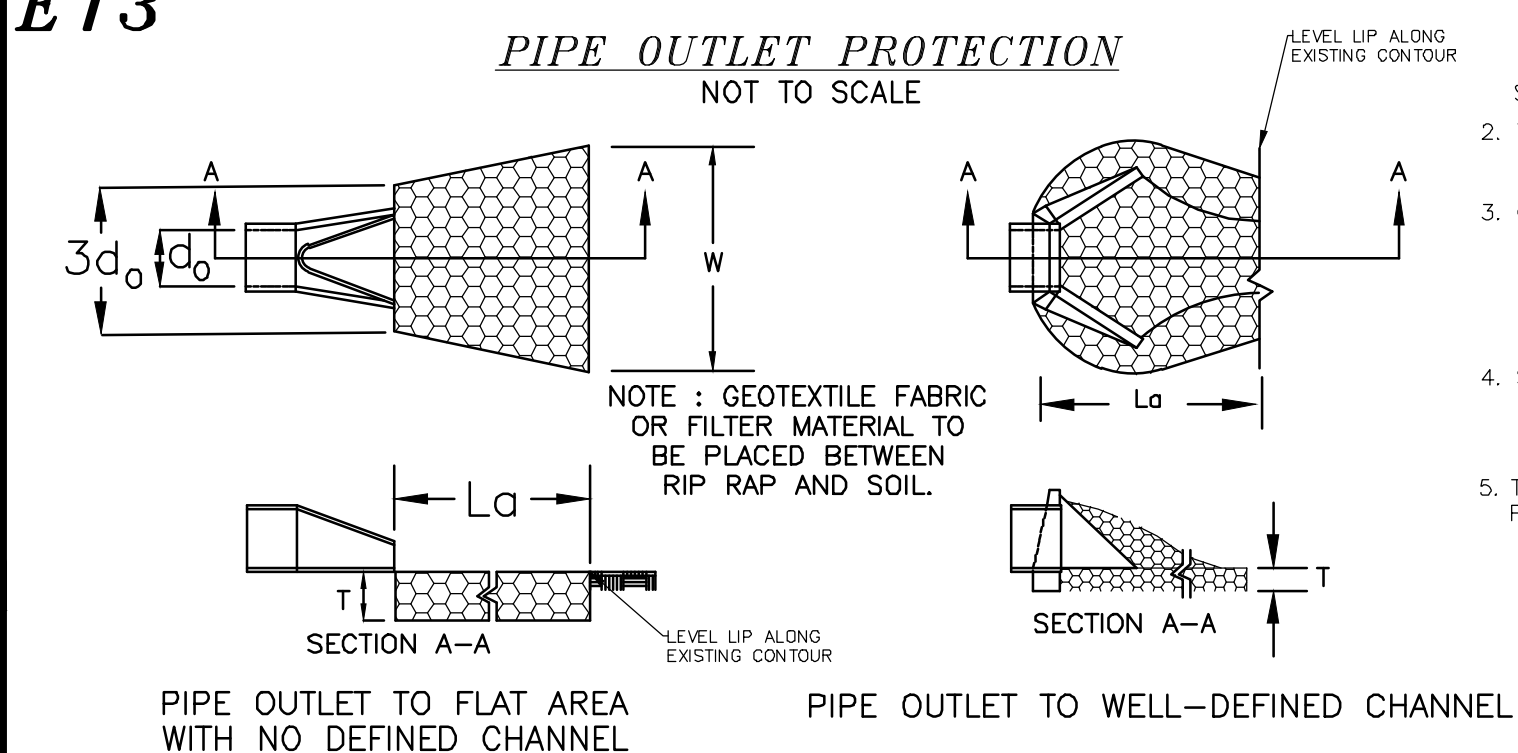
- NOTES:
1. ALL MATERIAL TO MEET FILTREX® SPECIFICATIONS.
 2. CHECK DAM SHOULD BE USED IN AREAS THAT DRAIN 1 ACRE OR LESS.
 3. SEDIMENT SHOULD BE REMOVED FROM BEHIND CHECK DAM ONCE THE ACCUMULATED HEIGHT HAS REACHED ½ THE HEIGHT OF THE CHECK DAM.
 4. CHECK DAM CAN BE DIRECT SEEDED AT THE TIME OF INSTALLATION.
 5. CONTRACTOR IS REQUIRED TO BE A FILTREX CERTIFIED™ INSTALLER.

E20



- 1.) HAY BALES BARRIERS MAY ONLY BE USED FOR A MAXIMUM OF 60 DAYS AND ARE NOT RECOMMENDED FOR PERIMETER CONTROL.
- 2.) TO BE INSTALLED IAW NH SWM #3, 4-2 SEDIMENT CONTROL, STRAW OR HAY BALE BARRIER.
- 3.) REQUIRED TO SHOW DETAIL, BUT DO NOT RECOMMEND USE OF HAY BALES FOR EROSION CONTROL.

E13



E16

NOTE: Temporary seed mix for stabilization of turf shall be winter type or oats at a rate of 2.5 lbs. per 1000 s.f. and shall be placed prior to OCT. 15, if permanent seeding not yet complete.

SEEDING GUIDE					
USE	SEEDING MIXTURE 1/	DROUGHTY	WELL DRAINED	MODERATELY WELL DRAINED	POORLY DRAINED
STEPP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A	FAIR	GOOD	GOOD	FAIR
	B	POOR	GOOD	GOOD	FAIR
	C	FAIR	GOOD	GOOD	EXCELLENT
	D	FAIR	GOOD	GOOD	EXCELLENT
WATERWAYS, EMERGENCY SPILLWAYS, AND OTHER CHANNELS WITH FLOWING WATER	A	GOOD	GOOD	GOOD	FAIR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
	D	GOOD	EXCELLENT	EXCELLENT	FAIR
LIGHTLY USED PARKING LOTS, ROAD AREAS, UNIMPAVED LANDS, AND LOW INTENSITY USE RECREATION SITES.	A	GOOD	GOOD	GOOD	FAIR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
	D	GOOD	EXCELLENT	EXCELLENT	FAIR
PLAY AREAS AND ATHLETIC FIELDS (TOPSOIL IS ESSENTIAL FOR GOOD TURF.)	F	FAIR	EXCELLENT	EXCELLENT	2/
	G	FAIR	EXCELLENT	EXCELLENT	2/

1/ REFER TO SEEDING MIXTURES AND RATES IN TABLE 7-36.

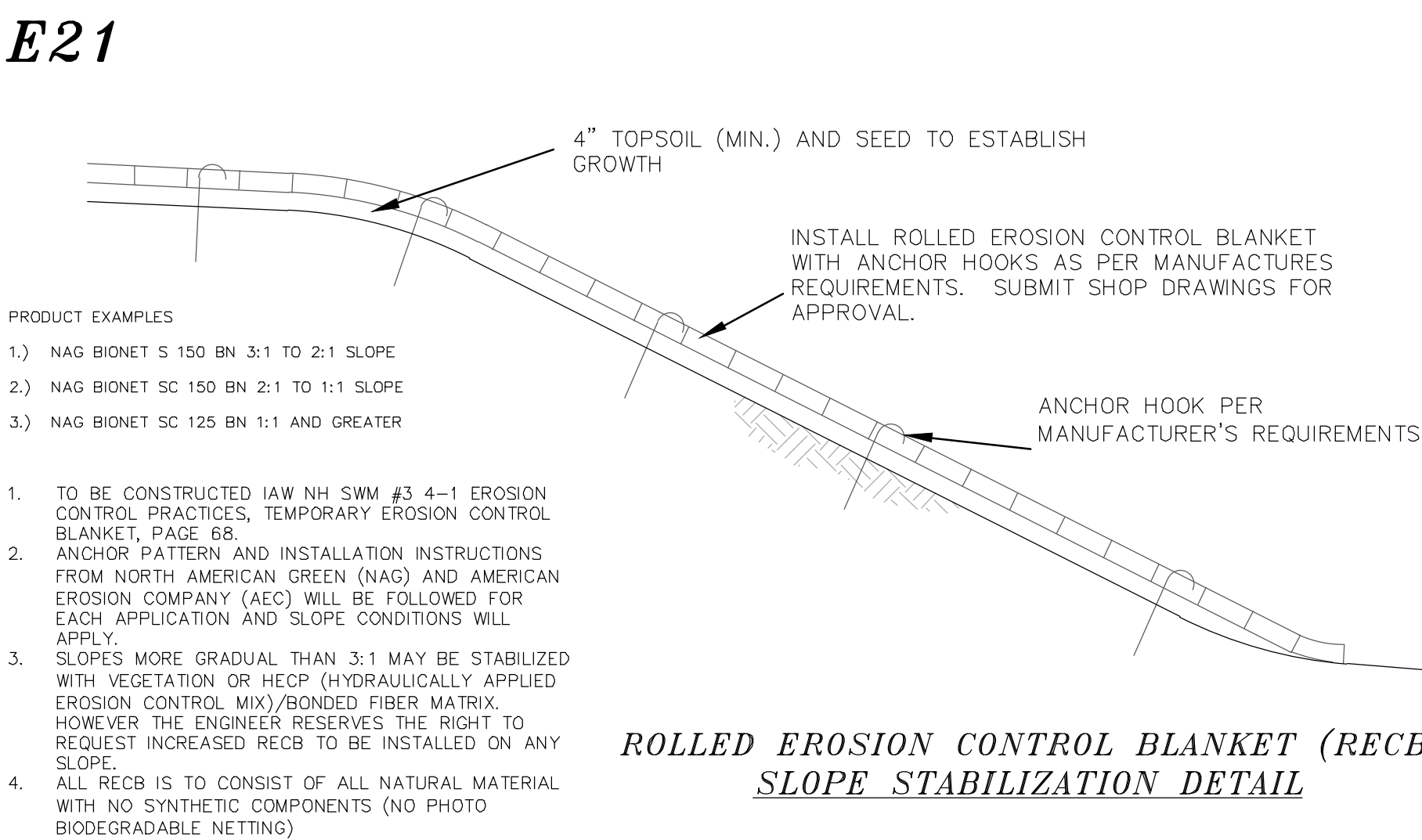
2/ POORLY DRAINED SOILS ARE NOT DESIRABLE FOR USE AS PLAYING AREA AND ATHLETIC FIELDS.

SEEDING SPECIFICATIONS

1. GRADING AND SHAPING
 - A. SLOPES SHALL NOT BE STEEPER THAN 2:1; 3:1 SLOPES OR FLATTER ARE PREFERRED.
 - WHERE MOWING WILL BE DONE, 3:1 SLOPES OR FLATTER ARE RECOMMENDED.
2. SEEDBED PREPARATION
 - A. SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.
 - B. STONES LARGER THAN 4 INCHES AND TRASH SHOULD BE REMOVED BECAUSE THEY INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF ABOUT 4 INCHES TO PREPARE A SEED BED AND MIX FERTILIZER AND LIME INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.
3. ESTABLISHING A STAND
 - A. LIME AND FERTILIZER SHOULD BE APPLIED PRIOR TO OR AT THE TIME OF SEEDING AND INCORPORATED INTO THE SOIL KINDS AND AMOUNTS OF LIME AND FERTILIZER SHOULD BE BASED ON AN EVALUATION OF SOIL TESTS. WHEN A SOIL TEST IS NOT AVAILABLE, THE FOLLOWING MINIMUM AMOUNTS SHOULD BE APPLIED:
 - AGRICULTURAL LIMESTONE, 2 TONS PER ACRE OR 100LBS. PER 1,000 SQ.FT.
 - NITROGEN(N), 50LBS. PER ACRE OR 1.1LBS. PER 1,000 SQ.FT.
 - PHOSPHATE(P2O5), 100LBS. PER ACRE OR 2.2LBS. PER 1,000 SQ.FT.
 - POTASH(K2O), 100LBS. PER ACRE OR 2.2LBS. PER 1,000 SQ.FT.
 - (NOTE: THIS IS THE EQUIVALENT OF 500LBS. PER ACRE OF 10-20-20 FERTILIZER OR 1,000LBS. PER ACRE OF 5-10-10.)
4. MULCH
 - A. HAY, STRAW, OR OTHER MULCH, WHEN NEEDED, SHOULD BE APPLIED IMMEDIATELY AFTER SEEDING.
 - B. MULCH WILL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE BEST MANAGEMENT PRACTICE FOR MULCHING. HAY OR STRAW MULCH SHALL BE PLACED AT A RATE OF 90LBS PER 1000 S.F.
5. MAINTENANCE TO ESTABLISH A STAND
 - A. PLANTED AREA SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH.
 - B. FERTILIZATION NEEDS SHOULD BE DETERMINED BY ONSITE INSPECTIONS. SUPPLEMENTAL FERTILIZER IS USUALLY THE KEY TO FULLY COMPLETE THE ESTABLISHMENT OF THE STAND BECAUSE MOST PERENNIAL STAKE 2 TO 3 YEARS TO BECOME ESTABLISHED.
 - C. IN WATERWAYS, CHANNELS, OR SWALES WHERE UNIFORM FLOW CONDITIONS ARE ANTICIPATED, OCCASIONAL MOWING MAY BE NECESSARY TO CONTROL GROWTH OF WOODY VEGETATION.
6. TO BE CONSTRUCTED IAW NH SWM #3 4-1 EROSION CONTROL PRACTICES, PERMANENT VEGETATION, PAGE 60.
7. SEE RAIN GARDEN AND INFILTRATION DETAIL SHEETS FOR SPECIFIC PLANTING INSTRUCTIONS AND SEEDING.

- B. SEED SHOULD BE SPREAD UNIFORMLY BY THE METHOD MOST APPROPRIATE FOR THE SITE. METHODS INCLUDE BROADCASTING, DRILLING AND HYDROSEEDING, WHERE BROADCASTING IS USED, COVER SEED WITH .25 INCH OF SOIL OR LESS, BY CULTIPACKING OR RAKING.
- C. REFER TO TABLE(G-E1 THIS SHEET) FOR APPROPRIATE SEED MIXTURES AND TABLE(H-E1 THIS SHEET) FOR RATES OF SEEDING. ALL LEGUMES (CROWNVETCH, BIRDSFOOT TREFOIL, AND FLATPEA) MUST BE INOCULATED WITH THEIR SPECIFIC INOCULANT.
- D. WHEN SEEDING AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO EARLY OCTOBER. WHEN SEEDING AREAS ARE NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20 OR FROM AUGUST 10 TO SEPTEMBER 1.

E21



ROLLED EROSION CONTROL BLANKET (RECB) SLOPE STABILIZATION DETAIL

PIPE OUTLET PROTECTION CONSTRUCTION SPECIFICATIONS

- SPECIFIED GRADATION.
2. THE ROCK OR GRAVEL USED FOR FILTER OF RIP RAP SHALL CONFORM TO NHDOT SECTION 583.
 3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIP RAP DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES.
 4. STONE FOR THE RIP RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.
 5. TO BE CONSTRUCTED IAW NH SWM #2 4-6 CONVEYANCE PRACTICES, 6. OUTLET PROTECTION, PAGE 172.

E14

TABLE 7-24--RECOMMENDED RIP RAP GRADATION RANGES			
d50 SIZE=	0.5 FEET	6 INCHES	
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE	SIZE OF STONE (INCHES) FROM		TO
100%	9	12	
85%	8	11	
50%	6	9	
15%	2	3	

CONSTRUCTION SEQUENCE:

- 1.) CUT AND REMOVE TREES IN CONSTRUCTION AREA ONLY AS REQUIRED, RELOCATE ANY PROJECT T.B.M.
- 2.) CONSTRUCT AND/OR INSTALL TEMPORARY AND PERMANENT SEDIMENT EROSION AND DETENTION CONTROL FACILITIES AS SPECIFIED. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY SOIL LAND DISTURBANCE AND MUST BE REVIEWED AND APPROVED BY THE COMMUNITY SERVICES DEPARTMENT.
- 3.) EROSION, SEDIMENT AND DETENTION CONTROL FACILITY SHALL BE INSTALLED & STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM. TEMPORARY DIVERSIONS MAY BE REQUIRED. POST CONSTRUCTION STORM WATER MANAGEMENT PRACTICES MUST BE INITIATED AND STABILIZED EARLY IN THE PROCESS. RUNOFF MUST BE DIRECTED TO TEMPORARY PRACTICES UNTIL STORMWATER BMPs ARE STABILIZED.
- 4.) CLEAR, CUT AND DISPOSE OF DEBRIS IN APPROVED FACILITY
- 5.) CONSTRUCT TEMPORARY CULVERTS AS REQUIRED, OR DIRECTED
- 6.) CONSTRUCT ROADWAYS FOR ACCESS TO DESIRED CONSTRUCTION AREAS. ALL ROADS SHALL BE STABILIZED IMMEDIATELY. SEE BEST MANAGEMENT PRACTICES FOR BLASTING ON SHEET C-102.
- 7.) START BUILDING CONSTRUCTION.
- 8.) INSTALL PIPE AND CONSTRUCTION ASSOCIATED APPURTENANCES AS REQUIRED OR DIRECTED. INSTALL RAIN GARDENS. ALL DISTURBED AREAS SHALL STABILIZED IMMEDIATELY AFTER GRADING.
- 9.) BEGIN PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES AND DISTURBED AREAS SHALL BE SEED OR MULCHED AS REQUIRED, OR DIRECTED. NO AREA IS ALLOWED TO BE DISTURBED FOR A LENGTH OF TIME THAT EXCEEDS 45 DAYS BEFORE BEING STABILIZED. DAILY, OR AS REQUIRED. ALL ROADWAYS AND PARKING AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADES. ALL CUT AND FILL SLOPES SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADES. LIMIT THE LENGTH OF EXPOSURE OF UNSTABILIZED SOIL TO 45 DAYS OR LESS.
- 10.) CONSTRUCT TEMPORARY BERMS, DRAINS DITCHES, SILT FENCES, SEDIMENT TRAPS, ETC. MULCH AND SEED AS REQUIRED.
- 11.) INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION. ALL SWPPP INSPECTIONS MUST BE CONDUCTED BY A QUALIFIED PROFESSIONAL SUCH AS A PROFESSIONAL ENGINEER (PE), A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC), A CERTIFIED EROSION SEDIMENT AND STORM WATER SPECIALIST (CESSW), OR A CERTIFIED PROFESSIONAL IN STORM WATER QUALITY (CPSWQ). INSPECTION REPORTS SHALL BE SUBMITTED TO THE COMMUNITY SERVICES DEPARTMENT. EROSION AND SEDIMENT CONTROL PRACTICES ARE TO BE INSPECTED WEEKLY AND AFTER 0.5" OF RAINFALL.
- 12.) COMPLETE PERMANENT SEEDING AND LANDSCAPING.
- 13.) REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDING AREAS HAVE ESTABLISHED THEMSELVES AND SITE IMPROVEMENTS ARE COMPLETE.
- 14.) SMOOTH AND REVEGETATE ALL DISTURBED AREAS.
- 15.) FINISH PAVING ALL ROADWAYS.
- 16.) LOT DISTURBANCE, OTHER THAN THAT SHOWN ON THE APPROVED PLANS, SHALL NOT COMMENCE UNTIL AFTER THE ROADWAY HAS THE BASE COURSE TO DESIGN ELEVATION AND THE ASSOCIATED DRAINAGE IS COMPLETE AND STABLE.

E18 DEFINITION OF STABLE:

PER ENV-WQ 1500 ALTERATION OF TERRAIN

1. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED.
 2. A MINIMUM OF 85 PERCENT VEGETATED GROWTH HAS BEEN ESTABLISHED..
 3. A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP-RAP HAS BEEN INSTALLED.
 4. OR, EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
- ADDITION STABILIZATION NOTES:
5. HAY MULCH OR OTHER APPROVED METHODS SHALL BE USED TO CONTROL EROSION OF NEWLY GRADED AREAS. ALL CUT AND FILL SLOPES SHALL BE SEED OR MULCHED WITHIN 72 HOURS AFTER THEIR CONSTRUCTION.
 6. DISTURBED SOIL AREAS SHALL BE EITHER TEMPORARILY OR PERMANENTLY STABILIZED. IN AREAS WHERE FINAL GRADING HAS NOT OCCURRED, TEMPORARY STABILIZATION MEASURES SHOULD BE IN PLACE WITHIN SEVEN (7) CALENDAR DAYS FOR EXPOSED SOIL AREAS THAT ARE WITHIN ONE HUNDRED (100) FEET OF A SURFACE WATER BODY OR A WETLAND AND NO MORE THAN 14 CALENDAR DAYS FOR ALL OTHER AREAS. PERMANENT STABILIZATION SHOULD BE IN PLACE WITHIN THREE (3) CALENDAR DAYS FOLLOWING COMPLETION OF FINAL GRADING OF EXPOSED SOIL AREAS.

E22

WINTER STABILIZATION NOTES

1. ALL DISTURBED AREAS THAT DO NOT HAVE AT LEAST 85% VEGETATIVE COVERAGE PRIOR TO OCTOBER 15TH SHALL BE STABILIZED BY APPLYING MULCH AT A RATE OF 3-4 TONS PER ACRE. ALL SIDE SLOPES, STEEPER THAN 4:1, THAT ARE NOT DIRECTED TO SWALES OR DETENTION BASINS, SHALL BE LINED WITH BIODEGRADABLE/PHOTODEGRADABLE "JUTE MATTING" (EXCELSIOR'S CURLEX II OR EQUAL). ALL OTHER SLOPES SHALL BE MULCHED AND TACKED AT A RATE OF 3-4 TONS PER ACRE. THE APPLICATION OF MULCH AND/OR JUTE MATTING SHALL NOT OCCUR OVER EXISTING SNOW COVER. IF THE SITE IS ACTIVE AFTER OCTOBER 15TH, ANY SNOW THAT ACCUMULATES ON DISTURBED AREAS SHALL BE REMOVED. PRIOR TO SPRING THAW ALL AREAS WILL BE STABILIZED, AS DIRECTED ABOVE.
2. ALL SWALES THAT DO NOT HAVE FULLY ESTABLISHED VEGETATION SHALL BE EITHER LINED WITH TEMPORARY JUTE MATTING OR TEMPORARY STONE CHECK DAMS (APPROPRIATELY SPACED). STONE CHECK DAMS WILL BE MAINTAINED THROUGHOUT THE WINTER MONTHS. IF THE SWALES ARE TO BE MATTED WITH PERMANENT LINERS OR RIPRAP WITH ENGINEERING FABRIC, THIS SHALL BE COMPLETED PRIOR TO WINTER SHUTDOWN OR AS SOON AS THEY ARE PROPERLY GRADED AND SHAPED.
3. PRIOR TO OCT. 15TH ALL ROADWAY AND PARKING AREAS SHALL BE BROUGHT UP TO AND THROUGH THE BANK RUN GRAVEL APPLICATION. IF THESE AREAS' ELEVATIONS ARE PROPOSED TO REMAIN BELOW THE PROPOSED SUBGRADE ELEVATION, THE SUBGRADE MATERIAL SHALL BE ROUGHLY CROWNED AND A 3" LAYER OF CRUSHED GRAVEL SHALL BE PLACED AND COMPACTED. THIS WILL ALLOW THE SUBGRADE TO SHED RUNOFF AND WILL REDUCE ROADWAY EROSION. THIS CRUSHED GRAVEL DOES NOT HAVE TO CONFORM TO NH DOT 304.3, BUT SHALL HAVE BETWEEN 15-25% PASSING THE #200 SIEVE AND THE LARGEST STONE SIZE SHALL BE 2". IF THE SITE IS ACTIVE AFTER OCTOBER 15TH, ANY ACCUMULATED SNOW SHALL BE REMOVED FROM ALL ROADWAY AND PARKING AREAS.
4. AFTER OCTOBER 15TH, THE END OF NEW HAMPSHIRE'S AVERAGE GROWING SEASON, NO ADDITIONAL LOAM SHALL BE SPREAD ON SIDE SLOPES AND SWALES. THE STOCKPILES THAT WILL BE LEFT UNDISTURBED UNTIL SPRING SHALL BE SEEDED BY THIS DATE. AFTER OCTOBER 15TH, ANY NEW OR DISTURBED PILES SHALL BE MULCHED AT A RATE OF 3-4 TONS PER ACRE. ALL STOCKPILES THAT WILL REMAIN THROUGHOUT THE WINTER SHALL BE SURROUNDED WITH SILT FENCING.
5. ENV-WQ 1505.06 COLD WEATHER SITE STABILIZATION (B)(1) LIMITS AREA OF EXPOSURE TO ONE ACRE OF UNSTABILIZED SOIL WITHOUT OBTAINING A WAIVER AND WINTER CONSTRUCTION PLAN.

E-102

DOVER FILE #22-55

REVISION	DATE	REVISION PER DOVER TRC COMMENT	DESCRIPTION
#1	9-1-22		

EROSION & SEDIMENT CONTROL DETAILS

LAND OF JSR, LLC

VENTURE DRIVE & QUALITY WAY

DOVER, NH

TAX MAP D, LOTS 11-5 & 11-5SND

BERRY SURVEYING & ENGINEERING

335 SECOND CROWN POINT ROAD

BARRINGTON, NH 03825 (603)332-2863

AS NOTED

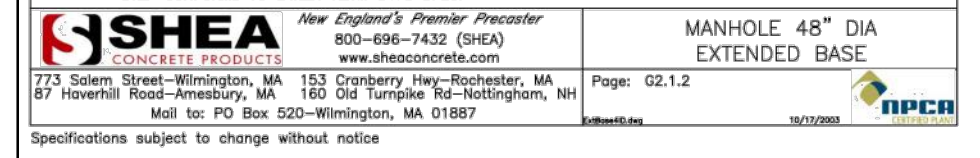
DATE : JUNE 1, 2022

FILE NO. : DB 2021 - 134

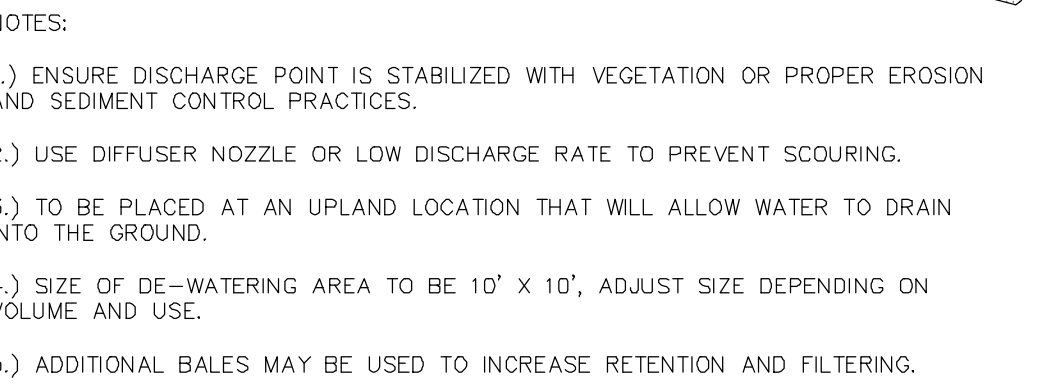
KENNETH A. BERRY

REGISTERED PROFESSIONAL ENGINEER

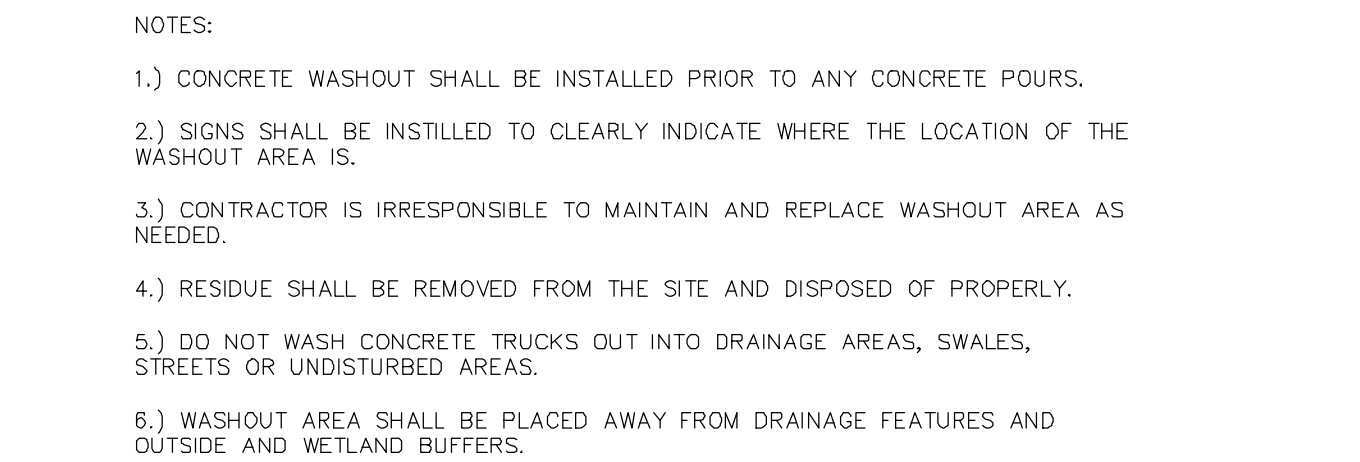
48" MANHOLE ROUND EXTENDED BASE
NOT TO SCALE



SET FILTER BAG IN TOP OF
FILTER FABRIC OR VEGETATION



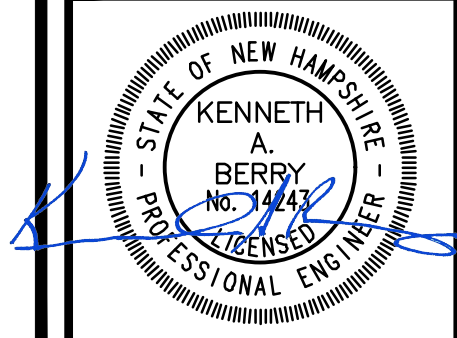
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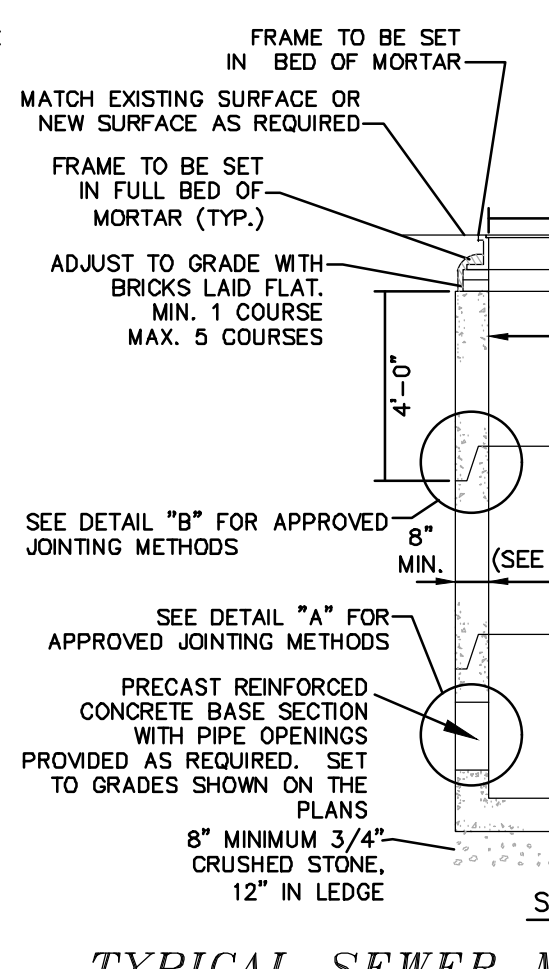
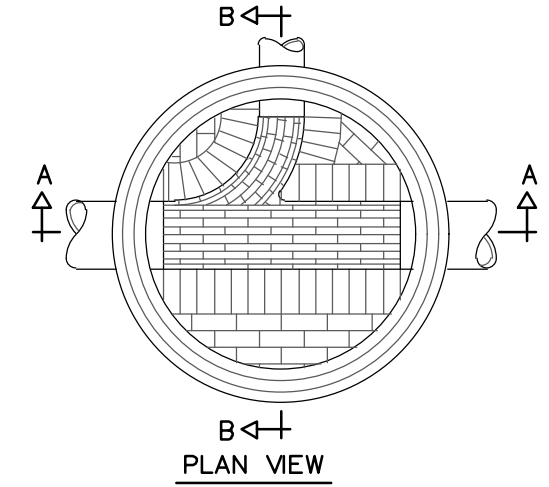
TAX MAP D, LOTS 11-5 & 11-5SND

FILE NO. : DB 2021 - 134

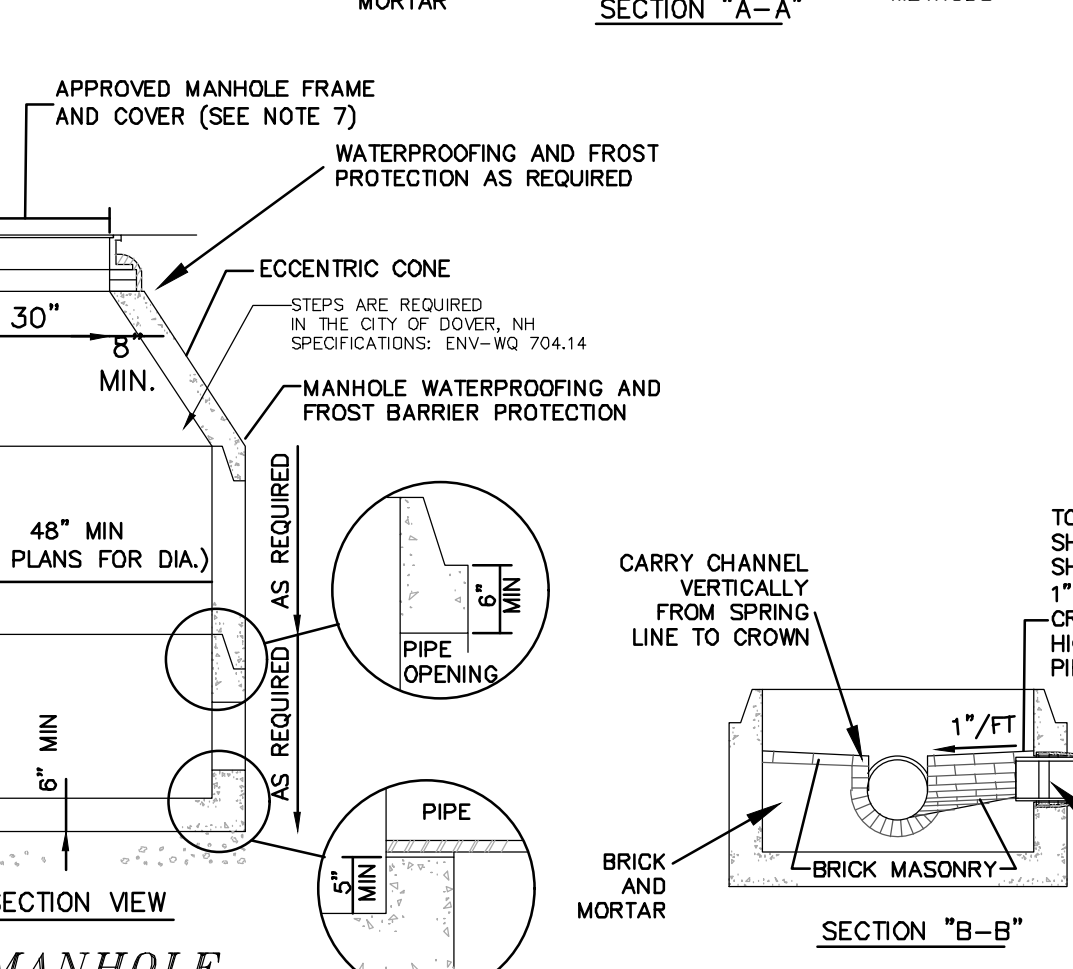
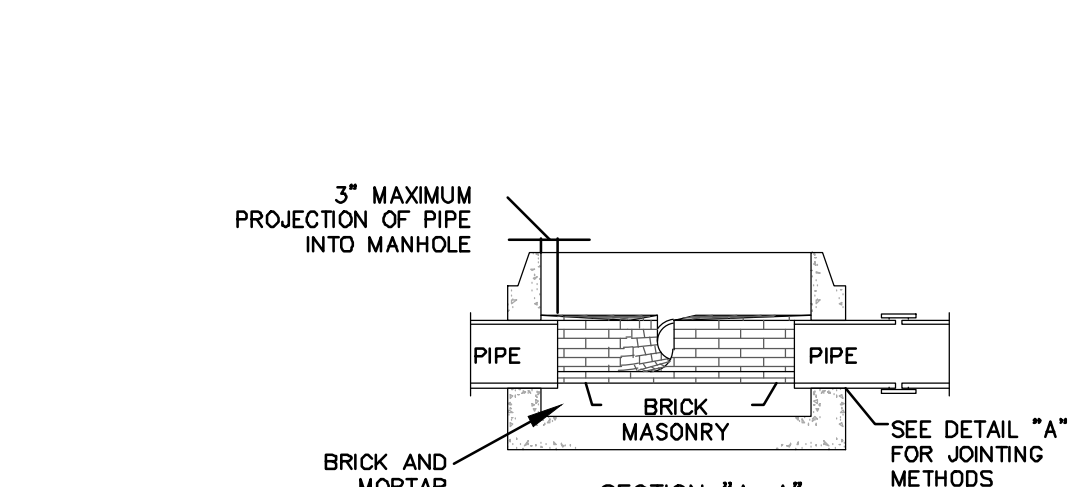


NOTES ON MANHOLE AND SEWER CONSTRUCTION:

- 1) IT IS THE INTENTION THAT THE MANHOLE, INCLUDING ALL COMPONENT PARTS, HAVE ADEQUATE SPACE, STRENGTH AND LEAKPROOF QUALITIES CONSIDERED NECESSARY FOR THE INTENDED SERVICE. SPACE REQUIREMENTS AND CONSTRUCTION SHALL BE AS SHOWN ON THE DRAWING. MANHOLES SHALL BE AN ASSEMBLY OF PRECAST SECTIONS, WITH STEEL REINFORCEMENT AND ADEQUATE JOINTING. THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND HS-20-44 LOADING, INCLUDING THE COVER. ALL SMH CONSTRUCTION AND MATERIALS WILL BE IAW ENV-WQ 704.13 ADOPTED OCTOBER 15, 2014.
- 2) BARRELS AND CONE SECTIONS SHALL BE PRECAST REINFORCED CONCRETE. (IAW ENV-WQ 704.12 (d))
- 3) SEWER MANHOLE DIAMETER SHALL BE AS INDICATED ON THE PLANS.
- 4) PRECAST CONCRETE BARREL SECTIONS, CONES AND BASES SHALL CONFORM TO ASTM C478.
- 5) GRAVITY SEWER PIPE TESTING WILL BE IN ACCORDANCE WITH ENV-WQ 704.06 AND MAN HOLE TESTING IAW ENV-WQ 704.17 DATED OCTOBER 15, 2014.
- 6) INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF THE PIPE AND FLOW. INVERT BRICKS SHALL BE LAID ON EDGE AND THE BASE SECTION SHALL BE FULL. AT CHANGES IN DIRECTIONS, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. CARE SHALL BE TAKEN TO ENSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPE TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY. (IAW ENV-WQ 704.13 (c) (9)), MORTAR SHALL CONFORM WITH REQUIREMENTS OF IAW ENV-WQ 704.13 (c).
- 7) FRAMES AND COVERS: MANHOLES FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30-INCH CLEAR OPENING. 3-INCH (MINIMUM HEIGHT) LETTERS WITH THE WORD "SEWER" SHALL BE PLAINLY CAST INTO THE CENTER OF EACH MANHOLE COVER. (IAW ENV-WQ 704.13 (c) (4-6)) SEWER MAN HOLE COVERS ARE TO PAMREX.
- 8) SHALLOW MANHOLE: IN LIEU OF A CONE SECTION, WHEN MANHOLE DEPTH IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED HAVING AN ECCENTRIC ENTRANCE OPENING AND CAPABLE OF SUPPORTING H-20 LOADS.
- 9) HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF A TYPE APPROVED BY THE DOVER DPW, WHICH TYPE SHALL, IN GENERAL, DEPEND FOR WATERTIGHTNESS UPON A DOUBLE ROW OF AN OVERLAPPING TYPE ELASTOMERIC OR MASTIC-LIKE GASKET. APPROVED ELASTOMERIC SEALANTS ARE: RAM-NEK, KENT SEAL NO. 2, EZ, OR EQUAL.
- 10) IN CROSS COUNTRY AREAS OUTSIDE OF THE PAVED ROADWAY SURFACE, THE MANHOLE FRAME ELEVATION SHALL BE A MINIMUM OF 6" ABOVE FINISHED GRADE. GRADE TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE MANHOLE. SEE TYPICAL TRENCH DETAIL ON SHEET D-102.
- 11) ALL FRAMES AND GRATES ARE TO BE U.S.A. MADE. MANHOLE STEPS ARE REQUIRED IN THIS MUNICIPALITY AND MUST CONFORM TO THE REQUIREMENTS OF ENV-WQ 704.14.
- 12) THE CONTRACTOR TO WORK WITH CITY OF DOVER REVIEW ENGINEER AND SEWER DEPARTMENT ON THE MEANS AND METHODS USED TO INSTALL ALL SEWER STRUCTURES.
- 13) ANY WORK INVOLVING THE CUTTING INTO THE EXISTING A.C. PIPE SHALL MEET THE REQUIREMENTS OF ENV-A 1800.
- 14) THE "CITY OF DOVER, NEW HAMPSHIRE, DEPARTMENT OF COMMUNITY SERVICES, CONSTRUCTION GUIDELINES, PERMITS, RULES, AND REGULATIONS" (DATED MARCH 13, 2018) ARE A PART OF THE CONSTRUCTION DETAILS AND TO BE FOLLOWED.
- 15) MANHOLES SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST IN ACCORDANCE WITH THE ASTM C1244 STANDARD AND ENV-WQ 704.17.



TYPICAL SEWER MANHOLE
NOT TO SCALE



U1

U2

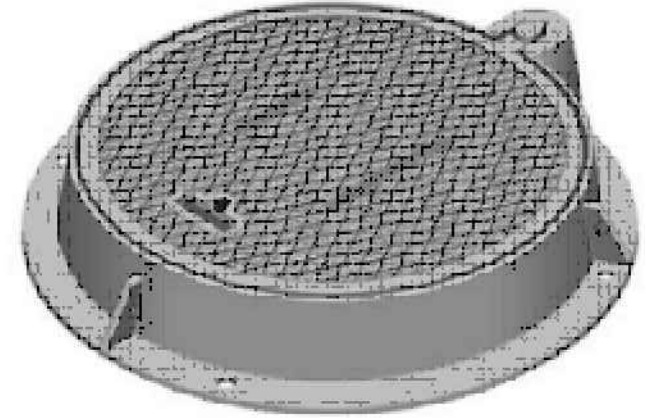
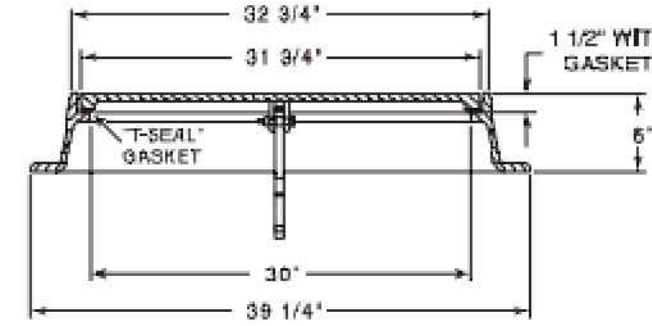
R-1743-LM
LiftMate Frame,
Solid Gasketed Lid

Heavy Duty

Furnished with four 1" anchor holes on 36-7/8" diameter bolt circle.

Hinge plug available for self-seal application.

See p. 13 for LiftMate information.

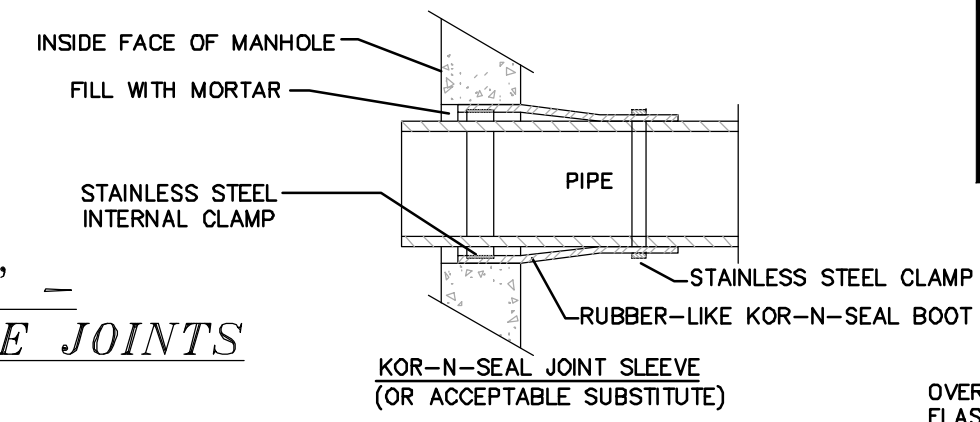


SEWER MANHOLE FRAME AND GRATE WILL BE LIFTMATE R-1743-LM, OR APPROVED EQUAL, 32 INCH OPENING, CAST IRON, H20 LOADING.

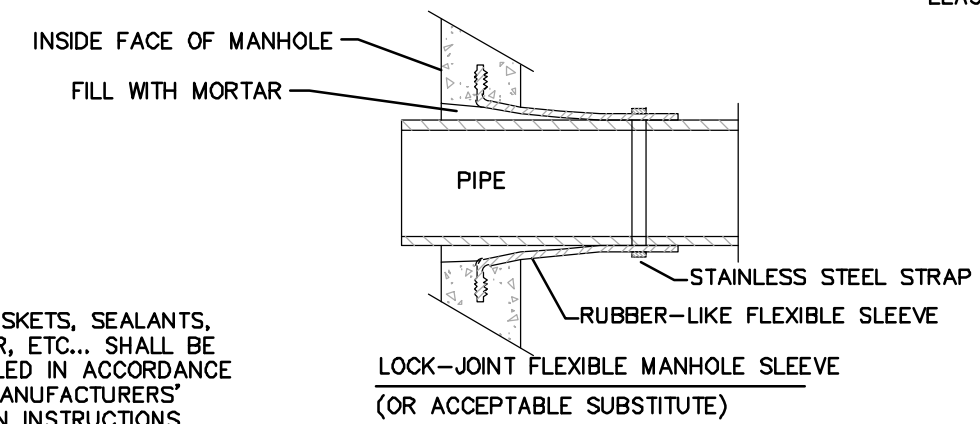
SEWER MANHOLE COVER DETAIL
NOT TO SCALE

U3

DETAIL "A" -
PIPE TO MANHOLE JOINTS
NOT TO SCALE



DETAIL "B" HORIZONTAL JOINTS
NOT TO SCALE

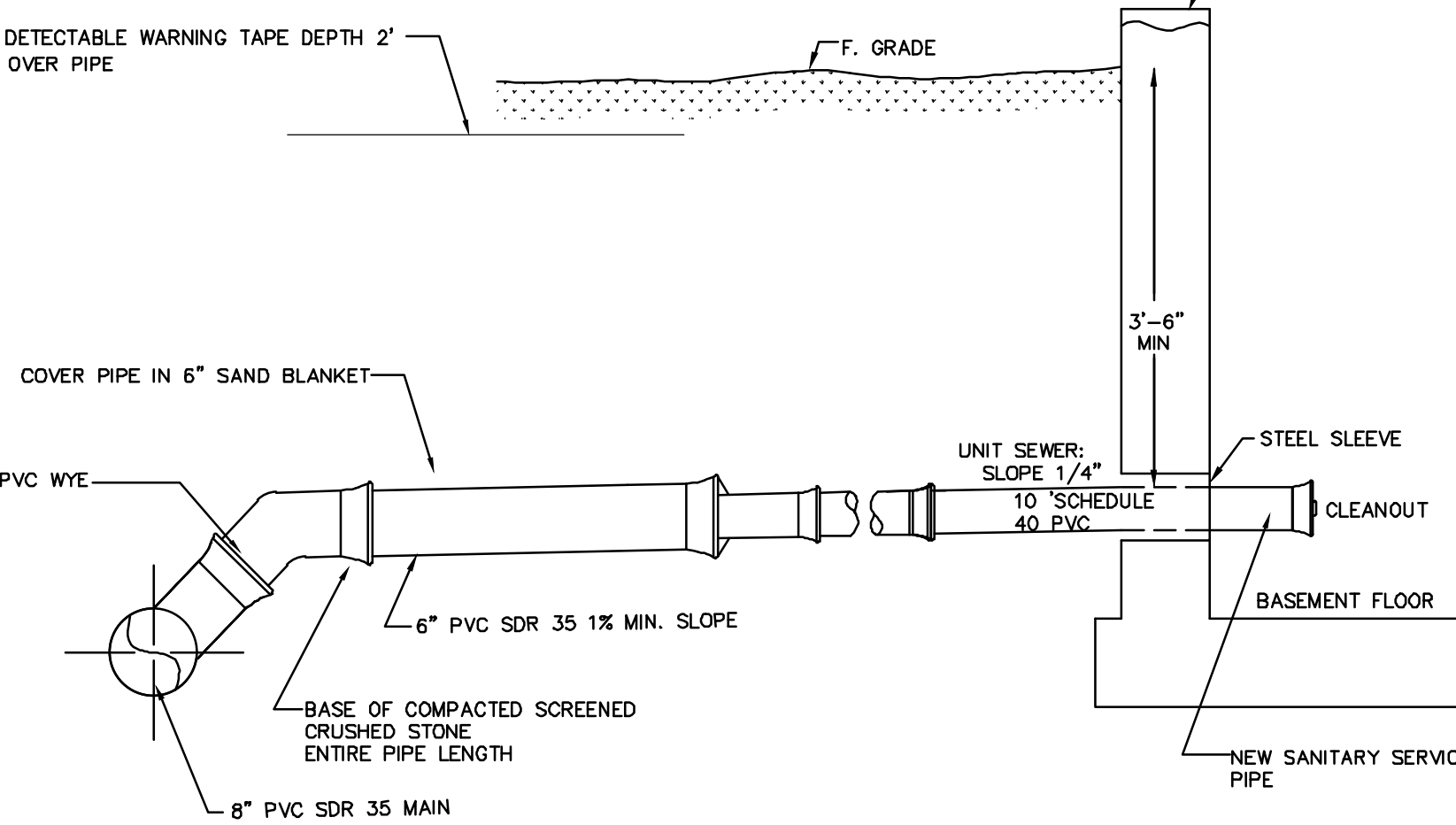


NOTE:
ALL GASKETS AND SEALANTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS.

ELASTOMERIC SEALANT

U4

DETECTABLE WARNING TAPE DEPTH 2' OVER PIPE

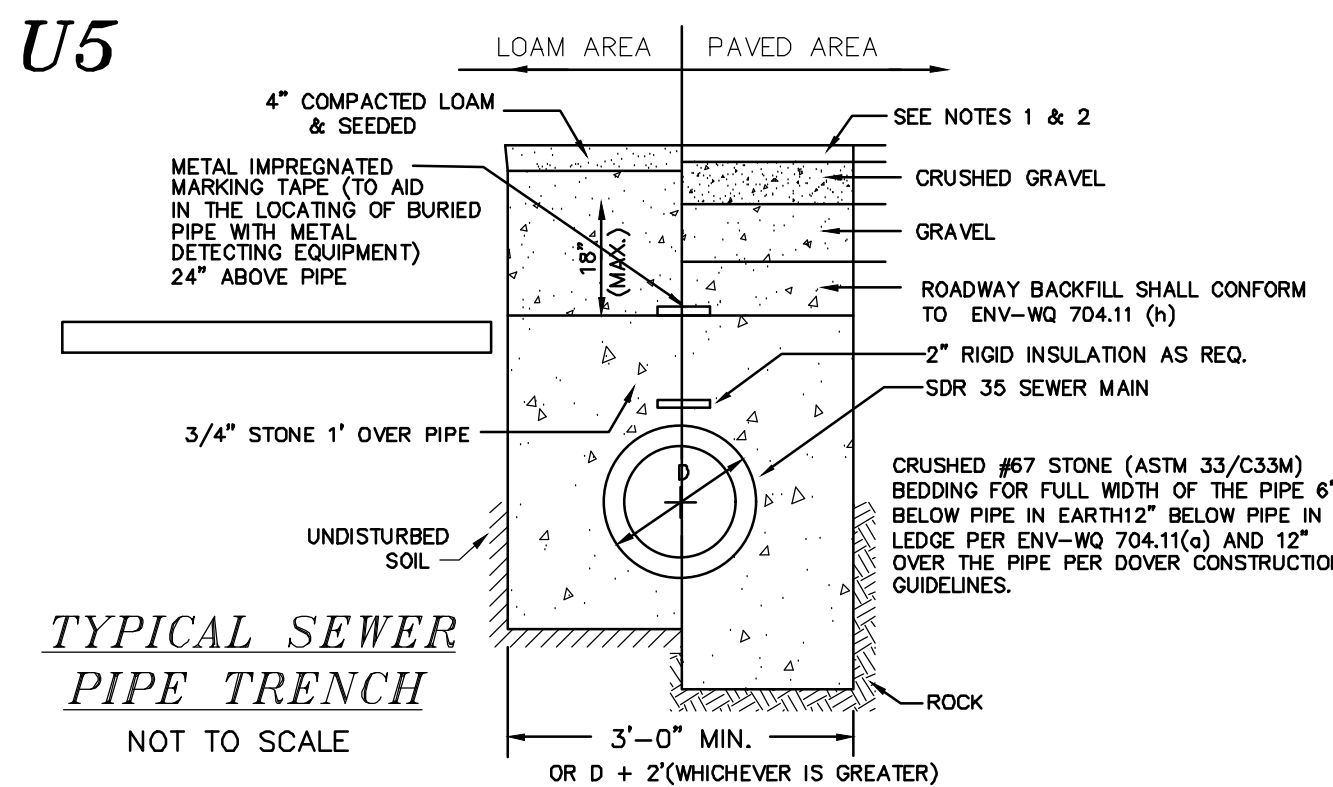


DETAIL OF UNIT SEWER SERVICE
NOT TO SCALE

- 1) SEE DETAILS FOR SERVICE CONNECTION REQUIREMENTS
- 2) SERVICE CONNECTION SHALL BE INSTALLED BELOW WATER MAIN WHERE POSSIBLE.
- 3) CLEANOUTS SHALL BE INSTALLED INSIDE EACH BUILDING EXIT POINT

U5

TYPICAL SEWER PIPE TRENCH
NOT TO SCALE

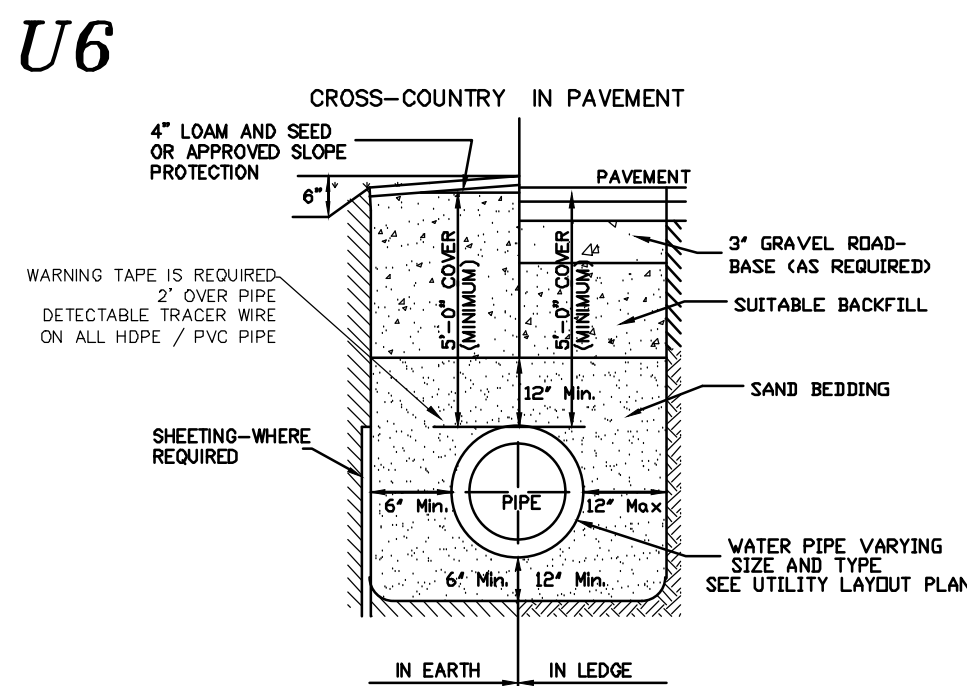


NOTE:

1. PAVEMENT REPAIR IN EXISTING ROADWAYS SHALL CONFORM TO STREET OPENING REGULATIONS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM TO SUBDIVISION SPEC'S.
3. ANTI-SLEEP COLLARS OR CLAY CHECK DAMS ON STEEP RUNS IN WET CONDITIONS.
4. ALL SEWER INSTALLATIONS SHALL CONFORM TO THE REQUIREMENTS OF NHDES & MUNICIPAL DPW SEWER DIVISION STANDARDS. ALL PVC SEWER PIPE IS TO CONFORM WITH ENV-WQ 704.05 (c)-(e) AND CONFORM WITH ASTM D3034. PVC JOINT SEALS SHALL CONFORM WITH ASTM D3121. SDR-21 PVC FORCE MAIN PIPE MATERIAL IS REQUIRED IN LOCATIONS AS SHOWN. SDR-21 PVC FORCE MAIN PIPE WILL CONFORM TO ENV-WQ 704.08.

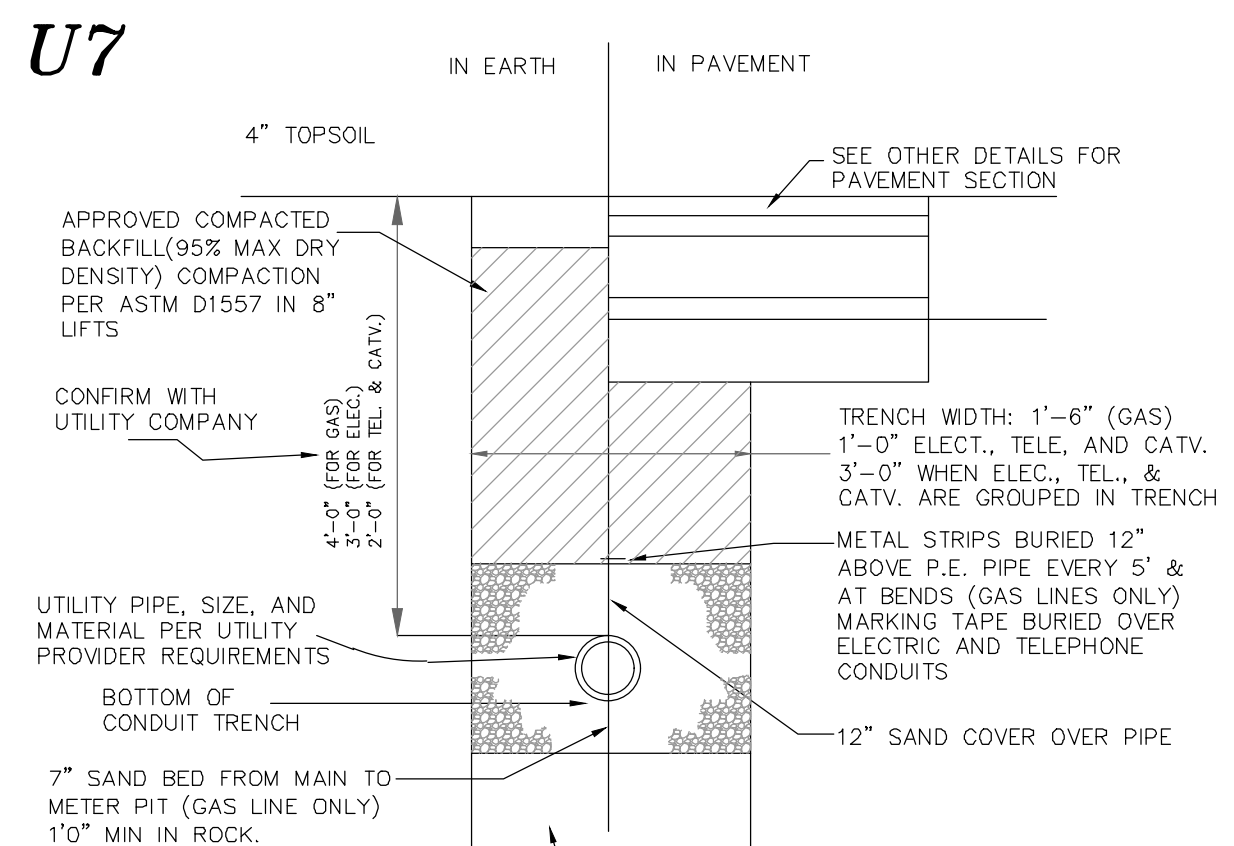
U6

TYPICAL TRENCH DETAIL FOR WATER SYSTEM
NOT TO SCALE



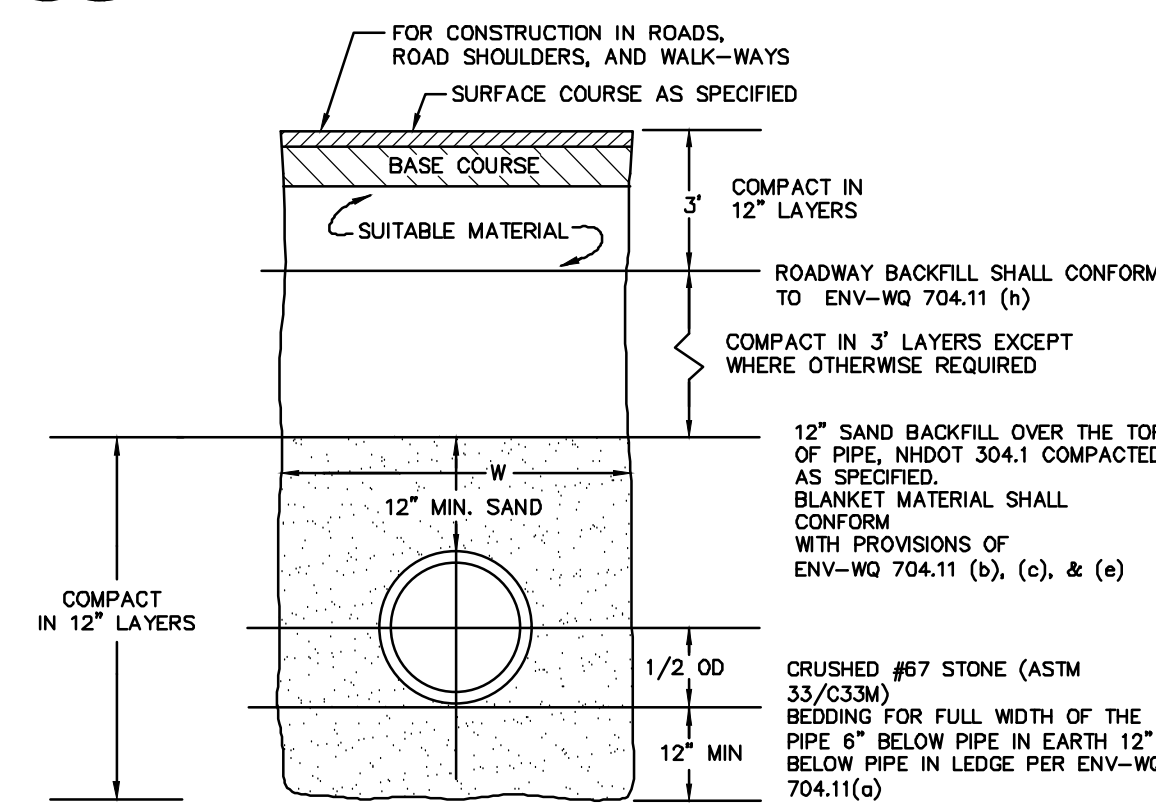
U7

ELECTRICAL, TELEPHONE, AND GAS TRENCH
NOT TO SCALE

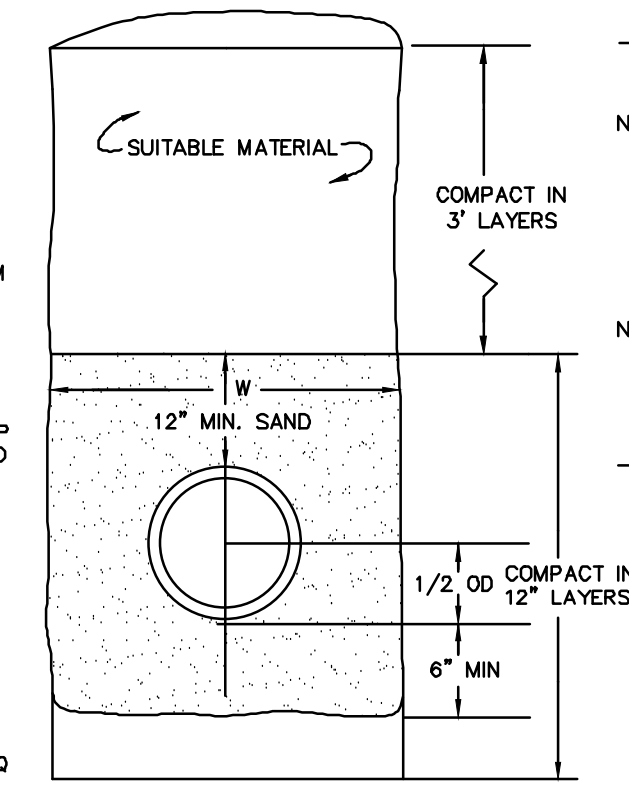


U8

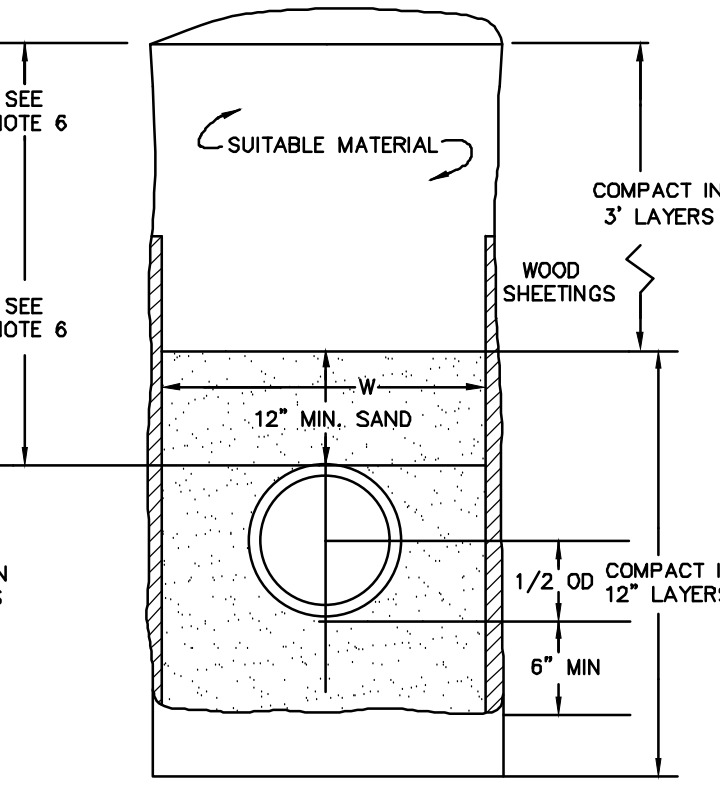
SEWER TRENCH SHALL BE MARKED WITH METAL WIRE OR TAPE.



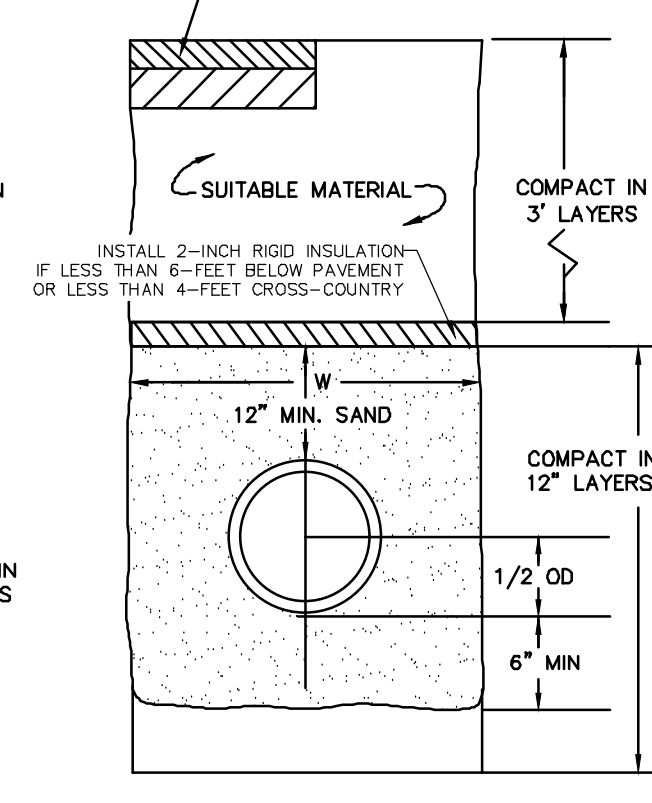
LEDGE CONSTRUCTION
NOT TO SCALE



EARTH CONSTRUCTION
NOT TO SCALE



EARTH CONSTRUCTION WITH SHEETING
NOT TO SCALE



TRENCH INSULATION
NOT TO SCALE

U-101

DOVER FILE #22-55

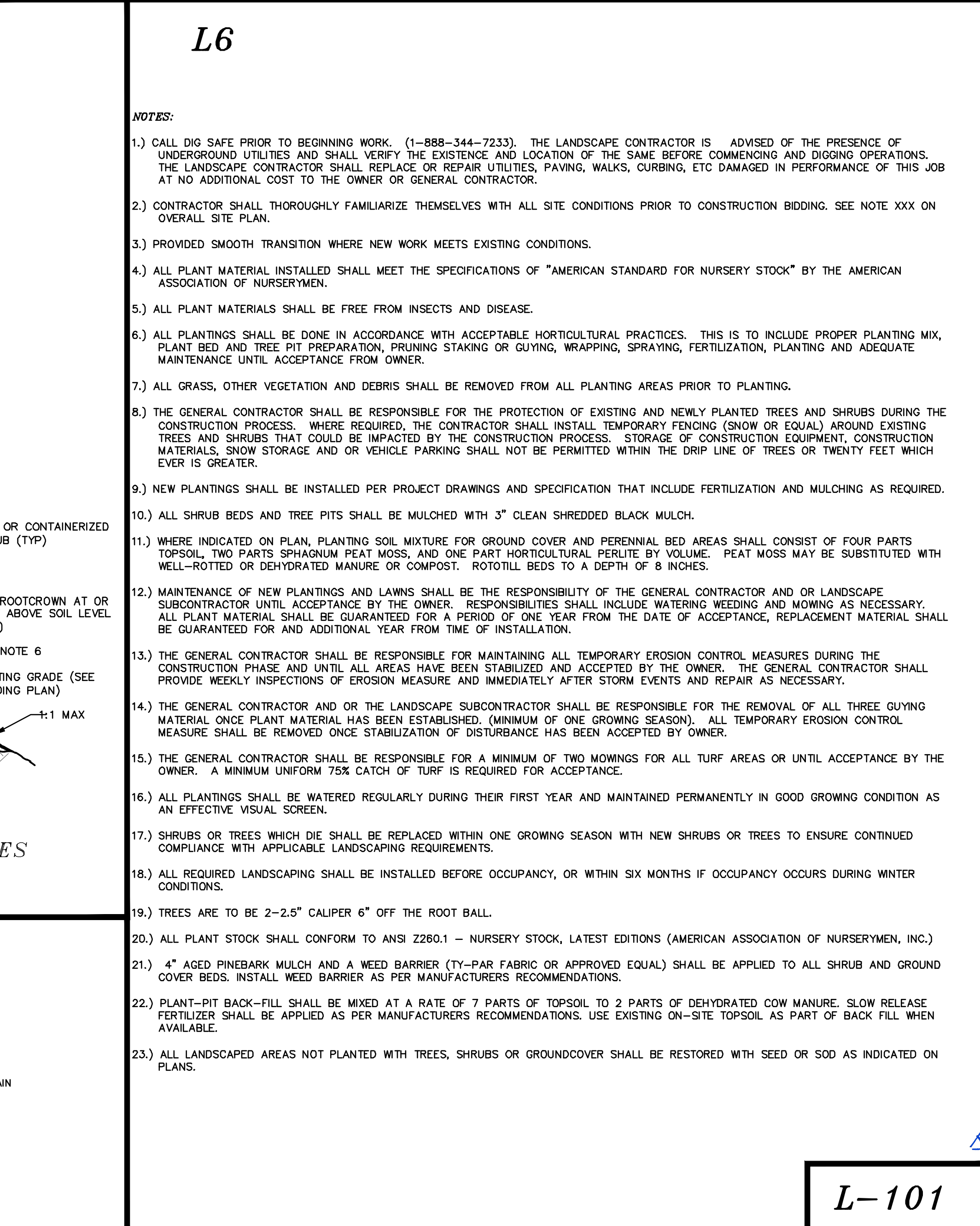
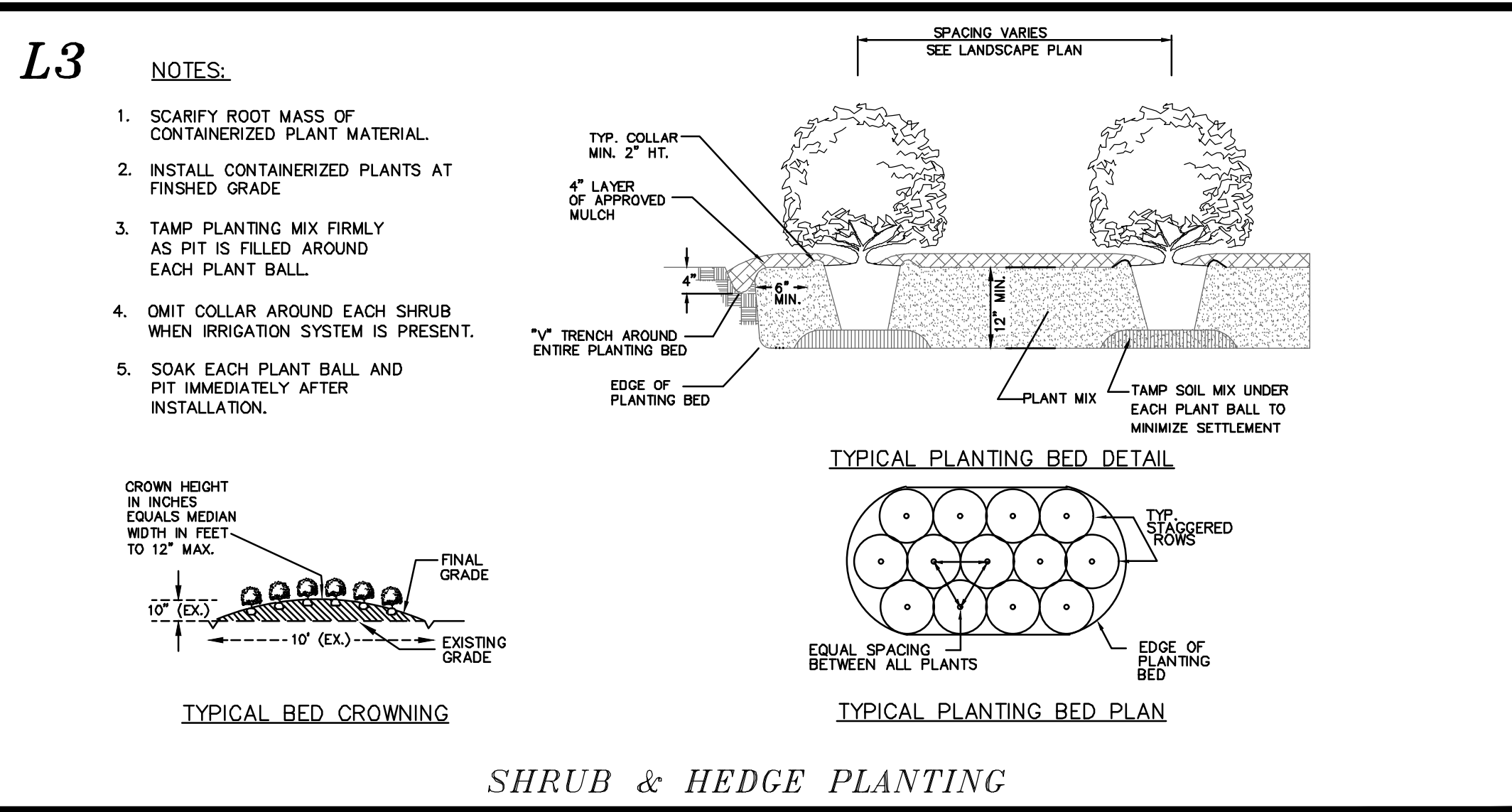
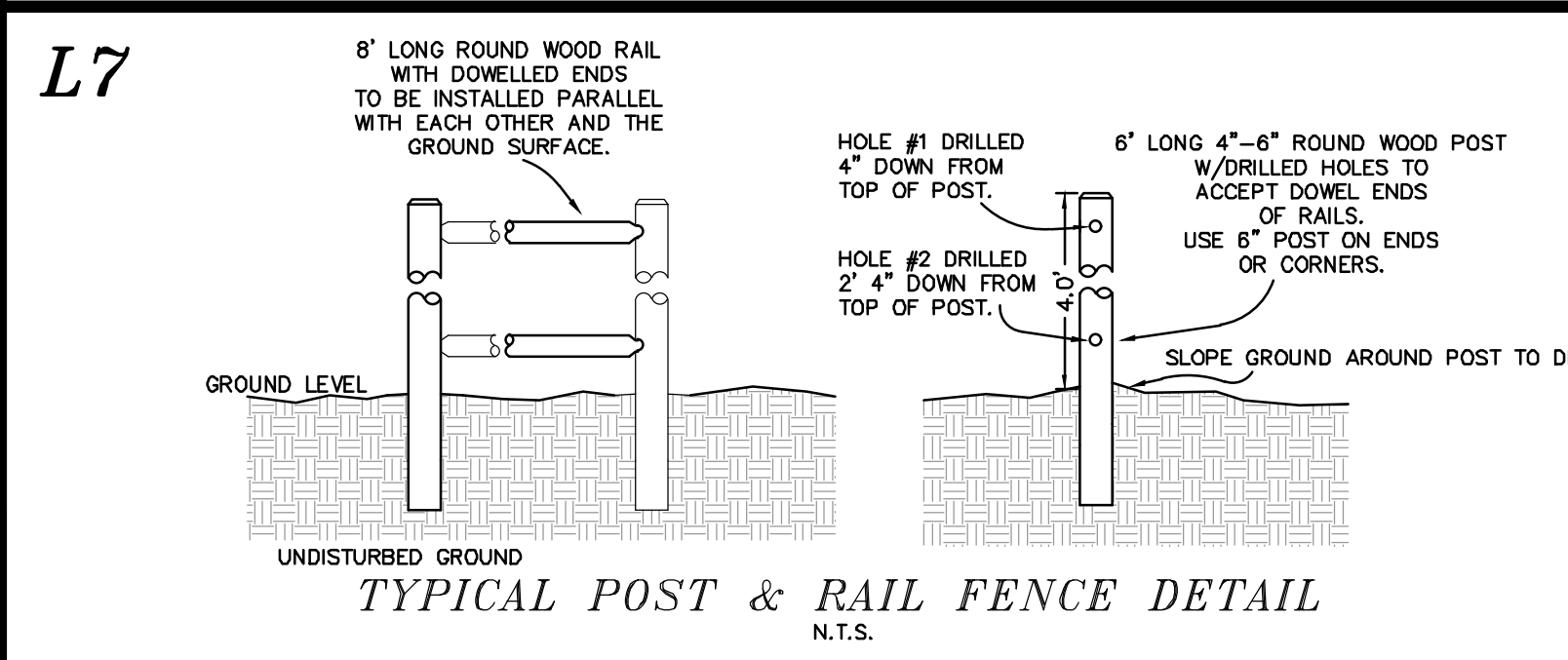
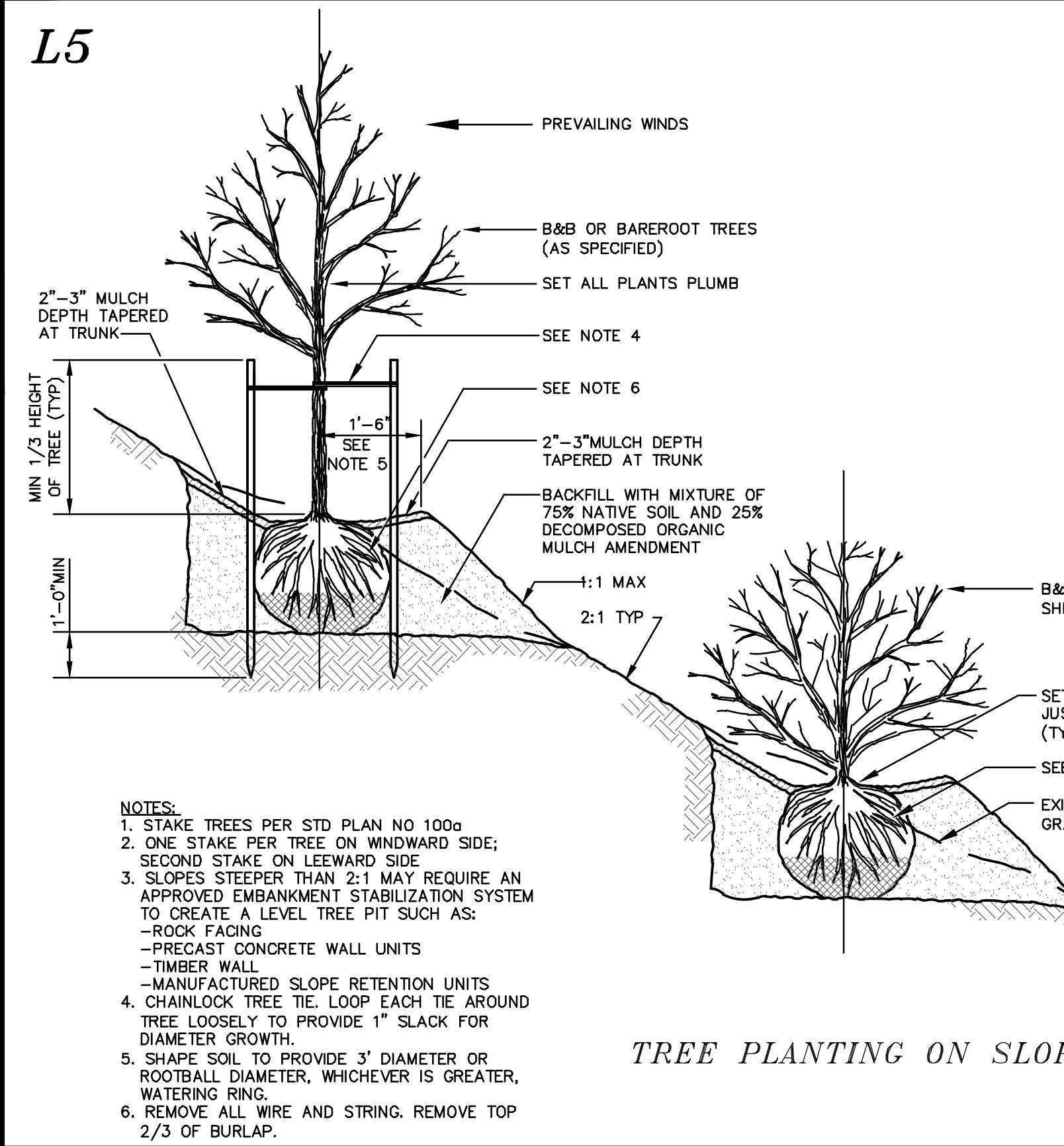
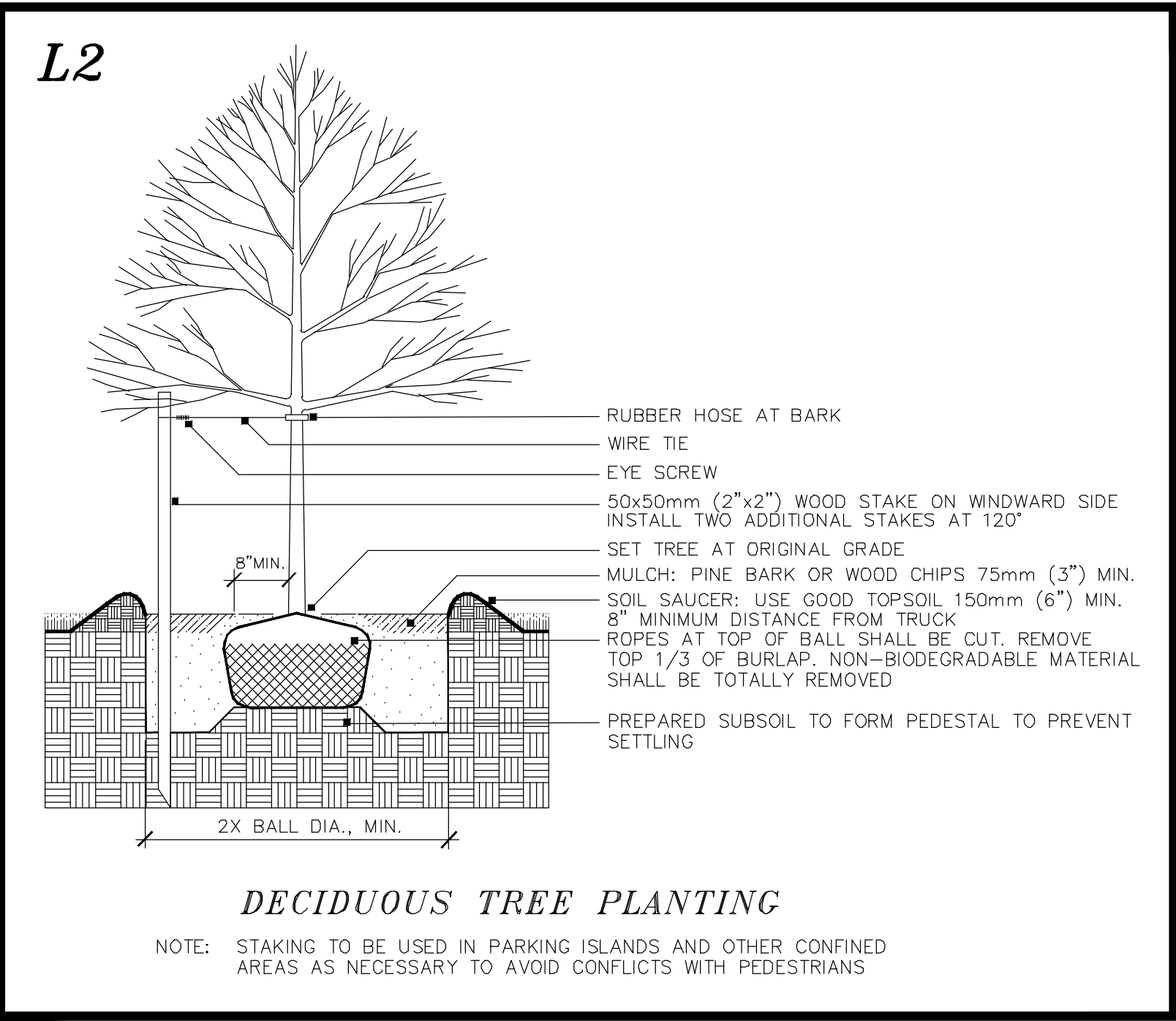
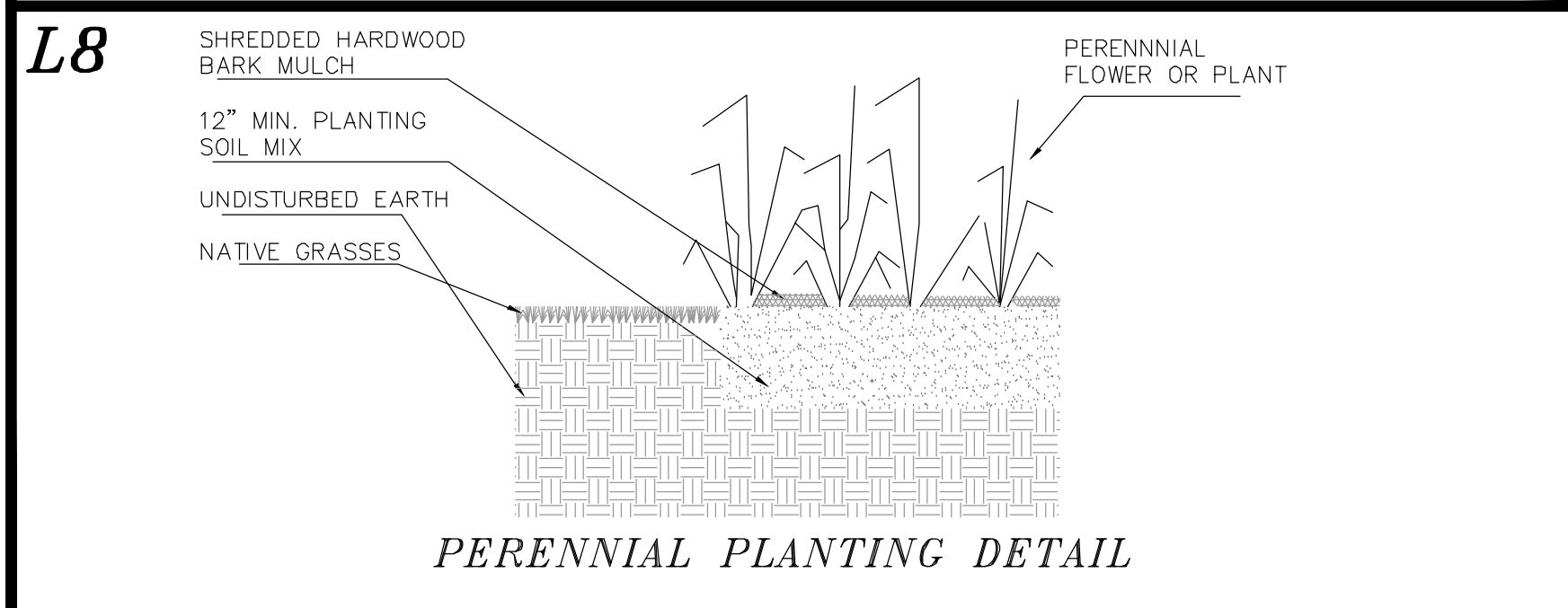
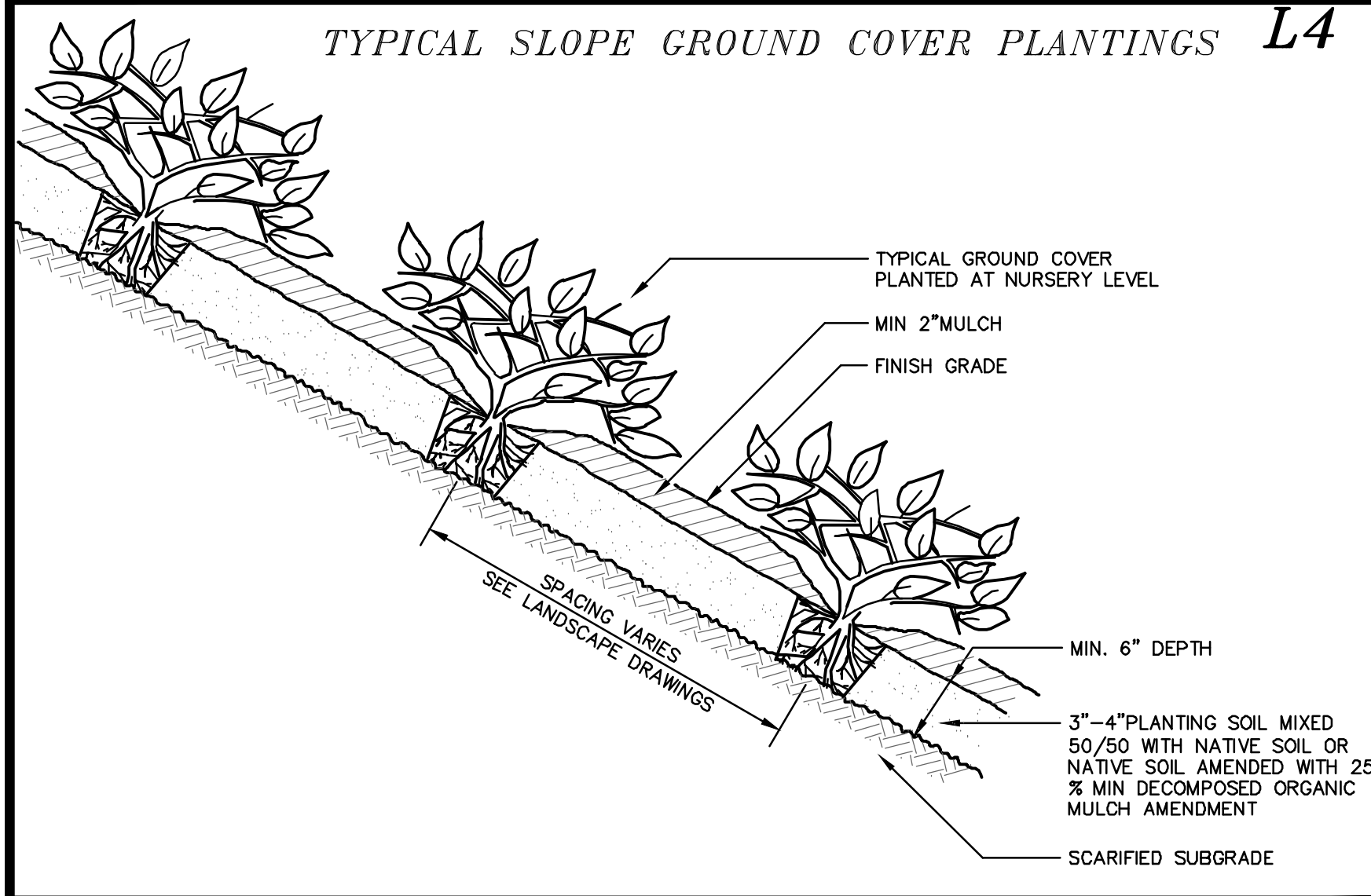
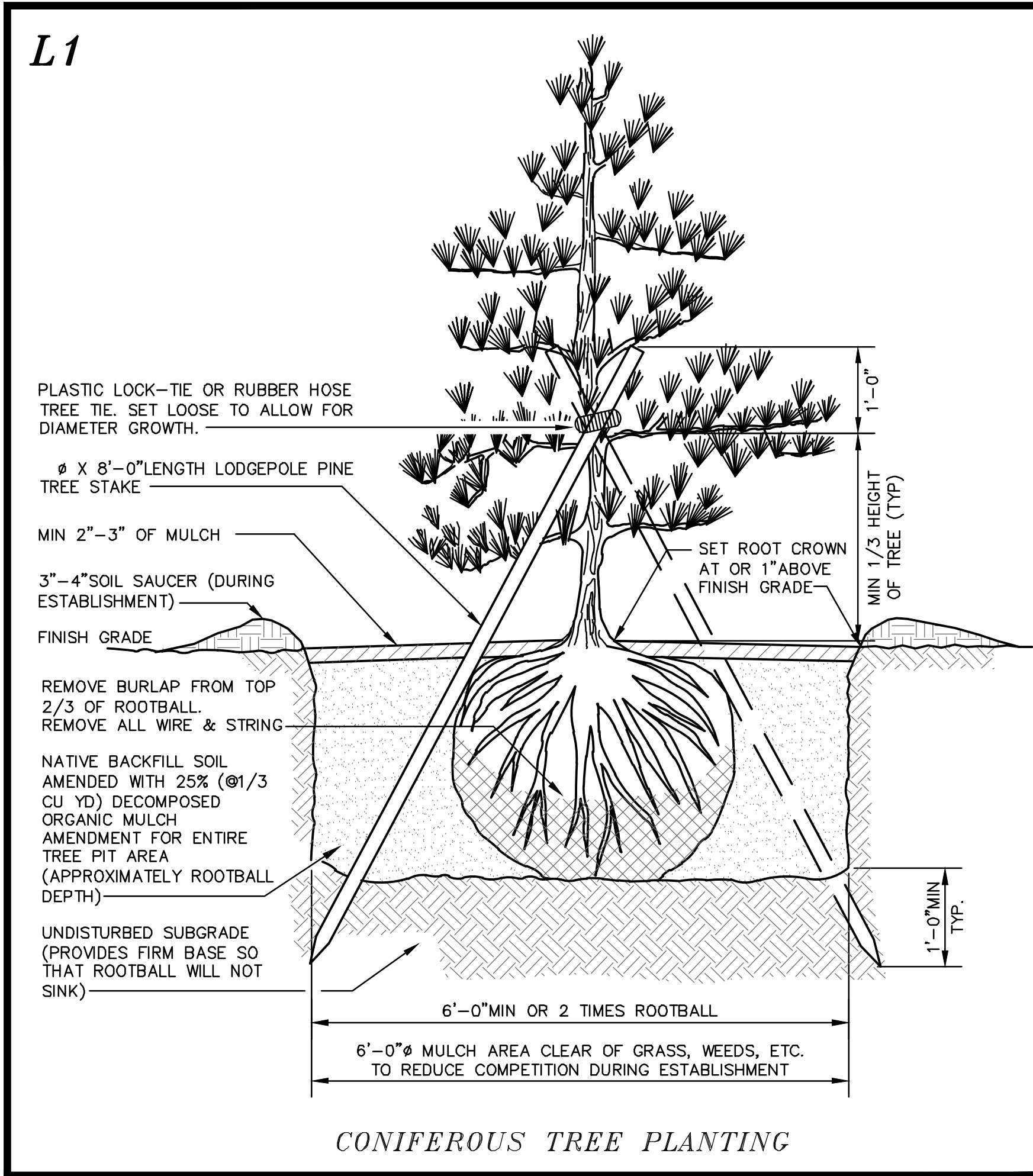
REVISION	DATE	DESCRIPTION
#1	9-1-22	REVISED PER DOVER TRC COMMENT

UTILITY DETAILS
LAND OF
JSR, LLC
VENTURE DRIVE & QUALITY WAY
DOVER, NH
TAX MAP D, LOTS 11-5 & 11-5SND

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863
AS NOTED
DATE : JUNE 1, 2022
FILE NO. : DB 2021 - 134

KENNETH A. BERRY
REGISTERED PROFESSIONAL ENGINEER
NO. 7443

SHEET 24 OF 27



DOVER FILE #P22-55

REVISION	DATE	REVISOR	DESCRIPTION
#1	9-1-22		

LANDSCAPING DETAILS

LAND OF JSR, LLC

VENTURE DRIVE & QUALITY WAY

DOVER, NH

TAX MAP D, LOTS 11-5 & 11-5SND

BERRY SURVEYING & ENGINEERING

335 SECOND CROWN POINT ROAD

BARRINGTON, NH 03825 (603)332-2863

AS NOTED

DATE : JUNE 1, 2022

FILE NO. : DB 2021 - 134

KENNETH A. BERRY

PROFESSIONAL ENGINEER

STATE OF NEW HAMPSHIRE

L-101

SHEET 25 OF 27



AMERICAN BUMBLE BEE

IDENTIFICATION/DESCRIPTION:

BOMBUS PENNSYLVANICUS IS A LARGE BUMBLE BEE WITH THE QUEEN MEASURING 1 IN, THE WORKER FROM 0.5 IN, AND THE MALE FROM 0.75 IN IN LENGTH. THE QUEEN IS MOSTLY BLACK, INCLUDING THE LEGS, SPURS AND TEGULAE (BASE OF WING). TERGITE 1, OR THE MOST ANTERIOR BACK PORTION OF THE QUEEN IS OFTEN YELLOW ESPECIALLY IN THE MIDDLE. WORKER BEES' MIDDLE TERGITES ARE YELLOW, THE TAIL BLACK, AND FACE LONG. THEIR CHEEKS ARE SLIGHTLY LONGER THAN BROAD, AND THE CLYPEUS (NOSE) HAS LARGE PUNCTURES EXCEPT ON THE MID LINE. THE HAIR ON THE TOP OF THE HEAD IS BLACK, SHORT AND EVEN. MALES HAVE A YELLOW ABDOMEN WITH A BLACK HEAD AND BLACK STRIPING IN THE LOWER THORAX.



