Town of Brunswick, Maine

STAFF REVIEW COMMITTEE
85 Union Street
Brunswick, ME 04011

STAFF REVIEW COMMITTEE AGENDA
BRUNSWICK TOWN HALL
85 UNION STREET
Wednesday, September 30, 2020, 10:00 A.M.

THIS MEETING IS BEING CONDUCTED VIA ELECTRONIC DEVICES WITH STAFF REVIEW COMMITTEE MEMBERS PARTICIPATING FROM REMOTE LOCATIONS.

THERE IS NO OPPORTUNITY FOR THE PUBLIC TO VIEW THIS MEETING IN PERSON.

THE PUBLIC MAY PROVIDE COMMENT VIA EMAIL (mpanfil@brunswickme.org) PRIOR TO THE MEETING OR THEY MAY PROVIDE LIVE COMMENT VIA ZOOM TELEPHONE AT: +1 929 205 6099; MEETING ID: 876 6724 3696; PASSCODE: 451943

1. **Case #20-030 Fire Station:** The Staff Review Committee will review and make a recommendation to the Planning Board on a **Final Plan Major Development Review** application submitted by WBRC on behalf of the Town of Brunswick for a new fire station on Pleasant Street at Map U23, Lots 28, 29, 30, 31, 42, 43, 44, and 45. The subject parcel is located within the **Growth Mixed-Use 5 (GM5)** zoning district.

2. **Case #20-019 Marijuana Store Conditional Use Permit:** The Staff Review Committee will review and provide a recommendation to the Planning Board on a **Conditional Use Permit** application submitted by Drummond Woodsum on behalf of GJoris, LLC for a Marijuana Store use at 4 Business Parkway at Map 17, Lot 66. The subject parcel is located within the **Growth Industry (GI)** zoning district.

3. **Case #20-008 Marijuana Store:** The Staff Review Committee will review and provide a recommendation to the Planning Board on a **Final Plan Major Development Review** application submitted by Drummond Woodsum on behalf of GJoris, LLC to construct a Marijuana Store at 4 Business Parkway at Map 17, Lot 66. The subject parcel is located within the **Growth Industry (GI)** zoning district.

4. **Other Business**

5. **Adjourn**

This agenda is mailed to owners of property within 200 feet of proposed development sites. In cases where Committee action is pending this agenda serves as notice of same. In cases where the Committee's role is to advise the Planning Board, this agenda is mailed as a courtesy along with notice of the Planning Board meeting. The Staff Review Committee meeting is open to the public. All are invited to attend and participate. For further information call the Brunswick Department of Planning and Development (725-6660).

4219.01
Brunswick Fire Station – Pleasant St.
Brunswick, Cumberland County, Maine

Brunswick Fire Station – Pleasant Street

Town of Brunswick

Development Review

Prepared For: Town of Brunswick
Attn: Chief Brillant
21 Town Hall Place
Brunswick, Maine 04011

Prepared By: WBRC Architects-Engineers
44 Central Street
Bangor, Maine 04401
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WBRC
ARCHITECTS • ENGINEERS

Sept 18, 2020

Mr. Jared Woolston – Planner
(jwoolston@brunswickme.org)
Town of Brunswick
10 Pine Tree Road
Brunswick, ME 04011

RE: 4219.01 –Brunswick Fire Station (Pleasant Street)
Standard Major Development Review

Dear Mr. Woolston:

On behalf of Brunswick Fire Department, who are looking to build a new facility on Pleasant St., WBRC is please to submit the local permitting package for the proposed construction in Brunswick, Maine, which consists of drawings and supporting materials for your consideration. This letter is intended to summarize the project in an effort to facilitate the review. The application fee will be provided under separate cover.

Property
The subject parcel is located at the intersection of Pleasant and Webster in Brunswick. The existing site consists of a number of single family style houses, some of which have been turned into businesses. All property is under ownership of the town as it has recently been acquired. The site is Tax Map U23, Lots 28,29,30,31,42,43,44,45 with the parcel area listed as 2.4 acres. (See Exhibit#1 for Title Right & Interest*).*

The project site is bounded by Pleasant Street to the north, Webster Street to the East, Turner Street to the South, and additional commercial and residential properties to the west. The project site is located within a business/commercial district along a stretch of road also known as U.S. Route 1. The proposed facility is adjacent to Turner Street and Webster Street. The parcel is surrounded on roughly three sides by public street right of way, there are residential abutters across Webster Street, as well as one other on Turner Street. The remainder of abutters are commercial properties.

Existing Conditions
The existing buildings are multiple story buildings supported by undetermined foundations. Those buildings will be torn down and removed to make way for the new development. The property is rectangular in shape. The existing land cover is multiple single-family residential style buildings with associated paved areas for pedestrian and vehicular access, surrounded by lawns, woods, and other landscaped areas. There is roadside a roadside curb and gutter line for stormwater management along Pleasant Street with a sidewalk just behind the curb. The other two streets have no sidewalk connection. There are some areas with and other areas without roadside curbing. A few of the existing buildings along Pleasant Street have associated parking behind the buildings. One existing parking lot has roughly 10-12 spaces. Two other parking areas have parking areas for roughly 5 cars in each smaller lot.

Grades on the subject site are generally flat and slope from the west to two drainage points at either intersection, Pleasant and Webster or Turner and Webster. There are no steep slopes to be concerned with. Additional discussion about drainage can be found elsewhere in the narrative. The existing buildings are currently served by municipal water and sewer via underground piping connections to all three abutting roads. Those connections will be cut and capped as part of the building demolition. The buildings are served by electrical and communication via overhead lines with the major power corridor coming from utility poles along Pleasant Street.

Project Description

The purpose of the project is to construct a single-story fire station facility, though the appearance will be multi-tiered. The building elevation is shown in the application package with the façade appearance mainly brick. Additional information related to the building elevation is addressed elsewhere in the application. The total footprint of this building is projected at approximately 26,000+/- square feet.

The main public entrance will face Pleasant Street, to the North. The proposed building would include offices, assembly spaces, bunk rooms, kitchenettes, storage, and bathrooms. In addition to the new building, an apparatus bay garage be installed and attached to the building on the south side. The intent is to have the vehicles enter the bay from the Turner street entrance and exit via Webster Street before entering Pleasant Street. Both drive aprons into and out of the bay will have enough pavement for the vehicles to park out of the public right of way prior to entering the bay.

The remaining developable portions of the site will be used to create parking. The main visitor vehicle entry with a small parking area will be located on the Pleasant Street side. Those vehicles will enter from Pleasant Street, approximately 300' west of the intersection with Webster Street. A second larger parking lot will be located south of the building and is intended for employees. There will be two curb cuts, one along Turner Street and the other is on Webster Street. The dumpster will be located behind the building to the south off of the apparatus bay drive. Vehicle access to the dumpster will be from Turner Street.

Grading of the site will be minimal. The existing site is fairly flat. The proposed grading is very close to existing grade with enough cut/fill to remove and fill voids from previous development and to provide a suitable foundation for the new development. Grading is designed to pitch as needed for stormwater to be captured and treated. ADA guidelines were incorporated for ease of access to the facility where needed. With the relatively flat nature of the site we don't expect erosion control to be an issue, however, Erosion and sediment control during construction will be handled utilizing Maine DEP best management practices.

The building will be served by municipal utility infrastructure. The building will have a sprinkler fire suppression system, therefore a new water service is proposed to feed that system. There will be a separate water service for domestic water use. Both water connections occur in Pleasant street and enter the east side of the building near the mechanical room. Sizes and actual location can be found on the plans. The building will have a number of full-time employees that work regular work hours.

Additionally the fire stations will have a crew of firefighters rotating shifts. Based on this information the peak water demand occurs during the day. Based on Maine subsurface waste water rules, the fire station daily demand is estimated at 1,000 gallons per day. A capacity letter has been sent to the water district. With this water demand provisions are proposed for wastewater generation. A new sewer

connection is being installed and connected to the municipal system. The on-site sewer is made up of a couple parts. First the apparatus bays will have floor drains to catch runoff from vehicles that have come out of the rain and snow. The floor drains will route through an oil/grit separator to capture major pollutants prior to a connection with the municipal sewer system. The proposed building has a small kitchen proposed for fire fighters to use during their shift, therefore an exterior grease trap is proposed where the dedicated kitchen waste line exits the building. Any grease will stay in the tank prior to wastewater being discharged to the municipal system.

Finally regular domestic waste water exits the buildings and enters the municipal system on Pleasant Street. A capacity letter has been sent to the sewer district. That letter is elsewhere in the application package.

Stormwater runoff will be collected onsite and processed through a stormwater management systems which consists treatment for quality of the runoff via Filterra units prior to discharge to the municipal system. A series of large underground tanks are proposed for quantity attenuation due to the increase in impervious area from the pre-development to the post development condition. The point of discharge will not change as proposed grading will not impact the overall drainage characteristics of the site. A Maine DEP application has been applied for. As part of that permit, the Maine DOT has been consulted as some discharge enters their system on Pleasant Street. Stormwater is discussed further elsewhere in the application package.

<u>Review Standards</u>
The narrative below follows the town of Brunswick zoning ordinance **chapter 2**, to address the zoning district and various standards applicable to this development. As stated above the project falls within the GM-1 and GM-5 zoning districts. The GM stands for growth mixed-use. Per the ordinance the proposed use is allowed in the district. The zoning standards are listed on the plans with the required and proposed data for comparison. All standards have been met.
The narrative below follows the town of Brunswick zoning ordinance **chapter 4**, to address various standards applicable to this development.

The zoning dimensional and density standards, as stated **in 4.2.3**, are listed on the plans with the required and proposed data for comparison. All standards have been met.

Per section **4.3.1**, no natural or historic areas exist on or near the project site. The site was previously developed and exists within an urban area, therefore no wetlands

Per section **4.3.2**, the project will not result in undue water or air pollution. The waste water is being run through various treatment measures prior to discharge to the municipal system. The stormwater is being treated prior to discharge. The develop is not a point source load for air pollution. The project will incorporate a back-up generator however it will only run in emergencies as well as possibly once a month for testing and maintenance.

Per section **4.3.3**, the project will not impact significant natural vegetation. The setting of the project site is urban with previous development occurring on the property. Per the specific standards listed in the ordinance, such as scenic areas, the project complies.

Per section **4.3.4**, the project will not impact significant plant or wildlife. The setting of the project site is urban with previous development occurring on the property. Per the specific standards listed in the ordinance the project complies.

Per section **4.3.5**, there are no steep slopes on the project site.

Per section **4.3.6**, erosion and sediment control plans are included in the drawings set. See CG101 for more information. The site is fairly flat therefore the contractor should not have a problem controlling sediment. The plan is to use sediment traps in all existing catch basins, silt fence and haybales where applicable.

Per section **4.3.7**, groundwater will not be impacted by the development. All runoff will be collected and treated prior to discharge. No subsurface waste system is proposed. The project will not penetrate into bedrock or sand aquifers.

Per section **4.3.8**, this section is not applicable as no surface waters, wetlands, or marine resources are found on or adjacent to the site.

Per section **4.4**, this project site is not subject to flooding. The site is not located within a flood zone or a flood district overlay. The site is not known to have intermittent flooding due to storm water during heavy rainfall.

Per section **4.5.1** sewage disposal, the development will connect to the municipal sewer system. The Brunswick sewer district has been contacted about the connection and has been asked to provide a review and comment. Connection will be in accordance with the relevant standards and any comments received.

Per section **4.5.2** water supply, the development will connect to the municipal water distribution system. The water district has been contacted about the connection and has been asked to provide a review and comment. Connection will be in accordance with the relevant standards and any comments received.

Per section **4.5.3** solid waste disposal. The site development includes a screened dumpster area for trash disposal. All trash will be collected by a disposal vendor.

Per section **4.5.4** stormwater management is covered within this application. The stormwater has been reviewed by the Maine DOT as portions connect into their system. The stormwater also requires a Maine DEP permit. The stormwater management system has been designed to conform to the applicable standards for treatment and quantity.

Per section **4.6** landscaping requirements. A planting plan has been included with the permitting plans.

Per section **4.6.2** landscaping standards, the proposed plantings are hardy and native to the region.

Per section **4.6.3** street trees are proposed in accordance with the standard, smaller trees are proposed along Pleasant and Webster as they fall underneath overhead utility lines.

Per section **4.6.4** buffers are proposed to create a border between the proposed parking lot and adjacent abutters, therefore minimizing the expansive nature of the asphalt parking lot.

Per section **4.7** residential recreational areas requirement is not applicable.

Per section **4.8.1** street standards, no new streets are proposed. Fire vehicles will exit and enter from side streets with less traffic than the adjacent Pleasant Street. One right turn in, right turn out curb cut exists on Pleasant street for a small visitor parking lot.

Per section **4.8.1 E** Sidewalk exists along Pleasant Street, that old sidewalk will be removed and replaced with a new one during construction. The property has street frontage on three streets. No sidewalk is proposed on Webster at this time. For safety reasons a sidewalk is not desired to cross the fire vehicle's exit driveway. The frontage on Turner is part of a dead end road as it connects to one residential lot before the road becomes a driveway for the Salvation army's back parking lot.

Per section **4.8.2,** the only curb cut that occurs on a street that generates over 500 vehicle trips per day is the visitor's parking lot entrance that has a right turn in, right turn out curb cut. It should be noted that this one curb cut replaces the four curb cuts that currently exist along that stretch of road.

Per section **4.8.2,** the and bike access, the development is maintaining connection for pedestrians that currently exist. As for bike access the development is proposing to install bike parking to comply with the ordinance as it is located within a growth zone and has a parking lot in excess of 30 spaces.

Per section **4.8.4,** ADA accessibility has been taken into account. ADA parking is proposed and accessible routes in and out of the being have been designed.

Per section **4.9,** parking is being provided in the form of a visitor lot and employee/ overflow parking lot. The development is a fire station but is classified as office space and storage space. The parking calculations are shown on the CP101 drawing. Per the calculation the project needs to provide 57 spaces, which it does. The applicable ADA spaces are included in this number.

Per section **4.9.2,** bicycle parking is provided near the building entrance on a brick patio.

Per section **4.9.3A,** the parking and circulation has been designed according to these standards, dimensions are shown on the plans.

Per section **4.9.3B,** the parking lot has a robust planting plan, buffering it from the adjacent streets as shown on the plans. The plantings on the exterior the parking lot have been increased to offset interior island plantings. The applicant would like to not have interior islands in the parking lot to help with snow removal.

Per section **4.9.3C,** related to surfacing the applicant wishes to have all vehicle circulation areas paved. The drainage has been designed to capture and treat runoff. No ground water recharge is proposed as a Maine DEP permit for an underground injection well would be required and it has been determined that

achieving the standards is difficult and cost prohibitive. Lighting has been designed with full cutoff so that light does not leave the site.

Per section **4.9.4,** not applicable – no offsite parking proposed**.**

Per section **4.9.5,** off street loading requirement can be met. Per the table 4.9.5.A2 for a public/civic institution of 10,001 to 50,000 square feet, one space is required for a medium sized truck. Space is available in apparatus bay driveway out of the way of operations and near the entrance door on Webster.

Per section **4.9.10,** lighting requirements have been met, lighting cut sheets are provided in this application.

Per section **4.11.1,** we believe architectural compatibility has been met. The building's façade is made of brick and stone with breaks in the horizontal plane as suggested in the ordinance.

Per section **4.12**, neighborhood protection standards are not applicable as the development is on a main arterial of the town.

Per section **4.13**, signs. The applicant is aware of the sign standard. Building mounted signage in terms of noting the building is a fire station will comply. No freestanding signs are proposed.

Per section **4.14,** performance standards,

Per section **4.14.1** Sound, the building is designed as an office space and storage space, the building operation will not generate sound, however a back up generator is proposed and will be run at least once a month for testing. Additionally, the development is a public safety facility and vehicle mounted sirens are part of the safety protocol. Smoke, dust, fumes, vibrations, and odors are secondary to the function of the building.

Per section **4.15,** the applicant is aware of the maintenance required for landscaping and other features and intends to comply.

Per section **4.16,** the town believes there are adequate funds for this project. The current design has been estimated and falls within the expected budget. For technical capacity, the applicant has hired WBRC architect engineers for the design in conjunction with other design professionals in the field, in particular a design firm named Mitchell and Associates was instrumental in the design as fire stations are their particular field of expertise and have design over 100 facilities across the country. The project will go to public bid.

<u>In Conclusion</u>
We look forward to present the project at the next available planning board meeting. If you have any questions, please feel free to contact me by email paul.monyok@wbrcae.com or by phone 207-947-4511. Thank you.

Sincerely,

Paul Monyok, P.E.
State of Maine Licensed Civil Engineer

Enclosures:

4219.01
Brunswick Fire Station – Pleasant St.
Brunswick, Cumberland County, Maine

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Exhibit #6 – Site Plans

Prepared For: Town of Brunswick
Attn: Chief Brillant
21 Town Hall Place
Brunswick, Maine 04011

Prepared By: WBRC Architects-Engineers
44 Central Street
Bangor, Maine 04401
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Exhibit #0 – Application Form & Checklist

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DEVELOPMENT REVIEW APPLICATION

1. Development Review application type (refer to **Appendix D**):

   - [ ] **Minor Development Review**
   - [ ] Major Development Review: **Sketch Plan**
   - [x] Major Development Review: **Final Plan**
   - [ ] Major Development Review: **Streamlined Final Plan**

2. Project Name: Brunswick Fire Station - Pleasant Street

3. Project Applicant
   Name: Town of Brunswick (attn: John Eldridge)
   Address: 85 Union Street
   Brunswick, ME 04011
   Phone Number: 207-725-6659
   Email: jeldridge@brunswickme.org

4. Project Owner (if different than applicant)
   Name: SAME
   Address:
   Phone Number:
   Email:

5. Authorized Representative
   Name: WBRC (attn:Paul Monyok, PE)
   Address: 44 Central St
   Bangor, ME 04401
   Phone Number: 207-947-4511
   Email: paul.monyok@wbrcae.com

6. List of Design Consultants. Indicate the registration number, address and phone number, email for any additional project engineers, surveyors, architects, landscape architects or planners:

   1. Arch - Mat Ward WBRC
   2. Larch - Paul Brody WBRC
   3. MEP - Hewitt Whitney, 161 Main St. Ste 2a, Winthrop, ME 04364

7. Physical location of property: Corner of Pleasant and Webster

8. Lot Size: 2.4 acres

9. Zoning District: GM-5

10. Overlay Zoning District(s): N/A

11. Indicate the interest of the applicant in the property and abutting property. For example, is the applicant the owner of the property and abutting property? If not, who owns the property subject to this application?

Applicant is the owner of the property.

12. Assessor's Tax Map U23 Lot Number 28,29,30,31,42,43,44,45 of subject property.

13. Brief description of proposed use/subdivision: _____

The proposed used is public and civic in nature as it will be a fire station including office space and vehicle storage.

14. Describe specific physical improvements to be done: _____

remove existing development. Construct new 26,000 SF fire station building and associated site improvements including paved parking and driveway entrances.

Owner Signature:

_____

Applicant Signature (*if different*):

_____

DEVELOPMENT REVIEW APPLICATION REQUIREMENTS

The submission requirements contained in **Appendix D** of the Brunswick Zoning Ordinance (attached in checklist format for each application category) shall apply to all Minor Development, Major Development, and Streamlined Major Development Review unless a waiver is granted. Proposed development applications shall be submitted to the Director of Planning and Development.

For each item listed in Appendix D the applicant shall either submit the requested information or request a waiver from the information requirement pursuant to Subsection 5.2.9.M of the Zoning Ordinance.

REQUIREMENTS FOR FINAL PLAN, STREAMLINED REVIEW & MINOR REVIEW APPLICATION SUBMITTAL Please mark box with one of the following: "W" (Waiver); "P" (Pending); "X" (Submitted) or "N/A" (Not applicable)		Final Plan	Streamlined	Minor
General	Application form and fee	X	--	--
	Name of development	X	--	--
	Existing zoning district and overlay designations	X	--	--
	Location map	X	--	--
	Names of current owner(s) of subject parcel and abutting parcels	X	--	--
	Names of engineer and surveyor; and professional registration numbers of those who prepared the plan	X	--	--
	Location of features, natural and artificial, such as water bodies, wetlands, streams, important habitats, vegetation, railroads, ditches and buildings	X	--	--
	Documentation of Right, Title and Interest	X	--	--
	Drafts of legal documents appropriate to the application, including: deeds, easements, conservation easements, deed restrictions or covenants, home/property owners association declarations and by-laws, and such other agreements or documents as are necessary to show the manner in which common areas will be owned, maintained, and protected	X N/A	-- --	-- --
	Draft performance guarantee or conditional agreement	N/A	--	--
Survey, Topography, & Existing Conditions	Scale, date, north point, and area	X	--	--
	A survey submitted (stamped for final plan submittal) by a professional surveyor with a current license by the State of Maine Board of Licensure for Professional Surveyors	X	--	--
	Boundaries of all lots and tracts with accurate distances and bearings, locations of all permanent monuments property identified as existing or proposed	X	--	--
	Existing easements associated with the development	N/A	--	--
	Location of existing utilities; water, sewer, electrical lines, and profiles of underground facilities	X	--	--
Survey, Topography, & Existing Conditions	Existing location, size, profile and cross section of sanitary sewers; description, plan and location of other means of sewage disposal with evidence of soil suitability	X	--	--
	Topography with contour intervals of not more than two (2) feet	X	--	--
	A Medium Intensity Soil Survey, available from the Cumberland County Soil and water Conservation District,. The Planning Board may require a Class A (high intensity) Soil Survey, prepared in accordance with the standards of the Maine Association of Professional Soil Scientists, if issues of water quality, wetlands or other natural constraints are noted.	X X	-- --	-- --
	Existing locations of sidewalks	X	--	--
	A delineation of wetlands, floodplains, important habitats, and other environmentally sensitive areas	X	--	--
	Approximate locations of dedicated public open space, areas protected by conservation easements and recreation areas	N/A	--	--

REQUIREMENTS FOR FINAL PLAN, STREAMLINED REVIEW & MINOR REVIEW APPLICATION SUBMITTAL Please mark box with one of the following: "W" (Waiver); "P" (Pending); "X" (Submitted) or "N/A" (Not applicable)		Final Plan	Streamlined	Minor
Infrastructure - Proposed	Name, location, width of paving and rights-of-way, profile, cross-section dimensions, curve radii of existing and proposed streets; profiles of center-lines of proposed streets, at a horizontal scale of one (1) inch = 50 feet and vertical scale of one (1) = five (5) feet, with all evaluations referred to in U.S.G.S. datum	N/A N/A	-- --	-- --
	Proposed easements associated with the development	N/A	--	--
	Kind, location, profile and cross-section of all proposed drainage facilities, both within and connections to the proposed development, and a storm-water management plan in accordance with Section	X	--	--
	Location of proposed utilities; water, sewer, electrical lines, and profiles of underground facilities. Tentative locations of private wells.	X	--	--
	Proposed location, size, profile and cross section of sanitary sewers; description, plan and location of other means of sewage disposal with evidence of soil suitability	X	--	--
	Proposed locations, widths and profiles of sidewalks	X	--	--
	Locations and dimensions of proposed vehicular and bicycle parking areas, including proposed shared parking arrangement if applicable.	X	--	--
Infrastructure - Proposed	Grading, erosion control, and landscaping plan; proposed finished grades, slopes, swells, and ground cover or other means of stabilization	X	--	--
	Storm water management plan for the proposed project prepared by a professional engineer	X	--	--
	The size and proposed location of water supply and sewage disposal systems	X	--	--
	Where a septic system is to be used, evidence of soil suitability	N/A	--	--
	A statement from the General Manager of the Brunswick Sewer District as to conditions under which the Sewer District will provide public sewer and approval of the proposed sanitary sewer infrastructure	X	--	--
	A statement from the Fire Chief recommending the number, size and location of hydrants, available pressure levels, road layout and street and project name, and any other fire protection measures to be taken	X	--	--
	A statement from the General Manager of the Brunswick and Topsham Water District as to conditions under which public water will be provided and approval of the proposed water distribution infrastructure	X	--	--
Proposed Development Plan	Lighting plan showing details of all proposed lighting and the location of that lighting in relation to the site	X	--	--
	Reference to special conditions stipulated by the Review Authority	N/A	--	--
	Proposed ownership and approximate location and dimensions of open spaces for conservation and recreation. Dedicated public open specs, areas protected by conservation easements, and existing and proposed open spaces or recreation areas and potential connectivity to adjoining open space.	N/A N/A	-- --	-- --
	When applicable, a table indicating the maximum number of lots permitted based upon the applicable dimensional requirements, the number of lots proposed, and the number of lots permitted to be further subdivided.	N/A	--	--
	Building envelopes showing acceptable locations for principal and accessory structures, setbacks and impervious coverage	X	--	--

REQUIREMENTS FOR FINAL PLAN, STREAMLINED REVIEW & MINOR REVIEW APPLICATION SUBMITTAL Please mark box with one of the following: "W" (Waiver); "P" (Pending); "X" (Submitted) or "N/A" (Not applicable)		Final Plan	Streamlined	Minor
Proposed Development Plan	Disclosure of any required permits or, if a permit has already been granted, a copy of that permit	X	--	--
	A statement from the General Manager of the Brunswick and Topsham Water District regarding the proposed development if located within an Aquifer Protection Zone	N/A	--	--
	A plan of all new construction, expansion and/or redevelopment of existing facilities, including type, size, footprint, floor layout, setback, elevation of first floor slab, storage and loading areas	X	--	--
	An elevation view of all sides of each building proposed indicating height, color, bulk, surface treatment, signage and other features as may be required by specific design standards	X	--	--
	A circulation plan describing all pedestrian and vehicle traffic flow on surrounding road systems	N/A	--	--
	A site landscaping plan indicating grade change, vegetation to be preserved, new plantings used to stabilize areas of cut and fill, screening, the size, locations and purpose and type of vegetation	X	--	--
	Number of lots if a subdivision	N/A	--	--
	A plan showing all ten (10) inch caliper trees to be removed as a result of the development proposal	X	--	--
	All applicable materials necessary for the Review Authority to review the proposal in accordance with the criteria of Chapter 5.	X	--	--
	Any additional studies required by the Review Authority	N/A	--	--

4219.01
Brunswick Fire Station – Pleasant St.
Brunswick, Cumberland County, Maine

Exhibit #1– Title Right Interest
Deeds
Property Survey Description

Prepared For: Town of Brunswick
Attn: Chief Brillant
21 Town Hall Place
Brunswick, Maine 04011

Prepared By: WBRC Architects-Engineers
44 Central Street
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Exhibit A

A certain lot or parcel of land and any improvements thereon located on the southerly side of Pleasant Street, also known as Route 1, Town of Brunswick, County of Cumberland, State of Maine, bounded and described as follows:

BEGINNING at a point on the southerly line of Pleasant Street at the northeast corner of Parcel One as described in a deed to 127 Pleasant Street, LLC, dated June 16, 2004, recorded in the Cumberland County Registry of Deeds, Book 21438, Page 236, said point is located N85°25'22"E of and one hundred thirty-one and fort4-eight hundredths (131.48) feet from a 6"x6" granite highway monument found on the southerly line of Pleasant Street at Station 631+46.17 on the Maine State Highway Commission Right of Way Map, State Highway "I", Brunswick, Cumberland County, dated January 1955, sheet 2 of 3, S.H.C. File No. 3-104, said point is also located N12°58'06"W of and two and sixty-five hundredths (2.65) feet from an axle found on the easterly line of said 127 Pleasant Street, LLC;

THENCE N85°25'22"E along the southerly line of said Pleasant Street, two hundred sixty-three and fourteen hundredths (263.14) feet to the intersection of the southerly line of said Pleasant Street with the westerly line of Webster Street;

THENCE S12°41'15"E along the westerly line of said Webster Street, four hundred fourteen and zero hundredths (414.00) feet to the intersection of the westerly line of said Webster Street with the northerly line of Turner Street, as described in the layout of Turner Street, Town of Brunswick Road Book 18, Page 353, dated October 2, 1963;

THENCE S89°42'36"W along the northerly line of said Turner Street, two hundred ninety and ninety-seven hundredths (290.97) feet to a an iron rod set at the southwest corner of land described in a deed to Bodwell Properties, LLC, dated May 17, 2019, recorded in Book 35659, Page 274;

THENCE N01°15'07"W along the easterly line of said Bodwell Properties, LLC, one hundred twenty-seven and eighty-five hundredths ((127.85) feet to an iron rod set;

THENCE S86°02'12"W along the northerly line of said Bodwell Properties, LLC, thirty-eight hundredths (0.38) feet to a ¾" iron pipe found at the southeast corner of Parcel Three in said deed to 127 Pleasant Street, LLC;

THENCE N12°58'06"W along the easterly line of Parcel Three and Parcel One as described in said deed to 127 Pleasant Street, LLC, two hundred sixty-three and twenty-eight hundredths (263.28) feet to the POINT OF BEGINNING.

Containing 2.445 acres.

All iron rods set are ¾" rebar with Survey ID Cap.

MEANING AND INTENDING to describe the following deeds to the Town of Brunswick:

- Deed from Brian K. & Louise L. Thibeault, dated July 15, 2019, recorded in Book 35829, Page 189.
- Deed from Kevin P Stauff, dated September 19, 2019, recorded in Book 36003, Page 224.
- Deed from 117-119 Pleasant Street LLC, dated December 30, 2019, recorded in Book 36306, Page 125.
- Deed from William E. Bodwell, II, dated March 24, 2020, recorded in Book 36534, Page 219.
- Deed from David R. & Catherine P. Flaherty, dated April 30, 2020, recorded in Book 36647, Page 332.

Also included in the above description is a small triangular parcel of land on the northerly side of Turner Street that appears to have been created when the Town of Brunswick extended the westerly line of Webster Street southerly sixteen feet. Reference is made to the Town of Brunswick Road Book 18, Page 353.

This description was prepared by Plisga & Day Land Surveyors and is based on a plan entitled "Boundary and Topographic Survey, Brunswick Fire Department", prepared by Shyka, Sheppard & Garster Land Surveyors, dated February 20, 2020, Project No. 19-136. Bearings reference NAD83 (Maine West Zine) as shown on said plan.

RECORDING REQUESTED BY
AND AFTER RECORDING RETURN TO:
Michael L. Lane, Esq.
PretiFlaherty, LLP
One City Center
P.O. Box 9546
Portland, ME 04112-9546

MAINE REAL ESTATE TAX PAID

QUITCLAIM DEED WITH COVENANT

BRIAN K. THIBEAULT and **LOUISE L. THIBEAULT**, both of Brunswick, Cumberland County, Maine, for consideration paid, grant to **TOWN OF BRUNSWICK**, a municipal corporation, with a mailing address of 85 Union Street, Brunswick, Maine 04011, with quitclaim covenant, a certain lot or parcel of land with the improvements thereon, located in Brunswick, Cumberland County, Maine, more particularly bounded and described as follows:

Parcel 1

Being lot no. 13 on a certain plan entitled "Plan of lots in Brunswick, Maine, owned by Frank O. Stanwood", dated November 7, 1921, drawn by Stephen Litchfield, C.E., recorded in the Cumberland County Registry of Deeds in Plan Book 22, Page 26, to which plan reference is made for further description of the lot herein conveyed.

For grantor's source of title, reference may be made to the Warranty Deed from Louise L. Thibeault, formerly known as Louise M. LeBlanc, to Brian K. Thibeault and Louise L. Thibeault, dated November 15, 1999, recorded in the Cumberland County Registry of Deeds in Book 15185, Page 91.

Parcel 2

Being lot no. 14 on a certain plan entitled "Plan of lots in Brunswick, Maine, owned by Frank O. Stanwood", dated November 7, 1921, drawn by Stephen Litchfield, C.E., recorded in the Cumberland County Registry of Deeds in Plan Book 22, Page 26, to which plan reference is made for further description of the lot herein conveyed.

For grantor's source of title, reference may be made to the Warranty Deed from Brian K. Thibeault to Brian K. Thibeault and Louise L. Thibeault, dated November 15, 1999, recorded in the Cumberland County Registry of Deeds in Book 15185, Page 92.

[*signature page follows*]

WITNESS our hands and seals this 15th day of July 2019.

WITNESS:

BRIAN K. THIBEAULT

LOUISE L. THIBEAULT

STATE OF MAINE
COUNTY OF ~~Ag~~ Cumberland

July 15, 2019

Then personally appeared the above-named Brian K. Thibeault and Louise L. Thibeault and severally acknowledged the foregoing instrument to be their free acts and deeds.

Before me,

~~Notary Public~~/Maine Attorney-at-law

Print Name: Kristin Collins # 9793

Commission Expires:
(Affix notarial seal)

Received
Recorded Register of Deeds
Jul 24,2019 02:42:26P
Cumberland County
Nancy A. Lane

14466726.1

RECORDING REQUESTED BY
AND AFTER RECORDING RETURN TO:
Michael L. Lane, Esq.
PretiFlaherty, LLP
One City Center
P.O. Box 9546
Portland, ME 04112-9546

DLN: 1001940072588

QUITCLAIM DEED WITH COVENANT

KEVIN P. STAUFF, of Greenville, Hunt County, Texas, for consideration paid, grants to **TOWN OF BRUNSWICK**, a municipal corporation, with a mailing address of 85 Union Street, Brunswick, Maine 04011, with quitclaim covenant, a certain lot or parcel of land with the improvements thereon, located in Brunswick, Cumberland County, Maine, more particularly bounded and described as follows:

MAINE REAL ESTATE TAX PAID

Beginning at a point on the westerly side of Webster Street which is the southeasterly corner of lot #11 on a plan of house lots in said Brunswick, Maine owned by Frank O. Stanwood, dated November 7, 1921, and recorded in the Cumberland County Registry of Deeds in Plan Book 22, Page 26, which point is also the northeasterly corner of lot #12 according to said plan; running thence northerly along the westerly side of Webster Street ten (10) feet; running thence westerly by line parallel with the southerly line of said lot #11 according to said plan one hundred thirty-two (132) feet, keeping a distance throughout from said southerly line of lot #11 of ten (10) feet, to land now or formerly of Frank A. Stanwood; running thence southerly along line of land now or formerly of said Frank A. Stanwood, which is also the westerly line of said lot #11 according to said plan (10) feet to the northerly line of lot #12 according to said plan; running thence easterly along the northerly line of said lot #12, which is also the southerly line of said lot #11 according to said plan, one hundred thirty-two (132) feet to the point or place of beginning.

ALSO another certain lot or parcel of land situated in said Brunswick, Maine, bounded and described as follows;

Easterly by Webster Street sixty-six (66) feet as shown on a plan hereafter referred to; northerly by lot #11 as shown on said plan one hundred thirty-two (132) feet; westerly by other land now or formerly of Carrie E. Stanwood, sixty-six (66) feet; southerly by lot #13 as shown on said plan one hundred thirty-two (132) feet to the point of beginning.

The foregoing premises is shown as lot #12 on a plan of house lots in said Brunswick, Maine owned by Frank O. Stanwood, dated November 7, 1921, and recorded in the Cumberland County Registry of Deeds in Plan Book 22, Page 26.

For grantor's source of title, reference may be made to the Warranty Deed from Nancy B. Ramsey and Lucien C. Bourgoin to Kevin P. Stauff, dated December 20, 2001, recorded in the Cumberland County Registry of Deeds in Book 17113, Page 298.

WITNESS my hand and seal this 19th day of September 2019.

WITNESS:

KEVIN P. STAUFF

STATE OF MAINE
COUNTY OF Cumberland

September 19, 2019

Then personally appeared the above-named Kevin P. Stauff and acknowledged the foregoing instrument to be his free act and deed.

Before me,

~~Notary Public~~/Maine Attorney-at-law

Print Name: Michael L. Lane

Commission Expires:
(Affix notarial seal)

Received
Recorded Register of Deeds
Sep 23,2019 01:21:36P
Cumberland County
Nancy A. Lane

14723442.1

MAINE REAL ESTATE TAX-Paid

DLN: 1001940083495

MAINE SHORT FORM QUIT CLAIM DEED WITH COVENANT

117-119 PLEASANT STREET LLC, a Maine limited liability company with a mailing address of 63 Shore Drive, Freeport, Maine 04032, for consideration paid, grants to the **TOWN OF BRUNSWICK**, a municipal corporation, with a mailing address of 85 Union Street, Brunswick, Maine 04011, with QUIT CLAIM COVENANT, the land and improvements in Brunswick, Maine and being bounded and described as follows:

See Exhibit A attached hereto and made a part hereof

WITNESS my hand and seal this 30th day of December in the year of our Lord two thousand and nineteen.

SIGNED, SEALED AND DELIVERED
in the presence of

117-119 PLEASANT STREET LLC

Witness

By: Andrew L. Allen
Its: Manager

STATE OF MAINE
CUMBERLAND, ss.

December 30, 2019

Personally appeared the above named **ANDREW L. ALLEN** and acknowledged the foregoing instrument to be his free act and deed as **Manager** of **117-119 PLEASANT STREET LLC.**

Before me,

Notary Public

Printed name of Notary

John W. Voorhees
Notary Public, Maine
My Commission Expires August 18, 2026

My Commission expires:

EXHIBIT A

PARCEL ONE: 117 Pleasant Street

A certain lot or parcel of land, but not including the two-story building numbered 117 Pleasant Street the title to which is retained by 117-119 Pleasant Street LLC, situated on the southerly side of Pleasant Street in said Brunswick, bounded and described as follows:

Beginning at the northwest corner of land conveyed to Emile Dionne and running westerly along the southerly line of said Pleasant Street, four (4) rods to other land now or formerly of Carrie E. Stanwood; thence running southerly by said Carrie E. Stanwood's other land, eight (8) rods to other land now or formerly of said Carrie E. Stanwood; thence running easterly by said Carrie E. Stanwood's other land four (4) rods to the southwest corner of said Emile Dionne's land and thence running northerly along said Dionne's westerly line, eight (8) rods to the place of beginning.

Also a certain lot or parcel of land in Brunswick, County of Cumberland and State of Maine, more particularly bounded and described as follows:

Northerly by Lot 3 on a plan hereinafter mentioned, sixty-six (66) feet; thence easterly by Lots 10 and 11 as shown on said plan, one hundred thirty-two (132) feet; thence southerly by Lot 14 as shown on said plan, sixty-six (66) feet; thence westerly by land now or formerly of Boucher about one hundred thirty-two (132) feet to the place of beginning.

The foregoing premises is the parcel of land shown on a plan of house lots in Brunswick, Maine now or formerly owned by Frank O. Stanwood dated November 7, 1921, and duly recorded in the Cumberland County Registry of Deeds in Plan Book 22, Page 26, which is located to the west of Lots 10 and 11 on said plan, to the north of Lot 14 and to the immediate south of Lot 3. The westerly line of the conveyed premises being a prolongation of the westerly line of Lot 14.

PARCEL TWO: 119 Pleasant Street

A certain lot or parcel of land, including all buildings thereon, situated in Brunswick, County of Cumberland and State of Maine, on the south side of Pleasant Street, bounded and described as follows:

Beginning at the northwest corner of land now or formerly of Albert Dube and running sixty-six (66) feet to land now or formerly of Wilfred Marios; thence southerly along land of said Marios eight (8) rods to land now or formerly of Marie Girard (who was formerly Marie Boucher); thence easterly on said Girard land to land of said Dube sixty-six (66) feet; thence northerly along said Dube land eight (8) rods to the place of beginning.

ALSO ANOTHER LOT OR PARCEL OF LAND together with the buildings thereon situated in said Brunswick and described as follows:

Northerly by (above described parcel) land now or formerly of Wilfred Desroucher sixty-six feet (66'), more or less; Easterly by other land of said Marie Girard one hundred thirty-two feet (132'), more or less; Southerly by other land of said Marie Girard sixty-six feet (66'), more or less; Westerly by other land of said Marie Girard one hundred thirty-two feet (132'), more or less

to the point of beginning. The easterly and westerly boundaries of the foregoing parcel are extensions running in southerly straight lines of the easterly and westerly sidelines respectively of the land of the grantor herein described in the first description above.

PARCEL THREE: Turner Street

A certain lot or parcel of land situated in Brunswick and being shown as Lot #15 on a plan recorded in the Cumberland County Registry of Deeds in Plan Book 22, Page 26, and being more particularly described as follows:

Northerly by land now or formerly of Andrew L. Allen, sixty-six (66) feet; thence easterly by Lot #14 as shown on said plan, one hundred thirty-two (132) feet; thence southerly by Turner Street, so-called, and as shown as an unnamed street on said plan, sixty-six (66) feet; thence westerly by Lot #16 as shown on said plan and other land now or formerly of Andrew L. Allen and as shown as Lot #16, one hundred thirty-two (132) feet to the place of beginning.

For source of title reference may be had to a certain instrument from Andrew L. Allen to 117-119 Pleasant Street LLC dated July 24, 2015 and recorded in the Cumberland County Registry of Deeds in Book 32468, Page 1. See also a Confirmatory Release Deed from Andrew L. Allen and Mary W. Allen to 117-119 Pleasant Street LLC dated November 12, 2019 and recorded in the said Registry of Deeds in Book 36161, Page 62 and a Confirmatory Release and Termination from Louis E. Thibeault, Jr., Mark A. Thibeault, Brian K. Thibeault, Cheryl R. Farnham and Tod M. Thibeault to 117-119 Pleasant Street LLC dated December 27, 2019 and to be recorded in the Cumberland County Registry of Deeds.

The premises are conveyed subject to an easement to Central Maine Power Company dated December 23, 1953 and recorded in said Registry of Deeds in Book 2172, Page 45.

MAINE REAL ESTATE TAX-Paid

RECORDING REQUESTED BY
AND AFTER RECORDING RETURN TO:
Michael L. Lane, Esq.
PretiFlaherty, LLP
One City Center
P.O. Box 9546
Portland, ME 04112-9546

DLN: 1002040090614

QUITCLAIM DEED WITH COVENANT

William E. Bodwell II, with a mailing address of 135 Maine Street, PMB 127, Brunswick, ME 04011, grants to the Town of Brunswick, a municipal corporation with a mailing address of 85 Union Street, Brunswick, Maine 04011, with quitclaim covenant, a certain lot or parcel of land with any buildings thereon, situated in Brunswick, County of Cumberland, State of Maine, more fully described as follows:

A certain lot or parcel of land situated in Brunswick, County of Cumberland and State of Maine, and described as follows:

Beginning at a point on the westerly side of Webster Street which is ten (10) feet northerly of the southeasterly corner at lot No, 11 according to the plan of house lots in said Brunswick, Maine, owned by Frank O. Stanwood, dated November 7, A. D. 1921, and recorded in the Cumberland County Registry of Deeds, Plan Book 22, Page 26; running thence northerly along the westerly side of said Webster Street fifty-six (56) feet to the southerly line of lot No. 10 according to said plan; running thence westerly along the southerly line of said lot No. 10 one hundred and thirty-two (132) feet to land now or formerly of Frank O. Stanwood; running thence southerly along said line of land now or formerly of said Frank O. Stanwood, which is also the westerly line of lot No. 11 according to said plan, fifty-six (56) feet to land conveyed by Claire B. Bouchard to Leah Powers by deed dated May 31, A. D. 1940, and recorded in said Registry of Deeds, Book 1626, Page 70, which line of land is ten (10) feet northerly from the northerly line of lot No. 12 according to said plan; running thence easterly, keeping a distance of ten (10) feet from the northerly line of said lot No. 12 according to said plan, one hundred and thirty-two (132) feet to the point or place of beginning.

Being a part of lot No. 11, according to said plan, which was conveyed to Elzear Berube by deed of Kenneth Batty, dated July 20, A. D. 1936, and recorded in said Registry of Deeds, Book 1504, Page 126, and the part remaining from said lot No. 11 after reserving from said lot No. 11 so much thereof as was conveyed by Claire B. Bouchard to Leah Powers by deed above referred to, and being also the same premises which were conveyed to Michael S. Toth and Mary A. Toth by said Claire B. Bouchard by deed dated November 29, A. D. 1940, and recorded in said Registry of Deeds, Book 1626, Page 71.

Also another lot or parcel of land, with-the buildings thereon, situated in said Brunswick, being lot No. 10 on a plan of house lots in said Brunswick, Maine, owned by Frank. O. Stanwood, dated November 7, A. D. 1921, and recorded in said Registry of Deeds, Plan Book 22, Page 26, said premises being bounded as follows: Easterly by Webster Street, sixty-six (66) feet; southerly

DOC :15878 BK:36534 PG:220
RECEIVED - RECORDED, CUMBERLAND COUNTY REGISTER OF DEEDS
03/25/2020, 02:11:55P
Register of Deeds Nancy A. Lane E-RECORDED

by lot No. 11 according to the above mentioned plan, one hundred and thirty-two (132) feet; westerly by land now or formerly of the estate of Carrie E. Stanwood, sixty-six (66) feet; northerly by lots numbered 2 and 1 according to said plan, one hundred and thirty-two (132) feet.

MEANING AND INTENDING to convey, and hereby conveying the same premises described in Deed to William E. Bodwell II dated December 26, 2019, and recorded in the Cumberland County Registry of Deeds in Book 36298, Page 261.

Witness my hand and seal this 24 day of ~~February~~ March, 2020.

Witness

William E. Bodwell II

STATE OF MAINE
CUMBERLAND COUNTY

~~February~~ March 24, 2020

Personally appeared the above named William E. Bodwell II and acknowledged the foregoing instrument to be his free act and deed before me,

Attorney at Law / Notary Public

Edgar S. Catlin, III

Attorney at Law

Print or Type Name as Signed

My Commission Expires

MAINE REAL ESTATE TAX-Paid

DLN: 1002040093740

MAINE SHORT FORM QUIT CLAIM DEED WITH COVENANT

We, **DAVID R. FLAHERTY and CATHERINE P. FLAHERTY,** whose mailing address is 115 Pleasant Street, Brunswick, Maine 04011, for consideration paid, grant to the **TOWN OF BRUNSWICK**, a municipal corporation, with a mailing address of 85 Union Street, Brunswick, Maine 04011, with QUIT CLAIM COVENANT, the land and improvements thereon, situated in Brunswick, Maine and being bounded and described as follows:

See Exhibit A attached hereto and made a part hereof

WITNESS our hands and seals this 30th day of April in the year of our Lord two thousand twenty.

SIGNED, SEALED AND DELIVERED
in the presence of

Witness — David R. Flaherty

Witness — Catherine P. Flaherty

STATE OF MAINE
COUNTY OF SAGADAHOC April 30, 2020

Personally appeared the above named **DAVID R. FLAHERTY and CATHERINE P. FLAHERTY** and severally acknowledged the foregoing instrument to be their free act and deed.

Before me,

Notary Public

Typed or Printed Name of Notary John W. Voorhees Notary Public, Maine
My commission expires: My Commission Expires August 18, 2026

DOC :22314 BK:36647 PG:333
RECEIVED - RECORDED, CUMBERLAND COUNTY REGISTER OF DEEDS
04/30/2020, 01:14:40P
Register of Deeds Nancy A. Lane E-RECORDED

EXHIBIT A

PARCEL I:

A certain lot or parcel of land, with the buildings thereon, situated in Brunswick, County of Cumberland and State of Maine, being the same premises conveyed to Frank E. Webster by Carrie E. Stanwood by warranty deed of July 30, 1921 and recorded in the Cumberland County Registry of Deeds in Book 1081 at Page 317, and therein described as follows:

BEGINNING at a stone at the intersection of the South side of Pleasant Street with the west side of Webster Street, and running Westerly along the South line of Pleasant Street, four (4) rods, to a point; thence running Southerly along land of said Carrie E. Stanwood, eight (8) rods, to said land now or formerly of Carrie E. Stanwood; thence running Easterly by the land last mentioned, four (4) rods, to the West line of Webster Street; and thence running Northerly along said West line eight (8) rods, to the place of beginning.

PARCEL II:

A certain lot or parcel of land, together with the buildings thereon, situated in said Brunswick and being the same premises conveyed by Carrie E. Stanwood to Emile Dionne by deed dated August 18, 1921 and recorded in the Cumberland County Registry of Deeds in Book 1085 at Page 24, and therein bounded and described as follows: "A certain lot or parcel of land on the southerly side of Pleasant Street, in said Brunswick, bounded as follows:

BEGINNING at the Northwest corner of land of Frank E. Webster and running Westerly on the Southerly line of said Pleasant Street, four (4) rods; thence running Southerly along other land of said Grantor, eight (8) rods; thence running Easterly along other land of said Grantor, four (4) rods to the Southwest corner of said Webster's land; and thence running Northerly along said Webster's westerly line eight (8) rods to the place of beginning."

For source of title reference may be had to a certain instrument from David R. Flaherty to David R. Flaherty and Catherine P. Flaherty dated September 2, 1998 and recorded in the Cumberland County Registry of Deeds in Book 14176, Page 191.

4219.01
Brunswick Fire Station – Pleasant St.
Brunswick, Cumberland County, Maine

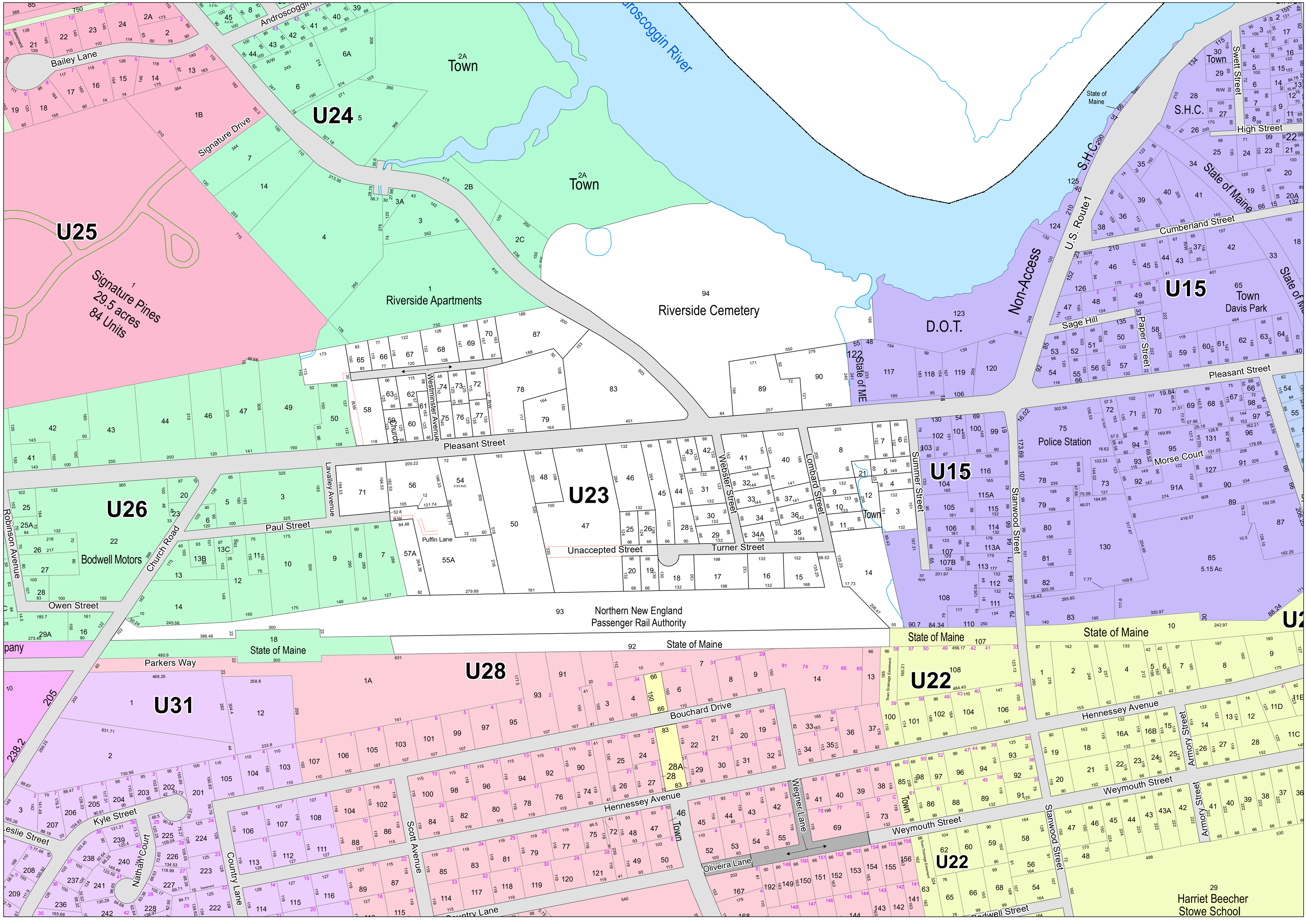
Exhibit #2 – Abutters
Tax maps
Abutters List

Prepared For: Town of Brunswick
Attn: Chief Brillant
21 Town Hall Place
Brunswick, Maine 04011

Prepared By: WBRC Architects-Engineers
44 Central Street
Bangor, Maine 04401
(207) 947-4511
(207) 947-4628
www.wbrcae.com

WBRC ARCHITECTS • ENGINEERS
BANGOR PORTLAND SARASOTA
www.wbrcae.com

Map	Lot	Address
U23	26	19 Turner
U23	46	121 Pleasant
U23	18	34 Turner
U23	17	32 Turner
U23	16	28 Turner
U23	34A	11 Webster
U23	34	9 Webster
U23	33	7 Webster
U23	32	5 Webster
U23	41	111 Pleasant
U23	83	118 Pleasant


Androscoggin River
U24
U25
U26
U23
U15
U28
U31
U22
Town
Signature Pines
29.5 acres
84 Units
Riverside Apartments
Riverside Cemetery
D.O.T.
Non-Access
U.S. Route 1
State of Maine
S.H.C.
Bailey Lane
Signature Drive
Pleasant Street
Paul Street
Church Road
Robinson Avenue
Owen Street
Bodwell Motors
Lavalley Avenue
Puffin Lane
Unaccepted Street
Turner Street
Webster Street
Lombard Street
Summer Street
Stanwood Street
Swett Street
High Street
Cumberland Street
Sage Hill
Paper Street
Davis Park
Police Station
Morse Court
Northern New England
Passenger Rail Authority
Parkers Way
Bouchard Drive
Hennessey Avenue
Weymouth Street
Armory Street
Wegner Lane
Oliveira Lane
Kyle Street
Nathan Court
Country Lane
Scott Avenue
Harriet Beecher
Stowe School
Town of
BRUNSWICK
Maine
TOWN OF BRUNSWICK, MAINE
INCORPORATED 1739
Legend
Lines_Other
Other Road
Hydrography Line
ROW Property Access
Town Boundary
Other Lot Boundary
Parcels_Lines
Public Road
Private Road
ROW
Water
Disclaimer:
The information is provided as a reasonably accurate point of reference, but is not guaranteed and is not to be used for conveyances.
The Town of Brunswick shall not be held responsible for the accuracy or misuse of this data.
Copyright Town of Brunswick.
N
1 inch = 150 feet
Revised To: April 1, 2019
Maps Prepared by:
Town of Brunswick
Revised and Reprinted By:
CAI Technologies
Precision Mapping. Geospatial Solutions.
MAP
U23

4219.01
Brunswick Fire Station – Pleasant St.
Brunswick, Cumberland County, Maine

Exhibit #3 –Photographs

Prepared For: Town of Brunswick
Attn: Chief Brillant
21 Town Hall Place
Brunswick, Maine 04011

Prepared By: WBRC Architects-Engineers
44 Central Street
Bangor, Maine 04401
(207) 947-4511
(207) 947-4628
www.wbrcae.com

WBRC ARCHITECTS • ENGINEERS
BANGOR PORTLAND SARASOTA
www.wbrcae.com

SITE PHOTOS

Photo 1 – Looking west at the project site from the intersection of Pleasant St. and Webster St.

Photo 2 – Looking south at the existing development along the Pleasant St property line.

SITE PHOTOS

Photo 3 – Looking south at western limit of project site along Pleasant Street

Photo 4 – Looking west at the existing development on the project site along the north end of Webster St

SITE PHOTOS

Photo 5 – Looking west at the existing development on the project site along Webster St

Photo 6 – Looking west at the existing development on the project site along the south end of Webster St

SITE PHOTOS

Photo 7 – Looking northwest at the project site from the intersection of Turner and Webster.

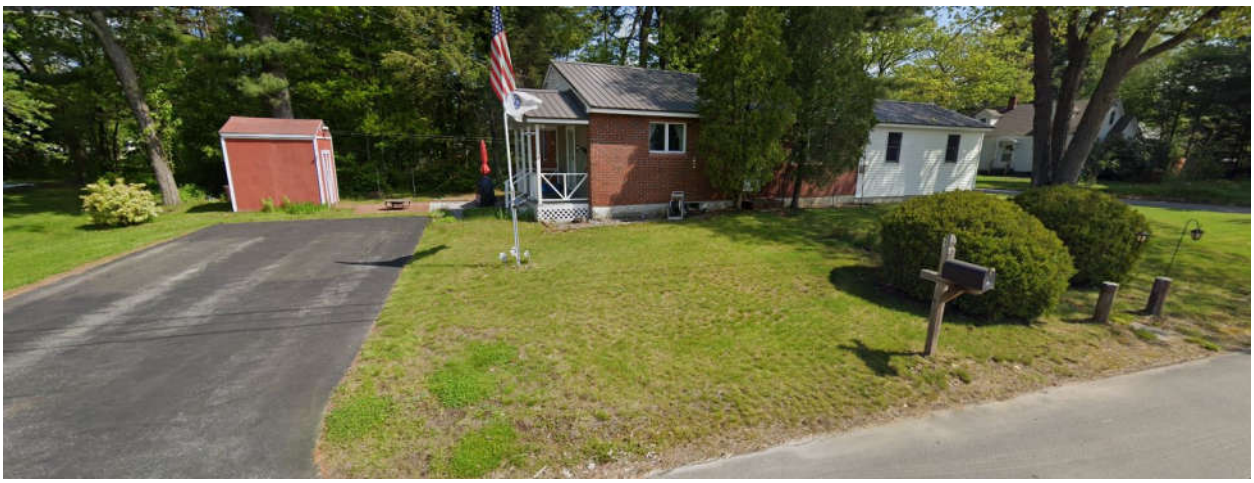


Photo 8 – Looking Northeast from Turner Street at existing development on the project site.

SITE PHOTOS

Photo 9 – Looking North from Turner Street at existing development on the project site

Photo 10 – Looking Northwest from Turner Street at existing development on the project site

4219.01
Brunswick Fire Station – Pleasant St.
Brunswick, Cumberland County, Maine

Exhibit #4 – Supporting Documents
Utility capacity Letters
Stormwater Management
Stormwater Maintenance
Erosion and Sediment Control
Lighting Cut Sheets
Geotechnical Report

Prepared For: Town of Brunswick
Attn: Chief Brillant
21 Town Hall Place
Brunswick, Maine 04011

Prepared By: WBRC Architects-Engineers
44 Central Street
Bangor, Maine 04401
(207) 947-4511
(207) 947-4628
www.wbrcae.com

WBRC ARCHITECTS • ENGINEERS
BANGOR PORTLAND SARASOTA
www.wbrcae.com

WBRC
ARCHITECTS • ENGINEERS

July 1, 2020

Mr. Alan J Frasier – General Manager
(ajfrasier@btwater.org)
Brunswick Topsham Water District
266 River Road
Topsham, ME 04086

RE: 4219.01 –Brunswick Fire Station (Pleasant Street)
Statement of Sewer Capacity

Dear Mr. Frasier:

On behalf of Brunswick Fire Department, who are looking to build a new facility on Pleasant Street, and are in the process of preparing a local permitting package for the proposed construction in Brunswick, Maine, we offer the following for your consideration.

The subject parcel is located at the intersection of Pleasant and Webster in Brunswick. The existing site is a number of single family style houses, some of which have been turned into businesses, all of which are currently served by the municipal water system. Those services will be cut, capped and abandoned.

The new project includes a proposed facility with 26,000+/- square feet of space. The building is a single story facility, with multi-level roofs, including a high bay garage area for the fire vehicles. The facility will include new office spaces for the fire department and storage for their vehicles. The building will be complemented with typical site improvements including additional paved vehicle parking and vehicle and pedestrian circulation, site landscaping, and utility infrastructure. New water pipes will be installed for the new building, one for fire protection as the building will have a sprinkler system and one for the domestic water service. Those pipe will connect to the public water main in Pleasant Street. All piping is proposed as ductile iron. A utility site plan has been included for reference. The current project timeline estimates anticipate the construction to begin this summer/fall 2020.

The anticipated water demand was estimated using the Maine subsurface wastewater rules, using table 4c. Of the 26,000 square feet, about 10,000 sqaure feet is vehicle storage or garage space and doesn't add to the water demand. Of the remaining 16,000 sf, 3,200 SF is sleeping quarter for firemen/employees on staff and 12,800 SF is office space and is estimated that there are about 4 employees per 1,000 sq.ft. or 50 employees. Using the table for employees at work with showers at 15GPD, it is estimate that the building will generate about 750 GPD worth of demand.

As part of the local permitting process, the ordinance requires that the applicant notify the local authority having jurisdiction and acquire a written statement from that department stating that this demand can be met. **Please respond in writing with your findings at your earliest convenience.** For

your convenience, you may e-mail a signed scanned copy of your response letter to paul.monyok@wbrcae.com or mail your response letter to (WBRC, 44 Central Street, Bangor, Maine 04401). Fax response is available upon request. If you have any questions, please feel free to contact me at 947-4511. Thank you for your prompt assistance.

Sincerely,

Paul Monyok, P.E.
State of Maine Licensed Civil Engineer

Enclosure: Site Location Map, Site Aerial Plan, Site Utility Plan

Paul Monyok (WBRC AE)

From: Ken Whitney <kwhitney@hwengineers.com>
Sent: Monday, July 13, 2020 7:33 AM
To: Paul Monyok (WBRC AE)
Subject: RE: Brunswick - construction project capacity review

(EXTERNAL)
Hi Paul:

Not sure if you got this already but the calculated peak flow for the domestic water is 100 GPM. The calculated peak flow for the truck fill lines is 60 GPM.

Ken

From: Paul Monyok (WBRC AE) [mailto:paul.monyok@wbrcae.com]
Sent: Wednesday, July 8, 2020 1:34 PM
To: Ken Whitney
Subject: FW: Brunswick - construction project capacity review

Hi Ken,
For the Brunswick Fire station project, do you have an estimated peak flow for the proposed building.
The water district is asking as part of their review for the local planning board.
Let me know when you get a chance
Thanks

Paul A. Monyok, P.E., LEED AP
CIVIL ENGINEER, DEPARTMENT MANAGER, PRINCIPAL
Maine Licensed Professional Engineer

207.947.4511 x387
44 Central Street
Bangor, ME 04401
wbrcae.com | Facebook | LinkedIn | Twitter

From: TC Schofield <tschofield@btwater.org>
Sent: Wednesday, July 8, 2020 1:26 PM
To: Paul Monyok (WBRC AE) <paul.monyok@wbrcae.com>
Cc: Craig Douglas <cwdouglas@btwater.org>; Alan Frasier <ajfrasier@btwater.org>
Subject: Re: Brunswick - construction project capacity review

(EXTERNAL)
Paul,

Thanks for reaching out. Do you have the estimated peak domestic demand for the new fire station in gallons per minute? GPD is typically used on the sewer side, but we need the peak flow in GPM to make sure the domestic service and meter are adequately sized.

TC

T.C. Schofield, PE | District Engineer
Brunswick & Topsham Water District
PO Box 489
Topsham, ME 04086
(207) 729-9956
www.btwater.org

On Wed, Jul 8, 2020 at 11:48 AM Alan Frasier <ajfrasier@btwater.org> wrote:

> Thanks, Paul. I've copied this to our engineering staff; they'll be in touch.
>
> Alan
>
> On Wed, Jul 8, 2020 at 10:28 AM Paul Monyok (WBRC AE) <paul.monyok@wbrcae.com> wrote:
>
>> Hi,
>>
>> I am currently working with the town of Brunswick on a new Fire Station proposed on Pleasant.
>>
>> We are reaching out as part of the planning board review process.
>>
>> The attached information is for you to review and comment.
>>
>> Let me know if you have questions or comments.
>>
>> Thanks
>>
>> **Paul A. Monyok, P.E., LEED AP**
>> **CIVIL ENGINEER, DEPARTMENT MANAGER, PRINCIPAL**
>> *Maine Licensed Professional Engineer*
>>
>> 207.947.4511 x387
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>
> --
> Alan J. Frasier, PE
> General Manager
>
> **Brunswick & Topsham Water District**
> PO Box 489

WBRC
ARCHITECTS • ENGINEERS

July 1, 2020

Mr. Wes Wharff – Superintendent
(wwharff@brunswicksewer.org)
Brunswick Sewer District
10 Pine Tree Road
Brunswick, ME 04011

RE: 4219.01 –Brunswick Fire Station (Pleasant Street)
Statement of Sewer Capacity

Dear Mr. Wharff:

On behalf of Brunswick Fire Department, who are looking to build a new facility on Pleasant St., and are in the process of preparing a local permitting package for the proposed construction in Brunswick, Maine, we offer the following for your consideration.

The subject parcel is located at the intersection of Pleasant and Webster in Brunswick. The existing site consists of a number of single family style houses, some of which have been turned into businesses, all of which are currently served by the municipal sewer system. Those services will be cut, capped and abandoned.

The new project includes a proposed facility with 26,000+/- square feet of space. The building is a single story facility, with multi-level roofs, including a high bay garage area for the fire vehicles. The facility will include new office spaces for the fire department and storage for their vehicles. The building will be complemented with typical site improvements including additional paved vehicle parking and vehicle and pedestrian circulation, site landscaping, and utility infrastructure. An additional sewer pipe will be installed for the new building. That pipe will connect to the onsite sewer piping prior to reaching the municipal system. A utility site plan has been included for reference. The current project timeline estimates anticipate the construction to begin this summer/fall 2020.

The is proposed connection is to the existing sewer main on Pleasant Street. A new waste line will exit the buildings midline along Pleasant Street, this will be the main wastewater line. A second dedicated kitchen line will exit around the back of the building, go through a grease trap and then be piped around the building to a connection in Pleasant Street. All new lines are proposed as SDR35 PVC pipe.

The anticipated waste water to be generated was done using the Maine subsurface wastewater rules, using table 4c. Of the 26,000 square feet, about 10,000 sqaure feet is vehicle storage or garage space and doesn't add to the wastewater generation. Of the remaining 16,000 sf, 3,200 SF is sleeping quarter for firemen/employees on staff and 12,800 SF is office space and is estimated that there are about 4 employees per 1,000 sq.ft. or 50 employees. Using the table for employees at work with showers at 15GPD, it is estimated that the building will generate about 750 GPD.

As part of the local permitting process, the ordinance requires that the applicant notify the local authority having jurisdiction and acquire a written statement from that department stating that this demand can be met. **Please respond in writing with your findings at your earliest convenience.** For your convenience, you may e-mail a signed scanned copy of your response letter to paul.monyok@wbrcae.com or mail your response letter to (WBRC, 44 Central Street, Bangor, Maine 04401). Fax response is available upon request. If you have any questions, please feel free to contact me at 947-4511. Thank you for your prompt assistance.

Sincerely,

Paul Monyok, P.E.
State of Maine Licensed Civil Engineer

Enclosure: Site Location Map, Site Aerial Plan, Site Utility Plan

Brunswick Sewer District

10 PINE TREE ROAD
BRUNSWICK, MAINE 04011
www.brunswicksewer.org
www.facebook.com/brunswicksewer

TELEPHONE (207) 729-0148

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Robert A. Pontau, Jr., P.E., Asst. General Manager
Lorraine M. Caron, Finance Manager

August 11, 2020

Town of Brunswick
Planning Department
Municipal Office Building
85 Union Street
Brunswick, Maine 04011

Attn: Jared Woolston, Town Planner

Re: Sketch Plan Review Application Review
Pleasant Street Fire Station

Dear Jared:

We have reviewed the Sketch Plan Application for the above-referenced project. The project proposes to construct a 26,000 sq. ft. municipal fire station on what was originally eight (8) individual lots within the Pleasant Street, Webster Street, and Turner Street area.

Review of District line facilities serving the area, we find that reserve capacity is sufficient to serve the project. The project is approved as proposed, contingent on the following conditions being met by the applicant.

1. Project use of the public sanitary sewer system will be in accordance with provisions of District Rules & Regulations.

2. District approval is based on information provided by the developer and presumed to be correct.

3. Project is subject to the District Entrance Charge Program. Though review notes the seven (7) buildings slated for demolition had a minimum 1,225 gallons per day (GPD) wastewater flow. Project proposes a 1,000 GPD wastewater flow. As such, the proposed flow is less than prior flow, no entrance charge will be assessed.

4. All sewer-related construction and demolition will be performed to District standards.

5. All sanitary sewer construction will comply with provisions of the Maine State Plumbing Code.

6. Design and construction of project sanitary sewers will **exclude all** non-sanitary surface, sub-surface, and rain waters.

7. Developer will certify that any and all project roof drains, foundation drains, surface drains, and/or basement sump pumps are not discharged to the public sanitary sewer system.

8. All sanitary sewer-related construction will be inspected in progress by District personnel. Notice by the developer in advance of construction is required.

9. Connection of proposed sanitary sewer to existing facilities, including possible replacement of sub-standard existing facilities, will be constructed in accordance with District standards.

10. Horizontal clearance between utility infrastructures will be sufficient to allow future utility maintenance operations without disturbance to adjacent utility infrastructure.

11. All costs incidental to installation of the proposed sanitary sewer, both mainline extension and service line, will be borne by the Developer.

12. Connection to sanitary maintenance holes will be accomplished using core-bored openings and flexible pipe boots to obtain watertight connections. New flows will be introduced into existing flow by constructing a smooth transition to existing invert channel and apron.

13. Sanitary sewer service pipe from the mainline sanitary sewer to the right-of-way line will have a minimum 6-inch diameter and connected at the mainline with wye connections. No Tees are allowed.

14. Minimum cover over insulated sanitary sewer pipe is 4.0 vertical feet.

15. Proposed floor drain will be designed and installed to provide the goal of grit and oil water separation and retention. Connection will be permitted under a separate Floor Drain Permit.

Please feel free to call if you have questions or need additional information.

Yours,

BRUNSWICK SEWER DISTRICT

Leonard Blanchette
General Manager

copy: Paul Monyok, P.E., WBRC
Robert A. Pontau, Jr. P.E., Brunswick Sewer District
Wesley D. Wharff, Brunswick Sewer District

BSD
Brunswick Sewer District

Stormwater Narrative

As it relates to stormwater, we offer the following.

Permits
The project does meet the thresholds for a State of Maine DEP Stomwater Permit.
A permit application has been submitted to the DEP. A copy of the narrative submitted as part of that application follows this page.

Existing
The existing parcel is developed as residential with small buildings and low asphalt pavement coverage. The existing site has street frontage on three sides with municipal storm systems. Portions of the existing runoff flow to the corner of Pleasant and Webster and enter the Maine DOT system. The other portion of the site drains to another corner at the intersection of Webster and Turner where it enters the local municipal system.

Proposed
The proposed runoff is directed to drain in the municipal systems in a similar manner in the post development conditions, as it does in the predevelopment conditions.

Coverage Change

The imperious area changes as a result of the this project is as shown in the table found on sheet CP101.

Quantity

Due to the coverage change additional peak flows will run from the site. Those peak flows are attenuated by underground storage chambers that will release the peak flows at a controlled rate in order to meet preexisting flow conditions. Peak flows were analyzed using stormwater modeling program called HydroCAD, calculations are provided in Volume 2 of this packet.

Quality

As part of our Maine DEP permit we are required to treat new impervious area. The intent is to treat this additional impervious area. Since we have additional impervious area created in multiple locations on-site, we have opted to provide treatment in various locations on site. The new stormwater quality treatment BMP proposed is a Filterra unit. The Fiterra unit is a soil filter in a precast concrete box similar to a catch basin. The micro-organisms in the soil and the plant soak up the pollutant. Large items are trapped in the unit on top of the soil. The unit is a proprietary device manufacturer by Contech and is a Maine DEP approved treatment. For this application we have chosen appropriately sized units based on information provided by the vendor. See below.

Filterra® Model Number	Area in Acres
4x6 or 6x4	0.32
4x8 or 8x4	0.42
6x6	0.47
6x8 or 8x6	0.64
6x10 or 10x6	0.79
6x12 or 12x6	0.95
7x13 or 13x7	1.20

Maintenance

The proposed storm water maintenance will not be different from the recommended maintenance that exists on site. The existing paved areas should be periodically inspected and cleaned of debris and overaccumulations of large sediment that may impede flow paths. The Filterra unit is a proprietary device and the first year of maintenance comes with the unit purchase. The owner is then educated on how to maintain the device in subsequent years or they can pay a company to continue servicing it for them. The maintenance plan is included in this packet.

Plans

The CG101 sheets show the existing and proposed grading which illustrates the runoff patterns described above. The CU101 shows the pipe networks. The SW101 and SW102 plans show pre and post stormwater conditions.

Section 12 – Stormwater Management

A. Narrative.

(1) Development location. The site is located in the Androscoggin River watershed. The area of the proposed new Fire Station building is previously developed and serves as the current home for several residential and commercial buildings as well as existing lawn area and trees surrounded by paved roadways.

(2) Surface water on or abutting the site. There are no wetlands, streams or vernal pools on the subject site.

(3) Downstream ponds and lakes. There are no ponds or lakes downstream of the site.

(4) General topography. The site is generally flat. Existing grade slopes in all directions away from the existing buildings towards catch basins located in the nearby streets. Those areas include Pleasant Street to the North, Webster Street to the East and Turner Street to the south. A grassy area located to the west of the new development but drains towards the project site.

(5) Flooding. There do not appear to be any areas subject to flooding.

(6) Alterations to natural drainage ways. Stormwater will leave the site generally in a similar manner as it does in existing conditions. There are no natural drainage ways as the runoff enters the municipal storm drain system. We have tried to move more runoff towards Pleasant Street as it has the larger infrastructure and is closer to the eventual water body outfall.

(7) Alterations to land cover. The existing site (106,000+/- SF) is mostly lawn area supporting residential style building with driveways and parking areas. For the analysis our drainage areas include roadway runoff increasing the total area to 194,410 SF) The proposed project will expand on the paved area and roof area with new development that will introduce **52,284** square feet of net new impervious area for the new Fire Station building and related site improvements.

	Imp Surf.-paved	Imp Surf. - Roof	Pervious	Total Area
Pre -Dev	41,536 SF	12,860 SF	140, 014 SF	194,410 SF
Post-Dev	76,274 SF	30,406 SF	87,730 SF	194,410 SF
Difference	34,738 SF	17,546 SF	-52,284	0 SF

(8) Modeling assumptions. The stormwater runoff evaluation was developed in accordance with the methodology outlined and implemented within the HydroCAD stormwater

modeling system. The HydroCAD modeling system was developed using techniques from the SCS TR-20 and TR-55 publications. The 2-year, 10-year, 25-year and 50-year 24-hour, Type II storm events were used to calculate the peak rates of runoff for the proposed development.

Based on the above methodology, the following modeling assumptions were incorporated into the calculations:

- The runoff curve numbers represented within the analysis identify the site ground cover characteristics. The following list represents the "Curve Numbers (CN)" used for this analysis:

CN	Description
98	Paved parking & roofs
80	>75% Grass cover, Good, HSG A

- Typically, the time of concentration path within each watershed (subcatchment) was identified by sheet flow (150' max for paved areas and 250' max for all other ground covers); shallow concentrated flow; pipes, and swales. For time of concentration, the slopes for each different segment were calculated by total vertical drop over the total segment length.

- The travel time (Tt) path serving each watershed (subcatchment) typically is represented by a subsurface storm drainpipe or existing natural drainage way. Reaches within the analysis identify the travel time segment.

- Ponds in the analysis represent storage areas, natural impoundments, and catch basins.

- The soil information used for this stormwater analysis was obtained from the soil survey by the NRCS Class D Soil Survey.

(8) Water quantity control. Water quantity will be controlled by on-site detention. The site drains in two directions, one towards pleasant street and one towards Turner Street. The proposed design calls for the use of underground precast concrete tanks. They have been modeled and designed to hold back water volumes that allow for, up to the 50-year storm , to match peak flows pre and post development conditions. Water is restricted to the tanks by use of a control structure in the form of an 8 foot diameter manhole with a weir wall. The weir wall restrict flow holding a volume of water back behind the weir wall in the tanks. The wall will have multiple orifices for a controlled release. The perforation in the weir wall are what slow down the discharge from the site, while allowing the system drain completely after each storm in a controlled manner. Under extreme conditions the weir wall is topped by water and outlet culvert is sized to match the roof drain entering the system, which allows flow to continue downstream rather than flood onsite structures. New Impervious areas are captured and treated prior to the storage tanks. The post-development peak flows to all study points are less than or equal to those in the pre-development conditions, hold

for one exception. The post development for the 2-year storm only to Turner street has a slight increase. That increase is 0.04CFS. The table below outlines the peak flows.

Table 8a: Pre and Post Construction Flows (if volume needed could be obtained)

		STP-1	**STP-2**
2-YR	*Pre*	1.33 cfs	0.24 cfs
	Post	1.21 cfs	0.28 cfs
	Diff	-0.12 cfs	+0.04 cfs
10-YR	*Pre*	2.73 cfs	1.48 cfs
	Post	2.38 cfs	1.40 cfs
	Diff	-0.35 cfs	-0.08 cfs
25-YR	*Pre*	3.90 cfs	2.84 cfs
	Post	3.52cfs	2.65 cfs
	Diff	-0.38 cfs	-0.19 cfs
50-YR	*Pre*	5.01 cfs	4.27 cfs
	Post	4.72 cfs	3.88 cfs
	Diff	-0.29 cfs	-0.39 cfs

For comparison with the underground detention removed from the project the peak flows are much greater to Study point 1, which is the only study point impacted by the system. Below is a table illustrating that scenario. (No HydroCad calculations are provided for this scenario however they can be provided as part of this report but can be upon request)

Table 8b: Pre and Post Construction Flows (no underground detention)

		STP-1	**STP-2**
2-YR	*Pre*	1.33 cfs	0.24 cfs
	Post	3.42 cfs	1.93 cfs
	Diff	+2.09 cfs	+1.69 cfs
10-YR	*Pre*	2.73 cfs	1.48 cfs
	Post	5.73 cfs	3.65 cfs
	Diff	+3.0 cfs	+2.17 cfs
25-YR	*Pre*	3.90 cfs	2.84 cfs
	Post	7.60 cfs	5.18 cfs

	Diff	+3.70 cfs	+2.34 cfs
50-YR	*Pre*	5.01 cfs	4.27 cfs
	Post	9.35 cfs	6.63 cfs
	Diff	+4.34 cfs	+2.36 cfs

(9) Water quality treatment. There is not much room on the site, due to its urban nature, to treat stormwater. Therefore, the available options led to two products. For all the ground level paved areas, new Filterra units are being proposed. Their locations are identified on the plans. Additional treatment discussion occurs under the calculation section. The other impervious area to be treated is the new building roof. That runoff is being run through an underground detention system with an isolation row to treatment.

(10) Offset credits. No TSS or phosphorus offset credits will be applied to this project.

(11) Compensation fees. No compensation fees are required.

(12) Development impacts. The stormwater will generally flow and leave the site in a similar manner to existing conditions. Due to the larger infrastructure along Pleasant Street, which is also closer to the watershed outfall, stormwater was directed that way in the post stormwater development scenario. Otherwise, the increase in impervious area could lead to flooding on Turner and Webster Street if not dealt with in this manner. Most developmental impacts are a result of increased peak flow as treatment is mostly covered. The compact nature of the development has led to relatively short time of concentrations which is why we have chosen to install onsite detention to counteract those potential impacts. The stormwater runoff from the biggest pollutant loads are being treated therefore we believe the impacts from this development are arguably positive, but for the sake of this narrative, overall the project is not expected to have an adverse effect to receiving waters, adjacent properties, or downstream properties.

B. Map.

(1) Topographic map. A USGS topographic map can be found elsewhere in this application.

(2) Soils map. Soils information can be found elsewhere in this application.

C. Drainage plans. Please see SW Series sheets in the plan set for drainage plans.

D. Runoff analysis. Pre-development and post-development stormwater analyses for this project were completed in accordance with acceptable engineering practice, as provided at Chapter 500.6(A)(3). The site runoff analyses include the following information.

(1) Curve number computations. Computations for determining the curve number for each pre-development and post-development subwatershed.

(2) Time of concentration calculations. Calculations for determining the time of concentration for each pre-development and post-development subwatershed.

(3) Travel time calculations. Calculations used to determine the travel time through each pre-development and post-development subwatershed or identified reach.

(4) Peak discharge calculations. Calculations used to determine the peak discharge for each pre-development and post-development subwatershed, reach, and watershed reservoir for 24-hour storms of 2-year, 10-year and 25-year frequencies.

(5) Reservoir routing calculations. Calculations used to route stormwater through storage areas.

E. Flooding standard submissions. The runoff is directed to two study points one is the connection to Pleasant Street which is under Maine DOT jurisdiction. The other is the intersection of Turner and Webster Street, which is under the town of Brunswick's municipal system. There fore the controlling factor for flooding is the connection to the Maine DOT system. In summary, Flood control will be achieved by on-site detention.

Post construction, the stormwater runoff from the project site comes from two sources the paved areas and the new building. The two sources are handled separately for treatment but the same for detention.

That detention system is comprised of underground concrete chambers used to hold the larger volumes of water created on site and slowly discharge that water to the municipal system. Please note the net change in impervious area is an additional 52,284 square feet of which the building footprint is 26,000 square feet.

F. General Standards Submissions.

(1) Narrative. Since the project will be on mostly undeveloped residential property, new development will meet the General Standards through several strategies.

The strategies as planned include underground detention with an isolator row for treatment, to handle the new building area. The paved areas are directed to Filterra units before entering the municipal system.

The site was treated using the "non-linear" standard (95% impervious/80% developed).

(2) Drainage Plans. See SW101 and SW102 for drainage plans.

(3) Calculations.

(a) Water volume. The water volume required to be treated is as follows:

Although there are potions of the site that could be delineated into Linear and Non-Linear as it relates to treatment, the site was viewed as all non-linear components.

To clearly define the treatment needed the total new impervious area and the total new developed area, in post construction conditions, is broken down in the table below. (numbers are in square feet)

Treatment provided by new Filterra system units

Number	Location	Area (SF)	Area (Acre)	Unit Selected	Treat Area (Acre)
Area #1	*Drive NE*	*4,660 SF*	*0.107 acre*	*4'X6' Filterra*	*0.32*
Area #2	*Drive SE*	*5,373 SF*	*0.123 acre*	*4'X6' Filterra*	*0.32*
Area #3	*Pass Lot E*	*10,014 SF*	*0.230 acre*	*4'X6' Filterra*	*0.32*
Area #4	*Pass Lot W*	*8,549 SF*	*0.196 acre*	*4'X6' Filterra*	*0.32*
Area #5	*Drive W*	*15,708 SF*	*0.361 acre*	*4'X8' Filterra*	*0.42*
Area #6	*Visit Lot*	*6,630 SF*	*0.152 acre*	*4'X6' Filterra*	*0.32*

Per the information for treatment provided by the vendor, the units selected are appropriate for the application. See below.

Filterra® Model Number	Area in Acres
4x6 or 6x4	0.32
4x8 or 8x4	0.42
6x6	0.47
6x8 or 8x6	0.64
6x10 or 10x6	0.79
6x12 or 12x6	0.95
7x13 or 13x7	1.20

New total impervious area treated by Filterras= 50,934 SF

(b) Buffer sizing. No buffers are proposed.

(4) Details, designs, and specifications.

(a) Ponds. No Ponds Proposed.
The calculations included are for the underground detention system to treat roof runoff, the precast storage tanks are to attenuate peak flows. The system chosen to treat the roof runoff is ChamberMAxx by Contech engineered solutions. The vendor was contacted and design was provided by them.

(b) Drip Strip Filtration –

a. no drip strip filtration is proposed.

(5) Phosphorus removal. The project will not require any phosphorus calculations or removal plans.

(6) Responsible party for long-term maintenance. The Town of Brunswick.

G. Maintenance plan. Basic Standards for erosion control are elsewhere in this application. The stormwater treatment systems will be maintained by a vendor who specializes in that field. A maintenance contract by a vendor is included elsewhere in this application.

H. Maintenance by a homeowner association. Not applicable.

I. Maintenance of facilities by a municipality or quasi-municipal district. Not applicable.

J. General inspection and maintenance requirements. See Section G above.

STORMWATER COMPLIANCE, LLC
Maintaining your investment • Protecting our environment™
163 Thadeus Street • South Portland, Maine 04106
PHONE | FAX: 877.271.9055 • www.StormwaterComp.com

Jul 24, 2020

Paul Monyok
WBRC A&E
44 Central Street
Bangor, ME 04401
207.947.4511 x387
Delivered via email to: paul.monyok@wbrcae.com

Re: Stormwater Management Services: Brunswick Fire Station - Turner St. Brunswick, ME
SMS Inspection & Maintenance - 5-yr Maine DEP Re-certification

Mr. Monyok,

StormWater Compliance, LLC (SWC) is pleased to present you with the following proposal to provide management services including **StormWater Inspection & Maintenance, Documentation, Submission & Maine DEP Recertification** for the stormwater management system at the above referenced location. This proposal was requested by you to satisfy your on-going Stormwater Operation and Maintenance obligations made during permitting of this project.

Scope of Work:

StormWater Compliance, LLC will develop and implement the site specific Stormwater Management Program based upon current Stormwater Industry Operation and Maintenance Standards and (if available) Stormwater Operation and Maintenance Plan. In general, the Stormwater Management Program will consist of **Semi-Annual** Inspections, Maintenance as necessary, Reporting, and Submission.

The cost to provide Stormwater Management Services as described above for the Stormwater Management System at the **Brunswick Fire Station** is detailed in Exhibit A. This scope of work and cost is subject to the terms and conditions set forth on Exhibit B hereto.

In order to satisfy Maine DEP Stormwater Management Law's 5-year re-certification cycle, the term for this contract will be 5-years commencing on the date executed below and renewing automatically for an additional five-year term unless one party provides the other with written notice of termination at least one month before the initial termination date. Either party may terminate this agreement at any time with 30 days' notice.

STORMWATER COMPLIANCE, LLC
Maintaining your investment • Protecting our environment™
163 Thadeus Street • South Portland, Maine 04106
PHONE | FAX: 877.271.9055 • www.StormwaterComp.com

Stormwater Structures: Catch Basins (CB), Manholes (MH), Trench Drains (TD), etc.:

All stormwater structures will be inspected. Any deficiencies in structural condition, function, and sediment levels will be noted. **Maintenance:** Accumulations of trash and debris will be removed where encountered during inspections. Any obstruction will be cleared if possible. Vacuum clean out of stormwater structures will be completed as necessary based on inspection observations (i.e. half of sump depth, etc.).

Subsurface Systems: (ChamberMaxx, Pre-cast Cisterns):

Subsurface systems will be visually inspected at available access points using a pole-mounted, zoom inspection camera specifically designed for this type of inspection. Any deficiencies in structural condition, function, and sediment levels will be noted. Interior components will be inspected for condition and function. **Maintenance: ChamberMaxx Contianment Row will be cleaned by Jet-Vac as necessary based on inspection observations and Manufacturer's O&M specifications. With proper I&M of upstream BMPs, maintenance of Pre-cast cisterns may not be required in this 5-yr term. To avoid un-necessary reoccuring cost vacuum maintenance of Cisterns has been excluded from this proposal. Cistern maintenance will be proposed upon as necessary under separate proposal if requested.**

Bio-Retention Systems (Filterra Bio-filtration Units):

The Bio-Retention Systems shall be visually inspected **Semi-Annually** to ensure that the vegetation has established, that the systems are draining within the prescribe amount of time and to gauge sedimentation/debris accumulation. Underdrain covers will be removed as necessary to inspect underdrain(s). Bio-uptake planting health will be assessed. **Maintenance:** Maintenance of Filterra Units will be performed **Semi-Annually** (per Mfg Specifications). At each maintenance event, fouled mulch layer, sediment, trash and debris will be removed. Weeding, pruning, and mulch replacement will be performed as necessary. Please note that proper plantings are an integral part of this treatment system. If necessary, Planting or replacement of plantings will be discussed and handled under a separate proposal.

Reporting and Documentation:

Log report(s) will be prepared and submitted to you electronically for your records. Hard copies of reports will be provided upon request. As necessary and upon request by Management, StormWater Compliance will submit the report to appropriate agencies (i.e. Conservation Commission, City, DEP etc.). The report shall include documentation of all Inspection & Maintenance activities. The report will verify that the Stormwater Management System is in good working order and in compliance with Stormwater permits or will detail recommendations if repairs are required.

Five-Year Re-certification - Maine DEP:

As part of this contract, StormWater Compliance, LLC will prepare re-certification paperwork and compile inspection and maintenance logs as necessary to satisfy Maine DEP's five year re-certification requirements.

STORMWATER COMPLIANCE, LLC
Maintaining your investment • Protecting our environment™
163 Thadeus Street • South Portland, Maine 04106
PHONE | FAX: 877.271.9055 • www.StormwaterComp.com

EXHIBIT A: ACCEPTANCE, PRICING, TERM, & GENERAL PROVISIONS

Pricing:
The cost to provide Stormwater Management Services as described above for the Stormwater Management System at **Brunswick Fire Station is $$6,400.00.** This scope of work and cost is subject to the terms and conditions below.

Acceptance:
If this proposal, as presented, is acceptable to you, please execute a copy of this document in the place indicated below and we will begin work.

We are prepared and eager to begin work outlined in this proposal as soon as conditions allow. If you have any questions, concerns, or require any additional information, please do not hesitate to contact me (508) 505-8723. We thank you for this opportunity and look forward to working with you.

Sincerely,

Paul Stonemetz
StormWater Compliance, LLC
PStonemetz@SWCIM.com

Agreed and Accepted this

Company Name: WBRC A&E

Signature: Name: Paul Monyok

Title: Principle Civil Engineer

By signing above, you acknowledge that you are authorized to enter into this contractual agreement for the entity that is responsible for the work proposed herein.

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Exhibit B: General Terms and Conditions

These general provisions govern the Contract between **StormWater Compliance, LLC** (the "Contractor") and **WBRC A&E** (the "Client") for work to be performed **at Brunswick Fire Station - Turner St. Brunswick, ME** (the "Site").

1.Scope of Work.The Scope of work is as set forth in the accompanying proposal and contract (the "Proposal and Contract").

2.Client Obligations.The Client will:

- not knowingly permit the release of any hazardous or regulated materials at the Site.
- provide the Contractor with written notice of: (i) the actual, suspected or threatened release of any regulated or hazardous materials at the site as well as (ii) all information known to the Client regarding the storage and use of any hazardous materials at the Site by any person or entity.
- reasonably cooperate with the Contractor in connection with the Contractor's work at the site.

3.Payment for Services. Invoices shall be due 30 days after the date of the invoice.

4.Termination**.** This Agreement may be terminated by (i) the Contractor upon a breach of any payment obligation which has not been cured within ten days after written notice from the Contractor to Client and (ii) either party upon a breach of this Agreement by the other party if breach has not been cured after thirty (30) days written notice to the other party (iii) the Client upon the event of a sale of the property.Either party may terminate this agreement at any time with 30 days' written notice to the other party.

5.Limitations of Liability. The Client understands and acknowledges that the Contractor's roles are in the areas of inspection and maintenance of the Stormwater Maintenance System ("SMS") at the Site and that, while inspection and maintenance of the SMS at the Site are essential elements of effective stormwater management, the Contractor's activities are limited and periodic and the Contractor's work cannot and does not guaranty that the SMS cannot be rendered ineffective by sudden events beyond Contractor's control between inspections. The Contractor is also not responsible for any deficiencies which are caused by improper or inadequate SMS installations / construction. Furthermore, the contractor is not liable for structures, features or details absent from the stormwater inspection due to poor/missing site plans provided or not provided by the client.The foregoing shall not be deemed to limit Contractor's liability under this Agreement for any damages or liabilities incurred by Client arising from the Contractor's failure to perform Contractor's obligations under this Agreement.

6.Assumptions and Exclusions. Unless otherwise stated in scope of work, the price schedule set forth in this agreement reflects an assumption that the Site is either new construction (and therefore free of sediment and debris) and/or that all normal routine inspections, maintenance, repairs and rehabilitation work has been completed prior to the date of this agreement. In the event that is not the case, the Contractor will so notify the Client and will provide the Client with an appropriate written change order to reflect the additional maintenance work which may be required in a system which has not been regularly inspected, maintained and/or repaired. This contract is for routine inspection and maintenance services only and does not include system repairs, system replacements or system rehabilitation work. Furthermore, the removal of sediment and debris caused by natural disasters (i.e. hurricanes, floods, etc.) would not be considered routine maintenance services. The Client shall be responsible for costs of (i) removal and disposal of any hazardous or regulated materials discovered including any of the Contractor's additional costs for labor or materials relating to such hazardous materials and (ii) required maintenance deemed by the Contractor to be caused by construction related activities, including but not limited to removal by mechanical means of sediment and debris any stormwater implement including any of the Contractor's additional costs for labor, materials or disposal relating to such maintenance functions. In either case (i or ii) a report of any findings and recommended work shall be furnished to the client and no work shall be performed without the client's authorization.

7.Indemnification. The Client agrees, upon demand, to defend, indemnify and hold the Contractor and its officers, directors, shareholders, employees and agents, harmless from any and all claims, liabilities or causes of action or any kind arising from or relating to any negligence or willful misconduct by the Client, its officers, employees, agents, or contractors at the Site. The Contractor agrees, upon demand, to defend, indemnify and hold the Client and its officers, directors, shareholders, employees and agents, harmless from any and all claims, liabilities or causes of action or any kind arising from or relating to (i) a breach of Contractor's obligations under this Agreement by the Contractor, its officers, employees, agents, or contractors or (ii) any negligence or willful misconduct, by the Contractor, its officers, employees, agents, or contractors at the Site.

8.Choice of Law, Limitation of Liability, Costs and fees.The rights of the Customer and Client will be interpreted in accordance with the law of the State in which the Site is located, including all matters of construction, validity, performance, and enforcement, without giving effect to any principles of conflict of laws. In no event shall either party be liable to the other party under any theory of liability whatsoever for any consequential or punitive damages.In any litigation arising from or relating to this agreement, the prevailing party will recover all such party's attorney's fees costs.

9.Amendments/Waivers. This Agreement may not be amended except in writing signed by all parties.

10. Entire Agreement. This Agreement, including the Proposal and Contract contains the entire and complete understanding between the parties concerning its subject matter and all representations, agreements, arrangements, and understandings between or among the parties, whether oral or written, have been fully merged herein and are superseded hereby.

CONTECH®
ENGINEERED SOLUTIONS

ChamberMaxx®
Open-Bottom Infiltration

The experts you need to solve your stormwater challenges

Contech is the leader in stormwater solutions, helping engineers, contractors and owners with infrastructure and land development projects throughout North America.

With our responsive team of stormwater experts, local regulatory expertise and flexible solutions, Contech is the trusted partner you can count on for stormwater management solutions.

Your Contech Team

STORMWATER CONSULTANT

It's my job to recommend the best solution to meet permitting requirements.

STORMWATER DESIGN ENGINEER

I work with consultants to design the best approved solution to meet your project's needs.

REGULATORY MANAGER

I understand the local stormwater regulations and what solutions will be approved.

SALES ENGINEER

I make sure our solutions meet the needs of the contractor during construction.

Contech is your partner in stormwater management solutions

Maximize Stormwater Storage in Shallow Footprints – ChamberMaxx®

ChamberMaxx® can be installed by hand without the need of heavy equipment.

The ChamberMaxx corrugated, open-bottom plastic infiltration chamber system allows you to meet stormwater runoff reduction requirements and maximize available land space by providing economic infiltration below grade. By utilizing subsurface infiltration, space is preserved for development or green space, runoff is reduced or eliminated, and groundwater recharge can occur.

ChamberMaxx maximizes storage volume in a small footprint, and its low profile shape is ideal for sights with shallow footprints. Each chamber provides 47 ft3 (1.3 m3) of storage.

The integrated end caps eliminate the expense associated with loose end caps that are common on many chamber systems and add to chamber strength.

ChamberMaxx is manufactured per ASTM F 2418 and is structurally designed to exceed HS-20/HS-25 live loads in accordance with AASHTO LRFD design specifications for stormwater chambers.

ChamberMaxx® Features and Benefits

FEATURE	BENEFIT
Each chamber provides 47 ft3 (1.3 m3) of storage	Maximized storage space
Low profile (51″ span x 30″ rise x 91″)	Allows for infiltration on sites with shallow footprint
Integrated end caps	Structural integrity and fewer parts to handle during installation
Manufactured per ASTM F 2418	Strength and durability
Lightweight	Installed by hand without the need of heavy equipment

APPLICATION TIPS

- Best practice designs for subsurface infiltration include pretreatment to reduce cost and frequency of maintenance while ensuring the infiltration capacity of the facility.
- Look for chamber systems that have integrated end caps to reduce installation time

ChamberMaxx® Applications

Bioretention

ChamberMaxx is designed with a minimum of 6″ stone above and below the units. The ChamberMaxx can help make bioretention practical by storing 75.1 CF per unit, including storage in stone, before discharging back into the surrounding soil.

Subsurface Infiltration

The open-bottom plastic chamber allows infiltration into surrounding soil, effectively achieving runoff reduction objectives often required by an LID design. By utilizing subsurface infiltration, space is preserved for development, runoff is reduced or eliminated and groundwater recharge can occur. The ChamberMaxx is ideal when you need to maximize storage capacity in a shallow footprint.

Practical for sites with marginal soils

ChamberMaxx® System Sizing

The ChamberMaxx system combines middle chambers, which are open on both ends, with start and end chambers, which include an integral end wall. Water is stored in both the chamber and in the void space in the surrounding stone backfill providing 75.1 cubic feet of storage per chamber. The ChamberMaxx system can be configured with up to 24-inch diameter (0.61 m) inlet/outlet manifold.

CHAMBER PART	WIDTH (IN) (M)	HEIGHT (IN) (M)	WEIGHT (LBS) (KG)	ACTUAL LENGTH (IN) (M)	INSTALLED LENGTH (IN) (M)	STORAGE VOLUME (CF) (M^3)	INSTALLED STORAGE VOLUME (CF) (M^3)*
Start	51.4 (1.31)	30.3 (0.77)	83.0 (37.65)	98.4 (2.50)	96.2 (2.44)	50.2 (1.42)	78.1 (2.21)
Middle	51.4 (1.31)	30.3 (0.77)	73.0 (33.11)	91.0 (2.31)	85.4 (2.17)	47.2 (1.34)	75.1 (2.31)
End	51.4 (1.31)	30.3 (0.77)	76.0 (34.47)	92.0 (2.34)	88.5 (2.25)	46.2 (1.31)	74.1 (2.10)

** 6" (152 mm) of stone above and below chamber, 5.6" (142 mm) chamber spacing and 40% porosity.*

Integral end caps eliminate loose end caps and add to chamber strength.

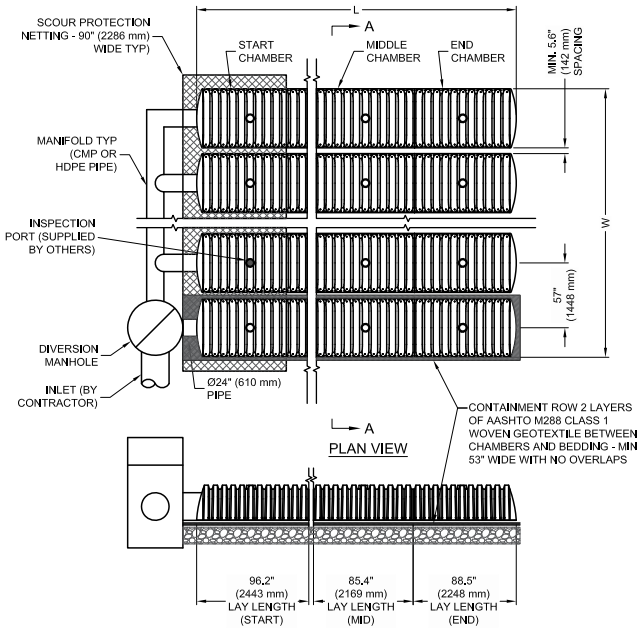
ChamberMaxx allows for infiltration on site with shallow footprint.

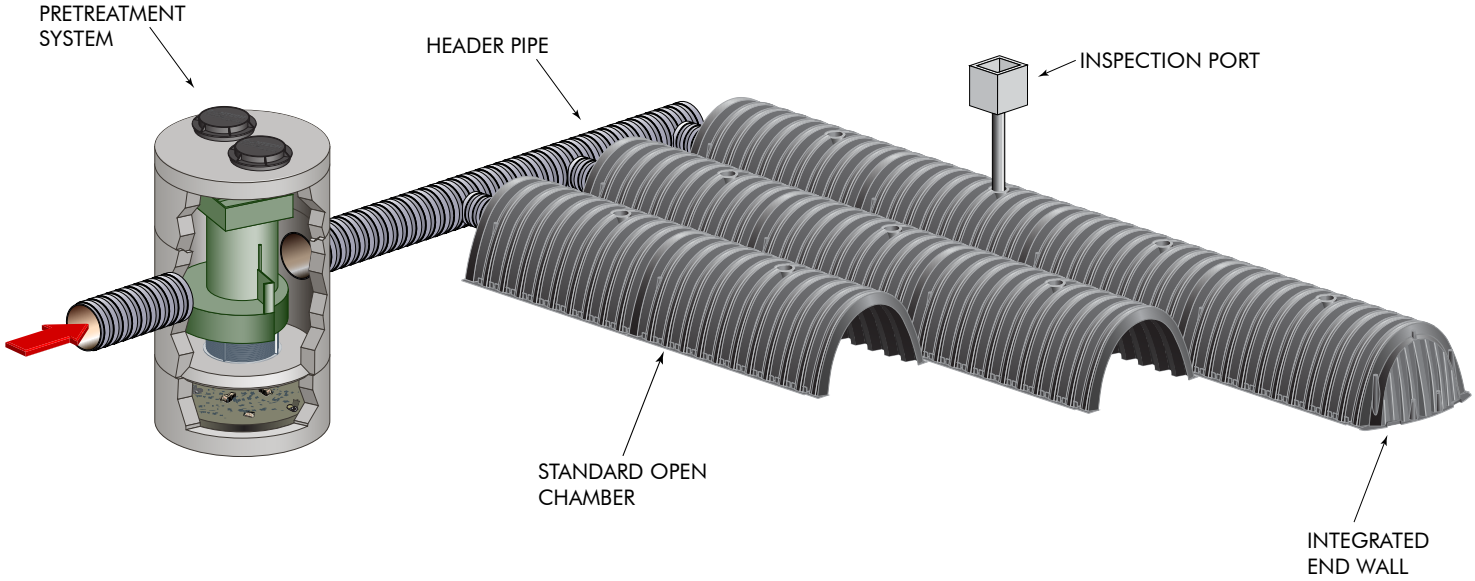
Learn More:
www.ContechES.com/chambermaxx

ChamberMaxx® Configuration Option

Optional Containment Row

Hydrodynamic separators and filtration devices provide the most efficient sediment removal and extended maintenance interval, and are recommended as pretreatment for ChamberMaxx systems. The ChamberMaxx Containment Row should be considered as basic, low cost treatment strategy and should only be considered where sediment loading to the ChamberMaxx system is assumed to be minimal. The Containment Row is designed to provide TSS removal by direct screening.





The open-bottom chamber system allows for runoff reduction and economic infiltration.

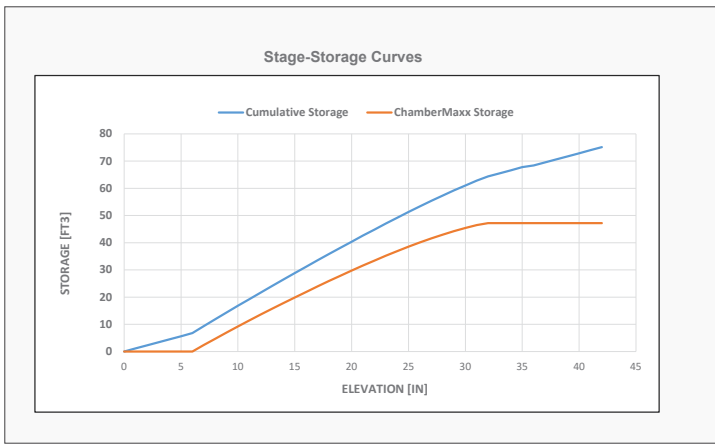
Include pretreatment for your best practice designs

ChamberMaxx® Stage Storage Table

	ELEVATION		CHAMBER STORAGE VOLUME		STONE STORAGE VOLUME		CUMULATIVE VOLUME INCREMENT		CUMULATIVE STORAGE VOLUME	
	(in)	(m)	(cf)	(m^3)	(cf)	(m^3)	(cf)	(m^3)	(cf)	(m^3)
STONE	42.30	1.07	47.20	1.34	27.94	0.79	1.13	0.03	75.14	2.13
	41.30	1.05	47.20	1.34	26.82	0.76	1.13	0.03	74.02	2.09
	40.30	1.02	47.20	1.34	25.69	0.73	1.13	0.03	72.89	2.06
	39.30	1.00	47.20	1.34	24.56	0.70	1.13	0.03	71.76	2.03
	38.30	0.97	47.20	1.34	23.44	0.66	1.13	0.03	70.64	2.00
	37.30	0.95	47.20	1.34	22.31	0.63	1.13	0.03	69.51	1.97
	36.30	0.92	47.20	1.34	21.18	0.60	0.62	0.02	68.38	1.94
	35.00	0.89	47.20	1.34	20.56	0.58	1.13	0.03	67.76	1.92
	34.00	0.86	47.20	1.34	19.43	0.55	1.13	0.03	66.63	1.89
	33.00	0.84	47.20	1.34	18.30	0.52	1.13	0.03	65.50	1.85
	32.00	0.81	47.20	1.34	17.18	0.49	1.56	0.04	64.38	1.82
	31.00	0.79	46.48	1.32	16.34	0.46	1.76	0.05	62.82	1.78
	30.00	0.76	45.43	1.29	15.63	0.44	1.83	0.05	61.06	1.73
CHAMBERMAXX CHAMBERS	29.00	0.74	44.26	1.25	14.98	0.42	1.90	0.05	59.23	1.68
	28.00	0.71	42.97	1.22	14.36	0.41	1.96	0.06	57.33	1.62
	27.00	0.69	41.58	1.18	13.79	0.39	2.02	0.06	55.37	1.57
	26.00	0.66	40.09	1.13	13.26	0.38	2.07	0.06	53.35	1.51
	25.00	0.64	38.53	1.09	12.76	0.36	2.11	0.06	51.29	1.45
	24.00	0.61	36.89	1.04	12.29	0.35	2.15	0.06	49.18	1.39
	23.00	0.58	35.18	1.00	11.84	0.34	2.18	0.06	47.03	1.33
	22.00	0.56	33.42	0.95	11.42	0.32	2.22	0.06	44.84	1.27
	21.00	0.53	31.60	0.89	11.02	0.31	2.24	0.06	42.63	1.21
	20.00	0.51	29.74	0.84	10.64	0.30	2.27	0.06	40.38	1.14
	19.00	0.48	27.84	0.79	10.27	0.29	2.29	0.06	38.11	1.08
	18.00	0.46	25.90	0.73	9.92	0.28	2.31	0.07	35.82	1.01
	17.00	0.43	23.93	0.68	9.59	0.27	2.33	0.07	33.51	0.95
	16.00	0.41	21.92	0.62	9.26	0.26	2.35	0.07	31.18	0.88
	15.00	0.38	19.88	0.56	8.95	0.25	2.37	0.07	28.83	0.82
	14.00	0.36	17.82	0.50	8.65	0.24	2.39	0.07	26.46	0.75
	13.00	0.33	15.72	0.44	8.36	0.24	2.40	0.07	24.08	0.68
	12.00	0.30	13.59	0.38	8.09	0.23	2.42	0.07	21.68	0.61
	11.00	0.28	11.43	0.32	7.82	0.22	2.45	0.07	19.25	0.54
	10.00	0.25	9.23	0.26	7.58	0.21	2.47	0.07	16.81	0.48
	9.00	0.23	6.99	0.20	7.34	0.21	2.50	0.07	14.34	0.41
	8.00	0.20	4.71	0.13	7.13	0.20	2.52	0.07	11.84	0.34
	7.00	0.18	2.38	0.07	6.93	0.20	2.56	0.07	9.32	0.26
STONE	6.00	0.15	0.00	0.00	6.76	0.19	1.13	0.03	6.76	0.19
	5.00	0.13	0.00	0.00	5.63	0.16	1.13	0.03	5.63	0.16
	4.00	0.10	0.00	0.00	4.51	0.13	1.13	0.03	4.51	0.13
	3.00	0.08	0.00	0.00	3.38	0.10	1.13	0.03	3.38	0.10
	2.00	0.05	0.00	0.00	2.25	0.06	1.13	0.03	2.25	0.06
	1.00	0.03	0.00	0.00	1.13	0.03	0.00	0.00	1.13	0.03

ChamberMaxx® Flow Routing

Proper design of any detention system typically requires that flow routing be performed. Engineers at Contech can be a valuable resource when designing a ChamberMaxx retention system. Typically, stage-storage curves like those shown are utilized in the analysis. Contech stage-storage calculator is available for download on www.ContechES.com. This information can simply be inserted into common hydrology/hydraulic software such as HydroCAD, HydroFlow, PondPack or TR20. This makes a flow routing design with ChamberMaxx just as simple as an aboveground pond design.



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PIPE SOLUTIONS

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Few companies offer the wide range of high-quality stormwater resources you can find with us — state-of-the-art products, decades of expertise, and all the maintenance support you need to operate your system cost-effectively.

THE CONTECH WAY

Contech provides innovative, cost-effective site solutions to engineers, contractors, and developers on projects across North America. Our portfolio includes bridges, drainage, erosion control, retaining wall, sanitary sewer and stormwater management products.

TAKE THE NEXT STEP

For more information: www.ContechES.com

NOTHING IN THIS CATALOG SHOULD BE CONSTRUED AS A WARRANTY. APPLICATIONS SUGGESTED HEREIN ARE DESCRIBED ONLY TO HELP READERS MAKE THEIR OWN EVALUATIONS AND DECISIONS, AND ARE NEITHER GUARANTEES NOR WARRANTIES OF SUITABILITY FOR ANY APPLICATION. CONTECH MAKES NO WARRANTY WHATSOEVER, EXPRESS OR IMPLIED, RELATED TO THE APPLICATIONS, MATERIALS, COATINGS, OR PRODUCTS DISCUSSED HEREIN. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND ALL IMPLIED WARRANTIES OF FITNESS FOR ANY PARTICULAR PURPOSE ARE DISCLAIMED BY CONTECH. SEE CONTECH'S CONDITIONS OF SALE (AVAILABLE AT WWW.CONTECHES.COM/COS) FOR MORE INFORMATION.

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Filterra Owner's Manual

filterra®

Bioretention Systems

CONTECH®

ENGINEERED SOLUTIONS

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Enclosed

Local Area Filterra Plant List

Introduction

Thank you for your purchase of the Filterra® Bioretention System. Filterra is a specially engineered stormwater treatment system incorporating high performance biofiltration media to remove pollutants from stormwater runoff. The system's biota (vegetation and soil microorganisms) then further breakdown and absorb captured pollutants. All components of the system work together to provide a sustainable long-term solution for treating stormwater runoff.

The Filterra system has been delivered to you with protection in place to resist intrusion of construction related sediment which can contaminate the biofiltration media and result in inadequate system performance. These protection devices are intended as a best practice and cannot fully prevent contamination. It is the purchaser's responsibility to provide adequate measures to prevent construction related runoff from entering the Filterra system.

Included with your purchase is Activation of the Filterra system by the manufacturer as well as a 1-year warranty from delivery of the system and 1-year of routine maintenance (mulch replacement, debris removal, and pruning of vegetation) up to twice during the first year after activation.

Design and Installation

Each project presents different scopes for the use of Filterra systems. Information and help may be provided to the design engineer during the planning process. Correct Filterra box sizing (by rainfall region) is essential to predict pollutant removal rates for a given area. The engineer shall submit calculations for approval by the local jurisdiction. The contractor is responsible for the correct installation of Filterra units as shown in approved plans. A comprehensive installation manual is available at www.ContechES.com.

Activation Overview

Activation of the Filterra system is a procedure completed by the manufacturer to place the system into working condition. This involves the following items:

- Removal of construction runoff protection devices
- Planting of the system's vegetation
- Placement of pretreatment mulch layer using mulch certified for use in Filterra systems.

Activation MUST be provided by the manufacturer to ensure proper site conditions are met for Activation, proper installation of the vegetation, and use of pretreatment mulch certified for use in Filterra systems.

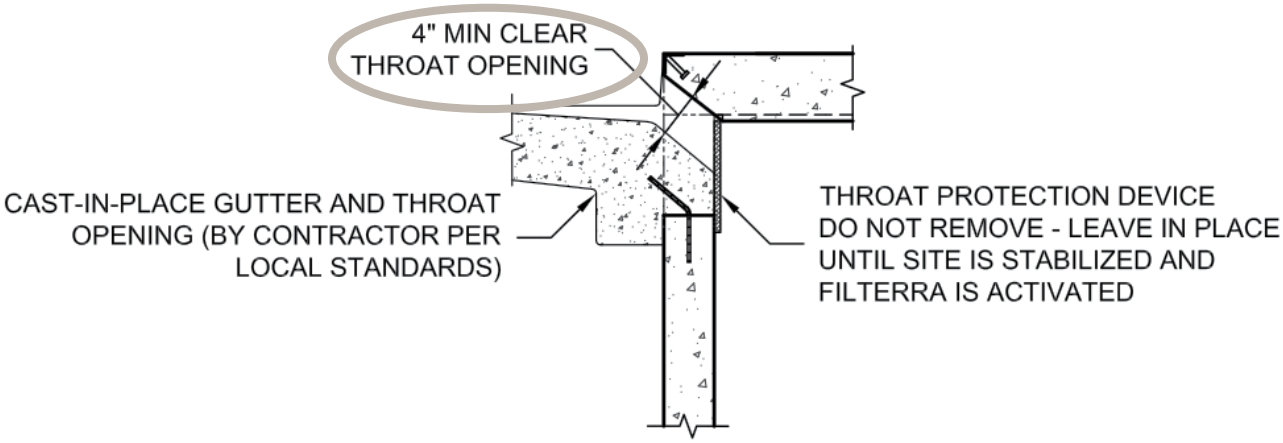
Minimum Requirements

The minimum requirements for Filterra Activation are as follows:

1. The site landscaping must be fully stabilized, i.e. full landscaping installed and some grass cover (not just straw and seed) is required to reduce sediment transport. Construction debris and materials should be removed from surrounding area.

2. Final paving must be completed. Final paving ensures that paving materials will not enter and contaminate the Filterra system during the paving process, and that the plant will receive runoff from the drainage area, assisting with plant survival for the Filterra system.

3. Filterra throat opening should be at least 4" in order to ensure adequate capacity for inflow and debris.



An Activation Checklist is included on page 12 to ensure proper conditions are met for Contech to perform the Activation services. A charge of $500.00 will be invoiced for each Activation visit requested by Customer where Contech determines that the site does not meet the conditions required for Activation.

Filterra Plant Selection Overview

A Plant List has been enclosed with this packet highlighting recommended plants for Filterra systems in your area. Keep in mind that plants are subject to availability due to seasonality and required minimum size for the Filterra system. Plants installed in the Filterra system are container plants (max 15 gallon) from nursery stock and will be immature in height and spread at Activation.

It is the responsibility of the owner to provide adequate irrigation when necessary to the plant of the Filterra system.

The "Planting Requirements for Filterra Systems" document is included as an appendix and discusses proper selection and care of the plants within Filterra systems.

Warranty Overview

Refer to the Contech Engineered Solutions LLC Stormwater Treatment System LIMITED WARRANTY for further information. The following conditions may void the Filterra system's warranty and waive the manufacturer provided Activation and Maintenance services:

- Unauthorized activation or performance of any of the items listed in the activation overview
- Any tampering, modifications or damage to the Filterra system or runoff protection devices
- Removal of any Filterra system components
- Failure to prevent construction related runoff from entering the Filterra system
- Failure to properly store and protect any Filterra components (including media and underdrain stone) that may be shipped separately from the vault

Routine Maintenance Guidelines

With proper routine maintenance, the biofiltration media within the Filterra system should last as long as traditional bioretention media. Routine maintenance is included by the manufacturer on all Filterra systems for the first year after activation. This includes a maximum of 2 visits to remove debris, replace pretreatment mulch, and prune the vegetation. More information is provided in the Operations and Maintenance Guidelines. Some Filterra systems also contain pretreatment or outlet bays. Depending on site pollutant loading, these bays may require periodic removal of debris, however this is not included in the first year of maintenance, and would likely not be required within the first year of operation.

These services, as well as routine maintenance outside of the included first year, can be provided by certified maintenance providers listed on the Contech website. Training can also be provided to other stormwater maintenance or landscape providers.

Why Maintain?

All stormwater treatment systems require maintenance for effective operation. This necessity is often incorporated in your property's permitting process as a legally binding BMP maintenance agreement. Other reasons to maintain are:

- Avoiding legal challenges from your jurisdiction's maintenance enforcement program.
- Prolonging the expected lifespan of your Filterra media.
- Avoiding more costly media replacement.
- Helping reduce pollutant loads leaving your property.

Simple maintenance of the Filterra is required to continue effective pollutant removal from stormwater runoff before discharge into downstream waters. This procedure will also extend the longevity of the living biofilter system. The unit will recycle and accumulate pollutants within the biomass, but is also subjected to other materials entering the inlet. This may include trash, silt and leaves etc. which will be contained above the mulch layer. Too much silt may inhibit the Filterra's flow rate, which is the reason for site stabilization before activation. Regular replacement of the mulch stops accumulation of such sediment.

When to Maintain?

Contech includes a 1-year maintenance plan with each system purchase. Annual included maintenance consists of a maximum of two (2) scheduled visits. Additional maintenance may be necessary depending on sediment and trash loading (by Owner or at additional cost). The start of the maintenance plan begins when the system is activated.

Maintenance visits are scheduled seasonally; the spring visit aims to clean up after winter loads including salts and sands while the fall visit helps the system by removing excessive leaf litter.

It has been found that in regions which receive between 30-50 inches of annual rainfall, (2) two visits are generally required; regions with less rainfall often only require (1) one visit per annum. Varying land uses can affect maintenance frequency; e.g. some fast food restaurants require more frequent trash removal. Contributing drainage areas which are subject to new development wherein the recommended erosion and sediment control measures have not been implemented may require additional maintenance visits.

Some sites may be subjected to extreme sediment or trash loads, requiring more frequent maintenance visits. This is the reason for detailed notes of maintenance actions per unit, helping the Supplier and Owner predict future maintenance frequencies, reflecting individual site conditions.

Owners must promptly notify the (maintenance) Supplier of any damage to the plant(s), which constitute(s) an integral part of the bioretention technology. Owners should also advise other landscape or maintenance contractors to leave all maintenance to the Supplier (i.e. no pruning or fertilizing) during the first year.

Exclusion of Services

Clean up due to major contamination such as oils, chemicals, toxic spills, etc. will result in additional costs and are not covered under the Supplier maintenance contract. Should a major contamination event occur the Owner must block off the outlet pipe of the Filterra (where the cleaned runoff drains to, such as drop inlet) and block off the throat of the Filterra. The Supplier should be informed immediately.

Maintenance Visit Summary

Each maintenance visit consists of the following simple tasks (detailed instructions below).

1. Inspection of Filterra and surrounding area
2. Removal of tree grate and erosion control stones
3. Removal of debris, trash and mulch
4. Mulch replacement
5. Plant health evaluation and pruning or replacement as necessary
6. Clean area around Filterra
7. Complete paperwork

Maintenance Tools, Safety Equipment and Supplies

Ideal tools include: camera, bucket, shovel, broom, pruners, hoe/rake, and tape measure. Appropriate Personal Protective Equipment (PPE) should be used in accordance with local or company procedures. This may include impervious gloves where the type of trash is unknown, high visibility clothing and barricades when working in close proximity to traffic and also safety hats and shoes. A T-Bar or crowbar should be used for moving the tree grates (up to 170 lbs ea.). Most visits require minor trash removal and a full replacement of mulch. See below for actual number of bagged mulch that is required in each media bay size. Mulch should be a double shredded, hardwood variety. Some visits may require additional Filterra engineered soil media available from the Supplier.

Box Length	Box Width	Filter Surface Area (ft^2)	Volume at 3" (ft^3)	# of 2 ft^3 Mulch Bags
4	4	16	4	2
6	4	24	6	3
8	4	32	8	4
6	6	36	9	5
8	6	48	12	6
10	6	60	15	8
12	6	72	18	9
13	7	91	23	12

Maintenance Visit Procedure

Keep sufficient documentation of maintenance actions to predict location specific maintenance frequencies and needs. An example Maintenance Report is included in this manual.

1. Inspection of Filterra and surrounding area

- Record individual unit before maintenance with photograph (numbered). Record on Maintenance Report (see example in this document) the following:

Record on Maintenance Report the following:

Standing Water	yes | no
Damage to Box Structure	yes | no
Damage to Grate	yes | no
Is Bypass Clear	yes | no

If yes answered to any of these observations, record with close-up photograph (numbered).

2. Removal of tree grate and erosion control stones

- Remove cast iron grates for access into Filterra box.
- Dig out silt (if any) and mulch and remove trash & foreign items.

3. Removal of debris, trash and mulch

Record on Maintenance Report the following:

Silt/Clay	yes | no
Cups/ Bags	yes | no
Leaves	yes | no
Buckets Removed	_____

- After removal of mulch and debris, measure distance from the top of the Filterra engineered media soil to the top of the top slab. Compare the measured distance to the distance shown on the approved Contract Drawings for the system. Add Filterra media (not top soil or other) to bring media up as needed to distance indicated on drawings.

Record on Maintenance Report the following:

Distance to Top of Top Slab (inches)	_____
Inches of Media Added	_____

4. Mulch replacement

- Add double shredded mulch evenly across the entire unit to a depth of 3".
- Refer to Filterra Mulch Specifications for information on acceptable sources.
- Ensure correct repositioning of erosion control stones by the Filterra inlet to allow for entry of trash during a storm event.
- Replace Filterra grates correctly using appropriate lifting or moving tools, taking care not to damage the plant.

5. Plant health evaluation and pruning or replacement as necessary

- Examine the plant's health and replace if necessary.
- Prune as necessary to encourage growth in the correct directions

Record on Maintenance Report the following:

Height above Grate	_____ (ft)
Width at Widest Point	_____ (ft)
Health	healthy | unhealthy
Damage to Plant	yes | no
Plant Replaced	yes | no

6. Clean area around Filterra

- Clean area around unit and remove all refuse to be disposed of appropriately.

7. Complete paperwork

- Deliver Maintenance Report and photographs to appropriate location (normally Contech during maintenance contract period).
- Some jurisdictions may require submission of maintenance reports in accordance with approvals. It is the responsibility of the Owner to comply with local regulations.

Maintenance Checklist

Drainage System Failure	Problem	Conditions to Check	Condition that Should Exist	Actions
Inlet	Excessive sediment or trash accumulation.	Accumulated sediments or trash impair free flow of water into Filterra.	Inlet should be free of obstructions allowing free distributed flow of water into Filterra.	Sediments and/or trash should be removed.
Mulch Cover	Trash and floatable debris accumulation.	Excessive trash and/or debris accumulation.	Minimal trash or other debris on mulch cover.	Trash and debris should be removed and mulch cover raked level. Ensure bark nugget mulch is not used.
Mulch Cover	"Ponding" of water on mulch cover.	"Ponding" in unit could be indicative of clogging due to excessive fine sediment accumulation or spill of petroleum oils.	Stormwater should drain freely and evenly through mulch cover.	Recommend contact manufacturer and replace mulch as a minimum.
Vegetation	Plants not growing or in poor condition.	Soil/mulch too wet, evidence of spill. Incorrect plant selection. Pest infestation. Vandalism to plants.	Plants should be healthy and pest free.	Contact manufacturer for advice.
Vegetation	Plant growth excessive.	Plants should be appropriate to the species and location of Filterra.		Trim/prune plants in accordance with typical landscaping and safety needs.
Structure	Structure has visible cracks.	Cracks wider than 1/2 inch or evidence of soil particles entering the structure through the cracks.		Vault should be repaired.
Maintenance is ideally to be performed twice annually.				

Filterra Inspection & Maintenance Log

Filterra System Size/Model:_____**Location:** _____

Date	Mulch & Debris Removed	Depth of Mulch Added	Mulch Brand	Height of Vegetation Above Grate	Vegetation Species	Issues with System	Comments
1/1/17	*5 – 5 gal Buckets*	*3″*	*Lowe's Premium Brown Mulch*	*4′*	*Galaxy Magnolia*	*- Standing water in downstream structure*	*- Removed blockage in downstream structure*

Appendix 1 – Filterra® Activation Checklist

CONTECH® ENGINEERED SOLUTIONS

Project Name:_____ Company: _____

Site Contact Name: _____ Site Contact Phone/Email: _____

Site Owner/End User Name:_____ Site Owner/End User Phone/Email: _____

Preferred Activation Date: _____ (provide 2 weeks minimum from date this form is submitted)

Site Designation	System Size	Final Pavement / Top Coat Complete	Landscaping Complete / Grass Emerging	Construction materials / Piles / Debris Removed	Throat Opening Measures 4" Min. Height	Plant Species Requested
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	

Attach additional sheets as necessary.

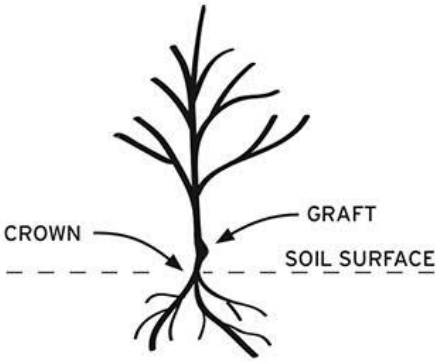
NOTE: A charge of $500.00 will be invoiced for each Activation visit requested by Customer where Contech determines that the site does not meet the conditions required for Activation. ONLY Contech authorized representatives can perform Activation of Filterra systems; unauthorized Activations will void the system warranty and waive manufacturer supplied Activation and 1st Year Maintenance.

_____ _____

Signature Date

Appendix 2 – Planting Requirements for Filterra® Systems

Plant Material Selection



- Select plant(s) as specified in the engineering plans and specifications.
- Select plant(s) with full root development but not to the point where root bound.
- Use local nursery container plants only. Ball and burlapped plants are not permitted.
- For precast Filterra systems with a tree grate, plant(s) must not have scaffold limbs at least 14 inches from the crown due to spacing between the top of the mulch and the tree grate. Lower branches can be pruned away provided there are sufficient scaffold branches for tree or shrub development.
- For precast Filterra systems with a tree grate, at the time of installation, it is required that plant(s) must be at least 6" above the tree grate opening at installation for all Filterra configurations. This DOES NOT apply to Full Grate Cover designs.
- Plant(s) shall not have a mature height greater than 25 feet.
- For standard 21" media depth, a 7 – 15 gallon container size shall be used. Media less than 21" (Filterra boxes only) will require smaller container plants.
- For precast Filterra systems, plant(s) should have a single trunk at installation, and pruning may be necessary at activation and maintenance for some of the faster growing species, or species known to produce basal sprouts.

Plant Installation

- During transport protect the plant leaves from wind and excessive jostling.
- Prior to removing the plant(s) from the container, ensure the soil moisture is sufficient to maintain the integrity of the root ball. If needed, pre-wet the container plant.
- Cut away any roots which are growing out of the container drain holes. Plants with excessive root growth from the drain holes should be rejected.
- Plant(s) should be carefully removed from the pot by gently pounding on the sides of the container with the fist to loosen root ball. Then carefully slide out. Do not lift plant(s) by trunk as this can break roots and cause soil to fall off. Extract the root ball in a horizontal position and support it to prevent it from breaking apart. Alternatively the pot can be cut away to minimize root ball disturbance.
- Remove any excess soil from above the root flare after removing plant(s) from container.
- Excavate a hole with a diameter 4" greater than the root ball, gently place the plant(s).
- If plant(s) have any circling roots from being pot bound, gently tease them loose without breaking them.
- If root ball has a root mat on the bottom, it should be shaved off with a knife just above the mat line.
- Plant the tree/shrub/grass with the top of the root ball 1" above surrounding media to allow for settling.
- All plants should have the main stem centered in the tree grate (where applicable) upon completion of installation.
- With all trees/shrubs, remove dead, diseased, crossed/rubbing, sharply crotched branches or branches growing excessively long or in wrong direction compared to majority of branches.
- To prevent transplant shock (especially if planting takes place in the hot season), it may be necessary to prune some of the foliage to compensate for reduced root uptake capacity. This is accomplished by pruning away some of the smaller secondary branches or a main scaffold branch if there are too many. Too much foliage relative to the root ball can dehydrate and damage the plant.
- Plant staking may be required.

Mulch Installation

- Only mulch that has been meeting Contech Engineered Solutions' mulch specifications can be used in the Filterra system.
- Mulch must be applied to a depth of 3″ evenly over the surface of the media.

Irrigation Requirements

- Each Filterra system must receive adequate irrigation to ensure survival of the living system during periods of drier weather.
- Irrigation sources include rainfall runoff from downspouts and/or gutter flow, applied water through the tree grate or in some cases from an irrigation system with emitters installed during construction.
- At Activation: Apply about one (cool climates) to two (warm climates) gallons of water per inch of trunk diameter over the root ball.
- During Establishment: In common with all plants, each Filterra plant will require more frequent watering during the establishment period. One inch of applied water per week for the first three months is recommended for cooler climates (2 to 3 inches for warmer climates). If the system is receiving rainfall runoff from the drainage area, then irrigation may not be needed. Inspection of the soil moisture content can be evaluated by gently brushing aside the mulch layer and feeling the soil. Be sure to replace the mulch when the assessment is complete. Irrigate as needed**.
- Established Plants: Established plants have fully developed root systems and can access the entire water column in the media. Therefore irrigation is less frequent but requires more applied water when performed. For a mature system assume 3.5 inches of available water within the media matrix. Irrigation demand can be estimated as 1″ of irrigation demand per week. Therefore if dry periods exceed 3 weeks, irrigation may be required. It is also important to recognize that plants which are exposed to windy areas and reflected heat from paved surfaces may need more frequent irrigation. Long term care should develop a history which is more site specific.

** Five gallons per square yard approximates 1 inch of water Therefore for a 6′ by 6′ Filterra approximately 20-60 gallons of water is needed. To ensure even distribution of water it needs to be evenly sprinkled over the entire surface of the filter bed, with special attention to make sure the root ball is completely wetted. NOTE: if needed, measure the time it takes to fill a five gallon bucket to estimate the applied water flow rate then calculate the time needed to irrigate the Filterra. For example, if the flow rate of the sprinkler is 5 gallons/minute then it would take 12 minutes to irrigate a 6′ by 6′ filter.

Notes

filterra®
Bioretention Systems

CONTECH®
ENGINEERED SOLUTIONS

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Erosion and Sedimentation Control Plan

All erosion and sedimentation control measures are designed according to the Maine Department of Environmental Protection's Maine Erosion and Sediment Control Best Management Practices Manual, 2003. Sediment control measures must be in place before activity begins. Measures must remain in place and functional until the site is permanently stabilized.

1. Pollution prevention. Minimize disturbed areas and protect natural down-gradient buffer areas to the extent practicable. The discharge may not result in erosion of any open drainage channels, swales, upland, or coastal or freshwater wetlands. Minimize disturbed areas through phasing. If work within an area is not anticipated to begin within two weeks time, leave the area in its naturally existing cover if practicable.
2. Sediment barriers. Prior to construction, properly install sediment barriers at the edge of any down-gradient disturbed area and adjacent to any drainage channels within the disturbed area. Maintain the sediment barriers until the disturbed area is permanently stabilized.
3. Temporary stabilization. Stabilize with mulch or other non-erodable cover any exposed soils that will not be worked for more than 7 days. Stabilize areas within 75 feet of a wetland or waterbody within 48 hours of the initial disturbance of the soil or prior to any storm event, whichever comes first.
4. Removal of temporary sediment control measures. Remove any temporary sediment control measures, such as silt fence, within 30 days after permanent stabilization is attained. Remove any accumulated sediments and stabilize. Remove silt fence by cutting the fence materials at ground level to avoid additional soil disturbance.
5. Permanent stabilization. Permanently stabilize all disturbed areas that will not be worked for more than one year or that have been brought to final grade by planting vegetation, seeding, sod, or through the use of permanent mulch, or riprap, or road sub-base. If using vegetation for stabilization, select the proper vegetation for the light, soil and moisture conditions; amend areas of disturbed subsoils with topsoil, compost, or fertilizers; protect seeded areas with mulch or, if necessary, erosion control blankets; and schedule sodding, planting, and seeding to avoid die-off from summer drought and fall frosts. Newly seeded or sodded areas must be protected from vehicle traffic, excessive pedestrian traffic, and concentrated runoff until the vegetation is well-established. If necessary, areas must be seeded and mulched again if germination is sparse, plant coverage is spotty, or topsoil erosion is evident. One or more of the following may apply to a particular site.
   (a) Seeded areas. For seeded areas, permanent stabilization means a 90% cover of healthy plants with no evidence of washing or rilling of the topsoil.
   (b) Sodded areas. For sodded areas, permanent stabilization means the complete binding of the sod roots into the underlying soil with no slumping of the sod or die-off.
   (c) Permanent Mulch. For mulched areas, permanent mulching means total coverage of the exposed area with an approved mulch material. Erosion control mix may be used as mulch for permanent stabilization according to the approved application rates and limitations.
   (d) Riprap. For areas stabilized with riprap, permanent stabilization means that slopes stabilized with riprap have an appropriate backing of a well-graded gravel or approved geotextile to prevent soil movement from behind the riprap. Stone must be sized appropriately. It is recommended that angular stone be used.
   (e) Agricultural use. For construction projects on land used for agricultural purposes (e.g., pipelines across crop land), permanent stabilization may be accomplished by returning the disturbed land to agricultural use.

(f) Paved areas. For paved areas, permanent stabilization means the placement of the compacted gravel subbase is completed.

(g) Ditches, channels, and swales. For open channels, permanent stabilization means the channel is stabilized with a 90% cover of healthy vegetation, with a well-graded riprap lining, or with another non-erosive lining such as concrete or asphalt pavement. There must be no evidence of slumping of the channel lining, undercutting of the channel banks, or down-cutting of the channel.

6. Winter construction. "Winter construction" is construction activity performed during the period from November 1 through April 15. If disturbed areas are not stabilized with permanent measures by November 1 or new soil disturbance occurs after November 1, but before April 15, then these areas must be protected and runoff from them must be controlled by additional measures and restrictions.

Natural Resource Protection Any areas within 100 feet from any natural resources, if not stabilized with a minimum of 75 % mature vegetation catch, shall be mulched by December 1 and anchored with plastic netting or protected with an erosion control cover. During winter construction, a double row of sediment barriers (i.e. silt fence backed with hay bales or erosion control mix) will be placed between any natural resource and the disturbed area. Projects crossing the natural resource shall be protected a minimum distance of 100 feet on either side from the resource. Existing projects not stabilized by December 1 shall be protected with the second line of sediment barrier to ensure functionality during the spring thaw and rains.
Sediment Barriers During frozen conditions, sediment barriers may consist of erosion control mix berms or any other recognized sediment barriers as frozen soil prevents the proper installation of hay bales or silt fences.
Mulching All area shall be considered to be denuded until seeded and mulched. Hay and straw mulch shall be applied at a rate of 150 lb. per 1,000 square feet or 3 tons/acre (twice the normal accepted rate of 75-lbs./1,000 s.f. or 1.5 tons/acre) and shall be properly anchored. Erosion control mix must be applied with a minimum 4-inch thickness. Mulch shall not be spread on top of snow. The snow will be removed down to a one-inch depth or less prior to application. After each day of final grading, the area will be properly stabilized with anchored hay or straw or erosion control matting. An area shall be considered to have been stabilized when exposed surfaces have been either mulched or adequately anchored so that ground surface is not visible though the mulch. Between the dates of November 1 and April 15, all mulch shall be anchored by either mulch netting, asphalt emulsion chemical, tracking or wood cellulose fiber. The cover will be considered sufficient when the ground surface is not visible though the mulch. After November 1st, mulch and anchoring of all exposed soil shall occur at the end of each final grading workday.
Soil Stockpiling Stockpiles of soil or subsoil will be mulched for over winter protection with hay or straw at twice the normal rate or with a four-inch layer of erosion control mix. This will be done within 24 hours of stocking and re-established prior to any rainfall or snowfall. Any soil stockpile will not be placed (even covered with mulched) within 100 feet from any natural resources.
Seeding Between the dates of October 15 and April 1st, loam or seed will not be required. During periods of above freezing temperatures finished areas shall be fine graded and either protected with mulch or temporarily seeded and mulched until such time as the final treatment can be applied. If the date is after November 1st and if the exposed area has been loomed, final graded with a uniform surface, then the area may be dormant seeded at a rate of 3 times higher than specified for permanent seed and then mulched. Dormant seeding may be placed prior to the placement of mulch or erosion control blankets. If dormant seeding is used for the site, all disturbed areas shall receive 4' of loam and seed at an application rate of 5lbs/1000 s.f. All areas seeded during the winter will be inspected in the spring for adequate catch. All areas insufficiently vegetated (less than 75 % catch) shall be revegetated by replacing loam, seed and mulch. If dormant seeding is not used for the site, all disturbed areas shall be revegetated in the spring.
Overwinter stabilization of ditches and channels All stone-lined ditches and channels must be constructed and stabilized by November 15. All grass-lined ditches and channels must be constructed and stabilized by September 1. If a ditch or channel is not grass-lined by September 1, then one of the following actions must be taken to stabilize the ditch for late fall and winter. Install a sod lining in the ditch: A ditch must be lined with properly installed sod by October 1. Proper installation includes: pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, watering the sod to promote root growth into the disturbed soil, and anchoring sod at the base of the ditch with jute or plastic mesh to prevent the sod from sloughing during flow conditions. Install a stone lining in the ditch: A ditch must be lined with stone riprap by November 15. A registered professional engineer must be hired to determine the stone size and lining thickness needed to

withstand the anticipated flow velocities and flow depths within the ditch. If necessary, the contractor will regrade the ditch prior to placing the stone lining so to prevent the stone lining from reducing the ditch's cross-sectional area.

Overwinter stabilization of disturbed slopes All stone-covered slopes must be constructed and stabilized by November 15. And all slopes to be vegetated must be seeded and mulched by September 1. The department will consider any area having a grade greater than 15% to be a slope. If a slope to be vegetated is not stabilized by September 1, then one of the following actions must be taken to stabilize the slope for late fall and winter. Stabilize the soil with temporary vegetation and erosion control mats -- By October 1 the disturbed slope must be seeded with winter rye at a seeding rate of 3 pounds per 1000 square feet and then install erosion control mats or anchored mulch over the seeding. If the rye fails to grow at least three inches or fails to cover at least 75% of the slope by November 1, then the contractor will cover the slope with a layer of erosion control mix or with stone riprap as described in the following standards. Stabilize the soil with sod -- The disturbed slope must be stabilized with properly installed sod by October 1. Proper installation includes the contractor pinning the sod onto the slope with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil. The contractor will not use late-season sod installation to stabilize slopes having a grade greater than 33% (3H:1V) or having groundwater seeps on the slope face. Stabilize the soil with erosion control mix – Erosion control mix must be properly installed by November 15. The contractor will not use erosion control mix to stabilize slopes having grades greater than 50% (2H:1V) or having groundwater seeps on the slope face. Stabilize the soil with stone riprap -- Place a layer of stone riprap on the slope by November 15. The development's owner will hire a registered professional engineer to determine the stone size needed for stability on the slope and to design a filter layer for underneath the riprap.

Overwinter stabilization of disturbed soils By September 15, all disturbed soils on areas having a slope less than 15% must be seeded and mulched. If the disturbed areas are not stabilized by this date, then one of the following actions must be taken to stabilize the soil for late fall and winter. Stabilize the soil with temporary vegetation -- By October 1, seed the disturbed soil with winter rye at a seeding rate of 3 pounds per 1000 square feet, lightly mulch the seeded soil with hay or straw at 75 pounds per 1000 square feet, and anchor the mulch with plastic netting. Monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or fails to cover at least 75% of the disturbed soil before November 1, then mulch the area for over-winter protection as described below. Stabilize the soil with sod -- Stabilize the disturbed soil with properly installed sod by October 1. Proper installation includes pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil. Stabilize the soil with mulch -- By November 15, mulch the disturbed soil by spreading hay or straw at a rate of at least 150 pounds per 1000 square feet on the area so that no soil is visible through the mulch. Immediately after applying the mulch, anchor the mulch with plastic netting to prevent wind from moving the mulch off the disturbed soil.

MAINTENANCE Maintenance measures shall be applied as needed during the entire construction season. After each rainfall, snow storm or period of thawing and runoff, the site contractor shall perform a visual inspection of all installed erosion control measures and perform repairs as needed to insure their continuous function. Following the temporary and/or final seeding and mulching, the contractor shall, in the spring, inspect and repair any damages and/or bare spots. An established vegetative cover means a minimum of 85 to 90 % of areas vegetated with vigorous growth.

STABILIZATION SCHEDULE BEFORE WINTER

September 15 All disturbed areas must be seeded and mulched. All slopes must be stabilized, seeded and mulched. All grass-lined ditches and channels must be stabilized with mulch or an erosion control blanket.

October 1 If the slope is stabilized with an erosion control blanket and seeded. All disturbed areas to be protected with an annual grass must be seeded at a seeding rate of 3 pounds per 1000 square feet and mulched.

November 15 All stone-lined ditches and channels must be constructed and stabilized. Slopes that are covered with riprap must be constructed by that date.

December 1 All disturbed areas where the growth of vegetation fails to be at least three inches tall or at least 75% of the disturbed soil is covered by vegetation, must be protected for over-winter.

NOTE: The dates given are for projects in South-Central Maine. Adjust the dates given based on the project's location within the state – reducing times up to three weeks for project's in Northern Maine and extending times up to two weeks for project's on the coast in extreme Southern Maine.

7. Stormwater channels. Ditches, swales, and other open stormwater channels must be constructed and stabilized using measures that achieve long-term erosion control. Each channel should be constructed in sections so that the section's grading, shaping, and installation of the permanent lining can be completed the same day. If a channel's final grading or lining installation must be delayed, then diversion berms must be used to divert stormwater away from the channel, properly-spaced check dams must be installed in the channel to slow the water velocity, and a temporary lining installed along the channel to prevent scouring.

8. Roads. Gravel and paved roads must be constructed with crowns or other measures, such as water bars, to ensure that stormwater is delivered immediately to adjacent stable ditches, vegetated buffer areas, catch basin inlets, or street gutters.

9. Culverts. Culvert inlets must be protected with appropriate materials and protection must extend at least as high as the expected maximum elevation of storage behind the culvert. Culvert outlets must incorporate measures, such as aprons or plunge pools, to prevent scour of the stream channel.

10. Parking areas. Parking areas must be constructed to ensure runoff is delivered to adjacent swales, catch basins, curb gutters, or buffer areas without eroding areas downslope. The parking area's subbase compaction and grading must be done to ensure runoff is evenly distributed to adjacent buffers or side slopes. Catch basins must be located and set to provide enough storage depth at the inlet to allow inflow of peak runoff rates without by-pass of runoff to other areas.

Inspection and Maintenance Plan

Responsible Party:	Name	
	Job Title	
	Employer	
	Address	
	Phone	
	E-mail	
Design Professional	Name	Paul Monyok, P.E., LEED AP
	Job Title	Civil Engineer
	Employer	WBRC Architects / Engineers
	Address	44 Central Street
		Bangor, Maine 04401
	Phone	(207) 947-4511
	E-mail	paul.monyok@wbrcae.com
Proprietary Device Supplier	Name	N/A
	Job Title	
	Employer	
	Address	
	Phone	
	E-mail	

1. <u>During construction.</u> The following standards must be met during construction:

   (a) Inspection and corrective action. Inspect disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. Inspect these areas at least once a week as well as before and after a storm event, and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in the permit, shall conduct the inspections.

   (b) Maintenance. Maintain all measures in effective operating condition until areas are permanently stabilized. If best management practices (BMPs) need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within 7 calendar days and prior to any storm event (rainfall).

   (c) Documentation. Keep a log (report) summarizing the inspections and any corrective action taken. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, materials storage areas, and vehicles access points to the parcel. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and location(s) where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to department staff and a copy must be provided upon request. The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

WEEKLY SITE INSPECTION REPORT

PROJECT:_____

DATE OF INSPECTION: _____ WEATHER/TEMPERATURE_____

PERSON CONDUCTING THE INSPECTION_____

A. EROSION AND SEDIMENTATION CONTROLS	
1._____ ☐ Functioning _____ ☐ Requires maintenance	1. Where:_____ Action Taken:_____
2._____ ☐ Functioning _____ ☐ Requires maintenance	2. Where:_____ Action Taken:_____
3._____ ☐ Functioning _____ ☐ Requires maintenance	3. Where:_____ Action Taken:_____
4._____ ☐ Functioning _____ ☐ Requires maintenance	4. Where:_____ Action Taken:_____
5._____ ☐ Functioning _____ ☐ Requires maintenance	5. Where:_____ Action Taken:_____
6._____ ☐ Functioning _____ ☐ Requires maintenance	6. Where:_____ Action Taken:_____
B. MATERIALS STORAGE AREA	
1._____ ☐ Functioning _____ ☐ Requires maintenance	1. Where:_____ Action Taken:_____
2._____ ☐ Functioning _____ ☐ Requires maintenance	2. Where:_____ Action Taken:_____
3._____ ☐ Functioning _____ ☐ Requires maintenance	3. Where:_____ Action Taken:_____
C. VEHICLE ACCESS POINTS	
1._____ ☐ Functioning _____ ☐ Requires maintenance	1. Where:_____ Action Taken:_____
2._____ ☐ Functioning _____ ☐ Requires maintenance	2. Where:_____ Action Taken:_____
3._____ ☐ Functioning _____ ☐ Requires maintenance	3. Where:_____ Action Taken:_____

2. Post-construction. The following standards must be met after construction.

   (a) Plan. Carry out the following inspection and maintenance plan.

   (b) Inspection and corrective action. All measures must be maintained in effective operating condition. A person with knowledge of erosion and stormwater control, including the standards and conditions in the permit, shall conduct the inspections. The following areas, facilities, and measures must be inspected and identified deficiencies must be corrected. Areas, facilities, and measures other than those listed below may also require inspection on a specific site. Inspection or maintenance tasks other than those discussed below must be included in the maintenance plan developed for a specific site.

      (i) Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

      (ii) Inspect ditches, swales and other open stormwater channels in the spring, in late fall, and after heavy rains to remove any obstructions to flow, remove accumulated sediments and debris, to control vegetated growth that could obstruct flow, and to repair any erosion of the ditch lining. Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity. Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable. If the ditch has a riprap lining, replace riprap on areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged. The channel must receive adequate routine maintenance to maintain capacity and prevent or correct any erosion of the channel's bottom or sideslopes.

      (iii) Inspect culverts in the spring, in late fall, and after heavy rains to remove any obstructions to flow; remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit; and to repair any erosion damage at the culvert's inlet and outlet.

      (iv) Inspect and, if required, clean-out catch basins at least once a year, preferably in early spring. Clean-out must include the removal and legal disposal of any accumulated sediments and debris at the bottom of the basin, at inlet any grates, at any inflow channels to the basin, and at any pipes between basins. If the basin outlet is designed to trap floatable materials, then remove the floating debris and any floating oils (using oil-absorptive pads).

      (v) Inspect pond embankments for evidence of erosion, concentrating flow, and encroachment by development. If erosion is present, adjust or modify the embankment and re-establish vegetation. Clean out any accumulation of sediment within the gravel bench, riprap spillway, or pipe outlets.

   (c) Regular maintenance

      (i) Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably in the spring. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader. Grading of gravel roads, or grading of the gravel shoulders of gravel or paved roads, must be routinely performed to ensure that stormwater drains immediately off the road surface to adjacent buffer areas or stable ditches, and is not impeded by accumulations of graded material on the road shoulder or by excavation of false ditches in the shoulder. If water bars or open-top culverts are used to divert runoff from road surfaces, clean out any sediment within or at the outlet of these structures to restore their function.

      (ii) Inspect pond embankments at least once a year for evidence of erosion, concentrating flow, and encroachment by development. If erosion is present, adjust or modify the embankment and re-

establish vegetation. Clean out any accumulation of sediment within the gravel bench, riprap spillway, or pipe outlets.

(d) Documentation. Keep a log (report) summarizing inspections, maintenance, and any corrective actions taken. The log must include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task. If a maintenance task requires the clean-out of any sediments or debris, indicate where the sediment and debris was disposed after removal.

The log must be made accessible to department staff and a copy provided to the department upon request. The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

ANNUAL SITE INSPECTION/MAINTENANCE REPORT

PROJECT:_____ YEAR: _____

Vegetated Areas, particularly slopes and embankments – Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

Location	Inspection	Maintenance	Inspected/maintained by
	☐ Functioning ☐ Requires maintenance	☐ Replant bare areas or areas with sparse growth ☐ Armor area with appropriate lining	Inspected/Maintained By: _____ Date:_____ Comments:_____
	☐ Functioning ☐ Requires maintenance	☐ Replant bare areas or areas with sparse growth ☐ Armor area with appropriate lining	Inspected/Maintained By: _____ Date:_____ Comments:_____
	☐ Functioning ☐ Requires maintenance	☐ Replant bare areas or areas with sparse growth ☐ Armor area with appropriate lining	Inspected/Maintained By: _____ Date:_____ Comments:_____
	☐ Functioning ☐ Requires maintenance	☐ Replant bare areas or areas with sparse growth ☐ Armor area with appropriate lining	Inspected/Maintained By: _____ Date:_____ Comments:_____
	☐ Functioning ☐ Requires maintenance	☐ Replant bare areas or areas with sparse growth ☐ Armor area with appropriate lining	Inspected/Maintained By: _____ Date:_____ Comments:_____

ANNUAL SITE INSPECTION/MAINTENANCE REPORT

PROJECT:_____ YEAR: _____

Ditches, Swales, or other Open Stormwater Channels - Inspect in the spring, in late fall, and after heavy rains to remove any obstructions to flow, remove accumulated sediments and debris, to control vegetated growth that could obstruct flow, and to repair any erosion of the ditch lining. Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity. Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable. If the ditch has a riprap lining, replace riprap on areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged. The channel must receive adequate routine maintenance to maintain capacity and prevent or correct any erosion of the channel's bottom or sideslopes.

Location	Inspection	Maintenance	Inspected/maintained by
	☐ Functioning ☐ Requires maintenance	☐ Remove obstructions to flow ☐ Remove sediment & debris ☐ Control vegetated growth ☐ Repair ditch lining ☐ Mow ☐ Repair slumping side slopes ☐ Replace riprap	Inspected/Maintained By: _____ Date:_____ Comments:_____ _____ _____ _____ _____
	☐ Functioning ☐ Requires maintenance	☐ Remove obstructions to flow ☐ Remove sediment & debris ☐ Control vegetated growth ☐ Repair ditch lining ☐ Mow ☐ Repair slumping side slopes ☐ Replace riprap	Inspected/Maintained By: _____ Date:_____ Comments:_____ _____ _____ _____ _____

ANNUAL SITE INSPECTION/MAINTENANCE REPORT

PROJECT:_____ YEAR: _____

Culverts – Inspect culverts in the spring, in late fall, and after heavy rains to remove any obstructions to flow; remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit; and to repair any erosion damage at the culvert's inlet and outlet.

Location	Inspection	Maintenance	Inspected/maintained by
	☐ Functioning ☐ Requires maintenance	☐ Remove obstructions to flow ☐ Remove sediment & debris ☐ Repair erosion damage at inlet and outlet	Inspected/Maintained By: _____ Date:_____ Comments:_____ _____
	☐ Functioning ☐ Requires maintenance	☐ Remove obstructions to flow ☐ Remove sediment & debris ☐ Repair erosion damage at inlet and outlet	Inspected/Maintained By: _____ Date:_____ Comments:_____ _____
	☐ Functioning ☐ Requires maintenance	☐ Remove obstructions to flow ☐ Remove sediment & debris ☐ Repair erosion damage at inlet and outlet	Inspected/Maintained By: _____ Date:_____ Comments:_____ _____
	☐ Functioning ☐ Requires maintenance	☐ Remove obstructions to flow ☐ Remove sediment & debris ☐ Repair erosion damage at inlet and outlet	Inspected/Maintained By: _____ Date:_____ Comments:_____ _____
	☐ Functioning ☐ Requires maintenance	☐ Remove obstructions to flow ☐ Remove sediment & debris ☐ Repair erosion damage at inlet and outlet	Inspected/Maintained By: _____ Date:_____ Comments:_____ _____

ANNUAL SITE INSPECTION/MAINTENANCE REPORT

PROJECT:_____ YEAR: _____

Catch Basins - Inspect and, if required, clean-out catch basins at least once a year, preferably in early spring. Clean-out must include the removal and legal disposal of any accumulated sediments and debris at the bottom of the basin, at inlet any grates, at any inflow channels to the basin, and at any pipes between basins. If the basin outlet is designed to trap floatable materials, then remove the floating debris and any floating oils (using oil-absorptive pads).

Location	Inspection	Maintenance	Inspected/maintained by
	☐ Functioning ☐ Requires maintenance	☐ Remove sediment & debris from bottom of basin ☐ Remove sediment & debris at inlet grates ☐ Remove sediment & debris from inflow channels ☐ Remove sediment & debris from pipes ☐ Remove floatable debris and oil (with oil-absorptive pads)	Inspected/Maintained By: _____ Date:_____ Comments:_____ _____ _____ _____ _____ _____
	☐ Functioning ☐ Requires maintenance	☐ Remove sediment & debris from bottom of basin ☐ Remove sediment & debris at inlet grates ☐ Remove sediment & debris from inflow channels ☐ Remove sediment & debris from pipes ☐ Remove floatable debris and oil (with oil-absorptive pads)	Inspected/Maintained By: _____ Date:_____ Comments:_____ _____ _____ _____ _____ _____

ANNUAL SITE INSPECTION/MAINTENANCE REPORT

PROJECT:_____ YEAR: _____

Resource and Treatment Buffers – Inspect resource and treatment buffers at least once a year for evidence of erosion, concentrating flow, and encroachment by development. If flows are concentrating within a buffer, site grading, level spreaders, or ditch turn-outs must be used to ensure a more even distribution of flow into a buffer. Check down slope of all spreaders and turn-outs for erosion. If erosion is present, adjust or modify the spreader's or turnout's lip to ensure a better distribution of flow into a buffer. Clean-out any accumulation of sediment within the spreader bays or turn-out pools. Wooded buffers must remain fully wooded and have no disturbance to the duff layer. Vegetation in non-wooded buffers may not be cut more than three times per year, and may not be cut shorter than six inches.

Location	Inspection	Maintenance	Inspected/maintained by
	☐ Functioning ☐ Erosion ☐ Concentrating flow ☐ Encroachment	☐ Grade site ☐ Install/repair level spreader ☐ Install ditch turnout ☐ Remove accumulated sediment ☐ Mow non-wooded buffer	Inspected/Maintained By: _____ Date:_____ Comments:_____ _____ _____
	☐ Functioning ☐ Erosion ☐ Concentrating flow ☐ Encroachment	☐ Grade site ☐ Install/repair level spreader ☐ Install ditch turnout ☐ Remove accumulated sediment ☐ Mow non-wooded buffer	Inspected/Maintained By: _____ Date:_____ Comments:_____ _____ _____
	☐ Functioning ☐ Erosion ☐ Concentrating flow ☐ Encroachment	☐ Grade site ☐ Install/repair level spreader ☐ Install ditch turnout ☐ Remove accumulated sediment ☐ Mow non-wooded buffer	Inspected/Maintained By: _____ Date:_____ Comments:_____ _____ _____

ANNUAL SITE INSPECTION/MAINTENANCE REPORT

PROJECT:_____ YEAR: _____

Regular Maintenance – Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably in the spring. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader. Grading of gravel roads, or grading of the gravel shoulders of gravel or paved roads, must be routinely performed to ensure that stormwater drains immediately off the road surface to adjacent buffer areas or stable ditches, and is not impeded by accumulations of graded material on the road shoulder or by excavation of false ditches in the shoulder. If water bars or open-top culverts are used to divert runoff from road surfaces, clean out any sediment within or at the outlet of these structures to restore their function.

Location	Maintenance	Maintained by
	☐ Sweep parking lot ☐ Grade shoulder & remove excess sand	Maintained By: _____ Date:_____ Comments:_____ _____
	☐ Sweep parking lot ☐ Grade shoulder & remove excess sand	Maintained By: _____ Date:_____ Comments:_____ _____
	☐ Sweep parking lot ☐ Grade shoulder & remove excess sand	Maintained By: _____ Date:_____ Comments:_____ _____
	☐ Sweep parking lot ☐ Grade shoulder & remove excess sand	Maintained By: _____ Date:_____ Comments:_____ _____

3. Maintenance contract.

   No proprietary devices are proposed for this project.

4. Re-certification. Submit a certification of the following to the department within three months of the expiration of each five-year interval from the date of issuance of the permit.

   (a) Identification and repair of erosion problems. All areas of the project site have been inspected for areas of erosion, and appropriate steps have been taken to permanently stabilize these areas.

   (b) Inspection and repair of stormwater control system. All aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the system, or portions of the system.

   (c) Maintenance. The erosion and stormwater maintenance plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the department, and the maintenance log is being maintained.

5. Duration of maintenance. Perform maintenance as described and required in the permit unless and until the system is formally accepted by the municipality or quasi-municipal district, or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system. If a municipality or quasi-municipal district chooses to accept a stormwater management system, or a component of a stormwater system, it must provide a letter to the department stating that it assumes responsibility for the system. The letter must specify the components of the system for which the municipality or district will assume responsibility, and that the municipality or district agrees to maintain those components of the system in compliance with department standards. Upon such assumption of responsibility, and approval by the department, the municipality, quasi-municipal district, or association becomes a co-permittee for this purpose only and must comply with all terms and conditions of the permit.

Housekeeping Plan

1. Spill prevention. Controls must be used to prevent pollutants from being discharged from materials on site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation.
2. Groundwater protection. During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.
3. Fugitive sediment and dust. Actions must be taken to ensure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control.

   NOTE: An example of the use of BMPs to control fugitive sediment and dust is as follows. Operations during wet months that experience tracking of mud off the site onto public roads should provide for sweeping of road areas at least once a week and prior to significant storm events. Where chronic mud tracking occurs, a stabilized construction entrance should be provided. Operations during dry months, that experience fugitive dust problems, should wet down the access roads once a week or more frequently as needed.

   NOTE: Dewatering a stream without a permit from the department violates state water quality standards and the Natural Resources Protection Act.
4. Debris and other materials. Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

   NOTE: To prevent these materials from becoming a source of pollutants, construction and post-construction activities related to a project may be required to comply with applicable provision of rules related to solid, universal, and hazardous waste, including, but not limited to, the Maine solid waste and hazardous waste management rules; Maine hazardous waste management rules; Maine oil conveyance and storage rules; and Maine pesticide requirements.
5. Trench or foundation de-watering. Trench de-watering is the removal of water from trenches, foundations, cofferdams, ponds, and other areas within the construction area that retain water after excavation. In most cases the collected water is heavily silted and hinders correct and safe construction practices. The collected water must be removed from the ponded area, either through gravity or pumping, and must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved by the department.
6. Non-stormwater discharges. Identify and prevent contamination by non-stormwater discharges.

4219.01
Brunswick Fire Station – Pleasant St.
Brunswick, Cumberland County, Maine

Site Lighting Schedule

5	FLAGPOLE LIGHT, INCLUDED WITH FLAGPOLE.	MVOLT	21	TOP OF FLAG POLE.	LED INCLUDED 4000K
92B	LITHONIA DSXOLED-P1-40K-T3M-MVOLT-SPA-PIRH1FC3V-HS-DDBXD LED PARKING LOT LIGHTING, APPROX 4700 LUMENS, TYPE III MEDIUM DISTRIBUTION, MOTION/AMBIENT SENSOR, w/HOUSE SIDE SHIELD, DARK BRONZE FINISH, W/CAT# SSS-25-4C-DM19AS-DDBXD 4" SQUARE STRAIGHT STEEL POLE, DARK BRONZE FINISH	MVOLT	38	MOUNTED AT 25' AFG (22.5' POLE ON 2.5' BASE	LED INCLUDED 4000K
93B	LITHONIA DSXOLED-P1-40K-T4M-MVOLT-SPA-PIRH1FC3V-HS-DDBXD LED PARKING LOT LIGHTING, APPROX 4600 LUMENS, TYPE IV MEDIUM DISTRIBUTION, MOTION/AMBIENT SENSOR, w/HOUSE SIDE SHIELD. DARK BRONZE FINISH, W/CAT# SSS-25-4C-DM19AS-DDBXD 4" SQUARE STRAIGHT STEEL POLE, DARK BRONZE FINISH	MVOLT	38	MOUNTED AT 25' AFG (22.5' POLE ON 2.5' BASE	LED INCLUDED 4000K
93C	LITHONIA DSXOLED-P2-40K-T4M-MVOLT-SPA-PIRH1FC3V-DDBXD LED PARKING LOT LIGHTING, APPROX 5900 LUMENS, TYPE IV MEDIUM DISTRIBUTION, MOTION/AMBIENT SENSOR, DARK BRONZE FINISH, W/CAT# SSS-25-4C-DM19AS-DDBXD 4" SQUARE STRAIGHT STEEL POLE, DARK BRONZE FINISH	MVOLT	49	MOUNTED AT 25' AFG (22.5' POLE ON 2.5' BASE	LED INCLUDED 4000K
93D	LITHONIA DSXOLED-P2-40K-T4M-MVOLT-SPA-PIRH1FC3V-HS-DDBXD LED PARKING LOT LIGHTING, APPROX 5900 LUMENS, TYPE IV MEDIUM DISTRIBUTION, MOTION/AMBIENT SENSOR, w/HOUSE SIDE SHIELD, DARK BRONZE FINISH, W/CAT# SSS-25-4C-DM19AS-DDBXD 4" SQUARE STRAIGHT STEEL POLE, DARK BRONZE FINISH	MVOLT	49	MOUNTED AT 25' AFG (22.5' POLE ON 2.5' BASE	LED INCLUDED 4000K
94	LITHONIA DSXOLED-P1-40K-BLC-MVOLT-SPA-PIRH1FC3V-HS-DDBXD LED PARKING LOT LIGHTING, APPROX 3800 LUMENS, TYPE BACK LIGHT CONTROL DISTRIBUTION, MOTION/AMBIENT SENSOR, w/HOUSE SIDE SHIELD, DARK BRONZE FINISH, w/CAT# SSS-25-4C-DM19AS-DDBXD 4" SQUARE STRAIGHT STEEL POLE, DARK BRONZE FINISH	MVOLT	38	MOUNTED AT 25' AFG (22.5' POLE ON 2.5' BASE	LED INCLUDED 4000K

Prepared For: Town of Brunswick
Attn: Chief Brillant
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(207) 947-4628
www.wbrcae.com

WBRC ARCHITECTS • ENGINEERS
BANGOR PORTLAND SARASOTA
www.wbrcae.com

D-Series Size 0
LED Area Luminaire

Catalog Number

Notes

Type

Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

EPA: 0.95 ft² (.09 m²)

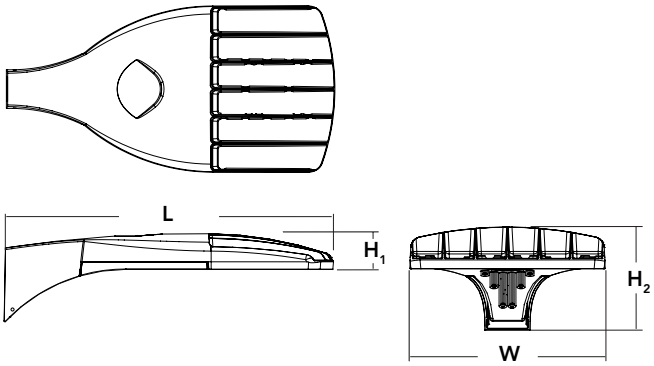
Length: 26" (66.0 cm)

Width: 13" (33.0 cm)

Height$_1$: 3" (7.62 cm)

Height$_2$: 7" (17.8 cm)

Weight (max): 16 lbs (7.25 kg)



Introduction

The modern styling of the D-Series is striking yet unobtrusive - making a bold, progressive statement even as it blends seamlessly with its environment. The D-Series distills the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire. The outstanding photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. It is ideal for replacing up to 400W metal halide with typical energy savings of 70% and expected service life of over 100,000 hours.

A+ Capable options indicated by this color background.

Ordering Information

EXAMPLE: DSX0 LED P6 40K T3M MVOLT SPA NLTAIR2 PIRHN DDBXD

DSX0 LED

Series	LEDs	Color temperature	Distribution		Voltage	Mounting
DSX0 LED	**Forward optics** P1 P4 P7 P2 P5 P3 P6 **Rotated optics** P10[1] P12[1] P11[1] P13[1]	30K 3000 K 40K 4000 K 50K 5000 K	T1S Type I short (Automotive) T2S Type II short T2M Type II medium T3S Type III short T3M Type III medium T4M Type IV medium TFTM Forward throw medium T5VS Type V very short[2]	T5S Type V short[2] T5M Type V medium[2] T5W Type V wide[2] BLC Backlight control[3] LCCO Left corner cutoff[3] RCCO Right corner cutoff[3]	MVOLT[4,5] 120[5] 208[5] 240[5] 277[5] 347[5,6] 480[5,6]	**Shipped included** SPA Square pole mounting RPA Round pole mounting WBA Wall bracket[2] SPUMBA Square pole universal mounting adaptor[7] RPUMBA Round pole universal mounting adaptor[7] **Shipped separately** KMA8 DDBXD U Mast arm mounting bracket adaptor (specify finish)[8]

Control options		Other options	Finish *(required)*
Shipped installed NLTAIR2 nLight AIR generation 2 enabled[9,10] PIRHN Network, high/low motion/ambient sensor[11] PER NEMA twist-lock receptacle only (control ordered separate)[12] PER5 Five-pin receptacle only (control ordered separate)[12,13] PER7 Seven-pin receptacle only (leads exit fixture) (control ordered separate)[12,13] DMG 0-10V dimming extend out back of housing for external control (control ordered separate)[14]	PIR High/low, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 5fc[15,16] PIRH High/low, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 5fc[15,16] PIR1FC3V High/low, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 1fc[15,16] PIRH1FC3V High/low, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 1fc[15,16] FAO Field adjustable output[17]	**Shipped installed** HS House-side shield[18] SF Single fuse (120, 277, 347V)[5] DF Double fuse (208, 240, 480V)[5] L90 Left rotated optics[1] R90 Right rotated optics[1] DDL Diffused drop lens[18] **Shipped separately** BS Bird spikes[19] EGS External glare shield	DDBXD Dark bronze DBLXD Black DNAXD Natural aluminum DWHXD White DDBTXD Textured dark bronze DBLBXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white

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Ordering Information

Accessories

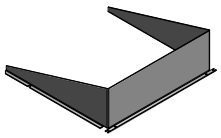
Ordered and shipped separately.

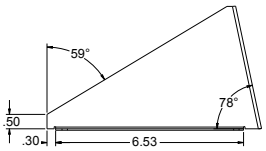
DLL127F 1.5 JU	Photocell - SSL twist-lock (120-277V) [20]
DLL347F 1.5 CUL JU	Photocell - SSL twist-lock (347V) [20]
DLL480F 1.5 CUL JU	Photocell - SSL twist-lock (480V) [20]
DSHORT SBK U	Shorting cap [20]
DSX0HS 20C U	House-side shield for P1,P2,P3 and P4 [18]
DSX0HS 30C U	House-side shield for P10,P11,P12 and P13 [18]
DSX0HS 40C U	House-side shield for P5,P6 and P7 [18]
DSX0DDL U	Diffused drop lens (polycarbonate) [18]
PUMBA DDBXD U*	Square and round pole universal mounting bracket adaptor (specify finish) [21]
KMA8 DDBXD U	Mast arm mounting bracket adaptor (specify finish) [7]
DSX0EGS (FINISH) U	External glare shield

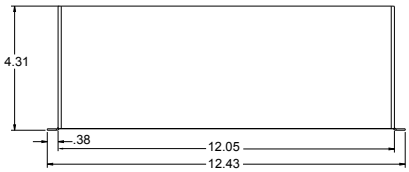
For more control options, visit DTL and ROAM online. Link to nLight Air 2

NOTES
1 P10, P11, P12 and P13 and rotated options (L90 or R90) only available together.
2 Any Type 5 distribution with photocell, is not available with WBA.
3 Not available with HS or DDL.
4 MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
5 Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
6 Not available with BL30, BL50 or PNMT options.
7 Universal mounting brackets intended for retrofit on existing pre-drilled poles only. 1.5 G vibration load rating per ANCI C136.31.
8 Must order fixture with SPA mounting. Must be ordered as a separate accessory; see Accessories information. For use with 2-3/8" mast arm (not included).
9 Must be ordered with PIRHN.
10 Sensor cover available only in dark bronze, black, white and natural aluminum colors.
11 Must be ordered with NLTAIR2. For more information on nLight Air 2 visit this link
12 Photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories. Shorting Cap included.
13 If ROAM® node required, it must be ordered and shipped as a separate line item from Acuity Brands Controls. Shorting Cap included.
14 DMG not available with PIRHN, PER5, PER7, PIR, PIRH, PIR1FC3V or PIRH1FC3V.
15 Reference Motion Sensor table on page 3.
16 Reference PER Table on page 3 to see functionality.
17 Not available with other dimming controls options.
18 Not available with BLC, LCCO and RCCO distribution.
19 Must be ordered with fixture for factory pre-drilling.
20 Requires luminaire to be specified with PER, PER5 or PER7 option. See PER Table on page 3.
21 For retrofit use only.

EGS – External Glare Shield

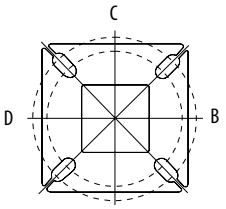


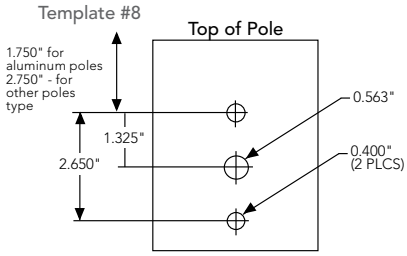




Drilling

HANDHOLE ORIENTATION
(from top of pole)





Tenon Mounting Slipfitter

Tenon O.D.	Single Unit	2 at 180°	2 at 90°	3 at 120°	3 at 90°	4 at 90°
2-3/8"	AST20-190	AST20-280	AST20-290	AST20-320	AST20-390	AST20-490
2-7/8"	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
4"	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490

Mounting Option	**Drilling Template**	**Single**	**2 @ 180**	**2 @ 90**	**3 @ 90**	**3 @ 120**	**4 @ 90**
Head Location		Side B	Side B & D	Side B & C	Side B, C & D	Round Pole Only	Side A, B, C & D
Drill Nomenclature	#8	DM19AS	DM28AS	DM29AS	DM39AS	DM32AS	DM49AS
		Minimum Acceptable Outside Pole Dimension					
SPA	#8	2-7/8"	2-7/8"	3.5"	3.5"		3.5"
RPA	#8	2-7/8"	2-7/8"	3.5"	3.5"	3"	3.5"
SPUMBA	#5	2-7/8"	3"	4"	4"		4"
RPUMBA	#5	2-7/8"	3.5"	5"	5"	3.5"	5"

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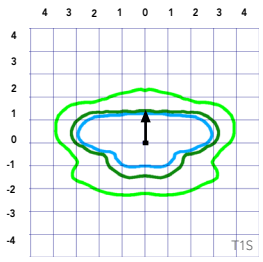
Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's D-Series Area Size 0 homepage.

Isofootcandle plots for the DSX0 LED 40C 1000 40K. Distances are in units of mounting height (20').

LEGEND

- 0.1 fc
- 0.5 fc
- 1.0 fc



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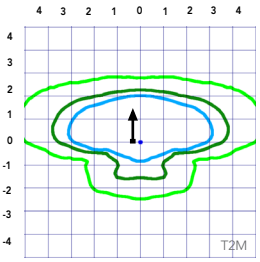

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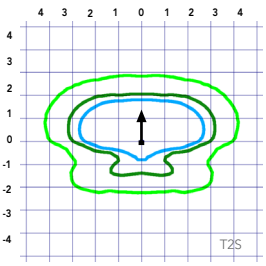
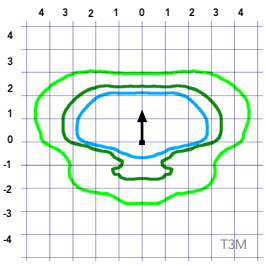


Test No. LTL23457P25 tested in accordance with IESNA LM-79-08.



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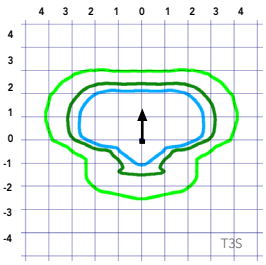

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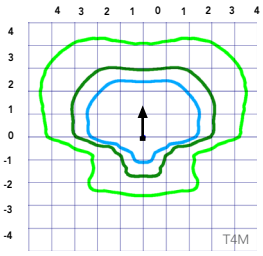

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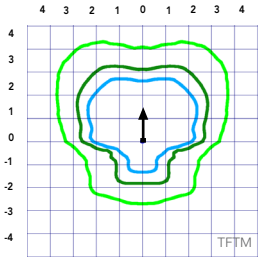

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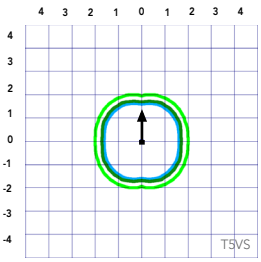

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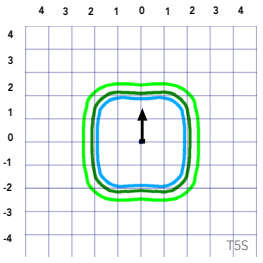

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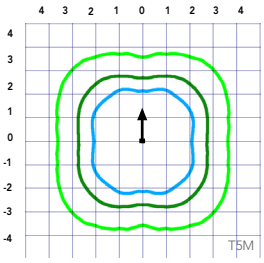

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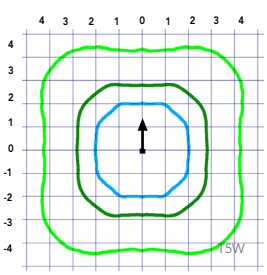

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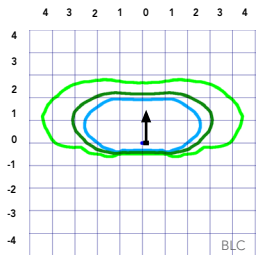

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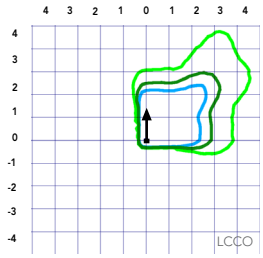

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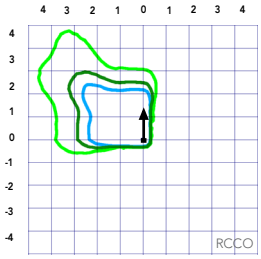

Test No.

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Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient		Lumen Multiplier
0°C	32°F	1.04
5°C	41°F	1.04
10°C	50°F	1.03
15°C	50°F	1.02
20°C	68°F	1.01
25°C	**77°C**	**1.00**
30°C	86°F	0.99
35°C	95°F	0.98
40°C	104°F	0.97

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	Lumen Maintenance Factor
25,000	0.96
50,000	0.92
100,000	0.85

Motion Sensor Default Settings						
Option	Dimmed State	High Level (when triggered)	Phototcell Operation	Dwell Time	Ramp-up Time	Ramp-down Time
PIR or PIRH	3V (37%) Output	10V (100%) Output	Enabled @ 5FC	5 min	3 sec	5 min
*PIR1FC3V or PIRH1FC3V	3V (37%) Output	10V (100%) Output	Enabled @ 1FC	5 min	3 sec	5 min
*for use with separate Dusk to Dawn or timer.						

Electrical Load

					Current (A)					
	Performance Package	LED Count	Drive Current	Wattage	120	208	240	277	347	480
Forward Optics (Non-Rotated)	P1	20	530	38	0.32	0.18	0.15	0.15	0.10	0.08
	P2	20	700	49	0.41	0.23	0.20	0.19	0.14	0.11
	P3	20	1050	71	0.60	0.37	0.32	0.27	0.21	0.15
	P4	20	1400	92	0.77	0.45	0.39	0.35	0.28	0.20
	P5	40	700	89	0.74	0.43	0.38	0.34	0.26	0.20
	P6	40	1050	134	1.13	0.65	0.55	0.48	0.39	0.29
	P7	40	1300	166	1.38	0.80	0.69	0.60	0.50	0.37
Rotated Optics (Requires L90 or R90)	P10	30	530	53	0.45	0.26	0.23	0.21	0.16	0.12
	P11	30	700	72	0.60	0.35	0.30	0.27	0.20	0.16
	P12	30	1050	104	0.88	0.50	0.44	0.39	0.31	0.23
	P13	30	1300	128	1.08	0.62	0.54	0.48	0.37	0.27

Controls Options

Nomenclature	Descripton	Functionality	Primary control device	Notes
FAO	Field adjustable output device installed inside the lumiaire; wired to the driver dimming leads.	Allows the lumiaire to be manually dimmed, effectively trimming the light output.	FAO device	Cannot be used with other controls options that need the 0-10V leads
DS	Drivers wired independantly for 50/50 luminaire operation	The luminaire is wired to two separate circuits, allowing for 50/50 operation.	Independently wired drivers	Requires two seperately switched circuits. Consider nLight AIR as a more cost effective alternative.
PER5 or PER7	Twist-lock photocell receptacle	Compatible with standard twist-lock photocells for dusk to dawn operation, or advanced control nodes that provide 0-10V dimming signals.	Twist-lock photocells such as DLL Elite or advanced control nodes such as ROAM.	Pins 4 & 5 to dimming leads on driver, Pins 6 & 7 are capped inside luminaire
PIR or PIRH	Motion sensors with integral photocell. PIR for 8-15' mounting; PIRH for 15-30' mounting	Luminaires dim when no occupancy is detected.	Acuity Controls SBGR	Also available with PIRH1FC3V when the sensor photocell is used for dusk-to-dawn operation.
NLTAIR2 PIRHN	nLight AIR enabled luminaire for motion sensing, photocell and wireless communication.	Motion and ambient light sensing with group response. Scheduled dimming with motion sensor over-ride when wirelessly connected to the nLight Eclypse.	nLight Air rSDGR	nLight AIR sensors can be programmed and commissioned from the ground using the CIAIRity Pro app.

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Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Forward Optics

Power Package	LED Count	Drive Current	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
P1	20	530	38W	T1S	4,369	1	0	1	115	4,706	1	0	1	124	4,766	1	0	1	125
				T2S	4,364	1	0	1	115	4,701	1	0	1	124	4,761	1	0	1	125
				T2M	4,387	1	0	1	115	4,726	1	0	1	124	4,785	1	0	1	126
				T3S	4,248	1	0	1	112	4,577	1	0	1	120	4,634	1	0	1	122
				T3M	4,376	1	0	1	115	4,714	1	0	1	124	4,774	1	0	1	126
				T4M	4,281	1	0	1	113	4,612	1	0	2	121	4,670	1	0	2	123
				TFTM	4,373	1	0	1	115	4,711	1	0	2	124	4,771	1	0	2	126
				T5VS	4,548	2	0	0	120	4,900	2	0	0	129	4,962	2	0	0	131
				T5S	4,552	2	0	0	120	4,904	2	0	0	129	4,966	2	0	0	131
				T5M	4,541	3	0	1	120	4,891	3	0	1	129	4,953	3	0	1	130
				T5W	4,576	3	0	2	120	4,929	3	0	2	130	4,992	3	0	2	131
				BLC	3,586	1	0	1	94	3,863	1	0	1	102	3,912	1	0	1	103
				LCCO	2,668	1	0	1	70	2,874	1	0	2	76	2,911	1	0	2	77
				RCCO	2,668	1	0	1	70	2,874	1	0	2	76	2,911	1	0	2	77
P2	20	700	49W	T1S	5,570	1	0	1	114	6,001	1	0	1	122	6,077	2	0	2	124
				T2S	5,564	1	0	2	114	5,994	1	0	2	122	6,070	2	0	2	124
				T2M	5,593	1	0	1	114	6,025	1	0	1	123	6,102	1	0	1	125
				T3S	5,417	1	0	2	111	5,835	1	0	2	119	5,909	2	0	2	121
				T3M	5,580	1	0	2	114	6,011	1	0	2	123	6,087	1	0	2	124
				T4M	5,458	1	0	2	111	5,880	1	0	2	120	5,955	1	0	2	122
				TFTM	5,576	1	0	2	114	6,007	1	0	2	123	6,083	1	0	2	124
				T5VS	5,799	2	0	0	118	6,247	2	0	0	127	6,327	2	0	0	129
				T5S	5,804	2	0	0	118	6,252	2	0	0	128	6,332	2	0	1	129
				T5M	5,789	3	0	1	118	6,237	3	0	1	127	6,316	3	0	1	129
				T5W	5,834	3	0	2	119	6,285	3	0	2	128	6,364	3	0	2	130
				BLC	4,572	1	0	1	93	4,925	1	0	1	101	4,987	1	0	1	102
				LCCO	3,402	1	0	2	69	3,665	1	0	2	75	3,711	1	0	2	76
				RCCO	3,402	1	0	2	69	3,665	1	0	2	75	3,711	1	0	2	76
P3	20	1050	71W	T1S	7,833	2	0	2	110	8,438	2	0	2	119	8,545	2	0	2	120
				T2S	7,825	2	0	2	110	8,429	2	0	2	119	8,536	2	0	2	120
				T2M	7,865	2	0	2	111	8,473	2	0	2	119	8,580	2	0	2	121
				T3S	7,617	2	0	2	107	8,205	2	0	2	116	8,309	2	0	2	117
				T3M	7,846	2	0	2	111	8,452	2	0	2	119	8,559	2	0	2	121
				T4M	7,675	2	0	2	108	8,269	2	0	2	116	8,373	2	0	2	118
				TFTM	7,841	2	0	2	110	8,447	2	0	2	119	8,554	2	0	2	120
				T5VS	8,155	3	0	0	115	8,785	3	0	0	124	8,896	3	0	0	125
				T5S	8,162	3	0	1	115	8,792	3	0	1	124	8,904	3	0	1	125
				T5M	8,141	3	0	2	115	8,770	3	0	2	124	8,881	3	0	2	125
				T5W	8,204	3	0	2	116	8,838	4	0	2	124	8,950	4	0	2	126
				BLC	6,429	1	0	2	91	6,926	1	0	2	98	7,013	1	0	2	99
				LCCO	4,784	1	0	2	67	5,153	1	0	2	73	5,218	1	0	2	73
				RCCO	4,784	1	0	2	67	5,153	1	0	2	73	5,218	1	0	2	73
P4	20	1400	92W	T1S	9,791	2	0	2	106	10,547	2	0	2	115	10,681	2	0	2	116
				T2S	9,780	2	0	2	106	10,536	2	0	2	115	10,669	2	0	2	116
				T2M	9,831	2	0	2	107	10,590	2	0	2	115	10,724	2	0	2	117
				T3S	9,521	2	0	2	103	10,256	2	0	2	111	10,386	2	0	2	113
				T3M	9,807	2	0	2	107	10,565	2	0	2	115	10,698	2	0	2	116
				T4M	9,594	2	0	2	104	10,335	2	0	3	112	10,466	2	0	3	114
				TFTM	9,801	2	0	2	107	10,558	2	0	2	115	10,692	2	0	2	116
				T5VS	10,193	3	0	1	111	10,981	3	0	1	119	11,120	3	0	1	121
				T5S	10,201	3	0	1	111	10,990	3	0	1	119	11,129	3	0	1	121
				T5M	10,176	4	0	2	111	10,962	4	0	2	119	11,101	4	0	2	121
				T5W	10,254	4	0	3	111	11,047	4	0	3	120	11,186	4	0	3	122
				BLC	8,036	1	0	2	87	8,656	1	0	2	94	8,766	1	0	2	95
				LCCO	5,979	1	0	2	65	6,441	1	0	2	70	6,523	1	0	3	71
					5,979	1	0	2	65	6,441	1	0	2	70	6,523	1	0	3	71

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Performance Data

Lumen Output

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Forward Optics

Power Package	LED Count	Drive Current	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
P5	40	700	89W	T1S	10,831	2	0	2	122	11,668	2	0	2	131	11,816	2	0	2	133
				T2S	10,820	2	0	2	122	11,656	2	0	2	131	11,803	2	0	2	133
				T2M	10,876	2	0	2	122	11,716	2	0	2	132	11,864	2	0	2	133
				T3S	10,532	2	0	2	118	11,346	2	0	2	127	11,490	2	0	2	129
				T3M	10,849	2	0	2	122	11,687	2	0	2	131	11,835	2	0	2	133
				T4M	10,613	2	0	3	119	11,434	2	0	3	128	11,578	2	0	3	130
				TFTM	10,842	2	0	2	122	11,680	2	0	2	131	11,828	2	0	2	133
				T5VS	11,276	3	0	1	127	12,148	3	0	1	136	12,302	3	0	1	138
				T5S	11,286	3	0	1	127	12,158	3	0	1	137	12,312	3	0	1	138
				T5M	11,257	4	0	2	126	12,127	4	0	2	136	12,280	4	0	2	138
				T5W	11,344	4	0	3	127	12,221	4	0	3	137	12,375	4	0	3	139
				BLC	8,890	1	0	2	100	9,576	1	0	2	108	9,698	1	0	2	109
				LCCO	6,615	1	0	3	74	7,126	1	0	3	80	7,216	1	0	3	81
				RCCO	6,615	1	0	3	74	7,126	1	0	3	80	7,216	1	0	3	81
P6	40	1050	134W	T1S	14,805	3	0	3	110	15,949	3	0	3	119	16,151	3	0	3	121
				T2S	14,789	3	0	3	110	15,932	3	0	3	119	16,134	3	0	3	120
				T2M	14,865	3	0	3	111	16,014	3	0	3	120	16,217	3	0	3	121
				T3S	14,396	3	0	3	107	15,509	3	0	3	116	15,705	3	0	3	117
				T3M	14,829	2	0	3	111	15,975	3	0	3	119	16,177	3	0	3	121
				T4M	14,507	2	0	3	108	15,628	3	0	3	117	15,826	3	0	3	118
				TFTM	14,820	2	0	3	111	15,965	3	0	3	119	16,167	3	0	3	121
				T5VS	15,413	4	0	1	115	16,604	4	0	1	124	16,815	4	0	1	125
				T5S	15,426	3	0	1	115	16,618	4	0	1	124	16,828	4	0	1	126
				T5M	15,387	4	0	2	115	16,576	4	0	2	124	16,786	4	0	2	125
				T5W	15,506	4	0	3	116	16,704	4	0	3	125	16,915	4	0	3	126
				BLC	12,151	1	0	2	91	13,090	1	0	2	98	13,255	1	0	2	99
				LCCO	9,041	1	0	3	67	9,740	1	0	3	73	9,863	1	0	3	74
				RCCO	9,041	1	0	3	67	9,740	1	0	3	73	9,863	1	0	3	74
P7	40	1300	166W	T1S	17,023	3	0	3	103	18,338	3	0	3	110	18,570	3	0	3	112
				T2S	17,005	3	0	3	102	18,319	3	0	3	110	18,551	3	0	3	112
				T2M	17,092	3	0	3	103	18,413	3	0	3	111	18,646	3	0	3	112
				T3S	16,553	3	0	3	100	17,832	3	0	3	107	18,058	3	0	3	109
				T3M	17,051	3	0	3	103	18,369	3	0	3	111	18,601	3	0	3	112
				T4M	16,681	3	0	3	100	17,969	3	0	3	108	18,197	3	0	3	110
				TFTM	17,040	3	0	3	103	18,357	3	0	4	111	18,590	3	0	4	112
				T5VS	17,723	4	0	1	107	19,092	4	0	1	115	19,334	4	0	1	116
				T5S	17,737	4	0	2	107	19,108	4	0	2	115	19,349	4	0	2	117
				T5M	17,692	4	0	2	107	19,059	4	0	2	115	19,301	4	0	2	116
				T5W	17,829	5	0	3	107	19,207	5	0	3	116	19,450	5	0	3	117
				BLC	13,971	2	0	2	84	15,051	2	0	2	91	15,241	2	0	2	92
				LCCO	10,396	1	0	3	63	11,199	1	0	3	67	11,341	1	0	3	68
					10,396	1	0	3	63	11,199	1	0	3	67	11,341	1	0	3	68

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Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Rotated Optics

Power Package	LED Count	Drive Current	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
P10	30	530	53W	T1S	6,727	2	0	2	127	7,247	3	0	3	137	7,339	3	0	3	138
				T2S	6,689	3	0	3	126	7,205	3	0	3	136	7,297	3	0	3	138
				T2M	6,809	3	0	3	128	7,336	3	0	3	138	7,428	3	0	3	140
				T3S	6,585	3	0	3	124	7,094	3	0	3	134	7,183	3	0	3	136
				T3M	6,805	3	0	3	128	7,331	3	0	3	138	7,424	3	0	3	140
				T4M	6,677	3	0	3	126	7,193	3	0	3	136	7,284	3	0	3	137
				TFTM	6,850	3	0	3	129	7,379	3	0	3	139	7,472	3	0	3	141
				T5VS	6,898	3	0	0	130	7,431	3	0	0	140	7,525	3	0	0	142
				T5S	6,840	2	0	1	129	7,368	2	0	1	139	7,461	2	0	1	141
				T5M	6,838	3	0	1	129	7,366	3	0	2	139	7,460	3	0	2	141
				T5W	6,777	3	0	2	128	7,300	3	0	2	138	7,393	3	0	2	139
				BLC	5,626	2	0	2	106	6,060	2	0	2	114	6,137	2	0	2	116
				LCCO	4,018	1	0	2	76	4,328	1	0	2	82	4,383	1	0	2	83
				RCCO	4,013	3	0	3	76	4,323	3	0	3	82	4,377	3	0	3	83
P11	30	700	72W	T1S	8,594	3	0	3	119	9,258	3	0	3	129	9,376	3	0	3	130
				T2S	8,545	3	0	3	119	9,205	3	0	3	128	9,322	3	0	3	129
				T2M	8,699	3	0	3	121	9,371	3	0	3	130	9,490	3	0	3	132
				T3S	8,412	3	0	3	117	9,062	3	0	3	126	9,177	3	0	3	127
				T3M	8,694	3	0	3	121	9,366	3	0	3	130	9,484	3	0	3	132
				T4M	8,530	3	0	3	118	9,189	3	0	3	128	9,305	3	0	3	129
				TFTM	8,750	3	0	3	122	9,427	3	0	3	131	9,546	3	0	3	133
				T5VS	8,812	3	0	0	122	9,493	3	0	0	132	9,613	3	0	0	134
				T5S	8,738	3	0	1	121	9,413	3	0	1	131	9,532	3	0	1	132
				T5M	8,736	3	0	2	121	9,411	3	0	2	131	9,530	3	0	2	132
				T5W	8,657	4	0	2	120	9,326	4	0	2	130	9,444	4	0	2	131
				BLC	7,187	3	0	3	100	7,742	3	0	3	108	7,840	3	0	3	109
				LCCO	5,133	1	0	2	71	5,529	1	0	2	77	5,599	1	0	2	78
				RCCO	5,126	3	0	3	71	5,522	3	0	3	77	5,592	3	0	3	78
P12	30	1050	104W	T1S	12,149	3	0	3	117	13,088	3	0	3	126	13,253	3	0	3	127
				T2S	12,079	4	0	4	116	13,012	4	0	4	125	13,177	4	0	4	127
				T2M	12,297	3	0	3	118	13,247	3	0	3	127	13,415	3	0	3	129
				T3S	11,891	4	0	4	114	12,810	4	0	4	123	12,972	4	0	4	125
				T3M	12,290	3	0	3	118	13,239	4	0	4	127	13,407	4	0	4	129
				T4M	12,058	4	0	4	116	12,990	4	0	4	125	13,154	4	0	4	126
				TFTM	12,369	4	0	4	119	13,325	4	0	4	128	13,494	4	0	4	130
				T5VS	12,456	3	0	1	120	13,419	3	0	1	129	13,589	4	0	1	131
				T5S	12,351	3	0	1	119	13,306	3	0	1	128	13,474	3	0	1	130
				T5M	12,349	4	0	2	119	13,303	4	0	2	128	13,471	4	0	2	130
				T5W	12,238	4	0	3	118	13,183	4	0	3	127	13,350	4	0	3	128
				BLC	10,159	3	0	3	98	10,944	3	0	3	105	11,083	3	0	3	107
				LCCO	7,256	1	0	3	70	7,816	1	0	3	75	7,915	1	0	3	76
				RCCO	7,246	3	0	3	70	7,806	4	0	4	75	7,905	4	0	4	76
P13	30	1300	128W	T1S	14,438	3	0	3	113	15,554	3	0	3	122	15,751	3	0	3	123
				T2S	14,355	4	0	4	112	15,465	4	0	4	121	15,660	4	0	4	122
				T2M	14,614	3	0	3	114	15,744	4	0	4	123	15,943	4	0	4	125
				T3S	14,132	4	0	4	110	15,224	4	0	4	119	15,417	4	0	4	120
				T3M	14,606	4	0	4	114	15,735	4	0	4	123	15,934	4	0	4	124
				T4M	14,330	4	0	4	112	15,438	4	0	4	121	15,633	4	0	4	122
				TFTM	14,701	4	0	4	115	15,836	4	0	4	124	16,037	4	0	4	125
				T5VS	14,804	4	0	1	116	15,948	4	0	1	125	16,150	4	0	1	126
				T5S	14,679	3	0	1	115	15,814	3	0	1	124	16,014	3	0	1	125
				T5M	14,676	4	0	2	115	15,810	4	0	2	124	16,010	4	0	2	125
				T5W	14,544	4	0	3	114	15,668	4	0	3	122	15,866	4	0	3	124
				BLC	7919	3	0	3	62	8531	3	0	3	67	8639	3	0	3	67
				LCCO	5145	1	0	2	40	5543	1	0	2	43	5613	1	0	2	44
					5139	3	0	3	40	5536	3	0	3	43	5606	3	0	3	44

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A+ Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and system-level interoperability.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is A+ Certified when ordered with DTL® controls marked by a shaded background. DTL DLL equipped luminaires meet the A+ specification for luminaire to photocontrol interoperability[1]
- This luminaire is part of an A+ Certified solution for ROAM® or XPoint™ Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a shaded background[1]

To learn more about A+, visit www.acuitybrands.com/aplus.

