FUSS & O'NEILL

November 19, 2018

Ms. Juliet Walker, AICP
Planning Director
City of Portsmouth
1 Junkins Ave, 3rd Floor
Portsmouth, NH 03801

RE: Torrington Properties, Waterstone Property Group;
West End Yards – Frank Jones Center and Cate Street Properties Re-development
Site Plan Review Application
Fuss & O'Neill Reference No. 20180317.A10

Dear Ms. Walker, Members of the Technical Advisory Committee, and Planning Board:

On behalf of Torrington Properties and Waterstone Properties Group, Fuss & O'Neill has prepared an Application for Site Plan Review for a project we are referring to as, West End Yards. The project is a re-development of parcels, Tax Map 172 Lot 1, Map 173 Lot 2, Map 165 Lot 2, and Map 163 Lots 33 & 34, which in their entirety will be referred to as the "Site". The re-development project, in broad strokes, is comprised of the following:

- Extension of a road from the Cate Street Bridge to Route 1 Bypass / Borthwick Avenue
  - Multi-use / Bike Trail also

  This road will connect Route 1 Bypass to Bartlett Street.

- A mixed use Retail and Office Building in the current location of the Frank Jones Center
  - 20,000-sf of Retail Space on the first floor
  - 20,000-sf on Office Space on the second floor

- Two Apartment Buildings totaling 325-units

- 23 Townhomes

- Subdivision to create Lots for:
  - The New Road Right of Way
  - The Retail Building
  - Apartment Building A
  - Apartment Building B
  - 23-Townhomes

5 Fletcher Street
Suite 1
Kennebunk, ME
04043
t 207.363.0669
800.286.2469
f 860.533.5143

www.fando.com

California
Connecticut
Maine
Massachusetts
New Hampshire
Rhode Island
Vermont

The total area of the lots that comprise the site is 13.31 Acres. 3.14 Acres will ultimately be deeded to the City as Right of Way and public land along Hodgson Brook.

As is typical with a project of this nature, there are other improvements to the site and other amenities that are proposed in support of the proposed uses. The following is a narrative of the items included as part of this project.

Local, State and Federal Approvals Required:

The following are the Approvals that the design team foresees as necessary for this project.

City of Portsmouth:

- Site Plan Review
- Subdivision
- Conditional Use; Work in the Wetland Buffer

Other Committee reviews may be appropriate as decided by TAC. These reviews if suggested would be performed concurrently with the above.

State of New Hampshire Department of Environmental Services (NHDES):

- Alteration of Terrain Permit (AoT)
- Wetlands Standard Dredge and Fill Permit
- Sewer Connection Permit

State of New Hampshire Department of Transportation (NHDOT):

The Intersection with Route 1 Bypass of the new road will require approval by NHDOT.

- NHDOT will require a number of offsite improvements
    - Turning lanes onto Route 1 Bypass form the new Road
    - Turning lanes into the site from Route 1 Bypass
    - Traffic Light Retiming

The above are currently assumed to be required for NHDOT approval. The specific requirements are subject to change with NHDOT review.

EPA, Construction General Permit (CGP):

A Construction General Permit will be required for this project. The permit will consist of a Notice of Intent being put on file with the EPA and a Stormwater Pollution Prevention Plan (SWPPP) being developed for the project.

The following sections will outline in more detail the main components of this project.

New City Road between Route 1 Bypass and Bartlett Street:

As part of the project, the developers are proposing to construct a new City Street from the intersection of Bartlett and Cate Streets on the northeast end of the project to the Intersection of the current site driveway, Route 1 Bypass, and Borthwick Avenue.

This new City Street and its construction affords the City and the various third party utilities in Portsmouth a unique opportunity to build some redundancy and improvements into a number of the infrastructure in the area.

- Water will be looped through the site in the new City Street with a 12-inch main from Coakley Road to the water Main in Bartlett Street.
- Sewer will be upsized and realigned to be in the new City Right of Way instead of through a private property as it is now.
- Unitil will be provided an opportunity to loop the eight-inch gas line in Route 1 Bypass through the new City Road Right of Way to the eight-inch main in Bartlett Street.
- Eversource will be able to create a redundant circuit connecting the circuit southwest of Route 1 Bypass to the circuit northeast of Bartlett Street and to move the aerial line circuit serving the site underground.
- Comcast and Consolidated Communications (telephone) will also be moved to underground systems
- Lighting will be provided per City requirements for public streets.

Multi-Use Trail, Seacoast Greenway:

Along with the Road network Connectivity between Route 1 Bypass and the West End the new City Street will provide, the proposal includes a portion of the Seacoast Greenway through the project along the new City Street Right of Way. The City plans to connect the Greenway to Vaughn Street along North Mill Pond from Bartlett Street. There are also plans for extension of the Greenway along Borthwick Avenue in the future.

Hodgson Brook:

Restoration and cleanup of Hodgson Brook has been a priority of the City of Portsmouth's for some time. The proposal includes improvements to the site that will benefit Hodgson Brook. The project team has had a series of work sessions and a site walk with the Conservation Commission and has made revisions to the design based on feedback from them.

- Wetland Buffer: Impervious surfaces currently encroach into the wetland buffer greatly. The proposal reduces this encroachment greatly and restores vegetated buffer to Hodgson brook along the top of bank in areas that are currently paved.
    - Initially, the proposal had the Multi-Use path along the existing edge of the pavement and provided a large area between the path and the proposed road for rain garden / bioretention areas for stormwater treatment.
    - In response to the Conservation Commissions comments, the multi-use path was shifted an additional 30-ft+/- into the site away from the brook.
    - Stormwater is treated by a Water Quality Unit instead of the bioretention areas.

- Reduction of Impervious Surface in Watershed: the site is over 80.5% impervious surfaces today and most of the stormwater runoff from these surfaces flows, untreated, into Hodgson Brook. The following improvements are provided by the proposal:

    - Total Project Area Impervious Surface Reduction = -1.8-Acres (13.6% reduction)
    - Reduction of Impervious Surface in the Wetland Buffer = -0.35-Acres (23.5% reduction in the buffer)
    - Stormwater Pretreatment; Increased from 0% to near 100%
    - Stormwater Treatment; Increased from 0% to between 50 and 100%
    - Distributed release of Stormwater across 13.3-Acres instead of all into Hodgson Brook.

- Invasive Species Removal: In discussions with the Conservation Commission it was agreed that removal of invasive species like Rugosa Rose and Japanese Knotweed should be done.

- Cleanup of Hodgson Brook: In discussions with the Conservation Commission it was agreed that removal of trash, and man-made debris should be removed from the stream and bank, while things like granite block and fallen trees should be left to remain.

Site Development:

The Site that remains after creation of the City Right of Way will be developed into four distinct sections that will be subdivided into four lots. Each will be discussed in the following sections. All of the lots will have cross easements for access to one another and for utilities.

Lighting

Lighting for the Site development is being designed in accordance with the City of Portsmouth ordinance and in a way that the lighting from each section of the development will be harmonious with its neighboring section.

Utilities

As part of this proposal, Utilities serving the proposed buildings and lots will be upgraded to current standards and mains will be relocated to the proposed Right of Way of the proposed City Street.

Water

The proposal involves upgrading the Water Main serving the area of the site. Currently, water is provided to the various uses on the existing site via either services running from the eight-inch main in Cottage Street, along Route 1 Bypass to the U-Haul and building on Tax Map 165 Lot 2, or by the eight-inch main in Cate Street that begins at a tee on the 12-inch main closer to Bartlett Street.

The upgraded main will consist of a 12-inch Cement Lined Ductile Iron pipe in the Right of Way of the proposed City Street that will begin at the 12-inch main on Coakley Road and end at the 12-inch Main in Cate Street / Bartlett Street.

A water service loop of a minimum eight-inch line (to be determined by building demand) will be run through the site around Apartment Buildings A and B, through the parking area. This line will allow for a number of fire hydrants to be located within the site.

Sewer

Currently, Sewer serving the site flows from a manhole on the shared property line with U-Haul near Route 1 Bypass. Flow from the west side of Route 1 Bypass, including flows form the Hospital and flows from north of the site and Hodgson Brook also enter the main flowing east through the site to the sewer line in Cate Street and ultimately Bartlett Street. This sewer is undersized by modern standards and also has a substandard slope to the line.

The proposal redirects the sewer from the manhole on the property line with U-Haul through an existing sewer easement in a new 21-inch SDR35 PVC sewer line, along Route 1 Bypass to the Right of Way of the proposed City Street. From the intersection with Borthwick Avenue and Route 1 Bypass, the proposed sewer line will follow the proposed road to the east and the existing 24-inch main in Cate Street and Bartlett Street.

Natural Gas

Unitil intends to connect an existing eight-inch natural gas main on Route 1 Bypass to an existing 8-inch natural gas main in Bartlett Street by running it north along Route 1 Bypass to the proposed City Street and then east within the proposed Right of Way.

Electric / Communications

Eversource and the Communications Services are going to run their main circuits underground in the proposed Right of Way.

Eversource is intending their new infrastructure to be a circuit that cross connects the circuit west of Route 1 Bypass to the circuit in the Bartlett Street neighborhood.

Stormwater Management

Stormwater Management on the site currently is almost non-existent. Very deficient closed drainage systems collect stormwater and release it directly to Hodgson Brook via culvert outfalls. Stormwater also flows over land, over the large impervious surfaces, and over the bank into Hodgson Brook. Currently, runoff from the site flows to Hodgson Brook from the site untreated. Stormwater runoff is managed by the proposal in a number of ways. All of the proposed stormwater management provides pre-treatment of stormwater removing suspended solids. Stormwater is also treated through various means.

<u>Pre-treatment</u>

<u>Offline Closed Drainage System</u>: The proposed closed drainage will be constructed in an offline configuration. Catch basins will only be connected to the drain mains at drain manholes and will not connect to the system through any other catch basins. Catch basins will also be deep sumped and hooded.

<u>Treatment</u>

<u>Infiltration Chambers</u>: A series of Infiltration Chamber galleries are proposed throughout the site development. These chambers are being sized to treat the water quality volume and infiltrate it.

<u>Water Quality Unit</u>: A Water Quality Unit (WQU) is proposed prior to the outfall of the closed drainage system in the proposed City Street. This unit is being sized to treat stormwater before it is release to Hodgson Brook. The WQU will outlet to a treatment swale and level spreader to further provide treatment of stormwater before it reaches Hodgson Brook.

Bioretention Areas (Rain Gardens): The proposal employs two- bioretention areas adjacent to the proposed City Street as it nears Bartlett Street to treat and infiltrate a portion of the runoff from the roadway.

Vegetated Buffers: The removal of pavement and buildings in the wetland buffer is allowing for revegetation of these areas. This will provide an amount of natural treatment of runoff flowing to Hodgson Brook that currently does not exist.

Detention

Subsurface Chamber Detention Galleries: In some locations of the site, Marine Clay was encountered. In some of these areas there was no choice but to utilize subsurface chamber galleries to detain stormwater prior to release. These galleries are similar to those being employed for infiltration in the sandy areas of the site; the difference being in a detention system the gallery will be lined so no infiltration can take place and no groundwater can enter the system.

Commercial Retail / Building and Lot:

The southernmost section of the lot between the U-Haul and Tax Map 165 Lot 2, will be occupied by a two- story building and its requisite site amenities, parking, and pedestrian facilities. The building will be occupied by restaurant and retail / commercial uses on the first floor and office on the second floor. Each floor will be 20,000-square feet and gross floor space will be 40,000-square feet for the building.

The lot that will be subdivided for this use will be 2.91-Acres and provide parking for 184 cars, six-spaces of which will be accessible.

Utilities

The utilities for this building will be provided from mains in Route 1 Bypass and from the new mains brought into the site via the proposed City Right of Way.

Apartment Building A and Lot:

Apartment Building A will occupy the proposed lot directly to the northeast of the U-Haul. The building will be five- stories containing 174 units and amenities such as, storage, fitness rooms a lobby, and office among other amenities. Sidewalks and a human scaled pedestrian way convey residents to the restaurants, retail, and commercial uses on the proposed adjacent lot. A shared court yard will separate Apartment Building A from Apartment Building B to the east. A dog park is proposed in the southeast corner of this lot.

The lot that will be subdivided for this use will be 3.66-Acres and provide parking for 226 cars, four- spaces of which will be accessible. 10 of these spaces will be tandem. The total that counts toward the required parking will be 216-spaces.

Utilities

The utilities for this building will be provided from the new mains brought into the site via the proposed City Right of Way.

Apartment Building B and Lot:

Apartment Building B will occupy the proposed lot directly to the east of Apartment Building A. The building will be five- stories containing 151 units and amenities such as, storage, fitness rooms, and a lobby among other amenities. Sidewalks will convey residents across Apartment Building B's lot to the restaurants, retail and commercial uses on the proposed Route 1 Bypass lot. A shared court yard will separate Apartment Building B from Apartment Building A to the east.

The lot that will be subdivided for this use will be 2.40-Acres and provide parking for 132 cars, four- spaces of which will be accessible.

Utilities

The utilities for this building will be provided from the new mains brought into the site via the proposed City Right of Way.

23 Townhomes and Lot:

23 Townhomes are proposed to occupy the final lot directly to the northeast of Apartment Building B and adjacent to the recently approved Brayerston Townhomes. The buildings will be two- stories, with garages under the living space. The buildings will be designed to have a similar architectural appearance to those of the Brayerston Townhomes.

The lot that will be subdivided for this use will be 1.20-Acres and provide parking for owners cars and will have five additional spaces for guests.

Utilities

The utilities for this building will be provided from the new mains brought into the site via the proposed City Right of Way.

Traffic and Vehicular Circulation (Offsite):

Today the curves on Cate Street are very undersized. Vehicles consistently exceed the speed limit when approaching the 90-degree turn on Cate Street, which has a centerline radius less than 80-ft.

The proposed new City Street that realigns the curves on Cate Street and connects to Route 1 Bypass, has a minimum centerline radius of 200-ft. We are recommending that the proposed road have a posted speed of 20 MPH which is equal to the speed limit on Bartlett Street. It is also proposed that vehicular travel across the Cate Street bridge be discontinued and the portion of Cate Street over the bridge be limited to pedestrians. This realignment, along with limiting the section of Cate Street over the bridge to be limited to pedestrians will improve safety on the road in the area.

The vehicular circulation through the site is being improved not only by the proposed City Street, but also by providing travelled ways around the buildings that are much more defined than the current scenario on site which is very wide open paves areas.

Care has also been taken to maintain the circulation to and through the abutting project the Brayerston Townhouses. The alignment of the proposed City Street also provides the two way entrance to the Brayerston Townhouses project a longer driveway which will provide more queuing which will be safer when trying to navigate onto the City Street from the Brayerston site.

Traffic and Vehicular Circulation (Onsite):

The site around the Retail / Commercial / Office Building and Apartment buildings have been designed with drive aisles and turning radii to accommodate WB50 vehicles (tractor trailer trucks). This will allow for navigation of the site by emergency vehicles and garbage trucks as well.

The area of the project occupied by the 23 townhomes is navigable by emergency vehicles as well.

In closing, as a team we are excited to discuss this project with you. We feel that it provides a rare level of public good while redeveloping an underutilized property.

If you have any questions or concerns, please do not hesitate to contact me at (207) 363-0669 x2314 or by email (rlundborn@fando.com).

Sincerely,

Rick Lundborn, PE
Branch Manager

/BH

Enclosures: Application, Checklist, Fee
Plans
Drainage Report
Sustainability Narrative

c: Torrington Properties
Waterstone Properties Group
Gove Environmental Services
August Consulting, PLLC

CITY OF PORTSMOUTH NEW HAMPSHIRE

SITE REVIEW APPLICATION

Building Permit Application Number ______________

Case Number ______________

Fee ______________

Map 172 Lot 1+(see below) Zone G1 Wetlands: Inland X Coastal ______ Lot Area 13.3AC+/-

Date of Approvals (Indicate if Pending)

Conservation Commission Pending Conditional Use ______________ Board of Adjustment ______________

Historic District Commission ______________ Subdivision Pending Other Pending

Street Address Cate Street, Portsmouth, NH

Description of Project including all use(s) Redevelopment of Tax maps & Lots, 163-33&34, 163-37,165-2, 172-1&173-2 into a reconfigured Cate St. intersecting Rte 1 Bypass and a mixed use development on 9.6AC.+/- including approximately 40,000sf retail/office space, 325 residential apartment units and 23 town homes (see attached)

Building(s) Footprint (See Attached Breakdown) Gross Floor Area ______________ #of Stories Between 2&5

# of Dwelling Units 348(325 apt, 23 town-homes) Number of Parking Spaces: Existing Total Unknown Proposed 532+/-

Print Information Below

Property Owner's Name Cate Street Development, LLC c/o Jay Bisognano

Street Address 60K Street City/Town Boston State MA Zip 02127

Telephone #	Cell Phone #	Fax #	Email Address
978-490-5278			jb@torprops.com

Print Information Below

Applicant's / Developer's Name Same as Owner

Street Address ______________ City/Town ______________ State ______ Zip ______

Telephone #	Cell Phone #	Fax #	Email Address

Print Information Below (Include Additional Contact Information on Next Page)

Check One: Owner's Attorney X Applicant's Attorney ☐ Engineer ☐ Surveyor ☐ Other ☐ If other, state relationship ______________

Representative's Name John Bosen, Bosen & Associates

Street Address 266 Middle Street City/Town Portsmouth State NH Zip 03801

Telephone #	Cell Phone #	Fax #	Email Address
603-427-5500			jbosen@bosenandassociates.com

I hereby apply for Site Review and acknowledge that I will comply with all the ordinances and any stipulations of the Site Review Committee of the City of Portsmouth in the development and construction of this project.

Owner's Signature	Print Owner's Name	Date
[signature]	Jay Bisognano	11/19/18

Applicant's/Developer's Signature	Print Applicant's/Developer's Name	Date

Print Information Below

Check One: Owner's Attorney ☐ Applicant's Attorney ☐ Engineer ☐ Surveyor ☐ Other ☐ If other, state relationship ___________________

Representative's Name______________________________

Street Address______________________ City/Town ____________ State __________ Zip ________

Telephone # | Cell Phone # | Fax # | Email Address

Print Information Below

Check One: Owner's Attorney ☐ Applicant's Attorney ☐ Engineer X Surveyor ☐ Other ☐ If other, state relationship ___________________

Representative's Name Rick Lundborn, PE

Street Address 5 Fletcher St, Suite 1 City/Town Kennebunk State ME Zip 04043

207-363-0669 x2314 603-767-4728 rlundborn@fando.com

Telephone # | Cell Phone # | Fax # | Email Address

Print Information Below

Check One: Owner's Attorney ☐ Applicant's Attorney ☐ Engineer ☐ Surveyor ☐ Other X If other, state relationship Project Consultant

Representative's Name Gregg M. Mikolaities PE

Street Address 411 Washington Road City/Town Rye State NH Zip 03870

603-475-3658 gregg@augustpllc.com

Telephone # | Cell Phone # | Fax # | Email Address

Attachments

The following materials must be submitted to the Planning Department along with the completed Application Form:

- ☐ Site Plan Application Checklist
- ☐ Ten (10) stamped and folded copies of the site plan – four (4) full-size (22" x 34") and six (6) reduced (11" x 17")
- ☐ Digital copy of any plans and/or exhibits (in PDF format)
- ☐ Application Fee
- ☐ Any required State or Federal Permits

Co-Developers

Jay Bisognano
Torrington Properties
Partner

975-490-5278 Work
jb@torprops.com
60 K Street
Boston, MA 02127
www.torprops.com

Josh Levy
Waterstone Property Group

508-737-5891 Work
jlevy@waterstonepg.com

322 Reservoir Street
Needham, MA 02494

Legal Counsel

John Bosen
Bosen & Associates
Principal

603.427.5500 Work
jbosen@bosenandassociates.com

266 Middle Street
Portsmouth, NH 03801

Architects

David Chilinski
Prellwitz Chilinski Associates, Inc.
Principal

617-547-8120 Work
dchilinski@prellchil.com

221 Hampshire Street
Cambridge, Massachusetts 02139

David Snell
Prellwitz Chilinski Associates, Inc.

617-547-8120 Work
dsnell@prellchil.com

221 Hampshire Street
Cambridge, Massachusetts 02139

Civil Engineer

Mr. Rick Lundborn
CLD | Fuss & O'Neill, Inc
P.E., Project Manager, Branch Manager

(207) 363-0669 x2314 Work
(603) 767-4728 Mobile
rlundborn@fando.com
5 Fletcher Street
Suite 1
Kennebunk, ME 03909

Owner's Representative

Steve Leonard, LEED AP
Construction Consultant
Owner's Construction Representatives & Consultants
70 Heritage Ave., Suite 2
Portsmouth, NH 03801

ofc (603) 433-8417
cell (603) 235-3792

sdleonard@OCRCLLC.com

Project Consultant

Mr. Gregg M. Mikolaities P. E.
August Constulting, PLLC
President

(603) 475-3658 Work
gregg@augustpllc.com
411 Washington Road
Rye, NH 03870
www.augustpllc.com

Pre-Construction General Contractor

Mr. Preston Hunter
Eckman Construction
Vice President, LEED AP
(603) 623-1713 x227 Work
(603) 365-7196 Mobile
hunterp@eckmanconstruction.com
84 Palomino Lane
Bedford, NH 03110
www.eckmanconstruction.com

City of Portsmouth, New Hampshire

Site Plan Application Checklist

This site plan application checklist is a tool designed to assist the applicant in the planning process and for preparing the application for Planning Board review. A pre-application conference with a member of the planning department is strongly encouraged as additional project information may be required depending on the size and scope. The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all site plan review requirements. Please refer to the Site Plan review regulations for full details.

Applicant Responsibilities (Section 2.5.2): Applicable fees are due upon application submittal along with required attachments. The application shall be complete as submitted and provide adequate information for evaluation of the proposed site development. Waiver requests must be submitted in writing with appropriate justification.

Name of Owner/AGENT Applicant: Rick Lundborn, PE Date Submitted: 11/19/18

Phone Number: 207-363-0669 x2314 E-mail: rlundborn@fando.com

Site Address: Cate Street, Portsmouth, NH Map: See Below pg 7 Lot: ______

Zoning District: G1 Lot area: 13.3AC+/- sq. ft.

Application Requirements			
☑	**Required Items for Submittal**	**Item Location (e.g. Page or Plan Sheet/Note #)**	**Waiver Requested**
✔	Fully executed and signed Application form. **(2.5.2.3)**		N/A
✔	All application documents, plans, supporting documentation and other materials provided in digital Portable Document Format (PDF) on compact disc, DVD or flash drive. **(2.5.2.8)**		N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
✔	Statement that lists and describes "green" building components and systems. **(2.5.3.1A)**	Added write up "Benefits summary"	☐
✔	Gross floor area and dimensions of all buildings and statement of uses and floor area for each floor. **(2.5.3.1B)**	Building Information Breakdown Memo	N/A
✔	Tax map and lot number, and current zoning of all parcels under Site Plan Review. **(2.5.3.1C)**	Sheet CN-001	N/A
✔	Owner's name, address, telephone number, and signature. Name, address, and telephone number of applicant if different from owner. **(2.5.3.1D)**		N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
✔	Names and addresses (including Tax Map and Lot number and zoning districts) of all direct abutting property owners (including properties located across abutting streets) and holders of existing conservation, preservation or agricultural preservation restrictions affecting the subject property. **(2.5.3.1E)**		N/A
✔	Names, addresses and telephone numbers of all professionals involved in the site plan design. **(2.5.3.1F)**		N/A
✔	List of reference plans. **(2.5.3.1G)**	Plan of Land	N/A
✔	List of names and contact information of all public or private utilities servicing the site. **(2.5.3.1H)**		N/A

Site Plan Specifications			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
✔	Full size plans shall not be larger than 22 inches by 34 inches with match lines as required, unless approved by the Planning Director. Submittals shall be a minimum of 11 inches by 17 inches as specified by Planning Dept. staff. **(2.5.4.1A)**	Required on all plan sheets	N/A
✔	Scale: Not less than 1 inch = 60 feet and a graphic bar scale shall be included on all plans. **(2.5.4.1B)**	Required on all plan sheets	N/A
✔	GIS data should be referenced to the coordinate system New Hampshire State Plane, NAD83 (1996), with units in feet. **(2.5.4.1C)**	Required on all plan sheets	N/A
✔	Plans shall be drawn to scale. **(2.5.4.1D)**	Required on all plan sheets	N/A
✔	Plans shall be prepared and stamped by a NH licensed civil engineer. **(2.5.4.1D)**	Required on all plan sheets	N/A
✔	Wetlands shall be delineated by a NH certified wetlands scientist. **(2.5.4.1E)**		N/A
✔	Title (name of development project), north point, scale, legend. **(2.5.4.2A)**	Required on all plan sheets	N/A
✔	Date plans first submitted, date and explanation of revisions. **(2.5.4.2B)**	Required on all plan sheets	N/A
✔	Individual plan sheet title that clearly describes the information that is displayed. **(2.5.4.2C)**	Required on all plan sheets	N/A

Site Plan Specifications			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
✔	Source and date of data displayed on the plan. **(2.5.4.2D)**	Required on all plan sheets	N/A
☐	A note shall be provided on the Site Plan stating: "All conditions on this Plan shall remain in effect in perpetuity pursuant to the requirements of the Site Plan Review Regulations." **(2.5.4.2E)**	Required on all plan sheets	N/A
☐	Plan sheets submitted for recording shall include the following notes: a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds." b. "All improvements shown on this Site Plan shall be constructed and maintained in accordance with the Plan by the property owner and all future property owners. No changes shall be made to this Site Plan without the express approval of the Portsmouth Planning Director." **(2.13.3)**		N/A
☐	Plan sheets showing landscaping and screening shall also include the following additional notes: a. "The property owner and all future property owners shall be responsible for the maintenance, repair and replacement of all required screening and landscape materials." b. "All required plant materials shall be tended and maintained in a healthy growing condition, replaced when necessary, and kept free of refuse and debris. All required fences and walls shall be maintained in good repair." c. "The property owner shall be responsible to remove and replace dead or diseased plant materials immediately with the same type, size and quantity of plant materials as originally installed, unless alternative plantings are requested, justified and approved by the Planning Board or Planning Director." **(2.13.4)**		N/A

☑	Site Plan Specifications – Required Exhibits and Data Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
	1. Existing Conditions: (2.5.4.3A)		
✔	a. Surveyed plan of site showing existing natural and built features;		☐
✔	b. Zoning boundaries;		☐
✔	c. Dimensional Regulations;		☐
✔	d. Wetland delineation, wetland function and value assessment;		☐
✔	e. SFHA, 100-year flood elevation line and BFE data.		☐
	2. Buildings and Structures: (2.5.4.3B)		
✔	a. Plan view: Use, size, dimensions, footings, overhangs, 1st fl. elevation;		☐
☐	b. Elevations: Height, massing, placement, materials, lighting, façade treatments;		☐
✔	c. Total Floor Area;		☐
✔	d. Number of Usable Floors;		☐
✔	e. Gross floor area by floor and use.		☐
	3. Access and Circulation: (2.5.4.3C)		
✔	a. Location/width of access ways within site;		☐
✔	b. Location of curbing, right of ways, edge of pavement and sidewalks;		☐
✔	c. Location, type, size and design of traffic signing (pavement markings);		☐
✔	d. Names/layout of existing abutting streets;		☐
✔	e. Driveway curb cuts for abutting prop. and public roads;		☐
☐	f. If subdivision; Names of all roads, right of way lines and easements noted;		☐
☐	g. AASHTO truck turning templates, description of minimum vehicle allowed being a WB-50 (unless otherwise approved by TAC).		☐
	4. Parking and Loading: (2.5.4.3D)		
✔	a. Location of off street parking/loading areas, landscaped areas/buffers;		☐
✔	b. Parking Calculations (# required and the # provided).		☐
	5. Water Infrastructure: (2.5.4.3E)		
✔	a. Size, type and location of water mains, shut-offs, hydrants & Engineering data;		☐
☐	b. Location of wells and monitoring wells (include protective radii).		☐
	6. Sewer Infrastructure: (2.5.4.3F)		
✔	a. Size, type and location of sanitary sewage facilities & Engineering data.		☐
	7. Utilities: (2.5.4.3G)		
✔	a. The size, type and location of all above & below ground utilities;		☐
✔	b. Size type and location of generator pads, transformers and other fixtures.		☐

☑	Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
	Site Plan Specifications – Required Exhibits and Data		
☐	**8. Solid Waste Facilities: (2.5.4.3H)**		
☐	a. The size, type and location of solid waste facilities.		☐
	9. Storm water Management: (2.5.4.3I)		
✔	a. The location, elevation and layout of all storm-water drainage.		☐
	10. Outdoor Lighting: (2.5.4.3J)		
✔	a. Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and; b. photometric plan.		☐
✔	**11.** Indicate where dark sky friendly lighting measures have been implemented. **(10.1)**		☐
	12. Landscaping: (2.5.4.3K)		
✔	a. Identify all undisturbed area, existing vegetation and that which is to be retained;		☐
☐	**b.** Location of any irrigation system and water source.		☐
	13. Contours and Elevation: (2.5.4.3L)		
✔	a. Existing/Proposed contours (2 foot minimum) and finished grade elevations.		☐
	14. Open Space: (2.5.4.3M)		
☐	a. Type, extent and location of all existing/proposed open space.		☐
✔	**15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)**		☐
☐	**16. Location of snow storage areas and/or off-site snow removal. (2.5.4.3O)**		☐
☐	**17. Character/Civic District (All following information shall be included): (2.5.4.3Q)**	Not Applicable	☐
	a. Applicable Building Height (10.5A21.20 & 10.5A43.30);		
	b. Applicable Special Requirements (10.5A21.30);		
	c. Proposed building form/type (10.5A43);		
	d. Proposed community space (10.5A46).		

Other Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
✔	Traffic Impact Study or Trip Generation Report, as required. (*Four (4) hardcopies of the full study/report and Six (6) summaries to be submitted with the Site Plan Application*) **(3.2.1-2)**	Previously Submitted	☐
✔	Indicate where Low Impact Development Design practices have been incorporated. **(7.1)**		☐
✔	Indicate whether the proposed development is located in a wellhead protection or aquifer protection area. Such determination shall be approved by the Director of the Dept. of Public Works. **(7.3.1)**	devvelopnet is not in a well head pr aquifer protection district	☐
✔	Indicate where measures to minimize impervious surfaces have been implemented. **(7.4.3)**	Narrative, Storwater Management Report	☐
✔	Calculation of the maximum effective impervious surface as a percentage of the site. **(7.4.3.2)**		☐
☐	Stormwater Management and Erosion Control Plan. (*Four (4) hardcopies of the full plan/report and Six (6) summaries to be submitted with the Site Plan Application*) **(7.4.4.1)**		☐

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	All local approvals, permits, easements and licenses required, including but not limited to: a. Waivers; b. Driveway permits; c. Special exceptions; d. Variances granted; e. Easements; f. Licenses. **(2.5.3.2A)**		☐
✔	Exhibits, data, reports or studies that may have been required as part of the approval process, including but not limited to: a. Calculations relating to stormwater runoff; b. Information on composition and quantity of water demand and wastewater generated; c. Information on air, water or land pollutants to be discharged, including standards, quantity, treatment and/or controls; d. Estimates of traffic generation and counts pre- and post-construction; e. Estimates of noise generation; f. A Stormwater Management and Erosion Control Plan; g. Endangered species and archaeological / historical studies; h. Wetland and water body (coastal and inland) delineations; i. Environmental impact studies. **(2.5.3.2B)**		☐

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	A document from each of the required private utility service providers indicating approval of the proposed site plan and indicating an ability to provide all required private utilities to the site. **(2.5.3.2D)**		☐
✔	A list of any required state and federal permit applications required for the project and the status of same. **(2.5.3.2E)**		☐

AGENT
Applicant's Signature: ______________________ **Date:** 11/19/18

Redevelopment of Tax Maps & Lots, 163-33&34, 163-37, 165-2, 172-1 & 173-2

An updated Checklist will be provided with the next submission

FUSS & O'NEILL

MEMORANDUM

FROM: Rick Lundborn, PE
5 Fletcher Street, Suite 1
Kennebunk, ME 04043
207-363-0669 x2314

DATE: November 19, 2018

RE: Cate Street Re-development
Portsmouth, NH 03801
Fuss & O'Neill, Inc. Reference No: 20180317.A10

Townhouses:
For the town houses there are two unit types:
24x36 = 864-sf/floor 2 floors, total = 1728-sf/each → 10 units
22x40 = 880-sf/floor 2 floors, total = 1760-sf/each → 13 units

Retail / Office:
First Floor: 22,635 GSF. 2 Retail and 3 Restaurant / Food service tenants
Second Floor: 22,720 GSF. 6 office / business tenants.

Resi Building A: 177,000 GSF. 174 Units. 5 Stories. 340' x 70'
1st: 36,950 sf (28,450 sf of 31 dwelling units. 7,500 sf Amenity. 1,000 sf Storage.)
2nd: 36,950 sf (36,250 of 38 dwelling units and 750 sf storage)
3rd: 36,950 sf (36,250 of 38 dwelling units and 750 sf storage)
4th: 36,950 sf (36,250 of 38 dwelling units and 750 sf storage)
5th: 29,200 sf (27,050 of 29 dwelling units, 1,400 sf Amenity and 750 sf storage)

Resi Building B: 141,000 GSF. 151 Units. 5 Stories. 300' x 70'
1st: 29,100 sf (24,600 sf of 28 dwelling units. 4,000 sf Amenity. 500 sf Storage.)
2nd: 29,100 sf (28,600 of 32 dwelling units and 500 sf storage)
3rd: 29,100 sf (28,600 of 32 dwelling units and 500 sf storage)
4th: 29,100 sf (28,600 of 32 dwelling units and 500 sf storage)
5th: 24,600 sf (24,100 of 27 dwelling units and 500 sf storage)

/bh

c: Fuss & O'Neill file

CATE ST - BENEFITS SUMMARY

Upon completion of the development, the following public benefits shall be realized:

1. Net gain of 3 acres of land to the City
2. Approximately 300 part time and full time jobs during construction and operation.
3. Borthwick Ave/Cate Street connection; providing a much-needed connection to downtown and relieving the major problems of the cut through traffic in the Cottage and Cate Street neighborhoods.
4. Red listed Cate St bridge will not have to be improved anytime soon and not ever for vehicular traffic.
5. Phased increase in property taxes – the property is currently generating $93,270 in property taxes. Expected to be $975,000 – 1 MM per year to the City when complete.
6. Large amount of permit fees to the City.
7. Increased housing supply along with 5 units of workforce housing;
8. Redevelopment of a blighted property into an attractive mixed-use community
9. An integrated recreation and wellness approach to the surrounding trail network – including a bike path along Hodgson Brook for recreation but also biking as transit.
10. Cleaning up Hodgson Brook See Sustainability Narrative Below
11. Converting the existing red listed Cate Street bridge to a pedestrian bridge with views up and down Hodgson Brook and integrated Public Art.
12. A collection of neighborhood retail including a restaurant, micro-beer and food hall in partnership with the Colicchio Group and service retail, all abutting a retail square – a public outdoor plaza with outdoor seating, landscaping and greater community amenities.
13. A public dog park for the community.
14. Both public and private green spaces
15. Potentially a pedestrian connection over the railroad to Islington St. This presents an opportunity to create a safe connection from the neighborhood to the commercial businesses on Islington.
16. Thoughtful design of pedestrian-friendly connections that go from the pedestrian bridge to the project's retail and beyond to provide a walkable connection from the neighborhood to the retail and ultimately connecting the Cottage/Cate Street neighborhoods to the site and to the West End.
17. Exploring a new Coast Bus stop
18. Exploring Zagster bike
19. An intensive and immersive amount of community programming both for onsite and Portsmouth area residents; open to the Public. i.e. min. 50-75 events per year. Ex: Food trucks festivals, farmers markets, outdoor movie nights, community crafting, Signature and Holiday events, etc
20. This re-development will continue the momentum of revitalization the City is fostering in the West End with projects like the re-development of the Dobles US Army Reserve Center on Cottage Street into a Community Senior Center and potential Arts venue.

21. A reduction in overall impervious surfaces for the project area resulting in over 27% open space between the road Right of Way, Restaurant/Retail plaza, Apartment buildings and Townhouses. Currently the same project area only has 20.5% open space, most of which is the stream bank of Hodgson Brook.
22. Opportunity to properly treat runoff from the impervious surfaces in the proposed City Right of Way and on the re-developed site.
    a. Currently a combination of bioretention areas and subsurface infiltration structures are envisioned.
    b. All stormwater outlets to Hodgson Brook will be appropriately constructed in a way that protects water quality and eliminated direct pipe outfalls.

CATE ST - SUSTAINABILITY NARRATIVE

Sustainability is an often used, sometimes misused, term these days. In environmental science, it refers to the quality of not being harmful to the environment or depleting natural resources, thereby supporting ecological balance. In modern development projects, where the challenge of building structures and infrastructure encounters pre-existing natural conditions, the thoughtful use of technology and good design becomes critical. Wherever possible, the objective is to understand the ecology of the site, repairing it where needed, integrating green infrastructure where feasible, and ultimately creating a development project that supports the public good, combining good urban design with land conservation. This narrative is a document in flux, expected to be reworked and added to as design and programmatic issues progress, and as the understanding of what is possible and what is practical emerges.

Hodgson Brook Closer to the northern end of the property runs Hodgson Brook, a continuously running stream whose source is about 2 miles to the north in the Pease Tradeport. It empties into the North Mill Pond on the east side of Bartlett Street.
North Mill Pond is becoming a lively and picturesque water resource in the West end of Portsmouth. A pedestrian and bicycle trail is currently proposed to run its eastern shore from Bartlett Street to Maplewood Avenue. North Mill Pond and Hodgson Brook provide much needed sanctuary in Portsmouth's urban environment, acting as a multi-acre wildlife corridor of lowland marshes and dramatic topography, managed by a combination of municipal and private entities. The opportunities for ecological restoration, environmental education, and public benefit along this little waterway are spectacular. The stream needs attention; it has not been loved over the past 30 plus years. Much of the streambank needs rehabilitation: invasive plant species need to be removed. Native plants need to be brought in to help maintain bank and stream stability once the invasive species are removed. The wetland surrounding Hodgson Brook needs to be cleaned removing trash and large discarded items ranging from shopping carts and car tires to bowling balls and other items that have been dumped in the brook over

the years. Many trees and other plantings need to be evaluated and cared for. These needs can attract the involvement of community groups, non-profit organizations, and potential funding sources.

There is an excellent opportunity to create a trail along this stream that goes from the development site all the way through the Ricci Lumber site and into downtown Portsmouth, with connections to the project, Route 1 and the West End, and to other existing and planned trails in the area. In addition, there is the ability to connect to other pre-existing and potential parkland (natural spaces, not overly designed). The Pedestrian bridge connection over the stream present opportunities for signature design statements and Public Art. A bicycle trail will allow citizens to travel safely and conveniently from the area to Downtown Portsmouth an easy 0.8 miles, without the use of a car, thereby reducing fossil fuel consumption. A well-designed landscape would enhance the ecology and provide a pleasing natural environment beneficial to native flora and fauna, as well as humans. Public art will draw the public into the space and support its function as a major way of getting into the development. Signage and other features can provide historic and environmental information.

Proximity to present and future path and open space systems The very strategic location of the Cate Street site is an asset unto itself that needs to be looked at on a larger scale. Its location between downtown Portsmouth, the West End and Route 1 bypass, on a future bus line is a good example of the transportation benefits. The possibility of a community garden providing organically produced local produce, is another potential sustainability benefit and one that is being explored by the developers. But, it is also worth looking at how the site fits more globally into the area trail systems and open spaces. The areas between Route 1 / The West End and Downtown Portsmouth already contain excellent trails, open spaces, streams and rivers. The attached map shows this well. But this is already a vast area, which includes I-95, Route 1 By Pass, and downtown Portsmouth where a great deal of future development is likely to occur. A vision of sustainable development is essential. The development of the Cate Street site, and nearby sites, can set the example for good urban design and environmentally sensitive development.

Design implications Some of the elements we will be exploring in this design process: Native plantings, bioretention, i.e. rain gardens, subsurface infiltration, permeable pavers, water recycling, and a multitude of sustainable engineering and design options will be considered and decided upon to provide the best outcome for the site, in terms of benefit and long term maintainability. Ecology and regenerative design consultants have been brought in early on to help build a manageable plan (for an example, see Biohabitats.org). A landscape architect, familiar with the area flora, soils, and climactic conditions, as well as removal and replacement of invasive species with native ones is also being brought in early, before buildings start being designed.

Sustainability in buildings and infrastructure There are a multitude of sustainable design options and technologies that can be incorporated in the buildings and infrastructure on the

site. Some strategies that will be explored on this project will be: reducing the water demand through the use of low-flow plumbing fixtures, a reduction of the buildings' energy load through the use of LED lighting and occupancy sensors, a reduction of the heat island effect by using roofing materials with high SRI values, and encouraging reduced energy and water consumption by individually metering and controlling utilities in the residential units.
There are site-wide sustainability efforts that are being considered, such as stormwater management, reducing the irrigation demands by utilizing drought-tolerant plants, composting, electric car charging stations and alternative energy sources. Again, these need to be defined and evaluated in light of the programmatic goals of the project.

All outcomes from this project and the considered techniques and technologies will provide benefits to the community and the environment that it calls home.

18045081 11/02/2018 11:12:58 AM
Book 5959 Page 109 Page 1 of 2
Register of Deeds, Rockingham County

LCHIP	ROA429199	25.00
TRANSFER TAX	R0084002	217,500.00
RECORDING		14.00
SURCHARGE		2.00

8 0 1 4 7 2 4 1
Tx:40128193

(M)
Commonwealth Land Title
2 Bedford Farms Dr.
Bedford, NH 03110

WARRANTY DEED

KNOW ALL MEN BY THESE PRESENTS, That PORTSMOUTH LAND ACQUISITION LLC, a New Hampshire Limited Liability Company, with an address of 300 Gay Street, Manchester, County of Hillsborough, State of New Hampshire, 03103, for consideration paid,

grants to CATE STREET DEVELOPMENT LLC, a New Hampshire limited liability company, with an address of 60 K Street, Boston, County of Suffolk, Commonwealth of Massachusetts 02127,

with WARRANTY COVENANTS, the following described premises:

Five parcels of land, with the buildings thereon, situate in Portsmouth, Rockingham County, New Hampshire, being Tax Map 165, Lot 2, Tax Map 172, Lot 1, Tax Map 173, Lot 2, Tax Map 163, Lot 33, and Tax Map 163, Lot 34, all as shown on a plan entitled "Plan of Land of Portsmouth Land Acquisitions, LLC of Tax Map 163, Lots 33 & 34, Tax Map 165, Lot 2, Tax Map 172, Lot 1, Tax Map 173, Lot 2, Cate Street & US Route 1 Bypass, Portsmouth, New Hampshire" prepared by Doucet Survey Inc. dated October 29, 2018, and recorded with the Rockingham County Registry of Deeds as Plan # D-41129.

Meaning and intending to describe and convey all and the same premises conveyed to Grantor herein by Deed of Joseph J. O'Brien, Jr., Trustee of Jask Realty Trust dated December 28, 2012, and recorded in the Rockingham County Registry of Deeds at Book 5393, Page 2976.

[signature on next page]

IN WITNESS WHEREOF, I hereunto set my hand, this 30th day of October, 2018.

PORTSMOUTH LAND ACQUISITION, LLC

Witness

By: Brian Thibeault, Manager

STATE OF NEW HAMPSHIRE
ROCKINGHAM, SS.

On this the 30th day of October, 2018, personally appeared before me, the above named Brian Thibeault, Manager of Portsmouth Land Acquisition, LLC, known to me or satisfactorily proven to be the person whose name is subscribed to the foregoing instrument and acknowledged that he executed same in his capacity as Manager and it was his free act and deed for the purposes herein contained.

Justice of the Peace/Notary Public
My commission expires:

JOHN K. BOSEN
MY COMMISSION EXPIRES DEC. 2, 2020
NOTARY PUBLIC
NEW HAMPSHIRE

FRANK JONES CENTER

CATE STREET · PORTSMOUTH · NEW HAMPSHIRE

SITE PLANS

NOVEMBER, 2018

PREPARED FOR

AAM 15 MANAGEMENT, LLC
78 BLANCHARD ROAD, SUITE 100
BURLINGTON, MA 01803

PREPARED BY

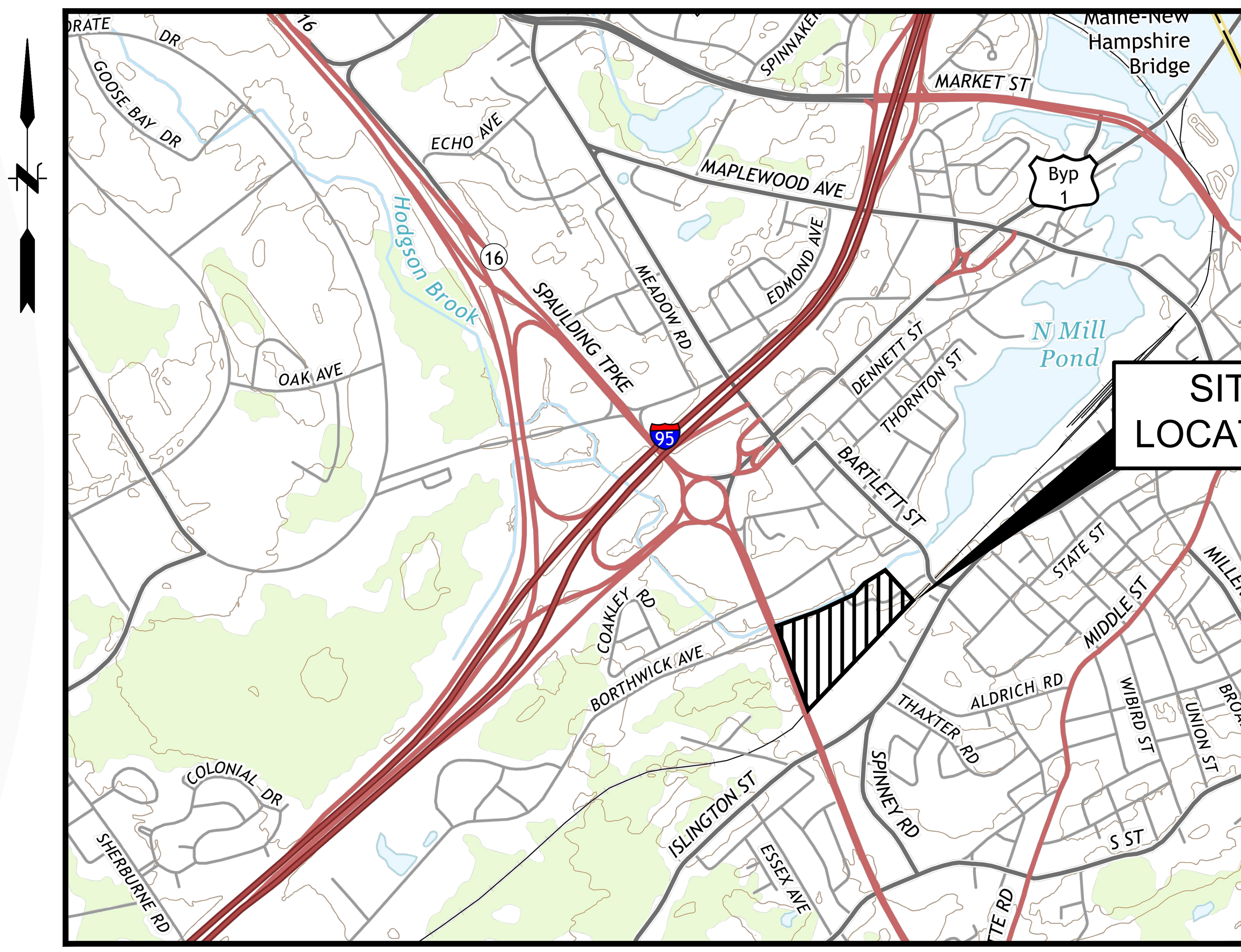
FUSS & O'NEILL
UPPER SQUARE BUSINESS CENTER
5 FLETCHER STREET, SUITE 1
KENNEBUNK, MAINE 04043
207.363.0669
www.fando.com

SHEET INDEX

SHEET No.	SHEET TITLE
GI-001	COVER SHEET
	RENDERINGS
	ELEVATIONS
	FLOOR PLANS
CN-001-CN-003	GENERAL NOTES & LEGEND
CS-1	KEY PLAN
CS-100	EXISTING CONDITIONS PLAN
CP-101-CP-104	SITE PREPARATION PLAN
CS-101-CS-104	ROADWAY PLAN & PROFILE
CS-105-CS-107	SITE PLANS
CG-101-CG-104	GRADING PLAN & PROFILE
CG-104-CG-107	GRADING PLAN
CU-101-CU-107	UTILITIES PLAN
CU-108	LIGHTING DETAILS
CD-501 - CD-510	DETAILS

PROJECT TEAM

LAND SURVEYOR
FUSS & O'NEILL
540 COMMERCIAL STREET
MANCHESTER, NH 03101
603.668.8223



LOCATION MAP
SCALE: 1" = 1200'

DIG SAFE
ME NH VT
CALL 1-888-DIG-SAFE TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION

THE LOCATION OF ANY UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. CLD CONSULTING ENG. INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. 72 HOURS PRIOR TO ANY EXCAVATION ON SITE, THE CONTRACTOR SHALL CONTACT DIG-SAFE AT 1-888-DIG-SAFE.

STATE OF NEW HAMPSHIRE
RICHARD R. LUNDBORN
No. 10943
LICENSED
PROFESSIONAL ENGINEER

PROJ. No.: 20170308.000
DATE: JANUARY 2018

GI-001

GENERAL

1. THE SUBJECT SITE IS IDENTIFIED AS TAX MAP 163 LOTS 33 AND 34, TAX MAP 165 LOT 2, TAX MAP 172 LOT 1, AND TAX MAP 173 LOT 2.
2. TOTAL PARCEL AREA:

TAX MAP 163, LOT 33	0.28 AC
TAX MAP 163, LOT 34	1.47 AC
TAX MAP 165, LOT 2	1.60 AC
TAX MAP 172, LOT 1	5.43 AC
TAX MAP 173, LOT 2	3.35 AC
COMBINED AREA =	12.13 AC

3. OWNER OF RECORD: CATE STREET DEVELOPMENT, LLC
   60 K STREET
   BOSTON, MA 02127
   R.C.R.D. BOOK 5959, PAGE 109
4. ZONE DISTRICT: G-1 GATEWAY NEIGHBORHOOD MIXED USE CORRIDOR

   MIXED USE DEVELOPMENT STANDARDS (10.5B42.20)

MIN. DEV. AREA	20,000 SF
MIN. SITE WIDTH	100 LF
MIN. SITE DEPTH	100 LF
MIN. BUFFER	75 LF
MIN. DEV. BLOCK	2,200 LF
MAX. BLDG. COV.	70%
MIN. OPEN SPACE	20%
COMMUNITY SPACE	ALL TYPES

5. PROPOSED PARKING:

	REQUIRED	PROPOSED
COMMERCIAL RETAIL LOT	124 SPACES	184 SPACES
APARTMENT BUILDING A LOT	227 SPACES	216 SPACES
APARTMENT BUILDING B LOT	197 SPACES	132 SPACES
TOWNHOMES LOT	30 SPACES	28 SPACES
TOTAL	463 SPACES*	560 SPACES

   *20% OVERALL PARKING REDUCTION ALLOWED PER 10.5B82.10 FOR PUBLIC TRANSIT STOP WITHIN 1/4-MILE OF THE SITE.
6. SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SHOWN ON THE DRAWINGS TO SCALE OR TO THEIR ACTUAL DIMENSION OR LOCATION. COORDINATE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT FEATURES.
7. DO NOT RELY SOLELY ON ELECTRONIC VERSIONS OF DRAWINGS, SPECIFICATIONS, AND DATA FILES THAT ARE PROVIDED BY THE ENGINEER. FIELD VERIFY LOCATION OF PROJECT FEATURES.
8. PERFORM NECESSARY CONSTRUCTION NOTIFICATIONS, APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY FEES, AND POST BONDS ASSOCIATED WITH THE WORK AS REQUIRED BY THE CONTRACT DOCUMENTS.
9. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS OF BUILDINGS AND ADJACENT SITE ELEMENTS INCLUDING SIDEWALKS, RAMPS, BUILDING ENTRANCES, STAIRWAYS, UTILITY PENETRATIONS, CONCRETE DOOR PADS, COMPACTOR PAD, LOADING DOCKS, BOLLARDS, ETC.
10. BASE PLAN: THE PROPERTY LINES SHOWN WERE DETERMINED BY AN ACTUAL FIELD SURVEY CONDUCTED BY DOUCET SURVEY, INC., AND FROM PLANS OF RECORD. THE TOPOGRAPHY AND PHYSICAL FEATURES ARE BASED ON AN ACTUAL FIELD SURVEY PERFORMED ON THE GROUND BY DOUCENT SURVEY, INC.

6. TOPOGRAPHIC ELEVATIONS ARE BASED ON NGVD29 DATUM.
7. GEOTECHNICAL DATA INCLUDING TEST PIT AND BORING LOCATIONS AND ELEVATIONS WERE OBTAINED FROM MCPHAIL ASSOCIATES, LLC.
8. WETLANDS WERE DELINEATED BY GOVE ENVIRONMENTAL SERVICES, INC.

WORK RESTRICTIONS

1. DO NOT CLOSE OR OBSTRUCT ROADWAYS, SIDEWALKS, FIRE HYDRANTS, AND UTILITIES WITHOUT APPROPRIATE PERMITS.

REGULATORY REQUIREMENTS

1. WITHIN LOCAL RIGHTS-OF-WAY, PERFORM THE WORK IN ACCORDANCE WITH LOCAL MUNICIPAL STANDARDS.
2. WITHIN STATE RIGHTS-OF-WAY, PERFORM THE WORK IN ACCORDANCE WITH THE LATEST EDITION OF THE DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS AND ISSUED REVISIONS/SUPPLEMENTS.
3. PROVIDE TRAFFIC SIGNAGE AND PAVEMENT MARKINGS IN CONFORMANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
4. BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. PERFORM CONSTRUCTION ACTIVITIES IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.
5. DISPOSE OF DEMOLITION DEBRIS IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, ORDINANCES AND STATUTES.
6. THIS PROJECT DISTURBS MORE THAN ONE-ACRE OF LAND. THE PROJECT WILL BE REQUIRED TO OBTAIN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COVERAGE AS ISSUED BY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA). THE OWNER/DEVELOPER AND "OPERATOR" (GENERAL CONTRACTOR) SHALL BE REQUIRED TO PREPARE AND SUBMIT A NOTICE OF INTENT TO THE EPA PRIOR TO THE START OF CONSTRUCTION AND SHALL BE RESPONSIBLE FOR THE PREPARATION AND IMPLEMENTATION OF A STORMWATER POLLUTION PREVISION PLAN MEETING THE REQUIREMENTS OF THE CURRENT NPDES PERMIT. THE CONTRACTOR MUST HAVE A COPY OF THIS GENERAL PERMIT ON SITE AT ALL TIMES.

EROSION AND SEDIMENT CONTROL

1. INSTALL EROSION CONTROL MEASURES PRIOR TO STARTING ANY WORK ON THE SITE. REFER TO THE EROSION AND SEDIMENT CONTROL DRAWINGS.
2. IMPLEMENT ALL NECESSARY MEASURES REQUIRED TO CONTROL STORMWATER RUNOFF, DUST, SEDIMENT, AND DEBRIS FROM EXITING THE SITE. PERFORM CORRECTIVE ACTION AS NEEDED FOR EROSION CLEANUP AND REPAIRS TO OFFSITE AREAS, IF ANY, AT NO COST TO OWNER.
3. INSPECT AND MAINTAIN EROSION CONTROL MEASURES PER THE SCHEDULE IN THE EROSION AND SEDIMENT CONTROL DRAWINGS. DISPOSE OF SEDIMENT IN AN UPLAND AREA. DO NOT ENCUMBER OTHER DRAINAGE STRUCTURES AND PROTECTED AREAS.
4. PERFORM CONSTRUCTION SEQUENCING IN SUCH A MANNER TO CONTROL EROSION AND TO MINIMIZE THE TIME THAT EARTH MATERIALS ARE EXPOSED BEFORE THEY ARE COVERED, SEEDED, OR OTHERWISE STABILIZED.
5. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER, REMOVE AND DISPOSE OF TEMPORARY EROSION CONTROL MEASURES. CLEAN SEDIMENT AND DEBRIS FROM TEMPORARY MEASURES AND FROM PERMANENT STORM DRAIN AND SANITARY SEWER SYSTEMS.

DEMOLITION

1. REMOVE AND DISPOSE OF EXISTING UTILITIES, FOUNDATIONS AND UNSUITABLE MATERIAL BENEATH AND FOR A DISTANCE OF 10-FEET BEYOND THE PROPOSED BUILDING FOOTPRINT INCLUDING EXTERIOR COLUMNS, UNLESS OTHERWISE NOTED.

CONSTRUCTION LAYOUT

1. PROVIDE PROPER TRANSITIONS BETWEEN EXISTING AND PROPOSED SITE IMPROVEMENTS. FIELD VERIFY EXISTING PAVEMENT AND GROUND ELEVATIONS AT THE INTERFACE WITH PROPOSED PAVEMENTS AND DRAINAGE STRUCTURES BEFORE START OF CONSTRUCTION.
2. PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION, FIELD VERIFY PROPOSED UTILITY ROUTES AND IDENTIFY ANY INTERFERENCES OR OBSTRUCTIONS WITH EXISTING UTILITIES OR PUBLIC RIGHTS-OF-WAY.
3. IMMEDIATELY INFORM THE ENGINEER IN WRITING IF EXISTING UTILITY CONDITIONS CONFLICT OR DIFFER FROM THAT INDICATED AND IF THE WORK CANNOT BE COMPLETED AS INDICATED.
4. DIMENSIONS ARE FROM FACE OF CURB, FACE OF BUILDING, FACE OF WALL, AND CENTER LINE OF PAVEMENT MARKINGS, UNLESS NOTED OTHERWISE.
5. BOUNDS OR MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE SET OR RESET BY A PROFESSIONAL LICENSED SURVEYOR.

EARTHWORK

1. NOTIFY UTILITY LOCATOR SERVICE AT LEAST 72 HOURS BEFORE STARTING EXCAVATION. "DIG SAFE" AT 1-888-344-7233 OR 811.
2. STOP WORK IN THE VICINITY OF SUSPECTED CONTAMINATED SOIL, GROUNDWATER OR OTHER MEDIA. IMMEDIATELY NOTIFY THE OWNER SO THAT APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN. RESUME WORK IN THE IMMEDIATE VICINITY ONLY UPON DIRECTION BY THE OWNER.
3. WITHIN THE LIMITS OF THE BUILDING FOOTPRINT, PERFORM EARTHWORK OPERATIONS TO SUBGRADE ELEVATIONS. SEE DRAWINGS BY OTHERS FOR WORK ABOVE SUBGRADE.

UTILITIES

1. COORDINATE ALL UTILITIES WORK WITH THE FOLLOWING UTILITY COMPANIES:

   WATER, SEWER --> CITY OF PORTSMOUTH
   NATURAL GAS --> UNITIL
   ELECTRIC --> EVERSOURCE
   TELEPHONE --> CONSOLIDATED COMMUNICATIONS (FORMERLY FAIRPOINT)
   CABLE --> COMCAST
2. TERMINATE EXISTING UTILITIES IN CONFORMANCE WITH LOCAL, STATE AND INDIVIDUAL UTILITY COMPANY STANDARD SPECIFICATIONS AND DETAILS. COORDINATE UTILITY SERVICE DISCONNECTS WITH UTILITY REPRESENTATIVES.
3. THE TYPE, SIZE AND LOCATION OF DEPICTED UNDERGROUND UTILITIES ARE APPROXIMATE REPRESENTATIONS OF INFORMATION OBTAINED FROM FIELD LOCATIONS OF VISIBLE FEATURES, EXISTING MAPS AND PLANS OF RECORD, UTILITY MAPPING, AND OTHER SOURCES OF INFORMATION OBTAINED BY THE ENGINEER. ASSUME NO GUARANTEE AS TO THE COMPLETENESS, SERVICEABILITY, EXISTENCE, OR ACCURACY OF UNDERGROUND FACILITIES. FIELD VERIFY THE EXACT LOCATIONS, SIZES, AND ELEVATIONS OF THE POINTS OF CONNECTIONS TO EXISTING UTILITIES.
4. PAY ALL FEES AND COSTS ASSOCIATED WITH UTILITY MODIFICATIONS AND CONNECTIONS, REGARDLESS OF THE ENTITY THAT PERFORMS THE WORK.
5. COORDINATE THE WORK AND WORK SCHEDULE WITH UTILITY COMPANIES. PROVIDE ADEQUATE NOTICE TO UTILITIES TO PREVENT DELAYS IN CONSTRUCTION.
6. INTERIOR DIAMETERS OF STORM DRAIN AND SANITARY SEWER STRUCTURES SHALL BE DETERMINED BY THE PRECAST MANUFACTURER, BASED ON THE INDICATED PIPE SYSTEM LAYOUT AND LOCAL MUNICIPAL STANDARDS.

   MINIMUM INTERIOR DIAMETERS:
   0 TO 20 FEET DEEP; 4 FEET.
   20 FEET OR GREATER; 5 FEET.
5. RIM ELEVATIONS FOR MANHOLES, VALVE COVERS, GATE AND PULL BOXES, AND OTHER STRUCTURES ARE APPROXIMATE. SET OR RESET RIM ELEVATIONS AS FOLLOWS:

   IN PAVEMENTS AND CONCRETE SURFACES: FLUSH
   IN SURFACES ALONG ACCESSIBLE ROUTES: FLUSH
   IN LANDSCAPE, SEEDED, AND OTHER EARTH SURFACE AREAS:
   1 INCH ABOVE SURROUNDING AREA; TAPER EARTH TO RIM ELEVATION.
6. INSTALL PROPOSED PRIVATE UTILITY SERVICES ACCORDING TO THE REQUIREMENTS PROVIDED BY, AND APPROVED BY THE AUTHORITY HAVING JURISDICTION (WATER, SEWER, GAS, TELEPHONE, ELECTRIC, FIRE ALARM, ETC.). COORDINATE FINAL DESIGN LOADS AND LOCATIONS WITH OWNER AND ARCHITECT.
7. ALL WATER MAIN INSTALLATIONS SHALL BE CLASS 52, CEMENT LINED DUCTILE IRON PIPE.
8. ALL WATER MAIN INSTALLATIONS SHALL BE PRESSURE TESTED AND CHLORINATED AFTER CONSTRUCTION PRIOR TO ACTIVATING THE SYSTEM. CONTRACTOR SHALL COORDINATE CHLORINATION AND TESTING WITH THE CITY OF PORTSMOUTH.
9. CONNECTIONS TO EXISTING WATER MAIN SHALL BE CONSTRUCTED TO CITY OF PORTSMOUTH STANDARDS.
10. ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
11. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
12. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL.
13. CONTRACTOR SHALL PROVIDE EXCAVATION, BEDDING, BACKFILL, AND COMPACTION FOR NATURAL GAS SERVICES.
14. A 10-FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. AN 18-INCH MINIMUM OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER/SANITARY SEWER CROSSINGS.
15. HYDRANTS, GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF THE CITY OF PORTSMOUTH.
16. COORDINATE TESTING OF SEWER CONSTRUCTION WITH THE CITY OF PORTSMOUTH.
17. ALL SEWER PIPE WITH LESS THAN 6-FEET OF COVER SHALL BE INSULATED.
18. CONTRACTOR SHALL COORDINATE ALL ELECTRIC, TELEPHONE, AND CABLE WORK INCLUDING, BUT NOT LIMITED TO: CONDUIT CONSTRUCTION, MANHOLE CONSTRUCTION, UTILITY POLE CONSTRUCTION, OVERHEAD WIRE RELOCATION, AND TRANSFORMER CONSTRUCTION WITH EVERSOURCE ENERGY, CONSOLIDATED COMMUNICATIONS, AND COMCAST.
19. CONTRACTOR SHALL PERFORM TEST PITS TO VERIFY INVERT ELEVATIONS IN FIELD PRIOR TO CONSTRUCTION AND SHALL NOTIFY ENGINEER IF ELEVATION DIFFERS FROM PLAN.
20. ABANDON EXISTING SEWERS, WHERE NOTED ON DRAWINGS, ONCE PROPOSED SEWERS HAVE BEEN INSTALLED, TESTED, AND ACCEPTED BY THE CITY. EXISTING SEWERS GREATER THAN OR EQUAL TO 24-INCH DIAMETER SHALL BE ABANDONED BY FILLING WITH CONTROLLED DENSITY FILL IN ACCORDANCE WITH SPECIFICATION SECTION 02 22 80. EXISTING SEWERS LESS THAN 24-INCH DIAMETER SHALL BE ABANDONED BY PLACING CONCRETE PLUGS IN THE OPEN ENDS, IN ACCORDANCE WITH SPECIFICATION 02 22 80.

PAVEMENT

1. AT A MINIMUM, CONSTRUCT ACCESSIBLE ROUTES, PARKING SPACES, RAMPS, SIDEWALKS AND WALKWAYS IN CONFORMANCE WITH THE FEDERAL AMERICANS WITH DISABILITIES ACT AND WITH STATE AND LOCAL LAWS AND REGULATIONS (WHICHEVER ARE MORE STRINGENT).
2. PAVEMENT MARKINGS SHALL BE INSTALLED AS SHOWN, INCLUDING PARKING SPACES, STOP BARS, ACCESSIBLE SYMBOLS, PAINTED ISLANDS, FIRE LANES, AND CENTERLINES. ALL MARKINGS, EXCEPT CENTERLINE AND MEDIAN ISLANDS, TO BE CONSTRUCTED USING WHITE PAVEMENT MARKINGS. ALL THERMOPLASTIC PAVEMENT MARKINGS INCLUDING LEGENDS, ARROWS, CROSSWALKS, AND STOP BARS SHALL MEET THE REQUIREMENTS OF AASHTO M249. ALL PAINTED PAVEMENT MARKINGS INCLUDING CENTERLINES, LANE LINES, AND PAINTED MEDIANS SHALL MEET THE REQUIREMENTS OF AASHTO M248 YPE "F."
3. ALL PAVEMENT MARKINGS AND SIGNS TO CONFORM TO "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES," "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS," AND THE AMERICANS WITH DISABILITIES ACT REQUIREMENTS, LATEST EDITIONS.
4. SEE DETAILS FOR PAVEMENT MARKINGS, ADA SYMBOLS, SIGNS, AND SIGN POSTS.
5. CENTERLINES SHALL BE 4-INCH WIDE YELLOW LINES.
6. PAINTED ISLANDS SHALL BE 4-INCH WIDE DIAGONAL LINES AT 3-FOOT O.C. BORDERED BY 4-INCH WIDE LINES.
7. STOP BARS SHALL BE 18-INCHES WIDE, WHITE THERMOPLASTIC, AND CONFORM TO CURRENT MUTCD STANDARDS.
8. CLEAN AND COAT VERTICAL FACE OF EXITING PAVEMENT AT SAWCUT LINE WITH RS-1 EMULSION IMMEDIATELY PRIOR TO PLACING NEW BITUMINOUS CONCRETE.
9. CONTRACTOR SHALL COORDINATE WITH THE BUILDING DRAWINGS FOR ALL CONCRETE PADS AND SIDEWALKS ADJACENT TO BUILDING.
10. ALL WORK SHALL CONFORM TO THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS, STANDARD SPECIFICATIONS AND WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORATION, "STANDARD SPECIFICATIONS OF ROAD AND BRIDGE CONSTRUCTION," CURRENT EDITION.
11. CONTACTOR TO PROVIDE BACKFILL AND COMPACTION AT CURB LINE AFTER CONCRETE FORMS FOR SIDEWALKS AND PADS HAVE BEEN STRIPPED. COORDINATE WITH BUILDING CONTRACTOR.
12. ALL DIMENSIONS ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.

SITE RESTORATION

1. PROVIDE 6 INCHES OF TOPSOIL AND SEED TO AREAS DISTURBED DURING CONSTRUCTION AND NOT DESIGNATED TO BE RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENTS, WALKS, ETC.) UNLESS OTHERWISE NOTED.
2. REPAIR DAMAGES RESULTING FROM CONSTRUCTION LOADS, AT NO ADDITIONAL COST TO OWNER.

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE – RICHARD R. LUNDBORN No. 10843 – LICENSED – PROFESSIONAL ENGINEER

SCALE: HORZ.: VERT.:
DATUM: HORZ.: VERT.:
0
GRAPHIC SCALE

FUSS & O'NEILL
UPPER SQUARE BUSINESS CENTER
5 FLETCHER STREET, SUITE 1
KENNEBUNK, MAINE 04043
207.363.0669
www.fando.com

CATE STREET DEVELOPMENT, LLC
GENERAL NOTES
WEST END YARDS
PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10
DATE: 11/19/2018

CN-001

DRAINAGE NOTES

(E1) EXISTING CB
STA. 2+27.70, RT 42.67'
RIM = 20.32'
INV OUT (D2)(12"HDPE) =18.83'

(1) PROPOSED 4' DMH
STA. 2+04.52, LT 68.83'
RIM = 23.00'
INV IN (D2)(24"HDPE) =17.10'
INV OUT (24")(HDPE) = 17.00'

(2) PROPOSED 4' DMH
STA. 2+27.69, LT 0'
RIM = 23.27'
INV IN (3)(12"HDPE) = 18.64'
INV OUT (1)(24"HDPE) = 17.64'
INV IN (E1)(12"HDPE) = 18.64'
INV IN (4)(24" HDPE) = 18.14'

(3) PROPOSED CB
STA. 2+03.28, RT 18.92'
RIM = 23.31'
INV OUT (2)(12"HDPE) = 19.31'

(4) PROPOSED 4' DMH
STA. 2+73.59, RT 0'
RIM = 22.90'
INV IN (5)(12"HDPE) = 18.91'
INV IN (6)(12"HDPE) = 18.91'
INV IN (7)(18"HDPE) = 18.51'
INV OUT (2)(24"HDPE) = 18.41'

(5) PROPOSED CB
STA. 2+63.79, LT 25.41'
RIM = 22.46'
INV OUT (4)(12"HDPE) = 19.03'

(6) PROPOSED CB
STA. 2+81.00, RT 18.99'
RIM = 22.65'
INV OUT (4)(12"HDPE) = 19.00'

(7) PROPOSED 4' DMH
STA. 4+54.22, RT 0'
RIM = 24.29'
INV IN (8)(12"HDPE) = 20.16'
INV IN (9)(12"HDPE) = 20.16'
INV IN (10)(18"HDPE) = 20.16'
INV OUT (2)(18"HDPE) = 19.66'

(8) PROPOSED CB
STA. 4+45.58, RT 11.33'
RIM = 24.07'
INV OUT (7)(12"HDPE) = 20.24'

(9) PROPOSED CB
STA. 2+81.00, RT 18.99'
RIM = 24.07'
INV OUT (7)(12"HDPE) = 20.24'

(10) PROPOSED 4' DMH
STA. 6+89.52, RT 0'
RIM = 25.63'
INV IN (11)(12"HDPE) = 21.77'
INV OUT (7)(12"HDPE) = 21.67'

(11) PROPOSED 4' DMH
STA. 9+24.79, RT 0'
RIM = 27.32'
INV IN (12)(12"HDPE) = 23.37'
INV IN (13)(12"HDPE) = 23.37'
INV OUT (10)(12"HDPE) = 23.27'

(12) PROPOSED CB
STA. 9+24.85, RT 11.00'
RIM = 27.10'
INV OUT (11)(12"HDPE) = 23.44'

(13) PROPOSED CB
STA. 9+24.79, LT 11.00'
RIM = 27.09'
INV OUT (11)(12"HDPE) = 23.44'

(E2) EXISTING DMH
STA. 15+44.91, LT 1.76'
RIM = 13.8'
INV IN (EX.CB 2348)(15"PIPE) = 9.1'
INV IN (EX.CB 2350)(15"PIPE) = 10.3'
INV IN (14)(18" HDPE) = 9.7'
INV OUT (EX.DMH 3772)(15"PIPE) = 9.1'

(14) PROPOSED 4' DMH
STA. 14+24.87, RT 3.86'
RIM = 14.93'
INV IN (15)(12"HDPE) = 10.72'
INV OUT (E2)(18"HDPE) = 10.47'

(15) PROPOSED 4' DMH
STA. 13+43.00, LT 0'
RIM = 17.21'
INV IN (16) = 11.74'
INV OUT (14)(15"HDPE) = 11.33'

(16) PROPOSED DMH
STA. 12+76.83, LT 0'
RIM = 19.20'
INV IN (17)(12"HDPE) = 11.99'
INV IN (18)(12'HDPE) = 11.99'
INV IN (19)(12"HDPE) = 11.99'
INV OUT (15)(15"HDPE) = 11.74'

(17) PROPOSED CB
STA. 12+77.00, RT 11.00'
RIM = 18.97'
INV OUT (16)(12"HDPE) = 11.99'

(18) PROPOSED CB
STA. 12+75.89, LT 26.25'
RIM = 15.50'
INV OUT (16)(12"HDPE) = 11.99'

(19) PROPOSED 4' DMH
STA. 11+87.56, LT 0'
RIM = 21.59'
INV IN (20)(12"HDPE) = 12.65'
INV OUT (16)(12"HDPE) =12.55'

(20) PROPOSED 12" ø OVERFLOW STRUCTURE
STA. 9+24.79, LT 11.00'
RIM = 18.50'
INV OUT (11)(12"HDPE) = 13.90'

SEWER STRUCTURE NOTES

[1] STA. 14+29.41, RT 14.39'
RIM = 14.75'
INV. IN (21" SDR35 PVC) = 9.20

[2] STA. 13+43.00, RT 7.98'
4' DIA.
RIM = 17.07'
INV. IN (21" SDR35 PVC) = 9.39
INV. OUT (21" PVC) = 9.30

[3] STA. 11+88.31, RT 5.46'
4' DIA.
RIM = 21.48'
INV. IN (21" SDR35 PVC) = 9.65
INV. OUT (21" SDR35 PVC) = 9.49

[4] STA. 10+92.29, RT 15.35'
4' DIA.
RIM = 23.07'
INV. IN (21" SDR35 PVC) = 9.84'
INV. OUT (21" SDR35 PVC) = 9.75'

[5] STA. 8+86.13, RT 5.50'
4' DIA.
RIM = 27.97'
INV. IN (21" SDR35 PVC) = 10.16'
INV. OUT (21" SDR35 PVC) = 9.94'

[6] STA. 5+86.13, RT 5.70'
4' DIA.
RIM = 24.85'
INV. IN (21" SDR35 PVC) = 10.58'
INV. OUT (21" SDR35 PVC) = 10.26'

[7] STA. 3+36.64, RT 12.08'
4' DIA.
RIM = 23.07'
INV. IN (21" SDR35 PVC) = 10.94'
INV. OUT (21" SDR35 PVC) = 10.68'

[8] STA. 0+36.64, RT 11.97'
4' DIA.
RIM = 25.58'
INV. IN (21" SDR35 PVC) = 11.35'
INV. OUT (21" SDR35 PVC) = 11.04'

[9] STA. 0+27.20, RT 342.33'
4' DIA.
RIM = 23.20'
INV. IN = 11.80'
INV. OUT (21" SDR35 PVC) = 11.45'

LEGEND

	PROPERTY LINE
R	PROPOSED ROOF DRAIN
C	PROPOSED CABLE LINE
S	PROPOSED SANITARY SEWER LINE
D	PROPOSED STORM DRAINAGE LINE
T	PROPOSED TELEPHONE LINE
W	PROPOSED WATER MAIN
G	PROPOSED GAS MAIN
E	PROPOSED ELECTRICAL SERVICE
	PROPOSED STORM MANHOLE
	PROPOSED TYPE "X" CATCH BASIN
	PROPOSED REINFORCED CONCRETE CULVERT END
	PROPOSED YARD DRAIN
	PROPOSED SANITARY MANHOLE
	PROPOSED HYDRANT AND GATE VALVE
	PROPOSED LIGHT
	ELECTRICAL STRUCTURE LABEL
	SEWER MANHOLE LABEL
	WATER STRUCTURE LABEL
	DRAINAGE STRUCTURE LABEL
	PROPOSED UTILITY POLE
	EXISTING UTILITY POLE
	EXISTING HYDRANT
	EXISTING CATCH BASIN
	EXISTING SANITARY MANHOLE
	EXISTING STORM MANHOLE
S	EXISTING SANITARY SEWER LINE
T	EXISTING TELEPHONE LINE
W	EXISTING WATER MAIN
G	EXISTING GAS MAIN
E	EXISTING ELECTRICAL SERVICE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE
RICHARD R. LUNDBORN
LICENSED PROFESSIONAL ENGINEER

SCALE:
HORZ.:
VERT.:
DATUM:
HORZ.:
VERT.:
0
GRAPHIC SCALE

FUSS & O'NEILL
UPPER SQUARE BUSINESS CENTER
5 FLETCHER STREET, SUITE 1
KENNEBUNK, MAINE 04043
207.363.0669
www.fando.com

CATE STREET DEVELOPMENT, LLC
STRUCTURE TABLE & LEGENDS
WEST END YARDS
PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10
DATE: 11/19/2018

CN-002

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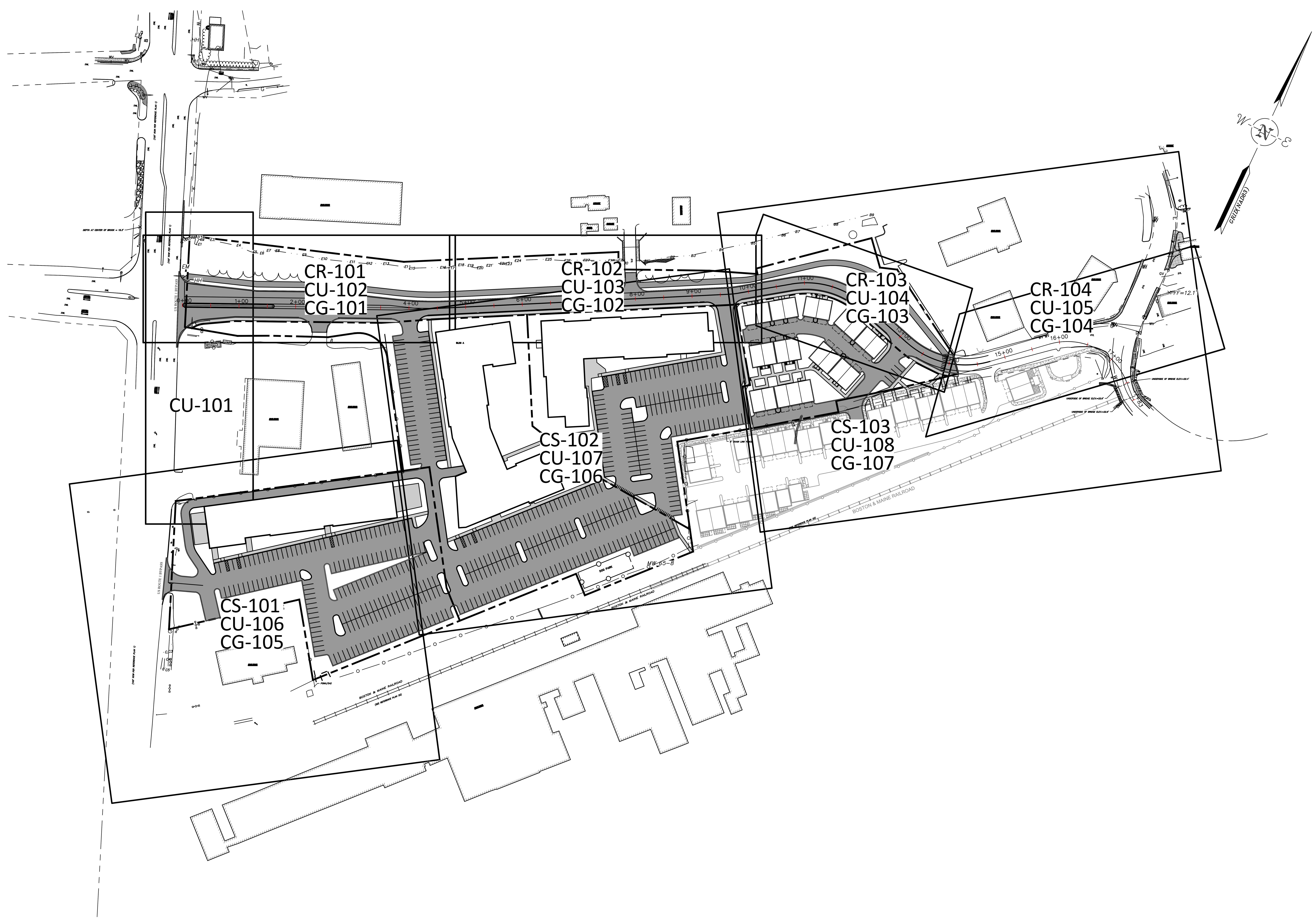

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No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE
RICHARD R. LUNDBORN
No. 12643
LICENSED PROFESSIONAL ENGINEER

SCALE: HORZ.: 1"=80' VERT.: 1"=80'
DATUM: HORZ.: NAD83 VERT.: NAVD88
80 40 0 80
GRAPHIC SCALE

FUSS & O'NEILL
UPPER SQUARE BUSINESS CENTER
5 FLETCHER STREET, SUITE 1
KENNEBUNK, MAINE 04043
207.363.0669
www.fando.com

CATE STREET DEVELOPMENT, LLC

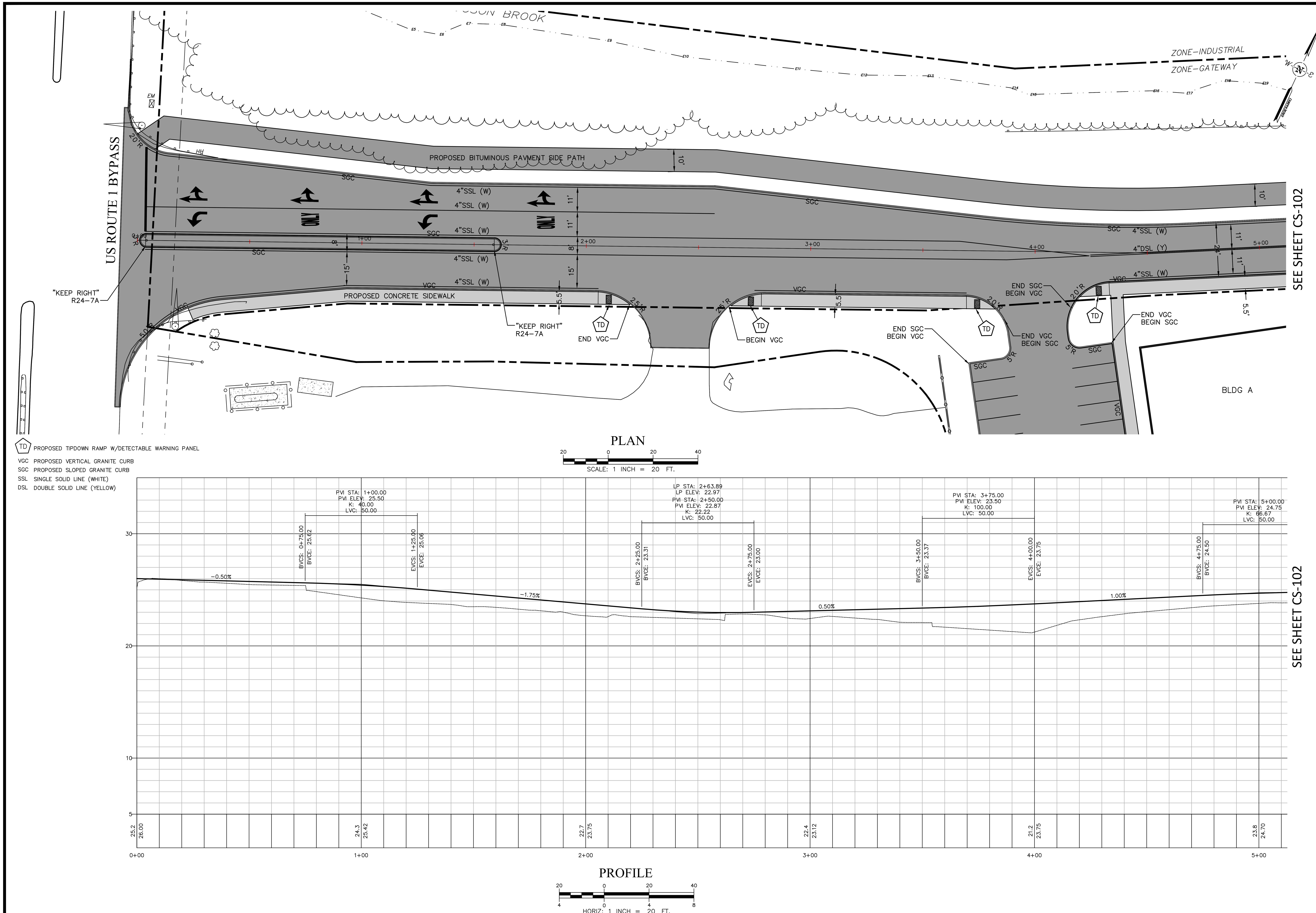
KEY PLAN

WEST END YARDS

PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10
DATE: 11/19/2018

CS-1



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LAYER STATE:

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE
RICHARD R. LUNDBORN
No. 10943
LICENSED PROFESSIONAL ENGINEER

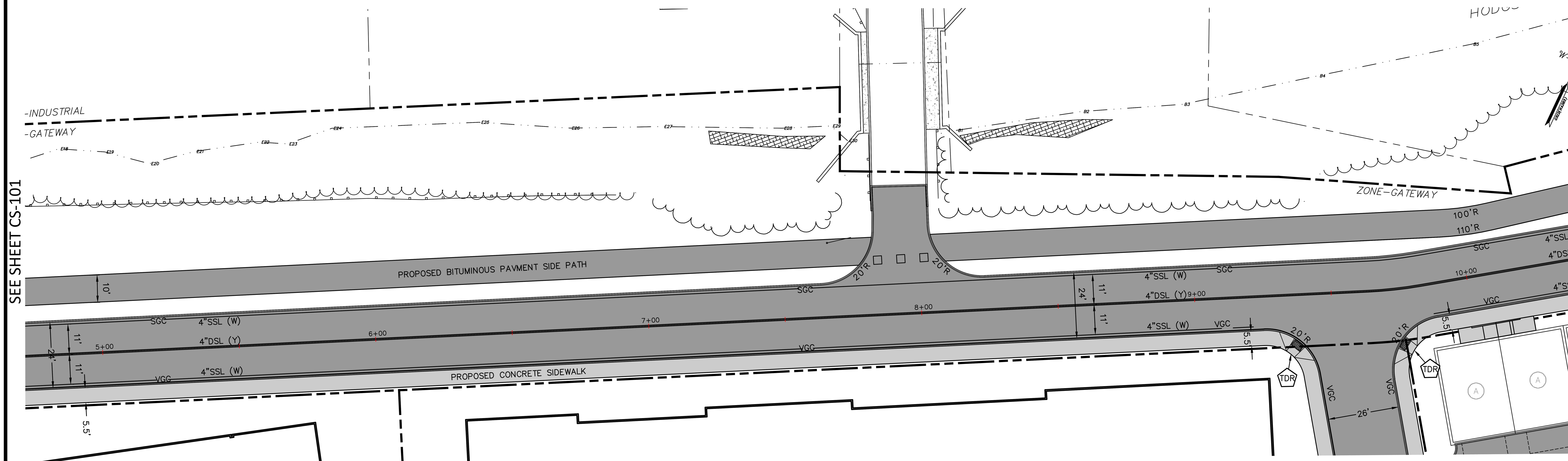
SCALE: HORZ.: VERT.:
DATUM: HORZ.: NAD83 VERT.: NAVD88
GRAPHIC SCALE

FUSS & O'NEILL
UPPER SQUARE BUSINESS CENTER
5 FLETCHER STREET, SUITE 1
KENNEBUNK, MAINE 04043
207.363.0669
www.fando.com

CATE STREET DEVELOPMENT, LLC
ROADWAY PLAN & PROFILE
WEST END YARDS
PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10
DATE: 11/19/2018

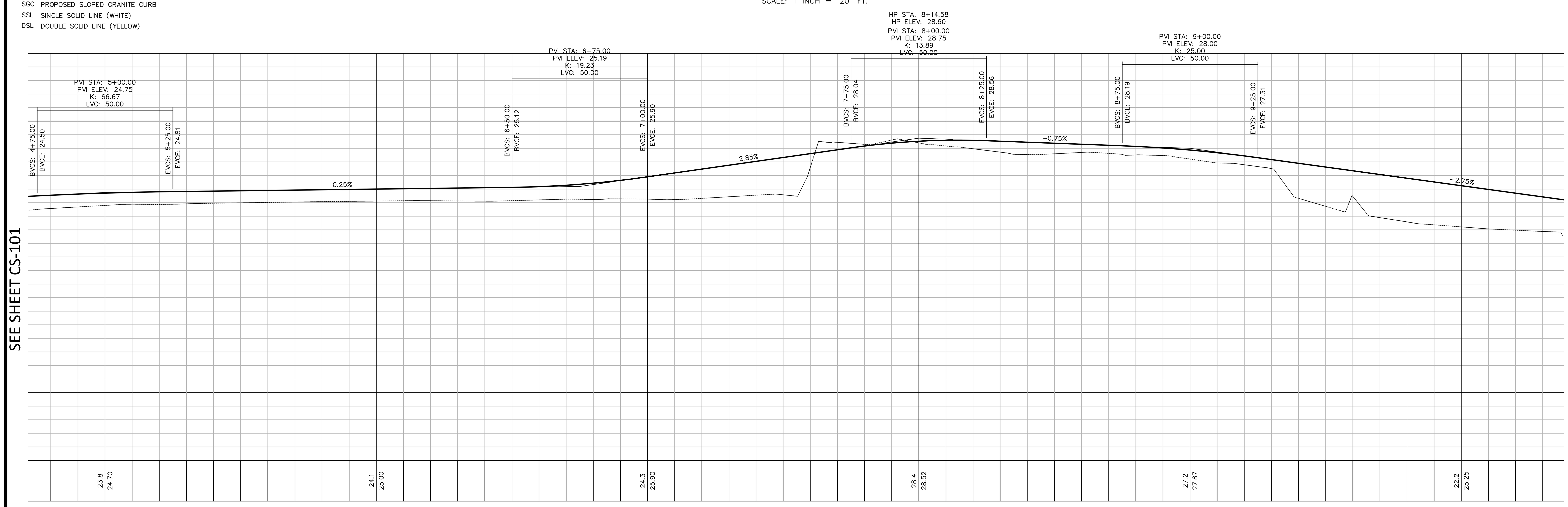
CS-101



TD PROPOSED TIPDOWN RAMP W/DETECTABLE WARNING PANEL
TDR PROPOSED TIPDOWN RAMP W/RADIUS DETECTABLE WARNING PANEL
VGC PROPOSED VERTICAL GRANITE CURB
SGC PROPOSED SLOPED GRANITE CURB
SSL SINGLE SOLID LINE (WHITE)
DSL DOUBLE SOLID LINE (YELLOW)

PLAN

SCALE: 1 INCH = 20 FT.



PROFILE

HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.

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LAYER STATE:

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE – RICHARD R. LUNDBORN No. 12543 – LICENSED PROFESSIONAL ENGINEER

SCALE: HORZ.: VERT.:
DATUM: HORZ.: NAD83 VERT.: NAVD88
GRAPHIC SCALE 0

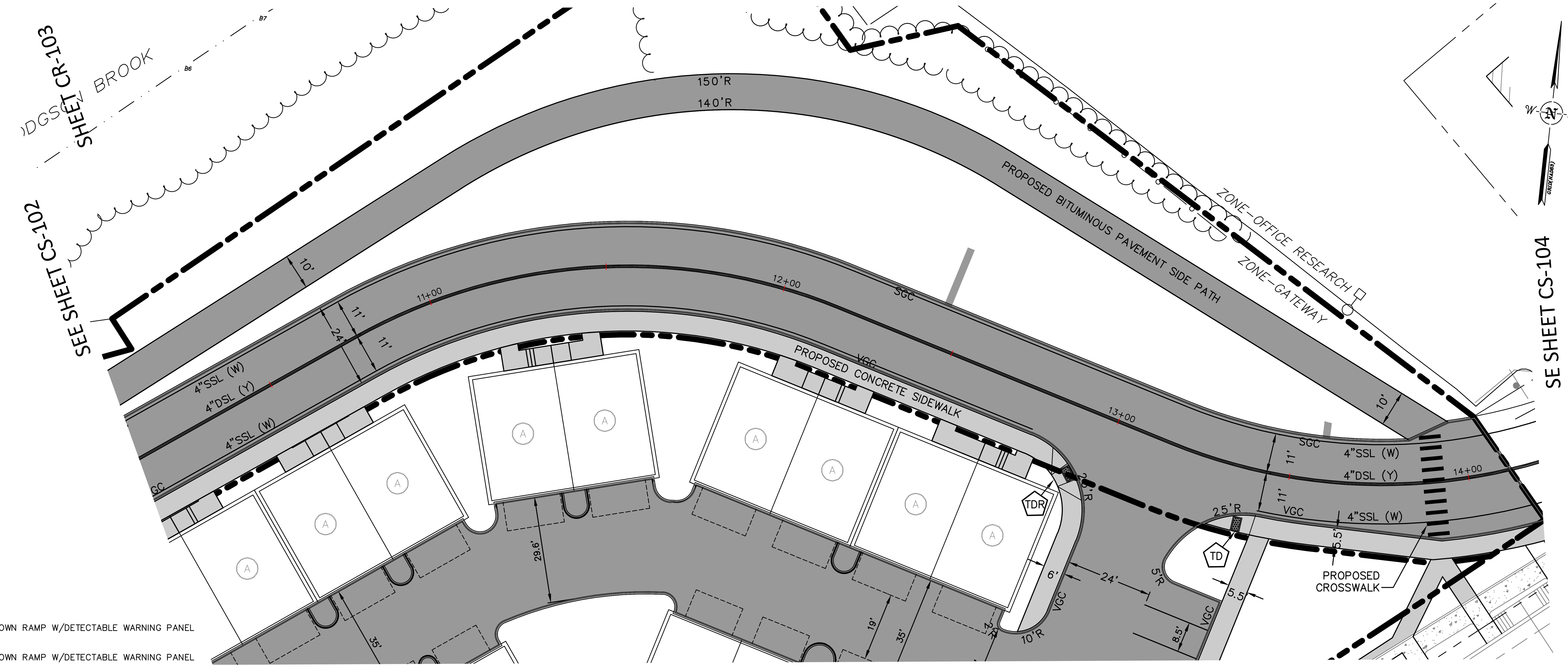
FUSS & O'NEILL
UPPER SQUARE BUSINESS CENTER
5 FLETCHER STREET, SUITE 1
KENNEBUNK, MAINE 04043
207.363.0669
www.fando.com

CATE STREET DEVELOPMENT, LLC
ROADWAY PLAN & PROFILE
WEST END YARDS
PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10
DATE: 11/19/2018

CS-102

PLAN



TD PROPOSED TIPDOWN RAMP W/DETECTABLE WARNING PANEL

TD PROPOSED TIPDOWN RAMP W/DETECTABLE WARNING PANEL

VGC PROPOSED VERTICAL GRANITE CURB

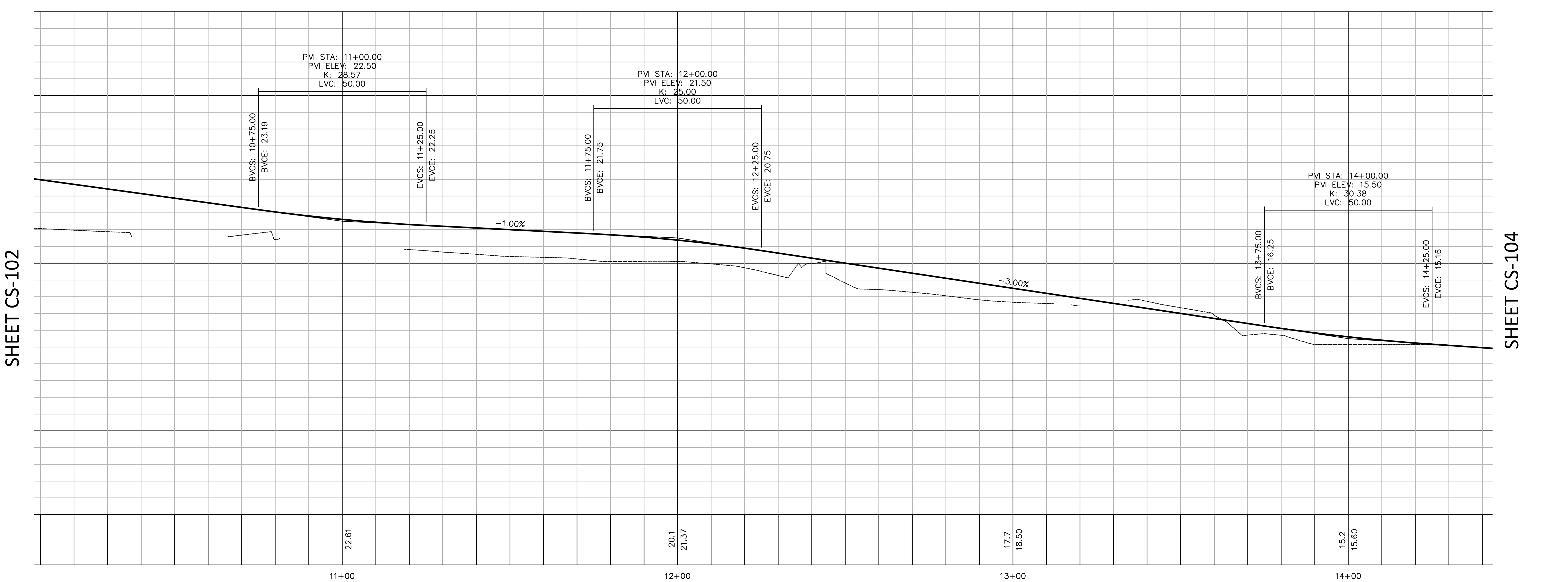
SGC PROPOSED SLOPED GRANITE CURB

SSL SINGLE SOLID LINE (WHITE)

DSL DOUBLE SOLID LINE (YELLOW)

SCALE: 1 INCH = 20 FT.

PROFILE



HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE – RICHARD R. LUNDBORN No. 12643 – LICENSED PROFESSIONAL ENGINEER

SCALE: HORZ.: VERT.:
DATUM: HORZ.: NAD83 VERT.: NAVD88
GRAPHIC SCALE

FUSS & O'NEILL
UPPER SQUARE BUSINESS CENTER
5 FLETCHER STREET, SUITE 1
KENNEBUNK, MAINE 04043
207.363.0669
www.fando.com

CATE STREET DEVELOPMENT, LLC

ROADWAY PLAN & PROFILE

WEST END YARDS

PORTSMOUTH NEW HAMPSHIRE

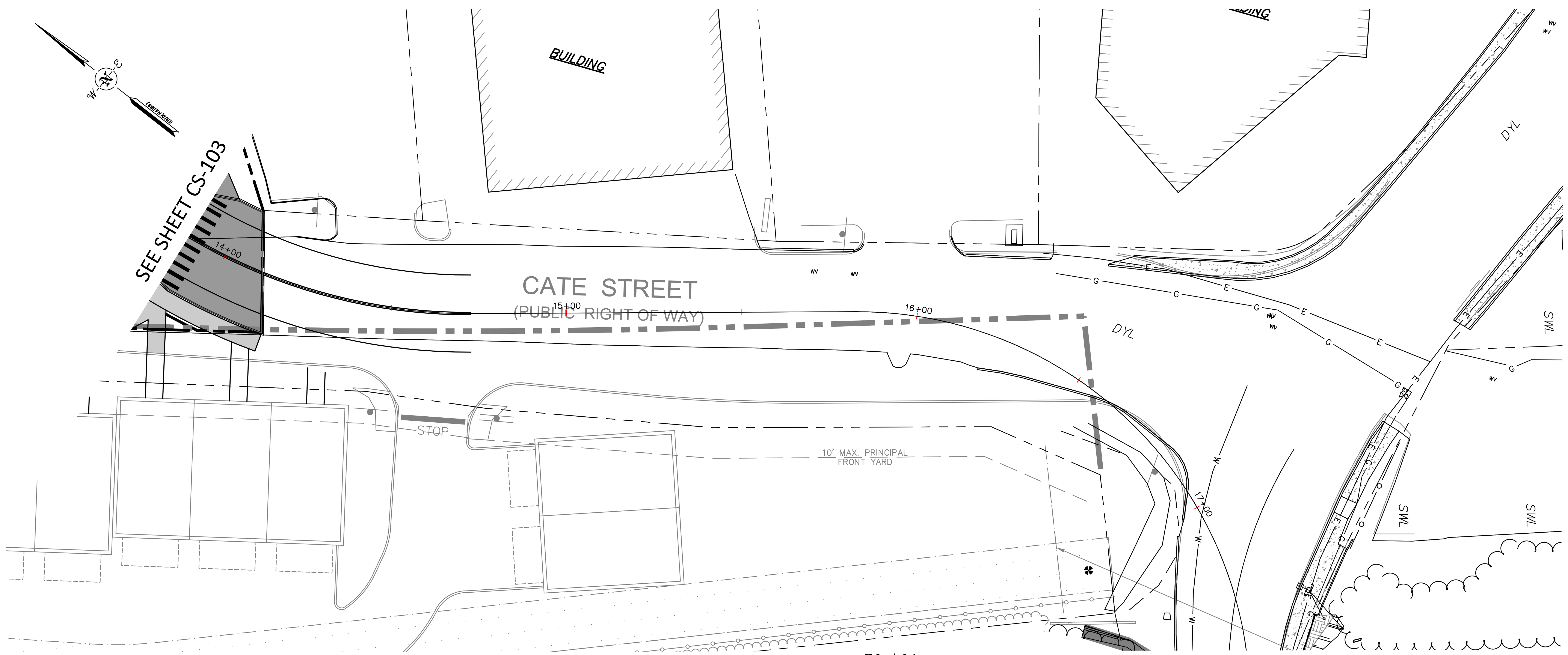
PROJ. No.: 20180317.A10
DATE: 11/19/2018

CS-103

File Path: F:\P2018\0317\A10\Civil3\Dwg\20180317A10_STP01.dwg Layout: CS-103 Plotted: Mon, November 19, 2018 - 2:55 PM User: ddugal
Plotter: DWG TO PDF.PC3 CTB File: FO.STB
MS VIEW: LAYER STATE:

File Path: F:\P2018\0317\A10\Civil3\Dwg\20180317A10_STP01.dwg Layout: CS-104 Plotted: Mon, November 19, 2018 - 2:55 PM User: ddugal
Plotter: DWG TO PDF.PC3 CTB File: FO.STB

MS VIEW: | LAYER STATE:



PLAN

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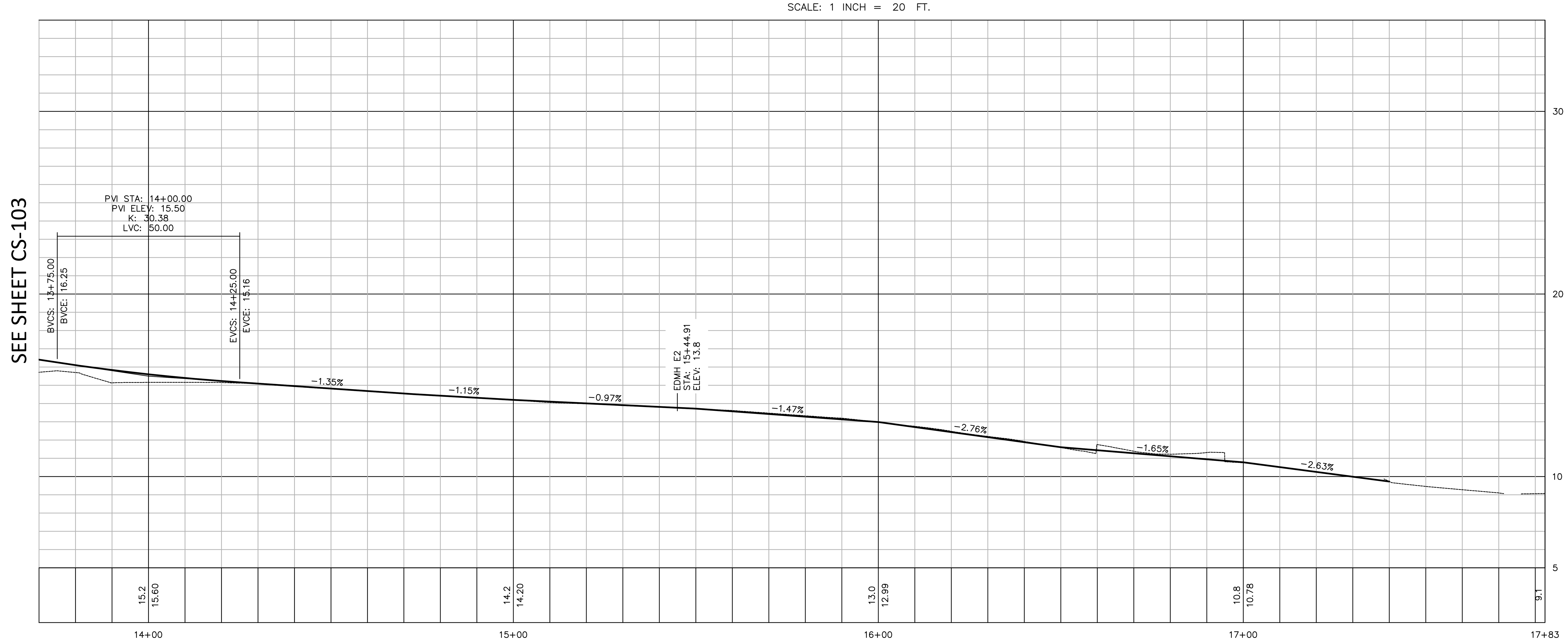
SCALE: 1 INCH = 20 FT.



PROFILE

20 0 20 40
4 0 4 8
HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE – RICHARD R. LUNDBORN No. 12943 – LICENSED – PROFESSIONAL ENGINEER

SCALE: HORZ.: VERT.:
DATUM: HORZ.: NAD83 VERT.: NAVD88
GRAPHIC SCALE 0

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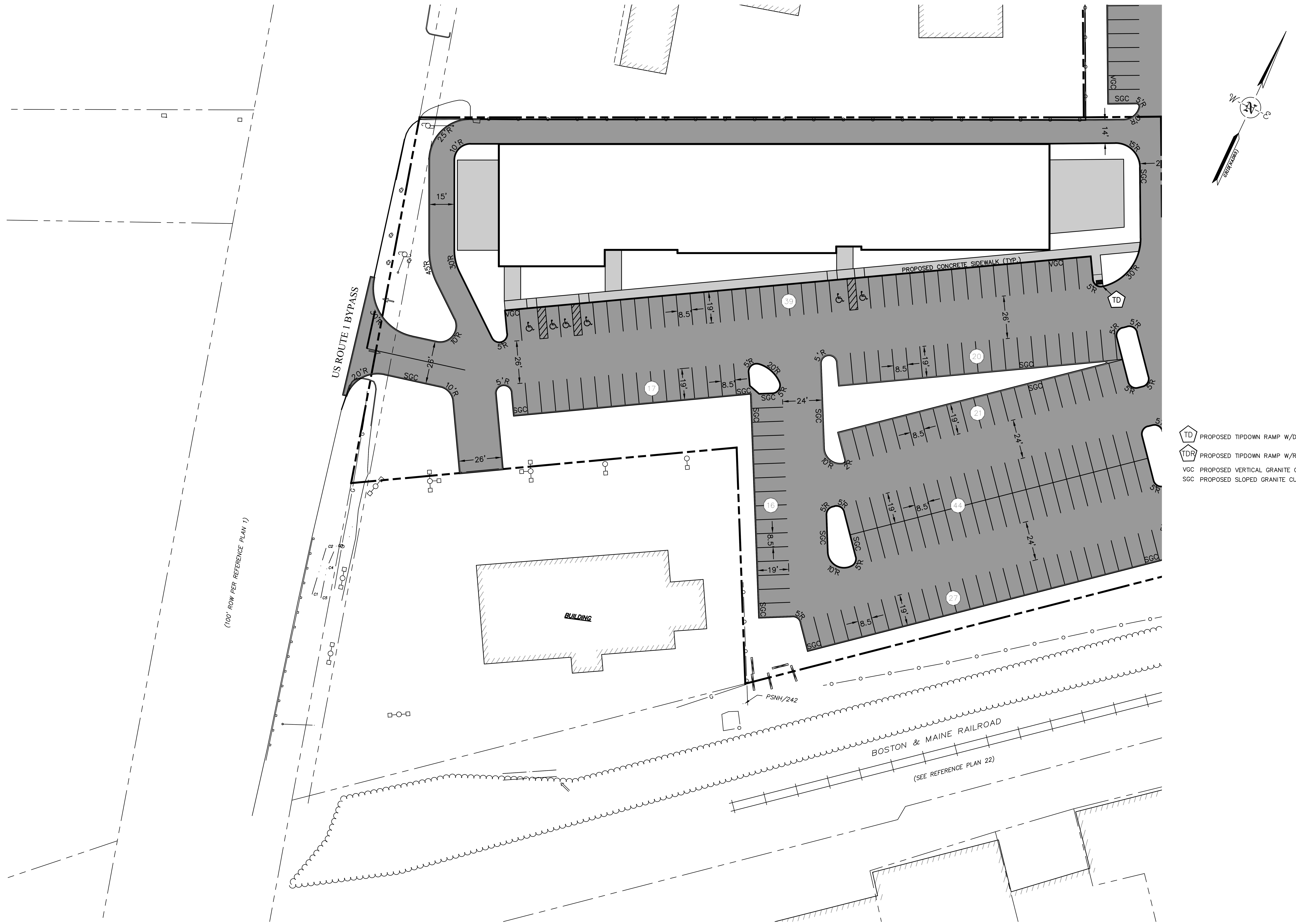
ROADWAY PLAN & PROFILE
WEST END YARDS
PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10
DATE: 11/19/2018

CR-104



TD PROPOSED TIPDOWN RAMP W/DETECTABLE WARNING PANEL

TDR PROPOSED TIPDOWN RAMP W/RADIUS DETECTABLE WARNING PANEL

VGC PROPOSED VERTICAL GRANITE CURB

SGC PROPOSED SLOPED GRANITE CURB

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE – RICHARD R. LUNDBORN No. 10943 – LICENSED PROFESSIONAL ENGINEER

SCALE: HORZ.: 1"=30' VERT.: 1"=30'

DATUM: HORZ.: NAD83 VERT.: NAVD88

30 15 0 30 GRAPHIC SCALE

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SITE PLAN

WEST END YARDS

PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10
DATE: 11/19/2018

CS-101

File Path: F:\P2018\0317\A10\Civil3\Dwg\20180317A10_STP01.dwg Layout: CS-105 Plotted: Mon, November 19, 2018 - 2:57 PM User: ddugal
MS VIEW: | LAYER STATE: | Plotter: DWG TO PDF.PC3 CTB File: FO.STB

TD PROPOSED TIPDOWN RAMP W/DETECTABLE WARNING PANEL
TDR PROPOSED TIPDOWN RAMP W/RADIUS DETECTABLE WARNING PANEL
VGC PROPOSED VERTICAL GRANITE CURB
SGC PROPOSED SLOPED GRANITE CURB

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE – RICHARD R. LUNDBORN No. 10943 – LICENSED – PROFESSIONAL ENGINEER

SCALE: HORZ.: 1"=30' VERT.: 1"=30'
DATUM: HORZ.: NAD83 VERT.: NAVD88
GRAPHIC SCALE 30 15 0 30

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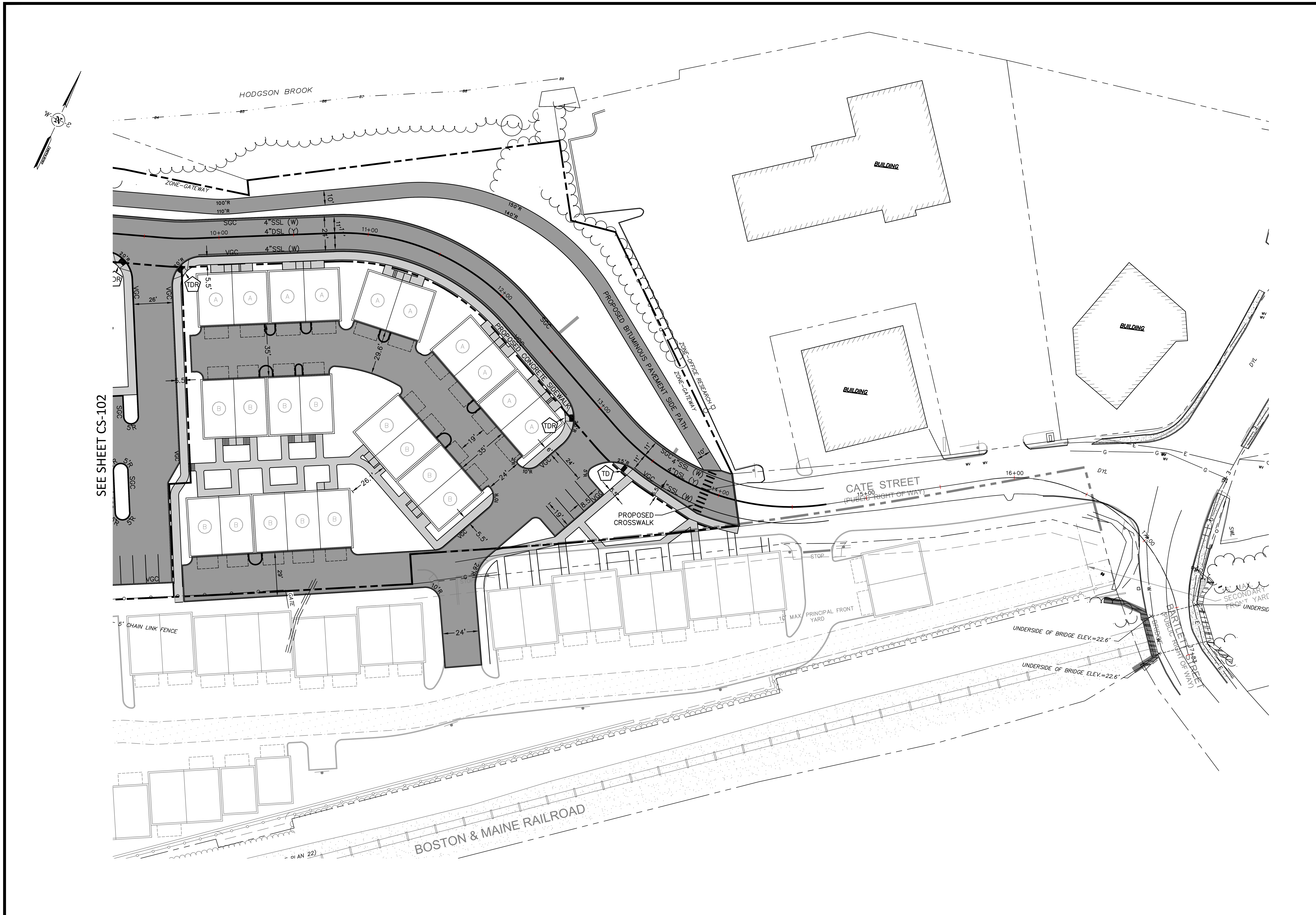
SITE PLAN
WEST END YARDS
PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10
DATE: 11/19/2018

CS-102

File Path: F:\P2018\0317\A10\Civil3\Dwg\20180317A10_STP01.dwg Layout: CS-106 Plotted: Mon, November 19, 2018 - 2:57 PM User: ddugal
Plotter: DWG TO PDF.PC3 CTB File: FO.STB
MS VIEW:
LAYER STATE:



No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE – RICHARD R. LUNDBORN – LICENSED PROFESSIONAL ENGINEER

SCALE:
HORZ.: 1"=30'
VERT.: 1"=30'
DATUM:
HORZ.: NAD83
VERT.: NAVD88
20 15 0 30
GRAPHIC SCALE

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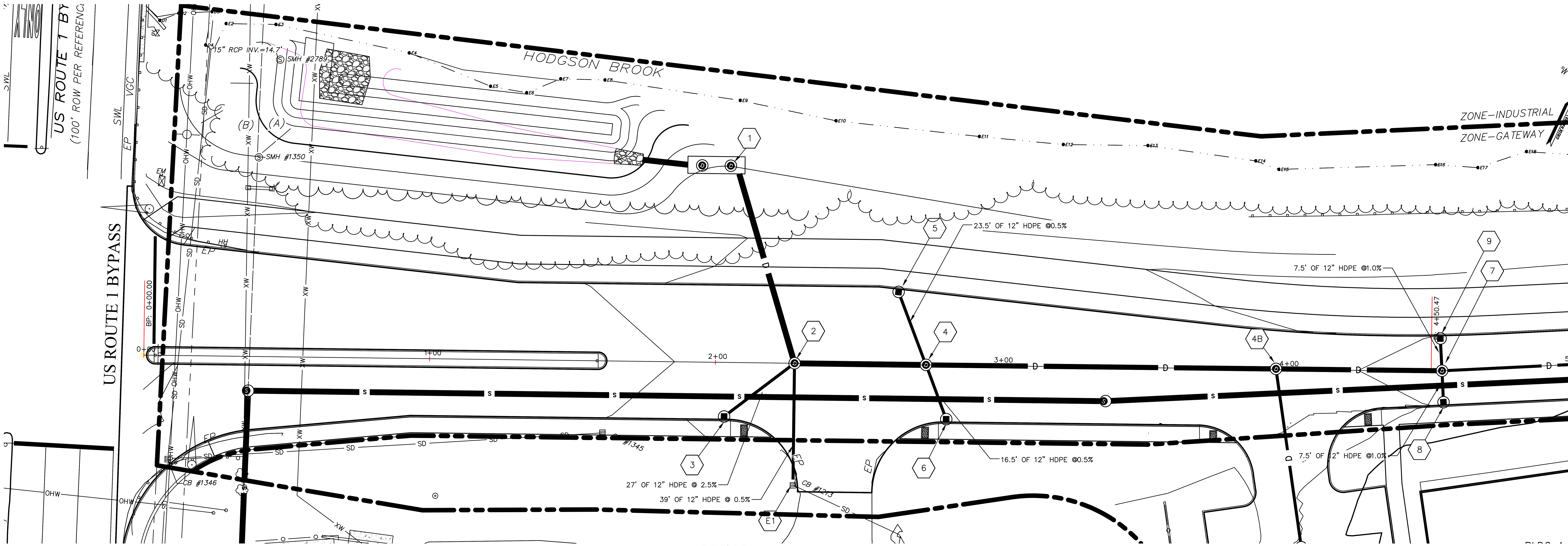
SITE PLAN
WEST END YARDS

PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10
DATE: 11/19/2018

CS-103



PLAN

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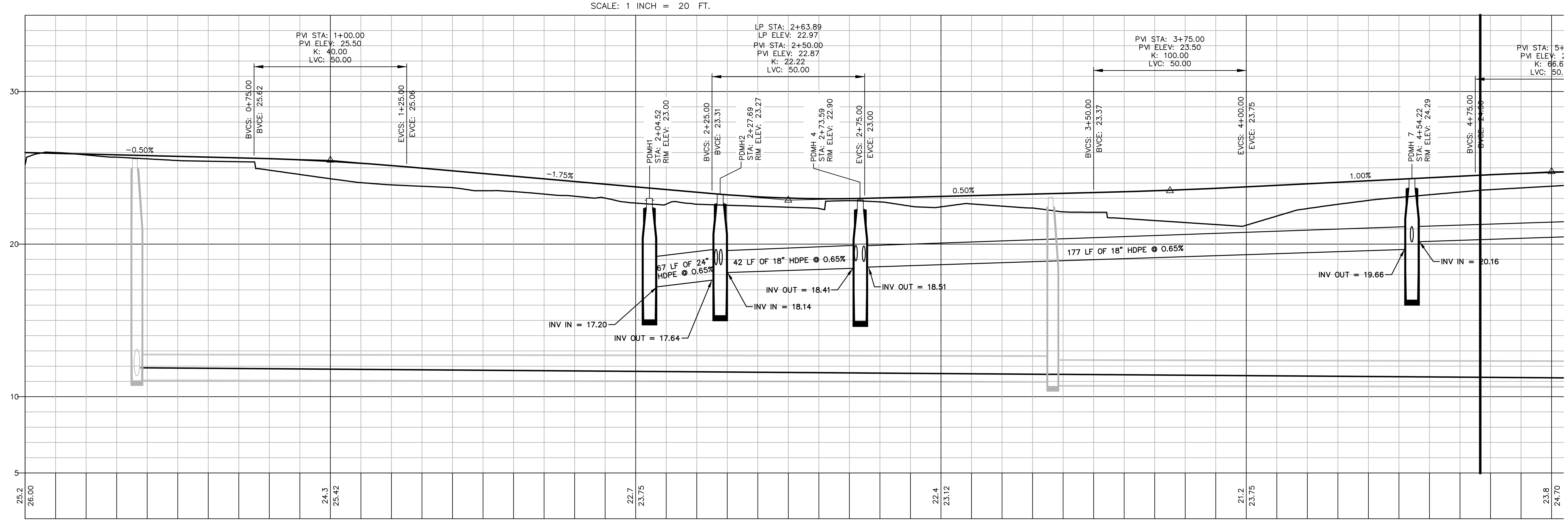

PROFILE

HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.

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STATE OF NEW HAMPSHIRE – RICHARD R. LUNDBORN No. 10843 – LICENSED PROFESSIONAL ENGINEER

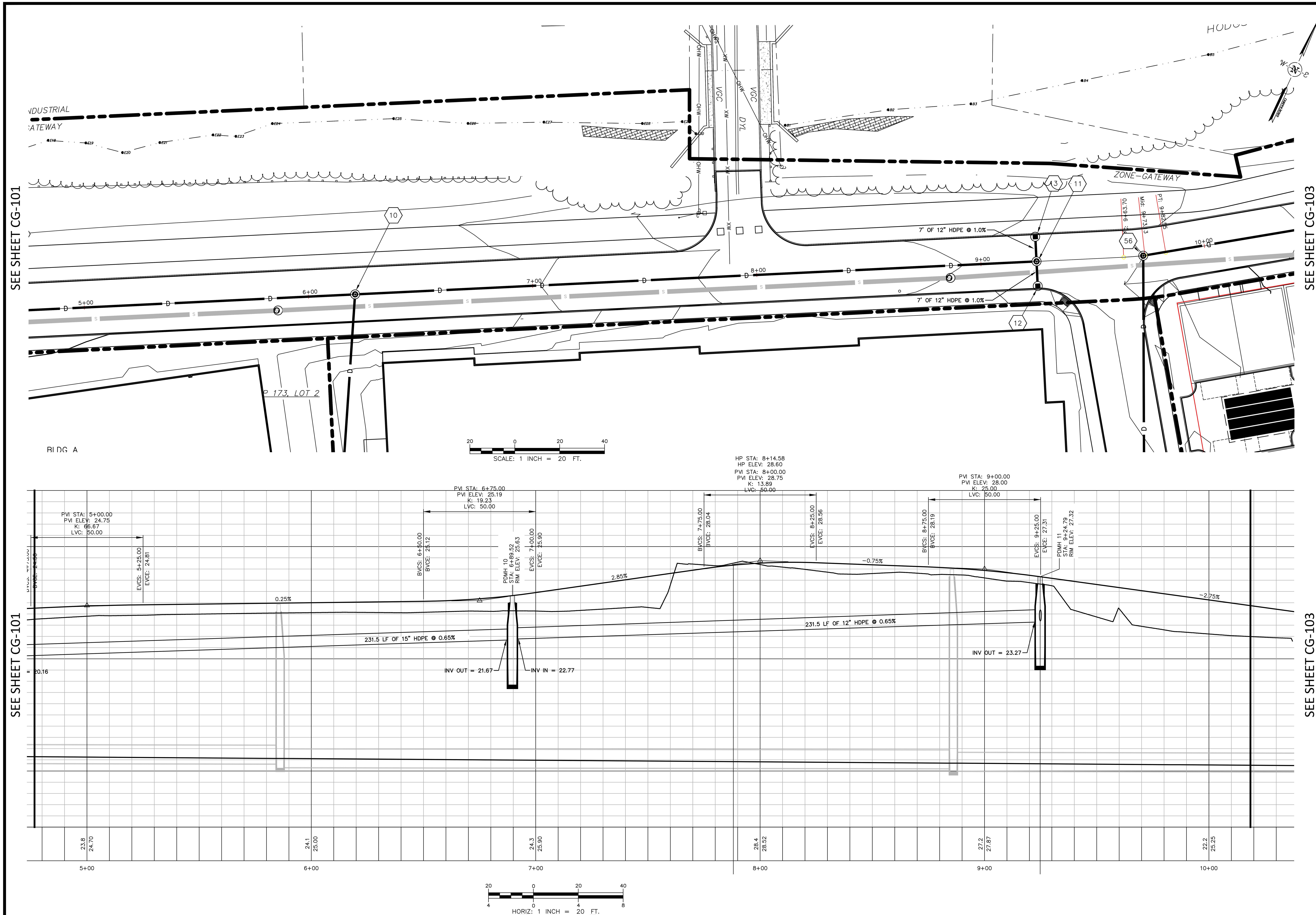
SCALE: HORZ.: VERT.:
DATUM: HORZ.: NAD83 VERT.: NAVD88
GRAPHIC SCALE

No. | DATE | DESCRIPTION | DESIGNER | REVIEWER

PROJ. No.: 20180317.A10
DATE: 11/19/2018

CG-101

File Path: F:\P2018\0317\A10\Civil3\Dwg\20180317A10_GRA01.dwg Layout: CG-101 Plotted: Mon, November 19, 2018 - 3:08 PM User: ddugal
Plotter: DWG TO PDF.PC3 CTB File: FO.STB
MS VIEW: LAYER STATE:



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Plotter: DWG TO PDF.PC3 CTB File: FO.STB

MS VIEW:
LAYER STATE:

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE
RICHARD R. LUNDBORN
No. 12843
LICENSED PROFESSIONAL ENGINEER

SCALE: HORZ.: VERT.:
DATUM: HORZ.: NAD83 VERT.: NAVD88
GRAPHIC SCALE

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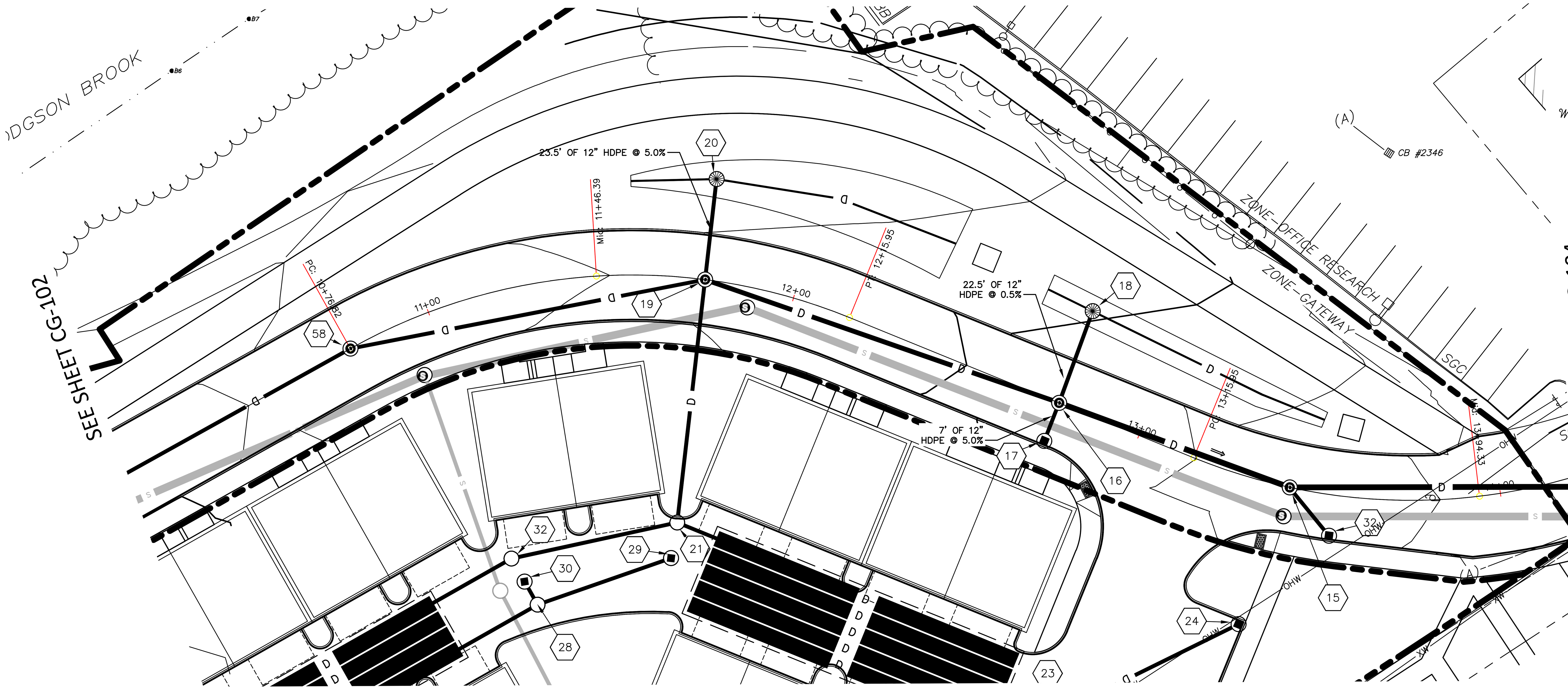
GRADING & DRAINAGE PLAN
WEST END YARDS

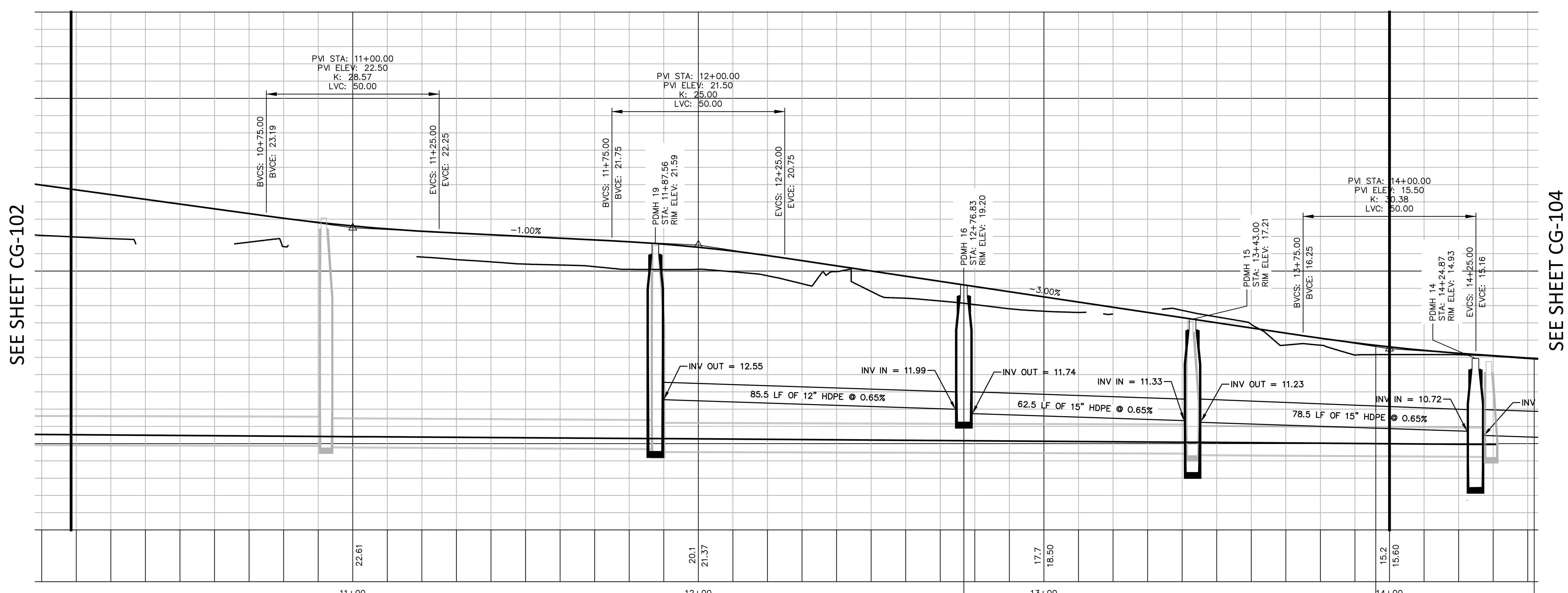
PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10
DATE: 11/19/2018

CG-102



SCALE: 1 INCH = 20 FT.



HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.

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Plotter: DWG TO PDF.PC3 CTB File: FO.STB
MS VIEW:
LAYER STATE:

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE — RICHARD R. LUNDBORN No. 12643 — LICENSED PROFESSIONAL ENGINEER

SCALE:
HORZ.:
VERT.:
DATUM:
HORZ.: NAD83
VERT.: NAVD88
GRAPHIC SCALE

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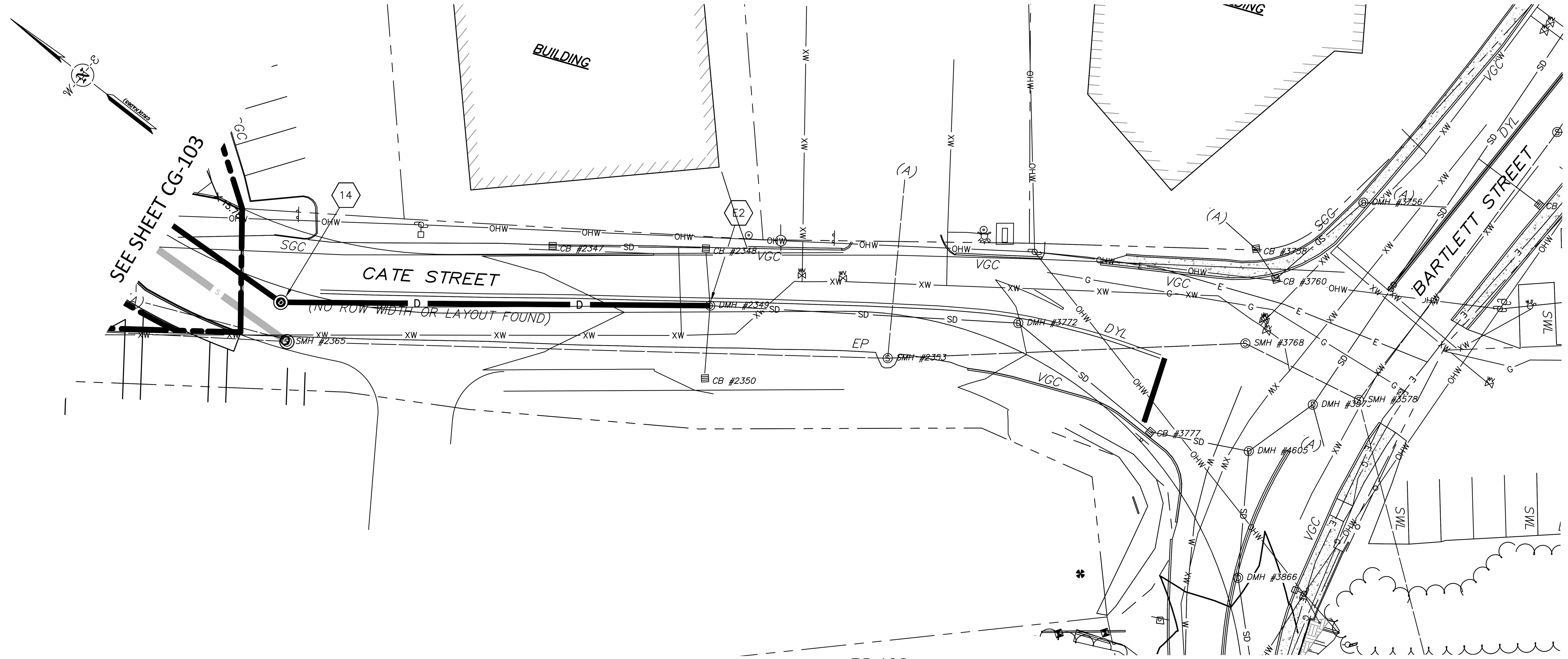
GRADING & DRAINAGE PLAN

WEST END YARDS

PORTSMOUTH NEW HAMPSHIRE

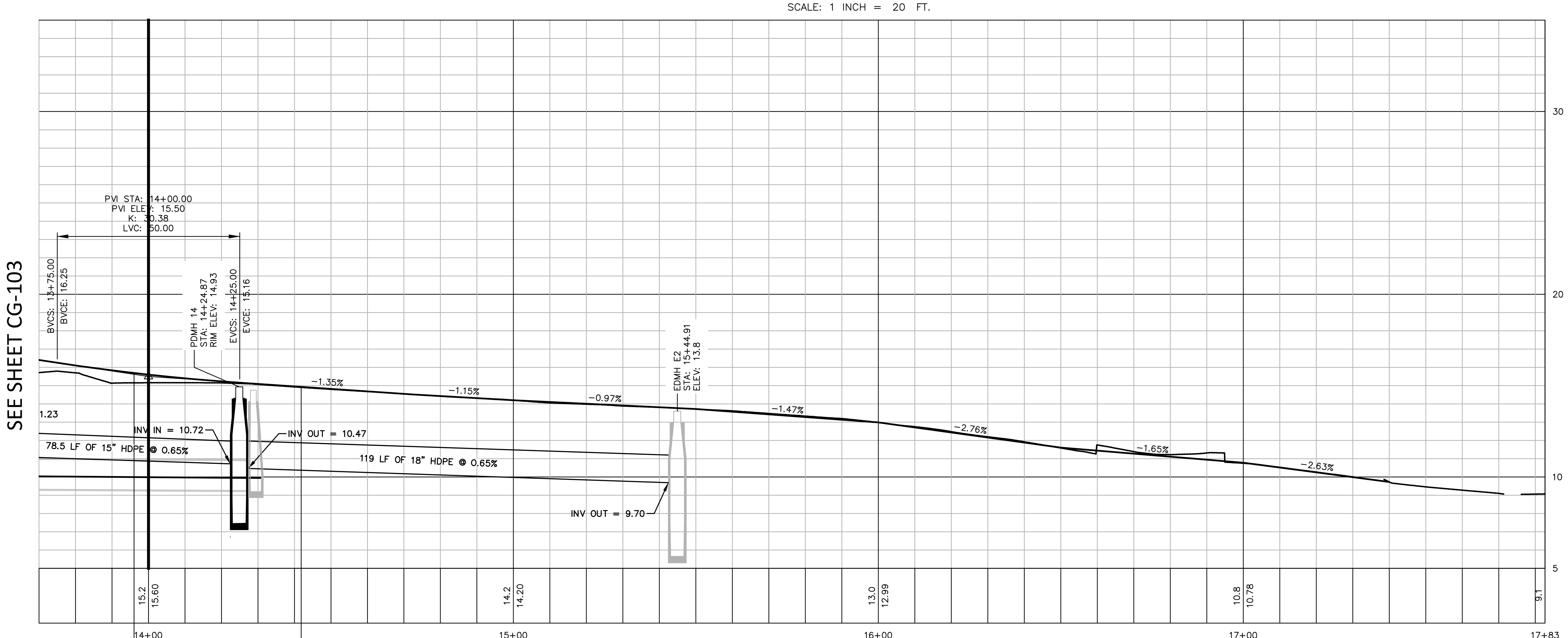
PROJ. No.: 20180317.A10
DATE: 11/19/2018

CG-103



PLAN

SCALE: 1 INCH = 20 FT.



PROFILE

HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE – RICHARD R. LUNDBORN No. 10943 – LICENSED PROFESSIONAL ENGINEER

SCALE: HORZ.: VERT.:
DATUM: HORZ.: NAD83 VERT.: NAVD88
GRAPHIC SCALE

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WEST END YARDS

PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10
DATE: 11/19/2018

CG-104

SEE SHEET CG-105

SEE SHEET CG-107

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE – PROFESSIONAL ENGINEER
RICHARD R. LUNDBORN
No. 10943
LICENSED

SCALE:
HORZ.:
VERT.:
DATUM:
HORZ.:
VERT.:

GRAPHIC SCALE
30 15 0 30

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GRADING & DRAINAGE PLAN

WEST END YARDS

PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10
DATE: 11/19/2018

CG-106

File Path: F:\P2018\0317\A10\Civil3\Dwg\20180317A10_GRA01.dwg Layout: CG-106 Plotted: Mon, November 19, 2018 - 4:25 PM User: ddugal
Plotter: DWG TO PDF.PC3 CTB File: FO.STB
MS VIEW: LAYER STATE:

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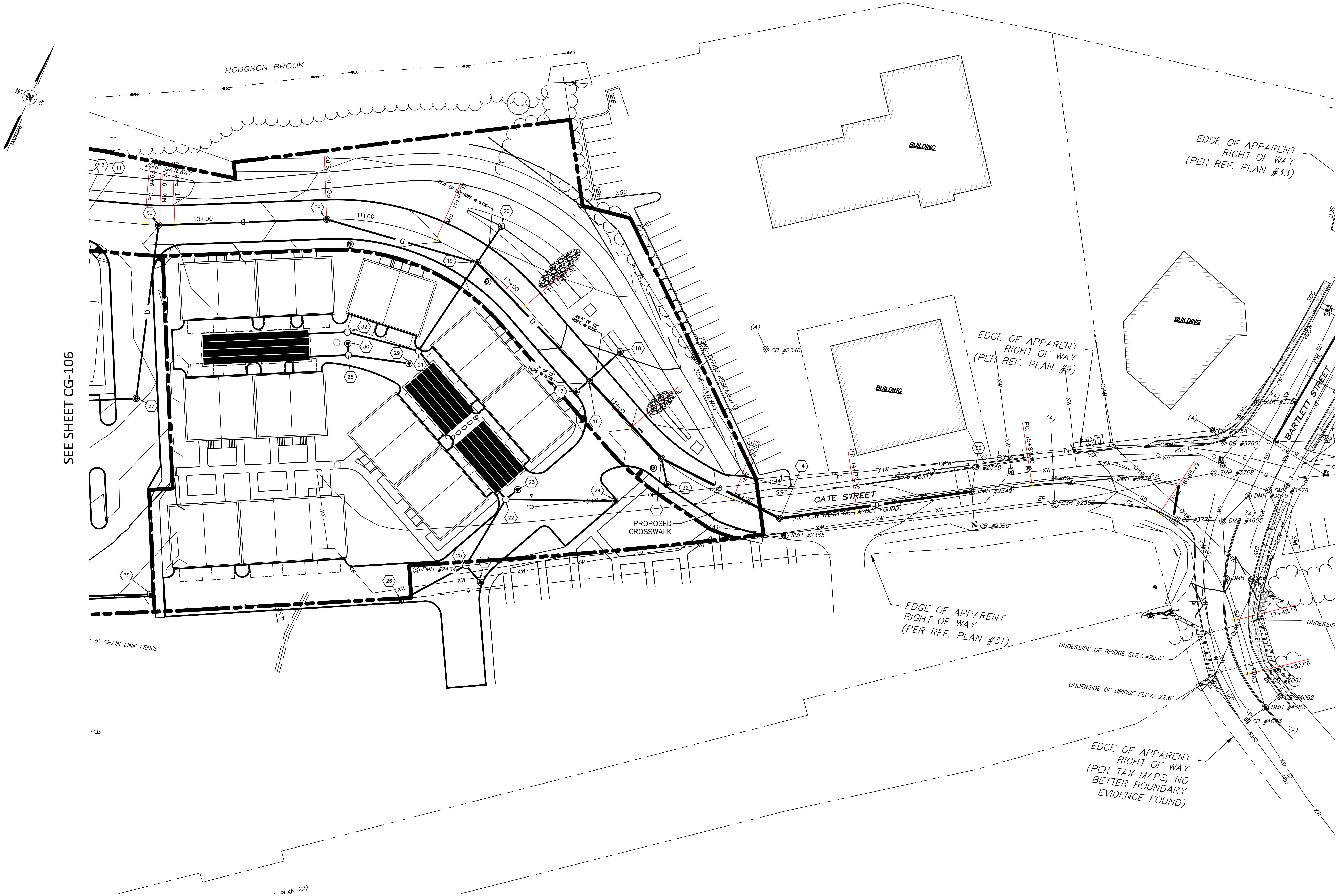
Plotter: DWG TO PDF.PC3 CTB File: FO.STB
MS VIEW:
LAYER STATE:



No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE
RICHARD R. LUNDBORN
LICENSED PROFESSIONAL ENGINEER

SCALE: HORZ.: VERT.:
DATUM: HORZ.: VERT.:
GRAPHIC SCALE 30 15 0 30

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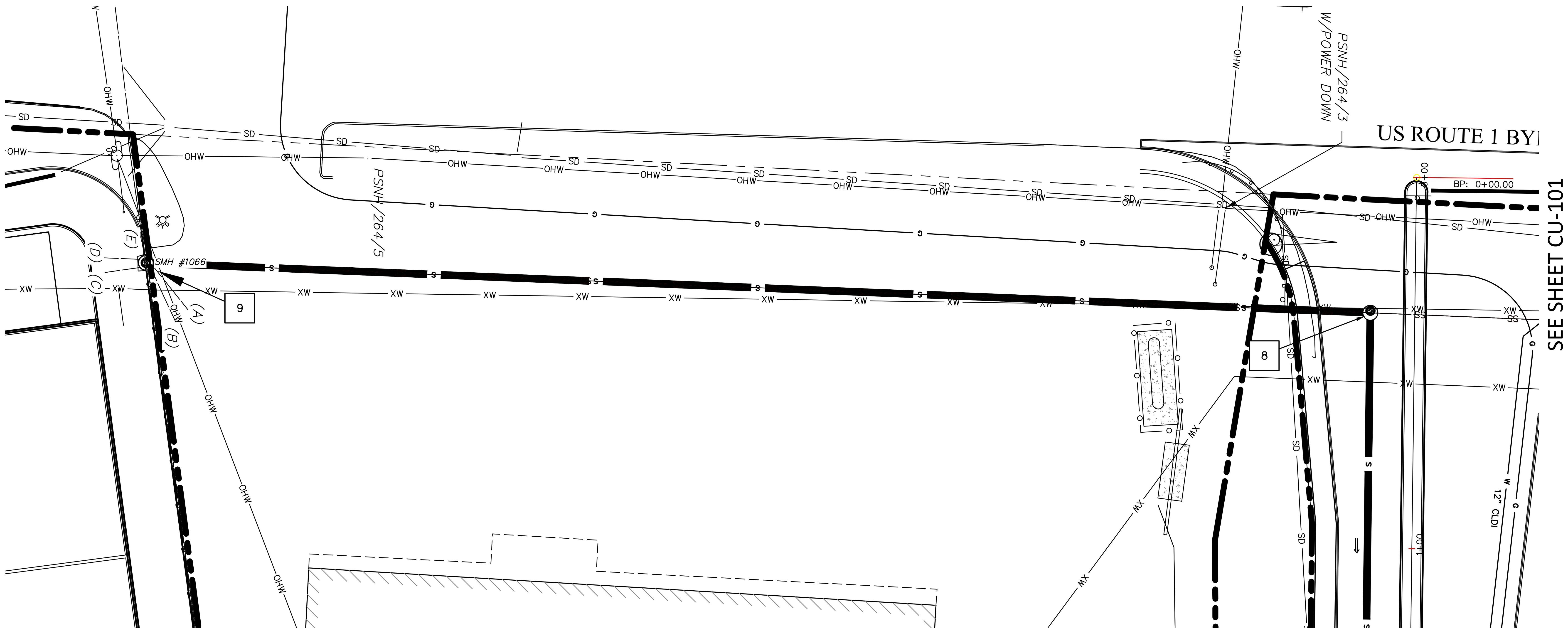
GRADING & DRAINAGE PLAN

WEST END YARDS

PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10
DATE: 11/19/2018

CG-107



PLAN

SCALE: 1 INCH = 20 FT.

PROFILE

HORIZ: 1 INCH = 20 FT.
VERT.: 1 INCH = 4 FT.

File Path: F:\P2018\0317\A10\Civil3\Dwg\20180317A10_UTIL01.dwg Layout: CU-101 Plotted: Mon, November 19, 2018 - 4:27 PM User: ddugal
Plotter: DWG TO PDF.PC3 CTB File: FO.STB

MS VIEW:	LAYER STATE:

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE – RICHARD R. LUNDBORN No. 10843 – LICENSED PROFESSIONAL ENGINEER

SCALE:
HORZ.:
VERT.:
DATUM:
HORZ.: NAD83
VERT.: NAVD88

GRAPHIC SCALE

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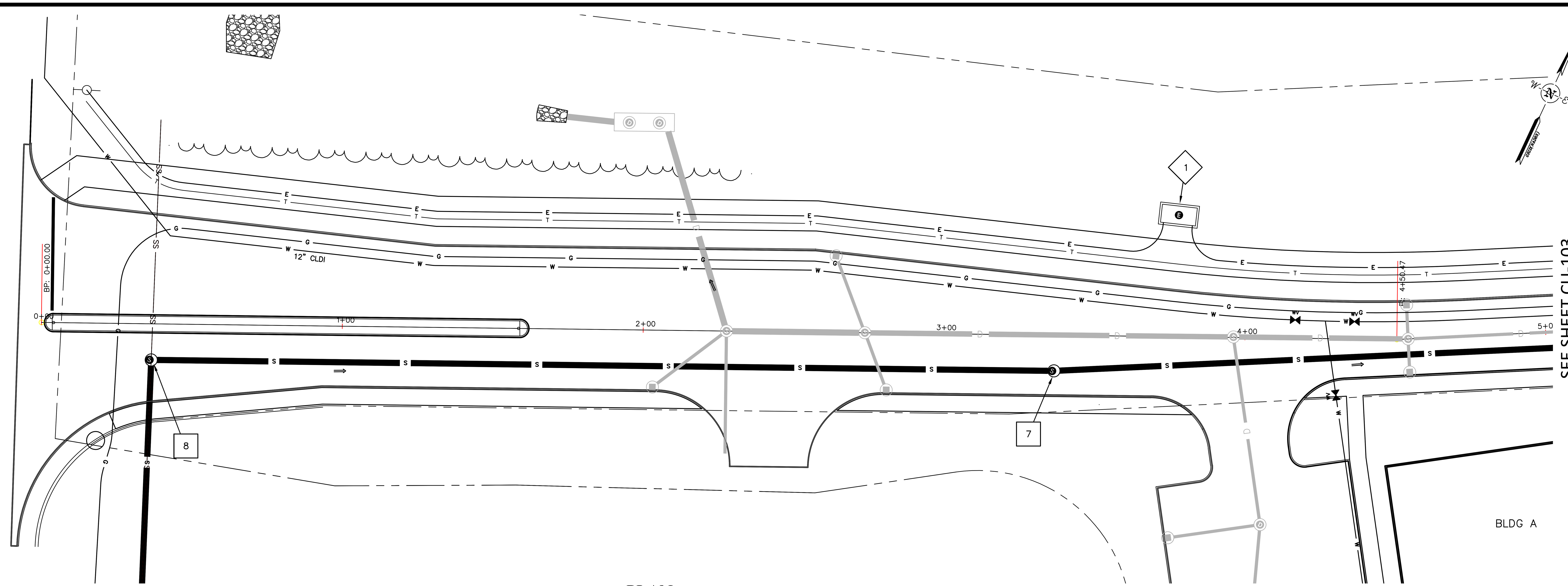
UTILITY PLAN & PROFILE

WEST END YARDS

PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10
DATE: 11/19/2018

CU-101

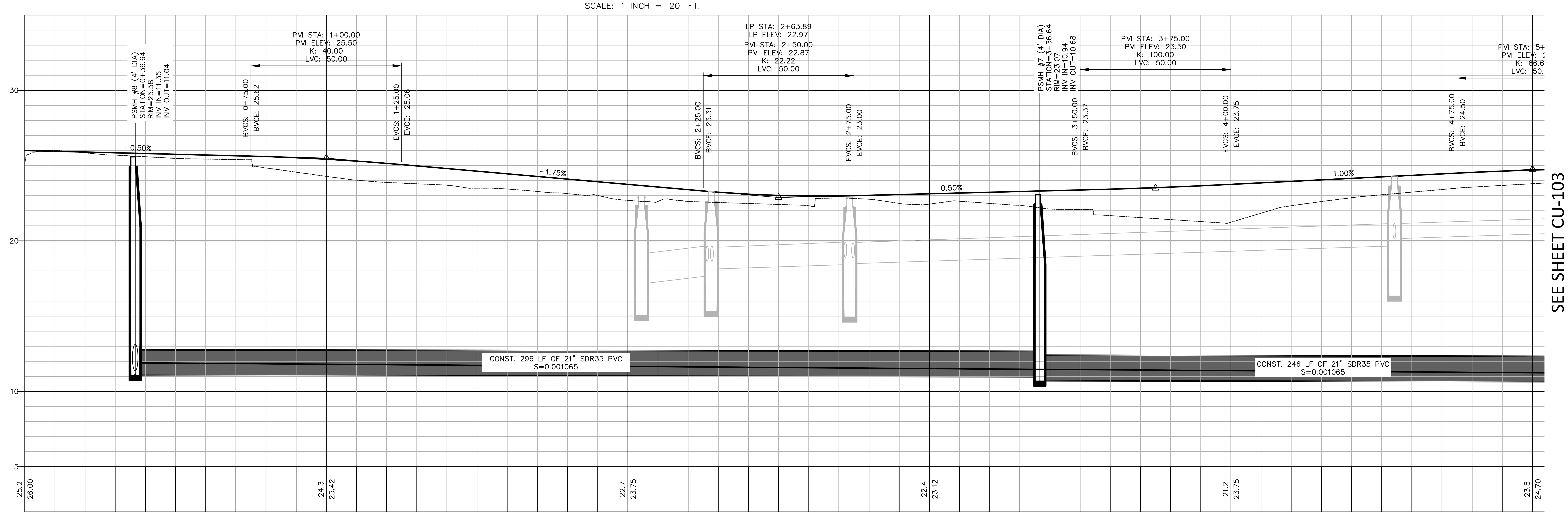


SEE SHEET CU-101

PLAN

SCALE: 1 INCH = 20 FT.