BLANDINGS TURTLE

IDENTIFICATION/DESCRIPTION:

A 7- TO 9-INCH TURTLE WITH YELLOW SPECKLES THAT OFTEN RUN TOGETHER TO FORM STREAKS ON THE CARAPACE. EASILY IDENTIFIED WHEN BASKING FROM ITS CHARACTERISTIC YELLOW THROAT AND CHIN.



NORTHERN BLACK RACER

IDENTIFICATION/DESCRIPTION:

A SLENDER BLACK SNAKE MEASURING 36-60 INCHES. BLACK RACERS ARE GLOSSY BLACK ON THE TOP AND BOTTOM WITH A WHITE THROAT AND CHIN. YOUNG RACERS ARE PATTERNED WITH BROWN OR REDDISH PATCHES ON A LIGHTER BASE OF GRAY.



SMOOTH GREEN SNAKE

IDENTIFICATION/DESCRIPTION:

A THIN, SLENDER BRIGHT-GREEN SNAKE MEASURING 10-20 INCHES. THE UNDERSIDE IS WHITE OR A PALE YELLOW.



LITTLE BROWN BAT

IDENTIFICATION/DESCRIPTION:

THE LITTLE BROWN BAT IS A SMALL MAMMAL WITH A BODY LENGTH OF 2 1/2 - 4" AND WEIGHING APPROXIMATELY 1/8 TO 1/2 AN OUNCE. THE WINGSPAN OF LITTLE BROWN BATS RANGE FROM 9 - 11". BATS ARE THE ONLY MAMMALS THAT ENGAGE IN TRULY ACTIVE FLIGHT. AS THEIR NAME SUGGESTS THEY ARE GLOSSY BROWN ABOVE WITH A LIGHTER GRAY COLOR BELOW. THESE BATS CAN LIVE 20 TO 30 YEARS.



NORTHERN LONG-EARED BAT

IDENTIFICATION/DESCRIPTION:

THE NORTHERN LONG-EARED BAT IS A MEDIUM-SIZED BAT WITH A BODY LENGTH OF 3 TO 3.7 INCHES BUT A WINGSPAN OF 9 TO 10 INCHES. THEIR FUR COLOR CAN BE MEDIUM TO DARK BROWN ON THE BACK AND TAWNY TO PALE-BROWN ON THE UNDERSIDE. AS ITS NAME SUGGESTS, THIS BAT IS DISTINGUISHED BY ITS LONG EARS, PARTICULARLY AS COMPARED TO OTHER BATS IN ITS GENUS, MYOTIS



EASTERN SMALL-FOOTED BAT

IDENTIFICATION/DESCRIPTION:

THE EASTERN SMALL-FOOTED BAT HAS BROWNISH FUR, OFTEN WITH A GOLDEN SHEEN, THAT CONTRASTS WITH ITS BLACKISH FACE AND EARS, AND BLACKISH-BROWN WINGS AND TAIL MEMBRANE. IT CAN BE DISTINGUISHED FROM OTHER MYOTIS SPECIES BY ITS BLACK MASK AND SMALL SIZE. THE BODY IS LITTLE MORE THAN 3/2 INCHES LONG, INCLUDING A 1 1/2-INCH TAIL. ITS SMALL FEET, WHICH PROVIDE THE COMMON NAME, ARE LESS THAN A HALF-INCH AND ITS WINGSPAN RANGES FROM 8 1/4 TO 9 1/4 INCHES. THIS SPECIES FLIES SLOWLY AND ERRATICALLY, USUALLY ABOUT ONE TO THREE YARDS ABOVE THE GROUND.



SILVER HAIRED BAT

IDENTIFICATION/DESCRIPTION:

THE SILVER-HAIRED BAT IS A MEDIUM-SIZED BAT WITH VERY DARK FUR TIPPED WITH SILVER OR WHITE. THE WINGS AND TAIL MEMBRANE ARE BLACK. EARS ARE SHORT AND ROUND WITH A SHORT, BLUNT-TIPPED TRAGUS. THE DORSAL SURFACE OF THE TAIL MEMBRANE IS PARTIALLY FURRED AND THE CALCAR LACKS A KEEL



TRI-COLORED BAT

IDENTIFICATION/DESCRIPTION:

THE TRICOLORED BAT, FORMERLY KNOWN AS THE EASTERN PIPISTRELLE (PIPISTRELLUS SUBFLAVUS), IS A SMALL BAT WEIGHING 0.2 TO 0.3 OUNCES (5 TO 8 GR) AND HAS A WINGSPAN OF 8 TO 10 INCHES. THE TERM "TRICOLORED" REFERS TO THE BATS YELLOWISH-BROWN COAT THAT IS DARK AT THE BASE, YELLOWISH-BROWN IN THE MIDDLE, AND DARK AT THE TIPS. THE WING MEMBRANES ARE BLACKISH, BUT THE FACE AND EARS HAVE A PINKISH COLOR. AN OBVIOUS IDENTIFYING CHARACTERISTIC OF THIS SPECIES IS THE PINK COLOR OF THE SKIN ON THE RADIUS BONE. THE FEET ARE ALSO RELATIVELY LARGE COMPARED TO ITS BODY SIZE.



SPOTTED TURTLE

IDENTIFICATION/DESCRIPTION:

A SMALL 3-5 INCH TURTLE RECOGNIZED BY NUMEROUS YELLOW SPOTS COVERING A DARK CARAPACE. THE NUMBER OF SPOTS IS VARIABLE. SPOTS CAN ALSO BE FOUND ON THE HEAD AND LIMBS.



WOOD TURTLE

IDENTIFICATION/DESCRIPTION:

A 5-8 INCH TURTLE CHARACTERIZED BY ITS HIGHLY SCULPTED SHELL WHERE EACH LARGE SCUTE TAKES AN IRREGULAR PYRAMIDAL SHAPE. THE NECK AND FORELIMBS ARE ORANGE.

NEW HAMPSHIRE FISH AND GAME NOTES:

1.) ALL OBSERVATIONS OF THREATENED OR ENDANGERED SPECIES SHALL BE REPORTED IMMEDIATELY TO THE NEW HAMPSHIRE FISH AND GAME DEPARTMENT NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM BY PHONE AT 603-271-2461 AND BY EMAIL AT NHFGRVIEW@WILDLIFE.NH.GOV. EMAIL SUBJECT LINE: WILDLIFE SPECIES OBSERVATION. SPECIES, VENTURE DRIVE/QUALITY WAY DOVER, NH. PHOTOGRAPHS SHALL BE PROVIDED FOR VERIFICATION AS FEASIBLE

2.) IN THE EVENT A THREATENED OR ENDANGERED SPECIES IS OBSERVED ON THE PROJECT SITE DURING THE TERM OF THE PERMIT, THE SPECIES SHALL NOT BE DISTURBED, HANDLED, OR HARMED IN ANY WAY PRIOR TO CONSULTATION WITH NHFG AND IMPLEMENTATION OF CORRECTIVE ACTIONS RECOMMENDED BY NHFG, IF ANY, TO ASSURE THE PROJECT DOES NOT APPRECIABLY JEOPARDIZE THE CONTINUED EXISTENCE OF THREATENED AND ENDANGERED SPECIES AS DEFINED IN FIS 1002.04. THE NEW HAMPSHIRE FISH AND GAME DEPARTMENT SHALL HAVE ACCESS TO THE PROPERTY DURING THE TERM OF THE PERMIT.

DOVER FILE #P22-55

REVISION	DATE	DESCRIPTION
#1	9-1-22	REVISED PER DOVER TRC COMMENT

WILDLIFE IDENTIFICATION PLAN

LAND OF JSR, LLC

VENTURE DRIVE & QUALITY WAY DOVER, NH

TAX MAP D, LOTS 11-5 & 11-5SND

BERRY SURVEYING & ENGINEERING

335 SECOND CROWN POINT ROAD

BARRINGTON, NH 03825 (603)332-2863

SCALE : NONE

DATE : JUNE 1, 2022

FILE NO. : DB 2021 - 134

STATE OF NEW HAMPSHIRE

KENNETH A. BERRY

REGISTERED PROFESSIONAL ENGINEER

W-101

SHEET 26 OF 27

Vehicle Trailer Path

Description: Aerial Ladder

Wheel Width: 8.167

Wheel Length: 17.200

Vehicle Width: 8.167

Front Overhang: 15.45

Rear Overhang: 15.05

Tire Diameter: 3.33

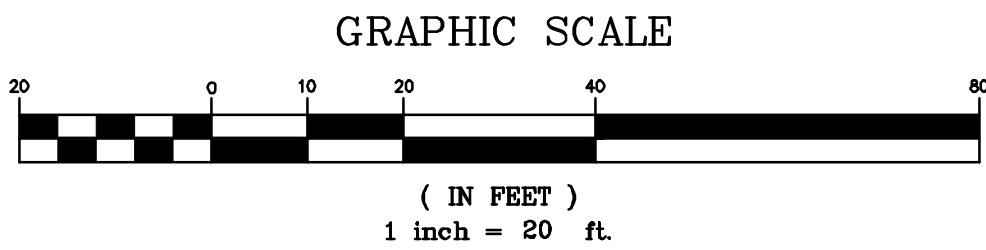
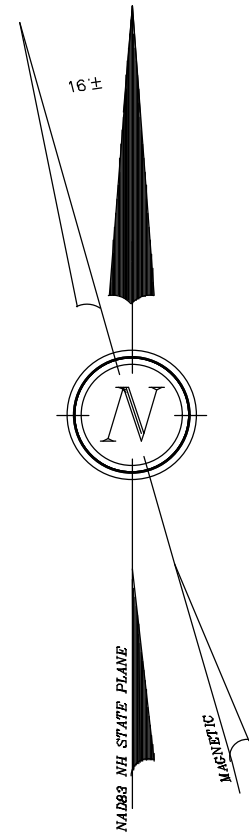
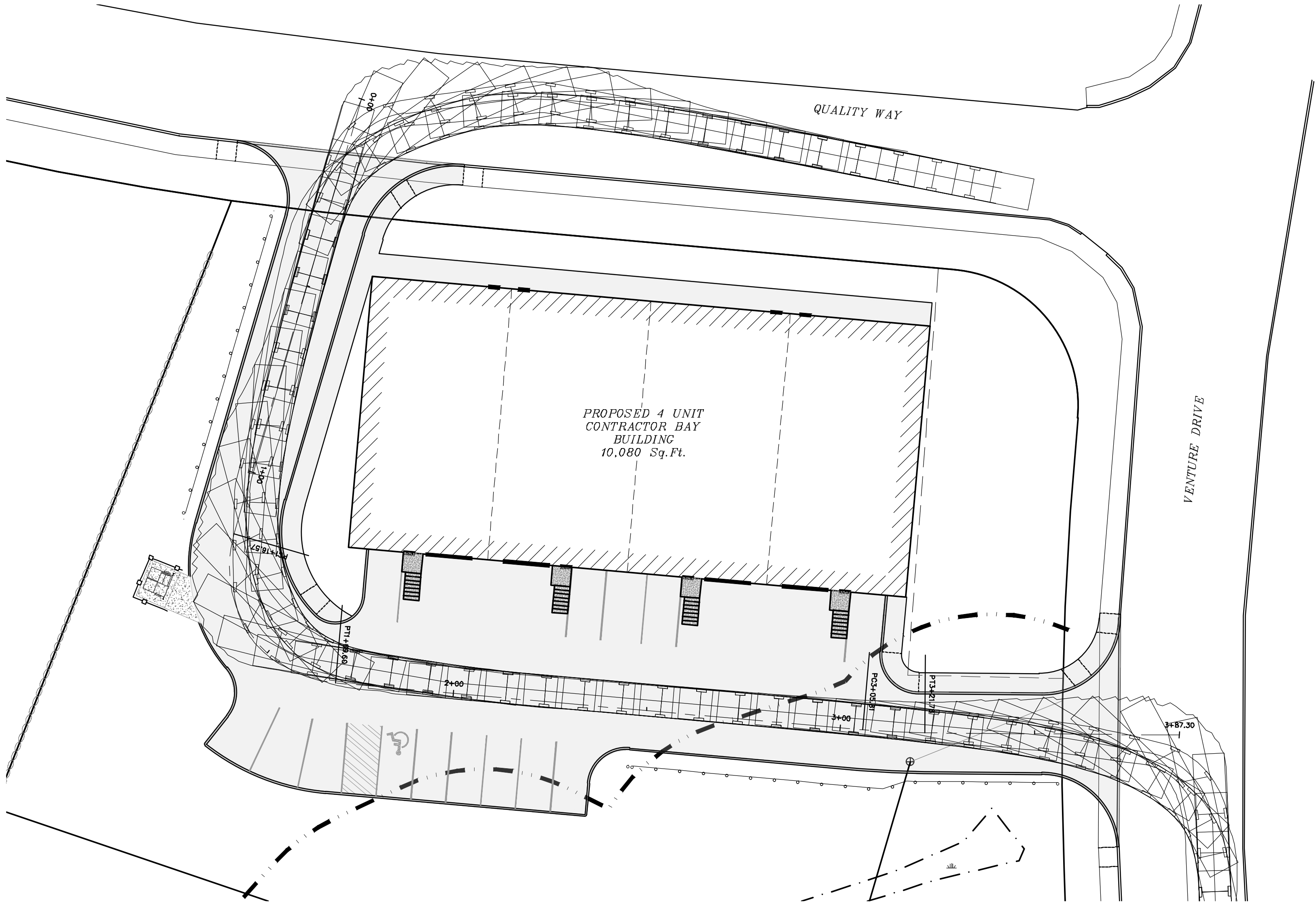
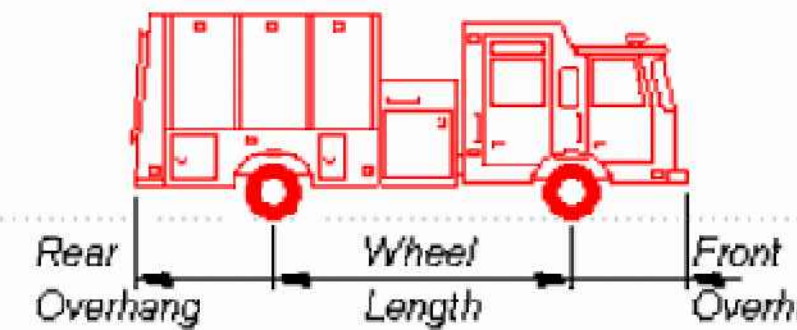
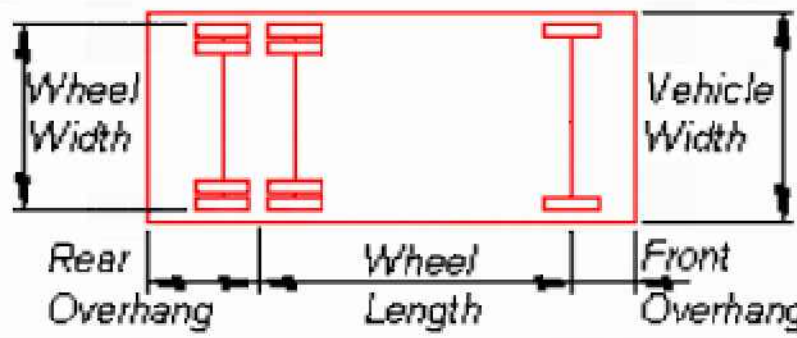
Rear Axle Count: 2

Rear Axle Offset: 4.2

Section Type: Fire Truck

Section Symbol: [] Set

Draw Plan Icon Draw Section Icon



BERRY SURVEYING & ENGINEERING

335 SECOND CROWN POINT ROAD

BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.

DATE : JUNE 1, 2022

FILE NO. : DB 2021 - 134

SEAL

KENNETH A. BERRY

REGISTERED PROFESSIONAL ENGINEER

DOVER FIRE TRUCK TURNING TEMPLATE			
LAND OF JSR, LLC			
VENTURE DRIVE & QUALITY WAY			
DOVER, N.H.			
TAX MAP D, LOTS 11-5 & 11-5SND			
#1	9-1-22	REVISION	DATE
		REVISD PER DOVER TRC COMMENT	
		DESCRIPTION	

DOVER FILE #P22-55

**DRAINAGE ANALYSIS
&
EROSION AND SEDIMENT
CONTROL PLAN**

Prepared for:

JSR, LLC
17 Fosters Drive
DOVER, NH 03820

Land of

JSR, LLC
17 Fosters Drive
DOVER, NH 03820

**QUALITY WAY, DOVER, NH
TAX MAP D, LOTS 11-5 & 11-5SND**

Prepared by:

**Berry Surveying & Engineering
335 Second Crown Point Road
Barrington, NH 03825**

Project Number:
DB 2021-134

**June 1, 2022
Revised: September 1, 2022**

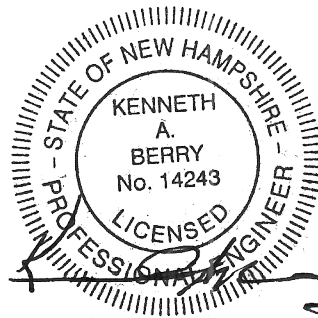


Table of Contents

USGS Quadrangle Location Map

Design Method Objectives	Page 2
1.0 Existing Conditions Analysis	Page 2
2.0 Proposed Conditions Analysis	Page 4
3.0 Full Comparative Analysis	Page 5
3.1 Ground Water Recharge	Page 5
3.2 Other Improvements	Page 6
4.0 Erosion & Sediment Control, BMP's	Page 6
5.0 Conclusion	Page 12

Appendix I - Existing Conditions Analysis

25 Yr-24 Hr Full Summary
2 Yr-24 Hr Node Listing
10 Yr-24 Hr Node Listing
25 Yr-24Hr Node Listing
50 Yr-24 Hr Node Listing
100 Yr-24 Hr Node Listing

Appendix II - Proposed Conditions Analysis

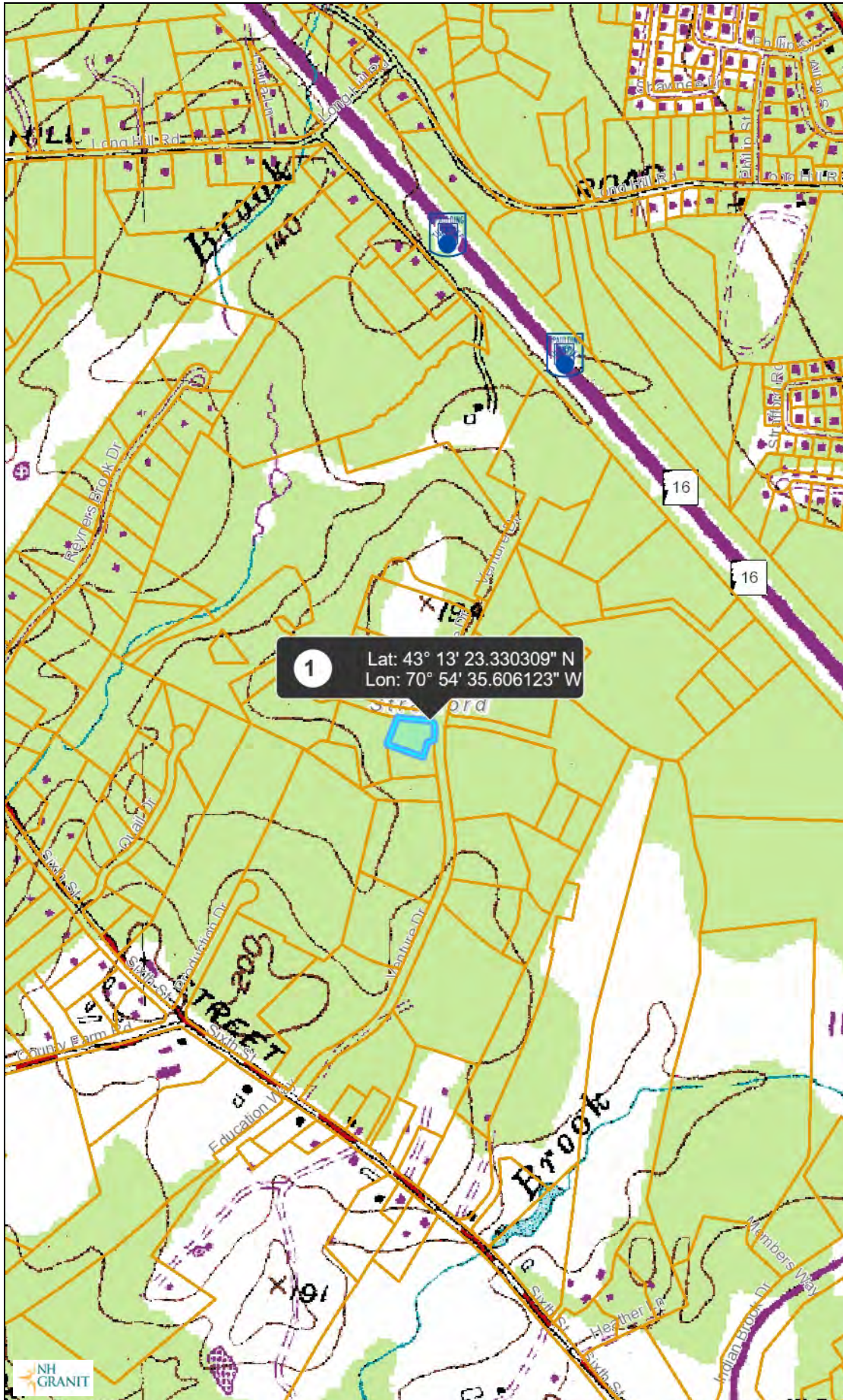
25 Yr-24 Hr Full Summary
2 Yr-24 Hr Node Listing
10 Yr-24 Hr Node Listing
25 Yr-24Hr Node Listing
50 Yr-24 Hr Node Listing
100 Yr-24 Hr Node Listing

Appendix III - Calculations, Charts, & Graphs

Extreme Precipitation Tables
NCRS USDA Web-soil Map
Pond #101 Stage-Area-Storage Table
Pond #101 Treatment Sheets
Stormwater System Operation & Maintenance Plan
& Inspection and Maintenance Manual
Watershed Report Card and Impaired Waters

Enclosed:	W-1 Sheet	Existing Conditions Watershed Plan	Sheet 1
	W-2 Sheet	Post Construction Watershed Plan	Sheet 2

Map by NH GRANIT



Legend

Parcels

- Parcel Polygons
- Attributes for Additional Lines

- State
- County
- City/Town

Map Scale

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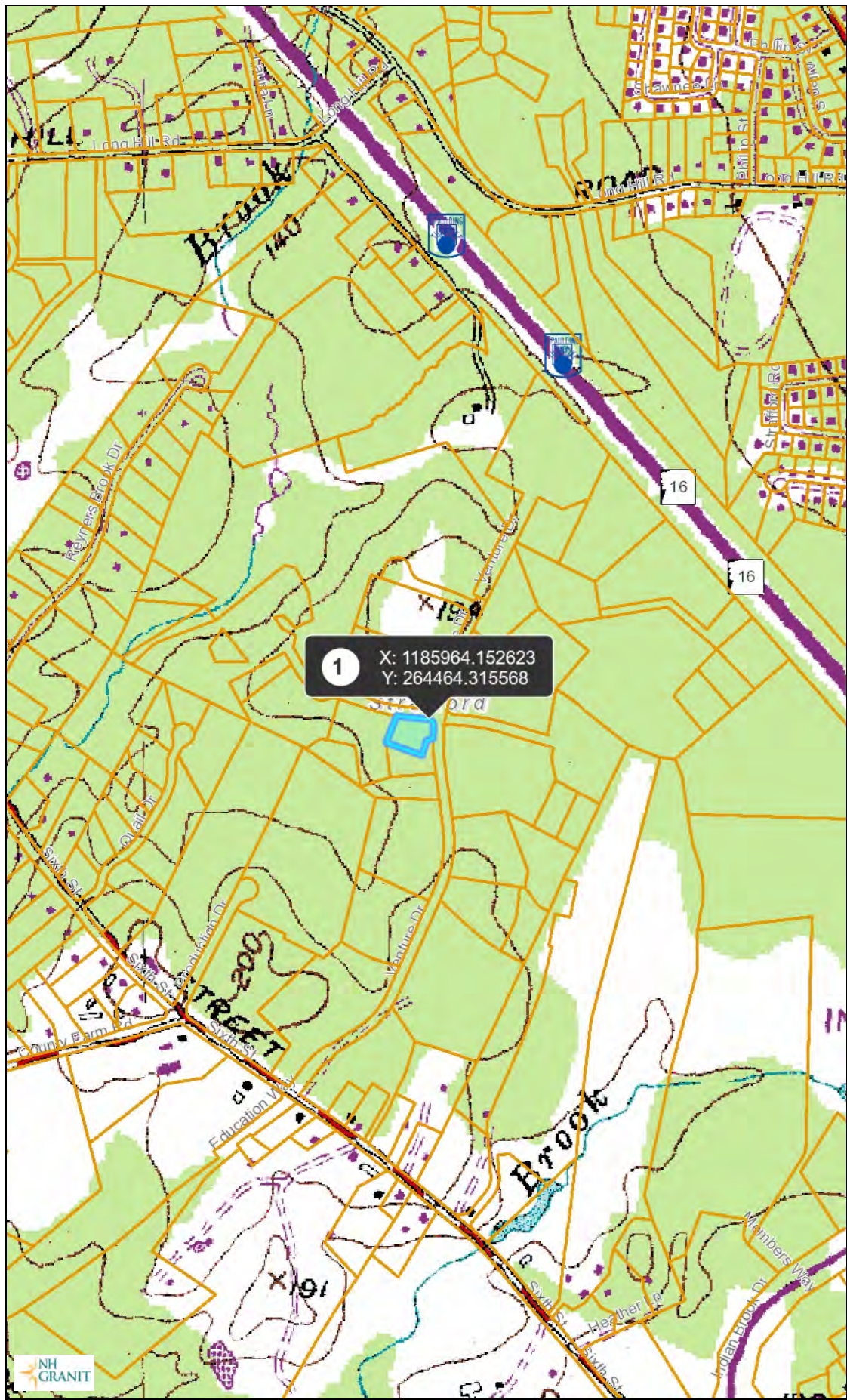
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Notes



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Legend

Parcels

- Parcel Polygons
- Attributes for Additional Lines
- State
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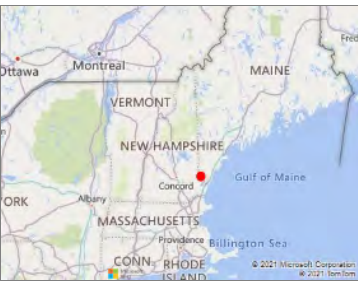
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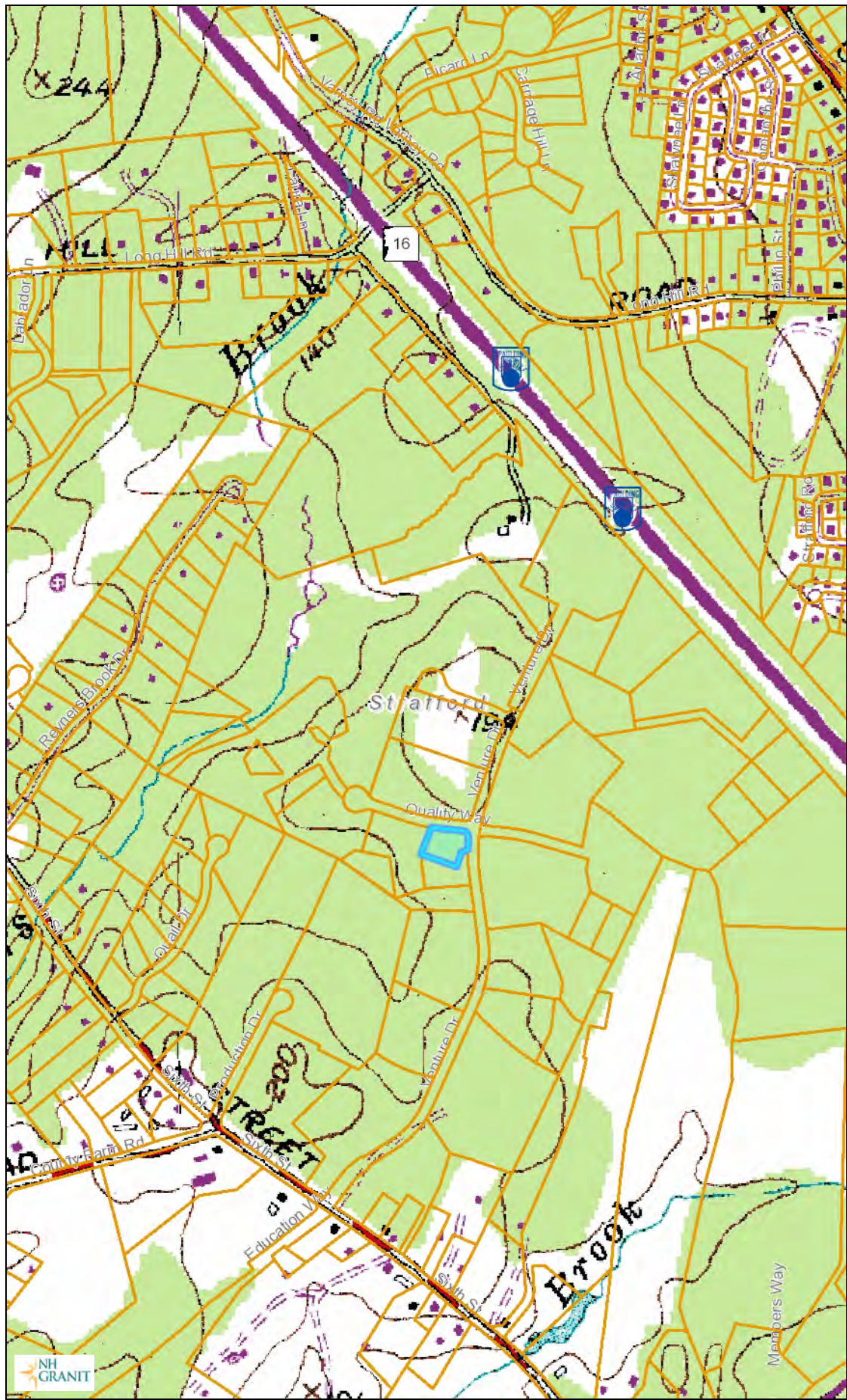
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Notes



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Legend

- Parcels
 - Parcel Polygons
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- State
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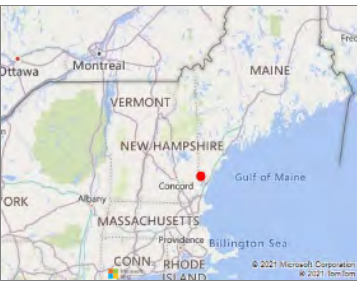
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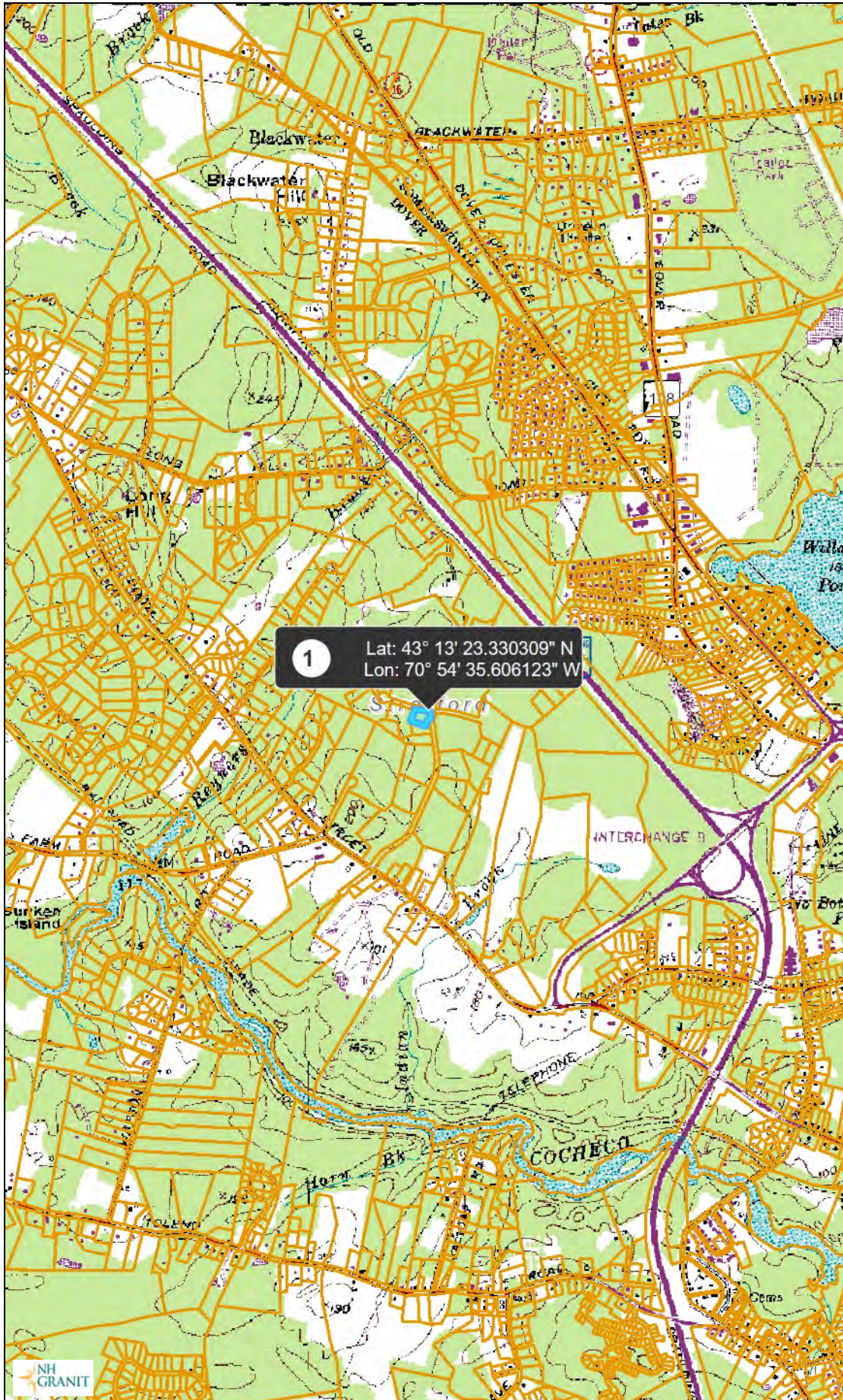
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Notes



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Legend

Parcels

Parcel Polygons

Attributes for Additional Lines

State

County

City/Town

Map Scale

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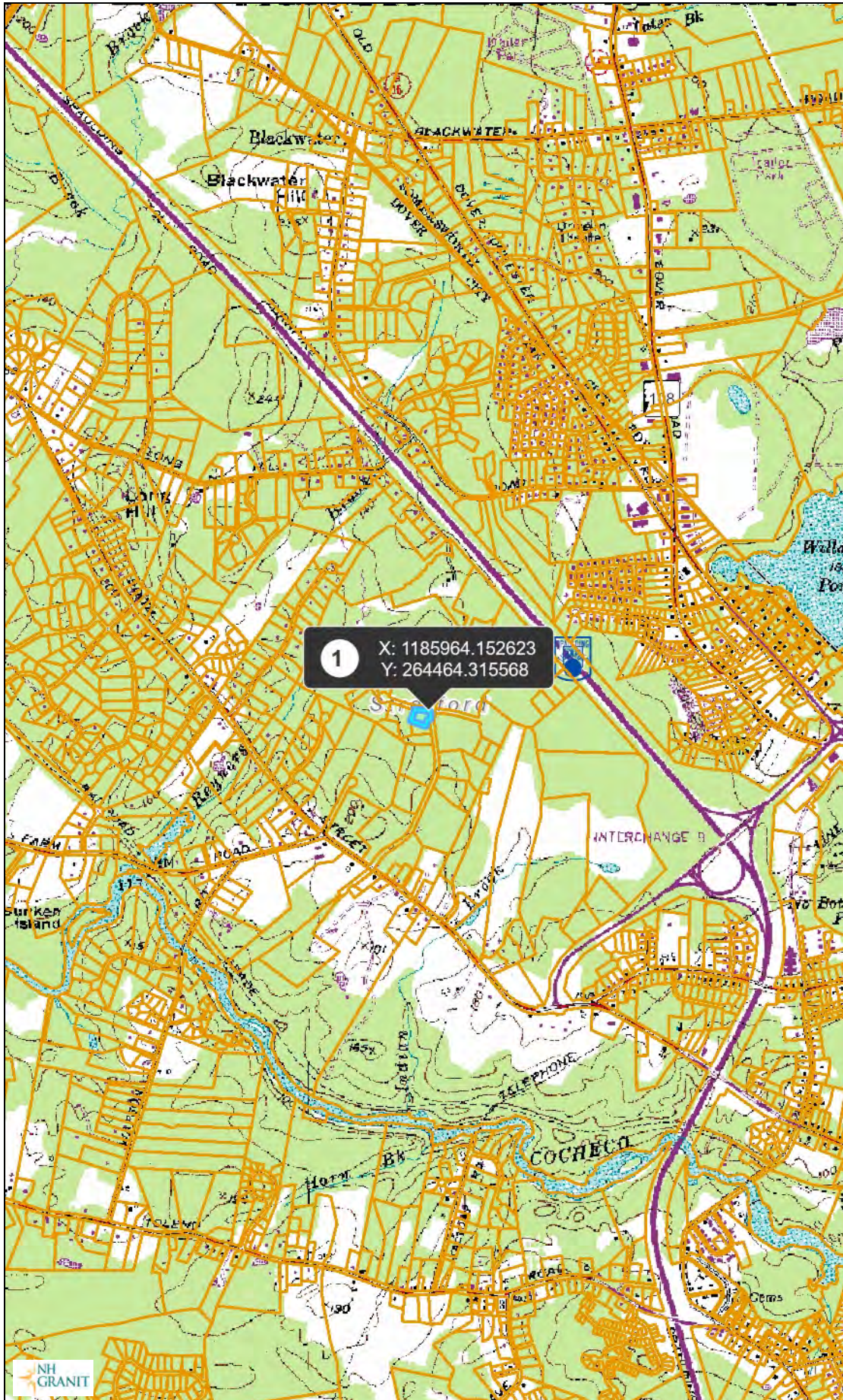
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Notes



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Legend

Parcels

Parcel Polygons

Attributes for Additional Lines

State

County

City/Town

Map Scale

1: 24,000

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Notes



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Legend

- Parcels
 - Parcel Polygons
 - Attributes for Additional Lines
- State
- County
- City/Town

Map Scale

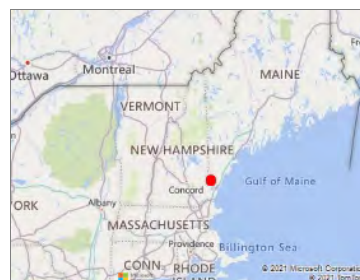
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Notes



DESIGN METHOD OBJECTIVES

JSR, LLC is proposing to develop a commercial building within the parcel at Quality Way & Venture Drive (Tax Map D, Lots 11-5 & 11-5SND.) The property is currently vacant and wooded.

Runoff from the parcel flows south to an onsite wetland (which continues offsite) as shallow concentrated flow.

An Existing and Proposed Conditions analysis was conducted for the purpose of estimating the peak rate of stormwater run-off from the property, Quality Way, and Venture Drive and to subsequently design adequate mitigation of drainage. There are two drainage discharge points which were identified in the existing analysis and duplicated in the proposed conditions analysis. Designing two watershed models we have compared the differences in these rates of peak run-off and surface water volume. Sheet W1, Existing Conditions Watershed Plan, outlines the characteristics of the site in its existing or pre-construction conditions. The second analysis displays the proposed (post-construction) conditions (See Sheet W2.) The analysis was conducted using data for; 2 Yr – 24 Hr (3.60”), 10 Yr – 24 Hr (5.42”), 25 Yr -24 Hr (6.85”), 50 Yr – 24 Hr (8.18”), and 100 YR-24 Hr (9.76”) storm events. Storm event analysis was accomplished using the USDA SCS TR-20 method within the HydroCAD Stormwater Modeling System environment and rainfall quantities are based on the Extreme Precipitation Table for this location from the Northeast Regional Climate Center / Cornell University (<http://precip.eas.cornell.edu>). As Dover is considered a Seacoast Community by NHDES the Extreme Precipitation quantities have been adjusted to be 115% of the documented rainfalls for the 24-hour events.

1.0 Existing Conditions Analysis:

Reference: Sheet W1 - Existing Conditions Watershed Plan (Enclosed)
Existing Conditions Plan

The existing property consists of vacant land. The surface water runoff is evaluated at the onsite wetland line in the southern portion of the parcel. The receiving watershed is the Lower Cochecho (Cochecho) River. The area of the property is 1.98 acres and the area of the analysis is 5.51 acres. The current use is supported by municipal water and sewer.

The onsite soils are made up of Gs – Gloucester (very stony) & Hg – Hollis-Gloucester Complex (very rocky), which are classified as Hydrologic Soil Group (HSG) A, as well as Sc - Scitico, 500 – Udorthents, 600 – Endoaquents, Ea (State #238) – Elmridge (very stony) which are classified as HSG C, and Be – Maybid which is classified as HSG D based on the Site Specific Soil Survey conducted by John P. Hayes III (CSS #87). The offsite soils are made up of GIB – Gloucester fine sandy loam & GsC – Gloucester very

stony fine sandy loam, which are classified as HSG A, as well as EaB – Elmwood fine sandy loam which is classified as HSG B based on the USDA, NRCS Websoil.

Note: Elmridge is abbreviated as Ea (State No. 238) in the provided Site Specific Soils Survey. Due to Elmwood being abbreviated as Ea in the provided USDA, NRCS Websoils Report we have primarily used the state number of 238 to denote Elmridge on the Site Specific Soils Map used throughout this plan set.

Final Reach #100:

Reach #2

Subcatchments #1 & #2 make up the offsite land area surrounding and including a portion of Quality Way north and east of the parcel with runoff draining east of the property through a culvert (**Pond #1**) and a catch basin (**Pond #2**). Runoff flows through an overland reach (**Reach #2**) through **Subcatchment #12** to the delineated wetland line evaluated as **Final Reach #100**.

Reach #4

Subcatchments #3 & #4 make up the offsite land area surrounding and including a majority of the intersection of Quality Way and Venture Drive with runoff draining onto the property through a pair of catch basins (**Ponds #3 & #4**). Runoff flows through an overland reach (**Reach #4**) to a combined overland reach (**Reach #10**) through **Subcatchment #12** to the delineated wetland line evaluated as **Final Reach #100**.

Reach #6

Subcatchments #5 - #11 make up the offsite land area north of Quality Way including a portion of Venture Drive. Runoff drains onto the property through a series of catch basins (**Ponds #5-#6, #7-#9, #10, & #11**). Runoff flows through an overland reach (**Reach #6**) to a combined overland reach (**Reach #10**) through **Subcatchment #12** to the delineated wetland line evaluated as **Final Reach #100**.

Subcatchment #12 consists of the entirety of the analyzed area of the locus parcel as well as a portion of offsite land and is defined by the runoff that drains to the delineated wetland line on the southern side of the parcel (**Final Reach #100**).

Final Reach #200:

Final Reach #200 serves only as an overflow analysis reach during larger storm events when **Ponds #5 & #6** overflow and runoff may flow further down Venture Drive away from the locus parcel.

Subcatchment #13 consists of a section on Venture Drive and sidewalk in front of the area of proposed development. (**Final Reach #200**).

2.0 Proposed Conditions Analysis:

Reference: Sheet W2 - Proposed Conditions Watershed Plan (Enclosed)
 Proposed Site Plan
 Proposed Site Detail Plans

The proposed conditions analysis consists of 17 subcatchments. Subcatchments #1 - #11 are largely offsite and therefore unchanged. Subcatchment #12 is altered as a result of the proposed construction. Subcatchments #20 - #24 are proposed subcatchments defined by the location of the proposed commercial building, paved area, and rain garden and divided by catch basins. The catch basins are modelled as ponds and routed to the proposed rain garden.

Final Reach #100:

Subcatchments #1 - #11 remain unchanged.

Subcatchment #12 is greatly decreased in size due to the construction of the proposed commercial building and the related parking area and drainage practice (**Pond #101**). Runoff still flows directly to the delineated wetland line analyzed as **Final Reach #100**.

Subcatchment #20 consists of the land area between the proposed commercial building and Venture Drive limited by the proposed entrance off of Venture Drive. Runoff is collected in a detention pond (**Pond #102**) and outlets through a cross culvert under the entrance and to **Final Reach #100**.

Subcatchments #21 & #22 encompass the proposed commercial building and a majority of the related driveway and parking area including the entrance from Venture Drive. Runoff drains to a pair of connected catch basins (**Ponds #C01 & #C02**) which outlet to **Pond #101** and eventually to **Final Reach #100**.

Subcatchment #23 consists of the entrance from Quality Way along the west side of the proposed commercial building. Runoff is collected in a catch basin (**Pond #C03**) and directed to **Pond #101** and eventually to **Final Reach #100**.

Subcatchment #24 Consists solely of the land area contributing directly to **Pond #101** which outlets through an outlet structure and emergency spillway utilizing two short overland reaches (**Reaches #101a & #101b**) to **Final Reach #100**.

Final Reach #200:

Subcatchments #5 & #6 remain unchanged

Subcatchment #25 Consists solely of the small driveway area that drains back to **Final Reach #200**.

Summary

Peak rate of discharge is decreased for all storm events at Final Reach #100 and remains unchanged at Final Reach #200. Volume is increased within the channel protection allowance of 0.100 acre feet at Final Reach #100 and remains unchanged at Final Reach #200.

3.0 FULL COMPARATIVE ANALYSIS

ANALYSIS COMPONENT: PEAK RATE DISCHARGE (Cubic Feet / Second)

		2 Yr	10 Yr	25 Yr	50 Yr	100 Yr
Final Reach #100	Existing	3.42	7.94	12.48	16.62	22.05
	Proposed	3.26	7.53	12.45	15.85	21.50
Final Reach #200	Existing	0.11	0.17	0.22	1.89	2.46
	Proposed	0.11	0.17	0.22	0.49	0.90

ANALYSIS COMPONENT: VOLUME (Acre Feet)

		2 Yr
Final Reach #100	Existing	0.373
	Proposed	0.464
Final Reach #200	Existing	0.009
	Proposed	0.009

3.1 Ground Water Recharge.

Though the soils onsite are not conducive to infiltration practices, due to KSat values being less than allowable rates, the onsite rain garden pond is specifically designed to be above seasonal high-water table to the base of the stone. On the high side of the design the stone base is 0.5' above seasonal high-water table while on the low side it is approximately 2.2' above.

3.2 Other Improvements.

The design captures two, point source discharges from Quality Way and Venture Drive which have historically discharged to a swale and then directly to a wetland system. The flow from these two outfalls is now captured, and attenuated in a detention pond. The outfalls are now equipped with fore-bays to increase the pre-treatment that takes place.

4.0 EROSION & SEDIMENT CONTROL PLANS BEST MANAGEMENT PRACTICES (BMP's)

Reference: Proposed Site Plan and Grading Plan
Erosion & Sediment Control Plan
Erosion & Sediment Control Details

The proposed site development is protected from erosion and the abutting properties are protected from sediment by the use of Best Management Practices as outlined in the New Hampshire Stormwater Manual, Volume 2, Post-Construction Best Management Practices Selection & Design (December 2008, NHDES & US EPA); and City of Dover Chapter 149-14 A, Stormwater Management, Erosion Control, and Flood Hazards. **Any area disturbed by construction will be re-stabilized within 14 calendar days and abutting properties will not be adversely affected by this development. All disturbed soils within 100 feet of surface waters or wetlands will be temporarily or permanently stabilized within 7 calendar days. Erosion and sediment control measures shall be installed prior to any soil land disturbance and must be reviewed and approved by the City of Dover Community Services Department. All swales and drainage structures will be constructed and stabilized prior to having run-off directed to them.** Reference is also made to the Stormwater System Operation Inspection & Maintenance Manual which has been written specifically for this project and available to the owner.

As this proposed site redevelopment will disturb less than one acre of land, a Notice of Intent does not need to be submitted to the US EPA. This project will not be covered by the Construction General Permit. As this project proposes less than 100,000 square feet of impact it does not require an issued permit by NHDES AoT, however construction is governed by a General Permit by Rule under NH RSA 485-A:17. Either a Stormwater Pollution Prevention Plan (SWPPP) or a Stormwater Management Plan (SWMP) as required by the City of Dover will be required. In either case, the requirements of Chapter 149-14 A will be included in the plan.

Silt Fence

The plan set demonstrates the location of silt fence for sediment control. The Erosion and Sediment Control Details, Sheet E-101, has the specifications for installation

and maintenance of the silt fence. It is noted that the City of Dover prefers the mulch berms below as well as the Filtrex product.

Erosion Control Mix Berm

As an alternative to the Silt Fence, an Erosion Control Mix Berm can be utilized as a perimeter control. The specifications can be found on Sheet E-101.

Vegetated Stabilization

All areas that are disturbed during construction will be stabilized with vegetated material within 30 days of breaking ground. Construction will be managed in such a manner that erosion is prevented and that no abutter's property will be subjected to any siltation, unless otherwise permitted. All areas to be planted with grass for long-term cover will follow the specification and on Sheet E-102 using seeding mixture C, as follows:

Mixture	Pounds per Acre	Pounds per 1,000 Sq. Ft.
Tall Fescue	24	0.55
Creeping Red Fescue	24	0.55
Total	48	1.10

Conservation Mix

Mixture	Pounds per Acre	Pounds per 1,000 Sq. Ft.
Tall Fescue	15	0.35
Creeping Red Fescue	15	0.35
Annual Ryegrass	5	0.12
Perennial Ryegrass	5	0.12
Kentucky Bluegrass	15	0.35
White Clover	7	0.16
Total	62	1.45

Conservation Mix will be used to stabilize all 2:1 slopes and all land area disturbed within the wetland buffer. (If applicable)

Stabilized Construction Entrance

A temporary gravel construction entrance provides an area where mud can be dislodged from tires before the vehicle leaves the construction site to reduce the amount of mud and sediment transported onto paved municipal and state roads. The stone size for the

pad should be between 1 and 2-inch coarse aggregate, and the pad itself constructed to a minimum length of 50' for the full width of the access road. The aggregate should be placed at least six inches thick. A plan view and profile are shown on Sheet E-102-Erosion and Sediment Control Detail Plan.

Environmental Dust Control

Dust will be controlled on the site by the use of multiple Best Management Practices. Mulching and temporary seeding will be the first line of protection to be utilized where problems occur. If dust problems are not solved by these applications, the use of water and calcium chloride can be applied. Calcium chloride will be applied at a rate that will keep the surface moist but not cause pollution.

Inlet Protection / Storm Drain Inlets

Storm drain inlet protection will be installed per the Erosion & Sediment Control Details as a sediment barrier installed around a storm drain inlet, catch basin, or curb inlet to reduce sediment intrusion into a system after it has been constructed and existing catch basins. These are to be constructed in accordance with the Erosion & Sediment Control Details, Sheet E-101 and maintained after every rain event.

At a minimum, you must comply with following (EPA CGP Part 2.1.2.9.b) "Clean, or remove and replace, the protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment accumulation adjacent to the inlet protection measure, you must remove the deposited sediment by the end of the same work day in which it is found or by the end of the following work day if removal by the same work day is not feasible."

It is vital in the construction of this site that the existing MS4 drainage system not be impacted by sediment. See also sediment track out below.

Sediment Track-Out / Stabilized Construction Entrance / Exit

A temporary gravel construction entrance provides an area where mud can be dislodged from tires before the vehicle leaves the construction site to reduce the amount of mud and sediment transported onto paved municipal and state roads. The stone size for the pad should be between 1 and 2-inch coarse aggregate, and the pad itself constructed to a minimum length of 50' for the full width of the access road. The aggregate should be placed at least six inches thick. A plan view and profile are shown on Construction Details Plan. The Construction Exit will be maintained in a condition that will prevent tracking of sediment onto the public highway. When the control pad becomes ineffective, the stone should be removed along with the collected soil material, regraded on site, and stabilized. A plan view and profile are shown on the Construction Details Plan in E-101 Erosion & Sediment Control Details.

Off-site Vehicle Tracking: A stabilized construction entrance has been provided to help reduce vehicle tracking of sediments. The paved street adjacent to the site entrance will be swept every other week or as necessary to remove any excess mud, dirt or rock tracked from the site. After the binder pavement has been placed, any construction activity that causes the tracking of sediments will also result in street sweeping. Pavement should be swept prior to surface pavement and periodically to remove materials. Dump trucks hauling material from the construction site will be covered with a tarpaulin.

At a minimum, you must provide for maintenance that meets the following (EPA CGP Part 2.1.2.3.d) “Where sediment has been tracked-out from your site onto the surface of off-site streets, other paved areas, and sidewalks, you must remove the deposited sediment by the end of the same work day in which the track-out occurs or by the end of the next work day if track-out occurs on a non-work day. You must remove the track-out by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. You are prohibited from hosing or sweeping tracked-out sediment into any stormwater conveyance (unless it is connected to a sediment basin, sediment trap, or similarly effective control), storm drain inlet, or surface water.”

Stockpiled Sediment or Soil

Stockpiled materials including topsoil, excavated materials, borrow materials imported onto the site, construction aggregates, and sediment removed from temporary sediment traps will be located in designated areas at least 50 feet away from concentrated flows. All stockpiles will have erosion protection in the form of silt fence and diversion swales will be applied to protect the material and surrounding areas. Inactive stockpiles will be seeded for temporary stabilization. Erosion control measures will be inspected in accordance with the schedule for all other activities on site.

At a minimum, you must comply with following (EPA CGP Part 2.1.2.4d) “Do no hose down or sweep soil or sediment accumulated on pavement or other impervious surfaces into any stormwater conveyance (unless connected to a sediment basin, sediment trap, or similar effective control,) storm drain inlet, or surface water.”

Dewatering Practices

Dewatering practices are not known to be required on this site. If during construction this becomes required, an addendum will be published specific for the requirements. As a general rule, ground water that needs to be removed from an excavation will be pumped to a sediment basin or a storm drain inlet prior to discharge from the site.

At a minimum, you must comply with following (EPA CGP Part 2.1.3.4) “With backwash water, either haul it away for disposal or return it to the beginning of the

treatment process; and replace and clean the filter media used in dewatering devices when the pressure differential equals or exceeds the manufacturer's specifications.”

Regarding dewatering practices in the State of New Hampshire, specifically see Construction General Permit Section 9.1.2 NHR12000 State of New Hampshire and “Clarification of Section 9.1.2 ... and other New Hampshire specific information for the U.S. EPA 2012 NPDES Construction General Permit (CGP), May 3, 2012”

Drainage Swales / Stormwater Conveyance Channels

Drainage swales will be stabilized with vegetation for long term cover as outlined below, and on Sheet E-102 using seed mixture C. As a general rule, velocities in the swale should not exceed 3.0 feet per second for a vegetated swale although velocities as high as 4.5 FPS are allowed under certain soil conditions (If applicable).

Construction Sequence

1. Cut and remove trees in construction area only as required.
2. Construct and/or install temporary and permanent sediment erosion and detention control facilities as required.
3. Erosion, sediment and detention control facility shall be installed & stabilized prior to any earth moving operation & or directing runoff to them.
4. Clear, cut and dispose of debris in approved facility.
5. Construct temporary culverts as required, or directed.
6. Construct roadways for access to desired construction areas. All roads shall be stabilized immediately.
7. Install pipe and construction associated appurtenances as required or directed. Install rain gardens. All disturbed areas shall be stabilized immediately after grading.
8. Begin permanent and temporary seeding and mulching. All cut and fill slopes and disturbed areas shall be seeded or mulched as required, or directed. No area is allowed to be disturbed for a length of time that exceeds 60 days before being stabilized. Daily, or as required. All roadways and parking areas shall be stabilized within 72 hours of

achieving finished grades. All cut and fill slopes shall be stabilized within 72 hours of achieving finished grades.

9. Construct temporary berms, drains ditches, silt fences, sediment traps, etc. mulch and seed as required.
10. Inspect and maintain all erosion and sediment control measures during construction.
11. Complete permanent seeding and landscaping.
12. Remove temporary erosion control measures after seeding areas have established themselves and site improvements are complete.
13. Smooth and revegetate all disturbed areas.
14. Finish paving all roadways.

Temporary Erosion Control Measures

1. The smallest practical area of land shall be exposed at any one time.
2. Erosion, sediment control measures shall be installed as shown on the plans and at locations as required, or directed by the engineer.
3. All disturbed areas shall be returned to original grades and elevations. Disturbed areas shall be loamed with a minimum of 4" of loam and seeded with not less than 1.10 pound of seed per 1,000 square feet (48 pounds per acre) of area.
4. Silt fences and other barriers shall be inspected periodically and after every rainstorm during the life of the project. All damaged areas shall be repaired, sediment deposits shall periodically be removed and properly disposed of.
5. After all disturbed areas have been stabilized, the temporary erosion control measures are to be removed and the area disturbed by the removal smoothed and re-vegetated.
6. Areas must be seeded and mulched within 5 days of final grading, permanently stabilized within 3 days of final grading, or temporarily stabilized within 14 days of initial disturbance of soil.

Inspection and Maintenance Schedule

Sediment control measures will be inspected during and after storm events to ensure that the practice still has integrity and is not allowing sediment to pass. Depending on SWPPP criteria, all controls will be inspected either once every 7 days or once every 14 days and after storm events. Inspection reports must be submitted to Town of Barrington Code Enforcement. Sediment build-up in swales and level spreaders will be removed if it is deeper than six inches. See also Stormwater System Operation: Inspection & Maintenance Manual published separately also by Berry Surveying & Engineering. See also Storm Water Pollution Prevention Plan (SWPPP) and / or Stormwater Management Plan (SWMP) developed in accordance with EPA NPDES or City of Dover requirements.

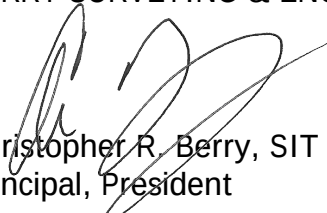
Corrective Action measures will be made in accordance with Stormwater Management Plan (SWMP) / SWPPP requirements and records maintained on site by the Contractor.

5.0 CONCLUSION

Peak rates of runoff flow are modeled to be reduced in the post-construction analysis / condition, as compared to the pre-construction peak rates of runoff flow at Final Reach #100 & unchanged at Final Reach #200. This reduction occurs during the 2 Yr, 10 Yr, 25 Yr, 50 Yr, and 100 Yr/24 Hour extreme storm events due to the detention effect of the Rain Garden as well as the modified detention pond. Per Env-Wq 1507.05(b)(1)(a) the channel protection volume is satisfied by the 2-year, 24-hour post-development peak flow rate generated from the proposed disturbance being less than the 2-year, 24-hour pre-development peak flow rate and the 2 year, 24-hour post-development storm volume has not increased over the pre-development volume by more than 0.1 acre-feet.

A Site Specific, Terrain Alteration Permit (RSA 485: A-17) is not required for this site plan due to the area of disturbance being less than 100,000 SF and the site will operate as a General Permit by Rule under this rule. Because the site impact is greater than one acre, a Notice of Intent with the EPA is required and the site will operate in accordance with the City of Dover Chapter 153-14 A Stormwater Management, Erosion Control, and Flood Hazards and the approved Stormwater Management Plan.

Respectfully Submitted,
BERRY SURVEYING & ENGINEERING



Christopher R. Berry, SIT 567
Principal, President



Kenneth A. Berry PE, LLS,
CPSWQ, CPESC, CESSWI
Principal, VP - Technical Operations

Appendix I – Existing Conditions Analysis

25 Yr - 24 Hr. Full Summary

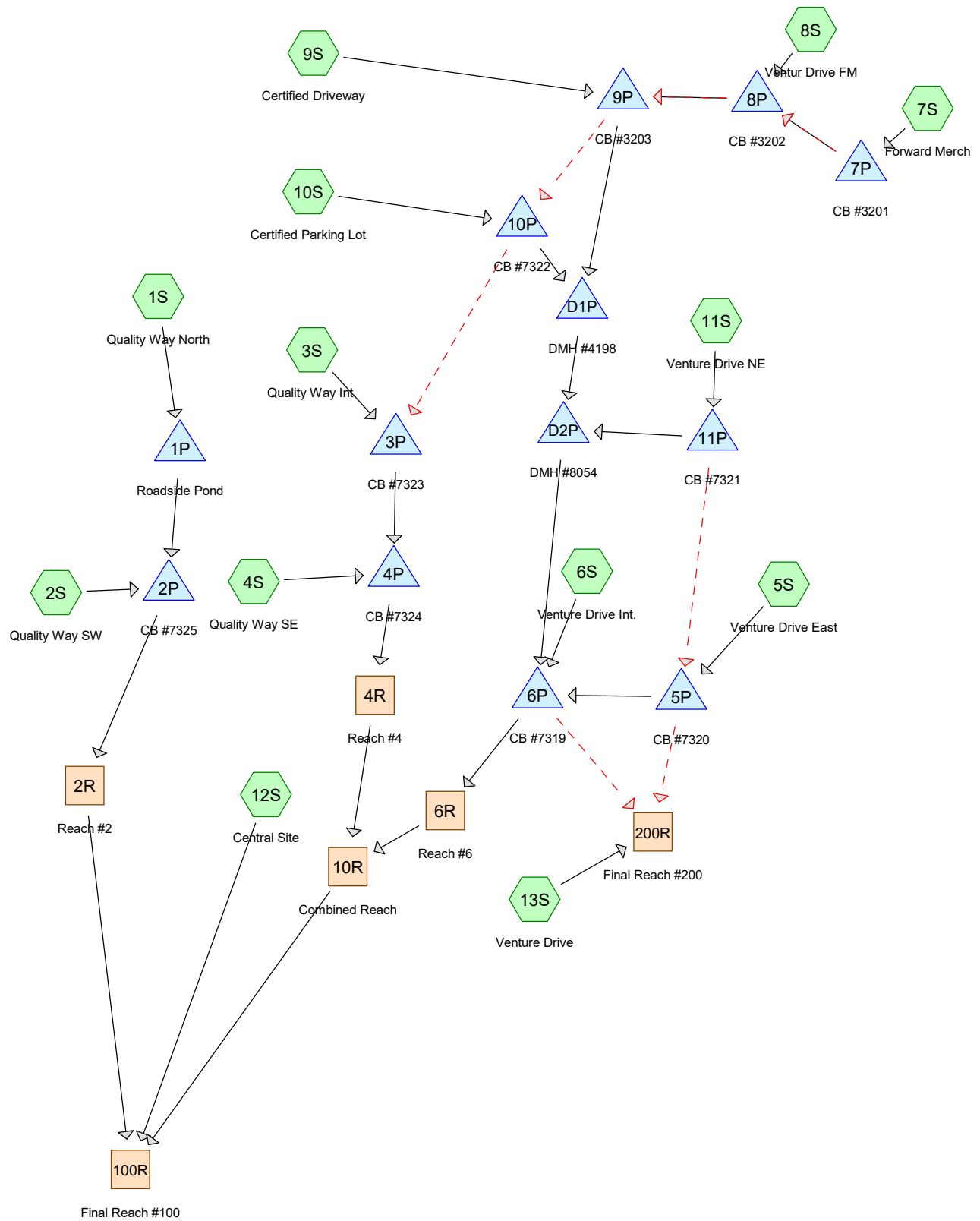
2 Yr - 24 Hr. Node Listing

10 Yr - 24 Hr. Node Listing

25 Yr - 24 Hr. Node Listing

50 Yr - 24 Hr. Node Listing

100 Yr - 24 Hr. Node Listing



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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.056	39	>75% Grass cover, Good, HSG A (1S, 3S, 6S, 7S, 9S, 10S, 12S)
0.006	61	>75% Grass cover, Good, HSG B (12S)
0.019	74	>75% Grass cover, Good, HSG C (12S)
1.526	98	Paved parking, HSG A (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S)
0.036	98	Paved parking, HSG B (5S, 13S)
0.043	98	Unconnected pavement, HSG A (12S)
0.475	98	Unconnected roofs, HSG A (1S, 9S, 10S)
1.819	30	Woods, Good, HSG A (1S, 3S, 7S, 10S, 12S)
0.003	55	Woods, Good, HSG B (12S)
0.677	70	Woods, Good, HSG C (12S)
5.659	62	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
4.918	HSG A	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S
0.045	HSG B	5S, 12S, 13S
0.696	HSG C	12S
0.000	HSG D	
0.000	Other	
5.659		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
1.056	0.006	0.019	0.000	0.000	1.081	>75% Grass cover, Good	1S, 3S, 6S, 7S, 9S, 10S, 12S
1.526	0.036	0.000	0.000	0.000	1.561	Paved parking	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 13S
0.043	0.000	0.000	0.000	0.000	0.043	Unconnected pavement	12S
0.475	0.000	0.000	0.000	0.000	0.475	Unconnected roofs	1S, 9S, 10S
1.819	0.003	0.677	0.000	0.000	2.499	Woods, Good	1S, 3S, 7S, 10S, 12S
4.918	0.045	0.696	0.000	0.000	5.659	TOTAL AREA	

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	168.58	167.36	42.3	0.0288	0.012	12.0	0.0	0.0
2	2P	166.90	166.78	32.7	0.0037	0.012	12.0	0.0	0.0
3	3P	168.90	168.43	24.4	0.0193	0.012	12.0	0.0	0.0
4	4P	168.33	167.78	36.3	0.0152	0.012	12.0	0.0	0.0
5	5P	167.11	166.51	25.3	0.0237	0.012	12.0	0.0	0.0
6	6P	166.45	166.46	27.1	-0.0004	0.012	12.0	0.0	0.0
7	7P	174.37	173.93	17.5	0.0251	0.012	12.0	0.0	0.0
8	8P	173.61	173.31	25.8	0.0116	0.012	12.0	0.0	0.0
9	9P	173.21	168.55	208.7	0.0223	0.012	12.0	0.0	0.0
10	10P	171.40	170.45	1.0	0.9500	0.012	12.0	0.0	0.0
11	11P	167.17	167.86	25.8	-0.0267	0.012	12.0	0.0	0.0
12	D1P	168.45	168.02	40.1	0.0107	0.012	12.0	0.0	0.0
13	D2P	167.86	166.51	96.9	0.0139	0.012	12.0	0.0	0.0

21-134 Existing Conditions

Type III 24-hr 25YR-24HR Rainfall=6.85"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Quality Way North	Runoff Area=78,168 sf 37.94% Impervious Runoff Depth>2.30" Flow Length=326' Tc=10.1 min CN=58 Runoff=3.98 cfs 0.344 af
Subcatchment 2S: Quality Way SW	Runoff Area=4,365 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.66 cfs 0.055 af
Subcatchment 3S: Quality Way Int.	Runoff Area=3,147 sf 34.19% Impervious Runoff Depth>2.30" Flow Length=163' Tc=8.1 min CN=58 Runoff=0.17 cfs 0.014 af
Subcatchment 4S: Quality Way SE	Runoff Area=4,615 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.70 cfs 0.058 af
Subcatchment 5S: Venture Drive East	Runoff Area=1,877 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.28 cfs 0.024 af
Subcatchment 6S: Venture Drive Int.	Runoff Area=2,181 sf 88.45% Impervious Runoff Depth>5.79" Tc=6.0 min CN=91 Runoff=0.31 cfs 0.024 af
Subcatchment 7S: Forward Merch Flow Length=57'	Runoff Area=3,403 sf 53.78% Impervious Runoff Depth>3.28" Slope=0.0176 '/' Tc=13.6 min CN=68 Runoff=0.23 cfs 0.021 af
Subcatchment 8S: Ventur Drive FM	Runoff Area=1,031 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.16 cfs 0.013 af
Subcatchment 9S: Certified Driveway	Runoff Area=34,665 sf 60.23% Impervious Runoff Depth>4.01" Flow Length=257' Tc=7.9 min CN=75 Runoff=3.46 cfs 0.266 af
Subcatchment 10S: Certified Parking Lot	Runoff Area=24,868 sf 62.08% Impervious Runoff Depth>3.91" Flow Length=151' Tc=6.4 min CN=74 Runoff=2.54 cfs 0.186 af
Subcatchment 11S: Venture Drive NE	Runoff Area=4,551 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.69 cfs 0.058 af
Subcatchment 12S: Central Site	Runoff Area=82,187 sf 2.30% Impervious Runoff Depth>1.32" Flow Length=296' Tc=16.0 min CN=47 Runoff=1.70 cfs 0.208 af
Subcatchment 13S: Venture Drive	Runoff Area=1,441 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.22 cfs 0.018 af
Reach 2R: Reach #2	Avg. Flow Depth=0.24' Max Vel=1.08 fps Inflow=4.38 cfs 0.399 af n=0.080 L=288.7' S=0.0399 '/' Capacity=20.81 cfs Outflow=4.10 cfs 0.398 af
Reach 4R: Reach #4	Avg. Flow Depth=0.21' Max Vel=0.69 fps Inflow=2.27 cfs 0.080 af n=0.080 L=89.2' S=0.0200 '/' Capacity=10.50 cfs Outflow=1.60 cfs 0.080 af
Reach 6R: Reach #6	Avg. Flow Depth=0.43' Max Vel=1.04 fps Inflow=6.98 cfs 0.584 af n=0.080 L=27.3' S=0.0168 '/' Capacity=9.65 cfs Outflow=6.96 cfs 0.583 af

21-134 Existing Conditions

Type III 24-hr 25YR-24HR Rainfall=6.85"

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Reach 10R: Combined Reach Avg. Flow Depth=0.28' Max Vel=1.57 fps Inflow=7.77 cfs 0.663 af
n=0.080 L=66.1' S=0.0681 '/' Capacity=27.17 cfs Outflow=7.72 cfs 0.663 af

Reach 100R: Final Reach #100 Inflow=12.48 cfs 1.269 af
Outflow=12.48 cfs 1.269 af

Reach 200R: Final Reach #200 Inflow=0.22 cfs 0.018 af
Outflow=0.22 cfs 0.018 af

Pond 1P: Roadside Pond Peak Elev=170.15' Storage=62 cf Inflow=3.98 cfs 0.344 af
12.0" Round Culvert n=0.012 L=42.3' S=0.0288 '/' Outflow=3.92 cfs 0.344 af

Pond 2P: CB #7325 Peak Elev=168.93' Storage=25 cf Inflow=4.39 cfs 0.400 af
12.0" Round Culvert n=0.012 L=32.7' S=0.0037 '/' Outflow=4.38 cfs 0.399 af

Pond 3P: CB #7323 Peak Elev=169.67' Storage=10 cf Inflow=2.01 cfs 0.022 af
12.0" Round Culvert n=0.012 L=24.4' S=0.0193 '/' Outflow=1.93 cfs 0.022 af

Pond 4P: CB #7324 Peak Elev=169.19' Storage=11 cf Inflow=2.33 cfs 0.080 af
12.0" Round Culvert n=0.012 L=36.3' S=0.0152 '/' Outflow=2.27 cfs 0.080 af

Pond 5P: CB #7320 Peak Elev=170.40' Storage=41 cf Inflow=0.75 cfs 0.028 af
Primary=0.75 cfs 0.028 af Secondary=0.00 cfs 0.000 af Outflow=0.75 cfs 0.028 af

Pond 6P: CB #7319 Peak Elev=170.36' Storage=49 cf Inflow=7.03 cfs 0.584 af
Primary=6.98 cfs 0.584 af Secondary=0.00 cfs 0.000 af Outflow=6.98 cfs 0.584 af

Pond 7P: CB #3201 Peak Elev=177.11' Storage=34 cf Inflow=0.23 cfs 0.021 af
Primary=0.45 cfs 0.021 af Secondary=0.00 cfs 0.000 af Outflow=0.45 cfs 0.021 af

Pond 8P: CB #3202 Peak Elev=177.11' Storage=44 cf Inflow=0.51 cfs 0.034 af
Primary=0.55 cfs 0.034 af Secondary=0.00 cfs 0.000 af Outflow=0.55 cfs 0.034 af

Pond 9P: CB #3203 Peak Elev=177.11' Storage=49 cf Inflow=3.77 cfs 0.301 af
Primary=3.74 cfs 0.301 af Secondary=0.00 cfs 0.000 af Outflow=3.74 cfs 0.301 af

Pond 10P: CB #7322 Peak Elev=174.65' Storage=35 cf Inflow=2.54 cfs 0.186 af
Primary=2.55 cfs 0.178 af Secondary=1.87 cfs 0.008 af Outflow=2.55 cfs 0.186 af

Pond 11P: CB #7321 Peak Elev=173.39' Storage=73 cf Inflow=0.69 cfs 0.058 af
Primary=0.61 cfs 0.053 af Secondary=0.55 cfs 0.004 af Outflow=0.63 cfs 0.057 af

Pond D1P: DMH #4198 Peak Elev=175.75' Storage=70 cf Inflow=6.25 cfs 0.479 af
12.0" Round Culvert n=0.012 L=40.1' S=0.0107 '/' Outflow=6.05 cfs 0.479 af

Pond D2P: DMH #8054 Peak Elev=173.88' Storage=64 cf Inflow=6.52 cfs 0.532 af
12.0" Round Culvert n=0.012 L=96.9' S=0.0139 '/' Outflow=6.50 cfs 0.532 af

Total Runoff Area = 5.659 ac Runoff Volume = 1.290 af Average Runoff Depth = 2.74"
63.26% Pervious = 3.580 ac 36.74% Impervious = 2.079 ac

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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Subcatchment 1S: Quality Way North

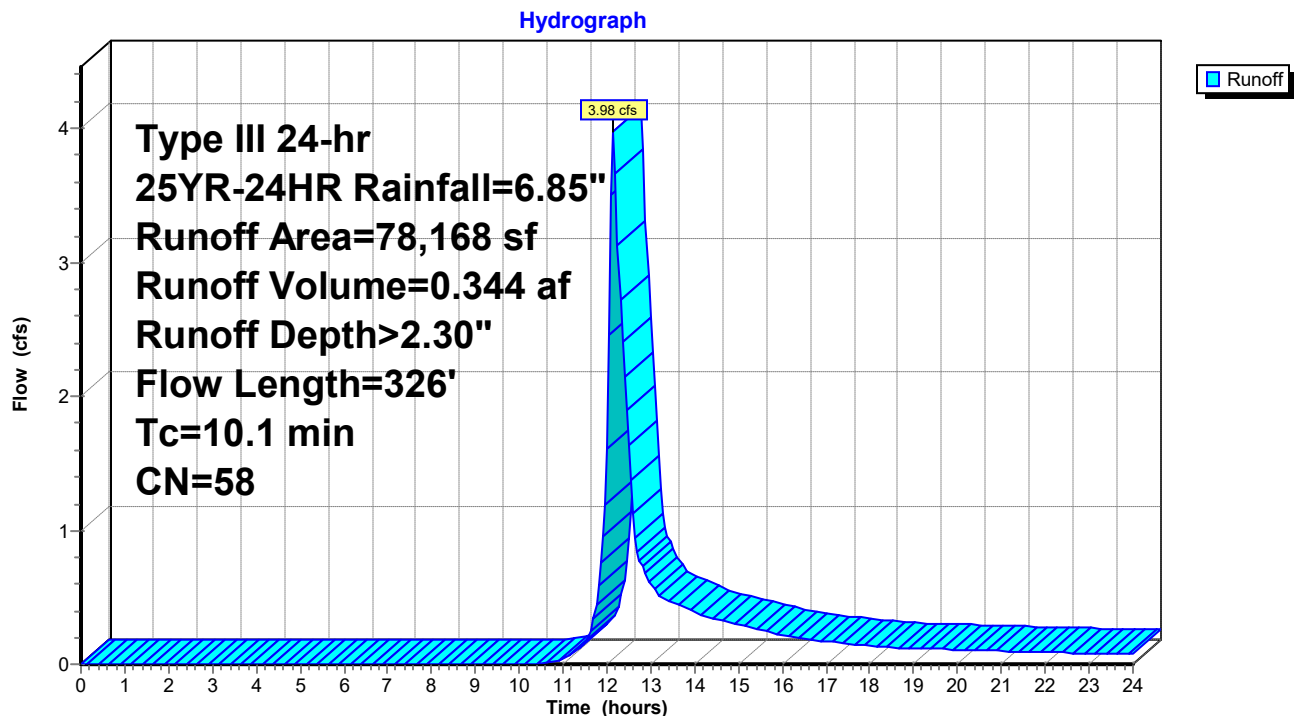
Runoff = 3.98 cfs @ 12.15 hrs, Volume= 0.344 af, Depth> 2.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
11,732	98	Unconnected roofs, HSG A
18,602	39	>75% Grass cover, Good, HSG A
17,923	98	Paved parking, HSG A
29,911	30	Woods, Good, HSG A
78,168	58	Weighted Average
48,513		62.06% Pervious Area
29,655		37.94% Impervious Area
11,732		39.56% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	100	0.0375	0.23		Sheet Flow, Segment #1
					Grass: Short n= 0.150 P2= 3.61"
2.9	226	0.0354	1.32		Shallow Concentrated Flow, Segment #2
					Short Grass Pasture Kv= 7.0 fps
10.1	326	Total			

Subcatchment 1S: Quality Way North



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Subcatchment 2S: Quality Way SW

Runoff = 0.66 cfs @ 12.09 hrs, Volume= 0.055 af, Depth> 6.61"

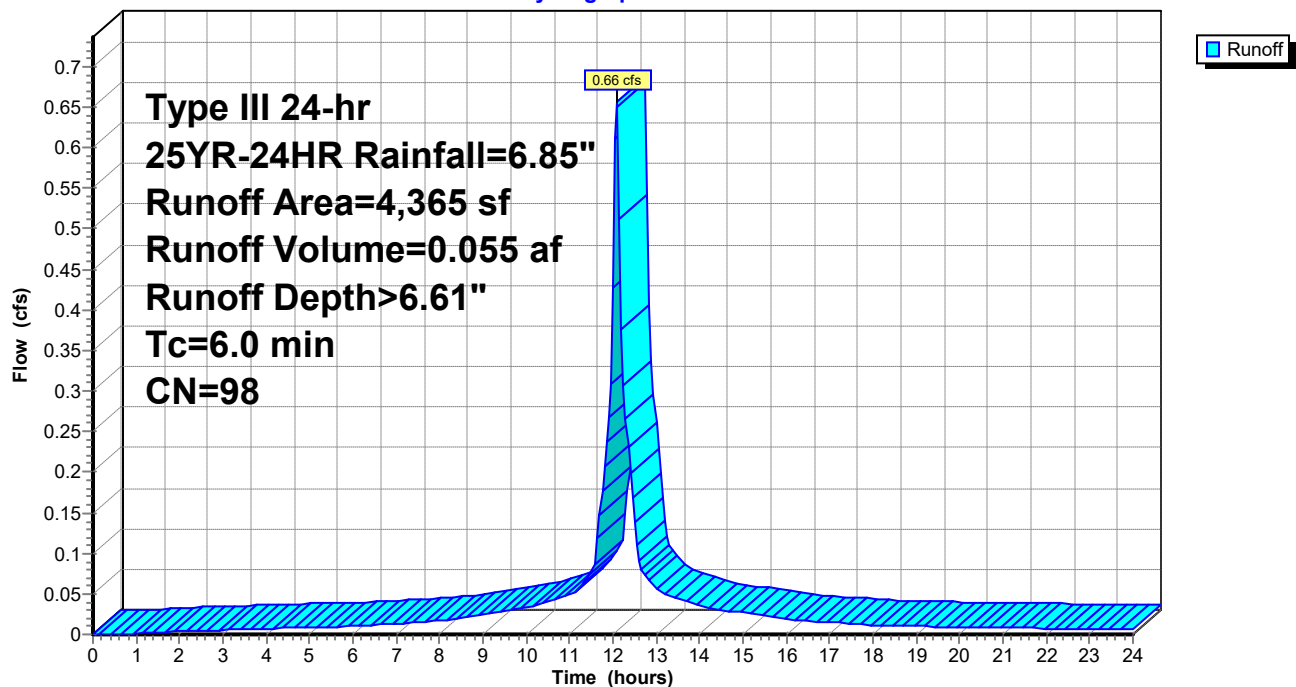
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
4,365	98	Paved parking, HSG A
4,365		100.00% Impervious Area

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

Subcatchment 2S: Quality Way SW

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Subcatchment 3S: Quality Way Int.