1. See ordering tree for details.
2. A+ Certified Solutions for ROAM require the order of one ROAM node per luminaire.
   Sold Separately: Link to Roam; Link to DTL DLL

FEATURES & SPECIFICATIONS

INTENDED USE

The sleek design of the D-Series Size 0 reflects the embedded high performance LED technology. It is ideal for many commercial and municipal applications, such as parking lots, plazas, campuses, and pedestrian areas.

CONSTRUCTION

Single-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance and future light engine upgrades. The LED driver is mounted in direct contact with the casting to promote low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65). Low EPA (0.95 ft^2) for optimized pole wind loading.

FINISH

Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in both textured and non-textured finishes.

OPTICS

Precision-molded proprietary acrylic lenses are engineered for superior area lighting distribution, uniformity, and pole spacing. Light engines are available in 3000 K, 4000 K or 5000 K (70 CRI) configurations. The D-Series Size 0 has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

ELECTRICAL

Light engine(s) configurations consist of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to L85/100,000 hours at 25°C). Class 1 electronic drivers are designed to have a power factor >90%, THD <20%, and an expected life of 100,000 hours with <1% failure rate. Easily serviceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

STANDARD CONTROLS

The DSX0 LED area luminaire has a number of control options. Dusk to dawn controls can be utilized via optional NEMA twist-lock photocell receptacles. Integrated motion sensors with on-board photocells feature field-adjustable programing and are suitable for mounting heights up to 30 feet.

nLIGHT AIR CONTROLS

The DSX0 LED area luminaire is also available with nLight® AIR for the ultimate in wireless control. This powerful controls platform provides out-of-the-box basic motion sensing and photocontrol functionality and is suitable for mounting heights up to 40 feet. Once commissioned using a smartphone and the easy-to-use CLAIRITY app, nLight AIR equipped luminaries can be grouped, resulting in motion sensor and photocell group response without the need for additional equipment. Scheduled dimming with motion sensor over-ride can be achieved when used with the nLight Eclypse. Additional information about nLight Air can be found here.

INSTALLATION

Included mounting block and integral arm facilitate quick and easy installation. Stainless steel bolts fasten the mounting block securely to poles and walls, enabling the D-Series Size 0 to withstand up to a 3.0 G vibration load rating per ANSI C136.31. The D-Series Size 0 utilizes the AERIS™ series pole drilling pattern (template #8). Optional terminal block and NEMA photocontrol receptacle are also available.

LISTINGS

UL Listed for wet locations. Light engines are IP66 rated; luminaire is IP65 rated. Rated for -40°C minimum ambient. U.S. Patent No. D672,492 S. International patent pending.

DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

International Dark-Sky Association (IDA) Fixture Seal of Approval (FSA) is available for all products on this page utilizing 3000K color temperature only.

WARRANTY

5-year limited warranty. Complete warranty terms located at:
www.acuitybrands.com/support/customer-support/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application.
All values are design or typical values, measured under laboratory conditions at 25 °C.
Specifications subject to change without notice.

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The key to success starts with a solid foundation.
ENGINEERING | EXPLORATION | EXPERIENCE

Geotechnical Report

Fire Station Headquarters
Pleasant Street, Brunswick, Maine

Client

Town of Brunswick
85 Union Street
Brunswick, ME 04011

Project #: 19111
Date: 5/16/19

SUMMIT
GEOENGINEERING SERVICES

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173 Pleasant Street Rockland, Maine 04841 | (207) 318-7761
www.summitgeoeng.com

May 16, 2019
Summit #19111

Ryan Barnes, P.E., CPESC
Town of Brunswick
85 Union Street
Brunswick, Maine 04011-2418

Reference: Geotechnical Engineering Services
Fire Station Headquarters– Pleasant Street, Brunswick, Maine

Dear Mr. Barnes;

We have completed our geotechnical investigation for a new fire station headquarters at a site off Pleasant Street in Brunswick, Maine. Our scope of services included performing subsurface explorations at the site and preparing this report summarizing our geotechnical findings.

The subsurface soils consist of sand (regressive marine delta) from ground surface to a depth of 41 feet overlying clay (Presumpscot Formation). Dense stratum is present at a depth of 87 feet below ground surface based on push refusal at cone penetration test CPT-2. Groundwater ranged in depths of 6.0 to 6.7 feet below ground surface during the exploration.

The proposed fire station headquarters is anticipated as a multilevel structure with access from Pleasant Street, Webster Street, and Turner Street. Topography within the site is relatively flat. The site is presently occupied by wood framed building structures planned for demolition.

This report provides discussion of the geotechnical findings and preliminary recommendations for the new fire station foundations. Summit Geoengineering Services (SGS) should be made available to review design plans as they become available. Our geotechnical evaluation is based on the existing site conditions, subsurface conditions, and preliminary information provided. Additional explorations may be recommended depending on advancement of design loads and layout.

We appreciate the opportunity to serve you during this phase of your project. If there are any questions or additional information is required, please do not hesitate to call.

Sincerely yours,
Summit Geoengineering Services

Craig W. Coolidge, P.E.
Vice President & Principal Engineer

STATE OF MAINE
CRAIG W. COOLIDGE
NO# 11569
LICENSED
PROFESSIONAL ENGINEER

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1.0 Project and Site Description

Summit Geoengineering Services (SGS) was asked by the Town of Brunswick to conduct a preliminary geotechnical investigation for a new fire station headquarters. The site is located between Pleasant Street, Webster Street, and Turner Street in Brunswick, Maine. Conceptual design for the fire station includes office space, conference rooms, resident quarters, equipment rooms, locker rooms, and garage bays. The structure is anticipated as having masonry façade with a reinforced concrete foundation within a footprint of approximately 25,000 ft^2. New access drives and parking spaces are planned as part of site development.

Site Facing East Towards Webster Street

Site Facing South Towards CPT-2

Presently the site is occupied by wooden buildings within an urban area. Topography at the site is relatively flat north to south from elevation 80 feet at Pleasant Street to 78 feet at Turner Street. Building layout and anticipated finish grades are considered preliminary at the time of this report. We recommend Summit Geoengineering Services (SGS) be made available to review final design for conformance to the geotechnical recommendations within this preliminary report.

2.0 Subsurface Investigation

Summit Geoengineering Services (SGS) observed the subsurface conditions with the drilling of 1 test borings and 2 cone penetration tests performed on April 22, 2019. Explorations were performed using a truck mount AMS 9630 Pro drill rig. The explorations were approximately located by SGS prior to drilling for notification of Dig Safe. Explorations were further cleared by subcontracting Dig Smart of Maine a private utility locator. An Exploration Location Plan is included in Appendix A. Logs of the explorations are included in Appendix B.

Test boring B-1 was advanced using direct push drilling. Sampling was conducted with standard penetration tests (SPT-N) using a split spoon sampler and auto-drop hammer. Groundwater was measured within an open borehole and backfilled upon completion.

Cone penetration test CPT-1 was performed to a depth of anchor failure at a depth of 35.4 feet below ground surface. CPT-2 was performed to a depth of push refusal at a depth of 86.7 feet below ground surface. Anchoring was conducting using a single point hollow anchor with a start of test depth at 5 feet below ground surface. CPT was performed with a Vertek digital cone having a cross sectional area of 10 cm^2. Parameters obtained include cone resistance (q_c), sleeve friction (f_s), and piezocone pore pressure (u). During the performance of piezocone penetration test, shear wave velocity tests (V_s) were conducted at approximate 1-meter depth intervals (rod breaks).

Performance of Cone Penetration Test CPT-1

3.0 Laboratory Testing

Laboratory testing was conducted by Summit Geoengineering Services (SGS) for 2 soil samples collected onsite during the subsurface exploration for grain size analysis (ASTM D6913). Reports of the laboratory tests are in Appendix C. Results of the laboratory tests are summarized as follows:

LABORATORY TEST SUMMARY					
Location	Depth	Gradation Analysis			MC
		Gravel	Sand	Fines	
B-1	7' - 9'	0.1%	97.8%	2.1%	22.5%
B-1	20' - 22'	0.0%	88.7%	11.3%	25.5%

4.0 Subsurface Conditions

The subsurface conditions consist of sand (marine regressive delta) overlying clay (Presumpscot Formation). A summary of subsurface conditions is provided on the following table:

SUBSURFACE CONDITIONS SUMMARY TABLE				
Exploration	Sand (ft)	Clay (ft)	Refusal (ft)	Groundwater (ft)
B-1	0 to >24	--	>24	6.7
CPT-1	0 to >35	--	>35	6.3
CPT-2	0 to 41	41 to 87	87	6.0

4.1 Soil Layers

Marine regressive delta is present from the ground surface beneath topsoil and consists of light brown sand with variable silt and classifies as SP, SP-SM, and SM in accordance with the Unified Soil Classification System (USCS). Soil Behavior Type (SBT_N) profiling based on normalized cone penetration resistance (Robertson 1990) indicates type 6 consisting of clean sand to silty sand. The sand is medium in density and damp to wet with depth.

Presumpscot Formation is present beneath the marine regressive delta (sand). Soil Behavior Type (SBT_N) profiling based on normalized cone penetration resistance (Robertson 1990) indicates type 3 consisting of clay to silty clay.

4.2 Bedrock

Push refusal was encountered at a depth of 86.7 feet below ground surface at cone penetration test CPT-2. Mapping by the Maine Geological Survey indicates bedrock is part of the Mount Ararat Gneiss (Oma) consisting of dark gray plagioclase-hornblende and light gray quartz-plagioclase-biotite gneiss.

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4.3 Groundwater

Groundwater was observed at a depth range of 6.0 to 6.7 feet below the ground surface within the explorations. Groundwater resides within the marine regressive delta (sand). Fluctuation of groundwater level is evident by soil mottling within the upper sand layer from 7 to 12 feet below ground surface. The site is located within a mapped significant sand and gravel aquifer estimated has having good groundwater yield generally greater than 10 gallons per minute for properly constructed wells.

5.0 Geotechnical Evaluation

Building layout, finish grades, and structural framing are considered preliminary at the time of this report. It is anticipated that the fire station foundations can be supported using ***spread footings*** with proper site preparation. This is based on the anticipation of lighter foundation loads and a higher tolerance to differential settlement. Alternatively, a reinforced ***mat foundation*** can be used to collectively distribute column and walls loads to increase bearing capacity and reduce differential settlement.

If larger foundation loads are required, a deep foundation system may be necessary. Deep foundations may include driven ***steel piles*** end bearing within dense strata or bedrock. Alternatively, ground improvement such as ***stone columns*** may be suitable to support the foundation. To properly evaluate a suitable foundation system, progress plans and structural design loads should be reviewed by Summit Geoengineering Services (SGS).

6.0 Geotechnical Recommendations

Preliminary geotechnical design recommendations are provided for the following:

- Shallow Foundation Recommendations
- Deep Foundation Recommendations
- Stone Column Recommendations
- Subgrade Preparation & Backfill Materials
- Groundwater Control Considerations
- Seismic Design Considerations

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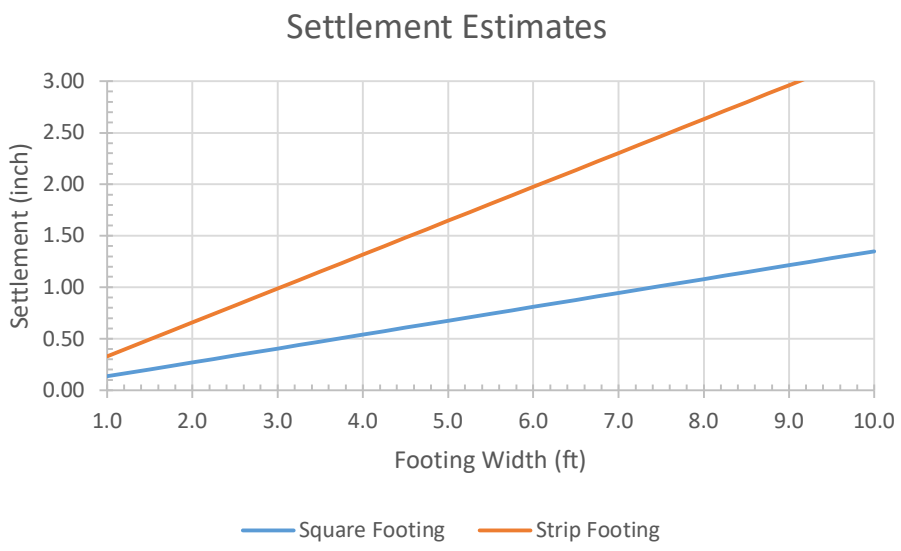
6.1 Shallow Foundations

The fire station foundations can be supported using conventional ***spread footings*** with proper site preparation and the following foundation limitations:

- Maximum column load of 200 kips
- Maximum wall load of 12 kips/ft

The fire station finish floor is estimated at or slightly above existing grade requiring minimal site cut or fill. The recommended net allowable bearing pressure is 4 kips/ft^2 for foundation footings based on a minimum embedment depth of 4 feet for exterior strip footings and 2 feet for interior column footings. Preliminary estimates of settlement determined using the applied allowable bearing pressure for square (column) and continuous (strip) footings are as follows:



Differential settlement should be limited to a deflection of 1/300 (δ/L, deflection divided by span length) or less. Structural and grading plans for the project should be made available to Summit Geoengineering Services (SGS) during design so that estimates for both total and differential settlement can be updated accordingly. To further evaluate potential for differential settlement, additional explorations may be necessary to provide better coverage within the building footprint.

To reduce potential for differential settlement between heavy and lightly loaded foundation elements, a reinforced ***mat foundation*** could be used to support the foundation slab, column loads, and exterior wall loads. The coefficient of subgrade reaction k_v (per 12-inch plate) applies to the design of reinforced concrete foundations over soil. A mat foundation can be designed using a preliminary coefficient of subgrade reaction of 250 kips/ft^3. The distributed load (to include weight of concrete) upon the mat foundation should not exceed 2 kips/ft^2 for 1 inch of total settlement.

The following soil parameters can be used for foundation design of lateral loads:

PARAMETER	FOUNDATION BACKFILL [1]	MARINE DELTA (SAND)	PRESUMPSCOT (CLAY)
Total Natural (moist) Unit Weight (Υ_t)	130 pcf	120 pcf	120 pcf
Saturated (buoyant) Unit Weight (Υ_s)	68 pcf	58 pcf	58 pcf
Friction Coefficient (f) for Concrete	0.50	0.40	0.30
Friction Coefficient (f) for Steel Piles	0.30	0.25	0.20
Passive Earth Pressure Coefficient (K_p)	3.54	3.54	--
Active Earth Pressure Coefficient (K_a)	0.28	0.28	--
At Rest Pressure Coefficient (K_o)	0.44	0.44	0.50
Effective Friction Angle (ϕ')	34^0	34^0	0^0
Undrained Shear Strength (S_u)	0 psf	0 psf	1,400 psf

[1] Based on 95% compaction by ASTM D1557, Modified Proctor Test Method

Exterior spread footings should be constructed at a minimum depth of 4 feet below finished grade for frost protection. This frost protection depth is based on a design air-freezing index of 1,300-degree days for the Brunswick area. We recommend exterior and interior portions of foundation elements be backfilled with Foundation Backfill. For mat foundations, the combination of concrete mat thickness and foundation backfill beneath the mat should be a minimum of 4 feet in thickness.

6.2 Deep Foundations Recommendations

A foundation supported by driven ***steel piles*** may be used, if necessary, due to larger foundation loads or to reduce settlement. Resistance to compressive loads distributed across the foundation is the bearing resistance of the subgrade soil along with frictional and end bearing resistance of the piles. Resistance to lateral loads are the frictional resistance of the foundation bearing upon soil and earth pressure resistance upon the foundation walls and lateral resistance of the piles. Resistance to uplift loads are the dead weight of the concrete foundation along with pullout resistance of the piles.

Push refusal was encountered at a depth of 87 feet at cone penetration test CPT-1 estimated upon dense strata or bedrock. To provide adequate end bearing capacity of the pile foundation, we recommend piles be bearing upon bedrock. Should a pile foundation system be deemed appropriate, we recommend additional explorations be conducted to further investigate depth of bedrock within the foundation footprint.

The following table is intended as a preliminary guideline for common pile sizes and an estimated capacity based on a pile length of 85 feet and the soil conditions encountered. A final pile design should be adjusted to account for additional subsurface information along with the foundation reaction loads and spacing required to support the fire station structure.

PRELIMINARY PILE FOUNDATION DESIGN			
Pile Type	**Sectional Area**	**Factor of Safety**	**Allowable Load***
HP 10x42	12.4 in^2	3.0	100 kips
HP 12x53	15.5 in^2	3.0	120 kips
HP 14x89	26.1 in^2	3.0	150 kips
Pipe 8-5/8" w/Concrete	58.4 in^2	3.0	190 kips
Pipe 10" w/Concrete	78.5 in^2	3.0	245 kips

**Assumes Piles End Bearing on Bedrock (50,000 psi Steel and 4,000 psi Concrete)*

To prevent pile damage during installation, we recommend that wave equation method of analysis (GRLWEAP or similar) be used to estimate drivability for both driving stresses and net displacement per blow at ultimate load. Analysis should be performed specific to the pile driver model and energy efficiency, driving cushion during installation, and specifications for pile type.

Pile design capacity of greater than 40 tons (80 kips) for compressive load will require load testing on select piles in accordance with the International Building Code (IBC 2015). Load tests should be performed in accordance with ASTM D1143 (static load test) or ASTM D 4945 (high strain dynamic load test). Additionally, driven piles should be logged during installation to inspect conformance to the driving criteria estimated by the wave equation method of analysis and to verify capacity.

6.3 Stone Column Recommendations

As an alternative to a deep foundation to increase bearing capacity and reduce settlement, ***stone columns*** can be installed within the subgrade beneath conventional spread footings or a mat foundation. Stone columns are a vibro-replacement or vibro-displacement ground improvement method intended to increase the stiffness and bearing capacity of the supporting soil. Well-graded gravel or crushed stone is installed into the subgrade by pre-drilled cavities or inserted with a hollow mandrel. The gravel or stone is compacted and densified in lifts to reinforce the existing soils and increase the net modulus to reduce settlement and increasing bearing capacity.

Ground improvement is typically provided as a design/build package from a specialty contractor. We recommend that the ground improvement system be designed and installed to meet the following foundation performance criteria:

- Allowable bearing pressure of 5 kips/ft^2
- Total settlement of 1 inch or less
- Differential settlement of ½ inch between adjacent columns

If stone columns are selected, we do not anticipate that they will need to be grouted. To achieve capacity, stone columns should extend within the marine regressive delta (sand). Stone columns could be installed at a length of approximately 25 feet or less to reduce transfer of foundation loads to the underlying Presumpscot formation (clay) present at a depth of approximately 40 feet. As preliminary design, we estimate an area replacement ratio of 20% to obtain an allowable bearing pressure of 5 kips/ft^2. Further considerations should be made for the underlying clay.

To verify capacity of the stone columns, we recommend that a minimum of 1 load test be performed for every 500 units installed. Additional load tests and/or proof tests will be at the discretion of the ground improvement designer. Design for ground improvement system and all ground improvement components should be designed and stamped by a qualified engineer.

6.4 Subgrade Preparation & Backfill Materials

The following materials are recommended for backfill of the fire station foundations as follows:

FOUNDATION BACKFILL MATERIALS			
Location	**Material**	**Specification**	**Notes**
Foundation Walls	Foundation Backfill	MDOT 703.20	95% Compaction
Foundation Slabs	Structural Backfill	MDOT 703.06	95% Compaction
Foundation Footings	Crushed Stone	MDOT 703.13	If Necessary
Subgrade	Geotextile Fabric	MDOT 722.01	If Necessary

Foundation Backfill should be placed along the foundation walls with a minimum width of 4 feet from edge of wall. Foundation Backfill should be compacted to 95 percent of its maximum dry density in accordance with ASTM D1557. The maximum particle size should be limited to 6 inches and portion passing a 3-inch sieve should meet the following gradation:

FOUNDATION BACKFILL	
Sieve Size	**Percent Passing**
¼ inch	25 to 100
No. 40	0 to 50
No. 200	0 to 7

Reference: MDOT Specification 703.06, Type E (2014)

145 Lisbon Street (PO Box 7216) Lewiston, Maine 04243 | (207) 576-3313
173 Pleasant Street Rockland, Maine 04841 | (207) 318-7761
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Building slabs should be constructed on a minimum 12-inch thick layer of Structural Fill compacted to 95 percent of its maximum dry density determined in accordance with ASTM D1557. Additional fill needed beneath the minimum 12-inch thick layer should consist of Structural Fill. Structural Fill should have a maximum particle size limited to 6 inches and the portion passing a 3-inch sieve should meet the following gradation specification:

STRUCTURAL FILL	
Sieve Size	**Percent Passing**
½ inch	35 to 80
¼ inch	25 to 65
No. 40	0 to 30
No. 200	0 to 7

Reference: MDOT Specification 703.06, Type D (2014)

Prior to placement of Structural Fill, sand subgrade where dry should be proof-rolled with a vibratory roller. Multiple passes should be made in a north-south and east-west direction. Subgrade which appears wet or becomes disturbed during compaction should not be proof-rolled but instead stabilized with Crushed Stone.

Deeper excavation for foundation footings should be proof-rolled using vibratory plate compactor. If subgrade softening occurs during excavation or proof-rolling, the base of the footing subgrade be over-excavated and replaced with 12 inches of Crushed Stone. Crushed Stone should be tamped to lock the stone structure together. Crushed Stone should meet the following gradation:

CRUSHED STONE ¾ INCH	
Sieve Size	**Percent finer**
1 inch	100
¾ inch	90 to 100
½ inch	20 to 55
⅜ inch	0 to 15
No. 4	0 to 5

Reference: MDOT Specification 703.13, Crushed Stone ¾-Inch (2014)

Larger areas of disturbance should have a separation of geotextile placed between the subgrade and Crushed Stone. Geotextile should consist of MDOT Specification 722.01 Class 1 or similar and placed with a minimum overlap of 2 feet. Excessively disturbed subgrade which appears to exhibit widespread liquefaction should be inspected by the geotechnical engineer to investigate if further stabilization and/or dewatering should be performed.

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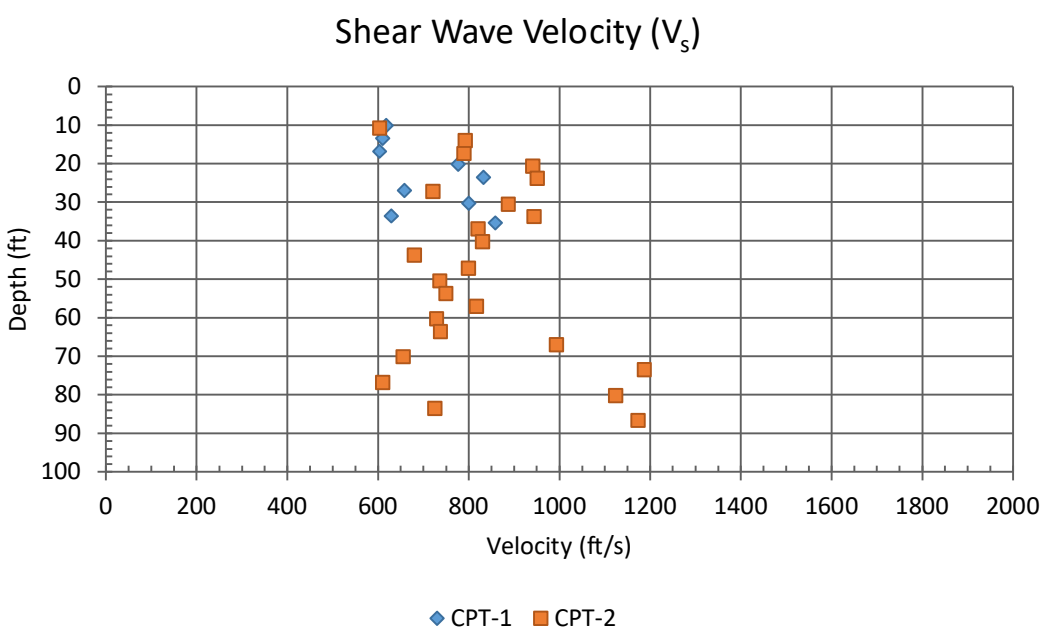
6.5 Groundwater Control

To provide drainage of groundwater, we recommend foundation underdrains be installed along the base of the exterior footings. Foundation underdrains should consist of 4-inch rigid perforated PVC placed adjacent to the exterior footings and surrounded by a minimum of 6 inches of Crushed Stone. Crushed Stone should be wrapped in filter fabric (Mirafi 140N or similar) to prevent clogging from the migration of the fine soil particles in the glacial marine deposits. Additionally, exterior grades should slope away from the foundation to reduce runoff water from infiltrating the backfill.

Due to the potential for capillary rise from groundwater and moist soil, we recommend a vapor barrier be considered beneath the building slabs. The vapor barrier should be installed in accordance with the latest ACI specifications (ACI 302.1R-96).

6.6 Seismic Design

During the performance of piezocone penetration tests, shear wave velocity tests (V_s) were conducted at approximate 1-meter depth intervals (rod breaks). The average shear wave velocity for the site is 835 ft/s based on the results from CPT-2. Results of the shear wave velocity tests are show below:

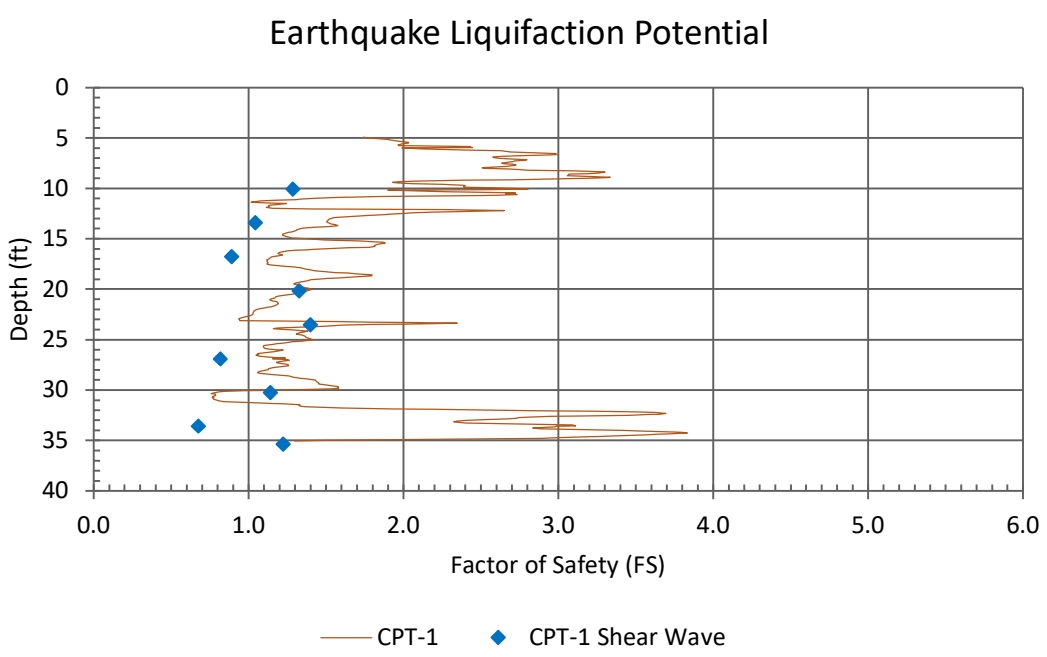


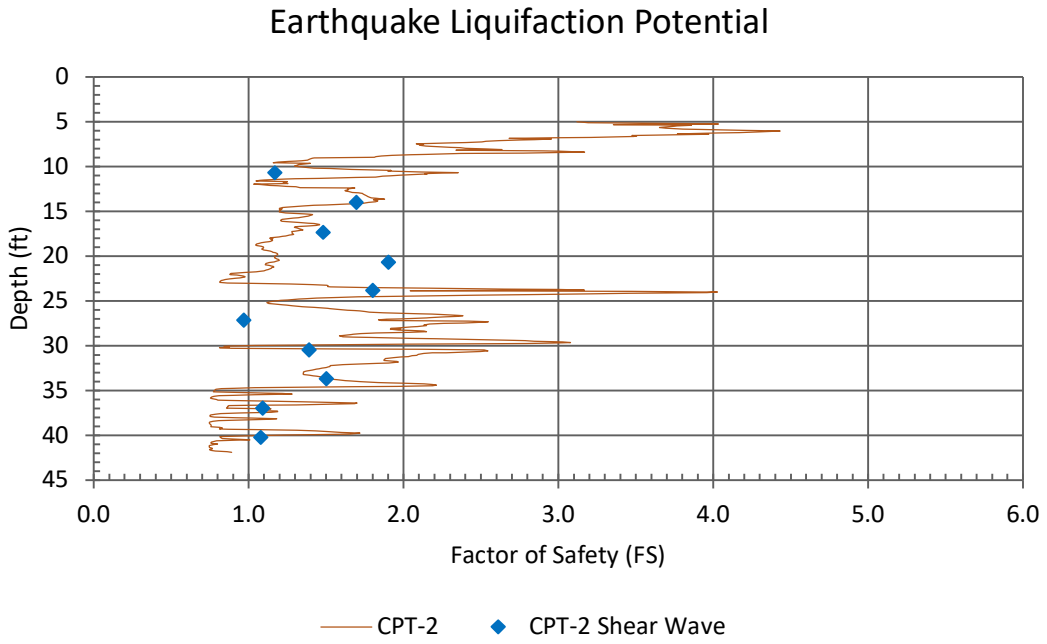
Based on results of the shear wave velocity, the site classifies as Site Class D in accordance with ASCE 7-10 as referenced by the 2015 International Building Code. The following seismic site coefficients should be used for a risk category IV and seismic design category C:

SUBGRADE SITE SEISMIC DESIGN COEFFICIENTS – ASCE 7-10	
Seismic Coefficient	**Site Class D**
Short period spectral response (S_S)	0.229
1 second spectral response (S_1)	0.077
Maximum short period spectral response (S_{MS})	0.367
Maximum 1 second spectral response (S_{M1})	0.185
Design short period spectral response (S_{DS})	0.245
Design 1 second spectral response (S_{D1})	0.123

The marine regressive delta (sand) was evaluated for liquefaction during earthquake based on penetration resistance obtained from the cone penetration tests and seismic mapping by the United States Geological Survey (USGS). The maximum considered earthquake peak ground acceleration for the site is 0.19g with a magnitude of 6. The factor of safety for liquefaction resistance by earthquake is as follows:

LIQUIFACTION POTENTIAL - FACTOR OF SAFETY			
Location	**Depth (ft)**	**FS at M 5.5**	**Notes**
CPT-1	5 to 35 ft	1.6	Sand
CPT-2	5 to 41 ft	1.7	Sand





Based on the results, the marine regressive delta (sand) is considered resistant to widespread liquefaction. The largest recorded earthquake recorded in Maine occurred on March 21, 1904 near Calais with an estimated magnitude of 5.9. The estimated return time in Maine for an earthquake of magnitude 6 is 300 to 400 years. Regional seismicity data for the northeast indicates the largest recorded earthquake to date is estimated at 7.0 in 1663 which occurred in Charlevoix Quebec.

7.0 Earthwork Considerations

Utility trenching and general excavations below 4 feet should be sloped no greater than 1.5H to 1V (OSHA type C) for granular soils and/or below groundwater. This slope is based on the current OSHA Excavation Guidelines.

Depending on the depth, location, and timing of excavation, dewatering may be required. We believe that shallow sumps and conventional submersible pumps will be sufficient to control localized groundwater during construction. Diversion and control of surface water should be performed to prevent water flow from adjacent wet areas or from rain or snowmelt from entering the excavations. Deeper excavations within the sand subgrade below groundwater may require larger dewatering systems such as well points or similar. If a larger dewatering system is required, we recommend it be reviewed by a qualified engineer.

We recommend the geotechnical engineer be retained to observe excavations and subgrade preparation to confirm that soil conditions and construction methods are consistent with this report. We further recommend that a qualified geotechnical consultant be retained to monitor and test soil materials used during construction to ensure proper material type and placement. Soil materials testing reports should be made available to the geotechnical engineer for review.

8.0 Closure

Our recommendations are based on professional judgment and generally accepted principles of geotechnical engineering and project information provided by others. Some changes in subsurface conditions from those presented in this report may occur. Should these conditions differ materially from those described in this report, SGS should be notified so that we can re-evaluate our recommendations.

It is recommended that design plans, developed subsequent to this report, be made available to SGS so that we can evaluate those updates or changes to our recommendations provided.

We appreciate the opportunity to serve you during this phase of your project. If there are any questions or additional information is required, please do not hesitate to call.

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4219.01
Brunswick Fire Station – Pleasant St.
Brunswick, Cumberland County, Maine

Exhibit #5 – Supporting Graphics
Flood Map
USGS Map
Soil Maps
Zoning Map

Prepared For: Town of Brunswick
Attn: Chief Brillant
21 Town Hall Place
Brunswick, Maine 04011

Prepared By: WBRC Architects-Engineers
44 Central Street
Bangor, Maine 04401
(207) 947-4511
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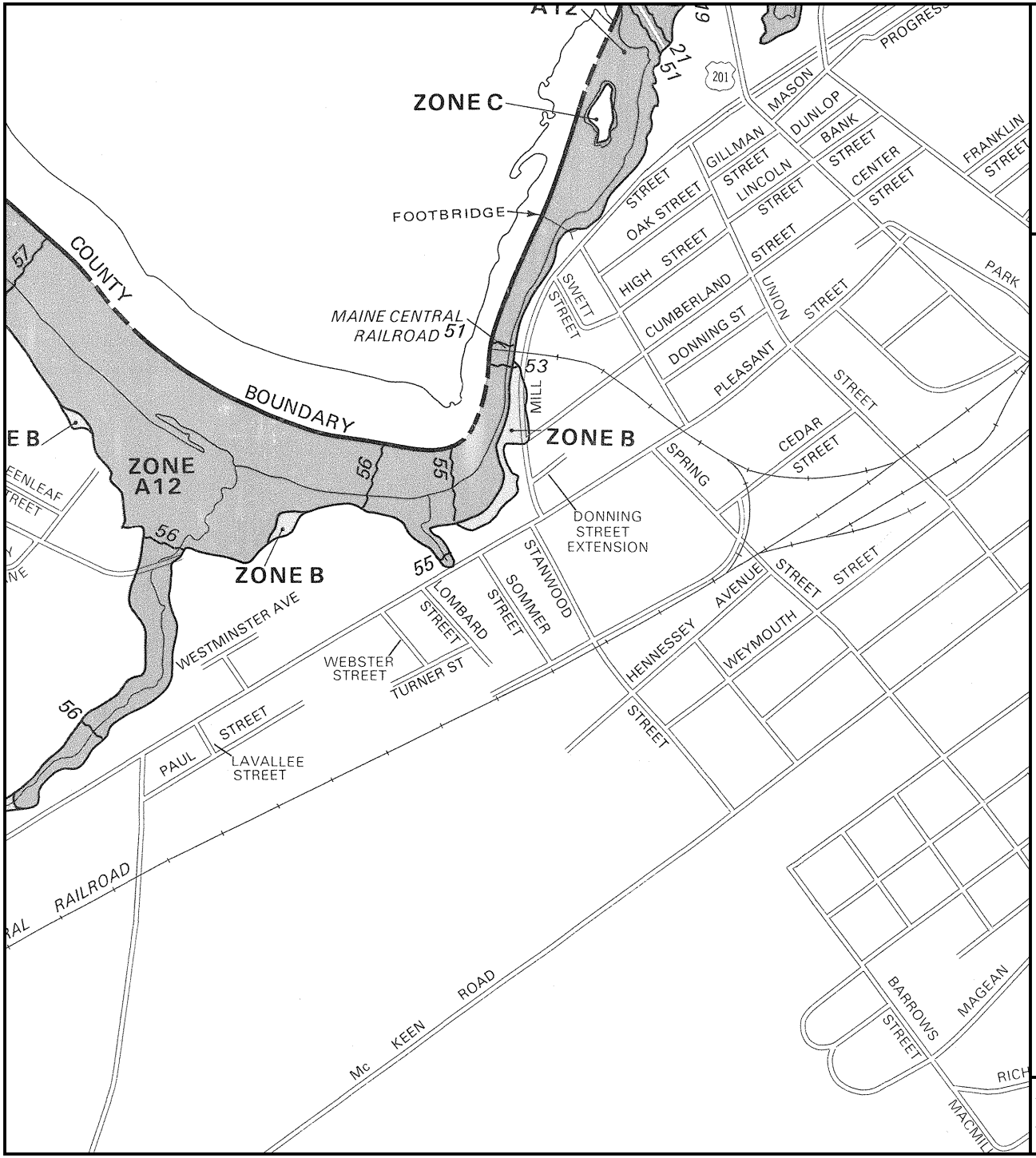


APPROXIMATE SCALE

1000 0 1000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

TOWN OF

BRUNSWICK, MAINE

CUMBERLAND COUNTY

PANEL 15 OF 35

(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER

230042 0015 B

EFFECTIVE DATE:

JANUARY 3, 1986

Federal Emergency Management Agency

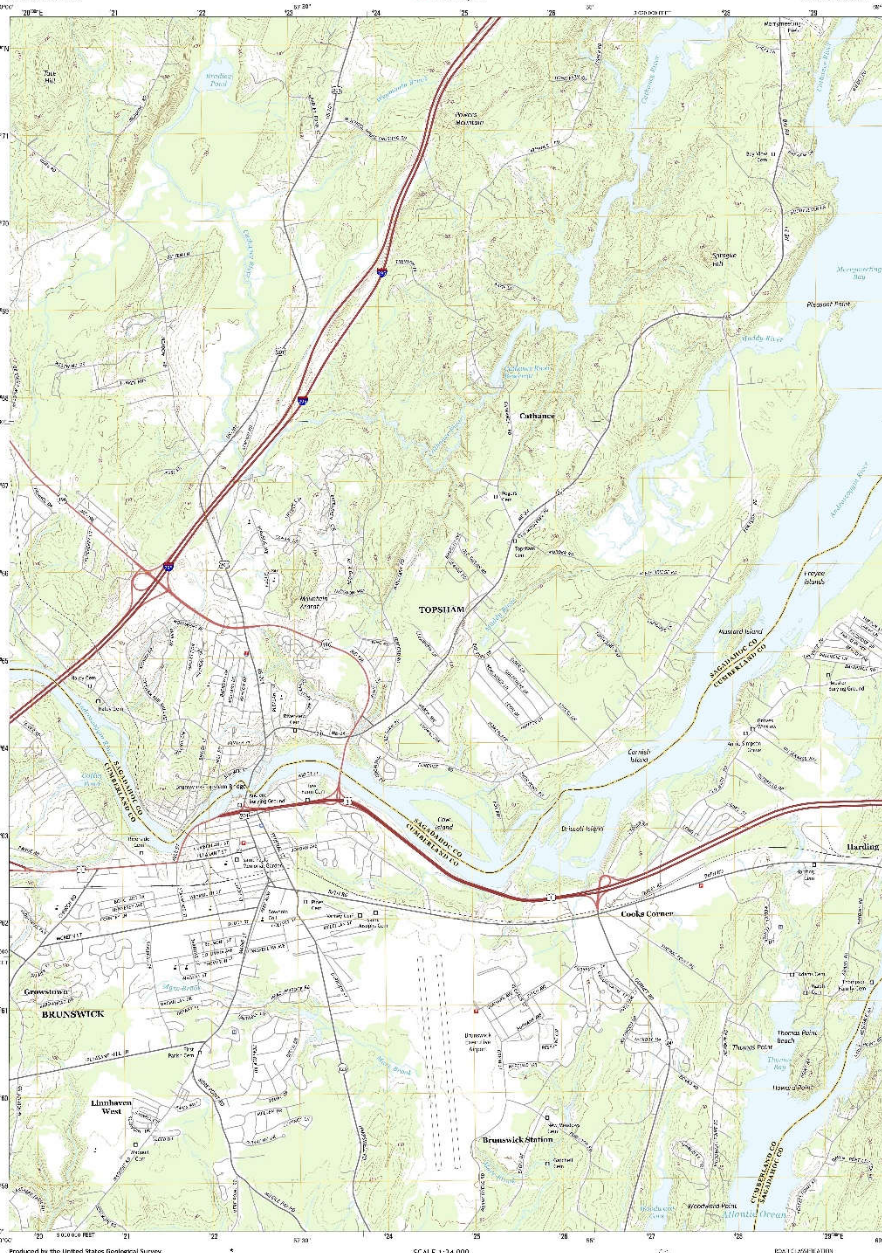
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

USGS
science for a changing world

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map
US Topo

BRUNSWICK QUADRANGLE
MAINE
7.5-MINUTE SERIES



Produced by the United States Geological Survey

SCALE 1:24 000

ROAD CLASSIFICATION

BRUNSWICK, ME
2014

Hydrologic Soil Group—Cumberland County and Part of Oxford County, Maine

Map Scale: 1:1,250 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

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 Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

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: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 16, Sep 16, 2019

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

Date(s) aerial images were photographed: Jun 7, 2019—Jul 2, 2019

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
WmB	Windsor loamy sand, 0 to 8 percent slopes	A	4.8	100.0%
Totals for Area of Interest			**4.8**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Map Scale: 1:1,250 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

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: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 16, Sep 16, 2019

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

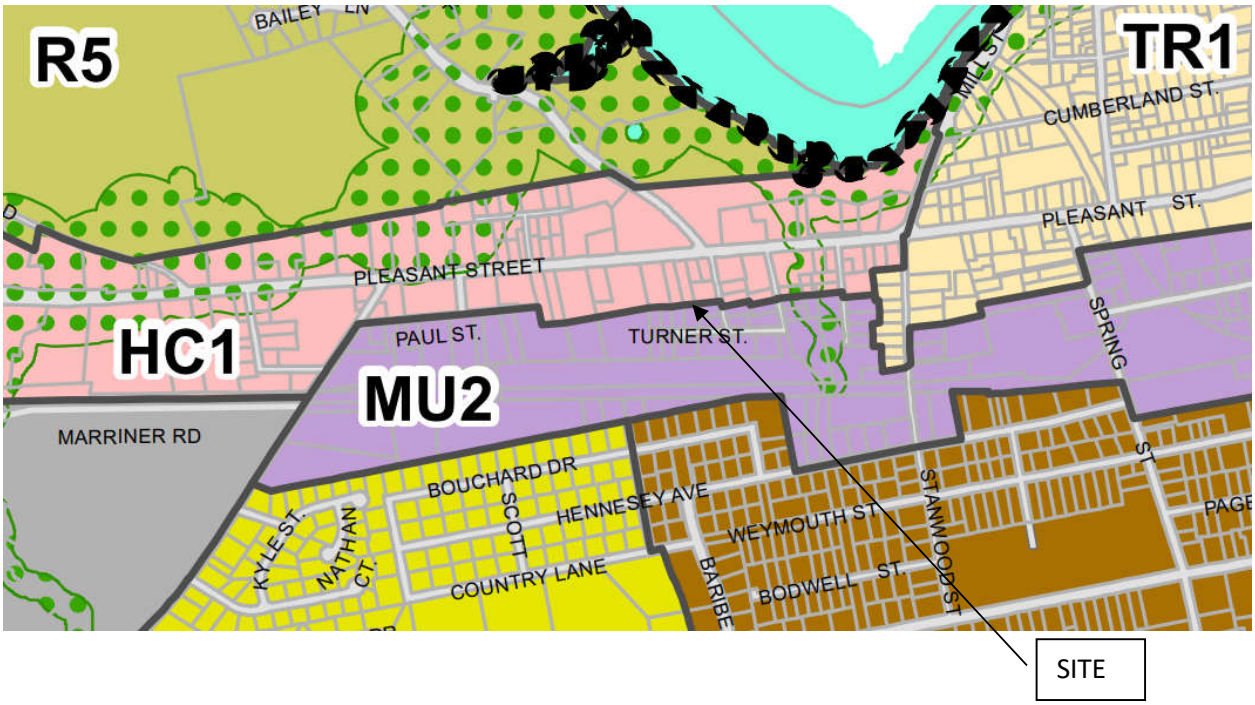
Date(s) aerial images were photographed: Jun 7, 2019—Jul 2, 2019

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
WmB	Windsor loamy sand, 0 to 8 percent slopes	4.8	100.0%
Totals for Area of Interest		**4.8**	**100.0%**

Zoning Map
Town of Brunswick, Maine



General Zoning

TC1	Town Center 1 / Maine Street
TC2	Town Center 2 / Fort Andross
TC3	Town Center 3 / Lower Park Row
TR1	Town Residential 1 / Inner Pleasant St
HC1	Highway Commercial 1 / Outer Pleasant
HC2	Highway Commercial 2 / Inner Bath Rd
MU2	Mixed Use 2 / Intown Railroad Corridor
MU3	Mixed Use 3 / Upper Harpswell Rd
MU4	Mixed Use 4 / Fox Run
MU6	Mixed Use 6 / Lower Harpswell Rd

Overlay Zones

- Growth / Rural Area Boundary
- Manufactured-Housing
- Medical Use Zone
- Telecommunications Zone
- Less Restrictive Flight Zone
- Most Restrictive Flight Zone
- Water
- Topsham
- NRPZ
- Slopes Exceeding 20 Percent
- Aquifer Protection Zone 1A
- Aquifer Protection Zone 1
- Aquifer Protection Zone 2

N
W E
S

4219.01
Brunswick Fire Station – Pleasant St.
Brunswick, Cumberland County, Maine

Exhibit #6 – Site Plans
(Under Separate Cover)

Prepared For: Town of Brunswick
Attn: Chief Brillant
21 Town Hall Place
Brunswick, Maine 04011

Prepared By: WBRC Architects-Engineers
44 Central Street
Bangor, Maine 04401
(207) 947-4511
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www.wbrcae.com

WBRC ARCHITECTS • ENGINEERS
BANGOR PORTLAND SARASOTA
www.wbrcae.com

4219.01
Brunswick Fire Station – Pleasant St.
Brunswick, Cumberland County, Maine

Exhibit #7 – Architectural Compatibility
- Building elevations, colors and finishes

Prepared For: Town of Brunswick
Attn: Chief Brillant
21 Town Hall Place
Brunswick, Maine 04011

Prepared By: WBRC Architects-Engineers
44 Central Street
Bangor, Maine 04401
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BRUNSWICK FIRE DEPARTMENT
EMS

4219.01
Brunswick Fire Station – Pleasant St.
Brunswick, Cumberland County, Maine

Stormwater – Pre Development Calculations

Prepared For: Town of Brunswick
Attn: Chief Brillant
21 Town Hall Place
Brunswick, Maine 04011

Prepared By: WBRC Architects-Engineers
44 Central Street
Bangor, Maine 04401
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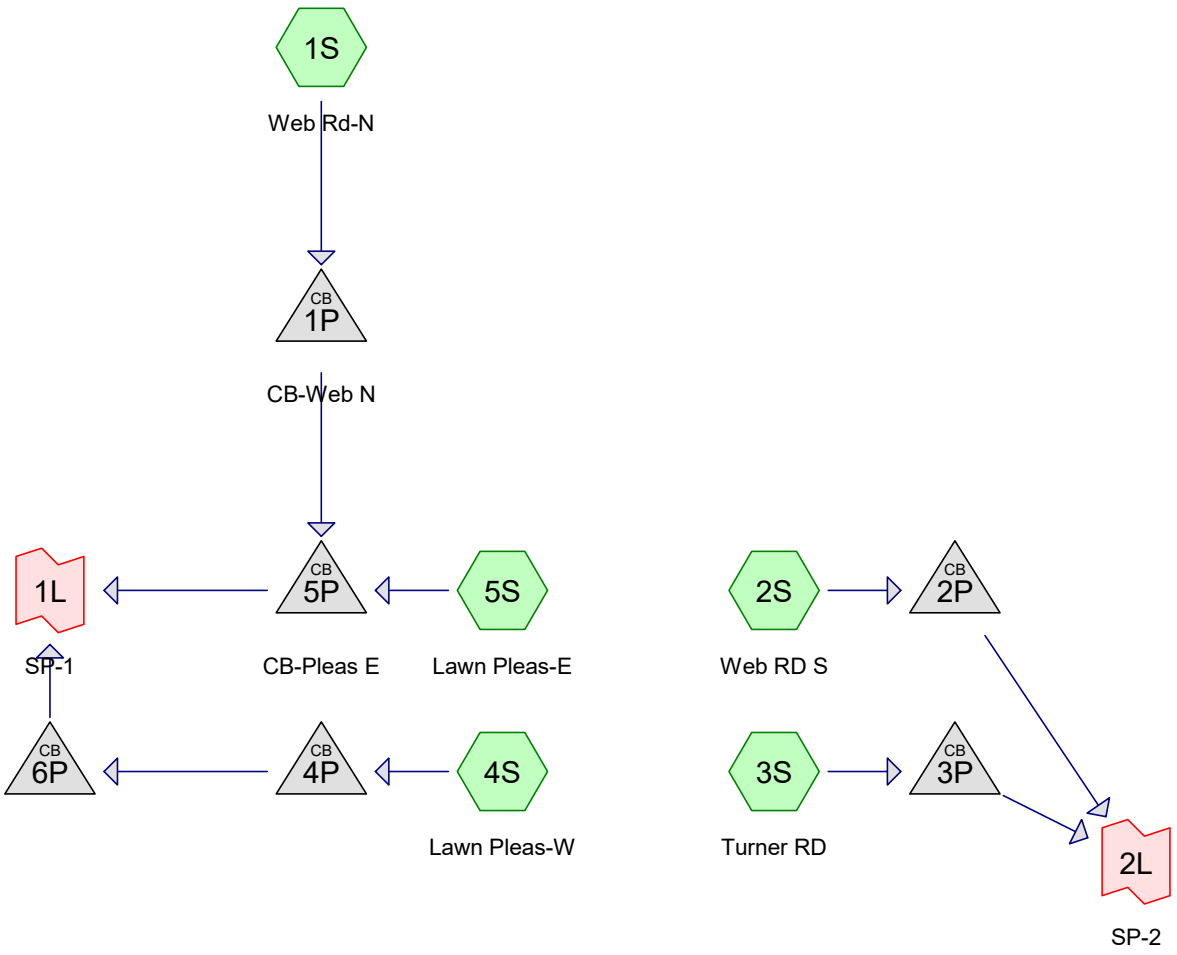
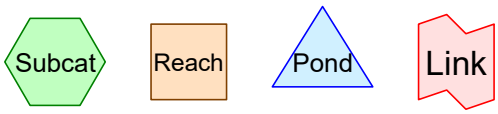




Routing Diagram for 421900-PRE_STM-rev03272020
Prepared by WBRC, Printed 4/3/2020
HydroCAD® 10.00-25 s/n 00653 © 2019 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.201	49	50-75% Grass cover, Fair, HSG A (1S, 2S, 3S, 4S, 5S)
1.245	98	Paved parking, HSG A (1S, 2S, 3S, 4S, 5S)
4.446	**63**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
4.446	HSG A	1S, 2S, 3S, 4S, 5S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
4.446		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
3.201	0.000	0.000	0.000	0.000	3.201	50-75% Grass cover, Fair	1S, 2S, 3S, 4S, 5S
1.245	0.000	0.000	0.000	0.000	1.245	Paved parking	1S, 2S, 3S, 4S, 5S
4.446	**0.000**	**0.000**	**0.000**	**0.000**	**4.446**	**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	74.50	74.10	30.0	0.0133	0.012	12.0	0.0	0.0
2	2P	73.00	72.10	50.0	0.0180	0.013	8.0	0.0	0.0
3	3P	73.10	72.10	197.0	0.0051	0.013	8.0	0.0	0.0
4	4P	75.20	72.70	55.0	0.0455	0.013	12.0	0.0	0.0
5	5P	74.00	71.50	50.0	0.0500	0.013	12.0	0.0	0.0
6	6P	72.60	70.00	254.0	0.0102	0.013	30.0	0.0	0.0

Time span=1.00-24.00 hrs, dt=0.03 hrs, 768 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Web Rd-N Runoff Area=18,940 sf 59.65% Impervious Runoff Depth>1.26"
Flow Length=225' Tc=11.8 min CN=78 Runoff=0.48 cfs 0.046 af

Subcatchment 2S: Web RD S Runoff Area=21,022 sf 30.46% Impervious Runoff Depth>0.55"
Flow Length=217' Tc=12.9 min CN=64 Runoff=0.17 cfs 0.022 af

Subcatchment 3S: Turner RD Runoff Area=118,720 sf 14.05% Impervious Runoff Depth>0.27"
Flow Length=501' Tc=27.6 min CN=56 Runoff=0.17 cfs 0.061 af

Subcatchment 4S: Lawn Pleas-W Runoff Area=15,481 sf 52.02% Impervious Runoff Depth>1.03"
Flow Length=114' Tc=9.8 min CN=74 Runoff=0.34 cfs 0.030 af

Subcatchment 5S: Lawn Pleas-E Runoff Area=19,515 sf 60.48% Impervious Runoff Depth>1.32"
Flow Length=230' Tc=11.8 min CN=79 Runoff=0.52 cfs 0.049 af

Pond 1P: CB-Web N Peak Elev=74.89' Inflow=0.48 cfs 0.046 af
12.0" Round Culvert n=0.012 L=30.0' S=0.0133 '/' Outflow=0.48 cfs 0.046 af

Pond 2P: Peak Elev=73.18' Inflow=0.17 cfs 0.022 af
8.0" Round Culvert n=0.013 L=50.0' S=0.0180 '/' Outflow=0.17 cfs 0.022 af

Pond 3P: Peak Elev=73.29' Inflow=0.17 cfs 0.061 af
8.0" Round Culvert n=0.013 L=197.0' S=0.0051 '/' Outflow=0.17 cfs 0.061 af

Pond 4P: Peak Elev=75.46' Inflow=0.34 cfs 0.030 af
12.0" Round Culvert n=0.013 L=55.0' S=0.0455 '/' Outflow=0.34 cfs 0.030 af

Pond 5P: CB-Pleas E Peak Elev=74.58' Inflow=1.00 cfs 0.095 af
12.0" Round Culvert n=0.013 L=50.0' S=0.0500 '/' Outflow=1.00 cfs 0.095 af

Pond 6P: Peak Elev=72.74' Inflow=0.34 cfs 0.030 af
30.0" Round Culvert n=0.013 L=254.0' S=0.0102 '/' Outflow=0.34 cfs 0.030 af

Link 1L: SP-1 Inflow=1.33 cfs 0.126 af
Primary=1.33 cfs 0.126 af

Link 2L: SP-2 Inflow=0.24 cfs 0.084 af
Primary=0.24 cfs 0.084 af

Total Runoff Area = 4.446 ac Runoff Volume = 0.209 af Average Runoff Depth = 0.56"
72.00% Pervious = 3.201 ac 28.00% Impervious = 1.245 ac

Summary for Subcatchment 1S: Web Rd-N

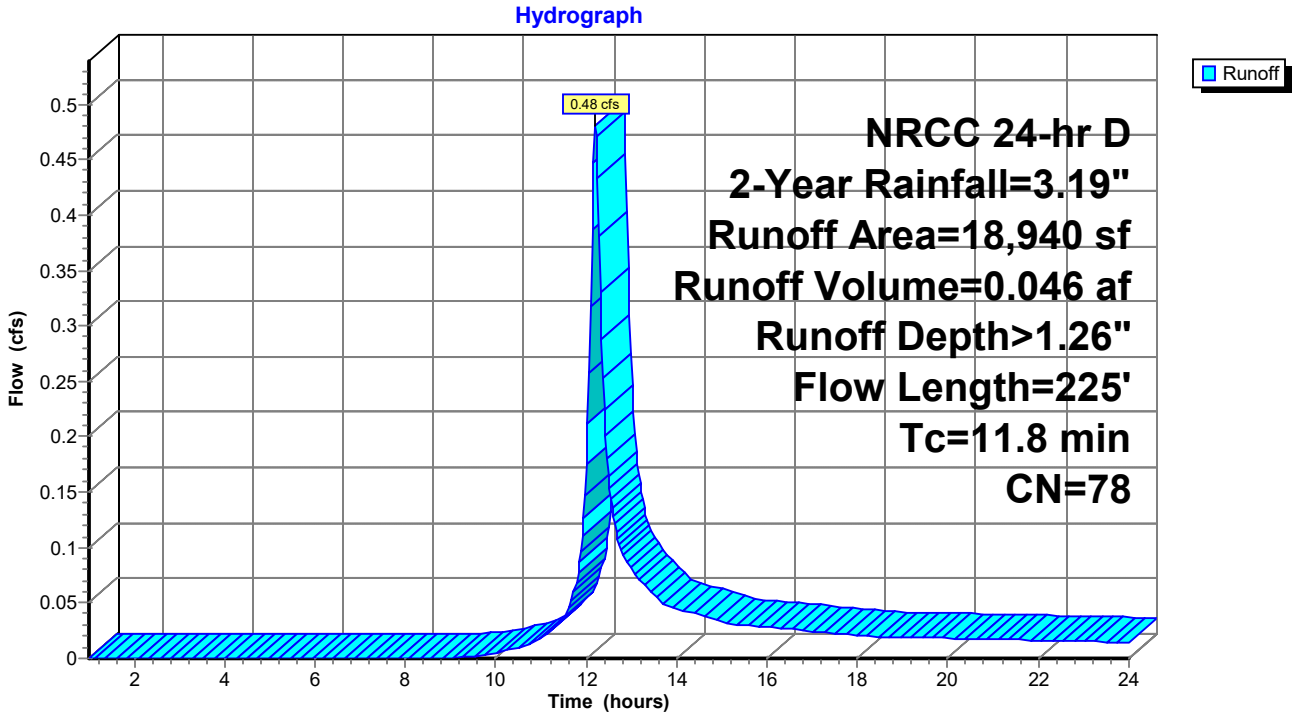
Runoff = 0.48 cfs @ 12.20 hrs, Volume= 0.046 af, Depth> 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 2-Year Rainfall=3.19"

Area (sf)	CN	Description
11,298	98	Paved parking, HSG A
7,642	49	50-75% Grass cover, Fair, HSG A
18,940	78	Weighted Average
7,642		40.35% Pervious Area
11,298		59.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	50	0.0125	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
1.0	175	0.0225	3.04		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
11.8	225	Total			

Subcatchment 1S: Web Rd-N



Summary for Subcatchment 2S: Web RD S

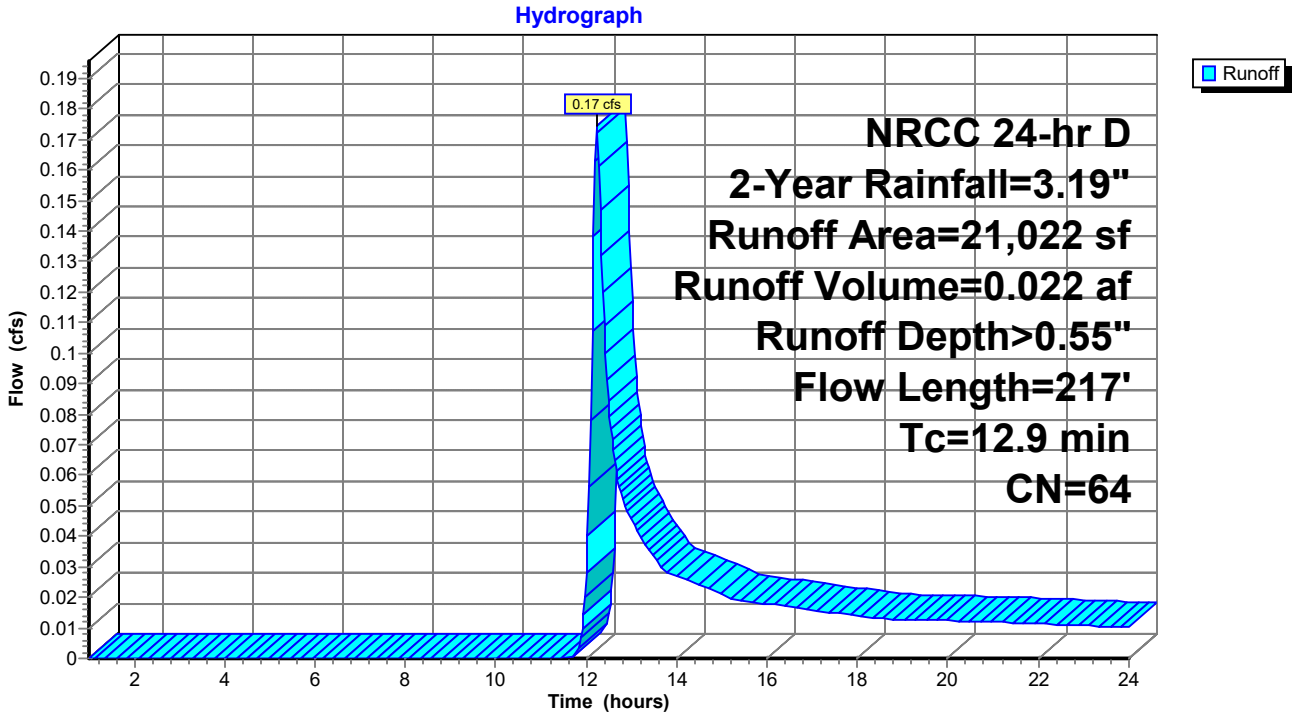
Runoff = 0.17 cfs @ 12.23 hrs, Volume= 0.022 af, Depth> 0.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 2-Year Rainfall=3.19"

Area (sf)	CN	Description
6,403	98	Paved parking, HSG A
14,619	49	50-75% Grass cover, Fair, HSG A
21,022	64	Weighted Average
14,619		69.54% Pervious Area
6,403		30.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0150	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.9	117	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
12.9	217	Total			

Subcatchment 2S: Web RD S



Summary for Subcatchment 3S: Turner RD

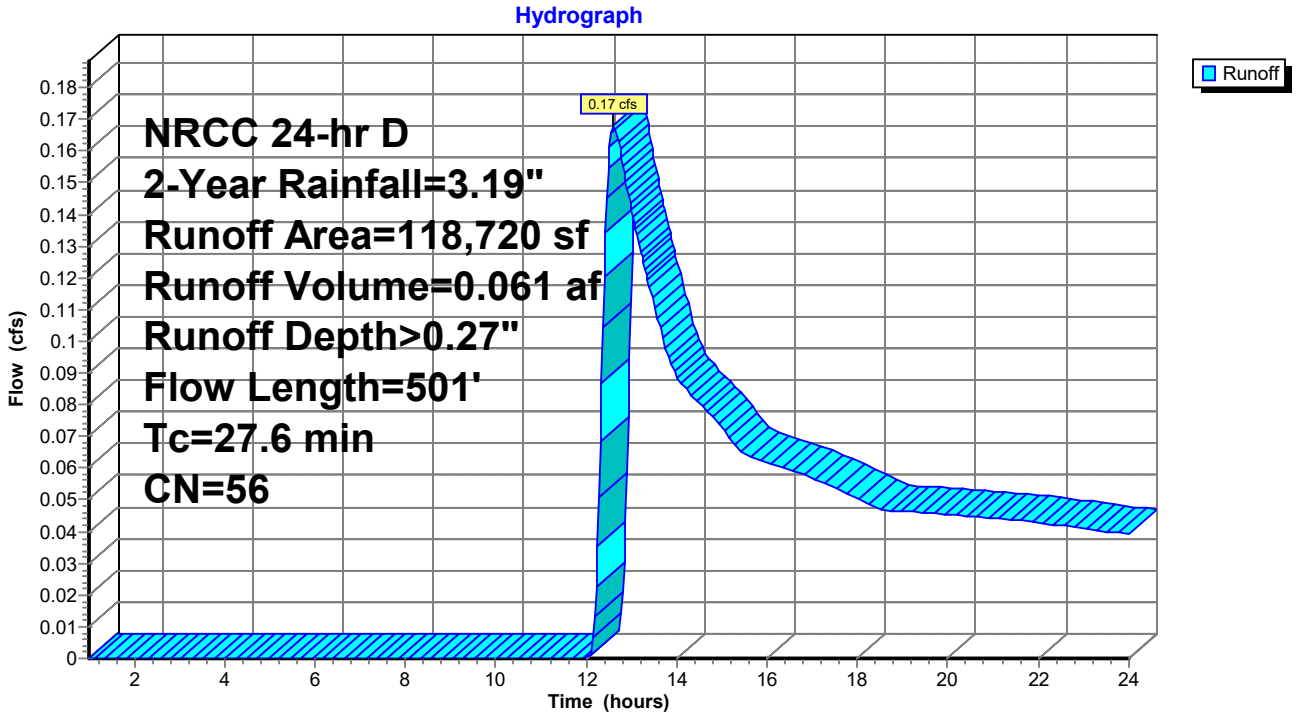
Runoff = 0.17 cfs @ 12.61 hrs, Volume= 0.061 af, Depth> 0.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 2-Year Rainfall=3.19"

Area (sf)	CN	Description
16,677	98	Paved parking, HSG A
102,043	49	50-75% Grass cover, Fair, HSG A
118,720	56	Weighted Average
102,043		85.95% Pervious Area
16,677		14.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7	132	0.0075	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
7.9	369	0.0125	0.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
27.6	501	Total			

Subcatchment 3S: Turner RD



Summary for Subcatchment 4S: Lawn Pleas-W

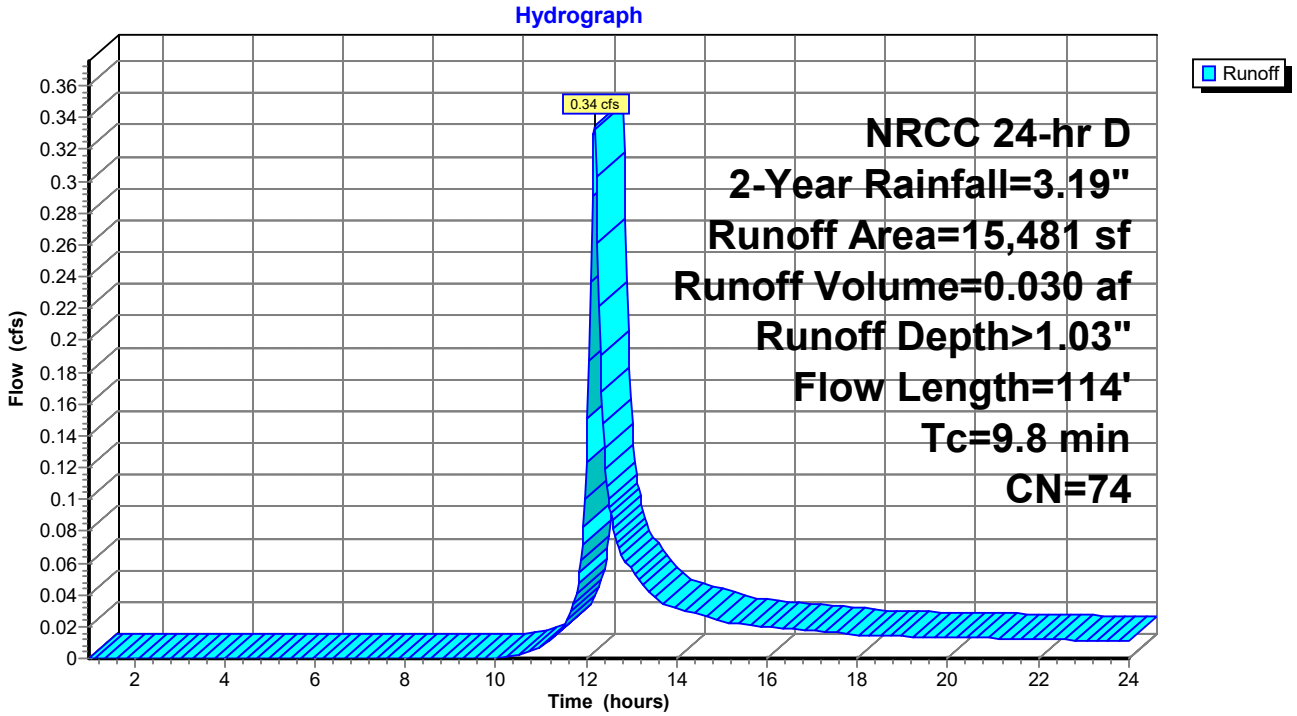
Runoff = 0.34 cfs @ 12.18 hrs, Volume= 0.030 af, Depth> 1.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 2-Year Rainfall=3.19"

Area (sf)	CN	Description
7,428	49	50-75% Grass cover, Fair, HSG A
8,053	98	Paved parking, HSG A
15,481	74	Weighted Average
7,428		47.98% Pervious Area
8,053		52.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	66	0.0125	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.6	48	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.8	114	Total			

Subcatchment 4S: Lawn Pleas-W



Summary for Subcatchment 5S: Lawn Pleas-E

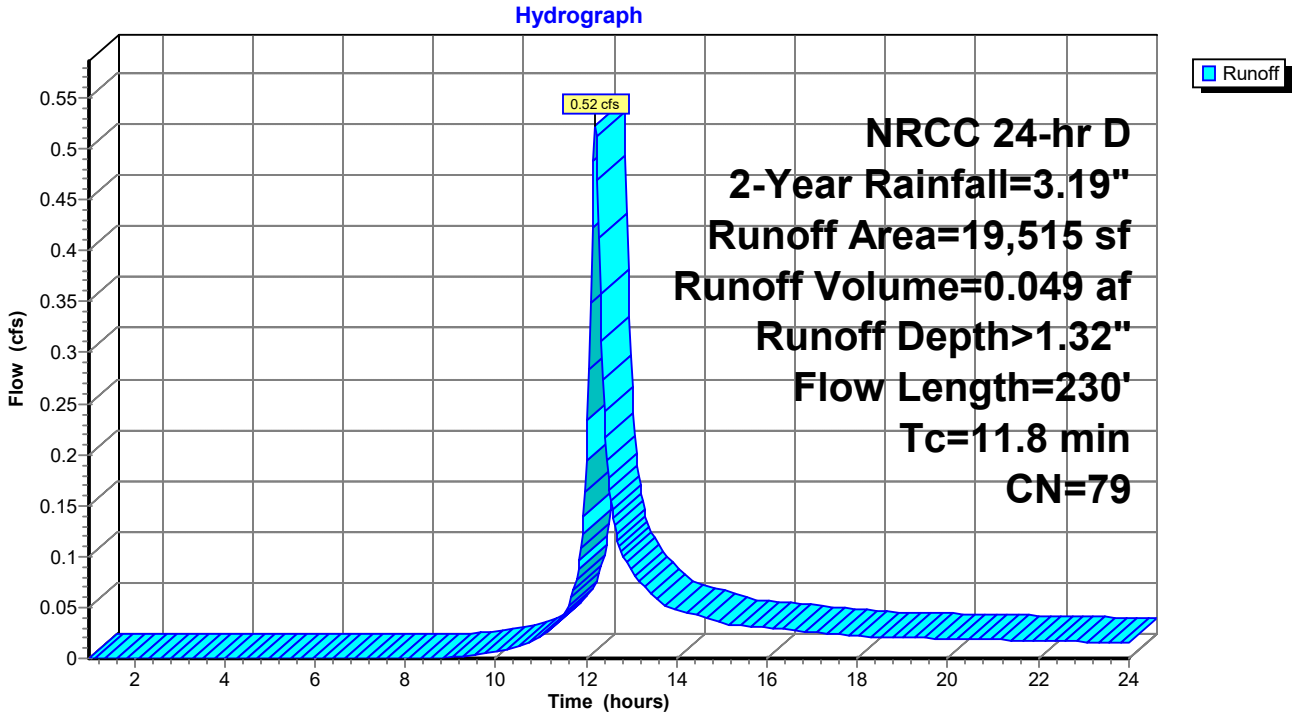
Runoff = 0.52 cfs @ 12.20 hrs, Volume= 0.049 af, Depth> 1.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 2-Year Rainfall=3.19"

Area (sf)	CN	Description
11,802	98	Paved parking, HSG A
7,713	49	50-75% Grass cover, Fair, HSG A
19,515	79	Weighted Average
7,713		39.52% Pervious Area
11,802		60.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	70	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
1.2	160	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
11.8	230	Total			

Subcatchment 5S: Lawn Pleas-E



Summary for Pond 1P: CB-Web N

[57] Hint: Peaked at 74.89' (Flood elevation advised)

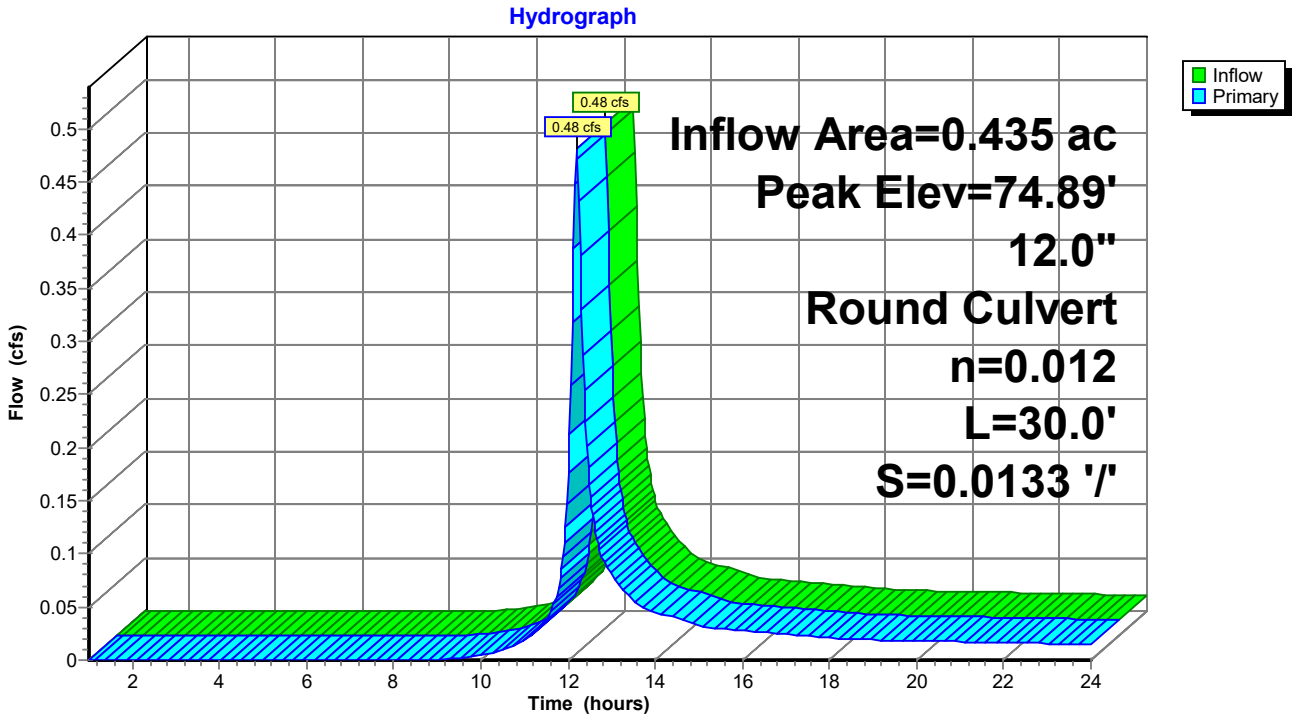
Inflow Area =	0.435 ac, 59.65% Impervious, Inflow Depth > 1.26" for 2-Year event				
Inflow =	0.48 cfs @	12.20 hrs,	Volume=	0.046 af	
Outflow =	0.48 cfs @	12.20 hrs,	Volume=	0.046 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.48 cfs @	12.20 hrs,	Volume=	0.046 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 74.89' @ 12.20 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	74.50'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 74.50' / 74.10' S= 0.0133 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.48 cfs @ 12.20 hrs HW=74.89' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.48 cfs @ 1.68 fps)

Pond 1P: CB-Web N



Summary for Pond 2P:

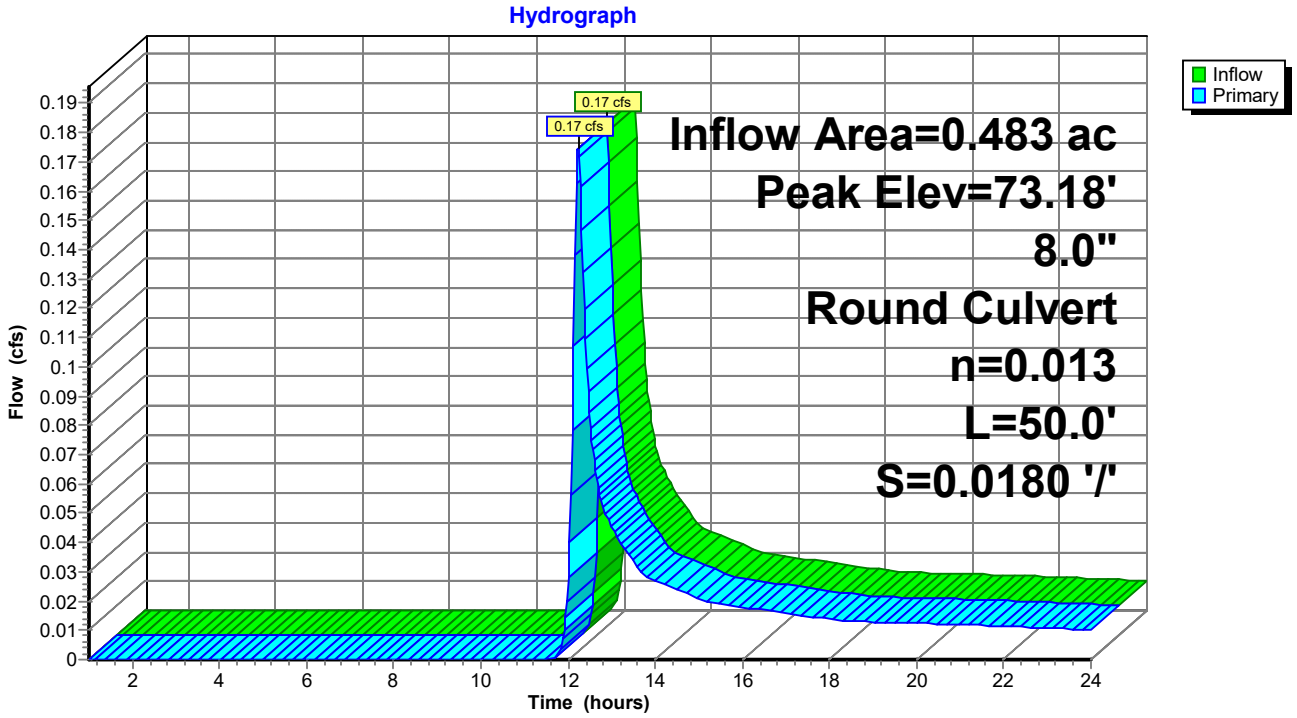
Inflow Area = 0.483 ac, 30.46% Impervious, Inflow Depth > 0.55" for 2-Year event
Inflow = 0.17 cfs @ 12.23 hrs, Volume= 0.022 af
Outflow = 0.17 cfs @ 12.23 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min
Primary = 0.17 cfs @ 12.23 hrs, Volume= 0.022 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 73.18' @ 12.23 hrs
Flood Elev= 116.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.00'	**8.0" Round Storm Drain** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.00' / 72.10' S= 0.0180 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.35 sf

Primary OutFlow Max=0.08 cfs @ 12.23 hrs HW=73.18' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 0.08 cfs @ 1.13 fps)

Pond 2P:



Summary for Pond 3P:

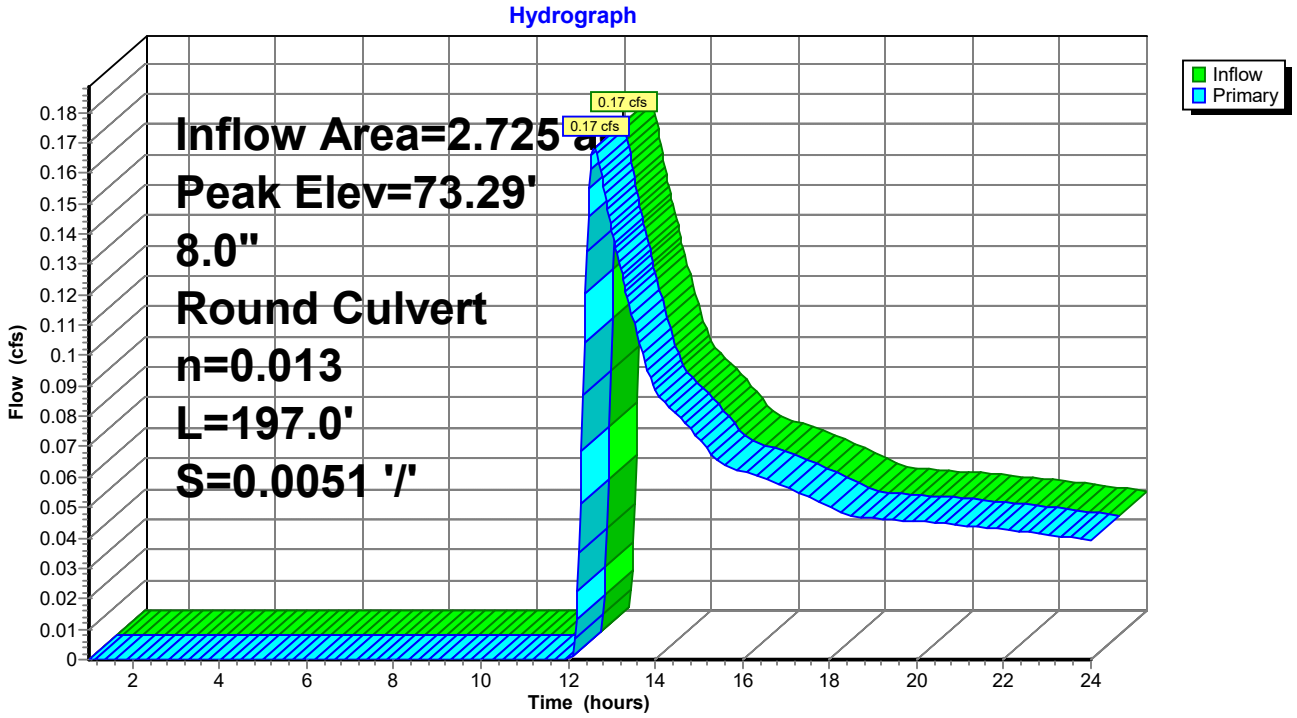
Inflow Area = 2.725 ac, 14.05% Impervious, Inflow Depth > 0.27" for 2-Year event
Inflow = 0.17 cfs @ 12.61 hrs, Volume= 0.061 af
Outflow = 0.17 cfs @ 12.61 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.0 min
Primary = 0.17 cfs @ 12.61 hrs, Volume= 0.061 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 73.29' @ 12.61 hrs
Flood Elev= 113.94'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.10'	**8.0" Round Storm Drain** L= 197.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.10' / 72.10' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.09 cfs @ 12.61 hrs HW=73.29' (Free Discharge)
└**1=Storm Drain** (Barrel Controls 0.09 cfs @ 1.56 fps)

Pond 3P:



Summary for Pond 4P:

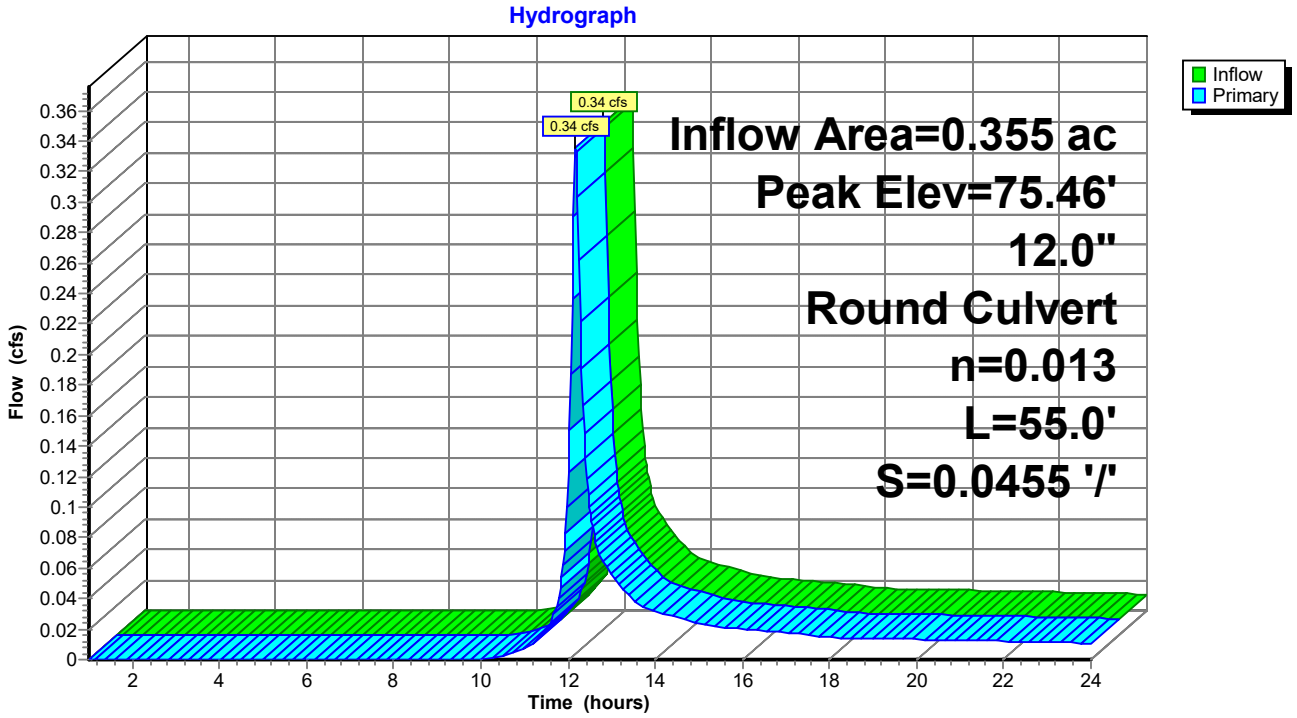
Inflow Area =	0.355 ac, 52.02% Impervious, Inflow Depth > 1.03" for 2-Year event				
Inflow =	0.34 cfs @	12.18 hrs,	Volume=	0.030 af	
Outflow =	0.34 cfs @	12.18 hrs,	Volume=	0.030 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.34 cfs @	12.18 hrs,	Volume=	0.030 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 75.46' @ 12.18 hrs
Flood Elev= 116.29'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.20'	**12.0" Round Storm Drain** L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.20' / 72.70' S= 0.0455 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.22 cfs @ 12.18 hrs HW=75.46' (Free Discharge)
└─**1=Storm Drain** (Inlet Controls 0.22 cfs @ 1.37 fps)

Pond 4P:



Summary for Pond 5P: CB-Pleas E

[79] Warning: Submerged Pond 1P Primary device # 1 INLET by 0.08'

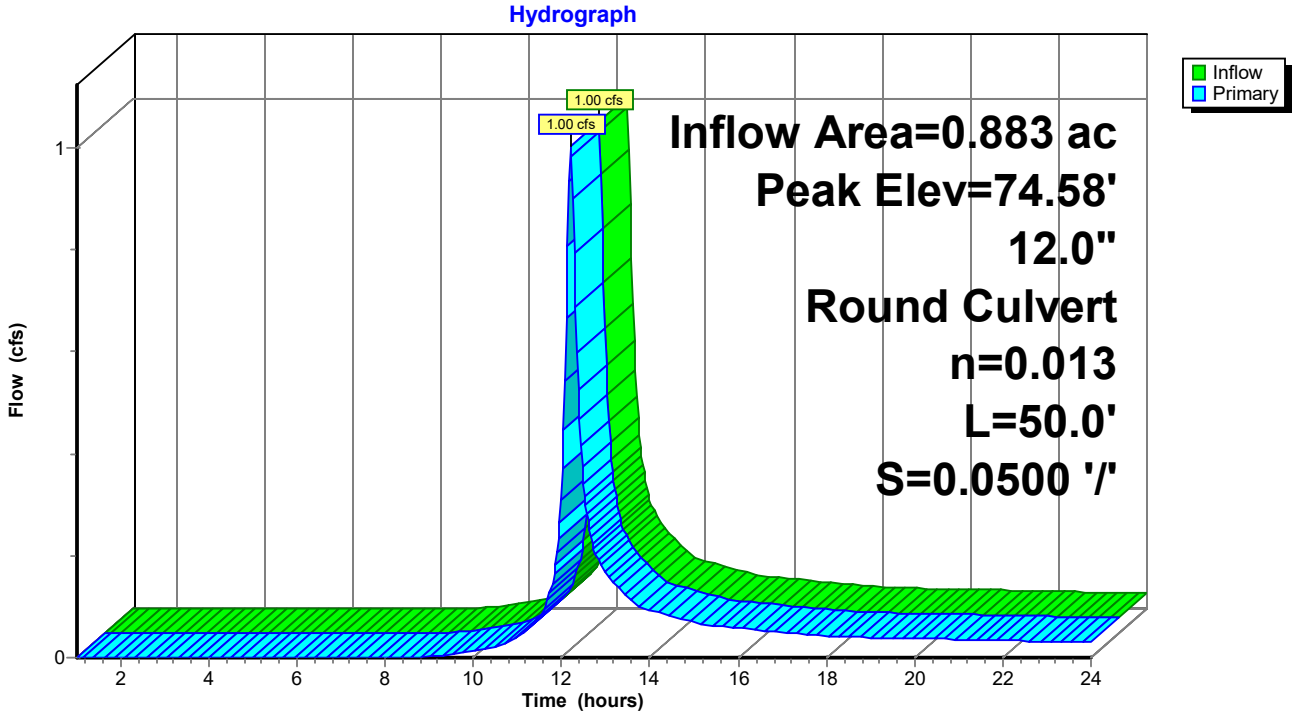
Inflow Area =	0.883 ac, 60.07% Impervious, Inflow Depth > 1.29" for 2-Year event				
Inflow =	1.00 cfs @	12.20 hrs,	Volume=	0.095 af	
Outflow =	1.00 cfs @	12.20 hrs,	Volume=	0.095 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.00 cfs @	12.20 hrs,	Volume=	0.095 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 74.58' @ 12.20 hrs
Flood Elev= 114.79'

Device	Routing	Invert	Outlet Devices
#1	Primary	74.00'	**12.0" Round Storm Drain** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 74.00' / 71.50' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.96 cfs @ 12.20 hrs HW=74.58' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 0.96 cfs @ 2.04 fps)

Pond 5P: CB-Pleas E



Summary for Pond 6P:

[79] Warning: Submerged Pond 4P Primary device # 1 OUTLET by 0.04'

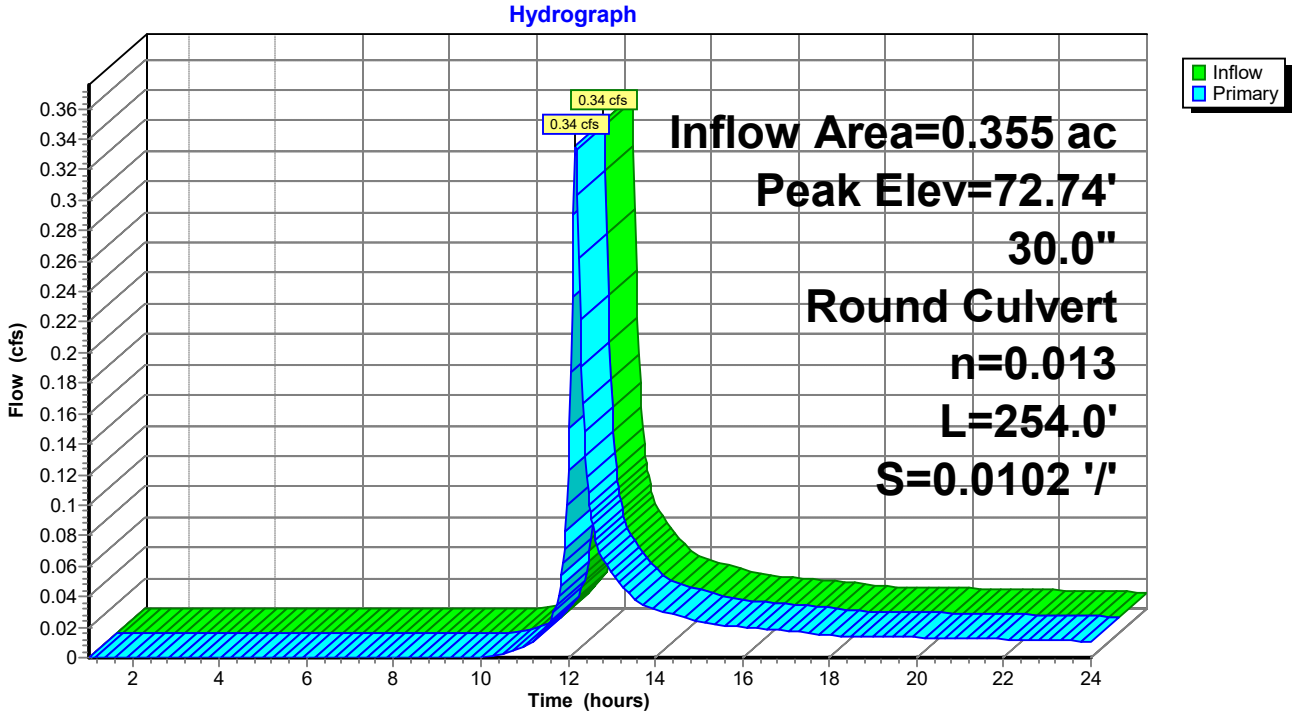
Inflow Area =	0.355 ac, 52.02% Impervious, Inflow Depth > 1.03" for 2-Year event				
Inflow =	0.34 cfs @	12.18 hrs,	Volume=	0.030 af	
Outflow =	0.34 cfs @	12.18 hrs,	Volume=	0.030 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.34 cfs @	12.18 hrs,	Volume=	0.030 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 72.74' @ 12.18 hrs
Flood Elev= 116.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.60'	**30.0" Round Storm Drain** L= 254.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.60' / 70.00' S= 0.0102 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=0.11 cfs @ 12.18 hrs HW=72.74' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 0.11 cfs @ 1.01 fps)

Pond 6P:

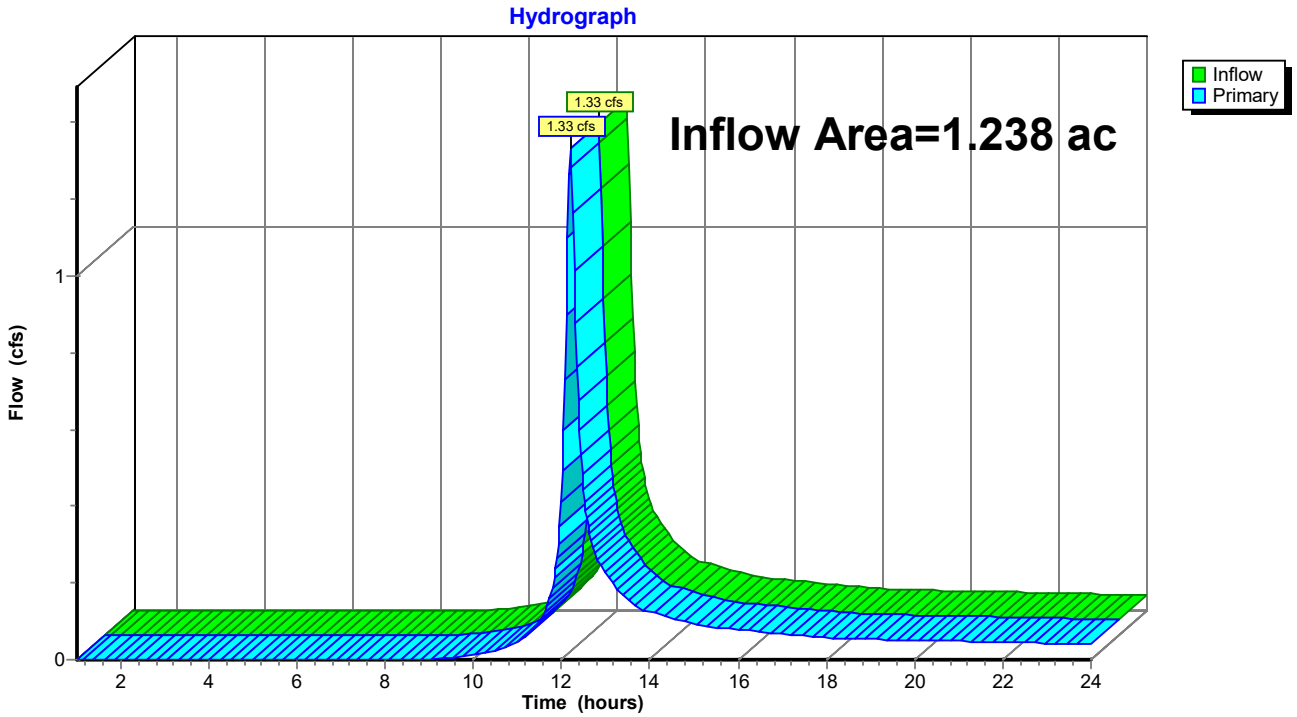


Summary for Link 1L: SP-1

Inflow Area = 1.238 ac, 57.76% Impervious, Inflow Depth > 1.22" for 2-Year event
Inflow = 1.33 cfs @ 12.19 hrs, Volume= 0.126 af
Primary = 1.33 cfs @ 12.19 hrs, Volume= 0.126 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs

Link 1L: SP-1

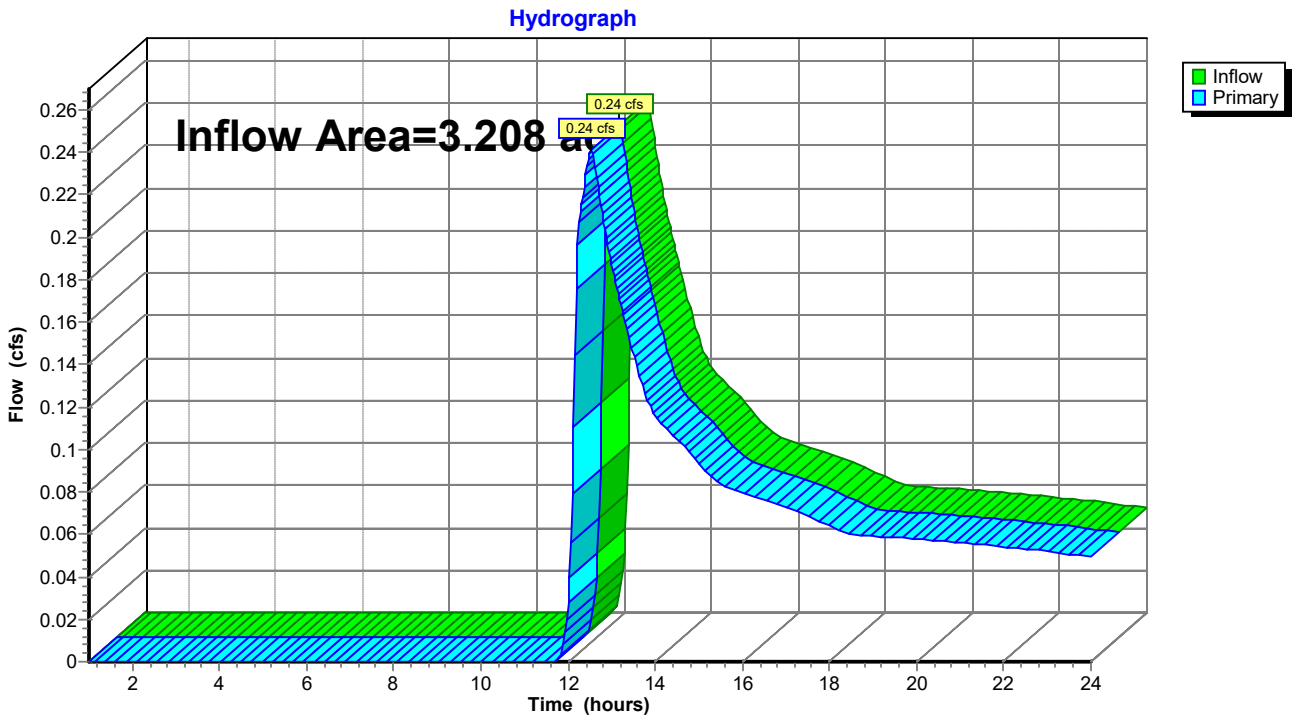


Summary for Link 2L: SP-2

Inflow Area = 3.208 ac, 16.52% Impervious, Inflow Depth > 0.31" for 2-Year event
Inflow = 0.24 cfs @ 12.54 hrs, Volume= 0.084 af
Primary = 0.24 cfs @ 12.54 hrs, Volume= 0.084 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs

Link 2L: SP-2



Time span=1.00-24.00 hrs, dt=0.03 hrs, 768 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Web Rd-N Runoff Area=18,940 sf 59.65% Impervious Runoff Depth>2.51"
Flow Length=225' Tc=11.8 min CN=78 Runoff=0.97 cfs 0.091 af

Subcatchment 2S: Web RD S Runoff Area=21,022 sf 30.46% Impervious Runoff Depth>1.43"
Flow Length=217' Tc=12.9 min CN=64 Runoff=0.56 cfs 0.057 af

Subcatchment 3S: Turner RD Runoff Area=118,720 sf 14.05% Impervious Runoff Depth>0.91"
Flow Length=501' Tc=27.6 min CN=56 Runoff=1.19 cfs 0.207 af

Subcatchment 4S: Lawn Pleas-W Runoff Area=15,481 sf 52.02% Impervious Runoff Depth>2.18"
Flow Length=114' Tc=9.8 min CN=74 Runoff=0.74 cfs 0.064 af

Subcatchment 5S: Lawn Pleas-E Runoff Area=19,515 sf 60.48% Impervious Runoff Depth>2.60"
Flow Length=230' Tc=11.8 min CN=79 Runoff=1.04 cfs 0.097 af

Pond 1P: CB-Web N Peak Elev=75.08' Inflow=0.97 cfs 0.091 af
12.0" Round Culvert n=0.012 L=30.0' S=0.0133 '/' Outflow=0.97 cfs 0.091 af

Pond 2P: Peak Elev=73.54' Inflow=0.56 cfs 0.057 af
8.0" Round Culvert n=0.013 L=50.0' S=0.0180 '/' Outflow=0.56 cfs 0.057 af

Pond 3P: Peak Elev=75.04' Inflow=1.19 cfs 0.207 af
8.0" Round Culvert n=0.013 L=197.0' S=0.0051 '/' Outflow=1.19 cfs 0.207 af

Pond 4P: Peak Elev=75.69' Inflow=0.74 cfs 0.064 af
12.0" Round Culvert n=0.013 L=55.0' S=0.0455 '/' Outflow=0.74 cfs 0.064 af

Pond 5P: CB-Pleas E Peak Elev=74.98' Inflow=2.01 cfs 0.188 af
12.0" Round Culvert n=0.013 L=50.0' S=0.0500 '/' Outflow=2.01 cfs 0.188 af

Pond 6P: Peak Elev=72.91' Inflow=0.74 cfs 0.064 af
30.0" Round Culvert n=0.013 L=254.0' S=0.0102 '/' Outflow=0.74 cfs 0.064 af

Link 1L: SP-1 Inflow=2.73 cfs 0.252 af
Primary=2.73 cfs 0.252 af

Link 2L: SP-2 Inflow=1.48 cfs 0.264 af
Primary=1.48 cfs 0.264 af

Total Runoff Area = 4.446 ac Runoff Volume = 0.517 af Average Runoff Depth = 1.39"
72.00% Pervious = 3.201 ac 28.00% Impervious = 1.245 ac

Summary for Subcatchment 1S: Web Rd-N

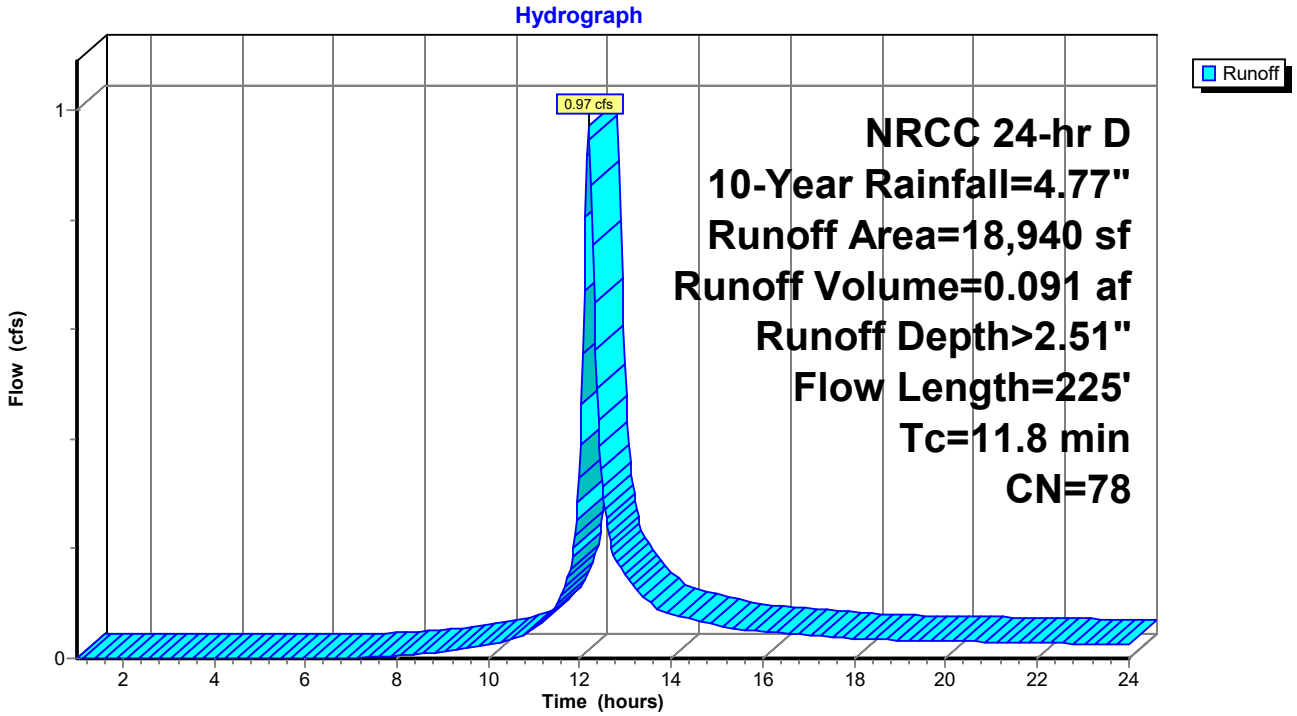
Runoff = 0.97 cfs @ 12.20 hrs, Volume= 0.091 af, Depth> 2.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
11,298	98	Paved parking, HSG A
7,642	49	50-75% Grass cover, Fair, HSG A
18,940	78	Weighted Average
7,642		40.35% Pervious Area
11,298		59.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	50	0.0125	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
1.0	175	0.0225	3.04		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
11.8	225	Total			

Subcatchment 1S: Web Rd-N



Summary for Subcatchment 2S: Web RD S

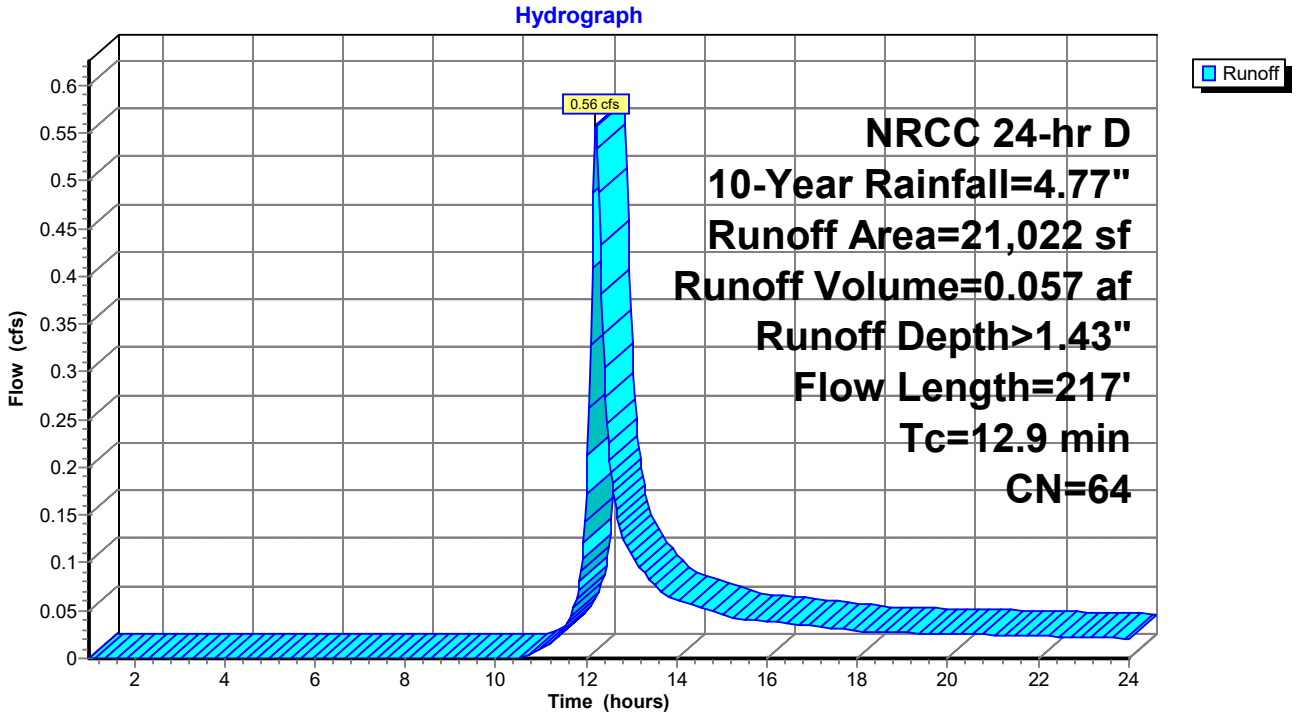
Runoff = 0.56 cfs @ 12.22 hrs, Volume= 0.057 af, Depth> 1.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
6,403	98	Paved parking, HSG A
14,619	49	50-75% Grass cover, Fair, HSG A
21,022	64	Weighted Average
14,619		69.54% Pervious Area
6,403		30.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0150	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.9	117	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
12.9	217	Total			

Subcatchment 2S: Web RD S



Summary for Subcatchment 3S: Turner RD

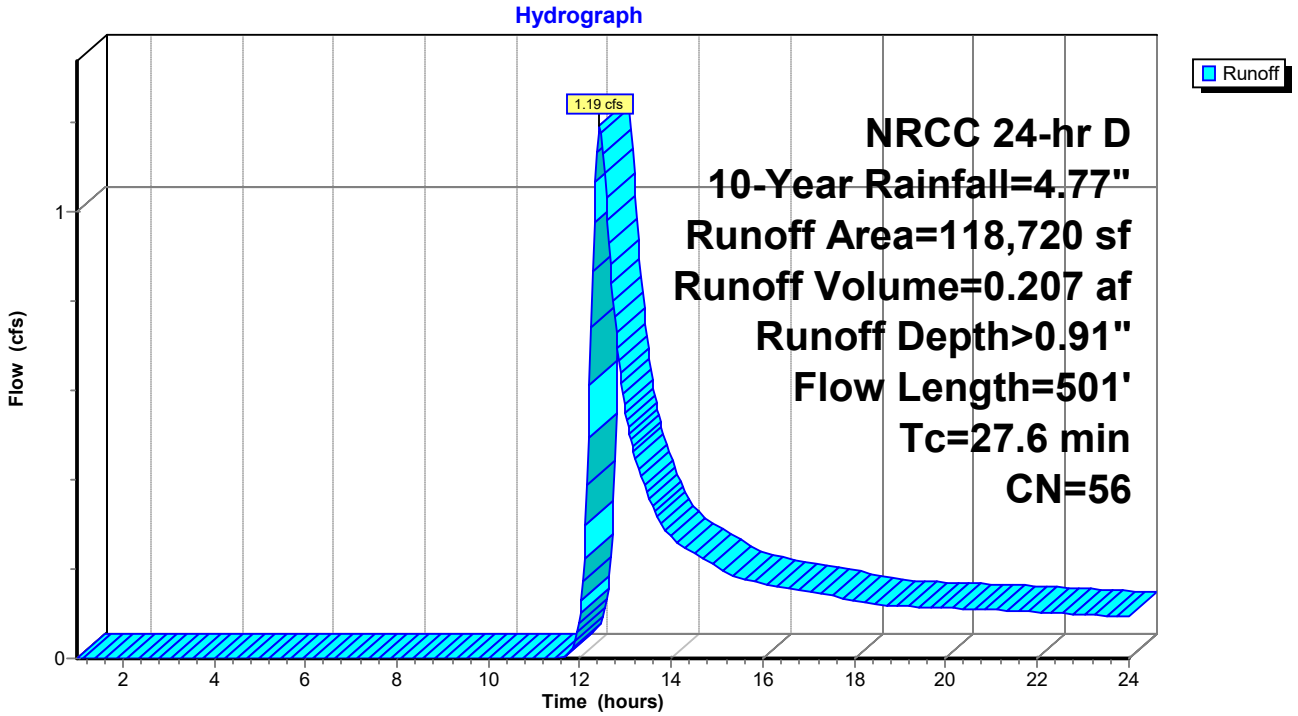
Runoff = 1.19 cfs @ 12.44 hrs, Volume= 0.207 af, Depth> 0.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
16,677	98	Paved parking, HSG A
102,043	49	50-75% Grass cover, Fair, HSG A
118,720	56	Weighted Average
102,043		85.95% Pervious Area
16,677		14.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7	132	0.0075	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
7.9	369	0.0125	0.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
27.6	501	Total			

Subcatchment 3S: Turner RD



Summary for Subcatchment 4S: Lawn Pleas-W

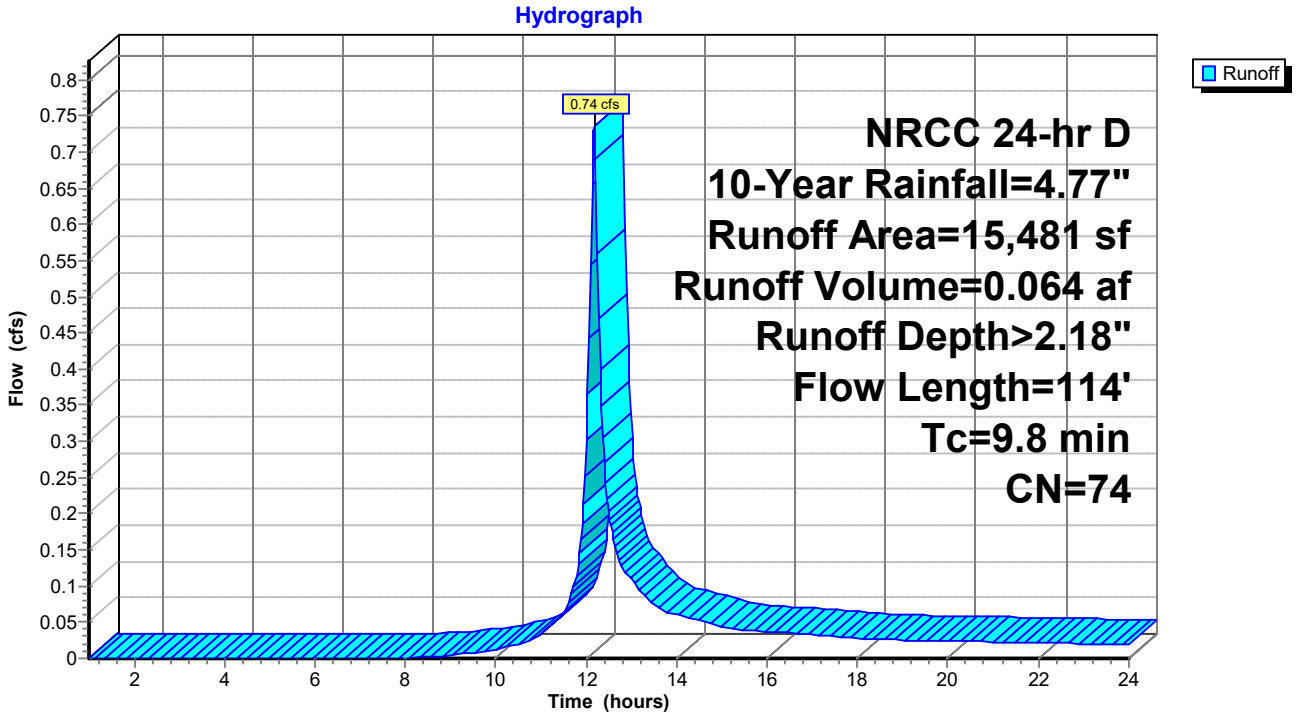
Runoff = 0.74 cfs @ 12.17 hrs, Volume= 0.064 af, Depth> 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
7,428	49	50-75% Grass cover, Fair, HSG A
8,053	98	Paved parking, HSG A
15,481	74	Weighted Average
7,428		47.98% Pervious Area
8,053		52.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	66	0.0125	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.6	48	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.8	114	Total			

Subcatchment 4S: Lawn Pleas-W



Summary for Subcatchment 5S: Lawn Pleas-E

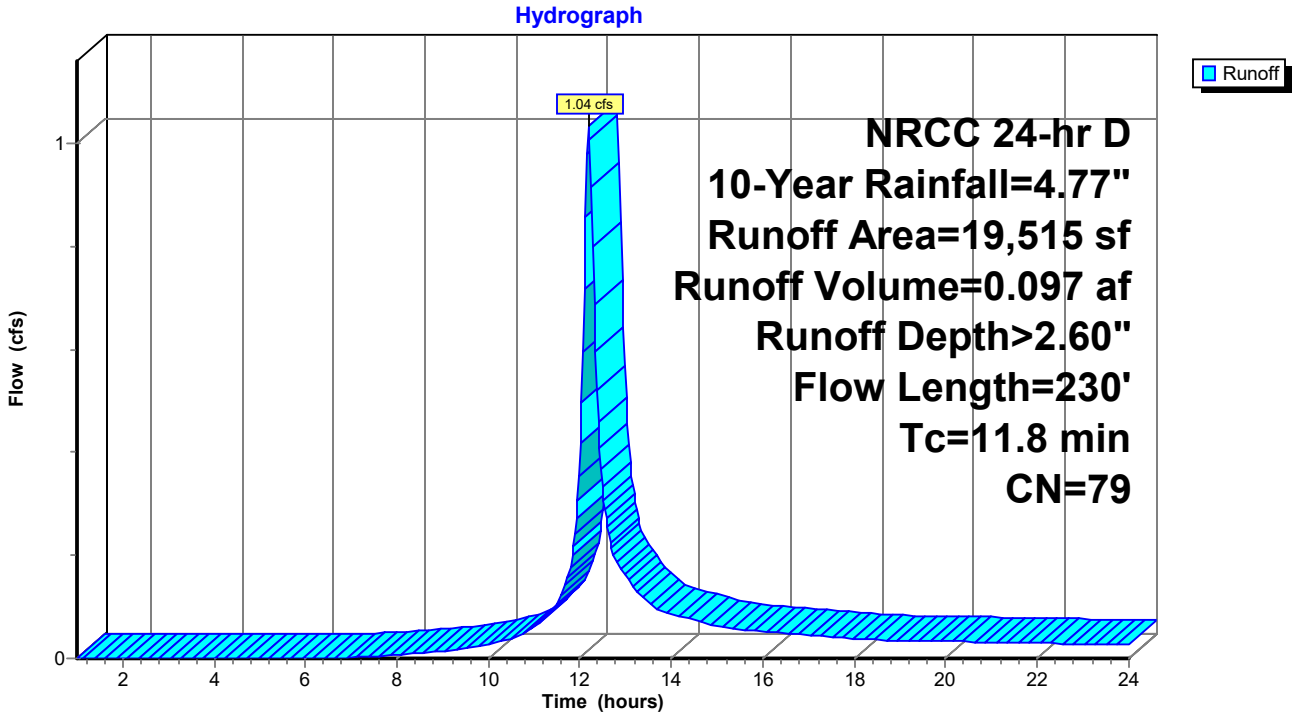
Runoff = 1.04 cfs @ 12.20 hrs, Volume= 0.097 af, Depth> 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
11,802	98	Paved parking, HSG A
7,713	49	50-75% Grass cover, Fair, HSG A
19,515	79	Weighted Average
7,713		39.52% Pervious Area
11,802		60.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	70	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
1.2	160	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
11.8	230	Total			

Subcatchment 5S: Lawn Pleas-E



Summary for Pond 1P: CB-Web N

[57] Hint: Peaked at 75.08' (Flood elevation advised)

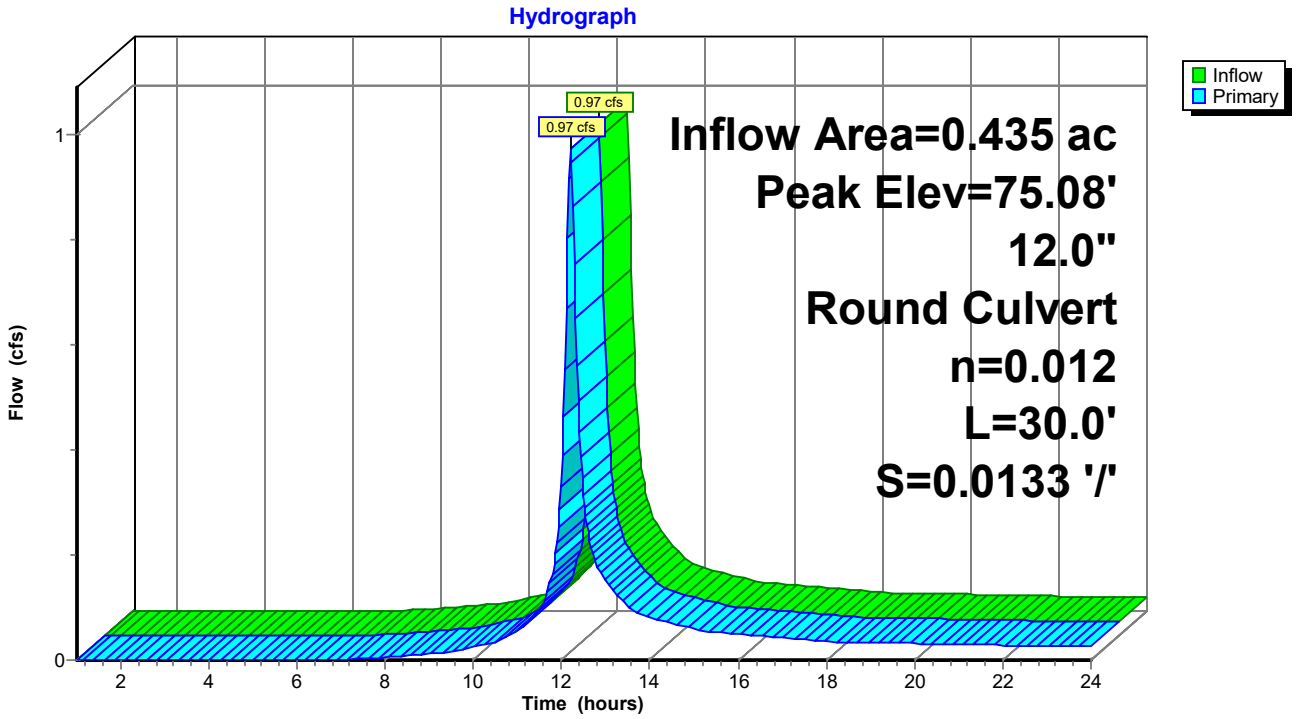
Inflow Area =	0.435 ac, 59.65% Impervious, Inflow Depth > 2.51" for 10-Year event				
Inflow =	0.97 cfs @ 12.20 hrs, Volume=	0.091 af			
Outflow =	0.97 cfs @ 12.20 hrs, Volume=	0.091 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.97 cfs @ 12.20 hrs, Volume=	0.091 af			

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 75.08' @ 12.20 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	74.50'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 74.50' / 74.10' S= 0.0133 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.97 cfs @ 12.20 hrs HW=75.08' (Free Discharge)
└─**1=Culvert** (Inlet Controls 0.97 cfs @ 2.05 fps)

Pond 1P: CB-Web N



Summary for Pond 2P:

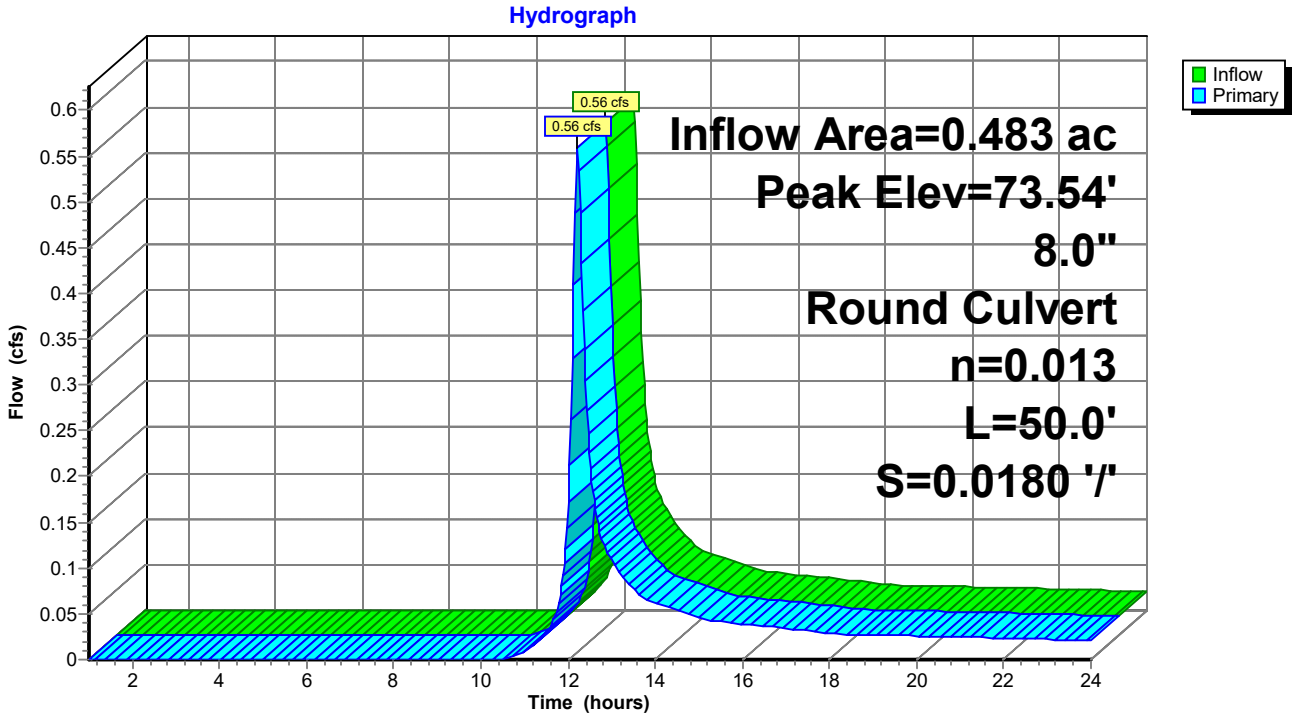
Inflow Area = 0.483 ac, 30.46% Impervious, Inflow Depth > 1.43" for 10-Year event
Inflow = 0.56 cfs @ 12.22 hrs, Volume= 0.057 af
Outflow = 0.56 cfs @ 12.22 hrs, Volume= 0.057 af, Atten= 0%, Lag= 0.0 min
Primary = 0.56 cfs @ 12.22 hrs, Volume= 0.057 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 73.54' @ 12.22 hrs
Flood Elev= 116.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.00'	**8.0" Round Storm Drain** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.00' / 72.10' S= 0.0180 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.35 sf

Primary OutFlow Max=0.59 cfs @ 12.22 hrs HW=73.54' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 0.59 cfs @ 1.97 fps)

Pond 2P:



Summary for Pond 3P:

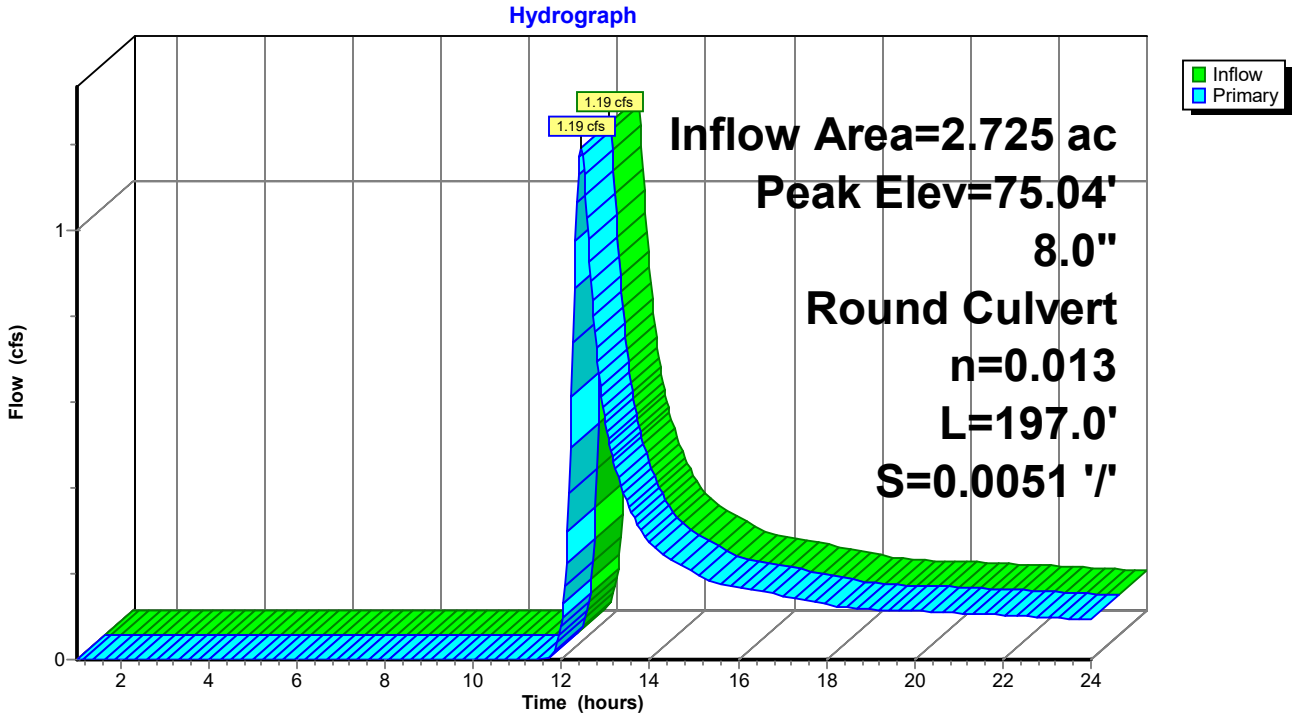
Inflow Area =	2.725 ac,	14.05% Impervious,	Inflow Depth >	0.91"	for 10-Year event
Inflow =	1.19 cfs @	12.44 hrs,	Volume=	0.207 af	
Outflow =	1.19 cfs @	12.44 hrs,	Volume=	0.207 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.19 cfs @	12.44 hrs,	Volume=	0.207 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 75.04' @ 12.44 hrs
Flood Elev= 113.94'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.10'	**8.0" Round Storm Drain** L= 197.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.10' / 72.10' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=1.19 cfs @ 12.44 hrs HW=75.03' (Free Discharge)
└─**1=Storm Drain** (Barrel Controls 1.19 cfs @ 3.41 fps)

Pond 3P:



Summary for Pond 4P:

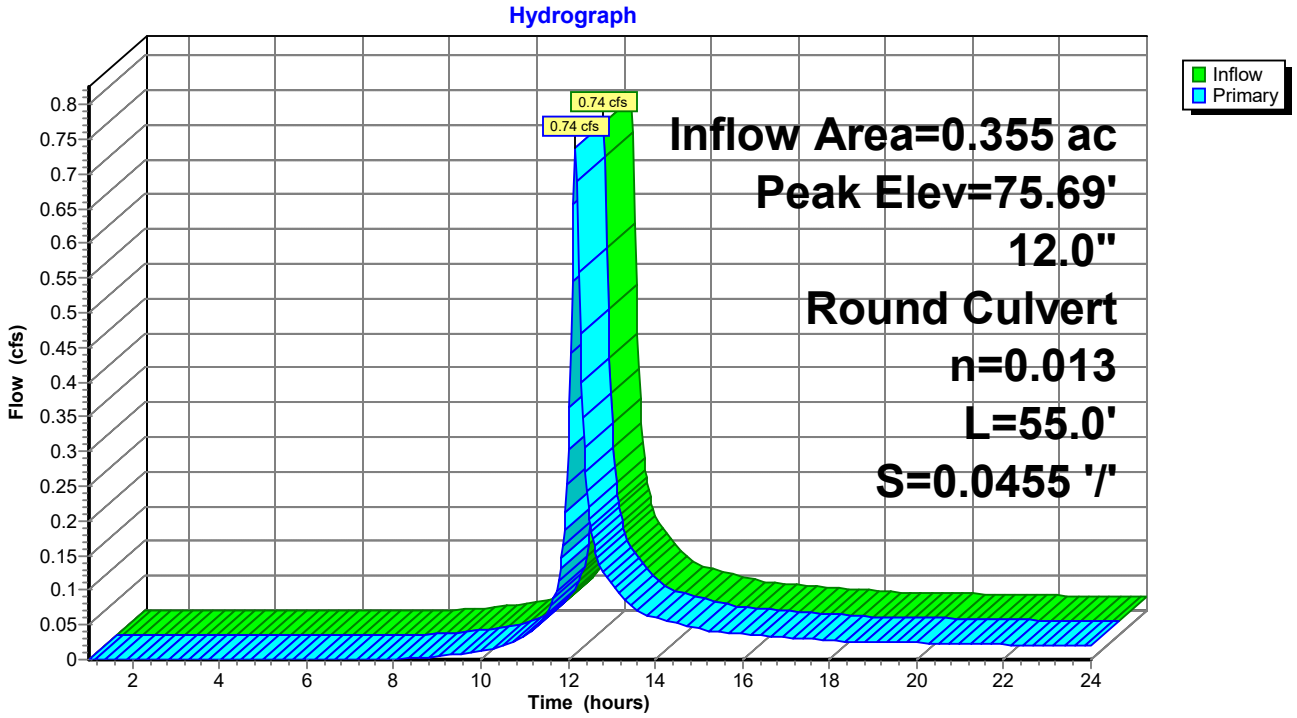
Inflow Area =	0.355 ac, 52.02% Impervious, Inflow Depth > 2.18" for 10-Year event				
Inflow =	0.74 cfs @	12.17 hrs,	Volume=	0.064 af	
Outflow =	0.74 cfs @	12.17 hrs,	Volume=	0.064 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.74 cfs @	12.17 hrs,	Volume=	0.064 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 75.69' @ 12.17 hrs
Flood Elev= 116.29'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.20'	**12.0" Round Storm Drain** L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.20' / 72.70' S= 0.0455 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.70 cfs @ 12.17 hrs HW=75.68' (Free Discharge)
└─**1=Storm Drain** (Inlet Controls 0.70 cfs @ 1.87 fps)

Pond 4P:



Summary for Pond 5P: CB-Pleas E

[79] Warning: Submerged Pond 1P Primary device # 1 INLET by 0.47'

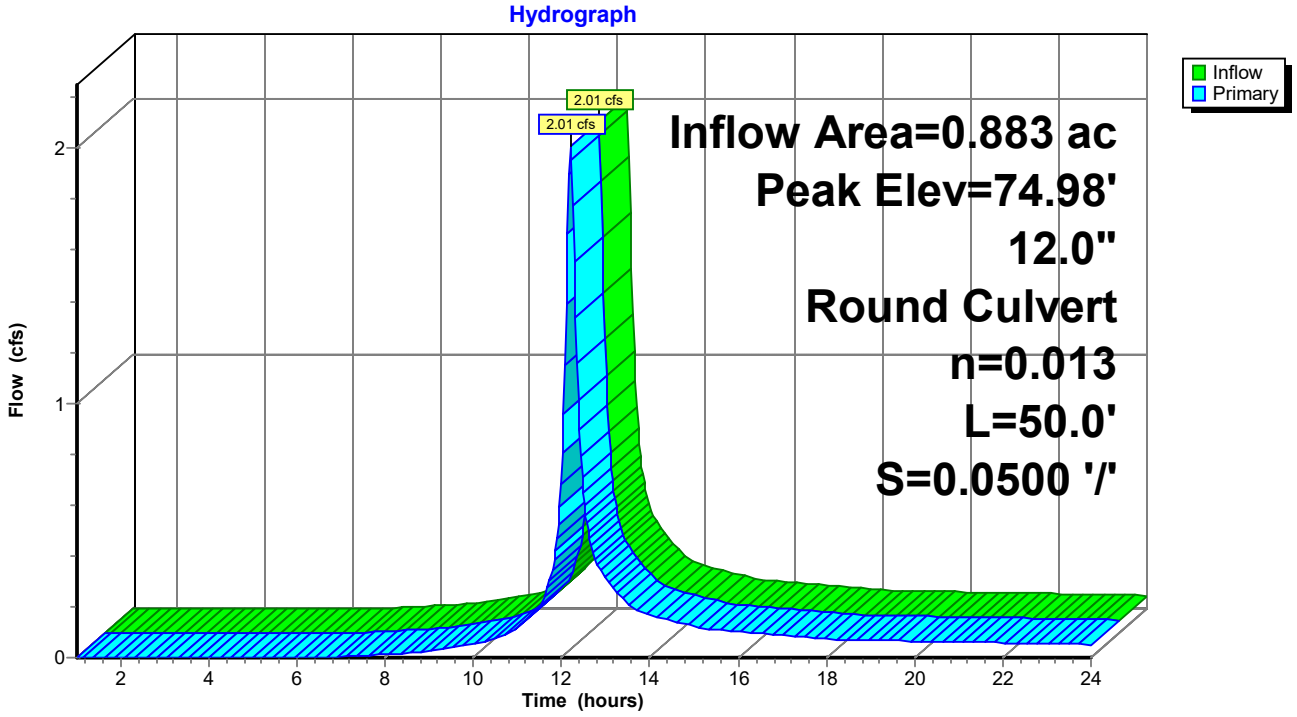
Inflow Area =	0.883 ac, 60.07% Impervious, Inflow Depth > 2.55" for 10-Year event				
Inflow =	2.01 cfs @	12.20 hrs,	Volume=	0.188 af	
Outflow =	2.01 cfs @	12.20 hrs,	Volume=	0.188 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.01 cfs @	12.20 hrs,	Volume=	0.188 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 74.98' @ 12.20 hrs
Flood Elev= 114.79'

Device	Routing	Invert	Outlet Devices
#1	Primary	74.00'	**12.0" Round Storm Drain** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 74.00' / 71.50' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.06 cfs @ 12.20 hrs HW=74.97' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 2.06 cfs @ 2.65 fps)

Pond 5P: CB-Pleas E



Summary for Pond 6P:

[79] Warning: Submerged Pond 4P Primary device # 1 OUTLET by 0.21'

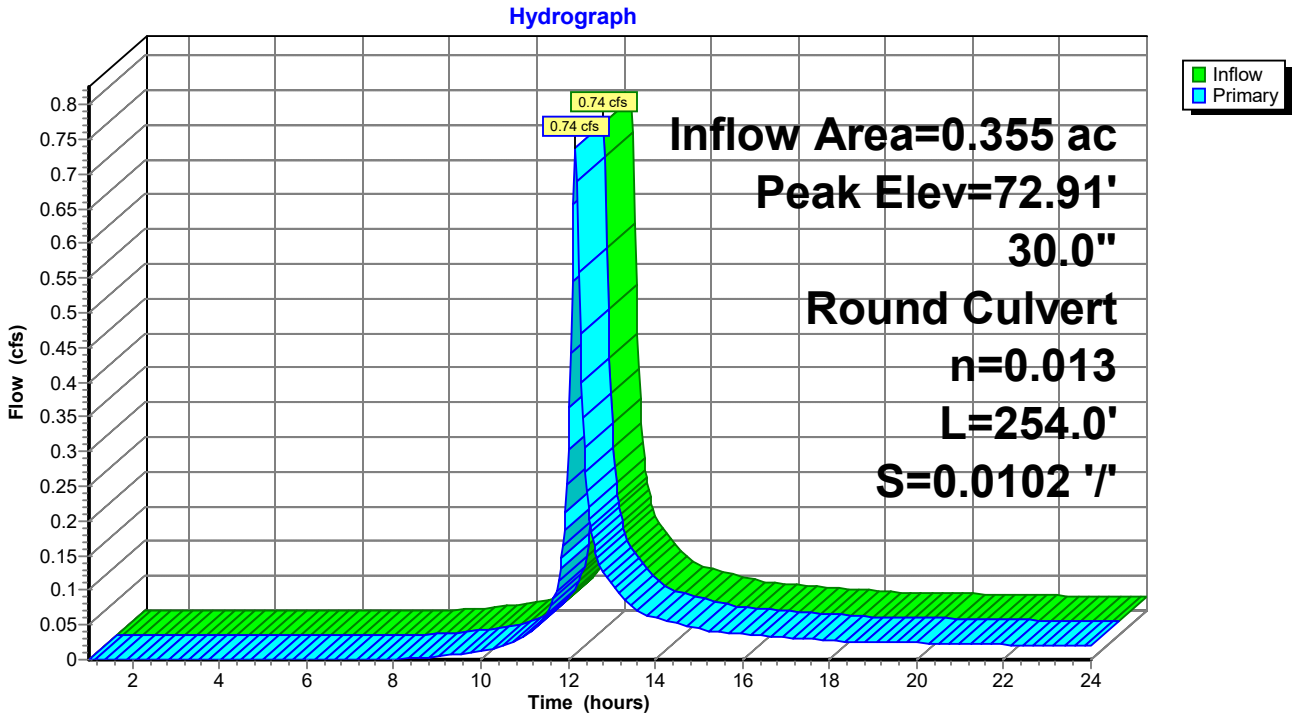
Inflow Area =	0.355 ac, 52.02% Impervious, Inflow Depth > 2.18" for 10-Year event				
Inflow =	0.74 cfs @	12.17 hrs,	Volume=	0.064 af	
Outflow =	0.74 cfs @	12.17 hrs,	Volume=	0.064 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.74 cfs @	12.17 hrs,	Volume=	0.064 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 72.91' @ 12.17 hrs
Flood Elev= 116.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.60'	**30.0" Round Storm Drain** L= 254.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.60' / 70.00' S= 0.0102 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=0.52 cfs @ 12.17 hrs HW=72.91' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 0.52 cfs @ 1.50 fps)

Pond 6P:

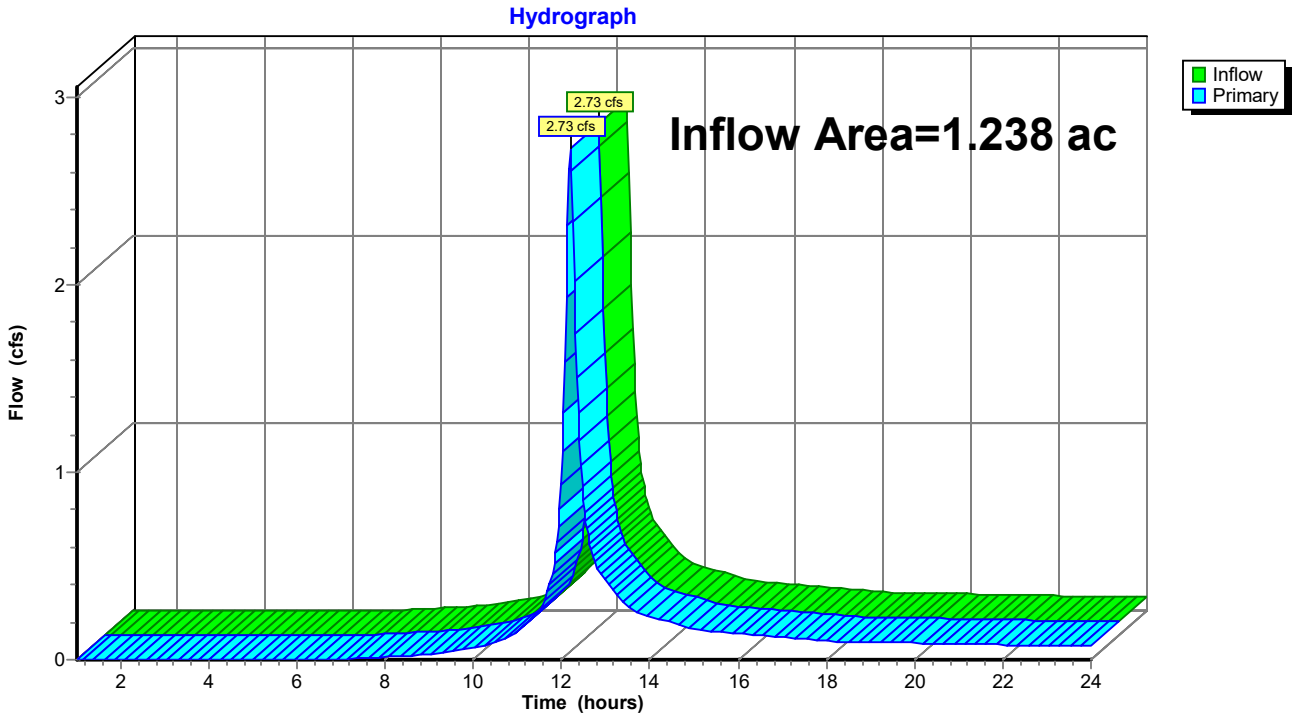


Summary for Link 1L: SP-1

Inflow Area = 1.238 ac, 57.76% Impervious, Inflow Depth > 2.44" for 10-Year event
Inflow = 2.73 cfs @ 12.19 hrs, Volume= 0.252 af
Primary = 2.73 cfs @ 12.19 hrs, Volume= 0.252 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs

Link 1L: SP-1

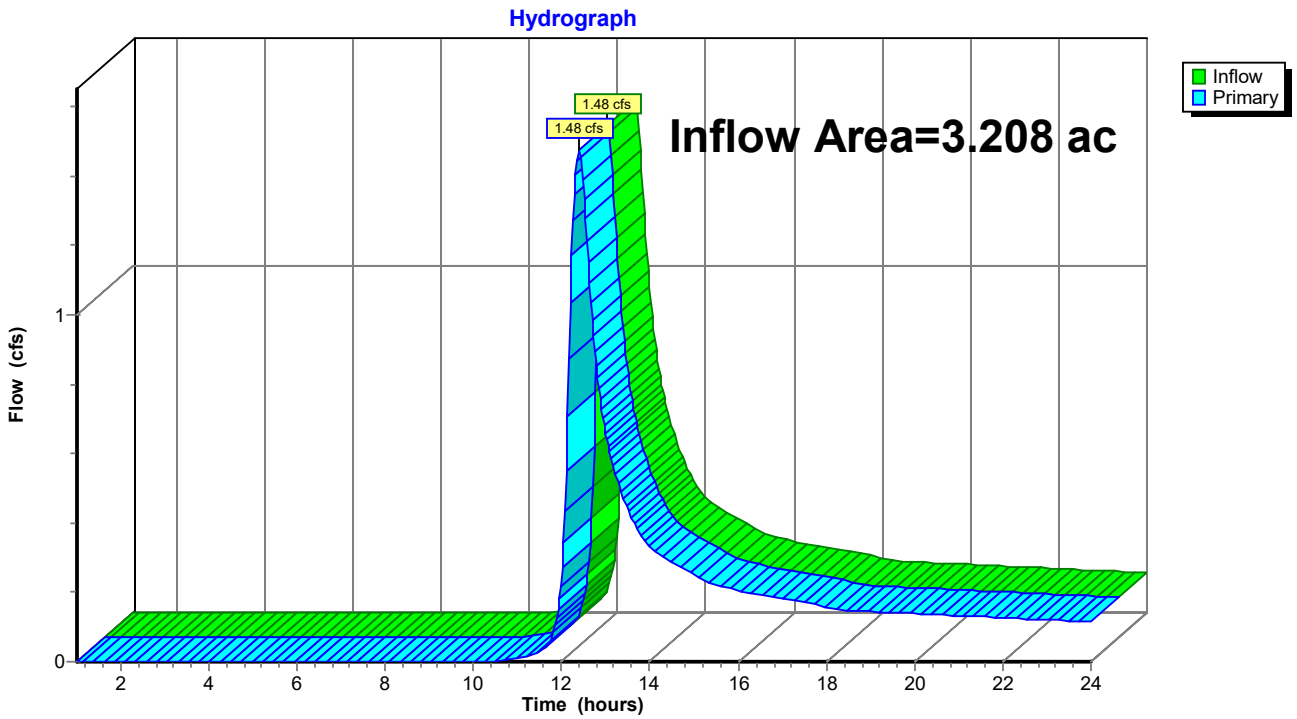


Summary for Link 2L: SP-2

Inflow Area = 3.208 ac, 16.52% Impervious, Inflow Depth > 0.99" for 10-Year event
Inflow = 1.48 cfs @ 12.39 hrs, Volume= 0.264 af
Primary = 1.48 cfs @ 12.39 hrs, Volume= 0.264 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs

Link 2L: SP-2



Time span=1.00-24.00 hrs, dt=0.03 hrs, 768 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Web Rd-N Runoff Area=18,940 sf 59.65% Impervious Runoff Depth>3.58"
Flow Length=225' Tc=11.8 min CN=78 Runoff=1.38 cfs 0.130 af

Subcatchment 2S: Web RD S Runoff Area=21,022 sf 30.46% Impervious Runoff Depth>2.26"
Flow Length=217' Tc=12.9 min CN=64 Runoff=0.92 cfs 0.091 af

Subcatchment 3S: Turner RD Runoff Area=118,720 sf 14.05% Impervious Runoff Depth>1.58"
Flow Length=501' Tc=27.6 min CN=56 Runoff=2.35 cfs 0.359 af

Subcatchment 4S: Lawn Pleas-W Runoff Area=15,481 sf 52.02% Impervious Runoff Depth>3.18"
Flow Length=114' Tc=9.8 min CN=74 Runoff=1.08 cfs 0.094 af

Subcatchment 5S: Lawn Pleas-E Runoff Area=19,515 sf 60.48% Impervious Runoff Depth>3.68"
Flow Length=230' Tc=11.8 min CN=79 Runoff=1.46 cfs 0.137 af

Pond 1P: CB-Web N Peak Elev=75.22' Inflow=1.38 cfs 0.130 af
12.0" Round Culvert n=0.012 L=30.0' S=0.0133 '/' Outflow=1.38 cfs 0.130 af

Pond 2P: Peak Elev=73.83' Inflow=0.92 cfs 0.091 af
8.0" Round Culvert n=0.013 L=50.0' S=0.0180 '/' Outflow=0.92 cfs 0.091 af

Pond 3P: Peak Elev=81.59' Inflow=2.35 cfs 0.359 af
8.0" Round Culvert n=0.013 L=197.0' S=0.0051 '/' Outflow=2.35 cfs 0.359 af

Pond 4P: Peak Elev=75.81' Inflow=1.08 cfs 0.094 af
12.0" Round Culvert n=0.013 L=55.0' S=0.0455 '/' Outflow=1.08 cfs 0.094 af

Pond 5P: CB-Pleas E Peak Elev=75.42' Inflow=2.84 cfs 0.267 af
12.0" Round Culvert n=0.013 L=50.0' S=0.0500 '/' Outflow=2.84 cfs 0.267 af

Pond 6P: Peak Elev=73.05' Inflow=1.08 cfs 0.094 af
30.0" Round Culvert n=0.013 L=254.0' S=0.0102 '/' Outflow=1.08 cfs 0.094 af

Link 1L: SP-1 Inflow=3.90 cfs 0.361 af
Primary=3.90 cfs 0.361 af

Link 2L: SP-2 Inflow=2.84 cfs 0.450 af
Primary=2.84 cfs 0.450 af

Total Runoff Area = 4.446 ac Runoff Volume = 0.811 af Average Runoff Depth = 2.19"
72.00% Pervious = 3.201 ac 28.00% Impervious = 1.245 ac

Summary for Subcatchment 1S: Web Rd-N

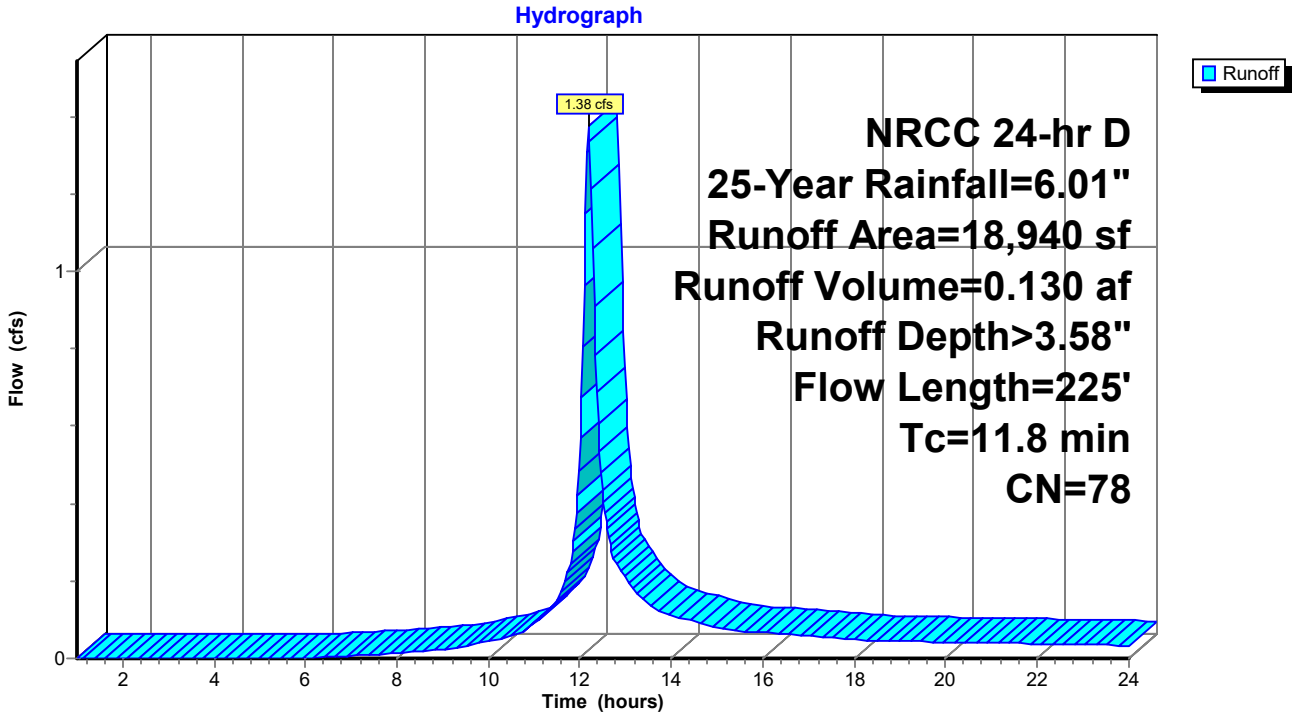
Runoff = 1.38 cfs @ 12.19 hrs, Volume= 0.130 af, Depth> 3.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 25-Year Rainfall=6.01"

Area (sf)	CN	Description
11,298	98	Paved parking, HSG A
7,642	49	50-75% Grass cover, Fair, HSG A
18,940	78	Weighted Average
7,642		40.35% Pervious Area
11,298		59.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	50	0.0125	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
1.0	175	0.0225	3.04		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
11.8	225	Total			

Subcatchment 1S: Web Rd-N



Summary for Subcatchment 2S: Web RD S

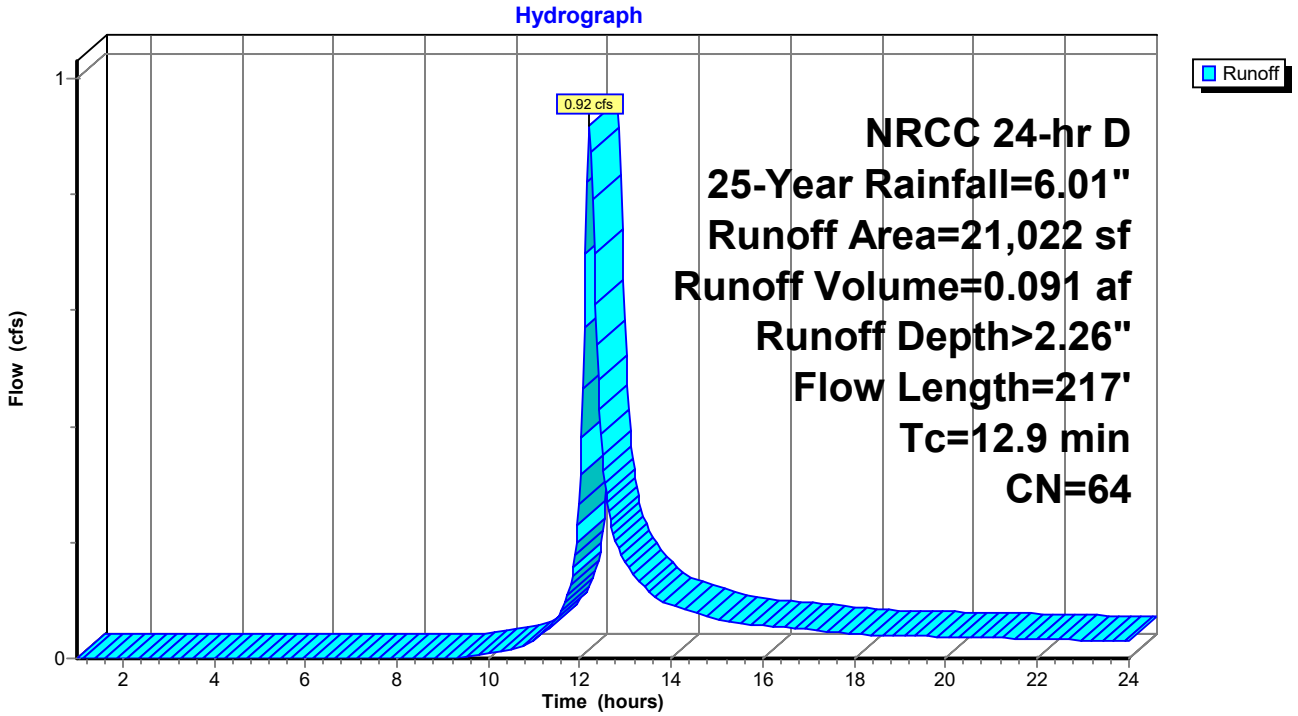
Runoff = 0.92 cfs @ 12.21 hrs, Volume= 0.091 af, Depth> 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 25-Year Rainfall=6.01"

Area (sf)	CN	Description
6,403	98	Paved parking, HSG A
14,619	49	50-75% Grass cover, Fair, HSG A
21,022	64	Weighted Average
14,619		69.54% Pervious Area
6,403		30.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0150	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.9	117	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
12.9	217	Total			

Subcatchment 2S: Web RD S



Summary for Subcatchment 3S: Turner RD

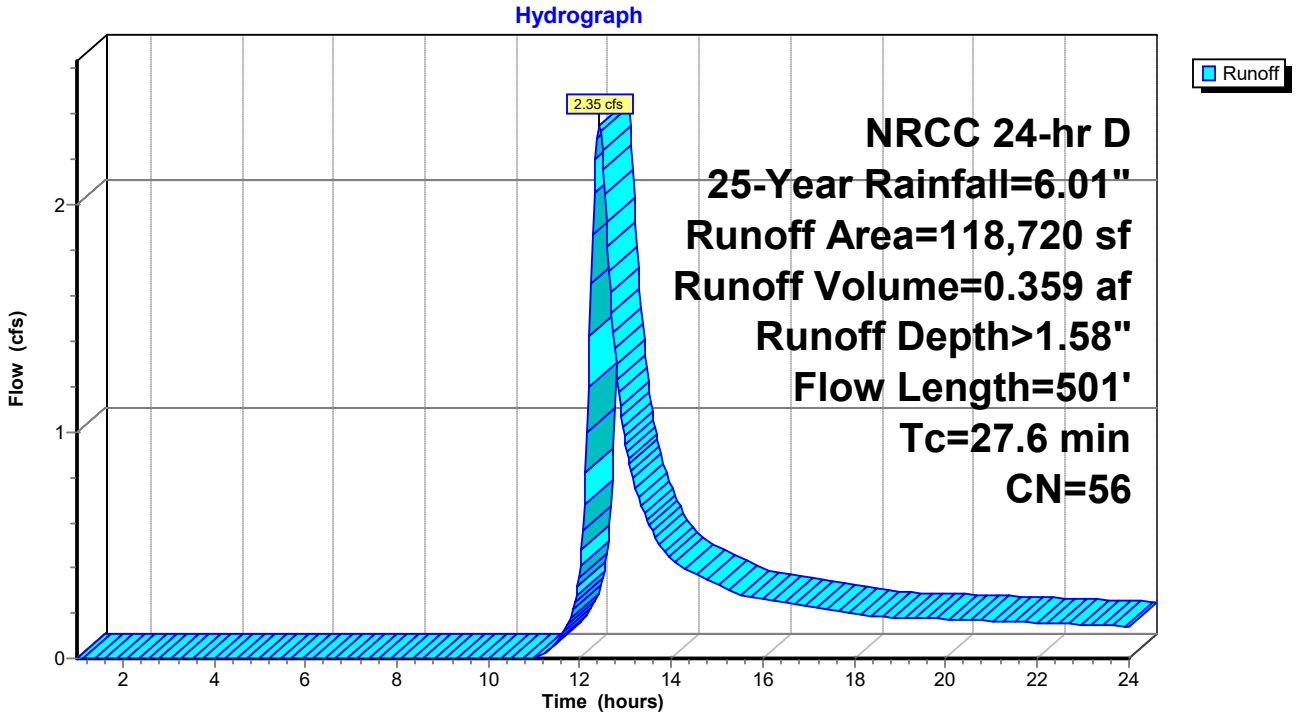
Runoff = 2.35 cfs @ 12.42 hrs, Volume= 0.359 af, Depth> 1.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 25-Year Rainfall=6.01"

Area (sf)	CN	Description
16,677	98	Paved parking, HSG A
102,043	49	50-75% Grass cover, Fair, HSG A
118,720	56	Weighted Average
102,043		85.95% Pervious Area
16,677		14.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7	132	0.0075	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
7.9	369	0.0125	0.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
27.6	501	Total			

Subcatchment 3S: Turner RD



Summary for Subcatchment 4S: Lawn Pleas-W

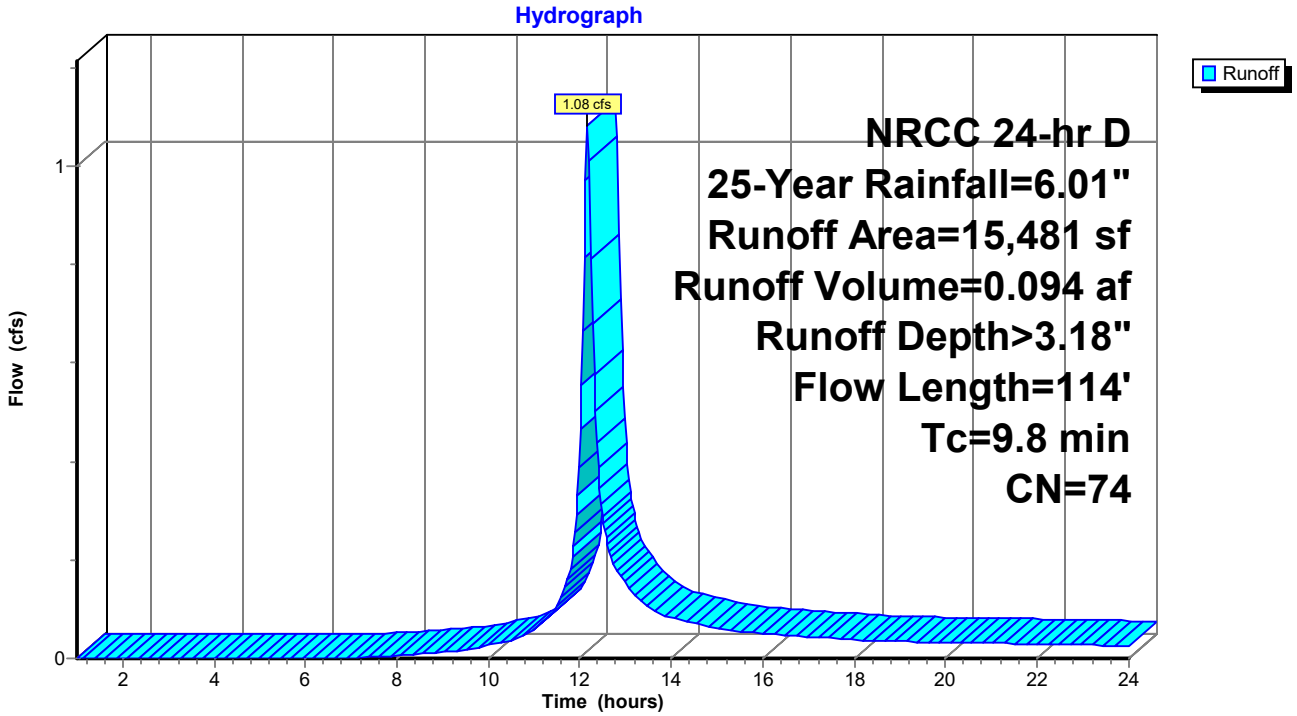
Runoff = 1.08 cfs @ 12.17 hrs, Volume= 0.094 af, Depth> 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 25-Year Rainfall=6.01"

Area (sf)	CN	Description
7,428	49	50-75% Grass cover, Fair, HSG A
8,053	98	Paved parking, HSG A
15,481	74	Weighted Average
7,428		47.98% Pervious Area
8,053		52.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	66	0.0125	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.6	48	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.8	114	Total			

Subcatchment 4S: Lawn Pleas-W



Summary for Subcatchment 5S: Lawn Pleas-E

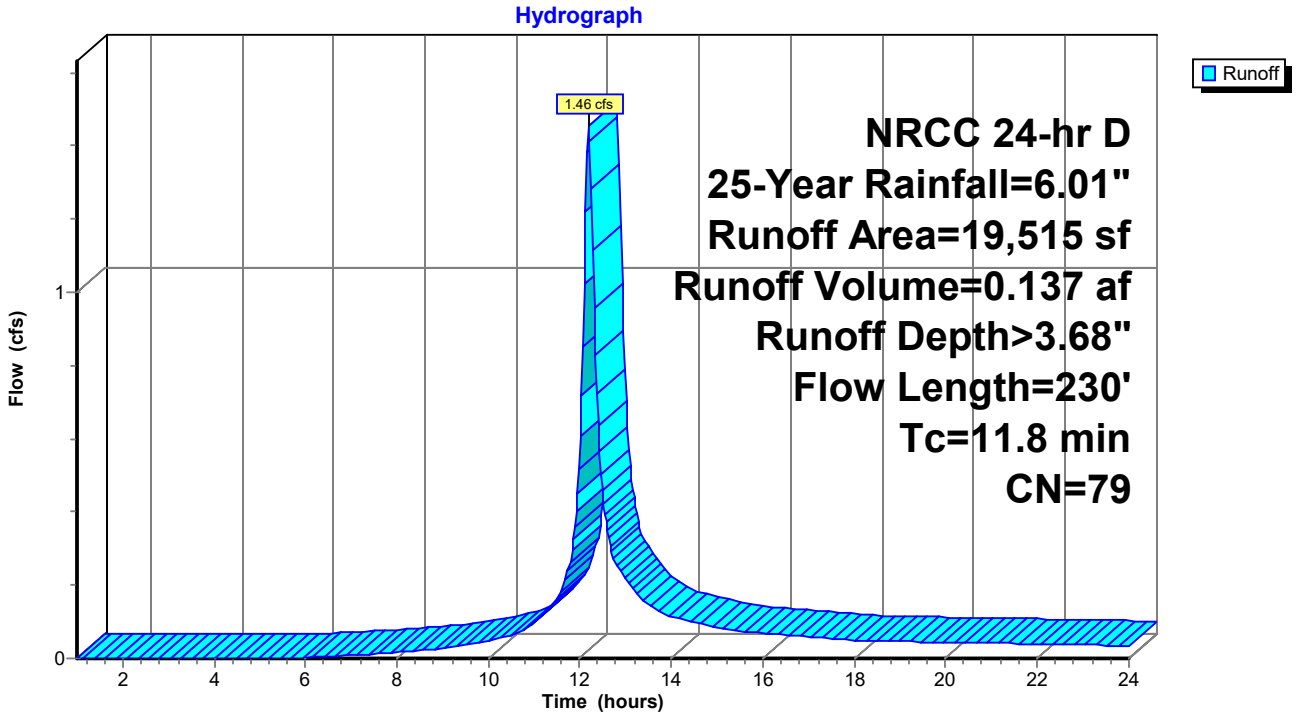
Runoff = 1.46 cfs @ 12.19 hrs, Volume= 0.137 af, Depth> 3.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 25-Year Rainfall=6.01"

Area (sf)	CN	Description
11,802	98	Paved parking, HSG A
7,713	49	50-75% Grass cover, Fair, HSG A
19,515	79	Weighted Average
7,713		39.52% Pervious Area
11,802		60.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	70	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
1.2	160	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
11.8	230	Total			

Subcatchment 5S: Lawn Pleas-E



Summary for Pond 1P: CB-Web N

[57] Hint: Peaked at 75.22' (Flood elevation advised)

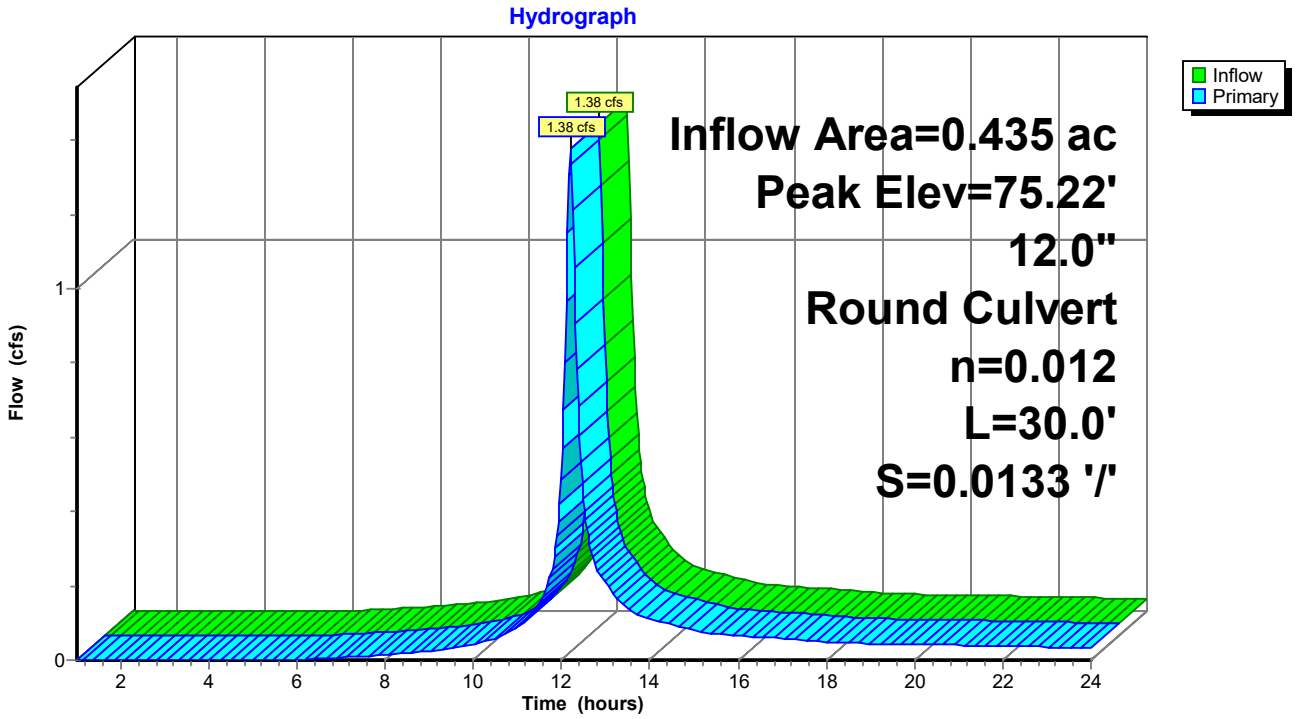
Inflow Area =	0.435 ac, 59.65% Impervious, Inflow Depth > 3.58" for 25-Year event				
Inflow =	1.38 cfs @ 12.19 hrs, Volume=	0.130 af			
Outflow =	1.38 cfs @ 12.19 hrs, Volume=	0.130 af, Atten= 0%, Lag= 0.0 min			
Primary =	1.38 cfs @ 12.19 hrs, Volume=	0.130 af			

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 75.22' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	74.50'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 74.50' / 74.10' S= 0.0133 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.37 cfs @ 12.19 hrs HW=75.22' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.37 cfs @ 2.28 fps)

Pond 1P: CB-Web N



Summary for Pond 2P:

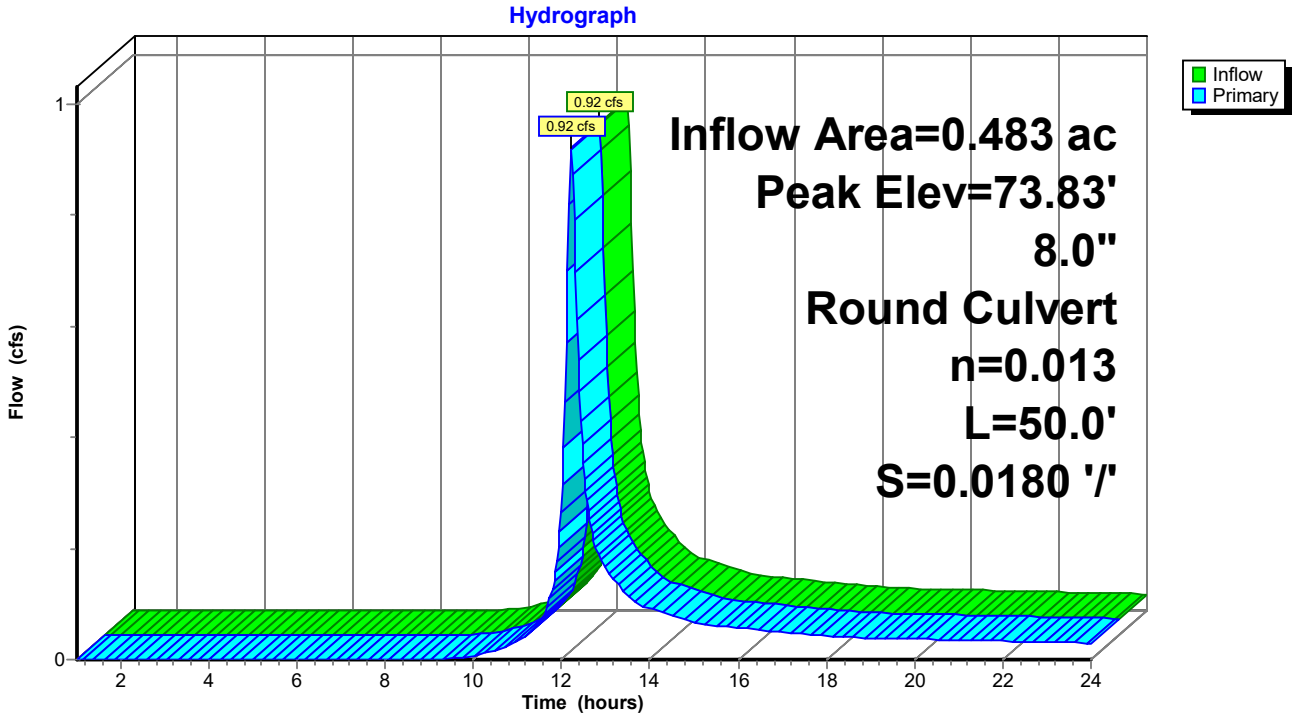
Inflow Area = 0.483 ac, 30.46% Impervious, Inflow Depth > 2.26" for 25-Year event
Inflow = 0.92 cfs @ 12.21 hrs, Volume= 0.091 af
Outflow = 0.92 cfs @ 12.21 hrs, Volume= 0.091 af, Atten= 0%, Lag= 0.0 min
Primary = 0.92 cfs @ 12.21 hrs, Volume= 0.091 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 73.83' @ 12.21 hrs
Flood Elev= 116.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.00'	**8.0" Round Storm Drain** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.00' / 72.10' S= 0.0180 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.35 sf

Primary OutFlow Max=0.93 cfs @ 12.21 hrs HW=73.82' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 0.93 cfs @ 2.66 fps)

Pond 2P:



Summary for Pond 3P:

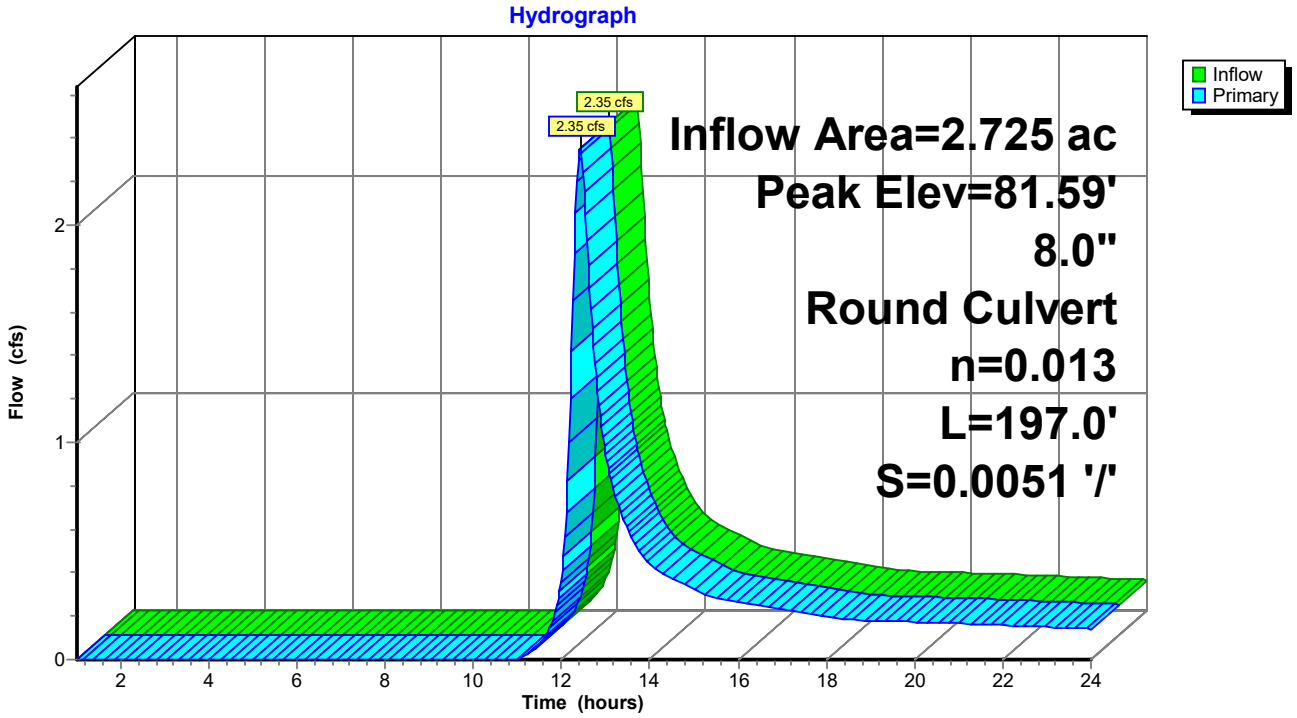
Inflow Area =	2.725 ac,	14.05% Impervious,	Inflow Depth >	1.58"	for 25-Year event
Inflow =	2.35 cfs @	12.42 hrs,	Volume=	0.359 af	
Outflow =	2.35 cfs @	12.42 hrs,	Volume=	0.359 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.35 cfs @	12.42 hrs,	Volume=	0.359 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 81.59' @ 12.42 hrs
Flood Elev= 113.94'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.10'	**8.0" Round Storm Drain** L= 197.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.10' / 72.10' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=2.35 cfs @ 12.42 hrs HW=81.55' (Free Discharge)
└**1=Storm Drain** (Barrel Controls 2.35 cfs @ 6.72 fps)

Pond 3P:



Summary for Pond 4P:

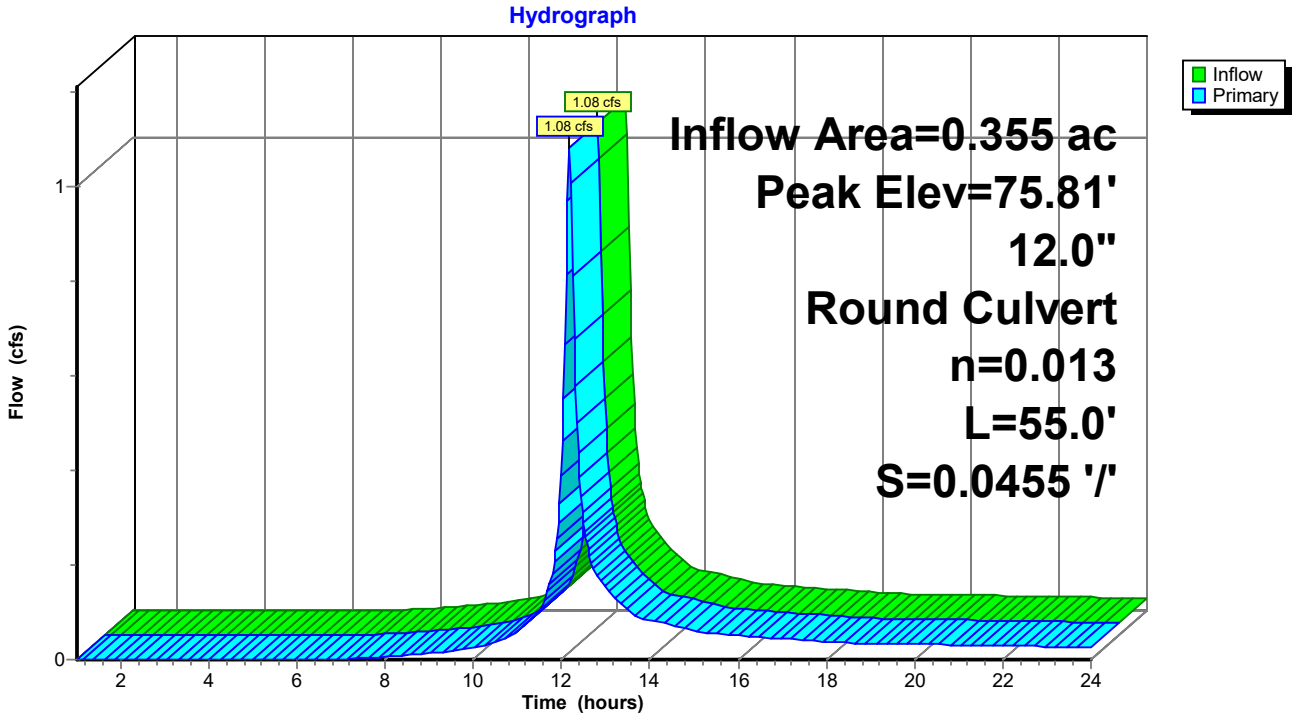
Inflow Area = 0.355 ac, 52.02% Impervious, Inflow Depth > 3.18" for 25-Year event
Inflow = 1.08 cfs @ 12.17 hrs, Volume= 0.094 af
Outflow = 1.08 cfs @ 12.17 hrs, Volume= 0.094 af, Atten= 0%, Lag= 0.0 min
Primary = 1.08 cfs @ 12.17 hrs, Volume= 0.094 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 75.81' @ 12.17 hrs
Flood Elev= 116.29'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.20'	**12.0" Round Storm Drain** L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.20' / 72.70' S= 0.0455 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.04 cfs @ 12.17 hrs HW=75.80' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 1.04 cfs @ 2.09 fps)

Pond 4P:



Summary for Pond 5P: CB-Pleas E

[81] Warning: Exceeded Pond 1P by 0.19' @ 12.19 hrs

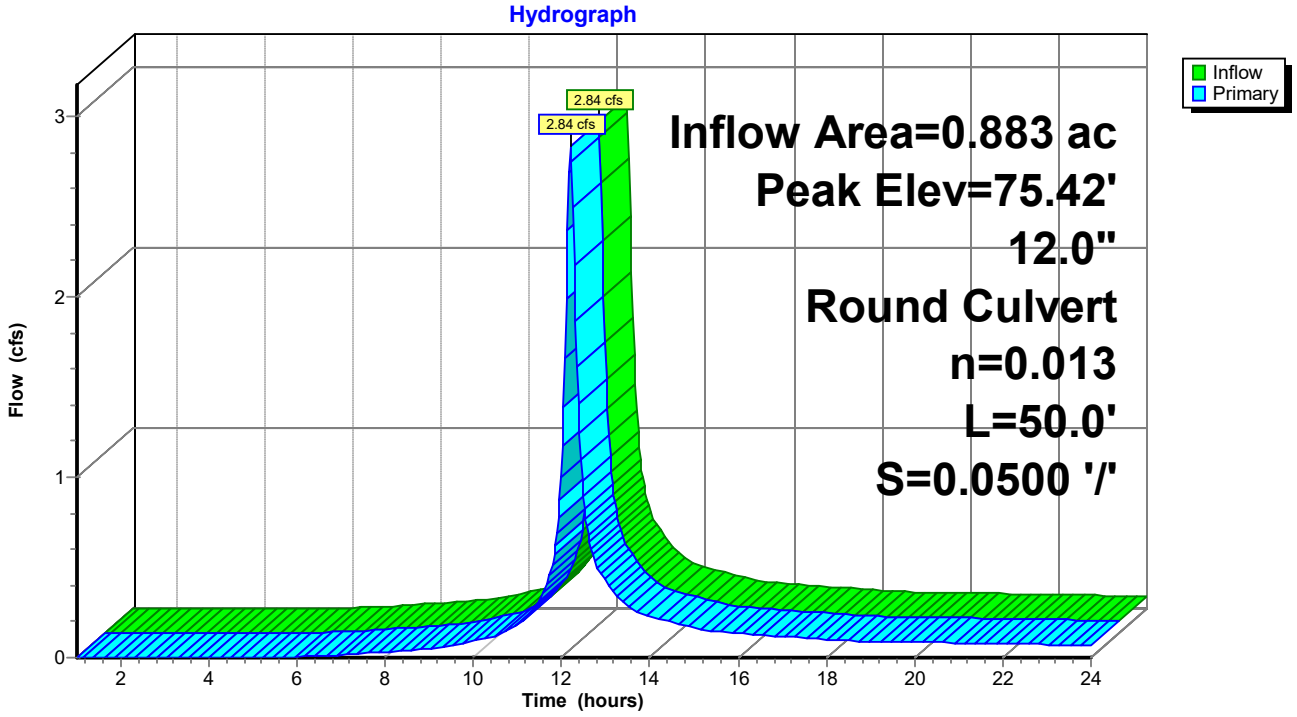
Inflow Area =	0.883 ac, 60.07% Impervious, Inflow Depth > 3.63" for 25-Year event				
Inflow =	2.84 cfs @	12.19 hrs,	Volume=	0.267 af	
Outflow =	2.84 cfs @	12.19 hrs,	Volume=	0.267 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.84 cfs @	12.19 hrs,	Volume=	0.267 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 75.42' @ 12.19 hrs
Flood Elev= 114.79'

Device	Routing	Invert	Outlet Devices
#1	Primary	74.00'	**12.0" Round Storm Drain** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 74.00' / 71.50' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.84 cfs @ 12.19 hrs HW=75.41' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 2.84 cfs @ 3.62 fps)

Pond 5P: CB-Pleas E



Summary for Pond 6P:

[79] Warning: Submerged Pond 4P Primary device # 1 OUTLET by 0.35'

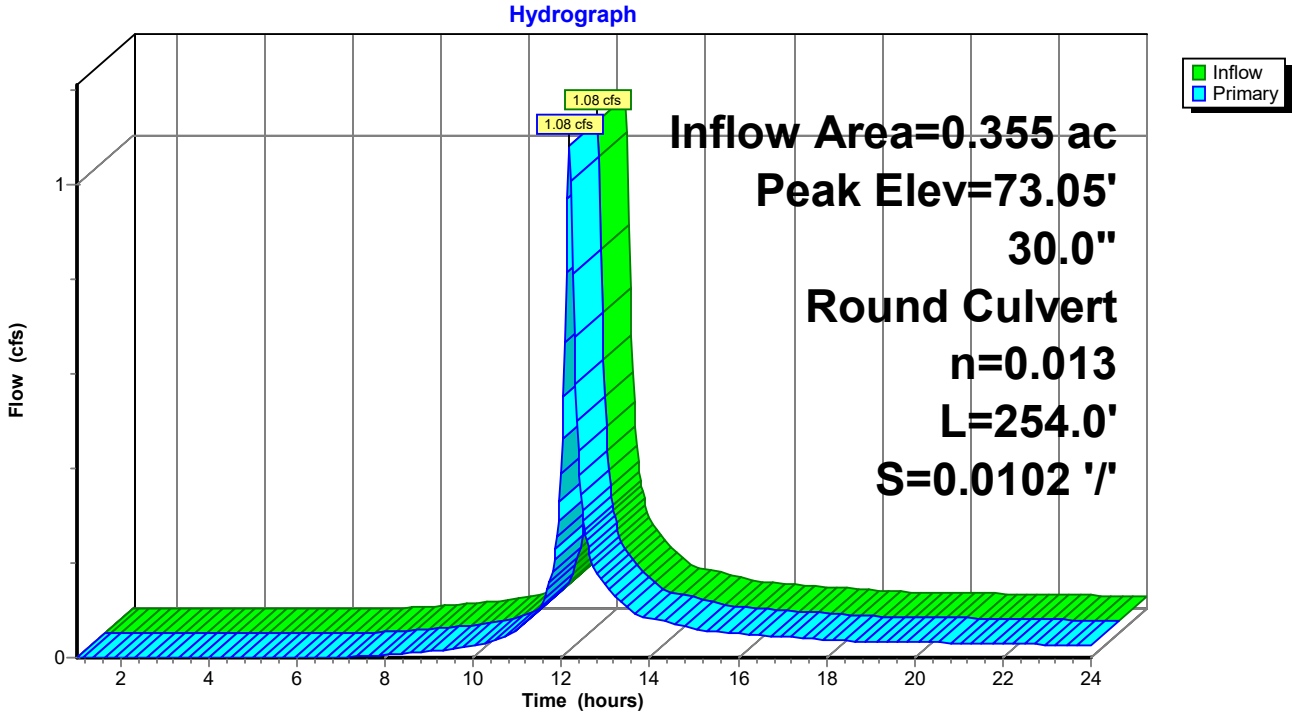
Inflow Area =	0.355 ac, 52.02% Impervious, Inflow Depth > 3.18" for 25-Year event				
Inflow =	1.08 cfs @ 12.17 hrs, Volume=	0.094 af			
Outflow =	1.08 cfs @ 12.17 hrs, Volume=	0.094 af, Atten= 0%, Lag= 0.0 min			
Primary =	1.08 cfs @ 12.17 hrs, Volume=	0.094 af			

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 73.05' @ 12.17 hrs
Flood Elev= 116.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.60'	**30.0" Round Storm Drain** L= 254.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.60' / 70.00' S= 0.0102 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=1.06 cfs @ 12.17 hrs HW=73.04' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 1.06 cfs @ 1.79 fps)

Pond 6P:

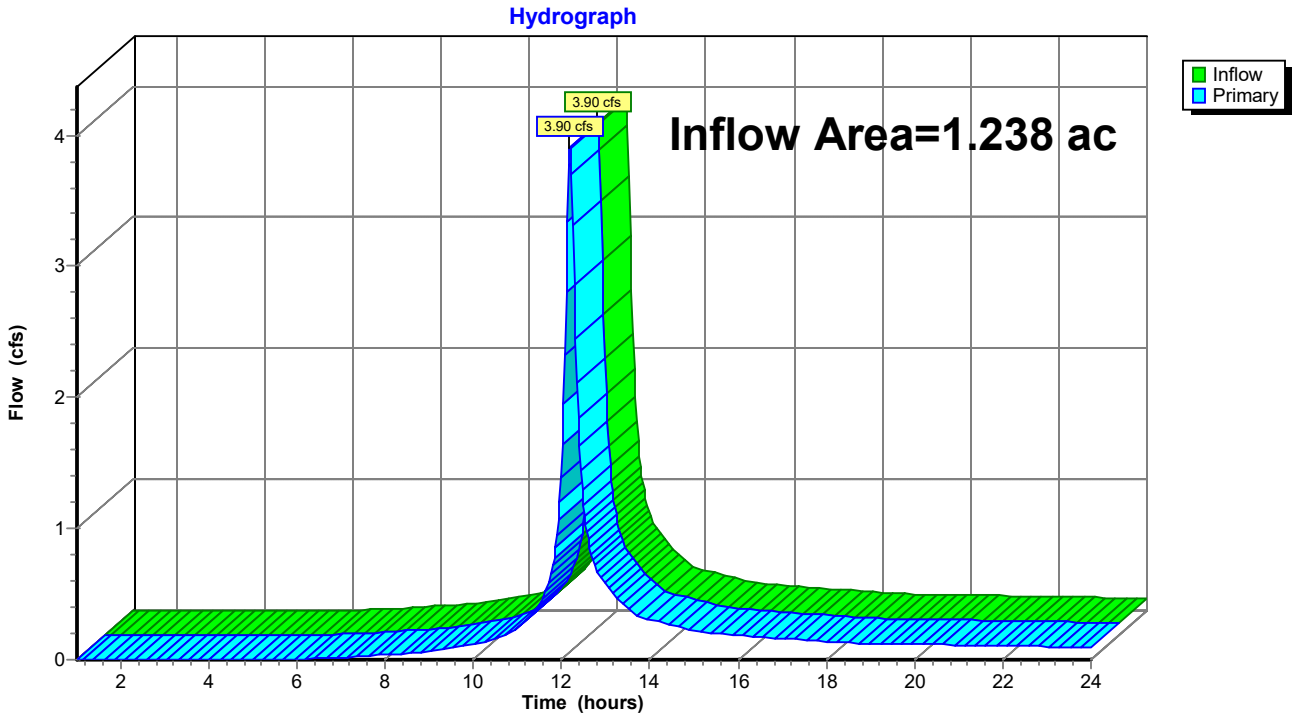


Summary for Link 1L: SP-1

Inflow Area = 1.238 ac, 57.76% Impervious, Inflow Depth > 3.50" for 25-Year event
Inflow = 3.90 cfs @ 12.19 hrs, Volume= 0.361 af
Primary = 3.90 cfs @ 12.19 hrs, Volume= 0.361 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs

Link 1L: SP-1

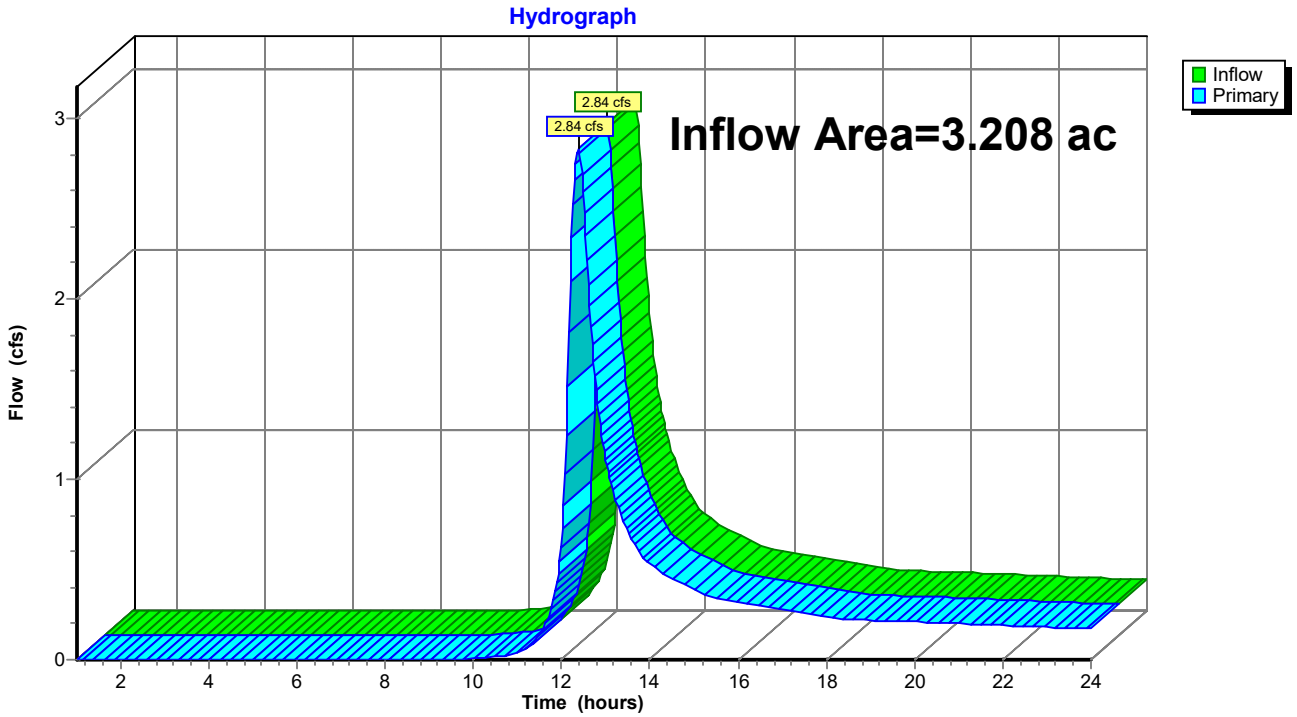


Summary for Link 2L: SP-2

Inflow Area = 3.208 ac, 16.52% Impervious, Inflow Depth > 1.68" for 25-Year event
Inflow = 2.84 cfs @ 12.38 hrs, Volume= 0.450 af
Primary = 2.84 cfs @ 12.38 hrs, Volume= 0.450 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs

Link 2L: SP-2



Time span=1.00-24.00 hrs, dt=0.03 hrs, 768 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Web Rd-N Runoff Area=18,940 sf 59.65% Impervious Runoff Depth>4.61"
Flow Length=225' Tc=11.8 min CN=78 Runoff=1.77 cfs 0.167 af

Subcatchment 2S: Web RD S Runoff Area=21,022 sf 30.46% Impervious Runoff Depth>3.11"
Flow Length=217' Tc=12.9 min CN=64 Runoff=1.28 cfs 0.125 af

Subcatchment 3S: Turner RD Runoff Area=118,720 sf 14.05% Impervious Runoff Depth>2.30"
Flow Length=501' Tc=27.6 min CN=56 Runoff=3.58 cfs 0.521 af

Subcatchment 4S: Lawn Pleas-W Runoff Area=15,481 sf 52.02% Impervious Runoff Depth>4.17"
Flow Length=114' Tc=9.8 min CN=74 Runoff=1.41 cfs 0.124 af

Subcatchment 5S: Lawn Pleas-E Runoff Area=19,515 sf 60.48% Impervious Runoff Depth>4.72"
Flow Length=230' Tc=11.8 min CN=79 Runoff=1.86 cfs 0.176 af

Pond 1P: CB-Web N Peak Elev=75.35' Inflow=1.77 cfs 0.167 af
12.0" Round Culvert n=0.012 L=30.0' S=0.0133 '/' Outflow=1.77 cfs 0.167 af

Pond 2P: Peak Elev=74.27' Inflow=1.28 cfs 0.125 af
8.0" Round Culvert n=0.013 L=50.0' S=0.0180 '/' Outflow=1.28 cfs 0.125 af

Pond 3P: Peak Elev=93.26' Inflow=3.58 cfs 0.521 af
8.0" Round Culvert n=0.013 L=197.0' S=0.0051 '/' Outflow=3.58 cfs 0.521 af

Pond 4P: Peak Elev=75.93' Inflow=1.41 cfs 0.124 af
12.0" Round Culvert n=0.013 L=55.0' S=0.0455 '/' Outflow=1.41 cfs 0.124 af

Pond 5P: CB-Pleas E Peak Elev=75.98' Inflow=3.62 cfs 0.343 af
12.0" Round Culvert n=0.013 L=50.0' S=0.0500 '/' Outflow=3.62 cfs 0.343 af

Pond 6P: Peak Elev=73.10' Inflow=1.41 cfs 0.124 af
30.0" Round Culvert n=0.013 L=254.0' S=0.0102 '/' Outflow=1.41 cfs 0.124 af

Link 1L: SP-1 Inflow=5.01 cfs 0.466 af
Primary=5.01 cfs 0.466 af

Link 2L: SP-2 Inflow=4.27 cfs 0.646 af
Primary=4.27 cfs 0.646 af

Total Runoff Area = 4.446 ac Runoff Volume = 1.113 af Average Runoff Depth = 3.00"
72.00% Pervious = 3.201 ac 28.00% Impervious = 1.245 ac

Summary for Subcatchment 1S: Web Rd-N

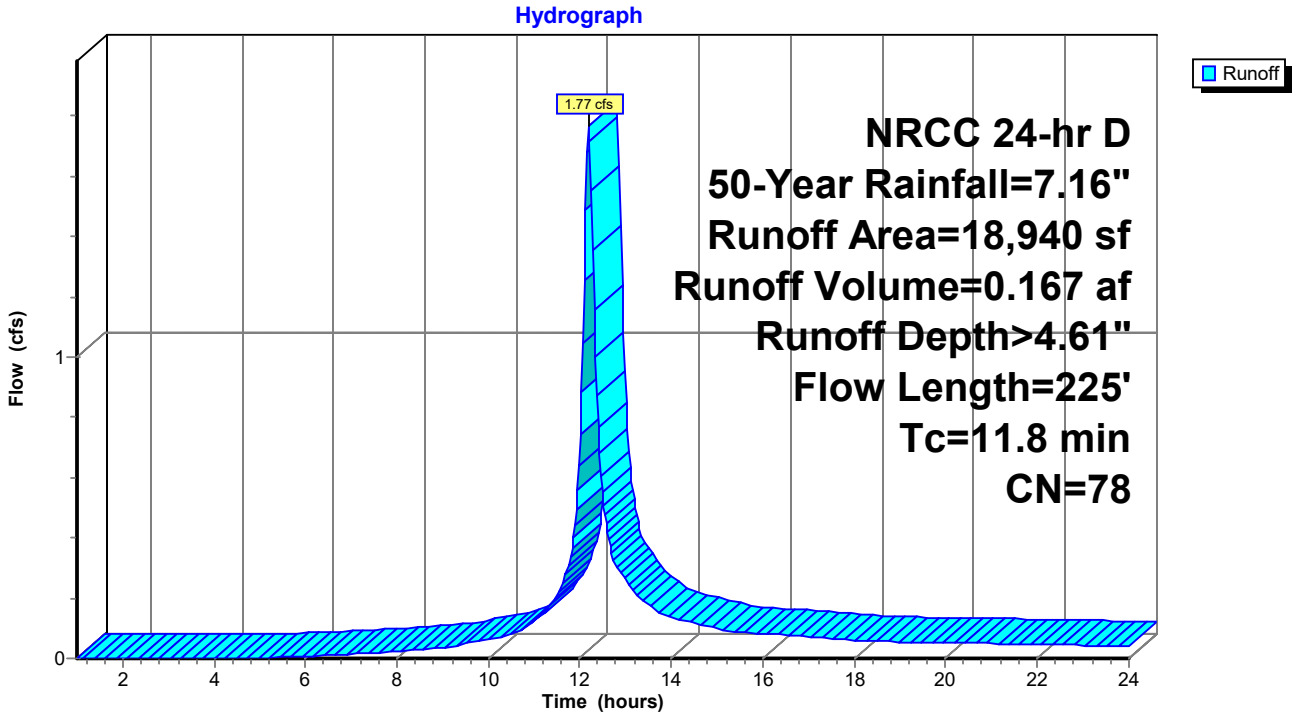
Runoff = 1.77 cfs @ 12.19 hrs, Volume= 0.167 af, Depth> 4.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 50-Year Rainfall=7.16"

Area (sf)	CN	Description
11,298	98	Paved parking, HSG A
7,642	49	50-75% Grass cover, Fair, HSG A
18,940	78	Weighted Average
7,642		40.35% Pervious Area
11,298		59.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	50	0.0125	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
1.0	175	0.0225	3.04		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
11.8	225	Total			

Subcatchment 1S: Web Rd-N



Summary for Subcatchment 2S: Web RD S

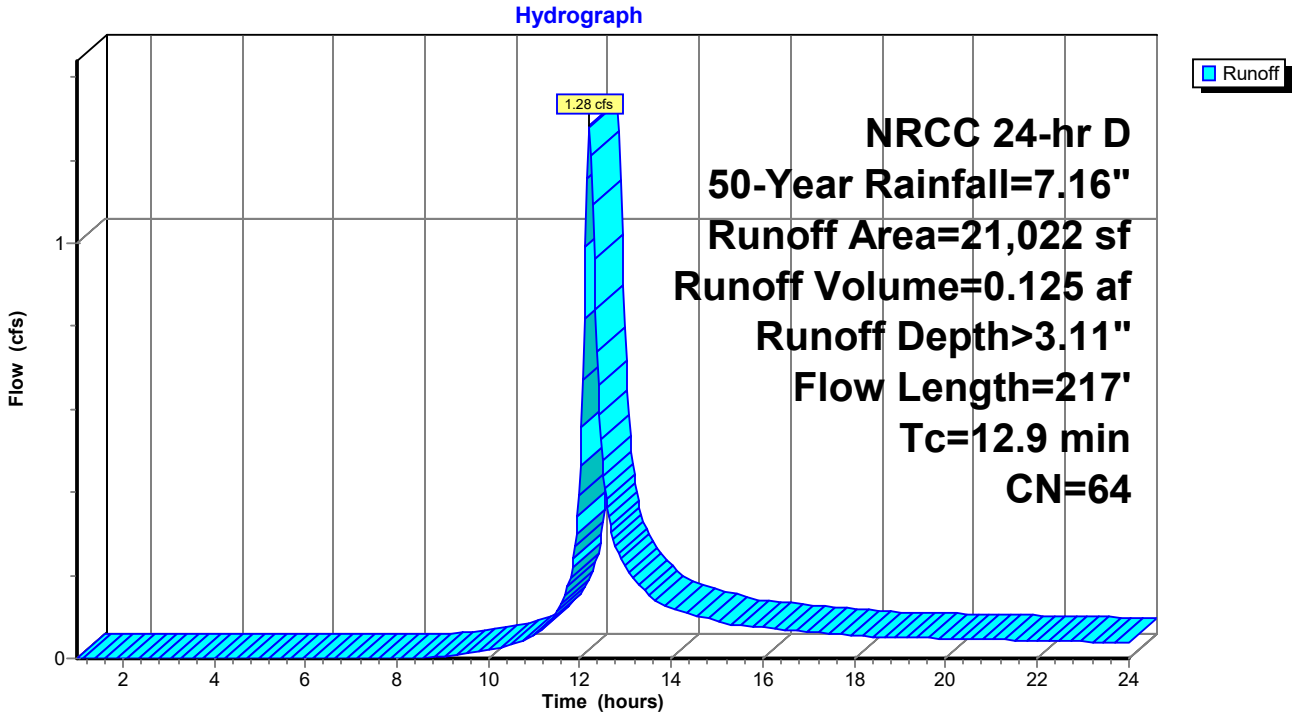
Runoff = 1.28 cfs @ 12.21 hrs, Volume= 0.125 af, Depth> 3.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 50-Year Rainfall=7.16"

Area (sf)	CN	Description
6,403	98	Paved parking, HSG A
14,619	49	50-75% Grass cover, Fair, HSG A
21,022	64	Weighted Average
14,619		69.54% Pervious Area
6,403		30.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0150	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.9	117	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
12.9	217	Total			

Subcatchment 2S: Web RD S



Summary for Subcatchment 3S: Turner RD

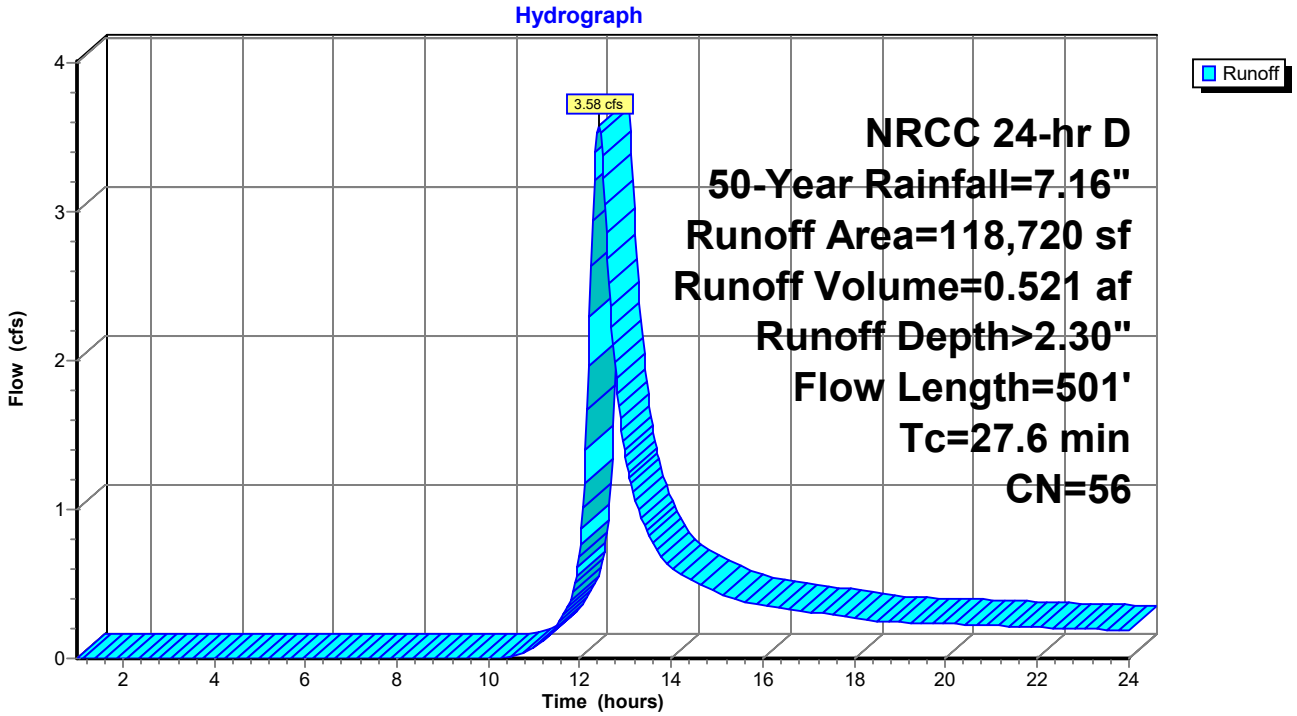
Runoff = 3.58 cfs @ 12.41 hrs, Volume= 0.521 af, Depth> 2.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 50-Year Rainfall=7.16"

Area (sf)	CN	Description
16,677	98	Paved parking, HSG A
102,043	49	50-75% Grass cover, Fair, HSG A
118,720	56	Weighted Average
102,043		85.95% Pervious Area
16,677		14.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7	132	0.0075	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
7.9	369	0.0125	0.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
27.6	501	Total			

Subcatchment 3S: Turner RD



Summary for Subcatchment 4S: Lawn Pleas-W

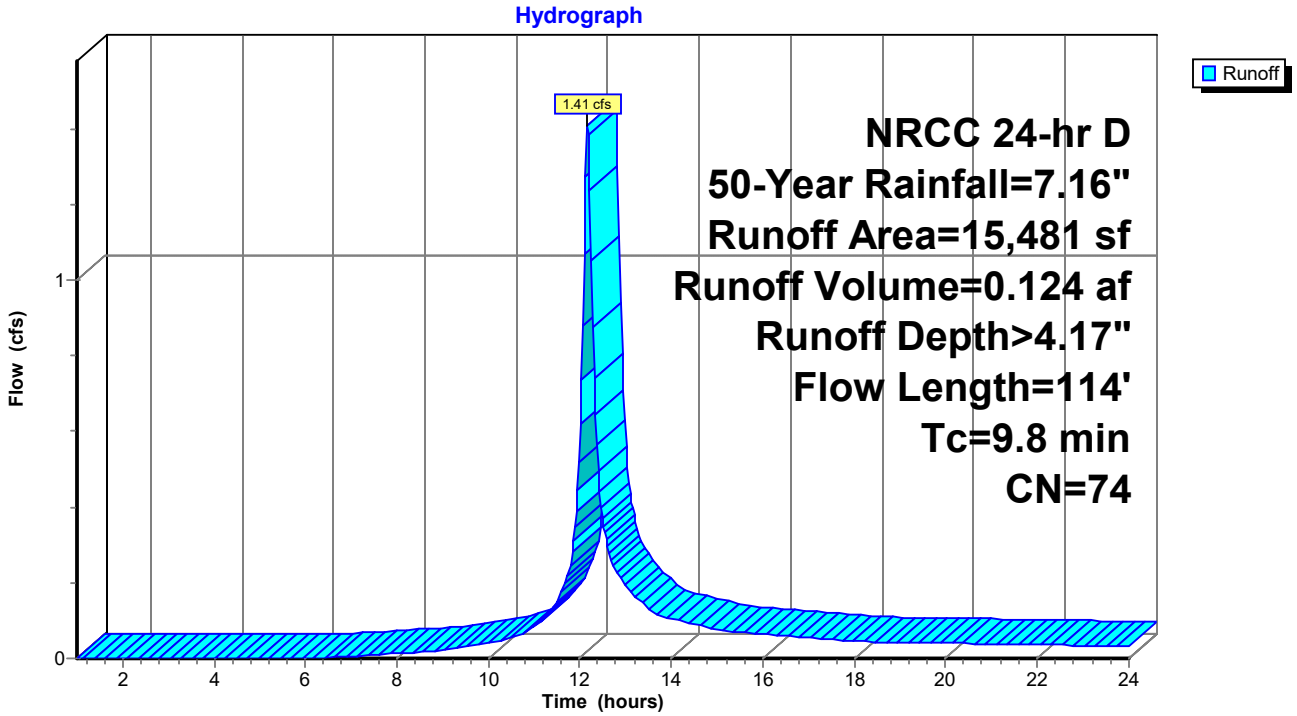
Runoff = 1.41 cfs @ 12.17 hrs, Volume= 0.124 af, Depth> 4.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 50-Year Rainfall=7.16"

Area (sf)	CN	Description
7,428	49	50-75% Grass cover, Fair, HSG A
8,053	98	Paved parking, HSG A
15,481	74	Weighted Average
7,428		47.98% Pervious Area
8,053		52.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	66	0.0125	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.6	48	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.8	114	Total			

Subcatchment 4S: Lawn Pleas-W



Summary for Subcatchment 5S: Lawn Pleas-E

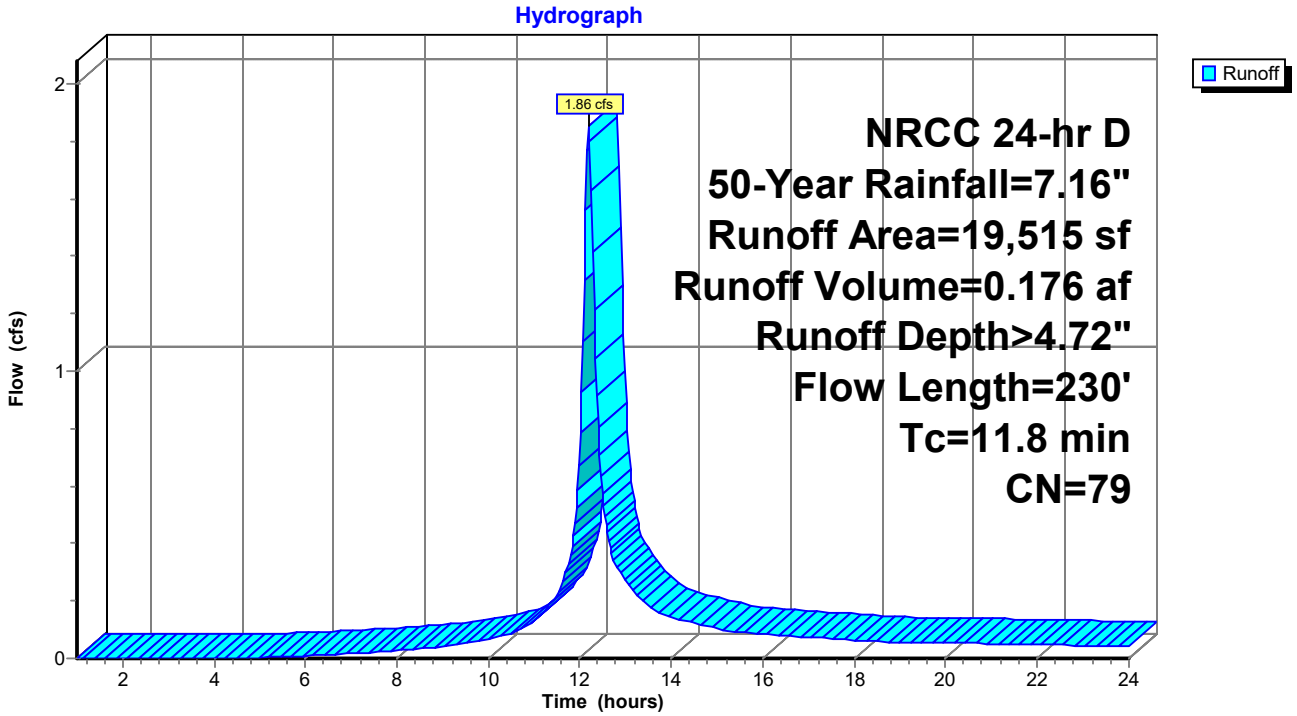
Runoff = 1.86 cfs @ 12.19 hrs, Volume= 0.176 af, Depth> 4.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 50-Year Rainfall=7.16"

Area (sf)	CN	Description
11,802	98	Paved parking, HSG A
7,713	49	50-75% Grass cover, Fair, HSG A
19,515	79	Weighted Average
7,713		39.52% Pervious Area
11,802		60.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	70	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
1.2	160	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
11.8	230	Total			

Subcatchment 5S: Lawn Pleas-E



Summary for Pond 1P: CB-Web N

[57] Hint: Peaked at 75.35' (Flood elevation advised)

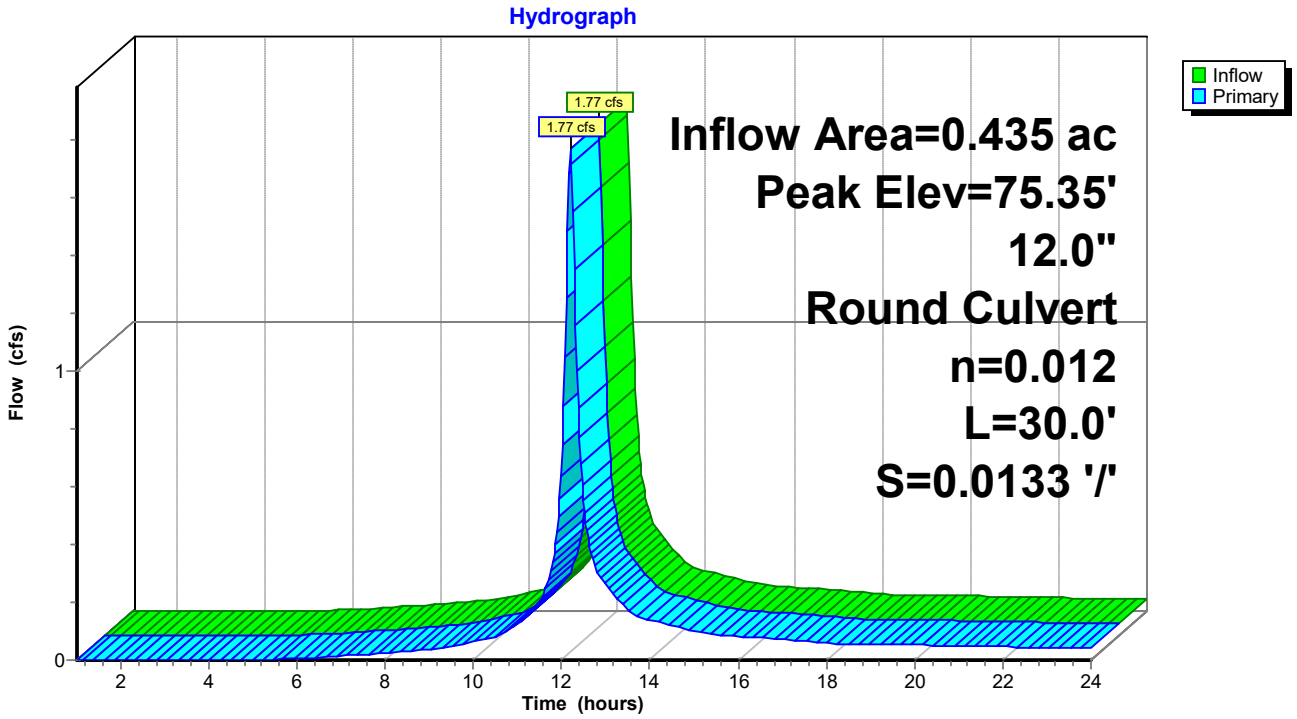
Inflow Area =	0.435 ac, 59.65% Impervious, Inflow Depth > 4.61" for 50-Year event				
Inflow =	1.77 cfs @ 12.19 hrs, Volume=	0.167 af			
Outflow =	1.77 cfs @ 12.19 hrs, Volume=	0.167 af, Atten= 0%, Lag= 0.0 min			
Primary =	1.77 cfs @ 12.19 hrs, Volume=	0.167 af			

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 75.35' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	74.50'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 74.50' / 74.10' S= 0.0133 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.76 cfs @ 12.19 hrs HW=75.35' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.76 cfs @ 2.48 fps)

Pond 1P: CB-Web N



Summary for Pond 2P:

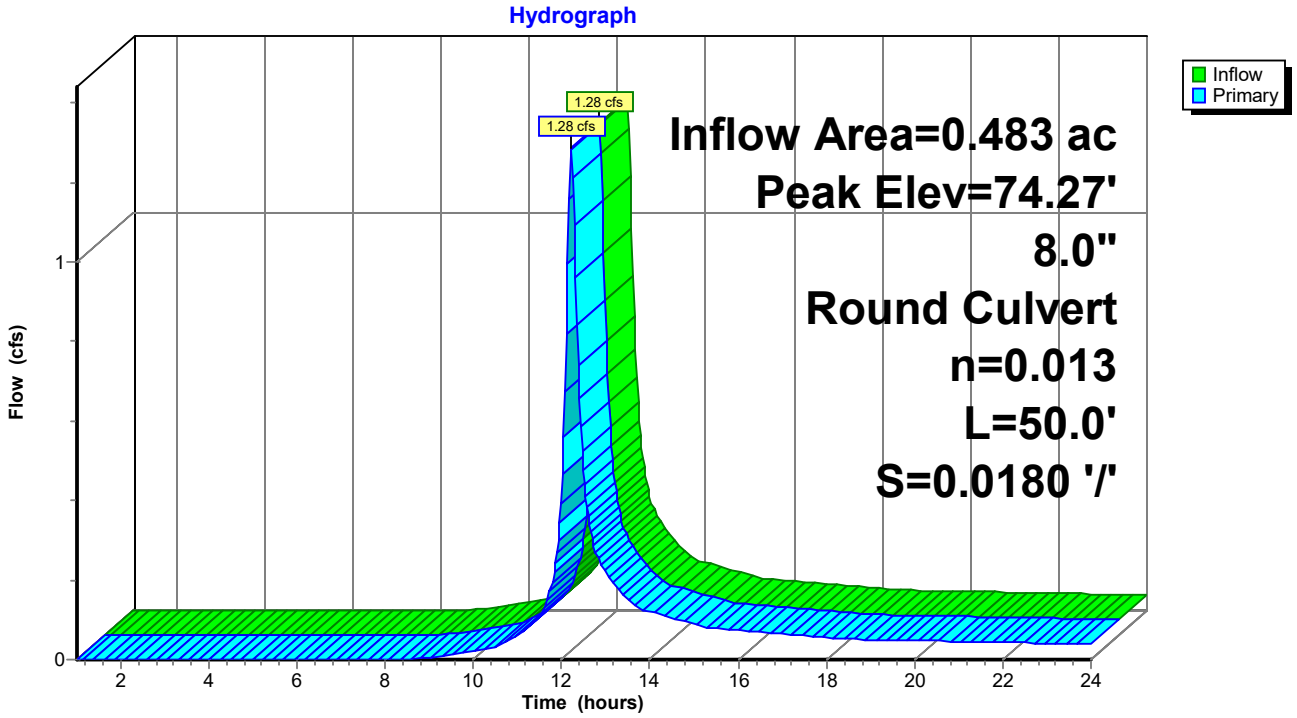
Inflow Area =	0.483 ac, 30.46% Impervious, Inflow Depth > 3.11" for 50-Year event				
Inflow =	1.28 cfs @	12.21 hrs,	Volume=	0.125 af	
Outflow =	1.28 cfs @	12.21 hrs,	Volume=	0.125 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.28 cfs @	12.21 hrs,	Volume=	0.125 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 74.27' @ 12.21 hrs
Flood Elev= 116.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.00'	**8.0" Round Storm Drain** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.00' / 72.10' S= 0.0180 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.35 sf

Primary OutFlow Max=1.28 cfs @ 12.21 hrs HW=74.26' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 1.28 cfs @ 3.66 fps)

Pond 2P:



Summary for Pond 3P:

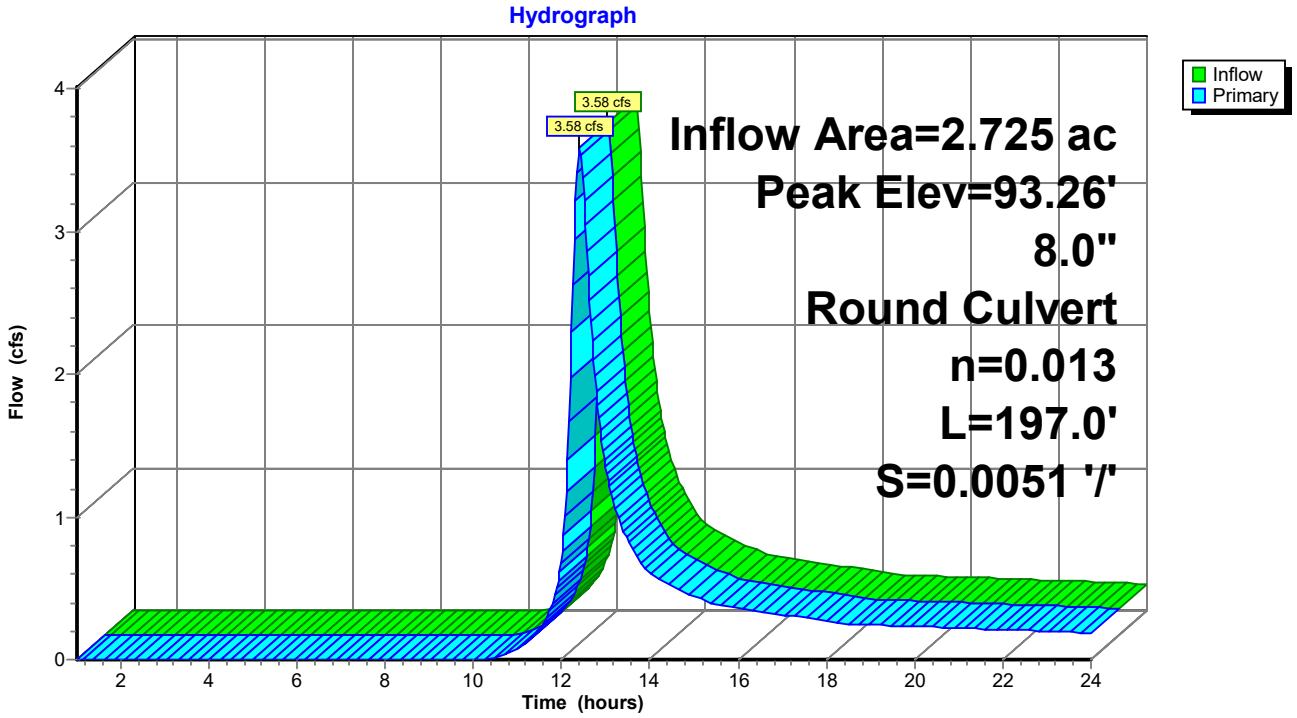
Inflow Area =	2.725 ac,	14.05% Impervious,	Inflow Depth >	2.30"	for 50-Year event
Inflow =	3.58 cfs @	12.41 hrs,	Volume=	0.521 af	
Outflow =	3.58 cfs @	12.41 hrs,	Volume=	0.521 af,	Atten= 0%, Lag= 0.0 min
Primary =	3.58 cfs @	12.41 hrs,	Volume=	0.521 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 93.26' @ 12.41 hrs
Flood Elev= 113.94'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.10'	**8.0" Round Storm Drain** L= 197.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.10' / 72.10' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=3.58 cfs @ 12.41 hrs HW=93.19' (Free Discharge)
└─**1=Storm Drain** (Barrel Controls 3.58 cfs @ 10.25 fps)

Pond 3P:



Summary for Pond 4P:

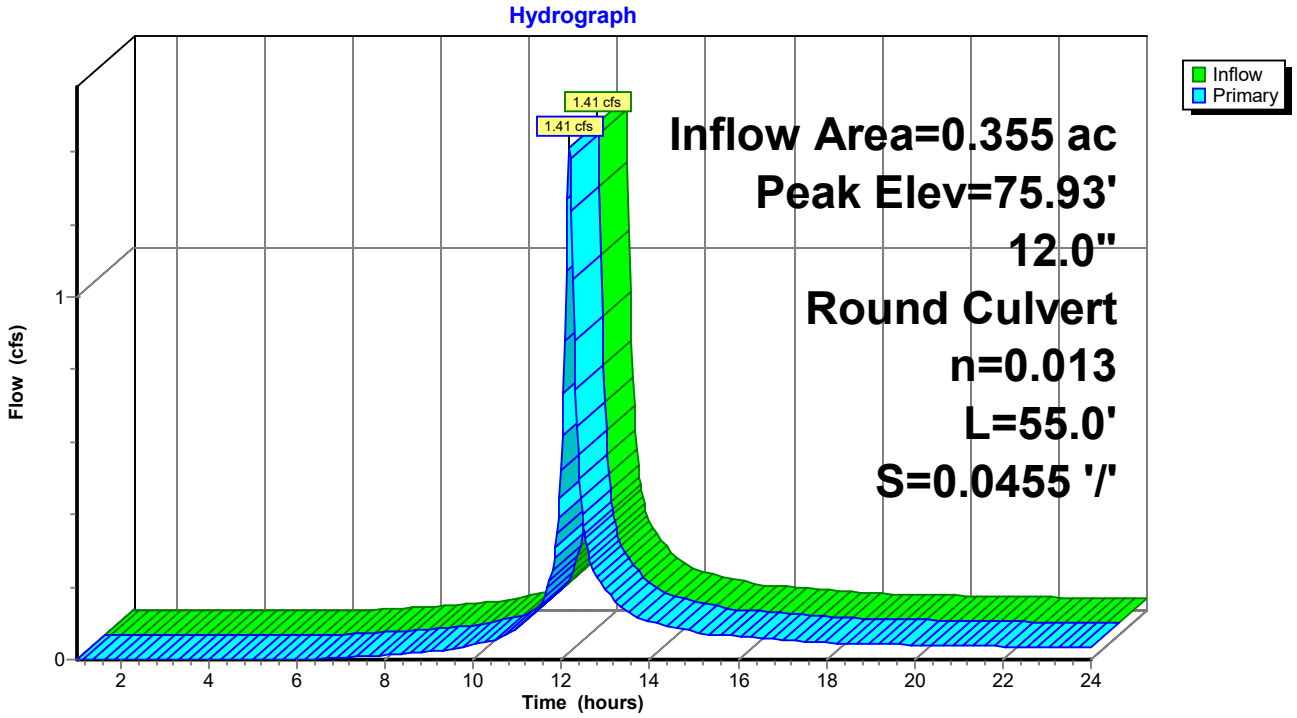
Inflow Area =	0.355 ac, 52.02% Impervious, Inflow Depth > 4.17" for 50-Year event				
Inflow =	1.41 cfs @	12.17 hrs,	Volume=	0.124 af	
Outflow =	1.41 cfs @	12.17 hrs,	Volume=	0.124 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.41 cfs @	12.17 hrs,	Volume=	0.124 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 75.93' @ 12.17 hrs
Flood Elev= 116.29'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.20'	**12.0" Round Storm Drain** L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.20' / 72.70' S= 0.0455 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.38 cfs @ 12.17 hrs HW=75.92' (Free Discharge)
└─**1=Storm Drain** (Inlet Controls 1.38 cfs @ 2.28 fps)

Pond 4P:



Summary for Pond 5P: CB-Pleas E

[81] Warning: Exceeded Pond 1P by 0.62' @ 12.19 hrs

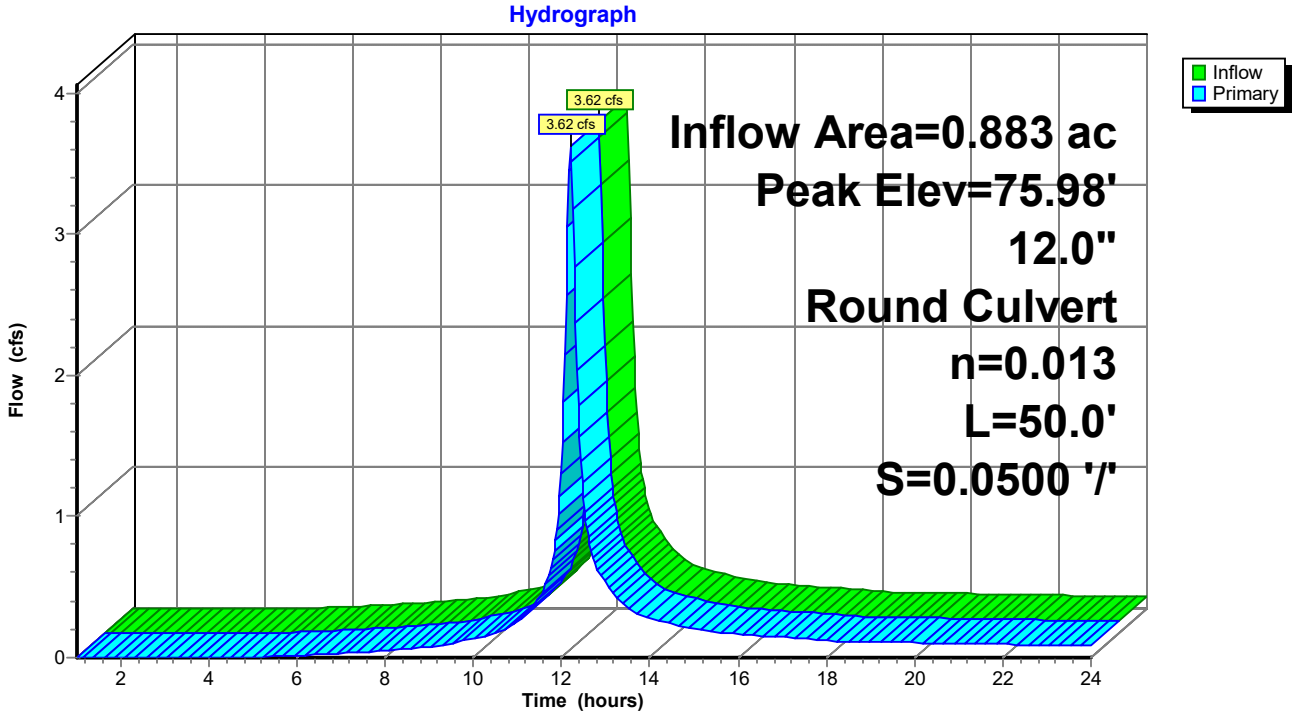
Inflow Area =	0.883 ac, 60.07% Impervious, Inflow Depth > 4.66" for 50-Year event				
Inflow =	3.62 cfs @	12.19 hrs,	Volume=	0.343 af	
Outflow =	3.62 cfs @	12.19 hrs,	Volume=	0.343 af,	Atten= 0%, Lag= 0.0 min
Primary =	3.62 cfs @	12.19 hrs,	Volume=	0.343 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 75.98' @ 12.19 hrs
Flood Elev= 114.79'

Device	Routing	Invert	Outlet Devices
#1	Primary	74.00'	**12.0" Round Storm Drain** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 74.00' / 71.50' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.62 cfs @ 12.19 hrs HW=75.97' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 3.62 cfs @ 4.60 fps)

Pond 5P: CB-Pleas E



Summary for Pond 6P:

[79] Warning: Submerged Pond 4P Primary device # 1 OUTLET by 0.40'

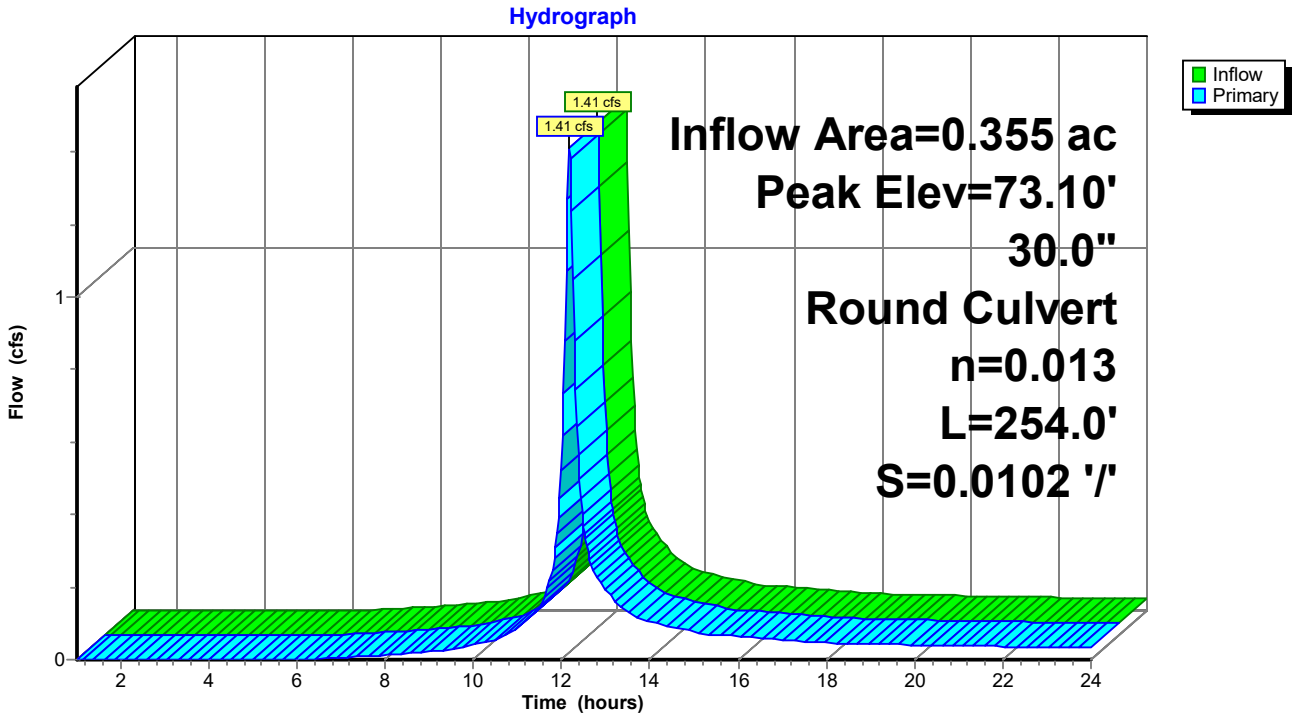
Inflow Area =	0.355 ac, 52.02% Impervious, Inflow Depth > 4.17" for 50-Year event				
Inflow =	1.41 cfs @ 12.17 hrs, Volume=	0.124 af			
Outflow =	1.41 cfs @ 12.17 hrs, Volume=	0.124 af, Atten= 0%, Lag= 0.0 min			
Primary =	1.41 cfs @ 12.17 hrs, Volume=	0.124 af			

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 73.10' @ 12.17 hrs
Flood Elev= 116.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.60'	**30.0" Round Storm Drain** L= 254.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.60' / 70.00' S= 0.0102 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=1.30 cfs @ 12.17 hrs HW=73.10' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 1.30 cfs @ 1.89 fps)

Pond 6P:

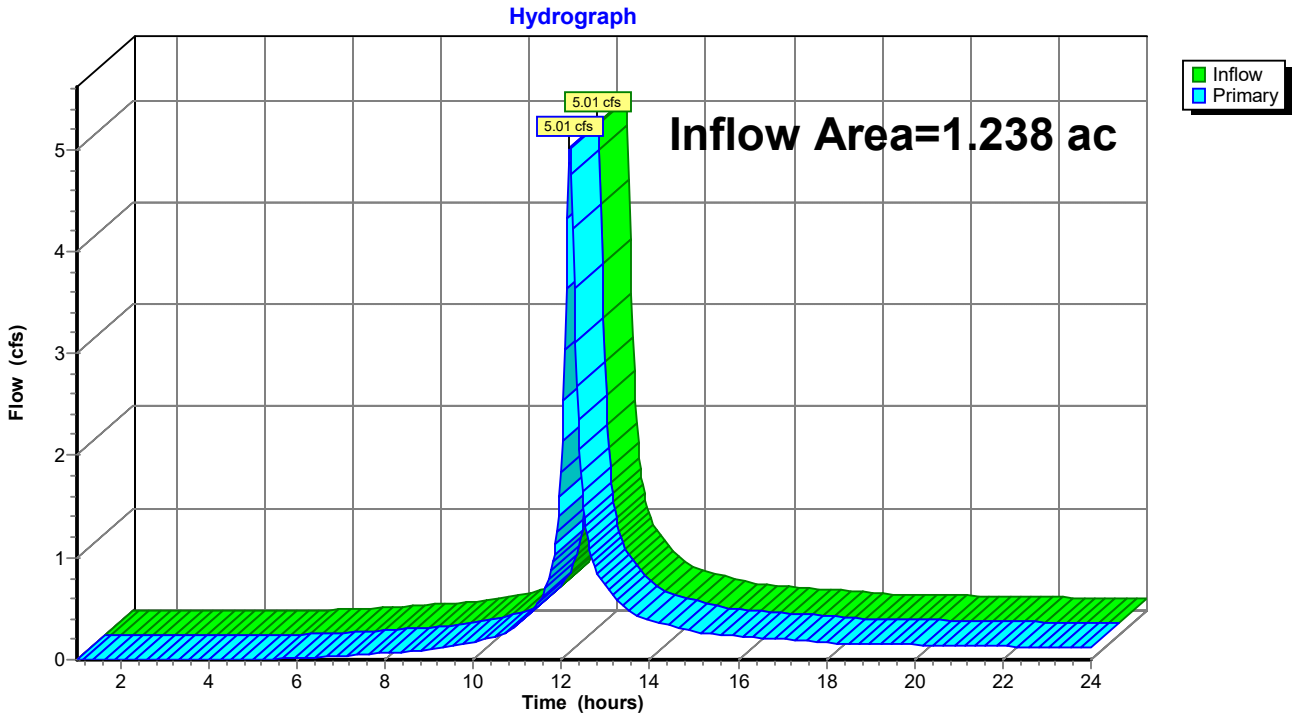


Summary for Link 1L: SP-1

Inflow Area = 1.238 ac, 57.76% Impervious, Inflow Depth > 4.52" for 50-Year event
Inflow = 5.01 cfs @ 12.19 hrs, Volume= 0.466 af
Primary = 5.01 cfs @ 12.19 hrs, Volume= 0.466 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs

Link 1L: SP-1

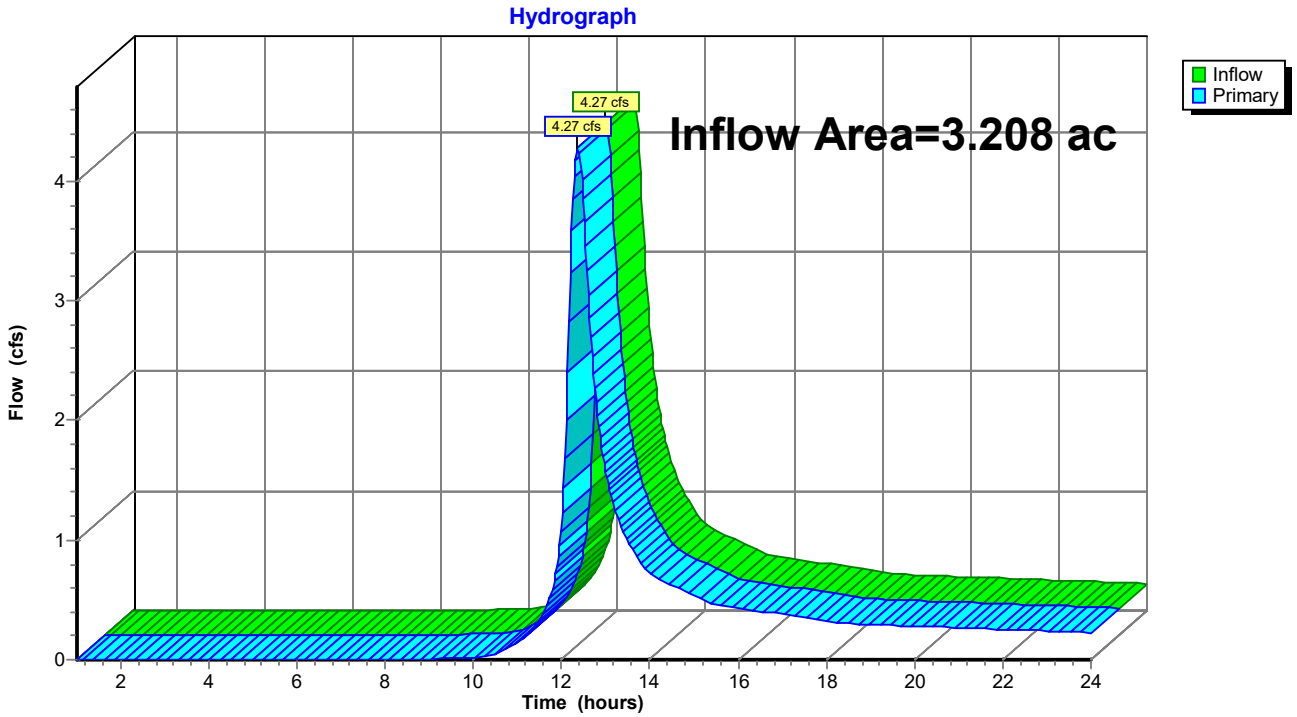


Summary for Link 2L: SP-2

Inflow Area = 3.208 ac, 16.52% Impervious, Inflow Depth > 2.42" for 50-Year event
Inflow = 4.27 cfs @ 12.37 hrs, Volume= 0.646 af
Primary = 4.27 cfs @ 12.37 hrs, Volume= 0.646 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs

Link 2L: SP-2



4219.01
Brunswick Fire Station – Pleasant St.
Brunswick, Cumberland County, Maine

Stormwater – Post Development Calculations

Prepared For: Town of Brunswick
Attn: Chief Brillant
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Brunswick, Maine 04011

Prepared By: WBRC Architects-Engineers
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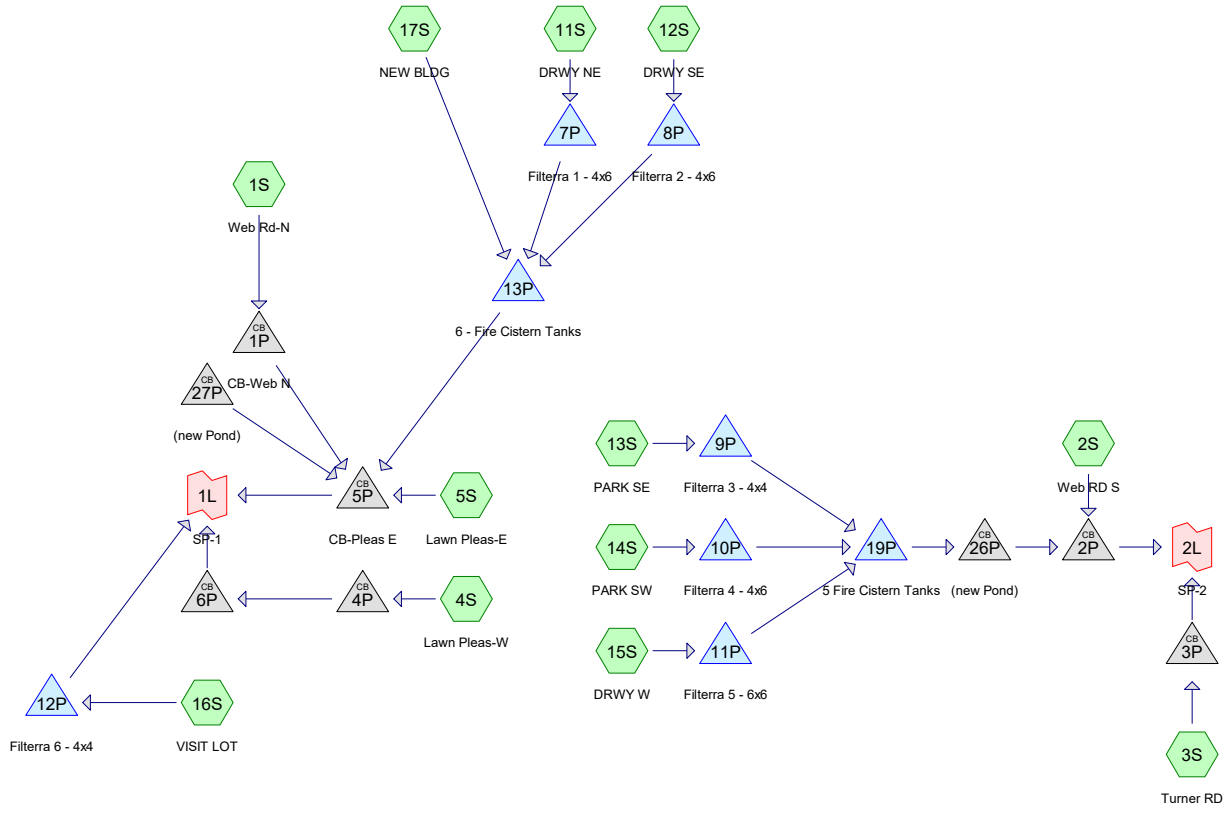


Subcat Reach Pond Link

Routing Diagram for 421900-POST_STM-rev051920
Prepared by WBRC, Printed 5/26/2020
HydroCAD® 10.00-25 s/n 00653 © 2019 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.993	49	50-75% Grass cover, Fair, HSG A (2S, 3S, 4S, 5S, 13S, 14S, 15S, 16S)
0.082	39	>75% Grass cover, Good, HSG A (1S)
0.458	98	Paved parking & roofs (3S, 5S)
1.317	98	Paved parking, HSG A (1S, 2S, 4S, 11S, 12S, 13S, 14S, 15S, 16S)
0.597	98	Roofs, HSG A (17S)
4.446	**75**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
3.989	HSG A	1S, 2S, 3S, 4S, 5S, 11S, 12S, 13S, 14S, 15S, 16S, 17S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.458	Other	3S, 5S
4.446		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
1.993	0.000	0.000	0.000	0.000	1.993	50-75% Grass cover, Fair	2S, 3S, 4S, 5S, 13S, 14S, 15S, 16S
0.082	0.000	0.000	0.000	0.000	0.082	>75% Grass cover, Good	1S
1.317	0.000	0.000	0.000	0.000	1.317	Paved parking	1S, 2S, 4S, 11S, 12S, 13S, 14S, 15S, 16S
0.000	0.000	0.000	0.000	0.458	0.458	Paved parking & roofs	3S, 5S
0.597	0.000	0.000	0.000	0.000	0.597	Roofs	17S
3.989	**0.000**	**0.000**	**0.000**	**0.458**	**4.446**	**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	72.40	72.10	30.0	0.0100	0.012	12.0	0.0	0.0
2	2P	72.60	72.10	50.0	0.0100	0.013	12.0	0.0	0.0
3	3P	73.10	72.10	197.0	0.0051	0.013	8.0	0.0	0.0
4	4P	75.20	72.70	55.0	0.0455	0.013	12.0	0.0	0.0
5	5P	72.00	71.50	50.0	0.0100	0.013	18.0	0.0	0.0
6	6P	72.60	70.00	254.0	0.0102	0.013	30.0	0.0	0.0
7	7P	74.42	74.33	10.0	0.0090	0.013	8.0	0.0	0.0
8	8P	74.42	74.33	10.0	0.0090	0.013	8.0	0.0	0.0
9	9P	76.17	76.08	10.0	0.0090	0.013	8.0	0.0	0.0
10	10P	76.17	76.08	10.0	0.0090	0.013	6.0	0.0	0.0
11	11P	76.92	76.83	10.0	0.0090	0.013	6.0	0.0	0.0
12	12P	75.12	75.08	10.0	0.0040	0.013	8.0	0.0	0.0
14	26P	73.50	72.70	70.0	0.0114	0.010	12.0	0.0	0.0
15	27P	72.40	72.10	30.0	0.0100	0.013	18.0	0.0	0.0

Time span=1.00-24.00 hrs, dt=0.03 hrs, 768 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Web Rd-N Runoff Area=7,980 sf 55.31% Impervious Runoff Depth>0.92"
Flow Length=174' Tc=12.7 min CN=72 Runoff=0.14 cfs 0.014 af

Subcatchment 2S: Web RD S Runoff Area=10,764 sf 46.11% Impervious Runoff Depth>0.92"
Flow Length=223' Tc=5.0 min CN=72 Runoff=0.25 cfs 0.019 af

Subcatchment 3S: Turner RD Runoff Area=68,885 sf 16.27% Impervious Runoff Depth>0.30"
Flow Length=576' Tc=29.3 min CN=57 Runoff=0.12 cfs 0.040 af

Subcatchment 4S: Lawn Pleas-W Runoff Area=14,692 sf 52.63% Impervious Runoff Depth>1.08"
Flow Length=114' Tc=9.8 min CN=75 Runoff=0.34 cfs 0.030 af

Subcatchment 5S: Lawn Pleas-E Runoff Area=14,348 sf 60.79% Impervious Runoff Depth>1.32"
Flow Length=215' Tc=9.9 min CN=79 Runoff=0.41 cfs 0.036 af

Subcatchment 11S: DRWY NE Runoff Area=4,660 sf 100.00% Impervious Runoff Depth>2.96"
Flow Length=105' Tc=5.0 min CN=98 Runoff=0.32 cfs 0.026 af

Subcatchment 12S: DRWY SE Runoff Area=5,373 sf 100.00% Impervious Runoff Depth>2.96"
Flow Length=105' Tc=5.0 min CN=98 Runoff=0.37 cfs 0.030 af

Subcatchment 13S: PARK SE Runoff Area=10,014 sf 68.49% Impervious Runoff Depth>1.60"
Flow Length=165' Tc=5.0 min CN=83 Runoff=0.43 cfs 0.031 af

Subcatchment 14S: PARK SW Runoff Area=8,603 sf 77.35% Impervious Runoff Depth>1.90"
Flow Length=158' Tc=5.0 min CN=87 Runoff=0.43 cfs 0.031 af

Subcatchment 15S: DRWY W Runoff Area=15,708 sf 79.34% Impervious Runoff Depth>1.99"
Flow Length=183' Tc=5.0 min CN=88 Runoff=0.82 cfs 0.060 af

Subcatchment 16S: VISIT LOT Runoff Area=6,630 sf 63.88% Impervious Runoff Depth>1.39"
Flow Length=81' Tc=5.0 min CN=80 Runoff=0.25 cfs 0.018 af

Subcatchment 17S: NEW BLDG Runoff Area=26,024 sf 100.00% Impervious Runoff Depth>2.96"
Flow Length=75' Slope=0.0050 '/' Tc=5.0 min CN=98 Runoff=1.77 cfs 0.147 af

Pond 1P: CB-Web N Peak Elev=72.60' Inflow=0.14 cfs 0.014 af
12.0" Round Culvert n=0.012 L=30.0' S=0.0100 '/' Outflow=0.14 cfs 0.014 af

Pond 2P: Peak Elev=72.81' Inflow=0.28 cfs 0.081 af
12.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=0.28 cfs 0.081 af

Pond 3P: Peak Elev=73.24' Inflow=0.12 cfs 0.040 af
8.0" Round Culvert n=0.013 L=197.0' S=0.0051 '/' Outflow=0.12 cfs 0.040 af

Pond 4P: Peak Elev=75.47' Inflow=0.34 cfs 0.030 af
12.0" Round Culvert n=0.013 L=55.0' S=0.0455 '/' Outflow=0.34 cfs 0.030 af

Pond 5P: CB-Pleas E Peak Elev=72.40' Inflow=0.69 cfs 0.222 af
18.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=0.69 cfs 0.222 af

Pond 6P: Peak Elev=72.74' Inflow=0.34 cfs 0.030 af
30.0" Round Culvert n=0.013 L=254.0' S=0.0102 '/' Outflow=0.34 cfs 0.030 af

Pond 7P: Filterra 1 - 4x6 Peak Elev=77.48' Storage=21 cf Inflow=0.32 cfs 0.026 af
Outflow=0.32 cfs 0.027 af

Pond 8P: Filterra 2 - 4x6 Peak Elev=77.49' Storage=22 cf Inflow=0.37 cfs 0.030 af
Outflow=0.36 cfs 0.030 af

Pond 9P: Filterra 3 - 4x4 Peak Elev=79.27' Storage=15 cf Inflow=0.43 cfs 0.031 af
Outflow=0.42 cfs 0.031 af

Pond 10P: Filterra 4 - 4x6 Peak Elev=79.27' Storage=22 cf Inflow=0.43 cfs 0.031 af
Outflow=0.43 cfs 0.031 af

Pond 11P: Filterra 5 - 6x6 Peak Elev=80.12' Storage=36 cf Inflow=0.82 cfs 0.060 af
Outflow=0.83 cfs 0.060 af

Pond 12P: Filterra 6 - 4x4 Peak Elev=78.16' Storage=14 cf Inflow=0.25 cfs 0.018 af
Outflow=0.24 cfs 0.018 af

Pond 13P: 6 - Fire Cistern Tanks Peak Elev=75.67' Storage=4,167 cf Inflow=2.45 cfs 0.204 af
Outflow=0.17 cfs 0.171 af

Pond 19P: 5 Fire Cistern Tanks Peak Elev=75.70' Storage=2,866 cf Inflow=1.68 cfs 0.122 af
Outflow=0.13 cfs 0.062 af

Pond 26P: (new Pond) Peak Elev=73.69' Inflow=0.13 cfs 0.062 af
12.0" Round Culvert n=0.010 L=70.0' S=0.0114 '/' Outflow=0.13 cfs 0.062 af

Pond 27P: (new Pond) Peak Elev=0.00'
18.0" Round Culvert n=0.013 L=30.0' S=0.0100 '/' Primary=0.00 cfs 0.000 af

Link 1L: SP-1 Inflow=1.21 cfs 0.270 af
Primary=1.21 cfs 0.270 af

Link 2L: SP-2 Inflow=0.28 cfs 0.121 af
Primary=0.28 cfs 0.121 af

Total Runoff Area = 4.446 ac Runoff Volume = 0.482 af Average Runoff Depth = 1.30"
46.66% Pervious = 2.075 ac 53.34% Impervious = 2.372 ac

Summary for Subcatchment 1S: Web Rd-N

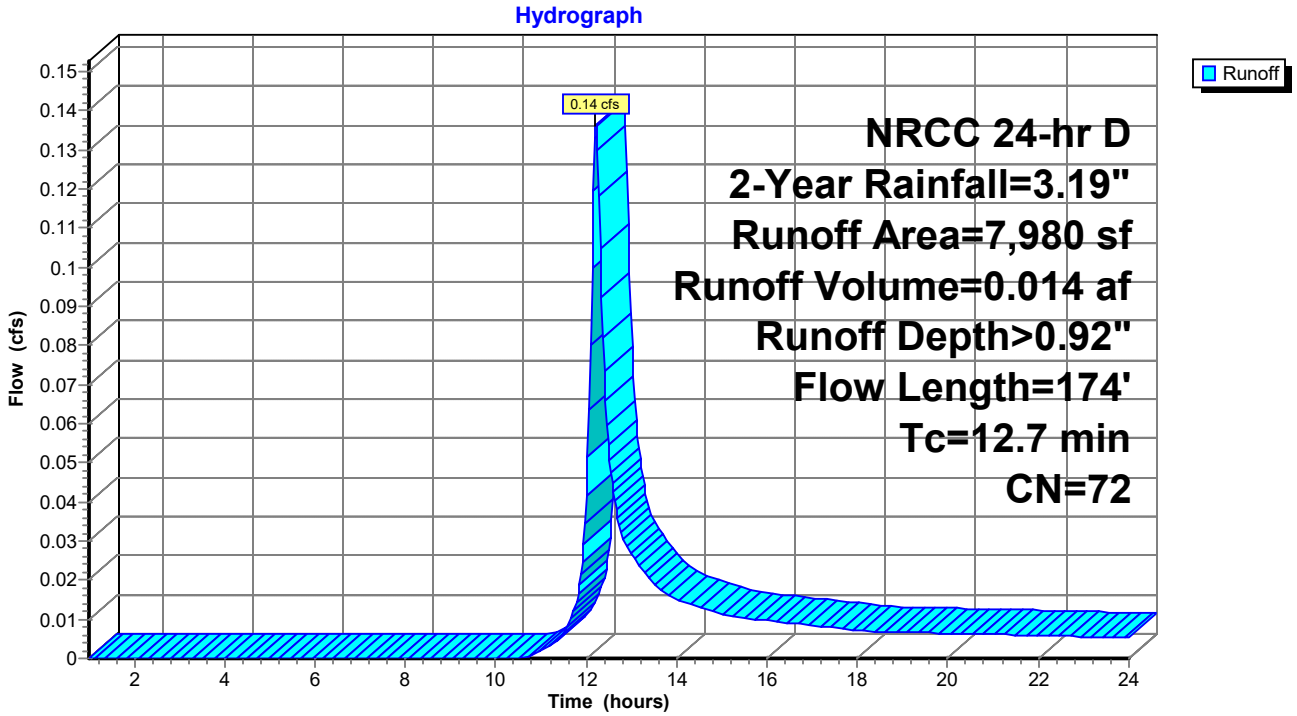
Runoff = 0.14 cfs @ 12.22 hrs, Volume= 0.014 af, Depth> 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 2-Year Rainfall=3.19"

Area (sf)	CN	Description
4,414	98	Paved parking, HSG A
3,566	39	>75% Grass cover, Good, HSG A
7,980	72	Weighted Average
3,566		44.69% Pervious Area
4,414		55.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	81	0.0250	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.7	93	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
12.7	174	Total			

Subcatchment 1S: Web Rd-N



Summary for Subcatchment 2S: Web RD S

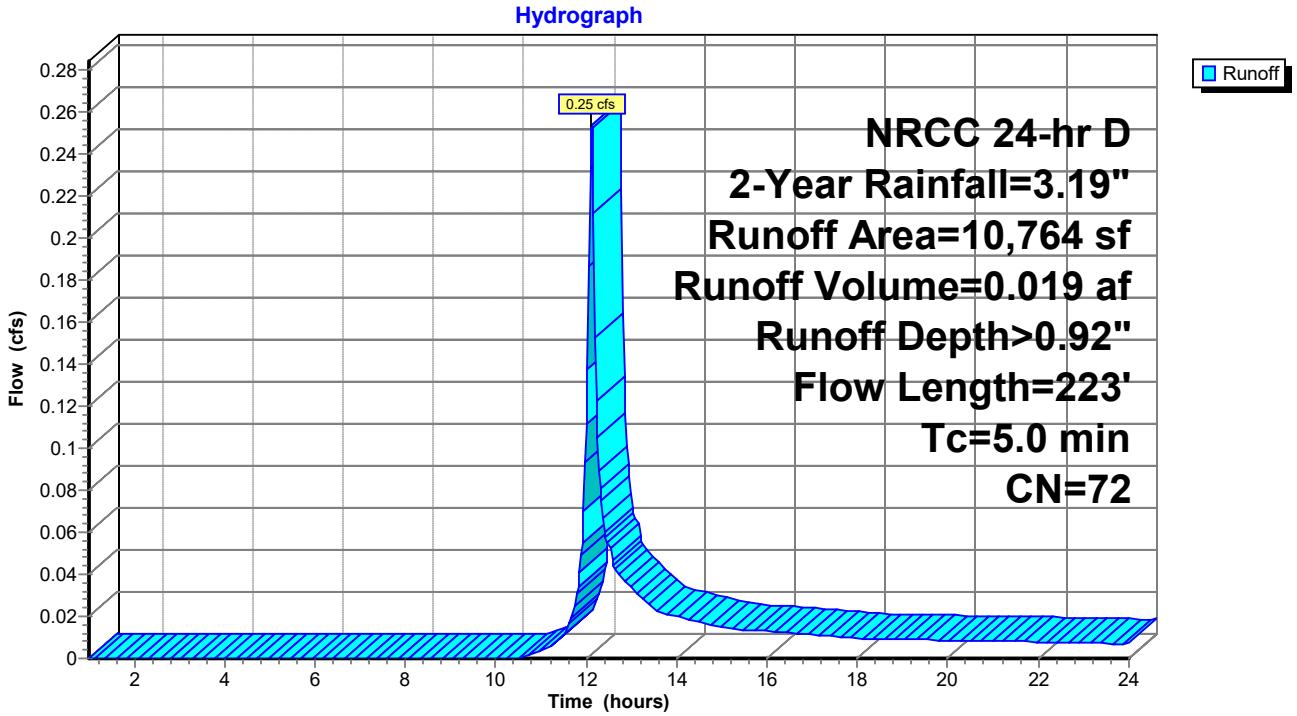
Runoff = 0.25 cfs @ 12.12 hrs, Volume= 0.019 af, Depth> 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 2-Year Rainfall=3.19"

Area (sf)	CN	Description
4,963	98	Paved parking, HSG A
5,801	49	50-75% Grass cover, Fair, HSG A
10,764	72	Weighted Average
5,801		53.89% Pervious Area
4,963		46.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0250	0.90		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
1.5	211	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	223	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 2S: Web RD S



Summary for Subcatchment 3S: Turner RD

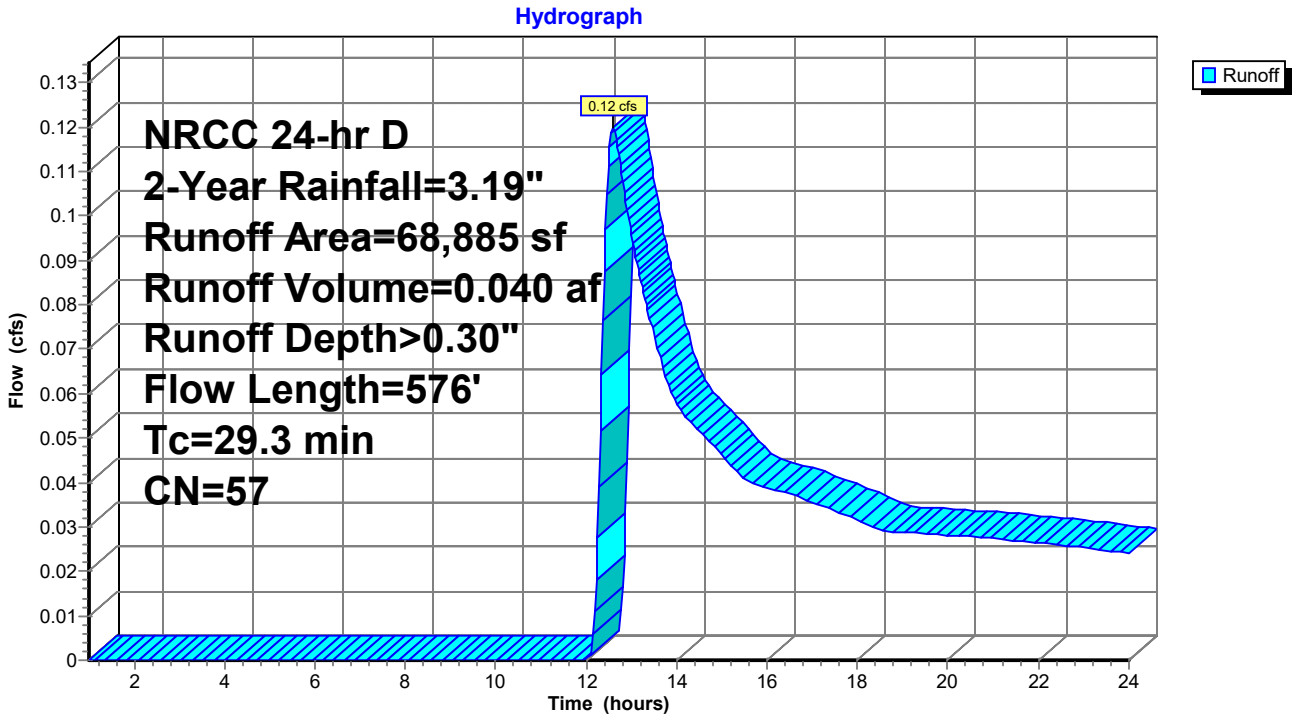
Runoff = 0.12 cfs @ 12.59 hrs, Volume= 0.040 af, Depth> 0.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 2-Year Rainfall=3.19"

	Area (sf)	CN	Description
*	11,210	98	Paved parking & roofs
	57,675	49	50-75% Grass cover, Fair, HSG A
	68,885	57	Weighted Average
	57,675		83.73% Pervious Area
	11,210		16.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7	132	0.0075	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
8.7	315	0.0075	0.61		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	129	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
29.3	576	Total			

Subcatchment 3S: Turner RD



Summary for Subcatchment 4S: Lawn Pleas-W

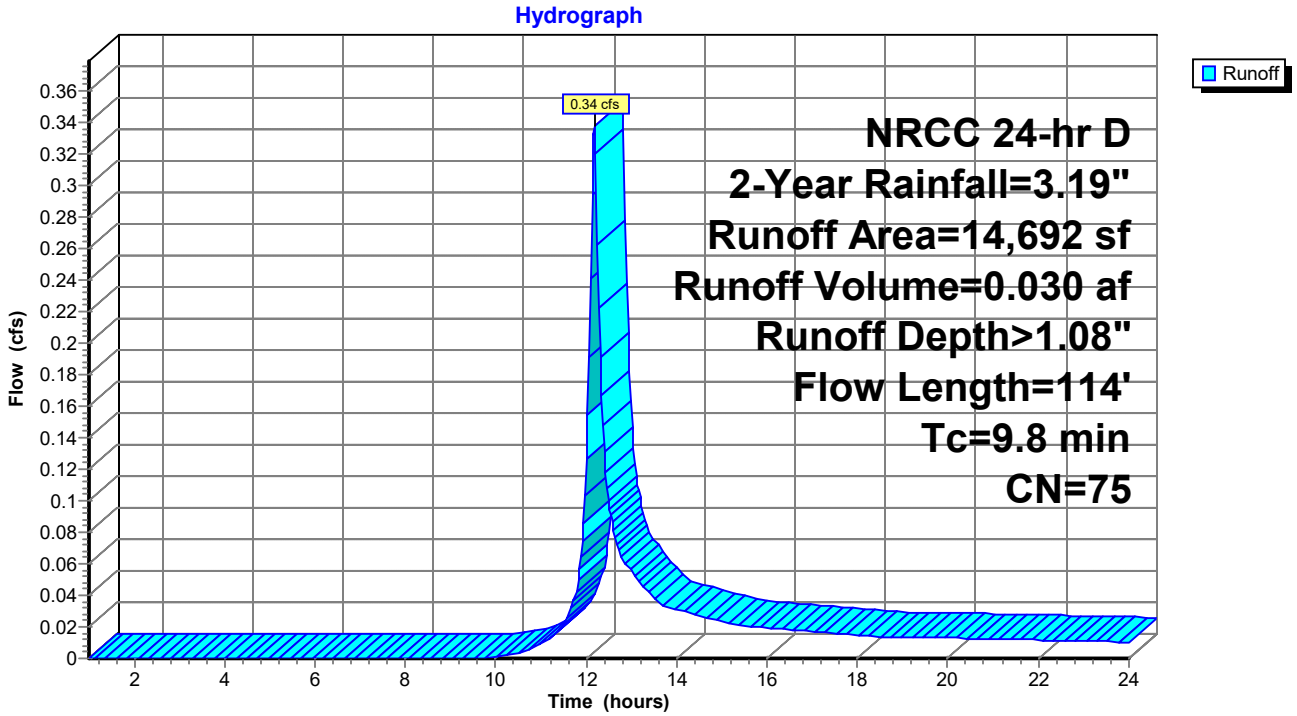
Runoff = 0.34 cfs @ 12.18 hrs, Volume= 0.030 af, Depth> 1.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 2-Year Rainfall=3.19"

Area (sf)	CN	Description
6,959	49	50-75% Grass cover, Fair, HSG A
7,733	98	Paved parking, HSG A
14,692	75	Weighted Average
6,959		47.37% Pervious Area
7,733		52.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	66	0.0125	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.6	48	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.8	114	Total			

Subcatchment 4S: Lawn Pleas-W



Summary for Subcatchment 5S: Lawn Pleas-E

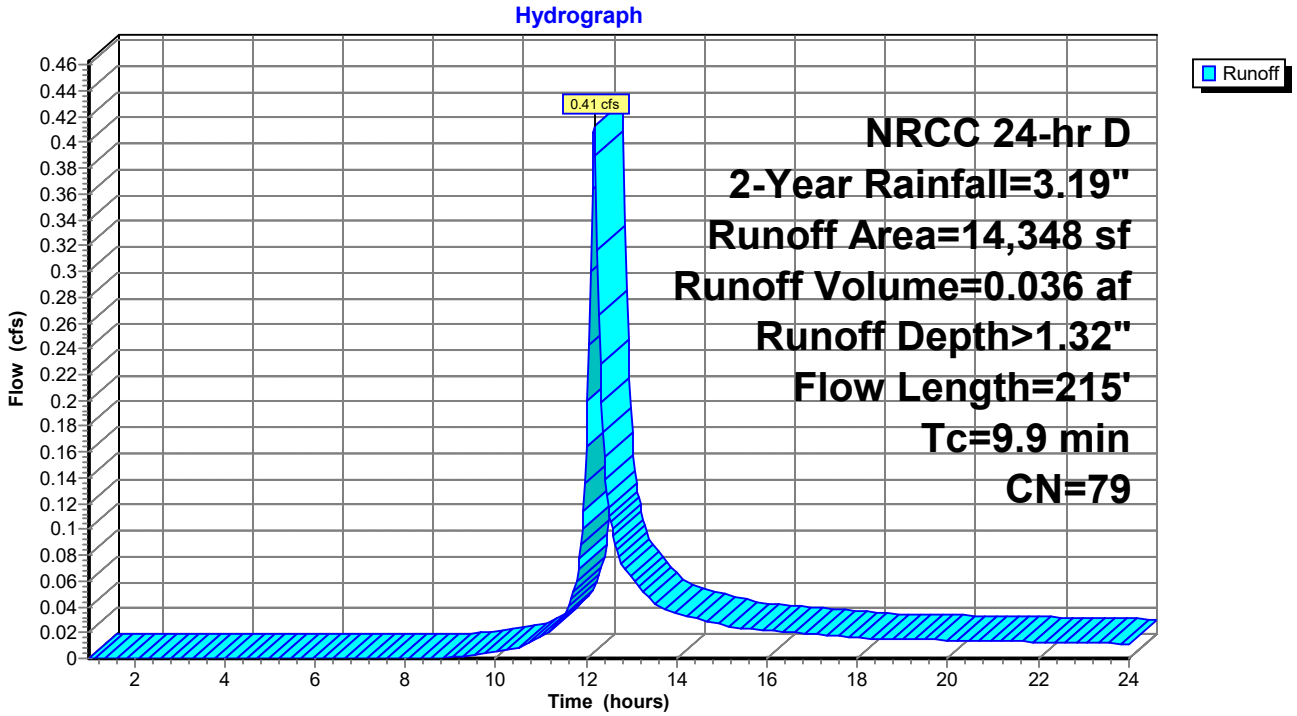
Runoff = 0.41 cfs @ 12.18 hrs, Volume= 0.036 af, Depth> 1.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 2-Year Rainfall=3.19"

	Area (sf)	CN	Description
*	8,722	98	Paved parking & roofs
	5,626	49	50-75% Grass cover, Fair, HSG A
	14,348	79	Weighted Average
	5,626		39.21% Pervious Area
	8,722		60.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	55	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
1.2	160	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.9	215	Total			

Subcatchment 5S: Lawn Pleas-E



Summary for Subcatchment 11S: DRWY NE

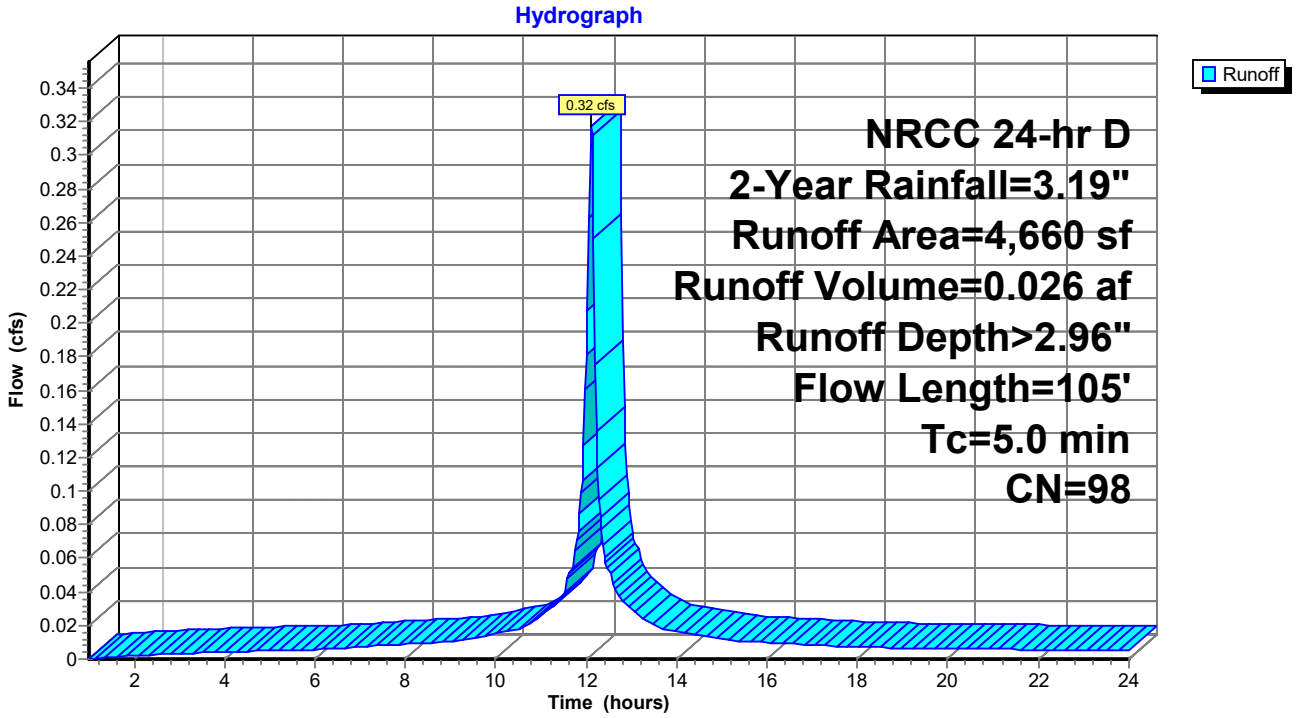
Runoff = 0.32 cfs @ 12.12 hrs, Volume= 0.026 af, Depth> 2.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 2-Year Rainfall=3.19"

Area (sf)	CN	Description
4,660	98	Paved parking, HSG A
4,660		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	45	0.0330	1.32		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.4	60	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	105	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 11S: DRWY NE



Summary for Subcatchment 12S: DRWY SE

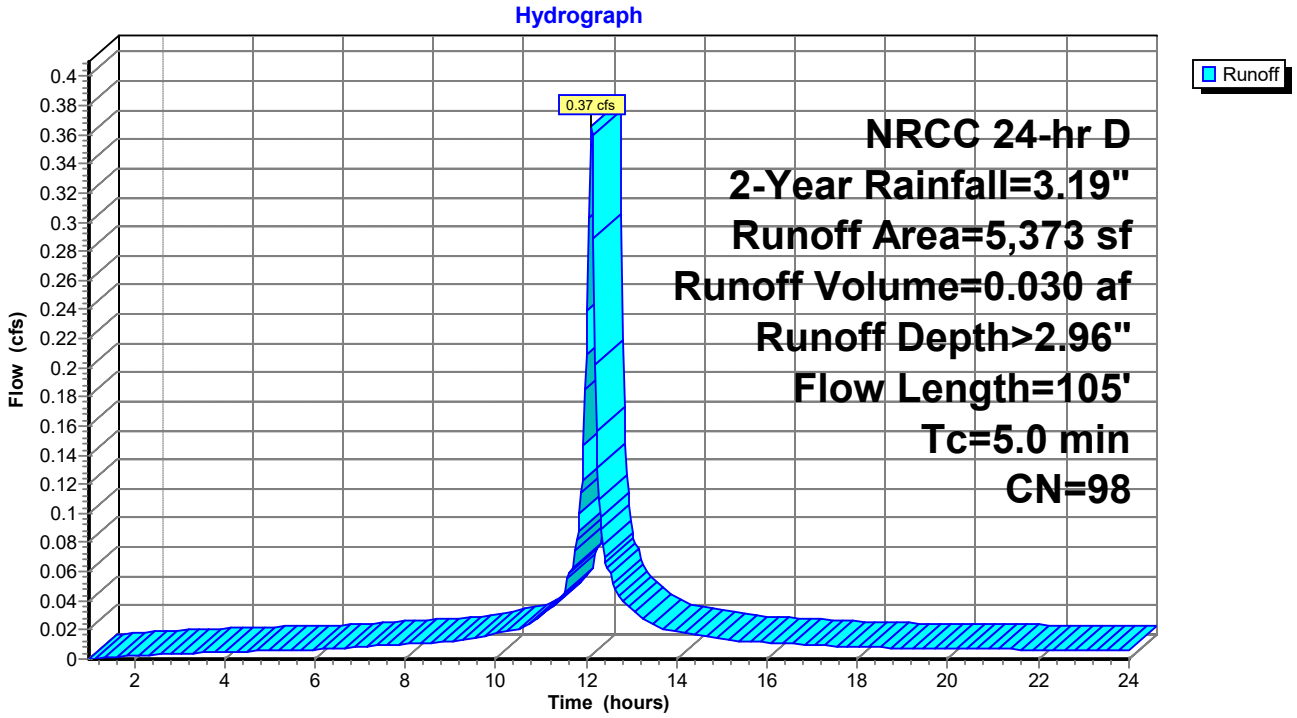
Runoff = 0.37 cfs @ 12.12 hrs, Volume= 0.030 af, Depth> 2.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 2-Year Rainfall=3.19"

Area (sf)	CN	Description
5,373	98	Paved parking, HSG A
5,373		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	45	0.0330	1.32		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.4	60	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	105	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 12S: DRWY SE



Summary for Subcatchment 13S: PARK SE

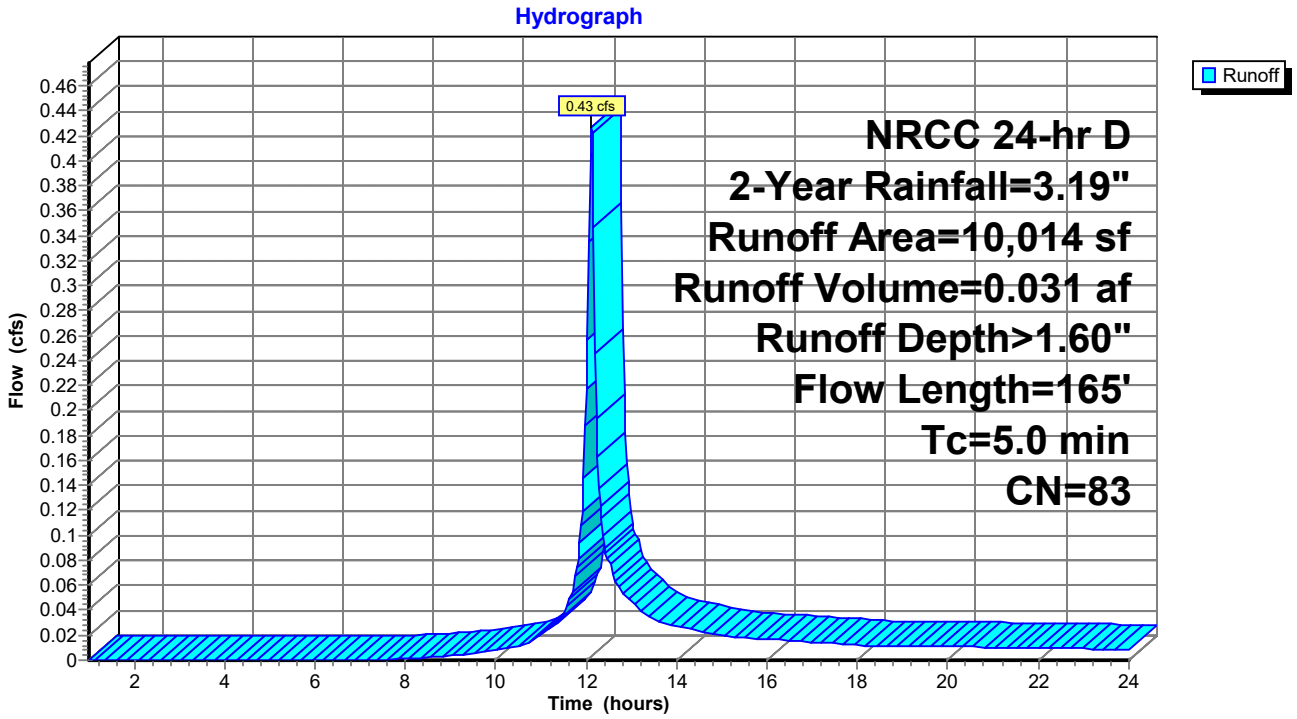
Runoff = 0.43 cfs @ 12.12 hrs, Volume= 0.031 af, Depth> 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 2-Year Rainfall=3.19"

Area (sf)	CN	Description
6,859	98	Paved parking, HSG A
3,155	49	50-75% Grass cover, Fair, HSG A
10,014	83	Weighted Average
3,155		31.51% Pervious Area
6,859		68.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	20	0.0170	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.8	66	0.0330	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.6	79	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.5	165	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 13S: PARK SE



Summary for Subcatchment 14S: PARK SW

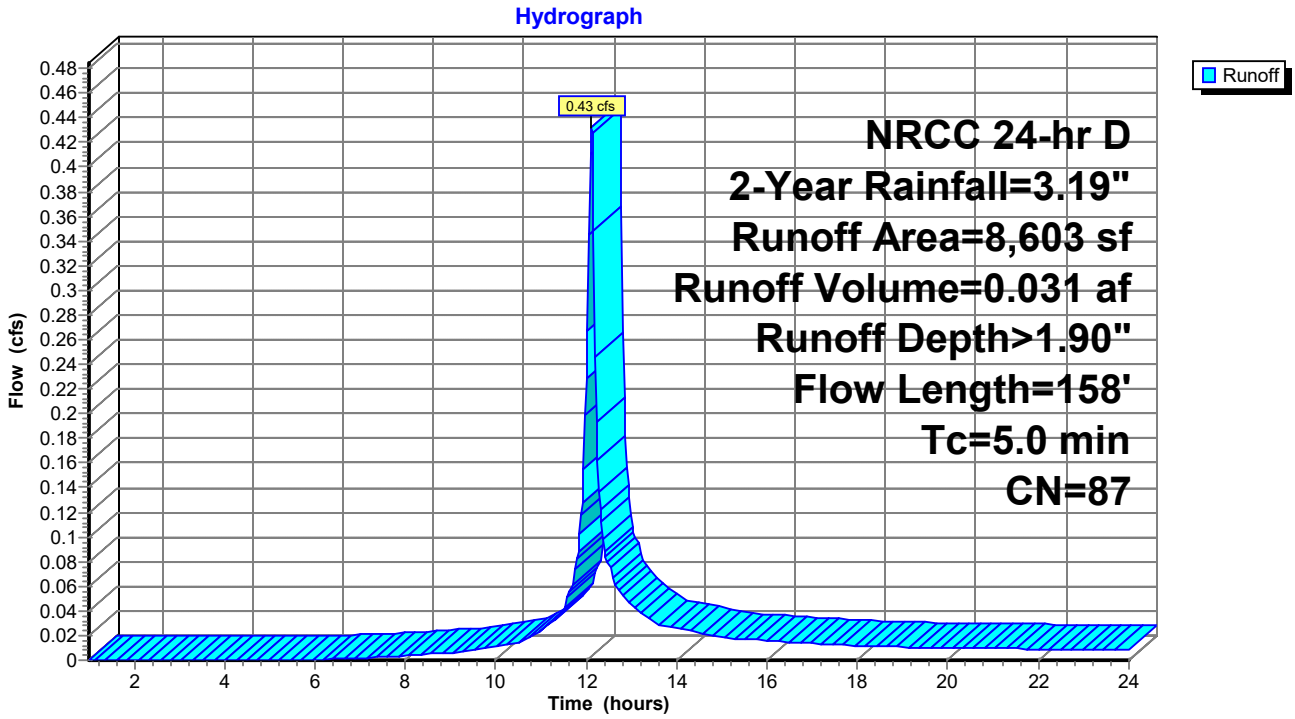
Runoff = 0.43 cfs @ 12.12 hrs, Volume= 0.031 af, Depth> 1.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 2-Year Rainfall=3.19"

Area (sf)	CN	Description
6,654	98	Paved parking, HSG A
1,949	49	50-75% Grass cover, Fair, HSG A
8,603	87	Weighted Average
1,949		22.65% Pervious Area
6,654		77.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0170	0.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.8	66	0.0330	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.5	72	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	158	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 14S: PARK SW



Summary for Subcatchment 15S: DRWY W

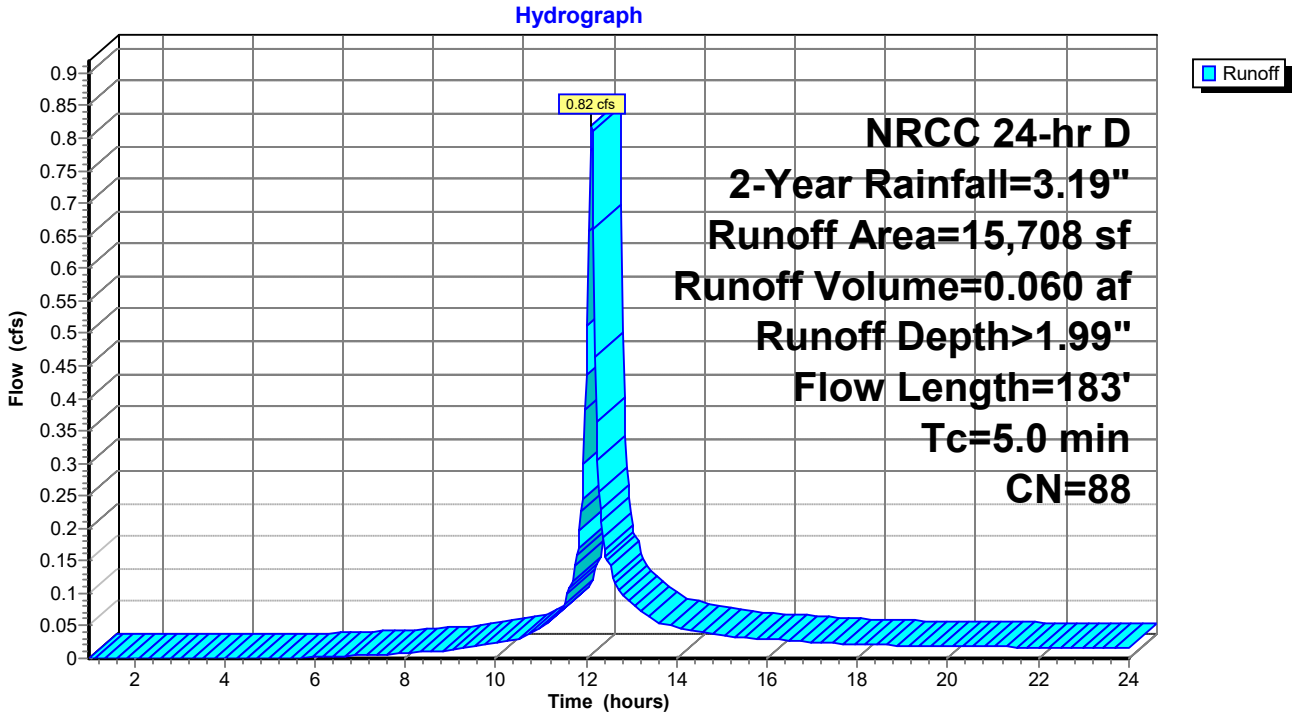
Runoff = 0.82 cfs @ 12.12 hrs, Volume= 0.060 af, Depth> 1.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 2-Year Rainfall=3.19"

Area (sf)	CN	Description
12,462	98	Paved parking, HSG A
3,246	49	50-75% Grass cover, Fair, HSG A
15,708	88	Weighted Average
3,246		20.66% Pervious Area
12,462		79.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	58	0.0150	1.01		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.9	125	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.9	183	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 15S: DRWY W



Summary for Subcatchment 16S: VISIT LOT

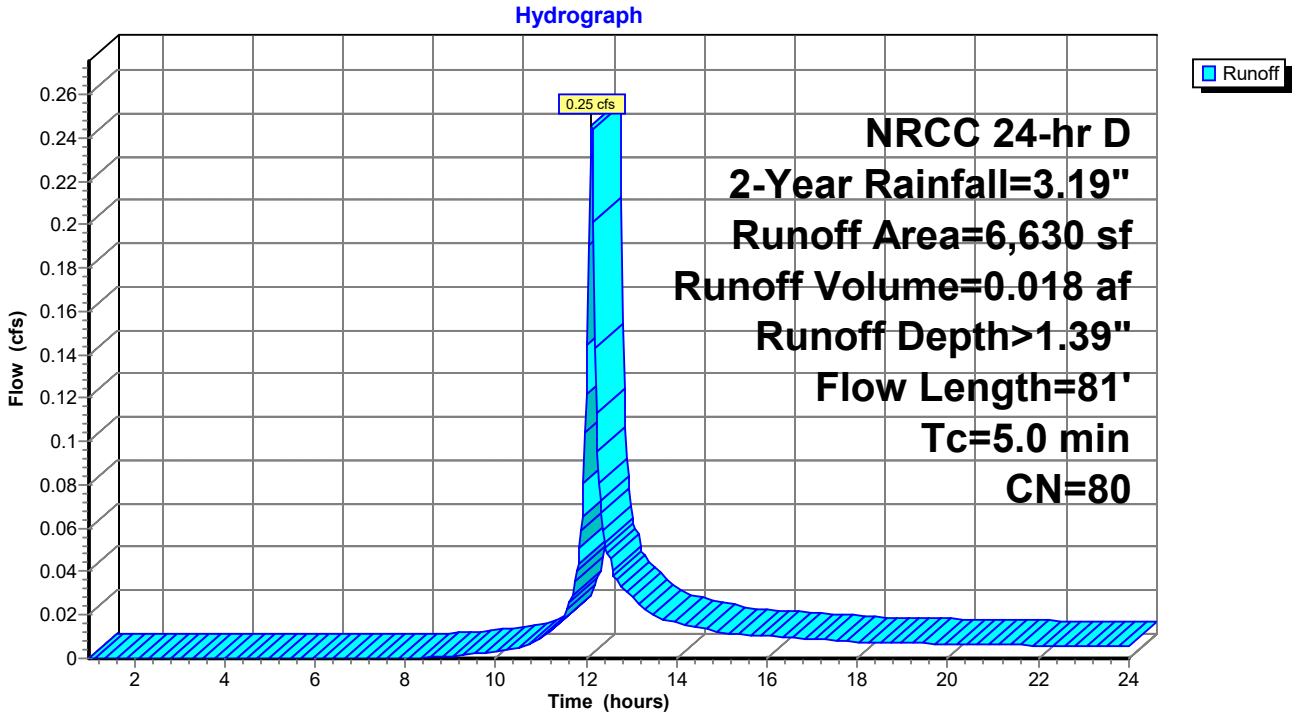
Runoff = 0.25 cfs @ 12.12 hrs, Volume= 0.018 af, Depth> 1.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 2-Year Rainfall=3.19"

Area (sf)	CN	Description
4,235	98	Paved parking, HSG A
2,395	49	50-75% Grass cover, Fair, HSG A
6,630	80	Weighted Average
2,395		36.12% Pervious Area
4,235		63.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	41	0.0125	0.88		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.3	40	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	81	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 16S: VISIT LOT



Summary for Subcatchment 17S: NEW BLDG

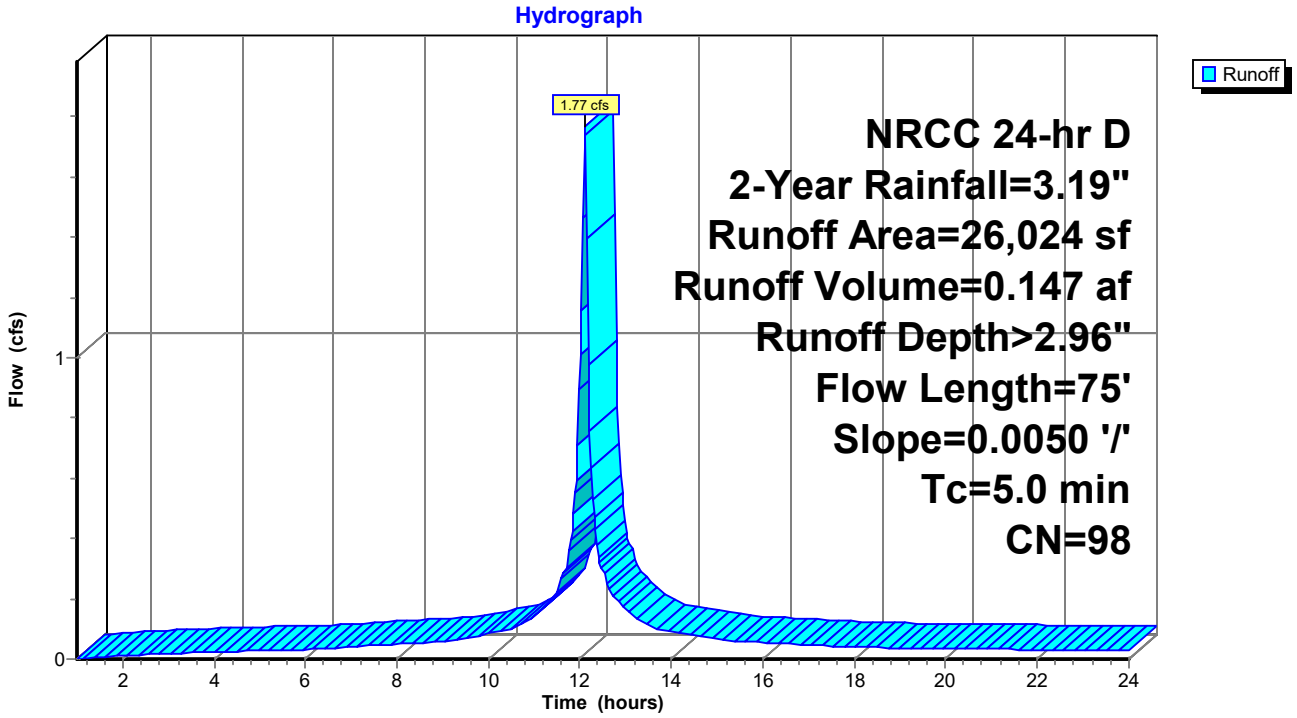
Runoff = 1.77 cfs @ 12.12 hrs, Volume= 0.147 af, Depth> 2.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 2-Year Rainfall=3.19"

Area (sf)	CN	Description
26,024	98	Roofs, HSG A
26,024		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	25	0.0050	0.55		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.6	50	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	75	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 17S: NEW BLDG



Summary for Pond 1P: CB-Web N

[57] Hint: Peaked at 72.60' (Flood elevation advised)

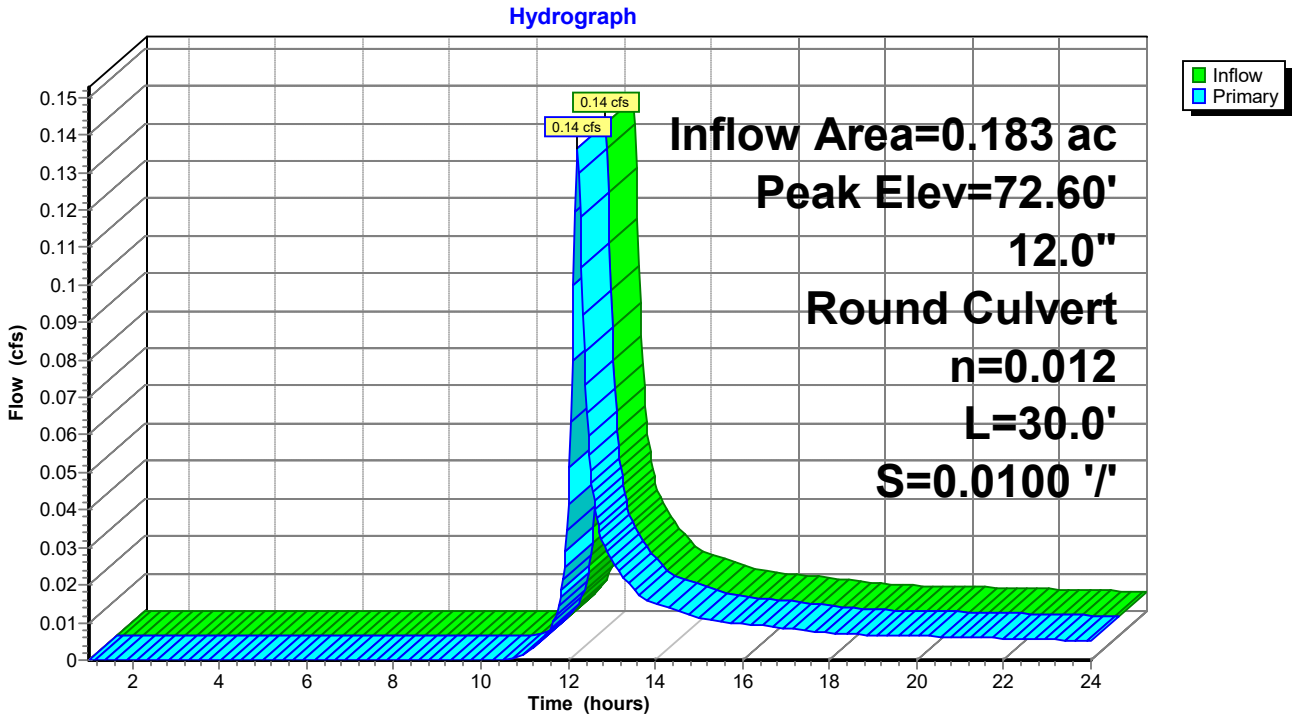
Inflow Area =	0.183 ac, 55.31% Impervious, Inflow Depth > 0.92" for 2-Year event				
Inflow =	0.14 cfs @	12.22 hrs,	Volume=	0.014 af	
Outflow =	0.14 cfs @	12.22 hrs,	Volume=	0.014 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.14 cfs @	12.22 hrs,	Volume=	0.014 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 72.60' @ 12.22 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	72.40'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.40' / 72.10' S= 0.0100 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.14 cfs @ 12.22 hrs HW=72.60' (Free Discharge)
└─**1=Culvert** (Inlet Controls 0.14 cfs @ 1.20 fps)

Pond 1P: CB-Web N



Summary for Pond 2P:

[79] Warning: Submerged Pond 26P Primary device # 1 OUTLET by 0.11'

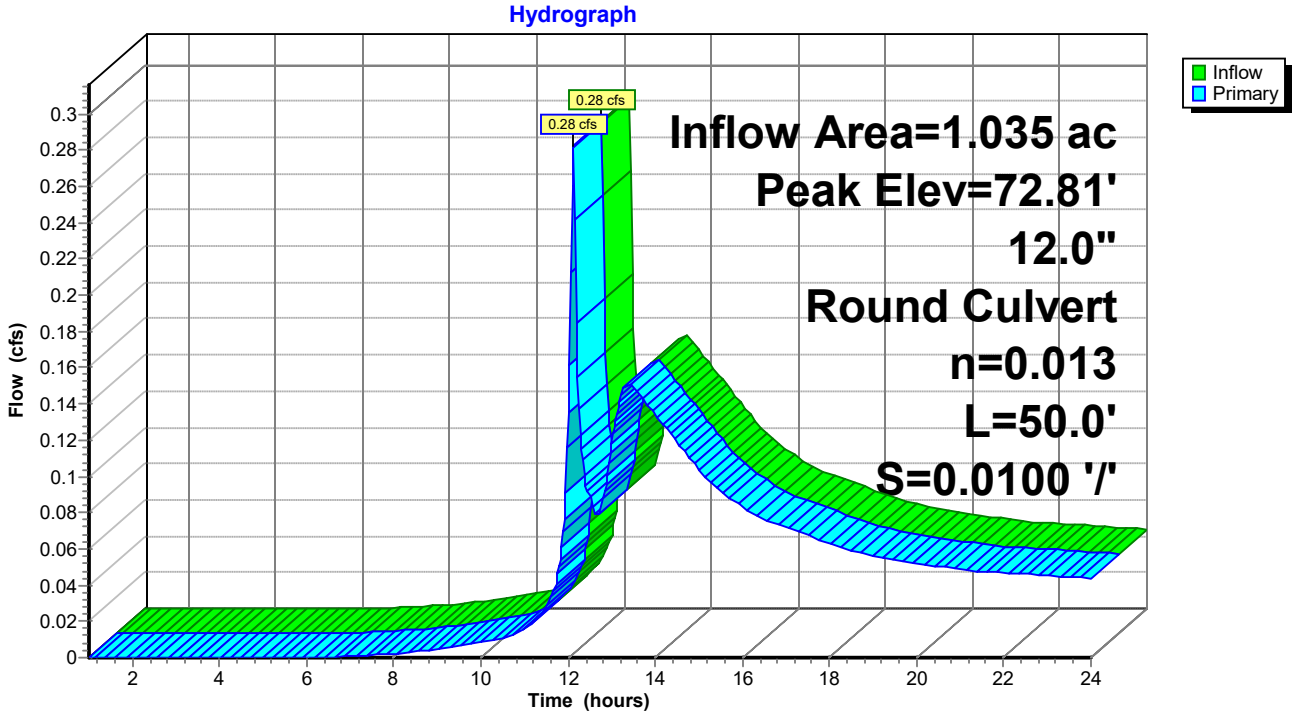
Inflow Area = 1.035 ac, 68.62% Impervious, Inflow Depth > 0.94" for 2-Year event
Inflow = 0.28 cfs @ 12.13 hrs, Volume= 0.081 af
Outflow = 0.28 cfs @ 12.13 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.0 min
Primary = 0.28 cfs @ 12.13 hrs, Volume= 0.081 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 72.81' @ 12.13 hrs
Flood Elev= 116.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.60'	**12.0" Round Storm Drain** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.60' / 72.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.14 cfs @ 12.13 hrs HW=72.81' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 0.14 cfs @ 1.22 fps)

Pond 2P:



Summary for Pond 3P:

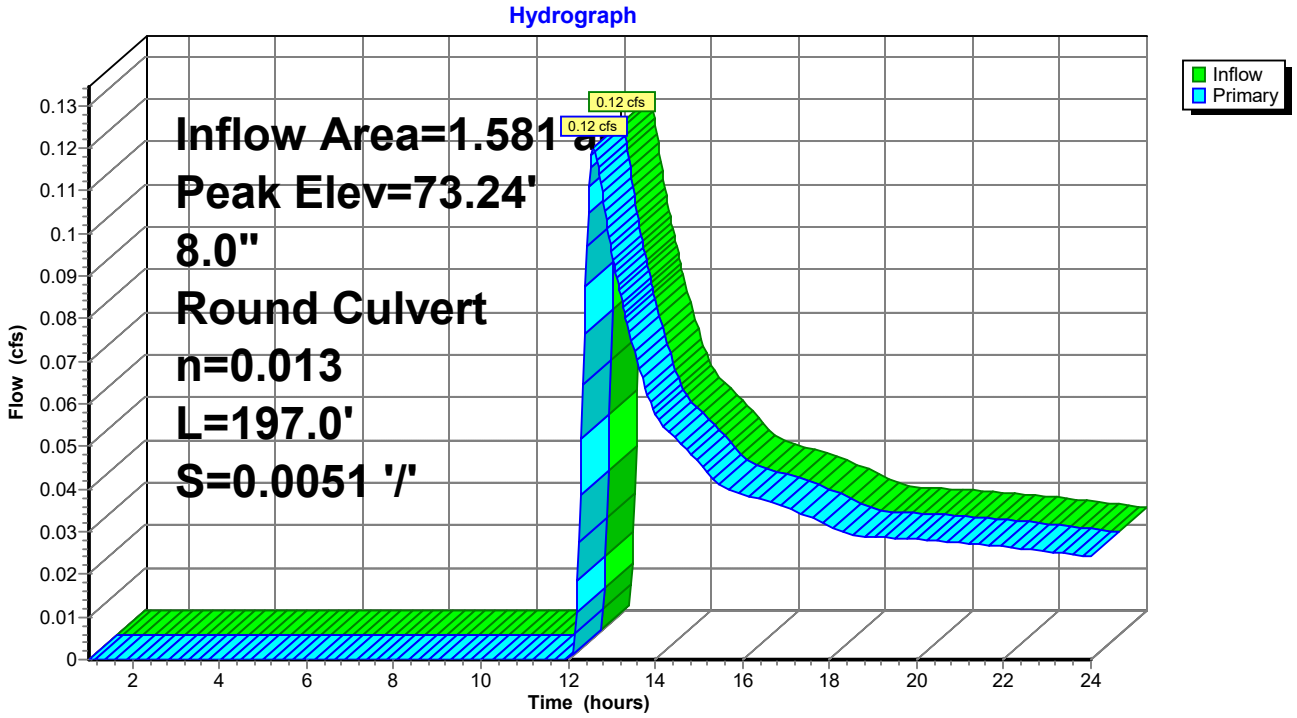
Inflow Area = 1.581 ac, 16.27% Impervious, Inflow Depth > 0.30" for 2-Year event
Inflow = 0.12 cfs @ 12.59 hrs, Volume= 0.040 af
Outflow = 0.12 cfs @ 12.59 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.0 min
Primary = 0.12 cfs @ 12.59 hrs, Volume= 0.040 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 73.24' @ 12.59 hrs
Flood Elev= 113.94'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.10'	**8.0" Round Storm Drain** L= 197.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.10' / 72.10' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.04 cfs @ 12.59 hrs HW=73.24' (Free Discharge)
└**1=Storm Drain** (Barrel Controls 0.04 cfs @ 1.28 fps)

Pond 3P:



Summary for Pond 4P:

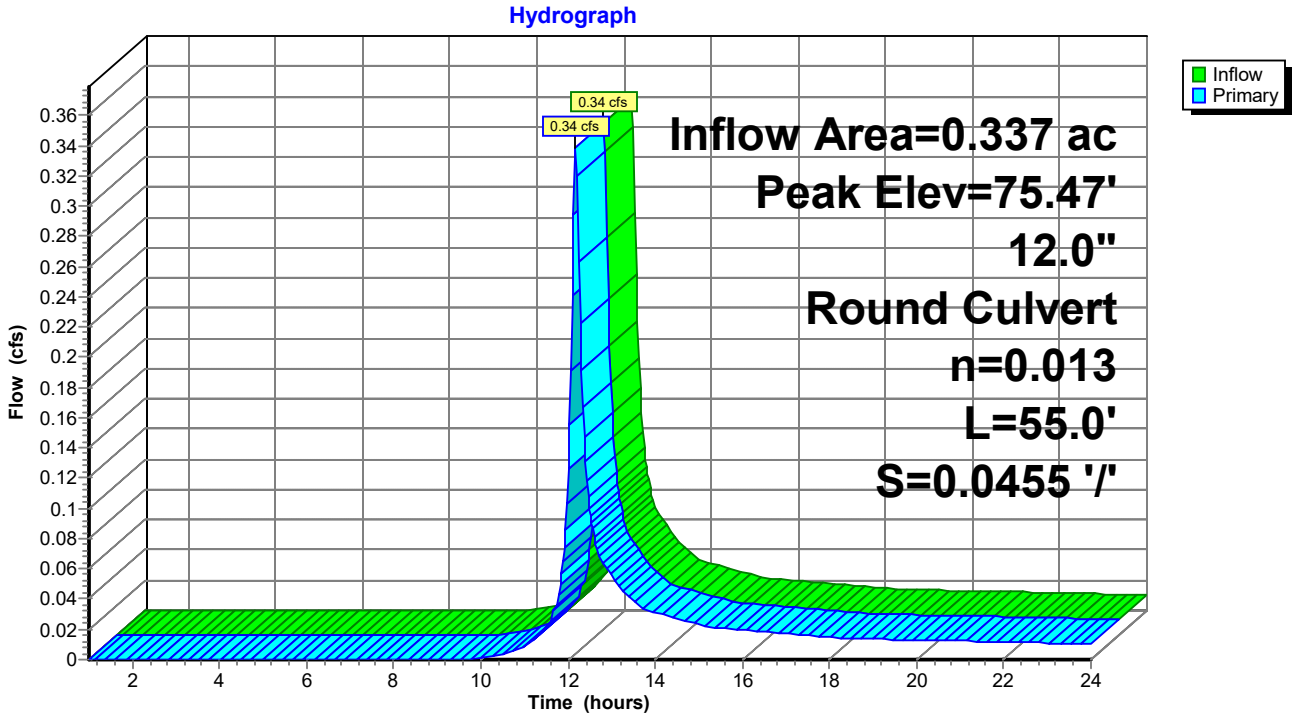
Inflow Area = 0.337 ac, 52.63% Impervious, Inflow Depth > 1.08" for 2-Year event
Inflow = 0.34 cfs @ 12.18 hrs, Volume= 0.030 af
Outflow = 0.34 cfs @ 12.18 hrs, Volume= 0.030 af, Atten= 0%, Lag= 0.0 min
Primary = 0.34 cfs @ 12.18 hrs, Volume= 0.030 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 75.47' @ 12.18 hrs
Flood Elev= 116.29'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.20'	**12.0" Round Storm Drain** L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.20' / 72.70' S= 0.0455 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.23 cfs @ 12.18 hrs HW=75.46' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 0.23 cfs @ 1.38 fps)

Pond 4P:



Summary for Pond 5P: CB-Pleas E

[79] Warning: Submerged Pond 1P Primary device # 1 OUTLET by 0.30'
[79] Warning: Submerged Pond 27P Primary device # 1 OUTLET by 0.30'

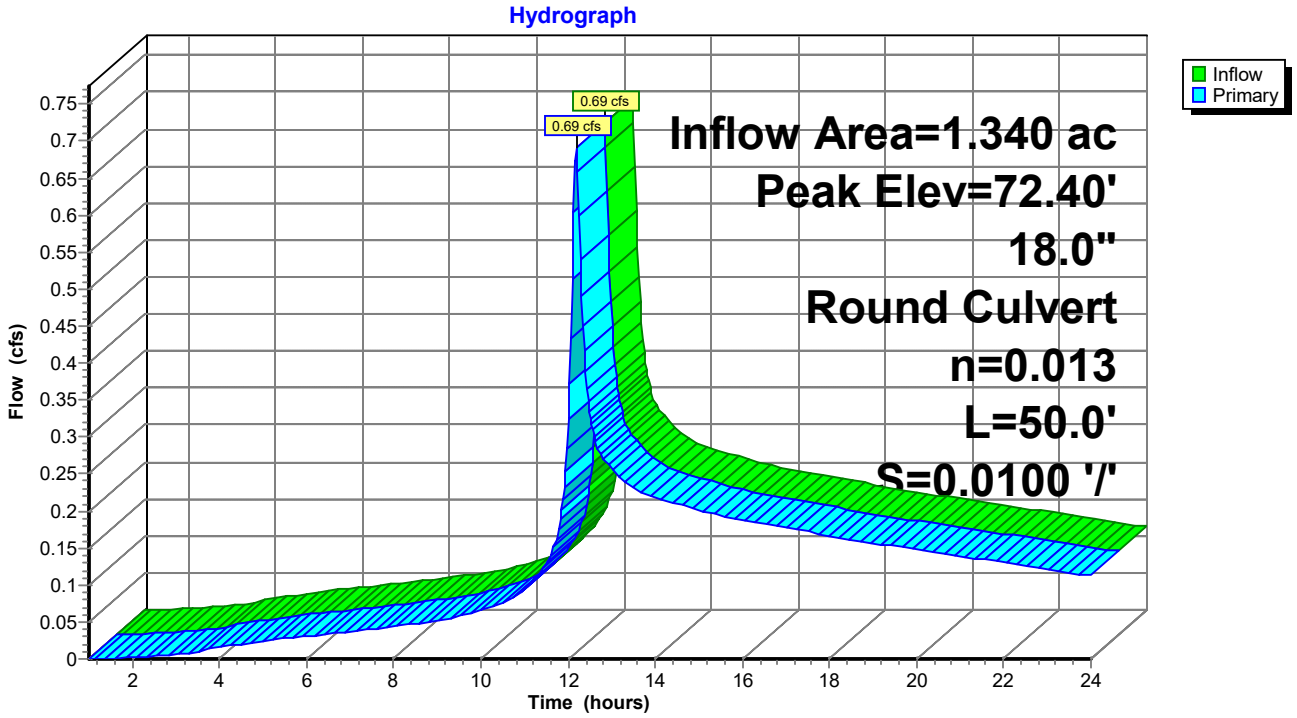
Inflow Area =	1.340 ac, 84.26% Impervious, Inflow Depth > 1.98" for 2-Year event				
Inflow =	0.69 cfs @	12.19 hrs,	Volume=	0.222 af	
Outflow =	0.69 cfs @	12.19 hrs,	Volume=	0.222 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.69 cfs @	12.19 hrs,	Volume=	0.222 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 72.40' @ 12.19 hrs
Flood Elev= 114.79'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.00'	**18.0" Round Storm Drain** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.00' / 71.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.65 cfs @ 12.19 hrs HW=72.40' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 0.65 cfs @ 1.71 fps)

Pond 5P: CB-Pleas E



Summary for Pond 6P:

[79] Warning: Submerged Pond 4P Primary device # 1 OUTLET by 0.04'

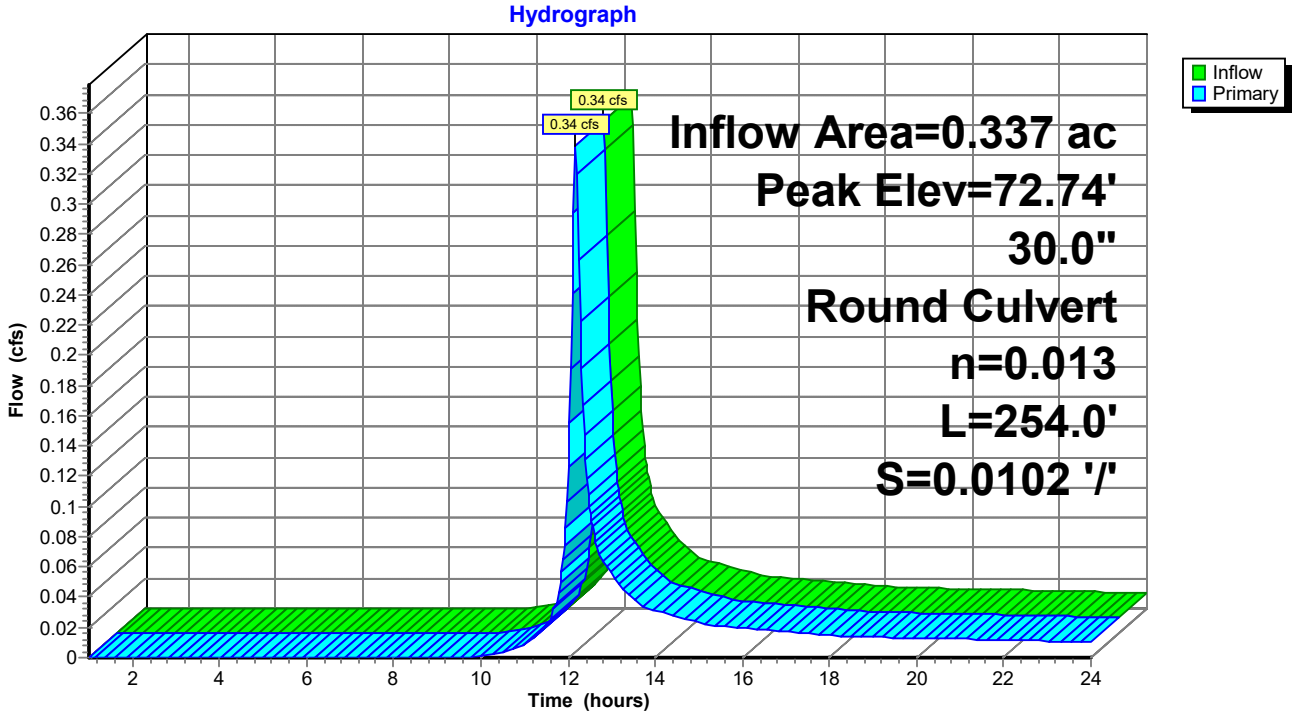
Inflow Area = 0.337 ac, 52.63% Impervious, Inflow Depth > 1.08" for 2-Year event
Inflow = 0.34 cfs @ 12.18 hrs, Volume= 0.030 af
Outflow = 0.34 cfs @ 12.18 hrs, Volume= 0.030 af, Atten= 0%, Lag= 0.0 min
Primary = 0.34 cfs @ 12.18 hrs, Volume= 0.030 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 72.74' @ 12.18 hrs
Flood Elev= 116.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.60'	**30.0" Round Storm Drain** L= 254.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.60' / 70.00' S= 0.0102 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=0.11 cfs @ 12.18 hrs HW=72.74' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 0.11 cfs @ 1.01 fps)

Pond 6P:



Summary for Pond 7P: Filterra 1 - 4x6

Inflow Area = 0.107 ac,100.00% Impervious, Inflow Depth > 2.96" for 2-Year event
Inflow = 0.32 cfs @ 12.12 hrs, Volume= 0.026 af
Outflow = 0.32 cfs @ 12.12 hrs, Volume= 0.027 af, Atten= 1%, Lag= 0.1 min
Primary = 0.32 cfs @ 12.12 hrs, Volume= 0.027 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 77.48' @ 12.12 hrs Surf.Area= 24 sf Storage= 21 cf

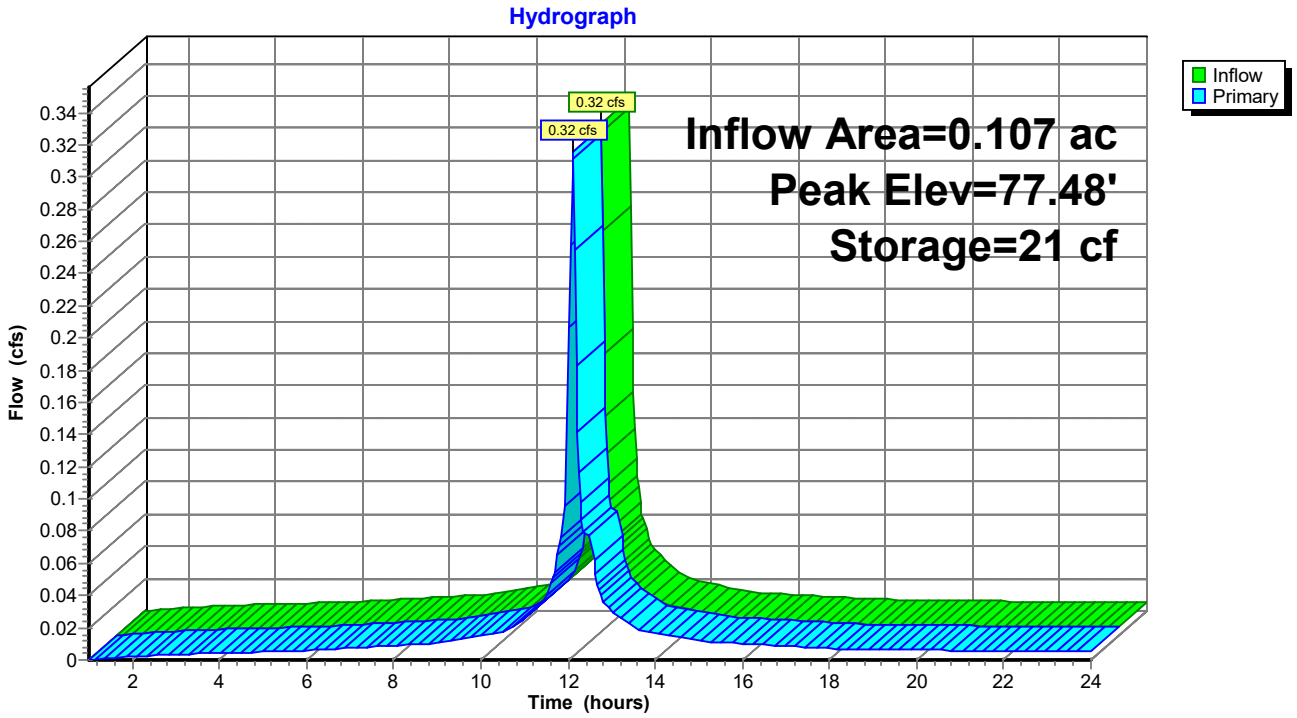
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.6 min (759.6 - 759.0)

Volume	Invert	Avail.Storage	Storage Description
#1	76.59'	24 cf	**6.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	74.42'	**8.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.42' / 74.33' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	76.59'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	77.34'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.31 cfs @ 12.12 hrs HW=77.47' (Free Discharge)
└─**1=Culvert** (Passes 0.31 cfs of 2.77 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.08 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Weir Controls 0.23 cfs @ 1.02 fps)

Pond 7P: Filterra 1 - 4x6



Summary for Pond 8P: Filterra 2 - 4x6

Inflow Area = 0.123 ac,100.00% Impervious, Inflow Depth > 2.96" for 2-Year event
Inflow = 0.37 cfs @ 12.12 hrs, Volume= 0.030 af
Outflow = 0.36 cfs @ 12.12 hrs, Volume= 0.030 af, Atten= 1%, Lag= 0.1 min
Primary = 0.36 cfs @ 12.12 hrs, Volume= 0.030 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 77.49' @ 12.12 hrs Surf.Area= 24 sf Storage= 22 cf

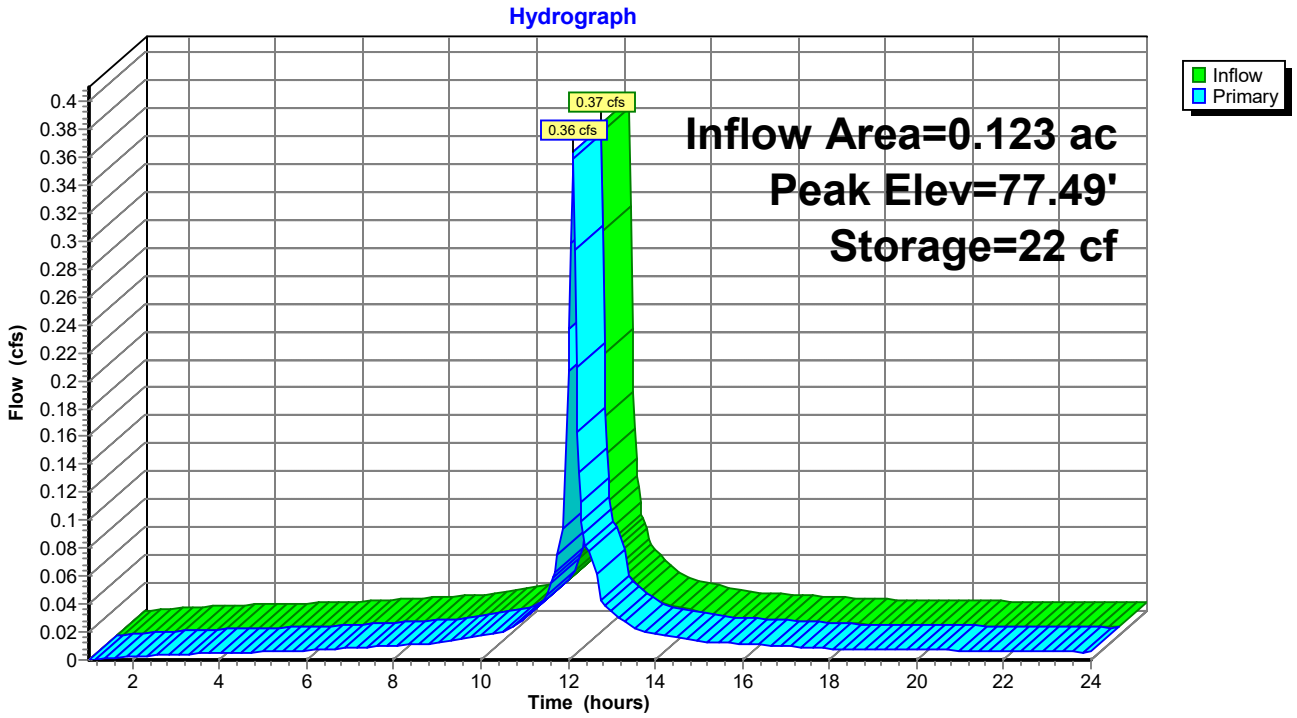
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.6 min (759.6 - 759.0)

Volume	Invert	Avail.Storage	Storage Description
#1	76.59'	24 cf	**6.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	74.42'	**8.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.42' / 74.33' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	76.59'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	77.34'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.35 cfs @ 12.12 hrs HW=77.49' (Free Discharge)
└─**1=Culvert** (Passes 0.35 cfs of 2.78 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.08 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Weir Controls 0.28 cfs @ 1.08 fps)

Pond 8P: Filterra 2 - 4x6



Summary for Pond 9P: Filterra 3 - 4x4

Inflow Area = 0.230 ac, 68.49% Impervious, Inflow Depth > 1.60" for 2-Year event
Inflow = 0.43 cfs @ 12.12 hrs, Volume= 0.031 af
Outflow = 0.42 cfs @ 12.12 hrs, Volume= 0.031 af, Atten= 1%, Lag= 0.0 min
Primary = 0.42 cfs @ 12.12 hrs, Volume= 0.031 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 79.27' @ 12.12 hrs Surf.Area= 16 sf Storage= 15 cf

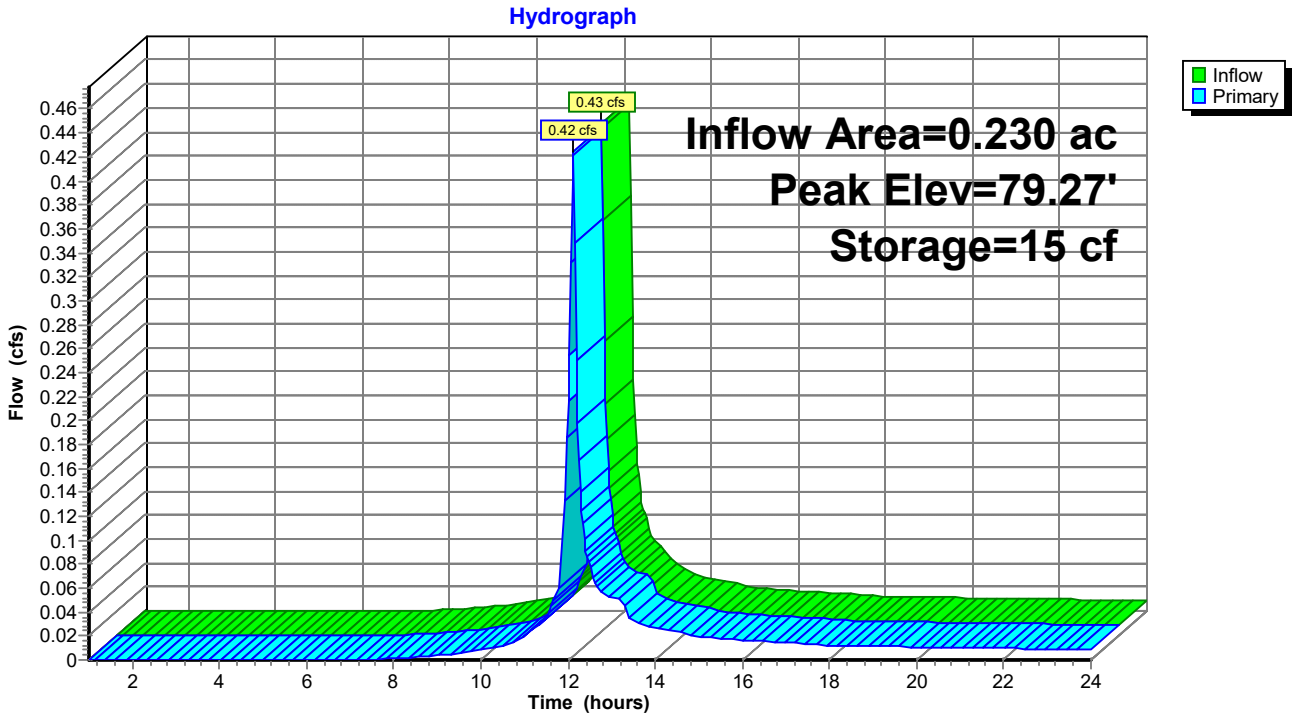
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.6 min (857.1 - 856.5)

Volume	Invert	Avail.Storage	Storage Description
#1	78.34'	16 cf	**4.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	76.17'	**8.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 76.17' / 76.08' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	78.34'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	79.09'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.41 cfs @ 12.12 hrs HW=79.27' (Free Discharge)
└─**1=Culvert** (Passes 0.41 cfs of 2.80 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.05 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Weir Controls 0.36 cfs @ 1.19 fps)

Pond 9P: Filterra 3 - 4x4



Summary for Pond 10P: Filterra 4 - 4x6

Inflow Area = 0.197 ac, 77.35% Impervious, Inflow Depth > 1.90" for 2-Year event
Inflow = 0.43 cfs @ 12.12 hrs, Volume= 0.031 af
Outflow = 0.43 cfs @ 12.12 hrs, Volume= 0.031 af, Atten= 1%, Lag= 0.1 min
Primary = 0.43 cfs @ 12.12 hrs, Volume= 0.031 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 79.27' @ 12.12 hrs Surf.Area= 24 sf Storage= 22 cf

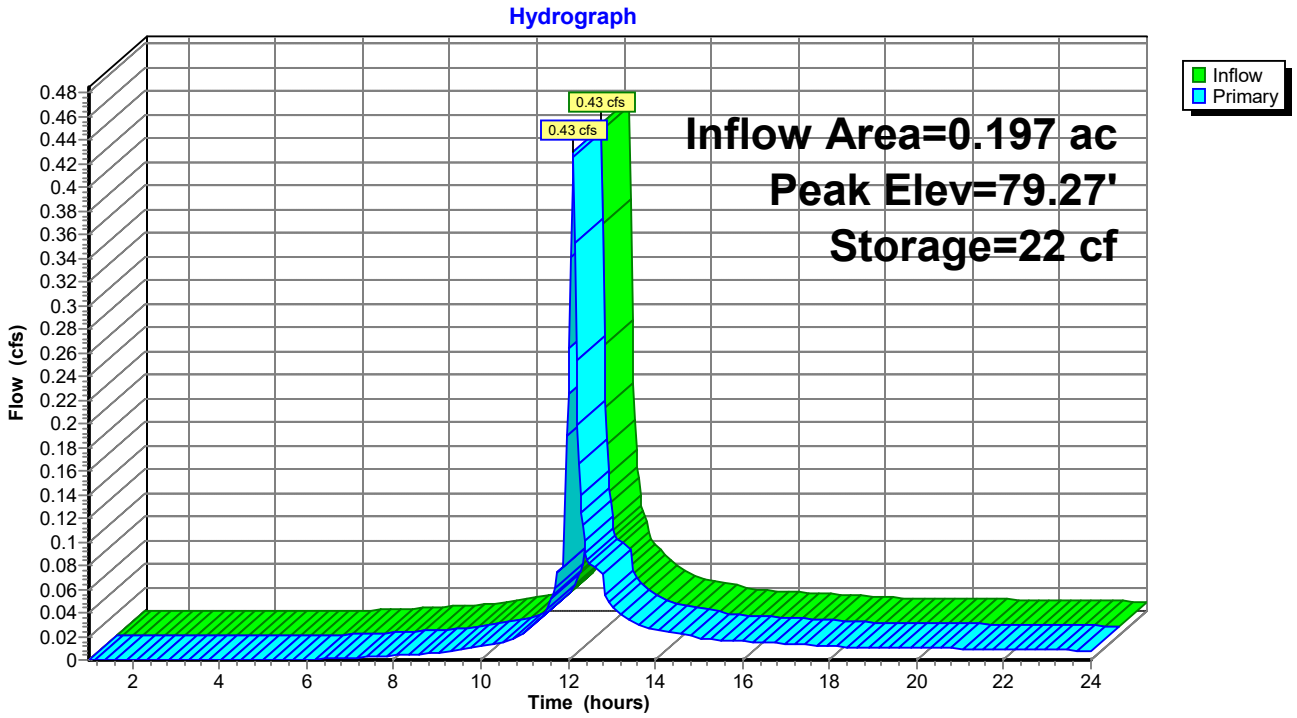
Plug-Flow detention time= 1.8 min calculated for 0.031 af (100% of inflow)
Center-of-Mass det. time= 0.9 min (839.3 - 838.3)

Volume	Invert	Avail.Storage	Storage Description
#1	78.34'	24 cf	**4.00'W x 6.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	76.17'	**6.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 76.17' / 76.08' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	78.34'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	79.09'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.42 cfs @ 12.12 hrs HW=79.26' (Free Discharge)
└─**1=Culvert** (Passes 0.42 cfs of 1.59 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.08 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Weir Controls 0.34 cfs @ 1.16 fps)

Pond 10P: Filterra 4 - 4x6



Summary for Pond 11P: Filterra 5 - 6x6

[93] Warning: Storage range exceeded by 0.03'
[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 0.361 ac, 79.34% Impervious, Inflow Depth > 1.99" for 2-Year event
Inflow = 0.82 cfs @ 12.12 hrs, Volume= 0.060 af
Outflow = 0.83 cfs @ 12.12 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.0 min
Primary = 0.83 cfs @ 12.12 hrs, Volume= 0.060 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 80.12' @ 12.12 hrs Surf.Area= 36 sf Storage= 36 cf

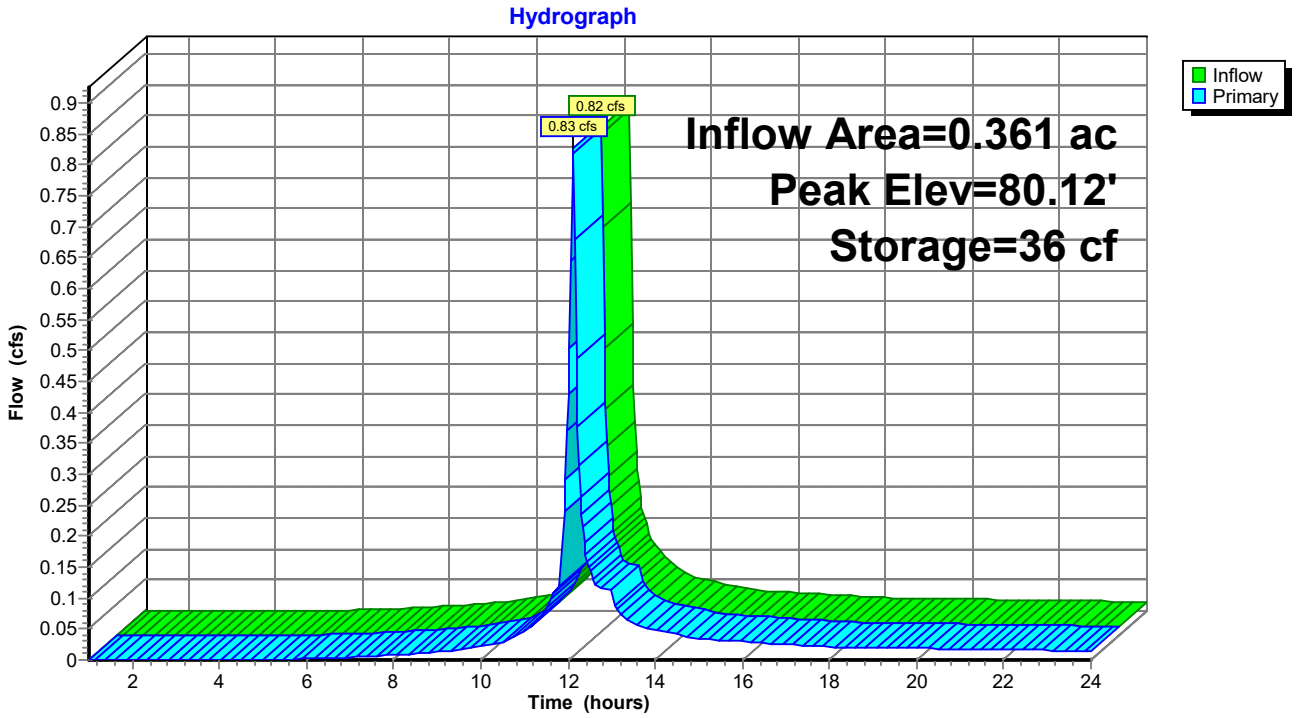
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.5 min (834.0 - 833.4)

Volume	Invert	Avail.Storage	Storage Description
#1	79.09'	36 cf	**6.00'W x 6.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	76.92'	**6.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 76.92' / 76.83' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	79.09'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	79.84'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.81 cfs @ 12.12 hrs HW=80.11' (Free Discharge)
└─**1=Culvert** (Passes 0.81 cfs of 1.62 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.12 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Weir Controls 0.69 cfs @ 1.49 fps)

Pond 11P: Filterra 5 - 6x6



Summary for Pond 12P: Filterra 6 - 4x4

Inflow Area = 0.152 ac, 63.88% Impervious, Inflow Depth > 1.39" for 2-Year event
Inflow = 0.25 cfs @ 12.12 hrs, Volume= 0.018 af
Outflow = 0.24 cfs @ 12.12 hrs, Volume= 0.018 af, Atten= 1%, Lag= 0.0 min
Primary = 0.24 cfs @ 12.12 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 78.16' @ 12.12 hrs Surf.Area= 16 sf Storage= 14 cf

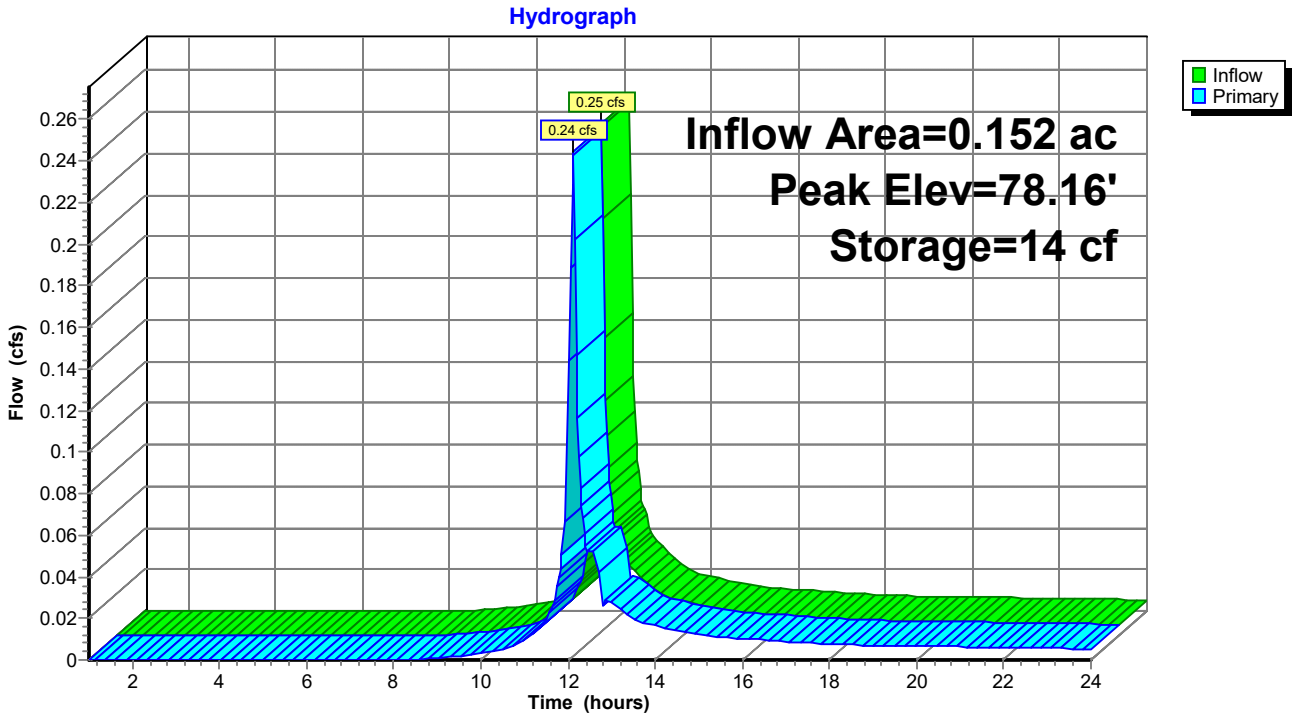
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.7 min (869.7 - 869.0)

Volume	Invert	Avail.Storage	Storage Description
#1	77.29'	16 cf	**4.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	75.12'	**8.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.12' / 75.08' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	77.29'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	78.04'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.24 cfs @ 12.12 hrs HW=78.16' (Free Discharge)
└─**1=Culvert** (Passes 0.24 cfs of 2.76 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.05 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Weir Controls 0.19 cfs @ 0.95 fps)

Pond 12P: Filterra 6 - 4x4



Summary for Pond 13P: 6 - Fire Cistern Tanks

[79] Warning: Submerged Pond 7P Primary device # 1 INLET by 1.25'
[79] Warning: Submerged Pond 8P Primary device # 1 INLET by 1.25'

Inflow Area = 0.828 ac,100.00% Impervious, Inflow Depth > 2.96" for 2-Year event
Inflow = 2.45 cfs @ 12.12 hrs, Volume= 0.204 af
Outflow = 0.17 cfs @ 13.43 hrs, Volume= 0.171 af, Atten= 93%, Lag= 78.5 min
Primary = 0.17 cfs @ 13.43 hrs, Volume= 0.171 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 75.67' @ 13.43 hrs Surf.Area= 1,561 sf Storage= 4,167 cf

Plug-Flow detention time= 269.4 min calculated for 0.171 af (84% of inflow)
Center-of-Mass det. time= 189.1 min (948.3 - 759.2)

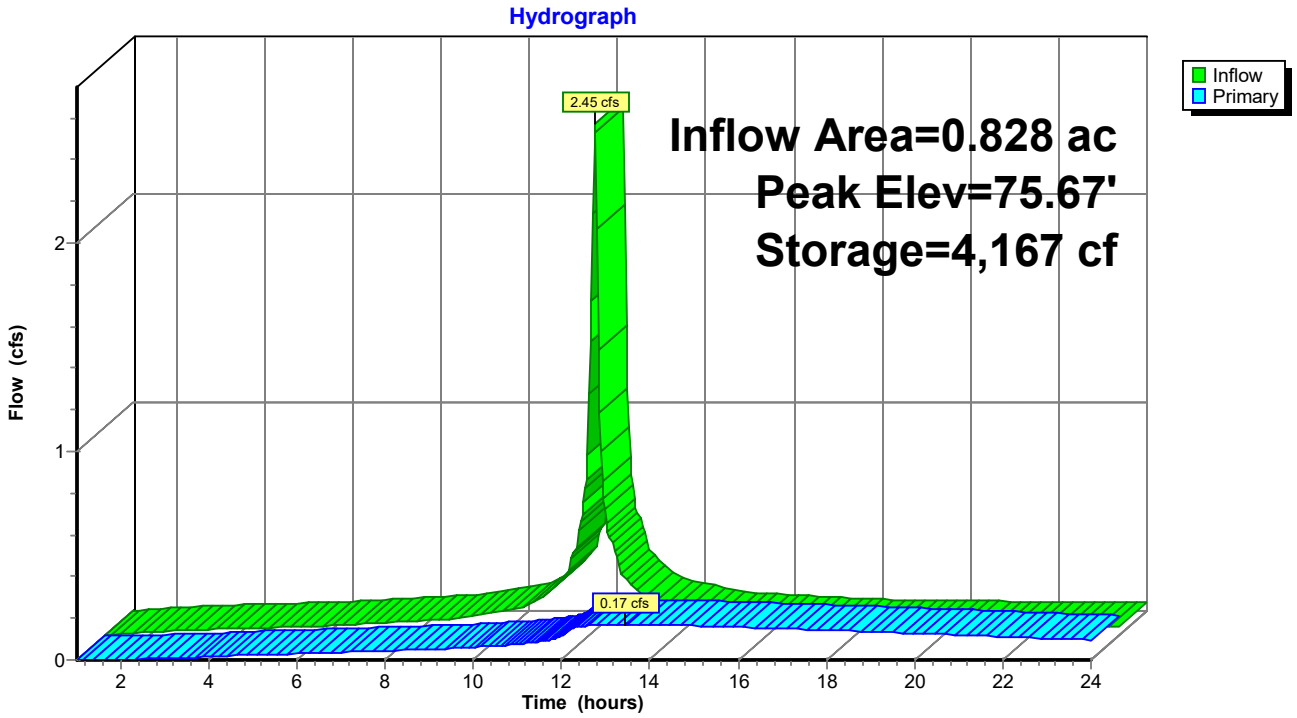
Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	10,927 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	1,561	0	0
74.00	1,561	1,561	1,561
75.00	1,561	1,561	3,122
76.00	1,561	1,561	4,683
77.00	1,561	1,561	6,244
78.00	1,561	1,561	7,805
79.00	1,561	1,561	9,366
80.00	1,561	1,561	10,927

Device	Routing	Invert	Outlet Devices
#1	Primary	78.92'	**6.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	76.92'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	73.00'	**2.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.17 cfs @ 13.43 hrs HW=75.67' (Free Discharge)
└─**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
└─**2=Orifice/Grate** (Controls 0.00 cfs)
└─**3=Orifice/Grate** (Orifice Controls 0.17 cfs @ 7.74 fps)

Pond 13P: 6 - Fire Cistern Tanks



Summary for Pond 19P: 5 Fire Cistern Tanks

Inflow Area = 0.788 ac, 75.67% Impervious, Inflow Depth > 1.86" for 2-Year event
Inflow = 1.68 cfs @ 12.12 hrs, Volume= 0.122 af
Outflow = 0.13 cfs @ 13.47 hrs, Volume= 0.062 af, Atten= 92%, Lag= 81.1 min
Primary = 0.13 cfs @ 13.47 hrs, Volume= 0.062 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 75.70' @ 13.47 hrs Surf.Area= 1,300 sf Storage= 2,866 cf

Plug-Flow detention time= 302.8 min calculated for 0.062 af (51% of inflow)
Center-of-Mass det. time= 159.5 min (1,000.6 - 841.2)

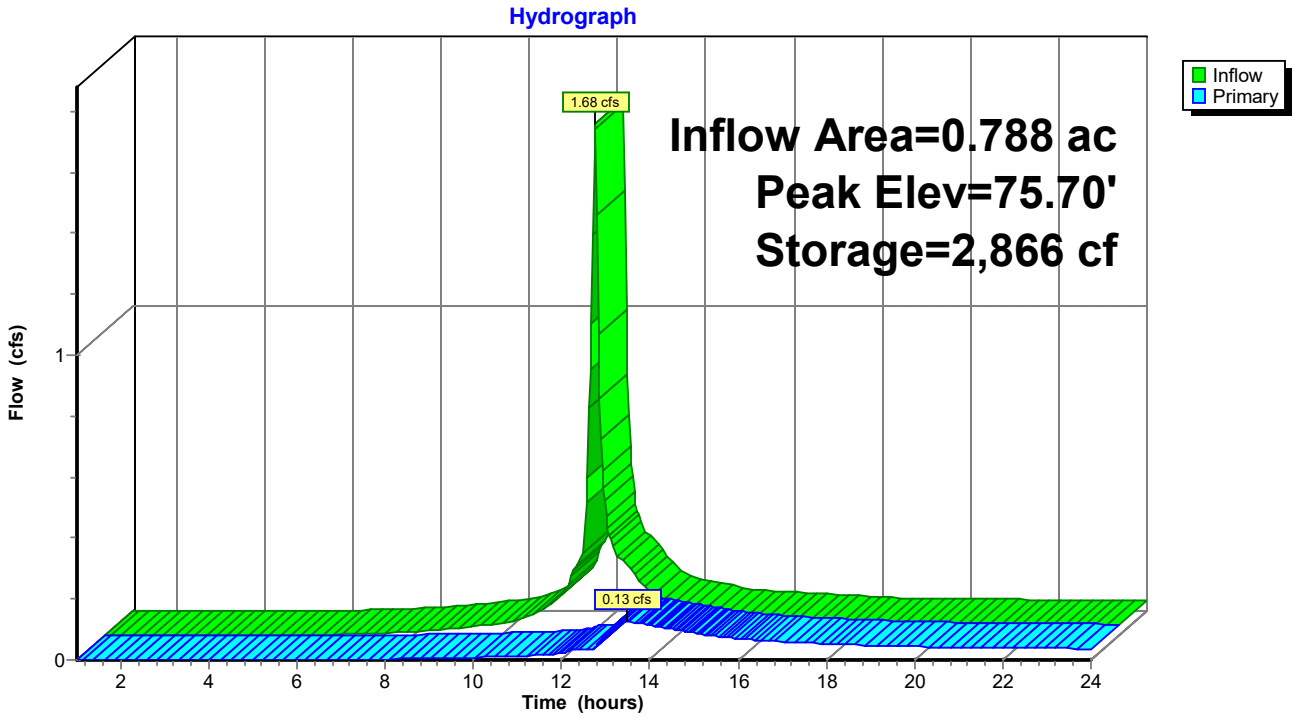
Volume	Invert	Avail.Storage	Storage Description
#1	73.50'	9,100 cf	**5-Cisterns (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.50	1,300	0	0
74.50	1,300	1,300	1,300
75.50	1,300	1,300	2,600
76.50	1,300	1,300	3,900
77.50	1,300	1,300	5,200
78.50	1,300	1,300	6,500
79.50	1,300	1,300	7,800
80.50	1,300	1,300	9,100

Device	Routing	Invert	Outlet Devices
#1	Primary	78.42'	**8.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	73.50'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	76.42'	**4.0" Vert. Orifice/Grate** C= 0.600
#4	Primary	75.50'	**4.0" Vert. Orifice/Grate** C= 0.600
#5	Primary	77.25'	**4.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.13 cfs @ 13.47 hrs HW=75.70' (Free Discharge)
- **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
- **2=Orifice/Grate** (Orifice Controls 0.04 cfs @ 7.08 fps)
- **3=Orifice/Grate** (Controls 0.00 cfs)
- **4=Orifice/Grate** (Orifice Controls 0.09 cfs @ 1.54 fps)
- **5=Orifice/Grate** (Controls 0.00 cfs)

Pond 19P: 5 Fire Cistern Tanks



Summary for Pond 26P: (new Pond)

[57] Hint: Peaked at 73.69' (Flood elevation advised)
[79] Warning: Submerged Pond 19P Primary device # 2 by 0.19'

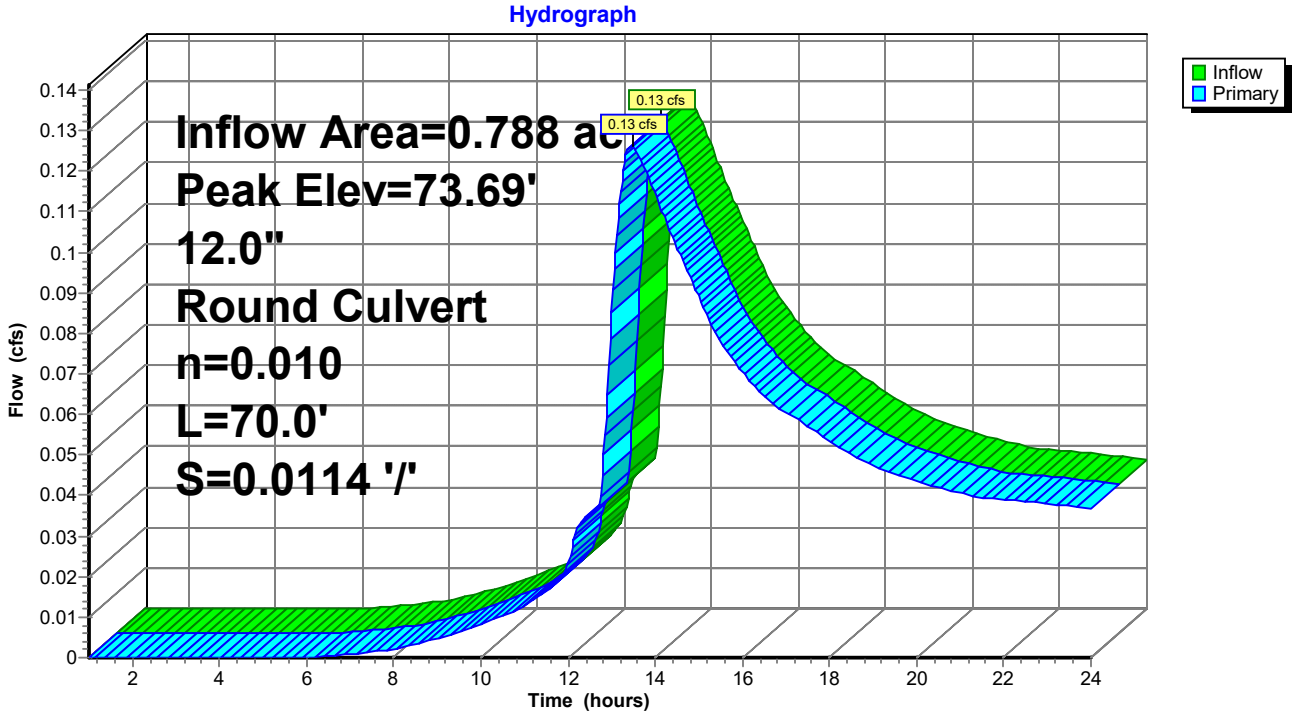
Inflow Area =	0.788 ac, 75.67% Impervious, Inflow Depth > 0.95" for 2-Year event				
Inflow =	0.13 cfs @	13.47 hrs,	Volume=	0.062 af	
Outflow =	0.13 cfs @	13.47 hrs,	Volume=	0.062 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.13 cfs @	13.47 hrs,	Volume=	0.062 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 73.69' @ 13.47 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	73.50'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.50' / 72.70' S= 0.0114 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.13 cfs @ 13.47 hrs HW=73.69' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.13 cfs @ 1.18 fps)

Pond 26P: (new Pond)



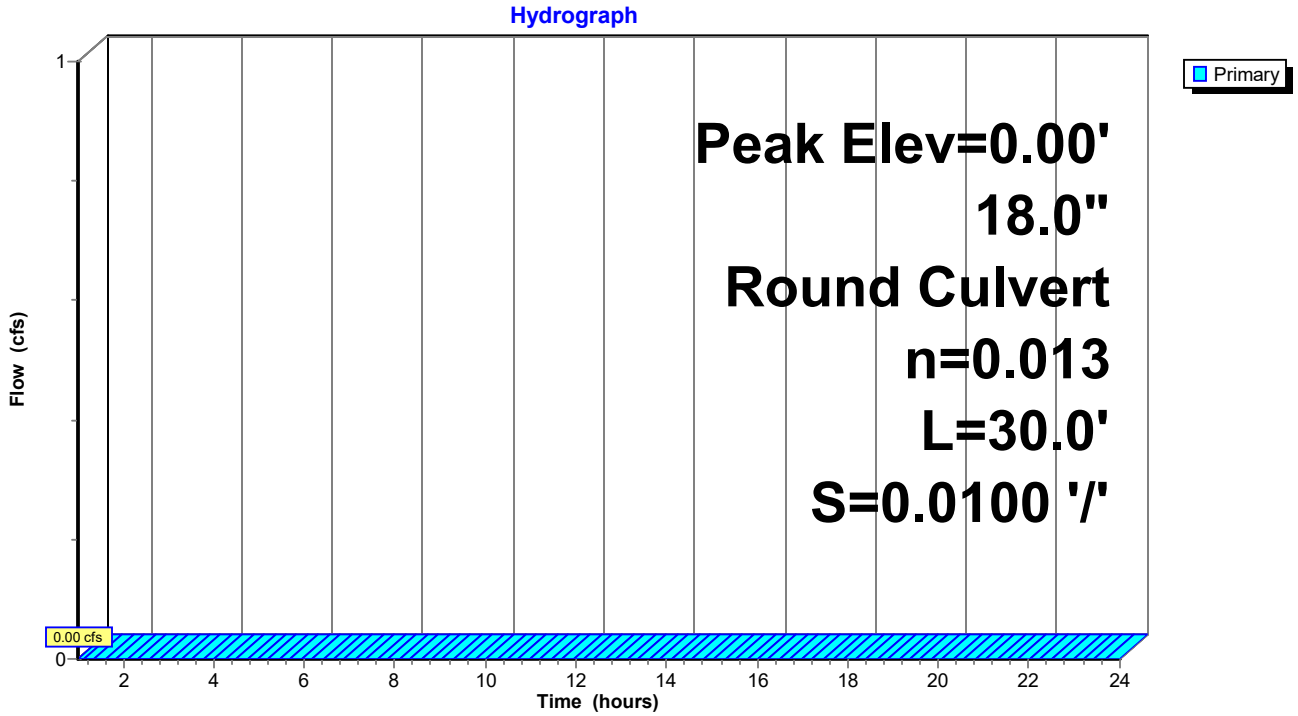
Summary for Pond 27P: (new Pond)

[43] Hint: Has no inflow (Outflow=Zero)

Device	Routing	Invert	Outlet Devices
#1	Primary	72.40'	**18.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.40' / 72.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=0.00' (Free Discharge)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 27P: (new Pond)

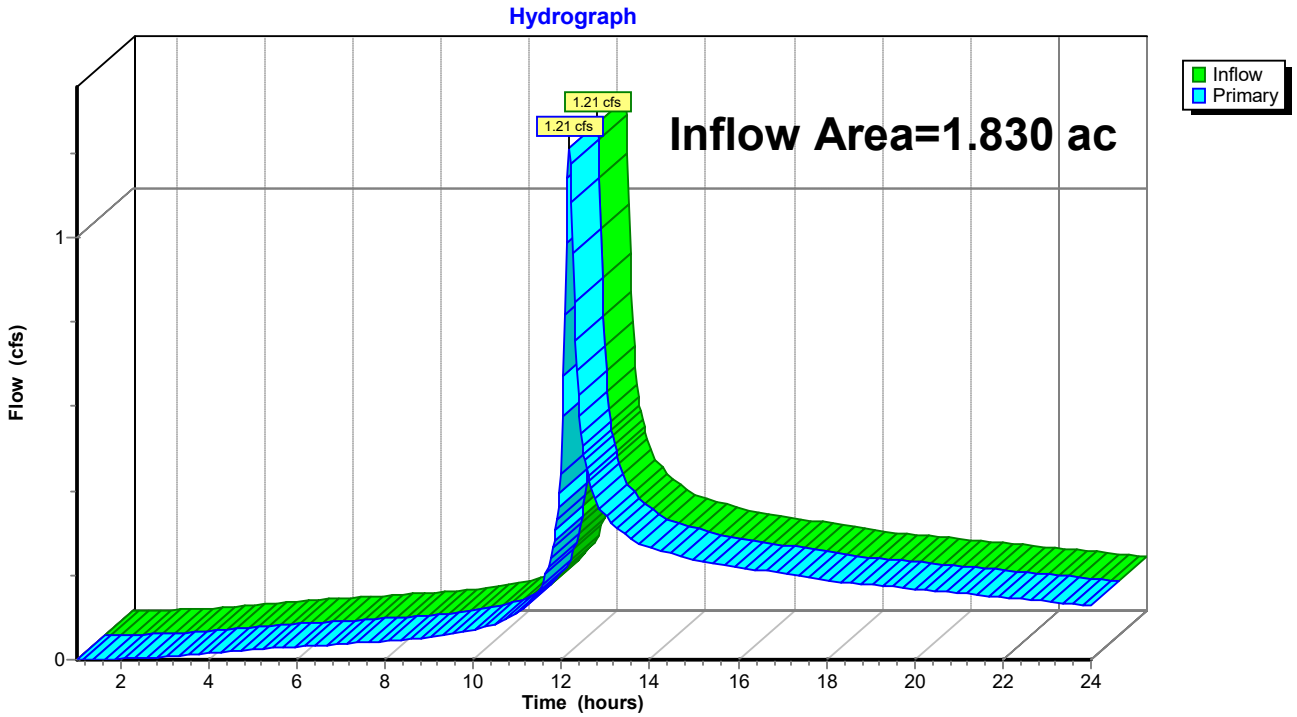


Summary for Link 1L: SP-1

Inflow Area = 1.830 ac, 76.73% Impervious, Inflow Depth > 1.77" for 2-Year event
Inflow = 1.21 cfs @ 12.16 hrs, Volume= 0.270 af
Primary = 1.21 cfs @ 12.16 hrs, Volume= 0.270 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs

Link 1L: SP-1

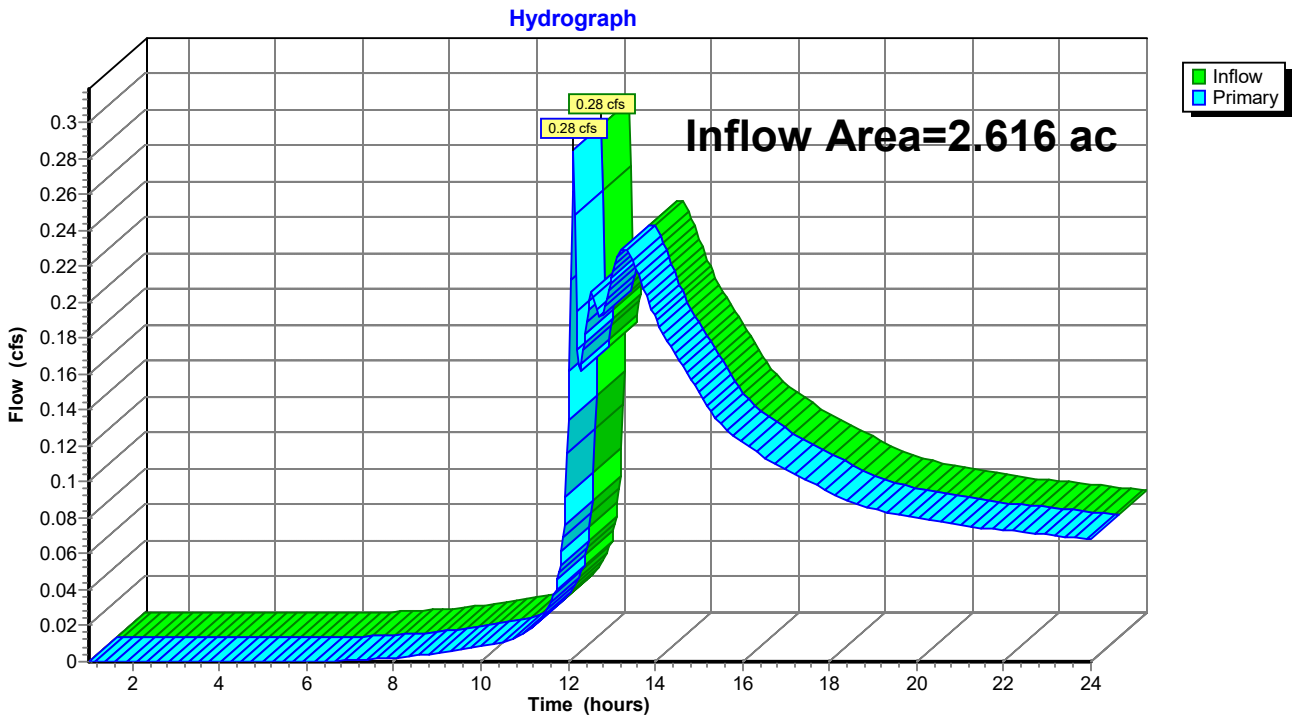


Summary for Link 2L: SP-2

Inflow Area = 2.616 ac, 36.98% Impervious, Inflow Depth > 0.55" for 2-Year event
Inflow = 0.28 cfs @ 12.13 hrs, Volume= 0.121 af
Primary = 0.28 cfs @ 12.13 hrs, Volume= 0.121 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs

Link 2L: SP-2



Time span=1.00-24.00 hrs, dt=0.03 hrs, 768 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Web Rd-N Runoff Area=7,980 sf 55.31% Impervious Runoff Depth>2.01"
Flow Length=174' Tc=12.7 min CN=72 Runoff=0.32 cfs 0.031 af

Subcatchment 2S: Web RD S Runoff Area=10,764 sf 46.11% Impervious Runoff Depth>2.02"
Flow Length=223' Tc=5.0 min CN=72 Runoff=0.58 cfs 0.042 af

Subcatchment 3S: Turner RD Runoff Area=68,885 sf 16.27% Impervious Runoff Depth>0.97"
Flow Length=576' Tc=29.3 min CN=57 Runoff=0.73 cfs 0.128 af

Subcatchment 4S: Lawn Pleas-W Runoff Area=14,692 sf 52.63% Impervious Runoff Depth>2.26"
Flow Length=114' Tc=9.8 min CN=75 Runoff=0.73 cfs 0.063 af

Subcatchment 5S: Lawn Pleas-E Runoff Area=14,348 sf 60.79% Impervious Runoff Depth>2.60"
Flow Length=215' Tc=9.9 min CN=79 Runoff=0.82 cfs 0.071 af

Subcatchment 11S: DRWY NE Runoff Area=4,660 sf 100.00% Impervious Runoff Depth>4.53"
Flow Length=105' Tc=5.0 min CN=98 Runoff=0.48 cfs 0.040 af

Subcatchment 12S: DRWY SE Runoff Area=5,373 sf 100.00% Impervious Runoff Depth>4.53"
Flow Length=105' Tc=5.0 min CN=98 Runoff=0.55 cfs 0.047 af

Subcatchment 13S: PARK SE Runoff Area=10,014 sf 68.49% Impervious Runoff Depth>2.96"
Flow Length=165' Tc=5.0 min CN=83 Runoff=0.78 cfs 0.057 af

Subcatchment 14S: PARK SW Runoff Area=8,603 sf 77.35% Impervious Runoff Depth>3.35"
Flow Length=158' Tc=5.0 min CN=87 Runoff=0.74 cfs 0.055 af

Subcatchment 15S: DRWY W Runoff Area=15,708 sf 79.34% Impervious Runoff Depth>3.45"
Flow Length=183' Tc=5.0 min CN=88 Runoff=1.39 cfs 0.104 af

Subcatchment 16S: VISIT LOT Runoff Area=6,630 sf 63.88% Impervious Runoff Depth>2.69"
Flow Length=81' Tc=5.0 min CN=80 Runoff=0.47 cfs 0.034 af

Subcatchment 17S: NEW BLDG Runoff Area=26,024 sf 100.00% Impervious Runoff Depth>4.53"
Flow Length=75' Slope=0.0050 '/' Tc=5.0 min CN=98 Runoff=2.67 cfs 0.225 af

Pond 1P: CB-Web N Peak Elev=72.71' Inflow=0.32 cfs 0.031 af
12.0" Round Culvert n=0.012 L=30.0' S=0.0100 '/' Outflow=0.32 cfs 0.031 af

Pond 2P: Peak Elev=73.14' Inflow=0.88 cfs 0.195 af
12.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=0.88 cfs 0.195 af

Pond 3P: Peak Elev=73.78' Inflow=0.73 cfs 0.128 af
8.0" Round Culvert n=0.013 L=197.0' S=0.0051 '/' Outflow=0.73 cfs 0.128 af

Pond 4P: Peak Elev=75.68' Inflow=0.73 cfs 0.063 af
12.0" Round Culvert n=0.013 L=55.0' S=0.0455 '/' Outflow=0.73 cfs 0.063 af

Pond 5P: CB-Pleas E Peak Elev=72.56' Inflow=1.31 cfs 0.345 af
18.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=1.31 cfs 0.345 af

Pond 6P: Peak Elev=72.91' Inflow=0.73 cfs 0.063 af
30.0" Round Culvert n=0.013 L=254.0' S=0.0102 '/' Outflow=0.73 cfs 0.063 af

Pond 7P: Filterra 1 - 4x6 Peak Elev=77.53' Storage=23 cf Inflow=0.48 cfs 0.040 af
Outflow=0.47 cfs 0.041 af

Pond 8P: Filterra 2 - 4x6 Peak Elev=77.55' Storage=23 cf Inflow=0.55 cfs 0.047 af
Outflow=0.55 cfs 0.047 af

Pond 9P: Filterra 3 - 4x4 Peak Elev=79.37' Storage=16 cf Inflow=0.78 cfs 0.057 af
Outflow=0.78 cfs 0.057 af

Pond 10P: Filterra 4 - 4x6 Peak Elev=79.36' Storage=24 cf Inflow=0.74 cfs 0.055 af
Outflow=0.74 cfs 0.055 af

Pond 11P: Filterra 5 - 6x6 Peak Elev=80.24' Storage=36 cf Inflow=1.39 cfs 0.104 af
Outflow=1.39 cfs 0.104 af

Pond 12P: Filterra 6 - 4x4 Peak Elev=78.24' Storage=15 cf Inflow=0.47 cfs 0.034 af
Outflow=0.47 cfs 0.034 af

Pond 13P: 6 - Fire Cistern Tanks Peak Elev=77.16' Storage=6,501 cf Inflow=3.69 cfs 0.313 af
Outflow=0.33 cfs 0.243 af

Pond 19P: 5 Fire Cistern Tanks Peak Elev=76.63' Storage=4,074 cf Inflow=2.91 cfs 0.216 af
Outflow=0.55 cfs 0.154 af

Pond 26P: (new Pond) Peak Elev=73.92' Inflow=0.55 cfs 0.154 af
12.0" Round Culvert n=0.010 L=70.0' S=0.0114 '/' Outflow=0.55 cfs 0.154 af