- SWITCH GEAR & ELECTRICAL MANHOLE
- SEWER MANHOLE LABEL
- PROPOSED CATCHBASIN
- PROPOSED DRAIN MANHOLE
- PROPOSED SANITARY MANHOLE
- PROPOSED HYDRANT
- PROPOSED GATE VALVE



PROFILE

HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.

File Path: F:\P2018\0317\A10\Civil3\Dwg\20180317A10_UTIL01.dwg Layout: CU-102 Plotted: Mon, November 19, 2018 - 4:29 PM User: ddugal
Plotter: DWG TO PDF.PC3 CTB File: FO.STB

MS VIEW: | LAYER STATE:

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE – RICHARD R. LUNDBORN No. 10843 – LICENSED PROFESSIONAL ENGINEER

SCALE: HORZ.: VERT.:
DATUM: HORZ.: NAD83 VERT.: NAVD88

GRAPHIC SCALE

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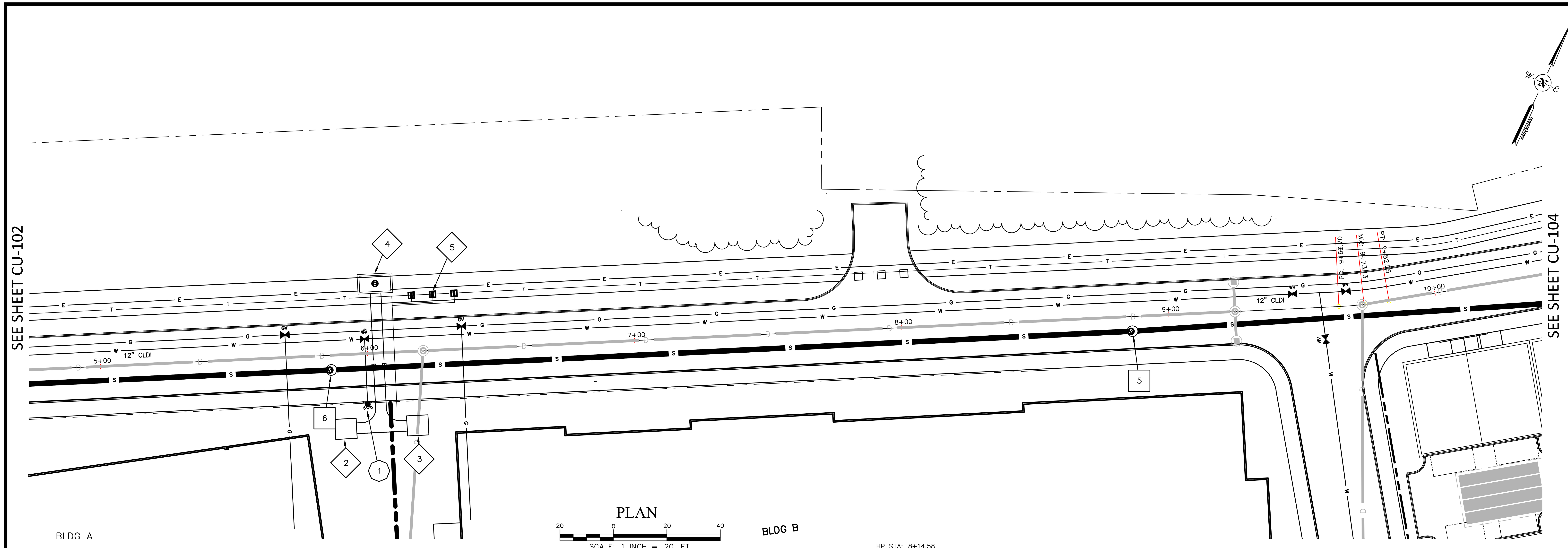
UTILITY PLAN & PROFILE

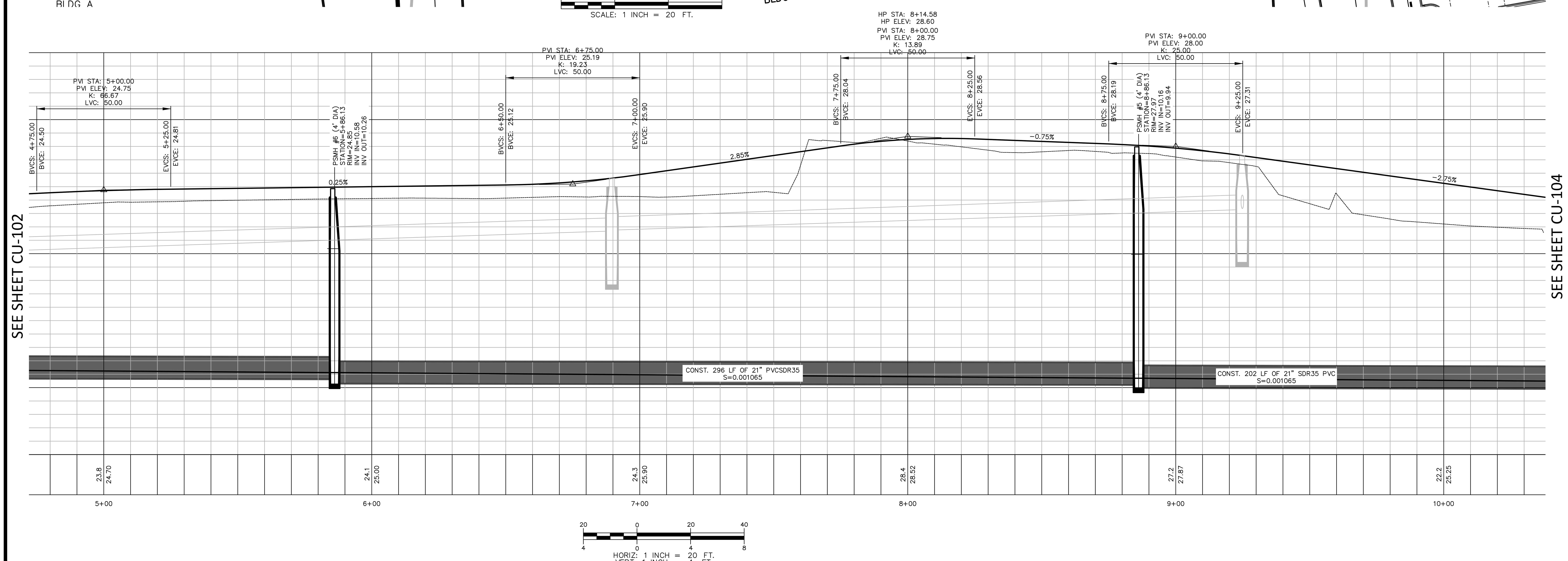
WEST END YARDS

PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10
DATE: 11/19/2018

CU-102





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Plotter: DWG TO PDF.PC3 CTB File: FO.STB
MS VIEW:
LAYER STATE:

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE
RICHARD R. LUNDBORN
No. 10943
LICENSED PROFESSIONAL ENGINEER

SCALE: HORZ.: VERT.:
DATUM: HORZ.: NAD83 VERT.: NAVD88
GRAPHIC SCALE

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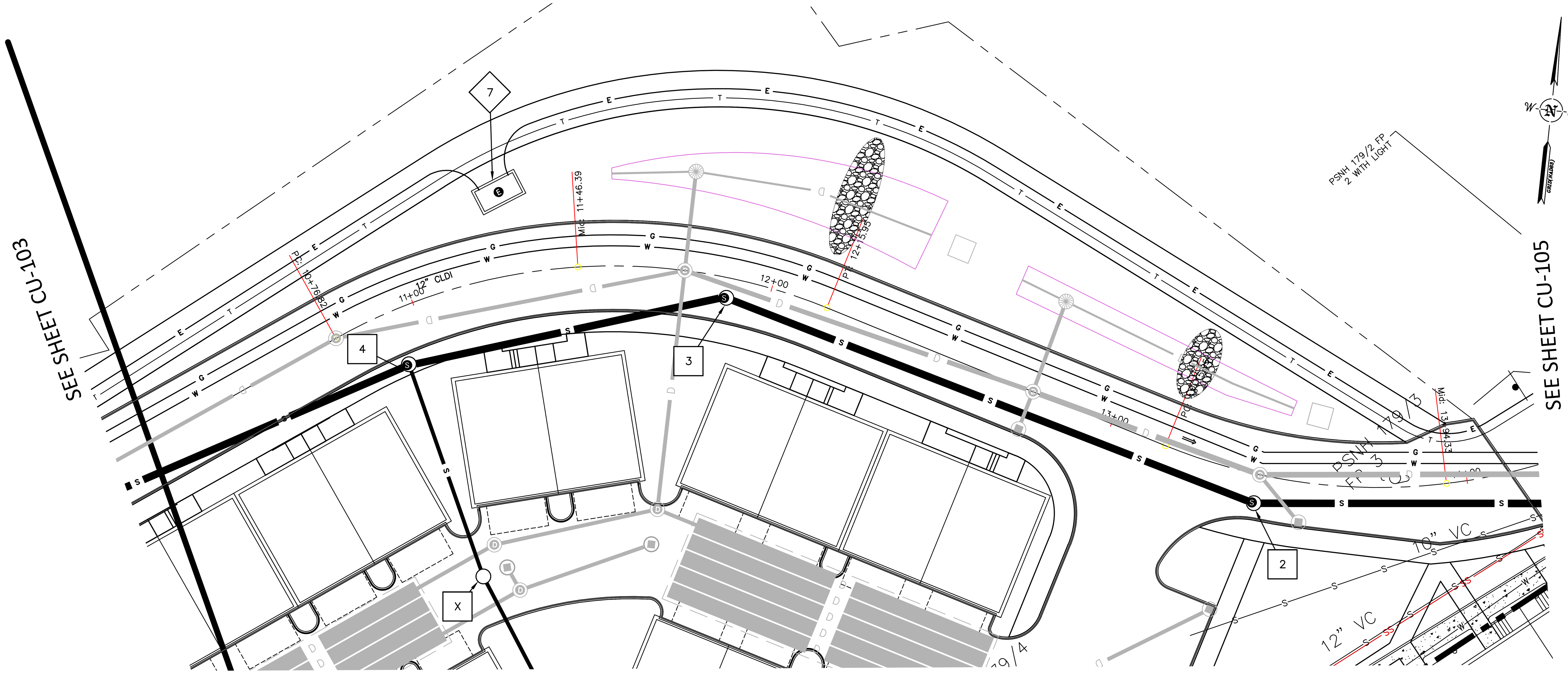
UTILITY PLAN & PROFILE
WEST END YARDS
PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10
DATE: 11/19/2018

CU-103



PLAN

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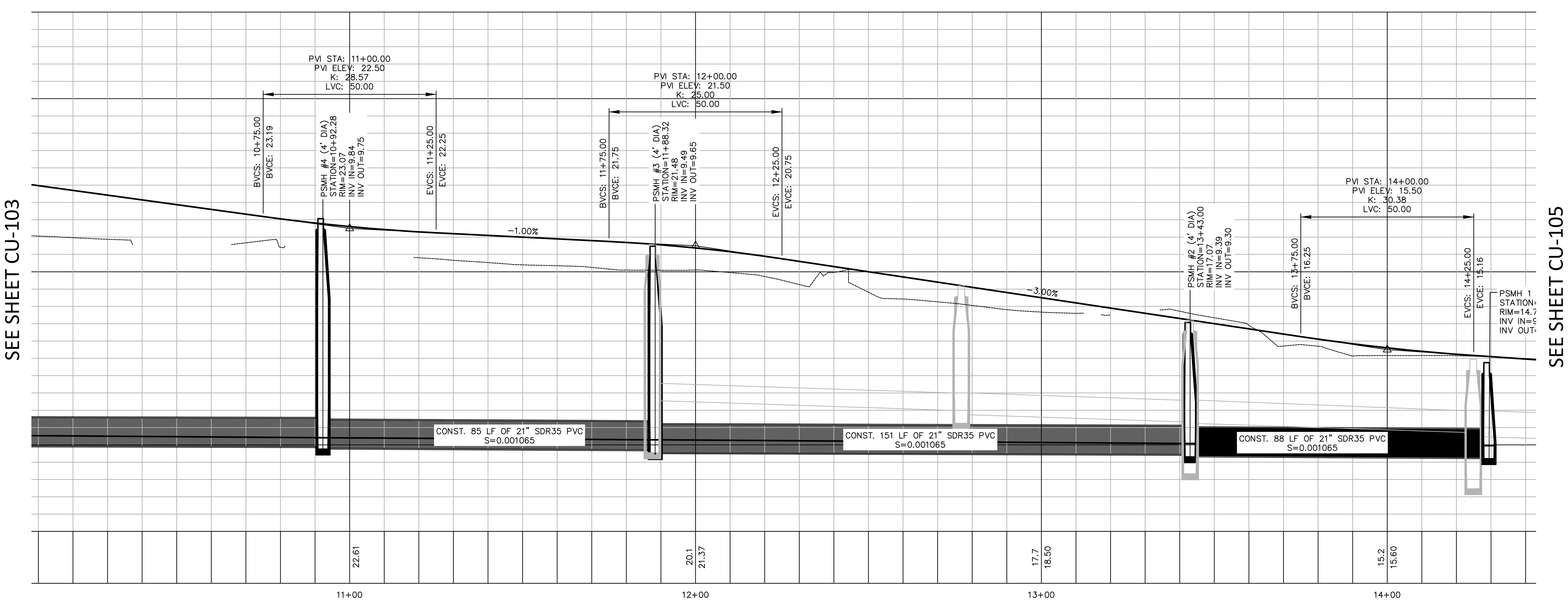

PROFILE

HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.

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Plotter: DWG TO PDF.PC3 CTB File: FO.STB

MS VIEW:
LAYER STATE:

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE – RICHARD R. LUNDBORN No. 10843 – LICENSED PROFESSIONAL ENGINEER

SCALE: HORZ.: VERT.:
DATUM: HORZ.: NAD83 VERT.: NAVD88
GRAPHIC SCALE

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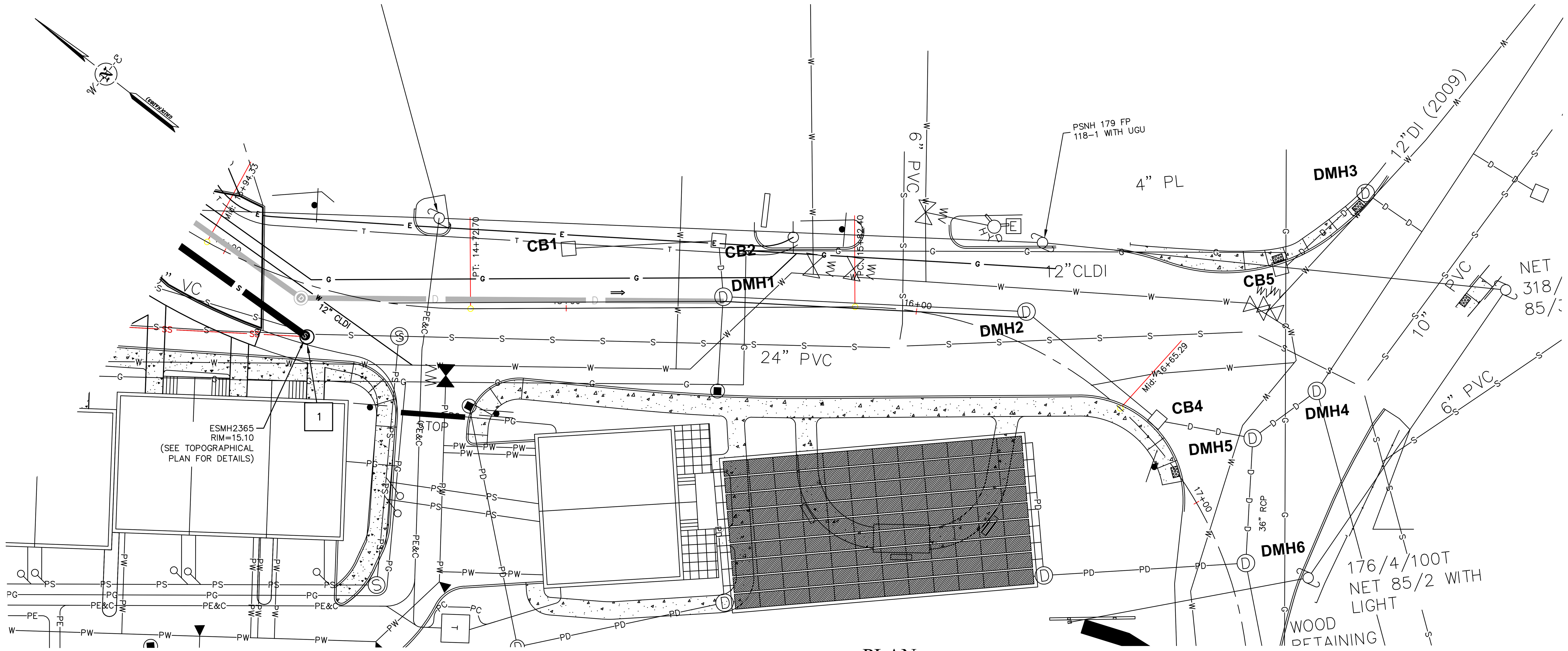
UTILITY PLAN & PROFILE

WEST END YARDS

PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10
DATE: 11/19/2018

CU-104



PLAN

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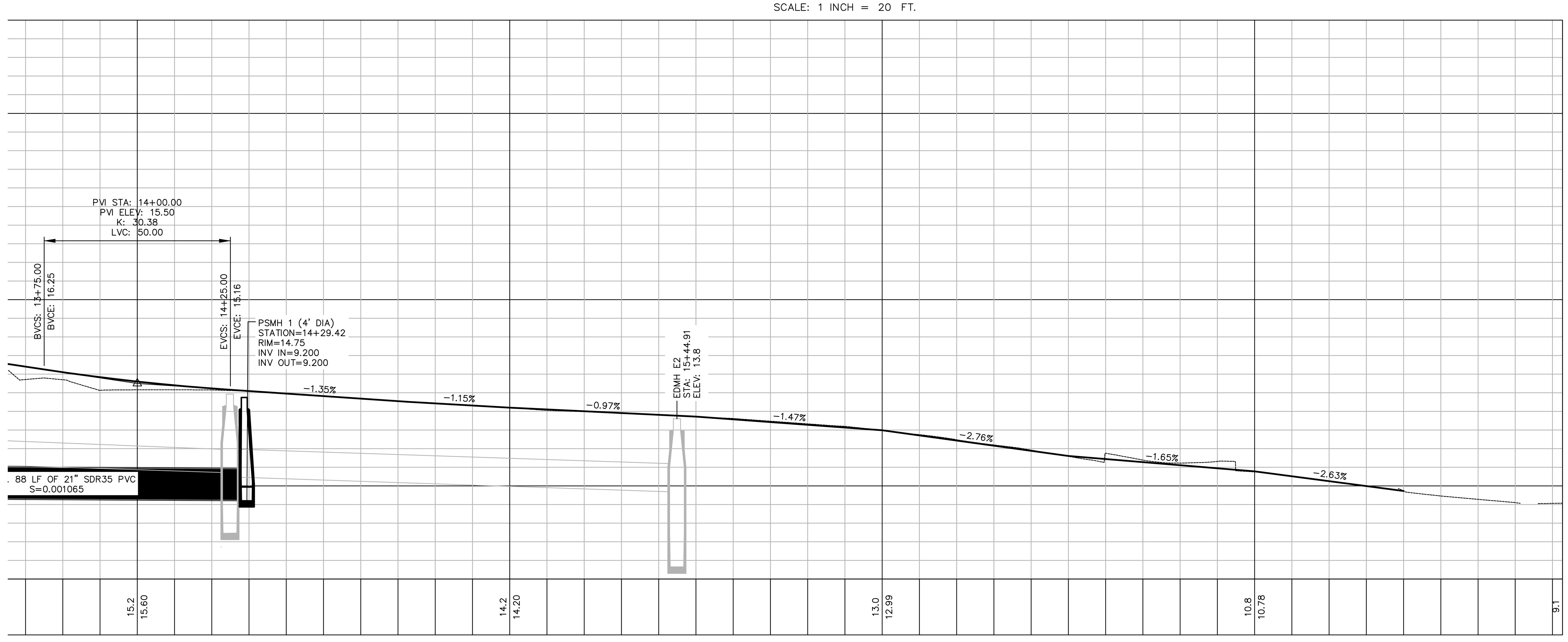

PROFILE

HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE
RICHARD R. LUNDBORN
No. 12843
LICENSED PROFESSIONAL ENGINEER

SCALE:
HORZ.:
VERT.:
DATUM:
HORZ.: NAD83
VERT.: NAVD88
GRAPHIC SCALE

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UTILITY PLAN & PROFILE

WEST END YARDS

PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10
DATE: 11/19/2018

CU-105

File Path: F:\P2018\0317\A10\Civil3\Dwg\20180317A10_UTIL01.dwg Layout: CU-105 Plotted: Mon, November 19, 2018 - 4:37 PM User: ddugal
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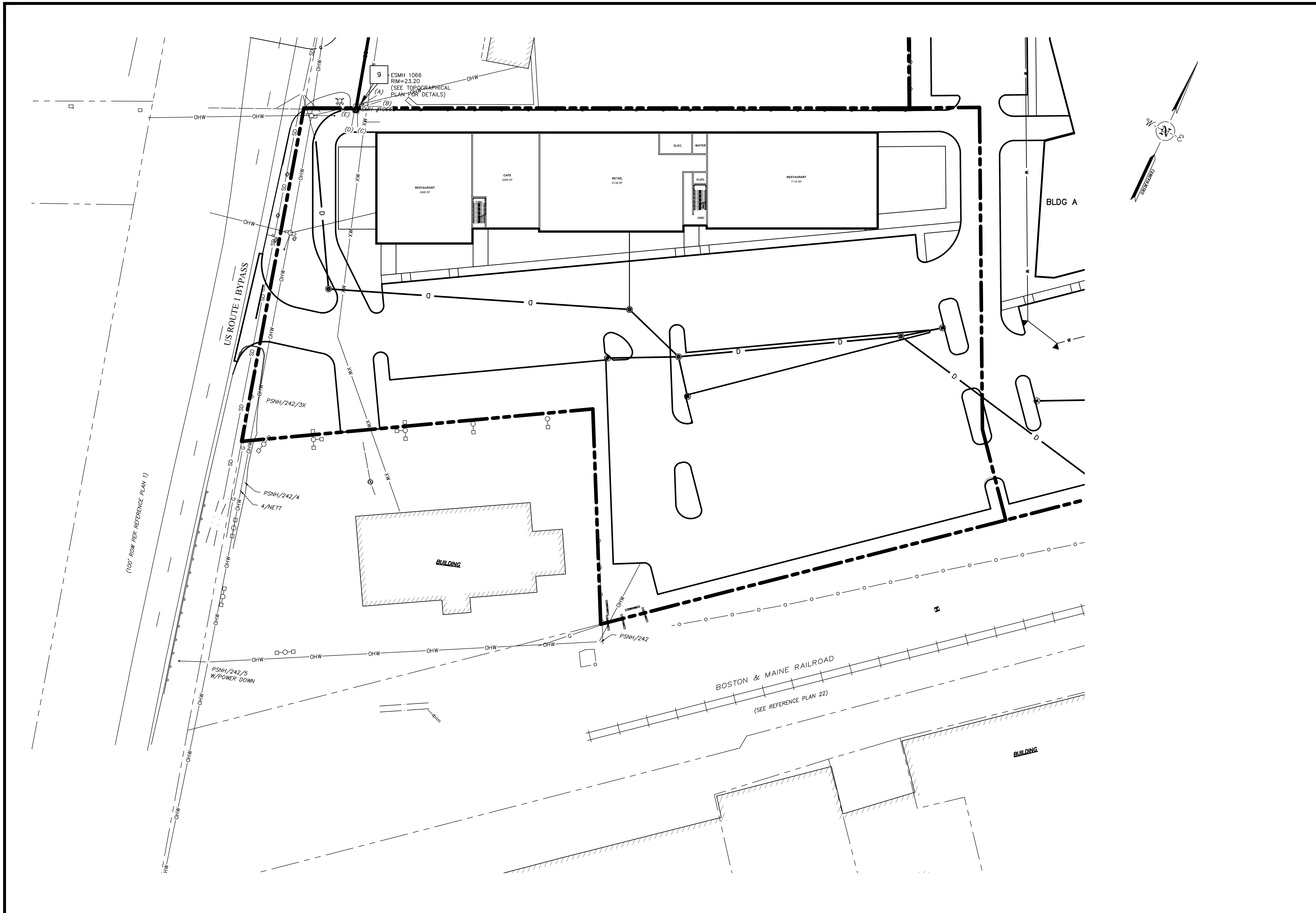
MS VIEW:
LAYER STATE:



No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE – RICHARD R. LUNDBORN No. 10943 – LICENSED PROFESSIONAL ENGINEER

SCALE:
HORZ.: 1" = 30'
VERT.: 1" = 30'
DATUM:
HORZ.: NAD83
VERT.: NAVD88
30 15 0 30
GRAPHIC SCALE

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UTILITY PLAN

WEST END YARDS

PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10
DATE: 11/19/2018

CU-106

File Path: F:\P2018\0317\A10\Civil3\Dwg\20180317A10_UTIL01.dwg Layout: CU-106 Plotted: Mon, November 19, 2018 - 4:38 PM User: ddugal
Plotter: DWG TO PDF.PC3 CTB File: FO.STB
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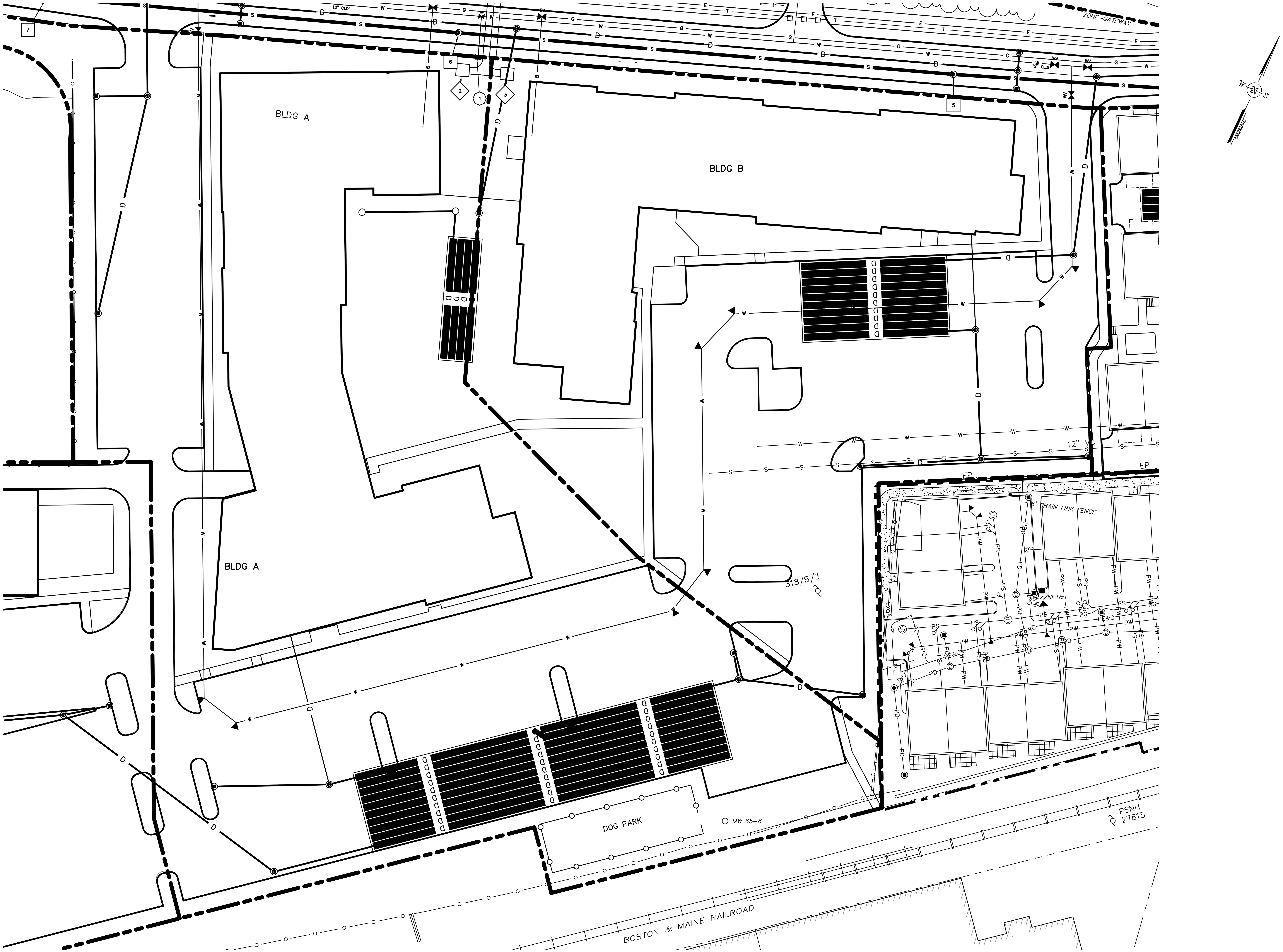
LAYER STATE:



No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

SCALE: HORZ.: 1"=30' VERT.: 1"=30'

DATUM: HORZ.: NAD83 VERT.: NAVD88

GRAPHIC SCALE 30 15 0 30

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UTILITY PLAN

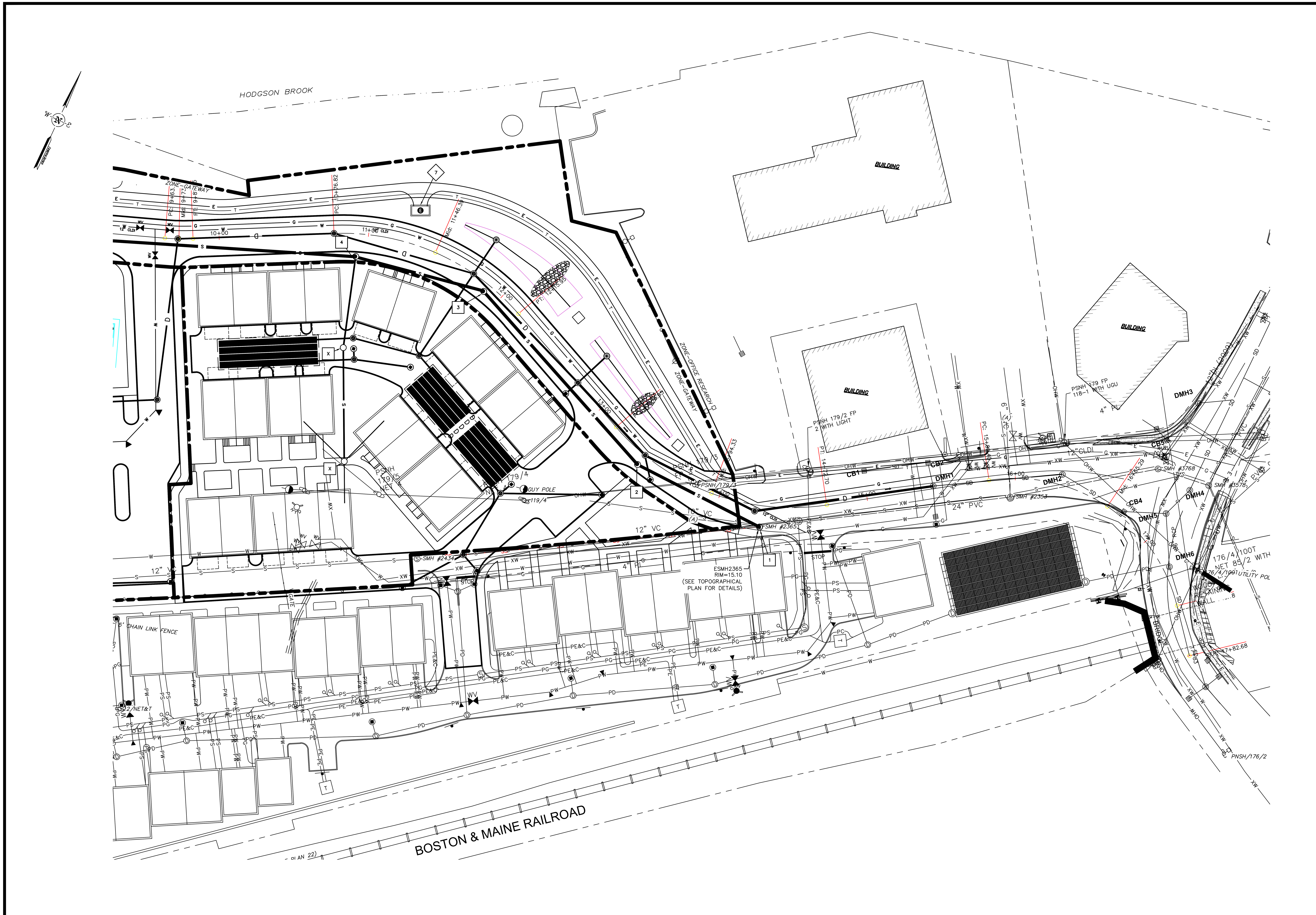
WEST END YARDS

PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10
DATE: 11/19/2018

CU-107

File Path: F:\P2018\0317\A10\Civil3\Dwg\20180317A10_UTIL01.dwg Layout: CU-107 Plotted: Mon, November 19, 2018 - 4:38 PM User: ddugal
Plotter: DWG TO PDF.PC3 CTB File: FO.STB
MS VIEW:
LAYER STATE:



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Plotter: DWG TO PDF.PC3 CTB File: FO.STB
MS VIEW:
LAYER STATE:

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE – RICHARD R. LUNDBORN No. 12643 – LICENSED PROFESSIONAL ENGINEER

SCALE: HORZ.: 1"=30' VERT.: 1"=30'
DATUM: HORZ.: NAD83 VERT.: NAVD88

GRAPHIC SCALE
30 15 0 30

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CATE STREET DEVELOPMENT, LLC

UTILITY PLAN

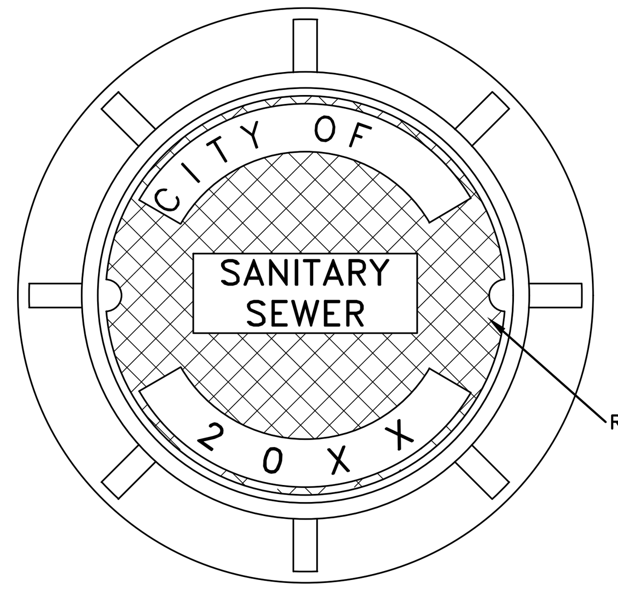
WEST END YARDS

PORTSMOUTH NEW HAMPSHIRE

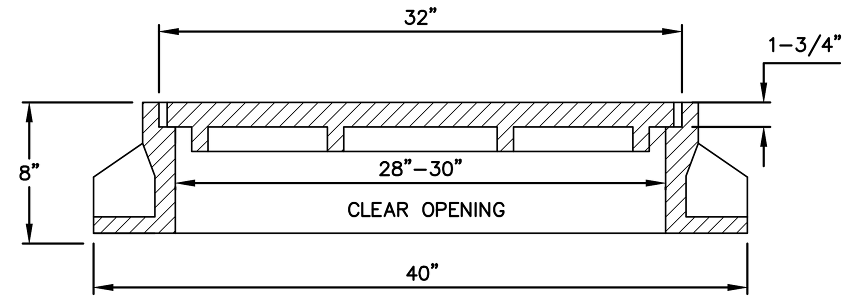
PROJ. No.: 20180317.A10
DATE: 11/19/2018

CU-108

NOT TO SCALE



PLAN



SECTION

STANDARD SANITARY MANHOLE FRAME & COVER

SCALE: N.T.S.

MANHOLE NOTES

1. ALL PIPES SHALL BE CUT FLUSH WITH INSIDE WALL OF STRUCTURE.
2. MANHOLES SHALL BE PLACED ON 8" MINIMUM CRUSHED STONE BASE.
3. MORTAR IN LIFTING HOLES AFTER INSTALLING RUBBER PLUGS.
4. MANHOLES SHALL RECEIVE A BITUMINOUS DAMP–PROOFING PRIOR TO DELIVERY TO THE SITE.
5. PROVIDE WATERTIGHT STUB AND FLEXIBLE SLEEVE AS NOTED ON THE DRAWING OR AS DIRECTED BY THE ENGINEER.
6. PIPE TO MANHOLE JOINTS SHALL BE SEALED WATERTIGHT BY USE OF PRE–MOLDED ELASTOMERIC SEALED JOINTS CAST INTO CONCRETE MANHOLE BASE AND SHALL CONFORM TO ASTM C 443 AND ASTM C 923M.
7. MANHOLE FRAME AND COVERS SHALL BE OF THE TYPE INDICATED BELOW OR APPROVED EQUAL, UNLESS OTHERWISE SPECIFIED.

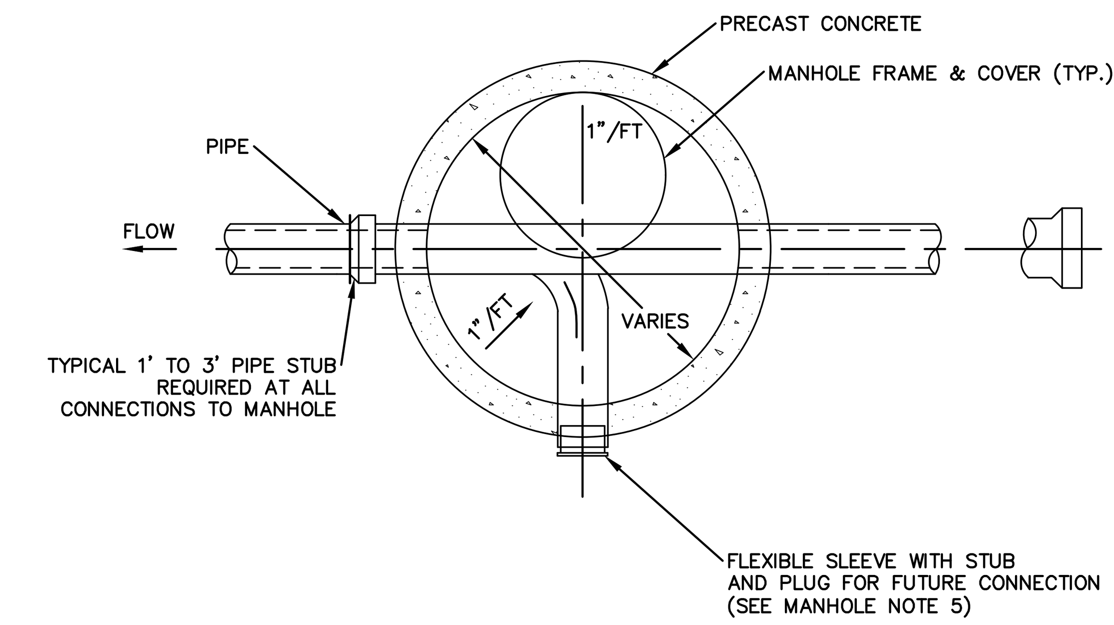
LOCATION	TYPE
GUTTERS, LOW LYING, WET UNPAVED AREAS	BOLTED & GASKETED (BOLTS SHALL BE 1/2" STAINLESS STEEL.)
NORMALLY DRY UNPAVED AND PAVED AREAS	STANDARD
VALVE STRUCTURES	WATERTIGHT

THE COVER SHALL HAVE THE WORDS "SANITARY SEWER", "CONFINED SPACE PERMIT REQUIRED" CAST INTO THE COVER IN 2" LETTERS.

8. MANHOLE STEPS SHALL BE STEEL REINFORCED POLYPROPYLENE OR ALUMINUM.
9. WHERE THE DIFFERENCE IN ELEVATION BETWEEN THE INCOMING SEWER AND THE MANHOLE INVERT IS 24" OR LESS, THE INVERT SHALL BE FILLETED.
10. PAYMENT DEPTHS ARE MEASURED FROM TOP OF CONE TO INVERT OF STRUCTURE.

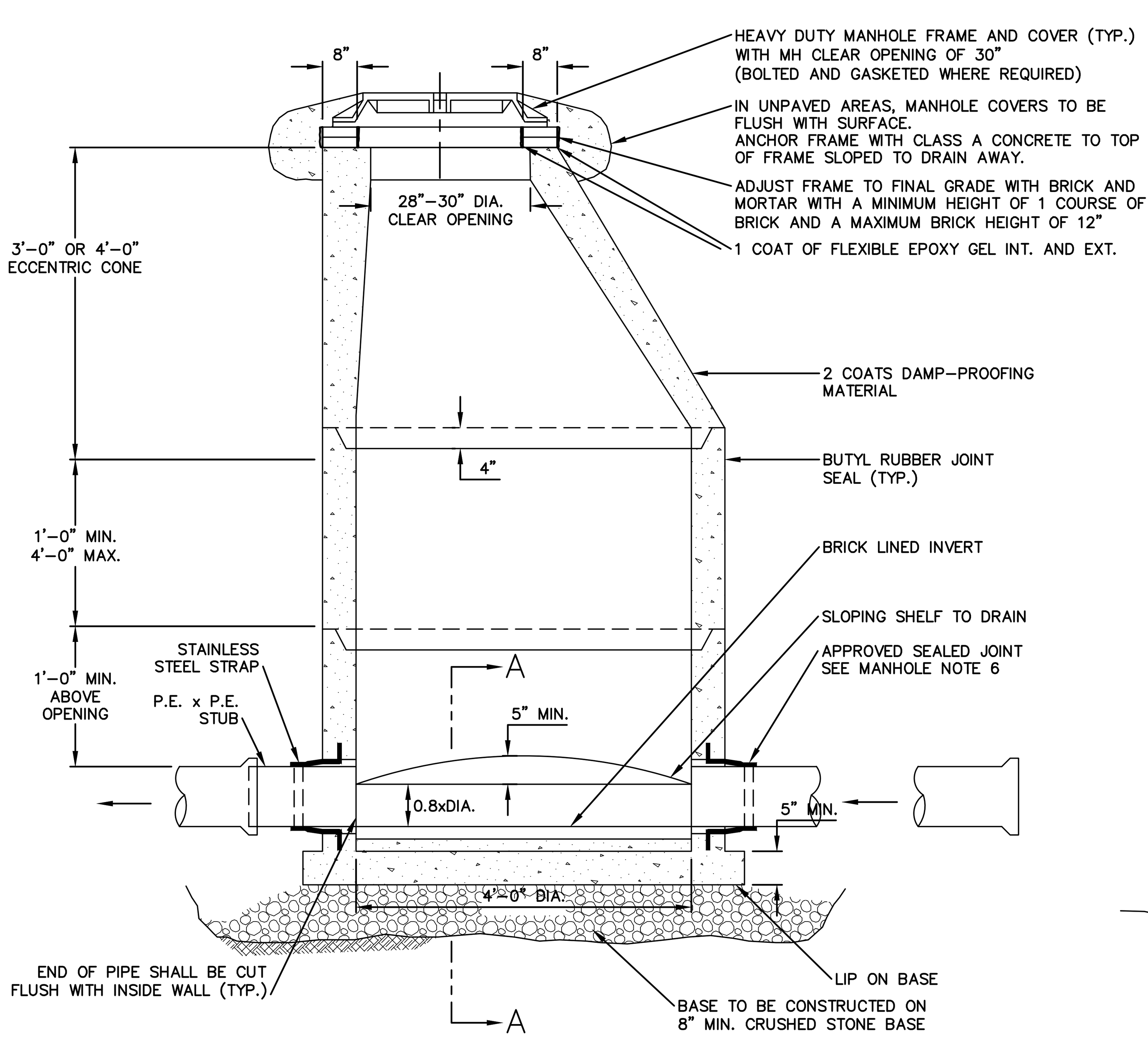
MANHOLE NOTES

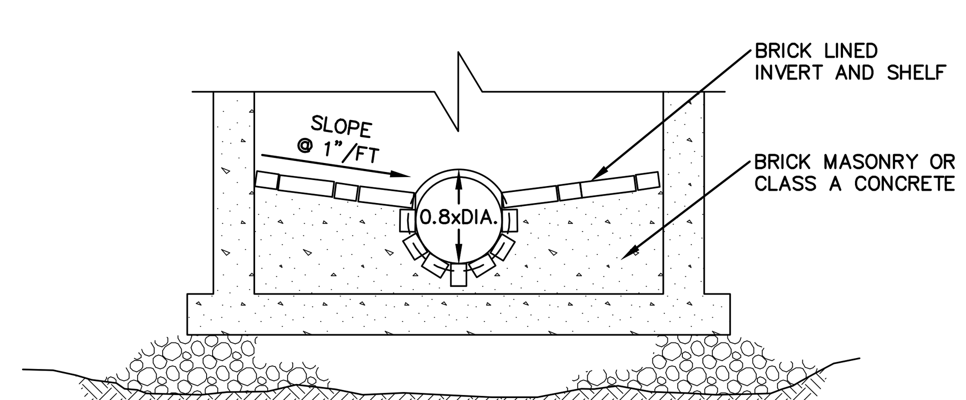
SCALE: N.T.S.



MANHOLE PLAN VIEW

SCALE: N.T.S.





SECTION A–A

4' PRECAST MANHOLE

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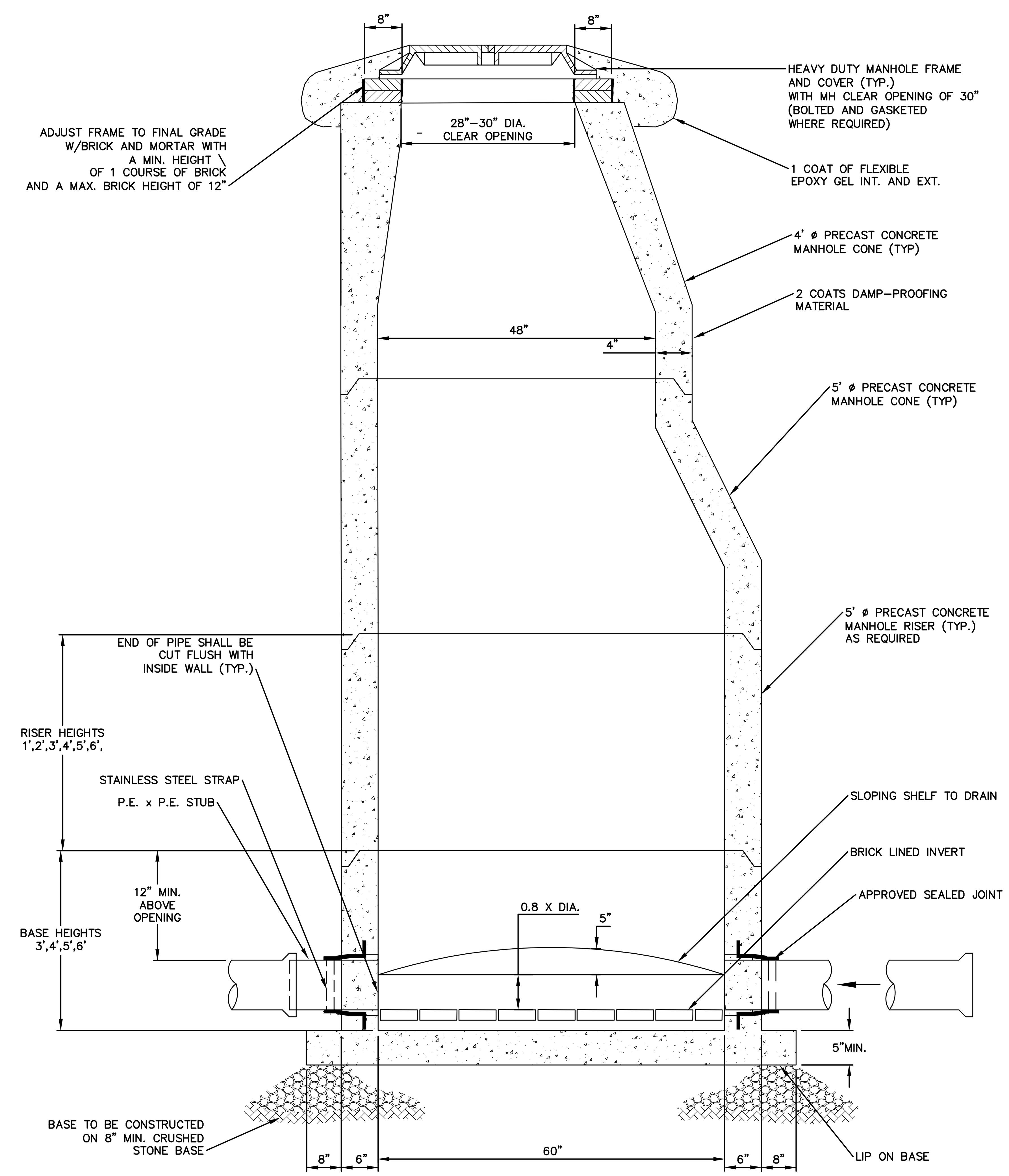

5' PRECAST MANHOLE

SCALE: N.T.S.

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No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE – RICHARD R. LUNDBORN No. 10943 – LICENSED – PROFESSIONAL ENGINEER

SCALE: HORZ.: NTS VERT.:
DATUM: HORZ.: VERT.:
0
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UPPER SQUARE BUSINESS CENTER
5 FLETCHER STREET, SUITE 1
KENNEBUNK, MAINE 04043
207.363.0669
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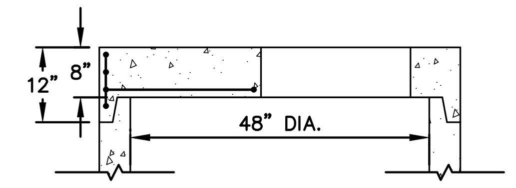
DETAILS

WEST END YARDS

PORTSMOUTH NEW HAMPSHIRE

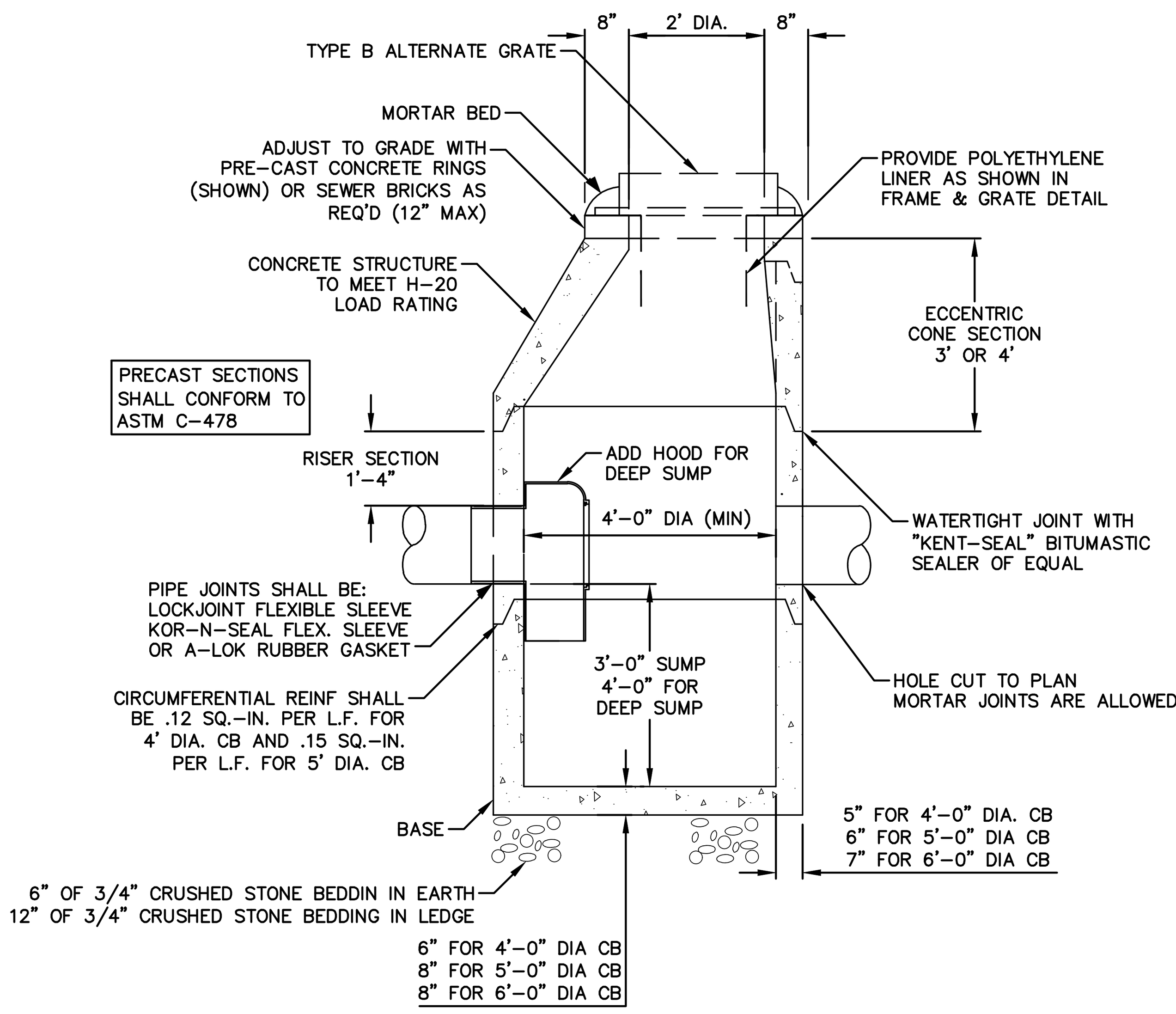
PROJ. No.: 20180317.A10
DATE: 11/19/2018

CD-501



ALTERNATE H-20 TOP SLAB

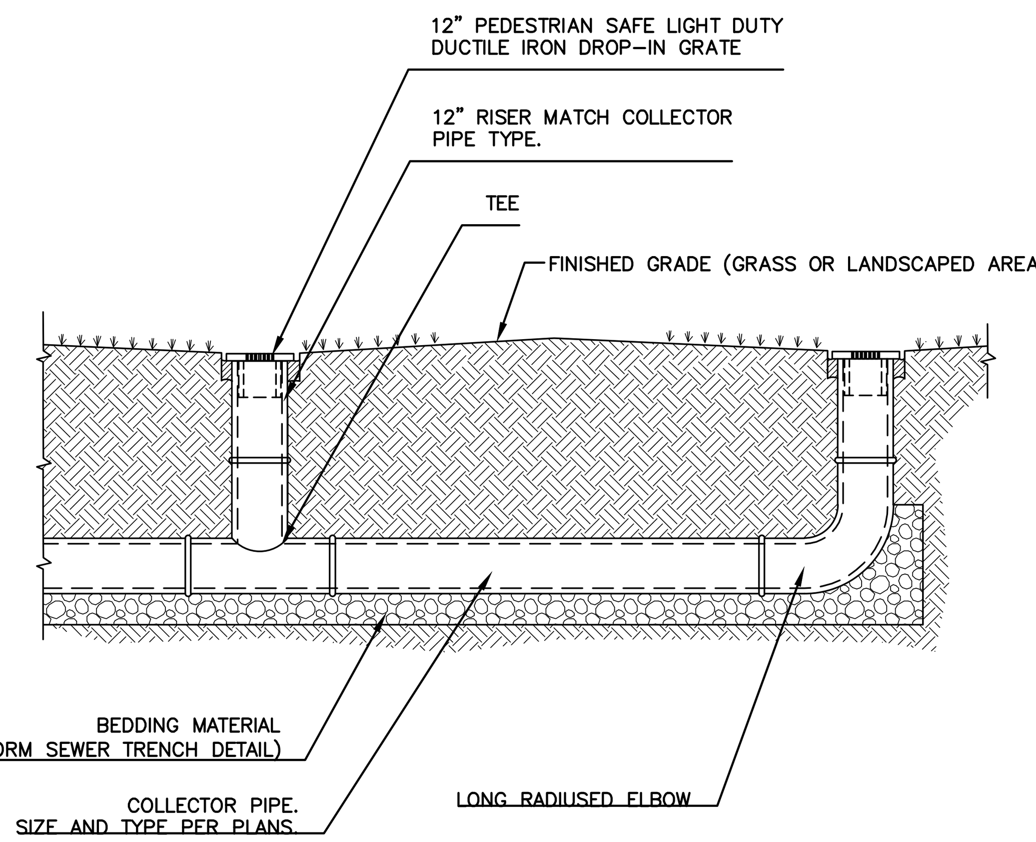
SCALE: N.T.S.



NOTES:
1. ALL SECTIONS SHALL BE CONCRETE, CLASS AA (4,000 PSI) CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ. IN. PER L.F. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
2. THE TONGUE AND GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER L.F.
3. RISERS OF 1'-4" MAY BE USED TO REACH THE DESIRED ELEVATION.
4. STEPS ARE NOT ALLOWED.

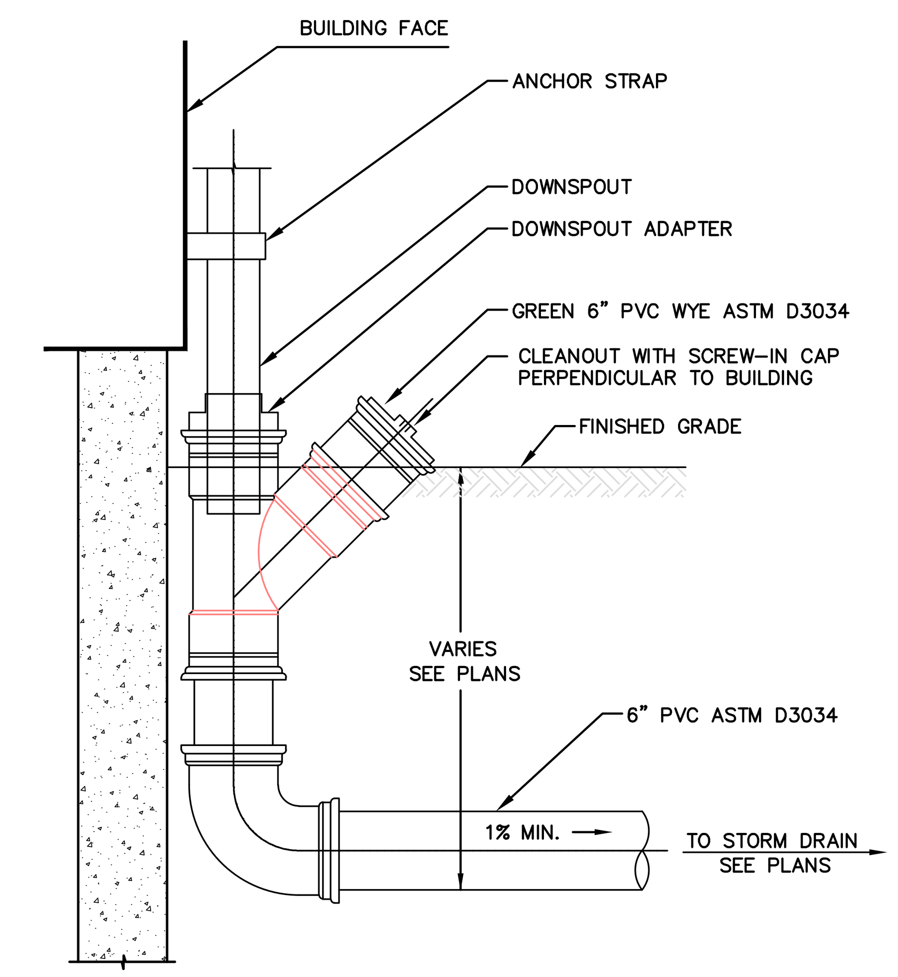
PRECAST REINFORCED CATCH BASIN

SCALE: N.T.S.



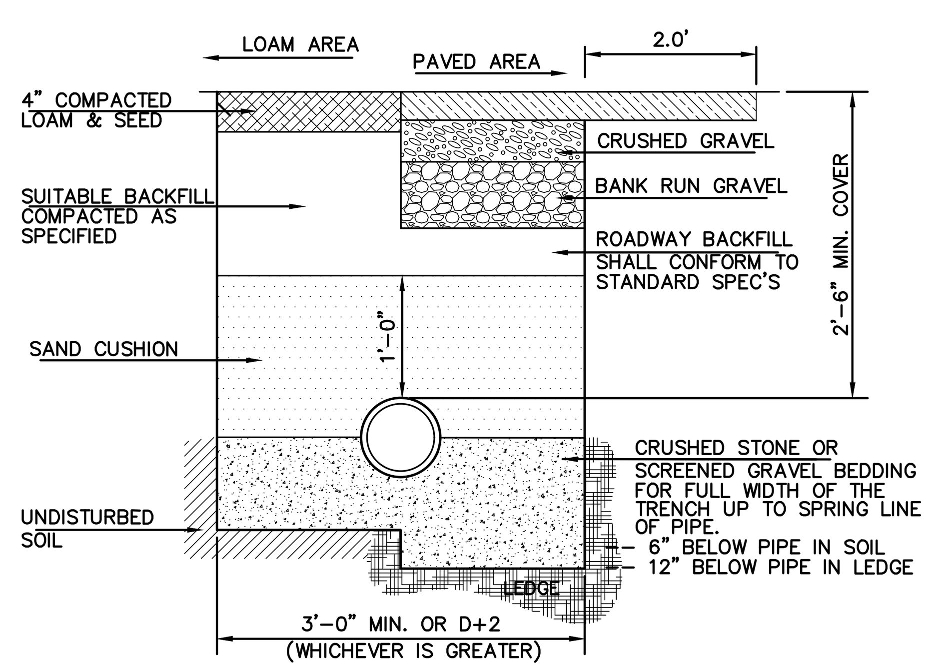
YARD DRAIN (LIGHT DUTY)

NOT TO SCALE



ROOF LEADER DRAIN CONNECTION

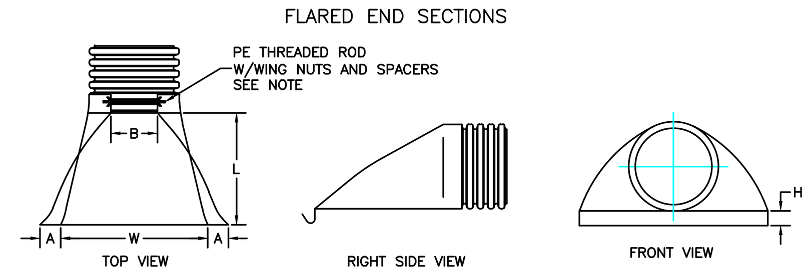
NOT TO SCALE



TYPICAL DRAINAGE PIPE TRENCH DETAIL

NOT TO SCALE

FLARED END SECTIONS



PART #	PIPE SIZE	A	B (MAX)	H	L	W
1210NP	12 in (300 mm)	6.50 in (165 mm)	10.00 in (254 mm)	6.50 in (165 mm)	25.00 in (635 mm)	29.00 in (737 mm)
1510NP	15 in (375 mm)	6.50 in (165 mm)	10.00 in (254 mm)	6.50 in (165 mm)	25.00 in (635 mm)	29.00 in (737 mm)
1810NP	18 in (450 mm)	7.50 in (191 mm)	15.00 in (381 mm)	6.50 in (165 mm)	32.00 in (813 mm)	35.00 in (889 mm)
2410NP	24 in (600 mm)	7.50 in (191 mm)	18.00 in (457 mm)	6.50 in (165 mm)	36.00 in (914 mm)	45.00 in (1143 mm)
3015NP	30 in (750 mm)	7.50 in (191 mm)	12.00 in (305 mm)	8.60 in (218 mm)	58.00 in (1473 mm)	63.00 in (1600 mm)
3615NP	36 in (900 mm)	7.50 in (191 mm)	25.00 in (635 mm)	8.60 in (218 mm)	58.00 in (1473 mm)	63.00 in (1600 mm)

NOTE: PE THREADED ROD W/WING NUTS PROVIDED FOR END SECTIONS 12"-24". 30" & 36" END SECTIONS REQUIRE TWO (2) THREADED RODS FOR ASSEMBLE.

NOTE: ALL DIMENSIONS ARE NOMINAL

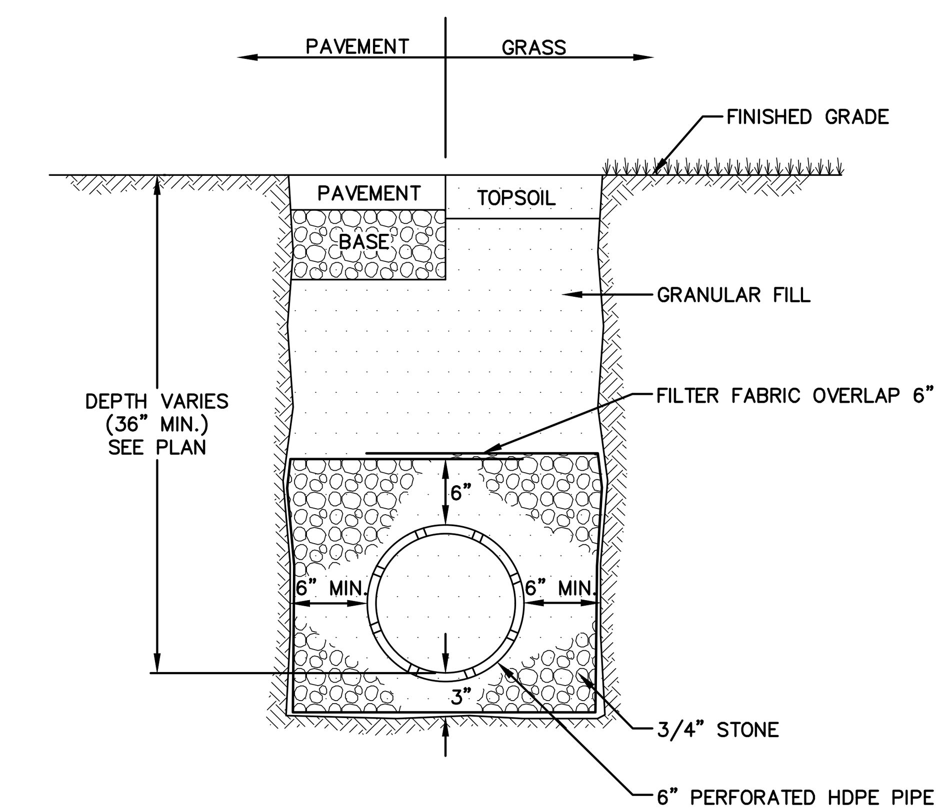
ADVANCED DRAINAGE SYSTEMS, INC.

DRAWN BY	APPROVED BY	DRAWING #
AWM 10.07.02	AWM 10.07.02	6070

REVISIONS	
BY	DATE
AWM	01.31.05

TABLE 4-3 FILTER MIXTURES			
COMPONENT MATERIAL	PERCENT OF MIXTURE BY VOLUME	GRADATION OF MATERIAL: SIEVE NO.	GRADATION OF MATERIAL: PERCENT BY WEIGHT STANDARD SIEVE
FILTER MEDIA OPTION A			
ASTM C-33 CONCRETE SAND	50 TO 55		
LOAMY SAND TOPSOIL, WITH FINES AS INDICATED	20 TO 30	200	15 TO 25
MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH, WITH FINES AS INDICATED	20 TO 30	200	<5
FILTER MEDIA OPTION B			
MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH, WITH FINES AS INDICATED	20 TO 30	200	<5
LOAMY COARSE SAND	70 TO 80	10	85 TO 100
		20	70 TO 100
		50	15 TO 40
		200	8 TO 15

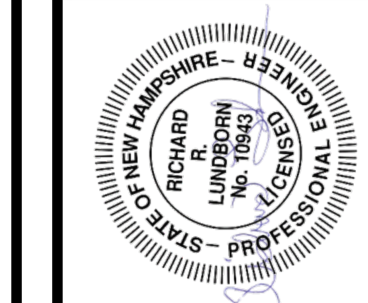
SOIL FILTER MIXTURE



UNDERDRAIN

NOT TO SCALE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER



SCALE: HORZ.: NTS VERT.:
DATUM: HORZ.: VERT.:
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GRAPHIC SCALE

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DATE: 11/19/2018

CD-502

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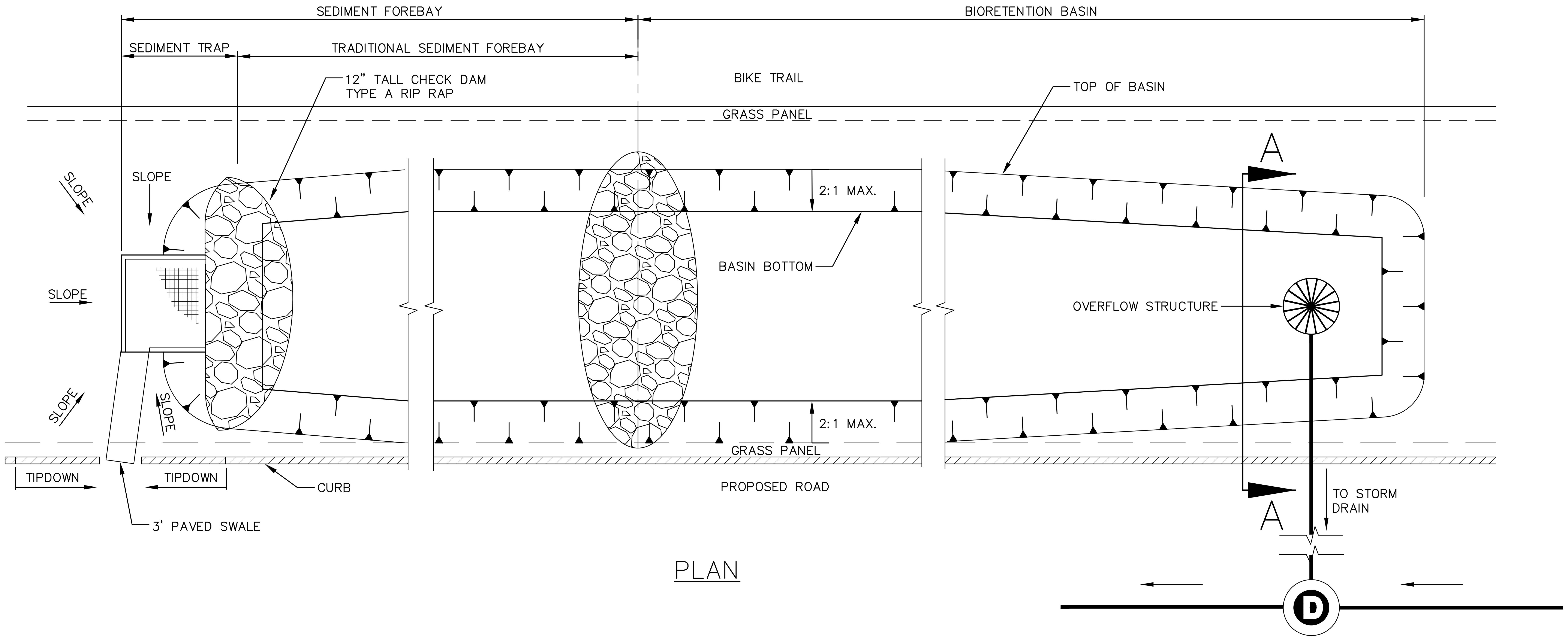
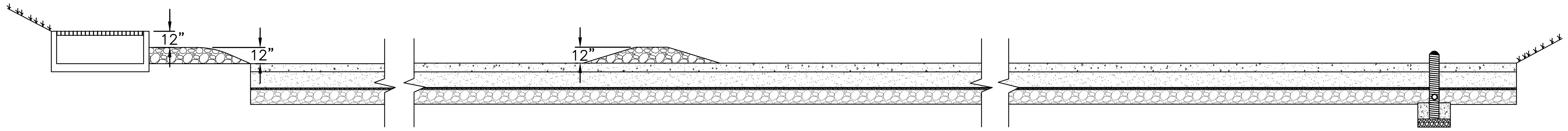


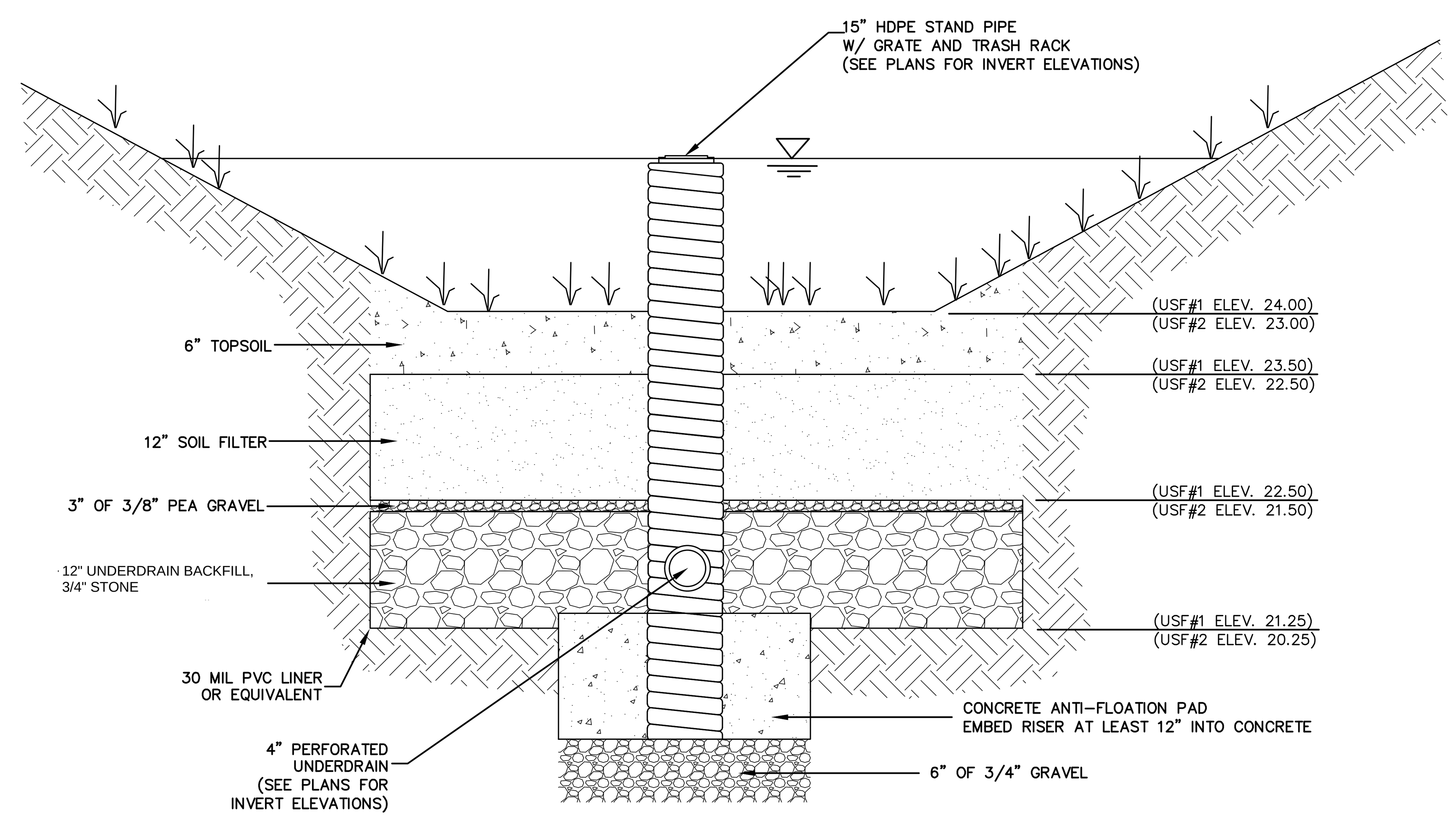
PLAN



PROFILE

BIORETENTION SYSTEM TYPICAL SECTION

SCALE: NOT TO SCALE



SECTION A–A

SCALE: NOT TO SCALE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

SCALE: HORZ.: NTS VERT.:
DATUM: HORZ.: VERT.:
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WEST END YARDS

PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10
DATE: 11/19/2018

CD-503

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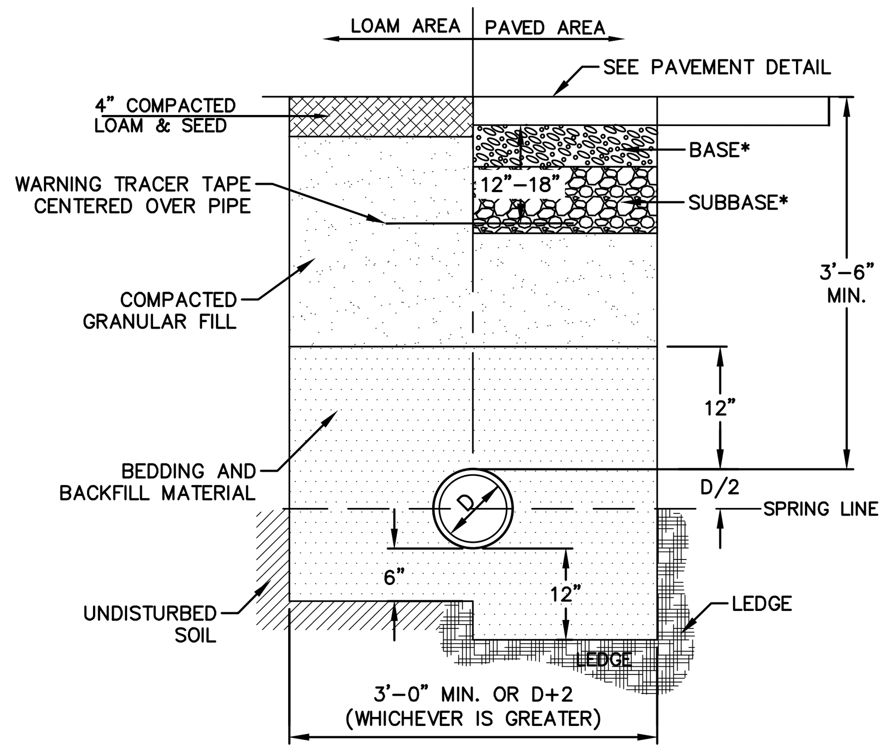
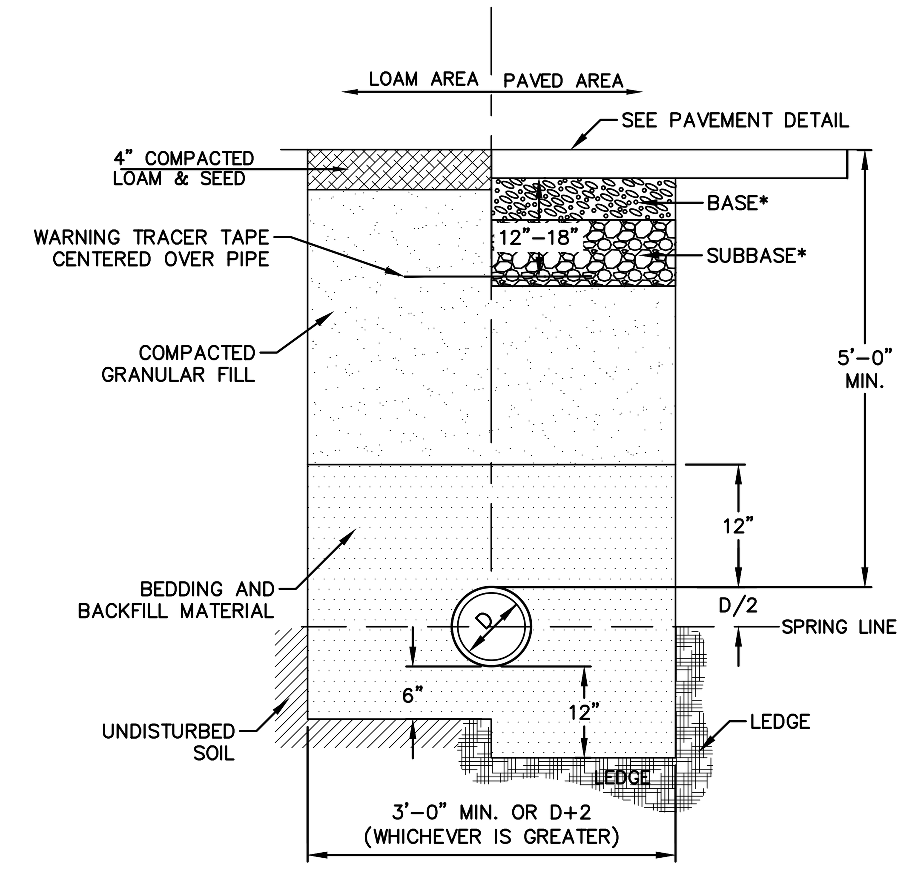


GAS TRENCH
NOT TO SCALE



WATER TRENCH SECTION
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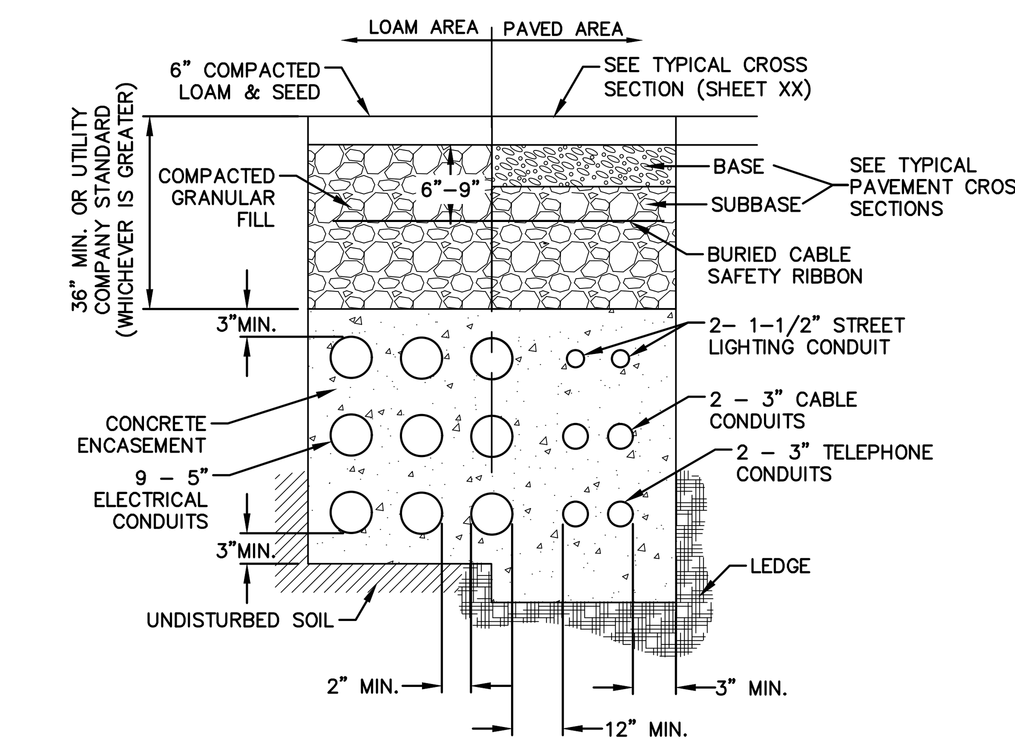
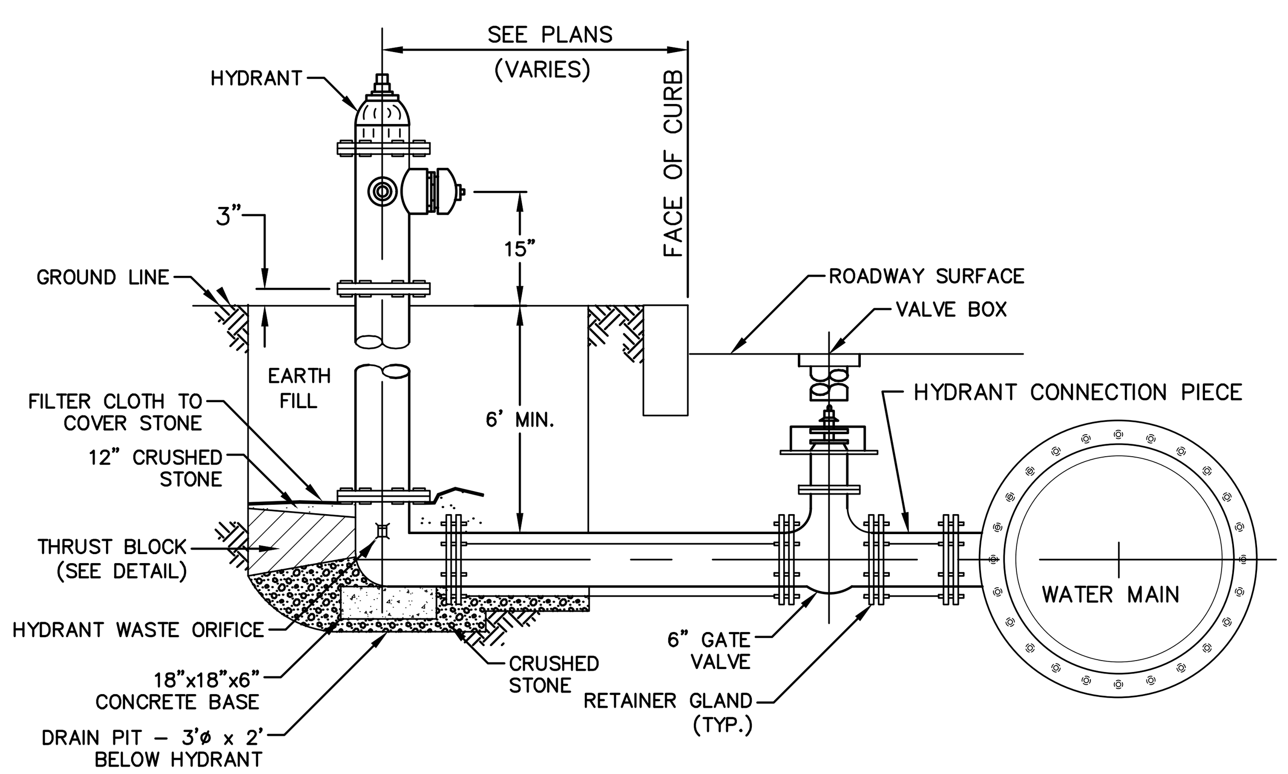


ELECTRICAL AND COMMUNICATION CONDUIT
NOT TO SCALE

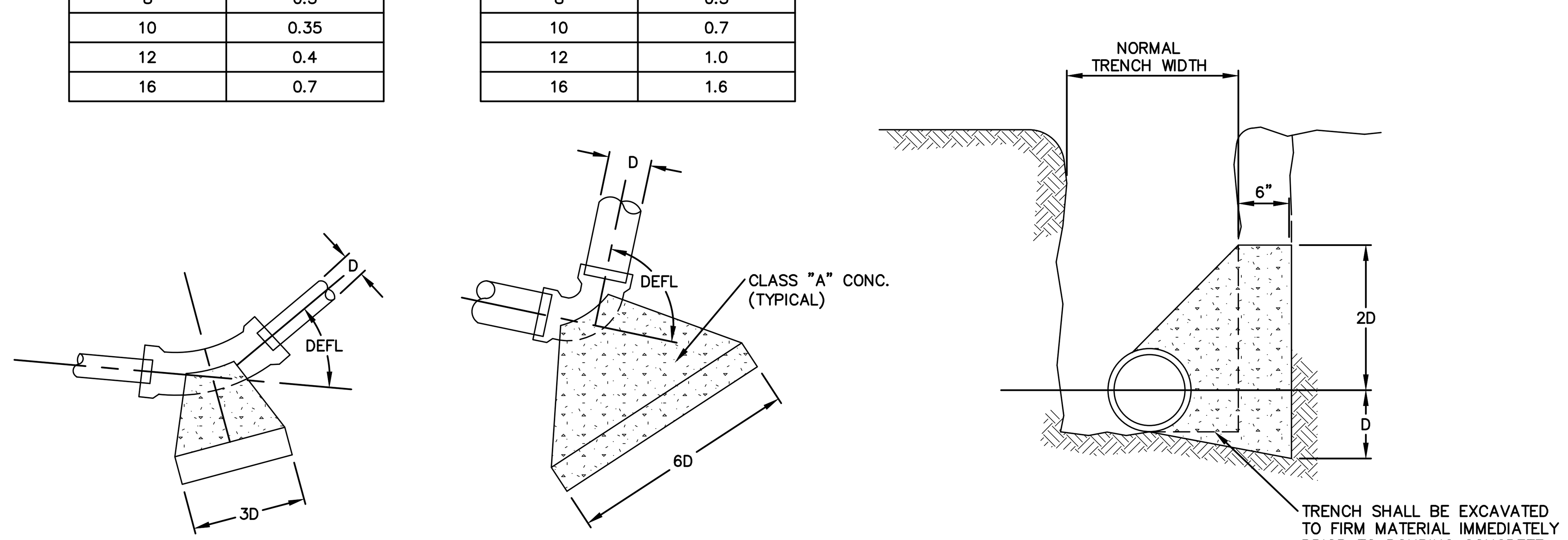
1. NUMBER, MATERIAL, AND SIZE OF UTILITY CONDUITS TO BE DETERMINED BY LOCAL OR AS SHOWN ON CONDUIT PLAN.
2. DIMENSIONS SHOWN REPRESENTS OWNER'S MINIMUM REQUIREMENTS. ACTUAL DIMENSIONS MAY BE GREATER BASED ON UTILITY COMPANY STANDARDS, BUT MAY NOT BE LESS THAN SHOWN.
3. NO CONDUIT SHALL EXCEED 360 DEGREES IN TOTAL BENDS.
4. A SUITABLE PULLING STRING, CAPABLE OF 200 POUNDS OF PULL MUST BE INSTALLED IN THE CONDUIT BEFORE UTILITY COMPANY IS NOTIFIED TO INSTALL CABLE. THE STRING SHOULD BE BLOWN INTO THE CONDUIT AFTER THE RUN IS ASSEMBLED TO AVOID BONDING THE STRING TO THE CONDUIT.
5. UTILITY COMPANY MUST BE GIVEN THE OPPORTUNITY TO INSPECT THE CONDUIT PRIOR TO BACKFILL. THE CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS SHOULD THE UTILITY COMPANY BE UNABLE TO INSTALL ITS CABLE IN A SUITABLE MANNER.
6. ALL CONDUIT INSTALLATIONS MUST CONFORM TO THE CURRENT EDITION OF THE NATIONAL ELECTRIC SAFETY CODE, STATE AND LOCAL CODES AND ORDINANCES, AND, WHERE APPLICABLE, THE NATIONAL ELECTRIC CODE.
7. ALL 90° SWEEPS WILL BE MADE USING RIGID GALVANIZED STEEL. SWEEPS WITH A 35" TO 48" RADIUS.?????



FIRE HYDRANT
NOT TO SCALE

PPE DIA. (INCHES)	MINIMUM THRUST BLOCK VOLUME (CUBIC YARDS)
4	0.2
6	0.25
8	0.3
10	0.35
12	0.4
16	0.7

PPE DIA. (INCHES)	MINIMUM THRUST BLOCK VOLUME (CUBIC YARDS)
4	0.25
6	0.3
8	0.5
10	0.7
12	1.0
16	1.6



PLAN ELBOW - DEFL. LESS THAN 50

PLAN ELBOW - DEFL. MORE THAN 50

SECTION

CONCRETE THRUST BLOCKS
NOT TO SCALE

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LAYER STATE:

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE - RICHARD R. LUNDBORN No. 10843 - LICENSED PROFESSIONAL ENGINEER

SCALE: HORZ.: NTS
VERT.:
DATUM: HORZ.:
VERT.:
GRAPHIC SCALE 0

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UPPER SQUARE BUSINESS CENTER
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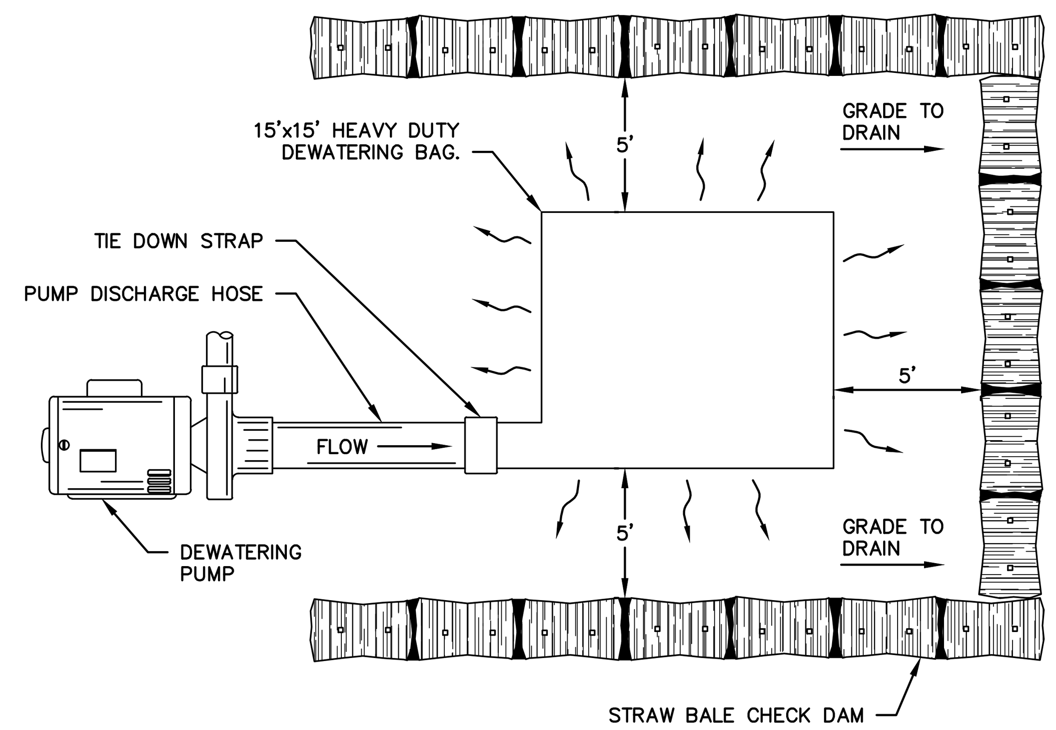
PROJ. No.: 20180317.A10
DATE: 11/19/2018

CD-504



DEWATERING BAG
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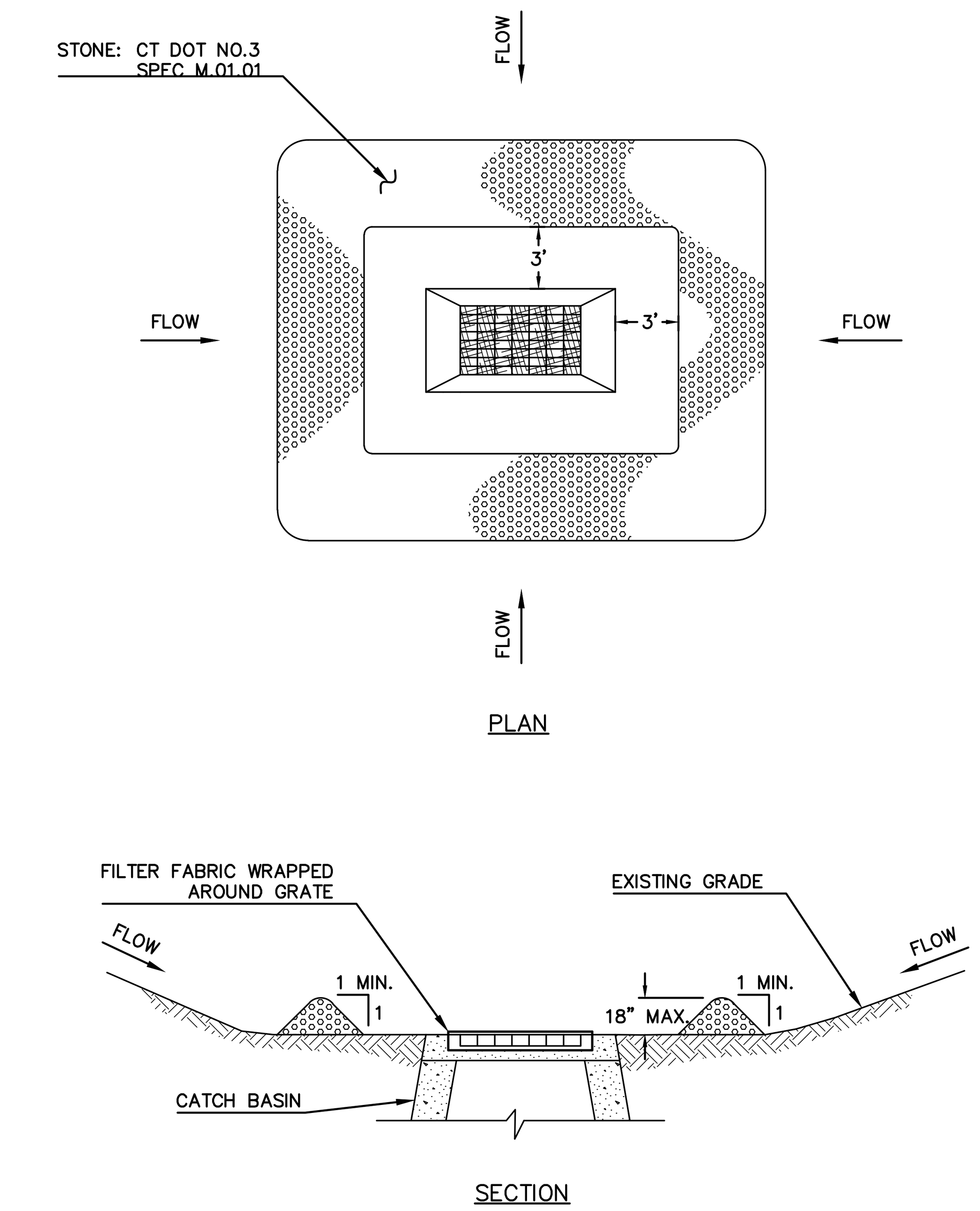

LOW POINT STONE CHECK DAM
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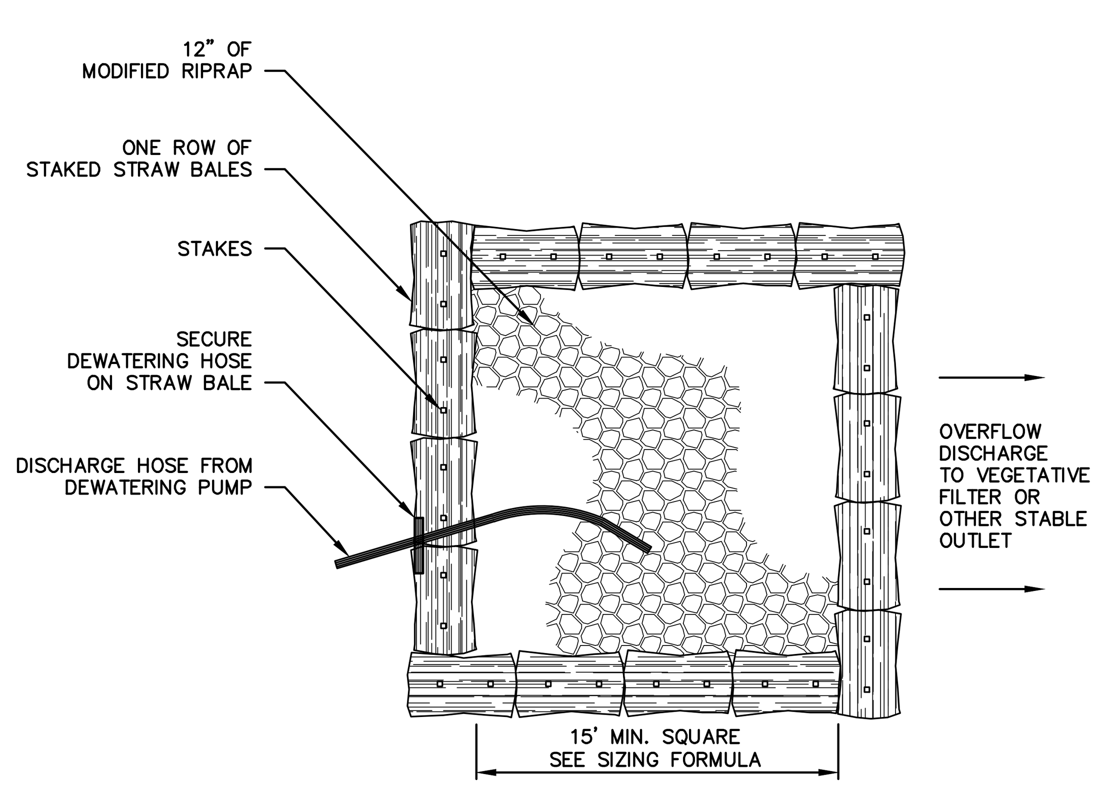
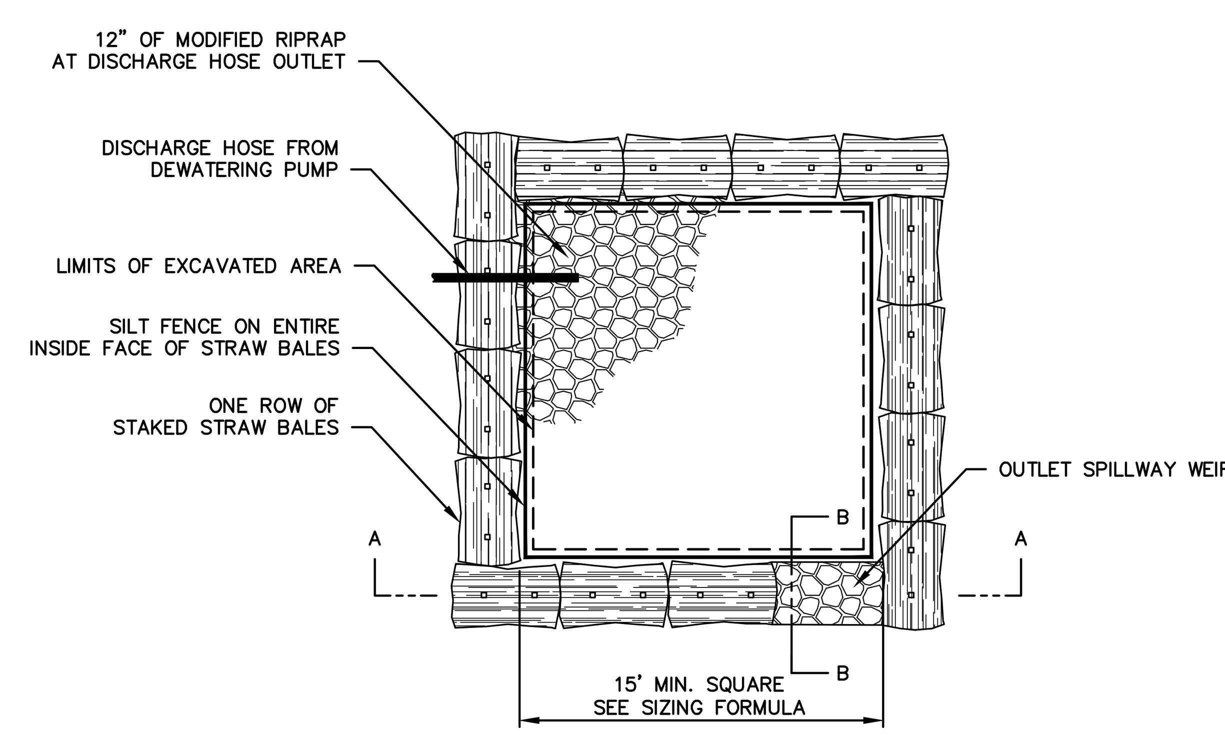


SIZING FORMULA:
CUBIC FT. OF REQUIRED STORAGE = PUMP DISCHARGE RATE (GPM) x 16

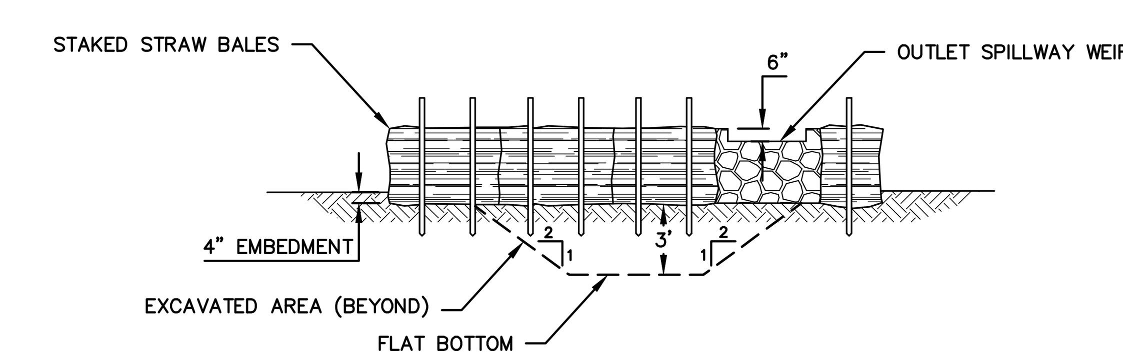
PLAN

PUMP SETTLING BASIN TYPE I
NOT TO SCALE

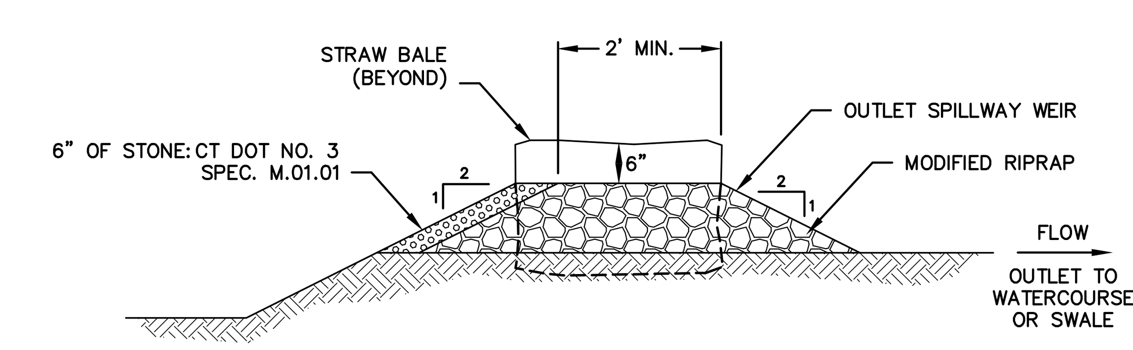


SIZING FORMULA:
CUBIC FT. OF REQUIRED STORAGE = PUMP DISCHARGE RATE (GPM) x 16

PLAN



SECTION A–A



SECTION B–B

PUMP SETTLING BASIN TYPE II
NOT TO SCALE

No. | DATE | DESCRIPTION | DESIGNER | REVIEWER

SCALE: HORZ.: NTS VERT.:
DATUM: HORZ.: VERT.:
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GRAPHIC SCALE

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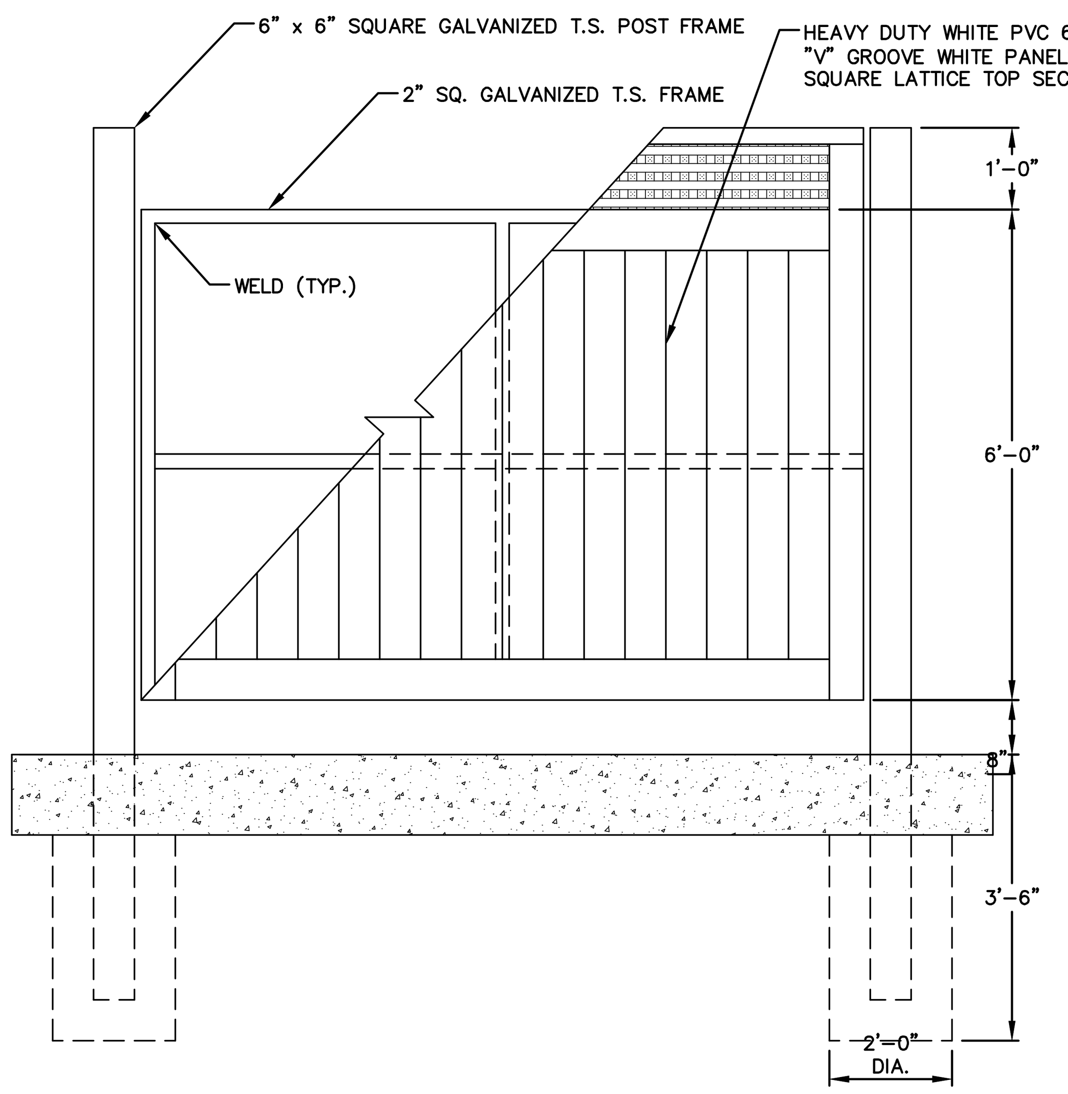
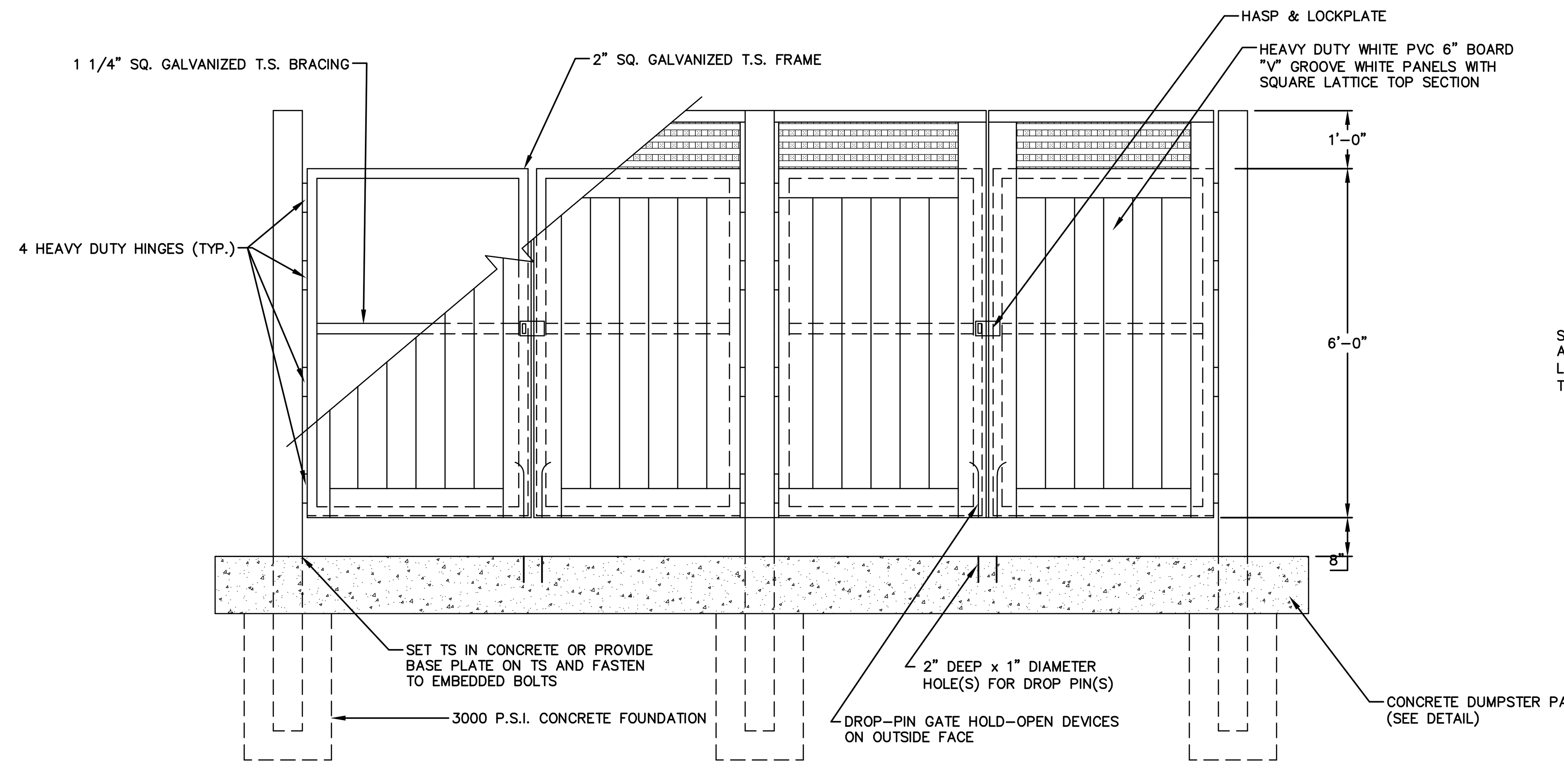
DATE: 11/19/2018

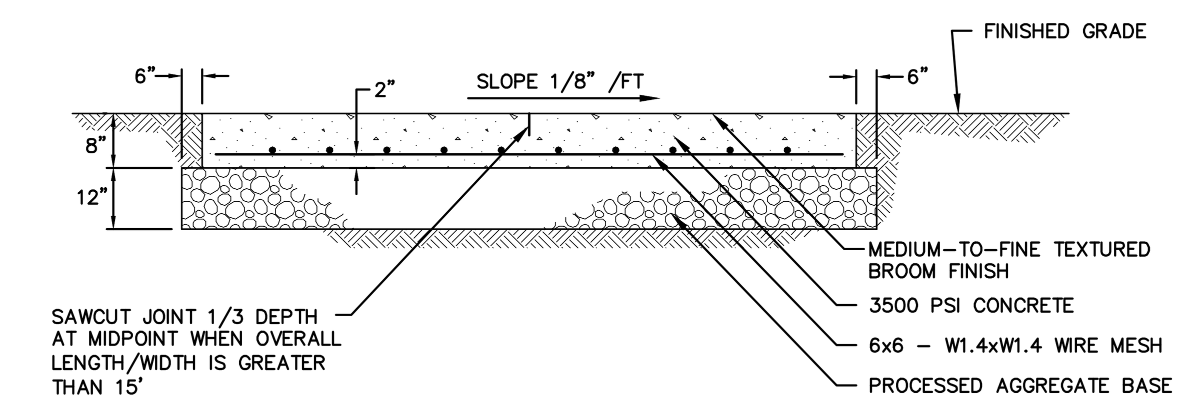
CD-505



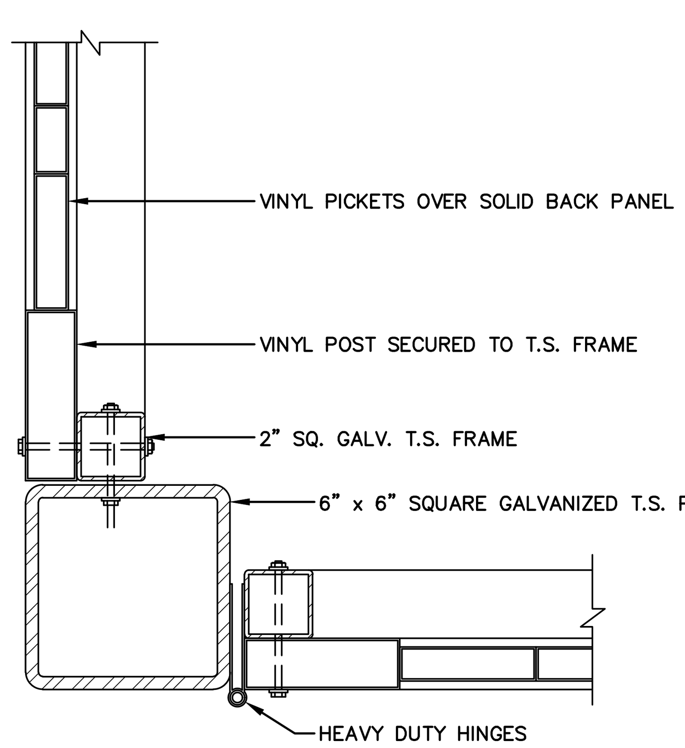
SIDE ELEVATION



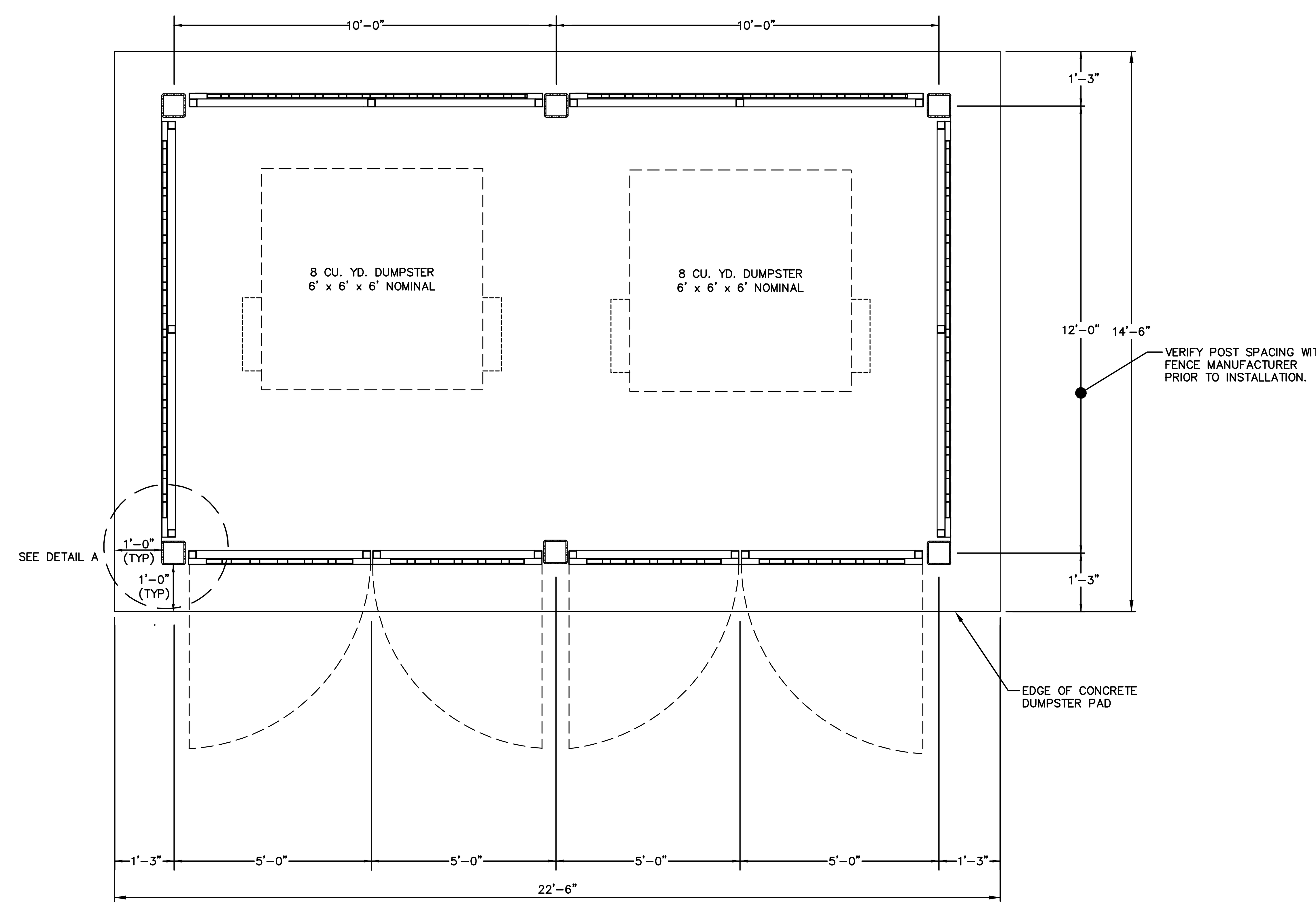
FRONT ELEVATION



CONCRETE DUMPSTER PAD
NOT TO SCALE



DETAIL A



PLAN

DOUBLE DUMPSTER ENCLOSURE

SCALE: N.T.S.

File Path: F:\P2018\0317\A10\Civil3\Dwg\20180317A10_DET01.dwg Layout: CD-506-SITE Plotted: Mon, November 19, 2018 - 1:54 PM User: ddugal
Plotter: DWG TO PDF.PC3 CTB File: FO.STB

MS VIEW:
LAYER STATE:

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE — RICHARD R. LUNDBORN No. 10843 LICENSED PROFESSIONAL ENGINEER

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VERT.:
DATUM: HORZ.:
VERT.:
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GRAPHIC SCALE

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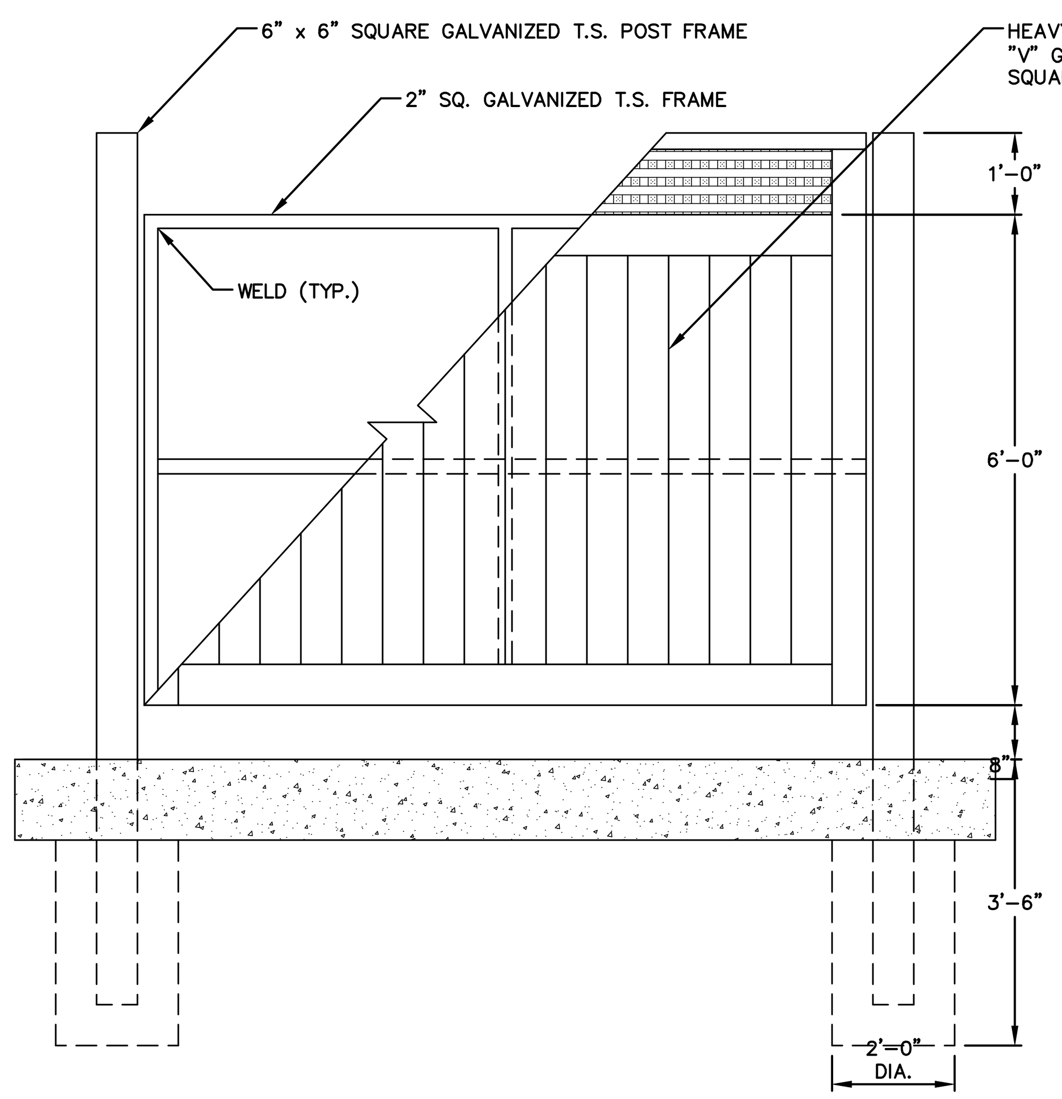
CD-506



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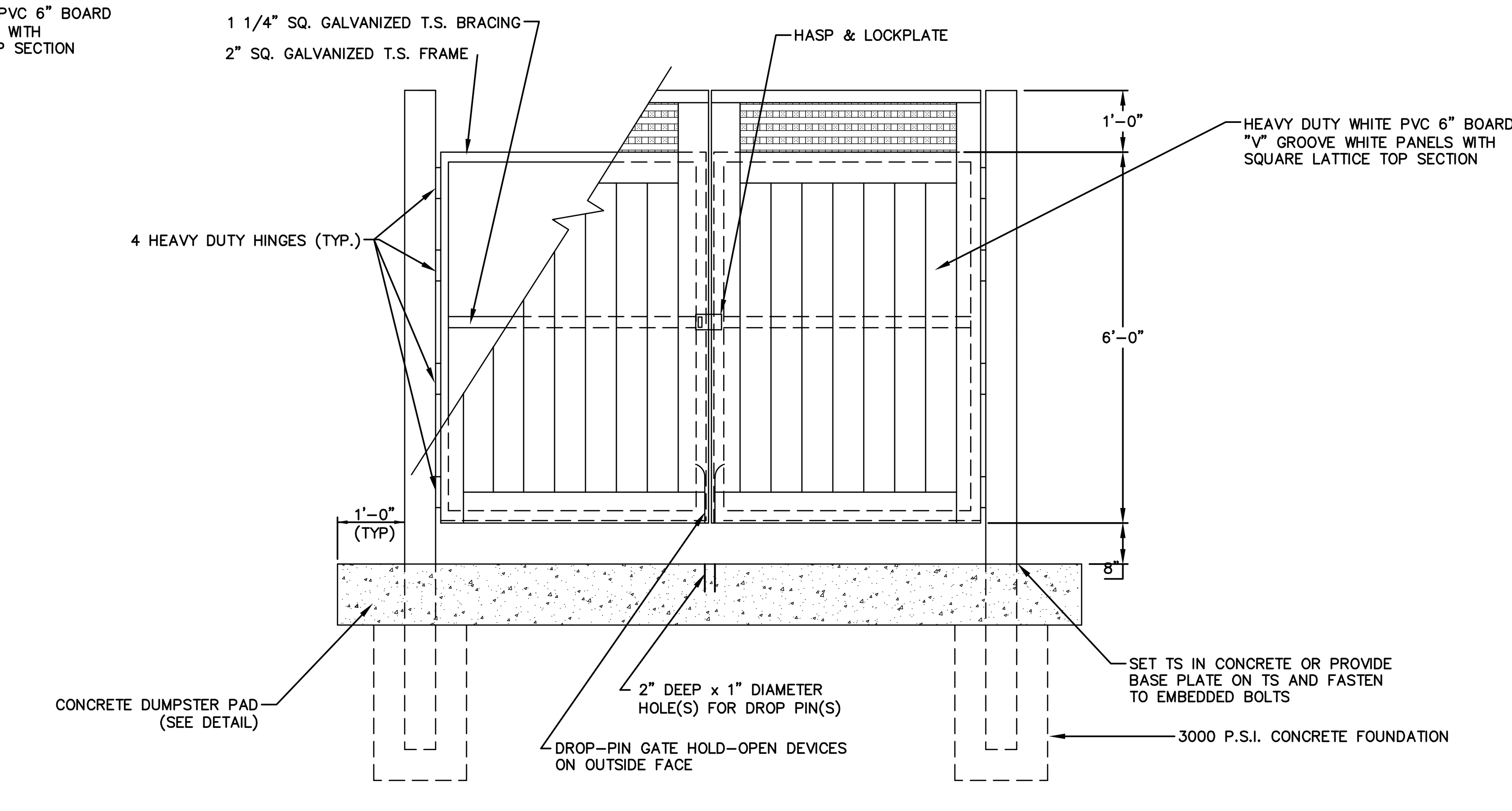
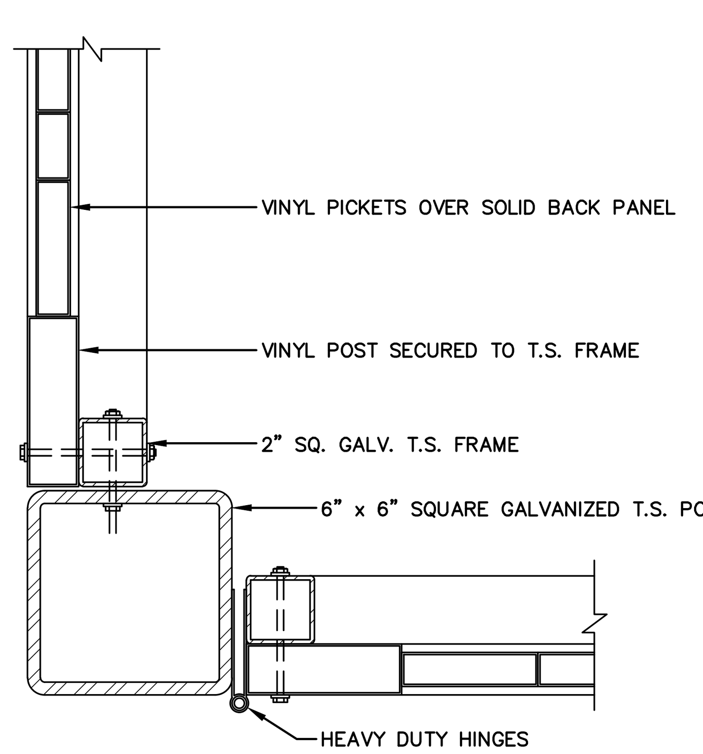
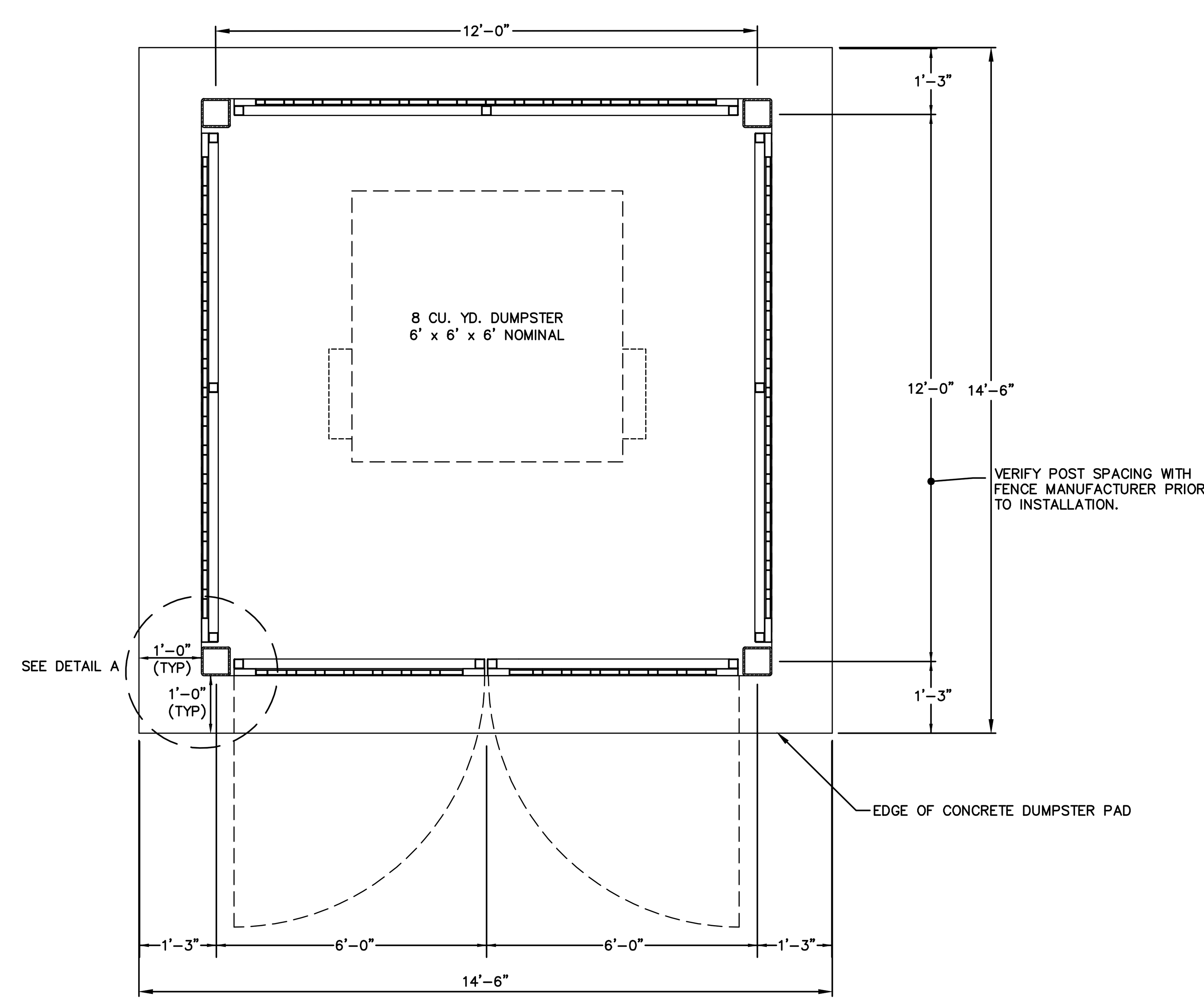


FRONT ELEVATION



DETAIL A



PLAN

SINGLE DUMPSTER ENCLOSURE

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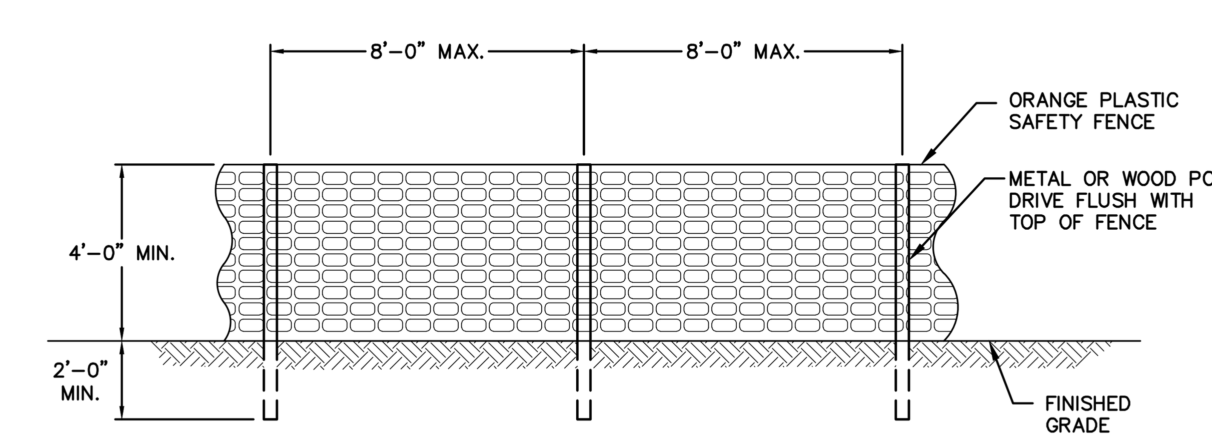

FOR TREE PROTECTION FENCE SHALL BE PLACED AT DRIPLINE OF TREES.

PROTECTIVE SAFETY FENCE

SCALE: N.T.S.

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE – RICHARD R. LUNDBORN No. 12643 LICENSED PROFESSIONAL ENGINEER

SCALE: HORZ.: NTS VERT.:
DATUM: HORZ.: VERT.:
GRAPHIC SCALE 0

FUSS & O'NEILL
UPPER SQUARE BUSINESS CENTER
5 FLETCHER STREET, SUITE 1
KENNEBUNK, MAINE 04043
207.363.0669
www.fando.com

CATE STREET DEVELOPMENT, LLC

DETAILS

WEST END YARDS

PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10
DATE: 11/19/2018

CD-507

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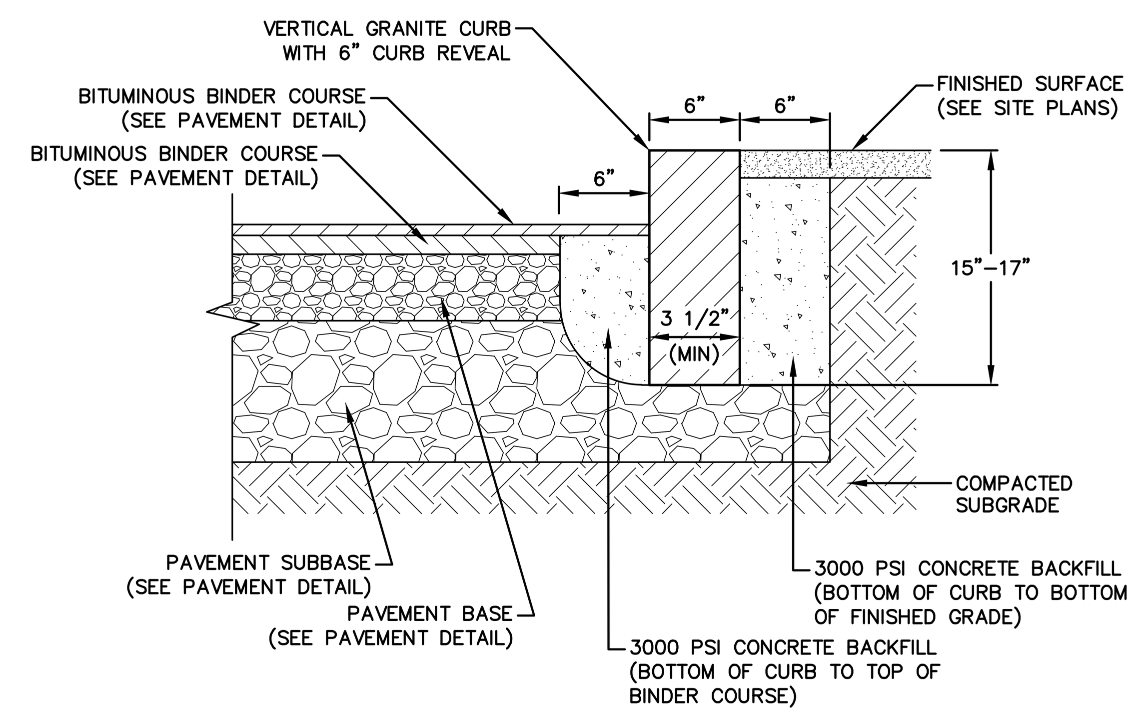
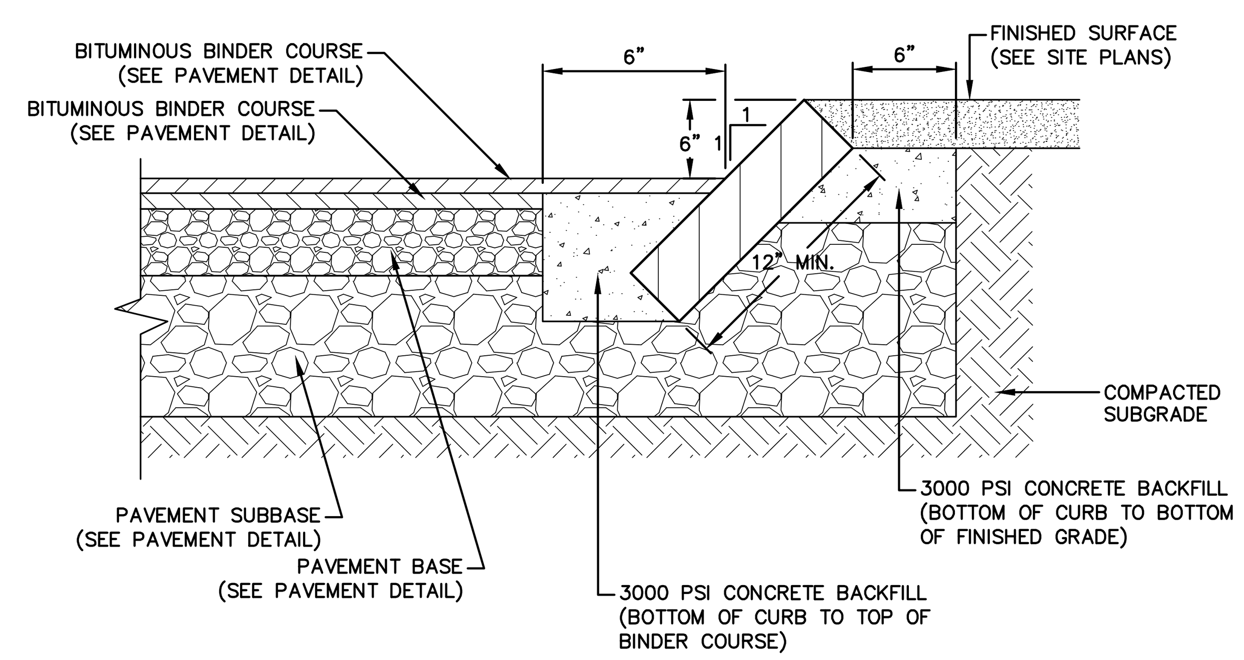


VERTICAL GRANITE CURB INSTALLED
SCALE: NOT TO SCALE



SLOPED GRANITE CURB INSTALLED
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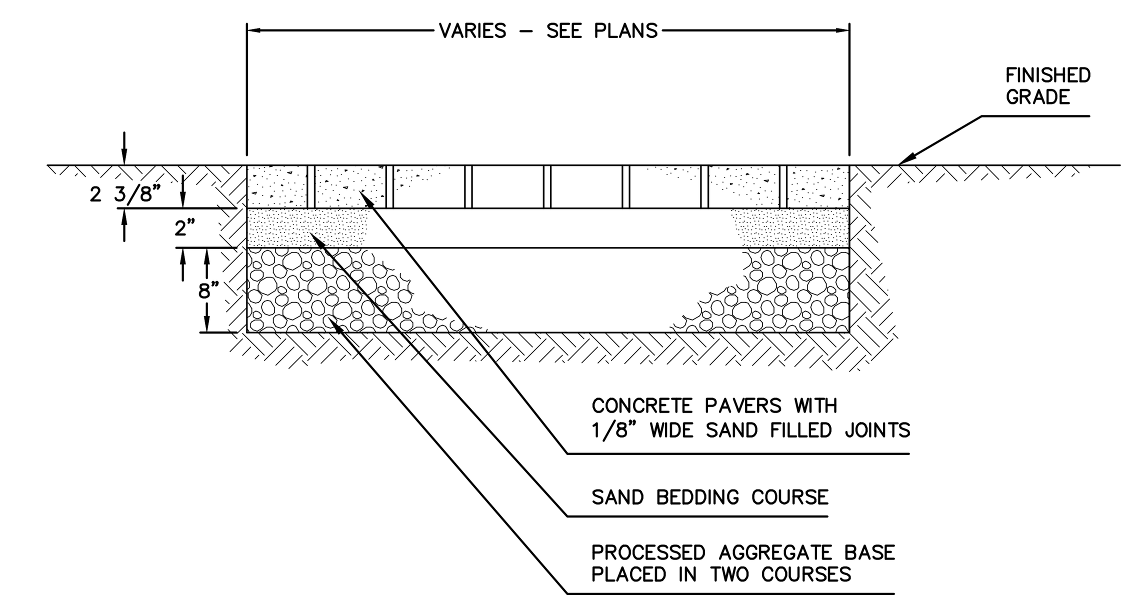

CONCRETE PAVER SIDEWALK
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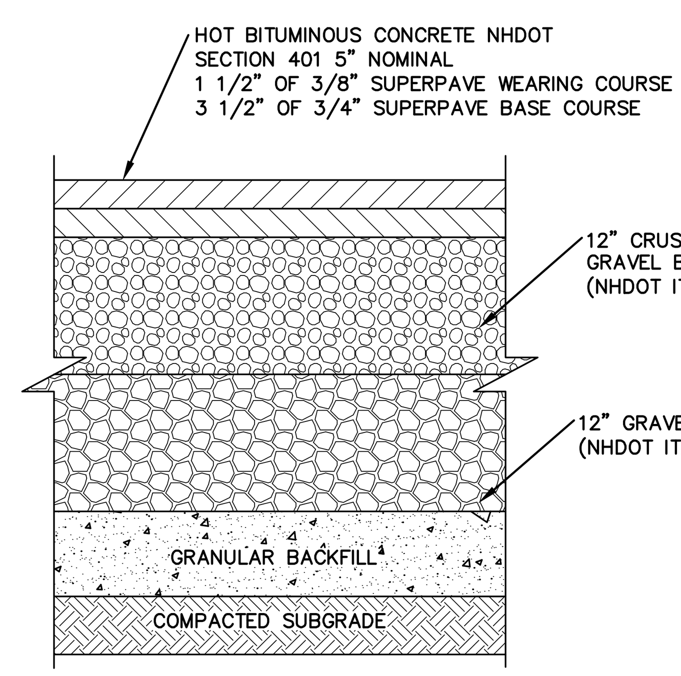

TYPICAL PAVEMENT SECTION
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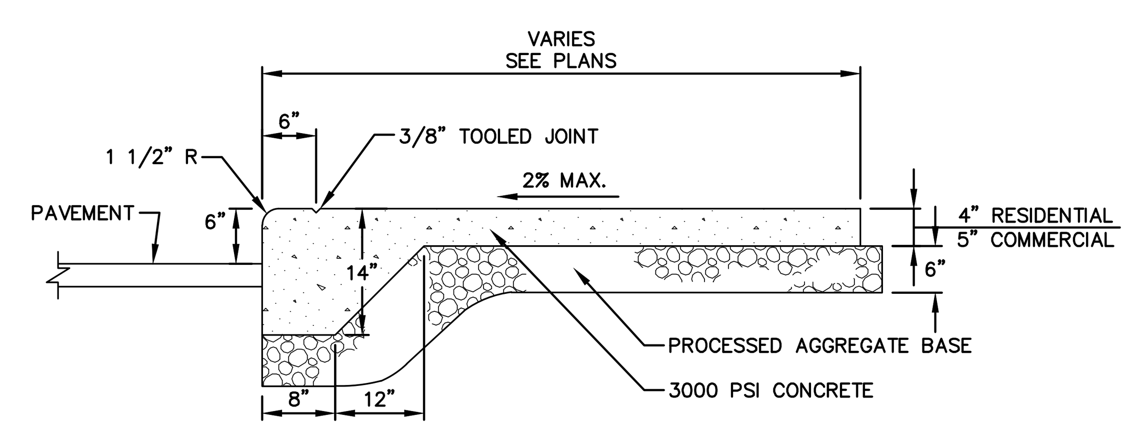

MONOLITHIC CONCRETE CURB AND WALK
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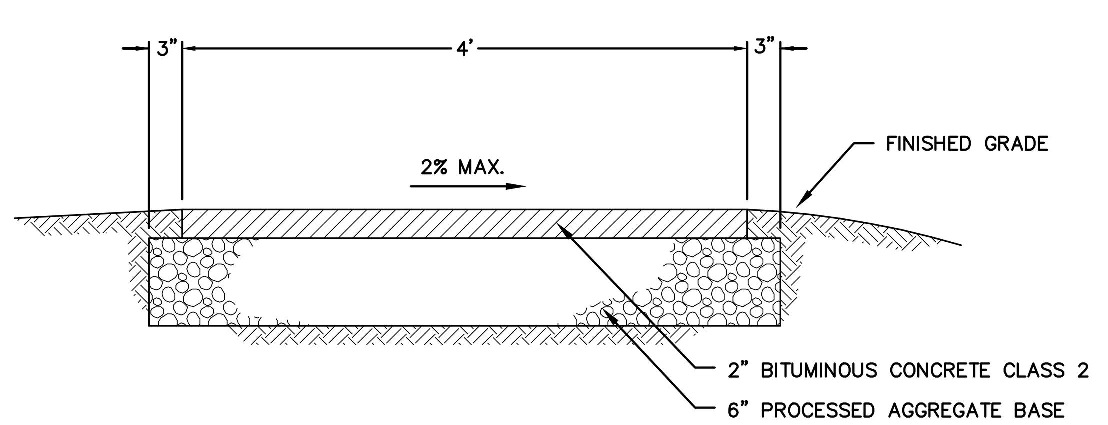

BITUMINOUS CONCRETE WALK
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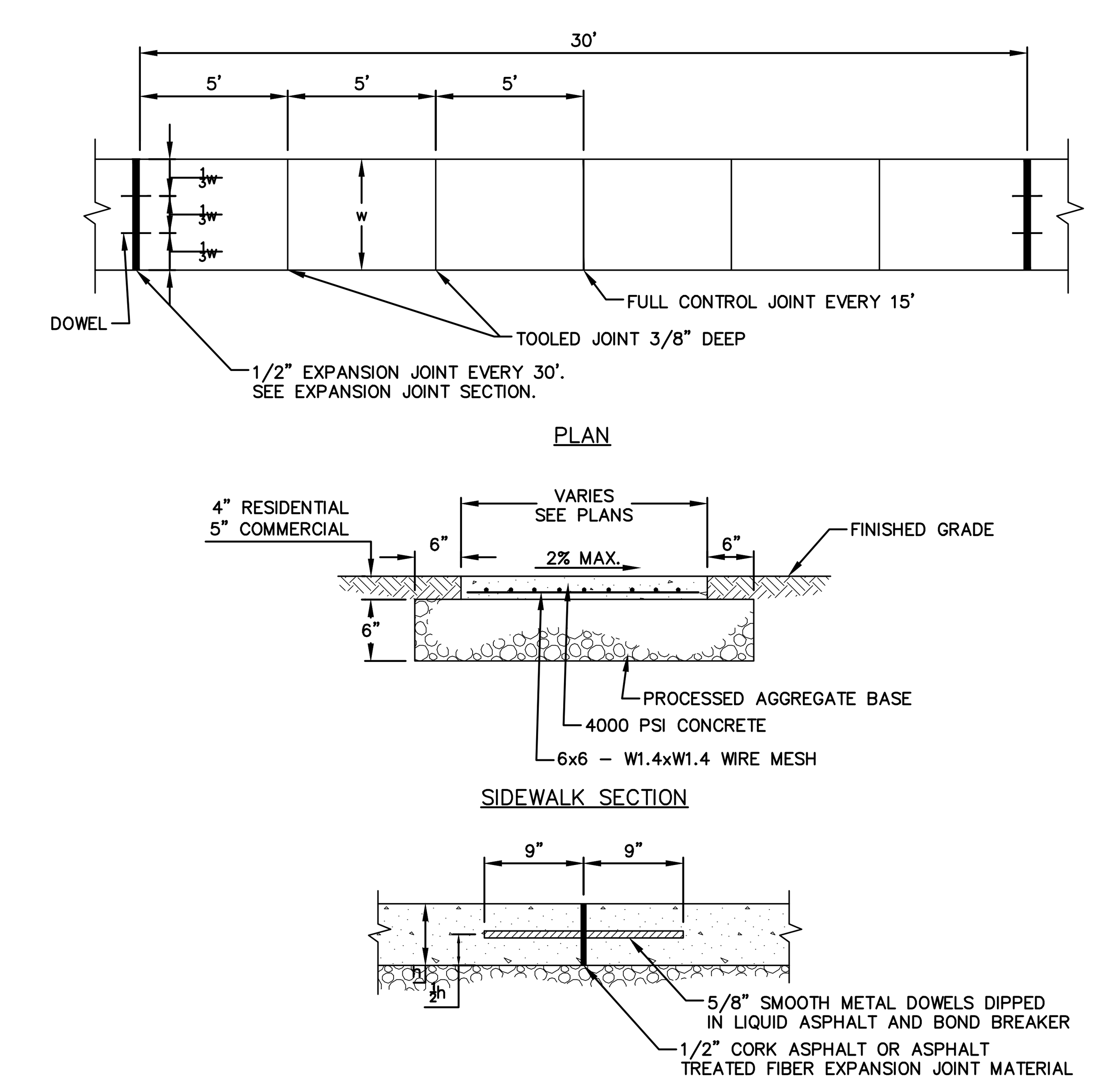

CONCRETE SIDEWALK
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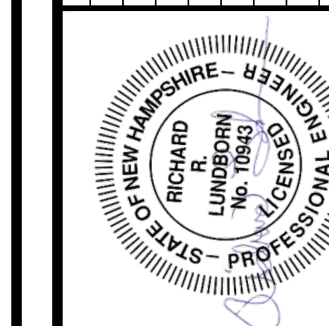

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PROJ. No.: 20180317.A10
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CD-510

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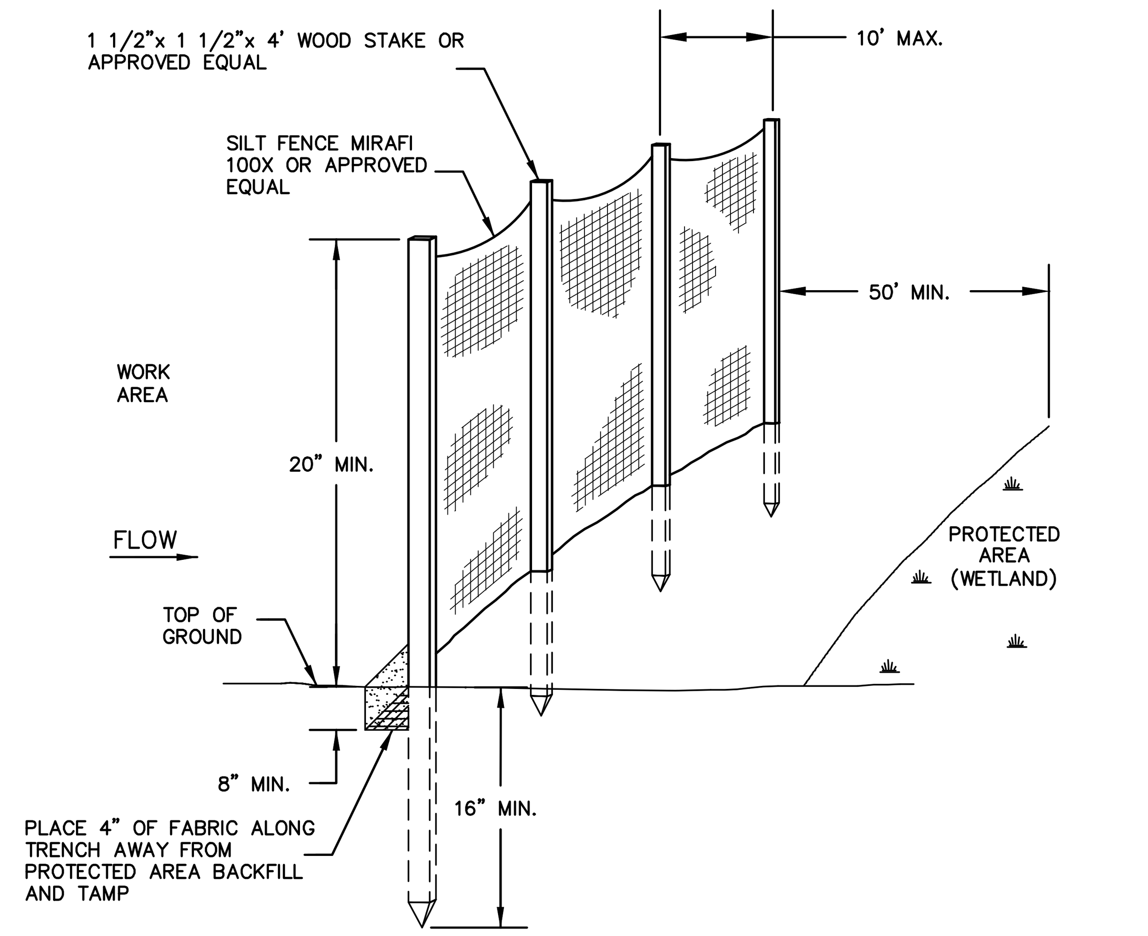


MAINTENANCE REQUIREMENTS:

1. FENCES SHOULD BE INSPECTED AND MAINTAINED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALLS;

2. SEDIMENT DEPOSITION SHOULD BE REMOVED, AT A MINIMUM, WHEN DEPOSITION ACCUMULATES TO ONE-HALF THE HEIGHT OF THE FENCE, AND MOVED TO AN APPROPRIATE LOCATION SO THE SEDIMENT IS NOT READILY TRANSPORTED BACK TOWARD THE SILT FENCE.