Runoff = 0.17 cfs @ 12.13 hrs, Volume= 0.014 af, Depth> 2.30"

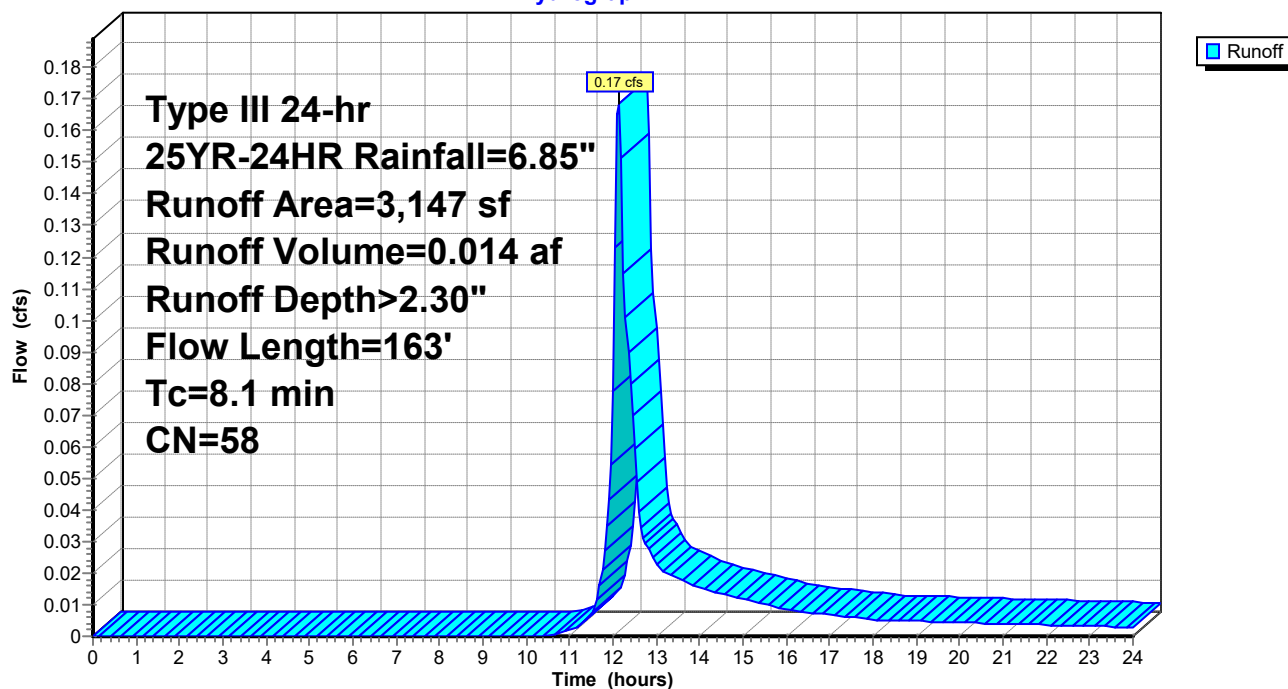
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
1,775	39	>75% Grass cover, Good, HSG A
1,076	98	Paved parking, HSG A
296	30	Woods, Good, HSG A
3,147	58	Weighted Average
2,071		65.81% Pervious Area
1,076		34.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	36	0.0830	0.26		Sheet Flow, Segment #1
					Grass: Short n= 0.150 P2= 3.61"
3.7	33	0.1517	0.15		Sheet Flow, Segment #2
					Woods: Light underbrush n= 0.400 P2= 3.61"
1.5	14	0.0356	0.15		Sheet Flow, Segment #3
					Grass: Short n= 0.150 P2= 3.61"
0.6	80	0.0125	2.27		Shallow Concentrated Flow, Segment #4
					Paved Kv= 20.3 fps
8.1	163	Total			

Subcatchment 3S: Quality Way Int.

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Subcatchment 4S: Quality Way SE

Runoff = 0.70 cfs @ 12.09 hrs, Volume= 0.058 af, Depth> 6.61"

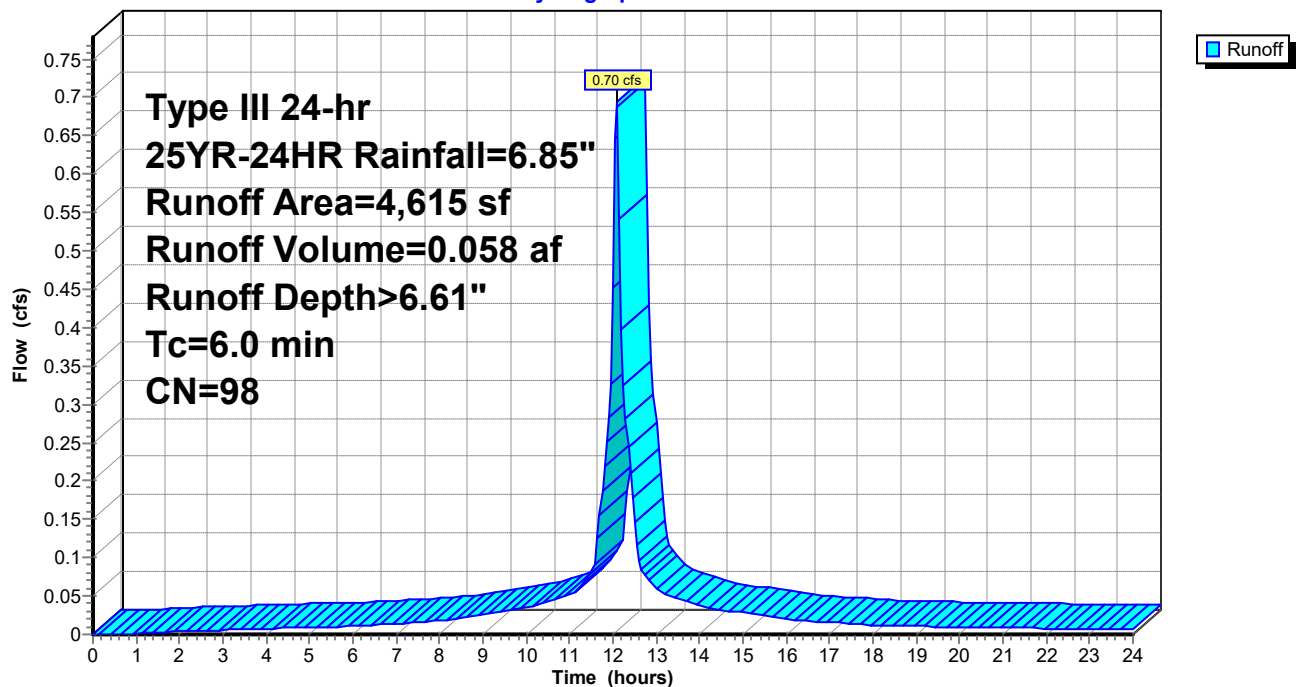
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
4,615	98	Paved parking, HSG A
4,615		100.00% Impervious Area

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

Subcatchment 4S: Quality Way SE

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Subcatchment 5S: Venture Drive East

Runoff = 0.28 cfs @ 12.09 hrs, Volume= 0.024 af, Depth> 6.61"

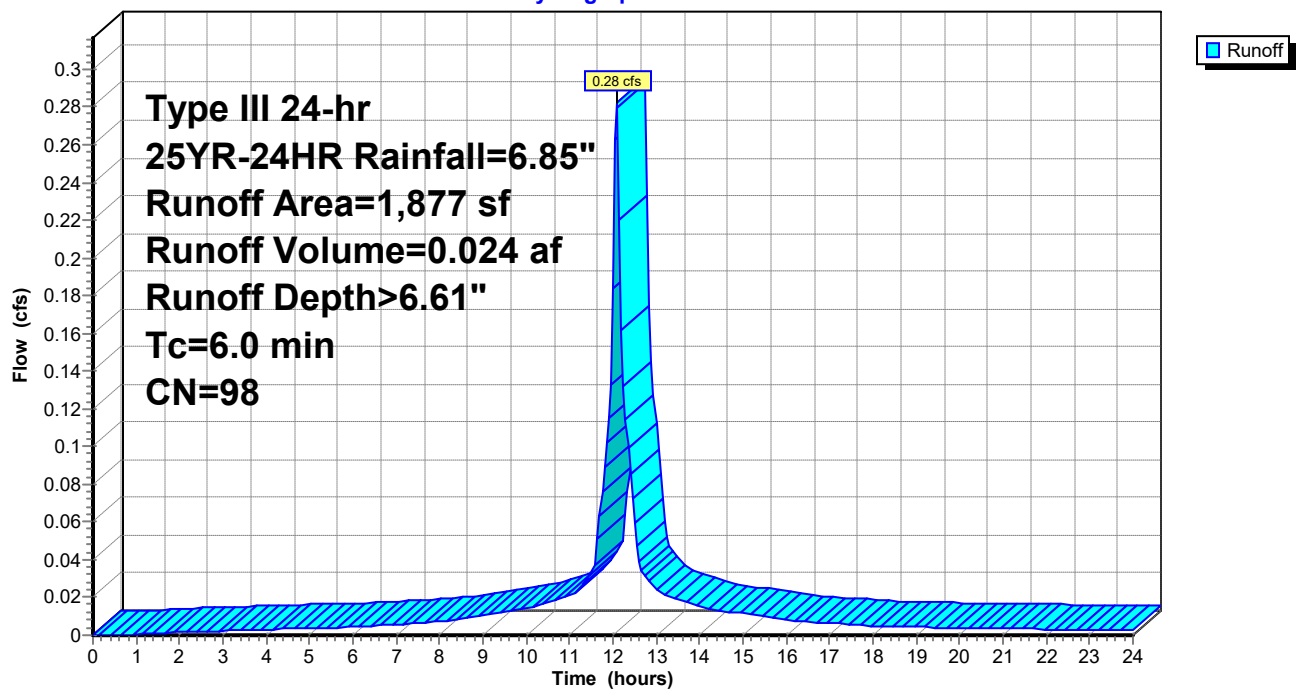
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
1,765	98	Paved parking, HSG A
112	98	Paved parking, HSG B
1,877	98	Weighted Average
1,877		100.00% Impervious Area

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

Subcatchment 5S: Venture Drive East

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Subcatchment 6S: Venture Drive Int.

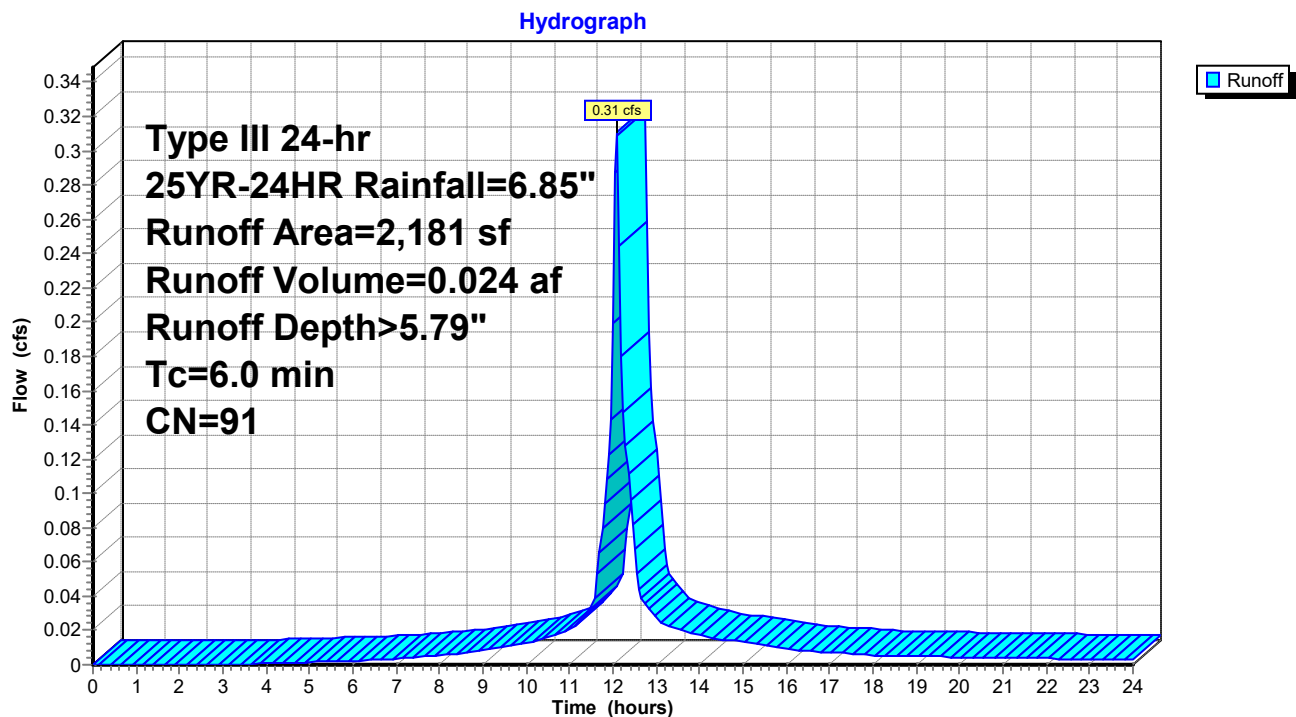
Runoff = 0.31 cfs @ 12.09 hrs, Volume= 0.024 af, Depth> 5.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
252	39	>75% Grass cover, Good, HSG A
1,929	98	Paved parking, HSG A
2,181	91	Weighted Average
252		11.55% Pervious Area
1,929		88.45% Impervious Area

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

Subcatchment 6S: Venture Drive Int.



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Subcatchment 7S: Forward Merch

Runoff = 0.23 cfs @ 12.20 hrs, Volume= 0.021 af, Depth> 3.28"

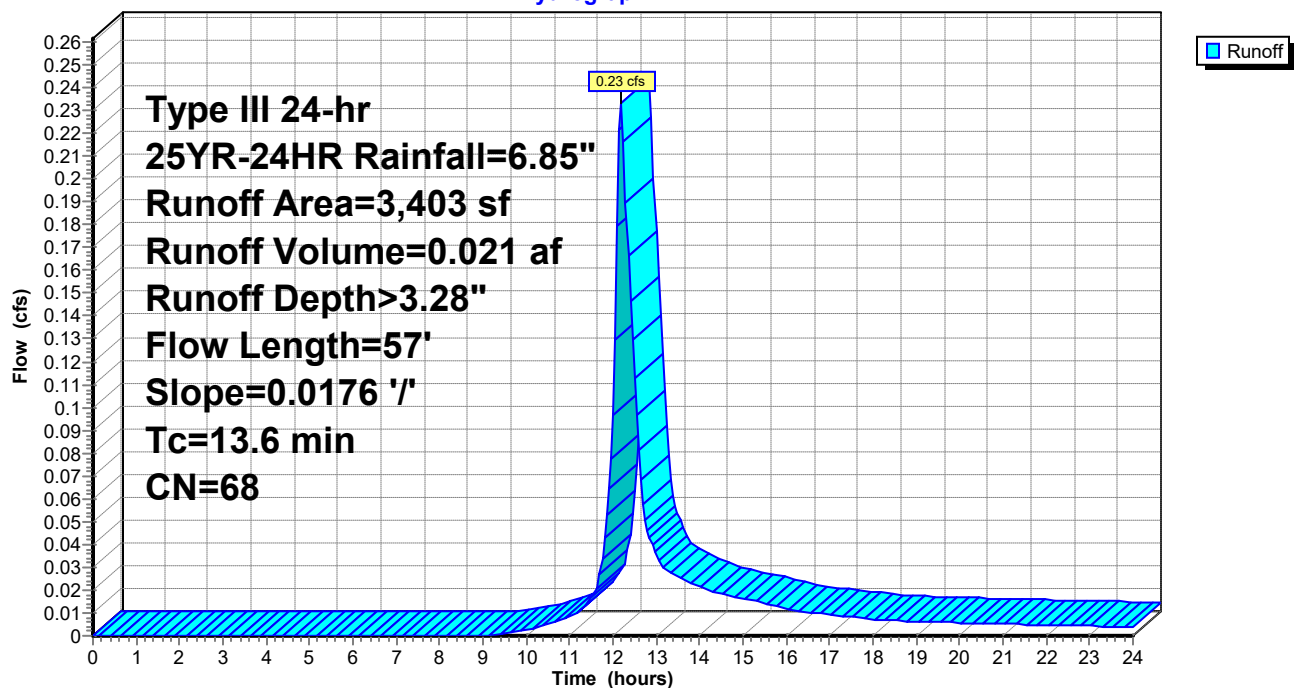
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
493	39	>75% Grass cover, Good, HSG A
1,830	98	Paved parking, HSG A
1,080	30	Woods, Good, HSG A
3,403	68	Weighted Average
1,573		46.22% Pervious Area
1,830		53.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	57	0.0176	0.07		Sheet Flow, Sheet Flow
					Woods: Light underbrush n= 0.400 P2= 3.61"

Subcatchment 7S: Forward Merch

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Subcatchment 8S: Ventur Drive FM

Runoff = 0.16 cfs @ 12.09 hrs, Volume= 0.013 af, Depth> 6.61"

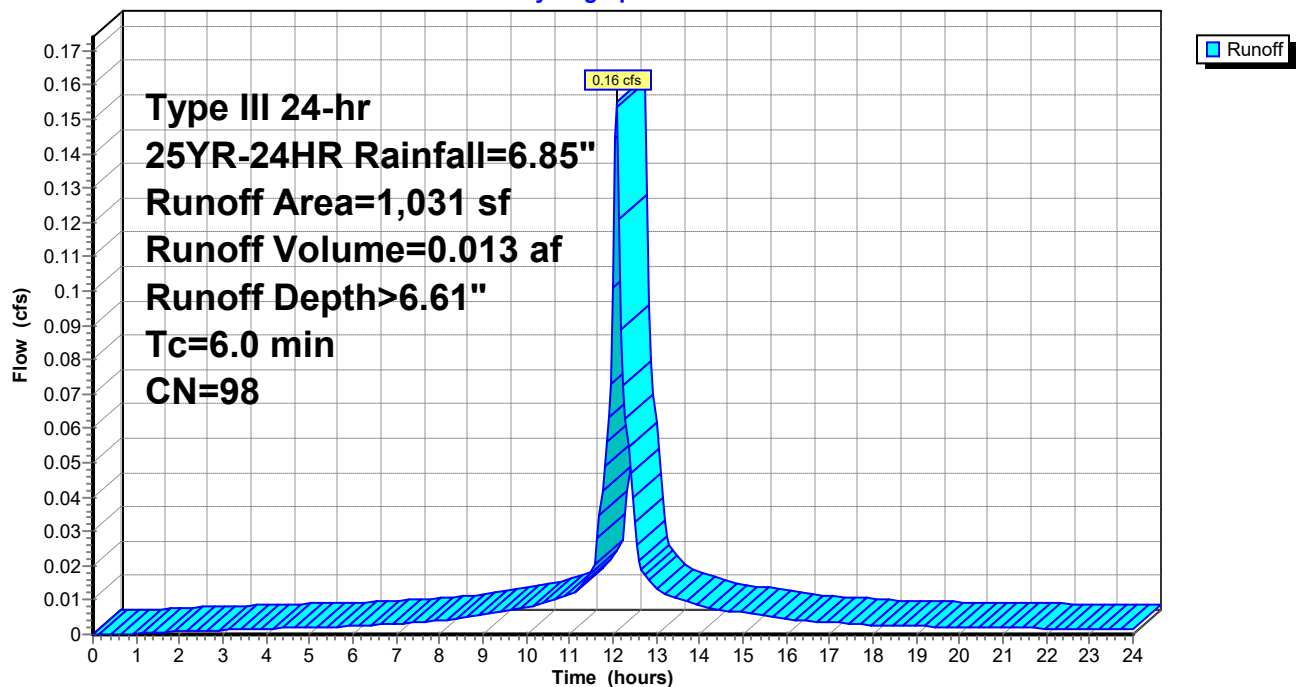
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
1,031	98	Paved parking, HSG A
1,031		100.00% Impervious Area

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

Subcatchment 8S: Ventur Drive FM

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Subcatchment 9S: Certified Driveway

Runoff = 3.46 cfs @ 12.11 hrs, Volume= 0.266 af, Depth> 4.01"

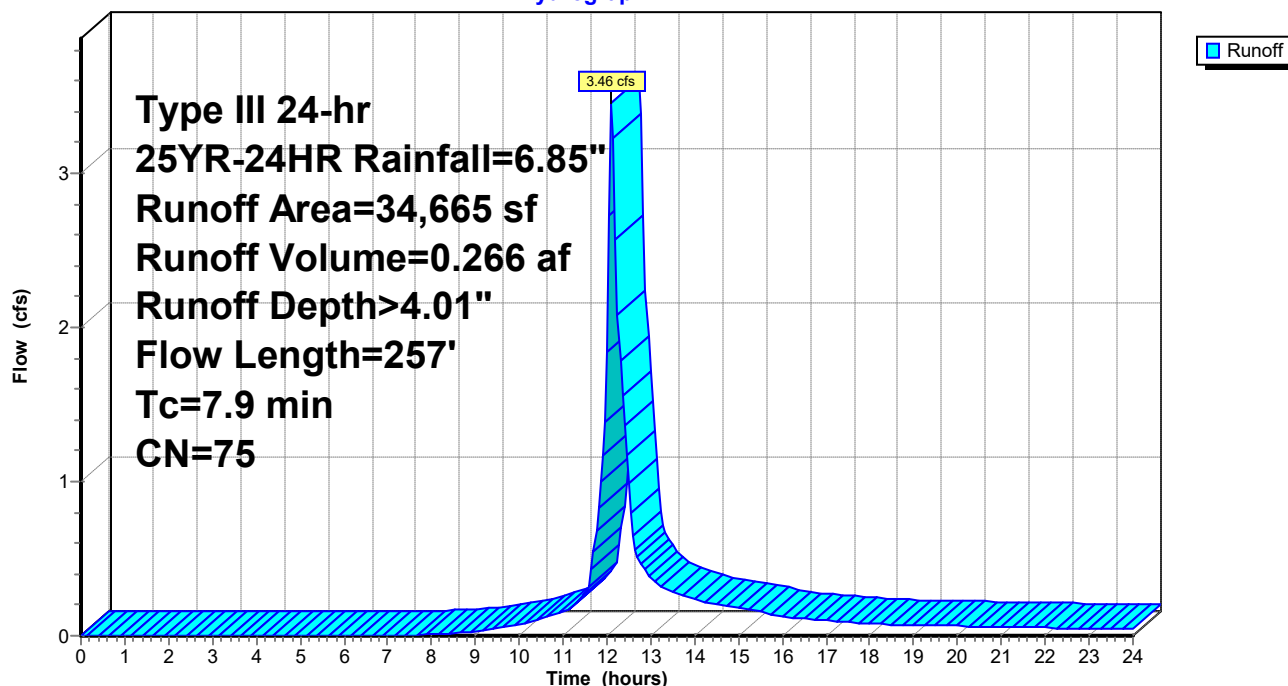
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
4,472	98	Unconnected roofs, HSG A
13,788	39	>75% Grass cover, Good, HSG A
16,405	98	Paved parking, HSG A
34,665	75	Weighted Average
13,788		39.77% Pervious Area
20,877		60.23% Impervious Area
4,472		21.42% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	100	0.0500	0.26		Sheet Flow, Segment #1
					Grass: Short n= 0.150 P2= 3.61"
1.2	110	0.0499	1.56		Shallow Concentrated Flow, Segment #2
					Short Grass Pasture Kv= 7.0 fps
0.3	47	0.0212	2.96		Shallow Concentrated Flow, Segment #3
					Paved Kv= 20.3 fps
7.9	257	Total			

Subcatchment 9S: Certified Driveway

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Subcatchment 10S: Certified Parking Lot

Runoff = 2.54 cfs @ 12.10 hrs, Volume= 0.186 af, Depth> 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
4,472	98	Unconnected roofs, HSG A
5,585	39	>75% Grass cover, Good, HSG A
10,965	98	Paved parking, HSG A
3,846	30	Woods, Good, HSG A
24,868	74	Weighted Average
9,431		37.92% Pervious Area
15,437		62.08% Impervious Area
4,472		28.97% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	18	0.1382	0.28		Sheet Flow, Segment #1 Grass: Short n= 0.150 P2= 3.61"
3.9	29	0.1021	0.12		Sheet Flow, Segment #2 Woods: Light underbrush n= 0.400 P2= 3.61"
0.9	14	0.1439	0.27		Sheet Flow, Segment #3 Grass: Short n= 0.150 P2= 3.61"
0.5	90	0.0223	3.03		Shallow Concentrated Flow, Segment #4 Paved Kv= 20.3 fps
6.4	151	Total			

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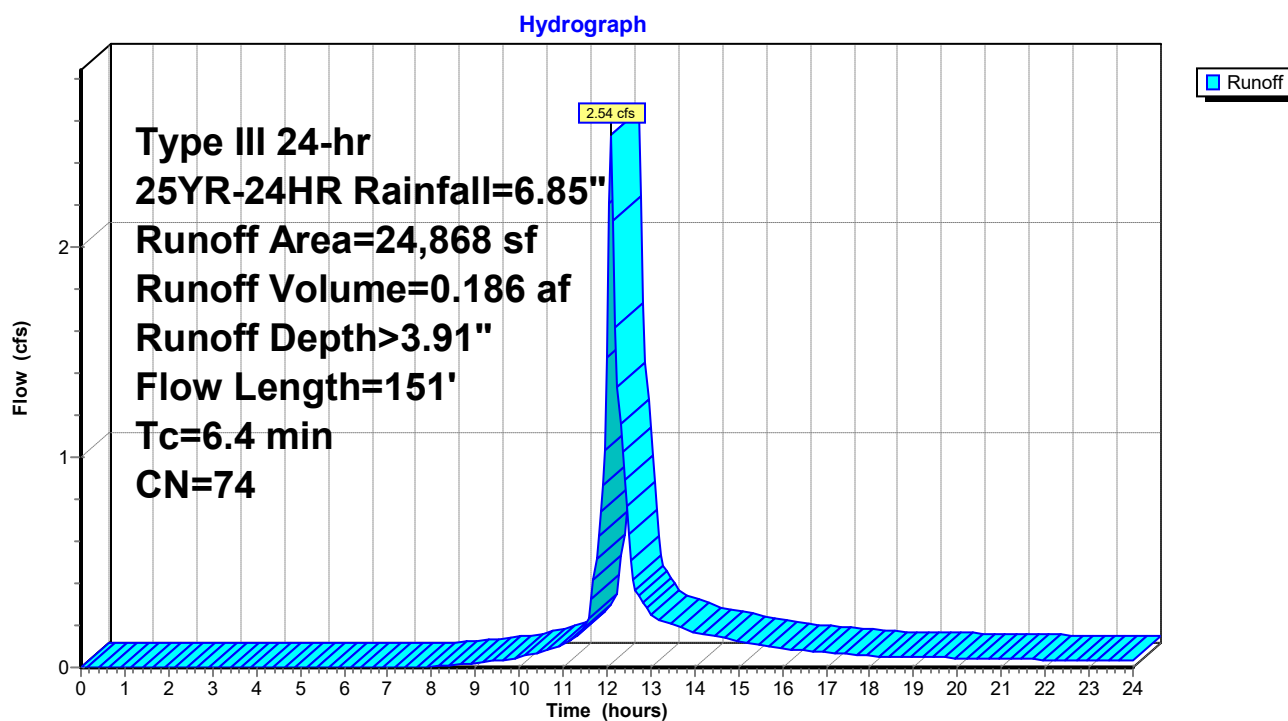
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Subcatchment 10S: Certified Parking Lot



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Summary for Subcatchment 11S: Venture Drive NE

Runoff = 0.69 cfs @ 12.09 hrs, Volume= 0.058 af, Depth> 6.61"

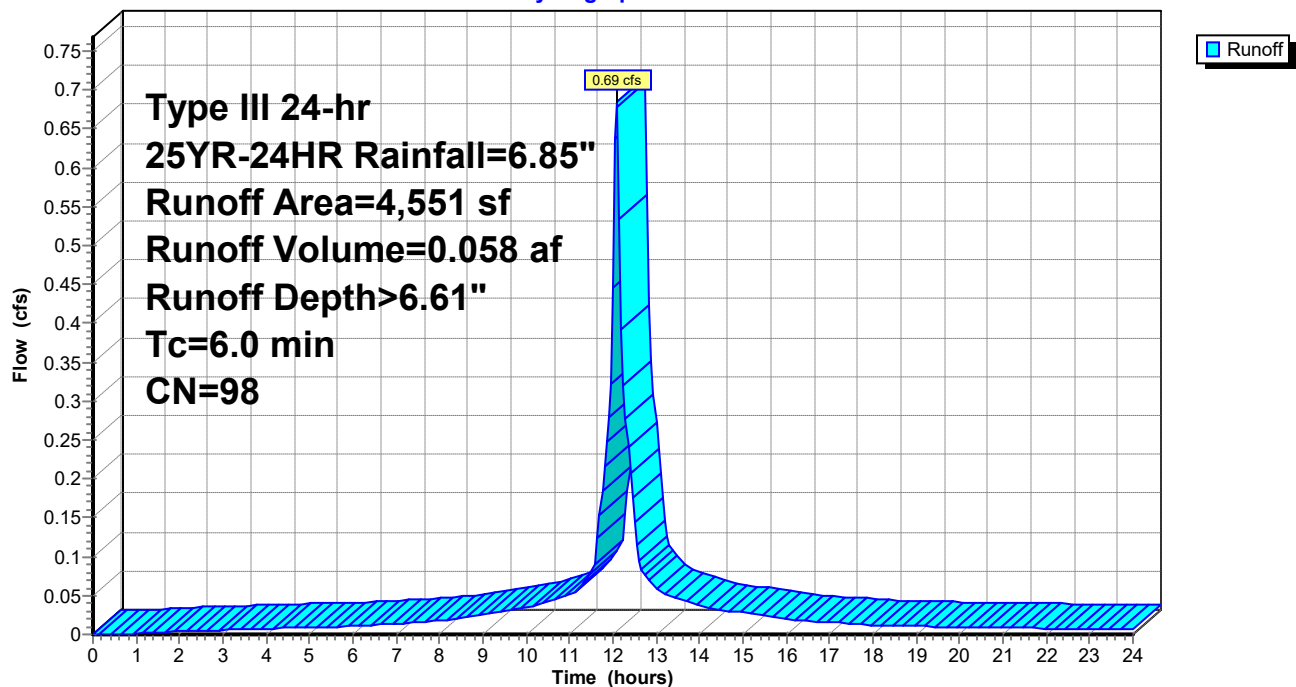
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
4,551	98	Paved parking, HSG A
4,551		100.00% Impervious Area

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

Subcatchment 11S: Venture Drive NE

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Subcatchment 12S: Central Site

Runoff = 1.70 cfs @ 12.27 hrs, Volume= 0.208 af, Depth> 1.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
5,499	39	>75% Grass cover, Good, HSG A
1,890	98	Unconnected pavement, HSG A
44,091	30	Woods, Good, HSG A
279	61	>75% Grass cover, Good, HSG B
110	55	Woods, Good, HSG B
811	74	>75% Grass cover, Good, HSG C
29,507	70	Woods, Good, HSG C
82,187	47	Weighted Average
80,297		97.70% Pervious Area
1,890		2.30% Impervious Area
1,890		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0600	0.13		Sheet Flow, Segment #1
					Woods: Light underbrush n= 0.400 P2= 3.61"
3.0	196	0.0460	1.07		Shallow Concentrated Flow, Segment #2
					Woodland Kv= 5.0 fps
16.0	296	Total			

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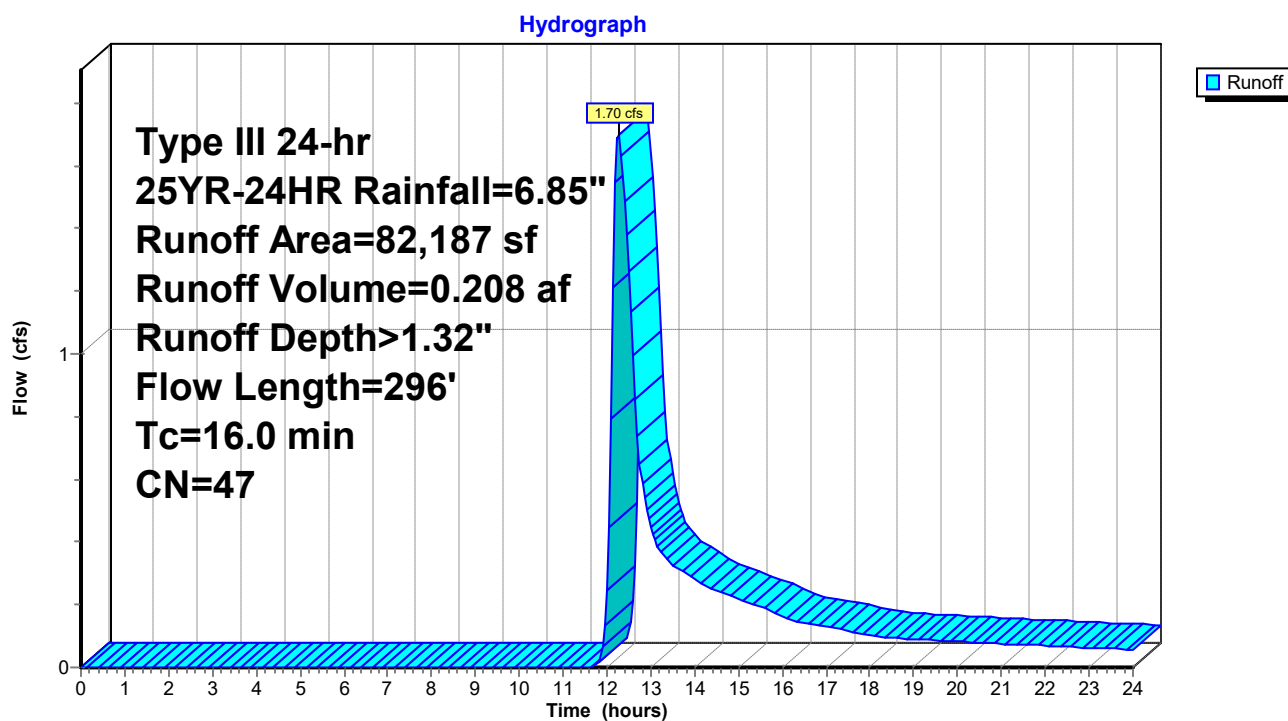
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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Subcatchment 12S: Central Site



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Subcatchment 13S: Venture Drive

Runoff = 0.22 cfs @ 12.09 hrs, Volume= 0.018 af, Depth> 6.61"

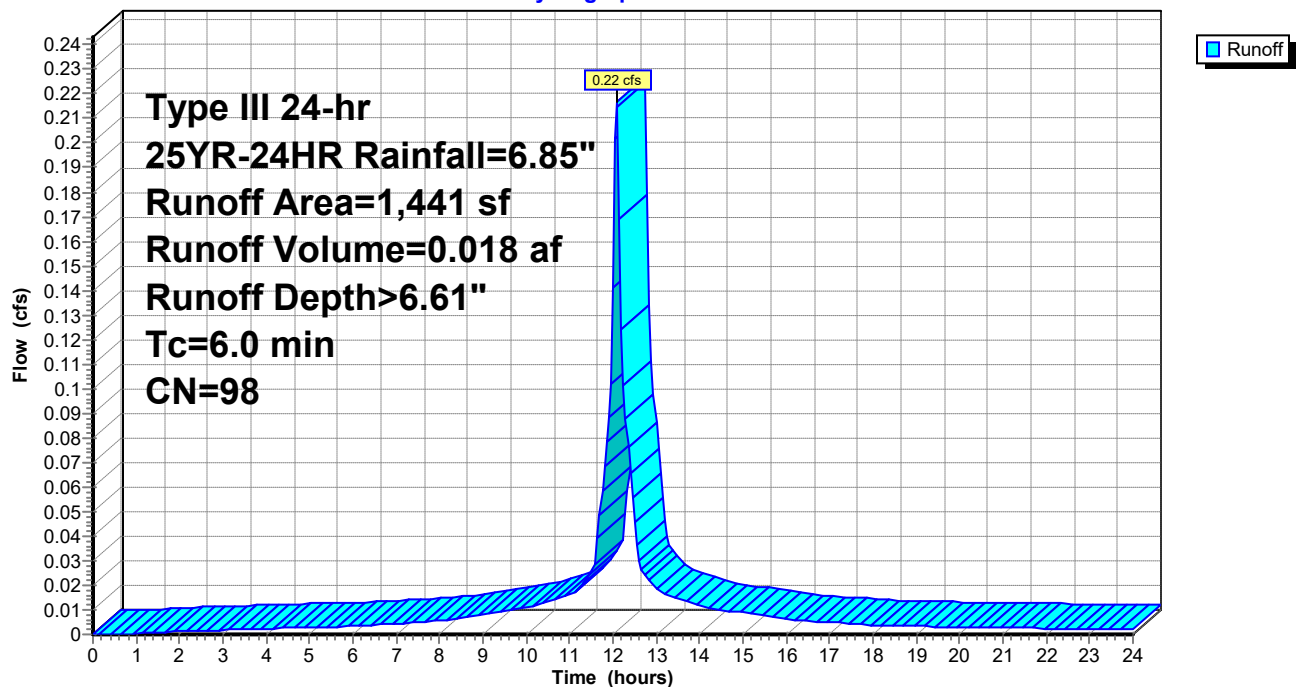
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
1,441	98	Paved parking, HSG B
1,441		100.00% Impervious Area

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

Subcatchment 13S: Venture Drive

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Reach 2R: Reach #2

Inflow Area = 1.895 ac, 41.22% Impervious, Inflow Depth > 2.53" for 25YR-24HR event
Inflow = 4.38 cfs @ 12.16 hrs, Volume= 0.399 af
Outflow = 4.10 cfs @ 12.21 hrs, Volume= 0.398 af, Atten= 6%, Lag= 3.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.08 fps, Min. Travel Time= 4.5 min

Avg. Velocity = 0.33 fps, Avg. Travel Time= 14.6 min

Peak Storage= 1,093 cf @ 12.21 hrs

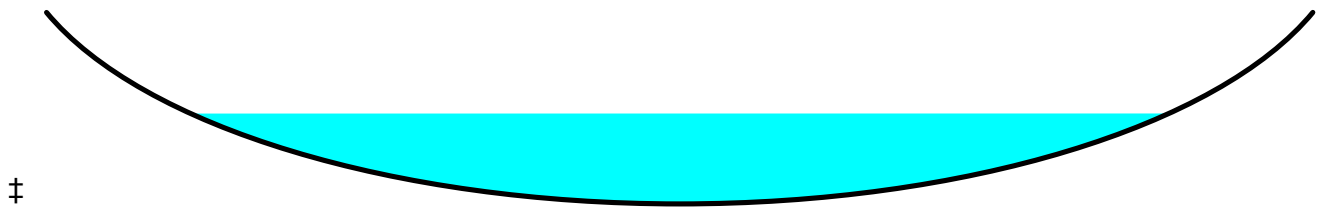
Average Depth at Peak Storage= 0.24'

Bank-Full Depth= 0.50' Flow Area= 11.7 sf, Capacity= 20.81 cfs

35.00' x 0.50' deep Parabolic Channel, n= 0.080 Earth, long dense weeds

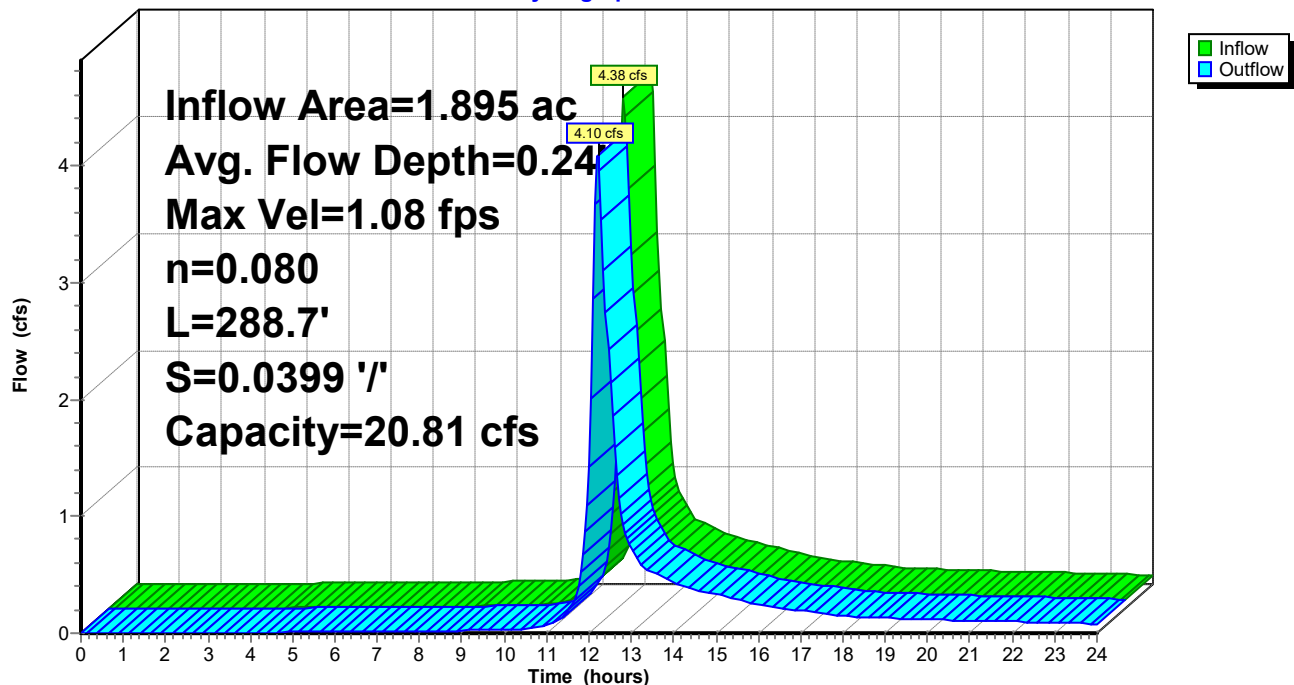
Length= 288.7' Slope= 0.0399 '/'

Inlet Invert= 166.78', Outlet Invert= 155.25'



Reach 2R: Reach #2

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Reach 4R: Reach #4

Inflow Area = 0.178 ac, 73.32% Impervious, Inflow Depth > 5.39" for 25YR-24HR event
Inflow = 2.27 cfs @ 12.20 hrs, Volume= 0.080 af
Outflow = 1.60 cfs @ 12.23 hrs, Volume= 0.080 af, Atten= 29%, Lag= 1.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.69 fps, Min. Travel Time= 2.2 min

Avg. Velocity = 0.19 fps, Avg. Travel Time= 7.9 min

Peak Storage= 204 cf @ 12.23 hrs

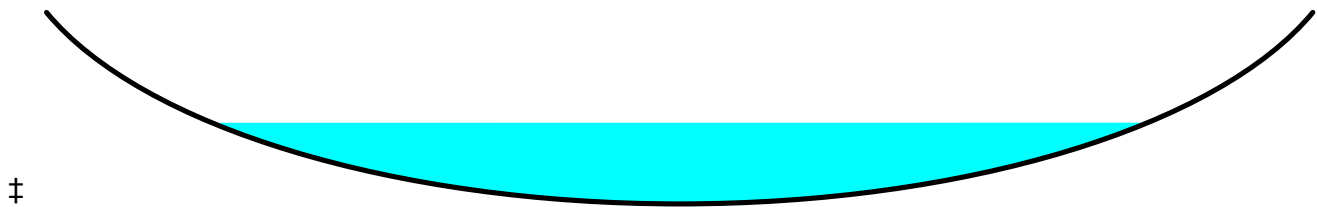
Average Depth at Peak Storage= 0.21'

Bank-Full Depth= 0.50' Flow Area= 8.3 sf, Capacity= 10.50 cfs

25.00' x 0.50' deep Parabolic Channel, n= 0.080 Earth, long dense weeds

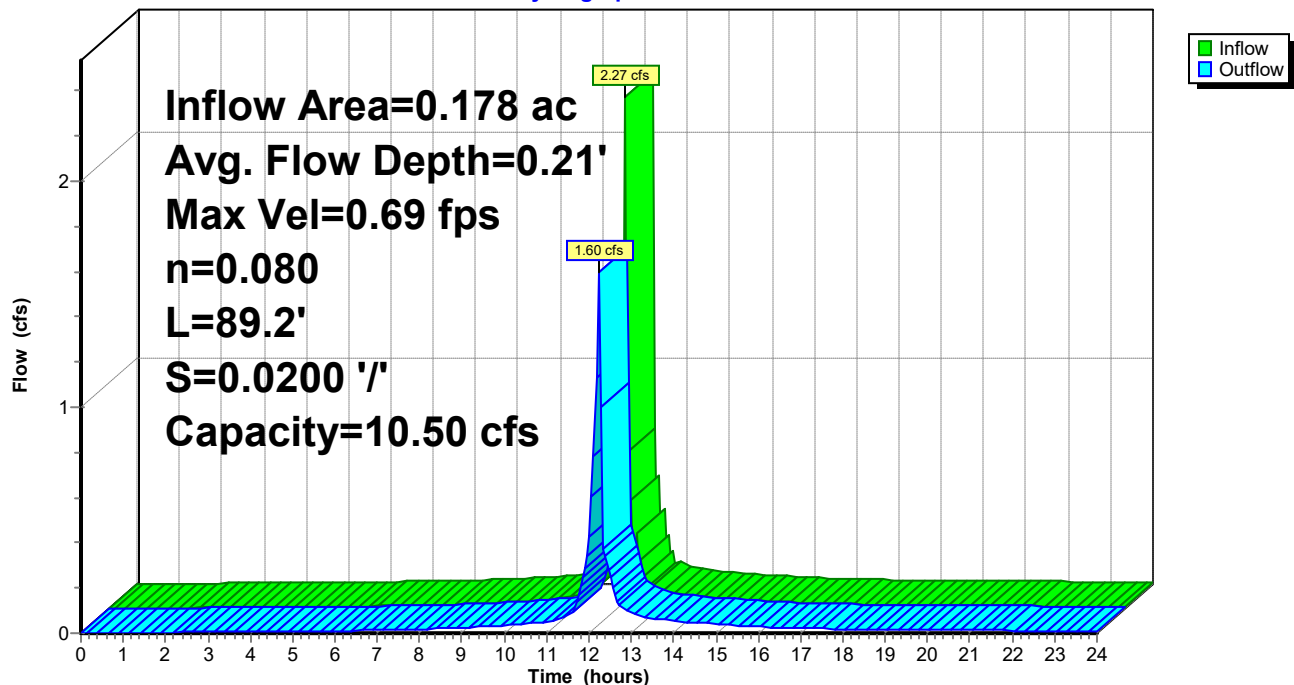
Length= 89.2' Slope= 0.0200 '/'

Inlet Invert= 167.78', Outlet Invert= 166.00'



Reach 4R: Reach #4

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Reach 6R: Reach #6

Inflow Area = 1.666 ac, 65.49% Impervious, Inflow Depth > 4.20" for 25YR-24HR event
Inflow = 6.98 cfs @ 12.11 hrs, Volume= 0.584 af
Outflow = 6.96 cfs @ 12.12 hrs, Volume= 0.583 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.04 fps, Min. Travel Time= 0.4 min

Avg. Velocity = 0.31 fps, Avg. Travel Time= 1.5 min

Peak Storage= 182 cf @ 12.12 hrs

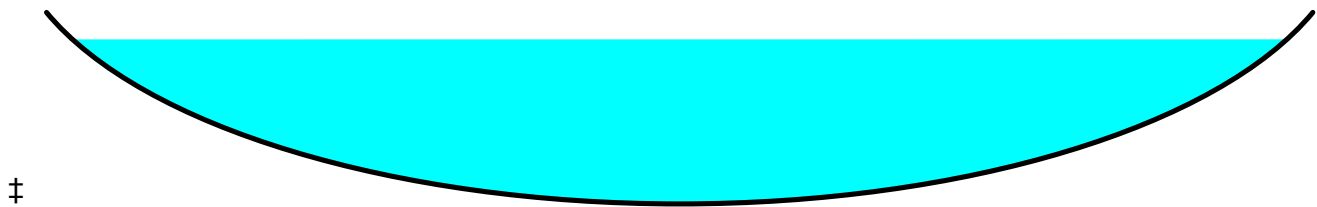
Average Depth at Peak Storage= 0.43'

Bank-Full Depth= 0.50' Flow Area= 8.3 sf, Capacity= 9.65 cfs

25.00' x 0.50' deep Parabolic Channel, n= 0.080 Earth, long dense weeds

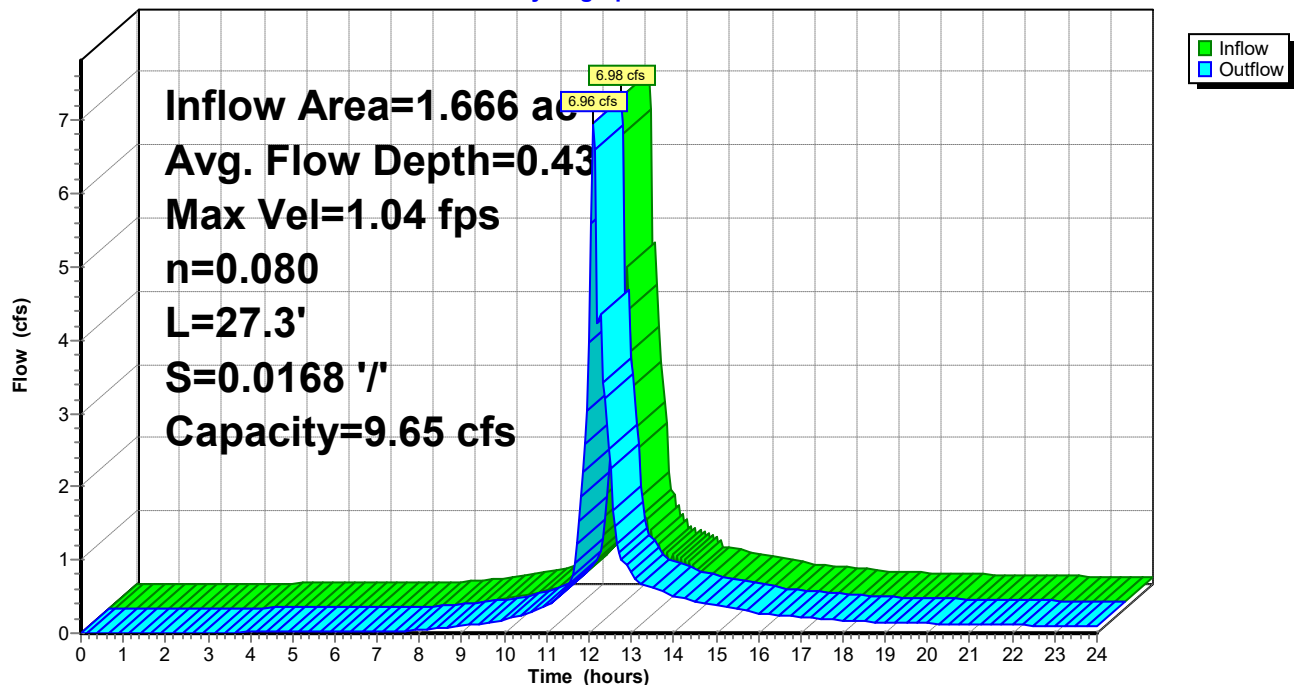
Length= 27.3' Slope= 0.0168 '/'

Inlet Invert= 166.46', Outlet Invert= 166.00'



Reach 6R: Reach #6

Hydrograph



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Summary for Reach 10R: Combined Reach

[62] Hint: Exceeded Reach 4R OUTLET depth by 0.13' @ 12.15 hrs

[61] Hint: Exceeded Reach 6R outlet invert by 0.28' @ 12.15 hrs

Inflow Area = 1.844 ac, 66.25% Impervious, Inflow Depth > 4.32" for 25YR-24HR event
Inflow = 7.77 cfs @ 12.12 hrs, Volume= 0.663 af
Outflow = 7.72 cfs @ 12.13 hrs, Volume= 0.663 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.57 fps, Min. Travel Time= 0.7 min

Avg. Velocity= 0.48 fps, Avg. Travel Time= 2.3 min

Peak Storage= 323 cf @ 12.13 hrs

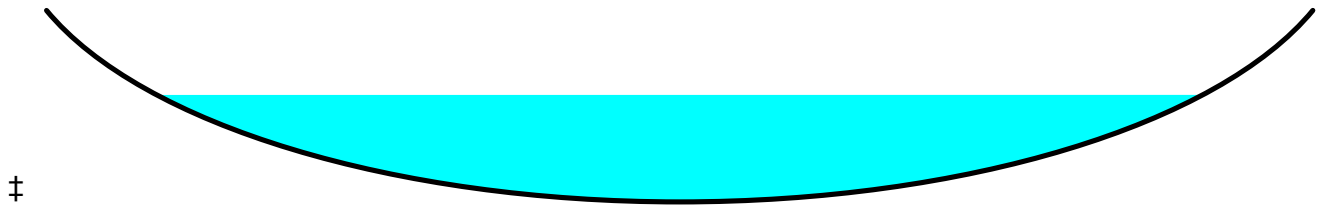
Average Depth at Peak Storage= 0.28'

Bank-Full Depth= 0.50' Flow Area= 11.7 sf, Capacity= 27.17 cfs

35.00' x 0.50' deep Parabolic Channel, n= 0.080 Earth, long dense weeds

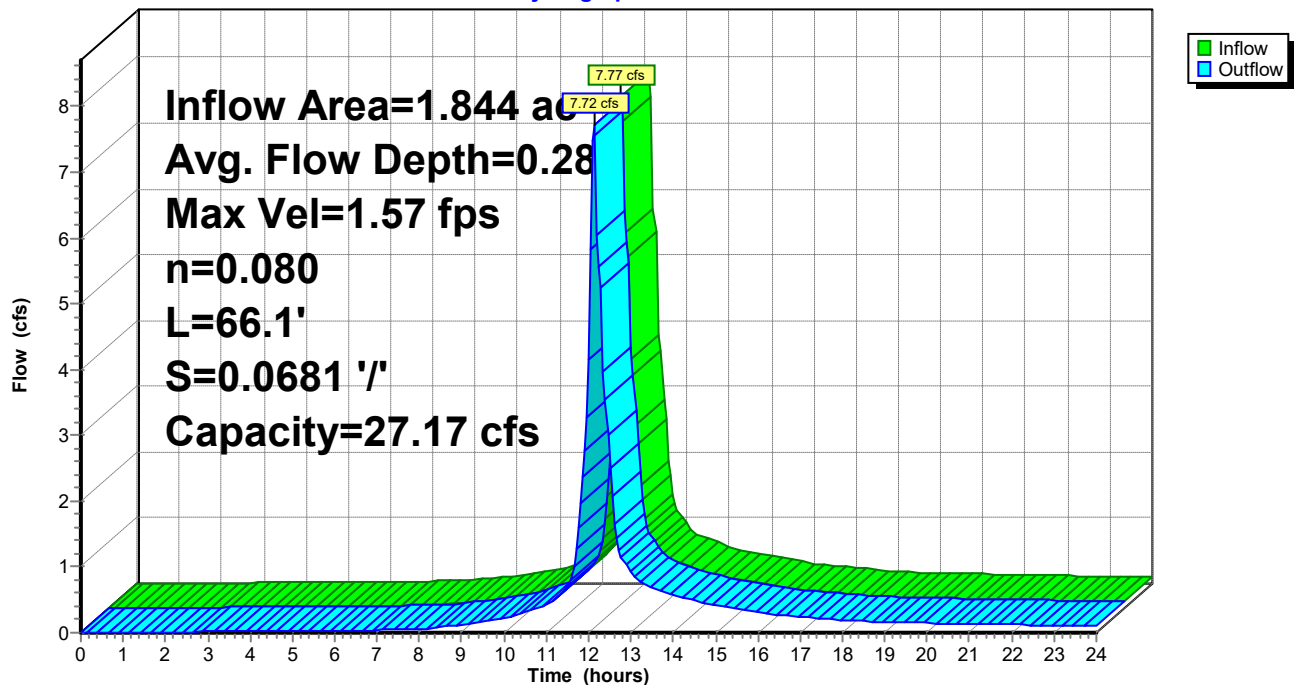
Length= 66.1' Slope= 0.0681 '/'

Inlet Invert= 166.00', Outlet Invert= 161.50'



Reach 10R: Combined Reach

Hydrograph



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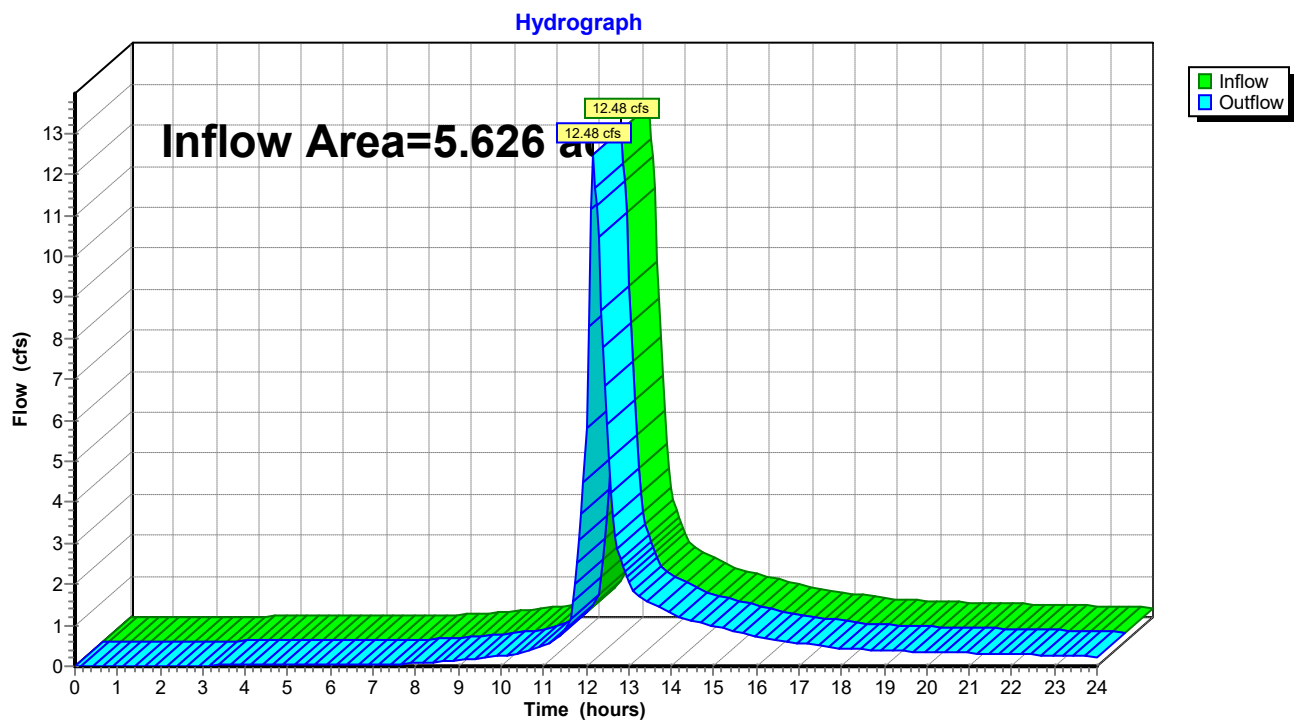
Summary for Reach 100R: Final Reach #100

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

Inflow Area = 5.626 ac, 36.37% Impervious, Inflow Depth > 2.71" for 25YR-24HR event
Inflow = 12.48 cfs @ 12.16 hrs, Volume= 1.269 af
Outflow = 12.48 cfs @ 12.16 hrs, Volume= 1.269 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 100R: Final Reach #100



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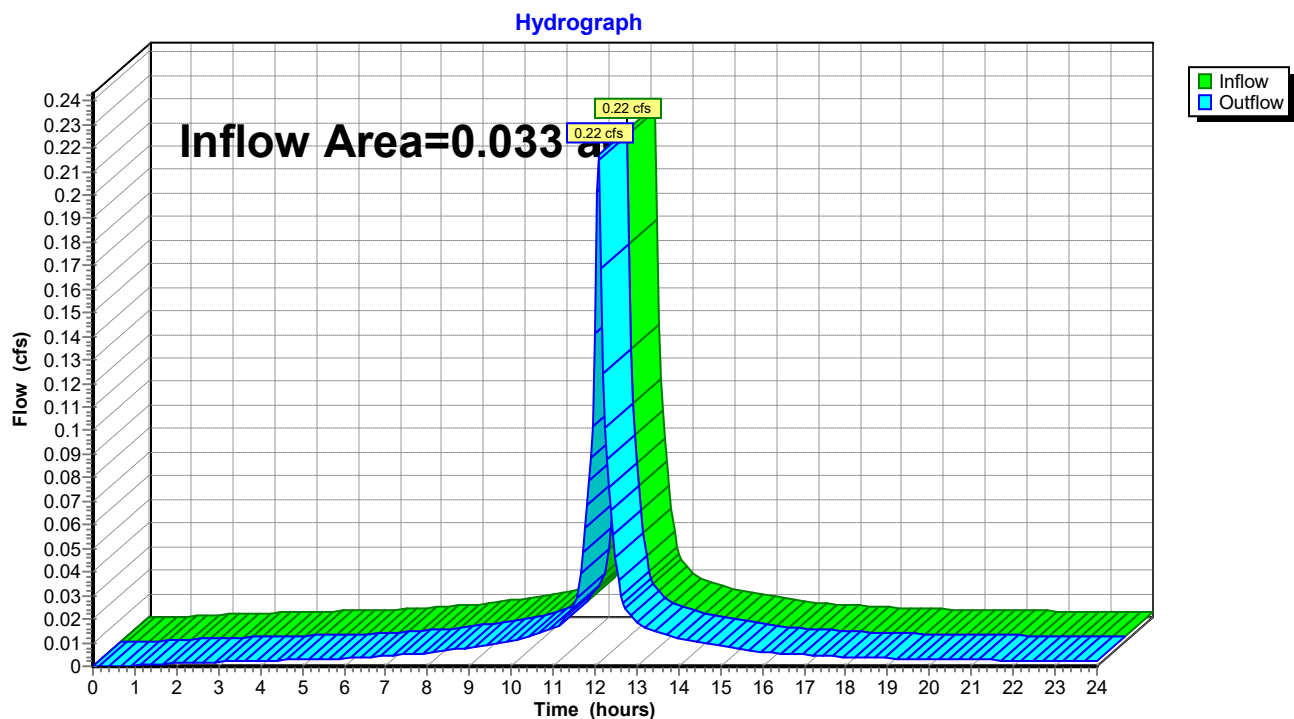
Summary for Reach 200R: Final Reach #200

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

Inflow Area = 0.033 ac, 100.00% Impervious, Inflow Depth > 6.61" for 25YR-24HR event
Inflow = 0.22 cfs @ 12.09 hrs, Volume= 0.018 af
Outflow = 0.22 cfs @ 12.09 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 200R: Final Reach #200



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Pond 1P: Roadside Pond

Inflow Area = 1.794 ac, 37.94% Impervious, Inflow Depth > 2.30" for 25YR-24HR event
 Inflow = 3.98 cfs @ 12.15 hrs, Volume= 0.344 af
 Outflow = 3.92 cfs @ 12.17 hrs, Volume= 0.344 af, Atten= 2%, Lag= 1.0 min
 Primary = 3.92 cfs @ 12.17 hrs, Volume= 0.344 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 170.15' @ 12.17 hrs Surf.Area= 146 sf Storage= 62 cf

Plug-Flow detention time= 0.1 min calculated for 0.344 af (100% of inflow)
 Center-of-Mass det. time= 0.1 min (862.3 - 862.2)

Volume	Invert	Avail.Storage	Storage Description		
#1	168.58'	1,980 cf	Open Water Storage (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
168.58	0	3.2	0	0	0
170.00	93	71.6	44	44	411
171.00	665	272.4	336	380	5,910
172.00	2,778	538.9	1,601	1,980	23,120

Device	Routing	Invert	Outlet Devices
#1	Primary	168.58'	12.0" Round 12" RCP L= 42.3' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 168.58' / 167.36' S= 0.0288 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=3.85 cfs @ 12.17 hrs HW=170.11' TW=168.89' (Dynamic Tailwater)
 ↑ **1=12" RCP** (Inlet Controls 3.85 cfs @ 4.90 fps)

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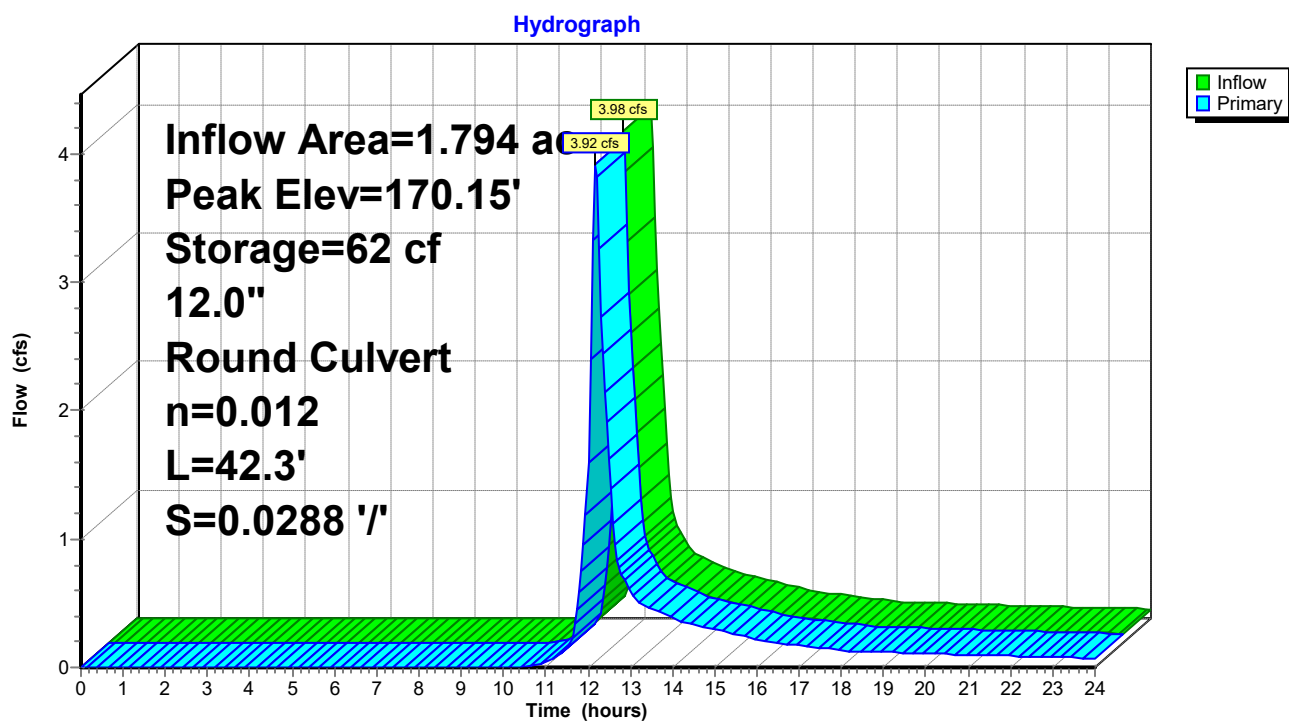
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Pond 1P: Roadside Pond



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Summary for Pond 2P: CB #7325

Inflow Area = 1.895 ac, 41.22% Impervious, Inflow Depth > 2.53" for 25YR-24HR event
Inflow = 4.39 cfs @ 12.16 hrs, Volume= 0.400 af
Outflow = 4.38 cfs @ 12.16 hrs, Volume= 0.399 af, Atten= 0%, Lag= 0.1 min
Primary = 4.38 cfs @ 12.16 hrs, Volume= 0.399 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 168.93' @ 12.16 hrs Surf.Area= 13 sf Storage= 25 cf

Plug-Flow detention time= 0.2 min calculated for 0.399 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (845.9 - 845.8)

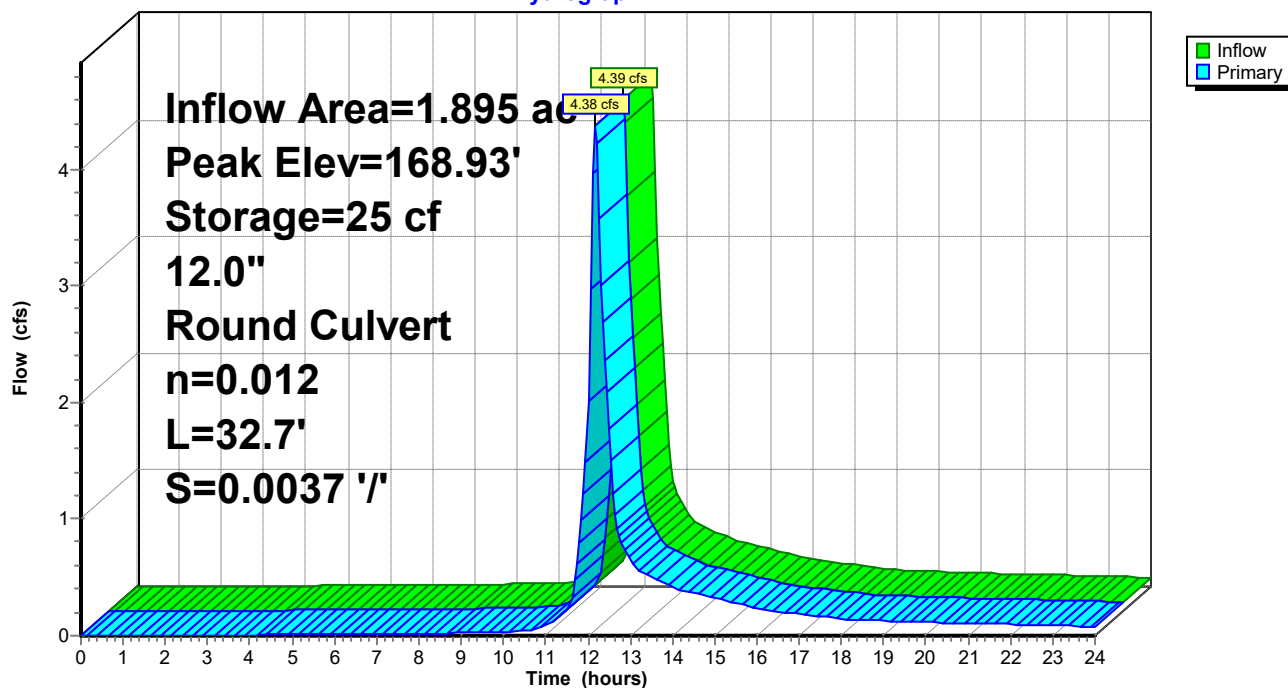
Volume	Invert	Avail.Storage	Storage Description
#1	166.90'	97 cf	4.00'D x 7.70'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	166.90'	12.0" Round 12" RCP L= 32.7' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 166.90' / 166.78' S= 0.0037 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=4.33 cfs @ 12.16 hrs HW=168.90' TW=167.01' (Dynamic Tailwater)
1=12" RCP (Barrel Controls 4.33 cfs @ 5.52 fps)

Pond 2P: CB #7325

Hydrograph



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Summary for Pond 3P: CB #7323

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=3)

Inflow Area = 0.072 ac, 34.19% Impervious, Inflow Depth > 3.61" for 25YR-24HR event
Inflow = 2.01 cfs @ 12.20 hrs, Volume= 0.022 af
Outflow = 1.93 cfs @ 12.20 hrs, Volume= 0.022 af, Atten= 4%, Lag= 0.1 min
Primary = 1.93 cfs @ 12.20 hrs, Volume= 0.022 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 169.67' @ 12.20 hrs Surf.Area= 13 sf Storage= 10 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.3 min (814.5 - 814.2)

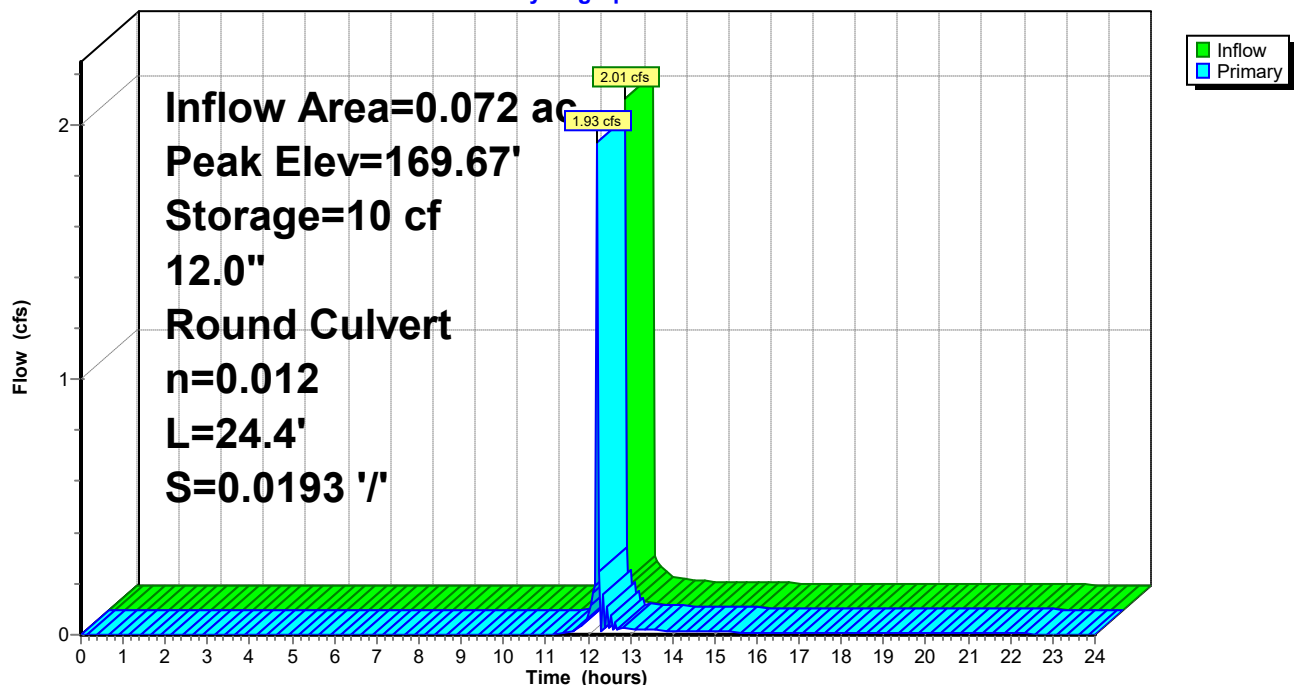
Volume	Invert	Avail.Storage	Storage Description
#1	168.90'	40 cf	4.00'D x 3.20'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	168.90'	12.0" Round 12" RCP L= 24.4' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 168.90' / 168.43' S= 0.0193 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.79 cfs @ 12.20 hrs HW=169.66' TW=169.19' (Dynamic Tailwater)
←1=12" RCP (Outlet Controls 1.79 cfs @ 3.85 fps)

Pond 3P: CB #7323

Hydrograph



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Summary for Pond 4P: CB #7324

Inflow Area = 0.178 ac, 73.32% Impervious, Inflow Depth > 5.39" for 25YR-24HR event
Inflow = 2.33 cfs @ 12.20 hrs, Volume= 0.080 af
Outflow = 2.27 cfs @ 12.20 hrs, Volume= 0.080 af, Atten= 3%, Lag= 0.1 min
Primary = 2.27 cfs @ 12.20 hrs, Volume= 0.080 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 169.19' @ 12.20 hrs Surf.Area= 13 sf Storage= 11 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.3 min (762.5 - 762.3)

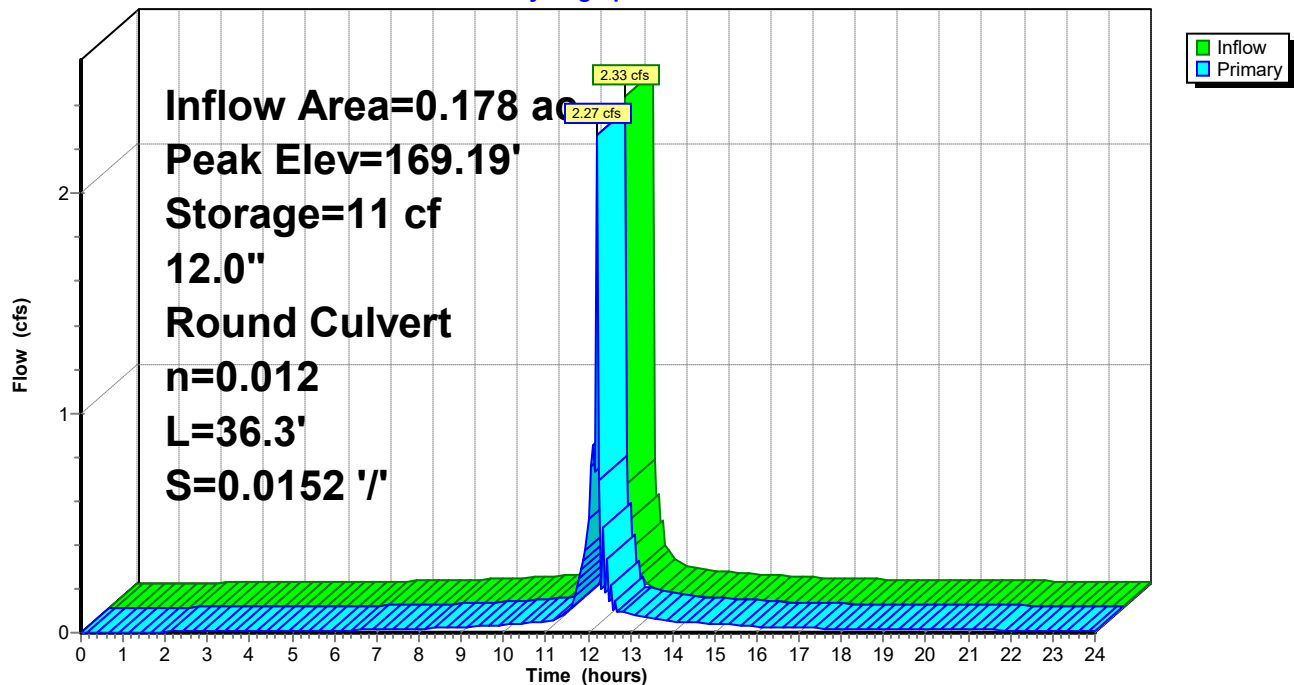
Volume	Invert	Avail.Storage	Storage Description
#1	168.33'	47 cf	4.00'D x 3.75'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	168.33'	12.0" Round 12" RCP L= 36.3' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 168.33' / 167.78' S= 0.0152 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.26 cfs @ 12.20 hrs HW=169.19' TW=167.98' (Dynamic Tailwater)
←1=12" RCP (Inlet Controls 2.26 cfs @ 3.15 fps)

Pond 4P: CB #7324

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Pond 5P: CB #7320

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=11)

Inflow Area = 0.043 ac, 100.00% Impervious, Inflow Depth > 7.67" for 25YR-24HR event
 Inflow = 0.75 cfs @ 12.16 hrs, Volume= 0.028 af
 Outflow = 0.75 cfs @ 12.18 hrs, Volume= 0.028 af, Atten= 1%, Lag= 1.0 min
 Primary = 0.75 cfs @ 12.18 hrs, Volume= 0.028 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 170.40' @ 12.16 hrs Surf.Area= 13 sf Storage= 41 cf
 Flood Elev= 170.63' Surf.Area= 13 sf Storage= 44 cf

Plug-Flow detention time= 1.2 min calculated for 0.028 af (100% of inflow)
 Center-of-Mass det. time= 1.0 min (742.1 - 741.1)

Volume	Invert	Avail.Storage	Storage Description
#1	167.11'	44 cf	4.00'D x 3.52'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	167.11'	12.0" Round 12" RCP L= 25.3' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 167.11' / 166.51' S= 0.0237 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	170.62'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=4.04 cfs @ 12.18 hrs HW=170.12' TW=168.98' (Dynamic Tailwater)
 ↳ **1=12" RCP** (Inlet Controls 4.04 cfs @ 5.15 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=167.11' TW=0.00' (Dynamic Tailwater)
 ↳ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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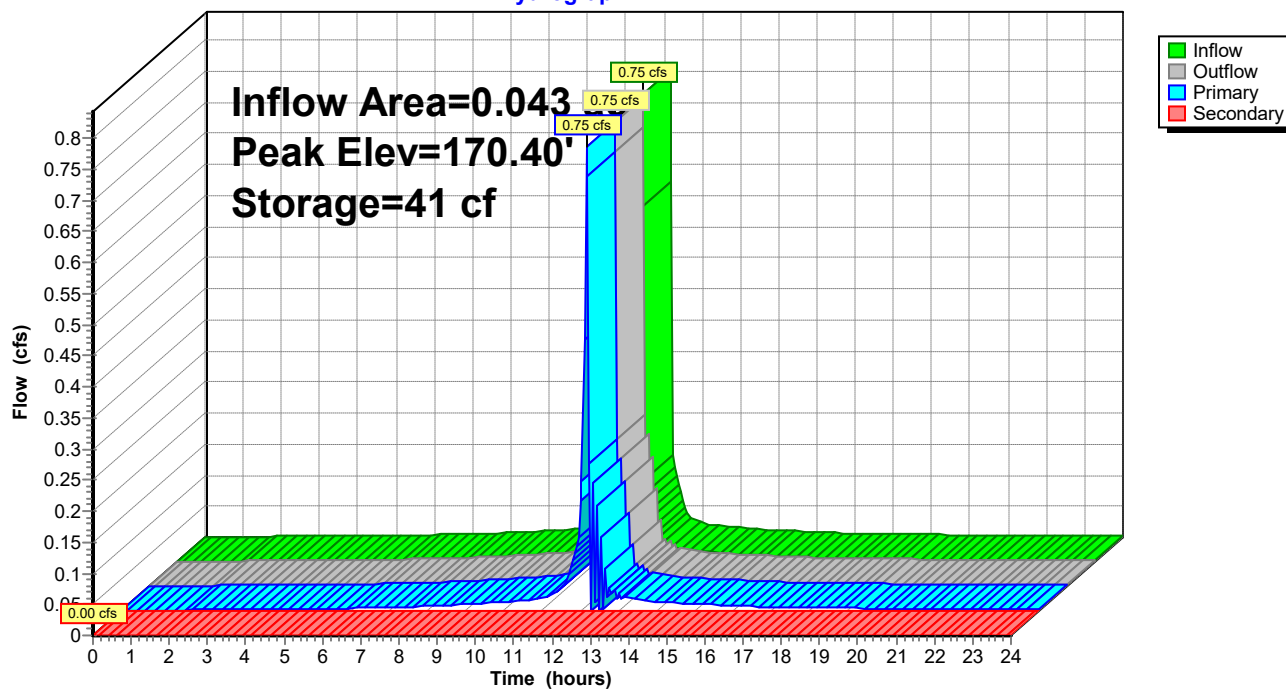
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Pond 5P: CB #7320

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Pond 6P: CB #7319

[80] Warning: Exceeded Pond 5P by 1.00' @ 12.10 hrs (3.78 cfs 0.067 af)

Inflow Area = 1.666 ac, 65.49% Impervious, Inflow Depth > 4.20" for 25YR-24HR event
 Inflow = 7.03 cfs @ 12.11 hrs, Volume= 0.584 af
 Outflow = 6.98 cfs @ 12.11 hrs, Volume= 0.584 af, Atten= 1%, Lag= 0.2 min
 Primary = 6.98 cfs @ 12.11 hrs, Volume= 0.584 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 170.36' @ 12.11 hrs Surf.Area= 13 sf Storage= 49 cf
 Flood Elev= 170.61' Surf.Area= 13 sf Storage= 52 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.2 min (810.3 - 810.1)