Pond 27P: (new Pond) Peak Elev=0.00'
18.0" Round Culvert n=0.013 L=30.0' S=0.0100 '/' Primary=0.00 cfs 0.000 af

Link 1L: SP-1 Inflow=2.38 cfs 0.443 af
Primary=2.38 cfs 0.443 af

Link 2L: SP-2 Inflow=1.40 cfs 0.323 af
Primary=1.40 cfs 0.323 af

Total Runoff Area = 4.446 ac Runoff Volume = 0.897 af Average Runoff Depth = 2.42"
46.66% Pervious = 2.075 ac 53.34% Impervious = 2.372 ac

Summary for Subcatchment 1S: Web Rd-N

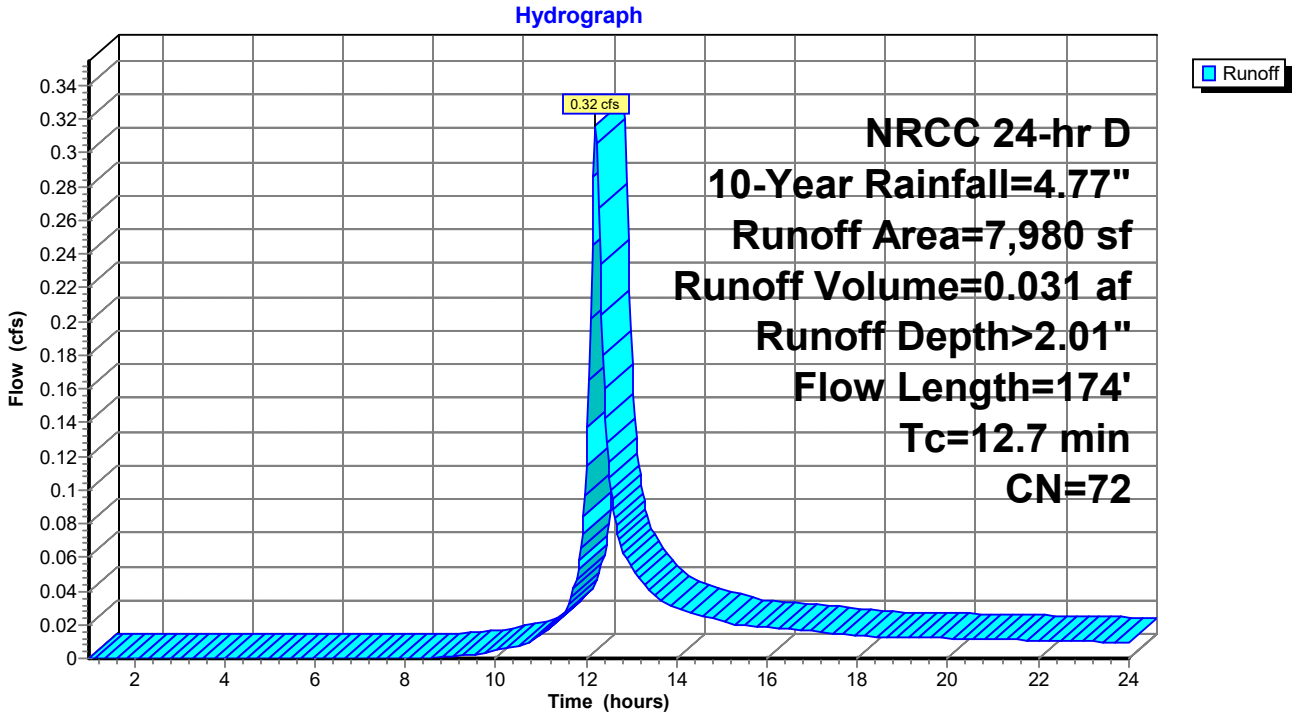
Runoff = 0.32 cfs @ 12.21 hrs, Volume= 0.031 af, Depth> 2.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
4,414	98	Paved parking, HSG A
3,566	39	>75% Grass cover, Good, HSG A
7,980	72	Weighted Average
3,566		44.69% Pervious Area
4,414		55.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	81	0.0250	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.7	93	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
12.7	174	Total			

Subcatchment 1S: Web Rd-N



Summary for Subcatchment 2S: Web RD S

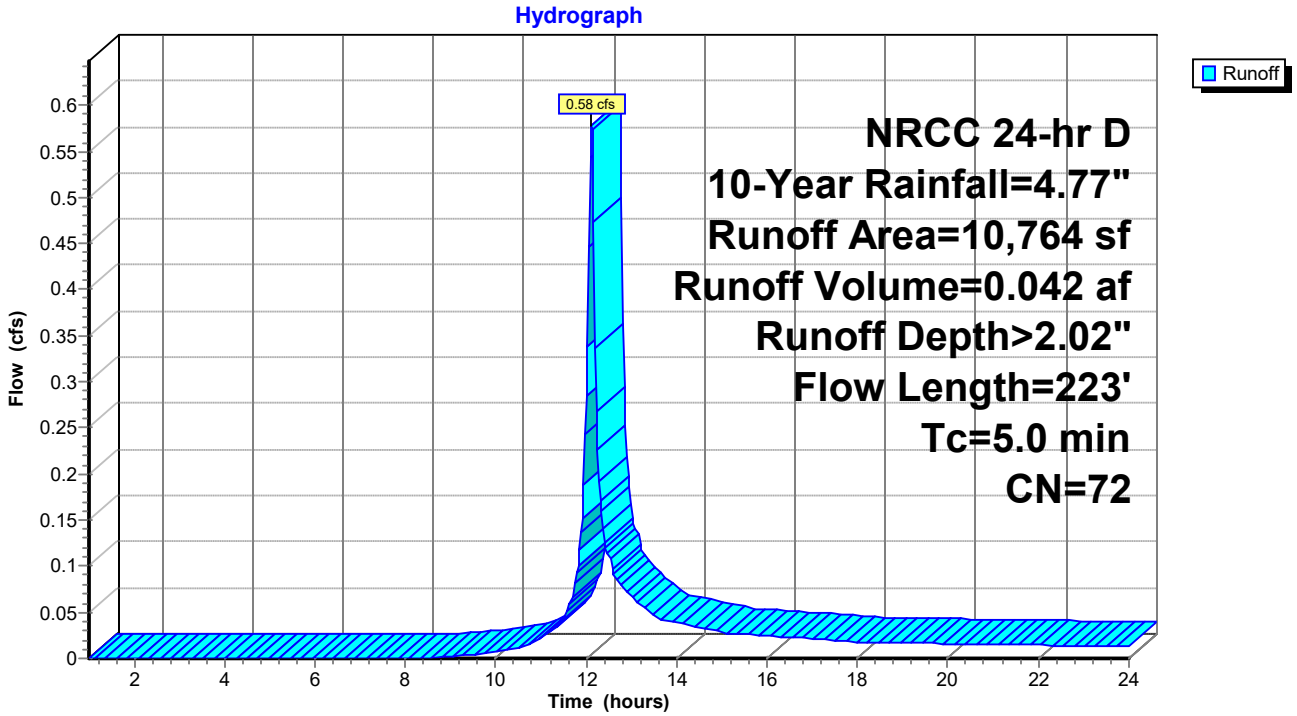
Runoff = 0.58 cfs @ 12.12 hrs, Volume= 0.042 af, Depth> 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
4,963	98	Paved parking, HSG A
5,801	49	50-75% Grass cover, Fair, HSG A
10,764	72	Weighted Average
5,801		53.89% Pervious Area
4,963		46.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0250	0.90		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
1.5	211	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	223	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 2S: Web RD S



Summary for Subcatchment 3S: Turner RD

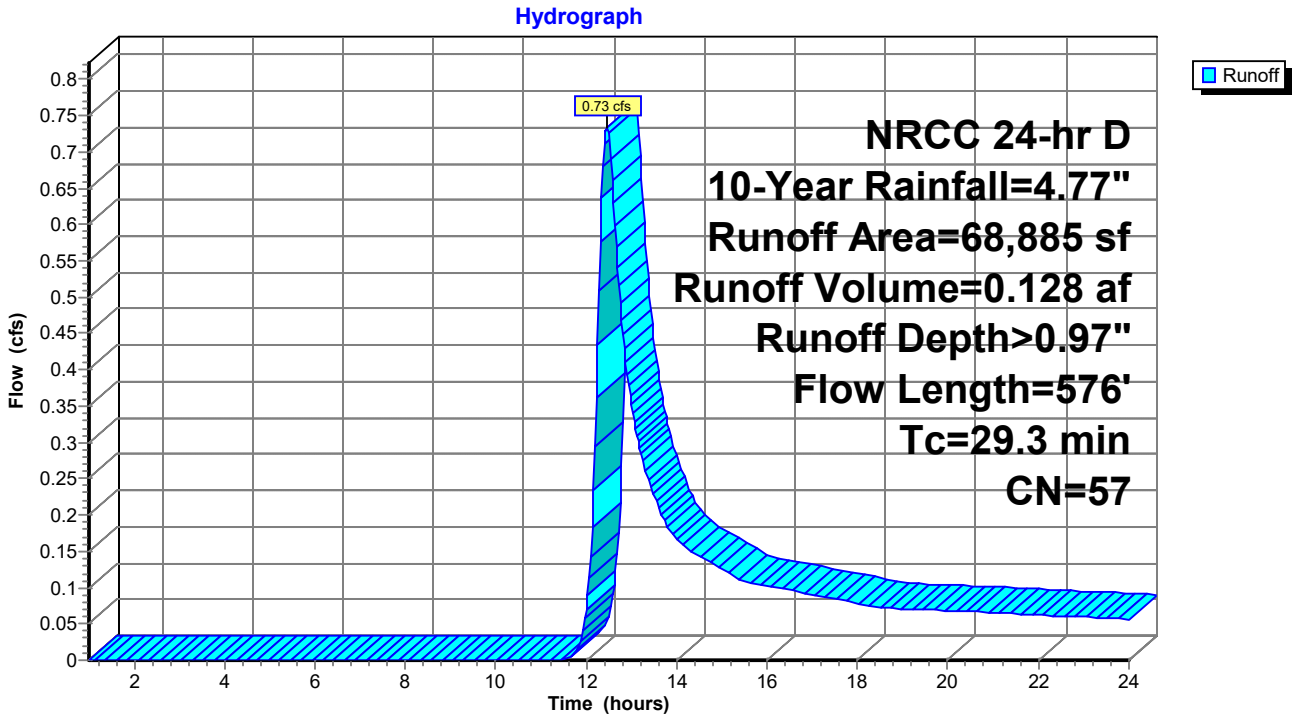
Runoff = 0.73 cfs @ 12.46 hrs, Volume= 0.128 af, Depth> 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 10-Year Rainfall=4.77"

	Area (sf)	CN	Description
*	11,210	98	Paved parking & roofs
	57,675	49	50-75% Grass cover, Fair, HSG A
	68,885	57	Weighted Average
	57,675		83.73% Pervious Area
	11,210		16.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7	132	0.0075	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
8.7	315	0.0075	0.61		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	129	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
29.3	576	Total			

Subcatchment 3S: Turner RD



Summary for Subcatchment 4S: Lawn Pleas-W

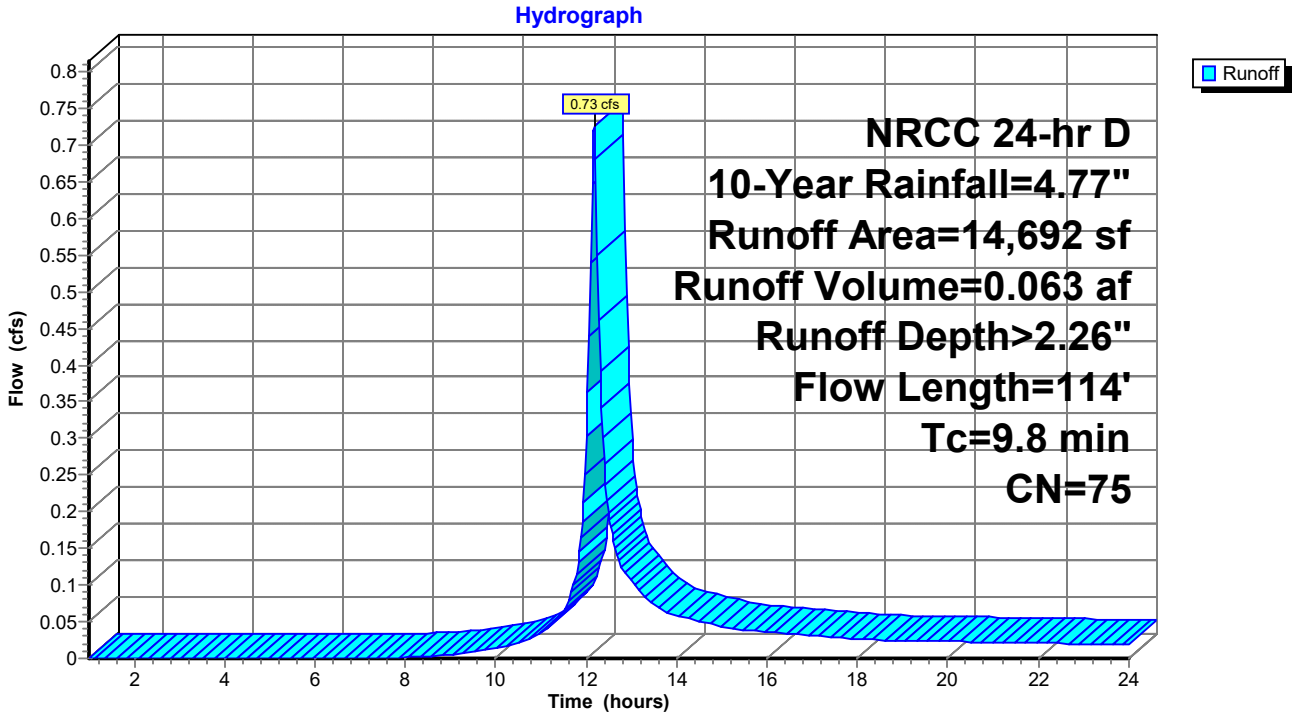
Runoff = 0.73 cfs @ 12.17 hrs, Volume= 0.063 af, Depth> 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
6,959	49	50-75% Grass cover, Fair, HSG A
7,733	98	Paved parking, HSG A
14,692	75	Weighted Average
6,959		47.37% Pervious Area
7,733		52.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	66	0.0125	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.6	48	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.8	114	Total			

Subcatchment 4S: Lawn Pleas-W



Summary for Subcatchment 5S: Lawn Pleas-E

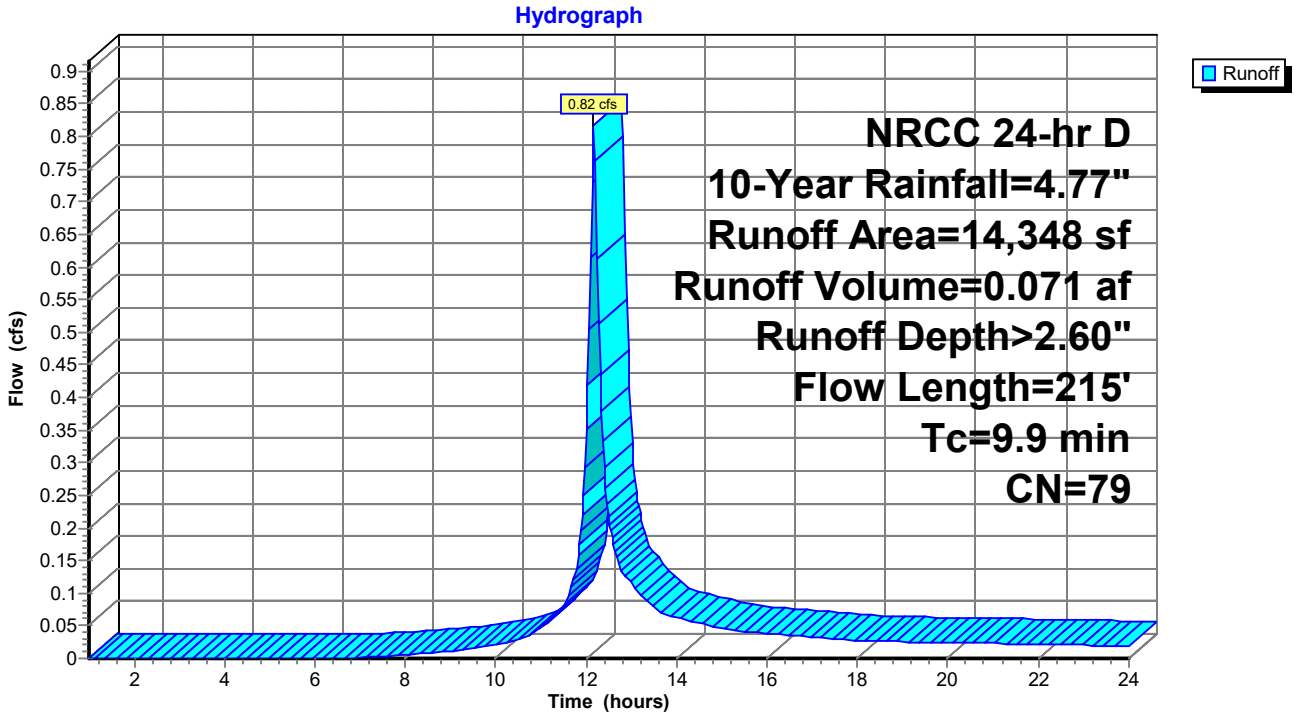
Runoff = 0.82 cfs @ 12.17 hrs, Volume= 0.071 af, Depth> 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 10-Year Rainfall=4.77"

	Area (sf)	CN	Description
*	8,722	98	Paved parking & roofs
	5,626	49	50-75% Grass cover, Fair, HSG A
	14,348	79	Weighted Average
	5,626		39.21% Pervious Area
	8,722		60.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	55	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
1.2	160	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.9	215	Total			

Subcatchment 5S: Lawn Pleas-E



Summary for Subcatchment 11S: DRWY NE

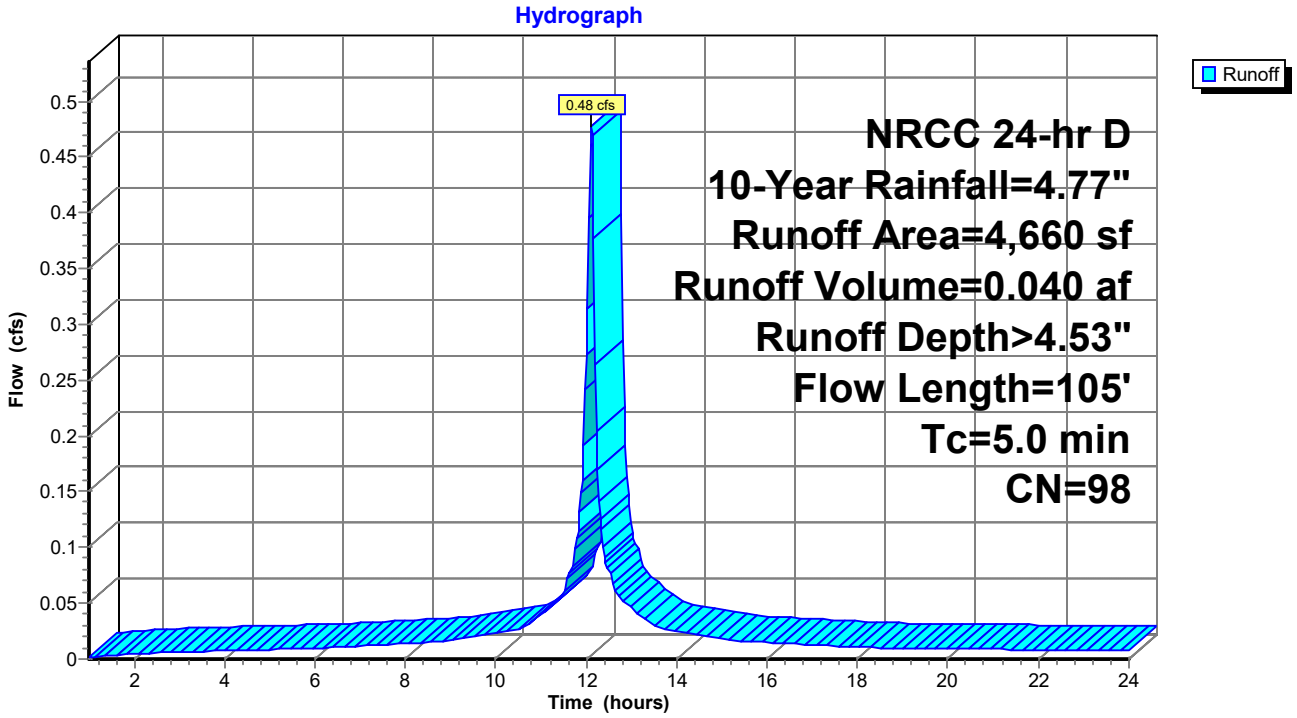
Runoff = 0.48 cfs @ 12.12 hrs, Volume= 0.040 af, Depth> 4.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
4,660	98	Paved parking, HSG A
4,660		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	45	0.0330	1.32		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.4	60	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	105	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 11S: DRWY NE



Summary for Subcatchment 12S: DRWY SE

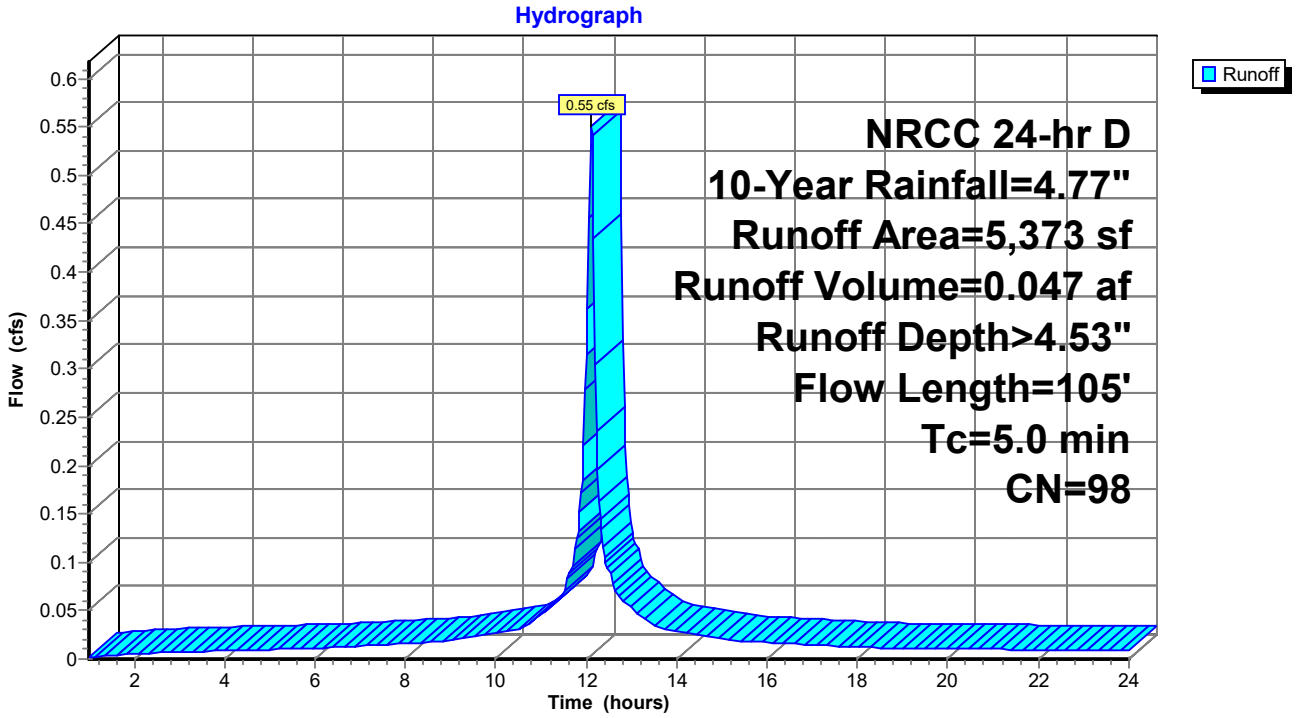
Runoff = 0.55 cfs @ 12.12 hrs, Volume= 0.047 af, Depth> 4.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
5,373	98	Paved parking, HSG A
5,373		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	45	0.0330	1.32		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.4	60	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	105	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 12S: DRWY SE



Summary for Subcatchment 13S: PARK SE

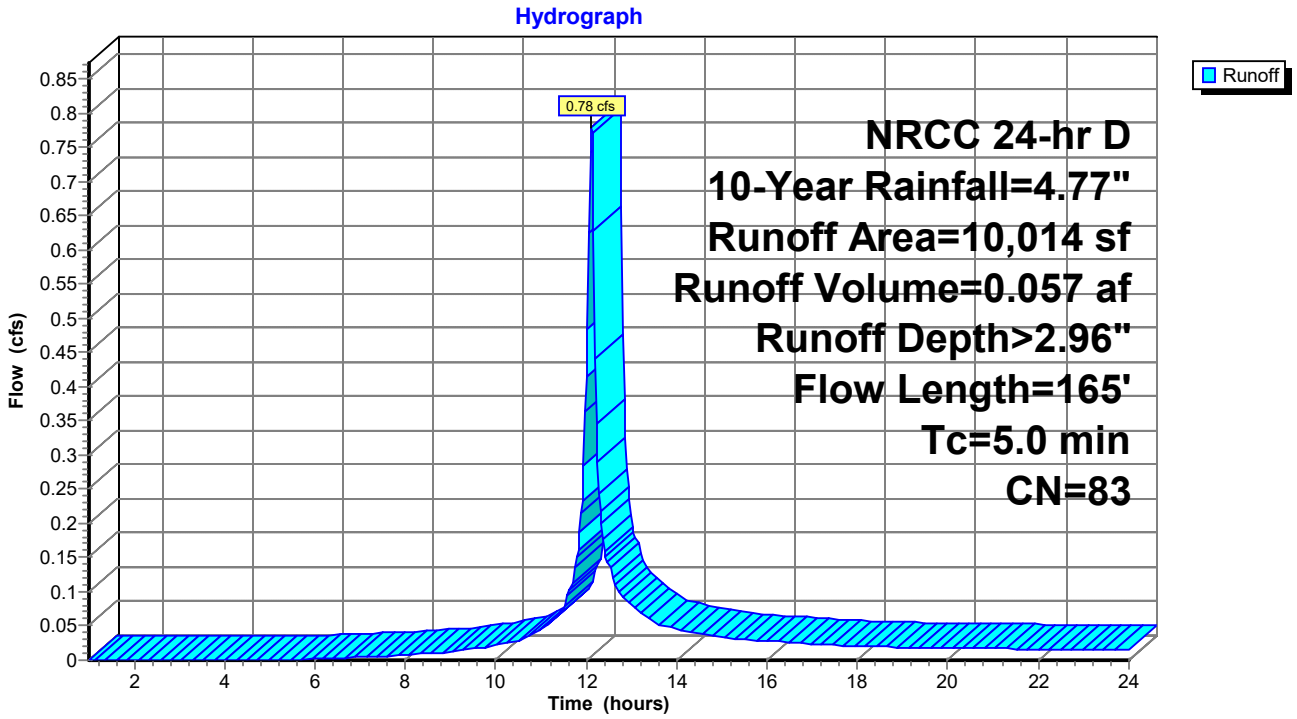
Runoff = 0.78 cfs @ 12.12 hrs, Volume= 0.057 af, Depth> 2.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
6,859	98	Paved parking, HSG A
3,155	49	50-75% Grass cover, Fair, HSG A
10,014	83	Weighted Average
3,155		31.51% Pervious Area
6,859		68.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	20	0.0170	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.8	66	0.0330	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.6	79	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.5	165	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 13S: PARK SE



Summary for Subcatchment 14S: PARK SW

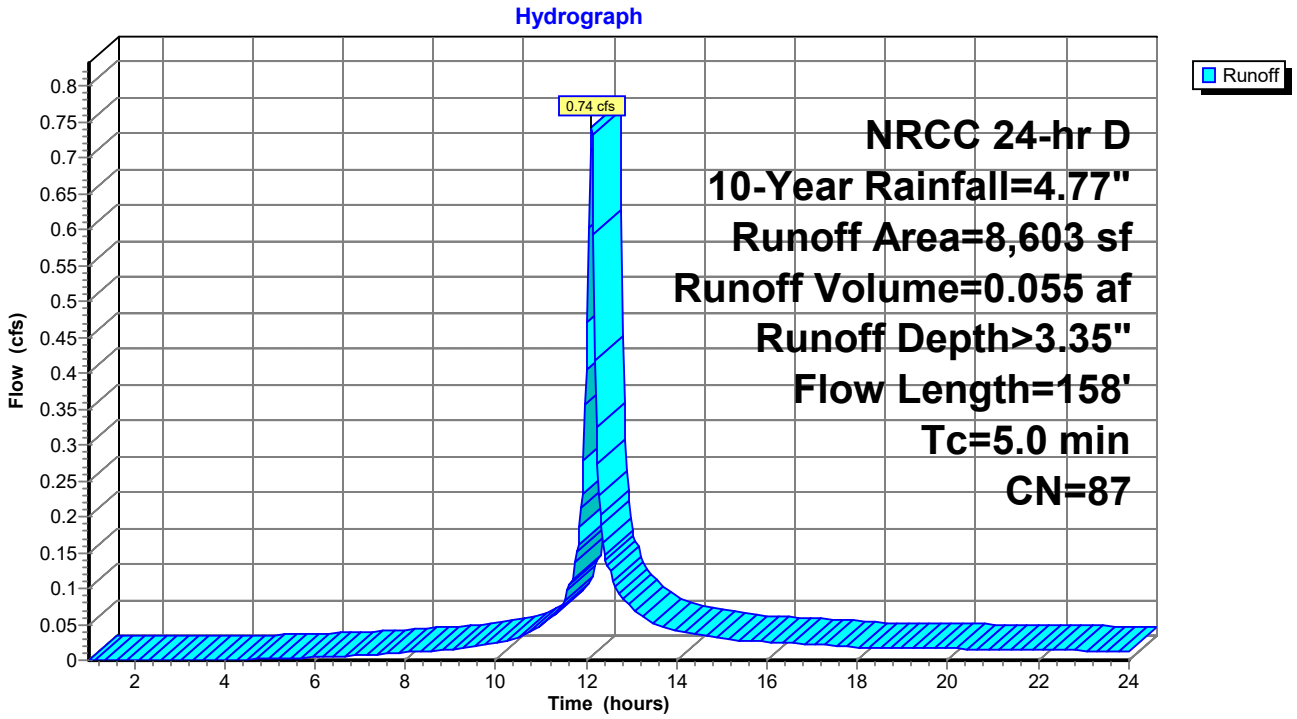
Runoff = 0.74 cfs @ 12.12 hrs, Volume= 0.055 af, Depth> 3.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
6,654	98	Paved parking, HSG A
1,949	49	50-75% Grass cover, Fair, HSG A
8,603	87	Weighted Average
1,949		22.65% Pervious Area
6,654		77.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0170	0.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.8	66	0.0330	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.5	72	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	158	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 14S: PARK SW



Summary for Subcatchment 15S: DRWY W

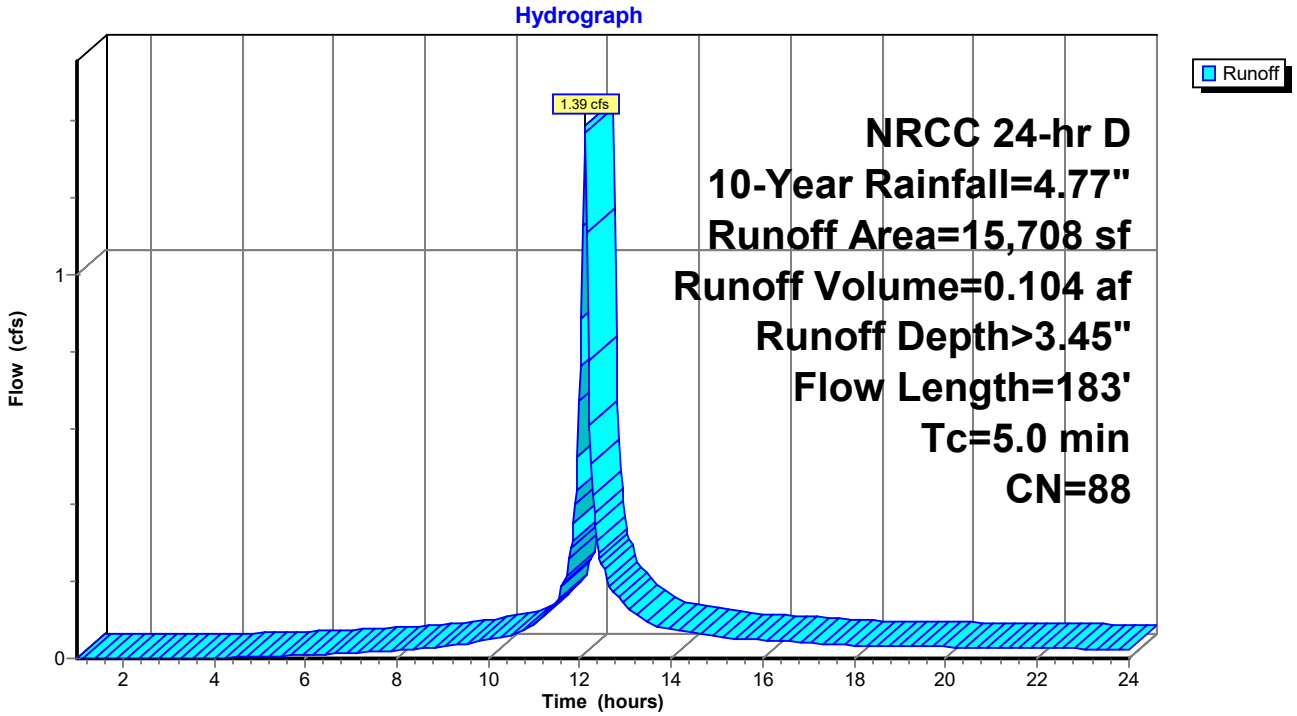
Runoff = 1.39 cfs @ 12.12 hrs, Volume= 0.104 af, Depth> 3.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
12,462	98	Paved parking, HSG A
3,246	49	50-75% Grass cover, Fair, HSG A
15,708	88	Weighted Average
3,246		20.66% Pervious Area
12,462		79.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	58	0.0150	1.01		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.9	125	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.9	183	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 15S: DRWY W



Summary for Subcatchment 16S: VISIT LOT

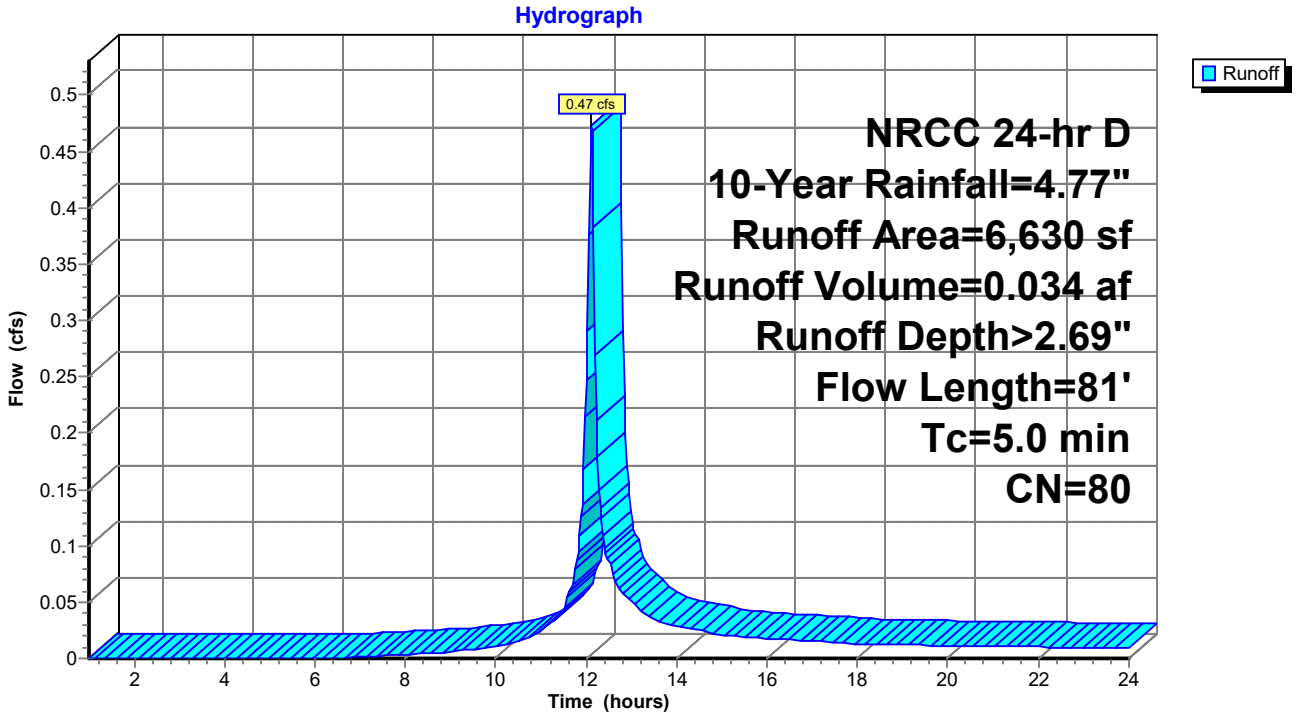
Runoff = 0.47 cfs @ 12.12 hrs, Volume= 0.034 af, Depth> 2.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
4,235	98	Paved parking, HSG A
2,395	49	50-75% Grass cover, Fair, HSG A
6,630	80	Weighted Average
2,395		36.12% Pervious Area
4,235		63.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	41	0.0125	0.88		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.3	40	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	81	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 16S: VISIT LOT



Summary for Subcatchment 17S: NEW BLDG

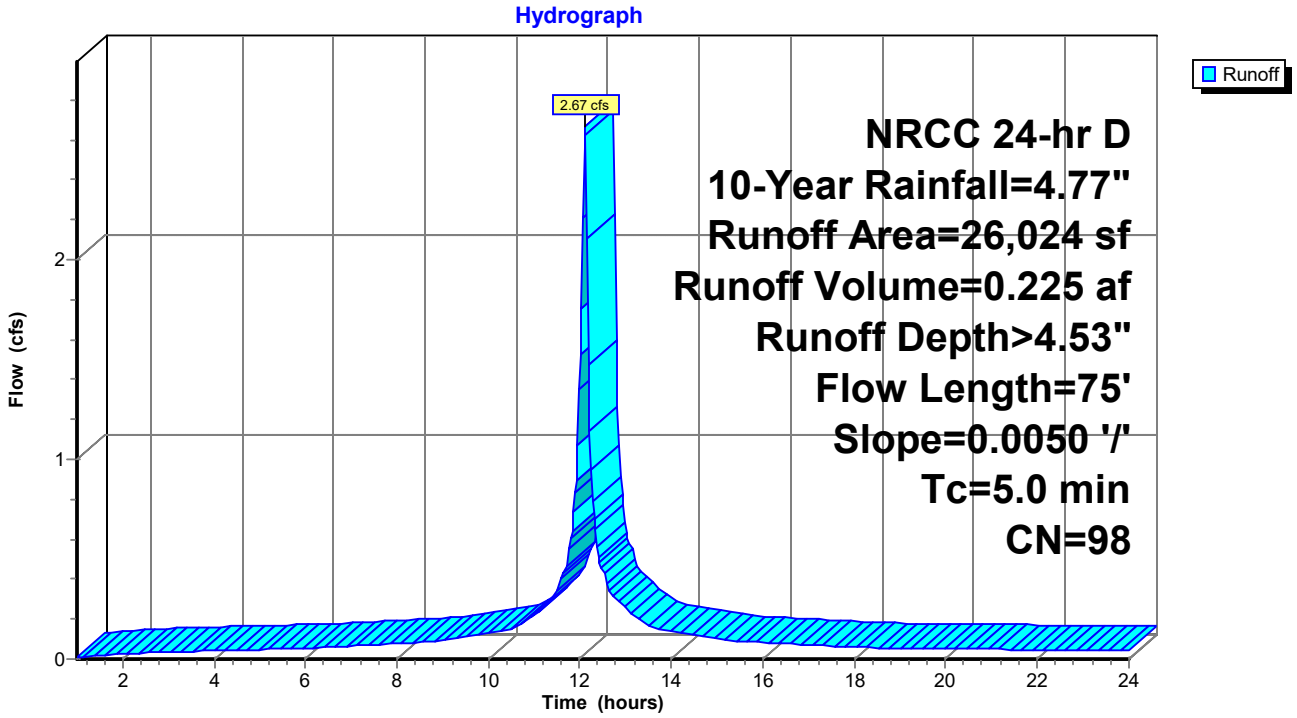
Runoff = 2.67 cfs @ 12.12 hrs, Volume= 0.225 af, Depth> 4.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
26,024	98	Roofs, HSG A
26,024		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	25	0.0050	0.55		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.6	50	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	75	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 17S: NEW BLDG



Summary for Pond 1P: CB-Web N

[57] Hint: Peaked at 72.71' (Flood elevation advised)

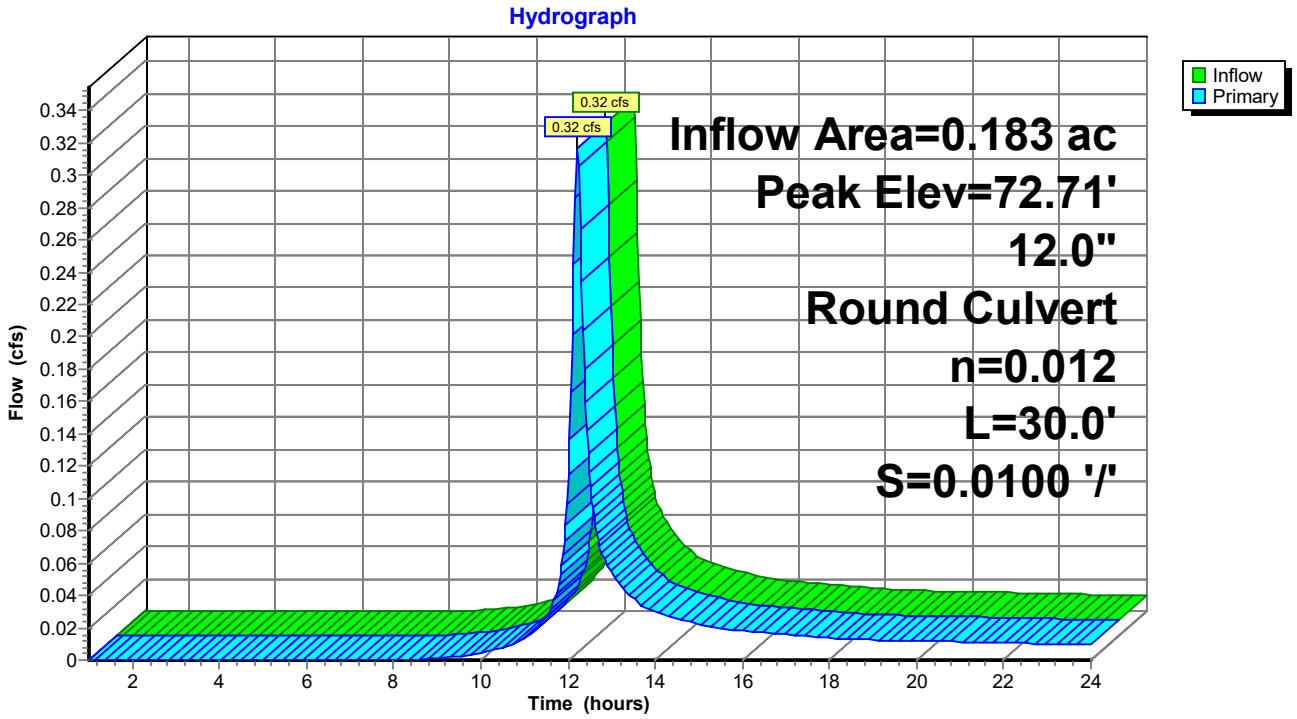
Inflow Area =	0.183 ac, 55.31% Impervious, Inflow Depth > 2.01" for 10-Year event				
Inflow =	0.32 cfs @ 12.21 hrs, Volume=	0.031 af			
Outflow =	0.32 cfs @ 12.21 hrs, Volume=	0.031 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.32 cfs @ 12.21 hrs, Volume=	0.031 af			

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 72.71' @ 12.21 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	72.40'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.40' / 72.10' S= 0.0100 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.31 cfs @ 12.21 hrs HW=72.71' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.31 cfs @ 1.50 fps)

Pond 1P: CB-Web N



Summary for Pond 2P:

[79] Warning: Submerged Pond 26P Primary device # 1 OUTLET by 0.44'

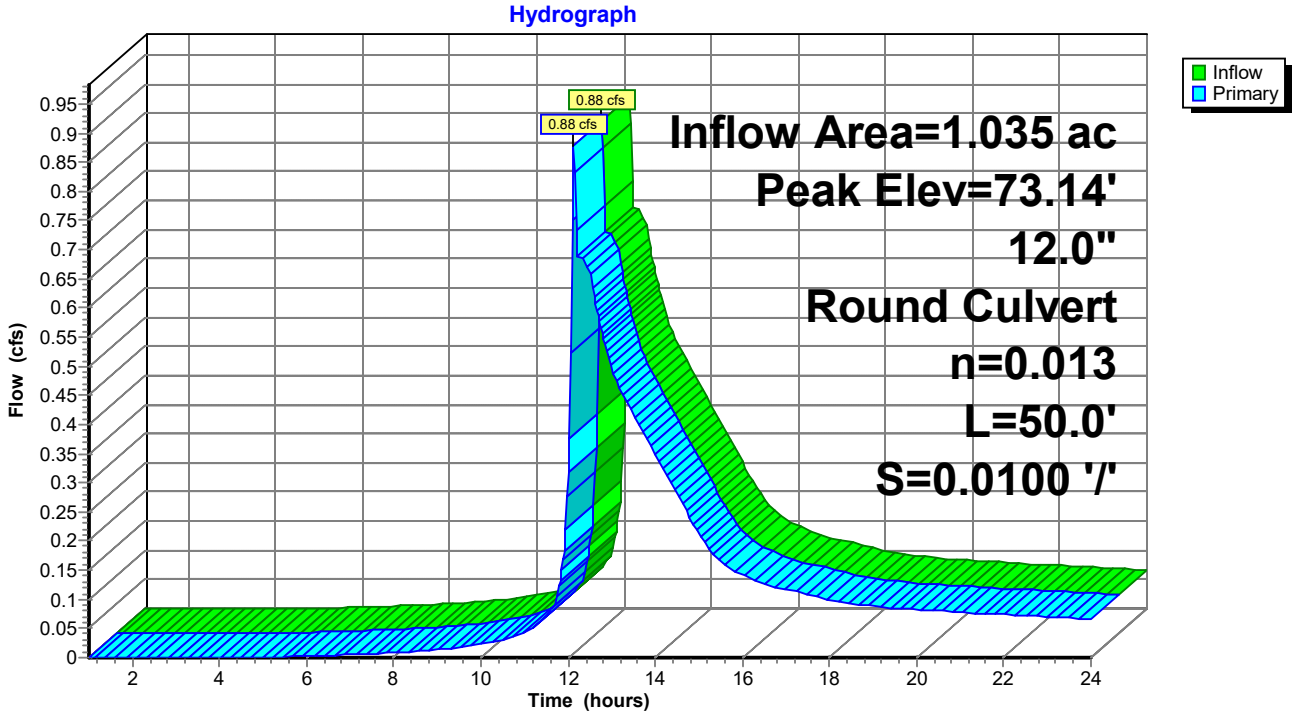
Inflow Area = 1.035 ac, 68.62% Impervious, Inflow Depth > 2.26" for 10-Year event
Inflow = 0.88 cfs @ 12.14 hrs, Volume= 0.195 af
Outflow = 0.88 cfs @ 12.14 hrs, Volume= 0.195 af, Atten= 0%, Lag= 0.0 min
Primary = 0.88 cfs @ 12.14 hrs, Volume= 0.195 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 73.14' @ 12.14 hrs
Flood Elev= 116.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.60'	**12.0" Round Storm Drain** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.60' / 72.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.84 cfs @ 12.14 hrs HW=73.13' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 0.84 cfs @ 1.96 fps)

Pond 2P:



Summary for Pond 3P:

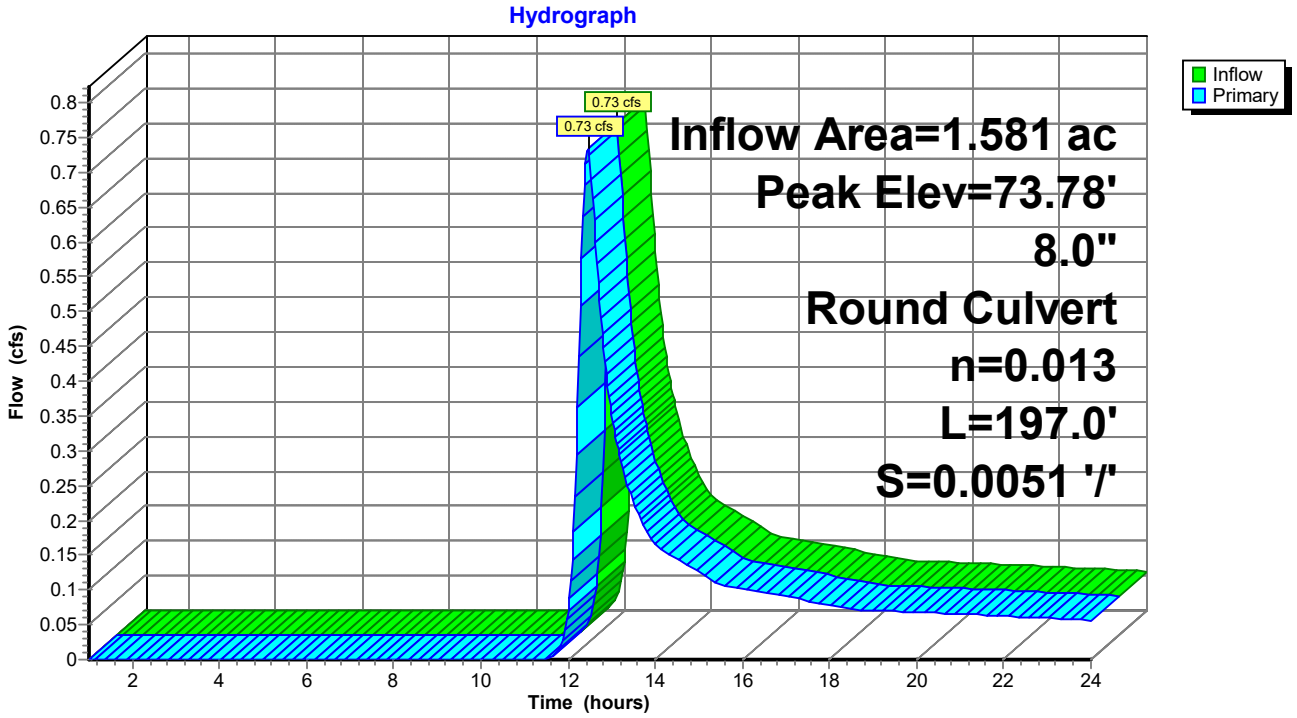
Inflow Area = 1.581 ac, 16.27% Impervious, Inflow Depth > 0.97" for 10-Year event
Inflow = 0.73 cfs @ 12.46 hrs, Volume= 0.128 af
Outflow = 0.73 cfs @ 12.46 hrs, Volume= 0.128 af, Atten= 0%, Lag= 0.0 min
Primary = 0.73 cfs @ 12.46 hrs, Volume= 0.128 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 73.78' @ 12.46 hrs
Flood Elev= 113.94'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.10'	**8.0" Round Storm Drain** L= 197.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.10' / 72.10' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.79 cfs @ 12.46 hrs HW=73.78' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 0.79 cfs @ 2.25 fps)

Pond 3P:



Summary for Pond 4P:

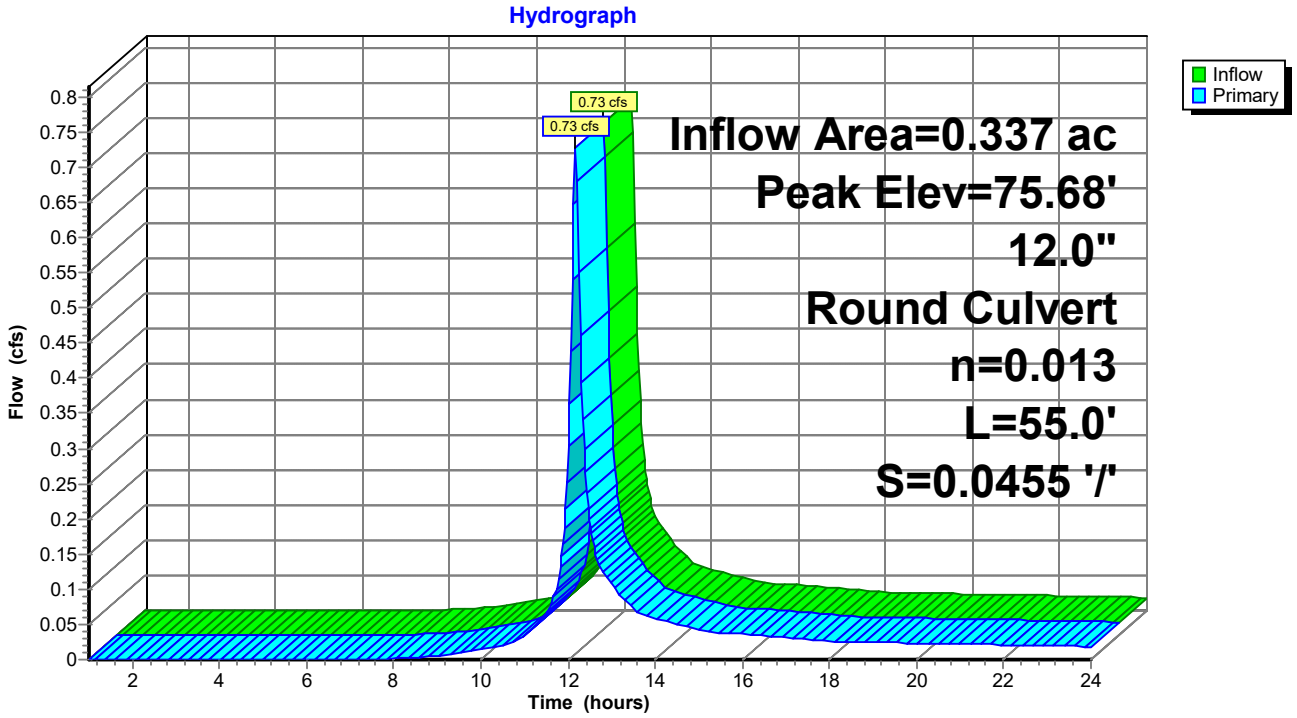
Inflow Area = 0.337 ac, 52.63% Impervious, Inflow Depth > 2.26" for 10-Year event
Inflow = 0.73 cfs @ 12.17 hrs, Volume= 0.063 af
Outflow = 0.73 cfs @ 12.17 hrs, Volume= 0.063 af, Atten= 0%, Lag= 0.0 min
Primary = 0.73 cfs @ 12.17 hrs, Volume= 0.063 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 75.68' @ 12.17 hrs
Flood Elev= 116.29'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.20'	**12.0" Round Storm Drain** L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.20' / 72.70' S= 0.0455 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.69 cfs @ 12.17 hrs HW=75.68' (Free Discharge)
└─**1=Storm Drain** (Inlet Controls 0.69 cfs @ 1.86 fps)

Pond 4P:



Summary for Pond 5P: CB-Pleas E

[79] Warning: Submerged Pond 1P Primary device # 1 INLET by 0.16'
[79] Warning: Submerged Pond 27P Primary device # 1 INLET by 0.16'

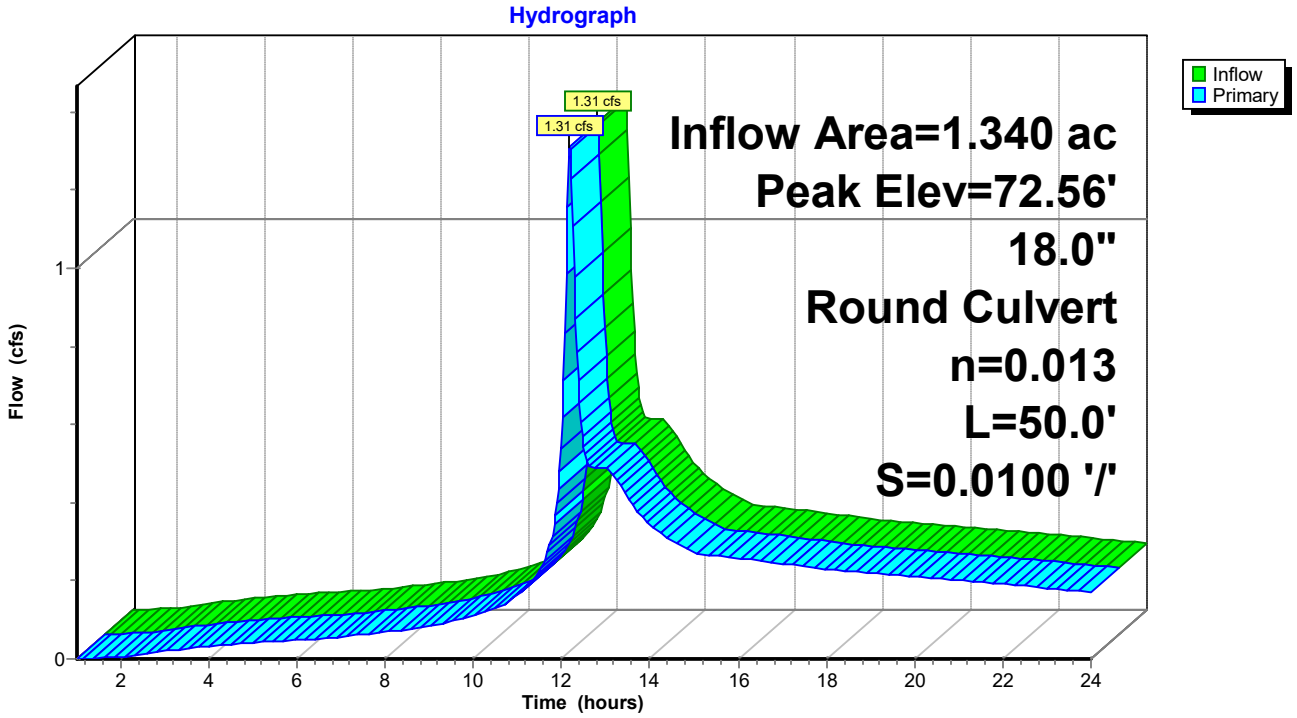
Inflow Area =	1.340 ac, 84.26% Impervious, Inflow Depth > 3.09" for 10-Year event				
Inflow =	1.31 cfs @	12.18 hrs,	Volume=	0.345 af	
Outflow =	1.31 cfs @	12.18 hrs,	Volume=	0.345 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.31 cfs @	12.18 hrs,	Volume=	0.345 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 72.56' @ 12.18 hrs
Flood Elev= 114.79'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.00'	**18.0" Round Storm Drain** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.00' / 71.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.21 cfs @ 12.18 hrs HW=72.56' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 1.21 cfs @ 2.01 fps)

Pond 5P: CB-Pleas E



Summary for Pond 6P:

[79] Warning: Submerged Pond 4P Primary device # 1 OUTLET by 0.21'

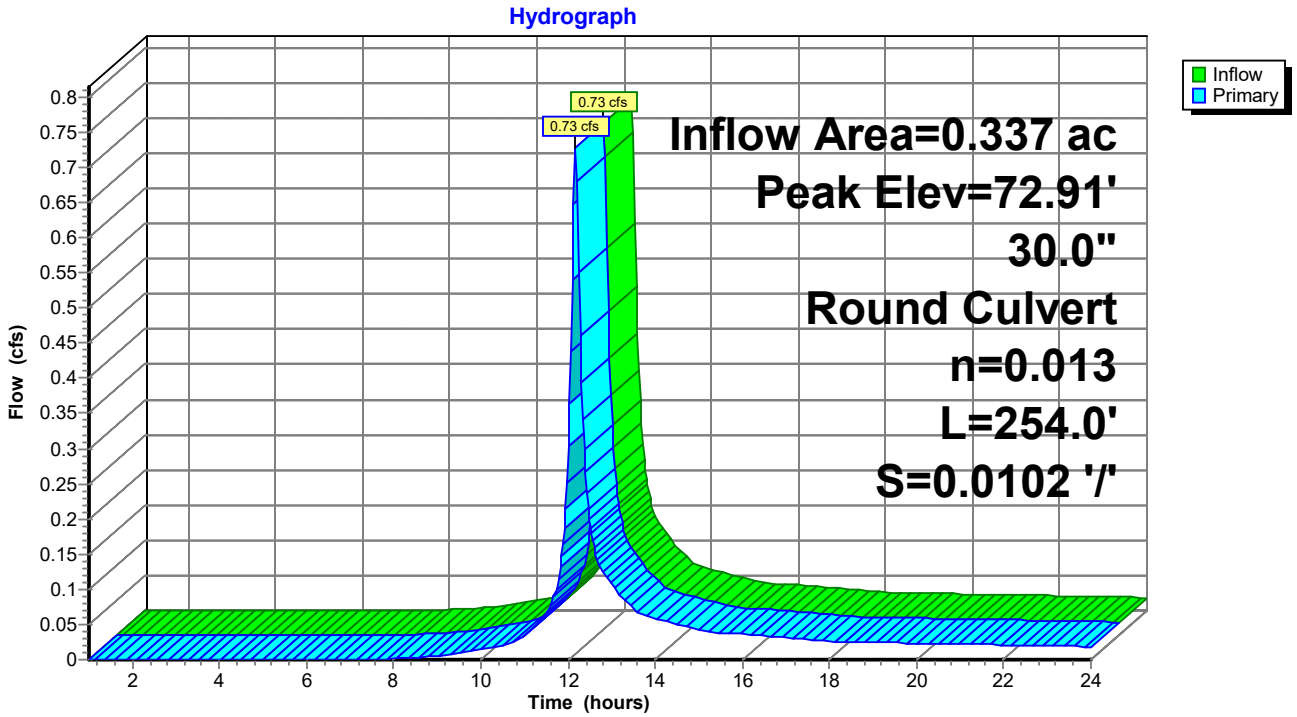
Inflow Area = 0.337 ac, 52.63% Impervious, Inflow Depth > 2.26" for 10-Year event
Inflow = 0.73 cfs @ 12.17 hrs, Volume= 0.063 af
Outflow = 0.73 cfs @ 12.17 hrs, Volume= 0.063 af, Atten= 0%, Lag= 0.0 min
Primary = 0.73 cfs @ 12.17 hrs, Volume= 0.063 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 72.91' @ 12.17 hrs
Flood Elev= 116.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.60'	**30.0" Round Storm Drain** L= 254.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.60' / 70.00' S= 0.0102 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=0.51 cfs @ 12.17 hrs HW=72.91' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 0.51 cfs @ 1.48 fps)

Pond 6P:



Summary for Pond 7P: Filterra 1 - 4x6

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.107 ac,100.00% Impervious, Inflow Depth > 4.53" for 10-Year event
Inflow = 0.48 cfs @ 12.12 hrs, Volume= 0.040 af
Outflow = 0.47 cfs @ 12.12 hrs, Volume= 0.041 af, Atten= 1%, Lag= 0.1 min
Primary = 0.47 cfs @ 12.12 hrs, Volume= 0.041 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 77.53' @ 12.12 hrs Surf.Area= 24 sf Storage= 23 cf

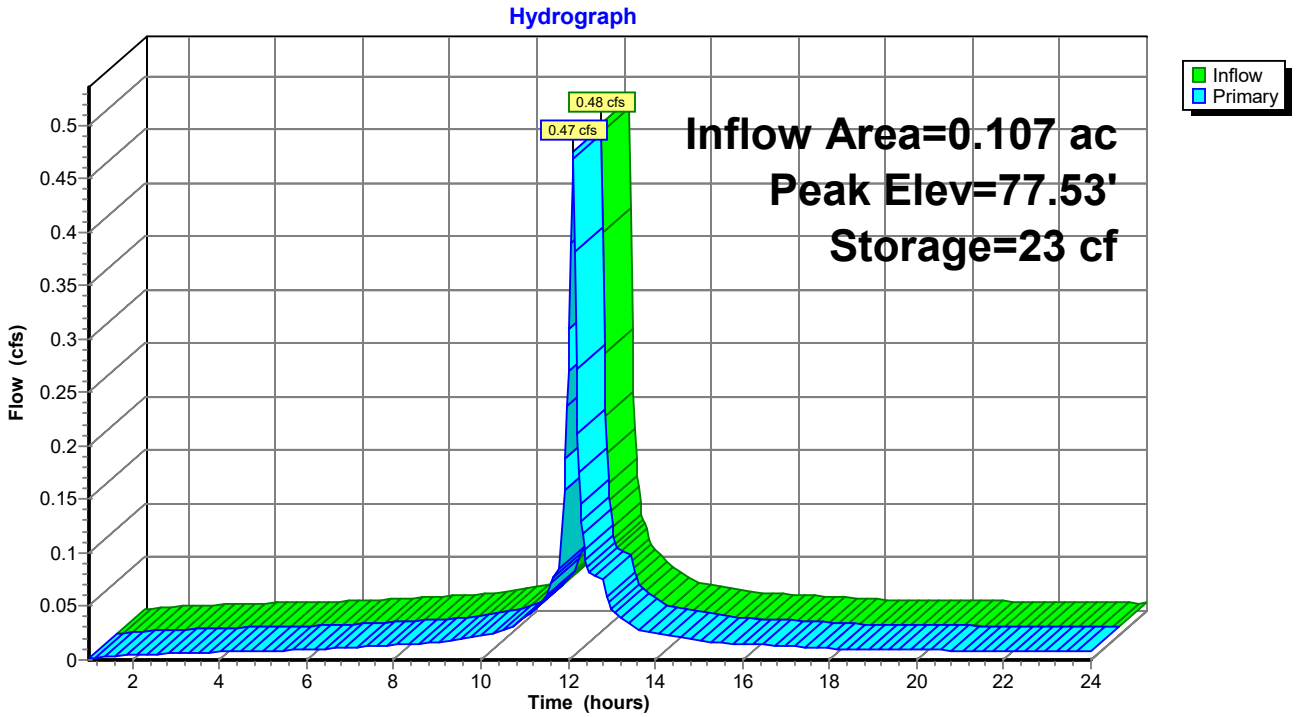
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.7 min (751.0 - 750.3)

Volume	Invert	Avail.Storage	Storage Description
#1	76.59'	24 cf	**6.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	74.42'	**8.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.42' / 74.33' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	76.59'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	77.34'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.46 cfs @ 12.12 hrs HW=77.53' (Free Discharge)
└─**1=Culvert** (Passes 0.46 cfs of 2.80 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.08 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Weir Controls 0.39 cfs @ 1.21 fps)

Pond 7P: Filterra 1 - 4x6



Summary for Pond 8P: Filterra 2 - 4x6

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.123 ac,100.00% Impervious, Inflow Depth > 4.53" for 10-Year event
Inflow = 0.55 cfs @ 12.12 hrs, Volume= 0.047 af
Outflow = 0.55 cfs @ 12.12 hrs, Volume= 0.047 af, Atten= 1%, Lag= 0.1 min
Primary = 0.55 cfs @ 12.12 hrs, Volume= 0.047 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 77.55' @ 12.12 hrs Surf.Area= 24 sf Storage= 23 cf

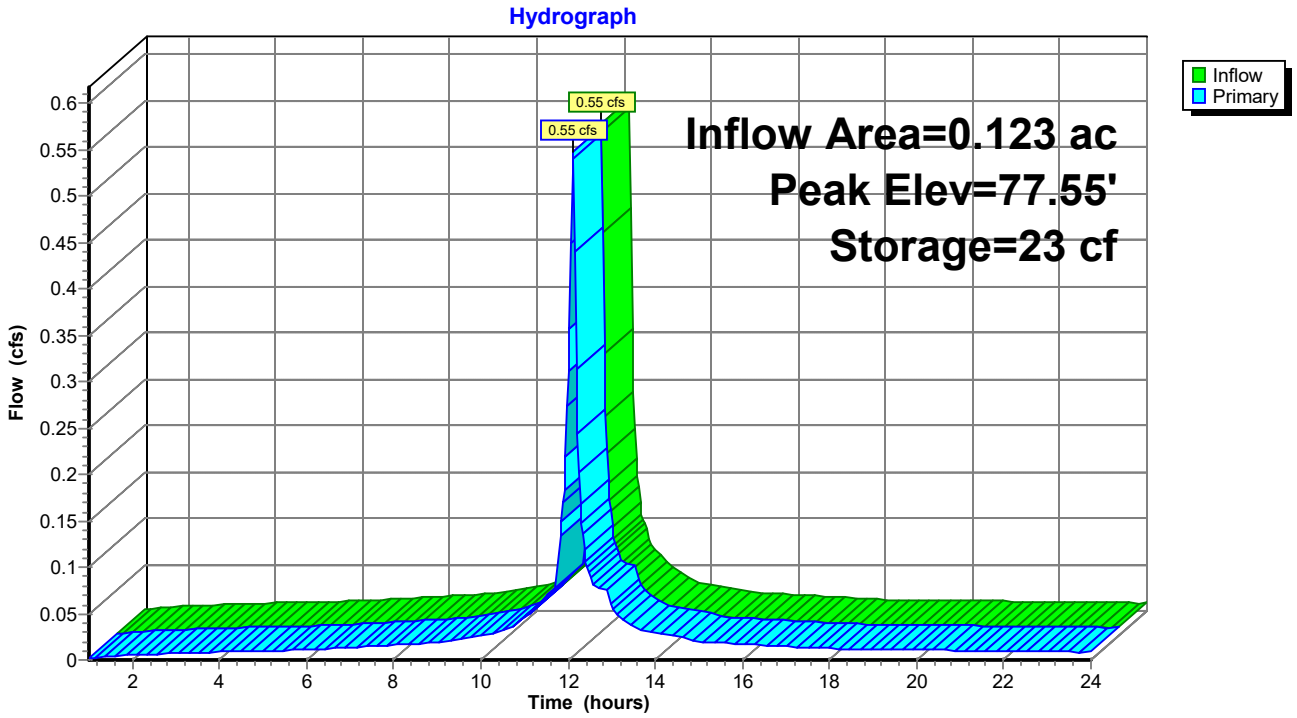
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.7 min (751.0 - 750.3)

Volume	Invert	Avail.Storage	Storage Description
#1	76.59'	24 cf	**6.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	74.42'	**8.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.42' / 74.33' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	76.59'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	77.34'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.53 cfs @ 12.12 hrs HW=77.55' (Free Discharge)
└─**1=Culvert** (Passes 0.53 cfs of 2.81 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.08 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Weir Controls 0.46 cfs @ 1.28 fps)

Pond 8P: Filterra 2 - 4x6



Summary for Pond 9P: Filterra 3 - 4x4

[93] Warning: Storage range exceeded by 0.03'

Inflow Area = 0.230 ac, 68.49% Impervious, Inflow Depth > 2.96" for 10-Year event
Inflow = 0.78 cfs @ 12.12 hrs, Volume= 0.057 af
Outflow = 0.78 cfs @ 12.12 hrs, Volume= 0.057 af, Atten= 0%, Lag= 0.0 min
Primary = 0.78 cfs @ 12.12 hrs, Volume= 0.057 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 79.37' @ 12.12 hrs Surf.Area= 16 sf Storage= 16 cf

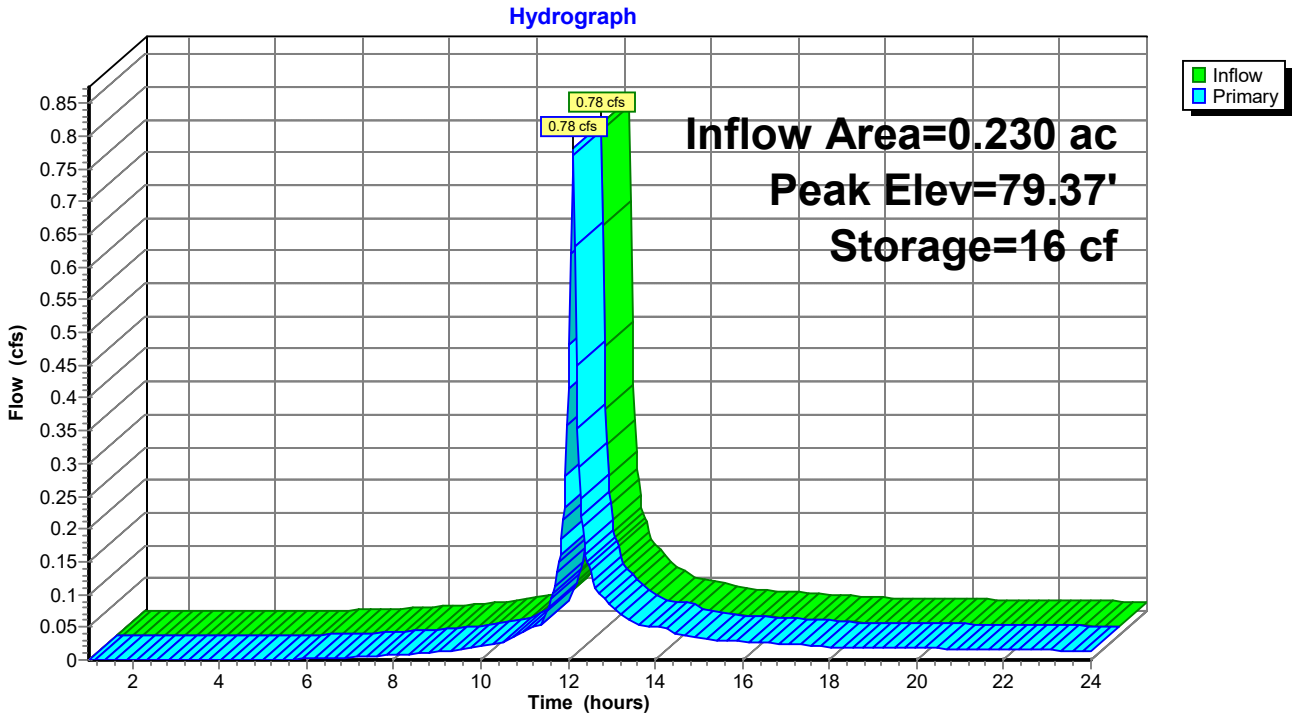
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.8 min (834.4 - 833.6)

Volume	Invert	Avail.Storage	Storage Description
#1	78.34'	16 cf	**4.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	76.17'	**8.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 76.17' / 76.08' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	78.34'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	79.09'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.76 cfs @ 12.12 hrs HW=79.37' (Free Discharge)
└─**1=Culvert** (Passes 0.76 cfs of 2.84 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.05 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Weir Controls 0.71 cfs @ 1.50 fps)

Pond 9P: Filterra 3 - 4x4



Summary for Pond 10P: Filterra 4 - 4x6

[93] Warning: Storage range exceeded by 0.02'

Inflow Area = 0.197 ac, 77.35% Impervious, Inflow Depth > 3.35" for 10-Year event
Inflow = 0.74 cfs @ 12.12 hrs, Volume= 0.055 af
Outflow = 0.74 cfs @ 12.12 hrs, Volume= 0.055 af, Atten= 0%, Lag= 0.0 min
Primary = 0.74 cfs @ 12.12 hrs, Volume= 0.055 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 79.36' @ 12.12 hrs Surf.Area= 24 sf Storage= 24 cf

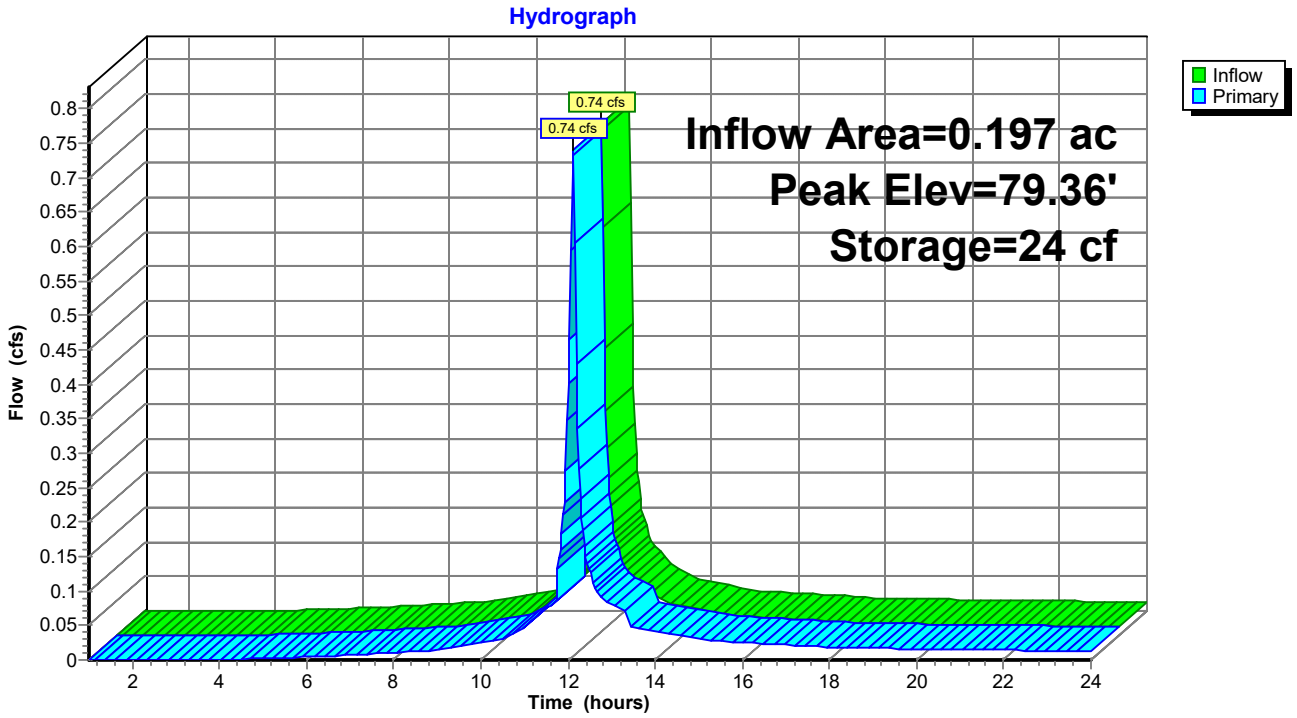
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.8 min (818.4 - 817.6)

Volume	Invert	Avail.Storage	Storage Description
#1	78.34'	24 cf	**4.00'W x 6.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	76.17'	**6.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 76.17' / 76.08' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	78.34'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	79.09'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.72 cfs @ 12.12 hrs HW=79.35' (Free Discharge)
└─**1=Culvert** (Passes 0.72 cfs of 1.62 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.08 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Weir Controls 0.65 cfs @ 1.45 fps)

Pond 10P: Filterra 4 - 4x6



Summary for Pond 11P: Filterra 5 - 6x6

[93] Warning: Storage range exceeded by 0.15'
[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 0.361 ac, 79.34% Impervious, Inflow Depth > 3.45" for 10-Year event
Inflow = 1.39 cfs @ 12.12 hrs, Volume= 0.104 af
Outflow = 1.39 cfs @ 12.12 hrs, Volume= 0.104 af, Atten= 0%, Lag= 0.0 min
Primary = 1.39 cfs @ 12.12 hrs, Volume= 0.104 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 80.24' @ 12.12 hrs Surf.Area= 36 sf Storage= 36 cf

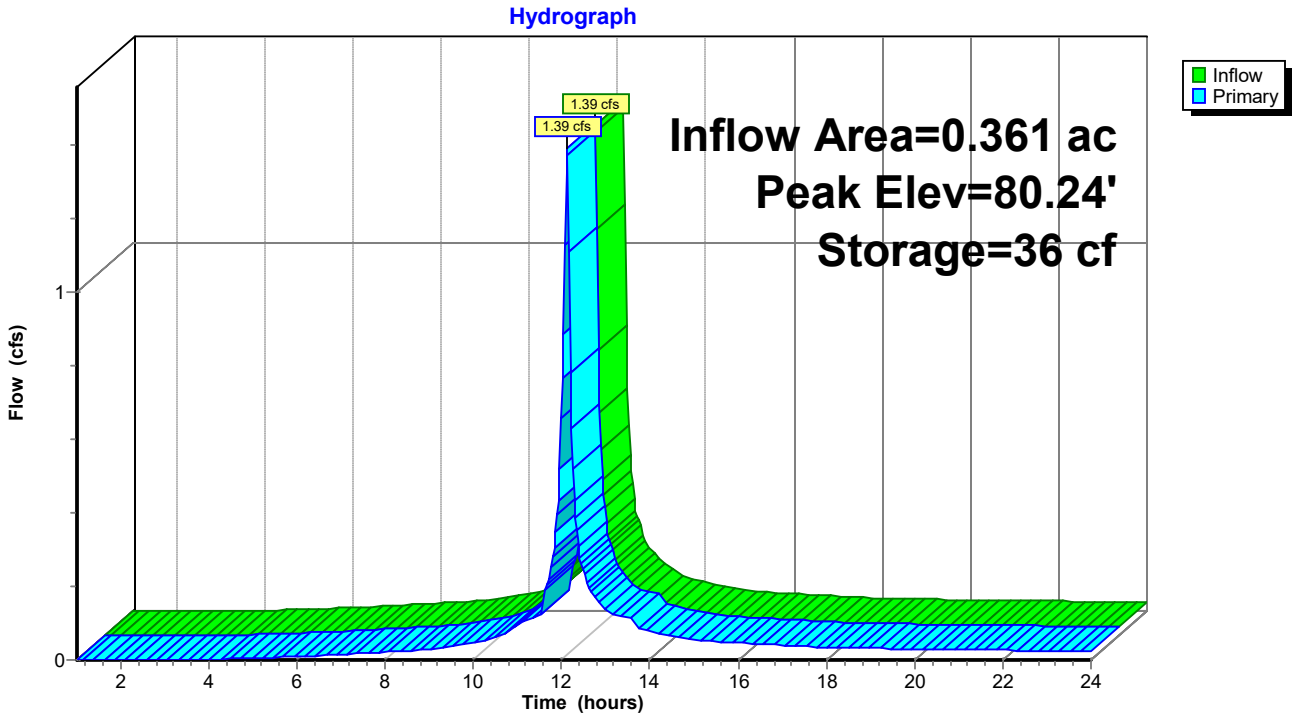
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.8 min (814.0 - 813.2)

Volume	Invert	Avail.Storage	Storage Description
#1	79.09'	36 cf	**6.00'W x 6.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	76.92'	**6.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 76.92' / 76.83' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	79.09'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	79.84'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=1.36 cfs @ 12.12 hrs HW=80.24' (Free Discharge)
└─**1=Culvert** (Passes 1.36 cfs of 1.66 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.12 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Weir Controls 1.24 cfs @ 1.84 fps)

Pond 11P: Filterra 5 - 6x6



Summary for Pond 12P: Filterra 6 - 4x4

Inflow Area = 0.152 ac, 63.88% Impervious, Inflow Depth > 2.69" for 10-Year event
Inflow = 0.47 cfs @ 12.12 hrs, Volume= 0.034 af
Outflow = 0.47 cfs @ 12.12 hrs, Volume= 0.034 af, Atten= 1%, Lag= 0.0 min
Primary = 0.47 cfs @ 12.12 hrs, Volume= 0.034 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 78.24' @ 12.12 hrs Surf.Area= 16 sf Storage= 15 cf

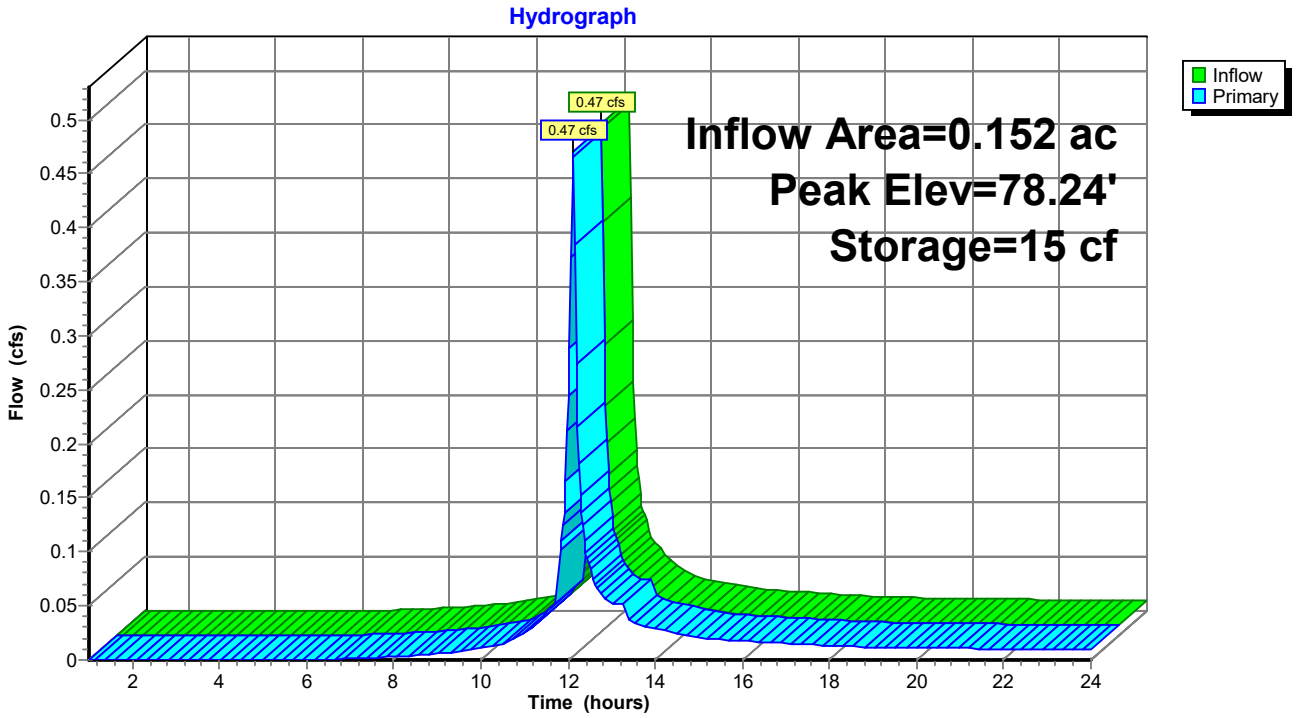
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.7 min (845.3 - 844.6)

Volume	Invert	Avail.Storage	Storage Description
#1	77.29'	16 cf	**4.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	75.12'	**8.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.12' / 75.08' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	77.29'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	78.04'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.46 cfs @ 12.12 hrs HW=78.23' (Free Discharge)
└─**1=Culvert** (Passes 0.46 cfs of 2.80 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.05 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Weir Controls 0.41 cfs @ 1.23 fps)

Pond 12P: Filterra 6 - 4x4



Summary for Pond 13P: 6 - Fire Cistern Tanks

[82] Warning: Early inflow requires earlier time span
[81] Warning: Exceeded Pond 7P by 0.57' @ 13.09 hrs
[81] Warning: Exceeded Pond 8P by 0.57' @ 13.09 hrs

Inflow Area =	0.828 ac,100.00% Impervious, Inflow Depth > 4.53" for 10-Year event				
Inflow =	3.69 cfs @	12.12 hrs,	Volume=	0.313 af	
Outflow =	0.33 cfs @	13.08 hrs,	Volume=	0.243 af,	Atten= 91%, Lag= 57.8 min
Primary =	0.33 cfs @	13.08 hrs,	Volume=	0.243 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 77.16' @ 13.08 hrs Surf.Area= 1,561 sf Storage= 6,501 cf

Plug-Flow detention time= 285.2 min calculated for 0.243 af (78% of inflow)
Center-of-Mass det. time= 184.8 min (935.3 - 750.5)

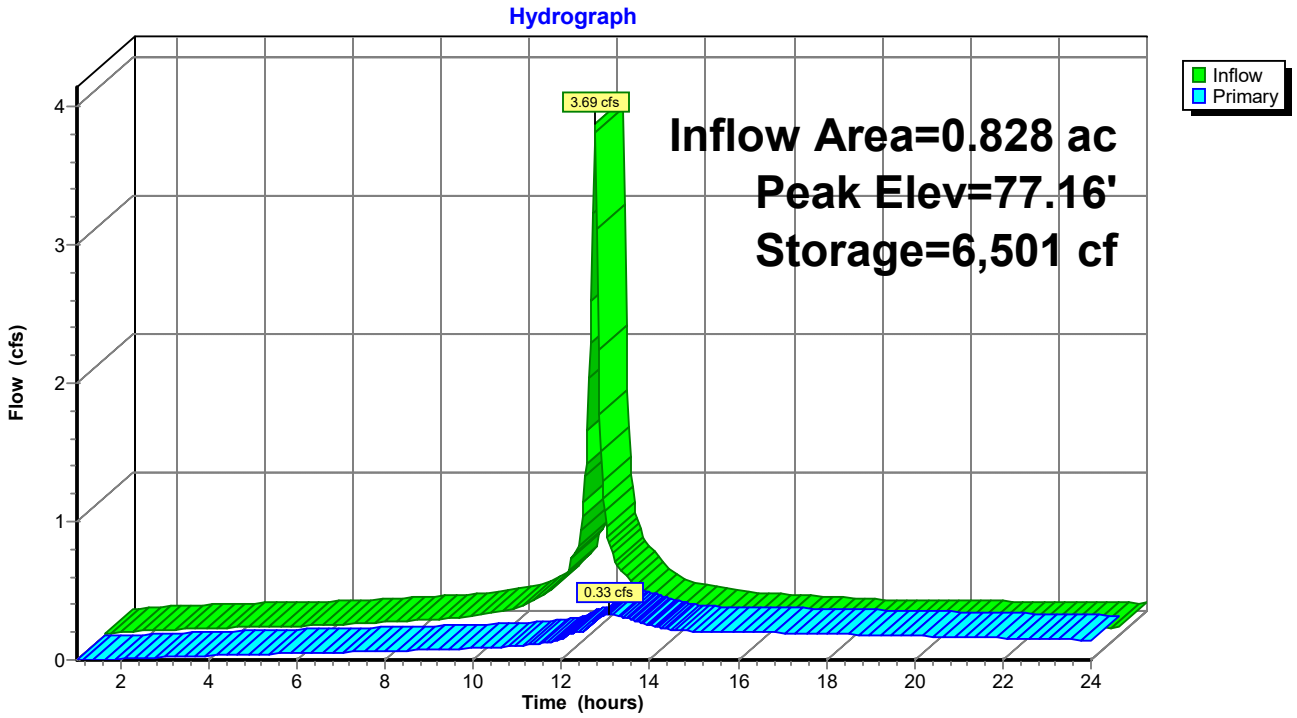
Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	10,927 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	1,561	0	0
74.00	1,561	1,561	1,561
75.00	1,561	1,561	3,122
76.00	1,561	1,561	4,683
77.00	1,561	1,561	6,244
78.00	1,561	1,561	7,805
79.00	1,561	1,561	9,366
80.00	1,561	1,561	10,927

Device	Routing	Invert	Outlet Devices
#1	Primary	78.92'	**6.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	76.92'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	73.00'	**2.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.33 cfs @ 13.08 hrs HW=77.16' (Free Discharge)
└─**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
├─**2=Orifice/Grate** (Orifice Controls 0.12 cfs @ 1.68 fps)
└─**3=Orifice/Grate** (Orifice Controls 0.21 cfs @ 9.73 fps)

Pond 13P: 6 - Fire Cistern Tanks



Summary for Pond 19P: 5 Fire Cistern Tanks

[79] Warning: Submerged Pond 9P Primary device # 1 INLET by 0.46'
[79] Warning: Submerged Pond 10P Primary device # 1 INLET by 0.46'

Inflow Area = 0.788 ac, 75.67% Impervious, Inflow Depth > 3.28" for 10-Year event
Inflow = 2.91 cfs @ 12.12 hrs, Volume= 0.216 af
Outflow = 0.55 cfs @ 12.43 hrs, Volume= 0.154 af, Atten= 81%, Lag= 18.9 min
Primary = 0.55 cfs @ 12.43 hrs, Volume= 0.154 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 76.63' @ 12.43 hrs Surf.Area= 1,300 sf Storage= 4,074 cf

Plug-Flow detention time= 206.6 min calculated for 0.154 af (71% of inflow)
Center-of-Mass det. time= 95.5 min (916.0 - 820.5)

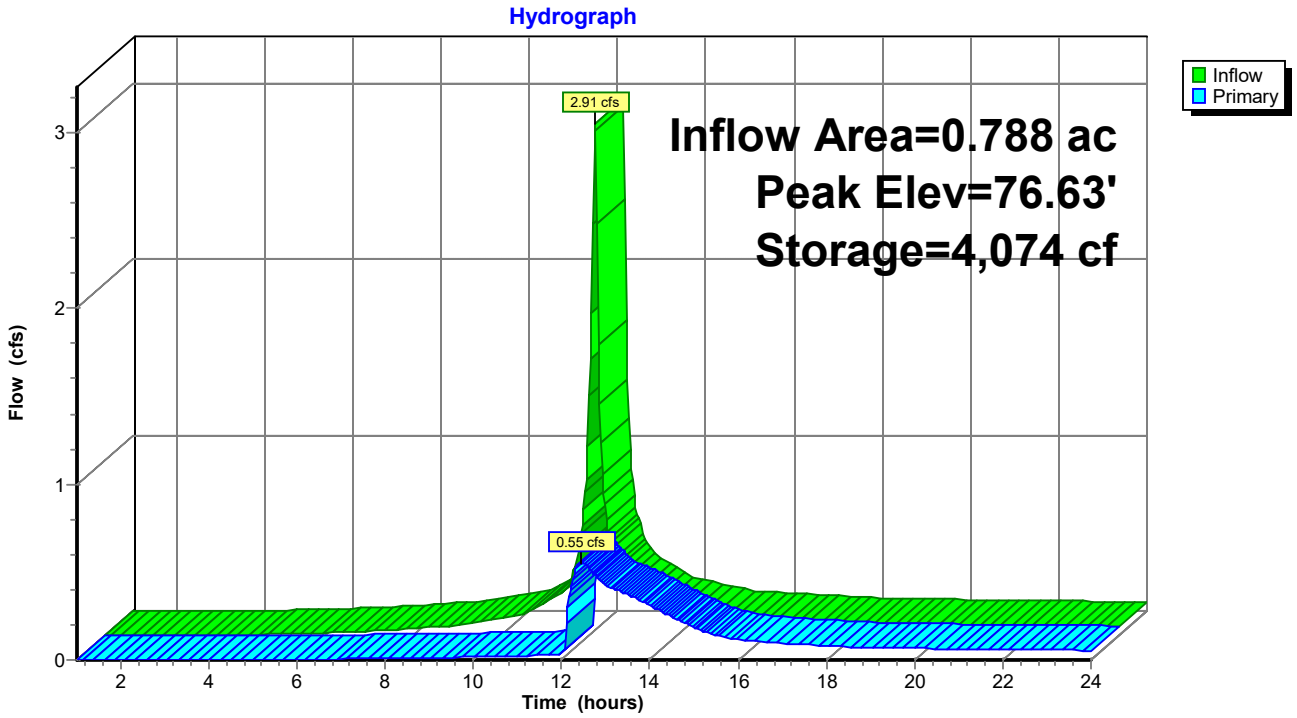
Volume	Invert	Avail.Storage	Storage Description
#1	73.50'	9,100 cf	**5-Cisterns (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.50	1,300	0	0
74.50	1,300	1,300	1,300
75.50	1,300	1,300	2,600
76.50	1,300	1,300	3,900
77.50	1,300	1,300	5,200
78.50	1,300	1,300	6,500
79.50	1,300	1,300	7,800
80.50	1,300	1,300	9,100

Device	Routing	Invert	Outlet Devices
#1	Primary	78.42'	**8.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	73.50'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	76.42'	**4.0" Vert. Orifice/Grate** C= 0.600
#4	Primary	75.50'	**4.0" Vert. Orifice/Grate** C= 0.600
#5	Primary	77.25'	**4.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.55 cfs @ 12.43 hrs HW=76.63' (Free Discharge)
- **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
- **2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 8.47 fps)
- **3=Orifice/Grate** (Orifice Controls 0.09 cfs @ 1.57 fps)
- **4=Orifice/Grate** (Orifice Controls 0.41 cfs @ 4.74 fps)
- **5=Orifice/Grate** (Controls 0.00 cfs)

Pond 19P: 5 Fire Cistern Tanks



Summary for Pond 26P: (new Pond)

[57] Hint: Peaked at 73.92' (Flood elevation advised)
[79] Warning: Submerged Pond 19P Primary device # 2 by 0.42'

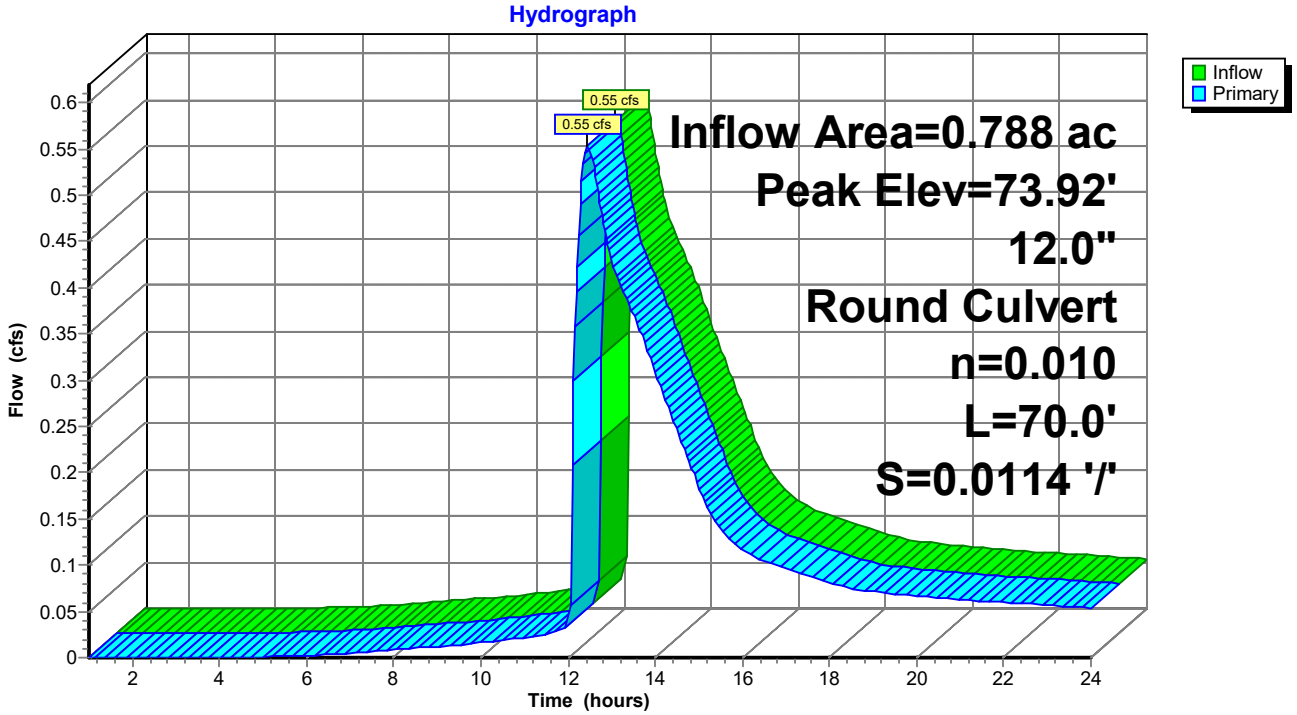
Inflow Area =	0.788 ac, 75.67% Impervious, Inflow Depth > 2.34" for 10-Year event				
Inflow =	0.55 cfs @ 12.43 hrs, Volume=	0.154 af			
Outflow =	0.55 cfs @ 12.43 hrs, Volume=	0.154 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.55 cfs @ 12.43 hrs, Volume=	0.154 af			

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 73.92' @ 12.43 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	73.50'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.50' / 72.70' S= 0.0114 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.55 cfs @ 12.43 hrs HW=73.92' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.55 cfs @ 1.75 fps)

Pond 26P: (new Pond)



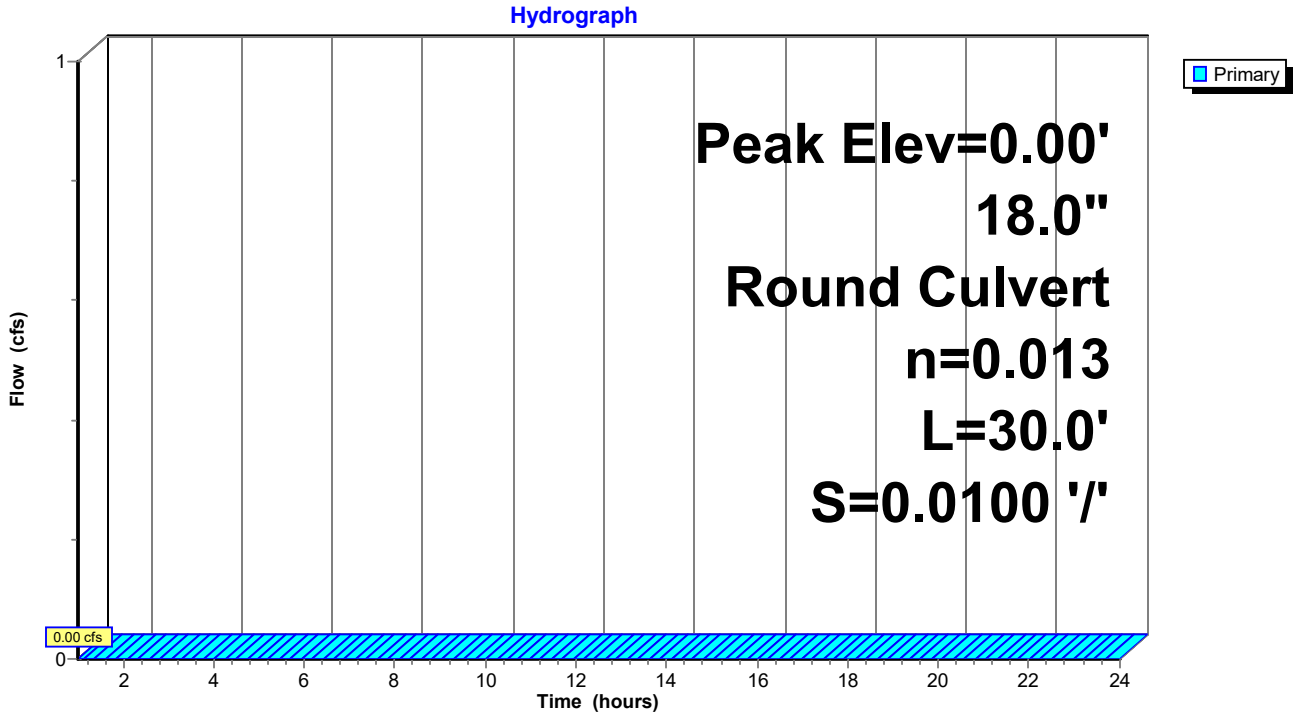
Summary for Pond 27P: (new Pond)

[43] Hint: Has no inflow (Outflow=Zero)

Device	Routing	Invert	Outlet Devices
#1	Primary	72.40'	**18.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.40' / 72.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=0.00' (Free Discharge)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 27P: (new Pond)

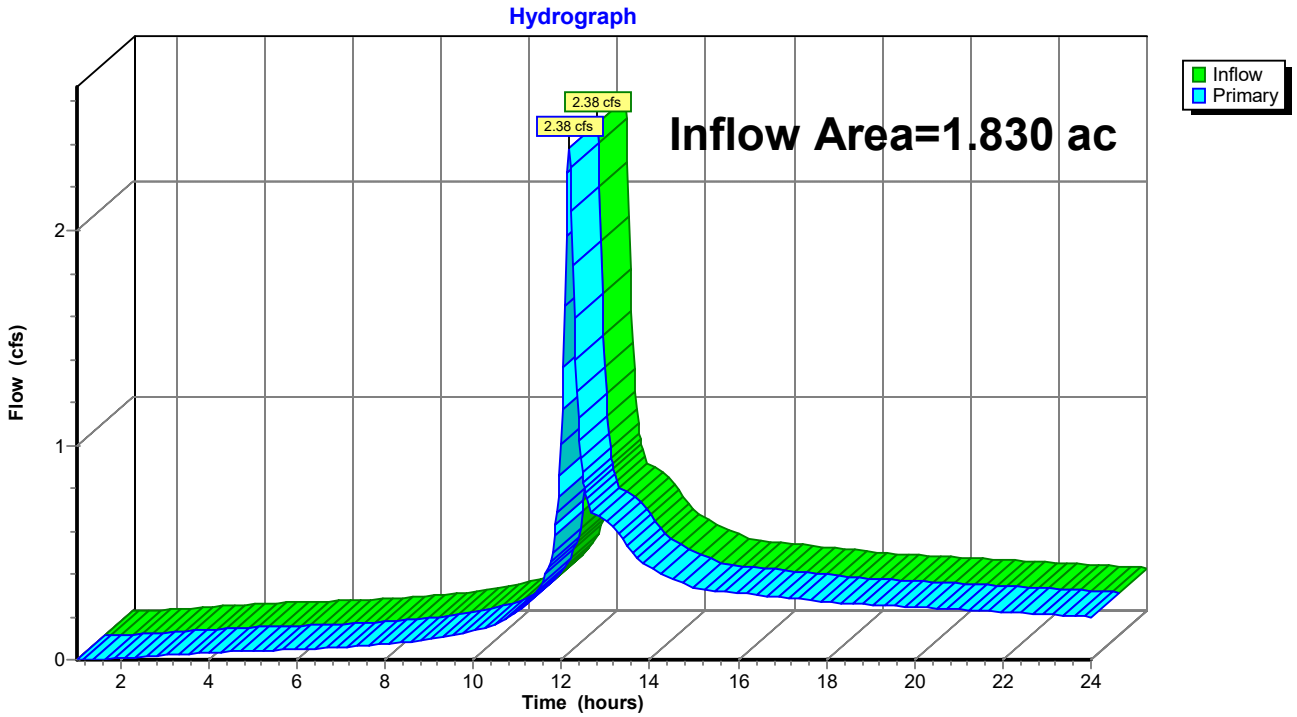


Summary for Link 1L: SP-1

Inflow Area = 1.830 ac, 76.73% Impervious, Inflow Depth > 2.90" for 10-Year event
Inflow = 2.38 cfs @ 12.16 hrs, Volume= 0.443 af
Primary = 2.38 cfs @ 12.16 hrs, Volume= 0.443 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs

Link 1L: SP-1

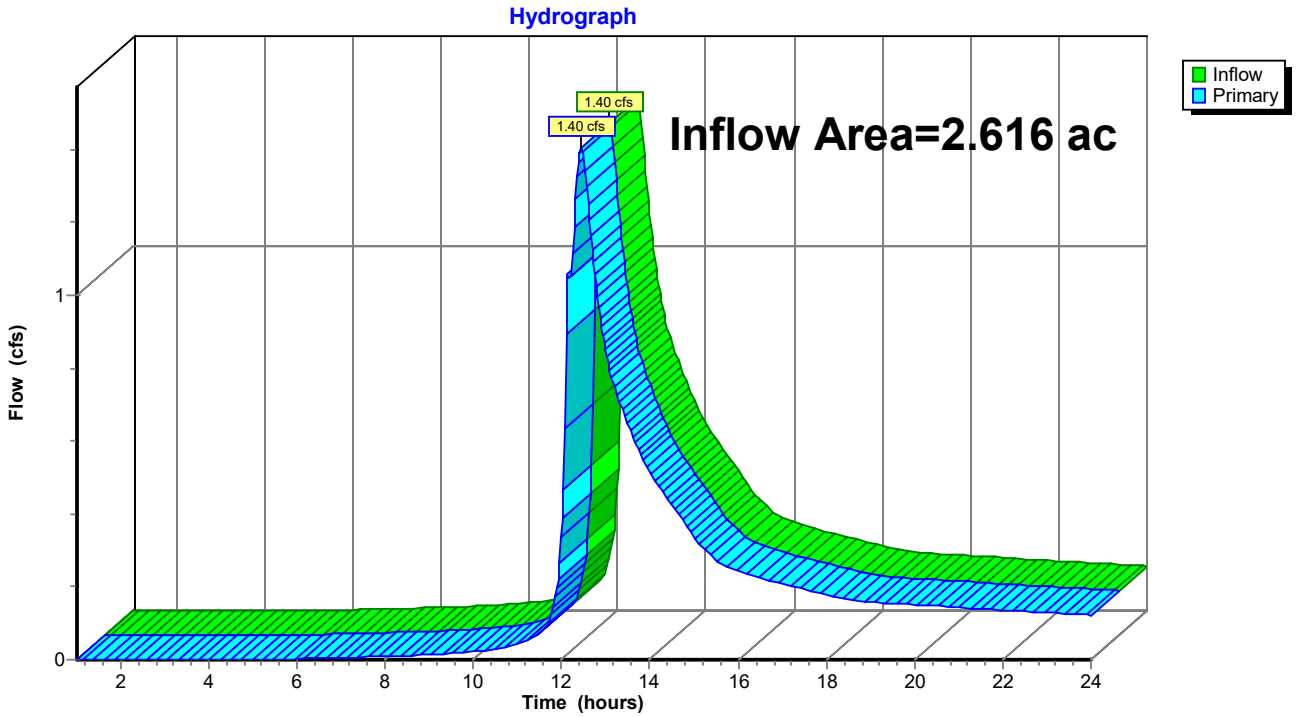


Summary for Link 2L: SP-2

Inflow Area = 2.616 ac, 36.98% Impervious, Inflow Depth > 1.48" for 10-Year event
Inflow = 1.40 cfs @ 12.45 hrs, Volume= 0.323 af
Primary = 1.40 cfs @ 12.45 hrs, Volume= 0.323 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs

Link 2L: SP-2



Time span=1.00-24.00 hrs, dt=0.03 hrs, 768 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Web Rd-N Runoff Area=7,980 sf 55.31% Impervious Runoff Depth>2.99"
Flow Length=174' Tc=12.7 min CN=72 Runoff=0.47 cfs 0.046 af

Subcatchment 2S: Web RD S Runoff Area=10,764 sf 46.11% Impervious Runoff Depth>3.00"
Flow Length=223' Tc=5.0 min CN=72 Runoff=0.86 cfs 0.062 af

Subcatchment 3S: Turner RD Runoff Area=68,885 sf 16.27% Impervious Runoff Depth>1.66"
Flow Length=576' Tc=29.3 min CN=57 Runoff=1.41 cfs 0.219 af

Subcatchment 4S: Lawn Pleas-W Runoff Area=14,692 sf 52.63% Impervious Runoff Depth>3.28"
Flow Length=114' Tc=9.8 min CN=75 Runoff=1.06 cfs 0.092 af

Subcatchment 5S: Lawn Pleas-E Runoff Area=14,348 sf 60.79% Impervious Runoff Depth>3.68"
Flow Length=215' Tc=9.9 min CN=79 Runoff=1.15 cfs 0.101 af

Subcatchment 11S: DRWY NE Runoff Area=4,660 sf 100.00% Impervious Runoff Depth>5.76"
Flow Length=105' Tc=5.0 min CN=98 Runoff=0.60 cfs 0.051 af

Subcatchment 12S: DRWY SE Runoff Area=5,373 sf 100.00% Impervious Runoff Depth>5.76"
Flow Length=105' Tc=5.0 min CN=98 Runoff=0.70 cfs 0.059 af

Subcatchment 13S: PARK SE Runoff Area=10,014 sf 68.49% Impervious Runoff Depth>4.10"
Flow Length=165' Tc=5.0 min CN=83 Runoff=1.06 cfs 0.078 af

Subcatchment 14S: PARK SW Runoff Area=8,603 sf 77.35% Impervious Runoff Depth>4.52"
Flow Length=158' Tc=5.0 min CN=87 Runoff=0.99 cfs 0.074 af

Subcatchment 15S: DRWY W Runoff Area=15,708 sf 79.34% Impervious Runoff Depth>4.63"
Flow Length=183' Tc=5.0 min CN=88 Runoff=1.83 cfs 0.139 af

Subcatchment 16S: VISIT LOT Runoff Area=6,630 sf 63.88% Impervious Runoff Depth>3.79"
Flow Length=81' Tc=5.0 min CN=80 Runoff=0.66 cfs 0.048 af

Subcatchment 17S: NEW BLDG Runoff Area=26,024 sf 100.00% Impervious Runoff Depth>5.76"
Flow Length=75' Slope=0.0050 '/' Tc=5.0 min CN=98 Runoff=3.37 cfs 0.287 af

Pond 1P: CB-Web N Peak Elev=72.79' Inflow=0.47 cfs 0.046 af
12.0" Round Culvert n=0.012 L=30.0' S=0.0100 '/' Outflow=0.47 cfs 0.046 af

Pond 2P: Peak Elev=73.41' Inflow=1.66 cfs 0.291 af
12.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=1.66 cfs 0.291 af

Pond 3P: Peak Elev=75.92' Inflow=1.41 cfs 0.219 af
8.0" Round Culvert n=0.013 L=197.0' S=0.0051 '/' Outflow=1.41 cfs 0.219 af

Pond 4P: Peak Elev=75.80' Inflow=1.06 cfs 0.092 af
12.0" Round Culvert n=0.013 L=55.0' S=0.0455 '/' Outflow=1.06 cfs 0.092 af

Pond 5P: CB-Pleas E Peak Elev=72.73' Inflow=2.05 cfs 0.461 af
18.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=2.05 cfs 0.461 af

Pond 6P: Peak Elev=73.05' Inflow=1.06 cfs 0.092 af
30.0" Round Culvert n=0.013 L=254.0' S=0.0102 '/' Outflow=1.06 cfs 0.092 af

Pond 7P: Filterra 1 - 4x6 Peak Elev=77.57' Storage=23 cf Inflow=0.60 cfs 0.051 af
Outflow=0.60 cfs 0.051 af

Pond 8P: Filterra 2 - 4x6 Peak Elev=77.59' Storage=24 cf Inflow=0.70 cfs 0.059 af
Outflow=0.69 cfs 0.059 af

Pond 9P: Filterra 3 - 4x4 Peak Elev=79.44' Storage=16 cf Inflow=1.06 cfs 0.078 af
Outflow=1.06 cfs 0.078 af

Pond 10P: Filterra 4 - 4x6 Peak Elev=79.42' Storage=24 cf Inflow=0.99 cfs 0.074 af
Outflow=0.99 cfs 0.075 af

Pond 11P: Filterra 5 - 6x6 Peak Elev=80.82' Storage=36 cf Inflow=1.83 cfs 0.139 af
Outflow=1.83 cfs 0.139 af

Pond 12P: Filterra 6 - 4x4 Peak Elev=78.29' Storage=16 cf Inflow=0.66 cfs 0.048 af
Outflow=0.66 cfs 0.048 af

Pond 13P: 6 - Fire Cistern Tanks Peak Elev=77.90' Storage=7,653 cf Inflow=4.66 cfs 0.397 af
Outflow=0.61 cfs 0.315 af

Pond 19P: 5 Fire Cistern Tanks Peak Elev=77.48' Storage=5,178 cf Inflow=3.89 cfs 0.292 af
Outflow=1.12 cfs 0.229 af

Pond 26P: (new Pond) Peak Elev=74.13' Inflow=1.12 cfs 0.229 af
12.0" Round Culvert n=0.010 L=70.0' S=0.0114 '/' Outflow=1.12 cfs 0.229 af

Pond 27P: (new Pond) Peak Elev=0.00'
18.0" Round Culvert n=0.013 L=30.0' S=0.0100 '/' Primary=0.00 cfs 0.000 af

Link 1L: SP-1 Inflow=3.52 cfs 0.602 af
Primary=3.52 cfs 0.602 af

Link 2L: SP-2 Inflow=2.65 cfs 0.510 af
Primary=2.65 cfs 0.510 af

Total Runoff Area = 4.446 ac Runoff Volume = 1.257 af Average Runoff Depth = 3.39"
46.66% Pervious = 2.075 ac 53.34% Impervious = 2.372 ac

Summary for Subcatchment 1S: Web Rd-N

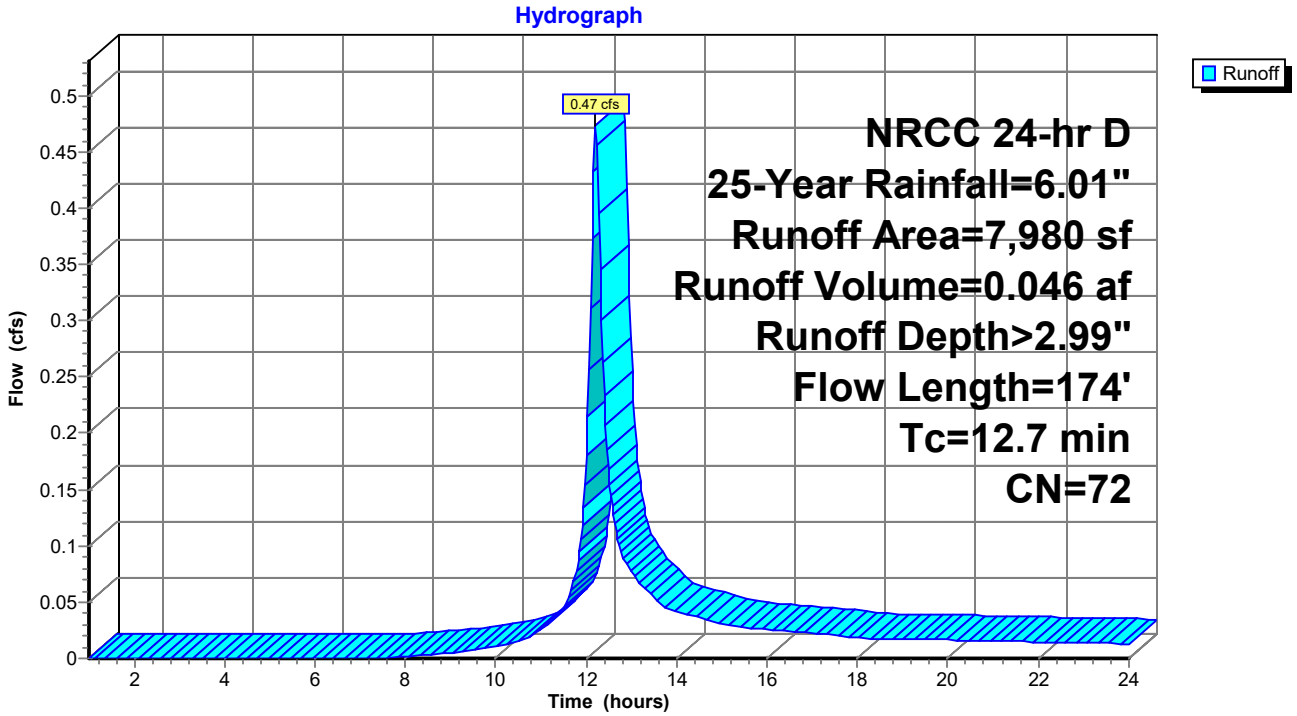
Runoff = 0.47 cfs @ 12.21 hrs, Volume= 0.046 af, Depth> 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 25-Year Rainfall=6.01"

Area (sf)	CN	Description
4,414	98	Paved parking, HSG A
3,566	39	>75% Grass cover, Good, HSG A
7,980	72	Weighted Average
3,566		44.69% Pervious Area
4,414		55.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	81	0.0250	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.7	93	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
12.7	174	Total			

Subcatchment 1S: Web Rd-N



Summary for Subcatchment 2S: Web RD S

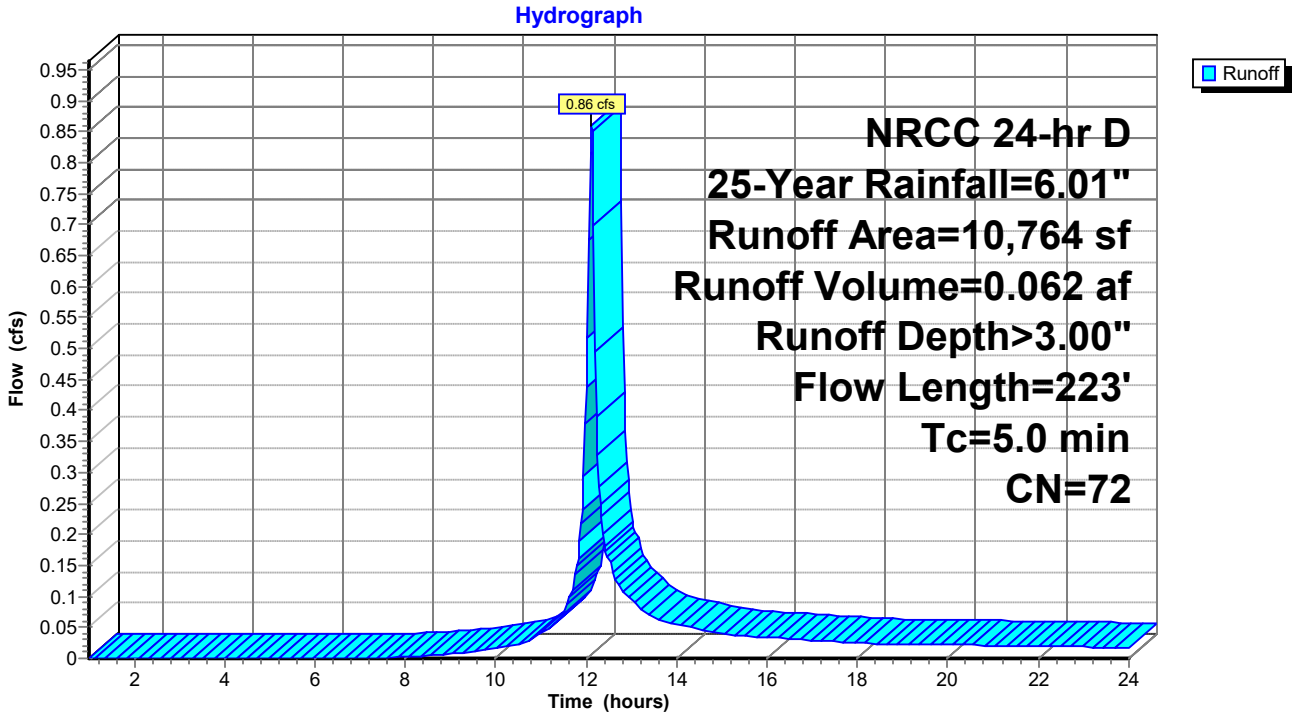
Runoff = 0.86 cfs @ 12.12 hrs, Volume= 0.062 af, Depth> 3.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 25-Year Rainfall=6.01"

Area (sf)	CN	Description
4,963	98	Paved parking, HSG A
5,801	49	50-75% Grass cover, Fair, HSG A
10,764	72	Weighted Average
5,801		53.89% Pervious Area
4,963		46.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0250	0.90		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
1.5	211	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	223	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 2S: Web RD S



Summary for Subcatchment 3S: Turner RD

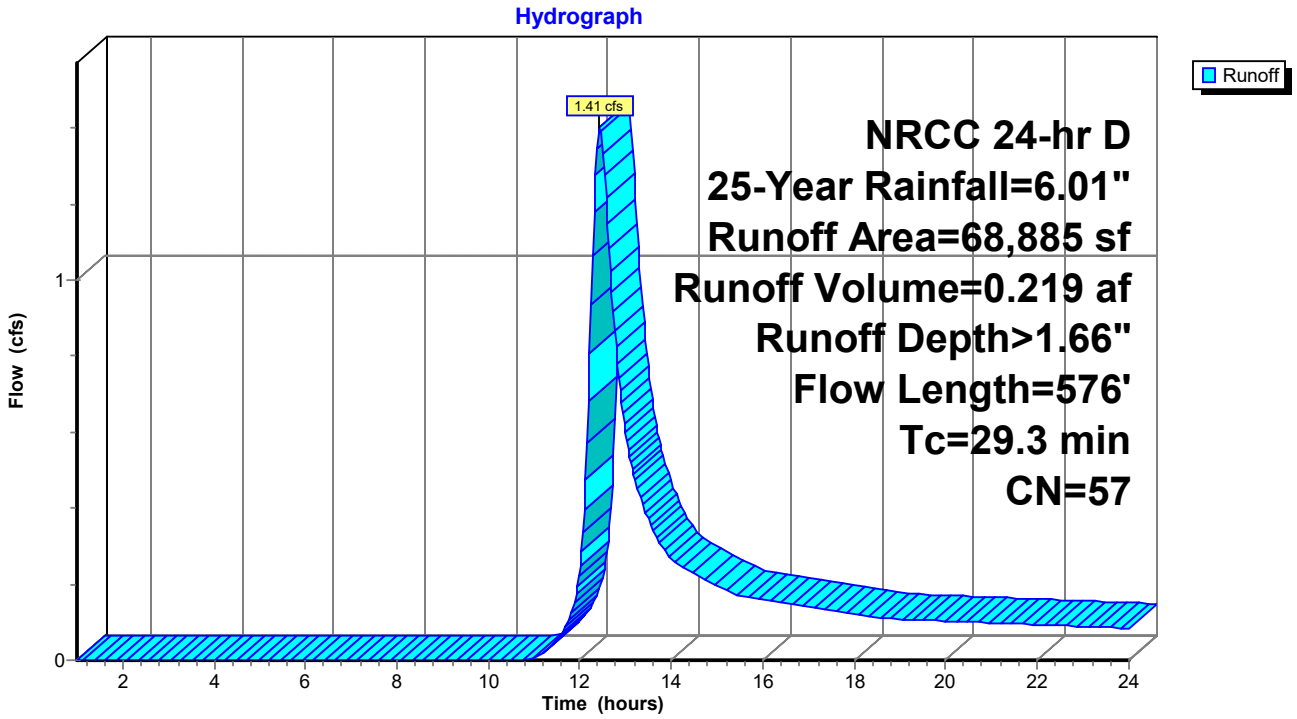
Runoff = 1.41 cfs @ 12.44 hrs, Volume= 0.219 af, Depth> 1.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 25-Year Rainfall=6.01"

	Area (sf)	CN	Description
*	11,210	98	Paved parking & roofs
	57,675	49	50-75% Grass cover, Fair, HSG A
	68,885	57	Weighted Average
	57,675		83.73% Pervious Area
	11,210		16.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7	132	0.0075	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
8.7	315	0.0075	0.61		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	129	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
29.3	576	Total			

Subcatchment 3S: Turner RD



Summary for Subcatchment 4S: Lawn Pleas-W

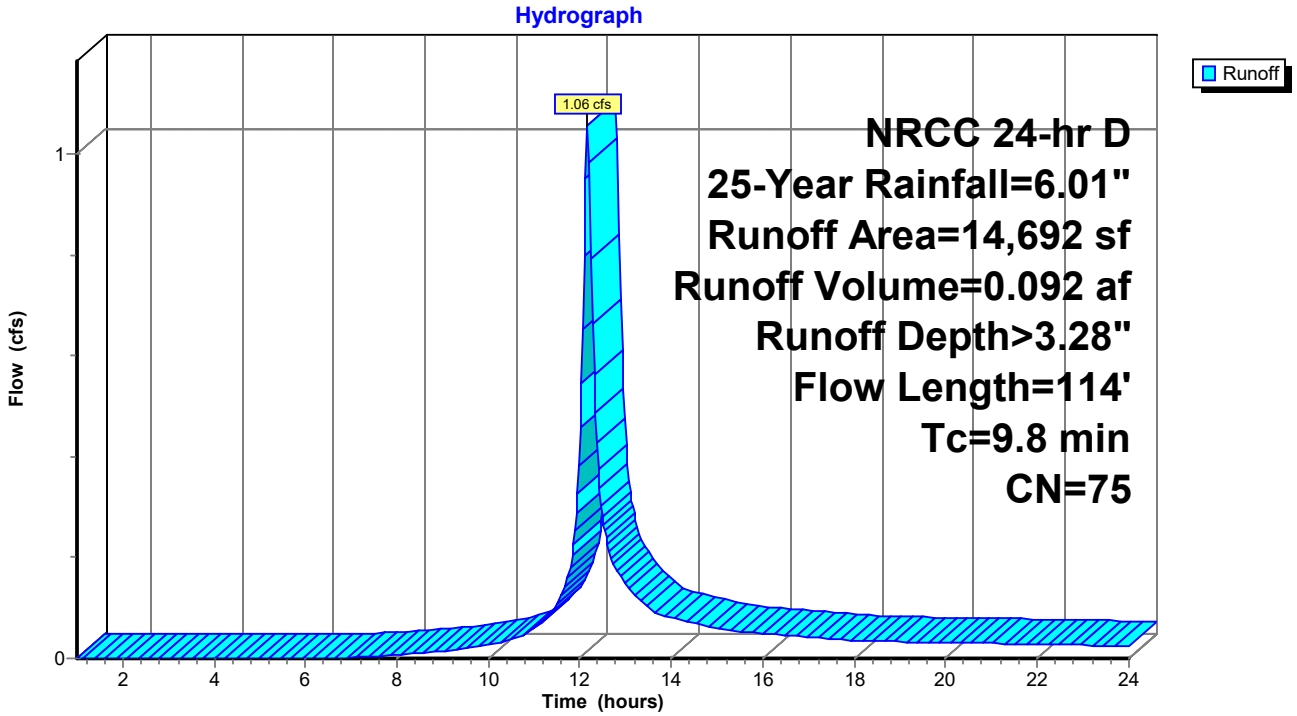
Runoff = 1.06 cfs @ 12.17 hrs, Volume= 0.092 af, Depth> 3.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 25-Year Rainfall=6.01"

Area (sf)	CN	Description
6,959	49	50-75% Grass cover, Fair, HSG A
7,733	98	Paved parking, HSG A
14,692	75	Weighted Average
6,959		47.37% Pervious Area
7,733		52.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	66	0.0125	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.6	48	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.8	114	Total			

Subcatchment 4S: Lawn Pleas-W



Summary for Subcatchment 5S: Lawn Pleas-E

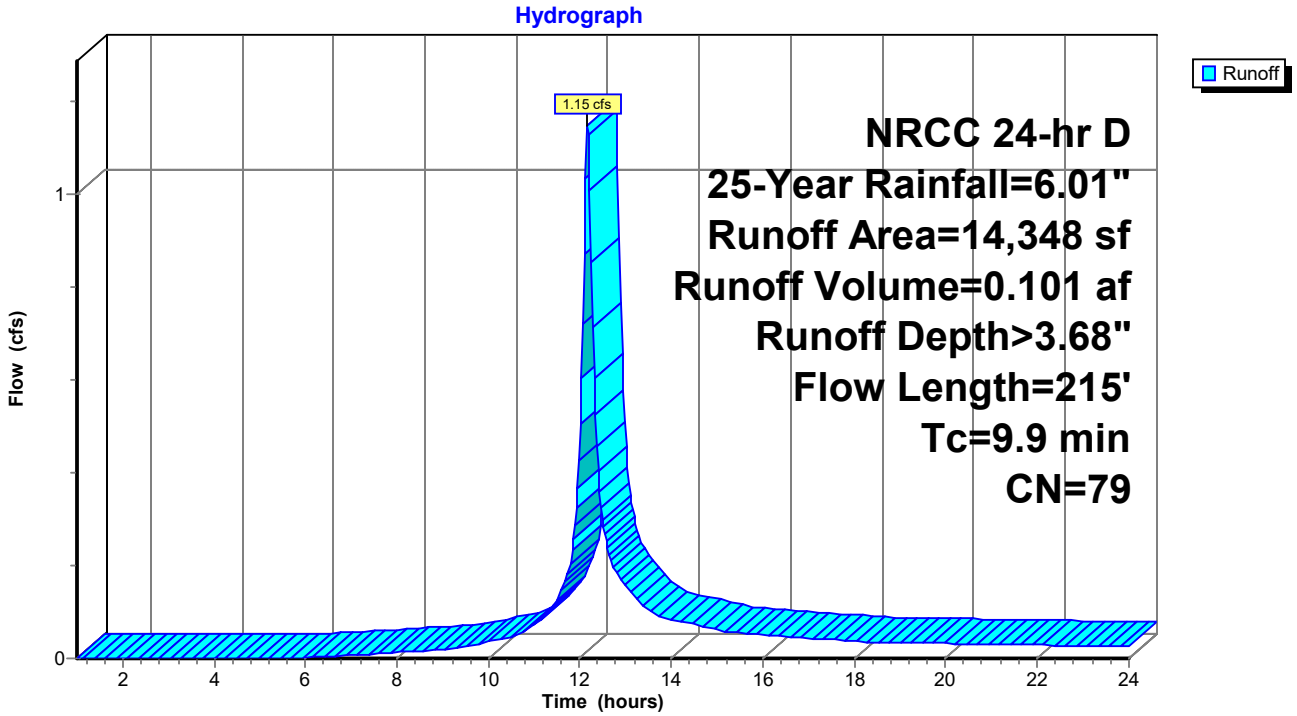
Runoff = 1.15 cfs @ 12.17 hrs, Volume= 0.101 af, Depth> 3.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 25-Year Rainfall=6.01"

	Area (sf)	CN	Description
*	8,722	98	Paved parking & roofs
	5,626	49	50-75% Grass cover, Fair, HSG A
	14,348	79	Weighted Average
	5,626		39.21% Pervious Area
	8,722		60.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	55	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
1.2	160	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.9	215	Total			

Subcatchment 5S: Lawn Pleas-E



Summary for Subcatchment 11S: DRWY NE

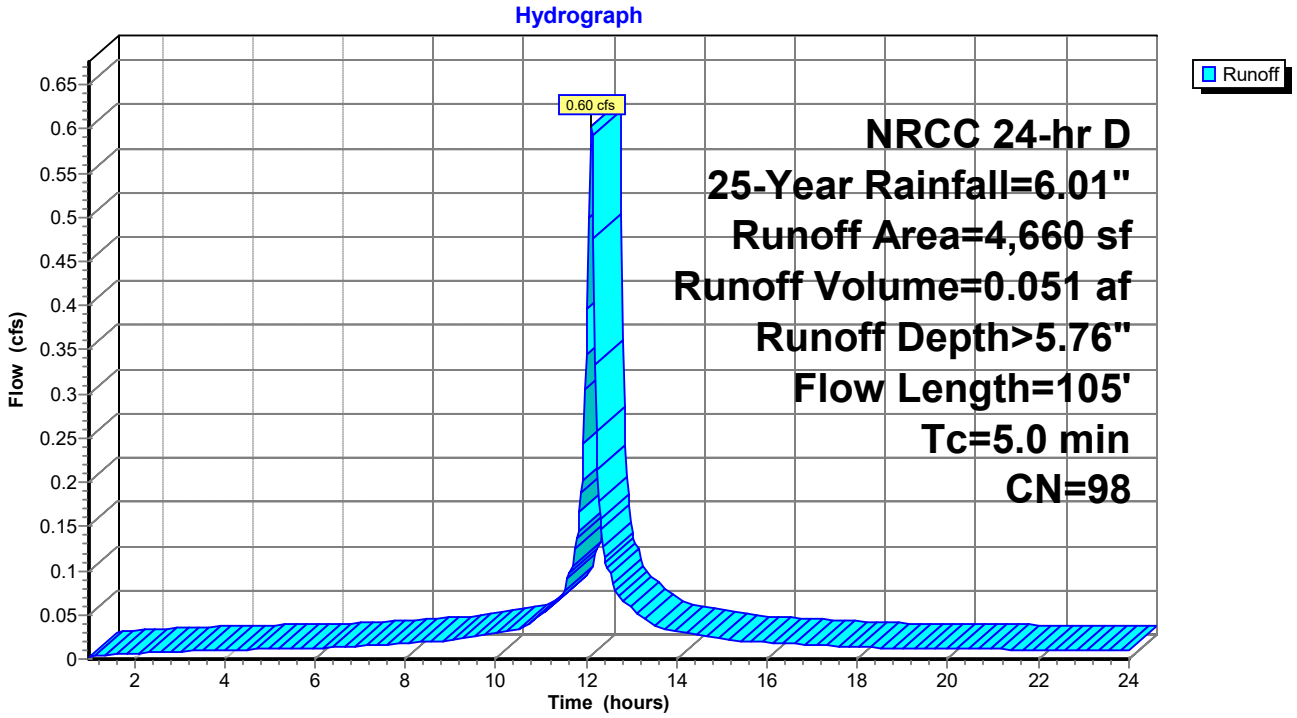
Runoff = 0.60 cfs @ 12.12 hrs, Volume= 0.051 af, Depth> 5.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 25-Year Rainfall=6.01"

Area (sf)	CN	Description
4,660	98	Paved parking, HSG A
4,660		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	45	0.0330	1.32		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.4	60	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	105	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 11S: DRWY NE



Summary for Subcatchment 12S: DRWY SE

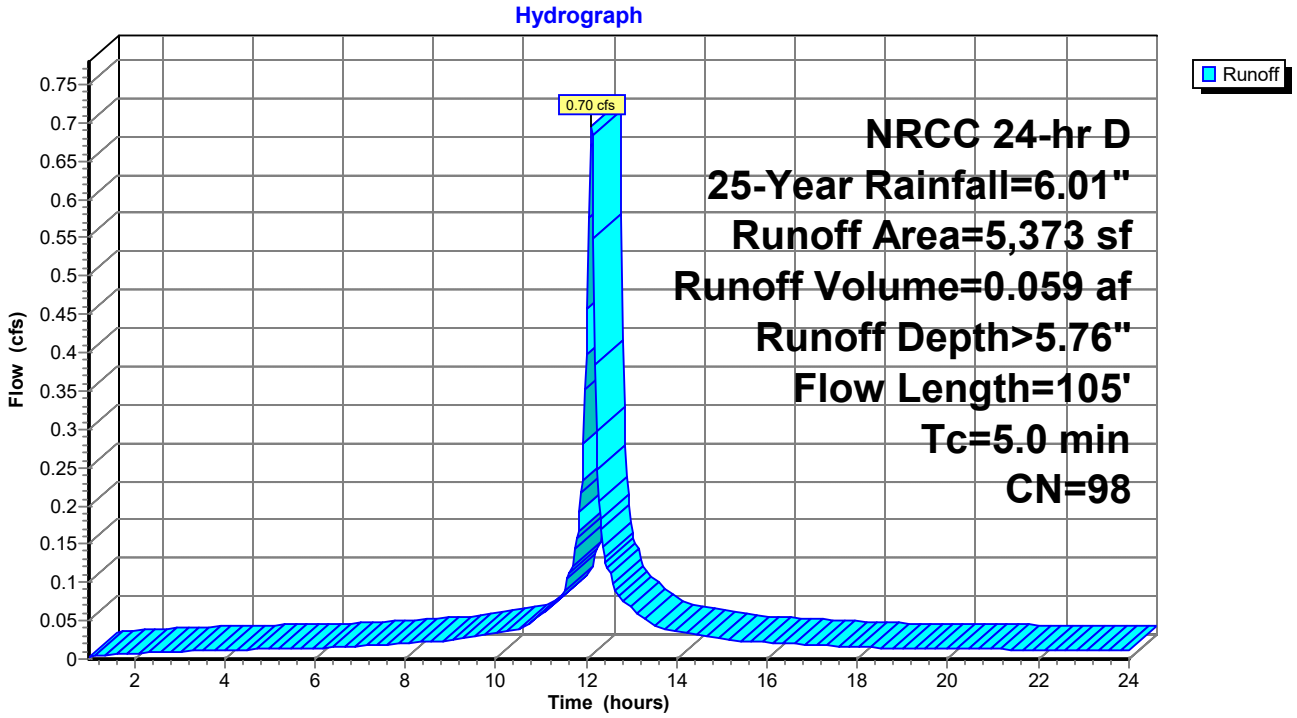
Runoff = 0.70 cfs @ 12.12 hrs, Volume= 0.059 af, Depth> 5.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 25-Year Rainfall=6.01"

Area (sf)	CN	Description
5,373	98	Paved parking, HSG A
5,373		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	45	0.0330	1.32		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.4	60	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	105	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 12S: DRWY SE



Summary for Subcatchment 13S: PARK SE

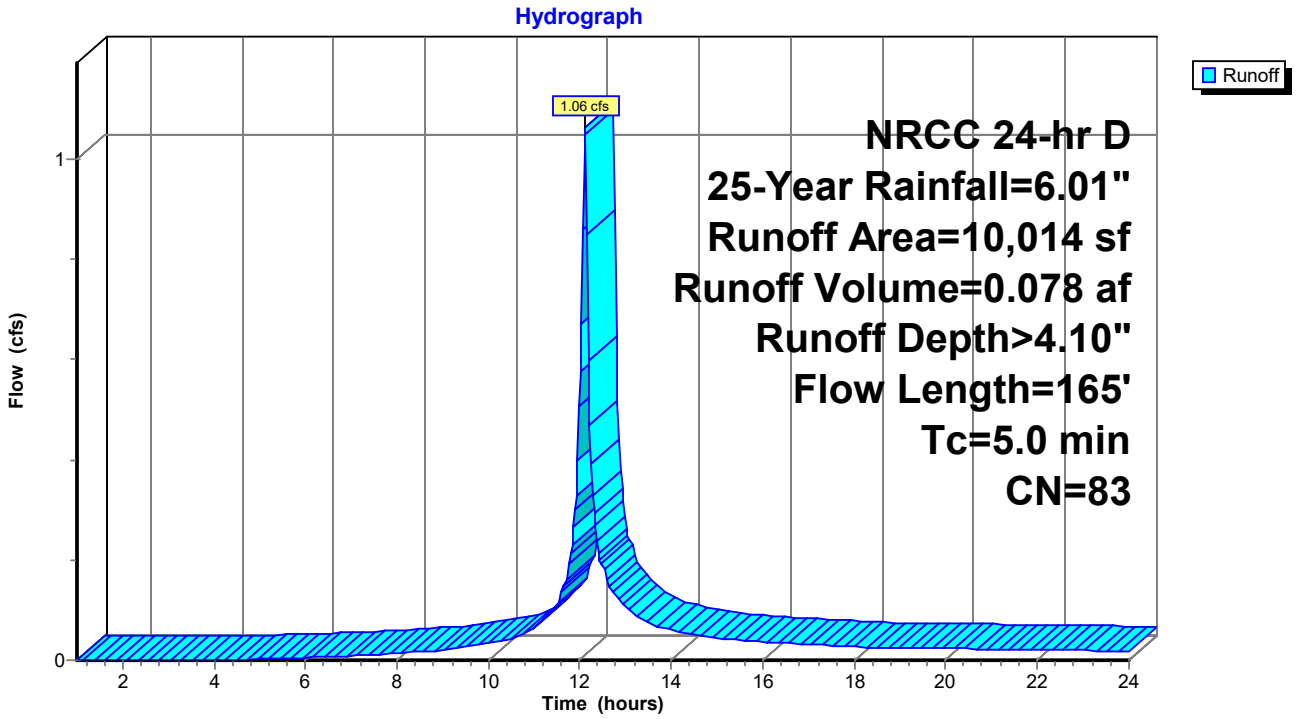
Runoff = 1.06 cfs @ 12.12 hrs, Volume= 0.078 af, Depth> 4.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 25-Year Rainfall=6.01"

Area (sf)	CN	Description
6,859	98	Paved parking, HSG A
3,155	49	50-75% Grass cover, Fair, HSG A
10,014	83	Weighted Average
3,155		31.51% Pervious Area
6,859		68.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	20	0.0170	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.8	66	0.0330	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.6	79	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.5	165	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 13S: PARK SE



Summary for Subcatchment 14S: PARK SW

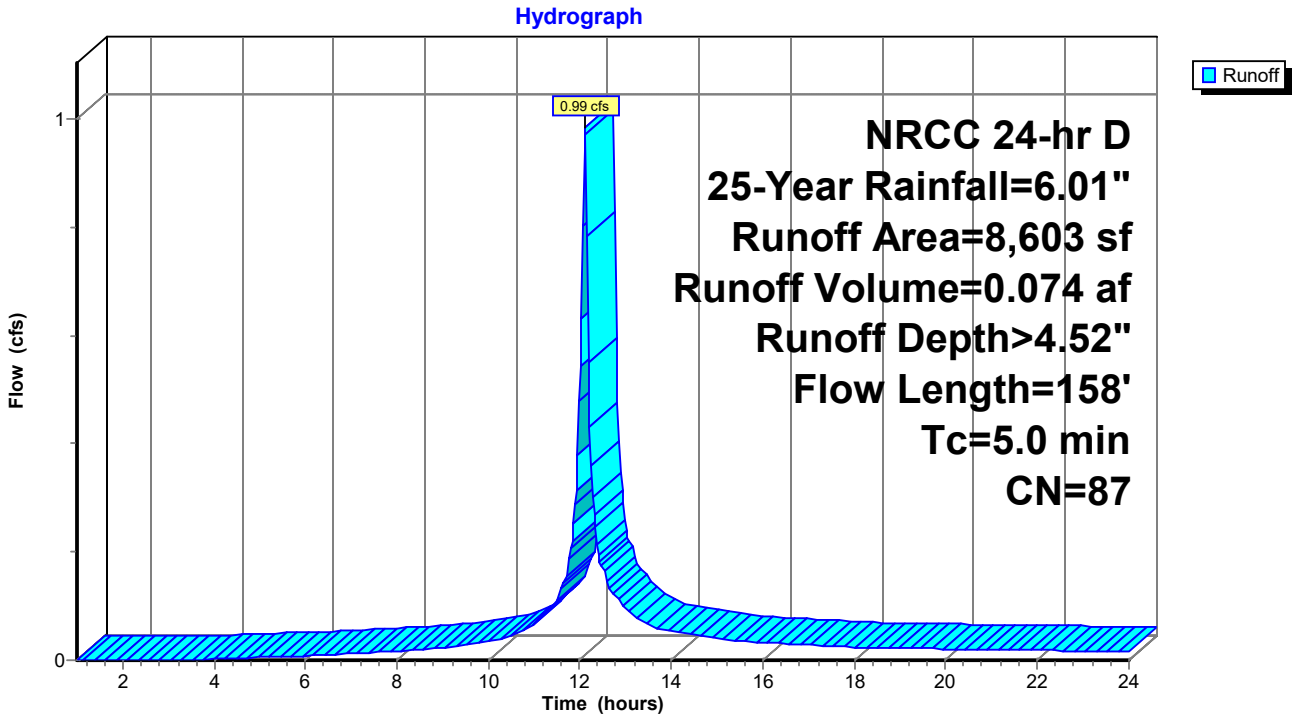
Runoff = 0.99 cfs @ 12.12 hrs, Volume= 0.074 af, Depth> 4.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 25-Year Rainfall=6.01"

Area (sf)	CN	Description
6,654	98	Paved parking, HSG A
1,949	49	50-75% Grass cover, Fair, HSG A
8,603	87	Weighted Average
1,949		22.65% Pervious Area
6,654		77.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0170	0.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.8	66	0.0330	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.5	72	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	158	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 14S: PARK SW



Summary for Subcatchment 15S: DRWY W

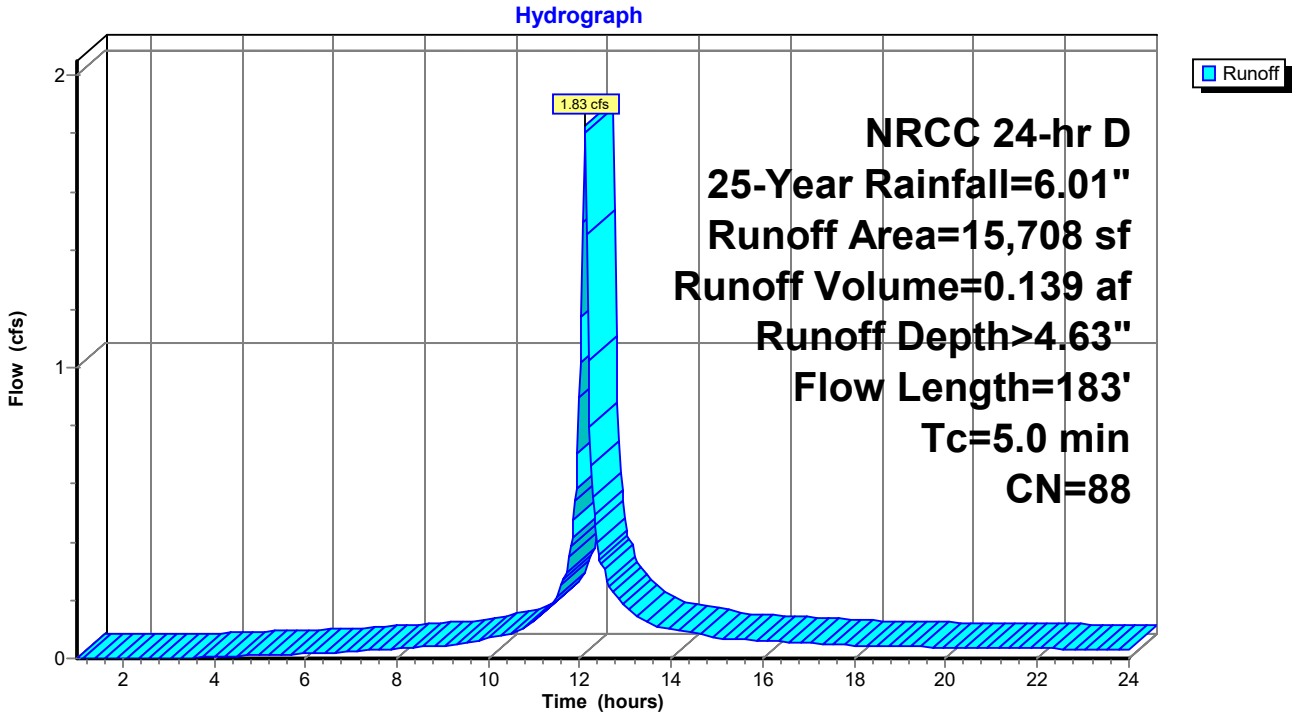
Runoff = 1.83 cfs @ 12.12 hrs, Volume= 0.139 af, Depth> 4.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 25-Year Rainfall=6.01"

Area (sf)	CN	Description
12,462	98	Paved parking, HSG A
3,246	49	50-75% Grass cover, Fair, HSG A
15,708	88	Weighted Average
3,246		20.66% Pervious Area
12,462		79.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	58	0.0150	1.01		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.9	125	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.9	183	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 15S: DRWY W



Summary for Subcatchment 16S: VISIT LOT

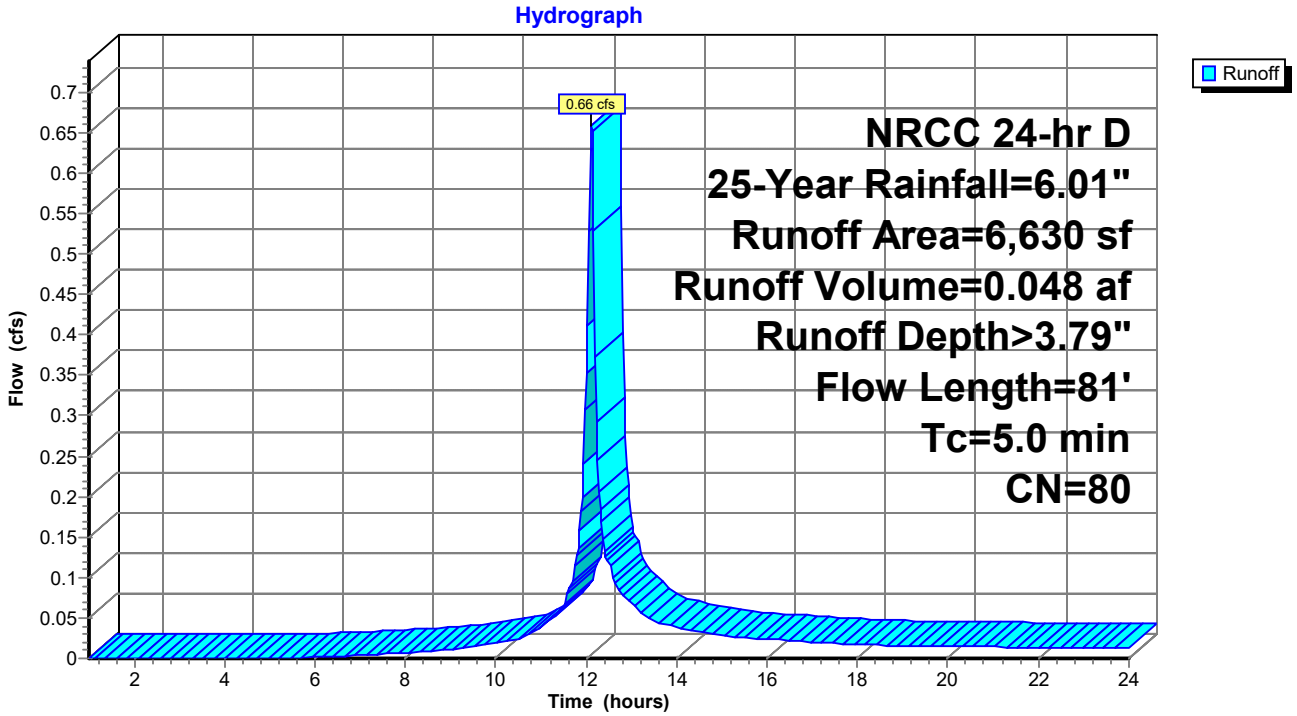
Runoff = 0.66 cfs @ 12.12 hrs, Volume= 0.048 af, Depth> 3.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 25-Year Rainfall=6.01"

Area (sf)	CN	Description
4,235	98	Paved parking, HSG A
2,395	49	50-75% Grass cover, Fair, HSG A
6,630	80	Weighted Average
2,395		36.12% Pervious Area
4,235		63.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	41	0.0125	0.88		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.3	40	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	81	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 16S: VISIT LOT



Summary for Subcatchment 17S: NEW BLDG

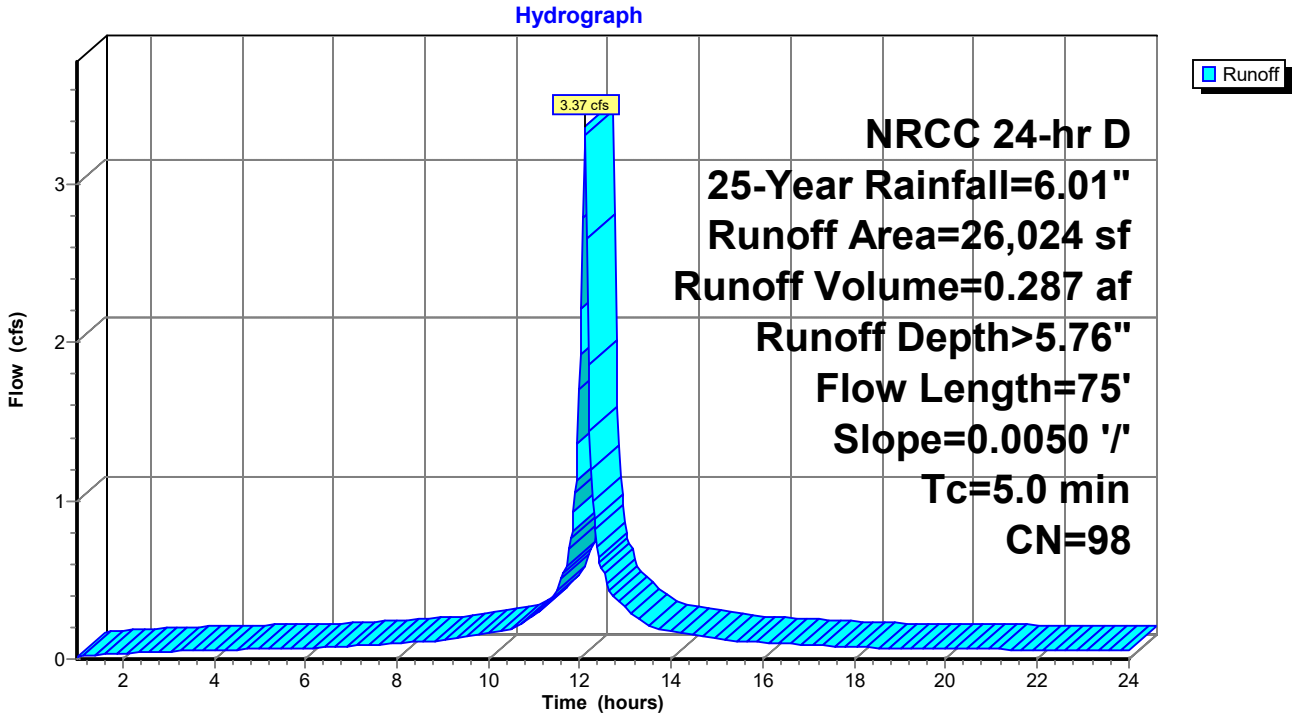
Runoff = 3.37 cfs @ 12.12 hrs, Volume= 0.287 af, Depth> 5.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 25-Year Rainfall=6.01"

Area (sf)	CN	Description
26,024	98	Roofs, HSG A
26,024		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	25	0.0050	0.55		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.6	50	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	75	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 17S: NEW BLDG



Summary for Pond 1P: CB-Web N

[57] Hint: Peaked at 72.79' (Flood elevation advised)

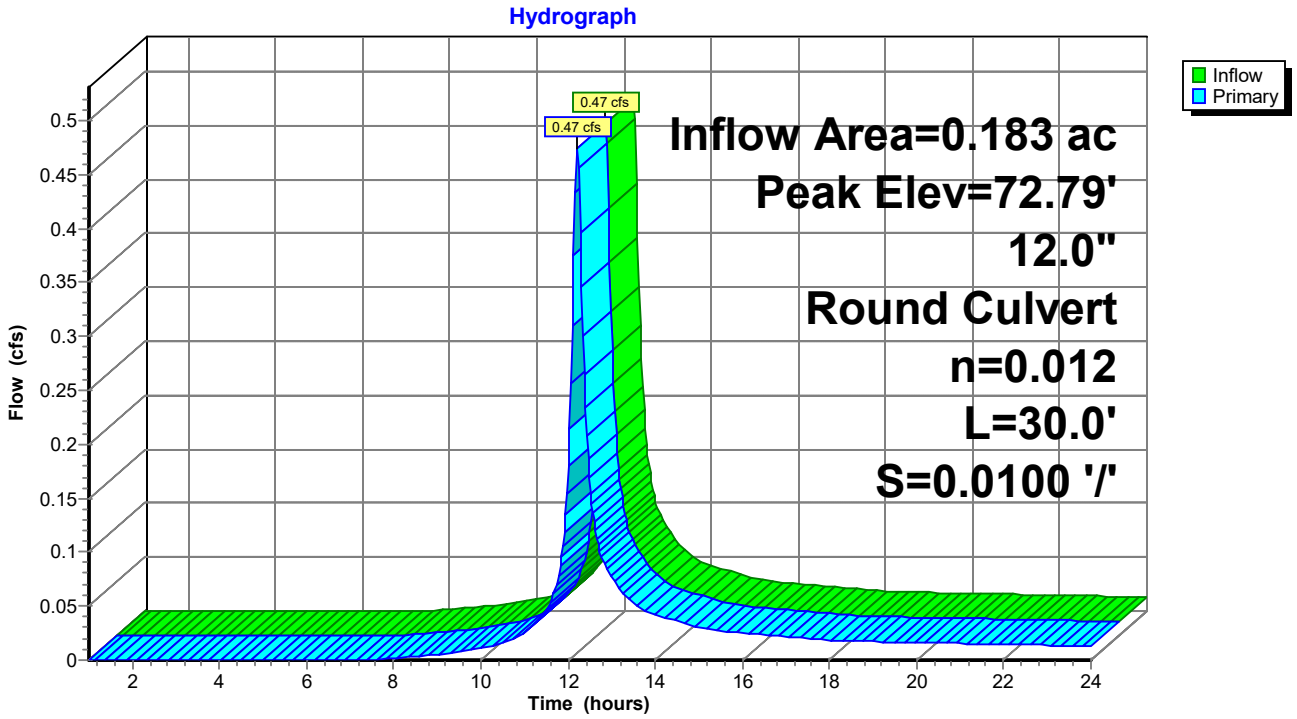
Inflow Area =	0.183 ac, 55.31% Impervious, Inflow Depth > 2.99" for 25-Year event				
Inflow =	0.47 cfs @ 12.21 hrs, Volume=	0.046 af			
Outflow =	0.47 cfs @ 12.21 hrs, Volume=	0.046 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.47 cfs @ 12.21 hrs, Volume=	0.046 af			

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 72.79' @ 12.21 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	72.40'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.40' / 72.10' S= 0.0100 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.47 cfs @ 12.21 hrs HW=72.79' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.47 cfs @ 1.67 fps)

Pond 1P: CB-Web N



Summary for Pond 2P:

[79] Warning: Submerged Pond 26P Primary device # 1 OUTLET by 0.71'

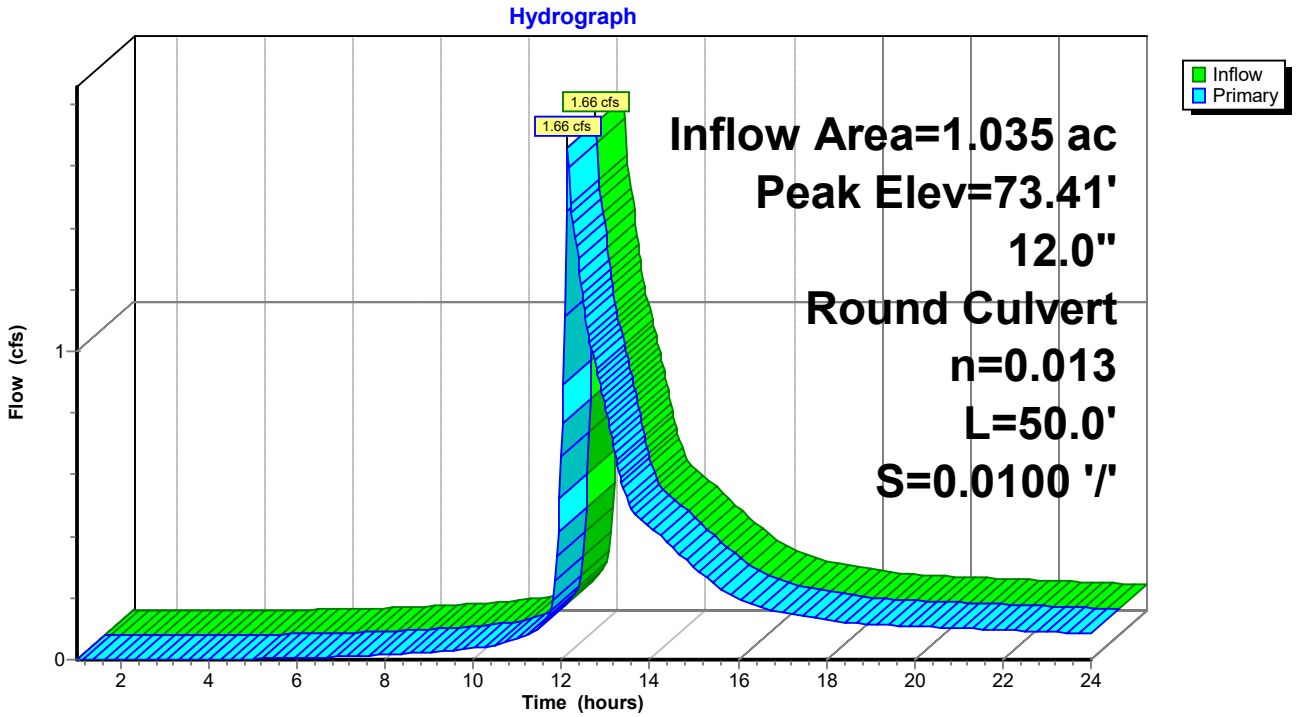
Inflow Area = 1.035 ac, 68.62% Impervious, Inflow Depth > 3.37" for 25-Year event
Inflow = 1.66 cfs @ 12.14 hrs, Volume= 0.291 af
Outflow = 1.66 cfs @ 12.14 hrs, Volume= 0.291 af, Atten= 0%, Lag= 0.0 min
Primary = 1.66 cfs @ 12.14 hrs, Volume= 0.291 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 73.41' @ 12.14 hrs
Flood Elev= 116.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.60'	**12.0" Round Storm Drain** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.60' / 72.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=1.64 cfs @ 12.14 hrs HW=73.41' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 1.64 cfs @ 2.41 fps)

Pond 2P:



Summary for Pond 3P:

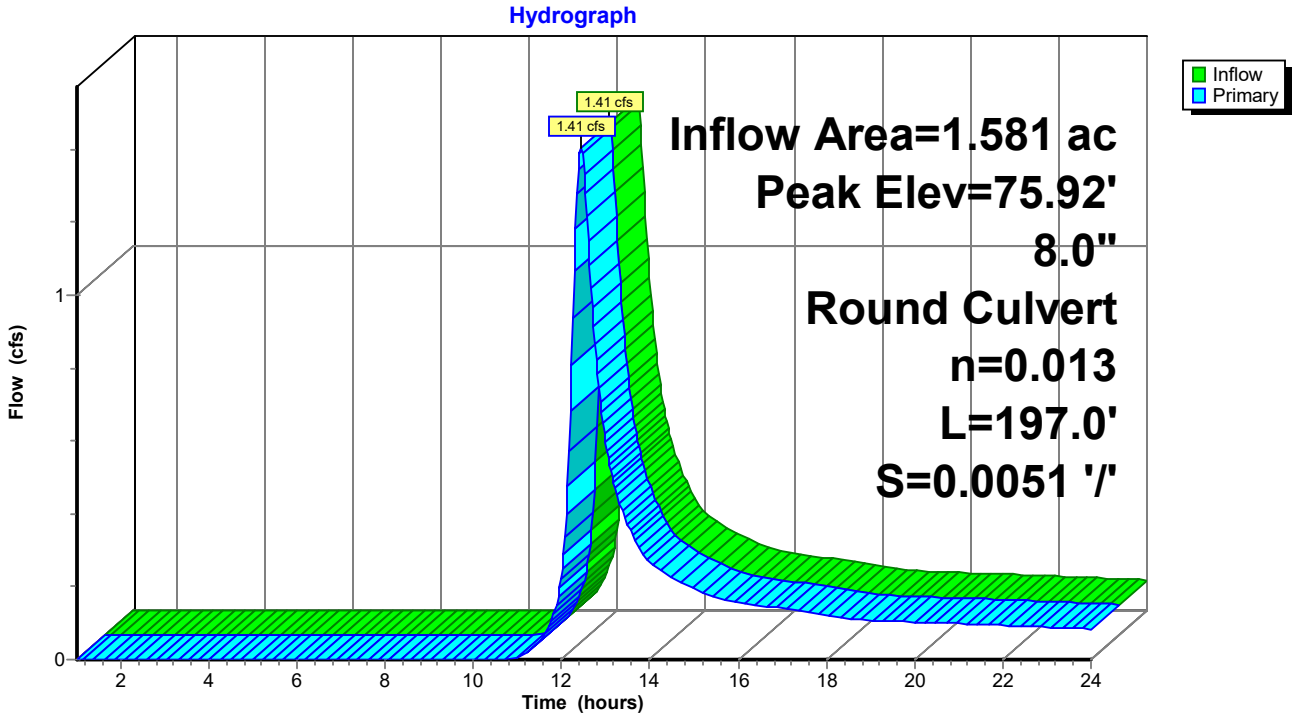
Inflow Area = 1.581 ac, 16.27% Impervious, Inflow Depth > 1.66" for 25-Year event
Inflow = 1.41 cfs @ 12.44 hrs, Volume= 0.219 af
Outflow = 1.41 cfs @ 12.44 hrs, Volume= 0.219 af, Atten= 0%, Lag= 0.0 min
Primary = 1.41 cfs @ 12.44 hrs, Volume= 0.219 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 75.92' @ 12.44 hrs
Flood Elev= 113.94'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.10'	**8.0" Round Storm Drain** L= 197.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.10' / 72.10' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=1.40 cfs @ 12.44 hrs HW=75.91' (Free Discharge)
└**1=Storm Drain** (Barrel Controls 1.40 cfs @ 4.02 fps)

Pond 3P:



Summary for Pond 4P:

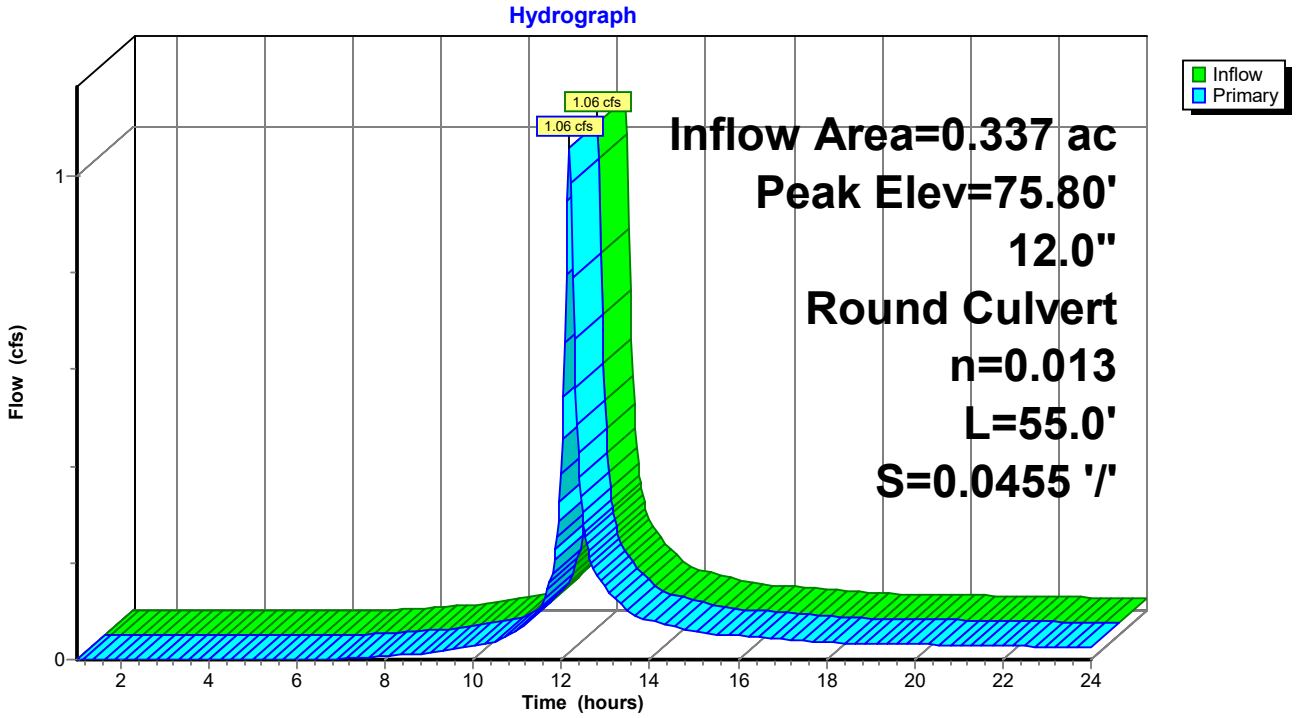
Inflow Area =	0.337 ac, 52.63% Impervious, Inflow Depth > 3.28" for 25-Year event				
Inflow =	1.06 cfs @	12.17 hrs,	Volume=	0.092 af	
Outflow =	1.06 cfs @	12.17 hrs,	Volume=	0.092 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.06 cfs @	12.17 hrs,	Volume=	0.092 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 75.80' @ 12.17 hrs
Flood Elev= 116.29'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.20'	**12.0" Round Storm Drain** L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.20' / 72.70' S= 0.0455 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.01 cfs @ 12.17 hrs HW=75.80' (Free Discharge)
└─**1=Storm Drain** (Inlet Controls 1.01 cfs @ 2.07 fps)

Pond 4P:



Summary for Pond 5P: CB-Pleas E

[79] Warning: Submerged Pond 1P Primary device # 1 INLET by 0.33'
[79] Warning: Submerged Pond 27P Primary device # 1 INLET by 0.33'

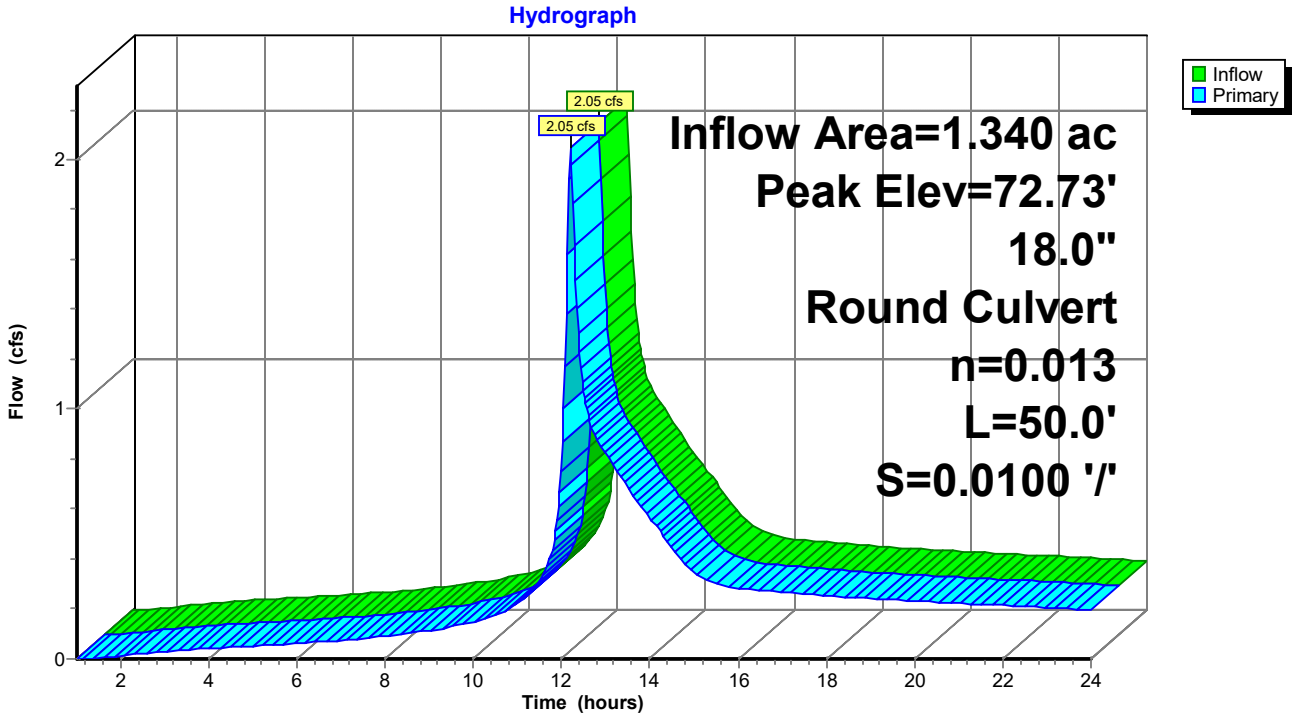
Inflow Area =	1.340 ac, 84.26% Impervious, Inflow Depth > 4.13" for 25-Year event				
Inflow =	2.05 cfs @	12.19 hrs,	Volume=	0.461 af	
Outflow =	2.05 cfs @	12.19 hrs,	Volume=	0.461 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.05 cfs @	12.19 hrs,	Volume=	0.461 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 72.73' @ 12.19 hrs
Flood Elev= 114.79'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.00'	**18.0" Round Storm Drain** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.00' / 71.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.95 cfs @ 12.19 hrs HW=72.73' (Free Discharge)
└─**1=Storm Drain** (Inlet Controls 1.95 cfs @ 2.29 fps)

Pond 5P: CB-Pleas E



Summary for Pond 6P:

[79] Warning: Submerged Pond 4P Primary device # 1 OUTLET by 0.34'

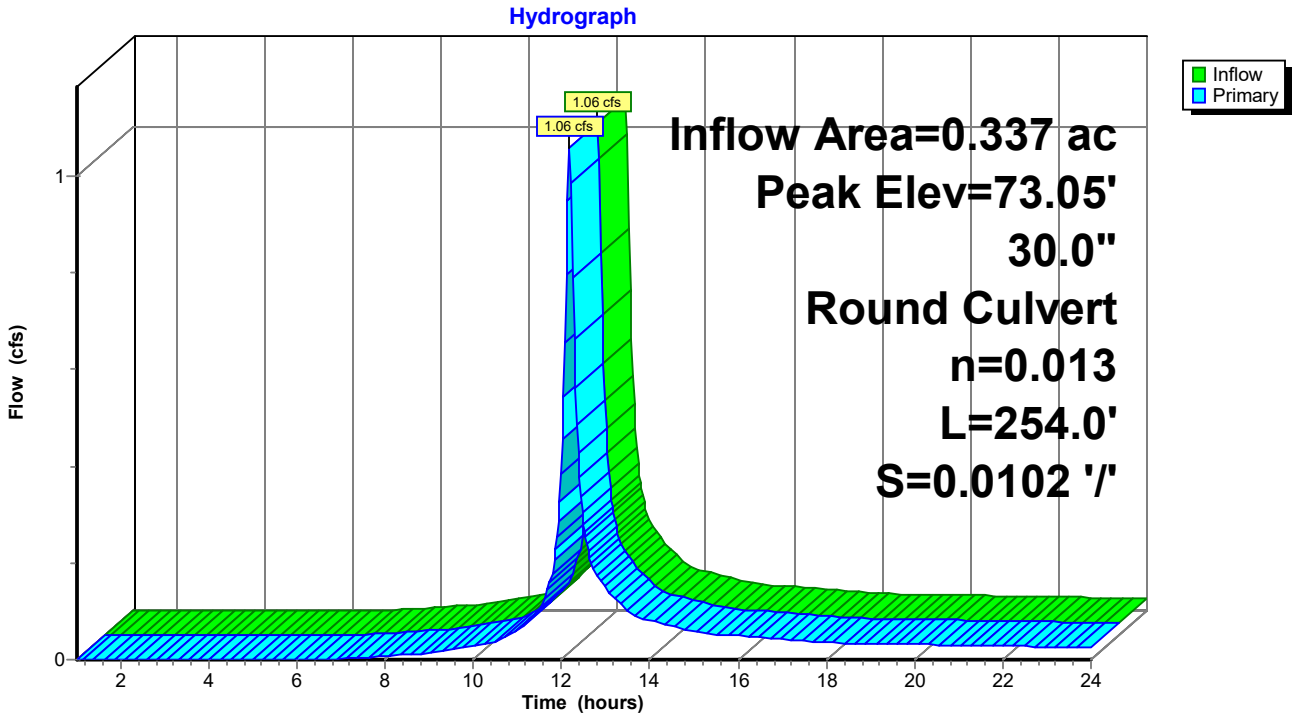
Inflow Area = 0.337 ac, 52.63% Impervious, Inflow Depth > 3.28" for 25-Year event
Inflow = 1.06 cfs @ 12.17 hrs, Volume= 0.092 af
Outflow = 1.06 cfs @ 12.17 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.0 min
Primary = 1.06 cfs @ 12.17 hrs, Volume= 0.092 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 73.05' @ 12.17 hrs
Flood Elev= 116.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.60'	**30.0" Round Storm Drain** L= 254.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.60' / 70.00' S= 0.0102 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=1.04 cfs @ 12.17 hrs HW=73.04' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 1.04 cfs @ 1.78 fps)

Pond 6P:



Summary for Pond 7P: Filterra 1 - 4x6

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.107 ac,100.00% Impervious, Inflow Depth > 5.76" for 25-Year event
Inflow = 0.60 cfs @ 12.12 hrs, Volume= 0.051 af
Outflow = 0.60 cfs @ 12.12 hrs, Volume= 0.051 af, Atten= 1%, Lag= 0.0 min
Primary = 0.60 cfs @ 12.12 hrs, Volume= 0.051 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 77.57' @ 12.12 hrs Surf.Area= 24 sf Storage= 23 cf

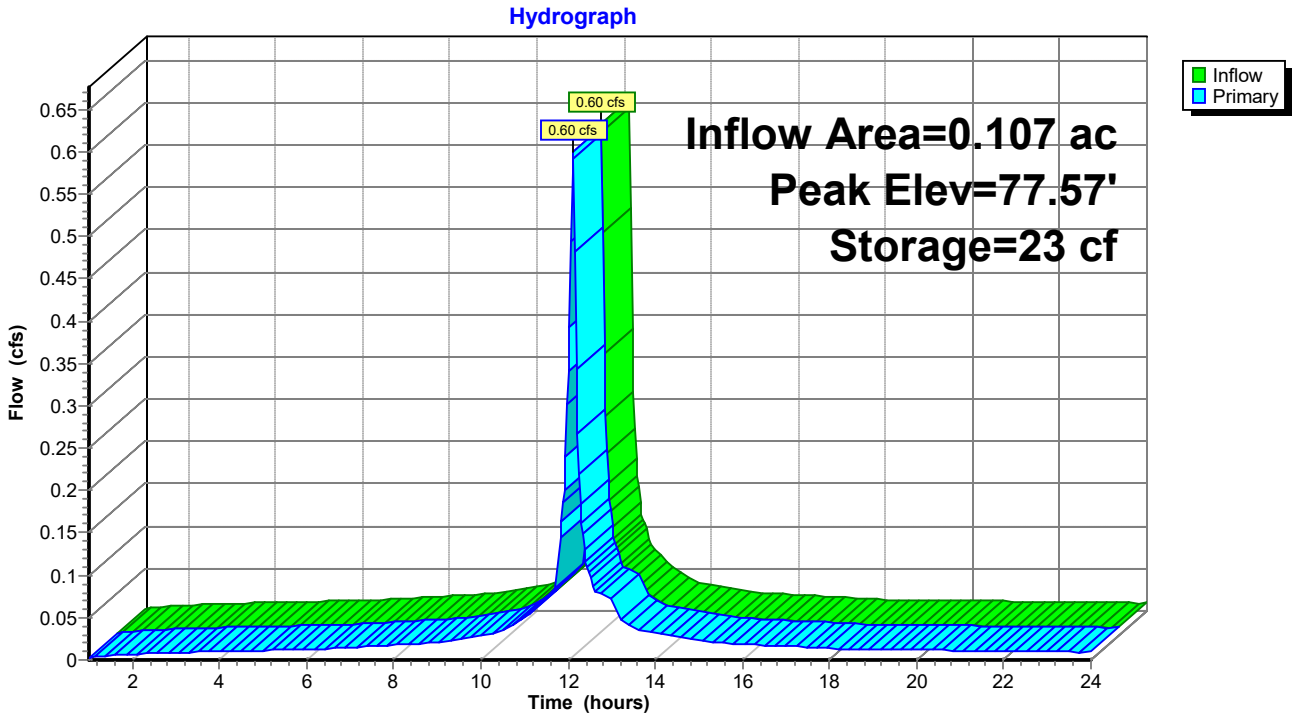
Plug-Flow detention time= 1.5 min calculated for 0.051 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (747.1 - 746.4)

Volume	Invert	Avail.Storage	Storage Description
#1	76.59'	24 cf	**6.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	74.42'	**8.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.42' / 74.33' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	76.59'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	77.34'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.58 cfs @ 12.12 hrs HW=77.56' (Free Discharge)
└─**1=Culvert** (Passes 0.58 cfs of 2.82 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.08 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Weir Controls 0.51 cfs @ 1.33 fps)

Pond 7P: Filterra 1 - 4x6



Summary for Pond 8P: Filterra 2 - 4x6

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.123 ac,100.00% Impervious, Inflow Depth > 5.76" for 25-Year event
Inflow = 0.70 cfs @ 12.12 hrs, Volume= 0.059 af
Outflow = 0.69 cfs @ 12.12 hrs, Volume= 0.059 af, Atten= 1%, Lag= 0.0 min
Primary = 0.69 cfs @ 12.12 hrs, Volume= 0.059 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 77.59' @ 12.12 hrs Surf.Area= 24 sf Storage= 24 cf

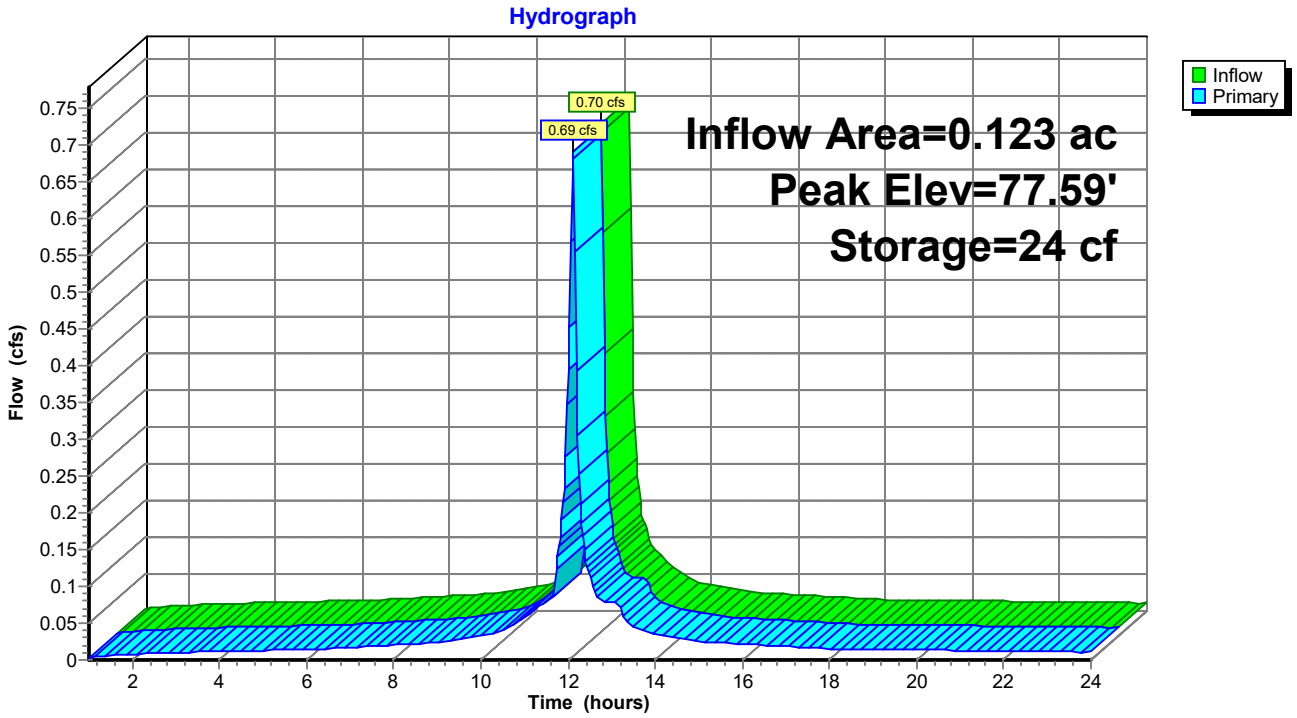
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.8 min (747.2 - 746.4)

Volume	Invert	Avail.Storage	Storage Description
#1	76.59'	24 cf	**6.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	74.42'	**8.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.42' / 74.33' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	76.59'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	77.34'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.67 cfs @ 12.12 hrs HW=77.59' (Free Discharge)
└─**1=Culvert** (Passes 0.67 cfs of 2.83 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.08 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Weir Controls 0.60 cfs @ 1.41 fps)

Pond 8P: Filterra 2 - 4x6



Summary for Pond 9P: Filterra 3 - 4x4

[93] Warning: Storage range exceeded by 0.10'

Inflow Area = 0.230 ac, 68.49% Impervious, Inflow Depth > 4.10" for 25-Year event
Inflow = 1.06 cfs @ 12.12 hrs, Volume= 0.078 af
Outflow = 1.06 cfs @ 12.12 hrs, Volume= 0.078 af, Atten= 0%, Lag= 0.0 min
Primary = 1.06 cfs @ 12.12 hrs, Volume= 0.078 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 79.44' @ 12.12 hrs Surf.Area= 16 sf Storage= 16 cf

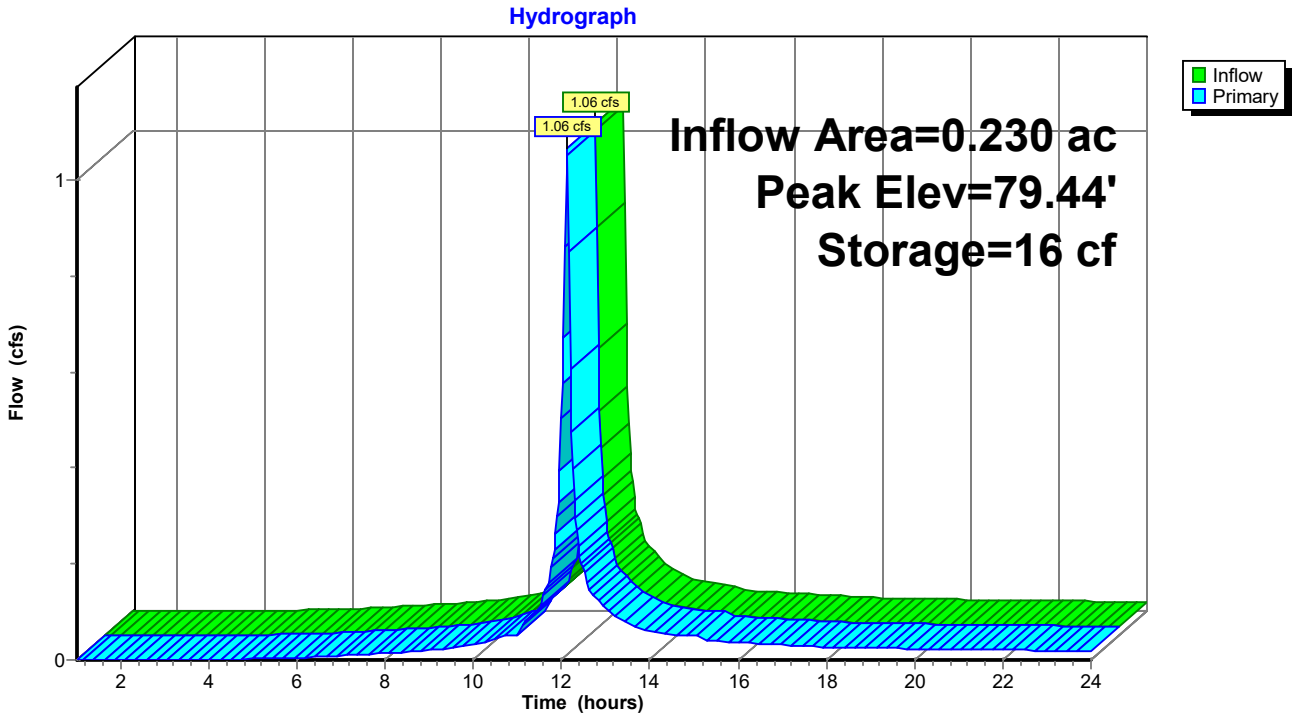
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.9 min (822.6 - 821.7)