3. SILT FENCES SHOULD BE REPAIRED IMMEDIATELY IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES OF THE BARRIER, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, SEDIMENT BARRIERS SHOULD BE REPLACED WITH A TEMPORARY CHECK DAM.

4. SHOULD THE FABRIC ON A SILT FENCE DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL IS NECESSARY; THE FABRIC SHOULD BE REPLACED PROMPTLY.

5. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE IS NO LONGER REQUIRED SHOULD BE DRESSED TO CONFORM TO THE EXISTING GRADE PREPARED AND SEEDED.

6. IF THERE IS EVIDENCE OF END FLOW ON PROPERLY INSTALLED BARRIERS, EXTEND BARRIERS UPHILL OR CONSIDER REPLACING THEM WITH OTHER MEASURES, SUCH AS TEMPORARY DIVERSIONS AND SEDIMENT TRAPS.

7. SILT FENCES HAVE A USEFUL LIFE OF ONE SEASON. ON LONGER CONSTRUCTION PROJECTS, SILT FENCE SHOULD BE REPAIRED PERIODICALLY AS REQUIRED TO MAINTAIN EFFECTIVENESS.

CONSTRUCTION SPECIFICATIONS:

1. FENCES SHOULD 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 FENCE. SEDIMENT BARRIERS SHOULD BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF THE CONTRIBUTING DRAINAGE AREA ABOVE THEM.

2. THE MAXIMUM CONTRIBUTING DRAINAGE AREA ABOVE THE FENCE SHOULD BE LESS THAN 1A ACRE PER 100 LINEAR FEET OF FENCE;

3. THE MAXIMUM LENGTH OF SLOPE ABOVE THE FENCE SHOULD BE 100 FEET;

4. THE MAXIMUM SLOPE ABOVE THE FENCE SHOULD BE 2:1;

5. FENCES SHOULD BE INSTALLED FOLLOWING THE CONTOUR OF THE LAND AS CLOSELY AS POSSIBLE, AND
   A. THE ENDS OF THE FENCE SHOULD BE FLARED UPSLOPE;
   B. THE FABRIC SHOULD BE EMBEDDED A MINIMUM OF 8 INCHES IN DEPTH AND 4 INCHES IN WIDTH IN A TRENCH EXCAVATED INTO THE GROUND, OR IF SITE CONDITIONS INCLUDE FROZEN GROUND, LEDGE, OR THE PRESENCE OF HEAVY ROOTS, THE BASE OF THE FABRIC SHOULD BE EMBEDDED WITH A MINIMUM THICKNESS OF 8 INCHES OF 3/4-INCH STONE;
   C. THE SOIL SHOULD BE COMPACTED OVER THE EMBEDDED FABRIC;
   D. SUPPORT POSTS SHOULD BE SIZED AND ANCHORED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS WITH MAXIMUM POST SPACING OF 6 FEET;
   E. ADJOINING SECTIONS OF THE FENCE SHOULD BE OVERLAPPED BY A MINIMUM OF 6 INCHES (24 INCHES IS PREFERRED), FOLDED AND STAPLED TO A SUPPORT POST. IF METAL POSTS ARE USED, FABRIC SHOULD BE WIRE-TIED DIRECTLY TO THE POSTS WITH THREE DIAGONAL TIES.

6. SILT FENCING SHOULD NOT BE STAPLED OR NAILED TO TREES.

7. THE FILTER FABRIC SHOULD BE A PERVIOUS SHEET OF PROPYLENE, NYLON, POLYESTER OR ETHYLENE YARN AND SHOULD BE CERTIFIED BY THE MANUFACTURER OR SUPPLIER.

8. THE FILTER FABRIC SHOULD CONTAIN ULTRAVIOLET RAY INHIBITORS AND STABILIZERS TO PROVIDE A MINIMUM OF 6 MONTHS OF EXPECTED USABLE CONSTRUCTION LIFE AT A TEMPERATURE RANGE OF 0 DEGREES FAHRENHEIT TO 120 DEGREES FAHRENHEIT.

9. POSTS FOR SILT FENCES SHOULD BE EITHER 4-INCH DIAMETER WOOD OR 1.33 POUNDS PER LINEAR FOOT STEEL WITH A MINIMUM LENGTH OF 5 FEET. STEEL POSTS SHOULD HAVE, PROJECTIONS FOR FASTENING WIRE TO THEM. POSTS SHOULD BE PLACED ON THE DOWN SLOPE SIDE OF THE FABRIC.

10. THE HEIGHT OF A SILT FENCE SHOULD NOT EXCEED 36 INCHES AS HIGHER FENCES MAY IMPOUND VOLUMES OF WATER SUFFICIENT TO CAUSE FAILURE OF THE STRUCTURE.

11. THE FILTER FABRIC SHOULD BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID THE USE OF JOINTS. WHEN JOINTS ARE NECESSARY; FILTER CLOTH SHOULD BE SPLICED TOGETHER ONLY AT SUPPORT POST, WITH A MINIMUM 6-INCH OVERLAP, AND SECURELY SEALED.

12. A MANUFACTURED SILT FENCE SYSTEM WITH INTEGRAL POSTS MAY BE USED.

13. POST SPACING SHOULD NOT EXCEED 6 FEET.

14. A TRENCH SHOULD BE EXCAVATED APPROXIMATELY 4 INCHES WIDE AND 4 INCHES DEEP ALONG THE LINE OF POSTS AND UP GRADIENT FROM THE BARRIER.

15. THE STANDARD STRENGTH OF FILTER FABRIC SHOULD BE STAPLED OR WIRED TO THE POST, AND 8 INCHES OF THE FABRIC SHOULD BE EXTENDED INTO THE TRENCH. THE FABRIC SHOULD NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE.

16. THE TRENCH SHOULD BE BACKFILLED AND THE SOIL COMPACTED OVER THE FILTER FABRIC.

17. SILT FENCE MAY BE INSTALLED BY "SLICING" USING MECHANICAL EQUIPMENT SPECIFICALLY DESIGNED FOR THIS PROCEDURE. THE SLICING METHOD USES AN IMPLEMENT TOWED BEHIND A TRACTOR TO "PLOW" OR SLICE THE SILT FENCE MATERIAL INTO THE SOIL. THE SLICING METHOD MINIMALLY DISRUPTS THE SOIL UPWARD AND SLIGHTLY DISPLACES THE SOIL, MAINTAINING THE SOIL'S PROFILE AND CREATING AN OPTIMAL CONDITION FOR SUBSEQUENT MECHANICAL COMPACTION.

18. SILT FENCES SHOULD BE INSTALLED WITH "SMILES" OR "J-HOOKS" TO REDUCE THE DRAINAGE AREA THAT ANY SEGMENT WILL IMPOUND.

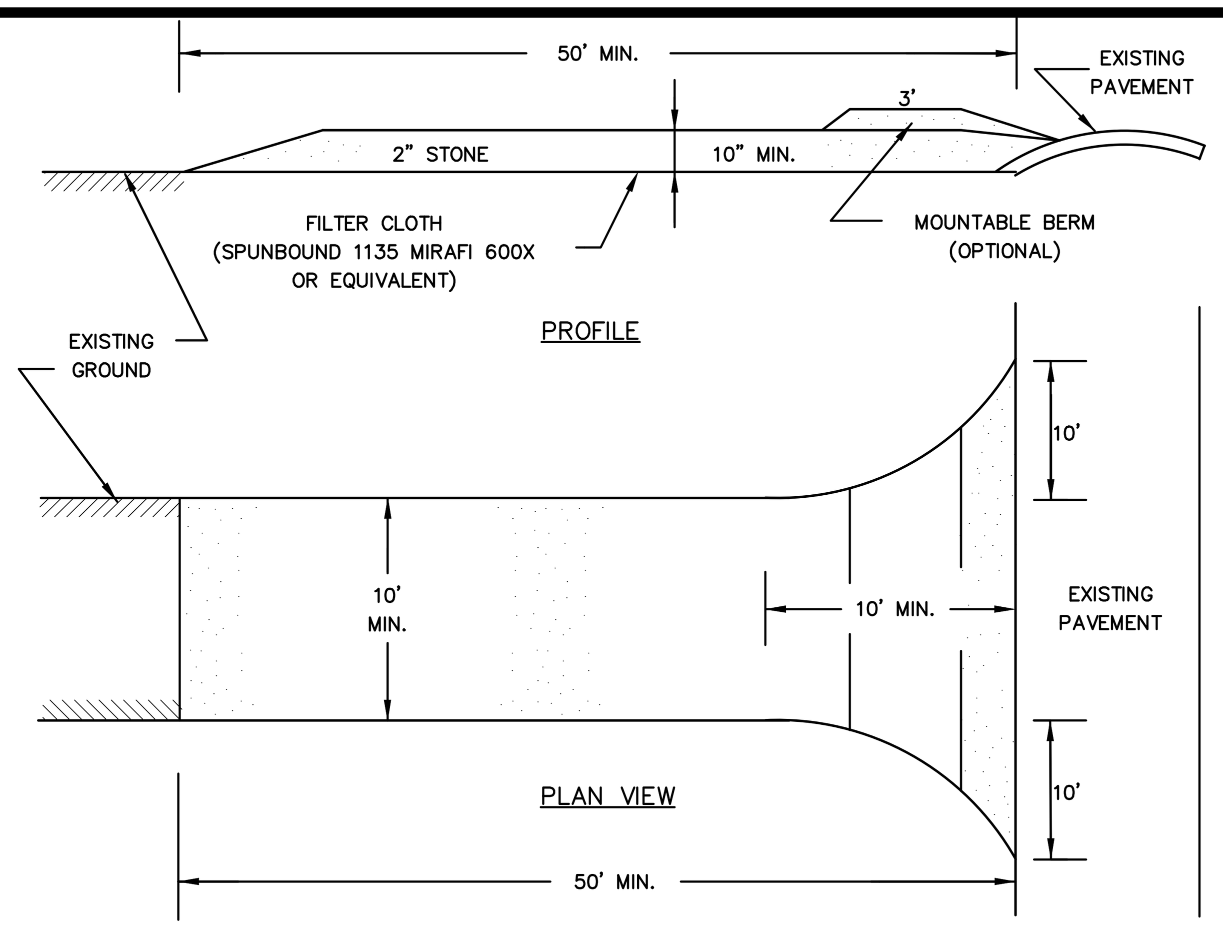
19. THE ENDS OF THE FENCE SHOULD BE TURNED UPHILL.

20. SILT FENCES PLACED AT THE TOE OF A SLOPE SHOULD BE SET AT LEAST 6 FEET FROM THE TOE M ALLOW SPACE FOR SHALLOW PONDING AND TO ALLOW FOR MAINTENANCE ACCESS WITHOUT DISTURBING THE SLOPE.

21. SILT FENCES SHOULD BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREAS HAVE BEEN PERMANENTLY STABILIZED.

SILT FENCE BARRIER

NOT TO SCALE



MAINTENANCE REQUIREMENTS:

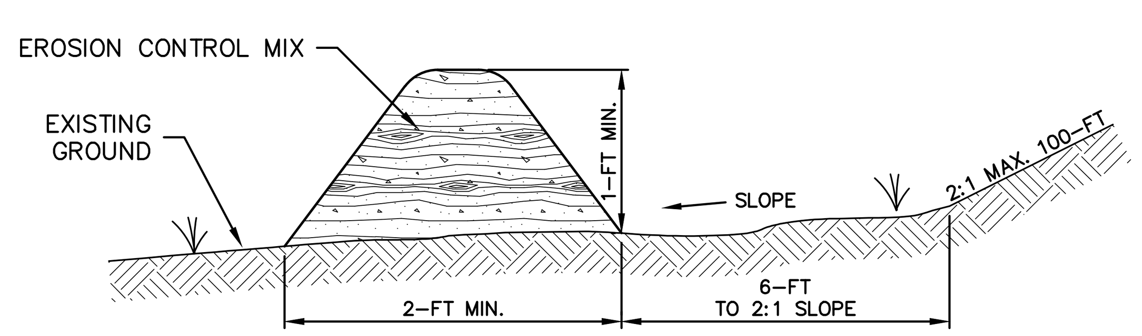
1. WHEN THE CONTROL PAD BECOMES INEFFECTIVE, THE STONE SHOULD BE REMOVED ALONG WITH THE COLLECTED SOIL MATERIAL, REGRADED ON SITE, AND STABILIZED. THE ENTRANCE SHOULD TEN BE RECONSTRUCTED.
2. THE CONTRACTOR SHOULD SWEEP THE PAVEMENT AT EXITS WHENEVER SOIL MATERIALS ARE TRACKED ONTO THE ADJACENT PAVEMENT OR TRAVELED WAY.
3. WHEN WHEEL WASHING IS REQUIRED, IT SHOULD BE CONDUCTED ON AN AREA STABILIZED WITH AGGREGATE, WHICH DRAINS INTO AN APPROVED SEDIMENT-TRAPPING DEVICE. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERWAYS.

CONSTRUCTION SPECIFICATIONS:

1. THE MINIMUM STONE USED SHOULD BE 3-INCH CRUSHED STONE.
2. THE MINIMUM LENGTH OF THE PAD SHOULD BE 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.
3. THE PAD SHOULD BE THE FULL WIDTH OF CONSTRUCTION ACCESS ROAD OR 10 FEET, WHICHEVER IS GREATER.
4. THE PAD SHOULD SLOPE AWAY FROM THE EXISTING ROADWAY.
5. THE PAD SHOULD BE AT LEAST 6 INCHES THICK.
6. THE GEOTEXTILE FILTER FABRIC SHOULD BE PLACED BETWEEN THE STONE PAD AND THE EARTH SURFACE BELOW THE PAD.
7. THE PAD SHOULD BE MAINTAINED OR REPLACED WHEN MUD AND SOIL PARTICLES CLOG THE VOIDS IN THE STONE SUCH THAT MUD AND SOIL PARTICLES ARE TRACKED OFF-SITE.
8. NATURAL DRAINAGE THAT CROSSES THE LOCATION OF THE STONE PAD SHOULD BE INTERCEPTED AND PIPED BENEATH THE PAD, AS NECESSARY, WITH SUITABLE OUTLET PROTECTION.

USDA-SCS STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



EROSION CONTROL MIX BERM CROSS SECTION

NOT TO SCALE

MAINTENANCE REQUIREMENTS:

1. EROSION CONTROL MIX BERMS SHOULD BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.
2. EROSION CONTROL MIX BERMS SHOULD BE REPAIRED IMMEDIATELY IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM.
3. IF THERE ARE SIGNS OF BREACHING OF THE BARRIER, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, THE EROSION CONTROL MIX BERMS SHOULD BE REPLACED WITH OTHER MEASURES TO INTERCEPT AND TRAP SEDIMENT (SUCH AS A DIVERSION BERM DIRECTING RUNOFF TO A SEDIMENT TRAP OR BASIN).
4. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT.
5. SEDIMENT DEPOSITS MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE THIRD (1/3) OF THE HEIGHT OF THE BARRIER.
6. EROSION CONTROL MIX BERMS SHOULD BE RESHAPED OR REAPPLIED AS NEEDED.
7. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE BARRIER IS NO LONGER REQUIRED SHOULD BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.

CONSTRUCTION SPECIFICATIONS:

1. EROSION CONTROL MIX CAN BE MANUFACTURED ON OR OFF OF THE PROJECT SITE.
2. EROSION CONTROL MIX MUST CONSIST PRIMARILY OF ORGANIC MATERIAL, SEPARATED AT THE POINT OF GENERATION, AND MAY INCLUDE SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR ACCEPTABLE MANUFACTURED PRODUCTS.
3. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS WILL NOT BE ACCEPTABLE AS THE ORGANIC COMPONENT OF THE MIX.
4. COMPOSITION OF THE EROSION CONTROL MIX SHOULD BE AS FOLLOWS:
   A. EROSION CONTROL MIX SHALL BE A WELL GRADED MIXTURE OF PARTICLE SIZES FREE OF REFUSE, PHYSICAL CONTAMINANTS, MATERIAL TOXIC TO PLANT GROWTH AND MAY NOT CONTAIN ROCKS LESS THAN 4-INCHES IN DIAMETER;
   B. ORGANIC MATTER = 25-65% DRY WEIGHT BASIS
   C. PARTICLES PASSING BY WEIGHT:

SCREEN:	PASSING BY WEIGHT:
3-INCH	100%
1-INCH	90-100%
3/4-INCH	70-100%
1/4-INCH	30-75%

   D. THE ORGANIC PORTION NEEDS TO BE FIBROUS AND ELONGATED.
   E. THE MIX SHOULD CONTAIN NO SILTS, CLAYS OR FINE SANDS.
   F. SOLUBLE SALTS CONTENT < 4.0 mmhos/cm
   G. pH OF THE MIX SHOULD BE BETWEEN 5.0 AND 8.0
5. THE BARRIER MUST BE PLACED ALONG A RELATIVELY LEVEL CONTOUR.
6. IT MAY BE NECESSARY TO CUT TALL GRASSES AND WOODY VEGETATION TO AVOID CREATING VOIDS AND BRIDGES IN THE BARRIER THAT WOULD ENABLE FINES TO WASH UNDER THE BARRIER THROUGH THE GRASS BLADES OR PLANT STEMS.
7. THE BARRIER MUST BE A MINIMUM OF 12-INCHES TALL AS MEASURED ON THE UPHILL SIDE OF THE BARRIER.
8. THE BARRIER MUST BE A MINIMUM OF 2-FT WIDE.

CONTINUOUS CONTAINED BERM (ALTERNATIVE):

1. AN ALTERNATIVE PRODUCT, THE CONTINUOUS CONTAINED BERM (OR "FILTER SOCK") CAN BE AN EFFECTIVE SEDIMENT BARRIER AS IT ADDS CONTAINMENT AND STABILITY TO A BERM OF EROSION CONTROL MIX.
2. IN THE EVENT THAT USE OF CONTINUOUS CONTAINED BERM IS DESIRED, THE PRODUCT SELECTED SHOULD BE REVIEWED AND APPROVED BY THE DESIGN ENGINEER.
3. INSTALLATION OF CONTINUOUS CONTAINED BERMS SHALL BE PERFORMED IN ACCORDANCE WITH THE SPECIFICATIONS OF THE MANUFACTURER.

EROSION CONTROL MIX BERM DETAIL

WINTER STABILIZATION & CONSTRUCTION PRACTICES:

MAINTENANCE REQUIREMENTS:

1. MAINTENANCE MEASURES SHOULD BE PERFORMED THROUGHOUT CONSTRUCTION, INCLUDING OVER THE WINTER PERIOD. AFTER EACH RAINFALL, SNOWSTORM, OR PERIOD OF THAWING AND RUNOFF, THE SITE CONTRACTOR SHOULD CONDUCT INSPECTION OF ALL INSTALLED EROSION CONTROL PRACTICES AND PERFORM REPAIRS AS NEEDED TO INSURE THEIR CONTINUED FUNCTION.

2. FOR ANY AREA STABILIZED BY TEMPORARY OR PERMANENT SEEDING PRIOR TO THE ONSET OF THE WINTER SEASON, THE CONTRACTOR SHOULD CONDUCT AN INSPECTION IN THE SPRING TO ASCERTAIN THE CONDITION OF THE VEGETATION AND REPAIR ANY DAMAGED AREAS OR BARE SPOTS AND RESEED AS REQUIRED TO ACHIEVE AN ESTABLISHED VEGETATIVE COVER (AT LEAST 85% OF AREA VEGETATED WITH HEALTHY, VIGOROUS GROWTH.)

SPECIFICATIONS:

THE FOLLOWING STABILIZATION TECHNIQUES SHOULD BE EMPLOYED DURING THE PERIOD FROM OCTOBER 15 THROUGH MAY 15.

1. THE AREA OF EXPOSED, UNSTABILIZED SOIL SHOULD BE LIMITED TO 1-ACRE AND SHOULD BE PROTECTED AGAINST EROSION BY THE METHODS DISCUSSED IN NHSMM, VOL. 3 AND ELSEWHERE IN THIS PLAN SET, PRIOR TO ANY THAW OR SPRING MELT EVENT. STABILIZATION AS FOLLOWS SHOULD BE COMPLETED WITHIN A DAY OF ESTABLISHING THE GRADE THAT IS FINAL OR THAT OTHERWISE WILL EXIST FOR MORE THAN 5 DAYS:
2. ALL PROPOSED VEGETATED AREAS HAVING A SLOPE OF LESS THAN 15% WHICH DO NOT EXHIBIT A MINIMUM 85% VEGETATIVE GROWTH BY OR ARE DISTURBED AFTER OCTOBER 15, SHOULD BE SEEDED AND COVERED WITH 3 TO 4 TONS OF HAY OR STRAW MULCH PER ACRE SECURED WITH ANCHORED NETTING, OR 2 INCHES OF EROSION CONTROL MIX (REFER TO NHSMM, VOL. 3 FOR SPECIFICATION).

3. ALL PROPOSED VEGETATED AREAS HAVING A SLOPE OF GREATER THAN 15% WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OR ARE DISTURBED AFTER OCTOBER 15 SHOULD BE SEEDED AND COVERED WITH A PROPERLY INSTALLED EROSION CONTROL BLANKET OR WITH A MINIMUM OF 4 INCHES OF EROSION CONTROL MIX, UNLESS OTHERWISE SPECIFIED BY THE MANUFACTURER. NOTE THAT COMPOST BLANKETS SHOULD NOT EXCEED 2 INCHES IN THICKNESS OR THEY MAY OVERHEAT.
4. ALL STONE COVERED SLOPES MUST BE CONSTRUCTED AND STABILIZED BY OCTOBER 15.

5. INSTALLATION OF ANCHORED HAY MULCH OR EROSION CONTROL MIX SHOULD NOT OCCUR OVER SNOW OF GREATER THAN 1 INCH IN DEPTH.

6. ALL MULCH APPLIED DURING WINTER SHOULD BE ANCHORED (I.E. BY NETTING, TRACKING, WOOD CELLULOSE FIBER).

7. WITHIN 24 HOURS OF STOCKPILING SOIL MATERIALS SHOULD BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR WITH A 4 INCH LAYER OF EROSION CONTROL MIX. MULCH SHOULD BE RE-ESTABLISHED PRIOR TO ANY RAIN OR SNOWFALL. NO SOIL STOCKPILE SHOULD BE PLACED (EVEN COVERED WITH MULCH) WITHIN 100-FT OF ANY WETLAND OR OTHER WATER RESOURCE AREA.

8. FROZEN MATERIAL (I.E. FROST LAYER REMOVED DURING WINTER CONSTRUCTION) SHOULD BE STOCKPILED SEPARATELY AND IN A LOCATION AWAY FROM ANY AREA NEEDING PROTECTION. FROZEN MATERIAL STOCKPILES CAN MELT IN SPRING AND BECOME UNWORKABLE AND DIFFICULT TO TRANSPORT DUE TO HIGH SOIL MOISTURE CONTENT.

9. INSTALLATION OF EROSION CONTROL BLANKETS SHOULD NOT OCCUR OVER SNOW OF GREATER THAN 1 INCH IN DEPTH OR ON FROZEN GROUND.

10. ALL GRASS-LINED DITCHES AND CHANNELS SHOULD BE CONSTRUCTED BY SEPTEMBER 1. ALL DITCHES AND SWALES WHICH DO NOT EXHIBIT 85% VEGETATIVE GROWTH BY OR ARE DISTURBED AFTER OCTOBER 15, SHOULD BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS AS DETERMINED BY A PROFESSIONAL ENGINEER. IF STONE LINING IS NECESSARY, THE CONTRACTOR MAY NEED TO RE-GRADE THE DITCH AS REQUIRED TO PROVIDE ADEQUATE CROSS-SECTION AFTER ALLOWING FOR PLACEMENT OF THE STONE.

11. ALL STONE LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED AND STABILIZED BY OCTOBER 15.

12. AFTER NOVEMBER 15, INCOMPLETE ROAD OR PARKING AREAS WHERE ACTIVE CONSTRUCTION HAS STOPPED FOR THE WINTER SHOULD BE PROTECTED WITH A MINIMUM 3 INCH LAYER OF SAND AND GRAVEL WITH A GRADATION THAT IS LESS THAN 12% OF THE SAND PORTION, OR MATERIAL PASSING THE NUMBER 4 SIEVE, BY WEIGHT, PASSES THE NUMBER 200 SIEVE.

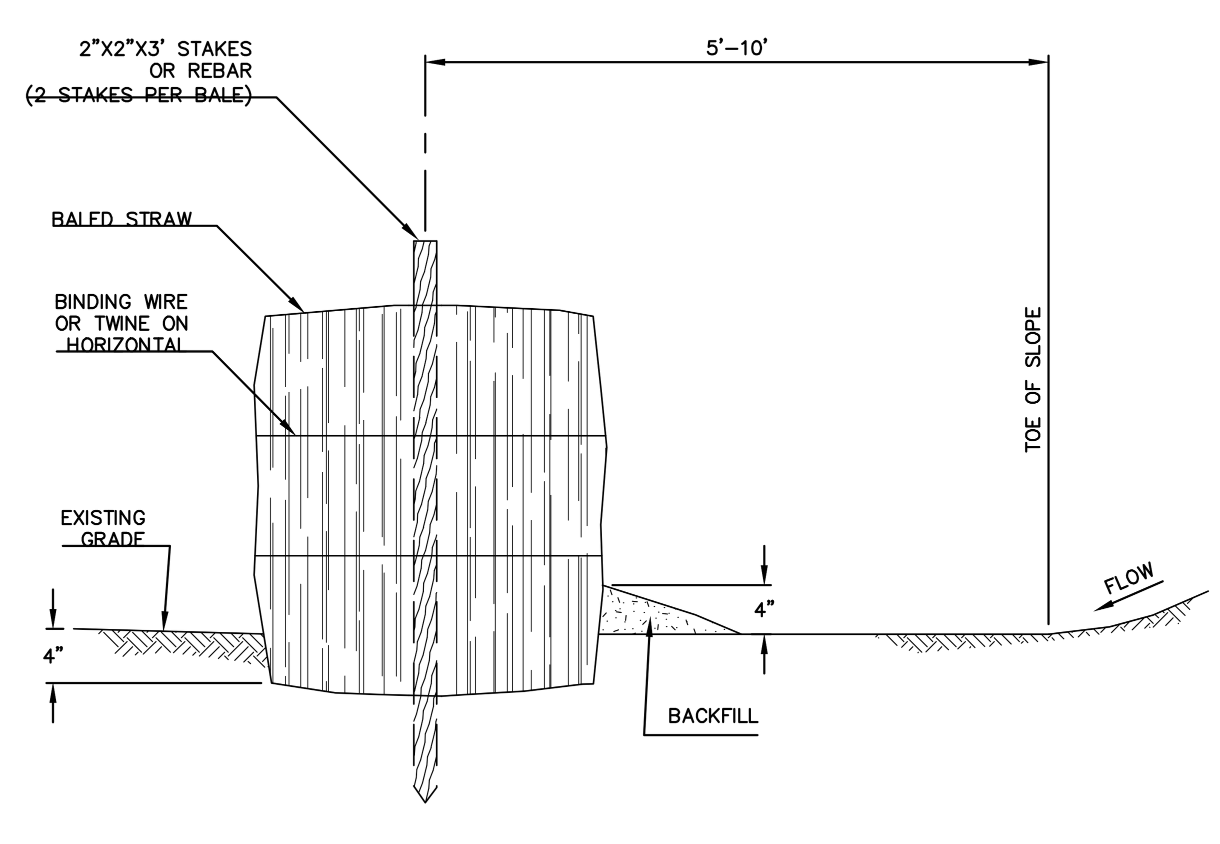
13. SEDIMENT BARRIERS THAT ARE INSTALLED DURING FROZEN CONDITIONS SHOULD CONSIST OF EROSION CONTROL MIX BERMS, OR CONTINUOUS CONTAINED BERMS. SILT FENCES AND HAY BALES SHOULD NOT BE INSTALLED WHEN FROZEN CONDITIONS PREVENT PROPER EMBEDMENT OF THESE BARRIERS.

DUST CONTROL PRACTICES:

1. APPLY DUST CONTROL MEASURES AS NECESSARY TO MAINTAIN CONTROL OF DUST ON SITE.
2. WATER APPLICATION:
   A) MOISTEN EXPOSED SOIL SURFACES PERIODICALLY WITH ADEQUATE WATER TO CONTROL DUST.
   B) AVOID EXCESSIVE APPLICATION OF WATER THAT WOULD RESULT IN MOBILIZING SEDIMENT AND SUBSEQUENT DEPOSITION IN NATURAL WATERBODIES.
3. STONE APPLICATION:
   A) COVER SURFACE WITH CRUSHED OR COARSE GRAVEL.
   B) IN AREAS NEAR WATERWAYS USE ONLY CHEMICALLY STABILIZED OR WASHED AGGREGATE.
4. REFER TO "NEW HAMPSHIRE STORMWATER MANAGEMENT MANUAL, VOLUME 3 CONSTRUCTION PHASE EROSION AND SEDIMENT CONTROLS, DECEMBER 2008" FOR OTHER ALLOWABLE DUST CONTROL PRACTICES (I.E. COMMERCIAL TACKIFIERS OR CHEMICAL TREATMENTS SUCH AS CALCIUM CHLORIDE, ETC.)

INVASIVE SPECIES NOTE:

THE CONTRACTOR SHALL TAKE STEPS TO PREVENT THE SPREAD OF INVASIVE PLANT, INSECT, AND FUNGAL SPECIES BY MEETING THE REQUIREMENTS AND INTENT OF RSA 430:53 AND AGR 3800 RELATIVE TO INVASIVE SPECIES. http://gencourt.state.nh.us/rules/state_agencies/agr3800.html



TOE OF SLOPE STRAW BALE BARRIER

NOT TO SCALE

GENERAL CONSTRUCTION PHASING:

1. STABILIZATION:
   A SITE IS DEEMED STABILIZED WHEN IT IS IN A CONDITION IN WHICH THE SOIL ON SITE WILL NOT EXPERIENCE ACCELERATED OR UNNATURAL EROSION UNDER THE CONDITIONS OF A 10-YEAR STORM EVENT, SUCH AS BUT NOT LIMITED TO:

A) IN AREAS THAT WILL NOT BE PAVED:
   i) A MINIMUM OF 85% VEGETATIVE COVER HAS BEEN ESTABLISHED;
   ii) A MINIMUM OF 3-INCHES OF NON-EROSIVE MATERIAL SUCH AS STONE OR A CERTIFIED COMPOST BLANKET HAS BEEN INSTALLED, OR;
   iii) EROSION CONTROL BLANKETS HAVE BEEN INSTALLED.

B) IN AREAS TO BE PAVED:
   i) BASE COURSE GRAVELS HAVE BEEN INSTALLED.

2. TEMPORARY STABILIZATION:
   ALL AREAS OF EXPOSED OR DISTURBED SOIL SHOULD BE TEMPORARILY STABILIZED AS SOON AS PRACTICABLE BUT NO LATER THAN 45 DAYS FROM THE TIME OF INITIAL DISTURBANCE, UNLESS A SHORTER TIME IS SPECIFIED BY LOCAL AUTHORITIES, THE CONSTRUCTION SEQUENCE APPROVED AS PART OF THE ISSUED PERMIT OR AN INDEPENDENT MONITOR.

3. PERMANENT STABILIZATION:
   ALL AREAS OF EXPOSED OR DISTURBED SOIL SHOULD BE PERMANENTLY STABILIZED AS SOON AS PRACTICABLE BUT NO LATER THAN 3 DAYS FOLLOWING FINAL GRADING.

4. MAXIMUM AREA OF DISTURBANCE:
   THE AREA OF UNSTABILIZED SOIL SHOULD NOT EXCEED 5 ACRES AT ANY TIME.

5. ONLY DISTURB, CLEAR, OR GRADE AREAS NECESSARY FOR CONSTRUCTION.
   A) FLAG OR OTHERWISE DELINEATE AREAS NOT TO BE DISTURBED.
   B) EXCLUDE VEHICLES AND CONSTRUCTION EQUIPMENT FROM THESE AREAS TO PRESERVE NATURAL VEGETATION.

6. ALL GRADED OR DISTURBED AREAS INCLUDING SLOPES SHOULD BE PROTECTED DURING CLEARING AND CONSTRUCTION IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENT CONTROL PLAN DEPICTED ON SHEET CE-101.

7. ALL EROSION AND SEDIMENT CONTROL PRACTICES AND MEASURES SHOULD BE CONSTRUCTED, APPLIED AND MAINTAINED IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENT CONTROL PLAN DEPICTED ON SHEET CE-101.

8. TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHOULD BE STOCKPILED IN THE AMOUNT NECESSARY TO COMPLETE FINISHED GRADING AND BE PROTECTED FROM EROSION.

9. STOCKPILES, BORROW AREAS AND SPOILS SHALL BE STABILIZED AS DESCRIBED UNDER "SOIL STOCKPILE PRACTICES".

10. SLOPES SHOULD NOT BE CREATED SO CLOSE TO PROPERTY LINES AS TO ENDANGER ADJOINING PROPERTIES WITHOUT ADEQUATE PROTECTION AGAINST SEDIMENTATION, EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED DAMAGE.

11. AREAS TO BE FILLED SHOULD BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS AND/OR OTHER OBJECTIONABLE MATERIALS.

12. AREAS SHOULD BE SCARIFIED TO A MINIMUM DEPTH OF 3-INCHES PRIOR TO PLACEMENT OF TOPSOIL. TOPSOIL SHOULD BE PLACED WITHOUT SIGNIFICANT COMPACTION TO PROVIDE A LOOSE BEDDING FOR PLACEMENT OF SEED.

13. ALL FILLS SHOULD BE COMPACTED IN ACCORDANCE WITH PROJECT SPECIFICATIONS TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES, SITE UTILITIES, CONDUITS AND OTHER FACILITIES, SHOULD BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES.

14. IN GENERAL, FILLS SHOULD BE COMPACTED IN LAYERS RANGING FROM 6 TO 24 INCHES IN THICKNESS. THE CONTRACTOR SHOULD REVIEW THE PROJECT GEOTECHNICAL REPORT AND/OR THE "PROJECT SPECIFIC PHASING NOTES" FOR SPECIFIC GUIDANCE.

15. ANY AND ALL FILL MATERIAL SHOULD BE FREE OF BRUSH, RUBBISH, ROCKS (LARGER THAN 3/4 THE DEPTH OF THE LIFT BEING INSTALLED), LOGS, STUMPS, BUILDING DEBRIS, FROZEN MATERIAL AND OTHER OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY LIFTS.

16. FROZEN MATERIAL OR SOFT, MUCKY OR HIGHLY COMPRESSIBLE (I.E. CLAY, SILT) MATERIALS ARE SUSCEPTIBLE TO ACCELERATED SETTLEMENT AND POTENTIAL ACCELERATED EROSION. WORK IN AREAS OF THESE MATERIALS SHOULD BE PERFORMED UNDER THE DIRECTION OF A PROFESSIONAL ENGINEER.

17. THE OUTER FACE OF THE FILL SLOPE SHOULD BE ALLOWED TO STAY LOOSE, NOT ROLLED OR COMPACTED, OR BLADE SMOOTHED. A BULLDOZER MAY RUN UP AND DOWN THE FILL SLOPE SO THE DOZER TREADS (CLEAT TRACKS) CREATE GROOVES PERPENDICULAR TO THE SLOPE. IF THE SOIL IS NOT TOO MOIST, EXCESSIVE COMPACTION WILL NOT OCCUR. SEE "SURFACE ROUGHENING" IN THE NHSMM, VOL.3.

18. ROUGHEN THE SURFACE OF ALL SLOPES DURING THE CONSTRUCTION OPERATION TO RETAIN WATER, INCREASE INFILTRATION AND FACILITATE VEGETATION ESTABLISHMENT.

19. USE SLOPE BREAKS, SUCH AS DIVERSIONS, BENCHES, OR CONTOUR FURROWS AS APPROPRIATE TO REDUCE THE LENGTH OF CUT-FILL SLOPES TO LIMIT SHEET AND RILL EROSION AND PREVENT GULLY EROSION. ALL BENCHES SHOULD BE KEPT FREE OF SEDIMENT DURING ALL PHASES OF CONSTRUCTION.

20. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHOULD BE EVALUATED BY A PROFESSIONAL ENGINEER (PREFERABLY THE DESIGN ENGINEER) TO DETERMINE IF THE PROPOSED DESIGN SHOULD BE REVISED TO PROPERLY MANAGE THE CONDITION.

21. STABILIZE ALL GRADED AREAS (AS ABOVE) WITH VEGETATION, CRUSHED STONE, COMPOST BLANKET, OR OTHER GROUND COVER AS SOON AS GRADING IS COMPLETE OR IF WORK IS INTERRUPTED FOR 21 WORKING DAYS OR MORE. USE MULCH OR OTHER APPROVED METHODS TO STABILIZE AREAS TEMPORARILY WHERE FINAL GRADING MUST BE DELAYED.

22. ALL GRADED AREAS SHOULD BE PERMANENTLY STABILIZED IMMEDIATELY FOLLOWING FINISHED GRADING.

ABOVE NOTES EXCERPTED, ADAPTED AND REFERENCED FROM "NEW HAMPSHIRE STORMWATER MANAGEMENT MANUAL, VOLUME 3 CONSTRUCTION PHASE EROSION AND SEDIMENT CONTROLS, DECEMBER 2008" (NHSMM, VOL. 3)

SOIL STOCKPILE PRACTICES:

1. LOCATE STOCKPILES A MINIMUM OF 50-FT. AWAY FROM CONCENTRATED FLOWS OF STORMWATER, DRAINAGE COURSES OR INLETS.

2. PROTECT ALL STOCKPILES FROM STORMWATER RUN-ON USING TEMPORARY PERIMETER MEASURES SUCH AS DIVERSIONS, BERMS, SANDBAGS OR OTHER APPROVED PRACTICES.

3. STOCKPILES SHOULD BE SURROUNDED BY SEDIMENT BARRIERS AS DESCRIBED ON THE PLANS AND IN NHSMM VOL. 3. TO PREVENT MIGRATION OF MATERIAL BEYOND THE IMMEDIATE CONFINES OF THE STOCKPILE.

4. IMPLEMENT WIND EROSION CONTROL PRACTICES AS APPROPRIATE ON ALL STOCKPILED MATERIAL.

5. PLACE BAGGED MATERIALS ON PALLETS OR UNDERCOVER.

PROTECTION OF INACTIVE STOCKPILES:

6. INACTIVE SOIL STOCKPILES SHOULD BE COVERED WITH ANCHORED TARPS OR PROTECTED WITH SOIL STABILIZATION MEASURES (TEMPORARY SEED AND MULCH OR OTHER TEMPORARY STABILIZATION PRACTICE) AND TEMPORARY PERIMETER SEDIMENT BARRIERS (I.E. SILT FENCE, ETC.) AT ALL TIMES.

7. INACTIVE STOCKPILES OF CONCRETE RUBBLE, ASPHALT CONCRETE RUBBLE, AGGREGATE MATERIALS, AND SIMILAR MATERIALS SHOULD BE PROTECTED WITH TEMPORARY SEDIMENT PERIMETER BARRIERS (I.E. SILT FENCE, ETC.) AT ALL TIMES. IF THE MATERIALS ARE A SOURCE OF DUST, THEY SHOULD ALSO BE COVERED.

PROTECTION OF ACTIVE STOCKPILES:

8. ALL STOCKPILES SHOULD BE SURROUNDED WITH TEMPORARY LINEAR SEDIMENT BARRIERS (I.E. SILT FENCE, ETC.) PRIOR TO THE ONSET OF PRECIPITATION. PERIMETER BARRIERS SHOULD BE MAINTAINED AT ALL TIMES, AND ADJUSTED AS NEEDED TO ACCOMMODATE THE DELIVERY AND REMOVAL OF MATERIAL FROM THE STOCKPILE. THE INTEGRITY OF THE BARRIER SHOULD BE INSPECTED AT THE END OF EACH WORKING DAY.

9. WHEN A STORM IS PREDICTED, STOCKPILES SHOULD BE PROTECTED WITH AN ANCHORED PROTECTIVE COVERING.

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE – RICHARD R. LUNDBORN No. 12842 LICENSED – PROFESSIONAL ENGINEER

SCALE:
HORZ.: NTS
VERT.:
DATUM:
HORZ.:
VERT.:
0
GRAPHIC SCALE

FUSS & O'NEILL
UPPER SQUARE BUSINESS CENTER
5 FLETCHER STREET, SUITE 1
KENNEBUNK, MAINE 04043
207.363.0669
www.fando.com

CATE STREET DEVELOPMENT, LLC

DETAILS

WEST END YARDS

PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10

DATE: 11/19/2018

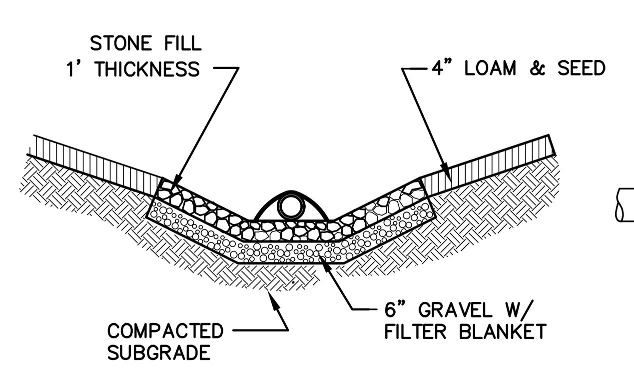
CD-510

D10=10"
RIP-RAP GRADATION

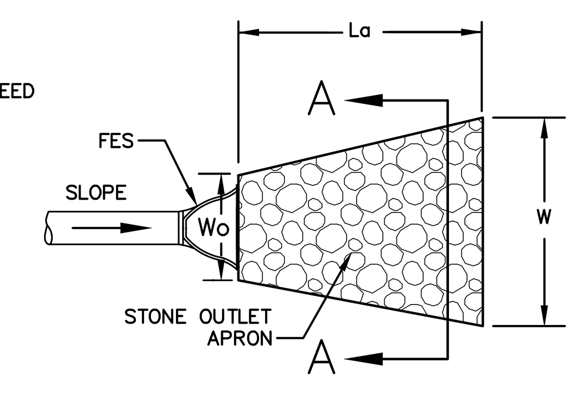
% OF WEIGHT SMALLER THAN THE GIVEN SIZE	SIZE OF STONE (INCHES)		
100	15	TO	20
85	13	TO	18
50	10	TO	15
15	3	TO	5

APRON DIMENSION TABLE

PIPE OUTLET	Wo	W	La	T	d50
12" HDPE OUTLET	3.0'	11'	8'	12"	3"
6" HDPE OUTLET	2.0'	11'	8'	12"	3"



SECTION A-A



PLAN VIEW

STONE: D50 = 6"
WELL GRADED WITH SUFFICIENT SAND
AND GRAVEL TO FILL THE VOIDS

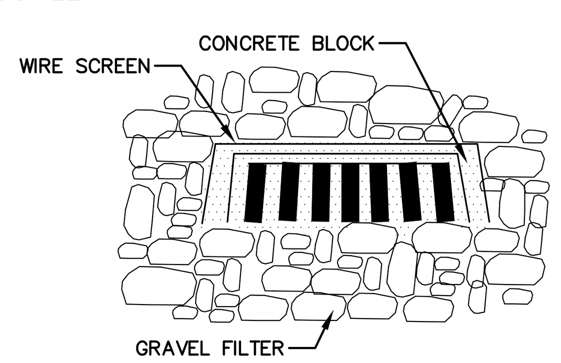
THE HEIGHT OF THE STRUCTURAL LINING ALONG THE CHANNEL SIDES SHALL BEGIN AT THE ELEVATION EQUAL TO THE TOP OF THE CONDUIT AND TAPER DOWN TO THE CHANNEL BOTTOM THROUGH THE LENGTH OF THE APRON.

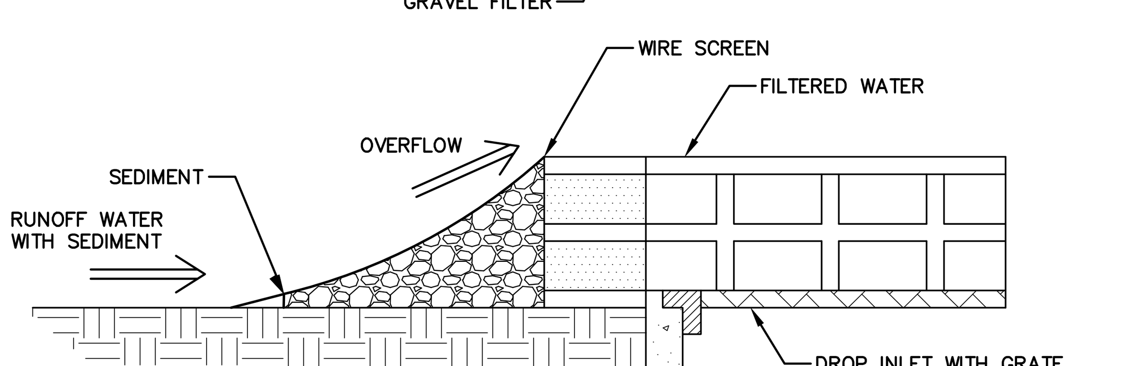
NOTES:
1. ALL PIPE CULVERTS SHALL HAVE END SECTIONS OR HEADWALLS. END SECTION MATERIAL AND MANUFACTURER SHALL MATCH THAT OF THE PIPE CULVERT.
2. THE LARGEST RIP-RAP SIZE DETERMINED DURING HYDROLOGIC ANALYSIS HAS BEEN USED FOR ALL OUTLETS FOR ECONOMY AND SIMPLICITY.
3. APRON LENGTHS, WIDTHS AND THICKNESSES HAVE BEEN ROUNDED UP TO WHOLE NUMBERS FOR EASE OF CONSTRUCTION.

CONSTRUCTION SPECIFICATIONS:
1. PREPARE THE SUB-GRADE FOR THE FILTER MATERIAL, GEOTEXTILE FABRIC, AND RIP-RAP TO THE GRADES SHOWN ON THE PLANS.
2. MINIMUM 6" SAND/GRAVEL BEDDING OR GEOTEXTILE FABRIC REQUIRED UNDER ALL ROCK RIP-RAP.
3. THE ROCK OR GRAVEL USED FOR FILTER OR RIP-RAP SHALL CONFORM TO THE SPECIFIED GRADATION.
4. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF 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 (2) PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES.
5. 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.
6. RIP-RAP SIZE CHOSEN FOR THE WORST CASE OF ALL OUTLETS. ALL RIP-RAP USED FOR PIPE OUTLET PROTECTION WILL HAVE THE SAME GRADATION AND THICKNESS.

MAINTENANCE NOTES:
1. OUTLETS SHALL BE INSPECTED AND CLEANED ANNUALLY AND AFTER ANY MAJOR STORM EVENT. ANY EROSION OR DAMAGE TO THE RIP-RAP SHALL BE REPAIRED IMMEDIATELY.
2. THE CHANNEL IMMEDIATELY DOWNSTREAM FROM THE OUTLET SHOULD BE CHECKED TO SEE THAT NO EROSION IS OCCURRING.
3. THE DOWNSTREAM CHANNEL SHOULD BE KEPT CLEAR OF OBSTRUCTIONS SUCH AS FALLEN TREES, DEBRIS, AND SEDIMENT THAT COULD CHANGE FLOW PATTERNS AND/OR TAILWATER DEPTHS ON THE PIPES. REPAIRS MUST BE CARRIED OUT IMMEDIATELY TO AVOID ADDITIONAL DAMAGE TO THE OUTLET PROTECTION APRON.

RIP RAP APRON OUTLET PROTECTION
NOT TO SCALE





BLOCK AND GRAVEL INLET SEDIMENT FILTER
NOT TO SCALE

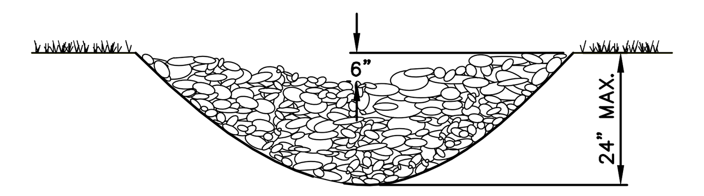
CONSTRUCTION SPECIFICATIONS:
1. PLACE CONCRETE BLOCKS LENGTHWISE ON THEIR SIDE IN A SINGLE ROW AROUND THE PERIMETER OF THE INLET, WITH THE ENDS OF ADJACENT BLOCKS ABUTTING. THE HEIGHT OF THE BARRIER CAN BE VARIED, DEPENDING ON DESIGN NEEDS, BY STACKING COMBINATIONS OF 4-INCH, 8-INCH AND 12-INCH WIDE BLOCKS. THE BARRIER OF BLOCKS SHALL BE AT LEAST 12 INCHES HIGH AND NO GREATER THAN 24 INCHES HIGH
2. WIRE MESH SHALL BE PLACED OVER THE OUTSIDE VERTICAL FACE (WEBBING) OF THE CONCRETE BLOCKS TO PREVENT STONE FROM BEING WASHED THROUGH THE HOLES IN THE BLOCKS. HARDWARE CLOTH OR COMPARABLE WIRE MESH WITH 1/2-INCH OPENINGS SHALL BE USED.
3. STONE SHALL BE PILED AGAINST THE WIRE TO THE TOP OF THE BLOCK BARRIER, AS SHOWN ABOVE. STONE GRADATION SHALL BE WELL GRADED WITH THE MAXIMUM STONE SIZE OF 6 INCHES AND MINIMUM STONE SIZE OF 1 INCH.
4. IF THE STONE FILTER BECOMES CLOGGED WITH SEDIMENT SO THAT IT NO LONGER ADEQUATELY PERFORMS ITS FUNCTION, THE STONE MUST BE PULLED AWAY FROM THE BLOCKS, CLEANED AND REPLACED.

MAINTENANCE NOTES:
1. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
2. SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
3. STRUCTURES SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

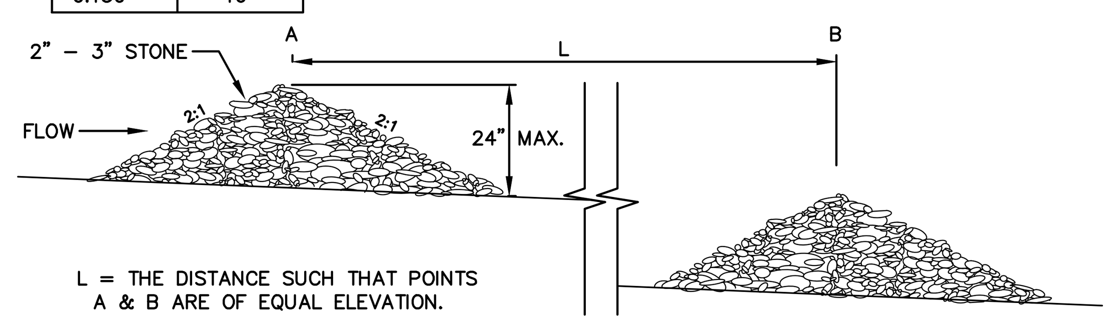
SEDIMENTATION CONTROL AT CATCH BASINS
NOT TO SCALE

SPACING BETWEEN CHECK DAMS

SLOPE (FT/FT)	LENGTH (FT)
0.020	75
0.030	50
0.040	37
0.050	30
0.080	19
0.100	15
0.120	13
0.150	10



DRAINAGEWAY CROSS-SECTION

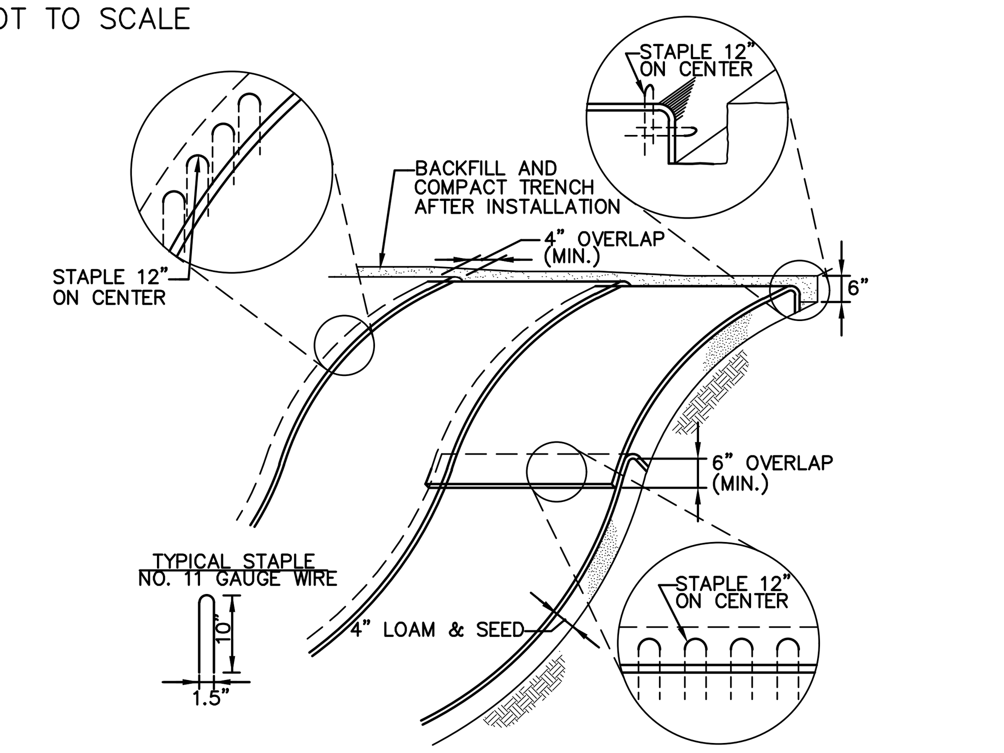


SPACING BETWEEN STONE CHECK DAMS

CONSTRUCTION SPECIFICATIONS:
1. STRUCTURES SHALL BE INSTALLED ACCORDING TO THE DIMENSIONS SHOWN ON THE PLANS AT THE APPROPRIATE SPACING.
2. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER SO THAT EROSION, AIR AND WATER POLLUTION WILL BE MINIMIZED.
3. STRUCTURES SHALL BE REMOVED FROM THE CHANNEL WHEN THEIR USEFUL LIFE HAS BEEN COMPLETED.

MAINTENANCE NOTES:
1. TEMPORARY GRADE STABILIZATION STRUCTURES SHOULD BE INSPECTED AFTER EACH STORM AND DAILY DURING PROLONGED STORM EVENTS. ANY DAMAGE TO THE STRUCTURES SHALL BE REPAIRED IMMEDIATELY.
2. PARTICULAR ATTENTION SHOULD BE GIVEN TO END RUN AND EROSION AT THE DOWNSTREAM TOE OF THE STRUCTURE.
3. WHEN REMOVING THE STRUCTURES, THE DISTURBED AREAS SHALL BE BROUGHT UP TO EXISTING CHANNEL GRADE AND THE AREAS PREPARED, SEEDED AND MULCHED
4. SEDIMENT SHALL BE REMOVED FROM BEHIND THE STRUCTURES WHEN IT REACHES 1/2 THE ORIGINAL HEIGHT OF THE STRUCTURE.

STONE CHECK DAM INSTALLATION DETAIL
NOT TO SCALE



SLOPE INSTALLATION

MAINTENANCE REQUIREMENTS:
1. ALL BLANKET AND MATS SHOULD BE INSPECTED WEEKLY DURING THE CONSTRUCTION PERIOD, AND AFTER ANY RAINFALL EVENT EXCEEDING 1/2 INCH IN A 24-HOUR PERIOD.
2. ANY FAILURE SHOULD BE REPAIRED IMMEDIATELY. IF WASHOUT OF THE SLOPE, DISPLACEMENT OF THE MAT, OR DAMAGE TO THE MAT OCCURS, THE AFFECTED SLOPE SHALL BE REPAIRED AND RESEEDED, AND THE AFFECTED AREA OF MAT SHALL BE RE-INSTALLED.

CONSTRUCTION SPECIFICATIONS:
1. MANUFACTURE'S INSTALLATION INSTRUCTIONS:
   A. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
   B. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP's IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF RECP's EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM)PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) APART ACROSS THE WIDTH OF THE RECP's.
   C. ROLL THE RECP's (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM , STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
   D. THE EDGES OF PARALLEL RECP's MUST BE STAPLED WITH APPROXIMATELY 2" - 5" (5 CM - 12.5 CM) OVERLAP DEPENDING ON RECP's TYPE.
   E. CONSECUTIVE RECP's SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5 CM) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30 CM) APART ACROSS ENTIRE RECP's WIDTH. NOTE: IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY SECURE THE RECP's.
2. SITE PREPARATION:
   A. PROPER SITE PREPARATION IS ESSENTIAL TO ENSURE COMPLETE CONTACT OF THE PROTECTION MATTING WITH THE SOIL.
   B. GRADE AND SHAPE AREA IF INSTALLATION.
   C. REMOVE ALL ROCKS, CLODS, TRASH, VEGETATIVE OR OTHER OBSTRUCTIONS SO THAT THE INSTALLED BLANKETS WILL HAVE DIRECT CONTACT WITH THE SOIL.
   D. PREPARE SEEDBED BY LOOSENING 2-3 INCHES OF TOPSOIL ABOVE FINAL GRADE.
   E. INCORPORATE AMENDMENTS, SUCH AS LIME AND FERTILIZER, INTO SOIL ACCORDING TO SOIL TEST AND THE SEEDING PLAN.
3. SEEDING:
   A. SEED AREA BEFORE BLANKET INSTALLATION FOR EROSION CONTROL AND REVEGETATION. SEEDING AFTER MAT INSTALLATION IS OFTEN SPECIFIED FOR TURF REINFORCEMENT APPLICATIONS. WHEN SEEDING PRIOR TO BLANKET INSTALLATION, ALL CHECK SLOTS AND OTHER AREAS DISTURBED DURING INSTALLATION MUST BE RESEEDED.
   B. WHEN SOIL FILLING IS SPECIFIED, SEED THE MATTING AND THE ENTIRE DISTURBED AREA AFTER INSTALLATION AND PRIOR TO FILLING THE MAT WITH SOIL.

EROSION CONTROL - BLANKET SLOPE PROTECTION
NOT TO SCALE

PERMANENT VEGETATION:

SPECIFICATIONS:

SITE PREPARATION:
1. INSTALL NEEDED EROSION AND SEDIMENT CONTROL MEASURES SUCH AS SILTATION BARRIERS, DIVERSIONS, AND SEDIMENT TRAPS.
2. GRADE AS NEEDED FOR THE ACCESS OF EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING.
3. RUNOFF SHOULD BE DIVERTED FROM THE SEEDBED AREA.
4. ON SLOPES 4:1 OR STEEPER, THE FINAL PREPARATION SHOULD INCLUDE CREATING HORIZONTAL GROOVES PERPENDICULAR O THE DIRECTION OF THE SLOPE TO CATCH SEED AND REDUCE RUNOFF.

SEEDBED PREPARATION:
1. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRING TOOTH HARROW OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLY UNIFORM, FINE SEEDBED IS PREPARED. ALL BUT CLAY AND SILT SOILS SHOULD BE ROLLED TO FIRM THE SEEDBED WHEREVER FEASIBLE.
2. REMOVE FROM THE SURFACE ALL STONES 2INCHES OR LARGER IN ANY DIMENSION. REMOVE ALL OTHER DEBRIS, SUCH AS WIRE, CABLE, TREE ROOTS, CONCRETE CLODS, LUMPS, TRASH OR OTHER UNSUITABLE MATERIAL.
3. INSPECT SEEDBED JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED; THE AREA MUST BE TILLED AND FIRMED AS ABOVE.
4. WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF 2 INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED.
5. IF APPLICABLE, FERTILIZER AND ORGANIC SOIL AMENDMENTS SHOULD BE APPLIED DURING THE GROWING SEASON.
6. APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS. IF SOIL TESTING IS NOT FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL FERTILIZER AND LIMESTONE MAY BE APPLIED AT THE FOLLOWING RATES:

   LIMESTONE APPLICATION RATE = 3 TONS/ACRE (138 LB./1,000-SF)*

   *EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDE

   FERTILIZER APPLICATION RATE = 600 LB./ACRE (13.8 LB./1,000-SF)*

   *LOW PHOSPHATE FERTILIZER (N-P205-K20) OR EQUIVALENT
7. FERTILIZER SHOULD BE RESTRICTED TO LOW PHOSPHATE, SLOW RELEASE NITROGEN FERTILIZER WHEN APPLIED TO AREAS BETWEEN 25 AND 250-FT FROM A SURFACE WATER BODY. NO FERTILIZER EXCEPT LIMESTONE SHOULD BE APPLIED WITHIN 25-FT OF A SURFACE WATER BODY. THESE ARE THE REQUIREMENTS FOR ANY WATER BODY PROTECTED BY THE COMPREHENSIVE SHORELAND PROTECTION ACT.

SEEDING:
1. INOCULATE ALL LEGUME SEED WITH THE CORRECT TYPE OF INOCULANT.
2. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL CULTIPACKER TYPE SEEDER OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER). NORMAL SEEDING DEPTH IS FROM 1/4 TO 1/2 INCH. HYDROSEEDING THAT INCLUDES MULCH MAY BE LEFT ON SOIL SURFACE.
3. WHERE FEASIBLE EXCEPT WHERE EITHER CULTIPACKER TYPE SEEDER OR HYDROSEEDER IS USED, THE SEEDBED SHOULD BE FIRMED FOLLOWING SEEDING OPERATIONS WITH A ROLLER, OR LIGHT DRAG.
4. SPRING SEEDING USUALLY GIVES THE BEST RESULTS FOR ALL SEED MIXES OR WITH LEGUMES. PERMANENT SEEDING SHOULD BE COMPLETED 45 DAYS PRIOR TO FIRST KILLING FROST. WHEN CROWN VETCH IS SEEDED IN LATE SUMMER AT LEAST 35% OF THE SEED SHOULD BE HARD SEED (UNSCARIFIED). IF SEEDING CANNOT BE DONE WITHIN THE SPECIFIED SEEDING DATES, MULCH ACCORDING TO THE "TEMPORARY AND PERMANENT MULCHING" PRACTICE DESCRIBED IN THE NHSSM, VOL 3. AND DELAY SEEDING UNTIL THE NEXT RECOMMENDED SEEDING PERIOD.
5. AREAS SEEDED BETWEEN MAY 15 AND AUGUST 15 SHOULD BE COVERED WITH HAY OR STRAW MULCH, ACCORDING TO THE "TEMPORARY AND PERMANENT MULCHING" PRACTICE DESCRIBED IN THE NHSSM, VOL 3.
6. VEGETATED GROWTH COVERING AT LEAST 85% OF THE DISTURBED AREA SHOULD BE ACHIEVED PRIOR TO OCTOBER 15. IF THIS CONDITION IS NOT ACHIEVED, IMPLEMENT OTHER TEMPORARY STABILIZATION MEASURES FOR OVERWINTER PROTECTION.

HYDROSEEDING:
1. WHEN HYDROSEEDING (HYDRAULIC APPLICATION), PREPARE THE SEEDBED AS SPECIFIED ABOVE OR BY HAND RAKING TO LOOSEN AND SMOOTH THE SOIL AND REMOVE SURFACE STONES LARGER THAN 2 INCHES IN DIAMETER.
2. SLOPES BUST BE NO STEEPER THAN 2:1 (2 FEET HORIZONTALLY BY 1 FOOT VERTICALLY.
3. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. THE USE OF FIBER MULCH ON CRITICAL AREAS IS NOT RECOMMENDED (UNLESS IT IS USED TO HOLD STRAW OR HAY). BETTER PROTECTION IS GAINED BY USING STRAW MULCH AND HOLDING IT WITH ADHESIVE MATERIALS OR 500 POUNDS PER ACRE OF WOOD FIBER MULCH.
4. SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.

MAINTENANCE REQUIREMENTS:
1. PERMANENT SEEDED AREAS SHOULD BE INSPECTED AT LEAST MONTHLY DURING THE COURSE OF CONSTRUCTION. INSPECTION, MAINTENANCE AND CORRECTIVE ACTIONS SHOULD CONTINUE UNTIL THE OWNER ASSUMES PERMANENT OPERATION OF THE SITE.
2. SEEDED AREAS SHOULD BE MOWED AS REQUIRED TO MAINTAIN A HEALTHY STAND OF VEGETATION. MOWING HEIGHT AND FREQUENCY DEPEND OF TYPE OF GRASS COVER.
3. BASED ON INSPECTION, AREAS SHOULD BE RESEEDED TO ACHIEVE FULL STABILIZATION OF EXPOSED SOILS.
4. AT A MINIMUM 85% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION.
5. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHOULD BE MADE AND AREAS SHOULD BE RESEEDED, WITH OTHER TEMPORARY MEASURES (I.E. MULCH, ETC.) USED TO PROVIDE EROSION PROTECTION DURING THE PERIOD OF VEGETATION ESTABLISHMENT.

PERMANENT VEGETATION SEEDING RECOMMENDATIONS

USE	MIXTURE	SPECIES	LBS./ACRE	LBS./ 1,000-SF
STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A	TALL FESCUE CREEPING RED FESCUE REDTOP TOTAL	20 20 2 42	0.45 0.45 0.05 0.95
WATERWAYS, EMERGENCY SPILLWAYS, AND OTHER CHANNELS WITH FLOWING WATER	A	TALL FESCUE CREEPING RED FESCUE REDTOP TOTAL	20 20 2 42	0.45 0.45 0.05 0.95
LIGHTLY USED PARKING LOTS, ODD AREAS, UNUSED LANDS, AND LOW INTENSITY RECREATION SITES	A	TALL FESCUE CREEPING RED FESCUE REDTOP TOTAL	20 20 2 42	0.45 0.45 0.05 0.95
PLAY AREAS AND ATHLETIC FIELDS (TOPSOIL ESSENTIAL FOR GOOD TURF)	F	CREEPING RED FESCUE KENTUCKY BLUEGRASS TOTAL	50 50 100	1.15 1.15 2.30

SOURCES:
1. NEW HAMPSHIRE STORMWATER MANAGEMENT MANUAL, VOLUME 3, TABLES 4-2 AND 4-3
2. MINNICK, E.L. AND H.T. MARSHALL, (AUGUST 1992)

TEMPORARY VEGETATION:

SPECIFICATIONS:

SITE PREPARATION:
1. INSTALL NEEDED EROSION AND SEDIMENT CONTROL MEASURES SUCH AS SILTATION BARRIERS, DIVERSIONS, AND SEDIMENT TRAPS.
2. GRADE AS NEEDED FOR THE ACCESS OF EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING.
3. RUNOFF SHOULD BE DIVERTED FROM THE SEEDBED AREA.
4. ON SLOPES 4:1 OR STEEPER, THE FINAL PREPARATION SHOULD INCLUDE CREATING HORIZONTAL GROOVES PERPENDICULAR O THE DIRECTION OF THE SLOPE TO CATCH SEED AND REDUCE RUNOFF.

SEEDBED PREPARATION:
1. STONES AND TRASH SHOULD BE REMOVED SO AS NOT TO INTERFERE WITH THE SEEDING AREA.
2. WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF 2 INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED.
3. IF APPLICABLE, FERTILIZER AND ORGANIC SOIL AMENDMENTS SHOULD BE APPLIED DURING THE GROWING SEASON.
4. APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS. IF SOIL TESTING IS NOT FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL FERTILIZER AND LIMESTONE MAY BE APPLIED AT THE FOLLOWING RATES:

   LIMESTONE APPLICATION RATE = 3 TONS/ACRE (138 LB./1,000-SF)*

   *EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDE

   FERTILIZER APPLICATION RATE = 600 LB./ACRE (13.8 LB./1,000-SF)*

   *LOW PHOSPHATE FERTILIZER (N-P205-K20) OR EQUIVALENT
5. FERTILIZER SHOULD BE RESTRICTED TO LOW PHOSPHATE, SLOW RELEASE NITROGEN FERTILIZER WHEN APPLIED TO AREAS BETWEEN 25 AND 250-FT FROM A SURFACE WATER BODY. NO FERTILIZER EXCEPT LIMESTONE SHOULD BE APPLIED WITHIN 25-FT OF A SURFACE WATER BODY. THESE ARE THE REQUIREMENTS FOR ANY WATER BODY PROTECTED BY THE COMPREHENSIVE SHORELAND PROTECTION ACT.

SEEDING:
1. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL CULTIPACKER TYPE SEEDER OR HYDRO SEEDER (SLURRY INCLUDING SEED AND FERTILIZER). NORMAL SEEDING DEPTH IS FROM 1/4 TO 1/2 INCH. HYDROSEEDING THAT INCLUDES MULCH MAY BE LEFT ON SOIL SURFACE. SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.
2. TEMPORARY SEED SHOULD TYPICALLY OCCUR PRIOR TO SEPTEMBER 15.
3. AREAS SEEDED BETWEEN MAY 15 AND AUGUST 15 SHOULD BE COVERED WITH HAY OR STRAW MULCH, ACCORDING TO THE "TEMPORARY AND PERMANENT MULCHING" PRACTICE DESCRIBED IN THE NHSSM, VOL 3.
4. VEGETATED GROWTH COVERING AT LEAST 85% OF THE DISTURBED AREA SHOULD BE ACHIEVED PRIOR TO OCTOBER 15. IF THIS CONDITION IS NOT ACHIEVED, IMPLEMENT OTHER TEMPORARY STABILIZATION MEASURES FOR OVERWINTER PROTECTION.

MAINTENANCE REQUIREMENTS:
1. TEMPORARY SEEDING SHOULD BE INSPECTED WEEKLY AFTER ANY RAINFALL EXCEEDING 1/2 INCH IN 24 HOURS ON ACTIVE CONSTRUCTION SITES. TEMPORARY SEEDING SHOULD BE INSPECTED JUST PRIOR TO SEPTEMBER 15, TO ASCERTAIN WHETHER ADDITIONAL SEEDING IS REQUIRED TO PROVIDE STABILIZATION OVER THE WINTER PERIOD.
2. BASED ON INSPECTION, AREAS SHOULD BE RESEEDED TO ACHIEVE FULL STABILIZATION OF EXPOSED SOILS. IF IT IS TOO LATE IN THE PLANTING SEASON TO APPLY ADDITIONAL SEED, THEN OTHER TEMPORARY STABILIZATION MEASURES SHOULD BE IMPLEMENTED.
3. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHOULD BE MADE AND AREAS SHOULD BE RESEEDED, WITH OTHER TEMPORARY MEASURES (I.E. MULCH, ETC.) USED TO PROVIDE EROSION PROTECTION DURING THE PERIOD OF VEGETATION ESTABLISHMENT.

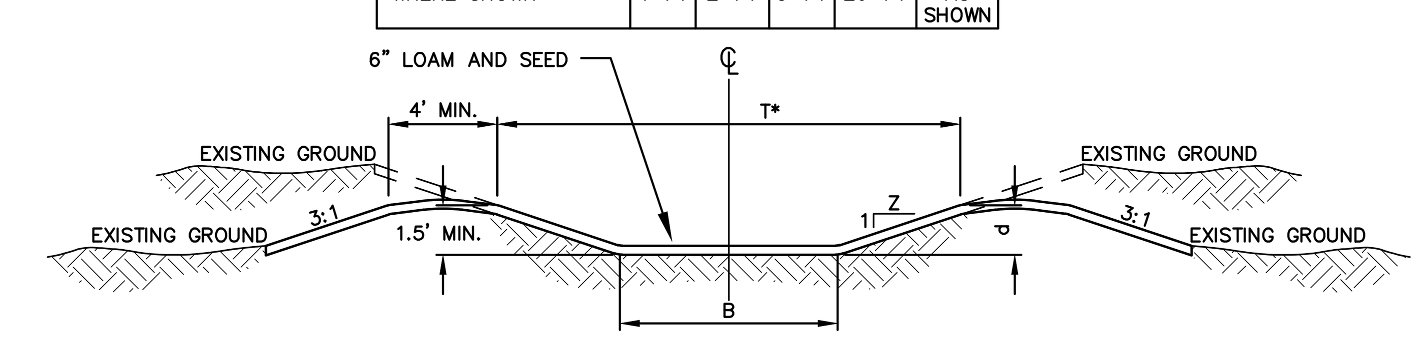
TEMPORARY VEGETATION SEEDING RECOMMENDATIONS

SPECIES	PER ACRE BUSHELS (BU) OR POUNDS (LBS.)	PER 1,000-SF	REMARKS
WINTER RYE	2.5 BU OR 112 LBS.	2.5 LBS.	BEST FOR FALL SEEDING. SEED FROM AUGUST 15 TO SEPTEMBER 15 FOR BEST COVER. SEED TO A DEPTH OF 1 INCH.
OATS	2.5 BU OR 80 LBS.	2.0 LBS.	BEST FOR SPRING SEEDING. SEED NO LATER THAN MAY 15 FOR SUMMER PROTECTION. SEED TO A DEPTH OF 1 INCH.
ANNUAL RYEGRASS	40 LBS.	1.0 LB.	GROWS QUICKLY, BUT IS OF SHORT DURATION. USE WHERE APPEARANCES ARE IMPORTANT. SEED EARLY SPRING AND/OR BETWEEN AUGUST 15 AND SEPTEMBER 15. COVER THE SEED WITH NO MORE THAN 0.25 INCH OF SOIL.
PERENNIAL RYEGRASS	30 LBS.	0.7 LBS.	BEST FOR FALL SEEDING. SEED FROM AUGUST 15 TO SEPTEMBER 15 FOR BEST COVER. SEED TO A DEPTH OF 1 INCH.

SOURCES:
1. NEW HAMPSHIRE STORMWATER MANAGEMENT MANUAL, VOLUME 3, TABLE 4-1
2. MINNICK, E.L. AND H.T. MARSHALL, (AUGUST 1992)

SWALE DIMENSION TABLE

LOCATION	B	d	Z	T	LENGTH
WHERE SHOWN	4-FT	2-FT	3-FT	20-FT	AS SHOWN



MAINTENANCE NOTES:
1. THE SWALE(S) SHALL BE MOWED WITH THE REST OF THE SITES LAWN AREAS TO PROMOTE HEALTHY GROWTH AND PREVENT THE ENCROACHMENT OF WEEDS AND WOODY VEGETATION. DO NOT MOW GRASS IN SWALE(S) TOO SHORT. THIS WILL REDUCE THE SWALES FILTERING ABILITY.
2. THE SWALE(S) SHOULD BE FERTILIZED ON AN AS NECESSARY BASIS, TO KEEP THE GRASS HEALTHY. OVER FERTILIZATION COULD RESULT IN THE SWALE(S) BECOMING A SOURCE OF POLLUTION TO THE SURROUNDING WETLAND AREAS.
3. THE SWALE(S) SHOULD BE INSPECTED PERIODICALLY AND AFTER EVERY MAJOR STORM. RILLS AND DAMAGED AREAS SHOULD BE PROMPTLY REPAIRED AND RE-VEGETATED AS NECESSARY TO PREVENT FURTHER DETERIORATION.

VEGETATED SWALE DETAIL
NOT TO SCALE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

STATE OF NEW HAMPSHIRE - RICHARD R. LUNDBORN No. 13543 - LICENSED - PROFESSIONAL ENGINEER

SCALE: HORZ.: NTS VERT.:
DATUM: HORZ.: VERT.:
0
GRAPHIC SCALE

FUSS & O'NEILL
UPPER SQUARE BUSINESS CENTER
5 FLETCHER STREET, SUITE 1
KENNEBUNK, MAINE 04043
207.363.0669
www.fando.com

CATE STREET DEVELOPMENT, LLC
DETAILS
WEST END YARDS
PORTSMOUTH NEW HAMPSHIRE

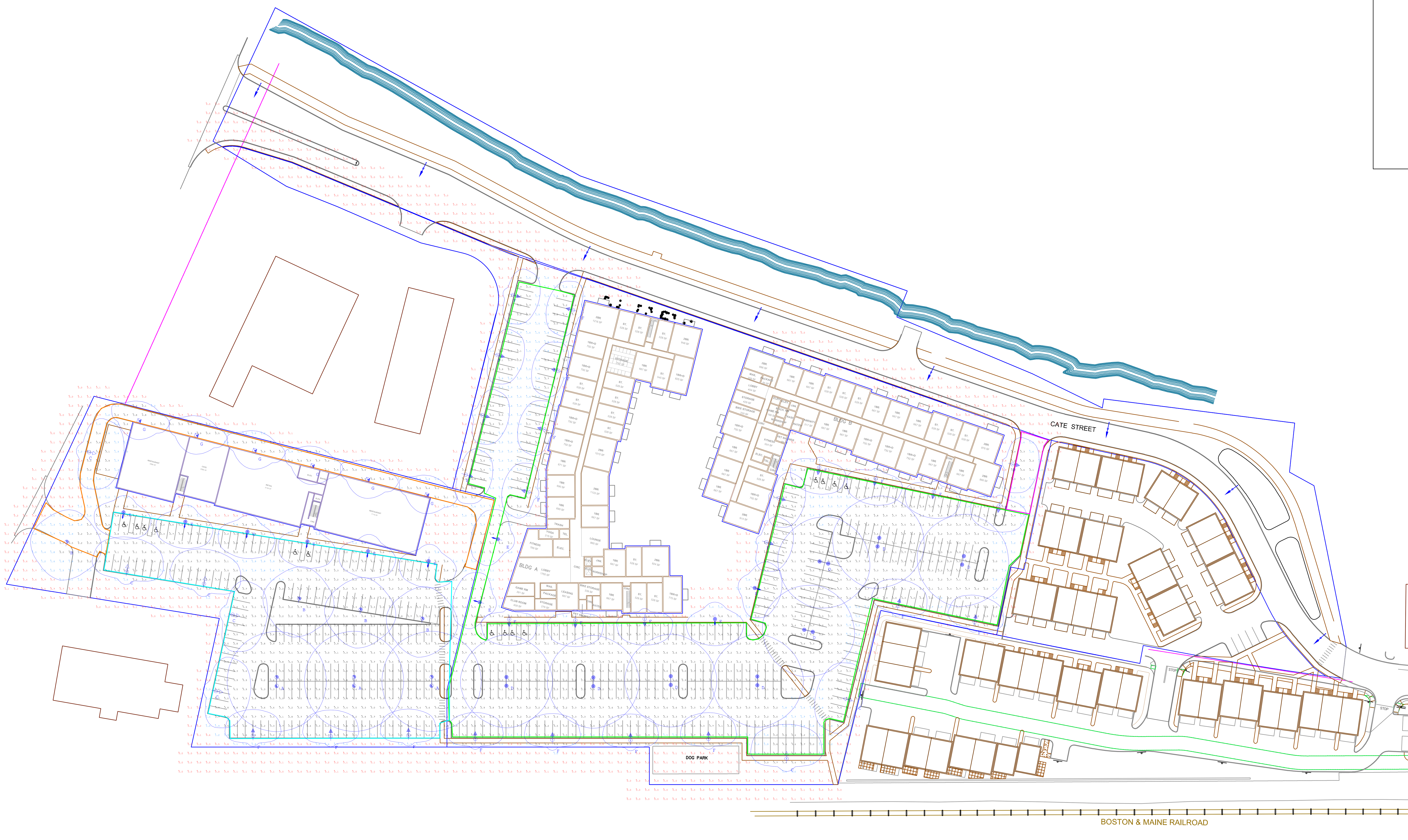
PROJ. No.: 20180317.A10
DATE: 11/19/2018

CD-511

File Path: F:\P2018\0317\A10\Civil3\Dwg\20180317A10_DET01.dwg Layout: CD-510 Plotted: Mon, November 19, 2018 - 1:57 PM User: ddugal
Plotter: DWG TO PDF.PC3 CTB File: FO.STB
MS VIEW:
LAYER STATE:

REVISIONS

Rev #	Date	BY:



WLS-DOM

WLS-BW

ENERGY SERVICES GROUP OF WLS

1-800-633-8711 - WWW.WLSLIGHTING.COM

Based on the information provided, all dimensions and luminaire locations shown represent recommended positions. The engineer and/or architect must determine applicability of the layout to existing or future field conditions.

This lighting pattern represents illumination levels calculated from laboratory data taken under controlled conditions utilizing current industry standard lamp ratings in accordance with Illuminating Engineering Society approved methods. Actual performance of any manufacturer's luminaire may vary due to variation in electrical voltage, tolerance in lamps and other variable field conditions.

Calculation Summary

Label	Avg	Max	Min	Avg/Min	Max/Min	PtSpcLr	PtSpcTb
CATE ST ENTRANCE	1.7	3.8	0.7	2.4	5.4	10	10
RESIDENTIAL PARKING SUMMARY	2.6	5.9	0.7	3.8	8.4	10	10
RETAIL ENTRANCE AND DRIVE AISLE	2.6	6.1	0.8	3.2	7.6	10	10
RETAIL PARKING SUMMARY	3.1	6.7	1.2	2.6	5.6	10	10

Luminaire Schedule

WLS14527 WEST END YARDS PORTSMOUTH, NH PM: ROBBY PLEASE EMAIL ROBBY AT RRUDASILL@WLSLIGHTING.COM FOR PRICING.

Symbol	Qty	Label	Lumens	LLF	Description	Lum. Watts
	3	A	N.A.	0.950	WLS-DOM-135W-5F-4K 20' MOUNTING HEIGHT	135
	4	B	N.A.	0.950	WLS-DOM-135W-5F-4K 20' MOUNTING HEIGHT	135
	7	C	N.A.	0.950	WLS-DOM-135W-4F-4K-HS 20' MOUNTING HEIGHT	135
	8	D	N.A.	0.950	WLS-DOM-110W-5F-4K 20' MOUNTING HEIGHT	110
	10	E	N.A.	0.950	WLS-DOM-80W-4F-4K 16' MOUNTING HEIGHT	80
	27	F	N.A.	0.950	WLS-DOM-80W-4F-4K-HS 16' MOUNTING HEIGHT	80
	6	G	N.A.	0.980	WLS-BW-70-2M-4K ASST MOUNTING HEIGHT	70
	9	ST	N.A.		AFFINITY STREET POLE AND FIXTURE	

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FORT WORTH, TX 76110
WWW.WLSLIGHTING.COM

WLS LIGHTING SYSTEMS
Consider the Impact!

WEST END YARDS
PORTSMOUTH, NH

SHEET 1 OF 1

BY: TO

PM: ROBBY

800-633-8711

SCALE: 1"=60'

DATE - 11/16/18

WLS-14527A

LINE TABLE		
LINE	BEARING	DISTANCE
L1	S40°55'22"E	54.00'
L2	N71°55'42"E	30.64'
L3	S36°26'29"E	20.01'
L4	S65°28'25"W	31.49'
L5	S65°28'25"W	100.01'
L6	N79°44'51"W	24.00'
L7	N26°33'24"W	90.08'
L8	N65°44'42"E	119.82'
L9	N69°04'00"E	85.18'
L10	N38°11'17"W	10.00'
L11	N32°56'35"W	25.61'
L12	S66°29'44"W	99.38'
L13	S25°06'26"E	251.24'
L14	S26°14'37"E	103.19'
L15	S33°10'10"E	196.10'
L16	N46°59'10"W	41.00'

CURVE TABLE					
CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	200.00'	200.00'	57°17'45"	S85°52'42"E	191.77'
C2	84.14'	100.00'	48°12'27"	N81°13'11"E	81.68'
C3	80.19'	51.00'	90°05'21"	N77°59'32"W	72.18'

LEGEND

- LOT LINE
- APPARENT RIGHT OF WAY LINE
- INTERIOR LOT LINE
- APPROXIMATE ABUTTER LOT LINE
- EASEMENT LINE
- STOCKADE FENCE
- CHAIN LINK FENCE
- EDGE OF WETLAND
- BOUND FOUND
- R.R.S.F. RAILROAD SPIKE FOUND
- IRON PIPE/ROD FOUND
- 4"X4" GRANITE BOUND TO BE SET
- 5/8" REBAR W/ID CAP TO BE SET
- CONCRETE

BND. FND. BOUND FOUND
I.P.F. IRON PIPE FOUND
CONC. CONCRETE
D.H. DRILL HOLE

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE (NHRSA TITLE LXIV) AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN. I CERTIFY THAT THIS SURVEY AND PLAN WERE PREPARED BY ME OR BY THOSE UNDER MY DIRECT SUPERVISION AND FALLS UNDER THE URBAN SURVEY CLASSIFICATION OF THE NH CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS. I CERTIFY THAT THIS SURVEY WAS MADE ON THE GROUND AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. RANDOM TRAVERSE SURVEY BY TOTAL STATION, WITH A PRECISION GREATER THAN 1:15,000.

_______________ L.L.S. #989

_______________ DATE

THE CERTIFICATIONS SHOWN HEREON ARE INTENDED TO MEET REGISTRY OF DEED REQUIREMENTS AND ARE NOT A CERTIFICATION TO TITLE OR OWNERSHIP OF PROPERTY SHOWN. OWNERS OF ADJOINING PROPERTIES ARE ACCORDING TO CURRENT TOWN ASSESSORS RECORDS.

50 0 50 100

SCALE: 1 INCH = 50 FT.

PLAN OF LAND

FOR

PORTSMOUTH LAND ACQUISITIONS, LLC

OF

TAX MAP 163, LOTS 33 & 34
TAX MAP 165, LOT 2
TAX MAP 172, LOT 1
TAX MAP 173, LOT 2
CATE STREET & US ROUTE 1 BYPASS
PORTSMOUTH, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY
1	10/10/18	ADDITIONAL SURVEY AREA	MWF

DRAWN BY:	M.T.L.	DATE:	DECEMBER 2016
CHECKED BY:	M.W.F.	DRAWING NO.:	5517A
JOB NO.:	5517	SHEET	1 OF 3

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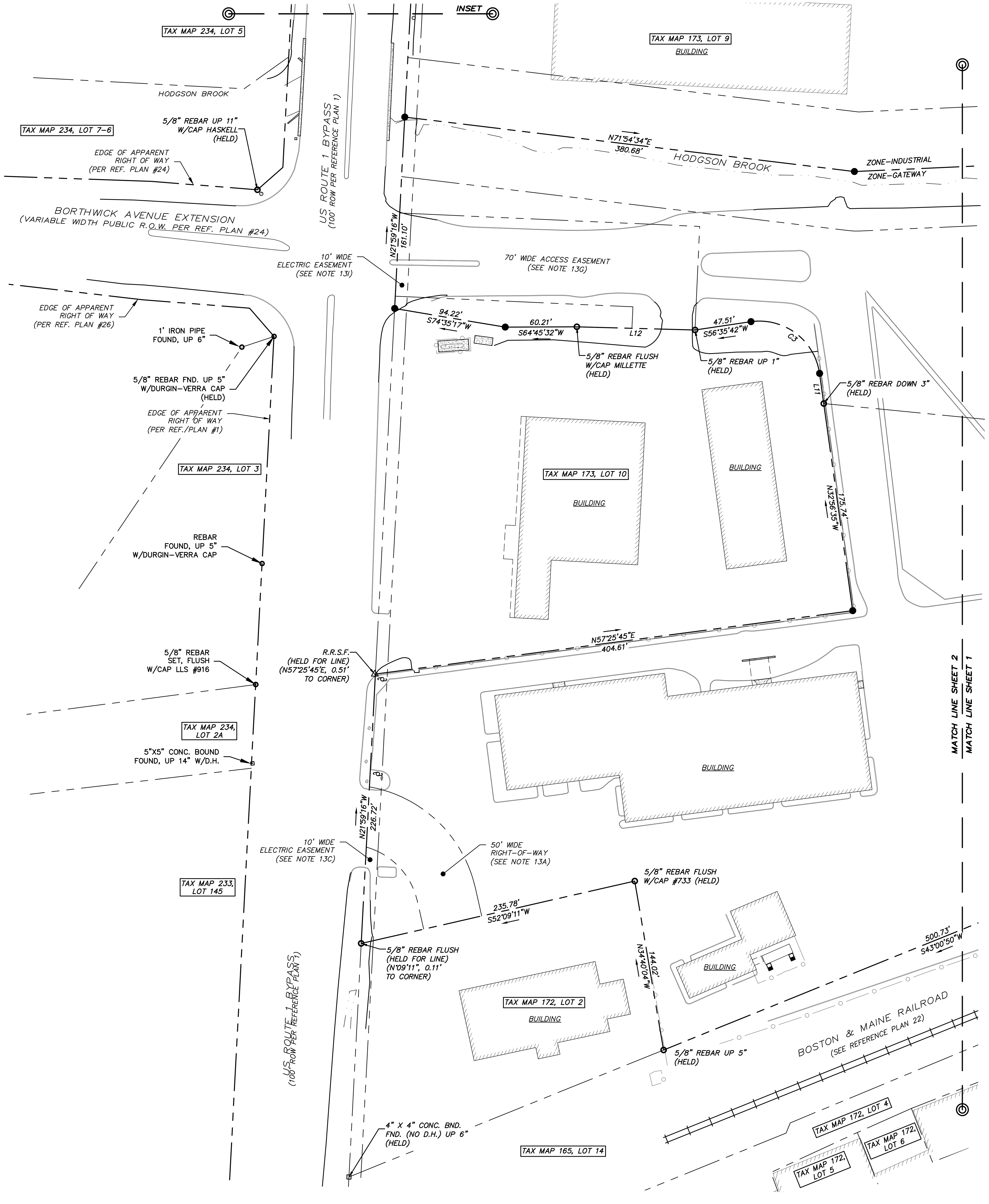

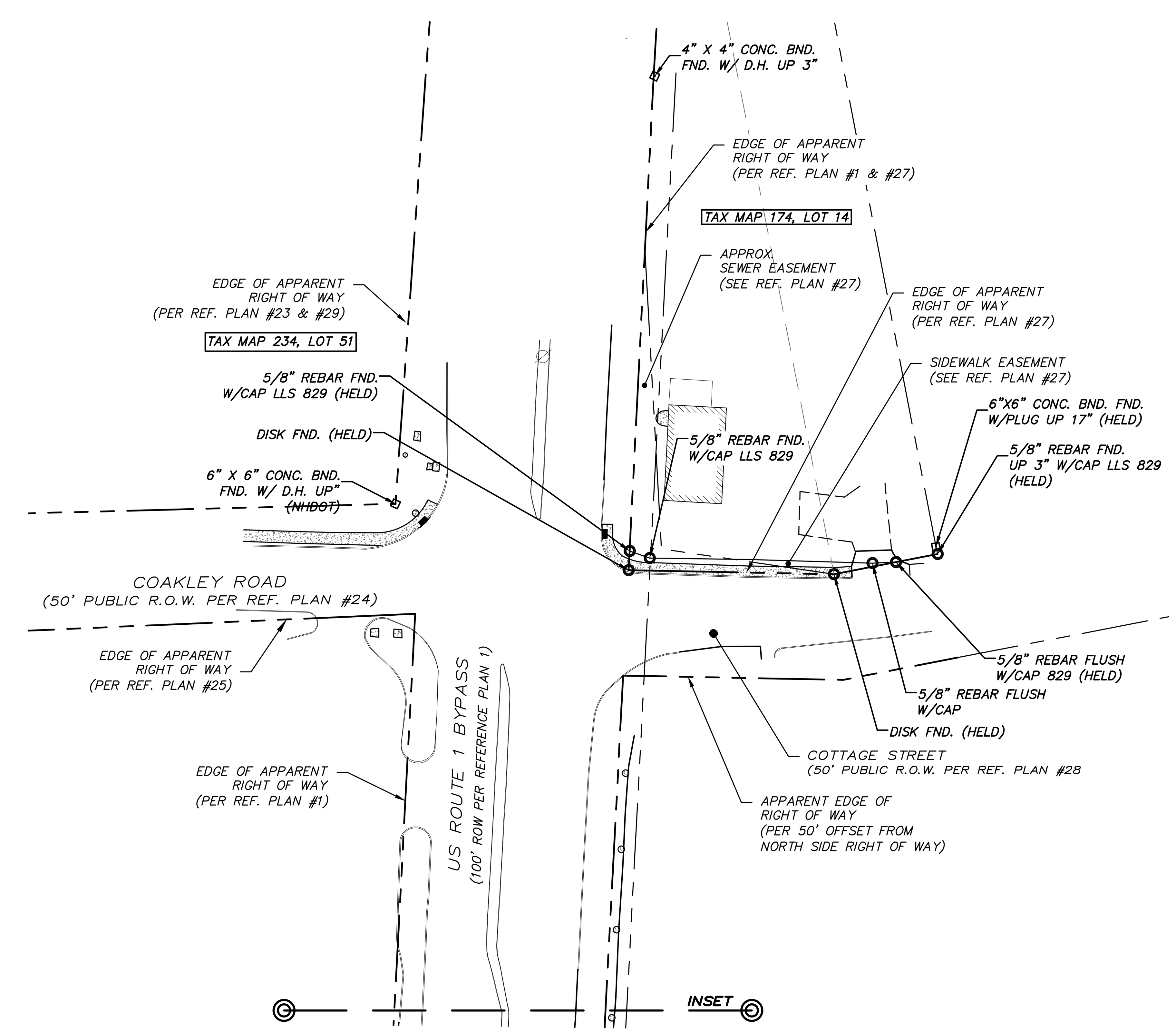

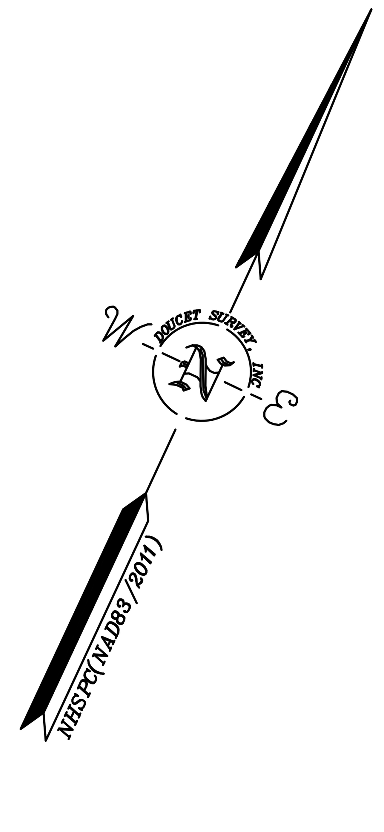

LINE TABLE		
LINE	BEARING	DISTANCE
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50 0 50 100

SCALE: 1 INCH = 50 FT.

LEGEND

- LOT LINE
- APPARENT RIGHT OF WAY LINE
- INTERIOR LOT LINE
- APPROXIMATE ABUTTER LOT LINE
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- CONCRETE

BND. FND. BOUND FOUND
I.P.F. IRON PIPE FOUND
CONC. CONCRETE
D.H. DRILL HOLE

PLAN OF LAND

FOR

PORTSMOUTH LAND ACQUISITIONS, LLC

OF

TAX MAP 163, LOTS 33 & 34
TAX MAP 165, LOT 2
TAX MAP 172, LOT 1
TAX MAP 173, LOT 2
CATE STREET & US ROUTE 1 BYPASS
PORTSMOUTH, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY
1	10/10/18	ADDITIONAL SURVEY AREA	MWF

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______________________ L.L.S. #989

______________________ DATE

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DRAWN BY:	M.T.L.	DATE:	DECEMBER 2016
CHECKED BY:	M.W.F.	DRAWING NO.:	5517A
JOB NO.:	5517	SHEET 2	OF 3

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ABUTTERS

TAX MAP 158, LOT 13
SLATTERY & DUMONT, LLC
66 OLD CONCORD TURNPIKE #10
BARRINGTON, NH 03825
R.C.R.D. BOOK 3471, PAGE 196

TAX MAP 163, LOT 1
M & B PROPERTIES, LLC
54 BARTLETT STREET
PORTSMOUTH, NH 03801
R.C.R.D. BOOK 5794, PAGE 996

TAX MAP 163, LOT 2
INDUSTRIAL RENTS–NH, LLC
6 WAYNE ROAD
WESTFORD, MA 01886
R.C.R.D. BOOK 5606, PAGE 2334

TAX MAP 163, LOT 37
CITY OF PORTSMOUTH
PO BOX 628
PORTSMOUTH, NH 03802
R.C.R.D. BOOK 2284 PAGE 812

TAX MAP 163, LOT 1
M & B PROPERTIES, LLC
54 BARTLETT ST
PORTSMOUTH, NH 03801
R.C.R.D. BOOK 5794 PAGE 996

TAX MAP 163, LOT 2
INDUSTRIAL RENTS–NH, LLC
6 WAYNE RD
WESTFORD, MA 01886
R.C.R.D. BOOK 5606 PAGE 2334

TAX MAP 163, LOT 32
SHARAN R. GROSS REV. TRUST
180 BIRCH HILL RD
YORK, ME 03909
R.C.R.D BOOK 5261 PAGE 2208
R.C.R.D. BOOK 3406 PAGE 1383

TAX MAP 163, LOT 35
ELDREDGE BREWERY REALTY PARTNERSHIP
1 CATE ST
PORTSMOUTH, NH 03801
R.C.R.D. BOOK 2572 PAGE 2635

TAX MAP 163, LOT 36
CST HOLDINGS, LLC
3 CATE ST
PORTSMOUTH, NH 03801
R.C.R.D. BOOK 3923 PAGE 202

TAX MAP 164, LOT 1
PORTSMOUTH LUMBER & HARDWARE, LLC
105 BARTLETT STREET
PORTSMOUTH, NH 03801
R.C.R.D. BOOK 5372, PAGE 2606

TAX MAP 164, LOT 2
PORTSMOUTH LUMBER & HARDWARE, LLC
105 BARTLETT STREET
PORTSMOUTH, NH 03801
R.C.R.D. BOOK 5808, PAGE 1379

TAX MAP 164, LOT 4
BOSTON & MAINE CORP.
IRON HORSE PARK, HIGH STREET
NO. BILLERICA, MA 01862

TAX MAP 164, LOT 5
HOUSTON HOLDINGS, LLC
653 ISLINGTON STREET
PORTSMOUTH, NH 03801
R.C.R.D. BOOK 3558, PAGE 464

TAX MAP 164, LOT 12
JOSEPH GOBBI SUPPLY CORP.
PO BOX 125
PORTSMOUTH, NH 03802
R.C.R.D. BOOK 3233, PAGE 1949

TAX MAP 165, LOT 1
MERTON ALAN INVESTMENTS, LLC
C/O JOAN RYAN & CASSASSA
459 LAFAYETTE RD
HAMPTON, NH 03842
R.C.R.D. BOOK 4771 PAGE 1259

TAX MAP 165, LOT 14
BOSTON AND MAINE CORP
IRON HORSE PK HIGH ST
NO BILLERICA, MA 01862
R.C.R.D. BOOK PAGE

TAX MAP 172, LOT 2
406 HIGHWAY 1 PYPASS, LLC
549 US HIGHWAY 1 BYPASS
PORTSMOUTH, NH 03801
R.C.R.D. BOOK 5671 PAGE 2150

TAX MAP 173, LOT 3
EDGAR W. & JANICE E. ANDERSON
224 CATE ST
PORTSMOUTH, NH 03801
R.C.R.D. BOOK 2956 PAGE 1071

TAX MAP 173, LOT 9
PAUL J. HOLLOWAY
C/O COAST PONTIAC
500 US HYWY 1 BYPASS
PORTSMOUTH, NH 03801
R.C.R.D. BOOK 2821 PAGE 2396

TAX MAP 173, LOT 10
AREC 13, LLC C/O U–HAUL INTERNATIONAL
PO BOX 29046
PHOENIX, AZ 85038
R.C.R.D. BOOK 4575 PAGE 950

TAX MAP 174, LOT 14
COLMAN C. GARLAND
416 SADDLEBACK DRIVE
FARIVIEW. TX 75069
R.C.R.D. BOOK 2232, PAGE 1002

TAX MAP 233, LOT 145
CITY OF PORTSMOUTH
1 JUNKINS AVENUE
PORTSMOUTH, NH 03801
R.C.R.D. BOOK 5127, PAGE 2074

TAX MAP 234, LOT 2A
PUBLIC SERVICE CO. OF NH
PO BOX 270
HARTFORD, CT 06141
R.C.R.D. BOOK 1257, PAGE 324

TAX MAP 234, LOT 3
PUBLIC SERVICE CO. OF NH
PO BOX 270
HARTFORD, CT 06141
R.C.R.D. BOOK 5548, PAGE 738

TAX MAP 234, LOT 5
SEACOAST DEVELOPMENT GROUP, LLC
505 US ROUTE 1 BYPASS
PORTSMOUTH, NH 03801
R.C.R.D. BOOK 3107, PAGE 950

TAX MAP 234, LOT 7–6
CREFIII WARAMAUG PORTSMOUTH, LLC
C/O CTMI, LLC
PO BOX 741328
DALLAS, TX 75374
R.C.R.D. BOOK 5620, PAGE 1675

TAX MAP 234, LOT 51
MEADOWBROOK INN CORP.
C/O PORTSMOUTH CHEVROLET
549 ROUTE 1 BYPASS
PORTSMOUTH, NH 03801
R.C.R.D. BOOK 2382, PAGE 1968

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE (NHRSA TITLE LXIV) AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN. I CERTIFY THAT THIS SURVEY AND PLAN WERE PREPARED BY ME OR BY THOSE UNDER MY DIRECT SUPERVISION AND FALLS UNDER THE URBAN SURVEY CLASSIFICATION OF THE NH CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS. I CERTIFY THAT THIS SURVEY WAS MADE ON THE GROUND AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. RANDOM TRAVERSE SURVEY BY TOTAL STATION, WITH A PRECISION GREATER THAN 1:15,000.

______________________L.L.S. #989

______________________DATE

THE CERTIFICATIONS SHOWN HEREON ARE INTENDED TO MEET REGISTRY OF DEED REQUIREMENTS AND ARE NOT A CERTIFICATION TO TITLE OR OWNERSHIP OF PROPERTY SHOWN. OWNERS OF ADJOINING PROPERTIES ARE ACCORDING TO CURRENT TOWN ASSESSORS RECORDS.

FILE NAME: Y:\PROJECTS\5517 C3D (SEE 4139)\DWG\5517A C3D.dwg LAYOUT NAME: POL (3) PLOTTED: Wednesday, October 10, 2018 – 2:07pm

NOTES:

1. REFERENCE: TAX MAP 163, LOT 33
TAX MAP 163, LOT 34
TAX MAP 165, LOT 2
TAX MAP 172, LOT 1
TAX MAP 173, LOT 2

2. TOTAL PARCEL AREA: TAX MAP 163, LOT 33–12,230 SQ. FT. OR 0.28 AC.
TAX MAP 163, LOT 34–64,109 SQ. FT. OR 1.47 AC.
COMBINED AREA–451,572 SQ. FT. OR 10.37 AC.
TAX MAP 165, LOT 2
TAX MAP 172, LOT 1
TAX MAP 173, LOT 2

3. OWNER OF RECORD: PORTSMOUTH LAND ACQUISITIONS, LLC
300 GAY STREET
MANCHESTER, NH 03103
R.C.R.D. BOOK 5393, PAGE 2976

4. ZONES: GW–GATEWAY
DIMENSIONAL REQUIREMENTS:

MIN. LOT AREA	43,560 sq.ft.
MIN. FRONTAGE	200 ft.
MIN. FRONT SETBACK	30 ft.
MIN. SIDE SETBACK	30 ft.
MIN. REAR SETBACK	50 ft.
MAX. BUILDING HEIGHT	40 ft.
MAX. BUILDING COVERAGE	30 %
WETLAND SETBACKS	100 ft.

ZONING INFORMATION LISTED HEREON IS BASED ON THE CITY OF PORTSMOUTH ZONING ORDINANCE DATED JULY 11, 2016 AS AVAILABLE ON THE CITY WEBSITE ON DECEMBER 15, 2016. ADDITIONAL REGULATIONS APPLY, AND REFERENCE IS HEREBY MADE TO THE EFFECTIVE ZONING ORDINANCE. THE LAND OWNER IS RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE MUNICIPAL, STATE AND FEDERAL REGULATIONS.

5. FIELD SURVEY PERFORMED BY P.J.S. & J.C.M. DURING NOVEMBER 2016 USING A TRIMBLE S6 TOTAL STATION, A TRIMBLE R8 SURVEY GRADE GPS UNIT, A TRIMBLE TSC3 DATA COLLECTOR AND A SOKKIA B21 AUTO LEVEL, BY L.P.S. & S.N.F. DURING JULY 2018 AND T.M.M. & J.C.M. IN SEPTEMBER & OCTOBER 2018 USING A TRIMBLE S6 TOTAL STATION WITH A TRIMBLE TSC3 DATA COLLECTOR. TRAVERSE ADJUSTMENT BASED ON LEAST SQUARE ANALYSIS. ADDITONAL FIELD SURVEY PERFORMED BY M.C. DURING NOVEMBER 2016 AND OCTOBER 2018 USING A LEICA HDS SCANNER.

6. MANMADE AND NATURAL JURISDICTIONAL WETLAND BOUNDARIES WERE DELINEATED BY MARC JACOBS, CERTIFIED WETLAND SCIENTIST NUMBER 090, IN NOVEMBER 2016 ACCORDING TO THE STANDARDS OF THE US ARMY CORPS OF ENGINEERS – WETLANDS DELINEATION MANUAL, TECHNICAL REPORT Y–87–1, JANUARY 1987; THE U.S. ARMY CORPS OF ENGINEERS REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION 2012; THE CODE OF ADMINISTRATIVE RULES, NH DEPARTMENT OF ENVIRONMENTAL SERVICES –WETLANDS BUREAU – CHAPTER ENV–WT 100–900 AND THE CITY OF PORTSMOUTH ZONING ORDINANCE, ARTICLE 10. PREDOMINANT HYDRIC SOILS WERE IDENTIFIED UTILIZING THE FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, VERSION 3, APRIL 2004 AND THE FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, VERSION 7, 2010. THE STATUS OF VEGETATION AS HYDROPHYTIC WAS DETERMINED ACCORDING TO THE NORTHCENTRAL AND NORTHEAST 2016 REGIONAL WETLAND PLANT LIST –U.S. ARMY CORPS OF ENGINEERS. COPIES OF SITE PLANS DEPICTING THE WETLAND DELINEATION WHICH HAVE BEEN REVIEWED BY THE WETLAND SCIENTIST ARE INDIVIDUALLY STAMPED & SIGNED AND DATED. THIS NOTE HAS BEEN CUSTOMIZED FOR THIS SITE/PROJECT.

7. FLOOD HAZARD ZONE:"X", PER FIRM MAP #33015C0259E, DATED 5/17/05.

8. VERTICAL DATUM IS BASED ON NGVD29 PER DISK V 28 1942 ELEV. 25.59.

9. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE(2800) NAD83(2011) DERIVED FROM REDUNDANT GPS OBSERVATIONS UTILIZING THE KEYNET GPS VRS NETWORK.

10. THE INTENT OF THIS PLAN IS TO SHOW THE LOCATION OF BOUNDARIES IN ACCORDANCE WITH AND IN RELATION TO THE CURRENT LEGAL DESCRIPTION, AND IS NOT AN ATTEMPT TO DEFINE UNWRITTEN RIGHTS, DETERMINE THE EXTENT OF OWNERSHIP, OR DEFINE THE LIMITS OF TITLE.

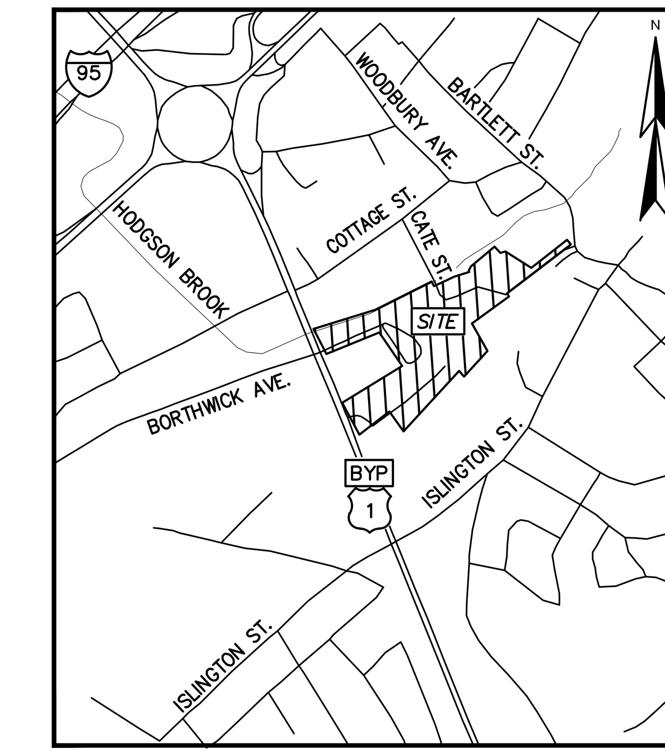
11. DUE TO THE COMPLEXITY OF RESEARCHING ROAD RECORDS AS A RESULT OF INCOMPLETE, UNORGANIZED, INCONCLUSIVE, OBLITERATED, OR LOST DOCUMENTS, THERE IS AN INHERENT UNCERTAINTY INVOLVED WHEN ATTEMPTING TO DETERMINE THE LOCATION AND WIDTH OF A ROADWAY RIGHT OF WAY. THE EXTENT OF (THE ROAD(S)) AS DEPICTED HEREON IS/ARE BASED ON RESEARCH CONDUCTED AT THE PORTSMOUTH CITY HALL, PORTSMOUTH DEPARTMENT OF ENGINEERING, THE ROCKINGHAM COUNTY REGISTRY OF DEEDS, AND THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION.

12. FINAL MONUMENTATION MAY BE DIFFERENT THAN THE PROPOSED MONUMENTATION SHOWN HEREON, DUE TO THE FACT THAT SITE CONDITIONS WILL DICTATE THE ACTUAL LOCATION AND TYPE OF MONUMENTS INSTALLED IN THE FIELD. PLEASE REFER TO EITHER THE "MONUMENTATION LOCATION PLAN" TO BE RECORDED OR CONTACT DOUCET SURVEY, INC. FOR CLARIFICATION OF MONUMENTS SET. (A RECORDED PLAN WILL BE PRODUCED AT THE DISCRETION OF DOUCET SURVEY, INC.).

13. THE FOLLOWING LOTS ARE EITHER SUBJECT TO OR IN BENEFIT OF, BUT NOT LIMITED TO, THE FOLLOWING EASEMENTS/RIGHTS OF RECORD:
TAX MAP 172, LOT 1
A. SUBJECT TO A 50' WIDE RIGHT OF WAY FOR THE BENEFIT OF TAX MAP 172, LOT 2 SEE R.C.R.D. BOOK 3127, PAGE 176 AND R.C.R.D. PLAN D–10722.
B. EXCEPTING AN 8" WATER PIPE LOCATED UNDER SUBJECT PARCEL, SEE R.C.R.D. BOOK 2783, PAGE 560, LOCATION OF SUBJECT WATER PIPE UNKNOWN.
C. SUBJECT TO A 10' WIDE ELECTRIC EASEMENT, SEE R.C.R.D. BOOK 1257, PAGE 324 AND R.C.R.D. PLAN D–19110.
D. SUBJECT TO A WATER LINE EASEMENT, SEE R.C.R.D. BOOK 950, PAGE 174, LOCATION OF SUBJECT WATERLINE UNKNOWN.
E. SUBJECT TO AN ELECTRIC EASEMENT, SEE R.C.R.D. BOOK 1374, PAGE 97, LOCATION OF SUBJECT EASEMENT UNKNOWN.
F. SUBJECT TO AN ELECTRIC EASEMENT, SEE R.C.R.D. BOOK 2364, PAGE 397, LOCATION OF SUBJECT EASEMENT UNKNOWN.
TAX MAP 173, LOT 2
G. SUBJECT TO A 70' WIDE ACCESS EASEMENT IN FAVOR OF TAX MAP 173, LOT 10, SEE R.C.R.D. BOOK 3204, PAGE 87 AND R.C.R.D. PLAN D–24912.
H. SUBJECT TO A DRAINAGE EASEMENT TO THE UNITED STATES OF AMERICA, SEE R.C.R.D. BOOK 1423, PAGE 240.
I. SUBJECT TO A 10' WIDE ELECTRIC EASEMENT, SEE R.C.R.D. BOOK 1257, PAGE 324. SEE ALSO R.C.R.D. PLAN D–19110.

REFERENCE PLANS

1. "MAINE–NEW HAMPSHIRE INTERSTATE BRIDGE AUTHORITY, PISCATAQUA RIVER BRIDGE, KITTERY, MAINE–PORTSMOUTH, NEW HAMPSHIRE, RIGHT OF WAY MAPS, N.H. APPROACH,BY ALBERT MOULTON, CE, DATED 1954, ON FILE A THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION.
2. "PLAT OF LAND U.S. ROUTE 1 BY–PASS PORTSMOUTH, NEW HAMPSHIRE FOR GRIFFIN FAMILY CORP.", BY DURGIN, VERRA AND ASSOCIATES, INC., DATED JANUARY 20, 1992, RECEIVED FROM THE OFFICE OF JAMES VERRA.
3. "LOT LINE REVISION U.S. ROUTE ONE BY–PASS, PORTSMOUTH, N.H. FOR WIGGIN, PARSONS, & O'BRIEN, BY JOHN W. DURGIN ASSOCIATES, INC., DATED JANUARY 22, 1982, R.C.R.D. PLAN D–10722.
4. "PLAN OF LAND FOR JOSEPH J. O'BRIEN JR.& SR., CATE STREET/ROUTE 1 BY–PASS, PORTSMOUTH, N.H., BY RICHARD P. MILLETTE AND ASSOCIATES, DATED NOVEMBER 17, 1988, R.C.R.D. PLAN D–19110.
5. "LAND IN PORTSMOUTH, N.H., BOSTON AND MAINE RAILROAD TO ALL STATE REALTY CORPORATION", BY BRENTON V. SCHOFIELD, DATED FEBRUARY 1964, R.C.R.D. PLAN 160.
6. "LOT LINE RELOCATION PLAN FOR U–HAUL REAL ESTATE COMPANY AND FRANCIS J. COSTELLO CATE STREET/ROUTE 1 BY–PASS, PORTSMOUTH, N.H.", BY RICHARD P. MILLETTE AND ASSOCIATES, DATED MAY 25, 1995, R.C.R.D. PLAN D–24912.
7. "SUBDIVISION OF LAND HEIRS OF CORNELUS COAKLEY", BY MCKENNA ASSOCIATES, DATED JULY 26, 1972, R.C.R.D. PLAN D–3790.
8. "LOT LINE REVISION PORTSMOUTH, N.H. FOR MICHAEL A. PAGANO", BY JOHN W. DURGIN ASSOCIATES, DATED JUNE 26, 1981, R.C.R.D. PLAN D–10278.
9. "SITE PLAN OF ELDREDGE PARK WEST PREPARED FOR ELDREDGE BREWERY REALTY PARTNERSHIP", BY KIMBALL CHASE COMPANY, INC., DATED JULY 23, 1987, R.C.R.D. PLAN D–16894.
10. "PLAN OF LAND OF FRANK JONES BREWING CORP. & PAUL C. BADGER & NORMAN E. RAND PORTSMOUTH, N.H.", BY JOHN W. DURGIN, CIVIL ENGINEERS, DATED SEPTEMBER 1950, R.C.R.D. PLAN 01635.
11. "LOT LINE ADJUSTMENT PLAN FOR LAND OWNED BY SHARON R. GROSS REVOCABLE TRUST, KNOWN AS TAX MAP 163, LOT 31 & 32 LOCATED ALONG #201 & 235 CATE STREET", BY KNIGHT HILL LAND SURVEYING SERVICES, INC., DATED JULY 28, 2011, R.C.R.D. PLAN D–37021.
12. "SITE REVIEW PLAN FOR LAND OWNED BY SHARON R. GROSS REVOCABLE TRUST, KNOWN AS TAX MAP 163, LOT 32 LOCATED ALONG #201 & CATE STREET", BY KNIGHT HILL LAND SURVEYING SERVICES, INC., DATED DECEMBER 2002, R.C.R.D. PLAN D–30850.
13. "PLAN SHOWING DIVISION OF ELDREDGE BREWING CO. LOT IN PORTSMOUTH, N.H. OWNED BY ALBERT HISLOP", BY WM A. GROVER, DATED DECEMBER 11, 1918, R.C.R.D. PLAN 18.
14. "PLAN OF LAND PORTSMOUTH, N.H. ATLANTIC REALTY CORP. TO KITTERY LAUNDRY, INC.", BY JOHN W. DURGIN, DATED AUGUST 1964, R.C.R.D. PLAN 300.
15. "CITY OF PORTSMOUTH, N.H. DEFENSE HOMES SEWER LOCATION PLAN", BY JOHN W. DURGIN DATED MAY 1961, R.C.R.D. PLAN 1106.
16. "LAND IN PORTSMOUTH, N.H. BOSTON AND MAINE RAILROAD TO M.H. PARSONS & SONS LUMBER COMPANY, INC.", R.C.R.D. BOOK 1267, PAGE 16.
17. "PLAN OF LAND PORTSMOUTH, N.H. FOR M.H. PARSONS REALTY CORP.", BY JOHN W. DURGIN, DATED DECEMBER 1956, R.C.R.D. BOOK 1431, PAGE 275.
18. "SITE PLAN PORTSMOUTH, N.H. PREPARED FOR U–HAUL OF N.H. AND VT., INC.", BY JOHN W. DURGIN, DATED JUNE 4, 1980, R.C.R.D. PLAN D–9642.
19. "STANDARD PROPERTY SURVEY & PROPOSED SIDEWALK EASEMENT FOR THE CITY OF PORTSMOUTH FOR PROPERTY AT 185 COTTAGE STREET OWNED BY COLMAN C. GARLAND", BY EASTERLY SURVEYING, INC., SATED NOVEMBER 30, 2012, R.C.R.D. PLAN D–38047.
20. "PLOT PLAN FOR MARIAN M. BADGER, PORTSMOUTH, N.H.", BY JOHN W. DURGIN, DATED JULY 1973, RECIEVED FROM THE OFFICE OF JAMES VERRA.
21. "LAND ON CATE STREET, PORTSMOUTH, N.H., BADGER & RAND TO PORTSMOUTH POWER CO.", BY JOHN W. DURGIN, DATED JANUARY 8, 1926, RECEIVED FROM THE OFFICE OF JAMES VERRA.
22. "RIGHT–OF–WAY AND TRACK MAP BOSTON AND MAINE R.R. OPERATED BY THE BOSTON & MAINE R.R., STATION 2928+05 TO 2966+20", DATED JUNE 30, 1914, ON FILE AT THE NH DEPARTMENT OF TRANSPORTATION.
23. "ALTA/ACSM LAND TITLE SURVEY, TAX MAP 234, LOT 51 PROPERTY OF THE MEADOWBROOK INN CORPORATION", BY MSC CIVIL ENGINEERS & LAND SURVEYORS, DATED DECEMBER 2, 2018, R.C.R.D. PLAN D–36980.
24. "LOT LINE REVISION PLAN TAX MAP R–34 LOTS 6 & 7–6, LOCATED ON BORTHWICK AVE., COAKLEY ROAD AND U.S. ROUTE 1 BYPASS IN PORTSMOUTH, NH", BY KIMBALL CHASE, DATED OCTOBER 20, 1993, R.C.R.D. PLAN #D–22686.
25. "PLAN OF LAND FOR SEACOAST DEVELOPMENT GROUP, LLC, US ROUTE 1 BYPASS & COAKLEY ROAD, PORTSMOUTH, NH", BY MILLETTE, SPRAGUE & COLWELL, INC., DATED JUNE 7, 2002, R.C.R.D. PLAN #D–30041.
26. "LOT LINE REVISION PLAN LAND OF SEARAY REALTY, LLC", BY DOUCET SURVEY, INC., DATED MARCH 12, 2014, R.C.R.D. PLAN D–38435.
27. "STANDARD PROPERTY SURVEY & PROPOSED SIDEWALK EASEMENT FOR THE CITY OF PROTSMOUTH FOR PROPERTY AT 185 COTTAGE STREET PORTSMOUTH, NH OWNED BY COLMAN C. GARLAND", BY NORTH EASTERLY SURVEYING, INC., DATED NOVEMBER 30, 2012, R.C.R.D. PLAN #D–38017.
28. "PLAN OF A LOT OF LAND BELONGING TO FRANK JONES", DATED JULY 1901, R.C.R.D. PLAN #223.
29. "MEADOWBROOK INN CONDOMINIUM SITE PLAN, MAP 234, LOT 51 IN PORTSMOUTH, NH, PREPARED FOR THE MEADOWBROOK INN CORPORATION", BY VANASSE HANGEN BRUSTLIN, INC., DATED SEPTEMBER 25, 2009, R.C.R.D. PLAN #D–36162.
30. "PROPOSED EASEMENTS – BARTLETT STREET, BARTLETT SEWER SEPARATION PROJECT OVER LAND OF PAN AM RAILWAYS, PORTSMOUTH, NH FOR CITY OF PORTSMOUTH", BY JAMES VERRA AND ASSOCIATES, INC., DATED OCTOBER 1, 2007, R.C.R.D. PLAN #D–35477.
31. "EASEMENT PLAN – 653 ISLINGTON STREET, BARTLETT SEWER SEPARATION PROJECT OVER LAND OF HOUSTON HOLDINGS, LLC", BY JAMES VERRA AND ASSOCIATES, INC., DATED JUNE 22, 2009, R.C.R.D. PLAN #D–35957.
32. "LAND TRANSFER AND EASEMENT PLAN, 30 CATE STREET PORTSMOUTH, NH OWNED BY MERTON ALAN INVESTMENTS, LLC.", BY TF MORAN/MSC, DATED OCTOBER 31, 2017, R.C.R.D. PLAN #D–40742.
33. "LAND IN PORTSMOUTH, N.H. BARTLETT & CATE STREET", BY JOHN W. DURGIN CIVIL ENGINEER, DATED JULY 1924, R.C.R.D. PLAN #0133.



LOCATION MAP (n.t.s.)

PLAN OF LAND
FOR
PORTSMOUTH LAND ACQUISITIONS, LLC
OF
TAX MAP 163, LOTS 33 & 34
TAX MAP 165, LOT 2
TAX MAP 172, LOT 1
TAX MAP 173, LOT 2
CATE STREET & US ROUTE 1 BYPASS
PORTSMOUTH, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY
1	10/10/18	ADDITIONAL SURVEY AREA	MWF

DRAWN BY: M.T.L.	DATE: DECEMBER 2016
CHECKED BY: M.W.F.	DRAWING NO.: 5517A
JOB NO.: 5517	SHEET 3 OF 3

DOUCET SURVEY INC
Serving Your Professional Surveying & Mapping Needs
102 Kent Place, Newmarket, NH 03857 (603) 659-6560
2 Commerce Drive (Suite 202) Bedford, NH 03110 (603) 614-4060
10 Storer Street (Riverview Suite) Kennebunk, ME (207) 502-7005
http://www.doucetsurvey.com

DRAINAGE STRUCTURES			
CB #1056	CB #1348	CB #3600	CB #4034
RIM ELEV.=23.3'	RIM ELEV.=24.6'	RIM ELEV.=11.1'	RIM ELEV.=10.8'
(A) 4" UNKN. INV.=17.6'	(1347) 12" RCP INV.=19.2'	12" PVC INV.=7.5'	12" PVC INV.=7.5'
(B) 4" UNKN. INV.=17.7'			
	CB #1742	CB #3672	DMH #4035
CB #1071	RIM ELEV.=24.7'	RIM ELEV.=11.9'	RIM ELEV.=11.7'
RIM ELEV.=22.7'	(1743) 12" RCP INV.=19.7'	(3693) 4" PVC INV.=8.2'	(NO VISIBLE PIPES)
(1072) 12" RCP INV.=17.3'		(3895) 4" PVC INV.=8.7'	SUMP=1.3'
	CB #1743	(A) 4" PVC INV.=8.3'	WATER LEVEL=1.8'
CB #1072	RIM ELEV.=24.7'		
RIM ELEV.=23.7'	(1742) 12" RCP INV.=19.5'	CB #3693	CB #4081
(A) 6" CMP INV.=17.6'	(A) 12" RCP INV.=19.5'	RIM ELEV.=11.0'	RIM ELEV.=8.7'
(1071) 12" RCP INV.=17.5'		(3672) 4" PVC INV.=8.2'	(4082) 12" HDPE INV.=5.8'
(1148) 12" CMP INV.=17.5'	CB #1926	(A) 12" PVC INV.=7.9'	
(1347) 15" RCP INV.=17.1'	RIM ELEV.=29.7'		CB #4082
(B) 15" RCP INV.=17.0'	8" PVC INV.=27.9' (OUTFALL)	DMH #3756	RIM ELEV.=8.7'
		RIM ELEV.=11.6'	(4081) 12" HDPE INV.=5.7'
CB #1128	CB #2346	(2360) 12" PVC INV.=7.8'	(4083) 12" HDPE INV.=5.9'
RIM ELEV.=22.7'	RIM ELEV.=15.6'	(A) 12" PVC INV.=7.8'	
(A) 6" PVC INV.=19.4'	(A) 12" RCP INV.=11.3'		DMH #4083
(1186) 12" CMP INV.=18.9'		DMH #3756	RIM ELEV.=8.9'
(1148) 12" CMP INV.=18.8'	CB #2347	RIM ELEV.=11.6'	(3866) 42"WX24H CMP INV.=5.0'
	RIM ELEV.=13.8'	(3760) 12" PVC INV.=7.7'	(4083) 12" HDPE INV.=5.7'
CB #1147	(2348) 15" HDPE INV.=9.7'	(A) 12" PVC INV.=7.8'	(4093) 12" HDPE INV.=5.6'
RIM ELEV.=22.2'			(A) 42"WX24H CMP INV.=5.0'
(A) 6" PVC INV.=18.7'	CB #2348	CB #3758	
(B) 12" CMP INV.=18.3'	RIM ELEV.=13.6'	RIM ELEV.=10.9'	CB #4093
	(2347) 15" HDPE INV.=9.8'	(3760) 12" PVC INV.=8.0'	RIM ELEV.=9.0'
CB #1148	(2349) 15" HDPE INV.=9.8'	(A) 8" PVC INV.=7.9'	(4083) 12" HDPE INV.=5.9'
RIM ELEV.=22.4'			
(A) 6" PVC INV.=18.7'	CB #2349	CB #3760	CB #4181
(1128) 12" CMP INV.=18.1'	RIM ELEV.=13.8'	RIM ELEV.=10.7'	RIM ELEV.=24.7'
(1148) 12" CMP INV.=18.2'	(2348) 15" HDPE INV.=9.1'	(3756) 12" PVC INV.=8.0'	12" CMP INV.=19.7'
	(2350) 15" HDPE INV.=10.3'	(3758) 12" PVC INV.=8.0'	
CB #1186	(3772) 15" HDPE INV.=9.1'		CB #4239
RIM ELEV.=23.5'		DMH #3772	RIM ELEV.=25.0'
(1188) 12" CMP (NOT VISIBLE)	CB #2350	RIM ELEV.=12.2'	12" CMP INV.=20.3'
(1128) 12" CMP INV.=20.0'	RIM ELEV.=12.6'	(2349) 15" HDPE INV.=8.7'	
	(FULL OF SILT & DEBRIS)	(3777) 15" HDPE INV.=8.6'	CB #4545
CB #1188			RIM ELEV.=27.8'
RIM ELEV.=25.7'	CB #2993	CB #3777	(3281) 15" RCP INV.=22.0'
(1186) 8" PVC INV.=22.3'	RIM ELEV.=30.2	RIM ELEV.=10.7'	(A) 18" RCP INV.=21.3'
	(A) 15" RCP INV.=26.2'	(3772) 15" HDPE INV.=7.7'	
CB #1213	(B) 12" UNKN. INV.=26.1'	(4605) 15" HDPE INV.=7.6'	DMH #4603 & 4604
RIM ELEV.=20.3'	(3281) 15" RCP INV.=26.0'		RIM ELEV.=10.3'
(HDWL) 12" HDPE INV.=17.6'		DMH #3866	(4035) 42" RCP INV.=1.0'
	CB #3019	RIM ELEV.=10.2'	(A) 36" RCP INV. (RECESSED)
CB #1251	RIM ELEV.=28.8'	(4083) 42"WX24H CMP INV.=5.3'	(B) UNKN. (RECESSED)
RIM ELEV.=20.9'	(A) 6" PVC INV.=25.4'	(4605) 24" RCP INV.=5.4'	(C) 42" RCP INV.=1.2'
(A) 18" CMP INV.=16.5'		(A) 8" CI INV.=8.0'	
	CB #3065		DMH #4605
CB #1345	RIM ELEV.=31.5'	CB #3895	RIM ELEV.=11.0'
RIM ELEV.=23.3'	WATER ELEV.=27.4'	RIM ELEV.=11.9'	(3579) 24" RCP INV.=4.4'
(1346) 12" RCP INV.=19.1'	(NO PIPES VISIBLE)	(3672) 4" PVC INV.=9.7'	(3777) 15" CMP INV.=7.5'
		(A) 4" PVC INV.=9.9'	(3866) 24" RCP INV.=4.6'
CB #1346	CB #3281		
RIM ELEV.=25'	RIM ELEV.=29.8'	CB #3993	
(1345) 12" RCP INV.=17.4'	(2993) 15" RCP INV.=24.3'	RIM ELEV.=12.6'	
(1347) 15" RCP INV.=15.9'	(4545) 15" RCP INV.=24.2'	(NO VISIBLE PIPES)	
(A) 15" RCP INV.=15.7'		APPEARS TO OPEN TO BROOK	
	DMH #3579	SUMP=1.5'	
CB #1347	RIM ELEV.=11.2'	WATER LEVEL=1.8'	
RIM ELEV.=23.9'	(4035) 36" BRICK TROUGH INV.=2.0'		
(1348) 12" RCP INV.=18.8'	(4605) 24" RCP INV.=4.2'	CB #4002	
(1072) 15" RCP INV.=15.9'	(A) UNKN. INV.=2.0'	RIM ELEV.=12.9'	
(1346) 15" RCP INV.=15.8'		(BOLTED SHUT)	

SEWER STRUCTURES		
SMH #1066	SMH #2434	SMH #3768
RIM ELEV.=23.2'	RIM ELEV.=18.2'	RIM ELEV.=11.4'
(A) 4" PVC INV.=18.5'	(2799) 10" UNKN. INV.=9.7'	(2353) 24" PVC INV.=6.0'
(D) UNKN. INV.=12.3'	(2365) 12" UNKN. INV.=9.7'	(3578) 24" PVC INV.=5.9'
(1152) 10" UNKN. INV.=11.8'		
(C) 4" PVC INV.=16.0'	SMH #2789	SMH #3999
(D) 4" PVC INV.=16.0'	RIM ELEV.=20.1'	RIM ELEV.=12.6'
(1350) UNKN. INV.=11.9'	(SUMP) INV.=9.9'	(4000) 10" PVC INV.=5.9'
(E) UNKN. INV.=11.6'	NO PIPES VISIBLE	(4003) 12" PVC INV.=5.8'
SMH #1152	SMH #2799	SMH #4000
RIM ELEV.=22.6'	RIM ELEV.=23.8'	RIM ELEV.=12.3'
(1066) 10" UNKN. INV.=11.3'	(A) 4" DI INV.=21.1'	(3718) 10" PVC INV.=5.8'
(2799) 10" UNKN. INV.=11.2'	(B) 8" UNKN. INV.=12.1'	(3999) 10" PVC INV.=5.8'
	(1152) 10" UNKN. INV.=10.7'	
SMH #1350	(2434) 10" UNKN. INV.=10.6'	SMH #4003
RIM ELEV.=25.5'		RIM ELEV.=13.3'
(A) 8" CLAY INV.=14.9'	SMH #3280	(3999) 12" PVC INV.=6.5'
(4565) UNKN. INV.=14.7'	RIM ELEV.=29.8'	(A) 10" CI INV.=6.6
(1066) UNKN. INV.=14.4'	(1527) 8" CLAY DROP INLET INV.=21.1'	
	(4565) UNKN. INV.=16.4'	SMH #4102
SMH #1470	(A) 4" CI INV.=23.3'	RIM ELEV.=11.3'
RIM ELEV.=29.4'	(B) UNKN. INV.=16.5'	(3578) 30" PVC INV.=3.7'
FULL OF DEBRIS		(A) 30" PVC INV.=3.6'
	SMH #3578	
SMH #1527	RIM ELEV.=10.9'	SMH #4103
RIM ELEV.=31.6'	(3604) 36" PVC INV.=3.0'	RIM ELEV.=10.5'
(3280) 8" CLAY INV.=24.8'	(3768) 24" PVC INV.=5.8'	(NO VISIBLE PIPES, POSSIBLE
(A) 8" CLAY INV.=25.3'	(4102) 30" PVC INV=3.1'	ELECTRIC MANHOLE)
(B) 8" CLAY INV.=24.7'		
	SMH #3604	SMH #4565
SMH #2353	RIM ELEV.=11.3'	RIM ELEV.=26.4'
RIM ELEV.=12.7'	(3578) 36" PVC INV.=2.5'	PIPES SUBMERGED
(2365) 24" PVC INV.=6.5'	(3636) 36" PVC INV.=2.5'	WATER LEVEL=16.5'
(3768) 24" PVC INV.=6.5'	(3718) 10" PVC INV.=4.7'	SUMP=15.4'
(A) 6" PVC INV.=7.2'		
	SMH #3636	SMH #4607
SMH #2365	RIM ELEV.=10.3'	RIM ELEV.=33.2'
RIM ELEV.=14.4'	(3604) 36" PVC INV.=2.3'	(A) 8" PVC INV.=17.9'
(A) 10" CI INV.=9.3'	(A) 36" PVC INV.=2.2'	(B) 8" PVC INV.=17.7'
(2434) 10" METAL INV.=9.2'		
(2353) 24" METAL INV.=9.2'	SMH #3718	
	RIM ELEV.=11.5'	
	(3604) 10" PVC INV.=5.3'	
	(4000) 10" PVC INV.=5.5'	

30 0 30 60

SCALE: 1 INCH = 30 FT.

TOPOGRAPHIC PLAN
FOR
PORTSMOUTH LAND ACQUISITIONS, LLC
OF
TAX MAP 163, LOTS 33 & 34
TAX MAP 165, LOT 2
TAX MAP 172, LOT 1
TAX MAP 173, LOT 2
CATE STREET & US ROUTE 1 BYPASS
PORTSMOUTH, NEW HAMPSHIRE

NOTES:

1. REFERENCE: TAX MAP 163, LOT 33
   TAX MAP 163, LOT 34
   TAX MAP 165, LOT 2
   TAX MAP 172, LOT 1
   TAX MAP 173, LOT 2

2. FIELD SURVEY PERFORMED BY P.J.S. & J.C.M. DURING NOVEMBER 2016 USING A TRIMBLE S6 TOTAL STATION, A TRIMBLE R8 SURVEY GRADE GPS UNIT, A TRIMBLE TSC3 DATA COLLECTOR AND A SOKKIA B21 AUTO LEVEL, BY L.P.S. & S.N.F. DURING JULY 2018 AND T.M.M. & J.C.M. IN SEPTEMBER & OCTOBER 2018 USING A TRIMBLE S6 TOTAL STATION WITH A TRIMBLE TSC3 DATA COLLECTOR. TRAVERSE ADJUSTMENT BASED ON LEAST SQUARE ANALYSIS. ADDITONAL FIELD SURVEY PERFORMED BY M.C. DURING NOVEMBER 2016 AND OCTOBER 2018 USING A LEICA HDS SCANNER.

3. MANMADE AND NATURAL JURISDICTIONAL WETLAND BOUNDARIES WERE DELINEATED BY MARC JACOBS, CERTIFIED WETLAND SCIENTIST NUMBER 090, IN NOVEMBER 2016 ACCORDING TO THE STANDARDS OF THE US ARMY CORPS OF ENGINEERS – WETLANDS DELINEATION MANUAL, TECHNICAL REPORT Y–87–1, JANUARY 1987; THE U.S. ARMY CORPS OF ENGINEERS REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION 2012; THE CODE OF ADMINISTRATIVE RULES, NH DEPARTMENT OF ENVIRONMENTAL SERVICES –WETLANDS BUREAU – CHAPTER ENV–WT 100–900 AND THE CITY OF PORTSMOUTH ZONING ORDINANCE, ARTICLE 10. PREDOMINANT HYDRIC SOILS WERE IDENTIFIED UTILIZING THE FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, VERSION 3, APRIL 2004 AND THE FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, VERSION 7, 2010. THE STATUS OF VEGETATION AS HYDROPHYTIC WAS DETERMINED ACCORDING TO THE NORTHCENTRAL AND NORTHEAST 2016 REGIONAL WETLAND PLANT LIST –U.S. ARMY CORPS OF ENGINEERS. COPIES OF SITE PLANS DEPICTING THE WETLAND DELINEATION WHICH HAVE BEEN REVIEWED BY THE WETLAND SCIENTIST ARE INDIVIDUALLY STAMPED & SIGNED AND DATED. THIS NOTE HAS BEEN CUSTOMIZED FOR THIS SITE/PROJECT.

4. VERTICAL DATUM IS BASED ON NGVD29 PER DISK V 28 1942 ELEV. 25.59..

5. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE(2800) NAD83(2011) DERIVED FROM REDUNDANT GPS OBSERVATIONS UTILIZING THE KEYNET GPS VRS NETWORK.

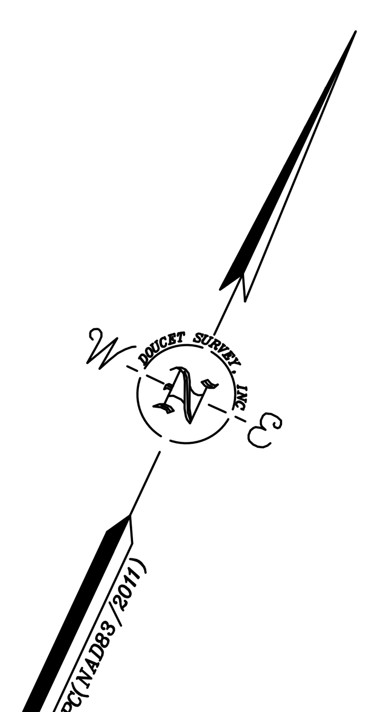
6. PROPER FIELD PROCEDURES WERE FOLLOWED IN ORDER TO GENERATE CONTOURS AT 1' INTERVALS. ANY MODIFICATION OF THIS INTERVAL WILL DIMINISH THE INTEGRITY OF THE DATA, AND DOUCET SURVEY, INC. WILL NOT BE RESPONSIBLE FOR ANY SUCH ALTERATION PERFORMED BY THE USER.

7. UNDERGROUND UTILITIES SHOWN HEREON ARE BASED ON OBSERVABLE PHYSICAL EVIDENCE AND PAINT MARKS FOUND ON–SITE.

8. THE ACCURACY OF MEASURED UTILITY INVERTS AND PIPE SIZES/TYPES IS SUBJECT TO NUMEROUS FIELD CONDITIONS, INCLUDING; THE ABILITY TO MAKE VISUAL OBSERVATIONS, DIRECT ACCESS TO THE VARIOUS ELEMENTS, MANHOLE CONFIGURATION, ETC.

9. ALL ELECTRIC, GAS, TEL. WATER, SEWER AND DRAIN SERVICES ARE SHOWN IN SCHEMATIC FASHION, THEIR LOCATIONS ARE NOT PRECISE OR NECESSARILY ACCURATE. NO WORK WHATSOEVER SHALL BE UNDERTAKEN ON THIS SITE USING THIS PLAN TO LOCATE THE ABOVE SERVICES. CONSULT WITH THE PROPER AUTHORITIES CONCERNED WITH THE SUBJECT SERVICE LOCATIONS FOR INFORMATION REGARDING SUCH. CALL DIG–SAFE AT 1–888–DIG–SAFE.

10. UNDERGROUND UTILITY DATA WAS PROVIDED TO DOUCET SURVEY, INC. BY THE CITY OF PORTSMOUTH GIS DEPARTMENT ON NOVEMBER 15, 2016. THIS DATA IS FOR PLANNING PURPOSES ONLY AND DOUCET SURVEY DOES NOT GUARANTEE THE ACCURACY OR EXISTENCE OF THE DATA PROVIDED. ON–SITE INSPECTION SHOULD BE CONDUCTED PRIOR FINAL DESIGN AND/OR CONSTRUCTION.



LEGEND

APPROXIMATE LOT LINE
INTERIOR LOT LINE
APPROXIMATE ABUTTER LOT LINE
EASEMENT LINE
STOCKADE FENCE
CHAIN LINK FENCE
GUARDRAIL
OVERHEAD WIRES
SEWER LINE
DRAIN LINE
GAS LINE
WATER LINE
MAJOR CONTOUR LINE
MINOR CONTOUR LINE
TREE LINE
SHRUB LINE
EDGE OF WETLAND
SEWER LINE (SEE NOTE 20)
DRAIN LINE (SEE NOTE 20)
WATER LINE (SEE NOTE 20)
UTILITY POLE
UTILITY POLE & GUY WIRE
UTILITY POLE W/ LIGHT
LIGHT POLE

SIGN
SIGN (TWO POSTS)
FENCE POST
POST
POST
BOLLARD
FIRE HYDRANT
WATER GATE VALVE
SPIGOT
GAS GATE VALVE
OIL FILL CAP
ELECTRIC BOX
CATCH BASIN
DRAIN MANHOLE
ROOF DRAIN
MANHOLE
SEWER MANHOLE
CLEANOUT
HAND HOLE
WETLAND AREA
FLAG POLE
CONIFEROUS TREE
DECIDUOUS TREE

MONITORING WELL
DRAINAGE FLOW DIRECTION ARROW
CONCRETE
CRUSHED STONE
LEDGE OUTCROP
ACCESSIBLE PARKING SPACE
MAST ARM
JERSEY BARRIER
TYP. TYPICAL
FF FINISHED FLOOR
EM ELECTRIC METER
EP EDGE OF PAVEMENT
VGC VERTICAL GRANITE CURB
SGC SLOPED GRANITE CURB
SBB SLOPED BITUMINOUS BERM
SWL SINGLE WHITE LINE
SYL SINGLE YELLOW LINE
DYL DOUBLE YELLOW LINE

1	10/10/18	ADDITIONAL SURVEY AREA	MWF
NO.	DATE	DESCRIPTION	BY

DRAWN BY: M.T.L.	DATE: DECEMBER 2016
CHECKED BY: M.W.F.	DRAWING NO.: 5517A
JOB NO.: 5517	SHEET 1 OF 5

DOUCET SURVEY INC

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102 Kent Place, Newmarket, NH 03857 (603) 659-6560
2 Commerce Drive (Suite 202) Bedford, NH 03110 (603) 614-4060
10 Storer Street (Riverview Suite) Kennebunk, ME (207) 502-7005
http://www.doucetsurvey.com

FILE NAME: Y:\PROJECTS\5517 C3D (SEE 4139)\DWG\5517A C3D.dwg LAYOUT NAME: TOPO (1) PLOTTED: Wednesday, October 10, 2018 – 2:09pm

TOPOGRAPHIC PLAN

FOR

PORTSMOUTH LAND ACQUISITIONS, LLC

OF

TAX MAP 163, LOTS 33 & 34
TAX MAP 165, LOT 2
TAX MAP 172, LOT 1
TAX MAP 173, LOT 2
CATE STREET & US ROUTE 1 BYPASS
PORTSMOUTH, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY
1	10/10/18	ADDITIONAL SURVEY AREA	MWF

DRAWN BY:	M.T.L.	DATE:	DECEMBER 2016
CHECKED BY:	M.W.F.	DRAWING NO.:	5517A
JOB NO.:	5517	SHEET	2 OF 5

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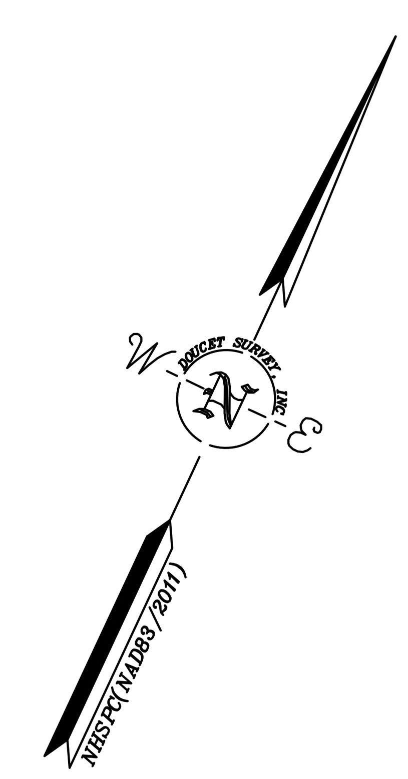

SCALE: 1 INCH = 30 FT.