Volume	Invert	Avail.Storage	Storage Description
#1	166.45'	52 cf	4.00'D x 4.16'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	166.46'	12.0" Round 12" RCP L= 27.1' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 166.45' / 166.46' S= -0.0004 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	170.60'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=6.85 cfs @ 12.11 hrs HW=170.24' TW=166.89' (Dynamic Tailwater)
 ↑1=12" RCP (Inlet Controls 6.85 cfs @ 8.72 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=166.45' TW=0.00' (Dynamic Tailwater)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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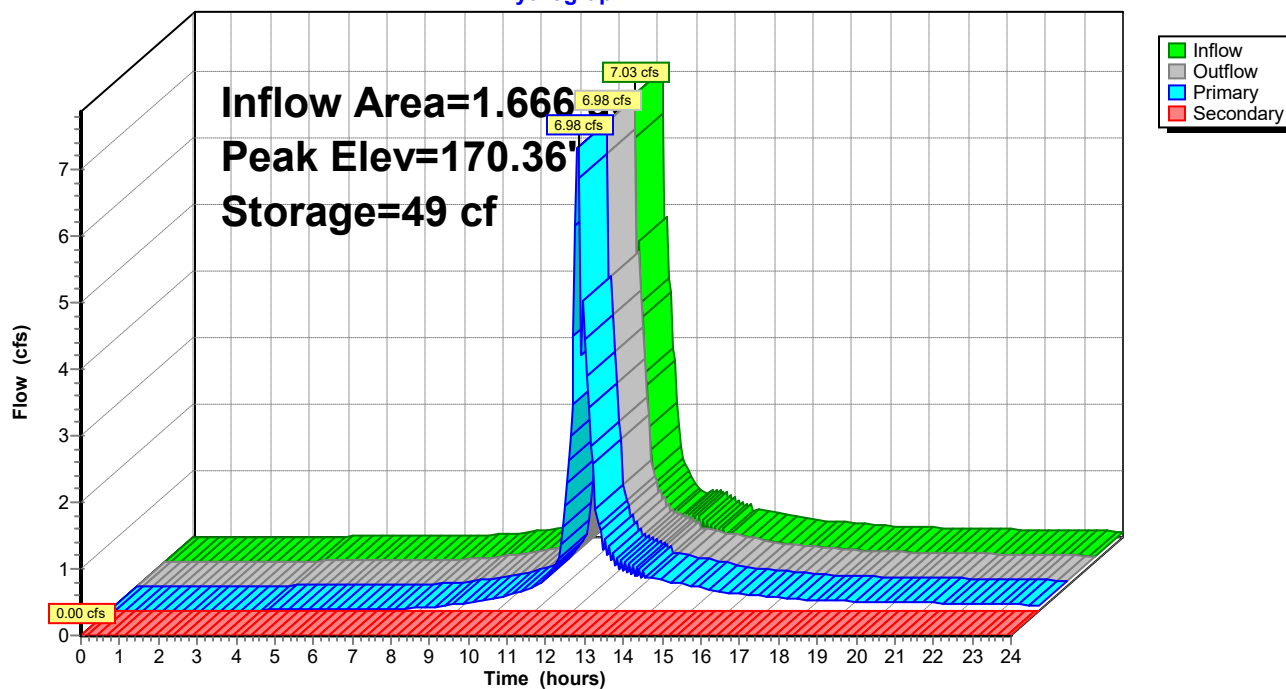
Type III 24-hr 25YR-24HR Rainfall=6.85"

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Pond 6P: CB #7319

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Pond 7P: CB #3201

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=6)

Inflow Area = 0.078 ac, 53.78% Impervious, Inflow Depth > 3.28" for 25YR-24HR event
 Inflow = 0.23 cfs @ 12.20 hrs, Volume= 0.021 af
 Outflow = 0.45 cfs @ 12.34 hrs, Volume= 0.021 af, Atten= 0%, Lag= 8.9 min
 Primary = 0.45 cfs @ 12.34 hrs, Volume= 0.021 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Peak Elev= 177.11' @ 12.29 hrs Surf.Area= 13 sf Storage= 34 cf

Flood Elev= 177.22' Surf.Area= 13 sf Storage= 35 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 0.2 min (841.9 - 841.8)

Volume	Invert	Avail.Storage	Storage Description
#1	174.37'	35 cf	4.00'D x 2.80'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	174.37'	12.0" Round 12" RCP L= 17.5' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 174.37' / 173.93' S= 0.0251 ' / Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	177.16'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=2.55 cfs @ 12.34 hrs HW=175.32' TW=174.23' (Dynamic Tailwater)↑**1=12" RCP** (Inlet Controls 2.55 cfs @ 3.31 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=174.37' TW=173.61' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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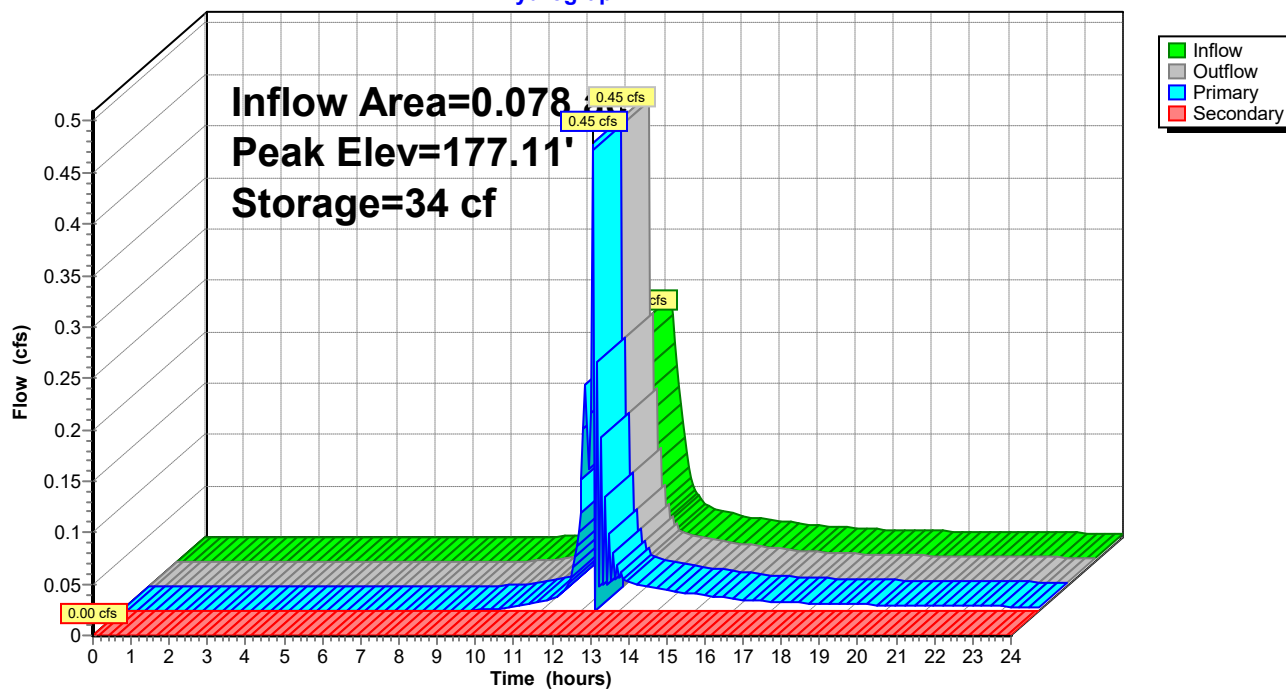
Type III 24-hr 25YR-24HR Rainfall=6.85"

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Pond 7P: CB #3201

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Pond 8P: CB #3202

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

[80] Warning: Exceeded Pond 7P by 1.24' @ 12.20 hrs (3.99 cfs 0.034 af)

Inflow Area = 0.102 ac, 64.52% Impervious, Inflow Depth > 4.06" for 25YR-24HR event
 Inflow = 0.51 cfs @ 12.34 hrs, Volume= 0.034 af
 Outflow = 0.55 cfs @ 12.31 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.55 cfs @ 12.31 hrs, Volume= 0.034 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 177.11' @ 12.24 hrs Surf.Area= 13 sf Storage= 44 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 0.6 min (805.1 - 804.4)

Volume	Invert	Avail.Storage	Storage Description
#1	173.61'	57 cf	4.00'D x 4.54'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	173.61'	12.0" Round 12" RCP L= 25.8' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 173.61' / 173.31' S= 0.0116 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	178.14'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=3.23 cfs @ 12.31 hrs HW=174.84' TW=174.04' (Dynamic Tailwater)↑**1=12" RCP** (Inlet Controls 3.23 cfs @ 4.11 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=173.61' TW=173.21' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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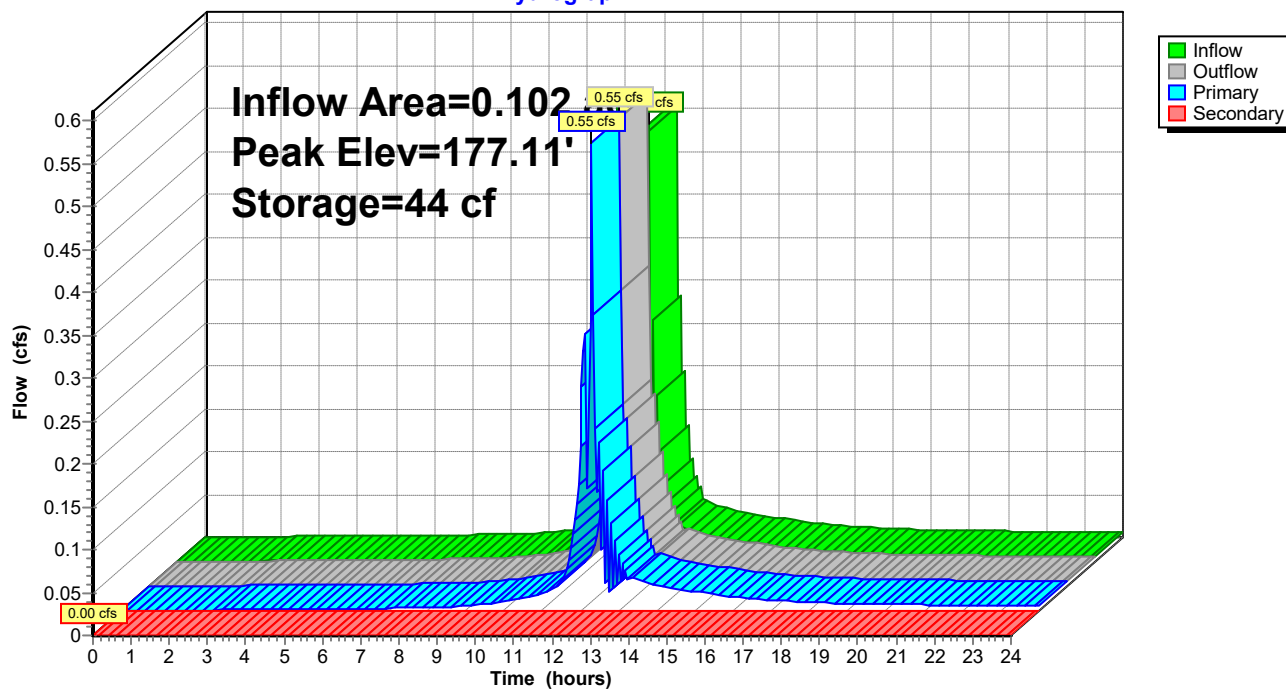
Type III 24-hr 25YR-24HR Rainfall=6.85"

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Pond 8P: CB #3202

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Pond 9P: CB #3203

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=5)

[80] Warning: Exceeded Pond 8P by 1.30' @ 12.15 hrs (4.31 cfs 0.049 af)

Inflow Area = 0.898 ac, 60.71% Impervious, Inflow Depth > 4.02" for 25YR-24HR event
 Inflow = 3.77 cfs @ 12.12 hrs, Volume= 0.301 af
 Outflow = 3.74 cfs @ 12.11 hrs, Volume= 0.301 af, Atten= 1%, Lag= 0.0 min
 Primary = 3.74 cfs @ 12.11 hrs, Volume= 0.301 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 177.11' @ 12.19 hrs Surf.Area= 13 sf Storage= 49 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.1 min (819.9 - 819.7)

Volume	Invert	Avail.Storage	Storage Description
#1	173.21'	62 cf	4.00'D x 4.92'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	173.21'	12.0" Round 12" RCP L= 208.7' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 173.21' / 168.55' S= 0.0223 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	178.12'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=1.90 cfs @ 12.11 hrs HW=174.93' TW=174.29' (Dynamic Tailwater)
 ↑**1=12" RCP** (Outlet Controls 1.90 cfs @ 2.42 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=173.21' TW=171.40' (Dynamic Tailwater)
 ↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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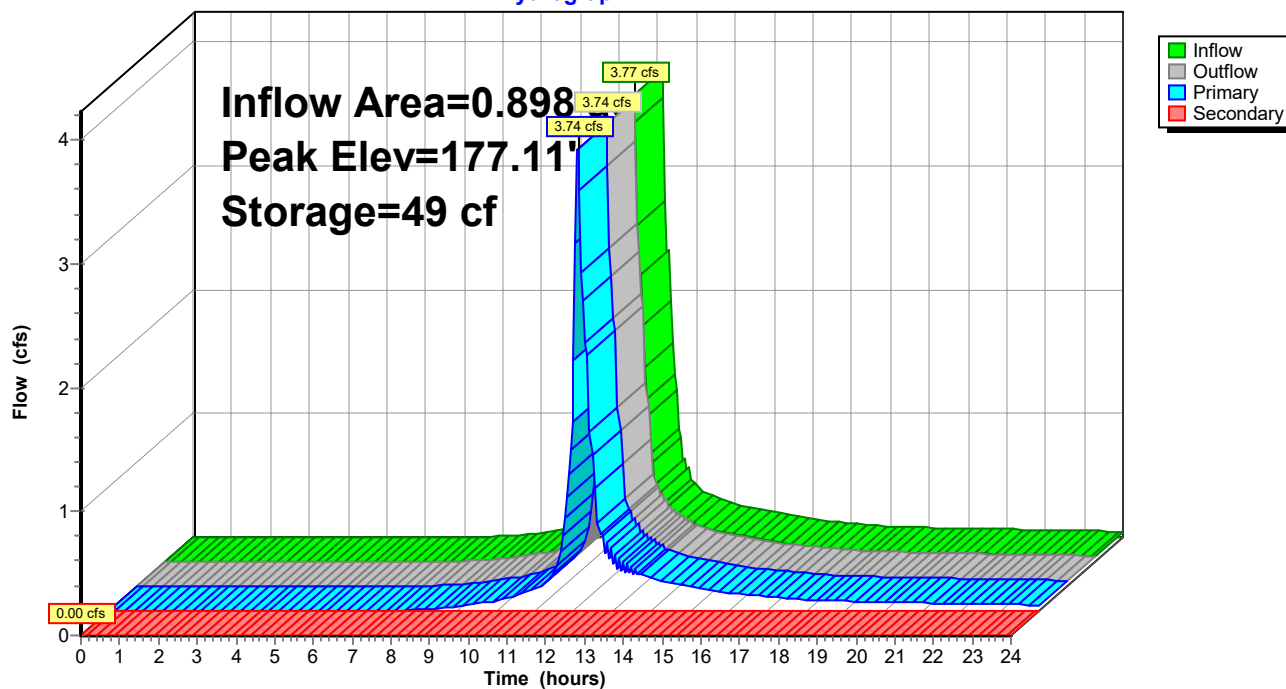
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Pond 9P: CB #3203

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Pond 10P: CB #7322

[93] Warning: Storage range exceeded by 0.50'

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=13)

Inflow Area = 0.571 ac, 62.08% Impervious, Inflow Depth > 3.91" for 25YR-24HR event
 Inflow = 2.54 cfs @ 12.10 hrs, Volume= 0.186 af
 Outflow = 2.55 cfs @ 12.09 hrs, Volume= 0.186 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.55 cfs @ 12.09 hrs, Volume= 0.178 af
 Secondary = 1.87 cfs @ 12.20 hrs, Volume= 0.008 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Peak Elev= 174.65' @ 12.20 hrs Surf.Area= 13 sf Storage= 35 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 0.2 min (822.8 - 822.7)

Volume	Invert	Avail.Storage	Storage Description
#1	171.40'	35 cf	4.00'D x 2.75'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	171.40'	12.0" Round 12" RCP L= 1.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 171.40' / 170.45' S= 0.9500 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	174.14'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=172.33' TW=173.48' (Dynamic Tailwater)↑**1=12" RCP** (Controls 0.00 cfs)**Secondary OutFlow** Max=1.86 cfs @ 12.20 hrs HW=174.64' TW=169.67' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 1.86 cfs @ 1.85 fps)

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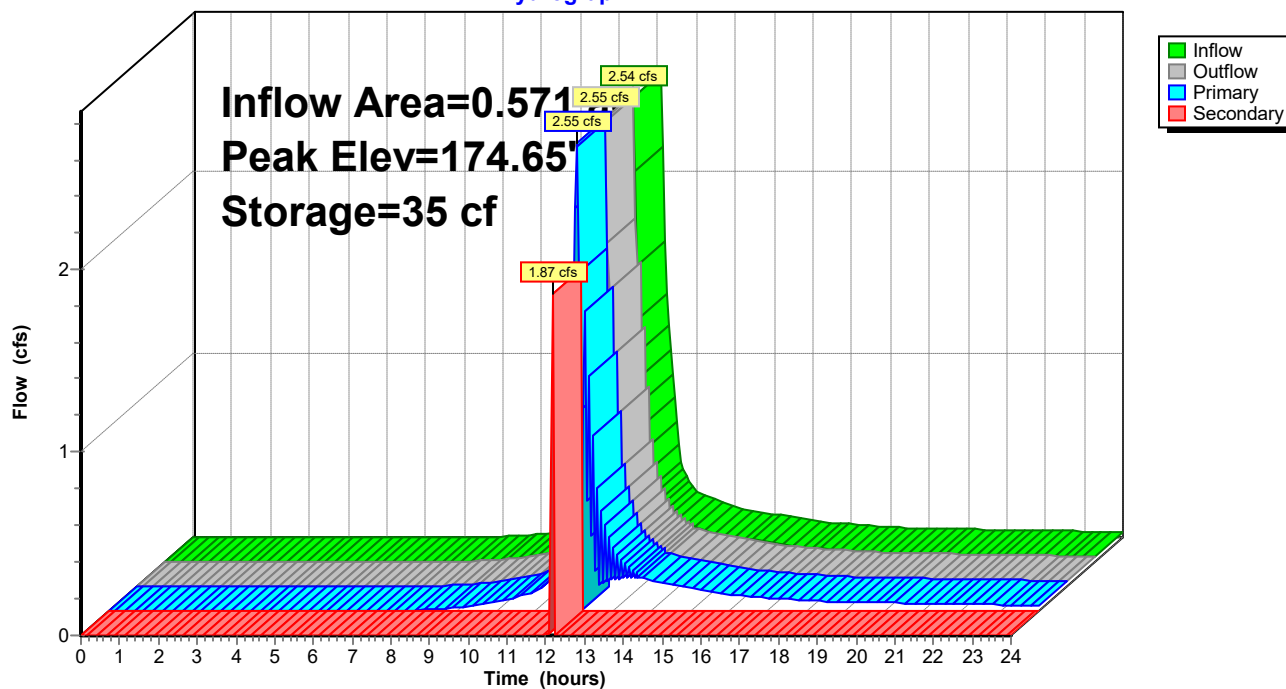
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Pond 10P: CB #7322

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Pond 11P: CB #7321

[93] Warning: Storage range exceeded by 0.42'

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=101)

Inflow Area = 0.104 ac, 100.00% Impervious, Inflow Depth > 6.61" for 25YR-24HR event
 Inflow = 0.69 cfs @ 12.09 hrs, Volume= 0.058 af
 Outflow = 0.63 cfs @ 12.24 hrs, Volume= 0.057 af, Atten= 8%, Lag= 9.1 min
 Primary = 0.61 cfs @ 12.25 hrs, Volume= 0.053 af
 Secondary = 0.55 cfs @ 12.17 hrs, Volume= 0.004 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 173.39' @ 12.17 hrs Surf.Area= 13 sf Storage= 73 cf

Plug-Flow detention time= 6.3 min calculated for 0.057 af (99% of inflow)
 Center-of-Mass det. time= 3.4 min (746.2 - 742.8)

Volume	Invert	Avail.Storage	Storage Description
#1	167.17'	73 cf	4.00'D x 5.80'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	167.86'	12.0" Round 12" RCP L= 25.8' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 167.17' / 167.86' S= -0.0267 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	172.96'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=2.56 cfs @ 12.25 hrs HW=170.76' TW=170.30' (Dynamic Tailwater)
 ↳ **1=12" RCP** (Inlet Controls 2.56 cfs @ 3.25 fps)

Secondary OutFlow Max=0.48 cfs @ 12.17 hrs HW=173.17' TW=170.22' (Dynamic Tailwater)
 ↳ **2=Broad-Crested Rectangular Weir** (Weir Controls 0.48 cfs @ 1.16 fps)

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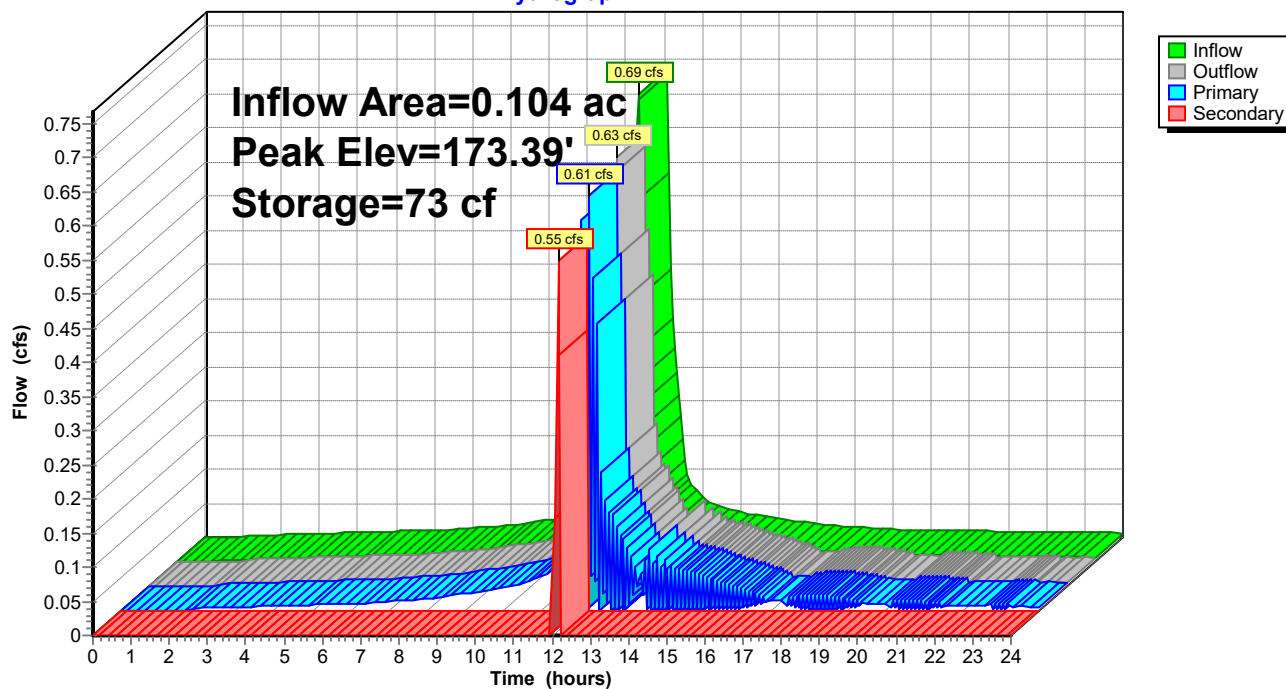
Type III 24-hr 25YR-24HR Rainfall=6.85"

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Pond 11P: CB #7321

Hydrograph



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Summary for Pond D1P: DMH #4198

[93] Warning: Storage range exceeded by 1.70'

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

[80] Warning: Exceeded Pond 10P by 1.59' @ 12.10 hrs (4.77 cfs 0.039 af)

Inflow Area = 1.468 ac, 61.24% Impervious, Inflow Depth > 3.91" for 25YR-24HR event
 Inflow = 6.25 cfs @ 12.10 hrs, Volume= 0.479 af
 Outflow = 6.05 cfs @ 12.11 hrs, Volume= 0.479 af, Atten= 3%, Lag= 0.3 min
 Primary = 6.05 cfs @ 12.11 hrs, Volume= 0.479 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 175.75' @ 12.15 hrs Surf.Area= 13 sf Storage= 70 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.1 min (822.6 - 822.5)

Volume	Invert	Avail.Storage	Storage Description
#1	168.45'	70 cf	4.00'D x 5.60'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	168.45'	12.0" Round 12" RCP L= 40.1' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 168.45' / 168.02' S= 0.0107 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.75 cfs @ 12.11 hrs HW=174.17' TW=173.64' (Dynamic Tailwater)
 ↑**1=12" RCP** (Inlet Controls 2.75 cfs @ 3.50 fps)

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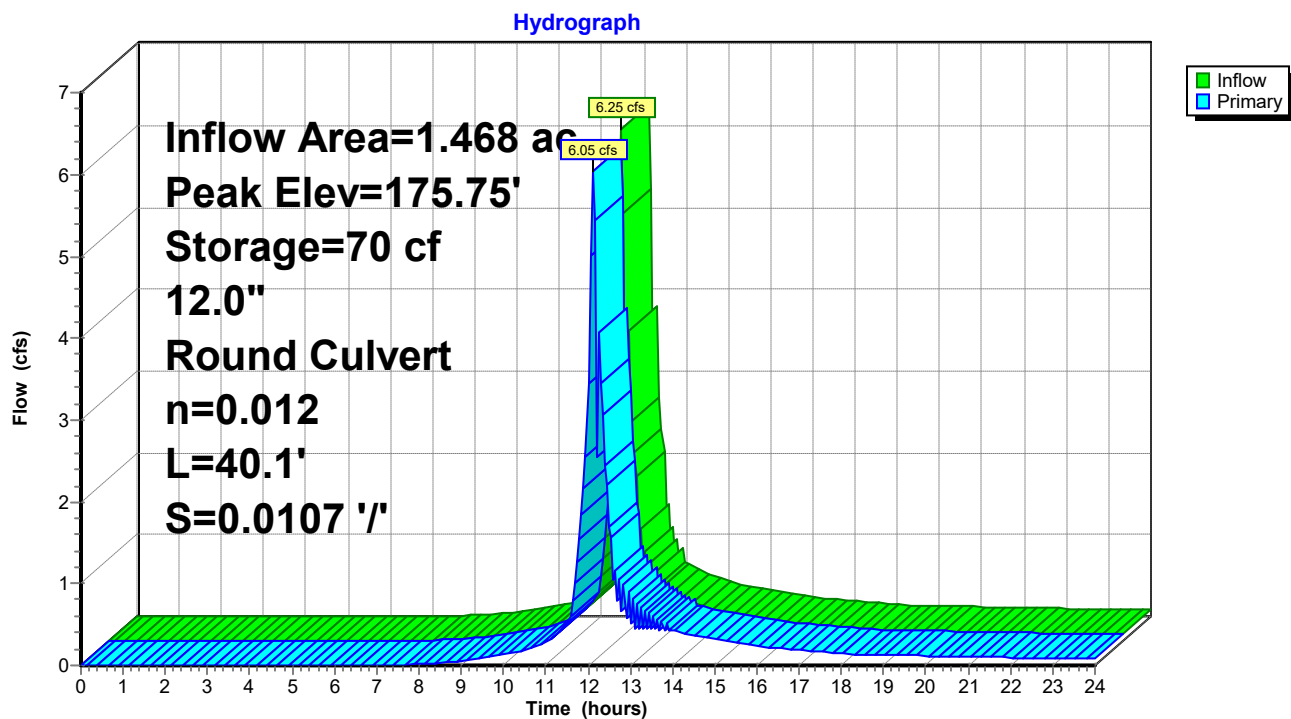
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Pond D1P: DMH #4198



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Pond D2P: DMH #8054

[93] Warning: Storage range exceeded by 0.92'

[80] Warning: Exceeded Pond 11P by 2.28' @ 12.10 hrs (5.71 cfs 0.134 af)

[80] Warning: Exceeded Pond D1P by 0.15' @ 12.05 hrs (1.44 cfs 0.006 af)

Inflow Area = 1.573 ac, 63.82% Impervious, Inflow Depth > 4.06" for 25YR-24HR event
 Inflow = 6.52 cfs @ 12.10 hrs, Volume= 0.532 af
 Outflow = 6.50 cfs @ 12.10 hrs, Volume= 0.532 af, Atten= 0%, Lag= 0.2 min
 Primary = 6.50 cfs @ 12.10 hrs, Volume= 0.532 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 173.88' @ 12.12 hrs Surf.Area= 13 sf Storage= 64 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.1 min (815.2 - 815.0)

Volume	Invert	Avail.Storage	Storage Description
#1	167.86'	64 cf	4.00'D x 5.10'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	167.86'	12.0" Round 12" RCP L= 96.9' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 167.86' / 166.51' S= 0.0139 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=5.70 cfs @ 12.10 hrs HW=173.68' TW=170.33' (Dynamic Tailwater)
 ↑1=12" RCP (Outlet Controls 5.70 cfs @ 7.26 fps)

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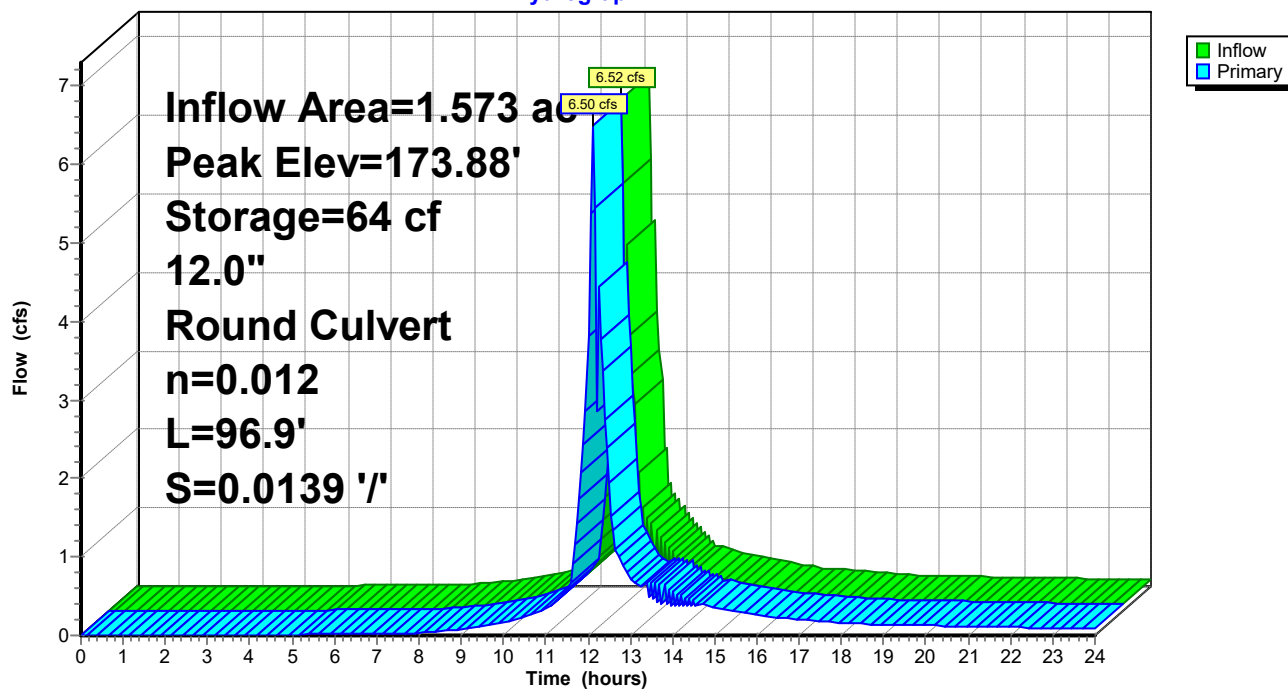
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Pond D2P: DMH #8054

Hydrograph



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Type III 24-hr 2YR-24HR Rainfall=3.60"

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Page 1

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Quality Way North	Runoff Area=78,168 sf 37.94% Impervious Runoff Depth>0.49" Flow Length=326' Tc=10.1 min CN=58 Runoff=0.55 cfs 0.073 af
Subcatchment 2S: Quality Way SW	Runoff Area=4,365 sf 100.00% Impervious Runoff Depth>3.36" Tc=6.0 min CN=98 Runoff=0.34 cfs 0.028 af
Subcatchment 3S: Quality Way Int.	Runoff Area=3,147 sf 34.19% Impervious Runoff Depth>0.49" Flow Length=163' Tc=8.1 min CN=58 Runoff=0.02 cfs 0.003 af
Subcatchment 4S: Quality Way SE	Runoff Area=4,615 sf 100.00% Impervious Runoff Depth>3.36" Tc=6.0 min CN=98 Runoff=0.36 cfs 0.030 af
Subcatchment 5S: Venture Drive East	Runoff Area=1,877 sf 100.00% Impervious Runoff Depth>3.36" Tc=6.0 min CN=98 Runoff=0.15 cfs 0.012 af
Subcatchment 6S: Venture Drive Int.	Runoff Area=2,181 sf 88.45% Impervious Runoff Depth>2.63" Tc=6.0 min CN=91 Runoff=0.15 cfs 0.011 af
Subcatchment 7S: Forward Merch Flow Length=57'	Runoff Area=3,403 sf 53.78% Impervious Runoff Depth>0.96" Slope=0.0176 ' Tc=13.6 min CN=68 Runoff=0.06 cfs 0.006 af
Subcatchment 8S: Ventur Drive FM	Runoff Area=1,031 sf 100.00% Impervious Runoff Depth>3.36" Tc=6.0 min CN=98 Runoff=0.08 cfs 0.007 af
Subcatchment 9S: Certified Driveway	Runoff Area=34,665 sf 60.23% Impervious Runoff Depth>1.37" Flow Length=257' Tc=7.9 min CN=75 Runoff=1.15 cfs 0.091 af
Subcatchment 10S: Certified Parking Lot	Runoff Area=24,868 sf 62.08% Impervious Runoff Depth>1.31" Flow Length=151' Tc=6.4 min CN=74 Runoff=0.82 cfs 0.062 af
Subcatchment 11S: Venture Drive NE	Runoff Area=4,551 sf 100.00% Impervious Runoff Depth>3.36" Tc=6.0 min CN=98 Runoff=0.36 cfs 0.029 af
Subcatchment 12S: Central Site	Runoff Area=82,187 sf 2.30% Impervious Runoff Depth>0.14" Flow Length=296' Tc=16.0 min CN=47 Runoff=0.04 cfs 0.022 af
Subcatchment 13S: Venture Drive	Runoff Area=1,441 sf 100.00% Impervious Runoff Depth>3.36" Tc=6.0 min CN=98 Runoff=0.11 cfs 0.009 af
Reach 2R: Reach #2	Avg. Flow Depth=0.10' Max Vel=0.62 fps Inflow=0.78 cfs 0.102 af n=0.080 L=288.7' S=0.0399 ' Capacity=20.81 cfs Outflow=0.65 cfs 0.101 af
Reach 4R: Reach #4	Avg. Flow Depth=0.10' Max Vel=0.44 fps Inflow=0.38 cfs 0.033 af n=0.080 L=89.2' S=0.0200 ' Capacity=10.50 cfs Outflow=0.35 cfs 0.033 af
Reach 6R: Reach #6	Avg. Flow Depth=0.28' Max Vel=0.78 fps Inflow=2.67 cfs 0.218 af n=0.080 L=27.3' S=0.0168 ' Capacity=9.65 cfs Outflow=2.67 cfs 0.218 af

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Reach 10R: Combined Reach Avg. Flow Depth=0.18' Max Vel=1.18 fps Inflow=3.01 cfs 0.250 af
 n=0.080 L=66.1' S=0.0681 '/' Capacity=27.17 cfs Outflow=2.97 cfs 0.250 af

Reach 100R: Final Reach #100 Inflow=3.42 cfs 0.373 af
 Outflow=3.42 cfs 0.373 af

Reach 200R: Final Reach #200 Inflow=0.11 cfs 0.009 af
 Outflow=0.11 cfs 0.009 af

Pond 1P: Roadside Pond Peak Elev=168.95' Storage=1 cf Inflow=0.55 cfs 0.073 af
 12.0" Round Culvert n=0.012 L=42.3' S=0.0288 '/' Outflow=0.55 cfs 0.073 af

Pond 2P: CB #7325 Peak Elev=167.45' Storage=7 cf Inflow=0.77 cfs 0.102 af
 12.0" Round Culvert n=0.012 L=32.7' S=0.0037 '/' Outflow=0.78 cfs 0.102 af

Pond 3P: CB #7323 Peak Elev=168.97' Storage=1 cf Inflow=0.02 cfs 0.003 af
 12.0" Round Culvert n=0.012 L=24.4' S=0.0193 '/' Outflow=0.02 cfs 0.003 af

Pond 4P: CB #7324 Peak Elev=168.63' Storage=4 cf Inflow=0.38 cfs 0.033 af
 12.0" Round Culvert n=0.012 L=36.3' S=0.0152 '/' Outflow=0.38 cfs 0.033 af

Pond 5P: CB #7320 Peak Elev=167.86' Storage=9 cf Inflow=0.15 cfs 0.012 af
 Primary=0.13 cfs 0.012 af Secondary=0.00 cfs 0.000 af Outflow=0.13 cfs 0.012 af

Pond 6P: CB #7319 Peak Elev=167.86' Storage=18 cf Inflow=2.68 cfs 0.218 af
 Primary=2.67 cfs 0.218 af Secondary=0.00 cfs 0.000 af Outflow=2.67 cfs 0.218 af

Pond 7P: CB #3201 Peak Elev=174.49' Storage=1 cf Inflow=0.06 cfs 0.006 af
 Primary=0.06 cfs 0.006 af Secondary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.006 af

Pond 8P: CB #3202 Peak Elev=173.86' Storage=3 cf Inflow=0.12 cfs 0.013 af
 Primary=0.12 cfs 0.013 af Secondary=0.00 cfs 0.000 af Outflow=0.12 cfs 0.013 af

Pond 9P: CB #3203 Peak Elev=173.80' Storage=7 cf Inflow=1.27 cfs 0.104 af
 Primary=1.27 cfs 0.104 af Secondary=0.00 cfs 0.000 af Outflow=1.27 cfs 0.104 af

Pond 10P: CB #7322 Peak Elev=171.86' Storage=6 cf Inflow=0.82 cfs 0.062 af
 Primary=0.82 cfs 0.062 af Secondary=0.00 cfs 0.000 af Outflow=0.82 cfs 0.062 af

Pond 11P: CB #7321 Peak Elev=168.78' Storage=20 cf Inflow=0.36 cfs 0.029 af
 Primary=0.34 cfs 0.029 af Secondary=0.00 cfs 0.000 af Outflow=0.34 cfs 0.029 af

Pond D1P: DMH #4198 Peak Elev=169.29' Storage=11 cf Inflow=2.09 cfs 0.166 af
 12.0" Round Culvert n=0.012 L=40.1' S=0.0107 '/' Outflow=2.08 cfs 0.166 af

Pond D2P: DMH #8054 Peak Elev=168.77' Storage=11 cf Inflow=2.42 cfs 0.195 af
 12.0" Round Culvert n=0.012 L=96.9' S=0.0139 '/' Outflow=2.42 cfs 0.195 af

Total Runoff Area = 5.659 ac Runoff Volume = 0.384 af Average Runoff Depth = 0.81"
63.26% Pervious = 3.580 ac 36.74% Impervious = 2.079 ac

21-134 Existing Conditions

Type III 24-hr 10YR-24HR Rainfall=5.42"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Quality Way North	Runoff Area=78,168 sf 37.94% Impervious Runoff Depth>1.40" Flow Length=326' Tc=10.1 min CN=58 Runoff=2.28 cfs 0.210 af
Subcatchment 2S: Quality Way SW	Runoff Area=4,365 sf 100.00% Impervious Runoff Depth>5.18" Tc=6.0 min CN=98 Runoff=0.52 cfs 0.043 af
Subcatchment 3S: Quality Way Int.	Runoff Area=3,147 sf 34.19% Impervious Runoff Depth>1.40" Flow Length=163' Tc=8.1 min CN=58 Runoff=0.10 cfs 0.008 af
Subcatchment 4S: Quality Way SE	Runoff Area=4,615 sf 100.00% Impervious Runoff Depth>5.18" Tc=6.0 min CN=98 Runoff=0.55 cfs 0.046 af
Subcatchment 5S: Venture Drive East	Runoff Area=1,877 sf 100.00% Impervious Runoff Depth>5.18" Tc=6.0 min CN=98 Runoff=0.22 cfs 0.019 af
Subcatchment 6S: Venture Drive Int.	Runoff Area=2,181 sf 88.45% Impervious Runoff Depth>4.39" Tc=6.0 min CN=91 Runoff=0.24 cfs 0.018 af
Subcatchment 7S: Forward Merch Flow Length=57'	Runoff Area=3,403 sf 53.78% Impervious Runoff Depth>2.18" Slope=0.0176 '/' Tc=13.6 min CN=68 Runoff=0.15 cfs 0.014 af
Subcatchment 8S: Ventur Drive FM	Runoff Area=1,031 sf 100.00% Impervious Runoff Depth>5.18" Tc=6.0 min CN=98 Runoff=0.12 cfs 0.010 af
Subcatchment 9S: Certified Driveway	Runoff Area=34,665 sf 60.23% Impervious Runoff Depth>2.79" Flow Length=257' Tc=7.9 min CN=75 Runoff=2.41 cfs 0.185 af
Subcatchment 10S: Certified Parking Lot	Runoff Area=24,868 sf 62.08% Impervious Runoff Depth>2.70" Flow Length=151' Tc=6.4 min CN=74 Runoff=1.75 cfs 0.128 af
Subcatchment 11S: Venture Drive NE	Runoff Area=4,551 sf 100.00% Impervious Runoff Depth>5.18" Tc=6.0 min CN=98 Runoff=0.54 cfs 0.045 af
Subcatchment 12S: Central Site	Runoff Area=82,187 sf 2.30% Impervious Runoff Depth>0.69" Flow Length=296' Tc=16.0 min CN=47 Runoff=0.68 cfs 0.108 af
Subcatchment 13S: Venture Drive	Runoff Area=1,441 sf 100.00% Impervious Runoff Depth>5.18" Tc=6.0 min CN=98 Runoff=0.17 cfs 0.014 af
Reach 2R: Reach #2	Avg. Flow Depth=0.18' Max Vel=0.91 fps Inflow=2.66 cfs 0.253 af n=0.080 L=288.7' S=0.0399 '/' Capacity=20.81 cfs Outflow=2.38 cfs 0.252 af
Reach 4R: Reach #4	Avg. Flow Depth=0.13' Max Vel=0.52 fps Inflow=0.64 cfs 0.054 af n=0.080 L=89.2' S=0.0200 '/' Capacity=10.50 cfs Outflow=0.59 cfs 0.054 af
Reach 6R: Reach #6	Avg. Flow Depth=0.37' Max Vel=0.95 fps Inflow=5.06 cfs 0.419 af n=0.080 L=27.3' S=0.0168 '/' Capacity=9.65 cfs Outflow=5.07 cfs 0.419 af

21-134 Existing Conditions*Type III 24-hr 10YR-24HR Rainfall=5.42"*

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Reach 10R: Combined Reach Avg. Flow Depth=0.24' Max Vel=1.43 fps Inflow=5.66 cfs 0.473 af
 n=0.080 L=66.1' S=0.0681 '/' Capacity=27.17 cfs Outflow=5.58 cfs 0.473 af

Reach 100R: Final Reach #100 Inflow=7.94 cfs 0.833 af
 Outflow=7.94 cfs 0.833 af

Reach 200R: Final Reach #200 Inflow=0.17 cfs 0.014 af
 Outflow=0.17 cfs 0.014 af

Pond 1P: Roadside Pond Peak Elev=169.44' Storage=10 cf Inflow=2.28 cfs 0.210 af
 12.0" Round Culvert n=0.012 L=42.3' S=0.0288 '/' Outflow=2.27 cfs 0.210 af

Pond 2P: CB #7325 Peak Elev=168.12' Storage=15 cf Inflow=2.66 cfs 0.253 af
 12.0" Round Culvert n=0.012 L=32.7' S=0.0037 '/' Outflow=2.66 cfs 0.253 af

Pond 3P: CB #7323 Peak Elev=169.05' Storage=2 cf Inflow=0.10 cfs 0.008 af
 12.0" Round Culvert n=0.012 L=24.4' S=0.0193 '/' Outflow=0.10 cfs 0.008 af

Pond 4P: CB #7324 Peak Elev=168.73' Storage=5 cf Inflow=0.64 cfs 0.054 af
 12.0" Round Culvert n=0.012 L=36.3' S=0.0152 '/' Outflow=0.64 cfs 0.054 af

Pond 5P: CB #7320 Peak Elev=168.88' Storage=22 cf Inflow=0.22 cfs 0.019 af
 Primary=0.18 cfs 0.019 af Secondary=0.00 cfs 0.000 af Outflow=0.18 cfs 0.019 af

Pond 6P: CB #7319 Peak Elev=168.88' Storage=31 cf Inflow=5.07 cfs 0.420 af
 Primary=5.06 cfs 0.419 af Secondary=0.00 cfs 0.000 af Outflow=5.06 cfs 0.419 af

Pond 7P: CB #3201 Peak Elev=174.56' Storage=2 cf Inflow=0.15 cfs 0.014 af
 Primary=0.15 cfs 0.014 af Secondary=0.00 cfs 0.000 af Outflow=0.15 cfs 0.014 af

Pond 8P: CB #3202 Peak Elev=174.20' Storage=7 cf Inflow=0.24 cfs 0.024 af
 Primary=0.24 cfs 0.024 af Secondary=0.00 cfs 0.000 af Outflow=0.24 cfs 0.024 af

Pond 9P: CB #3203 Peak Elev=174.18' Storage=12 cf Inflow=2.63 cfs 0.209 af
 Primary=2.63 cfs 0.209 af Secondary=0.00 cfs 0.000 af Outflow=2.63 cfs 0.209 af

Pond 10P: CB #7322 Peak Elev=172.12' Storage=9 cf Inflow=1.75 cfs 0.128 af
 Primary=1.75 cfs 0.128 af Secondary=0.00 cfs 0.000 af Outflow=1.75 cfs 0.128 af

Pond 11P: CB #7321 Peak Elev=170.87' Storage=47 cf Inflow=0.54 cfs 0.045 af
 Primary=0.49 cfs 0.045 af Secondary=0.00 cfs 0.000 af Outflow=0.49 cfs 0.045 af

Pond D1P: DMH #4198 Peak Elev=171.83' Storage=42 cf Inflow=4.37 cfs 0.338 af
 12.0" Round Culvert n=0.012 L=40.1' S=0.0107 '/' Outflow=4.28 cfs 0.338 af

Pond D2P: DMH #8054 Peak Elev=170.86' Storage=38 cf Inflow=4.74 cfs 0.383 af
 12.0" Round Culvert n=0.012 L=96.9' S=0.0139 '/' Outflow=4.66 cfs 0.383 af

Total Runoff Area = 5.659 ac Runoff Volume = 0.850 af Average Runoff Depth = 1.80"
63.26% Pervious = 3.580 ac 36.74% Impervious = 2.079 ac

21-134 Existing Conditions

Type III 24-hr 25YR-24HR Rainfall=6.85"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Quality Way North	Runoff Area=78,168 sf 37.94% Impervious Runoff Depth>2.30" Flow Length=326' Tc=10.1 min CN=58 Runoff=3.98 cfs 0.344 af
Subcatchment 2S: Quality Way SW	Runoff Area=4,365 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.66 cfs 0.055 af
Subcatchment 3S: Quality Way Int.	Runoff Area=3,147 sf 34.19% Impervious Runoff Depth>2.30" Flow Length=163' Tc=8.1 min CN=58 Runoff=0.17 cfs 0.014 af
Subcatchment 4S: Quality Way SE	Runoff Area=4,615 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.70 cfs 0.058 af
Subcatchment 5S: Venture Drive East	Runoff Area=1,877 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.28 cfs 0.024 af
Subcatchment 6S: Venture Drive Int.	Runoff Area=2,181 sf 88.45% Impervious Runoff Depth>5.79" Tc=6.0 min CN=91 Runoff=0.31 cfs 0.024 af
Subcatchment 7S: Forward Merch Flow Length=57'	Runoff Area=3,403 sf 53.78% Impervious Runoff Depth>3.28" Slope=0.0176 ' Tc=13.6 min CN=68 Runoff=0.23 cfs 0.021 af
Subcatchment 8S: Ventur Drive FM	Runoff Area=1,031 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.16 cfs 0.013 af
Subcatchment 9S: Certified Driveway	Runoff Area=34,665 sf 60.23% Impervious Runoff Depth>4.01" Flow Length=257' Tc=7.9 min CN=75 Runoff=3.46 cfs 0.266 af
Subcatchment 10S: Certified Parking Lot	Runoff Area=24,868 sf 62.08% Impervious Runoff Depth>3.91" Flow Length=151' Tc=6.4 min CN=74 Runoff=2.54 cfs 0.186 af
Subcatchment 11S: Venture Drive NE	Runoff Area=4,551 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.69 cfs 0.058 af
Subcatchment 12S: Central Site	Runoff Area=82,187 sf 2.30% Impervious Runoff Depth>1.32" Flow Length=296' Tc=16.0 min CN=47 Runoff=1.70 cfs 0.208 af
Subcatchment 13S: Venture Drive	Runoff Area=1,441 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.22 cfs 0.018 af
Reach 2R: Reach #2	Avg. Flow Depth=0.24' Max Vel=1.08 fps Inflow=4.38 cfs 0.399 af n=0.080 L=288.7' S=0.0399 ' Capacity=20.81 cfs Outflow=4.10 cfs 0.398 af
Reach 4R: Reach #4	Avg. Flow Depth=0.21' Max Vel=0.69 fps Inflow=2.27 cfs 0.080 af n=0.080 L=89.2' S=0.0200 ' Capacity=10.50 cfs Outflow=1.60 cfs 0.080 af
Reach 6R: Reach #6	Avg. Flow Depth=0.43' Max Vel=1.04 fps Inflow=6.98 cfs 0.584 af n=0.080 L=27.3' S=0.0168 ' Capacity=9.65 cfs Outflow=6.96 cfs 0.583 af

21-134 Existing Conditions

Type III 24-hr 25YR-24HR Rainfall=6.85"

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Reach 10R: Combined Reach Avg. Flow Depth=0.28' Max Vel=1.57 fps Inflow=7.77 cfs 0.663 af
n=0.080 L=66.1' S=0.0681 '/' Capacity=27.17 cfs Outflow=7.72 cfs 0.663 af

Reach 100R: Final Reach #100 Inflow=12.48 cfs 1.269 af
Outflow=12.48 cfs 1.269 af

Reach 200R: Final Reach #200 Inflow=0.22 cfs 0.018 af
Outflow=0.22 cfs 0.018 af

Pond 1P: Roadside Pond Peak Elev=170.15' Storage=62 cf Inflow=3.98 cfs 0.344 af
12.0" Round Culvert n=0.012 L=42.3' S=0.0288 '/' Outflow=3.92 cfs 0.344 af

Pond 2P: CB #7325 Peak Elev=168.93' Storage=25 cf Inflow=4.39 cfs 0.400 af
12.0" Round Culvert n=0.012 L=32.7' S=0.0037 '/' Outflow=4.38 cfs 0.399 af

Pond 3P: CB #7323 Peak Elev=169.67' Storage=10 cf Inflow=2.01 cfs 0.022 af
12.0" Round Culvert n=0.012 L=24.4' S=0.0193 '/' Outflow=1.93 cfs 0.022 af

Pond 4P: CB #7324 Peak Elev=169.19' Storage=11 cf Inflow=2.33 cfs 0.080 af
12.0" Round Culvert n=0.012 L=36.3' S=0.0152 '/' Outflow=2.27 cfs 0.080 af

Pond 5P: CB #7320 Peak Elev=170.40' Storage=41 cf Inflow=0.75 cfs 0.028 af
Primary=0.75 cfs 0.028 af Secondary=0.00 cfs 0.000 af Outflow=0.75 cfs 0.028 af

Pond 6P: CB #7319 Peak Elev=170.36' Storage=49 cf Inflow=7.03 cfs 0.584 af
Primary=6.98 cfs 0.584 af Secondary=0.00 cfs 0.000 af Outflow=6.98 cfs 0.584 af

Pond 7P: CB #3201 Peak Elev=177.11' Storage=34 cf Inflow=0.23 cfs 0.021 af
Primary=0.45 cfs 0.021 af Secondary=0.00 cfs 0.000 af Outflow=0.45 cfs 0.021 af

Pond 8P: CB #3202 Peak Elev=177.11' Storage=44 cf Inflow=0.51 cfs 0.034 af
Primary=0.55 cfs 0.034 af Secondary=0.00 cfs 0.000 af Outflow=0.55 cfs 0.034 af

Pond 9P: CB #3203 Peak Elev=177.11' Storage=49 cf Inflow=3.77 cfs 0.301 af
Primary=3.74 cfs 0.301 af Secondary=0.00 cfs 0.000 af Outflow=3.74 cfs 0.301 af

Pond 10P: CB #7322 Peak Elev=174.65' Storage=35 cf Inflow=2.54 cfs 0.186 af
Primary=2.55 cfs 0.178 af Secondary=1.87 cfs 0.008 af Outflow=2.55 cfs 0.186 af

Pond 11P: CB #7321 Peak Elev=173.39' Storage=73 cf Inflow=0.69 cfs 0.058 af
Primary=0.61 cfs 0.053 af Secondary=0.55 cfs 0.004 af Outflow=0.63 cfs 0.057 af

Pond D1P: DMH #4198 Peak Elev=175.75' Storage=70 cf Inflow=6.25 cfs 0.479 af
12.0" Round Culvert n=0.012 L=40.1' S=0.0107 '/' Outflow=6.05 cfs 0.479 af

Pond D2P: DMH #8054 Peak Elev=173.88' Storage=64 cf Inflow=6.52 cfs 0.532 af
12.0" Round Culvert n=0.012 L=96.9' S=0.0139 '/' Outflow=6.50 cfs 0.532 af

Total Runoff Area = 5.659 ac Runoff Volume = 1.290 af Average Runoff Depth = 2.74"
63.26% Pervious = 3.580 ac 36.74% Impervious = 2.079 ac

21-134 Existing Conditions

Type III 24-hr 50YR-24HR Rainfall=8.18"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Quality Way North	Runoff Area=78,168 sf 37.94% Impervious Runoff Depth>3.24" Flow Length=326' Tc=10.1 min CN=58 Runoff=5.75 cfs 0.484 af
Subcatchment 2S: Quality Way SW	Runoff Area=4,365 sf 100.00% Impervious Runoff Depth>7.94" Tc=6.0 min CN=98 Runoff=0.79 cfs 0.066 af
Subcatchment 3S: Quality Way Int.	Runoff Area=3,147 sf 34.19% Impervious Runoff Depth>3.24" Flow Length=163' Tc=8.1 min CN=58 Runoff=0.25 cfs 0.019 af
Subcatchment 4S: Quality Way SE	Runoff Area=4,615 sf 100.00% Impervious Runoff Depth>7.94" Tc=6.0 min CN=98 Runoff=0.83 cfs 0.070 af
Subcatchment 5S: Venture Drive East	Runoff Area=1,877 sf 100.00% Impervious Runoff Depth>7.94" Tc=6.0 min CN=98 Runoff=0.34 cfs 0.028 af
Subcatchment 6S: Venture Drive Int.	Runoff Area=2,181 sf 88.45% Impervious Runoff Depth>7.10" Tc=6.0 min CN=91 Runoff=0.38 cfs 0.030 af
Subcatchment 7S: Forward Merch Flow Length=57'	Runoff Area=3,403 sf 53.78% Impervious Runoff Depth>4.38" Slope=0.0176 '/' Tc=13.6 min CN=68 Runoff=0.31 cfs 0.028 af
Subcatchment 8S: Ventur Drive FM	Runoff Area=1,031 sf 100.00% Impervious Runoff Depth>7.94" Tc=6.0 min CN=98 Runoff=0.19 cfs 0.016 af
Subcatchment 9S: Certified Driveway	Runoff Area=34,665 sf 60.23% Impervious Runoff Depth>5.20" Flow Length=257' Tc=7.9 min CN=75 Runoff=4.47 cfs 0.345 af
Subcatchment 10S: Certified Parking Lot	Runoff Area=24,868 sf 62.08% Impervious Runoff Depth>5.08" Flow Length=151' Tc=6.4 min CN=74 Runoff=3.29 cfs 0.242 af
Subcatchment 11S: Venture Drive NE	Runoff Area=4,551 sf 100.00% Impervious Runoff Depth>7.94" Tc=6.0 min CN=98 Runoff=0.82 cfs 0.069 af
Subcatchment 12S: Central Site	Runoff Area=82,187 sf 2.30% Impervious Runoff Depth>2.03" Flow Length=296' Tc=16.0 min CN=47 Runoff=2.90 cfs 0.319 af
Subcatchment 13S: Venture Drive	Runoff Area=1,441 sf 100.00% Impervious Runoff Depth>7.94" Tc=6.0 min CN=98 Runoff=0.26 cfs 0.022 af
Reach 2R: Reach #2	Avg. Flow Depth=0.26' Max Vel=1.16 fps Inflow=5.26 cfs 0.550 af n=0.080 L=288.7' S=0.0399 '/' Capacity=20.81 cfs Outflow=5.20 cfs 0.548 af
Reach 4R: Reach #4	Avg. Flow Depth=0.36' Max Vel=1.01 fps Inflow=5.78 cfs 0.123 af n=0.080 L=89.2' S=0.0200 '/' Capacity=10.50 cfs Outflow=5.11 cfs 0.123 af
Reach 6R: Reach #6	Avg. Flow Depth=0.46' Max Vel=1.08 fps Inflow=8.15 cfs 0.713 af n=0.080 L=27.3' S=0.0168 '/' Capacity=9.65 cfs Outflow=8.06 cfs 0.712 af

21-134 Existing Conditions*Type III 24-hr 50YR-24HR Rainfall=8.18"*

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Reach 10R: Combined Reach Avg. Flow Depth=0.30' Max Vel=1.64 fps Inflow=8.81 cfs 0.835 af
 n=0.080 L=66.1' S=0.0681 '/' Capacity=27.17 cfs Outflow=8.76 cfs 0.835 af

Reach 100R: Final Reach #100 Inflow=16.62 cfs 1.703 af
 Outflow=16.62 cfs 1.703 af

Reach 200R: Final Reach #200 Inflow=1.89 cfs 0.034 af
 Outflow=1.89 cfs 0.034 af

Pond 1P: Roadside Pond Peak Elev=171.09' Storage=449 cf Inflow=5.75 cfs 0.484 af
 12.0" Round Culvert n=0.012 L=42.3' S=0.0288 '/' Outflow=4.86 cfs 0.484 af

Pond 2P: CB #7325 Peak Elev=169.43' Storage=32 cf Inflow=5.29 cfs 0.550 af
 12.0" Round Culvert n=0.012 L=32.7' S=0.0037 '/' Outflow=5.26 cfs 0.550 af

Pond 3P: CB #7323 Peak Elev=171.82' Storage=37 cf Inflow=5.65 cfs 0.053 af
 12.0" Round Culvert n=0.012 L=24.4' S=0.0193 '/' Outflow=5.40 cfs 0.053 af

Pond 4P: CB #7324 Peak Elev=171.08' Storage=35 cf Inflow=6.01 cfs 0.123 af
 12.0" Round Culvert n=0.012 L=36.3' S=0.0152 '/' Outflow=5.78 cfs 0.123 af

Pond 5P: CB #7320 Peak Elev=171.30' Storage=44 cf Inflow=1.16 cfs 0.034 af
 Primary=0.73 cfs 0.029 af Secondary=1.24 cfs 0.005 af Outflow=1.25 cfs 0.035 af

Pond 6P: CB #7319 Peak Elev=171.31' Storage=52 cf Inflow=9.36 cfs 0.719 af
 Primary=8.15 cfs 0.713 af Secondary=1.46 cfs 0.006 af Outflow=9.44 cfs 0.719 af

Pond 7P: CB #3201 Peak Elev=178.72' Storage=35 cf Inflow=0.31 cfs 0.028 af
 Primary=0.73 cfs 0.027 af Secondary=0.52 cfs 0.002 af Outflow=0.73 cfs 0.029 af

Pond 8P: CB #3202 Peak Elev=178.81' Storage=57 cf Inflow=0.79 cfs 0.045 af
 Primary=0.72 cfs 0.043 af Secondary=0.23 cfs 0.002 af Outflow=0.73 cfs 0.045 af

Pond 9P: CB #3203 Peak Elev=178.81' Storage=62 cf Inflow=4.82 cfs 0.389 af
 Primary=4.63 cfs 0.376 af Secondary=2.39 cfs 0.013 af Outflow=4.57 cfs 0.389 af

Pond 10P: CB #7322 Peak Elev=175.17' Storage=35 cf Inflow=5.11 cfs 0.255 af
 Primary=3.27 cfs 0.221 af Secondary=5.42 cfs 0.034 af Outflow=5.32 cfs 0.255 af

Pond 11P: CB #7321 Peak Elev=173.47' Storage=73 cf Inflow=0.82 cfs 0.069 af
 Primary=0.67 cfs 0.063 af Secondary=0.87 cfs 0.006 af Outflow=0.83 cfs 0.069 af

Pond D1P: DMH #4198 Peak Elev=178.26' Storage=70 cf Inflow=7.88 cfs 0.598 af
 12.0" Round Culvert n=0.012 L=40.1' S=0.0107 '/' Outflow=8.02 cfs 0.598 af

Pond D2P: DMH #8054 Peak Elev=177.06' Storage=64 cf Inflow=8.18 cfs 0.660 af
 12.0" Round Culvert n=0.012 L=96.9' S=0.0139 '/' Outflow=8.29 cfs 0.660 af

Total Runoff Area = 5.659 ac Runoff Volume = 1.739 af Average Runoff Depth = 3.69"
63.26% Pervious = 3.580 ac 36.74% Impervious = 2.079 ac

21-134 Existing Conditions

Type III 24-hr 100YR-24HR Rainfall=9.76"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Quality Way North	Runoff Area=78,168 sf 37.94% Impervious Runoff Depth>4.43" Flow Length=326' Tc=10.1 min CN=58 Runoff=7.98 cfs 0.663 af
Subcatchment 2S: Quality Way SW	Runoff Area=4,365 sf 100.00% Impervious Runoff Depth>9.51" Tc=6.0 min CN=98 Runoff=0.94 cfs 0.079 af
Subcatchment 3S: Quality Way Int.	Runoff Area=3,147 sf 34.19% Impervious Runoff Depth>4.44" Flow Length=163' Tc=8.1 min CN=58 Runoff=0.34 cfs 0.027 af
Subcatchment 4S: Quality Way SE	Runoff Area=4,615 sf 100.00% Impervious Runoff Depth>9.51" Tc=6.0 min CN=98 Runoff=0.99 cfs 0.084 af
Subcatchment 5S: Venture Drive East	Runoff Area=1,877 sf 100.00% Impervious Runoff Depth>9.51" Tc=6.0 min CN=98 Runoff=0.40 cfs 0.034 af
Subcatchment 6S: Venture Drive Int.	Runoff Area=2,181 sf 88.45% Impervious Runoff Depth>8.66" Tc=6.0 min CN=91 Runoff=0.46 cfs 0.036 af
Subcatchment 7S: Forward Merch Flow Length=57'	Runoff Area=3,403 sf 53.78% Impervious Runoff Depth>5.74" Slope=0.0176 '/' Tc=13.6 min CN=68 Runoff=0.41 cfs 0.037 af
Subcatchment 8S: Ventur Drive FM	Runoff Area=1,031 sf 100.00% Impervious Runoff Depth>9.51" Tc=6.0 min CN=98 Runoff=0.22 cfs 0.019 af
Subcatchment 9S: Certified Driveway	Runoff Area=34,665 sf 60.23% Impervious Runoff Depth>6.65" Flow Length=257' Tc=7.9 min CN=75 Runoff=5.68 cfs 0.441 af
Subcatchment 10S: Certified Parking Lot	Runoff Area=24,868 sf 62.08% Impervious Runoff Depth>6.52" Flow Length=151' Tc=6.4 min CN=74 Runoff=4.19 cfs 0.310 af
Subcatchment 11S: Venture Drive NE	Runoff Area=4,551 sf 100.00% Impervious Runoff Depth>9.51" Tc=6.0 min CN=98 Runoff=0.98 cfs 0.083 af
Subcatchment 12S: Central Site	Runoff Area=82,187 sf 2.30% Impervious Runoff Depth>2.99" Flow Length=296' Tc=16.0 min CN=47 Runoff=4.52 cfs 0.470 af
Subcatchment 13S: Venture Drive	Runoff Area=1,441 sf 100.00% Impervious Runoff Depth>9.51" Tc=6.0 min CN=98 Runoff=0.31 cfs 0.026 af
Reach 2R: Reach #2	Avg. Flow Depth=0.28' Max Vel=1.20 fps Inflow=5.90 cfs 0.742 af n=0.080 L=288.7' S=0.0399 '/' Capacity=20.81 cfs Outflow=5.81 cfs 0.740 af
Reach 4R: Reach #4	Avg. Flow Depth=0.49' Max Vel=1.24 fps Inflow=10.61 cfs 0.190 af n=0.080 L=89.2' S=0.0200 '/' Capacity=10.50 cfs Outflow=9.99 cfs 0.190 af
Reach 6R: Reach #6	Avg. Flow Depth=0.45' Max Vel=1.08 fps Inflow=7.93 cfs 0.864 af n=0.080 L=27.3' S=0.0168 '/' Capacity=9.65 cfs Outflow=7.76 cfs 0.864 af

21-134 Existing Conditions

Type III 24-hr 100YR-24HR Rainfall=9.76"

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Reach 10R: Combined Reach Avg. Flow Depth=0.35' Max Vel=1.80 fps Inflow=12.69 cfs 1.054 af
 n=0.080 L=66.1' S=0.0681 '/' Capacity=27.17 cfs Outflow=12.16 cfs 1.053 af

Reach 100R: Final Reach #100 Inflow=22.05 cfs 2.263 af
 Outflow=22.05 cfs 2.263 af

Reach 200R: Final Reach #200 Inflow=2.46 cfs 0.043 af
 Outflow=2.46 cfs 0.043 af

Pond 1P: Roadside Pond Peak Elev=171.86' Storage=1,613 cf Inflow=7.98 cfs 0.663 af
 12.0" Round Culvert n=0.012 L=42.3' S=0.0288 '/' Outflow=5.45 cfs 0.663 af

Pond 2P: CB #7325 Peak Elev=169.86' Storage=37 cf Inflow=5.92 cfs 0.742 af
 12.0" Round Culvert n=0.012 L=32.7' S=0.0037 '/' Outflow=5.90 cfs 0.742 af

Pond 3P: CB #7323 Peak Elev=178.75' Storage=40 cf Inflow=9.22 cfs 0.105 af
 12.0" Round Culvert n=0.012 L=24.4' S=0.0193 '/' Outflow=9.48 cfs 0.106 af

Pond 4P: CB #7324 Peak Elev=176.11' Storage=47 cf Inflow=10.33 cfs 0.190 af
 12.0" Round Culvert n=0.012 L=36.3' S=0.0152 '/' Outflow=10.61 cfs 0.190 af

Pond 5P: CB #7320 Peak Elev=171.16' Storage=44 cf Inflow=1.54 cfs 0.040 af
 Primary=0.65 cfs 0.034 af Secondary=1.54 cfs 0.006 af Outflow=1.55 cfs 0.040 af

Pond 6P: CB #7319 Peak Elev=171.23' Storage=52 cf Inflow=9.91 cfs 0.875 af
 Primary=7.93 cfs 0.864 af Secondary=2.05 cfs 0.010 af Outflow=9.89 cfs 0.875 af

Pond 7P: CB #3201 Peak Elev=179.27' Storage=35 cf Inflow=0.41 cfs 0.037 af
 Primary=0.65 cfs 0.033 af Secondary=0.60 cfs 0.004 af Outflow=0.68 cfs 0.037 af

Pond 8P: CB #3202 Peak Elev=179.27' Storage=57 cf Inflow=0.80 cfs 0.056 af
 Primary=0.64 cfs 0.053 af Secondary=0.52 cfs 0.003 af Outflow=0.68 cfs 0.056 af

Pond 9P: CB #3203 Peak Elev=179.27' Storage=62 cf Inflow=5.92 cfs 0.497 af
 Primary=5.34 cfs 0.464 af Secondary=4.95 cfs 0.033 af Outflow=6.05 cfs 0.497 af

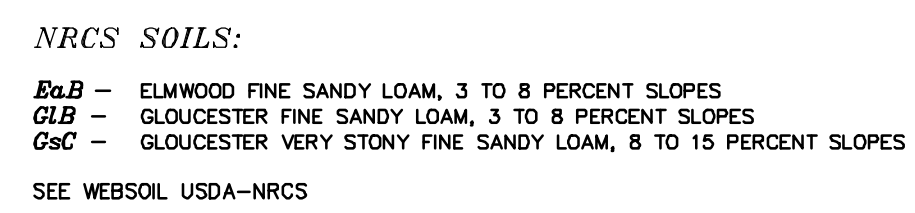
Pond 10P: CB #7322 Peak Elev=175.77' Storage=35 cf Inflow=8.66 cfs 0.343 af
 Primary=3.68 cfs 0.264 af Secondary=8.89 cfs 0.079 af Outflow=8.52 cfs 0.343 af

Pond 11P: CB #7321 Peak Elev=173.36' Storage=73 cf Inflow=0.98 cfs 0.083 af
 Primary=1.07 cfs 0.077 af Secondary=1.14 cfs 0.006 af Outflow=1.14 cfs 0.083 af

Pond D1P: DMH #4198 Peak Elev=179.37' Storage=70 cf Inflow=8.33 cfs 0.728 af
 12.0" Round Culvert n=0.012 L=40.1' S=0.0107 '/' Outflow=8.34 cfs 0.728 af

Pond D2P: DMH #8054 Peak Elev=178.40' Storage=64 cf Inflow=9.08 cfs 0.805 af
 12.0" Round Culvert n=0.012 L=96.9' S=0.0139 '/' Outflow=9.22 cfs 0.805 af

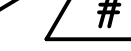
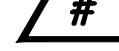
Total Runoff Area = 5.659 ac Runoff Volume = 2.309 af Average Runoff Depth = 4.90"
63.26% Pervious = 3.580 ac 36.74% Impervious = 2.079 ac



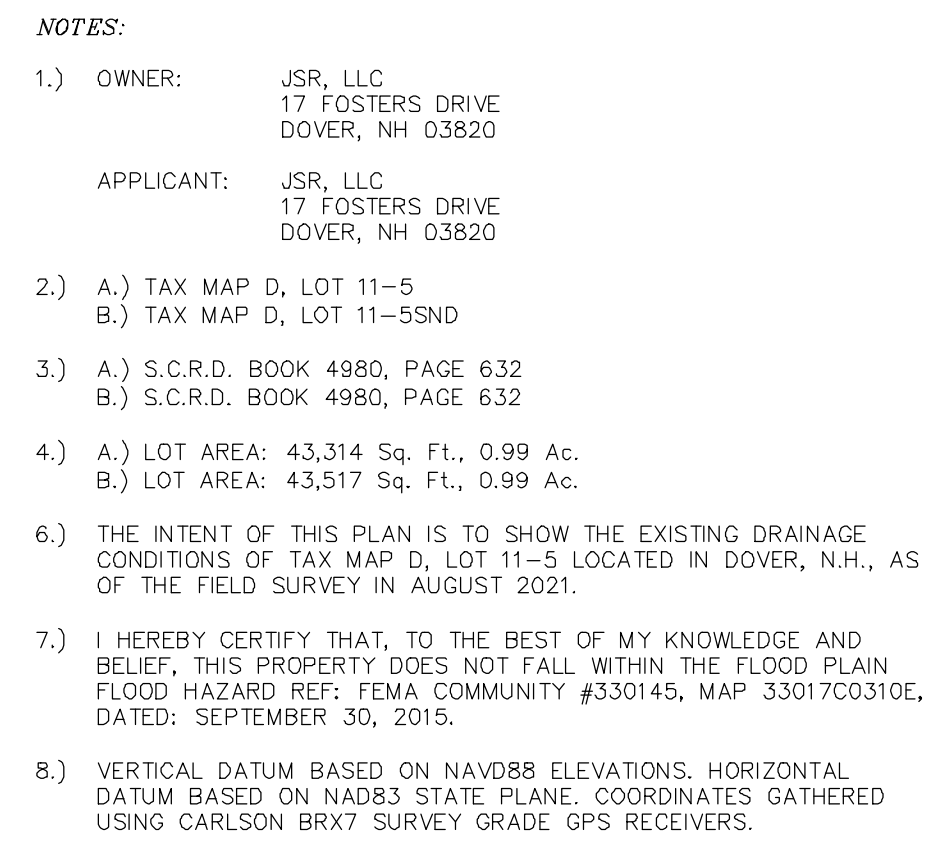
1. U.S. ARMY. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTH-CENTRAL AND NORTH-EAST REGION. VERSION 2.0. U.S. ARMY. ENGINEER RESEARCH AND DEVELOPMENT CENTER. 2012. VICKSBURG, MS.
2. U.S. ARMY. CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL. ENVIRONMENTAL LABORATORY. 1987. VICKSBURG, MS.
3. UNITED STATES DEPARTMENT OF AGRICULTURE. NATURAL RESOURCES CONSERVATION SERVICE. 2018. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, VERSION 8.2. L.M. VASILAS, G.W. HURT, AND J.F. BERKOWITZ (EDS.). USDA, NRCS, IN COOPERATION WITH THE NATIONAL TECHNICAL COMMITTEE FOR HYDRIC SOILS.
4. NEW ENGLAND HYDRIC SOIL TECHNICAL COMMITTEE. FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND. VERSION 4. NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION. 2019. LOWELL, MA.
5. U.S. ARMY CORPS OF ENGINEERS 2019. NATIONAL WETLAND PLANT LIST, VERSION 3.3. [HTTP://WETLAND-PLANTS.USARMY.MIL/](http://wetland-plants.usarmy.mil/)

	STONE BOUND (FND)
	DRILL HOLE (FND)
	IRON BOUND (FND)
	IRON PIPE (FND)
	STEEL STAKE (FND)
	UTILITY POLE / GUY WIRE
	SINGLE POST SIGN
	TEMPORARY BENCHMARK
	TEST PIT
	CURB STOP
	GATE VALVE
	FIRE HYDRANT
	CATCH BASIN
	SEWER MANHOLE

[illegible]

		SUBCATCHMENT AREA SYMBOL
		FLOW REACH SYMBOL
		POND DEVICE SYMBOL
		TIME OF CONCENTRATION SEGMENT

(IN FEET)
1 inch = 50 ft.



W-1 EXISTING CONDITIONS WATERSHED PLAN
LAND OF
JSR, LLC
VENTURE DRIVE & QUALITY WAY
DOVER, N.H.
TAX MAP D, LOTS 11-5 & 11-5SND

A circular professional engineer seal for the State of New Hampshire. The outer ring contains the text "STATE OF NEW HAMPSHIRE" at the top and "PROFESSIONAL ENGINEER" at the bottom, separated by dashes. The inner circle contains the name "KENNETH A. BERRY", the license number "No. 14243", and the word "LICENSED" at the bottom.

Appendix II - Proposed Conditions Analysis

25 Yr - 24 Hr. Full Summary

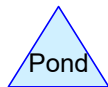
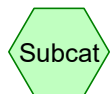
2 Yr - 24 Hr. Node Listing

10 Yr - 24 Hr. Node Listing

25 Yr - 24 Hr. Node Listing

50 Yr - 24 Hr. Node Listing

100 Yr - 24 Hr. Node Listing



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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.114	39	>75% Grass cover, Good, HSG A (1S, 3S, 6S, 7S, 9S, 10S, 12S, 20S, 22S)
0.003	61	>75% Grass cover, Good, HSG B (20S)
0.389	74	>75% Grass cover, Good, HSG C (12S, 20S, 22S, 24S)
1.802	98	Paved parking, HSG A (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 20S, 21S, 22S, 23S)
0.042	98	Paved parking, HSG B (5S, 13S, 21S)
0.085	98	Paved parking, HSG C (4S, 21S, 22S, 23S)
0.231	98	Roofs, HSG A (21S, 22S)
0.475	98	Unconnected roofs, HSG A (1S, 9S, 10S)
1.296	30	Woods, Good, HSG A (1S, 3S, 7S, 10S, 12S)
0.221	70	Woods, Good, HSG C (12S)
5.659	68	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
4.918	HSG A	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 20S, 21S, 22S, 23S
0.045	HSG B	5S, 13S, 20S, 21S
0.696	HSG C	4S, 12S, 20S, 21S, 22S, 23S, 24S
0.000	HSG D	
0.000	Other	
5.659		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
1.114	0.003	0.389	0.000	0.000	1.507	>75% Grass cover, Good	1S, 3S, 6S, 7S, 9S, 10S, 12S, 20S, 22S, 24S
1.802	0.042	0.085	0.000	0.000	1.930	Paved parking	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 13S, 20S, 21S, 22S, 23S
0.231	0.000	0.000	0.000	0.000	0.231	Roofs	21S, 22S
0.475	0.000	0.000	0.000	0.000	0.475	Unconnected roofs	1S, 9S, 10S
1.296	0.000	0.221	0.000	0.000	1.517	Woods, Good	1S, 3S, 7S, 10S, 12S
4.918	0.045	0.696	0.000	0.000	5.659	TOTAL AREA	

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	168.58	167.36	42.3	0.0288	0.012	12.0	0.0	0.0
2	2P	166.90	166.78	32.7	0.0037	0.012	12.0	0.0	0.0
3	3P	168.90	168.43	24.4	0.0193	0.012	12.0	0.0	0.0
4	4P	168.33	167.78	36.3	0.0152	0.012	12.0	0.0	0.0
5	5P	167.11	166.51	25.3	0.0237	0.012	12.0	0.0	0.0
6	6P	166.45	166.35	8.0	0.0125	0.012	15.0	0.0	0.0
7	7P	174.37	173.93	17.5	0.0251	0.012	12.0	0.0	0.0
8	8P	173.61	173.31	25.8	0.0116	0.012	12.0	0.0	0.0
9	9P	173.21	168.55	208.7	0.0223	0.012	12.0	0.0	0.0
10	10P	171.40	170.45	1.0	0.9500	0.012	12.0	0.0	0.0
11	11P	167.17	167.86	25.8	-0.0267	0.012	12.0	0.0	0.0
12	101P	160.90	160.40	20.0	0.0250	0.012	15.0	0.0	0.0
13	102P	163.50	163.25	42.0	0.0060	0.012	18.0	0.0	0.0
14	4198P	168.45	168.02	40.1	0.0107	0.012	12.0	0.0	0.0
15	8054P	167.86	166.51	96.9	0.0139	0.012	12.0	0.0	0.0
16	C01P	165.20	165.10	13.0	0.0077	0.012	15.0	0.0	0.0
17	C02P	165.20	165.10	9.7	0.0103	0.012	15.0	0.0	0.0
18	C03P	166.70	165.75	32.5	0.0292	0.012	12.0	0.0	0.0
19	D01P	165.00	164.35	82.7	0.0079	0.012	15.0	0.0	0.0
20	D02P	166.25	166.15	6.0	0.0167	0.012	15.0	0.0	0.0

21-134 Proposed Conditions*Type III 24-hr 25YR-24HR Rainfall=6.85"*

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Quality Way North	Runoff Area=78,168 sf 37.94% Impervious Runoff Depth>2.30" Flow Length=326' Tc=10.1 min CN=58 Runoff=3.98 cfs 0.344 af
Subcatchment 2S: Quality Way SW	Runoff Area=4,365 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.66 cfs 0.055 af
Subcatchment 3S: Quality Way Int.	Runoff Area=3,147 sf 34.19% Impervious Runoff Depth>2.30" Flow Length=163' Tc=8.1 min CN=58 Runoff=0.17 cfs 0.014 af
Subcatchment 4S: Quality Way SE	Runoff Area=4,938 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.74 cfs 0.062 af
Subcatchment 5S: Venture Drive East	Runoff Area=1,877 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.28 cfs 0.024 af
Subcatchment 6S: Venture Drive Int.	Runoff Area=2,203 sf 88.56% Impervious Runoff Depth>5.79" Tc=6.0 min CN=91 Runoff=0.31 cfs 0.024 af
Subcatchment 7S: Forward Merch Flow Length=57'	Runoff Area=3,403 sf 53.78% Impervious Runoff Depth>3.28" Slope=0.0176 '/' Tc=13.6 min CN=68 Runoff=0.23 cfs 0.021 af
Subcatchment 8S: Ventur Drive FM	Runoff Area=1,031 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.16 cfs 0.013 af
Subcatchment 9S: Certified Driveway	Runoff Area=34,665 sf 60.23% Impervious Runoff Depth>4.01" Flow Length=257' Tc=7.9 min CN=75 Runoff=3.46 cfs 0.266 af
Subcatchment 10S: Certified Parking Lot	Runoff Area=24,868 sf 62.08% Impervious Runoff Depth>3.91" Flow Length=151' Tc=6.4 min CN=74 Runoff=2.54 cfs 0.186 af
Subcatchment 11S: Venture Drive NE	Runoff Area=4,551 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.69 cfs 0.058 af
Subcatchment 12S: Remainder of Existing	Runoff Area=43,238 sf 0.00% Impervious Runoff Depth>1.49" Flow Length=296' Tc=16.0 min CN=49 Runoff=1.07 cfs 0.123 af
Subcatchment 13S: Venture Drive	Runoff Area=1,436 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.22 cfs 0.018 af
Subcatchment 20S: Subcatchment #20	Runoff Area=10,628 sf 23.04% Impervious Runoff Depth>2.88" Tc=6.0 min CN=64 Runoff=0.80 cfs 0.059 af
Subcatchment 21S: Subcatchment #21	Runoff Area=9,242 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=1.39 cfs 0.117 af
Subcatchment 22S: Subcatchment #22	Runoff Area=12,546 sf 93.85% Impervious Runoff Depth>6.14" Tc=6.0 min CN=94 Runoff=1.85 cfs 0.147 af

21-134 Proposed Conditions*Type III 24-hr 25YR-24HR Rainfall=6.85"*

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Subcatchment 23S: Subcatchment #23	Runoff Area=2,316 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.35 cfs 0.029 af
Subcatchment 24S: Area Around Pond	Runoff Area=3,890 sf 0.00% Impervious Runoff Depth>3.91" Tc=6.0 min CN=74 Runoff=0.40 cfs 0.029 af
Reach 2R: Reach #2	Avg. Flow Depth=0.24' Max Vel=1.08 fps Inflow=4.38 cfs 0.399 af n=0.080 L=288.7' S=0.0399 '/' Capacity=20.81 cfs Outflow=4.10 cfs 0.398 af
Reach 100R: Final Reach #100	Inflow=12.45 cfs 1.482 af Outflow=12.45 cfs 1.482 af
Reach 101aR: Overland Flow to	Avg. Flow Depth=0.14' Max Vel=2.08 fps Inflow=0.98 cfs 0.235 af n=0.065 L=20.0' S=0.2000 '/' Capacity=38.38 cfs Outflow=0.98 cfs 0.235 af
Reach 101bR: Overland Flow to	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.065 L=52.0' S=0.0192 '/' Capacity=5.06 cfs Outflow=0.00 cfs 0.000 af
Reach 200R: Final Reach #200	Inflow=0.22 cfs 0.018 af Outflow=0.22 cfs 0.018 af
Pond 1P: Roadside Pond	Peak Elev=170.15' Storage=62 cf Inflow=3.98 cfs 0.344 af 12.0" Round Culvert n=0.012 L=42.3' S=0.0288 '/' Outflow=3.92 cfs 0.344 af
Pond 2P: CB #7325	Peak Elev=168.93' Storage=25 cf Inflow=4.39 cfs 0.400 af 12.0" Round Culvert n=0.012 L=32.7' S=0.0037 '/' Outflow=4.38 cfs 0.399 af
Pond 3P: CB #7323	Peak Elev=169.64' Storage=9 cf Inflow=1.88 cfs 0.021 af 12.0" Round Culvert n=0.012 L=24.4' S=0.0193 '/' Outflow=1.81 cfs 0.021 af
Pond 4P: CB #7324	Peak Elev=169.16' Storage=10 cf Inflow=2.23 cfs 0.083 af 12.0" Round Culvert n=0.012 L=36.3' S=0.0152 '/' Outflow=2.17 cfs 0.083 af
Pond 5P: CB #7320	Peak Elev=169.54' Storage=31 cf Inflow=0.34 cfs 0.024 af Primary=0.37 cfs 0.024 af Secondary=0.00 cfs 0.000 af Outflow=0.37 cfs 0.024 af
Pond 6P: CB #7319	Peak Elev=169.53' Storage=39 cf Inflow=7.01 cfs 0.584 af Primary=6.98 cfs 0.584 af Secondary=0.00 cfs 0.000 af Outflow=6.98 cfs 0.584 af
Pond 7P: CB #3201	Peak Elev=176.36' Storage=25 cf Inflow=0.23 cfs 0.021 af Primary=0.39 cfs 0.021 af Secondary=0.00 cfs 0.000 af Outflow=0.39 cfs 0.021 af
Pond 8P: CB #3202	Peak Elev=176.36' Storage=35 cf Inflow=0.45 cfs 0.034 af Primary=0.47 cfs 0.034 af Secondary=0.00 cfs 0.000 af Outflow=0.47 cfs 0.034 af
Pond 9P: CB #3203	Peak Elev=176.36' Storage=40 cf Inflow=3.77 cfs 0.300 af Primary=3.74 cfs 0.300 af Secondary=0.00 cfs 0.000 af Outflow=3.74 cfs 0.300 af
Pond 10P: CB #7322	Peak Elev=174.62' Storage=35 cf Inflow=2.54 cfs 0.186 af Primary=2.55 cfs 0.179 af Secondary=1.74 cfs 0.007 af Outflow=2.55 cfs 0.186 af

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Pond 11P: CB #7321 Peak Elev=173.31' Storage=73 cf Inflow=0.69 cfs 0.058 af
Primary=0.59 cfs 0.057 af Secondary=0.18 cfs 0.001 af Outflow=0.59 cfs 0.057 af

Pond 101P: Rain Garden #101 Peak Elev=167.51' Storage=6,610 cf Inflow=3.92 cfs 0.321 af
Primary=0.98 cfs 0.235 af Secondary=0.00 cfs 0.000 af Outflow=0.98 cfs 0.235 af

Pond 102P: Entrance Detention Pond Peak Elev=167.22' Storage=2,982 cf Inflow=8.67 cfs 0.726 af
Outflow=6.42 cfs 0.725 af

Pond 4198P: DMH #4198 Peak Elev=174.95' Storage=70 cf Inflow=6.26 cfs 0.479 af
12.0" Round Culvert n=0.012 L=40.1' S=0.0107 '/' Outflow=6.10 cfs 0.479 af

Pond 8054P: DMH #8054 Peak Elev=173.30' Storage=64 cf Inflow=6.61 cfs 0.536 af
12.0" Round Culvert n=0.012 L=96.9' S=0.0139 '/' Outflow=6.51 cfs 0.536 af

Pond C01P: CB #1 Peak Elev=167.52' Storage=29 cf Inflow=1.39 cfs 0.117 af
15.0" Round Culvert n=0.012 L=13.0' S=0.0077 '/' Outflow=1.37 cfs 0.116 af

Pond C02P: CB #2 Peak Elev=167.52' Storage=29 cf Inflow=1.85 cfs 0.147 af
15.0" Round Culvert n=0.012 L=9.7' S=0.0103 '/' Outflow=1.82 cfs 0.147 af

Pond C03P: CB #3 Peak Elev=167.51' Storage=10 cf Inflow=0.35 cfs 0.029 af
12.0" Round Culvert n=0.012 L=32.5' S=0.0292 '/' Outflow=0.35 cfs 0.029 af

Pond D01P: DMH #1 Peak Elev=167.52' Storage=32 cf Inflow=3.19 cfs 0.263 af
15.0" Round Culvert n=0.012 L=82.7' S=0.0079 '/' Outflow=3.17 cfs 0.263 af

Pond D02P: DMH #2 Peak Elev=168.26' Storage=25 cf Inflow=6.98 cfs 0.584 af
15.0" Round Culvert n=0.012 L=6.0' S=0.0167 '/' Outflow=6.98 cfs 0.584 af

Total Runoff Area = 5.659 ac Runoff Volume = 1.590 af Average Runoff Depth = 3.37"
53.43% Pervious = 3.024 ac 46.57% Impervious = 2.636 ac

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Type III 24-hr 25YR-24HR Rainfall=6.85"

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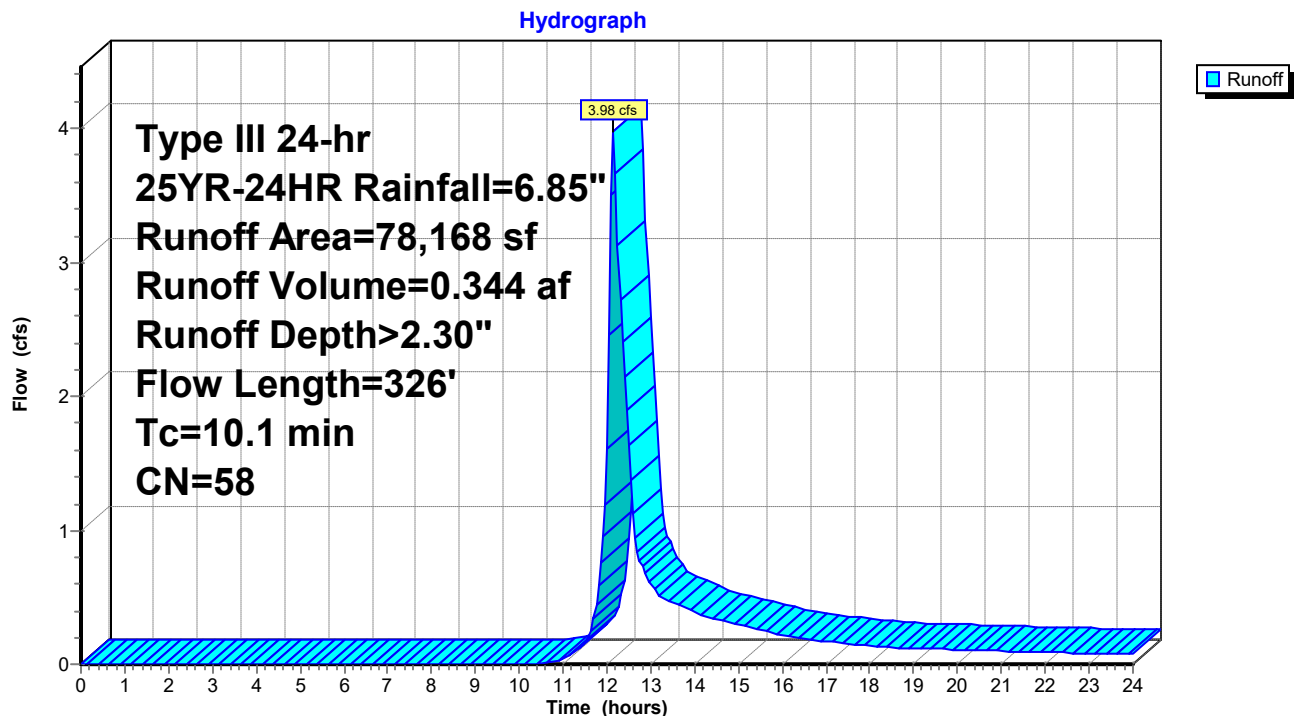
Summary for Subcatchment 1S: Quality Way North

Runoff = 3.98 cfs @ 12.15 hrs, Volume= 0.344 af, Depth> 2.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
11,732	98	Unconnected roofs, HSG A
18,602	39	>75% Grass cover, Good, HSG A
17,923	98	Paved parking, HSG A
29,911	30	Woods, Good, HSG A
78,168	58	Weighted Average
48,513		62.06% Pervious Area
29,655		37.94% Impervious Area
11,732		39.56% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	100	0.0375	0.23		Sheet Flow, Segment #1
					Grass: Short n= 0.150 P2= 3.61"
2.9	226	0.0354	1.32		Shallow Concentrated Flow, Segment #2
					Short Grass Pasture Kv= 7.0 fps
10.1	326	Total			

Subcatchment 1S: Quality Way North

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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Subcatchment 2S: Quality Way SW

Runoff = 0.66 cfs @ 12.09 hrs, Volume= 0.055 af, Depth> 6.61"

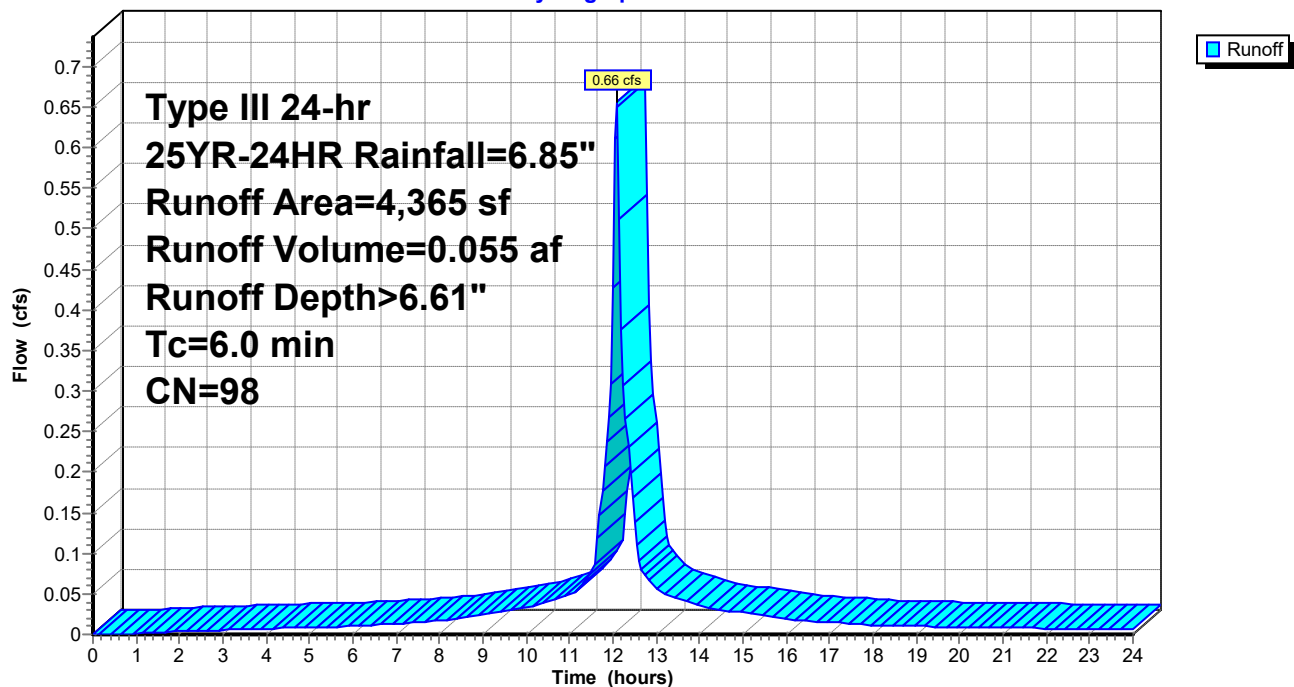
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
4,365	98	Paved parking, HSG A
4,365		100.00% Impervious Area

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

Subcatchment 2S: Quality Way SW

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Subcatchment 3S: Quality Way Int.