Volume	Invert	Avail.Storage	Storage Description
#1	78.34'	16 cf	**4.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	76.17'	**8.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 76.17' / 76.08' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	78.34'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	79.09'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=1.04 cfs @ 12.12 hrs HW=79.43' (Free Discharge)
└─**1=Culvert** (Passes 1.04 cfs of 2.88 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.05 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Weir Controls 0.98 cfs @ 1.69 fps)

Pond 9P: Filterra 3 - 4x4



Summary for Pond 10P: Filterra 4 - 4x6

[93] Warning: Storage range exceeded by 0.08'
[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area =	0.197 ac, 77.35% Impervious, Inflow Depth > 4.52" for 25-Year event				
Inflow =	0.99 cfs @	12.12 hrs, Volume=	0.074 af		
Outflow =	0.99 cfs @	12.12 hrs, Volume=	0.075 af, Atten= 0%, Lag= 0.0 min		
Primary =	0.99 cfs @	12.12 hrs, Volume=	0.075 af		

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 79.42' @ 12.12 hrs Surf.Area= 24 sf Storage= 24 cf

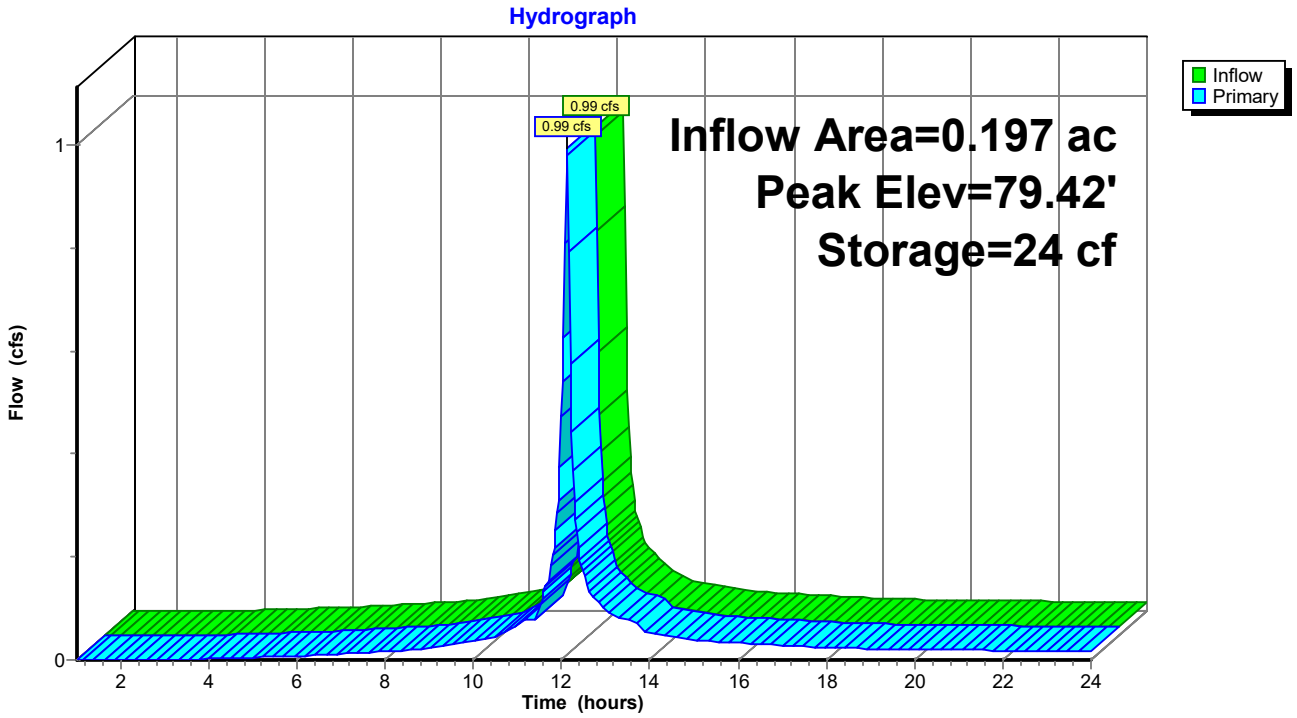
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.6 min (807.4 - 806.8)

Volume	Invert	Avail.Storage	Storage Description
#1	78.34'	24 cf	**4.00'W x 6.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	76.17'	**6.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 76.17' / 76.08' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	78.34'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	79.09'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.97 cfs @ 12.12 hrs HW=79.41' (Free Discharge)
└─**1=Culvert** (Passes 0.97 cfs of 1.64 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.08 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Weir Controls 0.89 cfs @ 1.63 fps)

Pond 10P: Filterra 4 - 4x6



Summary for Pond 11P: Filterra 5 - 6x6

[93] Warning: Storage range exceeded by 0.73'

Inflow Area = 0.361 ac, 79.34% Impervious, Inflow Depth > 4.63" for 25-Year event
Inflow = 1.83 cfs @ 12.12 hrs, Volume= 0.139 af
Outflow = 1.83 cfs @ 12.12 hrs, Volume= 0.139 af, Atten= 0%, Lag= 0.0 min
Primary = 1.83 cfs @ 12.12 hrs, Volume= 0.139 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 80.82' @ 12.12 hrs Surf.Area= 36 sf Storage= 36 cf

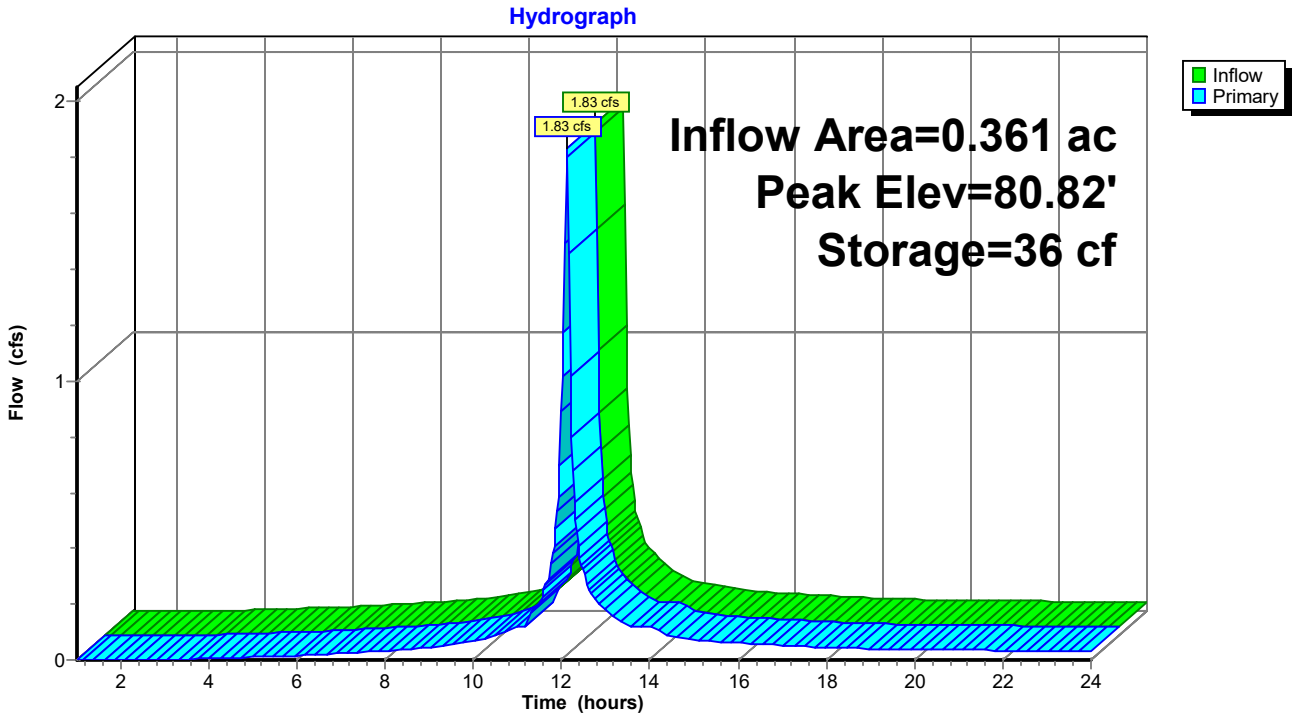
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.9 min (803.6 - 802.7)

Volume	Invert	Avail.Storage	Storage Description
#1	79.09'	36 cf	**6.00'W x 6.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	76.92'	**6.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 76.92' / 76.83' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	79.09'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	79.84'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=1.78 cfs @ 12.12 hrs HW=80.73' (Free Discharge)
└─**1=Culvert** (Inlet Controls 1.78 cfs @ 9.08 fps)
  ├─**2=Exfiltration** (Passes < 0.12 cfs potential flow)
  └─**3=Broad-Crested Rectangular Weir** (Passes < 4.71 cfs potential flow)

Pond 11P: Filterra 5 - 6x6



Summary for Pond 12P: Filterra 6 - 4x4

Inflow Area = 0.152 ac, 63.88% Impervious, Inflow Depth > 3.79" for 25-Year event
Inflow = 0.66 cfs @ 12.12 hrs, Volume= 0.048 af
Outflow = 0.66 cfs @ 12.12 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min
Primary = 0.66 cfs @ 12.12 hrs, Volume= 0.048 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 78.29' @ 12.12 hrs Surf.Area= 16 sf Storage= 16 cf

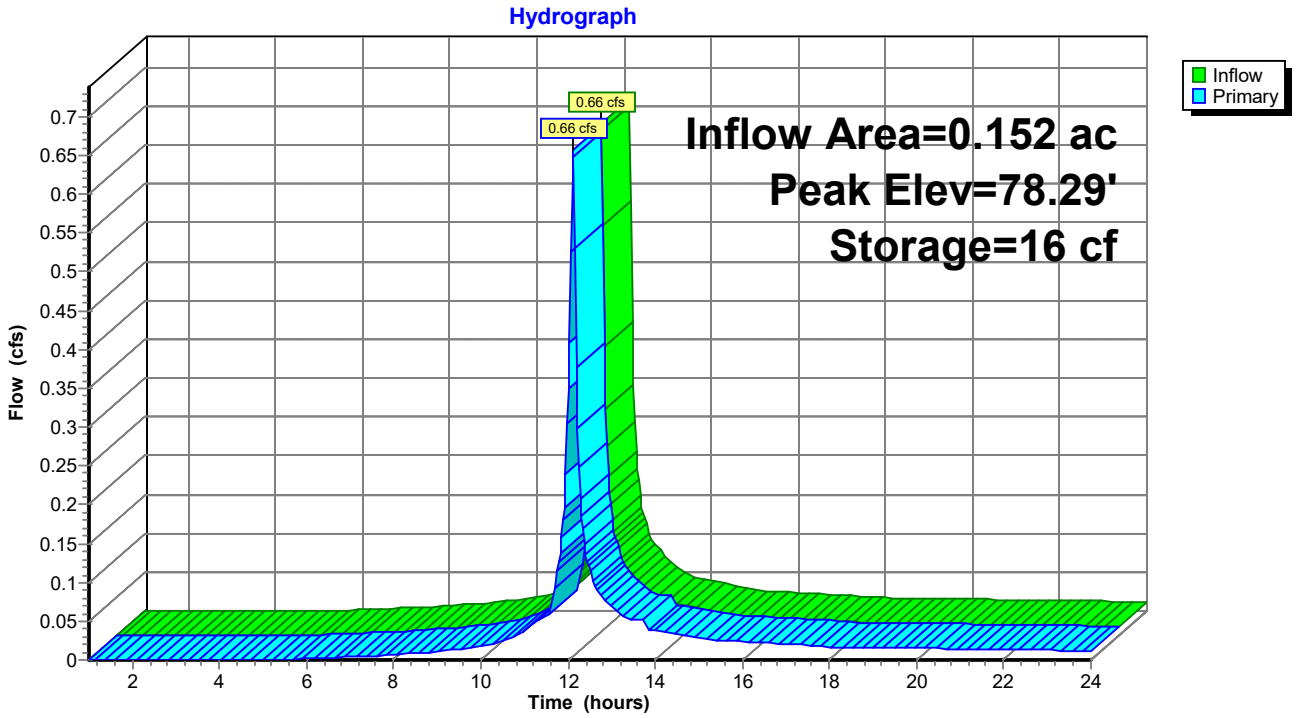
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.8 min (832.7 - 832.0)

Volume	Invert	Avail.Storage	Storage Description
#1	77.29'	16 cf	**4.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	75.12'	**8.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.12' / 75.08' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	77.29'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	78.04'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.64 cfs @ 12.12 hrs HW=78.29' (Free Discharge)
└─**1=Culvert** (Passes 0.64 cfs of 2.83 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.05 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Weir Controls 0.59 cfs @ 1.40 fps)

Pond 12P: Filterra 6 - 4x4



Summary for Pond 13P: 6 - Fire Cistern Tanks

[82] Warning: Early inflow requires earlier time span
[81] Warning: Exceeded Pond 7P by 1.23' @ 13.06 hrs
[81] Warning: Exceeded Pond 8P by 1.16' @ 13.21 hrs

Inflow Area =	0.828 ac,100.00% Impervious, Inflow Depth > 5.76" for 25-Year event				
Inflow =	4.66 cfs @	12.12 hrs,	Volume=	0.397 af	
Outflow =	0.61 cfs @	12.62 hrs,	Volume=	0.315 af,	Atten= 87%, Lag= 30.3 min
Primary =	0.61 cfs @	12.62 hrs,	Volume=	0.315 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 77.90' @ 12.62 hrs Surf.Area= 1,561 sf Storage= 7,653 cf

Plug-Flow detention time= 250.3 min calculated for 0.314 af (79% of inflow)
Center-of-Mass det. time= 153.9 min (900.6 - 746.6)

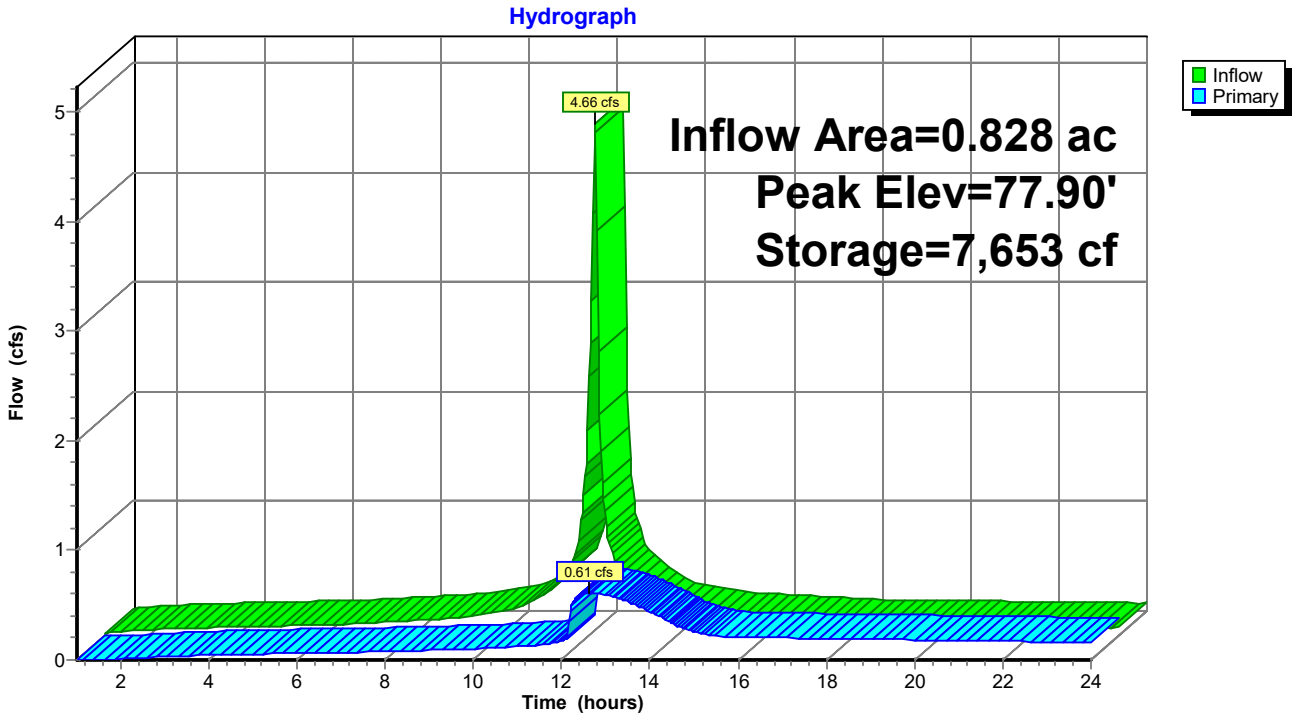
Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	10,927 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	1,561	0	0
74.00	1,561	1,561	1,561
75.00	1,561	1,561	3,122
76.00	1,561	1,561	4,683
77.00	1,561	1,561	6,244
78.00	1,561	1,561	7,805
79.00	1,561	1,561	9,366
80.00	1,561	1,561	10,927

Device	Routing	Invert	Outlet Devices
#1	Primary	78.92'	**6.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	76.92'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	73.00'	**2.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.61 cfs @ 12.62 hrs HW=77.90' (Free Discharge)
└─**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
├─**2=Orifice/Grate** (Orifice Controls 0.38 cfs @ 4.35 fps)
└─**3=Orifice/Grate** (Orifice Controls 0.23 cfs @ 10.57 fps)

Pond 13P: 6 - Fire Cistern Tanks



Summary for Pond 19P: 5 Fire Cistern Tanks

[79] Warning: Submerged Pond 9P Primary device # 1 INLET by 1.31'
[79] Warning: Submerged Pond 10P Primary device # 1 INLET by 1.31'
[79] Warning: Submerged Pond 11P Primary device # 1 INLET by 0.56'

Inflow Area =	0.788 ac,	75.67% Impervious,	Inflow Depth >	4.45"	for 25-Year event
Inflow =	3.89 cfs @	12.12 hrs,	Volume=	0.292 af	
Outflow =	1.12 cfs @	12.30 hrs,	Volume=	0.229 af,	Atten= 71%, Lag= 10.8 min
Primary =	1.12 cfs @	12.30 hrs,	Volume=	0.229 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 77.48' @ 12.30 hrs Surf.Area= 1,300 sf Storage= 5,178 cf

Plug-Flow detention time= 176.7 min calculated for 0.229 af (78% of inflow)
Center-of-Mass det. time= 82.6 min (892.3 - 809.7)

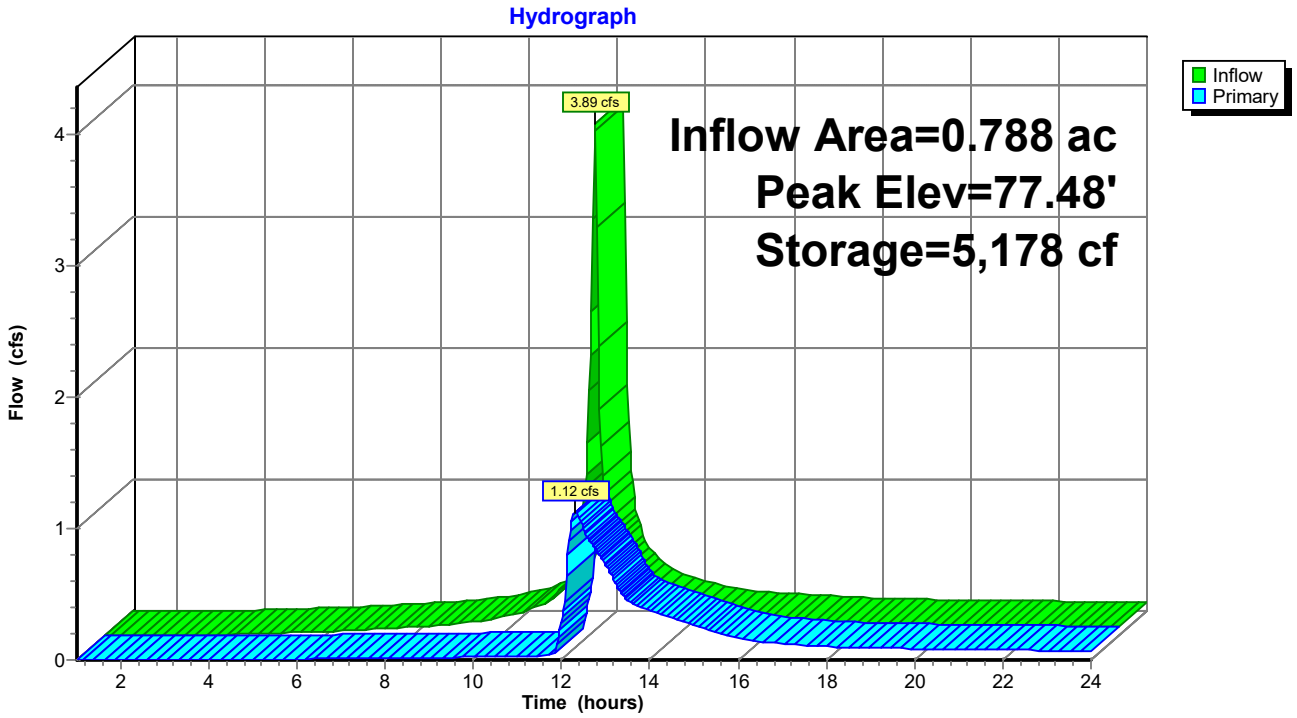
Volume	Invert	Avail.Storage	Storage Description
#1	73.50'	9,100 cf	**5-Cisterns (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.50	1,300	0	0
74.50	1,300	1,300	1,300
75.50	1,300	1,300	2,600
76.50	1,300	1,300	3,900
77.50	1,300	1,300	5,200
78.50	1,300	1,300	6,500
79.50	1,300	1,300	7,800
80.50	1,300	1,300	9,100

Device	Routing	Invert	Outlet Devices
#1	Primary	78.42'	**8.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	73.50'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	76.42'	**4.0" Vert. Orifice/Grate** C= 0.600
#4	Primary	75.50'	**4.0" Vert. Orifice/Grate** C= 0.600
#5	Primary	77.25'	**4.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.12 cfs @ 12.30 hrs HW=77.48' (Free Discharge)
- **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
- **2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 9.56 fps)
- **3=Orifice/Grate** (Orifice Controls 0.40 cfs @ 4.56 fps)
- **4=Orifice/Grate** (Orifice Controls 0.57 cfs @ 6.49 fps)
- **5=Orifice/Grate** (Orifice Controls 0.11 cfs @ 1.64 fps)

Pond 19P: 5 Fire Cistern Tanks



Summary for Pond 26P: (new Pond)

[57] Hint: Peaked at 74.13' (Flood elevation advised)
[79] Warning: Submerged Pond 19P Primary device # 2 by 0.63'

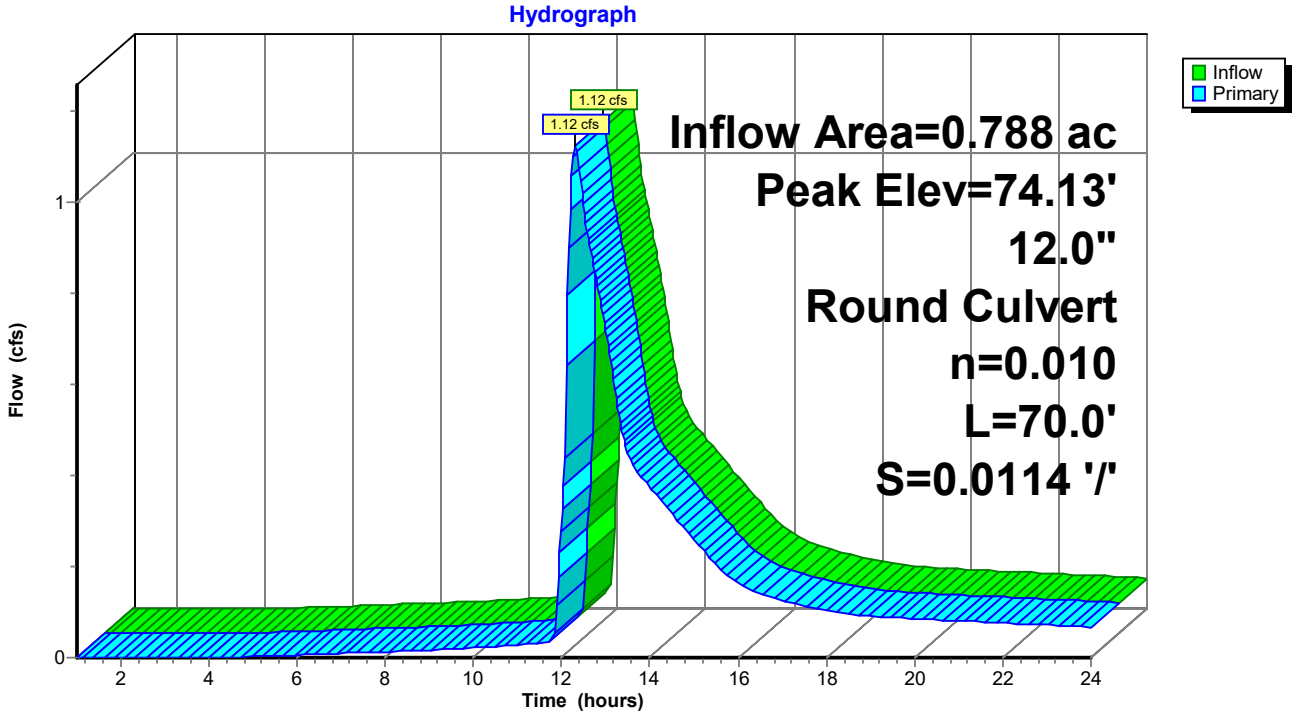
Inflow Area =	0.788 ac, 75.67% Impervious, Inflow Depth > 3.49" for 25-Year event				
Inflow =	1.12 cfs @ 12.30 hrs, Volume=	0.229 af			
Outflow =	1.12 cfs @ 12.30 hrs, Volume=	0.229 af, Atten= 0%, Lag= 0.0 min			
Primary =	1.12 cfs @ 12.30 hrs, Volume=	0.229 af			

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 74.13' @ 12.30 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	73.50'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.50' / 72.70' S= 0.0114 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.12 cfs @ 12.30 hrs HW=74.13' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.12 cfs @ 2.14 fps)

Pond 26P: (new Pond)



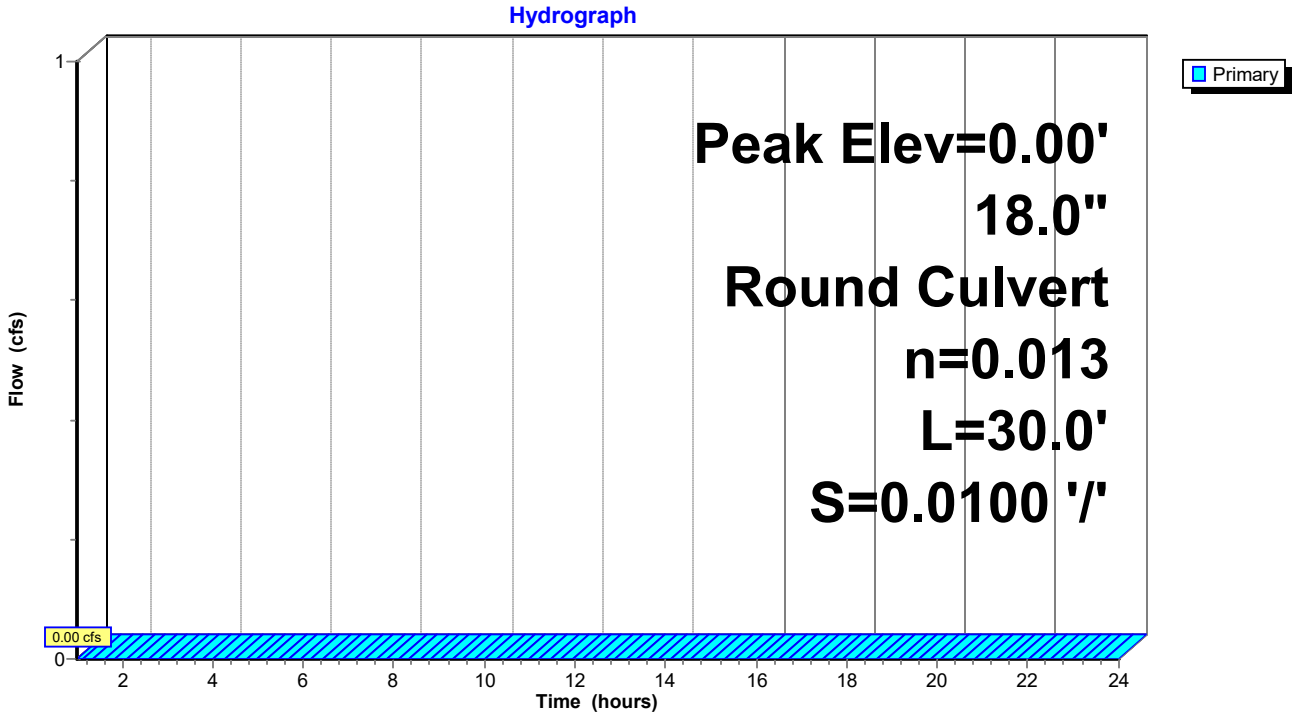
Summary for Pond 27P: (new Pond)

[43] Hint: Has no inflow (Outflow=Zero)

Device	Routing	Invert	Outlet Devices
#1	Primary	72.40'	**18.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.40' / 72.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=0.00' (Free Discharge)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 27P: (new Pond)

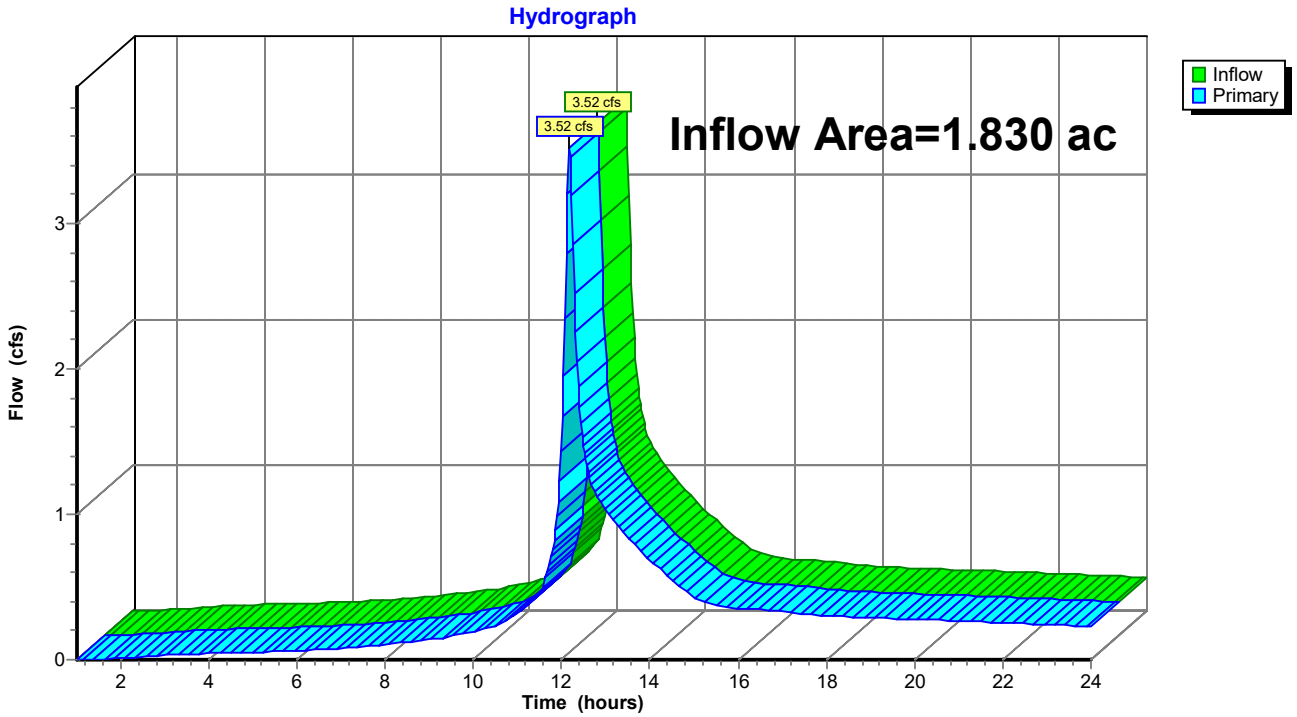


Summary for Link 1L: SP-1

Inflow Area = 1.830 ac, 76.73% Impervious, Inflow Depth > 3.95" for 25-Year event
Inflow = 3.52 cfs @ 12.17 hrs, Volume= 0.602 af
Primary = 3.52 cfs @ 12.17 hrs, Volume= 0.602 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs

Link 1L: SP-1

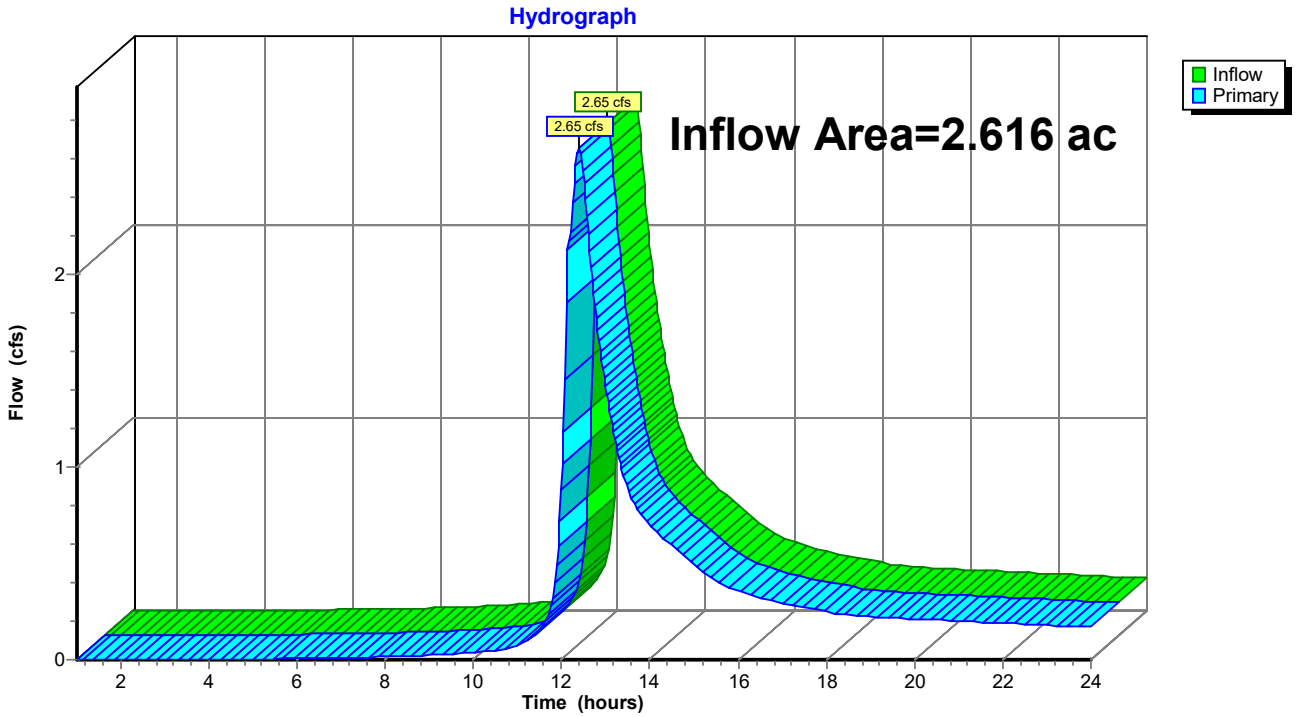


Summary for Link 2L: SP-2

Inflow Area = 2.616 ac, 36.98% Impervious, Inflow Depth > 2.34" for 25-Year event
Inflow = 2.65 cfs @ 12.38 hrs, Volume= 0.510 af
Primary = 2.65 cfs @ 12.38 hrs, Volume= 0.510 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs

Link 2L: SP-2



Time span=1.00-24.00 hrs, dt=0.03 hrs, 768 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Web Rd-N Runoff Area=7,980 sf 55.31% Impervious Runoff Depth>3.95"
Flow Length=174' Tc=12.7 min CN=72 Runoff=0.63 cfs 0.060 af

Subcatchment 2S: Web RD S Runoff Area=10,764 sf 46.11% Impervious Runoff Depth>3.96"
Flow Length=223' Tc=5.0 min CN=72 Runoff=1.13 cfs 0.082 af

Subcatchment 3S: Turner RD Runoff Area=68,885 sf 16.27% Impervious Runoff Depth>2.39"
Flow Length=576' Tc=29.3 min CN=57 Runoff=2.11 cfs 0.315 af

Subcatchment 4S: Lawn Pleas-W Runoff Area=14,692 sf 52.63% Impervious Runoff Depth>4.28"
Flow Length=114' Tc=9.8 min CN=75 Runoff=1.37 cfs 0.120 af

Subcatchment 5S: Lawn Pleas-E Runoff Area=14,348 sf 60.79% Impervious Runoff Depth>4.72"
Flow Length=215' Tc=9.9 min CN=79 Runoff=1.46 cfs 0.130 af

Subcatchment 11S: DRWY NE Runoff Area=4,660 sf 100.00% Impervious Runoff Depth>6.90"
Flow Length=105' Tc=5.0 min CN=98 Runoff=0.72 cfs 0.062 af

Subcatchment 12S: DRWY SE Runoff Area=5,373 sf 100.00% Impervious Runoff Depth>6.90"
Flow Length=105' Tc=5.0 min CN=98 Runoff=0.83 cfs 0.071 af

Subcatchment 13S: PARK SE Runoff Area=10,014 sf 68.49% Impervious Runoff Depth>5.17"
Flow Length=165' Tc=5.0 min CN=83 Runoff=1.33 cfs 0.099 af

Subcatchment 14S: PARK SW Runoff Area=8,603 sf 77.35% Impervious Runoff Depth>5.63"
Flow Length=158' Tc=5.0 min CN=87 Runoff=1.21 cfs 0.093 af

Subcatchment 15S: DRWY W Runoff Area=15,708 sf 79.34% Impervious Runoff Depth>5.74"
Flow Length=183' Tc=5.0 min CN=88 Runoff=2.24 cfs 0.173 af

Subcatchment 16S: VISIT LOT Runoff Area=6,630 sf 63.88% Impervious Runoff Depth>4.84"
Flow Length=81' Tc=5.0 min CN=80 Runoff=0.83 cfs 0.061 af

Subcatchment 17S: NEW BLDG Runoff Area=26,024 sf 100.00% Impervious Runoff Depth>6.90"
Flow Length=75' Slope=0.0050 '/' Tc=5.0 min CN=98 Runoff=4.02 cfs 0.344 af

Pond 1P: CB-Web N Peak Elev=72.85' Inflow=0.63 cfs 0.060 af
12.0" Round Culvert n=0.012 L=30.0' S=0.0100 '/' Outflow=0.63 cfs 0.060 af

Pond 2P: Peak Elev=73.80' Inflow=2.46 cfs 0.382 af
12.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=2.46 cfs 0.382 af

Pond 3P: Peak Elev=79.90' Inflow=2.11 cfs 0.315 af
8.0" Round Culvert n=0.013 L=197.0' S=0.0051 '/' Outflow=2.11 cfs 0.315 af

Pond 4P: Peak Elev=75.91' Inflow=1.37 cfs 0.120 af
12.0" Round Culvert n=0.013 L=55.0' S=0.0455 '/' Outflow=1.37 cfs 0.120 af

Pond 5P: CB-Pleas E Peak Elev=72.89' Inflow=2.76 cfs 0.572 af
18.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=2.76 cfs 0.572 af

Pond 6P: Peak Elev=73.09' Inflow=1.37 cfs 0.120 af
30.0" Round Culvert n=0.013 L=254.0' S=0.0102 '/' Outflow=1.37 cfs 0.120 af

Pond 7P: Filterra 1 - 4x6 Peak Elev=77.60' Storage=24 cf Inflow=0.72 cfs 0.062 af
Outflow=0.72 cfs 0.061 af

Pond 8P: Filterra 2 - 4x6 Peak Elev=77.63' Storage=24 cf Inflow=0.83 cfs 0.071 af
Outflow=0.82 cfs 0.071 af

Pond 9P: Filterra 3 - 4x4 Peak Elev=79.49' Storage=16 cf Inflow=1.33 cfs 0.099 af
Outflow=1.33 cfs 0.099 af

Pond 10P: Filterra 4 - 4x6 Peak Elev=79.46' Storage=24 cf Inflow=1.21 cfs 0.093 af
Outflow=1.21 cfs 0.093 af

Pond 11P: Filterra 5 - 6x6 Peak Elev=82.74' Storage=36 cf Inflow=2.24 cfs 0.173 af
Outflow=2.24 cfs 0.172 af

Pond 12P: Filterra 6 - 4x4 Peak Elev=78.34' Storage=16 cf Inflow=0.83 cfs 0.061 af
Outflow=0.83 cfs 0.061 af

Pond 13P: 6 - Fire Cistern Tanks Peak Elev=78.82' Storage=9,080 cf Inflow=5.56 cfs 0.476 af
Outflow=0.80 cfs 0.382 af

Pond 19P: 5 Fire Cistern Tanks Peak Elev=78.17' Storage=6,068 cf Inflow=4.77 cfs 0.364 af
Outflow=1.61 cfs 0.301 af

Pond 26P: (new Pond) Peak Elev=74.30' Inflow=1.61 cfs 0.301 af
12.0" Round Culvert n=0.010 L=70.0' S=0.0114 '/' Outflow=1.61 cfs 0.301 af

Pond 27P: (new Pond) Peak Elev=0.00'
18.0" Round Culvert n=0.013 L=30.0' S=0.0100 '/' Primary=0.00 cfs 0.000 af

Link 1L: SP-1 Inflow=4.72 cfs 0.754 af
Primary=4.72 cfs 0.754 af

Link 2L: SP-2 Inflow=3.88 cfs 0.697 af
Primary=3.88 cfs 0.697 af

Total Runoff Area = 4.446 ac Runoff Volume = 1.609 af Average Runoff Depth = 4.34"
46.66% Pervious = 2.075 ac 53.34% Impervious = 2.372 ac

Summary for Subcatchment 1S: Web Rd-N

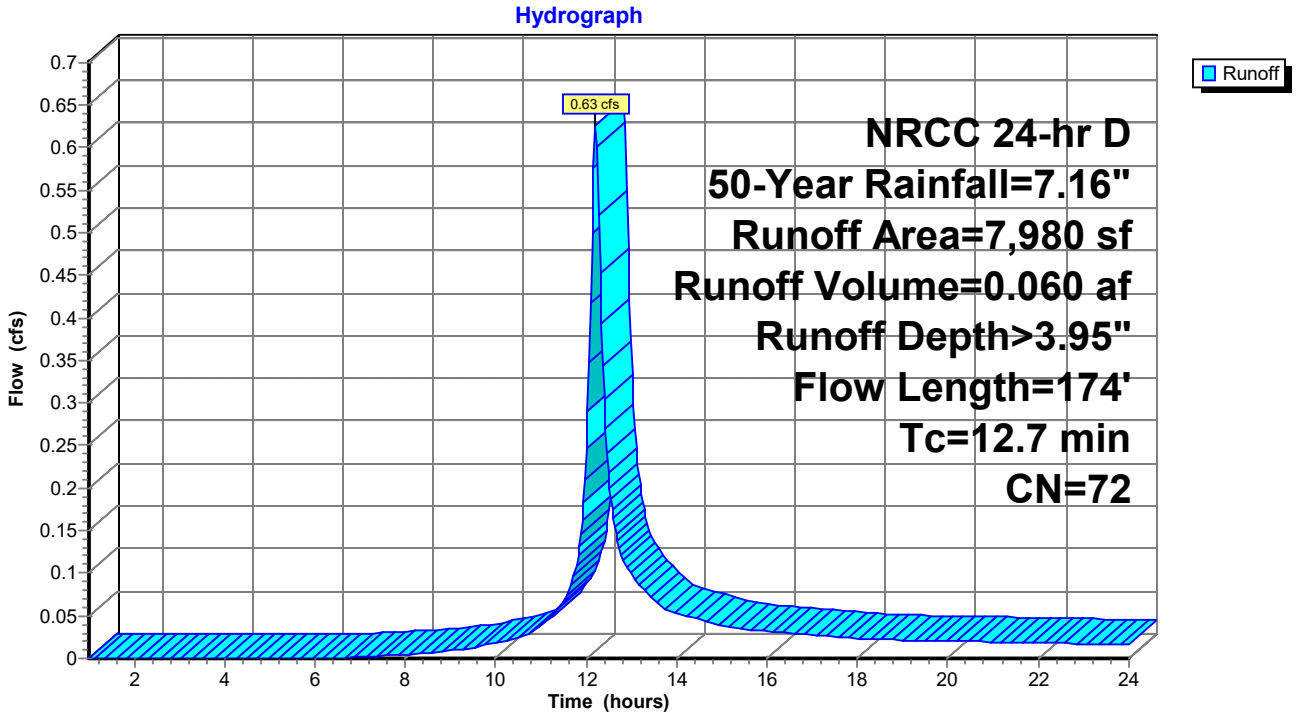
Runoff = 0.63 cfs @ 12.21 hrs, Volume= 0.060 af, Depth> 3.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 50-Year Rainfall=7.16"

Area (sf)	CN	Description
4,414	98	Paved parking, HSG A
3,566	39	>75% Grass cover, Good, HSG A
7,980	72	Weighted Average
3,566		44.69% Pervious Area
4,414		55.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	81	0.0250	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.7	93	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
12.7	174	Total			

Subcatchment 1S: Web Rd-N



Summary for Subcatchment 2S: Web RD S

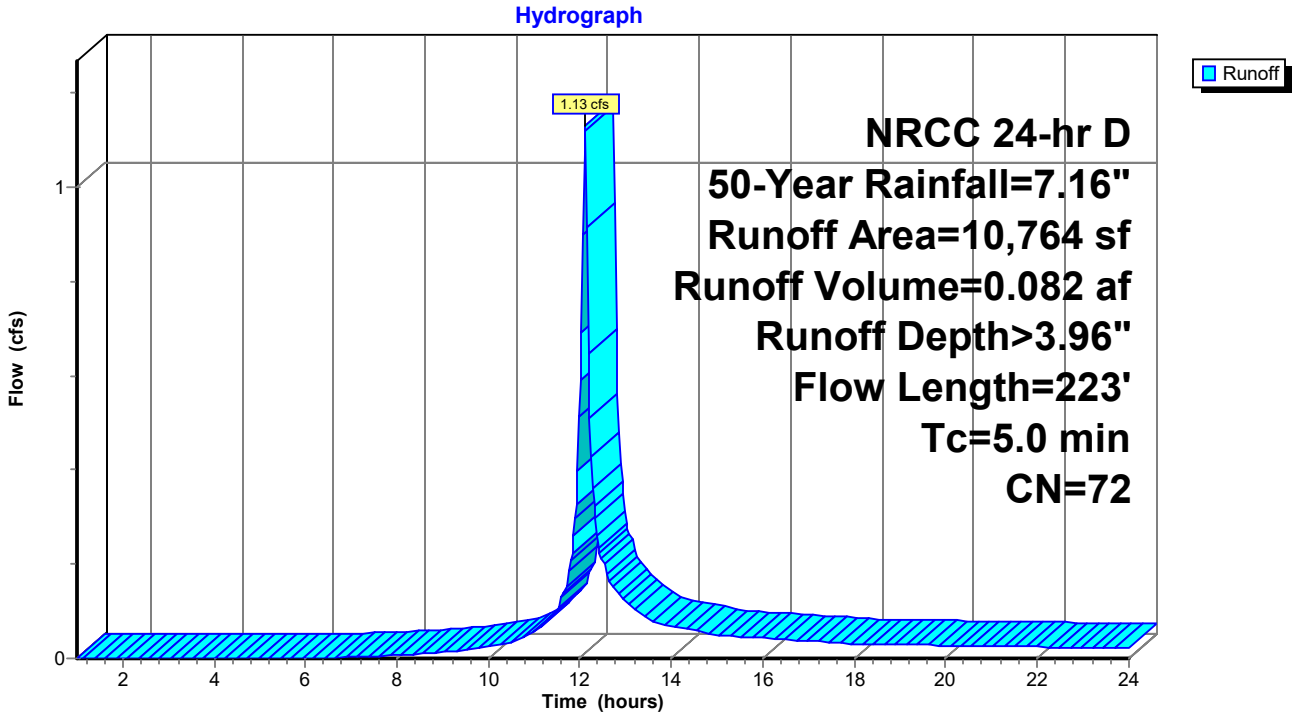
Runoff = 1.13 cfs @ 12.12 hrs, Volume= 0.082 af, Depth> 3.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 50-Year Rainfall=7.16"

Area (sf)	CN	Description
4,963	98	Paved parking, HSG A
5,801	49	50-75% Grass cover, Fair, HSG A
10,764	72	Weighted Average
5,801		53.89% Pervious Area
4,963		46.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0250	0.90		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
1.5	211	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	223	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 2S: Web RD S



Summary for Subcatchment 3S: Turner RD

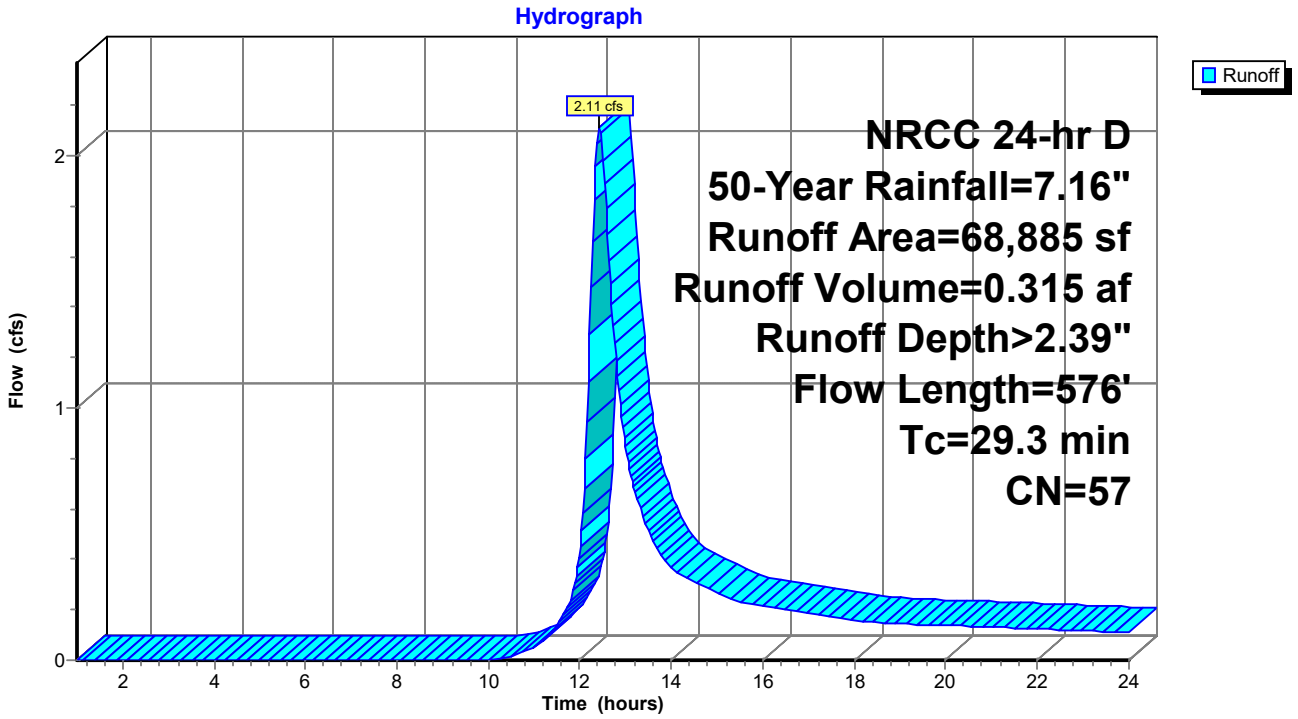
Runoff = 2.11 cfs @ 12.43 hrs, Volume= 0.315 af, Depth> 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 50-Year Rainfall=7.16"

	Area (sf)	CN	Description
*	11,210	98	Paved parking & roofs
	57,675	49	50-75% Grass cover, Fair, HSG A
	68,885	57	Weighted Average
	57,675		83.73% Pervious Area
	11,210		16.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7	132	0.0075	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
8.7	315	0.0075	0.61		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	129	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
29.3	576	Total			

Subcatchment 3S: Turner RD



Summary for Subcatchment 4S: Lawn Pleas-W

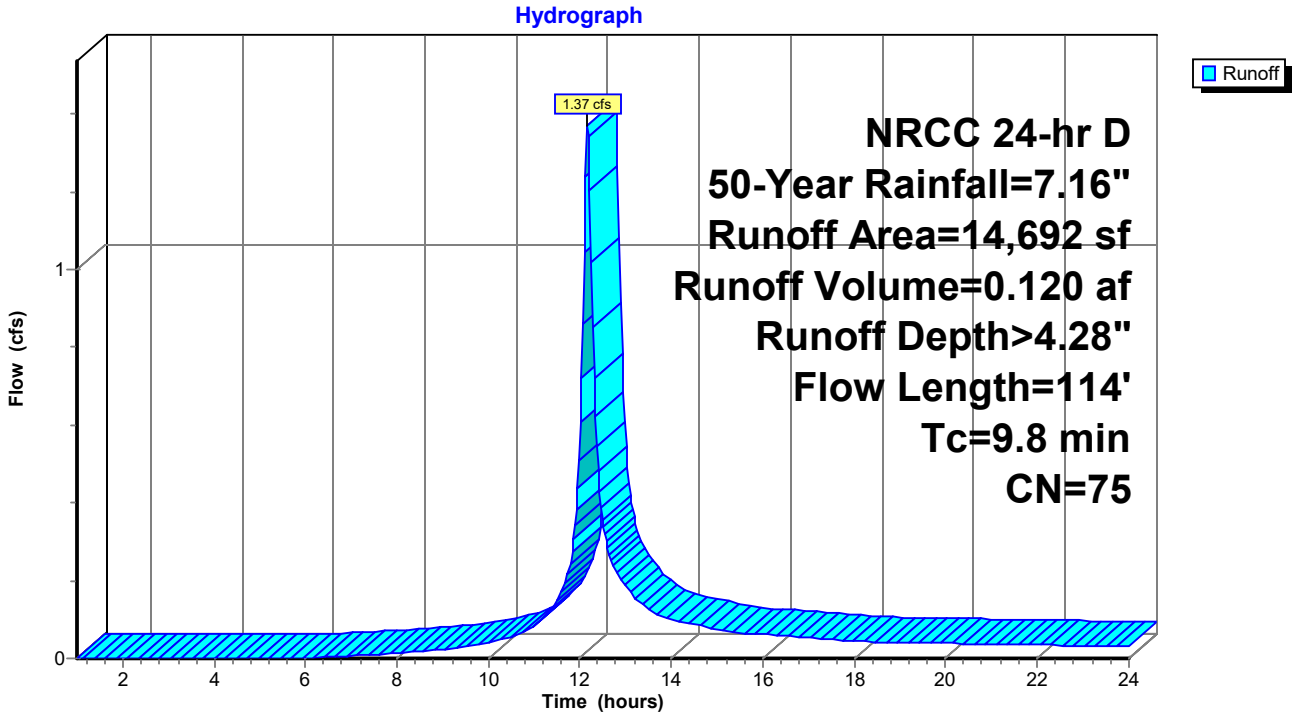
Runoff = 1.37 cfs @ 12.17 hrs, Volume= 0.120 af, Depth> 4.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 50-Year Rainfall=7.16"

Area (sf)	CN	Description
6,959	49	50-75% Grass cover, Fair, HSG A
7,733	98	Paved parking, HSG A
14,692	75	Weighted Average
6,959		47.37% Pervious Area
7,733		52.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	66	0.0125	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.6	48	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.8	114	Total			

Subcatchment 4S: Lawn Pleas-W



Summary for Subcatchment 5S: Lawn Pleas-E

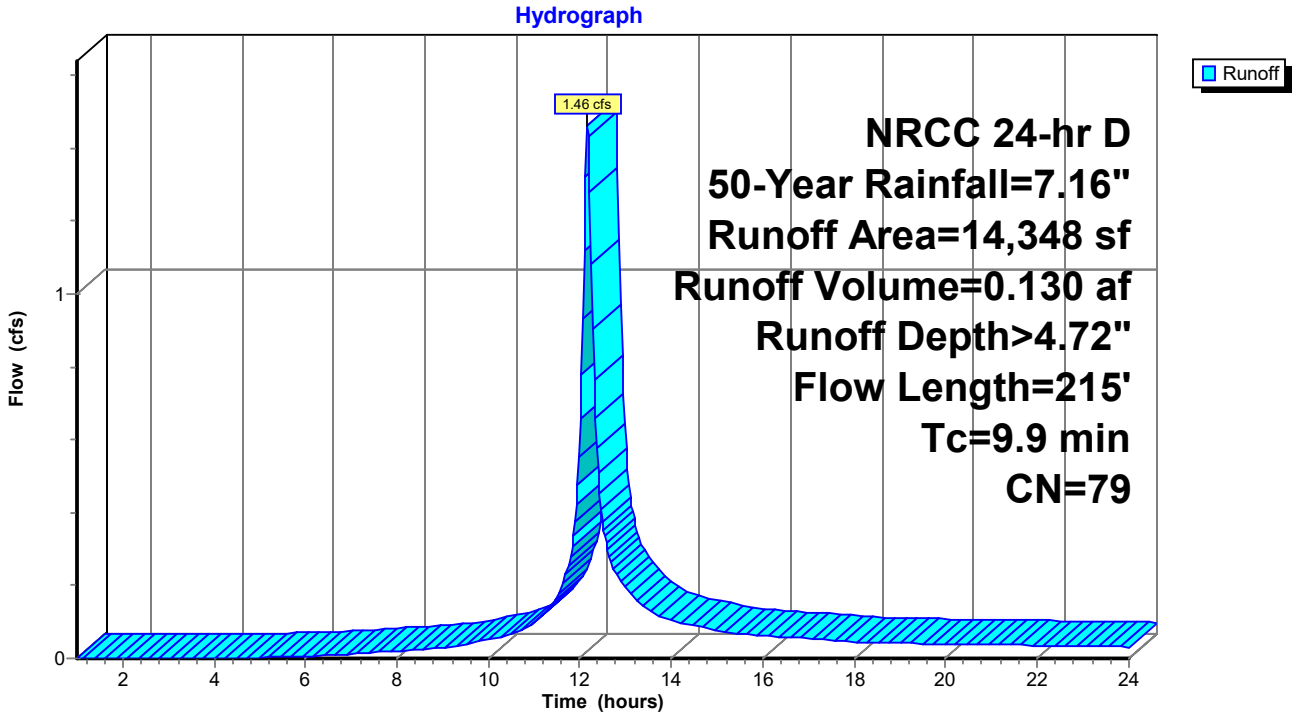
Runoff = 1.46 cfs @ 12.17 hrs, Volume= 0.130 af, Depth> 4.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 50-Year Rainfall=7.16"

	Area (sf)	CN	Description
*	8,722	98	Paved parking & roofs
	5,626	49	50-75% Grass cover, Fair, HSG A
	14,348	79	Weighted Average
	5,626		39.21% Pervious Area
	8,722		60.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	55	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
1.2	160	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.9	215	Total			

Subcatchment 5S: Lawn Pleas-E



Summary for Subcatchment 11S: DRWY NE

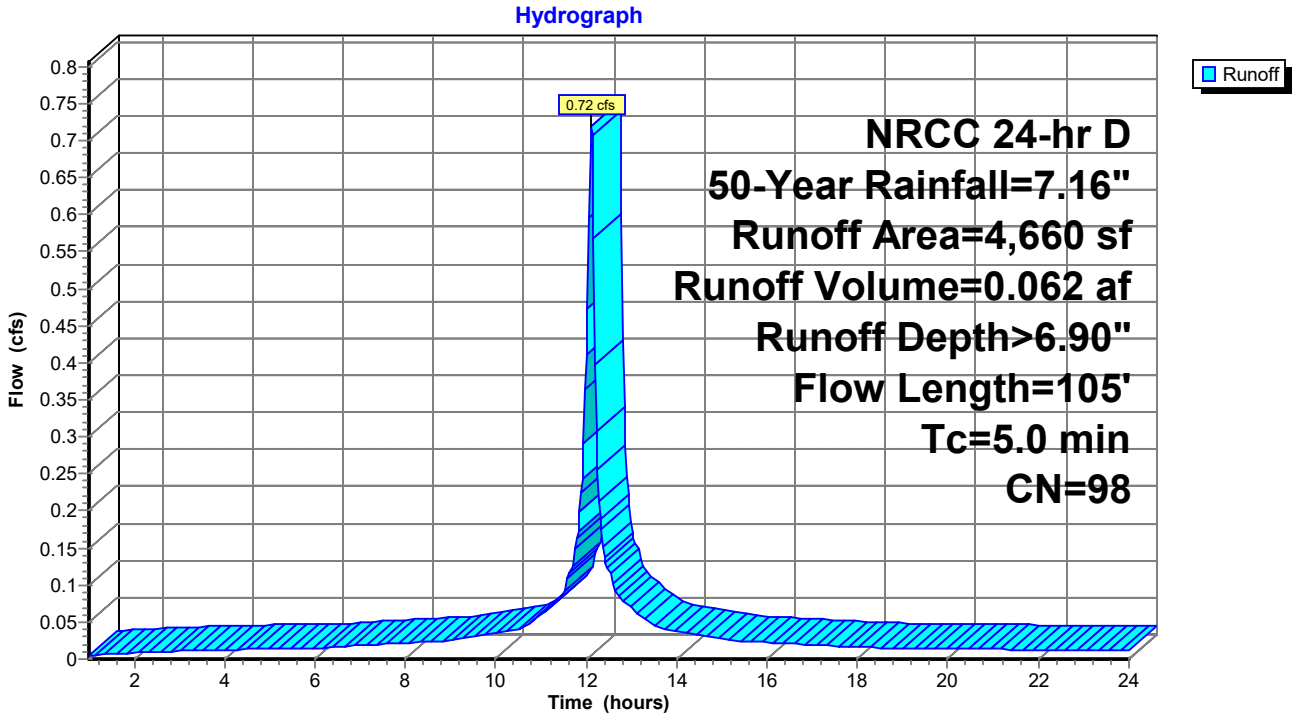
Runoff = 0.72 cfs @ 12.12 hrs, Volume= 0.062 af, Depth> 6.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 50-Year Rainfall=7.16"

Area (sf)	CN	Description
4,660	98	Paved parking, HSG A
4,660		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	45	0.0330	1.32		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.4	60	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	105	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 11S: DRWY NE



Summary for Subcatchment 12S: DRWY SE

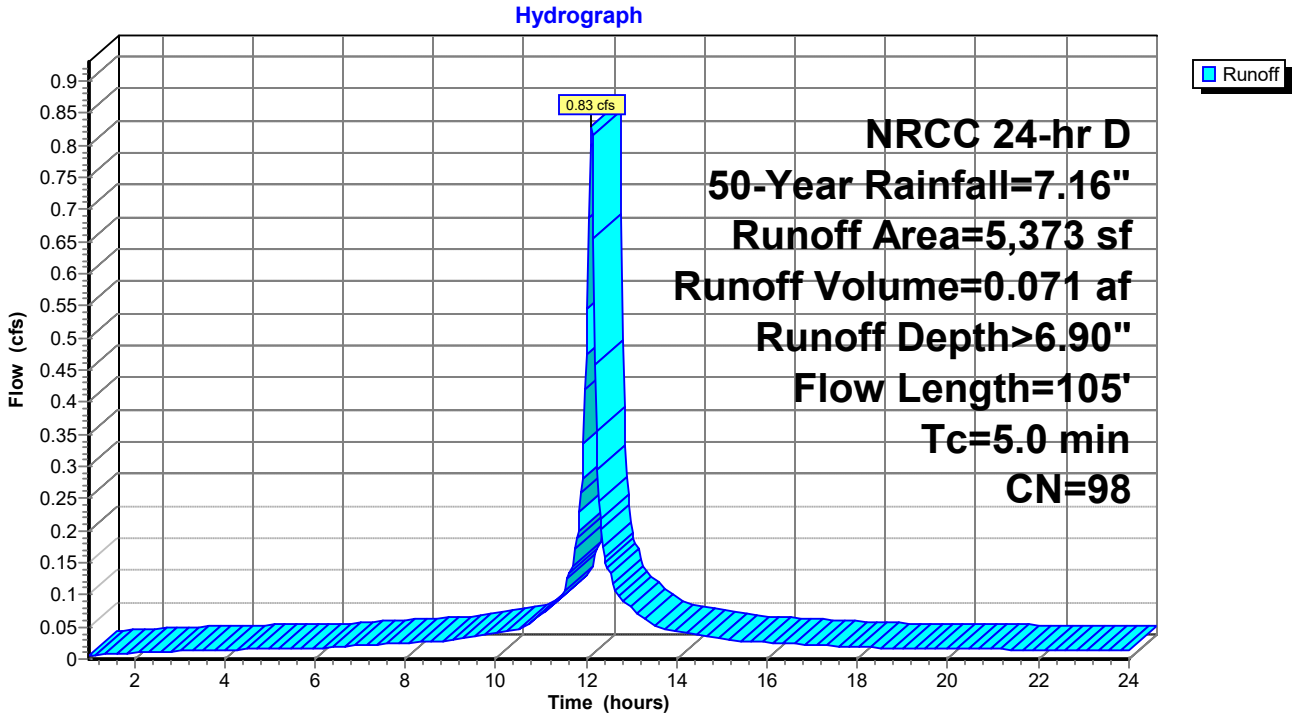
Runoff = 0.83 cfs @ 12.12 hrs, Volume= 0.071 af, Depth> 6.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 50-Year Rainfall=7.16"

Area (sf)	CN	Description
5,373	98	Paved parking, HSG A
5,373		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	45	0.0330	1.32		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.4	60	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	105	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 12S: DRWY SE



Summary for Subcatchment 13S: PARK SE

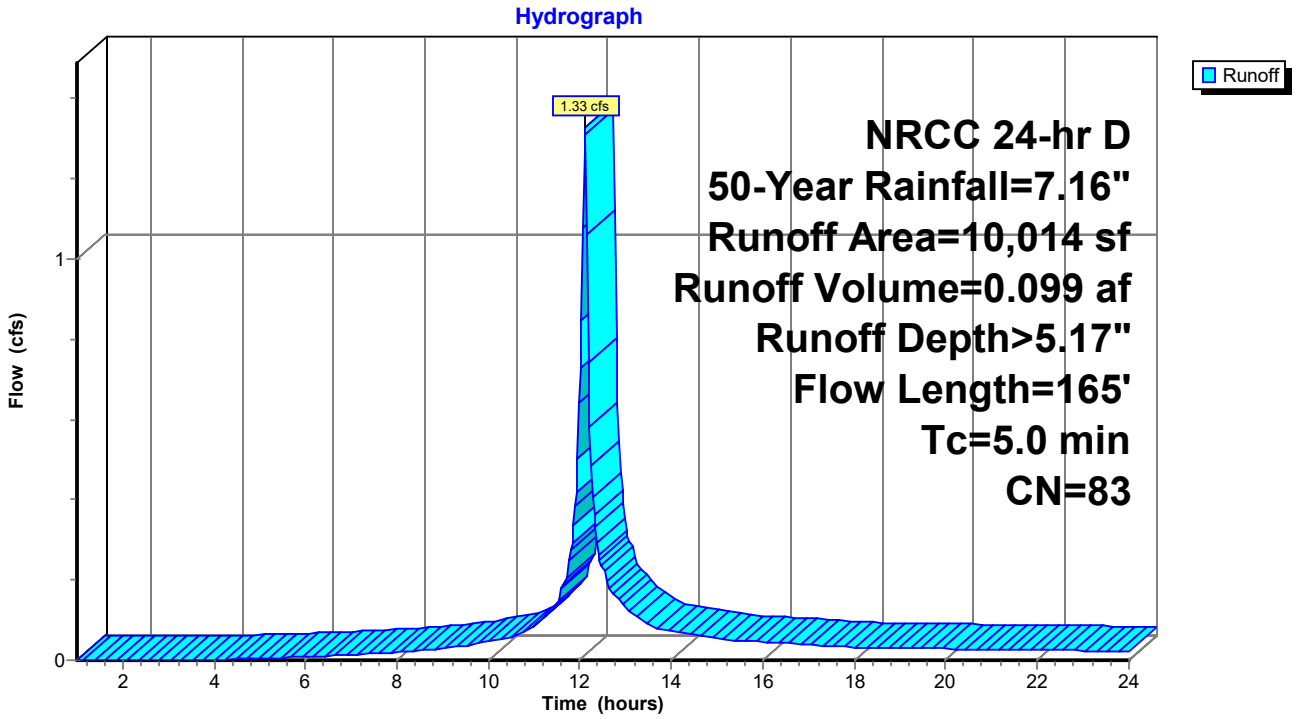
Runoff = 1.33 cfs @ 12.12 hrs, Volume= 0.099 af, Depth> 5.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 50-Year Rainfall=7.16"

Area (sf)	CN	Description
6,859	98	Paved parking, HSG A
3,155	49	50-75% Grass cover, Fair, HSG A
10,014	83	Weighted Average
3,155		31.51% Pervious Area
6,859		68.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	20	0.0170	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.8	66	0.0330	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.6	79	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.5	165	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 13S: PARK SE



Summary for Subcatchment 14S: PARK SW

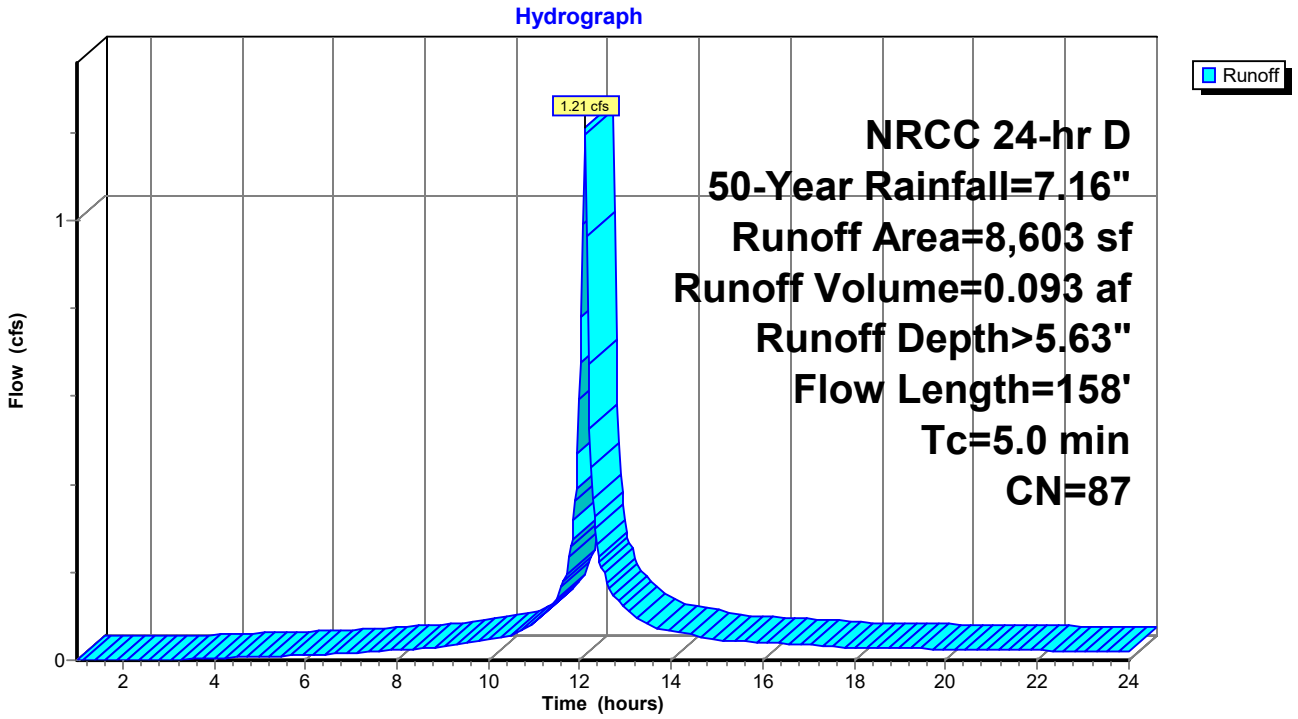
Runoff = 1.21 cfs @ 12.12 hrs, Volume= 0.093 af, Depth> 5.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 50-Year Rainfall=7.16"

Area (sf)	CN	Description
6,654	98	Paved parking, HSG A
1,949	49	50-75% Grass cover, Fair, HSG A
8,603	87	Weighted Average
1,949		22.65% Pervious Area
6,654		77.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0170	0.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.8	66	0.0330	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.5	72	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	158	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 14S: PARK SW



Summary for Subcatchment 15S: DRWY W

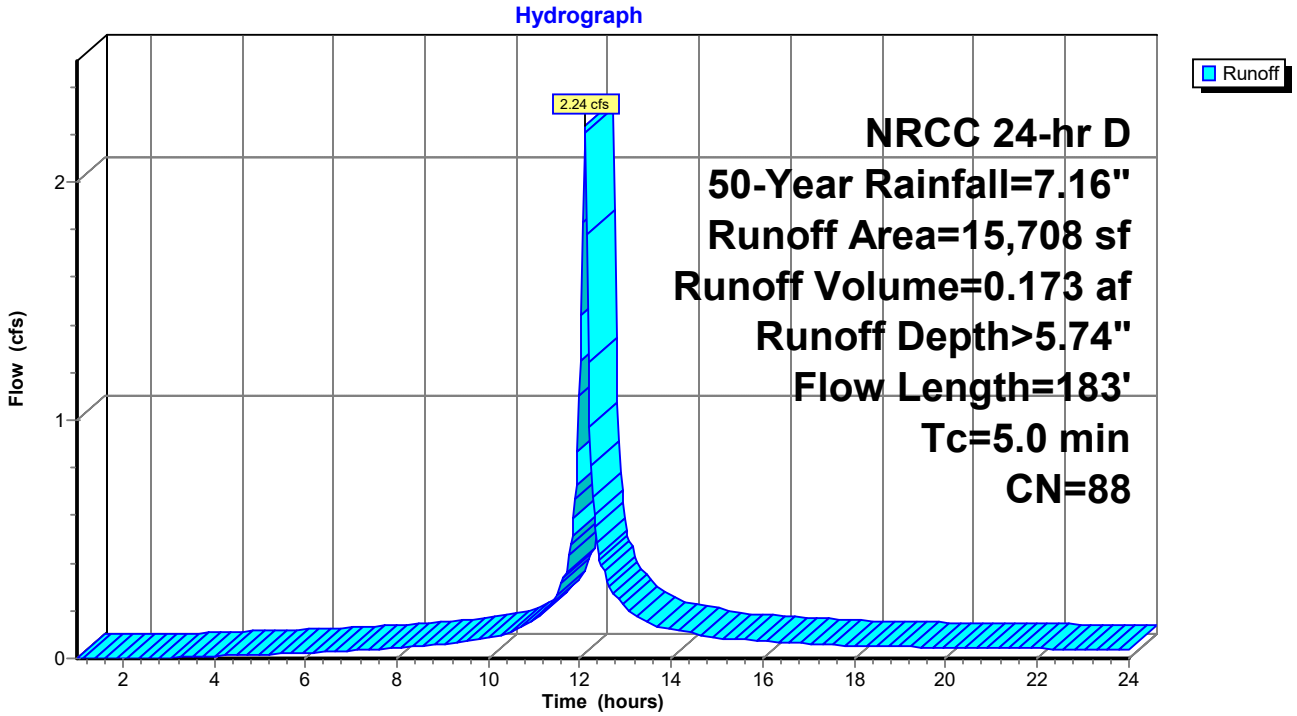
Runoff = 2.24 cfs @ 12.12 hrs, Volume= 0.173 af, Depth> 5.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 50-Year Rainfall=7.16"

Area (sf)	CN	Description
12,462	98	Paved parking, HSG A
3,246	49	50-75% Grass cover, Fair, HSG A
15,708	88	Weighted Average
3,246		20.66% Pervious Area
12,462		79.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	58	0.0150	1.01		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.9	125	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.9	183	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 15S: DRWY W



Summary for Subcatchment 16S: VISIT LOT

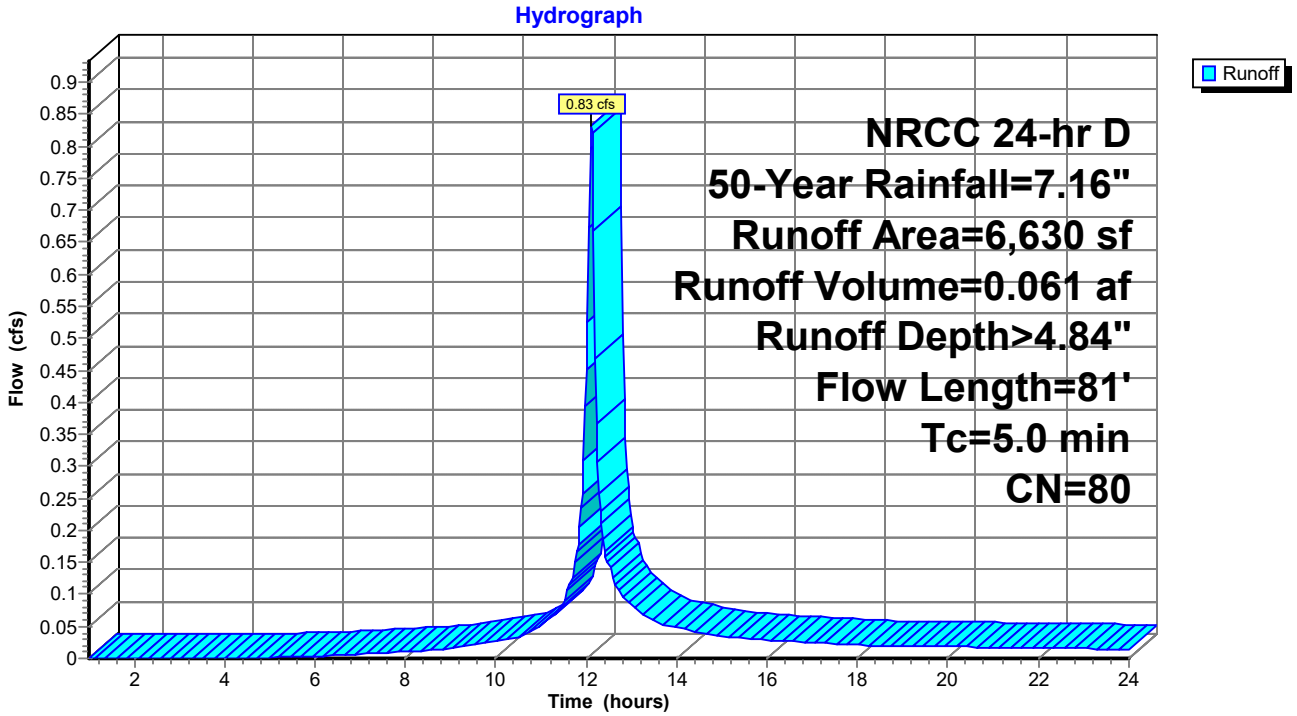
Runoff = 0.83 cfs @ 12.12 hrs, Volume= 0.061 af, Depth> 4.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 50-Year Rainfall=7.16"

Area (sf)	CN	Description
4,235	98	Paved parking, HSG A
2,395	49	50-75% Grass cover, Fair, HSG A
6,630	80	Weighted Average
2,395		36.12% Pervious Area
4,235		63.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	41	0.0125	0.88		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.3	40	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	81	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 16S: VISIT LOT



Summary for Subcatchment 17S: NEW BLDG

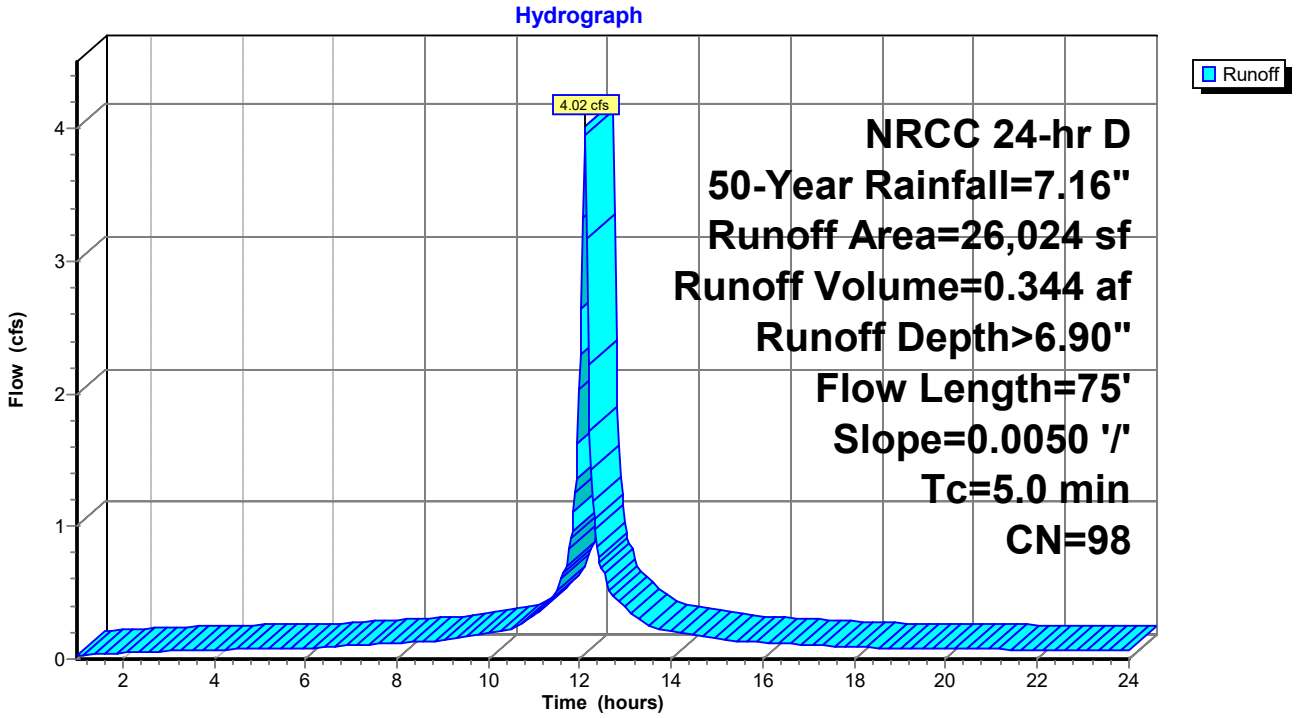
Runoff = 4.02 cfs @ 12.12 hrs, Volume= 0.344 af, Depth> 6.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
NRCC 24-hr D 50-Year Rainfall=7.16"

Area (sf)	CN	Description
26,024	98	Roofs, HSG A
26,024		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	25	0.0050	0.55		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.6	50	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	75	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 17S: NEW BLDG



Summary for Pond 1P: CB-Web N

[57] Hint: Peaked at 72.85' (Flood elevation advised)

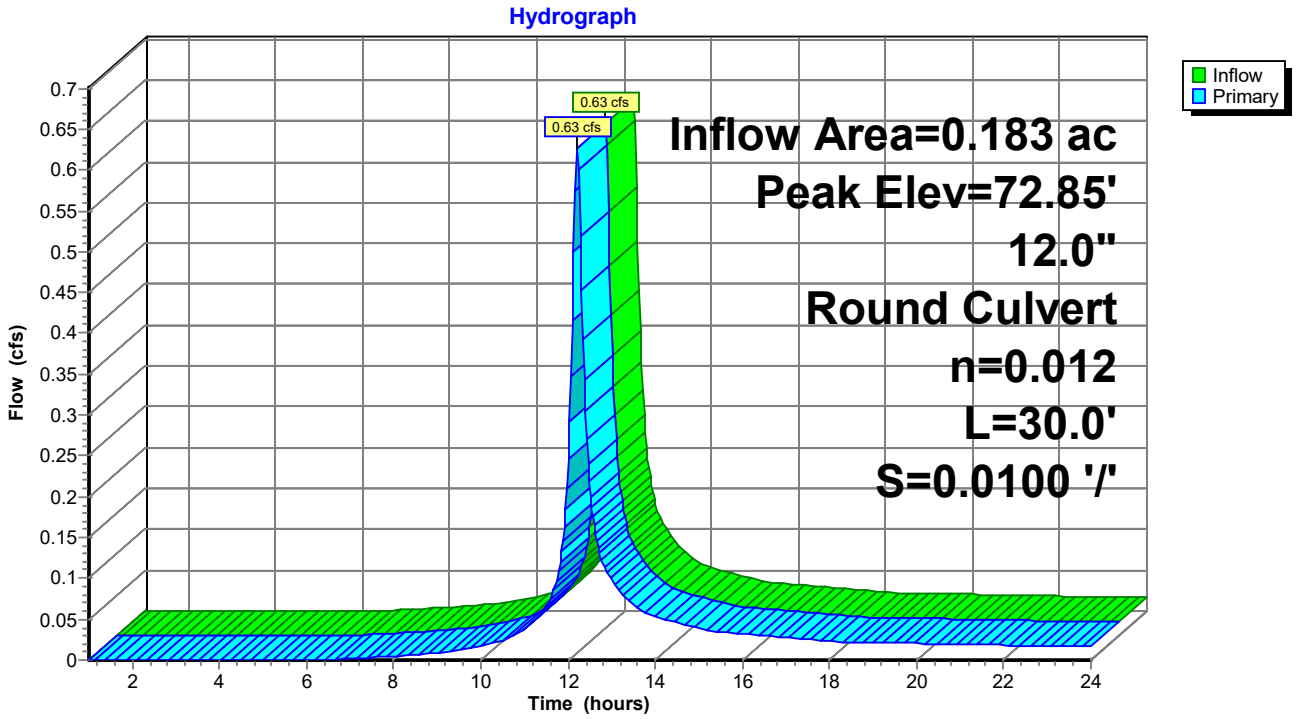
Inflow Area =	0.183 ac, 55.31% Impervious, Inflow Depth > 3.95" for 50-Year event				
Inflow =	0.63 cfs @ 12.21 hrs, Volume=	0.060 af			
Outflow =	0.63 cfs @ 12.21 hrs, Volume=	0.060 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.63 cfs @ 12.21 hrs, Volume=	0.060 af			

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 72.85' @ 12.21 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	72.40'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.40' / 72.10' S= 0.0100 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.62 cfs @ 12.21 hrs HW=72.85' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.62 cfs @ 1.81 fps)

Pond 1P: CB-Web N



Summary for Pond 2P:

[79] Warning: Submerged Pond 26P Primary device # 1 INLET by 0.28'

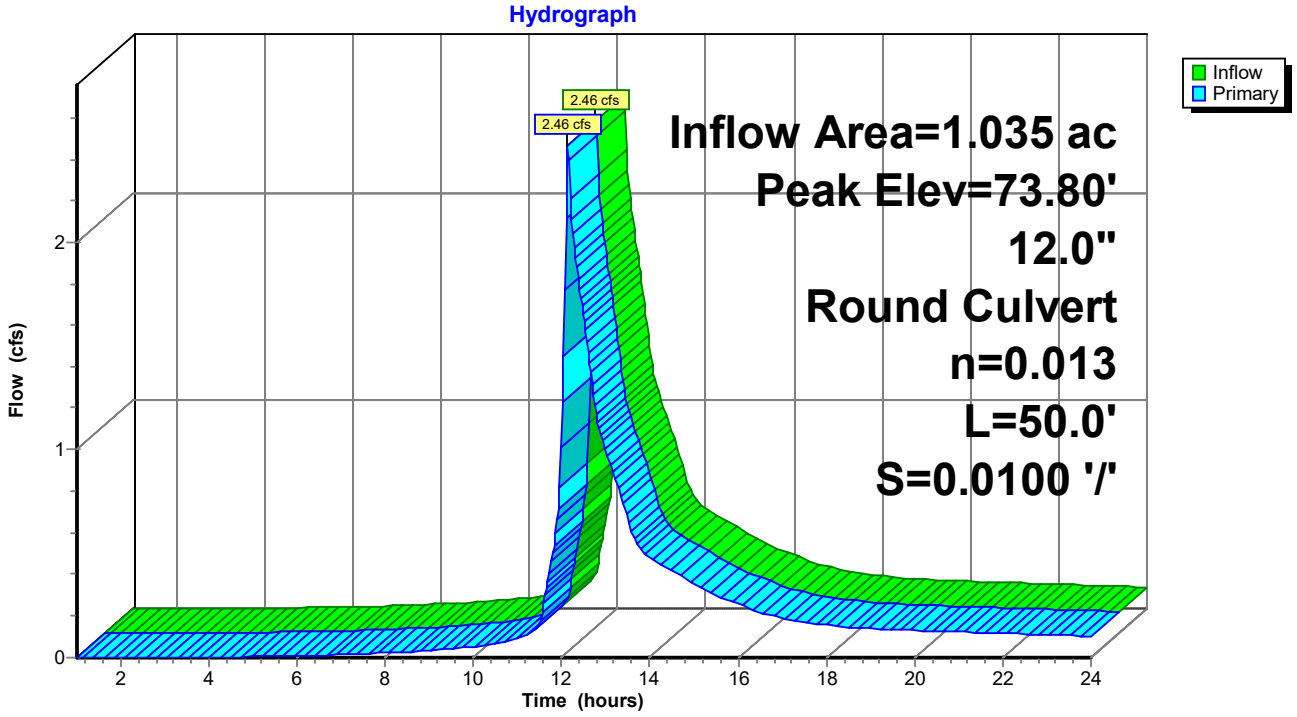
Inflow Area = 1.035 ac, 68.62% Impervious, Inflow Depth > 4.43" for 50-Year event
Inflow = 2.46 cfs @ 12.14 hrs, Volume= 0.382 af
Outflow = 2.46 cfs @ 12.14 hrs, Volume= 0.382 af, Atten= 0%, Lag= 0.0 min
Primary = 2.46 cfs @ 12.14 hrs, Volume= 0.382 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 73.80' @ 12.14 hrs
Flood Elev= 116.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.60'	**12.0" Round Storm Drain** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.60' / 72.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=2.45 cfs @ 12.14 hrs HW=73.77' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 2.45 cfs @ 3.12 fps)

Pond 2P:



Summary for Pond 3P:

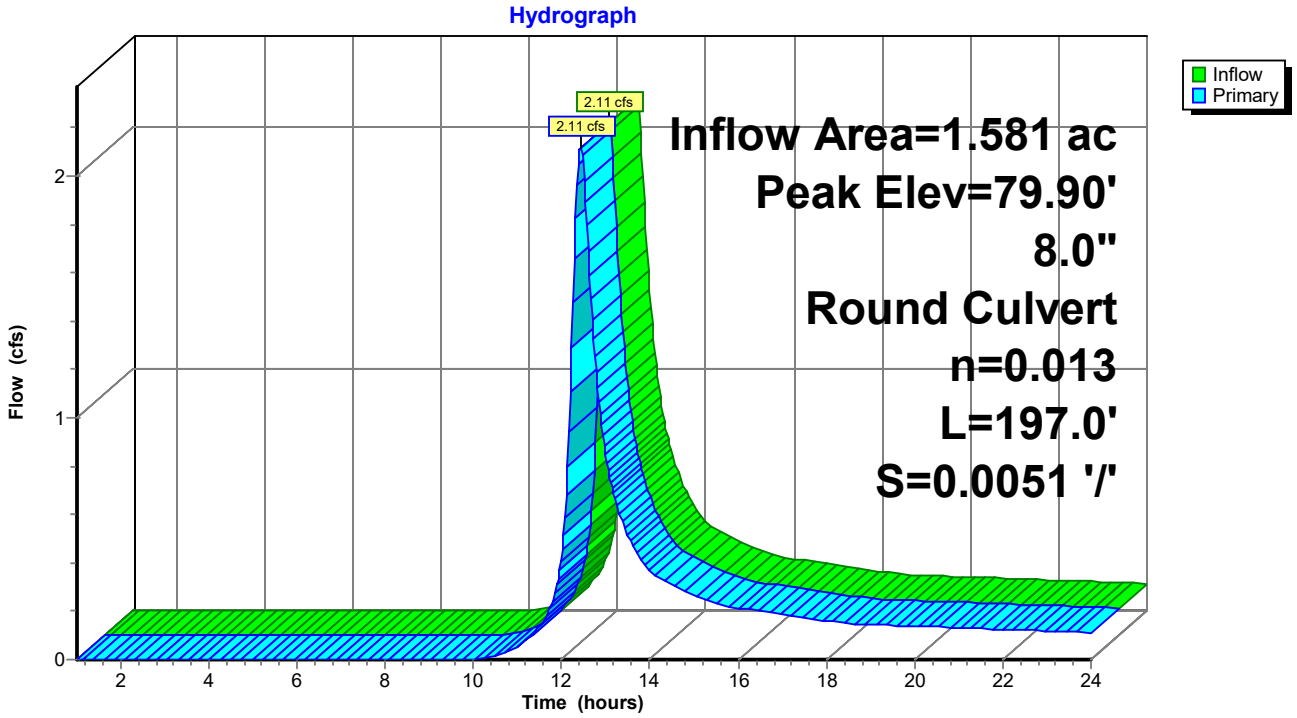
Inflow Area = 1.581 ac, 16.27% Impervious, Inflow Depth > 2.39" for 50-Year event
Inflow = 2.11 cfs @ 12.43 hrs, Volume= 0.315 af
Outflow = 2.11 cfs @ 12.43 hrs, Volume= 0.315 af, Atten= 0%, Lag= 0.0 min
Primary = 2.11 cfs @ 12.43 hrs, Volume= 0.315 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 79.90' @ 12.43 hrs
Flood Elev= 113.94'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.10'	**8.0" Round Storm Drain** L= 197.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.10' / 72.10' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=2.11 cfs @ 12.43 hrs HW=79.89' (Free Discharge)
└─**1=Storm Drain** (Barrel Controls 2.11 cfs @ 6.06 fps)

Pond 3P:



Summary for Pond 4P:

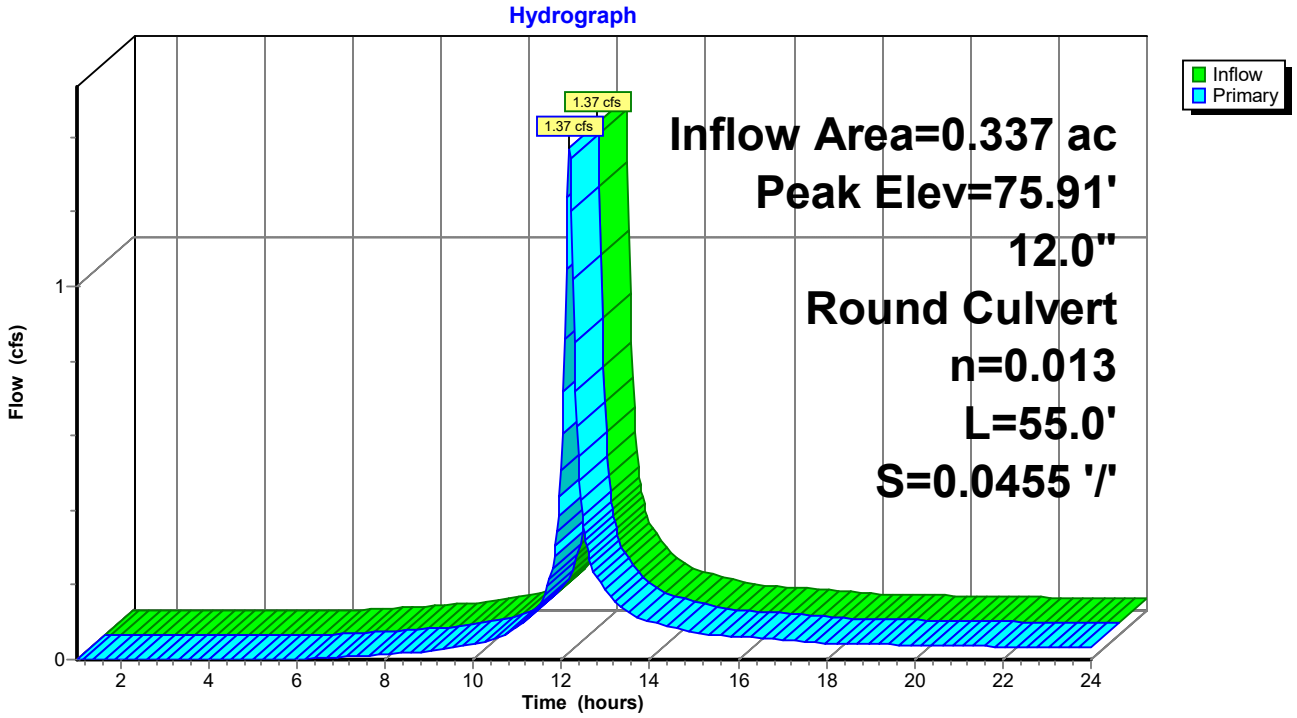
Inflow Area =	0.337 ac, 52.63% Impervious, Inflow Depth > 4.28" for 50-Year event				
Inflow =	1.37 cfs @	12.17 hrs,	Volume=	0.120 af	
Outflow =	1.37 cfs @	12.17 hrs,	Volume=	0.120 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.37 cfs @	12.17 hrs,	Volume=	0.120 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 75.91' @ 12.17 hrs
Flood Elev= 116.29'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.20'	**12.0" Round Storm Drain** L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.20' / 72.70' S= 0.0455 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.34 cfs @ 12.17 hrs HW=75.91' (Free Discharge)
└─**1=Storm Drain** (Inlet Controls 1.34 cfs @ 2.26 fps)

Pond 4P:



Summary for Pond 5P: CB-Pleas E

[81] Warning: Exceeded Pond 1P by 0.04' @ 12.16 hrs
[79] Warning: Submerged Pond 27P Primary device # 1 INLET by 0.49'

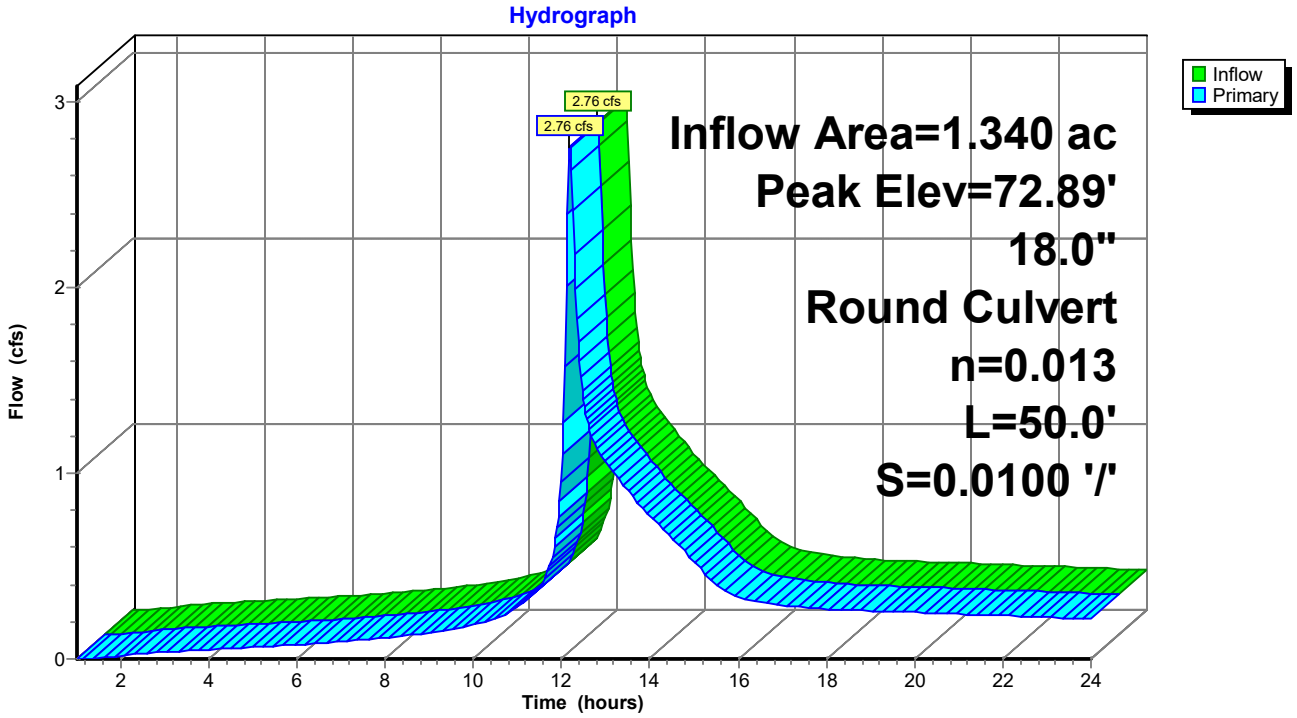
Inflow Area =	1.340 ac,	84.26% Impervious,	Inflow Depth >	5.12"	for 50-Year event
Inflow =	2.76 cfs @	12.19 hrs,	Volume=	0.572 af	
Outflow =	2.76 cfs @	12.19 hrs,	Volume=	0.572 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.76 cfs @	12.19 hrs,	Volume=	0.572 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 72.89' @ 12.19 hrs
Flood Elev= 114.79'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.00'	**18.0" Round Storm Drain** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.00' / 71.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.74 cfs @ 12.19 hrs HW=72.88' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 2.74 cfs @ 2.53 fps)

Pond 5P: CB-Pleas E



Summary for Pond 6P:

[79] Warning: Submerged Pond 4P Primary device # 1 OUTLET by 0.39'

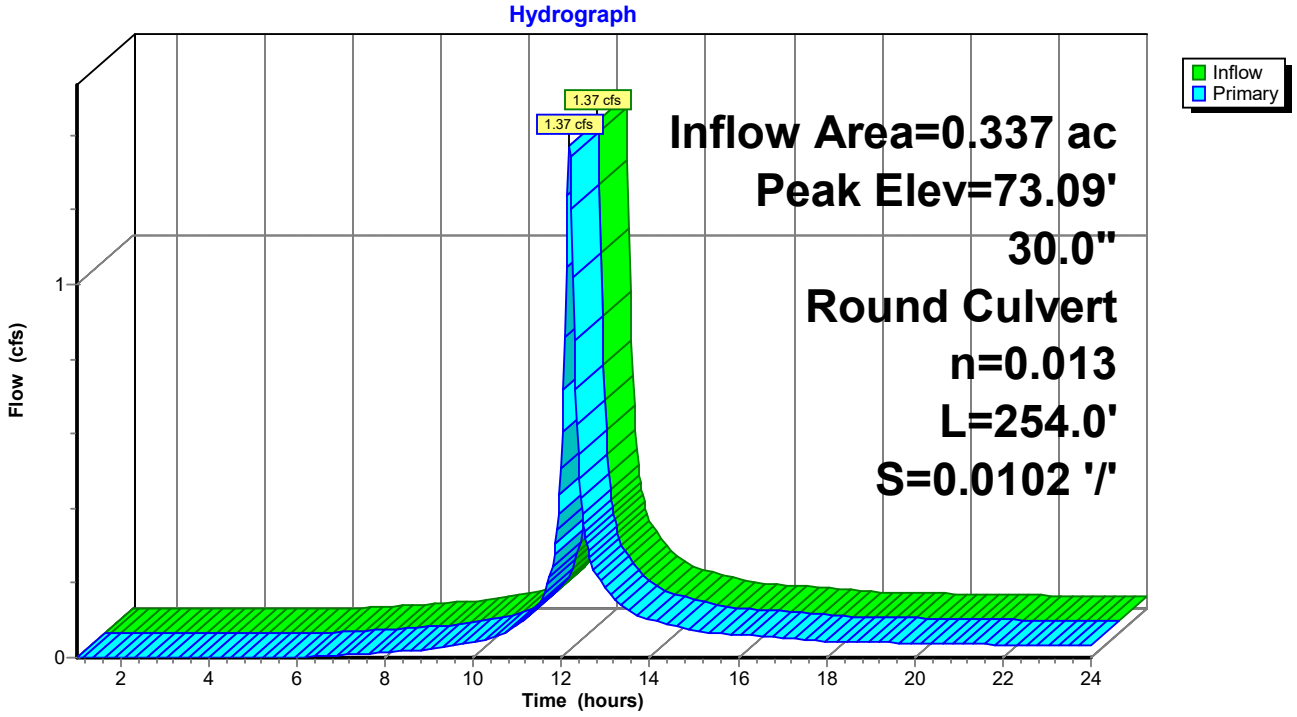
Inflow Area = 0.337 ac, 52.63% Impervious, Inflow Depth > 4.28" for 50-Year event
Inflow = 1.37 cfs @ 12.17 hrs, Volume= 0.120 af
Outflow = 1.37 cfs @ 12.17 hrs, Volume= 0.120 af, Atten= 0%, Lag= 0.0 min
Primary = 1.37 cfs @ 12.17 hrs, Volume= 0.120 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 73.09' @ 12.17 hrs
Flood Elev= 116.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.60'	**30.0" Round Storm Drain** L= 254.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.60' / 70.00' S= 0.0102 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=1.27 cfs @ 12.17 hrs HW=73.09' (Free Discharge)
└**1=Storm Drain** (Inlet Controls 1.27 cfs @ 1.88 fps)

Pond 6P:



Summary for Pond 7P: Filterra 1 - 4x6

[82] Warning: Early inflow requires earlier time span
[93] Warning: Storage range exceeded by 0.01'

Inflow Area =	0.107 ac,100.00% Impervious, Inflow Depth > 6.90" for 50-Year event				
Inflow =	0.72 cfs @	12.12 hrs, Volume=	0.062 af		
Outflow =	0.72 cfs @	12.12 hrs, Volume=	0.061 af, Atten= 1%, Lag= 0.0 min		
Primary =	0.72 cfs @	12.12 hrs, Volume=	0.061 af		

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 77.60' @ 12.12 hrs Surf.Area= 24 sf Storage= 24 cf

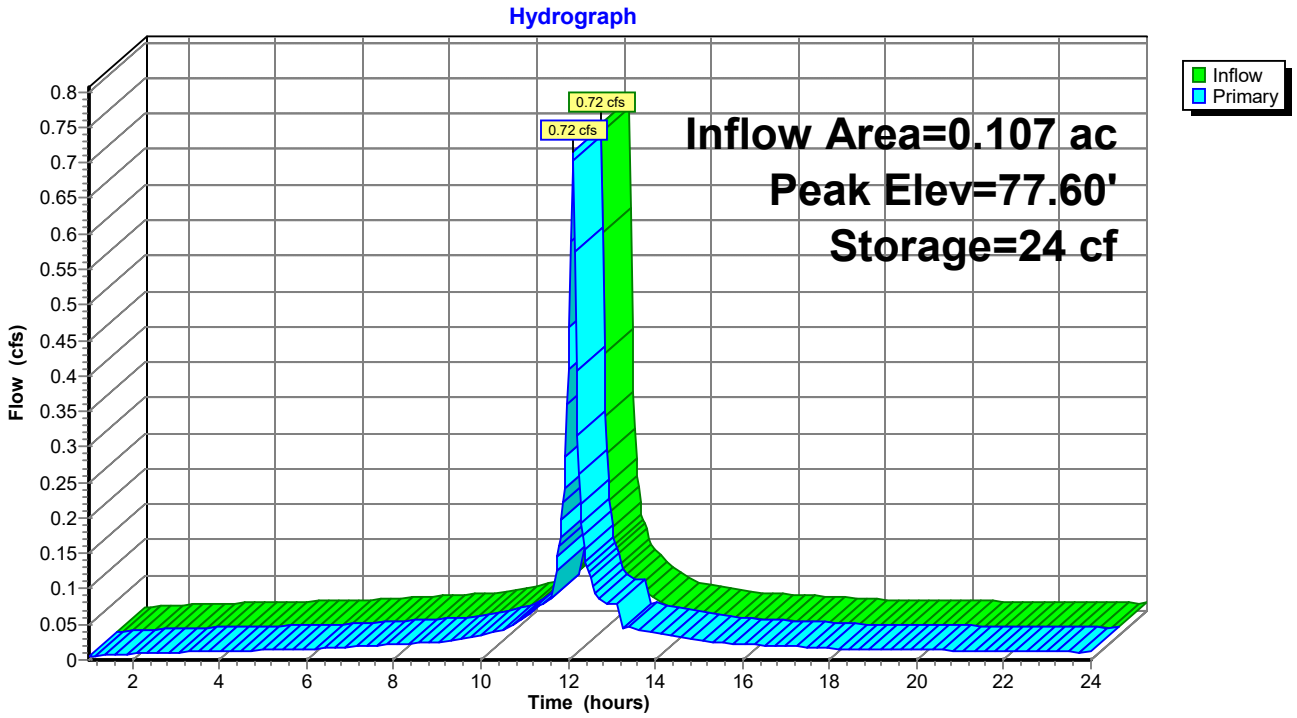
Plug-Flow detention time= 1.5 min calculated for 0.061 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (744.6 - 744.0)

Volume	Invert	Avail.Storage	Storage Description
#1	76.59'	24 cf	**6.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	74.42'	**8.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.42' / 74.33' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	76.59'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	77.34'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.70 cfs @ 12.12 hrs HW=77.59' (Free Discharge)
└─**1=Culvert** (Passes 0.70 cfs of 2.83 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.08 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Weir Controls 0.62 cfs @ 1.43 fps)

Pond 7P: Filterra 1 - 4x6



Summary for Pond 8P: Filterra 2 - 4x6

[82] Warning: Early inflow requires earlier time span
[93] Warning: Storage range exceeded by 0.04'

Inflow Area =	0.123 ac,100.00% Impervious, Inflow Depth > 6.90" for 50-Year event				
Inflow =	0.83 cfs @	12.12 hrs, Volume=	0.071 af		
Outflow =	0.82 cfs @	12.12 hrs, Volume=	0.071 af, Atten= 1%, Lag= 0.0 min		
Primary =	0.82 cfs @	12.12 hrs, Volume=	0.071 af		

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 77.63' @ 12.12 hrs Surf.Area= 24 sf Storage= 24 cf

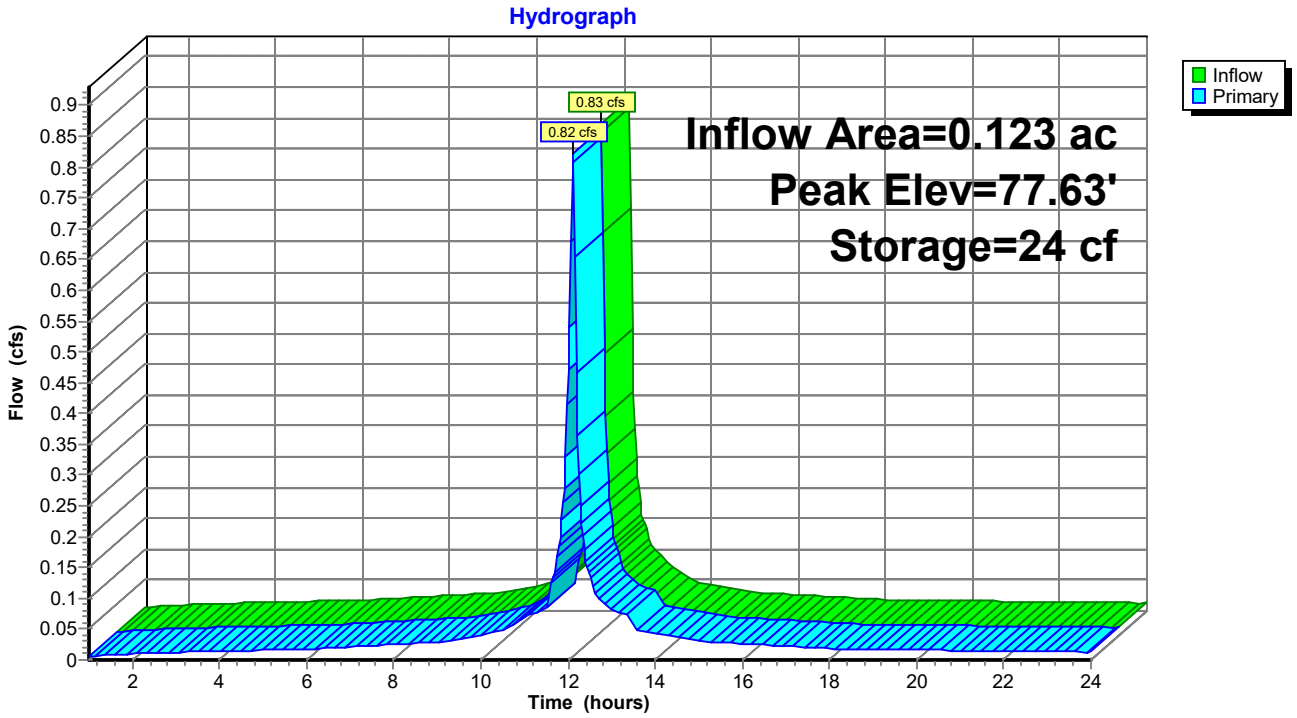
Plug-Flow detention time= 1.6 min calculated for 0.071 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (744.7 - 744.0)

Volume	Invert	Avail.Storage	Storage Description
#1	76.59'	24 cf	**6.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	74.42'	**8.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.42' / 74.33' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	76.59'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	77.34'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.80 cfs @ 12.12 hrs HW=77.62' (Free Discharge)
└─**1=Culvert** (Passes 0.80 cfs of 2.85 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.08 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Weir Controls 0.72 cfs @ 1.51 fps)

Pond 8P: Filterra 2 - 4x6



Summary for Pond 9P: Filterra 3 - 4x4

[93] Warning: Storage range exceeded by 0.15'

Inflow Area = 0.230 ac, 68.49% Impervious, Inflow Depth > 5.17" for 50-Year event
Inflow = 1.33 cfs @ 12.12 hrs, Volume= 0.099 af
Outflow = 1.33 cfs @ 12.12 hrs, Volume= 0.099 af, Atten= 0%, Lag= 0.0 min
Primary = 1.33 cfs @ 12.12 hrs, Volume= 0.099 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 79.49' @ 12.12 hrs Surf.Area= 16 sf Storage= 16 cf

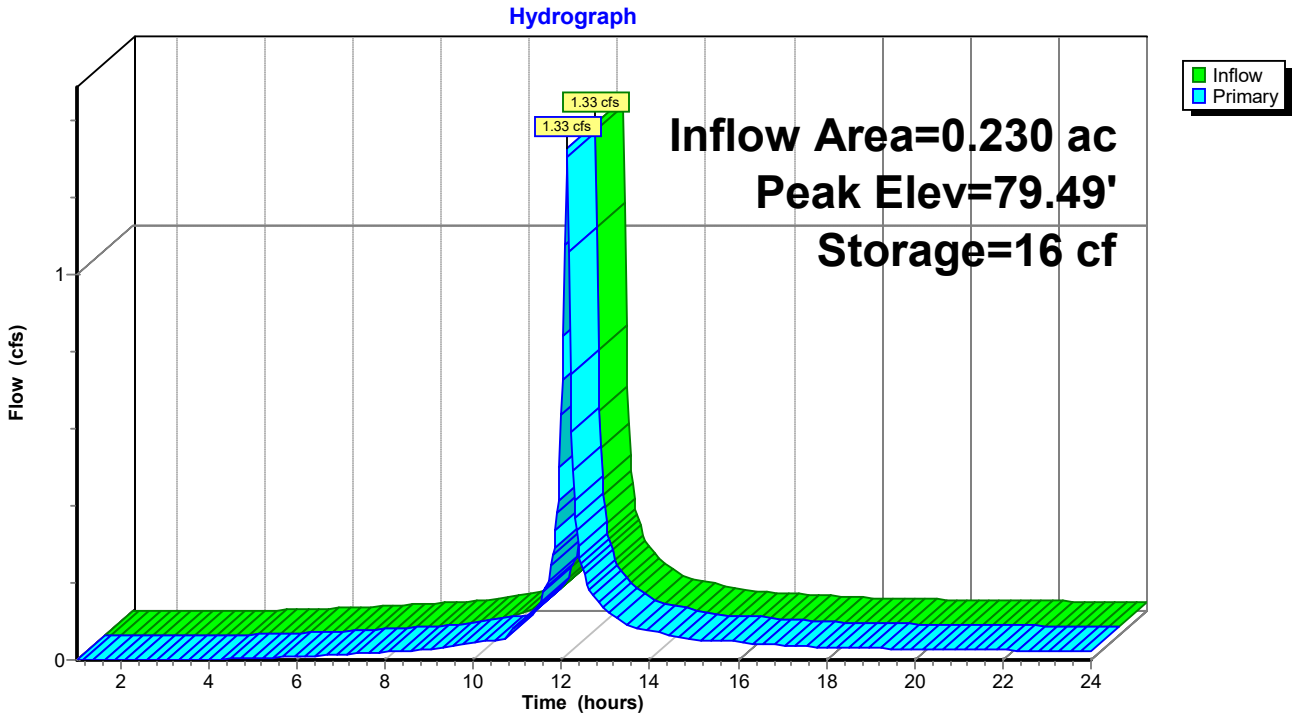
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.9 min (814.2 - 813.2)

Volume	Invert	Avail.Storage	Storage Description
#1	78.34'	16 cf	**4.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	76.17'	**8.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 76.17' / 76.08' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	78.34'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	79.09'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=1.29 cfs @ 12.12 hrs HW=79.49' (Free Discharge)
└─**1=Culvert** (Passes 1.29 cfs of 2.90 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.05 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Weir Controls 1.24 cfs @ 1.84 fps)

Pond 9P: Filterra 3 - 4x4



Summary for Pond 10P: Filterra 4 - 4x6

[93] Warning: Storage range exceeded by 0.12'

Inflow Area = 0.197 ac, 77.35% Impervious, Inflow Depth > 5.63" for 50-Year event
Inflow = 1.21 cfs @ 12.12 hrs, Volume= 0.093 af
Outflow = 1.21 cfs @ 12.12 hrs, Volume= 0.093 af, Atten= 0%, Lag= 0.0 min
Primary = 1.21 cfs @ 12.12 hrs, Volume= 0.093 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 79.46' @ 12.12 hrs Surf.Area= 24 sf Storage= 24 cf

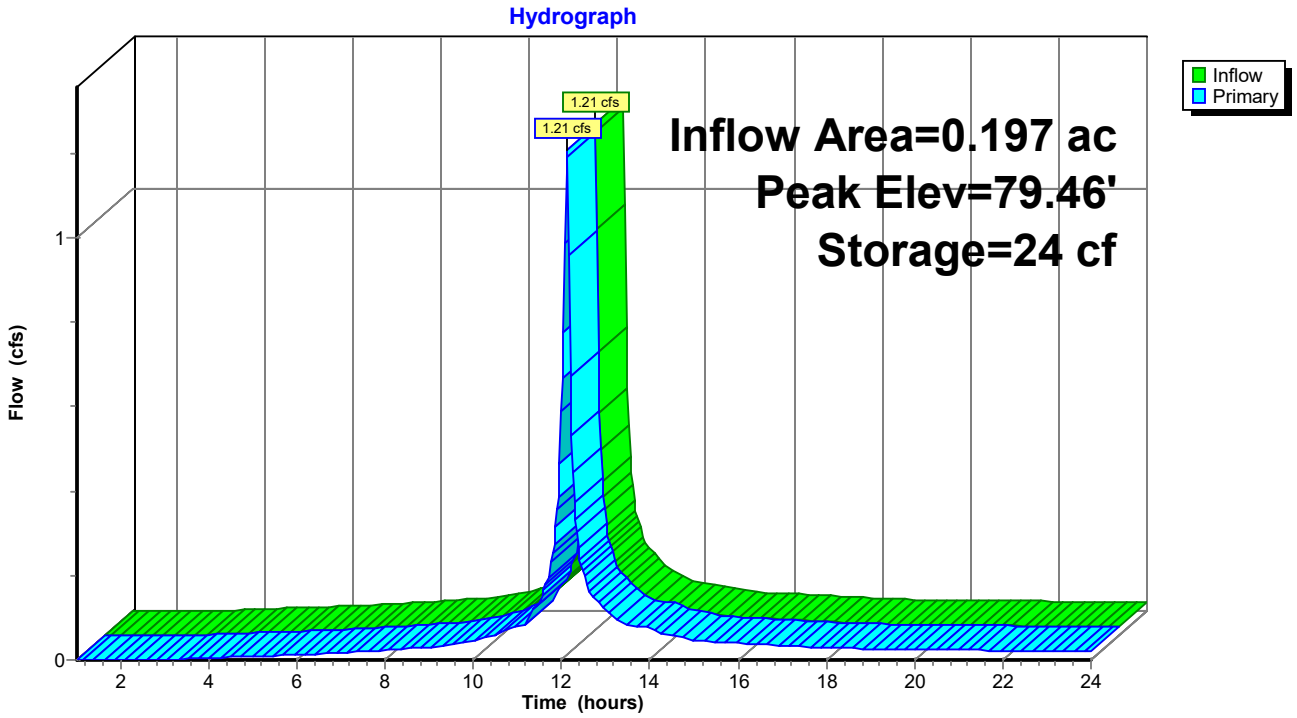
Plug-Flow detention time= 1.1 min calculated for 0.092 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (799.9 - 799.1)

Volume	Invert	Avail.Storage	Storage Description
#1	78.34'	24 cf	**4.00'W x 6.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	76.17'	**6.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 76.17' / 76.08' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	78.34'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	79.09'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=1.18 cfs @ 12.12 hrs HW=79.46' (Free Discharge)
└─**1=Culvert** (Passes 1.18 cfs of 1.65 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.08 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Weir Controls 1.10 cfs @ 1.76 fps)

Pond 10P: Filterra 4 - 4x6



Summary for Pond 11P: Filterra 5 - 6x6

[93] Warning: Storage range exceeded by 2.65'

Inflow Area = 0.361 ac, 79.34% Impervious, Inflow Depth > 5.74" for 50-Year event
Inflow = 2.24 cfs @ 12.12 hrs, Volume= 0.173 af
Outflow = 2.24 cfs @ 12.12 hrs, Volume= 0.172 af, Atten= 0%, Lag= 0.0 min
Primary = 2.24 cfs @ 12.12 hrs, Volume= 0.172 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 82.74' @ 12.12 hrs Surf.Area= 36 sf Storage= 36 cf

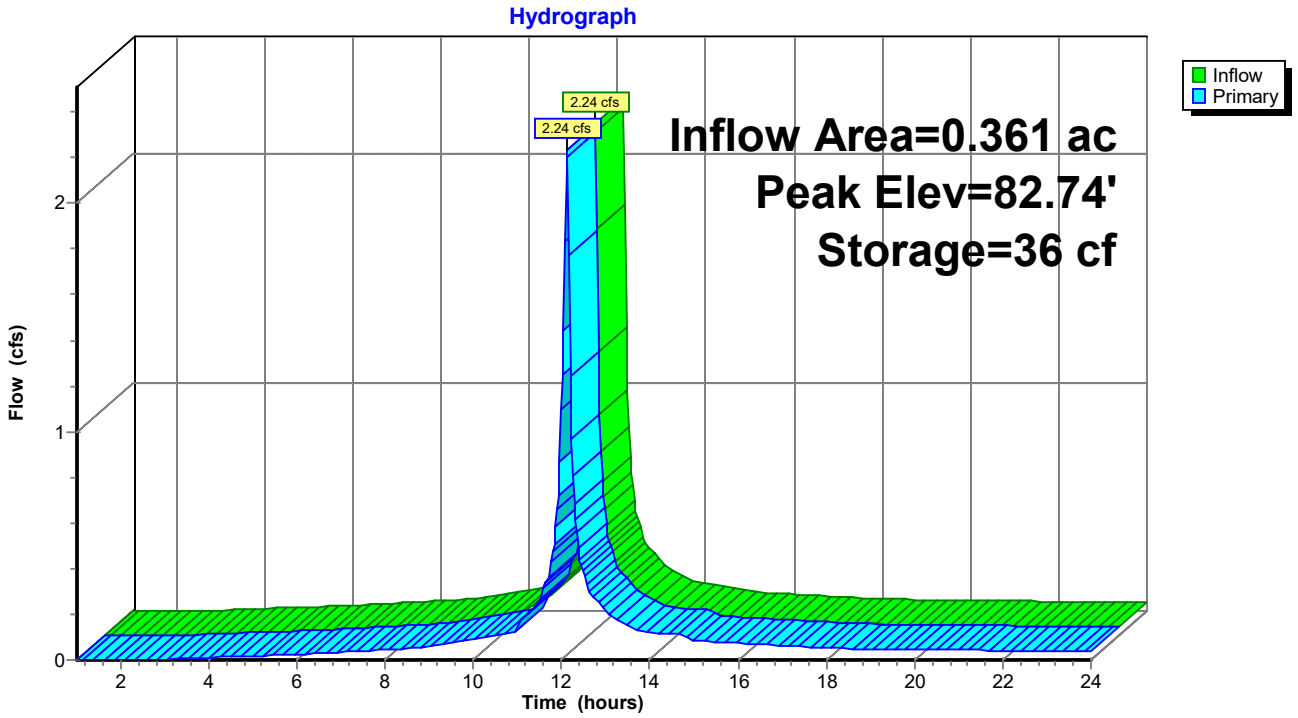
Plug-Flow detention time= 1.4 min calculated for 0.172 af (100% of inflow)
Center-of-Mass det. time= 1.0 min (796.2 - 795.2)

Volume	Invert	Avail.Storage	Storage Description
#1	79.09'	36 cf	**6.00'W x 6.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	76.92'	**6.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 76.92' / 76.83' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	79.09'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	79.84'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=2.18 cfs @ 12.12 hrs HW=82.48' (Free Discharge)
└─**1=Culvert** (Inlet Controls 2.18 cfs @ 11.10 fps)
  ├─**2=Exfiltration** (Passes < 0.12 cfs potential flow)
  └─**3=Broad-Crested Rectangular Weir** (Passes < 24.21 cfs potential flow)

Pond 11P: Filterra 5 - 6x6



Summary for Pond 12P: Filterra 6 - 4x4

[93] Warning: Storage range exceeded by 0.05'

Inflow Area = 0.152 ac, 63.88% Impervious, Inflow Depth > 4.84" for 50-Year event
Inflow = 0.83 cfs @ 12.12 hrs, Volume= 0.061 af
Outflow = 0.83 cfs @ 12.12 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.0 min
Primary = 0.83 cfs @ 12.12 hrs, Volume= 0.061 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 78.34' @ 12.12 hrs Surf.Area= 16 sf Storage= 16 cf

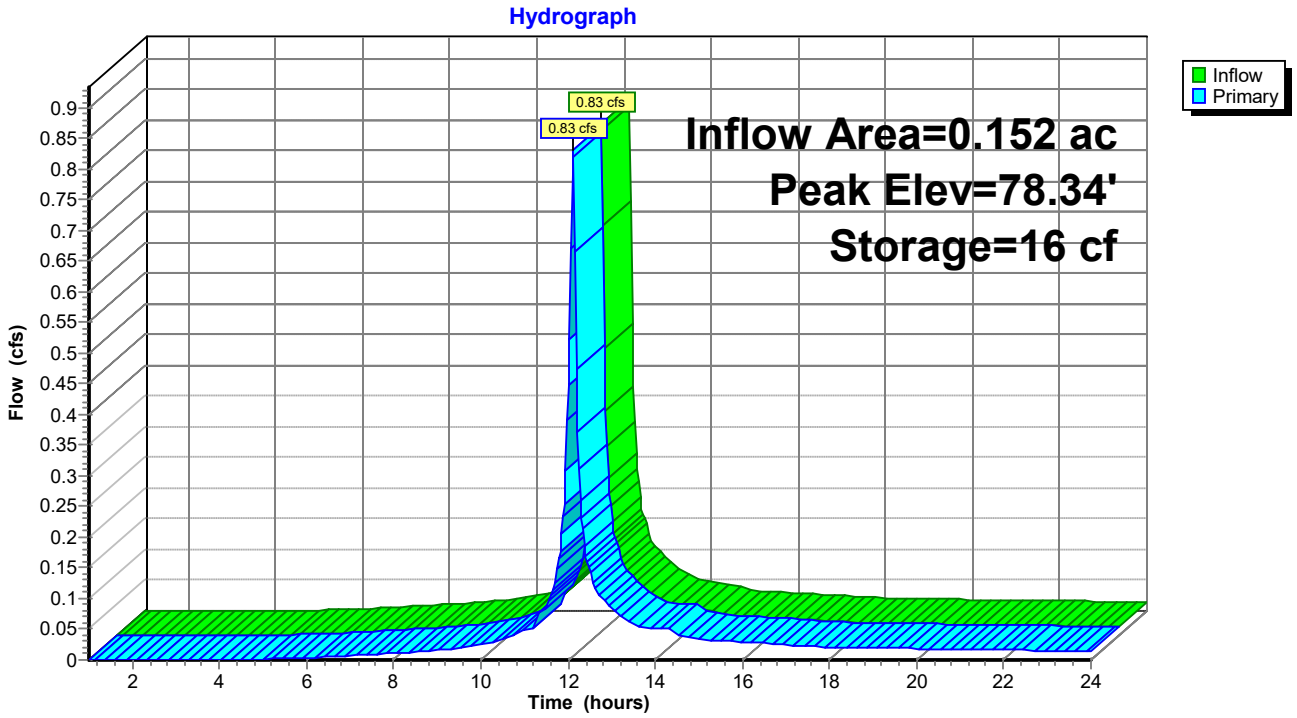
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.8 min (823.7 - 822.9)

Volume	Invert	Avail.Storage	Storage Description
#1	77.29'	16 cf	**4.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	75.12'	**8.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.12' / 75.08' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	77.29'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	78.04'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.81 cfs @ 12.12 hrs HW=78.33' (Free Discharge)
└─**1=Culvert** (Passes 0.81 cfs of 2.85 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.05 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Weir Controls 0.76 cfs @ 1.54 fps)

Pond 12P: Filterra 6 - 4x4



Summary for Pond 13P: 6 - Fire Cistern Tanks

[82] Warning: Early inflow requires earlier time span
[81] Warning: Exceeded Pond 7P by 1.90' @ 13.27 hrs
[81] Warning: Exceeded Pond 8P by 1.77' @ 13.45 hrs

Inflow Area =	0.828 ac,100.00% Impervious, Inflow Depth > 6.90" for 50-Year event				
Inflow =	5.56 cfs @	12.12 hrs,	Volume=	0.476 af	
Outflow =	0.80 cfs @	12.58 hrs,	Volume=	0.382 af,	Atten= 86%, Lag= 27.6 min
Primary =	0.80 cfs @	12.58 hrs,	Volume=	0.382 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 78.82' @ 12.58 hrs Surf.Area= 1,561 sf Storage= 9,080 cf

Plug-Flow detention time= 232.3 min calculated for 0.382 af (80% of inflow)
Center-of-Mass det. time= 138.9 min (883.1 - 744.2)

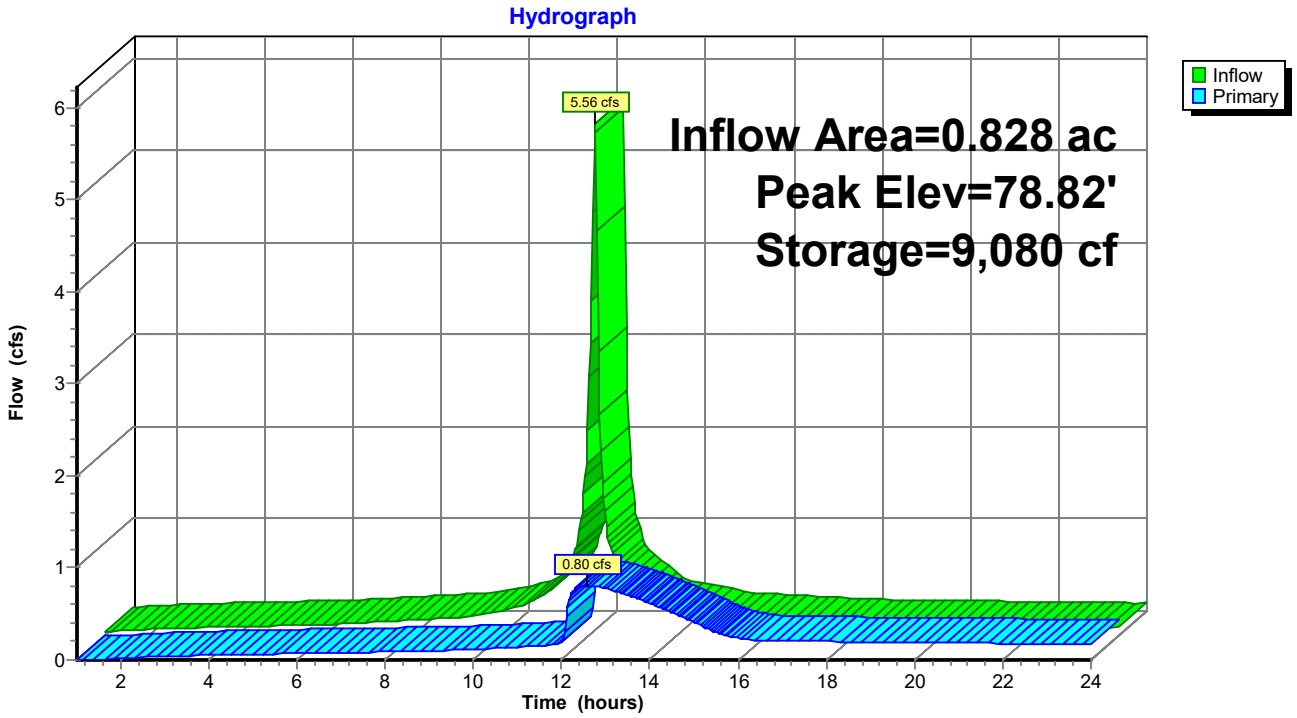
Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	10,927 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	1,561	0	0
74.00	1,561	1,561	1,561
75.00	1,561	1,561	3,122
76.00	1,561	1,561	4,683
77.00	1,561	1,561	6,244
78.00	1,561	1,561	7,805
79.00	1,561	1,561	9,366
80.00	1,561	1,561	10,927

Device	Routing	Invert	Outlet Devices
#1	Primary	78.92'	**6.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	76.92'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	73.00'	**2.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.80 cfs @ 12.58 hrs HW=78.82' (Free Discharge)
└─**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
├─**2=Orifice/Grate** (Orifice Controls 0.55 cfs @ 6.33 fps)
└─**3=Orifice/Grate** (Orifice Controls 0.25 cfs @ 11.53 fps)

Pond 13P: 6 - Fire Cistern Tanks



Summary for Pond 19P: 5 Fire Cistern Tanks

[79] Warning: Submerged Pond 9P Primary device # 1 INLET by 1.99'
[79] Warning: Submerged Pond 10P Primary device # 1 INLET by 1.99'
[79] Warning: Submerged Pond 11P Primary device # 1 INLET by 1.24'

Inflow Area = 0.788 ac, 75.67% Impervious, Inflow Depth > 5.55" for 50-Year event
Inflow = 4.77 cfs @ 12.12 hrs, Volume= 0.364 af
Outflow = 1.61 cfs @ 12.26 hrs, Volume= 0.301 af, Atten= 66%, Lag= 8.7 min
Primary = 1.61 cfs @ 12.26 hrs, Volume= 0.301 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 78.17' @ 12.26 hrs Surf.Area= 1,300 sf Storage= 6,068 cf

Plug-Flow detention time= 159.2 min calculated for 0.300 af (82% of inflow)
Center-of-Mass det. time= 76.9 min (878.9 - 802.0)

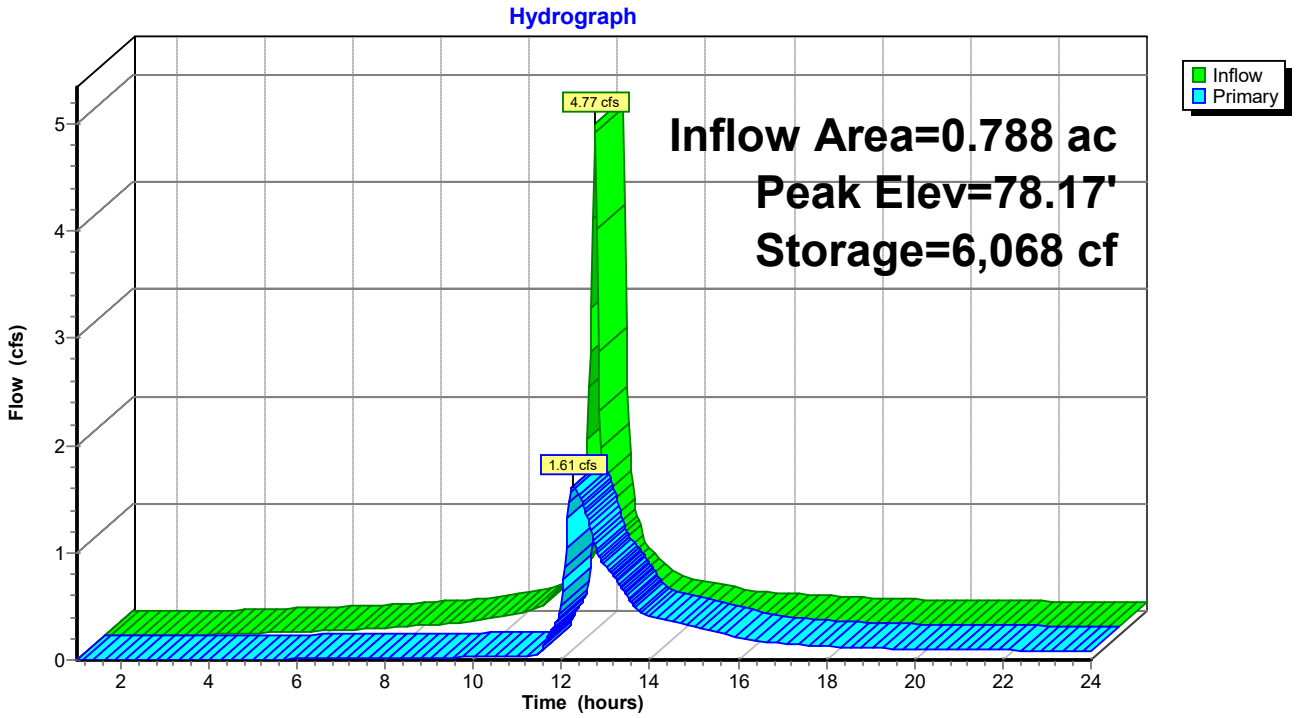
Volume	Invert	Avail.Storage	Storage Description
#1	73.50'	9,100 cf	**5-Cisterns (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.50	1,300	0	0
74.50	1,300	1,300	1,300
75.50	1,300	1,300	2,600
76.50	1,300	1,300	3,900
77.50	1,300	1,300	5,200
78.50	1,300	1,300	6,500
79.50	1,300	1,300	7,800
80.50	1,300	1,300	9,100

Device	Routing	Invert	Outlet Devices
#1	Primary	78.42'	**8.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	73.50'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	76.42'	**4.0" Vert. Orifice/Grate** C= 0.600
#4	Primary	75.50'	**4.0" Vert. Orifice/Grate** C= 0.600
#5	Primary	77.25'	**4.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.61 cfs @ 12.26 hrs HW=78.16' (Free Discharge)
- **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
- **2=Orifice/Grate** (Orifice Controls 0.06 cfs @ 10.35 fps)
- **3=Orifice/Grate** (Orifice Controls 0.53 cfs @ 6.05 fps)
- **4=Orifice/Grate** (Orifice Controls 0.66 cfs @ 7.61 fps)
- **5=Orifice/Grate** (Orifice Controls 0.36 cfs @ 4.16 fps)

Pond 19P: 5 Fire Cistern Tanks



Summary for Pond 26P: (new Pond)

[57] Hint: Peaked at 74.30' (Flood elevation advised)
[79] Warning: Submerged Pond 19P Primary device # 2 by 0.80'

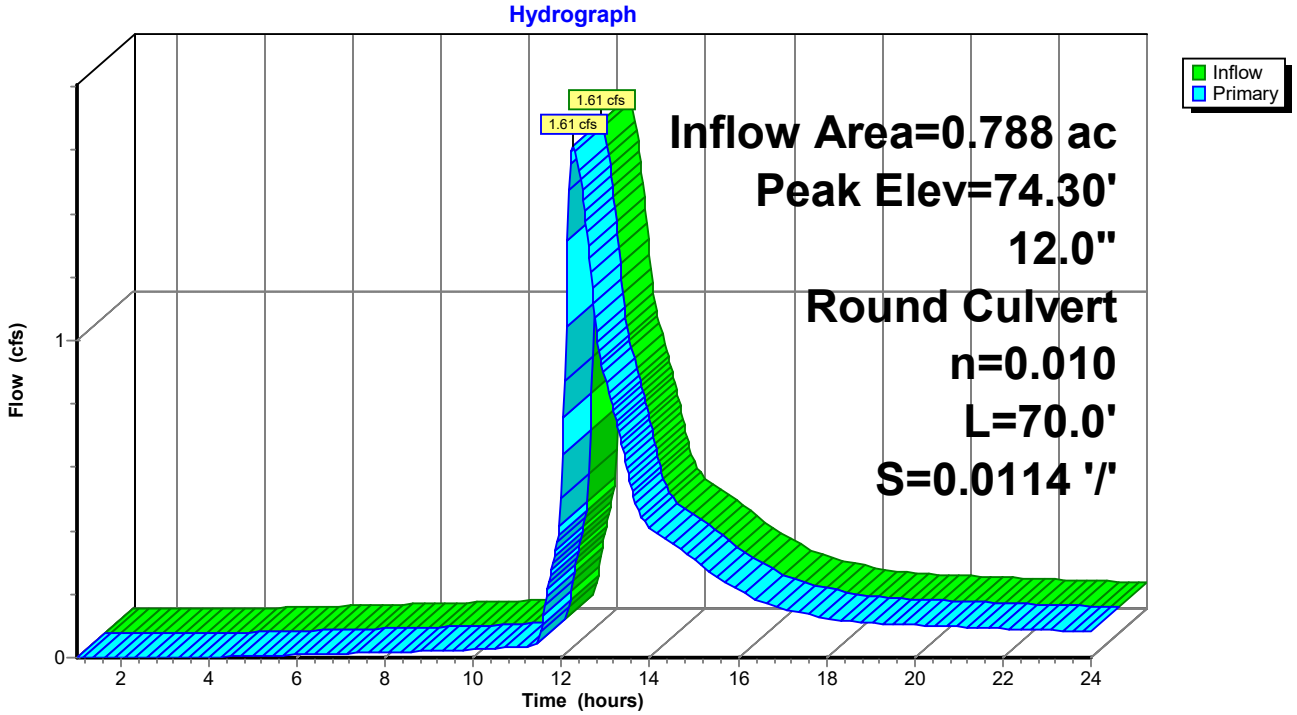
Inflow Area =	0.788 ac,	75.67% Impervious,	Inflow Depth >	4.58"	for 50-Year event
Inflow =	1.61 cfs @	12.26 hrs,	Volume=	0.301 af	
Outflow =	1.61 cfs @	12.26 hrs,	Volume=	0.301 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.61 cfs @	12.26 hrs,	Volume=	0.301 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 74.30' @ 12.26 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	73.50'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.50' / 72.70' S= 0.0114 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.61 cfs @ 12.26 hrs HW=74.30' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.61 cfs @ 2.40 fps)

Pond 26P: (new Pond)



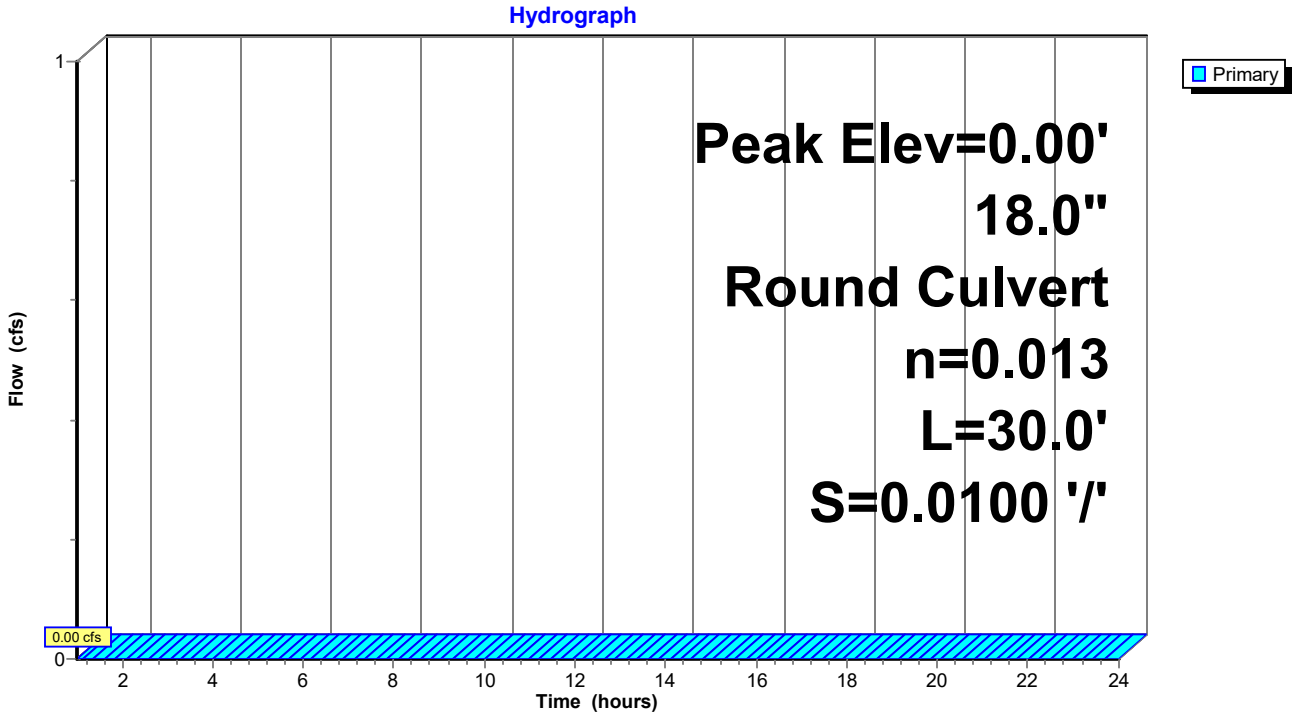
Summary for Pond 27P: (new Pond)

[43] Hint: Has no inflow (Outflow=Zero)

Device	Routing	Invert	Outlet Devices
#1	Primary	72.40'	**18.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.40' / 72.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=0.00' (Free Discharge)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 27P: (new Pond)

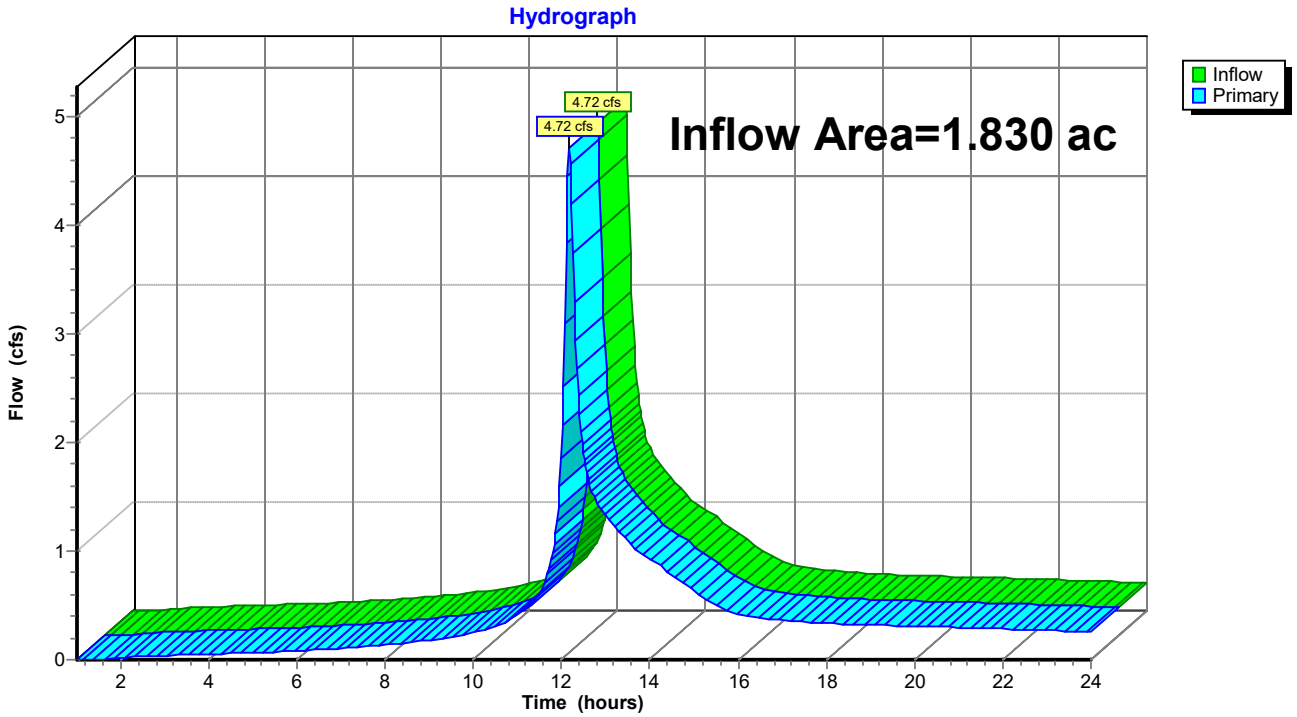


Summary for Link 1L: SP-1

Inflow Area = 1.830 ac, 76.73% Impervious, Inflow Depth > 4.94" for 50-Year event
Inflow = 4.72 cfs @ 12.16 hrs, Volume= 0.754 af
Primary = 4.72 cfs @ 12.16 hrs, Volume= 0.754 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs

Link 1L: SP-1

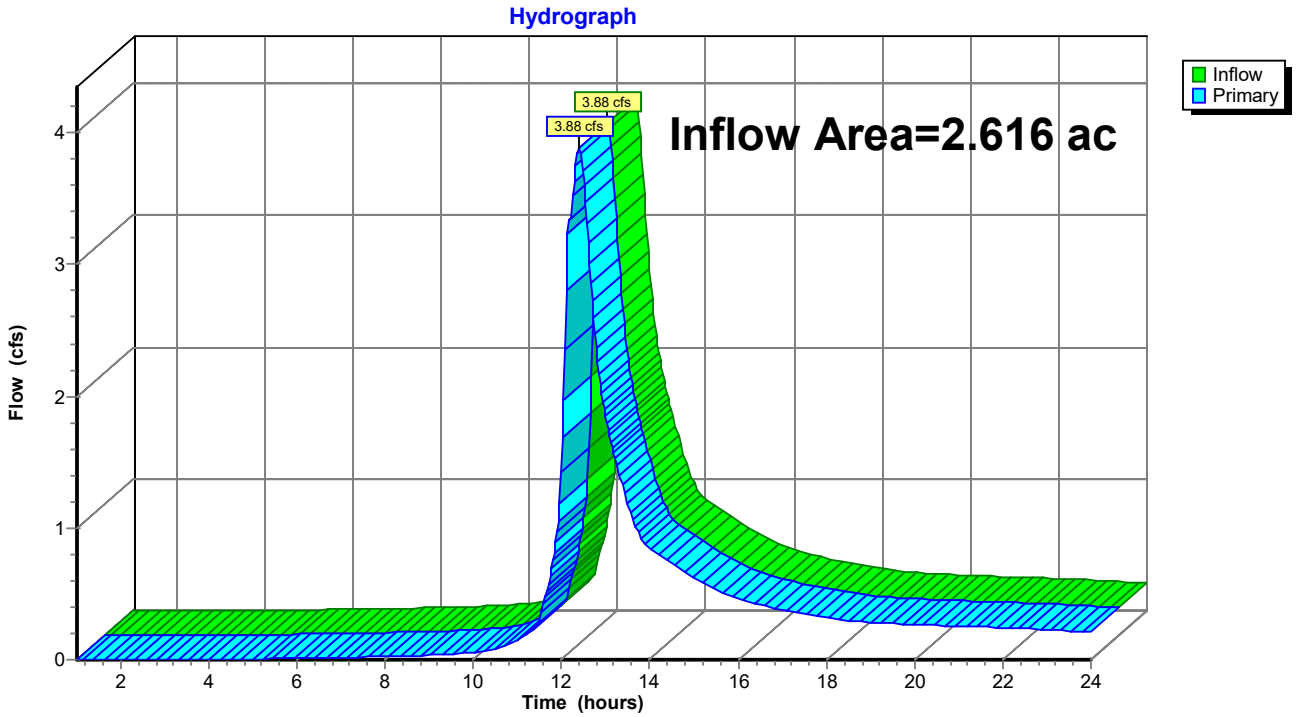


Summary for Link 2L: SP-2

Inflow Area = 2.616 ac, 36.98% Impervious, Inflow Depth > 3.20" for 50-Year event
Inflow = 3.88 cfs @ 12.39 hrs, Volume= 0.697 af
Primary = 3.88 cfs @ 12.39 hrs, Volume= 0.697 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs

Link 2L: SP-2



Time span=1.00-24.00 hrs, dt=0.03 hrs, 768 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Web Rd-N Runoff Area=7,980 sf 55.31% Impervious Runoff Depth>0.01"
Flow Length=174' Tc=12.7 min CN=72 Runoff=0.00 cfs 0.000 af

Subcatchment 2S: Web RD S Runoff Area=10,764 sf 46.11% Impervious Runoff Depth>0.01"
Flow Length=223' Tc=5.0 min CN=72 Runoff=0.00 cfs 0.000 af

Subcatchment 3S: Turner RD Runoff Area=68,885 sf 16.27% Impervious Runoff Depth=0.00"
Flow Length=576' Tc=29.3 min CN=57 Runoff=0.00 cfs 0.000 af

Subcatchment 4S: Lawn Pleas-W Runoff Area=14,692 sf 52.63% Impervious Runoff Depth>0.02"
Flow Length=114' Tc=9.8 min CN=75 Runoff=0.00 cfs 0.001 af

Subcatchment 5S: Lawn Pleas-E Runoff Area=14,348 sf 60.79% Impervious Runoff Depth>0.06"
Flow Length=215' Tc=9.9 min CN=79 Runoff=0.01 cfs 0.002 af

Subcatchment 11S: DRWY NE Runoff Area=4,660 sf 100.00% Impervious Runoff Depth>0.74"
Flow Length=105' Tc=5.0 min CN=98 Runoff=0.09 cfs 0.007 af

Subcatchment 12S: DRWY SE Runoff Area=5,373 sf 100.00% Impervious Runoff Depth>0.74"
Flow Length=105' Tc=5.0 min CN=98 Runoff=0.11 cfs 0.008 af

Subcatchment 13S: PARK SE Runoff Area=10,014 sf 68.49% Impervious Runoff Depth>0.11"
Flow Length=165' Tc=5.0 min CN=83 Runoff=0.02 cfs 0.002 af

Subcatchment 14S: PARK SW Runoff Area=8,603 sf 77.35% Impervious Runoff Depth>0.20"
Flow Length=158' Tc=5.0 min CN=87 Runoff=0.04 cfs 0.003 af

Subcatchment 15S: DRWY W Runoff Area=15,708 sf 79.34% Impervious Runoff Depth>0.22"
Flow Length=183' Tc=5.0 min CN=88 Runoff=0.08 cfs 0.007 af

Subcatchment 16S: VISIT LOT Runoff Area=6,630 sf 63.88% Impervious Runoff Depth>0.07"
Flow Length=81' Tc=5.0 min CN=80 Runoff=0.00 cfs 0.001 af

Subcatchment 17S: NEW BLDG Runoff Area=26,024 sf 100.00% Impervious Runoff Depth>0.74"
Flow Length=75' Slope=0.0050 '/' Tc=5.0 min CN=98 Runoff=0.52 cfs 0.037 af

Pond 1P: CB-Web N Peak Elev=72.41' Inflow=0.00 cfs 0.000 af
12.0" Round Culvert n=0.012 L=30.0' S=0.0100 '/' Outflow=0.00 cfs 0.000 af

Pond 2P: Peak Elev=72.61' Inflow=0.01 cfs 0.009 af
12.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=0.01 cfs 0.009 af

Pond 3P: Peak Elev=73.10' Inflow=0.00 cfs 0.000 af
8.0" Round Culvert n=0.013 L=197.0' S=0.0051 '/' Outflow=0.00 cfs 0.000 af

Pond 4P: Peak Elev=75.20' Inflow=0.00 cfs 0.001 af
12.0" Round Culvert n=0.013 L=55.0' S=0.0455 '/' Outflow=0.00 cfs 0.001 af

Pond 5P: CB-Pleas E Peak Elev=72.05' Inflow=0.09 cfs 0.050 af
18.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=0.09 cfs 0.050 af

Pond 6P: Peak Elev=72.60' Inflow=0.00 cfs 0.001 af
30.0" Round Culvert n=0.013 L=254.0' S=0.0102 '/' Outflow=0.00 cfs 0.001 af

Pond 7P: Filterra 1 - 4x6 Peak Elev=76.72' Storage=3 cf Inflow=0.09 cfs 0.007 af
Outflow=0.08 cfs 0.007 af

Pond 8P: Filterra 2 - 4x6 Peak Elev=76.93' Storage=8 cf Inflow=0.11 cfs 0.008 af
Outflow=0.08 cfs 0.008 af

Pond 9P: Filterra 3 - 4x4 Peak Elev=78.34' Storage=0 cf Inflow=0.02 cfs 0.002 af
Outflow=0.02 cfs 0.002 af

Pond 10P: Filterra 4 - 4x6 Peak Elev=78.34' Storage=0 cf Inflow=0.04 cfs 0.003 af
Outflow=0.04 cfs 0.003 af

Pond 11P: Filterra 5 - 6x6 Peak Elev=79.10' Storage=0 cf Inflow=0.08 cfs 0.007 af
Outflow=0.08 cfs 0.007 af

Pond 12P: Filterra 6 - 4x4 Peak Elev=77.29' Storage=0 cf Inflow=0.00 cfs 0.001 af
Outflow=0.00 cfs 0.001 af

Pond 13P: 6 - Fire Cistern Tanks Peak Elev=73.68' Storage=1,069 cf Inflow=0.67 cfs 0.051 af
Outflow=0.08 cfs 0.049 af

Pond 19P: 5 Fire Cistern Tanks Peak Elev=73.69' Storage=253 cf Inflow=0.14 cfs 0.012 af
Outflow=0.01 cfs 0.009 af

Pond 26P: (new Pond) Peak Elev=73.55' Inflow=0.01 cfs 0.009 af
12.0" Round Culvert n=0.010 L=70.0' S=0.0114 '/' Outflow=0.01 cfs 0.009 af

Pond 27P: (new Pond) Peak Elev=0.00'
18.0" Round Culvert n=0.013 L=30.0' S=0.0100 '/' Primary=0.00 cfs 0.000 af

Link 1L: SP-1 Inflow=0.09 cfs 0.052 af
Primary=0.09 cfs 0.052 af

Link 2L: SP-2 Inflow=0.01 cfs 0.009 af
Primary=0.01 cfs 0.009 af

Total Runoff Area = 4.446 ac Runoff Volume = 0.067 af Average Runoff Depth = 0.18"
46.66% Pervious = 2.075 ac 53.34% Impervious = 2.372 ac

Summary for Subcatchment 1S: Web Rd-N

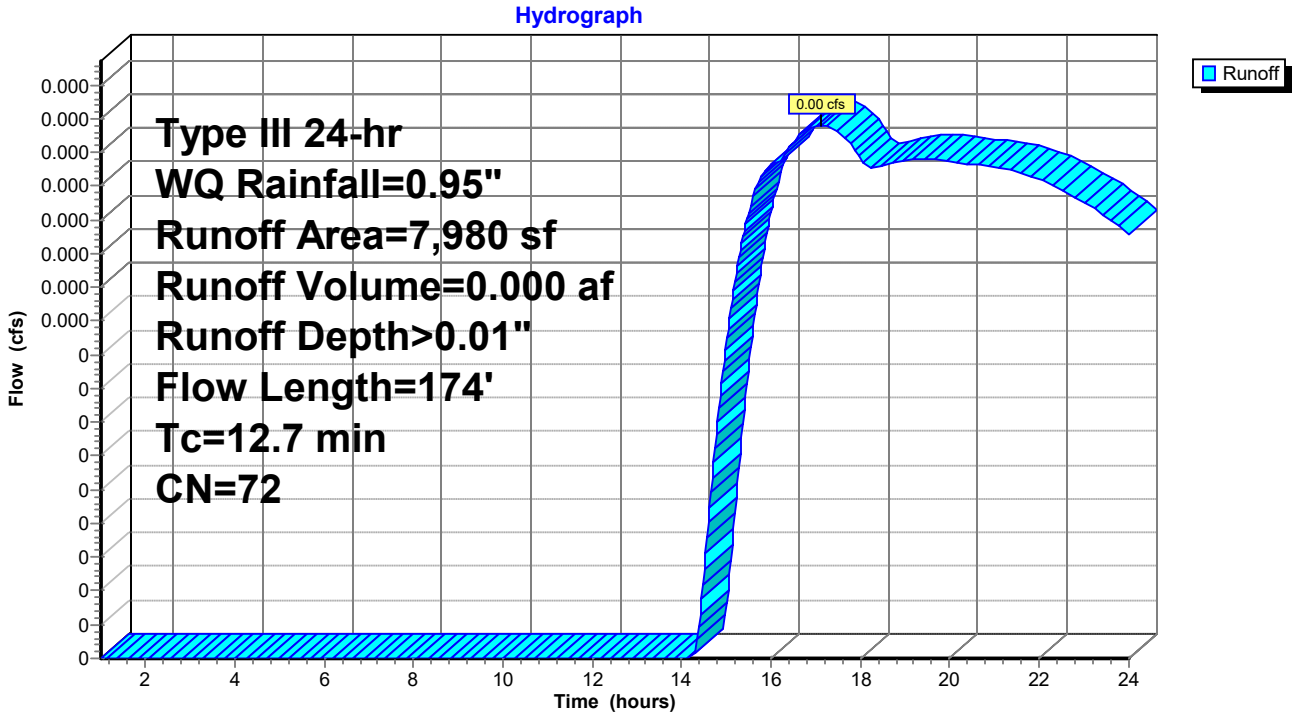
Runoff = 0.00 cfs @ 17.11 hrs, Volume= 0.000 af, Depth> 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Type III 24-hr WQ Rainfall=0.95"

Area (sf)	CN	Description
4,414	98	Paved parking, HSG A
3,566	39	>75% Grass cover, Good, HSG A
7,980	72	Weighted Average
3,566		44.69% Pervious Area
4,414		55.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	81	0.0250	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.7	93	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
12.7	174	Total			

Subcatchment 1S: Web Rd-N



Summary for Subcatchment 2S: Web RD S

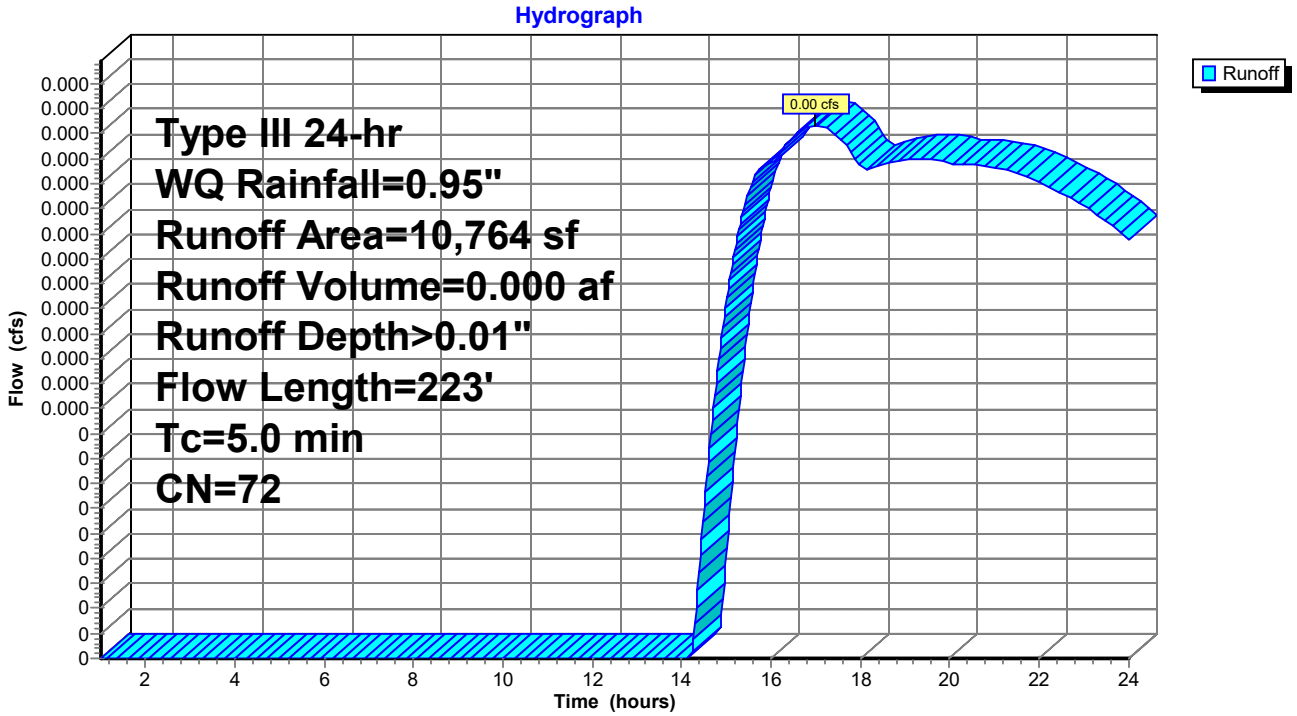
Runoff = 0.00 cfs @ 16.97 hrs, Volume= 0.000 af, Depth> 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Type III 24-hr WQ Rainfall=0.95"

Area (sf)	CN	Description
4,963	98	Paved parking, HSG A
5,801	49	50-75% Grass cover, Fair, HSG A
10,764	72	Weighted Average
5,801		53.89% Pervious Area
4,963		46.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0250	0.90		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
1.5	211	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	223	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 2S: Web RD S



Summary for Subcatchment 3S: Turner RD

[45] Hint: Runoff=Zero

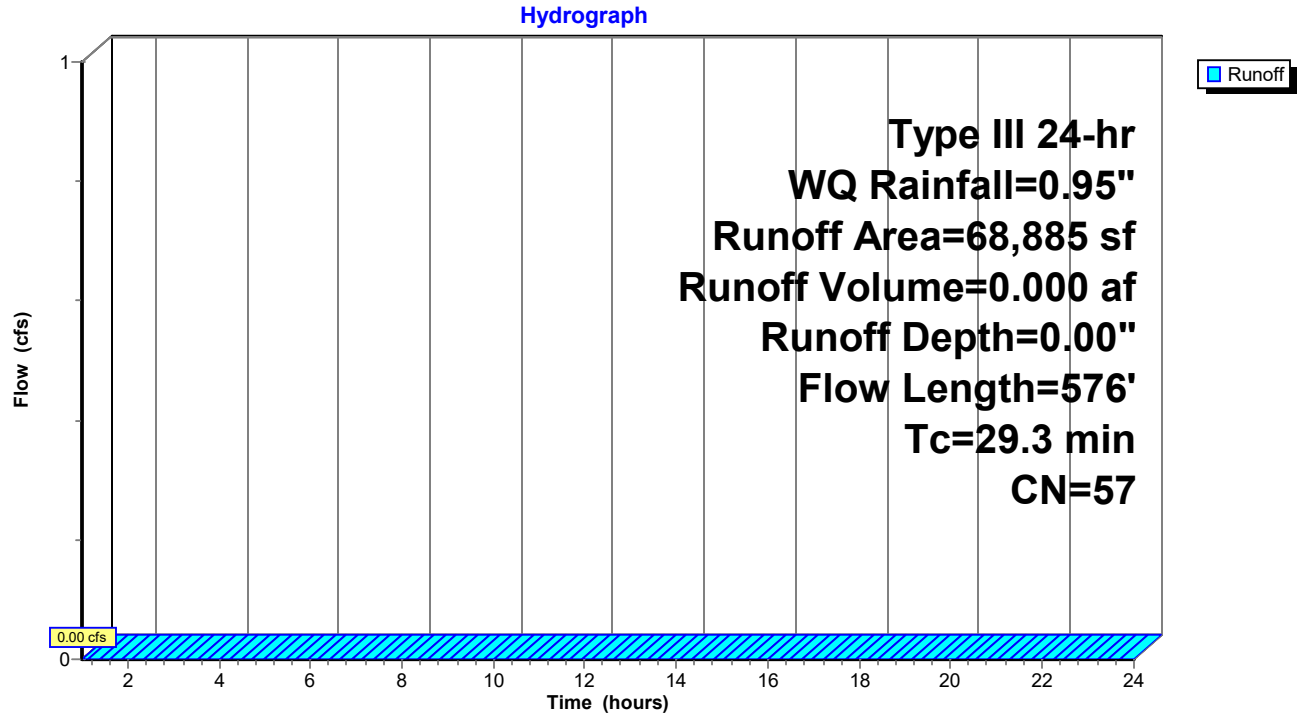
Runoff = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Type III 24-hr WQ Rainfall=0.95"

	Area (sf)	CN	Description
*	11,210	98	Paved parking & roofs
	57,675	49	50-75% Grass cover, Fair, HSG A
	68,885	57	Weighted Average
	57,675		83.73% Pervious Area
	11,210		16.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7	132	0.0075	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
8.7	315	0.0075	0.61		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	129	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
29.3	576	Total			

Subcatchment 3S: Turner RD



Summary for Subcatchment 4S: Lawn Pleas-W

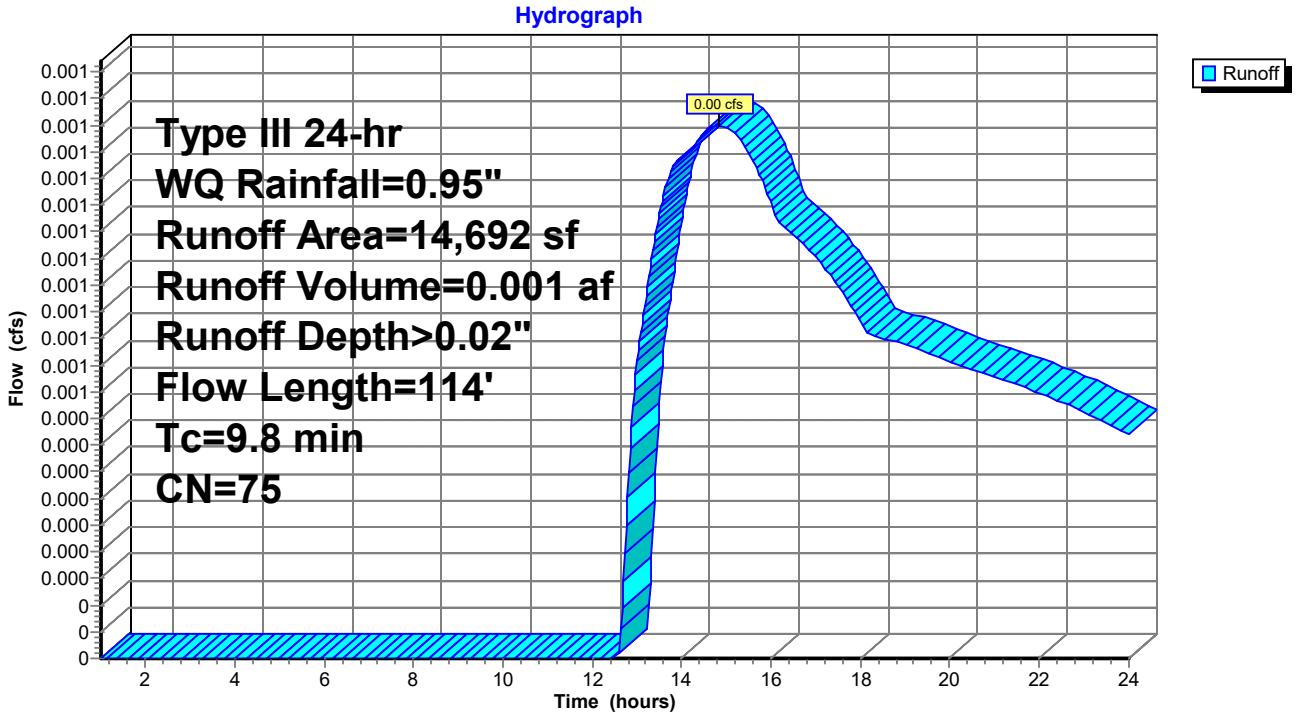
Runoff = 0.00 cfs @ 14.83 hrs, Volume= 0.001 af, Depth> 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Type III 24-hr WQ Rainfall=0.95"

Area (sf)	CN	Description
6,959	49	50-75% Grass cover, Fair, HSG A
7,733	98	Paved parking, HSG A
14,692	75	Weighted Average
6,959		47.37% Pervious Area
7,733		52.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	66	0.0125	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.6	48	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.8	114	Total			

Subcatchment 4S: Lawn Pleas-W



Summary for Subcatchment 5S: Lawn Pleas-E

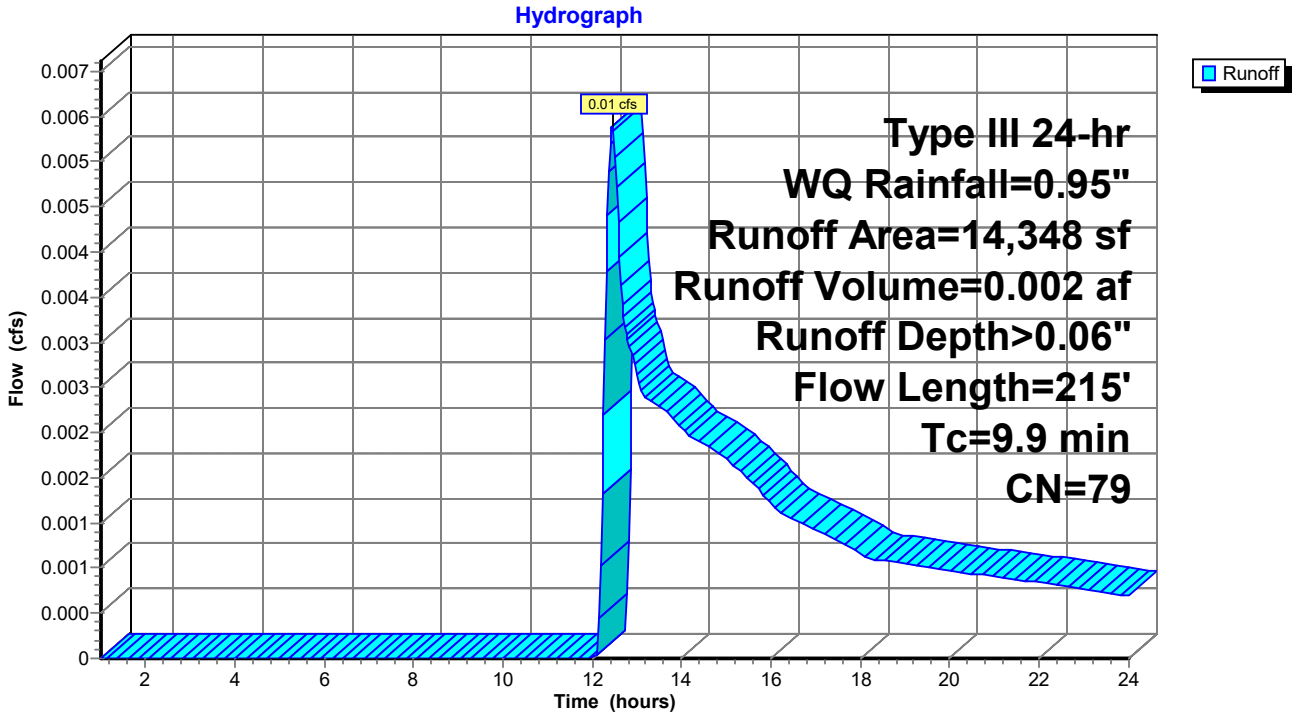
Runoff = 0.01 cfs @ 12.45 hrs, Volume= 0.002 af, Depth> 0.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Type III 24-hr WQ Rainfall=0.95"

	Area (sf)	CN	Description
*	8,722	98	Paved parking & roofs
	5,626	49	50-75% Grass cover, Fair, HSG A
	14,348	79	Weighted Average
	5,626		39.21% Pervious Area
	8,722		60.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	55	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
1.2	160	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.9	215	Total			

Subcatchment 5S: Lawn Pleas-E



Summary for Subcatchment 11S: DRWY NE

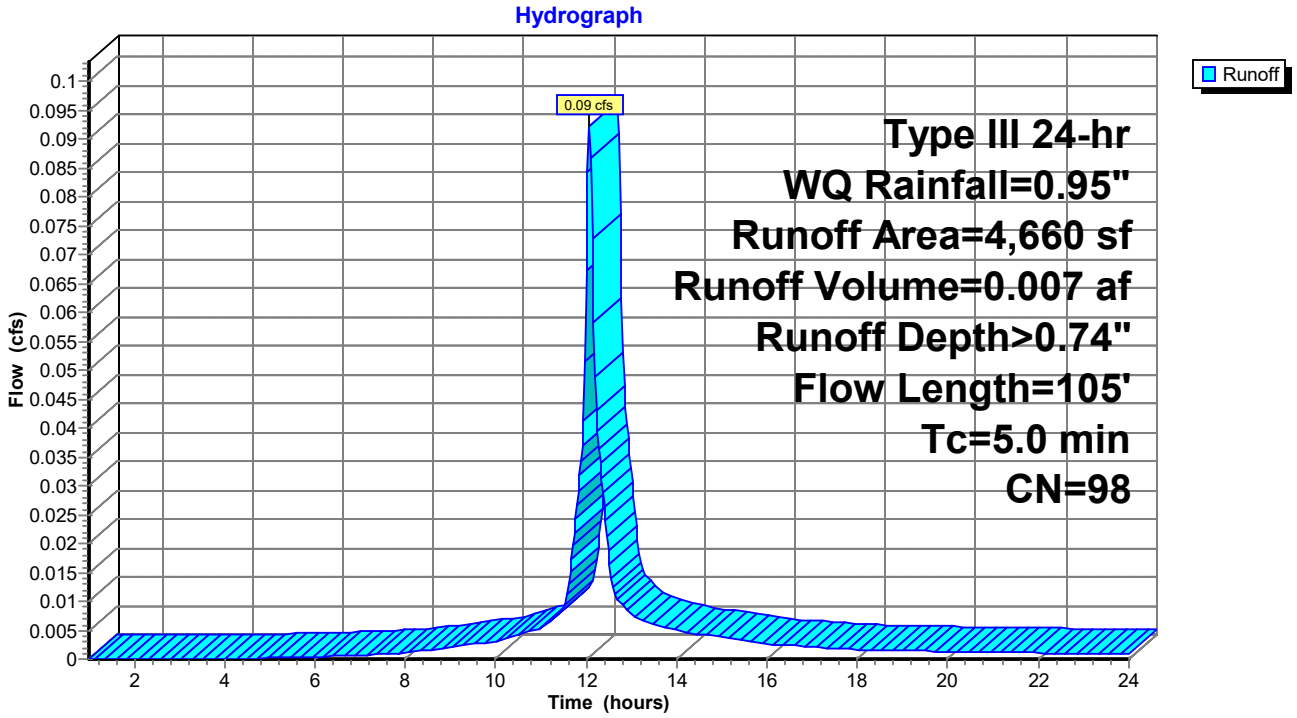
Runoff = 0.09 cfs @ 12.07 hrs, Volume= 0.007 af, Depth> 0.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Type III 24-hr WQ Rainfall=0.95"

Area (sf)	CN	Description
4,660	98	Paved parking, HSG A
4,660		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	45	0.0330	1.32		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.4	60	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	105	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 11S: DRWY NE



Summary for Subcatchment 12S: DRWY SE

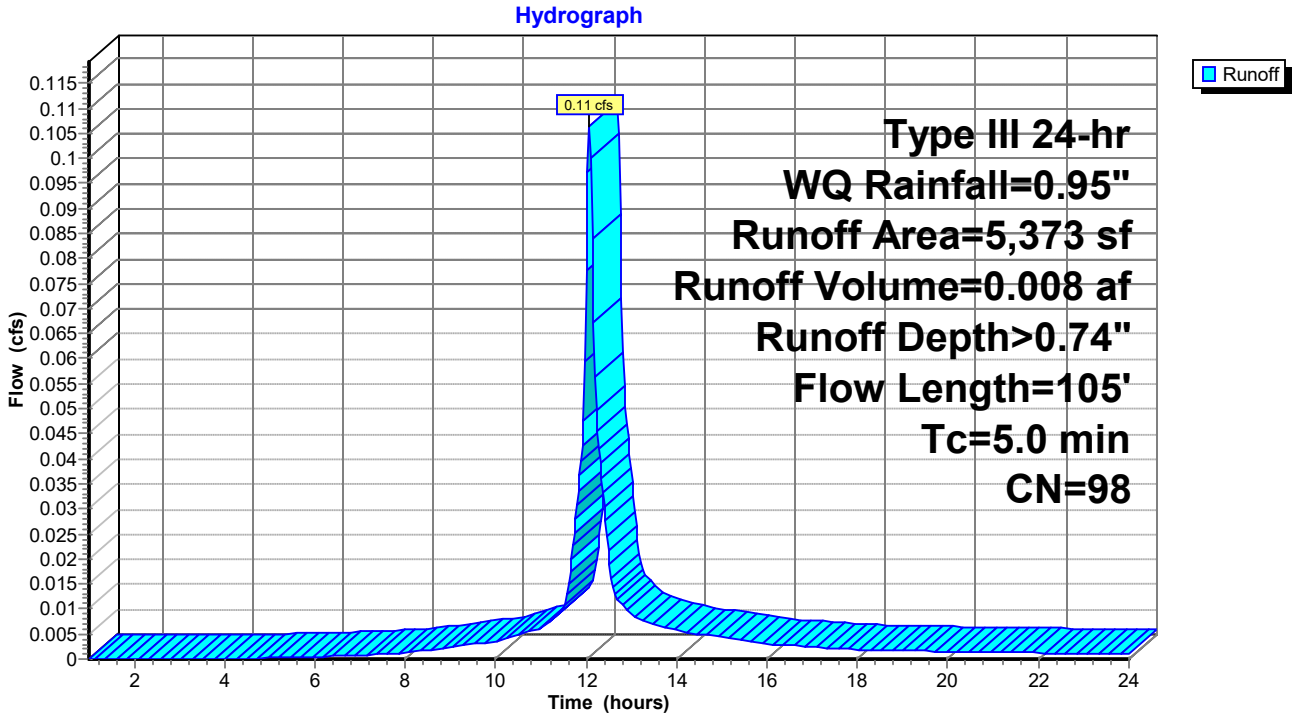
Runoff = 0.11 cfs @ 12.07 hrs, Volume= 0.008 af, Depth> 0.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Type III 24-hr WQ Rainfall=0.95"

Area (sf)	CN	Description
5,373	98	Paved parking, HSG A
5,373		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	45	0.0330	1.32		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.4	60	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	105	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 12S: DRWY SE



Summary for Subcatchment 13S: PARK SE

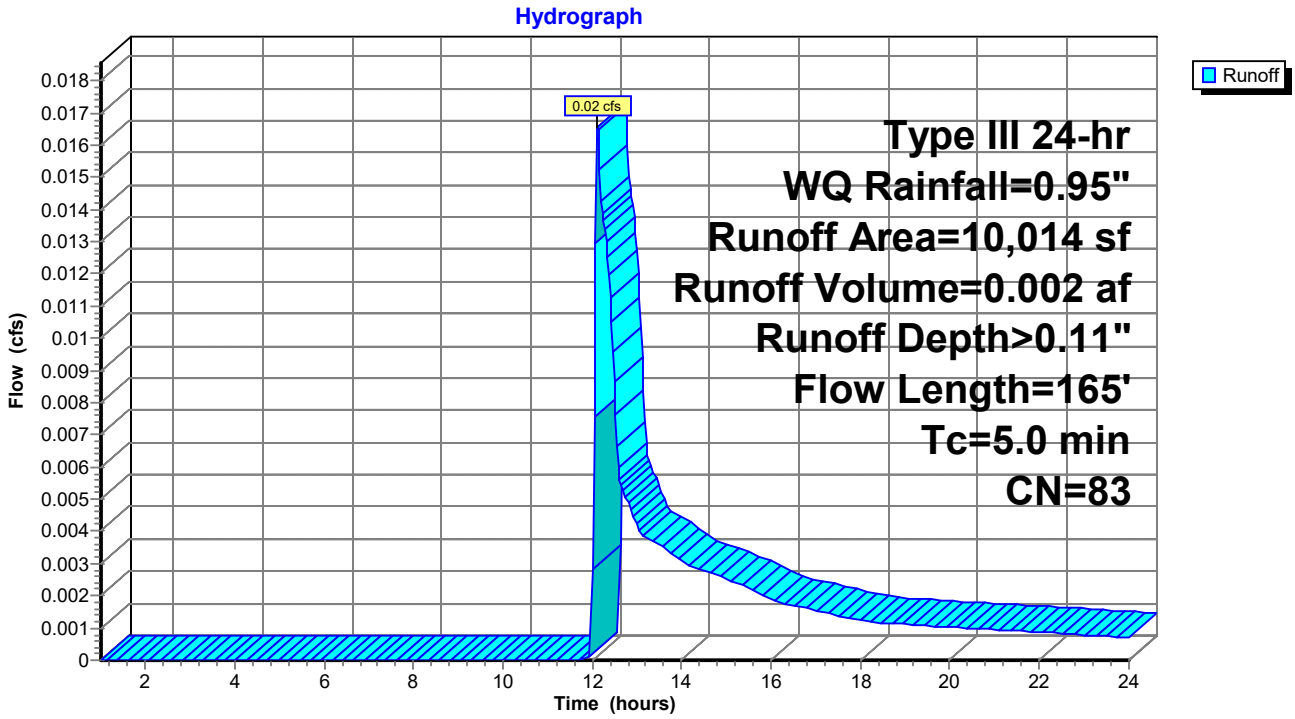
Runoff = 0.02 cfs @ 12.12 hrs, Volume= 0.002 af, Depth> 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Type III 24-hr WQ Rainfall=0.95"

Area (sf)	CN	Description
6,859	98	Paved parking, HSG A
3,155	49	50-75% Grass cover, Fair, HSG A
10,014	83	Weighted Average
3,155		31.51% Pervious Area
6,859		68.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	20	0.0170	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.8	66	0.0330	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.6	79	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.5	165	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 13S: PARK SE



Summary for Subcatchment 14S: PARK SW

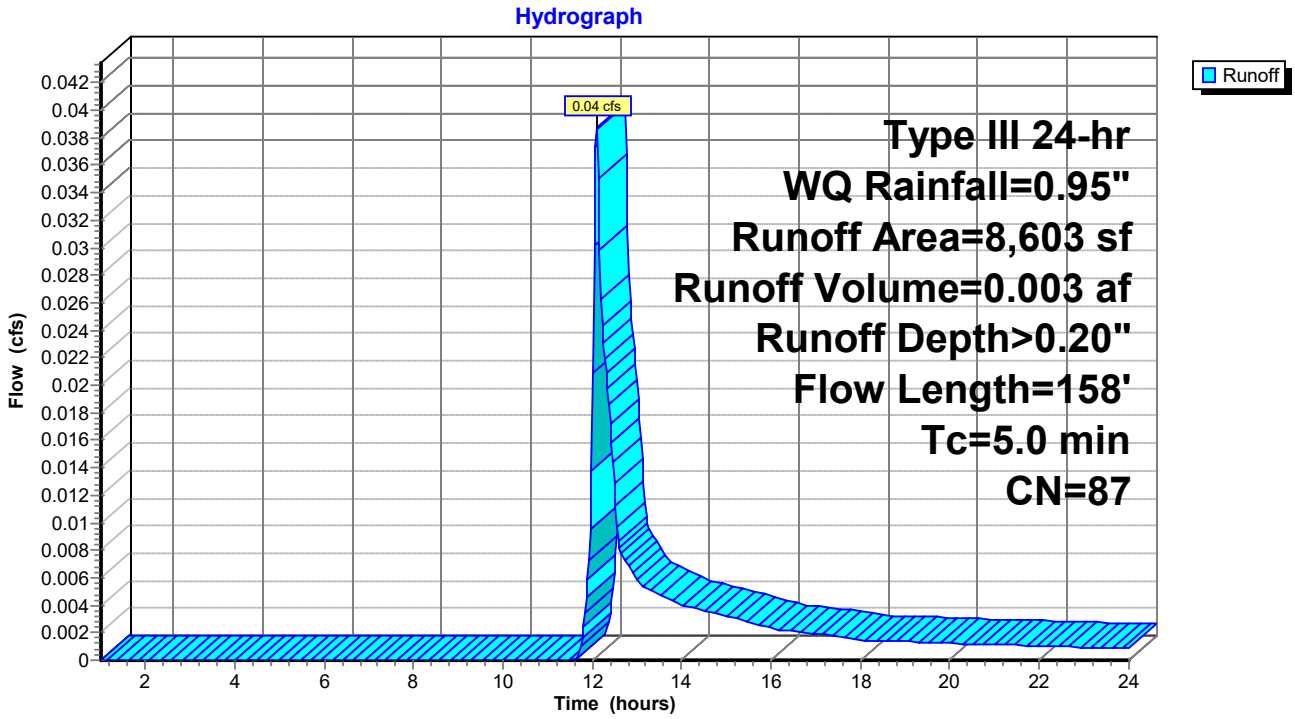
Runoff = 0.04 cfs @ 12.09 hrs, Volume= 0.003 af, Depth> 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Type III 24-hr WQ Rainfall=0.95"