TOPOGRAPHIC PLAN
FOR
PORTSMOUTH LAND ACQUISITIONS, LLC
OF
TAX MAP 163, LOTS 33 & 34
TAX MAP 165, LOT 2
TAX MAP 172, LOT 1
TAX MAP 173, LOT 2
CATE STREET & US ROUTE 1 BYPASS
PORTSMOUTH, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY
1	10/10/18	ADDITIONAL SURVEY AREA	MWF

DRAWN BY: M.T.L.	DATE: DECEMBER 2016
CHECKED BY: M.W.F.	DRAWING NO.: 5517A
JOB NO.: 5517	SHEET 3 OF 5

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FILE NAME: Y:\PROJECTS\5517 C3D (DEE 4136)\DWG\5517A C3D.dwg LAYOUT NAME: TOPO (3) PLOTTED: Wednesday, October 10, 2018 - 2:12pm

30 0 30 60

SCALE: 1 INCH = 30 FT.

TOPOGRAPHIC PLAN
FOR
PORTSMOUTH LAND ACQUISITIONS, LLC
OF
TAX MAP 163, LOTs 33 & 34
TAX MAP 165, LOT 2
TAX MAP 172, LOT 1
TAX MAP 173, LOT 2
CATE STREET & US ROUTE 1 BYPASS
PORTSMOUTH, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY
1	10/10/18	ADDITIONAL SURVEY AREA	MWF

DRAWN BY: M.T.L.	DATE: DECEMBER 2016
CHECKED BY: M.W.F.	DRAWING NO.: 5517A
JOB NO.: 5517	SHEET 4 OF 5

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TOPOGRAPHIC PLAN
FOR
PORTSMOUTH LAND ACQUISITIONS, LLC
OF
TAX MAP 163, LOTS 33 & 34
TAX MAP 165, LOT 2
TAX MAP 172, LOT 1
TAX MAP 173, LOT 2
CATE STREET & US ROUTE 1 BYPASS
PORTSMOUTH, NEW HAMPSHIRE

30 0 30 60
SCALE: 1 INCH = 30 FT.

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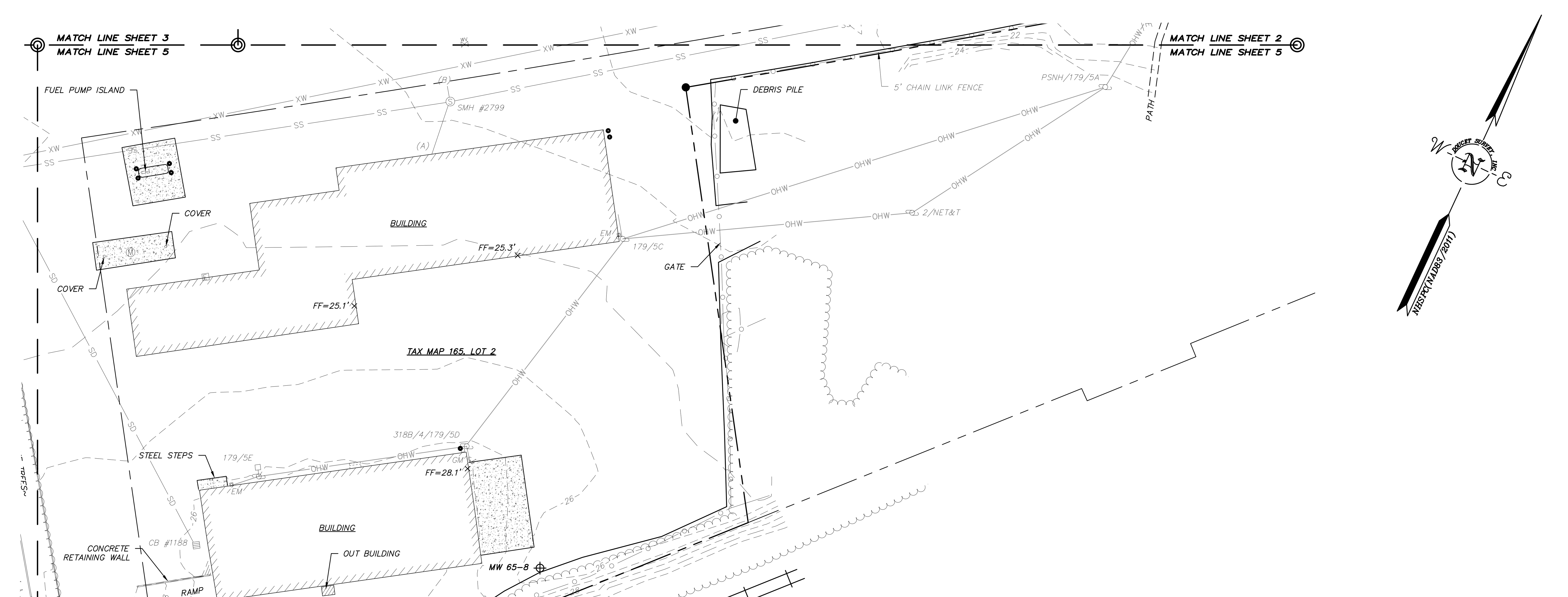
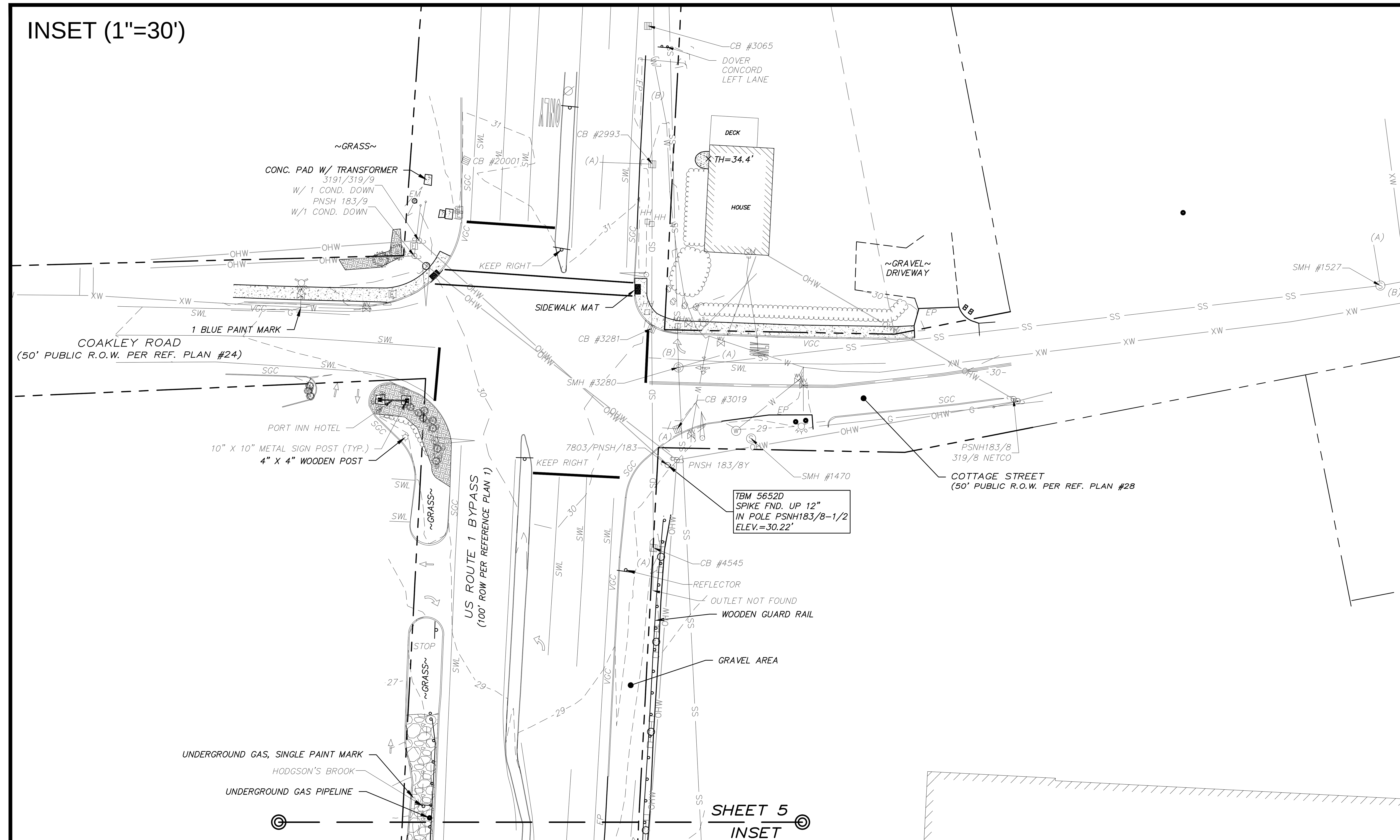
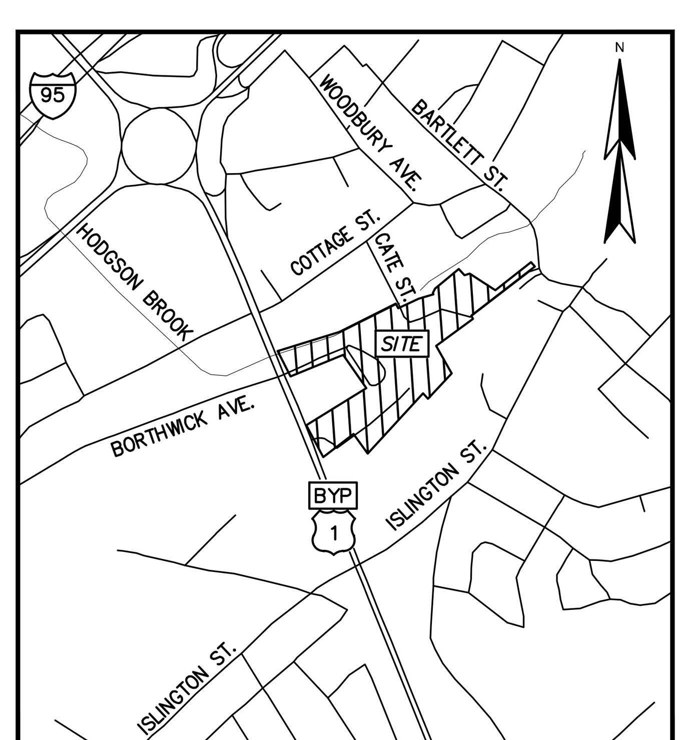
NO.	DATE	DESCRIPTION	BY
1	10/10/18	ADDITIONAL SURVEY AREA	MWF

DRAWN BY:	M.T.L.	DATE:	DECEMBER 2016
CHECKED BY:	M.W.F.	DRAWING NO.:	5517A
JOB NO.:	5517	SHEET	5 OF 5







LOCATION MAP (n.t.s.)

FILE NAME: Y:\PROJECTS\5517 C3D (SEE 4136)\DWG\5517A C3D.dwg LAYOUT NAME: TOPO (5) PLOTTED: Wednesday, October 10, 2018 - 2:14pm

New Hampshire Natural Heritage Bureau

To: James Andretta
14 High Street
Wiscasset, ME 04578

Date: 4/13/2018

From: NH Natural Heritage Bureau

Re: Review by NH Natural Heritage Bureau of request dated 4/13/2018

NHB File ID: NHB18-1167

Applicant: Rick Lundborn

Location: Tax Map(s)/Lot(s): 172 Lot 1, 165 Lot 2, 163 Lot 34, 163 Lot 33, 173 Lot 2
Portsmouth

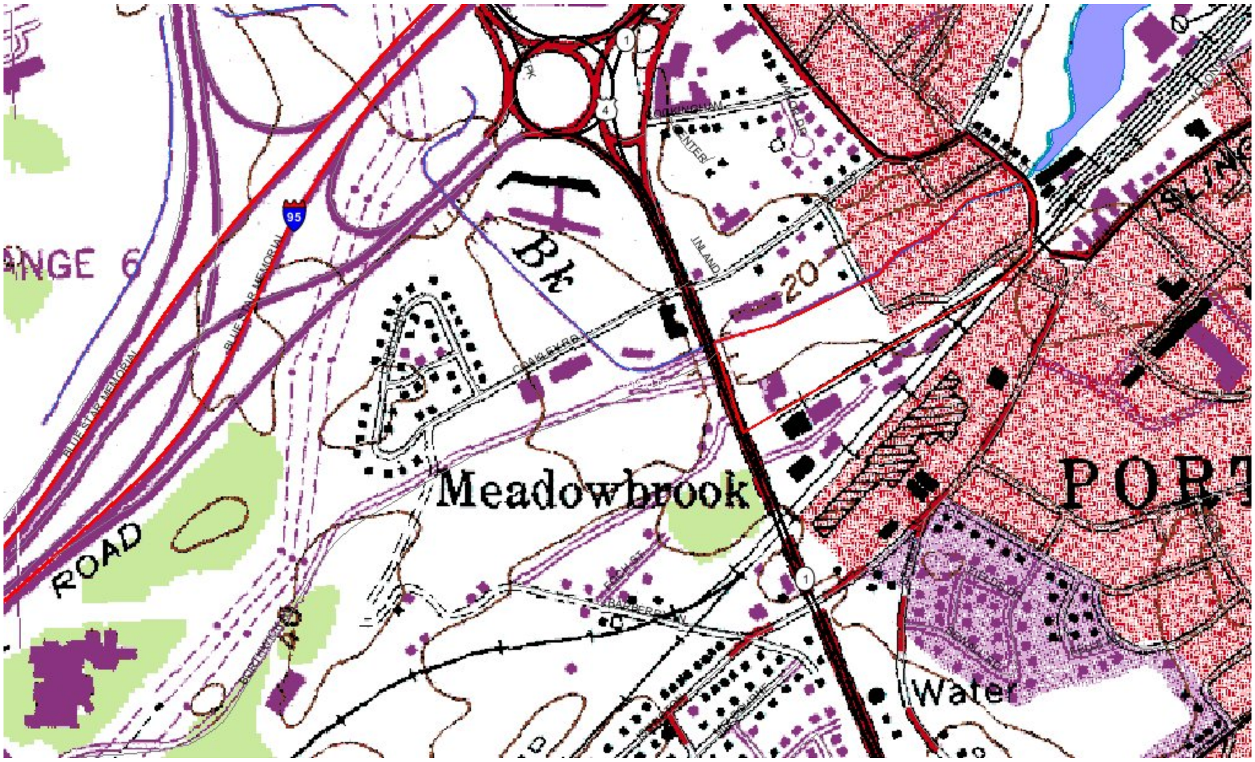
Project Description: Cate Street Development

The NH Natural Heritage database has been checked for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government. We currently have no recorded occurrences for sensitive species near this project area.

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

This report is valid through 4/12/2019.

MAP OF PROJECT BOUNDARIES FOR NHB FILE ID: NHB18-1167



United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for

Rockingham County, New Hampshire

April 16, 2018

Preface

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

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

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

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

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

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

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How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

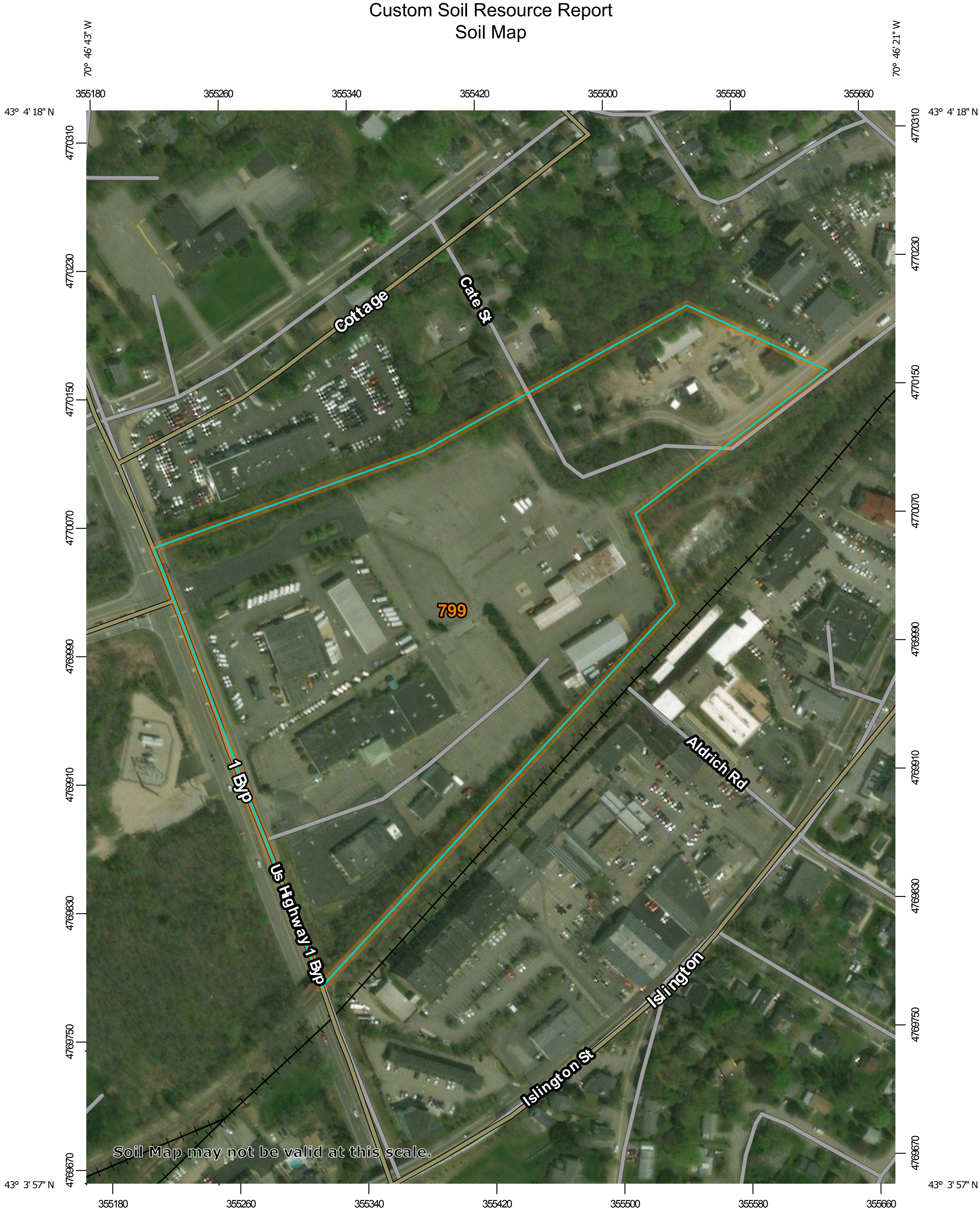
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree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

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

Soil Map

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

Soil Map



Map Scale: 1:3,260 if printed on A portrait (8.5" x 11") sheet.

Meters: 0 45 90 180 270

Feet: 0 150 300 600 900

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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: Rockingham County, New Hampshire
Survey Area Data: Version 19, Sep 11, 2017

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 12, 2016

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
799	Urban land-Canton complex, 3 to 15 percent slopes	18.4	100.0%
Totals for Area of Interest		**18.4**	**100.0%**

Map Unit Descriptions

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

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

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

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

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

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

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

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

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

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

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

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

Rockingham County, New Hampshire

799—Urban land-Canton complex, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9cq0
Elevation: 0 to 1,000 feet
Mean annual precipitation: 42 to 46 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 120 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 55 percent
Canton and similar soils: 20 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Parent material: Till

Typical profile

H1 - 0 to 5 inches: gravelly fine sandy loam
H2 - 5 to 21 inches: gravelly fine sandy loam
H3 - 21 to 60 inches: loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Udorthents

Percent of map unit: 5 percent
Hydric soil rating: No

Boxford and eldridge

Percent of map unit: 4 percent
Hydric soil rating: No

Squamscott and scitico

Percent of map unit: 4 percent
Landform: Marine terraces
Hydric soil rating: Yes

Chatfield

Percent of map unit: 4 percent
Hydric soil rating: No

Scituate and newfields

Percent of map unit: 4 percent
Hydric soil rating: No

Walpole

Percent of map unit: 4 percent
Landform: Depressions
Hydric soil rating: Yes

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

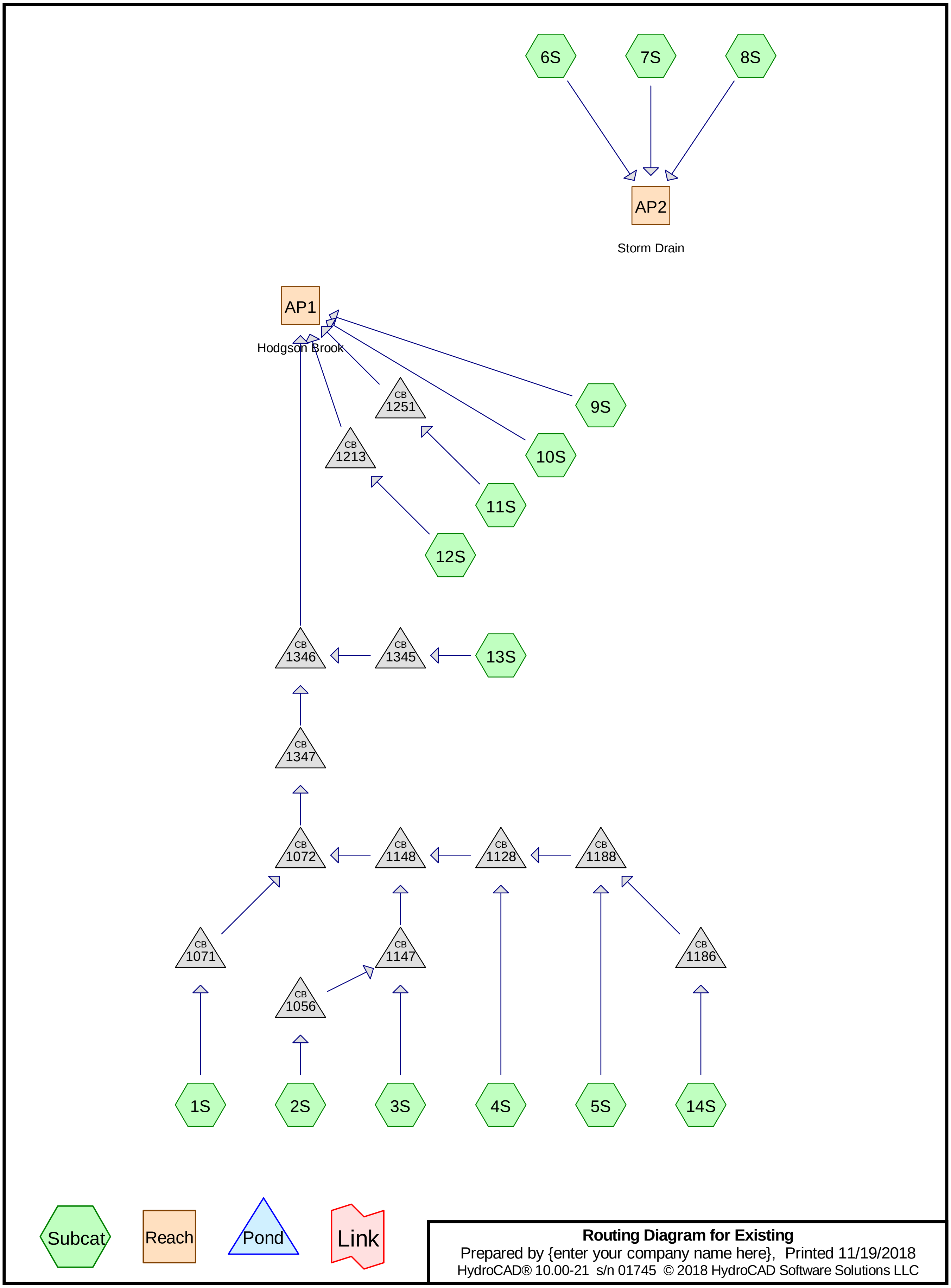
United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf



Routing Diagram for Existing
Prepared by {enter your company name here}, Printed 11/19/2018
HydroCAD® 10.00-21 s/n 01745 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
64,149	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 10S, 11S, 12S, 13S)
54,989	96	Gravel surface, HSG C (8S, 9S)
321,117	98	Paved parking, HSG C (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 10S, 11S, 12S, 13S, 14S)
61,523	98	Roofs, HSG C (1S, 2S, 3S, 5S, 6S, 7S, 8S, 9S, 14S)
70,288	70	Woods, Good, HSG C (10S, 14S)
9,551	72	Woods/grass comb., Good, HSG C (9S)
581,617	**91**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
581,617	HSG C	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S
0	HSG D	
0	Other	
581,617		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Subcat Numbe
0	0	64,149	0	0	64,149	>75% Grass cover, Good	
0	0	54,989	0	0	54,989	Gravel surface	
0	0	321,117	0	0	321,117	Paved parking	
0	0	61,523	0	0	61,523	Roofs	
0	0	70,288	0	0	70,288	Woods, Good	
0	0	9,551	0	0	9,551	Woods/grass comb., Good	
0	**0**	**581,617**	**0**	**0**	**581,617**	**TOTAL AREA**	

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	1056	18.30	17.70	128.5	0.0047	0.025	12.0	0.0	0.0
2	1071	17.50	17.30	31.0	0.0065	0.025	12.0	0.0	0.0
3	1072	17.10	15.90	31.0	0.0387	0.025	15.0	0.0	0.0
4	1128	22.90	14.70	860.0	0.0095	0.025	12.0	0.0	0.0
5	1147	18.30	18.20	36.0	0.0028	0.025	12.0	0.0	0.0
6	1148	18.20	17.50	311.5	0.0022	0.025	12.0	0.0	0.0
7	1186	22.30	21.00	161.5	0.0080	0.025	12.0	0.0	0.0
8	1188	20.00	18.90	191.0	0.0058	0.025	12.0	0.0	0.0
9	1213	17.60	14.60	150.0	0.0200	0.025	12.0	0.0	0.0
10	1251	16.50	14.70	82.0	0.0220	0.025	18.0	0.0	0.0
11	1345	19.10	17.40	915.0	0.0019	0.025	12.0	0.0	0.0
12	1346	15.70	14.70	143.0	0.0070	0.025	15.0	0.0	0.0
13	1347	15.90	15.80	204.0	0.0005	0.025	15.0	0.0	0.0

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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: Runoff Area=62,627 sf 94.71% Impervious Runoff Depth=2.87"
Flow Length=505' Tc=8.9 min CN=97 Runoff=4.01 cfs 14,960 cf

Subcatchment 2S: Runoff Area=36,667 sf 98.09% Impervious Runoff Depth=2.98"
Flow Length=369' Tc=10.9 min CN=98 Runoff=2.24 cfs 9,098 cf

Subcatchment 3S: Runoff Area=17,703 sf 90.15% Impervious Runoff Depth=2.76"
Tc=6.0 min CN=96 Runoff=1.22 cfs 4,070 cf

Subcatchment 4S: Runoff Area=38,050 sf 94.05% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=97 Runoff=2.68 cfs 9,089 cf

Subcatchment 5S: Runoff Area=41,493 sf 97.25% Impervious Runoff Depth=2.87"
Tc=0.0 min CN=97 Runoff=3.57 cfs 9,912 cf

Subcatchment 6S: Runoff Area=30,372 sf 95.75% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=97 Runoff=2.14 cfs 7,255 cf

Subcatchment 7S: Runoff Area=104,777 sf 71.77% Impervious Runoff Depth=2.27"
Tc=6.0 min CN=91 Runoff=6.29 cfs 19,800 cf

Subcatchment 8S: Runoff Area=72,636 sf 23.00% Impervious Runoff Depth=2.65"
Flow Length=621' Tc=8.9 min CN=95 Runoff=4.45 cfs 16,069 cf

Subcatchment 9S: Runoff Area=17,777 sf 29.63% Impervious Runoff Depth=1.69"
Tc=6.0 min CN=84 Runoff=0.81 cfs 2,505 cf

Subcatchment 10S: Runoff Area=111,766 sf 29.49% Impervious Runoff Depth=1.34"
Tc=6.0 min CN=79 Runoff=3.99 cfs 12,520 cf

Subcatchment 11S: Runoff Area=28,185 sf 92.95% Impervious Runoff Depth=2.76"
Tc=6.0 min CN=96 Runoff=1.95 cfs 6,480 cf

Subcatchment 12S: Runoff Area=9,491 sf 21.46% Impervious Runoff Depth=1.34"
Tc=6.0 min CN=79 Runoff=0.34 cfs 1,063 cf

Subcatchment 13S: Runoff Area=6,133 sf 67.28% Impervious Runoff Depth=2.18"
Tc=6.0 min CN=90 Runoff=0.36 cfs 1,113 cf

Subcatchment 14S: Runoff Area=3,940 sf 93.60% Impervious Runoff Depth=2.76"
Tc=6.0 min CN=96 Runoff=0.27 cfs 906 cf

Reach AP1: Hodgson Brook Inflow=19.05 cfs 71,714 cf
Outflow=19.05 cfs 71,714 cf

Reach AP2: Storm Drain Inflow=12.66 cfs 43,124 cf
Outflow=12.66 cfs 43,124 cf

Pond 1056: Peak Elev=127.98' Inflow=2.24 cfs 9,098 cf
12.0" Round Culvert n=0.025 L=128.5' S=0.0047 '/' Outflow=2.24 cfs 9,098 cf

Pond 1071: Peak Elev=70.47' Inflow=4.01 cfs 14,960 cf
12.0" Round Culvert n=0.025 L=31.0' S=0.0065 '/' Outflow=4.01 cfs 14,960 cf

Pond 1072: Peak Elev=68.43' Inflow=11.62 cfs 48,033 cf
15.0" Round Culvert n=0.025 L=31.0' S=0.0387 '/' Outflow=11.62 cfs 48,033 cf

Pond 1128: Peak Elev=184.27' Inflow=5.44 cfs 19,905 cf
12.0" Round Culvert n=0.025 L=860.0' S=0.0095 '/' Outflow=5.44 cfs 19,905 cf

Pond 1147: Peak Elev=126.13' Inflow=3.30 cfs 13,168 cf
12.0" Round Culvert n=0.025 L=36.0' S=0.0028 '/' Outflow=3.30 cfs 13,168 cf

Pond 1148: Peak Elev=124.63' Inflow=8.00 cfs 33,073 cf
12.0" Round Culvert n=0.025 L=311.5' S=0.0022 '/' Outflow=8.00 cfs 33,073 cf

Pond 1186: Peak Elev=187.05' Inflow=0.27 cfs 906 cf
12.0" Round Culvert n=0.025 L=161.5' S=0.0080 '/' Outflow=0.29 cfs 904 cf

Pond 1188: Peak Elev=187.02' Inflow=3.72 cfs 10,815 cf
12.0" Round Culvert n=0.025 L=191.0' S=0.0058 '/' Outflow=3.71 cfs 10,815 cf

Pond 1213: Peak Elev=17.92' Inflow=0.34 cfs 1,063 cf
12.0" Round Culvert n=0.025 L=150.0' S=0.0200 '/' Outflow=0.34 cfs 1,063 cf

Pond 1251: Peak Elev=17.18' Inflow=1.95 cfs 6,480 cf
18.0" Round Culvert n=0.025 L=82.0' S=0.0220 '/' Outflow=1.95 cfs 6,480 cf

Pond 1345: Peak Elev=36.73' Inflow=0.36 cfs 1,113 cf
12.0" Round Culvert n=0.025 L=915.0' S=0.0019 '/' Outflow=0.36 cfs 1,113 cf

Pond 1346: Peak Elev=36.40' Inflow=11.97 cfs 49,146 cf
15.0" Round Culvert n=0.025 L=143.0' S=0.0070 '/' Outflow=11.97 cfs 49,146 cf

Pond 1347: Peak Elev=62.74' Inflow=11.62 cfs 48,033 cf
15.0" Round Culvert n=0.025 L=204.0' S=0.0005 '/' Outflow=11.62 cfs 48,033 cf

Total Runoff Area = 581,617 sf Runoff Volume = 114,840 cf Average Runoff Depth = 2.37"
34.21% Pervious = 198,977 sf 65.79% Impervious = 382,640 sf

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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: Runoff Area=62,627 sf 94.71% Impervious Runoff Depth=5.81"
Flow Length=505' Tc=8.9 min CN=97 Runoff=7.86 cfs 30,342 cf

Subcatchment 2S: Runoff Area=36,667 sf 98.09% Impervious Runoff Depth=5.93"
Flow Length=369' Tc=10.9 min CN=98 Runoff=4.35 cfs 18,125 cf

Subcatchment 3S: Runoff Area=17,703 sf 90.15% Impervious Runoff Depth=5.70"
Tc=6.0 min CN=96 Runoff=2.43 cfs 8,404 cf

Subcatchment 4S: Runoff Area=38,050 sf 94.05% Impervious Runoff Depth=5.81"
Tc=6.0 min CN=97 Runoff=5.26 cfs 18,434 cf

Subcatchment 5S: Runoff Area=41,493 sf 97.25% Impervious Runoff Depth=5.81"
Tc=0.0 min CN=97 Runoff=6.99 cfs 20,103 cf

Subcatchment 6S: Runoff Area=30,372 sf 95.75% Impervious Runoff Depth=5.81"
Tc=6.0 min CN=97 Runoff=4.20 cfs 14,715 cf

Subcatchment 7S: Runoff Area=104,777 sf 71.77% Impervious Runoff Depth=5.12"
Tc=6.0 min CN=91 Runoff=13.64 cfs 44,737 cf

Subcatchment 8S: Runoff Area=72,636 sf 23.00% Impervious Runoff Depth=5.58"
Flow Length=621' Tc=8.9 min CN=95 Runoff=8.98 cfs 33,778 cf

Subcatchment 9S: Runoff Area=17,777 sf 29.63% Impervious Runoff Depth=4.36"
Tc=6.0 min CN=84 Runoff=2.05 cfs 6,453 cf

Subcatchment 10S: Runoff Area=111,766 sf 29.49% Impervious Runoff Depth=3.83"
Tc=6.0 min CN=79 Runoff=11.49 cfs 35,689 cf

Subcatchment 11S: Runoff Area=28,185 sf 92.95% Impervious Runoff Depth=5.70"
Tc=6.0 min CN=96 Runoff=3.87 cfs 13,380 cf

Subcatchment 12S: Runoff Area=9,491 sf 21.46% Impervious Runoff Depth=3.83"
Tc=6.0 min CN=79 Runoff=0.98 cfs 3,031 cf

Subcatchment 13S: Runoff Area=6,133 sf 67.28% Impervious Runoff Depth=5.01"
Tc=6.0 min CN=90 Runoff=0.79 cfs 2,561 cf

Subcatchment 14S: Runoff Area=3,940 sf 93.60% Impervious Runoff Depth=5.70"
Tc=6.0 min CN=96 Runoff=0.54 cfs 1,870 cf

Reach AP1: Hodgson Brook Inflow=41.92 cfs 158,390 cf
Outflow=41.92 cfs 158,390 cf

Reach AP2: Storm Drain Inflow=26.37 cfs 93,230 cf
Outflow=26.37 cfs 93,230 cf

Pond 1056: Peak Elev=446.32' Inflow=4.35 cfs 18,125 cf
12.0" Round Culvert n=0.025 L=128.5' S=0.0047 '/' Outflow=4.35 cfs 18,125 cf

Pond 1071: Peak Elev=226.24' Inflow=7.86 cfs 30,342 cf
12.0" Round Culvert n=0.025 L=31.0' S=0.0065 '/' Outflow=7.86 cfs 30,342 cf

Pond 1072: Peak Elev=218.38' Inflow=22.75 cfs 97,276 cf
15.0" Round Culvert n=0.025 L=31.0' S=0.0387 '/' Outflow=22.75 cfs 97,276 cf

Pond 1128: Peak Elev=663.73' Inflow=10.65 cfs 40,405 cf
12.0" Round Culvert n=0.025 L=860.0' S=0.0095 '/' Outflow=10.65 cfs 40,405 cf

Pond 1147: Peak Elev=439.45' Inflow=6.46 cfs 26,529 cf
12.0" Round Culvert n=0.025 L=36.0' S=0.0028 '/' Outflow=6.46 cfs 26,529 cf

Pond 1148: Peak Elev=433.56' Inflow=15.66 cfs 66,934 cf
12.0" Round Culvert n=0.025 L=311.5' S=0.0022 '/' Outflow=15.66 cfs 66,934 cf

Pond 1186: Peak Elev=676.10' Inflow=0.54 cfs 1,870 cf
12.0" Round Culvert n=0.025 L=161.5' S=0.0080 '/' Outflow=0.55 cfs 1,868 cf

Pond 1188: Peak Elev=675.96' Inflow=7.33 cfs 21,971 cf
12.0" Round Culvert n=0.025 L=191.0' S=0.0058 '/' Outflow=7.33 cfs 21,971 cf

Pond 1213: Peak Elev=18.17' Inflow=0.98 cfs 3,031 cf
12.0" Round Culvert n=0.025 L=150.0' S=0.0200 '/' Outflow=0.98 cfs 3,031 cf

Pond 1251: Peak Elev=17.51' Inflow=3.87 cfs 13,380 cf
18.0" Round Culvert n=0.025 L=82.0' S=0.0220 '/' Outflow=3.87 cfs 13,380 cf

Pond 1345: Peak Elev=96.61' Inflow=0.79 cfs 2,561 cf
12.0" Round Culvert n=0.025 L=915.0' S=0.0019 '/' Outflow=0.79 cfs 2,561 cf

Pond 1346: Peak Elev=94.97' Inflow=23.54 cfs 99,837 cf
15.0" Round Culvert n=0.025 L=143.0' S=0.0070 '/' Outflow=23.54 cfs 99,837 cf

Pond 1347: Peak Elev=196.46' Inflow=22.75 cfs 97,276 cf
15.0" Round Culvert n=0.025 L=204.0' S=0.0005 '/' Outflow=22.75 cfs 97,276 cf

Total Runoff Area = 581,617 sf Runoff Volume = 251,622 cf Average Runoff Depth = 5.19"
34.21% Pervious = 198,977 sf 65.79% Impervious = 382,640 sf

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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: Runoff Area=62,627 sf 94.71% Impervious Runoff Depth=7.03"
Flow Length=505' Tc=8.9 min CN=97 Runoff=9.44 cfs 36,696 cf

Subcatchment 2S: Runoff Area=36,667 sf 98.09% Impervious Runoff Depth=7.15"
Flow Length=369' Tc=10.9 min CN=98 Runoff=5.22 cfs 21,849 cf

Subcatchment 3S: Runoff Area=17,703 sf 90.15% Impervious Runoff Depth=6.91"
Tc=6.0 min CN=96 Runoff=2.92 cfs 10,198 cf

Subcatchment 4S: Runoff Area=38,050 sf 94.05% Impervious Runoff Depth=7.03"
Tc=6.0 min CN=97 Runoff=6.31 cfs 22,295 cf

Subcatchment 5S: Runoff Area=41,493 sf 97.25% Impervious Runoff Depth=7.03"
Tc=0.0 min CN=97 Runoff=8.40 cfs 24,313 cf

Subcatchment 6S: Runoff Area=30,372 sf 95.75% Impervious Runoff Depth=7.03"
Tc=6.0 min CN=97 Runoff=5.04 cfs 17,796 cf

Subcatchment 7S: Runoff Area=104,777 sf 71.77% Impervious Runoff Depth=6.32"
Tc=6.0 min CN=91 Runoff=16.63 cfs 55,207 cf

Subcatchment 8S: Runoff Area=72,636 sf 23.00% Impervious Runoff Depth=6.79"
Flow Length=621' Tc=8.9 min CN=95 Runoff=10.83 cfs 41,123 cf

Subcatchment 9S: Runoff Area=17,777 sf 29.63% Impervious Runoff Depth=5.51"
Tc=6.0 min CN=84 Runoff=2.57 cfs 8,165 cf

Subcatchment 10S: Runoff Area=111,766 sf 29.49% Impervious Runoff Depth=4.94"
Tc=6.0 min CN=79 Runoff=14.73 cfs 46,035 cf

Subcatchment 11S: Runoff Area=28,185 sf 92.95% Impervious Runoff Depth=6.91"
Tc=6.0 min CN=96 Runoff=4.65 cfs 16,236 cf

Subcatchment 12S: Runoff Area=9,491 sf 21.46% Impervious Runoff Depth=4.94"
Tc=6.0 min CN=79 Runoff=1.25 cfs 3,909 cf

Subcatchment 13S: Runoff Area=6,133 sf 67.28% Impervious Runoff Depth=6.21"
Tc=6.0 min CN=90 Runoff=0.96 cfs 3,172 cf

Subcatchment 14S: Runoff Area=3,940 sf 93.60% Impervious Runoff Depth=6.91"
Tc=6.0 min CN=96 Runoff=0.65 cfs 2,270 cf

Reach AP1: Hodgson Brook Inflow=51.47 cfs 195,136 cf
Outflow=51.47 cfs 195,136 cf

Reach AP2: Storm Drain Inflow=31.95 cfs 114,126 cf
Outflow=31.95 cfs 114,126 cf

Pond 1056: Peak Elev=636.81' Inflow=5.22 cfs 21,849 cf
12.0" Round Culvert n=0.025 L=128.5' S=0.0047 '/' Outflow=5.22 cfs 21,849 cf

Pond 1071: Peak Elev=319.31' Inflow=9.44 cfs 36,696 cf
12.0" Round Culvert n=0.025 L=31.0' S=0.0065 '/' Outflow=9.44 cfs 36,696 cf

Pond 1072: Peak Elev=307.98' Inflow=27.32 cfs 117,620 cf
15.0" Round Culvert n=0.025 L=31.0' S=0.0387 '/' Outflow=27.32 cfs 117,620 cf

Pond 1128: Peak Elev=950.71' Inflow=12.88 cfs 48,877 cf
12.0" Round Culvert n=0.025 L=860.0' S=0.0095 '/' Outflow=12.88 cfs 48,877 cf

Pond 1147: Peak Elev=627.03' Inflow=7.75 cfs 32,047 cf
12.0" Round Culvert n=0.025 L=36.0' S=0.0028 '/' Outflow=7.75 cfs 32,047 cf

Pond 1148: Peak Elev=618.84' Inflow=18.81 cfs 80,924 cf
12.0" Round Culvert n=0.025 L=311.5' S=0.0022 '/' Outflow=18.81 cfs 80,924 cf

Pond 1186: Peak Elev=968.59' Inflow=0.65 cfs 2,270 cf
12.0" Round Culvert n=0.025 L=161.5' S=0.0080 '/' Outflow=0.66 cfs 2,269 cf

Pond 1188: Peak Elev=968.37' Inflow=8.82 cfs 26,582 cf
12.0" Round Culvert n=0.025 L=191.0' S=0.0058 '/' Outflow=8.82 cfs 26,582 cf

Pond 1213: Peak Elev=18.25' Inflow=1.25 cfs 3,909 cf
12.0" Round Culvert n=0.025 L=150.0' S=0.0200 '/' Outflow=1.25 cfs 3,909 cf

Pond 1251: Peak Elev=17.63' Inflow=4.65 cfs 16,236 cf
18.0" Round Culvert n=0.025 L=82.0' S=0.0220 '/' Outflow=4.65 cfs 16,236 cf

Pond 1345: Peak Elev=132.53' Inflow=0.96 cfs 3,172 cf
12.0" Round Culvert n=0.025 L=915.0' S=0.0019 '/' Outflow=0.96 cfs 3,172 cf

Pond 1346: Peak Elev=130.05' Inflow=28.29 cfs 120,792 cf
15.0" Round Culvert n=0.025 L=143.0' S=0.0070 '/' Outflow=28.29 cfs 120,792 cf

Pond 1347: Peak Elev=276.33' Inflow=27.32 cfs 117,620 cf
15.0" Round Culvert n=0.025 L=204.0' S=0.0005 '/' Outflow=27.32 cfs 117,620 cf

Total Runoff Area = 581,617 sf Runoff Volume = 309,263 cf Average Runoff Depth = 6.38"
34.21% Pervious = 198,977 sf 65.79% Impervious = 382,640 sf

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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:	Runoff Area=62,627 sf 94.71% Impervious Runoff Depth=8.50" Flow Length=505' Tc=8.9 min CN=97 Runoff=11.34 cfs 44,357 cf
Subcatchment 2S:	Runoff Area=36,667 sf 98.09% Impervious Runoff Depth=8.62" Flow Length=369' Tc=10.9 min CN=98 Runoff=6.26 cfs 26,338 cf
Subcatchment 3S:	Runoff Area=17,703 sf 90.15% Impervious Runoff Depth=8.38" Tc=6.0 min CN=96 Runoff=3.52 cfs 12,361 cf
Subcatchment 4S:	Runoff Area=38,050 sf 94.05% Impervious Runoff Depth=8.50" Tc=6.0 min CN=97 Runoff=7.58 cfs 26,950 cf
Subcatchment 5S:	Runoff Area=41,493 sf 97.25% Impervious Runoff Depth=8.50" Tc=0.0 min CN=97 Runoff=10.09 cfs 29,389 cf
Subcatchment 6S:	Runoff Area=30,372 sf 95.75% Impervious Runoff Depth=8.50" Tc=6.0 min CN=97 Runoff=6.05 cfs 21,512 cf
Subcatchment 7S:	Runoff Area=104,777 sf 71.77% Impervious Runoff Depth=7.77" Tc=6.0 min CN=91 Runoff=20.21 cfs 67,883 cf
Subcatchment 8S:	Runoff Area=72,636 sf 23.00% Impervious Runoff Depth=8.26" Flow Length=621' Tc=8.9 min CN=95 Runoff=13.05 cfs 49,987 cf
Subcatchment 9S:	Runoff Area=17,777 sf 29.63% Impervious Runoff Depth=6.92" Tc=6.0 min CN=84 Runoff=3.19 cfs 10,257 cf
Subcatchment 10S:	Runoff Area=111,766 sf 29.49% Impervious Runoff Depth=6.31" Tc=6.0 min CN=79 Runoff=18.65 cfs 58,801 cf
Subcatchment 11S:	Runoff Area=28,185 sf 92.95% Impervious Runoff Depth=8.38" Tc=6.0 min CN=96 Runoff=5.60 cfs 19,680 cf
Subcatchment 12S:	Runoff Area=9,491 sf 21.46% Impervious Runoff Depth=6.31" Tc=6.0 min CN=79 Runoff=1.58 cfs 4,993 cf
Subcatchment 13S:	Runoff Area=6,133 sf 67.28% Impervious Runoff Depth=7.65" Tc=6.0 min CN=90 Runoff=1.17 cfs 3,911 cf
Subcatchment 14S:	Runoff Area=3,940 sf 93.60% Impervious Runoff Depth=8.38" Tc=6.0 min CN=96 Runoff=0.78 cfs 2,751 cf
Reach AP1: Hodgson Brook	Inflow=62.99 cfs 239,786 cf Outflow=62.99 cfs 239,786 cf
Reach AP2: Storm Drain	Inflow=38.64 cfs 139,382 cf Outflow=38.64 cfs 139,382 cf

Pond 1056: Peak Elev=911.80' Inflow=6.26 cfs 26,338 cf
12.0" Round Culvert n=0.025 L=128.5' S=0.0047 '/' Outflow=6.26 cfs 26,338 cf

Pond 1071: Peak Elev=453.79' Inflow=11.34 cfs 44,357 cf
12.0" Round Culvert n=0.025 L=31.0' S=0.0065 '/' Outflow=11.34 cfs 44,358 cf

Pond 1072: Peak Elev=437.44' Inflow=32.82 cfs 142,143 cf
15.0" Round Culvert n=0.025 L=31.0' S=0.0387 '/' Outflow=32.82 cfs 142,143 cf

Pond 1128: Peak Elev=1,364.84' Inflow=15.47 cfs 59,086 cf
12.0" Round Culvert n=0.025 L=860.0' S=0.0095 '/' Outflow=15.47 cfs 59,086 cf

Pond 1147: Peak Elev=897.72' Inflow=9.31 cfs 38,699 cf
12.0" Round Culvert n=0.025 L=36.0' S=0.0028 '/' Outflow=9.31 cfs 38,699 cf

Pond 1148: Peak Elev=885.91' Inflow=22.59 cfs 97,786 cf
12.0" Round Culvert n=0.025 L=311.5' S=0.0022 '/' Outflow=22.59 cfs 97,786 cf

Pond 1186: Peak Elev=1,390.65' Inflow=0.78 cfs 2,751 cf
12.0" Round Culvert n=0.025 L=161.5' S=0.0080 '/' Outflow=0.79 cfs 2,748 cf

Pond 1188: Peak Elev=1,390.33' Inflow=10.59 cfs 32,136 cf
12.0" Round Culvert n=0.025 L=191.0' S=0.0058 '/' Outflow=10.60 cfs 32,136 cf

Pond 1213: Peak Elev=18.36' Inflow=1.58 cfs 4,993 cf
12.0" Round Culvert n=0.025 L=150.0' S=0.0200 '/' Outflow=1.58 cfs 4,993 cf

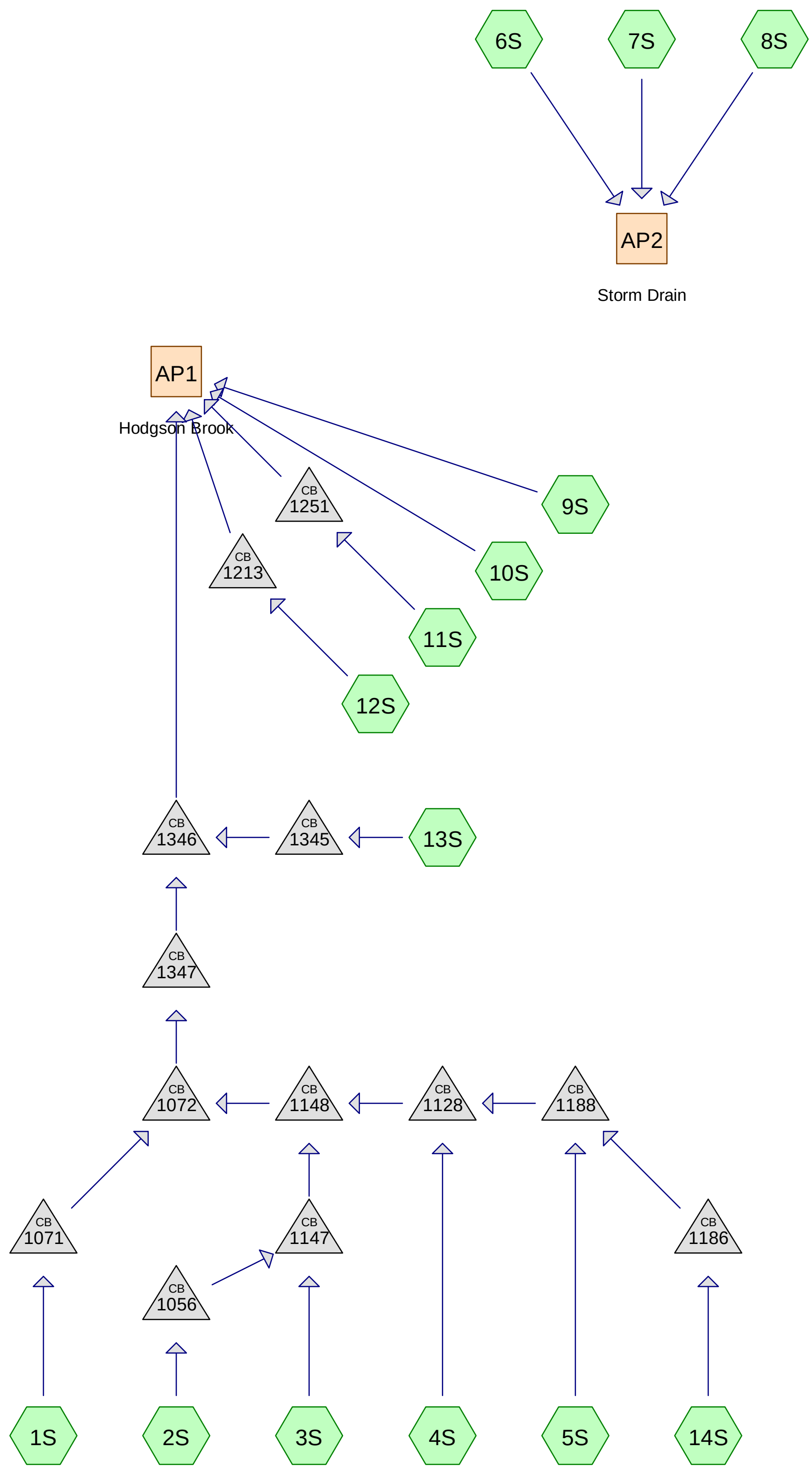
Pond 1251: Peak Elev=17.77' Inflow=5.60 cfs 19,680 cf
18.0" Round Culvert n=0.025 L=82.0' S=0.0220 '/' Outflow=5.60 cfs 19,680 cf

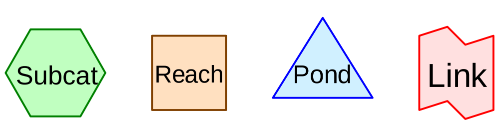
Pond 1345: Peak Elev=184.40' Inflow=1.17 cfs 3,911 cf
12.0" Round Culvert n=0.025 L=915.0' S=0.0019 '/' Outflow=1.17 cfs 3,911 cf

Pond 1346: Peak Elev=180.73' Inflow=33.99 cfs 146,055 cf
15.0" Round Culvert n=0.025 L=143.0' S=0.0070 '/' Outflow=33.99 cfs 146,055 cf

Pond 1347: Peak Elev=391.78' Inflow=32.82 cfs 142,143 cf
15.0" Round Culvert n=0.025 L=204.0' S=0.0005 '/' Outflow=32.82 cfs 142,143 cf

Total Runoff Area = 581,617 sf Runoff Volume = 379,171 cf Average Runoff Depth = 7.82"
34.21% Pervious = 198,977 sf 65.79% Impervious = 382,640 sf





Routing Diagram for Existing
Prepared by {enter your company name here}, Printed 11/19/2018
HydroCAD® 10.00-21 s/n 01745 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
64,149	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 10S, 11S, 12S, 13S)
54,989	96	Gravel surface, HSG C (8S, 9S)
321,117	98	Paved parking, HSG C (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 10S, 11S, 12S, 13S, 14S)
61,523	98	Roofs, HSG C (1S, 2S, 3S, 5S, 6S, 7S, 8S, 9S, 14S)
70,288	70	Woods, Good, HSG C (10S, 14S)
9,551	72	Woods/grass comb., Good, HSG C (9S)
581,617	**91**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
581,617	HSG C	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S
0	HSG D	
0	Other	
581,617		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Subcat Numbe
0	0	64,149	0	0	64,149	>75% Grass cover, Good	
0	0	54,989	0	0	54,989	Gravel surface	
0	0	321,117	0	0	321,117	Paved parking	
0	0	61,523	0	0	61,523	Roofs	
0	0	70,288	0	0	70,288	Woods, Good	
0	0	9,551	0	0	9,551	Woods/grass comb., Good	
0	**0**	**581,617**	**0**	**0**	**581,617**	**TOTAL AREA**	

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	1056	18.30	17.70	128.5	0.0047	0.025	12.0	0.0	0.0
2	1071	17.50	17.30	31.0	0.0065	0.025	12.0	0.0	0.0
3	1072	17.10	15.90	31.0	0.0387	0.025	15.0	0.0	0.0
4	1128	22.90	14.70	860.0	0.0095	0.025	12.0	0.0	0.0
5	1147	18.30	18.20	36.0	0.0028	0.025	12.0	0.0	0.0
6	1148	18.20	17.50	311.5	0.0022	0.025	12.0	0.0	0.0
7	1186	22.30	21.00	161.5	0.0080	0.025	12.0	0.0	0.0
8	1188	20.00	18.90	191.0	0.0058	0.025	12.0	0.0	0.0
9	1213	17.60	14.60	150.0	0.0200	0.025	12.0	0.0	0.0
10	1251	16.50	14.70	82.0	0.0220	0.025	18.0	0.0	0.0
11	1345	19.10	17.40	915.0	0.0019	0.025	12.0	0.0	0.0
12	1346	15.70	14.70	143.0	0.0070	0.025	15.0	0.0	0.0
13	1347	15.90	15.80	204.0	0.0005	0.025	15.0	0.0	0.0

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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: Runoff Area=62,627 sf 94.71% Impervious Runoff Depth=4.52"
Flow Length=505' Tc=8.9 min CN=97 Runoff=6.17 cfs 23,577 cf

Subcatchment 2S: Runoff Area=36,667 sf 98.09% Impervious Runoff Depth=4.63"
Flow Length=369' Tc=10.9 min CN=98 Runoff=3.43 cfs 14,158 cf

Subcatchment 3S: Runoff Area=17,703 sf 90.15% Impervious Runoff Depth=4.40"
Tc=6.0 min CN=96 Runoff=1.90 cfs 6,496 cf

Subcatchment 4S: Runoff Area=38,050 sf 94.05% Impervious Runoff Depth=4.52"
Tc=6.0 min CN=97 Runoff=4.13 cfs 14,324 cf

Subcatchment 5S: Runoff Area=41,493 sf 97.25% Impervious Runoff Depth=4.52"
Tc=0.0 min CN=97 Runoff=5.49 cfs 15,621 cf

Subcatchment 6S: Runoff Area=30,372 sf 95.75% Impervious Runoff Depth=4.52"
Tc=6.0 min CN=97 Runoff=3.30 cfs 11,434 cf

Subcatchment 7S: Runoff Area=104,777 sf 71.77% Impervious Runoff Depth=3.86"
Tc=6.0 min CN=91 Runoff=10.43 cfs 33,668 cf

Subcatchment 8S: Runoff Area=72,636 sf 23.00% Impervious Runoff Depth=4.29"
Flow Length=621' Tc=8.9 min CN=95 Runoff=7.00 cfs 25,972 cf

Subcatchment 9S: Runoff Area=17,777 sf 29.63% Impervious Runoff Depth=3.15"
Tc=6.0 min CN=84 Runoff=1.50 cfs 4,669 cf

Subcatchment 10S: Runoff Area=111,766 sf 29.49% Impervious Runoff Depth=2.69"
Tc=6.0 min CN=79 Runoff=8.10 cfs 25,055 cf

Subcatchment 11S: Runoff Area=28,185 sf 92.95% Impervious Runoff Depth=4.40"
Tc=6.0 min CN=96 Runoff=3.03 cfs 10,342 cf

Subcatchment 12S: Runoff Area=9,491 sf 21.46% Impervious Runoff Depth=2.69"
Tc=6.0 min CN=79 Runoff=0.69 cfs 2,128 cf

Subcatchment 13S: Runoff Area=6,133 sf 67.28% Impervious Runoff Depth=3.75"
Tc=6.0 min CN=90 Runoff=0.60 cfs 1,917 cf

Subcatchment 14S: Runoff Area=3,940 sf 93.60% Impervious Runoff Depth=4.40"
Tc=6.0 min CN=96 Runoff=0.42 cfs 1,446 cf

Reach AP1: Hodgson Brook Inflow=31.76 cfs 119,732 cf
Outflow=31.76 cfs 119,732 cf

Reach AP2: Storm Drain Inflow=20.38 cfs 71,074 cf
Outflow=20.38 cfs 71,074 cf

Pond 1056: Peak Elev=281.45' Inflow=3.43 cfs 14,158 cf
12.0" Round Culvert n=0.025 L=128.5' S=0.0047 '/' Outflow=3.43 cfs 14,158 cf

Pond 1071: Peak Elev=145.58' Inflow=6.17 cfs 23,577 cf
12.0" Round Culvert n=0.025 L=31.0' S=0.0065 '/' Outflow=6.17 cfs 23,577 cf

Pond 1072: Peak Elev=140.73' Inflow=17.87 cfs 75,621 cf
15.0" Round Culvert n=0.025 L=31.0' S=0.0387 '/' Outflow=17.87 cfs 75,621 cf

Pond 1128: Peak Elev=415.58' Inflow=8.42 cfs 31,390 cf
12.0" Round Culvert n=0.025 L=860.0' S=0.0095 '/' Outflow=8.42 cfs 31,390 cf

Pond 1147: Peak Elev=277.23' Inflow=5.08 cfs 20,654 cf
12.0" Round Culvert n=0.025 L=36.0' S=0.0028 '/' Outflow=5.08 cfs 20,654 cf

Pond 1148: Peak Elev=273.72' Inflow=12.30 cfs 52,044 cf
12.0" Round Culvert n=0.025 L=311.5' S=0.0022 '/' Outflow=12.30 cfs 52,044 cf

Pond 1186: Peak Elev=423.21' Inflow=0.42 cfs 1,446 cf
12.0" Round Culvert n=0.025 L=161.5' S=0.0080 '/' Outflow=0.43 cfs 1,445 cf

Pond 1188: Peak Elev=423.11' Inflow=5.77 cfs 17,066 cf
12.0" Round Culvert n=0.025 L=191.0' S=0.0058 '/' Outflow=5.77 cfs 17,066 cf

Pond 1213: Peak Elev=18.07' Inflow=0.69 cfs 2,128 cf
12.0" Round Culvert n=0.025 L=150.0' S=0.0200 '/' Outflow=0.69 cfs 2,128 cf

Pond 1251: Peak Elev=17.37' Inflow=3.03 cfs 10,342 cf
18.0" Round Culvert n=0.025 L=82.0' S=0.0220 '/' Outflow=3.03 cfs 10,342 cf

Pond 1345: Peak Elev=65.56' Inflow=0.60 cfs 1,917 cf
12.0" Round Culvert n=0.025 L=915.0' S=0.0019 '/' Outflow=0.60 cfs 1,917 cf

Pond 1346: Peak Elev=64.60' Inflow=18.47 cfs 77,538 cf
15.0" Round Culvert n=0.025 L=143.0' S=0.0070 '/' Outflow=18.47 cfs 77,538 cf

Pond 1347: Peak Elev=127.18' Inflow=17.87 cfs 75,621 cf
15.0" Round Culvert n=0.025 L=204.0' S=0.0005 '/' Outflow=17.87 cfs 75,621 cf

Total Runoff Area = 581,617 sf Runoff Volume = 190,806 cf Average Runoff Depth = 3.94"
34.21% Pervious = 198,977 sf 65.79% Impervious = 382,640 sf

Summary for Subcatchment 1S:

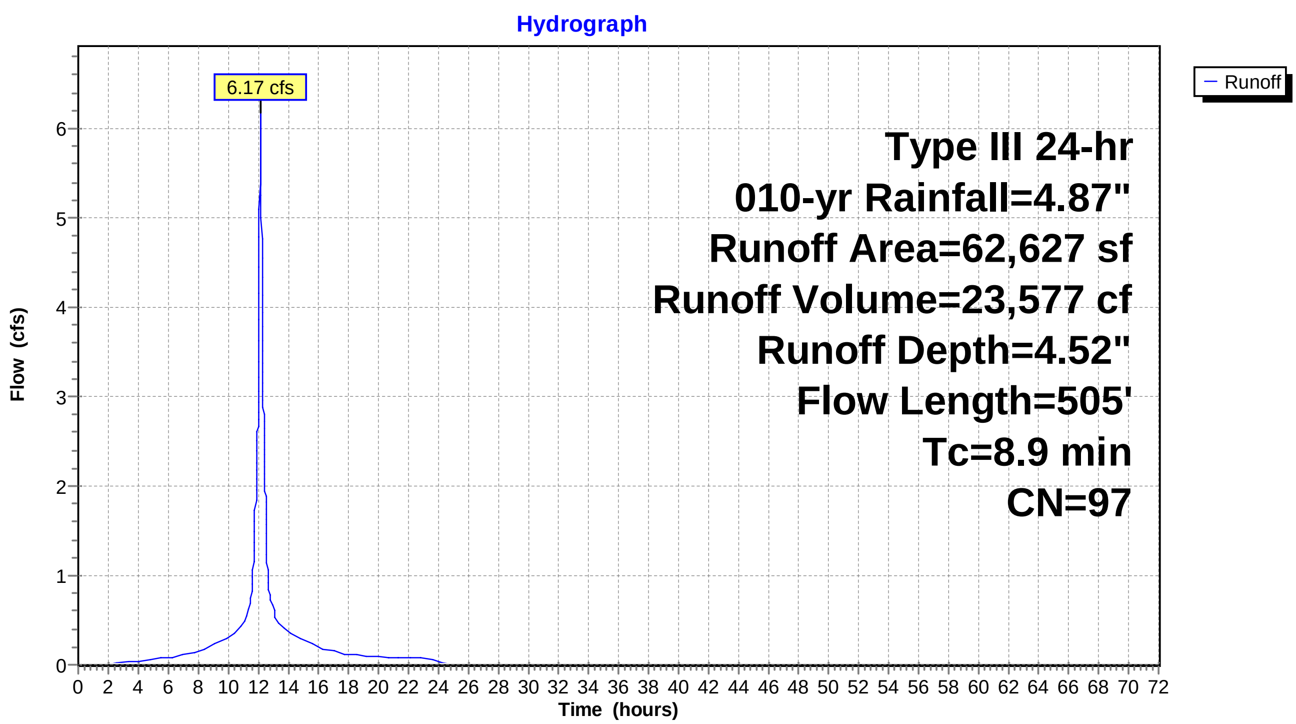
Runoff = 6.17 cfs @ 12.12 hrs, Volume= 23,577 cf, Depth= 4.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 010-yr Rainfall=4.87"

Area (sf)	CN	Description
3,311	74	>75% Grass cover, Good, HSG C
19,506	98	Roofs, HSG C
39,810	98	Paved parking, HSG C
62,627	97	Weighted Average
3,311		5.29% Pervious Area
59,316		94.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	50	0.1600	0.16		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.21"
3.5	455	0.0114	2.17		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
8.9	505	Total			

Subcatchment 1S:



Summary for Subcatchment 2S:

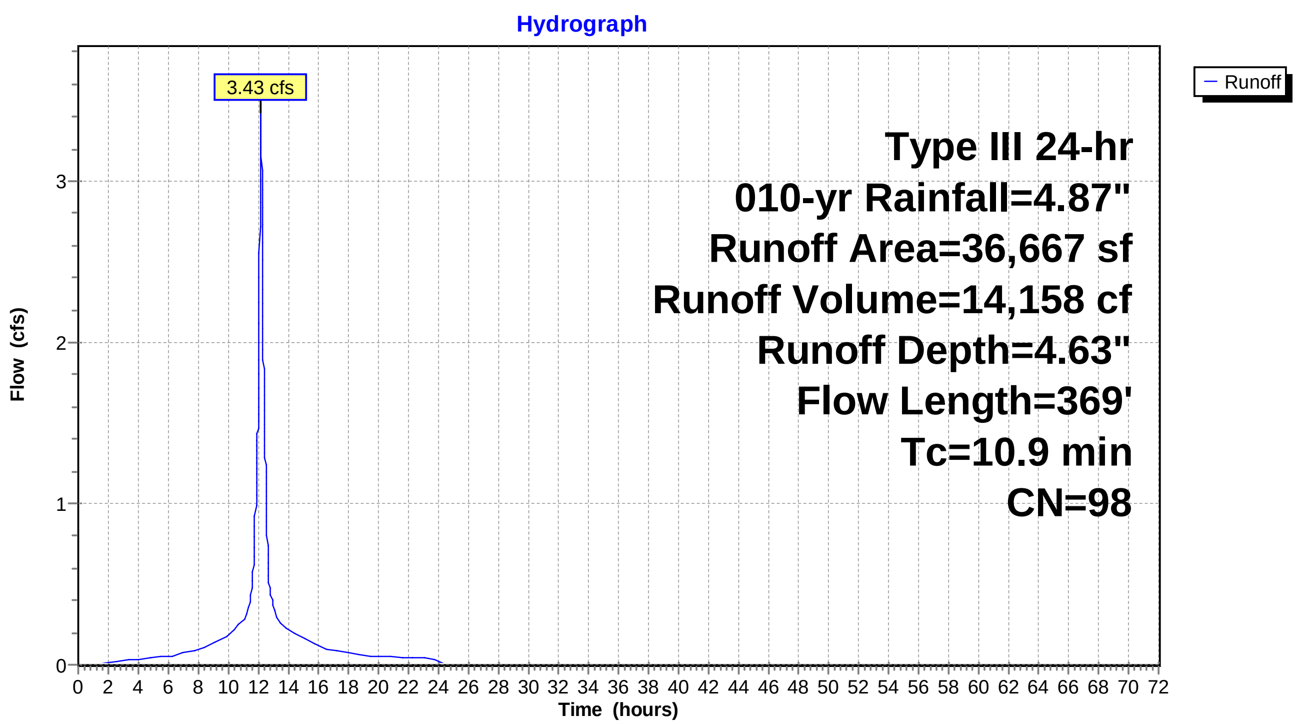
Runoff = 3.43 cfs @ 12.15 hrs, Volume= 14,158 cf, Depth= 4.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 010-yr Rainfall=4.87"

Area (sf)	CN	Description
700	74	>75% Grass cover, Good, HSG C
2,984	98	Roofs, HSG C
32,983	98	Paved parking, HSG C
36,667	98	Weighted Average
700		1.91% Pervious Area
35,967		98.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.21"
1.6	319	0.0257	3.25		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
10.9	369	Total			

Subcatchment 2S:



Summary for Subcatchment 3S:

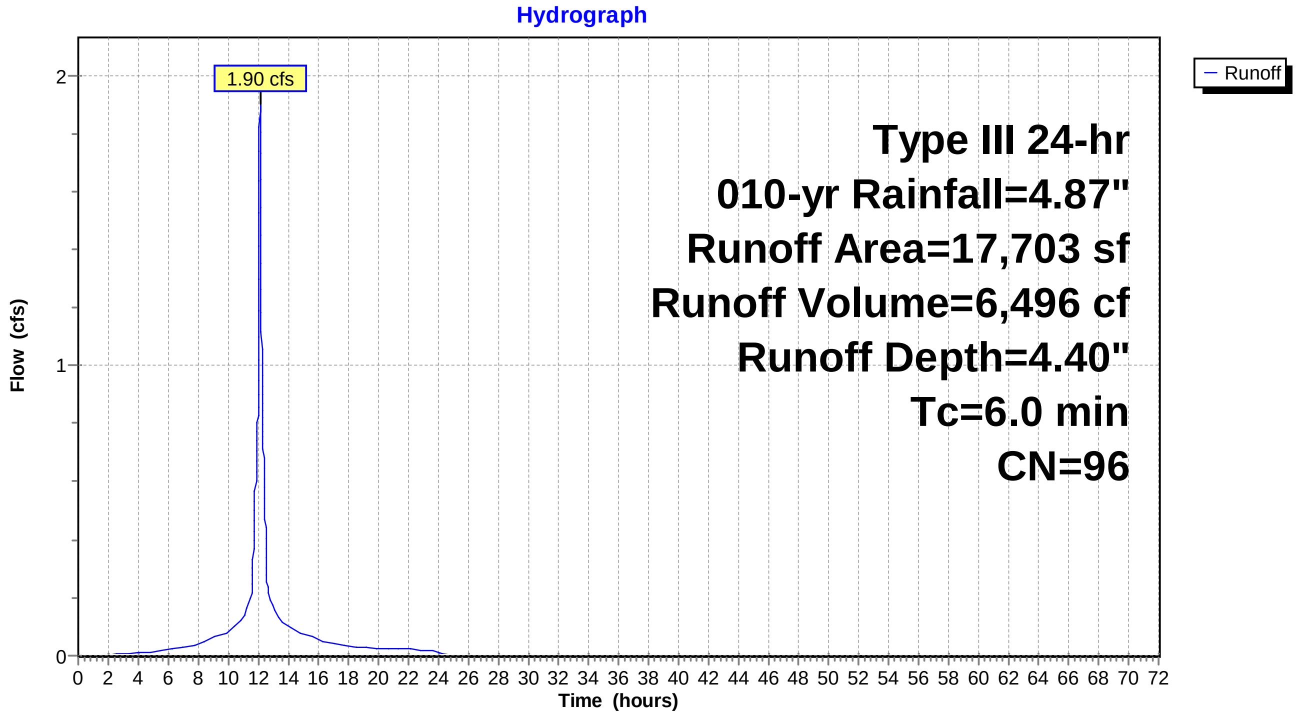
Runoff = 1.90 cfs @ 12.08 hrs, Volume= 6,496 cf, Depth= 4.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 010-yr Rainfall=4.87"

Area (sf)	CN	Description
1,743	74	>75% Grass cover, Good, HSG C
10,382	98	Roofs, HSG C
5,578	98	Paved parking, HSG C
17,703	96	Weighted Average
1,743		9.85% Pervious Area
15,960		90.15% Impervious Area

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

Subcatchment 3S:



Summary for Subcatchment 4S:

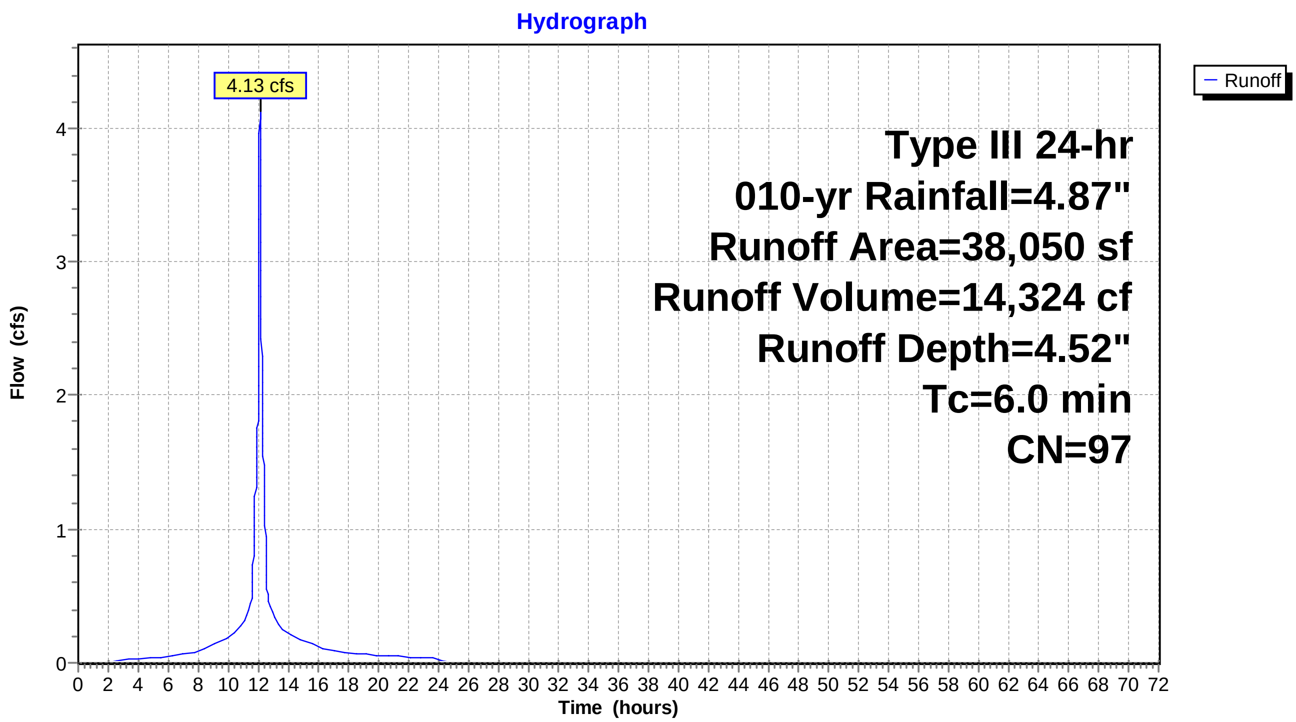
Runoff = 4.13 cfs @ 12.08 hrs, Volume= 14,324 cf, Depth= 4.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 010-yr Rainfall=4.87"

Area (sf)	CN	Description
2,263	74	>75% Grass cover, Good, HSG C
35,787	98	Paved parking, HSG C
38,050	97	Weighted Average
2,263		5.95% Pervious Area
35,787		94.05% Impervious Area

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

Subcatchment 4S:



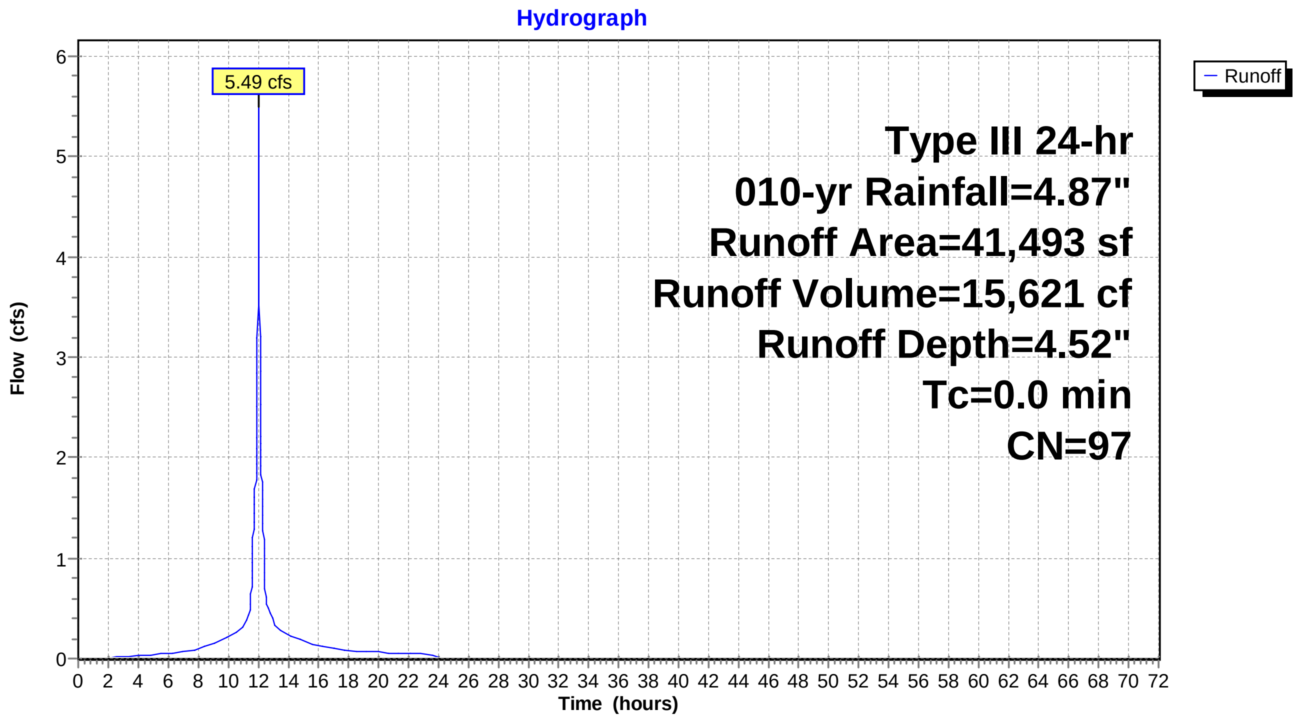
Summary for Subcatchment 5S:

Runoff = 5.49 cfs @ 12.00 hrs, Volume= 15,621 cf, Depth= 4.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 010-yr Rainfall=4.87"

Area (sf)	CN	Description
1,139	74	>75% Grass cover, Good, HSG C
2,890	98	Roofs, HSG C
37,464	98	Paved parking, HSG C
41,493	97	Weighted Average
1,139		2.75% Pervious Area
40,354		97.25% Impervious Area

Subcatchment 5S:



Summary for Subcatchment 6S:

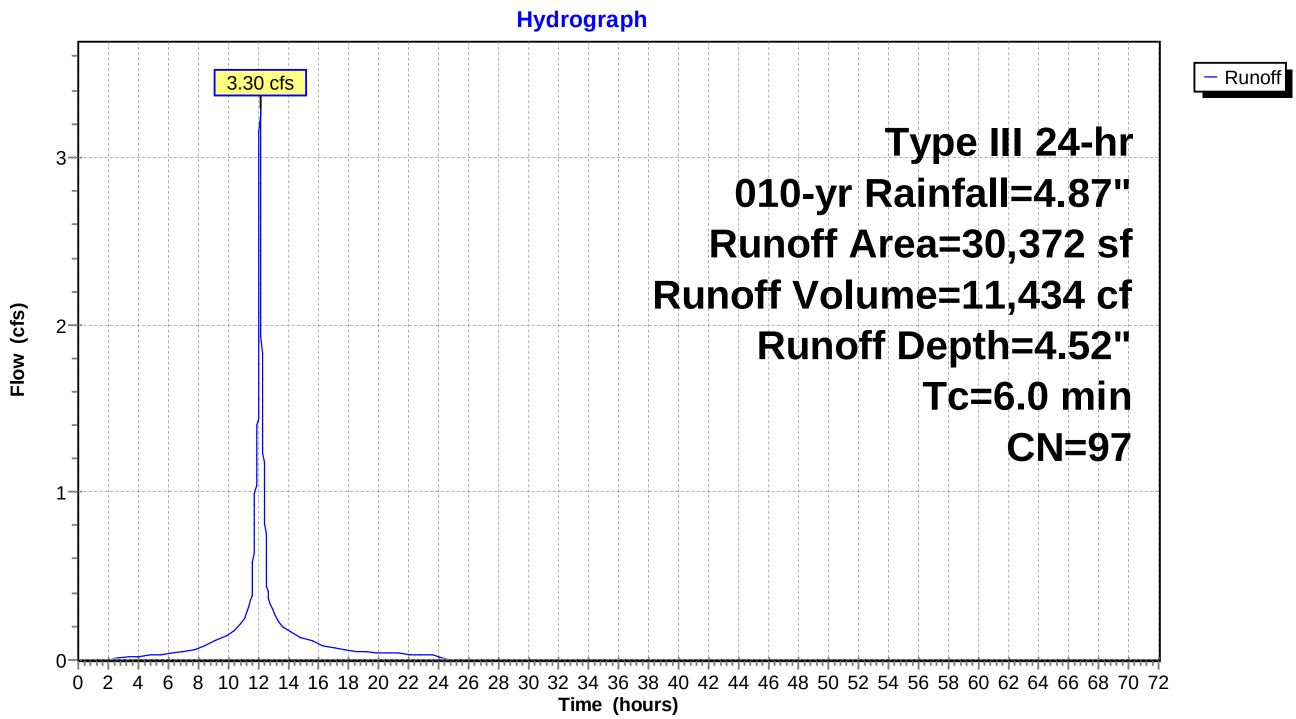
Runoff = 3.30 cfs @ 12.08 hrs, Volume= 11,434 cf, Depth= 4.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 010-yr Rainfall=4.87"

Area (sf)	CN	Description
1,290	74	>75% Grass cover, Good, HSG C
4,065	98	Roofs, HSG C
0	70	Woods, Good, HSG C
25,017	98	Paved parking, HSG C
30,372	97	Weighted Average
1,290		4.25% Pervious Area
29,082		95.75% Impervious Area

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

Subcatchment 6S:



Summary for Subcatchment 7S:

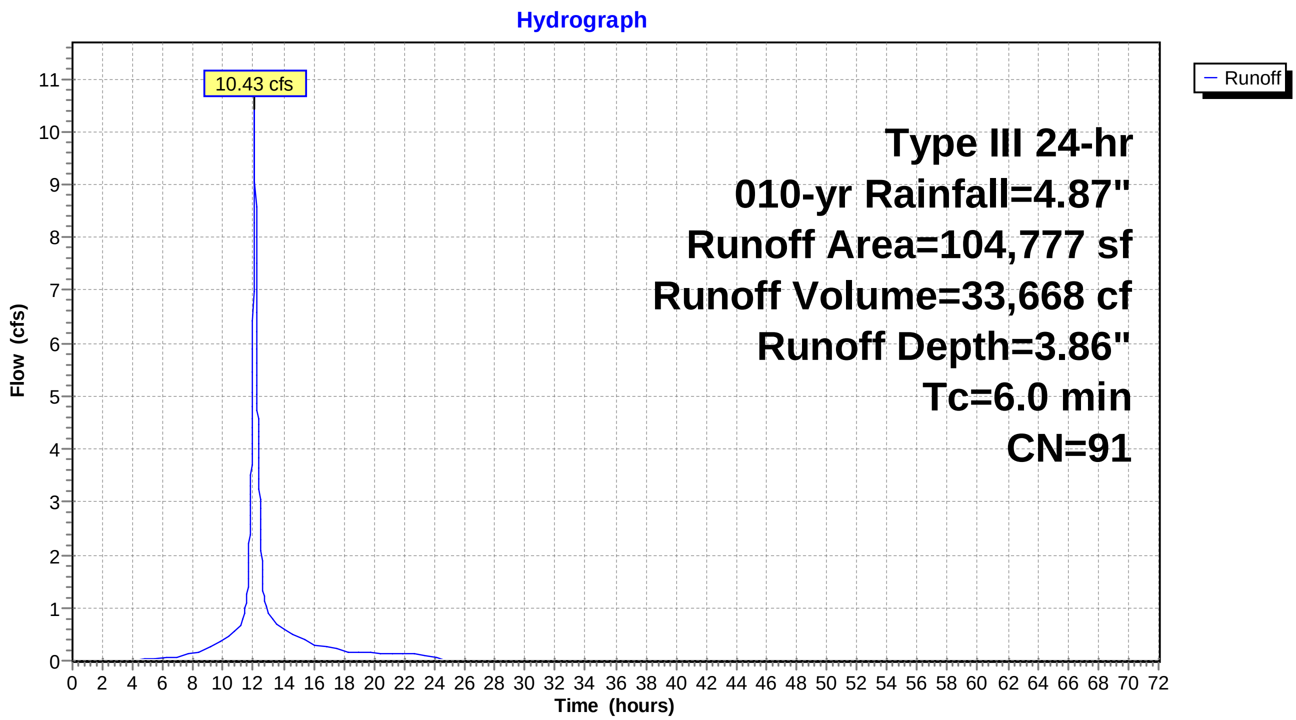
Runoff = 10.43 cfs @ 12.08 hrs, Volume= 33,668 cf, Depth= 3.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 010-yr Rainfall=4.87"

Area (sf)	CN	Description
29,577	74	>75% Grass cover, Good, HSG C
8,271	98	Roofs, HSG C
66,929	98	Paved parking, HSG C
104,777	91	Weighted Average
29,577		28.23% Pervious Area
75,200		71.77% Impervious Area

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

Subcatchment 7S:



Summary for Subcatchment 8S:

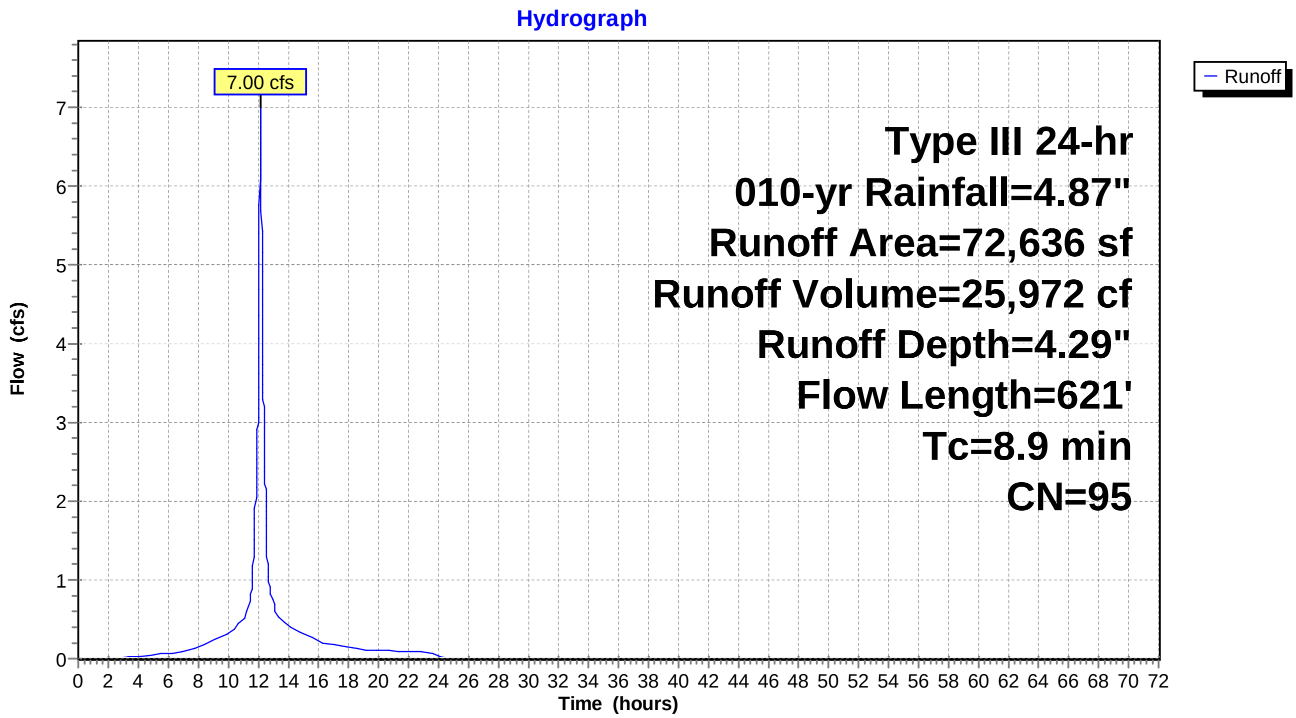
Runoff = 7.00 cfs @ 12.12 hrs, Volume= 25,972 cf, Depth= 4.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 010-yr Rainfall=4.87"

Area (sf)	CN	Description
3,902	74	>75% Grass cover, Good, HSG C
6,363	98	Roofs, HSG C
52,030	96	Gravel surface, HSG C
10,341	98	Paved parking, HSG C
72,636	95	Weighted Average
55,932		77.00% Pervious Area
16,704		23.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0300	0.17		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.21"
4.1	571	0.0210	2.33		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
8.9	621	Total			

Subcatchment 8S:



Summary for Subcatchment 9S:

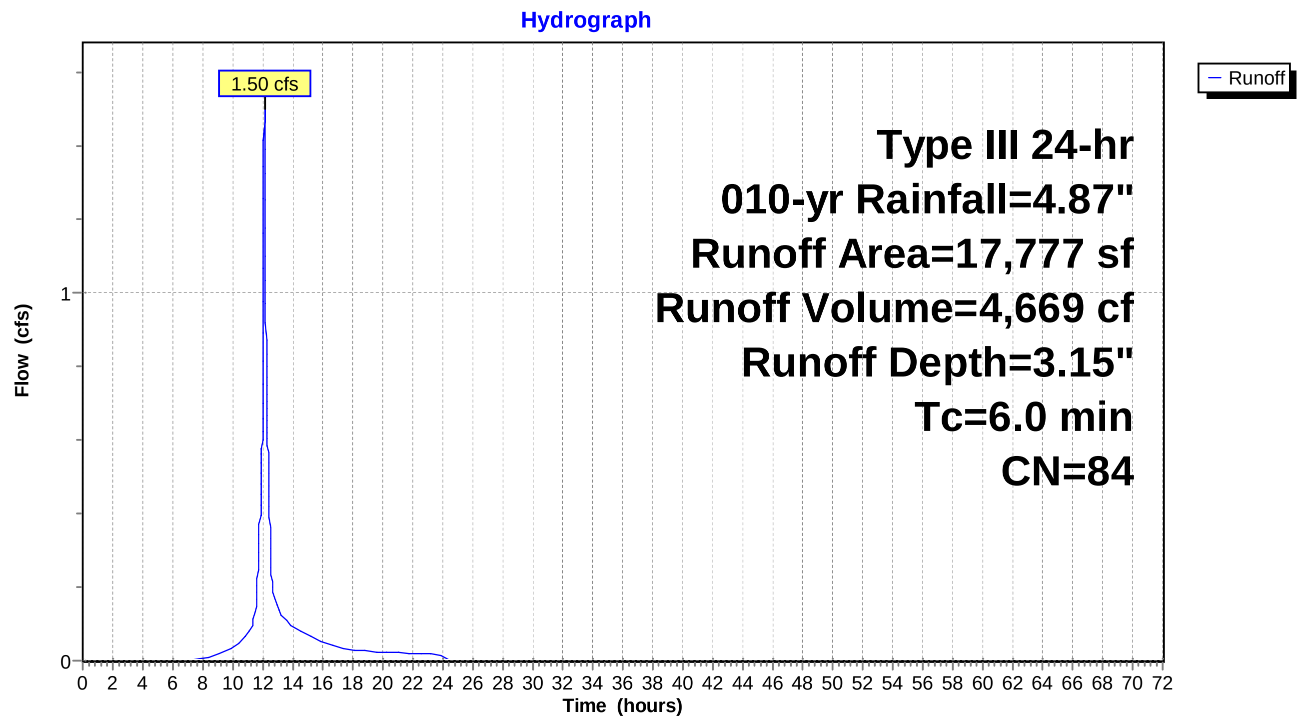
Runoff = 1.50 cfs @ 12.09 hrs, Volume= 4,669 cf, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 010-yr Rainfall=4.87"

Area (sf)	CN	Description
9,551	72	Woods/grass comb., Good, HSG C
5,267	98	Roofs, HSG C
2,959	96	Gravel surface, HSG C
17,777	84	Weighted Average
12,510		70.37% Pervious Area
5,267		29.63% Impervious Area

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

Subcatchment 9S:



Summary for Subcatchment 10S:

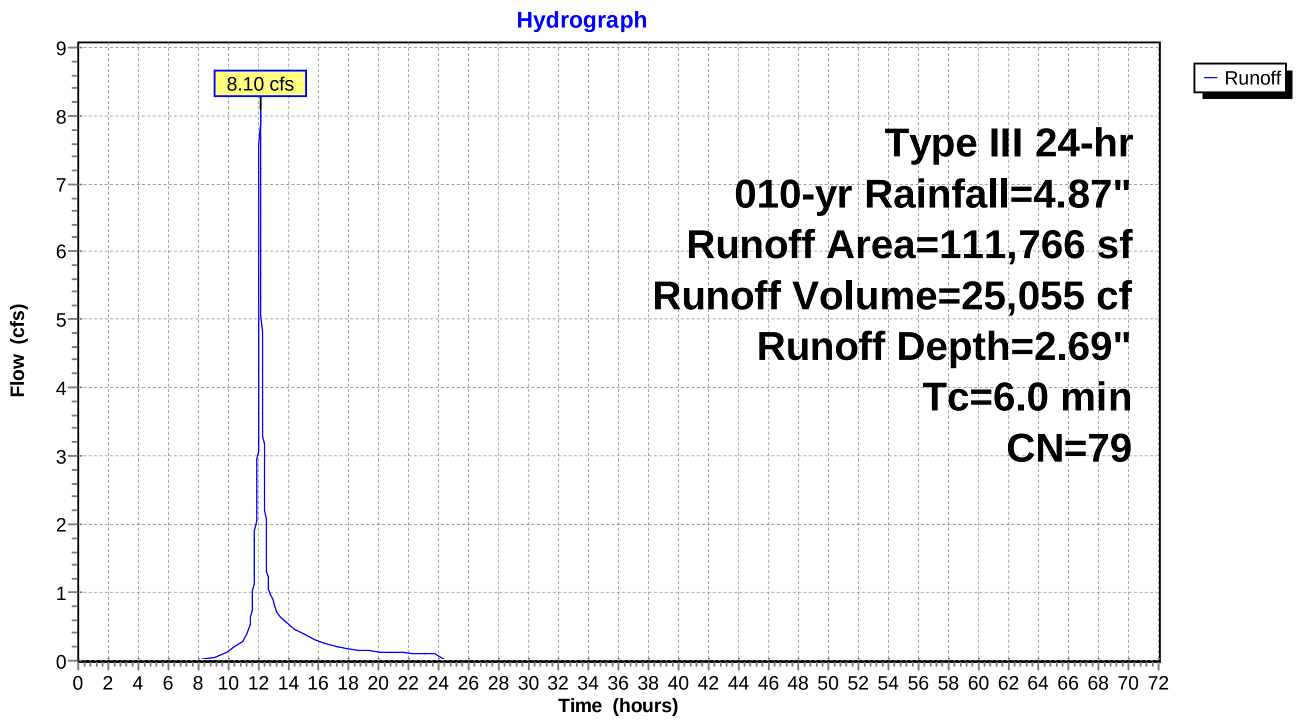
Runoff = 8.10 cfs @ 12.09 hrs, Volume= 25,055 cf, Depth= 2.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 010-yr Rainfall=4.87"

Area (sf)	CN	Description
8,775	74	>75% Grass cover, Good, HSG C
70,036	70	Woods, Good, HSG C
32,955	98	Paved parking, HSG C
111,766	79	Weighted Average
78,811		70.51% Pervious Area
32,955		29.49% Impervious Area

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

Subcatchment 10S:



Summary for Subcatchment 11S:

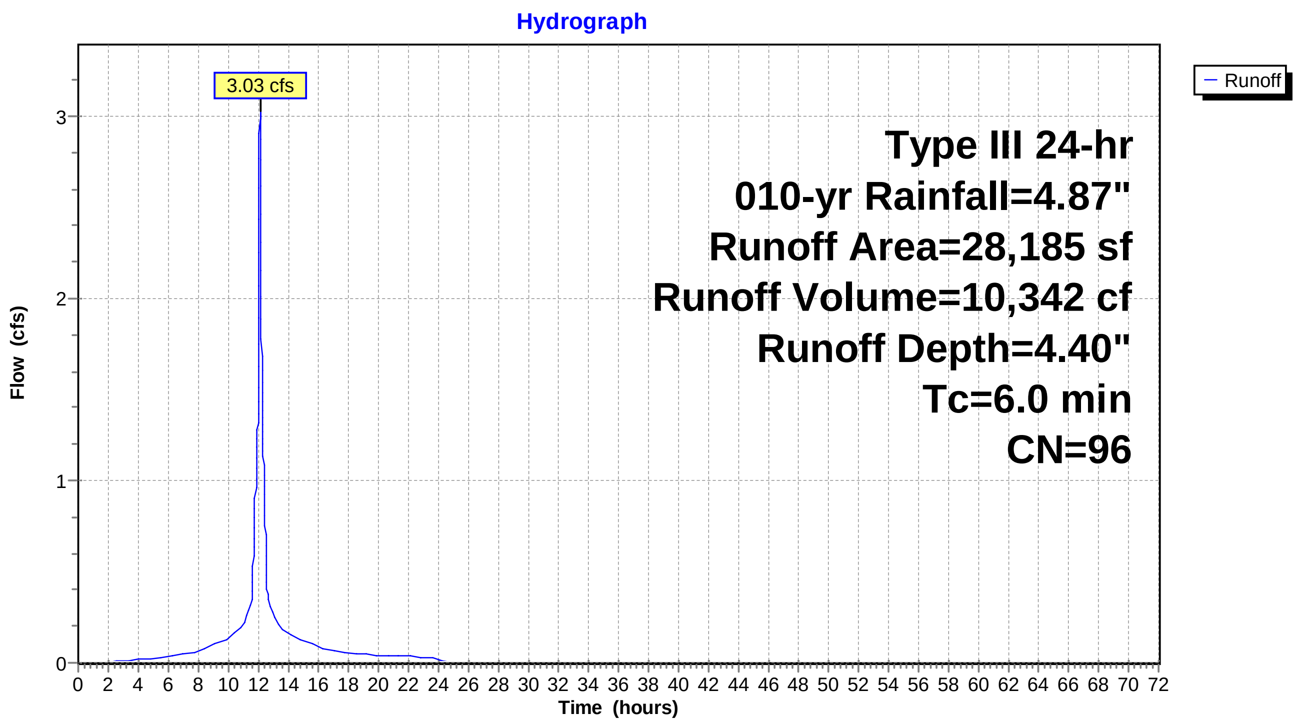
Runoff = 3.03 cfs @ 12.08 hrs, Volume= 10,342 cf, Depth= 4.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 010-yr Rainfall=4.87"

Area (sf)	CN	Description
1,988	74	>75% Grass cover, Good, HSG C
26,197	98	Paved parking, HSG C
28,185	96	Weighted Average
1,988		7.05% Pervious Area
26,197		92.95% Impervious Area

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

Subcatchment 11S:



Summary for Subcatchment 12S:

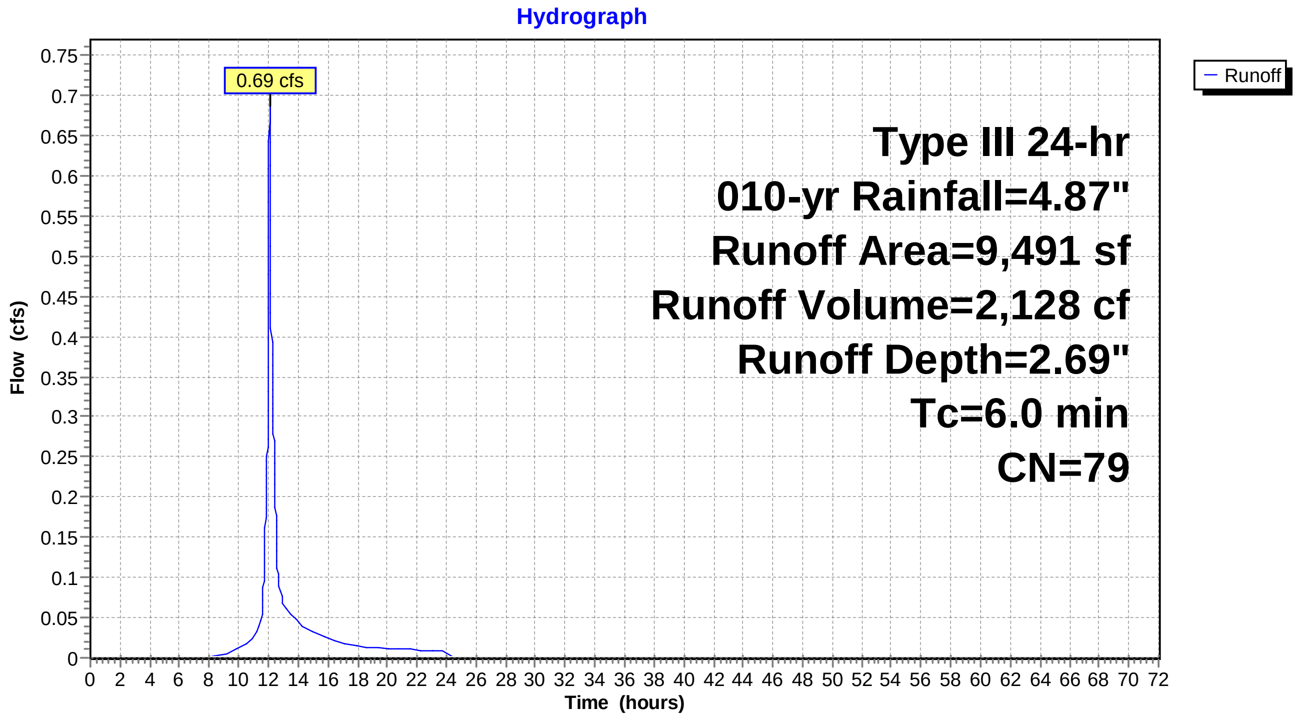
Runoff = 0.69 cfs @ 12.09 hrs, Volume= 2,128 cf, Depth= 2.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 010-yr Rainfall=4.87"

Area (sf)	CN	Description
7,454	74	>75% Grass cover, Good, HSG C
2,037	98	Paved parking, HSG C
9,491	79	Weighted Average
7,454		78.54% Pervious Area
2,037		21.46% Impervious Area

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

Subcatchment 12S:



Summary for Subcatchment 13S:

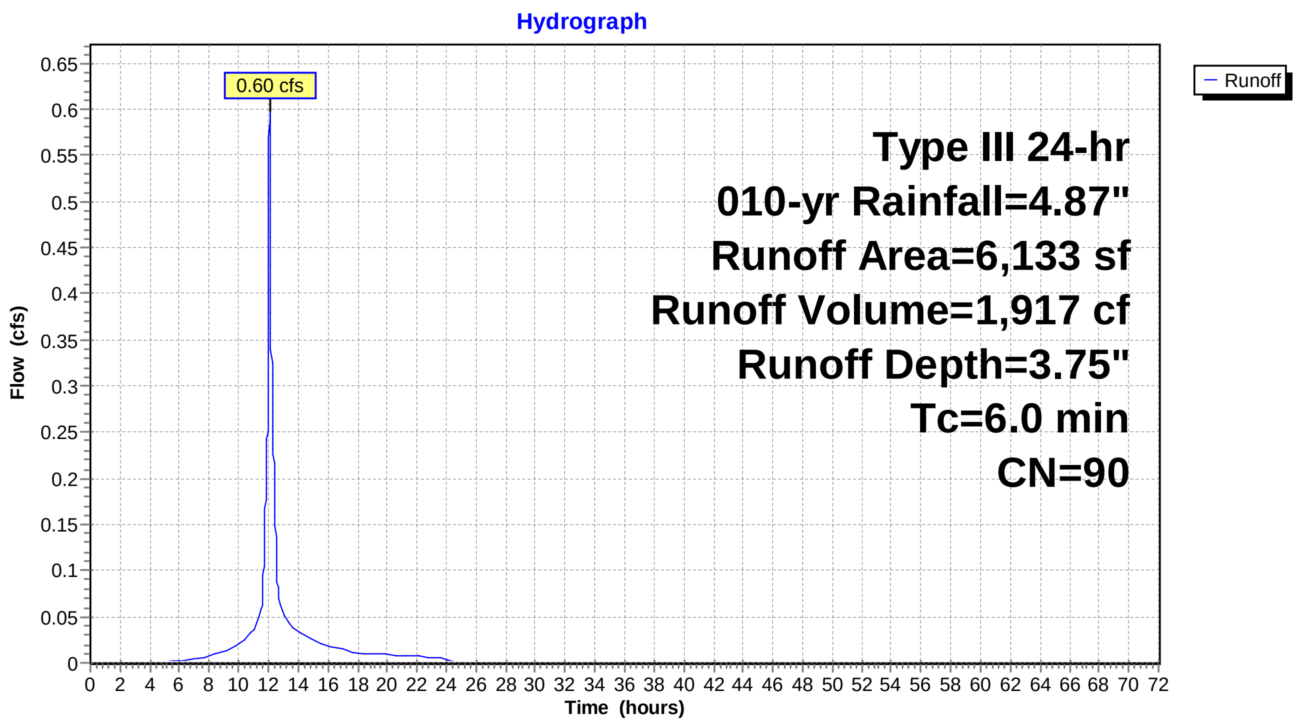
Runoff = 0.60 cfs @ 12.09 hrs, Volume= 1,917 cf, Depth= 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 010-yr Rainfall=4.87"

Area (sf)	CN	Description
2,007	74	>75% Grass cover, Good, HSG C
4,126	98	Paved parking, HSG C
6,133	90	Weighted Average
2,007		32.72% Pervious Area
4,126		67.28% Impervious Area

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

Subcatchment 13S:



Summary for Subcatchment 14S:

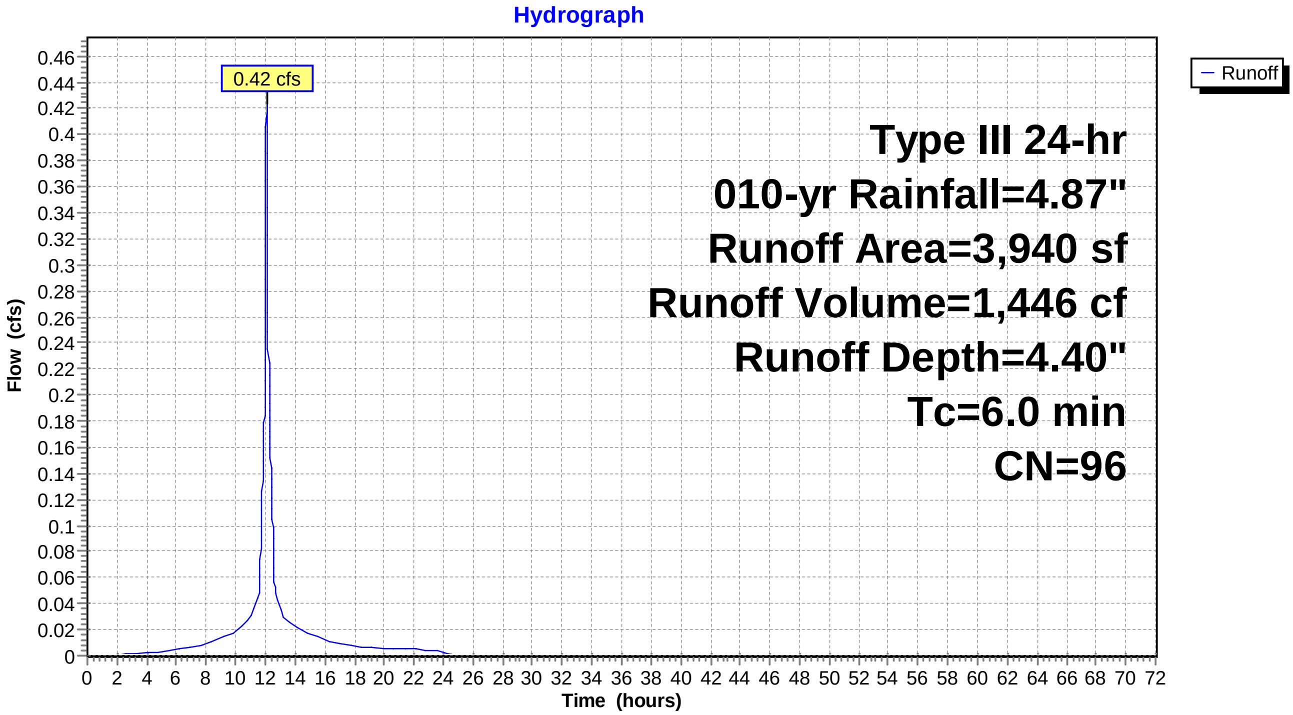
Runoff = 0.42 cfs @ 12.08 hrs, Volume= 1,446 cf, Depth= 4.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 010-yr Rainfall=4.87"

Area (sf)	CN	Description
1,795	98	Roofs, HSG C
252	70	Woods, Good, HSG C
1,893	98	Paved parking, HSG C
3,940	96	Weighted Average
252		6.40% Pervious Area
3,688		93.60% Impervious Area

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

Subcatchment 14S:

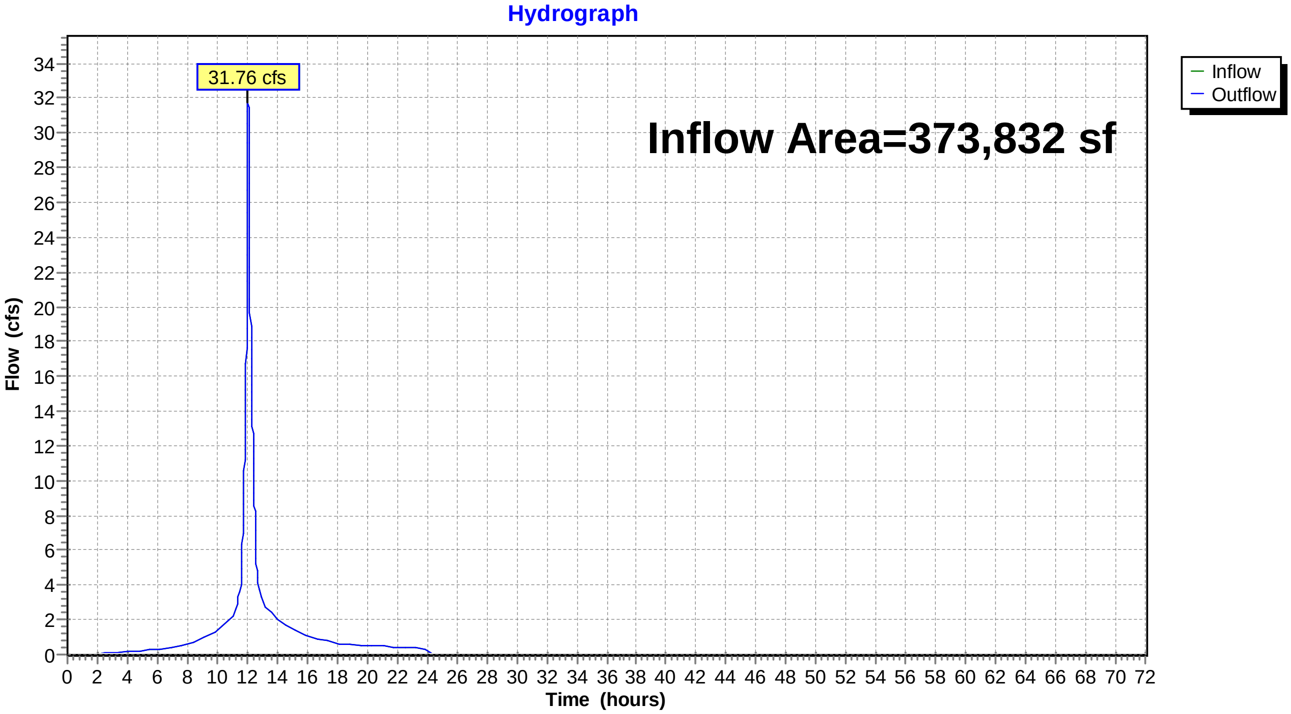


Summary for Reach AP1: Hodgson Brook

Inflow Area =	373,832 sf,	69.99% Impervious,	Inflow Depth = 3.84"	for 010-yr event
Inflow =	31.76 cfs @	12.09 hrs, Volume=	119,732 cf	
Outflow =	31.76 cfs @	12.09 hrs, Volume=	119,732 cf, Atten= 0%,	Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Reach AP1: Hodgson Brook

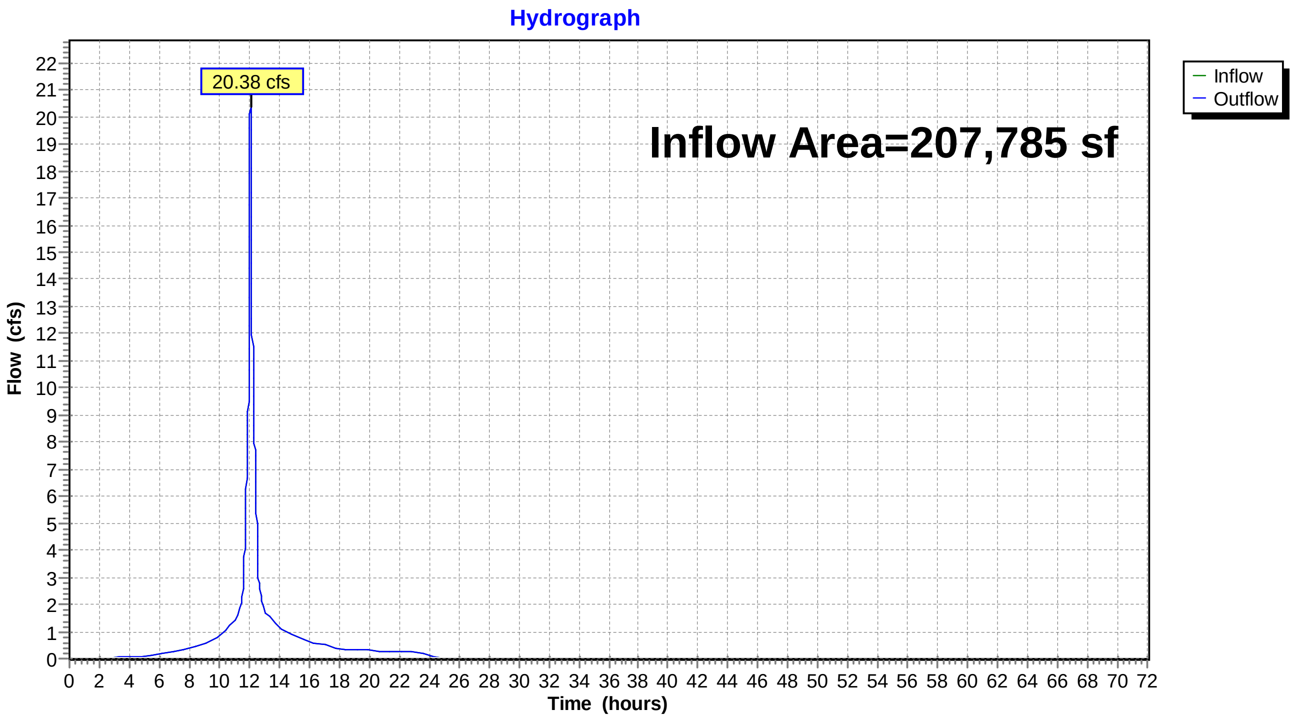


Summary for Reach AP2: Storm Drain

Inflow Area = 207,785 sf, 58.23% Impervious, Inflow Depth = 4.10" for 010-yr event
Inflow = 20.38 cfs @ 12.09 hrs, Volume= 71,074 cf
Outflow = 20.38 cfs @ 12.09 hrs, Volume= 71,074 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Reach AP2: Storm Drain



Summary for Pond 1056:

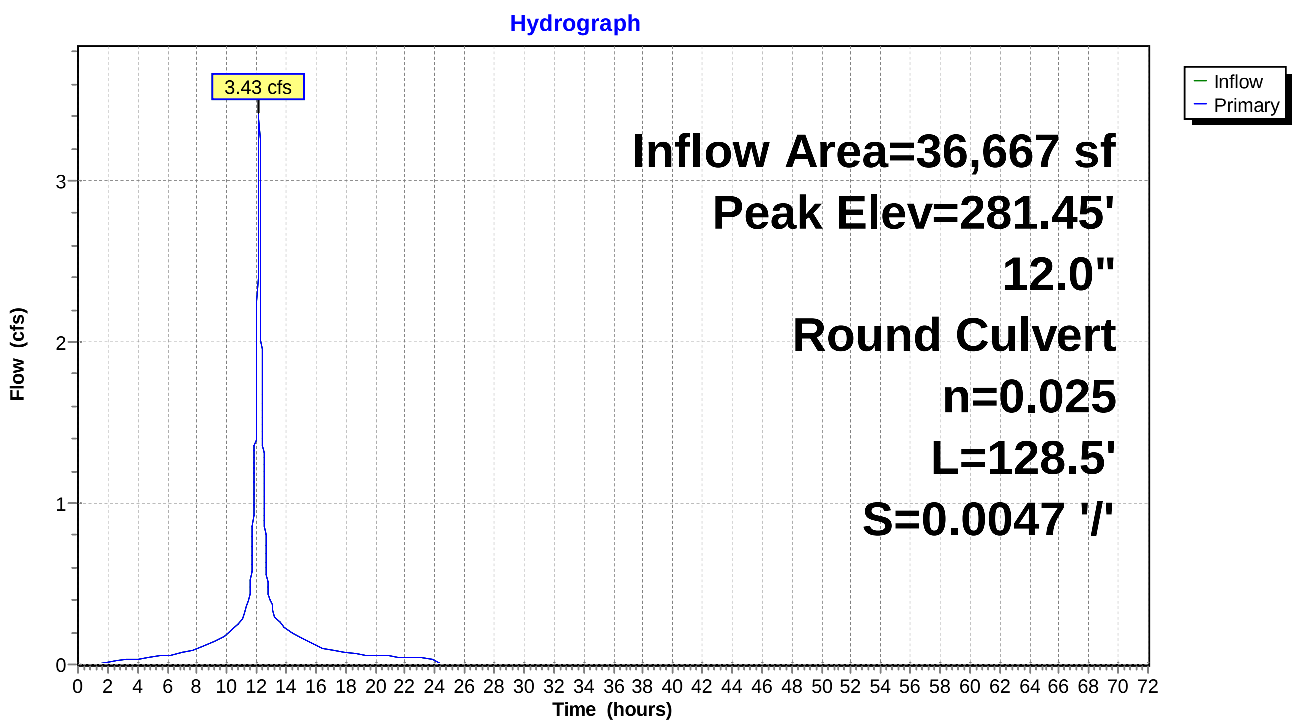
Inflow Area = 36,667 sf, 98.09% Impervious, Inflow Depth = 4.63" for 010-yr event
Inflow = 3.43 cfs @ 12.15 hrs, Volume= 14,158 cf
Outflow = 3.43 cfs @ 12.15 hrs, Volume= 14,158 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.43 cfs @ 12.15 hrs, Volume= 14,158 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 281.45' @ 12.10 hrs
Flood Elev= 23.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.30'	**12.0" Round Culvert** L= 128.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.30' / 17.70' S= 0.0047 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=5.68 cfs @ 12.15 hrs HW=265.81' TW=252.49' (Dynamic Tailwater)
1=Culvert (Outlet Controls 5.68 cfs @ 7.23 fps)

Pond 1056:



Summary for Pond 1071:

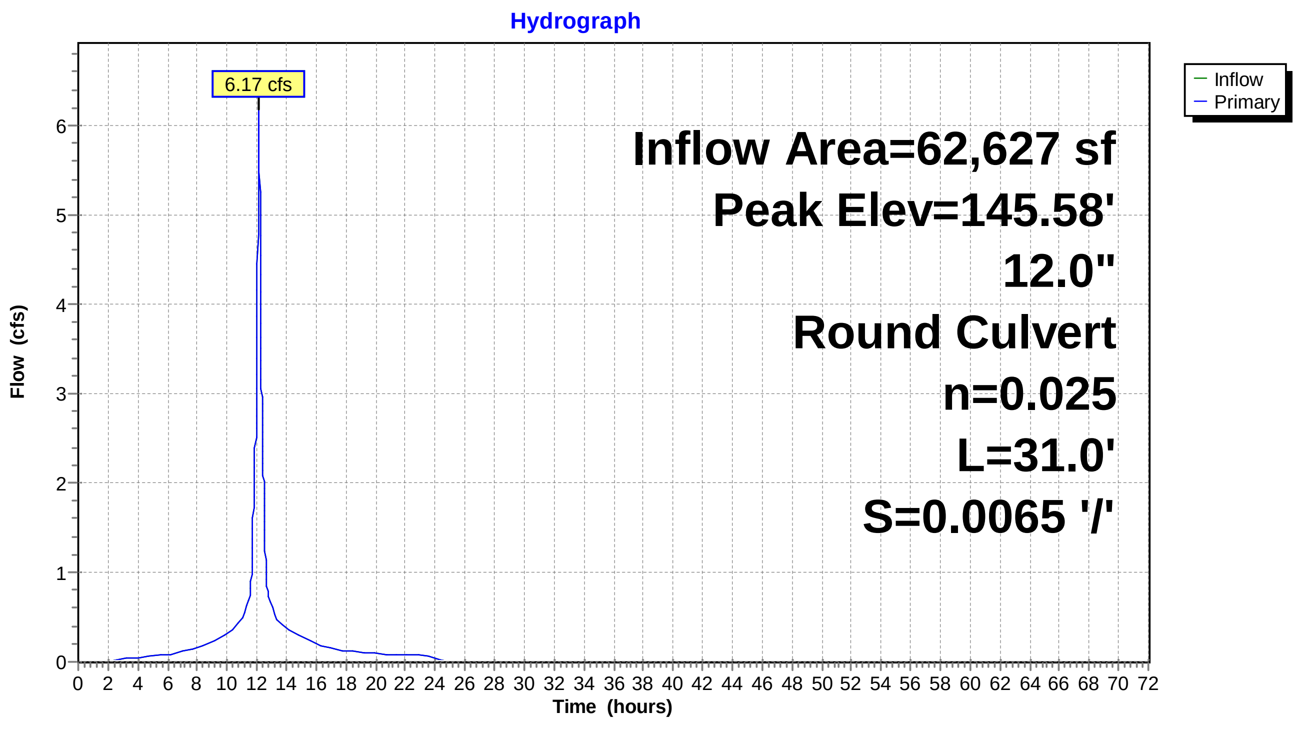
Inflow Area = 62,627 sf, 94.71% Impervious, Inflow Depth = 4.52" for 010-yr event
Inflow = 6.17 cfs @ 12.12 hrs, Volume= 23,577 cf
Outflow = 6.17 cfs @ 12.12 hrs, Volume= 23,577 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.17 cfs @ 12.12 hrs, Volume= 23,577 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 145.58' @ 12.11 hrs
Flood Elev= 22.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.50'	**12.0" Round Culvert** L= 31.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.50' / 17.30' S= 0.0065 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=6.99 cfs @ 12.12 hrs HW=144.79' TW=138.53' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 6.99 cfs @ 8.89 fps)

Pond 1071:



Summary for Pond 1072:

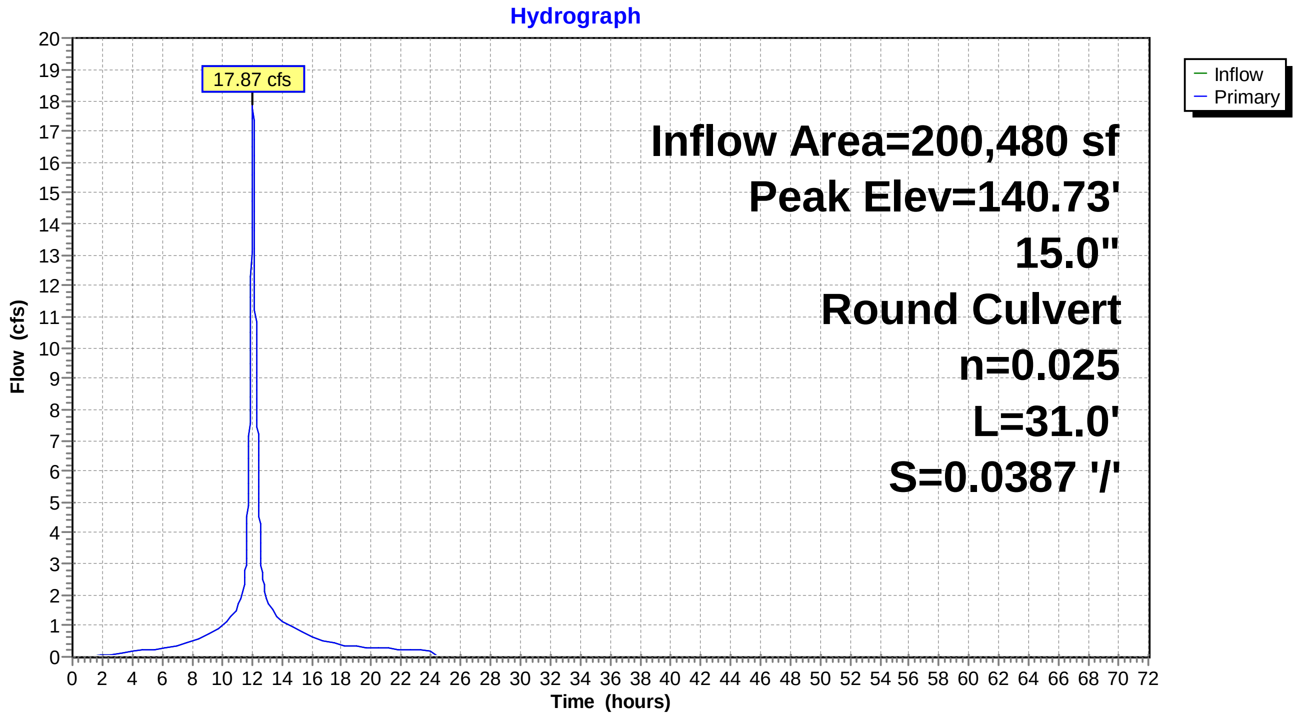
Inflow Area = 200,480 sf, 95.31% Impervious, Inflow Depth = 4.53" for 010-yr event
Inflow = 17.87 cfs @ 12.08 hrs, Volume= 75,621 cf
Outflow = 17.87 cfs @ 12.08 hrs, Volume= 75,621 cf, Atten= 0%, Lag= 0.0 min
Primary = 17.87 cfs @ 12.08 hrs, Volume= 75,621 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 140.73' @ 12.10 hrs
Flood Elev= 22.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.10'	**15.0" Round Culvert** L= 31.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.10' / 15.90' S= 0.0387 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=16.52 cfs @ 12.08 hrs HW=138.41' TW=126.67' (Dynamic Tailwater)
1=Culvert (Outlet Controls 16.52 cfs @ 13.46 fps)

Pond 1072:



Summary for Pond 1128:

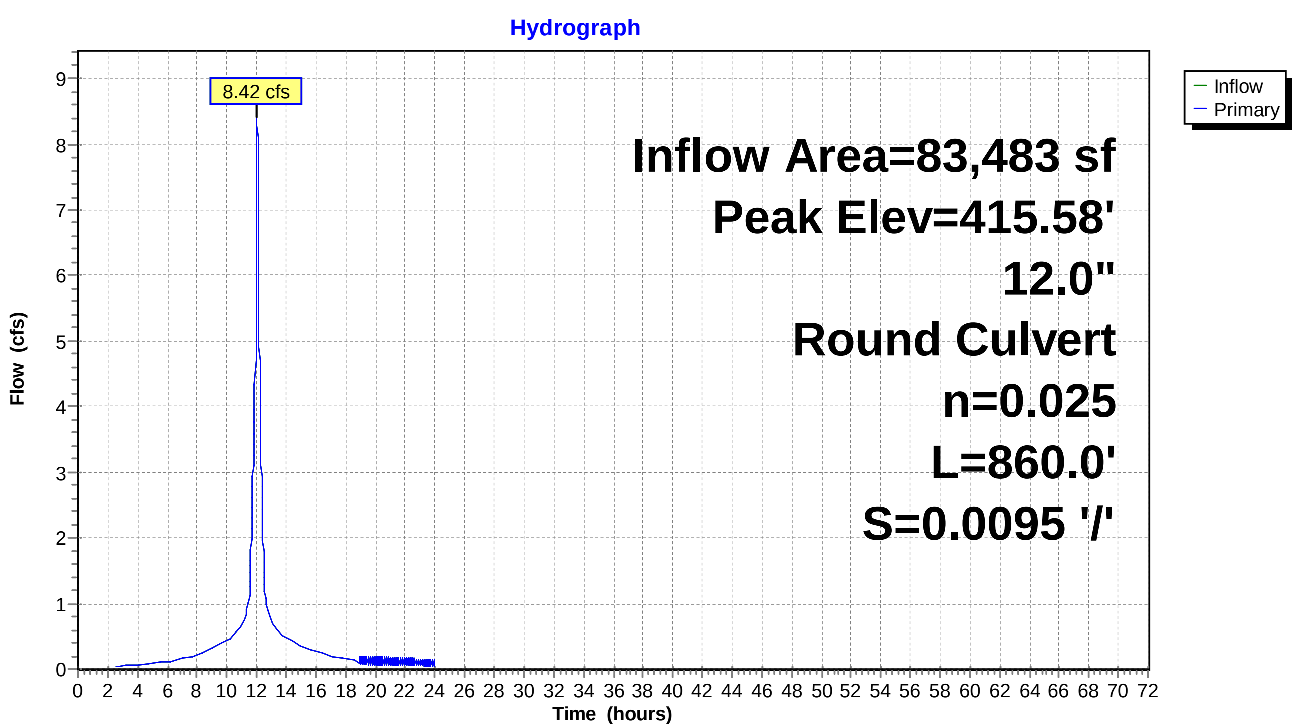
Inflow Area = 83,483 sf, 95.62% Impervious, Inflow Depth = 4.51" for 010-yr event
Inflow = 8.42 cfs @ 12.00 hrs, Volume= 31,390 cf
Outflow = 8.42 cfs @ 12.00 hrs, Volume= 31,390 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.42 cfs @ 12.00 hrs, Volume= 31,390 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 415.58' @ 12.06 hrs
Flood Elev= 22.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.90'	**12.0" Round Culvert** L= 860.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 22.90' / 14.70' S= 0.0095 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=7.94 cfs @ 12.00 hrs HW=369.37' TW=208.36' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 7.94 cfs @ 10.11 fps)

Pond 1128:



Summary for Pond 1147:

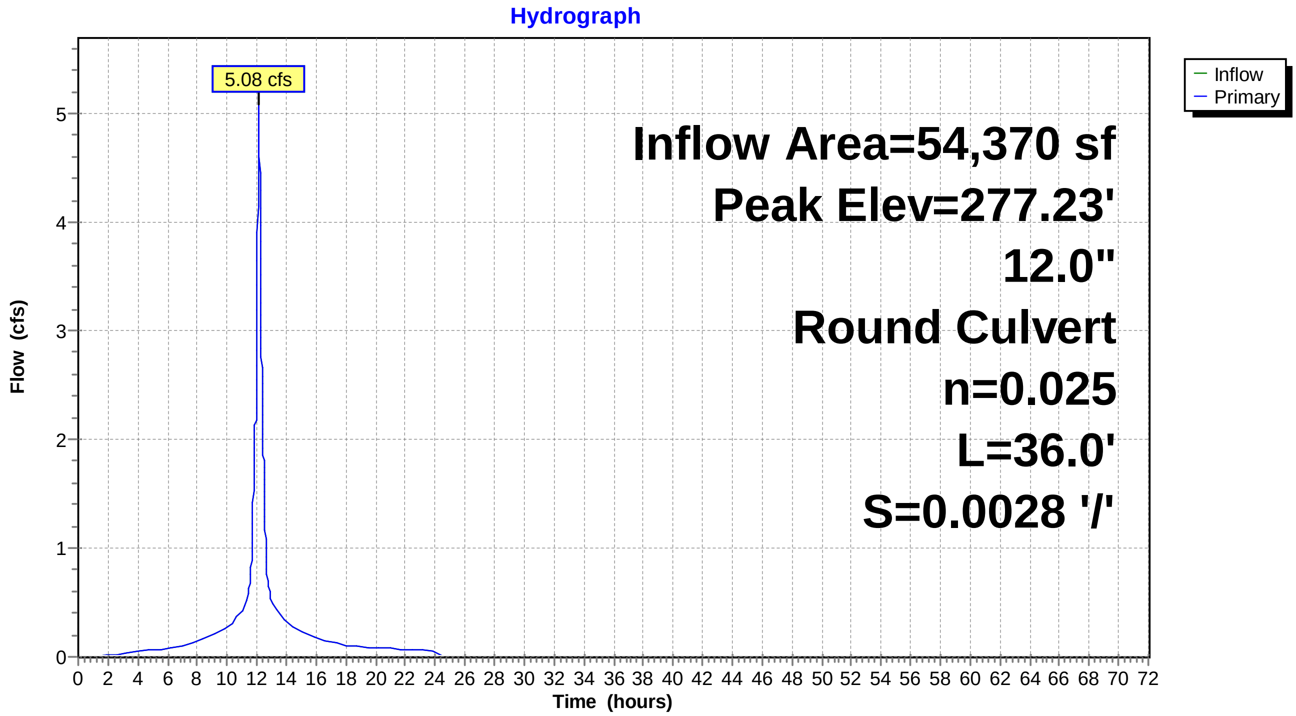
Inflow Area = 54,370 sf, 95.51% Impervious, Inflow Depth = 4.56" for 010-yr event
Inflow = 5.08 cfs @ 12.12 hrs, Volume= 20,654 cf
Outflow = 5.08 cfs @ 12.12 hrs, Volume= 20,654 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.08 cfs @ 12.12 hrs, Volume= 20,654 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 277.23' @ 12.09 hrs
Flood Elev= 22.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.30'	**12.0" Round Culvert** L= 36.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.30' / 18.20' S= 0.0028 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=7.59 cfs @ 12.12 hrs HW=271.02' TW=262.78' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 7.59 cfs @ 9.66 fps)

Pond 1147:



Summary for Pond 1148:

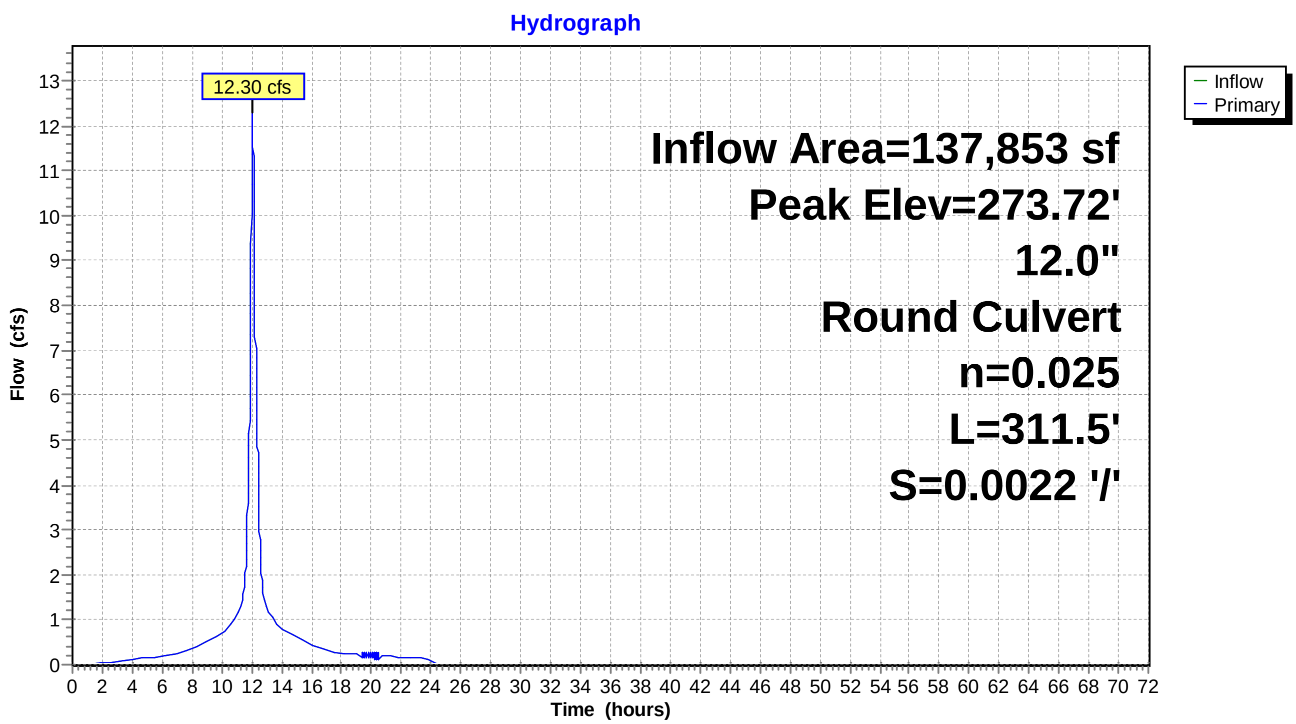
Inflow Area =	137,853 sf,	95.58% Impervious,	Inflow Depth = 4.53"	for 010-yr event
Inflow =	12.30 cfs @	12.06 hrs, Volume=	52,044 cf	
Outflow =	12.30 cfs @	12.06 hrs, Volume=	52,044 cf, Atten= 0%, Lag= 0.0 min	
Primary =	12.30 cfs @	12.06 hrs, Volume=	52,044 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 273.72' @ 12.08 hrs
Flood Elev= 22.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.20'	**12.0" Round Culvert** L= 311.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.20' / 17.50' S= 0.0022 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=12.03 cfs @ 12.06 hrs HW=266.08' TW=128.91' (Dynamic Tailwater)
1=Culvert (Outlet Controls 12.03 cfs @ 15.31 fps)

Pond 1148:



Summary for Pond 1186:

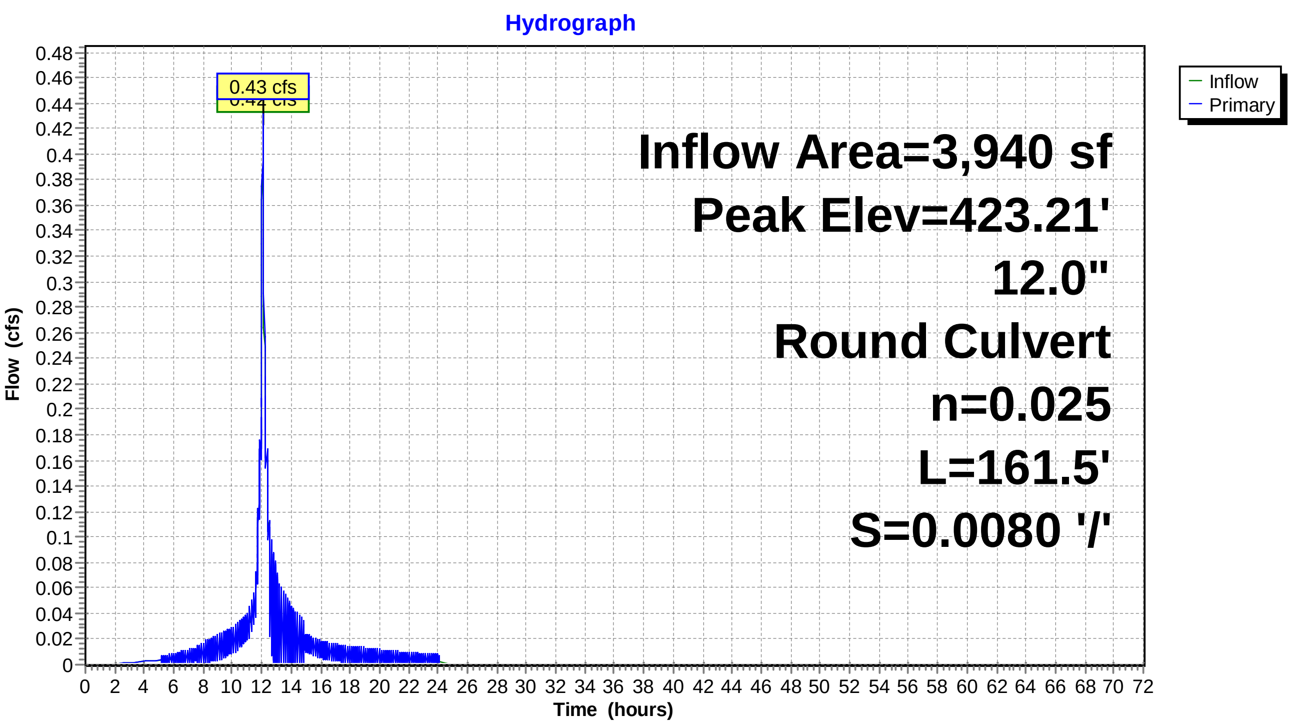
Inflow Area =	3,940 sf, 93.60% Impervious,	Inflow Depth = 4.40"	for 010-yr event
Inflow =	0.42 cfs @ 12.08 hrs, Volume=	1,446 cf	
Outflow =	0.43 cfs @ 12.08 hrs, Volume=	1,445 cf, Atten= 0%, Lag= 0.0 min	
Primary =	0.43 cfs @ 12.08 hrs, Volume=	1,445 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 423.21' @ 12.08 hrs
Flood Elev= 23.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.30'	**12.0" Round Culvert** L= 161.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 22.30' / 21.00' S= 0.0080 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=2.07 cfs @ 12.08 hrs HW=423.11' TW=420.93' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 2.07 cfs @ 2.64 fps)

Pond 1186:



Summary for Pond 1188:

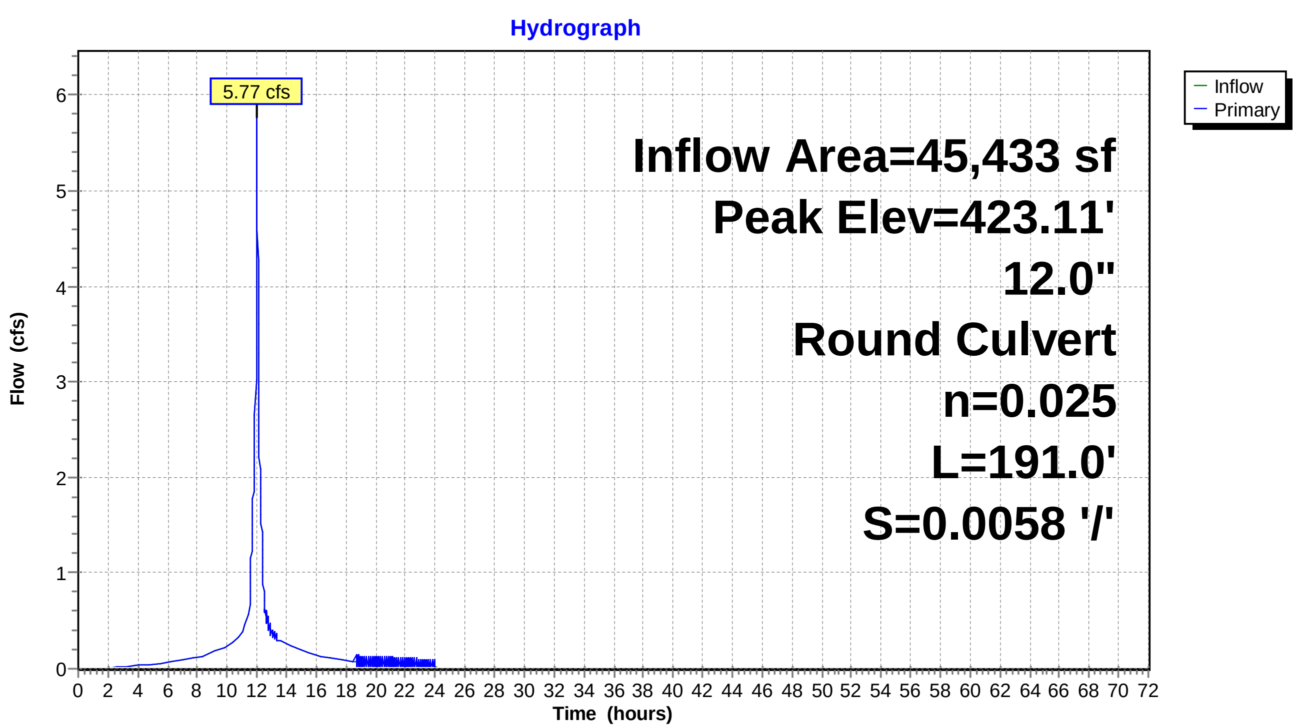
Inflow Area = 45,433 sf, 96.94% Impervious, Inflow Depth = 4.51" for 010-yr event
Inflow = 5.77 cfs @ 12.00 hrs, Volume= 17,066 cf
Outflow = 5.77 cfs @ 12.00 hrs, Volume= 17,066 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.77 cfs @ 12.00 hrs, Volume= 17,066 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 423.11' @ 12.07 hrs
Flood Elev= 25.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.00'	**12.0" Round Culvert** L= 191.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.00' / 18.90' S= 0.0058 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.00 hrs HW=341.82' TW=360.97' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Pond 1188:



Summary for Pond 1213:

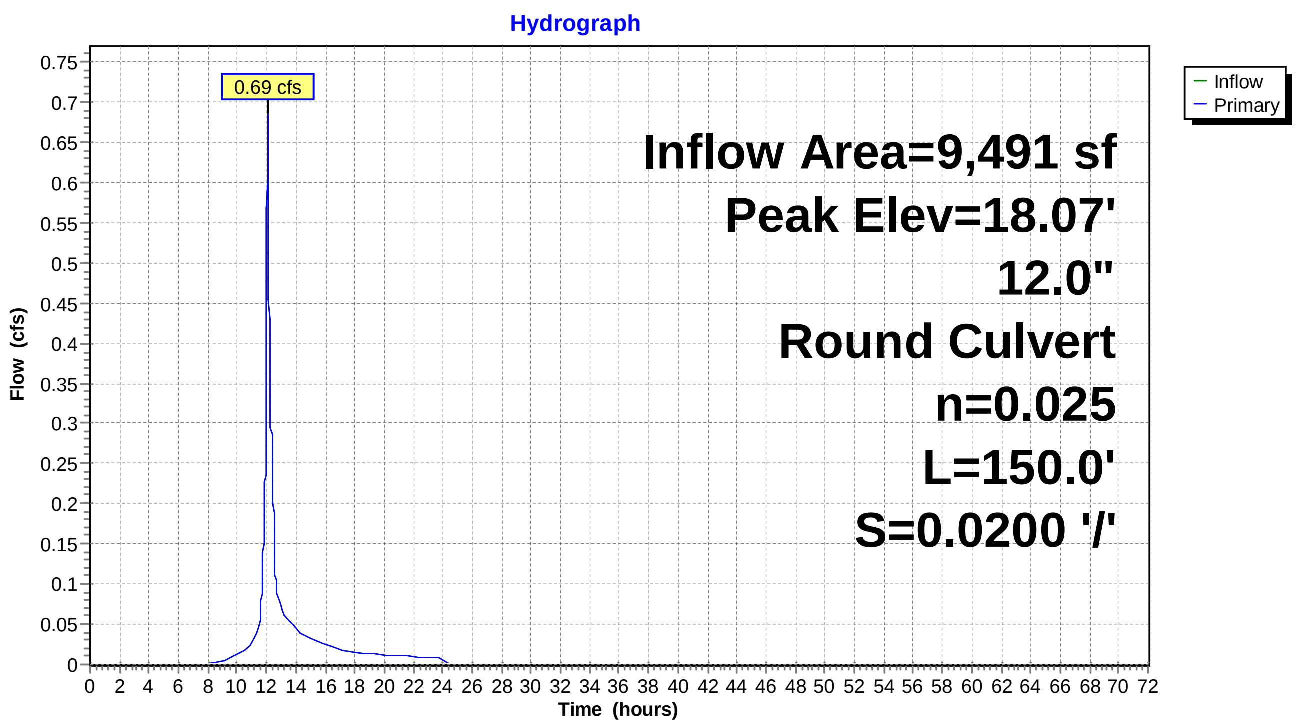
Inflow Area = 9,491 sf, 21.46% Impervious, Inflow Depth = 2.69" for 010-yr event
Inflow = 0.69 cfs @ 12.09 hrs, Volume= 2,128 cf
Outflow = 0.69 cfs @ 12.09 hrs, Volume= 2,128 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.69 cfs @ 12.09 hrs, Volume= 2,128 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 18.07' @ 12.09 hrs
Flood Elev= 20.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.60'	**12.0" Round Culvert** L= 150.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.60' / 14.60' S= 0.0200 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=0.69 cfs @ 12.09 hrs HW=18.07' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.69 cfs @ 2.79 fps)

Pond 1213:



Summary for Pond 1251:

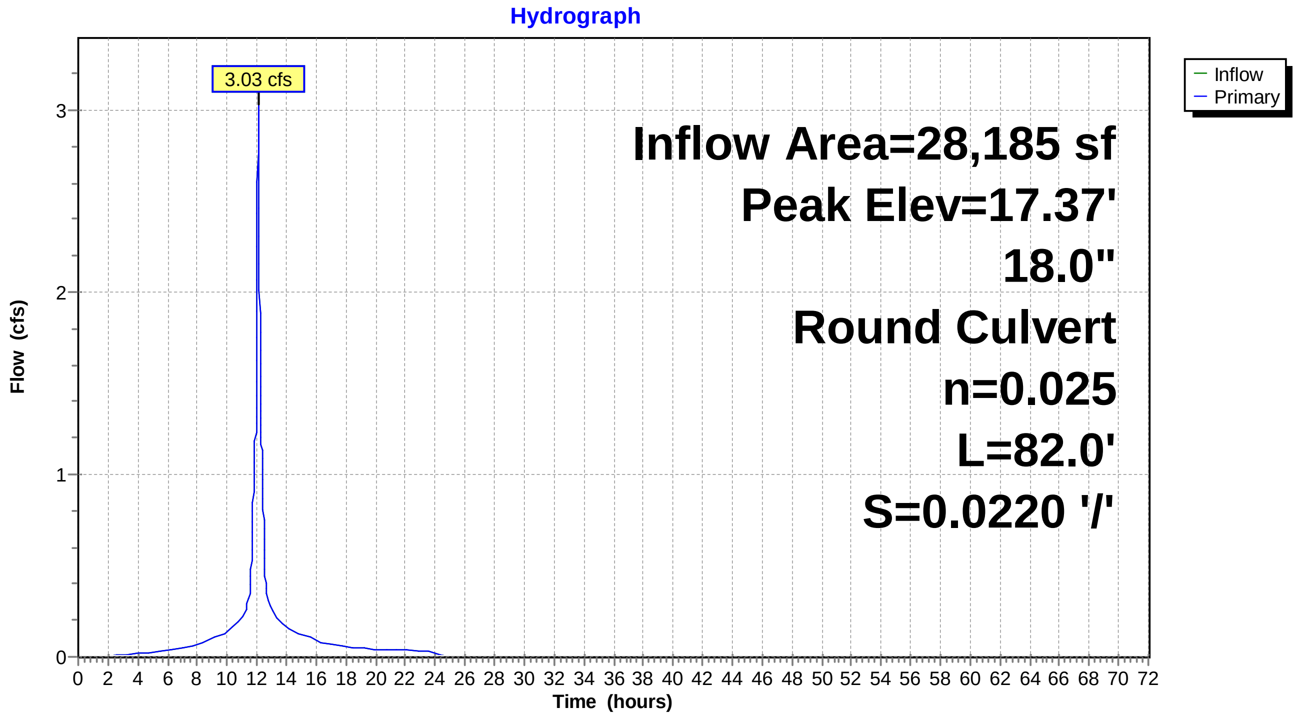
Inflow Area = 28,185 sf, 92.95% Impervious, Inflow Depth = 4.40" for 010-yr event
Inflow = 3.03 cfs @ 12.08 hrs, Volume= 10,342 cf
Outflow = 3.03 cfs @ 12.08 hrs, Volume= 10,342 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.03 cfs @ 12.08 hrs, Volume= 10,342 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 17.37' @ 12.08 hrs
Flood Elev= 20.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.50'	**18.0" Round Culvert** L= 82.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.50' / 14.70' S= 0.0220 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

Primary OutFlow Max=3.02 cfs @ 12.08 hrs HW=17.37' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 3.02 cfs @ 4.09 fps)

Pond 1251:



Summary for Pond 1345:

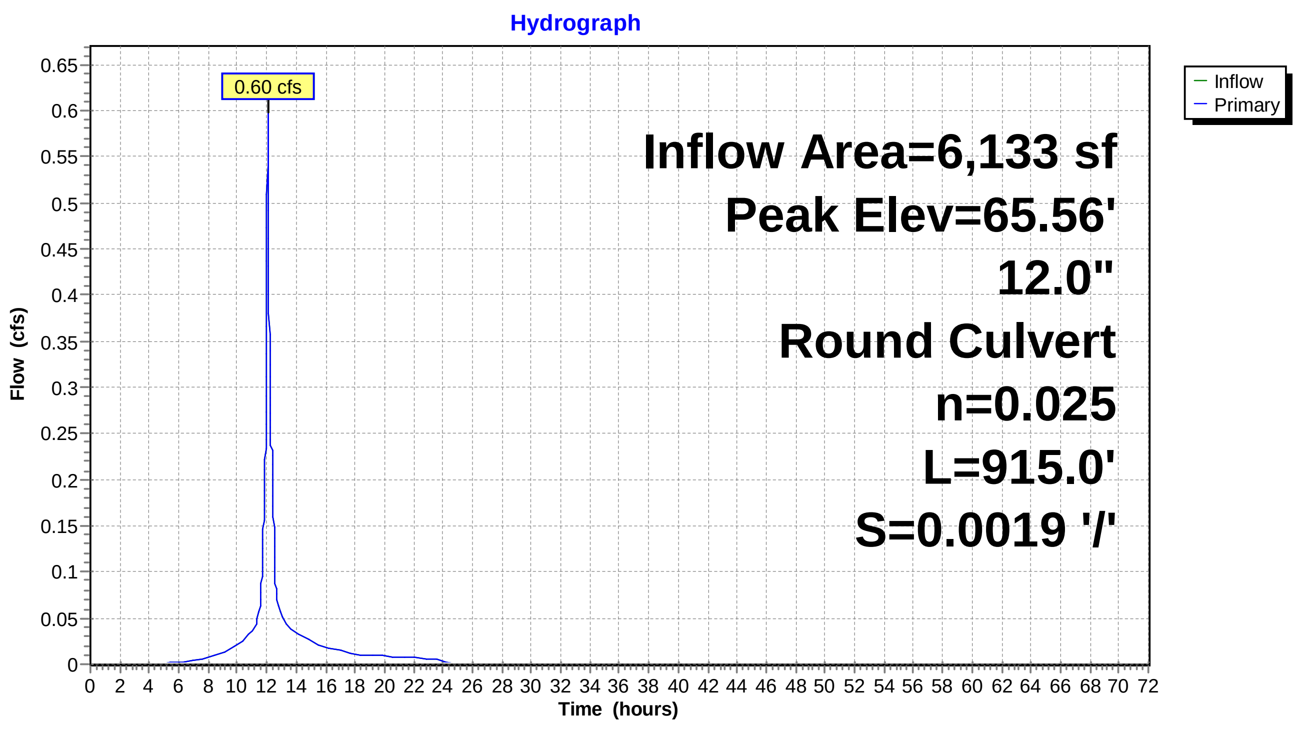
Inflow Area = 6,133 sf, 67.28% Impervious, Inflow Depth = 3.75" for 010-yr event
Inflow = 0.60 cfs @ 12.09 hrs, Volume= 1,917 cf
Outflow = 0.60 cfs @ 12.09 hrs, Volume= 1,917 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.60 cfs @ 12.09 hrs, Volume= 1,917 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 65.56' @ 12.09 hrs
Flood Elev= 23.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.10'	**12.0" Round Culvert** L= 915.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 19.10' / 17.40' S= 0.0019 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=0.43 cfs @ 12.09 hrs HW=64.97' TW=64.47' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.43 cfs @ 0.54 fps)

Pond 1345:



Summary for Pond 1346:

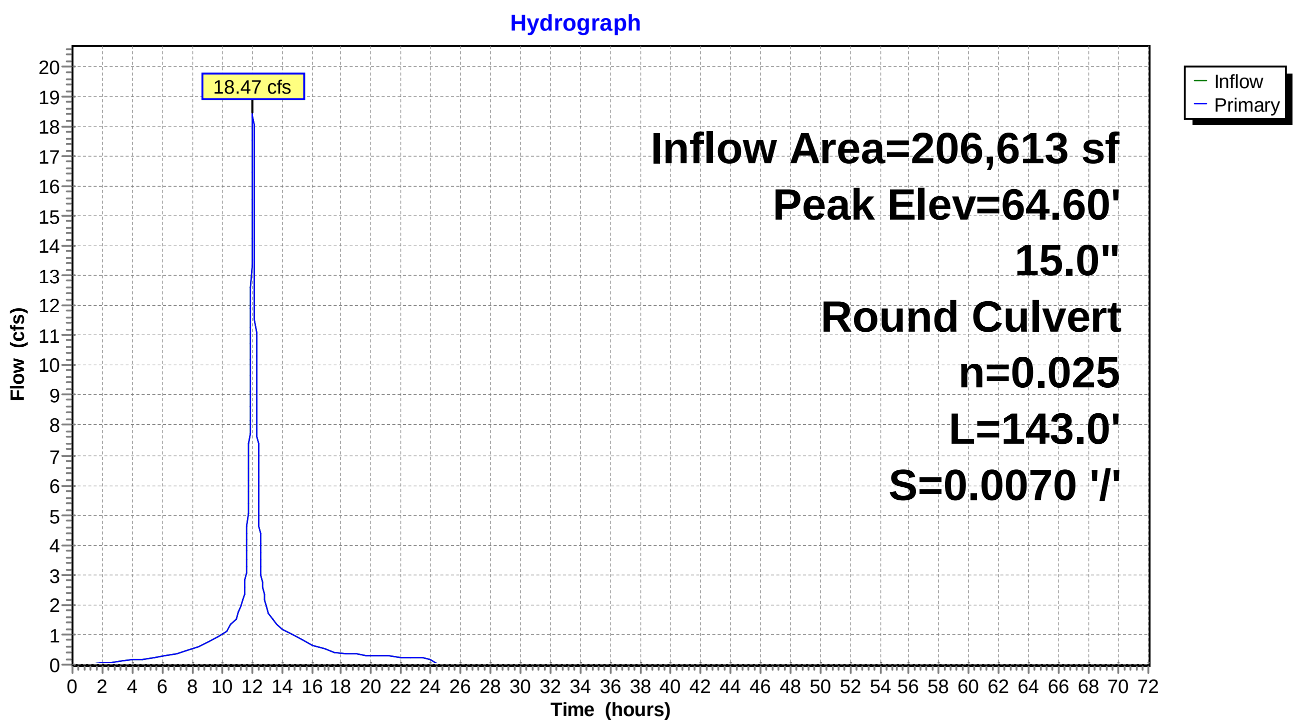
Inflow Area = 206,613 sf, 94.48% Impervious, Inflow Depth = 4.50" for 010-yr event
Inflow = 18.47 cfs @ 12.08 hrs, Volume= 77,538 cf
Outflow = 18.47 cfs @ 12.08 hrs, Volume= 77,538 cf, Atten= 0%, Lag= 0.0 min
Primary = 18.47 cfs @ 12.08 hrs, Volume= 77,538 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 64.60' @ 12.08 hrs
Flood Elev= 25.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.70'	**15.0" Round Culvert** L= 143.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.70' / 14.70' S= 0.0070 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=18.45 cfs @ 12.08 hrs HW=64.47' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 18.45 cfs @ 15.03 fps)

Pond 1346:



Summary for Pond 1347:

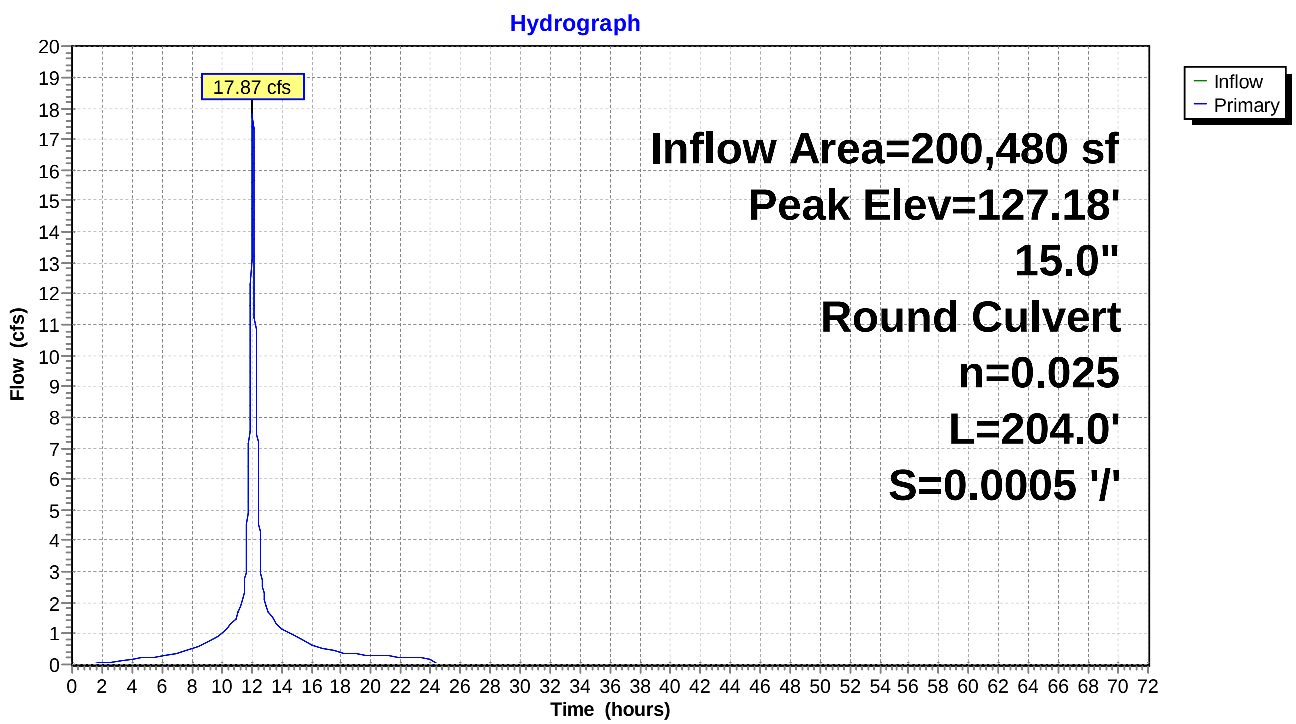
Inflow Area = 200,480 sf, 95.31% Impervious, Inflow Depth = 4.53" for 010-yr event
Inflow = 17.87 cfs @ 12.08 hrs, Volume= 75,621 cf
Outflow = 17.87 cfs @ 12.08 hrs, Volume= 75,621 cf, Atten= 0%, Lag= 0.0 min
Primary = 17.87 cfs @ 12.08 hrs, Volume= 75,621 cf

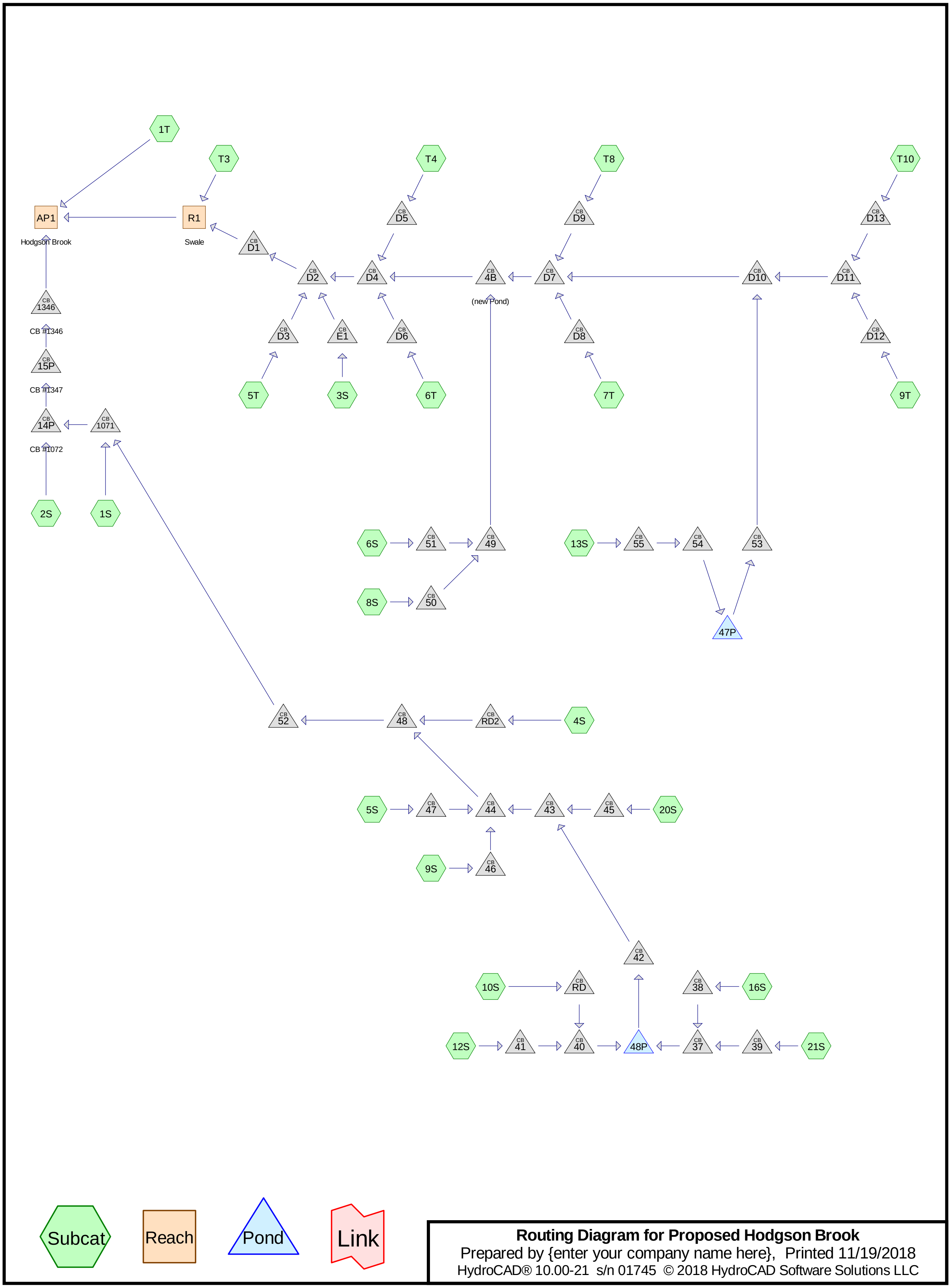
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 127.18' @ 12.09 hrs
Flood Elev= 23.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.90'	**15.0" Round Culvert** L= 204.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.90' / 15.80' S= 0.0005 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=17.77 cfs @ 12.08 hrs HW=126.67' TW=64.47' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 17.77 cfs @ 14.48 fps)

Pond 1347:





Routing Diagram for Proposed Hodgson Brook
Prepared by {enter your company name here}, Printed 11/19/2018
HydroCAD® 10.00-21 s/n 01745 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
148,289	74	>75% Grass cover, Good, HSG C (1S, 1T, 2S, 3S, 5S, 6S, 6T, 7T, 8S, 9S, 9T, 12S, 13S, 16S, 20S, 21S, T10, T3, T4, T8)
222,557	98	Paved parking, HSG C (1S, 2S, 3S, 5S, 5T, 6S, 6T, 7T, 8S, 9S, 9T, 12S, 13S, 16S, 20S, 21S, T10, T4, T8)
59,534	98	Unconnected roofs, HSG C (4S, 10S)
430,380	**90**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
430,380	HSG C	1S, 1T, 2S, 3S, 4S, 5S, 5T, 6S, 6T, 7T, 8S, 9S, 9T, 10S, 12S, 13S, 16S, 20S, 21S, T10, T3, T4, T8
0	HSG D	
0	Other	
430,380		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Subcatcl Numbers
0	0	148,289	0	0	148,289	>75% Grass cover, Good	
0	0	222,557	0	0	222,557	Paved parking	
0	0	59,534	0	0	59,534	Unconnected roofs	
0	**0**	**430,380**	**0**	**0**	**430,380**	**TOTAL AREA**	

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	4B	19.29	18.51	119.0	0.0066	0.013	18.0	0.0	0.0
2	14P	17.10	15.90	31.0	0.0387	0.025	15.0	0.0	0.0
3	15P	15.90	15.80	204.0	0.0005	0.025	15.0	0.0	0.0
4	37	20.61	20.54	14.5	0.0048	0.013	12.0	0.0	0.0
5	38	20.78	20.71	12.5	0.0056	0.013	12.0	0.0	0.0
6	39	21.07	20.71	71.5	0.0050	0.013	12.0	0.0	0.0
7	40	20.61	20.54	14.5	0.0048	0.013	12.0	0.0	0.0
8	41	21.04	20.71	66.0	0.0050	0.013	12.0	0.0	0.0
9	42	20.43	20.12	155.0	0.0020	0.013	1.0	0.0	0.0
10	43	20.02	19.29	145.5	0.0050	0.013	12.0	0.0	0.0
11	44	19.19	18.98	42.0	0.0050	0.013	12.0	0.0	0.0
12	45	20.24	20.12	24.5	0.0049	0.013	12.0	0.0	0.0
13	46	19.41	19.29	23.5	0.0051	0.013	12.0	0.0	0.0
14	47	19.51	19.29	44.0	0.0050	0.013	12.0	0.0	0.0
15	47P	22.87	22.28	14.5	0.0407	0.013	8.0	0.0	0.0
16	48	18.88	17.89	198.0	0.0050	0.013	12.0	0.0	0.0
17	48P	20.54	20.53	60.0	0.0002	0.013	12.0	0.0	0.0
18	49	20.08	19.79	59.0	0.0049	0.013	12.0	0.0	0.0
19	50	20.84	20.18	131.0	0.0050	0.013	12.0	0.0	0.0
20	51	20.32	20.18	27.5	0.0051	0.013	12.0	0.0	0.0
21	52	17.79	17.30	97.5	0.0050	0.013	12.0	0.0	0.0
22	53	21.95	21.40	110.0	0.0050	0.013	12.0	0.0	0.0
23	54	22.61	22.54	14.5	0.0048	0.013	12.0	0.0	0.0
24	55	22.98	22.71	53.0	0.0051	0.013	12.0	0.0	0.0
25	1071	17.50	17.30	31.0	0.0065	0.025	12.0	0.0	0.0
26	1346	15.70	14.70	143.0	0.0070	0.025	15.0	0.0	0.0
27	D1	17.10	17.00	16.0	0.0063	0.013	24.0	0.0	0.0
28	D10	21.30	20.24	231.5	0.0046	0.013	12.0	0.0	0.0
29	D11	23.35	21.40	231.5	0.0084	0.013	12.0	0.0	0.0
30	D12	23.52	23.45	7.0	0.0100	0.013	12.0	0.0	0.0
31	D13	23.52	23.45	7.0	0.0100	0.013	12.0	0.0	0.0
32	D2	17.64	17.20	67.0	0.0066	0.013	24.0	0.0	0.0
33	D3	19.31	18.64	27.0	0.0248	0.013	12.0	0.0	0.0
34	D4	18.41	18.14	42.0	0.0064	0.013	18.0	0.0	0.0
35	D5	19.03	18.91	23.5	0.0051	0.013	12.0	0.0	0.0
36	D6	19.11	19.03	16.5	0.0048	0.013	12.0	0.0	0.0
37	D7	19.74	19.39	54.5	0.0064	0.013	18.0	0.0	0.0
38	D8	20.32	20.24	7.5	0.0107	0.013	12.0	0.0	0.0
39	D9	20.32	20.24	7.5	0.0107	0.013	12.0	0.0	0.0
40	E1	18.83	18.64	39.0	0.0049	0.010	12.0	0.0	0.0
41	RD	22.02	21.11	91.0	0.0100	0.013	6.0	0.0	0.0
42	RD2	19.23	18.98	50.5	0.0050	0.013	6.0	0.0	0.0

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=13,115 sf 67.68% Impervious Runoff Depth=2.18"
Tc=6.0 min CN=90 Runoff=0.76 cfs 2,380 cf

Subcatchment 1T: Runoff Area=44,465 sf 0.00% Impervious Runoff Depth=1.04"
Flow Length=143' Tc=6.0 min CN=74 Runoff=1.19 cfs 3,869 cf

Subcatchment 2S: Runoff Area=8,206 sf 45.53% Impervious Runoff Depth=1.77"
Tc=0.0 min CN=85 Runoff=0.48 cfs 1,208 cf

Subcatchment 3S: Runoff Area=7,897 sf 9.73% Impervious Runoff Depth=1.16"
Tc=0.0 min CN=76 Runoff=0.29 cfs 763 cf

Subcatchment 4S: Runoff Area=22,635 sf 100.00% Impervious Runoff Depth=2.98"
Tc=6.0 min CN=98 Runoff=1.62 cfs 5,616 cf

Subcatchment 5S: Runoff Area=37,687 sf 67.42% Impervious Runoff Depth=2.18"
Tc=6.0 min CN=90 Runoff=2.19 cfs 6,840 cf

Subcatchment 5T: Runoff Area=5,760 sf 100.00% Impervious Runoff Depth=2.98"
Flow Length=176' Tc=6.0 min CN=98 Runoff=0.41 cfs 1,429 cf

Subcatchment 6S: Runoff Area=4,765 sf 77.02% Impervious Runoff Depth=2.36"
Tc=6.0 min CN=92 Runoff=0.30 cfs 937 cf

Subcatchment 6T: Runoff Area=9,722 sf 82.42% Impervious Runoff Depth=2.55"
Flow Length=71' Slope=0.1342 '/' Tc=7.7 min CN=94 Runoff=0.60 cfs 2,069 cf

Subcatchment 7T: Runoff Area=11,305 sf 59.96% Impervious Runoff Depth=2.01"
Flow Length=349' Slope=0.0138 '/' Tc=6.0 min CN=88 Runoff=0.61 cfs 1,890 cf

Subcatchment 8S: Runoff Area=25,878 sf 76.57% Impervious Runoff Depth=2.36"
Tc=6.0 min CN=92 Runoff=1.61 cfs 5,090 cf

Subcatchment 9S: Runoff Area=18,472 sf 83.26% Impervious Runoff Depth=2.55"
Tc=6.0 min CN=94 Runoff=1.22 cfs 3,931 cf

Subcatchment 9T: Runoff Area=3,204 sf 63.30% Impervious Runoff Depth=2.09"
Tc=6.0 min CN=89 Runoff=0.18 cfs 558 cf

Subcatchment 10S: Runoff Area=36,899 sf 100.00% Impervious Runoff Depth=2.98"
Tc=6.0 min CN=98 Runoff=2.64 cfs 9,155 cf

Subcatchment 12S: Runoff Area=23,297 sf 94.18% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=97 Runoff=1.64 cfs 5,565 cf

Subcatchment 13S: Runoff Area=23,084 sf 3.69% Impervious Runoff Depth=1.10"
Tc=6.0 min CN=75 Runoff=0.66 cfs 2,117 cf

Subcatchment 16S: Runoff Area=31,860 sf 64.47% Impervious Runoff Depth=2.09"
Tc=6.0 min CN=89 Runoff=1.78 cfs 5,551 cf

Subcatchment 20S: Runoff Area=28,057 sf 89.69% Impervious Runoff Depth=2.76"
Tc=6.0 min CN=96 Runoff=1.94 cfs 6,451 cf

Subcatchment 21S: Runoff Area=33,588 sf 79.33% Impervious Runoff Depth=2.46"
Tc=6.0 min CN=93 Runoff=2.15 cfs 6,873 cf

Subcatchment T10: Runoff Area=3,547 sf 81.62% Impervious Runoff Depth=2.55"
Tc=0.0 min CN=94 Runoff=0.29 cfs 755 cf

Subcatchment T3: Runoff Area=8,065 sf 0.00% Impervious Runoff Depth=1.04"
Flow Length=115' Slope=0.0011 '/' Tc=6.0 min CN=74 Runoff=0.21 cfs 702 cf

Subcatchment T4: Runoff Area=18,873 sf 85.85% Impervious Runoff Depth=2.65"
Tc=0.0 min CN=95 Runoff=1.56 cfs 4,175 cf

Subcatchment T8: Runoff Area=9,999 sf 80.90% Impervious Runoff Depth=2.46"
Tc=0.0 min CN=93 Runoff=0.78 cfs 2,046 cf

Reach AP1: Hodgson Brook Inflow=14.64 cfs 50,708 cf
Outflow=14.64 cfs 50,708 cf

Reach R1: Swale Avg. Flow Depth=0.39' Max Vel=2.76 fps Inflow=5.59 cfs 20,413 cf
n=0.035 L=100.0' S=0.0200 '/' Capacity=333.24 cfs Outflow=5.58 cfs 20,413 cf

Pond 4B: (new Pond) Peak Elev=20.33' Inflow=3.27 cfs 11,276 cf
18.0" Round Culvert n=0.013 L=119.0' S=0.0066 '/' Outflow=3.27 cfs 11,276 cf

Pond 14P: CB #1072 Peak Elev=40.27' Inflow=7.97 cfs 26,425 cf
15.0" Round Culvert n=0.025 L=31.0' S=0.0387 '/' Outflow=7.97 cfs 26,425 cf

Pond 15P: CB #1347 Peak Elev=37.53' Inflow=7.97 cfs 26,425 cf
15.0" Round Culvert n=0.025 L=204.0' S=0.0005 '/' Outflow=7.97 cfs 26,425 cf

Pond 37: Peak Elev=22.30' Inflow=3.93 cfs 12,423 cf
12.0" Round Culvert n=0.013 L=14.5' S=0.0048 '/' Outflow=3.93 cfs 12,423 cf

Pond 38: Peak Elev=22.52' Inflow=1.78 cfs 5,551 cf
12.0" Round Culvert n=0.013 L=12.5' S=0.0056 '/' Outflow=1.78 cfs 5,551 cf

Pond 39: Peak Elev=22.74' Inflow=2.15 cfs 6,873 cf
12.0" Round Culvert n=0.013 L=71.5' S=0.0050 '/' Outflow=2.15 cfs 6,873 cf

Pond 40: Peak Elev=22.44' Inflow=4.28 cfs 14,721 cf
12.0" Round Culvert n=0.013 L=14.5' S=0.0048 '/' Outflow=4.28 cfs 14,721 cf

Pond 41: Peak Elev=22.68' Inflow=1.64 cfs 5,565 cf
12.0" Round Culvert n=0.013 L=66.0' S=0.0050 '/' Outflow=1.64 cfs 5,565 cf

Pond 42: Peak Elev=27.91' Inflow=0.00 cfs 0 cf
1.0" Round Culvert n=0.013 L=155.0' S=0.0020 '/' Outflow=0.00 cfs 0 cf

Pond 43: Peak Elev=65.12' Inflow=1.94 cfs 6,451 cf
12.0" Round Culvert n=0.013 L=145.5' S=0.0050 '/' Outflow=1.94 cfs 6,451 cf

Pond 44: Peak Elev=64.63' Inflow=5.34 cfs 17,221 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0050 '/' Outflow=5.34 cfs 17,221 cf

Pond 45: Peak Elev=65.57' Inflow=1.94 cfs 6,451 cf
12.0" Round Culvert n=0.013 L=24.5' S=0.0049 '/' Outflow=1.94 cfs 6,451 cf

Pond 46: Peak Elev=64.66' Inflow=1.22 cfs 3,931 cf
12.0" Round Culvert n=0.013 L=23.5' S=0.0051 '/' Outflow=1.22 cfs 3,931 cf

Pond 47: Peak Elev=64.90' Inflow=2.19 cfs 6,840 cf
12.0" Round Culvert n=0.013 L=44.0' S=0.0050 '/' Outflow=2.19 cfs 6,840 cf

Pond 47P: Peak Elev=21.62' Storage=0.011 af Inflow=0.66 cfs 2,117 cf
Discarded=0.18 cfs 2,118 cf Primary=0.00 cfs 0 cf Outflow=0.18 cfs 2,118 cf

Pond 48: Peak Elev=62.79' Inflow=6.96 cfs 22,838 cf
12.0" Round Culvert n=0.013 L=198.0' S=0.0050 '/' Outflow=6.96 cfs 22,838 cf

Pond 48P: Peak Elev=19.96' Storage=0.149 af Inflow=8.21 cfs 27,144 cf
Discarded=2.29 cfs 27,144 cf Primary=0.00 cfs 0 cf Outflow=2.29 cfs 27,144 cf

Pond 49: Peak Elev=20.99' Inflow=1.90 cfs 6,027 cf
12.0" Round Culvert n=0.013 L=59.0' S=0.0049 '/' Outflow=1.90 cfs 6,027 cf

Pond 50: Peak Elev=21.69' Inflow=1.61 cfs 5,090 cf
12.0" Round Culvert n=0.013 L=131.0' S=0.0050 '/' Outflow=1.61 cfs 5,090 cf

Pond 51: Peak Elev=21.01' Inflow=0.30 cfs 937 cf
12.0" Round Culvert n=0.013 L=27.5' S=0.0051 '/' Outflow=0.30 cfs 937 cf

Pond 52: Peak Elev=53.39' Inflow=6.96 cfs 22,838 cf
12.0" Round Culvert n=0.013 L=97.5' S=0.0050 '/' Outflow=6.96 cfs 22,838 cf

Pond 53: Peak Elev=21.95' Inflow=0.00 cfs 0 cf
12.0" Round Culvert n=0.013 L=110.0' S=0.0050 '/' Outflow=0.00 cfs 0 cf

Pond 54: Peak Elev=23.11' Inflow=0.66 cfs 2,117 cf
12.0" Round Culvert n=0.013 L=14.5' S=0.0048 '/' Outflow=0.66 cfs 2,117 cf

Pond 55: Peak Elev=23.47' Inflow=0.66 cfs 2,117 cf
12.0" Round Culvert n=0.013 L=53.0' S=0.0051 '/' Outflow=0.66 cfs 2,117 cf

Pond 1071: Peak Elev=47.83' Inflow=7.72 cfs 25,218 cf
12.0" Round Culvert n=0.025 L=31.0' S=0.0065 '/' Outflow=7.72 cfs 25,218 cf

Pond 1346: CB #1346 Peak Elev=25.02' Inflow=7.97 cfs 26,425 cf
15.0" Round Culvert n=0.025 L=143.0' S=0.0070 '/' Outflow=7.97 cfs 26,425 cf

Pond D1: Peak Elev=18.31' Inflow=5.40 cfs 19,711 cf
24.0" Round Culvert n=0.013 L=16.0' S=0.0063 '/' Outflow=5.40 cfs 19,711 cf

Pond D10: Peak Elev=21.67' Inflow=0.39 cfs 1,313 cf
12.0" Round Culvert n=0.013 L=231.5' S=0.0046 '/' Outflow=0.39 cfs 1,313 cf

Pond D11: Peak Elev=23.67' Inflow=0.39 cfs 1,313 cf
12.0" Round Culvert n=0.013 L=231.5' S=0.0084 '/' Outflow=0.39 cfs 1,313 cf

Pond D12: Peak Elev=23.76' Inflow=0.18 cfs 558 cf
12.0" Round Culvert n=0.013 L=7.0' S=0.0100 '/' Outflow=0.18 cfs 558 cf

Pond D13: Peak Elev=23.82' Inflow=0.29 cfs 755 cf
12.0" Round Culvert n=0.013 L=7.0' S=0.0100 '/' Outflow=0.29 cfs 755 cf

Pond D2: Peak Elev=18.86' Inflow=5.40 cfs 19,711 cf
24.0" Round Culvert n=0.013 L=67.0' S=0.0066 '/' Outflow=5.40 cfs 19,711 cf

Pond D3: Peak Elev=19.63' Inflow=0.41 cfs 1,429 cf
12.0" Round Culvert n=0.013 L=27.0' S=0.0248 '/' Outflow=0.41 cfs 1,429 cf

Pond D4: Peak Elev=19.65' Inflow=4.79 cfs 17,520 cf
18.0" Round Culvert n=0.013 L=42.0' S=0.0064 '/' Outflow=4.79 cfs 17,520 cf

Pond D5: Peak Elev=19.89' Inflow=1.56 cfs 4,175 cf
12.0" Round Culvert n=0.013 L=23.5' S=0.0051 '/' Outflow=1.56 cfs 4,175 cf

Pond D6: Peak Elev=19.72' Inflow=0.60 cfs 2,069 cf
12.0" Round Culvert n=0.013 L=16.5' S=0.0048 '/' Outflow=0.60 cfs 2,069 cf

Pond D7: Peak Elev=20.54' Inflow=1.54 cfs 5,249 cf
18.0" Round Culvert n=0.013 L=54.5' S=0.0064 '/' Outflow=1.54 cfs 5,249 cf

Pond D8: Peak Elev=20.77' Inflow=0.61 cfs 1,890 cf
12.0" Round Culvert n=0.013 L=7.5' S=0.0107 '/' Outflow=0.61 cfs 1,890 cf

Pond D9: Peak Elev=20.84' Inflow=0.78 cfs 2,046 cf
12.0" Round Culvert n=0.013 L=7.5' S=0.0107 '/' Outflow=0.78 cfs 2,046 cf

Pond E1: Peak Elev=19.14' Inflow=0.29 cfs 763 cf
12.0" Round Culvert n=0.010 L=39.0' S=0.0049 '/' Outflow=0.29 cfs 763 cf

Pond RD: Peak Elev=46.85' Inflow=2.64 cfs 9,155 cf
6.0" Round Culvert n=0.013 L=91.0' S=0.0100 '/' Outflow=2.64 cfs 9,155 cf

Pond RD2: Peak Elev=68.36' Inflow=1.62 cfs 5,616 cf
6.0" Round Culvert n=0.013 L=50.5' S=0.0050 '/' Outflow=1.62 cfs 5,616 cf

Total Runoff Area = 430,380 sf Runoff Volume = 79,969 cf Average Runoff Depth = 2.23"
34.46% Pervious = 148,289 sf 65.54% Impervious = 282,091 sf

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=13,115 sf 67.68% Impervious Runoff Depth=5.01"
Tc=6.0 min CN=90 Runoff=1.68 cfs 5,477 cf

Subcatchment 1T: Runoff Area=44,465 sf 0.00% Impervious Runoff Depth=3.33"
Flow Length=143' Tc=6.0 min CN=74 Runoff=3.99 cfs 12,333 cf

Subcatchment 2S: Runoff Area=8,206 sf 45.53% Impervious Runoff Depth=4.46"
Tc=0.0 min CN=85 Runoff=1.18 cfs 3,052 cf

Subcatchment 3S: Runoff Area=7,897 sf 9.73% Impervious Runoff Depth=3.53"
Tc=0.0 min CN=76 Runoff=0.92 cfs 2,321 cf

Subcatchment 4S: Runoff Area=22,635 sf 100.00% Impervious Runoff Depth=5.93"
Tc=6.0 min CN=98 Runoff=3.14 cfs 11,189 cf

Subcatchment 5S: Runoff Area=37,687 sf 67.42% Impervious Runoff Depth=5.01"
Tc=6.0 min CN=90 Runoff=4.84 cfs 15,739 cf

Subcatchment 5T: Runoff Area=5,760 sf 100.00% Impervious Runoff Depth=5.93"
Flow Length=176' Tc=6.0 min CN=98 Runoff=0.80 cfs 2,847 cf

Subcatchment 6S: Runoff Area=4,765 sf 77.02% Impervious Runoff Depth=5.24"
Tc=6.0 min CN=92 Runoff=0.63 cfs 2,079 cf

Subcatchment 6T: Runoff Area=9,722 sf 82.42% Impervious Runoff Depth=5.47"
Flow Length=71' Slope=0.1342 '/' Tc=7.7 min CN=94 Runoff=1.24 cfs 4,428 cf

Subcatchment 7T: Runoff Area=11,305 sf 59.96% Impervious Runoff Depth=4.79"
Flow Length=349' Slope=0.0138 '/' Tc=6.0 min CN=88 Runoff=1.41 cfs 4,512 cf

Subcatchment 8S: Runoff Area=25,878 sf 76.57% Impervious Runoff Depth=5.24"
Tc=6.0 min CN=92 Runoff=3.41 cfs 11,293 cf

Subcatchment 9S: Runoff Area=18,472 sf 83.26% Impervious Runoff Depth=5.47"
Tc=6.0 min CN=94 Runoff=2.49 cfs 8,413 cf

Subcatchment 9T: Runoff Area=3,204 sf 63.30% Impervious Runoff Depth=4.90"
Tc=6.0 min CN=89 Runoff=0.40 cfs 1,308 cf

Subcatchment 10S: Runoff Area=36,899 sf 100.00% Impervious Runoff Depth=5.93"
Tc=6.0 min CN=98 Runoff=5.12 cfs 18,239 cf

Subcatchment 12S: Runoff Area=23,297 sf 94.18% Impervious Runoff Depth=5.81"
Tc=6.0 min CN=97 Runoff=3.22 cfs 11,287 cf

Subcatchment 13S: Runoff Area=23,084 sf 3.69% Impervious Runoff Depth=3.43"
Tc=6.0 min CN=75 Runoff=2.13 cfs 6,593 cf

Subcatchment 16S:	Runoff Area=31,860 sf 64.47% Impervious Runoff Depth=4.90" Tc=6.0 min CN=89 Runoff=4.03 cfs 13,010 cf
Subcatchment 20S:	Runoff Area=28,057 sf 89.69% Impervious Runoff Depth=5.70" Tc=6.0 min CN=96 Runoff=3.85 cfs 13,319 cf
Subcatchment 21S:	Runoff Area=33,588 sf 79.33% Impervious Runoff Depth=5.35" Tc=6.0 min CN=93 Runoff=4.48 cfs 14,976 cf
Subcatchment T10:	Runoff Area=3,547 sf 81.62% Impervious Runoff Depth=5.47" Tc=0.0 min CN=94 Runoff=0.58 cfs 1,615 cf
Subcatchment T3:	Runoff Area=8,065 sf 0.00% Impervious Runoff Depth=3.33" Flow Length=115' Slope=0.0011 '/' Tc=6.0 min CN=74 Runoff=0.72 cfs 2,237 cf
Subcatchment T4:	Runoff Area=18,873 sf 85.85% Impervious Runoff Depth=5.58" Tc=0.0 min CN=95 Runoff=3.14 cfs 8,777 cf
Subcatchment T8:	Runoff Area=9,999 sf 80.90% Impervious Runoff Depth=5.35" Tc=0.0 min CN=93 Runoff=1.63 cfs 4,458 cf
Reach AP1: Hodgson Brook	Inflow=32.59 cfs 116,426 cf Outflow=32.59 cfs 116,426 cf
Reach R1: Swale	Avg. Flow Depth=0.60' Max Vel=3.51 fps Inflow=12.21 cfs 46,033 cf n=0.035 L=100.0' S=0.0200 '/' Capacity=333.24 cfs Outflow=12.19 cfs 46,033 cf
Pond 4B: (new Pond)	Peak Elev=22.01' Inflow=7.06 cfs 25,423 cf 18.0" Round Culvert n=0.013 L=119.0' S=0.0066 '/' Outflow=7.06 cfs 25,423 cf
Pond 14P: CB #1072	Peak Elev=121.62' Inflow=16.62 cfs 58,061 cf 15.0" Round Culvert n=0.025 L=31.0' S=0.0387 '/' Outflow=16.62 cfs 58,061 cf
Pond 15P: CB #1347	Peak Elev=109.74' Inflow=16.62 cfs 58,061 cf 15.0" Round Culvert n=0.025 L=204.0' S=0.0005 '/' Outflow=16.62 cfs 58,061 cf
Pond 37:	Peak Elev=26.17' Inflow=8.51 cfs 27,986 cf 12.0" Round Culvert n=0.013 L=14.5' S=0.0048 '/' Outflow=8.51 cfs 27,986 cf
Pond 38:	Peak Elev=27.31' Inflow=4.03 cfs 13,010 cf 12.0" Round Culvert n=0.013 L=12.5' S=0.0056 '/' Outflow=4.03 cfs 13,010 cf
Pond 39:	Peak Elev=28.07' Inflow=4.48 cfs 14,976 cf 12.0" Round Culvert n=0.013 L=71.5' S=0.0050 '/' Outflow=4.48 cfs 14,976 cf
Pond 40:	Peak Elev=25.98' Inflow=8.34 cfs 29,526 cf 12.0" Round Culvert n=0.013 L=14.5' S=0.0048 '/' Outflow=8.34 cfs 29,526 cf
Pond 41:	Peak Elev=26.91' Inflow=3.22 cfs 11,287 cf 12.0" Round Culvert n=0.013 L=66.0' S=0.0050 '/' Outflow=3.22 cfs 11,287 cf

Pond 42: Peak Elev=22,346.84' Inflow=0.56 cfs 872 cf
1.0" Round Culvert n=0.013 L=155.0' S=0.0020 '/' Outflow=0.56 cfs 872 cf

Pond 43: Peak Elev=227.65' Inflow=3.85 cfs 14,191 cf
12.0" Round Culvert n=0.013 L=145.5' S=0.0050 '/' Outflow=3.85 cfs 14,191 cf

Pond 44: Peak Elev=225.66' Inflow=11.18 cfs 38,343 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0050 '/' Outflow=11.18 cfs 38,343 cf

Pond 45: Peak Elev=229.41' Inflow=3.85 cfs 13,319 cf
12.0" Round Culvert n=0.013 L=24.5' S=0.0049 '/' Outflow=3.85 cfs 13,319 cf

Pond 46: Peak Elev=225.85' Inflow=2.49 cfs 8,413 cf
12.0" Round Culvert n=0.013 L=23.5' S=0.0051 '/' Outflow=2.49 cfs 8,413 cf

Pond 47: Peak Elev=227.10' Inflow=4.84 cfs 15,739 cf
12.0" Round Culvert n=0.013 L=44.0' S=0.0050 '/' Outflow=4.84 cfs 15,739 cf

Pond 47P: Peak Elev=23.08' Storage=0.049 af Inflow=2.13 cfs 6,593 cf
Discarded=0.37 cfs 6,437 cf Primary=0.14 cfs 157 cf Outflow=0.52 cfs 6,594 cf

Pond 48: Peak Elev=217.56' Inflow=14.32 cfs 49,531 cf
12.0" Round Culvert n=0.013 L=198.0' S=0.0050 '/' Outflow=14.32 cfs 49,531 cf

Pond 48P: Peak Elev=21.13' Storage=0.376 af Inflow=16.85 cfs 57,512 cf
Discarded=4.18 cfs 57,500 cf Primary=0.56 cfs 872 cf Outflow=4.34 cfs 57,512 cf

Pond 49: Peak Elev=23.32' Inflow=4.04 cfs 13,372 cf
12.0" Round Culvert n=0.013 L=59.0' S=0.0049 '/' Outflow=4.04 cfs 13,372 cf

Pond 50: Peak Elev=24.98' Inflow=3.41 cfs 11,293 cf
12.0" Round Culvert n=0.013 L=131.0' S=0.0050 '/' Outflow=3.41 cfs 11,293 cf

Pond 51: Peak Elev=23.38' Inflow=0.63 cfs 2,079 cf
12.0" Round Culvert n=0.013 L=27.5' S=0.0051 '/' Outflow=0.63 cfs 2,079 cf

Pond 52: Peak Elev=177.73' Inflow=14.32 cfs 49,531 cf
12.0" Round Culvert n=0.013 L=97.5' S=0.0050 '/' Outflow=14.32 cfs 49,531 cf

Pond 53: Peak Elev=22.28' Inflow=0.14 cfs 157 cf
12.0" Round Culvert n=0.013 L=110.0' S=0.0050 '/' Outflow=0.14 cfs 157 cf

Pond 54: Peak Elev=23.62' Inflow=2.13 cfs 6,593 cf
12.0" Round Culvert n=0.013 L=14.5' S=0.0048 '/' Outflow=2.13 cfs 6,593 cf

Pond 55: Peak Elev=24.05' Inflow=2.13 cfs 6,593 cf
12.0" Round Culvert n=0.013 L=53.0' S=0.0051 '/' Outflow=2.13 cfs 6,593 cf

Pond 1071: Peak Elev=154.16' Inflow=16.01 cfs 55,009 cf
12.0" Round Culvert n=0.025 L=31.0' S=0.0065 '/' Outflow=16.01 cfs 55,009 cf

Pond 1346: CB #1346 Peak Elev=55.35' Inflow=16.62 cfs 58,061 cf
15.0" Round Culvert n=0.025 L=143.0' S=0.0070 '/' Outflow=16.62 cfs 58,061 cf

Pond D1: Peak Elev=19.03' Inflow=11.55 cfs 43,796 cf
24.0" Round Culvert n=0.013 L=16.0' S=0.0063 '/' Outflow=11.55 cfs 43,796 cf

Pond D10: Peak Elev=22.31' Inflow=0.84 cfs 3,080 cf
12.0" Round Culvert n=0.013 L=231.5' S=0.0046 '/' Outflow=0.84 cfs 3,080 cf

Pond D11: Peak Elev=23.84' Inflow=0.84 cfs 2,924 cf
12.0" Round Culvert n=0.013 L=231.5' S=0.0084 '/' Outflow=0.84 cfs 2,924 cf

Pond D12: Peak Elev=23.93' Inflow=0.40 cfs 1,308 cf
12.0" Round Culvert n=0.013 L=7.0' S=0.0100 '/' Outflow=0.40 cfs 1,308 cf

Pond D13: Peak Elev=23.99' Inflow=0.58 cfs 1,615 cf
12.0" Round Culvert n=0.013 L=7.0' S=0.0100 '/' Outflow=0.58 cfs 1,615 cf

Pond D2: Peak Elev=19.69' Inflow=11.55 cfs 43,796 cf
24.0" Round Culvert n=0.013 L=67.0' S=0.0066 '/' Outflow=11.55 cfs 43,796 cf

Pond D3: Peak Elev=19.89' Inflow=0.80 cfs 2,847 cf
12.0" Round Culvert n=0.013 L=27.0' S=0.0248 '/' Outflow=0.80 cfs 2,847 cf

Pond D4: Peak Elev=21.11' Inflow=10.15 cfs 38,627 cf
18.0" Round Culvert n=0.013 L=42.0' S=0.0064 '/' Outflow=10.15 cfs 38,627 cf

Pond D5: Peak Elev=21.60' Inflow=3.14 cfs 8,777 cf
12.0" Round Culvert n=0.013 L=23.5' S=0.0051 '/' Outflow=3.14 cfs 8,777 cf

Pond D6: Peak Elev=21.19' Inflow=1.24 cfs 4,428 cf
12.0" Round Culvert n=0.013 L=16.5' S=0.0048 '/' Outflow=1.24 cfs 4,428 cf

Pond D7: Peak Elev=22.15' Inflow=3.33 cfs 12,051 cf
18.0" Round Culvert n=0.013 L=54.5' S=0.0064 '/' Outflow=3.33 cfs 12,051 cf

Pond D8: Peak Elev=22.29' Inflow=1.41 cfs 4,512 cf
12.0" Round Culvert n=0.013 L=7.5' S=0.0107 '/' Outflow=1.41 cfs 4,512 cf

Pond D9: Peak Elev=22.23' Inflow=1.63 cfs 4,458 cf
12.0" Round Culvert n=0.013 L=7.5' S=0.0107 '/' Outflow=1.63 cfs 4,458 cf

Pond E1: Peak Elev=19.75' Inflow=0.92 cfs 2,321 cf
12.0" Round Culvert n=0.010 L=39.0' S=0.0049 '/' Outflow=0.92 cfs 2,321 cf

Pond RD: Peak Elev=117.93' Inflow=5.12 cfs 18,239 cf
6.0" Round Culvert n=0.013 L=91.0' S=0.0100 '/' Outflow=5.12 cfs 18,239 cf

Pond RD2: Peak Elev=238.53' Inflow=3.14 cfs 11,189 cf
6.0" Round Culvert n=0.013 L=50.5' S=0.0050 '/' Outflow=3.14 cfs 11,189 cf

Total Runoff Area = 430,380 sf Runoff Volume = 179,504 cf Average Runoff Depth = 5.00"
34.46% Pervious = 148,289 sf 65.54% Impervious = 282,091 sf

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=13,115 sf 67.68% Impervious Runoff Depth=6.21"
Tc=6.0 min CN=90 Runoff=2.06 cfs 6,782 cf

Subcatchment 1T: Runoff Area=44,465 sf 0.00% Impervious Runoff Depth=4.38"
Flow Length=143' Tc=6.0 min CN=74 Runoff=5.24 cfs 16,244 cf

Subcatchment 2S: Runoff Area=8,206 sf 45.53% Impervious Runoff Depth=5.63"
Tc=0.0 min CN=85 Runoff=1.47 cfs 3,847 cf

Subcatchment 3S: Runoff Area=7,897 sf 9.73% Impervious Runoff Depth=4.61"
Tc=0.0 min CN=76 Runoff=1.19 cfs 3,031 cf

Subcatchment 4S: Runoff Area=22,635 sf 100.00% Impervious Runoff Depth=7.15"
Tc=6.0 min CN=98 Runoff=3.77 cfs 13,488 cf

Subcatchment 5S: Runoff Area=37,687 sf 67.42% Impervious Runoff Depth=6.21"
Tc=6.0 min CN=90 Runoff=5.92 cfs 19,490 cf

Subcatchment 5T: Runoff Area=5,760 sf 100.00% Impervious Runoff Depth=7.15"
Flow Length=176' Tc=6.0 min CN=98 Runoff=0.96 cfs 3,432 cf

Subcatchment 6S: Runoff Area=4,765 sf 77.02% Impervious Runoff Depth=6.44"
Tc=6.0 min CN=92 Runoff=0.76 cfs 2,557 cf

Subcatchment 6T: Runoff Area=9,722 sf 82.42% Impervious Runoff Depth=6.68"
Flow Length=71' Slope=0.1342 '/' Tc=7.7 min CN=94 Runoff=1.50 cfs 5,408 cf

Subcatchment 7T: Runoff Area=11,305 sf 59.96% Impervious Runoff Depth=5.97"
Flow Length=349' Slope=0.0138 '/' Tc=6.0 min CN=88 Runoff=1.73 cfs 5,627 cf

Subcatchment 8S: Runoff Area=25,878 sf 76.57% Impervious Runoff Depth=6.44"
Tc=6.0 min CN=92 Runoff=4.15 cfs 13,888 cf

Subcatchment 9S: Runoff Area=18,472 sf 83.26% Impervious Runoff Depth=6.68"
Tc=6.0 min CN=94 Runoff=3.01 cfs 10,276 cf

Subcatchment 9T: Runoff Area=3,204 sf 63.30% Impervious Runoff Depth=6.09"
Tc=6.0 min CN=89 Runoff=0.50 cfs 1,626 cf

Subcatchment 10S: Runoff Area=36,899 sf 100.00% Impervious Runoff Depth=7.15"
Tc=6.0 min CN=98 Runoff=6.14 cfs 21,988 cf

Subcatchment 12S: Runoff Area=23,297 sf 94.18% Impervious Runoff Depth=7.03"
Tc=6.0 min CN=97 Runoff=3.87 cfs 13,651 cf

Subcatchment 13S: Runoff Area=23,084 sf 3.69% Impervious Runoff Depth=4.49"
Tc=6.0 min CN=75 Runoff=2.79 cfs 8,647 cf

Subcatchment 16S: Runoff Area=31,860 sf 64.47% Impervious Runoff Depth=6.09"
Tc=6.0 min CN=89 Runoff=4.94 cfs 16,167 cf

Subcatchment 20S: Runoff Area=28,057 sf 89.69% Impervious Runoff Depth=6.91"
Tc=6.0 min CN=96 Runoff=4.63 cfs 16,162 cf

Subcatchment 21S: Runoff Area=33,588 sf 79.33% Impervious Runoff Depth=6.56"
Tc=6.0 min CN=93 Runoff=5.43 cfs 18,355 cf

Subcatchment T10: Runoff Area=3,547 sf 81.62% Impervious Runoff Depth=6.68"
Tc=0.0 min CN=94 Runoff=0.71 cfs 1,973 cf

Subcatchment T3: Runoff Area=8,065 sf 0.00% Impervious Runoff Depth=4.38"
Flow Length=115' Slope=0.0011 '/' Tc=6.0 min CN=74 Runoff=0.95 cfs 2,946 cf

Subcatchment T4: Runoff Area=18,873 sf 85.85% Impervious Runoff Depth=6.79"
Tc=0.0 min CN=95 Runoff=3.78 cfs 10,685 cf

Subcatchment T8: Runoff Area=9,999 sf 80.90% Impervious Runoff Depth=6.56"
Tc=0.0 min CN=93 Runoff=1.97 cfs 5,464 cf

Reach AP1: Hodgson Brook Inflow=40.06 cfs 148,224 cf
Outflow=40.06 cfs 148,224 cf

Reach R1: Swale Avg. Flow Depth=0.67' Max Vel=3.72 fps Inflow=14.94 cfs 57,704 cf
n=0.035 L=100.0' S=0.0200 '/' Capacity=333.24 cfs Outflow=14.92 cfs 57,704 cf

Pond 4B: (new Pond) Peak Elev=23.61' Inflow=8.60 cfs 32,200 cf
18.0" Round Culvert n=0.013 L=119.0' S=0.0066 '/' Outflow=8.60 cfs 32,200 cf

Pond 14P: CB #1072 Peak Elev=171.30' Inflow=20.15 cfs 74,276 cf
15.0" Round Culvert n=0.025 L=31.0' S=0.0387 '/' Outflow=20.15 cfs 74,276 cf

Pond 15P: CB #1347 Peak Elev=153.82' Inflow=20.15 cfs 74,276 cf
15.0" Round Culvert n=0.025 L=204.0' S=0.0005 '/' Outflow=20.15 cfs 74,276 cf

Pond 37: Peak Elev=28.64' Inflow=10.38 cfs 34,522 cf
12.0" Round Culvert n=0.013 L=14.5' S=0.0048 '/' Outflow=10.38 cfs 34,522 cf

Pond 38: Peak Elev=30.35' Inflow=4.94 cfs 16,167 cf
12.0" Round Culvert n=0.013 L=12.5' S=0.0056 '/' Outflow=4.94 cfs 16,167 cf

Pond 39: Peak Elev=31.42' Inflow=5.43 cfs 18,355 cf
12.0" Round Culvert n=0.013 L=71.5' S=0.0050 '/' Outflow=5.43 cfs 18,355 cf

Pond 40: Peak Elev=28.11' Inflow=10.01 cfs 35,638 cf
12.0" Round Culvert n=0.013 L=14.5' S=0.0048 '/' Outflow=10.01 cfs 35,638 cf

Pond 41: Peak Elev=29.46' Inflow=3.87 cfs 13,651 cf
12.0" Round Culvert n=0.013 L=66.0' S=0.0050 '/' Outflow=3.87 cfs 13,651 cf

Pond 42: Peak Elev=255,075.84' Inflow=1.90 cfs 4,230 cf
1.0" Round Culvert n=0.013 L=155.0' S=0.0020 '/' Outflow=1.90 cfs 4,230 cf

Pond 43: Peak Elev=326.68' Inflow=4.63 cfs 20,392 cf
12.0" Round Culvert n=0.013 L=145.5' S=0.0050 '/' Outflow=4.63 cfs 20,392 cf

Pond 44: Peak Elev=323.79' Inflow=13.56 cfs 50,158 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0050 '/' Outflow=13.56 cfs 50,158 cf

Pond 45: Peak Elev=329.23' Inflow=4.63 cfs 16,162 cf
12.0" Round Culvert n=0.013 L=24.5' S=0.0049 '/' Outflow=4.63 cfs 16,162 cf

Pond 46: Peak Elev=324.08' Inflow=3.01 cfs 10,276 cf
12.0" Round Culvert n=0.013 L=23.5' S=0.0051 '/' Outflow=3.01 cfs 10,276 cf

Pond 47: Peak Elev=325.96' Inflow=5.92 cfs 19,490 cf
12.0" Round Culvert n=0.013 L=44.0' S=0.0050 '/' Outflow=5.92 cfs 19,490 cf

Pond 47P: Peak Elev=23.39' Storage=0.057 af Inflow=2.79 cfs 8,647 cf
Discarded=0.42 cfs 7,582 cf Primary=0.71 cfs 1,065 cf Outflow=1.13 cfs 8,647 cf

Pond 48: Peak Elev=311.87' Inflow=17.33 cfs 63,646 cf
12.0" Round Culvert n=0.013 L=198.0' S=0.0050 '/' Outflow=17.33 cfs 63,646 cf

Pond 48P: Peak Elev=21.73' Storage=0.469 af Inflow=20.38 cfs 70,160 cf
Discarded=5.16 cfs 70,160 cf Primary=1.90 cfs 4,230 cf Outflow=5.16 cfs 70,160 cf

Pond 49: Peak Elev=25.55' Inflow=4.91 cfs 16,445 cf
12.0" Round Culvert n=0.013 L=59.0' S=0.0049 '/' Outflow=4.91 cfs 16,445 cf

Pond 50: Peak Elev=28.00' Inflow=4.15 cfs 13,888 cf
12.0" Round Culvert n=0.013 L=131.0' S=0.0050 '/' Outflow=4.15 cfs 13,888 cf

Pond 51: Peak Elev=25.64' Inflow=0.76 cfs 2,557 cf
12.0" Round Culvert n=0.013 L=27.5' S=0.0051 '/' Outflow=0.76 cfs 2,557 cf

Pond 52: Peak Elev=253.55' Inflow=17.33 cfs 63,646 cf
12.0" Round Culvert n=0.013 L=97.5' S=0.0050 '/' Outflow=17.33 cfs 63,646 cf

Pond 53: Peak Elev=23.70' Inflow=0.71 cfs 1,065 cf
12.0" Round Culvert n=0.013 L=110.0' S=0.0050 '/' Outflow=0.71 cfs 1,065 cf

Pond 54: Peak Elev=23.87' Inflow=2.79 cfs 8,647 cf
12.0" Round Culvert n=0.013 L=14.5' S=0.0048 '/' Outflow=2.79 cfs 8,647 cf

Pond 55: Peak Elev=24.49' Inflow=2.79 cfs 8,647 cf
12.0" Round Culvert n=0.013 L=53.0' S=0.0051 '/' Outflow=2.79 cfs 8,647 cf

Pond 1071: Peak Elev=219.04' Inflow=19.39 cfs 70,428 cf
12.0" Round Culvert n=0.025 L=31.0' S=0.0065 '/' Outflow=19.39 cfs 70,428 cf

Pond 1346: CB #1346 Peak Elev=73.87' Inflow=20.15 cfs 74,276 cf
15.0" Round Culvert n=0.025 L=143.0' S=0.0070 '/' Outflow=20.15 cfs 74,276 cf

Pond D1: Peak Elev=19.32' Inflow=14.08 cfs 54,757 cf
24.0" Round Culvert n=0.013 L=16.0' S=0.0063 '/' Outflow=14.08 cfs 54,757 cf

Pond D10: Peak Elev=24.02' Inflow=1.09 cfs 4,664 cf
12.0" Round Culvert n=0.013 L=231.5' S=0.0046 '/' Outflow=1.09 cfs 4,664 cf

Pond D11: Peak Elev=24.27' Inflow=1.02 cfs 3,599 cf
12.0" Round Culvert n=0.013 L=231.5' S=0.0084 '/' Outflow=1.02 cfs 3,599 cf

Pond D12: Peak Elev=24.30' Inflow=0.50 cfs 1,626 cf
12.0" Round Culvert n=0.013 L=7.0' S=0.0100 '/' Outflow=0.50 cfs 1,626 cf

Pond D13: Peak Elev=24.30' Inflow=0.71 cfs 1,973 cf
12.0" Round Culvert n=0.013 L=7.0' S=0.0100 '/' Outflow=0.71 cfs 1,973 cf

Pond D2: Peak Elev=20.18' Inflow=14.08 cfs 54,757 cf
24.0" Round Culvert n=0.013 L=67.0' S=0.0066 '/' Outflow=14.08 cfs 54,757 cf

Pond D3: Peak Elev=20.26' Inflow=0.96 cfs 3,432 cf
12.0" Round Culvert n=0.013 L=27.0' S=0.0248 '/' Outflow=0.96 cfs 3,432 cf

Pond D4: Peak Elev=22.28' Inflow=12.33 cfs 48,294 cf
18.0" Round Culvert n=0.013 L=42.0' S=0.0064 '/' Outflow=12.33 cfs 48,294 cf

Pond D5: Peak Elev=22.95' Inflow=3.78 cfs 10,685 cf
12.0" Round Culvert n=0.013 L=23.5' S=0.0051 '/' Outflow=3.78 cfs 10,685 cf

Pond D6: Peak Elev=22.39' Inflow=1.50 cfs 5,408 cf
12.0" Round Culvert n=0.013 L=16.5' S=0.0048 '/' Outflow=1.50 cfs 5,408 cf

Pond D7: Peak Elev=23.82' Inflow=4.06 cfs 15,755 cf
18.0" Round Culvert n=0.013 L=54.5' S=0.0064 '/' Outflow=4.06 cfs 15,755 cf

Pond D8: Peak Elev=24.03' Inflow=1.73 cfs 5,627 cf
12.0" Round Culvert n=0.013 L=7.5' S=0.0107 '/' Outflow=1.73 cfs 5,627 cf

Pond D9: Peak Elev=23.94' Inflow=1.97 cfs 5,464 cf
12.0" Round Culvert n=0.013 L=7.5' S=0.0107 '/' Outflow=1.97 cfs 5,464 cf

Pond E1: Peak Elev=20.28' Inflow=1.19 cfs 3,031 cf
12.0" Round Culvert n=0.010 L=39.0' S=0.0049 '/' Outflow=1.19 cfs 3,031 cf

Pond RD: Peak Elev=160.34' Inflow=6.14 cfs 21,988 cf
6.0" Round Culvert n=0.013 L=91.0' S=0.0100 '/' Outflow=6.14 cfs 21,988 cf

Pond RD2: Peak Elev=342.02' Inflow=3.77 cfs 13,488 cf
6.0" Round Culvert n=0.013 L=50.5' S=0.0050 '/' Outflow=3.77 cfs 13,488 cf

Total Runoff Area = 430,380 sf Runoff Volume = 221,735 cf Average Runoff Depth = 6.18"
34.46% Pervious = 148,289 sf 65.54% Impervious = 282,091 sf

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=13,115 sf 67.68% Impervious Runoff Depth=7.65"
Tc=6.0 min CN=90 Runoff=2.51 cfs 8,364 cf

Subcatchment 1T: Runoff Area=44,465 sf 0.00% Impervious Runoff Depth=5.70"
Flow Length=143' Tc=6.0 min CN=74 Runoff=6.79 cfs 21,127 cf

Subcatchment 2S: Runoff Area=8,206 sf 45.53% Impervious Runoff Depth=7.05"
Tc=0.0 min CN=85 Runoff=1.82 cfs 4,818 cf

Subcatchment 3S: Runoff Area=7,897 sf 9.73% Impervious Runoff Depth=5.95"
Tc=0.0 min CN=76 Runoff=1.53 cfs 3,913 cf

Subcatchment 4S: Runoff Area=22,635 sf 100.00% Impervious Runoff Depth=8.62"
Tc=6.0 min CN=98 Runoff=4.52 cfs 16,259 cf

Subcatchment 5S: Runoff Area=37,687 sf 67.42% Impervious Runoff Depth=7.65"
Tc=6.0 min CN=90 Runoff=7.21 cfs 24,036 cf

Subcatchment 5T: Runoff Area=5,760 sf 100.00% Impervious Runoff Depth=8.62"
Flow Length=176' Tc=6.0 min CN=98 Runoff=1.15 cfs 4,137 cf

Subcatchment 6S: Runoff Area=4,765 sf 77.02% Impervious Runoff Depth=7.90"
Tc=6.0 min CN=92 Runoff=0.93 cfs 3,135 cf

Subcatchment 6T: Runoff Area=9,722 sf 82.42% Impervious Runoff Depth=8.14"
Flow Length=71' Slope=0.1342 '/' Tc=7.7 min CN=94 Runoff=1.81 cfs 6,593 cf

Subcatchment 7T: Runoff Area=11,305 sf 59.96% Impervious Runoff Depth=7.41"
Flow Length=349' Slope=0.0138 '/' Tc=6.0 min CN=88 Runoff=2.12 cfs 6,981 cf

Subcatchment 8S: Runoff Area=25,878 sf 76.57% Impervious Runoff Depth=7.90"
Tc=6.0 min CN=92 Runoff=5.03 cfs 17,027 cf

Subcatchment 9S: Runoff Area=18,472 sf 83.26% Impervious Runoff Depth=8.14"
Tc=6.0 min CN=94 Runoff=3.63 cfs 12,526 cf

Subcatchment 9T: Runoff Area=3,204 sf 63.30% Impervious Runoff Depth=7.53"
Tc=6.0 min CN=89 Runoff=0.61 cfs 2,011 cf

Subcatchment 10S: Runoff Area=36,899 sf 100.00% Impervious Runoff Depth=8.62"
Tc=6.0 min CN=98 Runoff=7.37 cfs 26,505 cf

Subcatchment 12S: Runoff Area=23,297 sf 94.18% Impervious Runoff Depth=8.50"
Tc=6.0 min CN=97 Runoff=4.64 cfs 16,501 cf

Subcatchment 13S: Runoff Area=23,084 sf 3.69% Impervious Runoff Depth=5.82"
Tc=6.0 min CN=75 Runoff=3.59 cfs 11,203 cf

Subcatchment 16S: Runoff Area=31,860 sf 64.47% Impervious Runoff Depth=7.53"
Tc=6.0 min CN=89 Runoff=6.04 cfs 19,997 cf

Subcatchment 20S: Runoff Area=28,057 sf 89.69% Impervious Runoff Depth=8.38"
Tc=6.0 min CN=96 Runoff=5.57 cfs 19,591 cf

Subcatchment 21S: Runoff Area=33,588 sf 79.33% Impervious Runoff Depth=8.02"
Tc=6.0 min CN=93 Runoff=6.57 cfs 22,439 cf

Subcatchment T10: Runoff Area=3,547 sf 81.62% Impervious Runoff Depth=8.14"
Tc=0.0 min CN=94 Runoff=0.85 cfs 2,405 cf

Subcatchment T3: Runoff Area=8,065 sf 0.00% Impervious Runoff Depth=5.70"
Flow Length=115' Slope=0.0011 '/' Tc=6.0 min CN=74 Runoff=1.23 cfs 3,832 cf

Subcatchment T4: Runoff Area=18,873 sf 85.85% Impervious Runoff Depth=8.26"
Tc=0.0 min CN=95 Runoff=4.55 cfs 12,988 cf

Subcatchment T8: Runoff Area=9,999 sf 80.90% Impervious Runoff Depth=8.02"
Tc=0.0 min CN=93 Runoff=2.39 cfs 6,680 cf

Reach AP1: Hodgson Brook Inflow=49.07 cfs 189,222 cf
Outflow=49.07 cfs 189,222 cf

Reach R1: Swale Avg. Flow Depth=0.74' Max Vel=3.94 fps Inflow=18.23 cfs 72,000 cf
n=0.035 L=100.0' S=0.0200 '/' Capacity=333.24 cfs Outflow=18.21 cfs 72,000 cf

Pond 4B: (new Pond) Peak Elev=26.11' Inflow=10.45 cfs 40,537 cf
18.0" Round Culvert n=0.013 L=119.0' S=0.0066 '/' Outflow=10.45 cfs 40,537 cf

Pond 14P: CB #1072 Peak Elev=243.47' Inflow=24.39 cfs 96,095 cf
15.0" Round Culvert n=0.025 L=31.0' S=0.0387 '/' Outflow=24.39 cfs 96,095 cf

Pond 15P: CB #1347 Peak Elev=217.87' Inflow=24.39 cfs 96,095 cf
15.0" Round Culvert n=0.025 L=204.0' S=0.0005 '/' Outflow=24.39 cfs 96,095 cf

Pond 37: Peak Elev=32.26' Inflow=12.61 cfs 42,436 cf
12.0" Round Culvert n=0.013 L=14.5' S=0.0048 '/' Outflow=12.61 cfs 42,436 cf

Pond 38: Peak Elev=34.81' Inflow=6.04 cfs 19,997 cf
12.0" Round Culvert n=0.013 L=12.5' S=0.0056 '/' Outflow=6.04 cfs 19,997 cf

Pond 39: Peak Elev=36.33' Inflow=6.57 cfs 22,439 cf
12.0" Round Culvert n=0.013 L=71.5' S=0.0050 '/' Outflow=6.57 cfs 22,439 cf

Pond 40: Peak Elev=31.23' Inflow=12.01 cfs 43,006 cf
12.0" Round Culvert n=0.013 L=14.5' S=0.0048 '/' Outflow=12.01 cfs 43,006 cf

Pond 41: Peak Elev=33.17' Inflow=4.64 cfs 16,501 cf
12.0" Round Culvert n=0.013 L=66.0' S=0.0050 '/' Outflow=4.64 cfs 16,501 cf

Pond 42: Peak Elev=980,829.03' Inflow=3.73 cfs 10,501 cf
1.0" Round Culvert n=0.013 L=155.0' S=0.0020 '/' Outflow=3.73 cfs 10,501 cf

Pond 43: Peak Elev=470.48' Inflow=6.43 cfs 30,091 cf
12.0" Round Culvert n=0.013 L=145.5' S=0.0050 '/' Outflow=6.43 cfs 30,091 cf

Pond 44: Peak Elev=466.29' Inflow=16.42 cfs 66,653 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0050 '/' Outflow=16.42 cfs 66,653 cf

Pond 45: Peak Elev=474.17' Inflow=5.57 cfs 19,591 cf
12.0" Round Culvert n=0.013 L=24.5' S=0.0049 '/' Outflow=5.57 cfs 19,591 cf

Pond 46: Peak Elev=466.72' Inflow=3.63 cfs 12,526 cf
12.0" Round Culvert n=0.013 L=23.5' S=0.0051 '/' Outflow=3.63 cfs 12,526 cf

Pond 47: Peak Elev=469.52' Inflow=7.21 cfs 24,036 cf
12.0" Round Culvert n=0.013 L=44.0' S=0.0050 '/' Outflow=7.21 cfs 24,036 cf

Pond 47P: Peak Elev=24.16' Storage=0.070 af Inflow=3.59 cfs 11,203 cf
Discarded=0.52 cfs 8,907 cf Primary=1.62 cfs 2,297 cf Outflow=2.14 cfs 11,204 cf

Pond 48: Peak Elev=448.81' Inflow=20.94 cfs 82,912 cf
12.0" Round Culvert n=0.013 L=198.0' S=0.0050 '/' Outflow=20.94 cfs 82,912 cf

Pond 48P: Peak Elev=22.73' Storage=0.573 af Inflow=24.62 cfs 85,442 cf
Discarded=6.80 cfs 85,442 cf Primary=3.73 cfs 10,501 cf Outflow=6.80 cfs 85,442 cf

Pond 49: Peak Elev=28.97' Inflow=5.95 cfs 20,162 cf
12.0" Round Culvert n=0.013 L=59.0' S=0.0049 '/' Outflow=5.95 cfs 20,162 cf

Pond 50: Peak Elev=32.54' Inflow=5.03 cfs 17,027 cf
12.0" Round Culvert n=0.013 L=131.0' S=0.0050 '/' Outflow=5.03 cfs 17,027 cf

Pond 51: Peak Elev=29.09' Inflow=0.93 cfs 3,135 cf
12.0" Round Culvert n=0.013 L=27.5' S=0.0051 '/' Outflow=0.93 cfs 3,135 cf

Pond 52: Peak Elev=363.68' Inflow=20.94 cfs 82,912 cf
12.0" Round Culvert n=0.013 L=97.5' S=0.0050 '/' Outflow=20.94 cfs 82,912 cf

Pond 53: Peak Elev=24.78' Inflow=1.62 cfs 2,297 cf
12.0" Round Culvert n=0.013 L=110.0' S=0.0050 '/' Outflow=1.62 cfs 2,297 cf

Pond 54: Peak Elev=24.53' Inflow=3.59 cfs 11,203 cf
12.0" Round Culvert n=0.013 L=14.5' S=0.0048 '/' Outflow=3.59 cfs 11,203 cf

Pond 55: Peak Elev=25.25' Inflow=3.59 cfs 11,203 cf
12.0" Round Culvert n=0.013 L=53.0' S=0.0051 '/' Outflow=3.59 cfs 11,203 cf

Pond 1071: Peak Elev=313.29' Inflow=23.45 cfs 91,277 cf
12.0" Round Culvert n=0.025 L=31.0' S=0.0065 '/' Outflow=23.45 cfs 91,277 cf

Pond 1346: CB #1346 Peak Elev=100.78' Inflow=24.39 cfs 96,095 cf
15.0" Round Culvert n=0.025 L=143.0' S=0.0070 '/' Outflow=24.39 cfs 96,095 cf

Pond D1: Peak Elev=19.78' Inflow=17.10 cfs 68,168 cf
24.0" Round Culvert n=0.013 L=16.0' S=0.0063 '/' Outflow=17.10 cfs 68,168 cf

Pond D10: Peak Elev=26.71' Inflow=2.16 cfs 6,713 cf
12.0" Round Culvert n=0.013 L=231.5' S=0.0046 '/' Outflow=2.16 cfs 6,713 cf

Pond D11: Peak Elev=26.94' Inflow=1.24 cfs 4,416 cf
12.0" Round Culvert n=0.013 L=231.5' S=0.0084 '/' Outflow=1.24 cfs 4,416 cf

Pond D12: Peak Elev=26.98' Inflow=0.61 cfs 2,011 cf
12.0" Round Culvert n=0.013 L=7.0' S=0.0100 '/' Outflow=0.61 cfs 2,011 cf

Pond D13: Peak Elev=26.97' Inflow=0.85 cfs 2,405 cf
12.0" Round Culvert n=0.013 L=7.0' S=0.0100 '/' Outflow=0.85 cfs 2,405 cf

Pond D2: Peak Elev=21.06' Inflow=17.10 cfs 68,168 cf
24.0" Round Culvert n=0.013 L=67.0' S=0.0066 '/' Outflow=17.10 cfs 68,168 cf

Pond D3: Peak Elev=21.14' Inflow=1.15 cfs 4,137 cf
12.0" Round Culvert n=0.013 L=27.0' S=0.0248 '/' Outflow=1.15 cfs 4,137 cf

Pond D4: Peak Elev=24.14' Inflow=14.94 cfs 60,118 cf
18.0" Round Culvert n=0.013 L=42.0' S=0.0064 '/' Outflow=14.94 cfs 60,118 cf

Pond D5: Peak Elev=25.07' Inflow=4.55 cfs 12,988 cf
12.0" Round Culvert n=0.013 L=23.5' S=0.0051 '/' Outflow=4.55 cfs 12,988 cf

Pond D6: Peak Elev=24.31' Inflow=1.81 cfs 6,593 cf
12.0" Round Culvert n=0.013 L=16.5' S=0.0048 '/' Outflow=1.81 cfs 6,593 cf

Pond D7: Peak Elev=26.42' Inflow=4.94 cfs 20,375 cf
18.0" Round Culvert n=0.013 L=54.5' S=0.0064 '/' Outflow=4.94 cfs 20,375 cf

Pond D8: Peak Elev=26.74' Inflow=2.12 cfs 6,981 cf
12.0" Round Culvert n=0.013 L=7.5' S=0.0107 '/' Outflow=2.12 cfs 6,981 cf

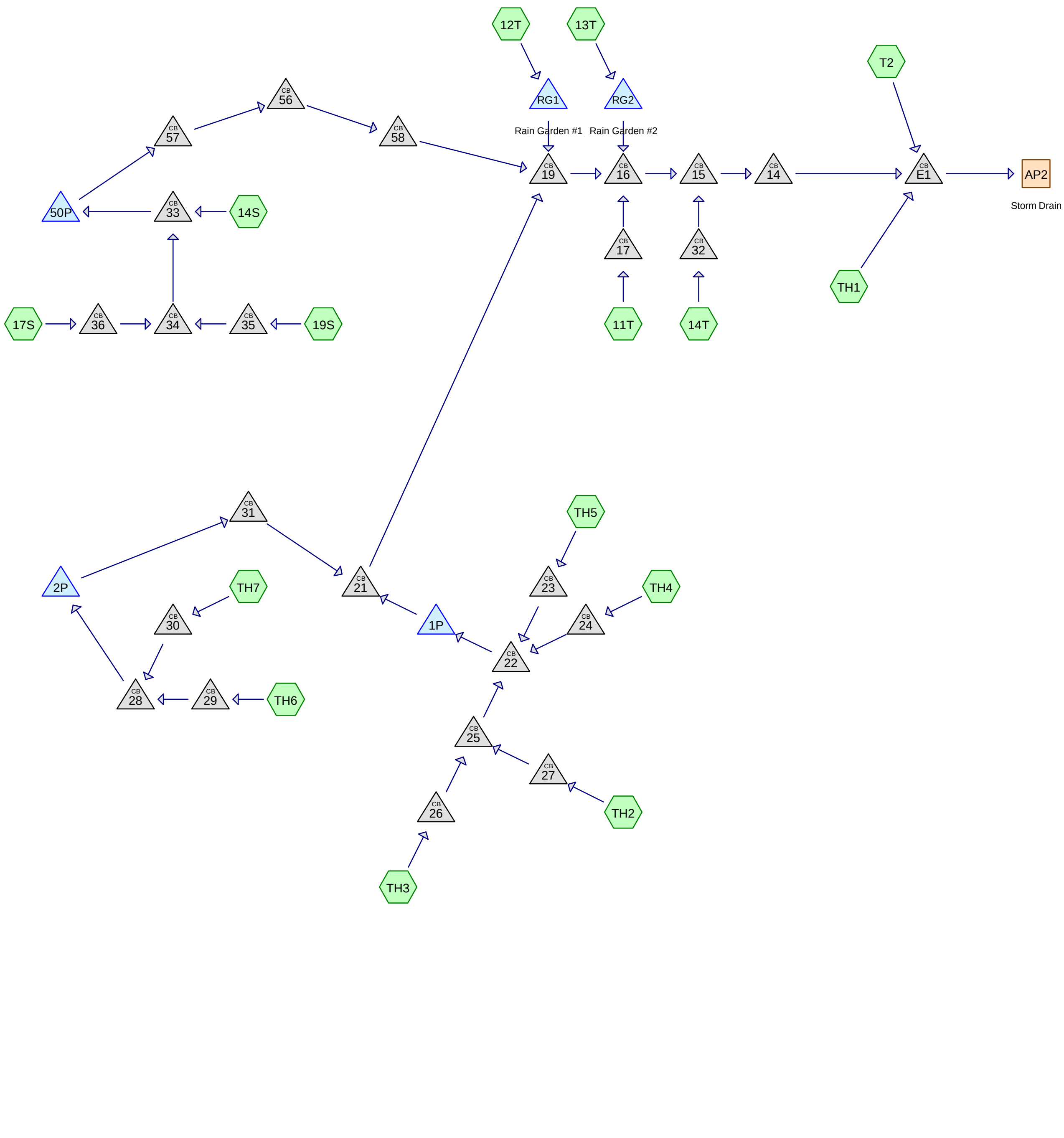
Pond D9: Peak Elev=26.59' Inflow=2.39 cfs 6,680 cf
12.0" Round Culvert n=0.013 L=7.5' S=0.0107 '/' Outflow=2.39 cfs 6,680 cf

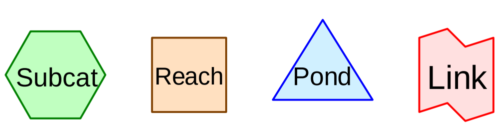
Pond E1: Peak Elev=21.23' Inflow=1.53 cfs 3,913 cf
12.0" Round Culvert n=0.010 L=39.0' S=0.0049 '/' Outflow=1.53 cfs 3,913 cf

Pond RD: Peak Elev=221.60' Inflow=7.37 cfs 26,505 cf
6.0" Round Culvert n=0.013 L=91.0' S=0.0100 '/' Outflow=7.37 cfs 26,505 cf

Pond RD2: Peak Elev=492.22' Inflow=4.52 cfs 16,259 cf
6.0" Round Culvert n=0.013 L=50.5' S=0.0050 '/' Outflow=4.52 cfs 16,259 cf

Total Runoff Area = 430,380 sf Runoff Volume = 273,069 cf Average Runoff Depth = 7.61"
34.46% Pervious = 148,289 sf 65.54% Impervious = 282,091 sf





Routing Diagram for Proposed City Storm Drain
Prepared by {enter your company name here}, Printed 11/19/2018
HydroCAD® 10.00-21 s/n 01745 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
31,507	74	>75% Grass cover, Good, HSG C (11T, 12T, 13T, 14T, 17S, 19S, T2, TH1, TH2, TH3, TH4, TH5, TH6, TH7)
93,695	98	Paved parking, HSG C (11T, 12T, 13T, 14T, 17S, 19S, T2, TH1, TH2, TH3, TH4, TH5, TH6, TH7)
29,032	98	Roofs, HSG C (14S)
154,234	**93**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
154,234	HSG C	11T, 12T, 13T, 14S, 14T, 17S, 19S, T2, TH1, TH2, TH3, TH4, TH5, TH6, TH7
0	HSG D	
0	Other	
154,234		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Subcatcl Numbers
0	0	31,507	0	0	31,507	>75% Grass cover, Good	
0	0	93,695	0	0	93,695	Paved parking	
0	0	29,032	0	0	29,032	Roofs	
0	**0**	**154,234**	**0**	**0**	**154,234**	**TOTAL AREA**	

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	14.00	13.67	9.5	0.0347	0.013	8.0	0.0	0.0
2	2P	14.50	14.36	22.5	0.0062	0.013	6.0	0.0	0.0
3	14	10.47	9.70	119.0	0.0065	0.013	18.0	0.0	0.0
4	15	11.23	10.72	78.5	0.0065	0.013	15.0	0.0	0.0
5	16	11.74	11.33	62.5	0.0066	0.013	15.0	0.0	0.0
6	17	12.34	11.99	7.0	0.0500	0.013	12.0	0.0	0.0
7	19	12.47	11.84	97.0	0.0065	0.013	15.0	0.0	0.0
8	21	13.34	12.74	62.0	0.0097	0.013	12.0	0.0	0.0
9	22	14.47	14.42	5.0	0.0100	0.013	18.0	0.0	0.0
10	23	15.00	14.97	6.0	0.0050	0.013	12.0	0.0	0.0
11	24	15.29	14.97	64.0	0.0050	0.013	12.0	0.0	0.0
12	25	15.46	14.97	49.5	0.0099	0.013	12.0	0.0	0.0
13	26	15.74	15.56	36.5	0.0049	0.013	12.0	0.0	0.0
14	27	15.69	15.56	26.0	0.0050	0.013	12.0	0.0	0.0
15	28	15.27	15.04	22.5	0.0102	0.013	12.0	0.0	0.0
16	29	17.09	15.37	34.5	0.0499	0.013	12.0	0.0	0.0
17	30	15.54	15.37	3.5	0.0486	0.013	12.0	0.0	0.0
18	31	14.26	13.84	42.0	0.0100	0.013	6.0	0.0	0.0
19	32	12.13	11.48	13.0	0.0500	0.013	12.0	0.0	0.0
20	33	19.19	19.04	14.5	0.0103	0.013	18.0	0.0	0.0
21	34	19.88	19.29	118.5	0.0050	0.013	15.0	0.0	0.0
22	35	20.28	19.98	61.0	0.0049	0.013	12.0	0.0	0.0
23	36	21.03	19.98	70.0	0.0150	0.013	12.0	0.0	0.0
24	50P	18.00	16.01	76.0	0.0262	0.013	12.0	0.0	0.0
25	56	14.76	13.76	100.5	0.0100	0.013	12.0	0.0	0.0
26	57	15.91	14.86	104.5	0.0100	0.013	12.0	0.0	0.0
27	58	13.66	12.72	93.5	0.0101	0.013	12.0	0.0	0.0
28	E1	9.60	9.00	87.0	0.0069	0.010	18.0	0.0	0.0
29	RG1	13.90	12.72	23.5	0.0502	0.013	12.0	0.0	0.0
30	RG2	12.10	11.99	22.5	0.0049	0.013	12.0	0.0	0.0

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 11T: Runoff Area=15,307 sf 88.03% Impervious Runoff Depth=2.65"
Flow Length=389' Slope=0.0264 '/' Tc=6.0 min CN=95 Runoff=1.03 cfs 3,386 cf

Subcatchment 12T: Runoff Area=13,222 sf 57.00% Impervious Runoff Depth=2.01"
Tc=6.0 min CN=88 Runoff=0.71 cfs 2,210 cf

Subcatchment 13T: Runoff Area=5,275 sf 47.03% Impervious Runoff Depth=1.77"
Tc=6.0 min CN=85 Runoff=0.25 cfs 776 cf

Subcatchment 14S: Runoff Area=29,032 sf 100.00% Impervious Runoff Depth=2.98"
Tc=6.0 min CN=98 Runoff=2.08 cfs 7,203 cf

Subcatchment 14T: Runoff Area=3,646 sf 77.21% Impervious Runoff Depth=2.46"
Tc=6.0 min CN=93 Runoff=0.23 cfs 746 cf

Subcatchment 17S: Runoff Area=19,175 sf 81.41% Impervious Runoff Depth=2.55"
Tc=6.0 min CN=94 Runoff=1.26 cfs 4,080 cf

Subcatchment 19S: Runoff Area=13,766 sf 90.03% Impervious Runoff Depth=2.76"
Tc=6.0 min CN=96 Runoff=0.95 cfs 3,165 cf

Subcatchment T2: Runoff Area=5,558 sf 47.34% Impervious Runoff Depth=1.77"
Flow Length=199' Slope=0.0111 '/' Tc=6.0 min CN=85 Runoff=0.26 cfs 818 cf

Subcatchment TH1: Runoff Area=5,291 sf 29.31% Impervious Runoff Depth=1.48"
Tc=6.0 min CN=81 Runoff=0.21 cfs 651 cf

Subcatchment TH2: Runoff Area=15,650 sf 69.69% Impervious Runoff Depth=2.27"
Tc=6.0 min CN=91 Runoff=0.94 cfs 2,957 cf

Subcatchment TH3: Runoff Area=6,118 sf 94.31% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=97 Runoff=0.43 cfs 1,461 cf

Subcatchment TH4: Runoff Area=1,834 sf 98.64% Impervious Runoff Depth=2.98"
Tc=6.0 min CN=98 Runoff=0.13 cfs 455 cf

Subcatchment TH5: Runoff Area=9,636 sf 78.63% Impervious Runoff Depth=2.46"
Tc=6.0 min CN=93 Runoff=0.62 cfs 1,972 cf

Subcatchment TH6: Runoff Area=2,877 sf 80.50% Impervious Runoff Depth=2.46"
Tc=6.0 min CN=93 Runoff=0.18 cfs 589 cf

Subcatchment TH7: Runoff Area=7,847 sf 86.94% Impervious Runoff Depth=2.65"
Tc=6.0 min CN=95 Runoff=0.53 cfs 1,736 cf

Reach AP2: Storm Drain Inflow=3.54 cfs 14,167 cf
Outflow=3.54 cfs 14,167 cf

Pond 1P: Peak Elev=14.66' Storage=1,657 cf Inflow=2.12 cfs 6,846 cf
Discarded=0.19 cfs 4,167 cf Primary=0.97 cfs 2,678 cf Outflow=1.16 cfs 6,846 cf

Pond 2P: Peak Elev=14.55' Storage=887 cf Inflow=0.71 cfs 2,325 cf
Discarded=0.11 cfs 2,320 cf Primary=0.00 cfs 5 cf Outflow=0.11 cfs 2,325 cf

Pond 14: Peak Elev=11.40' Inflow=3.15 cfs 12,697 cf
18.0" Round Culvert n=0.013 L=119.0' S=0.0065 '/' Outflow=3.15 cfs 12,697 cf

Pond 15: Peak Elev=12.25' Inflow=3.15 cfs 12,697 cf
15.0" Round Culvert n=0.013 L=78.5' S=0.0065 '/' Outflow=3.15 cfs 12,697 cf

Pond 16: Peak Elev=12.80' Inflow=2.98 cfs 11,951 cf
15.0" Round Culvert n=0.013 L=62.5' S=0.0066 '/' Outflow=2.98 cfs 11,951 cf

Pond 17: Peak Elev=12.96' Inflow=1.03 cfs 3,386 cf
12.0" Round Culvert n=0.013 L=7.0' S=0.0500 '/' Outflow=1.03 cfs 3,386 cf

Pond 19: Peak Elev=13.40' Inflow=2.37 cfs 7,789 cf
15.0" Round Culvert n=0.013 L=97.0' S=0.0065 '/' Outflow=2.37 cfs 7,789 cf

Pond 21: Peak Elev=13.92' Inflow=0.97 cfs 2,683 cf
12.0" Round Culvert n=0.013 L=62.0' S=0.0097 '/' Outflow=0.97 cfs 2,683 cf

Pond 22: Peak Elev=15.28' Inflow=2.12 cfs 6,846 cf
18.0" Round Culvert n=0.013 L=5.0' S=0.0100 '/' Outflow=2.12 cfs 6,846 cf

Pond 23: Peak Elev=15.49' Inflow=0.62 cfs 1,972 cf
12.0" Round Culvert n=0.013 L=6.0' S=0.0050 '/' Outflow=0.62 cfs 1,972 cf

Pond 24: Peak Elev=15.52' Inflow=0.13 cfs 455 cf
12.0" Round Culvert n=0.013 L=64.0' S=0.0050 '/' Outflow=0.13 cfs 455 cf

Pond 25: Peak Elev=16.10' Inflow=1.37 cfs 4,419 cf
12.0" Round Culvert n=0.013 L=49.5' S=0.0099 '/' Outflow=1.37 cfs 4,419 cf

Pond 26: Peak Elev=16.23' Inflow=0.43 cfs 1,461 cf
12.0" Round Culvert n=0.013 L=36.5' S=0.0049 '/' Outflow=0.43 cfs 1,461 cf

Pond 27: Peak Elev=16.33' Inflow=0.94 cfs 2,957 cf
12.0" Round Culvert n=0.013 L=26.0' S=0.0050 '/' Outflow=0.94 cfs 2,957 cf

Pond 28: Peak Elev=15.73' Inflow=0.71 cfs 2,325 cf
12.0" Round Culvert n=0.013 L=22.5' S=0.0102 '/' Outflow=0.71 cfs 2,325 cf

Pond 29: Peak Elev=17.30' Inflow=0.18 cfs 589 cf
12.0" Round Culvert n=0.013 L=34.5' S=0.0499 '/' Outflow=0.18 cfs 589 cf

Pond 30: Peak Elev=15.93' Inflow=0.53 cfs 1,736 cf
12.0" Round Culvert n=0.013 L=3.5' S=0.0486 '/' Outflow=0.53 cfs 1,736 cf

Pond 31: Peak Elev=14.30' Inflow=0.00 cfs 5 cf
6.0" Round Culvert n=0.013 L=42.0' S=0.0100 '/' Outflow=0.00 cfs 5 cf

Pond 32: Peak Elev=12.39' Inflow=0.23 cfs 746 cf
12.0" Round Culvert n=0.013 L=13.0' S=0.0500 '/' Outflow=0.23 cfs 746 cf

Pond 33: Peak Elev=20.35' Inflow=4.29 cfs 14,449 cf
18.0" Round Culvert n=0.013 L=14.5' S=0.0103 '/' Outflow=4.29 cfs 14,449 cf

Pond 34: Peak Elev=20.87' Inflow=2.21 cfs 7,245 cf
15.0" Round Culvert n=0.013 L=118.5' S=0.0050 '/' Outflow=2.21 cfs 7,245 cf

Pond 35: Peak Elev=21.06' Inflow=0.95 cfs 3,165 cf
12.0" Round Culvert n=0.013 L=61.0' S=0.0049 '/' Outflow=0.95 cfs 3,165 cf

Pond 36: Peak Elev=21.64' Inflow=1.26 cfs 4,080 cf
12.0" Round Culvert n=0.013 L=70.0' S=0.0150 '/' Outflow=1.26 cfs 4,080 cf

Pond 50P: Peak Elev=18.61' Storage=0.070 af Inflow=4.29 cfs 14,449 cf
Discarded=0.67 cfs 11,554 cf Primary=1.33 cfs 2,895 cf Outflow=2.00 cfs 14,449 cf

Pond 56: Peak Elev=15.37' Inflow=1.33 cfs 2,895 cf
12.0" Round Culvert n=0.013 L=100.5' S=0.0100 '/' Outflow=1.33 cfs 2,895 cf

Pond 57: Peak Elev=16.52' Inflow=1.33 cfs 2,895 cf
12.0" Round Culvert n=0.013 L=104.5' S=0.0100 '/' Outflow=1.33 cfs 2,895 cf

Pond 58: Peak Elev=14.30' Inflow=1.33 cfs 2,895 cf
12.0" Round Culvert n=0.013 L=93.5' S=0.0101 '/' Outflow=1.33 cfs 2,895 cf

Pond E1: Peak Elev=10.50' Inflow=3.54 cfs 14,167 cf
18.0" Round Culvert n=0.010 L=87.0' S=0.0069 '/' Outflow=3.54 cfs 14,167 cf

Pond RG1: Rain Garden #1 Peak Elev=19.06' Storage=768 cf Inflow=0.71 cfs 2,210 cf
Outflow=0.10 cfs 2,210 cf

Pond RG2: Rain Garden #2 Peak Elev=15.85' Storage=237 cf Inflow=0.25 cfs 776 cf
Outflow=0.04 cfs 776 cf

Total Runoff Area = 154,234 sf Runoff Volume = 32,207 cf Average Runoff Depth = 2.51"
20.43% Pervious = 31,507 sf 79.57% Impervious = 122,727 sf

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 11T: Runoff Area=15,307 sf 88.03% Impervious Runoff Depth=5.58"
Flow Length=389' Slope=0.0264 '/' Tc=6.0 min CN=95 Runoff=2.08 cfs 7,118 cf

Subcatchment 12T: Runoff Area=13,222 sf 57.00% Impervious Runoff Depth=4.79"
Tc=6.0 min CN=88 Runoff=1.64 cfs 5,277 cf

Subcatchment 13T: Runoff Area=5,275 sf 47.03% Impervious Runoff Depth=4.46"
Tc=6.0 min CN=85 Runoff=0.62 cfs 1,962 cf

Subcatchment 14S: Runoff Area=29,032 sf 100.00% Impervious Runoff Depth=5.93"
Tc=6.0 min CN=98 Runoff=4.03 cfs 14,351 cf

Subcatchment 14T: Runoff Area=3,646 sf 77.21% Impervious Runoff Depth=5.35"
Tc=6.0 min CN=93 Runoff=0.49 cfs 1,626 cf

Subcatchment 17S: Runoff Area=19,175 sf 81.41% Impervious Runoff Depth=5.47"
Tc=6.0 min CN=94 Runoff=2.59 cfs 8,733 cf

Subcatchment 19S: Runoff Area=13,766 sf 90.03% Impervious Runoff Depth=5.70"
Tc=6.0 min CN=96 Runoff=1.89 cfs 6,535 cf

Subcatchment T2: Runoff Area=5,558 sf 47.34% Impervious Runoff Depth=4.46"
Flow Length=199' Slope=0.0111 '/' Tc=6.0 min CN=85 Runoff=0.65 cfs 2,067 cf

Subcatchment TH1: Runoff Area=5,291 sf 29.31% Impervious Runoff Depth=4.04"
Tc=6.0 min CN=81 Runoff=0.57 cfs 1,781 cf

Subcatchment TH2: Runoff Area=15,650 sf 69.69% Impervious Runoff Depth=5.12"
Tc=6.0 min CN=91 Runoff=2.04 cfs 6,682 cf

Subcatchment TH3: Runoff Area=6,118 sf 94.31% Impervious Runoff Depth=5.81"
Tc=6.0 min CN=97 Runoff=0.85 cfs 2,964 cf

Subcatchment TH4: Runoff Area=1,834 sf 98.64% Impervious Runoff Depth=5.93"
Tc=6.0 min CN=98 Runoff=0.25 cfs 907 cf

Subcatchment TH5: Runoff Area=9,636 sf 78.63% Impervious Runoff Depth=5.35"
Tc=6.0 min CN=93 Runoff=1.29 cfs 4,296 cf

Subcatchment TH6: Runoff Area=2,877 sf 80.50% Impervious Runoff Depth=5.35"
Tc=6.0 min CN=93 Runoff=0.38 cfs 1,283 cf

Subcatchment TH7: Runoff Area=7,847 sf 86.94% Impervious Runoff Depth=5.58"
Tc=6.0 min CN=95 Runoff=1.07 cfs 3,649 cf

Reach AP2: Storm Drain Inflow=10.00 cfs 40,616 cf
Outflow=10.00 cfs 40,616 cf

Pond 1P: Peak Elev=16.29' Storage=4,154 cf Inflow=4.42 cfs 14,849 cf
Discarded=0.42 cfs 7,096 cf Primary=2.30 cfs 8,196 cf Outflow=2.67 cfs 14,849 cf

Pond 2P: Peak Elev=15.55' Storage=1,916 cf Inflow=1.45 cfs 4,932 cf
Discarded=0.20 cfs 3,894 cf Primary=0.71 cfs 1,678 cf Outflow=0.85 cfs 4,932 cf

Pond 14: Peak Elev=13.01' Inflow=8.96 cfs 36,768 cf
18.0" Round Culvert n=0.013 L=119.0' S=0.0065 '/' Outflow=8.96 cfs 36,768 cf

Pond 15: Peak Elev=15.31' Inflow=8.96 cfs 36,768 cf
15.0" Round Culvert n=0.013 L=78.5' S=0.0065 '/' Outflow=8.96 cfs 36,768 cf

Pond 16: Peak Elev=16.81' Inflow=8.69 cfs 35,142 cf
15.0" Round Culvert n=0.013 L=62.5' S=0.0066 '/' Outflow=8.69 cfs 35,142 cf

Pond 17: Peak Elev=17.11' Inflow=2.08 cfs 7,118 cf
12.0" Round Culvert n=0.013 L=7.0' S=0.0500 '/' Outflow=2.08 cfs 7,118 cf

Pond 19: Peak Elev=18.18' Inflow=7.26 cfs 26,037 cf
15.0" Round Culvert n=0.013 L=97.0' S=0.0065 '/' Outflow=7.26 cfs 26,037 cf

Pond 21: Peak Elev=18.37' Inflow=2.78 cfs 9,874 cf
12.0" Round Culvert n=0.013 L=62.0' S=0.0097 '/' Outflow=2.78 cfs 9,874 cf

Pond 22: Peak Elev=16.33' Inflow=4.42 cfs 14,849 cf
18.0" Round Culvert n=0.013 L=5.0' S=0.0100 '/' Outflow=4.42 cfs 14,849 cf

Pond 23: Peak Elev=16.34' Inflow=1.29 cfs 4,296 cf
12.0" Round Culvert n=0.013 L=6.0' S=0.0050 '/' Outflow=1.29 cfs 4,296 cf

Pond 24: Peak Elev=16.33' Inflow=0.25 cfs 907 cf
12.0" Round Culvert n=0.013 L=64.0' S=0.0050 '/' Outflow=0.25 cfs 907 cf

Pond 25: Peak Elev=16.54' Inflow=2.88 cfs 9,646 cf
12.0" Round Culvert n=0.013 L=49.5' S=0.0099 '/' Outflow=2.88 cfs 9,646 cf

Pond 26: Peak Elev=16.63' Inflow=0.85 cfs 2,964 cf
12.0" Round Culvert n=0.013 L=36.5' S=0.0049 '/' Outflow=0.85 cfs 2,964 cf

Pond 27: Peak Elev=16.83' Inflow=2.04 cfs 6,682 cf
12.0" Round Culvert n=0.013 L=26.0' S=0.0050 '/' Outflow=2.04 cfs 6,682 cf

Pond 28: Peak Elev=15.97' Inflow=1.45 cfs 4,932 cf
12.0" Round Culvert n=0.013 L=22.5' S=0.0102 '/' Outflow=1.45 cfs 4,932 cf

Pond 29: Peak Elev=17.40' Inflow=0.38 cfs 1,283 cf
12.0" Round Culvert n=0.013 L=34.5' S=0.0499 '/' Outflow=0.38 cfs 1,283 cf

Pond 30: Peak Elev=16.18' Inflow=1.07 cfs 3,649 cf
12.0" Round Culvert n=0.013 L=3.5' S=0.0486 '/' Outflow=1.07 cfs 3,649 cf

Pond 31: Peak Elev=19.04' Inflow=0.71 cfs 1,678 cf
6.0" Round Culvert n=0.013 L=42.0' S=0.0100 '/' Outflow=0.71 cfs 1,678 cf

Pond 32: Peak Elev=15.20' Inflow=0.49 cfs 1,626 cf
12.0" Round Culvert n=0.013 L=13.0' S=0.0500 '/' Outflow=0.49 cfs 1,626 cf

Pond 33: Peak Elev=21.13' Inflow=8.51 cfs 29,618 cf
18.0" Round Culvert n=0.013 L=14.5' S=0.0103 '/' Outflow=8.51 cfs 29,618 cf

Pond 34: Peak Elev=22.01' Inflow=4.48 cfs 15,268 cf
15.0" Round Culvert n=0.013 L=118.5' S=0.0050 '/' Outflow=4.48 cfs 15,268 cf

Pond 35: Peak Elev=22.31' Inflow=1.89 cfs 6,535 cf
12.0" Round Culvert n=0.013 L=61.0' S=0.0049 '/' Outflow=1.89 cfs 6,535 cf

Pond 36: Peak Elev=22.63' Inflow=2.59 cfs 8,733 cf
12.0" Round Culvert n=0.013 L=70.0' S=0.0150 '/' Outflow=2.59 cfs 8,733 cf

Pond 50P: Peak Elev=19.52' Storage=0.140 af Inflow=8.51 cfs 29,618 cf
Discarded=0.98 cfs 19,506 cf Primary=3.91 cfs 10,886 cf Outflow=4.92 cfs 29,618 cf

Pond 56: Peak Elev=20.77' Inflow=3.91 cfs 10,886 cf
12.0" Round Culvert n=0.013 L=100.5' S=0.0100 '/' Outflow=3.91 cfs 10,886 cf

Pond 57: Peak Elev=21.91' Inflow=3.91 cfs 10,886 cf
12.0" Round Culvert n=0.013 L=104.5' S=0.0100 '/' Outflow=3.91 cfs 10,886 cf

Pond 58: Peak Elev=19.41' Inflow=3.91 cfs 10,886 cf
12.0" Round Culvert n=0.013 L=93.5' S=0.0101 '/' Outflow=3.91 cfs 10,886 cf

Pond E1: Peak Elev=11.71' Inflow=10.00 cfs 40,616 cf
18.0" Round Culvert n=0.010 L=87.0' S=0.0069 '/' Outflow=10.00 cfs 40,616 cf

Pond RG1: Rain Garden #1 Peak Elev=19.45' Storage=1,373 cf Inflow=1.64 cfs 5,277 cf
Outflow=0.86 cfs 5,277 cf

Pond RG2: Rain Garden #2 Peak Elev=16.24' Storage=548 cf Inflow=0.62 cfs 1,962 cf
Outflow=0.33 cfs 1,962 cf

Total Runoff Area = 154,234 sf Runoff Volume = 69,231 cf Average Runoff Depth = 5.39"
20.43% Pervious = 31,507 sf 79.57% Impervious = 122,727 sf

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 11T: Runoff Area=15,307 sf 88.03% Impervious Runoff Depth=6.79"
Flow Length=389' Slope=0.0264 '/' Tc=6.0 min CN=95 Runoff=2.51 cfs 8,666 cf

Subcatchment 12T: Runoff Area=13,222 sf 57.00% Impervious Runoff Depth=5.97"
Tc=6.0 min CN=88 Runoff=2.03 cfs 6,581 cf

Subcatchment 13T: Runoff Area=5,275 sf 47.03% Impervious Runoff Depth=5.63"
Tc=6.0 min CN=85 Runoff=0.77 cfs 2,473 cf

Subcatchment 14S: Runoff Area=29,032 sf 100.00% Impervious Runoff Depth=7.15"
Tc=6.0 min CN=98 Runoff=4.83 cfs 17,300 cf

Subcatchment 14T: Runoff Area=3,646 sf 77.21% Impervious Runoff Depth=6.56"
Tc=6.0 min CN=93 Runoff=0.59 cfs 1,992 cf

Subcatchment 17S: Runoff Area=19,175 sf 81.41% Impervious Runoff Depth=6.68"
Tc=6.0 min CN=94 Runoff=3.13 cfs 10,667 cf

Subcatchment 19S: Runoff Area=13,766 sf 90.03% Impervious Runoff Depth=6.91"
Tc=6.0 min CN=96 Runoff=2.27 cfs 7,930 cf

Subcatchment T2: Runoff Area=5,558 sf 47.34% Impervious Runoff Depth=5.63"
Flow Length=199' Slope=0.0111 '/' Tc=6.0 min CN=85 Runoff=0.82 cfs 2,606 cf

Subcatchment TH1: Runoff Area=5,291 sf 29.31% Impervious Runoff Depth=5.17"
Tc=6.0 min CN=81 Runoff=0.73 cfs 2,279 cf

Subcatchment TH2: Runoff Area=15,650 sf 69.69% Impervious Runoff Depth=6.32"
Tc=6.0 min CN=91 Runoff=2.48 cfs 8,246 cf

Subcatchment TH3: Runoff Area=6,118 sf 94.31% Impervious Runoff Depth=7.03"
Tc=6.0 min CN=97 Runoff=1.02 cfs 3,585 cf

Subcatchment TH4: Runoff Area=1,834 sf 98.64% Impervious Runoff Depth=7.15"
Tc=6.0 min CN=98 Runoff=0.31 cfs 1,093 cf

Subcatchment TH5: Runoff Area=9,636 sf 78.63% Impervious Runoff Depth=6.56"
Tc=6.0 min CN=93 Runoff=1.56 cfs 5,266 cf

Subcatchment TH6: Runoff Area=2,877 sf 80.50% Impervious Runoff Depth=6.56"
Tc=6.0 min CN=93 Runoff=0.47 cfs 1,572 cf

Subcatchment TH7: Runoff Area=7,847 sf 86.94% Impervious Runoff Depth=6.79"
Tc=6.0 min CN=95 Runoff=1.29 cfs 4,443 cf

Reach AP2: Storm Drain Inflow=11.79 cfs 53,441 cf
Outflow=11.79 cfs 53,441 cf

Pond 1P: Peak Elev=17.45' Storage=5,205 cf Inflow=5.36 cfs 18,189 cf
Discarded=0.58 cfs 8,435 cf Primary=2.93 cfs 10,745 cf Outflow=3.42 cfs 18,189 cf

Pond 2P: Peak Elev=15.91' Storage=2,247 cf Inflow=1.75 cfs 6,015 cf
Discarded=0.23 cfs 4,569 cf Primary=0.90 cfs 2,605 cf Outflow=1.01 cfs 6,015 cf

Pond 14: Peak Elev=14.39' Inflow=10.44 cfs 48,556 cf
18.0" Round Culvert n=0.013 L=119.0' S=0.0065 '/' Outflow=10.44 cfs 48,556 cf

Pond 15: Peak Elev=17.11' Inflow=10.44 cfs 48,556 cf
15.0" Round Culvert n=0.013 L=78.5' S=0.0065 '/' Outflow=10.44 cfs 48,556 cf

Pond 16: Peak Elev=19.63' Inflow=10.26 cfs 46,564 cf
15.0" Round Culvert n=0.013 L=62.5' S=0.0066 '/' Outflow=10.26 cfs 46,564 cf

Pond 17: Peak Elev=19.09' Inflow=2.51 cfs 8,666 cf
12.0" Round Culvert n=0.013 L=7.0' S=0.0500 '/' Outflow=2.51 cfs 8,666 cf

Pond 19: Peak Elev=20.94' Inflow=9.01 cfs 35,064 cf
15.0" Round Culvert n=0.013 L=97.0' S=0.0065 '/' Outflow=9.01 cfs 35,064 cf

Pond 21: Peak Elev=21.80' Inflow=3.72 cfs 13,350 cf
12.0" Round Culvert n=0.013 L=62.0' S=0.0097 '/' Outflow=3.72 cfs 13,350 cf

Pond 22: Peak Elev=17.48' Inflow=5.36 cfs 18,189 cf
18.0" Round Culvert n=0.013 L=5.0' S=0.0100 '/' Outflow=5.36 cfs 18,189 cf

Pond 23: Peak Elev=17.50' Inflow=1.56 cfs 5,266 cf
12.0" Round Culvert n=0.013 L=6.0' S=0.0050 '/' Outflow=1.56 cfs 5,266 cf

Pond 24: Peak Elev=17.49' Inflow=0.31 cfs 1,093 cf
12.0" Round Culvert n=0.013 L=64.0' S=0.0050 '/' Outflow=0.31 cfs 1,093 cf

Pond 25: Peak Elev=17.57' Inflow=3.50 cfs 11,831 cf
12.0" Round Culvert n=0.013 L=49.5' S=0.0099 '/' Outflow=3.50 cfs 11,831 cf

Pond 26: Peak Elev=17.53' Inflow=1.02 cfs 3,585 cf
12.0" Round Culvert n=0.013 L=36.5' S=0.0049 '/' Outflow=1.02 cfs 3,585 cf

Pond 27: Peak Elev=17.57' Inflow=2.48 cfs 8,246 cf
12.0" Round Culvert n=0.013 L=26.0' S=0.0050 '/' Outflow=2.48 cfs 8,246 cf

Pond 28: Peak Elev=16.06' Inflow=1.75 cfs 6,015 cf
12.0" Round Culvert n=0.013 L=22.5' S=0.0102 '/' Outflow=1.75 cfs 6,015 cf

Pond 29: Peak Elev=17.43' Inflow=0.47 cfs 1,572 cf
12.0" Round Culvert n=0.013 L=34.5' S=0.0499 '/' Outflow=0.47 cfs 1,572 cf

Pond 30: Peak Elev=16.27' Inflow=1.29 cfs 4,443 cf
12.0" Round Culvert n=0.013 L=3.5' S=0.0486 '/' Outflow=1.29 cfs 4,443 cf

Pond 31: Peak Elev=21.83' Inflow=0.90 cfs 2,605 cf
6.0" Round Culvert n=0.013 L=42.0' S=0.0100 '/' Outflow=0.90 cfs 2,605 cf

Pond 32: Peak Elev=17.02' Inflow=0.59 cfs 1,992 cf
12.0" Round Culvert n=0.013 L=13.0' S=0.0500 '/' Outflow=0.59 cfs 1,992 cf

Pond 33: Peak Elev=21.46' Inflow=10.23 cfs 35,897 cf
18.0" Round Culvert n=0.013 L=14.5' S=0.0103 '/' Outflow=10.23 cfs 35,897 cf

Pond 34: Peak Elev=22.74' Inflow=5.40 cfs 18,597 cf
15.0" Round Culvert n=0.013 L=118.5' S=0.0050 '/' Outflow=5.40 cfs 18,597 cf

Pond 35: Peak Elev=23.19' Inflow=2.27 cfs 7,930 cf
12.0" Round Culvert n=0.013 L=61.0' S=0.0049 '/' Outflow=2.27 cfs 7,930 cf

Pond 36: Peak Elev=23.65' Inflow=3.13 cfs 10,667 cf
12.0" Round Culvert n=0.013 L=70.0' S=0.0150 '/' Outflow=3.13 cfs 10,667 cf

Pond 50P: Peak Elev=20.37' Storage=0.191 af Inflow=10.23 cfs 35,897 cf
Discarded=1.27 cfs 22,937 cf Primary=4.85 cfs 15,058 cf Outflow=6.02 cfs 35,897 cf

Pond 56: Peak Elev=22.91' Inflow=4.85 cfs 15,058 cf
12.0" Round Culvert n=0.013 L=100.5' S=0.0100 '/' Outflow=4.85 cfs 15,058 cf

Pond 57: Peak Elev=22.55' Inflow=4.85 cfs 15,058 cf
12.0" Round Culvert n=0.013 L=104.5' S=0.0100 '/' Outflow=4.85 cfs 15,058 cf

Pond 58: Peak Elev=22.34' Inflow=4.85 cfs 15,058 cf
12.0" Round Culvert n=0.013 L=93.5' S=0.0101 '/' Outflow=4.85 cfs 15,058 cf

Pond E1: Peak Elev=12.26' Inflow=11.79 cfs 53,441 cf
18.0" Round Culvert n=0.010 L=87.0' S=0.0069 '/' Outflow=11.79 cfs 53,441 cf

Pond RG1: Rain Garden #1 Peak Elev=19.58' Storage=1,590 cf Inflow=2.03 cfs 6,581 cf
Outflow=1.45 cfs 6,581 cf

Pond RG2: Rain Garden #2 Peak Elev=16.48' Storage=771 cf Inflow=0.77 cfs 2,473 cf
Outflow=0.92 cfs 2,473 cf

Total Runoff Area = 154,234 sf Runoff Volume = 84,699 cf Average Runoff Depth = 6.59"
20.43% Pervious = 31,507 sf 79.57% Impervious = 122,727 sf

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 11T: Runoff Area=15,307 sf 88.03% Impervious Runoff Depth=8.26"
Flow Length=389' Slope=0.0264 '/' Tc=6.0 min CN=95 Runoff=3.03 cfs 10,534 cf

Subcatchment 12T: Runoff Area=13,222 sf 57.00% Impervious Runoff Depth=7.41"
Tc=6.0 min CN=88 Runoff=2.48 cfs 8,165 cf

Subcatchment 13T: Runoff Area=5,275 sf 47.03% Impervious Runoff Depth=7.05"
Tc=6.0 min CN=85 Runoff=0.96 cfs 3,097 cf

Subcatchment 14S: Runoff Area=29,032 sf 100.00% Impervious Runoff Depth=8.62"
Tc=6.0 min CN=98 Runoff=5.80 cfs 20,854 cf

Subcatchment 14T: Runoff Area=3,646 sf 77.21% Impervious Runoff Depth=8.02"
Tc=6.0 min CN=93 Runoff=0.71 cfs 2,436 cf

Subcatchment 17S: Runoff Area=19,175 sf 81.41% Impervious Runoff Depth=8.14"
Tc=6.0 min CN=94 Runoff=3.77 cfs 13,003 cf

Subcatchment 19S: Runoff Area=13,766 sf 90.03% Impervious Runoff Depth=8.38"
Tc=6.0 min CN=96 Runoff=2.73 cfs 9,612 cf

Subcatchment T2: Runoff Area=5,558 sf 47.34% Impervious Runoff Depth=7.05"
Flow Length=199' Slope=0.0111 '/' Tc=6.0 min CN=85 Runoff=1.01 cfs 3,263 cf

Subcatchment TH1: Runoff Area=5,291 sf 29.31% Impervious Runoff Depth=6.56"
Tc=6.0 min CN=81 Runoff=0.91 cfs 2,891 cf

Subcatchment TH2: Runoff Area=15,650 sf 69.69% Impervious Runoff Depth=7.77"
Tc=6.0 min CN=91 Runoff=3.02 cfs 10,139 cf

Subcatchment TH3: Runoff Area=6,118 sf 94.31% Impervious Runoff Depth=8.50"
Tc=6.0 min CN=97 Runoff=1.22 cfs 4,333 cf

Subcatchment TH4: Runoff Area=1,834 sf 98.64% Impervious Runoff Depth=8.62"
Tc=6.0 min CN=98 Runoff=0.37 cfs 1,317 cf

Subcatchment TH5: Runoff Area=9,636 sf 78.63% Impervious Runoff Depth=8.02"
Tc=6.0 min CN=93 Runoff=1.88 cfs 6,437 cf

Subcatchment TH6: Runoff Area=2,877 sf 80.50% Impervious Runoff Depth=8.02"
Tc=6.0 min CN=93 Runoff=0.56 cfs 1,922 cf

Subcatchment TH7: Runoff Area=7,847 sf 86.94% Impervious Runoff Depth=8.26"
Tc=6.0 min CN=95 Runoff=1.55 cfs 5,400 cf

Reach AP2: Storm Drain Inflow=14.73 cfs 69,285 cf
Outflow=14.73 cfs 69,285 cf

Pond 1P: Peak Elev=32.32' Storage=5,252 cf Inflow=6.49 cfs 22,227 cf
Discarded=2.65 cfs 10,089 cf Primary=3.92 cfs 12,760 cf Outflow=6.58 cfs 22,227 cf

Pond 2P: Peak Elev=18.05' Storage=2,935 cf Inflow=2.11 cfs 7,322 cf
Discarded=0.42 cfs 5,962 cf Primary=1.26 cfs 7,092 cf Outflow=1.18 cfs 7,322 cf

Pond 14: Peak Elev=16.55' Inflow=13.16 cfs 63,130 cf
18.0" Round Culvert n=0.013 L=119.0' S=0.0065 '/' Outflow=13.16 cfs 63,130 cf

Pond 15: Peak Elev=22.14' Inflow=13.16 cfs 63,130 cf
15.0" Round Culvert n=0.013 L=78.5' S=0.0065 '/' Outflow=13.16 cfs 63,130 cf

Pond 16: Peak Elev=25.38' Inflow=12.59 cfs 60,694 cf
15.0" Round Culvert n=0.013 L=62.5' S=0.0066 '/' Outflow=12.59 cfs 60,694 cf

Pond 17: Peak Elev=24.31' Inflow=3.03 cfs 10,534 cf
12.0" Round Culvert n=0.013 L=7.0' S=0.0500 '/' Outflow=3.03 cfs 10,534 cf

Pond 19: Peak Elev=28.28' Inflow=10.52 cfs 46,295 cf
15.0" Round Culvert n=0.013 L=97.0' S=0.0065 '/' Outflow=10.52 cfs 46,295 cf

Pond 21: Peak Elev=27.41' Inflow=3.94 cfs 19,852 cf
12.0" Round Culvert n=0.013 L=62.0' S=0.0097 '/' Outflow=3.94 cfs 19,852 cf

Pond 22: Peak Elev=32.76' Inflow=6.49 cfs 22,227 cf
18.0" Round Culvert n=0.013 L=5.0' S=0.0100 '/' Outflow=6.49 cfs 22,227 cf

Pond 23: Peak Elev=29.67' Inflow=1.88 cfs 6,437 cf
12.0" Round Culvert n=0.013 L=6.0' S=0.0050 '/' Outflow=1.88 cfs 6,437 cf

Pond 24: Peak Elev=29.54' Inflow=0.37 cfs 1,317 cf
12.0" Round Culvert n=0.013 L=64.0' S=0.0050 '/' Outflow=0.37 cfs 1,317 cf

Pond 25: Peak Elev=30.30' Inflow=4.24 cfs 14,473 cf
12.0" Round Culvert n=0.013 L=49.5' S=0.0099 '/' Outflow=4.24 cfs 14,473 cf

Pond 26: Peak Elev=33.36' Inflow=1.22 cfs 4,333 cf
12.0" Round Culvert n=0.013 L=36.5' S=0.0049 '/' Outflow=1.22 cfs 4,333 cf

Pond 27: Peak Elev=33.63' Inflow=3.02 cfs 10,139 cf
12.0" Round Culvert n=0.013 L=26.0' S=0.0050 '/' Outflow=3.02 cfs 10,139 cf

Pond 28: Peak Elev=17.03' Inflow=2.11 cfs 7,322 cf
12.0" Round Culvert n=0.013 L=22.5' S=0.0102 '/' Outflow=2.11 cfs 7,322 cf

Pond 29: Peak Elev=18.06' Inflow=0.56 cfs 1,922 cf
12.0" Round Culvert n=0.013 L=34.5' S=0.0499 '/' Outflow=0.56 cfs 1,922 cf

Pond 30: Peak Elev=18.06' Inflow=1.55 cfs 5,400 cf
12.0" Round Culvert n=0.013 L=3.5' S=0.0486 '/' Outflow=1.55 cfs 5,400 cf

Pond 31: Peak Elev=27.73' Inflow=1.26 cfs 7,092 cf
6.0" Round Culvert n=0.013 L=42.0' S=0.0100 '/' Outflow=1.26 cfs 7,092 cf

Pond 32: Peak Elev=20.84' Inflow=0.71 cfs 2,436 cf
12.0" Round Culvert n=0.013 L=13.0' S=0.0500 '/' Outflow=0.71 cfs 2,436 cf

Pond 33: Peak Elev=26.77' Inflow=12.31 cfs 43,469 cf
18.0" Round Culvert n=0.013 L=14.5' S=0.0103 '/' Outflow=12.31 cfs 43,469 cf

Pond 34: Peak Elev=27.16' Inflow=6.51 cfs 22,615 cf
15.0" Round Culvert n=0.013 L=118.5' S=0.0050 '/' Outflow=6.51 cfs 22,615 cf

Pond 35: Peak Elev=27.29' Inflow=2.73 cfs 9,612 cf
12.0" Round Culvert n=0.013 L=61.0' S=0.0049 '/' Outflow=2.73 cfs 9,612 cf

Pond 36: Peak Elev=27.40' Inflow=3.77 cfs 13,003 cf
12.0" Round Culvert n=0.013 L=70.0' S=0.0150 '/' Outflow=3.77 cfs 13,003 cf

Pond 50P: Peak Elev=26.54' Storage=0.236 af Inflow=12.31 cfs 43,469 cf
Discarded=3.35 cfs 27,400 cf Primary=5.32 cfs 17,747 cf Outflow=6.82 cfs 43,469 cf

Pond 56: Peak Elev=31.29' Inflow=5.32 cfs 17,747 cf
12.0" Round Culvert n=0.013 L=100.5' S=0.0100 '/' Outflow=5.32 cfs 17,747 cf

Pond 57: Peak Elev=33.88' Inflow=5.32 cfs 17,747 cf
12.0" Round Culvert n=0.013 L=104.5' S=0.0100 '/' Outflow=5.32 cfs 17,747 cf

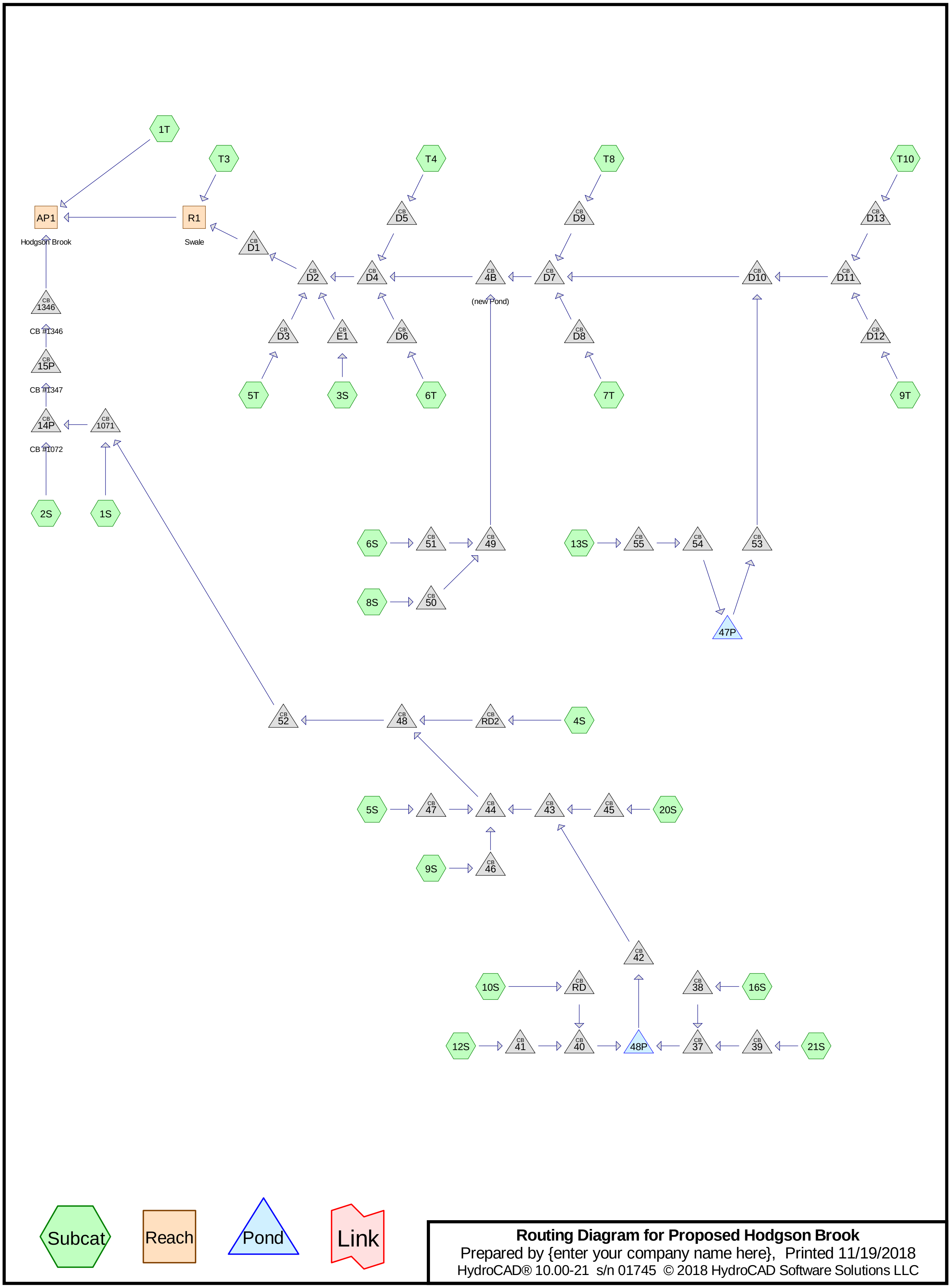
Pond 58: Peak Elev=29.04' Inflow=5.32 cfs 17,747 cf
12.0" Round Culvert n=0.013 L=93.5' S=0.0101 '/' Outflow=5.32 cfs 17,747 cf

Pond E1: Peak Elev=13.33' Inflow=14.73 cfs 69,285 cf
18.0" Round Culvert n=0.010 L=87.0' S=0.0069 '/' Outflow=14.73 cfs 69,285 cf

Pond RG1: Rain Garden #1 Peak Elev=19.90' Storage=2,166 cf Inflow=2.48 cfs 8,165 cf
Outflow=2.49 cfs 8,165 cf

Pond RG2: Rain Garden #2 Peak Elev=16.70' Storage=989 cf Inflow=0.96 cfs 3,097 cf
Outflow=1.68 cfs 3,097 cf

Total Runoff Area = 154,234 sf Runoff Volume = 103,405 cf Average Runoff Depth = 8.05"
20.43% Pervious = 31,507 sf 79.57% Impervious = 122,727 sf



Routing Diagram for Proposed Hodgson Brook
Prepared by {enter your company name here}, Printed 11/19/2018
HydroCAD® 10.00-21 s/n 01745 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
148,289	74	>75% Grass cover, Good, HSG C (1S, 1T, 2S, 3S, 5S, 6S, 6T, 7T, 8S, 9S, 9T, 12S, 13S, 16S, 20S, 21S, T10, T3, T4, T8)
222,557	98	Paved parking, HSG C (1S, 2S, 3S, 5S, 5T, 6S, 6T, 7T, 8S, 9S, 9T, 12S, 13S, 16S, 20S, 21S, T10, T4, T8)
59,534	98	Unconnected roofs, HSG C (4S, 10S)
430,380	**90**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
430,380	HSG C	1S, 1T, 2S, 3S, 4S, 5S, 5T, 6S, 6T, 7T, 8S, 9S, 9T, 10S, 12S, 13S, 16S, 20S, 21S, T10, T3, T4, T8
0	HSG D	
0	Other	
430,380		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Subcatcl Numbers
0	0	148,289	0	0	148,289	>75% Grass cover, Good	
0	0	222,557	0	0	222,557	Paved parking	
0	0	59,534	0	0	59,534	Unconnected roofs	
0	**0**	**430,380**	**0**	**0**	**430,380**	**TOTAL AREA**	

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	4B	19.29	18.51	119.0	0.0066	0.013	18.0	0.0	0.0
2	14P	17.10	15.90	31.0	0.0387	0.025	15.0	0.0	0.0
3	15P	15.90	15.80	204.0	0.0005	0.025	15.0	0.0	0.0
4	37	20.61	20.54	14.5	0.0048	0.013	12.0	0.0	0.0
5	38	20.78	20.71	12.5	0.0056	0.013	12.0	0.0	0.0
6	39	21.07	20.71	71.5	0.0050	0.013	12.0	0.0	0.0
7	40	20.61	20.54	14.5	0.0048	0.013	12.0	0.0	0.0
8	41	21.04	20.71	66.0	0.0050	0.013	12.0	0.0	0.0
9	42	20.43	20.12	155.0	0.0020	0.013	1.0	0.0	0.0
10	43	20.02	19.29	145.5	0.0050	0.013	12.0	0.0	0.0
11	44	19.19	18.98	42.0	0.0050	0.013	12.0	0.0	0.0
12	45	20.24	20.12	24.5	0.0049	0.013	12.0	0.0	0.0
13	46	19.41	19.29	23.5	0.0051	0.013	12.0	0.0	0.0
14	47	19.51	19.29	44.0	0.0050	0.013	12.0	0.0	0.0
15	47P	22.87	22.28	14.5	0.0407	0.013	8.0	0.0	0.0
16	48	18.88	17.89	198.0	0.0050	0.013	12.0	0.0	0.0
17	48P	20.54	20.53	60.0	0.0002	0.013	12.0	0.0	0.0
18	49	20.08	19.79	59.0	0.0049	0.013	12.0	0.0	0.0
19	50	20.84	20.18	131.0	0.0050	0.013	12.0	0.0	0.0
20	51	20.32	20.18	27.5	0.0051	0.013	12.0	0.0	0.0
21	52	17.79	17.30	97.5	0.0050	0.013	12.0	0.0	0.0
22	53	21.95	21.40	110.0	0.0050	0.013	12.0	0.0	0.0
23	54	22.61	22.54	14.5	0.0048	0.013	12.0	0.0	0.0
24	55	22.98	22.71	53.0	0.0051	0.013	12.0	0.0	0.0
25	1071	17.50	17.30	31.0	0.0065	0.025	12.0	0.0	0.0
26	1346	15.70	14.70	143.0	0.0070	0.025	15.0	0.0	0.0
27	D1	17.10	17.00	16.0	0.0063	0.013	24.0	0.0	0.0
28	D10	21.30	20.24	231.5	0.0046	0.013	12.0	0.0	0.0
29	D11	23.35	21.40	231.5	0.0084	0.013	12.0	0.0	0.0
30	D12	23.52	23.45	7.0	0.0100	0.013	12.0	0.0	0.0
31	D13	23.52	23.45	7.0	0.0100	0.013	12.0	0.0	0.0
32	D2	17.64	17.20	67.0	0.0066	0.013	24.0	0.0	0.0
33	D3	19.31	18.64	27.0	0.0248	0.013	12.0	0.0	0.0
34	D4	18.41	18.14	42.0	0.0064	0.013	18.0	0.0	0.0
35	D5	19.03	18.91	23.5	0.0051	0.013	12.0	0.0	0.0
36	D6	19.11	19.03	16.5	0.0048	0.013	12.0	0.0	0.0
37	D7	19.74	19.39	54.5	0.0064	0.013	18.0	0.0	0.0
38	D8	20.32	20.24	7.5	0.0107	0.013	12.0	0.0	0.0
39	D9	20.32	20.24	7.5	0.0107	0.013	12.0	0.0	0.0
40	E1	18.83	18.64	39.0	0.0049	0.010	12.0	0.0	0.0
41	RD	22.02	21.11	91.0	0.0100	0.013	6.0	0.0	0.0
42	RD2	19.23	18.98	50.5	0.0050	0.013	6.0	0.0	0.0

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=13,115 sf 67.68% Impervious Runoff Depth=3.75"
Tc=6.0 min CN=90 Runoff=1.28 cfs 4,100 cf

Subcatchment 1T: Runoff Area=44,465 sf 0.00% Impervious Runoff Depth=2.26"
Flow Length=143' Tc=6.0 min CN=74 Runoff=2.69 cfs 8,378 cf

Subcatchment 2S: Runoff Area=8,206 sf 45.53% Impervious Runoff Depth=3.25"
Tc=0.0 min CN=85 Runoff=0.87 cfs 2,221 cf

Subcatchment 3S: Runoff Area=7,897 sf 9.73% Impervious Runoff Depth=2.43"
Tc=0.0 min CN=76 Runoff=0.63 cfs 1,598 cf

Subcatchment 4S: Runoff Area=22,635 sf 100.00% Impervious Runoff Depth=4.63"
Tc=6.0 min CN=98 Runoff=2.47 cfs 8,740 cf

Subcatchment 5S: Runoff Area=37,687 sf 67.42% Impervious Runoff Depth=3.75"
Tc=6.0 min CN=90 Runoff=3.68 cfs 11,780 cf

Subcatchment 5T: Runoff Area=5,760 sf 100.00% Impervious Runoff Depth=4.63"
Flow Length=176' Tc=6.0 min CN=98 Runoff=0.63 cfs 2,224 cf

Subcatchment 6S: Runoff Area=4,765 sf 77.02% Impervious Runoff Depth=3.96"
Tc=6.0 min CN=92 Runoff=0.48 cfs 1,573 cf

Subcatchment 6T: Runoff Area=9,722 sf 82.42% Impervious Runoff Depth=4.18"
Flow Length=71' Slope=0.1342 '/' Tc=7.7 min CN=94 Runoff=0.96 cfs 3,386 cf

Subcatchment 7T: Runoff Area=11,305 sf 59.96% Impervious Runoff Depth=3.55"
Flow Length=349' Slope=0.0138 '/' Tc=6.0 min CN=88 Runoff=1.06 cfs 3,340 cf

Subcatchment 8S: Runoff Area=25,878 sf 76.57% Impervious Runoff Depth=3.96"
Tc=6.0 min CN=92 Runoff=2.62 cfs 8,545 cf

Subcatchment 9S: Runoff Area=18,472 sf 83.26% Impervious Runoff Depth=4.18"
Tc=6.0 min CN=94 Runoff=1.94 cfs 6,434 cf

Subcatchment 9T: Runoff Area=3,204 sf 63.30% Impervious Runoff Depth=3.65"
Tc=6.0 min CN=89 Runoff=0.31 cfs 974 cf

Subcatchment 10S: Runoff Area=36,899 sf 100.00% Impervious Runoff Depth=4.63"
Tc=6.0 min CN=98 Runoff=4.03 cfs 14,247 cf

Subcatchment 12S: Runoff Area=23,297 sf 94.18% Impervious Runoff Depth=4.52"
Tc=6.0 min CN=97 Runoff=2.53 cfs 8,770 cf

Subcatchment 13S: Runoff Area=23,084 sf 3.69% Impervious Runoff Depth=2.34"
Tc=6.0 min CN=75 Runoff=1.45 cfs 4,510 cf

Subcatchment 16S: Runoff Area=31,860 sf 64.47% Impervious Runoff Depth=3.65"
Tc=6.0 min CN=89 Runoff=3.04 cfs 9,684 cf

Subcatchment 20S: Runoff Area=28,057 sf 89.69% Impervious Runoff Depth=4.40"
Tc=6.0 min CN=96 Runoff=3.02 cfs 10,295 cf

Subcatchment 21S: Runoff Area=33,588 sf 79.33% Impervious Runoff Depth=4.07"
Tc=6.0 min CN=93 Runoff=3.46 cfs 11,393 cf

Subcatchment T10: Runoff Area=3,547 sf 81.62% Impervious Runoff Depth=4.18"
Tc=0.0 min CN=94 Runoff=0.45 cfs 1,235 cf

Subcatchment T3: Runoff Area=8,065 sf 0.00% Impervious Runoff Depth=2.26"
Flow Length=115' Slope=0.0011 '/' Tc=6.0 min CN=74 Runoff=0.49 cfs 1,520 cf

Subcatchment T4: Runoff Area=18,873 sf 85.85% Impervious Runoff Depth=4.29"
Tc=0.0 min CN=95 Runoff=2.45 cfs 6,748 cf

Subcatchment T8: Runoff Area=9,999 sf 80.90% Impervious Runoff Depth=4.07"
Tc=0.0 min CN=93 Runoff=1.26 cfs 3,392 cf

Reach AP1: Hodgson Brook Inflow=24.65 cfs 86,485 cf
Outflow=24.65 cfs 86,485 cf

Reach R1: Swale Avg. Flow Depth=0.52' Max Vel=3.23 fps Inflow=9.30 cfs 34,536 cf
n=0.035 L=100.0' S=0.0200 '/' Capacity=333.24 cfs Outflow=9.28 cfs 34,536 cf

Pond 4B: (new Pond) Peak Elev=20.85' Inflow=5.40 cfs 19,059 cf
18.0" Round Culvert n=0.013 L=119.0' S=0.0066 '/' Outflow=5.40 cfs 19,059 cf

Pond 14P: CB #1072 Peak Elev=78.99' Inflow=12.84 cfs 43,571 cf
15.0" Round Culvert n=0.025 L=31.0' S=0.0387 '/' Outflow=12.84 cfs 43,571 cf

Pond 15P: CB #1347 Peak Elev=71.90' Inflow=12.84 cfs 43,571 cf
15.0" Round Culvert n=0.025 L=204.0' S=0.0005 '/' Outflow=12.84 cfs 43,571 cf

Pond 37: Peak Elev=24.07' Inflow=6.51 cfs 21,077 cf
12.0" Round Culvert n=0.013 L=14.5' S=0.0048 '/' Outflow=6.51 cfs 21,077 cf

Pond 38: Peak Elev=24.72' Inflow=3.04 cfs 9,684 cf
12.0" Round Culvert n=0.013 L=12.5' S=0.0056 '/' Outflow=3.04 cfs 9,684 cf

Pond 39: Peak Elev=25.20' Inflow=3.46 cfs 11,393 cf
12.0" Round Culvert n=0.013 L=71.5' S=0.0050 '/' Outflow=3.46 cfs 11,393 cf

Pond 40: Peak Elev=24.12' Inflow=6.56 cfs 23,018 cf
12.0" Round Culvert n=0.013 L=14.5' S=0.0048 '/' Outflow=6.56 cfs 23,018 cf

Pond 41: Peak Elev=24.70' Inflow=2.53 cfs 8,770 cf
12.0" Round Culvert n=0.013 L=66.0' S=0.0050 '/' Outflow=2.53 cfs 8,770 cf

Pond 42: Peak Elev=33.97' Inflow=0.00 cfs 0 cf
1.0" Round Culvert n=0.013 L=155.0' S=0.0020 '/' Outflow=0.00 cfs 0 cf

Pond 43: Peak Elev=142.58' Inflow=3.02 cfs 10,295 cf
12.0" Round Culvert n=0.013 L=145.5' S=0.0050 '/' Outflow=3.02 cfs 10,296 cf

Pond 44: Peak Elev=141.36' Inflow=8.63 cfs 28,510 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0050 '/' Outflow=8.63 cfs 28,510 cf

Pond 45: Peak Elev=143.66' Inflow=3.02 cfs 10,295 cf
12.0" Round Culvert n=0.013 L=24.5' S=0.0049 '/' Outflow=3.02 cfs 10,295 cf

Pond 46: Peak Elev=141.48' Inflow=1.94 cfs 6,434 cf
12.0" Round Culvert n=0.013 L=23.5' S=0.0051 '/' Outflow=1.94 cfs 6,434 cf

Pond 47: Peak Elev=142.19' Inflow=3.68 cfs 11,780 cf
12.0" Round Culvert n=0.013 L=44.0' S=0.0050 '/' Outflow=3.68 cfs 11,780 cf

Pond 47P: Peak Elev=22.39' Storage=0.032 af Inflow=1.45 cfs 4,510 cf
Discarded=0.28 cfs 4,510 cf Primary=0.00 cfs 0 cf Outflow=0.28 cfs 4,510 cf

Pond 48: Peak Elev=136.54' Inflow=11.10 cfs 37,250 cf
12.0" Round Culvert n=0.013 L=198.0' S=0.0050 '/' Outflow=11.10 cfs 37,250 cf

Pond 48P: Peak Elev=20.59' Storage=0.275 af Inflow=13.07 cfs 44,095 cf
Discarded=3.30 cfs 44,095 cf Primary=0.00 cfs 0 cf Outflow=3.30 cfs 44,095 cf

Pond 49: Peak Elev=21.64' Inflow=3.11 cfs 10,118 cf
12.0" Round Culvert n=0.013 L=59.0' S=0.0049 '/' Outflow=3.11 cfs 10,118 cf

Pond 50: Peak Elev=22.62' Inflow=2.62 cfs 8,545 cf
12.0" Round Culvert n=0.013 L=131.0' S=0.0050 '/' Outflow=2.62 cfs 8,545 cf

Pond 51: Peak Elev=21.67' Inflow=0.48 cfs 1,573 cf
12.0" Round Culvert n=0.013 L=27.5' S=0.0051 '/' Outflow=0.48 cfs 1,573 cf

Pond 52: Peak Elev=112.62' Inflow=11.10 cfs 37,250 cf
12.0" Round Culvert n=0.013 L=97.5' S=0.0050 '/' Outflow=11.10 cfs 37,250 cf

Pond 53: Peak Elev=21.95' Inflow=0.00 cfs 0 cf
12.0" Round Culvert n=0.013 L=110.0' S=0.0050 '/' Outflow=0.00 cfs 0 cf

Pond 54: Peak Elev=23.40' Inflow=1.45 cfs 4,510 cf
12.0" Round Culvert n=0.013 L=14.5' S=0.0048 '/' Outflow=1.45 cfs 4,510 cf

Pond 55: Peak Elev=23.79' Inflow=1.45 cfs 4,510 cf
12.0" Round Culvert n=0.013 L=53.0' S=0.0051 '/' Outflow=1.45 cfs 4,510 cf

Pond 1071: Peak Elev=98.46' Inflow=12.38 cfs 41,349 cf
12.0" Round Culvert n=0.025 L=31.0' S=0.0065 '/' Outflow=12.38 cfs 41,349 cf

Pond 1346: CB #1346 Peak Elev=39.46' Inflow=12.84 cfs 43,571 cf
15.0" Round Culvert n=0.025 L=143.0' S=0.0070 '/' Outflow=12.84 cfs 43,571 cf

Pond D1: Peak Elev=18.73' Inflow=8.86 cfs 33,016 cf
24.0" Round Culvert n=0.013 L=16.0' S=0.0063 '/' Outflow=8.86 cfs 33,016 cf

Pond D10: Peak Elev=21.81' Inflow=0.64 cfs 2,209 cf
12.0" Round Culvert n=0.013 L=231.5' S=0.0046 '/' Outflow=0.64 cfs 2,209 cf

Pond D11: Peak Elev=23.76' Inflow=0.64 cfs 2,209 cf
12.0" Round Culvert n=0.013 L=231.5' S=0.0084 '/' Outflow=0.64 cfs 2,209 cf

Pond D12: Peak Elev=23.85' Inflow=0.31 cfs 974 cf
12.0" Round Culvert n=0.013 L=7.0' S=0.0100 '/' Outflow=0.31 cfs 974 cf

Pond D13: Peak Elev=23.92' Inflow=0.45 cfs 1,235 cf
12.0" Round Culvert n=0.013 L=7.0' S=0.0100 '/' Outflow=0.45 cfs 1,235 cf

Pond D2: Peak Elev=19.33' Inflow=8.86 cfs 33,016 cf
24.0" Round Culvert n=0.013 L=67.0' S=0.0066 '/' Outflow=8.86 cfs 33,016 cf

Pond D3: Peak Elev=19.72' Inflow=0.63 cfs 2,224 cf
12.0" Round Culvert n=0.013 L=27.0' S=0.0248 '/' Outflow=0.63 cfs 2,224 cf

Pond D4: Peak Elev=20.20' Inflow=7.81 cfs 29,194 cf
18.0" Round Culvert n=0.013 L=42.0' S=0.0064 '/' Outflow=7.81 cfs 29,194 cf

Pond D5: Peak Elev=20.55' Inflow=2.45 cfs 6,748 cf
12.0" Round Culvert n=0.013 L=23.5' S=0.0051 '/' Outflow=2.45 cfs 6,748 cf

Pond D6: Peak Elev=20.25' Inflow=0.96 cfs 3,386 cf
12.0" Round Culvert n=0.013 L=16.5' S=0.0048 '/' Outflow=0.96 cfs 3,386 cf

Pond D7: Peak Elev=21.00' Inflow=2.54 cfs 8,941 cf
18.0" Round Culvert n=0.013 L=54.5' S=0.0064 '/' Outflow=2.54 cfs 8,941 cf

Pond D8: Peak Elev=21.12' Inflow=1.06 cfs 3,340 cf
12.0" Round Culvert n=0.013 L=7.5' S=0.0107 '/' Outflow=1.06 cfs 3,340 cf

Pond D9: Peak Elev=21.09' Inflow=1.26 cfs 3,392 cf
12.0" Round Culvert n=0.013 L=7.5' S=0.0107 '/' Outflow=1.26 cfs 3,392 cf

Pond E1: Peak Elev=19.43' Inflow=0.63 cfs 1,598 cf
12.0" Round Culvert n=0.010 L=39.0' S=0.0049 '/' Outflow=0.63 cfs 1,598 cf

Pond RD: Peak Elev=81.15' Inflow=4.03 cfs 14,247 cf
6.0" Round Culvert n=0.013 L=91.0' S=0.0100 '/' Outflow=4.03 cfs 14,247 cf

Pond RD2: Peak Elev=149.55' Inflow=2.47 cfs 8,740 cf
6.0" Round Culvert n=0.013 L=50.5' S=0.0050 '/' Outflow=2.47 cfs 8,740 cf

Total Runoff Area = 430,380 sf Runoff Volume = 135,089 cf Average Runoff Depth = 3.77"
34.46% Pervious = 148,289 sf 65.54% Impervious = 282,091 sf

Summary for Subcatchment 1S:

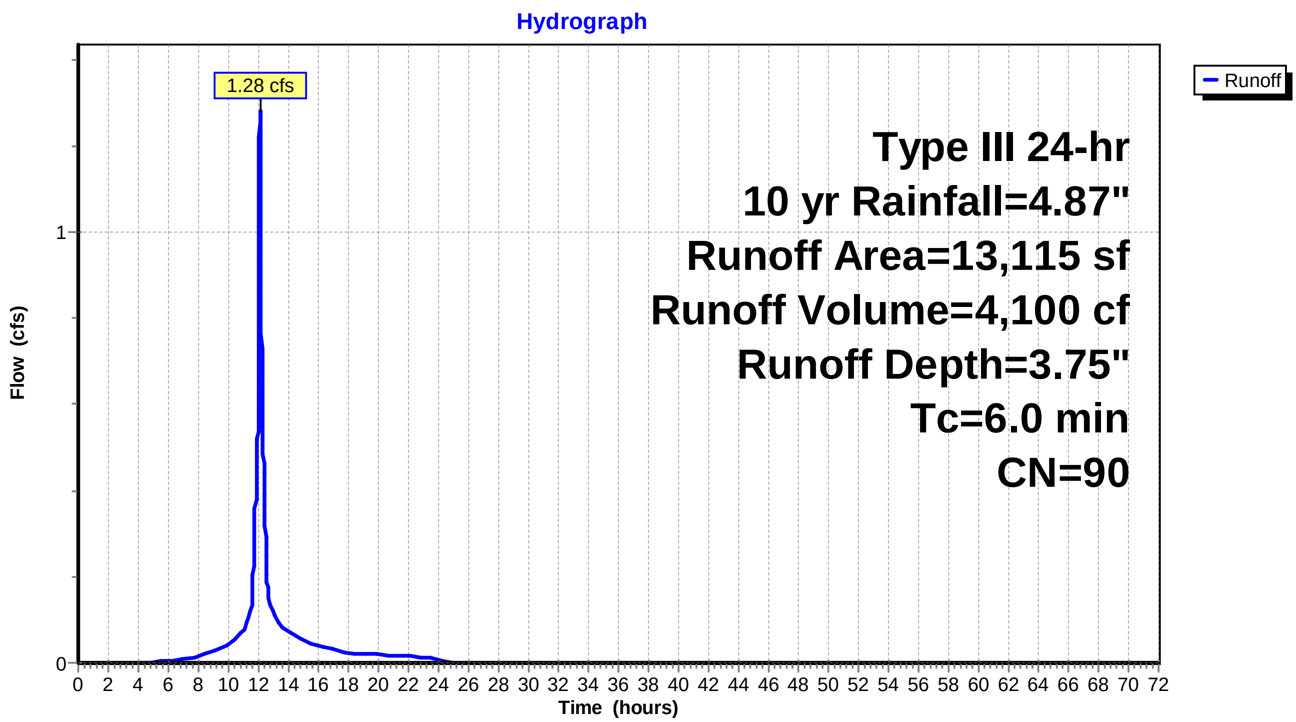
Runoff = 1.28 cfs @ 12.09 hrs, Volume= 4,100 cf, Depth= 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
4,239	74	>75% Grass cover, Good, HSG C
8,876	98	Paved parking, HSG C
13,115	90	Weighted Average
4,239		32.32% Pervious Area
8,876		67.68% Impervious Area

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

Subcatchment 1S:



Summary for Subcatchment 1T:

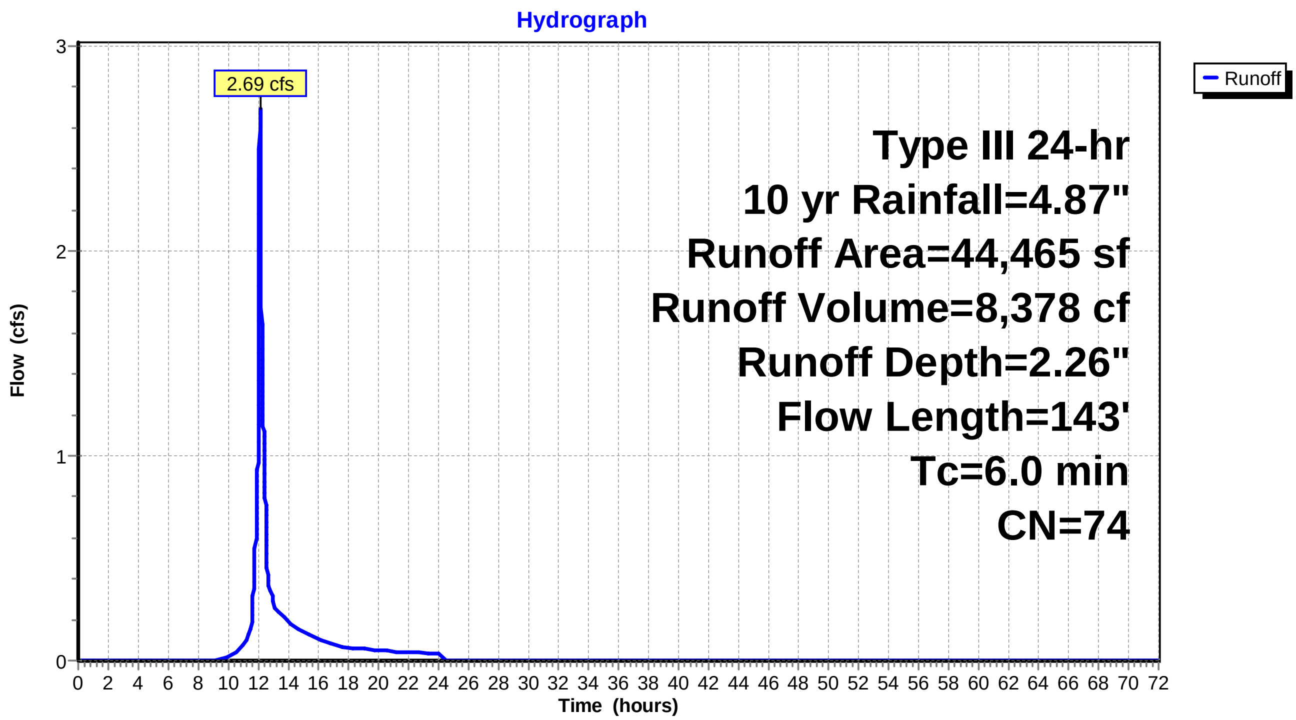
Runoff = 2.69 cfs @ 12.09 hrs, Volume= 8,378 cf, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
44,465	74	>75% Grass cover, Good, HSG C
44,465		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	28	0.2000	0.22		**Sheet Flow, Sheet into swale** Grass: Dense n= 0.240 P2= 3.10"
1.0	115	0.0174	1.98		**Shallow Concentrated Flow, swale channel** Grassed Waterway Kv= 15.0 fps
2.9					**Direct Entry, minimum**
6.0	143	Total			

Subcatchment 1T:



Summary for Subcatchment 2S:

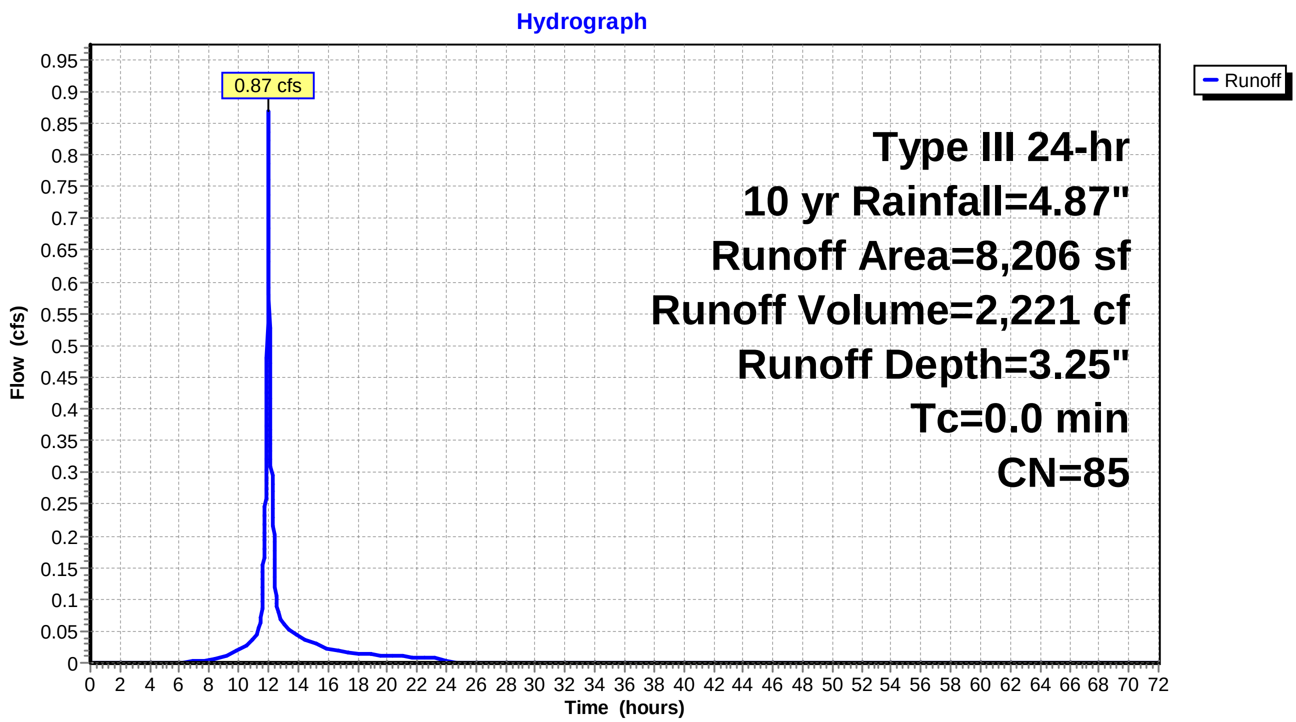
Runoff = 0.87 cfs @ 12.00 hrs, Volume= 2,221 cf, Depth= 3.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
4,470	74	>75% Grass cover, Good, HSG C
3,736	98	Paved parking, HSG C
8,206	85	Weighted Average
4,470		54.47% Pervious Area
3,736		45.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0					**Direct Entry, 6**

Subcatchment 2S:



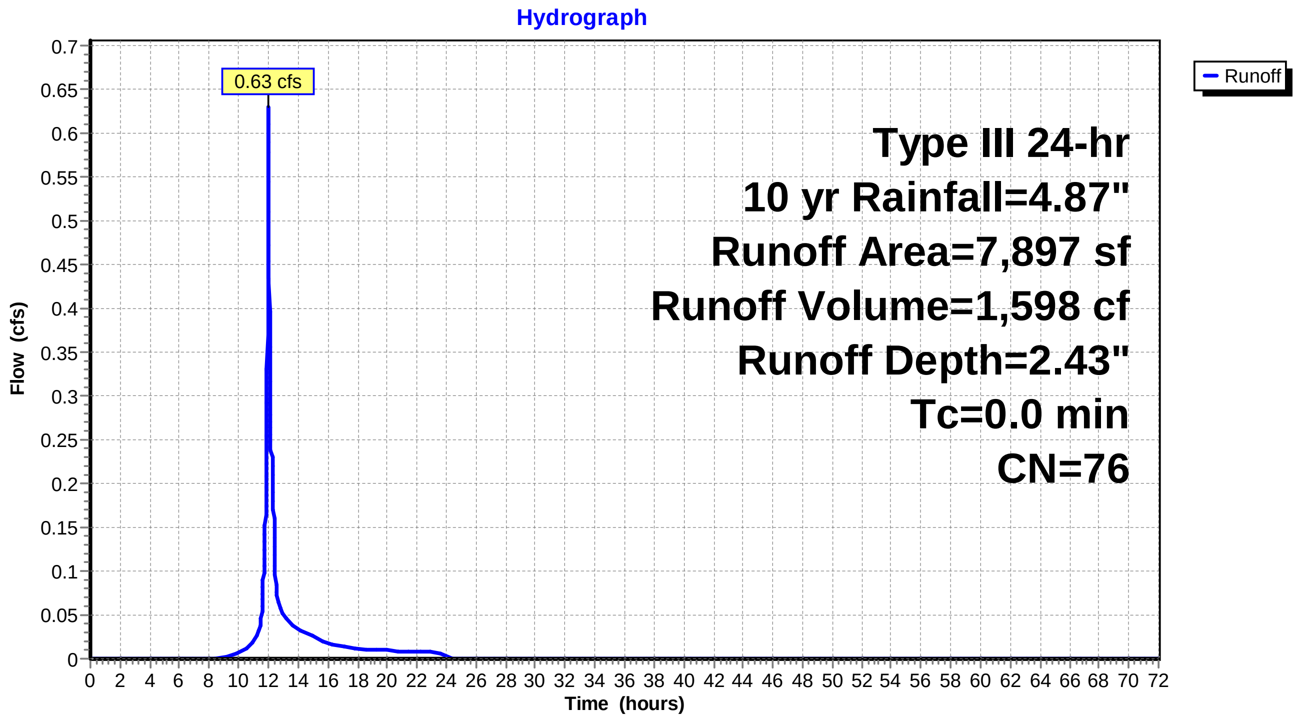
Summary for Subcatchment 3S:

Runoff = 0.63 cfs @ 12.00 hrs, Volume= 1,598 cf, Depth= 2.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
768	98	Paved parking, HSG C
7,129	74	>75% Grass cover, Good, HSG C
7,897	76	Weighted Average
7,129		90.27% Pervious Area
768		9.73% Impervious Area

Subcatchment 3S:



Summary for Subcatchment 4S:

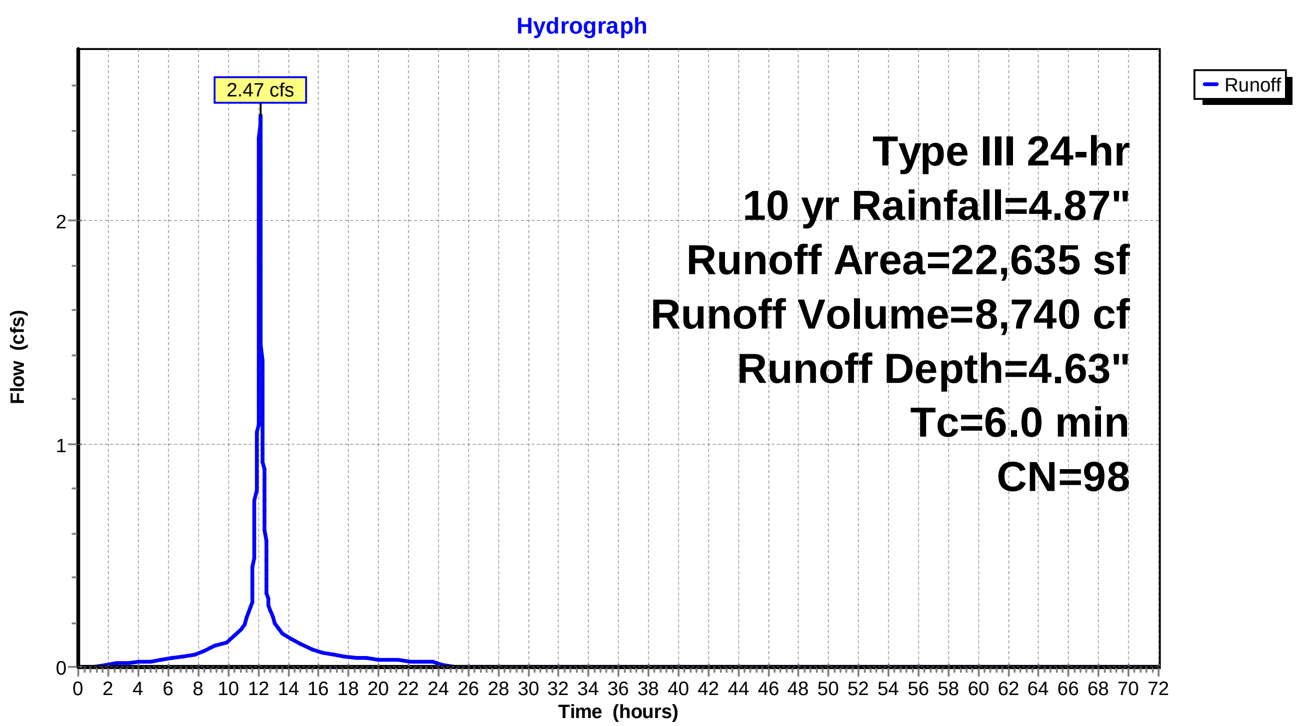
Runoff = 2.47 cfs @ 12.08 hrs, Volume= 8,740 cf, Depth= 4.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
0	74	>75% Grass cover, Good, HSG C
22,635	98	Unconnected roofs, HSG C
22,635	98	Weighted Average
22,635		100.00% Impervious Area
22,635		100.00% Unconnected

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

Subcatchment 4S:



Summary for Subcatchment 5S:

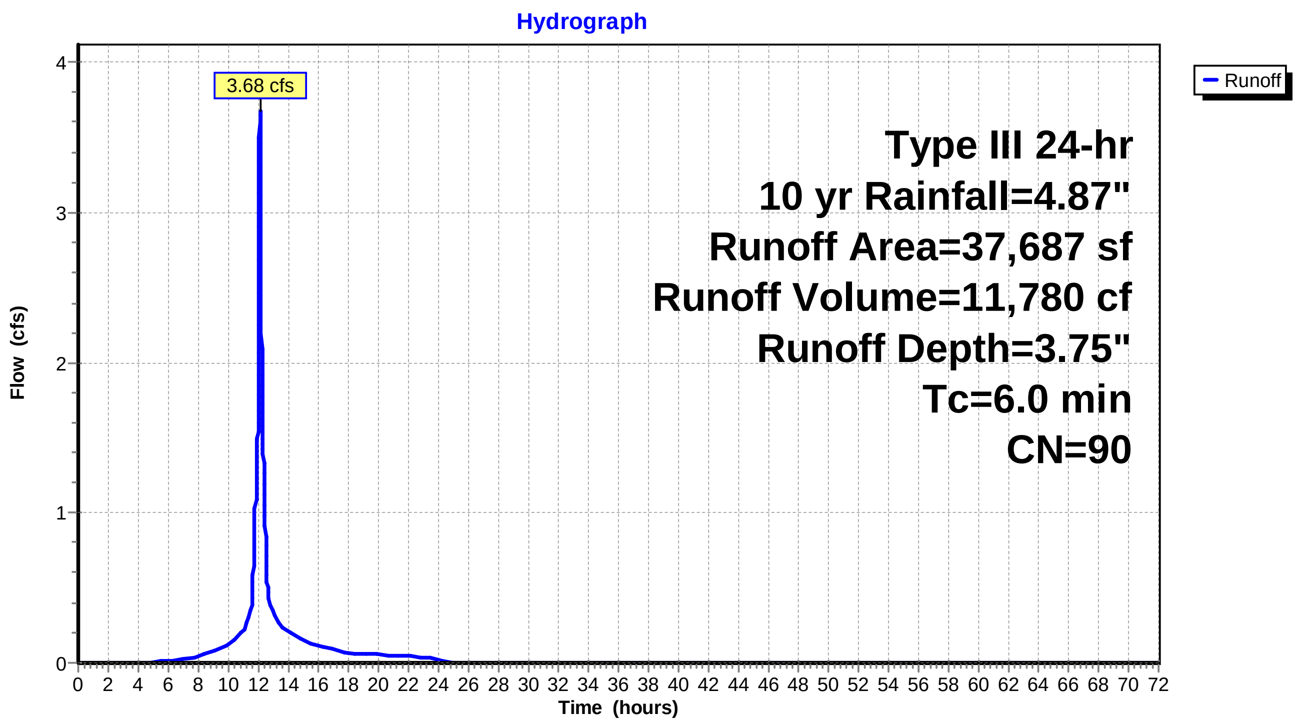
Runoff = 3.68 cfs @ 12.09 hrs, Volume= 11,780 cf, Depth= 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
12,280	74	>75% Grass cover, Good, HSG C
25,407	98	Paved parking, HSG C
37,687	90	Weighted Average
12,280		32.58% Pervious Area
25,407		67.42% Impervious Area

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

Subcatchment 5S:



Summary for Subcatchment 5T:

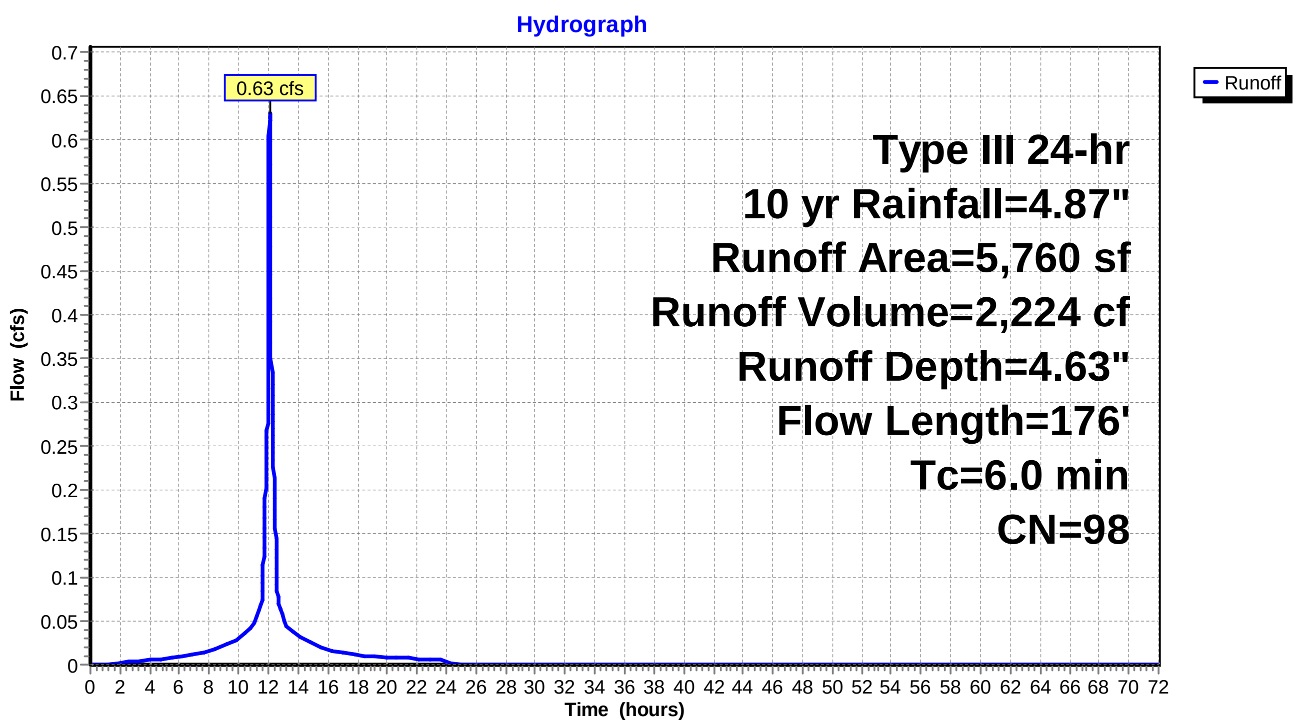
Runoff = 0.63 cfs @ 12.08 hrs, Volume= 2,224 cf, Depth= 4.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
5,760	98	Paved parking, HSG C
5,760		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	50	0.0894	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.9	126	0.0138	2.38		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0					**Direct Entry,**
6.0	176	Total			

Subcatchment 5T:



Summary for Subcatchment 6S:

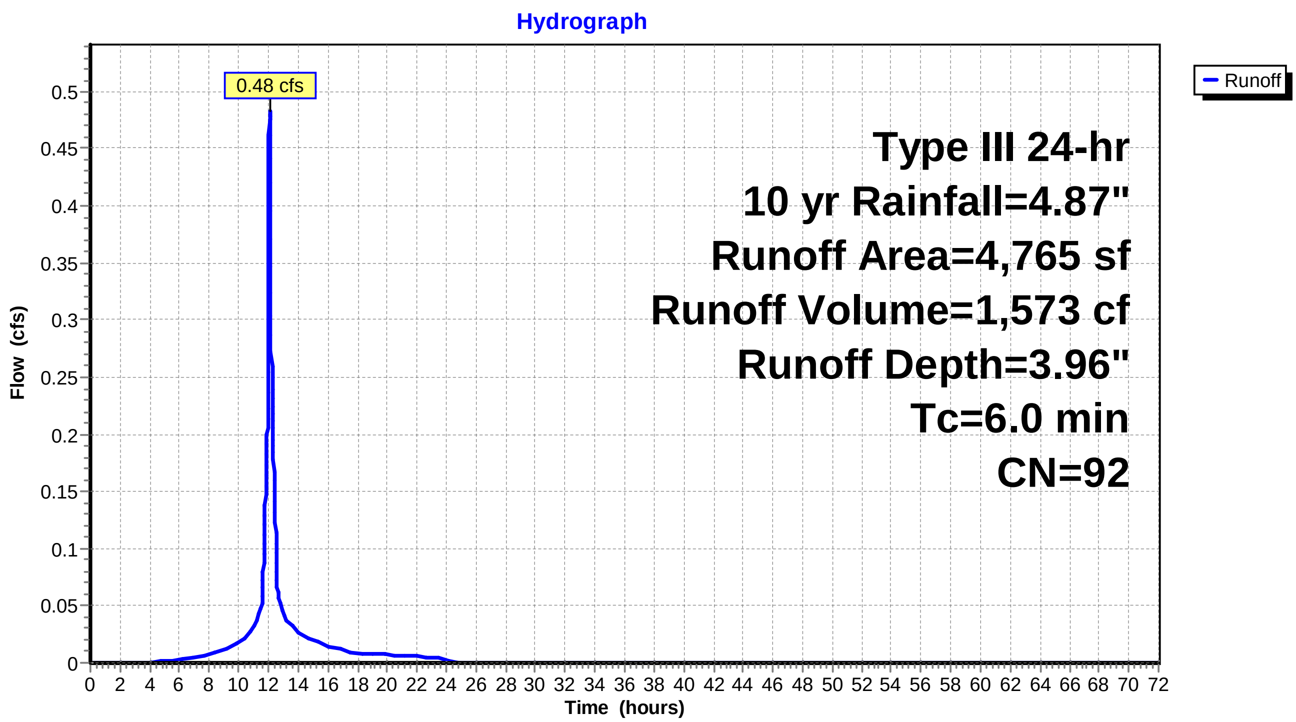
Runoff = 0.48 cfs @ 12.08 hrs, Volume= 1,573 cf, Depth= 3.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
1,095	74	>75% Grass cover, Good, HSG C
3,670	98	Paved parking, HSG C
4,765	92	Weighted Average
1,095		22.98% Pervious Area
3,670		77.02% Impervious Area

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

Subcatchment 6S:



Summary for Subcatchment 6T:

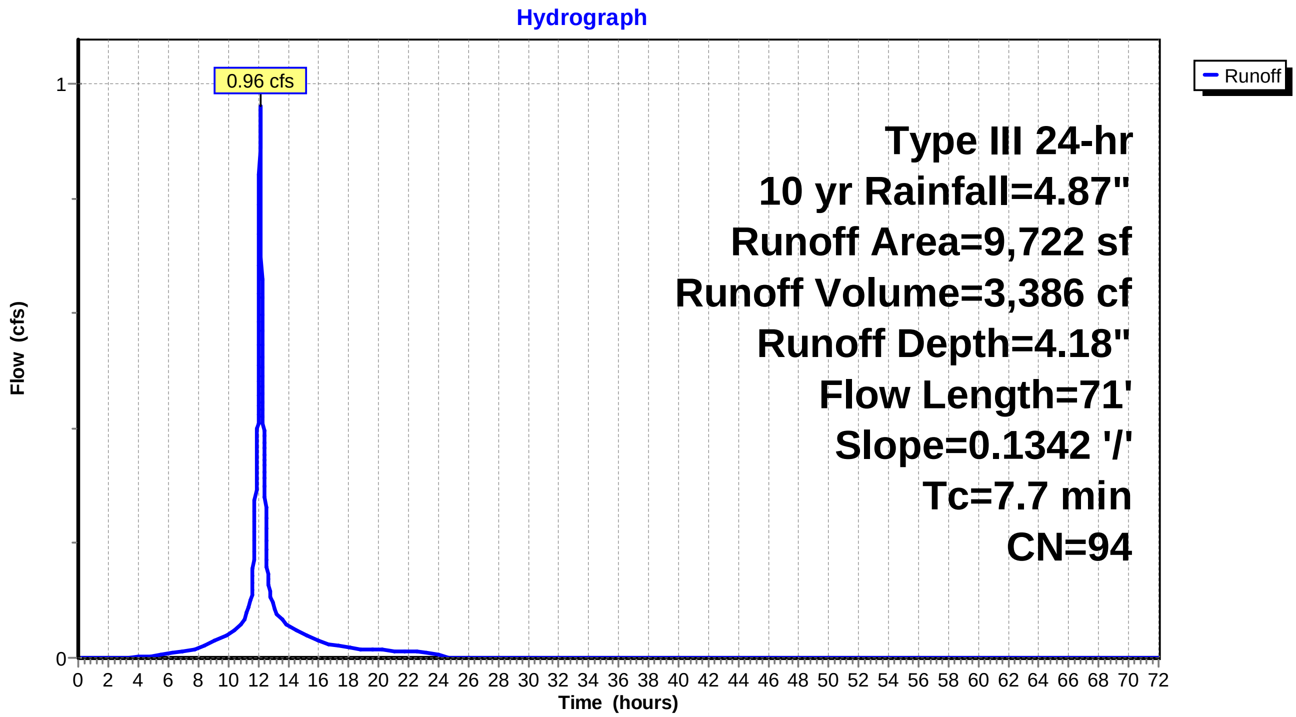
Runoff = 0.96 cfs @ 12.11 hrs, Volume= 3,386 cf, Depth= 4.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

	Area (sf)	CN	Description
	6,582	98	Paved parking, HSG C
*	0	100	S7 Below
	1,431	98	Paved parking, HSG C
	1,709	74	>75% Grass cover, Good, HSG C
	9,722	94	Weighted Average
	1,709		17.58% Pervious Area
	8,013		82.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	71	0.1342	0.15		**Sheet Flow, sheet into hodgson brook** Woods: Light underbrush n= 0.400 P2= 3.10"

Subcatchment 6T:



Summary for Subcatchment 7T:

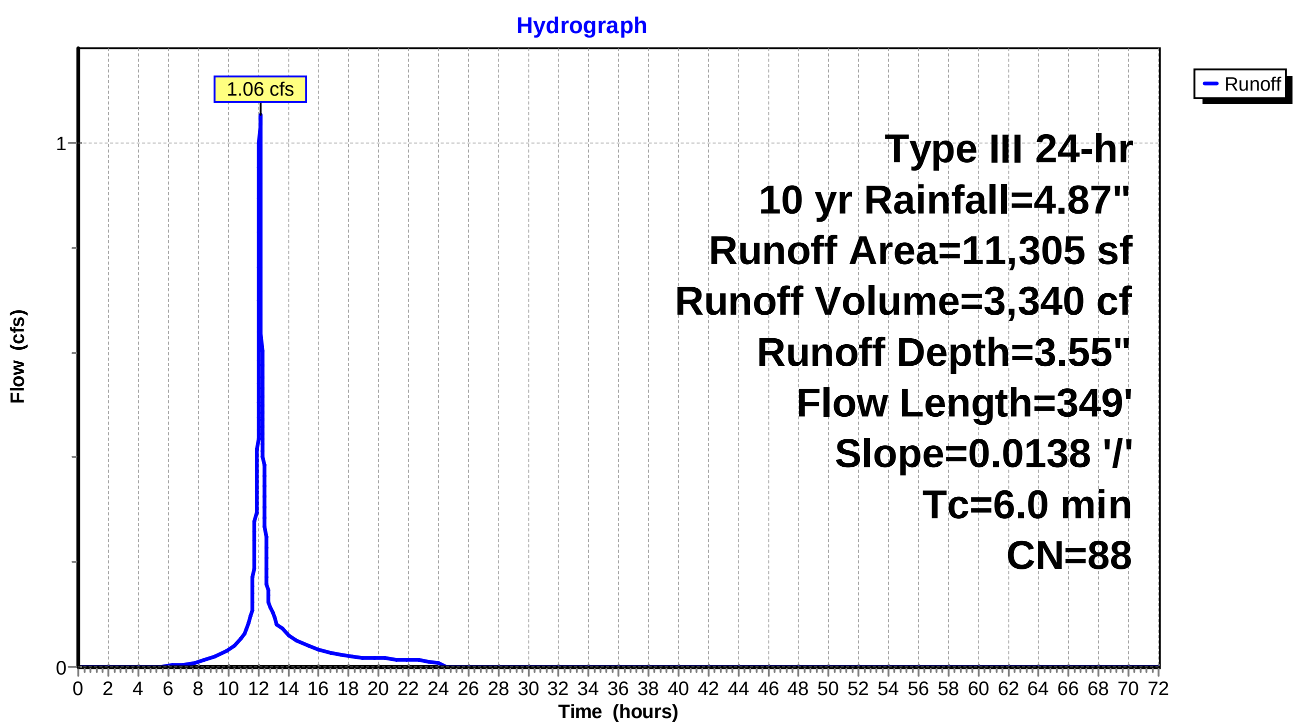
Runoff = 1.06 cfs @ 12.09 hrs, Volume= 3,340 cf, Depth= 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

	Area (sf)	CN	Description
	6,778	98	Paved parking, HSG C
*	0	100	S11 Below
	4,527	74	>75% Grass cover, Good, HSG C
	11,305	88	Weighted Average
	4,527		40.04% Pervious Area
	6,778		59.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	349	0.0138	2.38		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.6					**Direct Entry,**
6.0	349	Total			

Subcatchment 7T:



Summary for Subcatchment 8S:

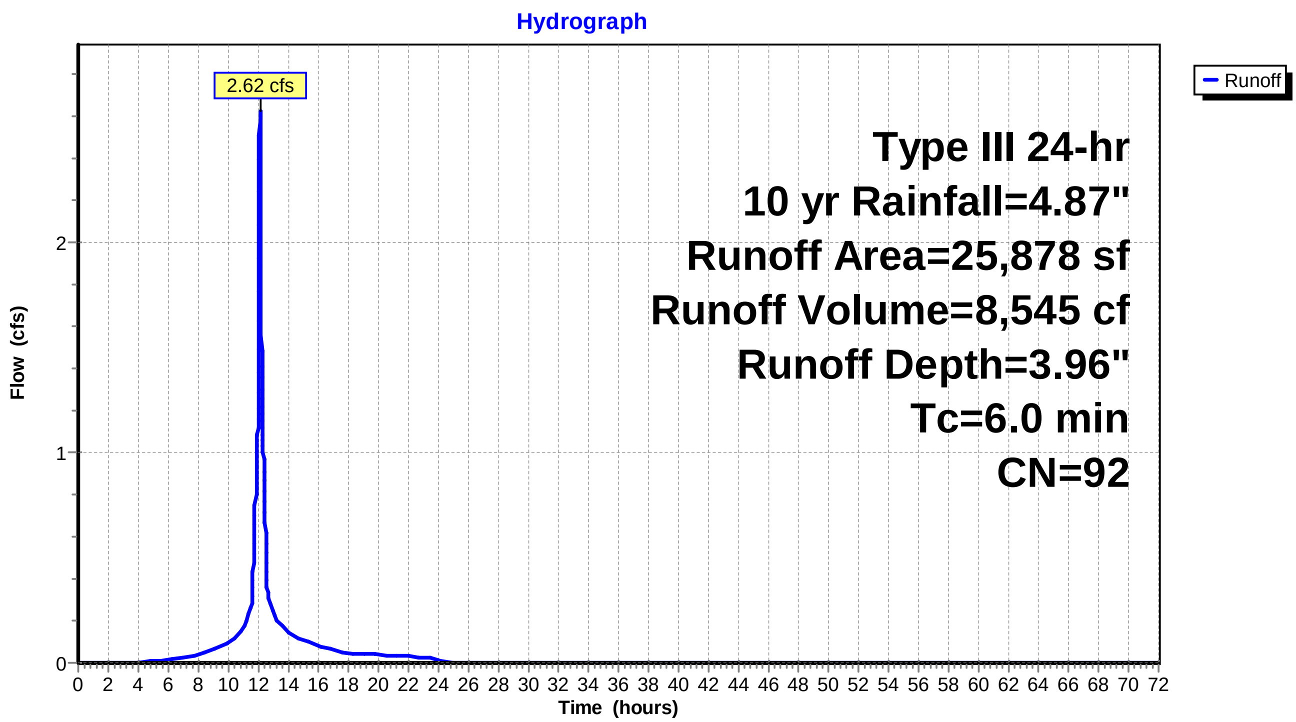
Runoff = 2.62 cfs @ 12.08 hrs, Volume= 8,545 cf, Depth= 3.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
6,063	74	>75% Grass cover, Good, HSG C
19,815	98	Paved parking, HSG C
25,878	92	Weighted Average
6,063		23.43% Pervious Area
19,815		76.57% Impervious Area

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

Subcatchment 8S:



Summary for Subcatchment 9S:

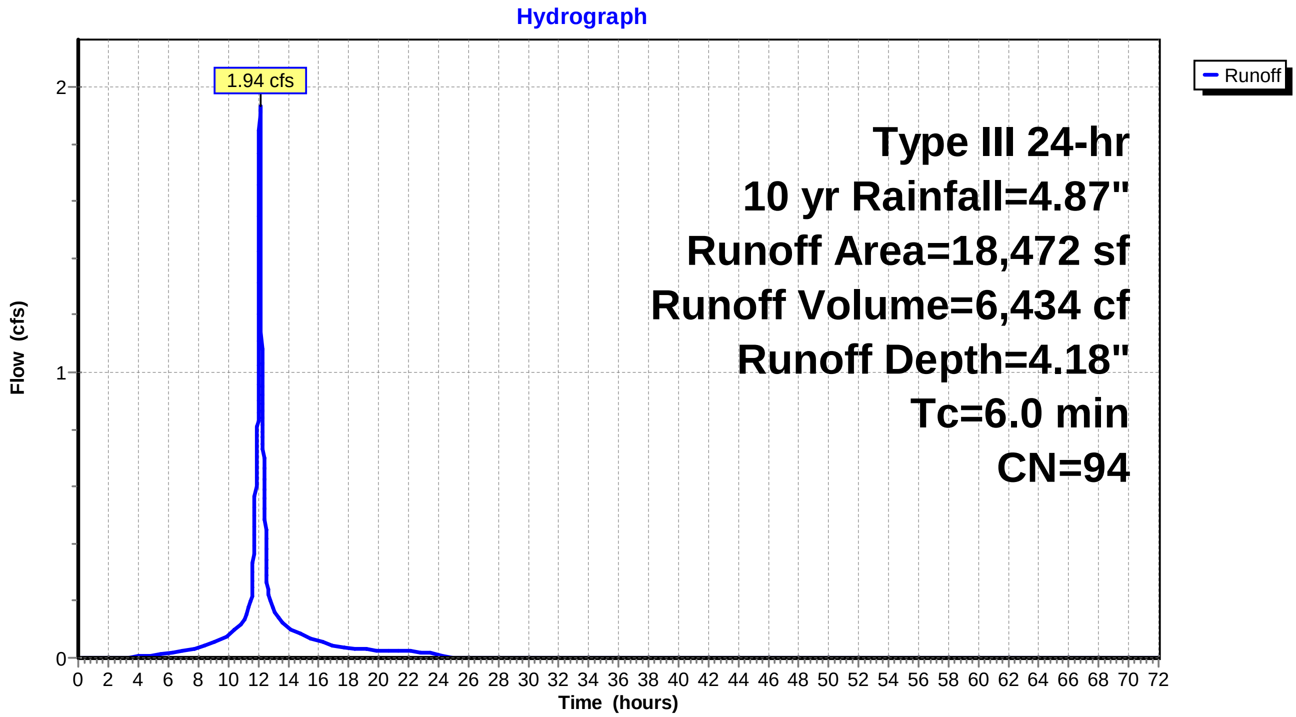
Runoff = 1.94 cfs @ 12.08 hrs, Volume= 6,434 cf, Depth= 4.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
3,092	74	>75% Grass cover, Good, HSG C
15,380	98	Paved parking, HSG C
18,472	94	Weighted Average
3,092		16.74% Pervious Area
15,380		83.26% Impervious Area

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

Subcatchment 9S:



Summary for Subcatchment 9T:

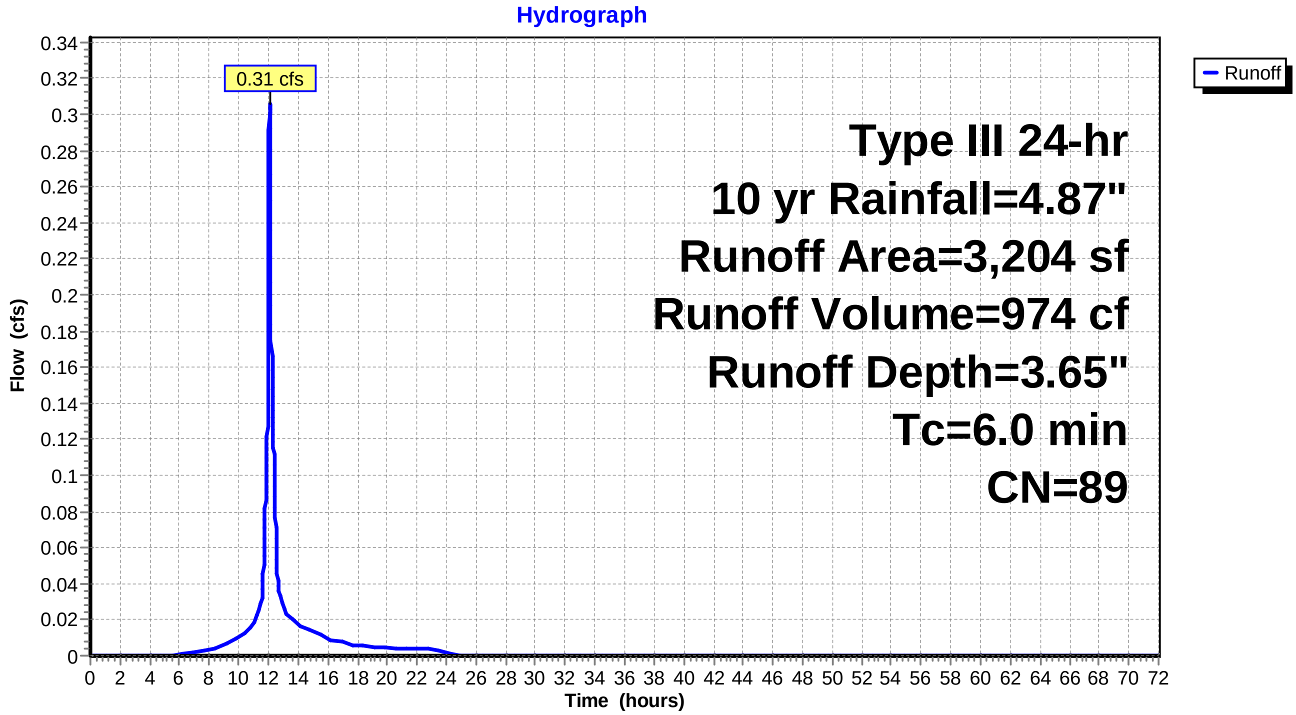
Runoff = 0.31 cfs @ 12.09 hrs, Volume= 974 cf, Depth= 3.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

	Area (sf)	CN	Description
	2,028	98	Paved parking, HSG C
*	0	100	S15 Below
	1,176	74	>75% Grass cover, Good, HSG C
	3,204	89	Weighted Average
	1,176		36.70% Pervious Area
	2,028		63.30% Impervious Area

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

Subcatchment 9T:



Summary for Subcatchment 10S:

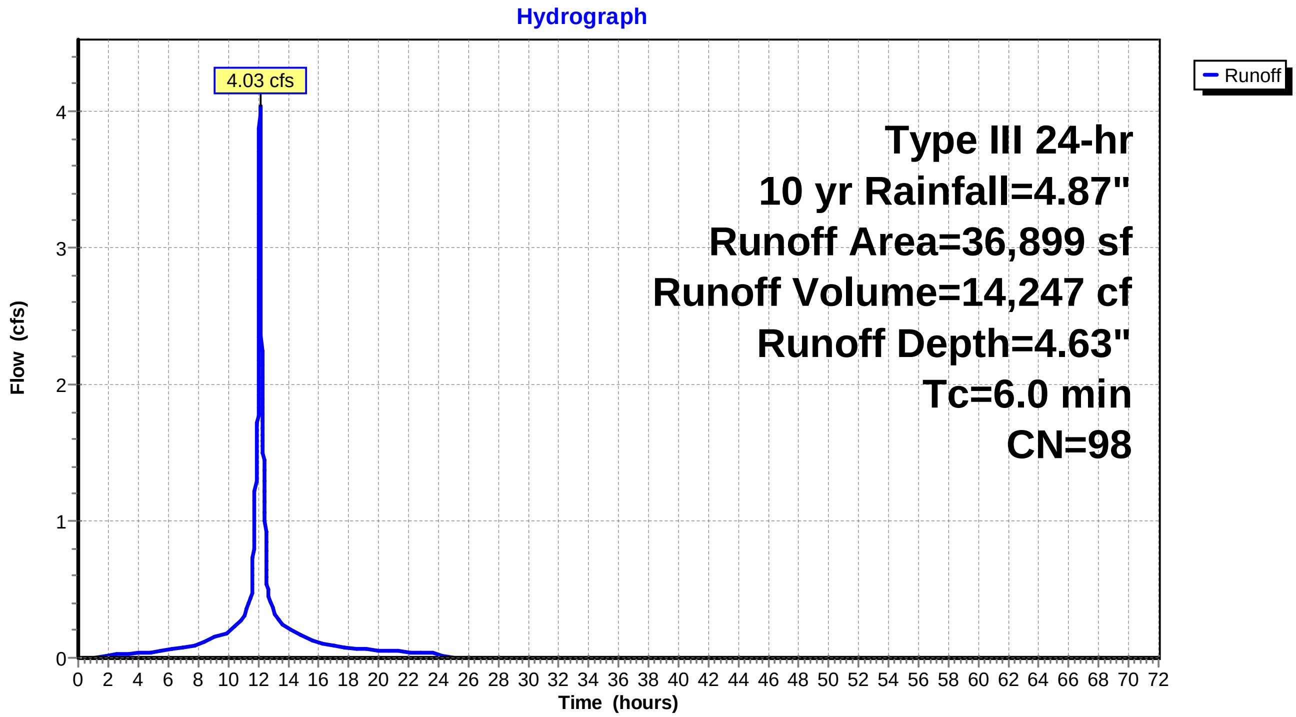
Runoff = 4.03 cfs @ 12.08 hrs, Volume= 14,247 cf, Depth= 4.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
0	80	>75% Grass cover, Good, HSG D
36,899	98	Unconnected roofs, HSG C
36,899	98	Weighted Average
36,899		100.00% Impervious Area
36,899		100.00% Unconnected

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

Subcatchment 10S:



Summary for Subcatchment 12S:

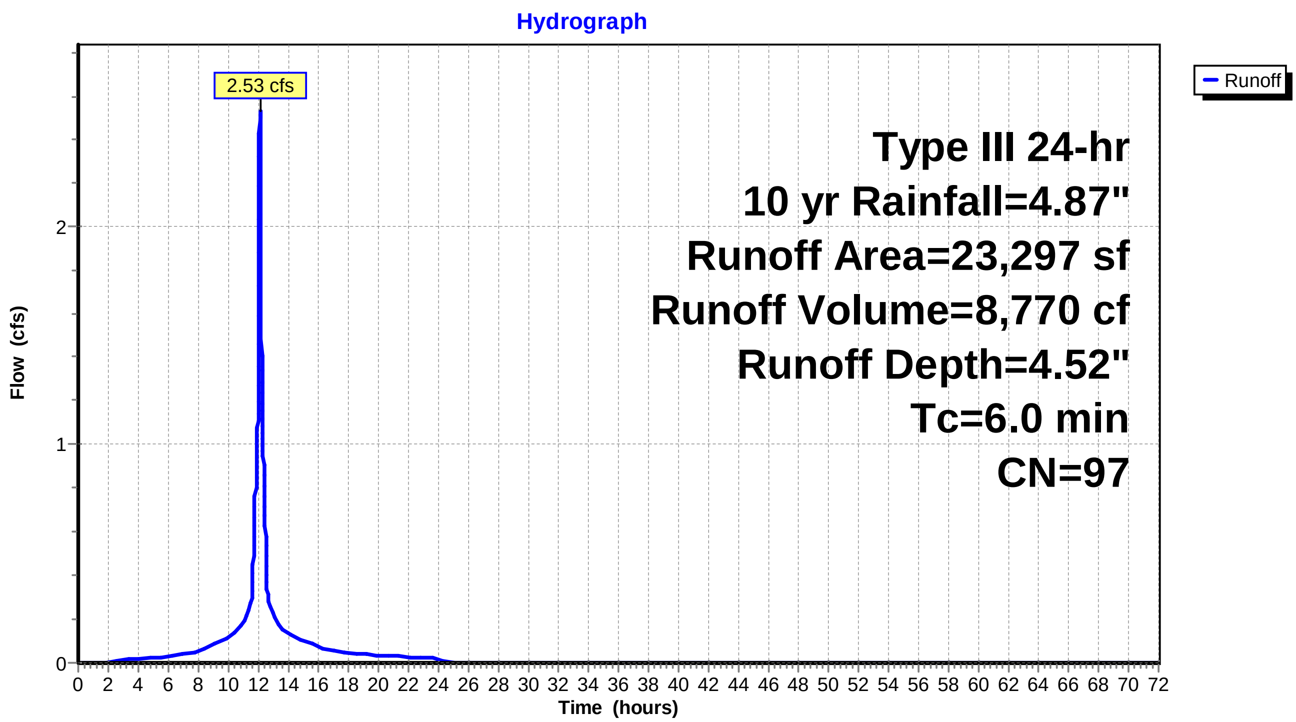
Runoff = 2.53 cfs @ 12.08 hrs, Volume= 8,770 cf, Depth= 4.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
1,356	74	>75% Grass cover, Good, HSG C
21,941	98	Paved parking, HSG C
23,297	97	Weighted Average
1,356		5.82% Pervious Area
21,941		94.18% Impervious Area

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

Subcatchment 12S:



Summary for Subcatchment 13S:

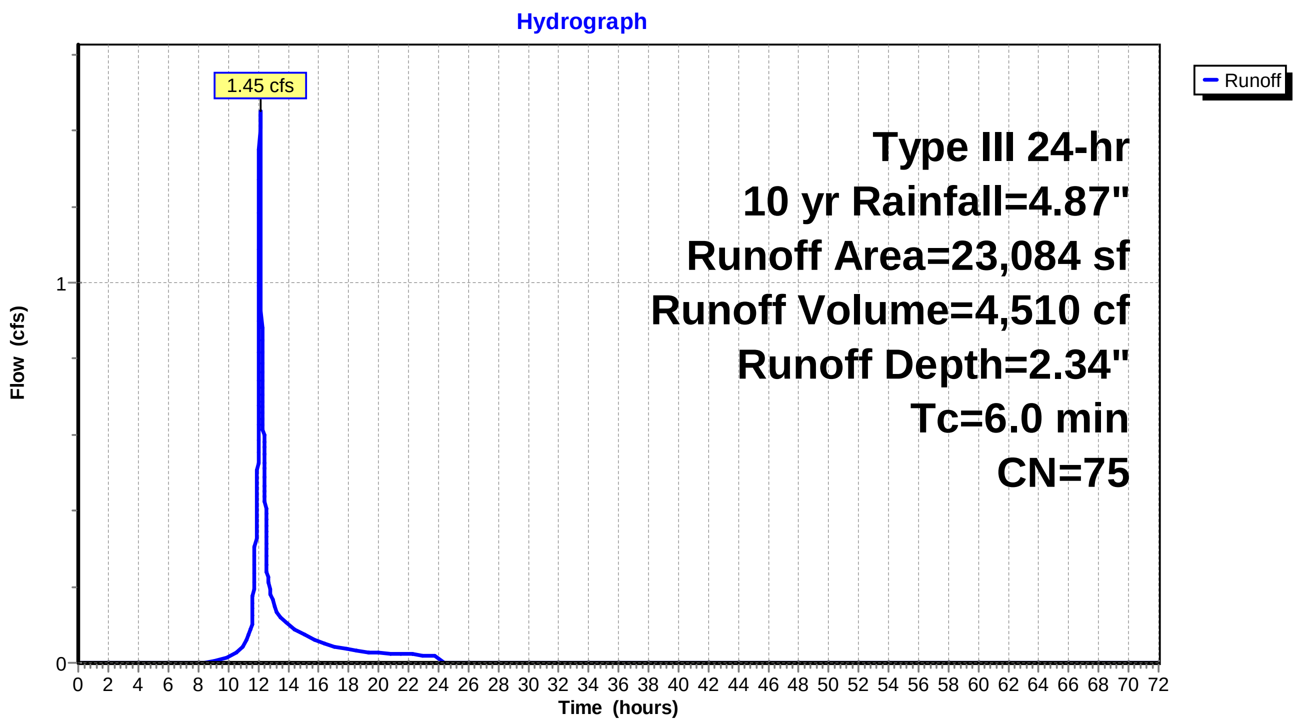
Runoff = 1.45 cfs @ 12.09 hrs, Volume= 4,510 cf, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
22,233	74	>75% Grass cover, Good, HSG C
851	98	Paved parking, HSG C
23,084	75	Weighted Average
22,233		96.31% Pervious Area
851		3.69% Impervious Area

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

Subcatchment 13S:



Summary for Subcatchment 16S:

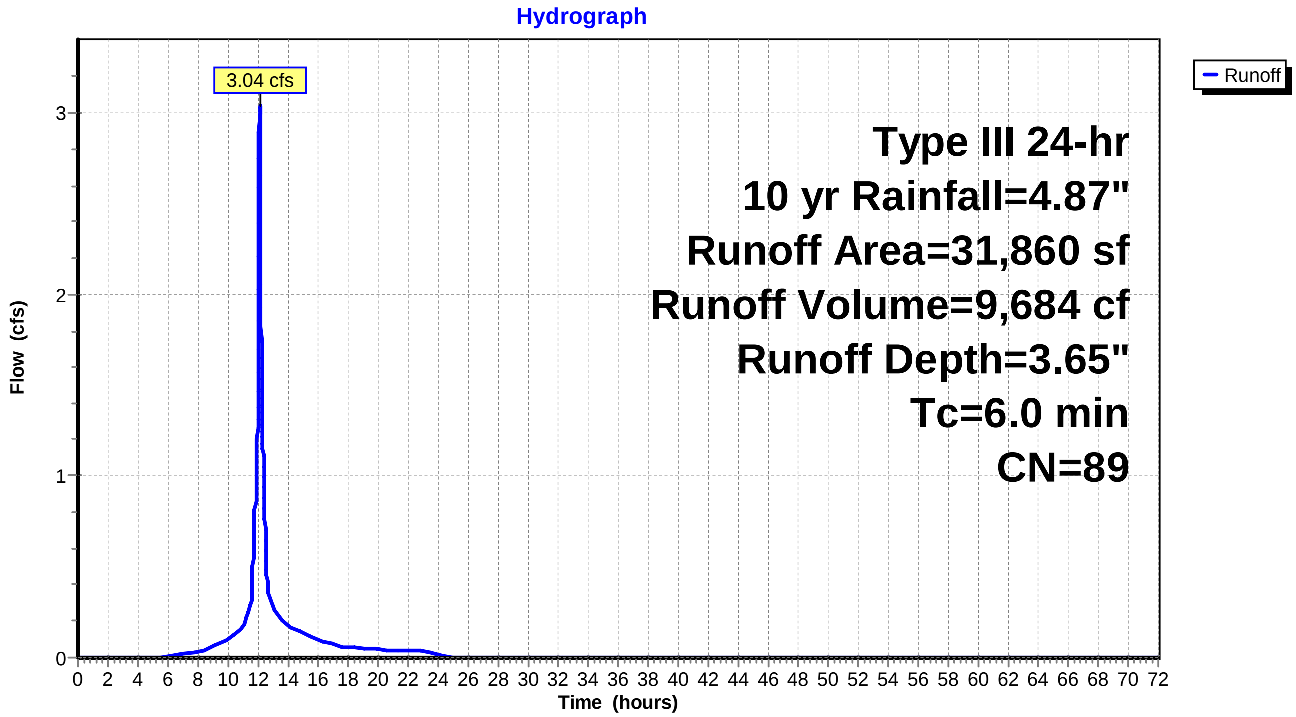
Runoff = 3.04 cfs @ 12.09 hrs, Volume= 9,684 cf, Depth= 3.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
11,321	74	>75% Grass cover, Good, HSG C
20,539	98	Paved parking, HSG C
31,860	89	Weighted Average
11,321		35.53% Pervious Area
20,539		64.47% Impervious Area

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

Subcatchment 16S:



Summary for Subcatchment 20S:

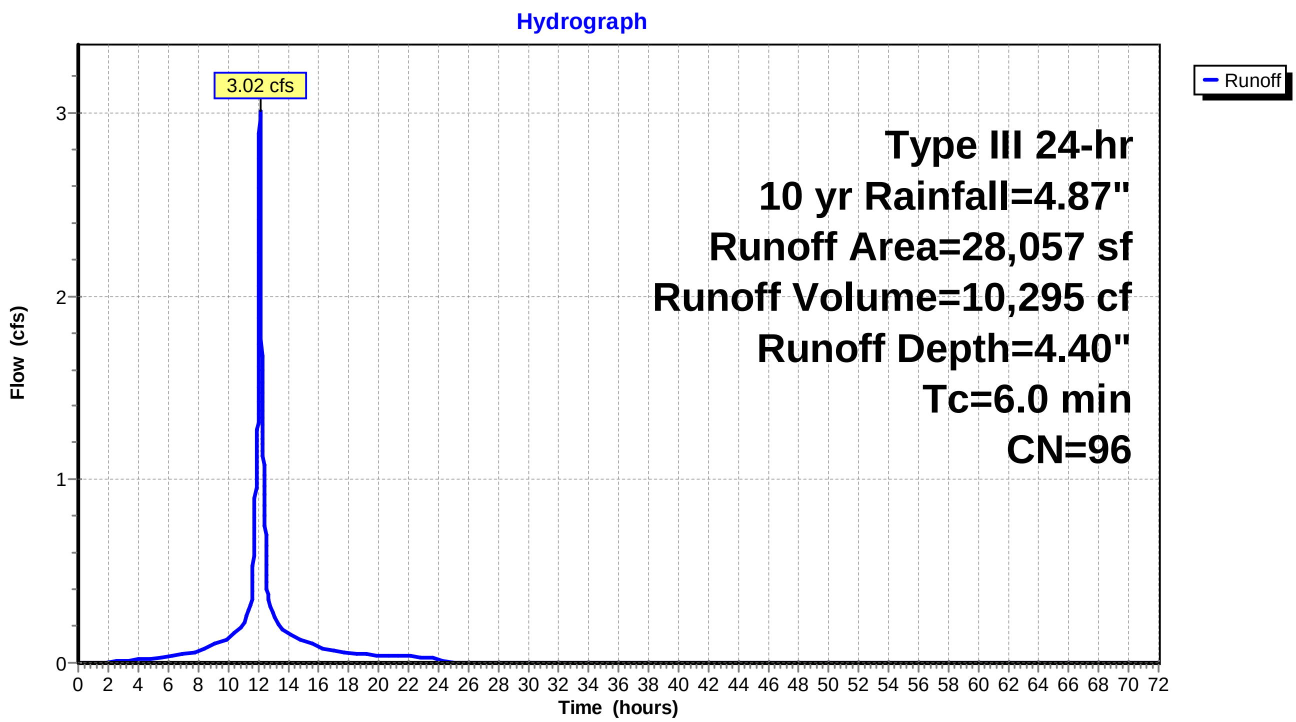
Runoff = 3.02 cfs @ 12.08 hrs, Volume= 10,295 cf, Depth= 4.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
2,893	74	>75% Grass cover, Good, HSG C
25,164	98	Paved parking, HSG C
28,057	96	Weighted Average
2,893		10.31% Pervious Area
25,164		89.69% Impervious Area

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

Subcatchment 20S:



Summary for Subcatchment 21S:

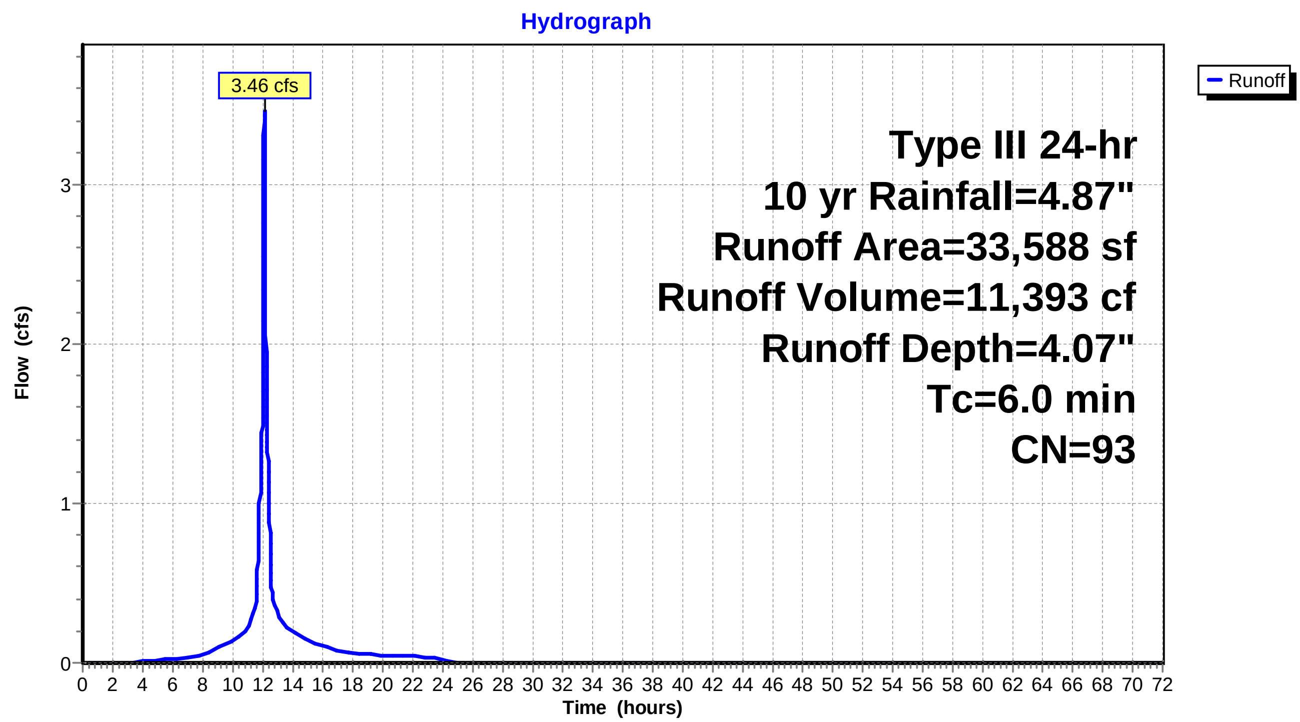
Runoff = 3.46 cfs @ 12.08 hrs, Volume= 11,393 cf, Depth= 4.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
6,944	74	>75% Grass cover, Good, HSG C
26,644	98	Paved parking, HSG C
33,588	93	Weighted Average
6,944		20.67% Pervious Area
26,644		79.33% Impervious Area

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

Subcatchment 21S:



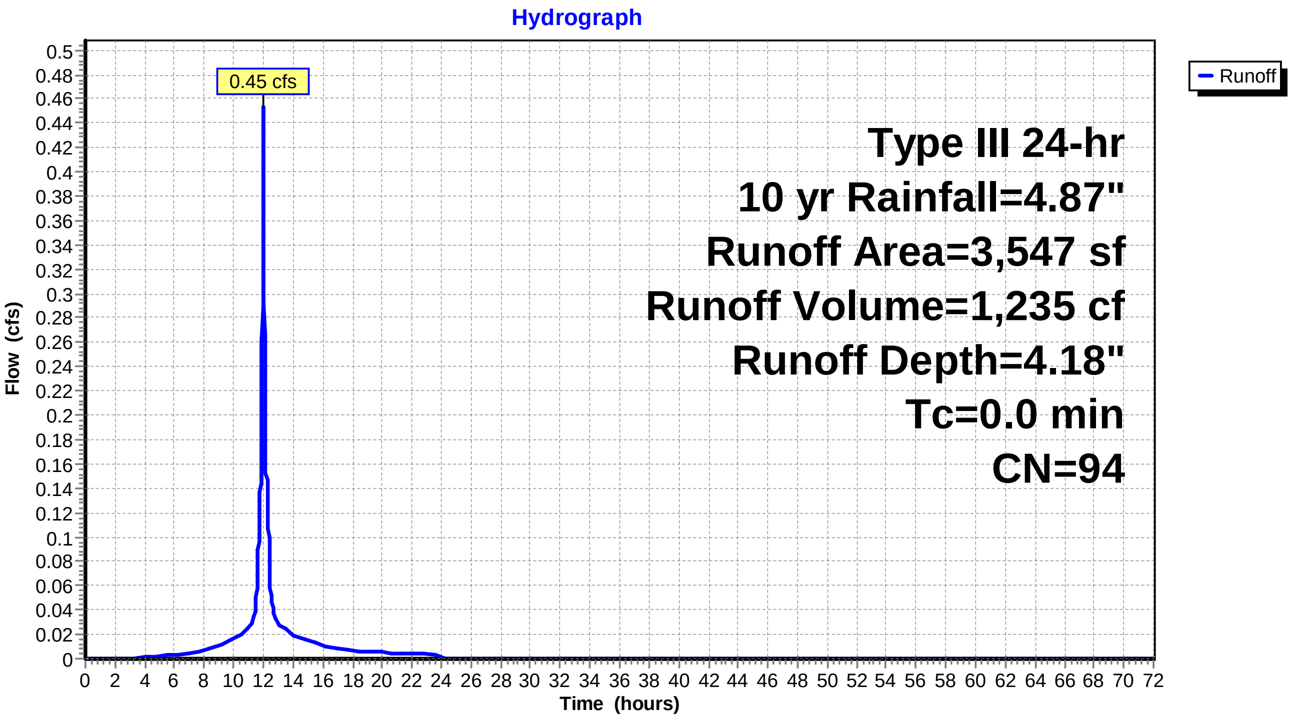
Summary for Subcatchment T10:

Runoff = 0.45 cfs @ 12.00 hrs, Volume= 1,235 cf, Depth= 4.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
2,895	98	Paved parking, HSG C
652	74	>75% Grass cover, Good, HSG C
3,547	94	Weighted Average
652		18.38% Pervious Area
2,895		81.62% Impervious Area

Subcatchment T10:



Summary for Subcatchment T3:

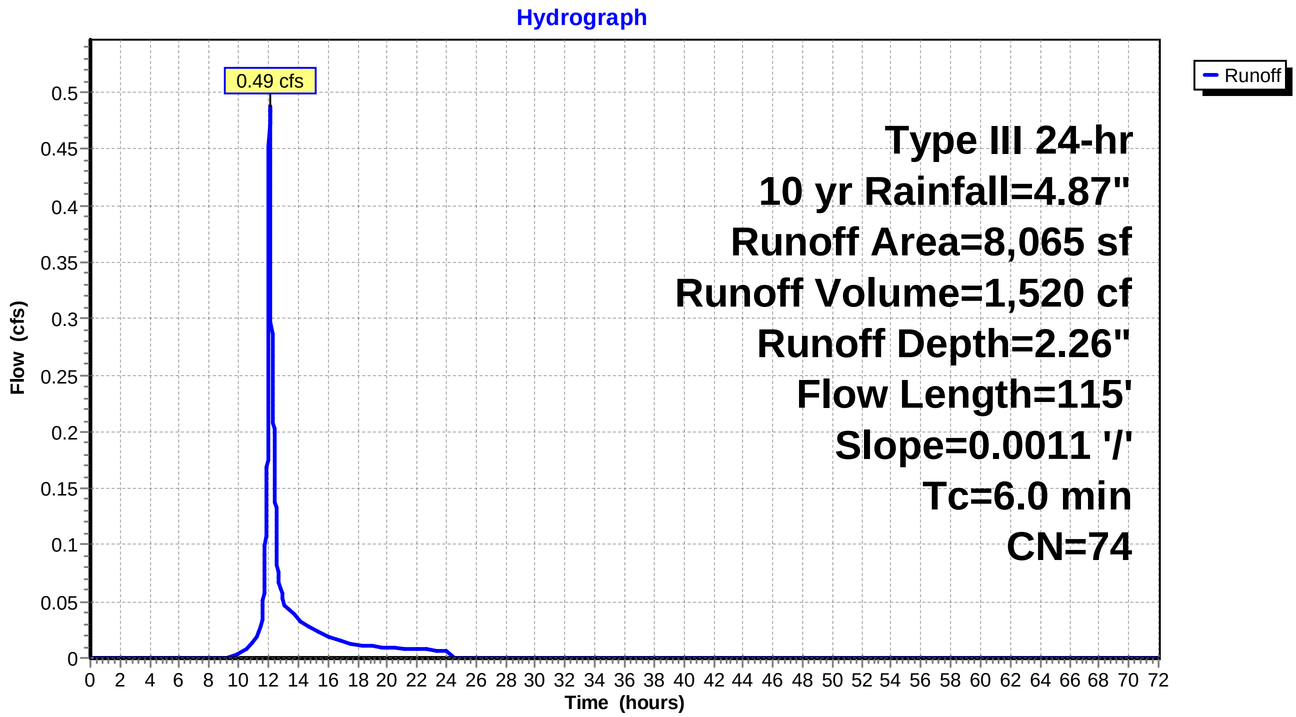
Runoff = 0.49 cfs @ 12.09 hrs, Volume= 1,520 cf, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
8,065	74	>75% Grass cover, Good, HSG C
8,065		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	115	0.0011	0.67		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.2					**Direct Entry,**
6.0	115	Total			

Subcatchment T3:



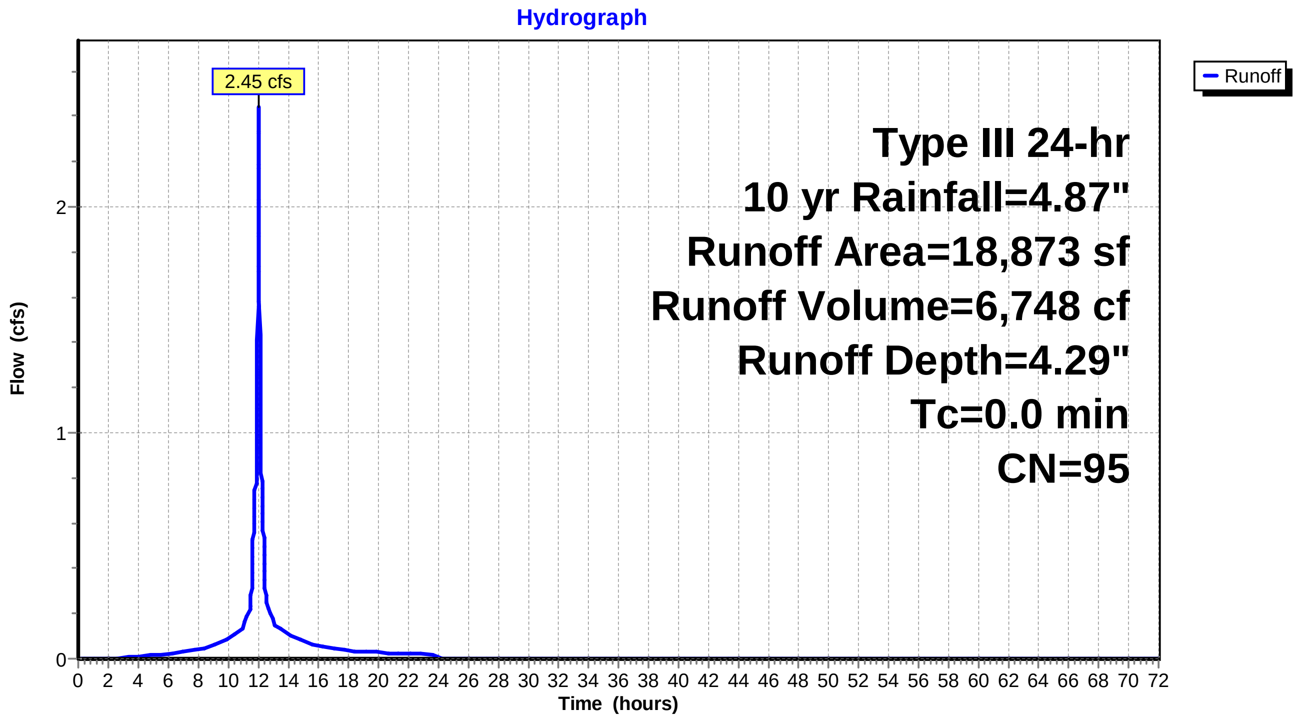
Summary for Subcatchment T4:

Runoff = 2.45 cfs @ 12.00 hrs, Volume= 6,748 cf, Depth= 4.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
16,203	98	Paved parking, HSG C
2,670	74	>75% Grass cover, Good, HSG C
18,873	95	Weighted Average
2,670		14.15% Pervious Area
16,203		85.85% Impervious Area

Subcatchment T4:



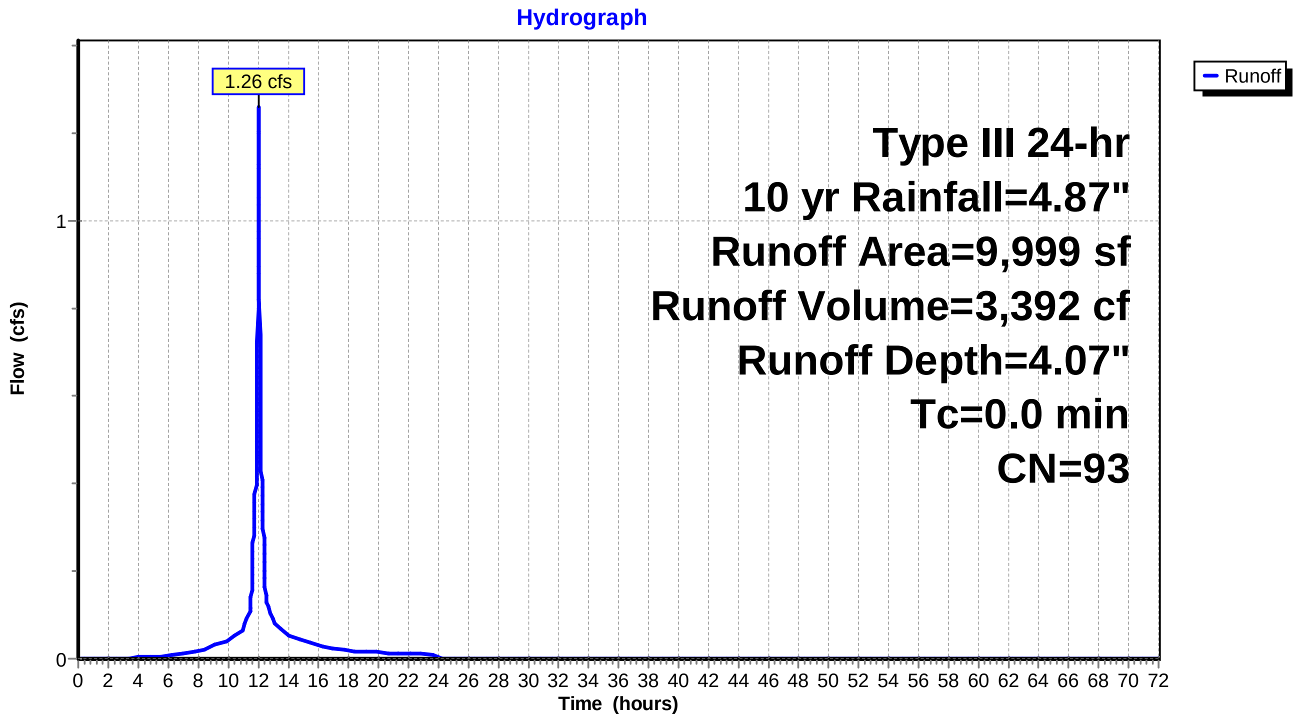
Summary for Subcatchment T8:

Runoff = 1.26 cfs @ 12.00 hrs, Volume= 3,392 cf, Depth= 4.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
8,089	98	Paved parking, HSG C
1,910	74	>75% Grass cover, Good, HSG C
9,999	93	Weighted Average
1,910		19.10% Pervious Area
8,089		80.90% Impervious Area

Subcatchment T8:

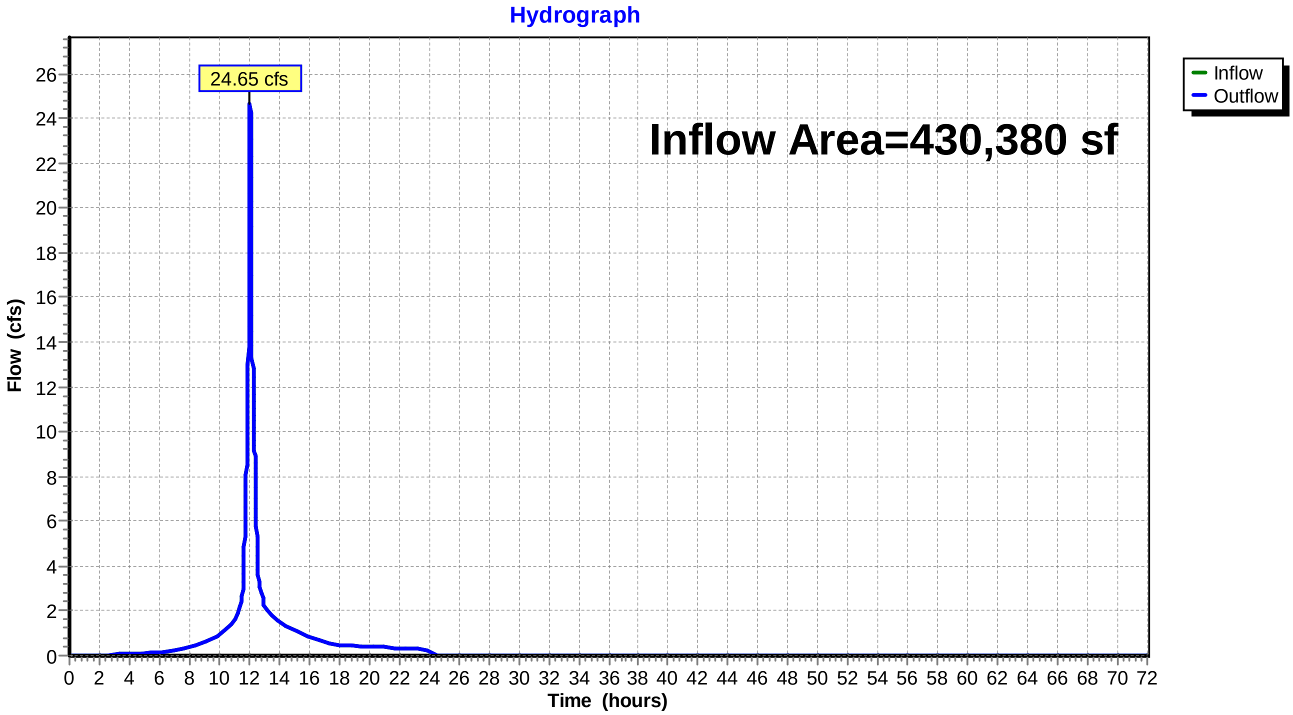


Summary for Reach AP1: Hodgson Brook

Inflow Area =	430,380 sf,	65.54% Impervious,	Inflow Depth = 2.41"	for 10 yr event
Inflow =	24.65 cfs @	12.08 hrs, Volume=	86,485 cf	
Outflow =	24.65 cfs @	12.08 hrs, Volume=	86,485 cf, Atten= 0%, Lag= 0.0 min	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3

Reach AP1: Hodgson Brook



Summary for Reach R1: Swale

Inflow Area = 132,099 sf, 56.68% Impervious, Inflow Depth = 3.14" for 10 yr event
Inflow = 9.30 cfs @ 12.06 hrs, Volume= 34,536 cf
Outflow = 9.28 cfs @ 12.06 hrs, Volume= 34,536 cf, Atten= 0%, Lag= 0.3 min

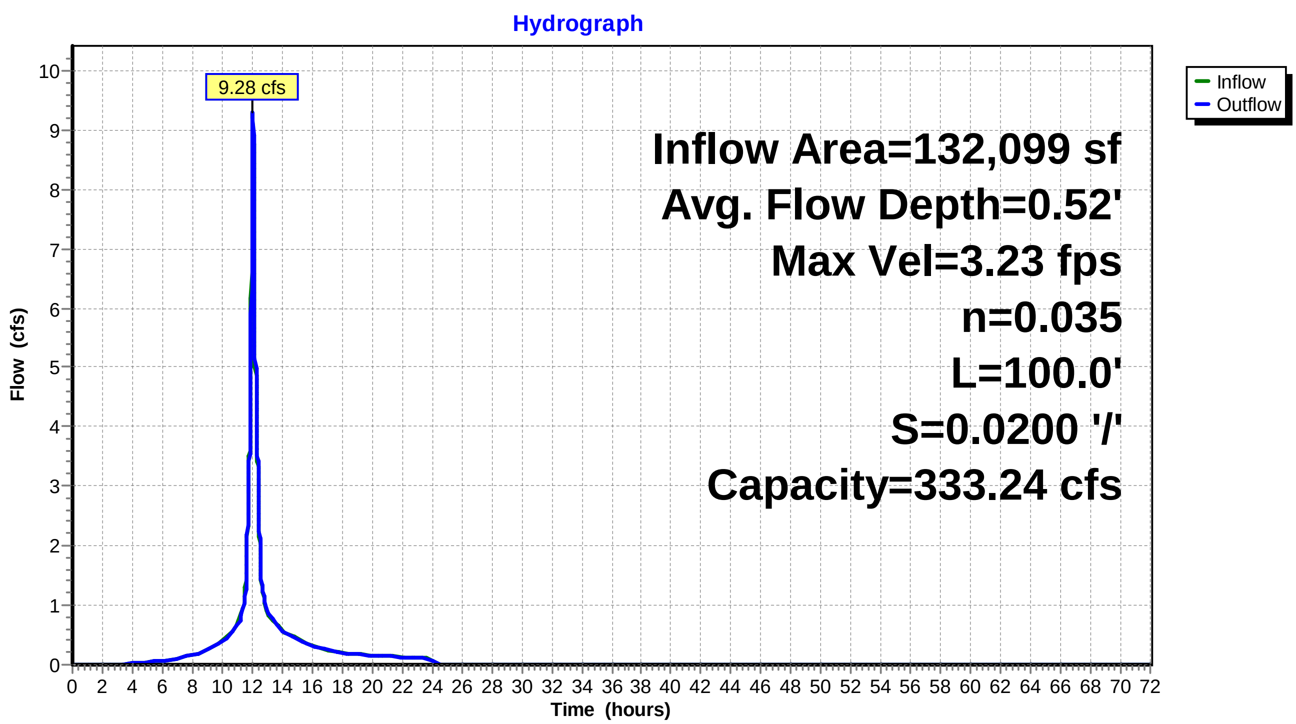
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 3.23 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.93 fps, Avg. Travel Time= 1.8 min

Peak Storage= 287 cf @ 12.06 hrs
Average Depth at Peak Storage= 0.52'
Bank-Full Depth= 3.00' Flow Area= 39.0 sf, Capacity= 333.24 cfs

4.00' x 3.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 3.0 '/' Top Width= 22.00'
Length= 100.0' Slope= 0.0200 '/'
Inlet Invert= 17.00', Outlet Invert= 15.00'

‡

Reach R1: Swale



Summary for Pond 4B: (new Pond)

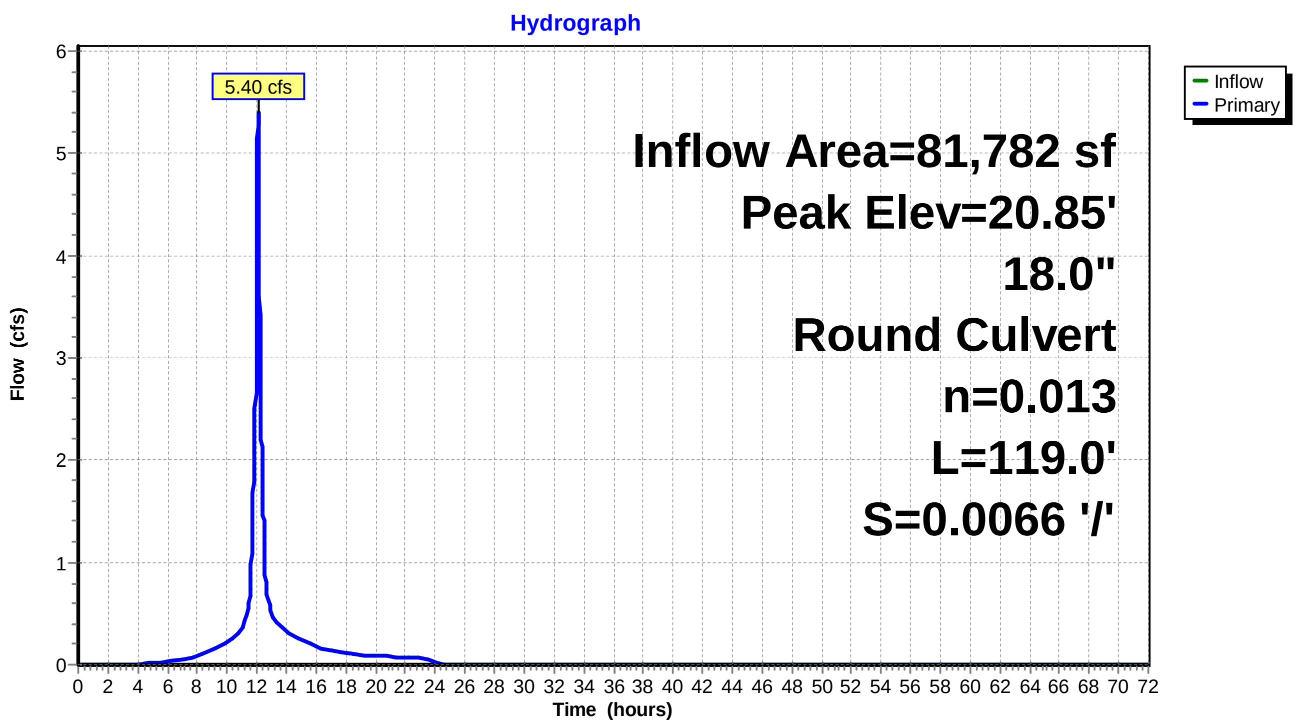
Inflow Area = 81,782 sf, 53.96% Impervious, Inflow Depth = 2.80" for 10 yr event
Inflow = 5.40 cfs @ 12.07 hrs, Volume= 19,059 cf
Outflow = 5.40 cfs @ 12.07 hrs, Volume= 19,059 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.40 cfs @ 12.07 hrs, Volume= 19,059 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 20.85' @ 12.06 hrs
Flood Elev= 23.71'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.29'	**18.0" Round Culvert** L= 119.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 19.29' / 18.51' S= 0.0066 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.40 cfs @ 12.07 hrs HW=20.84' TW=20.18' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 5.40 cfs @ 3.67 fps)

Pond 4B: (new Pond)



Summary for Pond 14P: CB #1072

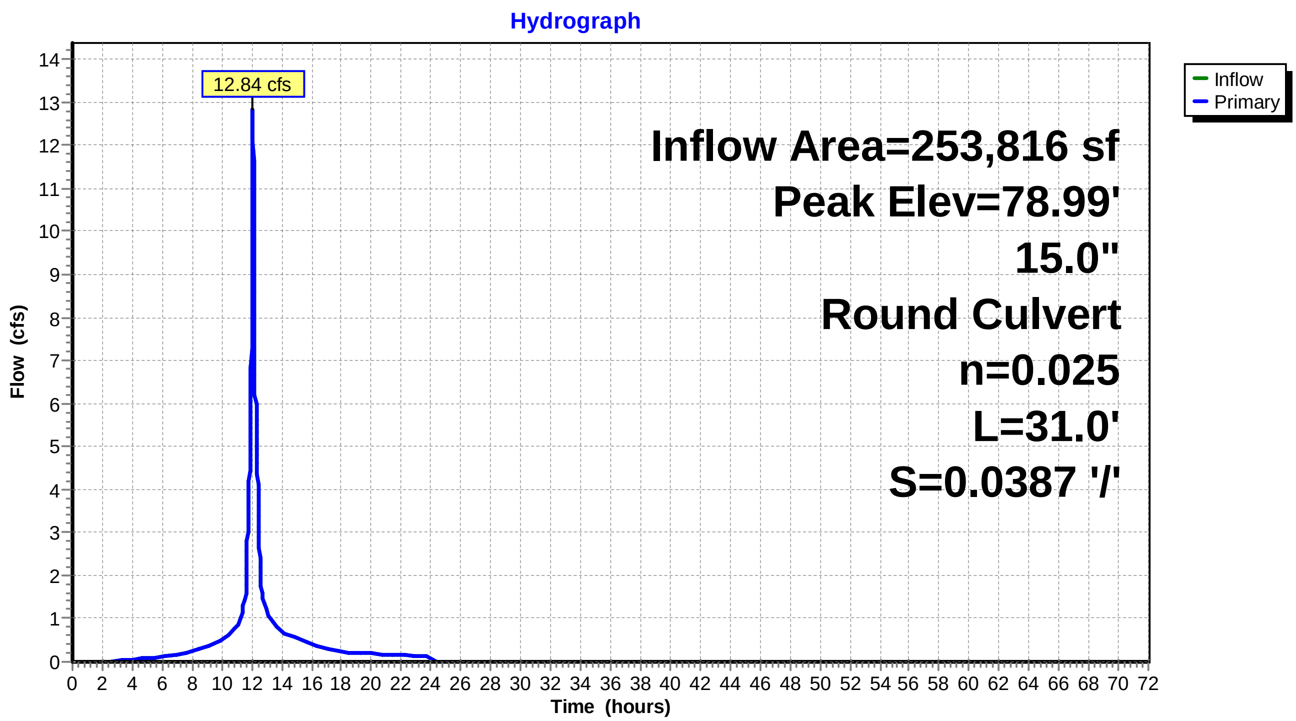
Inflow Area = 253,816 sf, 81.64% Impervious, Inflow Depth = 2.06" for 10 yr event
Inflow = 12.84 cfs @ 12.08 hrs, Volume= 43,571 cf
Outflow = 12.84 cfs @ 12.08 hrs, Volume= 43,571 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.84 cfs @ 12.08 hrs, Volume= 43,571 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 78.99' @ 12.08 hrs
Flood Elev= 22.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.10'	**15.0" Round Culvert** L= 31.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.10' / 15.90' S= 0.0387 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=12.83 cfs @ 12.08 hrs HW=78.89' TW=71.81' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 12.83 cfs @ 10.45 fps)

Pond 14P: CB #1072



Summary for Pond 15P: CB #1347

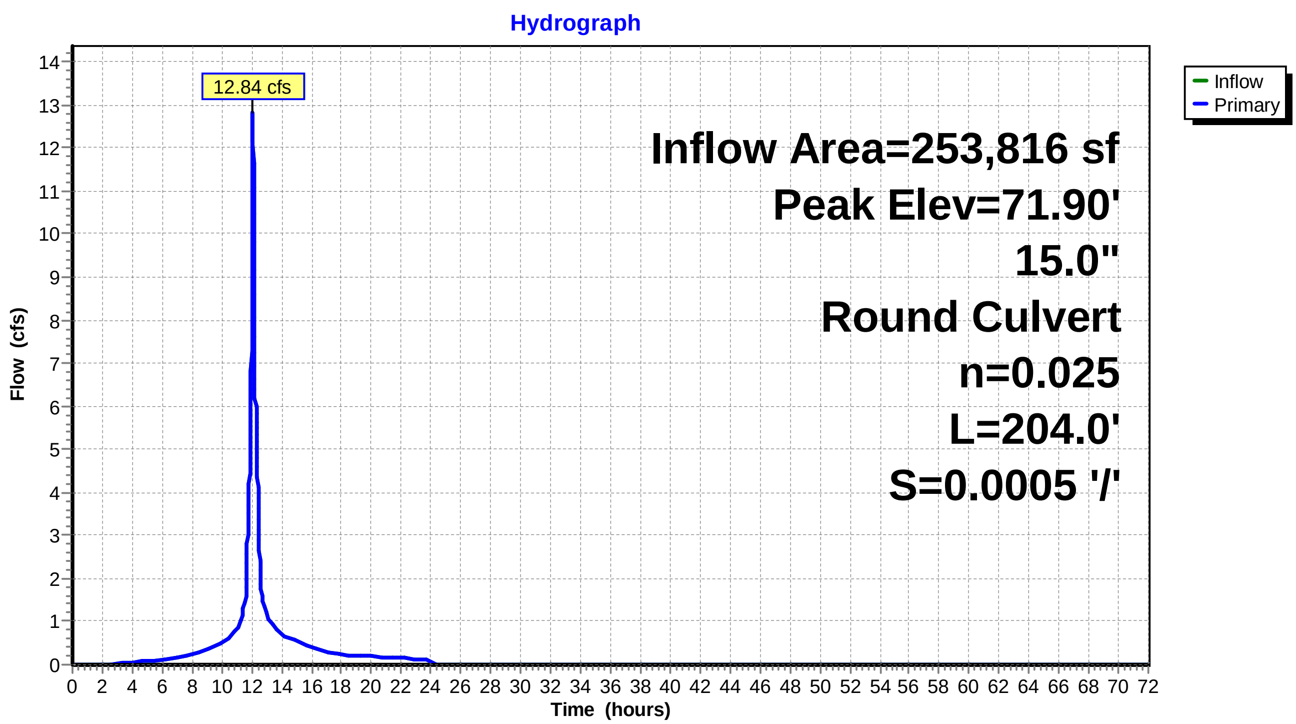
Inflow Area = 253,816 sf, 81.64% Impervious, Inflow Depth = 2.06" for 10 yr event
Inflow = 12.84 cfs @ 12.08 hrs, Volume= 43,571 cf
Outflow = 12.84 cfs @ 12.08 hrs, Volume= 43,571 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.84 cfs @ 12.08 hrs, Volume= 43,571 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 71.90' @ 12.08 hrs
Flood Elev= 23.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.90'	**15.0" Round Culvert** L= 204.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.90' / 15.80' S= 0.0005 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=12.83 cfs @ 12.08 hrs HW=71.81' TW=39.42' (Dynamic Tailwater)
1=Culvert (Outlet Controls 12.83 cfs @ 10.45 fps)

Pond 15P: CB #1347



Summary for Pond 37:

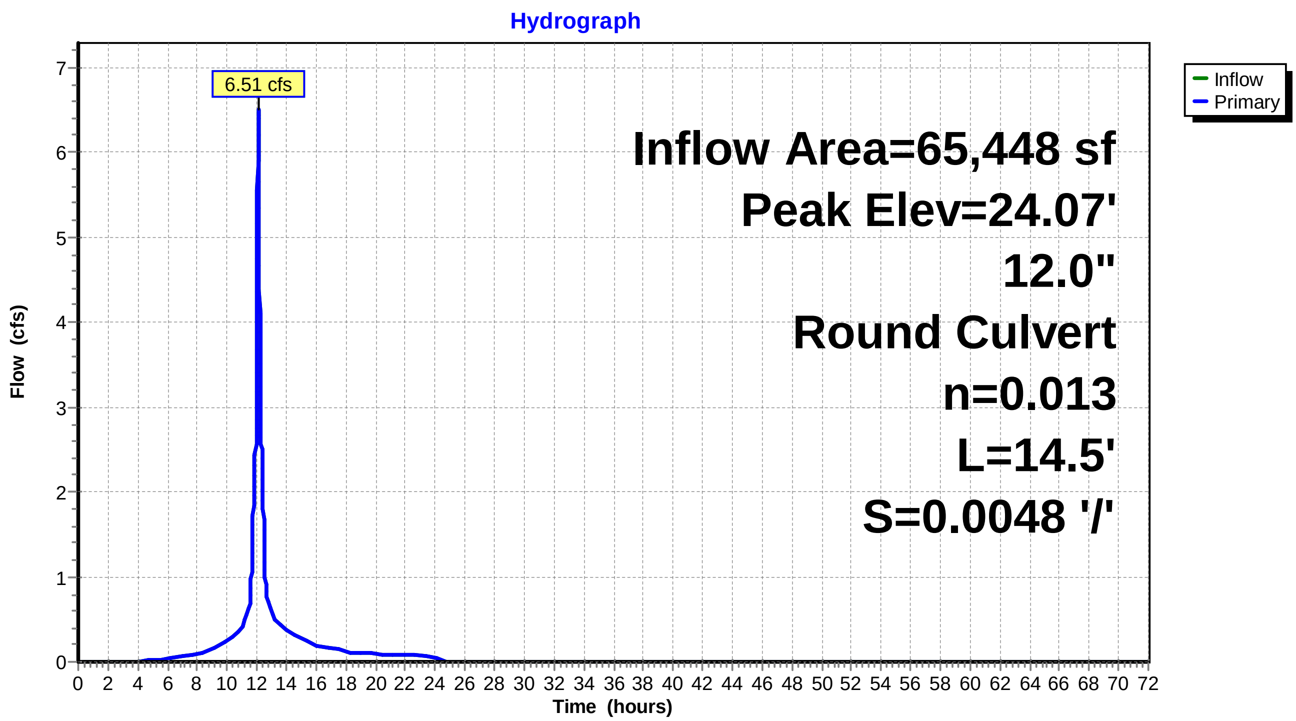
Inflow Area = 65,448 sf, 72.09% Impervious, Inflow Depth = 3.86" for 10 yr event
Inflow = 6.51 cfs @ 12.08 hrs, Volume= 21,077 cf
Outflow = 6.51 cfs @ 12.08 hrs, Volume= 21,077 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.51 cfs @ 12.08 hrs, Volume= 21,077 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 24.07' @ 12.08 hrs
Flood Elev= 24.99'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.61'	**12.0" Round Culvert** L= 14.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.61' / 20.54' S= 0.0048 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=6.50 cfs @ 12.08 hrs HW=24.06' TW=20.04' (Dynamic Tailwater)
1=Culvert (Inlet Controls 6.50 cfs @ 8.27 fps)

Pond 37:



Summary for Pond 38:

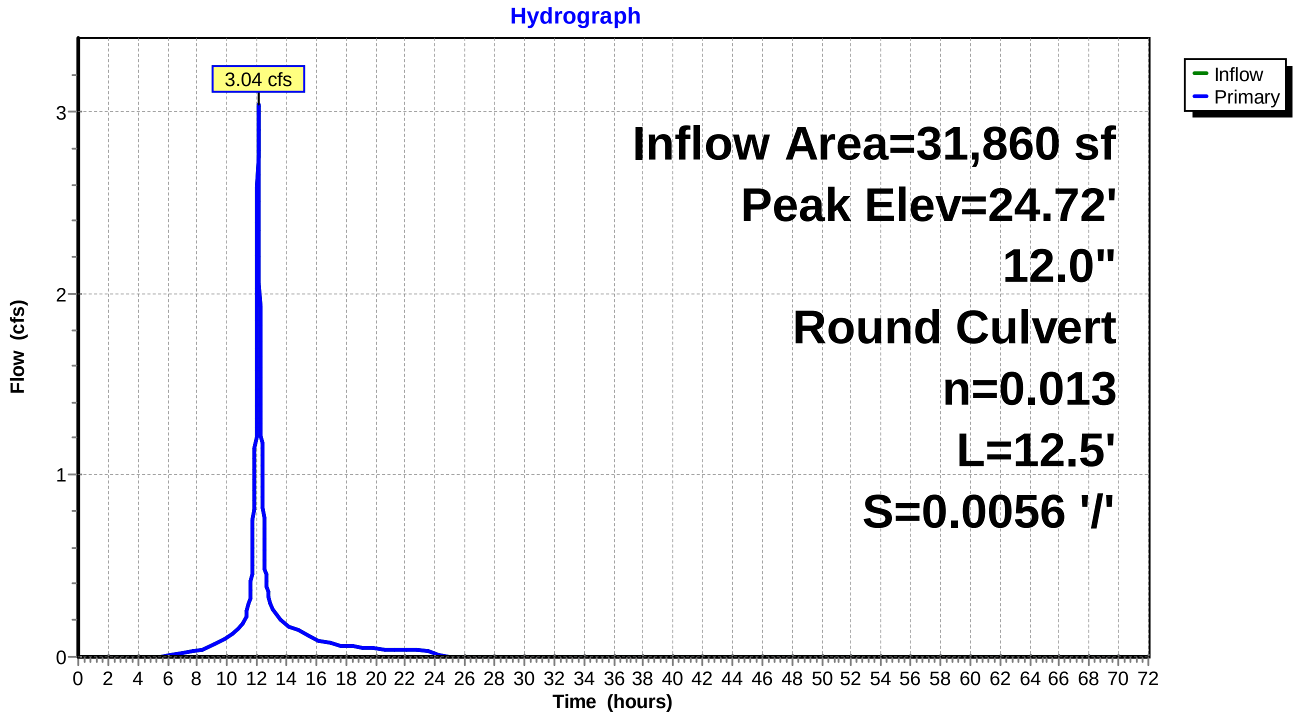
Inflow Area =	31,860 sf,	64.47% Impervious,	Inflow Depth = 3.65"	for 10 yr event	
Inflow =	3.04 cfs @	12.09 hrs, Volume=	9,684 cf		
Outflow =	3.04 cfs @	12.09 hrs, Volume=	9,684 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	3.04 cfs @	12.09 hrs, Volume=	9,684 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 24.72' @ 12.08 hrs
Flood Elev= 24.43'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.78'	**12.0" Round Culvert** L= 12.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.78' / 20.71' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.04 cfs @ 12.09 hrs HW=24.70' TW=24.06' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 3.04 cfs @ 3.87 fps)

Pond 38:



Summary for Pond 39:

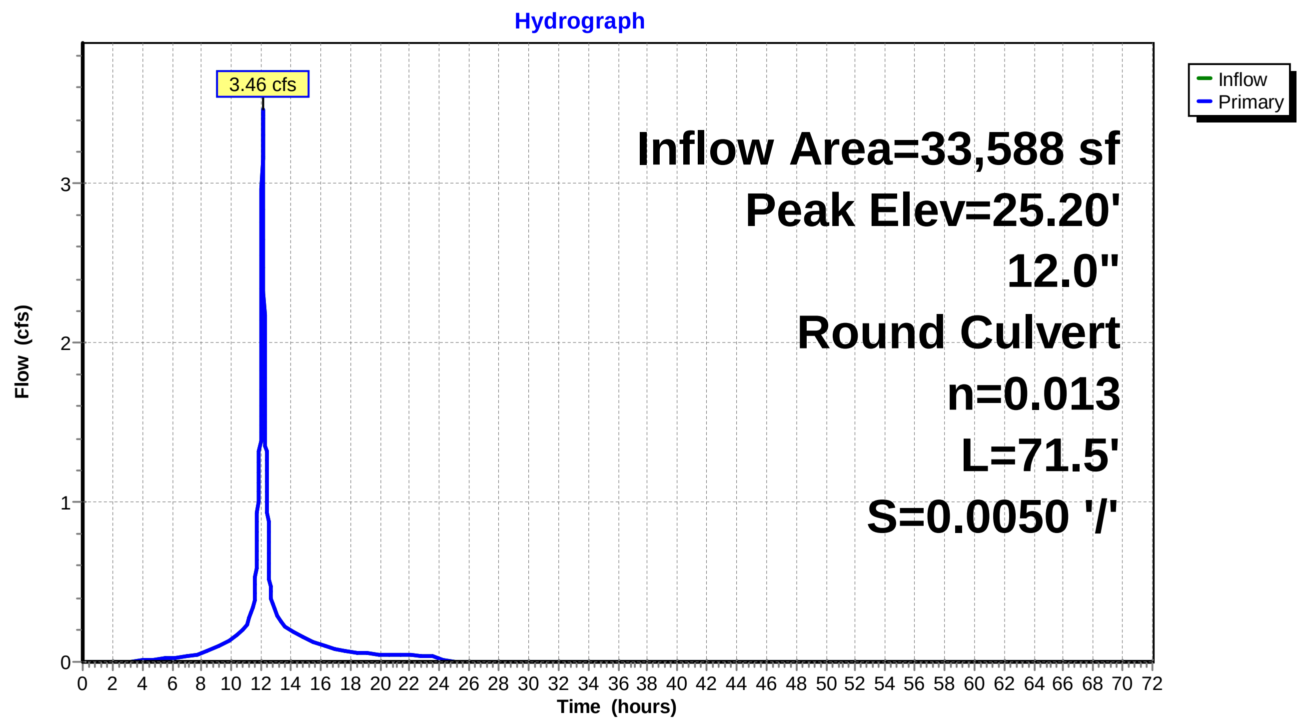
Inflow Area =	33,588 sf,	79.33% Impervious,	Inflow Depth = 4.07"	for 10 yr event
Inflow =	3.46 cfs @	12.08 hrs, Volume=	11,393 cf	
Outflow =	3.46 cfs @	12.08 hrs, Volume=	11,393 cf, Atten= 0%, Lag= 0.0 min	
Primary =	3.46 cfs @	12.08 hrs, Volume=	11,393 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 25.20' @ 12.08 hrs
Flood Elev= 23.71'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.07'	**12.0" Round Culvert** L= 71.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.07' / 20.71' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.46 cfs @ 12.08 hrs HW=25.19' TW=24.06' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 3.46 cfs @ 4.40 fps)

Pond 39:



Summary for Pond 40:

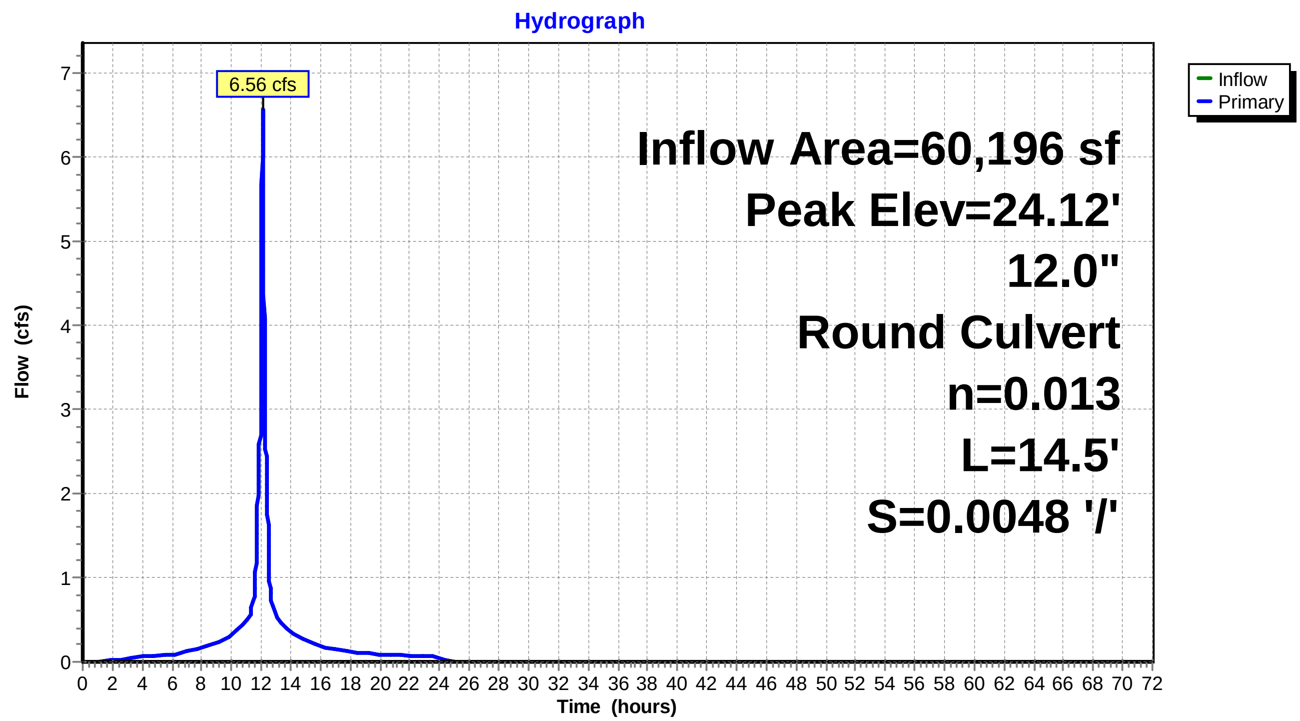
Inflow Area = 60,196 sf, 97.75% Impervious, Inflow Depth = 4.59" for 10 yr event
Inflow = 6.56 cfs @ 12.08 hrs, Volume= 23,018 cf
Outflow = 6.56 cfs @ 12.08 hrs, Volume= 23,018 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.56 cfs @ 12.08 hrs, Volume= 23,018 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 24.12' @ 12.08 hrs
Flood Elev= 25.29'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.61'	**12.0" Round Culvert** L= 14.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.61' / 20.54' S= 0.0048 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=6.55 cfs @ 12.08 hrs HW=24.11' TW=20.03' (Dynamic Tailwater)
1=Culvert (Inlet Controls 6.55 cfs @ 8.34 fps)

Pond 40:



Summary for Pond 41:

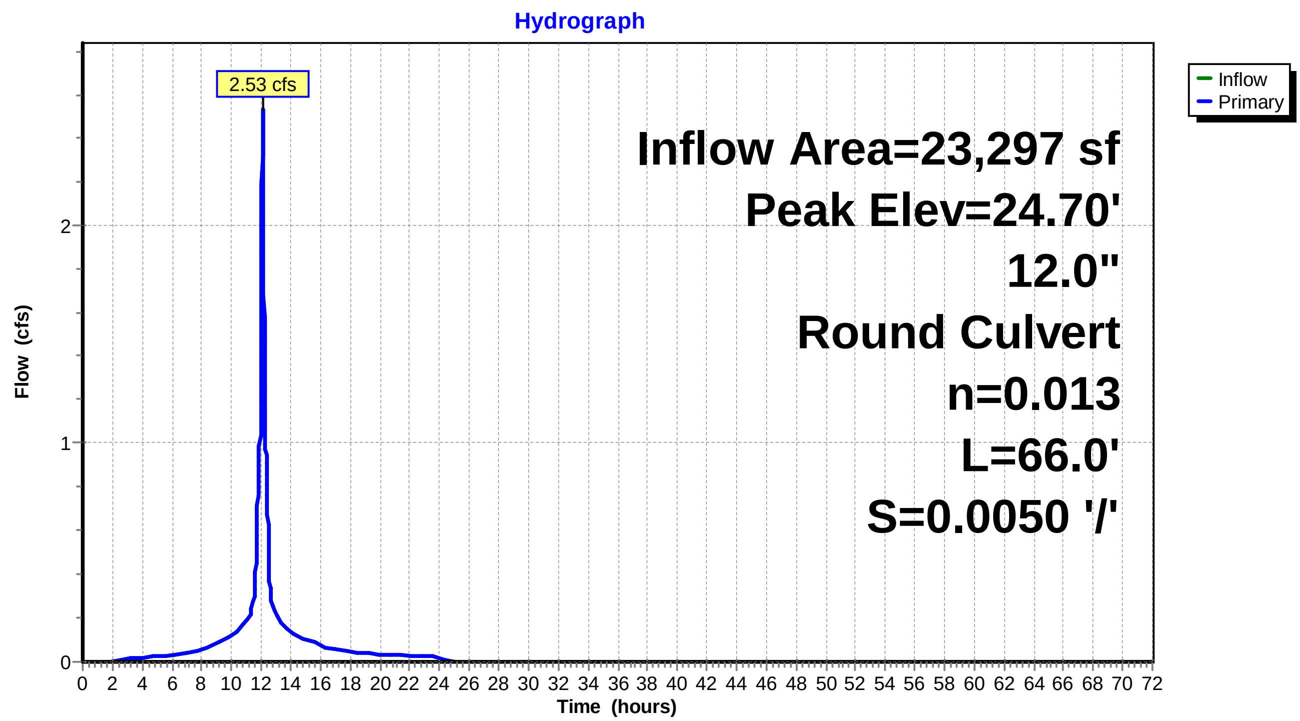
Inflow Area = 23,297 sf, 94.18% Impervious, Inflow Depth = 4.52" for 10 yr event
Inflow = 2.53 cfs @ 12.08 hrs, Volume= 8,770 cf
Outflow = 2.53 cfs @ 12.08 hrs, Volume= 8,770 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.53 cfs @ 12.08 hrs, Volume= 8,770 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 24.70' @ 12.08 hrs
Flood Elev= 24.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.04'	**12.0" Round Culvert** L= 66.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.04' / 20.71' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.52 cfs @ 12.08 hrs HW=24.68' TW=24.11' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 2.52 cfs @ 3.21 fps)

Pond 41:



Summary for Pond 42:

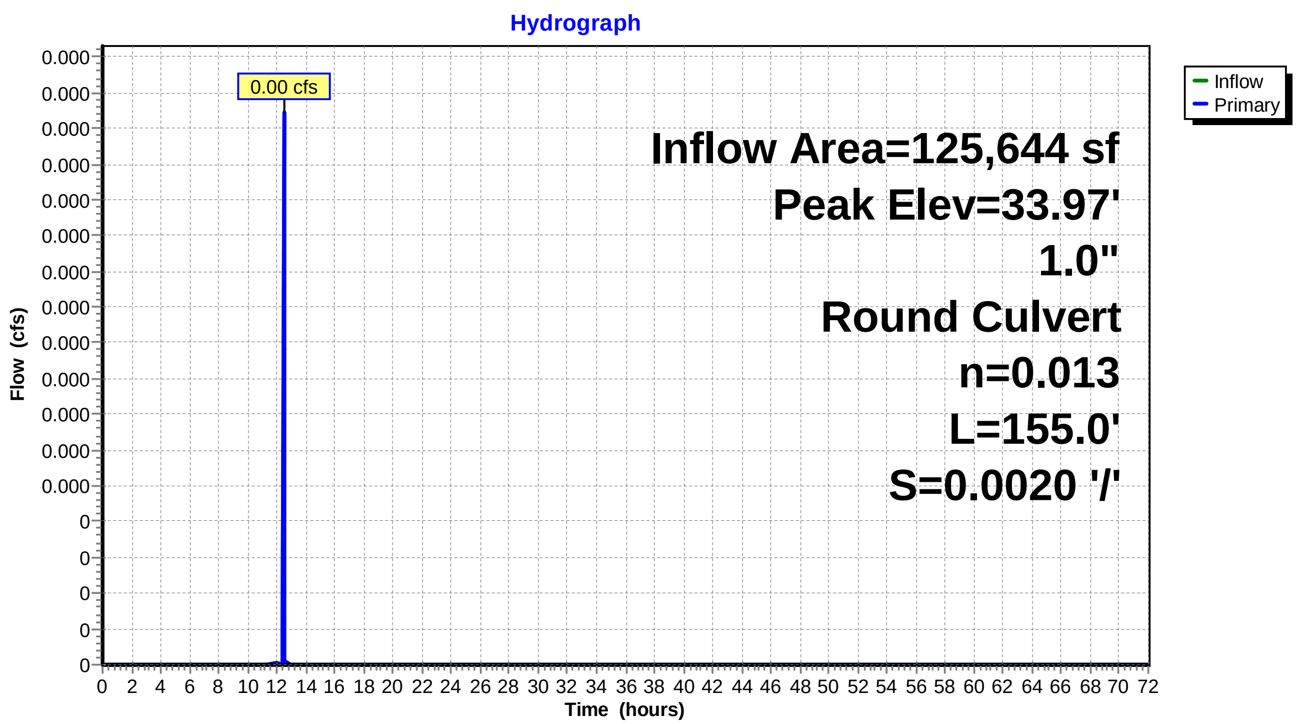
Inflow Area = 125,644 sf, 84.38% Impervious, Inflow Depth = 0.00" for 10 yr event
Inflow = 0.00 cfs @ 12.55 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 12.55 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 12.55 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 33.97' @ 12.34 hrs
Flood Elev= 26.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.43'	**1.0" Round Culvert** L= 155.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.43' / 20.12' S= 0.0020 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.01 sf

Primary OutFlow Max=0.00 cfs @ 12.55 hrs HW=20.56' TW=20.55' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.00 cfs @ 0.09 fps)

Pond 42:



Summary for Pond 43:

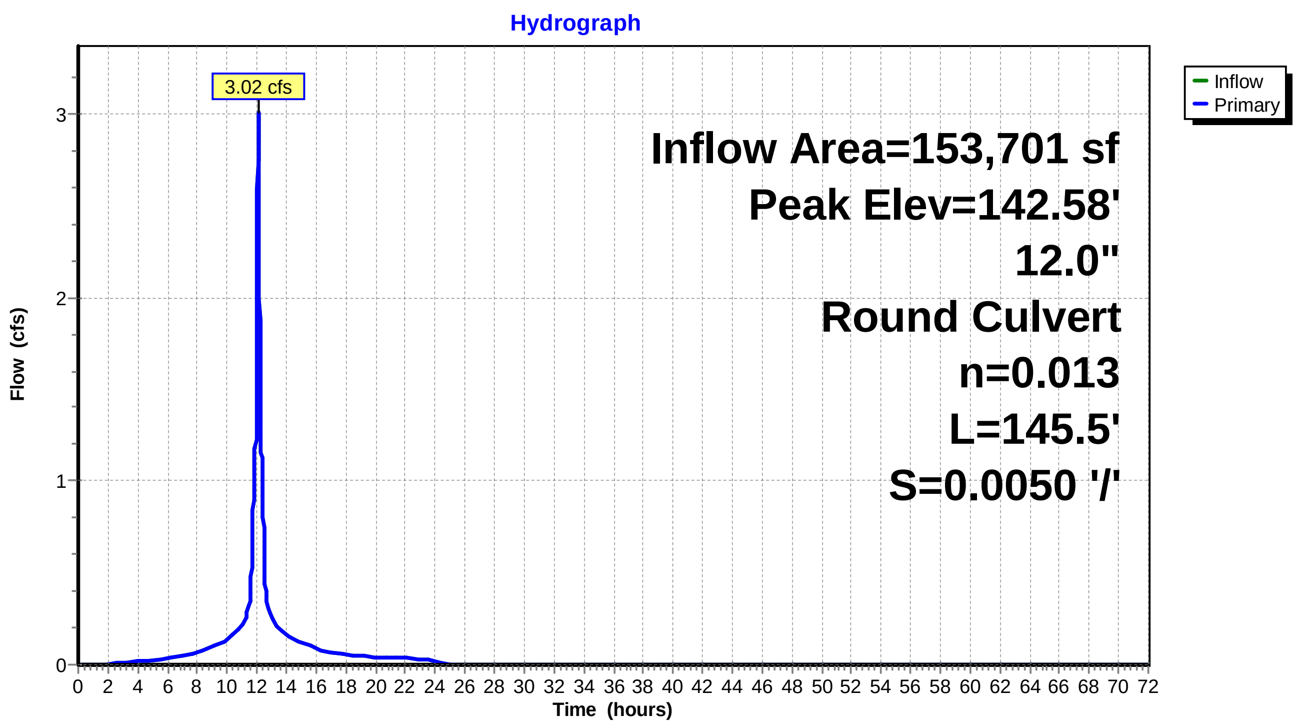
Inflow Area = 153,701 sf, 85.35% Impervious, Inflow Depth = 0.80" for 10 yr event
Inflow = 3.02 cfs @ 12.08 hrs, Volume= 10,295 cf
Outflow = 3.02 cfs @ 12.08 hrs, Volume= 10,296 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.02 cfs @ 12.08 hrs, Volume= 10,296 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 142.58' @ 12.09 hrs
Flood Elev= 24.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.02'	**12.0" Round Culvert** L= 145.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.02' / 19.29' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.08 hrs HW=139.84' TW=139.89' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Pond 43:



Summary for Pond 44:

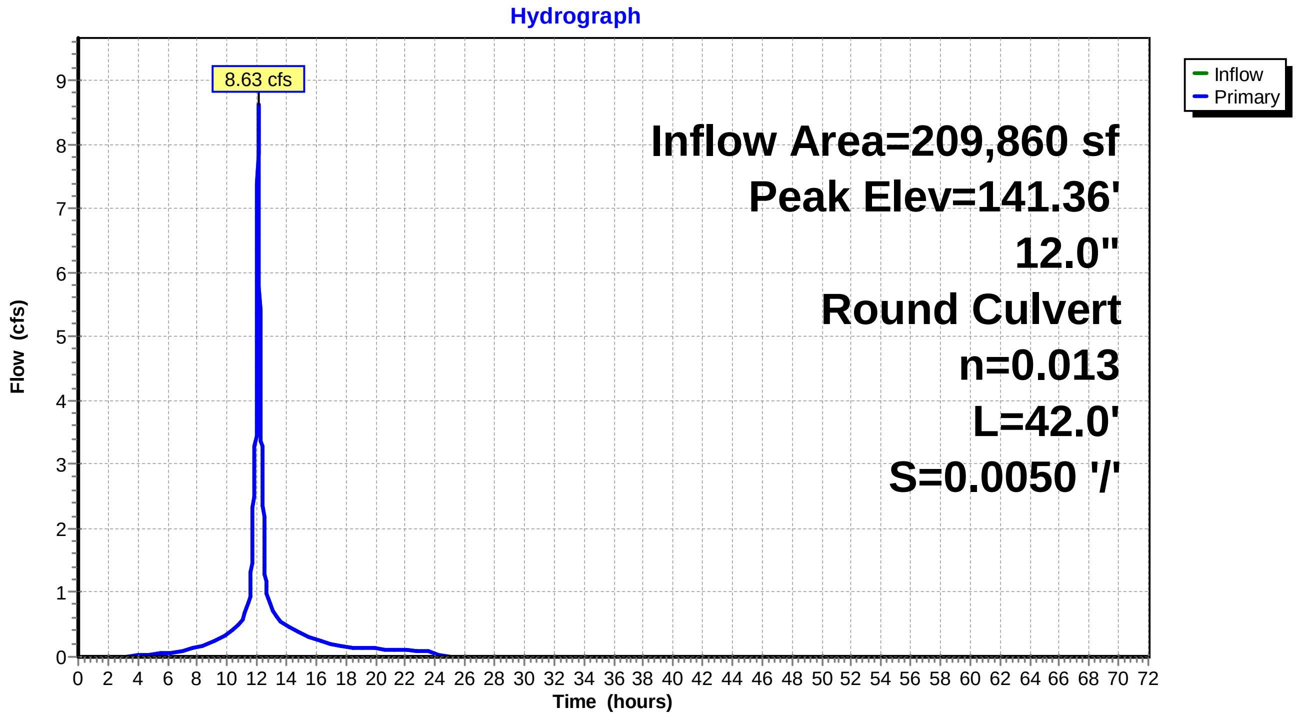
Inflow Area = 209,860 sf, 81.95% Impervious, Inflow Depth = 1.63" for 10 yr event
Inflow = 8.63 cfs @ 12.08 hrs, Volume= 28,510 cf
Outflow = 8.63 cfs @ 12.08 hrs, Volume= 28,510 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.63 cfs @ 12.08 hrs, Volume= 28,510 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 141.36' @ 12.09 hrs
Flood Elev= 25.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.19'	**12.0" Round Culvert** L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 19.19' / 18.98' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=7.66 cfs @ 12.08 hrs HW=140.06' TW=135.90' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 7.66 cfs @ 9.75 fps)

Pond 44:



Summary for Pond 45:

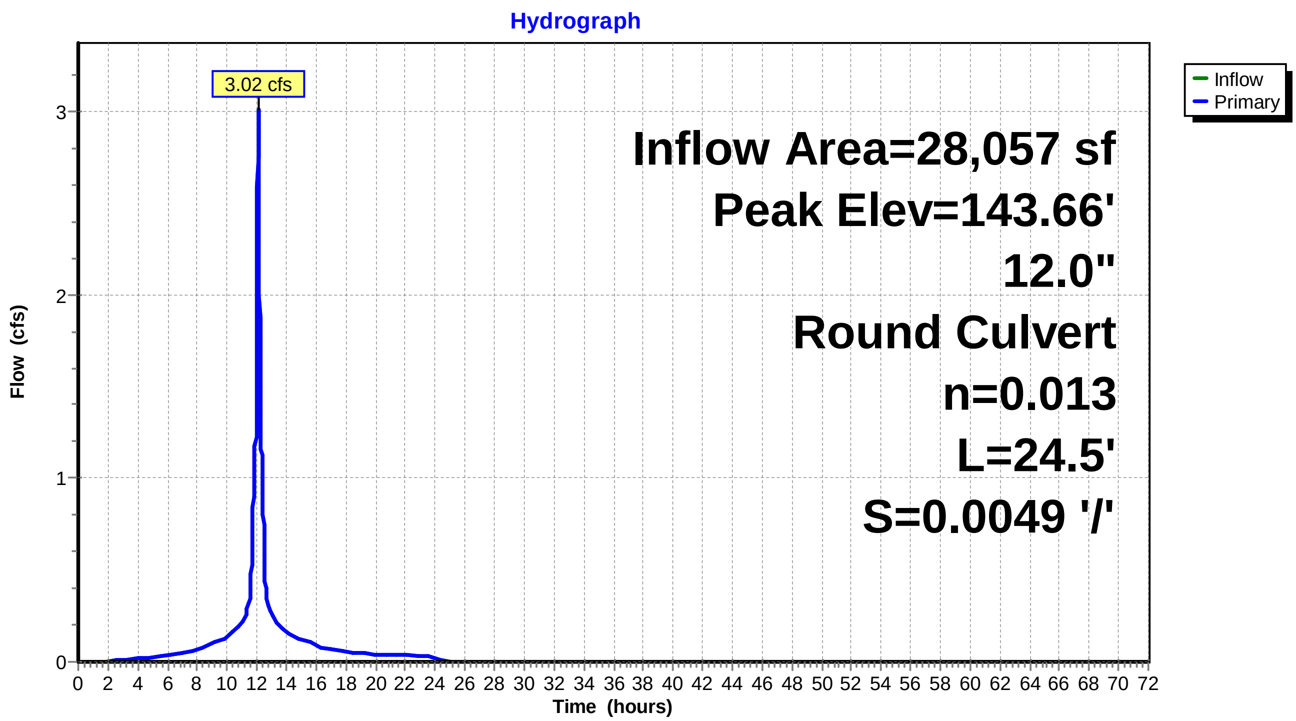
Inflow Area =	28,057 sf, 89.69% Impervious,	Inflow Depth = 4.40"	for 10 yr event
Inflow =	3.02 cfs @ 12.08 hrs, Volume=	10,295 cf	
Outflow =	3.02 cfs @ 12.08 hrs, Volume=	10,295 cf, Atten= 0%, Lag= 0.0 min	
Primary =	3.02 cfs @ 12.08 hrs, Volume=	10,295 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 143.66' @ 12.10 hrs
Flood Elev= 23.91'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.24'	**12.0" Round Culvert** L= 24.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.24' / 20.12' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.08 hrs HW=139.82' TW=139.84' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 45:



Summary for Pond 46:

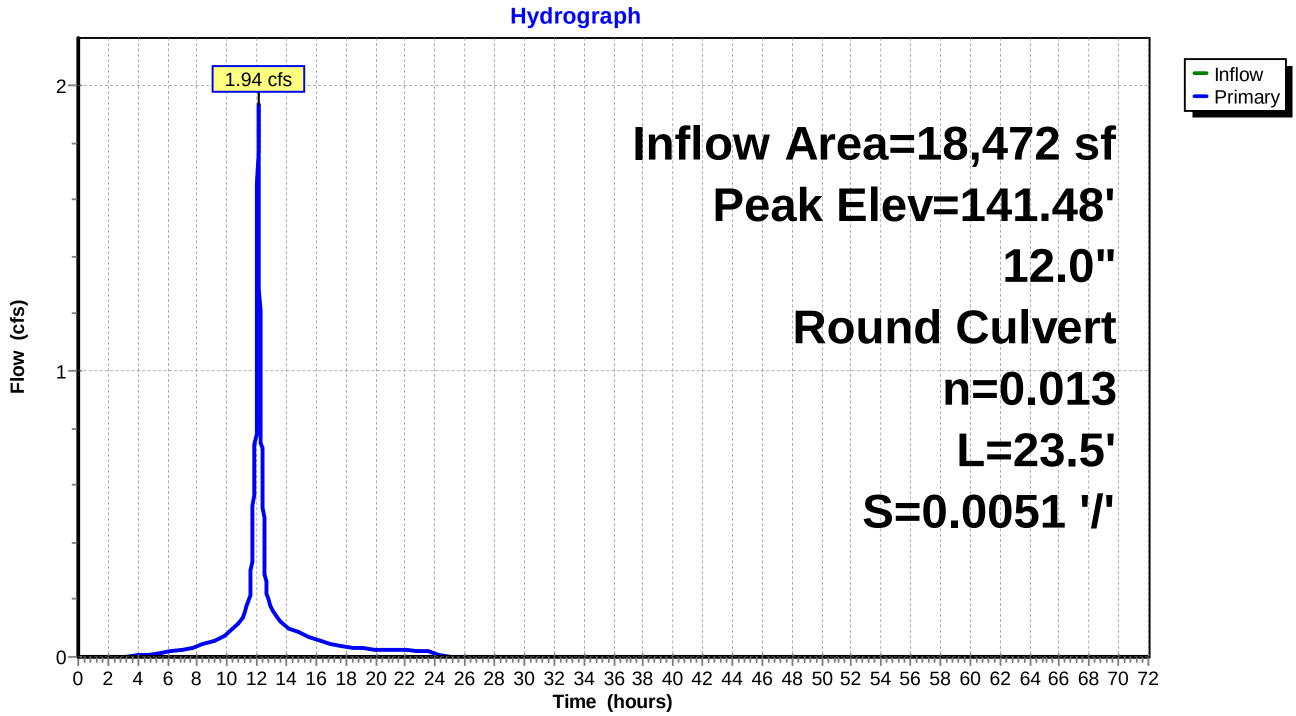
Inflow Area = 18,472 sf, 83.26% Impervious, Inflow Depth = 4.18" for 10 yr event
Inflow = 1.94 cfs @ 12.08 hrs, Volume= 6,434 cf
Outflow = 1.94 cfs @ 12.08 hrs, Volume= 6,434 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.94 cfs @ 12.08 hrs, Volume= 6,434 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 141.48' @ 12.09 hrs
Flood Elev= 23.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.41'	**12.0" Round Culvert** L= 23.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 19.41' / 19.29' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.08 hrs HW=138.88' TW=139.99' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Pond 46:



Summary for Pond 47:

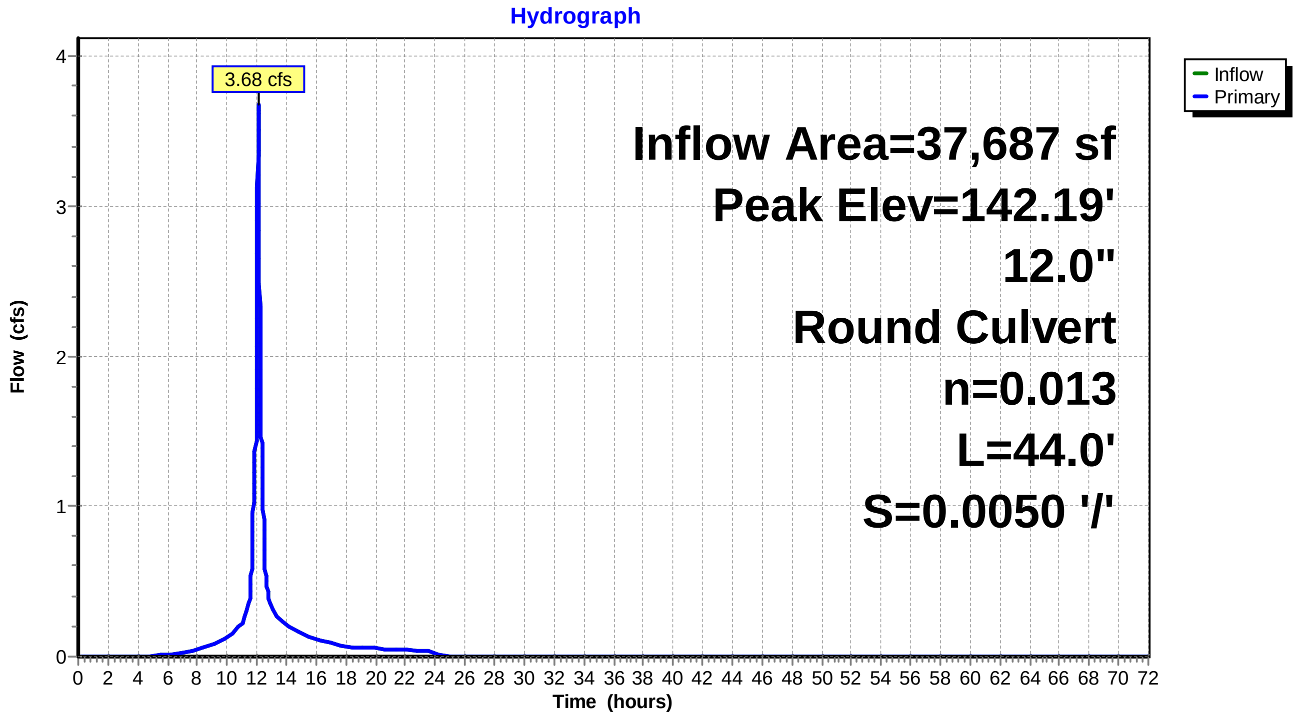
Inflow Area = 37,687 sf, 67.42% Impervious, Inflow Depth = 3.75" for 10 yr event
Inflow = 3.68 cfs @ 12.09 hrs, Volume= 11,780 cf
Outflow = 3.68 cfs @ 12.09 hrs, Volume= 11,780 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.68 cfs @ 12.09 hrs, Volume= 11,780 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 142.19' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	19.51'	**12.0" Round Culvert** L= 44.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 19.51' / 19.29' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=140.00' TW=140.24' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Pond 47:



Summary for Pond 47P:

Inflow Area =	23,084 sf,	3.69% Impervious,	Inflow Depth = 2.34"	for 10 yr event	
Inflow =	1.45 cfs @	12.09 hrs,	Volume=	4,510 cf	
Outflow =	0.28 cfs @	12.55 hrs,	Volume=	4,510 cf,	Atten= 81%, Lag= 27.8 min
Discarded =	0.28 cfs @	12.55 hrs,	Volume=	4,510 cf	
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 22.39' @ 12.55 hrs Surf.Area= 0.035 ac Storage= 0.032 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 41.8 min (878.0 - 836.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	21.00'	0.032 af	**20.50'W x 74.82'L x 3.50'H Field A** 0.123 af Overall - 0.042 af Embedded = 0.081 af x 40.0% Voids
#2A	21.50'	0.042 af	**ADS_StormTech SC-740 +Cap** x 40 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 4 Rows of 10 Chambers
		0.075 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	21.00'	**3.000 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 20.00'
#2	Primary	22.87'	**8.0" Round Culvert** L= 14.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 22.87' / 22.28' S= 0.0407 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Discarded OutFlow Max=0.28 cfs @ 12.55 hrs HW=22.39' (Free Discharge)
1=Exfiltration (Controls 0.28 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=21.00' TW=21.95' (Dynamic Tailwater)
2=Culvert (Controls 0.00 cfs)

Pond 47P: - Chamber Wizard Field A

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

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

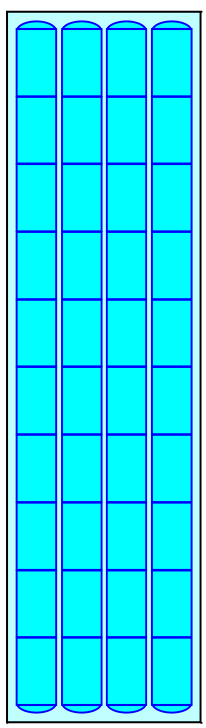
10 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 72.82' Row Length +12.0" End Stone x 2 = 74.82' Base Length
4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

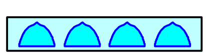
40 Chambers x 45.9 cf = 1,837.6 cf Chamber Storage

5,368.1 cf Field - 1,837.6 cf Chambers = 3,530.5 cf Stone x 40.0% Voids = 1,412.2 cf Stone Storage

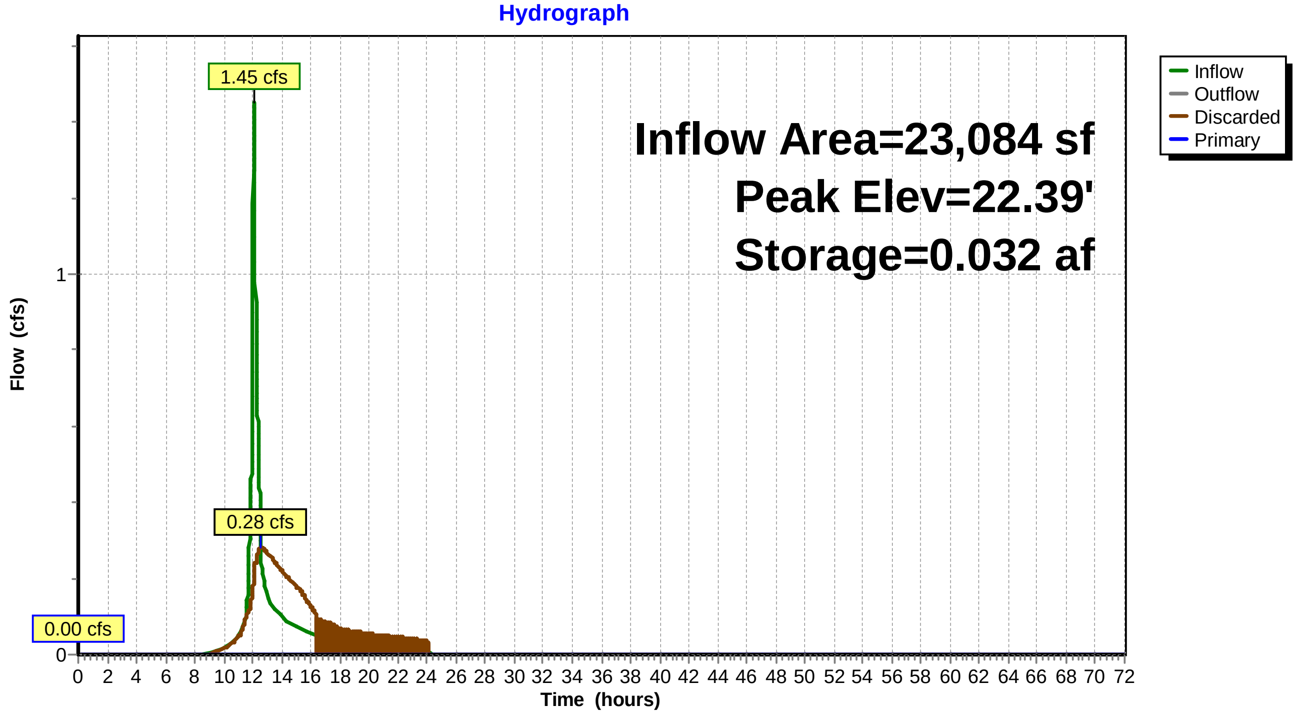
Chamber Storage + Stone Storage = 3,249.8 cf = 0.075 af
Overall Storage Efficiency = 60.5%
Overall System Size = 74.82' x 20.50' x 3.50'

40 Chambers
198.8 cy Field
130.8 cy Stone





Pond 47P:


Hydrograph
1.45 cfs
0.28 cfs
0.00 cfs
Inflow Area=23,084 sf
Peak Elev=22.39'
Storage=0.032 af
Inflow
Outflow
Discarded
Primary
Flow (cfs)
1
0
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Summary for Pond 48:

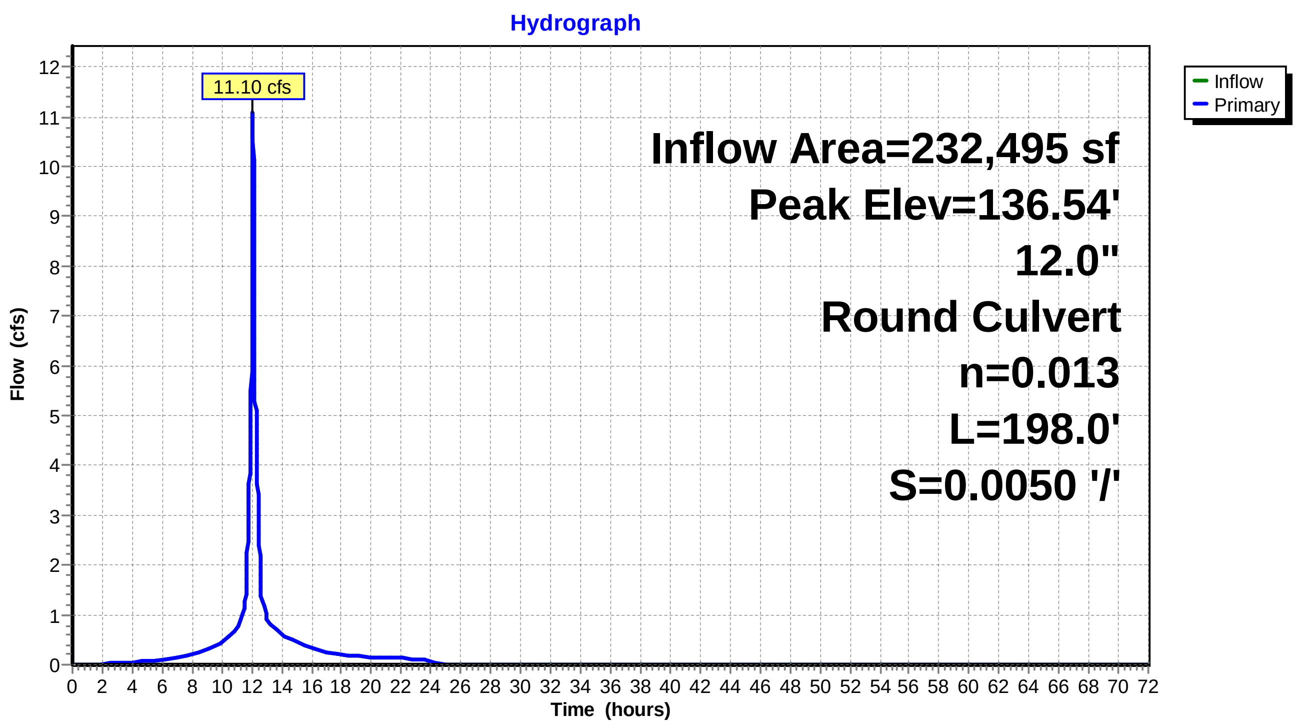
Inflow Area = 232,495 sf, 83.70% Impervious, Inflow Depth = 1.92" for 10 yr event
Inflow = 11.10 cfs @ 12.08 hrs, Volume= 37,250 cf
Outflow = 11.10 cfs @ 12.08 hrs, Volume= 37,250 cf, Atten= 0%, Lag= 0.0 min
Primary = 11.10 cfs @ 12.08 hrs, Volume= 37,250 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 136.54' @ 12.09 hrs
Flood Elev= 24.06'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.88'	**12.0" Round Culvert** L= 198.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.88' / 17.89' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=11.07 cfs @ 12.08 hrs HW=135.88' TW=112.07' (Dynamic Tailwater)
1=Culvert (Outlet Controls 11.07 cfs @ 14.10 fps)

Pond 48:



Summary for Pond 48P:

Inflow Area = 125,644 sf, 84.38% Impervious, Inflow Depth = 4.21" for 10 yr event
Inflow = 13.07 cfs @ 12.08 hrs, Volume= 44,095 cf
Outflow = 3.30 cfs @ 12.45 hrs, Volume= 44,095 cf, Atten= 75%, Lag= 22.2 min
Discarded = 3.30 cfs @ 12.45 hrs, Volume= 44,095 cf
Primary = 0.00 cfs @ 12.55 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 20.59' @ 12.45 hrs Surf.Area= 0.252 ac Storage= 0.275 af

Plug-Flow detention time= 28.0 min calculated for 44,089 cf (100% of inflow)
Center-of-Mass det. time= 28.0 min (796.2 - 768.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	19.00'	0.273 af	**49.00'W x 224.34'L x 4.00'H Field A** 1.009 af Overall - 0.327 af Embedded = 0.682 af x 40.0% Voids
#2A	19.50'	0.327 af	**ADS_StormTech SC-740 +Cap** x 310 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 10 Rows of 31 Chambers
		0.600 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	19.00'	**3.000 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 18.50' Phase-In= 0.01'
#2	Primary	20.54'	**12.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.54' / 20.53' S= 0.0002 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=3.30 cfs @ 12.45 hrs HW=20.59' (Free Discharge)
1=Exfiltration (Controls 3.30 cfs)

Primary OutFlow Max=0.00 cfs @ 12.55 hrs HW=20.56' TW=20.56' (Dynamic Tailwater)
2=Culvert (Controls 0.00 cfs)

Pond 48P: - Chamber Wizard Field A

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

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

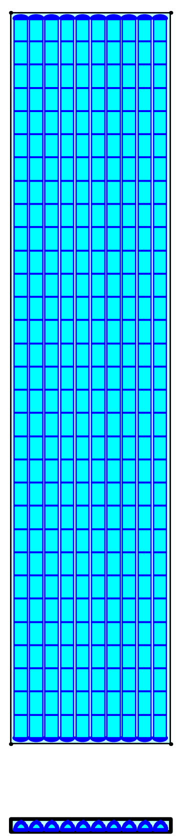
31 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 222.34' Row Length +12.0" End Stone x 2 = 224.34' Base Length
10 Rows x 51.0" Wide + 6.0" Spacing x 9 + 12.0" Side Stone x 2 = 49.00' Base Width
6.0" Base + 30.0" Chamber Height + 12.0" Cover = 4.00' Field Height

310 Chambers x 45.9 cf = 14,241.4 cf Chamber Storage

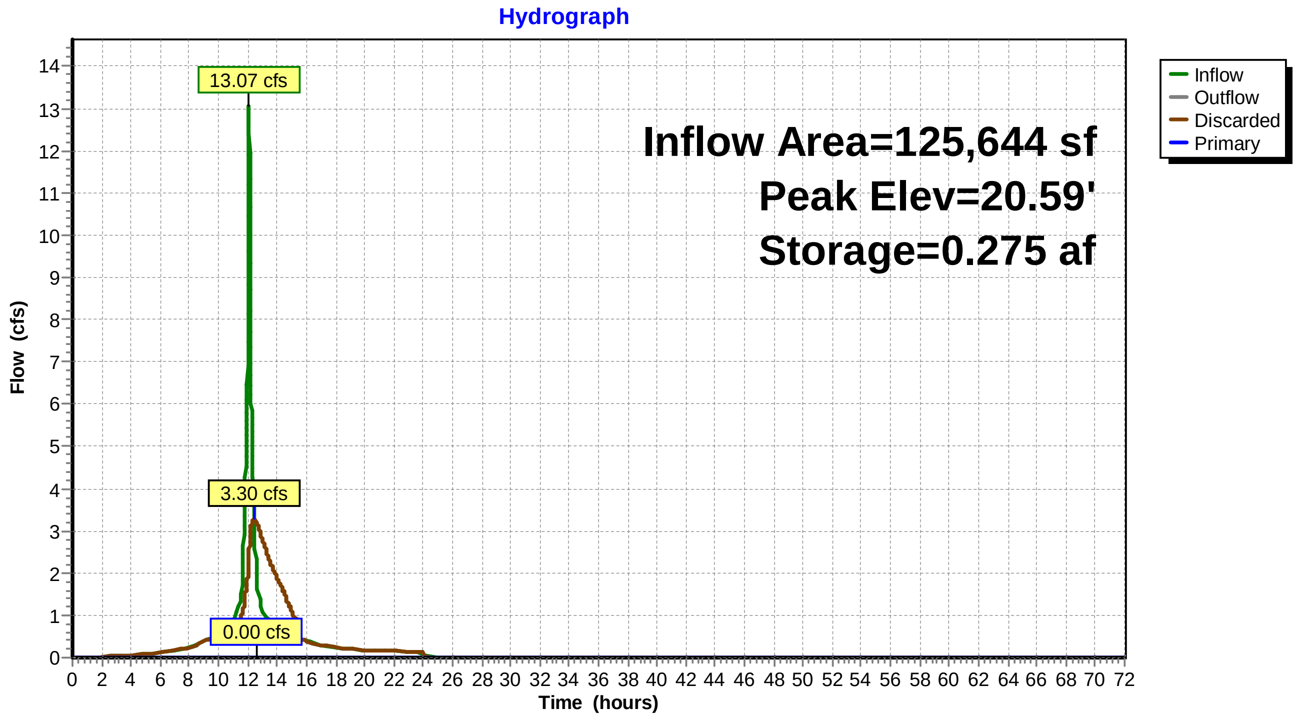
43,970.0 cf Field - 14,241.4 cf Chambers = 29,728.6 cf Stone x 40.0% Voids = 11,891.4 cf Stone Storage

Chamber Storage + Stone Storage = 26,132.8 cf = 0.600 af
Overall Storage Efficiency = 59.4%
Overall System Size = 224.34' x 49.00' x 4.00'

310 Chambers
1,628.5 cy Field
1,101.1 cy Stone



Pond 48P:


Hydrograph
13.07 cfs
3.30 cfs
0.00 cfs
Inflow Area=125,644 sf
Peak Elev=20.59'
Storage=0.275 af
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Pond 49:

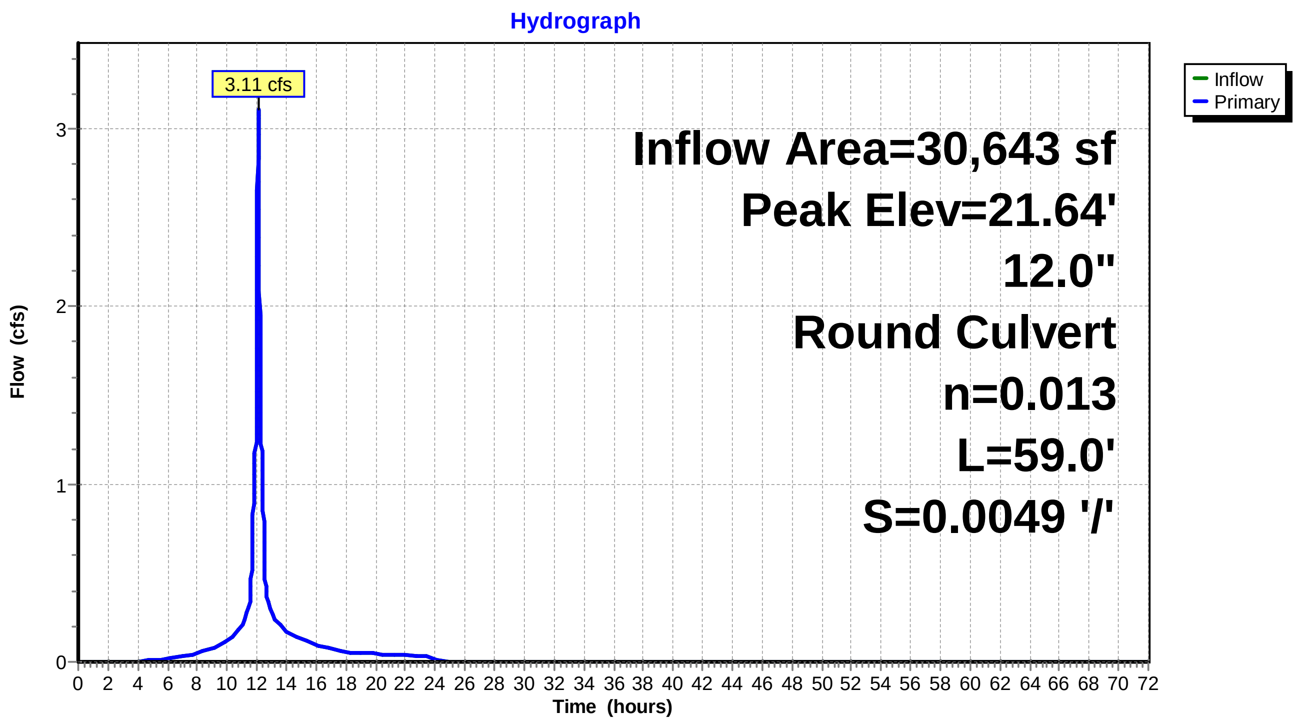
Inflow Area = 30,643 sf, 76.64% Impervious, Inflow Depth = 3.96" for 10 yr event
Inflow = 3.11 cfs @ 12.08 hrs, Volume= 10,118 cf
Outflow = 3.11 cfs @ 12.08 hrs, Volume= 10,118 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.11 cfs @ 12.08 hrs, Volume= 10,118 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.64' @ 12.07 hrs
Flood Elev= 24.11'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.08'	**12.0" Round Culvert** L= 59.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.08' / 19.79' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.11 cfs @ 12.08 hrs HW=21.62' TW=20.80' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 3.11 cfs @ 3.96 fps)

Pond 49:



Summary for Pond 50:

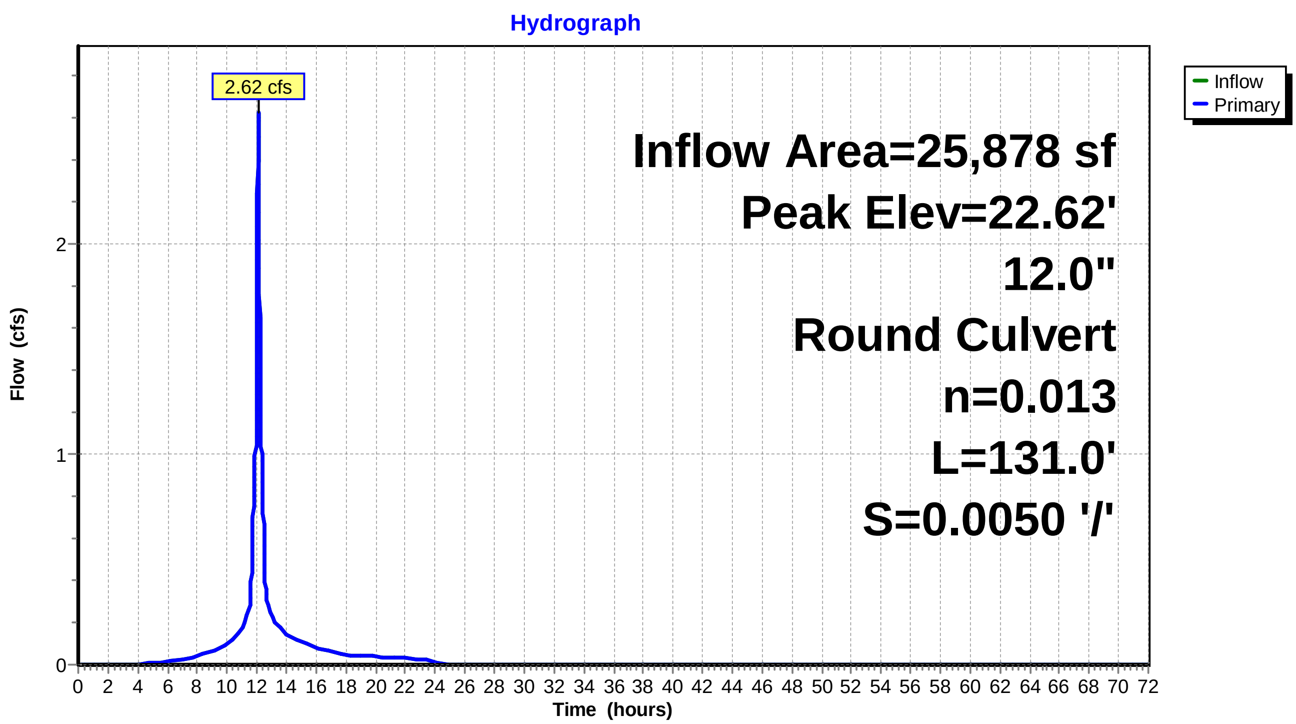
Inflow Area = 25,878 sf, 76.57% Impervious, Inflow Depth = 3.96" for 10 yr event
Inflow = 2.62 cfs @ 12.08 hrs, Volume= 8,545 cf
Outflow = 2.62 cfs @ 12.08 hrs, Volume= 8,545 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.62 cfs @ 12.08 hrs, Volume= 8,545 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 22.62' @ 12.08 hrs
Flood Elev= 22.74'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.84'	**12.0" Round Culvert** L= 131.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.84' / 20.18' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.64 cfs @ 12.08 hrs HW=22.60' TW=21.62' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.64 cfs @ 3.36 fps)