Runoff = 0.17 cfs @ 12.13 hrs, Volume= 0.014 af, Depth> 2.30"

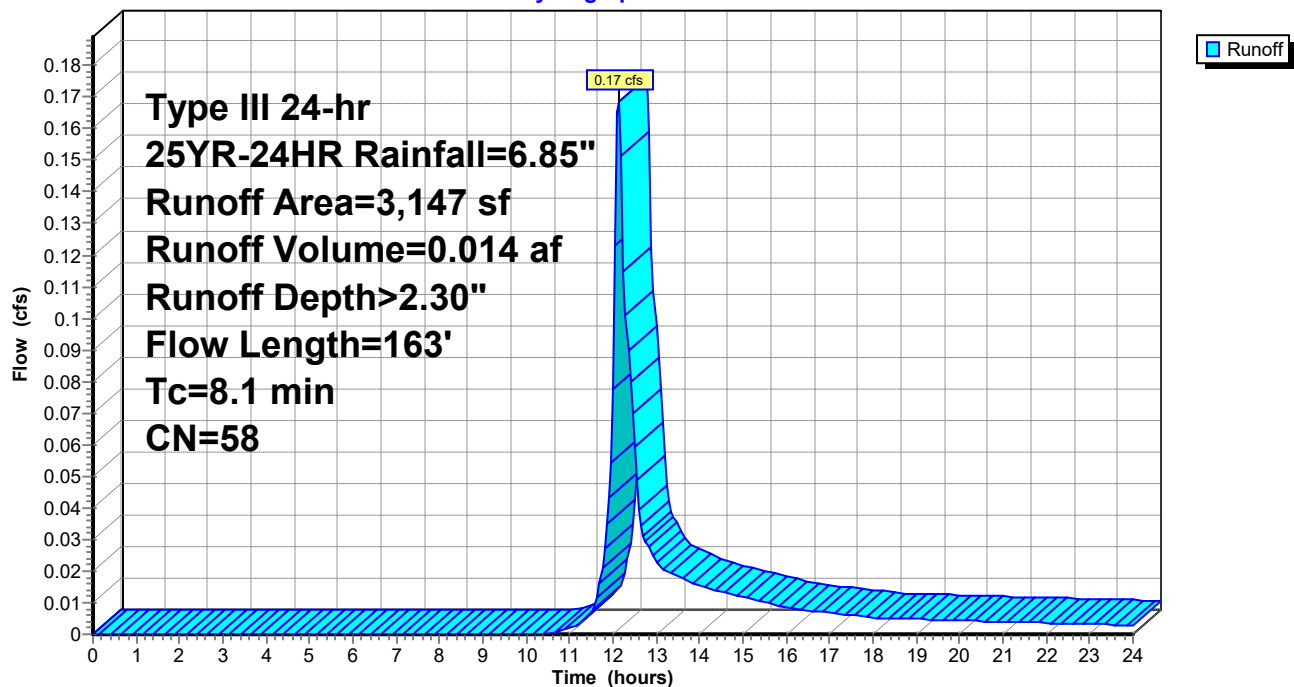
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
1,775	39	>75% Grass cover, Good, HSG A
1,076	98	Paved parking, HSG A
296	30	Woods, Good, HSG A
3,147	58	Weighted Average
2,071		65.81% Pervious Area
1,076		34.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	36	0.0830	0.26		Sheet Flow, Segment #1 Grass: Short n= 0.150 P2= 3.61"
3.7	33	0.1517	0.15		Sheet Flow, Segment #2 Woods: Light underbrush n= 0.400 P2= 3.61"
1.5	14	0.0356	0.15		Sheet Flow, Segment #3 Grass: Short n= 0.150 P2= 3.61"
0.6	80	0.0125	2.27		Shallow Concentrated Flow, Segment #4 Paved Kv= 20.3 fps
8.1	163	Total			

Subcatchment 3S: Quality Way Int.

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Subcatchment 4S: Quality Way SE

Runoff = 0.74 cfs @ 12.09 hrs, Volume= 0.062 af, Depth> 6.61"

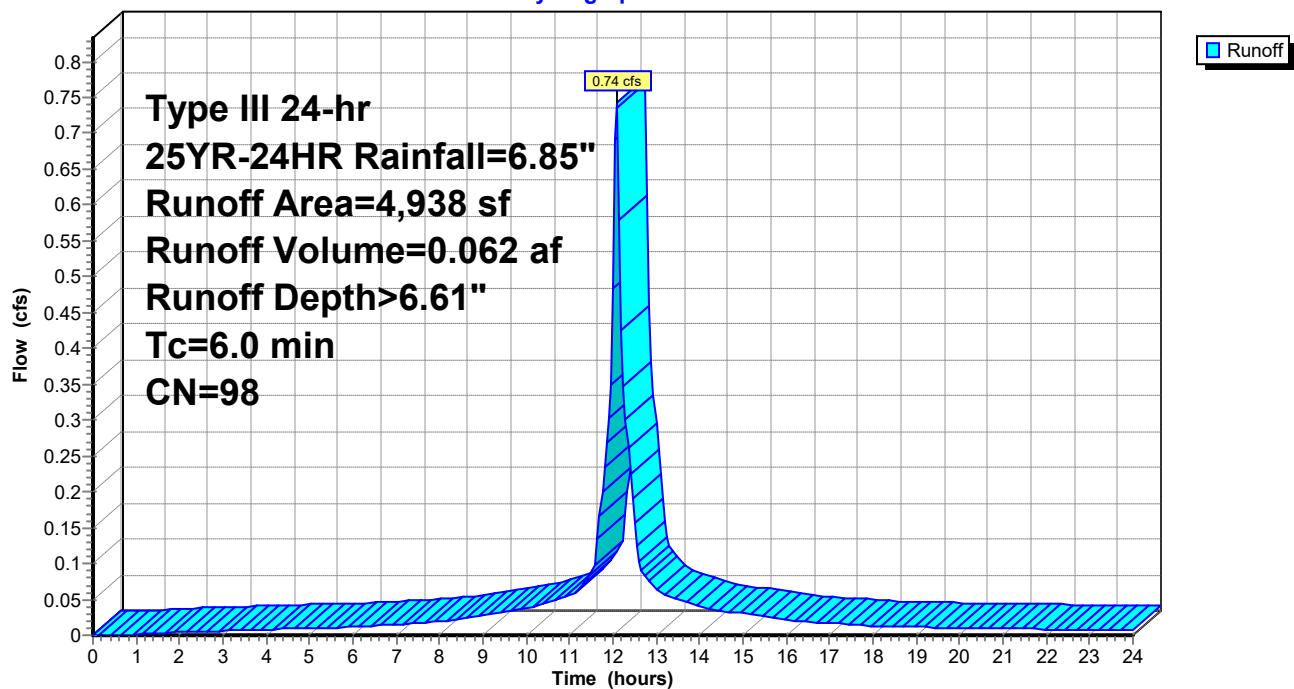
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
4,880	98	Paved parking, HSG A
58	98	Paved parking, HSG C
4,938	98	Weighted Average
4,938		100.00% Impervious Area

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

Subcatchment 4S: Quality Way SE

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Subcatchment 5S: Venture Drive East

Runoff = 0.28 cfs @ 12.09 hrs, Volume= 0.024 af, Depth> 6.61"

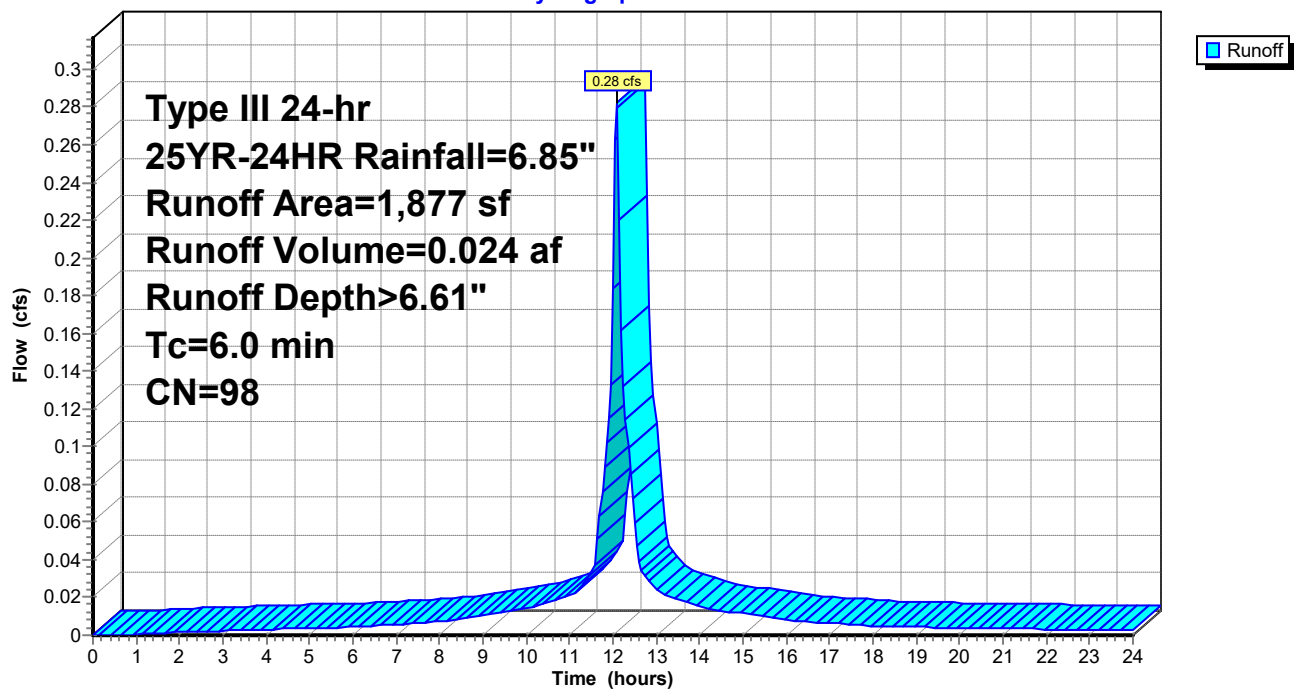
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
1,765	98	Paved parking, HSG A
112	98	Paved parking, HSG B
1,877	98	Weighted Average
1,877		100.00% Impervious Area

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

Subcatchment 5S: Venture Drive East

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Subcatchment 6S: Venture Drive Int.

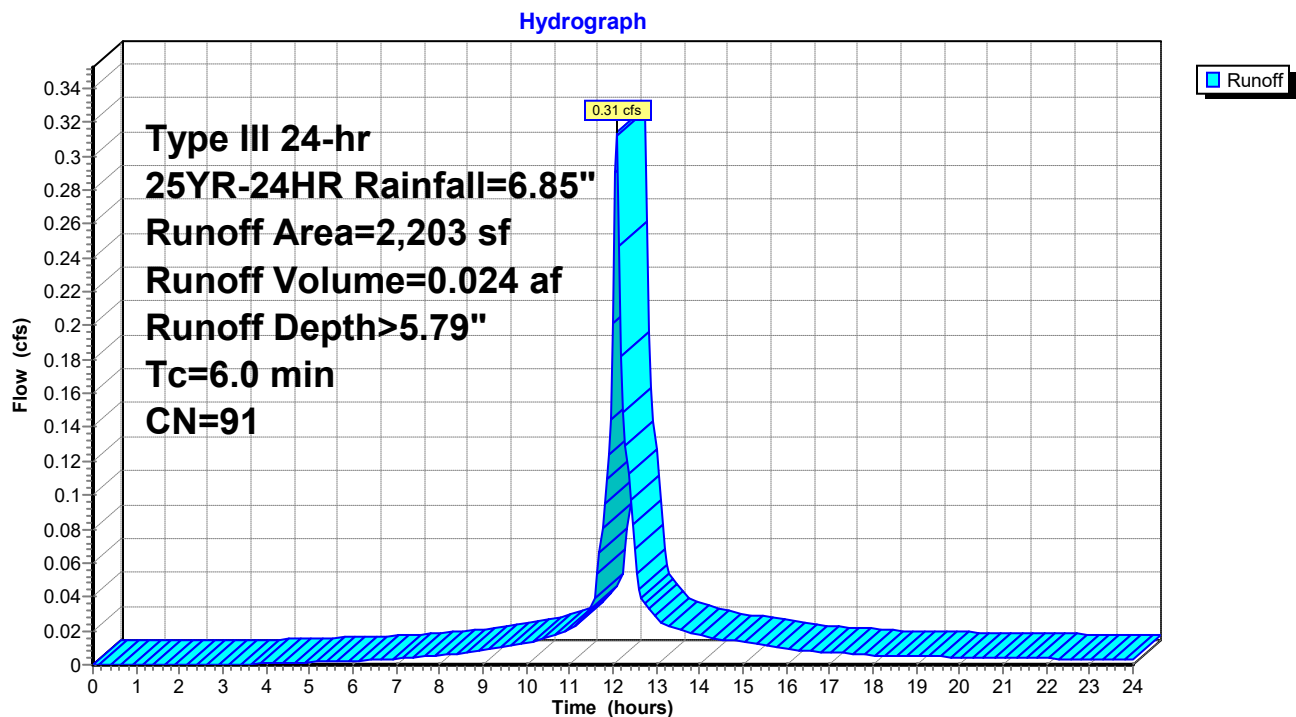
Runoff = 0.31 cfs @ 12.09 hrs, Volume= 0.024 af, Depth> 5.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
252	39	>75% Grass cover, Good, HSG A
1,951	98	Paved parking, HSG A
2,203	91	Weighted Average
252		11.44% Pervious Area
1,951		88.56% Impervious Area

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

Subcatchment 6S: Venture Drive Int.



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Subcatchment 7S: Forward Merch

Runoff = 0.23 cfs @ 12.20 hrs, Volume= 0.021 af, Depth> 3.28"

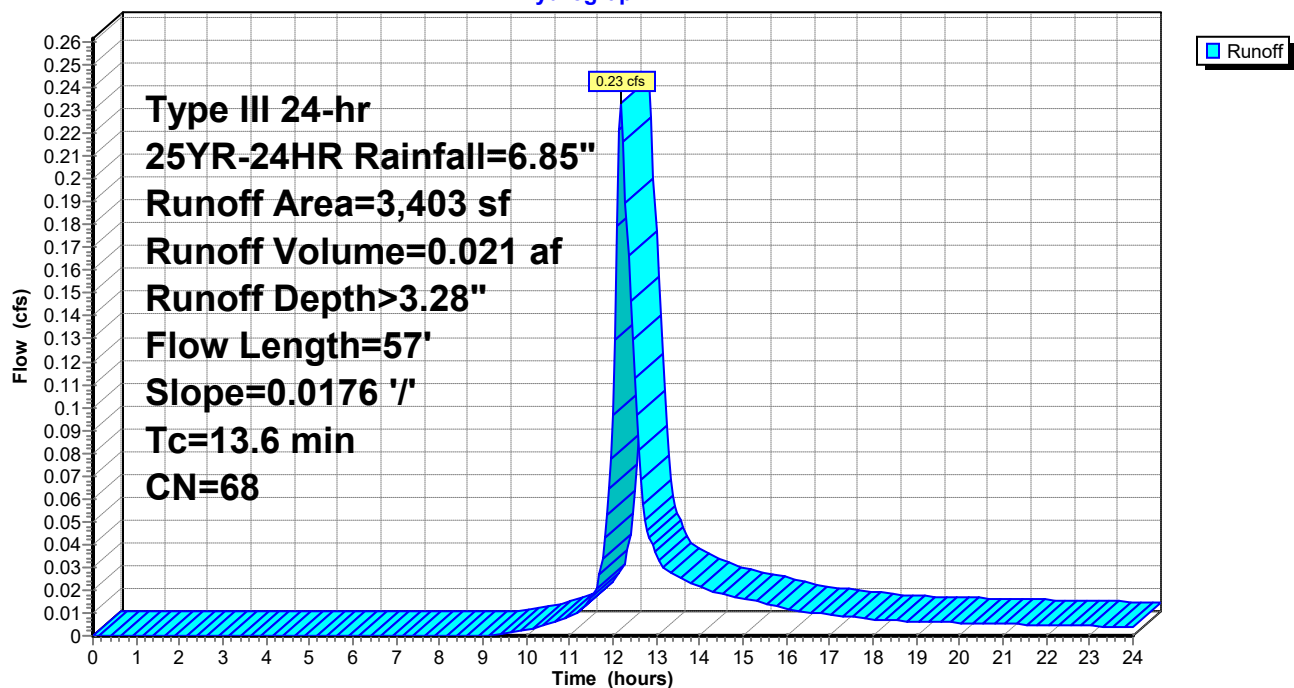
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
493	39	>75% Grass cover, Good, HSG A
1,830	98	Paved parking, HSG A
1,080	30	Woods, Good, HSG A
3,403	68	Weighted Average
1,573		46.22% Pervious Area
1,830		53.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	57	0.0176	0.07		Sheet Flow, Sheet Flow Woods: Light underbrush n= 0.400 P2= 3.61"

Subcatchment 7S: Forward Merch

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Subcatchment 8S: Ventur Drive FM

Runoff = 0.16 cfs @ 12.09 hrs, Volume= 0.013 af, Depth> 6.61"

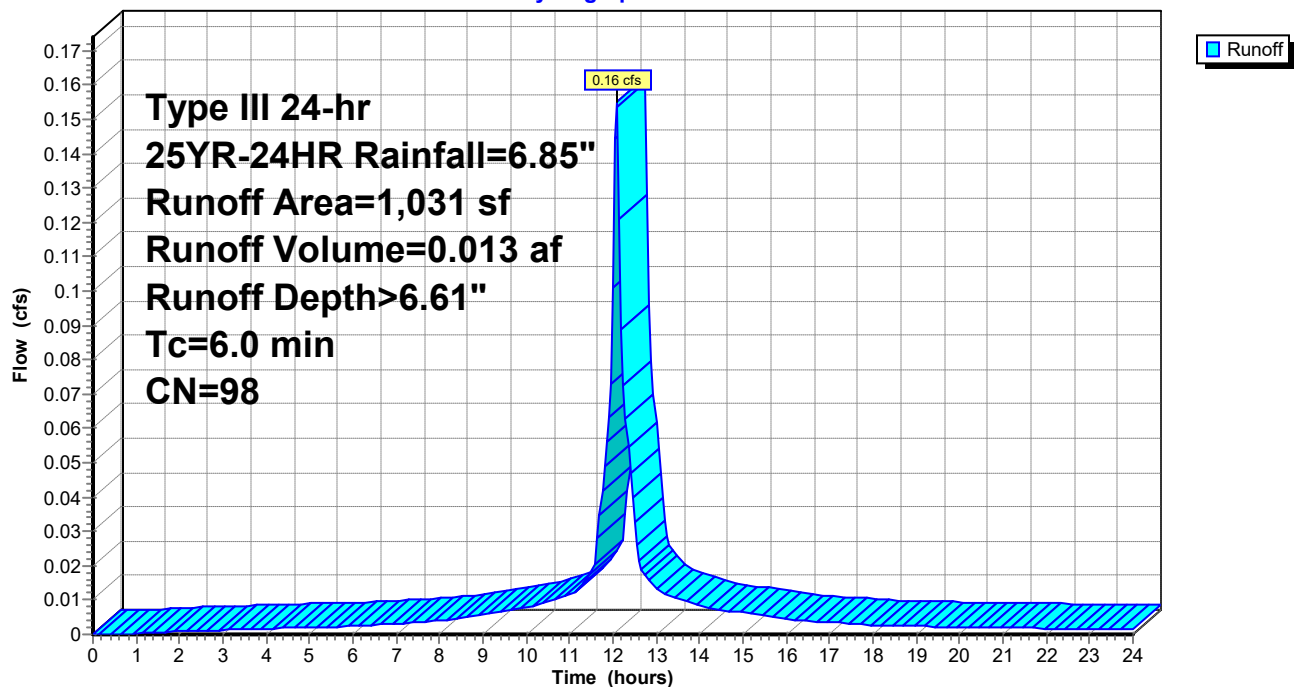
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
1,031	98	Paved parking, HSG A
1,031		100.00% Impervious Area

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

Subcatchment 8S: Ventur Drive FM

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Subcatchment 9S: Certified Driveway

Runoff = 3.46 cfs @ 12.11 hrs, Volume= 0.266 af, Depth> 4.01"

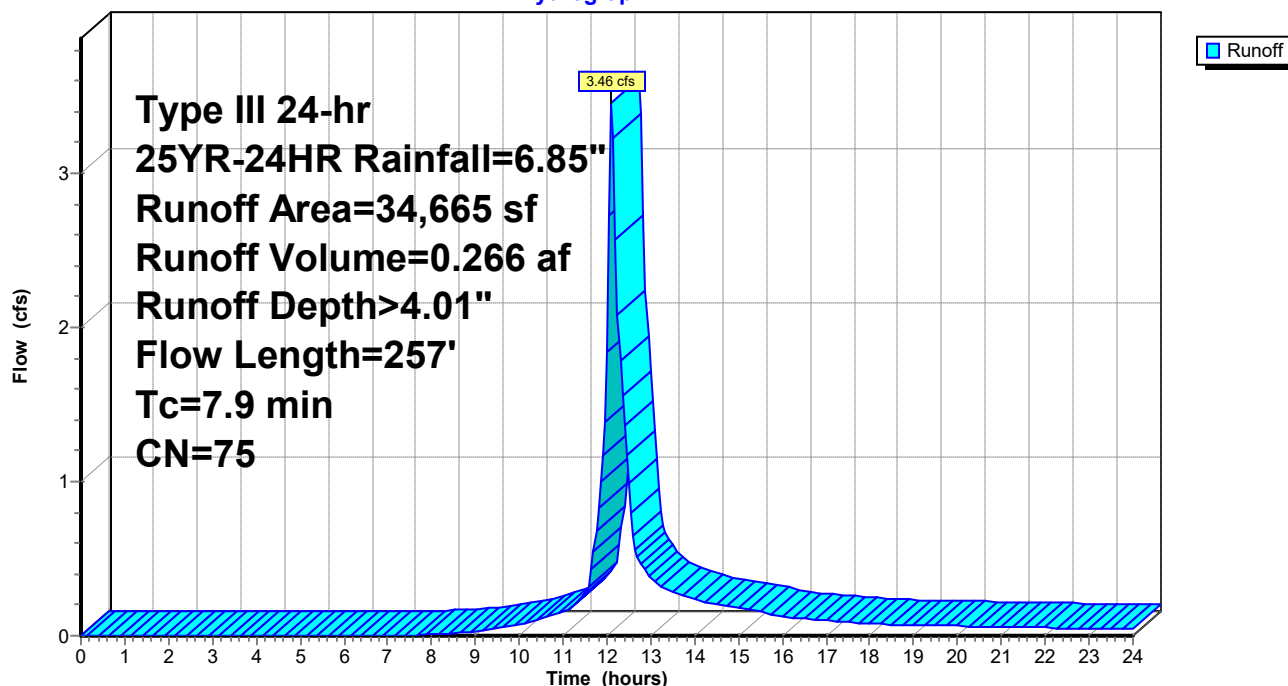
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
4,472	98	Unconnected roofs, HSG A
13,788	39	>75% Grass cover, Good, HSG A
16,405	98	Paved parking, HSG A
34,665	75	Weighted Average
13,788		39.77% Pervious Area
20,877		60.23% Impervious Area
4,472		21.42% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	100	0.0500	0.26		Sheet Flow, Segment #1
					Grass: Short n= 0.150 P2= 3.61"
1.2	110	0.0499	1.56		Shallow Concentrated Flow, Segment #2
					Short Grass Pasture Kv= 7.0 fps
0.3	47	0.0212	2.96		Shallow Concentrated Flow, Segment #3
					Paved Kv= 20.3 fps
7.9	257	Total			

Subcatchment 9S: Certified Driveway

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Subcatchment 10S: Certified Parking Lot

Runoff = 2.54 cfs @ 12.10 hrs, Volume= 0.186 af, Depth> 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
4,472	98	Unconnected roofs, HSG A
5,585	39	>75% Grass cover, Good, HSG A
10,965	98	Paved parking, HSG A
3,846	30	Woods, Good, HSG A
24,868	74	Weighted Average
9,431		37.92% Pervious Area
15,437		62.08% Impervious Area
4,472		28.97% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	18	0.1382	0.28		Sheet Flow, Segment #1 Grass: Short n= 0.150 P2= 3.61"
3.9	29	0.1021	0.12		Sheet Flow, Segment #2 Woods: Light underbrush n= 0.400 P2= 3.61"
0.9	14	0.1439	0.27		Sheet Flow, Segment #3 Grass: Short n= 0.150 P2= 3.61"
0.5	90	0.0223	3.03		Shallow Concentrated Flow, Segment #4 Paved Kv= 20.3 fps
6.4	151	Total			

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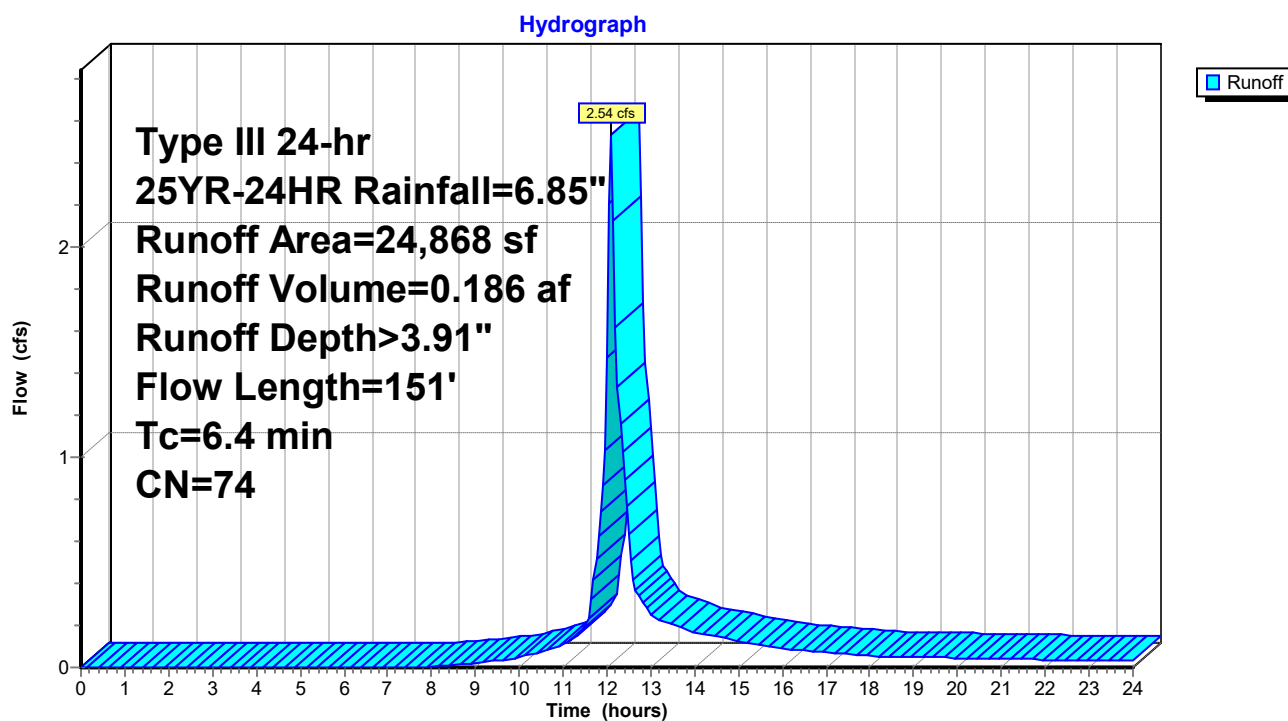
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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Subcatchment 10S: Certified Parking Lot



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Subcatchment 11S: Venture Drive NE

Runoff = 0.69 cfs @ 12.09 hrs, Volume= 0.058 af, Depth> 6.61"

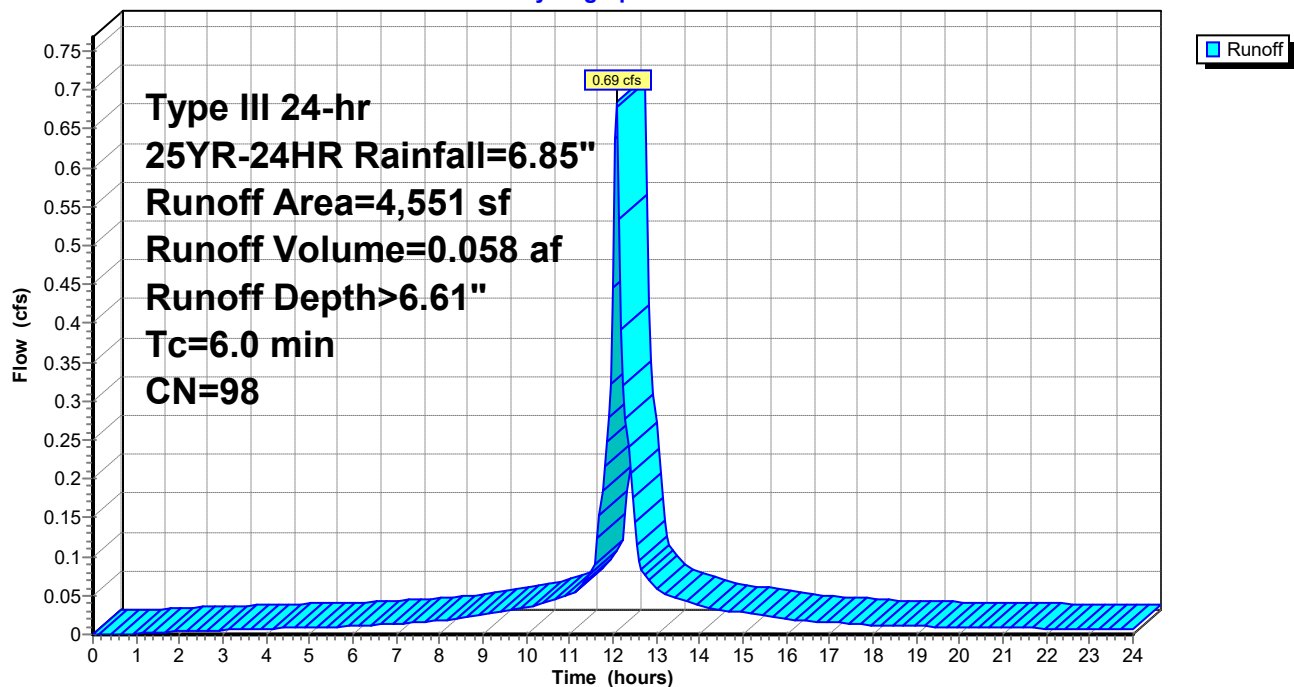
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
4,551	98	Paved parking, HSG A
4,551		100.00% Impervious Area

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

Subcatchment 11S: Venture Drive NE

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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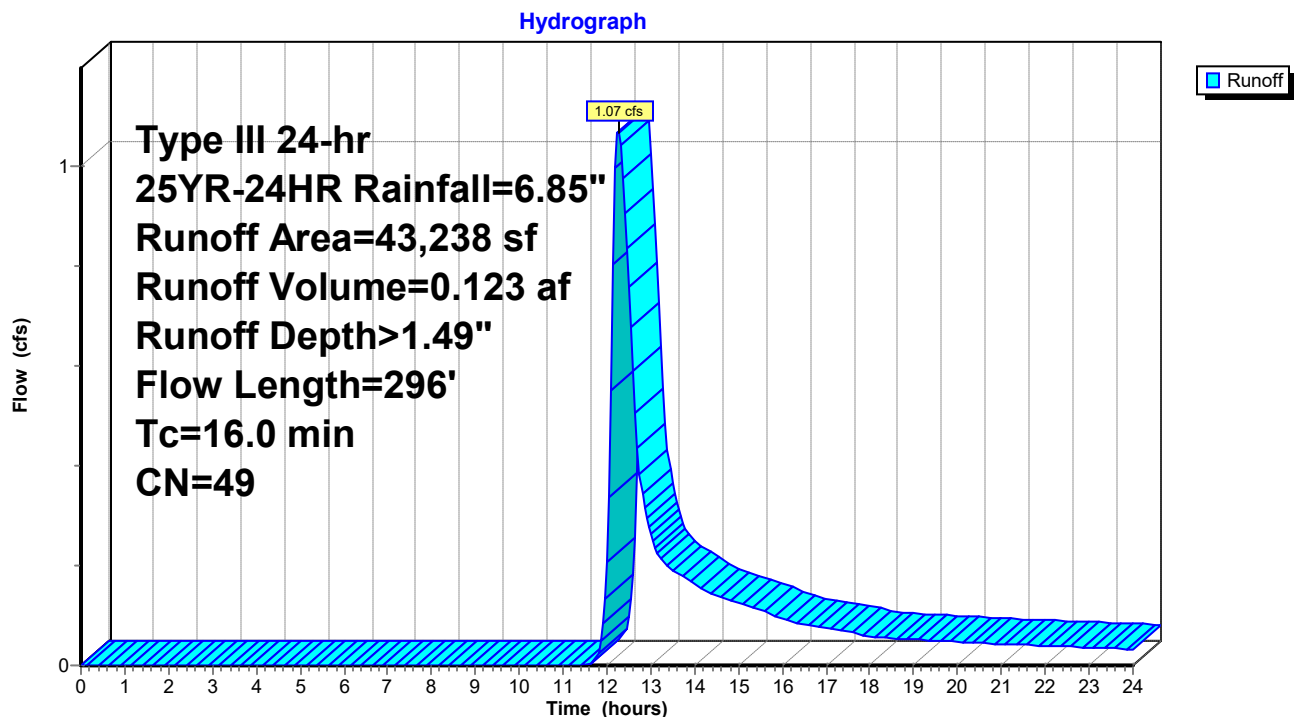
Summary for Subcatchment 12S: Remainder of Existing Site

Runoff = 1.07 cfs @ 12.26 hrs, Volume= 0.123 af, Depth> 1.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
2,711	39	>75% Grass cover, Good, HSG A
21,309	30	Woods, Good, HSG A
9,577	74	>75% Grass cover, Good, HSG C
9,641	70	Woods, Good, HSG C
43,238	49	Weighted Average
43,238		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0600	0.13		Sheet Flow, Segment #1
					Woods: Light underbrush n= 0.400 P2= 3.61"
3.0	196	0.0460	1.07		Shallow Concentrated Flow, Segment #2
					Woodland Kv= 5.0 fps
16.0	296	Total			

Subcatchment 12S: Remainder of Existing Site

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Summary for Subcatchment 13S: Venture Drive

Runoff = 0.22 cfs @ 12.09 hrs, Volume= 0.018 af, Depth> 6.61"

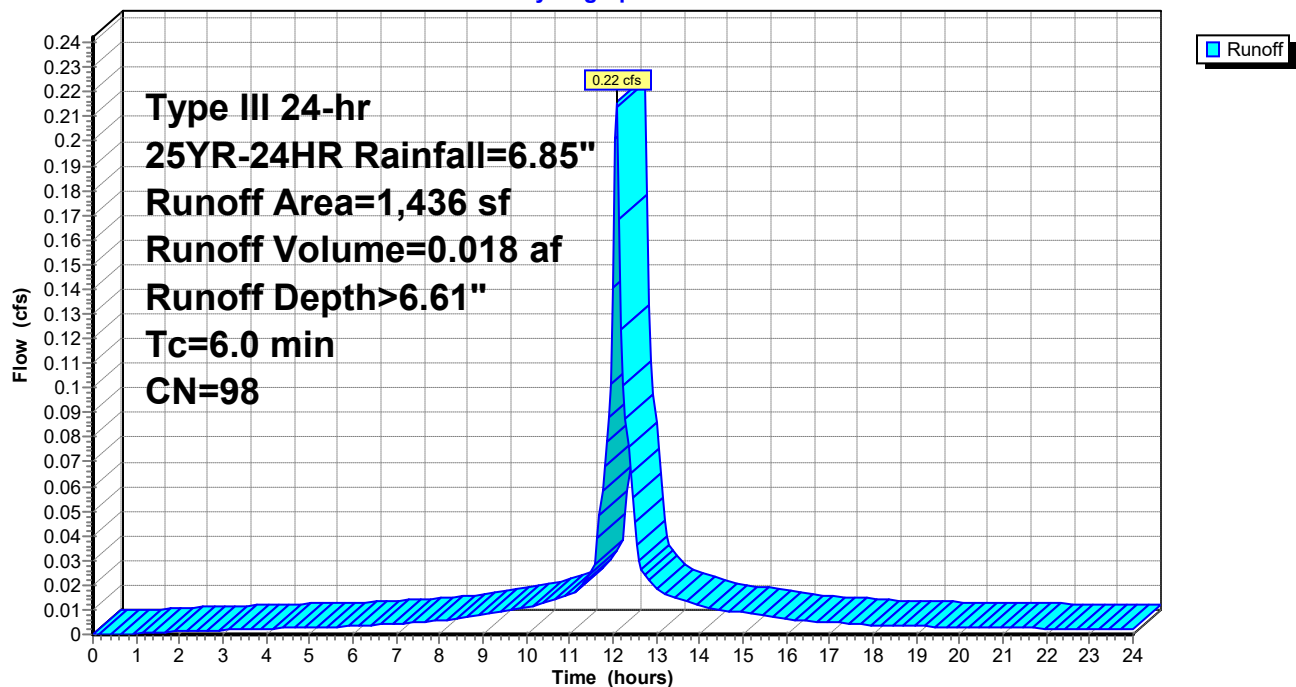
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
1,436	98	Paved parking, HSG B
1,436		100.00% Impervious Area

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

Subcatchment 13S: Venture Drive

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Subcatchment 20S: Subcatchment #20

Runoff = 0.80 cfs @ 12.10 hrs, Volume= 0.059 af, Depth> 2.88"

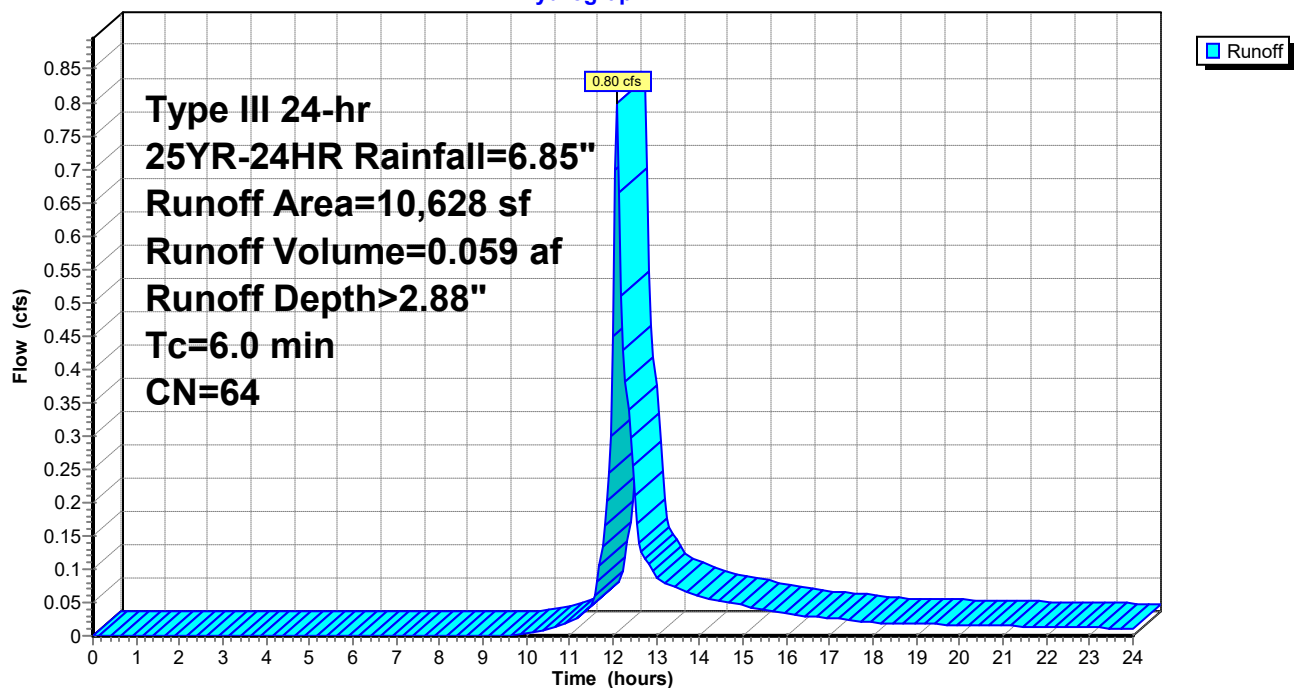
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
4,612	39	>75% Grass cover, Good, HSG A
2,449	98	Paved parking, HSG A
119	61	>75% Grass cover, Good, HSG B
3,448	74	>75% Grass cover, Good, HSG C
10,628	64	Weighted Average
8,179		76.96% Pervious Area
2,449		23.04% Impervious Area

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

Subcatchment 20S: Subcatchment #20

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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Subcatchment 21S: Subcatchment #21

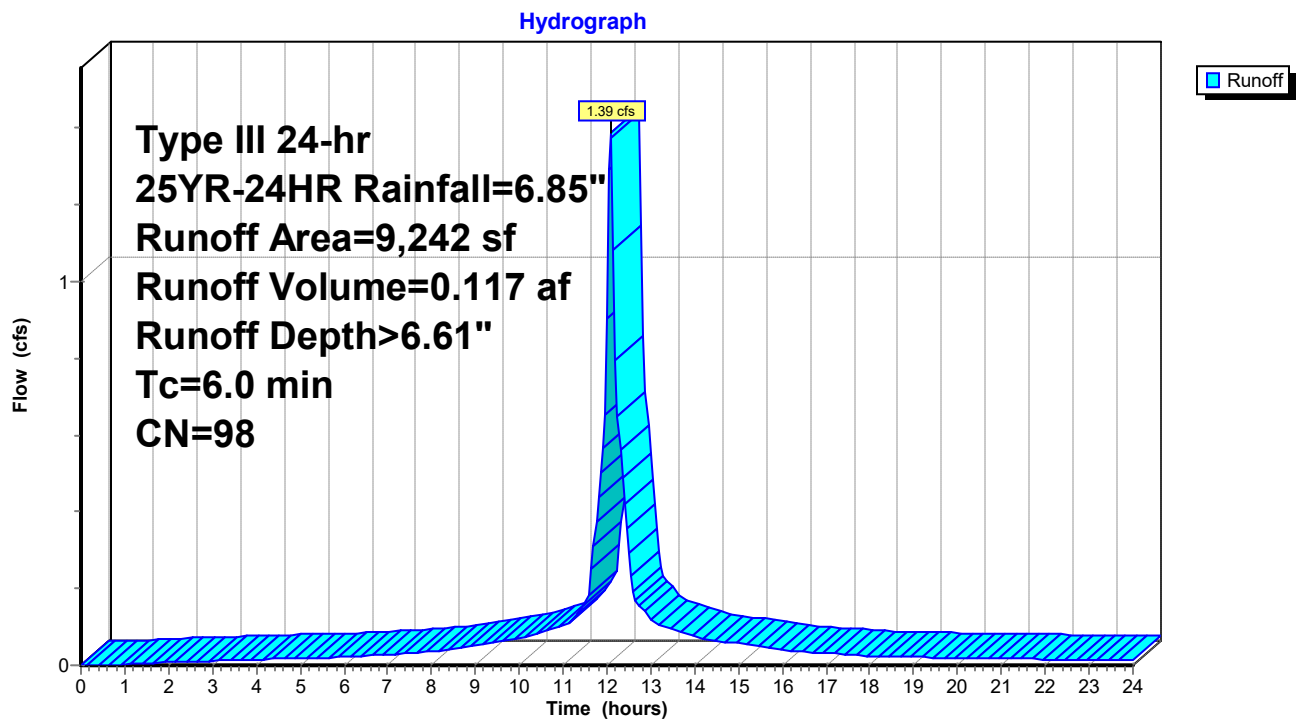
Runoff = 1.39 cfs @ 12.09 hrs, Volume= 0.117 af, Depth> 6.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
4,702	98	Roofs, HSG A
2,302	98	Paved parking, HSG A
294	98	Paved parking, HSG B
1,944	98	Paved parking, HSG C
9,242	98	Weighted Average
9,242		100.00% Impervious Area

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

Subcatchment 21S: Subcatchment #21



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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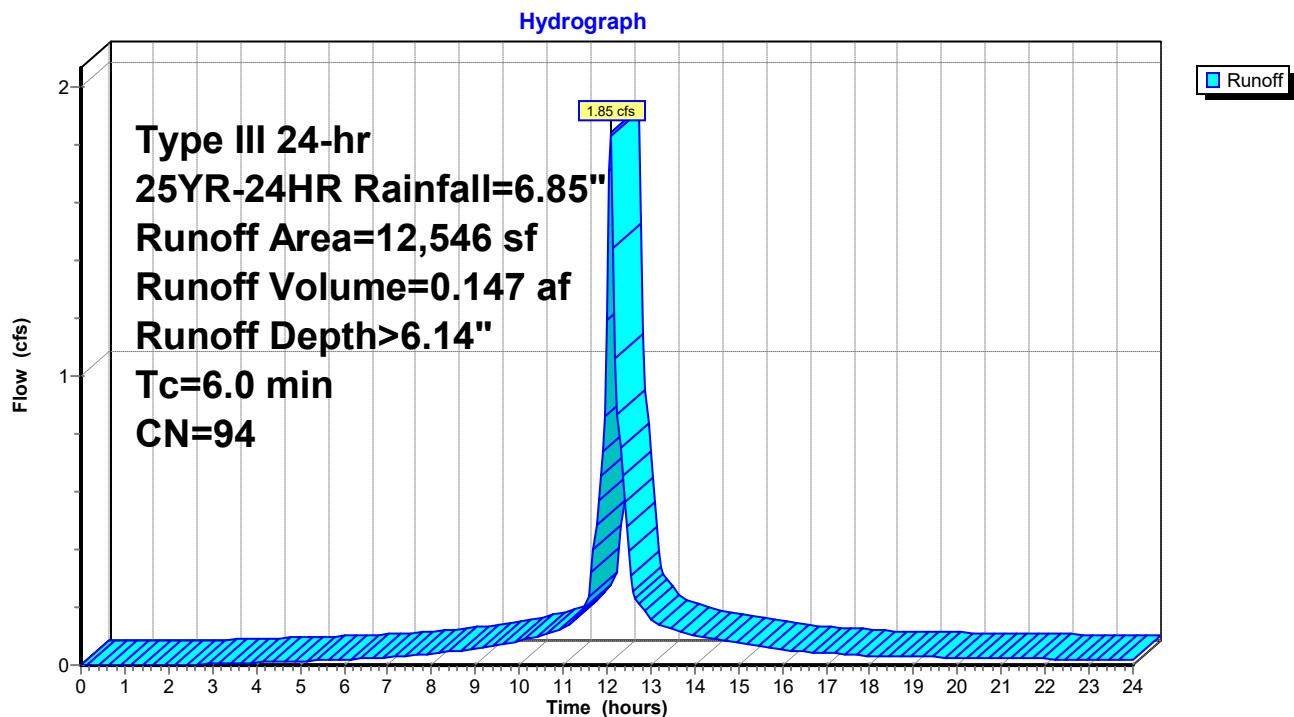
Summary for Subcatchment 22S: Subcatchment #22

Runoff = 1.85 cfs @ 12.09 hrs, Volume= 0.147 af, Depth> 6.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
5,372	98	Roofs, HSG A
727	39	>75% Grass cover, Good, HSG A
6,022	98	Paved parking, HSG A
45	74	>75% Grass cover, Good, HSG C
380	98	Paved parking, HSG C
12,546	94	Weighted Average
772		6.15% Pervious Area
11,774		93.85% Impervious Area

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

Subcatchment 22S: Subcatchment #22

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Summary for Subcatchment 23S: Subcatchment #23

Runoff = 0.35 cfs @ 12.09 hrs, Volume= 0.029 af, Depth> 6.61"

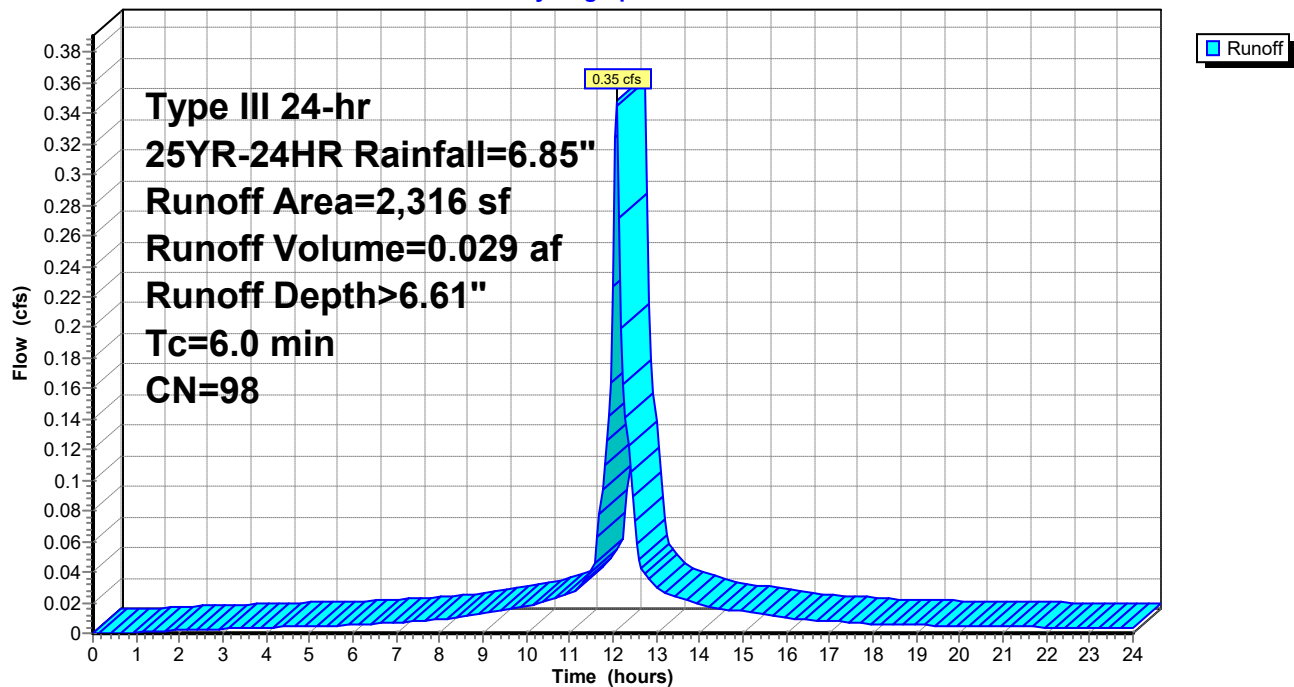
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
983	98	Paved parking, HSG A
1,333	98	Paved parking, HSG C
2,316	98	Weighted Average
2,316		100.00% Impervious Area

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

Subcatchment 23S: Subcatchment #23

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Subcatchment 24S: Area Around Pond

Runoff = 0.40 cfs @ 12.09 hrs, Volume= 0.029 af, Depth> 3.91"

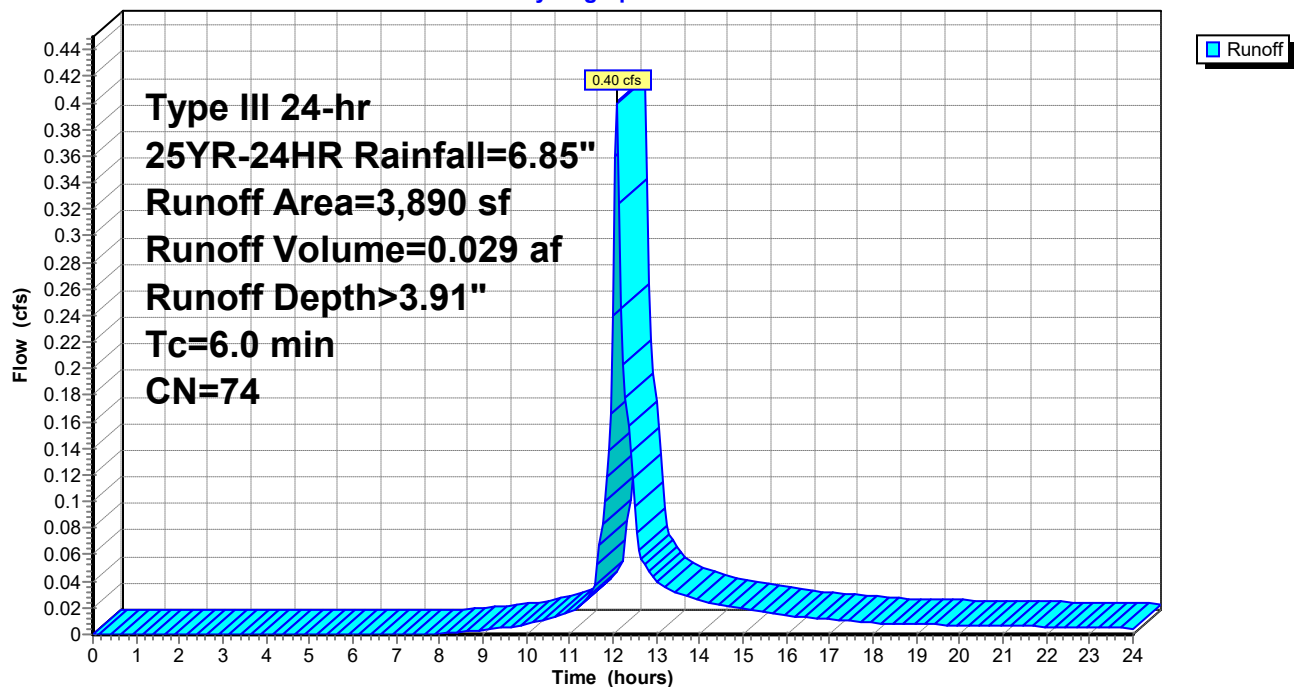
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR-24HR Rainfall=6.85"

Area (sf)	CN	Description
3,890	74	>75% Grass cover, Good, HSG C
3,890		100.00% Pervious Area

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

Subcatchment 24S: Area Around Pond

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Reach 2R: Reach #2

Inflow Area = 1.895 ac, 41.22% Impervious, Inflow Depth > 2.53" for 25YR-24HR event
Inflow = 4.38 cfs @ 12.16 hrs, Volume= 0.399 af
Outflow = 4.10 cfs @ 12.21 hrs, Volume= 0.398 af, Atten= 6%, Lag= 3.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.08 fps, Min. Travel Time= 4.5 min

Avg. Velocity = 0.33 fps, Avg. Travel Time= 14.6 min

Peak Storage= 1,093 cf @ 12.21 hrs

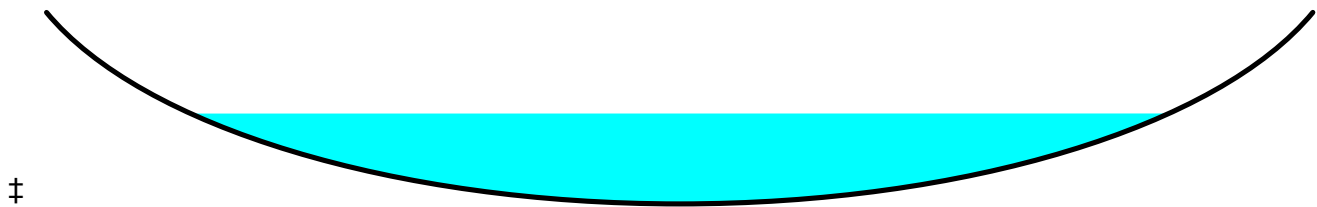
Average Depth at Peak Storage= 0.24'

Bank-Full Depth= 0.50' Flow Area= 11.7 sf, Capacity= 20.81 cfs

35.00' x 0.50' deep Parabolic Channel, n= 0.080 Earth, long dense weeds

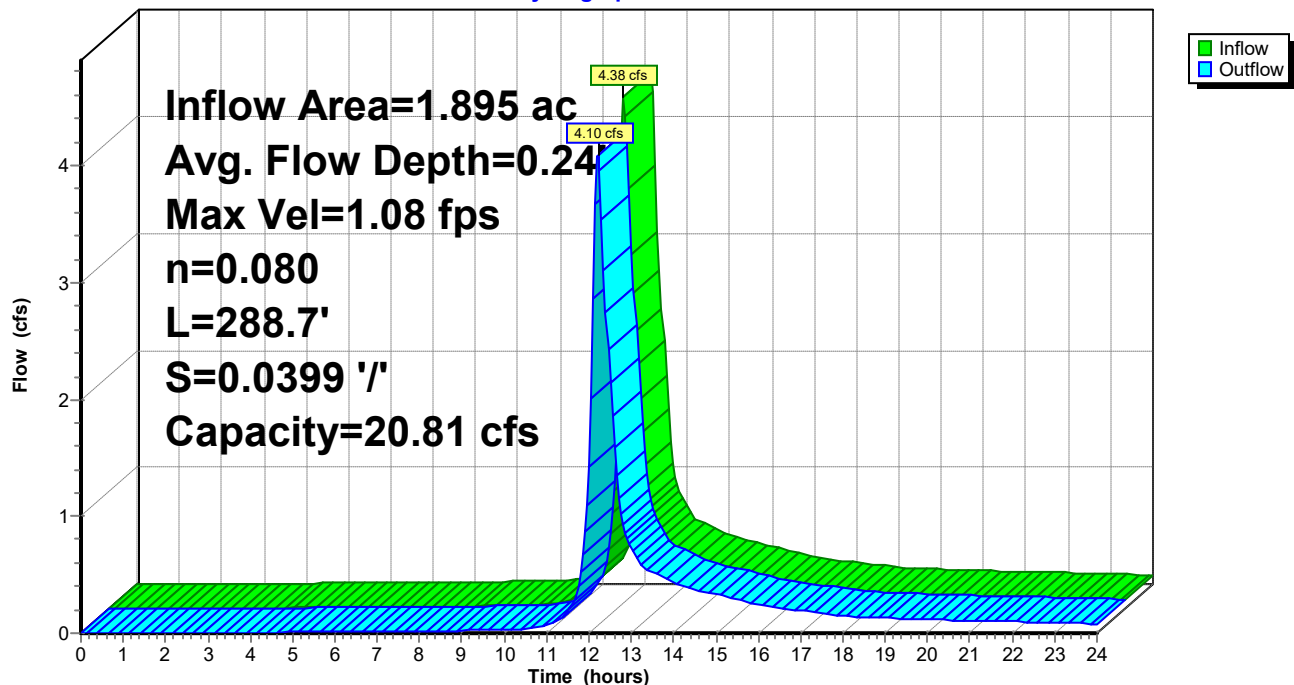
Length= 288.7' Slope= 0.0399 '/'

Inlet Invert= 166.78', Outlet Invert= 155.25'



Reach 2R: Reach #2

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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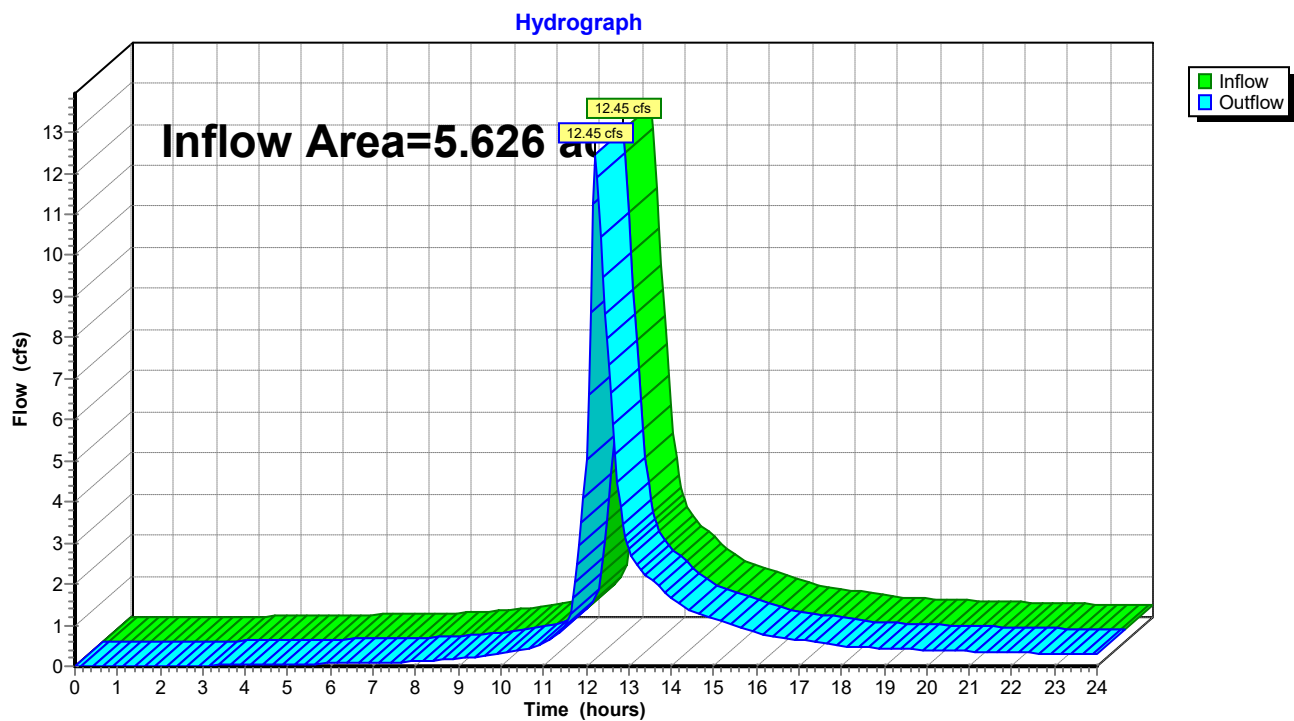
Summary for Reach 100R: Final Reach #100

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

Inflow Area = 5.626 ac, 46.26% Impervious, Inflow Depth > 3.16" for 25YR-24HR event
Inflow = 12.45 cfs @ 12.22 hrs, Volume= 1.482 af
Outflow = 12.45 cfs @ 12.22 hrs, Volume= 1.482 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 100R: Final Reach #100



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Reach 101aR: Overland Flow to Wetlands

Inflow Area = 0.643 ac, 83.35% Impervious, Inflow Depth > 4.40" for 25YR-24HR event
Inflow = 0.98 cfs @ 12.47 hrs, Volume= 0.235 af
Outflow = 0.98 cfs @ 12.48 hrs, Volume= 0.235 af, Atten= 0%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.08 fps, Min. Travel Time= 0.2 min

Avg. Velocity= 1.03 fps, Avg. Travel Time= 0.3 min

Peak Storage= 9 cf @ 12.48 hrs

Average Depth at Peak Storage= 0.14'

Bank-Full Depth= 0.75' Flow Area= 6.0 sf, Capacity= 38.38 cfs

12.00' x 0.75' deep Parabolic Channel, n= 0.065

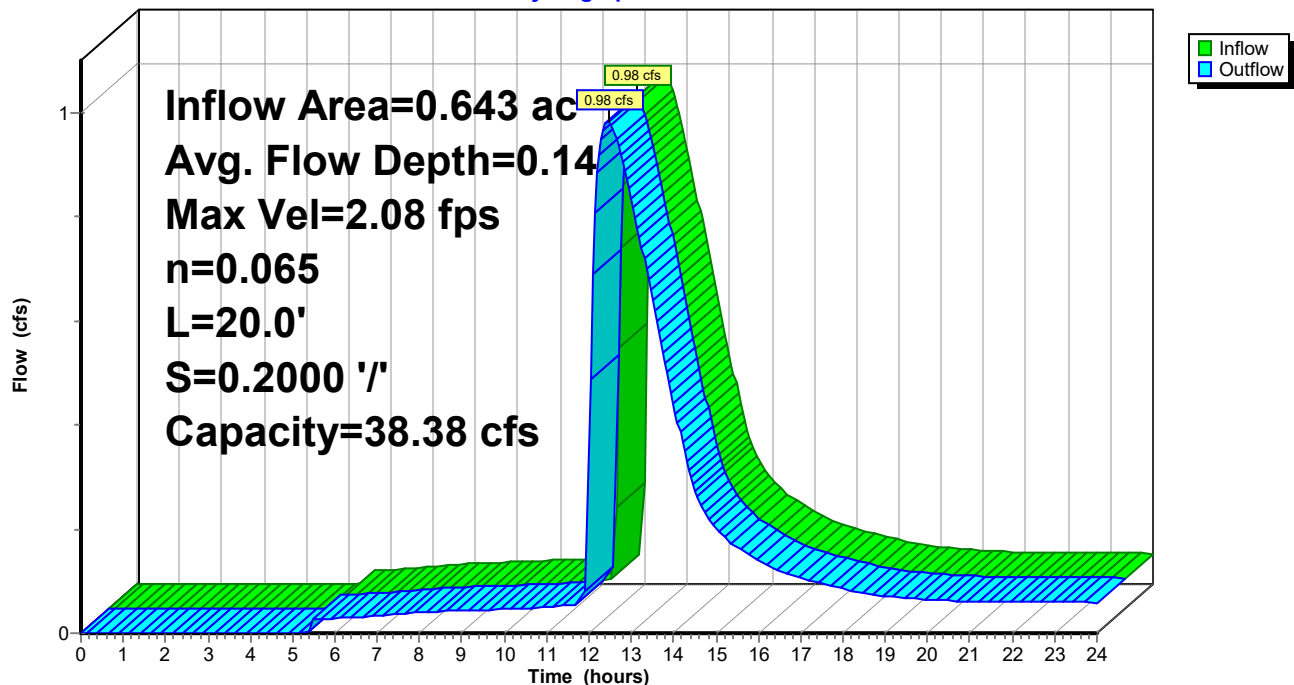
Length= 20.0' Slope= 0.2000 '/

Inlet Invert= 159.50', Outlet Invert= 155.50'



Reach 101aR: Overland Flow to Wetlands

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Reach 101bR: Overland Flow to Wetlands

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

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min

Avg. Velocity= 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 0.50' Flow Area= 3.3 sf, Capacity= 5.06 cfs

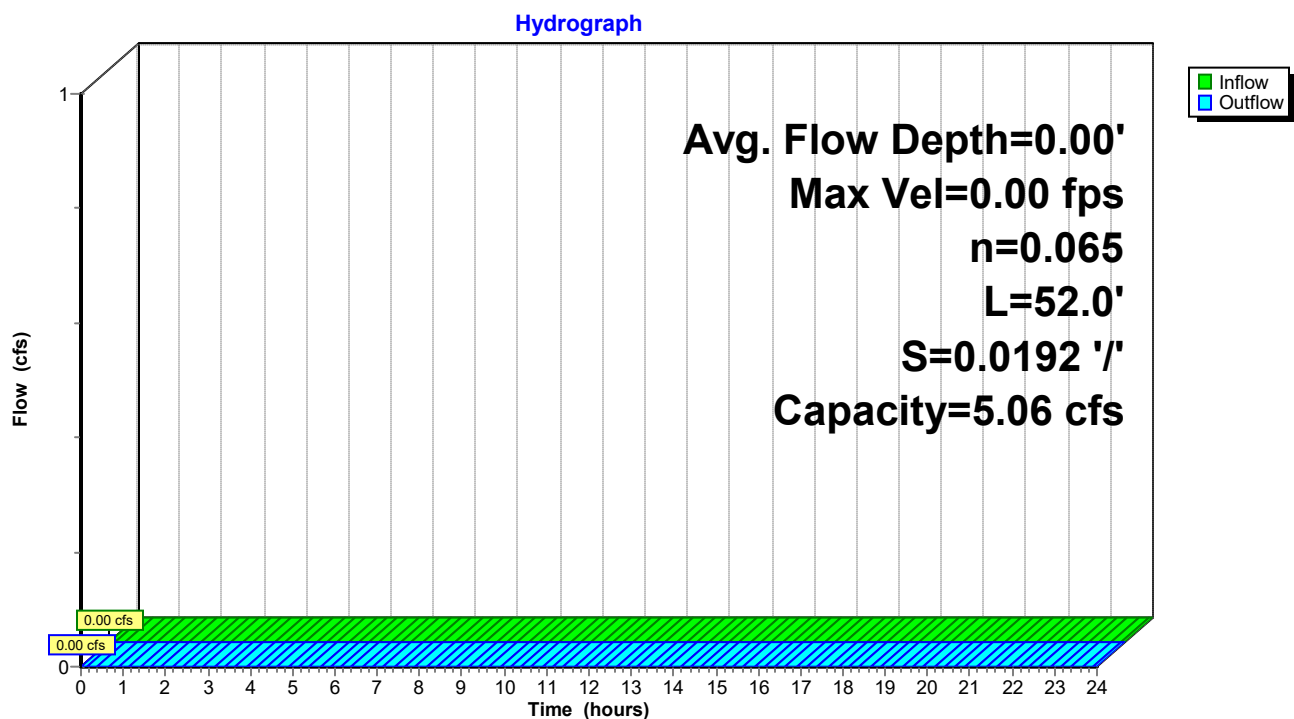
10.00' x 0.50' deep Parabolic Channel, n= 0.065

Length= 52.0' Slope= 0.0192 '/'

Inlet Invert= 161.00', Outlet Invert= 160.00'



Reach 101bR: Overland Flow to Wetlands



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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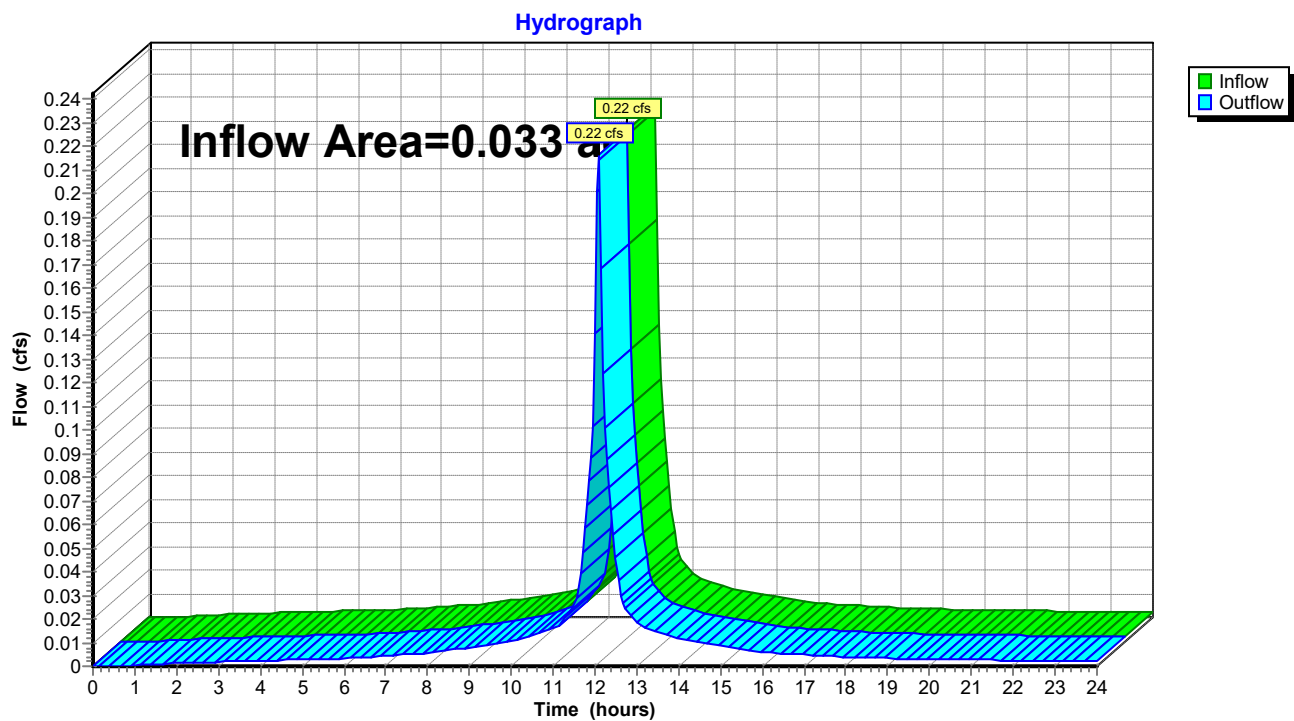
Summary for Reach 200R: Final Reach #200

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

Inflow Area = 0.033 ac, 100.00% Impervious, Inflow Depth > 6.61" for 25YR-24HR event
Inflow = 0.22 cfs @ 12.09 hrs, Volume= 0.018 af
Outflow = 0.22 cfs @ 12.09 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 200R: Final Reach #200



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Pond 1P: Roadside Pond

Inflow Area = 1.794 ac, 37.94% Impervious, Inflow Depth > 2.30" for 25YR-24HR event
 Inflow = 3.98 cfs @ 12.15 hrs, Volume= 0.344 af
 Outflow = 3.92 cfs @ 12.17 hrs, Volume= 0.344 af, Atten= 2%, Lag= 1.0 min
 Primary = 3.92 cfs @ 12.17 hrs, Volume= 0.344 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 170.15' @ 12.17 hrs Surf.Area= 146 sf Storage= 62 cf

Plug-Flow detention time= 0.1 min calculated for 0.344 af (100% of inflow)
 Center-of-Mass det. time= 0.1 min (862.3 - 862.2)

Volume	Invert	Avail.Storage	Storage Description		
#1	168.58'	1,980 cf	Open Water Storage (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
168.58	0	3.2	0	0	0
170.00	93	71.6	44	44	411
171.00	665	272.4	336	380	5,910
172.00	2,778	538.9	1,601	1,980	23,120

Device	Routing	Invert	Outlet Devices
#1	Primary	168.58'	12.0" Round 12" RCP L= 42.3' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 168.58' / 167.36' S= 0.0288 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=3.85 cfs @ 12.17 hrs HW=170.11' TW=168.89' (Dynamic Tailwater)
 ↑ **1=12" RCP** (Inlet Controls 3.85 cfs @ 4.90 fps)

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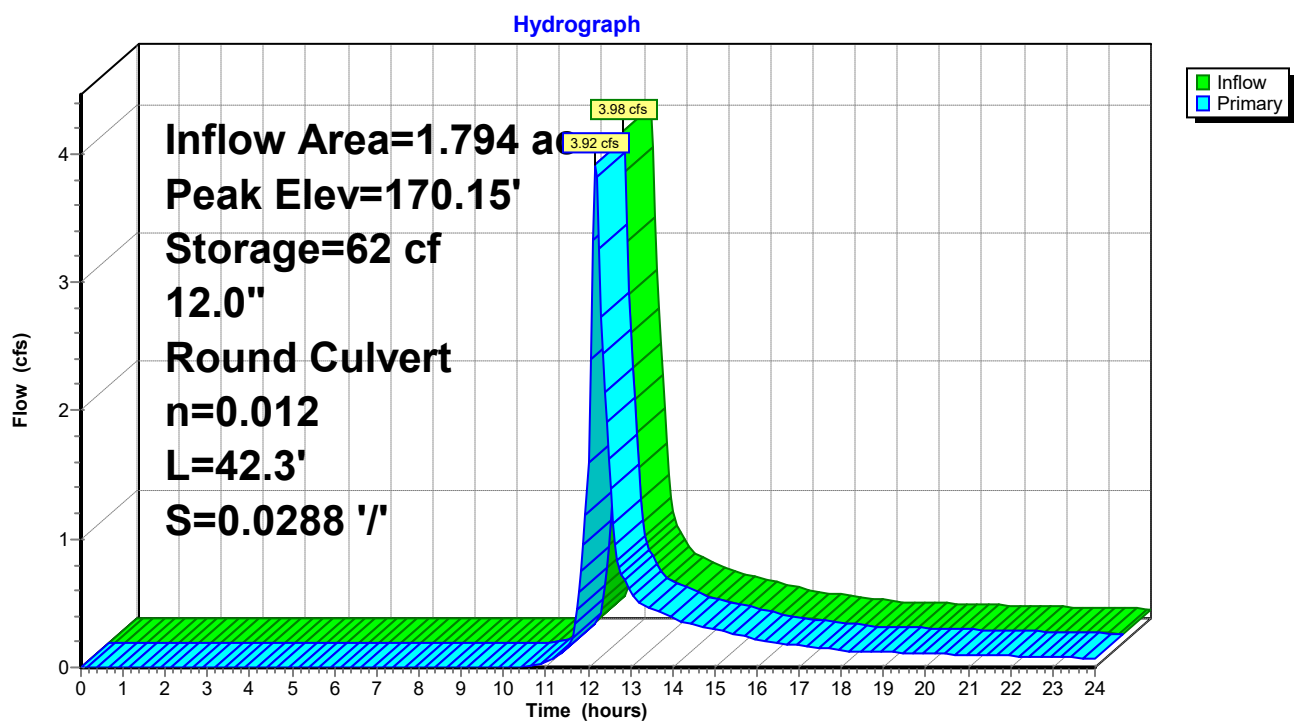
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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Pond 1P: Roadside Pond



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Summary for Pond 2P: CB #7325

Inflow Area = 1.895 ac, 41.22% Impervious, Inflow Depth > 2.53" for 25YR-24HR event
Inflow = 4.39 cfs @ 12.16 hrs, Volume= 0.400 af
Outflow = 4.38 cfs @ 12.16 hrs, Volume= 0.399 af, Atten= 0%, Lag= 0.1 min
Primary = 4.38 cfs @ 12.16 hrs, Volume= 0.399 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 168.93' @ 12.16 hrs Surf.Area= 13 sf Storage= 25 cf

Plug-Flow detention time= 0.2 min calculated for 0.399 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (845.9 - 845.8)

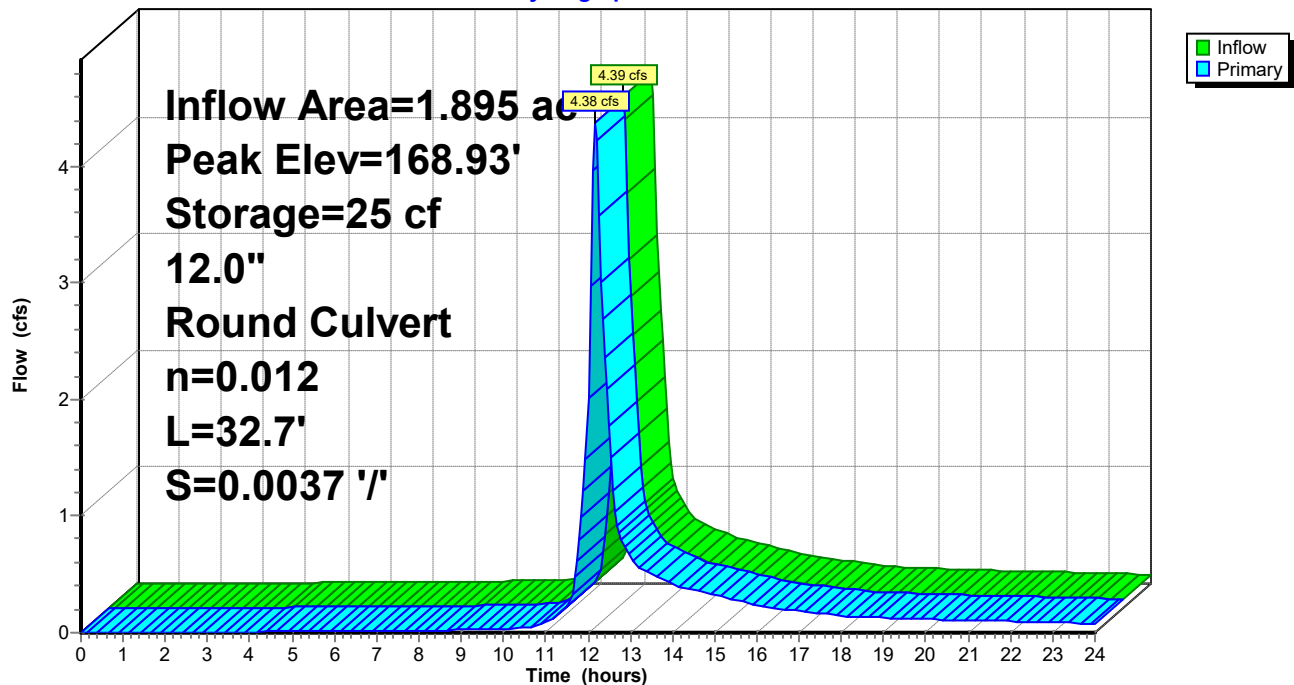
Volume	Invert	Avail.Storage	Storage Description
#1	166.90'	97 cf	4.00'D x 7.70'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	166.90'	12.0" Round 12" RCP L= 32.7' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 166.90' / 166.78' S= 0.0037 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=4.33 cfs @ 12.16 hrs HW=168.90' TW=167.01' (Dynamic Tailwater)
1=12" RCP (Barrel Controls 4.33 cfs @ 5.52 fps)