Area (sf)	CN	Description
6,654	98	Paved parking, HSG A
1,949	49	50-75% Grass cover, Fair, HSG A
8,603	87	Weighted Average
1,949		22.65% Pervious Area
6,654		77.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0170	0.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.8	66	0.0330	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.5	72	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	158	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 14S: PARK SW



Summary for Subcatchment 15S: DRWY W

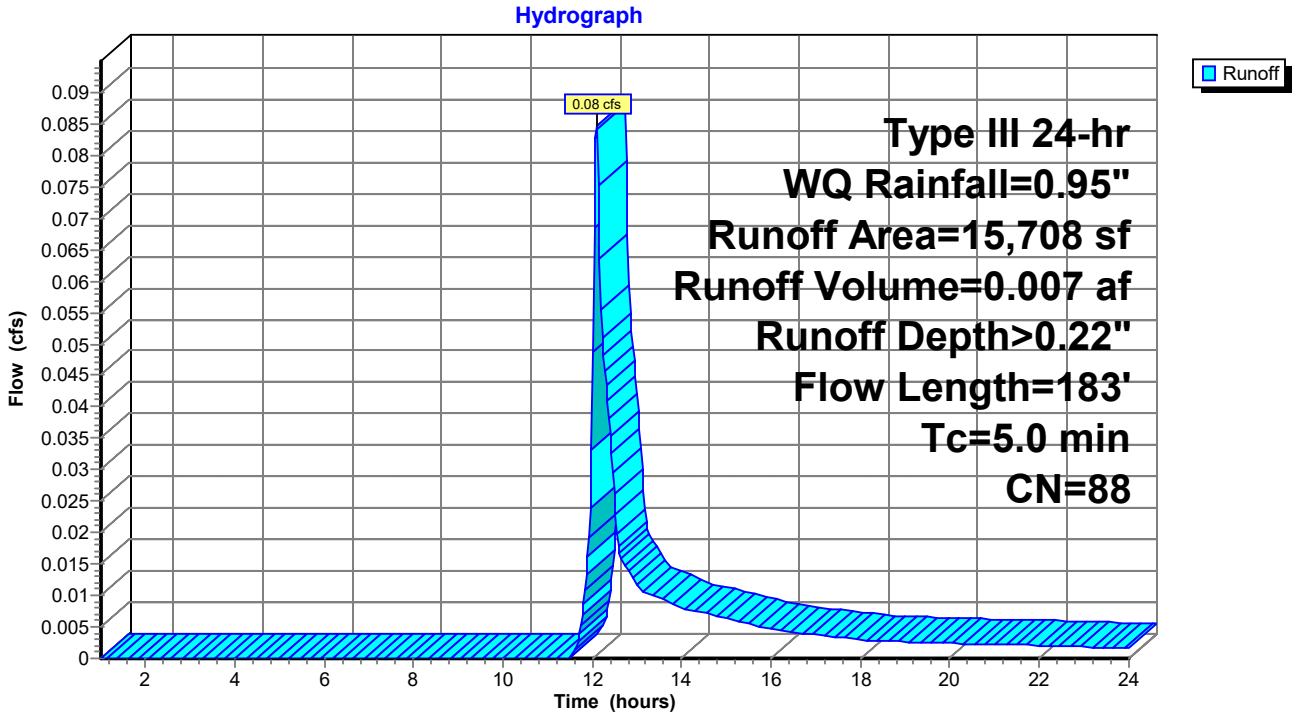
Runoff = 0.08 cfs @ 12.09 hrs, Volume= 0.007 af, Depth> 0.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Type III 24-hr WQ Rainfall=0.95"

Area (sf)	CN	Description
12,462	98	Paved parking, HSG A
3,246	49	50-75% Grass cover, Fair, HSG A
15,708	88	Weighted Average
3,246		20.66% Pervious Area
12,462		79.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	58	0.0150	1.01		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.9	125	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.9	183	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 15S: DRWY W



Summary for Subcatchment 16S: VISIT LOT

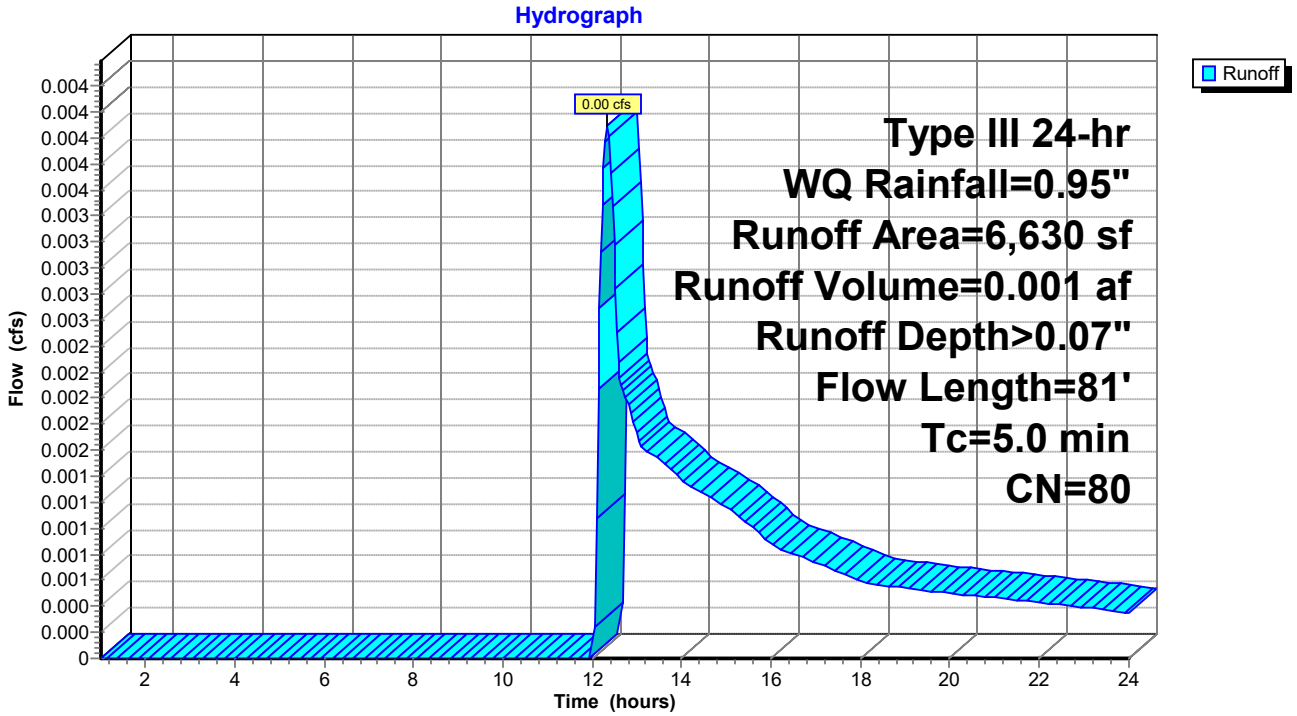
Runoff = 0.00 cfs @ 12.33 hrs, Volume= 0.001 af, Depth> 0.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Type III 24-hr WQ Rainfall=0.95"

Area (sf)	CN	Description
4,235	98	Paved parking, HSG A
2,395	49	50-75% Grass cover, Fair, HSG A
6,630	80	Weighted Average
2,395		36.12% Pervious Area
4,235		63.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	41	0.0125	0.88		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.3	40	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	81	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 16S: VISIT LOT



Summary for Subcatchment 17S: NEW BLDG

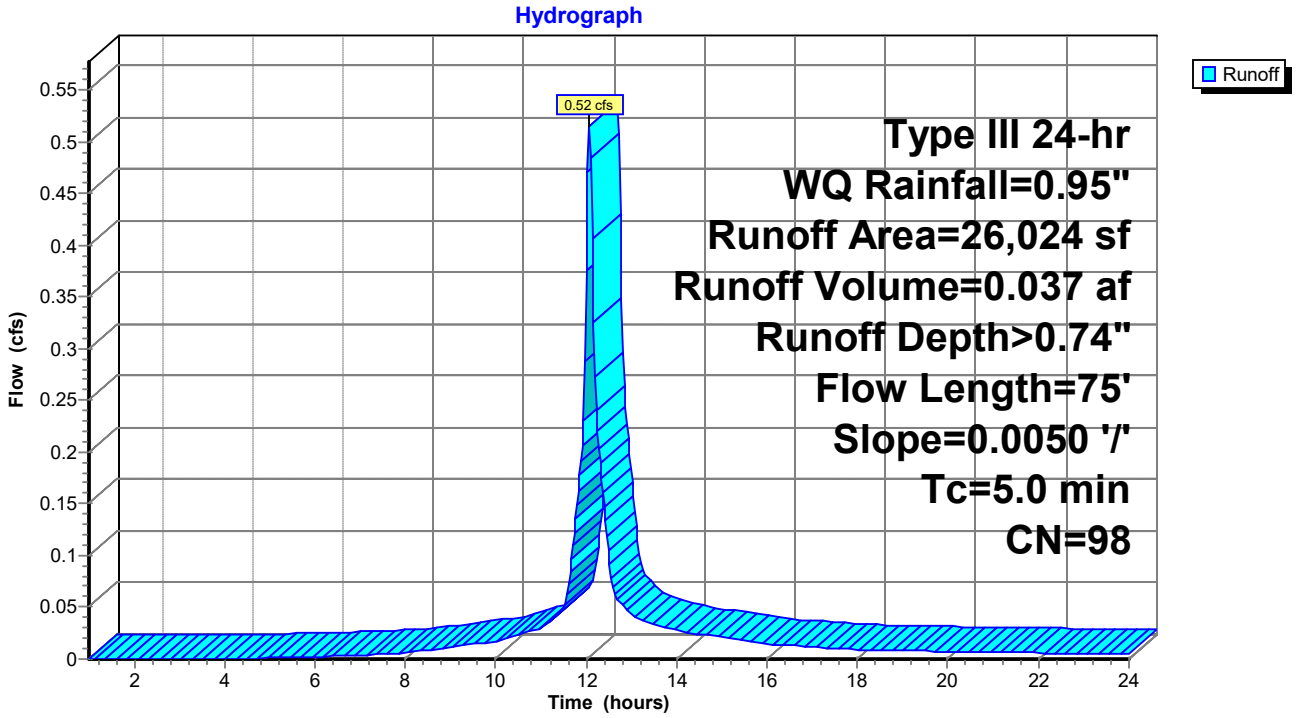
Runoff = 0.52 cfs @ 12.07 hrs, Volume= 0.037 af, Depth> 0.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Type III 24-hr WQ Rainfall=0.95"

Area (sf)	CN	Description
26,024	98	Roofs, HSG A
26,024		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	25	0.0050	0.55		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.6	50	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	75	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 17S: NEW BLDG



Summary for Pond 1P: CB-Web N

[57] Hint: Peaked at 72.41' (Flood elevation advised)

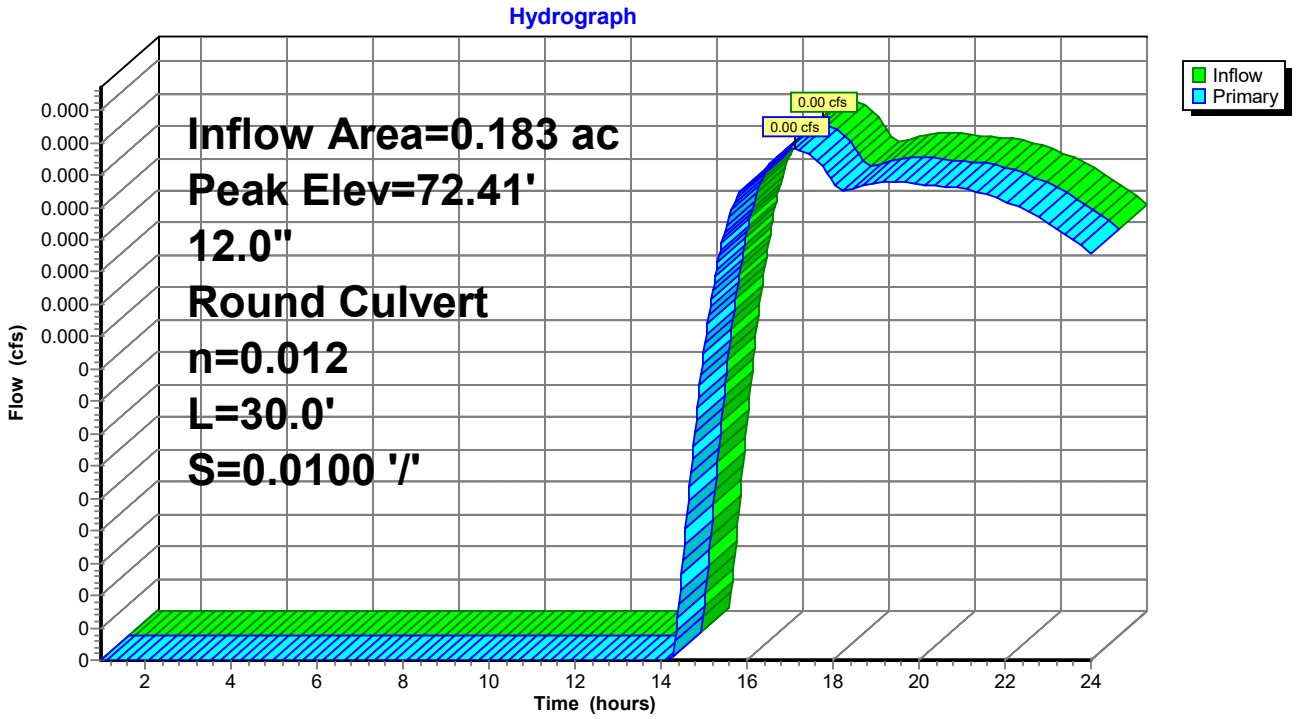
Inflow Area =	0.183 ac, 55.31% Impervious, Inflow Depth > 0.01" for WQ event				
Inflow =	0.00 cfs @	17.11 hrs,	Volume=	0.000 af	
Outflow =	0.00 cfs @	17.11 hrs,	Volume=	0.000 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.00 cfs @	17.11 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 72.41' @ 17.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	72.40'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.40' / 72.10' S= 0.0100 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 17.11 hrs HW=72.41' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.00 cfs @ 0.23 fps)

Pond 1P: CB-Web N



Summary for Pond 2P:

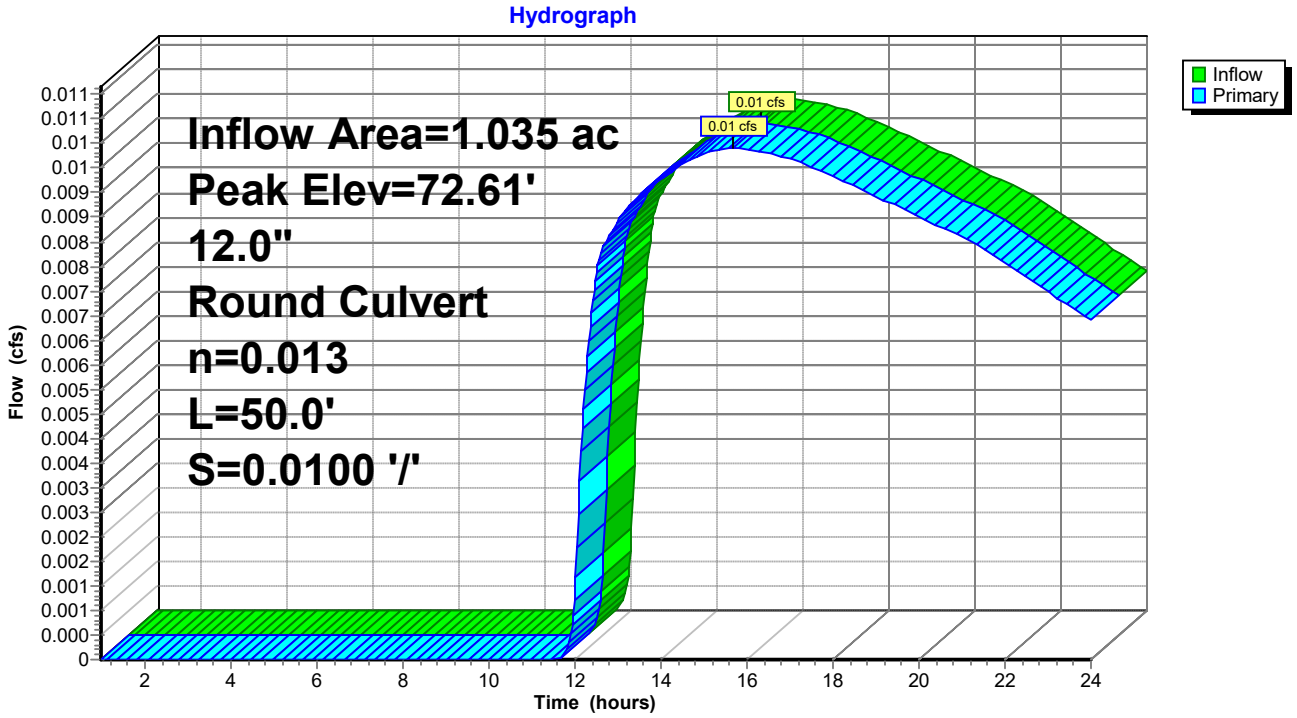
Inflow Area = 1.035 ac, 68.62% Impervious, Inflow Depth > 0.10" for WQ event
Inflow = 0.01 cfs @ 15.70 hrs, Volume= 0.009 af
Outflow = 0.01 cfs @ 15.70 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min
Primary = 0.01 cfs @ 15.70 hrs, Volume= 0.009 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 72.61' @ 15.70 hrs
Flood Elev= 116.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.60'	**12.0" Round Storm Drain** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.60' / 72.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 15.70 hrs HW=72.61' (Free Discharge)
└**1=Storm Drain** (Barrel Controls 0.00 cfs @ 0.28 fps)

Pond 2P:



Summary for Pond 3P:

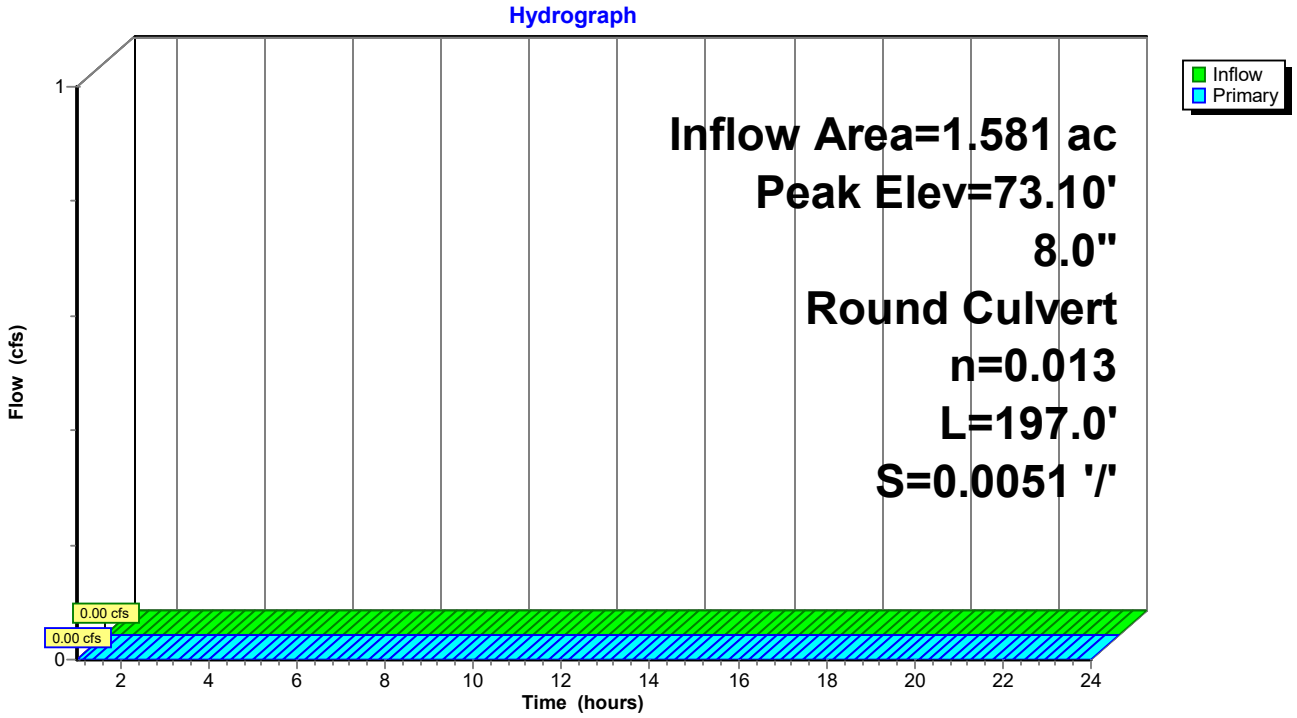
Inflow Area = 1.581 ac, 16.27% Impervious, Inflow Depth = 0.00" for WQ event
Inflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 73.10' @ 1.00 hrs
Flood Elev= 113.94'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.10'	**8.0" Round Storm Drain** L= 197.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.10' / 72.10' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=73.10' (Free Discharge)
└─**1=Storm Drain** (Controls 0.00 cfs)

Pond 3P:



Summary for Pond 4P:

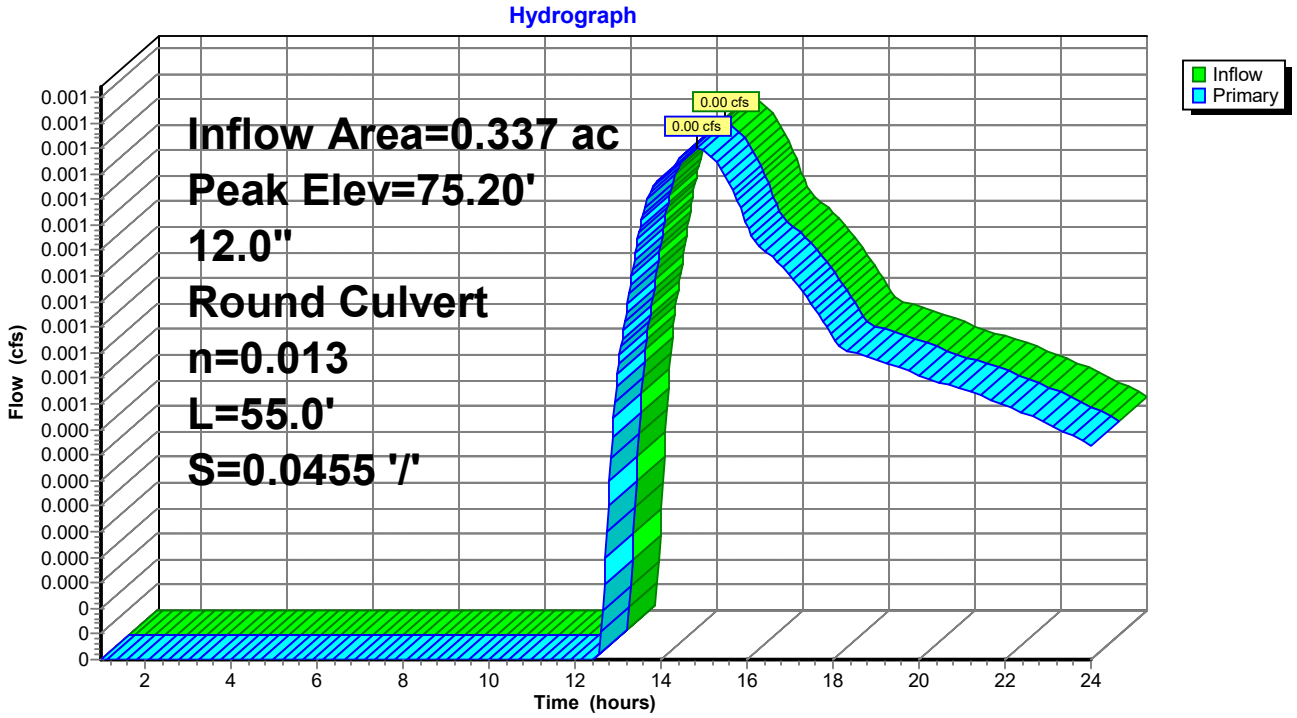
Inflow Area = 0.337 ac, 52.63% Impervious, Inflow Depth > 0.02" for WQ event
Inflow = 0.00 cfs @ 14.83 hrs, Volume= 0.001 af
Outflow = 0.00 cfs @ 14.83 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 14.83 hrs, Volume= 0.001 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 75.20' @ 14.83 hrs
Flood Elev= 116.29'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.20'	**12.0" Round Storm Drain** L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.20' / 72.70' S= 0.0455 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 14.83 hrs HW=75.20' (Free Discharge)
└─**1=Storm Drain** (Inlet Controls 0.00 cfs @ 0.08 fps)

Pond 4P:



Summary for Pond 5P: CB-Pleas E

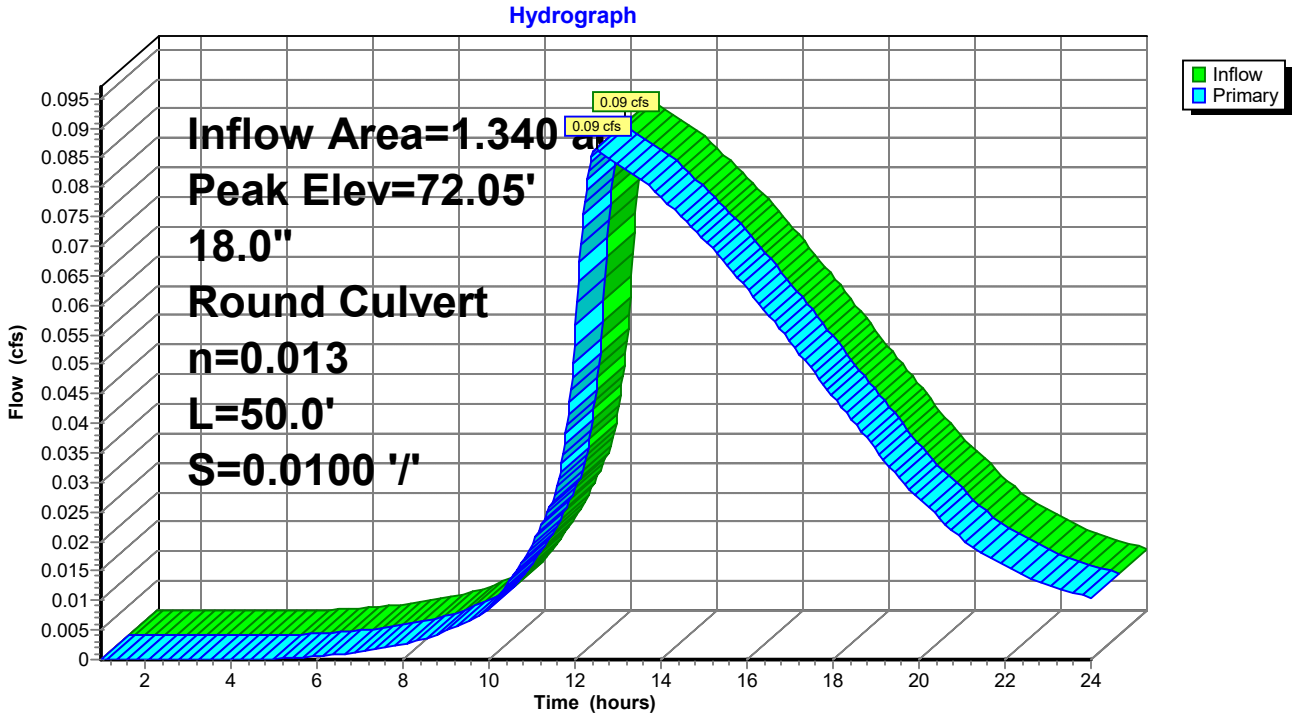
Inflow Area = 1.340 ac, 84.26% Impervious, Inflow Depth > 0.45" for WQ event
Inflow = 0.09 cfs @ 12.51 hrs, Volume= 0.050 af
Outflow = 0.09 cfs @ 12.51 hrs, Volume= 0.050 af, Atten= 0%, Lag= 0.0 min
Primary = 0.09 cfs @ 12.51 hrs, Volume= 0.050 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 72.05' @ 12.51 hrs
Flood Elev= 114.79'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.00'	**18.0" Round Storm Drain** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.00' / 71.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.01 cfs @ 12.51 hrs HW=72.05' (Free Discharge)
└─**1=Storm Drain** (Inlet Controls 0.01 cfs @ 0.61 fps)

Pond 5P: CB-Pleas E



Summary for Pond 6P:

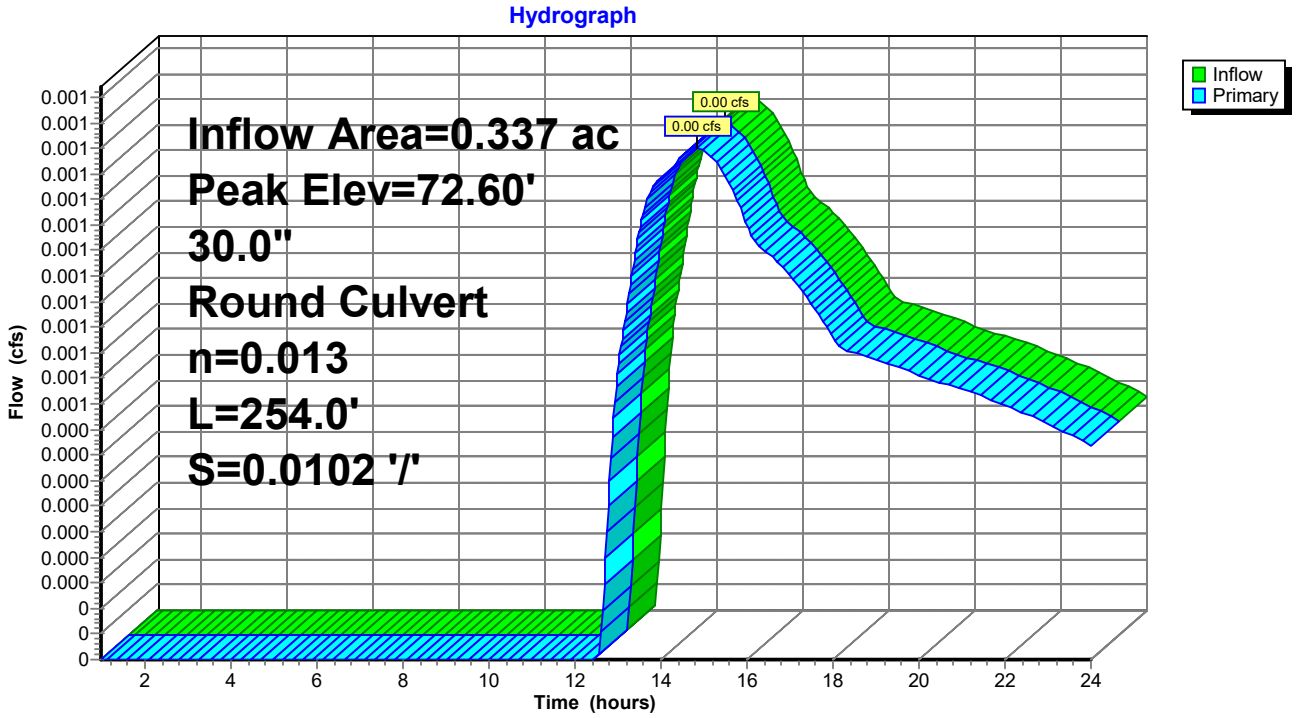
Inflow Area = 0.337 ac, 52.63% Impervious, Inflow Depth > 0.02" for WQ event
Inflow = 0.00 cfs @ 14.83 hrs, Volume= 0.001 af
Outflow = 0.00 cfs @ 14.83 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 14.83 hrs, Volume= 0.001 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 72.60' @ 14.83 hrs
Flood Elev= 116.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	72.60'	**30.0" Round Storm Drain** L= 254.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.60' / 70.00' S= 0.0102 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=0.00 cfs @ 14.83 hrs HW=72.60' (Free Discharge)
└**1=Storm Drain** (Barrel Controls 0.00 cfs @ 0.04 fps)

Pond 6P:



Summary for Pond 7P: Filterra 1 - 4x6

Inflow Area = 0.107 ac,100.00% Impervious, Inflow Depth > 0.74" for WQ event
Inflow = 0.09 cfs @ 12.07 hrs, Volume= 0.007 af
Outflow = 0.08 cfs @ 12.04 hrs, Volume= 0.007 af, Atten= 16%, Lag= 0.0 min
Primary = 0.08 cfs @ 12.04 hrs, Volume= 0.007 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 76.72' @ 12.12 hrs Surf.Area= 24 sf Storage= 3 cf

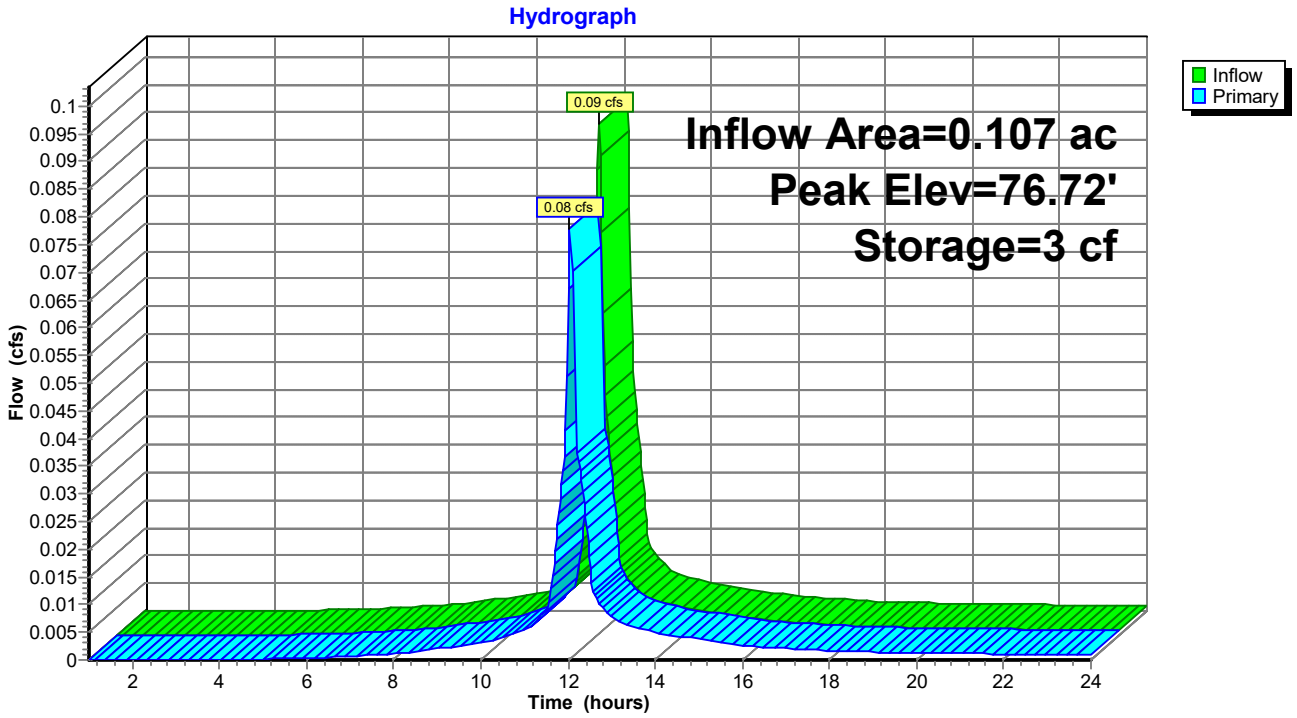
Plug-Flow detention time= 8.0 min calculated for 0.007 af (99% of inflow)
Center-of-Mass det. time= 0.7 min (789.0 - 788.3)

Volume	Invert	Avail.Storage	Storage Description
#1	76.59'	24 cf	**6.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	74.42'	**8.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.42' / 74.33' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	76.59'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	77.34'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.08 cfs @ 12.04 hrs HW=76.61' (Free Discharge)
└─**1=Culvert** (Passes 0.08 cfs of 2.29 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.08 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 7P: Filterra 1 - 4x6



Summary for Pond 8P: Filterra 2 - 4x6

Inflow Area = 0.123 ac,100.00% Impervious, Inflow Depth > 0.74" for WQ event
Inflow = 0.11 cfs @ 12.07 hrs, Volume= 0.008 af
Outflow = 0.08 cfs @ 12.04 hrs, Volume= 0.008 af, Atten= 27%, Lag= 0.0 min
Primary = 0.08 cfs @ 12.04 hrs, Volume= 0.008 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 76.93' @ 12.14 hrs Surf.Area= 24 sf Storage= 8 cf

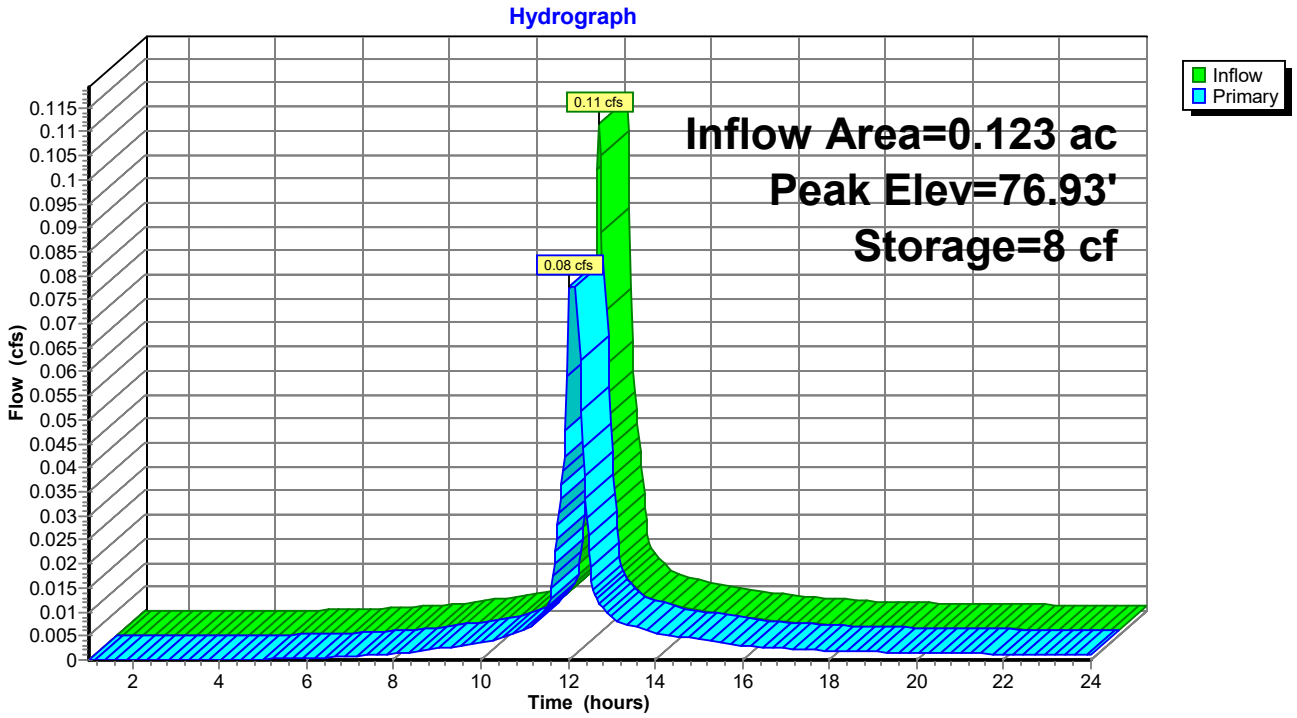
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	76.59'	24 cf	**6.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	74.42'	**8.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.42' / 74.33' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	76.59'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	77.34'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.08 cfs @ 12.04 hrs HW=76.64' (Free Discharge)
└─**1=Culvert** (Passes 0.08 cfs of 2.31 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.08 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 8P: Filterra 2 - 4x6



Summary for Pond 9P: Filterra 3 - 4x4

Inflow Area = 0.230 ac, 68.49% Impervious, Inflow Depth > 0.11" for WQ event
Inflow = 0.02 cfs @ 12.12 hrs, Volume= 0.002 af
Outflow = 0.02 cfs @ 12.12 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min
Primary = 0.02 cfs @ 12.12 hrs, Volume= 0.002 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 78.34' @ 12.12 hrs Surf.Area= 16 sf Storage= 0 cf

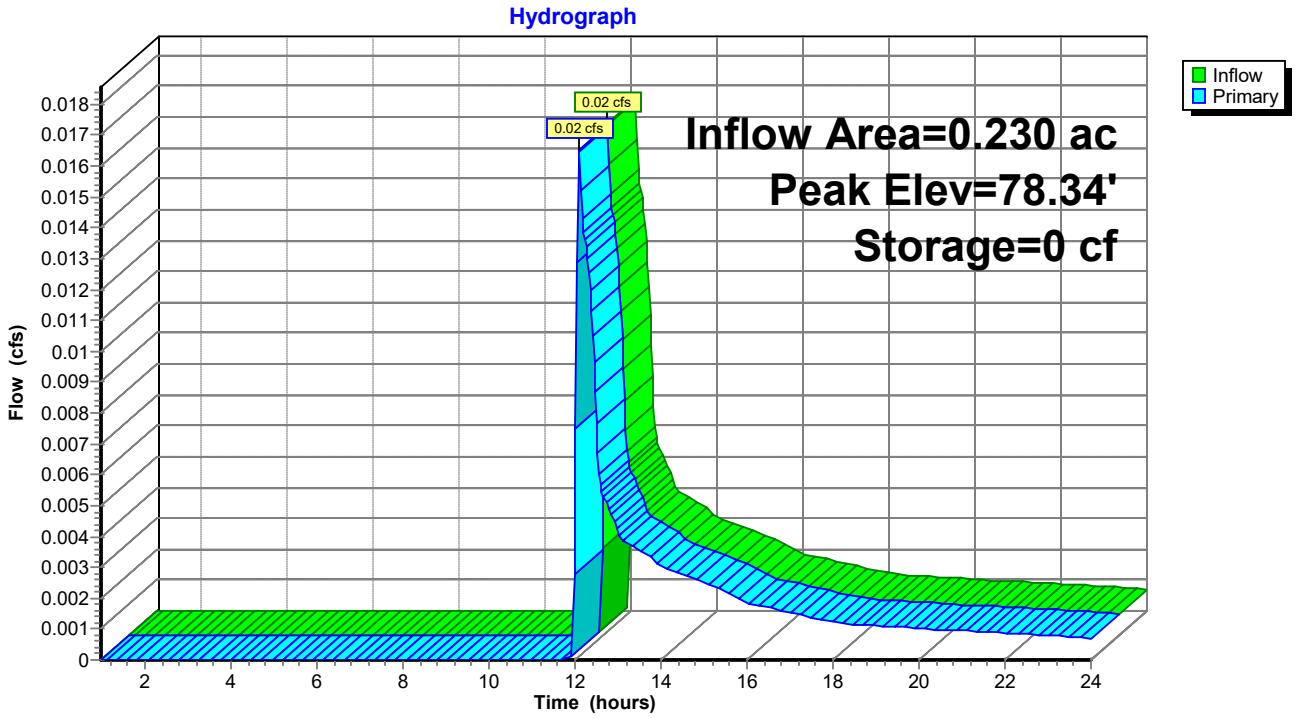
Plug-Flow detention time= 0.1 min calculated for 0.002 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (923.7 - 923.6)

Volume	Invert	Avail.Storage	Storage Description
#1	78.34'	16 cf	**4.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	76.17'	**8.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 76.17' / 76.08' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	78.34'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	79.09'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.05 cfs @ 12.12 hrs HW=78.34' (Free Discharge)
└─**1=Culvert** (Passes 0.05 cfs of 2.28 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.05 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 9P: Filterra 3 - 4x4



Summary for Pond 10P: Filterra 4 - 4x6

Inflow Area = 0.197 ac, 77.35% Impervious, Inflow Depth > 0.20" for WQ event
Inflow = 0.04 cfs @ 12.09 hrs, Volume= 0.003 af
Outflow = 0.04 cfs @ 12.09 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min
Primary = 0.04 cfs @ 12.09 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 78.34' @ 12.09 hrs Surf.Area= 24 sf Storage= 0 cf

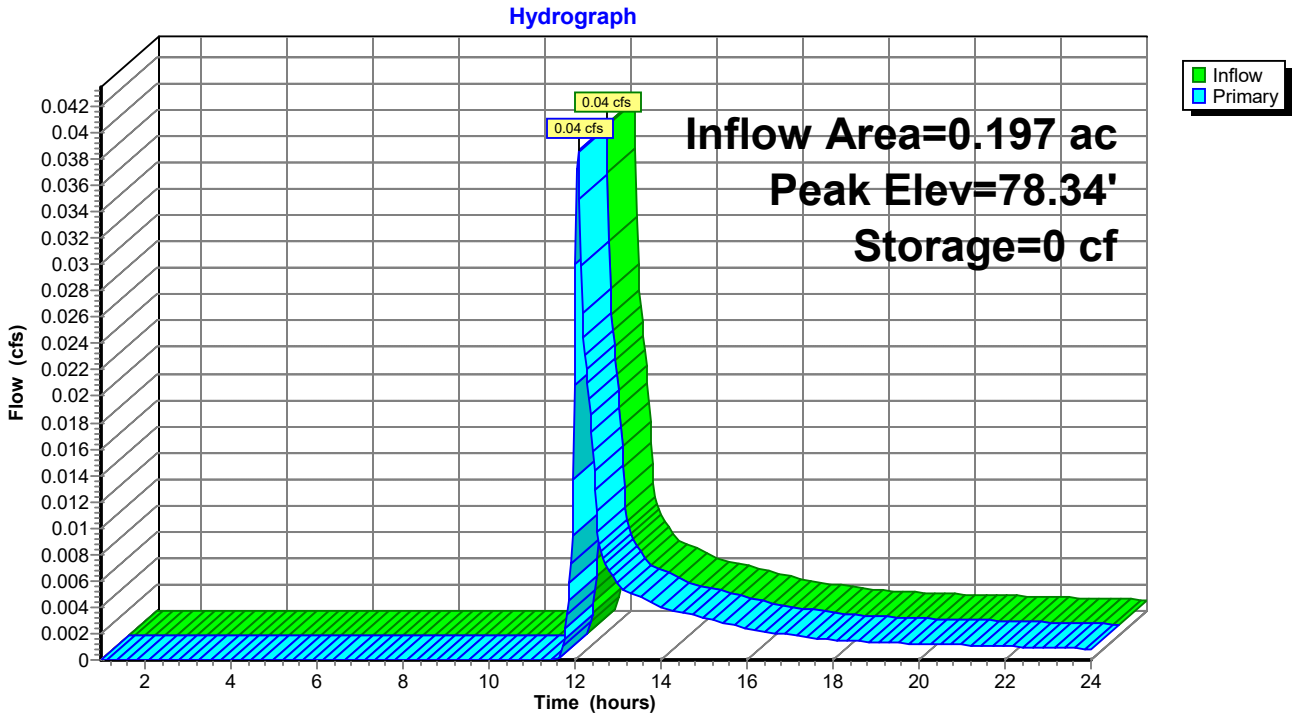
Plug-Flow detention time= 0.1 min calculated for 0.003 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (887.5 - 887.4)

Volume	Invert	Avail.Storage	Storage Description
#1	78.34'	24 cf	**4.00'W x 6.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	76.17'	**6.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 76.17' / 76.08' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	78.34'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	79.09'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.08 cfs @ 12.09 hrs HW=78.34' (Free Discharge)
└─**1=Culvert** (Passes 0.08 cfs of 1.31 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.08 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10P: Filterra 4 - 4x6



Summary for Pond 11P: Filterra 5 - 6x6

Inflow Area = 0.361 ac, 79.34% Impervious, Inflow Depth > 0.22" for WQ event
Inflow = 0.08 cfs @ 12.09 hrs, Volume= 0.007 af
Outflow = 0.08 cfs @ 12.09 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min
Primary = 0.08 cfs @ 12.09 hrs, Volume= 0.007 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 79.10' @ 12.09 hrs Surf.Area= 36 sf Storage= 0 cf

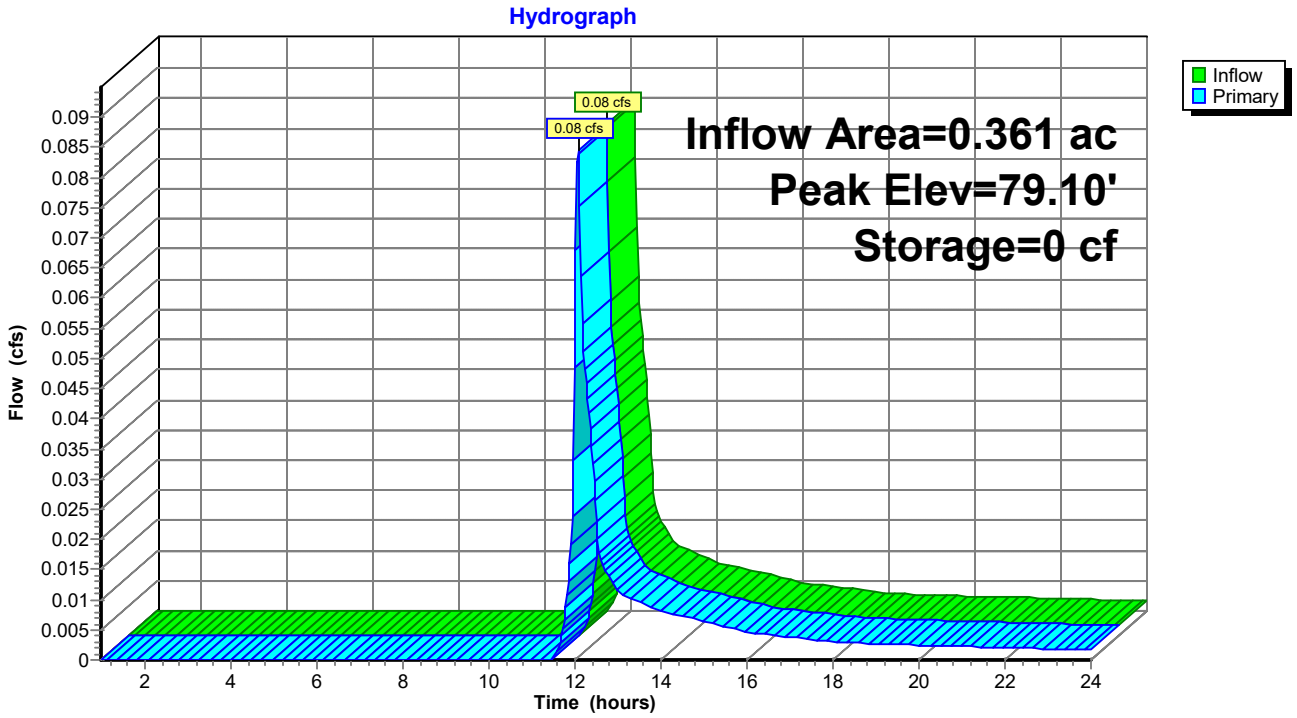
Plug-Flow detention time= 0.1 min calculated for 0.007 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (879.7 - 879.6)

Volume	Invert	Avail.Storage	Storage Description
#1	79.09'	36 cf	**6.00'W x 6.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	76.92'	**6.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 76.92' / 76.83' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	79.09'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	79.84'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.12 cfs @ 12.09 hrs HW=79.10' (Free Discharge)
└─**1=Culvert** (Passes 0.12 cfs of 1.31 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.12 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 11P: Filterra 5 - 6x6



Summary for Pond 12P: Filterra 6 - 4x4

Inflow Area = 0.152 ac, 63.88% Impervious, Inflow Depth > 0.07" for WQ event
Inflow = 0.00 cfs @ 12.33 hrs, Volume= 0.001 af
Outflow = 0.00 cfs @ 12.33 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.1 min
Primary = 0.00 cfs @ 12.33 hrs, Volume= 0.001 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs / 2
Peak Elev= 77.29' @ 12.33 hrs Surf.Area= 16 sf Storage= 0 cf

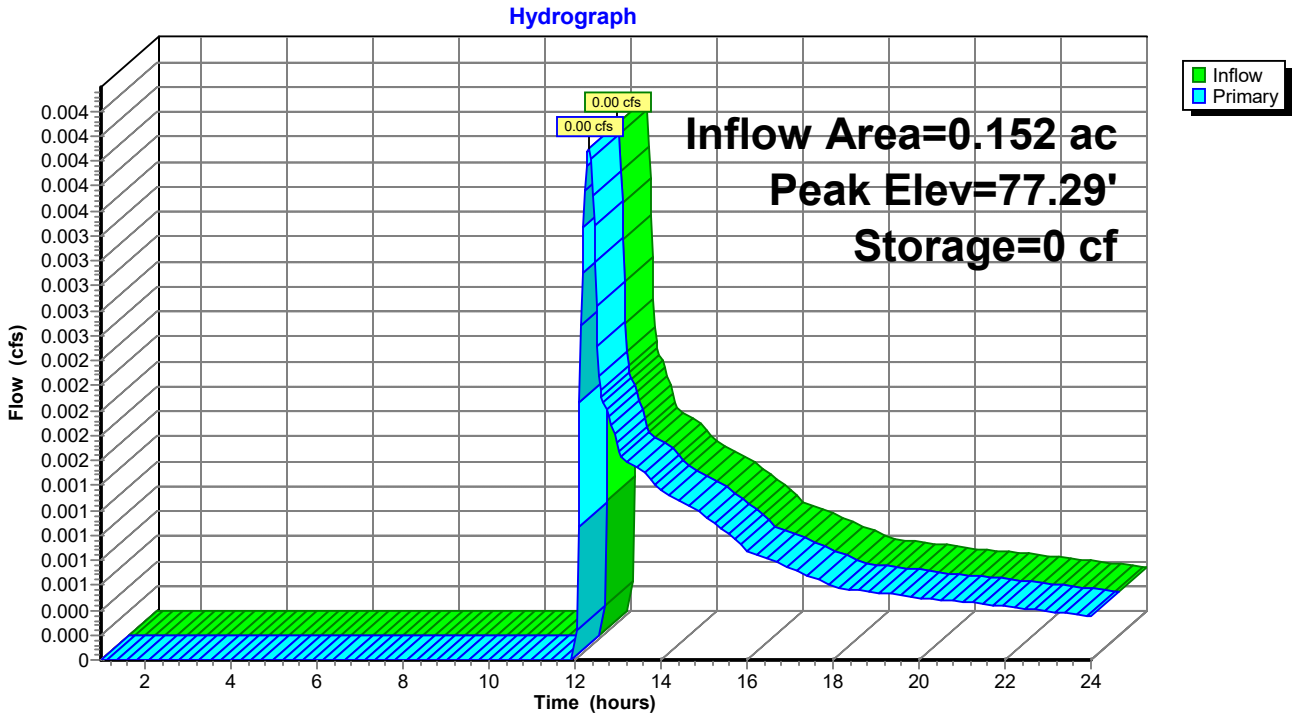
Plug-Flow detention time= 0.1 min calculated for 0.001 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (959.9 - 959.9)

Volume	Invert	Avail.Storage	Storage Description
#1	77.29'	16 cf	**4.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	75.12'	**8.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.12' / 75.08' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	77.29'	**140.000 in/hr Exfiltration over Surface area**
#3	Device 1	78.04'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.05 cfs @ 12.33 hrs HW=77.29' (Free Discharge)
└─**1=Culvert** (Passes 0.05 cfs of 2.28 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.05 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 12P: Filterra 6 - 4x4



Summary for Pond 13P: 6 - Fire Cistern Tanks

Inflow Area = 0.828 ac,100.00% Impervious, Inflow Depth > 0.74" for WQ event
Inflow = 0.67 cfs @ 12.07 hrs, Volume= 0.051 af
Outflow = 0.08 cfs @ 12.69 hrs, Volume= 0.049 af, Atten= 88%, Lag= 37.1 min
Primary = 0.08 cfs @ 12.69 hrs, Volume= 0.049 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 73.68' @ 12.69 hrs Surf.Area= 1,561 sf Storage= 1,069 cf

Plug-Flow detention time= 176.5 min calculated for 0.048 af (94% of inflow)
Center-of-Mass det. time= 146.7 min (934.9 - 788.2)

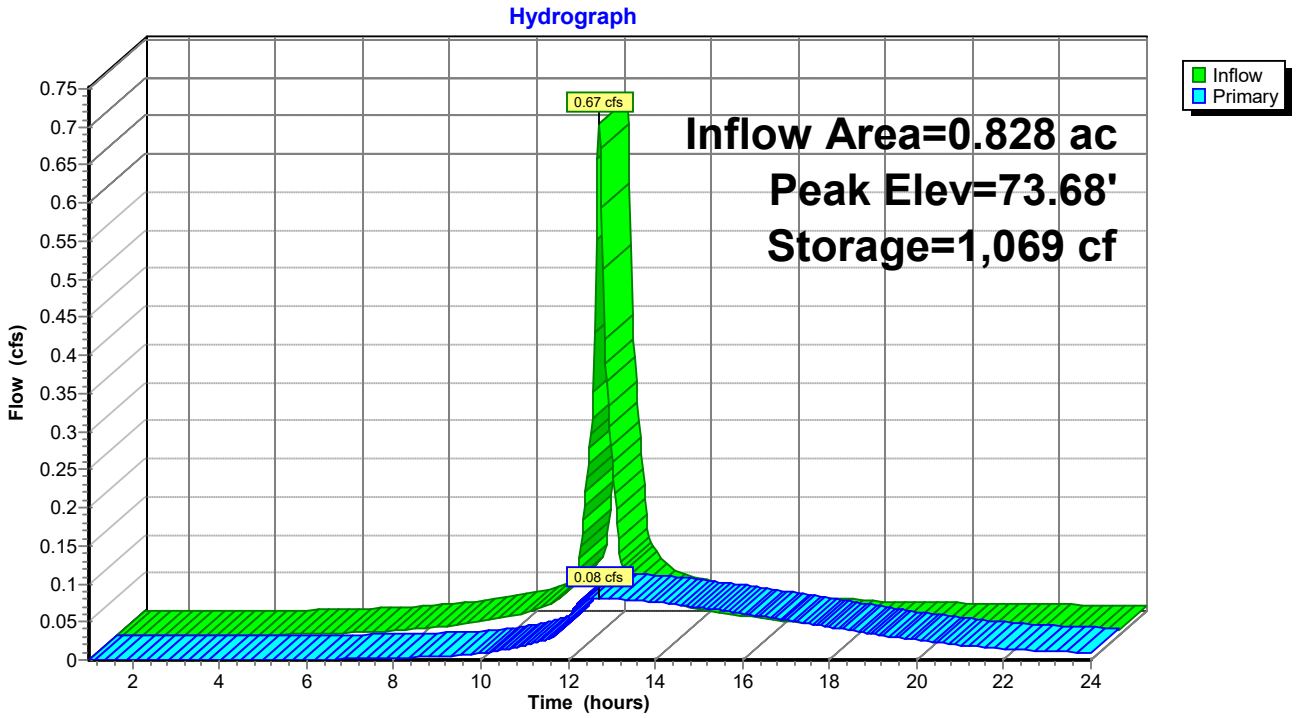
Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	10,927 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	1,561	0	0
74.00	1,561	1,561	1,561
75.00	1,561	1,561	3,122
76.00	1,561	1,561	4,683
77.00	1,561	1,561	6,244
78.00	1,561	1,561	7,805
79.00	1,561	1,561	9,366
80.00	1,561	1,561	10,927

Device	Routing	Invert	Outlet Devices
#1	Primary	78.92'	**6.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	76.92'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	73.00'	**2.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.08 cfs @ 12.69 hrs HW=73.68' (Free Discharge)
- **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
- **2=Orifice/Grate** (Controls 0.00 cfs)
- **3=Orifice/Grate** (Orifice Controls 0.08 cfs @ 3.73 fps)

Pond 13P: 6 - Fire Cistern Tanks



Summary for Pond 19P: 5 Fire Cistern Tanks

Inflow Area = 0.788 ac, 75.67% Impervious, Inflow Depth > 0.19" for WQ event
Inflow = 0.14 cfs @ 12.10 hrs, Volume= 0.012 af
Outflow = 0.01 cfs @ 15.61 hrs, Volume= 0.009 af, Atten= 93%, Lag= 211.1 min
Primary = 0.01 cfs @ 15.61 hrs, Volume= 0.009 af

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 73.69' @ 15.61 hrs Surf.Area= 1,300 sf Storage= 253 cf

Plug-Flow detention time= 284.1 min calculated for 0.009 af (72% of inflow)
Center-of-Mass det. time= 180.1 min (1,069.7 - 889.6)

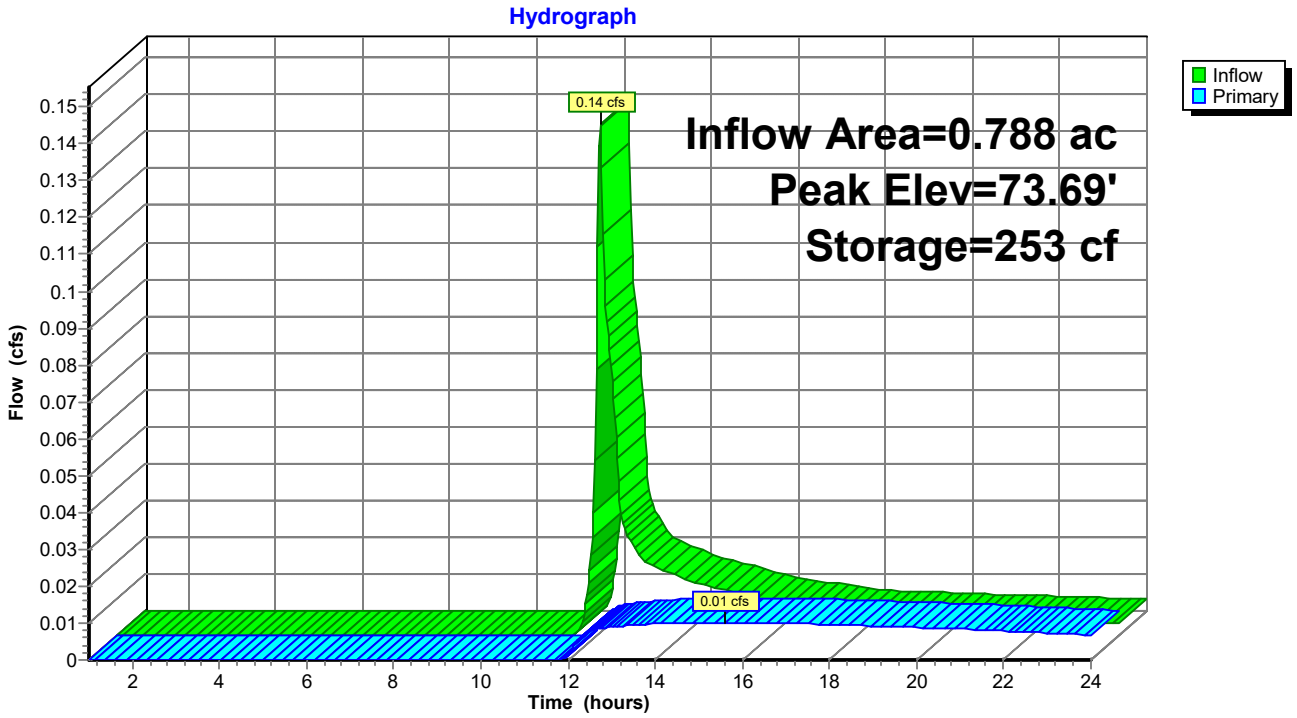
Volume	Invert	Avail.Storage	Storage Description
#1	73.50'	9,100 cf	**5-Cisterns (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.50	1,300	0	0
74.50	1,300	1,300	1,300
75.50	1,300	1,300	2,600
76.50	1,300	1,300	3,900
77.50	1,300	1,300	5,200
78.50	1,300	1,300	6,500
79.50	1,300	1,300	7,800
80.50	1,300	1,300	9,100

Device	Routing	Invert	Outlet Devices
#1	Primary	78.42'	**8.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	73.50'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	76.42'	**4.0" Vert. Orifice/Grate** C= 0.600
#4	Primary	75.50'	**4.0" Vert. Orifice/Grate** C= 0.600
#5	Primary	77.25'	**4.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.01 cfs @ 15.61 hrs HW=73.69' (Free Discharge)
- **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
- **2=Orifice/Grate** (Orifice Controls 0.01 cfs @ 1.88 fps)
- **3=Orifice/Grate** (Controls 0.00 cfs)
- **4=Orifice/Grate** (Controls 0.00 cfs)
- **5=Orifice/Grate** (Controls 0.00 cfs)

Pond 19P: 5 Fire Cistern Tanks



Summary for Pond 26P: (new Pond)

[57] Hint: Peaked at 73.55' (Flood elevation advised)
[79] Warning: Submerged Pond 19P Primary device # 2 by 0.05'

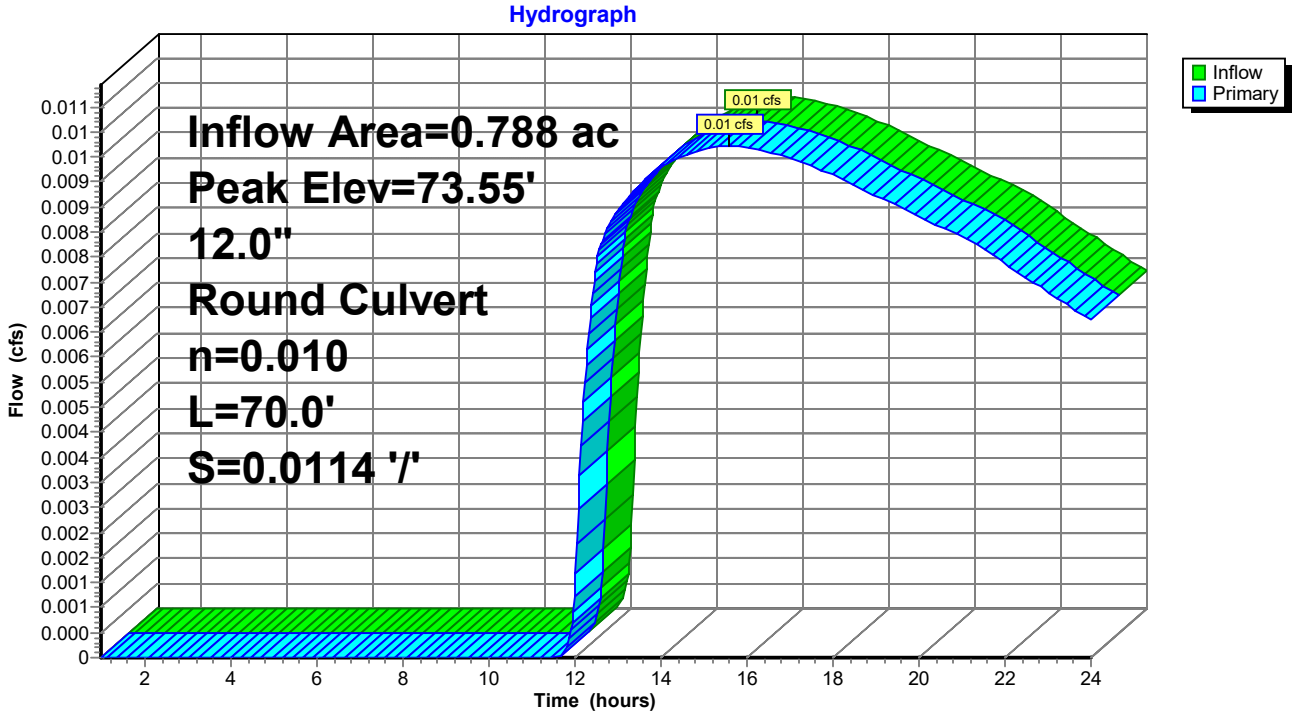
Inflow Area =	0.788 ac, 75.67% Impervious, Inflow Depth > 0.13" for WQ event				
Inflow =	0.01 cfs @	15.61 hrs, Volume=	0.009 af		
Outflow =	0.01 cfs @	15.61 hrs, Volume=	0.009 af,	Atten= 0%,	Lag= 0.0 min
Primary =	0.01 cfs @	15.61 hrs, Volume=	0.009 af		

Routing by Stor-Ind method, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs
Peak Elev= 73.55' @ 15.61 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	73.50'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.50' / 72.70' S= 0.0114 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.01 cfs @ 15.61 hrs HW=73.55' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.01 cfs @ 0.62 fps)

Pond 26P: (new Pond)



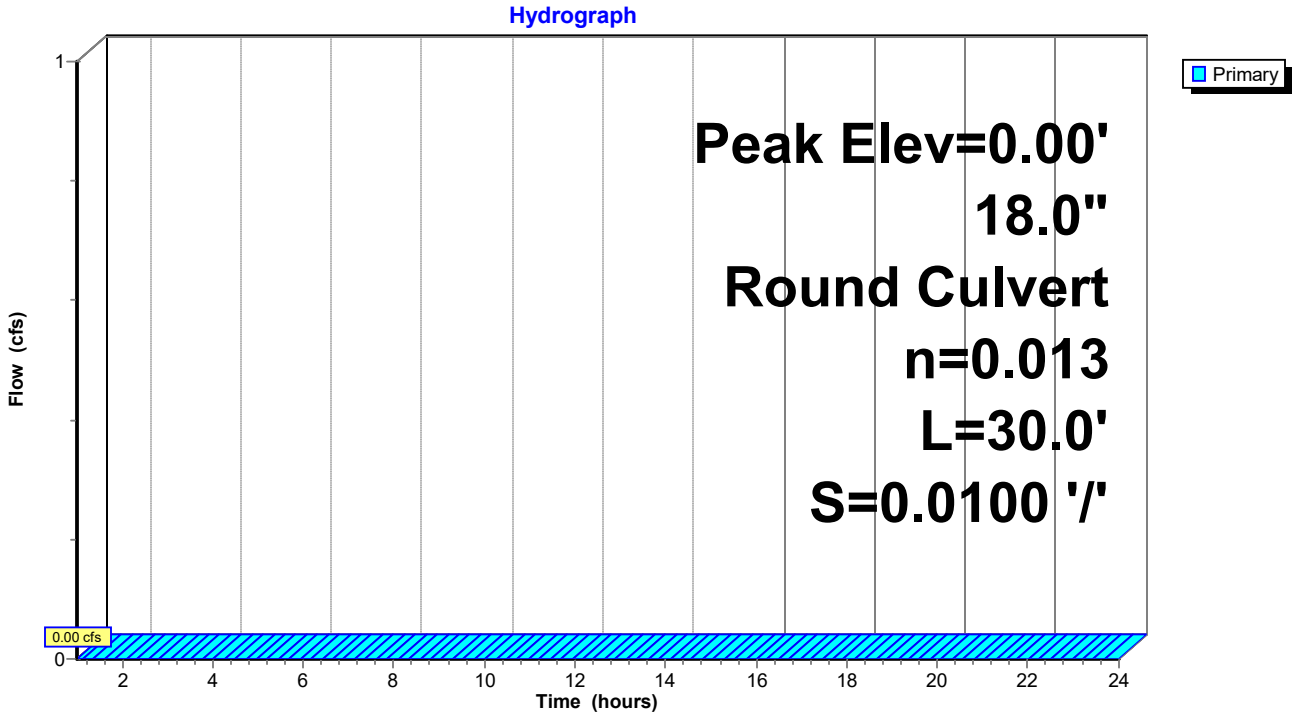
Summary for Pond 27P: (new Pond)

[43] Hint: Has no inflow (Outflow=Zero)

Device	Routing	Invert	Outlet Devices
#1	Primary	72.40'	**18.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 72.40' / 72.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=0.00' (Free Discharge)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 27P: (new Pond)

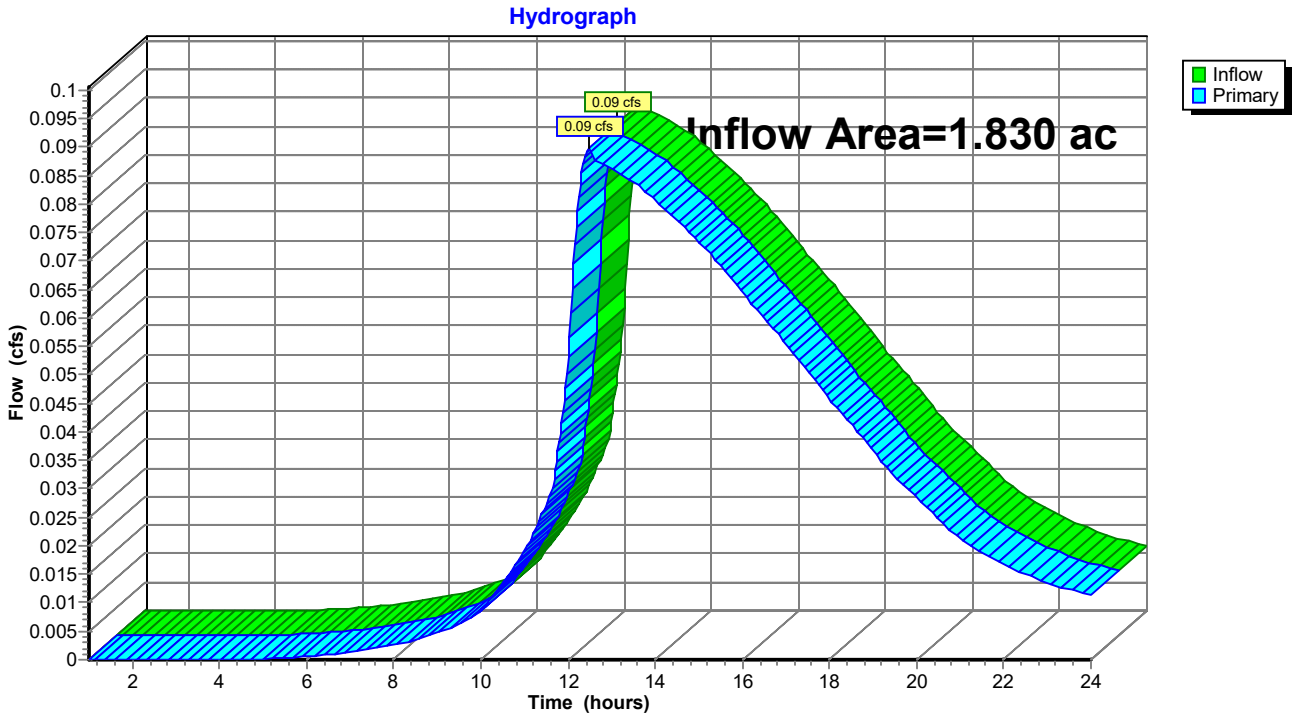


Summary for Link 1L: SP-1

Inflow Area = 1.830 ac, 76.73% Impervious, Inflow Depth > 0.34" for WQ event
Inflow = 0.09 cfs @ 12.47 hrs, Volume= 0.052 af
Primary = 0.09 cfs @ 12.47 hrs, Volume= 0.052 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs

Link 1L: SP-1

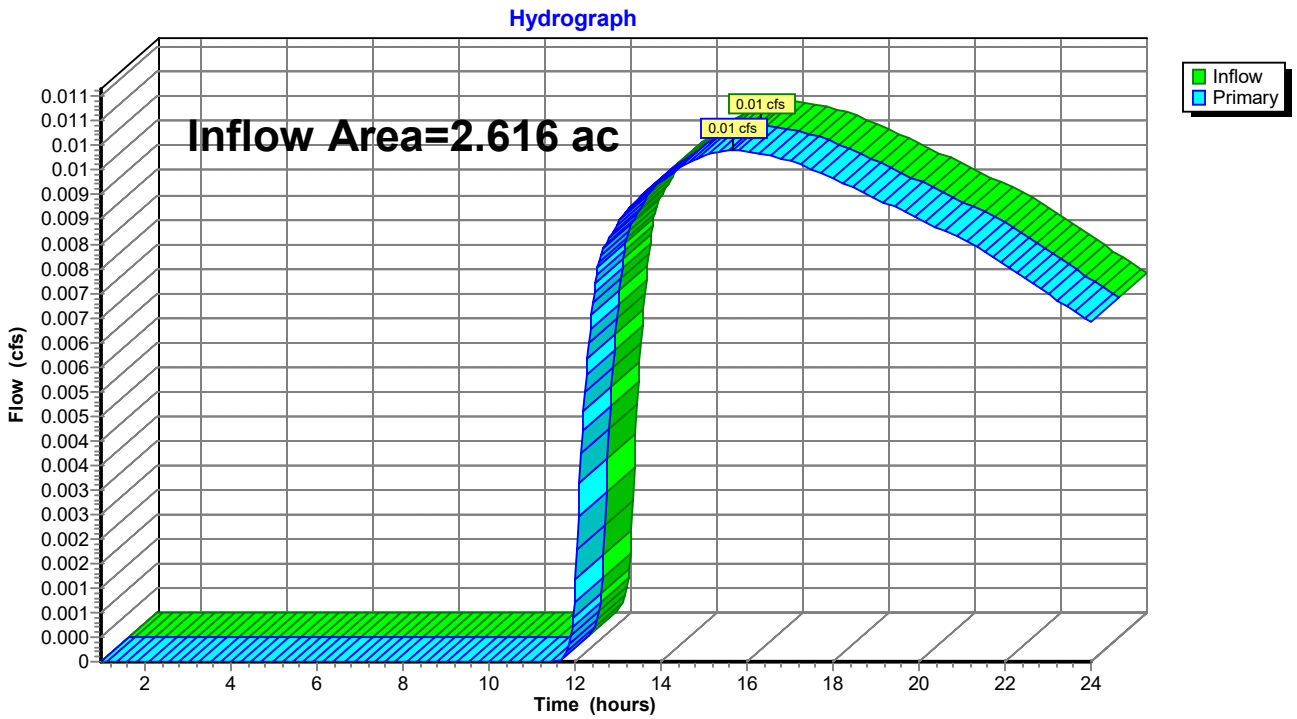


Summary for Link 2L: SP-2

Inflow Area = 2.616 ac, 36.98% Impervious, Inflow Depth > 0.04" for WQ event
Inflow = 0.01 cfs @ 15.70 hrs, Volume= 0.009 af
Primary = 0.01 cfs @ 15.70 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.01 hrs, dt= 0.03 hrs

Link 2L: SP-2



BRUNSWICK & TOPSHAM
WATER DISTRICT
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General Manager

Craig W. Douglas, PE
Assistant General Manager

T.C. Schofield, PE
District Engineer

Daniel O. Knowles, CPA
Director of Finance and
Data Management Systems

Joshua S. Cobb, PE
Director of Operations

September 24, 2020

Paul Monyok, PE
WBRC
44 Central Street
Bangor, ME 04401

Transmitted Via email: paul.monyok@wbrcae.com

RE: Brunswick Fire Station – Pleasant Street

Dear Mr. Monyok:

This letter is to inform you that the District has the ability to serve the referenced project and will provide service in accordance with Maine Public Utilities Commission and Brunswick & Topsham Water District Rules and Regulations.

We understand that the proposed facility will have a peak domestic demand of 160 gpm and an 8-inch fire service. Both the fire service and domestic service can be taken from the 16-inch main on Pleasant Street.

The District requires the customer or its authorized agent to make application for all new service and meter installation requests. An application form can be found on our website www.btwater.org.

Please keep us informed as this project progresses. If you have any questions, please call.

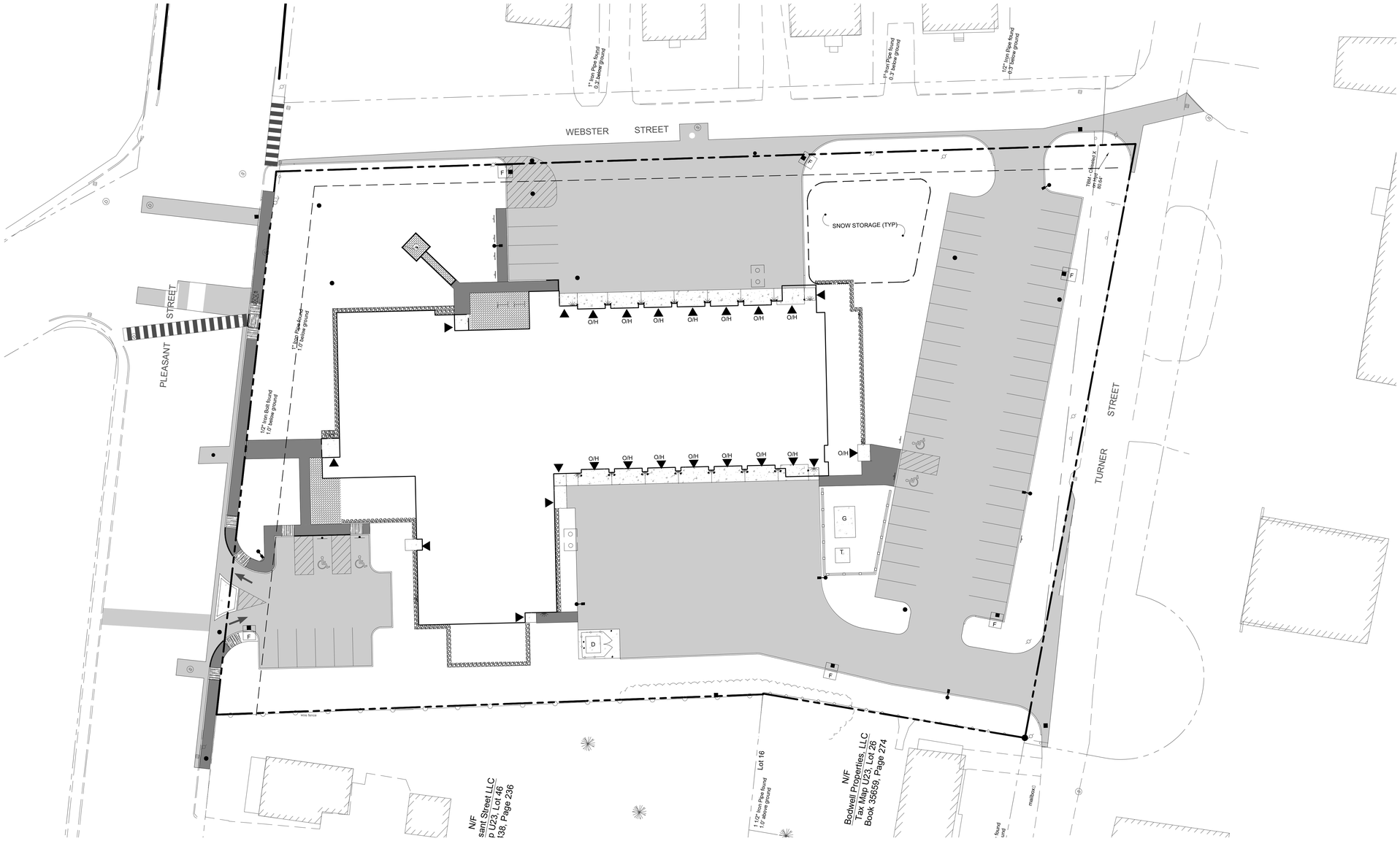
Yours truly,

T.C. Schofield

T.C. Schofield, PE
District Engineer

BRUNSWICK FIRE STATION

BRUNSWICK, MAINE



APPLICANT: TOWN OF BRUNSWICK
85 UNION STREET
BRUNSWICK, ME 04011
(207) 725-6659

WBRC
ARCHITECTS • ENGINEERS

BANGOR, MAINE
(207) 947-4511
PORTLAND, MAINE
(207) 828-4511
SARASOTA, FLORIDA
(941) 556-0757
WWW.WBRCAE.COM

THIS IS TO CERTIFY THAT AFTER REVIEWING THE SITE PLAN SUBMISSION INFORMATION FOR THE PROJECT SHOWN ON THE PLAN AND CONSIDERING EACH OF THE CRITERIA SET FORTH IN THE CITY ORDINANCE,THE UNDERSIGNED HAVE MADE FINDING OF FACT ESTABLISHING THAT THIS PLAN ALONG WITH ITS ADDITIONAL SUBMISSION MATERIAL HAS MET ALL THE CRITERIA SET FORTH AND THEREFORE THE SITE PLAN IS APPROVED..

APPROVED TOWN OF ORONO PLANNING BOARD.

PLANNING BOARD APPROVED ON: _____

CONDITIONS: _____

PLANNING BOARD SIGNED ON: _____

INDEX

DRAWING INDEX

GI001	COVER SHEET
C-001	SITE GENERAL NOTES AND ABBREVIATIONS
	BOUNDARY & TOPOGRAPHIC SURVEY

SITE DRAWINGS

CD101	SITE REMOVALS PLAN
CP101	SITE LAYOUT & MATERIALS PLAN
CG101	SITE GRADING & EROSION CONTROL PLAN
CU101	SITE SEWER, WATER, & GAS PLAN
ES101A	SITE PHOTOMETRIC PLAN
LP101	SITE PLANTING PLAN
C501	SITE DETAILS
C502	SITE DETAILS
C503	SITE DETAILS
C504	SITE DETAILS
C505	SITE DETAILS
SW101	PRE-STORMWATER PLAN
SW102	POST-STORMWATER PLAN

APPROVAL DRAWINGS
07.07.20

	SIGNATURE	DATE
OWNER :		
ARCHITECT :		
CONTRACTOR :		

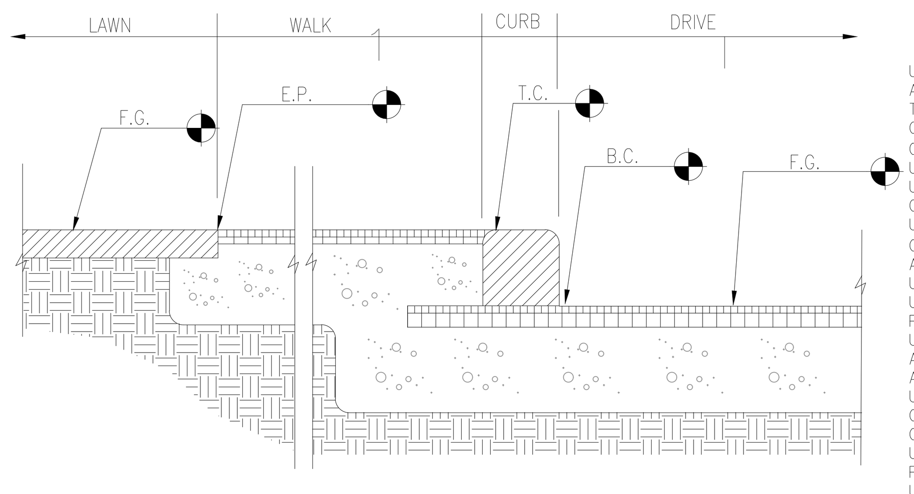
NOT FOR CONSTRUCTION

STATE OF MAINE
PAUL A. MONYOK
No. 11835
LICENSED
PROFESSIONAL ENGINEER

07.07.20

COMM. No.	SHEET No.
4219.01	GI001

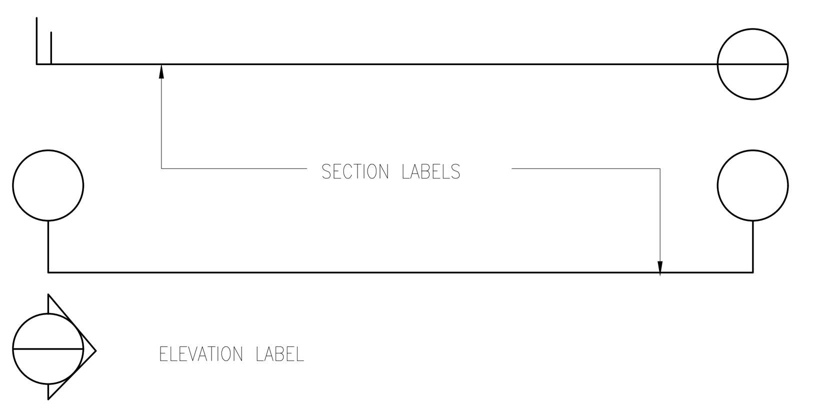
Jul 07, 2020 – 10:14pm
T:\02 Projects – Maine\4201-4300\4219.01 Brunswick Fire Station SD-CA\2 Design\Dwgs\Site\421901-GI001 – Local.dwg paul.monyok



SPOT ELEVATION REFERENCE INDEX

SYMBOLS

- BITUMINOUS PAVEMENT SECTION
- TOPSOIL, LOAM AND SEED, SOD
- GRANULAR FILL MATERIAL
- COARSE AGGREGATE
- UNDISTURBED NATIVE SOIL
- CONCRETE SECTION
- GENERAL FILL MATERIAL
- SAND OR STONE DUST
- RIGID INSULATION
- MULCH BED



REMOVALS NOTES

R1 THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL UTILITIES AND SHALL NOTIFY THE ARCHITECT OF UTILITIES DEVIATING FROM THOSE SHOWN ON THIS PLAN
R2 THE CONTRACTOR SHALL MEET THE REQUIREMENTS OF THE UTILITY COMPANIES WHEN INSTALLING WORK ON OR NEAR THEIR POLES.
R3 REMOVE ALL EXISTING PAVEMENT MARKINGS THAT CONFLICT WITH PROPOSED MARKINGS.
R4 ALL DEMOLITION DEBRIS AND REMOVALS SHALL BE DISPOSED OF OFFSITE AND IN CONFORMANCE WITH LOCAL AND STATE ORDINANCES
R5 TREE CANOPY AS SHOWN ON PLANS ARE APPROXIMATE AND SHOULD BE FIELD VERIFIED BY THE SITE CONTRACTOR

LAYOUT NOTES

L1 THE CONTRACTOR SHALL NOTIFY THE OWNER/ARCHITECT OF CONDITIONS VARYING FROM THOSE SHOWN ON THE DRAWING SHEET PRIOR TO CONTINUING WORK.
L2 THE CONTRACTOR SHALL EMPLOY A REGISTERED LAND SURVEYOR IN THE LAYOUT OF BUILDING, DRIVES AND SITE ELEMENTS.
L3 THE CONTRACTOR SHALL VERIFY AND CLEARLY MARK LOCATION OF ALL PROPERTY LINES PRIOR TO COMMENCING WORK.

GRADING NOTES

G1 TOPOGRAPHIC INFORMATION BASED ON A SURVEY BY OAK POINT ASSOCIATES & CES.
G2 BOUNDARY INFORMATION BASED ON A SURVEY BY PLISGA & DAY.
G3 ALL ELEVATIONS SHOWN HEREIN ARE BASED ON A SURVEY BY OAK POINT ASSOCIATES & CES.
G4 ALL TOPSOIL AND ORGANICS SHALL BE REMOVED FROM PAVEMENT AND BUILDING AREAS PRIOR TO CONSTRUCTION. THIS MATERIAL SHALL NOT BE USED AS GENERAL SITE FILL.
G5 FINISH GRADES ONE FOOT FROM BUILDING SHALL BE 8" BELOW FINISH FLOOR UNLESS OTHERWISE NOTED.
G6 FINISH GRADES OF SIDEWALKS AT BUILDING ENTRANCES SHALL BE FLUSH WITH FINISH FLOOR UNLESS OTHERWISE NOTED
G7 TEST PIT LOCATIONS ARE APPROXIMATE-REFER TO GEOTECHNICAL REPORT BOUND INTO SPECIFICATIONS (TBD).
G8 ALL DISTURBED AREAS NOT RECEIVING PAVEMENT, BUILDING, STONE DUST, COURSE AGGREGATE, ETC. SHALL RECEIVE 6" OF LOAM AND SEED UNLESS OTHERWISE NOTED.

UTILITY NOTES

E1 ALL UNDERGROUND SECONDARY SHALL BE RUN IN SCH. 40 CONDUIT UNLESS SPECIFIED OTHERWISE.
E2 ALL UNDERGROUND ELECTRICAL FOR SITE LIGHTING SHALL BE RUN IN SCH. 40 P.V.C. CONDUIT.
E3 ALL CABLE TELEVISION / TELEPHONE LINES SHALL BE RUN IN SCH. 40 P.V.C. CONDUIT.
E4 PROVIDE PULL WIRE IN ALL UNDERGROUND CONDUITS.
E5 MAINTAIN 2' - 6" COVER OVER CABLE TELEVISION/TELEPHONE.

S1 WHERE NEW WATER AND SEWER RUN SIDE BY SIDE, MAINTAIN A TEN FOOT (10') HORIZONTAL SEPARATION. WHERE THEY CROSS, MAINTAIN AN EIGHTEEN INCH (18") VERTICAL SEPARATION, WITH WATERLINE ABOVE SEWER. IF WITHIN 18" MIN. VERTICAL SEPARATION, ENCASE WATERLINE 10' EITHER SIDE OF SEWER IN CONC. 3,000 PSI MIN.
S2 SEWER SERVICE, WHEN ENTERING THE BUILDING, SHALL BE 6' - 0" BELOW FINISH FLOOR, UNLESS NOTED OTHERWISE.

W1 MAINTAIN A 5' - 6" MINIMUM COVER OVER WATER LINE.

U1 THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
U2 THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR TRENCHING AND BACKFILLING OF ALL CONDUIT. CONDUIT AND WIRING SHALL BE SUPPLIED AND INSTALLED BY ELECTRICAL CONTRACTOR.
U3 PRIOR TO ANY EARTHWORK ACTIVITIES, THE CONTRACTOR SHALL CONTACT CONTROLLING UTILITY CO., OR CALL "DIGSAFE" AT 1-888-DIG-SAFE. ANY UTILITIES ENCOUNTERED THAT ARE TO REMAIN IN PLACE OR BE ABANDONED SHALL BE DISCONNECTED AND TERMINATED IN ACCORDANCE WITH THE CONTROLLING UTILITY CO. AND NATIONALLY OR LOCALLY APPLICABLE CODES AND ORDINANCES.
U4 NO UTILITY TRENCH SHALL BE BACKFILLED UNTIL WORK HAS BEEN INSPECTED AND APPROVED BY PROJECT ENGINEER AND CONTROLLING UTILITY CO. OR DISTRICT
U5 ALL SANITARY SEWER LINE TO BE SDR 35 PVC MEETING ALL PERFORMANCE CHARACTERISTICS OF ASTM D3034. ALL PIPES AND FITTINGS SHALL HAVE PUSH-ON JOINTS WITH RUBBER GASKETS CONFORMING TO ASTM D1869 AND F477.
U6 ALL NEW WATER SERVICE LINE SHALL BE TYPE K COPPER MEETING ALL PERFORMANCE CHARACTERISTICS OF ASTM B-88-62 FOR TYPE K COPPER. ALL FITTINGS SHALL BE COMPRESSION TYPE.
U7 ALL NEW WATER SPRINKLER SERVICE SHALL BE CLASS 52 DUCTILE IRON MEETING ALL PERFORMANCE CHARACTERISTICS OF THE LATEST VERSION OF ASTM AND AWWA.
U8 THE FOLLOWING UTILITY COMPANIES ARE LOCATED WITHIN THE PROJECT SITE:
- EMERA MAINE
- CONSOLIDATED COMMUNICATIONS
- TIME WARNER

EROSION & SEDIMENTATION CONTROL PLAN

(PURSUANT TO 38 MRSA § 420-C)

ALL EROSION AND SEDIMENTATION CONTROL MEASURES ARE DESIGNED ACCORDING TO THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION'S MAINE EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES MANUAL, 2016. SEDIMENT CONTROL MEASURES MUST BE IN PLACE BEFORE ACTIVITY BEGINS. MEASURES MUST REMAIN IN PLACE AND FUNCTIONAL UNTIL THE SITE IS PERMANENTLY STABILIZED.

1. POLLUTION PREVENTION. MINIMIZE DISTURBED AREAS AND PROTECT NATURAL DOWN-GRADIENT BUFFER AREAS TO THE EXTENT PRACTICABLE. THE DISCHARGE MAY NOT RESULT IN EROSION OF ANY OPEN DRAINAGE CHANNELS, SWALES, UPLAND, OR COASTAL OR FRESHWATER WETLANDS. MINIMIZE DISTURBED AREAS THROUGH PHASING. IF WORK WITHIN AN AREA IS NOT ANTICIPATED TO BEGIN WITHIN TWO WEEKS TIME, LEAVE THE AREA IN ITS NATURALLY EXISTING COVER IF PRACTICABLE.
2. SEDIMENT BARRIERS. PRIOR TO CONSTRUCTION, PROPERLY INSTALL SEDIMENT BARRIERS AT THE EDGE OF ANY DOWN-GRADIENT DISTURBED AREA AND ADJACENT TO ANY DRAINAGE CHANNELS WITHIN THE DISTURBED AREA. MAINTAIN THE SEDIMENT BARRIERS UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED.
3. TEMPORARY STABILIZATION. STABILIZE WITH MULCH OR OTHER NON-ERODABLE COVER ANY EXPOSED SOILS THAT WILL NOT BE WORKED FOR MORE THAN 7 DAYS. STABILIZE AREAS WITHIN 75 FEET OF A WETLAND OR WATERBODY WITHIN 48 HOURS OF THE INITIAL DISTURBANCE OF THE SOIL OR PRIOR TO ANY STORM EVENT, WHICHEVER COMES FIRST.
4. REMOVAL OF TEMPORARY SEDIMENT CONTROL MEASURES. REMOVE ANY TEMPORARY SEDIMENT CONTROL MEASURES, SUCH AS SILT FENCE, WITHIN 30 DAYS AFTER PERMANENT STABILIZATION IS ATTAINED. REMOVE ANY ACCUMULATED SEDIMENTS AND STABILIZE. REMOVE SILT FENCE BY CUTTING THE FENCE MATERIALS AT GROUND LEVEL TO AVOID ADDITIONAL SOIL DISTURBANCE.
5. PERMANENT STABILIZATION. PERMANENTLY STABILIZE ALL DISTURBED AREAS THAT WILL NOT BE WORKED FOR MORE THAN ONE YEAR OR THAT HAVE BEEN BROUGHT TO FINAL GRADE BY PLANTING VEGETATION, SEEDING, SOD, OR THROUGH THE USE OF PERMANENT MULCH, OR RIPRAP, OR ROAD SUB-BASE. IF USING VEGETATION FOR STABILIZATION, SELECT THE PROPER VEGETATION FOR THE LIGHT, SOIL AND MOISTURE CONDITIONS; AMEND AREAS OF DISTURBED SUBSOILS WITH TOPSOIL, COMPOST, OR FERTILIZERS; PROTECT SEEDED AREAS WITH MULCH OR, IF NECESSARY, EROSION CONTROL BLANKETS; AND SCHEDULE SODDING, PLANTING, AND SEEDING TO AVOID DIE-OFF FROM SUMMER DROUGHT AND FALL FROSTS. NEWLY SEEDED OR SODDED AREAS MUST BE PROTECTED FROM VEHICLE TRAFFIC, EXCESSIVE PEDESTRIAN TRAFFIC, AND CONCENTRATED RUNOFF UNTIL THE VEGETATION IS WELL-ESTABLISHED. IF NECESSARY, AREAS MUST BE SEEDED AND MULCHED AGAIN IF GERMINATION IS SPARSE, PLANT COVERAGE IS SPOTTY, OR TOPSOIL EROSION IS EVIDENT. ONE OR MORE OF THE FOLLOWING MAY APPLY TO A PARTICULAR SITE.
   (A) SEEDED AREAS. FOR SEEDED AREAS, PERMANENT STABILIZATION MEANS A 90% COVER OF HEALTHY PLANTS WITH NO EVIDENCE OF WASHING OR RILLING OF THE TOPSOIL.
   (B) SODDED AREAS. FOR SODDED AREAS, PERMANENT STABILIZATION MEANS THE COMPLETE BINDING OF THE SOD ROOTS INTO THE UNDERLYING SOIL WITH NO SLUMPING OF THE SOD OR DIE-OFF.
   (C) PERMANENT MULCH. FOR MULCHED AREAS, PERMANENT MULCHING MEANS TOTAL COVERAGE OF THE EXPOSED AREA WITH AN APPROVED MULCH MATERIAL. EROSION CONTROL MIX MAY BE USED AS MULCH FOR PERMANENT STABILIZATION ACCORDING TO THE APPROVED APPLICATION RATES AND LIMITATIONS.
   (D) RIPRAP. FOR AREAS STABILIZED WITH RIPRAP, PERMANENT STABILIZATION MEANS THAT SLOPES STABILIZED WITH RIPRAP HAVE AN APPROPRIATE BACKING OF A WELL-GRADED GRAVEL OR APPROVED GEOTEXTILE TO PREVENT SOIL MOVEMENT FROM BEHIND THE RIPRAP. STONE MUST BE SIZED APPROPRIATELY. IT IS RECOMMENDED THAT ANGULAR STONE BE USED.
   (E) AGRICULTURAL USE. FOR CONSTRUCTION PROJECTS ON LAND USED FOR AGRICULTURAL PURPOSES (E.G., PIPELINES ACROSS CROP LAND), PERMANENT STABILIZATION MAY BE ACCOMPLISHED BY RETURNING THE DISTURBED LAND TO AGRICULTURAL USE.
   (F) PAVED AREAS. FOR PAVED AREAS, PERMANENT STABILIZATION MEANS THE PLACEMENT OF THE COMPACTED GRAVEL SUBBASE IS COMPLETED.
   (G) DITCHES, CHANNELS, AND SWALES. FOR OPEN CHANNELS, PERMANENT STABILIZATION MEANS THE CHANNEL IS STABILIZED WITH A 90% COVER OF HEALTHY VEGETATION, WITH A WELL-GRADED RIPRAP LINING, OR WITH ANOTHER NON-EROSIVE LINING SUCH AS CONCRETE OR ASPHALT PAVEMENT. THERE MUST BE NO EVIDENCE OF SLUMPING OF THE CHANNEL LINING, UNDERCUTTING OF THE CHANNEL BANKS, OR DOWN-CUTTING OF THE CHANNEL.
6. WINTER CONSTRUCTION. "WINTER CONSTRUCTION" IS CONSTRUCTION ACTIVITY PERFORMED DURING THE PERIOD FROM NOVEMBER 1 THROUGH APRIL 15. IF DISTURBED AREAS ARE NOT STABILIZED WITH PERMANENT MEASURES BY NOVEMBER 1 OR NEW SOIL DISTURBANCE OCCURS AFTER NOVEMBER 1, BUT BEFORE APRIL 15, THEN THESE AREAS MUST BE PROTECTED AND RUNOFF FROM THEM MUST BE CONTROLLED BY ADDITIONAL MEASURES AND RESTRICTIONS.

SPECIFICATIONS:

NATURAL RESOURCE PROTECTION ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCES, IF NOT STABILIZED WITH A MINIMUM OF 75 % MATURE VEGETATION CATCH, SHALL BE MULCHED BY DECEMBER 1 AND ANCHORED WITH PLASTIC NETTING OR PROTECTED WITH AN EROSION CONTROL COVER. DURING WINTER CONSTRUCTION, A DOUBLE ROW OF SEDIMENT BARRIERS (I.E. SILT FENCE BACKED WITH HAY BALES OR EROSION CONTROL MIX) WILL BE PLACED BETWEEN ANY NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE. EXISTING PROJECTS NOT STABILIZED BY DECEMBER 1 SHALL BE PROTECTED WITH THE SECOND LINE OF SEDIMENT BARRIER TO ENSURE FUNCTIONALITY DURING THE SPRING THAW AND RAINS.

SEDIMENT BARRIERS DURING FROZEN CONDITIONS, SEDIMENT BARRIERS MAY CONSIST OF EROSION CONTROL MIX BERMS OR ANY OTHER RECOGNIZED SEDIMENT BARRIERS AS FROZEN SOIL PREVENTS THE PROPER INSTALLATION OF HAY BALES OR SILT FENCES.

MULCHING ALL AREA SHALL BE CONSIDERED TO BE DENUDED UNTIL SEEDED AND MULCHED. HAY AND STRAW MULCH SHALL BE APPLIED AT A RATE OF 150 LB. PER 1,000 SQUARE FEET OR 3 TONS/ACRE (TWICE THE NORMAL ACCEPTED RATE OF 75-LBS./1,000 S.F. OR 1.5 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED. EROSION CONTROL MIX MUST BE APPLIED WITH A MINIMUM 4-INCH THICKNESS. MULCH SHALL NOT BE SPREAD ON TOP OF SNOW. THE SNOW WILL BE REMOVED DOWN TO A ONE-INCH DEPTH OR LESS PRIOR TO APPLICATION. AFTER EACH DAY OF FINAL GRADING, THE AREA WILL BE PROPERLY STABILIZED WITH ANCHORED HAY OR STRAW OR EROSION CONTROL MATTING. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED OR ADEQUATELY ANCHORED SO THAT GROUND SURFACE IS NOT VISIBLE THOUGH THE MULCH. BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15, ALL MULCH SHALL BE ANCHORED BY EITHER MULCH NETTING, ASPHALT EMULSION CHEMICAL, TRACKING OR WOOD CELLULOSE FIBER. THE COVER WILL BE CONSIDERED SUFFICIENT WHEN THE GROUND SURFACE IS NOT VISIBLE THOUGH THE MULCH. AFTER NOVEMBER 1ST, MULCH AND ANCHORING OF ALL EXPOSED SOIL SHALL OCCUR AT THE END OF EACH FINAL GRADING WORKDAY.

SOIL STOCKPILING STOCKPILES OF SOIL OR SUBSOIL WILL BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR WITH A FOUR-INCH LAYER OF EROSION CONTROL MIX. THIS WILL BE DONE WITHIN 24 HOURS OF STOCKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL OR SNOWFALL. ANY SOIL STOCKPILE WILL NOT BE PLACED (EVEN COVERED WITH MULCHED) WITHIN 100 FEET FROM ANY NATURAL RESOURCES.

SEEDING BETWEEN THE DATES OF OCTOBER 15 AND APRIL 1ST, LOAM OR SEED WILL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES FINISHED AREAS SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1ST AND IF THE EXPOSED AREA HAS BEEN LOOMED, FINAL GRADED WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED. DORMANT SEEDING MAY BE PLACED PRIOR TO THE PLACEMENT OF MULCH OR EROSION CONTROL BLANKETS. IF DORMANT SEEDING IS USED FOR THE SITE, ALL DISTURBED AREAS SHALL RECEIVE 4' OF LOAM AND SEED AT AN APPLICATION RATE OF 5LBS/1000 S.F. ALL AREAS SEEDED DURING THE WINTER WILL BE INSPECTED IN THE SPRING FOR ADEQUATE CATCH. ALL AREAS INSUFFICIENTLY VEGETATED (LESS THAN 75 % CATCH) SHALL BE REVEGETATED BY REPLACING LOAM, SEED AND MULCH. IF DORMANT SEEDING IS NOT USED FOR THE SITE, ALL DISTURBED AREAS SHALL BE REVEGETATED IN THE SPRING.

OVERWINTER STABILIZATION OF DITCHES AND CHANNELS ALL STONE-LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED AND STABILIZED BY NOVEMBER 15. ALL GRASS-LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED AND STABILIZED BY SEPTEMBER 1. IF A DITCH OR CHANNEL IS NOT GRASS-LINED BY SEPTEMBER 1, THEN ONE OF THE FOLLOWING ACTIONS MUST BE TAKEN TO STABILIZE THE DITCH FOR LATE FALL AND WINTER. INSTALL A SOD LINING IN THE DITCH: A DITCH MUST BE LINED WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES: PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL, AND ANCHORING SOD AT THE BASE OF THE DITCH WITH JUTE OR PLASTIC MESH TO PREVENT THE SOD FROM SLOUGHING DURING FLOW CONDITIONS. INSTALL A STONE LINING IN THE DITCH: A DITCH MUST BE LINED WITH STONE RIPRAP BY NOVEMBER 15. A REGISTERED PROFESSIONAL ENGINEER MUST BE HIRED TO DETERMINE THE STONE SIZE AND LINING THICKNESS NEEDED TO WITHSTAND THE ANTICIPATED FLOW VELOCITIES AND FLOW DEPTHS WITHIN THE DITCH. IF NECESSARY, THE CONTRACTOR WILL REGRADE THE DITCH PRIOR TO PLACING THE STONE LINING SO TO PREVENT THE STONE LINING FROM REDUCING THE DITCH'S CROSS-SECTIONAL AREA.

OVERWINTER STABILIZATION OF DISTURBED SLOPES ALL STONE-COVERED SLOPES MUST BE CONSTRUCTED AND STABILIZED BY NOVEMBER 15. AND ALL SLOPES TO BE VEGETATED MUST BE SEEDED AND MULCHED BY SEPTEMBER 1. THE DEPARTMENT WILL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 15% TO BE A SLOPE. IF A SLOPE TO BE VEGETATED IS NOT STABILIZED BY SEPTEMBER 1, THEN ONE OF THE FOLLOWING ACTIONS MUST BE TAKEN TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER. STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS -- BY OCTOBER 1 THE DISTURBED SLOPE MUST BE SEEDED WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET AND THEN INSTALL EROSION CONTROL MATS OR ANCHORED MULCH OVER THE SEEDING. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE SLOPE BY NOVEMBER 1, THEN THE CONTRACTOR WILL COVER THE SLOPE WITH A LAYER OF EROSION CONTROL MIX OR WITH STONE RIPRAP AS DESCRIBED IN THE FOLLOWING STANDARDS. STABILIZE THE SOIL WITH SOD -- THE DISTURBED SLOPE MUST BE STABILIZED WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE CONTRACTOR PINNING THE SOD ONTO THE SLOPE WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE CONTRACTOR WILL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V) OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE. STABILIZE THE SOIL WITH EROSION CONTROL MIX - EROSION CONTROL MIX MUST BE PROPERLY INSTALLED BY NOVEMBER 15. THE CONTRACTOR WILL NOT USE EROSION CONTROL MIX TO STABILIZE SLOPES HAVING GRADES GREATER THAN 50% (2H:1V) OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE. STABILIZE THE SOIL WITH STONE RIPRAP -- PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15. THE DEVELOPMENT'S REGISTERED PROFESSIONAL ENGINEER IS TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY ON THE SLOPE AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

OVERWINTER STABILIZATION OF DISTURBED SOILS BY SEPTEMBER 15, ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15% MUST BE SEEDED AND MULCHED. IF THE DISTURBED AREAS ARE NOT STABILIZED BY THIS DATE, THEN ONE OF THE FOLLOWING ACTIONS MUST BE TAKEN TO STABILIZE THE SOIL FOR LATE FALL AND WINTER. STABILIZE THE SOIL WITH TEMPORARY VEGETATION -- BY OCTOBER 1, SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 1, THEN MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED BELOW. STABILIZE THE SOIL WITH SOD -- STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. STABILIZE THE SOIL WITH MULCH -- BY NOVEMBER 15, MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. IMMEDIATELY AFTER APPLYING THE MULCH, ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

MAINTENANCE:

MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION SEASON. AFTER EACH RAINFALL, SNOW STORM OR PERIOD OF THAWING AND RUNOFF, THE SITE CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES AND PERFORM REPAIRS AS NEEDED TO INSURE THEIR CONTINUOUS FUNCTION. FOLLOWING THE TEMPORARY AND/OR FINAL SEEDING AND MULCHING, THE CONTRACTOR SHALL, IN THE SPRING, INSPECT AND REPAIR ANY DAMAGES AND/OR BARE SPOTS. AN ESTABLISHED VEGETATIVE COVER MEANS A MINIMUM OF 85 TO 90 % OF AREAS VEGETATED WITH VIGOROUS GROWTH.

STABILIZATION SCHEDULE BEFORE WINTER:

SEPTEMBER 15 ALL DISTURBED AREAS MUST BE SEEDED AND MULCHED. ALL SLOPES MUST BE STABILIZED, SEEDED AND MULCHED. ALL GRASS-LINED DITCHES AND CHANNELS MUST BE STABILIZED WITH MULCH OR AN EROSION CONTROL BLANKET.

OCTOBER 1 IF THE SLOPE IS STABILIZED WITH AN EROSION CONTROL BLANKET AND SEEDED. ALL DISTURBED AREAS TO BE PROTECTED WITH AN ANNUAL GRASS MUST BE SEEDED AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET AND MULCHED.

NOVEMBER 15 ALL STONE-LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED AND STABILIZED. SLOPES THAT ARE COVERED WITH RIPRAP MUST BE CONSTRUCTED BY THAT DATE.

DECEMBER 1 ALL DISTURBED AREAS WHERE THE GROWTH OF VEGETATION FAILS TO BE AT LEAST THREE INCHES TALL OR AT LEAST 75% OF THE DISTURBED SOIL IS COVERED BY VEGETATION, MUST BE PROTECTED FOR OVER-WINTER.

NOTE: THE DATES GIVEN ARE FOR PROJECTS IN SOUTH-CENTRAL MAINE. ADJUST THE DATES GIVEN BASED ON THE PROJECT'S LOCATION WITHIN THE STATE - REDUCING TIMES UP TO THREE WEEKS FOR PROJECT'S IN NORTHERN MAINE AND EXTENDING TIMES UP TO TWO WEEKS FOR PROJECT'S ON THE COAST IN EXTREME SOUTHERN MAINE.

7. STORMWATER CHANNELS. DITCHES, SWALES, AND OTHER OPEN STORMWATER CHANNELS MUST BE CONSTRUCTED AND STABILIZED USING MEASURES THAT ACHIEVE LONG-TERM EROSION CONTROL. EACH CHANNEL SHOULD BE CONSTRUCTED IN SECTIONS SO THAT THE SECTION'S GRADING, SHAPING, AND INSTALLATION OF THE PERMANENT LINING CAN BE COMPLETED THE SAME DAY. IF A CHANNEL'S FINAL GRADING OR LINING INSTALLATION MUST BE DELAYED, THEN DIVERSION BERMS MUST BE USED TO DIVERT STORMWATER AWAY FROM THE CHANNEL, PROPERLY-SPACED CHECK DAMS MUST BE INSTALLED IN THE CHANNEL TO SLOW THE WATER VELOCITY, AND A TEMPORARY LINING INSTALLED ALONG THE CHANNEL TO PREVENT SCOURING.
8. ROADS. GRAVEL AND PAVED ROADS MUST BE CONSTRUCTED WITH CROWNS OR OTHER MEASURES, SUCH AS WATER BARS, TO ENSURE THAT STORMWATER IS DELIVERED IMMEDIATELY TO ADJACENT STABLE DITCHES, VEGETATED BUFFER AREAS, CATCH BASIN INLETS, OR STREET GUTTERS.
9. CULVERTS. CULVERT INLETS MUST BE PROTECTED WITH APPROPRIATE MATERIALS AND PROTECTION MUST EXTEND AT LEAST AS HIGH AS THE EXPECTED MAXIMUM ELEVATION OF STORAGE BEHIND THE CULVERT. CULVERT OUTLETS MUST INCORPORATE MEASURES, SUCH AS APRONS OR PLUNGE POOLS, TO PREVENT SCOUR OF THE STREAM CHANNEL.
10. PARKING AREAS. PARKING AREAS MUST BE CONSTRUCTED TO ENSURE RUNOFF IS DELIVERED TO ADJACENT SWALES, CATCH BASINS, CURB GUTTERS, OR BUFFER AREAS WITHOUT ERODING AREAS DOWNSLOPE. THE PARKING AREA'S SUBBASE COMPACTION AND GRADING MUST BE DONE TO ENSURE RUNOFF IS EVENLY DISTRIBUTED TO ADJACENT BUFFERS OR SIDE SLOPES. CATCH BASINS MUST BE LOCATED AND SET TO PROVIDE ENOUGH STORAGE DEPTH AT THE INLET TO ALLOW INFLOW OF PEAK RUNOFF RATES WITHOUT BY-PASS OF RUNOFF TO OTHER AREAS.

INSPECTION AND MAINTENANCE PLAN

1. DURING CONSTRUCTION. THE FOLLOWING STANDARDS MUST BE MET DURING CONSTRUCTION:
   (A) INSPECTION AND CORRECTIVE ACTION. INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION CONTROL MEASURES, MATERIALS STORAGE AREAS THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE. INSPECT THESE AREAS AT LEAST ONCE A WEEK AS WELL AS BEFORE AND AFTER A STORM EVENT, AND PRIOR TO COMPLETING PERMANENT STABILIZATION MEASURES. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS.
   (B) MAINTENANCE. MAINTAIN ALL MEASURES IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED. IF BEST MANAGEMENT PRACTICES (BMPS) NEED TO BE MAINTAINED OR MODIFIED, ADDITIONAL BMPS ARE NECESSARY, OR OTHER CORRECTIVE ACTION IS NEEDED, IMPLEMENTATION MUST BE COMPLETED WITHIN 7 CALENDAR DAYS AND PRIOR TO ANY STORM EVENT (RAINFALL).
   (C) DOCUMENTATION. KEEP A LOG (REPORT) SUMMARIZING THE INSPECTIONS AND ANY CORRECTIVE ACTION TAKEN. THE LOG MUST INCLUDE THE NAME(S) AND QUALIFICATIONS OF THE PERSON MAKING THE INSPECTIONS, THE DATE(S) OF THE INSPECTIONS, AND MAJOR OBSERVATIONS ABOUT THE OPERATION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS, MATERIALS STORAGE AREAS, AND VEHICLES ACCESS POINTS TO THE PARCEL. MAJOR OBSERVATIONS MUST INCLUDE BMPS THAT NEED MAINTENANCE, BMPS THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION, AND LOCATION(S) WHERE ADDITIONAL BMPS ARE NEEDED. FOR EACH BMP REQUIRING MAINTENANCE, BMP NEEDING REPLACEMENT, AND LOCATION NEEDING ADDITIONAL BMPS, NOTE IN THE LOG THE CORRECTIVE ACTION TAKEN AND WHEN IT WAS TAKEN. THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY MUST BE PROVIDED UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST THREE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

HOUSEKEEPING PLAN

1. SPILL PREVENTION. CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM BEING DISCHARGED FROM MATERIALS ON SITE, INCLUDING STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER, AND APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING AND IMPLEMENTATION.
2. GROUNDWATER PROTECTION. DURING CONSTRUCTION, LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO AN INFILTRATION AREA. AN "INFILTRATION AREA" IS ANY AREA OF THE SITE THAT BY DESIGN OR AS A RESULT OF SOILS, TOPOGRAPHY AND OTHER RELEVANT FACTORS ACCUMULATES RUNOFF THAT INFILTRATES INTO THE SOIL. DIKES, BERMS, SUMPS, AND OTHER FORMS OF SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS.
3. FUGITIVE SEDIMENT AND DUST. ACTIONS MUST BE TAKEN TO ENSURE THAT ACTIVITIES DO NOT RESULT IN NOTICEABLE EROSION OF SOILS OR FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION. OIL MAY NOT BE USED FOR DUST CONTROL.
   NOTE: AN EXAMPLE OF THE USE OF BMPS TO CONTROL FUGITIVE SEDIMENT AND DUST IS AS FOLLOWS. OPERATIONS DURING WET MONTHS THAT EXPERIENCE TRACKING OF MUD OFF THE SITE ONTO PUBLIC ROADS SHOULD PROVIDE FOR SWEEPING OF ROAD AREAS AT LEAST ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS. WHERE CHRONIC MUD TRACKING OCCURS, A STABILIZED CONSTRUCTION ENTRANCE SHOULD BE PROVIDED. OPERATIONS DURING DRY MONTHS, THAT EXPERIENCE FUGITIVE DUST PROBLEMS, SHOULD WET DOWN THE ACCESS ROADS ONCE A WEEK OR MORE FREQUENTLY AS NEEDED.
   NOTE: DEWATERING A STREAM WITHOUT A PERMIT FROM THE DEPARTMENT VIOLATES STATE WATER QUALITY STANDARDS AND THE NATURAL RESOURCES PROTECTION ACT.
4. DEBRIS AND OTHER MATERIALS. LITTER, CONSTRUCTION DEBRIS, AND CHEMICALS EXPOSED TO STORMWATER MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.
   NOTE: TO PREVENT THESE MATERIALS FROM BECOMING A SOURCE OF POLLUTANTS, CONSTRUCTION AND POST-CONSTRUCTION ACTIVITIES RELATED TO A PROJECT MAY BE REQUIRED TO COMPLY WITH APPLICABLE PROVISION OF RULES RELATED TO SOLID, UNIVERSAL, AND HAZARDOUS WASTE, INCLUDING, BUT NOT LIMITED TO, THE MAINE SOLID WASTE AND HAZARDOUS WASTE MANAGEMENT RULES; MAINE HAZARDOUS WASTE MANAGEMENT RULES; MAINE OIL CONVEYANCE AND STORAGE RULES; AND MAINE PESTICIDE REQUIREMENTS.
5. TRENCH OR FOUNDATION DE-WATERING. TRENCH DE-WATERING IS THE REMOVAL OF WATER FROM TRENCHES, FOUNDATIONS, COFFERDAMS, PONDS, AND OTHER AREAS WITHIN THE CONSTRUCTION AREA THAT RETAIN WATER AFTER EXCAVATION. IN MOST CASES THE COLLECTED WATER IS HEAVILY SILTED AND HINDERS CORRECT AND SAFE CONSTRUCTION PRACTICES. THE COLLECTED WATER MUST BE REMOVED FROM THE PONDED AREA, EITHER THROUGH GRAVITY OR PUMPING, AND MUST BE SPREAD THROUGH NATURAL WOODED BUFFERS OR REMOVED TO AREAS THAT ARE SPECIFICALLY DESIGNED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE, LIKE A COFFERDAM SEDIMENTATION BASIN. AVOID ALLOWING THE WATER TO FLOW OVER DISTURBED AREAS OF THE SITE. EQUIVALENT MEASURES MAY BE TAKEN IF APPROVED BY THE DEPARTMENT.

SITE DEFINITION

1. POSITIVE DRAINAGE SHALL MEAN PROVIDING A MINIMUM DOWN GRADIENT SLOPE OF ONE PERCENT TO A REFERENCED STRUCTURE OR VEGETATIVE SWALE UNLESS OTHERWISE NOTED.

SITE ABBREVIATIONS

∅	DIAMETER	GA.	GAUGE
ACP	ASBESTOS CEMENT PIPE	GALV.	GALVANIZED
ADD. ALT.	ADDITIVE ALTERNATE BID ITEM	GPM	GALLONS PER MINUTE
AE	AERIAL ELECTRIC	GRAN	GRANULAR
ARCH.	ARCHITECTURAL	G.V.	GATE VALVE
		G	GAS
B.C.	BOTTOM OF CURB		
BIT.	BITUMINOUS	H.C.	HANDICAP
BLDG.	BUILDING	HORIZ., HOR.	HORIZONTAL
BOT.	BOTTOM	HPS	HIGH PRESSURE SODIUM
BW	BOTTOM OF WALL	HMA	HOT MIX ASPHALT
		HDPE	HIGH DENSITY POLYETHYLENE
℄	CENTERLINE		
CB	CATCH BASIN	I.D.	IDENTIFICATION, INSIDE DIAMETER
C.I.	CAST IRON, CONTRACTOR INST'D.	I.E.	INVERT ELEVATION
C.I.P.	CAST IN PLACE	INV.	INVERT
CMP	CORRUGATED METAL PIPE, CENTRAL MAINE POWER	INSUL.	INSULATION
C	CENTER	LBS.	POUNDS
C.O.	CLEANOUT	LF	LINEAR FEET
CONC.	CONCRETE	LED	LIGHT EMITTING DIODE
CPP	CORRUGATED PLASTIC PIPE	LPS	LOW PRESSURE SODIUM
CTV	CABLE TELEVISION	L	LENGTH
CFS	CUBIC FEET PER SECOND		
		MAS	MASONRY
D.I.	DITCH INVERT, DUCTILE IRON	MATL.	MATERIAL
DTL.	DETAIL	MAX.	MAXIMUM
DIA. ∅	DIAMETER	MH	MANHOLE
DIM.	DIMENSION	MIN	MINIMUM
DMH	DRAIN MANHOLE,DROP MANHOLE	MISC.	MISCELLANEOUS
DN	DOWN		
DWG	DRAWING	N	NORTH, NEW UTILITY
		N.I.C.	NOT IN CONTRACT
E	EAST	NFD	NEW FOUNDATION DRAIN
E.P.	EDGE OF PAVEMENT	NFM	NEW FORCE MAIN
E.L. ELEV.	ELEVATION	NGAS	NATURAL GAS
EQ.	EQUAL	NOM.	NOMINAL
EXIST.	EXISTING	NO.	NUMBER
EXP.	EXPANSION	NRD	NEW ROOF DRAIN
		NSS	NEW SANITARY SEWER
FD	FOOTING DRAIN	NSD	NEW STORM DRAIN
F.G.	FINISH GRADE	NTS	NOT TO SCALE
F.H.	FIRE HYDRANT	NUE	NEW UNDERGROUND ELECTRIC
FIN.	FINISH	NUD	NEW UNDERDRAIN
F.F.	FINISH FLOOR	NUP	NEW UNDERGROUND PRIMARY
FPM	FEET PER MINUTE	NUS	NEW UNDERGROUND SECONDARY
FT.	FEET	NW	NEW WATER LINE
FTG.	FOOTING		

SITE ABBREVIATIONS CONT.

OC	ON CENTER
OS/OI	OWNER SUPPLIED/OWNER INST'D
OE	OVERHEAD ELECTRIC
OHW	OVERHEAD WIRE
PVMT.	PAVEMENT
PERF.	PERFORATED
PB	PULL BOX
PI	POINT OF INTERSECTION
P & I	PROVIDE AND INSTALL
PRELIM	PRELIMINARY
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
P.C.	POINT OF TANGENT
PT	POINT
PVC	POLYVINYL CHLORIDE
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
REQ'D	REQUIRED
S	SEWER
SS	SANITARY SEWER
SCH	SCHEDULE
SD	STORM DRAIN
SIM.	SIMILAR
SMH	SEWER MANHOLE
SPECS	SPECIFICATIONS
SQ.	SQUARE
S.F.	SQUARE FEET
STA.	STATION
STYRO.	STYROFOAM
TBM	TEMPORARY BENCH MARK
TEL	TELEPHONE
T.O.W.	TOP OF WALL
T.C.	TOP OF CURB
TEMP.	TEMPORARY
THK.	THICK
TV	TELEVISION
TYP	TYPICAL
T.S.	TOP OF SLAB
UE	UNDERGROUND ELECTRIC
US	UNDERGROUND SECONDARY
UP	UNDERGROUND PRIMARY
VERT., VER.	VERTICAL
W	WATER
W/	WITH
W/O	WITHOUT
WSO	WATER SHUTOFF (CURB STOP OR GATE VALVE)
W.W.F.	WELDED WIRE FABRIC
W V	WATER SHUT OFF / GATE VALVE

REV.	DESCRIPTION	DATE
0	95% QA/QC	04.17.20

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PROJECT: BRUNSWICK FIRE STATION
BRUNSWICK, MAINE

SHEET TITLE: SITE GENERAL NOTES PLAN

WBRC CAD FILE:	421900-C001.DWG
PROJECT No.	4219.00
SCALE:	1"=20'
PROJECT MANAGER:	MLW
DRAWN BY:	TDP
CHECKED BY:	PAM

GRAPHIC SCALE: 0" 1"

SHEET No. C-001

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FILE NAME: T:\02 Projects - Maine\4201-4300\421901 Brunswick Fire Station SD-CA\2 Design\Dwgs\Site\421900-C001.dwg LAYOUT NAME: C001 SITE GENERAL NOTES PLOTTED: Friday, May 08, 2020 - 4:53pm USER: paul.monyok
May 08, 2020 - 4:53pm
T:\02 Projects - Maine\4201-4300\421901 Brunswick Fire Station SD-CA\2 Design\Dwgs\Site\421900-C001.dwg paul.monyok

LEGEND

EXISTING		PROPOSED
	TREES	
	LIMITS OF WETLAND	
	UTILITY POLE	
	STREET LIGHTING	
	BUILDING LIGHTING	
	WATER SHUTOFF / GATE VALVE	
	TRANSFORMER PAD	
	DUMPSTER	
	MANHOLE	
	SEWER MANHOLE	
	CATCH BASIN	
	FIRE HYDRANT	
	SIGN	
	FENCING	
	PAVEMENT	
	PROPERTY SETBACK	
	PROPERTY LINE	
	ABUTTING PROPERTY LINE	
	TREE LINE	

REV.	DESCRIPTION	DATE
0	SCHEMATIC DESIGN	01.10.20

NORTH

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PROJECT: BRUNSWICK FIRE STATION
BRUNSWICK, MAINE

SHEET TITLE: SITE REMOVALS PLAN

WBRC CAD FILE:	421900-SP101.DWG
PROJECT No.	4219.00
SCALE:	1"=20'
PROJECT MANAGER:	MLW
DRAWN BY:	TDP
CHECKED BY:	PAM
GRAPHIC SCALE:	0" 1"
SHEET No.	SW101

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Jan 07, 2020 - 4:11pm
T:\02 Projects - Maine\421-4300\421901 Brunswick Fire Station SD-Bid\2 Design\Dwgs\Site\421900-SP101.dwg tyler.peabody

REMOVALS NOTES:

1. SEE NOTES R1 THROUGH R5 ON SHEET C-001 FOR ADDITIONAL REMOVALS INFORMATION.

2. CLEARING LIMITS SHALL EXTEND ONLY TO SUCH A POINT NECESSARY TO COMPLETE EARTHWORK ACTIVITIES.

3. THE UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE AND IS BASED ON TOWN OF BRUNSWICK GIS DATA. THE SITE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES PRIOR TO BEGINNING ANY SITE CLEARING, GRUBBING AND EARTHWORK ACTIVITIES.

4. ALL SOIL AND EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO THE COMMENCEMENT OF ANY WORK. SEE CG101 FOR MORE INFORMATION. THE SITE CONTRACTOR IS RESPONSIBLE FOR INSPECTING AND MAINTAINING ALL SOIL AND EROSION CONTROL MEASURES.

5. SOME TREE TRIMMING NOT SHOWN ON THIS PLAN MAY BE NECESSARY FOR CONSTRUCTION PURPOSES. THE SITE CONTRACTOR SHOULD EVALUATE AND SCHEDULE ACCORDINGLY.

LEGEND

EXISTING		PROPOSED
	TREE REMOVALS	
	LIMITS OF WETLAND	
	UTILITY POLE	
	STREET LIGHTING	
	BUILDING LIGHTING	
	WATER SHUTOFF / GATE VALVE	
	TRANSFORMER PAD	
	DUMPSTER	
	MANHOLE	
	SEWER MANHOLE	
	CATCH BASIN	
	FIRE HYDRANT	
	SIGN	
	FENCING	
	PAVEMENT REMOVALS	
	LIMITS OF CONSTRUCTION	LW
	PROPERTY SETBACK	
	PROPERTY LINE	
	ABUTTING PROPERTY LINE	
	TREE LINE	

REV.	DESCRIPTION	DATE
0	95% QA/QC	04.17.20

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PROJECT: BRUNSWICK FIRE STATION
BRUNSWICK, MAINE

SHEET TITLE: SITE REMOVALS PLAN

WBRC CAD FILE:	421900-SP101.DWG
PROJECT No.	4219.00
SCALE:	1"=20'
PROJECT MANAGER:	MLW
DRAWN BY:	TDP
CHECKED BY:	PAM

GRAPHIC SCALE 0" 1"

SHEET No. CD101

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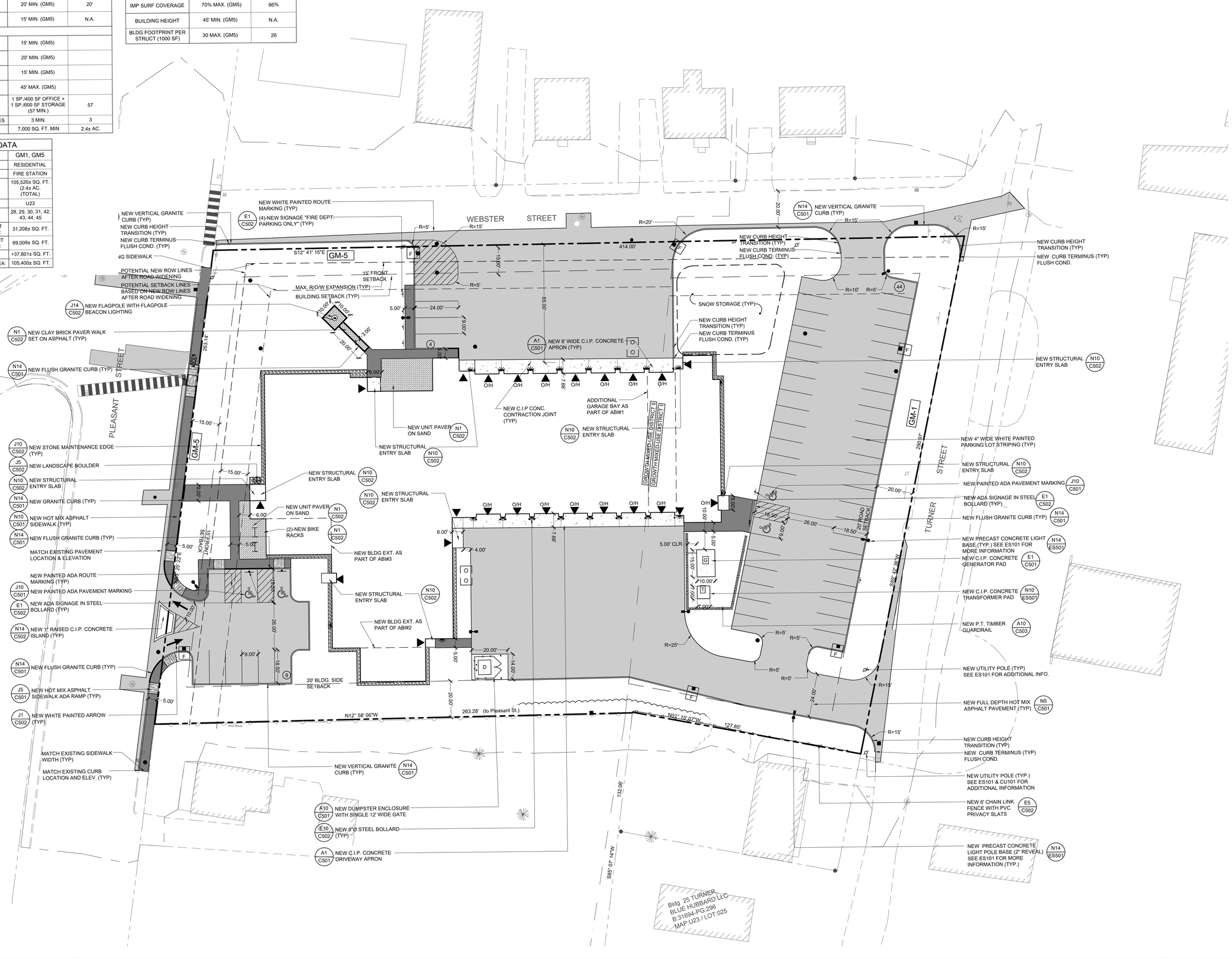
May 08, 2020 – 3:14pm
T:\02 Projects – Maine\4201-4300\421901 Brunswick Fire Station SD-CA\2 Design\Dwgs\Site\421900-SP101.dwg paul.monyok

PERMITTING DATA		
ITEM	REQUIRED	PROPOSED
BUILDING SETBACK		
FRONT SETBACK	15' MIN. (GM5)	36.35' MIN.
SIDE SETBACK	20' MIN. (GM5)	20'
REAR SETBACK	15' MIN. (GM5)	N.A.
PARKING SETBACK		
FRONT SETBACK	15' MIN. (GM5)	
SIDE SETBACK	20' MIN. (GM5)	
REAR SETBACK	15' MIN. (GM5)	
BUILDING HEIGHT	45' MAX. (GM5)	
PARKING SPACES	1 SP./400 SF OFFICE + 1 SP./600 SF STORAGE (57 MIN.)	57
H.C. PARKING SPACES	3 MIN.	3
LOT SIZE	7,000 SQ. FT. MIN	2.4± AC.

PERMITTING DATA		
ITEM	REQUIRED	PROPOSED
LOT WIDTH	75 MIN. (GM5)	264' PLEASANT
IMP SURF COVERAGE	70% MAX. (GM5)	66%
BUILDING HEIGHT	45' MIN. (GM5)	N.A.
BLDG FOOTPRINT PER STRUCT (1000 SF)	30 MAX. (GM5)	26

LOT DATA	
ZONE:	GM1, GM5
EXISTING USE:	RESIDENTIAL
PROPOSED USE:	FIRE STATION
LOT SIZE:	105,520± SQ. FT. (2.4± AC. (TOTAL)
TAX MAP #:	U23
LOT #:	28, 29, 30, 31, 42, 43, 44, 45
PRE DEVELOPMENT IMPERVIOUS AREA:	31,208± SQ. FT.
POST DEVELOPMENT IMPERVIOUS AREA:	69,009± SQ. FT.
NET CHANGE:	+37,801± SQ. FT.
NET DISTURBED AREA:	105,400± SQ. FT.



LAYOUT NOTES:

1. SEE NOTES L1 THROUGH L3 ON SHEET C-001 FOR ADDITIONAL LAYOUT INFORMATION.
2. ALL CURB RADII SHALL BE 5' UNLESS OTHERWISE NOTED.
3. COORDINATE ALL SIDEWALK LOCATIONS WITH ARCH. AND STRUCTURAL DRAWINGS TO VERIFY NEW EXTERIOR DOOR LOCATIONS. FIELD ADJUST AS REQUIRED.
4. REFER TO STRUCTURAL SHEETS FOR NEW FOUNDATION LAYOUT. COORDINATE LAYOUT WITH FOUNDATION CONTRACTOR.
5. SEE SHEET CU101 FOR ADDITIONAL INFORMATION RELATED TO THE LAYOUT OF SITE LIGHTS AND UTILITY POLES AND THEIR RESPECTIVE CONDUIT AND WIRING. COORDINATE LAYOUT WITH THE ELECTRICAL CONTRACTOR.

LEGEND

EXISTING		PROPOSED
	LIMITS OF WETLAND	
	UTILITY POLE	
	STREET LIGHTING	
	BUILDING LIGHTING	
	WATER SHUTOFF / GATE VALVE	
T	TRANSFORMER PAD	T
D	DUMPSTER	D
MH	MANHOLE	
SM	SEWER MANHOLE	
	CATCH BASIN	
	FIRE HYDRANT	
	SIGN	
	FENCING	
	P.T. GUARD RAIL	
	PAVEMENT	
	SIDEWALK	
	VERT. SLIPFORM CONC. CURB	
	GRANITE CURB	
	PRECAST CONC. WHEEL STOP	
	GEO BLOCK RETAINING WALL	
	CIP CONCRETE RETAINING WALL	
	WOOD CHIP PLAY AREA	
	COARSE AGGREGATE	
	CENTERLINE	
	CONTROL PT.	
	PROPERTY SETBACK	
	PROPERTY LINE	
	ABUTTING PROPERTY LINE	
	TREE LINE	

REV.	DESCRIPTION	DATE
0	SKETCH PLAN	07.30.2020

STATE OF MAINE
PAUL A. KNOWLES
No. 11833
LICENSED
PROFESSIONAL ENGINEER
07/07/20

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PROJECT: BRUNSWICK FIRE STATION
BRUNSWICK, MAINE

SHEET TITLE: SITE LAYOUT PLAN

WBRC CAD FILE:	421900-SP101.DWG
PROJECT No:	4219.00
SCALE:	1"=20'
PROJECT MANAGER:	MLW
DRAWN BY:	TDP
CHECKED BY:	PAM
GRAPHIC SCALE:	0" 1"
SHEET No:	CP101

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Sep 17, 2020 – 6:23pm
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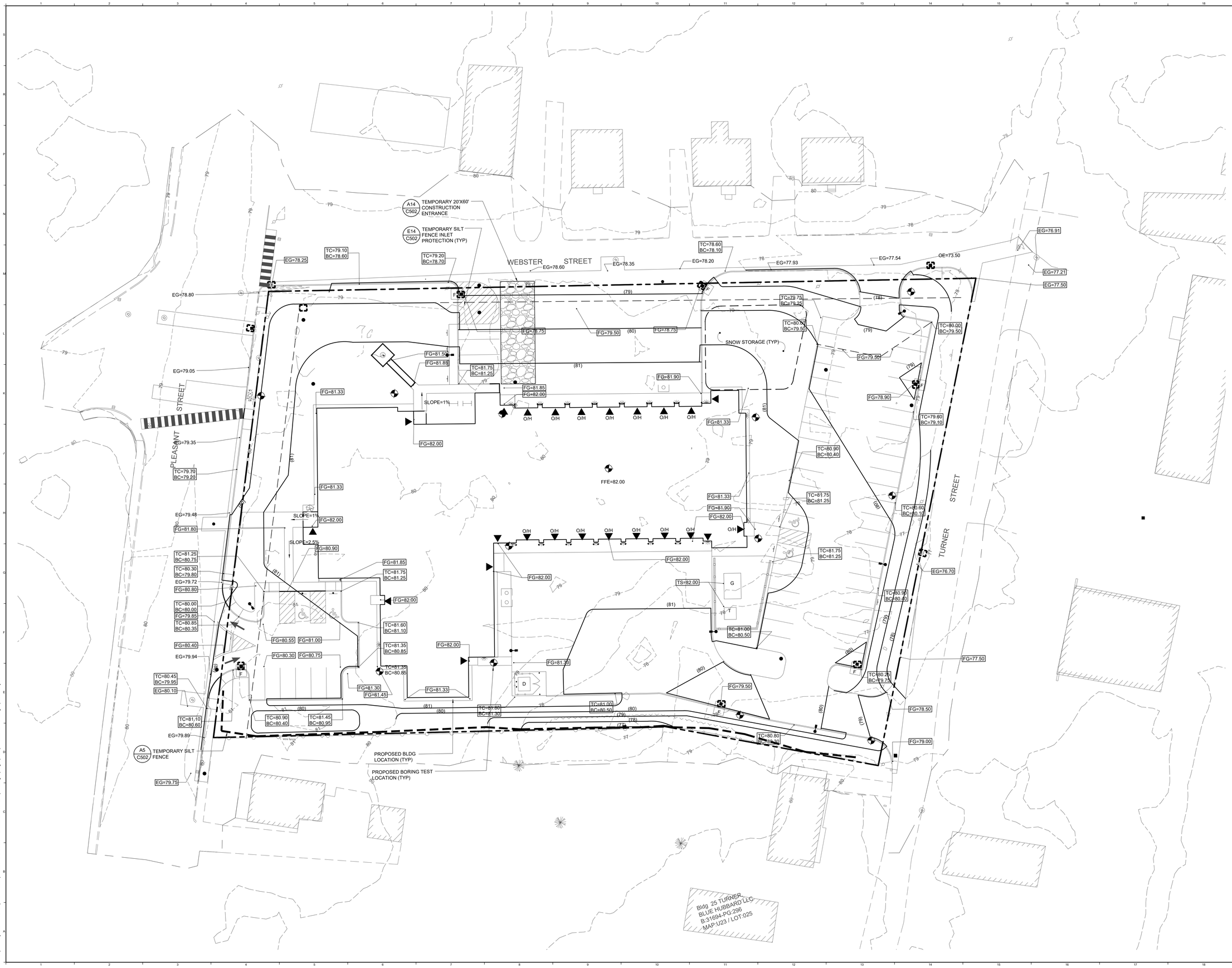

GRADING NOTES:

1. SEE NOTES G1 THROUGH G8 ON SHEET C-001 FOR ADDITIONAL GRADING INFORMATION.

2. ALL DISTURBED AREAS NOT RECEIVING PAVEMENT SHALL BE PROVIDED WITH LOAM AND SEED PER THE CONTRACT DOCUMENTS.

3. PROPOSED GRADING SHOWN ON THIS PLAN IS BASED ON STATE OF MAINE GIS 2' CONTOUR DATA.

LEGEND

EXISTING		PROPOSED
	LIMITS OF WETLAND	
	UTILITY POLE	
	STREET LIGHTING	
	BUILDING LIGHTING	
	WATER SHUTOFF / GATE VALVE	
	TRANSFORMER PAD	
	DUMPSTER	
	MANHOLE	
	SEWER MANHOLE	
	CATCH BASIN	
	FIRE HYDRANT	
	SIGN	
	FENCING	
	P.T. GUARD RAIL	
	PAVEMENT	
	SIDEWALK	
	VERT. SLIPFORM CONC. CURB	
	GRANITE CURB	
	PRECAST CONC. WHEEL STOP	
	GEO BLOCK RETAINING WALL	
	CIP CONCRETE RETAINING WALL	
	WOOD CHIP PLAY AREA	
	COARSE AGGREGATE	
110	CONTOURS	(110)
	SEDIMENTATION CONTROL FENCE	
	FLOW PATH	
	TEMP. SILT INLET PROTECTION	
	BANK STABILIZATION MESH	
	PROPERTY SETBACK	
	PROPERTY LINE	
	ABUTTING PROPERTY LINE	
	TREE LINE	

REV.	DESCRIPTION	DATE
0	95% QA/QC	04.17.20

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PROJECT: BRUNSWICK FIRE STATION
BRUNSWICK, MAINE

SHEET TITLE: SITE GRADING PLAN

WBRC CAD FILE:	421900-SP101.DWG		
PROJECT No.	4219.00	GRAPHIC SCALE:	0" 1"
SCALE:	1"=20'		
PROJECT MANAGER:	MLW	SHEET No.	CG101
DRAWN BY:	TDP		
CHECKED BY:	PAM		

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Jun 09, 2020 – 3:53pm
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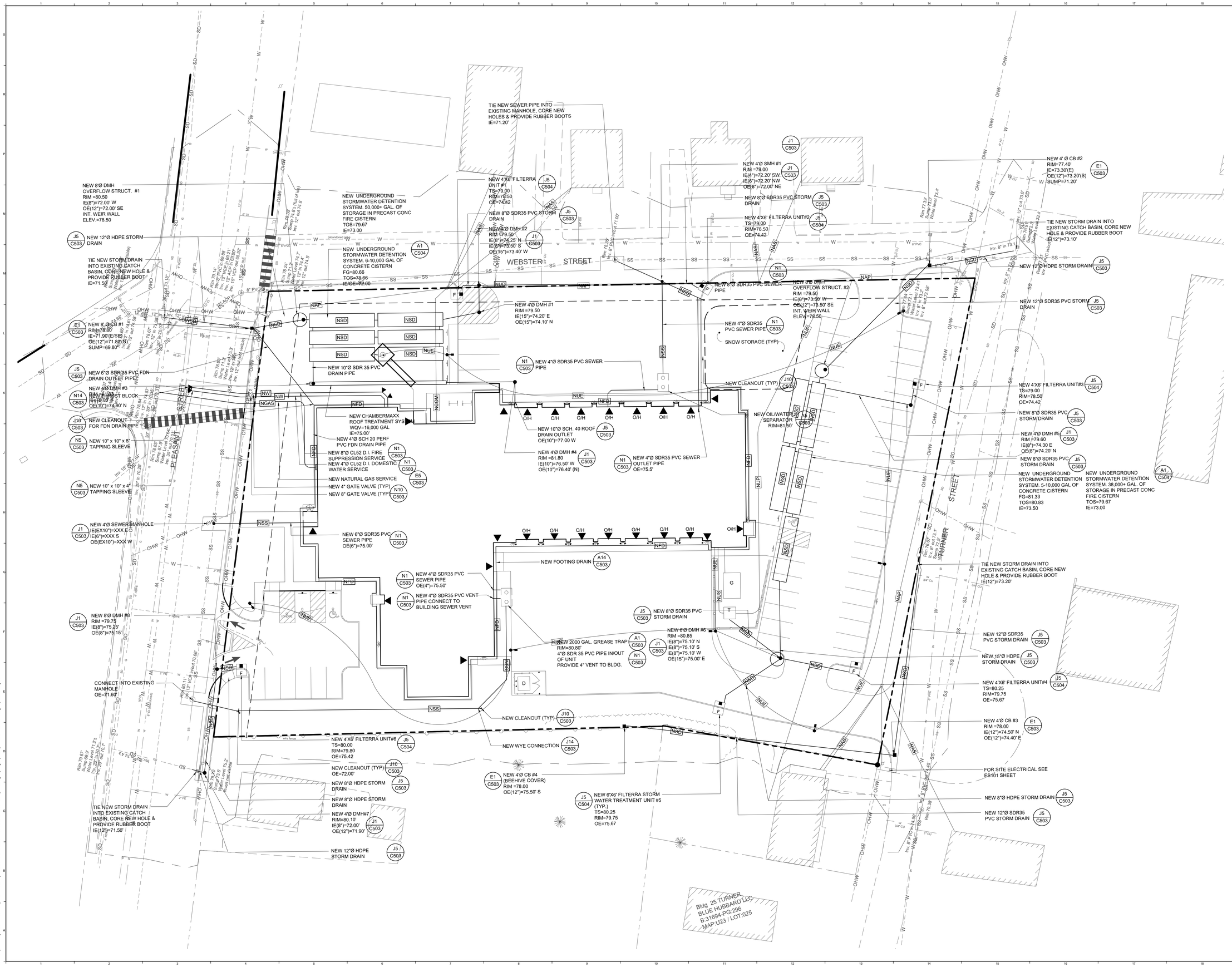

UTILITY NOTES:

1. SEE NOTES E1 THROUGH U8 ON SHEET C-001 FOR ADDITIONAL UTILITY INFORMATION.

2. DOMESTIC WATER DISTRIBUTION AND FIRE SUPPRESSION PIPING AND APPURTENANCES SHALL BE SUPPLIED AND INSTALLED BY SITE CONTRACTOR. ALL EXCAVATION AND BACKFILL REQUIRED FOR ANY PART OF THE WATER SUPPLY SYSTEM AND FIRE SUPPRESSION PIPING SHALL BE BY THE SITE CONTRACTOR. COORDINATE INSTALLATION OF PIPING WITH THE PLUMBING AND MECHANICAL CONTRACTORS. PIPING FOR NEW BUILDING SHALL BE SUPPLIED AND INSTALLED BY THE PLUMBING CONTRACTOR FROM THE BUILDING TO A COORDINATED POINT LOCATED 10' FROM THE BUILDING PENETRATION.

3. SITE CONTRACTOR TO FIELD VERIFY ALL EXISTING UTILITIES PRIOR TO BEGINNING ANY PROPOSED WORK.

4. PROVIDE 4" MIN. RIGID INSULATION BETWEEN WATER LINE AND SANITARY SEWER LINE. EXTEND 8' IN ALL DIRECTIONS WHERE THEY CROSS.

LEGEND

EXISTING		PROPOSED
	LIMITS OF WETLAND	
	UTILITY POLE	
	STREET LIGHTING	
	BUILDING LIGHTING	
	WATER SHUTOFF / GATE VALVE	
	TRANSFORMER PAD	
	DUMPSTER	
	DRAIN MANHOLE	
	SEWER MANHOLE	
	CATCH BASIN	
	FIRE HYDRANT	
	SIGN	
	FENCING	
	P.T. GUARD RAIL	
	PAVEMENT	
	SIDEWALK	
	VERT. SLIPFORM CONC. CURB	
	GRANITE CURB	
	PRECAST CONC. WHEEL STOP	
	GEO BLOCK RETAINING WALL	
	CIP CONCRETE RETAINING WALL	
	WOOD CHIP PLAY AREA	
	COARSE AGGREGATE	
— —G— —	GAS SERVICE / MAIN	NGAS
— —W— —	WATER SERVICE / MAIN	NW
— —SD— —	STORM DRAIN	NSD
	UNDERDRAIN	NUD
	FOOTING DRAIN	NFD
	CLEANOUT	
— —SS— —	SANITARY SEWER	NSS
— —UE— —	UNDERGROUND ELECTRIC	NUE
	UNDERGROUND SECONDARY	NUS
	UNDERGROUND PRIMARY	NUP
— —OE— —	AERIAL ELEC. / PRIMARY	NAP
	PROPERTY SETBACK	
	PROPERTY LINE	
	ABUTTING PROPERTY LINE	
	TREE LINE	

REV.	DESCRIPTION	DATE
0	95% QA/QC	04.17.20

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BRUNSWICK FIRE STATION

PROJECT: BRUNSWICK, MAINE

SITE UTILITY PLAN

SHEET TITLE:

WBRC CAD FILE:	421900-SP101.DWG
PROJECT No.	4219.00
SCALE:	1"=20'
PROJECT MANAGER:	MLW
DRAWN BY:	TDP
CHECKED BY:	PAM
GRAPHIC SCALE:	0" 1"
SHEET No.	CU101

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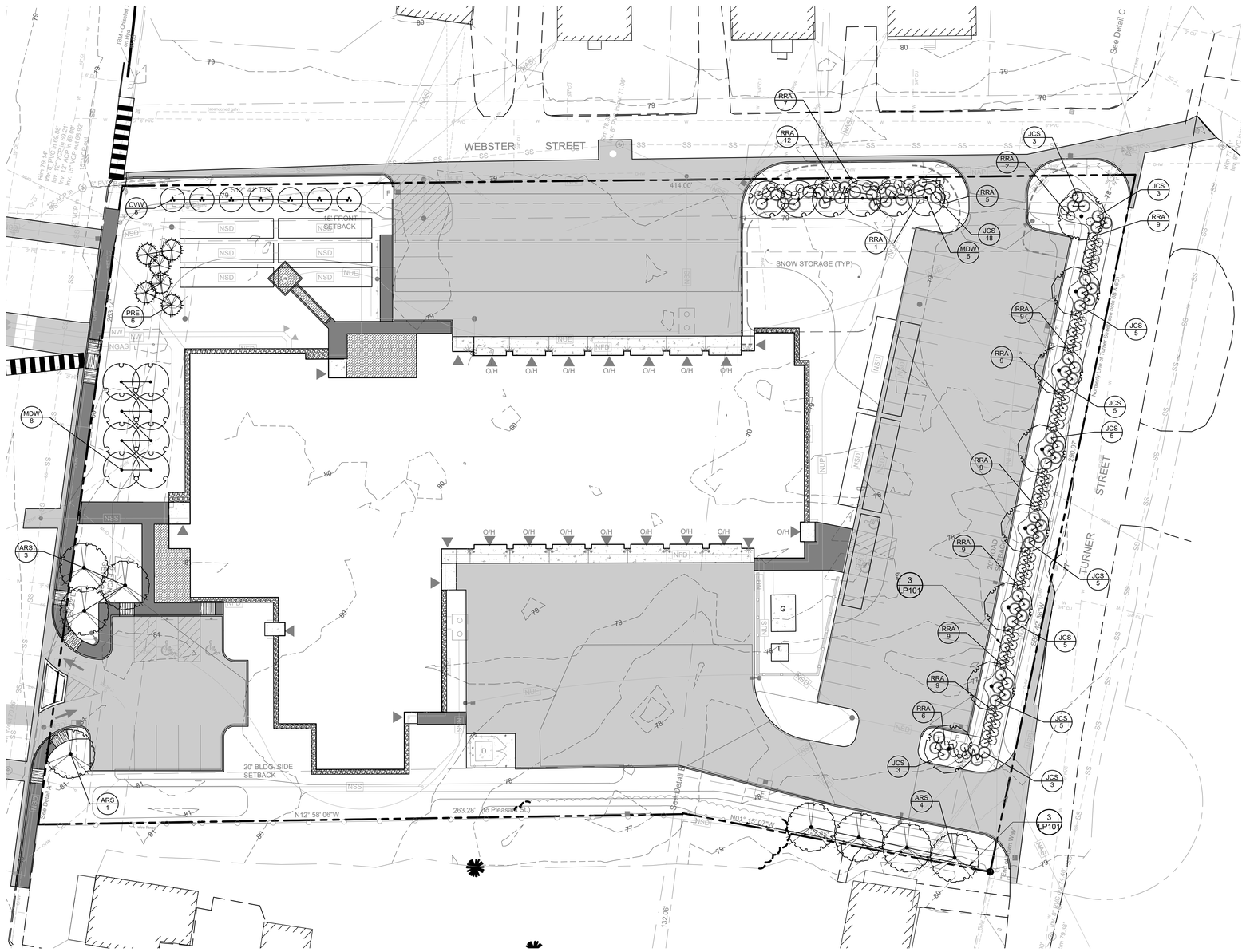


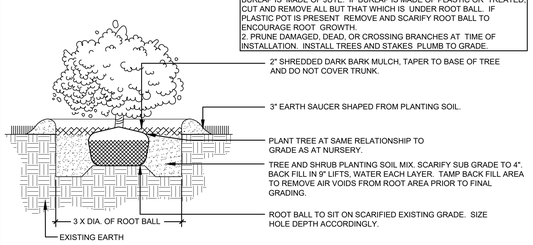
PLANT SCHEDULE

DECIDUOUS TREES	BOTANICAL / COMMON NAME	CONT	CAL	SIZE	QTY
	Acer rubrum `Red Sunset` / Red Sunset Maple	B & B	3" - 3.5" Cal.		8
	Gleditsia triacanthos `Skycole` TM / Skyline Honeylocust Limb to 6'	B & B	3" - 3.5" Cal.		8
EVERGREEN TREES	**BOTANICAL / COMMON NAME**	**CONT**	**CAL**	**SIZE**	**QTY**
	Pinus resinosa / Red Pine Limb to 3'	B & B		7'-8' H	6
SMALL TREES	**BOTANICAL / COMMON NAME**	**CONT**	**CAL**	**SIZE**	**QTY**
	Crataegus viridis `Winter King` / `Winter King` Hawthorn	B & B	2" - 2.5"Cal.		7
	Malus hybrid `Donald Wyman` / Donald Wyman Crab	B & B	2.5" - 3"Cal.		14
DECIDUOUS SHRUBS	**BOTANICAL / COMMON NAME**	**SIZE**	**FIELD2**	**FIELD3**	**QTY**
	Rosa rugosa alba / White Rugosa Rose 3` O.C.	B & B			96
EVERGREEN SHRUBS	**BOTANICAL / COMMON NAME**	**SIZE**	**FIELD2**	**FIELD3**	**QTY**
	Juniperus chinensis `Sea Green` / Sea Green Juniper 5` O.C.	B & B			61

PLANTING NOTES:

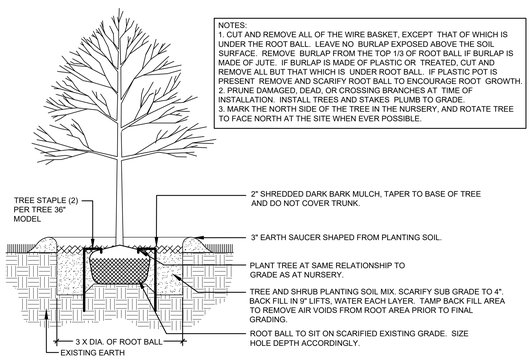
1. THE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT 10 DAYS PRIOR TO DELIVERY OF PLANT MATERIAL TO SITE.
2. PLANT MATERIAL DELIVERED BUT NOT PLANTED WITHIN 6 DAYS OF DELIVERY IS TO BE HEELED IN & PROTECTED FROM DIRECT SUNLIGHT. PLANTS ARE TO BE WATERED & MULCHED WITH STRAW DURING HOLDING PERIOD.
3. SUPPLY ALL PLANT MATERIAL IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTINGS SHOWN ON THE DRAWINGS.
4. NO TREES SHALL BE PLANTED BEFORE ACCEPTANCE OF ROUGH GRADING. PLANT ROOT BALLS SHALL BEAR THE SAME RELATIONSHIP TO FINISH GRADE AS THEY DID AT THE NURSERY. DO NOT SET ROOT BALLS MORE THAN 1" ABOVE FINISH GRADE.
5. PLANT BED EDGES ARE TO BE SHARP, CLEAN & CONSISTENT WITH SURROUNDING GRADES. DO NOT MOUND MULCH BEDS.
6. PLANT PITS ARE TO BE DUG 3 TIMES THE DIAMETER OF THE ROOT BALL OF THE PLANT.
7. STAKE LOCATION OF ALL PROPOSED PLANTING FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO THE COMMENCEMENT OF PLANTING.
8. REFER TO SHEET LP101 FOR PROJECT PLANT LIST.
9. REFER TO DETAILS FOR PLANTING INFORMATION PRIOR TO COMMENCING PLANT INSTALLATION.
10. REFER TO THE PROJECT SPECIFICATIONS FOR IMPORTANT PLANTING INFORMATION PRIOR TO COMMENCING PLANT INSTALLATION.
11. COORDINATE ALL PLANTING WITH FINISH GRADING AND SEEDING. PLANTING SHOULD BE COMPLETED AFTER ROUGH GRADING AND PRIOR TO SEEDING.
12. LOCATE & VERIFY ALL EXISTING UTILITY LINES PRIOR TO PLANTING & REPORT ANY CONFLICTS TO THE ENGINEER.
13. ANY PROPOSED SUBSTITUTIONS OF PLANT SPECIES SHALL BE MADE WITH PLANTS OF EQUIVALENT OVERALL FORM, HEIGHT, BRANCHING HABIT, FLOWER, LEAF, COLOR, FRUIT, & CULTURE ONLY AS APPROVED BY THE OWNER'S REPRESENTATIVE.
14. ALL PLANT BEDS ARE TO RECEIVE 3" OF SHREDDED BARK MULCH AS NOTED ON PLAN & SPECIFIED.
15. ALL DISTURBED AREAS ARE TO BE LOAMED W/ 6" DEPTH TOPSOIL & SEEDED UNLESS SPECIFIED. ALL AREAS TO BE SEEDED SHALL RECEIVE SOIL PREPARATION AS SPECIFIED PRIOR TO SEEDING, UNLESS OTHERWISE NOTED ON PLAN. OTHERWISE. COORDINATE WITH FINISH GRADING.
16. APPLICATION RATE SHALL BE THE SAME AS FOR THE PERMANENT MIXTURE, AS SHALL BE THE APPLICATION RATE FOR FERTILIZER, LIME & MULCH.
17. SHOULD THE CONSTRUCTION SEQUENCE BE SUCH THAT THE PERMANENT SEEDING CANNOT BE MADE AT LEAST 45 DAYS PRIOR TO THE FIRST KILLING FROST OR AS DORMANT SEEDLINGS IMMEDIATELY AFTER THE FIRST KILLING FROST, WINTER RYE SHALL BE USED AS A TEMPORARY PLANTING.
18. THE CONTRACTOR SHALL RESEED ANY AREAS WHICH HAVE NOT ESTABLISHED AN ACCEPTABLE CATCH (>80%) OF GRASS WITHIN A REASONABLE TIME (2 MOWINGS).
19. IN AREAS WHERE TREES ARE NOTED TO REMAIN, CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT DAMAGE TO TREES TO REMAIN, INCLUDING, BUT NOT LIMITED TO INSTALLATION OF TEMPORARY FENCING.

NOTES:
1. CUT AND REMOVE ALL OF THE WIRE BASKET, EXCEPT THAT OF WHICH IS UNDER THE ROOT BALL. LEAVE NO BURLAP EXPOSED ABOVE THE SOIL SURFACE. REMOVE BURLAP FROM THE TOP 1/3 OF ROOT BALL IF BURLAP IS MADE OF JUTE. IF BURLAP IS MADE OF PLASTIC OR TREATED, CUT AND REMOVE ALL BUT THAT WHICH IS UNDER ROOT BALL. IF PLASTIC POT IS PRESENT REMOVE AND SCARIFY ROOT BALL TO ENCOURAGE ROOT GROWTH.
2. PRUNE DAMAGED, DEAD, OR CROSSING BRANCHES AT TIME OF INSTALLATION. INSTALL TREES AND STAKES PLUMB TO GRADE.

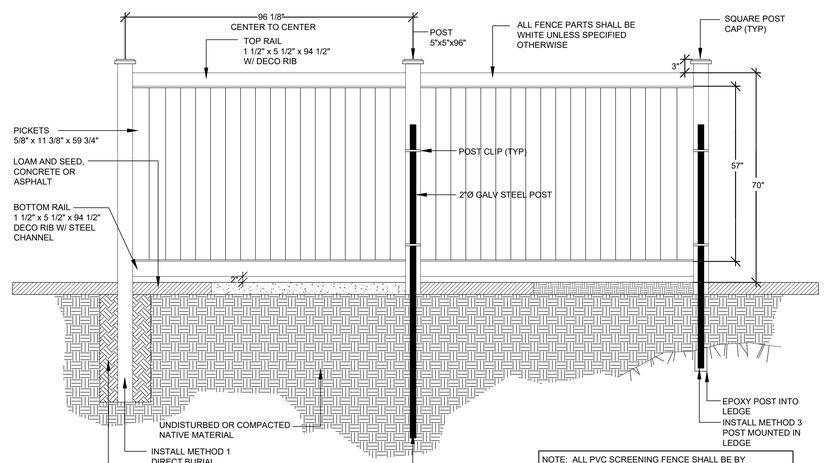


1 SHRUB PLANTING
NTS 329333-02

NOTES:
1. CUT AND REMOVE ALL OF THE WIRE BASKET, EXCEPT THAT OF WHICH IS UNDER THE ROOT BALL. LEAVE NO BURLAP EXPOSED ABOVE THE SOIL SURFACE. REMOVE BURLAP FROM THE TOP 1/3 OF ROOT BALL IF BURLAP IS MADE OF JUTE. IF BURLAP IS MADE OF PLASTIC OR TREATED, CUT AND REMOVE ALL BUT THAT WHICH IS UNDER ROOT BALL. IF PLASTIC POT IS PRESENT REMOVE AND SCARIFY ROOT BALL TO ENCOURAGE ROOT GROWTH.
2. PRUNE DAMAGED, DEAD, OR CROSSING BRANCHES AT TIME OF INSTALLATION. INSTALL TREES AND STAKES PLUMB TO GRADE.
3. MARK THE NORTH SIDE OF THE TREE IN THE NURSERY, AND ROTATE TREE TO FACE NORTH AT THE SITE WHEN EVER POSSIBLE.



2 DECIDUOUS TREE W/ STAPLES
NTS 329343-01



NOTE: ALL PVC SCREENING FENCE SHALL BE BY ALLEN FARM FENCE COMPANY OR APPROVED EQUAL

3 FENCE - PVC
NTS

REV.	DESCRIPTION	DATE
0	95% QA / QC	04.17.20

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LICENSED LANDSCAPE ARCHITECT
PAUL F. BRODY
LR2824
STATE OF MAINE
06/07/20

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PROJECT: BRUNSWICK FIRE STATION
BRUNSWICK, MAINE

SHEET TITLE: SITE PLANTING PLAN

WBRC CAD FILE:	421901-LP101.DWG
PROJECT No.	4219.00
GRAPHIC SCALE:	0" 1"
SCALE:	1"=20'
PROJECT MANAGER:	MLW
SHEET No.	LP101
DRAWN BY:	PFB
CHECKED BY:	PFB

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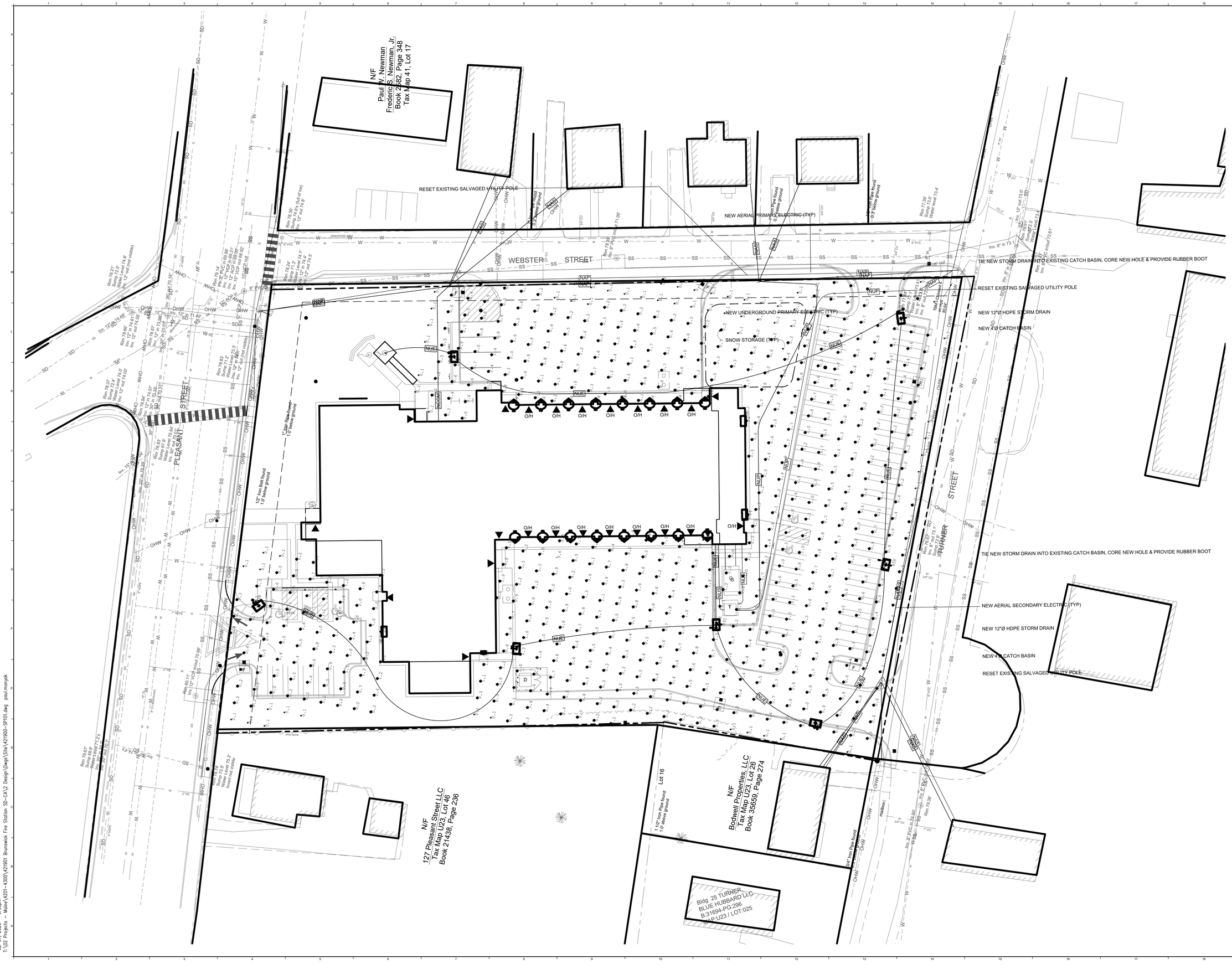
Jul 07, 2020 – 10:09am
T:\02 Projects – Maine\4201-4300\421901 Brunswick Fire Station SD-CA\2 Design\Dwgs\Site\421901-LP101.dwg tyler.peabody



SITE ELECTRICAL NOTES:

1. SEE NOTES E1 THROUGH U8 ON SHEET C-001 FOR ADDITIONAL UTILITY INFORMATION.

2. ALL TRENCH EXCAVATION AND BACKFILL FOR ELECTRICAL SYSTEMS SHALL BE BY THE SITE CONTRACTOR. CONDUIT, PULL BOXES, RISER POLES, LIGHT BASES, ETC. SHALL BE SUPPLIED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. LIGHT BASES TO BE SET BY THE SITE CONTRACTOR.

3. SITE CONTRACTOR TO FIELD VERIFY ALL EXISTING UTILITIES PRIOR TO BEGINNING ANY PROPOSED WORK.

LEGEND

EXISTING		PROPOSED
	LIMITS OF WETLAND	
	UTILITY POLE	
	STREET LIGHTING	
	BUILDING LIGHTING	
	WATER SHUTOFF / GATE VALVE	
	TRANSFORMER PAD	
	DUMPSTER	
	DRAIN MANHOLE	
	SEWER MANHOLE	
	CATCH BASIN	
	FIRE HYDRANT	
	SIGN	
	FENCING	
	P.T. GUARD RAIL	
	PAVEMENT	
	SIDEWALK	
	VERT. SLIPFORM CONC. CURB	
	GRANITE CURB	
	PRECAST CONC. WHEEL STOP	
	GEO BLOCK RETAINING WALL	
	CIP CONCRETE RETAINING WALL	
	WOOD CHIP PLAY AREA	
	COARSE AGGREGATE	
— G —	GAS SERVICE / MAIN	GAS
— W —	WATER SERVICE / MAIN	WAT
— SD —	STORM DRAIN	STD
	UNDERDRAIN	UND
	FOOTING DRAIN	FTD
	CLEANOUT	
— SS —	SANITARY SEWER	SAS
— UE —	UNDERGROUND ELECTRIC	NUE
	UNDERGROUND SECONDARY	NUS
	UNDERGROUND PRIMARY	NUP
— OE —	AERIAL ELEC. / PRIMARY	NAP
	PROPERTY SETBACK	
	PROPERTY LINE	
	ABUTTING PROPERTY LINE	
	TREE LINE	

REV.	DESCRIPTION	DATE
0	95% QA/QC	04.17.20

NORTH

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BRUNSWICK FIRE STATION

PROJECT: BRUNSWICK, MAINE

SITE PHOTOMETRIC PLAN

SHEET TITLE:

WBRC CAD FILE:	421900-SP101.DWG
PROJECT No.	4219.00
SCALE:	1"=20'
PROJECT MANAGER:	MLW
DRAWN BY:	TDP
CHECKED BY:	PAM
GRAPHIC SCALE:	0" 1"
SHEET No.	ES101A

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Jul 07, 2020 – 9:03pm
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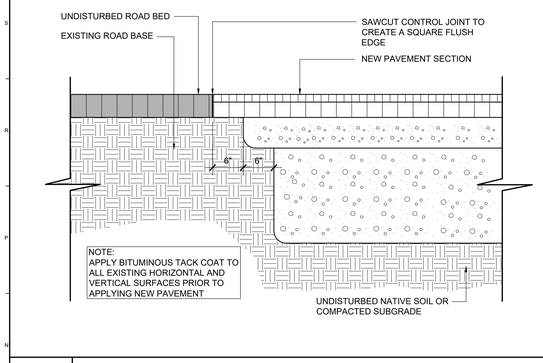
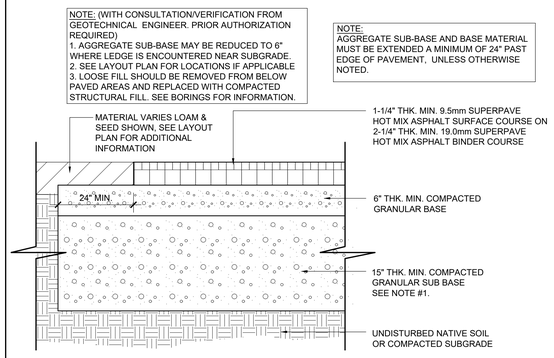


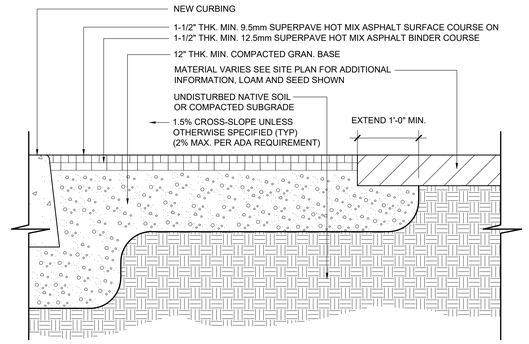
N1 NEW HOT MIX ASPHALT "BUTT JOINT"

NO SCALE



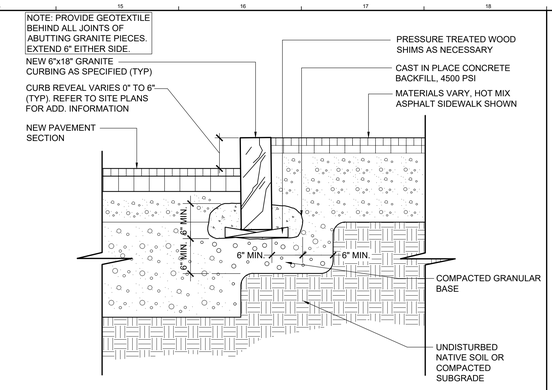
N5 NEW FULL DEPTH HOT MIX ASPHALT PAVEMENT

NO SCALE



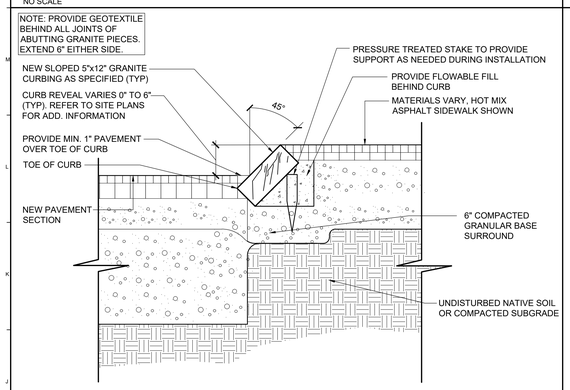
N10 NEW HOT MIX ASPHALT SIDEWALK

NO SCALE



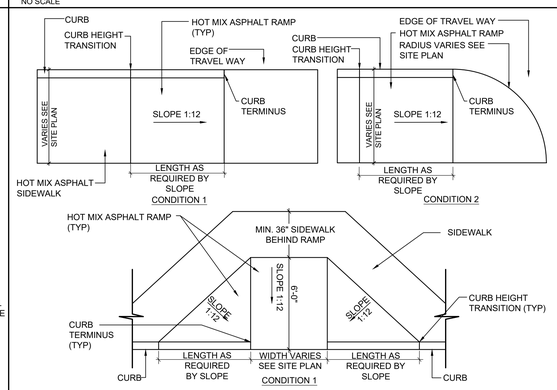
N14 NEW VERITCAL GRANITE CURB

NO SCALE



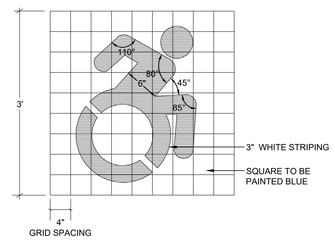
J1 NEW SLOPED GRANITE CURB

NO SCALE



J5 NEW HOT MIX ASPHALT ADA RAMP

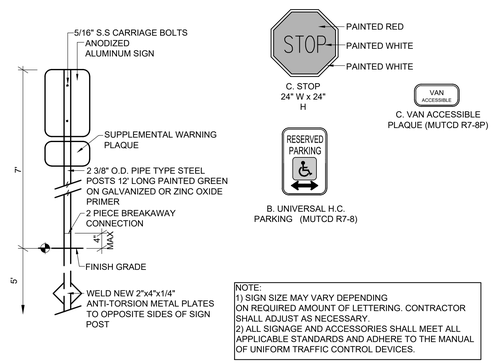
NO SCALE



CONTRACTOR TO MEET THE LATEST ADA REQUIREMENTS

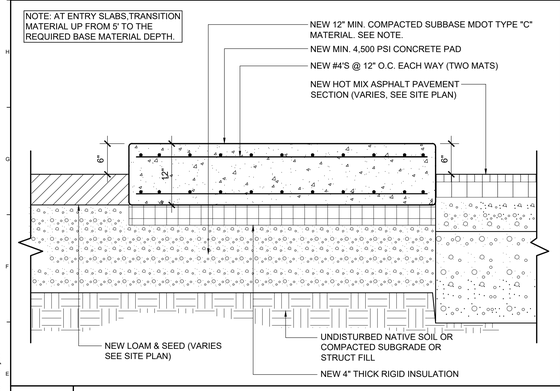
J10 NEW PAINTED ADA PAVEMENT MARKINGS

NO SCALE



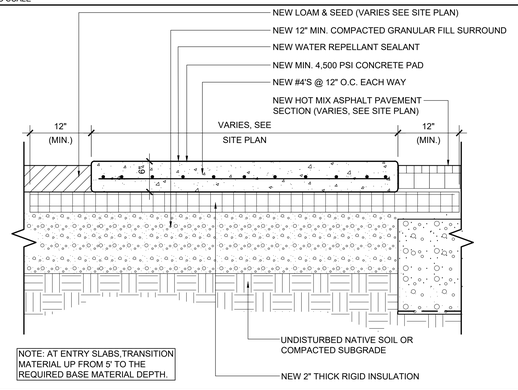
J14 NEW SIGNAGE

NO SCALE



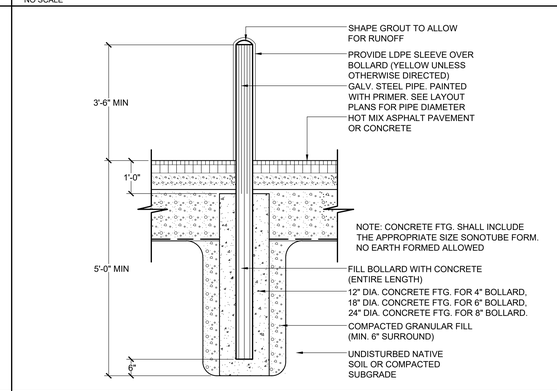
E1 NEW 12" C.I.P. CONCRETE MECHANICAL PAD

NO SCALE



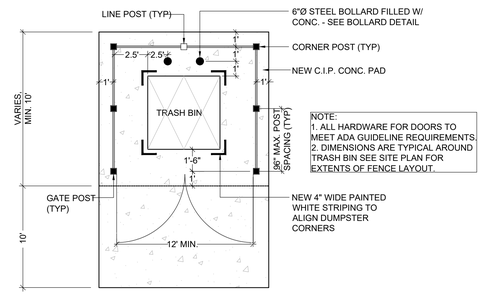
E5 NEW 6" C.I.P. CONCRETE PAD

NO SCALE

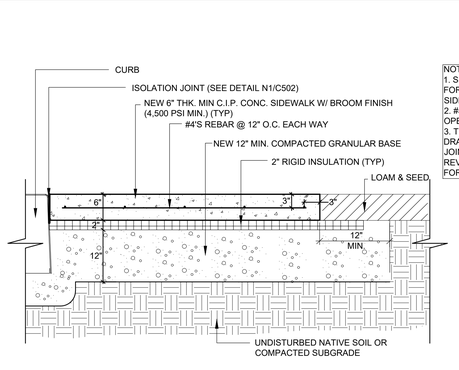


E10 NEW STEEL BOLLARD

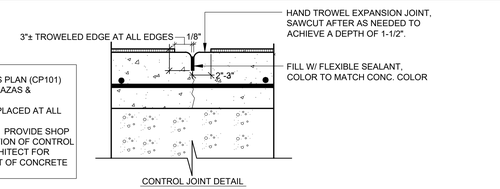
NO SCALE



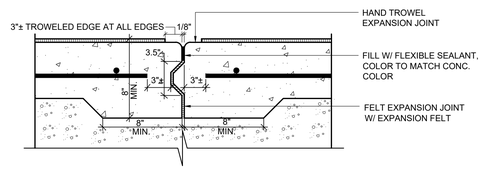
PLAN VIEW



NOTE:
1. SEE SITE LAYOUT & MATERIALS PLAN (CP101) FOR LOCATION OF CONCRETE PLAZAS & SIDEWALKS.
2. #5 DIAGONAL BARS SHALL BE PLACED AT ALL OPENINGS.
3. THE SITE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS SHOWING THE LOCATION OF CONTROL JOINTS TO THE LANDSCAPE ARCHITECT FOR REVIEW PRIOR TO REPLACEMENT OF CONCRETE FOR THE PLAZAS.



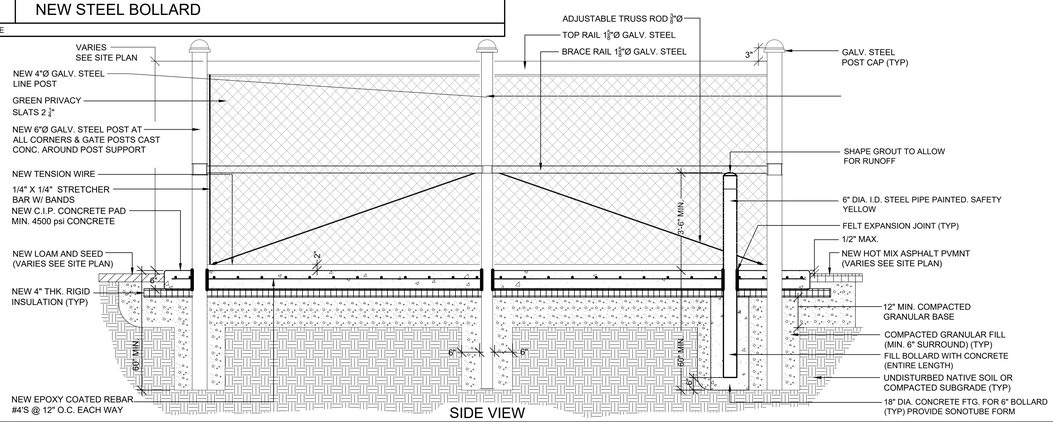
CONTROL JOINT DETAIL



CONSTRUCTION JOINT DETAIL

A1 NEW C.I.P. CONCRETE PLAZA

NO SCALE



SIDE VIEW

A10 NEW DUMPSTER PAD AND ENCLOSURE

NO SCALE

REV.	DESCRIPTION	DATE
0	95% QA / QC	04.17.20

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BRUNSWICK FIRE STATION

PROJECT: BRUNSWICK, MAINE

SITE DETAILS

SHEET TITLE:

WBRC CAD FILE:	421900-C501.DWG
PROJECT No.	4219.00
GRAPHIC SCALE:	0" 1"
SCALE:	NO SCALE
PROJECT MANAGER:	MLW
SHEET No:	C501
DRAWN BY:	TDP
CHECKED BY:	PAM

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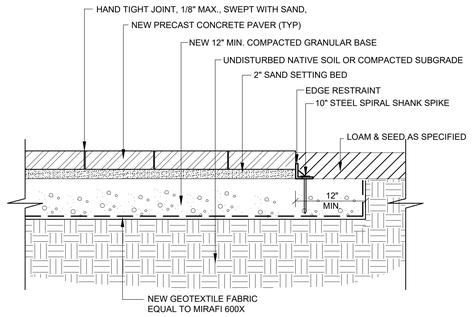
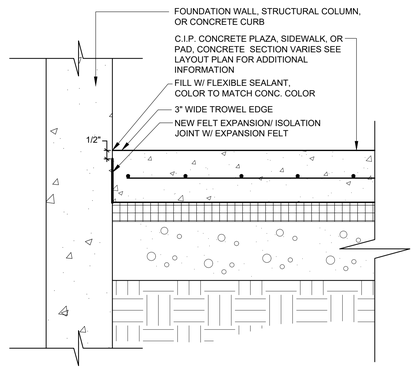
May 08, 2020 – 4:23pm
T:\02 Projects – Maine\4201-4300\421901 Brunswick Fire Station SD-CA\2 Design\Dwgs\Site\421900-C501.dwg paul.monyok



NOTE:
1. EDGE RESTRAINT SHALL BE USED AT ALL EDGES OF BRICK PAVERS WHERE CURB, OR BUILDING FOUNDATION IS NOT PRESENT
2. AT FOLD IN PAVEMENT SAW CUT PAVERS & PROVIDE HANDTIGHT JOINT (TYP)

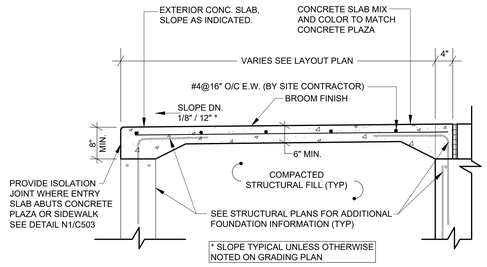
N1 NEW UNIT PAVERS ON SAND

NO SCALE



N5 NEW ISOLATION JOINT

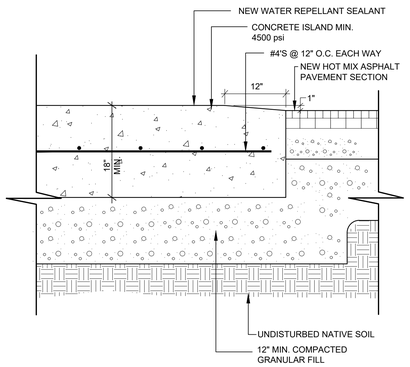
NO SCALE



* SLOPE TYPICAL UNLESS OTHERWISE NOTED ON GRADING PLAN

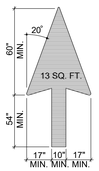
N10 NEW STRUCTURAL ENTRY SLAB

NO SCALE



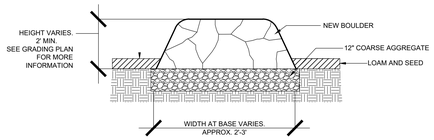
N14 NEW 1" C.I.P. CONCRETE RAISED ISLAND

NO SCALE



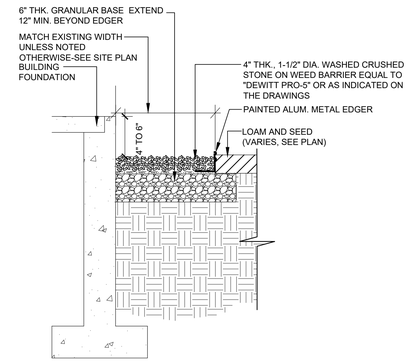
J1 NEW WHITE PAINTED ARROW

NO SCALE



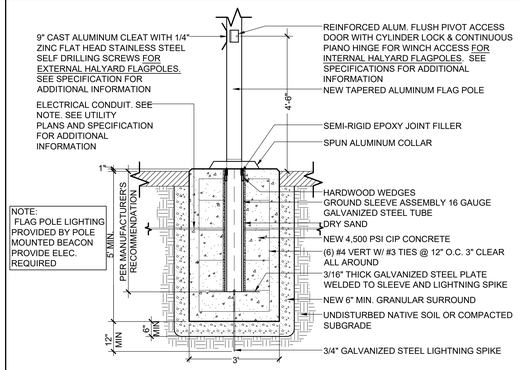
J5 NEW LANDSCAPE BOULDER

NO SCALE



J10 NEW STONE MAINTENANCE EDGE

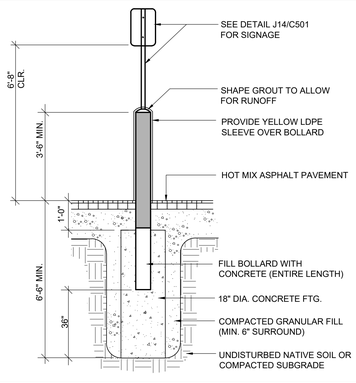
NO SCALE



NOTE:
FLAG POLE LIGHTING PROVIDED BY POLE MOUNTED BEACON PROVIDE ELEC. REQUIRED

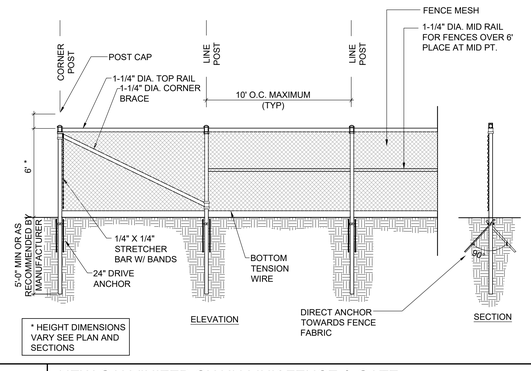
J14 NEW FLAG BASE

NO SCALE



E1 NEW SIGN IN STEEL BOLLARD

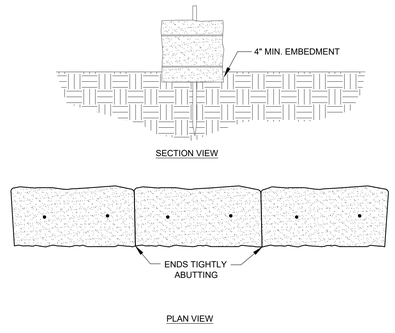
NO SCALE



* HEIGHT DIMENSIONS VARY SEE PLAN AND SECTIONS

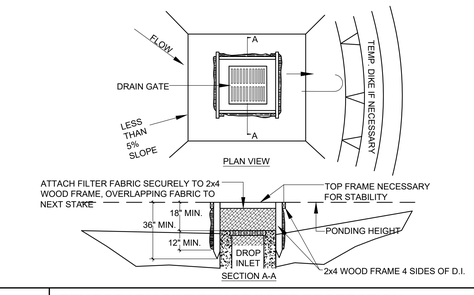
E5 NEW GALVINIZED CHAIN LINK FENCE & GATE

NO SCALE



E10 TEMPORARY HAY BALE BARRIER

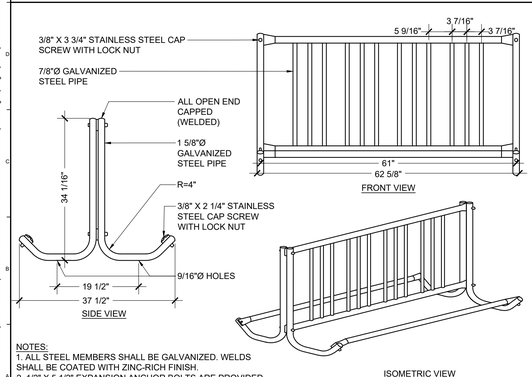
NO SCALE



NOTES:
1. DROP INLET SEDIMENT BARRIERS ARE TO BE USED FOR SMALL, NEARLY LEVEL DRAINAGE AREAS (LESS THAN 5%)
2. USE 2"X4" (100X50MM) WOOD OR EQUIVALENT METAL STAKES, 3' (1M MIN. LENGTH)
3. INSTALL 2"X4" (100X50MM) WOOD TOP FRAME TO INSURE STABILITY.
4. THE TOP OF THE FRAME (PONDING HEIGHT) MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BY-PASSING THE INLET. A TEMP. DIKE MAY BE NECESSARY ON THE DOWNSLOPE SIDE OF THE STRUCTURE.