Pond 50:



Summary for Pond 51:

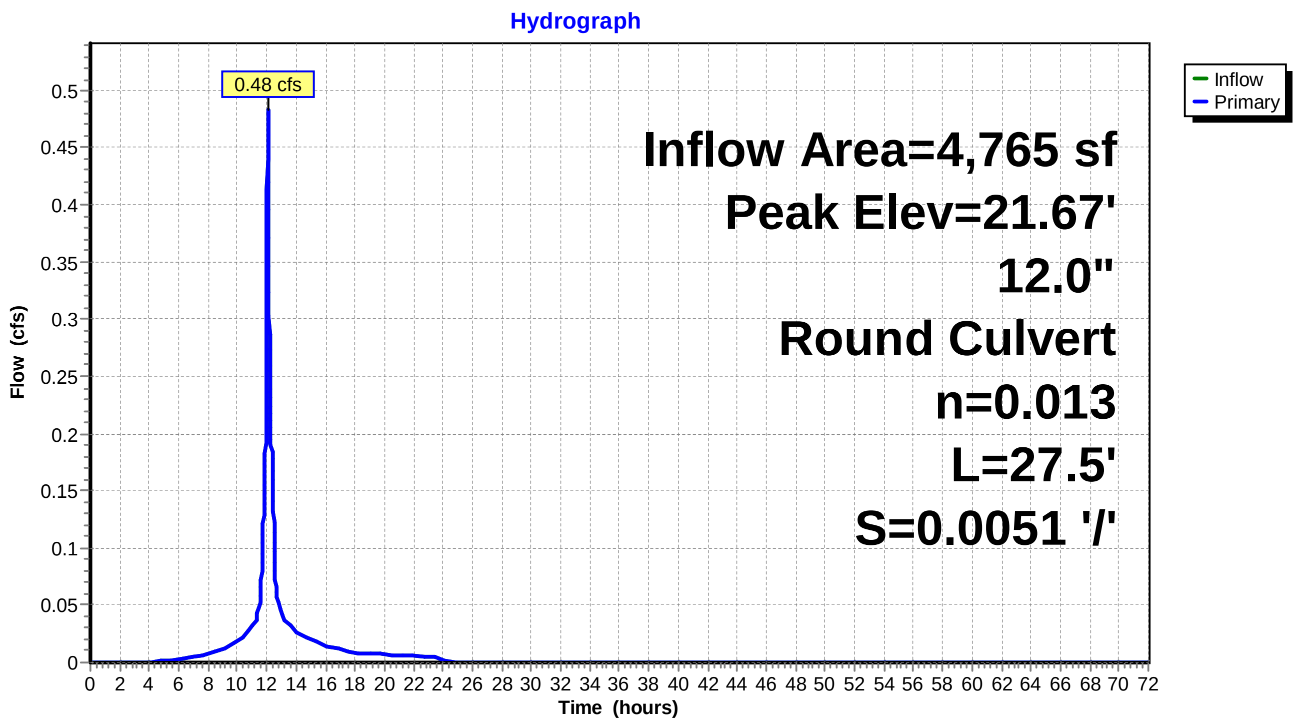
Inflow Area = 4,765 sf, 77.02% Impervious, Inflow Depth = 3.96" for 10 yr event
Inflow = 0.48 cfs @ 12.08 hrs, Volume= 1,573 cf
Outflow = 0.48 cfs @ 12.08 hrs, Volume= 1,573 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.48 cfs @ 12.08 hrs, Volume= 1,573 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.67' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	20.32'	**12.0" Round Culvert** L= 27.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.32' / 20.18' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.69 cfs @ 12.08 hrs HW=21.65' TW=21.62' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.69 cfs @ 0.88 fps)

Pond 51:



Summary for Pond 52:

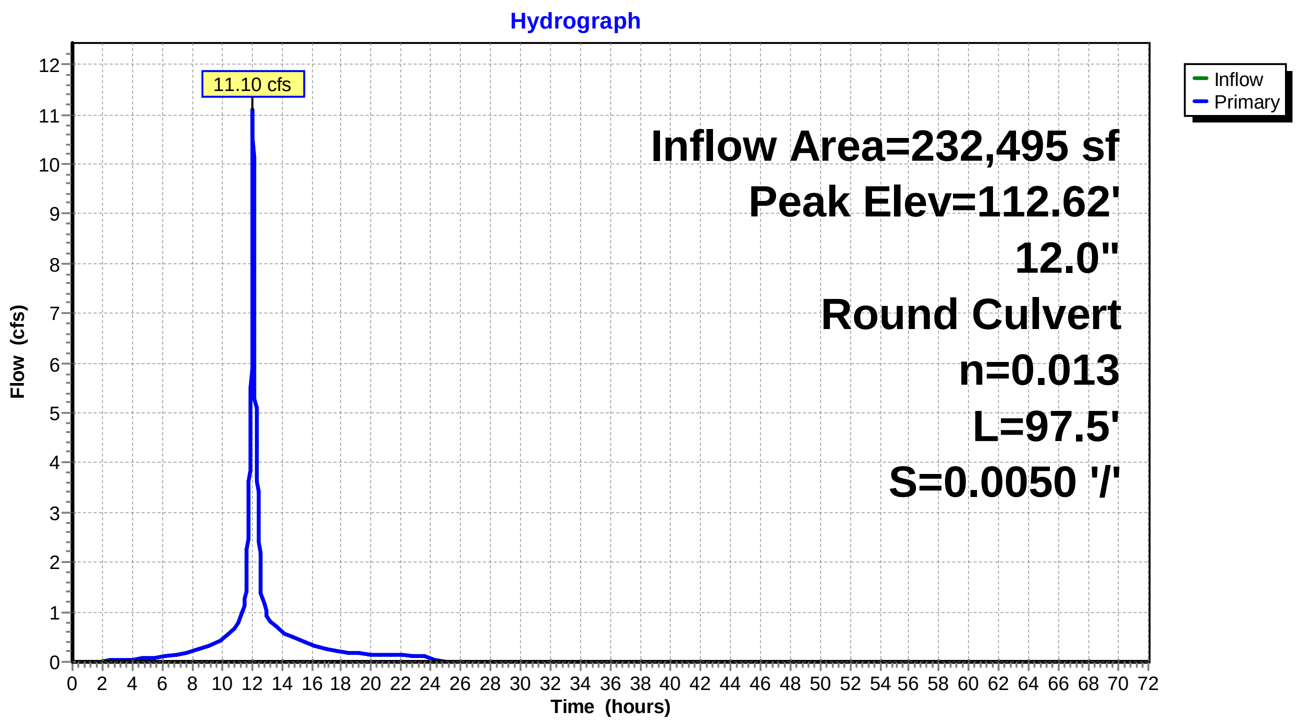
Inflow Area =	232,495 sf, 83.70% Impervious,	Inflow Depth = 1.92"	for 10 yr event
Inflow =	11.10 cfs @ 12.08 hrs, Volume=	37,250 cf	
Outflow =	11.10 cfs @ 12.08 hrs, Volume=	37,250 cf, Atten= 0%, Lag= 0.0 min	
Primary =	11.10 cfs @ 12.08 hrs, Volume=	37,250 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 112.62' @ 12.09 hrs
Flood Elev= 25.16'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.79'	**12.0" Round Culvert** L= 97.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.79' / 17.30' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=11.00 cfs @ 12.08 hrs HW=112.07' TW=98.16' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 11.00 cfs @ 14.01 fps)

Pond 52:



Summary for Pond 53:

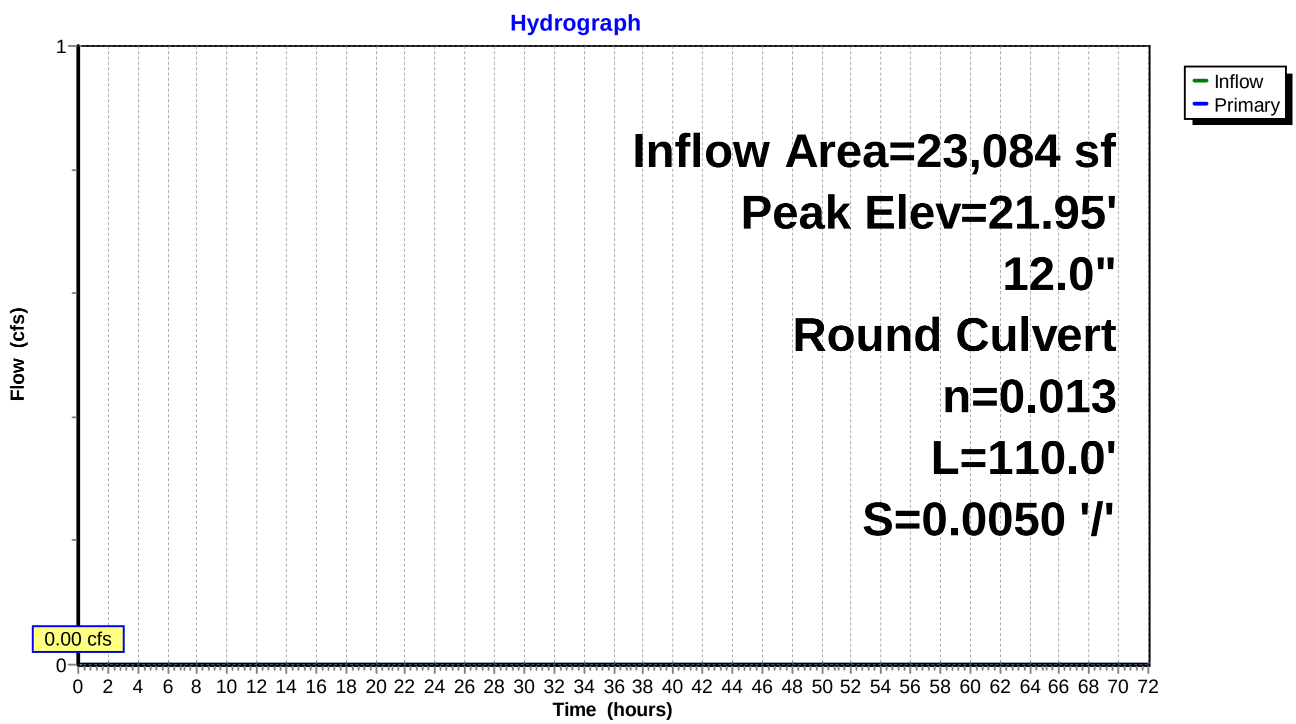
Inflow Area = 23,084 sf, 3.69% Impervious, Inflow Depth = 0.00" for 10 yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.95' @ 0.00 hrs
Flood Elev= 27.37'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.95'	**12.0" Round Culvert** L= 110.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.95' / 21.40' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=21.95' TW=21.30' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Pond 53:



Summary for Pond 54:

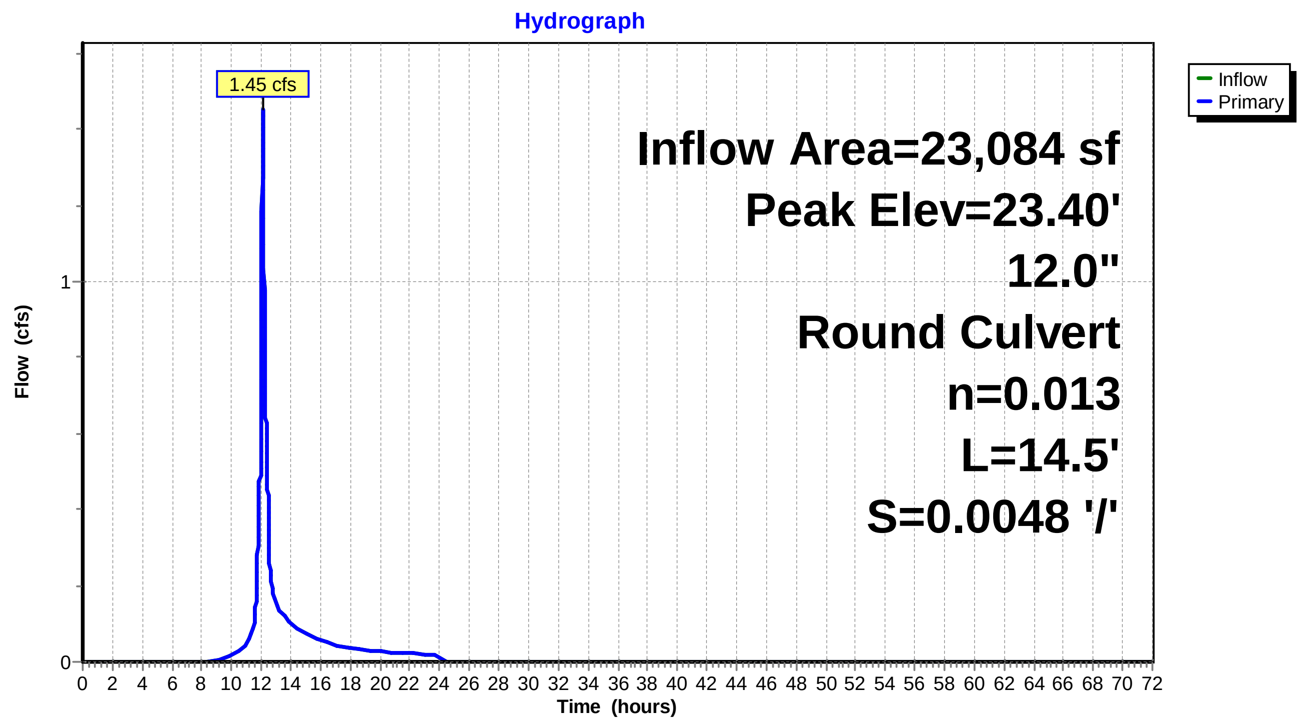
Inflow Area = 23,084 sf, 3.69% Impervious, Inflow Depth = 2.34" for 10 yr event
Inflow = 1.45 cfs @ 12.09 hrs, Volume= 4,510 cf
Outflow = 1.45 cfs @ 12.09 hrs, Volume= 4,510 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.45 cfs @ 12.09 hrs, Volume= 4,510 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 23.40' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	22.61'	**12.0" Round Culvert** L= 14.5' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 22.61' / 22.54' S= 0.0048 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.45 cfs @ 12.09 hrs HW=23.40' TW=21.78' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.45 cfs @ 3.01 fps)

Pond 54:



Summary for Pond 55:

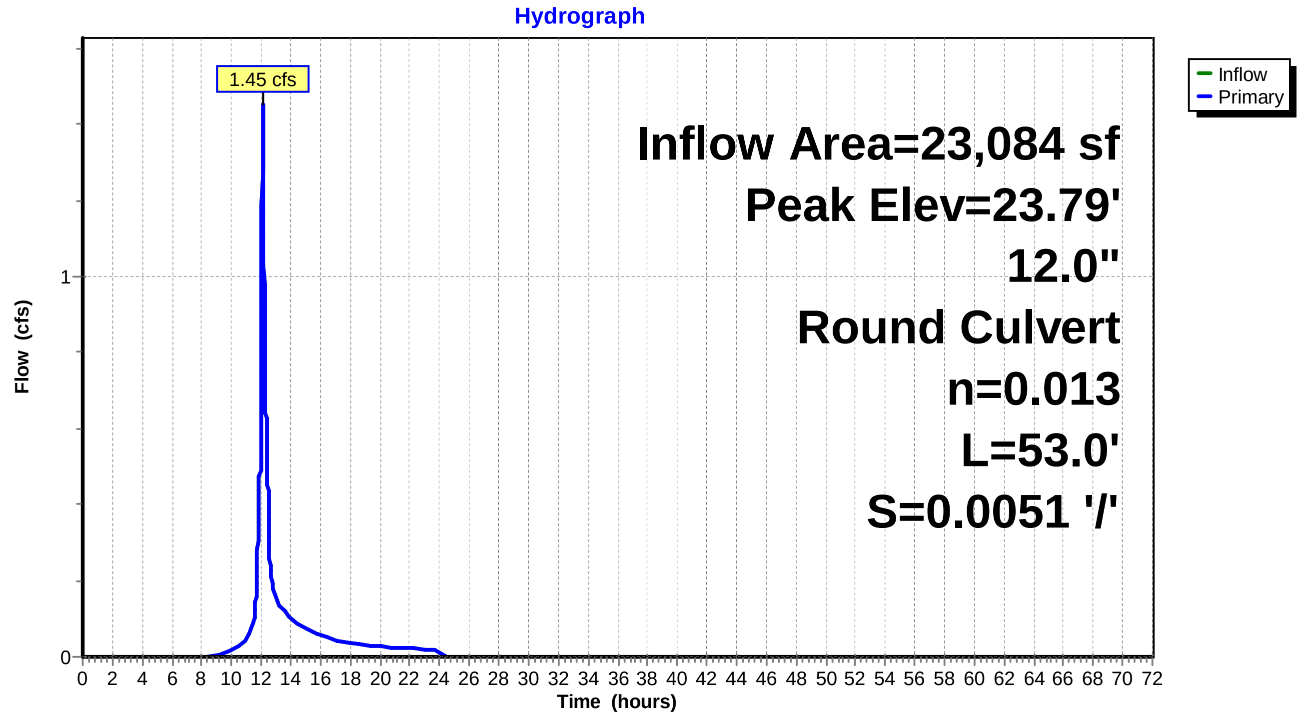
Inflow Area =	23,084 sf,	3.69% Impervious,	Inflow Depth = 2.34"	for 10 yr event
Inflow =	1.45 cfs @	12.09 hrs, Volume=	4,510 cf	
Outflow =	1.45 cfs @	12.09 hrs, Volume=	4,510 cf, Atten= 0%, Lag= 0.0 min	
Primary =	1.45 cfs @	12.09 hrs, Volume=	4,510 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 23.79' @ 12.09 hrs
Flood Elev= 25.54'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.98'	**12.0" Round Culvert** L= 53.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 22.98' / 22.71' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.45 cfs @ 12.09 hrs HW=23.79' TW=23.40' (Dynamic Tailwater)
└1=Culvert (Outlet Controls 1.45 cfs @ 2.92 fps)

Pond 55:



Summary for Pond 1071:

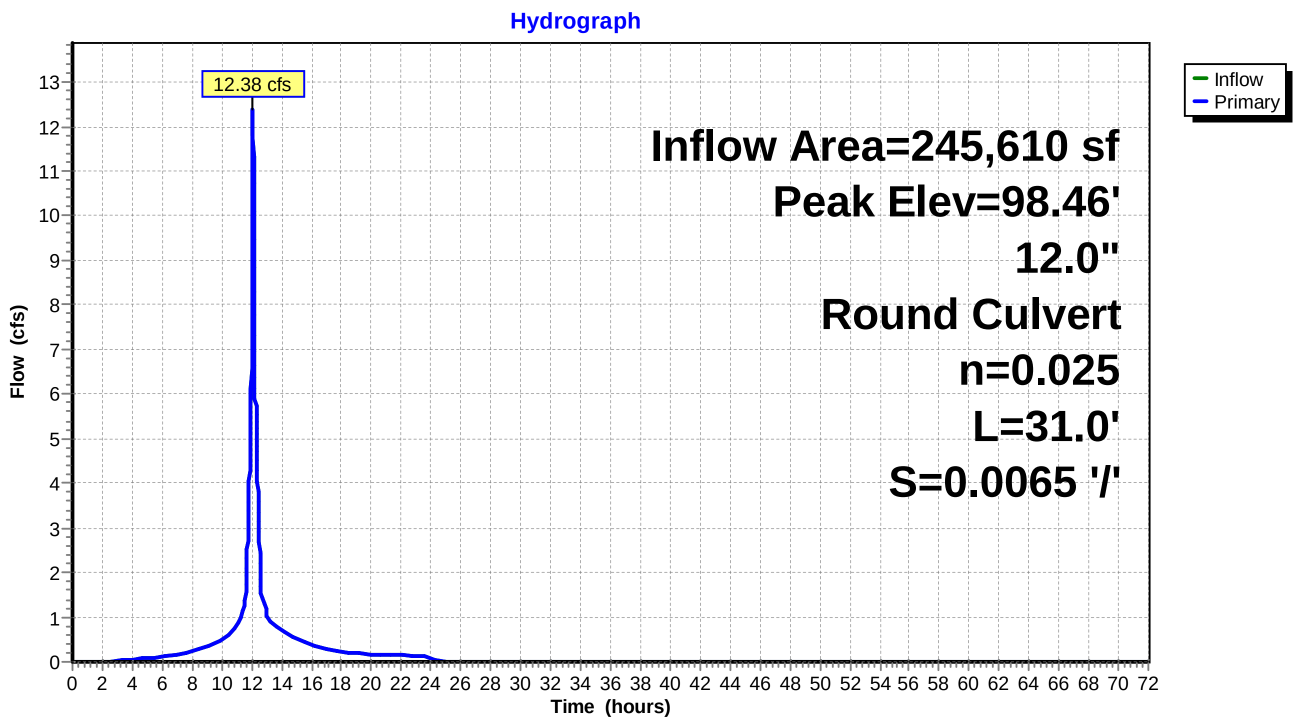
Inflow Area = 245,610 sf, 82.85% Impervious, Inflow Depth = 2.02" for 10 yr event
Inflow = 12.38 cfs @ 12.08 hrs, Volume= 41,349 cf
Outflow = 12.38 cfs @ 12.08 hrs, Volume= 41,349 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.38 cfs @ 12.08 hrs, Volume= 41,349 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 98.46' @ 12.08 hrs
Flood Elev= 22.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.50'	**12.0" Round Culvert** L= 31.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.50' / 17.30' S= 0.0065 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=12.32 cfs @ 12.08 hrs HW=98.16' TW=78.69' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 12.32 cfs @ 15.68 fps)

Pond 1071:



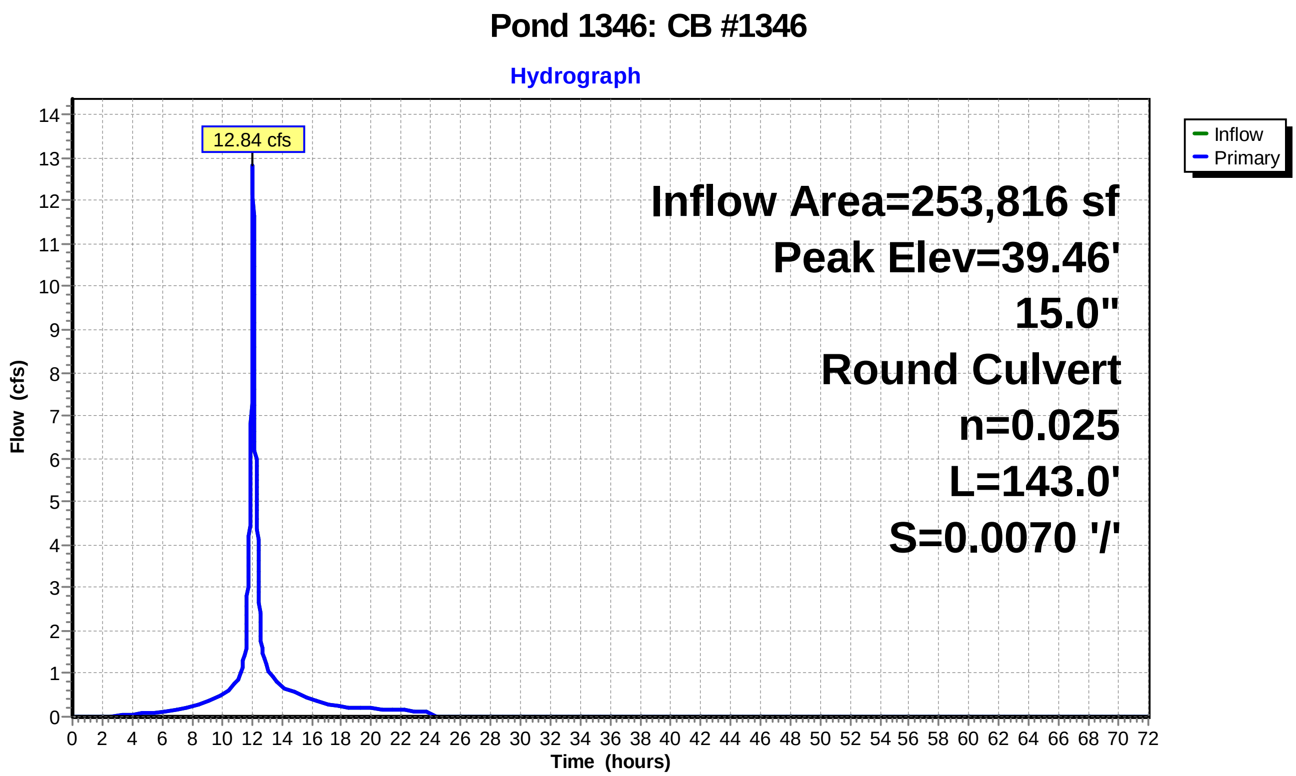
Summary for Pond 1346: CB #1346

Inflow Area =	253,816 sf, 81.64% Impervious,	Inflow Depth = 2.06"	for 10 yr event
Inflow =	12.84 cfs @ 12.08 hrs, Volume=	43,571 cf	
Outflow =	12.84 cfs @ 12.08 hrs, Volume=	43,571 cf, Atten= 0%, Lag= 0.0 min	
Primary =	12.84 cfs @ 12.08 hrs, Volume=	43,571 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 39.46' @ 12.08 hrs
Flood Elev= 25.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.70'	**15.0" Round Culvert** L= 143.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.70' / 14.70' S= 0.0070 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=12.83 cfs @ 12.08 hrs HW=39.42' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 12.83 cfs @ 10.45 fps)



Summary for Pond D1:

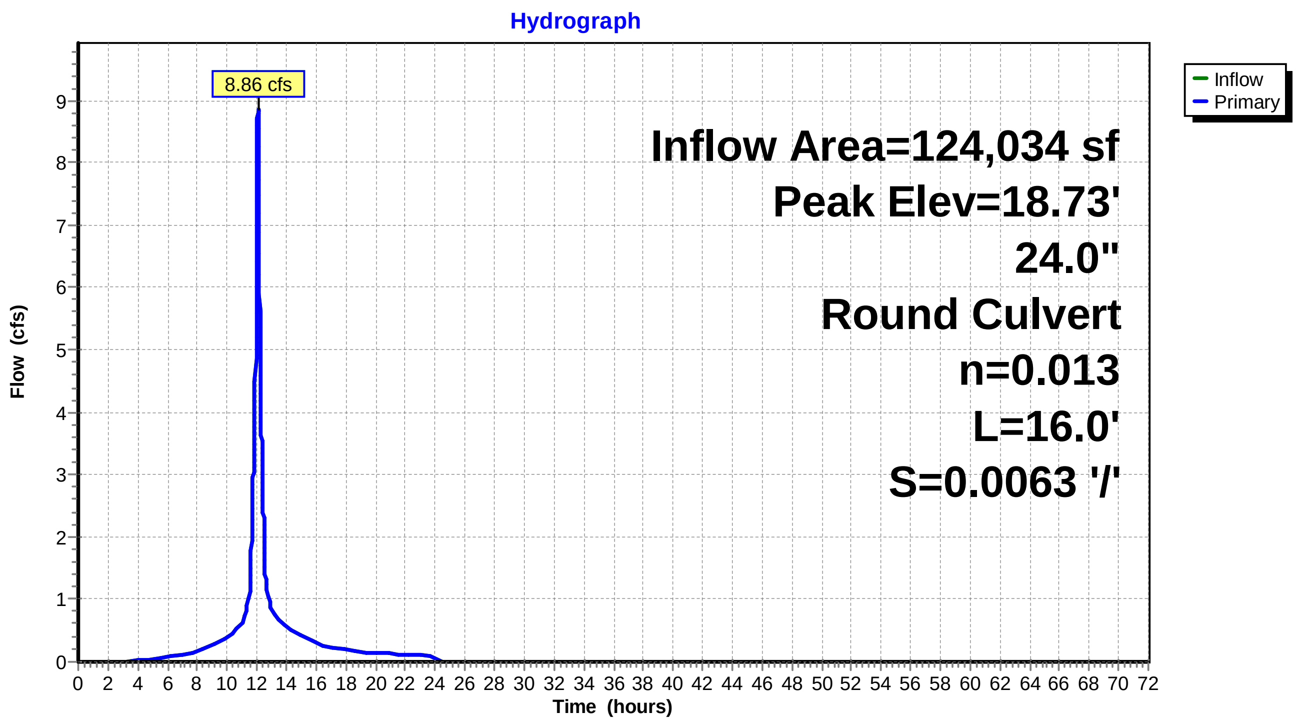
Inflow Area = 124,034 sf, 60.36% Impervious, Inflow Depth = 3.19" for 10 yr event
Inflow = 8.86 cfs @ 12.05 hrs, Volume= 33,016 cf
Outflow = 8.86 cfs @ 12.05 hrs, Volume= 33,016 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.86 cfs @ 12.05 hrs, Volume= 33,016 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 18.73' @ 12.05 hrs
Flood Elev= 23.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.10'	**24.0" Round Culvert** L= 16.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.10' / 17.00' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=8.85 cfs @ 12.05 hrs HW=18.72' TW=17.52' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 8.85 cfs @ 4.42 fps)

Pond D1:



Summary for Pond D10:

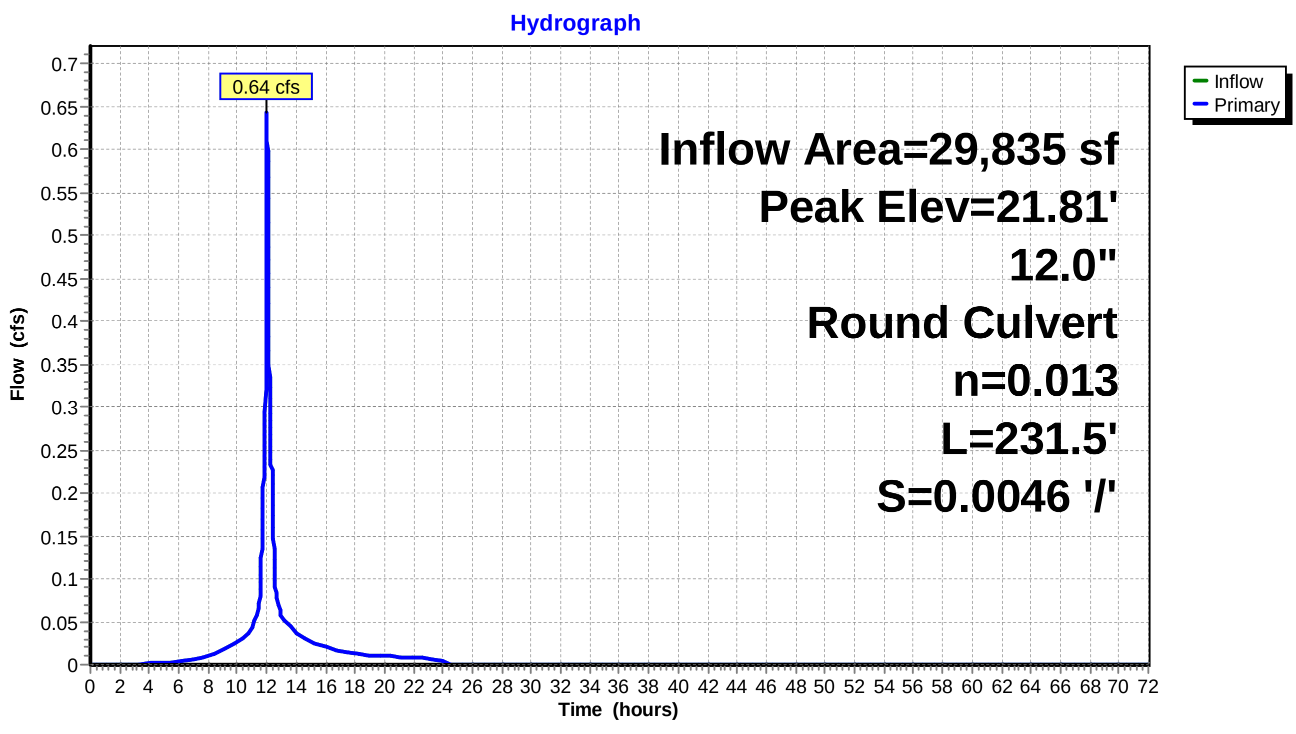
Inflow Area = 29,835 sf, 19.35% Impervious, Inflow Depth = 0.89" for 10 yr event
Inflow = 0.64 cfs @ 12.00 hrs, Volume= 2,209 cf
Outflow = 0.64 cfs @ 12.00 hrs, Volume= 2,209 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.64 cfs @ 12.00 hrs, Volume= 2,209 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.81' @ 12.01 hrs
Flood Elev= 28.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.30'	**12.0" Round Culvert** L= 231.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.30' / 20.24' S= 0.0046 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.63 cfs @ 12.00 hrs HW=21.81' TW=20.91' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.63 cfs @ 2.30 fps)

Pond D10:



Summary for Pond D11:

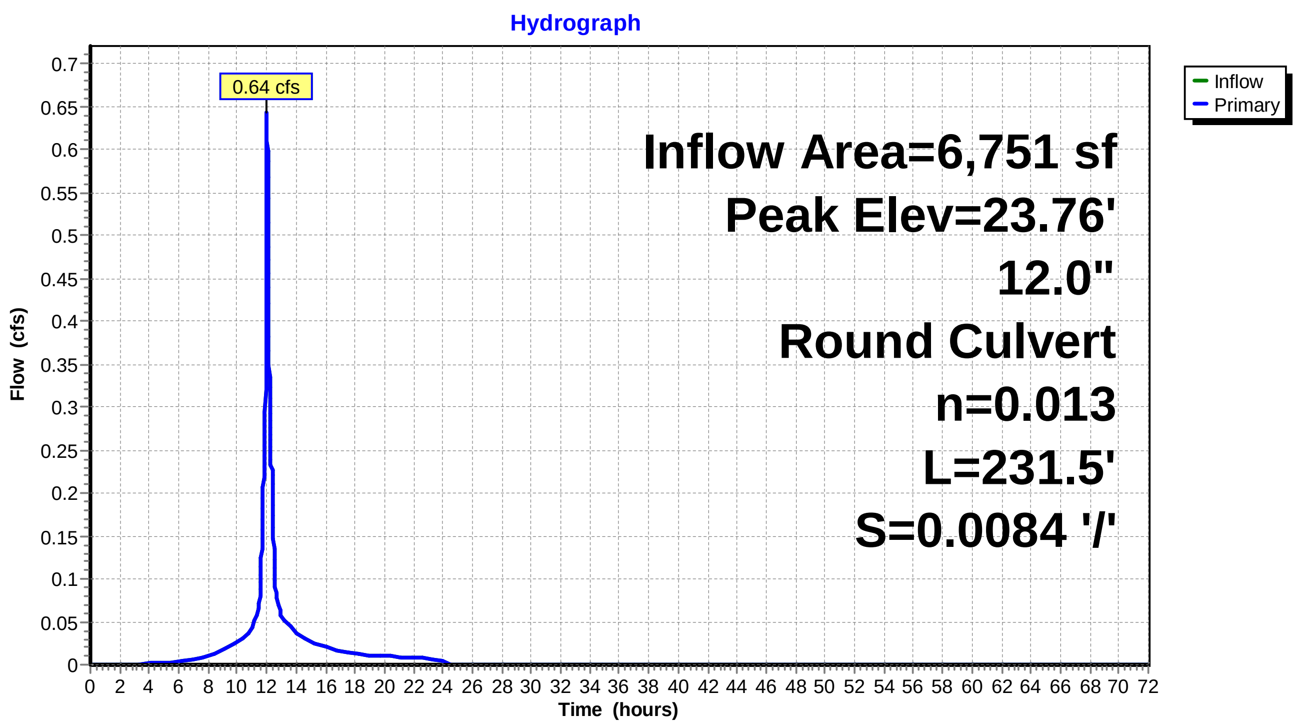
Inflow Area =	6,751 sf,	72.92% Impervious,	Inflow Depth = 3.93"	for 10 yr event
Inflow =	0.64 cfs @	12.00 hrs, Volume=	2,209 cf	
Outflow =	0.64 cfs @	12.00 hrs, Volume=	2,209 cf, Atten= 0%, Lag= 0.0 min	
Primary =	0.64 cfs @	12.00 hrs, Volume=	2,209 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 23.76' @ 12.00 hrs
Flood Elev= 27.32'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.35'	**12.0" Round Culvert** L= 231.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.35' / 21.40' S= 0.0084 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.64 cfs @ 12.00 hrs HW=23.76' TW=21.81' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.64 cfs @ 3.09 fps)

Pond D11:



Summary for Pond D12:

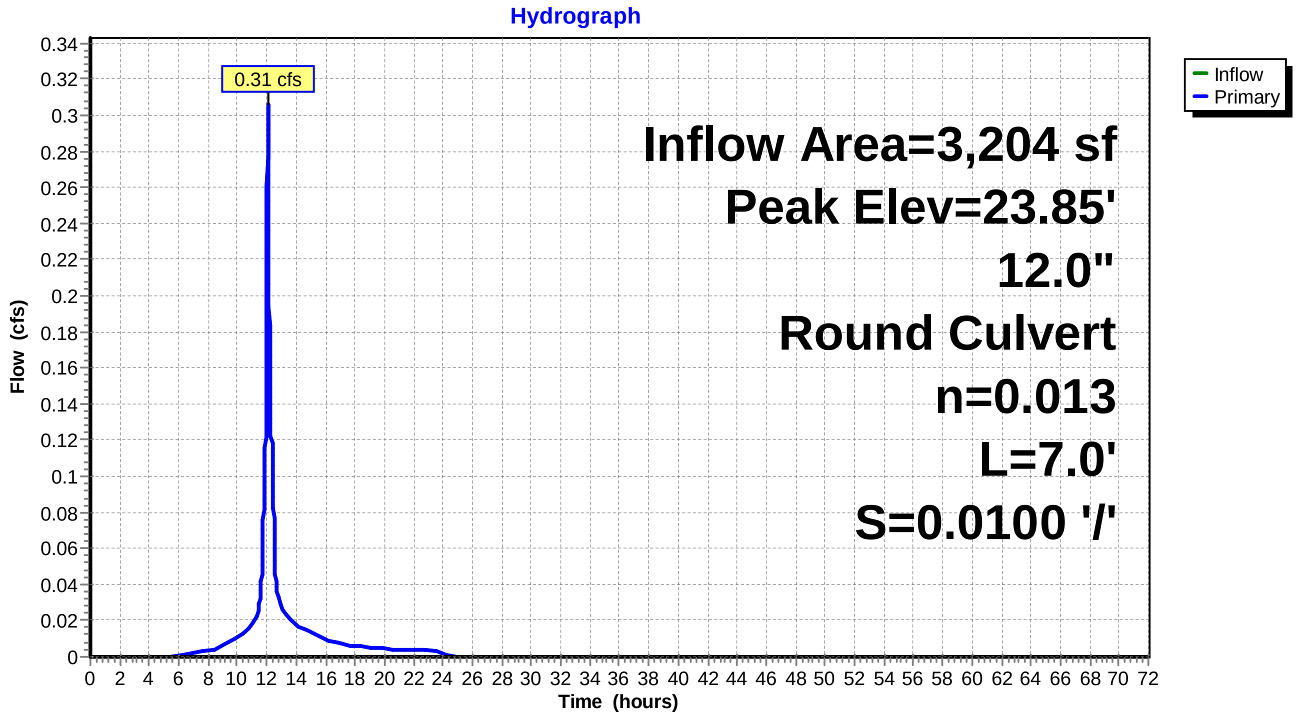
Inflow Area =	3,204 sf, 63.30% Impervious,	Inflow Depth = 3.65"	for 10 yr event
Inflow =	0.31 cfs @ 12.09 hrs, Volume=	974 cf	
Outflow =	0.31 cfs @ 12.09 hrs, Volume=	974 cf, Atten= 0%, Lag= 0.0 min	
Primary =	0.31 cfs @ 12.09 hrs, Volume=	974 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 23.85' @ 12.07 hrs
Flood Elev= 27.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.52'	**12.0" Round Culvert** L= 7.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.52' / 23.45' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.31 cfs @ 12.09 hrs HW=23.85' TW=23.72' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.31 cfs @ 2.03 fps)

Pond D12:



Summary for Pond D13:

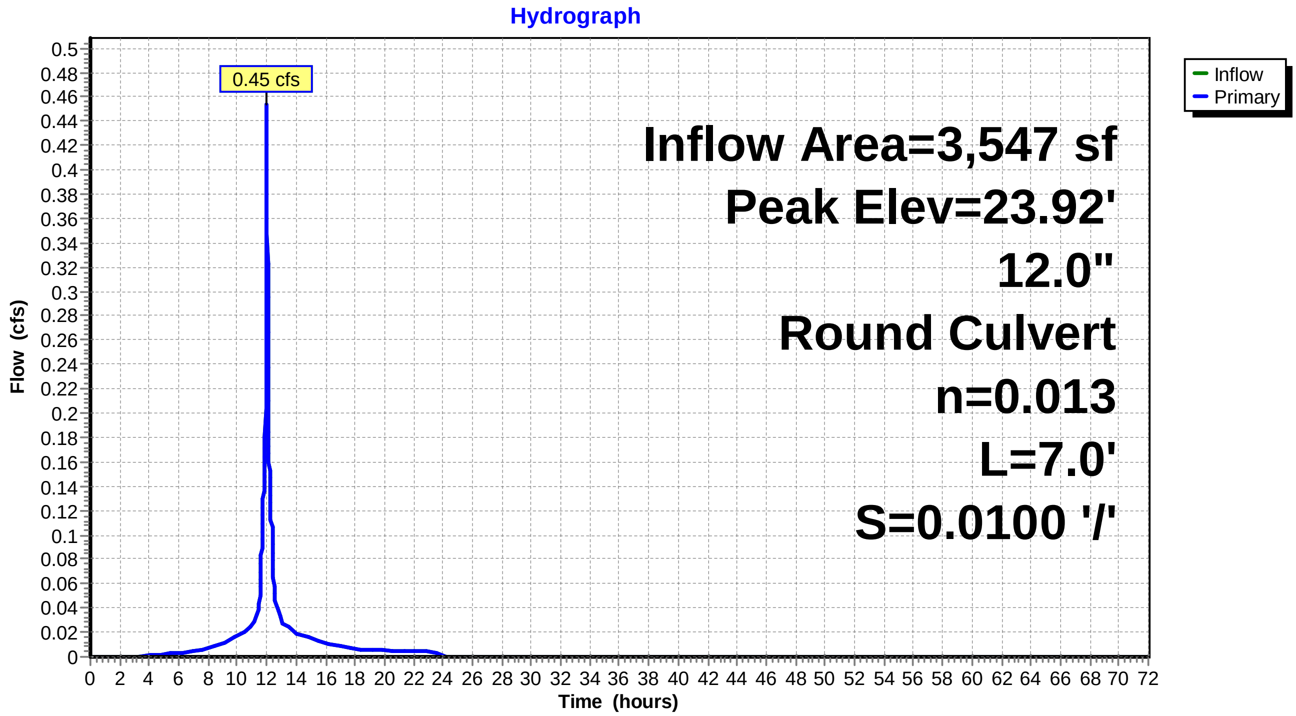
Inflow Area = 3,547 sf, 81.62% Impervious, Inflow Depth = 4.18" for 10 yr event
Inflow = 0.45 cfs @ 12.00 hrs, Volume= 1,235 cf
Outflow = 0.45 cfs @ 12.00 hrs, Volume= 1,235 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.45 cfs @ 12.00 hrs, Volume= 1,235 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 23.92' @ 12.00 hrs
Flood Elev= 27.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.52'	**12.0" Round Culvert** L= 7.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.52' / 23.45' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.45 cfs @ 12.00 hrs HW=23.92' TW=23.76' (Dynamic Tailwater)
└1=Culvert (Outlet Controls 0.45 cfs @ 2.31 fps)

Pond D13:



Summary for Pond D2:

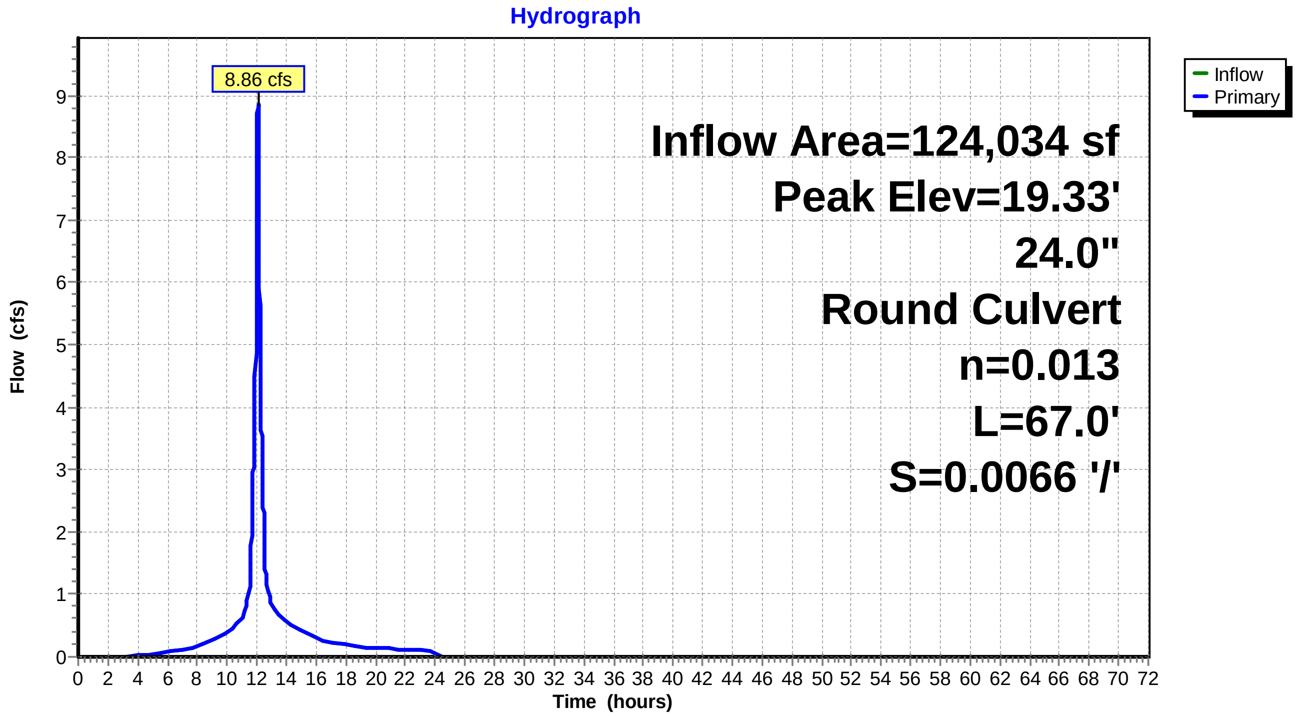
Inflow Area = 124,034 sf, 60.36% Impervious, Inflow Depth = 3.19" for 10 yr event
Inflow = 8.86 cfs @ 12.05 hrs, Volume= 33,016 cf
Outflow = 8.86 cfs @ 12.05 hrs, Volume= 33,016 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.86 cfs @ 12.05 hrs, Volume= 33,016 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 19.33' @ 12.05 hrs
Flood Elev= 23.27'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.64'	**24.0" Round Culvert** L= 67.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.64' / 17.20' S= 0.0066 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=8.85 cfs @ 12.05 hrs HW=19.33' TW=18.72' (Dynamic Tailwater)
1=Culvert (Outlet Controls 8.85 cfs @ 4.21 fps)

Pond D2:



Summary for Pond D3:

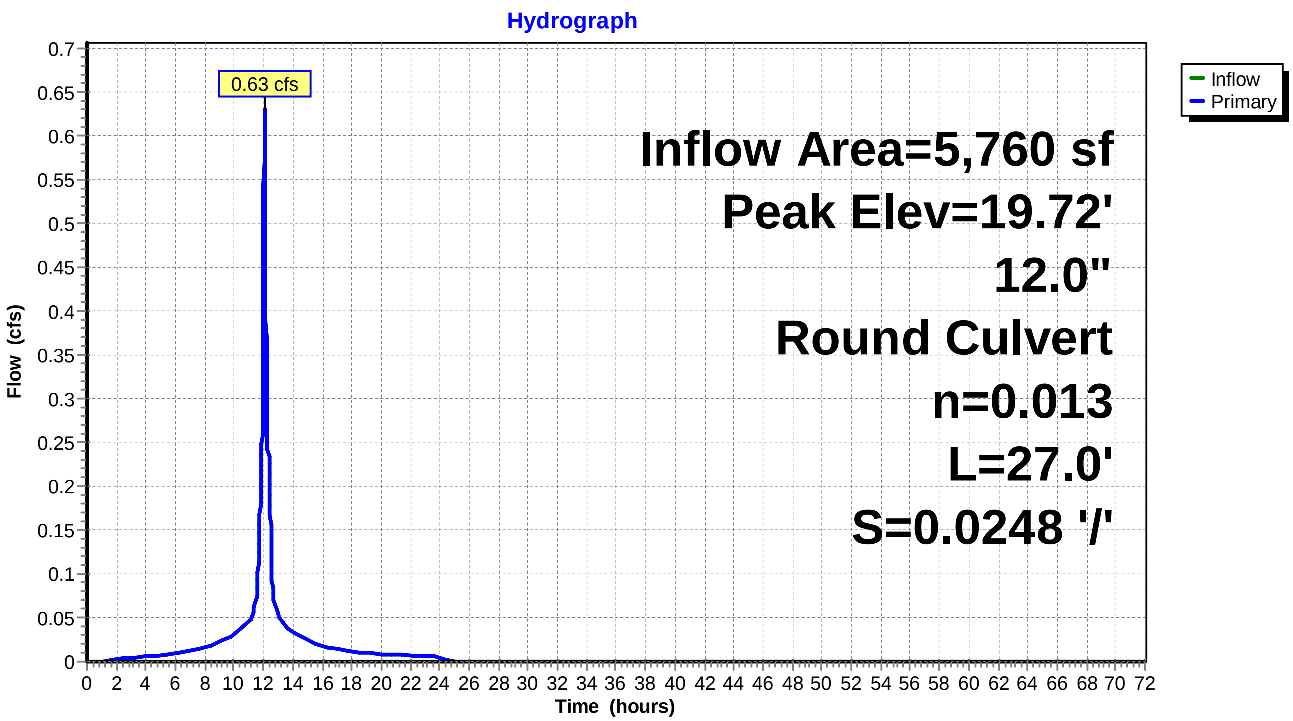
Inflow Area = 5,760 sf,100.00% Impervious, Inflow Depth = 4.63" for 10 yr event
Inflow = 0.63 cfs @ 12.08 hrs, Volume= 2,224 cf
Outflow = 0.63 cfs @ 12.08 hrs, Volume= 2,224 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.63 cfs @ 12.08 hrs, Volume= 2,224 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 19.72' @ 12.07 hrs
Flood Elev= 23.31'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.31'	**12.0" Round Culvert** L= 27.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 19.31' / 18.64' S= 0.0248 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.63 cfs @ 12.08 hrs HW=19.72' TW=19.28' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 0.63 cfs @ 3.12 fps)

Pond D3:



Summary for Pond D4:

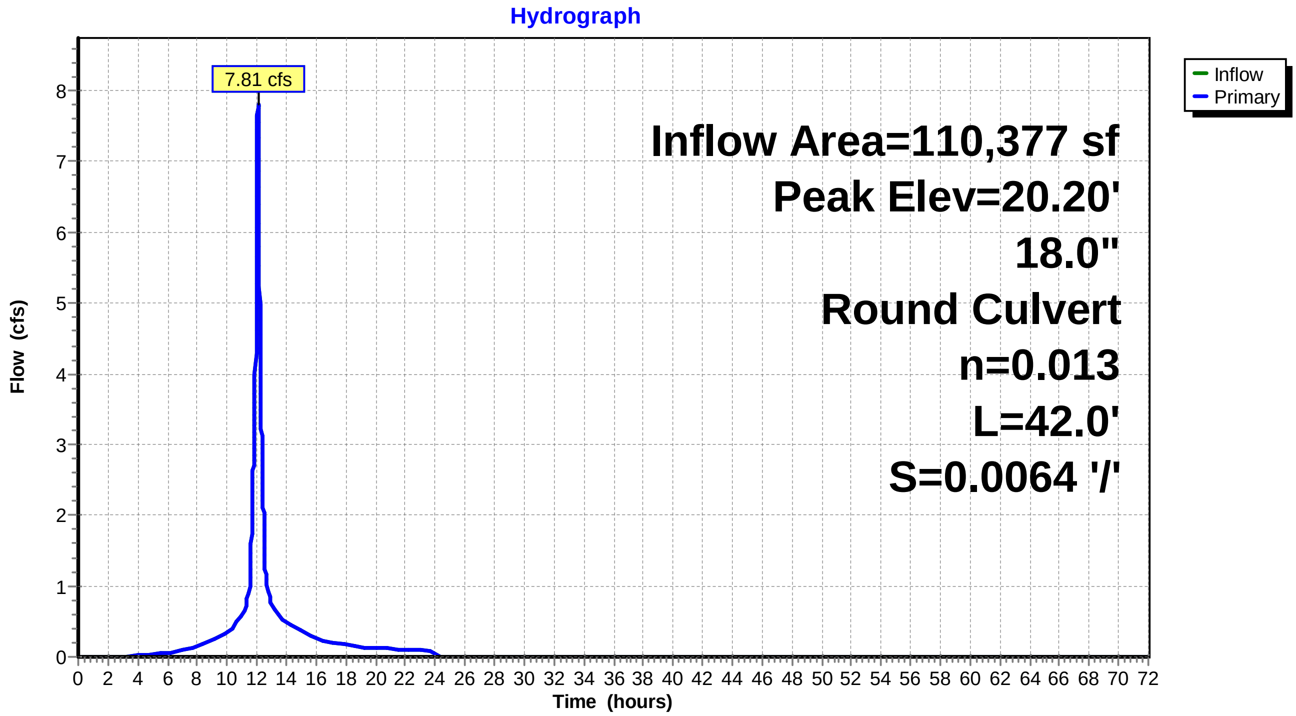
Inflow Area = 110,377 sf, 61.92% Impervious, Inflow Depth = 3.17" for 10 yr event
Inflow = 7.81 cfs @ 12.05 hrs, Volume= 29,194 cf
Outflow = 7.81 cfs @ 12.05 hrs, Volume= 29,194 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.81 cfs @ 12.05 hrs, Volume= 29,194 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 20.20' @ 12.05 hrs
Flood Elev= 22.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.41'	**18.0" Round Culvert** L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.41' / 18.14' S= 0.0064 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=7.80 cfs @ 12.05 hrs HW=20.20' TW=19.33' (Dynamic Tailwater)
1=Culvert (Barrel Controls 7.80 cfs @ 4.68 fps)

Pond D4:



Summary for Pond D5:

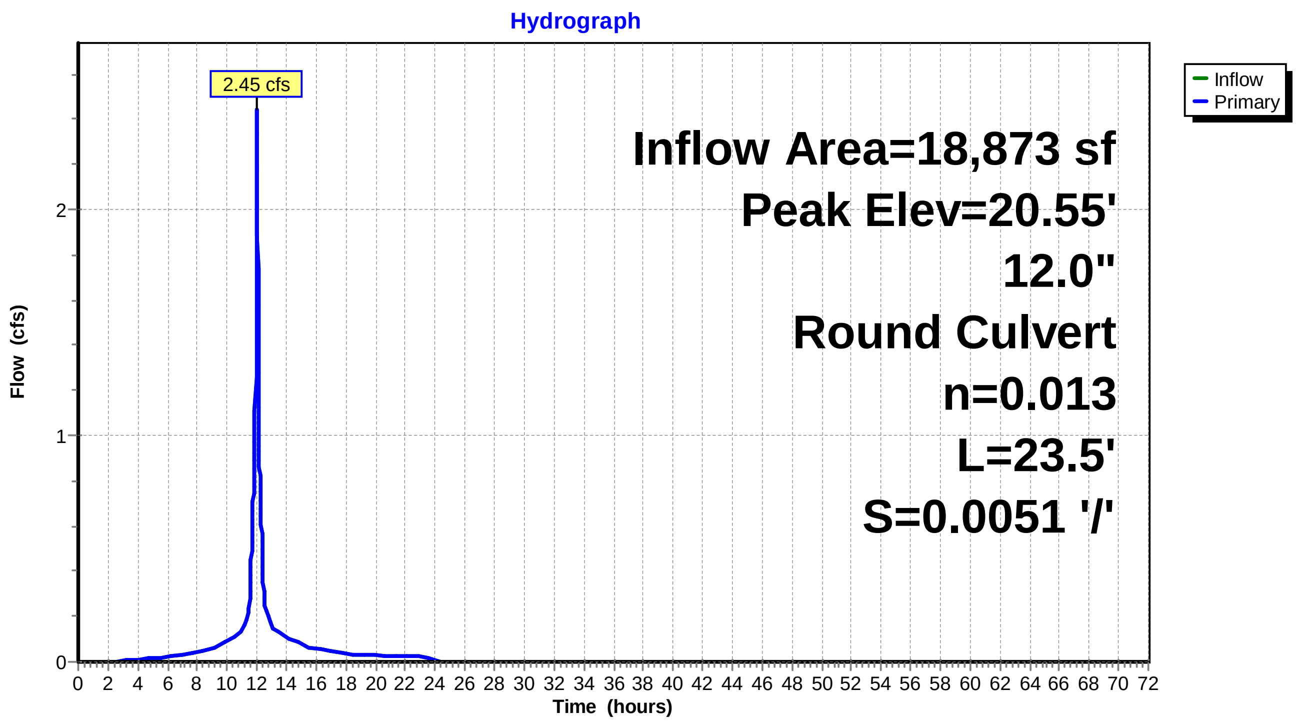
Inflow Area =	18,873 sf,	85.85% Impervious,	Inflow Depth = 4.29"	for 10 yr event
Inflow =	2.45 cfs @	12.00 hrs, Volume=	6,748 cf	
Outflow =	2.45 cfs @	12.00 hrs, Volume=	6,748 cf, Atten= 0%, Lag= 0.0 min	
Primary =	2.45 cfs @	12.00 hrs, Volume=	6,748 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 20.55' @ 12.00 hrs
Flood Elev= 22.46'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.03'	**12.0" Round Culvert** L= 23.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 19.03' / 18.91' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.45 cfs @ 12.00 hrs HW=20.54' TW=20.12' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.45 cfs @ 3.11 fps)

Pond D5:



Summary for Pond D6:

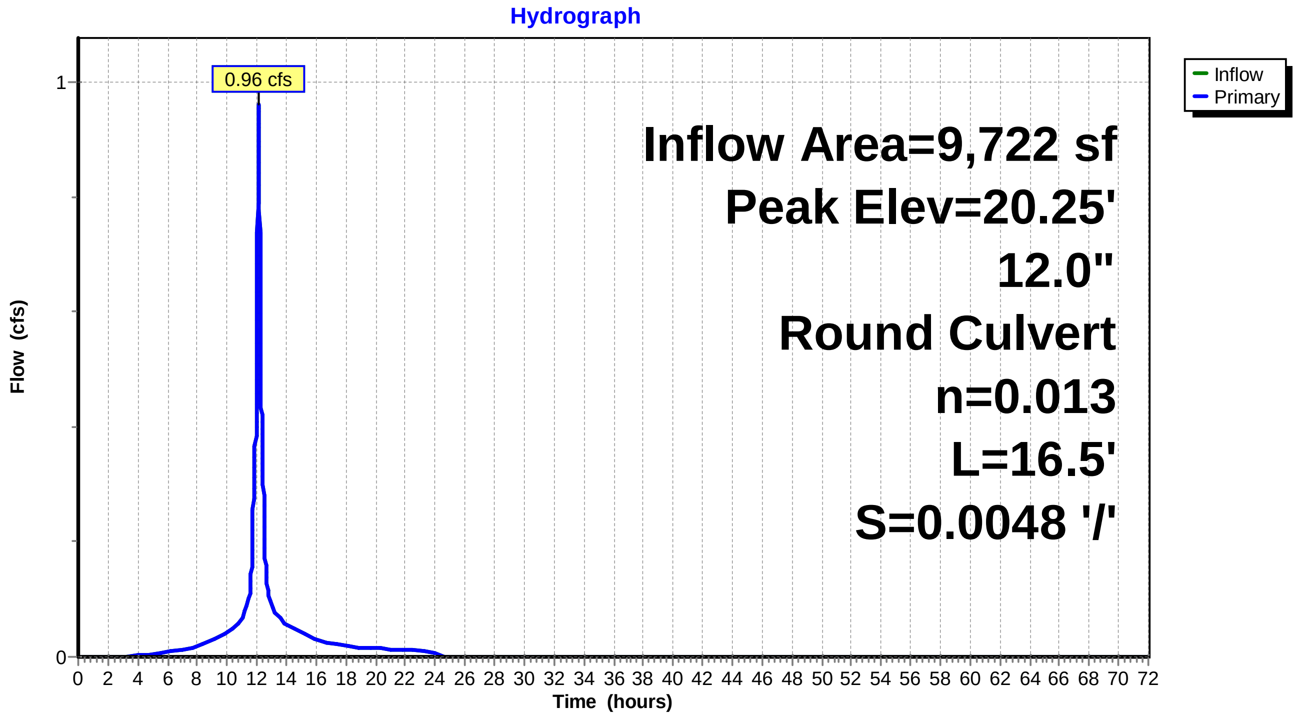
Inflow Area = 9,722 sf, 82.42% Impervious, Inflow Depth = 4.18" for 10 yr event
Inflow = 0.96 cfs @ 12.11 hrs, Volume= 3,386 cf
Outflow = 0.96 cfs @ 12.11 hrs, Volume= 3,386 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.96 cfs @ 12.11 hrs, Volume= 3,386 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 20.25' @ 12.06 hrs
Flood Elev= 22.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.11'	**12.0" Round Culvert** L= 16.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 19.11' / 19.03' S= 0.0048 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.96 cfs @ 12.11 hrs HW=20.09' TW=20.02' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.96 cfs @ 1.55 fps)

Pond D6:



Summary for Pond D7:

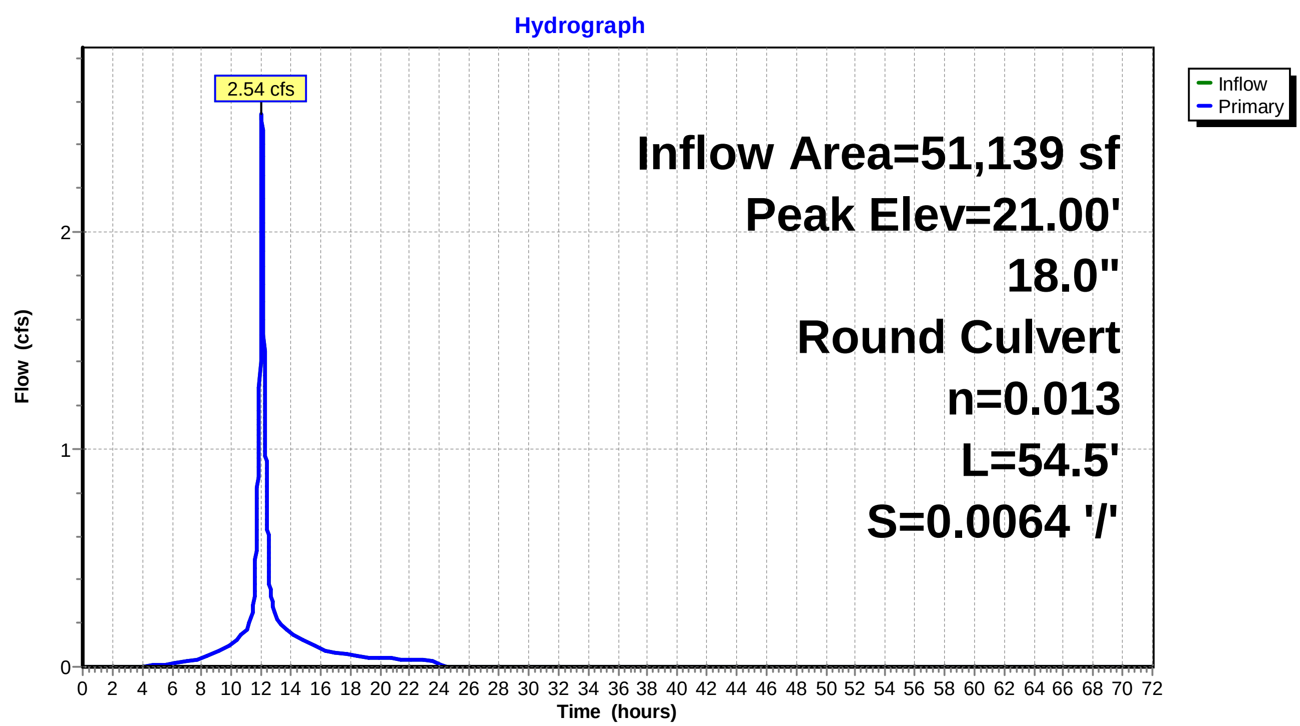
Inflow Area =	51,139 sf,	40.36% Impervious,	Inflow Depth = 2.10"	for 10 yr event
Inflow =	2.54 cfs @	12.01 hrs, Volume=	8,941 cf	
Outflow =	2.54 cfs @	12.01 hrs, Volume=	8,941 cf, Atten= 0%, Lag= 0.0 min	
Primary =	2.54 cfs @	12.01 hrs, Volume=	8,941 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.00' @ 12.06 hrs
Flood Elev= 24.29'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.74'	**18.0" Round Culvert** L= 54.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 19.74' / 19.39' S= 0.0064 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.54 cfs @ 12.01 hrs HW=20.91' TW=20.71' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 2.54 cfs @ 2.36 fps)

Pond D7:



Summary for Pond D8:

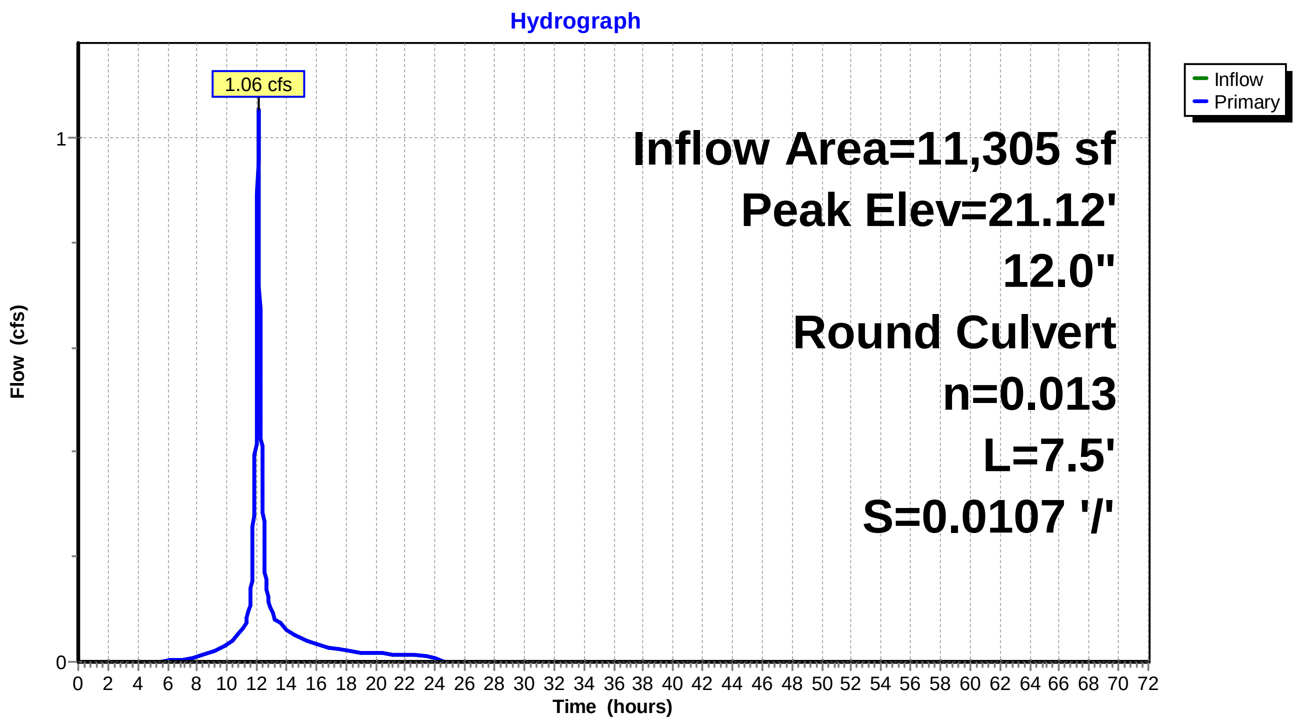
Inflow Area = 11,305 sf, 59.96% Impervious, Inflow Depth = 3.55" for 10 yr event
Inflow = 1.06 cfs @ 12.09 hrs, Volume= 3,340 cf
Outflow = 1.06 cfs @ 12.09 hrs, Volume= 3,340 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.06 cfs @ 12.09 hrs, Volume= 3,340 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.12' @ 12.07 hrs
Flood Elev= 24.07'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.32'	**12.0" Round Culvert** L= 7.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.32' / 20.24' S= 0.0107 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.12 cfs @ 12.09 hrs HW=21.09' TW=20.94' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 1.12 cfs @ 2.37 fps)

Pond D8:



Summary for Pond D9:

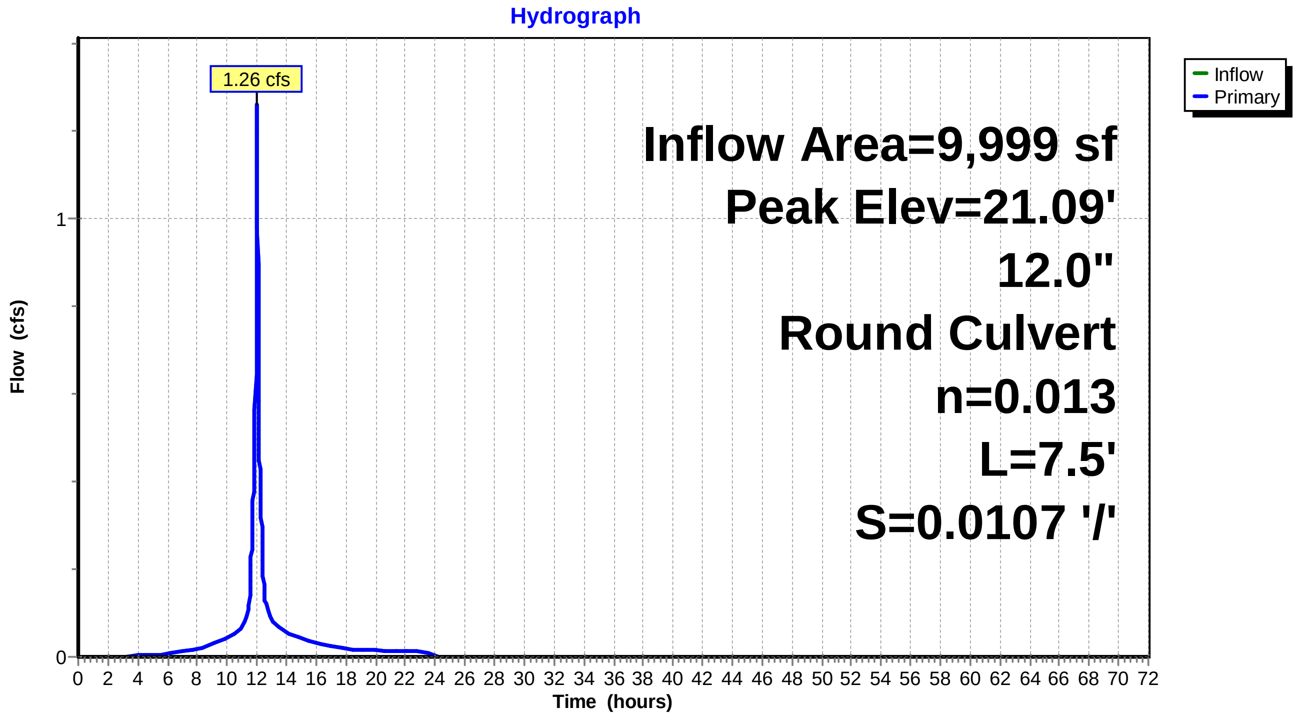
Inflow Area = 9,999 sf, 80.90% Impervious, Inflow Depth = 4.07" for 10 yr event
Inflow = 1.26 cfs @ 12.00 hrs, Volume= 3,392 cf
Outflow = 1.26 cfs @ 12.00 hrs, Volume= 3,392 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.26 cfs @ 12.00 hrs, Volume= 3,392 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.09' @ 12.01 hrs
Flood Elev= 24.07'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.32'	**12.0" Round Culvert** L= 7.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.32' / 20.24' S= 0.0107 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.17 cfs @ 12.00 hrs HW=21.07' TW=20.90' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 1.17 cfs @ 2.54 fps)

Pond D9:



Summary for Pond E1:

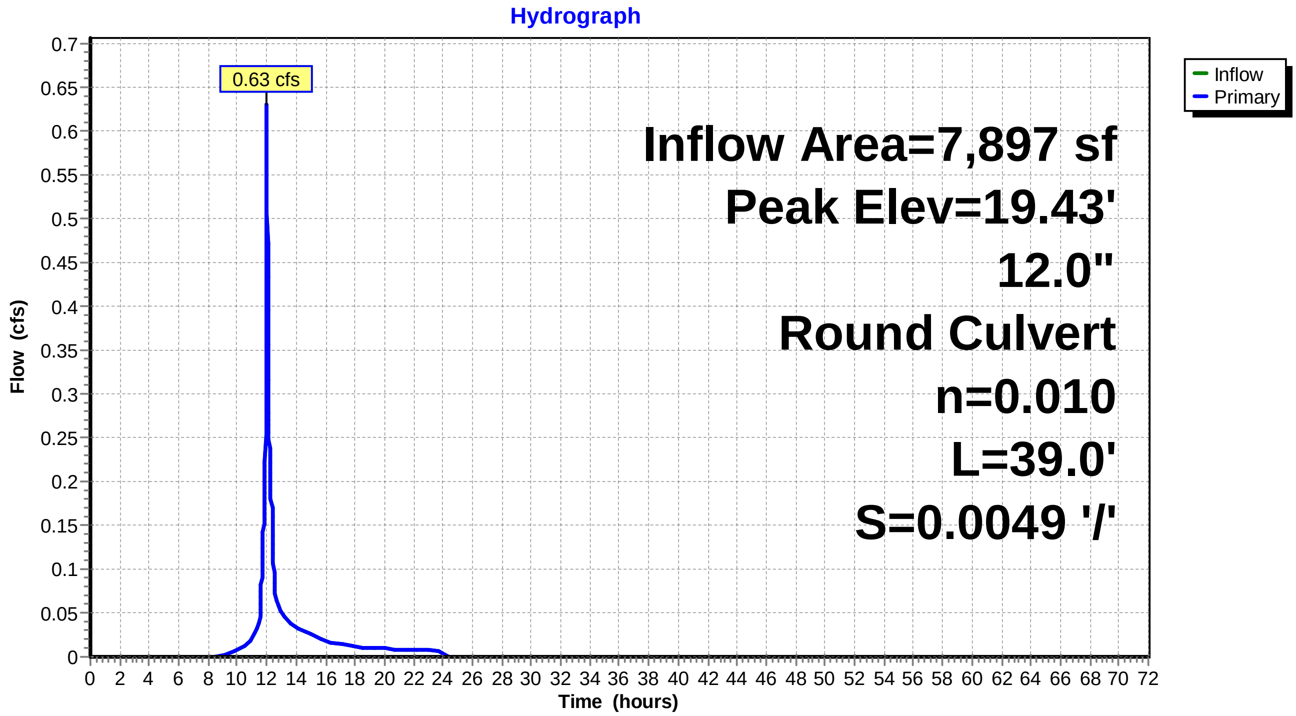
Inflow Area = 7,897 sf, 9.73% Impervious, Inflow Depth = 2.43" for 10 yr event
Inflow = 0.63 cfs @ 12.00 hrs, Volume= 1,598 cf
Outflow = 0.63 cfs @ 12.00 hrs, Volume= 1,598 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.63 cfs @ 12.00 hrs, Volume= 1,598 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 19.43' @ 12.01 hrs
Flood Elev= 20.32'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.83'	**12.0" Round Culvert** L= 39.0' Ke= 1.000 Inlet / Outlet Invert= 18.83' / 18.64' S= 0.0049 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.63 cfs @ 12.00 hrs HW=19.43' TW=19.28' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.63 cfs @ 1.83 fps)

Pond E1:



Summary for Pond RD:

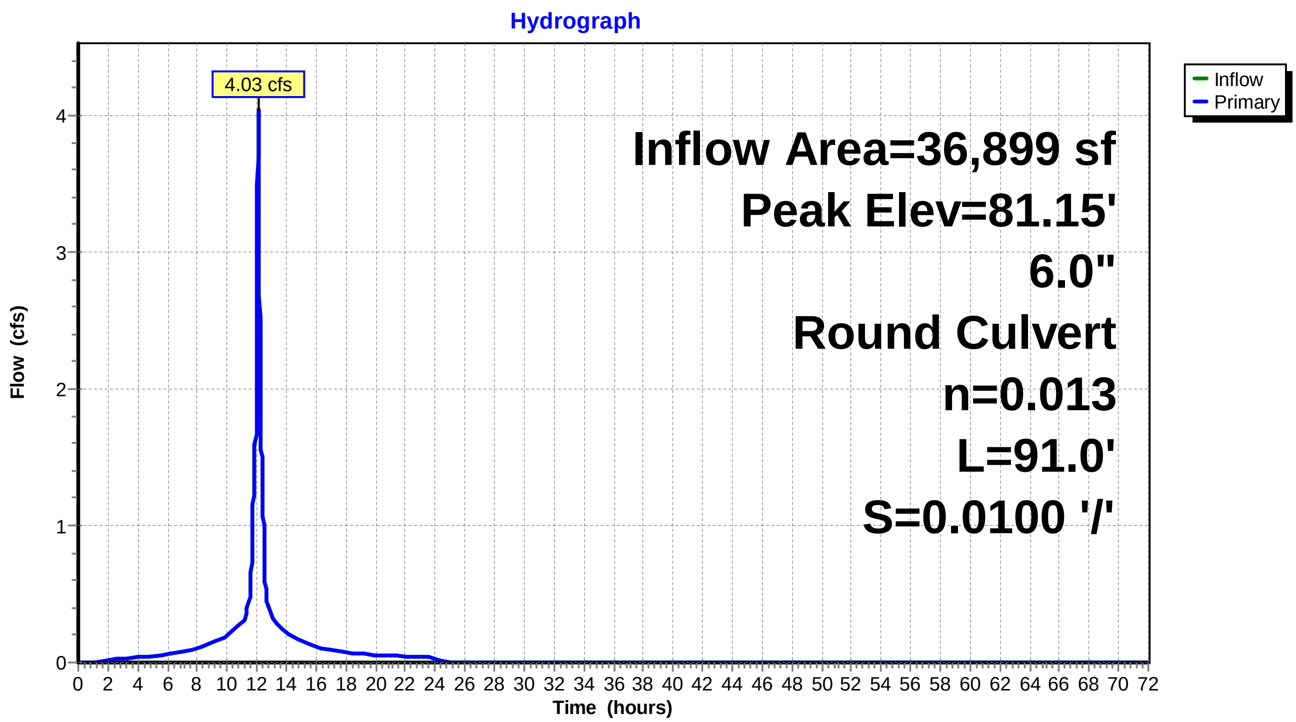
Inflow Area = 36,899 sf,100.00% Impervious, Inflow Depth = 4.63" for 10 yr event
Inflow = 4.03 cfs @ 12.08 hrs, Volume= 14,247 cf
Outflow = 4.03 cfs @ 12.08 hrs, Volume= 14,247 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.03 cfs @ 12.08 hrs, Volume= 14,247 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 81.15' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	22.02'	**6.0" Round Culvert** L= 91.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 22.02' / 21.11' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=4.03 cfs @ 12.08 hrs HW=80.95' TW=24.11' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 4.03 cfs @ 20.51 fps)

Pond RD:



Summary for Pond RD2:

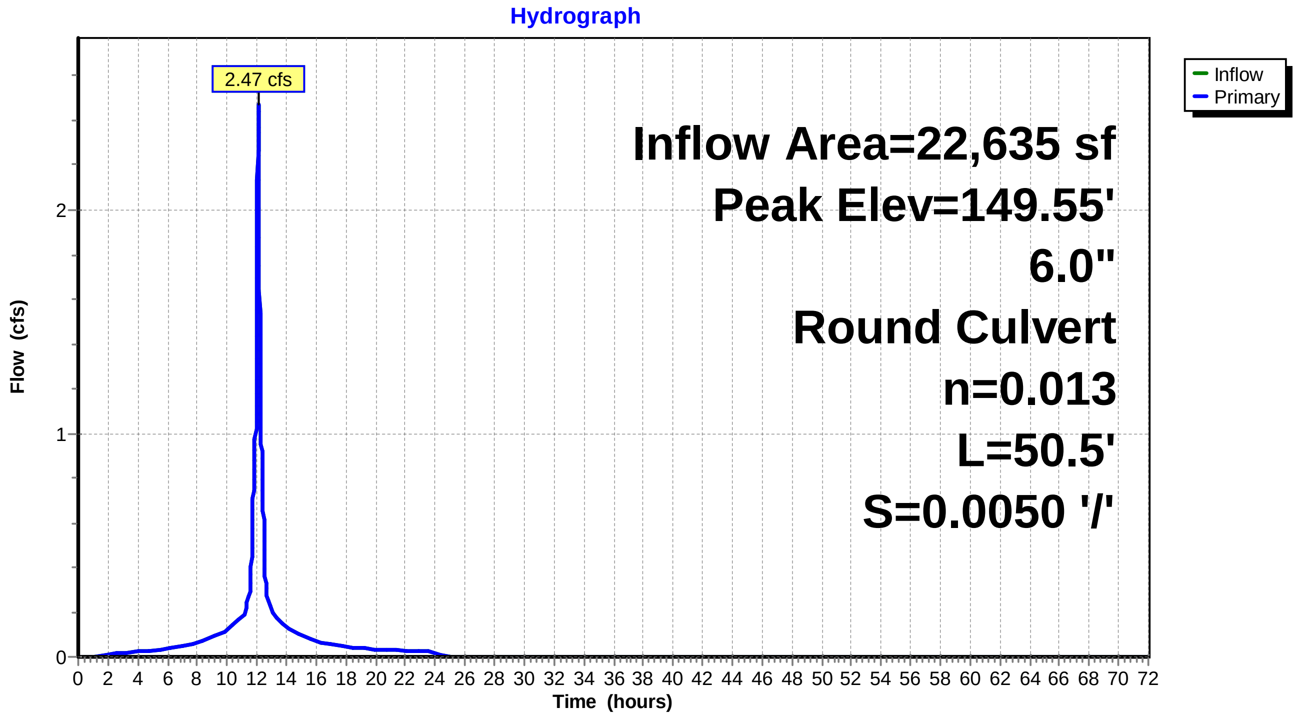
Inflow Area = 22,635 sf,100.00% Impervious, Inflow Depth = 4.63" for 10 yr event
Inflow = 2.47 cfs @ 12.08 hrs, Volume= 8,740 cf
Outflow = 2.47 cfs @ 12.08 hrs, Volume= 8,740 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.47 cfs @ 12.08 hrs, Volume= 8,740 cf

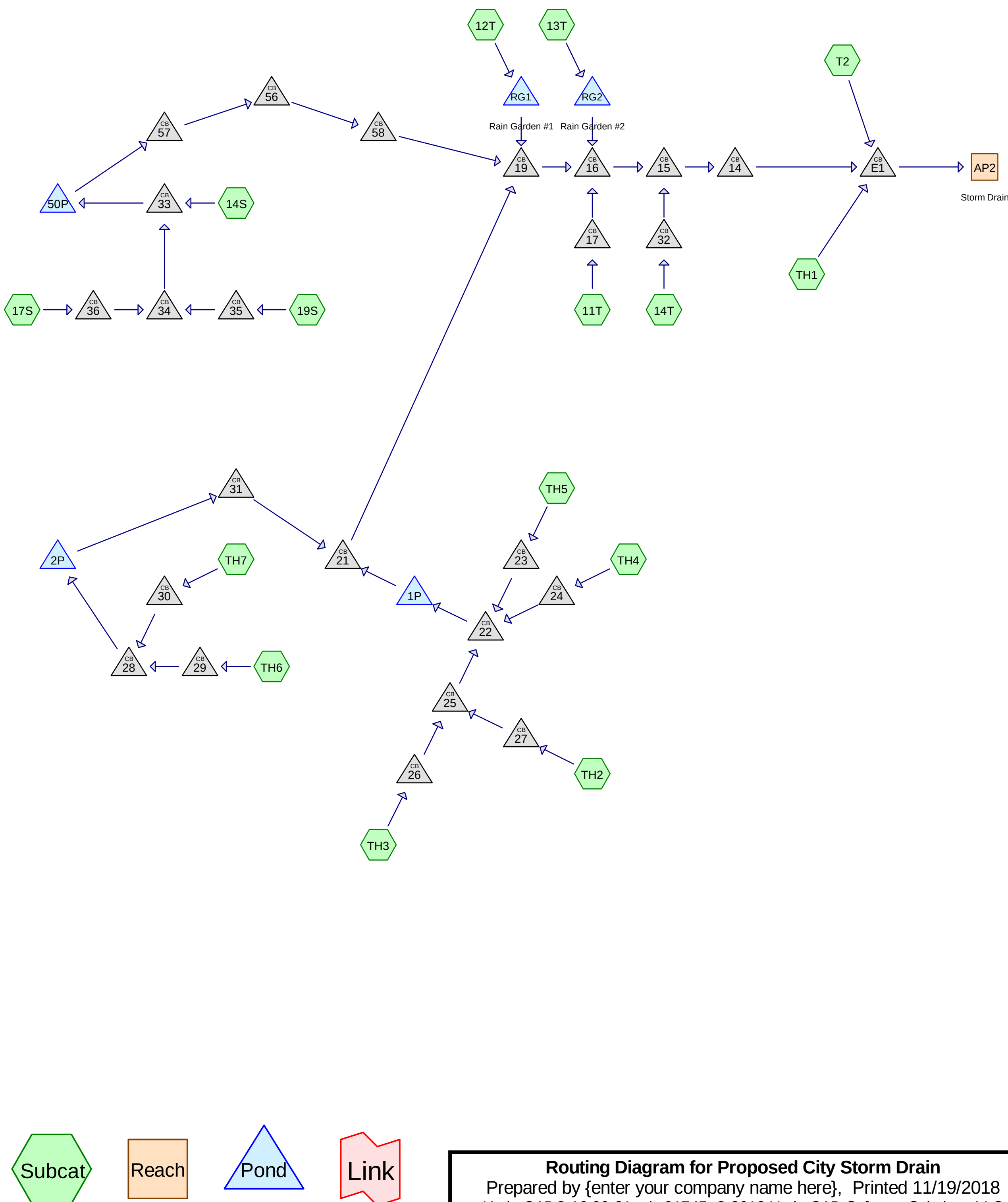
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 149.55' @ 12.09 hrs
Flood Elev= 26.19'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.23'	**6.0" Round Culvert** L= 50.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 19.23' / 18.98' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=2.35 cfs @ 12.08 hrs HW=148.07' TW=135.80' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.35 cfs @ 11.99 fps)

Pond RD2:





Routing Diagram for Proposed City Storm Drain
Prepared by {enter your company name here}, Printed 11/19/2018
HydroCAD® 10.00-21 s/n 01745 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
31,507	74	>75% Grass cover, Good, HSG C (11T, 12T, 13T, 14T, 17S, 19S, T2, TH1, TH2, TH3, TH4, TH5, TH6, TH7)
93,695	98	Paved parking, HSG C (11T, 12T, 13T, 14T, 17S, 19S, T2, TH1, TH2, TH3, TH4, TH5, TH6, TH7)
29,032	98	Roofs, HSG C (14S)
154,234	**93**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
154,234	HSG C	11T, 12T, 13T, 14S, 14T, 17S, 19S, T2, TH1, TH2, TH3, TH4, TH5, TH6, TH7
0	HSG D	
0	Other	
154,234		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Subcatc Numbers
0	0	31,507	0	0	31,507	>75% Grass cover, Good	
0	0	93,695	0	0	93,695	Paved parking	
0	0	29,032	0	0	29,032	Roofs	
0	**0**	**154,234**	**0**	**0**	**154,234**	**TOTAL AREA**	

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	14.00	13.67	9.5	0.0347	0.013	8.0	0.0	0.0
2	2P	14.50	14.36	22.5	0.0062	0.013	6.0	0.0	0.0
3	14	10.47	9.70	119.0	0.0065	0.013	18.0	0.0	0.0
4	15	11.23	10.72	78.5	0.0065	0.013	15.0	0.0	0.0
5	16	11.74	11.33	62.5	0.0066	0.013	15.0	0.0	0.0
6	17	12.34	11.99	7.0	0.0500	0.013	12.0	0.0	0.0
7	19	12.47	11.84	97.0	0.0065	0.013	15.0	0.0	0.0
8	21	13.34	12.74	62.0	0.0097	0.013	12.0	0.0	0.0
9	22	14.47	14.42	5.0	0.0100	0.013	18.0	0.0	0.0
10	23	15.00	14.97	6.0	0.0050	0.013	12.0	0.0	0.0
11	24	15.29	14.97	64.0	0.0050	0.013	12.0	0.0	0.0
12	25	15.46	14.97	49.5	0.0099	0.013	12.0	0.0	0.0
13	26	15.74	15.56	36.5	0.0049	0.013	12.0	0.0	0.0
14	27	15.69	15.56	26.0	0.0050	0.013	12.0	0.0	0.0
15	28	15.27	15.04	22.5	0.0102	0.013	12.0	0.0	0.0
16	29	17.09	15.37	34.5	0.0499	0.013	12.0	0.0	0.0
17	30	15.54	15.37	3.5	0.0486	0.013	12.0	0.0	0.0
18	31	14.26	13.84	42.0	0.0100	0.013	6.0	0.0	0.0
19	32	12.13	11.48	13.0	0.0500	0.013	12.0	0.0	0.0
20	33	19.19	19.04	14.5	0.0103	0.013	18.0	0.0	0.0
21	34	19.88	19.29	118.5	0.0050	0.013	15.0	0.0	0.0
22	35	20.28	19.98	61.0	0.0049	0.013	12.0	0.0	0.0
23	36	21.03	19.98	70.0	0.0150	0.013	12.0	0.0	0.0
24	50P	18.00	16.01	76.0	0.0262	0.013	12.0	0.0	0.0
25	56	14.76	13.76	100.5	0.0100	0.013	12.0	0.0	0.0
26	57	15.91	14.86	104.5	0.0100	0.013	12.0	0.0	0.0
27	58	13.66	12.72	93.5	0.0101	0.013	12.0	0.0	0.0
28	E1	9.60	9.00	87.0	0.0069	0.010	18.0	0.0	0.0
29	RG1	13.90	12.72	23.5	0.0502	0.013	12.0	0.0	0.0
30	RG2	12.10	11.99	22.5	0.0049	0.013	12.0	0.0	0.0

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 11T: Runoff Area=15,307 sf 88.03% Impervious Runoff Depth=4.29"
Flow Length=389' Slope=0.0264 '/' Tc=6.0 min CN=95 Runoff=1.63 cfs 5,473 cf

Subcatchment 12T: Runoff Area=13,222 sf 57.00% Impervious Runoff Depth=3.55"
Tc=6.0 min CN=88 Runoff=1.23 cfs 3,907 cf

Subcatchment 13T: Runoff Area=5,275 sf 47.03% Impervious Runoff Depth=3.25"
Tc=6.0 min CN=85 Runoff=0.46 cfs 1,428 cf

Subcatchment 14S: Runoff Area=29,032 sf 100.00% Impervious Runoff Depth=4.63"
Tc=6.0 min CN=98 Runoff=3.17 cfs 11,210 cf

Subcatchment 14T: Runoff Area=3,646 sf 77.21% Impervious Runoff Depth=4.07"
Tc=6.0 min CN=93 Runoff=0.38 cfs 1,237 cf

Subcatchment 17S: Runoff Area=19,175 sf 81.41% Impervious Runoff Depth=4.18"
Tc=6.0 min CN=94 Runoff=2.01 cfs 6,679 cf

Subcatchment 19S: Runoff Area=13,766 sf 90.03% Impervious Runoff Depth=4.40"
Tc=6.0 min CN=96 Runoff=1.48 cfs 5,051 cf

Subcatchment T2: Runoff Area=5,558 sf 47.34% Impervious Runoff Depth=3.25"
Flow Length=199' Slope=0.0111 '/' Tc=6.0 min CN=85 Runoff=0.48 cfs 1,504 cf

Subcatchment TH1: Runoff Area=5,291 sf 29.31% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=81 Runoff=0.41 cfs 1,266 cf

Subcatchment TH2: Runoff Area=15,650 sf 69.69% Impervious Runoff Depth=3.86"
Tc=6.0 min CN=91 Runoff=1.56 cfs 5,029 cf

Subcatchment TH3: Runoff Area=6,118 sf 94.31% Impervious Runoff Depth=4.52"
Tc=6.0 min CN=97 Runoff=0.66 cfs 2,303 cf

Subcatchment TH4: Runoff Area=1,834 sf 98.64% Impervious Runoff Depth=4.63"
Tc=6.0 min CN=98 Runoff=0.20 cfs 708 cf

Subcatchment TH5: Runoff Area=9,636 sf 78.63% Impervious Runoff Depth=4.07"
Tc=6.0 min CN=93 Runoff=0.99 cfs 3,268 cf

Subcatchment TH6: Runoff Area=2,877 sf 80.50% Impervious Runoff Depth=4.07"
Tc=6.0 min CN=93 Runoff=0.30 cfs 976 cf

Subcatchment TH7: Runoff Area=7,847 sf 86.94% Impervious Runoff Depth=4.29"
Tc=6.0 min CN=95 Runoff=0.83 cfs 2,806 cf

Reach AP2: Storm Drain Inflow=6.52 cfs 27,815 cf
Outflow=6.52 cfs 27,815 cf

Pond 1P: Peak Elev=15.26' Storage=2,685 cf Inflow=3.42 cfs 11,309 cf
Discarded=0.27 cfs 5,760 cf Primary=1.53 cfs 5,549 cf Outflow=1.79 cfs 11,309 cf

Pond 2P: Peak Elev=14.95' Storage=1,317 cf Inflow=1.13 cfs 3,782 cf
Discarded=0.14 cfs 3,198 cf Primary=0.31 cfs 584 cf Outflow=0.45 cfs 3,782 cf

Pond 14: Peak Elev=11.87' Inflow=5.69 cfs 25,045 cf
18.0" Round Culvert n=0.013 L=119.0' S=0.0065 '/' Outflow=5.69 cfs 25,045 cf

Pond 15: Peak Elev=13.08' Inflow=5.69 cfs 25,045 cf
15.0" Round Culvert n=0.013 L=78.5' S=0.0065 '/' Outflow=5.69 cfs 25,045 cf

Pond 16: Peak Elev=13.97' Inflow=5.37 cfs 23,808 cf
15.0" Round Culvert n=0.013 L=62.5' S=0.0066 '/' Outflow=5.37 cfs 23,808 cf

Pond 17: Peak Elev=14.13' Inflow=1.63 cfs 5,473 cf
12.0" Round Culvert n=0.013 L=7.0' S=0.0500 '/' Outflow=1.63 cfs 5,473 cf

Pond 19: Peak Elev=14.66' Inflow=4.60 cfs 16,907 cf
15.0" Round Culvert n=0.013 L=97.0' S=0.0065 '/' Outflow=4.60 cfs 16,907 cf

Pond 21: Peak Elev=14.80' Inflow=1.81 cfs 6,133 cf
12.0" Round Culvert n=0.013 L=62.0' S=0.0097 '/' Outflow=1.81 cfs 6,133 cf

Pond 22: Peak Elev=15.53' Inflow=3.42 cfs 11,309 cf
18.0" Round Culvert n=0.013 L=5.0' S=0.0100 '/' Outflow=3.42 cfs 11,309 cf

Pond 23: Peak Elev=15.69' Inflow=0.99 cfs 3,268 cf
12.0" Round Culvert n=0.013 L=6.0' S=0.0050 '/' Outflow=0.99 cfs 3,268 cf

Pond 24: Peak Elev=15.65' Inflow=0.20 cfs 708 cf
12.0" Round Culvert n=0.013 L=64.0' S=0.0050 '/' Outflow=0.20 cfs 708 cf

Pond 25: Peak Elev=16.34' Inflow=2.22 cfs 7,332 cf
12.0" Round Culvert n=0.013 L=49.5' S=0.0099 '/' Outflow=2.22 cfs 7,332 cf

Pond 26: Peak Elev=16.44' Inflow=0.66 cfs 2,303 cf
12.0" Round Culvert n=0.013 L=36.5' S=0.0049 '/' Outflow=0.66 cfs 2,303 cf

Pond 27: Peak Elev=16.59' Inflow=1.56 cfs 5,029 cf
12.0" Round Culvert n=0.013 L=26.0' S=0.0050 '/' Outflow=1.56 cfs 5,029 cf

Pond 28: Peak Elev=15.87' Inflow=1.13 cfs 3,782 cf
12.0" Round Culvert n=0.013 L=22.5' S=0.0102 '/' Outflow=1.13 cfs 3,782 cf

Pond 29: Peak Elev=17.36' Inflow=0.30 cfs 976 cf
12.0" Round Culvert n=0.013 L=34.5' S=0.0499 '/' Outflow=0.30 cfs 976 cf

Pond 30: Peak Elev=16.08' Inflow=0.83 cfs 2,806 cf
12.0" Round Culvert n=0.013 L=3.5' S=0.0486 '/' Outflow=0.83 cfs 2,806 cf

Pond 31: Peak Elev=14.93' Inflow=0.31 cfs 584 cf
6.0" Round Culvert n=0.013 L=42.0' S=0.0100 '/' Outflow=0.31 cfs 584 cf

Pond 32: Peak Elev=13.10' Inflow=0.38 cfs 1,237 cf
12.0" Round Culvert n=0.013 L=13.0' S=0.0500 '/' Outflow=0.38 cfs 1,237 cf

Pond 33: Peak Elev=20.75' Inflow=6.66 cfs 22,940 cf
18.0" Round Culvert n=0.013 L=14.5' S=0.0103 '/' Outflow=6.66 cfs 22,940 cf

Pond 34: Peak Elev=21.30' Inflow=3.49 cfs 11,730 cf
15.0" Round Culvert n=0.013 L=118.5' S=0.0050 '/' Outflow=3.49 cfs 11,730 cf

Pond 35: Peak Elev=21.48' Inflow=1.48 cfs 5,051 cf
12.0" Round Culvert n=0.013 L=61.0' S=0.0049 '/' Outflow=1.48 cfs 5,051 cf

Pond 36: Peak Elev=21.94' Inflow=2.01 cfs 6,679 cf
12.0" Round Culvert n=0.013 L=70.0' S=0.0150 '/' Outflow=2.01 cfs 6,679 cf

Pond 50P: Peak Elev=19.04' Storage=0.104 af Inflow=6.66 cfs 22,940 cf
Discarded=0.82 cfs 16,073 cf Primary=2.78 cfs 6,867 cf Outflow=3.60 cfs 22,940 cf

Pond 56: Peak Elev=16.44' Inflow=2.78 cfs 6,867 cf
12.0" Round Culvert n=0.013 L=100.5' S=0.0100 '/' Outflow=2.78 cfs 6,867 cf

Pond 57: Peak Elev=17.36' Inflow=2.78 cfs 6,867 cf
12.0" Round Culvert n=0.013 L=104.5' S=0.0100 '/' Outflow=2.78 cfs 6,867 cf

Pond 58: Peak Elev=15.52' Inflow=2.78 cfs 6,867 cf
12.0" Round Culvert n=0.013 L=93.5' S=0.0101 '/' Outflow=2.78 cfs 6,867 cf

Pond E1: Peak Elev=10.94' Inflow=6.52 cfs 27,815 cf
18.0" Round Culvert n=0.010 L=87.0' S=0.0069 '/' Outflow=6.52 cfs 27,815 cf

Pond RG1: Rain Garden #1 Peak Elev=19.30' Storage=1,139 cf Inflow=1.23 cfs 3,907 cf
Outflow=0.46 cfs 3,907 cf

Pond RG2: Rain Garden #2 Peak Elev=16.13' Storage=458 cf Inflow=0.46 cfs 1,428 cf
Outflow=0.13 cfs 1,428 cf

Total Runoff Area = 154,234 sf Runoff Volume = 52,845 cf Average Runoff Depth = 4.11"
20.43% Pervious = 31,507 sf 79.57% Impervious = 122,727 sf

Summary for Subcatchment 11T:

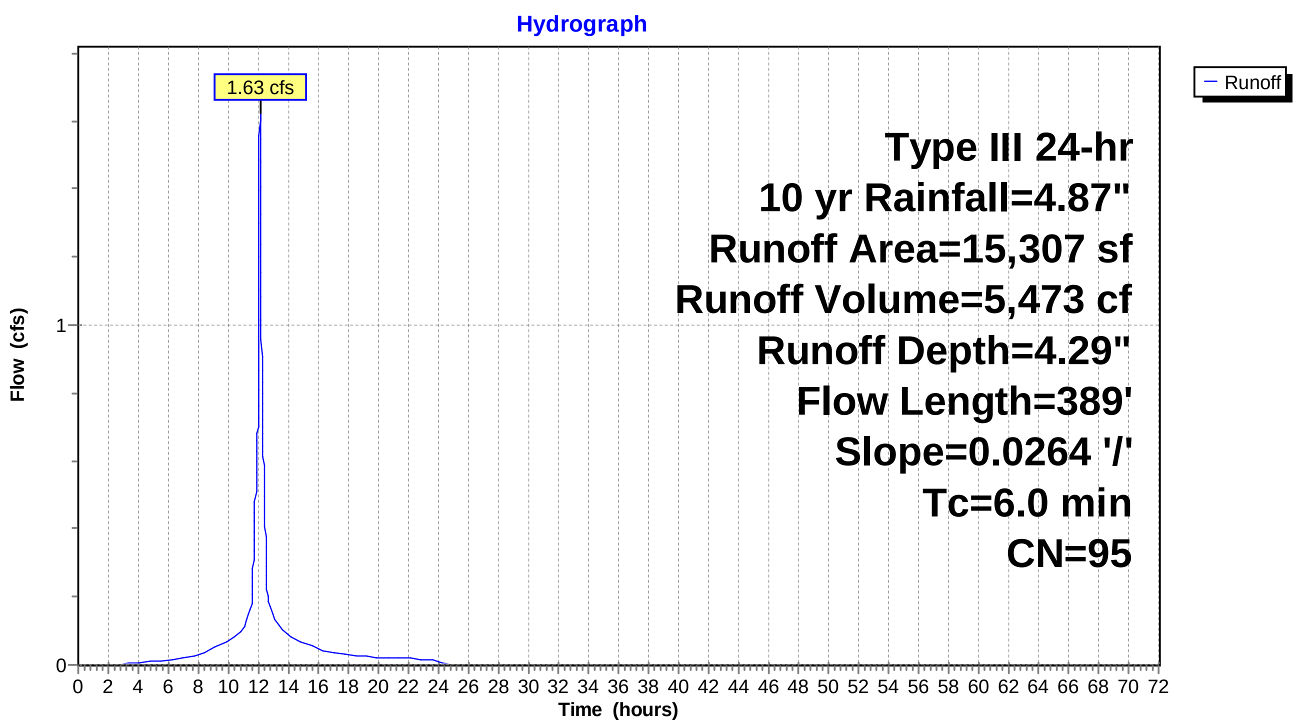
Runoff = 1.63 cfs @ 12.08 hrs, Volume= 5,473 cf, Depth= 4.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

	Area (sf)	CN	Description
	6,479	98	Paved parking, HSG C
*	0	100	S18 Below
	3,164	98	Paved parking, HSG C
	1,152	74	>75% Grass cover, Good, HSG C
*	0	100	TH8 Below
	3,832	98	Paved parking, HSG C
	680	74	>75% Grass cover, Good, HSG C
	15,307	95	Weighted Average
	1,832		11.97% Pervious Area
	13,475		88.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	389	0.0264	3.30		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.0					**Direct Entry,**
6.0	389	Total			

Subcatchment 11T:



Summary for Subcatchment 12T:

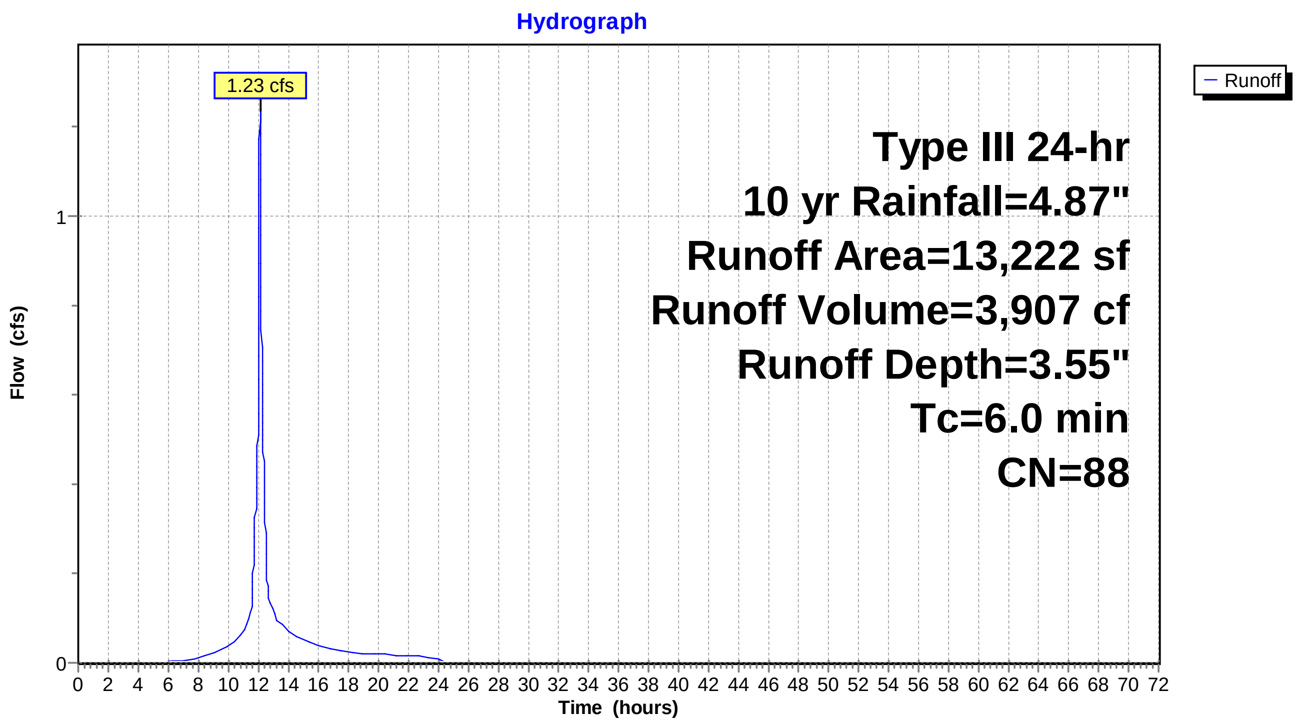
Runoff = 1.23 cfs @ 12.09 hrs, Volume= 3,907 cf, Depth= 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
7,536	98	Paved parking, HSG C
5,686	74	>75% Grass cover, Good, HSG C
13,222	88	Weighted Average
5,686		43.00% Pervious Area
7,536		57.00% Impervious Area

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

Subcatchment 12T:



Summary for Subcatchment 13T:

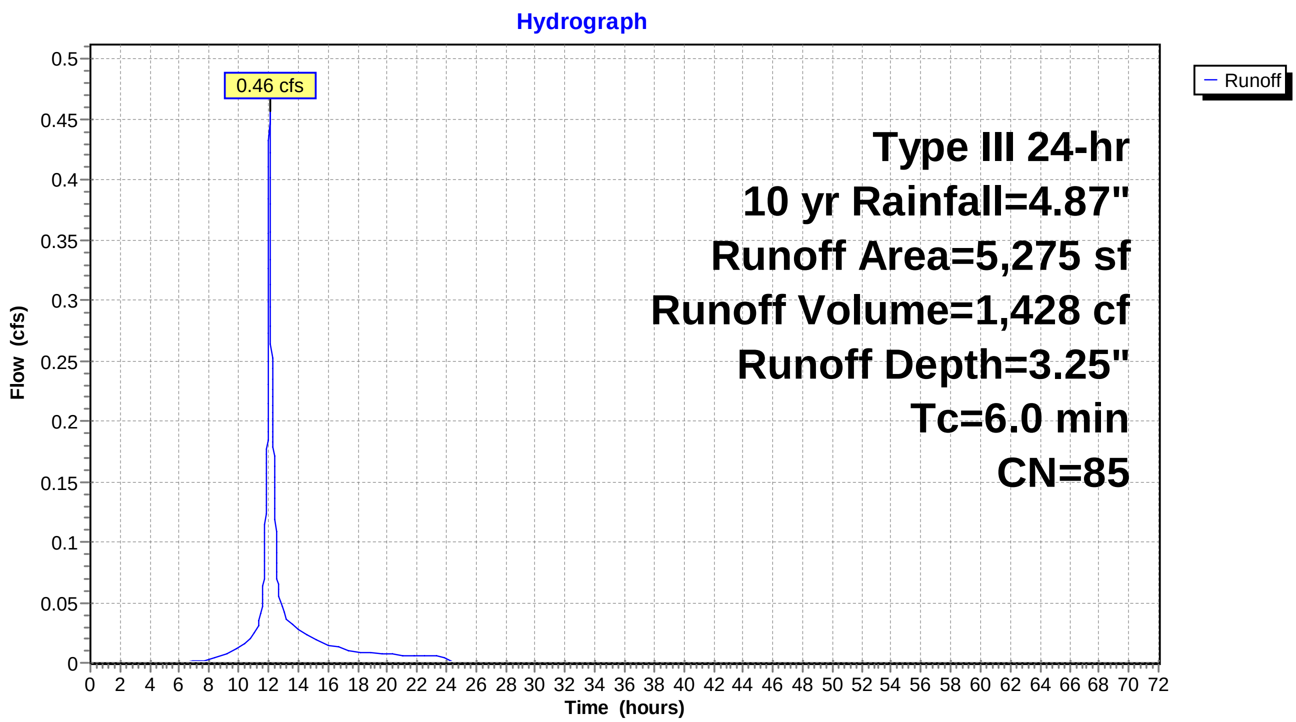
Runoff = 0.46 cfs @ 12.09 hrs, Volume= 1,428 cf, Depth= 3.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
2,481	98	Paved parking, HSG C
2,794	74	>75% Grass cover, Good, HSG C
5,275	85	Weighted Average
2,794		52.97% Pervious Area
2,481		47.03% Impervious Area

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

Subcatchment 13T:



Summary for Subcatchment 14S:

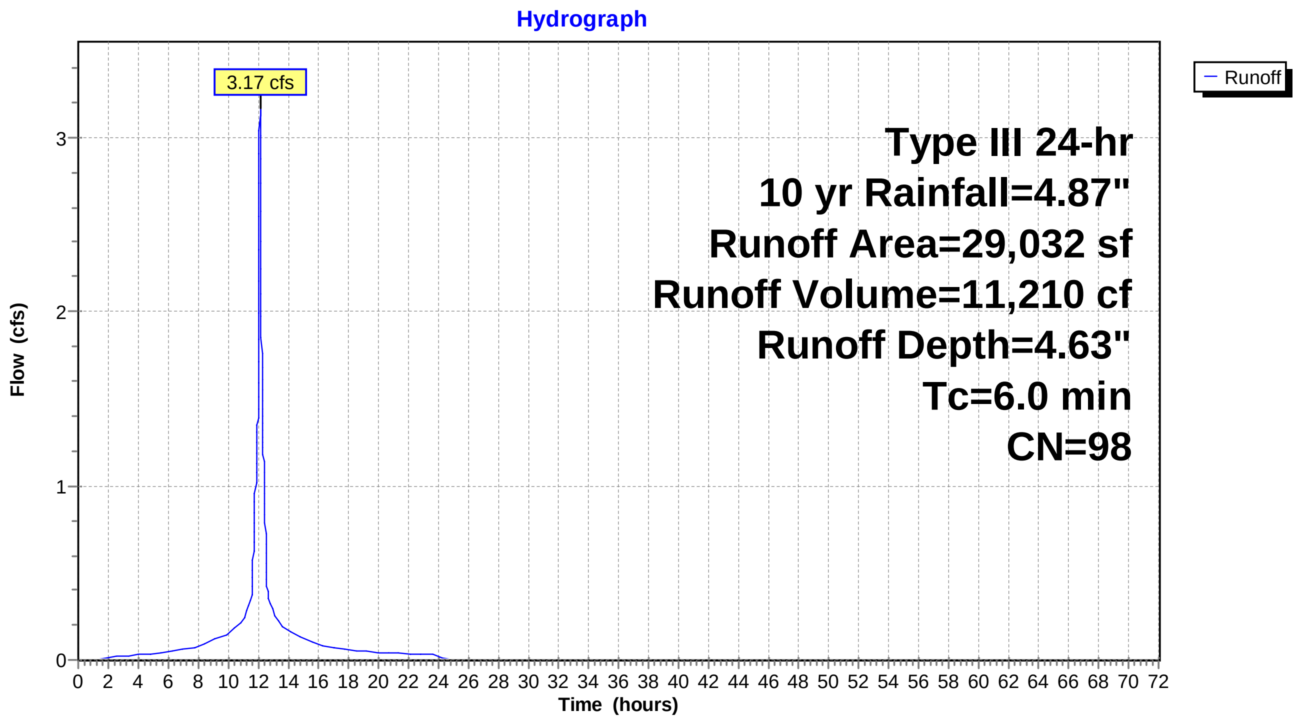
Runoff = 3.17 cfs @ 12.08 hrs, Volume= 11,210 cf, Depth= 4.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
0	74	>75% Grass cover, Good, HSG C
29,032	98	Roofs, HSG C
29,032	98	Weighted Average
29,032		100.00% Impervious Area

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

Subcatchment 14S:



Summary for Subcatchment 14T:

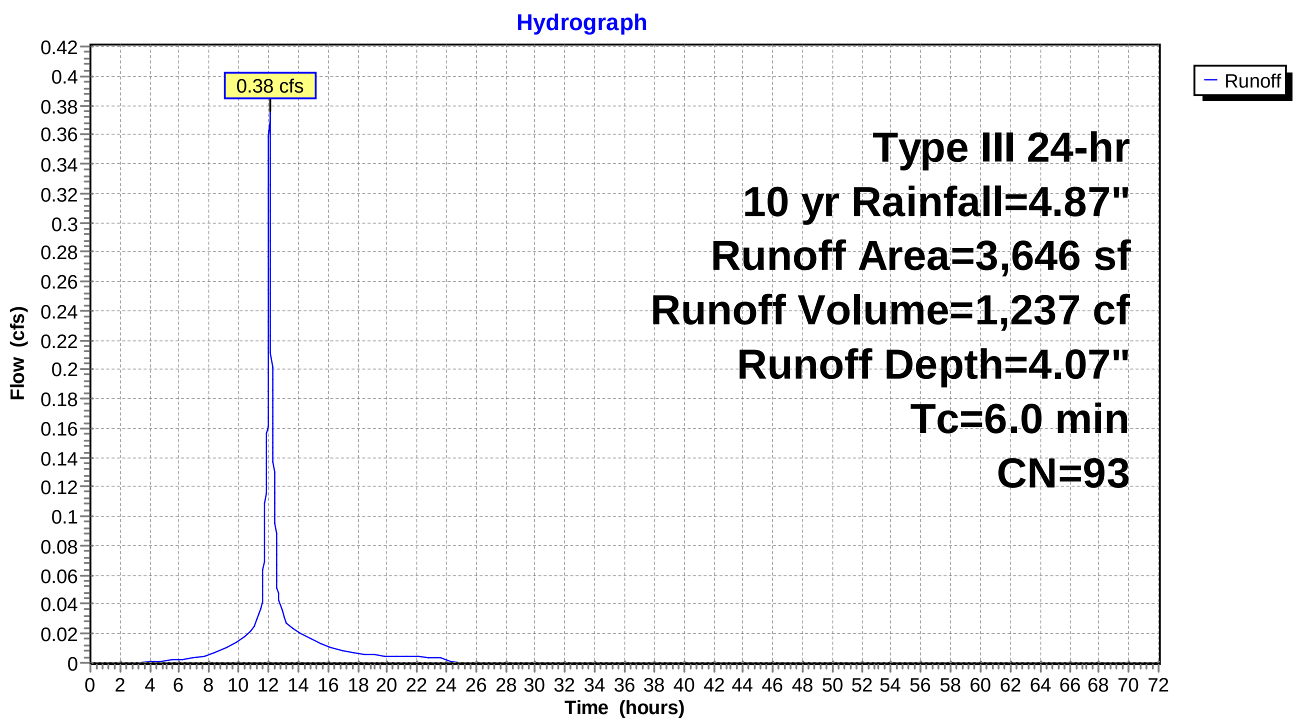
Runoff = 0.38 cfs @ 12.08 hrs, Volume= 1,237 cf, Depth= 4.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

	Area (sf)	CN	Description
	491	74	>75% Grass cover, Good, HSG C
	1,111	98	Paved parking, HSG C
*	0	100	TH9 Below
	340	74	>75% Grass cover, Good, HSG C
	1,704	98	Paved parking, HSG C
	3,646	93	Weighted Average
	831		22.79% Pervious Area
	2,815		77.21% Impervious Area

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

Subcatchment 14T:



Summary for Subcatchment 17S:

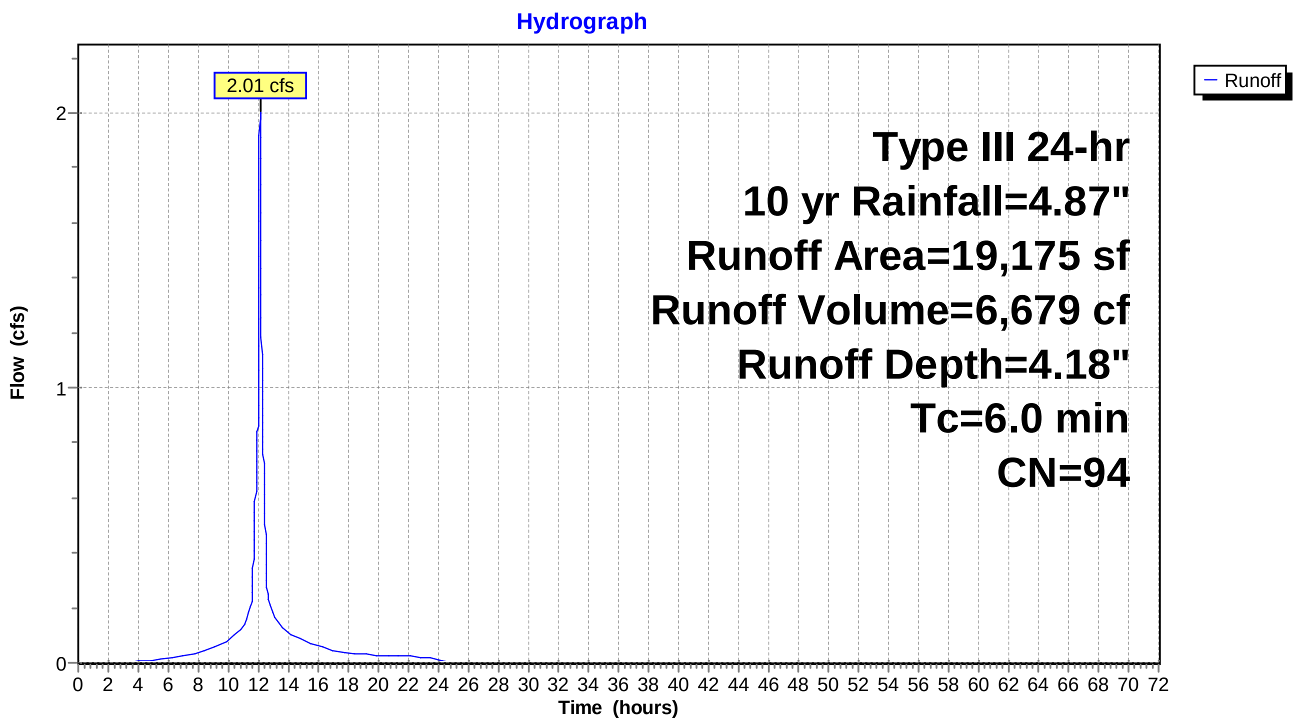
Runoff = 2.01 cfs @ 12.08 hrs, Volume= 6,679 cf, Depth= 4.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
3,564	74	>75% Grass cover, Good, HSG C
15,611	98	Paved parking, HSG C
19,175	94	Weighted Average
3,564		18.59% Pervious Area
15,611		81.41% Impervious Area

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

Subcatchment 17S:



Summary for Subcatchment 19S:

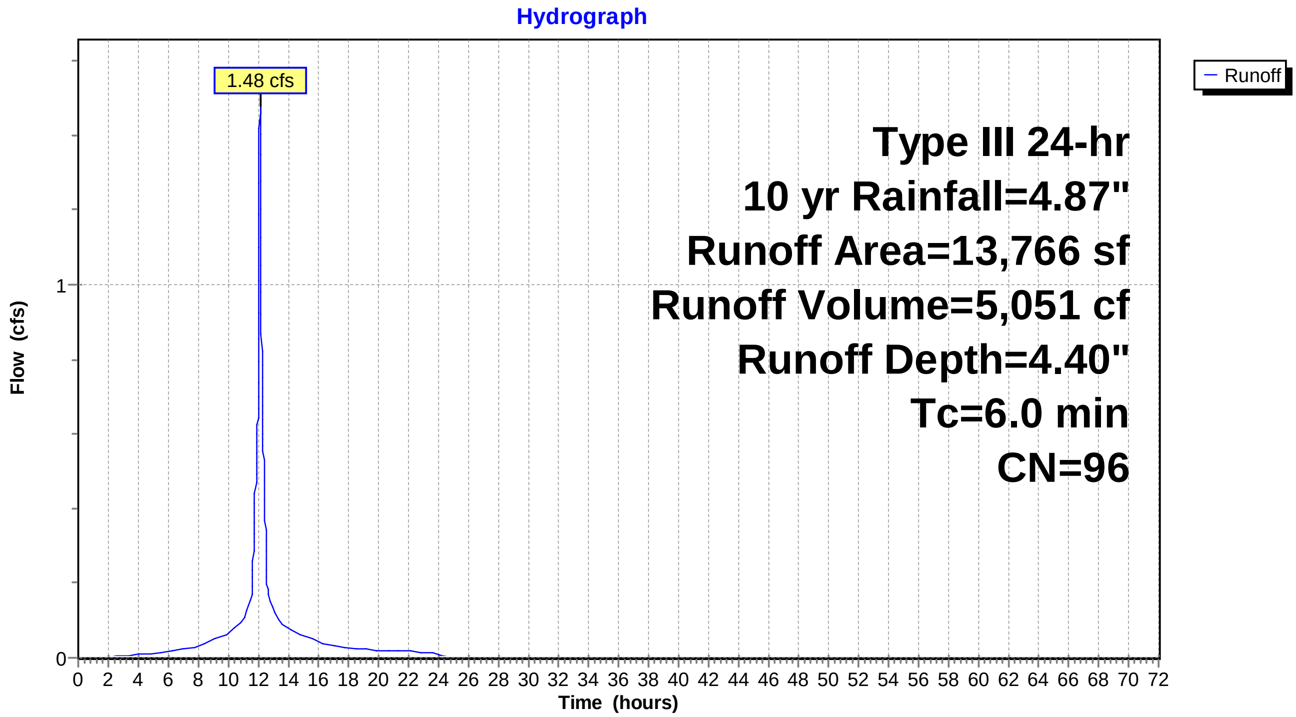
Runoff = 1.48 cfs @ 12.08 hrs, Volume= 5,051 cf, Depth= 4.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
1,372	74	>75% Grass cover, Good, HSG C
12,394	98	Paved parking, HSG C
13,766	96	Weighted Average
1,372		9.97% Pervious Area
12,394		90.03% Impervious Area

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

Subcatchment 19S:



Summary for Subcatchment T2:

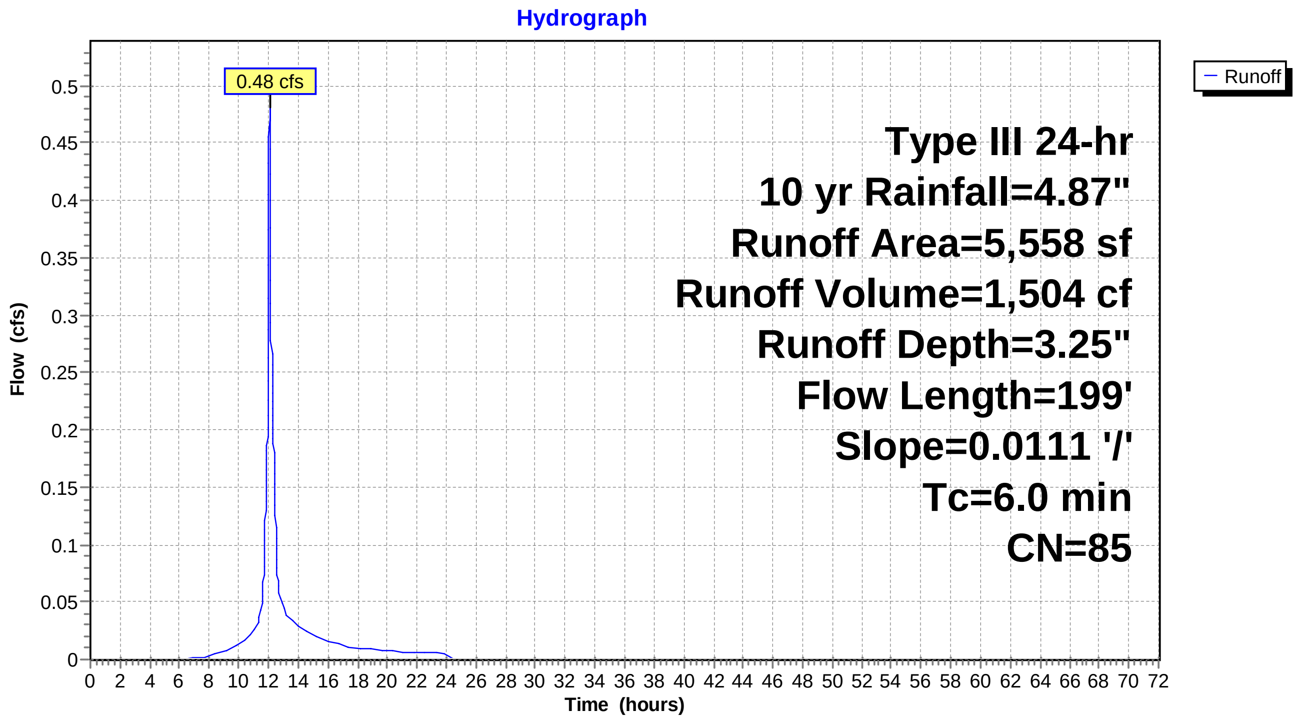
Runoff = 0.48 cfs @ 12.09 hrs, Volume= 1,504 cf, Depth= 3.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
2,631	98	Paved parking, HSG C
2,927	74	>75% Grass cover, Good, HSG C
5,558	85	Weighted Average
2,927		52.66% Pervious Area
2,631		47.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	199	0.0111	2.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.4					**Direct Entry,**
6.0	199	Total			

Subcatchment T2:



Summary for Subcatchment TH1:

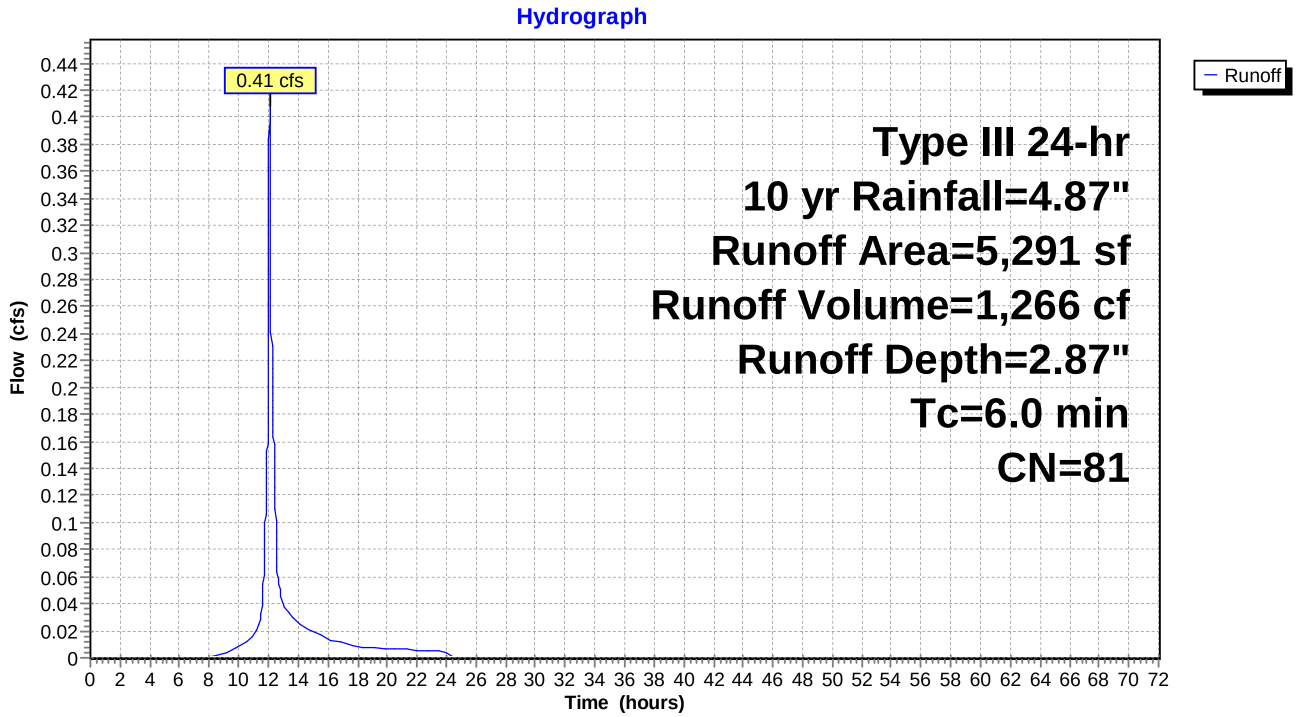
Runoff = 0.41 cfs @ 12.09 hrs, Volume= 1,266 cf, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
3,740	74	>75% Grass cover, Good, HSG C
1,551	98	Paved parking, HSG C
5,291	81	Weighted Average
3,740		70.69% Pervious Area
1,551		29.31% Impervious Area

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

Subcatchment TH1:



Summary for Subcatchment TH2:

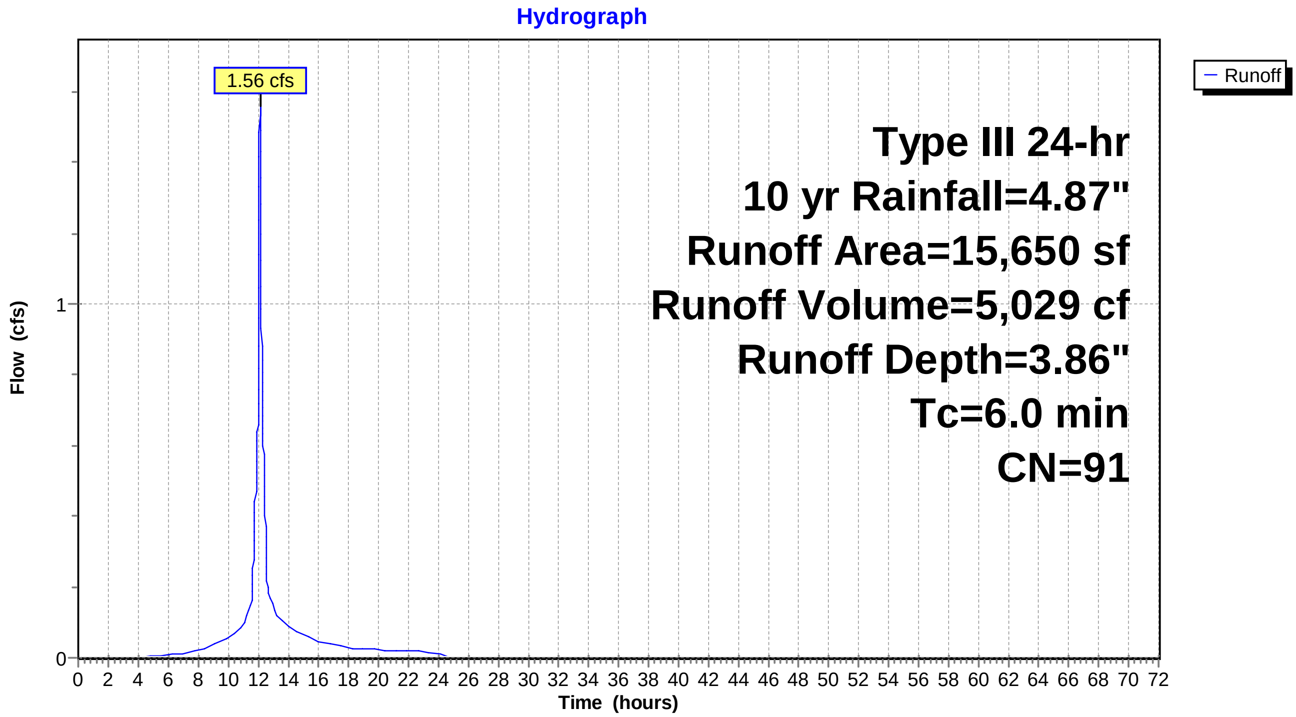
Runoff = 1.56 cfs @ 12.08 hrs, Volume= 5,029 cf, Depth= 3.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
4,743	74	>75% Grass cover, Good, HSG C
10,907	98	Paved parking, HSG C
15,650	91	Weighted Average
4,743		30.31% Pervious Area
10,907		69.69% Impervious Area

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

Subcatchment TH2:



Summary for Subcatchment TH3:

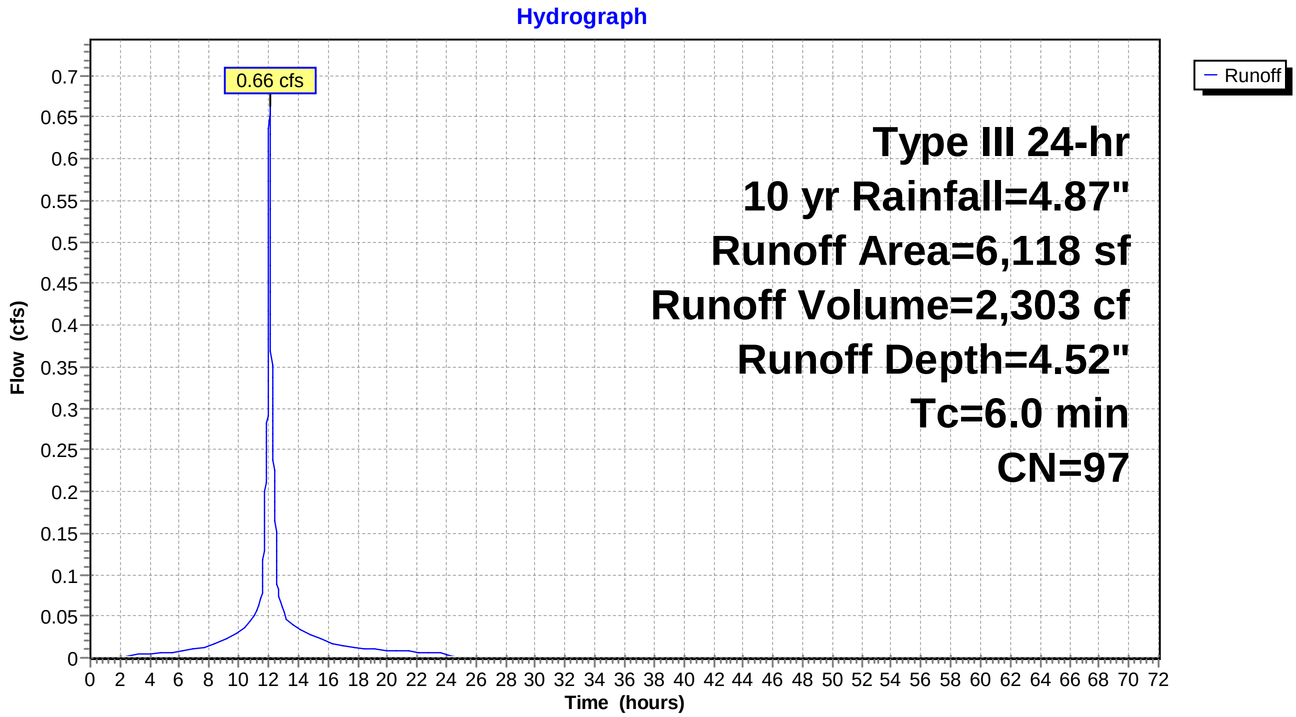
Runoff = 0.66 cfs @ 12.08 hrs, Volume= 2,303 cf, Depth= 4.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
348	74	>75% Grass cover, Good, HSG C
5,770	98	Paved parking, HSG C
6,118	97	Weighted Average
348		5.69% Pervious Area
5,770		94.31% Impervious Area

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

Subcatchment TH3:



Summary for Subcatchment TH4:

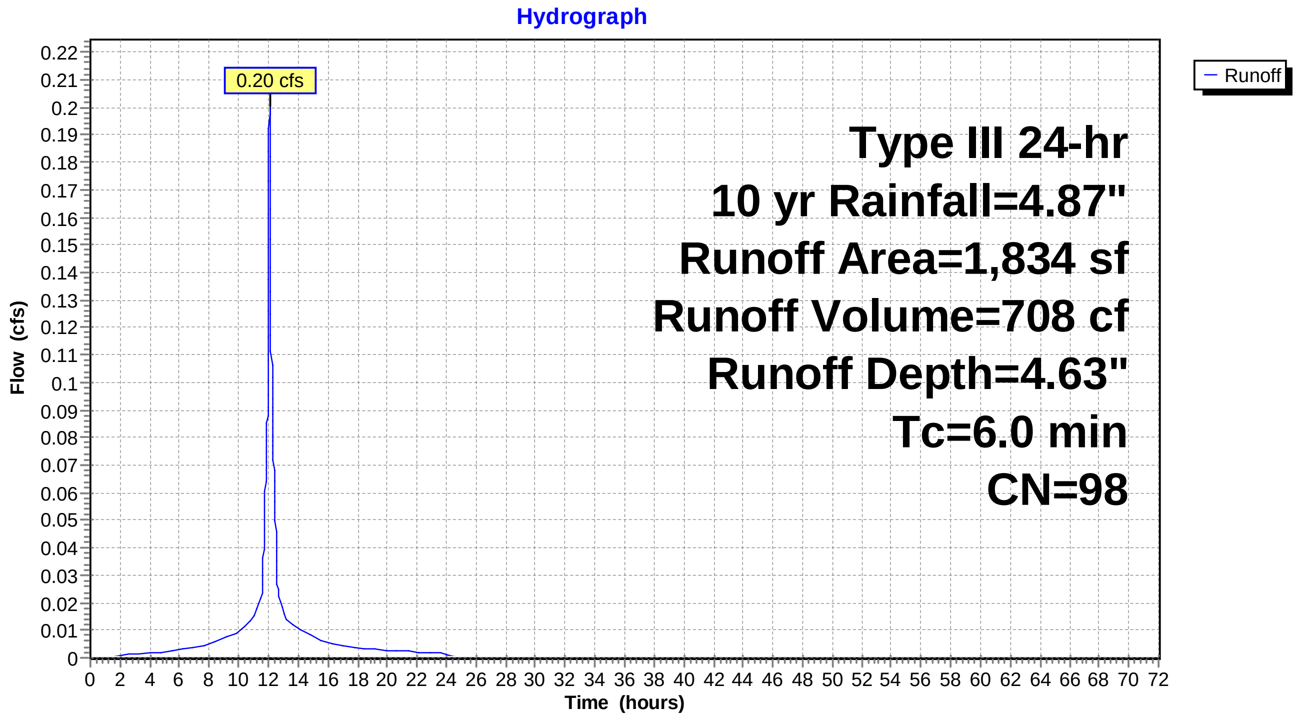
Runoff = 0.20 cfs @ 12.08 hrs, Volume= 708 cf, Depth= 4.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
25	74	>75% Grass cover, Good, HSG C
1,809	98	Paved parking, HSG C
1,834	98	Weighted Average
25		1.36% Pervious Area
1,809		98.64% Impervious Area

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

Subcatchment TH4:



Summary for Subcatchment TH5:

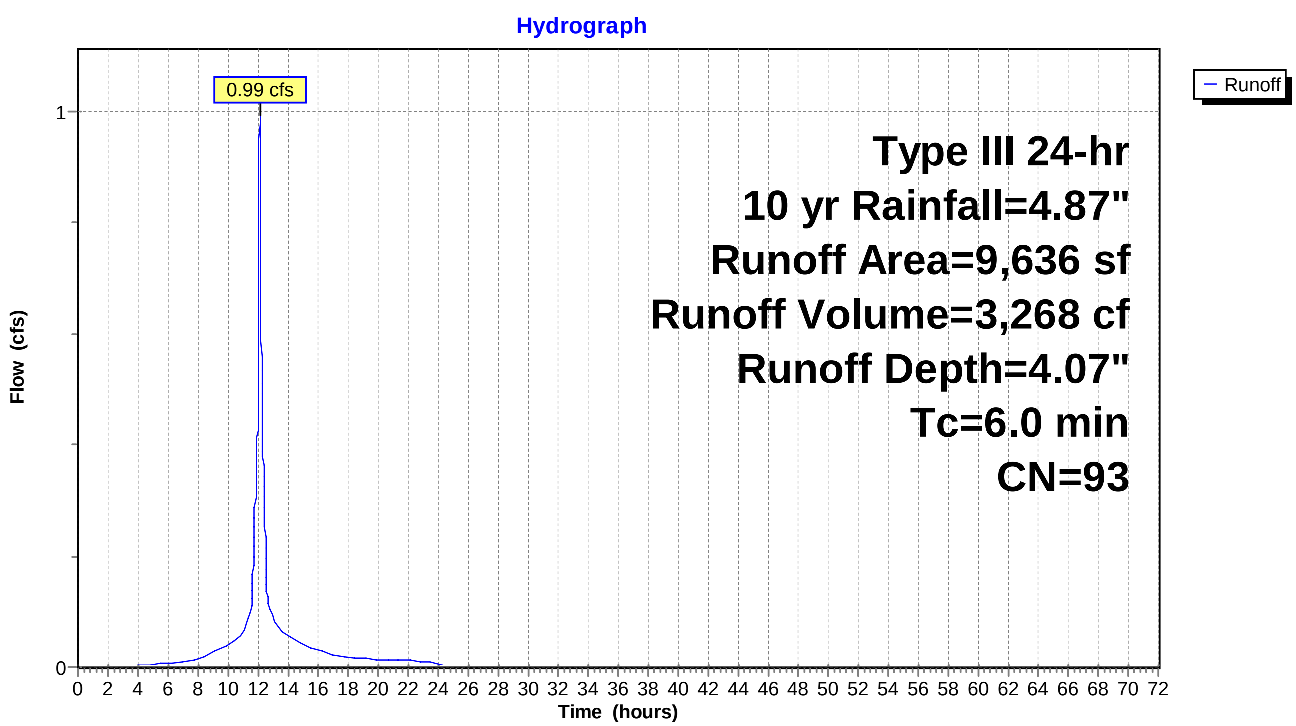
Runoff = 0.99 cfs @ 12.08 hrs, Volume= 3,268 cf, Depth= 4.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
2,059	74	>75% Grass cover, Good, HSG C
7,577	98	Paved parking, HSG C
9,636	93	Weighted Average
2,059		21.37% Pervious Area
7,577		78.63% Impervious Area

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

Subcatchment TH5:



Summary for Subcatchment TH6:

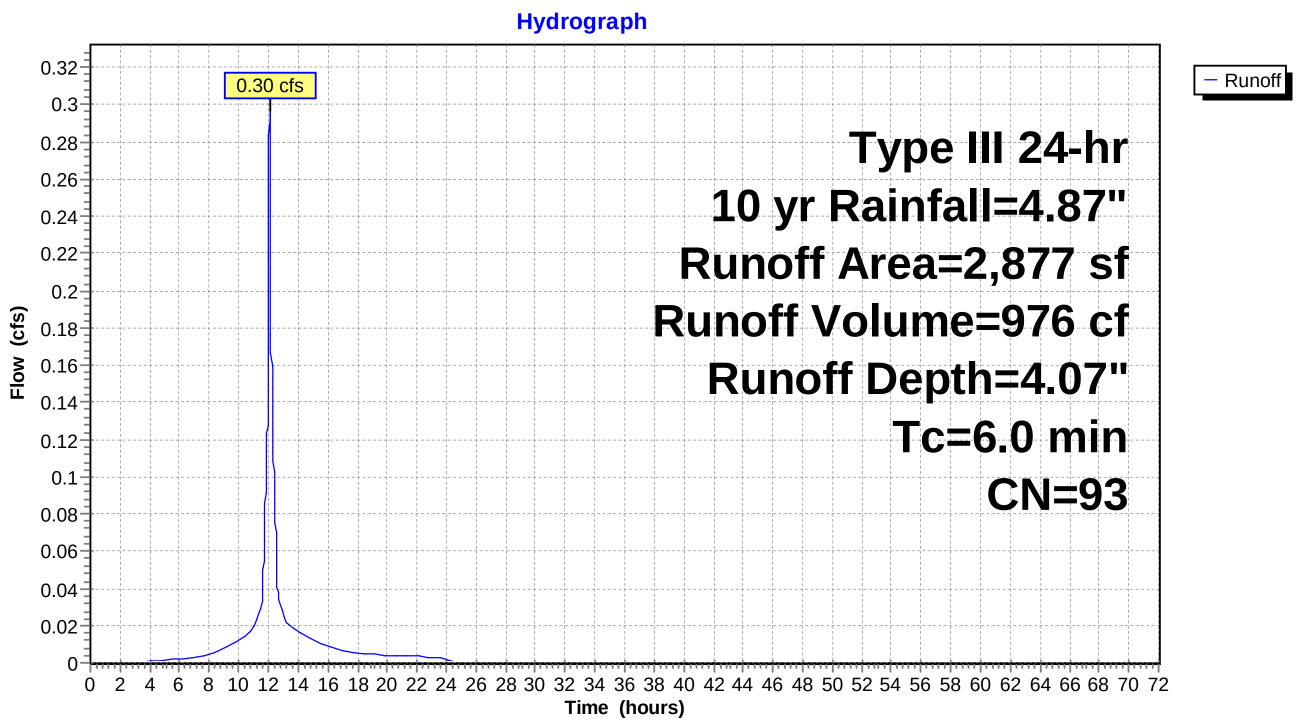
Runoff = 0.30 cfs @ 12.08 hrs, Volume= 976 cf, Depth= 4.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
561	74	>75% Grass cover, Good, HSG C
2,316	98	Paved parking, HSG C
2,877	93	Weighted Average
561		19.50% Pervious Area
2,316		80.50% Impervious Area

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

Subcatchment TH6:



Summary for Subcatchment TH7:

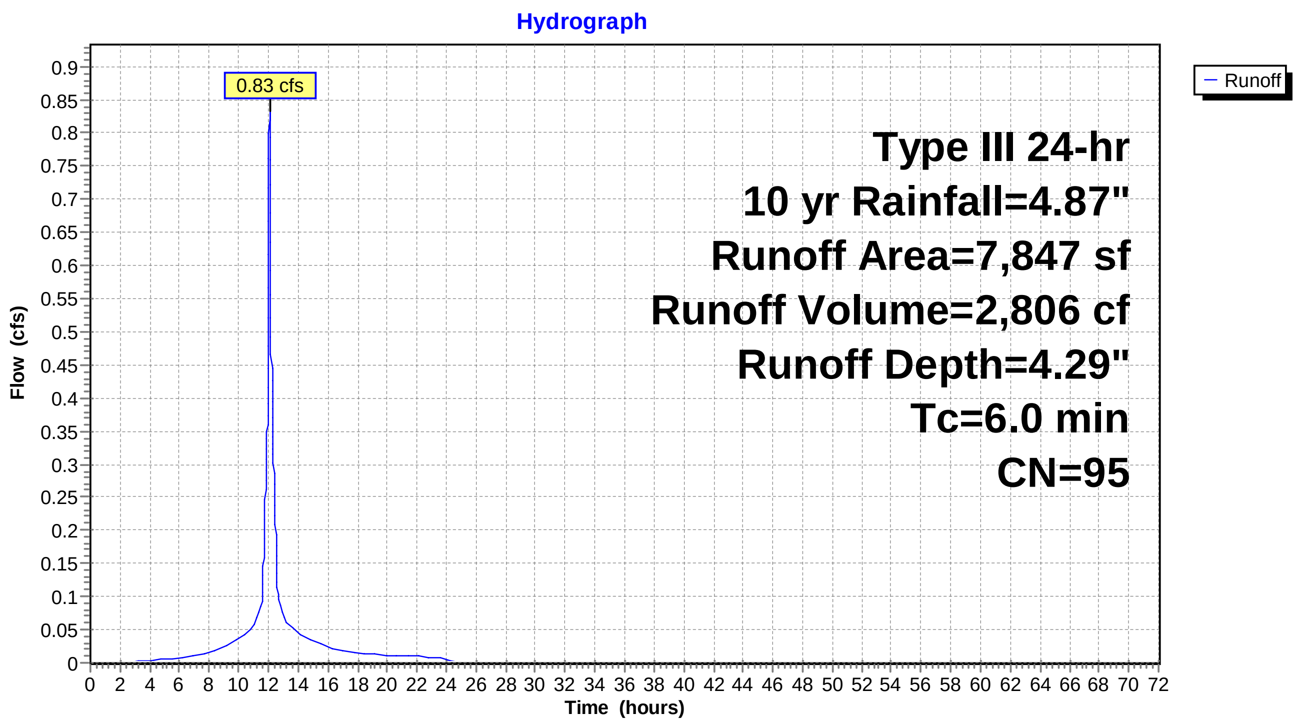
Runoff = 0.83 cfs @ 12.08 hrs, Volume= 2,806 cf, Depth= 4.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.87"

Area (sf)	CN	Description
1,025	74	>75% Grass cover, Good, HSG C
6,822	98	Paved parking, HSG C
7,847	95	Weighted Average
1,025		13.06% Pervious Area
6,822		86.94% Impervious Area

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

Subcatchment TH7:

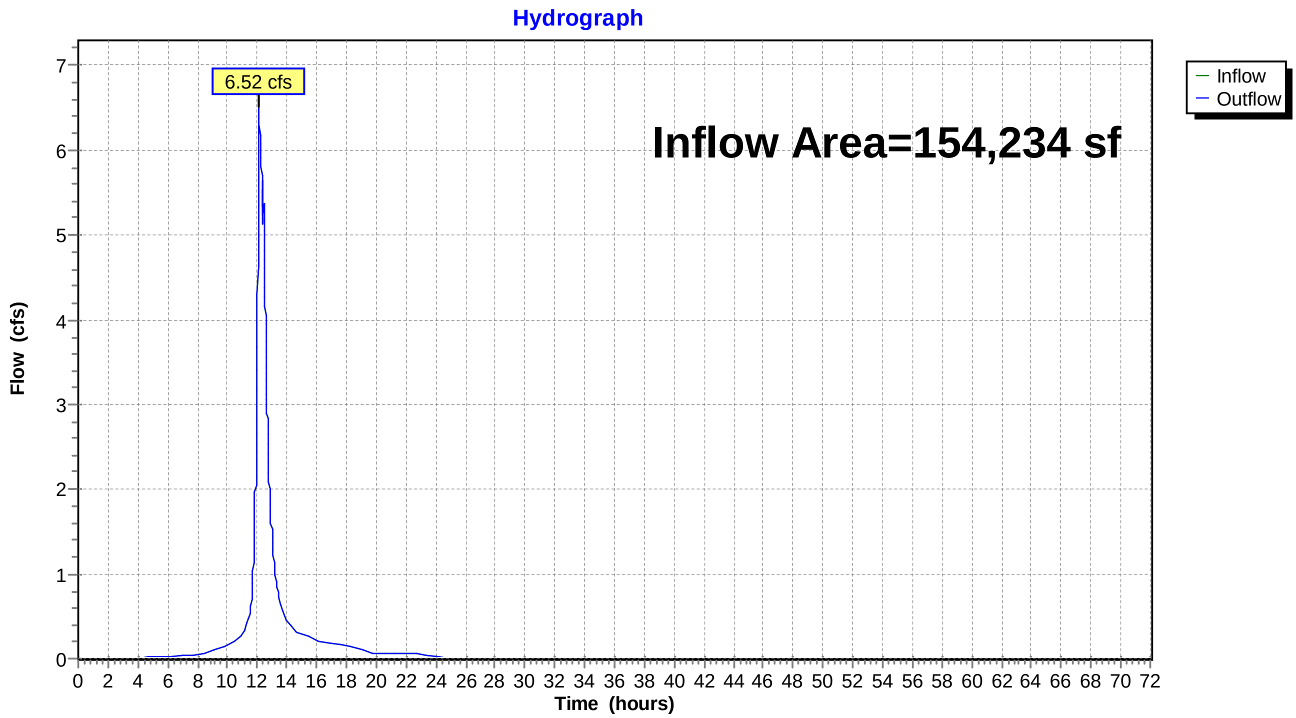


Summary for Reach AP2: Storm Drain

Inflow Area = 154,234 sf, 79.57% Impervious, Inflow Depth = 2.16" for 10 yr event
Inflow = 6.52 cfs @ 12.11 hrs, Volume= 27,815 cf
Outflow = 6.52 cfs @ 12.11 hrs, Volume= 27,815 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3

Reach AP2: Storm Drain



Summary for Pond 1P:

Inflow Area = 33,238 sf, 78.41% Impervious, Inflow Depth = 4.08" for 10 yr event
Inflow = 3.42 cfs @ 12.08 hrs, Volume= 11,309 cf
Outflow = 1.79 cfs @ 12.41 hrs, Volume= 11,309 cf, Atten= 47%, Lag= 19.6 min
Discarded = 0.27 cfs @ 12.28 hrs, Volume= 5,760 cf
Primary = 1.53 cfs @ 12.41 hrs, Volume= 5,549 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 15.26' @ 12.28 hrs Surf.Area= 2,249 sf Storage= 2,685 cf

Plug-Flow detention time= 42.7 min calculated for 11,307 cf (100% of inflow)
Center-of-Mass det. time= 42.7 min (819.1 - 776.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	13.50'	2,495 cf	**25.25'W x 89.06'L x 4.00'H Field A** 8,995 cf Overall - 2,756 cf Embedded = 6,238 cf x 40.0% Voids
#2A	14.00'	2,756 cf	**ADS_StormTech SC-740 +Cap** x 60 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 5 Rows of 12 Chambers
		5,252 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	13.50'	**0.600 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 13.26' Phase-In= 0.01'
#2	Primary	14.00'	**8.0" Round Culvert** L= 9.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.00' / 13.67' S= 0.0347 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Discarded OutFlow Max=0.27 cfs @ 12.28 hrs HW=15.26' (Free Discharge)
↑**1=Exfiltration** (Controls 0.27 cfs)

Primary OutFlow Max=1.49 cfs @ 12.41 hrs HW=15.18' TW=14.40' (Dynamic Tailwater)
↑**2=Culvert** (Inlet Controls 1.49 cfs @ 4.26 fps)

Pond 1P: - Chamber Wizard Field A

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

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

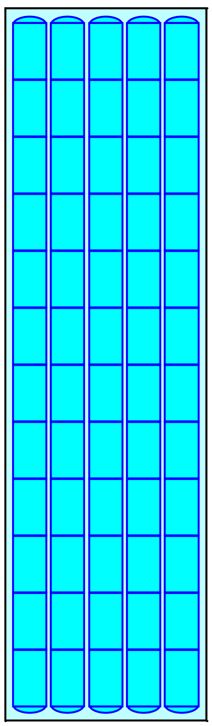
12 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 87.06' Row Length +12.0" End Stone x 2 = 89.06' Base Length
5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width
6.0" Base + 30.0" Chamber Height + 12.0" Cover = 4.00' Field Height

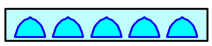
60 Chambers x 45.9 cf = 2,756.4 cf Chamber Storage

8,994.7 cf Field - 2,756.4 cf Chambers = 6,238.3 cf Stone x 40.0% Voids = 2,495.3 cf Stone Storage

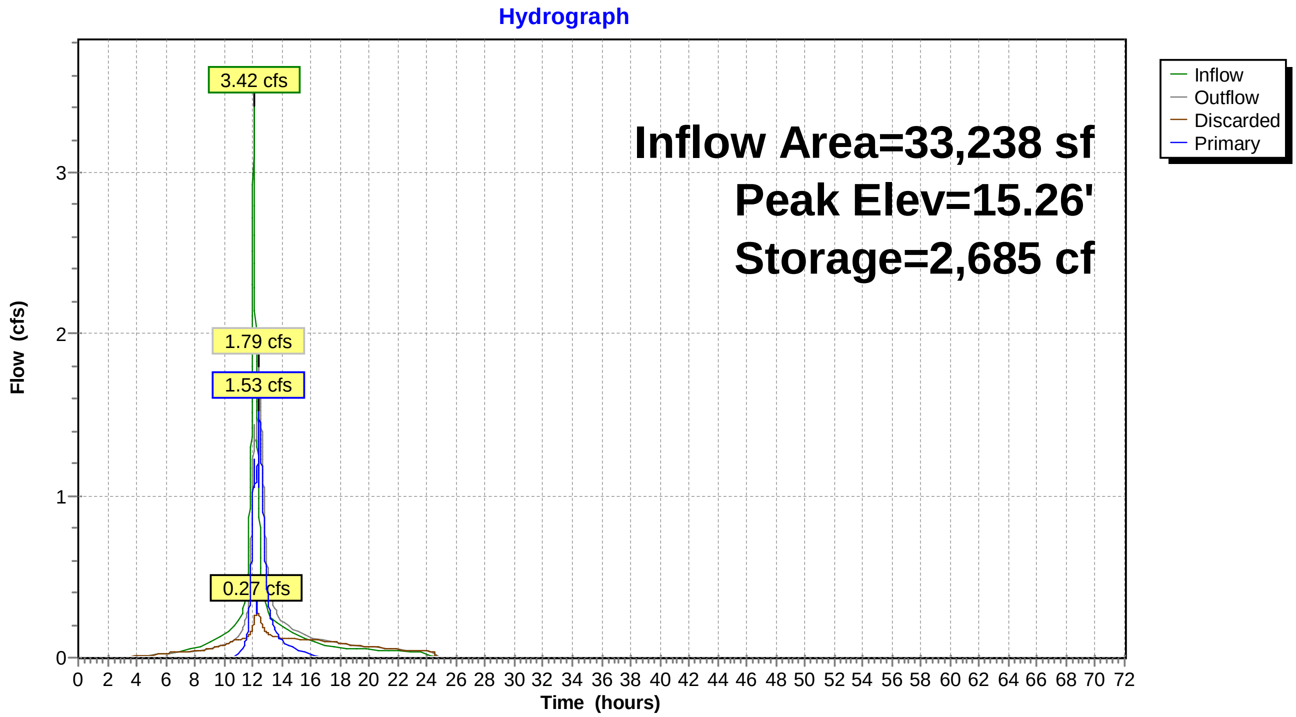
Chamber Storage + Stone Storage = 5,251.7 cf = 0.121 af
Overall Storage Efficiency = 58.4%
Overall System Size = 89.06' x 25.25' x 4.00'

60 Chambers
333.1 cy Field
231.0 cy Stone





Pond 1P:


Hydrograph
3.42 cfs
1.79 cfs
1.53 cfs
0.27 cfs
Inflow Area=33,238 sf
Peak Elev=15.26'
Storage=2,685 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0
1
2
3
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72

Summary for Pond 2P:

Inflow Area = 10,724 sf, 85.21% Impervious, Inflow Depth = 4.23" for 10 yr event
Inflow = 1.13 cfs @ 12.08 hrs, Volume= 3,782 cf
Outflow = 0.45 cfs @ 12.39 hrs, Volume= 3,782 cf, Atten= 60%, Lag= 18.4 min
Discarded = 0.14 cfs @ 12.36 hrs, Volume= 3,198 cf
Primary = 0.31 cfs @ 12.39 hrs, Volume= 584 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 14.95' @ 12.36 hrs Surf.Area= 1,388 sf Storage= 1,317 cf

Plug-Flow detention time= 77.5 min calculated for 3,781 cf (100% of inflow)
Center-of-Mass det. time= 77.5 min (849.1 - 771.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	13.50'	1,281 cf	**20.50'W x 67.70'L x 3.50'H Field A** 4,857 cf Overall - 1,654 cf Embedded = 3,203 cf x 40.0% Voids
#2A	14.00'	1,654 cf	**ADS_StormTech SC-740 +Cap** x 36 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 4 Rows of 9 Chambers
		2,935 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	13.50'	**0.600 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 13.26' Phase-In= 0.01'
#2	Primary	14.50'	**6.0" Round Culvert** L= 22.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.50' / 14.36' S= 0.0062 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.14 cfs @ 12.36 hrs HW=14.95' (Free Discharge)
1=Exfiltration (Controls 0.14 cfs)

Primary OutFlow Max=0.29 cfs @ 12.39 hrs HW=14.94' TW=14.74' (Dynamic Tailwater)
2=Culvert (Outlet Controls 0.29 cfs @ 2.10 fps)

Pond 2P: - Chamber Wizard Field A

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

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

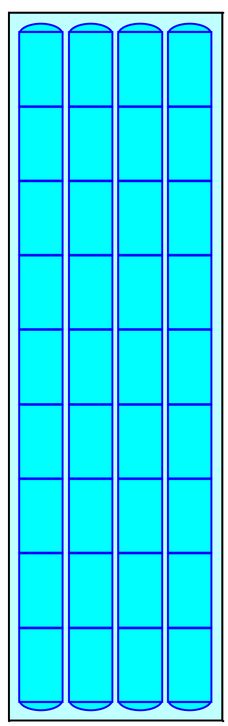
9 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 65.70' Row Length +12.0" End Stone x 2 = 67.70' Base Length
4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

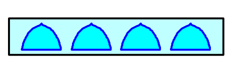
36 Chambers x 45.9 cf = 1,653.8 cf Chamber Storage

4,857.2 cf Field - 1,653.8 cf Chambers = 3,203.4 cf Stone x 40.0% Voids = 1,281.4 cf Stone Storage

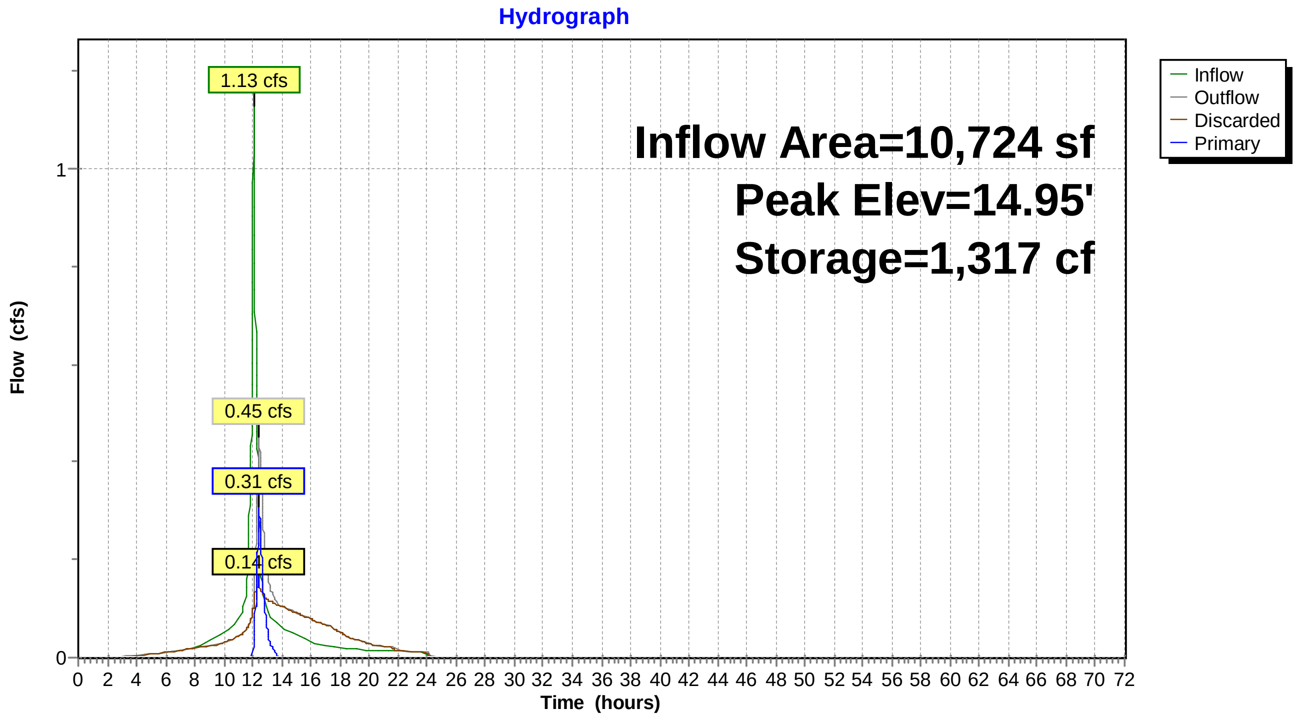
Chamber Storage + Stone Storage = 2,935.2 cf = 0.067 af
Overall Storage Efficiency = 60.4%
Overall System Size = 67.70' x 20.50' x 3.50'

36 Chambers
179.9 cy Field
118.6 cy Stone





Pond 2P:


Hydrograph
1.13 cfs
0.45 cfs
0.31 cfs
0.14 cfs
Inflow Area=10,724 sf
Peak Elev=14.95'
Storage=1,317 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
1
0
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Summary for Pond 14:

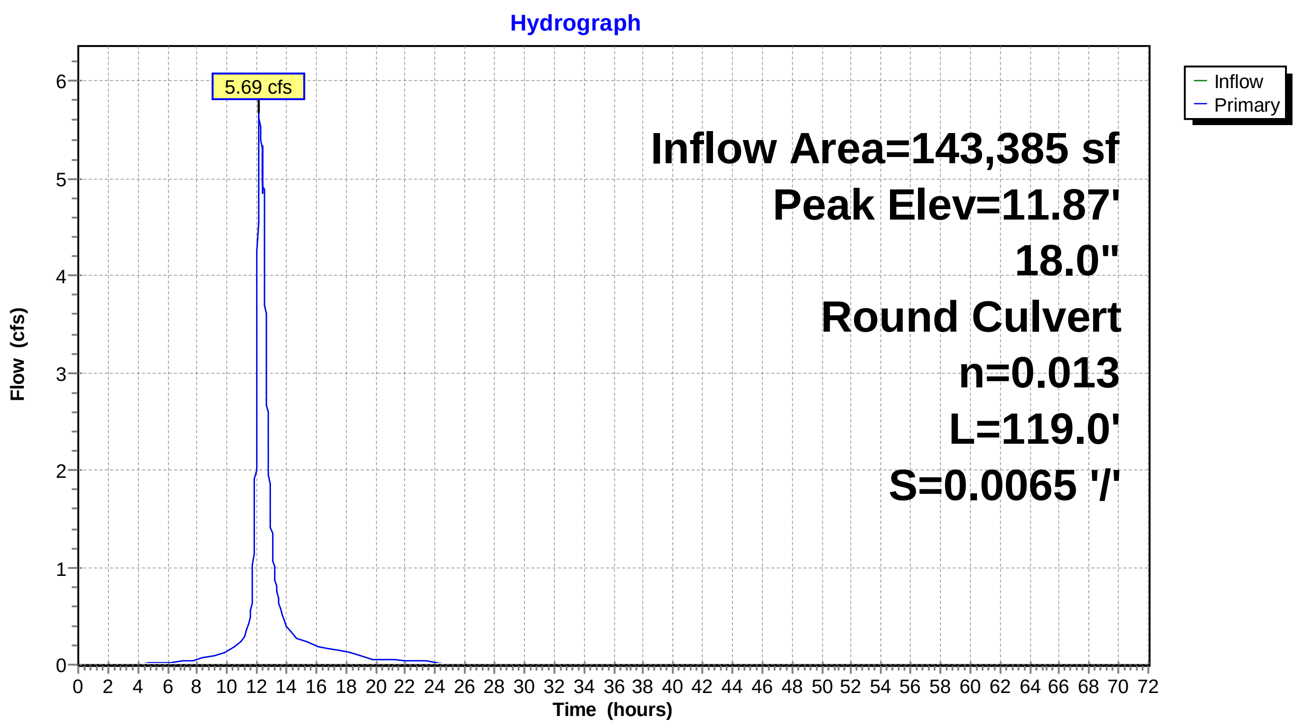
Inflow Area =	143,385 sf,	82.68% Impervious,	Inflow Depth = 2.10"	for 10 yr event
Inflow =	5.69 cfs @	12.13 hrs, Volume=	25,045 cf	
Outflow =	5.69 cfs @	12.13 hrs, Volume=	25,045 cf, Atten= 0%, Lag= 0.0 min	
Primary =	5.69 cfs @	12.13 hrs, Volume=	25,045 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 11.87' @ 12.13 hrs
Flood Elev= 14.93'

Device	Routing	Invert	Outlet Devices
#1	Primary	10.47'	**18.0" Round Culvert** L= 119.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.47' / 9.70' S= 0.0065 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.69 cfs @ 12.13 hrs HW=11.87' TW=10.94' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 5.69 cfs @ 4.31 fps)

Pond 14:



Summary for Pond 15:

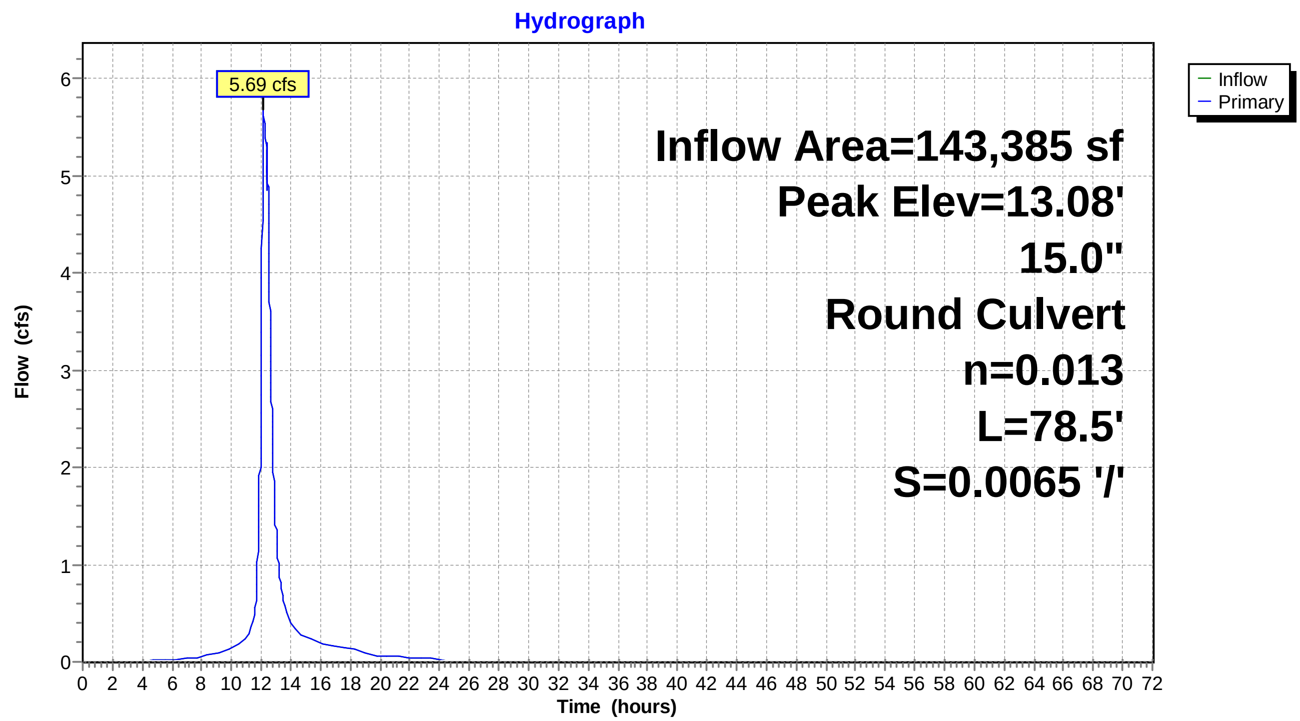
Inflow Area = 143,385 sf, 82.68% Impervious, Inflow Depth = 2.10" for 10 yr event
Inflow = 5.69 cfs @ 12.13 hrs, Volume= 25,045 cf
Outflow = 5.69 cfs @ 12.13 hrs, Volume= 25,045 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.69 cfs @ 12.13 hrs, Volume= 25,045 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 13.08' @ 12.13 hrs
Flood Elev= 17.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.23'	**15.0" Round Culvert** L= 78.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 11.23' / 10.72' S= 0.0065 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=5.68 cfs @ 12.13 hrs HW=13.08' TW=11.87' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 5.68 cfs @ 4.63 fps)

Pond 15:



Summary for Pond 16:

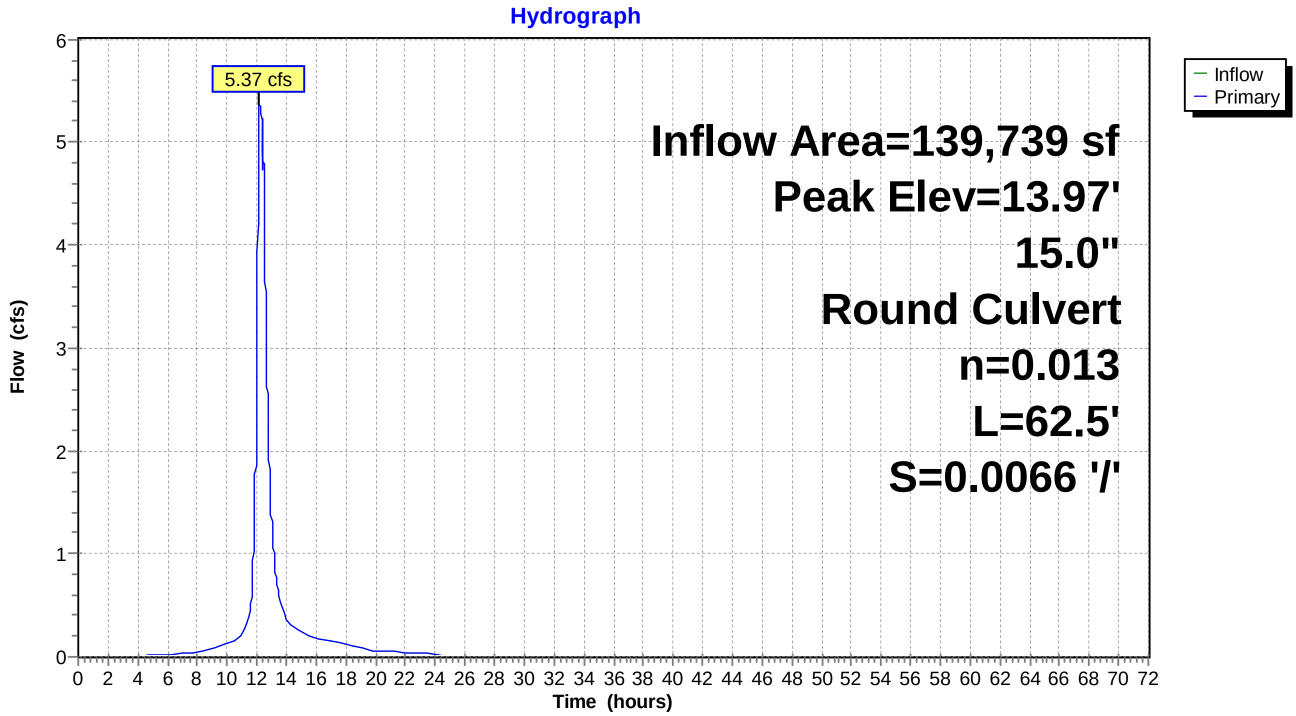
Inflow Area = 139,739 sf, 82.82% Impervious, Inflow Depth = 2.04" for 10 yr event
Inflow = 5.37 cfs @ 12.15 hrs, Volume= 23,808 cf
Outflow = 5.37 cfs @ 12.15 hrs, Volume= 23,808 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.37 cfs @ 12.15 hrs, Volume= 23,808 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 13.97' @ 12.13 hrs
Flood Elev= 19.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.74'	**15.0" Round Culvert** L= 62.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 11.74' / 11.33' S= 0.0066 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=5.40 cfs @ 12.15 hrs HW=13.96' TW=13.07' (Dynamic Tailwater)
1=Culvert (Outlet Controls 5.40 cfs @ 4.40 fps)

Pond 16:



Summary for Pond 17:

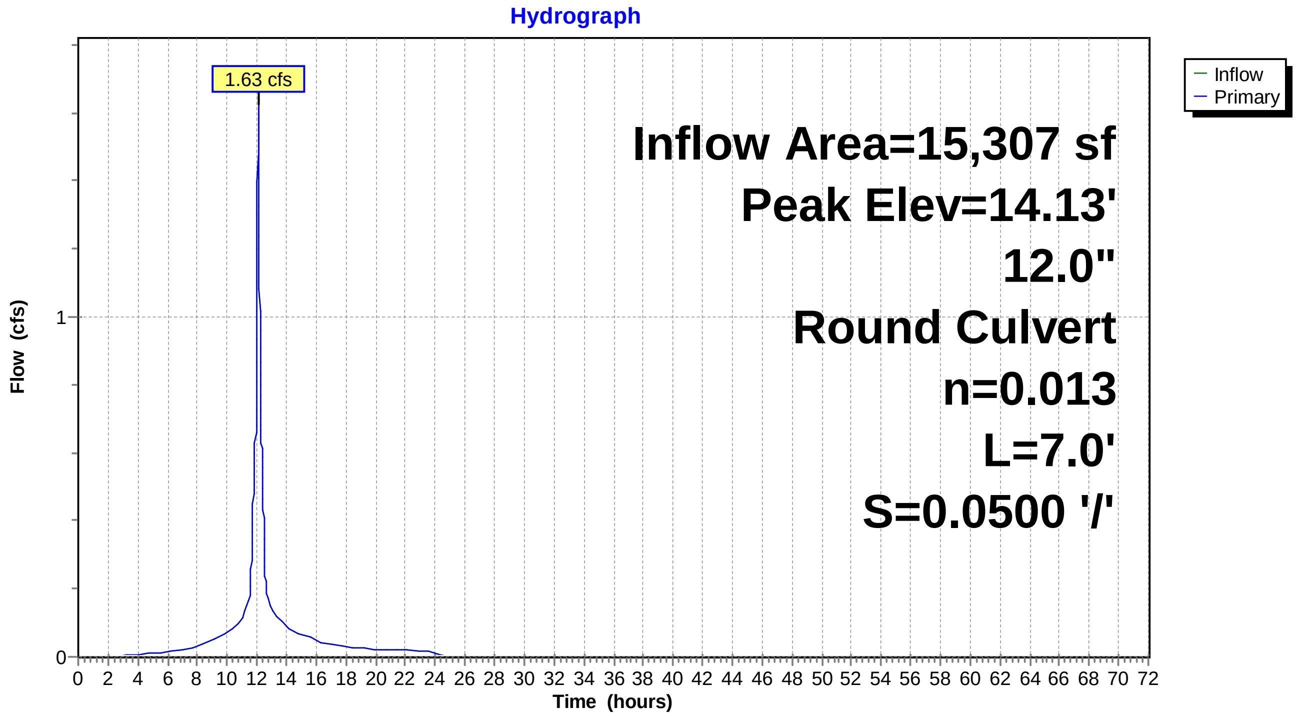
Inflow Area = 15,307 sf, 88.03% Impervious, Inflow Depth = 4.29" for 10 yr event
Inflow = 1.63 cfs @ 12.08 hrs, Volume= 5,473 cf
Outflow = 1.63 cfs @ 12.08 hrs, Volume= 5,473 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.63 cfs @ 12.08 hrs, Volume= 5,473 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 14.13' @ 12.11 hrs
Flood Elev= 18.97'

Device	Routing	Invert	Outlet Devices
#1	Primary	12.34'	**12.0" Round Culvert** L= 7.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 12.34' / 11.99' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.65 cfs @ 12.08 hrs HW=13.96' TW=13.77' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.65 cfs @ 2.10 fps)

Pond 17:



Summary for Pond 19:

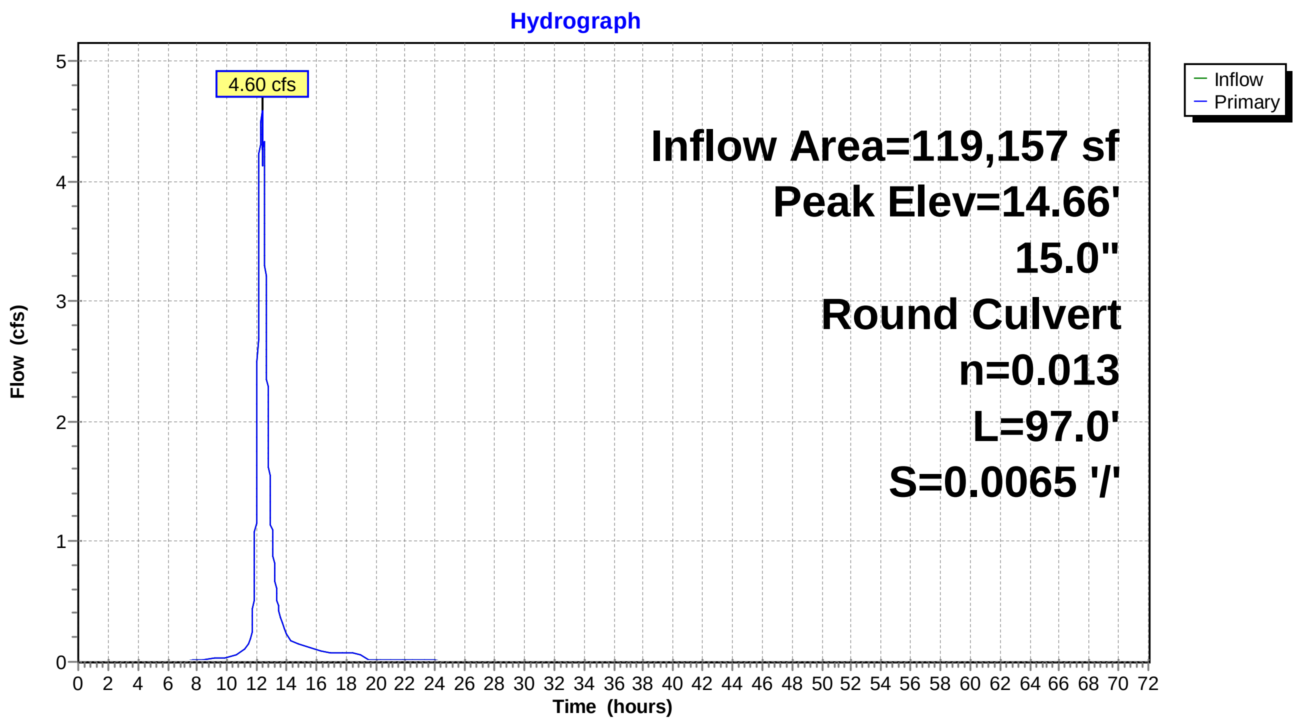
Inflow Area =	119,157 sf, 83.73% Impervious,	Inflow Depth = 1.70"	for 10 yr event
Inflow =	4.60 cfs @ 12.37 hrs, Volume=	16,907 cf	
Outflow =	4.60 cfs @ 12.37 hrs, Volume=	16,907 cf, Atten= 0%, Lag= 0.0 min	
Primary =	4.60 cfs @ 12.37 hrs, Volume=	16,907 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 14.66' @ 12.23 hrs
Flood Elev= 21.59'

Device	Routing	Invert	Outlet Devices
#1	Primary	12.47'	**15.0" Round Culvert** L= 97.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 12.47' / 11.84' S= 0.0065 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.02 cfs @ 12.37 hrs HW=14.42' TW=13.80' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 4.02 cfs @ 3.28 fps)

Pond 19:



Summary for Pond 21:

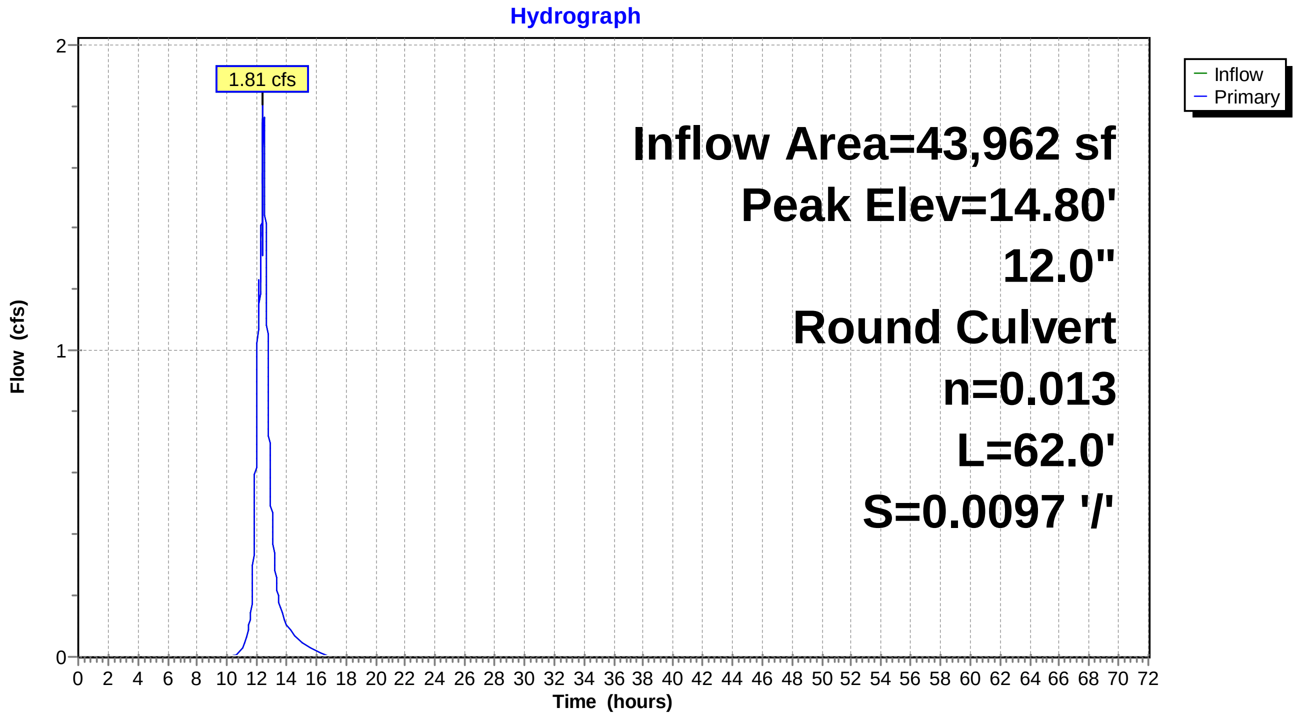
Inflow Area =	43,962 sf, 80.07% Impervious,	Inflow Depth = 1.67"	for 10 yr event
Inflow =	1.81 cfs @ 12.41 hrs, Volume=	6,133 cf	
Outflow =	1.81 cfs @ 12.41 hrs, Volume=	6,133 cf, Atten= 0%, Lag= 0.0 min	
Primary =	1.81 cfs @ 12.41 hrs, Volume=	6,133 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 14.80' @ 12.25 hrs
Flood Elev= 19.93'

Device	Routing	Invert	Outlet Devices
#1	Primary	13.34'	**12.0" Round Culvert** L= 62.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.34' / 12.74' S= 0.0097 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.44 cfs @ 12.41 hrs HW=14.40' TW=14.19' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.44 cfs @ 2.15 fps)

Pond 21:



Summary for Pond 22:

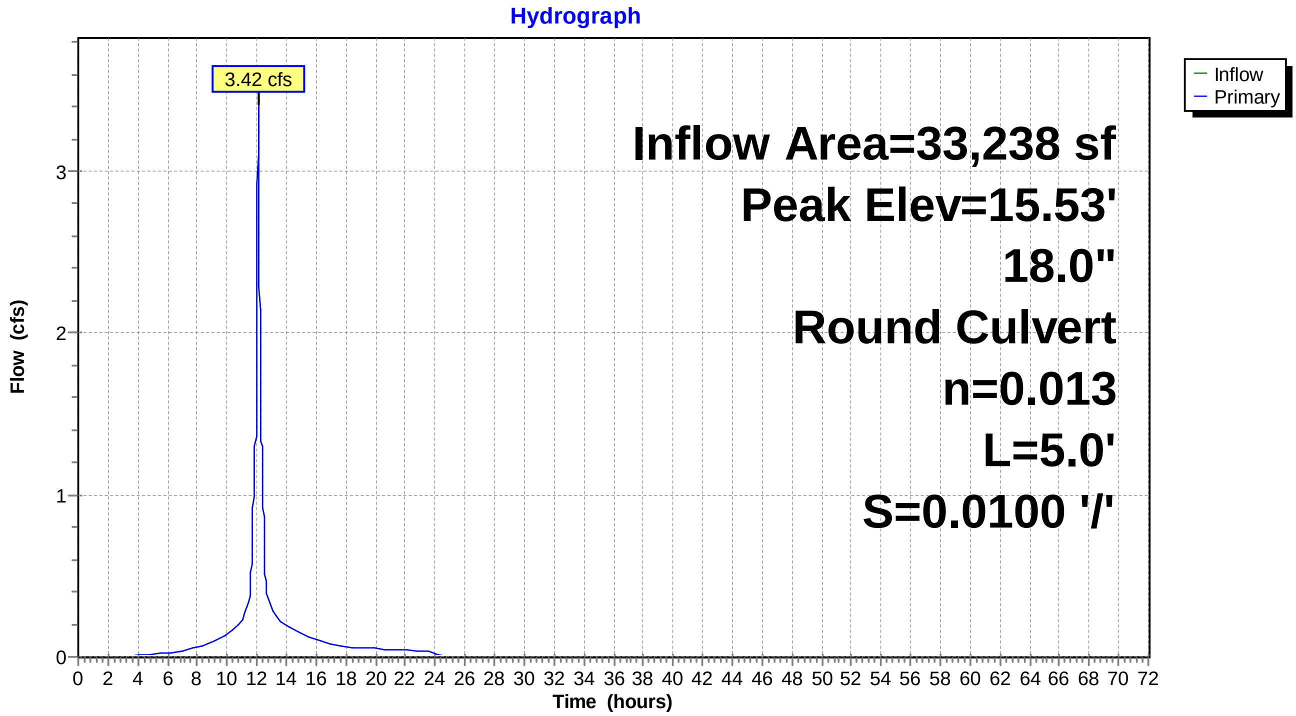
Inflow Area = 33,238 sf, 78.41% Impervious, Inflow Depth = 4.08" for 10 yr event
Inflow = 3.42 cfs @ 12.08 hrs, Volume= 11,309 cf
Outflow = 3.42 cfs @ 12.08 hrs, Volume= 11,309 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.42 cfs @ 12.08 hrs, Volume= 11,309 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 15.53' @ 12.08 hrs
Flood Elev= 19.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.47'	**18.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.47' / 14.42' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.41 cfs @ 12.08 hrs HW=15.53' TW=14.88' (Dynamic Tailwater)
1=Culvert (Barrel Controls 3.41 cfs @ 3.58 fps)

Pond 22:



Summary for Pond 23:

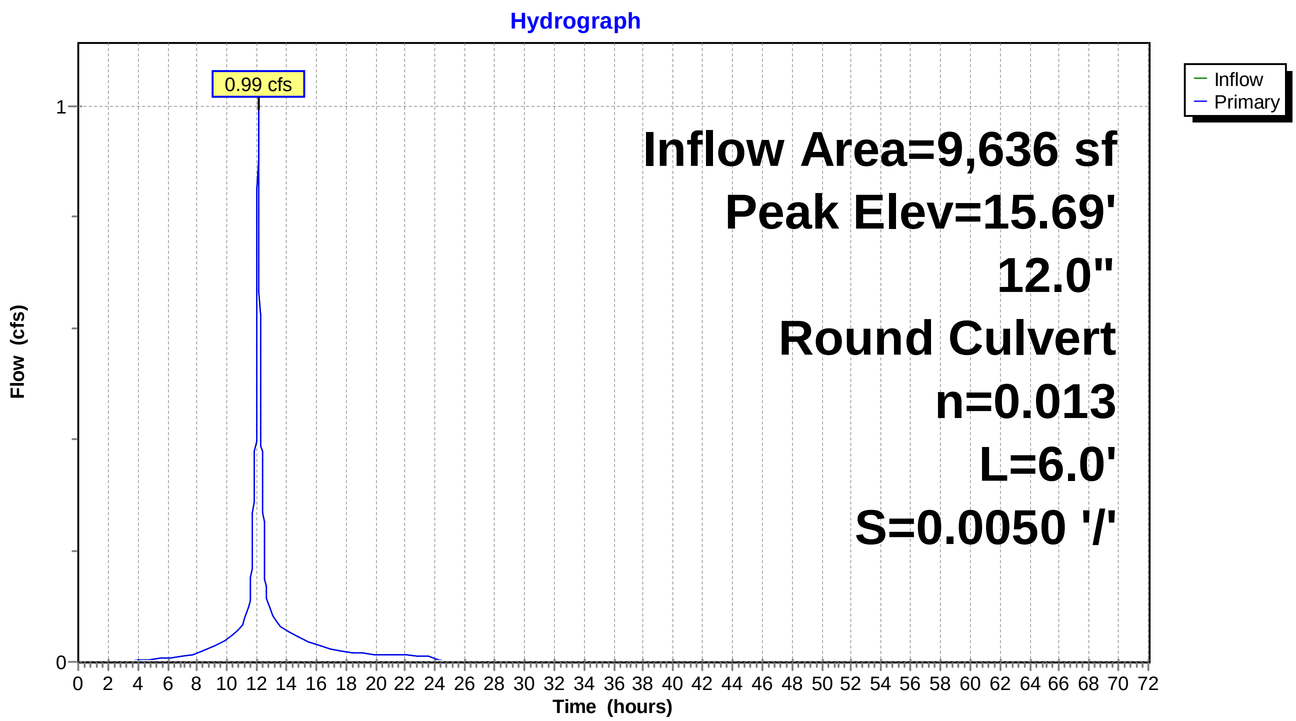
Inflow Area = 9,636 sf, 78.63% Impervious, Inflow Depth = 4.07" for 10 yr event
Inflow = 0.99 cfs @ 12.08 hrs, Volume= 3,268 cf
Outflow = 0.99 cfs @ 12.08 hrs, Volume= 3,268 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.99 cfs @ 12.08 hrs, Volume= 3,268 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 15.69' @ 12.08 hrs
Flood Elev= 19.74'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.00'	**12.0" Round Culvert** L= 6.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.00' / 14.97' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.99 cfs @ 12.08 hrs HW=15.69' TW=15.53' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.99 cfs @ 2.43 fps)

Pond 23:



Summary for Pond 24:

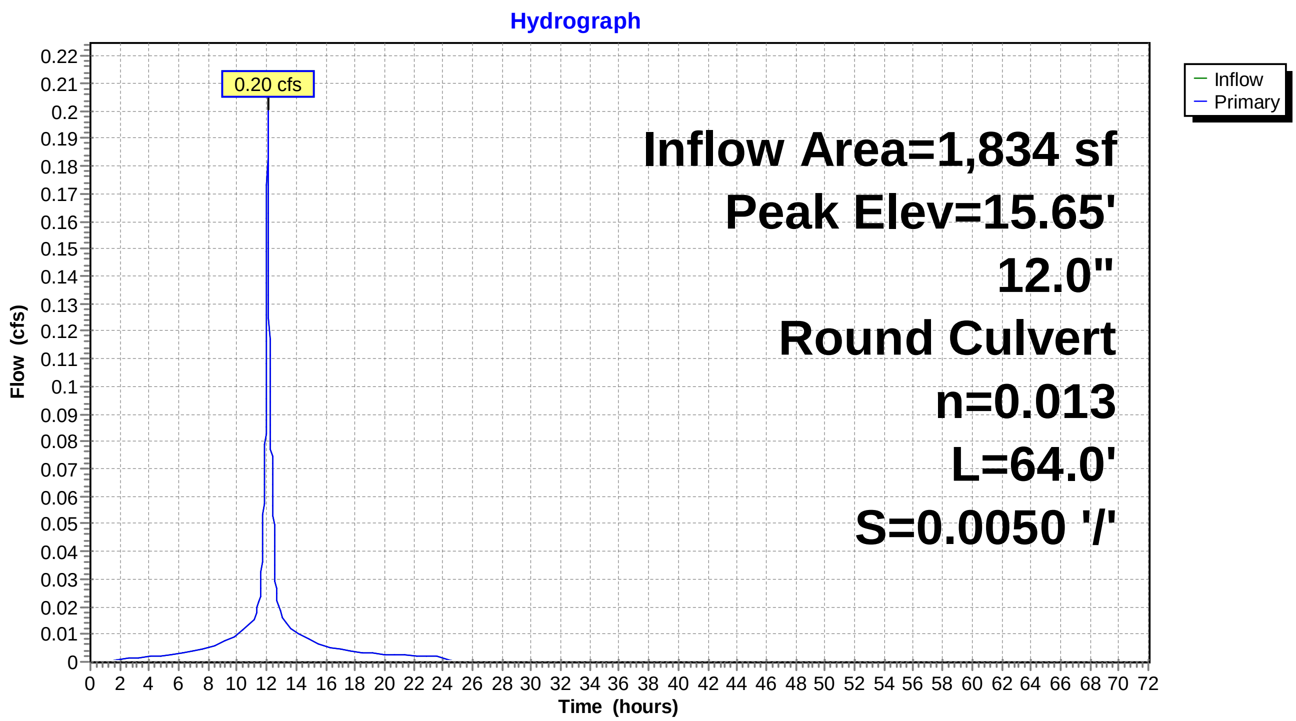
Inflow Area = 1,834 sf, 98.64% Impervious, Inflow Depth = 4.63" for 10 yr event
Inflow = 0.20 cfs @ 12.08 hrs, Volume= 708 cf
Outflow = 0.20 cfs @ 12.08 hrs, Volume= 708 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.20 cfs @ 12.08 hrs, Volume= 708 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 15.65' @ 12.08 hrs
Flood Elev= 17.72'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.29'	**12.0" Round Culvert** L= 64.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.29' / 14.97' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.20 cfs @ 12.08 hrs HW=15.65' TW=15.53' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.20 cfs @ 1.18 fps)

Pond 24:



Summary for Pond 25:

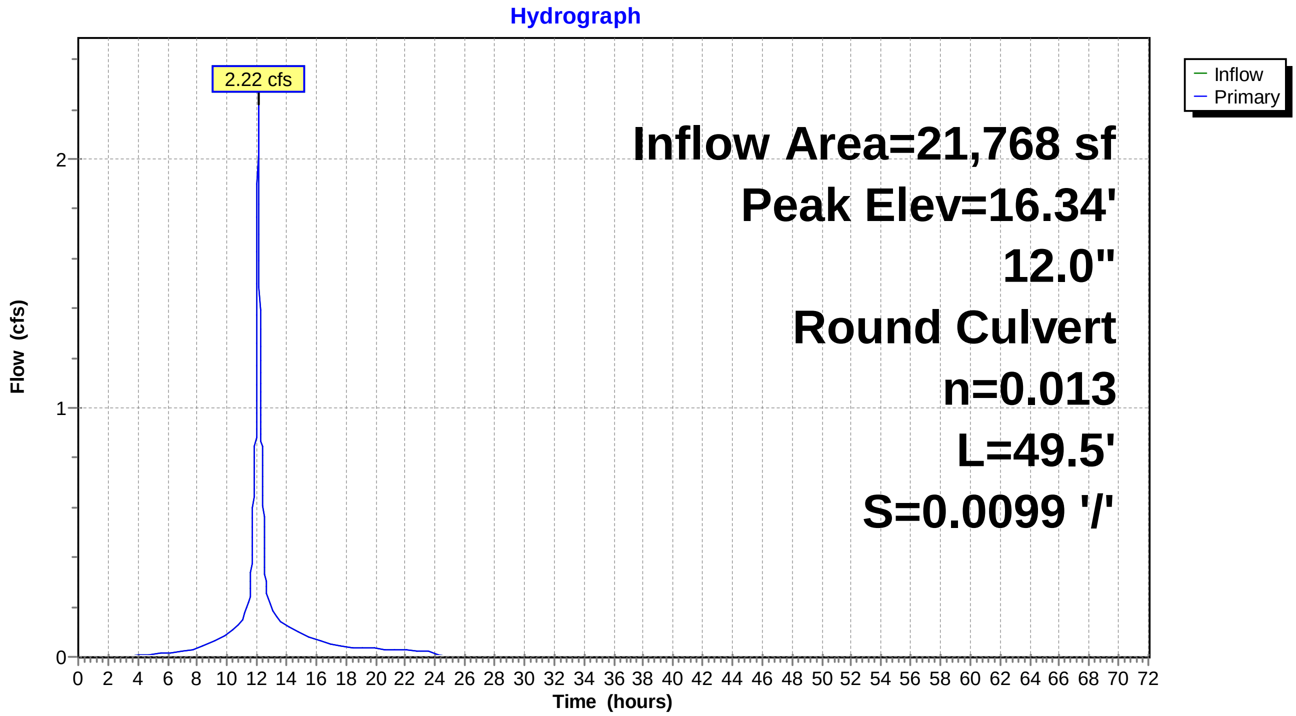
Inflow Area = 21,768 sf, 76.61% Impervious, Inflow Depth = 4.04" for 10 yr event
Inflow = 2.22 cfs @ 12.08 hrs, Volume= 7,332 cf
Outflow = 2.22 cfs @ 12.08 hrs, Volume= 7,332 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.22 cfs @ 12.08 hrs, Volume= 7,332 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 16.34' @ 12.08 hrs
Flood Elev= 19.46'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.46'	**12.0" Round Culvert** L= 49.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.46' / 14.97' S= 0.0099 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.22 cfs @ 12.08 hrs HW=16.34' TW=15.53' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 2.22 cfs @ 4.05 fps)

Pond 25:



Summary for Pond 26:

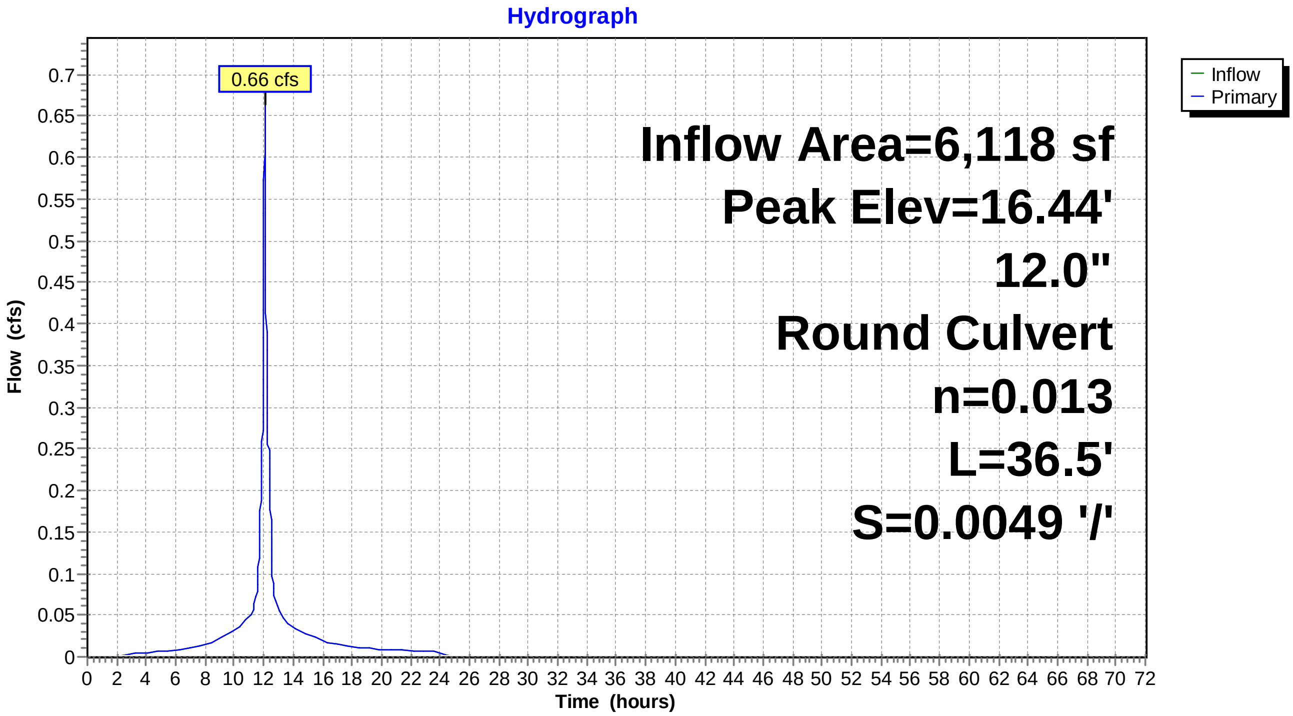
Inflow Area = 6,118 sf, 94.31% Impervious, Inflow Depth = 4.52" for 10 yr event
Inflow = 0.66 cfs @ 12.08 hrs, Volume= 2,303 cf
Outflow = 0.66 cfs @ 12.08 hrs, Volume= 2,303 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.66 cfs @ 12.08 hrs, Volume= 2,303 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 16.44' @ 12.08 hrs
Flood Elev= 19.26'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.74'	**12.0" Round Culvert** L= 36.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.74' / 15.56' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.66 cfs @ 12.08 hrs HW=16.44' TW=16.34' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.66 cfs @ 1.59 fps)

Pond 26:



Summary for Pond 27:

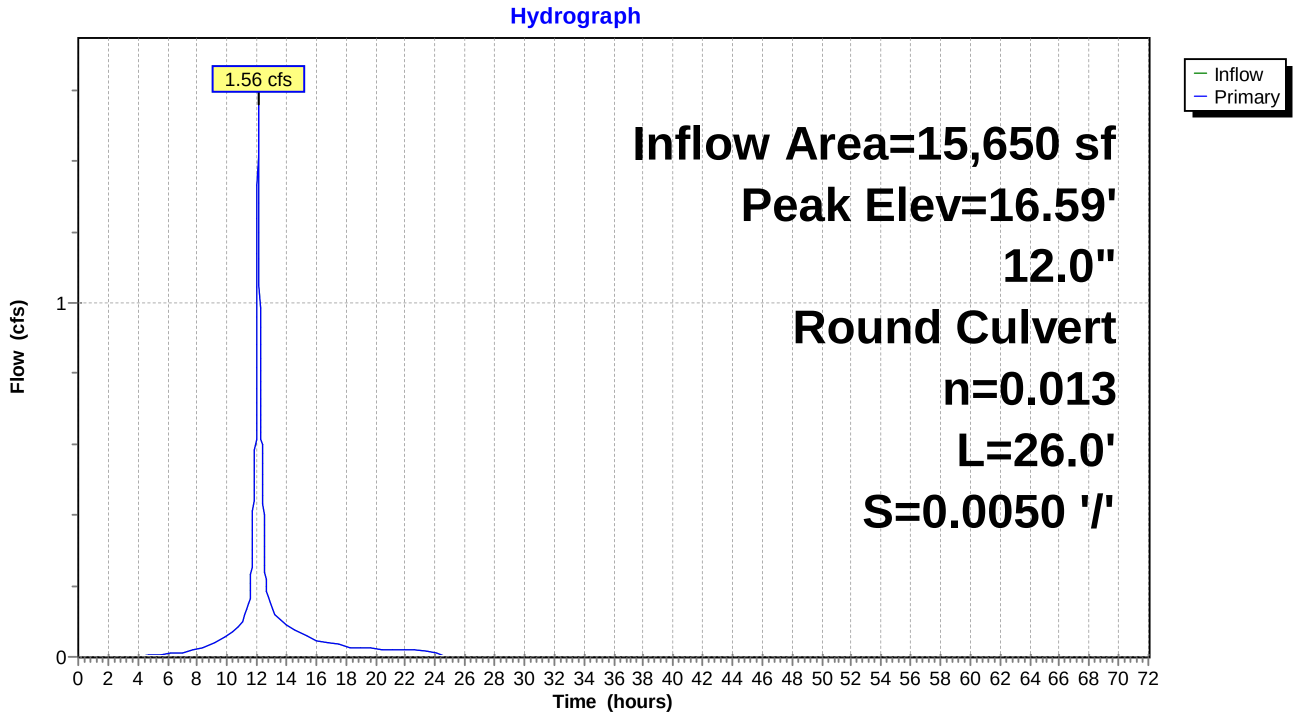
Inflow Area = 15,650 sf, 69.69% Impervious, Inflow Depth = 3.86" for 10 yr event
Inflow = 1.56 cfs @ 12.08 hrs, Volume= 5,029 cf
Outflow = 1.56 cfs @ 12.08 hrs, Volume= 5,029 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.56 cfs @ 12.08 hrs, Volume= 5,029 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 16.59' @ 12.08 hrs
Flood Elev= 18.53'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.69'	**12.0" Round Culvert** L= 26.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.69' / 15.56' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.55 cfs @ 12.08 hrs HW=16.59' TW=16.34' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.55 cfs @ 2.75 fps)

Pond 27:



Summary for Pond 28:

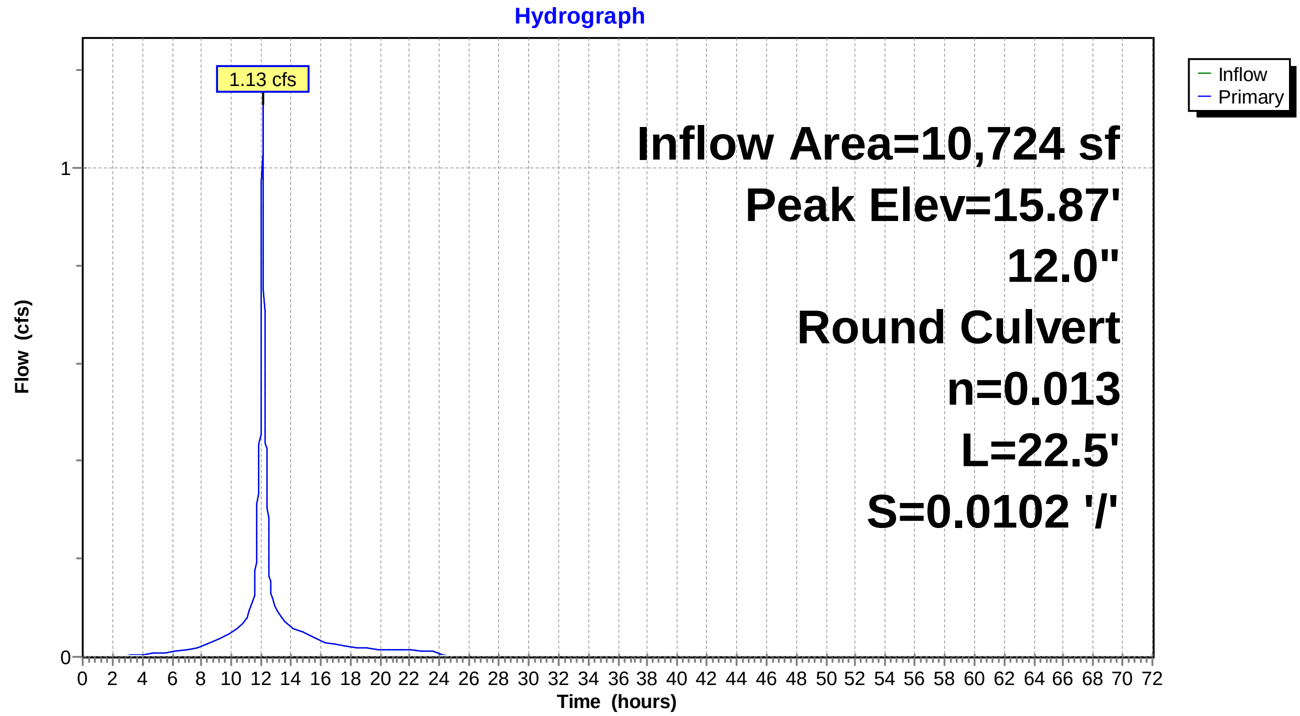
Inflow Area = 10,724 sf, 85.21% Impervious, Inflow Depth = 4.23" for 10 yr event
Inflow = 1.13 cfs @ 12.08 hrs, Volume= 3,782 cf
Outflow = 1.13 cfs @ 12.08 hrs, Volume= 3,782 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.13 cfs @ 12.08 hrs, Volume= 3,782 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 15.87' @ 12.08 hrs
Flood Elev= 23.36'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.27'	**12.0" Round Culvert** L= 22.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.27' / 15.04' S= 0.0102 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.13 cfs @ 12.08 hrs HW=15.87' TW=14.58' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.13 cfs @ 3.28 fps)

Pond 28:



Summary for Pond 29:

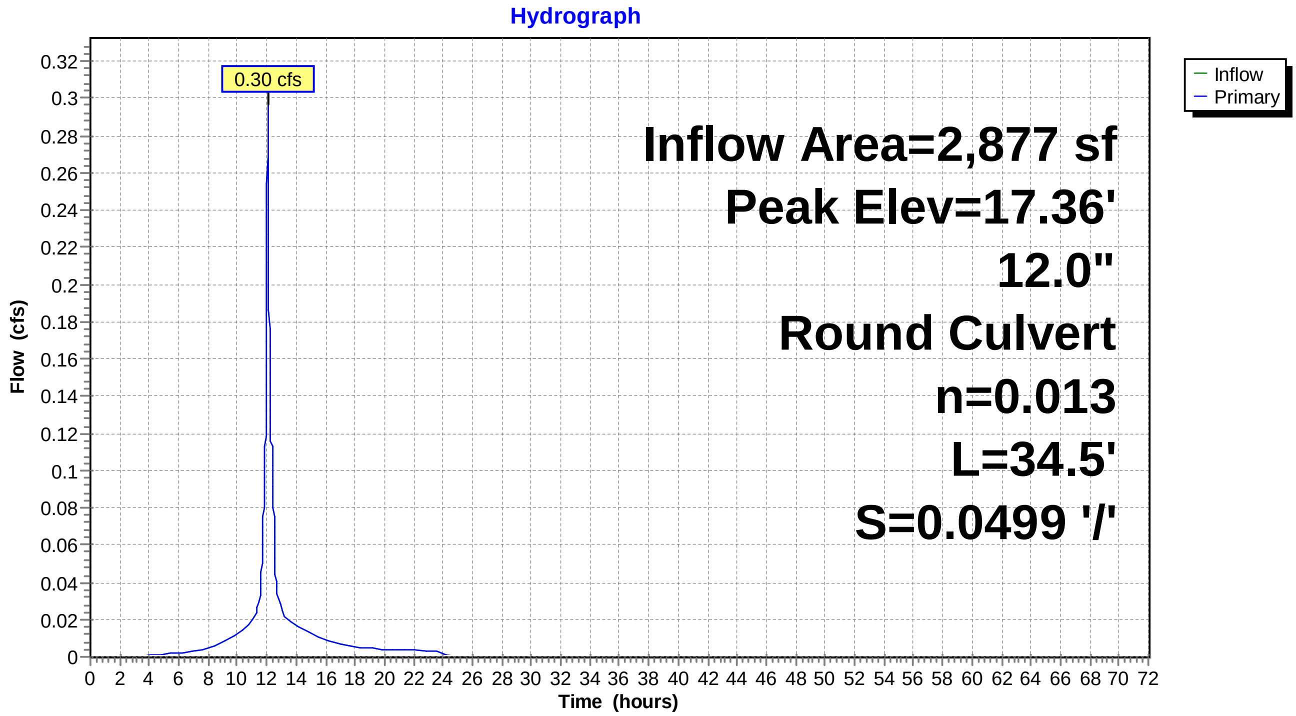
Inflow Area =	2,877 sf, 80.50% Impervious,	Inflow Depth = 4.07"	for 10 yr event
Inflow =	0.30 cfs @ 12.08 hrs, Volume=	976 cf	
Outflow =	0.30 cfs @ 12.08 hrs, Volume=	976 cf, Atten= 0%, Lag= 0.0 min	
Primary =	0.30 cfs @ 12.08 hrs, Volume=	976 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 17.36' @ 12.08 hrs
Flood Elev= 22.07'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.09'	**12.0" Round Culvert** L= 34.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.09' / 15.37' S= 0.0499 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.30 cfs @ 12.08 hrs HW=17.36' TW=15.87' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.30 cfs @ 1.76 fps)

Pond 29:



Summary for Pond 30:

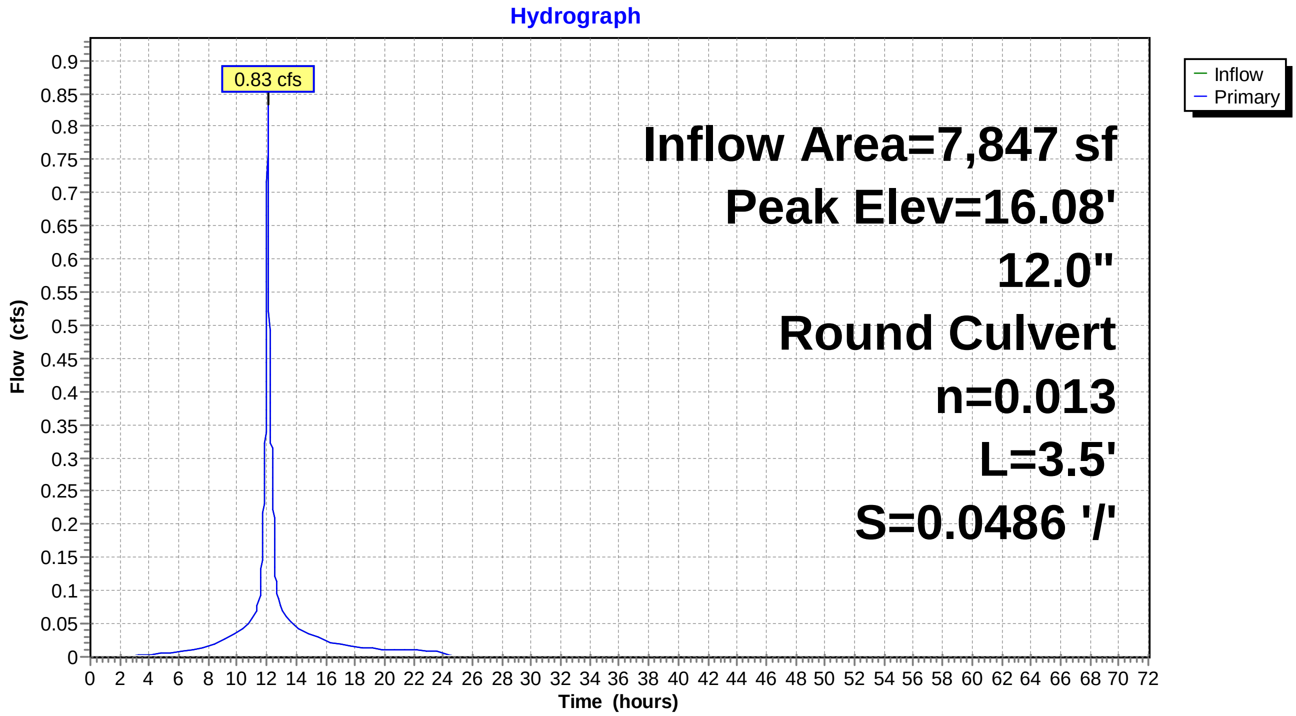
Inflow Area =	7,847 sf, 86.94% Impervious,	Inflow Depth = 4.29" for 10 yr event	
Inflow =	0.83 cfs @ 12.08 hrs, Volume=	2,806 cf	
Outflow =	0.83 cfs @ 12.08 hrs, Volume=	2,806 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.83 cfs @ 12.08 hrs, Volume=	2,806 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 16.08' @ 12.08 hrs
Flood Elev= 23.28'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.54'	**12.0" Round Culvert** L= 3.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.54' / 15.37' S= 0.0486 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.83 cfs @ 12.08 hrs HW=16.07' TW=15.87' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.83 cfs @ 2.83 fps)

Pond 30:



Summary for Pond 31:

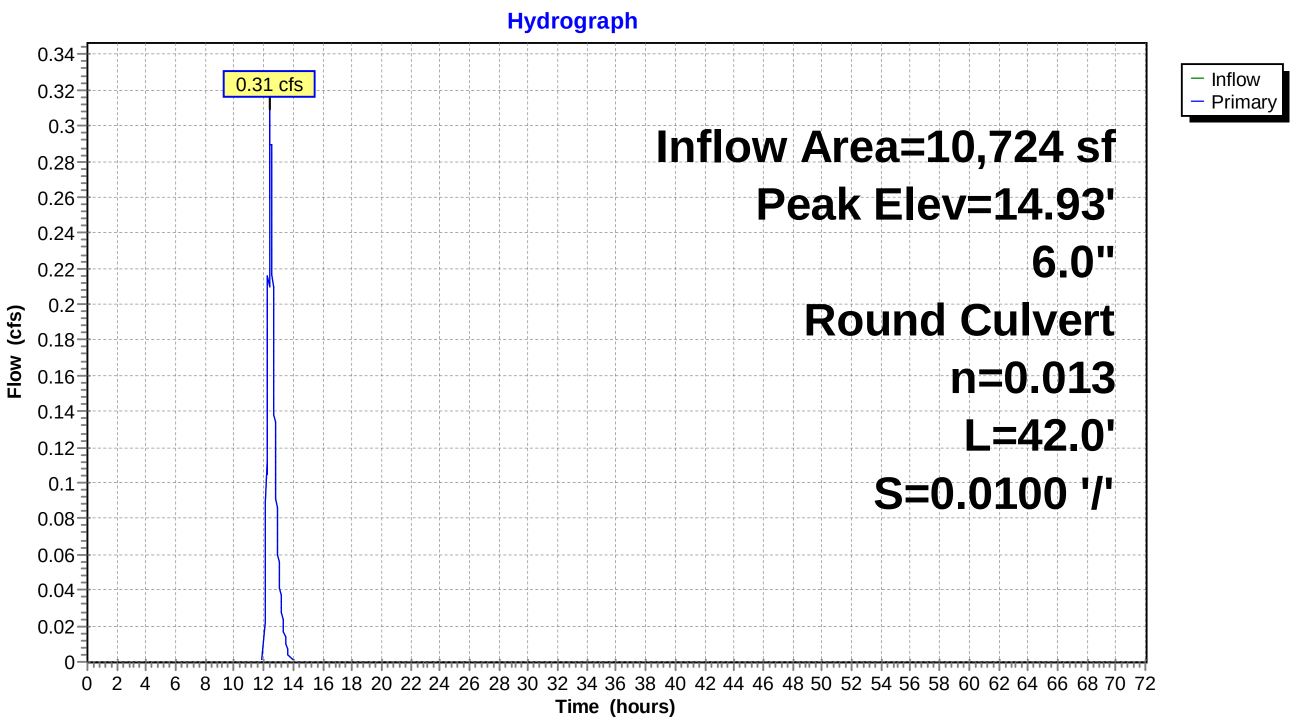
Inflow Area =	10,724 sf,	85.21% Impervious,	Inflow Depth = 0.65"	for 10 yr event
Inflow =	0.31 cfs @	12.39 hrs, Volume=	584 cf	
Outflow =	0.31 cfs @	12.39 hrs, Volume=	584 cf, Atten= 0%, Lag= 0.0 min	
Primary =	0.31 cfs @	12.39 hrs, Volume=	584 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 14.93' @ 12.40 hrs
Flood Elev= 23.58'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.26'	**6.0" Round Culvert** L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.26' / 13.84' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.30 cfs @ 12.39 hrs HW=14.74' TW=14.48' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 0.30 cfs @ 2.01 fps)

Pond 31:



Summary for Pond 32:

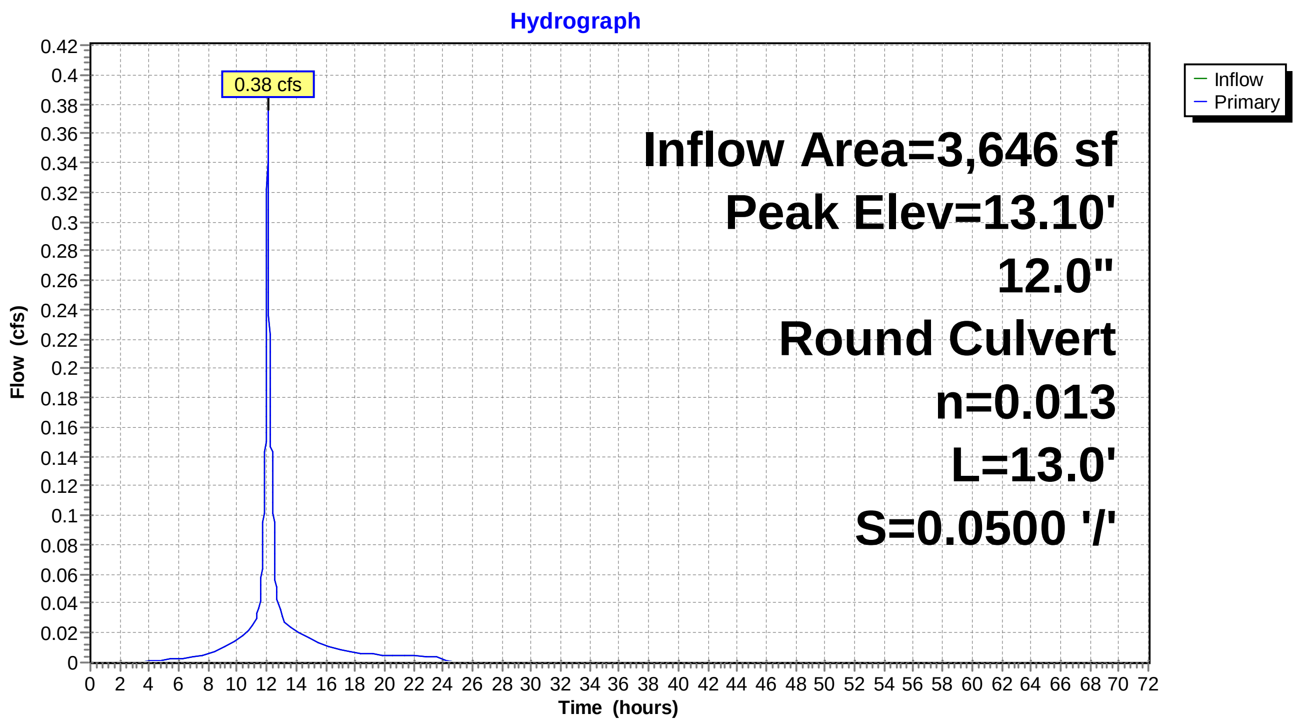
Inflow Area =	3,646 sf,	77.21% Impervious,	Inflow Depth = 4.07"	for 10 yr event	
Inflow =	0.38 cfs @	12.08 hrs,	Volume=	1,237 cf	
Outflow =	0.38 cfs @	12.08 hrs,	Volume=	1,237 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.38 cfs @	12.08 hrs,	Volume=	1,237 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 13.10' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	12.13'	**12.0" Round Culvert** L= 13.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 12.13' / 11.48' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.48 cfs @ 12.08 hrs HW=13.01' TW=12.98' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.48 cfs @ 0.88 fps)

Pond 32:



Summary for Pond 33:

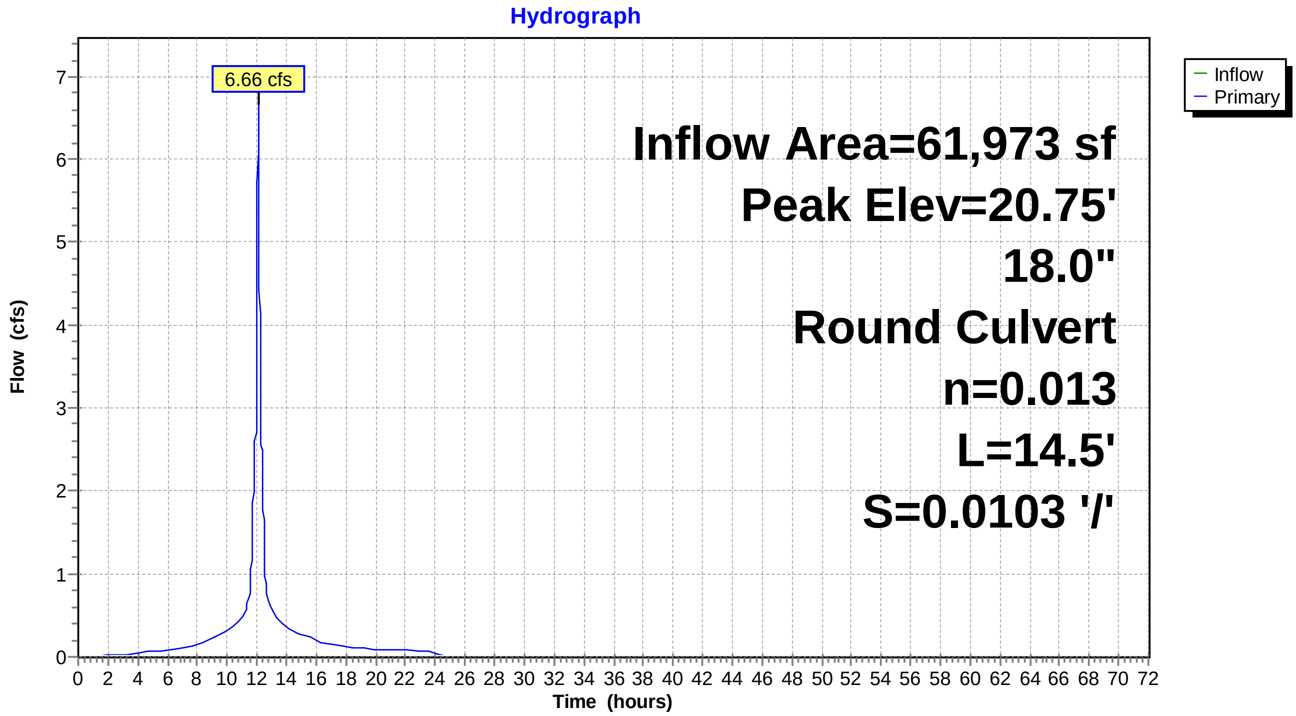
Inflow Area = 61,973 sf, 92.04% Impervious, Inflow Depth = 4.44" for 10 yr event
Inflow = 6.66 cfs @ 12.08 hrs, Volume= 22,940 cf
Outflow = 6.66 cfs @ 12.08 hrs, Volume= 22,940 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.66 cfs @ 12.08 hrs, Volume= 22,940 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 20.75' @ 12.08 hrs
Flood Elev= 28.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.19'	**18.0" Round Culvert** L= 14.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 19.19' / 19.04' S= 0.0103 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.65 cfs @ 12.08 hrs HW=20.75' TW=18.80' (Dynamic Tailwater)
1=Culvert (Barrel Controls 6.65 cfs @ 4.51 fps)

Pond 33:



Summary for Pond 34:

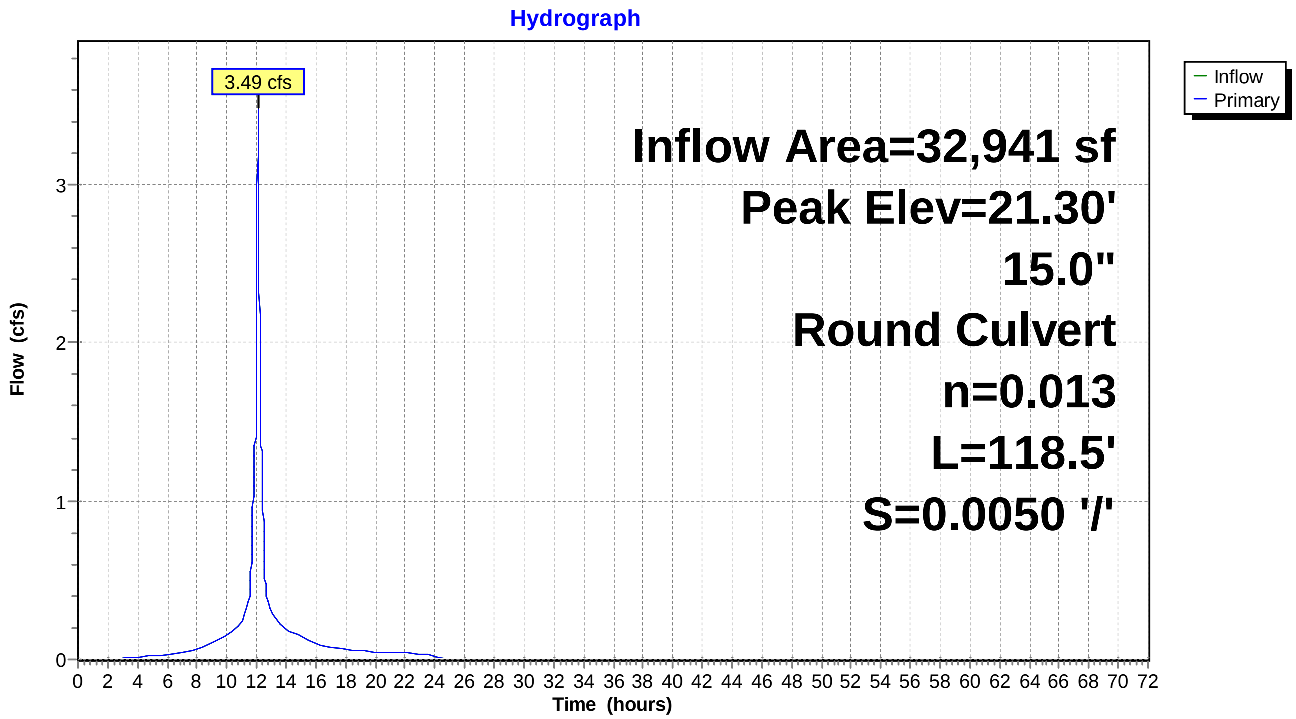
Inflow Area =	32,941 sf, 85.02% Impervious,	Inflow Depth = 4.27"	for 10 yr event
Inflow =	3.49 cfs @ 12.08 hrs, Volume=	11,730 cf	
Outflow =	3.49 cfs @ 12.08 hrs, Volume=	11,730 cf, Atten= 0%, Lag= 0.0 min	
Primary =	3.49 cfs @ 12.08 hrs, Volume=	11,730 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.30' @ 12.08 hrs
Flood Elev= 24.89'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.88'	**15.0" Round Culvert** L= 118.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 19.88' / 19.29' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.48 cfs @ 12.08 hrs HW=21.30' TW=20.75' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.48 cfs @ 3.13 fps)

Pond 34:



Summary for Pond 35:

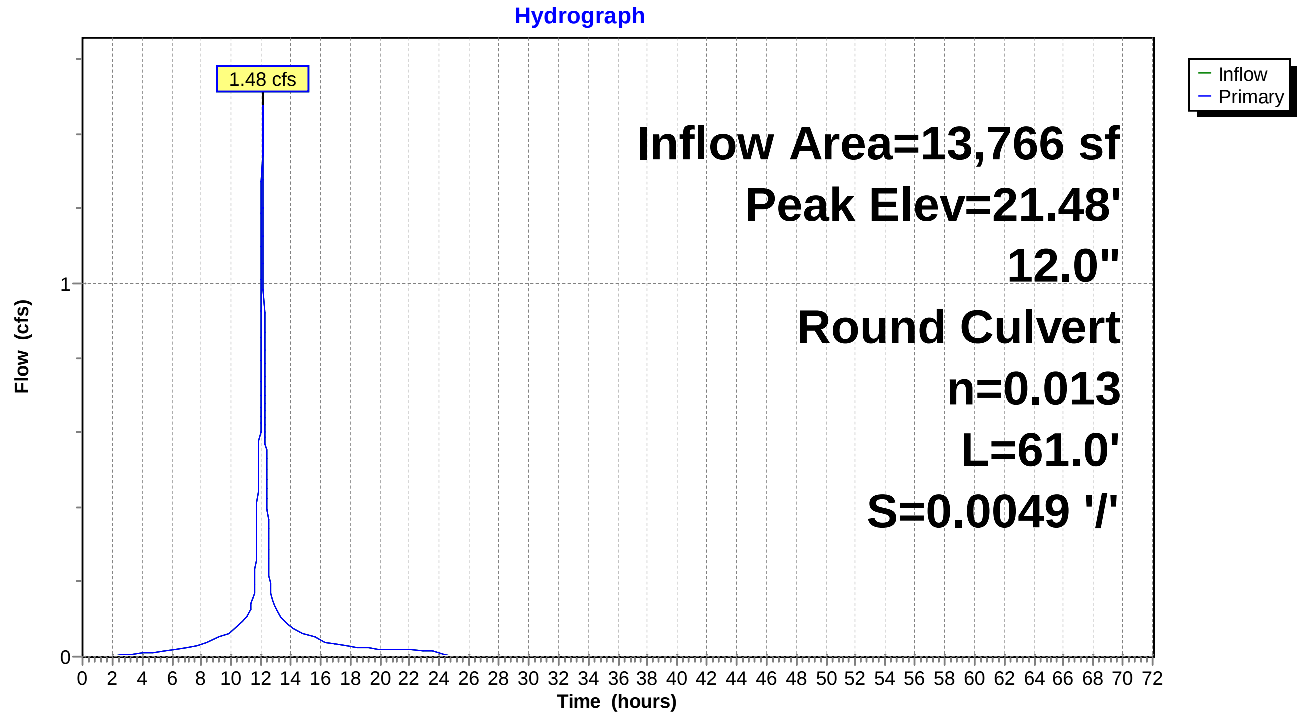
Inflow Area = 13,766 sf, 90.03% Impervious, Inflow Depth = 4.40" for 10 yr event
Inflow = 1.48 cfs @ 12.08 hrs, Volume= 5,051 cf
Outflow = 1.48 cfs @ 12.08 hrs, Volume= 5,051 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.48 cfs @ 12.08 hrs, Volume= 5,051 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.48' @ 12.08 hrs
Flood Elev= 23.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.28'	**12.0" Round Culvert** L= 61.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.28' / 19.98' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.48 cfs @ 12.08 hrs HW=21.48' TW=21.30' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.48 cfs @ 1.98 fps)

Pond 35:



Summary for Pond 36:

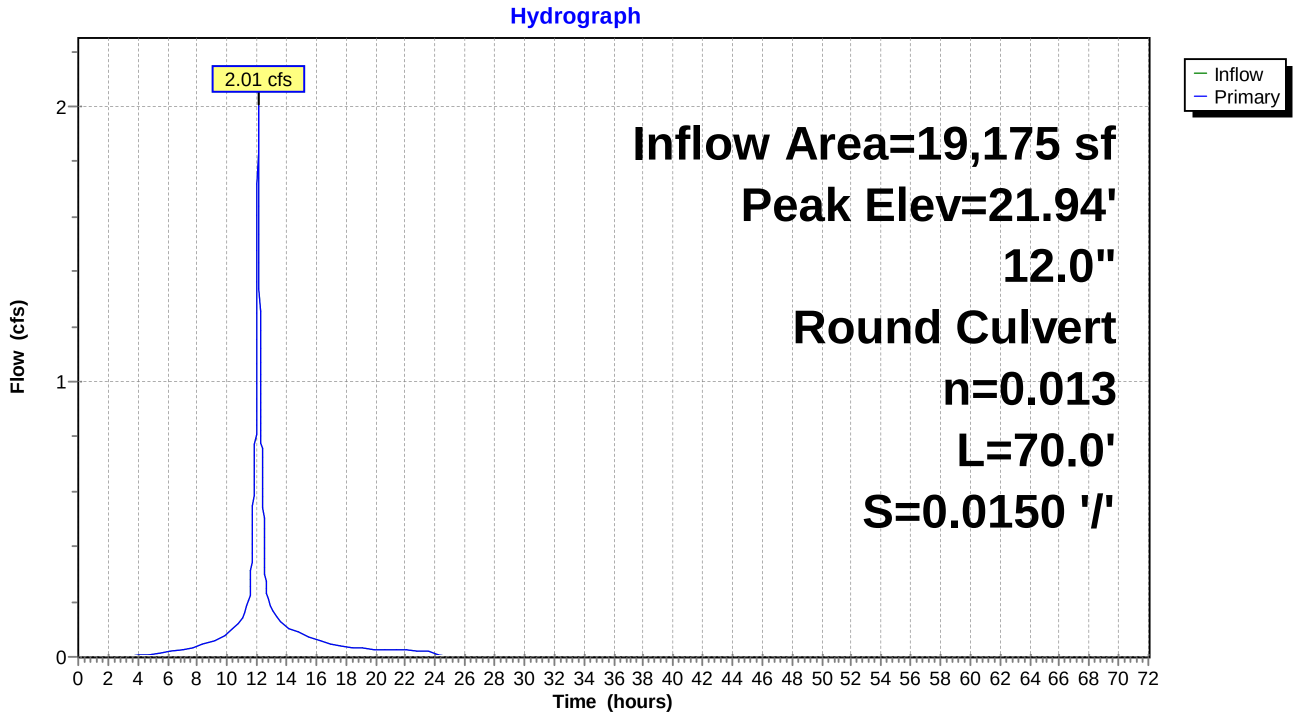
Inflow Area =	19,175 sf, 81.41% Impervious,	Inflow Depth = 4.18"	for 10 yr event
Inflow =	2.01 cfs @ 12.08 hrs, Volume=	6,679 cf	
Outflow =	2.01 cfs @ 12.08 hrs, Volume=	6,679 cf, Atten= 0%, Lag= 0.0 min	
Primary =	2.01 cfs @ 12.08 hrs, Volume=	6,679 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.94' @ 12.08 hrs
Flood Elev= 25.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.03'	**12.0" Round Culvert** L= 70.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.03' / 19.98' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.01 cfs @ 12.08 hrs HW=21.93' TW=21.30' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 2.01 cfs @ 3.54 fps)

Pond 36:



Summary for Pond 50P:

Inflow Area =	61,973 sf, 92.04% Impervious,	Inflow Depth = 4.44" for 10 yr event	
Inflow =	6.66 cfs @ 12.08 hrs, Volume=	22,940 cf	
Outflow =	3.60 cfs @ 12.21 hrs, Volume=	22,940 cf,	Atten= 46%, Lag= 7.4 min
Discarded =	0.82 cfs @ 12.21 hrs, Volume=	16,073 cf	
Primary =	2.78 cfs @ 12.21 hrs, Volume=	6,867 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 19.04' @ 12.21 hrs Surf.Area= 0.100 ac Storage= 0.104 af

Plug-Flow detention time= 18.8 min calculated for 22,940 cf (100% of inflow)
Center-of-Mass det. time= 18.8 min (777.9 - 759.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	17.50'	0.110 af	**49.00'W x 89.06'L x 4.00'H Field A** 0.401 af Overall - 0.127 af Embedded = 0.274 af x 40.0% Voids
#2A	18.00'	0.127 af	**ADS_StormTech SC-740 +Cap** x 120 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 10 Rows of 12 Chambers
		0.236 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	17.50'	**3.000 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 16.50' Phase-In= 0.01'
#2	Primary	18.00'	**12.0" Round Culvert** L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.00' / 16.01' S= 0.0262 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.82 cfs @ 12.21 hrs HW=19.04' (Free Discharge)
└**1=Exfiltration** (Controls 0.82 cfs)

Primary OutFlow Max=2.78 cfs @ 12.21 hrs HW=19.04' TW=17.35' (Dynamic Tailwater)
└**2=Culvert** (Inlet Controls 2.78 cfs @ 3.54 fps)

Pond 50P: - Chamber Wizard Field A

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

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

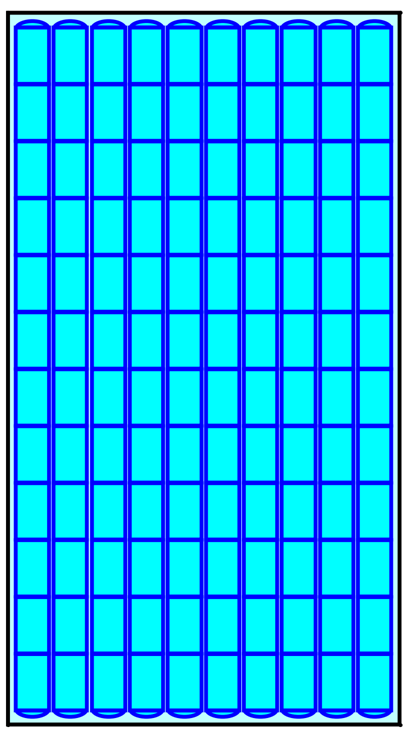
12 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 87.06' Row Length +12.0" End Stone x 2 = 89.06' Base Length
10 Rows x 51.0" Wide + 6.0" Spacing x 9 + 12.0" Side Stone x 2 = 49.00' Base Width
6.0" Base + 30.0" Chamber Height + 12.0" Cover = 4.00' Field Height

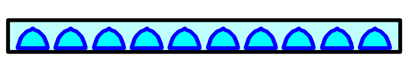
120 Chambers x 45.9 cf = 5,512.8 cf Chamber Storage

17,455.1 cf Field - 5,512.8 cf Chambers = 11,942.3 cf Stone x 40.0% Voids = 4,776.9 cf Stone Storage

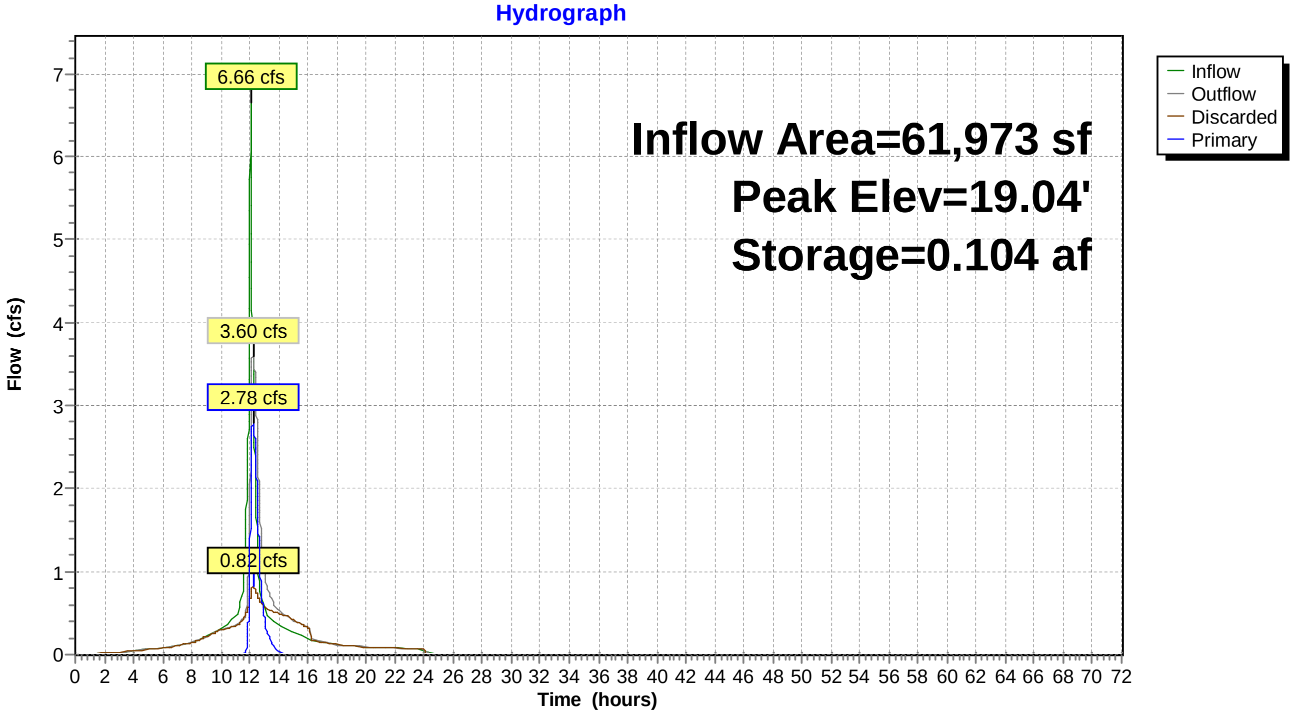
Chamber Storage + Stone Storage = 10,289.7 cf = 0.236 af
Overall Storage Efficiency = 58.9%
Overall System Size = 89.06' x 49.00' x 4.00'

120 Chambers
646.5 cy Field
442.3 cy Stone





Pond 50P:


Hydrograph
6.66 cfs
3.60 cfs
2.78 cfs
0.82 cfs
Inflow Area=61,973 sf
Peak Elev=19.04'
Storage=0.104 af
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
7
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72

Summary for Pond 56:

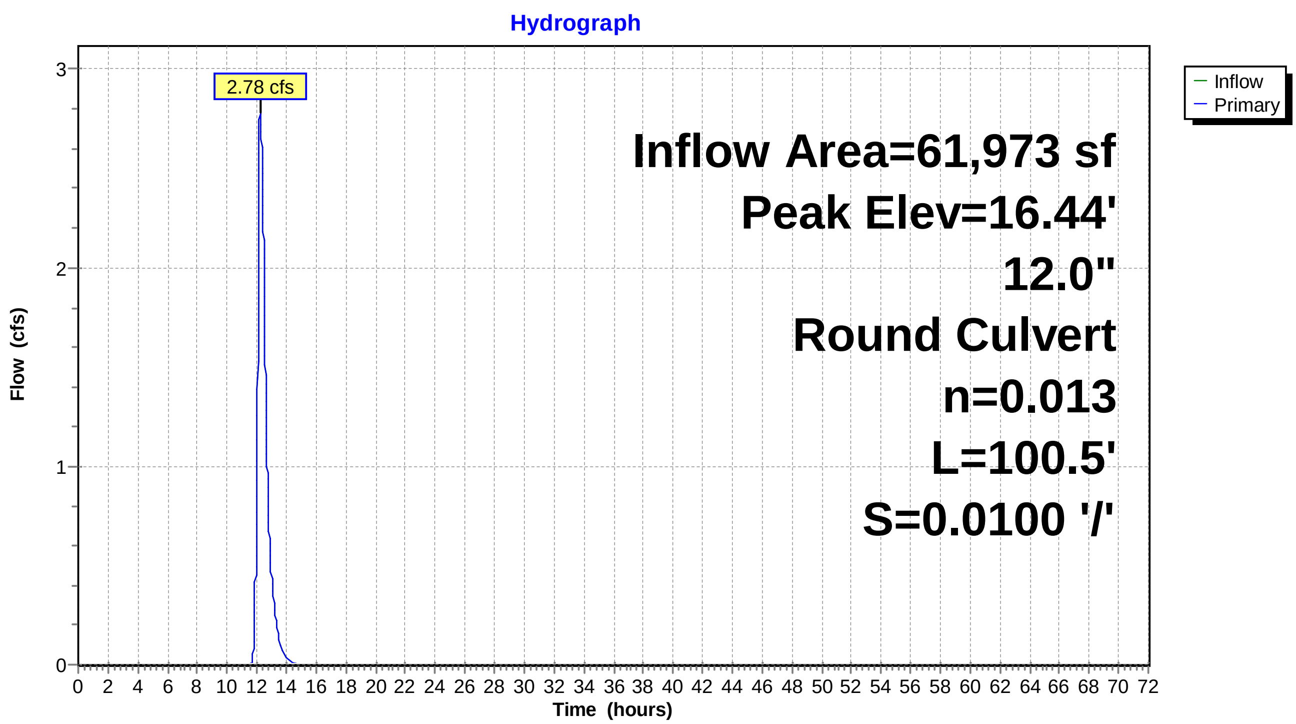
Inflow Area = 61,973 sf, 92.04% Impervious, Inflow Depth = 1.33" for 10 yr event
Inflow = 2.78 cfs @ 12.21 hrs, Volume= 6,867 cf
Outflow = 2.78 cfs @ 12.21 hrs, Volume= 6,867 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.78 cfs @ 12.21 hrs, Volume= 6,867 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 16.44' @ 12.20 hrs
Flood Elev= 26.01'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.76'	**12.0" Round Culvert** L= 100.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.76' / 13.76' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.78 cfs @ 12.21 hrs HW=16.43' TW=15.52' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 2.78 cfs @ 3.54 fps)

Pond 56:



Summary for Pond 57:

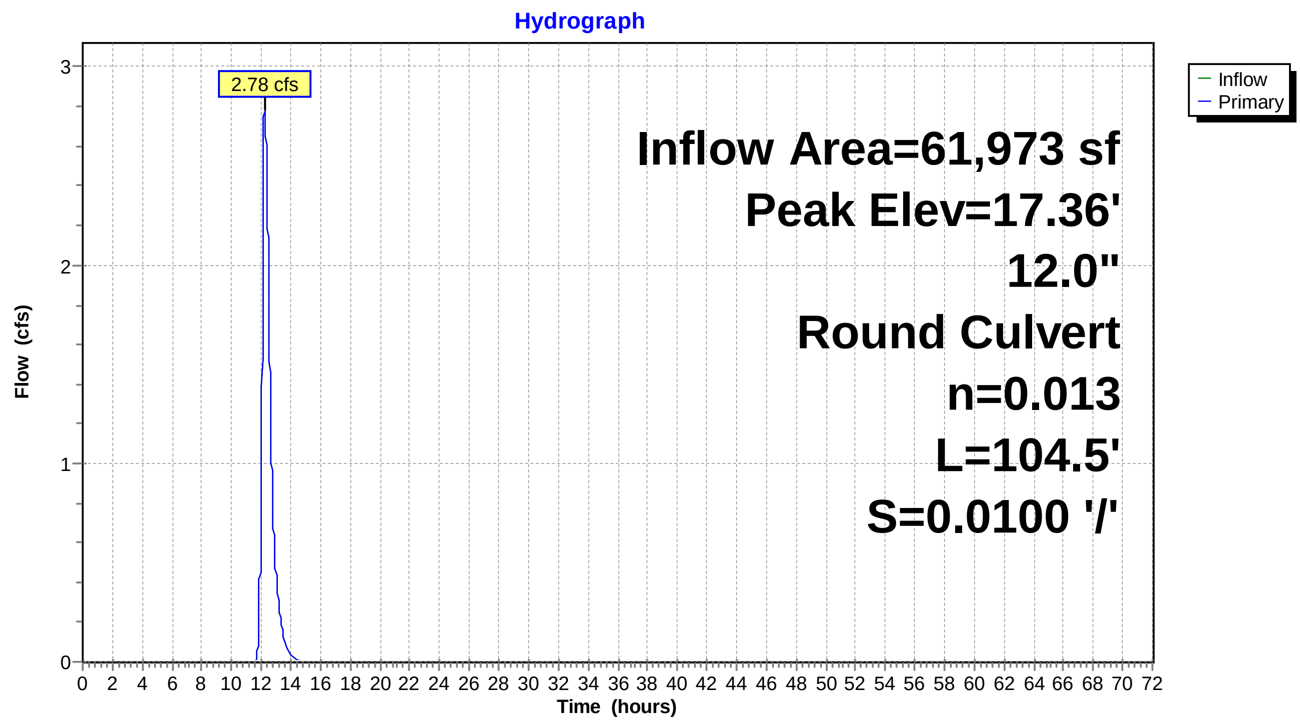
Inflow Area =	61,973 sf, 92.04% Impervious,	Inflow Depth = 1.33"	for 10 yr event
Inflow =	2.78 cfs @ 12.21 hrs, Volume=	6,867 cf	
Outflow =	2.78 cfs @ 12.21 hrs, Volume=	6,867 cf, Atten= 0%, Lag= 0.0 min	
Primary =	2.78 cfs @ 12.21 hrs, Volume=	6,867 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 17.36' @ 12.22 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	15.91'	**12.0" Round Culvert** L= 104.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.91' / 14.86' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.77 cfs @ 12.21 hrs HW=17.35' TW=16.43' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 2.77 cfs @ 3.52 fps)

Pond 57:



Summary for Pond 58:

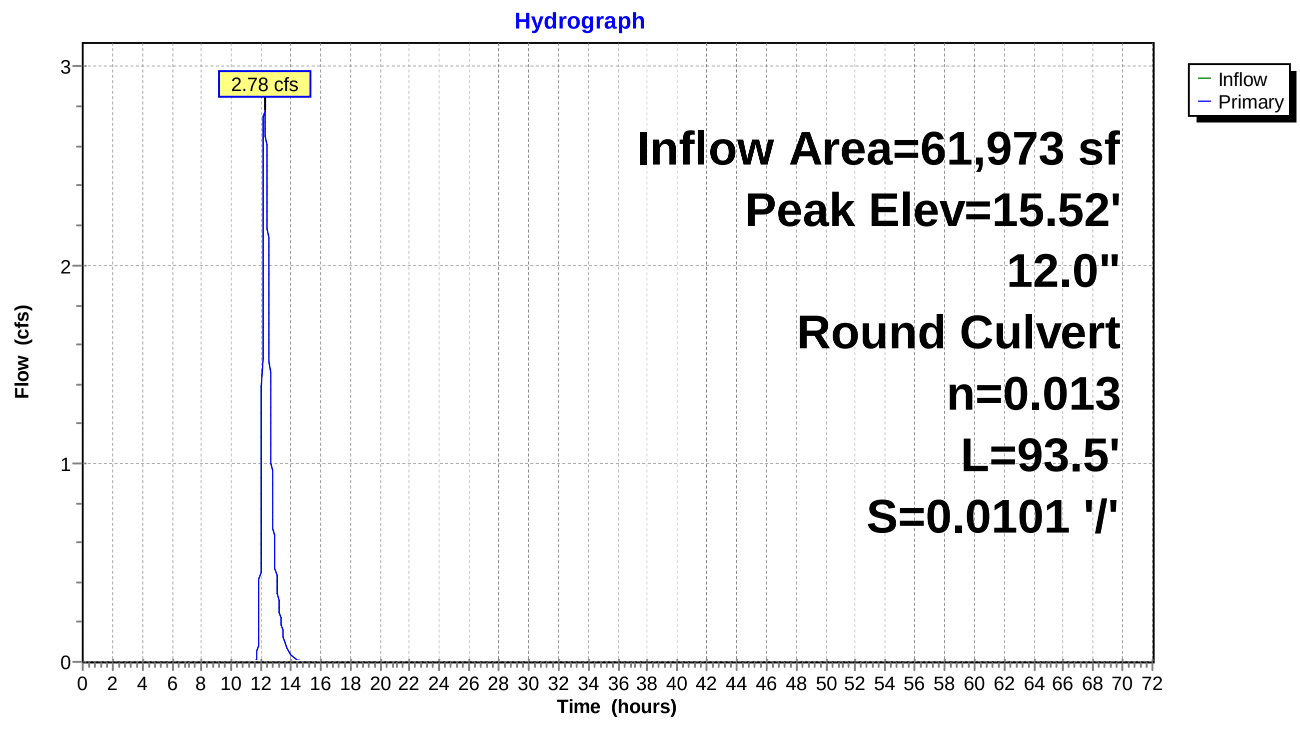
Inflow Area =	61,973 sf,	92.04% Impervious,	Inflow Depth = 1.33"	for 10 yr event
Inflow =	2.78 cfs @	12.21 hrs, Volume=	6,867 cf	
Outflow =	2.78 cfs @	12.21 hrs, Volume=	6,867 cf, Atten= 0%, Lag= 0.0 min	
Primary =	2.78 cfs @	12.21 hrs, Volume=	6,867 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 15.52' @ 12.20 hrs
Flood Elev= 23.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	13.66'	**12.0" Round Culvert** L= 93.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.66' / 12.72' S= 0.0101 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.78 cfs @ 12.21 hrs HW=15.52' TW=14.65' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.78 cfs @ 3.54 fps)

Pond 58:



Summary for Pond E1:

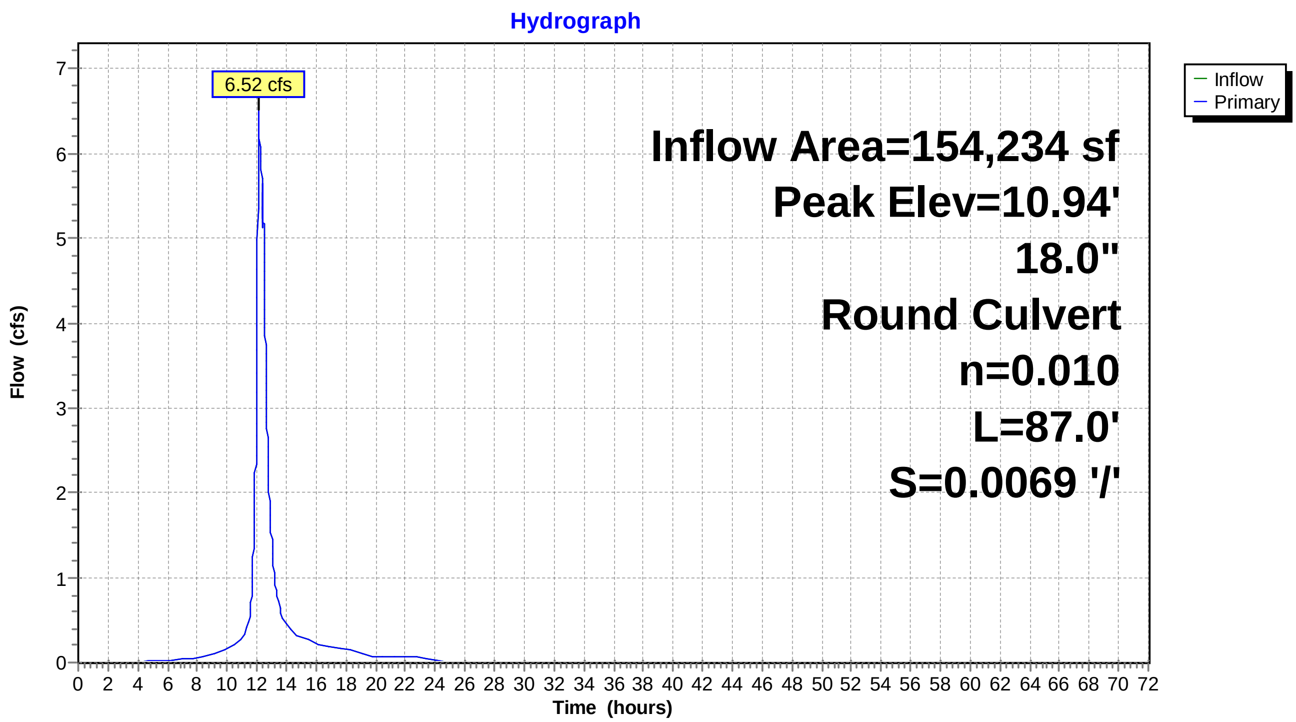
Inflow Area =	154,234 sf,	79.57% Impervious,	Inflow Depth = 2.16"	for 10 yr event
Inflow =	6.52 cfs @	12.11 hrs, Volume=	27,815 cf	
Outflow =	6.52 cfs @	12.11 hrs, Volume=	27,815 cf, Atten= 0%, Lag= 0.0 min	
Primary =	6.52 cfs @	12.11 hrs, Volume=	27,815 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 10.94' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	9.60'	**18.0" Round Culvert** L= 87.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 9.60' / 9.00' S= 0.0069 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.51 cfs @ 12.11 hrs HW=10.94' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 6.51 cfs @ 5.16 fps)

Pond E1:



Summary for Pond RG1: Rain Garden #1

Inflow Area = 13,222 sf, 57.00% Impervious, Inflow Depth = 3.55" for 10 yr event
Inflow = 1.23 cfs @ 12.09 hrs, Volume= 3,907 cf
Outflow = 0.46 cfs @ 12.34 hrs, Volume= 3,907 cf, Atten= 63%, Lag= 15.0 min
Primary = 0.46 cfs @ 12.34 hrs, Volume= 3,907 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 19.30' @ 12.34 hrs Surf.Area= 1,589 sf Storage= 1,139 cf
Flood Elev= 19.50' Surf.Area= 1,676 sf Storage= 1,462 cf

Plug-Flow detention time= 63.9 min calculated for 3,906 cf (100% of inflow)
Center-of-Mass det. time= 63.9 min (862.7 - 798.8)

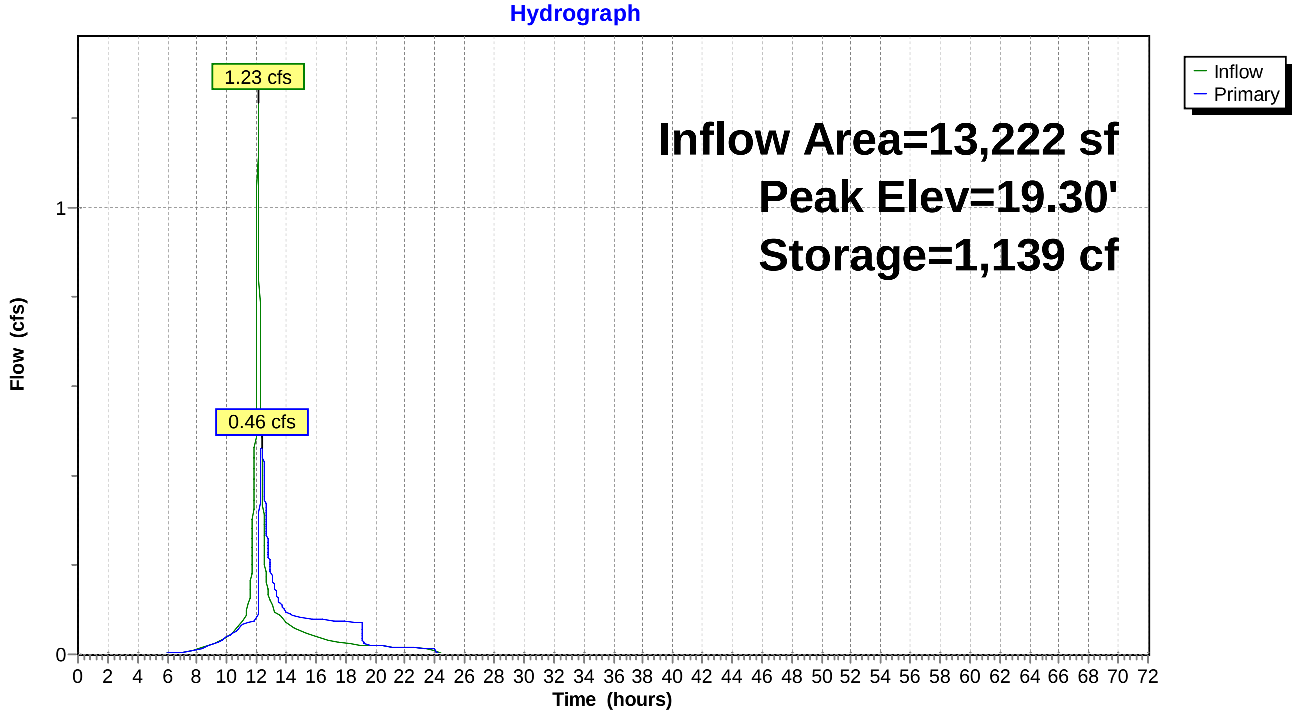
Volume	Invert	Avail.Storage	Storage Description
#1	18.50'	3,360 cf	**Rain Garden 5 (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
18.50	1,255	205.3	0	0	1,255
19.00	1,462	211.5	679	679	1,486
19.50	1,676	217.8	784	1,462	1,726
20.00	1,897	224.1	893	2,355	1,974
20.50	2,124	230.4	1,005	3,360	2,228

Device	Routing	Invert	Outlet Devices
#1	Primary	13.90'	**12.0" Round Culvert** L= 23.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.90' / 12.72' S= 0.0502 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	14.40'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 2	18.50'	**2.410 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#4	Device 1	19.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.46 cfs @ 12.34 hrs HW=19.30' TW=14.53' (Dynamic Tailwater)
└—**1=Culvert** (Passes 0.46 cfs of 8.26 cfs potential flow)
  ├—**2=Orifice/Grate** (Passes 0.09 cfs of 2.04 cfs potential flow)
  │ └—**3=Exfiltration** (Exfiltration Controls 0.09 cfs)
  └—**4=Orifice/Grate** (Orifice Controls 0.37 cfs @ 1.87 fps)

Pond RG1: Rain Garden #1



Summary for Pond RG2: Rain Garden #2

Inflow Area = 5,275 sf, 47.03% Impervious, Inflow Depth = 3.25" for 10 yr event
Inflow = 0.46 cfs @ 12.09 hrs, Volume= 1,428 cf
Outflow = 0.13 cfs @ 12.45 hrs, Volume= 1,428 cf, Atten= 73%, Lag= 21.7 min
Primary = 0.13 cfs @ 12.45 hrs, Volume= 1,428 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 16.13' @ 12.45 hrs Surf.Area= 835 sf Storage= 458 cf
Flood Elev= 16.00' Surf.Area= 787 sf Storage= 348 cf

Plug-Flow detention time= 65.0 min calculated for 1,428 cf (100% of inflow)
Center-of-Mass det. time= 65.0 min (873.6 - 808.6)

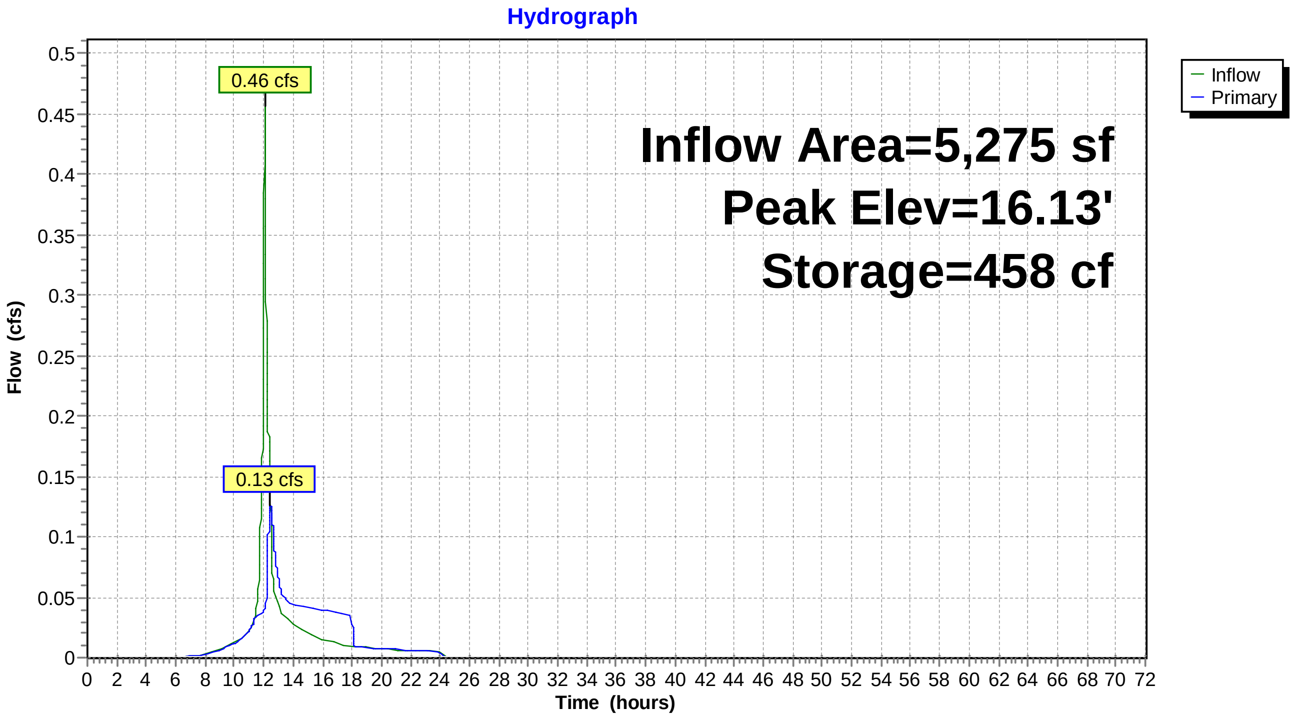
Volume	Invert	Avail.Storage	Storage Description
#1	15.50'	1,322 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
15.50	610	177.6	0	0	610
16.00	787	183.6	348	348	805
16.50	974	189.9	439	788	1,014
17.00	1,167	196.2	535	1,322	1,230

Device	Routing	Invert	Outlet Devices
#1	Primary	12.10'	**12.0" Round Culvert** L= 22.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 12.10' / 11.99' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	12.60'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 2	15.50'	**2.410 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#4	Device 1	16.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.13 cfs @ 12.45 hrs HW=16.13' TW=13.36' (Dynamic Tailwater)
1=Culvert (Passes 0.13 cfs of 6.30 cfs potential flow)
2=Orifice/Grate (Passes 0.05 cfs of 1.58 cfs potential flow)
3=Exfiltration (Exfiltration Controls 0.05 cfs)
4=Orifice/Grate (Orifice Controls 0.08 cfs @ 1.25 fps)

Pond RG2: Rain Garden #2



Richard Lundborn

From: Luke Hurley <lhurley@gesinc.biz>
Sent: Wednesday, September 12, 2018 9:32 AM
To: Richard Lundborn
Subject: Cate street soil Map

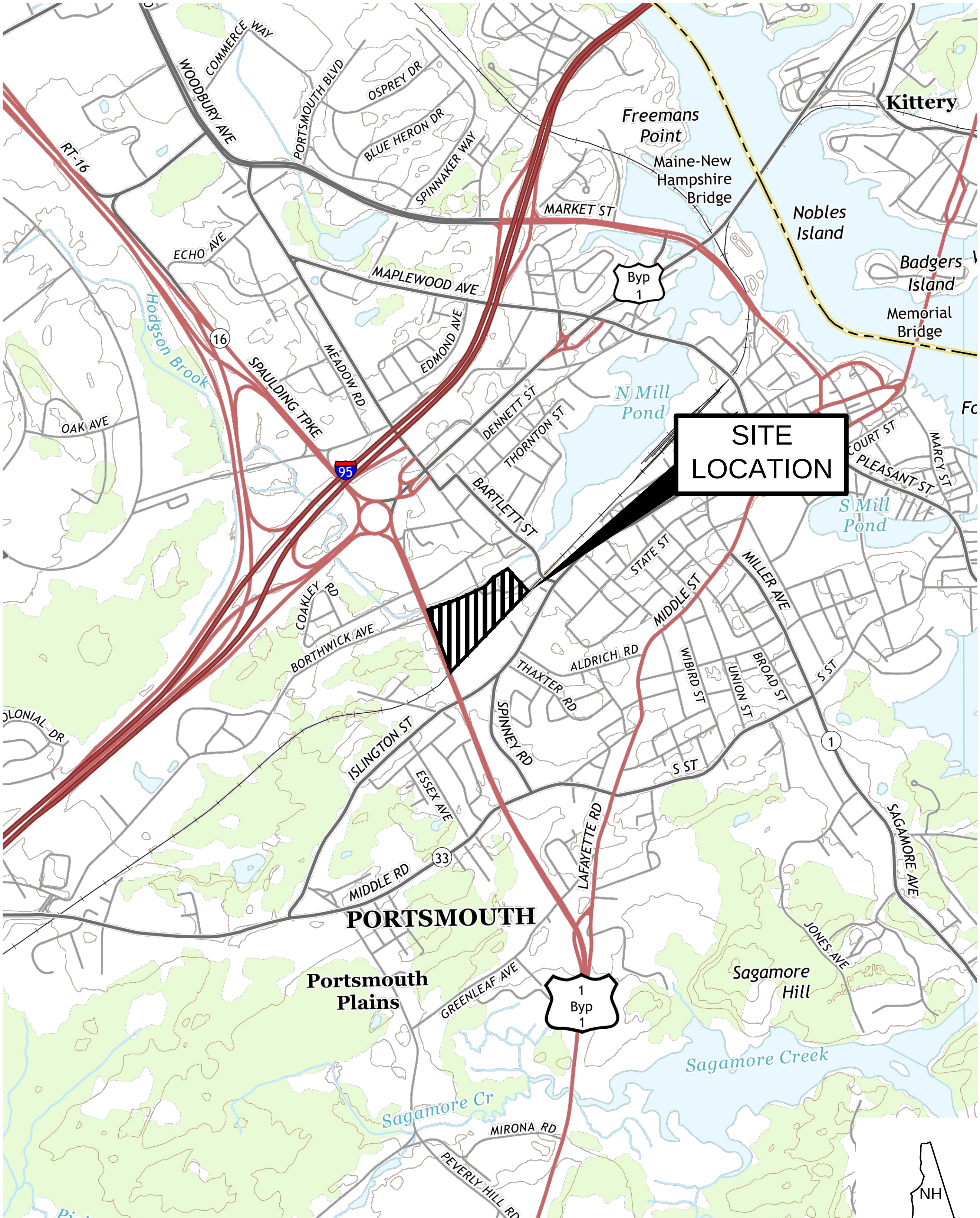
Hi Rick,
Here is the soil map. Pretty straight forward:

400A Udorthents, sandy or gravelly

This map unit typically includes the following concepts: 1) very gravelly (> 35%) sand or very gravelly loamy sand; Or 2) sand or loamy sand textures that may have lenses of loamy very fine sand or finer somewhere in the particle-size class control section (25 - 100 cm or 10 - 40"). Saturated hydraulic conductivity (K_{sat}) is high or very high. Drainage class ranges from excessively drained to somewhat poorly drained. Typical gravel pit.

This would equaste to an Eldridge NRCS, 89 HSG C.

I see no need to mark up the plan.
Luke



MAP REFERENCE:

2015 USGS US TOPO 7.5-MINUTE MAP FOR PORTSMOUTH, NH QUADRANGLE

SCALE:	
HORZ.: 1" = 2000'	
VERT.:	
DATUM:	
HORZ.: NAD83	
VERT.: NAVD88	
0 1000 2000	
GRAPHIC SCALE	

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LIBBY HOUSE
5 FLETCHER STREET, SUITE 1
KENNEBUNK, MAINE 04043
207.363.0669
www.fando.com

AAM 15 MANAGEMENT, LLC

SITE LOCATION MAP

FRANK JONES CENTER

PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10
DATE: 05/08/2018

FIGURE 1

MS VIEW:
LAYER STATE:

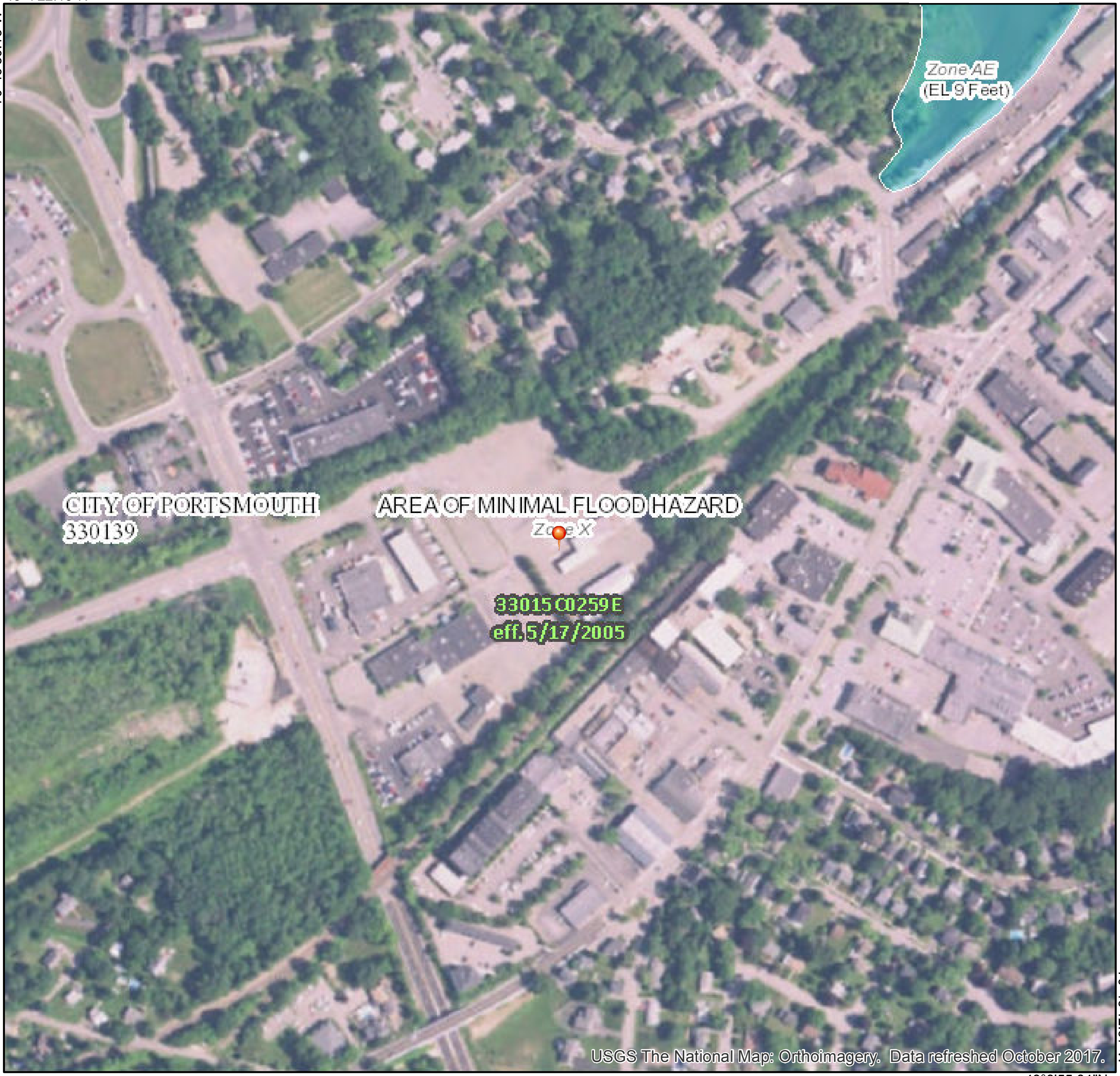
File Path: F:\P2018\0317\A10\Civil3\Dwg\20180317A10_COV01.dwg Layout: FIGURE 1 Plotted: Tue, May 08, 2018 - 10:43 AM User: jandretta
Plotter: DWG TO PDF.PC3 CTB File: FO.STB

National Flood Hazard Layer FIRMette

FEMA

43°4'22.13"N

70°46'50.13"W



70°46'12.67"W

43°3'55.84"N

Feet 1:6,000

0 250 500 1,000 1,500 2,000

Legend

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

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99*
	With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN Area of Minimal Flood Hazard *Zone X*
	Effective LOMRs
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Levee, Dike, or Floodwall
OTHER FEATURES	20.2 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
	8 Coastal Transect
	513 Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
MAP PANELS	Digital Data Available
	No Digital Data Available
	Unmapped

N

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

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/18/2018 at 8:15:07 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

File Path: F:\P2018\0317\A10\Civil3\Dwg\20180317A10_DRA01.dwg Layout: CU-101-60SC (2) Plotted: Mon, November 19, 2018 - 4:29 PM User: jandretta
Plotter: DWG TO PDF.PC3 CTB File: FO.STB

MS VIEW:	LAYER STATE:

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

SCALE:
HORZ.: 1"=50'
VERT.:
DATUM:
HORZ.:
VERT.:

50 25 0 50
GRAPHIC SCALE

FUSS & O'NEILL
UPPER SQUARE BUSINESS CENTER
5 FLETCHER STREET, SUITE 1
KENNEBUNK, MAINE 04043
207.363.0669
www.fando.com

CATE STREET DEVELOPMENT, LLC

PROPOSED DRAINAGE PLAN

WEST END YARDS

PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10
DATE: 11/19/2018

DR-102

REVISIONS: No. | DATE | DESCRIPTION | DESIGNER | REVIEWER

SCALE: HORZ.: 1"=50' VERT.:
DATUM: HORZ.: VERT.:

GRAPHIC SCALE: 50 25 0 50

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UPPER SQUARE BUSINESS CENTER
5 FLETCHER STREET, SUITE 1
KENNEBUNK, MAINE 04043
207.363.0669
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CATE STREET DEVELOPMENT, LLC

EXISTING DRAINAGE PLAN

WEST END YARDS

PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.A10
DATE: 11/19/2018

DR-101

File Path: F:\P2018\0317\A10\Civil3\Dwg\20180317A10_DRA01.dwg Layout: CU-101-60SC Plotted: Mon, November 19, 2018 - 4:30 PM User: jandretta
Plotter: DWG TO PDF.PC3 CTB File: FO.STB
MS VIEW:
LAYER STATE:

Stormwater Management Report

West End Yards

Cate Street / Route 1
Portsmouth, NH 03801

APPLICANT & OWNER

Torrington Properties Inc.

60 K Street
Boston, MA 02127

Waterstone Property Group

322 Reservoir Street
Needham, MA 02494

November 19, 2018

FUSS & O'NEILL

Libby House
5 Fletcher Street, Suite 1
Kennebunk, ME 04043

Project No. 20180317.A10

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100%

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C	NRCS Soil Survey Report	
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1 Executive Summary

This Stormwater Management Report describes proposed work and stormwater management associated with the re-development of the Frank Jones Center Property as well as a collection of other properties along Cate Street, located between Route 1 Bypass and Bartlett Street, Portsmouth, New Hampshire (Site). The Site is identified on the Site Location Map, Figure 1.

The results of the redevelopment of these parcels of land are as follows:

1) 1.8 Acre reduction of impervious surfaces on the 13.31 Acres being redeveloped
    a. Equivalent to a 13.6% reduction
2) 0.35 Acre reduction of impervious surface in the wetland buffer along Hodgson Brook
    a. Equivalent to a 24% reduction of impervious surface in the buffer
3) 100% Stormwater pre-treatment
    a. Currently stormwater is not pre-treated
4) 50%-100% Stormwater Treatment
    a. Currently stormwater is not treated
5) Provision of a 25 to 30-ft wide vegetated wetland buffer along the top of bank to Hodgson Brook
    a. Currently only a short section of the wetland and brook has a vegetated buffer at the top of bank
6) Increased Stormwater Infiltration both passively through restoration of vegetated areas and actively through Stormwater Management Practices such as, bioretention areas and Infiltration Chamber Galleries
7) Net reduction on stormwater runoff to Hodgson Brook and the Watershed points of Analysis, both in Flow Rate and Volume

The proposal consists of the construction of:

1) A new City Street, in essence an extension of Cate Street to Route 1 Bypass at the current intersection of Route1 Bypass, Borthwick Avenue and the Frank Jones Center driveway
2) A multi-use / Bike Trail along the alignment of the new City Street from Route 1 Bypass to Bartlett Street.
3) A Dog Park
4) New greenspaces throughout the site

5) A 20,000-sf footprint Retail / Commercial / Office Building in the current location of the Frank Jones Center. Gross floor space of 40,000-sf over 2 floors

6) 2, 5 story Apartment Buildings providing a total of 325 apartment units

7) 23 Townhomes

8) Parking for all of the uses above Commercial, Office and Residential

Existing and proposed hydrologic conditions for the development of the project Site were evaluated to compare existing and proposed stormwater peak discharges and volumes. The evaluation demonstrates a net decrease in peak stormwater discharge and volume for the 2-year, 10-year, 25-year, and 100-year storm events.

2 Project Description

2.1 Existing Conditions

The Site, 13.3 Acres of commercial land, is located east of U.S. Route 1 Bypass in Portsmouth, New Hampshire (Refer to Figure 1). Existing Site features include the Frank Jones Center and an accessory building on Tax Map 172 Lot 1, parking area on Tax Map 173 Lot 2, 2 industrial buildings on Tax Map 165 Lot 2, The PK Brown contractor yard and buildings on Tax Map 163 Lot 34, a House and outbuildings on Tax Map 163 Lot 33, and City Land occupied by Cate Street and a pocket of woods.

2.1.1 Site Parameters

A review of Federal, state, and local requirements for the Site generated the following results:

- The Site lies outside the 500-year flood plain, denoted as "Zone X" on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map Community Panel Number 33015C0259E, May 17, 2005.

- The Site is free of Endangered Flora or Fauna Habitat that would be directly affected by the project per the New Hampshire Natural Heritage Bureau (NHB). Refer to Appendix C.

- Freshwater wetland resources exist on and adjacent to the property. Resource area delineations were completed by Luke Hurley, CWS, CSS of Gove Environmental Services, Inc. and are included on the plans. These Wetlands are subject to a 100-ft wetland buffer.

2.1.2 Soils

The Site is characterized by Natural Resources Conservation Service (NRCS, formerly SCS) as Urban land-Canton complex, which is classified as Hydrological Soil Group (HSG) D. A websoil survey of the soils within the Site can be found in Appendix C.

A Site Specific Soils Mapping (SSSM) has been prepared for the site by Luke Hurley, CWS, CSS of Gove Environmental Services, Inc. Based upon the mapping the site has been mapped as:

> *400A Udorthents, sandy or gravelly*
> This map unit typically includes the following concepts: 1) very gravelly (> 35%) sand or very gravelly loamy sand; Or 2) sand or loamy sand textures that may have lenses of loamy very fine sand or finer somewhere in the particle-size class control section (25 - 100 cm or 10 - 40"). Saturated hydraulic conductivity (Ksat) is high or very high. Drainage class ranges from excessively drained to somewhat poorly drained. Typical gravel pit.

Mr. Hurley has offered that this would equate to an Eldridge NRCS, 38 Hydrologic Soils Group (HSG) C. According to this guidance we have used HSG C for the drainage analysis.

Hydraulic conductivity is being confirmed by McPhail Associates, Inc. the team Geotechnical Engineers.

ESHWT will be confirmed by Testpit in each stormwater practice.

2.2 Proposed Conditions

The redevelopment of the site, will reduce impervious cover by13.6% over the entire site area and greatly improve the stormwater collection, conveyance, treatment and ability to provide groundwater recharge on site. The practices implemented to accomplish this are discussed further in section 3.3.

2.2.1 Design Elements

The following measures have been incorporated in the project design to control the peak stormwater runoff rate, provide recharge, and treat stormwater generated by the site:

- Best Management Practices Designed in accordance with the City of Portsmouth regulations and the NHDES Stormwater Manual;
- An Erosion and Sediment Control plan has been developed that will prevent direct discharges to wetlands, and avoid or minimize channelized stormwater flow directly into wetland resource areas;
- Land disturbance and grading shall be conducted in a selective manner and appropriate construction BMPs are incorporated to preclude construction period runoff/erosion;
- Top soil is preserved or supplemented sufficient to maintain vegetation cover;
- All conveyances and outfalls are dissipated outside of wetland areas; and

- No work is proposed in Essential or Significant Wildlife Habitats or fisheries habitats, as identified by the NHB.

3 Hydrologic Analysis

The hydrologic analyses for existing and proposed conditions were completed using HydroCAD version 10.00-20 to determine peak runoff flow rates and total runoff volumes for the watershed models. HydroCAD is based on the NRCS Technical Release 20 and Technical Release 55, and is subject to cumulative rainfall/volume dependent routing calculations. Hydrographs are prepared for each element of the watershed and routed through the dynamic-storage-indication method to produce various time-based results.
Labeling on the drainage plans and HydroCAD diagrams is as follows:

- Subcatchments – represented by hexagons
- Ponds – represented by triangles
- Reaches and Analysis Points – represented by squares
- Time of Concentration – represented by circles with letters and flow lines

The Pre and Post-Development hydrologic analysis has been included in Appendix F.

3.1 Existing Watershed Summary

The majority of stormwater runoff from the existing on-site development is conveyed via the cities stormwater runoff system which runs south to north along U.S. Route 1 Bypass. The stormwater system and the outfalls into Hodgson Brook are designated as Analysis Point AP1. A small portion of stormwater flows offsite and is designated as Analysis Point AP2. All soils on Site are hydrologic soils group C.

14 subwatersheds have been established for the project's pre-development conditions. Refer to the Pre-Development Subwatershed Plan included as Figure 3.

3.2 Proposed Watershed Summary

Post-development stormwater management features have been located and designed to imitate a more natural distribution of stormwater over the site than what exists today due to the extreme amount of impervious coverage. Stormwater is conveyed via closed drainage system to one of the following:

- Water Quality Unit followed by a vegetated swale and level spreader
- Bioretention areas
- Subsurface Infiltration Chamber galleries

Overflow stormwater leaves the infiltration practices in large storm events and flows to either Hodgson Brook or the City closed Drainage system on Bartlett Street via overflow pipes tied to the proposed closed drainage system.

38 subwatersheds have been established for the project's post-development conditions. Refer to the Post-Development Subwatershed Plan included as Figure 4.

3.3 Best Management Practices

BMPs have been incorporated into the proposed Site improvements in order to protect natural resources from point source stormwater releases associated with the development. The following sections discuss the various BMP's employed.

3.3.1 Off-line Closed Drainage System

A project of this size will inevitably require a closed drainage stormwater collection system employing catch basins, drain manholes and pipe to route stormwater to locations on site available to treat and control it prior to release to downstream areas in the watershed.

There are two common types of closed drainage systems employed In-line and Off-line.

In an in-line closed drainage system, stormwater is collected by catch basins that are connected to each other in series as the system moves down gradient across the site. This type of system re-suspends any solids that settle in the downstream catch basin sumps as flow from upstream catch basins are conveyed through them. Ultimately, this provides little to no pre-treatment of suspended solids.

The proposal utilizes an off-line closed drainage system. In an off-line system, stormwater is collected by catch basins that are then connected to a "drain main" via drain manholes. The sump of each catch basin is then able to retain the suspended solids that enter the catch basin without being re-suspended by flow from another catch basin flowing through it. The proposal also implements catch basins that are "hooded". The hoods are accessories that are mounted to the wall of the catch basin over the invert out that extend about 1-ft below the invert which help to retain floating solids and help settle sediment in the sump of the catch basin.

3.3.2 Bioretention Basins (Rain Gardens)

Bioretention areas are being employed to treat and control stormwater along the new City Street on the north side. The bioretention areas are located at the curve in the road at the east end of the site.

Bioretention basins utilize biologic actions that take place in all soil cross sections to treat stormwater. The soil in a bioretention basin, commonly referred to as a rain garden is a specific tested mix of soils components, that create a soil with a very specific infiltration rate and organic soil / sand mix. Bioretention basins can be constructed in any existing soil condition.

If the existing soil in the location of the bioretention basin provide adequate separation from Estimated Seasonal High Water Table (ESHWT) and sufficient hydraulic conductivity (Ksat), infiltration can be used as one of the means the basin outlets stormwater, providing groundwater recharge.

In the event that the ESHWT separation requirements cannot be met, the bioretention basin can be lined and equip with an underdrain that is outleted to a closed drainage system or an appropriate outfall in the watershed.

The proposal employs bioretention basins that provide some infiltration and groundwater recharge and are also equipped with underdrains to ensure that stormwater does not remain ponded for more than 72 hours.

3.3.3 Subsurface Infiltration Chambers

Subsurface Chambers are being used by this proposal. Particularly, Stormtech SC740 chambers. These chambers consist of high density poly ethylene (HDPE) arches embedded in clean washed stone. The chambers provide superior storage and the stone provides both storage and a stable interface with the in-situ soils the chamber gallery is constructed in. Stormtech Chamber systems provide an additional amount of pre-treatment in one row of chambers called the isolator row. Stormwater is directed to the isolator row first and flows laterally through perforations to the chambers and stone adjacent to it. The isolator row is constructed on top of filter fabric allowing any sediment finding its way to the chambers to be trapped and kept out of the stone. With adequate separation to ESHWT and Ksat infiltration can be employed to allow the stormwater to recharge the groundwater.

In the event that inadequate separation to ESHWT or Ksat are available, chamber galleries can be lined, creating a subsurface detention system.

3.3.4 Water Quality Unit (WQU)

A Water Quality Unit is being provided in the design just prior to the treatment swale and level spreader that allows discharge of stormwater from the closed drainage system to outlet to Hodgson Brook. The WQU will ensure maximum suspended solids removal ahead of stormwater release to the brook.

3.3.5 Treatment Swale with Level Spreader

A treatment swale and level spreader are provided at the outfall of the closed drainage system ahead of Hodgson Brook to ensure energy in the stormwater is dissipated prior to release.

3.3.6 Vegetated Buffer

The design as proposed provides a vegetated buffer along the alignment of the new City Street between the multi-use / bike trail and the top of bank to Hodgson Brook. While this is an improvement, it cannot be claimed as a treatment practice under the NHDES Stormwater rules because it is note deep enough.

3.4 Hydrologic Analysis Results

Today the stormwater generated on site either flows to Hodgson Brook at Analysis Point AP1 or to the City Closed Drainage system in Cate Street hat is connected to the system in Bartlett Street denoted by Analysis Point AP2. The Pre development site is highly impervious,; developed with buildings and paved areas.

The post-development decrease in impervious ground cover and proposed BMPs will attenuate peak flows from the Site. The proposed improvements will result in a net decrease to the Analysis Points AP 1 and AP2 in peak stormwater discharge for the 2-year, 10-year, 25-year, and 100-year 24-hour storm events, as compared to the existing conditions peak stormwater flowrate. The following tables summarize existing vs. proposed stormwater flows for the watershed analysis.

Table 1.1: AP1 Peak Stormwater Flowrate Results at Analysis Point

Design Storm	Existing Flow (cfs)	Proposed Flow (cfs)	Net Change (cfs)
2-year	19.05	14.64	-4.41
10-year	31.76	24.65	-7.11
25-year	41.92	32.59	-9.33
50-year	51.47	40.06	11.41
100-year	62.99	49.07	-13.92

Table 1.2: AP1 Total Stormwater Volume Results at Analysis Point

Design Storm	Existing Volume (cf)	Proposed Volume (cf)	Net Change (cf)
2-year	71,714	50,708	-21,006
10-year	119,732	86,485	-33,247
25-year	158,390	116,426	-41,964
50-year	195,136	148,224	-46912
100-year	239,786	189,222	-50,564

Table 2.1: AP2 Peak Stormwater Flowrate Results at Analysis Point

Design Storm	Existing Flow (cfs)	Proposed Flow (cfs)	Net Change (cfs)
2-year	12.66	3.54	-9.12
10-year	20.38	6.52	-0.60
25-year	26.37	10.00	-16.37
50-year	31.95	11.79	-20.16
100-year	38.64	14.73	-23.91

Table 2.2: AP2 Total Stormwater Volume Results at Analysis Point

Design Storm	Existing Volume (cf)	Proposed Volume (cf)	Net Change (cf)
2-year	43,124	14,167	-28,957
10-year	71,074	27,815	-43,259
25-year	93,230	40,616	-52,614
50-year	114,126	53,441	-60,685
100-year	139,392	70,107	-69,285

As can be seen the re-development of the site affords a unique opportunity to reduce stormwater flows both in rate and volume to a taxed waterway and an existing City Storm Drain.

4 Soil Erosion and Sedimentation Control

Soil erosion and sedimentation control details and narratives for construction periods are provided in the Stormwater Pollution Prevention Plan (SWPPP) [Pending] and the Site plans. Soil erosion and sedimentation control details and procedures are consistent with the NHDES best management Practices for Erosion and Sediment Control.

Erosion and sedimentation controls used on the Site during construction will include silt fence, check dams, hay bales, a construction entrance, and water for dust control. Additional erosion and sediment controls will be utilized as required. Silt fence and hay bales will be placed down-gradient of disturbed areas and up-gradient of wetlands. A construction entrance will be installed to ensure sediment does not get tracked onto US Route 1 Bypass or Bartlett Street.

Water will be applied to exposed soils to provide dust control as needed.
The schedule for the commencement or cessation of construction activities, grading, and soil stabilization measures ceased on a portion of the Site, and stabilization measures initiated, shall be recorded and maintained as part of the SWPPP.

4.1 Construction Support Activities

Waste materials generated from construction activities will include excavated soil, brush, asphalt, and building demo debris. All excavation debris and other waste will be transported to an approved disposal facility. If required, materials may be temporarily stockpiled within designated staging areas. Details and procedures are provided in the construction Site plans. Construction materials will be present on-site during various stages of construction. All materials will be temporarily stored within designated staging or lay-down areas and will be transported to the Site as needed. Construction vehicle fueling will take place at a designated staging area only. Staging areas will be located within the limit of work, outside the wetlands located on-site.

5 Summary

This Stormwater Management Report describes proposed work and stormwater management associated with the re-development of the Frank Jones Center and assembled properties.

The proposed Site improvements will decrease post-development peak stormwater runoff rates and volumes. 2 bioretention areas and 4 subsurface infiltration galleries as well as an offline closed drainage system and a vegetated swale and level spreader all work together to accomplish the improvements.

Appendix A

NHDES WebGIS Printouts; Surface Water Impairments

NHDES WebGIS Printouts; AOT Screening Layers

PENDING

100%

Appendix B

NHB Letter

Appendix C

NRCS Soil Survey Report

FUSS & O'NEILL

Appendix D

Aerial Photograph

Site Photographs

100%

Appendix E

Groundwater Recharge Volume Calulations

PENDING

BMP Worksheets

PENDING

Appendix F

Pre-Development Hydrologic Analysis

Post-Development Hydrologic Analysis

Pre-Development Hydrologic Analysis

2-year Type III, 24 hour storm event summary
25-year Type III, 24 hour storm event summary
50-year Type III, 24 hour storm event summary
100-year Type III, 24 hour storm event summary

10-year Type III, 24 hour storm event summary, Hydrographs and Detailed Printouts

Post-Development Hydrologic Analysis

2-year Type III, 24 hour storm event summary
25-year Type III, 24 hour storm event summary
50-year Type III, 24 hour storm event summary
100-year Type III, 24 hour storm event summary

10-year Type III, 24 hour storm event summary, Hydrographs and Detailed Printouts

Appendix G

Rip-Rap Apron / Energy Dissipation Calculations

PENDING

Appendix H

Site Specific Soils Survey

Appendix I

Infiltration Feasibility Report

PENDING

Appendix J

UIC Registration for infiltration to Groundwater (underground systems)

PENDING

Appendix K

Inspection and Maintenance Manual

PENDING

FUSS & O'NEILL

Figure 1

Site Location Map

100%

FUSS & O'NEILL

Figure 2

FEMA Flood Insurance Rate Map

100%

Figure 3

Pre-Development Subwatershed Plan

100%

FUSS & O'NEILL

Figure 4

Post-Development Subwatershed Plan

100%