Pond 2P: CB #7325

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Pond 3P: CB #7323

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=3)

Inflow Area = 0.072 ac, 34.19% Impervious, Inflow Depth > 3.50" for 25YR-24HR event
Inflow = 1.88 cfs @ 12.20 hrs, Volume= 0.021 af
Outflow = 1.81 cfs @ 12.20 hrs, Volume= 0.021 af, Atten= 4%, Lag= 0.1 min
Primary = 1.81 cfs @ 12.20 hrs, Volume= 0.021 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Peak Elev= 169.64' @ 12.20 hrs Surf.Area= 13 sf Storage= 9 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 0.3 min (817.0 - 816.7)

Volume	Invert	Avail.Storage	Storage Description
#1	168.90'	40 cf	4.00'D x 3.20'H 4' Structure

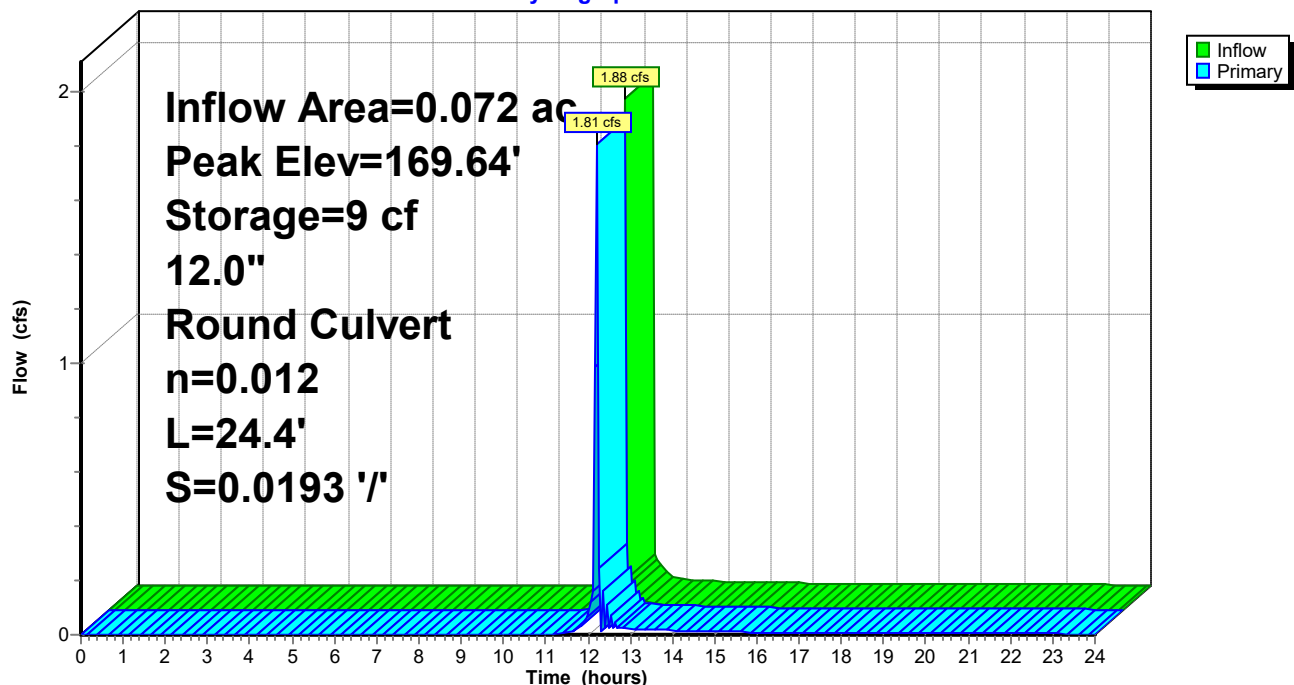
Device	Routing	Invert	Outlet Devices
#1	Primary	168.90'	12.0" Round 12" RCP L= 24.4' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 168.90' / 168.43' S= 0.0193 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.67 cfs @ 12.20 hrs HW=169.63' TW=169.16' (Dynamic Tailwater)

←1=12" RCP (Outlet Controls 1.67 cfs @ 3.80 fps)

Pond 3P: CB #7323

Hydrograph



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Summary for Pond 4P: CB #7324

Inflow Area = 0.186 ac, 74.38% Impervious, Inflow Depth > 5.40" for 25YR-24HR event
Inflow = 2.23 cfs @ 12.20 hrs, Volume= 0.083 af
Outflow = 2.17 cfs @ 12.20 hrs, Volume= 0.083 af, Atten= 3%, Lag= 0.1 min
Primary = 2.17 cfs @ 12.20 hrs, Volume= 0.083 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 169.16' @ 12.20 hrs Surf.Area= 13 sf Storage= 10 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.3 min (761.8 - 761.5)

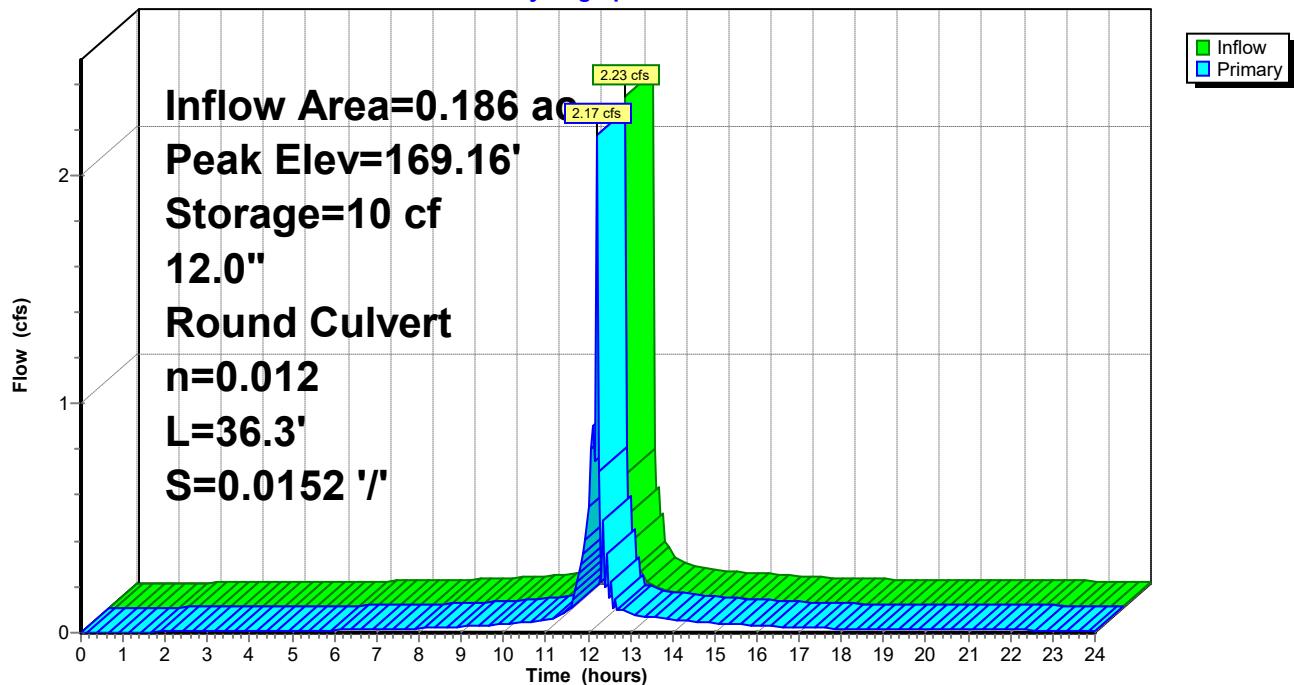
Volume	Invert	Avail.Storage	Storage Description
#1	168.33'	47 cf	4.00'D x 3.75'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	168.33'	12.0" Round 12" RCP L= 36.3' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 168.33' / 167.78' S= 0.0152 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.16 cfs @ 12.20 hrs HW=169.16' TW=167.21' (Dynamic Tailwater)
←1=12" RCP (Inlet Controls 2.16 cfs @ 3.10 fps)

Pond 4P: CB #7324

Hydrograph



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Summary for Pond 5P: CB #7320

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=5)

Inflow Area = 0.043 ac, 100.00% Impervious, Inflow Depth > 6.81" for 25YR-24HR event
 Inflow = 0.34 cfs @ 12.19 hrs, Volume= 0.024 af
 Outflow = 0.37 cfs @ 12.20 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.6 min
 Primary = 0.37 cfs @ 12.20 hrs, Volume= 0.024 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Peak Elev= 169.54' @ 12.18 hrs Surf.Area= 13 sf Storage= 31 cf

Flood Elev= 170.63' Surf.Area= 13 sf Storage= 44 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 0.9 min (743.4 - 742.5)

Volume	Invert	Avail.Storage	Storage Description
#1	167.11'	44 cf	4.00'D x 3.52'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	167.11'	12.0" Round 12" RCP L= 25.3' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 167.11' / 166.51' S= 0.0237 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	170.62'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=3.53 cfs @ 12.20 hrs HW=169.39' TW=168.51' (Dynamic Tailwater)↑**1=12" RCP** (Inlet Controls 3.53 cfs @ 4.50 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=167.11' TW=0.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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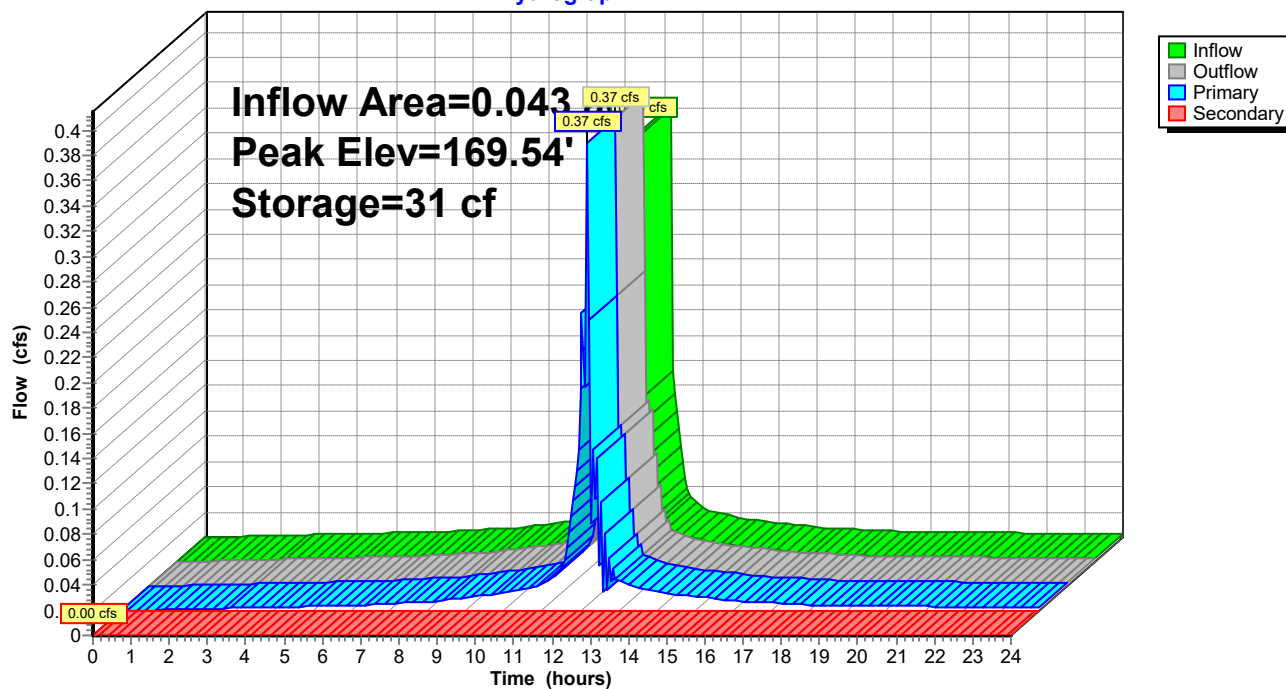
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Pond 5P: CB #7320

Hydrograph



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Summary for Pond 6P: CB #7319

[80] Warning: Exceeded Pond 5P by 0.83' @ 12.10 hrs (3.45 cfs 0.044 af)

Inflow Area = 1.667 ac, 65.50% Impervious, Inflow Depth > 4.21" for 25YR-24HR event
 Inflow = 7.01 cfs @ 12.11 hrs, Volume= 0.584 af
 Outflow = 6.98 cfs @ 12.11 hrs, Volume= 0.584 af, Atten= 0%, Lag= 0.1 min
 Primary = 6.98 cfs @ 12.11 hrs, Volume= 0.584 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 169.53' @ 12.13 hrs Surf.Area= 13 sf Storage= 39 cf
 Flood Elev= 170.61' Surf.Area= 13 sf Storage= 52 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.1 min (810.1 - 810.0)

Volume	Invert	Avail.Storage	Storage Description
#1	166.45'	52 cf	4.00'D x 4.16'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	166.45'	15.0" Round 15" RCP L= 8.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 166.45' / 166.35' S= 0.0125 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Secondary	170.60'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=6.32 cfs @ 12.11 hrs HW=169.38' TW=168.23' (Dynamic Tailwater)
 ↳1=15" RCP (Inlet Controls 6.32 cfs @ 5.15 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=166.45' TW=0.00' (Dynamic Tailwater)
 ↳2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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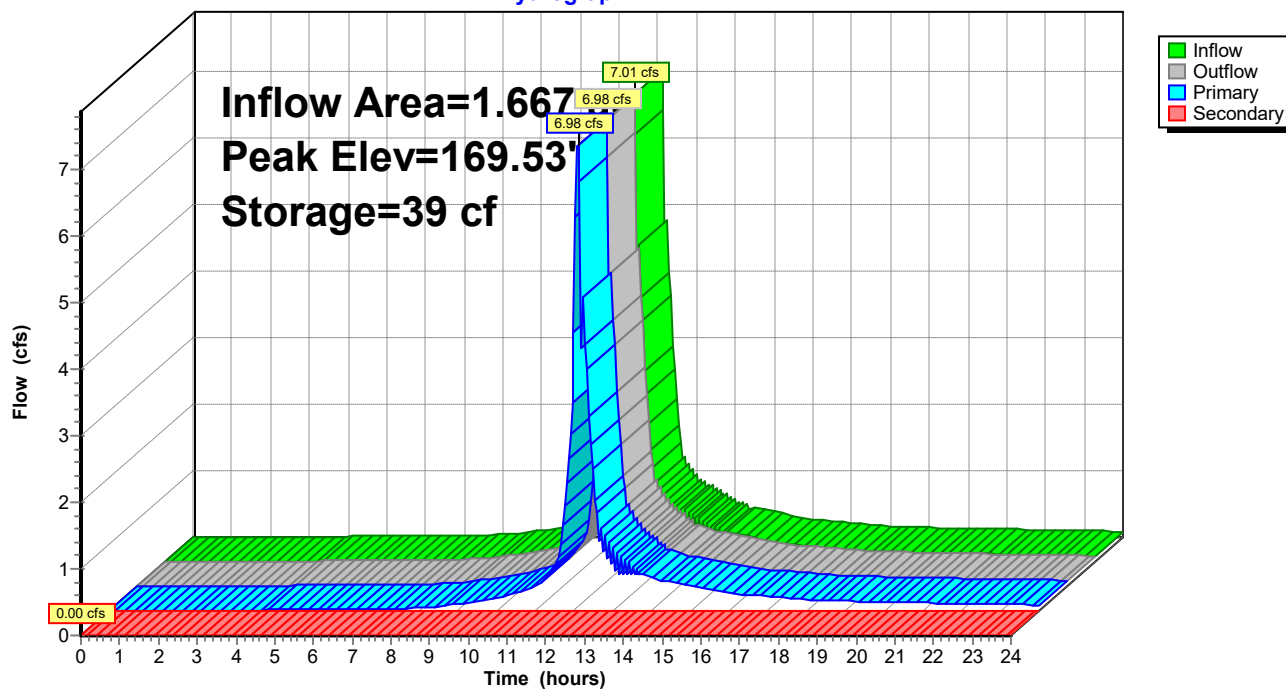
Type III 24-hr 25YR-24HR Rainfall=6.85"

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Pond 6P: CB #7319

Hydrograph



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Summary for Pond 7P: CB #3201

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

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

Inflow Area = 0.078 ac, 53.78% Impervious, Inflow Depth > 3.28" for 25YR-24HR event
 Inflow = 0.23 cfs @ 12.20 hrs, Volume= 0.021 af
 Outflow = 0.39 cfs @ 12.34 hrs, Volume= 0.021 af, Atten= 0%, Lag= 8.8 min
 Primary = 0.39 cfs @ 12.34 hrs, Volume= 0.021 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 176.36' @ 12.29 hrs Surf.Area= 13 sf Storage= 25 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.4 min (842.2 - 841.8)

Volume	Invert	Avail.Storage	Storage Description
#1	174.37'	35 cf	4.00'D x 2.80'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	174.37'	12.0" Round 12" RCP L= 17.5' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 174.37' / 173.93' S= 0.0251 ' / Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	177.16'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=1.58 cfs @ 12.34 hrs HW=175.05' TW=174.18' (Dynamic Tailwater)
 ↳ **1=12" RCP** (Inlet Controls 1.58 cfs @ 2.80 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=174.37' TW=173.61' (Dynamic Tailwater)
 ↳ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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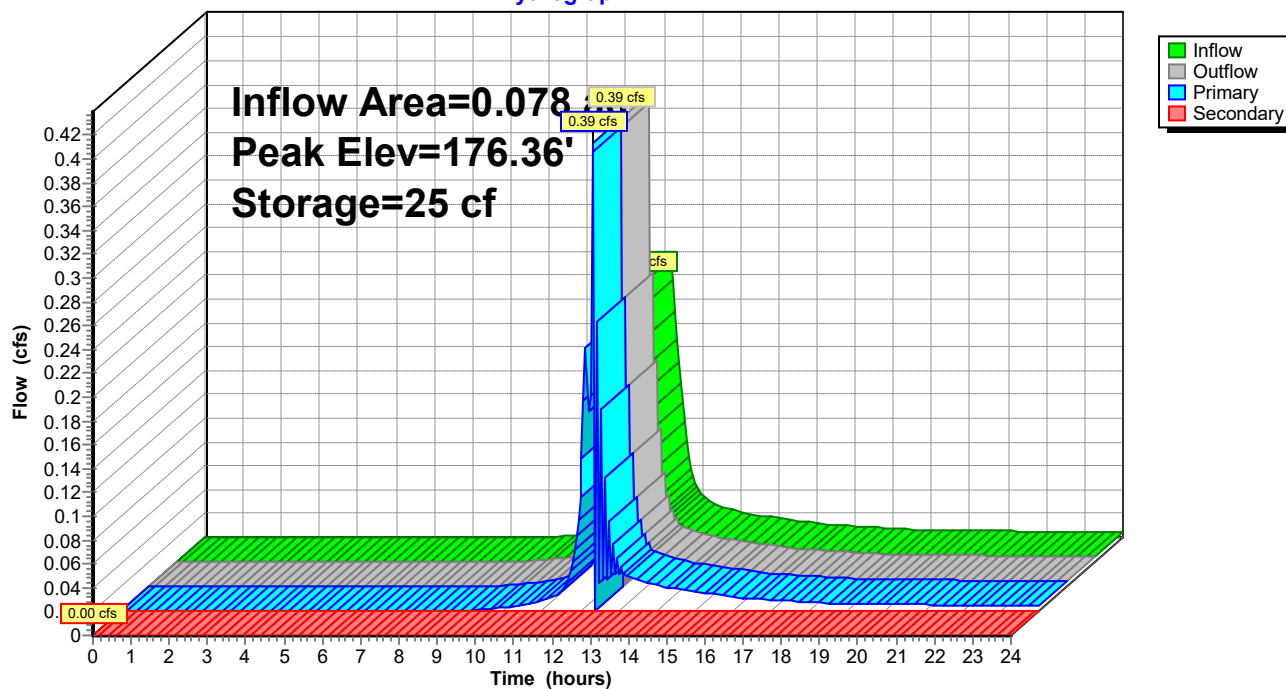
Type III 24-hr 25YR-24HR Rainfall=6.85"

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Pond 7P: CB #3201

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Pond 8P: CB #3202

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

[80] Warning: Exceeded Pond 7P by 0.82' @ 12.20 hrs (3.14 cfs 0.027 af)

Inflow Area = 0.102 ac, 64.52% Impervious, Inflow Depth > 4.06" for 25YR-24HR event
 Inflow = 0.45 cfs @ 12.34 hrs, Volume= 0.034 af
 Outflow = 0.47 cfs @ 12.31 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.47 cfs @ 12.31 hrs, Volume= 0.034 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 176.36' @ 12.24 hrs Surf.Area= 13 sf Storage= 35 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.6 min (805.1 - 804.5)

Volume	Invert	Avail.Storage	Storage Description
#1	173.61'	57 cf	4.00'D x 4.54'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	173.61'	12.0" Round 12" RCP L= 25.8' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 173.61' / 173.31' S= 0.0116 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	178.14'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=2.72 cfs @ 12.31 hrs HW=174.64' TW=174.02' (Dynamic Tailwater)
 ↑1=12" RCP (Barrel Controls 2.72 cfs @ 4.20 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=173.61' TW=173.21' (Dynamic Tailwater)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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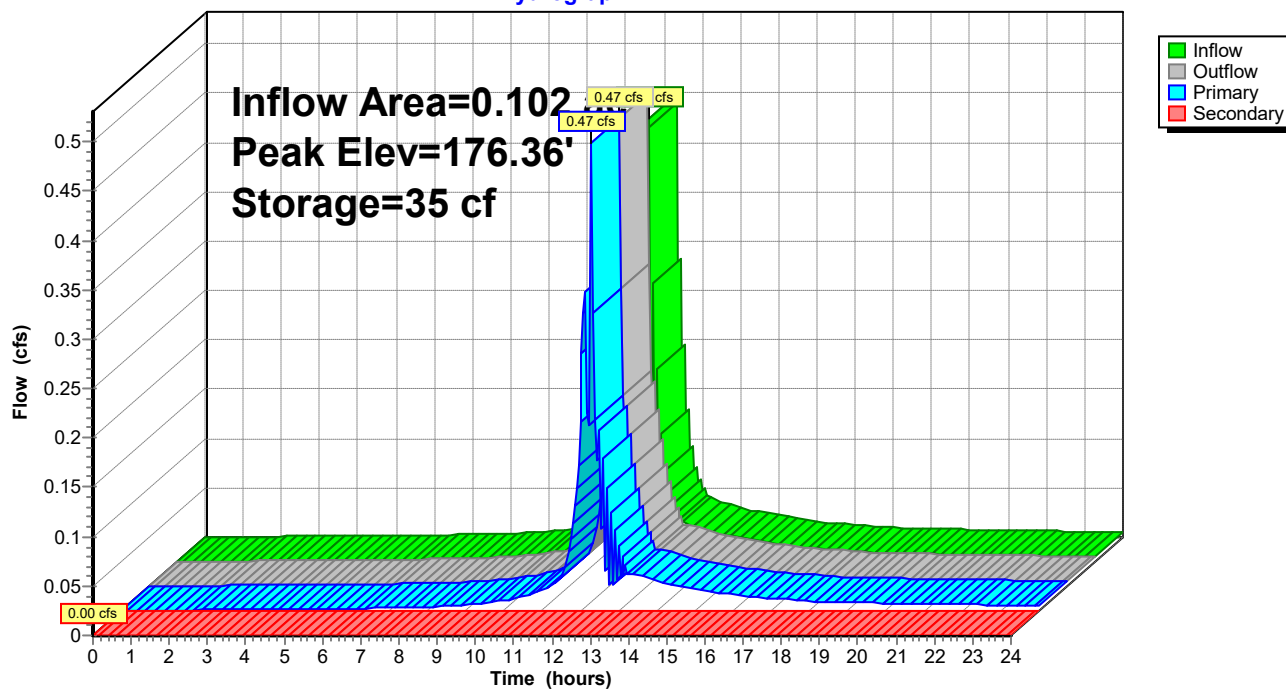
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Pond 8P: CB #3202

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Summary for Pond 9P: CB #3203

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=5)

[80] Warning: Exceeded Pond 8P by 0.88' @ 12.15 hrs (3.54 cfs 0.043 af)

Inflow Area = 0.898 ac, 60.71% Impervious, Inflow Depth > 4.02" for 25YR-24HR event
 Inflow = 3.77 cfs @ 12.12 hrs, Volume= 0.300 af
 Outflow = 3.74 cfs @ 12.11 hrs, Volume= 0.300 af, Atten= 1%, Lag= 0.0 min
 Primary = 3.74 cfs @ 12.11 hrs, Volume= 0.300 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 176.36' @ 12.19 hrs Surf.Area= 13 sf Storage= 40 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.1 min (819.9 - 819.7)

Volume	Invert	Avail.Storage	Storage Description
#1	173.21'	62 cf	4.00'D x 4.92'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	173.21'	12.0" Round 12" RCP L= 208.7' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 173.21' / 168.55' S= 0.0223 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	178.12'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=2.47 cfs @ 12.11 hrs HW=174.88' TW=173.80' (Dynamic Tailwater)
 ↑**1=12" RCP** (Outlet Controls 2.47 cfs @ 3.14 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=173.21' TW=171.40' (Dynamic Tailwater)
 ↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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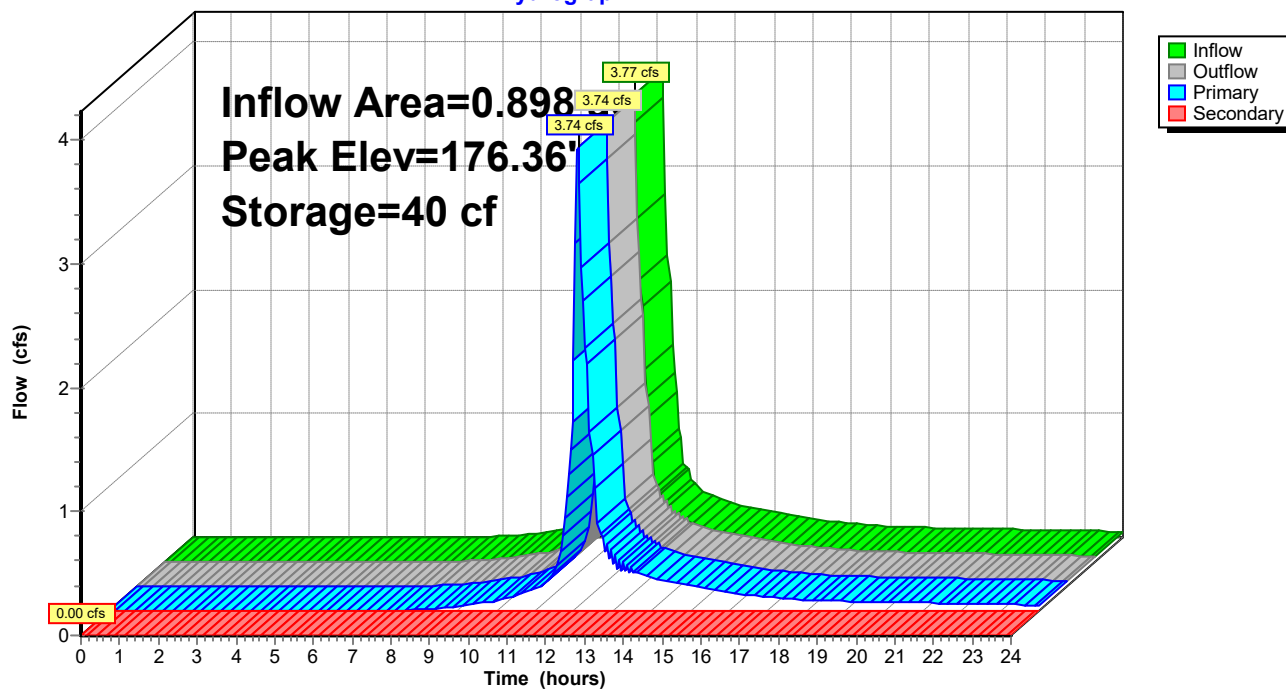
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Pond 9P: CB #3203

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Summary for Pond 10P: CB #7322

[93] Warning: Storage range exceeded by 0.47'

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=12)

Inflow Area = 0.571 ac, 62.08% Impervious, Inflow Depth > 3.91" for 25YR-24HR event
 Inflow = 2.54 cfs @ 12.10 hrs, Volume= 0.186 af
 Outflow = 2.55 cfs @ 12.09 hrs, Volume= 0.186 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.55 cfs @ 12.09 hrs, Volume= 0.179 af
 Secondary = 1.74 cfs @ 12.20 hrs, Volume= 0.007 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Peak Elev= 174.62' @ 12.20 hrs Surf.Area= 13 sf Storage= 35 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 0.2 min (822.8 - 822.7)

Volume	Invert	Avail.Storage	Storage Description
#1	171.40'	35 cf	4.00'D x 2.75'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	171.40'	12.0" Round 12" RCP L= 1.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 171.40' / 170.45' S= 0.9500 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	174.14'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=172.33' TW=173.13' (Dynamic Tailwater)

↑1=12" RCP (Controls 0.00 cfs)

Secondary OutFlow Max=1.74 cfs @ 12.20 hrs HW=174.62' TW=169.64' (Dynamic Tailwater)

↑2=Broad-Crested Rectangular Weir (Weir Controls 1.74 cfs @ 1.81 fps)

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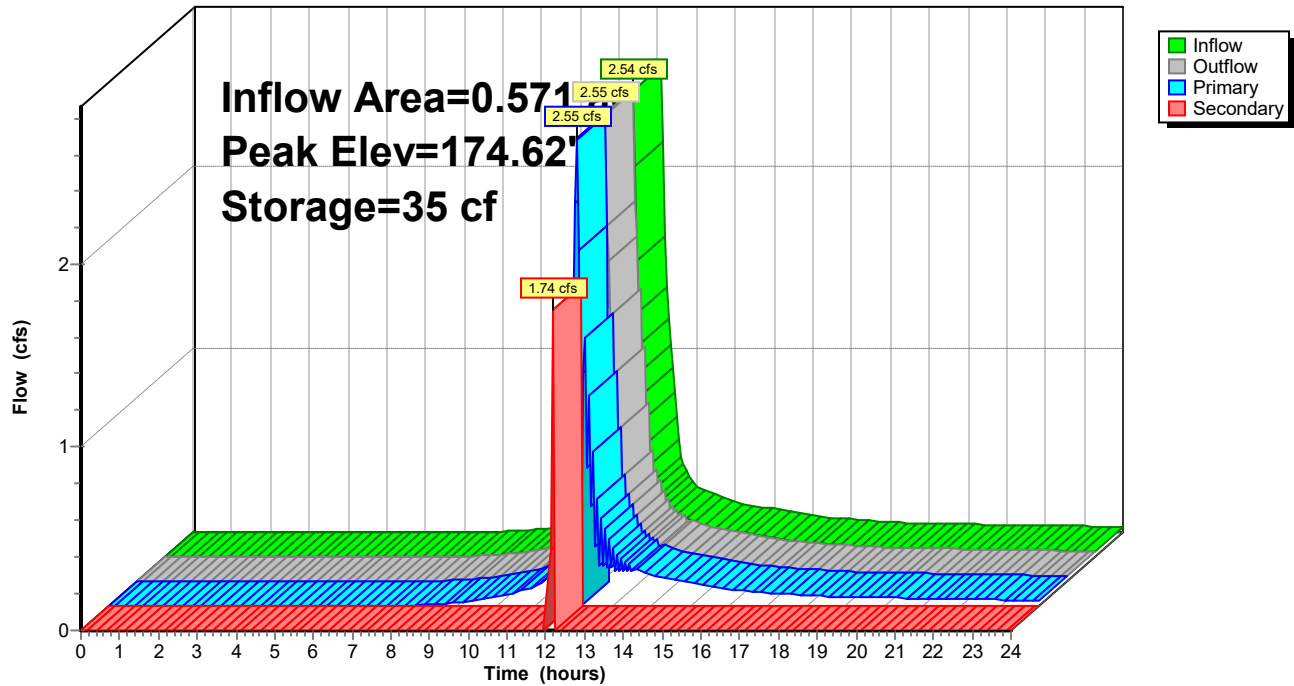
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Pond 10P: CB #7322

Hydrograph



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Summary for Pond 11P: CB #7321

[93] Warning: Storage range exceeded by 0.34'

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=99)

Inflow Area = 0.104 ac, 100.00% Impervious, Inflow Depth > 6.61" for 25YR-24HR event
 Inflow = 0.69 cfs @ 12.09 hrs, Volume= 0.058 af
 Outflow = 0.59 cfs @ 12.06 hrs, Volume= 0.057 af, Atten= 14%, Lag= 0.0 min
 Primary = 0.59 cfs @ 12.06 hrs, Volume= 0.057 af
 Secondary = 0.18 cfs @ 12.20 hrs, Volume= 0.001 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 173.31' @ 12.18 hrs Surf.Area= 13 sf Storage= 73 cf

Plug-Flow detention time= 6.2 min calculated for 0.057 af (99% of inflow)
 Center-of-Mass det. time= 3.4 min (746.2 - 742.8)

Volume	Invert	Avail.Storage	Storage Description
#1	167.17'	73 cf	4.00'D x 5.80'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	167.86'	12.0" Round 12" RCP L= 25.8' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 167.17' / 167.86' S= -0.0267 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	172.96'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.00 cfs @ 12.06 hrs HW=169.71' TW=171.27' (Dynamic Tailwater)
 ↳ **1=12" RCP** (Controls 0.00 cfs)

Secondary OutFlow Max=0.18 cfs @ 12.20 hrs HW=173.07' TW=169.46' (Dynamic Tailwater)
 ↳ **2=Broad-Crested Rectangular Weir** (Weir Controls 0.18 cfs @ 0.83 fps)

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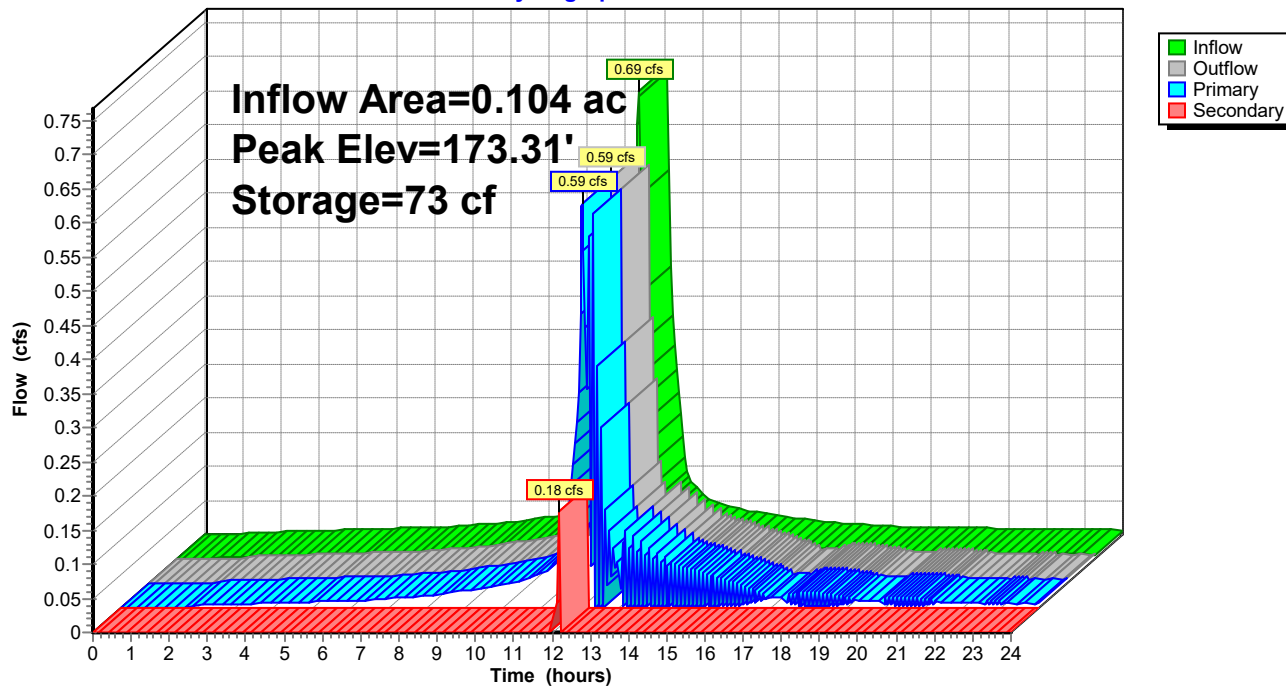
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Pond 11P: CB #7321

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Summary for Pond 101P: Rain Garden #101

[80] Warning: Exceeded Pond C03P by 0.12' @ 12.20 hrs (0.56 cfs 0.013 af)

[80] Warning: Exceeded Pond D01P by 0.04' @ 12.20 hrs (1.15 cfs 0.035 af)

Inflow Area = 0.643 ac, 83.35% Impervious, Inflow Depth > 6.00" for 25YR-24HR event
 Inflow = 3.92 cfs @ 12.09 hrs, Volume= 0.321 af
 Outflow = 0.98 cfs @ 12.47 hrs, Volume= 0.235 af, Atten= 75%, Lag= 22.7 min
 Primary = 0.98 cfs @ 12.47 hrs, Volume= 0.235 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Peak Elev= 167.51' @ 12.47 hrs Surf.Area= 804 sf Storage= 6,610 cf

Flood Elev= 168.50' Surf.Area= 804 sf Storage= 9,116 cf

Plug-Flow detention time= 182.3 min calculated for 0.235 af (73% of inflow)

Center-of-Mass det. time= 93.7 min (854.4 - 760.7)

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	322 cf	Stone (Irregular) Listed below (Recalc) -Impervious 804 cf Overall x 40.0% Voids
#2	162.00'	241 cf	BioMedia (Irregular) Listed below (Recalc) 1,206 cf Overall x 20.0% Voids
#3	163.50'	8,473 cf	Open Water (Irregular) Listed below (Recalc) -Impervious
#4	160.90'	80 cf	4.00'D x 6.35'H 4' Structure -Impervious
		9,116 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
161.00	804	122.6	0	0	804
162.00	804	122.6	804	804	927

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
162.00	804	122.6	0	0	804
163.50	804	122.6	1,206	1,206	988

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
163.50	804	122.6	0	0	804
164.00	931	129.4	433	433	954
165.00	1,282	173.0	1,102	1,535	2,014
166.00	1,656	200.0	1,465	3,000	2,837
167.00	2,074	217.0	1,861	4,861	3,439
168.00	2,521	230.0	2,294	7,155	3,952
168.50	2,754	236.3	1,318	8,473	4,213

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Device	Routing	Invert	Outlet Devices
#1	Primary	160.90'	15.0" Round 15" HDPE N-12 L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 160.90' / 160.40' S= 0.0250 ' / Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	161.00'	1.0" Vert. 1" Orifice C= 0.600
#3	Device 1	166.15'	4.0" Vert. 4" Orifice (2) X 2.00 C= 0.600
#4	Device 1	167.90'	48.0" Horiz. Top Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	168.00'	10.0' long x 8.0' breadth E-Spillway Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#6	Device 2	162.00'	10.000 in/hr Exfiltration over Surface area

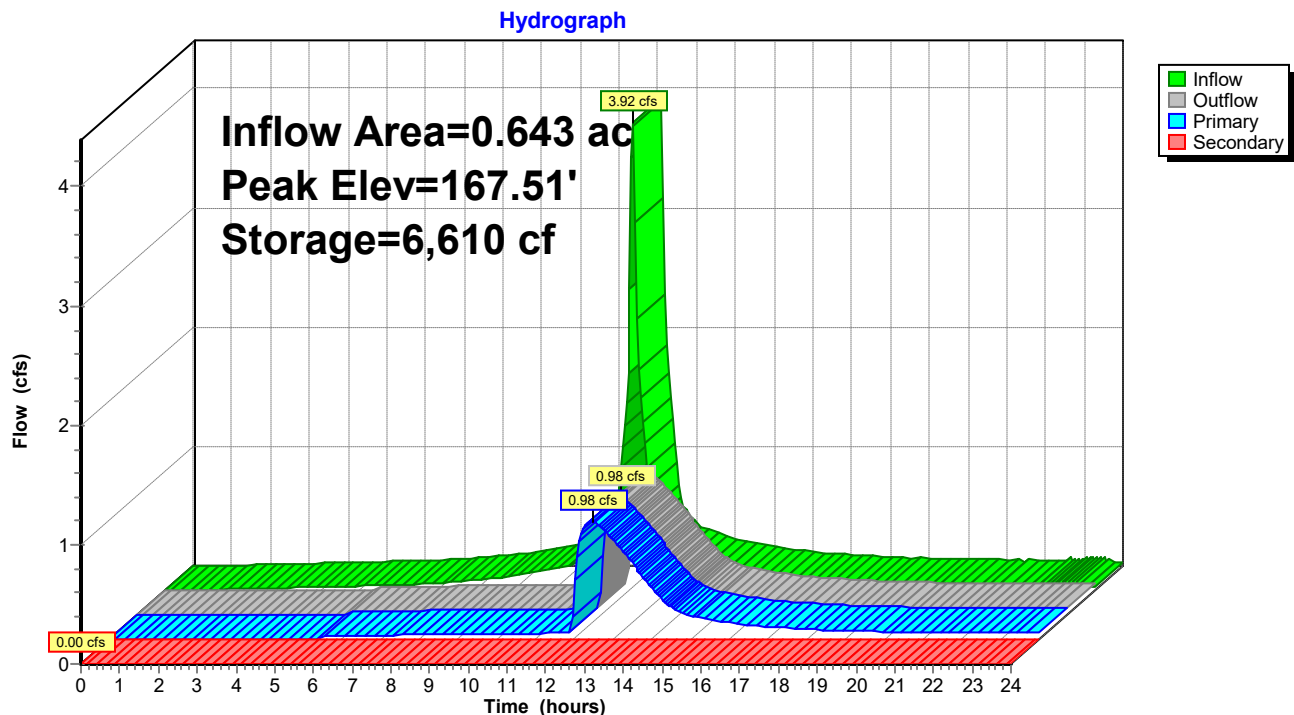
Primary OutFlow Max=0.98 cfs @ 12.47 hrs HW=167.51' TW=159.64' (Dynamic Tailwater)

- 1=15" HDPE N-12 (Passes 0.98 cfs of 14.45 cfs potential flow)
- 2=1" Orifice (Orifice Controls 0.07 cfs @ 12.24 fps)
- 6=Exfiltration (Passes 0.07 cfs of 0.19 cfs potential flow)
- 3=4" Orifice (2) (Orifice Controls 0.92 cfs @ 5.25 fps)
- 4=Top Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=160.90' TW=161.00' (Dynamic Tailwater)

- 5=E-Spillway (Controls 0.00 cfs)

Pond 101P: Rain Garden #101



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Summary for Pond 102P: Entrance Detention Pond

Inflow Area = 2.096 ac, 61.35% Impervious, Inflow Depth > 4.16" for 25YR-24HR event
 Inflow = 8.67 cfs @ 12.11 hrs, Volume= 0.726 af
 Outflow = 6.42 cfs @ 12.22 hrs, Volume= 0.725 af, Atten= 26%, Lag= 6.8 min
 Primary = 6.42 cfs @ 12.22 hrs, Volume= 0.725 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 167.22' @ 12.22 hrs Surf.Area= 1,417 sf Storage= 2,982 cf

Plug-Flow detention time= 6.1 min calculated for 0.724 af (100% of inflow)
 Center-of-Mass det. time= 5.0 min (812.4 - 807.4)

Volume	Invert	Avail.Storage	Storage Description
#1	163.50'	7,133 cf	Ponding (Irregular) Listed below (Recalc)
#2	163.50'	118 cf	5.00'D x 6.00'H 5' Structure
		7,251 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
163.50	303	101.0	0	0	303
164.00	403	108.0	176	176	431
165.00	646	132.0	520	696	904
166.00	940	156.0	788	1,484	1,473
167.00	1,314	185.0	1,122	2,606	2,278
168.00	1,705	201.0	1,505	4,111	2,806
169.00	2,120	213.0	1,909	6,020	3,252
169.50	2,336	220.0	1,114	7,133	3,517

Device	Routing	Invert	Outlet Devices
#1	Primary	163.50'	18.0" Round 18" HDPE N-12 L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 163.50' / 163.25' S= 0.0060 ' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	163.50'	10.0" Vert. 10" Orifice C= 0.600
#3	Device 1	166.50'	12.0" W x 6.0" H Vert. 12"W X 6"T Slot C= 0.600
#4	Device 1	169.00'	60.0" Horiz. 5' Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.36 cfs @ 12.22 hrs HW=167.20' TW=0.00' (Dynamic Tailwater)

- ↑ **1=18" HDPE N-12** (Passes 6.36 cfs of 14.62 cfs potential flow)
- ↑ **2=10" Orifice** (Orifice Controls 4.76 cfs @ 8.73 fps)
- ↑ **3=12"W X 6"T Slot** (Orifice Controls 1.60 cfs @ 3.20 fps)
- ↑ **4=5' Grate** (Controls 0.00 cfs)

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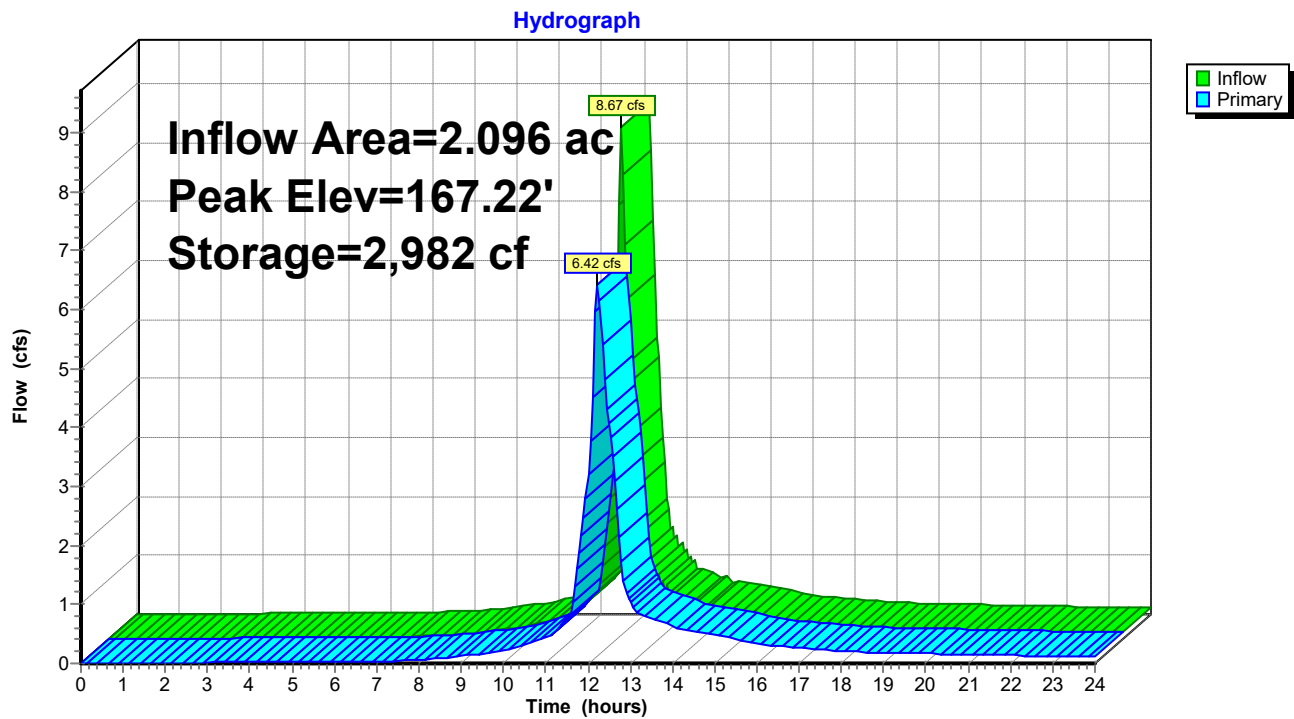
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Pond 102P: Entrance Detention Pond



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Summary for Pond 4198P: DMH #4198

[93] Warning: Storage range exceeded by 0.90'

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=12)

[80] Warning: Exceeded Pond 10P by 1.24' @ 12.15 hrs (4.22 cfs 0.034 af)

Inflow Area = 1.468 ac, 61.24% Impervious, Inflow Depth > 3.92" for 25YR-24HR event
 Inflow = 6.26 cfs @ 12.10 hrs, Volume= 0.479 af
 Outflow = 6.10 cfs @ 12.11 hrs, Volume= 0.479 af, Atten= 3%, Lag= 0.2 min
 Primary = 6.10 cfs @ 12.11 hrs, Volume= 0.479 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 174.95' @ 12.15 hrs Surf.Area= 13 sf Storage= 70 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.1 min (822.5 - 822.3)

Volume	Invert	Avail.Storage	Storage Description
#1	168.45'	70 cf	4.00'D x 5.60'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	168.45'	12.0" Round 12" RCP L= 40.1' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 168.45' / 168.02' S= 0.0107 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=3.31 cfs @ 12.11 hrs HW=173.65' TW=172.88' (Dynamic Tailwater)
 ↑**1=12" RCP** (Inlet Controls 3.31 cfs @ 4.22 fps)

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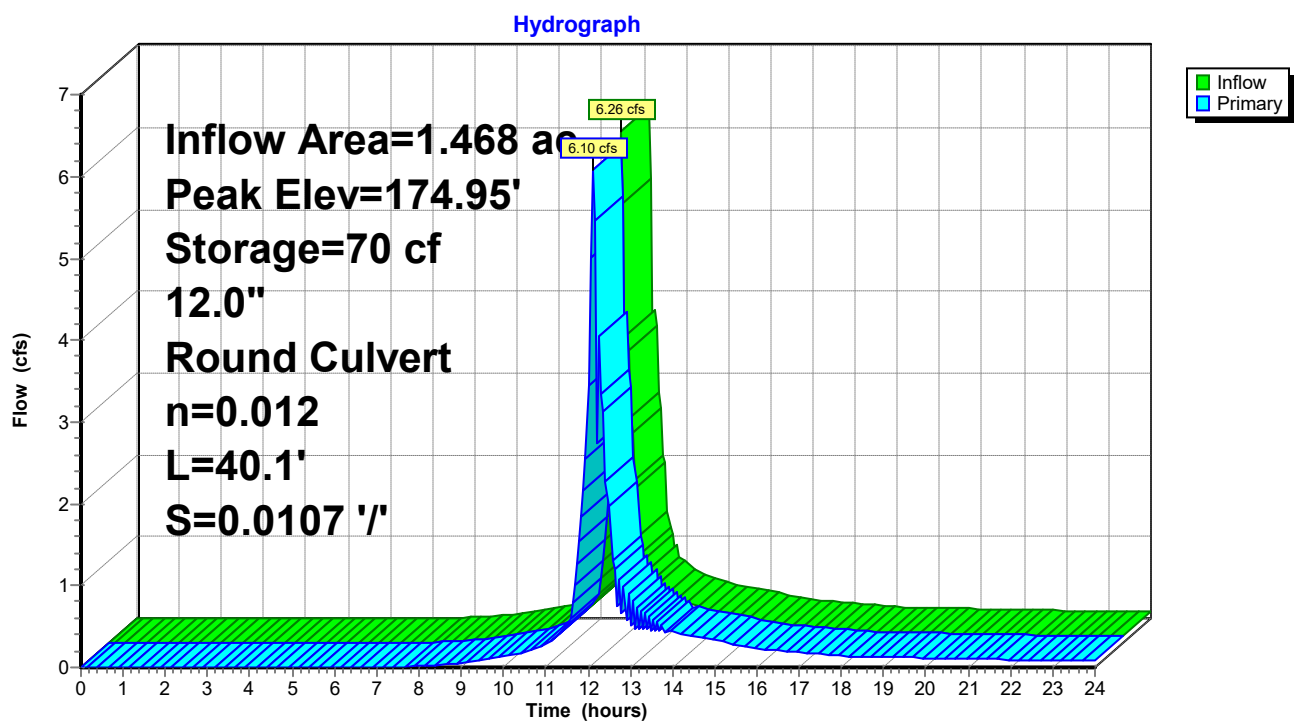
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Pond 4198P: DMH #4198



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Summary for Pond 8054P: DMH #8054

[93] Warning: Storage range exceeded by 0.34'

[80] Warning: Exceeded Pond 11P by 1.98' @ 12.10 hrs (5.32 cfs 0.144 af)

Inflow Area = 1.573 ac, 63.82% Impervious, Inflow Depth > 4.09" for 25YR-24HR event
 Inflow = 6.61 cfs @ 12.10 hrs, Volume= 0.536 af
 Outflow = 6.51 cfs @ 12.11 hrs, Volume= 0.536 af, Atten= 2%, Lag= 0.3 min
 Primary = 6.51 cfs @ 12.11 hrs, Volume= 0.536 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Peak Elev= 173.30' @ 12.13 hrs Surf.Area= 13 sf Storage= 64 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 0.1 min (814.6 - 814.4)

Volume	Invert	Avail.Storage	Storage Description
#1	167.86'	64 cf	4.00'D x 5.10'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	167.86'	12.0" Round 12" RCP L= 96.9' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 167.86' / 166.51' S= 0.0139 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=5.84 cfs @ 12.11 hrs HW=172.89' TW=169.38' (Dynamic Tailwater)↑**1=12" RCP** (Outlet Controls 5.84 cfs @ 7.44 fps)

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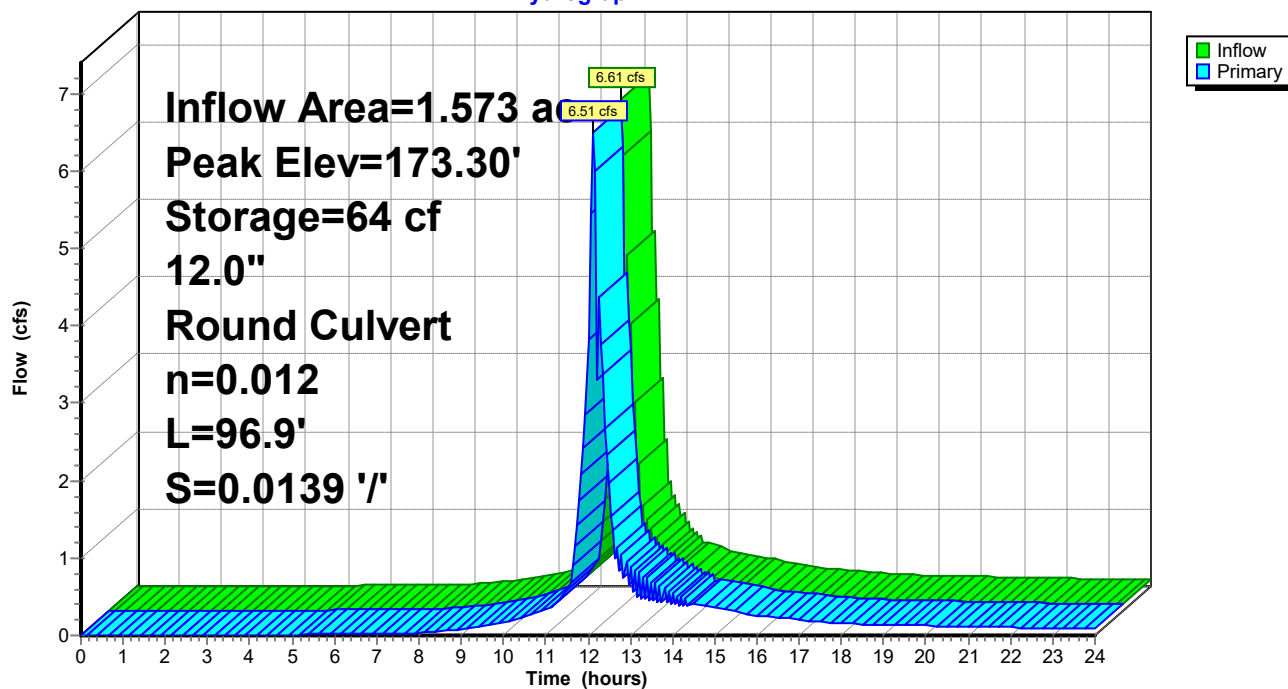
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Pond 8054P: DMH #8054

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Summary for Pond C01P: CB #1

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=106)

Inflow Area = 0.212 ac, 100.00% Impervious, Inflow Depth > 6.61" for 25YR-24HR event
Inflow = 1.39 cfs @ 12.09 hrs, Volume= 0.117 af
Outflow = 1.37 cfs @ 12.09 hrs, Volume= 0.116 af, Atten= 2%, Lag= 0.0 min
Primary = 1.37 cfs @ 12.09 hrs, Volume= 0.116 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 167.52' @ 12.54 hrs Surf.Area= 13 sf Storage= 29 cf

Plug-Flow detention time= 2.4 min calculated for 0.116 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (743.3 - 742.8)

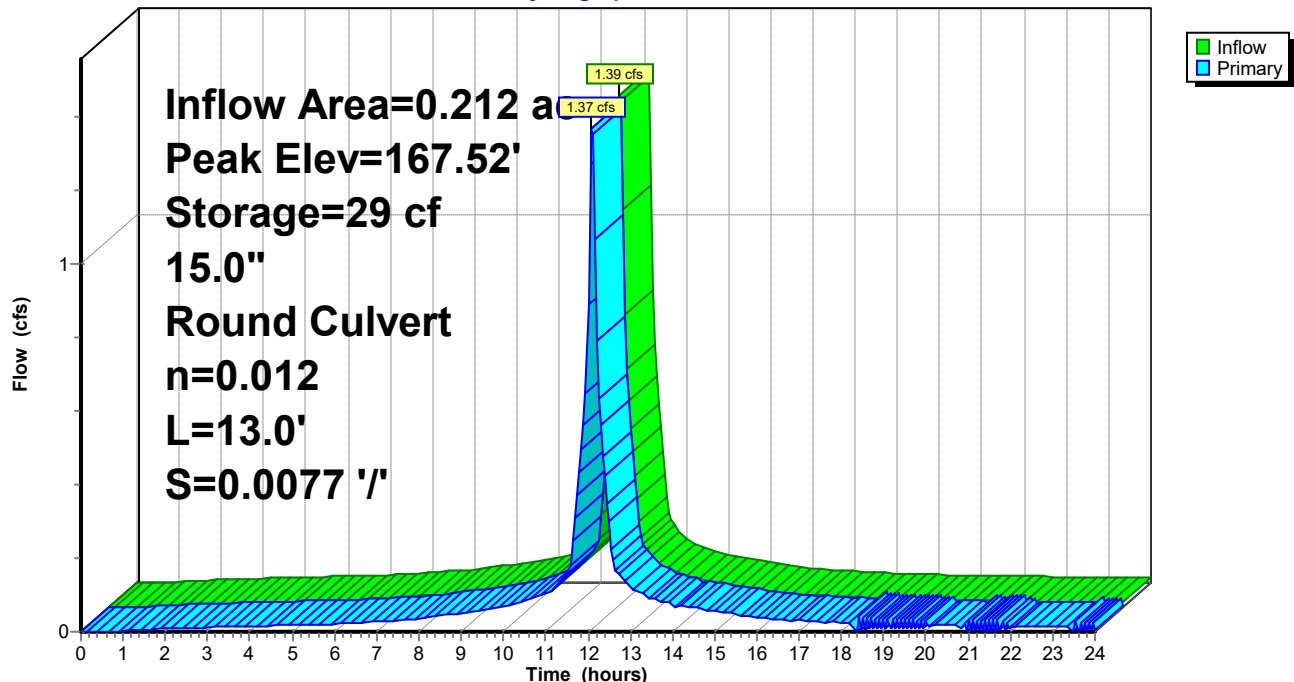
Volume	Invert	Avail.Storage	Storage Description
#1	165.20'	46 cf	4.00'D x 3.67'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	165.20'	15.0" Round 15" HDPE N-12 L= 13.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 165.20' / 165.10' S= 0.0077 ' / Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=166.56' TW=166.82' (Dynamic Tailwater)
←1=15" HDPE N-12 (Controls 0.00 cfs)

Pond C01P: CB #1

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Pond C02P: CB #2

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=46)

Inflow Area = 0.288 ac, 93.85% Impervious, Inflow Depth > 6.14" for 25YR-24HR event
Inflow = 1.85 cfs @ 12.09 hrs, Volume= 0.147 af
Outflow = 1.82 cfs @ 12.09 hrs, Volume= 0.147 af, Atten= 1%, Lag= 0.0 min
Primary = 1.82 cfs @ 12.09 hrs, Volume= 0.147 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Peak Elev= 167.52' @ 12.54 hrs Surf.Area= 13 sf Storage= 29 cf

Plug-Flow detention time= 1.8 min calculated for 0.147 af (100% of inflow)

Center-of-Mass det. time= 0.5 min (765.1 - 764.7)

Volume	Invert	Avail.Storage	Storage Description
#1	165.20'	42 cf	4.00'D x 3.31'H 4' Structure

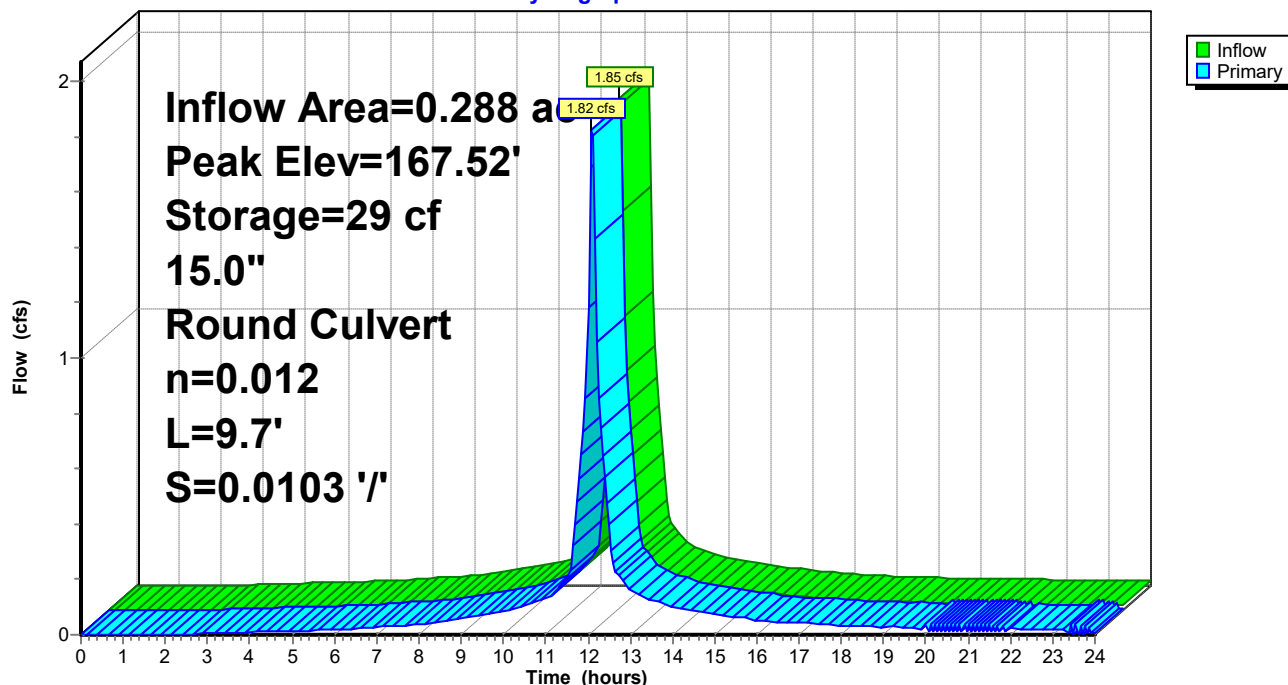
Device	Routing	Invert	Outlet Devices
#1	Primary	165.20'	15.0" Round 15" HDPE N-12 L= 9.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 165.20' / 165.10' S= 0.0103 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=166.60' TW=166.83' (Dynamic Tailwater)

←1=15" HDPE N-12 (Controls 0.00 cfs)

Pond C02P: CB #2

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Pond C03P: CB #3

Inflow Area = 0.053 ac, 100.00% Impervious, Inflow Depth > 6.61" for 25YR-24HR event
Inflow = 0.35 cfs @ 12.09 hrs, Volume= 0.029 af
Outflow = 0.35 cfs @ 12.09 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min
Primary = 0.35 cfs @ 12.09 hrs, Volume= 0.029 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 167.51' @ 12.51 hrs Surf.Area= 13 sf Storage= 10 cf

Plug-Flow detention time= 1.0 min calculated for 0.029 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (743.7 - 742.8)

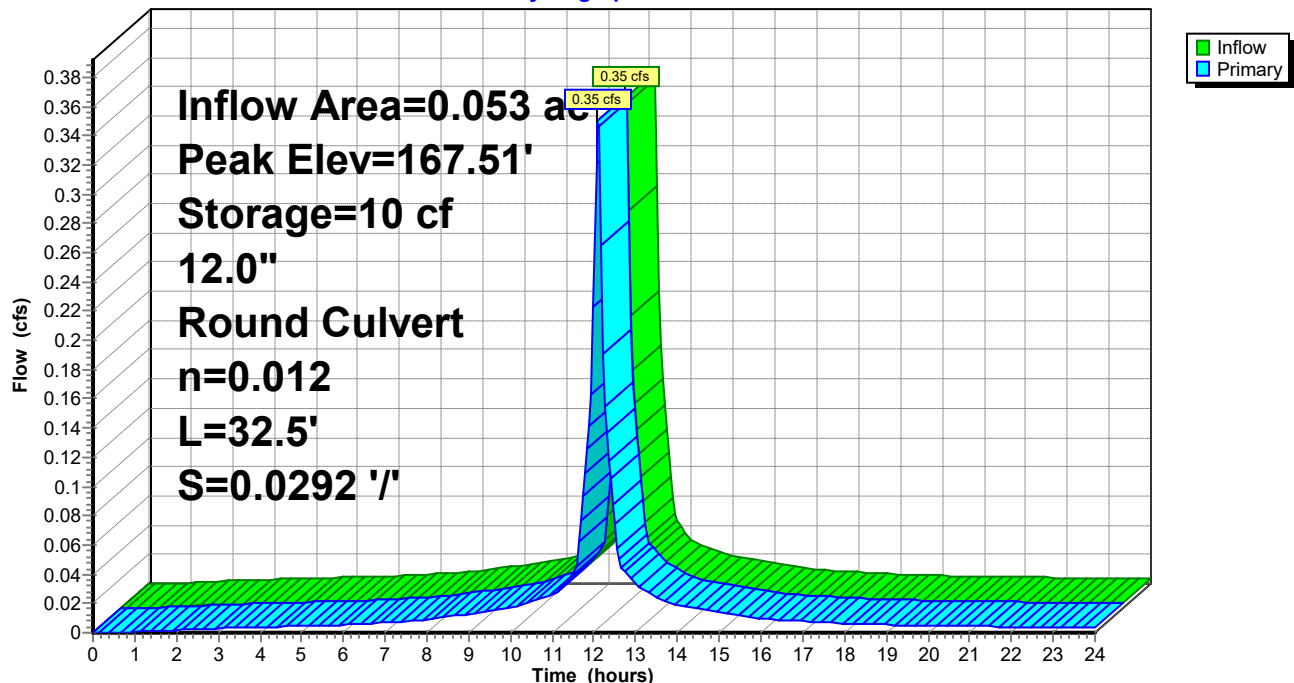
Volume	Invert	Avail.Storage	Storage Description
#1	166.70'	41 cf	4.00'D x 3.25'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	166.70'	12.0" Round 12" HDPE N-12 L= 32.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 166.70' / 165.75' S= 0.0292 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.23 cfs @ 12.09 hrs HW=166.99' TW=166.80' (Dynamic Tailwater)
←1=12" HDPE N-12 (Outlet Controls 0.23 cfs @ 1.82 fps)

Pond C03P: CB #3

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Pond D01P: DMH #1

[80] Warning: Exceeded Pond C01P by 0.27' @ 12.10 hrs (3.04 cfs 0.134 af)

[80] Warning: Exceeded Pond C02P by 0.22' @ 12.10 hrs (2.80 cfs 0.107 af)

Inflow Area = 0.500 ac, 96.46% Impervious, Inflow Depth > 6.32" for 25YR-24HR event
 Inflow = 3.19 cfs @ 12.09 hrs, Volume= 0.263 af
 Outflow = 3.17 cfs @ 12.09 hrs, Volume= 0.263 af, Atten= 1%, Lag= 0.0 min
 Primary = 3.17 cfs @ 12.09 hrs, Volume= 0.263 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Peak Elev= 167.52' @ 12.49 hrs Surf.Area= 13 sf Storage= 32 cf

Flood Elev= 168.94' Surf.Area= 13 sf Storage= 47 cf

Plug-Flow detention time= 1.2 min calculated for 0.263 af (100% of inflow)

Center-of-Mass det. time= 0.3 min (755.8 - 755.5)

Volume	Invert	Avail.Storage	Storage Description
#1	165.00'	47 cf	4.00'D x 3.77'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	165.00'	15.0" Round 15" HDPE N-12 L= 82.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 165.00' / 164.35' S= 0.0079 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.85 cfs @ 12.09 hrs HW=166.83' TW=166.80' (Dynamic Tailwater)↑**1=15" HDPE N-12** (Outlet Controls 0.85 cfs @ 0.69 fps)

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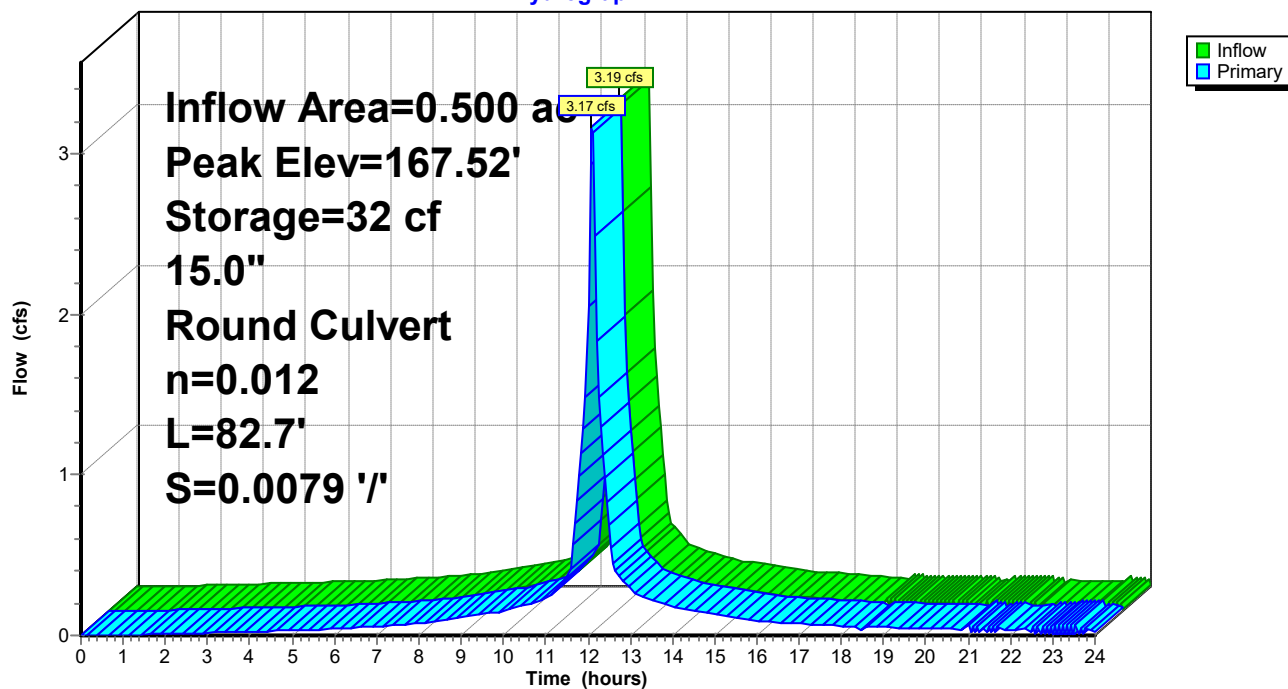
Type III 24-hr 25YR-24HR Rainfall=6.85"

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Pond D01P: DMH #1

Hydrograph



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Type III 24-hr 25YR-24HR Rainfall=6.85"

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Summary for Pond D02P: DMH #2

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 1.667 ac, 65.50% Impervious, Inflow Depth > 4.21" for 25YR-24HR event
 Inflow = 6.98 cfs @ 12.11 hrs, Volume= 0.584 af
 Outflow = 6.98 cfs @ 12.11 hrs, Volume= 0.584 af, Atten= 0%, Lag= 0.1 min
 Primary = 6.98 cfs @ 12.11 hrs, Volume= 0.584 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 168.26' @ 12.11 hrs Surf.Area= 13 sf Storage= 25 cf
 Flood Elev= 171.35' Surf.Area= 13 sf Storage= 64 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.1 min (810.2 - 810.1)

Volume	Invert	Avail.Storage	Storage Description
#1	166.25'	64 cf	4.00'D x 5.10'H 4' Structure

Device	Routing	Invert	Outlet Devices
#1	Primary	166.25'	15.0" Round 15" HDPE N-12 L= 6.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 166.25' / 166.15' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=6.88 cfs @ 12.11 hrs HW=168.23' TW=166.72' (Dynamic Tailwater)
 ↑**1=15" HDPE N-12** (Inlet Controls 6.88 cfs @ 5.60 fps)

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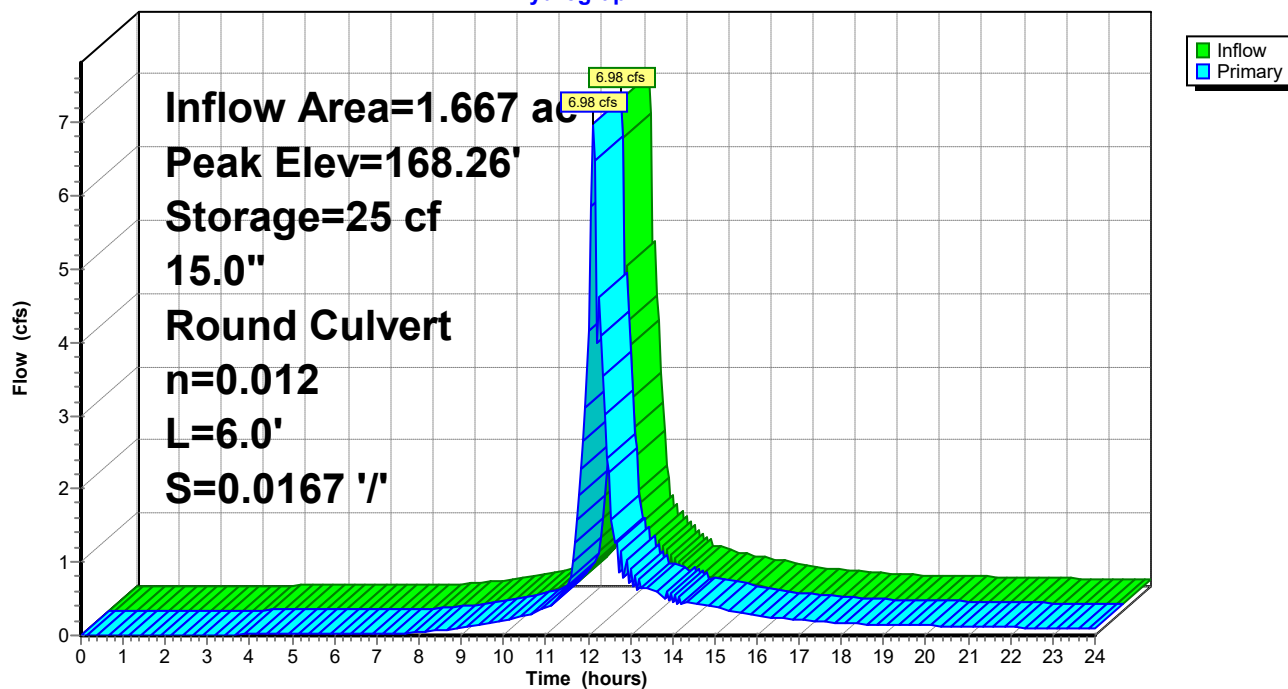
Type III 24-hr 25YR-24HR Rainfall=6.85"

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Pond D02P: DMH #2

Hydrograph



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Type III 24-hr 2YR-24HR Rainfall=3.60"

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Page 1

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Quality Way North	Runoff Area=78,168 sf 37.94% Impervious Runoff Depth>0.49" Flow Length=326' Tc=10.1 min CN=58 Runoff=0.55 cfs 0.073 af
Subcatchment 2S: Quality Way SW	Runoff Area=4,365 sf 100.00% Impervious Runoff Depth>3.36" Tc=6.0 min CN=98 Runoff=0.34 cfs 0.028 af
Subcatchment 3S: Quality Way Int.	Runoff Area=3,147 sf 34.19% Impervious Runoff Depth>0.49" Flow Length=163' Tc=8.1 min CN=58 Runoff=0.02 cfs 0.003 af
Subcatchment 4S: Quality Way SE	Runoff Area=4,938 sf 100.00% Impervious Runoff Depth>3.36" Tc=6.0 min CN=98 Runoff=0.39 cfs 0.032 af
Subcatchment 5S: Venture Drive East	Runoff Area=1,877 sf 100.00% Impervious Runoff Depth>3.36" Tc=6.0 min CN=98 Runoff=0.15 cfs 0.012 af
Subcatchment 6S: Venture Drive Int.	Runoff Area=2,203 sf 88.56% Impervious Runoff Depth>2.63" Tc=6.0 min CN=91 Runoff=0.15 cfs 0.011 af
Subcatchment 7S: Forward Merch Flow Length=57'	Runoff Area=3,403 sf 53.78% Impervious Runoff Depth>0.96" Slope=0.0176 ' Tc=13.6 min CN=68 Runoff=0.06 cfs 0.006 af
Subcatchment 8S: Ventur Drive FM	Runoff Area=1,031 sf 100.00% Impervious Runoff Depth>3.36" Tc=6.0 min CN=98 Runoff=0.08 cfs 0.007 af
Subcatchment 9S: Certified Driveway	Runoff Area=34,665 sf 60.23% Impervious Runoff Depth>1.37" Flow Length=257' Tc=7.9 min CN=75 Runoff=1.15 cfs 0.091 af
Subcatchment 10S: Certified Parking Lot	Runoff Area=24,868 sf 62.08% Impervious Runoff Depth>1.31" Flow Length=151' Tc=6.4 min CN=74 Runoff=0.82 cfs 0.062 af
Subcatchment 11S: Venture Drive NE	Runoff Area=4,551 sf 100.00% Impervious Runoff Depth>3.36" Tc=6.0 min CN=98 Runoff=0.36 cfs 0.029 af
Subcatchment 12S: Remainder of Existing	Runoff Area=43,238 sf 0.00% Impervious Runoff Depth>0.19" Flow Length=296' Tc=16.0 min CN=49 Runoff=0.05 cfs 0.016 af
Subcatchment 13S: Venture Drive	Runoff Area=1,436 sf 100.00% Impervious Runoff Depth>3.36" Tc=6.0 min CN=98 Runoff=0.11 cfs 0.009 af
Subcatchment 20S: Subcatchment #20	Runoff Area=10,628 sf 23.04% Impervious Runoff Depth>0.76" Tc=6.0 min CN=64 Runoff=0.18 cfs 0.015 af
Subcatchment 21S: Subcatchment #21	Runoff Area=9,242 sf 100.00% Impervious Runoff Depth>3.36" Tc=6.0 min CN=98 Runoff=0.73 cfs 0.059 af
Subcatchment 22S: Subcatchment #22	Runoff Area=12,546 sf 93.85% Impervious Runoff Depth>2.93" Tc=6.0 min CN=94 Runoff=0.92 cfs 0.070 af

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Type III 24-hr 2YR-24HR Rainfall=3.60"

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Subcatchment 23S: Subcatchment #23	Runoff Area=2,316 sf 100.00% Impervious Runoff Depth>3.36" Tc=6.0 min CN=98 Runoff=0.18 cfs 0.015 af
Subcatchment 24S: Area Around Pond	Runoff Area=3,890 sf 0.00% Impervious Runoff Depth>1.31" Tc=6.0 min CN=74 Runoff=0.13 cfs 0.010 af
Reach 2R: Reach #2	Avg. Flow Depth=0.10' Max Vel=0.62 fps Inflow=0.78 cfs 0.102 af n=0.080 L=288.7' S=0.0399 '/' Capacity=20.81 cfs Outflow=0.65 cfs 0.101 af
Reach 100R: Final Reach #100	Inflow=3.26 cfs 0.465 af Outflow=3.26 cfs 0.465 af
Reach 101aR: Overland Flow to	Avg. Flow Depth=0.05' Max Vel=1.09 fps Inflow=0.12 cfs 0.081 af n=0.065 L=20.0' S=0.2000 '/' Capacity=38.38 cfs Outflow=0.12 cfs 0.081 af
Reach 101bR: Overland Flow to	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.065 L=52.0' S=0.0192 '/' Capacity=5.06 cfs Outflow=0.00 cfs 0.000 af
Reach 200R: Final Reach #200	Inflow=0.11 cfs 0.009 af Outflow=0.11 cfs 0.009 af
Pond 1P: Roadside Pond	Peak Elev=168.95' Storage=1 cf Inflow=0.55 cfs 0.073 af 12.0" Round Culvert n=0.012 L=42.3' S=0.0288 '/' Outflow=0.55 cfs 0.073 af
Pond 2P: CB #7325	Peak Elev=167.45' Storage=7 cf Inflow=0.77 cfs 0.102 af 12.0" Round Culvert n=0.012 L=32.7' S=0.0037 '/' Outflow=0.78 cfs 0.102 af
Pond 3P: CB #7323	Peak Elev=168.97' Storage=1 cf Inflow=0.02 cfs 0.003 af 12.0" Round Culvert n=0.012 L=24.4' S=0.0193 '/' Outflow=0.02 cfs 0.003 af
Pond 4P: CB #7324	Peak Elev=168.64' Storage=4 cf Inflow=0.40 cfs 0.035 af 12.0" Round Culvert n=0.012 L=36.3' S=0.0152 '/' Outflow=0.40 cfs 0.035 af
Pond 5P: CB #7320	Peak Elev=167.47' Storage=5 cf Inflow=0.15 cfs 0.012 af Primary=0.14 cfs 0.012 af Secondary=0.00 cfs 0.000 af Outflow=0.14 cfs 0.012 af
Pond 6P: CB #7319	Peak Elev=167.46' Storage=13 cf Inflow=2.70 cfs 0.218 af Primary=2.70 cfs 0.218 af Secondary=0.00 cfs 0.000 af Outflow=2.70 cfs 0.218 af
Pond 7P: CB #3201	Peak Elev=174.49' Storage=1 cf Inflow=0.06 cfs 0.006 af Primary=0.06 cfs 0.006 af Secondary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.006 af
Pond 8P: CB #3202	Peak Elev=173.86' Storage=3 cf Inflow=0.12 cfs 0.013 af Primary=0.12 cfs 0.013 af Secondary=0.00 cfs 0.000 af Outflow=0.12 cfs 0.013 af
Pond 9P: CB #3203	Peak Elev=173.80' Storage=7 cf Inflow=1.27 cfs 0.104 af Primary=1.27 cfs 0.104 af Secondary=0.00 cfs 0.000 af Outflow=1.27 cfs 0.104 af
Pond 10P: CB #7322	Peak Elev=171.86' Storage=6 cf Inflow=0.82 cfs 0.062 af Primary=0.82 cfs 0.062 af Secondary=0.00 cfs 0.000 af Outflow=0.82 cfs 0.062 af

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Pond 11P: CB #7321 Peak Elev=168.77' Storage=20 cf Inflow=0.36 cfs 0.029 af
Primary=0.34 cfs 0.029 af Secondary=0.00 cfs 0.000 af Outflow=0.34 cfs 0.029 af

Pond 101P: Rain Garden #101 Peak Elev=166.26' Storage=4,077 cf Inflow=1.95 cfs 0.154 af
Primary=0.12 cfs 0.081 af Secondary=0.00 cfs 0.000 af Outflow=0.12 cfs 0.081 af

Pond 102P: Entrance Detention Pond Peak Elev=164.91' Storage=668 cf Inflow=3.27 cfs 0.268 af
Outflow=2.62 cfs 0.267 af

Pond 4198P: DMH #4198 Peak Elev=169.29' Storage=11 cf Inflow=2.09 cfs 0.166 af
12.0" Round Culvert n=0.012 L=40.1' S=0.0107 '/' Outflow=2.08 cfs 0.166 af

Pond 8054P: DMH #8054 Peak Elev=168.76' Storage=11 cf Inflow=2.42 cfs 0.195 af
12.0" Round Culvert n=0.012 L=96.9' S=0.0139 '/' Outflow=2.42 cfs 0.195 af

Pond C01P: CB #1 Peak Elev=166.26' Storage=13 cf Inflow=0.73 cfs 0.059 af
15.0" Round Culvert n=0.012 L=13.0' S=0.0077 '/' Outflow=0.72 cfs 0.059 af

Pond C02P: CB #2 Peak Elev=166.26' Storage=13 cf Inflow=0.92 cfs 0.070 af
15.0" Round Culvert n=0.012 L=9.7' S=0.0103 '/' Outflow=0.92 cfs 0.070 af

Pond C03P: CB #3 Peak Elev=166.91' Storage=3 cf Inflow=0.18 cfs 0.015 af
12.0" Round Culvert n=0.012 L=32.5' S=0.0292 '/' Outflow=0.18 cfs 0.015 af

Pond D01P: DMH #1 Peak Elev=166.26' Storage=16 cf Inflow=1.64 cfs 0.129 af
15.0" Round Culvert n=0.012 L=82.7' S=0.0079 '/' Outflow=1.64 cfs 0.129 af

Pond D02P: DMH #2 Peak Elev=167.21' Storage=12 cf Inflow=2.70 cfs 0.218 af
15.0" Round Culvert n=0.012 L=6.0' S=0.0167 '/' Outflow=2.70 cfs 0.218 af

Total Runoff Area = 5.659 ac Runoff Volume = 0.550 af Average Runoff Depth = 1.17"
53.43% Pervious = 3.024 ac 46.57% Impervious = 2.636 ac

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Quality Way North	Runoff Area=78,168 sf 37.94% Impervious Runoff Depth>1.40" Flow Length=326' Tc=10.1 min CN=58 Runoff=2.28 cfs 0.210 af
Subcatchment 2S: Quality Way SW	Runoff Area=4,365 sf 100.00% Impervious Runoff Depth>5.18" Tc=6.0 min CN=98 Runoff=0.52 cfs 0.043 af
Subcatchment 3S: Quality Way Int.	Runoff Area=3,147 sf 34.19% Impervious Runoff Depth>1.40" Flow Length=163' Tc=8.1 min CN=58 Runoff=0.10 cfs 0.008 af
Subcatchment 4S: Quality Way SE	Runoff Area=4,938 sf 100.00% Impervious Runoff Depth>5.18" Tc=6.0 min CN=98 Runoff=0.59 cfs 0.049 af
Subcatchment 5S: Venture Drive East	Runoff Area=1,877 sf 100.00% Impervious Runoff Depth>5.18" Tc=6.0 min CN=98 Runoff=0.22 cfs 0.019 af
Subcatchment 6S: Venture Drive Int.	Runoff Area=2,203 sf 88.56% Impervious Runoff Depth>4.39" Tc=6.0 min CN=91 Runoff=0.24 cfs 0.018 af
Subcatchment 7S: Forward Merch Flow Length=57'	Runoff Area=3,403 sf 53.78% Impervious Runoff Depth>2.18" Slope=0.0176 '/' Tc=13.6 min CN=68 Runoff=0.15 cfs 0.014 af
Subcatchment 8S: Ventur Drive FM	Runoff Area=1,031 sf 100.00% Impervious Runoff Depth>5.18" Tc=6.0 min CN=98 Runoff=0.12 cfs 0.010 af
Subcatchment 9S: Certified Driveway	Runoff Area=34,665 sf 60.23% Impervious Runoff Depth>2.79" Flow Length=257' Tc=7.9 min CN=75 Runoff=2.41 cfs 0.185 af
Subcatchment 10S: Certified Parking Lot	Runoff Area=24,868 sf 62.08% Impervious Runoff Depth>2.70" Flow Length=151' Tc=6.4 min CN=74 Runoff=1.75 cfs 0.128 af
Subcatchment 11S: Venture Drive NE	Runoff Area=4,551 sf 100.00% Impervious Runoff Depth>5.18" Tc=6.0 min CN=98 Runoff=0.54 cfs 0.045 af
Subcatchment 12S: Remainder of Existing	Runoff Area=43,238 sf 0.00% Impervious Runoff Depth>0.81" Flow Length=296' Tc=16.0 min CN=49 Runoff=0.47 cfs 0.067 af
Subcatchment 13S: Venture Drive	Runoff Area=1,436 sf 100.00% Impervious Runoff Depth>5.18" Tc=6.0 min CN=98 Runoff=0.17 cfs 0.014 af
Subcatchment 20S: Subcatchment #20	Runoff Area=10,628 sf 23.04% Impervious Runoff Depth>1.86" Tc=6.0 min CN=64 Runoff=0.50 cfs 0.038 af
Subcatchment 21S: Subcatchment #21	Runoff Area=9,242 sf 100.00% Impervious Runoff Depth>5.18" Tc=6.0 min CN=98 Runoff=1.10 cfs 0.092 af
Subcatchment 22S: Subcatchment #22	Runoff Area=12,546 sf 93.85% Impervious Runoff Depth>4.72" Tc=6.0 min CN=94 Runoff=1.44 cfs 0.113 af