E14 TEMPORARY SILT FENCE INLET PROTECTION

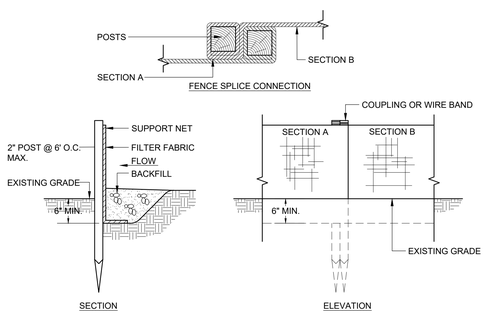
NO SCALE



NOTES:
1. ALL STEEL MEMBERS SHALL BE GALVANIZED. WELDS SHALL BE COATED WITH ZINC-RICH FINISH.
2. 1/2" X 5 1/2" EXPANSION ANCHOR BOLTS ARE PROVIDED.

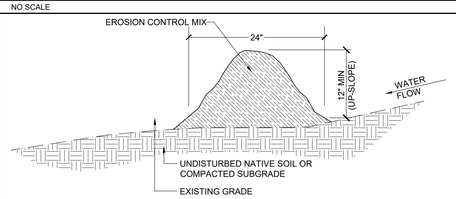
A1 DUMOR 82 SERIES DUAL-SIDE ENTRY BIKE RACK

NO SCALE



A5 TEMPORARY SILT FENCE/EROSION CONTROL FENCE

NO SCALE



NOTES:
THE EROSION CONTROL MIX SHALL CONTAIN A WELL GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4" DIAMETER. EROSION CONTROL MIX MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS, AND MATERIAL TOXIC TO PLANT GROWTH.

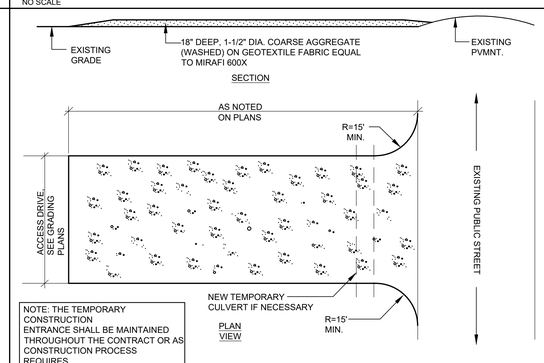
PLACE BARRIER ALONG A RELATIVELY FLAT CONTOUR. CUT TALL GRASSES OR WOODY VEGETATION TO AVOID CREATING VOIDS AND BRIDGES WHERE FINES CAN WASH UNDER THE BARRIER THROUGH GRASS BLADES AND BRANCHES.

PLACEMENT OF BARRIER SHOULD BE:
- AT THE TOE OF THE SLOPE.
- ON FROZEN GROUND, BEDROCK OR ROOTED FORESTED AREAS.
- AT THE EDGE OF GRAVEL AND AREAS UNDER CONSTRUCTION.
REMOVE SEDIMENT DEPOSITS WHEN THEY REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER.

WHEN BARRIER IS DECOMPOSED, CLOGGED WITH SEDIMENT, ERODED OR INEFFECTIVE, IT MUST BE REPLACED OR REPAIRED. THE BARRIER SHOULD BE RESHAPED AS NECESSARY.

A10 TEMPORARY EROSION CONTROL MIX BERM

NO SCALE



NOTE: THE TEMPORARY CONSTRUCTION ENTRANCE SHALL BE MAINTAINED THROUGHOUT THE CONTRACT OR AS CONSTRUCTION PROCESS REQUIRES.

A14 TEMPORARY CONSTRUCTION ENTRANCE/EXIT

NO SCALE

REV.	DESCRIPTION	DATE
0	95% QA / QC	04.17.20

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PROJECT: BRUNSWICK FIRE STATION
BRUNSWICK, MAINE

SHEET TITLE: SITE DETAILS

WBRC CAD FILE:	421900-C501.DWG
PROJECT No.	4219.00
GRAPHIC SCALE:	0" 1"
SCALE:	NO SCALE
PROJECT MANAGER:	MLW
SHEET No.	C502
DRAWN BY:	TDP
CHECKED BY:	PAM

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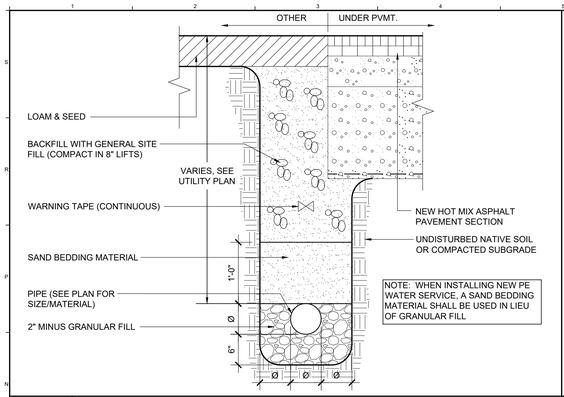
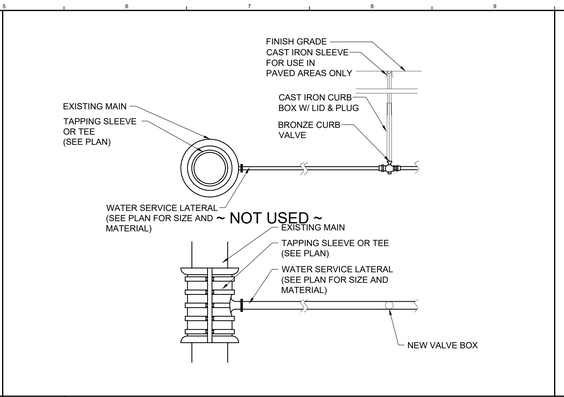


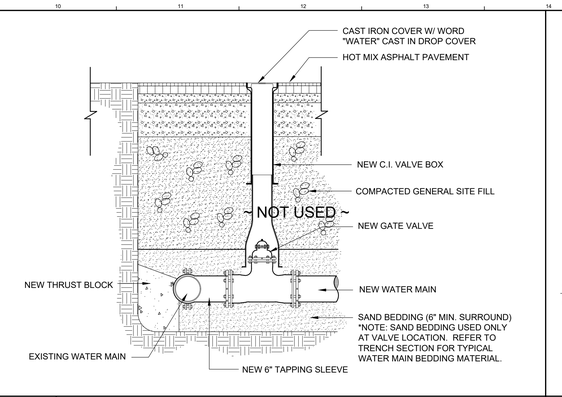
N1 NEW WATER / SEWER TRENCH

NO SCALE



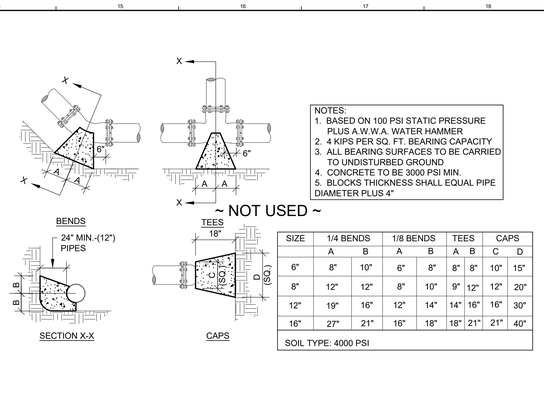
N5 NEW TAPPING SLEEVE CONNECTION

NO SCALE



N10 NEW GATE VALVE

NO SCALE

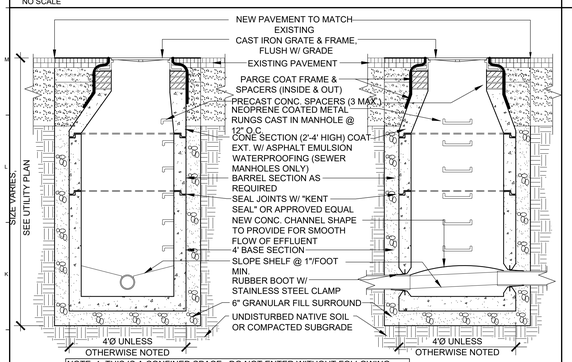


NOTES:
1. BASED ON 100 PSI STATIC PRESSURE PLUS A.W.W.A. WATER HAMMER
2. 4 KIPS PER SQ. FT. BEARING CAPACITY
3. ALL BEARING SURFACES TO BE CARRIED TO UNDISTURBED GROUND
4. CONCRETE TO BE 3000 PSI MIN.
5. BLOCKS THICKNESS SHALL EQUAL PIPE DIAMETER PLUS 4"

SIZE	1/4 BENDS		1/8 BENDS		TEES		CAPS	
	A	B	A	B	A	B	C	D
6"	8"	10"	6"	8"	8"	8"	10"	15"
8"	12"	12"	8"	10"	9"	12"	12"	20"
12"	19"	16"	12"	14"	14"	16"	16"	30"
16"	27"	21"	16"	18"	18"	21"	21"	40"
SOIL TYPE: 4000 PSI								

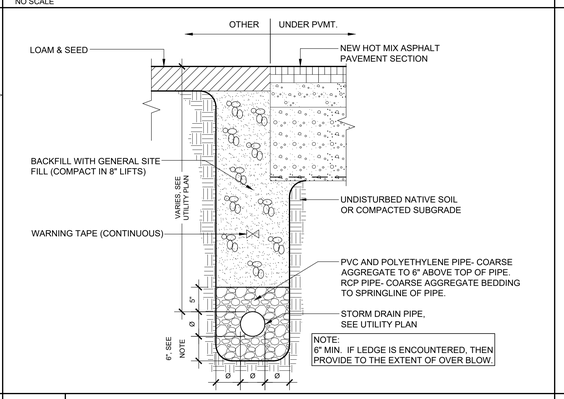
N14 NEW THRUST BLOCK

NO SCALE



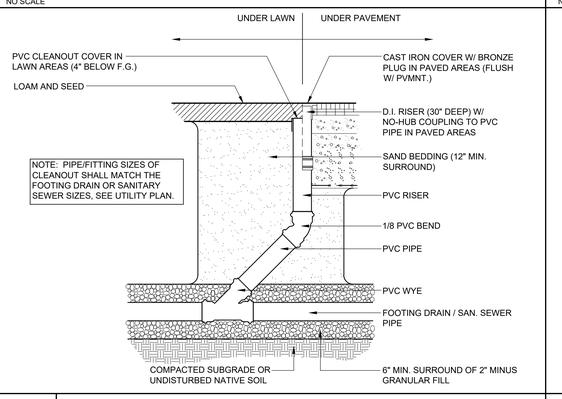
J1 NEW SEWER DRAIN MANHOLE

NO SCALE



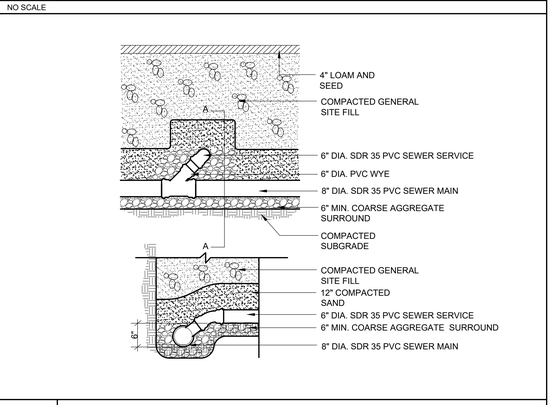
J5 NEW STORM DRAIN TRENCH

NO SCALE



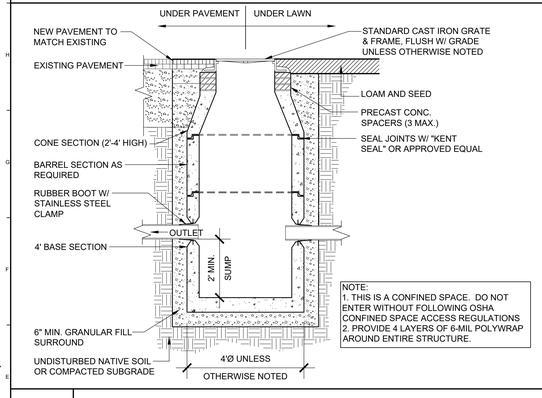
J10 NEW CLEANOUT

NO SCALE



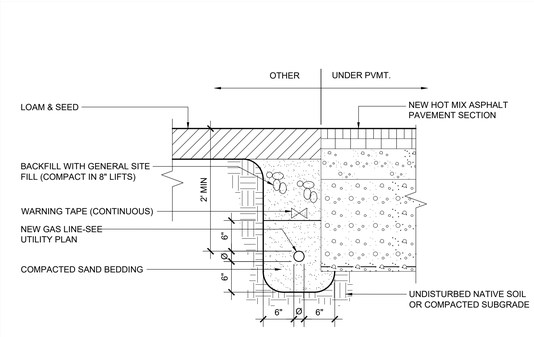
J14 NEW WYE CONNECTION

NO SCALE



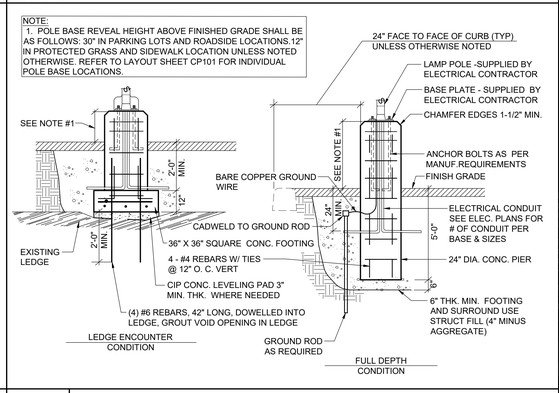
E1 NEW CATCH BASIN

NO SCALE



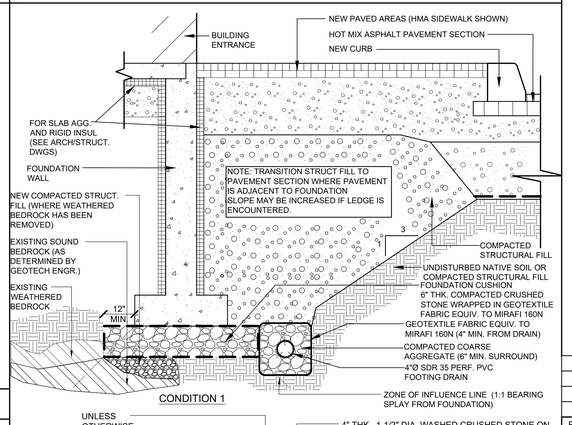
E5 NEW GAS LINE TRENCH

NO SCALE



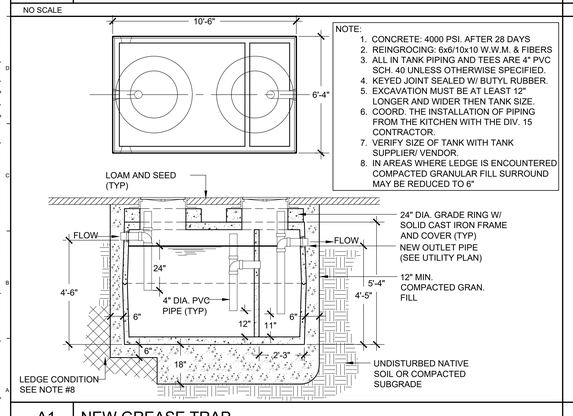
E10 NEW PRECAST CONC. LIGHTPOLE BASE

NO SCALE



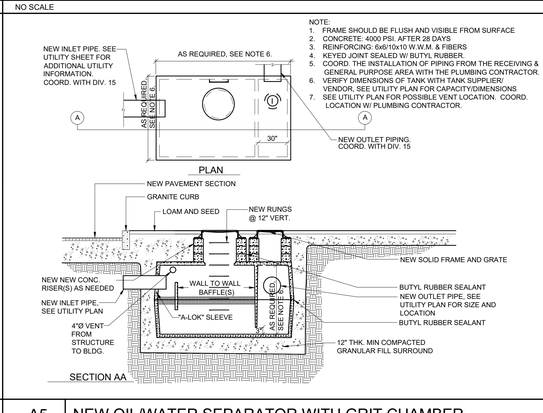
N14 NEW FOUNDATION DRAIN AND BACKFILL

NO SCALE



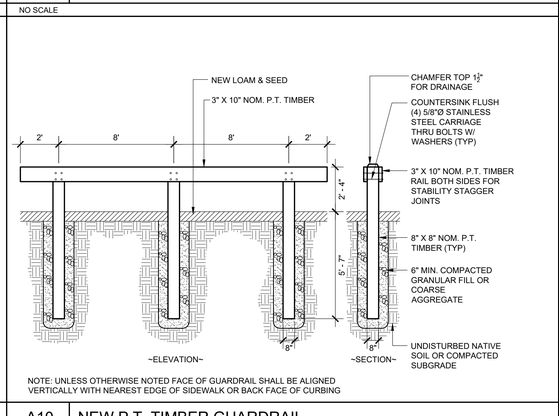
A1 NEW GREASE TRAP

NO SCALE



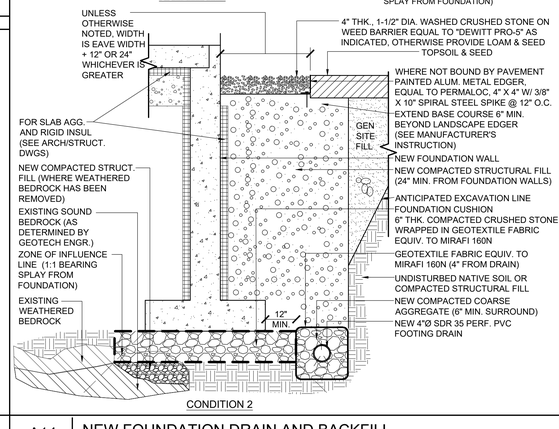
A5 NEW OIL/WATER SEPARATOR WITH GRIT CHAMBER

NO SCALE



A10 NEW P.T. TIMBER GUARDRAIL

NO SCALE



A14 NEW FOUNDATION DRAIN AND BACKFILL

NO SCALE

REV.	DESCRIPTION	DATE
0	95% QA / QC	04.17.20

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BRUNSWICK FIRE STATION

PROJECT: BRUNSWICK, MAINE

SITE DETAILS

SHEET TITLE:

WBRC CAD FILE: 421900-C501.DWG

PROJECT No. 4219.00 GRAPHIC SCALE: 0" 1"

SCALE: NO SCALE

PROJECT MANAGER: MLW SHEET No.

DRAWN BY: TDP C503

CHECKED BY: PAM

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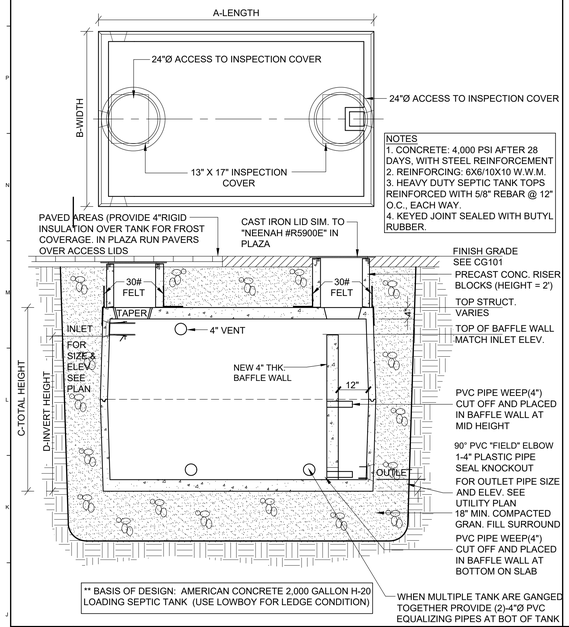


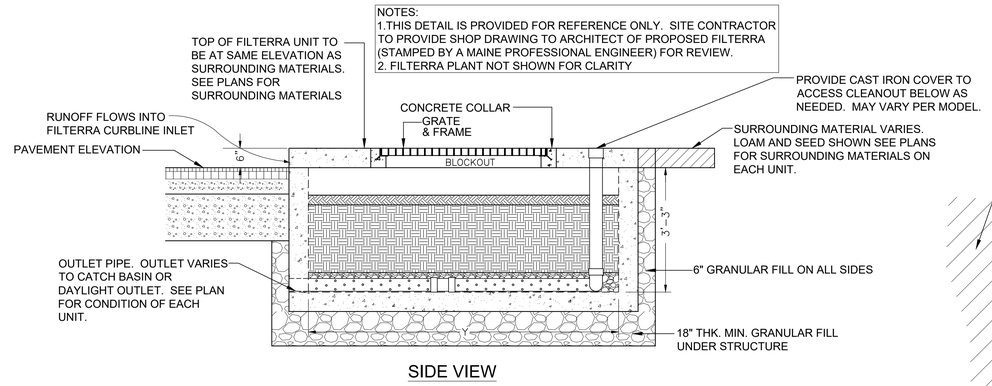
NOTES
1. CONCRETE: 4,000 PSI AFTER 28 DAYS, WITH STEEL REINFORCEMENT
2. REINFORCING: 6X6/10X10 W.W.M.
3. HEAVY DUTY SEPTIC TANK TOPS REINFORCED WITH 5/8" REBAR @ 12" O.C., EACH WAY.
4. KEYED JOINT SEALED WITH BUTYL RUBBER.

** BASIS OF DESIGN: AMERICAN CONCRETE 2,000 GALLON H-20 LOADING SEPTIC TANK (USE LOWBOY FOR LEDGE CONDITION)

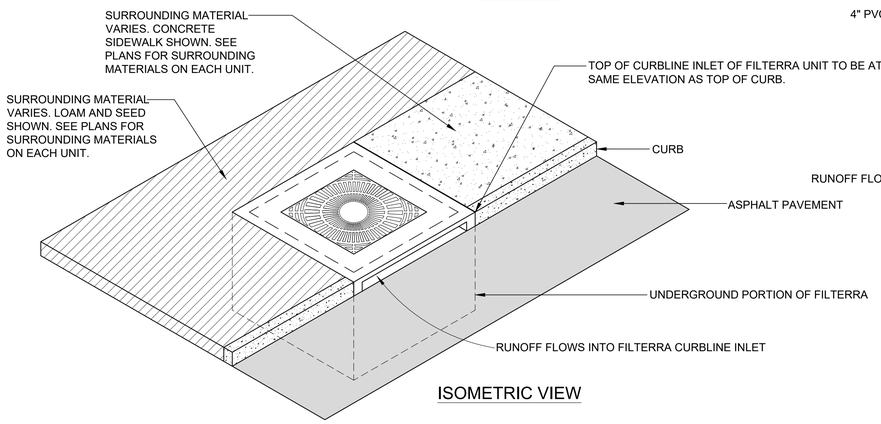
J1 STORM SURGE TANK

NO SCALE

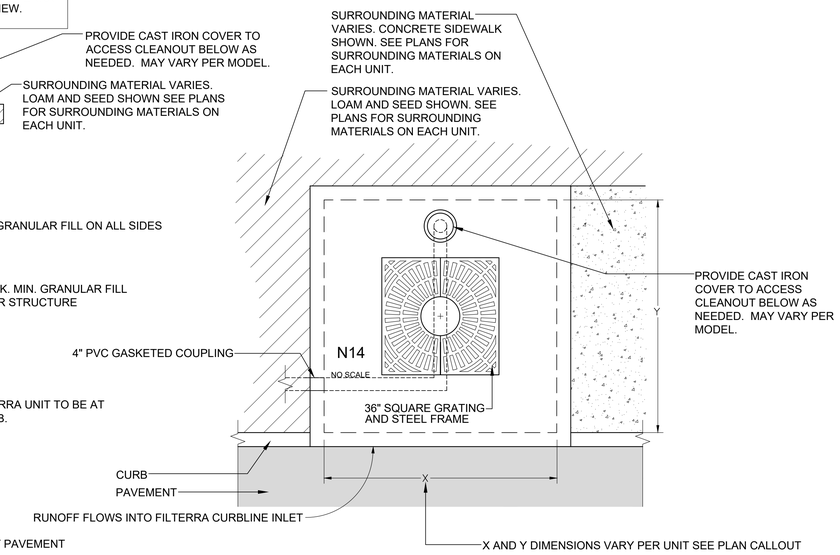
NOTES:
1.THIS DETAIL IS PROVIDED FOR REFERENCE ONLY. SITE CONTRACTOR TO PROVIDE SHOP DRAWING TO ARCHITECT OF PROPOSED FILTERRA (STAMPED BY A MAINE PROFESSIONAL ENGINEER) FOR REVIEW.
2. FILTERRA PLANT NOT SHOWN FOR CLARITY



SIDE VIEW



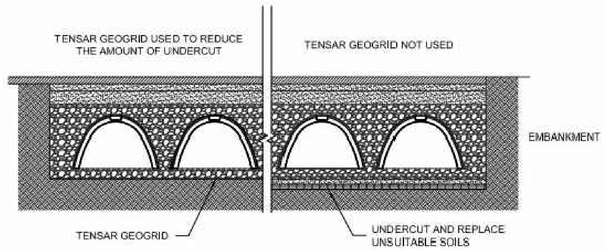
ISOMETRIC VIEW



PLAN VIEW

J5 NEW FILTERRA

NO SCALE



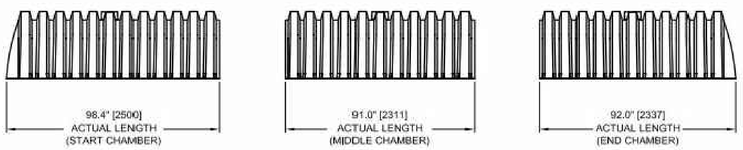
SECTION VIEW

TYPICAL FOUNDATION DETAIL

BACKFILL MATERIAL
THE CHAMBER SYSTEM INCORPORATES TWO TYPES OF BACKFILL MATERIAL.

FREE DRAINING ANGULAR WASHED STONE 3/4 TO 2-INCH [19 TO 51] PARTICLE SIZE COMPACTED TO 90% AASHTO T99 IS USED AROUND THE CHAMBERS. THIS MATERIAL IS USED AROUND THE CHAMBERS AND WITHIN A MINIMUM OF 6-INCHES (152 MM) BELOW AND 6-INCHES [152] ABOVE THE CHAMBERS. THE REMAINING SPACE SHOULD BE FILLED WITH AN ANGULAR, WELL-GRADED GRANULAR FILL MEETING THE REQUIREMENTS OF AASHTO M145 A1, A2 OR A3, COMPACTED TO 95% AASHTO T99.

CONTECH C-40 NON-WOVEN GEOTEXTILE SHOULD BE USED BETWEEN THE TWO LAYERS OF BACKFILL MATERIAL. SEE DETAIL BELOW.

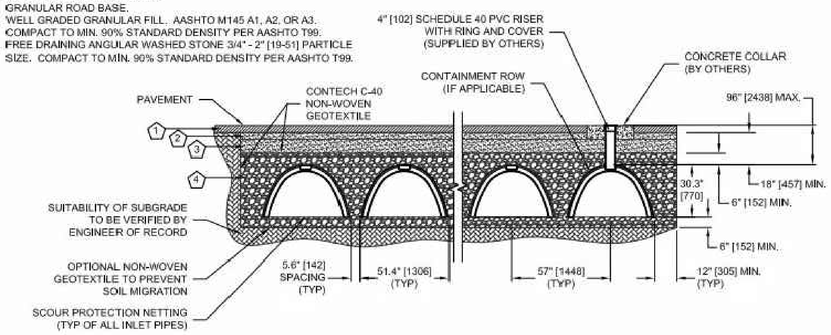


ELEVATION VIEW

TYPICAL CHAMBER ROW DETAIL

KEY

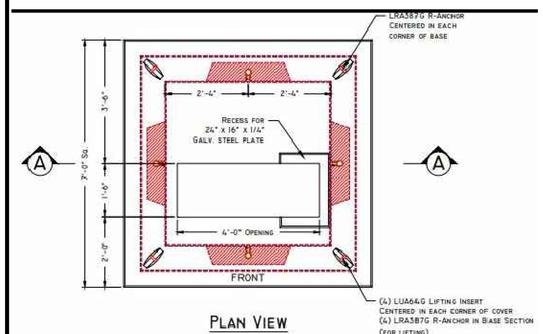
1. RIGID OR FLEXIBLE PAVEMENT.
2. GRANULAR ROAD BASE.
3. WELL GRADED GRANULAR FILL. AASHTO M145 A1, A2, OR A3. COMPACT TO MIN. 90% STANDARD DENSITY PER AASHTO T99.
4. FREE DRAINING ANGULAR WASHED STONE 3/4" - 2" [19-51] PARTICLE SIZE. COMPACT TO MIN. 90% STANDARD DENSITY PER AASHTO T99.



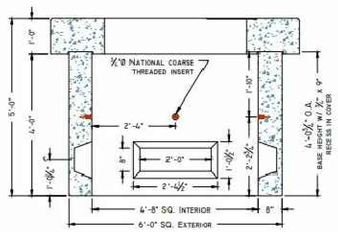
TYPICAL SECTION VIEW
(H20/H25 LIVE LOAD)
PER AASHTO 12

A1 UNDERGROUND DETENTION SYSTEM - CHAMBERMAXX

NO SCALE



PLAN VIEW



SECTION A-A

A14 NEW CMP THREE PHASE CONCRETE TRANSFORMER PAD (7'X7'

NO SCALE

REV.	DESCRIPTION	DATE
0	95% QA / QC	04.17.20

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PROJECT: BRUNSWICK FIRE STATION
BRUNSWICK, MAINE

SHEET TITLE: SITE DETAILS

WBRC CAD FILE: 421900-C501.DWG
PROJECT No. 4219.00
GRAPHIC SCALE: 0" 1"
SCALE: NO SCALE
PROJECT MANAGER: MLW
DRAWN BY: TDP
CHECKED BY: PAM
SHEET No. C504

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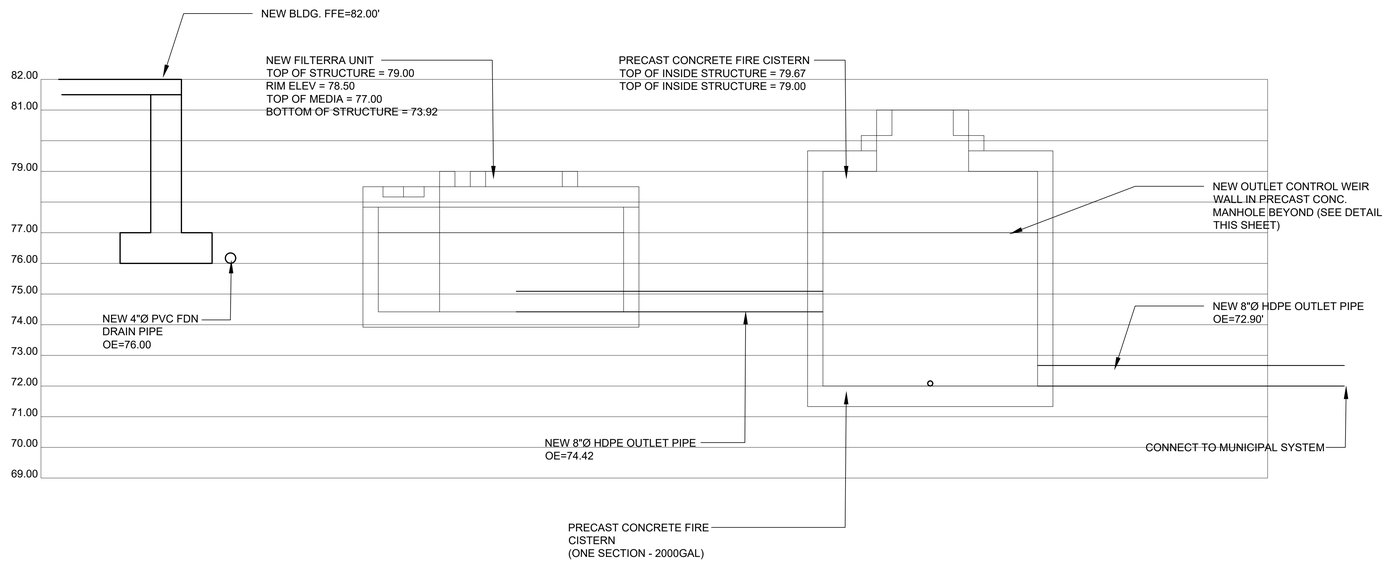
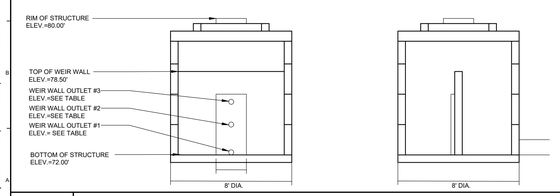


J1 STORM SYSTEM SECTION (FOR REFERENCE ONLY)

NO SCALE

	STRUCTURE #1	STRUCTURE #2
RIM OF STRUCTURE	81.00	81.00
TOP OF WEIR WALL	78.92	78.42
OUTLET #4	N/A	77.25 (4" HOLE)
OUTLET #3	N/A	76.42 (4" HOLE)
OUTLET #2	76.92 (4" HOLE)	75.50 (4" HOLE)
OUTLET #1	73.00 (2" HOLE)	76.42 (1" HOLE)
OE	73.00	73.50
BOTTOM OF STRUCTURE	72.00	73.00



A1 NEW OUTLET CONTROL STRUCTURE

NO SCALE

A5 NOT USED

A10 NOT USED

A14 NOT USED

REV.	DESCRIPTION	DATE
0	95% QA / QC	04.17.20

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BRUNSWICK FIRE STATION

PROJECT: BRUNSWICK, MAINE

SITE DETAILS

SHEET TITLE:

WBRC CAD FILE: 421900-C501.DWG

PROJECT No. 4219.00

GRAPHIC SCALE: 0" 1"

SCALE: NO SCALE

PROJECT MANAGER: MLW

DRAWN BY: TDP

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SHEET No.: C505

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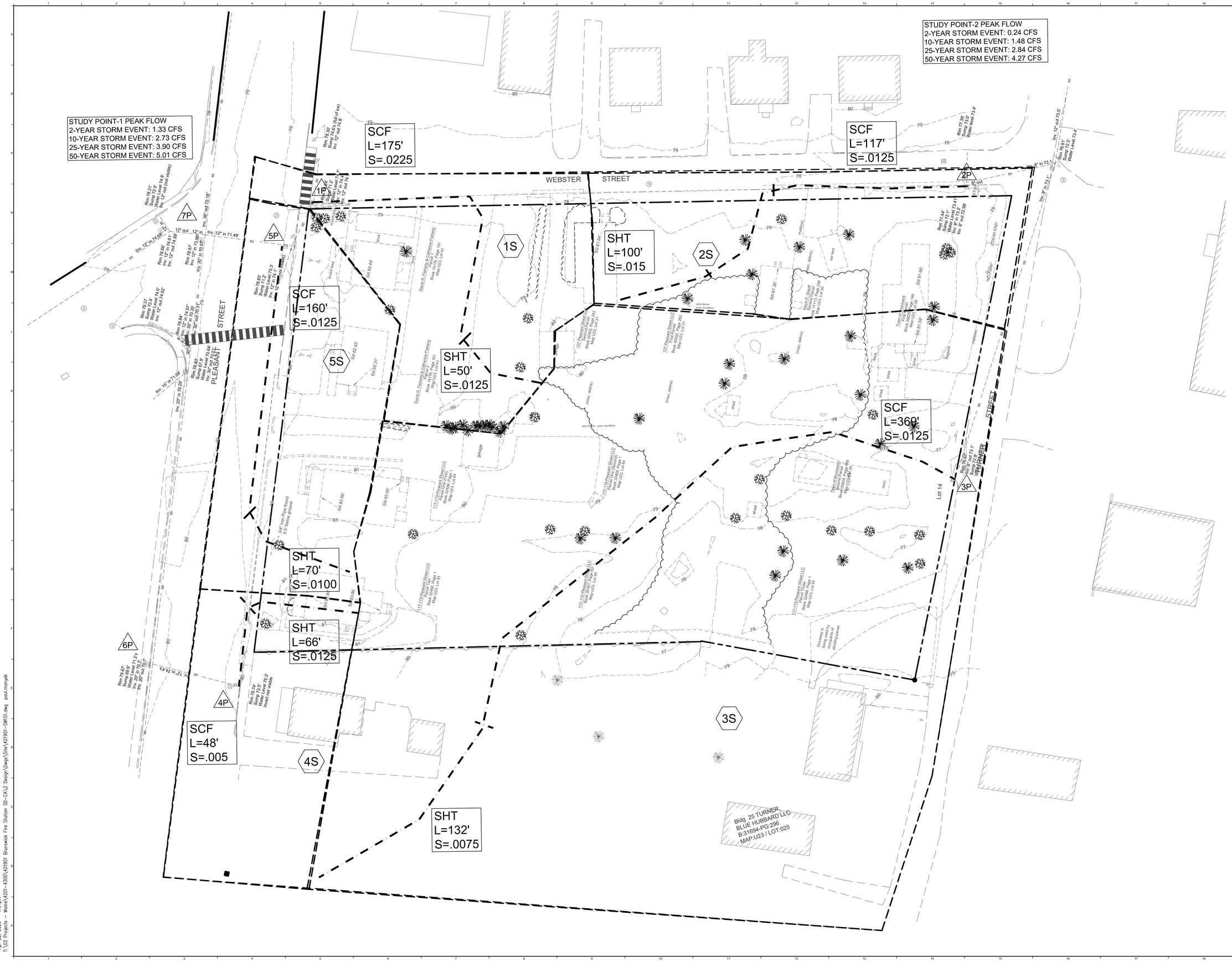

LEGEND

EXISTING		PROPOSED
	LIMITS OF WETLAND	
	UTILITY POLE	
	STREET LIGHTING	
	BUILDING LIGHTING	
	WATER SHUTOFF / GATE VALVE	
	TRANSFORMER PAD	
	DUMPSTER	
	MANHOLE	
	SEWER MANHOLE	
	CATCH BASIN	
	FIRE HYDRANT	
	SIGN	
	FENCING	
	P.T. GUARD RAIL	
	PAVEMENT	
	SIDEWALK	
	VERT. SLIPFORM CONC. CURB	
	GRANITE CURB	
	PRECAST CONC. WHEEL STOP	
	GEO BLOCK RETAINING WALL	
	CIP CONCRETE RETAINING WALL	
	WOOD CHIP PLAY AREA	
	COARSE AGGREGATE	
	CENTERLINE	
	CONTROL PT.	
	PROPERTY SETBACK	
	PROPERTY LINE	
	ABUTTING PROPERTY LINE	
	TREE LINE	

REV.	DESCRIPTION	DATE
0	PROGRESS PRINT	03.09.20

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PROJECT: BRUNSWICK FIRE STATION
BRUNSWICK, MAINE

SHEET TITLE: PRE-DEVELOPMENT STM PLAN

WBRC CAD FILE:	421901-SW101.DWG		
PROJECT No:	4219.00	GRAPHIC SCALE:	0" 1"
SCALE:	1"=20'		
PROJECT MANAGER:	MLW	SHEET No:	SW101
DRAWN BY:	TDP		
CHECKED BY:	PAM		

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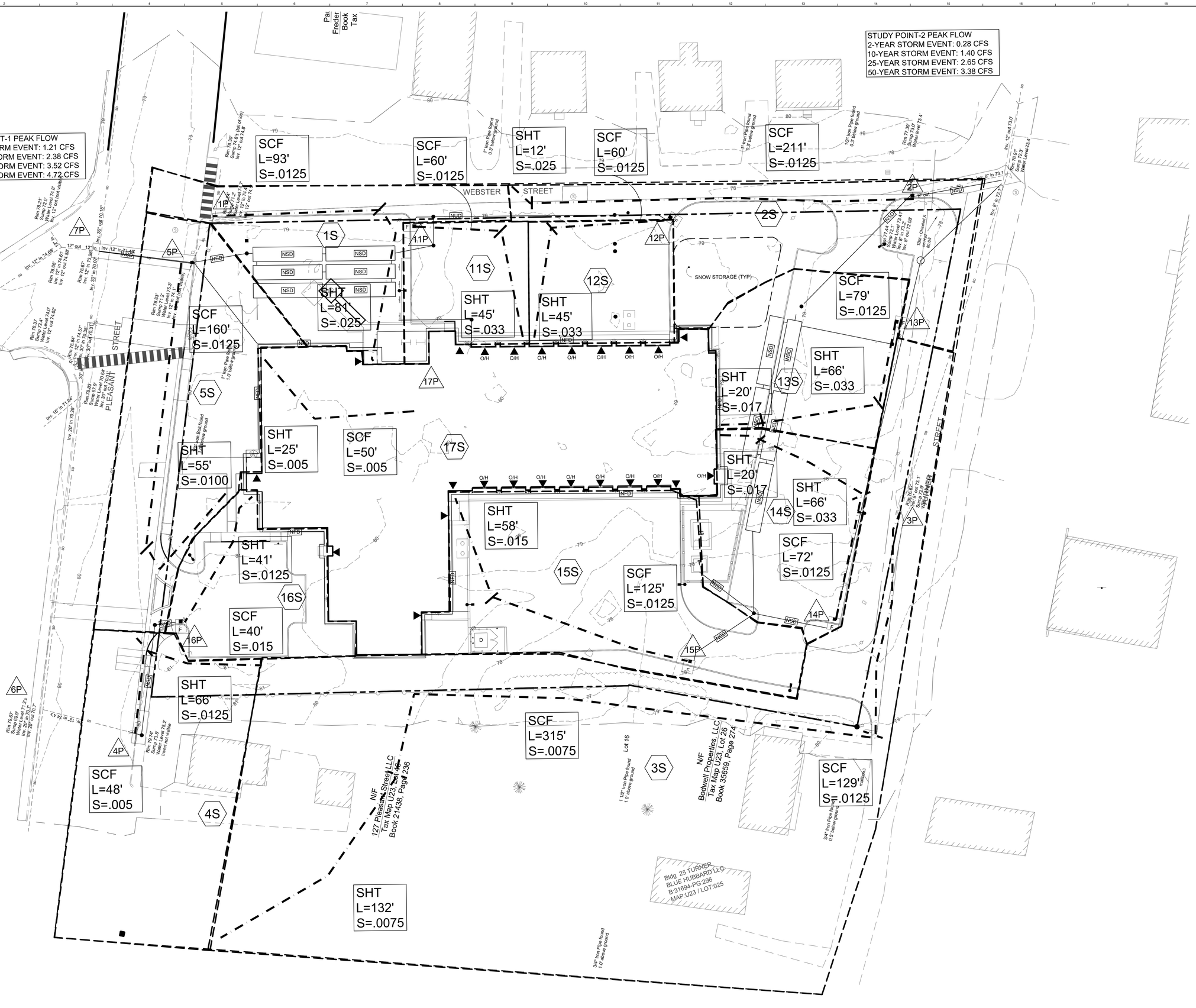
STUDY POINT-1 PEAK FLOW
2-YEAR STORM EVENT: 1.21 CFS
10-YEAR STORM EVENT: 2.38 CFS
25-YEAR STORM EVENT: 3.52 CFS
50-YEAR STORM EVENT: 4.72 CFS

STUDY POINT-2 PEAK FLOW
2-YEAR STORM EVENT: 0.28 CFS
10-YEAR STORM EVENT: 1.40 CFS
25-YEAR STORM EVENT: 2.65 CFS
50-YEAR STORM EVENT: 3.38 CFS



LEGEND

EXISTING		PROPOSED
	LIMITS OF WETLAND	
	UTILITY POLE	
	STREET LIGHTING	
	BUILDING LIGHTING	
	WATER SHUTOFF / GATE VALVE	
	TRANSFORMER PAD	
	DUMPSTER	
	MANHOLE	
	SEWER MANHOLE	
	CATCH BASIN	
	FIRE HYDRANT	
	SIGN	
	FENCING	
	P.T. GUARD RAIL	
	PAVEMENT	
	SIDEWALK	
	VERT. SLIPFORM CONC. CURB	
	GRANITE CURB	
	PRECAST CONC. WHEEL STOP	
	GEO BLOCK RETAINING WALL	
	CIP CONCRETE RETAINING WALL	
	WOOD CHIP PLAY AREA	
	COARSE AGGREGATE	
	CENTERLINE	
	CONTROL PT.	
	PROPERTY SETBACK	
	PROPERTY LINE	
	ABUTTING PROPERTY LINE	
	TREE LINE	

REV.	DESCRIPTION	DATE
0	95% QA/QC	04.17.20

NOT FOR CONSTRUCTION

WBRC ARCHITECTS • ENGINEERS
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BANGOR, MAINE 207-947-4281
PORTLAND, MAINE 207-828-4281
SARASOTA, FLORIDA 941-379-1203

PROJECT: BRUNSWICK FIRE STATION
BRUNSWICK, MAINE

SHEET TITLE: POST-DEVELOPMENT STM PLAN

WBRC CAD FILE:	421901-SW101.DWG
PROJECT No.	4219.00
SCALE:	1"=20'
PROJECT MANAGER:	MLW
DRAWN BY:	TDP
CHECKED BY:	PAM
GRAPHIC SCALE:	0" 1"
SHEET No.	SW102

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Jun 04, 2020 – 1:07pm
T:\02 Projects – Maine\4201-4300\421901 Brunswick Fire Station SD-CA\2 Design\Dwgs\Site\421901-SW101.dwg paul.morrysk

CONDITIONAL USE PERMIT
APPLICATION

1. Project Name: Marijuana Store - Adult Use

2. Project Applicant
   Name: GJoris LLC
   Address: 135 Maine Street, Suite 129
   Brunswick, Maine 04011
   Phone Number: (207)-239-4189
   Email: docfoglight@gmail.com

4. Project Owner (if different than applicant)
   Name: Same as Applicant
   Address:
   Phone Number:
   Email:

5. Authorized Representative
   Name: Sitelines, PA Attn: Joseph J. Marden, PE
   Address: 119 Purinton Road, Suite A
   Brunswick, Maine 04011
   Phone Number: 207-725-1200 ext. 12
   Email: jmarden@sitelinespa.com

6. List of Design Consultants. Indicate the registration number, address and phone number, email for any additional project engineers, surveyors, architects, landscape architects or planners:

   1. Engineering & Surveying: Sitelines PA (Joseph J. Marden, PE #12828)
   2. Wetlands: Atlantic Environmental LLC (Tim Forrester, PWS #1933)
   3. Traffic: Sewall (Diane Morabito, PE #5077)

7. Physical Location of Property: 4 Business Parkway

8. Lot Size: 2.92 acres

9. Zoning District: Growth Industrial (GI)

10. Overlay Zoning District(s): N/A

11. Indicate the interest of the applicant in the property and abutting property. For example, is the applicant the owner of the property and abutting property? If not, who owns the property subject to this application?
Owner _____

_____

_____

_____

_____

12. Assessor's Tax Map 17 _____ Lot Number 66 _____ of subject property.

13. Brief description of proposed use: Refer to Cover Letter _____

_____

_____

14. Describe specific physical improvements to be done: Refer to Cover Letter _____

_____

_____

Owner Signature:

_____

Applicant Signature (*if different*):

AS AGENT _____

CONDITIONAL USE PERMIT APPLICATION REQUIREMENTS

The submission requirements contained in **Appendix D** of the Brunswick Zoning Ordinance (attached in checklist format for each application category) shall apply to all unless a waiver is granted. Applications shall be submitted to the Director of Planning and Development.

For each item listed in Appendix D the applicant shall either submit the requested information or request a waiver from the information requirement pursuant to Subsection 5.2.9.M of the Zoning Ordinance.

REQUIREMENTS FOR CONDITIONAL USE OR SPECIAL PERMIT APPLICATION SUBMITTAL Please mark box with one of the following: "W" (Waiver); "P" (Pending); "X" (Submitted) or "N/A" (Not applicable)		Conditional Use or Special Permit
General	Application form and fee	X
	Name of development	X
	Existing zoning district and overlay designations	X
	Location map	X
	Names of current owner(s) of subject parcel and abutting parcels	X
	Names of engineer and surveyor; and professional registration numbers of those who prepared the plan	X
	Location of features, natural and artificial, such as water bodies, wetlands, streams, important habitats, vegetation, railroads, ditches and buildings	X
	Documentation of Right, Title and Interest	X
	Drafts of legal documents appropriate to the application, including: deeds, easements, conservation easements, deed restrictions or covenants, home/property owners association declarations and by-laws, and such other agreements or documents as are necessary to show the manner in which common areas will be owned, maintained, and protected	X
	Draft performance guarantee or conditional agreement	N/A
Survey, Topography, & Existing Conditions	Scale, date, north point, and area	X
	A survey submitted (stamped for final plan submittal) by a professional surveyor with a current license by the State of Maine Board of Licensure for Professional Surveyors	X
	Existing easements associated with the development	X
Infrastructure - Proposed	Proposed easements associated with the development	N/A
	Locations and dimensions of proposed vehicular and bicycle parking areas, including proposed shared parking arrangement if applicable.	X
	Grading, erosion control, and landscaping plan; proposed finished grades, slopes, swells, and ground cover or other means of stabilization	X
	Where a septic system is to be used, evidence of soil suitability	N/A
	A statement from the General Manager of the Brunswick Sewer District as to conditions under which the Sewer District will provide public sewer and approval of the proposed sanitary sewer infrastructure	X
	A statement from the Fire Chief recommending the number, size and location of hydrants, available pressure levels, road layout and street and project name, and any other fire protection measures to be taken	N/A
	A statement from the General Manager of the Brunswick and Topsham Water District as to conditions under which public water will be provided and approval of the proposed water distribution infrastructure	X
	Reference to special conditions stipulated by the Review Authority	N/A

REQUIREMENTS FOR CONDITIONAL USE OR SPECIAL PERMIT APPLICATION SUBMITTAL Please mark box with one of the following: "W" (Waiver); "P" (Pending); "X" (Submitted) or "N/A" (Not applicable)		Conditional Use or Special Permit
Proposed Development Plan	When applicable, a table indicating the maximum number of lots permitted based upon the applicable dimensional requirements, the number of lots proposed, and the number of lots permitted to be further subdivided.	N/A
	Disclosure of any required permits or, if a permit has already been granted, a copy of that permit	X
	A statement from the General Manager of the Brunswick and Topsham Water District regarding the proposed development if located within an Aquifer Protection Zone	N/A
Proposed Development Plan	A plan of all new construction, expansion and/or redevelopment of existing facilities, including type, size, footprint, floor layout, setback, elevation of first floor slab, storage and loading areas	X
	A site landscaping plan indicating grade change, vegetation to be preserved, new plantings used to stabilize areas of cut and fill, screening, the size, locations and purpose and type of vegetation	X
	Number of lots if a subdivision	N/A
	All applicable materials necessary for the Review Authority to review the proposal in accordance with the criteria of Chapter 5.	X
	Any additional studies required by the Review Authority	X

DrummondWoodsum
ATTORNEYS AT LAW

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Admitted in ME

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207.772.1941 Main
207.772.3627 Fax

September 22, 2020

Matt Panfil, Director of Planning and Development
Town of Brunswick
85 Union Street
Brunswick, ME 04011

Re: Application for Conditional Use Approval by GJoris, LLC
4 Business Parkway, Brunswick, Maine

Dear Mr. Panfil:

I represent GJoris, LLC ("GJoris") in the above-referenced matter. As you will recall, the Planning Board tabled my client's application on May 12, 2020 after it became apparent that the conditional use standards contained in § 5.2.2.B of the Brunswick Zoning Ordinance ("BZO") required amendment. On August 17, 2020, after public hearings were conducted by both this Board and the Town Council, the Council adopted significant amendments to the conditional use criteria set forth in § 5.2.2.B. These amended standards are addressed below.

In our August 27, 2020 correspondence in the wake of the adoption of the amendments to § 5.2.2.B, you indicated that my client should submit a new application form for the purposes of administrative clarity. You noted, however, that GJoris could incorporate by reference all prior submissions, and that the Town would waive the application fee and all other submission requirements (except to address the new conditional use criteria under § 5.2.2.B, as amended).[1]

As discussed in detail below, GJoris meets each one of the BZO's conditional use criteria. I have cut and pasted below the newly amended criteria from the Town's updated conditional use application. The criteria are in **bold-faced type** and our explanation of how they are each met appears in turn.

A. Criteria for Conditional Use Approval

1. The proposed structure and site design comply with all standards of this Ordinance applicable to the zoning district and any overlay district within which the property is located.

GJoris incorporates by reference its prior submissions in support of its conditional use permit in this regard. Additionally, we direct the Planning Board to GJoris' detailed application for Major

[1]Joseph Marden of Sitelines, PA will be submitting the requisite number of copies of the new application form and will be resubmitting the original application for the Board's convenience and reference under separate cover.

Development Review, which outlines in significant detail, how the proposed project meets all of the many land use standards set forth in the BZO.[2] These standards include: dimensional and density standards; natural and historical areas; flood hazards; basic municipal services; landscaping requirements; circulation and access; parking and loading; lighting; architectural compatibility; neighborhood protection standards; signs; general performance standards (i.e., construction activities; smoke, dust or particulate emissions, fumes, vapors or gases that would cause injury to human, animal, or vegetable health; odors; vibrations; and storage); site maintenance; and financial and technical capacity. As discussed in GJoris' Major Development Review application, the project meets all of the governing provisions of the BZO.

2. The volume and type of vehicular traffic to be generated will not:

a. Be greater than would occur from any uses designated as a permitted use or conditional use within the same zoning district.

This new conditional use standard represents a significant change from the prior one. The relevant inquiry is no longer whether the proposed use would generate more traffic than uses with 300 feet (given that such a standard was recognized by both this Board and Town Council to invite inconsistent, potentially unfair, and legally untenable results). Rather, the inquiry is now broader in scope, and directs that the focus be centered on similar uses allowed within the zoning district *as a whole*.

GJoris commissioned a new traffic analysis by Professional Traffic Engineer, Diane Morabito, to address the amended criteria enumerated in § 5.2.2.B(2)(a). Ms. Morabito's September 15, 2020 report is attached as ***Exhibit 1***.

As evidenced by Ms. Morabito's report, not only will the volume and type of vehicular traffic generated by GJoris' proposed use ***not*** be greater than would occur from "any uses designated as a permitted use or conditional use within the same zoning district," it would be ***substantially less*** in many instances.

In her report, Ms. Morabito identifies several actual uses that are currently operating in the Growth Industrial ("GI") zone, including the LL Bean Manufacturing Center, Hancock Lumber, Region 10 Technical School, and the BIW Office Building. As she outlines in her report, these uses, respectively, generate the following number of peak hour trips: 101, 166 (Saturday), 79, and 123. By comparison, GJoris' proposed use is expected to generate at its highest peak trips between 93 and 113 trips. These trip numbers are entirely consistent with actual existing uses within the GI zone. In fact, they are significantly less than the traffic generated by Hancock Lumber and the BIW Office Building.

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[2] In addition to GJoris' original conditional use permit application, it also incorporates by reference its Major Development Review Application, because there is tremendous crossover between the standards that must be met under the newly adopted conditional use standards under § 5.2.2.B and Chapter 4 of the BZO, (which is the subject of the Development Review Application).

The fact that the traffic to be generated by the proposed use is well within the amount contemplated and permitted under the amended § 5.2.2.B is further demonstrated when one examines other "uses designated as a permitted use or conditional use within the same zoning district." Ms. Morabito notes that the following uses are listed as either permitted or conditional uses in the GI zone: churches; schools, restaurants, theaters, retail (class II); and vehicle fueling stations. These various uses generate the following numbers of daily peak trips, respectively: 150; 204; 142; 531; 694; 115. When compared to the highest number of daily peak trips that GJoris' project is expected to generate (i.e., 113 trips), it becomes clear that the proposed use will generate ***substantially less*** traffic than many of the uses designated as permitted or conditional uses within the GI zone.

Based on the evidence submitted, it cannot reasonably be disputed that the application meets the requirements of § 5.2.2.B(2)(a).

b. Result in hazardous or unsafe conditions for pedestrians or cyclists.

As addressed in GJoris' submissions in connection with its Major Development Review Application relating to "Circulation and Access," this standard is met for the reasons discussed below.

The number of trips that GJoris' project will add to the total numbers of trips to/from the Industrial Park is well within the number contemplated by the Traffic Movement Permit ("TMP") issued in April 2003 by Maine DOT for the Industrial Park expansion. As discussed in Ms. Morabito's January 28, 2020 letter to Randy Illian, Maine DOT's Region 1 Traffic Engineer, the 2003 TMP contemplated 167 peak AM and 184 peak PM trips to/from the Industrial Park.[3] Her analysis of the number projected trips by GJoris' proposed use was 65 AM, 93 PM, and 113 Saturday peak hour trips.[4] Based on the results of an actual traffic study conducted at the Industrial Park in January 2020, the park's existing uses are currently generating 56 AM and 38 PM peak trips. Ms. Morabito therefore concluded as follows:

> …the projected trips for the proposed marijuana facility, when combined with the existing peak summer trips for the business park…will be 121 for the weekday AM peak hour and 131 for the PM peak hour. These numbers are well within the 167 AM and 184 PM permitted trips in the TMP. Additionally, it is important to note that a new TMP would not be required until the trips exceeded the permitted trips by 100. Hence, a new TMP would

[3] Ms. Morabito's January 28, 2020 letter to Mr. Illian was included in GJoris LLC's original conditional use application, which is incorporated herein by reference.

[4] The land use code identified in the most recent edition of the Institute of Traffic Engineers ("ITE") trip generation manual that applies here is "Marijuana Dispensary." This term is defined in the ITE manual as "a standalone facility where cannabis is sold to patients or consumers in a legal manner." Accordingly, the classification employed by Ms. Morabito in her report includes not only medical marijuana dispensaries but also retail establishments.

not be required for the business park expansion until expected trips reach 267 AM or 284 PM trips.[5]

As discussed by GJoris' engineer, it is expected that the majority of customers will come from outside of Brunswick given the specialized nature of the proposed use. Attached as ***Exhibit 2*** are Mr. Marden's submissions outlining how the proposed project meets the requirements of § 5.2.2.B(2)(b). Accordingly, the bulk of the traffic anticipated to be generated by this project is overwhelmingly vehicular rather than from pedestrians or cyclists. To the extent that the proposed use will cause increased traffic that could impact existing pedestrian and bicycle traffic, any such increase will not pose a hazard or create unsafe conditions for them given the low traffic volumes currently within the business park and that the roadways within the park are well maintained and have ample width to accommodate them. The site itself has been designed with both cyclists and pedestrians firmly in mind. It features a sidewalk along the front of the building. Additionally, a crosswalk and a pedestrian path have been provided through the parking lot to provide safe passage for all customers and employees from the parking lot to the building. Although few are anticipated, a bike rack has also been provided adjacent to the building to accommodate any cyclists.

c. Impede emergency vehicles as determined by public safety officials.

Deputy Fire Chief, Jeff Emerson, who served on the Staff Review Committee that originally reviewed this application, has indicated that the Fire Department has no concern that the proposed use would impede emergency vehicles. Attached as ***Exhibit 3*** is a confirmatory email from Deputy Chief Emerson in this regard.

Similarly, the police department has no concern that the proposed use will impede emergency vehicles. Attached as ***Exhibit 4*** is a confirmatory email from Chief Scott Stewart in this regard.

3. The proposed use will not operate or require deliveries earlier in the morning, or later at night, than would occur at any permitted use or conditional use within the same zoning district.

As noted in GJoris' original submissions in support of its conditional use application, all structures located in close proximity to the proposed project are commercial uses located within the industrial park. While there are some residential properties in the general vicinity, they are located at least 250 feet away (i.e., separated by a 200 foot natural wooded buffer plus a 50 foot right of way for Greenwood Road). Given this distance, residential properties will not be affected by deliveries, which will largely be made by vans that generate no more noise than most passenger vehicles. With respect to the surrounding commercial properties located within the industrial park, it is

[5] *See* Chapter 305 of the MDOT Rules entitled, "Rules and Regulations Pertaining to Traffic Movement Permits." 17-229, C.M.R. at p. 2 ("Any project which generates 100 or more passenger car equivalents (PCE) during peak hour of traffic generation must file a [TMP] application with [MDOT]." Since a project does not require a TMP until 100 trips are anticipated, MDOT has does not require a new (or modified) permit until 100 trips are anticipated over permitted levels.

unlikely that deliveries outside normal business hours would detrimentally impact them. In any event, the proposed use will operate during normal business hours, including deliveries.

Additionally, there are uses located within the GI zone whose approvals apparently impose no limitations on delivery times. For example, the owner of 43 Bibber Parkway, which is located in the GI zone within in the Industrial Park, reports that tenants in that building receive deliveries both during the day and at night and he is unaware of any limitations or conditions imposed by the Town in that regard.

4. The proposed use shall not create adverse impacts as a result of noise, vibrations, glare, fumes, odor, dust, or other airborne contaminants on any use or structure within 300 feet of the lot on which the proposed use or structure would be located.

All of these "adverse impacts" enumerated in § 5.2.2.B(4) of the BZO are virtually verbatim to standards that must also be met during the Planning Board's Major Development Review process. For the reasons stated in GJoris' Major Development Review application, and as summarized here, these standards are all met.

First, a marijuana store, by its nature, is not the kind of use that would generate any kind of noise that would exceed the maximum equivalent sound levels prescribed in the BZO, i.e., 50 dBA during the day and 40 dBA at night.

Second, a marijuana store, by its nature, is not the kind of use that would result in any kind of recurring vibrations.

Third, a marijuana store, by its nature, is not the kind of a use that would generate glare. As with any other commercial use, all outdoor lighting will have to comply with § 4.10 of the BZO. As demonstrated in its extensive submissions with respect to its lighting plan in conjunction with its Major Development Review, lighting has been designed to mitigate impact on surrounding properties and will meet all governing requirements under the BZO regarding lighting and glare.

Fourth, a marijuana store, by its nature, is not the kind of a use that would generate odor or fumes. While such a concern may be warranted in circumstances where cultivation of marijuana is involved, that is not the case here. The proposed use only sells product that is already packaged before it arrives on site. To the extent that odor from smoke generated by customers smoking recently purchased product is a concern, GJoris has a strict policy prohibiting on-site consumption, consistent with state law. Accordingly, there will be no odors associated with the sale of retail marijuana at the site.

Fifth, a marijuana store, by its nature, is not the kind of a use that would generate dust or other airborne contaminants.

For these reasons, GJoris' proposed use meets all governing review criteria of § 5.2.2.B(4) of the BZO.

5. The application shall further the planning goals of the adopted Town of Brunswick Comprehensive Plan, as amended, including but not limited to the planning goals for the Planning Area (see Brunswick Zoning Ordinance Appendix A - Planning Areas)[6] in which the property is located.

For the reasons that follow, this standard is met. As noted in response to questions from Planning Board members at its May 12, 2020 meeting, the Town Attorney summarized the law regarding consistency with comprehensive plans. As she explained, the comprehensive plan is a planning document that is not intended to have the clarity or weight of an ordinance. In essence, the comprehensive plan identifies a municipality's aspirational planning goals, which are then fleshed out in ordinances that have the force and effect of law, which comprehensive plans lack.

As noted in the earlier Planning Board proceedings involving this project and the subsequent ordinance amendment process (and, as candidly recognized by two members of the Planning Board who are also members of the Comprehensive Plan Update Steering Committee), there are what could be considered internal inconsistencies within 2008 Comprehensive Plan (the "Comp Plan") regarding the desirability of retail uses in GI zone.[7] Ultimately, however, as explained below, there is sufficient support in both the Comp Plan and the BZO for the proposed use.

What follows is an overview of the provisions of Comp Plan that we believe operate to support GJoris' application. Chapter 7 of the Comp Plan, entitled "Land Use Plan," provides as follows:

B. General Pattern of Development. The Town of Brunswick's Land Use Plan reflects the following guiding principles with respect to the general pattern of development:

6. ***Retail uses*** and development should be carefully managed. ***The downtown should remain the heart*** of the community and should include a strong commercial/retail base. New retail development should also be accommodated at Cook's Corner – Brunswick's second retail center. Limited retail development should be allowed along the existing commercial corridors that link the various parts of the community. ***Creation of additional retail centers outside of these areas should not be allowed although limited scale retail uses serving future businesses and residences would be appropriate***.

7. Growth of ***other types of economic activities*** should be encouraged and an adequate supply of land provided that is designated for these types of uses. ***Economic growth and development should be accommodated*** in the downtown, Cook's Corner, the commercial

[6] The provisions of Appendix A of the BZO regarding the planning goals for the GI zone are almost identical to the language cited below from the 2008 Comprehensive Plan now in effect. Accordingly, the same arguments apply equally to both.

[7] While the 12 year-old 2008 Comprehensive Plan is currently in effect, it is under review by the Comprehensive Plan Update Steering Committee. The fact that the plan will likely be amended soon is reflected in the recent amendments to the conditional use standards in § 5.2.2.B(4) of the BZO. Whereas the prior version of this section specifically referenced the 2008 plan, the new version simply references the "Comprehensive Plan, as amended."

> corridors, and ***in well planned business/industrial areas that are served by public water and sewer***.
>
> (emphasis added)

While the Comp Plan expresses a preference that retail uses be focused in the downtown and in other traditionally commercial areas, a review of the plain language of sections 6 and 7, when read together, reflects an openness to such uses being located outside these areas in certain circumstances. While the Comp Plan reflects a desire to avoid the creation of new "retail centers," outside these designated areas, that is not what is contemplated here. Even if the proposed project were a traditional retail use, (which it is not for the reasons set forth below), approving a *single* such establishment does not in any way create a "retail center." A review of the BZO clearly demonstrates that marijuana stores are not designated as a "retail" use. Rather, they are in a land use classification all of their own, i.e., "Marijuana Uses." *See* § 3.2 of the BZO. Clearly, the Council believes retail marijuana (along with other marijuana-related uses) to be somewhat different than traditional retail uses, and as such, subjected them to different standards. Accordingly, their location in the GI zone is entirely consistent with section 7.B.7 of the Comp Plan in that it is "another type of economic activity" located in a "well planned… industrial area…served by public water and sewer." The Industrial Park is served by both public water and sewer.

Another provision of the Comp Plan that supports approval of GJoris' application is section 7.9, entitled, "Industrial Areas." The introductory language of this section provides that the Town's "Industrial Areas include lands appropriate for industrial and other types of more intensive, non-residential uses (excluding ***large*** retail uses). (emphasis added) Clearly, GJoris' 3,100 square foot facility is not a "large retail use," such as a big box store or supermarket.[8] In any event, retail uses of *all* sizes are specifically allowed as of right as "permitted uses" in the GI zone. *See* § 3.2 of the BZO. Moreover, section 7.9(a) of the Comp Plans further provides that "as development, expansions, and redevelopment occur within these areas, the environmental and visual quality of the areas is improved." As a review of the architectural renderings for this application demonstrate, the proposed structure greatly enhances the "visual quality" of the area.

GJoris's application is consistent with the above-cited provisions of both the Comp Plan and BZO. While opponents to the project have argued that there are other provision of the Comp Plan that do not support the pending application, Maine precedent is clear that any such inconsistency would be an impermissible basis upon which to deny it.

When considering whether a provision of an ordinance (or, as here, a proposed project) is "consistent with" with a comprehensive plan, a court need only determine that it is in "basic harmony" with the comprehensive plan. To be considered "in basic harmony," it need not perfectly fulfill the goals of a comprehensive plan. Rather, so long as it strikes a reasonable balance among the municipality's various zoning goals as stated in the plan, it will be determined

---

[8] The BZO separately defines "Retail, Class I" and "Retail, Class II" by reference to square footage with "Class I" having less than 5,000 square feet of gross floor area and "Class II" having 5,000 square feet or more.

to be in basic harmony with the plan. Additionally, a comprehensive plan must be considered as a whole and a municipality may conclude that a zoning action is consistent with a comprehensive plan when it is in harmony with some provisions of the plan, *even if* the action appears inconsistent with other provisions of the plan. *See Friends of Motherhouse v. City of Portland*, 2016 ME 178, ¶ 10, 152 A.3d 159, 161–62 citing *Remmel v. City of Portland*, 2014 ME 114, ¶ ¶ 1, 12-14 11; *see also Golder v. City of Saco*, 2012 ME 76, ¶ 11, 45 A.3d 697; *Adelman v. Town of Baldwin,* 2000 ME 91, ¶ 22, 750 A.2d 577; *LaBonta v. City of Waterville,* 528 A.2d 1262, 1265 (Me.1987)); *Nestle Waters N. Amer., Inc. v. Town of Fryeburg,* 2009 ME 30, ¶ 23, 967 A.2d 702; *Stewart v. Town of Durham,* 451 A.2d 308, 312 (Me.1982).

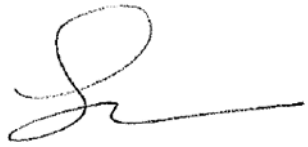
Based on the foregoing, the applicant meets the requirements of § 5.2.2.B(5) of the BZO.

6. The proposed use shall be adequately served by, but shall not impose an unreasonable burden on existing or planned municipal services, utilities, or other necessary facilities.

As with § 5.2.2.B(4) above, this conditional use criteria is virtually identical to ones also required under Major Development Review. Specifically, § 4.5 of the BZO requires applicants to demonstrate that the proposed development will not overburden existing "basic and municipal services." As noted in GJoris' application for Major Development Review, the site is served by public sewer and the Brunswick Sewer District has certified that the Town's sewer system has sufficient capacity to serve the project. Similarly, the site is served by public water from the Brunswick & Topsham Water District, which has also confirmed its capacity to serve the proposed project. Because the proposed use is commercial, not residential in nature, there is no concern that it would unduly burden the school system. Finally, as noted above, the Town's police and fire departments both participated in the initial staff review of this project and neither expressed any concern that the project would place an undue burden on them.

Based on the foregoing, GJoris' proposed use meets all of the criteria in the amended conditional use standards set forth in § 5.2.2.B.2 of the BZO. We look forward to discussing the application further at your October 13, 2020 meeting.

Sincerely,



Leah B. Rachin

September 15, 2020

Joseph Marden, P.E.
Project Manager
Sitelines, PA
119 Purinton Road, Suite A
Brunswick, ME 04011

RE: ADDITIONAL TRIP GENERATION ANALYSIS FOR 4 BUSINESS PARKWAY IN BRUNSWICK, MAINE

INTRODUCTION

This is written to summarize trip generation analysis performed regarding Conditional Use Standards for the proposed marijuana sales facility at 4 Business Parkway in Brunswick. It is understood, based upon information you have provided, that Criteria for Approval requires the following:

The volume and type of vehicular traffic to be generated will not:

A. *Be greater than would occur from any uses designated as a permitted use or conditional use within the same zoning district*
B. *Result in hazardous or unsafe conditions for pedestrians or cyclists; and*
C. *Impede emergency vehicles as determined by public safety officials.*

To address the above condition A. Sewall has performed additional trip generation analyses.

TRIP GENERATION ANALYSIS

The number of trips to be generated by the proposed retail marijuana facility was previously estimated utilizing the most recent Institute of Transportation Engineers (ITE) "Trip Generation" 10th edition report. This newest edition is based upon the largest and most current database and is considered to be the best information regarding current trip making. Land use code (LUC 882) – Marijuana Dispensary was utilized. The calculations were based upon the proposed 3,100 square feet (s.f.) and the results are repeated in the following table for later comparisons:

EXHIBIT 1

PROPOSED SALES FACILITY TRIP GENERATION

Time Period	One-way Trip-ends
AM Peak Hour – Adjacent Street	32
AM Peak Hour – Generator	65
PM Peak Hour – Adjacent Street	68
PM Peak Hour – Generator	93
Saturday Peak Hour	113

As shown in the above table, based upon the ITE data, the facility is expected to generate their greatest volumes during their PM peak hour and Saturday peak hour, with 93 and 113 trips respectively.

Based upon information you have provided, existing uses within the zoning district include the following:

- LL Bean Manufacturing Center
- Hancock Lumber
- Region 10 Technical School
- BIW Office Building
- Flight Deck Brewery

Trip generation for these existing uses was estimated using the most recent Institute of Transportation Engineers (ITE) "Trip Generation, 10th Edition. The following land use codes (LUCs) and bases were used:

- LL Bean Manufacturing Center - LUC 140 – Manufacturing 127,816 s.f.
- Hancock Lumber – LUC 812 - Building Materials and Lumber Store 17,290 s.f.
- Region 10 Technical School – LUC 530 – High School 238 students
- BIW Office Building - LUC 715 – Single Tenant Office Building 71,827 s.f.

There is no ITE data for a brewery so trips for that facility have not been estimated. The results are summarized in the following table for the weekday PM peak hour of the facility (generator) and other relevant weekend periods in terms of one-way trip-ends:

	Estimated Peak Hour Generator Trips
• LL Bean Manufacturing Center	101 PM
• Hancock Lumber	48 PM and 166 Saturday
• Region 10 Technical School	79 PM
• BIW Office Building	123 PM

As seen above, at least two of the existing uses in the zone generate more than 100 one-way trips during the PM peak hour, exceeding the projected 93 trips of the marijuana sales facility. The Hancock Lumber facility is projected to generate 166 one-way trips during their Saturday peak hour, exceeding the 113 of the proposed sales facility.

In addition to the existing uses within the zone, some additional trip generation analysis was performed for the permitted/conditional uses within the Zoning District for further comparison purposes. These calculations were also performed using the most recent ITE data and were based upon the following LUCs and bases:

- Religious Institution – LUC 560 – Church - 15,000 s.f.
- School – LUC 520 – Elementary School – 600 students
- Restaurant - LUC 932- High-Turnover Sit-Down Restaurant - 5,500 s.f.
- Theater – LUC 444 – Movie Theater – 6 Screens
- Bank – LUC 912 – Drive-In Bank – 3,500 S.F.
- Retail Class II - LUC 815 – Free-Standing Discount Store – 100,000 s.f.
- Motor Vehicle Fueling Station – LUC 944- Gasoline Station – 8 fueling positions

The results for these potential uses within the zoning district for the weekday PM and weekend peak hours where relevant follow:

	Peak Hour Trip Generation (one-way trips)		
Potential Use/Size	PM	Saturday	Sunday
Church - 15,000 s.f. -	12	42	**150**
Elementary School – 600 students	**204**	---	---
Restaurant - 5,500 s.f.	**96**	62	**142**
Theater –6 Screens	**227**	**531**	**267**
Bank – 3,500 S.F.	72	92	---
Retail, Class II – 100,000 s.f.	**533**	**694**	---
Vehicle Fueling Station– 8 fueling positions	**115**	102	---

Highlighted in bold print in the table are the uses that would exceed the projected peak hour trip generation of the proposed sales facility during either the weekday PM peak hour or during a weekend peak hour. As can be seen, most of the permitted/conditional uses would be expected to exceed the trip generation of the proposed marijuana sales facility during at least one peak hour.

Based upon all of these analyses, of both existing uses in the zone and permitted/conditional uses, it is concluded that the proposed marijuana sales facility's trip generation would clearly not be greater than would occur from any uses designated as a permitted use or conditional use within this zoning district.

As always, let me know if you or the Town of Brunswick have any questions or concerns regarding this additional trip generation analysis or our conclusion.

STATE OF MAINE
DIANE W. MORABITO
No. 5077
LICENSED
PROFESSIONAL ENGINEER

Sincerely,

Diane W. Morabito

Diane W. Morabito, P.E. PTOE
Vice President Traffic Engineering

SITELINES
Civil Engineers • Land Surveyors

September 22, 2020

3781.02-7

Matt Panfil, Director of Planning
Town of Brunswick
85 Union Street
Brunswick, Maine 04011

Re: Conditional Use Application – Criteria 2
Marijuana Store – Adult Use
4 Business Parkway, Brunswick, Maine
Tax Map 17, Lot 66

On behalf of GJoris LLC, Sitelines PA submitted a Conditional Use application in April 2020 to the Planning Department for a Marijuana Store – Adult Use to be located at 4 Business Parkway in the Brunswick Industrial Park. At the May 12, 2020 Planning Board, the project was tabled due to some discrepancies in the Conditional Use standards. Subsequent to that meeting, the Town Council and Planning Board have revised the Conditional Use Standards to provide further clarity and intent. In order to demonstrate that this project meets the revised Conditional Use Criteria for Approval, below is Criteria 2 and a summary of how the applicant has addressed the standard. The remaining Criteria for Approval will be addressed in a separate letter from Drummond Woodsum.

Criteria for Approval

2. The volume and type of vehicular traffic to be generated will not:

a. Be greater than would occur from any uses designated as a permitted use or conditional use within the same zoning district;

Based on the questions and concerns that were raised as part of the prior Planning Board meeting and to address this Conditional Use standard, the applicant had Diane Morabito, P.E. with Sewall, review the anticipated traffic generated from the proposed project and compare it with other current permitted and conditional uses within the Growth-Industrial (GI) Zoning District along with other potential uses that would be allowed under the Zoning Ordinance. Based on her analysis, she concluded the following:

> "Based upon all of these analyses, of both existing uses in the zone and permitted/conditional uses, it is concluded that the proposed marijuana sales facility's trip generation would clearly not be greater than would occur from any uses designated as a permitted use or conditional use within this zoning district."

Refer to the attached traffic generation report from Sewall for further information on the traffic analysis.

EXHIBIT 2

b. *Result in hazardous or unsafe conditions for pedestrians or cyclists; and*

Based on the specialized type of retail use, it is anticipated that the project will attract customers from the mid-Maine region more so than primarily residents of Brunswick. As such, it is not anticipated that pedestrians or cyclists will be a significant source of traffic to the site. The location of the property is within an existing industrial park, which was not designed as pedestrian or bicycle friendly and as such, does not attract customers to utilize those modes of transportation. Nonetheless, the roadways within the Industrial Park are well maintained and have ample width to accommodate bicycles. There are no sidewalks within the Brunswick Industrial Park or on the access roadways of Greenwood Road or Church Road and no defined bicycle lanes are provided on the surrounding roadways. It is anticipated that the majority of the traffic will be by passenger vehicles. Based on the low traffic volumes within the Brunswick Industrial Park, it is not anticipated that even with an increase in bicycle or pedestrian traffic, there would be a hazardous or unsafe condition.

The proposed development has been designed to accommodate pedestrians and cyclists. A sidewalk has been extended along the front of the building, and a crosswalk and pedestrian path have been provided through the parking lot to provide safe passage for all customers and employees from the parking lot to the building. Per the Town of Brunswick standards, a bike rack has been provided adjacent to the building to accommodate any cyclists.

c. *Impede emergency vehicles as determined by public safety officials.*

The project has been designed with adequately sized access drives to accommodate any emergency access vehicles. As part of the Town review process, the Police Department and Fire Department have reviewed the project and did not have any concerns regarding emergency vehicle access.

We look forward to meeting with you and the Planning Board at their next available meeting to review the project and gain their approval. We appreciate your assistance with this project. Should you have any questions, please call or contact me via jmarden@sitelinespa.com.

Very truly yours,

Joseph J. Marden, P.E.
Project Manager

Enclosures

STATE OF MAINE
JOSEPH J. MARDEN
No. 12028
LICENSED
PROFESSIONAL ENGINEER

SITELINES
Civil Engineers • Land Surveyors

From: Jeff Emerson [mailto:jemerson@brunswickme.org]
Sent: Monday, September 21, 2020 11:58 AM
To: Joseph Marden <jmarden@sitelinespa.com>
Cc: Leah B. Rachin <LRachin@dwmlaw.com>
Subject: RE: 3781.02-Retail Marijuana Store, Business Parkway

I have looked at the plan and see no issues that would impede emergency vehicles.

Jeff Emerson
Deputy Chief
Fire Prevention Division
Brunswick Fire Department
21 Town Hall Place
Brunswick, ME 04011
207-725-5541 Ext # 2
207-725-6638 Fax
jemerson@brunswickme.org

With limited exceptions, e-mails sent to and from the Town of Brunswick are considered public records under Maine's Freedom of Access Act (FOAA). Public records are open to inspection and may be copied and distributed to others, including members of the media. Unless the e-mail meets one of the exceptions to the public records provisions, there should be no expectation of privacy or confidentiality.

EXHIBIT 3

From: Scott J. Stewart <SStewart@brunswickpd.org>
Sent: Monday, September 21, 2020 12:29 PM
To: Joseph Marden <jmarden@sitelinespa.com>
Subject: RE: 3781.02-Retail Marijuana Store, Business Parkway

I have only been with the PD since June 15th. However, I have reviewed the site plan and do not have any issues with it.

sjs

From: Joseph Marden <jmarden@sitelinespa.com>
Sent: Monday, September 21, 2020 9:48 AM
To: Scott J. Stewart <SStewart@brunswickpd.org>
Subject: 3781.02-Retail Marijuana Store, Business Parkway

Chief Stewart,

You may recall us coming before the staff review meeting back in April 2020 for a retail marijuana store to be located on Business Parkway in the Brunswick Industrial Park. Due to some vague Conditional Use language, the project was tabled at the Planning Board and the past few months the Town has revised their Conditional Use standards to clarify their intent. One of the new Conditional Use Criteria is as follows:

2. The volume and type of vehicular traffic to be generated will not:

c. *Impede emergency vehicles as determined by public safety officials.*

As part of our submission to the Town, we would like to have a statement from the Police and Fire Departments indicating any concerns they would have regarding emergency vehicle access or if they are satisfied that emergency vehicle access has been accounted for in the design of the project. Attached is the Site Plan for the project. As shown on the plans, there are 24-foot wide access drives that permit circulation throughout the project site for passenger vehicle and emergency vehicle access. Please review the Site Plan and provide any comments or questions you would have.

Thanks,

Joe Marden, P.E.
Project Manager
Sitelines, PA
119 Purinton Road, Suite A
Brunswick, ME 04011
t (207) 725-1200 xt 12
f (207) 725-1114
www.sitelinespa.com

EXHIBIT 4

MAJOR DEVELOPMENT REVIEW
FINAL PLAN APPLICATION

MARIJUANA STORE – ADULT USE

TAX MAP 17, LOT 66
4 BUSINESS PARKWAY
BRUNSWICK, MAINE

April 21, 2020

Prepared For

GJORIS LLC
135 Maine Street, Suite 129
Brunswick, Maine 04011

Prepared By

SITELINES
Civil Engineers • Land Surveyors

119 Purinton Road, Suite A, Brunswick Landing, Brunswick, ME 04011
207-725-1200 ▪ www.sitelinespa.com

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Rev. May 6, 2020

3781.02-7

Jared Woolston, Town Planner
Town of Brunswick
85 Union Street
Brunswick, Maine 04011

Re: Major Development Review Final Plan Application
Marijuana Store – Adult Use
4 Business Parkway, Brunswick, Maine
Tax Map 17, Lot 66

Dear Jared:

On behalf of GJoris LLC, Sitelines PA is pleased to submit the enclosed Final Plan Application, drawings, and supporting materials for the development of single-story commercial building with associated parking, infrastructure, and landscaping to be located at 4 Business Parkway in Brunswick. The project was previously presented to the Planning Board as a Sketch Plan on February 25, 2020. This letter is intended to summarize the project in order to facilitate the review process.

PROPERTY

GJoris LLC owns a parcel of land currently identified as Tax Map 17, Lot 66. The parcel contains approximately 2.92 acres and has frontage on Business Parkway and Greenwood Road. The property is located within the Growth Industrial (GI) zoning district in which marijuana store is a conditional use. The site is currently undeveloped and consists of a mix of meadow and woodland.

As part of the Industrial Park Expansion, which included the construction of Business Parkway and four commercial lots, a Site Location of Development Act (SLODA) permit (#L-6773-39-L-A) was obtained from the Maine Department of Environmental Protection (MDEP). As part of that permit, each commercial lot was approved with a predetermined amount of impervious area and wetland fill. The subject property (known as Lot 2 on MDEP permit) was approved for 1.70 acres of impervious area and 2,215 s.f. (0.05 acres) of wetland alteration. As proposed, the project will result in approximately 36,901 s.f. (0.85 acres) of impervious area and no wetland impacts.

As part of the Industrial Park Expansion, a Traffic Movement Permit was obtained from the Maine Department of Transportation (MaineDOT) that allocated a certain number of trips to the properties located off Business Parkway. Based on a traffic analysis performed by Diane Morabito with Sewall, the project is in conformance with the approved Traffic Movement Permit and no further traffic permitting is required. An email from Stephen Landry with MaineDOT has been enclosed with this submission.

PROJECT DESCRIPTION

Since the submission of the Sketch Plan application, the site layout has been revised to locate the building with the front door facing Business Parkway and the parking located in front of the building. This change

was made to provide better visibility from the front of the building towards Business Parkway and to provide better circulation throughout the parking lot.

The proposed project consists of the construction of a 3,100 s.f. footprint single-story commercial building that will be utilized for a marijuana retail store. The project will include 64 parking spaces, with an additional eighteen (18) potential parking spaces that can be added in the future, if necessary. The site will be accessed via a new entrance off Business Parkway. The proposed building will be served via public water, public sewer, natural gas, and underground electric. As part of the construction of Business Parkway, sewer and water service stubs were extended to the property, which will be utilized for the new building. Stormwater runoff from the project will be directed to the drainage ditch along Business Parkway which ultimate discharges to a stormwater pond located at the end of Business Parkway.

A wetland delineation was previously completed for the property and indicated forested wetlands in the rear of the property. As the wetland delineation is more than five (5) years old, an updated wetlands delineation was completed by Atlantic Environmental, LLC. Based on new guidelines for delineating wetlands, the wetland area on the parcel was decreased significantly. As part of the wetland delineation, the wetland biologist noted that a portion of the wetland was a potential significant vernal pool and would need to be treated as such until a formal vernal pool survey could be completed in the spring. At this time, we are moving forward with the assumption that there is a significant vernal pool present within the wetland. As we are clearing forested areas within 250-feet of the vernal pool, a NRPA Permit-by-Rule will be submitted to the MDEP.

Although located within an existing Industrial park, the applicant intends for the proposed building to be visually appealing and be the focal point of the project. A copy of the architectural elevations and floor plan have been enclosed with this submission.

Based on the specifics of the project, the Applicant requests waivers for *the location and profiles of existing utilities* and *the existing location, size, profile, and cross section of sanitary sewers*. The existing utilities will not be altered and only service lines for the new building will be constructed.

Review Standards
To facilitate your review of our proposal, the following issues are summarized in accordance with *CHAPTER 4 - PROPERTY DEVELOPMENT STANDARDS* of the Ordinance:

4.1 APPLICABILITY OF PROPERTY DEVELOPMENT STANDARDS
The proposed development is in compliance with the standards set forth in Chapter 4 – Property Development Standards.

4.2 DIMENSIONAL AND DENSITY STANDARDS
The proposed development is in the Growth Industrial (GI) Zoning District and complies with the Dimensional and Density Standards for Growth Special Purpose Zoning Districts. A table indicating the applicable dimensional and density standards is provided within the enclosed plan set.

As the proposed development does not consist of residential units, the computation of the Net Site Area for the parcel does not apply. There are no variations or exceptions to the dimensional standards requested as part of this development. The project is neither an Open Space Development nor an

Affordable Housing Development; bonus development density does not apply. The development is not in the Shoreland Protection Overlay District.

4.3 NATURAL AND HISTORIC AREAS

4.3.1 There are no known existing features on the site that would be considered of natural, scenic, or historic character to the Town. Wetlands, as delineated by Atlantic Environmental, LLC, have been shown on the enclosed plans.

4.3.2 The use will not result in undue water or air pollution.

4.3.3 Although the project is not located within a Scenic Area, the existing wooded area adjacent to Greenwood Road is to be preserved to provide a visual buffer to the development. Per the requirements of the existing SLODA permit from MDEP, a 50-foot wooded buffer will be provided along the frontage of Greenwood Road. The limit of clearing proposed for the project has been shown on the enclosed plans.

4.3.4 There are no known areas of significant plant or animal habitat located on the parcel.

4.3.5 There are no steep slopes or embankments greater than 25%, as defined by the ordinance, located on the property.

4.3.6 The disturbed areas of the site will be isolated through the use of silt sock and other measures to minimize the transport of sediment from the site. The project has been designed to incorporate Best Management Practices (BMPs) as outlined in the Maine Erosion and Sediment Control BMPs as published by the Maine Department of Environmental Control, current edition. Specific provisions for permanent and temporary erosion control features have been provided in the construction drawings. The contractor will be bound to meet the performance standards of the BMPs including erosion control, stabilization, maintenance, and inspection requirements.

4.3.7 The project will not extract groundwater or discharge stormwater to groundwater. It is anticipated that no undue adverse effect on the quality or quantity of groundwater will occur as a result of this project.

4.3.8 As indicated previously, as part of the project, no wetlands will be impacted. As part of the previous SLODA permit, each commercial lot was approved with wetland fill totals. The subject property (known as Lot 2 on MDEP permit) was approved for 2,215 s.f. (0.05 acres) of wetland alteration. As indicated previously, as part of the wetland delineation the wetland biologist noted that a portion of the wetland was a potential significant vernal pool and would need to be treated as such until a formal vernal pool survey could be completed in the spring. At this time, we are moving forward with the assumption that there is a significant vernal pool present within the wetland. As we are clearing forested areas within 250-feet of the vernal pool, a NRPA Permit-by-Rule will be submitted to the MDEP.

4.3.9 There are no known historic or archeological resources in the vicinity of the project.

4.4 FLOOD HAZARD AREAS

The development is not in the Flood Protection Overlay (FPO) District. The project area is in Zone C (Areas of Minimal Flooding) of the Flood Insurance Rate Maps (FIRMs) for Cumberland County, Maine. The project area is located on Panel 15 of 35 (Community Panel 230042-0010-B, Effective June 3, 1986). An excerpt of the applicable FIRM is enclosed.

4.5 BASIC AND MUNICIPAL SERVICES

4.5.1 The site is serviced by the public sewer system. As part of the construction of Business Parkway, a 6-inch sewer stub was extended to the property. The proposed building will utilize this existing sewer stub. A letter from the Brunswick Sewer District, certifying both the willingness to accept and capacity to serve the proposed project, is enclosed with this application.

Sewer Impact Fees have been determined by the Brunswick Sewer District to be $5,753.96.

4.5.2 The site is serviced by the Brunswick & Topsham Water District public water system. As part of the construction of Business Parkway, a 6-inch fire service stub and 2-inch domestic service stub was extended to the property. The proposed building will utilize the existing 2-inch domestic service. A letter from the Brunswick & Topsham Water District, certifying the ability to serve the proposed project, is enclosed with this application.

4.5.3 Solid waste will be removed by a licensed waste hauler and disposed of in accordance with Local and State requirements. The owner is currently working with his private waste hauler to determine the amount of solid waste that is created at their existing facility. We request that the solid waste impact fee be determined and paid at the time of issuance of the building permit.

4.5.4 As mentioned previously, as part of the permitting associated with the construction of Business Parkway, the four (4) lots along Business Parkway were preapproved for a certain amount of impervious area. As part of the approved plans, the impervious areas from these lots are to be directed towards the existing drainage swale along Business Parkway and discharged to the existing stormwater pond located at the end of Business Parkway. A copy of the approved Subdivision Plan for the Industrial Park Expansion, which indicates the preapproved impervious areas, has been enclosed with this submission along with the MDEP permit approval. Furthermore, enclosed with this submission is an email from Alison Sirois, the Regional Licensing and Compliance Manager for MDEP, indicating that *"As far as NRPA/SLOD there is no need for further permits."*

As shown on the enclosed plans, to be in compliance with the approved plans, the stormwater runoff from the project has been directed to drainage swales along the north and south sides of the project that will direct the stormwater to the existing drainage swales along Business Parkway.

4.6 LANDSCAPING REQUIREMENTS

A Landscape Plan, conforming to the Town's Ordinances, has been prepared for the proposed development, and is enclosed with this submission. Due to the location of the property, and the layout of the development, the proposed landscaping has been concentrated along the portion of the development facing Business Parkway and within the parking lot.

4.7 RESIDENTIAL RECREATION REQUIREMENTS

As the project does not include any residential uses, this section does not apply.

4.8 CIRCULATION AND ACCESS

4.8.1 As part of the permitting of the Industrial Park Expansion, which consisted of Business Parkway and four (4) commercial lots, a Traffic Movement Permit (TMP) was obtained from the Maine Department of Transportation (MaineDOT). Based on a memorandum prepared by Diane Morabito, PE, with Sewall, "the facility is expected to generate 65 one-way trips during the AM peak hour, 93 one-way trips during their PM peak hour, and 113 during their Saturday peak hour." Based on her review of the existing TMP, she indicated that the *"trips are well within the 167 AM and 184 PM permitted trips of the TMP. Additionally, it is important to note that a new TMP would not be required until the trips exceed the permitted trips by 100."* An email from Stephen Landry with MaineDOT has been enclosed with this submission.

4.8.2 There is one new entrance proposed for the project from Business Parkway. There is no posted speed limit for Business Parkway. Although unable to find within the Code of Ordinances, unposted roads are typically assumed to have a speed limit 25 miles per hour. With that assumption, a sight distance of 200 feet in both directions is required. The site distance exceeds 200 feet in both directions at the entrance.

4.8.3 As there are no sidewalks present along Business Parkway or in the vicinity of the project, no sidewalks have been extended to the site. A waiver is requested for the requirement of a sidewalk extended along the frontage of the property. There are no sidewalks located within the Industrial Park or on any adjacent roads to the Industrial Park including Greenwood Road and Church Road. Furthermore, a sidewalk along the frontage of the property would directly conflict with the stormwater management for Business Parkway and would require significant modifications to Business Parkway to accommodate the sidewalk.

A bike rack has been proposed as part of the project to accommodate bicyclists.

4.8.4 The proposed development has been designed to comply with the Americans with Disabilities Act (ADA) in providing four (4) ADA compliant parking spaces and an adequate accessible route to the proposed building.

4.8.5 There is no shoreline associated with the property.

4.9 PARKING AND LOADING

4.9.1 The project will include 64 parking spaces, with an additional eighteen (18) potential parking spaces that can be added in the future, if necessary. Per the Brunswick Zoning Ordinance, for a retail use, a parking space shall be provided for every 300 s.f. of retail space. For this project,

with a building footprint of approximately 3,100 s.f., that would result in eleven (11) required parking spaces. The applicant is requesting additional parking spaces as, even though the building is relatively small, the parking demand, especially during peak hours, is substantially more than the required eleven (11) parking spaces. The building will have approximately twelve (12) to fourteen (14) staff working at any given time. Based on the requirements of the State of Maine, the access into the building needs to be restricted and people are to be screened prior to entering the building. Those entering will be restricted depending on the amount of people currently within the retail area. During peak hours, this will most likely result in delayed turnover time, which will result in an increased parking demand.

At the previous Planning Board meeting, it was recommended that a process be put in place to trigger the construction of the additional parking spaces if needed. It should be noted that the applicant is not interested in constructing more parking spaces than is required for business operations. If the Planning Board still wants a review prior to the construction of the additional parking spaces, we would request that the additional parking spaces be permitted upon review and approval from the Planning Department and/or Code Enforcement.

4.9.2 As mentioned previously, a bike rack is proposed within the development to provide bicycle access to the site.

4.9.3 The parking spaces have been designed to conform with the Town of Brunswick standards. The interior drive aisle along the front of the building is 24-feet in width rather than the 26-feet width specified in the Brunswick Zoning Ordinance. The administrative reduction is requested to reduce the impervious area while still providing adequate access for the low use facility.

4.9.4 No parking alternatives are proposed.

4.9.5 The new building will have a loading area located on the side of the building. There will be an overhead door that provides access to a garage space within the building. The vehicle providing deliveries to the building will be a full-size van or similar sized vehicle. No tractor trailers will be providing deliveries to the building.

4.10 LIGHTING

The proposed development will be illuminated by building-mounted LED light fixtures. The fixtures will be full cut-off fixtures and have been designed to mitigate the impact on adjacent properties. The proposed color temperature of the light fixtures will be 3000K, which provides a more yellowish light than the typical 5000K “bright-white” color temperature utilized for commercial developments. Due to the sensitive nature of the proposed use, per the request of the applicant, the illumination levels provided within the parking lot are more than is typically provided for a retail-style use, but still within conformance of the Brunswick Zoning Ordinance.

Cut sheets for the proposed light fixtures have been enclosed with this submission and a copy of the Lighting Plan has been included within the plan set.

4.11 ARCHITECTURAL COMPATIBILITY

The proposed building will be somewhat smaller than those in the surrounding area in terms of size, mass, and design. Unlike most of the other buildings within the Industrial Park, the proposed building has been designed to provide a visually pleasing building that is typical of a retail-style business. The building has been designed to conform with the Americans with Disabilities Act. Architectural elevations and floor plans have been developed by Tricarico Architecture and Design PC and are enclosed with this submission.

4.12 NEIGHBORHOOD PROTECTION STANDARDS

As the project is located within a Growth Special Purpose zoning district, and abuts residential properties, it is subject to the requirements of this section. Due to the layout of the project in relation to the existing residential uses across Greenwood Road, the project meets the compatibility standards provided within Section 4.12. As previously discussed, there is a 50-foot wooded buffer provided along Greenwood Road and, based on the proposed clearing limit for the project, there be in excess of a 150-foot wide wooded area between the project and Greenwood Road. Per the requirements of this Section, the proposed use will comply with the required hours of operation of 7:00 am – 11:00 pm.

4.13 SIGNS

There is a proposed ground-mounted sign along the frontage of Business Parkway at the new entrance. A separate signage package will be submitted to the Code Enforcement Officer for approval.

4.14 PERFORMANCE STANDARDS

4.14.1.B Any construction activities will occur between the hours of 7 am and 7 pm.

4.14.1.C No activities will be conducted that exceed the Maximum Equivalent Sound Level (50 dBA day and 40 dBA night in Rural Area districts).

4.14.1.D No activities will be conducted that generate smoke, dust, or particulate emissions.

4.14.1.E No activities will be conducted that generate dust, fly ash, dirt, fumes, vapors, or gasses that could cause injury to human, animal, or vegetable health.

4.14.1.F No activities will be conducted that generate odors. Although impacts from odor are typically a concern with a marijuana use, as the proposed use is for a marijuana retail use, all marijuana products arrive to the building packaged and ready for resale. There are no odors associated with the retail sale of marijuana.

4.14.1.G No activities will be conducted that generate heat or recurring vibrations.

4.14.1.H No more than two unregistered or unlicensed motor vehicles will be stored outside.

4.14.1.I No motor vehicles or watercraft will be stored within the required setbacks.

4.14.1.J All existing and new outdoor lighting will comply of Section 4.10.

4.15 SITE MAINTENANCE
Site maintenance will be managed by the applicant in compliance with the Brunswick Zoning Ordinance standards.

4.16 FINANCIAL AND TECHNICAL CAPACITY
The Applicant owns the subject property. A copy of deed is enclosed with this submission. The applicant is going to self-finance the project and is not dependent on any financing from a third-party. Enclosed with this submission is a letter from Dufour Tax Group LLC, indicating that the applicant *"has sufficient financial capacity to successfully undertake the development and operation of the adult use marijuana retail store to be located at 4 Business Parkway in Brunswick, Maine."*

The design team, led by Sitelines, PA, has extensive experience planning, designing, and gaining approvals for commercial development projects throughout the state, including multiple projects located in Brunswick such as the Sam's Restaurant and Coastal Orthopedics facility in Cooks Corner.

4.17 ADMINISTRATIVE ADJUSTMENTS / ALTERNATIVE EQUIVALENT COMPLIANCE
The project has been designed in accordance with the Town of Brunswick Zoning Ordinance to the greatest extent practicable. No Administrative Adjustments are requested, other than those waivers requested elsewhere in this letter.

We look forward to meeting with you and the Planning Board at their next available meeting to review the project and gain their approval. We appreciate your assistance with this project. Should you have any questions, please call or contact me via jmarden@sitelinespa.com.

Very truly yours,

Joseph J. Marden, P.E.
Project Manager

Enclosures

STATE OF MAINE
JOSEPH J. MARDEN
No. 12028
LICENSED
PROFESSIONAL ENGINEER

SITELINES
Civil Engineers • Land Surveyors

Attachment A
Application Form & Checklists

A completed copy of the Major Development Review Final Application Form and the Checklist are enclosed.

DEVELOPMENT REVIEW APPLICATION

1. Development Review application type (refer to **Appendix D**):

	Minor Development Review
	Major Development Review: **Sketch Plan**
✓	Major Development Review: **Final Plan**
	Major Development Review: **Streamlined Final Plan**

2. Project Name: Marijuana Store - Adult Use

3. Project Applicant
   - Name: Gjoris LLC
   - Address: 135 Maine Street, Suite 129
     Brunswick, Maine 04011
   - Phone Number: (207)-239-4189
   - Email: docfoglight@gmail.com

4. Project Owner (if different than applicant)
   - Name: Same as Applicant
   - Address:
   - Phone Number:
   - Email:

5. Authorized Representative
   - Name: Sitelines, PA, Attn: Joseph Marden, PE
   - Address: 119 Purinton Road, Suite A
     Brunswick, Maine 04011
   - Phone Number: (207)-725-1200 ext. 12
   - Email: jmarden@sitelinespa.com

6. List of Design Consultants. Indicate the registration number, address and phone number, email for any additional project engineers, surveyors, architects, landscape architects or planners:
   1. Engineering & Surveying: Sitelines PA (Joseph J. Marden, PE #12828)
   2. Wetlands: Atlantic Environmental LLC (Tim Forrester, PWS #1933)
   3. Traffic: Sewall (Diane Morabito, PE #5077)

7. Physical location of property: 4 Business Parkway

8. Lot Size: 2.92 Acres

9. Zoning District: Growth Industrial (GI)

10. Overlay Zoning District(s): N/A

11. Indicate the interest of the applicant in the property and abutting property. For example, is the applicant the owner of the property and abutting property? If not, who owns the property subject to this application?
Owner

12. Assessor's Tax Map 17 Lot Number 66 of subject property.

13. Brief description of proposed use/subdivision: Refer to Cover Letter

14. Describe specific physical improvements to be done: Refer to Cover Letter

Owner Signature:

Applicant Signature (*if different*):
AS AGENT

DEVELOPMENT REVIEW APPLICATION REQUIREMENTS

The submission requirements contained in **Appendix D** of the Brunswick Zoning Ordinance (attached in checklist format for each application category) shall apply to all Minor Development, Major Development, and Streamlined Major Development Review unless a waiver is granted. Proposed development applications shall be submitted to the Director of Planning and Development.

For each item listed in Appendix D the applicant shall either submit the requested information or request a waiver from the information requirement pursuant to Subsection 5.2.9.M of the Zoning Ordinance.

	REQUIREMENTS FOR FINAL PLAN, STREAMLINED REVIEW & MINOR REVIEW APPLICATION SUBMITTAL	Final Plan	Streamlined	Minor
Infrastructure - Proposed	Name, location, width of paving and rights-of-way, profile, cross-section dimensions, curve radii of existing and proposed streets; profiles of center-lines of proposed streets, at a horizontal scale of one (1) inch = 50 feet and vertical scale of one (1) = five (5) feet, with all evaluations referred to in U.S.G.S. datum	X		
	Proposed easements associated with the development	X		
	Kind, location, profile and cross-section of all proposed drainage facilities, both within and connections to the proposed development, and a storm-water management plan in accordance with Section	X		
	Location of proposed utilities; water, sewer, electrical lines, and profiles of underground facilities. Tentative locations of private wells.	X		
	Proposed location, size, profile and cross section of sanitary sewers; description, plan and location of other means of sewage disposal with evidence of soil suitability	X		
	Proposed locations, widths and profiles of sidewalks	X		
	Locations and dimensions of proposed vehicular and bicycle parking areas, including proposed shared parking arrangement if applicable.	X		
Infrastructure - Proposed	Grading, erosion control, and landscaping plan; proposed finished grades, slopes, swells, and ground cover or other means of stabilization	X		
	Storm water management plan for the proposed project prepared by a professional engineer	N/A		
	The size and proposed location of water supply and sewage disposal systems	X		
	Where a septic system is to be used, evidence of soil suitability	N/A		
	A statement from the General Manager of the Brunswick Sewer District as to conditions under which the Sewer District will provide public sewer and approval of the proposed sanitary sewer infrastructure	X		
	A statement from the Fire Chief recommending the number, size and location of hydrants, available pressure levels, road layout and street and project name, and any other fire protection measures to be taken	N/A		
	A statement from the General Manager of the Brunswick and Topsham Water District as to conditions under which public water will be provided and approval of the proposed water distribution infrastructure	X		
Proposed Development Plan	Lighting plan showing details of all proposed lighting and the location of that lighting in relation to the site	X		
	Reference to special conditions stipulated by the Review Authority	NA		
	Proposed ownership and approximate location and dimensions of open spaces for conservation and recreation. Dedicated public open specs, areas protected by conservation easements, and existing and proposed open spaces or recreation areas and potential connectivity to adjoining open space.	X		
	When applicable, a table indicating the maximum number of lots permitted based upon the applicable dimensional requirements, the number of lots proposed, and the number of lots permitted to be further subdivided.	X		
	Building envelopes showing acceptable locations for principal and accessory structures, setbacks and impervious coverage	X		

REQUIREMENTS FOR FINAL PLAN, STREAMLINED REVIEW & MINOR REVIEW APPLICATION SUBMITTAL		Final Plan	Streamlined	Minor
Proposed Development Plan	Disclosure of any required permits or, if a permit has already been granted, a copy of that permit	×		
	A statement from the General Manager of the Brunswick and Topsham Water District regarding the proposed development if located within an Aquifer Protection Zone	NA		
	A plan of all new construction, expansion and/or redevelopment of existing facilities, including type, size, footprint, floor layout, setback, elevation of first floor slab, storage and loading areas	×		
	An elevation view of all sides of each building proposed indicating height, color, bulk, surface treatment, signage and other features as may be required by specific design standards	×		
	A circulation plan describing all pedestrian and vehicle traffic flow on surrounding road systems	×		
	A site landscaping plan indicating grade change, vegetation to be preserved, new plantings used to stabilize areas of cut and fill, screening, the size, locations and purpose and type of vegetation	×		
	Number of lots if a subdivision	NA		
	A plan showing all ten (10) inch caliper trees to be removed as a result of the development proposal	W		
	All applicable materials necessary for the Review Authority to review the proposal in accordance with the criteria of Chapter 5.	×		
	Any additional studies required by the Review Authority	NA		

Attachment B
Right, Title, & Interest

A copy of the current deed are included with this attachment.

DLN: 1001940058058

MAINE REAL ESTATE TAX PAID

QUITCLAIM DEED WITH COVENANT

(Statutory Short Form)

KNOW ALL MEN BY THESE PRESENTS, that **ALLIED COMPOSITE CENTER, LLC**, a Maine limited liability company with offices at 2 Main Street, Topsham, Maine, in consideration of One Dollar and other valuable consideration paid by **GJORIS LLC**, a Maine limited liability company with a principal place of business at 8 Business Parkway, Brunswick, Maine, the receipt whereof is hereby acknowledged, does hereby REMISE, RELEASE, BARGAIN, SELL AND CONVEY and forever QUITCLAIM unto the said **GJORIS LLC**, its successors and assigns forever, WITH QUITCLAIM COVENANT, the following described real estate located in the Town of Brunswick, County of Cumberland and State of Maine:

All that property described in **Exhibit A** attached hereto and incorporated herein by reference.

Meaning and intending to convey, and hereby conveying, a portion of that property described in a deed from The Town of Brunswick to the Grantor herein, dated January 18, 2008 and recorded in the Cumberland County Registry of Deeds at Book 25771, Page 3.

IN WITNESS WHEREOF, the said Allied Composite Center, LLC has caused this instrument to executed this 20th day of May, 2019 by James G. Howard, its Manager thereunto duly authorized.

WITNESS:

ALLIED COMPOSITE CENTER, LLC

By: _____
James G. Howard
Its City Manager

STATE OF MAINE
COUNTY OF Sagadahoc, ss.

~~April~~ May 20th, 2019

Then personally appeared the above-named James G. Howard, in his capacity as Manager of Allied Composite Center, LLC, and acknowledged the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of Allied Composite Center, LLC.

Before me,

_____
Notary Public/Attorney-at-Law

NICOLE L. CHIPMAN
Notary Public-State of Maine
My Commission Expires August 9, 2019

EXHIBIT A

A certain lot or parcel of land, with any buildings and improvements thereon, situated on the southerly side of Business Parkway on the Town of Brunswick, County of Cumberland and State of Maine, being Lot 2 on plan entitled "Subdivision Plan Industrial Park Expansion , Brunswick Industrial Park (Phase IV)", dated March 28, 2003 and last revised June 23, 2003, approved by the Town of Brunswick Planning Board on June 24, 2003 and recorded in the Cumberland County Registry of Deeds at Plan Book 203, Page 520, as modified by plan entitled "Subdivision Plan – Amendment, Industrial Park Expansion, Brunswick Industrial Park (Phase IV)" Prepared by Sitelines, PA, dated March 28, 2003 and recorded in said Registry at Plan Book 203, Page 530. Being a portion of the second parcel described in mortgage recorded in said Registry at Book 25771, Page 5.

This conveyance is subject to:

1. The Declaration of Covenants and Restrictions of the Brunswick Industrial Park dated February 12, 1981 and recorded in the Cumberland County Registry of Deeds at Book 4739, Page 302, as amended from time to time, which grantee and its successors and assigns forever hereby agree to observe.
2. Any utility easements.
3. The requirement of the federal, state and local approval processes.

Received
Recorded Register of Deeds
May 22,2019 11:21:57A
Cumberland County
Nancy A. Lane

Attachment C
Abutting Property Owners

A copy of the abutters map and a list of abutting property owners are included in this attachment for reference.

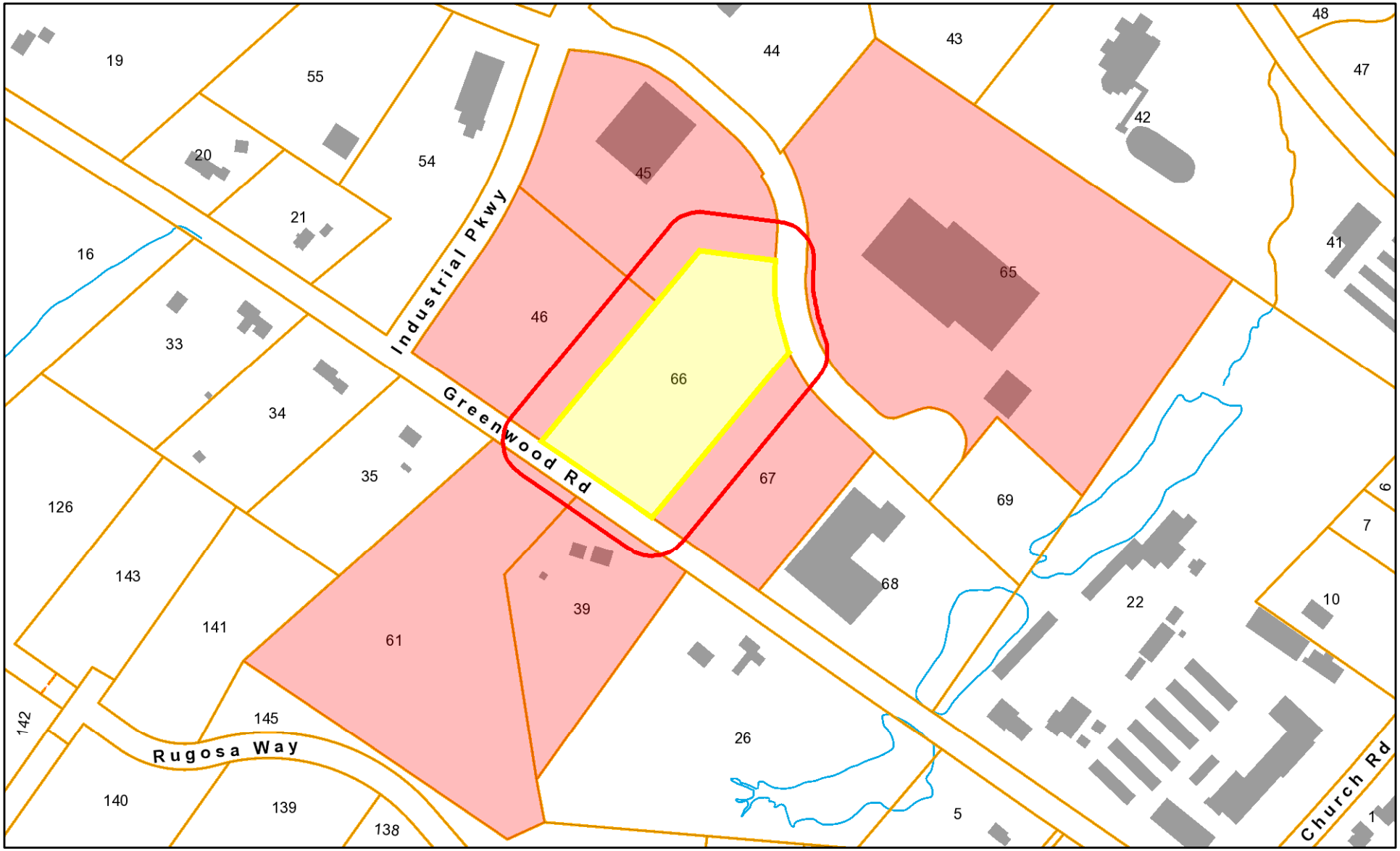
Abutter Map

Brunswick, ME

1 inch = 271 Feet

0 271 542 813

January 29, 2020



Data shown on this map is provided for planning and informational purposes only. The municipality and CAI Technologies are not responsible for any use for other purposes or misuse or misrepresentation of this map.

75 foot Abutters List Report

Brunswick, ME
January 29, 2020

Subject Property:

Parcel Number:	17-66	Mailing Address:	GJORIS LLC
CAMA Number:	17-66		135 MAINE ST SUITE 129
Property Address:	4 BUSINESS PKWY		BRUNSWICK, ME 04011

Abutters:

Parcel Number:	17-39	Mailing Address:	JOHNSON, HANNAH
CAMA Number:	17-39		1655 WILLOW LN
Property Address:	76 GREENWOOD RD		VENICE, FL 34293
Parcel Number:	17-45	Mailing Address:	BRINKS ALLIED HOLDINGS LLC
CAMA Number:	17-45-1		2 MAIN ST
Property Address:	9 INDUSTRIAL PKWY		TOPSHAM, ME 04086
Parcel Number:	17-45	Mailing Address:	NAVIGATOR PROPERTIES LLC
CAMA Number:	17-45-2		PO BOX 1160
Property Address:	0 BUSINESS PKWY		KENNEBUNKPORT, ME 04046
Parcel Number:	17-46	Mailing Address:	LEBOURDAIS, PETER
CAMA Number:	17-46		183 HIGH HEAD RD
Property Address:	11 INDUSTRIAL PKWY		HARPSWELL, ME 04079
Parcel Number:	17-61	Mailing Address:	CENTRAL MAINE POWER CO
CAMA Number:	17-61		ONE CITY CENTER - 5TH FLR
Property Address:	0 GREENWOOD RD		PORTLAND, ME 04101
Parcel Number:	17-65	Mailing Address:	3 BUSINESS PARKWAY LLC
CAMA Number:	17-65		10 DANA ST SUITE 400
Property Address:	3 BUSINESS PKWY		PORTLAND, ME 04101
Parcel Number:	17-67	Mailing Address:	ALLIED COMPOSITE CENTER LLC
CAMA Number:	17-67		2 MAIN ST
Property Address:	6 BUSINESS PKWY		TOPSHAM, ME 04086

Attachment D
Photographs

Photographs of the existing conditions of the project site are enclosed.

SITE PHOTOGRAPHS

Marijuana Store – Adult Use
4 Business Parkway, Brunswick, Maine

Photograph 1: Business Parkway, Looking East, from Proposed Entrance Location

Photograph 2: Business Parkway, Looking West, from Proposed Entrance Location

Photographs taken by Sitelines PA, January 2019.

SITE PHOTOGRAPHS

Marijuana Store – Adult Use
4 Business Parkway, Brunswick, Maine

Photograph 3: Property Looking from Business Parkway

Photograph 4: Wooded Areas On Property

Photographs taken by Sitelines PA, January 2019.

SITE PHOTOGRAPHS

Marijuana Store – Adult Use
4 Business Parkway, Brunswick, Maine

Photograph 5: Frontage on Greenwood Road, Looking East

Photograph 6: Frontage on Greenwood Road, Looking West

Photographs taken by Sitelines PA, January 2019.

Attachment E
Supporting Documents

Copies of relevant correspondence and documents pertaining to the project are enclosed.

SITELINES
Civil Engineers • Land Surveyors

January 31, 2020

3781.02-2

Mr. Michael DiPersia
GJoris LLC
135 Maine Street, Suite 129
Brunswick, Maine 04011
<via email>

Re: Designation of Agent Authorization
Marijuana Store – Adult Use
4 Business Parkway, Brunswick, Maine
Tax Map 17, Lot 66

Dear Michael:

As required by various approval agencies, please indicate by signing below that Sitelines, PA is authorized to act as agent for GJoris LLC, for the specific purpose of preparation and submission of local and state permitting applications on your behalf for the proposed marijuana store to be located at 4 Business Parkway in Brunswick, Maine.

Sincerely,

Joseph J. Marden, P.E.
Project Manager

The undersigned hereby gives Sitelines, PA the authority to act as agent for GJoris LLC for the specific purpose of preparation and submission of local and state permitting applications for the project specifically identified above.

GJoris LLC By Michael DiPersia 2/3/2020
Michael DiPersia, GJoris LLC Date

State of Maine

Department of the Secretary of State

I, the Secretary of State of Maine, certify that according to the provisions of the Constitution and Laws of the State of Maine, the Department of the Secretary of State is the legal custodian of the Great Seal of the State of Maine which is hereunto affixed and that the paper to which this is attached is a true copy from the records of this Department.

In testimony whereof, I have caused the Great Seal of the State of Maine to be hereunto affixed. Given under my hand at Augusta, Maine, this twenty-ninth day of January 2020.

Matthew Dunlap
Secretary of State

Additional Addresses

Legal Name	Title	Name	Charter #	Status
GJORIS LLC	Registered Agent	DREW A. ANDERSON	20192995DC	GOOD STANDING

Home Office Address (of foreign entity)	Other Mailing Address
	75 PEARL STREET PORTLAND, ME 04101

Dufour
TAX GROUP LLC

March 21, 2020

Via Email
Town of Brunswick Planning Board

RE: Gjoris, LLC, Adult Use Marijuana Retail Store, 4 Business Parkway, Brunswick, ME

To Whom It May Concern:

I have been Michael DiPersia's business and personal CPA for over three years and have historical knowledge of his financial capacity as well as a good understanding of the fair market value of his current assets.

The purpose of this letter is to confirm that Mr. DiPersia, as owner of Gjoris, LLC, has sufficient financial capacity to successfully undertake the development and operation of the adult use marijuana retail store to be located at 4 Business Parkway in Brunswick, Maine.

Please do not hesitate to contact me if you have any questions or require additional information.

Yours truly,

Peter Dufour, CPA

215 Commercial Street, 3rd Floor, Portland, ME 04101
Office (207)805-0000 | Fax (207)805-0021 | info@dufourtax.com

BRUNSWICK SEWER DISTRICT
10 PINE TREE ROAD
BRUNSWICK, ME 04011

brunswicksewer.org
facebook.com/brunswicksewer
info@brunswicksewer.org
(207) 729-0148

March 15, 2020

Joe Marden, PE
Project Manager
Sitelines, PA
119 Purinton Road, Suite A
Brunswick, ME 0401

RE: Retail Marijuana Shop – 4 Business Parkway

Dear Joe,

This letter is in response to your request for a willingness and capacity to serve letter regarding the construction of a new retail marijuana store located at 4 Business Parkway in Brunswick Maine. I have reviewed the material provided and conclude that the **Brunswick Sewer District (BSD) has both the willingness and capacity to serve the proposed project.**

The project will be subject to the District's entrance charge program. Prior to connecting to the sewer system, an entrance permit must be secured, and the entrance charge paid. Based on the information you provided and a review of flow of similar facilities, the proposed marijuana shop will have an average daily flow (ADF) of 469 gallons. At today's rate, the entrance charge (fee) is 5,480.60. Our rates will increase on April 1, 2020. The charge after April 1, 2020 will be $5,753.96. Please note that a permit can not be obtained until approval is granted by the Town of Brunswick.

For more information on the entrance charge program, visit http://www.brunswicksewer.org/ecp.html. The online entrance permit is available at http://www.brunswicksewer.org/iwt.html.

The following conditions apply to construction:

1. All sewer-related construction will be performed to District standards.
2. All sewer construction will comply with provisions of the Maine Plumbing Code.
3. Design and construction of project sanitary sewers will exclude all non-sanitary ground, surface, foundation drain, floor drain, sump pump, and roof drain waters.
4. Horizontal clearance between utility infrastructures will be sufficient to allow future utility maintenance operations without disturbance to adjacent utility infrastructure.

If you have any questions or need additional information, please do not hesitate to contact me.

Sincerely,

Robert A. Pontau Jr., PE
Assistant General Manager

BRUNSWICK & TOPSHAM
WATER DISTRICT

PO Box 489
Topsham, Maine 04086
Telephone (207) 729-9956
Fax (207) 725-6470

Alan J. Frasier, PE
General Manager

Daniel O. Knowles, CPA
Director of Finance and
Data Management Systems

Craig W. Douglas, PE
Assistant General Manager

Joshua S. Cobb, PE
Director of Operations

T.C. Schofield, PE
District Engineer

March 20, 2020

Joe Marden, PE
Sitelines, PA
119 Purinton Road, Suite A
Brunswick, ME 04011
Via email: jmarden@sitelinespa.com

RE: 4 Business Parkway

Dear Mr. Marden:

This letter is to inform you that the District has the ability to serve the referenced project and will provide service in accordance with Maine Public Utilities Commission and Brunswick & Topsham Water District Rules and Regulations.

We understand that the proposed facility will have a peak domestic demand of 22 gpm supplied via a 2-inch service. We understand that there will be no fire service at this project.

The District requires the customer or its authorized agent to make application for all new service and meter installation requests. An application form can be found on our website www.btwater.org.

Feel free to contact me if you have any questions.

Yours truly,

T.C. Schofield

T.C. Schofield, PE
District Engineer

ATLANTIC Environmental LLC
135 River Road • Woolwich, ME 04579
tim@atlanticenviromaine.com 207-837-2199
www.atlanticenviromaine.com

March 17, 2020

Joe Marden, P.E.
Project Manager
Sitelines, PA
119 Purinton Road, Suite A
Brunswick, ME 04011

RE: Wetland Delineation for Lot 4, Business Parkway in Brunswick, Maine.

Dear Mr. Marden,

At your request, Atlantic Environmental, LLC. (AE) completed a Wetland Delineation of an approximate 2.92 acre parcel identified on Tax Map #17 as Lot #66 in the Town of Brunswick, Maine. This work was performed on March 15, 2020. Wetlands were GPS located by AE staff. A CAD file was subsequently emailed to your office providing the location of property pins and the upland/wetland boundary.

This wetland delineation was conducted outside of the growing season, however, the ground was not frozen or covered with snow. While typical wetland delineations are performed during the summer (growing season) months; the physical characteristics of the site provide for abrupt topographic and vegetative changes between the upland and wetland. Additionally, a distinct line exists between areas of open water and the upland forested edge. Those conditions are distinct enough that an accurate delineation of the wetland boundary was ascertainable.

Site Description

The approximately 3-acre project area is located off Business Parkway and is undeveloped. The on-site topography is relatively flat in the upland with a distinct drop down to wetland areas. According to the U.S. Department of Agriculture, *Soil Survey of Cumberland County, Maine*, there are two (2) primary soil types mapped within the project area. The upland areas consist of Winsor loamy sand which is excessively drained and the wetland areas are mapped as Au Gres loamy sand which is poorly drained.

Wetland One (W1)

One Wetland area was identified and mapped onsite. That wetland contains standing water over 1' deep, water stained leaves, and a concave depression. The wetland is dominated by red maple in the over story, maleberry and winterberry dominate the shrub layer. The ground cover includes sensitive fern and spirea. Soils within the site were saturated to the surface and contained greater than 20% redoximorphic features within 8 inches of the upper soil profile.

Potential Vernal Pools

While onsite, AE looked for potentially significant vernal pools that are regulated under Chapter 335 of the Natural Resources Protection Act. The upland areas are very flat with no topographic changes or isolated depressions that have the potential to hold enough water to create vernal pool habitats. Wetland One does contain over 1 foot of standing water and has favorable conditions to support vernal pool indicator species. Based on our assessment, AE feels that wetland has the potential to be significant and a follow up visit should be conducted during the spring breeding season.

River, Stream, or Brook

No rivers, streams or brooks were found within the site.

Federal and State Review

All wetlands are regulated by Maine Department of Environmental Protection (DEP) under the Natural Resources Protection Act (NRPA) and by the U.S. Army Corps of Engineers (Corps) under the Programmatic General Permit (PGP). The DEP also defines specific types of wetlands as Wetlands of Special Significance (WOSS) if they meet the specific criteria of Section 4 of Chapter 310 of the NRPA. Wetland fill to a wetland not of special significance greater than 4,300 square feet may be eligible for a Tiered review under the NRPA. Based on AE's assessment of the wetland, wetland one is a forested wetland and a potentially significant vernal pool. Impacts up to 25% of the terrestrial habitat surrounding the pool depression maybe approved under a Permit-By-Rule. Impacts to the pool depression itself would require an individual NRPA license. AE suggests that any proposed development be reviewed by the U.S. Army Corps of Engineers and the Maine Department of Environmental Protection prior to any soil disturbance onsite.

TOWN OF BRUNSWICK -

Based on the Town of Brunswick's Zoning Map, the area is mapped as Growth Industrial (GI). The SPO Zone includes land areas within 250 feet of the upland edge of a freshwater wetland and all land areas within 75 feet, horizontal distance of the edge of a stream. The Town of Brunswick regulates Freshwater Wetlands as, "a freshwater swamp, marsh, bog, or similar area other than a forested wetland which is:

A. Of ten or more contiguous acres; or of less than ten contiguous acres and adjacent to a surface water body, excluding any river or stream, such that in a natural state, the combined surface area is in excess of ten acres; and

B. Inundated or saturated by surface or ground water at a frequency and for a duration sufficient to support, and that under normal circumstances does support, a prevalence of wetland vegetation typically adapted for life in saturated soils. Freshwater wetlands may contain small stream channels or inclusions of land that do not conform to the criteria of this definition.

The Town also regulates streams and associated wetlands as-

Stream: A channel between defined banks created by the action of surface water and has two (2) or more of the following characteristics.

A. It contains or is known to contain flowing water continuously for a period of at least 6 months of the year under normal seasonal rainfall conditions.

B. The channel bed is primarily composed of mineral material such as sand, scoured silt, gravel, clay, or other parent material that has been deposited or scoured by water.

C. The channel contains aquatic animals such as fish, aquatic insects or mollusks in the water or, if no surface water is present, within the stream bed.

D. The channel contains aquatic vegetation and is essentially devoid of upland vegetation.

This definition is based on physical characteristics that in case of development need to be field verified. The Town has attempted to map streams throughout the community to serve as an initial guide for land owners and developers. This information is available in the Town Planning and Codes Enforcement Offices, but should not be considered a substitute for field verification.

Bordering freshwater wetlands that are not separated from the stream channel by a distinct change in elevation (such as hillside groundwater seeps) or barrier, and wetlands that are subject to periodic flooding or soil saturation as a result of high stream flows are considered part of the stream. Where these wetlands are present, the normal high water line of the stream is measured from the upland / wetland transition of bordering wetlands subject to periodic stream water flooding or saturation, or where changes in wetland vegetation, soil characteristics, or topography clearly demonstrate wetland hydrology not associated with associated with periodic flood flows.

Natural and artificial impoundments at the source and along the course of the stream are considered to be part of the stream. Stream does not mean a ditch or other drainage way constructed, or constructed and maintained, solely for the purpose of draining storm water or a grassy swale. (Amended 11/18/02 R)

Based on our field assessment, no portion of the parcel meets the Town of Brunswick's definition of a wetland or a stream. AE suggests you contact the Town of Brunswick Planning Department prior to any soil disturbance onsite.

Thank you for the opportunity to work with you on this project. Please do not hesitate to contact me at 207-837-2199 or via email at tim@atlanticenviromaine.com if you have additional questions.

Sincerely,
Atlantic Environmental LLC.

Timothy A. Forrester, Owner

Timothy A. Forrester

PWS #1933

Photograph One. View of Wetland One Lot 4 Business Parkway, Brunswick, Maine. Note the distinct drop from the upland to the wetland edge.
Photographer: Tim Forrester, Atlantic Environmental, LLC. Date: March 15, 2020

REPORT

09-0019.1 S

January 24, 2020

Explorations and Geotechnical Engineering Services

Proposed Retail Development
4 Business Parkway
Brunswick, Maine

Prepared For:
GJoris, LLC
Attention: Michael DiPersia
135 Maine Street, Suite 129
Brunswick, Maine 04011

Prepared By:
S. W. Cole Engineering, Inc.
286 Portland Road
Gray, Maine 04039
T: 207-657-2866

S.W.COLE
ENGINEERING, INC.

- *Geotechnical Engineering*
- *Construction Materials Testing and Special Inspections*
- *GeoEnvironmental Services*
- *Test Boring Explorations*

www.swcole.com

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09-0019.1 S

January 24, 2020

GJoris, LLC
Attention: Michael DiPersia
135 Maine Street, Suite 129
Brunswick, Maine 04011

Subject: Explorations and Geotechnical Engineering Services
Proposed Retail Development
4 Business Parkway
Brunswick, Maine

Dear Michael:

In accordance with our Revised Agreement, dated January 14, 2020, we have performed subsurface explorations for the subject project. This report summarizes our findings and geotechnical recommendations and its contents are subject to the limitations set forth in Appendix A.

1.0 INTRODUCTION

1.1 Scope and Purpose

The purpose of our services was to obtain subsurface information at the site in order to develop geotechnical recommendations relative to foundations, earthwork and pavement associated with the proposed construction. Our scope of services included a review of prior explorations, performing supplemental test pit explorations, a geotechnical analysis of the subsurface findings and preparation of this report.

1.2 Site and Proposed Construction

The project site consists of a mostly undeveloped, partially wooded lot at 4 Business Parkway in Brunswick, Maine. A gravel road off of Business Parkway runs through the southeast corner of the site and onto an adjacent parcel. The site is relatively flat with existing grades varying from about elevation108 to 113 feet (project datum). The site was snow covered during our recent exploration work.

We understand development plans call for construction of a new 3,060 SF, single-story, on-grade building with associated paved parking and access drive areas. We understand the building is proposed at a finished floor elevation of about 110 feet requiring tapered fills of about 2 feet. We understand the building will consist of masonry construction with on-grade floor slab.

Proposed and existing site features are shown on the "Exploration Location Plan" attached in Appendix B.

2.0 EXPLORATION AND TESTING

2.1 Explorations

S. W. Cole Engineering, Inc. (S.W.COLE) observed test pit explorations at the site in 2009 for a prior development proposal and coordinated supplemental test pit explorations in January 2020 for the current development concept.

2.1.1 Current Explorations

Five test pits (TP-101 through TP-105) were made at the site on January 20, 2020 by Ray Labbe & Sons, Inc. of Brunswick, Maine working under subcontract to S.W.COLE. The exploration locations were selected and established in the field by S. W. Cole Engineering, Inc. (S.W.COLE) using measurements from existing site features. The approximate exploration locations are shown on the "Exploration Location Plan" attached in Appendix B. Logs of the explorations and a key to the notes and symbols used on the logs are attached in Appendix C. The elevations shown on the logs were estimated based on topographic information shown on the "Exploration Location Plan".

2.1.2 Prior Explorations

S.W.COLE observed and logged twelve test pits (TP-1 through TP-12) in 2009 for a prior development proposal. Test pit TP-2 has not been considered as part of the current evaluation due to site improvement made in the vicinity of this test pit since it was dug in 2009. The approximate exploration locations are shown on the "Exploration Location Plan" attached in Appendix B. Logs of the prior explorations are attached in Appendix C.

2.2 Testing

Soil samples obtained from the explorations were returned to our laboratory for further classification and testing. The results of one grain size analysis, made as part of the prior 2009 evaluation, are attached in Appendix D.

3.0 SUBSURFACE CONDITIONS

3.1 Soil and Bedrock

Underlying a relatively thick surficial layer of topsoil and organics, the explorations generally encountered native sands. Several explorations encountered a layer of uncontrolled fill and relic organics overlying the native soils. The principle soils encountered are summarized below. Not all of the strata were encountered at each exploration; refer to the attached logs for more detailed subsurface information.

Topsoil: The test pits encountered a relatively thick surficial layer of topsoil, organics, and forest duff extending to depths of approximately 1 to 2 feet.

Uncontrolled Fill & Relic Organics: Underlying surficial topsoil, test pit TP-104 and prior test pits TP-1, TP-5, TP-9 TP-10 encountered uncontrolled sandy fill and relic buried organics extending to depths of approximately 2 to 4 feet. The fill and relic organics generally appear concentrated in the south and southeast portions of the site and on the neighboring parcel.

Native Sands: Underlying the topsoil, fill, and relic organics, the explorations encountered native sands. The native soils consisted of brown sand with varying portions of silt and varying frequency of silt and clay seams.

3.2 Groundwater

The soils encountered at the test borings were generally damp from the ground surface. Saturated soils and groundwater seepage were encountered at depths varying from about 5 to 8 feet at several test pit locations. Long term groundwater information is not available. It should be anticipated that groundwater levels will fluctuate, particularly in response to periods of snowmelt and precipitation, as well as changes in site use.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 General Findings

Based on the subsurface findings, the proposed construction appears feasible from a geotechnical standpoint. The principle geotechnical considerations include:

- A relatively thick layer of topsoil and organics was encountered at the explorations. Additionally, uncontrolled fill and relic buried organics were encountered at some explorations, generally in the south and southeast portions of the site and the adjacent parcel. The organics and uncontrolled fill are unsuitable for support of the proposed building and utilities, and should be removed and replaced, as encountered. Following removal of organics, the uncontrolled fill should be proof-rolled and repaired beneath proposed paved areas, as encountered.

- Spread footing foundations and a slab-on-grade floors bearing on properly prepared subgrades appear suitable for the proposed building. Footings should bear on at least 3-inches of compacted Crushed Stone overlying undisturbed, native, non-organic soils. On-grade floor slabs should bear on at least 12-inches of properly compacted Structural Fill overlying properly prepared subgrades.

- Subgrades across the site will consist of sands with varying portions of silt. Some silt and clay seams were observed in the sands. Earthwork and grading activities should occur during drier, non-freezing weather of Spring, Summer and Fall. Excavation of bearing surfaces should be completed with a smooth-edged bucket to lessen subgrade disturbance.

- Imported Granular Borrow, Structural Fill, Crushed Stone, and pavement gravels will be required for construction.

4.2 Site and Subgrade Preparation

We recommend that site preparation begin with the construction of an erosion control system to protect adjacent drainage ways and areas outside the construction limits. Organics, roots and topsoil should be completely removed from areas of proposed fill and construction; a relativity thick layer of topsoil should be anticipated. As much vegetation

as possible should remain outside the construction areas to lessen the potential for erosion and site disturbance.

Building Pad and Footings: As discussed, in addition to a relatively thick surficial layer of topsoil, uncontrolled fill and relic buried organics were encountered at several of the test pit locations. If encountered beneath the building, existing fill and organics should be removed and replaced with compacted Granular Borrow. The extent of removal should extend 1 foot laterally outward from outside edge of perimeter footings for every 1-foot of excavation depth (1H:1V bearing splay).

Compacted Granular Borrow should be used to raise grades beneath the building. We recommend that footings be excavated using a smooth-edged bucket and that footings be underlain by at least 3 inches of compacted Crushed Stone.

Paved Areas: Following removal of organics beneath proposed paved areas, existing fill should be proof-rolled and densified with 3 to 5 passes of a vibratory roller compactor having a static weight of at least 5 tons. Areas that become soft or yielding after densification should be over-excavated and backfilled with compacted Granular Borrow. Compacted Granular Borrow should be used to raise grades beneath paved areas.

4.3 Excavation and Dewatering

Excavation work will generally encounter topsoil and native sands. Uncontrolled fill and relic organics may be encountered in the south and southeastern portions of the site. Care must be exercised during construction to limit disturbance of the bearing soils. Earthwork and grading activities should occur during drier, non-freezing weather of Spring, Summer and Fall. Final cuts to subgrade should be performed with a smooth-edged bucket to help reduce strength loss from soil disturbance.

Vibrations from construction should be controlled below threshold limits of 0.5 in/sec for structures, water supply wells and infrastructure within 500 feet of the project site. More restrictive vibration limits may be warranted in specific cases with sensitive equipment, historic structures or artifacts on-site or within close proximity.

Sumping and pumping dewatering techniques should be adequate to control groundwater in shallow excavations. Deep utility excavations extending below groundwater, if needed,

may require braced sheetpiling for shoring and groundwater cut-off. Controlling the water levels to at least one foot below planned excavation depths will help stabilize subgrades during construction.

Excavations must be properly shored or sloped in accordance with OSHA Regulations to prevent sloughing and caving of the sidewalls during construction. Care must be taken to preclude undermining adjacent structures, utilities and roadways. The design and planning of excavations, excavation support systems, and dewatering is the responsibility of the contractor.

4.4 Foundations

We recommend the proposed buildings be supported on spread footings founded on at least 3-inches of compacted Crushed Stone overlying undisturbed, native, non-organic sands. For foundations bearing on properly prepared subgrades, we recommend the following geotechnical parameters for design consideration:

Geotechnical Parameters for Spread Footings and Foundation Walls	
Design Frost Depth (100 year AFI)	4.5 feet
Net Allowable Soil Bearing Pressure	1.5 ksf
Base Friction Factor	0.35
Total Unit Weight of Backfill	125 pcf
At-Rest Lateral Earth Pressure Coefficient	0.5
Internal Friction Angle of Backfill	30°
Seismic Soil Site Class	D (IBC 2015)
Estimated Total Settlement	1-inch
Differential Settlement	½-inch

4.5 Foundation Drainage

We recommend an underdrain system be installed on the outside edge of the perimeter building footings. The underdrain pipe should consist of 4-inch diameter, perforated SDR-35 foundation drain pipe bedded in Crushed Stone and wrapped in non-woven geotextile fabric. The underdrain pipe must have a positive gravity outlet protected from freezing, clogging and backflow. Surface grades should be sloped away from the building for positive surface water drainage. General underdrain details are illustrated on the “Foundation Detail Sketch” attached in Appendix B.

4.6 Slab-On-Grade

On-grade floor slabs in heated areas may be designed using a subgrade reaction modulus of 100 pci (pounds per cubic inch) provided the slab is underlain by at least 12-inches of compacted Structural Fill placed over undisturbed, native, non-organic sands. The structural engineer or concrete consultant must design steel reinforcing and joint spacing appropriate to slab thickness and function.

We recommend a sub-slab vapor retarder particularly in areas of the building where the concrete slab will be covered with an impermeable surface treatment or floor covering that may be sensitive to moisture vapors. The vapor retarder must have a permeance that is less than the floor cover or surface treatment that is applied to the slab. The vapor retarder must have sufficient durability to withstand direct contact with the sub-slab base material and construction activity. The vapor retarder material should be placed according to the manufacturer's recommended method, including the taping and lapping of all joints and wall connections. The architect and/or flooring consultant should select the vapor retarder products compatible with flooring and adhesive materials.

The floor slab should be appropriately cured using moisture retention methods after casting. Typical floor slab curing methods should be used for at least 7 days. The architect or flooring consultant should assign curing methods consistent with current applicable American Concrete Institute (ACI) procedures with consideration of curing method compatibility to proposed surface treatments, flooring and adhesive materials.

4.7 Entrance Slabs and Sidewalks

Entrance slabs and sidewalks adjacent to the building must be designed to reduce the effects of differential frost action between adjacent pavement, doorways, and entrances. We recommend that non-frost susceptible Structural Fill be provided to a depth of at least 4.5 feet below the top of entrance slabs. This thickness of Structural Fill should extend the full width of the entrance slab and outward at least 4.5 feet, thereafter transitioning up to the bottom of the adjacent sidewalk or pavement gravels at a 3H:1V or flatter slope. General details of this frost transition zone are shown on the "Foundation Detail Sketch" attached in Appendix B.

4.8 Fill, Backfill and Compaction

We recommend the following fill and backfill materials: recycled products must also be tested in accordance with applicable environmental regulations and approved by a qualified environmental consultant.

Common Borrow: Fill to raise grades in landscape areas should be non-organic compactable earth meeting the requirements of 2014 MaineDOT Standard Specification 703.18 Common Borrow.

Granular Borrow: Fill to raise grades in building and paved areas, and backfill for over-excavations and repair of soft areas should be sand meeting the requirements of 2014 MaineDOT Standard Specification 703.19 Granular Borrow. Granular Borrow for Underwater Backfill may be needed as initial lifts of fill over wet subgrades.

Structural Fill: Backfill for foundations, slab base material and material below exterior entrances slabs should be clean, non-frost susceptible sand and gravel meeting the gradation requirements for Structural Fill as given below:

Structural Fill	
Sieve Size	**Percent Finer by Weight**
4 inch	100
3 inch	90 to 100
¼ inch	25 to 90
No. 40	0 to 30
No. 200	0 to 6

Crushed Stone: Crushed Stone, used beneath foundations and for underdrain aggregate should be washed ¾-inch crushed stone meeting the requirements of 2014 MaineDOT Standard Specification 703.22 Underdrain Backfill Material Type C.

Reuse of Site Soils: The on-site sandy soils are unsuitable for reuse in building areas, but may be suitable for reuse as Granular Borrow in paved areas and Common Borrow in landscape areas, provided they are free of organics and deleterious material, and are at a compactable moisture content at the time of reuse.

Placement and Compaction: Fill should be placed in horizontal lifts and compacted such that the desired density is achieved throughout the lift thickness with 3 to 5 passes

of the compaction equipment. Loose lift thicknesses for grading, fill and backfill activities should not exceed 12 inches. We recommend that fill and backfill in building and paved areas be compacted to at least 95 percent of its maximum dry density as determined by ASTM D-1557. Crushed Stone should be compacted with 3 to 5 passes of a vibratory plate compactor having a static weight of at least 500 pounds.

4.9 Weather Considerations

Construction activity should be limited during wet and freezing weather and the site soils may require drying or thawing before construction activities may continue. The contractor should anticipate the need for water to temper fills in order to facilitate compaction during dry weather. If construction takes place during cold weather, subgrades, foundations and floor slabs must be protected during freezing conditions. Concrete and fill must not be placed on frozen soil; and once placed, the concrete and soil beneath the structure must be protected from freezing.

4.10 Paved Areas

We anticipate paved areas will be subjected primarily to passenger vehicle and light delivery truck traffic with occasional heavy delivery truck traffic. Considering the site soils, and proposed usage, we offer the following pavement section for consideration.

FLEXIBLE (HMA) PAVEMENT SECTION – 2014 MaineDOT Standard Specs	
Pavement Layer	**Material Thickness**
MaineDOT 9.5 mm Hot Mix Asphalt	1 ½ inches
MaineDOT 19.0 mm Hot Mix Asphalt	2 ½ inches
MaineDOT 703.06 Aggregate Base Type A	6 inches
MaineDOT 703.06 Aggregate Subbase Type D	12 inches

The base and subbase materials should be compacted to at least 95 percent of their maximum dry density as determined by ASTM D-1557. Hot mix asphalt pavement should be compacted to 92 to 97 percent of its theoretical maximum density as determined by ASTM D-2041. A tack coat should be used between successive lifts of bituminous pavement.

It should be understood that frost penetration can be on the order of 4.5 feet in this area. In the absence of full depth excavation of frost susceptible soils below paved

areas and subsequent replacement with non-frost susceptible compacted fill, frost penetration into the subgrade will occur and some heaving and distress of pavement must be anticipated.

4.11 Design Review and Construction Testing

S.W.COLE should be retained to review the construction documents prior to bidding to determine that our earthwork, foundation and pavement recommendations have been properly interpreted and implemented.

A soils and concrete testing program should be implemented during construction to observe compliance with the design concepts, plans, and specifications. S.W.COLE is available to observe earthwork activities, the preparation of foundation bearing surfaces and pavement subgrades, as well as to provide testing and IBC Special Inspection services for soils, concrete, steel, spray-applied fireproofing, structural masonry and asphalt construction materials.

5.0 CLOSURE

It has been a pleasure to be of assistance to you with this phase of your project. We look forward to working with you during the construction phase of the project.

Sincerely,

S. W. Cole Engineering, Inc.

STATE OF MAINE
EVAN
MICHAEL
WALKER
No. 12847
LICENSED
PROFESSIONAL ENGINEER

Evan M. Walker, P.E.
Geotechnical Engineer

EMW:tjb

APPENDIX A

Limitations

This report has been prepared for the exclusive use of GJoris, LLC for specific application to the proposed Retail Development at 4 Business Parkway in Brunswick, Maine. S. W. Cole Engineering, Inc. (S.W.COLE) has endeavored to conduct our services in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made.

The soil profiles described in the report are intended to convey general trends in subsurface conditions. The boundaries between strata are approximate and are based upon interpretation of exploration data and samples.

The analyses performed during this investigation and recommendations presented in this report are based in part upon the data obtained from subsurface explorations made at the site. Variations in subsurface conditions may occur between explorations and may not become evident until construction. If variations in subsurface conditions become evident after submission of this report, it will be necessary to evaluate their nature and to review the recommendations of this report.

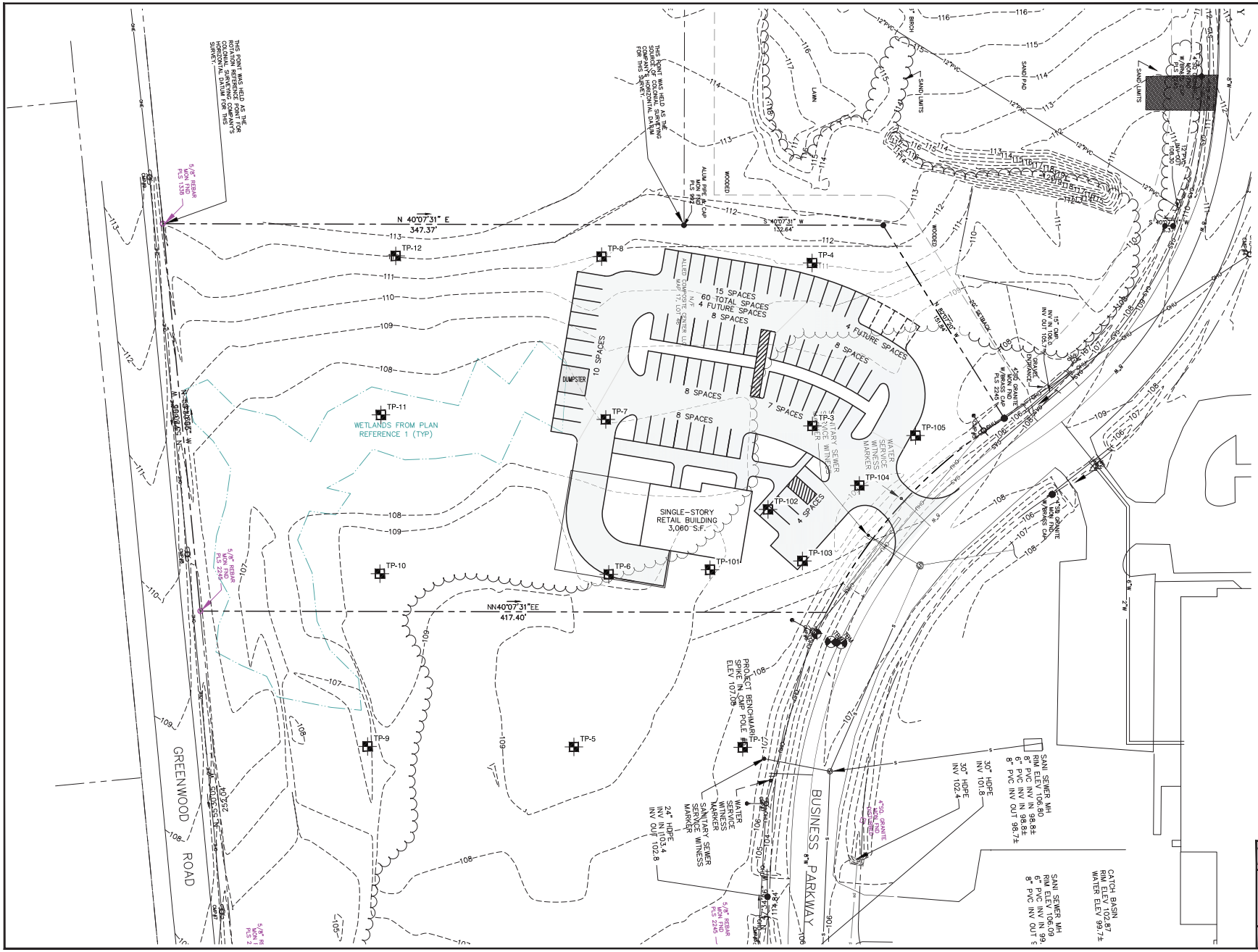
Observations have been made during exploration work to assess site groundwater levels. Fluctuations in water levels will occur due to variations in rainfall, temperature, and other factors.

S.W.COLE's scope of services has not included the investigation, detection, or prevention of any Biological Pollutants at the project site or in any existing or proposed structure at the site. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and the byproducts of any such biological organisms.

Recommendations contained in this report are based substantially upon information provided by others regarding the proposed project. In the event that any changes are made in the design, nature, or location of the proposed project, S.W.COLE should review such changes as they relate to analyses associated with this report. Recommendations contained in this report shall not be considered valid unless the changes are reviewed by S.W.COLE.

APPENDIX B

Figures



LEGEND:

APPROXIMATE TEST PIT LOCATION

NOTES:

1. EXPLORATION LOCATION PLAN WAS PREPARED FROM A 1"=30' SCALE PLAN OF THE SITE ENTITLED "SITE LAYOUT PLAN," PREPARED BY SITELINES, PA, RECEIVED VIA E-MAIL 01/20/2020.
2. TEST PITS TP-101 THROUGH TP-105 WERE LOCATED IN THE FIELD BY MEASUREMENTS FROM EXISTING SITE FEATURES.
3. TEST PITS TP-1 AND TP-3 THROUGH TP-12 WERE PERFORMED UNDER THE DIRECTION OF S. W. COLE ENGINEERING, INC. IN FEBRUARY 2009.
4. THIS PLAN SHOULD BE USED IN CONJUNCTION WITH THE ASSOCIATED S. W. COLE ENGINEERING, INC. GEOTECHNICAL REPORT.
5. THE PURPOSE OF THIS PLAN IS ONLY TO DEPICT THE LOCATION OF THE EXPLORATIONS IN RELATION TO THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION AND IS NOT TO BE USED FOR CONSTRUCTION.

0 30 60 Feet

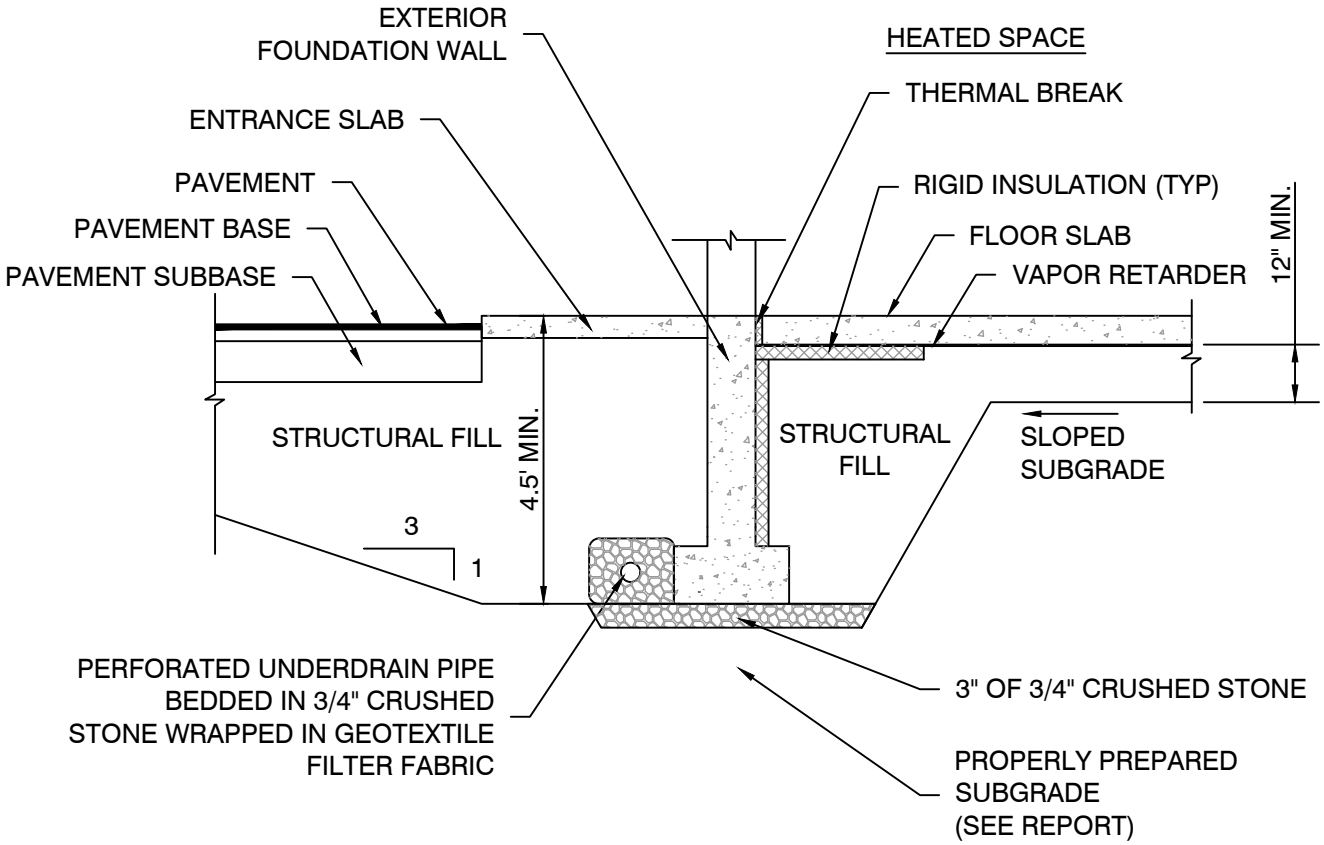
S.W.COLE ENGINEERING, INC.

GJORIS, LLC.

EXPLORATION LOCATION PLAN

PROPOSED RETAIL DEVELOPMENT
4 BUSINESS PARKWAY
BRUNSWICK, MAINE

Job No.:	09-0019.1	Scale:	1" = 30'
Date :	01/21/2020	Sheet:	1



NOTE:

1. UNDERDRAIN INSTALLATION AND MATERIAL GRADATION RECOMMENDATIONS ARE CONTAINED WITHIN THIS REPORT.

2. DETAIL IS PROVIDED FOR ILLUSTRATIVE PURPOSES ONLY, NOT FOR CONSTRUCTION.

S.W.COLE
ENGINEERING, INC.

GJORIS, LLC.

FOUNDATION DETAIL SKETCH

PROPOSED RETAIL DEVELOPMENT
4 BUSINESS PARKWAY
BRUNSWICK, MAINE

Job No.:	09-0019.1	Scale:	Not to Scale
Date :	01/21/2020	Sheet:	2

R:\2009\09-0019.1\CAD\Drawings\19-0019.1 FDS.dwg, 1/21/2020 12:02:49 PM, 1:1, CEM, S. W. Cole Engineering, Inc.

APPENDIX C

Exploration Logs and Key

TEST PIT LOGS

CLIENT: GJoris, LLC
PROJECT: Proposed Retail Development
LOCATION: 4 Business Parkway, Brunswick, Maine

PROJECT NO.: 09-0019.1
LOGGED BY: Evan Walker
CONTRACTOR: Ray Labbe & Sons, Inc.
EQUIPMENT: Kobelco 70SR Excavator

TEST PIT TP-101

DATE: 1/20/2020 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 109' +/- **COMPLETION DEPTH (FT):** 5.5
WATER LEVEL DEPTHS (FT): All Soils Damp, No Free Water Observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Vegetation / Dark brown, silty SAND, with roots and organics (TOPSOIL)					
		0.8 Brown, fine to medium SAND, trace to some silt					
5							

Bottom of Exploration at 5.5 feet

TEST PIT TP-102

DATE: 1/20/2020 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 108.5' +/- **COMPLETION DEPTH (FT):** 5.0
WATER LEVEL DEPTHS (FT): All Soils Damp, No Free Water Observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Vegetation / Dark brown, silty SAND, with roots and organics (TOPSOIL)					
		1.2 Brown, fine to medium SAND, trace to some silt					
5							

Bottom of Exploration at 5.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT LOGS

CLIENT: GJoris, LLC
PROJECT: Proposed Retail Development
LOCATION: 4 Business Parkway, Brunswick, Maine

PROJECT NO.: 09-0019.1
LOGGED BY: Evan Walker
CONTRACTOR: Ray Labbe & Sons, Inc.
EQUIPMENT: Kobelco 70SR Excavator

TEST PIT TP-103

DATE: 1/20/2020 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 108.5' +/- **COMPLETION DEPTH (FT):** 3.0
WATER LEVEL DEPTHS (FT): All Soils Damp, No Free Water Observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Vegetation / Dark brown, silty SAND, with roots and organics (TOPSOIL)					
		1.6 Orange-brown to brown, fine to medium SAND, trace to some silt					
		2.3 Brown, fine to medium SAND, some silt					

Bottom of Exploration at 3.0 feet

TEST PIT TP-104

DATE: 1/20/2020 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 109' +/- **COMPLETION DEPTH (FT):** 4.5
WATER LEVEL DEPTHS (FT): All Soils Damp, No Free Water Observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Vegetation / Dark brown, silty SAND, with roots, organics, cobble, plastic piece (FILL / TOPSOIL)					
		2.0 Light brown, fine to medium SAND, trace to some silt					

Bottom of Exploration at 4.5 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
At time of Digging
At Completion of Digging
After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT LOGS

CLIENT: GJoris, LLC
PROJECT: Proposed Retail Development
LOCATION: 4 Business Parkway, Brunswick, Maine

PROJECT NO.: 09-0019.1
LOGGED BY: Evan Walker
CONTRACTOR: Ray Labbe & Sons, Inc.
EQUIPMENT: Kobelco 70SR Excavator

TEST PIT TP-105

DATE: 1/20/2020 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 108.5' +/- **COMPLETION DEPTH (FT):** 3.0
WATER LEVEL DEPTHS (FT): All Soils Damp, No Free Water Observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Vegetation / Dark brown, silty SAND, with roots and organics (TOPSOIL)					
		1.2 Orange-brown to brown, fine SAND, trace to some silt					

Bottom of Exploration at 3.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

S.W.COLE ENGINEERING, INC.

TEST PIT LOGS

PROJECT/CLIENT: PROPOSED ALLIED COMPOSITE CENTER / PRIORITY GROUP LLC
LOCATION: BRUNSWICK INDUSTRIAL PARK, BUSINESS PARKWAY LOTS 4 AND 6
PROJECT NO. 09-0019

TEST PIT TP-1

DATE: 2/2/2009 SURFACE ELEVATION: 108' +/- LOCATION: SEE SHEET 1

SAMPLE NO.	SAMPLE DEPTH	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
		0.8'	DARK BROWN SILTY SAND WITH ORGANICS (LOAM)	
		1.5'	BROWN SILTY SAND (FILL)	
		2.0'	DARK BROWN SILTY SAND SOME ORGANICS (POSSIBLE RELIC TOPSOIL)	
		7.5'	BROWN SAND SOME SILT	
			BOTTOM OF EXPLORATION AT 7.5'	

COMPLETION DEPTH: 7.5'

DEPTH TO WATER: NO FREE WATER / NO CAVING OBSERVED
SOILS APPEARED DAMP BELOW 7' +/-

S.W.COLE ENGINEERING, INC.

TEST PIT LOGS

PROJECT/CLIENT: PROPOSED ALLIED COMPOSITE CENTER / PRIORITY GROUP LLC
LOCATION: BRUNSWICK INDUSTRIAL PARK, BUSINESS PARKWAY LOTS 4 AND 6
PROJECT NO. 09-0019

TEST PIT TP-3

DATE: 1/27/2009 SURFACE ELEVATION: 109' +/- LOCATION: SEE SHEET 1

SAMPLE NO.	SAMPLE DEPTH	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
		1.0'	DARK BROWN SILT AN D SAND WITH ORGANICS (TOPSOIL / FIELD AREA)	
		1.5'	BROWN TO ORANGE SILTY SAND TRACE ORGANICS	
S-1	6.5-7'	7.0'	BROWN SAND SOME SILT	
			BOTTOM OF EXPLORATION AT 7.0'	

COMPLETION DEPTH: 7.0' DEPTH TO WATER: SOILS MOIST BELOW 6.5'
NO CAVING OBSERVED

TEST PIT TP-4

DATE: 2/2/2009 SURFACE ELEVATION: 111' +/- LOCATION: SEE SHEET 1

SAMPLE NO.	SAMPLE DEPTH	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
		1.0'	DARK BROWN ORGANICS (FOREST DUFF)	
S-1	4-5'	8.0'	BROWN SANDY SILT WITH BROWN CLAYEY SAND AND SILT SEAMS NOTE: SOILS APPEARED WETTER AND MORE CLAYEY WITH DEPTH	w = 19.7 %
			BOTTOM OF EXPLORATION AT 8.0'	

COMPLETION DEPTH: 8.0' DEPTH TO WATER: LIGHT SEEPAGE BELOW 7' +/-
NO CAVING OBSERVED

S.W.COLE ENGINEERING, INC.

TEST PIT LOGS

PROJECT/CLIENT: PROPOSED ALLIED COMPOSITE CENTER / PRIORITY GROUP LLC
LOCATION: BRUNSWICK INDUSTRIAL PARK, BUSINESS PARKWAY LOTS 4 AND 6
PROJECT NO. 09-0019

TEST PIT TP-5

DATE: 2/2/2009 SURFACE ELEVATION: 109' +/- LOCATION: SEE SHEET 1

SAMPLE NO.	SAMPLE DEPTH	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
		3.0'	DARK BROWN SILTY SAND TRACE GRAVEL WITH ASPHALT AND WOOD (UNCONTROLLED FILL)	
		4.0'	BROWN SILTY SAND WITH ORGANICS (PROBABLE RELIC TOPSOIL HORIZON)	
		5.5'	BROWN TO ORANGE SAND SOME SILT	
		9.0'	BROWN SAND TRACE SILT	
			BOTTOM OF EXPLORATION AT 9.0'	

COMPLETION DEPTH: 9.0' DEPTH TO WATER: NO FREE WATER OBSERVED
NO CAVING OBSERVED

TEST PIT TP-6

DATE: 2/2/2009 SURFACE ELEVATION: 109' +/- LOCATION: SEE SHEET 1

SAMPLE NO.	SAMPLE DEPTH	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
		0.4'	BROWN SILTY SAND WITH ORGANICS (FOREST DUFF SCALPED)	
		1.5'	BROWN TO ORANGE SILTY SAND TRACE ORGANICS	
		9.0'	BROWN SAND TRACE SILT	

COMPLETION DEPTH: 9.0' DEPTH TO WATER: CAVING BELOW 5'
SOILS APPEARED SATURATED AT 8' +/-

S.W.COLE ENGINEERING, INC.

TEST PIT LOGS

PROJECT/CLIENT: PROPOSED ALLIED COMPOSITE CENTER / PRIORITY GROUP LLC
LOCATION: BRUNSWICK INDUSTRIAL PARK, BUSINESS PARKWAY LOTS 4 AND 6
PROJECT NO. 09-0019

TEST PIT TP-7

DATE: 2/2/2009 SURFACE ELEVATION: 108' +/- LOCATION: SEE SHEET 1

SAMPLE NO.	SAMPLE DEPTH	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
		1.0'	DARK BROWN ORGANICS (FOREST DUFF)	
		2.0'	BROWN TO ORANGE SILTY SAND WITH SOME ORGANICS	
		8.0'	BROWN SILTY SAND	
S-1	8.5-9'	9.0'	BROWN SILTY SAND WITH BROWN CLAYEY SILT AND SAND SEAMS	w = 27.1 %
			BOTTOM OF EXPLORATION AT 9.0'	

COMPLETION DEPTH: 9.0' DEPTH TO WATER: HOLE LEFT OPEN FOR 1-HOUR CAVING BELOW 3' WATER AT 5.7'

TEST PIT TP-8

DATE: 2/2/2009 SURFACE ELEVATION: 111' +/- LOCATION: SEE SHEET 1

SAMPLE NO.	SAMPLE DEPTH	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
		1.0'	DARK BROWN ORGANICS (FOREST DUFF)	
		2.0'	BROWN SILTY SAND WITH ORGANICS	
S-1	7-7.5'	8.0'	BROWN SILTY SAND WITH BROWN CLAYEY SILT AND SAND SEAMS	
			BOTTOM OF EXPLORATION AT 8.0'	

COMPLETION DEPTH: 8.0' DEPTH TO WATER: MINOR SEEPAGE AND CAVING OBSERVED BELOW 5' +/-

S.W.COLE ENGINEERING, INC.

TEST PIT LOGS

PROJECT/CLIENT: PROPOSED ALLIED COMPOSITE CENTER / PRIORITY GROUP LLC
LOCATION: BRUNSWICK INDUSTRIAL PARK, BUSINESS PARKWAY LOTS 4 AND 6
PROJECT NO. 09-0019

TEST PIT TP-9

DATE: 2/2/2009 SURFACE ELEVATION: 107' +/- LOCATION: SEE SHEET 1

SAMPLE NO.	SAMPLE DEPTH	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
		1.8'	DARK BROWN ORGANICS (FOREST DUFF)	AN ADDITIONAL SHALLOW TEST PIT WAS PERFORMED 20' TOWARD TP-5 IN AREA WHERE MAN-MADE ELEVATION CHANGE WAS OBSERVED - ORGANICS 3.5-FEET THICK (UNCONTROLLED FILL) - FOLLOWED APPROXIMATELY 20-FEET WEST WHERE IT APPEARED TO TAPER TO TYPICAL 1.5-FOOT SECTION.
		4.5'	BROWN SILTY SAND	
		8.0'	BROWN SAND TRACE SILT	
			BOTTOM OF EXPLORATION AT 8.0'	

COMPLETION DEPTH: 8.9' DEPTH TO WATER: MODERATE SEEPAGE AND CAVING OBSERVED BELOW 6' +/-

TEST PIT TP-10

DATE: 2/2/2009 SURFACE ELEVATION: 109' +/- LOCATION: SEE SHEET 1

SAMPLE NO.	SAMPLE DEPTH	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
		0.8'	DARK BROWN ORGANICS (FOREST DUFF)	
S-1	1-2'	2.0'	BROWN SILTY SAND SOME ORGANICS (UNCONTROLLED FILL)	
		3.3'	DARK BROWN SILTY SAND WITH ORGANICS (PROBABLE RELIC TOPSOIL HORIZON)	
		5.5'	BROWN TO ORANGE SILTY SAND TRACE ORGANICS IN UPPER PORTION OF STRATA	
		7.0'	BROWN SILTY SAND WITH BROWN CLAYEY SILT AND SAND SEAMS	
S-2	7-8'	9.5'	GRAY FINE SAND TRACE SILT	
			BOTTOM OF EXPLORATION AT 9.5'	

COMPLETION DEPTH: 9.5' DEPTH TO WATER: NO SEEPAGE OBSERVED NO CAVING OBSERVED

S.W.COLE ENGINEERING, INC.

TEST PIT LOGS

PROJECT/CLIENT: PROPOSED ALLIED COMPOSITE CENTER / PRIORITY GROUP LLC
LOCATION: BRUNSWICK INDUSTRIAL PARK, BUSINESS PARKWAY LOTS 4 AND 6
PROJECT NO. 09-0019

TEST PIT TP-11

DATE: 2/2/2009 SURFACE ELEVATION: 108' +/- LOCATION: SEE SHEET 1

SAMPLE NO.	SAMPLE DEPTH	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
		1.5'	DARK BROWN ORGANICS (FOREST DUFF)	
		7.5'	BROWN SILTY SAND WITH OCCASIONAL BROWN CLAYEY DEPOSITS	
		8.0'	BROWN CLAYEY SILT AND SAND SEAM	
		9.0'	BROWN SILTY SAND	
			BOTTOM OF EXPLORATION AT 9.0'	

COMPLETION DEPTH: 9.0' DEPTH TO WATER: MINOR SEEPAGE AND CAVING OBSERVED BELOW 8' +/-

TEST PIT TP-12

DATE: 2/2/2009 SURFACE ELEVATION: 112' +/- LOCATION: SEE SHEET 1

SAMPLE NO.	SAMPLE DEPTH	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
		1.0'	DARK BROWN ORGANICS (FOREST DUFF)	
		2.0'	BROWN SILTY SAND WITH ORGANICS	
		5.0'	BROWN SILTY SAND	
S-1	8-9'	10.0'	BROWN SILTY SAND WITH CLAYEY SILT AND SAND SEAMS BOTTOM OF EXPLORATION AT 10.0'	

COMPLETION DEPTH: 10.0' DEPTH TO WATER: MINOR SEEPAGE AND CAVING OBSERVED BELOW 5' +/-

KEY TO NOTES & SYMBOLS
Test Boring and Test Pit Explorations

Stratification lines represent the approximate boundary between soil types and the transition may be gradual.

Key to Symbols Used:

w	-	water content, percent (dry weight basis)
q_u	-	unconfined compressive strength, kips/sq. ft. - laboratory test
S_v	-	field vane shear strength, kips/sq. ft.
L_v	-	lab vane shear strength, kips/sq. ft.
q_p	-	unconfined compressive strength, kips/sq. ft. – pocket penetrometer test
O	-	organic content, percent (dry weight basis)
W_L	-	liquid limit - Atterberg test
W_P	-	plastic limit - Atterberg test
WOH	-	advance by weight of hammer
WOM	-	advance by weight of man
WOR	-	advance by weight of rods
HYD	-	advance by force of hydraulic piston on drill
RQD	-	Rock Quality Designator - an index of the quality of a rock mass.
γ_T	-	total soil weight
γ_B	-	buoyant soil weight

Description of Proportions:

Trace:	0 to 5%
Some:	5 to 12%
"Y"	12 to 35%
And	35+%
With	Undifferentiated

Description of Stratified Soils

Parting:	0 to 1/16" thickness
Seam:	1/16" to 1/2" thickness
Layer:	½" to 12" thickness
Varved:	Alternating seams or layers
Occasional:	one or less per foot of thickness
Frequent:	more than one per foot of thickness

REFUSAL: **Test Boring Explorations** - Refusal depth indicates that depth at which, in the drill foreman's opinion, sufficient resistance to the advance of the casing, auger, probe rod or sampler was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

REFUSAL: **Test Pit Explorations** - Refusal depth indicates that depth at which sufficient resistance to the advance of the backhoe bucket was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

Although refusal may indicate the encountering of the bedrock surface, it may indicate the striking of large cobbles, boulders, very dense or cemented soil, or other buried natural or man-made objects or it may indicate the encountering of a harder zone after penetrating a considerable depth through a weathered or disintegrated zone of the bedrock.

APPENDIX D

Laboratory Test Results

S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

Project Name: BRUNSWICK ME - PROPOSED ALLIED COMPOSITE CENTER - PRELIMINARY GEOTECHNICAL ENGINEERING SERVICES

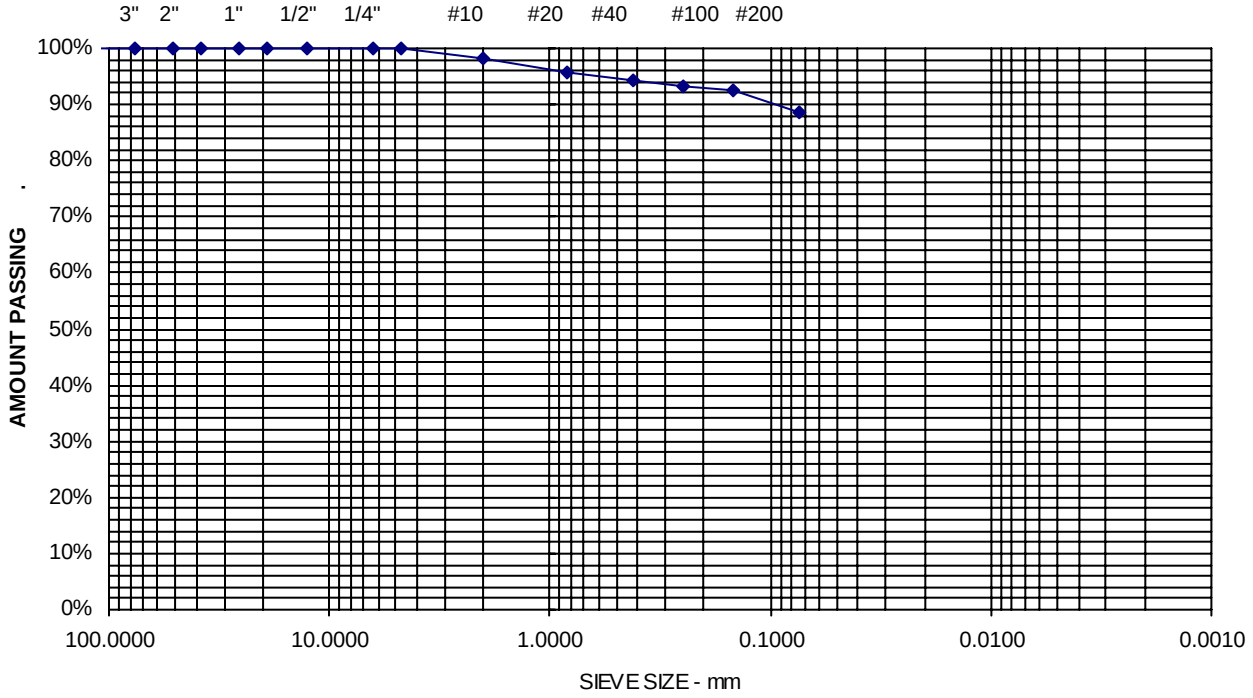
Client:

Material Source: **TP-4 S-1 4.0-5.0**

Project Number: 09-0019
Lab ID: 10181G
Date Received: 2/11/2009
Date Complete: 2/12/2009
Tested By: JUSTIN BISSON

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	**6"**	**100**	
125 mm	**5"**	**100**	
100 mm	**4"**	**100**	
75 mm	**3"**	**100**	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**100**	
25.0 mm	**1"**	**100**	
19.0 mm	**3/4"**	**100**	
12.5 mm	**1/2"**	**100**	
6.3 mm	**1/4"**	**100**	
4.75 mm	**No. 4**	**100**	0.1% Gravel
2.00 mm	**No. 10**	**98**	
850 um	**No. 20**	**96**	
425 um	**No. 40**	**94**	11.2% Sand
250 um	**No. 60**	**93**	
150 um	**No. 100**	**92**	
75 um	**No. 200**	**88.8**	88.8% Fines

BROWN SANDY SILT WITH CLAYEY SAND AND SILT SEAMS



Comments: w = 19.7 %

Sheet 10

Joseph Marden

From: Diane Morabito <mordi@sewall.com>
Sent: Thursday, April 23, 2020 6:34 AM
To: Joseph Marden
Subject: Fwd: 4 Businesss Parkway

Hi Joe,

Email from Steve Landry to Brunswick FYI regarding 4 Business Parkway.

Diane

Diane W. Morabito, PE, PTOE
Vice President Traffic Engineering
T: +1. 207.817.5440 | **F:** +1. 207.827.3641 | **E:** diane.morabito@sewall.com
40 Forest Falls Avenue | Suite 2 | Yarmouth, Maine 04096 | www.sewall.com

---------- Forwarded message ---------
From: **Landry, Stephen** <Stephen.Landry@maine.gov>
Date: Wed, Apr 22, 2020 at 4:52 PM
Subject: 4 Businesss Parkway
To: jwoolston@brunswickme.org <jwoolston@brunswickme.org>, Ryan Barnes <rbarnes@brunswickme.org>
Cc: Diane Morabito - Maine Traffic Resources (mordi@sewall.com) <mordi@sewall.com>

Jared and Ryan,

I am writing regarding a traffic movement permit (TMP) issued to the Town of Brunswick for the Business Industrial Expansion (permit Div. 05-00026-A-N) back in 2003. MaineDOT wants to go on record that we believe the current marijuana distribution shop is considered to be permitted under the permit that was issued back in 2003. Given changes to the TMP rules, any future development on this site would need to obtain a permit modification in order to move forward. The new changes indicate that a development would need to be started within 5 years and completed within 7 years. Any future development of that site would be beyond that timeline. If you have any questions regarding this development, please feel free to contact me by phone at 207-557-0347 or by email at Stephen.landry@maine.gov.

Stephen Landry

State Traffic Engineer

MaineDOT

Phone 207-624-3632

January 28, 2020

Mr. Randy Illian, P.E.
MaineDOT Region 1 Traffic Engineer
51 Pleasant Hill Road
Scarborough, ME 04074

RE: TRIP GENERATION AND PERMITTING NEEDS FOR 4 BUSINESS PARKWAY, BRUNSWICK

Dear Randy,

This is written to summarize trip generation analysis performed for a proposed new building to be located at 4 Business Parkway in Brunswick, Maine and to determine if any state permitting will be required. It is understood that the proposed building will be 3,100 square feet (SF) in size and it will be utilized for marijuana sales.

TRIP GENERATION ANALYSIS

The number of trips to be generated by the proposed new retail marijuana facility was estimated utilizing the most recent Institute of Transportation Engineers (ITE) "Trip Generation" 10th edition report. This newest edition is based upon the largest and most current database and is considered to be the best information regarding current trip making. Land use code (LUC 882) – Marijuana Dispensary was utilized on the basis of 3,060 SF. It is important to note that this land use code is not provided in any older editions. The results are presented below:

	ITE TRIP GENERATION
Time Period	One-way Trip-ends
Daily	784
AM Peak Hour – Adjacent Street	32
Entering	17
Exiting	15
AM Peak Hour – Generator	65
Entering	34
Exiting	31

Time Period	One-way Trip-ends
PM Peak Hour – Adjacent Street	68
Entering	34
Exiting	34
PM Peak Hour – Generator	93
Entering	46
Exiting	47
Saturday	804
Saturday Peak Hour	113
Entering	57
Exiting	56

As shown in the above table, based upon the ITE data, the facility is expected to generate 65 one-way trips during their AM peak hour, 93 one-way trips during their PM peak hour and 113 during their Saturday peak hour.

EXISTING TMP

The Town of Brunswick was issued a Traffic Movement Permit (TMP) by the Maine Department of Transportation (MaineDOT) for the Brunswick Industrial Park Expansion on 4/18/2003. This TMP was granted for the five additional light industrial lots located on Business Parkway. The TMP was issued for 167 AM peak hour trips and 184 PM peak hour trips. A copy of that TMP is attached for your reference.

EXISTING TRAFFIC VOLUMES

In order to determine existing trip levels, traffic counts were conducted at the intersection of Business Parkway, Industrial Parkway and Bibber Parkway. All trips entering and exiting Business Parkway (the business park expansion area) were recorded during the weekday AM (7:00 – 9:00) and PM (3:00 – 6:00) peak hour periods. The AM counts were conducted on January 9, 2020 while the PM counts were performed on January 8, 2020. The AM peak hour occurred from 8:00 – 9:00 while the PM peak hour occurred from 4:00 – 5:00. The count records are attached to this memorandum. The counts were seasonally adjusted to reflect the higher summer trip generation in Maine utilizing MaineDOT group mean factors. Based upon the count results, factored to peak summer conditions, the business park expansion is currently generating 56 one-way trips in the AM peak hour and 38 during the PM peak hour.

Sewall
The evolution of expertise

PERMITTING REQUIREMENTS

The existing measured trips are combined with the projected trips of the proposed marijuana sales facility in the following table:

Time Period	Proposed Facility	Existing Trips	Total Trips
AM Peak Hour – Adjacent Street	32	56	88
AM Peak Hour – Generator	65	56	121
PM Peak Hour – Adjacent Street	68	38	106
PM Peak Hour – Generator	93	38	131
Saturday Peak Hour	113	---	---

As seen above, the projected trips for the proposed marijuana sales facility, when combined with the existing peak summer trips for the business park expansion, will be 121 for the weekday AM peak hour and 131 for the PM peak hour. These trips are well within the 167 AM and 184 PM permitted trips of the TMP. Additionally, it is important to note that a new TMP would not be required until the trips exceed the permitted trips by 100. Hence, a new TMP would not be required for the business park expansion until expected trips reach 267 AM or 284 PM trips.

While the TMP did not specify a Saturday trip level, light industrial uses typically generate approximately 12 % of weekday peak hour trips during their Saturday peak hour, based upon ITE data, resulting in an estimated permitted Saturday peak hour trips of 21. Hence, the proposed Saturday trip generation, assuming 7 existing trips and 113 for the proposed facility should be within the allowed 121 (21 permitted plus 100 trip allowance), before a new or modified TMP is required.

Please review this analysis and let me know if you concur that neither a new or modified TMP is required for the proposed building at 4 Business Parkway in Brunswick. As always, let me know if you have any questions regarding this analysis or if you need any additional information.

STATE OF MAINE
DIANE W. MORABITO
No. 5077
LICENSED
PROFESSIONAL ENGINEER

Sincerely,

Diane W. Morabito

Diane W. Morabito, P.E. PTOE
Vice President Traffic Engineering

A TFIC Company
40 Forest Falls Drive, Suite 2 • Yarmouth, Maine 04096 • +1.207.817.5440 • sewall.com • info@sewall.com

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
16 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0016

APR 25 2003

JOHN ELIAS BALDACCI
GOVERNOR

DAVID A. COLE
COMMISSIONER

Applicant:	Town of Brunswick
Project Location:	Northeast quadrant of Greenwood Road and Industrial Parkway, Brunswick
Project:	Brunswick Industrial Park Expansion
Identification #:	Div. 05-00026-A-N
Traffic Engineer:	Gorrill-Palmer Consulting Engineers, Inc.

Pursuant to the provision of 23 M.R.S.A. § 704-A and Chapter 305 of the Department's Regulations, the Department of Transportation has considered the application of the Town of Brunswick with supportive data, agency review and other related materials on file.

PROJECT DESCRIPTION

The applicant proposes to construct a 5 lot light industrial subdivision. The proposed development is expected to generate 167 a.m. peak hour trips and 184 p.m. peak hour trips.

Findings

Based on the review of the files and related information, the Department approves the Traffic Movement Permit application of the Town of Brunswick, subject to the following conditions.

On Site Mitigation

Overhead lighting shall be provided to illuminate the intersection with the Industrial Parkway. Overhead lighting shall have an average of 0.6 to 1.0 foot candles, with the maximum to minimum lighting ration of not more than 10:1 and an average to minimum light level of not more than 4:1.

If any of the supporting data or representations for which this permit is based changes in any way or is found to be incorrect/inaccurate, the applicant shall request in writing from the MDOT a decision of what impacts those changes will have on the permit. The applicant will then be required to submit those changes for review and approval and additional mitigation as a result of those changes may be required at the expense of the applicant.