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Subcatchment 23S: Subcatchment #23	Runoff Area=2,316 sf 100.00% Impervious Runoff Depth>5.18" Tc=6.0 min CN=98 Runoff=0.28 cfs 0.023 af
Subcatchment 24S: Area Around Pond	Runoff Area=3,890 sf 0.00% Impervious Runoff Depth>2.70" Tc=6.0 min CN=74 Runoff=0.28 cfs 0.020 af
Reach 2R: Reach #2	Avg. Flow Depth=0.18' Max Vel=0.91 fps Inflow=2.66 cfs 0.253 af n=0.080 L=288.7' S=0.0399 '/' Capacity=20.81 cfs Outflow=2.38 cfs 0.252 af
Reach 100R: Final Reach #100	Inflow=7.53 cfs 0.998 af Outflow=7.53 cfs 0.998 af
Reach 101aR: Overland Flow to	Avg. Flow Depth=0.12' Max Vel=1.88 fps Inflow=0.70 cfs 0.165 af n=0.065 L=20.0' S=0.2000 '/' Capacity=38.38 cfs Outflow=0.71 cfs 0.165 af
Reach 101bR: Overland Flow to	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.065 L=52.0' S=0.0192 '/' Capacity=5.06 cfs Outflow=0.00 cfs 0.000 af
Reach 200R: Final Reach #200	Inflow=0.17 cfs 0.014 af Outflow=0.17 cfs 0.014 af
Pond 1P: Roadside Pond	Peak Elev=169.44' Storage=10 cf Inflow=2.28 cfs 0.210 af 12.0" Round Culvert n=0.012 L=42.3' S=0.0288 '/' Outflow=2.27 cfs 0.210 af
Pond 2P: CB #7325	Peak Elev=168.12' Storage=15 cf Inflow=2.66 cfs 0.253 af 12.0" Round Culvert n=0.012 L=32.7' S=0.0037 '/' Outflow=2.66 cfs 0.253 af
Pond 3P: CB #7323	Peak Elev=169.05' Storage=2 cf Inflow=0.10 cfs 0.008 af 12.0" Round Culvert n=0.012 L=24.4' S=0.0193 '/' Outflow=0.10 cfs 0.008 af
Pond 4P: CB #7324	Peak Elev=168.75' Storage=5 cf Inflow=0.68 cfs 0.057 af 12.0" Round Culvert n=0.012 L=36.3' S=0.0152 '/' Outflow=0.68 cfs 0.057 af
Pond 5P: CB #7320	Peak Elev=168.41' Storage=16 cf Inflow=0.22 cfs 0.019 af Primary=0.20 cfs 0.019 af Secondary=0.00 cfs 0.000 af Outflow=0.20 cfs 0.019 af
Pond 6P: CB #7319	Peak Elev=168.41' Storage=25 cf Inflow=5.16 cfs 0.420 af Primary=5.13 cfs 0.420 af Secondary=0.00 cfs 0.000 af Outflow=5.13 cfs 0.420 af
Pond 7P: CB #3201	Peak Elev=174.56' Storage=2 cf Inflow=0.15 cfs 0.014 af Primary=0.15 cfs 0.014 af Secondary=0.00 cfs 0.000 af Outflow=0.15 cfs 0.014 af
Pond 8P: CB #3202	Peak Elev=174.20' Storage=7 cf Inflow=0.24 cfs 0.024 af Primary=0.24 cfs 0.024 af Secondary=0.00 cfs 0.000 af Outflow=0.24 cfs 0.024 af
Pond 9P: CB #3203	Peak Elev=174.18' Storage=12 cf Inflow=2.63 cfs 0.209 af Primary=2.63 cfs 0.209 af Secondary=0.00 cfs 0.000 af Outflow=2.63 cfs 0.209 af
Pond 10P: CB #7322	Peak Elev=172.12' Storage=9 cf Inflow=1.75 cfs 0.128 af Primary=1.75 cfs 0.128 af Secondary=0.00 cfs 0.000 af Outflow=1.75 cfs 0.128 af

21-134 Proposed Conditions*Type III 24-hr 10YR-24HR Rainfall=5.42"*

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Pond 11P: CB #7321

Peak Elev=170.32' Storage=40 cf Inflow=0.54 cfs 0.045 af
Primary=0.49 cfs 0.045 af Secondary=0.00 cfs 0.000 af Outflow=0.49 cfs 0.045 af

Pond 101P: Rain Garden #101

Peak Elev=166.89' Storage=5,277 cf Inflow=3.06 cfs 0.247 af
Primary=0.70 cfs 0.165 af Secondary=0.00 cfs 0.000 af Outflow=0.70 cfs 0.165 af

Pond 102P: Entrance Detention Pond

Peak Elev=166.44' Storage=1,988 cf Inflow=6.29 cfs 0.515 af
Outflow=4.17 cfs 0.514 af

Pond 4198P: DMH #4198

Peak Elev=171.22' Storage=35 cf Inflow=4.37 cfs 0.338 af
12.0" Round Culvert n=0.012 L=40.1' S=0.0107 '/' Outflow=4.30 cfs 0.338 af

Pond 8054P: DMH #8054

Peak Elev=170.31' Storage=31 cf Inflow=4.77 cfs 0.383 af
12.0" Round Culvert n=0.012 L=96.9' S=0.0139 '/' Outflow=4.74 cfs 0.383 af

Pond C01P: CB #1

Peak Elev=166.90' Storage=21 cf Inflow=1.10 cfs 0.092 af
15.0" Round Culvert n=0.012 L=13.0' S=0.0077 '/' Outflow=1.09 cfs 0.091 af

Pond C02P: CB #2

Peak Elev=166.90' Storage=21 cf Inflow=1.44 cfs 0.113 af
15.0" Round Culvert n=0.012 L=9.7' S=0.0103 '/' Outflow=1.43 cfs 0.113 af

Pond C03P: CB #3

Peak Elev=166.96' Storage=3 cf Inflow=0.28 cfs 0.023 af
12.0" Round Culvert n=0.012 L=32.5' S=0.0292 '/' Outflow=0.28 cfs 0.023 af

Pond D01P: DMH #1

Peak Elev=166.90' Storage=24 cf Inflow=2.52 cfs 0.204 af
15.0" Round Culvert n=0.012 L=82.7' S=0.0079 '/' Outflow=2.51 cfs 0.204 af

Pond D02P: DMH #2

Peak Elev=167.76' Storage=19 cf Inflow=5.13 cfs 0.420 af
15.0" Round Culvert n=0.012 L=6.0' S=0.0167 '/' Outflow=5.13 cfs 0.420 af

Total Runoff Area = 5.659 ac Runoff Volume = 1.097 af Average Runoff Depth = 2.33"
53.43% Pervious = 3.024 ac 46.57% Impervious = 2.636 ac

21-134 Proposed Conditions*Type III 24-hr 25YR-24HR Rainfall=6.85"*

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Quality Way North	Runoff Area=78,168 sf 37.94% Impervious Runoff Depth>2.30" Flow Length=326' Tc=10.1 min CN=58 Runoff=3.98 cfs 0.344 af
Subcatchment 2S: Quality Way SW	Runoff Area=4,365 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.66 cfs 0.055 af
Subcatchment 3S: Quality Way Int.	Runoff Area=3,147 sf 34.19% Impervious Runoff Depth>2.30" Flow Length=163' Tc=8.1 min CN=58 Runoff=0.17 cfs 0.014 af
Subcatchment 4S: Quality Way SE	Runoff Area=4,938 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.74 cfs 0.062 af
Subcatchment 5S: Venture Drive East	Runoff Area=1,877 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.28 cfs 0.024 af
Subcatchment 6S: Venture Drive Int.	Runoff Area=2,203 sf 88.56% Impervious Runoff Depth>5.79" Tc=6.0 min CN=91 Runoff=0.31 cfs 0.024 af
Subcatchment 7S: Forward Merch Flow Length=57'	Runoff Area=3,403 sf 53.78% Impervious Runoff Depth>3.28" Slope=0.0176 '/' Tc=13.6 min CN=68 Runoff=0.23 cfs 0.021 af
Subcatchment 8S: Ventur Drive FM	Runoff Area=1,031 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.16 cfs 0.013 af
Subcatchment 9S: Certified Driveway	Runoff Area=34,665 sf 60.23% Impervious Runoff Depth>4.01" Flow Length=257' Tc=7.9 min CN=75 Runoff=3.46 cfs 0.266 af
Subcatchment 10S: Certified Parking Lot	Runoff Area=24,868 sf 62.08% Impervious Runoff Depth>3.91" Flow Length=151' Tc=6.4 min CN=74 Runoff=2.54 cfs 0.186 af
Subcatchment 11S: Venture Drive NE	Runoff Area=4,551 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.69 cfs 0.058 af
Subcatchment 12S: Remainder of Existing	Runoff Area=43,238 sf 0.00% Impervious Runoff Depth>1.49" Flow Length=296' Tc=16.0 min CN=49 Runoff=1.07 cfs 0.123 af
Subcatchment 13S: Venture Drive	Runoff Area=1,436 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.22 cfs 0.018 af
Subcatchment 20S: Subcatchment #20	Runoff Area=10,628 sf 23.04% Impervious Runoff Depth>2.88" Tc=6.0 min CN=64 Runoff=0.80 cfs 0.059 af
Subcatchment 21S: Subcatchment #21	Runoff Area=9,242 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=1.39 cfs 0.117 af
Subcatchment 22S: Subcatchment #22	Runoff Area=12,546 sf 93.85% Impervious Runoff Depth>6.14" Tc=6.0 min CN=94 Runoff=1.85 cfs 0.147 af

21-134 Proposed Conditions*Type III 24-hr 25YR-24HR Rainfall=6.85"*

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Subcatchment 23S: Subcatchment #23	Runoff Area=2,316 sf 100.00% Impervious Runoff Depth>6.61" Tc=6.0 min CN=98 Runoff=0.35 cfs 0.029 af
Subcatchment 24S: Area Around Pond	Runoff Area=3,890 sf 0.00% Impervious Runoff Depth>3.91" Tc=6.0 min CN=74 Runoff=0.40 cfs 0.029 af
Reach 2R: Reach #2	Avg. Flow Depth=0.24' Max Vel=1.08 fps Inflow=4.38 cfs 0.399 af n=0.080 L=288.7' S=0.0399 '/' Capacity=20.81 cfs Outflow=4.10 cfs 0.398 af
Reach 100R: Final Reach #100	Inflow=12.45 cfs 1.482 af Outflow=12.45 cfs 1.482 af
Reach 101aR: Overland Flow to	Avg. Flow Depth=0.14' Max Vel=2.08 fps Inflow=0.98 cfs 0.235 af n=0.065 L=20.0' S=0.2000 '/' Capacity=38.38 cfs Outflow=0.98 cfs 0.235 af
Reach 101bR: Overland Flow to	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.065 L=52.0' S=0.0192 '/' Capacity=5.06 cfs Outflow=0.00 cfs 0.000 af
Reach 200R: Final Reach #200	Inflow=0.22 cfs 0.018 af Outflow=0.22 cfs 0.018 af
Pond 1P: Roadside Pond	Peak Elev=170.15' Storage=62 cf Inflow=3.98 cfs 0.344 af 12.0" Round Culvert n=0.012 L=42.3' S=0.0288 '/' Outflow=3.92 cfs 0.344 af
Pond 2P: CB #7325	Peak Elev=168.93' Storage=25 cf Inflow=4.39 cfs 0.400 af 12.0" Round Culvert n=0.012 L=32.7' S=0.0037 '/' Outflow=4.38 cfs 0.399 af
Pond 3P: CB #7323	Peak Elev=169.64' Storage=9 cf Inflow=1.88 cfs 0.021 af 12.0" Round Culvert n=0.012 L=24.4' S=0.0193 '/' Outflow=1.81 cfs 0.021 af
Pond 4P: CB #7324	Peak Elev=169.16' Storage=10 cf Inflow=2.23 cfs 0.083 af 12.0" Round Culvert n=0.012 L=36.3' S=0.0152 '/' Outflow=2.17 cfs 0.083 af
Pond 5P: CB #7320	Peak Elev=169.54' Storage=31 cf Inflow=0.34 cfs 0.024 af Primary=0.37 cfs 0.024 af Secondary=0.00 cfs 0.000 af Outflow=0.37 cfs 0.024 af
Pond 6P: CB #7319	Peak Elev=169.53' Storage=39 cf Inflow=7.01 cfs 0.584 af Primary=6.98 cfs 0.584 af Secondary=0.00 cfs 0.000 af Outflow=6.98 cfs 0.584 af
Pond 7P: CB #3201	Peak Elev=176.36' Storage=25 cf Inflow=0.23 cfs 0.021 af Primary=0.39 cfs 0.021 af Secondary=0.00 cfs 0.000 af Outflow=0.39 cfs 0.021 af
Pond 8P: CB #3202	Peak Elev=176.36' Storage=35 cf Inflow=0.45 cfs 0.034 af Primary=0.47 cfs 0.034 af Secondary=0.00 cfs 0.000 af Outflow=0.47 cfs 0.034 af
Pond 9P: CB #3203	Peak Elev=176.36' Storage=40 cf Inflow=3.77 cfs 0.300 af Primary=3.74 cfs 0.300 af Secondary=0.00 cfs 0.000 af Outflow=3.74 cfs 0.300 af
Pond 10P: CB #7322	Peak Elev=174.62' Storage=35 cf Inflow=2.54 cfs 0.186 af Primary=2.55 cfs 0.179 af Secondary=1.74 cfs 0.007 af Outflow=2.55 cfs 0.186 af

21-134 Proposed Conditions*Type III 24-hr 25YR-24HR Rainfall=6.85"*

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Pond 11P: CB #7321 Peak Elev=173.31' Storage=73 cf Inflow=0.69 cfs 0.058 af
Primary=0.59 cfs 0.057 af Secondary=0.18 cfs 0.001 af Outflow=0.59 cfs 0.057 af

Pond 101P: Rain Garden #101 Peak Elev=167.51' Storage=6,610 cf Inflow=3.92 cfs 0.321 af
Primary=0.98 cfs 0.235 af Secondary=0.00 cfs 0.000 af Outflow=0.98 cfs 0.235 af

Pond 102P: Entrance Detention Pond Peak Elev=167.22' Storage=2,982 cf Inflow=8.67 cfs 0.726 af
Outflow=6.42 cfs 0.725 af

Pond 4198P: DMH #4198 Peak Elev=174.95' Storage=70 cf Inflow=6.26 cfs 0.479 af
12.0" Round Culvert n=0.012 L=40.1' S=0.0107 '/' Outflow=6.10 cfs 0.479 af

Pond 8054P: DMH #8054 Peak Elev=173.30' Storage=64 cf Inflow=6.61 cfs 0.536 af
12.0" Round Culvert n=0.012 L=96.9' S=0.0139 '/' Outflow=6.51 cfs 0.536 af

Pond C01P: CB #1 Peak Elev=167.52' Storage=29 cf Inflow=1.39 cfs 0.117 af
15.0" Round Culvert n=0.012 L=13.0' S=0.0077 '/' Outflow=1.37 cfs 0.116 af

Pond C02P: CB #2 Peak Elev=167.52' Storage=29 cf Inflow=1.85 cfs 0.147 af
15.0" Round Culvert n=0.012 L=9.7' S=0.0103 '/' Outflow=1.82 cfs 0.147 af

Pond C03P: CB #3 Peak Elev=167.51' Storage=10 cf Inflow=0.35 cfs 0.029 af
12.0" Round Culvert n=0.012 L=32.5' S=0.0292 '/' Outflow=0.35 cfs 0.029 af

Pond D01P: DMH #1 Peak Elev=167.52' Storage=32 cf Inflow=3.19 cfs 0.263 af
15.0" Round Culvert n=0.012 L=82.7' S=0.0079 '/' Outflow=3.17 cfs 0.263 af

Pond D02P: DMH #2 Peak Elev=168.26' Storage=25 cf Inflow=6.98 cfs 0.584 af
15.0" Round Culvert n=0.012 L=6.0' S=0.0167 '/' Outflow=6.98 cfs 0.584 af

Total Runoff Area = 5.659 ac Runoff Volume = 1.590 af Average Runoff Depth = 3.37"
53.43% Pervious = 3.024 ac 46.57% Impervious = 2.636 ac

21-134 Proposed Conditions*Type III 24-hr 50YR-24HR Rainfall=8.18"*

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Quality Way North	Runoff Area=78,168 sf 37.94% Impervious Runoff Depth>3.24" Flow Length=326' Tc=10.1 min CN=58 Runoff=5.75 cfs 0.484 af
Subcatchment 2S: Quality Way SW	Runoff Area=4,365 sf 100.00% Impervious Runoff Depth>7.94" Tc=6.0 min CN=98 Runoff=0.79 cfs 0.066 af
Subcatchment 3S: Quality Way Int.	Runoff Area=3,147 sf 34.19% Impervious Runoff Depth>3.24" Flow Length=163' Tc=8.1 min CN=58 Runoff=0.25 cfs 0.019 af
Subcatchment 4S: Quality Way SE	Runoff Area=4,938 sf 100.00% Impervious Runoff Depth>7.94" Tc=6.0 min CN=98 Runoff=0.89 cfs 0.075 af
Subcatchment 5S: Venture Drive East	Runoff Area=1,877 sf 100.00% Impervious Runoff Depth>7.94" Tc=6.0 min CN=98 Runoff=0.34 cfs 0.028 af
Subcatchment 6S: Venture Drive Int.	Runoff Area=2,203 sf 88.56% Impervious Runoff Depth>7.10" Tc=6.0 min CN=91 Runoff=0.38 cfs 0.030 af
Subcatchment 7S: Forward Merch Flow Length=57'	Runoff Area=3,403 sf 53.78% Impervious Runoff Depth>4.38" Slope=0.0176 ' Tc=13.6 min CN=68 Runoff=0.31 cfs 0.028 af
Subcatchment 8S: Ventur Drive FM	Runoff Area=1,031 sf 100.00% Impervious Runoff Depth>7.94" Tc=6.0 min CN=98 Runoff=0.19 cfs 0.016 af
Subcatchment 9S: Certified Driveway	Runoff Area=34,665 sf 60.23% Impervious Runoff Depth>5.20" Flow Length=257' Tc=7.9 min CN=75 Runoff=4.47 cfs 0.345 af
Subcatchment 10S: Certified Parking Lot	Runoff Area=24,868 sf 62.08% Impervious Runoff Depth>5.08" Flow Length=151' Tc=6.4 min CN=74 Runoff=3.29 cfs 0.242 af
Subcatchment 11S: Venture Drive NE	Runoff Area=4,551 sf 100.00% Impervious Runoff Depth>7.94" Tc=6.0 min CN=98 Runoff=0.82 cfs 0.069 af
Subcatchment 12S: Remainder of Existing	Runoff Area=43,238 sf 0.00% Impervious Runoff Depth>2.24" Flow Length=296' Tc=16.0 min CN=49 Runoff=1.74 cfs 0.186 af
Subcatchment 13S: Venture Drive	Runoff Area=1,436 sf 100.00% Impervious Runoff Depth>7.94" Tc=6.0 min CN=98 Runoff=0.26 cfs 0.022 af
Subcatchment 20S: Subcatchment #20	Runoff Area=10,628 sf 23.04% Impervious Runoff Depth>3.92" Tc=6.0 min CN=64 Runoff=1.10 cfs 0.080 af
Subcatchment 21S: Subcatchment #21	Runoff Area=9,242 sf 100.00% Impervious Runoff Depth>7.94" Tc=6.0 min CN=98 Runoff=1.66 cfs 0.140 af
Subcatchment 22S: Subcatchment #22	Runoff Area=12,546 sf 93.85% Impervious Runoff Depth>7.46" Tc=6.0 min CN=94 Runoff=2.22 cfs 0.179 af

21-134 Proposed Conditions*Type III 24-hr 50YR-24HR Rainfall=8.18"*

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Subcatchment 23S: Subcatchment #23 Runoff Area=2,316 sf 100.00% Impervious Runoff Depth>7.94"
Tc=6.0 min CN=98 Runoff=0.42 cfs 0.035 af

Subcatchment 24S: Area Around Pond Runoff Area=3,890 sf 0.00% Impervious Runoff Depth>5.08"
Tc=6.0 min CN=74 Runoff=0.52 cfs 0.038 af

Reach 2R: Reach #2 Avg. Flow Depth=0.26' Max Vel=1.16 fps Inflow=5.26 cfs 0.550 af
n=0.080 L=288.7' S=0.0399 '/' Capacity=20.81 cfs Outflow=5.20 cfs 0.548 af

Reach 100R: Final Reach #100 Inflow=15.85 cfs 1.966 af
Outflow=15.85 cfs 1.966 af

Reach 101aR: Overland Flow to Avg. Flow Depth=0.18' Max Vel=2.46 fps Inflow=1.71 cfs 0.303 af
n=0.065 L=20.0' S=0.2000 '/' Capacity=38.38 cfs Outflow=1.72 cfs 0.303 af

Reach 101bR: Overland Flow to Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.065 L=52.0' S=0.0192 '/' Capacity=5.06 cfs Outflow=0.00 cfs 0.000 af

Reach 200R: Final Reach #200 Inflow=0.49 cfs 0.024 af
Outflow=0.49 cfs 0.024 af

Pond 1P: Roadside Pond Peak Elev=171.09' Storage=449 cf Inflow=5.75 cfs 0.484 af
12.0" Round Culvert n=0.012 L=42.3' S=0.0288 '/' Outflow=4.86 cfs 0.484 af

Pond 2P: CB #7325 Peak Elev=169.43' Storage=32 cf Inflow=5.29 cfs 0.550 af
12.0" Round Culvert n=0.012 L=32.7' S=0.0037 '/' Outflow=5.26 cfs 0.550 af

Pond 3P: CB #7323 Peak Elev=171.32' Storage=30 cf Inflow=5.00 cfs 0.049 af
12.0" Round Culvert n=0.012 L=24.4' S=0.0193 '/' Outflow=4.79 cfs 0.049 af

Pond 4P: CB #7324 Peak Elev=170.68' Storage=30 cf Inflow=5.44 cfs 0.124 af
12.0" Round Culvert n=0.012 L=36.3' S=0.0152 '/' Outflow=5.26 cfs 0.124 af

Pond 5P: CB #7320 Peak Elev=170.76' Storage=44 cf Inflow=1.17 cfs 0.033 af
Primary=0.83 cfs 0.032 af Secondary=0.26 cfs 0.001 af Outflow=1.08 cfs 0.033 af

Pond 6P: CB #7319 Peak Elev=170.71' Storage=52 cf Inflow=9.49 cfs 0.728 af
Primary=9.21 cfs 0.727 af Secondary=0.18 cfs 0.001 af Outflow=9.38 cfs 0.727 af

Pond 7P: CB #3201 Peak Elev=178.74' Storage=35 cf Inflow=0.31 cfs 0.028 af
Primary=0.77 cfs 0.027 af Secondary=0.45 cfs 0.002 af Outflow=0.77 cfs 0.029 af

Pond 8P: CB #3202 Peak Elev=178.75' Storage=57 cf Inflow=0.83 cfs 0.045 af
Primary=0.65 cfs 0.043 af Secondary=0.20 cfs 0.001 af Outflow=0.66 cfs 0.045 af

Pond 9P: CB #3203 Peak Elev=178.74' Storage=62 cf Inflow=4.82 cfs 0.389 af
Primary=4.63 cfs 0.380 af Secondary=1.79 cfs 0.010 af Outflow=4.60 cfs 0.389 af

Pond 10P: CB #7322 Peak Elev=175.12' Storage=35 cf Inflow=4.53 cfs 0.252 af
Primary=3.42 cfs 0.222 af Secondary=4.76 cfs 0.030 af Outflow=4.66 cfs 0.252 af

21-134 Proposed Conditions*Type III 24-hr 50YR-24HR Rainfall=8.18"*

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Pond 11P: CB #7321

Peak Elev=173.46' Storage=73 cf Inflow=0.82 cfs 0.069 af
Primary=0.66 cfs 0.064 af Secondary=0.90 cfs 0.005 af Outflow=0.90 cfs 0.069 af

Pond 101P: Rain Garden #101

Peak Elev=167.96' Storage=7,691 cf Inflow=4.73 cfs 0.391 af
Primary=1.71 cfs 0.303 af Secondary=0.00 cfs 0.000 af Outflow=1.71 cfs 0.303 af

Pond 102P: Entrance Detention Pond

Peak Elev=167.91' Storage=4,041 cf Inflow=11.17 cfs 0.931 af
Outflow=7.83 cfs 0.929 af

Pond 4198P: DMH #4198

Peak Elev=177.75' Storage=70 cf Inflow=8.02 cfs 0.601 af
12.0" Round Culvert n=0.012 L=40.1' S=0.0107 '/' Outflow=8.11 cfs 0.601 af

Pond 8054P: DMH #8054

Peak Elev=176.55' Storage=64 cf Inflow=8.48 cfs 0.665 af
12.0" Round Culvert n=0.012 L=96.9' S=0.0139 '/' Outflow=8.66 cfs 0.665 af

Pond C01P: CB #1

Peak Elev=168.01' Storage=35 cf Inflow=1.66 cfs 0.140 af
15.0" Round Culvert n=0.012 L=13.0' S=0.0077 '/' Outflow=1.63 cfs 0.140 af

Pond C02P: CB #2

Peak Elev=168.02' Storage=35 cf Inflow=2.22 cfs 0.179 af
15.0" Round Culvert n=0.012 L=9.7' S=0.0103 '/' Outflow=2.19 cfs 0.179 af

Pond C03P: CB #3

Peak Elev=167.96' Storage=16 cf Inflow=0.42 cfs 0.035 af
12.0" Round Culvert n=0.012 L=32.5' S=0.0292 '/' Outflow=0.41 cfs 0.035 af

Pond D01P: DMH #1

Peak Elev=168.00' Storage=38 cf Inflow=3.82 cfs 0.319 af
15.0" Round Culvert n=0.012 L=82.7' S=0.0079 '/' Outflow=3.80 cfs 0.318 af

Pond D02P: DMH #2

Peak Elev=169.18' Storage=37 cf Inflow=9.21 cfs 0.727 af
15.0" Round Culvert n=0.012 L=6.0' S=0.0167 '/' Outflow=9.13 cfs 0.727 af

Total Runoff Area = 5.659 ac Runoff Volume = 2.082 af Average Runoff Depth = 4.42"
53.43% Pervious = 3.024 ac 46.57% Impervious = 2.636 ac

21-134 Proposed Conditions*Type III 24-hr 100YR-24HR Rainfall=9.76"*

Prepared by Berry Surveying & Engineering

Printed 9/1/2022

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Quality Way North	Runoff Area=78,168 sf 37.94% Impervious Runoff Depth>4.43" Flow Length=326' Tc=10.1 min CN=58 Runoff=7.98 cfs 0.663 af
Subcatchment 2S: Quality Way SW	Runoff Area=4,365 sf 100.00% Impervious Runoff Depth>9.51" Tc=6.0 min CN=98 Runoff=0.94 cfs 0.079 af
Subcatchment 3S: Quality Way Int.	Runoff Area=3,147 sf 34.19% Impervious Runoff Depth>4.44" Flow Length=163' Tc=8.1 min CN=58 Runoff=0.34 cfs 0.027 af
Subcatchment 4S: Quality Way SE	Runoff Area=4,938 sf 100.00% Impervious Runoff Depth>9.51" Tc=6.0 min CN=98 Runoff=1.06 cfs 0.090 af
Subcatchment 5S: Venture Drive East	Runoff Area=1,877 sf 100.00% Impervious Runoff Depth>9.51" Tc=6.0 min CN=98 Runoff=0.40 cfs 0.034 af
Subcatchment 6S: Venture Drive Int.	Runoff Area=2,203 sf 88.56% Impervious Runoff Depth>8.66" Tc=6.0 min CN=91 Runoff=0.46 cfs 0.036 af
Subcatchment 7S: Forward Merch Flow Length=57'	Runoff Area=3,403 sf 53.78% Impervious Runoff Depth>5.74" Slope=0.0176 ' Tc=13.6 min CN=68 Runoff=0.41 cfs 0.037 af
Subcatchment 8S: Ventur Drive FM	Runoff Area=1,031 sf 100.00% Impervious Runoff Depth>9.51" Tc=6.0 min CN=98 Runoff=0.22 cfs 0.019 af
Subcatchment 9S: Certified Driveway	Runoff Area=34,665 sf 60.23% Impervious Runoff Depth>6.65" Flow Length=257' Tc=7.9 min CN=75 Runoff=5.68 cfs 0.441 af
Subcatchment 10S: Certified Parking Lot	Runoff Area=24,868 sf 62.08% Impervious Runoff Depth>6.52" Flow Length=151' Tc=6.4 min CN=74 Runoff=4.19 cfs 0.310 af
Subcatchment 11S: Venture Drive NE	Runoff Area=4,551 sf 100.00% Impervious Runoff Depth>9.51" Tc=6.0 min CN=98 Runoff=0.98 cfs 0.083 af
Subcatchment 12S: Remainder of Existing	Runoff Area=43,238 sf 0.00% Impervious Runoff Depth>3.25" Flow Length=296' Tc=16.0 min CN=49 Runoff=2.63 cfs 0.269 af
Subcatchment 13S: Venture Drive	Runoff Area=1,436 sf 100.00% Impervious Runoff Depth>9.51" Tc=6.0 min CN=98 Runoff=0.31 cfs 0.026 af
Subcatchment 20S: Subcatchment #20	Runoff Area=10,628 sf 23.04% Impervious Runoff Depth>5.22" Tc=6.0 min CN=64 Runoff=1.47 cfs 0.106 af
Subcatchment 21S: Subcatchment #21	Runoff Area=9,242 sf 100.00% Impervious Runoff Depth>9.51" Tc=6.0 min CN=98 Runoff=1.99 cfs 0.168 af
Subcatchment 22S: Subcatchment #22	Runoff Area=12,546 sf 93.85% Impervious Runoff Depth>9.03" Tc=6.0 min CN=94 Runoff=2.66 cfs 0.217 af

21-134 Proposed Conditions

Type III 24-hr 100YR-24HR Rainfall=9.76"

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Subcatchment 23S: Subcatchment #23	Runoff Area=2,316 sf 100.00% Impervious Runoff Depth>9.51" Tc=6.0 min CN=98 Runoff=0.50 cfs 0.042 af
Subcatchment 24S: Area Around Pond	Runoff Area=3,890 sf 0.00% Impervious Runoff Depth>6.52" Tc=6.0 min CN=74 Runoff=0.66 cfs 0.049 af
Reach 2R: Reach #2	Avg. Flow Depth=0.28' Max Vel=1.20 fps Inflow=5.90 cfs 0.742 af n=0.080 L=288.7' S=0.0399 '/' Capacity=20.81 cfs Outflow=5.81 cfs 0.740 af
Reach 100R: Final Reach #100	Inflow=21.50 cfs 2.569 af Outflow=21.50 cfs 2.569 af
Reach 101aR: Overland Flow to	Avg. Flow Depth=0.26' Max Vel=3.13 fps Inflow=3.67 cfs 0.382 af n=0.065 L=20.0' S=0.2000 '/' Capacity=38.38 cfs Outflow=3.75 cfs 0.382 af
Reach 101bR: Overland Flow to	Avg. Flow Depth=0.13' Max Vel=0.62 fps Inflow=0.30 cfs 0.002 af n=0.065 L=52.0' S=0.0192 '/' Capacity=5.06 cfs Outflow=0.28 cfs 0.002 af
Reach 200R: Final Reach #200	Inflow=0.90 cfs 0.032 af Outflow=0.90 cfs 0.032 af
Pond 1P: Roadside Pond	Peak Elev=171.86' Storage=1,613 cf Inflow=7.98 cfs 0.663 af 12.0" Round Culvert n=0.012 L=42.3' S=0.0288 '/' Outflow=5.45 cfs 0.663 af
Pond 2P: CB #7325	Peak Elev=169.86' Storage=37 cf Inflow=5.92 cfs 0.742 af 12.0" Round Culvert n=0.012 L=32.7' S=0.0037 '/' Outflow=5.90 cfs 0.742 af
Pond 3P: CB #7323	Peak Elev=176.96' Storage=40 cf Inflow=8.18 cfs 0.101 af 12.0" Round Culvert n=0.012 L=24.4' S=0.0193 '/' Outflow=8.41 cfs 0.101 af
Pond 4P: CB #7324	Peak Elev=174.74' Storage=47 cf Inflow=9.33 cfs 0.191 af 12.0" Round Culvert n=0.012 L=36.3' S=0.0152 '/' Outflow=9.58 cfs 0.191 af
Pond 5P: CB #7320	Peak Elev=170.79' Storage=44 cf Inflow=1.43 cfs 0.039 af Primary=1.00 cfs 0.037 af Secondary=0.31 cfs 0.002 af Outflow=1.27 cfs 0.039 af
Pond 6P: CB #7319	Peak Elev=170.89' Storage=52 cf Inflow=9.85 cfs 0.884 af Primary=9.54 cfs 0.880 af Secondary=0.75 cfs 0.004 af Outflow=9.67 cfs 0.884 af
Pond 7P: CB #3201	Peak Elev=179.12' Storage=35 cf Inflow=0.41 cfs 0.037 af Primary=0.54 cfs 0.033 af Secondary=0.51 cfs 0.004 af Outflow=0.57 cfs 0.037 af
Pond 8P: CB #3202	Peak Elev=179.12' Storage=57 cf Inflow=0.70 cfs 0.056 af Primary=0.88 cfs 0.053 af Secondary=0.48 cfs 0.003 af Outflow=0.88 cfs 0.056 af
Pond 9P: CB #3203	Peak Elev=179.12' Storage=62 cf Inflow=5.96 cfs 0.497 af Primary=5.11 cfs 0.471 af Secondary=3.76 cfs 0.026 af Outflow=6.01 cfs 0.497 af
Pond 10P: CB #7322	Peak Elev=175.65' Storage=35 cf Inflow=7.54 cfs 0.336 af Primary=3.73 cfs 0.262 af Secondary=7.85 cfs 0.074 af Outflow=7.49 cfs 0.336 af

21-134 Proposed Conditions*Type III 24-hr 100YR-24HR Rainfall=9.76"*

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Pond 11P: CB #7321

Peak Elev=173.30' Storage=73 cf Inflow=0.98 cfs 0.083 af
Primary=0.89 cfs 0.078 af Secondary=1.03 cfs 0.005 af Outflow=1.03 cfs 0.083 af

Pond 101P: Rain Garden #101

Peak Elev=168.05' Storage=7,935 cf Inflow=5.69 cfs 0.475 af
Primary=3.67 cfs 0.382 af Secondary=0.30 cfs 0.002 af Outflow=3.97 cfs 0.385 af

Pond 102P: Entrance Detention Pond

Peak Elev=168.78' Storage=5,661 cf Inflow=14.47 cfs 1.177 af
Outflow=9.22 cfs 1.176 af

Pond 4198P: DMH #4198

Peak Elev=178.55' Storage=70 cf Inflow=8.41 cfs 0.733 af
12.0" Round Culvert n=0.012 L=40.1' S=0.0107 '/' Outflow=8.37 cfs 0.733 af

Pond 8054P: DMH #8054

Peak Elev=177.44' Storage=64 cf Inflow=9.14 cfs 0.810 af
12.0" Round Culvert n=0.012 L=96.9' S=0.0139 '/' Outflow=9.17 cfs 0.810 af

Pond C01P: CB #1

Peak Elev=168.31' Storage=39 cf Inflow=1.99 cfs 0.168 af
15.0" Round Culvert n=0.012 L=13.0' S=0.0077 '/' Outflow=1.95 cfs 0.168 af

Pond C02P: CB #2

Peak Elev=168.33' Storage=39 cf Inflow=2.66 cfs 0.217 af
15.0" Round Culvert n=0.012 L=9.7' S=0.0103 '/' Outflow=2.62 cfs 0.216 af

Pond C03P: CB #3

Peak Elev=168.06' Storage=17 cf Inflow=0.50 cfs 0.042 af
12.0" Round Culvert n=0.012 L=32.5' S=0.0292 '/' Outflow=0.48 cfs 0.042 af

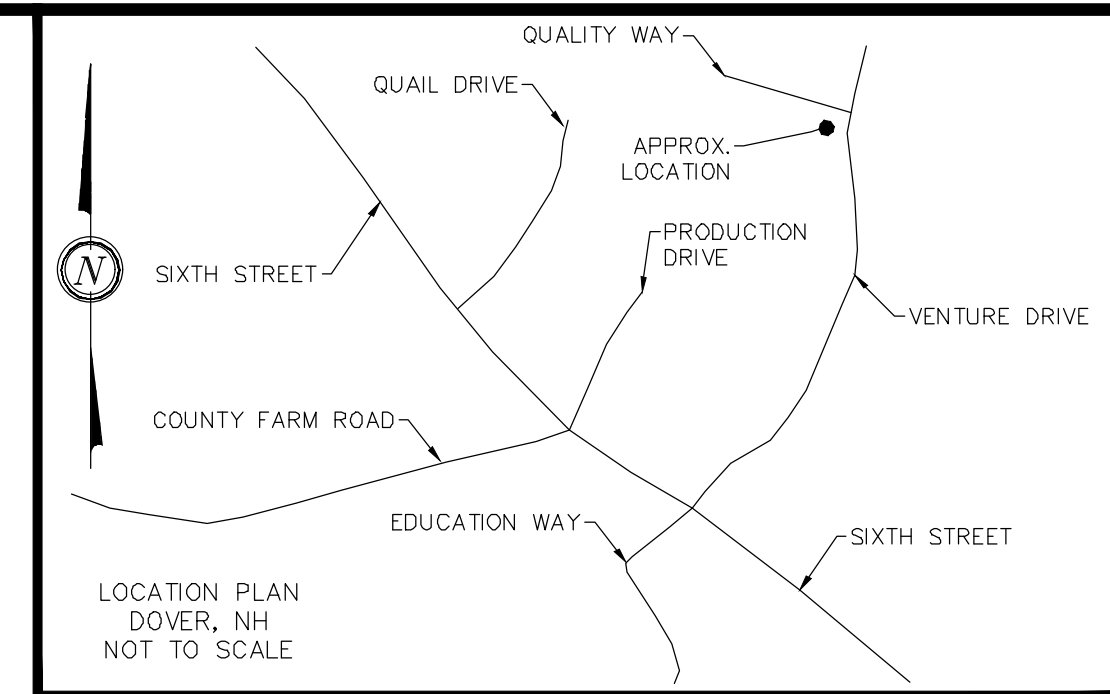
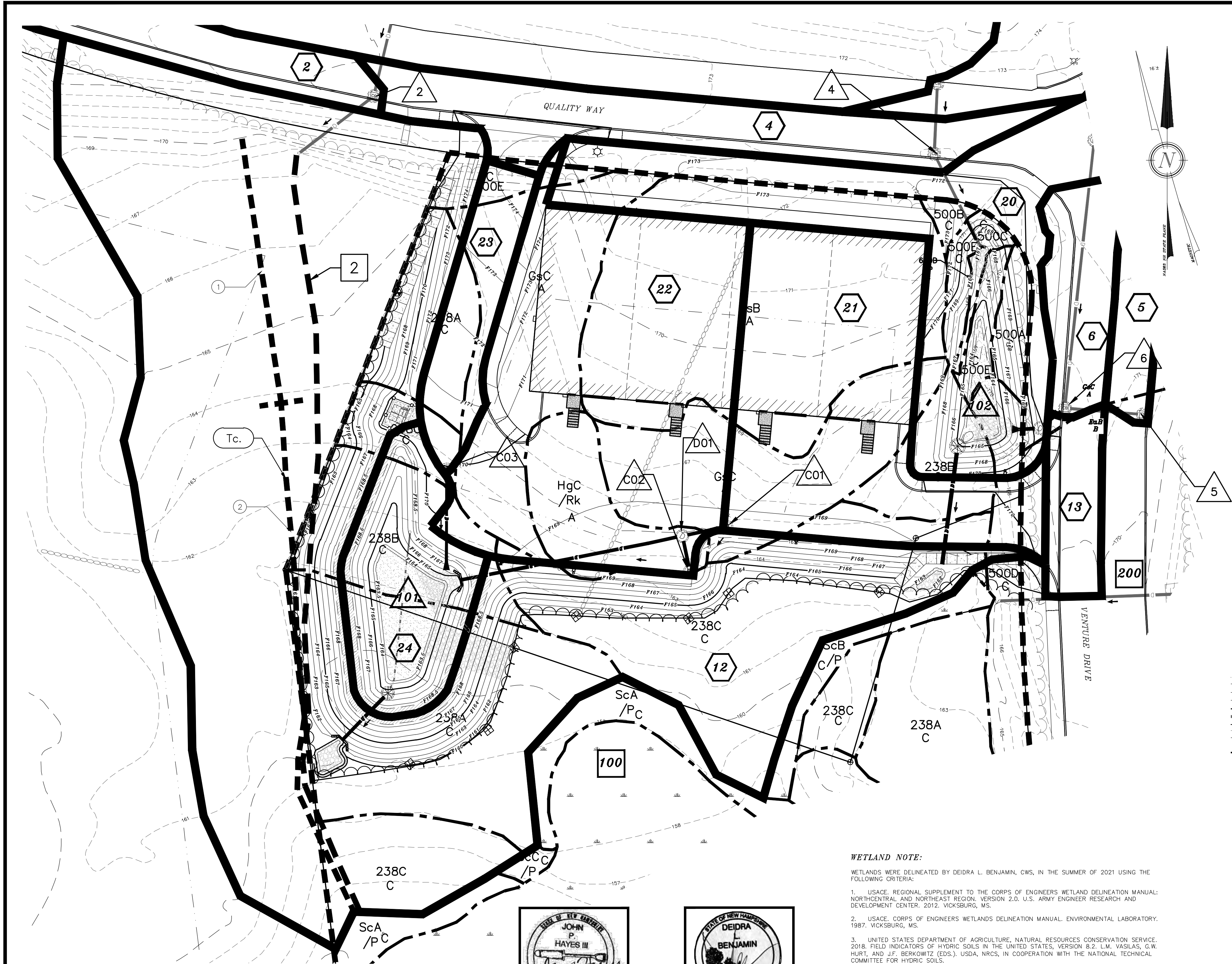
Pond D01P: DMH #1

Peak Elev=168.28' Storage=41 cf Inflow=4.57 cfs 0.384 af
15.0" Round Culvert n=0.012 L=82.7' S=0.0079 '/' Outflow=4.55 cfs 0.384 af

Pond D02P: DMH #2

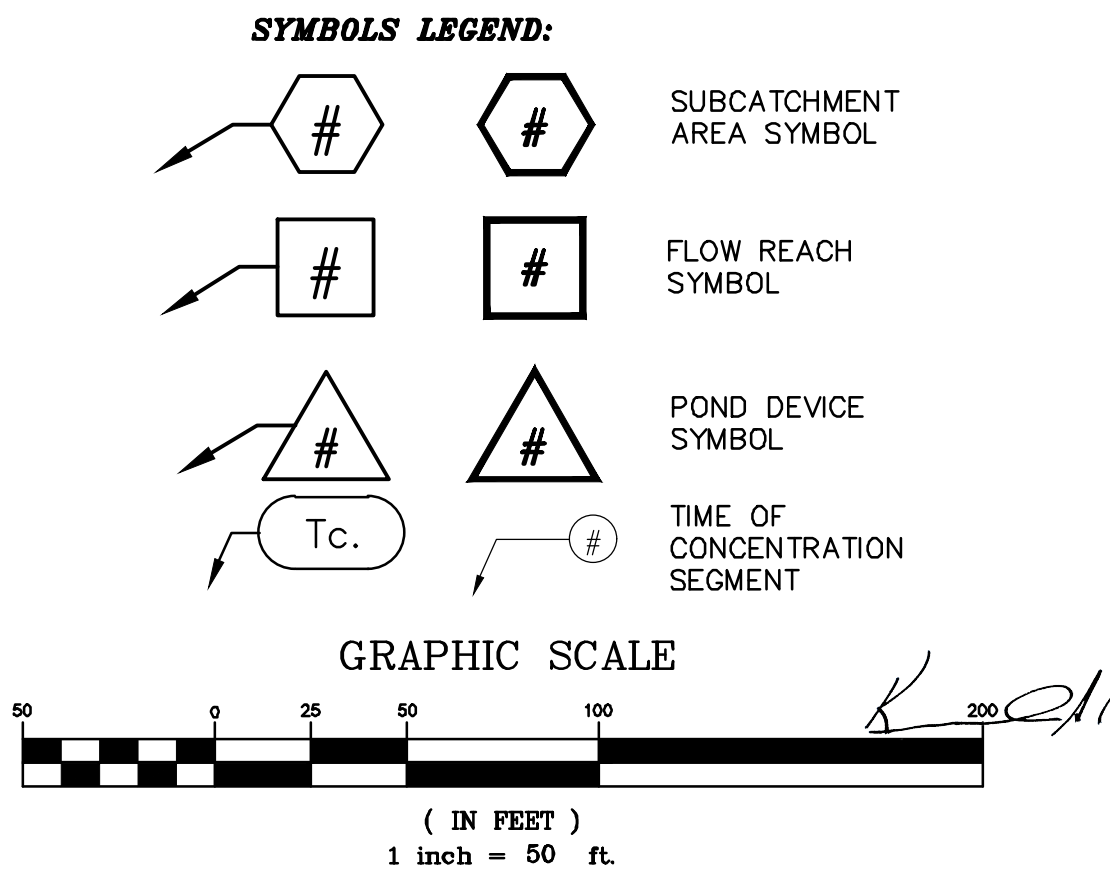
Peak Elev=170.40' Storage=52 cf Inflow=9.54 cfs 0.880 af
15.0" Round Culvert n=0.012 L=6.0' S=0.0167 '/' Outflow=9.38 cfs 0.880 af

Total Runoff Area = 5.659 ac Runoff Volume = 2.696 af Average Runoff Depth = 5.72"
53.43% Pervious = 3.024 ac 46.57% Impervious = 2.636 ac



- NOTES:**
- 1.) OWNER: JSR, LLC
17 FOSTERS DRIVE
DOVER, NH 03820
 - 2.) A.) TAX MAP D, LOT 11-5
B.) TAX MAP D, LOT 11-5SND
 - 3.) A.) S.C.R.D. BOOK 4980, PAGE 632
B.) S.C.R.D. BOOK 4980, PAGE 632
 - 4.) A.) LOT AREA: 43,314 Sq. Ft., 0.99 Ac.
B.) LOT AREA: 43,517 Sq. Ft., 0.99 Ac.
 - 6.) THE INTENT OF THIS PLAN IS TO SHOW THE PROPOSED DRAINAGE CONDITIONS OF TAX MAP D, LOT 11-5 LOCATED IN DOVER, N.H., AT THE COMPLETION OF THE PROPOSED DEVELOPMENT.
 - 7.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS PROPERTY DOES NOT FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD REF: FEMA COMMUNITY #330145, MAP 33017C0310E, DATED: SEPTEMBER 30, 2015.
 - 8.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE. COORDINATES GATHERED USING CARLSON BRX7 SURVEY GRADE GPS RECEIVERS.

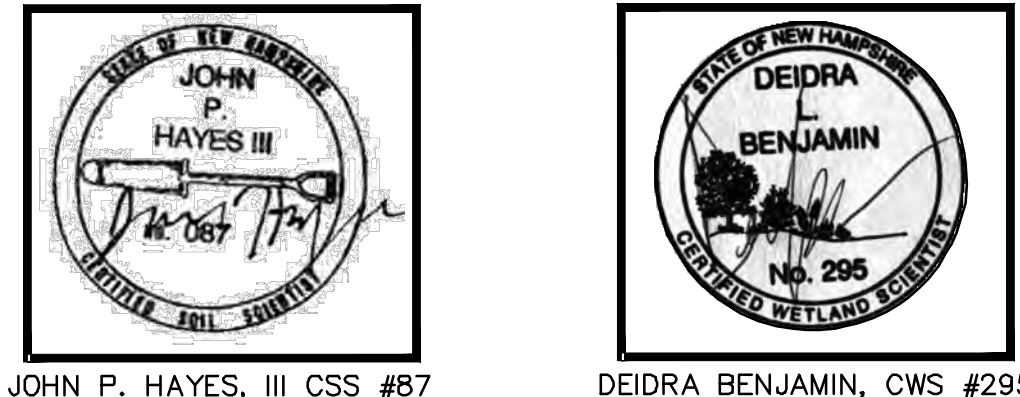
- EXISTING LEGEND:**
- STONE BOUND (FND)
 - DRILL HOLE (FND)
 - IRON BOUND (FND)
 - IRON PIPE (FND)
 - STEEL STAKE (FND)
 - UTILITY POLE / GUY WIRE
 - SINGLE POST SIGN
 - TEMPORARY BENCHMARK
 - TEST PIT
 - CURB STOP
 - GATE VALVE
 - FIRE HYDRANT
 - CATCH BASIN
 - SEWER MANHOLE
 - STONE WALL
 - ABUTTING PROPERTY LINE
 - BUILDING SETBACK LINE
 - EXISTING WATER LINE
 - EXISTING SEWER LINE
 - EXISTING DRAIN LINE
 - OVERHEAD UTILITIES
 - EXISTING CONTOUR MINOR
 - EXISTING CONTOUR MAJOR
 - EXISTING TREELINE
 - NRCS SOIL LINE/LABEL
 - FND FOUND
 - TYP TYPICAL
 - S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS



WETLAND NOTE:

WETLANDS WERE DELINEATED BY DEIDRA L. BENJAMIN, CWS, IN THE SUMMER OF 2021 USING THE FOLLOWING CRITERIA:

1. USACE, REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHEASTAL AND NORTHEAST REGION, VERSION 2.0. U.S. ARMY ENGINEER RESEARCH AND DEVELOPMENT CENTER, 2012. VICKSBURG, MS.
2. USACE, CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL, ENVIRONMENTAL LABORATORY, 1987. VICKSBURG, MS.
3. UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2018. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, VERSION 8.2. L.M. VASILAS, G.W. HURT, AND J.F. BERKOWITZ (EDS.). USDA, NRCS, IN COOPERATION WITH THE NATIONAL TECHNICAL COMMITTEE FOR HYDRIC SOILS.
4. NEW ENGLAND HYDRIC SOIL TECHNICAL COMMITTEE, FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, VERSION 4. NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION, 2019. LOWELL, MA.
5. U.S. ARMY CORPS OF ENGINEERS 2019. NATIONAL WETLAND PLANT LIST, VERSION 3.3. [HTTP://WETLAND-PLANTS.USACE.ARMY.MIL/](http://wetland-plants.usace.army.mil/)



DOVER FILE #22-55

REVISED PER DOVER TRC COMMENT	DESCRIPTION
#1	9-1-22
REVISION	DATE

W-2 PROPOSED CONDITIONS WATERSHED PLAN
LAND OF
JSR, LLC
VENTURE DRIVE & QUALITY WAY
DOVER, N.H.
TAX MAP D, LOTS 11-5 & 11-5SND

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863
SCALE : 1 IN. EQUALS 50 FT.
DATE : JUNE 1, 2022
FILE NO. : DB 2021 - 134

KENNETH A. BERRY
No. 14243
PROFESSIONAL ENGINEER

Appendix III - Calculations, Charts, & Graphs

Extreme Precipitation Tables

Rip-Rap Calculations

NHDES AoT Spreadsheet

USDA / NRCS Websoil

Site Specific Soil Survey Report & Plan

Stormwater System Management: Inspection and Maintenance Manual

Watershed Report Card, 303 (d) List, ORW List

Filtrexx Silt Soxx Specifications Cut Sheets

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New Hampshire
Location	
Longitude	70.911 degrees West
Latitude	43.223 degrees North
Elevation	0 feet
Date/Time	Tue, 19 Jul 2022 09:17:31 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.81	1.03	1yr	0.70	0.98	1.20	1.54	1.99	2.59	2.86	1yr	2.29	2.75	3.15	3.88	4.44	1yr
2yr	0.32	0.49	0.61	0.80	1.01	1.28	2yr	0.87	1.17	1.50	1.91	2.44	3.13	3.49	2yr	2.77	3.36	3.85	4.59	5.22	2yr
5yr	0.37	0.57	0.72	0.96	1.23	1.58	5yr	1.06	1.44	1.85	2.38	3.06	3.95	4.47	5yr	3.50	4.30	4.92	5.78	6.54	5yr
10yr	0.40	0.63	0.80	1.09	1.42	1.85	10yr	1.22	1.69	2.18	2.82	3.64	4.71	5.39	10yr	4.17	5.18	5.93	6.90	7.75	10yr
25yr	0.46	0.74	0.94	1.30	1.72	2.27	25yr	1.49	2.09	2.69	3.52	4.58	5.96	6.91	25yr	5.27	6.64	7.58	8.71	9.72	25yr
50yr	0.52	0.83	1.06	1.48	2.00	2.66	50yr	1.73	2.45	3.18	4.17	5.46	7.11	8.34	50yr	6.29	8.02	9.14	10.40	11.54	50yr
100yr	0.58	0.94	1.21	1.71	2.32	3.12	100yr	2.01	2.88	3.74	4.94	6.49	8.49	10.07	100yr	7.52	9.68	11.02	12.42	13.71	100yr
200yr	0.64	1.05	1.36	1.96	2.71	3.67	200yr	2.33	3.39	4.42	5.87	7.74	10.15	12.16	200yr	8.98	11.70	13.29	14.83	16.29	200yr
500yr	0.76	1.25	1.63	2.36	3.31	4.54	500yr	2.86	4.21	5.50	7.35	9.74	12.85	15.62	500yr	11.37	15.02	17.03	18.78	20.48	500yr

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.37	0.45	0.60	0.74	0.90	1yr	0.64	0.88	0.92	1.25	1.54	2.05	2.46	1yr	1.82	2.36	2.94	3.42	4.10	1yr
2yr	0.31	0.49	0.60	0.81	1.00	1.18	2yr	0.86	1.15	1.36	1.82	2.35	3.05	3.39	2yr	2.70	3.26	3.74	4.46	5.08	2yr
5yr	0.35	0.54	0.67	0.91	1.16	1.40	5yr	1.00	1.37	1.61	2.14	2.77	3.69	4.11	5yr	3.26	3.95	4.59	5.39	6.09	5yr
10yr	0.38	0.59	0.73	1.02	1.31	1.60	10yr	1.13	1.56	1.81	2.44	3.12	4.24	4.77	10yr	3.75	4.58	5.30	6.21	6.97	10yr
25yr	0.44	0.66	0.83	1.18	1.55	1.91	25yr	1.34	1.87	2.11	2.84	3.64	5.08	5.76	25yr	4.50	5.54	6.47	7.50	8.35	25yr
50yr	0.48	0.73	0.91	1.31	1.77	2.19	50yr	1.52	2.14	2.36	3.20	4.08	5.83	6.64	50yr	5.16	6.39	7.51	8.63	9.55	50yr
100yr	0.54	0.81	1.02	1.47	2.02	2.51	100yr	1.74	2.45	2.65	3.58	4.55	6.69	7.65	100yr	5.92	7.35	8.72	9.94	10.90	100yr
200yr	0.60	0.90	1.14	1.65	2.30	2.87	200yr	1.98	2.81	2.96	4.02	5.07	7.66	8.80	200yr	6.78	8.46	10.12	11.45	12.46	200yr
500yr	0.70	1.04	1.33	1.94	2.75	3.46	500yr	2.38	3.39	3.44	4.67	5.87	9.13	10.59	500yr	8.08	10.18	12.32	13.81	14.81	500yr

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.53	0.71	0.87	1.08	1yr	0.75	1.05	1.23	1.73	2.20	2.82	3.07	1yr	2.49	2.95	3.37	4.17	4.74	1yr
2yr	0.33	0.51	0.62	0.84	1.04	1.24	2yr	0.90	1.22	1.47	1.95	2.51	3.24	3.61	2yr	2.86	3.47	3.98	4.73	5.39	2yr
5yr	0.39	0.60	0.75	1.03	1.31	1.58	5yr	1.13	1.54	1.85	2.49	3.19	4.21	4.83	5yr	3.73	4.64	5.27	6.20	6.96	5yr
10yr	0.46	0.70	0.87	1.21	1.57	1.91	10yr	1.35	1.87	2.22	3.03	3.84	5.18	6.02	10yr	4.58	5.79	6.63	7.60	8.47	10yr
25yr	0.55	0.84	1.05	1.50	1.97	2.46	25yr	1.70	2.41	2.87	3.94	4.94	6.81	8.08	25yr	6.03	7.77	8.86	10.01	11.03	25yr
50yr	0.64	0.97	1.21	1.75	2.35	2.97	50yr	2.03	2.90	3.48	4.80	5.99	8.37	10.12	50yr	7.41	9.73	11.07	12.30	13.48	50yr
100yr	0.75	1.13	1.41	2.04	2.80	3.58	100yr	2.42	3.50	4.22	5.87	7.28	10.30	12.68	100yr	9.12	12.19	13.81	15.14	16.48	100yr
200yr	0.87	1.30	1.65	2.39	3.33	4.34	200yr	2.88	4.24	5.13	7.18	8.84	12.71	15.90	200yr	11.25	15.29	17.25	18.63	20.18	200yr
500yr	1.06	1.58	2.03	2.95	4.19	5.56	500yr	3.62	5.44	6.62	9.38	11.45	16.80	21.45	500yr	14.87	20.62	23.17	24.55	26.40	500yr



RIP RAP CALCULATIONS

21-134

Quality & Venture

Dover, NH

Berry Surveying & Engineering

335 Second Crown Point Road

Barrington, NH

6/1/2022/Rev: 9-1-22

Rip Rap equations were obtained from the *Stormwater Management and Erosion*

Control Handbook for Urban and Developing Areas in New

Hampshire. Rip Rap was sized for the 25 year storm event. (Some d50 sizes and T values have been modified)

TAILWATER < HALF THE Do

$La = (1.8 \times Q) / Do^{3/2} + (7 \times Do)$ Q = Peak Flow & Do is Pipe Diameter

$W = La + 3 \times Do$ or defined channel width

$d50 = (0.02 \times Q^{4/3}) / (Tw \times Do)$

Tw = Tailwater Depth

T = Largest Stone Size $\times 1.5$

Culvert or Catch Basin	Tailwater (Feet) Tw	Discharge (C.F.S.) Q	Diameter of Pipe Do	Length of Rip Rap La (feet)	Width of Rip Rap W (feet)	d50-Stone Rip Rap $d50$ (ft.)	Actual Size	Thickness
15" HDPE (Pond #101P)	0.25	0.98	1.25	10.0	13.8	0.06	0.50	1.20
18" HDPE (Pond #102P)	0.30	6.42	1.50	16.8	21.3	0.53	0.67	1.75
12" HDPE (Pond #C03P)	0.20	0.35	1.00	7.6	10.6	0.02	0.50	1.20
15" HDPE (Pond #D01P)	0.25	3.17	1.25	12.8	16.6	0.30	0.50	1.20
15" RCP (Pond #D02P)	0.25	6.98	1.25	17.7	21.5	0.85	1.00	2.25
12" RCP (Pond #7324P)	0.20	2.17	1.00	10.9	13.9	0.28	0.50	1.20

Please note that the designer chose to use the 25 Year Event for the dimensional calculations.

Table 7-24 -- Recommended Rip Rap Gradation Ranges				
d50 Size =	0.5	Feet	6	Inches
% of Weight Smaller Than the Given d50 Size			Size of Stone (Inches)	
			From	To
100%			9	12
85%			8	11
50%			6	9
15%			2	3

Table 7-24 -- Recommended Rip Rap Gradation Ranges				
d50 Size =	0.75	Feet	9	Inches
% of Weight Smaller Than the Given d50 Size			Size of Stone (Inches)	
			From	To
100%			14	18
50%			9	14

15%	3	5
-----	---	---

Table 7-24 -- Recommended Rip Rap Gradation Ranges			
d50 Size =	1	Feet	12 Inches
% of Weight Smaller Than the Given d50 Size	Size of Stone (Inches)		
	From	To	
100%	18	24	
85%	16	22	
50%	12	18	
15%	4	6	



FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name:

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

☐ Yes	Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).		
0.64 ac	A = Area draining to the practice		
0.54 ac	A_i = Impervious area draining to the practice		
0.83 decimal	I = Percent impervious area draining to the practice, in decimal form		
0.80 unitless	R_v = Runoff coefficient = $0.05 + (0.9 \times I)$		
0.51 ac-in	WQV = 1" x R_v x A		
1,868 cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")		
467 cf	25% x WQV (check calc for sediment forebay volume)		
1,401 cf	75% x WQV (check calc for surface sand filter volume)		
Deep Sumps	Method of Pretreatment? (not required for clean or roof runoff)		
- cf	V_{SED} = Sediment forebay volume, if used for pretreatment		≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:			
sf	A_{SA} = Surface area of the practice		
iph	K_{sat_DESIGN} = Design infiltration rate ¹		
	If K_{sat} (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?		
Yes/No	(Use the calculations below)		
- hours	T_{DRAIN} = Drain time = $V / (A_{SA} * I_{DESIGN})$		≤ 72-hrs
Calculate time to drain if system IS underdrained:			
165.04 ft	E_{WQV} = Elevation of WQV (attach stage-storage table)		
0.05 cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)		
20.75 hours	T_{DRAIN} = Drain time = $2WQV/Q_{WQV}$		≤ 72-hrs
162.00 feet	E_{FC} = Elevation of the bottom of the filter course material ²		
161.00 feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable		
160.50 feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)		
156.00 feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)		
1.00 feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course		≥ 1'
6.00 feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course		≥ 1'
1.50 feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course		≥ 1'
167.96 ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)		
168.50 ft	Elevation of the top of the practice		
YES	50 peak elevation ≤ Elevation of the top of the practice		← yes
If a surface sand filter or underground sand filter is proposed:			
YES ac	Drainage Area check.		< 10 ac
cf	V = Volume of storage ³ (attach a stage-storage table)		≥ 75%WQV
inches	D_{FC} = Filter course thickness		18", or 24" if within GPA
Sheet	Note what sheet in the plan set contains the filter course specification.		
Yes/No	Access grate provided?		← yes

YES	ac	Drainage Area no larger than 5 ac?	← yes
2,013	cf	V = Volume of storage ³ (attach a stage-storage table)	≥ WQV
18.0	inches	D _{FC} = Filter course thickness	18", or 24" if within GPA
Sheet	P-101	Note what sheet in the plan set contains the filter course specification	
2.0	:1	Pond side slopes	≥ 3:1
Sheet	P-101	Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
	acres	Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.) A _{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	≤ 5:1
	inches	D _{FC} = Filter course thickness	12", or 18" if within GPA
Sheet		Note what sheet in the plan set contains the filter course spec.	mod. 304.1 (see spec)

1. Rate of the limiting layer (either the filter course or the underlying soil). K_{sat_design} includes factor of safety. See Env-Wq 1504.14 for guidance on determining the infiltration rate.
2. See lines 34, 40 and 48 for required depths of filter media.
3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet structure, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:

21-134 Proposed Conditions

Type III 24-hr 50YR-24HR Rainfall=8.18"

Prepared by Berry Surveying & Engineering

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Summary for Pond 101P: Rain Garden #101

[80] Warning: Exceeded Pond C03P by 0.23' @ 12.15 hrs (1.50 cfs 0.027 af)

[80] Warning: Exceeded Pond D01P by 0.06' @ 11.90 hrs (1.39 cfs 0.028 af)

Inflow Area = 0.643 ac, 83.35% Impervious, Inflow Depth > 7.31" for 50YR-24HR event
 Inflow = 4.73 cfs @ 12.09 hrs, Volume= 0.391 af
 Outflow = 1.71 cfs @ 12.36 hrs, Volume= 0.303 af, Atten= 64%, Lag= 16.5 min
 Primary = 1.71 cfs @ 12.36 hrs, Volume= 0.303 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Peak Elev= 167.96' @ 12.36 hrs Surf.Area= 804 sf Storage= 7,691 cf

Flood Elev= 168.50' Surf.Area= 804 sf Storage= 9,116 cf

Plug-Flow detention time= 167.8 min calculated for 0.302 af (77% of inflow)

Center-of-Mass det. time= 86.5 min (844.2 - 757.6)

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	322 cf	Stone (Irregular) Listed below (Recalc) -Impervious 804 cf Overall x 40.0% Voids
#2	162.00'	241 cf	BioMedia (Irregular) Listed below (Recalc) 1,206 cf Overall x 20.0% Voids
#3	163.50'	8,473 cf	Open Water (Irregular) Listed below (Recalc) -Impervious
#4	160.90'	80 cf	4.00'D x 6.35'H 4' Structure -Impervious
		9,116 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
161.00	804	122.6	0	0	804
162.00	804	122.6	804	804	927

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
162.00	804	122.6	0	0	804
163.50	804	122.6	1,206	1,206	988

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
163.50	804	122.6	0	0	804
164.00	931	129.4	433	433	954
165.00	1,282	173.0	1,102	1,535	2,014
166.00	1,656	200.0	1,465	3,000	2,837
167.00	2,074	217.0	1,861	4,861	3,439
168.00	2,521	230.0	2,294	7,155	3,952
168.50	2,754	236.3	1,318	8,473	4,213

21-134 Proposed Conditions

Type III 24-hr 50YR-24HR Rainfall=8.18"

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Device	Routing	Invert	Outlet Devices
#1	Primary	160.90'	15.0" Round 15" HDPE N-12 L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 160.90' / 160.40' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	161.00'	1.0" Vert. 1" Orifice C= 0.600
#3	Device 1	166.15'	4.0" Vert. 4" Orifice (2) X 2.00 C= 0.600
#4	Device 1	167.90'	48.0" Horiz. Top Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	168.00'	10.0' long x 8.0' breadth E-Spillway Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#6	Device 2	162.00'	10.000 in/hr Exfiltration over Surface area

Primary OutFlow Max=1.68 cfs @ 12.36 hrs HW=167.96' TW=159.68' (Dynamic Tailwater)

1=15" HDPE N-12 (Passes 1.68 cfs of 14.98 cfs potential flow)
 2=1" Orifice (Orifice Controls 0.07 cfs @ 12.66 fps)
 6=Exfiltration (Passes 0.07 cfs of 0.19 cfs potential flow)
 3=4" Orifice (2) (Orifice Controls 1.08 cfs @ 6.16 fps)
 4=Top Grate (Weir Controls 0.53 cfs @ 0.77 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=160.90' TW=161.00' (Dynamic Tailwater)

5=E-Spillway (Controls 0.00 cfs)

21-134 Proposed Conditions

Type III 24-hr 50YR-24HR Rainfall=8.18"

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Stage-Area-Storage for Pond 101P: Rain Garden #101

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
160.90	0	0	166.10	804	3,796
161.00	0	1	166.20	804	3,969
161.10	0	35	166.30	804	4,146
161.20	0	68	166.40	804	4,327
161.30	0	102	166.50	804	4,512
161.40	0	135	166.60	804	4,701
161.50	0	168	166.70	804	4,894
161.60	0	202	166.80	804	5,092
161.70	0	235	166.90	804	5,294
161.80	0	269	167.00	804	5,501
161.90	0	302	167.10	804	5,712
162.00	804	335	167.20	804	5,927
162.10	804	353	167.30	804	6,145
162.20	804	370	167.40	804	6,368
162.30	804	387	167.50	804	6,595
162.40	804	405	167.60	804	6,826
162.50	804	422	167.70	804	7,062
162.60	804	439	167.80	804	7,303
162.70	804	457	167.90	804	7,548
162.80	804	474	168.00	804	7,798
162.90	804	491	168.10	804	8,052
163.00	804	509	168.20	804	8,311
163.10	804	526	168.30	804	8,575
163.20	804	543	168.40	804	8,843
163.30	804	561	168.50	804	9,116
163.40	804	578	Linear Interpolation		
163.50	804	595	Lowest Outlet = 166.15'		
163.60	804	678	Storage Volume = 2,013 CF		
163.70	804	764			
163.80	804	852			
163.90	804	942			
164.00	804	1,035	Total Storage Table		
164.10	804	1,131			
164.20	804	1,230			
164.30	804	1,333			
164.40	804	1,439			
164.50	804	1,548			
164.60	804	1,661			
164.70	804	1,778			
164.80	804	1,898			
164.90	804	2,022			
165.00	804	2,150			
165.10	804	2,281			
165.20	804	2,415			
165.30	804	2,554			
165.40	804	2,696			
165.50	804	2,842			
165.60	804	2,991			
165.70	804	3,144			
165.80	804	3,301			
165.90	804	3,462			
166.00	804	3,627			

21-134 Proposed Conditions

Type III 24-hr 50YR-24HR Rainfall=8.18"

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Stage-Area-Storage for Pond 101P: Rain Garden #101

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
160.90	0	0	166.10	804	3,796
161.00	0	1	166.20	804	3,969
161.10	0	35	166.30	804	4,146
161.20	0	68	166.40	804	4,327
161.30	0	102	166.50	804	4,512
161.40	0	135	166.60	804	4,701
161.50	0	168	166.70	804	4,894
161.60	0	202	166.80	804	5,092
161.70	0	235	166.90	804	5,294
161.80	0	269	167.00	804	5,501
161.90	0	302	167.10	804	5,712
162.00	804	335	167.20	804	5,927
162.10	804	353	167.30	804	6,145
162.20	804	370	167.40	804	6,368
162.30	804	387	167.50	804	6,595
162.40	804	405	167.60	804	6,826
162.50	804	422	167.70	804	7,062
162.60	804	439	167.80	804	7,303
162.70	804	457	167.90	804	7,548
162.80	804	474	168.00	804	7,798
162.90	804	491	168.10	804	8,052
163.00	804	509	168.20	804	8,311
163.10	804	526	168.30	804	8,575
163.20	804	543	168.40	804	8,843
163.30	804	561	168.50	804	9,116
163.40	804	578	WQV = 1,868		
163.50	804	595	1,868 + 335 CF (stone) = 2,203 CF		
163.60	804	678	2,203 CF stored at elev: 165.04		
163.70	804	764	WQV Storage Table		
163.80	804	852			
163.90	804	942			
164.00	804	1,035			
164.10	804	1,131			
164.20	804	1,230			
164.30	804	1,333			
164.40	804	1,439			
164.50	804	1,548			
164.60	804	1,661			
164.70	804	1,778			
164.80	804	1,898			
164.90	804	2,022			
165.00	804	2,150			
165.10	804	2,281			
165.20	804	2,415			
165.30	804	2,554			
165.40	804	2,696			
165.50	804	2,842			
165.60	804	2,991			
165.70	804	3,144			
165.80	804	3,301			
165.90	804	3,462			
166.00	804	3,627			

21-134 Proposed Conditions

Type III 24-hr 50YR-24HR Rainfall=8.18"

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Stage-Discharge for Pond 101P: Rain Garden #101

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
160.90	0.00	0.00	0.00	166.10	0.06	0.06	0.00
161.00	0.00	0.00	0.00	166.20	0.07	0.07	0.00
161.10	0.00	0.00	0.00	166.30	0.16	0.16	0.00
161.20	0.00	0.00	0.00	166.40	0.30	0.30	0.00
161.30	0.00	0.00	0.00	166.50	0.42	0.42	0.00
161.40	0.00	0.00	0.00	166.60	0.51	0.51	0.00
161.50	0.00	0.00	0.00	166.70	0.58	0.58	0.00
161.60	0.00	0.00	0.00	166.80	0.65	0.65	0.00
161.70	0.00	0.00	0.00	166.90	0.71	0.71	0.00
161.80	0.00	0.00	0.00	167.00	0.76	0.76	0.00
161.90	0.00	0.00	0.00	167.10	0.81	0.81	0.00
162.00	0.03	0.03	0.00	167.20	0.86	0.86	0.00
162.10	0.03	0.03	0.00	167.30	0.90	0.90	0.00
162.20	0.03	0.03	0.00	167.40	0.94	0.94	0.00
162.30	0.03	0.03	0.00	167.50	0.98	0.98	0.00
162.40	0.03	0.03	0.00	167.60	1.02	1.02	0.00
162.50	0.03	0.03	0.00	167.70	1.06	1.06	0.00
162.60	0.03	0.03	0.00	167.80	1.09	1.09	0.00
162.70	0.03	0.03	0.00	167.90	1.13	1.13	0.00
162.80	0.03	0.03	0.00	168.00	2.46	2.46	0.00
162.90	0.04	0.04	0.00	168.10	5.64	4.87	0.77
163.00	0.04	0.04	0.00	168.20	10.15	7.98	2.17
163.10	0.04	0.04	0.00	168.30	15.73	11.65	4.08
163.20	0.04	0.04	0.00	168.40	21.92	15.49	6.43
163.30	0.04	0.04	0.00	168.50	24.87	15.61	9.26
163.40	0.04	0.04	0.00	WQV Elev = 165.04			
163.50	0.04	0.04	0.00	WQV Discharge = 0.05			
163.60	0.04	0.04	0.00	WQV Discharge Table			
163.70	0.04	0.04	0.00				
163.80	0.04	0.04	0.00				
163.90	0.04	0.04	0.00				
164.00	0.05	0.05	0.00				
164.10	0.05	0.05	0.00				
164.20	0.05	0.05	0.00				
164.30	0.05	0.05	0.00				
164.40	0.05	0.05	0.00				
164.50	0.05	0.05	0.00				
164.60	0.05	0.05	0.00				
164.70	0.05	0.05	0.00				
164.80	0.05	0.05	0.00				
164.90	0.05	0.05	0.00				
165.00	0.05	0.05	0.00				
165.10	0.05	0.05	0.00				
165.20	0.05	0.05	0.00				
165.30	0.05	0.05	0.00				
165.40	0.05	0.05	0.00				
165.50	0.06	0.06	0.00				
165.60	0.06	0.06	0.00				
165.70	0.06	0.06	0.00				
165.80	0.06	0.06	0.00				
165.90	0.06	0.06	0.00				
166.00	0.06	0.06	0.00				

21-134 Proposed Conditions

Type III 24-hr 50YR-24HR Rainfall=8.18"

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Summary for Pond 102P: Entrance Detention Pond

Inflow Area = 2.096 ac, 61.35% Impervious, Inflow Depth > 5.33" for 50YR-24HR event
 Inflow = 11.17 cfs @ 12.11 hrs, Volume= 0.931 af
 Outflow = 7.83 cfs @ 12.22 hrs, Volume= 0.929 af, Atten= 30%, Lag= 7.1 min
 Primary = 7.83 cfs @ 12.22 hrs, Volume= 0.929 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 167.91' @ 12.22 hrs Surf.Area= 1,686 sf Storage= 4,041 cf

Plug-Flow detention time= 6.1 min calculated for 0.927 af (100% of inflow)
 Center-of-Mass det. time= 5.2 min (807.5 - 802.3)

Volume	Invert	Avail.Storage	Storage Description
#1	163.50'	7,133 cf	Ponding (Irregular) Listed below (Recalc)
#2	163.50'	118 cf	5.00'D x 6.00'H 5' Structure
		7,251 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
163.50	303	101.0	0	0	303
164.00	403	108.0	176	176	431
165.00	646	132.0	520	696	904
166.00	940	156.0	788	1,484	1,473
167.00	1,314	185.0	1,122	2,606	2,278
168.00	1,705	201.0	1,505	4,111	2,806
169.00	2,120	213.0	1,909	6,020	3,252
169.50	2,336	220.0	1,114	7,133	3,517

Device	Routing	Invert	Outlet Devices
#1	Primary	163.50'	18.0" Round 18" HDPE N-12 L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 163.50' / 163.25' S= 0.0060 ' S= 0.0060 ' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	163.50'	10.0" Vert. 10" Orifice C= 0.600
#3	Device 1	166.50'	12.0" W x 6.0" H Vert. 12"W X 6"T Slot C= 0.600
#4	Device 1	169.00'	60.0" Horiz. 5' Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.79 cfs @ 12.22 hrs HW=167.88' TW=0.00' (Dynamic Tailwater)

- ↑ **1=18" HDPE N-12** (Passes 7.79 cfs of 16.22 cfs potential flow)
- ↑ **2=10" Orifice** (Orifice Controls 5.23 cfs @ 9.59 fps)
- ↑ **3=12"W X 6"T Slot** (Orifice Controls 2.56 cfs @ 5.12 fps)
- ↑ **4=5' Grate** (Controls 0.00 cfs)

21-134 Proposed Conditions

Type III 24-hr 50YR-24HR Rainfall=8.18"

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Stage-Area-Storage for Pond 102P: Entrance Detention Pond

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
163.50	0	165.58	1,158	167.66	3,637
163.54	13	165.62	1,191	167.70	3,701
163.58	26	165.66	1,225	167.74	3,765
163.62	40	165.70	1,259	167.78	3,830
163.66	54	165.74	1,294	167.82	3,896
163.70	68	165.78	1,330	167.86	3,962
163.74	83	165.82	1,366	167.90	4,029
163.78	98	165.86	1,402	167.94	4,097
163.82	113	165.90	1,439	167.98	4,165
163.86	129	165.94	1,476	168.02	4,234
163.90	145	165.98	1,514	168.06	4,304
163.94	161	166.02	1,552	168.10	4,374
163.98	177	166.06	1,591	168.14	4,445
164.02	194	166.10	1,631	168.18	4,516
164.06	211	166.14	1,671	168.22	4,588
164.10	229	166.18	1,712	168.26	4,661
164.14	247	166.22	1,753	168.30	4,735
164.18	265	166.26	1,794	168.34	4,809
164.22	284	166.30	1,837	168.38	4,884
164.26	303	166.34	1,880	168.42	4,959
164.30	322	166.38	1,923	168.46	5,035
164.34	342	166.42	1,967	168.50	5,112
164.38	362	166.46	2,012	168.54	5,189
164.42	383	166.50	2,057	168.58	5,267
164.46	404	166.54	2,103	168.62	5,346
164.50	425	166.58	2,149	168.66	5,425
164.54	447	166.62	2,196	168.70	5,505
164.58	469	166.66	2,244	168.74	5,586
164.62	491	166.70	2,292	168.78	5,668
164.66	514	166.74	2,341	168.82	5,750
164.70	537	166.78	2,391	168.86	5,833
164.74	561	166.82	2,441	168.90	5,916
164.78	585	166.86	2,492	168.94	6,000
164.82	610	166.90	2,543	168.98	6,085
164.86	635	166.94	2,595	169.02	6,171
164.90	660	166.98	2,648	169.06	6,257
164.94	686	167.02	2,701	169.10	6,344
164.98	712	167.06	2,755	169.14	6,432
165.02	738	167.10	2,810	169.18	6,520
165.06	766	167.14	2,865	169.22	6,609
165.10	793	167.18	2,921	169.26	6,699
165.14	821	167.22	2,977	169.30	6,789
165.18	849	167.26	3,034	169.34	6,880
165.22	878	167.30	3,091	169.38	6,972
165.26	907	167.34	3,149	169.42	7,064
165.30	937	167.38	3,208	169.46	7,157
165.34	967	167.42	3,268	169.50	7,251
165.38	998	167.46	3,328	Linear Interpolation	
165.42	1,029	167.50	3,388	Lowest Outlet above 10" = 166.60'	
165.46	1,060	167.54	3,449	Storage Volume = 2,173 CF	
165.50	1,092	167.58	3,511		
165.54	1,125	167.62	3,574		

Custom Soil Resource Report Soil Map



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 1:20,000.

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: Strafford County, New Hampshire
Survey Area Data: Version 20, May 29, 2020

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

Date(s) aerial images were photographed: Dec 31, 2009—Sep 9, 2017

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
EaB	Elmwood fine sandy loam, 3 to 8 percent slopes	3.7	26.3%
GIB	Gloucester fine sandy loam, 3 to 8 percent slopes	0.4	2.5%
GsC	Gloucester very stony fine sandy loam, 8 to 15 percent slopes	8.3	59.2%
HcB	Hollis-Charlton fine sandy loams, 3 to 8 percent slopes	0.0	0.1%
ScA	Scantic silt loam, 0 to 3 percent slopes	0.6	4.5%
ScB	Scantic silt loam, 3 to 8 percent slopes	1.0	7.4%
Totals for Area of Interest		13.9	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.

**John P. Hayes III CSS, CWS,
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North Hampton, NH 03862
603-205-4396
johnphayes@comcast.net**

7/11/22

**Christopher Berry
Berry Surveying and Engineering
335 Second Crown Point Road
Barrington NH 03825**

Job # 21-035

**7/8/22
Site Specific Soil Survey
Map D Lot 11-5
Quality Way Dover NH**

Dear Chris,

This letter report presents the findings of a Site Specific Soil Survey conducted on the referenced property by John P. Hayes III on July 8, 2022. The soil survey was conducted in accordance with the New Hampshire Supplement of the Site-Specific Soil Mapping Standard For New Hampshire and Vermont, Version 5.0, December 2017, Special Publication # 3, published by the Society of Soil Scientist of Northern New England.

The property that is subject of the soil survey is located on the on the south side of Quality Way, and the west side of Venture Drive, in Dover NH. The parcel is approximately 2 acres in size. The plans used for these soil maps are a 20 scale plan, where 1 inch equals 20 feet, with one foot contours.

The purpose of the soil survey is to provide the client with soils information for urban and suburban or rural land planning. Soil characteristics on the property were evaluated through observation of numerous test pits, and hand auger probes conducted throughout the property. Slope phases were determined with the use of the topography provided on the plan. The Site-specific Soil Map Units identified are taken from the New Hampshire State-Wide Numerical Soils Legend, Issue #10 January 2011, and are briefly described below. Official Series Descriptions (OSD) for each of these soil series are enclosed with this report. The soil map units comply with the Range In Characteristics described in the OSD. Any limiting enclussions on the site, do not exceed 15 percent of any of the soil map units. Dissimilar inclusions, if any, are noted above. Limits of the Site Specific mapping units are highlighted on the plan. The Hydrological Soil Groups for each of the soil series was determined using SSSNNE Publication No. 5 Ksat Values for New Hampshire Soils September 2009. Limits of the Site Specific mapping units are highlighted on the plan.

Soil parent materials on this site include Glacial Till and Glaciolacustrine deposits. Portions of the soil map with the map unit denominator P and VP, are poorly drained, and very poorly drained soils respectively. The portions of the soil map that are identified with the map unit Hg/Rk, are a Hollis/Gloucester soil complex that is shallow to ledge, with varying depths to ledge that are less than 40 in in depth. Portions of the soil map, with the map label 500, contain disturbed soils that have been excavated and/or regraded, that are loamy in texture, underlain with a layer of silt loam. Portions of the soil map with the map label 600/P, contain disturbed soils have textures of loam and silt loam, that have been excavated down to, or near the water table. A Disturbed Soil Mapping Unit Supplement for New Hampshire DES AOT Site Specific Soil Maps, is also included. This supplement explains the additional information given about each of the disturbed soil map units that are present on the site.

MAP UNIT #	SOIL TAXANOMIC NAME	SLOPES	HYDRO LOGIC SOIL GROUP	DESCRIPTION
Be VP (State No. 134)	Maybid	A	D	The Maybid series consists of very deep, very poorly drained soils formed in lacustrine or marine sediments. These soil are located on the southeastern of th parcel. These soils are deep to bedrock. The saturated hydraulic conductivity is moderately high or high in the surface layer and very low to moderately high in the subsoil and substratum. Some inclusions of poorly drained Scitico soils may be present, but are less than 10 percent of the map unit. These soils are permanantly saturated.
Ea (State No. 238)	Elmridge (very stony)	A B C D	C	The Elmridge series consists of very deep, moderately well drained soils formed in loamy over clayey sediments. These soils are found throughout the upland portion of the parcel. These soils are deep to bedrock, and very stony. The saturated hydraulic conductivity is high in the upper loamy horizons and low to moderately high in the underlying clayey horizons. Some inclusions of Excessively drained Gloucester, or somewhat poorly drained Boxford may be present, but are less than 10 percent of the map units of the mapped areas. Estimated seasonal high water tables in these soils on site range from 16 to 36 inches.
Gs (State No. 111)	Gloucester (very stony)	B C	A	The Gloucester series consists of very deep, somewhat excessively drained soils formed in sandy till. These soils are found on the northern side of the parcel, near Quality Way. These soils are deep to bedrock, and are very stony. Thre saturated hydraulic conductivity in these soils is high or very high. Some inclusions of moderately well drained Elmridge soils may be present but are less than 10 percent of map units of the mapped areas. Estimated seasonal high water tables in these soils on site range from 38 to 56 inches.

MAP UNIT #	SOIL TAXANOMIC NAME	SLOPES	HYDRO LOGIC SOIL GROUP	DESCRIPTION
Hg Rk (State No. 121)	Hollis- Gloucester complex (very rocky)	C	D/A	The Hollis series consists of well drained and somewhat excessively drained soils formed in a thin mantle of till. They are shallow to bedrock. They are nearly level to very steep upland soils on bedrock-controlled hills and ridges. Saturated hydraulic conductivity is moderately high or high. The Gloucester series consists of very deep, somewhat excessively drained soils formed in sandy till. These soils are deep to bedrock, and are very stony. The saturated hydraulic conductivity in these soils is high or very high. This soil complex is located in the central portion of the lot. The estimated percentage of the Hollis soil component in the complex is 80%. The estimated percentage of Gloucester soil in the complex is 20%. The Hollis component of the complex is shallow to ledge, and has no estimated seasonal high water table. Estimated seasonal high water tables in the Gloucester component of the complex ranges from 38 to 50 inches.
Sc P (State No. 233)	Scitico	A B	C	The Scitico series consists of very deep, poorly drained soils formed in silty and clayey sediments. These soil are located on the southeastern of th parcel. They are are deep to bedrock. Saturated hydraulic conductivity is moderately high or high in the upper portion of the profile, and low or moderately slow in the substratum. Some inclusions of very poorly drained Maybid, and somewhat poorly drained soils Boxford soils may be present, but are less than 10 percent of the map unit. Estimated seasonal high water tables in these soils on site are less than 10 inches.
500 (decde)	Udorthents loamy	A B C D E	C	Udorthents are disturbed soils that have been excavated and/or regraded and are loamy in texture. These disturbed soils are located on the south and east edges of the parcel, adjacent to Venture Drive and Quality Way. of the mapped area. These disturbed soils are mostly derrived mostly from the Elmwood soil series, and are moderately well drained. The soils are deep to bedrock. The saturated hydralic conductivity of this soil is moderately high in the upper portion, and moderately low in the firm substratum. Estimated seasonal high water tables in these soils range from 18 to 36 inches.

MAP UNIT #	SOIL TAXANOMIC NAME	SLOPES	HYDRO LOGIC SOIL GROUP	DESCRIPTION
600 P (fecdc)	Endoaquents loamy	B	C	Endoaquents are disturbed soils that have been excavated down to, or near the water table. Soil material is typically sandy loam, loam or silt loam. These disturbed soils are located on the southeast corner of the parcel in an excavated drainage swale, that is adjacent to the intersection of Venture Drive and Quality way. These disturbed soils are mostly derived mostly from substratum of the the Elmwood soil series, and are poorly drained. The soils are deep to bedrock. The saturated hydraulic conductivity of this soil is moderately high in the upper portion, and moderately low in the firm substratum. Estimated seasonal high water tables in these soils is less than 10 inches.

Slope Phases

Alpha Slope Symbol

Range

A	0 – 3%
B	3 – 8%
C	8 – 15%
D	15 – 25%
E	25 – 50%
F	> 50%

I trust that this Soil Survey and report meet your current planning needs. Please do not hesitate to contact me if you have any questions.

Sincerely:

John P. Hayes III



John P. Hayes III CSS, CWS

TEST PIT DATA:

TEST PIT #1
0-6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6-22 10YR 5/6 YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
22-38 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
38-68 2.5Y 5/3 LIGHT OLIVE BROWN, GRAVELLY LOAMY SAND WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 38"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 68"
REFUSAL @ N/A
P = 10 MIN/IN

TEST PIT #2
0-5 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
5-22 10YR 5/6 YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
22-38 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
38-65 2.5Y 5/3 LIGHT OLIVE BROWN, GRAVELLY LOAMY SAND WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 38"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 65"
REFUSAL @ N/A
P = 10 MIN/IN

TEST PIT #3
0-6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6-18 10YR 5/6 YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
18-30 2.5Y 5/4 LIGHT OLIVE BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
30-55 2.5Y 5/3 LIGHT OLIVE BROWN, GRAVELLY LOAMY SAND WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 30"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 55"
REFUSAL @ N/A
P = 10 MIN/IN

TEST PIT #4
0-6 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6-24 10YR 5/6 YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
24-40 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY LOAMY SAND, GRANULAR, FRIABLE
40-60 2.5Y 5/3 LIGHT OLIVE BROWN, GRAVELLY LOAMY SAND WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 40"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 60"
REFUSAL @ N/A
P = 6 MIN/IN

TEST PIT #5
0-6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6-22 10YR 5/6 YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
22-38 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
38-64 2.5Y 5/3 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 38"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 64"
REFUSAL @ N/A
P = 10 MIN/IN

TEST PIT #6
0-6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6-24 10YR 5/6 YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
E.S.H.W.T. @ N/A
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 30"
REFUSAL @ 30"
P = 10 MIN/IN

TEST PIT #7
0-6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6-22 10YR 5/6 YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
22-38 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
38-64 2.5Y 5/3 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM WITH REDOX. FEAT. PRESENT, MASSIVE, FRIABLE
E.S.H.W.T. @ 38"
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 64"
REFUSAL @ N/A
P = 10 MIN/IN

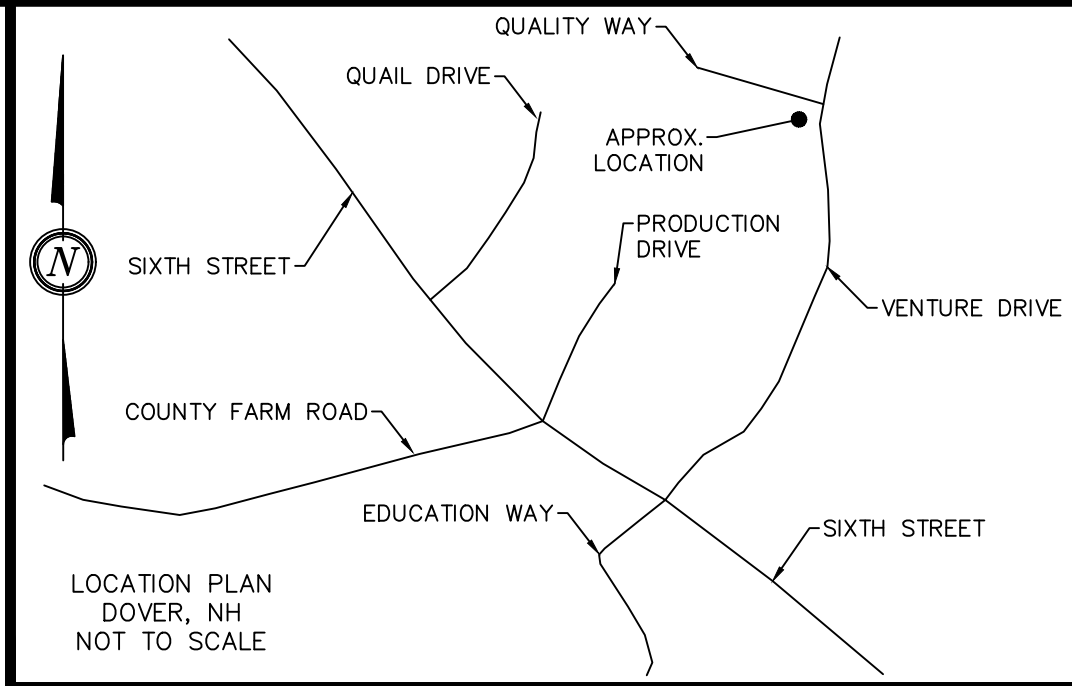
TEST PIT #8
0-6 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6-24 10YR 5/6 YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
E.S.H.W.T. @ N/A
RESTRICTIVE LAYER @ N/A
GROUND WATER @ N/A
TERMINATED @ 24"
REFUSAL @ 24"
P = 10 MIN/IN

TEST PIT #9
0-5 10YR 4/2 DARK GRAYISH BROWN, SILT LOAM, GRANULAR, FRIABLE
5-12 2.5Y 4/2 DARK GRAYISH BROWN, SILT LOAM, GRANULAR, FRIABLE
12-45 5Y 5/2 OLIVE GRAY SILT LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 12"
RESTRICTIVE LAYER @ 12"
GROUND WATER @ N/A
TERMINATED @ 45"
REFUSAL @ N/A
P = 18 MIN/IN

TEST PIT #10
0-5 10YR 4/2 DARK GRAYISH BROWN, SILT LOAM, GRANULAR, FRIABLE
5-14 2.5Y 4/2 DARK GRAYISH BROWN, SILT LOAM, GRANULAR, FRIABLE
14-45 5Y 5/2 OLIVE GRAY SILT LOAM WITH REDOX. FEAT. PRESENT, BLOCKY, FIRM
E.S.H.W.T. @ 14"
RESTRICTIVE LAYER @ 14"
GROUND WATER @ N/A
TERMINATED @ 45"
REFUSAL @ N/A
P = 18 MIN/IN

EXISTING LEGEND:

- STONE BOUND (FND)
STEEL STAKE (FND)
TEST PIT
EXISTING DRAIN LINE
EXISTING CONTOUR MINOR
EXISTING CONTOUR MAJOR
EXISTING TREELINE
NRCS SOIL LINE/LABEL
POORLY DRAINED WETLANDS
50' WETLAND BUFFER
SOIL LINE
LIMIT OF SOIL SURVEY
SOIL SERIES
STRAFFORD COUNTY REGISTRY OF DEEDS
TYP. FOUND
TYPICAL



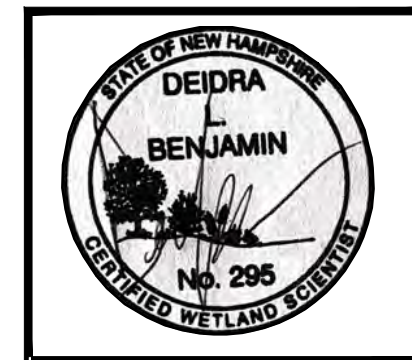
NOTES:

- OWNER: JSR, LLC
17 FOSTERS DRIVE
DOVER, NH 03820
- APPLICANT: JSR, LLC
17 FOSTERS DRIVE
DOVER, NH 03820
- A) TAX MAP D, LOT 11-5
B) TAX MAP D, LOT 11-5SND
- A) LOT AREA: 43,314 Sq. Ft., 0.99 Ac.
B) LOT AREA: 43,517 Sq. Ft., 1.00 Ac.
- PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY BERRY SURVEYING AND ENGINEERING IN 2021 WITH AN ERROR OF CLOSURE BETTER THAN 1 IN 10,000.
- VERTICAL DATUM IS BASED ON USGS NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83 NH STATE PLANE COORDINATES. COORDINATES GATHERED FROM CARLSON BRX7 SURVEY GRADE GPS RECEIVERS.
- THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING ANALYZED SITE SPECIFIC SOIL CONDITIONS OF THE SITE.

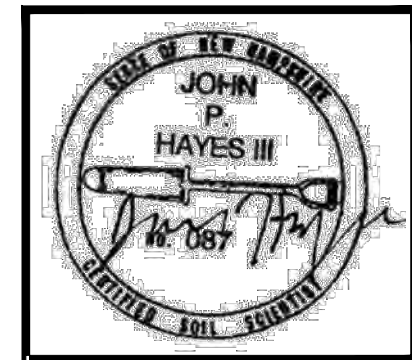
SITE SPECIFIC SOILS LEGEND

SYMBOL	SLOPES	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
Be	A	MAYBID	D
238	A,B,C,D	ELMRIDGE (VERY STONY)	C
Gs	B,C	GLOUCESTER (VERY STONY)	A
Hg	C	HOLLIS-GLOUCESTER COMPLEX (VERY ROCKY)	A/D
Sc	A,B	SCITICO	C
500	A,B,C,D,E	UDORTHENTS	C
600	B	ENDORAQUENTS	C

SLOPE: A = 0-3% B = 3-8% C = 8-15% D = 15-25% E = 25-50% F = 50%+
DENOMINATOR: /VP = VERY POORLY DRAINED /P = POORLY DRAINED
/Rk = VERY ROCKY



DEIDRA BENJAMIN, CWS #295

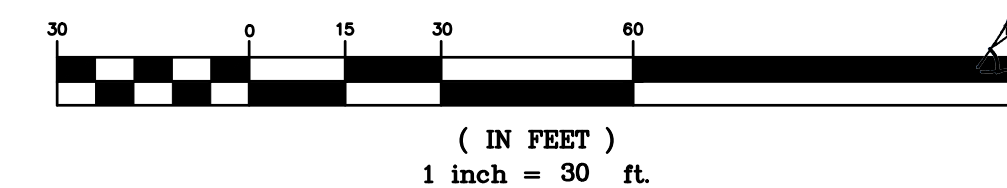


JOHN P. HAYES, III CSS #87

WETLAND NOTE:

- WETLANDS WERE DELINEATED BY DEIDRA L. BENJAMIN, CWS, IN THE SUMMER OF 2021 USING THE FOLLOWING CRITERIA:
- USACE, REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, VERSION 2.0. U.S. ARMY ENGINEER RESEARCH AND DEVELOPMENT CENTER, 2012. VICKSBURG, MS.
 - USACE, CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL, ENVIRONMENTAL LABORATORY, 1987. VICKSBURG, MS.
 - UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2018. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, VERSION 8.2. L.M. VASILAS, G.W. HURT, AND J.F. BERKOWITZ (EDS.). USDA, NRCS, IN COOPERATION WITH THE NATIONAL TECHNICAL COMMITTEE FOR HYDRIC SOILS.
 - NEW ENGLAND HYDRIC SOIL TECHNICAL COMMITTEE, FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, VERSION 4. NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION, 2019. LOWELL, MA.
 - U.S. ARMY CORPS OF ENGINEERS 2019, NATIONAL WETLAND PLANT LIST, VERSION 3.3. [HTTP://WETLAND-PLANTS.USACE.ARMY.MIL/](http://wetland-plants.usace.army.mil/)

GRAPHIC SCALE



DOVER FILE #PXX-XX

REVISION	DATE	DESCRIPTION

SITE SPECIFIC SOILS MAP

LAND OF
JSR, LLC
VENTURE DRIVE & QUALITY WAY
DOVER, NH

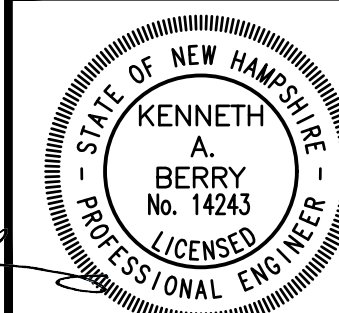
TAX MAP D, LOTS 11-5 & 11-5SND

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 60 FT.

DATE : JUNE 1, 2022

FILE NO. : DB 2021 - 134





BERRY SURVEYING & ENGINEERING

335 Second Crown Point Road

Barrington, NH 03825

Phone: (603) 332-2863

Fax: (603) 335-4623

www.BerrySurveying.Com

Inspection and Maintenance Manual

Stormwater System Management

Quality Way

Prepared for

JSR, LLC
17 Fosters Drive
Dover, NH 03820

Land of

JSR, LLC
17 Fosters Drive
Dover, NH 03820

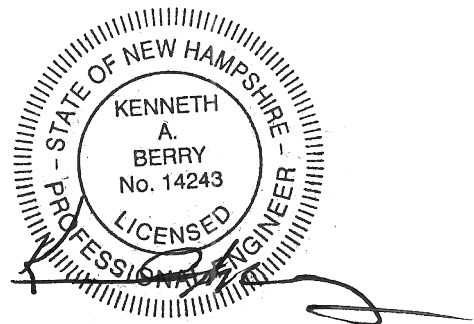
Prepared By

Berry Surveying & Engineering
335 Second Crown Point Road
Barrington, NH 03825
603-332-2863

File Number
DB2021-134

June 1, 2022

Revised: September 1, 2022



Stormwater System Operation and Maintenance Plan And Inspection and Maintenance Manual

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Control of Invasive Plants, NH Department of Agriculture	Attached – 4 Pages
NHDES Green SnoPro Utilization Chart	

Introduction

The Best Management Practices (BMP) described in this manual are specified in more detail within the plan set giving design details and specifications. The New Hampshire Stormwater Manual, Volume 2, Post-Construction Best Management Practices Selection & Design (December 2008, NHDES & US EPA) is included by reference to this manual. Additional details, construction specifications, and example drawings are provided within this reference. (<http://des.nh.gov/organization/divisions/water/stormwater/>)

The BMP's are covered below in the general order in which the storm water flows. Each BMP has a description and maintenance consideration listed. A Check List table is provided after the narrative to summarize the maintenance responsibilities and schedule. A Log Form is also provided for the owners use.

For details regarding the design of the Storm Water System see also Drainage Analysis & Sediment and Erosion Control Plan also published by Berry Surveying & Engineering originally dated June 1, 2022, as revised. See also plan set completed for JSR, LLC. originally dated June 1, 2022, as revised.

JSR, LLC. is responsible for the Stormwater System Operation and Maintenance. A significant step in this responsibility is the Inspection and Maintenance of each component of the system. Ongoing, semi-annual, and annual inspection and maintenance requirement are documented below and must be taken seriously. Failure of any component of the system can result in surface water run-off ponding and/or freezing in the roadway and parking lots, leaving the developed site untreated, and/or causing violations to issued permits. The owner must maintain, and have available, plans of the Stormwater System in order to properly inspect and maintain the system. (Reduced copies attached.) JSR, LLC, as the owner / operator, is responsible to ensure that any subsequent owner or subcontractor has copies of the Log Form and Annual Report records and fully understands the responsibilities of this plan. The grantor owner will ensure this document is provided to the grantee owner by duplicating the Ownership Responsibility Sheet which is found toward the back of this document, which will be maintained with the Inspection & Maintenance Logs, provided to the City of Dover, Community Services, DPW, Engineering Department, with the Annual Report.

The owner of Tax Map D, Lots 11-5 & 11-5SND, JSR, LLC, is proposing to the construction of a commercial building as well as a driveway connecting Venture Drive and Quality Way with associated parking. There is a rain garden, detention pond, and catch basins proposed to manage the surface water runoff.

The following drainage features will all require periodic inspections and maintenance based on this manual in addition to deep sump catch basins throughout:

Deep Sump Catch Basins

Drain Manholes

Conveyance Swales with Check Dams

Sediment Forebays

Rain Garden #101 w/ Under-drains, outlet structure, and emergency spillway.

Detention Pond #102

Level Spreaders

Catch Basins and Drain Manholes

Design Intent: There are three proposed catch basins with deep sumps on the property.

Description: Deep Sump Catch Basins are used throughout the site as a pretreatment measure to remove sediment and debris from storm water runoff. Deep Sump Catch Basins will be designed with a sump that is four times the depth of the discharge culvert and a minimum of four feet. All pretreatment deep sump catch basins will have an outlet pipe hood which extends one-foot below the outlet invert and will include a hood vent. During construction the catch basins will be protected by inlet protection per the approved construction plans. The practice of street sweeping on a bi-annual basis will help reduce maintenance of these deep sumps.

Maintenance Considerations: Sediment must be removed from Deep Sump Catch Basins and Deep Sump Manholes on a regular basis, at least twice a year and more often if the sumps become half-full. Inspections should be conducted periodically. At a minimum they should be cleaned after snow-melt and after leaf-drop. Damaged outlet hoods must be replaced. It is recommended that a vacuum truck be utilized as contrasted to a clam-shell method to avoid damage to the hood. Hydrocarbons found to be floating in the basin should be removed by skimming, absorbent materials, or other method. Disposal of all material, sediment, and debris must be done in accordance with state and federal regulations. Culvert pipes will be inspected to ensure that surface water runoff is capable of leaving the structures.

Sediment Forebay

Design Intent: A Sediment Forebay is designed to pre-treat surface water runoff from the paved surfaces on the northeasterly portion of the property.

Description: A sediment forebay is designed to reduce the velocity of incoming surface water runoff allowing sediment to fall out of suspension initially pre-treating the runoff before it is sent to a treatment structure. This earthen basin will have vegetated side-slopes and will a check dam to further reduce and pretreat the runoff. At the point of incoming runoff, the basin will be protected by rip rap outlet protection construction and the outgoing edge will be protected with rip rap. The check dam will be constructed from one side of the basin to the other and cause runoff to either go through or over. The volume of the forebay is generally one-tenth the volume of the Water Quality Volume (WQV). Construction specifications are included in the plan set and New Hampshire Stormwater Manual, Volume 2, 4-4 Pretreatment Practices 1, Sediment Forebays.

Maintenance Considerations: The basin and slopes will be periodically mowed, at least twice per year ensuring that woody material does not get an opportunity to grow.

Sediment accumulated in the basin will be removed and properly disposed of when it reaches half the height of the check dam. Erosion or other damage to the basin will be repaired and revegetated. (See Outlet Protection below.)

Bioretention System (Rain Gardens)

Design Intent: Surface water runoff from the proposed building as well as from the pavement section enters the Rain Garden directly through deep sump catch basins. The rain garden is designed to treat the Water Quality Volume from these areas.

Description: Rain Gardens, or bioretention areas are located close to the source of runoff. They are intended to integrate with the site landscaping and become an aesthetically attractive opportunity to provide highly effective stormwater treatment. The rain gardens associated with this proposed development contribute toward recharge of surface water run-off into the ground. It is important that sediment be removed from run-off prior to discharge into the bioretention area to preserve the mulch and soil mix ratio. During construction it is important that the ground surface not be exposed to traffic or construction equipment to preserve the infiltration capabilities of the existing soil. Construction specifications are included in the plan set and New Hampshire Stormwater Manual, Volume 2, 4-3 Treatment Practices, 4c Bioretention System.

Maintenance Considerations:

Rain Gardens should be inspected at least twice annually and following any rainfall event exceeding 2.5 inches in a twenty-four hour period. Maintenance rehabilitation will be conducted as warranted by each inspection. Trash and debris will be removed at each inspection.

On an annual basis the infiltration capabilities need to be confirmed by evaluation the drawdown time. If the bioretention system does not drain within 72-hours following a rainfall event, a qualified professional will assess the condition of the rain garden to determine measures required to restore the infiltration function. This is normally the direct result of sediment accumulation which will be removed to restore the filter media ratio.

Also on an annual basis the vegetation should be inspected to ensure healthy condition. Invasive species need to be removed along with dead or diseased vegetation.

Detention Ponds

Description: Detention Ponds are constructed ponds with the purpose of detaining runoff but not for infiltration purposes. During construction it is important that the ground surface not be exposed to traffic or construction equipment to preserve the infiltration capabilities of the existing soil. Construction specifications are included in the plan set and New Hampshire Stormwater Manual, Volume 2, 4-3 Treatment Practices, 3B, In-ground Infiltration Basin and Section 4-6, Conveyance Practices, 2. Detention Basins.

Maintenance Considerations:

Infiltration Basins and Detention Ponds should be inspected at least twice annually and following any rainfall event exceeding 0.25 inches in a twenty-four-hour period. Maintenance rehabilitation will be conducted as warranted by each inspection. Trash and debris will be removed at each inspection.

On an annual basis the infiltration capabilities need to be confirmed by evaluation the drawdown time. If the infiltration system does not drain within 72-hours following a rainfall event, a qualified professional will assess the condition of the basin to determine measures required to restore the infiltration function. This is normally the direct result of sediment accumulation which will be removed to restore the filter media ratio.

Also, on an annual basis the vegetation should be inspected to ensure healthy condition. Invasive species need to be removed along with dead or diseased vegetation.

Outlet Protection & Level Spreaders

Description: Outlet Protection consists of a riprap apron or preformed scour hole that is designed to provide velocity reduction of the surface water run-off that is leaving a culvert. The design is dependent on the culvert size, soil conditions, velocity, and quantity of the run-off. There are to be no bend or curves at the intersection of the conduit and apron. Level spreaders are intended to provide a level lip where surface water runoff is allowed to continue downhill closer to sheet flow. The level lip is to be constructed as level as possible for the entire length.

Maintenance Considerations: The riprap outlet protection will be inspected annually for damage, which must be corrected immediately. Any sediment buildup will be removed and disposed of correctly. Sediment and subsequent vegetation will build up in the Level Spreader. This material will be cleaned out along with any gross solids and disposed of properly. (See invasive species below) Any rip rap that has been displaced from the original construction will be repaired, especially recreating the level lip.

CONTROL OF INVASIVE PLANTS

During maintenance activities, check for the presence of invasive plants and remove in a safe manner as described on the following pages. They should be controlled as described on the following pages.

Invasive plants are introduced, alien, or non-native plants, which have been moved by people from their native habitat to a new area. Some exotic plants are imported for human use such as landscaping, erosion control, or food crops. They also can arrive as "hitchhikers" among shipments of other plants, seeds, packing materials, or fresh produce. Some exotic plants become invasive and cause harm by:

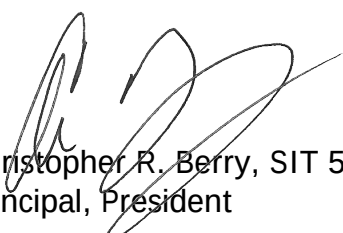
- becoming weedy and overgrown;
- killing established shade trees;
- obstructing pipes and drainage systems;
- forming dense beds in water;
- lowering water levels in lakes, streams, and wetlands;
- destroying natural communities;
- promoting erosion on stream banks and hillsides; and
- resisting control except by hazardous chemical.

Annual Report

Description: The owner is responsible to keep an **I & M Activity Log** that documents inspection, maintenance and repairs to the storm water management system, and a **Deicing Log** to track the amount and type of deicing material applied to the site. The original owner is responsible to ensure that any subsequent owner (s) have copies of the Stormwater System Operation and Maintenance Plan & Inspection and Maintenance Manual, copies of past logs and check lists. This includes any owner association for potential condominium conversion of the property. The Annual Report will be prepared and submitted to the City of Dover, Community Services, Engineering Department with copies of both logs and check lists no later than December 15th of each year and made available to NHDES upon request. Upon an ownership change, the Annual Report will include the Transfer of Ownership Responsibility Forms duplicated from the form found below.

The plans that accompanies this manual includes a plan sheet, "Inspection & Maintenance Plan". JSR, LLC will also maintain a complete set of the approved original design plans.

Respectfully
BERRY SURVEYING & ENGINEERING



Christopher R. Berry, SIT 567
Principal, President



Kenneth A. Berry PE, LLS,
CPSWQ, CPESC, CESSWI
Principal, VP – Technical Operations

STORMWATER SYSTEM OPERATION AND MAINTENANCE PLAN

Inspection & Maintenance Manual Checklist

Quality Way – Dover, NH
JSR, LLC
17 Fosters Drive
Dover, NH 03820

☒	Date	BMP / System	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
		Pavement Sweeping	Three Times Per Year	N/A	N/A
		Litter/Trash Removal	Routinely	Inspect dumpsters, outdoor waste receptacles area, and yard areas.	Parcel will be free of litter/trash.
		Deicing Agents	N/A	N/A	Use salt as the primary agent for roadway safety during winter.
		Invasive Species	Two times per year.	Inspect for Invasive Species	Remove and dispose invasive species.
		Closed Drainage System:			
		Drainage Pipes	1 time per 2 years	Check for sediment accumulation & clogging.	Less than 2" sediment depth

☒	Date	BMP / System	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
		Deep Sump Catch Basins	2 times per year	Check for sediment accumulation & clogging.	Sediment accumulated to a depth of 2 feet.
		Rain Gardens,	2 times per year	Check for sediment and debris accumulation buildup.	Remove sediment & debris when required. Remove Invasive Species
		Rain Garden	Annually	72-Hour drawdown time evaluation and vegetation evaluation. Underdrain flushing.	Remove dead & diseased vegetation along with all debris, take corrective measures of filtration media if required. Flush underdrain clean-outs with a hose.
		Riprap Outlet Protection	Annually	Check for sediment buildup and structure damage.	Remove excess sediment and repair damage.
		Winter Maintenance	Ongoing	Remove snow as directed.	Ongoing
		Post Winter Maintenance	Annually	Remove excess sand, gross solids, and repair vegetation and plantings	Parcel will be free of excess sand, litter/trash.
		Annual Report	1 time per year	Submit Annual Report to Dover Engineering Dept. and kept on file by the owner.	Report to be submitted on or before December 15th each year.

Inspection Check List: Page 3

The following drainage features will all require periodic inspections and maintenance based on this manual in addition to deep sump catch basins throughout:

Deep Sump Catch Basins

Drain Manholes

Conveyance Swales with Check Dams

Sediment Forebays

Rain Garden #101 w/ Under-drains, outlet structure, and emergency spillway.

Detention Pond #102

Level Spreaders

Inspection Notes:

Inspection & Maintenance Manual Log Form

[illegible]

[illegible]

STORMWATER SYSTEM OPERATION & MAINTENANCE PLAN CERTIFICATION

Owner	Responsibility
Name: JSR, LLC Robinson Whitten Address: 17 Fosters Drive Dover, NH 03820 Telephone: 978-979-2170 (cell) Email: rswhit10@gmail.com	The owner is responsible for the conduct of all construction activities, and ultimate compliance with all the provisions of the Stormwater System Operation & Maintenance Plan and the implementation of the Inspection and Maintenance Manual.

OWNER CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

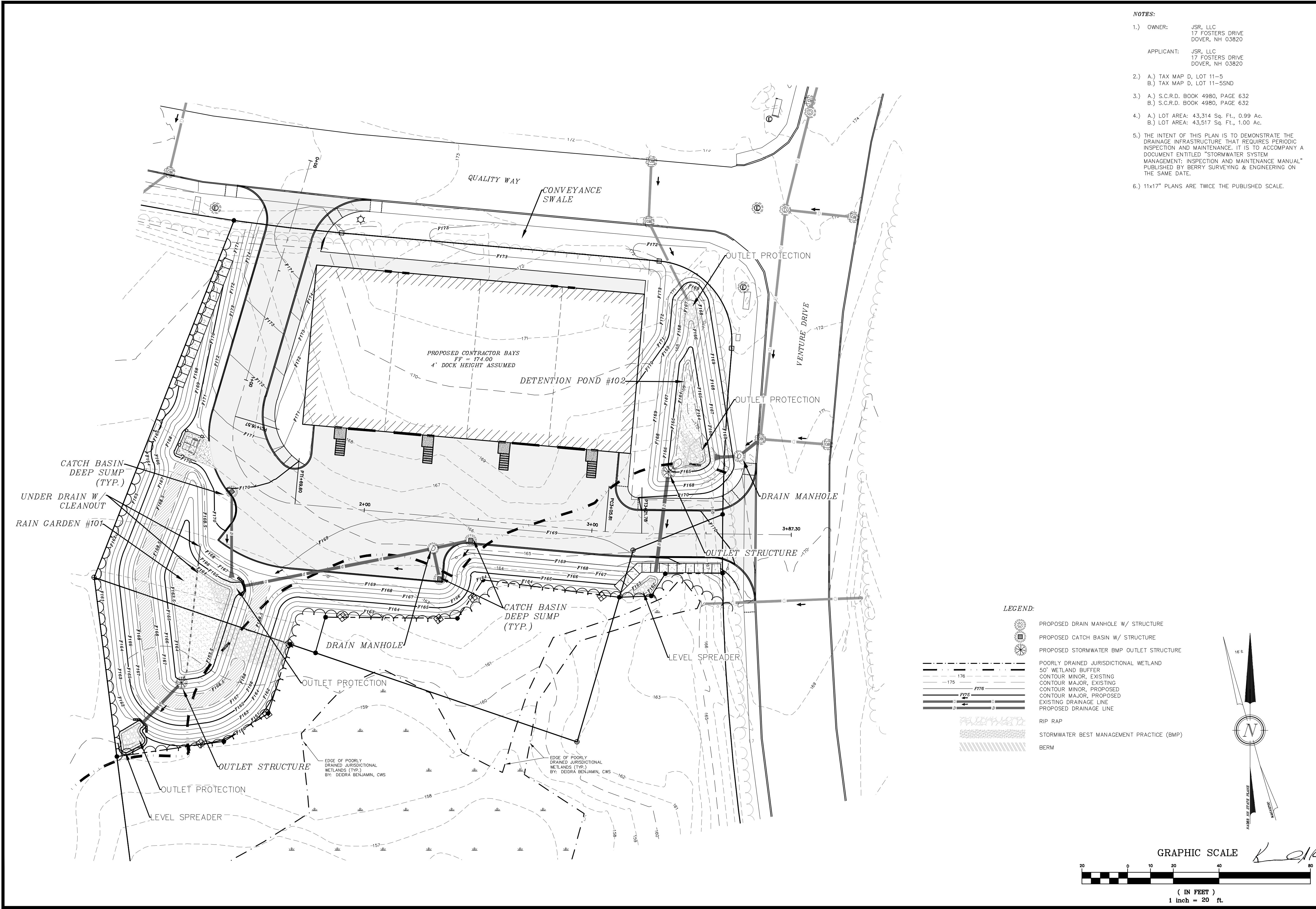
Signed: _____ Date: _____

Printed Name:

Representing:

Quality Way – Dover, NH
JSR, LLC
17 Fosters Drive
Dover, NH 03820

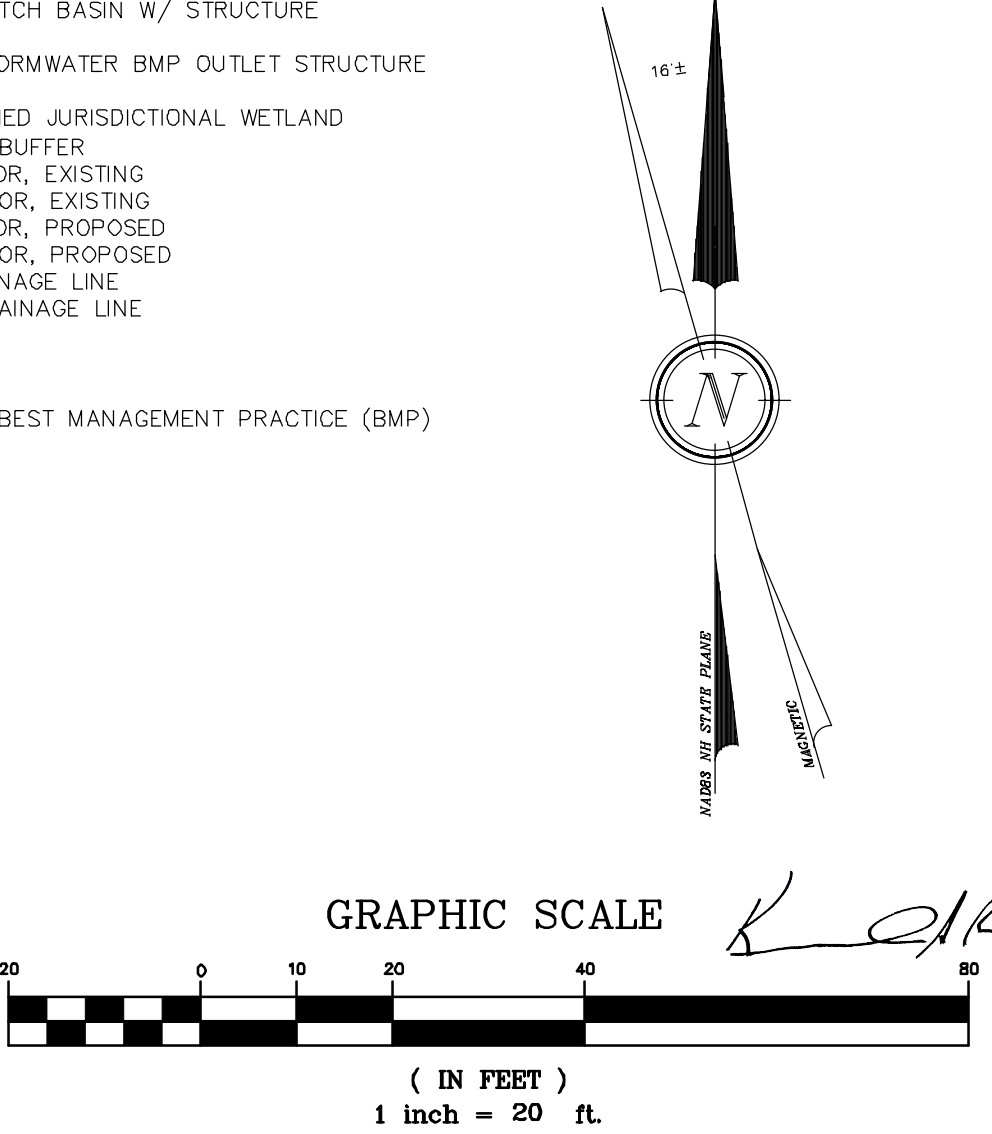
Robinson Whitten
978-979-2170 (cell)
rswhit10@gmail.com



- NOTES:
- 1.) OWNER: JSR, LLC
17 FOSTERS DRIVE
DOVER, NH 03820

APPLICANT: JSR, LLC
17 FOSTERS DRIVE
DOVER, NH 03820
 - 2.) A.) TAX MAP D, LOT 11-5
B.) TAX MAP D, LOT 11-5SND
 - 3.) A.) S.C.R.D. BOOK 4980, PAGE 632
B.) S.C.R.D. BOOK 4980, PAGE 632
 - 4.) A.) LOT AREA: 43,314 Sq. Ft., 0.99 Ac.
B.) LOT AREA: 43,517 Sq. Ft., 1.00 Ac.
 - 5.) THE INTENT OF THIS PLAN IS TO DEMONSTRATE THE DRAINAGE INFRASTRUCTURE THAT REQUIRES PERIODIC INSPECTION AND MAINTENANCE. IT IS TO ACCOMPANY A DOCUMENT ENTITLED "STORMWATER SYSTEM MANAGEMENT; INSPECTION AND MAINTENANCE MANUAL" PUBLISHED BY BERRY SURVEYING & ENGINEERING ON THE SAME DATE.
 - 6.) 11x17" PLANS ARE TWICE THE PUBLISHED SCALE.

- LEGEND:
- PROPOSED DRAIN MANHOLE W/ STRUCTURE
 - PROPOSED CATCH BASIN W/ STRUCTURE
 - PROPOSED STORMWATER BMP OUTLET STRUCTURE
 - POORLY DRAINED JURISDICTIONAL WETLAND
 - 50' WETLAND BUFFER
 - CONTOUR MINOR, EXISTING
 - CONTOUR MAJOR, EXISTING
 - CONTOUR MINOR, PROPOSED
 - CONTOUR MAJOR, PROPOSED
 - EXISTING DRAINAGE LINE
 - PROPOSED DRAINAGE LINE
 - RIP RAP
 - STORMWATER BEST MANAGEMENT PRACTICE (BMP)
 - BERM



DOVER FILE #P22-55

REVISION	DATE	REVISED PER DOVER TRC COMMENT	DESCRIPTION
#1	9-1-22		

INSPECTION & MAINTENANCE PLAN
LAND OF
JSR, LLC
VENTURE DRIVE & QUALITY WAY
DOVER, NH
TAX MAP D, LOTS 11-5 & 11-5SND

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863
SCALE : 1 IN. EQUALS 20 FT.
DATE : JUNE 1, 2022
FILE NO. : DB 2021 - 134

KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

Each Watershed Report Card covers a single 12-digit Hydrologic Unit Code (HUC12), on average a 34 square mile area. Each Watershed Report Card has three components;

1. REPORT CARD - A one page card that summarizes the overall use support for Aquatic Life Integrity, Primary Contact (i.e. Swimming), and Secondary Contact (i.e. Boating) Designated Uses on every Assessment Unit ID (AUID) within the HUC12.
2. HUC 12 MAP - A map of the watershed with abbreviated labels for each AUID within the HUC12.
3. ASSESSMENT DETAILS - Anywhere from one to forty pages with the detailed assessment information for each and every AUID in the Report Card and Map.

How are the Surface Water Quality Assessment determinations made?

All readily available data with reliable Quality Assurance/Quality Control is used in the biennial surface water quality assessments. For a full understanding of how the Surface Water Quality Standards (Env-Wq 1700) are translated into surface water quality assessments we urge the reader to review the 2020/2022 [Consolidated Assessment and Listing Methodology](#) (CALM).

Where can I find more advanced mapping resources?

GIS files are available by assessment cycle at the NHDES [FTP site](#).

I'd like to see the more raw water quality data?

The [web mapping tool](#) allows you to download the data used in the assessment of the primary contact and aquatic life designated uses by clicking on the “[Data Access Waterbody Data \(Aquatic Life and Swimming Uses\)](#)” link for any assessment unit.

How are assessments coded in the report card?

Assessment outcomes are displayed on a color scale as well as an alpha numeric scale that provides additional distinctions for the designated use and parameter level assessments as outlined in the table below.

		Severe	Poor	Likely Bad	No Data	Likely Good	Marginal	Good
		Not Supporting, Severe	Not Supporting, Marginal	Insufficient Information – Potentially Not Supporting	No Data	Insufficient Information – Potentially Full Supporting	Full Support, Marginal	Full Support, Good
CATEGORY	Description							
Category 2	Meets standards						2-M or 2-OBS	2-G
Category 3	Insufficient Information			3-PNS	3-ND	3-PAS		
Category 4	Does not Meet Standards;							
4A	TMDL* Completed	4A-P	4A-M or 4A-T					
4B	Other enforceable measure will correct the issue.	4B-P	4B-M or 4B-T					
4C	Non-pollutant (i.e. exotic weeds)	4C-P	4C-M					
Category 5	TMDL* Needed	5-P	5-M or 5-T					

* [TMDL](#) stands for Total Maximum Daily Load studies

Watershed 305(b) Assessment Summary Report:

Assessment Cycle: 2020/2022

HUC 12: 010600030608

HUC 12 Name: Lower Cocheco River

(Locator map on next page only applies to this HUC12)

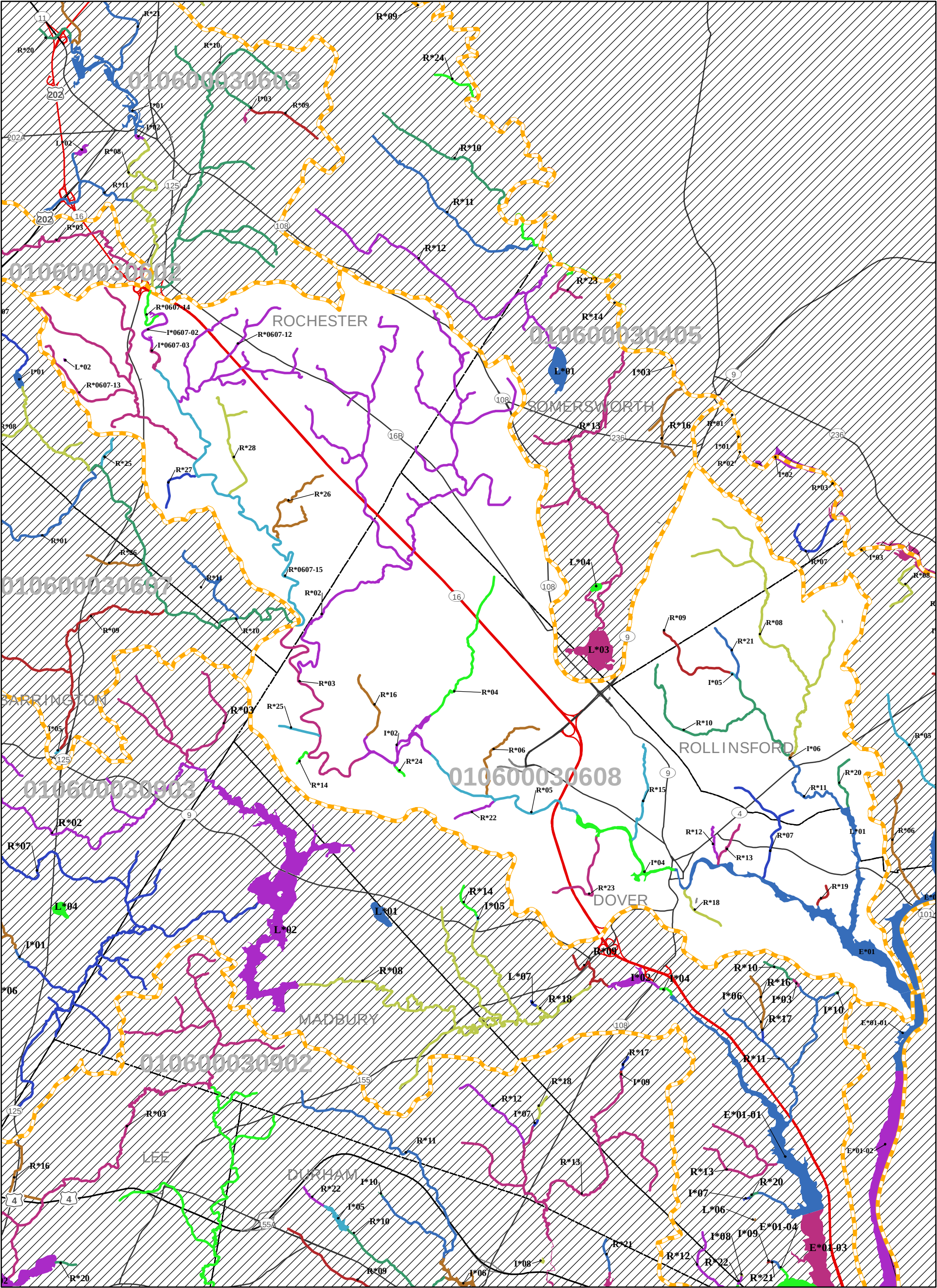
Good	Meets water quality standards/thresholds by a relatively large margin.
Marginal	Meets water quality standards/thresholds but only marginally.
Likely Good	Limited data available, however, the data that is available suggests that the parameter is Potentially Attaining Standards (PAS).
No Current Data	Insufficient information to make an assessment decision.
Likely Bad	Limited data available, however, the data that is available suggests that the parameter is Potentially Not Supporting (PNS) water quality standards.
Poor	Not meeting water quality standards/thresholds. The impairment is marginal.
Severe	Not meeting water quality standards/thresholds. The impairment is more severe and causes poor water quality.



Assessment Unit ID	Map Label	Assessment Unit Name	Aquatic Life	Fish Consump.	Swimming	Boating
NHEST600030608-01	E*01	Cocheco River		5-M	5-P	4A-M
NHIMP600030607-02	I*0607-02	Cocheco River - Gonic Dam Pond	5-M	4A-M	4A-P	2-G
NHIMP600030607-03	I*0607-03	Cocheco River - Mill Pond Dam	3-PNS	4A-M	3-ND	3-ND
NHIMP600030608-02	I*02	Cocheco River - Watson Waldron Dam	5-M	4A-M	3-PAS	3-ND
NHIMP600030608-04	I*04	Cocheco River - Central Ave Dam	5-M	4A-M	3-PAS	3-ND
NHIMP600030608-05	I*05	Conservation Pond Dam	3-ND	4A-M	3-ND	3-ND
NHIMP600030608-06	I*06	Fresh Creek - Farm Pond	3-ND	4A-M	3-ND	3-ND
NHLAK600030608-01	L*01	Fresh Creek Pond	5-M	4A-M	4A-P	3-ND
NHLAK600030608-02	L*02	Unnamed Pond	3-ND	4A-M	3-PAS	3-PAS
NHRIV600030607-12	R*0607-12	Unnamed Tributary - To Cocheco River	3-ND	4A-M	3-ND	3-ND
NHRIV600030607-13	R*0607-13	Unnamed Brook - To Cocheco River	3-ND	4A-M	3-ND	3-ND

NHRIV600030607-14	R*0607-14	Cocheco River	3-ND	4A-M	3-ND	3-ND
NHRIV600030607-15	R*0607-15	Cocheco River	5-M	4A-M	2-G	2-G
NHRIV600030608-02	R*02	Blackwater Brook-Clark Brook	3-ND	4A-M	4A-P	3-ND
NHRIV600030608-03	R*03	Cocheco River - Unnamed Brook	5-M	4A-M	4A-M	3-ND
NHRIV600030608-04	R*04	Reyners Brook	3-ND	4A-M	4A-P	3-ND
NHRIV600030608-05	R*05	Cocheco River	5-M	4A-M	4A-M	3-ND
NHRIV600030608-06	R*06	Indian Brook	5-P	4A-M	4A-P	3-ND
NHRIV600030608-07	R*07	Emerson Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-08	R*08	Fresh Creek - Twombly Brook	5-P	4A-M	4A-M	3-ND
NHRIV600030608-09	R*09	Unnamed Brook - Rollins Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-10	R*10	Rollins Brook	5-P	4A-M	4A-P	3-ND
NHRIV600030608-11	R*11	Fresh Creek	3-PNS	4A-M	4A-P	4A-M
NHRIV600030608-12	R*12	Unnamed Tributary - To Cocheco River (Dover (Downstream Of Portland Ave))	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-13	R*13	Unnamed Tributary - To Cocheco River - (Dover (Upstream Of Atlantic Ave))	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-14	R*14	Unnamed Trib. To Cocheco River, Dover (From Landfill)	5-M	4A-M	3-ND	3-ND
NHRIV600030608-15	R*15	Berry Brook	5-M	4A-M	4A-P	2-G
NHRIV600030608-16	R*16	Jackson Brook	3-ND	4A-M	4A-P	3-ND
NHRIV600030608-18	R*18	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-19	R*19	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-20	R*20	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-21	R*21	Unnamed Brook - To Rollins Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-22	R*22	Horn Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-23	R*23	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-24	R*24	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-25	R*25	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-26	R*26	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-27	R*27	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV600030608-28	R*28	Unnamed Brook	3-ND	4A-M	3-ND	3-ND

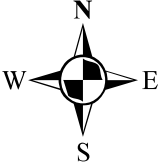
AUIDs For HUC12: 010600030608 - Lower Cocheco River



HUC12 Boundaries
 Town Boundaries

Major Roads
 Interstate Highway
 US Highway
 State Highway

Assessment Unit Coloring
AUs Ending with:
 0 =
 1 =
 2 =
 3 =
 4 =
 5 =
 6 =
 7 =
 8 =
 9 =



Abbrev. Label

L*03

HUC 12

010 700060201

AUID = NH

LAK700060201-

03

Assessment Unit IDs are derived from the HUC12 they reside within. The labels have been shortened on this map for presentation purposes. Example: the Label "L*03" in HUC12 = 010700060201 represents AUID = "NHLAK700060201-03" In rare cases where an AUID extends beyond the boundary of a single HUC12, additional portions of the end of the HUC 12 number have also been replaced.

0 0.6 1.2 1.8 2.4 Miles

Scale:1:59,820

Assessment Unit ID: NHRIV600030608-04
Assessment Unit Name: Reyners Brook
Town(s) Primary Town is Listed First: Dover

Size: 1.77 MILES
Assessment Unit Category: 4A-P
Beach: N

2020/2022, 305(b)/303(d) - All
Reviewed Parameters by Assessment Unit

Designated Use Description	Desig. Use Category	Parameter Name	Parameter Threatened (Y/N)	Last Sample	Last Exceed	Parameter Category	TMDL Priority
Aquatic Life Integrity	3-ND	Benthic-Macroinvertebrate Bioassessments (Streams)	N			3-ND	
		CHLORIDE	N	2008	N/A	3-ND	
		Dissolved oxygen saturation	N			3-ND	
		Fishes Bioassessments (Streams)	N			3-ND	
		Oxygen, Dissolved	N			3-ND	
		pH	N			3-ND	
Fish Consumption	4A-M	MERCURY - FISH CONSUMPTION ADVISORY	N			4A-M	
Potential Drinking Water Supply	2-G	ESCHERICHIA COLI	N	2007	2007	3-ND	
Primary Contact Recreation	4A-P	ESCHERICHIA COLI	N	2007	2007	4A-P	
Secondary Contact Recreation	3-ND	ESCHERICHIA COLI	N	2007	N/A	3-ND	
Wildlife	3-ND						

Good Meets water quality standards/thresholds by a relatively large margin.	Marginal Meets water quality standards/thresholds but only marginally.	Likely Good Limited data available. The data that is available suggests that the parameter is Potentially Attaining Standards (PAS)	No Current Data Insufficient information to make an assessment decision.	Likely Bad Limited data available The data that is available suggests that the parameter is Potentially Not Supporting (PNS) water quality standards.	Poor Not meeting water quality standards/thresholds. The impairment is marginal.	Severe Not meeting water quality standards/thresholds The impairment is more severe and causes poor water quality.
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2020/2022	NHRIV600030605-14	STONEHOUSE BROOK - HALL BROOK	BARRINGTON, NORTHWOOD, STRAFFORD	7.020	MILES								ORW
2020/2022	NHRIV600030605-15	NIPPO BROOK	BARRINGTON, STRAFFORD	12.125	MILES								ORW
2020/2022	NHRIV600030605-16	ISINGLASS RIVER	STRAFFORD, BARRINGTON	0.778	MILES	Primary Contact Recreation	Escherichia coli	4A-M	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39273	Review OneStop GIS	ORW
2020/2022	NHRIV600030605-17	UNNAMED BROOK	STRAFFORD	1.609	MILES								ORW
2020/2022	NHRIV600030605-18	UNNAMED BROOK	STRAFFORD	0.865	MILES								ORW
2020/2022	NHRIV600030605-19	UNNAMED BROOK	STRAFFORD	0.359	MILES								ORW
2020/2022	NHRIV600030605-20	UNNAMED BROOK	STRAFFORD	0.460	MILES								ORW
2020/2022	NHRIV600030606-03	BERRYS RIVER	STRAFFORD, FARMINGTON, ROCHESTER	5.200	MILES	Aquatic Life Integrity	pH	5-P					Non-ORW
2020/2022	NHRIV600030606-04	BERRYS RIVER - UNNAMED BROOK	STRAFFORD, BARRINGTON	5.705	MILES	Aquatic Life Integrity	Low flow alterations	4C-P					Non-ORW
2020/2022	NHRIV600030606-04	BERRYS RIVER - UNNAMED BROOK	STRAFFORD, BARRINGTON	5.705	MILES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHRIV600030606-06	BERRY RIVER - FROM LONG POND TO ISINGLASS RIVER	BARRINGTON	0.107	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M					Non-ORW
2020/2022	NHRIV600030606-06	BERRY RIVER - FROM LONG POND TO ISINGLASS RIVER	BARRINGTON	0.107	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-M					Non-ORW
2020/2022	NHRIV600030606-06	BERRY RIVER - FROM LONG POND TO ISINGLASS RIVER	BARRINGTON	0.107	MILES	Aquatic Life Integrity	pH	5-P					Non-ORW
2020/2022	NHRIV600030606-07	BERRYS RIVER	BARRINGTON	1.260	MILES	Aquatic Life Integrity	pH	5-P					Non-ORW
2020/2022	NHRIV600030607-01	ISINGLASS RIVER	BARRINGTON, ROCHESTER	7.336	MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessments (Streams)	5-M					Non-ORW
2020/2022	NHRIV600030607-01	ISINGLASS RIVER	BARRINGTON, ROCHESTER	7.336	MILES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHRIV600030607-03	AYERS POND BROOK	BARRINGTON	0.128	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-M					Non-ORW
2020/2022	NHRIV600030607-03	AYERS POND BROOK	BARRINGTON	0.128	MILES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHRIV600030607-04	AYERS POND BROOK	BARRINGTON	1.691	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-M					Non-ORW
2020/2022	NHRIV600030607-04	AYERS POND BROOK	BARRINGTON	1.691	MILES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHRIV600030607-08	HANSON BROOK	ROCHESTER, BARRINGTON	2.411	MILES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHRIV600030607-09	GREEN HILL BROOK	BARRINGTON	3.224	MILES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHRIV600030607-10	ISINGLASS RIVER	ROCHESTER, BARRINGTON	3.796	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M					Non-ORW
2020/2022	NHRIV600030607-10	ISINGLASS RIVER	ROCHESTER, BARRINGTON	3.796	MILES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHRIV600030607-10	ISINGLASS RIVER	ROCHESTER, BARRINGTON	3.796	MILES	Primary Contact Recreation	Escherichia coli	4A-M	8/29/2011	58 NH BACTERIA IMPAIRED WATERS	40663		Non-ORW
2020/2022	NHRIV600030607-15	COCHECO RIVER	ROCHESTER	4.414	MILES	Aquatic Life Integrity	Iron	5-M					Non-ORW
2020/2022	NHRIV600030607-15	COCHECO RIVER	ROCHESTER	4.414	MILES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHRIV600030607-16	SCRUTON POND OUTLET BROOK	BARRINGTON	0.071	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M					Non-ORW
2020/2022	NHRIV600030607-16	SCRUTON POND OUTLET BROOK	BARRINGTON	0.071	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P					Non-ORW
2020/2022	NHRIV600030607-16	SCRUTON POND OUTLET BROOK	BARRINGTON	0.071	MILES	Aquatic Life Integrity	pH	5-P					Non-ORW
2020/2022	NHRIV600030608-02	BLACKWATER BROOK-CLARK BROOK	ROCHESTER, DOVER, SOMERSWORTH	15.228	MILES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272		Non-ORW
2020/2022	NHRIV600030608-03	COCHECO RIVER - UNNAMED BROOK	DOVER, ROCHESTER	3.267	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M					Non-ORW
2020/2022	NHRIV600030608-03	COCHECO RIVER - UNNAMED BROOK	DOVER, ROCHESTER	3.267	MILES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHRIV600030608-03	COCHECO RIVER - UNNAMED BROOK	DOVER, ROCHESTER	3.267	MILES	Primary Contact Recreation	Escherichia coli	4A-M	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272		Non-ORW
2020/2022	NHRIV600030608-04	REYNERS BROOK	DOVER	1.770	MILES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272		Non-ORW
2020/2022	NHRIV600030608-05	COCHECO RIVER	DOVER	2.060	MILES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHRIV600030608-05	COCHECO RIVER	DOVER	2.060	MILES	Primary Contact Recreation	Escherichia coli	4A-M	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272		Non-ORW
2020/2022	NHRIV600030608-06	INDIAN BROOK	DOVER	1.106	MILES	Aquatic Life Integrity	Chloride	5-P					Non-ORW
2020/2022	NHRIV600030608-06	INDIAN BROOK	DOVER	1.106	MILES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272		Non-ORW
2020/2022	NHRIV600030608-08	FRESH CREEK - TWOMBLY BROOK	ROLLINSFORD, SOMERSWORTH	4.983	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M					Non-ORW
2020/2022	NHRIV600030608-08	FRESH CREEK - TWOMBLY BROOK	ROLLINSFORD, SOMERSWORTH	4.983	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P					Non-ORW
2020/2022	NHRIV600030608-08	FRESH CREEK - TWOMBLY BROOK	ROLLINSFORD, SOMERSWORTH	4.983	MILES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHRIV600030608-08	FRESH CREEK - TWOMBLY BROOK	ROLLINSFORD, SOMERSWORTH	4.983	MILES	Primary Contact Recreation	Escherichia coli	4A-M	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272		Non-ORW
2020/2022	NHRIV600030608-10	ROLLINS BROOK	ROLLINSFORD	2.856	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M					Non-ORW
2020/2022	NHRIV600030608-10	ROLLINS BROOK	ROLLINSFORD	2.856	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P					Non-ORW
2020/2022	NHRIV600030608-10	ROLLINS BROOK	ROLLINSFORD	2.856	MILES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHRIV600030608-10	ROLLINS BROOK	ROLLINSFORD	2.856	MILES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272		Non-ORW
2020/2022	NHRIV600030608-11	FRESH CREEK	ROLLINSFORD, DOVER	1.126	MILES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272		Non-ORW
2020/2022	NHRIV600030608-14	UNNAMED TRIB. TO COCHECO RIVER, DOVER (FROM LANDFILL)	DOVER	0.169	MILES	Aquatic Life Integrity	Iron	5-M					Non-ORW
2020/2022	NHRIV600030608-15	BERRY BROOK	DOVER	1.106	MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessments (Streams)	5-M					Non-ORW
2020/2022	NHRIV600030608-15	BERRY BROOK	DOVER	1.106	MILES	Aquatic Life Integrity	Chloride	5-M					Non-ORW
2020/2022	NHRIV600030608-15	BERRY BROOK	DOVER	1.106	MILES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272		Non-ORW
2020/2022	NHRIV600030608-16	JACKSON BROOK	DOVER	0.724	MILES	Primary Contact Recreation	Escherichia coli	4A-P	9/21/2010	NEW HAMPSHIRE STATEWIDE BACTERIA	39272		Non-ORW
2020/2022	NHRIV600030701-01	LAMPREY RIVER - AND HEADWATER TRIBUTARIES	NORTHWOOD, DEERFIELD	13.652	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-P					Non-ORW
2020/2022	NHRIV600030701-01	LAMPREY RIVER - AND HEADWATER TRIBUTARIES	NORTHWOOD, DEERFIELD	13.652	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P					Non-ORW
2020/2022	NHRIV600030701-01	LAMPREY RIVER - AND HEADWATER TRIBUTARIES	NORTHWOOD, DEERFIELD	13.652	MILES	Aquatic Life Integrity	pH	5-P					Non-ORW
2020/2022	NHRIV600030701-08	HARTFORD BROOK	DEERFIELD	10.734	MILES	Aquatic Life Integrity	Aluminum	5-M					Non-ORW
2020/2022	NHRIV600030701-08	HARTFORD BROOK	DEERFIELD	10.734	MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessments (Streams)	5-P					Non-ORW
2020/2022	NHRIV600030701-08	HARTFORD BROOK	DEERFIELD	10.734	MILES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHRIV600030701-09	LAMPREY RIVER	DEERFIELD	7.767	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-P					Non-ORW
2020/2022	NHRIV600030701-09	LAMPREY RIVER	DEERFIELD	7.767	MILES	Aquatic Life Integrity	Oxygen, Dissolved	5-P					Non-ORW
2020/2022	NHRIV600030701-09	LAMPREY RIVER	DEERFIELD	7.767	MILES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHRIV600030701-13	LAMPREY RIVER	DEERFIELD	0.041	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M					Non-ORW
2020/2022	NHRIV600030701-13	LAMPREY RIVER	DEERFIELD	0.041	MILES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHRIV600030701-14	LAMPREY RIVER	RAYMOND, DEERFIELD	6.776	MILES								Review OneStop GIS
2020/2022	NHRIV600030702-01	TR NORTH BRANCH RIVER - UNNAMED BROOKS	CANDIA	8.629	MILES								ORW
2020/2022	NHRIV600030702-02	UNNAMED BROOKS - TO NORTH BRANCH RIVER	CANDIA	3.680	MILES								ORW
2020/2022	NHRIV600030702-03	UNNAMED BROOK - FROM SPRUCE POND TO BEAVER POND	DEERFIELD	0.131	MILES								ORW
2020/2022	NHRIV600030702-05	NORTH BRANCH RIVER - UNNAMED BROOK	DEERFIELD, CANDIA	3.563	MILES								ORW
2020/2022	NHRIV600030702-06	NORTH BRANCH RIVER - UNNAMED BROOKS	DEERFIELD, CANDIA	5.185	MILES								ORW
2020/2022	NHRIV600030702-07	NORTH BRANCH RIVER - UNNAMED BROOKS	CANDIA, DEERFIELD	10.013	MILES								ORW
2020/2022	NHRIV600030702-08	UNNAMED BROOK - TO NORTH BRANCH RIVER	CANDIA, RAYMOND	1.171	MILES								ORW
2020/2022	NHRIV600030702-09	NORTH BRANCH RIVER	RAYMOND, CANDIA	0.974	MILES								Review OneStop GIS
2020/2022	NHRIV600030702-10	UNNAMED BROOK	CANDIA	1.071	MILES								ORW
2020/2022	NHRIV600030702-11	UNNAMED BROOK	CANDIA	0.839	MILES								ORW
2020/2022	NHRIV600030702-12	UNNAMED BROOK	DEERFIELD	0.590	MILES								ORW
2020/2022	NHRIV600030703-01	UNNAMED BROOK - TO ONWAY LAKE	RAYMOND, CANDIA	5.450	MILES	Aquatic Life Integrity	Benthic-Macroinvertebrate Bioassessments (Streams)	5-P					Non-ORW
2020/2022	NHRIV600030703-01	UNNAMED BROOK - TO ONWAY LAKE	RAYMOND, CANDIA	5.450	MILES	Aquatic Life Integrity	Habitat Assessment (Streams)	4C-M					Non-ORW
2020/2022	NHRIV600030703-01	UNNAMED BROOK - TO ONWAY LAKE	RAYMOND, CANDIA	5.450	MILES	Aquatic Life Integrity	pH	5-M					Non-ORW
2020/2022	NHRIV600030703-04	DUDLEY BROOK - UNNAMED BROOK	RAYMOND, DEERFIELD, NOTTINGHAM	4.340	MILES	Aquatic Life Integrity	Dissolved oxygen saturation	5-M					Non-ORW
2020/2022	NHRIV600030703-04	DUDLEY BROOK - UNNAMED BROOK	RAYMOND, DEERFIELD, NOTTINGHAM	4.340	MILES	Aquatic Life Integrity	Lead	5-M					Non-ORW

SWPPP Cut Sheet:

Filtrex[®] Sediment Control

Sediment & Perimeter Control Technology

PURPOSE & DESCRIPTION

Filtrex[®] Sediment control is a three-dimensional tubular sediment control and storm water runoff filtration device typically used for **perimeter control** of sediment and other soluble pollutants (such as phosphorus and petroleum hydrocarbons), on and around construction activities.

APPLICATION

Filtrex[®] Sediment control is to be installed down slope of any disturbed area requiring erosion and sediment control and filtration of soluble pollutants from runoff. Sediment control is effective when installed perpendicular to sheet or low concentrated flow. Acceptable applications include:

- Site perimeters
- Above and below disturbed areas subject to sheet runoff, interrill and rill erosion
- Above and below exposed and erodable slopes
- Around area drains or inlets located in a 'sump'
- On compacted soils where trenching of silt fence is difficult or impossible
- Around sensitive trees where trenching of silt fence is not beneficial for tree survival or may unnecessarily disturb established vegetation.
- On frozen ground where trenching of silt fence is impossible.
- On paved surfaces where trenching of silt fence is impossible.

INSTALLATION

1. Sediment control used for perimeter control of sediment and soluble pollutants in storm runoff shall meet Filtrex[®] Soxx[™] Material Specifications and use Certified Filtrex[®] FilterMedia[™].
2. Contractor is required to be Filtrex[®] Certified[™], or use pre-filled Filtrex[®] Sediment control

products manufactured by a Filtrex[®] Certified Manufacturer[™] as determined by Filtrex[®] International, LLC (440-926-2607 or visit www.filtrex.com). Certification shall be considered current if appropriate identification is shown during time of bid or at time of application. Look for the Filtrex[®] Certified[™] Seal.

3. Sediment control will be placed at locations indicated on plans as directed by the Engineer.
4. Sediment control should be installed parallel to the base of the slope or other disturbed area. In extreme conditions (i.e., 2:1 slopes), a second Sediment control shall be constructed at the top of the slope.
5. Effective Soxx[™] height in the field should be as follows: 8" Diameter Sediment control = 6.5" high, 12" Diameter Sediment control = 9.5" high, 18" Diameter SiltSoxx[™] = 14.5" high, 24" Diameter Sediment control = 19" high.
6. Stakes shall be installed through the middle of the Sediment control on 10 ft (3m) centers, using 2 in (50mm) by 2 in (50mm) by 3 ft (1m) hard wood stakes. In the event staking is not possible, i.e., when Sediment control is used on pavement, heavy concrete blocks shall be used behind the Sediment control to help stabilize during rainfall/runoff events.
7. Staking depth for sand and silt loam soils shall be 12 in (300mm), and 8 in (200mm) for clay soils.
8. Loose compost may be backfilled along the upslope side of the Sediment control, filling the seam between the soil surface and the device, improving filtration and sediment retention.
9. If the Sediment control is to be left as a permanent filter or part of the natural landscape, it may be seeded at time of installation for



establishment of permanent vegetation. The Engineer will specify seed requirements.

10. Filtrex[®] Sediment control is not to be used in perennial, ephemeral, or intermittent streams.

See design drawing schematic for correct Filtrex[®] Sediment control installation (Figure 1.1).

INSPECTION AND MAINTENANCE

Routine inspection should be conducted within 24 hrs of a runoff event or as designated by the regulating authority. Sediment control should be regularly inspected to make sure they maintain their shape and are producing adequate hydraulic flow-through. If ponding becomes excessive, additional Sediment control may be required to reduce effective slope length or sediment removal may be necessary. Sediment control shall be inspected until area above has been permanently stabilized and construction activity has ceased

1. The Contractor shall maintain the Sediment control in a functional condition at all times and it shall be routinely inspected.
2. If the Sediment control has been damaged, it shall be repaired, or replaced if beyond repair.

3. The Contractor shall remove sediment at the base of the upslope side of the Sediment control when accumulation has reached 1/2 of the effective height of the Sediment control, or as directed by the Engineer. Alternatively, a new Sediment control can be placed on top of and slightly behind the original one creating more sediment storage capacity without soil disturbance.
4. Sediment control shall be maintained until disturbed area above the device has been permanently stabilized and construction activity has ceased.
5. The FilterMedia[™] will be dispersed on site once disturbed area has been permanently stabilized, construction activity has ceased, or as determined by the Engineer.
6. For long-term sediment and pollution control applications, Sediment control can be seeded at the time of installation to create a vegetative filtering system for prolonged and increased filtration of sediment and soluble pollutants (contained vegetative filter strip). The appropriate seed mix shall be determined by the Engineer.

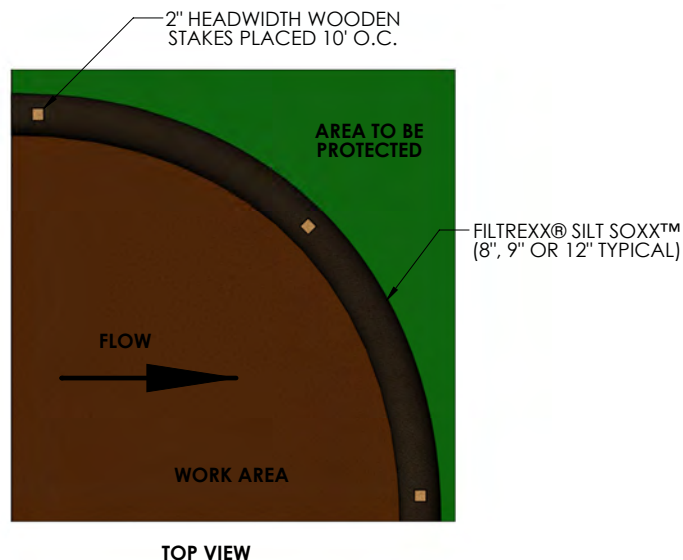
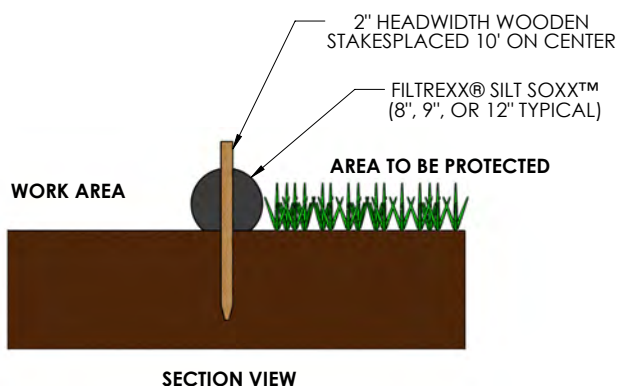
Slope Percent	Maximum Slope Length Above Sediment Control in Feet (meters)*				
	8 in (200 mm) Sediment control	12 in (300 mm) Sediment control	18 in (450 mm) Sediment control	24 in (600mm) Sediment control	32 in (800mm) Sediment control
	6.5 in (160 mm)**	9.5 in (240 mm) **	14.5 in (360 mm) **	19 in (480 mm) **	26 in (650 mm) **
2 (or less)	600 (180)	750 (225)	1000 (300)	1300 (400)	1650 (500)
5	400 (120)	500 (150)	550 (165)	650 (200)	750 (225)
10	200 (60)	250 (75)	300 (90)	400 (120)	500 (150)
15	140 (40)	170 (50)	200 (60)	325 (100)	450 (140)
20	100 (30)	125 (38)	140 (42)	260 (80)	400 (120)
25	80 (24)	100 (30)	110 (33)	200 (60)	275 (85)
30	60 (18)	75 (23)	90 (27)	130 (40)	200 (60)
35	60 (18)	75 (23)	80 (24)	115 (35)	150 (45)
40	60 (18)	75 (23)	80 (24)	100 (30)	125 (38)
45	40 (12)	50 (15)	60 (18)	80 (24)	100 (30)
50	40 (12)	50 (15)	55 (17)	65 (20)	75 (23)

* Based on a failure point of 36 in (0.9 m) super silt fence (wire reinforced) at 1000 ft (303 m) of slope, watershed width equivalent to receiving length of sediment control device, 1 in/ 24 hr (25 mm/24 hr) rain event.

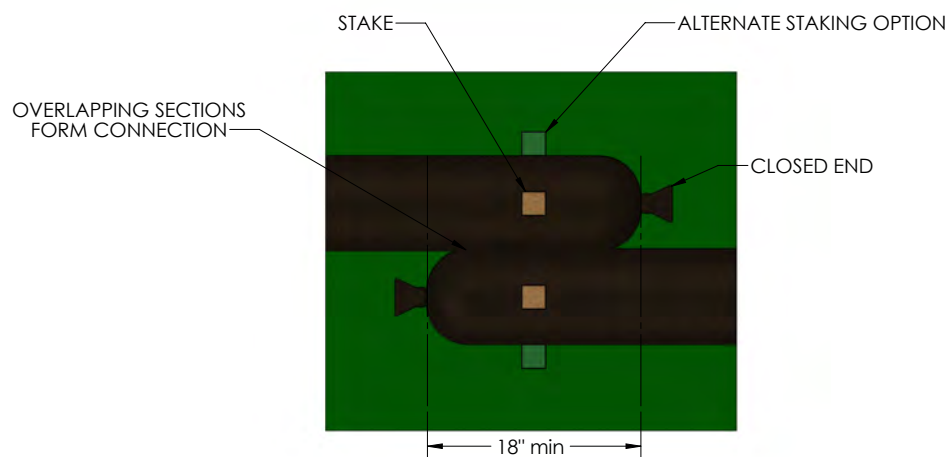
** Effective height of Sediment control after installation and with constant head from runoff as determined by Ohio State University.



FILTREXX® SILT SOXX™



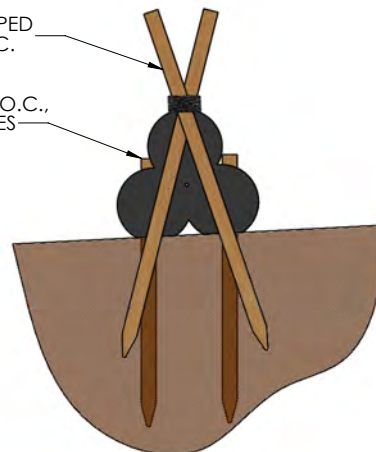
COMPOST SOCK CONNECTION/ATTACHMENT DETAIL



FILTREXX® PYRAMID STAKING DETAIL

(2) 2"x2"x48+" HARDWOOD STAKES, WRAPPED TOGETHER WITH 16 GAUGE WIRE, 10' O.C.

2"x2"x36" HARDWOOD STAKE, 10' O.C., STARTING 5' FROM ANGLED STAKES



NOTES:
1. ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS.
2. SILT SOXX™ FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

SWPPP Cut Sheet:

Filtrex[®] Inlet Protection *Sediment & Perimeter Control Technology*

PURPOSE & DESCRIPTION

Filtrex[®] Inlet protection is a three-dimensional tubular sediment control and storm water runoff filtration device typically used for storm drain **inlet protection** of sediment and soluble pollutants (such as phosphorus and petroleum hydrocarbons) on and around construction activities.

APPLICATION

Drain inlets are located in areas that receive runoff from surrounding lands, often exposed and disturbed soils, and are located at a low point, or in a sump. Inlet protection used around drain inlets (or *Drain Inlet protection*) should completely enclose the circumference of the drain and where possible should not be placed on a grade or slope. Inlet protection used around drain inlets should never be the only form of site sediment control and should be accompanied by erosion control/slope stabilization practices, such as Slope protection or rolled erosion control blankets (RECB). Inlet protection should never be placed where they divert runoff flow from the drain inlet, or on top of the inlet, which can cause flooding. Under high runoff and sediment loading conditions placement of 1-2 in (25-50 mm) diameter rock (AASHTO #2) may be placed around the outer circumference of the Inlet protection up to ½ the height of the Inlet protection. This will slow runoff velocity as it contacts the Inlet protection and will reduce sediment build-up and clogging of the Inlet protection.

Curb inlets are generally located on paved surfaces and are designed to rapidly drain storm runoff from roadways to prevent flooding that poses a hazard to vehicular traffic. Inlet protection devices should be placed in a manner which intercepts runoff prior to entering the inlet, but does not block or divert runoff from the inlet. To prevent diversion of runoff, Inlet protection used around curbs (or *Curb*

Inlet protection) should be used in low points, or sumps, and minor slopes or grades. Inlet protection should never be placed in or on the curb inlet drain, or placed in a manner than obstructs vehicular traffic. Inlet protection height should be at least 1 in (25 mm) lower than top of curb inlet to allow for overflow into the drain and not over the curb. Maximum sediment removal efficiency occurs when minor ponding exists behind Inlet protection but should never lead to flooding.

Curb sediment containment systems are used to reduce the sediment and pollutant load flowing to a curb inlet. They are generally placed on paved surfaces perpendicular to runoff flow and should be lower than the height of the curb. Curb sediment containment systems should never cause flooding or placed where they are a hazard to vehicular traffic. Inlet protection used for curb sediment containment (or *Curb Sediment Containment Inlet protection*) can be placed on a grade but should never be placed directly upslope from curb inlet where it may inadvertently divert runoff from entering curb inlet.

INSTALLATION

1. Inlet protection used for inlet protection to reduce sediment and soluble pollutants entering storm drains shall meet Filtrex[®] FilterSoxx[™] Material Specifications and use Certified Filtrex[®] FilterMedia[™].
2. Contractor is required to be a Filtrex[®] Certified[™] Installer as determined by Filtrex[®] International, LLC (440-926-2607 or visit web site at [Filtrex.com](http://www.filtrex.com)). Certification shall be considered current if appropriate identification is shown during time of bid or at time of application (current list of installers can be found at www.filtrex.com). Look for the Filtrex[®] Certified[™] Installer Seal.



3. Filtrexx® Inlet protection shall be placed at locations indicated on plans as directed by the Engineer. Inlet protection should be installed in a pattern that allows complete protection of the inlet area.
4. Installation of curb Inlet protection will ensure a minimal overlap of at least 1 ft (300mm) on either side of the opening being protected. The Inlet protection will be anchored to the soil behind the curb using staples, stakes or other devices capable of holding the Inlet protection in place.
5. Standard Inlet protection for curb inlet protection and curb sediment containment will use 8 in (200mm) diameter Inlet protection, and drain inlets on soil will use 12 in (300mm) or 18 in (450mm) diameter Inlet protection. In severe flow situations, larger Inlet protection may be specified by the Engineer. During curb installation, Inlet protection shall be compacted to be slightly shorter than curb height.
6. If Inlet protection becomes clogged with debris and sediment, they shall be maintained so as to assure proper drainage and water flow into the storm drain. In severe storm events, overflow of the Inlet protection may be acceptable in order to keep the area from flooding.
7. Curb and drain Inlet protection shall be positioned so as to provide a permeable physical barrier to the drain itself, allowing sediment to collect on the outside of the Inlet protection.
8. For drains and inlets that have only curb cuts, without street grates, a spacer is required in order to keep the Inlet protection away from the drain opening. This spacer should be a hog wire screen bent to overlap the grate opening and keep the sock from falling into the opening. Use at least one spacer for every 4 ft (1.2m) of curb drain opening. The wire grid also prevents other floatable waste from passing over the Inlet protection.
9. Stakes shall be installed through the middle of the drain Inlet protection on 5 ft (1.5m) centers, using 2 in (50mm) x 2 in (50mm) x 3 ft (1m) wood stakes.
10. Staking depth for sand and silt loam soils shall be 12 in (300mm), and 8 in (200mm) for clay soils.

INSPECTION AND MAINTENANCE

Routine inspection should be conducted within 24 hrs of a runoff event or as designated by the regulating authority. Inlet protection should be regularly inspected to make sure they maintain their

shape and are producing adequate hydraulic flow-through. If ponding becomes excessive, additional Inlet protection may be required or sediment removal may be necessary. Inlet protection shall be inspected until contributing drainage area has been permanently stabilized and construction activity has ceased

1. The Contractor shall maintain the Inlet protection in a functional condition at all times and it shall be routinely inspected.
2. If the Inlet protection has been damaged, it shall be repaired, or replaced if beyond repair.
3. The Contractor shall remove sediment at the base of the upslope side of the Inlet protection when accumulation has reached 1/2 of the effective height of the Inlet protection, or as directed by the Engineer. Alternatively, for drain Inlet protection a new Soxx™ may be placed on top of the original increasing the sediment storage capacity without soil disturbance.
4. Inlet protection shall be maintained until disturbed area above or around the device has been permanently stabilized and construction activity has ceased.
5. Regular maintenance includes lifting the Inlet protection and cleaning around and under them as sediment collects.
6. The FilterMedia™ will be removed from paved areas or dispersed on site soil or behind curb once disturbed area has been permanently stabilized, construction activity has ceased, or as determined by the Engineer.

Table 2.4 Spacing for Curb Sediment Containment Systems.

Grade (%)	Spacing (ft)	Spacing (mm)
0.5	100	30
1.0	50	15
2.0	25	8
3.0	16	5
4.0	13	4
5.0	10	3

Source: Fifield, 2001.



Figure 2.1. Engineering Design Drawing for Curb and Drain Inlet Protection

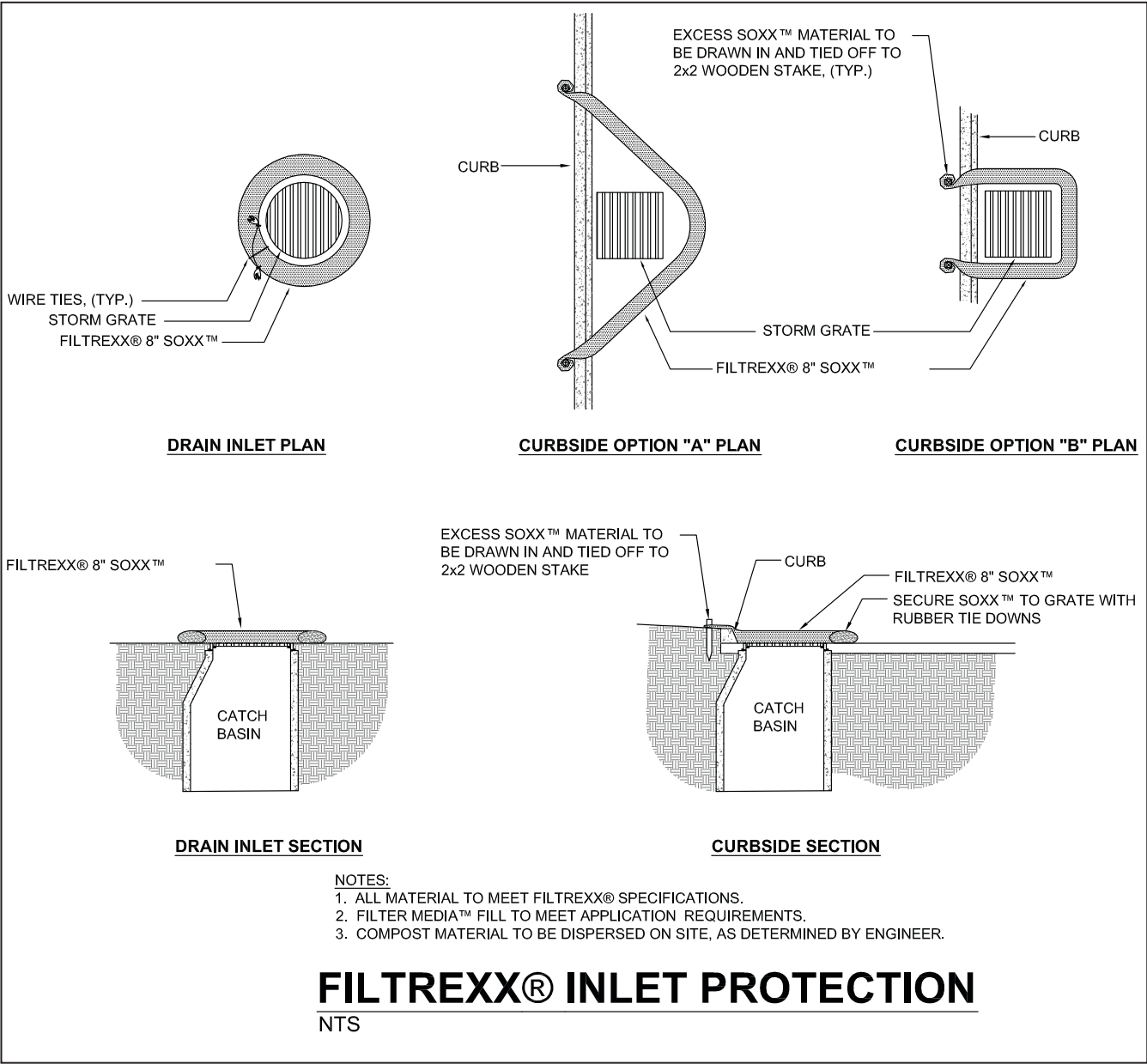
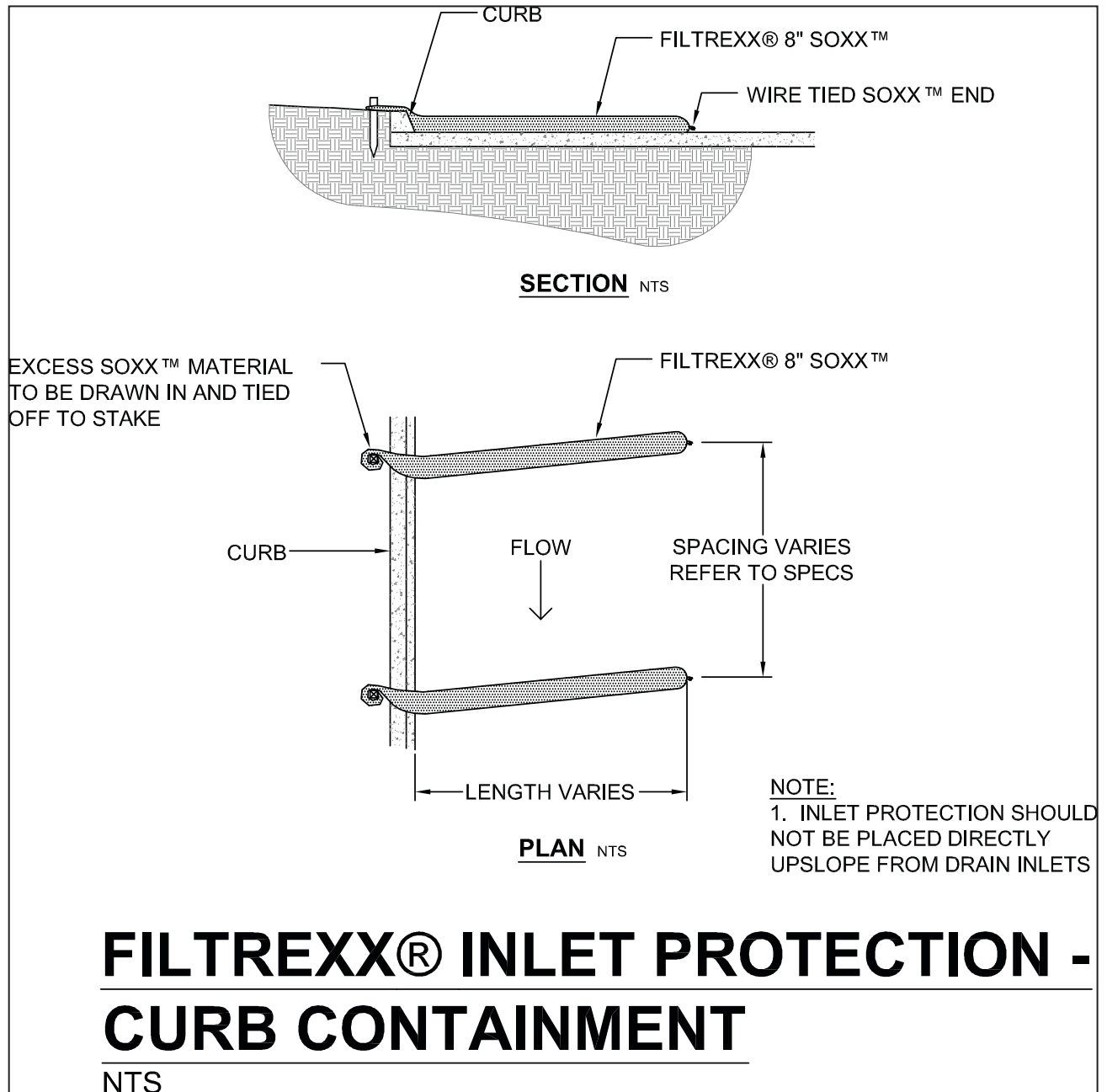


Figure 2.2. Engineering Design Drawing for Curb Sediment Containment Inlet Protection



Pavement Temp. (°F) and Trend (↑ ↓)	Weather Condition	Maintenance Actions	Application Rate (lbs/per 1000 sq.ft.)			
			Salt Prewetted/Pretreated with salt brine	Salt Prewetted/Pretreated with other blends	Dry salt	Winter sand
>30 ↑	Snow	Plow, treat intersections only				Not recommended
	Frz. Rain	Apply chemical				Not recommended
30 ↓	Snow	Plow and apply chemical				Not recommended
	Frz. Rain	Apply chemical				Not recommended
25 - 30 ↑	Snow	Plow and apply chemical				Not recommended
	Frz. Rain	Apply chemical				Not recommended
25 - 30 ↓	Snow	Plow and apply chemical				Not recommended
	Frz. Rain	Apply chemical				3.25
20 - 25 ↑	Snow or frz. Rain	Plow and Apply chemical				3.25 for frz. Rain
20 - 25 ↓	Snow	Plow and apply chemical				Not recommended
	Frz. Rain	Apply chemical				3.25
15 - 20 ↑	Snow	Plow and apply chemical				Not recommended
	Frz. Rain	Apply chemical				3.25
15 - 20 ↓	Snow or Frz. Rain	Plow and apply chemical				3.25 for frz. Rain
0 to 15 ↑↓	Snow	Plow, treat with blends, sand hazardous areas	Not recommended		Not recommended	5.0 and spot-treat as needed
< 0	Snow	Plow, treat with blends, sand hazardous areas	Not recommended		Not recommended	5.0 and spot-treat as needed

Table 19. Application Rates for Deicing

These rates & table format are based on road application guidelines (Mn Snow & Ice Control Field Handbook, Manual 2005-1). Develop your own application rates by adjusting your current rates incrementally downward toward these guidelines. Where temperature categories overlap, select the rate most applicable to your situation.