By:

Bruce A. Ibarguen

Bruce A. Ibarguen, P.E.
State Traffic Engineer

Date: 4/18/03

PRINTED ON RECYCLED PAPER

THE MAINE DEPARTMENT OF TRANSPORTATION IS AN AFFIRMATIVE ACTION - EQUAL OPPORTUNITY EMPLOYER

Maine Traffic Resources

40 Forest Falls Drive, Suite 2
Yarmouth, Maine 04096
www.mainetrafficresources.com

Title: Industrial, Bibber & Business Parkways
Town: Brunswick
Counter: JAM
Weather: Sun/clouds

File Name : BrunswickBusParkway2020AM
Site Code : 13132223
Start Date : 1/9/2020
Page No : 1

Groups Printed- Passenger Cars - Light Trucks - Heavy Trucks

	Industrial Parkway From North					Business Parkway From East					Industrial Parkway From South					Bibber Parkway From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	2	3	3	0	8	1	0	0	0	1	0	4	2	0	6	0	0	0	0	0	15
07:15 AM	2	2	4	0	8	1	0	0	0	1	2	5	6	0	13	2	0	2	0	4	26
07:30 AM	8	2	3	0	13	1	0	0	0	1	4	6	8	0	18	1	0	2	0	3	35
07:45 AM	9	4	5	0	18	2	0	0	0	2	5	2	9	0	16	1	0	2	0	3	39
Total	21	11	15	0	47	5	0	0	0	5	11	17	25	0	53	4	0	6	0	10	115
08:00 AM	2	3	3	0	8	4	0	0	0	4	3	8	7	0	18	1	0	3	0	4	34
08:15 AM	5	2	3	0	10	0	0	0	0	0	1	12	2	0	15	1	0	2	0	3	28
08:30 AM	4	4	6	0	14	2	1	1	0	4	4	6	3	0	13	5	0	1	0	6	37
08:45 AM	4	9	8	0	21	2	0	1	0	3	5	2	2	0	9	0	1	5	0	6	39
Total	15	18	20	0	53	8	1	2	0	11	13	28	14	0	55	7	1	11	0	19	138
Grand Total	36	29	35	0	100	13	1	2	0	16	24	45	39	0	108	11	1	17	0	29	253
Apprch %	36	29	35	0		81.2	6.2	12.5	0		22.2	41.7	36.1	0		37.9	3.4	58.6	0		
Total %	14.2	11.5	13.8	0	39.5	5.1	0.4	0.8	0	6.3	9.5	17.8	15.4	0	42.7	4.3	0.4	6.7	0	11.5	
Passenger Cars	35	29	34	0	98	13	1	2	0	16	24	45	39	0	108	10	1	11	0	22	244
% Passenger Cars	97.2	100	97.1	0	98	100	100	100	0	100	100	100	100	0	100	90.9	100	64.7	0	75.9	96.4
Light Trucks	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	6	0	7	8
% Light Trucks	0	0	2.9	0	1	0	0	0	0	0	0	0	0	0	0	9.1	0	35.3	0	24.1	3.2
Heavy Trucks	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Heavy Trucks	2.8	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4

4
7
9
13

10 -
5
14
17 -

46

Gr. I = 1.03/.85 = 1.21

46 x 1.21 = 56

Maine Traffic Resources

40 Forest Falls Drive, Suite 2
Yarmouth, Maine 04096
www.mainetrafficresources.com

Title: Industrial, Business & Bibber Parkways
Town: Brunswick
Counter: JAM
Weather: Sun/clouds

File Name : BrunswickBusParkway2020PM
Site Code : 13132222
Start Date : 1/8/2020
Page No : 1

Groups Printed- Passenger Cars - Light Trucks - Heavy Trucks

	Industrial Parkway From North					Business Parkway From East					Industrial Parkway From South					Bibber Parkway From West						
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0			
03:00 PM	1	7	4	0	12	2	0	2	0	4	0	4	2	0	6	3	0	2	0	5	27	8
03:15 PM	4	1	4	0	9	1	0	0	0	1	1	2	0	0	3	3	0	5	0	8	21	6
03:30 PM	3	6	1	0	10	2	0	5	0	7	1	1	1	0	3	6	0	3	0	9	29	9
03:45 PM	0	7	1	0	8	3	0	0	0	3	0	1	5	0	6	0	0	2	0	2	19	4
Total	8	21	10	0	39	8	0	7	0	15	2	8	8	0	18	12	0	12	0	24	96	
04:00 PM	1	7	1	0	9	4	0	3	0	7	1	6	2	0	9	4	1	5	0	10	35	10
04:15 PM	2	4	3	0	9	2	0	1	0	3	1	3	1	0	5	4	0	5	0	9	26	7
04:30 PM	1	4	2	0	7	2	0	2	0	4	1	2	1	0	4	6	0	15	0	21	36	7
04:45 PM	2	7	1	0	10	4	0	1	0	5	1	1	1	0	3	6	0	5	0	11	29	7
Total	6	22	7	0	35	12	0	7	0	19	4	12	5	0	21	20	1	30	0	51	126	
05:00 PM	3	4	0	0	7	8	0	2	0	10	0	1	2	0	3	3	0	8	0	11	31	10
05:15 PM	0	3	1	0	4	4	0	2	0	6	0	1	2	0	3	3	0	4	0	7	20	7
05:30 PM	1	2	2	0	5	4	0	1	0	5	0	0	0	0	0	3	0	1	0	4	14	7
05:45 PM	1	1	1	0	3	3	0	0	0	3	0	3	2	0	5	0	0	2	0	2	13	4
Total	5	10	4	0	19	19	0	5	0	24	0	5	6	0	11	9	0	15	0	24	78	
Grand Total	19	53	21	0	93	39	0	19	0	58	6	25	19	0	50	41	1	57	0	99	300	86
Apprch %	20.4	57	22.6	0		67.2	0	32.8	0		12	50	38	0		41.4	1	57.6	0			
Total %	6.3	17.7	7	0	31	13	0	6.3	0	19.3	2	8.3	6.3	0	16.7	13.7	0.3	19	0	33		
Passenger Cars	18	53	21	0	92	39	0	19	0	58	6	23	16	0	45	39	1	48	0	88	283	
% Passenger Cars	94.7	100	100	0	98.9	100	0	100	0	100	100	92	84.2	0	90	95.1	100	84.2	0	88.9	94.3	
Light Trucks	1	0	0	0	1	0	0	0	0	0	0	2	2	0	4	0	0	6	0	6	11	
% Light Trucks	5.3	0	0	0	1.1	0	0	0	0	0	0	8	10.5	0	8	0	0	10.5	0	6.1	3.7	
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	3	0	5	6	
% Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	5.3	0	2	4.9	0	5.3	0	5.1	2	

31

Gr. I = 1.03/.85 = 1.21

31 × 1.21 = 38

April 16, 2020

Mr. Stephen Landry
State Traffic Engineer
MaineDOT
16 State House Station
Augusta, ME 04333-0016

RE: ADDITIONAL ITE TRIP GENERATION FOR 4 BUSINESS PARKWAY IN BRUNSWICK

INTRODUCTION

This is written to summarize additional trip generation analysis you requested according to ITE for a proposed new building to be located at 4 Business Parkway in Brunswick. The Town of Brunswick was issued a Traffic Movement Permit (TMP) for the Brunswick Industrial Park Expansion on 4/18/2003. This TMP was granted for the five additional light industrial lots located on Business Parkway. The TMP was issued for 167 AM peak hour trips and 184 PM peak hour trips. It is understood two lots were later combined into one lot so there are only four lots today.

Two of the four lots have been developed to date. Those developments are as follows according to information obtained from Sitelines:

Lot 1 – Two Buildings

- Bowdoin Storage (currently being used to store Bowdoin art): 33,604 S.F.
- Times Record (office space): 7,008 S.F.
- Guardian Pharmacy of Maine (office space): 7,008 S.F.
- Storage for Bowdoin Dining – 4,320 S.F.

Lot 4

- Marijuana Cultivation Facility – 28,082 S.F. with six (6) employees

ITE TRIP GENERATION ANALYSIS

The number of trips generated by these existing developments was estimated utilizing the most recent Institute of Transportation Engineers (ITE) "Trip Generation" 10th edition report. This newest edition is based upon the largest and most current database and is considered to be the best information regarding current trip making. It was estimated using the following land use codes (LUCs) on the noted bases:

LUC 710 – General Office - 14,016 S.F.
LUC 150 – Warehousing - 37,924 S.F.

Additionally, the existing marijuana cultivation facility was estimated utilizing general office on the basis of the six (6) employees since it would be expected to function like an office with employees arriving in the morning and departing in the late afternoon/evening since there are no ITE agricultural codes. The results are summarized below:

	ITE TRIP GENERATION (one-way trips)			
Time Period	Offices	Warehouse	Grow Facility	Total
AM Peak Hour – Adjacent Street	16	6	2	24
AM Peak Hour – Generator	21	8	3	32
PM Peak Hour – Adjacent Street	16	7	2	25
PM Peak Hour – Generator	20	9	3	32
Saturday Peak Hour	7	2	1	10

As shown in the above table, based upon the most current ITE data, the existing businesses within the park expansion are expected to generate 32 one-way trips during their AM peak hour, 32 trips during their PM peak hour and 10 during the Saturday peak hour.

ACTUAL COUNTED VOLUMES

The above ITE trips are compared to the actual counted volumes, previously detailed in my January 28th, 2020 memorandum, in the following table:

Time Period	Counted Trips	ITE Trips
AM Peak Hour – Adjacent Street	56	24
AM Peak Hour – Generator	56	32
PM Peak Hour – Adjacent Street	38	25
PM Peak Hour – Generator	38	32
Saturday Peak Hour	---	10

As seen above, the counted volumes (which had been factored up for seasonal adjustment), which the previous analysis was based upon, are higher than the ITE estimates. Hence, the previous analysis showing that the trips were within permitted levels, based upon actual counts, was conservative in comparison to ITE.

As always, let me know if you need any additional information or if you have any questions.

STATE OF MAINE
DIANE W. MORABITO
No. 5077
LICENSED
PROFESSIONAL ENGINEER

Sincerely,

Diane W. Morabito

Diane W. Morabito, P.E. PTOE
Vice President Traffic Engineering

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
STATE HOUSE STATION 17 AUGUSTA, MAINE 04333

927.9

DEPARTMENT ORDER

IN THE MATTER OF

TOWN OF BRUNSWICK	) SITE LOCATION OF DEVELOPMENT
Brunswick, Cumberland County	)
INDUSTRIAL PARK - ADD FOUR LOTS	)
L-6773-39-L-A (approval)	) FINDINGS OF FACT AND ORDER

Pursuant to the provisions of 38 M.R.S.A. Sections 481 et seq., the Department of Environmental Protection has considered the application of the TOWN OF BRUNSWICK with the supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

Post-it® Fax Note 7671
To Phyllis Rheault
Co./Dept.
Phone #
Fax # 725-1114
Date
From
Co.
Phone #
Fax #
# of pages # 10

PROJECT DESCRIPTION:

A. History of Project: In Board Order #39-6773-05030, dated September 10, 1980, the Board granted conditional approval for the development of the Brunswick Industrial Park Phase I, a 14-lot commercial subdivision on a 60.7-acre parcel of land. The Board modified several conditions of approval and the Department approved a number of modifications and amendments to the project in subsequent Orders.

B. Summary: The applicant proposes to create a four-lot commercial subdivision on an approximately 20.6-acre parcel of land adjacent to the existing Brunswick Industrial Park. The lots will range in size from 2.1 to 9.8 acres. Lot 1 is anticipated to be the site of an office and production facility for the Brunswick Times Record. The proposed project is shown on a set of twelve plans, the first of which is entitled "Industrial Park Expansion – Business Parkway," prepared by Sitelines, and dated June 6, 2002, with a last revision date on any sheet of June 27, 2003. The project site is located at the end of Industrial Park Road, between Church Road and Greenwood Road, in the Town of Brunswick, Maine, and is otherwise known as a portion of Brunswick tax map 17, Lot 22.

The proposed project will result in the filling of approximately 2,085 square feet of forested freshwater wetland to construct the access road. This amount of wetland alteration is exempt from review under the Natural Resources Protection Act. The development of Lot 1 will not result in any wetland alteration.

C. Current Use of Site: The site of the proposed project is predominantly undeveloped fields and woods. The prior owner, a lumber company, used portions of the property for product storage and wood chip and sawdust piles.

2. FINANCIAL CAPACITY:

The total cost of the project is estimated to be $300,000. The applicant submitted a letter from its town manager, dated September 5, 2003, stating that the town currently has an agreement to sell Lot 1 for 400,000, which the applicant intends to use to cover the costs of constructing the proposed roadway and infrastructure.

The Department finds that the applicant has demonstrated adequate financial capacity to comply with Department standards.

3. TECHNICAL ABILITY:

The applicant successfully permitted and developed the existing industrial park. The applicant also retained the services of Sitelines, a professional engineering firm, to assist in the design and engineering of the project.

The Department finds that the applicant has demonstrated adequate technical ability to comply with Department standards.

4. NOISE:

The proposed project does not fall within the category of developments producing minor noise impacts as identified in the Department's Rules, Chapter 375. The proposed project site is located within a commercial district and the uses allowed in this district will be consistent with other existing commercial uses in the surrounding area.

The Department finds that the applicant has made adequate provision for the control of excessive environmental noise from the proposed project.

5. SCENIC CHARACTER:

The proposed project site is located in an urban commercial area adjacent to the existing industrial park. A residential area abuts the southerly boundary line along Greenwood Road. Wooded buffers of 100 feet or more in width are incorporated into the project design that will help to screen the project from portions of the surrounding residential area. The applicant proposes to maintain and enhance a vegetated buffer strip to visually screen development on Lots 3 and 4 as described in Finding 7.

Based on the project's location and design, the Department finds that the proposed project will not have an unreasonable adverse effect on the scenic character of the surrounding area.

6. WILDLIFE AND FISHERIES:

The Maine Department of Inland Fisheries & Wildlife (MDIFW) reviewed the proposed project. In its comments, MDIFW stated that it found no records of any essential or significant wildlife habitats, or other wildlife habitats of special concern associated with this site. No specific fisheries concerns were identified, although a fisheries biologist from MDIFW recommended the inclusion of a 100-foot wide undisturbed buffer strip adjacent to the stream/pond complex on the southerly portion of the project site. Department staff visited the site to view the 100 foot wide buffer strip proposed by the applicant in response to MDIFW's comments. Portions of the proposed buffer area are currently mowed. The applicant agreed to cease mowing these areas to allow natural vegetation to colonize them. The Final Subdivision Plan, last revised August 29, 2003, depicts the 100 foot wide buffer strip and includes a statement that it shall remain undisturbed.

The Department finds that the applicant has made adequate provision for the protection of wildlife and fisheries.

7. HISTORIC SITES:

The Maine Historic Preservation Commission (MHPC) reviewed the proposed project and requested additional information related to structures existing on or adjacent to the project site. MHPC reviewed the additional information submitted by the applicant relating to an adjacent house and concluded that the house is potentially eligible for inclusion on the National Register of Historic Places. In response to MHPC's concerns that the proposed project could adversely affect this potential historic site, the applicant widened the proposed vegetated visual buffer to 50 feet from the edge of Greenwood Road. A portion of the vegetated area on Lot 4 is currently less than 50 feet wide. The applicant submitted a letter stating that it intends to maintain the 50 foot wide buffer strip adjacent to Lots 3 and 4 as a visual screen, and it intends to enhance the buffer on Lot 4 with a mixture of indigenous shrubs and conifers to achieve the 50 foot width. This buffer is shown on the plan sheet entitled "Subdivision Plan Amendment 1 Industrial Park Expansion," as revised August 29, 2003. MHPC subsequently stated that, with the visual buffers proposed by the applicant, the project will have no effect upon any structure or site of historic, architectural, or archaeological significance as defined by the National Historic Preservation Act of 1966.

The Department finds that, with the visual buffers proposed by the applicant, the proposed development will not have an adverse effect on the preservation of any historic sites on or near the development site

8. UNUSUAL NATURAL AREAS:

The Maine Natural Areas Program database does not contain any records documenting the existence of rare or unique botanical features on the project site and, as discussed in

Finding 6. MDIFW did not identify any unusual wildlife habitats located on the project site.

The Department finds that the proposed development will not have an adverse effect on unusual natural areas either on or near the development site.

9. BUFFER STRIPS:

A 100-foot wide undisturbed buffer strip will be maintained between any disturbance associated with the proposed project and the upland edge of the stream-associated wetlands of the stream/pond complex on the southern portion of the site as discussed in Finding 6. Restrictions on the use of this buffer strip will be incorporated into the deeds for the affected lots (Lots 1 and 4). Additional visual buffer strips will be maintained and enhanced as described in Finding 7.

The Department finds that the applicant has made adequate provision for buffer strips.

10. SURFACE WATER QUALITY:

The proposed project is not located within the watershed of a lake or great pond. No discharges to surface waters are proposed other than stormwater.

The proposed project includes 8.11 acres of new impervious area that will ultimately discharge to an existing pond and stream complex on the southeasterly side of the project site. Because of the project's location and size, stormwater runoff from the project site must be treated to meet the sliding scale total suspended solids (TSS) standard outlined in Chapter 500 of the Department Rules. The applicant proposes to remove 99 percent of TSS from the project's stormwater runoff.

As discussed in Finding 11, the applicant's proposed stormwater management system was reviewed by, and revised in response to, comments from the Division of Watershed Management (DWM) of the Bureau of Land and Water Quality (BLWQ). Specific aspects of the system, including measures to protect water quality, are further discussed in Finding 11.

Based on the stormwater management system's design and DWM's review, the Department finds that the applicant has made adequate provision to ensure that the proposed project will meet the stormwater quality standards contained in Department Rules, Chapter 500 and to ensure that the project will not have an unreasonable adverse impact on surface water quality.

11. SOILS:

The applicant submitted a high intensity soil survey map and report prepared by Albert Frick Associates, Inc. and dated December 16, 2002. The applicant also submitted a report entitled "Geotechnical Investigation – Proposed New Roadway and Detention

Pond," prepared by Summit Geoengineering Services. Both of these reports were based on the soils found at the project site. These reports were prepared by a certified soils scientist and a registered professional engineer, respectively, and were reviewed by staff from the Division of Environmental Assessment (DEA) of the BLWQ, which commented that the soils appear to be suitable for the intended use.

The Department finds that, based on these reports and DEA's review, the soils on the project site present no limitations to the proposed project that cannot be overcome through standard engineering practices.

12. STORMWATER MANAGEMENT:

The project site is very flat with slopes ranging from 0 to 5 percent. Several isolated wetland pockets are located on the site in natural depressions.

The applicant is proposing to utilize a stormwater management system consisting of an infiltration basin that is sized to accommodate post construction runoff from each of the four lots. Road ditches and drainage swales located along each lot will transport runoff from impervious areas to the basin. The system is based on estimates of pre- and post-development stormwater runoff flows obtained by using the methodology outlined in Technical Release #20, U.S.D.A., Soil Conservation Service, and results in the infiltration of stormwater from 24-hour storms of 2-, 10-, and 25-year frequency. The post-development peak flow from the site will not exceed the pre-development peak flow from the site and the peak flow of the receiving water will not be increased as a result of stormwater runoff from the development site.

The stormwater management system proposed by the applicant was reviewed by, and revised in response to, comments from the DWM. In its comments, the DWM stated that the proposed system complies with Department standards for stormwater management. The applicant will maintain the stormwater management system in accordance with the maintenance plan dated March 15, 2003 and submitted with the application.

Based on the system's design and DWM's review, the Department finds that the applicant has made adequate provision to ensure that the proposed project will meet the stormwater quantity standards for: (1) peak flow from the site and peak flow of the receiving waters; (2) grading or other construction activity; (3) channel limits and runoff areas; (4) detention basins; (5) maintenance; (6) discharge to freshwater or coastal wetlands; and (7) level spreaders.

13. EROSION AND SEDIMENTATION CONTROL:

The applicant submitted an Erosion and Sedimentation Control Plan as Section 14 of the application. This plan and plan sheets containing erosion control details were reviewed by, and revised in response to the comments of the DWM. Erosion control details will be included on the final construction plans and the erosion control narrative will be included in the project specifications to be provided to the construction contractor.

The Department finds that the applicant has made adequate provision to control erosion and sedimentation.

14. GROUNDWATER:

The project site is not located over a mapped sand and gravel aquifer. The proposed project does not propose any withdrawal from the groundwater. The applicant proposes to direct stormwater runoff from the proposed project into an infiltration basin as described in Finding 11. DEA reviewed the proposed stormwater infiltration system and commented that, because of the high permeability of the subsoils, the applicant must install a groundwater monitoring well downgradient of the proposed infiltration basin, approximately halfway between the basin and the upland edge of the wetland. The well must be screened in the shallow aquifer at a depth sufficiently shallow to monitor the uppermost part of the saturated zone throughout the year. The well must be installed as soon as practical to obtain pre-construction groundwater quality data. The applicant agreed to install this well.

The well must be monitored on a quarterly basis for field parameters (pH, temperature, specific conductance, and dissolved oxygen), sodium, chloride, and zinc. Sampling must commence upon occupancy of the first lot. The applicant must also obtain one background screen for diesel-range and gasoline-range organics. All sampling reports must be submitted on a quarterly basis to the BLWQ. Prior to occupancy of the first lot sold in the subdivision expansion, the applicant must submit a report and accompanying plan describing the location of the well and details of its installation, and the results of the background screen, to the BLWQ for review and approval.

Lot 1 will be occupied by the Brunswick Times Record. This newspaper office and production facility will store printing and other chemicals and will be formulating a Spill Prevention, Control and Countermeasures (SPCC) Plan for Lot 1. Prior to occupancy of Lot 1 and prior to the storage of any potential contaminants on the site, the applicant must submit the SPCC Plan to the BLWQ for review and approval. In addition, an SPCC Plan must be submitted to the BLWQ for review and approval prior to the occupancy of any other lot that will be occupied by a user that intends to store and use chemicals that could potentially contaminate groundwater.

The Department finds that, provided the monitoring well is installed and tested and an SPCC Plan is submitted as described above, the proposed project will not have an unreasonable adverse effect on ground water quality.

15. WATER SUPPLY:

When completed, the proposed project is anticipated to use 6,500 gallons of water per day. Water will be supplied by the Brunswick and Topsham Water District. The applicant submitted a letter from the District, dated March 3, 2003, indicating that it will be capable of servicing this project.

The Department finds that the applicant has made adequate provision for securing and maintaining a sufficient and healthful water supply.

16. WASTEWATER DISPOSAL:

When completed, the proposed project is anticipated to discharge 6,500 gallons of wastewater per day to the Brunswick Sewer District's wastewater treatment facility. The applicant will extend the existing sewer lines to serve this project. The applicant submitted a letter from the Sewer District stating that it will accept these flows. This project was reviewed by the Division of Engineering, Compliance and Technical Assistance (DECTA) of the BLWQ, which commented that the Brunswick Sewer District has the capacity to treat these flows and is operating in compliance with the water quality laws of the State of Maine.

Based on DECTA's comments, the Department finds that the applicant has made adequate provision for wastewater disposal at a facility that has the capacity to ensure satisfactory treatment.

17. SOLID WASTE:

When completed, the proposed project is anticipated to generate 2,080 tons of general office solid waste per year. All general solid wastes from the proposed project will be disposed of at the Brunswick Landfill, which is currently in substantial compliance with the Solid Waste Management Regulations of the State of Maine.

The proposed project will generate approximately 4,750 cubic yards of stumps and grubbings. All stumps and grubbings generated will be hauled to the Brunswick Landfill and chipped, in compliance with Solid Waste Management Regulations of the State of Maine.

The proposed project will generate approximately 200 cubic yards of construction debris. All construction debris generated will be disposed of at the Brunswick Landfill, which is currently in substantial compliance with the Solid Waste Management Regulations of the State of Maine.

Based on the above information, the Department finds that the applicant has made adequate provision for solid waste disposal.

18. FLOODING:

The proposed project is not located within the 100-year floodway of any river or stream.

The Department finds that the proposed project is unlikely to cause or increase flooding or cause an unreasonable flood hazard to any structure.

19. ALL OTHER:

All other findings of fact, conclusions, and conditions remain as approved in Board Order #39-6773-05030, dated September 10, 1980, and subsequent Orders, and are incorporated herein.

BASED on the above findings of fact, and subject to the conditions listed below, the Department makes the following conclusions pursuant to 38 M.R.S.A. Sections 481 et seq.:

A. The applicant has provided adequate evidence of financial capacity and technical ability to develop the project in a manner consistent with state environmental standards.

B. The applicant has made adequate provision for fitting the development harmoniously into the existing natural environment and the development will not adversely affect existing uses, scenic character, air quality, water quality or other natural resources in the municipality or in neighboring municipalities provided a monitoring well is installed and tested, and the SPCC Plan is submitted, as described in Finding 14.

C. The proposed development will be built on soil types which are suitable to the nature of the undertaking and will not cause unreasonable erosion of soil or sediment nor inhibit the natural transfer of soil.

D. The proposed development meets the standards for storm water management in Section 420-D and the standard for erosion and sedimentation control in Section 420-C.

E. The proposed development will not pose an unreasonable risk that a discharge to a significant groundwater aquifer will occur.

F. The applicant has made adequate provision of utilities, including water supplies, sewerage facilities, solid waste disposal and roadways required for the development and the development will not have an unreasonable adverse effect on the existing or proposed utilities and roadways in the municipality or area served by those services.

G. The activity will not unreasonably cause or increase the flooding of the alteration area or adjacent properties nor create an unreasonable flood hazard to any structure.

THEREFORE, the Department APPROVES the application of the TOWN OF BRUNSWICK to add four lots to the Brunswick Industrial Park, SUBJECT TO THE FOLLOWING CONDITIONS and all applicable standards and regulations:

1. The Standard Conditions of Approval, a copy attached.

2. In addition to any specific erosion control measures described in this or previous orders, the applicant shall take all necessary actions to ensure that its activities or those of its agents do not result in noticeable erosion of soils or fugitive dust emissions on the site during the construction and operation of the project covered by this approval.

3. The applicant shall include in all conveyances of subdivision lots deed restrictions making the conveyance subject to all terms and conditions of this Department permit and any applicable municipal approval. These terms and conditions may be incorporated by specific and prominent reference to the permit in the deed. All conveyances required by this approval to contain restrictions shall include in the restrictions the requirement that any subsequent conveyance shall specifically include the same restrictions.

4. The applicant shall give a copy of this permit, including the standard conditions, and a copy of the approved subdivision plan to each lot buyer at least 14 days prior to the date of closing on the sale or lease of the lot. The applicant also shall maintain a file containing signed and dated statements by lot buyers or lessees acknowledging that they have received and read their copy of this permit and the subdivision plan prior to the closing on their lot. The file shall also contain a copy of the signed and dated deed or lease containing the restrictive covenants required under this approval. The applicant shall make this file available for inspection upon request by the Department.

5. The monitoring well described in Finding 14 shall be sampled on a quarterly basis for field parameters (pH, temperature, specific conductance, and dissolved oxygen), sodium, chloride, and zinc. The applicant shall obtain one background screen for diesel-range and gasoline-range organics. All sampling reports shall be submitted to the BLWQ on a quarterly basis. Prior to occupancy of the first lot sold in the subdivision expansion, the applicant shall submit a report and accompanying plan describing the location of the well and details of its installation, and the results of the background screen, to the BLWQ for review and approval.

6. Prior to occupancy of Lot 1 and prior to the storage of any potential contaminants on the lot, the applicant shall submit an SPCC Plan to the BLWQ for review and approval. In addition, an SPCC Plan must be submitted to the BLWQ for review and approval prior to the occupancy of any other lot that will be occupied by a user that intends to store and use chemicals that could potentially contaminate groundwater.

THIS APPROVAL DOES NOT CONSTITUTE OR SUBSTITUTE FOR ANY OTHER REQUIRED STATE, FEDERAL OR LOCAL APPROVALS NOR DOES IT VERIFY COMPLIANCE WITH ANY APPLICABLE SHORELAND ZONING ORDINANCES.

DONE AND DATED AT AUGUSTA, MAINE, THIS 9th DAY OF September, 2003.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

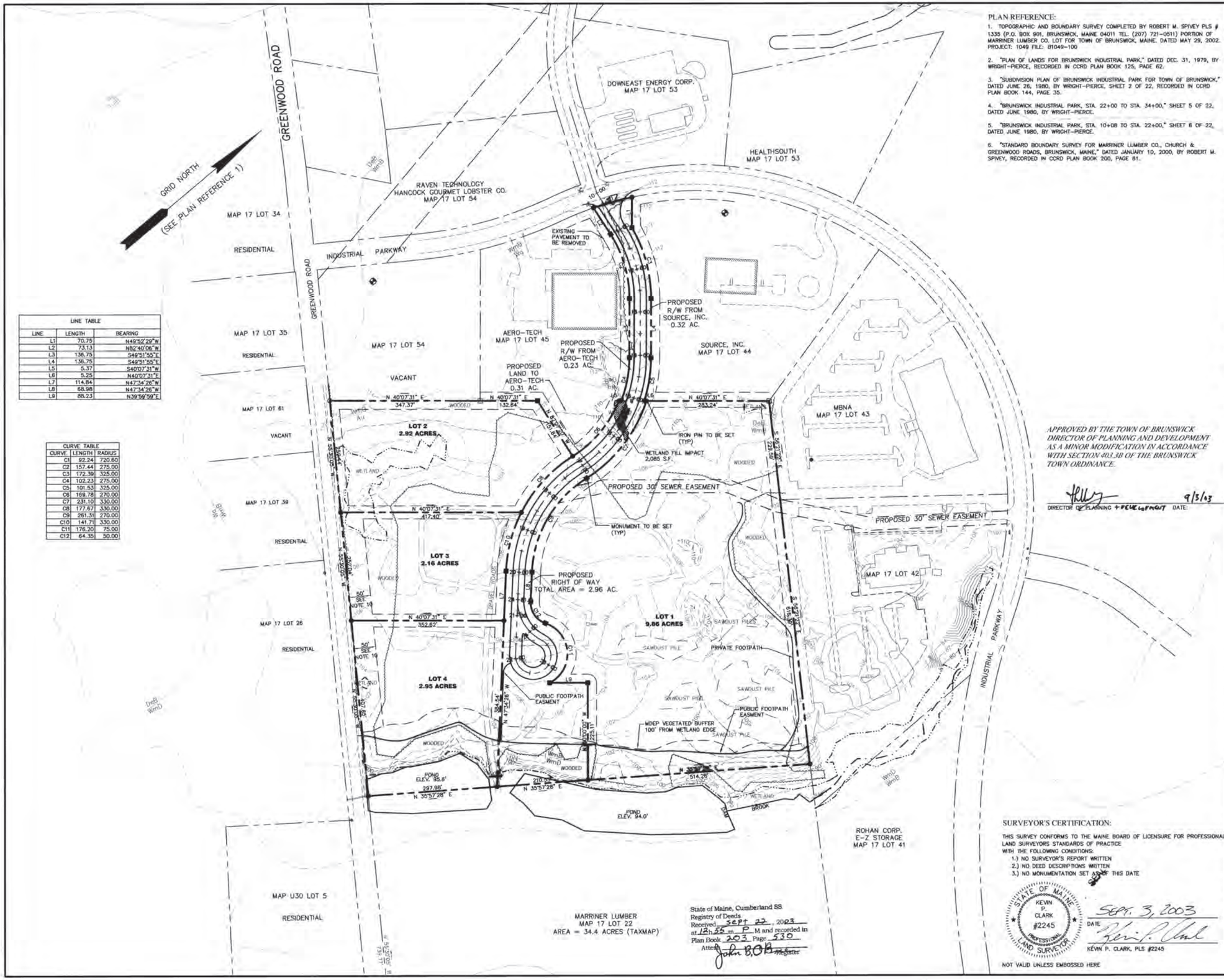
By: _____
DAWN R. GALLAGHER, COMMISSIONER

PLEASE NOTE THE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application 3.20.03
Date of application acceptance 3.26.03

Date filed with Board of Environmental Protection
MR/L06773LA

FILED
SEP 10 2003
BOARD OF ENVIRONMENTAL PROT.
STATE OF MAINE



LINE TABLE		
LINE	LENGTH	BEARING
L1	70.75	N49°52'29"W
L2	73.13	N82°40'06"W
L3	136.75	S49°51'55"E
L4	136.75	S49°51'55"E
L5	5.37	S40°07'31"W
L6	5.25	N40°07'31"E
L7	114.84	N47°34'26"W
L8	68.98	N47°34'26"W
L9	88.23	N39°59'59"E

CURVE TABLE		
CURVE	LENGTH	RADIUS
C1	92.24	720.60
C2	157.44	275.00
C3	172.39	325.00
C4	102.23	275.00
C5	101.53	325.00
C6	169.78	270.00
C7	231.10	330.00
C8	177.67	330.00
C9	261.31	270.00
C10	141.71	330.00
C11	176.20	75.00
C12	64.35	50.00

PLAN REFERENCE:

1. TOPOGRAPHIC AND BOUNDARY SURVEY COMPLETED BY ROBERT M. SPIVEY PLS # 1335 (P.O. BOX 901, BRUNSWICK, MAINE 04011 TEL. (207) 721-0511) PORTION OF MARRINER LUMBER CO. LOT FOR TOWN OF BRUNSWICK, MAINE. DATED MAY 29, 2002. PROJECT: 1049 FILE: 81049-100

2. "PLAN OF LANDS FOR BRUNSWICK INDUSTRIAL PARK," DATED DEC. 31, 1979, BY WRIGHT-PIERCE, RECORDED IN CCRD PLAN BOOK 125, PAGE 62.

3. "SUBDIVISION PLAN OF BRUNSWICK INDUSTRIAL PARK FOR TOWN OF BRUNSWICK," DATED JUNE 26, 1980, BY WRIGHT-PIERCE, SHEET 2 OF 22, RECORDED IN CCRD PLAN BOOK 144, PAGE 35.

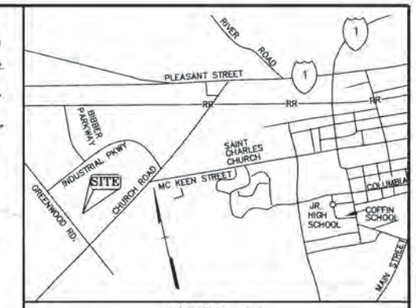
4. "BRUNSWICK INDUSTRIAL PARK, STA. 22+00 TO STA. 34+00," SHEET 5 OF 22, DATED JUNE 1980, BY WRIGHT-PIERCE.

5. "BRUNSWICK INDUSTRIAL PARK, STA. 10+08 TO STA. 22+00," SHEET 6 OF 22, DATED JUNE 1980, BY WRIGHT-PIERCE.

6. "STANDARD BOUNDARY SURVEY FOR MARRINER LUMBER CO., CHURCH & GREENWOOD ROADS, BRUNSWICK, MAINE," DATED JANUARY 10, 2000, BY ROBERT M. SPIVEY, RECORDED IN CCRD PLAN BOOK 200, PAGE 81.

APPROVED BY THE TOWN OF BRUNSWICK DIRECTOR OF PLANNING AND DEVELOPMENT AS A MINOR MODIFICATION IN ACCORDANCE WITH SECTION 403.3B OF THE BRUNSWICK TOWN ORDINANCE.

DIRECTOR OF PLANNING + DEVELOPMENT 9/3/03 DATE:



LOCATION MAP
NOT TO SCALE

GENERAL NOTES:

1. THE SITE IS A PORTION OF MAP 17 LOT 22.

2. AREA OF LOT TO BE SUBDIVIDED = 20.82± AC.

3. ORDINANCE STANDARDS:
   ZONE: I2 (CHURCH ROAD INDUSTRIAL PARK)
   MINIMUM LOT SIZE: 20,000 S.F.
   DIMENSION REQUIREMENTS:
   1.) MINIMUM LOT WIDTH: 100'
   2.) YARD DEPTHS:
      A) FRONT = 20'
      B) REAR = 20'
      C) SIDE = 15'
   3.) MAXIMUM BUILDING HEIGHT = 60'
   MAXIMUM FOOTPRINT FACTOR = N/A
   MAXIMUM IMPERVIOUS SURFACE COVERAGE= 80%

4. PROPOSED ROAD GRADING LIMITS FOR SUBDIVISION DRAINAGE EXTEND BEYOND RIGHT-OF WAY. A DRAINAGE EASEMENT IS REQUIRED 10' WIDE ADJACENT TO THE ROAD RIGHT-OF-WAY STARTING AT STA 15+00 AND ENDING AT THE DETENSION POND.

5. WETLANDS WERE LOCATED FROM FLAGS SET BY STEVE WALKER, TOWN OF BRUNSWICK.

6. ELEVATIONS ARE IN FEET AND ARE IN THE SAME DATUM AS PLAN REFERENCE 3 ABOVE.

7. THE EXISTENCE AND LOCATIONS OF UNDERGROUND UTILITIES HAVE NOT BEEN INVESTIGATED.

8. THE SURFICIAL SOILS ARE CLASSIFIED BY THE SOIL SURVEY FOR CUMBERLAND COUNTY, MAINE BY THE SOIL CONSERVATION SERVICE (PG. 40)

   Au – Au Gres loamy sand
   DeB – Deerfield loamy sand, 3 to 8 percent slopes
   Wg – Whately fine sandy loam
   WmB – Windsor loamy sand, 0 to 8 percent slopes
   WmD – Windsor loamy sand, 15 to 30 percent slopes

9. MAINE DEP HAS APPROVED THE FOLLOWING IMPERVIOUS AREAS ON LOTS 1, 2, 3 & 4 AS SPECIFIED IN DEPARTMENT ORDER #L-6773-39-L-A:
   LOT 1 – 3.08 ACRES
   LOT 2 – 1.70 ACRES
   LOT 3 – 1.34 ACRES
   LOT 4 – 1.18 ACRES
   DEVELOPMENT WHICH EXCEEDS THE IMPERVIOUS AREA RESERVED FOR EACH LOT REQUIRES ADDITIONAL APPROVAL FROM MAINE DEP. 2,085 S.F. OF WETLAND WILL BE FILLED AS PART OF THE ROAD CONSTRUCTION. WETLANDS ON LOT 2 MAY BE FILLED UP TO 2,215 S.F. WITHOUT A PERMIT. IMPACTS ON LOT 2 GREATER THAN 2,215 S.F. SHALL REQUIRE A PERMIT FROM MAINE DEP. ANY WETLAND IMPACT ON LOT 1 & 3 SHALL REQUIRE A PERMIT FROM MAINE DEP.

10. A 50' UNDISTURBED BUFFER SHALL BE PRESERVED. THE BUFFER SHALL BE ENHANCED WITH ADDITIONAL EVERGREEN TREES TO PROVIDE A SOLID VISUAL BARRIER FROM THE RESIDENCE LOCATED AT TAX MAP 17 LOT 26.

16. 08-29-03	ADD 50' BUFFER TO LOTS 3 & 4 AND NOTE 10	DSE
15. 06-23-03	REVISED PER MDEP COMMENTS	DSE
14. 05-08-03	RESUBMITTED MYLARS FOR SIGNATURES	DSE
13. 04-08-03	ADDED PRIVATE FOOTPATH, REVISED CURVE 9 SUBMITTED MYLARS FOR SIGNATURE	REH
12. 4/1/03	SUBMITTED 18 COPIES TO TOWN ADDED FOOTPATH EASEMENT SUBMITTED 1 COPY TO PLANNER	REH DSE
11. 3-18-03	REVISED VEGETATED BUFFER RESUBMITTED TO MDEP	DSE
10. 3-17-03	SUBMITTED TO MDEP	DSE
9. 03-07-03	REVISED CUL-DE-SAC LAYOUT, LOT CONFIGURATION AND AREAS. ADDED LINE AND CURVE TABLE	REH
8. 02-04-03	MOVED PROPOSED PROPERTY LINE REVISED LOTS 1 AND 5 AREAS	REH
7. 11-04-02	REVISED ROAD LAYOUT, LOT AREAS SUBMITTED 1 COPY TO PLANNER	REH
6. 9-4-02	REVISED PLAN NAME	RPL
5. 9/03/02	REVISED LAYOUT	RPL
4. 8/26/02	REVISED ROADWAY ALIGNMENT	RPL
3. 8/8/02	REVISED LAYOUT	RPL
2. 7/30/02	ADD PROPOSED RIGHT OF WAY AREAS	RPL

SURVEYOR'S CERTIFICATION:

THIS SURVEY CONFORMS TO THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS STANDARDS OF PRACTICE WITH THE FOLLOWING CONDITIONS:
1.) NO SURVEYOR'S REPORT WRITTEN
2.) NO DEED DESCRIPTIONS WRITTEN
3.) NO MONUMENTATION SET AS OF THIS DATE

STATE OF MAINE KEVIN P. CLARK #2245 PROFESSIONAL LAND SURVEYOR

SEPT. 3, 2003
DATE
KEVIN P. CLARK, PLS #2245

NOT VALID UNLESS EMBOSSED HERE

State of Maine, Cumberland SS
Registry of Deeds
Received Sept 22, 2003
at 12h 55m P M and recorded in
Plan Book 203 Page 530
Attest John B. O'Donnell Register

SUBDIVISION PLAN - AMENDMENT 1
INDUSTRIAL PARK EXPANSION

BRUNSWICK INDUSTRIAL PARK (PHASE IV)
Record owner: TOWN OF BRUNSWICK

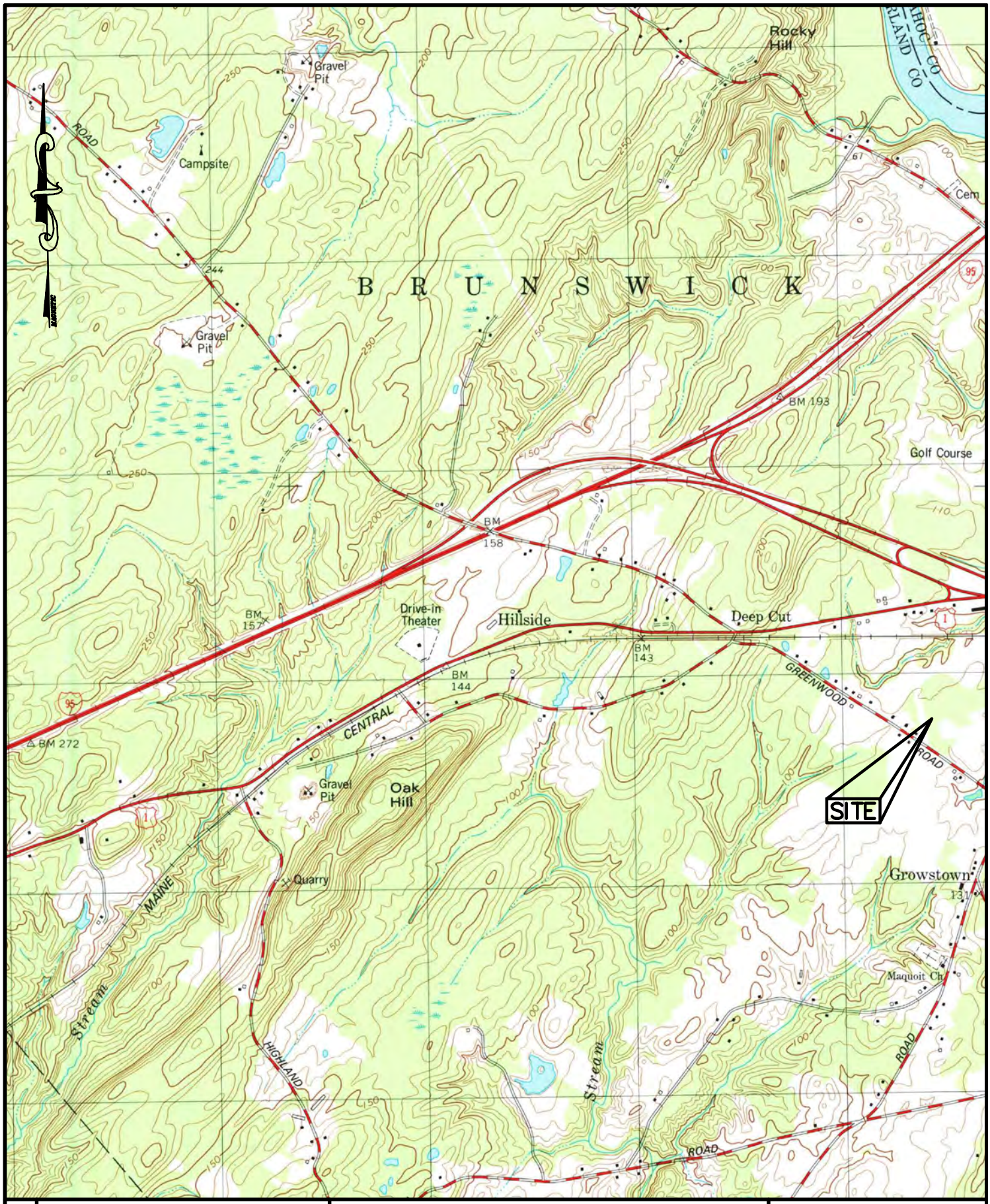
BUSINESS PARKWAY
BRUNSWICK, MAINE 04011

SITELINES P.A.
ENGINEERS • PLANNERS • SURVEYORS
8 CUMBERLAND STREET, BRUNSWICK, ME 04011
(207) 725-1200 FAX 725-1114 EMAIL: sitelines@blazenetinc.net

FIELD WK: R. SPIVEY	SCALE: 1" = 100'	SHEET:
DRN BY: R. LERETTE	JOB #: 927	
CH'D BY: C. WIERCINSKI	SS:	
DATE: 3/28/03	FILE: 927BASE2	

Attachment F
Supporting Graphics

This attachment includes supporting materials and graphics for the application. This includes an excerpt of the FEMA flood rate insurance map (FIRM) and reduced size copies of the zoning map and tax maps. An excerpt of the applicable USGS 7.5 minute quadrangle map is provided for reference.



SHEET: 1 OF 1

SITELINES

119 PURINTON ROAD, SUITE A
BRUNSWICK, ME 04011
207.725.1200

CIVIL ENGINEERS • LAND SURVEYORS

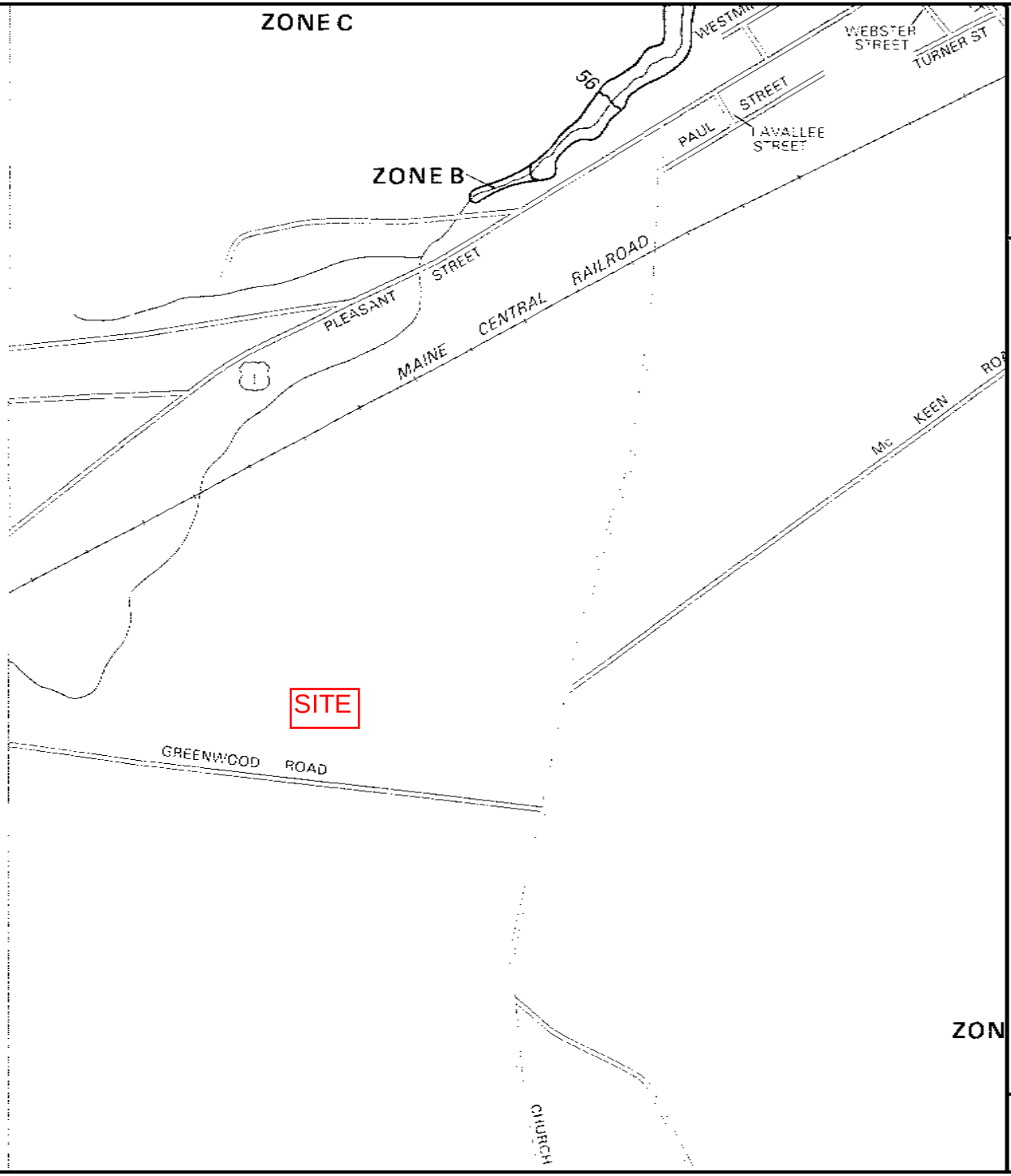
USGS MAP

MARIJUANA STORE – ADULT USE

GJORIS LLC

4 BUSINESS PKWY, BRUNSWICK, MAINE

DATE: 01–29–20
SCALE: 1" = 2000'
JOB: 3781.02
FILE: 3781.02–USGS



APPROXIMATE SCALE

1000 0 1000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

TOWN OF

BRUNSWICK, MAINE

CUMBERLAND COUNTY

PANEL 15 OF 35

(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER

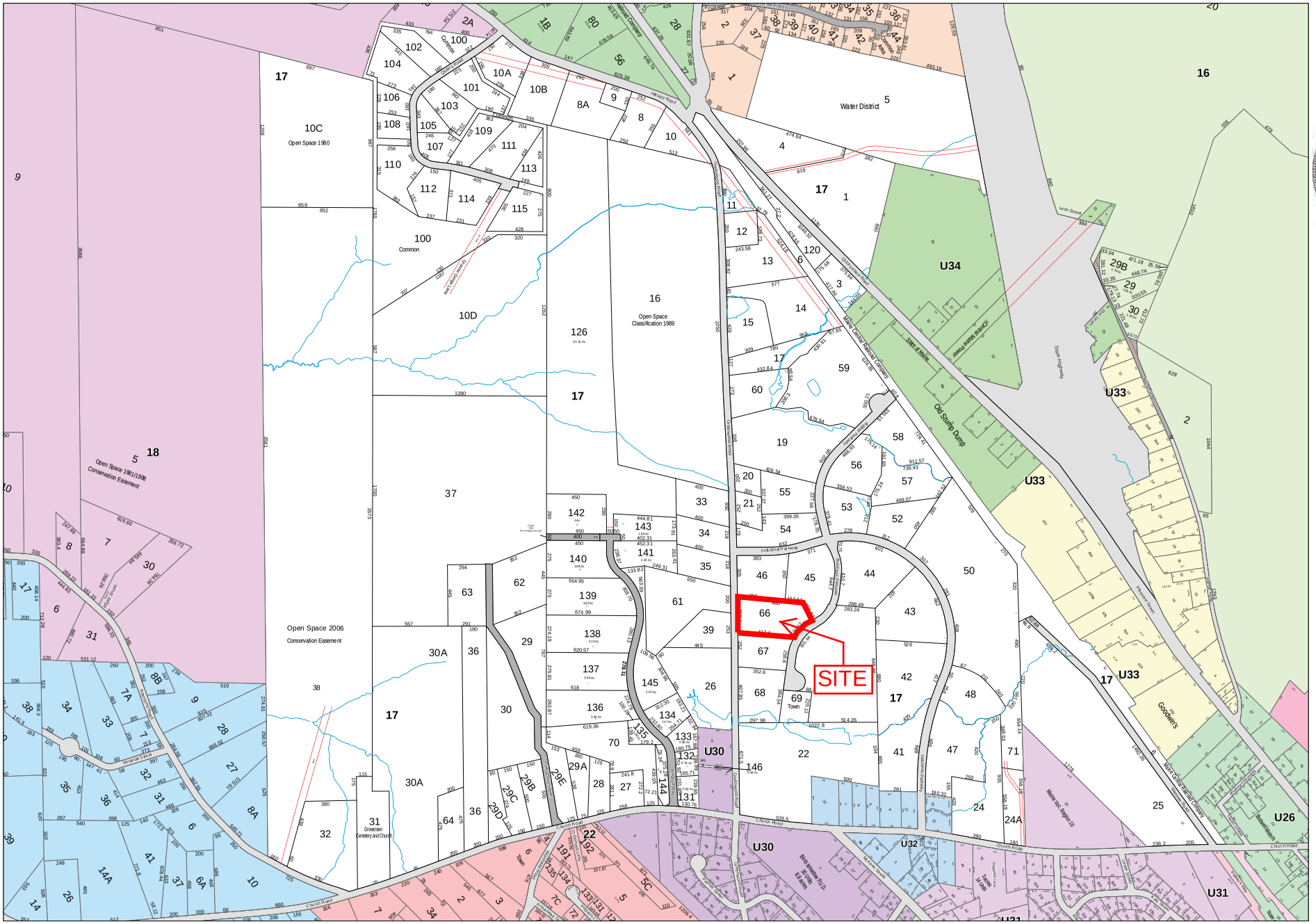
230042 0015 B

EFFECTIVE DATE:

JANUARY 3, 1986

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



Town of
BRUNSWICK
Maine

Legend

- Lines_Other
- Other Road
- Hydrography Line
- ROW Property Access
- Town Boundary
- Other Lot Boundary
- Parcels_Lines
- Public Road
- Private Road
- ROW
- Water

Disclaimer:
The information is provided as a reasonably accurate point of reference, but is not guaranteed and is not to be used for conveyances.
The Town of Brunswick shall not be held responsible for the accuracy or misuse of this data.
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N

1 inch = 300 feet

Revised To: April 1, 2019

Maps Prepared by:
Town of Brunswick

Revised and Reprinted By:

CAI Technologies
Precision Mapping. Geospatial Solutions

MAP
17

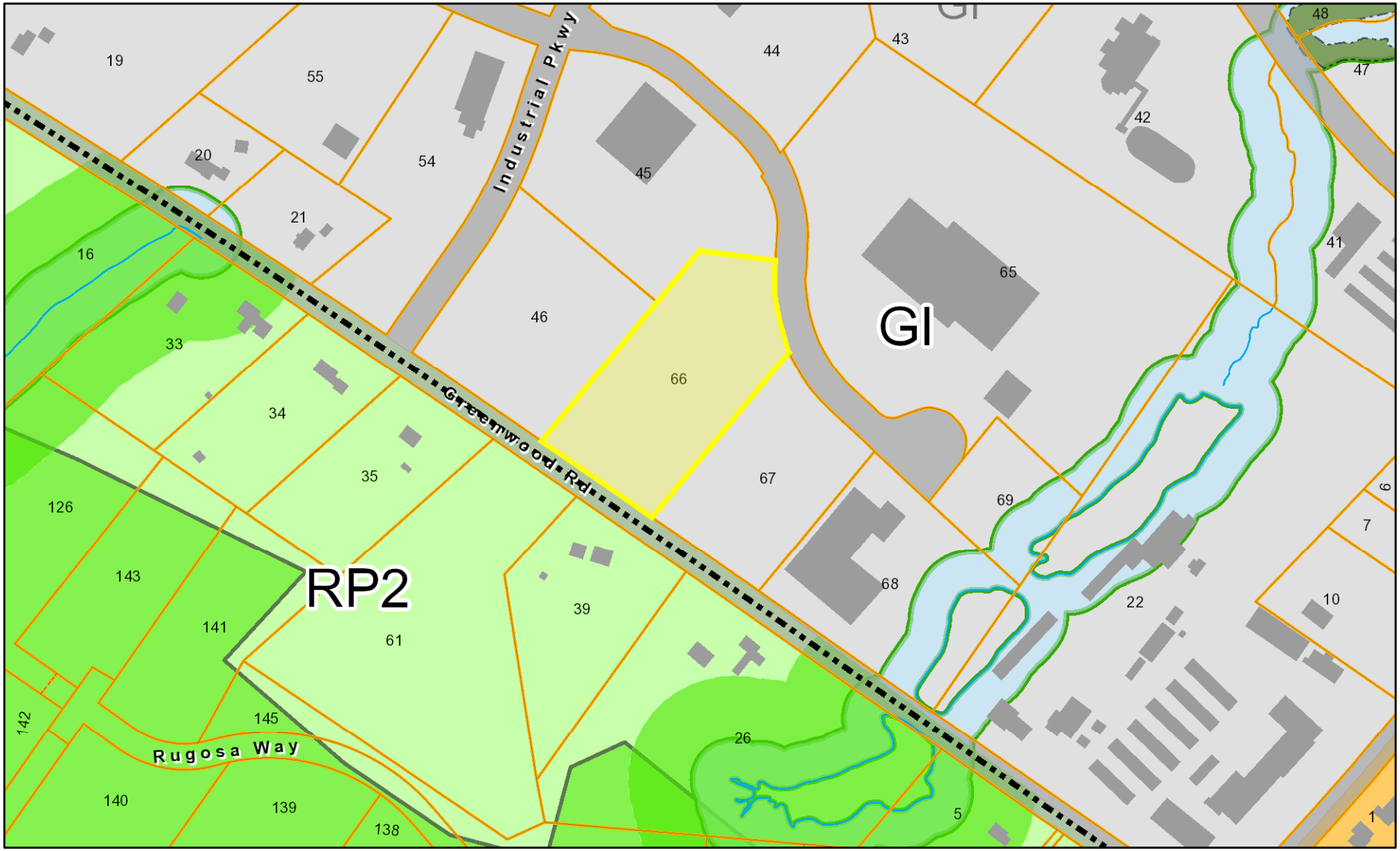
Zoning Map

Brunswick, ME

1 inch = 271 Feet

0 271 542 813

January 29, 2020



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Soil Map—Cumberland County and Part of Oxford County, Maine

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Au	Au Gres loamy sand	1.4	35.7%
DeB	Deerfield loamy fine sand, 3 to 8 percent slopes	0.3	8.0%
WmB	Windsor loamy sand, 0 to 8 percent slopes	2.3	56.3%
Totals for Area of Interest		**4.0**	**100.0%**

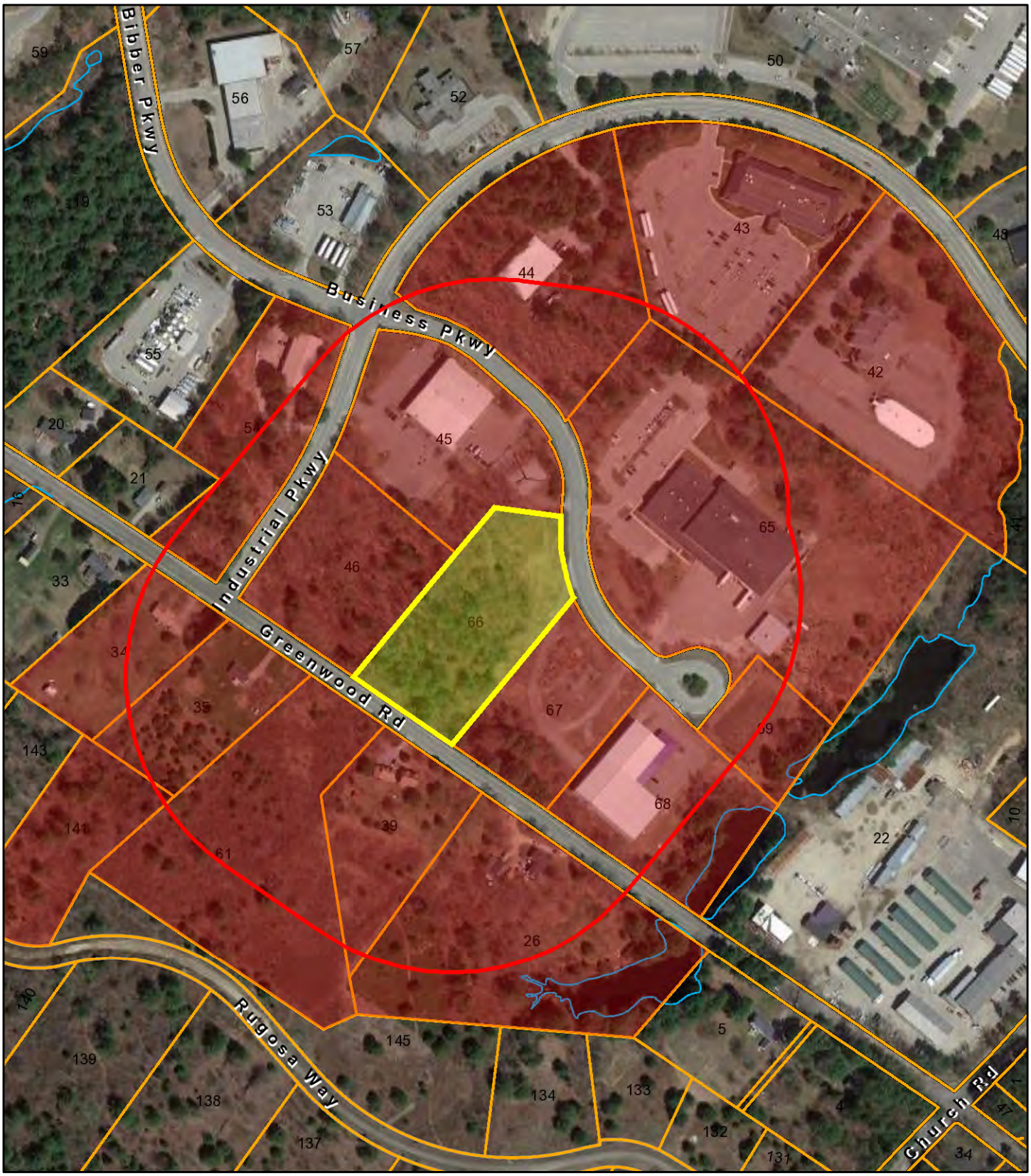
500' Radius Map

Brunswick, ME

1 inch = 300 Feet

0 300 600 900

February 17, 2020



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Aerial Map

Brunswick, ME

1 inch = 135 Feet

0 135 270 405

January 29, 2020

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Attachment G
Lighting Details

Information on the proposed lighting is enclosed for reference.

BEACON
design . performance . technology

DATE:	LOCATION:
TYPE:	PROJECT:
CATALOG #:	

VIPER L

LARGE VIPER LUMINAIRE

OPTICS STRIKE

FEATURES

- Large size companion to Viper Small
- Wide choice of different LED wattage configurations
- Ten optical distributions
- Designed to replace HID lighting up to 1000W MH or HPS
- Suitable for wet locations

C US

*3000K and warmer CCTs only

RELATED PRODUCTS

Viper Small

CONTROL TECHNOLOGY

NX DISTRIBUTED INTELLIGENCE · wiSCAPE · energeni · SiteSync LIGHTING CONTROL

SPECIFICATIONS

CONSTRUCTION

- Manufactured with die cast aluminum
- Coated with a polyester finish that meets ASTM B117 corrosion test requirements and ASTM D522 cracking and loss of adhesion test requirements
- IFS polyester powder-coat electrostatically applied and thermocured. IFS finish consists of a five stage pretreatment regimen with a polymer primer sealer and top coated with a thermoset super TGIC polyester powder coat finish
- The finish meets the AAMA 2604 performance specification which includes passing a 3,000-hour salt spray test for corrosion resistance and resists cracking or loss of adhesion per ASTM D522 and resists surface impacts of up to 160 inch-pounds
- External hardware is corrosion resistant

OPTICS

- Cartridge is held together with internal brass standoffs soldered to the board so that it can be field replaced as a one-piece optical system
- One-piece silicone gasket ensures a weatherproof seal around each individual optic
- One-piece optical cartridge system consisting of an LED engine, optics, gasket and stainless steel bezel

INSTALLATION

- Mounting options for horizontal arm, vertical tenon or traditional arm mounting available. Mounting hardware included

ELECTRICAL

- Luminaire accepts 100V through 277V, 347V or 480V input 50 Hz to 60 Hz (UNV)
- Power factor is ≥ .90 at full load
- Dimming drivers are standard, but must contact factory to request wiring leads for purpose of external dimming controls
- Component-to-component wiring within the luminaire may carry no more than 80% of rated load and is certified by UL for use at 600VAC at 90°C or higher
- Plug disconnects are certified by UL for use at 600 VAC, 13A or higher. 13A rating applies to primary (AC) side only
- Fixture electrical compartment contains all LED driver components and a push-button terminal block for AC power connections
- Optional 7-pin ANSI C136.41-2013 Twist-Lock® photo control receptacle available. Compatible with ANSI C136.41 external wireless control devices
- Ambient operating temperature -40°C to 25°C
- Surge protection: 20kA
- Lifeshield™ Circuit (see Electrical Data)

CONTROLS

- Available with an optional passive infrared (PIR) motion sensor capable of detecting motion 360° around the luminaire. When no motion is detected for the specified time, the motion response system reduces the wattage to factory preset level, reducing the light level accordingly. When motion is detected by the PIR sensor, the luminaire returns to full wattage and full light output. Please contact Beacon Products if project requirements vary from standard configuration
- Available with Energeni for optional set dimming, timed dimming with simple delay, or timed dimming based on time of night
- In addition, Viper can be specified with SiteSync™ wireless control system for reduction in energy and maintenance costs while optimizing light quality 24/7

CERTIFICATIONS

- DLC® (DesignLights Consortium) Qualified. Please refer to the DLC website for specific product qualifications at www.designlights.org
- Certified to UL 1598 and UL 8750
- 3G rated for ANSI C136.31 high vibration applications with MAF mounting
- IDA approved
- This product is approved by the Florida Fish and Wildlife Conservation Commission. Separate spec available online

WARRANTY

- 5 year warranty
- See HLI Commercial and Industrial Outdoor Lighting Warranty for additional information

KEY DATA	
Lumen Range	14,283–39,969
Wattage Range	64–395
Efficacy Range (LPW)	98–135
Reported Life (Hours)	L70>377,000
Input Current Range (Amps)	0.3–4.0

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HUBBELL Lighting

BEACON design . performance . technology

DATE:	LOCATION:
TYPE:	PROJECT:
CATALOG #:	

VIPER L

LARGE VIPER LUMINAIRE

ORDERING GUIDE

Example: VPL–96L–280–4K7–4W–UNV–A–DB–TL–GENI–04–BC

CATALOG # _____

VPL –

Series	
VPL	Viper Large

LED Engine	
64L-135	135W LED array
80L-180	180W LED array
80L-235	235W LED array
96L-220	220W LED array
96L-280	280W LED array
96L-315	315W LED array
96L-395	395W LED array

CCT/CRI [7]	
3K7	3000K, 70 CRI
4K7	4000K, 70 CRI
5K7	5000K, 70 CRI

Distribution	
FR	Type 1/Front Row
2	Type 2
3	Type 3
4	Type 4
4W	Type 4 Wide
5QM	Type 5QM
5QN	Type 5QN
5R	Type 5R (rectangular)
5W	Type 5W (round wide)
TC	Tennis Court

Rotation	
Blank	No rotation
L	Optic rotation left [5]
R	Optic rotation right [5]

Voltage	
UNV	120–277V
347	347V
480	480V

Mounting	
A	Rectangular Arm (formerly RA) for square or round pole
MAF	Mast Arm Fitter (formerly SF2) for 2⅜" OD horizontal arm
K	Knuckle (formerly PK2) limit to 30° tilt or 2⅜" OD horizontal arm or vertical tenon
WB	Wall Bracket
AD	Universal Arm for square pole
AD3	Adapter for 2.4"–4.1" round pole
AD4	Adapter for 4.2"–5.3" round pole
AD5	Adapter for 5.5"–5.9" round pole
AD6	Adapter for 6.0"–6.5" round pole

Color	
BL	Black Textured
DB	Dark Bronze Textured
GYS	Light Gray Smooth
PS	Platinum Silver Smooth
WH	White Textured
CC	Custom Color

Control Options	
7PR	7-Pin Receptacle only (shorting cap, photo control, or wireless control provided by others)
7PR-SC	7-Pin Receptacle w/Shorting Cap
7PR-TL	7-Pin Receptacle w/Twist-Lock® photo control
SCP/_F	Programmable Occupancy Sensor w/ daylight control [1,2,6]
GENI-XX	ENERGENI [3]
SWP	SiteSync Pre-Commission [1,4]
SWPM_F	SiteSync Pre-Commission w/ Sensor [1,2,4]

Options	
F	Fusing
BSP	Bird Spikes
BC	Backsheid (available for FR, 2, 3, 4, 4W Optics)

House Side Shield Accessories

☐	**HSS/VP-L/90-FB/XXX**	90° shield front or back
☐	**HSS/VP-L/90-LR/XXX**	90° shield left or right
☐	**HSS/VP-L/270-FB/XXX**	270° shield front or back
☐	**HSS/VP-L/270-LR/XXX**	270° shield left or right
☐	**HSS/VP-L/360/XXX**	Full shield

Replace XXX with notation for desired finish color. Refer to page 8 for shield images.

Mounting Accessories

☐	**VPL-AD-RPA3**	2.4"–4.1" Round Pole Adapter for AD arm
☐	**VPL-AD-RPA4**	4.2"–5.3" Round Pole Adapter for AD arm
☐	**VPL-AD-RPA5**	5.5"–5.9" Round Pole Adapter for AD arm
☐	**VPL-AD-RPA6**	6.0"–6.5" Round Pole Adapter for AD arm

Notes:

1. Not available with other wireless control or sensor options
2. Specify mounting height; 8 = 8' or less, 40 = 9' to 40'
3. Specify routine setting code (example GENI-04). See ENERGENI brochure and instructions for setting table and options. Not available with sensor or SiteSync options
4. Specify group and zone at time of order. See www.hubbelllighting.com/sitesync for further details. Order at least one SiteSync interface accessory SWUSB or SWTAB. Each option contains SiteSync License, GUI, and Bridge Node
5. Only available with FR, 2, 3, 4, 4W and 5R distributions
6. Order at least one SCP-REMOTE per project location to program and control the occupancy sensor

Accessories and Services (Ordered Separately)

☐	**SCP-REMOTE**	Remote Control for SCP/_F option. Order at least one per project to program and control the occupancy sensor
☐	**SWUSB***	SiteSync interface software loaded on USB flash drive for use with owner supplied PC (Windows based only). Includes SiteSync license, software and USB radio bridge node
☐	**SWTAB***	Windows tablet and SiteSync interface software. Includes tablet with preloaded software, SiteSync license and USB radio bridge node
☐	**SWBRG**	SiteSync USB radio bridge node only. Order if a replacement is required or if an extra bridge node is requested
☐	**SW7PR+**	SiteSync 7-Pin on fixture module On/Off/Dim, Daylight Sensor 120–480VAC

* When ordering SiteSync at least one of these two interface options must be ordered per project.
\+ Available as a SiteSync retrofit solution for fixtures with an existing 7-pin receptacle.

Hubbell Control Solutions — Accessories (Sold Separately)

NX Distributed Intelligence™

☐	**NXOFM-1R1D-UNV**	On-fixture Module (7-pin), On / Off / Dim, Daylight Sensor with HubbNET Radio and Bluetooth® Radio, 120–480VAC

wiSCAPE® Lighting Control

☐	**WIR-RME-L**	On-fixture Module (7-pin or 5-pin), On / Off / Dim, Daylight Sensor with wiSCAPE Radio, 110–480VAC

For additional information related to these accessories please visit www.hubbellcontrolsolutions.com. Options provided for use with integrated sensor, please view specification sheet ordering information table for details.

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HUBBELL Lighting

VIPER L

LARGE VIPER LUMINAIRE

CONTROLS

SiteSync — Precommissioned Ordering Information:
When ordering a fixture with the SiteSync lighting control option, additional information will be required to complete the order. The SiteSync Commissioning Form or alternate schedule information must be completed. This form includes Project location, Group information, and Operating schedules. For more detailed information please visit the SiteSync family page on our website or contact Hubbell Lighting tech support at 800-888-8006.

SiteSync fixtures with Motion control (SWPM) require the mounting height of the fixture for selection of the lens.

Examples: VP-L/80L-235/4K7/3/UNV/A/DB/SWP/ SiteSync only
VP-L/80L-235/4K7/3/UNV/A/DB/SWPM-40F/ SiteSync with Motion Control

SiteSync 7-Pin Module:
- SiteSync features in a new form
- Available as an accessory for new construction or retrofit applications (with existing 7-Pin receptacle)
- Does not interface with occupancy sensors

SW7PR

NX Distributed Intelligence™ Lighting Controls:
Supports both indoor and outdoor applications in a variety of deployment options: wired, wireless and hybrid.
Integrates with and enables a wide array of luminaires including those with SpectraSync Color Tuning Technology.

NX Integrated Controls Reference								
NX Option	Sensor	Networkable	Scheduling	Occupancy	Daylight Harvesting	0–10V Dimming	On/off Control	Bluetooth® App Programming
NX Networked – Wireless								
NXOFM-1R1D-UNV	SCLNX	Yes	Yes	Yes	Yes	Yes	Yes	Yes, Bluetooth App

wiSCAPE™:
Supports remote management, monitoring and metering of outdoor wireless lighting applications such as smart campuses, smart cities, parking lots, parking lots and roadways.

wiSCAPE Reference								
wiSCAPE Option	Sensor	Networkable	Scheduling	Occupancy	Daylight Harvesting	0–10V Dimming	On/off Control	Bluetooth® App Programming
Networked – Wireless								
WIR-RME-L	WIR-RME-L	Yes	Yes	No	Yes	Yes	Yes	wiSCAPE Gateway

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BEACON
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DATE: LOCATION:

TYPE: PROJECT:

CATALOG #:

VIPER L

LARGE VIPER LUMINAIRE

DELIVERED LUMENS

				5K (5000K nominal, 70 CRI)					4K (4000K nominal, 70 CRI)					3K (3000K nominal, 70 CRI)				
# of LEDs	DRIVE CURRENT (mA)	SYSTEM WATTS	DISTRIBUTION TYPE	LUMENS	LPW[1]	B	U	G	LUMENS	LPW[1]	B	U	G	LUMENS	LPW[1]	B	U	G
64	625 mA	135W	1A	18220	132	2	0	2	18783	137	2	0	2	16341	119	2	0	2
			2	17228	125	2	0	2	17761	129	2	0	2	15452	112	2	0	2
			3	17257	125	2	0	3	17791	129	2	0	3	15478	112	2	0	3
			4	16864	123	1	0	4	17386	126	1	0	4	15125	110	1	0	3
			4W	15106	112	2	0	4	15573	115	2	0	4	13237	98	2	0	3
			5QM	17259	125	4	0	2	17792	129	4	0	2	15479	112	4	0	2
			5QN	18023	131	4	0	0	18580	135	4	0	0	16165	117	4	0	0
			5R	17410	127	4	0	4	17948	130	4	0	4	15615	113	4	0	4
			5W	16498	120	4	0	2	17009	124	4	0	3	14797	108	4	0	2
			TC	15925	110	2	1	2	16417	113	2	1	2	14283	98	1	1	2
80	700 mA	180W	1A	23230	128	2	0	2	23948	132	2	0	2	20835	115	2	0	2
			2	21965	121	3	0	3	22645	125	3	0	3	19701	109	2	0	3
			3	22003	121	2	0	4	22683	125	3	0	4	19734	109	2	0	4
			4	21502	119	2	0	4	22167	122	2	0	4	19285	106	2	0	4
			4W	19260	107	2	0	4	19856	110	2	0	4	16877	94	2	0	4
			5QM	22005	121	4	0	2	22686	125	4	0	2	19736	109	4	0	2
			5QN	22979	127	4	0	1	23689	131	4	0	1	20610	114	4	0	0
			5R	22197	122	4	0	4	22884	126	4	0	4	19909	110	4	0	4
			5W	21035	116	5	0	3	21686	120	5	0	3	18867	104	4	0	3
			TC	19906	110	2	1	2	20522	113	2	1	2	17854	98	2	1	2
80	875 mA	235W	1A	27849	121	2	0	2	28711	125	2	0	2	24978	108	2	0	2
			2	26334	114	3	0	3	27148	118	3	0	4	23619	102	3	0	3
			3	26378	114	3	0	4	27194	118	3	0	4	23659	103	3	0	4
			4	25777	112	2	0	4	26575	115	2	0	5	23120	100	2	0	4
			4W	23090	98	2	0	5	23805	101	2	0	5	20234	86	2	0	4
			5QM	26381	114	4	0	2	27196	118	4	0	2	23661	103	4	0	2
			5QN	27548	119	5	0	1	28400	123	5	0	1	24708	107	5	0	1
			5R	26611	115	5	0	5	27434	119	5	0	5	23868	104	4	0	4
			5W	25218	109	5	0	3	25998	113	5	0	3	22619	98	5	0	3
			TC	23864	103	2	1	2	24602	107	2	1	2	21404	93	2	1	2
96	700 mA	220W	1A	27876	128	2	0	2	28738	132	2	0	2	25002	115	2	0	2
			2	26359	121	3	0	3	27174	125	3	0	4	23641	109	3	0	3
			3	26403	121	3	0	4	27220	125	3	0	4	23681	109	3	0	4
			4	25802	119	2	0	4	26600	122	2	0	5	23142	106	2	0	4
			4W	23111	105	2	0	5	23826	108	2	0	5	20252	92	2	0	4
			5QM	26406	121	4	0	2	27222	125	4	0	2	23684	109	4	0	2
			5QN	27575	127	5	0	1	28427	131	5	0	1	24732	114	5	0	1
			5R	26637	122	5	0	5	27460	126	5	0	5	23891	110	4	0	4
			5W	25242	116	5	0	3	26023	120	5	0	3	22640	104	5	0	3
			TC	23887	110	2	1	2	24626	113	2	1	2	21424	98	2	1	2
96	875 mA	280W	1A	33419	121	3	0	2	34453	125	3	0	2	29974	108	2	0	2
			2	31600	114	3	0	4	32577	118	3	0	4	28342	102	3	0	4
			3	31654	114	3	0	5	32633	118	3	0	5	28390	103	3	0	4
			4	30933	112	2	0	5	31889	115	2	0	5	27744	100	2	0	5
			4W	27708	99	3	0	5	28564	102	3	0	5	24280	87	2	0	5
			5QM	31657	114	5	0	3	32636	118	5	0	3	28393	103	4	0	2
			5QN	33058	119	5	0	1	34080	123	5	0	1	29650	101	5	0	1
			5R	31933	115	5	0	5	32921	119	5	0	5	28641	104	5	0	5
			5W	30262	109	5	0	4	31198	113	5	0	4	27142	98	5	0	3
			TC	28642	104	2	1	3	29528	107	2	1	3	25690	93	2	1	2
96	1000mA	315W[2]	1A	35666	113	3	0	2	36769	117	3	0	2	31989	101	2	0	2
			2	33725	107	3	0	4	34768	110	3	0	4	30248	96	3	0	4
			3	33782	107	3	0	5	34827	110	3	0	5	30299	96	3	0	4
			4	33012	105	2	0	5	34033	108	2	0	5	29609	94	2	0	5
			4W	29571	94	3	0	5	30485	97	3	0	5	25913	82	2	0	5
			5QM	33785	107	5	0	3	34830	110	5	0	3	30302	96	5	0	2
			5QN	35280	112	5	0	1	36371	115	5	0	1	31643	100	5	0	1
			5R	34080	108	5	0	5	35134	111	5	0	5	30567	97	5	0	5
			5W	32302	102	5	0	4	33301	106	5	0	4	28972	92	5	0	4
			TC	30568	97	2	1	3	31513	100	3	1	3	27416	87	2	1	3
96	1225mA	395W[2]	1A	39569	101	3	0	4	43125	110	3	0	3	37518	96	3	0	2
			2	39569	101	3	0	4	40793	104	3	0	4	35490	91	3	0	4
			3	39619	101	3	0	5	40845	104	3	0	5	35535	91	3	0	5
			4	38723	98	3	0	5	39921	101	3	0	5	34731	88	2	0	5
			4W	34691	86	3	0	5	35764	89	3	0	5	30400	76	3	0	5
			5QM	39623	101	5	0	3	40848	104	5	0	3	35538	90	5	0	3
			5QN	41394	105	5	0	1	42675	109	5	0	1	37127	95	5	0	1
			5R	39969	102	5	0	5	41205	105	5	0	5	35848	91	5	0	5
			5W	37877	97	5	0	4	39048	100	5	0	4	33986	87	5	0	4
			TC	35850	90	3	1	3	36959	93	3	1	3	32154	81	3	1	3

1 Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown. Actual performance may differ as a result of end-user environment and application.

2 315W and 395W 3000K versions are not DLC QPL listed. Reference dark gray highlighted cells in table.

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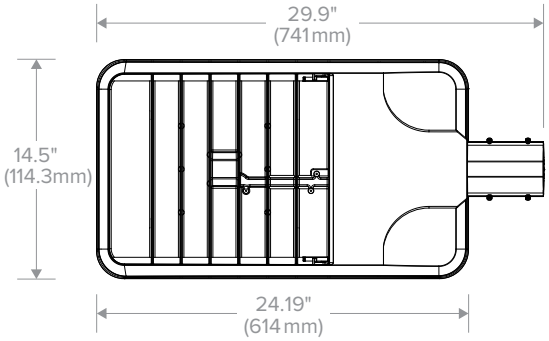
HUBBELL Lighting

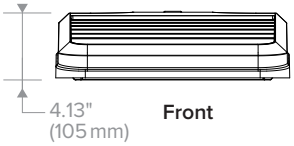
DATE:	LOCATION:
TYPE:	PROJECT:
CATALOG #:	

VIPER L

LARGE VIPER LUMINAIRE

DIMENSIONS

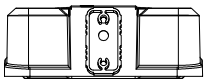




Weight	25.0 lbs (11.3 kg)
EPA	1.2 ft^2

A Arm (formerly RA)

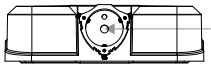
Side View



Back View

MAF (formerly SF2)

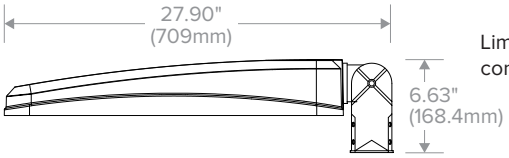
Side View



Back View

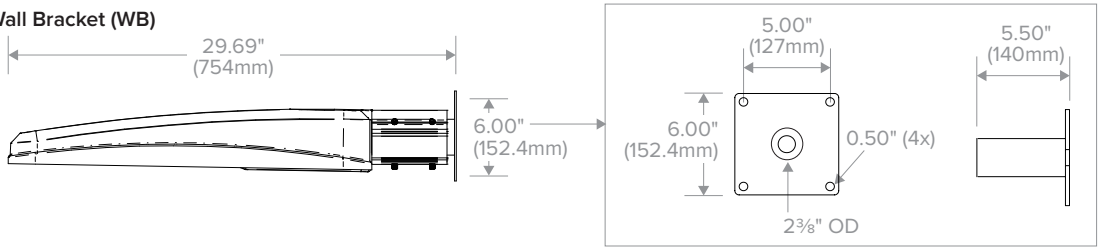
Accepts 2⅜" OD tenon, min 5" long.

2⅜" Adjustable Knuckle (K) (formerly PK2)

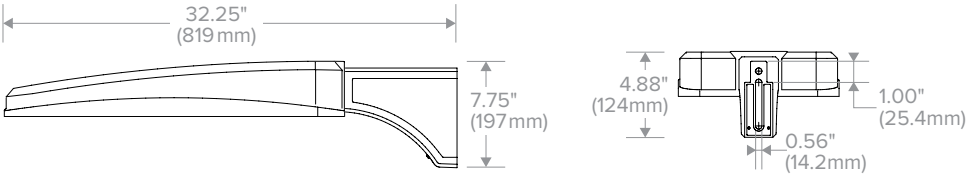


Limit to 30° tilt. Sensor, photocelss and wireless controls should not be tilted above horizontal.

Wall Bracket (WB)



AD Decorative Arm



See page 9 for mounting details.

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VIPER L

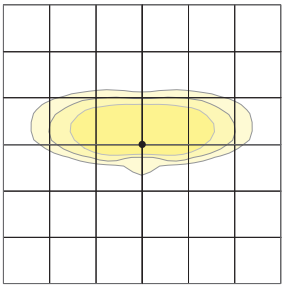
LARGE VIPER LUMINAIRE

DATE:	LOCATION:
TYPE:	PROJECT:
CATALOG #:	

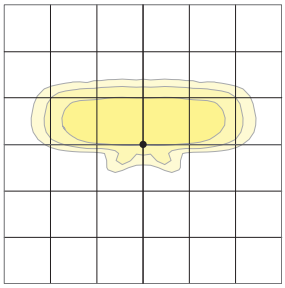
PHOTOMETRY

The following diagrams represent the general distribution options offered for this product. For detailed information on specific product configurations, see website photometric test reports.

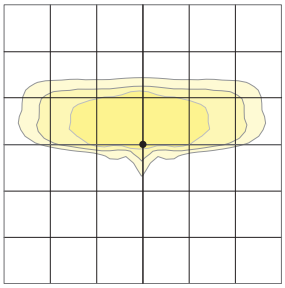
Type FR – Front Row/Auto Optic



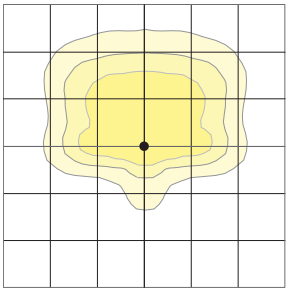
Type 2



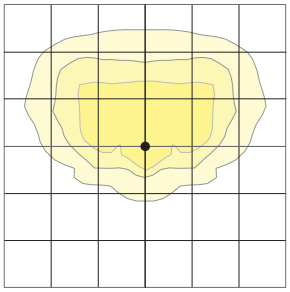
Type 3



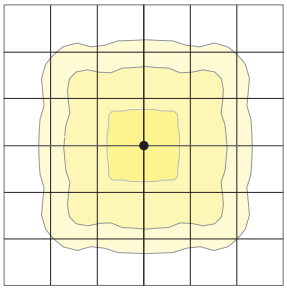
Type 4



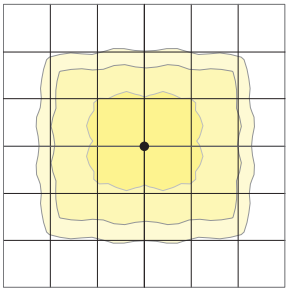
Type 4 Wide



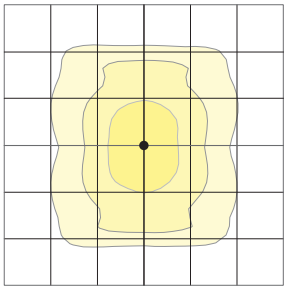
Type 5QM



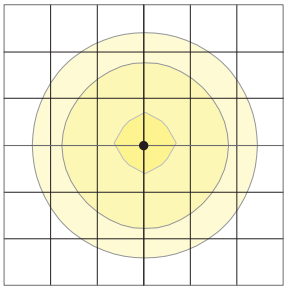
Type 5QN



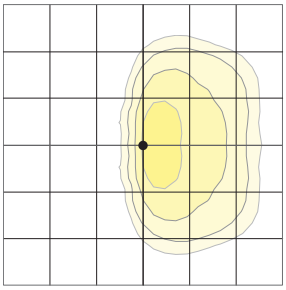
Type 5R (rectangular)



Type 5W (round wide)



Type TC



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DATE: LOCATION:

TYPE: PROJECT:

CATALOG #:

VIPER L

LARGE VIPER LUMINAIRE

ELECTRICAL DATA

# OF LEDS	NUMBER OF DRIVERS	DRIVE CURRENT (mA)	INPUT VOLTAGE (V)	SYSTEM POWER (w)	CURRENT (Amps)
64	1	625 mA	120	135	1.4
			277		0.6
			347		0.5
			480		0.3
80	2	700 mA	120	180	1.8
			277		0.8
			347		0.6
			480		0.5
80	2	875 mA	120	235	2.4
			277		1
			347		0.8
			480		0.6
96	2	700 mA	120	220	2.2
			277		1
			347		0.8
			480		0.6
96	2	875 mA	120	280	2.8
			277		1.2
			347		1
			480		0.7
96	2	1000 mA	120	315	3.2
			277		1.4
			347		1.1
			480		0.8
96	2	1225 mA	120	395	4
			277		1.7
			347		1.4
			480		1

PROJECTED LUMEN MAINTENANCE						
Ambient Temp.	0	25,000	50,000	TM-21-11 60,000[1]	100,000	Calculated L70 (HOURS)
25°C / 77°C	1	0.98	0.97	0.97	0.96	>377,000

1 Projected per IESNA TM-21-11.
Data references the extrapolated performance projections for the 700mA base model in a 25°C ambient, based on 10,000 hours of LED testing per IESNA LM-80-08.

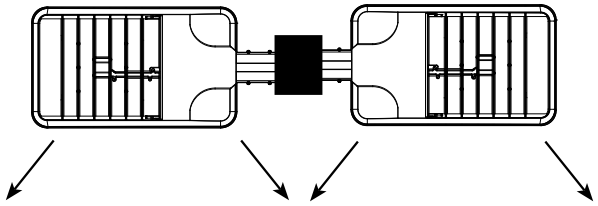
LIFESHIELD™ CIRCUIT

Protects luminaire from excessive temperature. The device activates at a specific, factory-preset temperature and progressively reduces power over a finite temperature range. Operation is smooth and undetectable to the eye. Thermal circuit is designed to “fail on”, allowing the luminaire to revert to full power in the event of an interruption of its power supply or faulty wiring connection to the drivers. The device can co-exist with other 0–10V control devices (occupancy sensors, external dimmers, etc.)

ADDITIONAL INFORMATION

ROTATION OPTIONS

LEFT ROTATED OPTIC RIGHT ROTATED OPTIC



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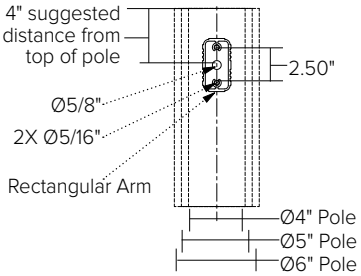
VIPER L

LARGE VIPER LUMINAIRE

ADDITIONAL INFORMATION (CONTINUED)

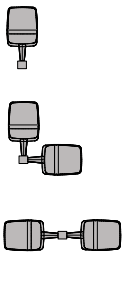
DRILL PATTERN

RECTANGULAR ARM (A)
Compatible with Pole drill pattern B3

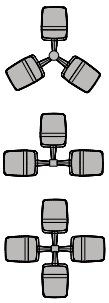


EPA

Config.	EPA
1	1.2
2 @ 90˚	1.9
2 @ 180˚	2.4



Config.	EPA
3 @ 120˚	3.0
3 @ 90˚	3.1
4 @ 90˚	3.8

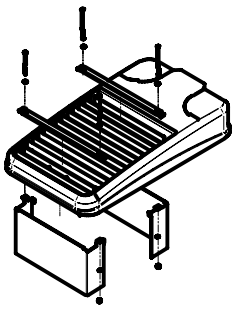


TENON TOP POLE BRACKET ACCESSORIES (ORDER SEPARATELY)

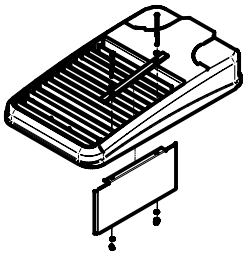
(2 3/8" OD tenon)

TENON TOP POLE BRACKET ACCESSORIES (Order Separately)	
☐ **SETAVP-XX**	Square tenon adapter (4 at 90°) for A - Rectangular Arm mounting option only
☐ **RETAVP-XX**	Round tenon adapter (4 at 90°) for A - Rectangular Arm mounting option only
☐ **SETA2XX**	Square tenon adapter (4 at 90°) for AD - Universal Arm mounting option only
☐ **RETA2XX**	Round tenon adapter (4 at 90°) for AD3 - Universal Arm mounting option only
☐ **TRETA2XX**	Hexagonal tenon adapter (3 at 120°) for AD - Universal Arm mounting option only

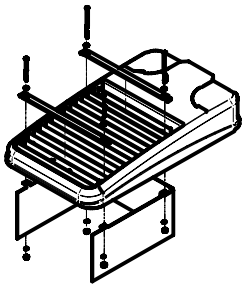
HOUSE SIDE SHIELD FIELD INSTALL ACCESSORIES



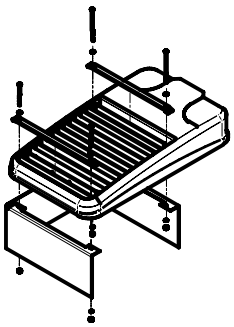
HSS/VP-L/90-FB/XXX
90° shield front or back
(2 shields shown)



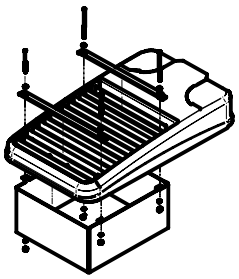
HSS/VP-L/90-LR/XXX
90° shield left or right
(1 shield shown in left orientation)



HSS/VP-L/270-FB/XXX
270° shield front or back
(1 shield shown in back orientation)



HSS/VP-L/270-LR/XXX
270° shield left or right
(1 shield shown in right orientation)



HSS/VP-L/360/XXX
Full shield
(1 shield shown)

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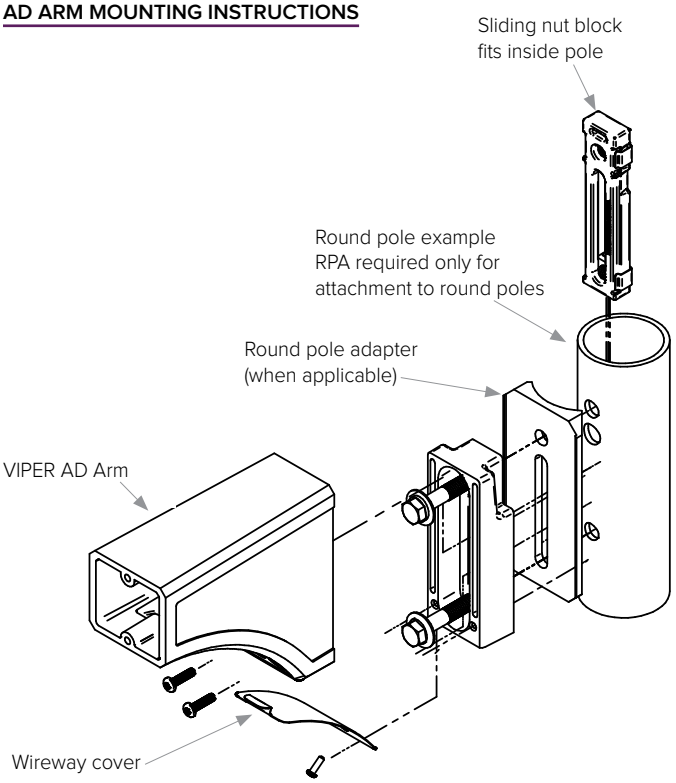
VIPER L

LARGE VIPER LUMINAIRE

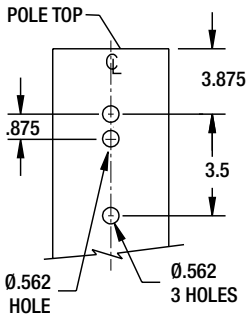
ADDITIONAL INFORMATION (CONTINUED)

AD ARM MOUNTING INSTRUCTIONS



DECORATIVE ARM (AD)

Compatible with pole drill pattern S2



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design . performance . technology

DATE:	LOCATION:
TYPE:	PROJECT:
CATALOG #:	

VIPER S

SMALL VIPER LUMINAIRE

OPTICS STRIKE

FEATURES

- Small size companion to Viper Large
- Wide choice of different LED wattage configurations
- Nine optical distributions
- Designed to replace HID lighting up to 400W MH or HPS
- Suitable for wet locations

*3000K and warmer CCTs only

RELATED PRODUCTS

Viper Large

CONTROL TECHNOLOGY

NX DISTRIBUTED INTELLIGENCE™ wiSCAPE™ energent SiteSync LIGHTING CONTROL™

SPECIFICATIONS

CONSTRUCTION

- Manufactured with die cast aluminum
- Coated with a polyester finish that meets ASTM B117 corrosion test requirements and ASTM D522 cracking and loss of adhesion test requirements
- IFS polyester powder-coat electrostatically applied and thermocured. IFS finish consists of a five stage pretreatment regimen with a polymer primer sealer and top coated with a thermoset super TGIC polyester powder coat finish
- The finish meets the AAMA 2604 performance specification which includes passing a 3,000-hour salt spray test for corrosion resistance and resists cracking or loss of adhesion per ASTM D522 and resists surface impacts of up to 160 inch-pounds
- External hardware is corrosion resistant

OPTICS

- Cartridge is held together with internal brass standoffs soldered to the board so that it can be field replaced as a one-piece optical system
- One-piece silicone gasket ensures a weatherproof seal around each individual optic
- One-piece optical cartridge system consisting of an LED engine, optics, gasket and stainless steel bezel

INSTALLATION

- Mounting options for horizontal arm, vertical tenon or traditional arm mounting available. Mounting hardware included

ELECTRICAL

- Luminaire accepts 100V through 277V, 347V or 480V input 50 Hz to 60 Hz (UNV)
- Power factor is ≥ .90 at full load
- Dimming drivers are standard, but CD must be selected in options to obtain external wiring leads for dimming controls
- Component-to-component wiring within the luminaire may carry no more than 80% of rated load and is certified by UL for use at 600VAC at 90°C or higher
- Plug disconnects are certified by UL for use at 600 VAC, 13A or higher. 13A rating applies to primary (AC) side only
- Fixture electrical compartment contains all LED driver components
- Optional 7-pin ANSI C136.41-2013 Twist-Lock® photo control receptacle available. Compatible with ANSI C136.41 external wireless control devices
- Ambient operating temperature -40°C to 25°C
- Surge protection: 20kA
- Lifeshield™ Circuit (see Electrical Data)

CONTROLS

- Available with an optional passive infrared (PIR) motion sensor capable of detecting motion 360° around the luminaire. When no motion is detected for the specified time, the motion response system reduces the wattage to factory preset level, reducing the light level accordingly. When motion is detected by the PIR sensor, the luminaire returns to full wattage and full light output. Please contact Beacon Products if project requirements vary from standard configuration

CONTROLS (CONTINUED)

- Available with Energeni for optional set dimming, timed dimming with simple delay, or timed dimming based on time of night
- In addition, Viper can be specified with SiteSync™ wireless control system for reduction in energy and maintenance costs while optimizing light quality 24/7

CERTIFICATIONS

- DLC® (DesignLights Consortium) Qualified. Please refer to the DLC website for specific product qualifications at www.designlights.org
- Certified to UL 1598 and UL 8750
- 3G rated for ANSI C136.31 high vibration applications with MAF mounting
- IDA approved
- This product is approved by the Florida Fish and Wildlife Conservation Commission. Separate spec available online

WARRANTY

- 5 year warranty
- See HLI Commercial and Industrial Outdoor Lighting Warranty for additional information

KEY DATA	
Lumen Range	5400–16,216
Wattage Range	55–136
Efficacy Range (LPW)	100–124
Reported Life (Hours)	L70>60,000
Input Current Range (Amps)	0.1–1.1

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DATE:	LOCATION:
TYPE:	PROJECT:
CATALOG #:	

VIPER S

SMALL VIPER LUMINAIRE

ORDERING GUIDE

Example: VPS–24L–55–4K7–4W–UNV–A–DB–TL–GENI–04–BC

CATALOG # _____

VPS –

Series	
VPS	Viper Small

LED Engine	
24L-55	55W, LED array
36L-65	65W, LED array
36L-80	80W, LED array
48L-110	110W, LED array
60L-136	136W, LED array

CCT/CRI [7]	
3K7	3000K, 70 CRI
4K7	4000K, 70 CRI
5K7	5000K, 70 CRI

Distribution	
FR	Type 1/Front Row
2	Type 2
3	Type 3
4F (formerly 4)	Type 4
4W	Type 4 Wide
5QM	Type 5QM
5R	Type 5R (rectangular)
5W	Type 5W (round wide)
TC	Tennis Court

Rotation	
Blank	No rotation
L	Optic rotation left [5]
R	Optic rotation right [5]

Voltage	
UNV	120–277V
347	347V
480	480V

Mounting	
A	Rectangular Arm (formerly RA) for square or round pole
MAF	Mast Arm Fitter (formerly SF2) for 2⅜" OD horizontal arm
K	Knuckle (formerly PK2) limit to 30° tilt or 2⅜" OD horizontal arm or vertical tenon
WB	Wall Bracket
AD	Universal Arm for square pole
AD3	Adapter for 2.4"–4.1" round pole
AD4	Adapter for 4.2"–5.3" round pole
AD5	Adapter for 5.5"–5.9" round pole
AD6	Adapter for 6.0"–6.5" round pole

Color	
BLT	Black Matte Textured
BLS	Black Gloss Smooth
DBT	Dark Bronze Matte Textured
DBS	Dark Bronze Gloss Smooth
GTT	Graphite Matte Textured
LGS	Light Grey Gloss Smooth
PSS	Platinum Silver Smooth
WHT	White Matte Textured
WHS	White Gloss Smooth
VGT	Verde Green Textured
Color Option	
CC	Custom Color

Control Options	
7PR	7-Pin Receptacle only (shorting cap, photo control, or wireless control provided by others)
7PR-SC	7-Pin Receptacle w/Shorting Cap
7PR-TL	7-Pin Receptacle w/Twist-Lock® photo control
SCP/_F	Programmable Occupancy Sensor w/ daylight control [1,2,6]
GENI-XX	ENERGENI [3]
SWP	SiteSync Pre-Commission [1,4]
SWPM_F	SiteSync Pre-Commission w/ Sensor [1,2,4]

Options	
BC	Backshield (available for FR, 2, 3, 4, 4W Optics)
CD	Continuous Dimming
F	Fusing
TB	Terminal Block

House Side Shield Accessories

☐	**HSS/VP-S/90-FB/XXX**	90° shield front or back
☐	**HSS/VP-S/90-LR/XXX**	90° shield left or right
☐	**HSS/VP-S/270-FB/XXX**	270° shield front or back
☐	**HSS/VP-S/270-LR/XXX**	270° shield left or right
☐	**HSS/VP-S/360/XXX**	Full shield

Replace XXX with notation for desired finish color. Refer to page 8 for shield images.

Mounting Accessories

☐	**VPL-AD-RPA3**	2.4"–4.1" Round Pole Adapter for AD arm
☐	**VPL-AD-RPA4**	4.2"–5.3" Round Pole Adapter for AD arm
☐	**VPL-AD-RPA5**	5.5"–5.9" Round Pole Adapter for AD arm
☐	**VPL-AD-RPA6**	6.0"–6.5" Round Pole Adapter for AD arm

Notes:

1. Not available with other wireless control or sensor options
2. Specify mounting height; 8 = 8' or less, 40 = 9' to 40'
3. Specify routine setting code (example GENI-04). See ENERGENI brochure and instructions for setting table and options. Not available with sensor or SiteSync options
4. Specify group and zone at time of order. See www.hubbelllighting.com/sitesync for further details. Order at least one SiteSync interface accessory SWUSB or SWTAB. Each option contains SiteSync License, GUI, and Bridge Node
5. Only available with FR, 2, 3, 4, 4W and 5R distributions
6. Order at least one SCP-REMOTE per project location to program and control the occupancy sensor

Accessories and Services (Ordered Separately)

☐	**SCP-REMOTE**	Remote Control for SCP/_F option. Order at least one per project to program and control the occupancy sensor
☐	**SWUSB***	SiteSync interface software loaded on USB flash drive for use with owner supplied PC (Windows based only). Includes SiteSync license, software and USB radio bridge node
☐	**SWTAB***	Windows tablet and SiteSync interface software. Includes tablet with preloaded software, SiteSync license and USB radio bridge node
☐	**SWBRG**	SiteSync USB radio bridge node only. Order if a replacement is required or if an extra bridge node is requested
☐	**SW7PR+**	SiteSync 7-Pin on fixture module On/Off/Dim, Daylight Sensor 120–480VAC
☐	**BIRD-SPIKE-3**	Bird Spikes

* When ordering SiteSync at least one of these two interface options must be ordered per project.
\+ Available as a SiteSync retrofit solution for fixtures with an existing 7-pin receptacle.

Hubbell Control Solutions — Accessories (Sold Separately)

NX Distributed Intelligence™

☐	**NXOFM-1R1D-UNV**	On-fixture Module (7-pin), On / Off / Dim, Daylight Sensor with HubbNET Radio and Bluetooth® Radio, 120–480VAC

wiSCAPE® Lighting Control

☐	**WIR-RME-L**	On-fixture Module (7-pin or 5-pin), On / Off / Dim, Daylight Sensor with wiSCAPE Radio, 110–480VAC

For additional information related to these accessories please visit www.hubbellcontrolsolutions.com. Options provided for use with integrated sensor, please view specification sheet ordering information table for details.

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HUBBELL Lighting

VIPER S

SMALL VIPER LUMINAIRE

CONTROLS

SiteSync — Precommissioned Ordering Information:
When ordering a fixture with the SiteSync lighting control option, additional information will be required to complete the order. The SiteSync Commissioning Form or alternate schedule information must be completed. This form includes Project location, Group information, and Operating schedules. For more detailed information please visit the SiteSync family page on our website or contact Hubbell Lighting tech support at 864-678-1000.

SiteSync fixtures with Motion control (SWPM) require the mounting height of the fixture for selection of the lens.

Examples: VP-L/80L-235/4K7/3/UNV/A/DB/SWP/ SiteSync only
VP-L/80L-235/4K7/3/UNV/A/DB/SWPM-40F/ SiteSync with Motion Control

SiteSync 7-Pin Module:
- SiteSync features in a new form
- Available as an accessory for new construction or retrofit applications (with existing 7-Pin receptacle)
- Does not interface with occupancy sensors

SW7PR

NX Distributed Intelligence™ Lighting Controls:
Supports both indoor and outdoor applications in a variety of deployment options: wired, wireless and hybrid.
Integrates with and enables a wide array of luminaires including those with SpectraSync Color Tuning Technology.

NX Integrated Controls Reference								
NX Option	Sensor	Networkable	Scheduling	Occupancy	Daylight Harvesting	0–10V Dimming	On/off Control	Bluetooth® App Programming
NX Networked – Wireless								
NXOFM-1R1D-UNV	SCLNX	Yes	Yes	Yes	Yes	Yes	Yes	Yes, Bluetooth App

wiSCAPE™:
Supports remote management, monitoring and metering of outdoor wireless lighting applications such as smart campuses, smart cities, parking lots, parking lots and roadways.

wiSCAPE Reference								
wiSCAPE Option	Sensor	Networkable	Scheduling	Occupancy	Daylight Harvesting	0–10V Dimming	On/off Control	Bluetooth® App Programming
Networked – Wireless								
WIR-RME-L	WIR-RME-L	Yes	Yes	No	Yes	Yes	Yes	wiSCAPE Gateway

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VIPER S

SMALL VIPER LUMINAIRE

DELIVERED LUMENS

				5K (5000K nominal, 70 CRI)					4K (4000K nominal, 70 CRI)					3K (3000K nominal, 70 CRI)				
# of LEDs	DRIVE CURRENT (mA)	SYSTEM WATTS	DISTRIBUTION TYPE	LUMENS	LPW	B	U	G	LUMENS	LPW	B	U	G	LUMENS	LPW	B	U	G
24	700 mA	55W	FR	6357	118	1	0	1	6486	120	1	0	1	5804	107	1	0	1
			2	6132	114	1	0	1	6257	116	1	0	2	5599	104	1	0	1
			3	6015	111	1	0	2	6137	114	1	0	2	5492	102	1	0	2
			4	5921	110	1	0	2	6034	112	1	0	2	5400	100	1	0	2
			4W	5793	108	1	0	2	5909	110	1	0	2	5272	98	1	0	2
			5QM	6022	112	2	0	1	6145	114	2	0	1	5499	102	2	0	1
			5R	6063	112	3	0	3	6187	115	3	0	3	5536	103	3	0	3
			5W	5908	109	3	0	1	6028	112	3	0	1	5908	102	3	0	1
			TC	6183	113	1	0	1	6309	118	1	0	1	5645	105	1	0	1
36	560 mA	65W	FR	7864	121	1	0	1	8041	124	1	0	1	7189	111	1	0	1
			2	7586	117	1	0	2	7757	119	1	0	2	6934	107	1	0	2
			3	7441	114	1	0	2	7609	117	1	0	2	6802	105	1	0	2
			4	7317	110	1	0	2	7482	112	1	0	2	6688	100	1	0	2
			4W	8690	108	1	0	2	8864	110	1	0	2	7908	98	1	0	2
			5QM	7450	115	3	0	1	7618	117	3	0	1	6810	105	3	0	1
			5R	7501	115	3	0	3	7670	118	3	0	3	6857	105	3	0	3
			5W	7309	112	3	0	2	7473	115	3	0	2	6681	103	3	0	1
36	700 mA	80W	FR	9535	118	1	0	1	9730	120	1	0	1	8706	107	1	0	1
			2	9197	114	1	0	2	9385	116	1	0	2	8398	104	1	0	2
			3	9022	111	1	0	2	9206	114	1	0	2	8238	102	1	0	2
			4	8871	110	1	0	2	9052	112	1	0	2	8100	100	1	0	2
			4W	11587	108	1	0	3	11819	110	1	0	3	10544	98	1	0	3
			5QM	9033	112	3	0	1	9217	114	3	0	1	8248	102	3	0	1
			5R	9095	112	3	0	3	9280	115	3	0	3	8304	103	3	0	3
			5W	8861	109	3	0	2	9043	112	3	0	2	8092	100	3	0	2
			TC	9275	115	1	0	1	9464	118	1	0	1	8468	105	1	0	1
48	700 mA	110W	FR	12713	118	1	0	1	12973	120	2	0	1	11608	107	1	0	1
			2	12263	114	2	0	2	12513	116	2	0	2	11197	104	2	0	2
			3	12029	111	2	0	2	11275	114	2	0	2	10984	102	1	0	2
			4	11828	110	1	0	3	12069	112	1	0	3	10800	100	1	0	2
			4W	14484	108	2	0	4	14774	111	2	0	4	13180	98	2	0	3
			5QM	12044	112	3	0	2	12290	114	3	0	2	10997	102	3	0	1
			5R	12126	112	3	0	3	12374	115	3	0	3	11072	103	3	0	3
			5W	12126	109	4	0	2	12057	112	4	0	2	10789	100	4	0	2
			TC	12366	115	1	0	2	12619	118	1	0	2	11290	105	1	0	2
60	700 mA	136W	FR	15891	117	2	0	2	16216	120	2	0	2	14511	107	2	0	1
			2	15329	113	2	0	2	15642	116	2	0	2	13997	103	2	0	2
			3	15037	111	2	0	3	15344	113	2	0	3	13730	101	2	0	3
			4	14784	109	1	0	3	15086	111	1	0	3	13500	100	1	0	3
			4W	14802	109	2	0	3	15104	112	2	0	3	13515	100	2	0	3
			5QM	15055	111	3	0	2	15362	114	3	0	2	13747	102	3	0	2
			5R	15158	112	4	0	4	15469	114	4	0	4	13841	102	4	0	4
			5W	14781	109	4	0	2	15083	111	4	0	2	13495	100	4	0	2
			TC	15458	115	1	0	2	15834	118	1	0	2	14113	105	1	0	2

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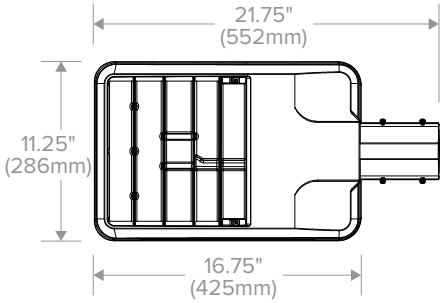
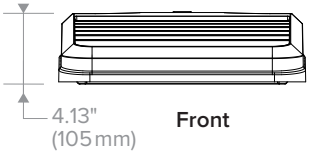
VIPER S

SMALL VIPER LUMINAIRE

DIMENSIONS

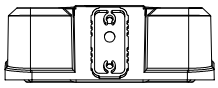




Weight	15.0 lbs (6.8 kg)
EPA	.67 ft²

A Arm (formerly RA)

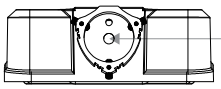
Side View



Back View

MAF (formerly SF2)

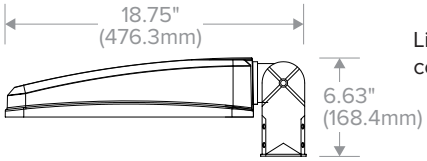
Side View



Back View

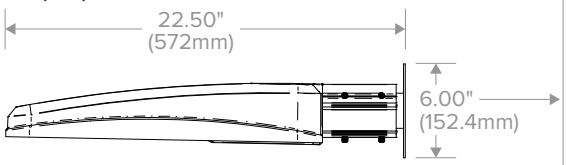
Accepts 2⅜" OD tenon, min 5" long.

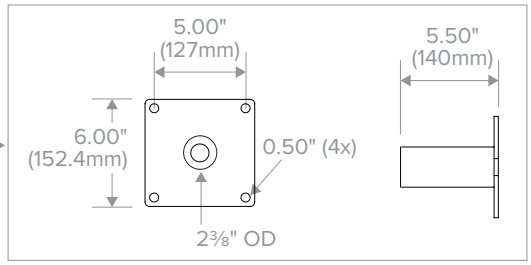
2⅜" Adjustable Knuckle (K) (formerly PK2)



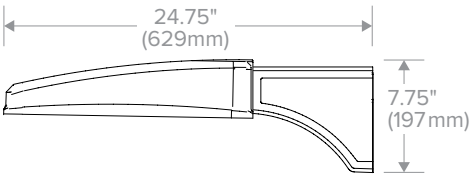
Limit to 30° tilt. Sensor, photocell and wireless controls should not be tilted above horizontal.

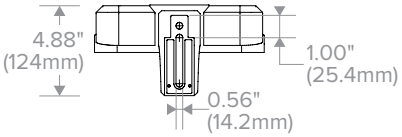
Wall Bracket (WB)





AD Decorative Arm





See page 9 for mounting details.

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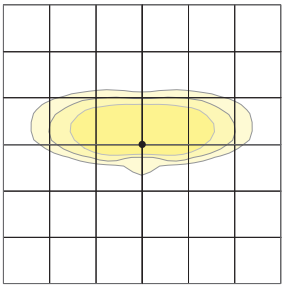
VIPER S

SMALL VIPER LUMINAIRE

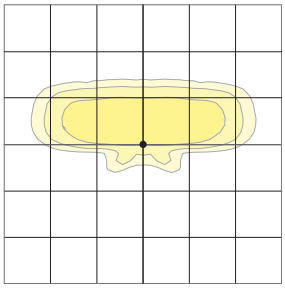
PHOTOMETRY

The following diagrams represent the general distribution options offered for this product. For detailed information on specific product configurations, see website photometric test reports.

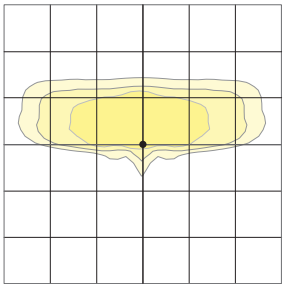
Type FR – Front Row/Auto Optic



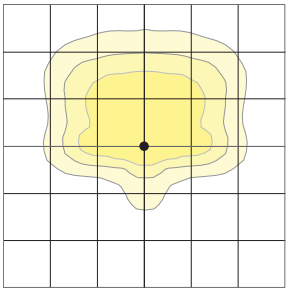
Type 2



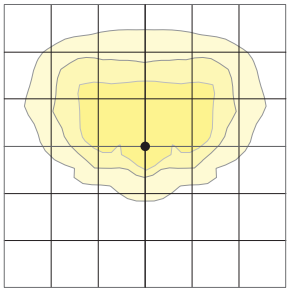
Type 3



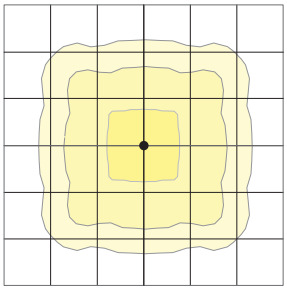
Type 4



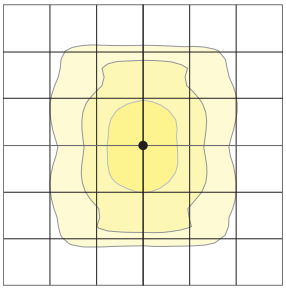
Type 4 Wide



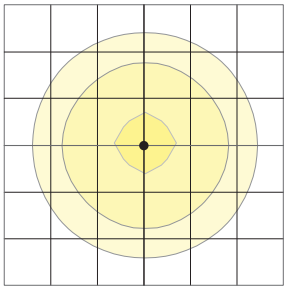
Type 5QM



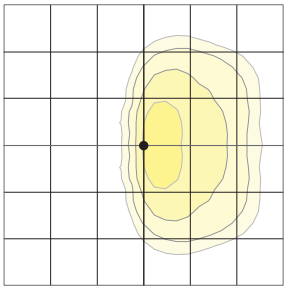
Type 5R (rectangular)



Type 5W (round wide)



Type TC



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VIPER S

SMALL VIPER LUMINAIRE

ELECTRICAL DATA

# OF LEDS	NUMBER OF DRIVERS	DRIVE CURRENT (mA)	INPUT VOLTAGE (V)	SYSTEM POWER (w)	CURRENT (Amps)
24	1	700 mA	120	55	0.5
			277		0.2
			347		0.2
			480		0.1
36	1	525 mA	120	65	0.65
			277		0.28
			347		0.22
			480		0.16
		700 mA	120	80	0.7
			277		0.3
			347		0.2
			480		0.2
48	1	700 mA	120	110	0.9
			277		0.4
			347		0.3
			480		0.2
60	1	700 mA	120	136	1.1
			277		0.5
			347		0.4
			480		0.3

PROJECTED LUMEN MAINTENANCE						
Ambient Temp.	0	25,000	50,000	TM-21-11 60,000[1]	100,000	Calculated L70 (HOURS)
25°C / 77°C	1	0.97	0.95	0.95	0.92	>377,000

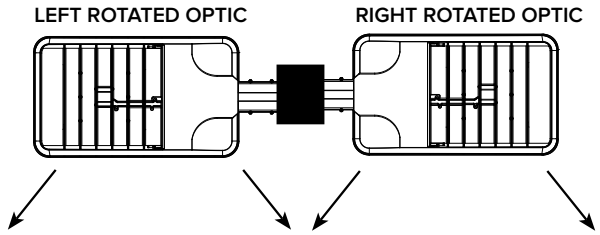
1 Projected per IESNA TM-21-11.
Data references the extrapolated performance projections for the 60 LED base model in a 25°C ambient, based on 10,000 hours of LED testing per IESNA LM-80-08.

LIFESHIELD™ CIRCUIT

Protects luminaire from excessive temperature. The device activates at a specific, factory-preset temperature and progressively reduces power over a finite temperature range. Operation is smooth and undetectable to the eye. Thermal circuit is designed to “fail on”, allowing the luminaire to revert to full power in the event of an interruption of its power supply or faulty wiring connection to the drivers. The device can co-exist with other 0–10V control devices (occupancy sensors, external dimmers, etc.)

ADDITIONAL INFORMATION

ROTATION OPTIONS



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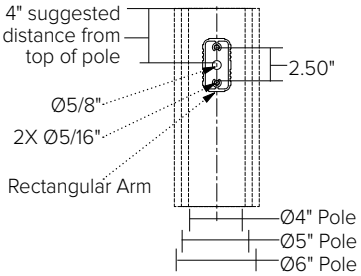
VIPER S

SMALL VIPER LUMINAIRE

ADDITIONAL INFORMATION (CONTINUED)

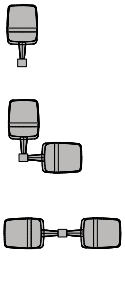
DRILL PATTERN

RECTANGULAR ARM (A)
Compatible with Pole drill pattern B3

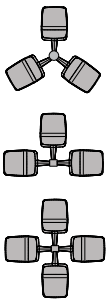


EPA

Config.	EPA
1	.67
2 @ 90˚	1.06
2 @ 180˚	1.34



Config.	EPA
3 @ 120˚	1.68
3 @ 90˚	1.73
4 @ 90˚	2.12

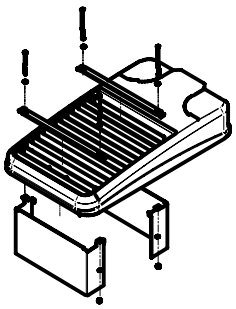


TENON TOP POLE BRACKET ACCESSORIES (ORDER SEPARATELY)

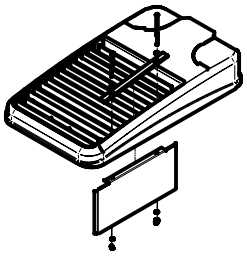
(2 3/8" OD tenon)

TENON TOP POLE BRACKET ACCESSORIES (Order Separately)	
☐ **SETAVP-XX**	Square tenon adapter (4 at 90°) for A - Rectangular Arm mounting option only
☐ **RETAVP-XX**	Round tenon adapter (4 at 90°) for A - Rectangular Arm mounting option only
☐ **SETA2XX**	Square tenon adapter (4 at 90°) for AD - Universal Arm mounting option only
☐ **RETA2XX**	Round tenon adapter (4 at 90°) for AD3 - Universal Arm mounting option only

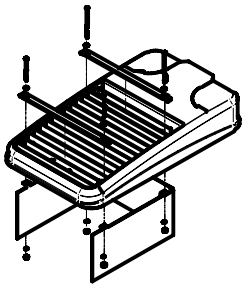
HOUSE SIDE SHIELD FIELD INSTALL ACCESSORIES



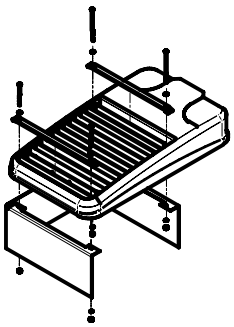
HSS/VP-S/90-FB/XXX
90° shield front or back
(2 shields shown)



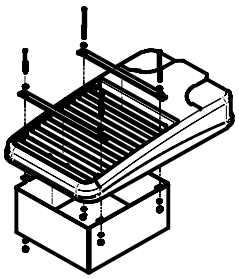
HSS/VP-S/90-LR/XXX
90° shield left or right
(1 shield shown in left orientation)



HSS/VP-S/270-FB/XXX
270° shield front or back
(1 shield shown in back orientation)



HSS/VP-S/270-LR/XXX
270° shield left or right
(1 shield shown in right orientation)



HSS/VP-S/360/XXX
Full shield
(1 shield shown)

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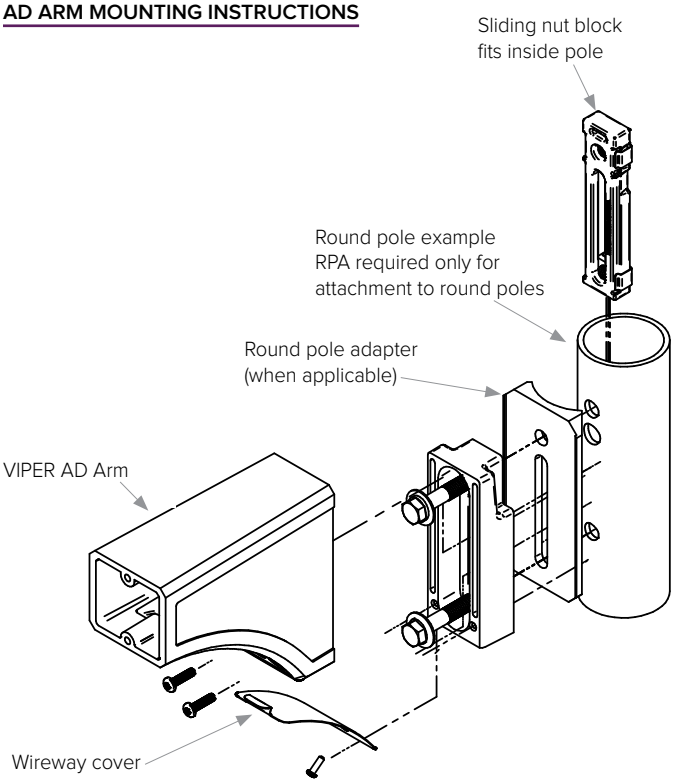
VIPER S

SMALL VIPER LUMINAIRE

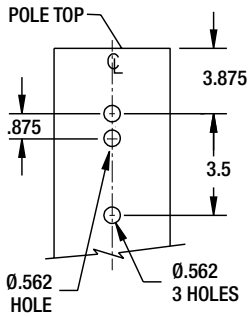
ADDITIONAL INFORMATION (CONTINUED)

AD ARM MOUNTING INSTRUCTIONS



DECORATIVE ARM (AD)

Compatible with pole drill pattern S2



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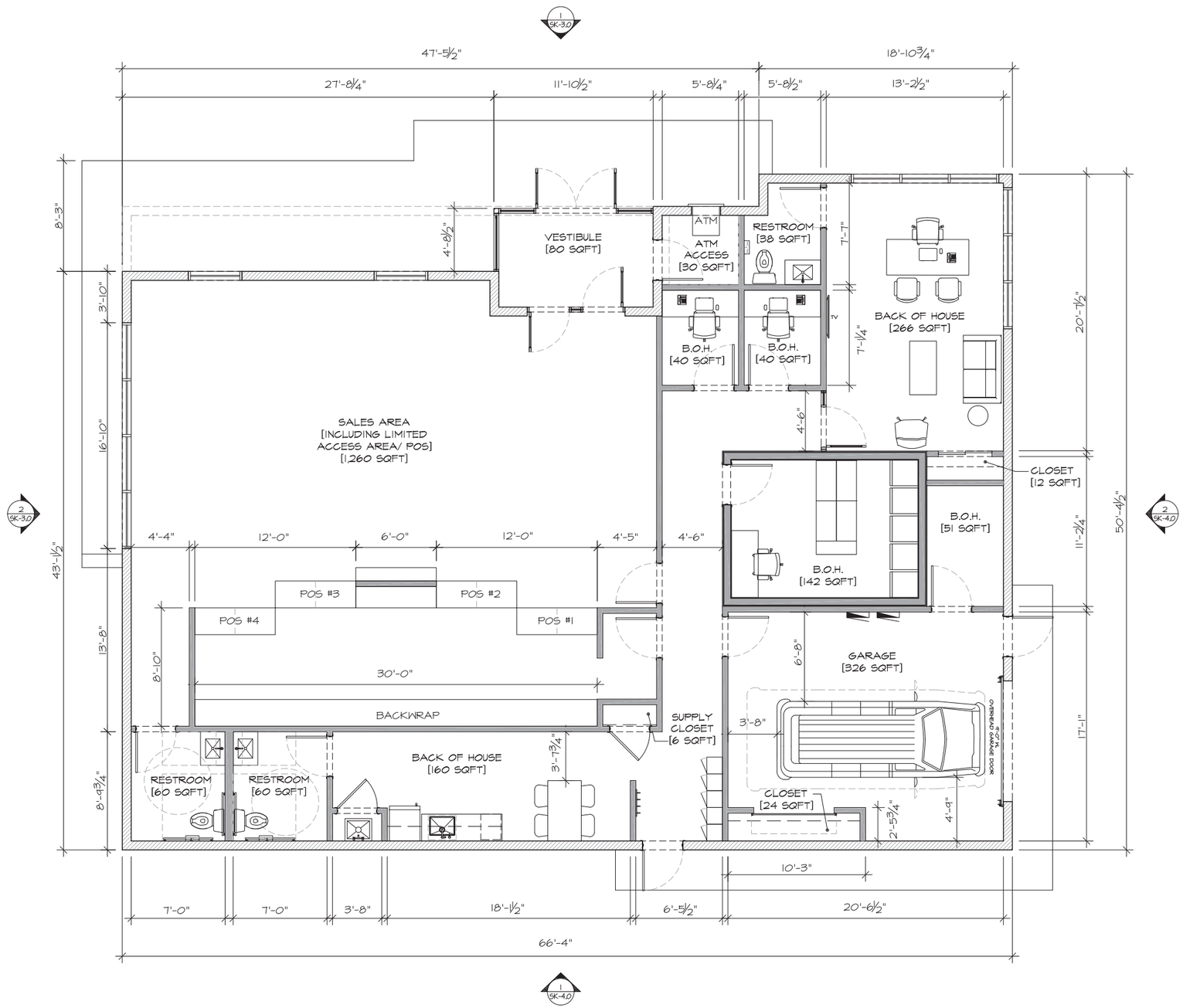
Attachment H
Architecture

The floor plan and architectural elevations are included here for reference.



AREA CALCULATIONS

SURFACE AREA FOH:	
• VESTIBULE	= 80 SF
• ATM ACCESS	= 30 SF
• SALES AREA	= 965 SF
• LIMITED ACCESS AREA (POS)	= 295 SF
• RESTROOM	= 60 SF
TOTAL SURFACE AREA FOH	= 1,430 SF
SURFACE AREA BOH:	
• GARAGE	= 326 SF
• BACK OF HOUSE	= 699 SF
• RESTROOM	= 38 SF
• ALL CLOSETS	= 42 SF
• RESTROOM	= 60 SF
• CORRIDOR	= 498 SF
TOTAL SURFACE AREA BOH	= 1,663 SF

SURFACE AREA FOH	= 1,430
SURFACE AREA BOH	= 1,663
TOTAL SURFACE AREA (EXCLUDING BUILDING OVERHANG)	= 3,093 SF

1 PROPOSED FLOOR PLAN
SCALE: 1/4" = 1'-0"

TRICARICO ARCHITECTURE AND DESIGN PC
502 VALLEY ROAD, WAYNE, NJ 07470
T: 973-692-0222 F: 973-692-0223
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DATE:	ISSUE
03/11/2020	CLIENT REVIEW
03/19/2020	CLIENT REVIEW
03/23/2020	CLIENT REVIEW
04/17/2020	CLIENT REVIEW
04/20/2020	CLIENT REVIEW

DATE:	No.	REVISIONS / BY:

PROJECT:
RETAIL DISPENSARY

LOCATION:
4 BUSINESS PARKWAY
BRUNSWICK, ME 04011

PROJECT NO. 190475	DRAWN BY: MF
SCALE: AS NOTED	CHECKED BY: GJC
DATE: 01.07.2020	THESE DRAWINGS WERE COMPLETED UNDER THE DIRECT SUPERVISION OF: NJT

NICHOLAS J. TRICARICO
ARCHITECT

TRICARICO ARCHITECTURE AND DESIGN PC

DRAWING NAME:
PROPOSED FLOOR PLAN

DRAWING NO.
SK-1.0

LICENSE NO.

SEAL SEAL

DATE: AS SHOWN
PROJECT NO.: 190475
LOCATION: 4 BUSINESS PARKWAY, BRUNSWICK, ME 04011
PROJECT: KILSHIRE MADISON
PLOT SCALE: 1:1

1 PROPOSED SITE PLAN
SCALE: 1" = 20'

LEGEND

SYMBOL	DESCRIPTION
PL	PROPERTY LINE
	SETBACK
	EXT. ABUTTER LINE
	EXT. PAVEMENT
	PRP. BUILDING

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04/20/2020	CLIENT REVIEW

DATE:	No.	REVISIONS / BY:

PROJECT:
RETAIL DISPENSARY

LOCATION:
4 BUSINESS PARKWAY
BRUNSWICK, ME 04011

PROJECT NO. 190475	DRAWN BY: RAL/MF
SCALE: AS NOTED	CHECKED BY: GJC
DATE: 01.07.2020	THESE DRAWINGS WERE COMPLETED UNDER THE DIRECT SUPERVISION OF: NJT

NICHOLAS J. TRICARICO
ARCHITECT

TRICARICO ARCHITECTURE
AND DESIGN PC

DRAWING NAME:
PROPOSED
SITE PLAN

DRAWING NO.
SK-2.0

LICENSE NO.

SEAL SEAL

DATE: AS SHOWN
PROJECT NO.: 190475
LOCATION: 4 BUSINESS PARKWAY, BRUNSWICK, ME 04011
PROJECT: KILSHIRE MADISON
PLOT SCALE: 1:1

1 EXTERIOR PERSPECTIVE VIEW
SCALE: NOT TO SCALE

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03/23/2020	CLIENT REVIEW
04/17/2020	CLIENT REVIEW
04/20/2020	CLIENT REVIEW

DATE:	No.	REVISIONS / BY:

PROJECT:
RETAIL DISPENSARY

LOCATION:
4 BUSINESS PARKWAY
BRUNSWICK, ME 04011

PROJECT NO. 190475	DRAWN BY: MF
SCALE: AS NOTED	CHECKED BY: GJC
DATE: 01.07.2020	THESE DRAWINGS WERE COMPLETED UNDER THE DIRECT SUPERVISION OF: NJT

NICHOLAS J. TRICARICO
ARCHITECT

TRICARICO ARCHITECTURE
AND DESIGN PC

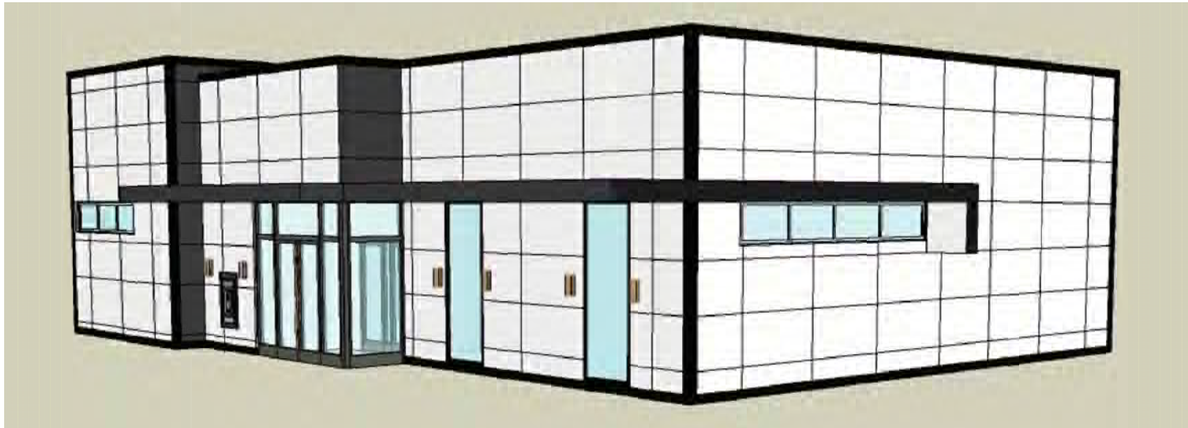
DRAWING NAME:
EXTERIOR PERSPECTIVE VIEW

DRAWING NO.
SK-2.1

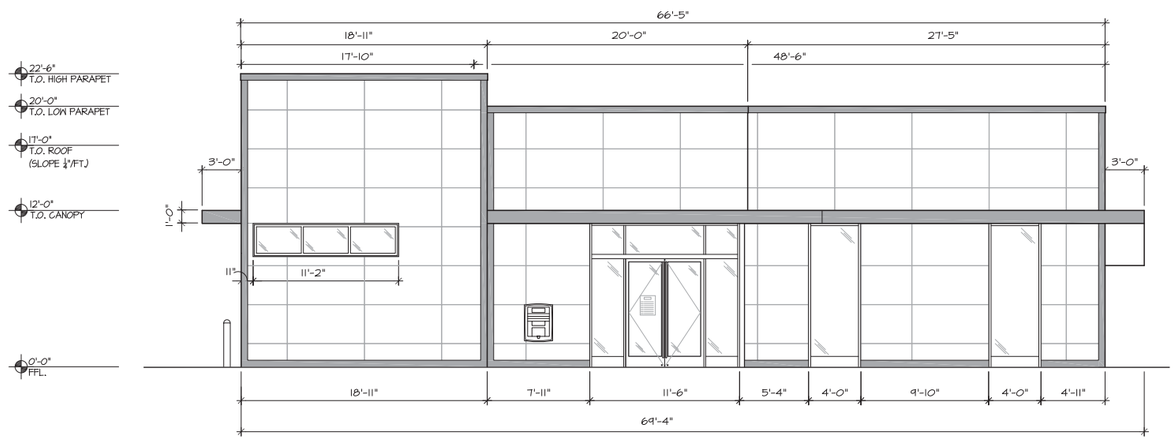
LICENSE NO.

SEAL SEAL

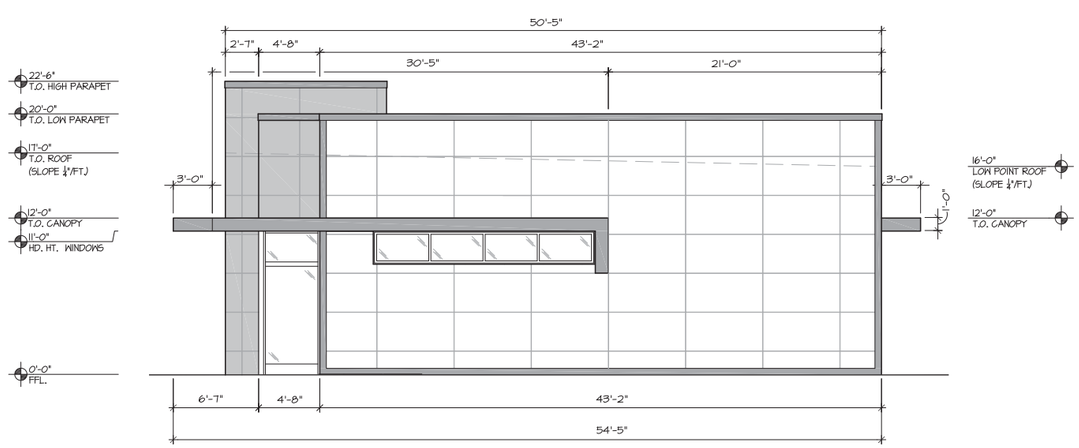
PLOT SCALE: 1:1 PROJECT: WILSHIRE MADISON LOCATION: 4 BUSINESS PARKWAY, BRUNSWICK, ME 04011 PROJECT NO.: 190475 DATE: AS SHOWN



EXTERIOR PERSPECTIVE VIEW
SCALE: NOT TO SCALE



1 EXTERIOR ELEVATION
SCALE: 3/16" = 1'-0"



2 EXTERIOR ELEVATION
SCALE: 3/16" = 1'-0"

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04/17/2020	CLIENT REVIEW
04/20/2020	CLIENT REVIEW

DATE:	No.	REVISIONS / BY:

PROJECT:
RETAIL DISPENSARY

LOCATION:
4 BUSINESS PARKWAY
BRUNSWICK, ME 04011

PROJECT NO. 190475	DRAWN BY: MF
SCALE: AS NOTED	CHECKED BY: GJC
DATE: 01.07.2020	THESE DRAWINGS WERE COMPLETED UNDER THE DIRECT SUPERVISION OF: NJT

NICHOLAS J. TRICARICO
ARCHITECT

TRICARICO ARCHITECTURE
AND DESIGN PC

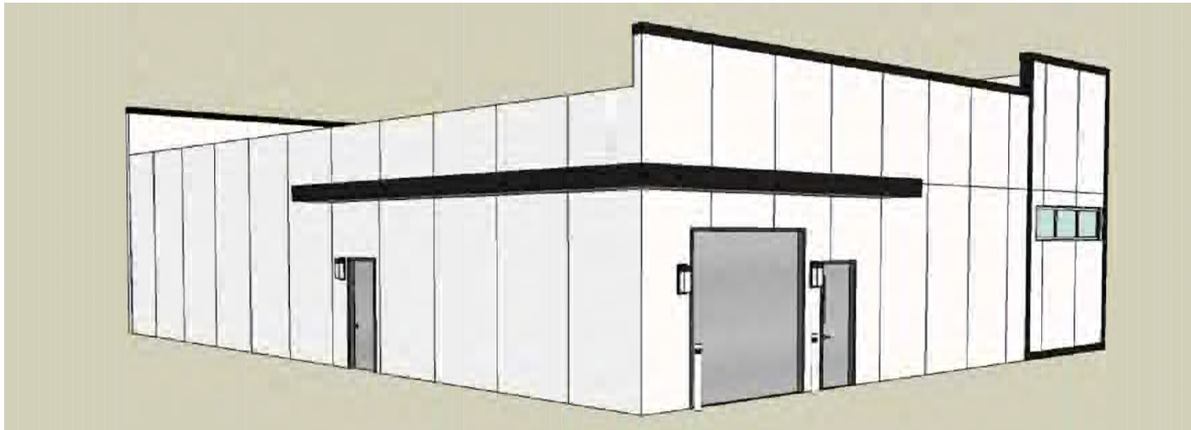
DRAWING NAME:
PROPOSED
EXTERIOR ELEVATIONS

DRAWING NO.
SK-3.0

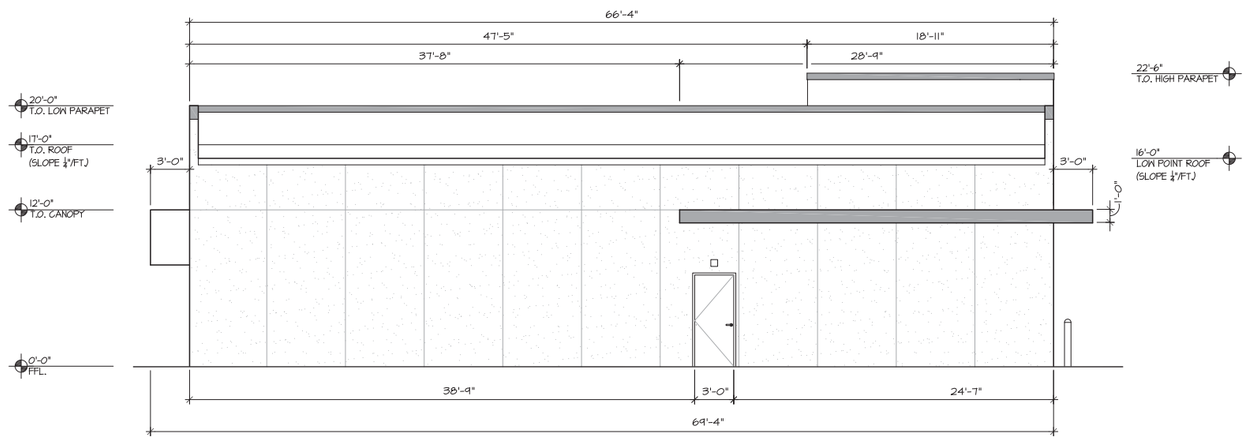
LICENSE NO.

SEAL SEAL

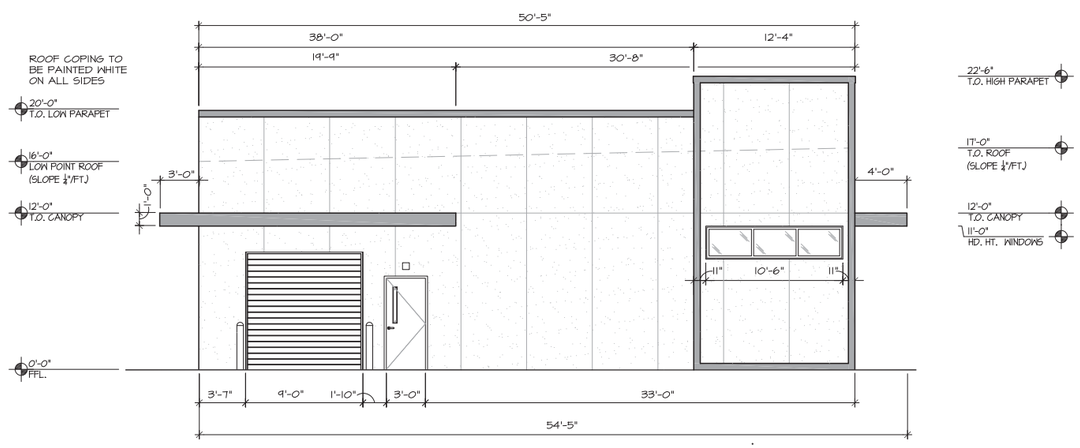
DATE: AS SHOWN
PROJECT NO.: 190475
LOCATION: 4 BUSINESS PARKWAY, BRUNSWICK, ME 04011
PROJECT: KILSHIRE MADISON
PLOT SCALE: 1:1



EXTERIOR PERSPECTIVE VIEW
SCALE: NOT TO SCALE



1 EXTERIOR ELEVATION
SCALE: 3/16" = 1'-0"



2 EXTERIOR ELEVATION
SCALE: 3/16" = 1'-0"

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04/17/2020	CLIENT REVIEW
04/20/2020	CLIENT REVIEW

DATE:	No.	REVISIONS / BY:

PROJECT:
RETAIL DISPENSARY

LOCATION:
4 BUSINESS PARKWAY
BRUNSWICK, ME 04011

PROJECT NO.	DRAWN BY:
190475	MF
SCALE: AS NOTED	CHECKED BY: GJC
DATE: 01.07.2020	THESE DRAWINGS WERE COMPLETED UNDER THE DIRECT SUPERVISION OF: NJT

NICHOLAS J. TRICARICO
ARCHITECT

TRICARICO ARCHITECTURE
AND DESIGN PC

DRAWING NAME:
PROPOSED
EXTERIOR ELEVATIONS

DRAWING NO.
SK-4.0

LICENSE NO.

SEAL SEAL

DATE: AS SHOWN
PROJECT NO.: 190475
LOCATION: 4 BUSINESS PARKWAY, BRUNSWICK, ME 04011
PROJECT: WILSHIRE MADISON
PLOT SCALE: 1:1

Attachment I
Site Plans

The project site plans are included for review as a separate plan set of full-size documents.

MARIJUANA STORE
ADULT USE

4 BUSINESS PARKWAY
BRUNSWICK, MAINE

PREPARED FOR:
GJORIS LLC
135 MAINE STREET, SUITE 129
BRUNSWICK, MAINE

GENERAL NOTES:

1. DRAWINGS ARE BASED ON BOUNDARY AND TOPOGRAPHIC SURVEY INFORMATION FROM MULTIPLE SOURCES BY SITELINES, PA.

2. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR THE ELEVATION OF THE EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION HAS NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVES AND IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANY AND DIG SAFE (1-800-DIG-SAFE) AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IN AREAS OF POTENTIAL CONFLICTS TEST PITS SHALL BE REQUIRED TO VERIFY EXISTING UTILITY LOCATION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

3. RIM ELEVATIONS OF PROPOSED MANHOLES AND ASSOCIATED STRUCTURES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH AND CONSISTENT WITH THE GRADING PLANS. ADJUST ALL OTHER RIM ELEVATIONS OF MANHOLES, WATER GATES, GAS GATES AND OTHER UTILITIES TO FINISH GRADE WITHIN LIMITS OF WORK.

4. THE LOCATION, SIZE, DEPTH, AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS PROVIDED BY, AND APPROVED BY THE RESPECTIVE UTILITY COMPANY (GAS, TELEPHONE, ELECTRIC, CABLE AND FIRE ALARM). FINAL DESIGN LOADS AND LOCATIONS TO BE COORDINATED WITH CONSTRUCTION MANAGER AND ARCHITECT.

5. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION, SIZE, INVERTS AND TYPES OF EXISTING PIPES AT ALL PROPOSED POINTS OF CONNECTION PRIOR TO ORDERING MATERIALS. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATIONS, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED IN WRITING TO THE CONSTRUCTION MANAGER REPRESENTATIVE FOR THE RESOLUTION OF THE CONFLICT.

6. THE CONTRACTOR SHALL VERIFY ALL CRITICAL DIMENSIONS AND GRADES BEFORE WORK BEGINS. CONTRACTOR SHALL CONFIRM LOCATION AND DEPTH ALL UTILITY LINE CROSSINGS WITH TEST PITS PRIOR TO BEGINNING WORK. CONFLICTS SHALL BE REPORTED IN WRITING TO CONSTRUCTION MANAGER FOR RESOLUTION OF THE CONFLICT.

7. ALL AREAS OUTSIDE THE LIMIT OF WORK THAT ARE DISTURBED SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE. ALL AREAS DISTURBED DURING CONSTRUCTION NOT COVERED WITH BUILDINGS, STRUCTURES, OR PAVEMENT SHALL RECEIVE 4 INCHES OF LOAM AND SEED.

8. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS AND SHALL BE RESPONSIBLE FOR PAYING ANY FEES FOR ANY POLE RELOCATION AND FOR THE ALTERATION OR ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, CABLE, FIRE ALARM AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.

9. UPON AWARD OF CONTRACT, CONTRACTOR SHALL MAKE ALL NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN ALL NECESSARY PERMITS, PAY ALL FEES AND POST ALL BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS AND AS SPECIFIED.

10. ALL PROPERTY MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE RESET TO THEIR ORIGINAL LOCATION BY A MAINE REGISTERED LICENSED PROFESSIONAL LAND SURVEYOR (PLS) AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL PREPARE AN AS-BUILT PLAN SURVEY SHOWING LOCATIONS OF ALL SURFACE FEATURES AND SUBSURFACE UTILITY SYSTEMS INCLUDING THE LOCATION TYPE, SIZE AND INVERTS.

11. THE CONTRACTOR SHALL INSTALL ALL EROSION CONTROL MEASURES PRIOR TO EARTHWORK OPERATION AND MAINTAIN ALL EROSION CONTROL MEASURES AND SEEDED EMBANKMENTS DURING CONSTRUCTION. EROSION CONTROL SHALL BE REMOVED ONLY UPON THE ESTABLISHMENT OF ALL LANDSCAPED AREAS. ALL WORK SHALL BE IN COMPLIANCE WITH THE ENVIRONMENTAL QUALITY HANDBOOK FOR EROSION AND SEDIMENT CONTROL, LATEST EDITION, AS ADOPTED BY THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

12. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. ALL CONSTRUCTION ACTIVITY SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.

13. ALL MATERIALS AND CONSTRUCTION METHODS USED WITHIN THE PUBLIC RIGHT-OF-WAY SHALL CONFORM TO ALL LOCAL MUNICIPAL STANDARDS AND MAINE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS.

14. THE CONTRACTOR IS REQUIRED TO CONTROL DUST DURING CONSTRUCTION. EXPOSED SOIL AREAS SHALL BE SPRAYED WITH WATER AS NEEDED TO CONTROL DUST EMISSIONS. COVER EXPOSED SOIL AREAS AS QUICKLY AS PRACTICAL TO PREVENT WINDS FROM GENERATING DUST.

15. ALL HANDICAP ACCESSIBLE PARKING SPACES, RAMPS AND SIDEWALKS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE AMERICANS WITH DISABILITIES ACT (ADA).

16. ALL SITE SIGNAGE AND PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION. ALL SIGNAGE TO BE IN PLACE PRIOR TO OCCUPANCY.

17. THE CONTRACTOR SHALL ANTICIPATE THAT GROUNDWATER WILL BE ENCOUNTERED DURING CONSTRUCTION AND SHALL INCLUDE SUFFICIENT COSTS WITHIN THEIR BID TO PROVIDE DEWATERING AS NECESSARY. NO SEPARATE PAYMENT SHALL BE MADE TO THE CONTRACTOR FOR DEWATERING.

18. ALL MATERIALS SHALL BE NEW AND PROVIDED BY THE CONTRACTOR.

LAYOUT NOTES:

1. ALL DIMENSIONING, UNLESS NOTED OTHERWISE, IS TO THE FACE OF CURB OR FOUNDATION.

2. OFFSETS TO CATCH BASINS AND MANHOLES ARE TO THE CENTER OF THE FRAME.

3. PIPE LENGTH EQUALS THE CENTER TO CENTER DISTANCES BETWEEN CATCH BASINS AND/OR MANHOLES MINUS ONE HALF THE DIAMETER OF EACH CATCH BASIN OR MANHOLE.

4. BOUNDARY INFORMATION ON LAYOUT PLAN IS FOR REFERENCE ONLY, REFER TO CERTIFIED BOUNDARY PLANS FOR BOUNDARY INFORMATION.

GRADING AND DRAINAGE NOTES:

1. UNLESS OTHERWISE NOTED, ALL STORM DRAIN PIPE SHALL BE IN ACCORDANCE WITH MDOT SPECIFICATIONS SECTION 603. PIPE CULVERTS AND STORM DRAINS, LATEST REVISION WITH THE EXCEPTION THAT THE ONLY ACCEPTABLE TYPES OF PIPE ARE AS FOLLOWS:

POLYVINYL CHLORIDE PIPE (PVC) SDR 35
SMOOTH BORE POLYETHYLENE PIPE – HDPE N-12 ADS OR SDR 35

2. TOPSOIL STRIPPED IN AREAS OF CONSTRUCTION THAT IS SUITABLE FOR REUSE AS LOAM SHALL BE STOCKPILED ON SITE AT A LOCATION TO BE DESIGNATED BY OWNER. UNSUITABLE SOIL SHALL BE SEPARATED, REMOVED AND DISPOSED OF AT AN APPROVED DISPOSAL LOCATION OFF SITE.

3. THE CONTRACTOR SHALL ANTICIPATE THAT GROUNDWATER WILL BE ENCOUNTERED DURING CONSTRUCTION AND SHALL INCLUDE SUFFICIENT COSTS WITHIN THEIR BID TO PROVIDE DEWATERING AS NECESSARY. NO SEPARATE PAYMENT SHALL BE MADE TO THE CONTRACTOR FOR DEWATERING.

PERMITTING REQUIREMENTS:

AGENCY:	*PERMIT:*	*STATUS:*
TOWN OF BRUNSWICK	SITE PLAN APPROVAL CONDITIONAL USE APPROVAL BUILDING	SUBMITTED 04/21/20 SUBMITTED 04/21/20 (BY CONTRACTOR)
MAINE DEPARTMENT OF ENIRONMENTAL PROTECTION	NRPA - PERMIT BY RULE	PENDING

CALL DIG SAFE UTILITY LOCATION
1-888-344-7233
STATE LAW REQUIRES ADVANCE NOTICE OF AT LEAST 3 BUSINESS DAYS BEFORE YOU DIG, GRADE OR EXCAVATE FOR THE MARKING OF UNDERGROUND UTILITIES

UTILITY CONTACTS

CODE ENFORCEMENT
JEFF HUTCHINSON
TOWN OF BRUNSWICK
85 UNION STREET
BRUNSWICK, MAINE 04O11
207-721-4024

ELECTRIC SERVICE
CENTRAL MAINE POWER
280 BATH ROAD
BRUNSWICK, MAINE 04011
207-721-8054

TELEPHONE SERVICE
FAIRPOINT
BATH ROAD (P.O. BOX 360)
BRUNSWICK, MAINE O4011
207-442-8018

CABLE SERVICE
COMCAST CONSTRUCTION OFFICE
336 BATH ROAD
BRUNSWICK, MAINE, 04011
207-729-6660

WATER SERVICE
BRUNSWICK-TOPSHAM WATER DISTRICT
ALAN FRASIER, P.E., GENERAL MANAGER
BOX 580
BRUNSWICK, MAINE 004011
207-729-9956

PUBLIC WORKS DEPARTMENT
JAY ASTLE, PUBLIC WORKS DIRECTOR
9 INDUSTRY ROAD
BRUNSWICK, MAINE 04011
207-725-6654

TOWN ENGINEER
RYAN BARNES, P.E., TOWN ENGINEER
9 INDUSTRY ROAD
BRUNSWICK, MAINE 04011
207-725-6659

BRUNSWICK FIRE DEPARTMENT
KENNETH BRILLANT, FIRE CHIEF
21 TOWN HALL PLACE
BRUNSWICK, MAINE 04011
207-725-5541

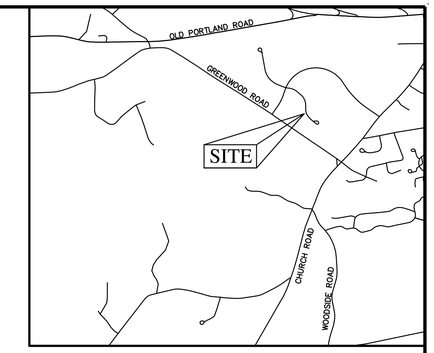
PROJECT TEAM

CIVIL ENGINEER
SITELINES P.A.
ATTN: JOSEPH J. MARDEN, P.E.
119 PURINTON ROAD, SUITE A
BRUNSWICK, MAINE 04011
207-725-1200
WWW.SITELINESPA.COM

SURVEYOR
SITELINES P.A.
ATTN: BRUCE MARTINSON, PLS
119 PURINTON ROAD, SUITE A
BRUNSWICK, MAINE 04011
207-725-1200
WWW.SITELINESPA.COM

WETLANDS:
ATLANTIC ENVIRONMENTAL LLC
TIM FORRESTER
135 RIVER ROAD
WOOLWICH, MAINE 04579
207-837-2199

ARCHITECTURE:
TRICARICO ARCHITECTURE AND DESIGN PC
502 VALLEY ROAD
WAYNE, NEW JERSEY 07470
973-692-0222



LOCATION MAP
NOT TO SCALE

LEGEND

EXISTING		PROPOSED
●	IRON MARKER FOUND	
	5/8" REBAR TOPPED WITH AN ALUMINUM CAP READING "BRUCE W. MARTINSON – PLS 2137" TO BE SET	⊙
	GRANITE MONUMENT SET	⊡
□	CATCH BASIN	◈
⊙	SEWER MANHOLE	Ⓢ
	FIRE HYDRANT	
WV	WATER GATE VALVE	WV
WS	WATER SHUT-OFF	WS
○	BLOW-OFF/CLEAN-OUT	○
CMP #13	UTILITY POLE	●
OHE (OVERHEAD UTILITY LINE)	UTILITY LINE	OHE (OVERHEAD UTILITY LINE)
	PROPERTY LINE	
	EASEMENTS	
	SETBACK/BUFFER	
WmB Au	SOILS BOUNDARY	
	WETLAND BOUNDARY	
	STREAM	
	CURB	
	EDGE OF PAVEMENT	
	BUILDING	
12"SD	STORM DRAIN(SEE PLAN FOR SIZE)	12"SD
6"S	SEWER LINE(SEE PLAN FOR SIZE)	6"S
8"W	WATER LINE(SEE PLAN FOR SIZE)	8"W
	SLOPE ARROW	1.5%
100	CONTOURS	100
	TREE LINE	
	SEDIMENT BARRIER	SB
	RIPRAP	
	PROPOSED PAVEMENT	
	SPOT GRADE	T100.50 B100.00

SHEET INDEX

SHEET #	SHEET TITLE:	SCALE:
C1	COVER SHEET	NTS
C2	EXISTING CONDITIONS AND DEMOLITION PLAN	1"=30'
C3	SITE LAYOUT AND UTILITY PLAN	1"=30'
C4	GRADING, DRAINAGE, AND EROSION CONTROL PLAN	1"=30'
C5	SITE DETAILS - 1 OF 2	NTS
C6	SITE DETAILS - 2 OF 2	NTS
C7	EROSION CONTROL DETAILS AND NOTES	NTS
L1	LANDSCAPING PLAN	1"=30'
L2	LIGHTING PLAN	1"=30'

PROGRESS PRINT
THIS PLAN IS ISSUED FOR REVIEW AND INFORMATION PURPOSES ONLY. THIS PLAN IS SUBJECT TO CHANGE AND IS NOT FOR PRICING OR CONSTRUCTION. PRICING BASED ON THIS PLAN IS NOT BINDING UNLESS SIGNED BY BOTH CONTRACTOR AND OWNER.

STATE OF MAINE
JOSEPH J. MARDEN
12828
LICENSED
PROFESSIONAL ENGINEER
05-06-20

3. 04-21-20	SUBMITTED TO TOWN FOR FINAL REVIEW	JJM
2. 02-19-20	REVISED PER TOWN COMMENTS	JJM
1. 02-04-20	SUBMITTED TO TOWN FOR SKETCH REVIEW	JJM

TITLE:
COVER SHEET

PROJECT:
MARIJUANA STORE – ADULT USE
4 BUSINESS PARKWAY, BRUNSWICK, ME 04011

OWNER:
GJORIS LLC
135 MAINE STREET, SUITE 129, BRUNSWICK, ME 04011

SITELINES
119 PURINTON ROAD, SUITE A
BRUNSWICK, MAINE 04011
207.725.1200
CIVIL ENGINEERS ▪ PLANNERS ▪ LAND SURVEYORS

FIELD WK: MC/MH	SCALE: NTS	SHEET: C1
DRN BY: JJM	JOB #: 3781.02	
CH'D BY: CYN	MAP/LOT: 17/66	
DATE: 01-30-20	FILE:3781.02-COVER-DET	

X:\LAND PROJECTS\3781.02 GJORIS 4 BUSINESS PKWY BRUNSWICK\DWG\3781.02-COVER-DET.DWG, C1 COVER, 5/6/2020 8:39:25 AM, JOSEPH MARDEN
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X:\LAND PROJECTS\3781.02 GJORIS 4 BUSINESS PKWY BRUNSWICK\DWG\3781.02-SITE.DWG, C2-EX COND, 5/6/2020 8:39 AM, JOSEPH MARDEN
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DEMOLITION NOTES:

1) ALL DEMOLITION ACTIVITIES ARE TO BE PERFORMED IN STRICT ADHERENCE TO ALL FEDERAL, STATE AND LOCAL REGULATIONS. CONTRACTOR TO INSTALL EROSION CONTROL DEVICES IN ACCORDANCE WITH GRADING & DRAINAGE PLAN PRIOR TO BEGINNING DEMOLITION ACTIVITIES.

2) REFRAIN FROM USING EXPLOSIVES WITHOUT PRIOR WRITTEN CONSENT OF THE DEVELOPER AND APPLICABLE GOVERNMENTAL AUTHORITIES.

3) CONDUCT DEMOLITION SERVICES IN SUCH A MANNER TO INSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKS AND OTHER ADJACENT FACILITIES. DO NOT CLOSE OR OBSTRUCT STREETS, WALKS OR OTHER OCCUPIED FACILITIES WITHOUT PRIOR WRITTEN PERMISSION OF THE DEVELOPER AND APPLICABLE GOVERNMENTAL AUTHORITIES. PROVIDE ALTERNATIVE ROUTES AROUND CLOSED OR OBSTRUCTED TRAFFIC WAYS IF REQUIRED BY APPLICABLE GOVERNMENTAL REGULATIONS.

4) USE WATERING, TEMPORARY ENCLOSURES AND OTHER SUITABLE METHODS, AS NECESSARY, TO LIMIT THE AMOUNT OF DUST AND DIRT RISING AND SCATTERING IN THE AIR. CLEAN ADJACENT STRUCTURES AND IMPROVEMENTS OF ALL DUST AND DEBRIS CAUSED BY THE DEMOLITION OPERATIONS. RETURN ALL ADJACENT AREAS TO THE CONDITIONS EXISTING PRIOR TO THE START OF WORK.

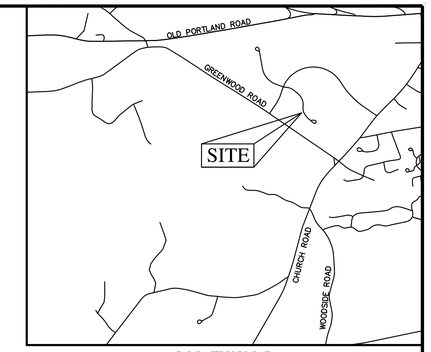
5) ACCOMPLISH AND PERFORM THE DEMOLITION IN SUCH A MANNER AS TO PREVENT THE UNAUTHORIZED ENTRY OF PERSONS AT ANY TIME.

6) REMOVE FROM THE DESIGNATED SITE, AT THE EARLIEST POSSIBLE TIME, ALL DEBRIS RUBBISH, SALVAGEABLE ITEMS, HAZARDOUS AND COMBUSTIBLE SERVICES. REMOVED MATERIALS MAY NOT BE STORED, SOLD OR BURNED ON SITE. REMOVAL OF HAZARDOUS AND COMBUSTIBLE MATERIALS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE PROCEDURES AS AUTHORIZED BY THE FIRE DEPARTMENT OR OTHER APPROPRIATE REGULATORY AGENCIES AND DEPARTMENTS.

7) PROTECT EXISTING DRAINAGE SYSTEM(S) AS NECESSARY TO PREVENT SEDIMENT FROM ENTERING DURING CONSTRUCTION. SEE DETAIL SHEETS FOR EROSION CONTROL DEVICES.

8) ALL WORK WITHIN ROADWAY RIGHT-OF-WAYS TO CONFORM TO TOWN OF BRUNSWICK STANDARDS.

9) THE LIMITS OF WORK SHALL BE CLEARLY MARKED IN THE FIELD PRIOR TO THE START OF CONSTRUCTION OR SITE CLEARING.



LOCATION MAP
NOT TO SCALE

GENERAL NOTES:

1. TITLE REFERENCE FOR SURVEYED PARCEL:

   BK 35660, PG 227

2. PLAN REFERENCE(S):

   1. "SUBDIVISION PLAN – AMENDMENT 1 INDUSTRIAL PARK EXPANSION BRUNSWICK INDUSTRIAL PARK (PHASE IV)" DATED 3-28-03, LAST REVISED 08-29-03. PREPARED BY SITELINES, PA. FOR THE TOWN OF BRUNSWICK, MAINE

   2. "TOPOGRAPHIC SURVEY LOT 2,3 & 4 BRUNSWICK BUSINESS PARK" DATED APRIL 2008, PREPARED BY COLONIAL SURVEYING COMPANY, LLC OF GRAY MAINE FOR SITELINES, P.A.

3. AREA INFORMATION:

   LOT AREA: 127,300 S.F. (2.92 ACRES)

4. TAX MAP REFERENCE:

   TAX MAP 17, LOT 66

5. BASIS OF BEARINGS:

   BEARINGS ARE REFERENCED TO MAGNETIC.

6. ELEVATION DATUM:

   CONTACT SITELINES, PA (207-725-1200)

7. FLOOD ZONE INFORMATION:

   PARCEL IS LOCATED WITHIN ZONE C (AREAS OF MINIMAL FLOODING) OF THE FLOOD INSURANCE RATE MAPS FOR CUMBERLAND COUNTY, MAINE. THE PROJECT IS LOCATED ON PANEL 15 OF 35 (COMMUNITY PANEL 230042-0015-B, EFF. DATE JANUARY 3, 1986)

8. IMPERVIOUS AREA:

   PROPOSED IMPERVIOUS AREA: 37,333 S.F. (0.86 AC)

9. SITE SUBJECT TO SITE LOCATION OF DEVELOPMENT ACT PERMIT #L-6773-39-L-A

UTILITY NOTES:

1. INFORMATION REGARDING THE LOCATION OF EXISTING UNDERGROUND UTILITIES IS A COMPILATION OF THAT FOUND IN THE FIELD AND THAT SHOWN ON A PREVIOUS PLANS, AND SHALL NOT BE CONSIDERED AN AS-BUILT PLAN. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING UTILITY LOCATIONS PRIOR TO COMMENCING WORK. NOTIFY ENGINEER OF ANY DISCREPANCY BETWEEN UTILITIES AS SHOWN AND AS FOUND. CONTRACTOR SHALL NOTIFY DIG-SAFE (1-888-344-7233) PRIOR TO EXCAVATION.

3.	04-21-20	SUBMITTED TO TOWN FOR FINAL REVIEW	JJM
2.	02-19-20	REVISED PER TOWN COMMENTS	JJM
1.	02-04-20	SUBMITTED TO TOWN FOR SKETCH REVIEW	JJM

TITLE:
EXISTING CONDITIONS AND DEMOLITION PLAN

PROJECT:
MARIJUANA STORE – ADULT USE
4 BUSINESS PARKWAY, BRUNSWICK, ME 04011

PREPARED FOR:
GJORIS LLC
135 MAINE STREET, SUITE 129, BRUNSWICK, ME 04011

PROGRESS PRINT
THIS PLAN IS ISSUED FOR REVIEW AND INFORMATION PURPOSES ONLY. THIS PLAN IS SUBJECT TO CHANGE AND IS NOT FOR PRICING OR CONSTRUCTION. PRICING BASED ON THIS PLAN IS NOT BINDING UNLESS SIGNED BY BOTH CONTRACTOR AND OWNER.

CALL DIG SAFE UTILITY LOCATION
1-888-344-7233
STATE LAW REQUIRES ADVANCE NOTICE OF AT LEAST 3 BUSINESS DAYS BEFORE YOU DIG, GRADE OR EXCAVATE FOR THE MARKING OF UNDERGROUND UTILITIES

GRAPHIC SCALE
30 0 15 30 60
(IN FEET)
1 inch = 30 ft.

ISSUED FOR:
PERMITTING REVIEW

STATE OF MAINE
JOSEPH J. MARDEN
12828
LICENSED
PROFESSIONAL ENGINEER
05-06-20

SITELINES
119 PURINTON ROAD, SUITE A
BRUNSWICK, MAINE 04011
207.725.1200
CIVIL ENGINEERS • PLANNERS • LAND SURVEYORS

FIELD WK: MC/MH	SCALE: 1"=30'	SHEET: C2
DRN BY: JJM	JOB #: 3781.02	
CH'D BY: CYN	MAP/LOT: 17/66	
DATE: 01-30-20	FILE: 3781.02-SITE	

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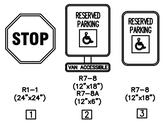
SIGN LEGEND:



CURBING LEGEND:

VERTICAL SLIPFORM CONCRETE CURB: VSFC

TD — TIP DOWN

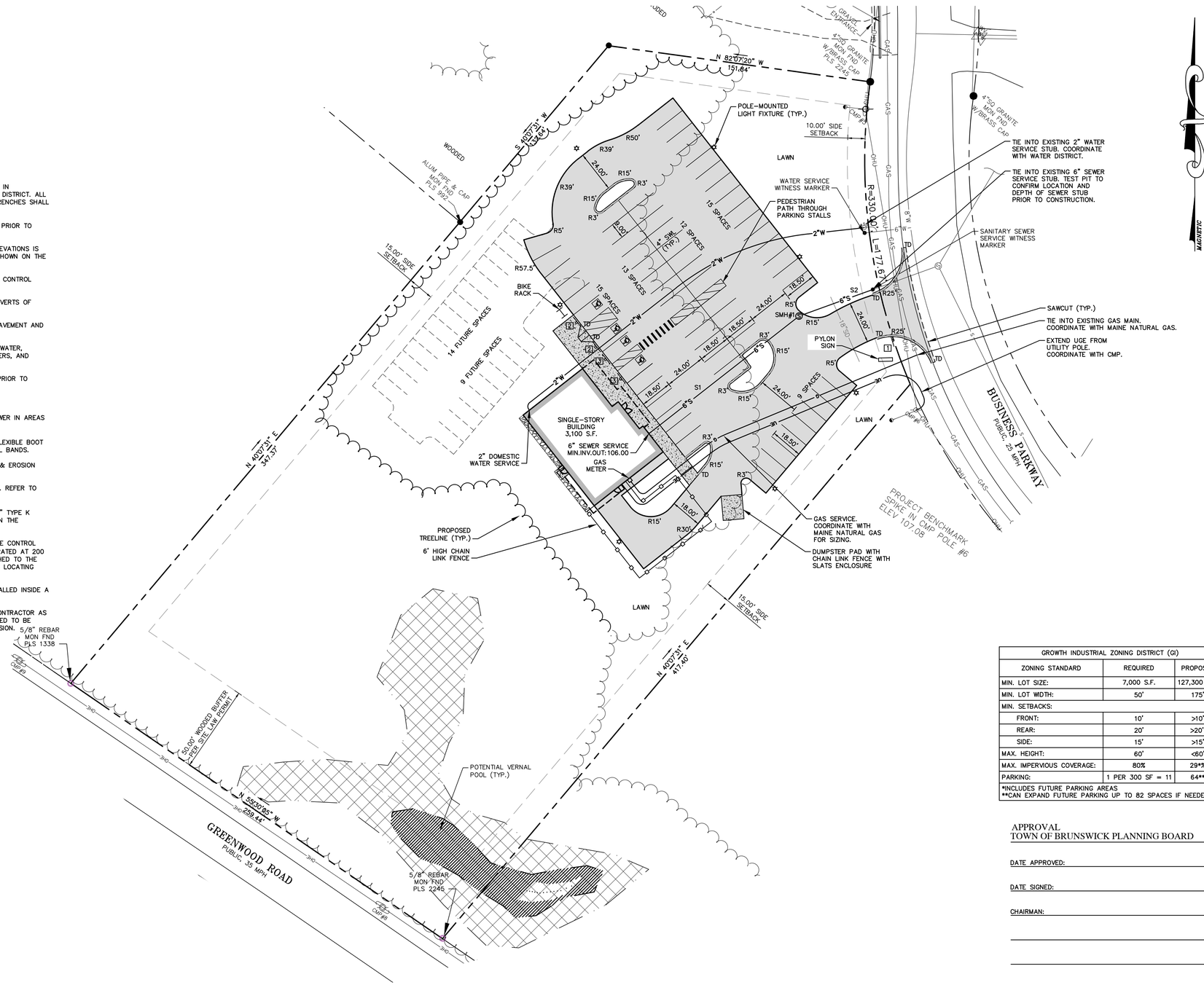
UTILITY NOTES:

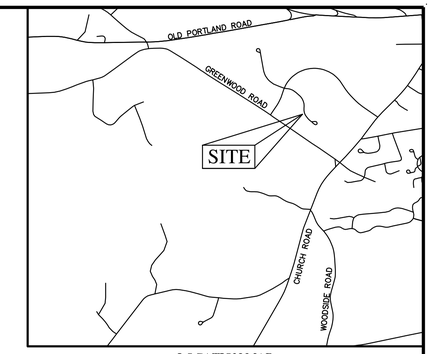
1. ALL TERMINATIONS AND CONNECTIONS OF SERVICES SHALL BE IN COMPLIANCE WITH REQUIREMENTS OF THE APPLICABLE UTILITY DISTRICT. ALL BACKFILLING AND COMPACTION OF WATER AND SEWER LINE TRENCHES SHALL BE AS APPROVED BY THE LOCAL UTILITY DISTRICT.
2. THE CONTRACTOR SHALL CONTACT DIGSAFE (888–344–7233) PRIOR TO COMMENCING EXCAVATION.
3. THE BASIS FOR PROJECT LAYOUT AND FOR CONSTRUCTION ELEVATIONS IS THE BASELINE AND BENCHMARK EXISTING ON THE SITE AND SHOWN ON THE DRAWINGS.
4. THE CONTRACTOR SHALL CONFIRM HORIZONTAL AND VERTICAL CONTROL BEFORE BEGINNING WORK.
5. SEE PLUMBING AND ELECTRICAL PLANS FOR LOCATION AND INVERTS OF SLEEVES IN FOUNDATIONS.
6. ELECTRIC SERVICE SHALL BE INSTALLED IN CONDUIT UNDER PAVEMENT AND CONCRETE.
7. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ALL SEWER, WATER, ELECTRICAL, AND SANITARY CONDUIT, MANHOLES, TRANSFORMERS, AND FITTINGS FOR APPROVAL.
8. CONTRACTOR SHALL VERIFY LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
9. SANITARY SEWER PIPE AND FITTINGS SHALL BE SDR–35 PVC.
10. INSTALL 2" RIGID STYROFOAM INSULATION OVER SANITARY SEWER IN AREAS WHERE THERE IS LESS THAN 4' OF COVER.
11. CONNECTIONS AT MANHOLES/CATCH BASINS SHALL HAVE A FLEXIBLE BOOT CAST ONTO THE BARREL AND SECURED WITH STAINLESS STEEL BANDS.
12. SEE SHEET C4 FOR GRADING, DRAINAGE, STORM DRAIN DATA & EROSION CONTROL MEASURES.
13. BUILDING FOOTPRINT SHOWN IS NOT FOR FOUNDATION LAYOUT. REFER TO STRUCTURAL/ARCHITECTURAL DRAWINGS.
14. ALL PIPING MATERIAL TO THE BALL VALVE SHALL BE 1" OR 2" TYPE K COPPER AND ALL CONTROL VALVES SHALL BE LOCATED WITHIN THE EASEMENT AREA.
15. ALL DOMESTIC WATER SERVICES ON THE BUILDING SIDE OF THE CONTROL VALVE SHALL BE EITHER 2" TYPE K COPPER OR 2" CTS PE RATED AT 200 PSI. IF THE PE IS USED, AN 8 GAUGE WIRE SHALL BE ATTACHED TO THE PIPE WITH ONE END BROUGHT ALONGSIDE THE CURB BOX FOR LOCATING PURPOSES.
16. ANY CURB BOXES LOCATED WITHIN PAVEMENT SHALL BE INSTALLED INSIDE A GATE BOX TOP.
17. ALL MATERIALS SHOWN SHALL BE NEW AND FURNISHED BY CONTRACTOR AS PART OF CONTRACT WORK. ONLY ITEMS SPECIFICALLY IDENTIFIED TO BE SALVAGED MAY BE RE–USED WITHOUT PRIOR WRITTEN PERMISSION.

SEWER STRUCTURE DATA:

SMH#1
RIM: 109.05
INV.IN: TBD AFTER TEST PIT FOR STUB
INV.OUT: TBD AFTER TEST PIT FOR STUB

S1: 6" PVC L=108' S=0.0100 MIN.
S2: 6" PVC L=43' S=0.0100 MIN.





LOCATION MAP
NOT TO SCALE

GENERAL NOTES:

1. TITLE REFERENCE FOR SURVEYED PARCEL:

   BK 35660, PG 227

2. PLAN REFERENCE(S):

   1. "SUBDIVISION PLAN – AMENDMENT 1 INDUSTRIAL PARK EXPANSION BRUNSWICK INDUSTRIAL PARK (PHASE IV)" DATED 3–28–03, LAST REVISED 08–29–03. PREPARED BY SITELINES, PA. FOR THE TOWN OF BRUNSWICK, MAINE

   2. "TOPOGRAPHIC SURVEY LOT 2,3 & 4 BRUNSWICK BUSINESS PARK" DATED APRIL 2008, PREPARED BY COLONIAL SURVEYING COMPANY, LLC OF GRAY MAINE FOR SITELINES, P.A.

3. AREA INFORMATION:

   LOT AREA: 127,300 S.F. (2.92 ACRES)

4. TAX MAP REFERENCE:

   TAX MAP 17, LOT 66

5. BASIS OF BEARINGS:

   BEARINGS ARE REFERENCED TO MAGNETIC.

6. ELEVATION DATUM:

   CONTACT SITELINES, PA (207–725–1200)

7. FLOOD ZONE INFORMATION:

   PARCEL IS LOCATED WITHIN ZONE C (AREAS OF MINIMAL FLOODING) OF THE FLOOD INSURANCE RATE MAPS FOR CUMBERLAND COUNTY, MAINE. THE PROJECT IS LOCATED ON PANEL 15 OF 35 (COMMUNITY PANEL 230042–0015–B, EFF. DATE JANUARY 3, 1986)

8. IMPERVIOUS AREA:

   PROPOSED IMPERVIOUS AREA: 36,454 S.F. (0.84 AC)*
   *INCLUDES FUTURE PARKING AREA

9. SITE SUBJECT TO SITE LOCATION OF DEVELOPMENT ACT PERMIT #L–6773–39–L–A

UTILITY NOTES:

1. INFORMATION REGARDING THE LOCATION OF EXISTING UNDERGROUND UTILITIES IS A COMPILATION OF THAT FOUND IN THE FIELD AND THAT SHOWN ON A PREVIOUS PLANS, AND SHALL NOT BE CONSIDERED AN AS–BUILT PLAN. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING UTILITY LOCATIONS PRIOR TO COMMENCING WORK. NOTIFY ENGINEER OF ANY DISCREPANCY BETWEEN UTILITIES AS SHOWN AND AS FOUND. CONTRACTOR SHALL NOTIFY DIG–SAFE (1–888–344–7233) PRIOR TO EXCAVATION.

GROWTH INDUSTRIAL ZONING DISTRICT (GI)		
ZONING STANDARD	REQUIRED	PROPOSED
MIN. LOT SIZE:	7,000 S.F.	127,300 S.F.
MIN. LOT WIDTH:	50'	175'
MIN. SETBACKS:		
FRONT:	10'	>10'
REAR:	20'	>20"
SIDE:	15'	>15'
MAX. HEIGHT:	60'	<60'
MAX. IMPERVIOUS COVERAGE:	80%	29*%
PARKING:	1 PER 300 SF = 11	64**

*INCLUDES FUTURE PARKING AREAS
**CAN EXPAND FUTURE PARKING UP TO 82 SPACES IF NEEDED

APPROVAL
TOWN OF BRUNSWICK PLANNING BOARD

DATE APPROVED: _____

DATE SIGNED: _____

CHAIRMAN: _____

3.	04–21–20	SUBMITTED TO TOWN FOR FINAL REVIEW	JJM
2.	02–19–20	REVISED PER TOWN COMMENTS	JJM
1.	02–04–20	SUBMITTED TO TOWN FOR SKETCH REVIEW	JJM

TITLE:
SITE LAYOUT AND UTILITY PLAN

PROJECT:
MARIJUANA STORE – ADULT USE
4 BUSINESS PARKWAY, BRUNSWICK, ME 04011

PREPARED FOR:
GJORIS LLC
135 MAINE STREET, SUITE 129, BRUNSWICK, ME 04011

PROGRESS PRINT
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CALL DIG SAFE — UTILITY LOCATION
1-888-344-7233
STATE LAW REQUIRES ADVANCE NOTICE OF AT LEAST 3 BUSINESS DAYS BEFORE YOU DIG, GRADE OR EXCAVATE FOR THE MARKING OF UNDERGROUND UTILITIES

GRAPHIC SCALE
30 0 15 30 60
(IN FEET)
1 inch = 30 ft.

ISSUED FOR:
PERMITTING REVIEW

STATE OF MAINE — JOSEPH J. MARDEN 12828 LICENSED PROFESSIONAL ENGINEER
05–06–20

SITELINES
119 PURINTON ROAD, SUITE A
BRUNSWICK, MAINE 04011
207.725.1200
CIVIL ENGINEERS ▪ PLANNERS ▪ LAND SURVEYORS

FIELD WK: MC/MH	SCALE: 1"=30'	SHEET:
DRN BY: JJM	JOB #: 3781.02	C3
CH'D BY: CYN	MAP/LOT: 17/66	
DATE: 01-30-20	FILE: 3781.02-SITE	

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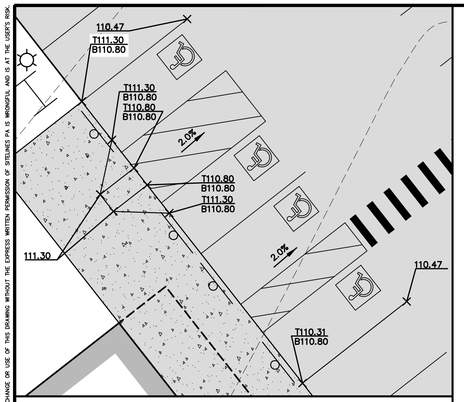
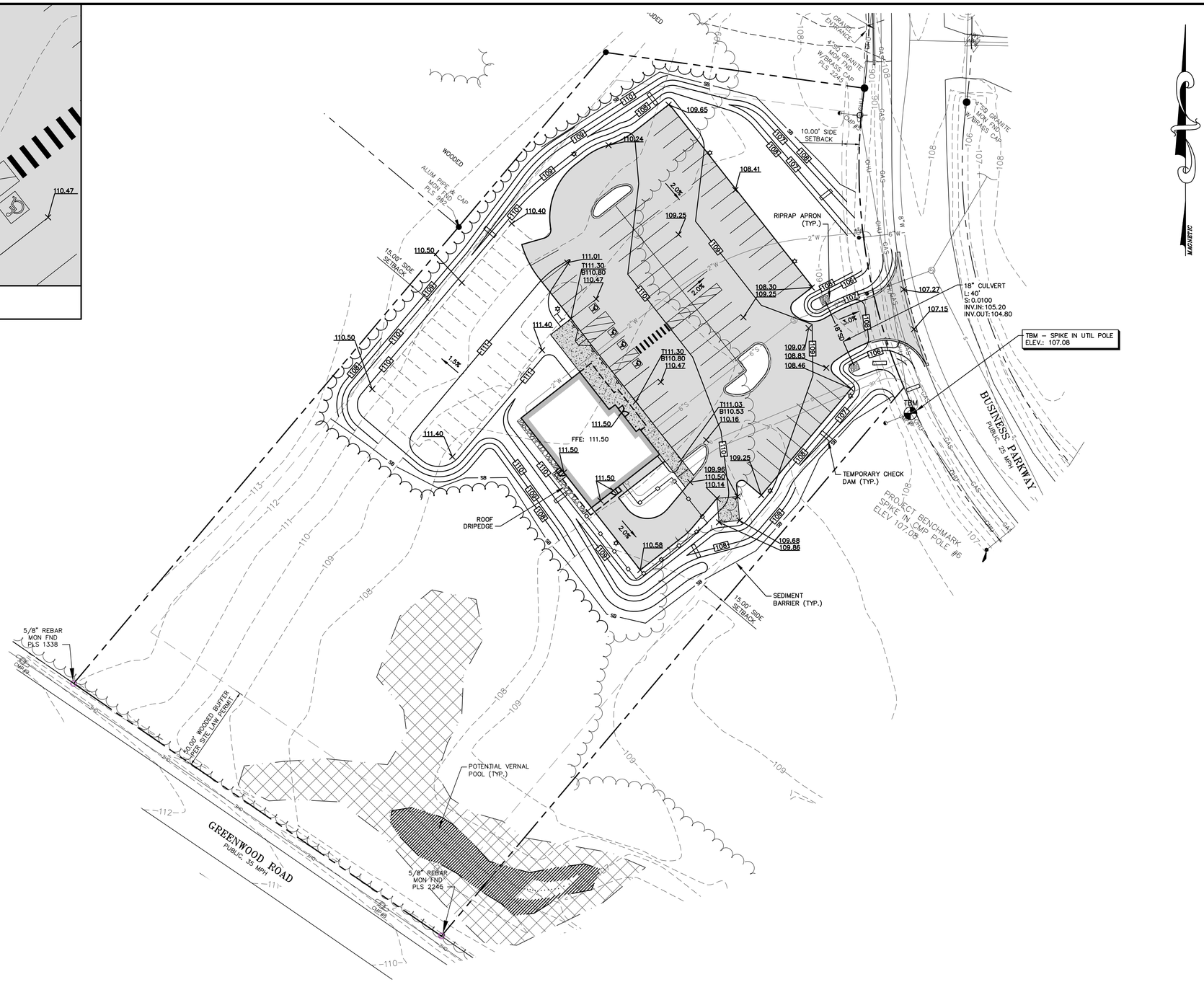


ADA GRADING DETAIL
SCALE: 1"=10'



GRADING AND DRAINAGE NOTES:

1. THE CONTRACTOR SHALL PHASE GRADING EFFORTS SUCH THAT TOTAL SITE DISTURBANCE IS MINIMIZED. TEMPORARY EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO GRADING EFFORTS OR WITHOUT DELAY UPON THEIR COMPLETION, DEPENDENT UPON THE SITUATION.

2. ALL FILL SLOPES SHALL BE A MINIMUM OF 3:1 HORIZONTAL TO VERTICAL UNLESS OTHERWISE NOTED OR DIRECTED.

3. THE LIMITS OF DISTURBANCE SHALL GENERALLY BE THE MINIMAL EXTENT NECESSARY ONLY TO PERFORM THE GRADING EFFORTS SHOWN ON THE DRAWINGS. SPECIAL CARE SHALL BE TAKEN TO AVOID DISTURBANCE OF OBJECTS AND AREAS NOT SPECIFICALLY IDENTIFIED FOR MODIFICATION OR REMOVAL.

4. ALL DISTURBED AREAS SHALL BE LOAMED AND SEEDED IN ACCORDANCE WITH THE DRAWINGS, UNLESS INTENDED FOR OTHER SURFACE COVER.

5. STORM DRAINS SHALL BE CONSTRUCTED CONCURRENTLY WITH GRADING EFFORTS TO PROVIDE ADEQUATE CONVEYANCE FOR ANY SITE RUNOFF CONDITIONS.

6. WHERE FINAL GRADING HAS BEEN COMPLETED, SURFACE RESTORATION FOR DISTURBED AREAS WILL BE COMPLETED AS SOON AS PRACTICABLE. FOR VEGETATIVE AREAS, VEGETATION WILL BE PROGRESSIVELY ESTABLISHED.

7. UNLESS OTHERWISE NOTED, ALL STORM DRAIN PIPE SHALL BE IN ACCORDANCE WITH MDOT SPECIFICATIONS SECTION 603. PIPE CULVERTS AND STORM DRAINS, LATEST REVISION WITH ACCEPTABLE TYPES OF PIPE ARE AS FOLLOWS:
   SMOOTH BORE POLYETHYLENE PIPE – HDPE N-12 ADS

8. BENCHMARK INFORMATION: SEE PLAN

9. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ALL DRAINAGE STRUCTURES AND PIPING PRIOR TO ORDERING.

10. RIM ELEVATIONS OF PROPOSED DRAINAGE STRUCTURES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH AND CONSISTENT WITH THE GRADING PLANS.

11. TRANSITIONS BETWEEN SLOPES ARE TO BE GENERALLY GRADUAL AND RESULT IN A SMOOTH, ROUNDED APPEARANCE.

3.	04–21–20	SUBMITTED TO TOWN FOR FINAL REVIEW	JJM
2.	02–19–20	REVISED PER TOWN COMMENTS	JJM
1.	02–04–20	SUBMITTED TO TOWN FOR SKETCH REVIEW	JJM

TITLE: GRADING, DRAINAGE, & EROSION CONTROL PLAN

PROJECT: *MARIJUANA STORE – ADULT USE*
4 BUSINESS PARKWAY, BRUNSWICK, ME 04011

PREPARED FOR: *GJORIS LLC*
135 MAINE STREET, SUITE 129, BRUNSWICK, ME 04011

PROGRESS PRINT
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1-888-344-7233
STATE LAW REQUIRES ADVANCE NOTICE OF AT LEAST 3 BUSINESS DAYS BEFORE YOU DIG, GRADE OR EXCAVATE FOR THE MARKING OF UNDERGROUND UTILITIES

GRAPHIC SCALE
30 0 15 30 60
(IN FEET)
1 inch = 30 ft.

ISSUED FOR:
PERMITTING REVIEW

STATE OF MAINE
JOSEPH J. MARDEN
12828
LICENSED
PROFESSIONAL ENGINEER
05–06–20

SITELINES
119 PURINTON ROAD, SUITE A
BRUNSWICK, MAINE 04011
207.725.1200
CIVIL ENGINEERS ▪ PLANNERS ▪ LAND SURVEYORS

FIELD WK: MC/MH	SCALE: 1"=30'	SHEET: C4
DRN BY: JJM	JOB #: 3781.02	
CH'D BY: CYN	MAP/LOT: 17/66	
DATE: 01-30-20	FILE: 3781.02-SITE	

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X:\LAND PROJECTS\3781.02 GJORIS 4 BUSINESS PKWY BRUNSWICK\DWG\3781.02-SITE.DWG, C4-GRADING, 5/6/2020 8:39 AM, JOSEPH MARDEN

X:\LAND PROJECTS\3781.02 GJORIS 4 BUSINESS PKWY BRUNSWICK\DWG\3781.02-COVER-DET.DWG, C5 DETAILS, 5/6/2020 8:39:32 AM, JOSEPH MARDEN
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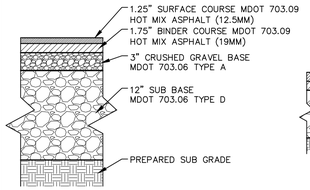
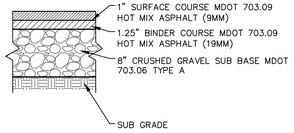


ACCESS DRIVE SECTION
NOT TO SCALE



WALKWAY SECTION
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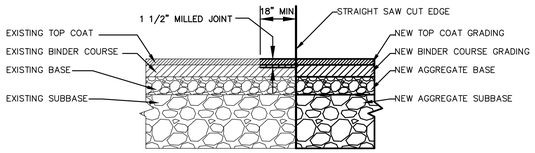
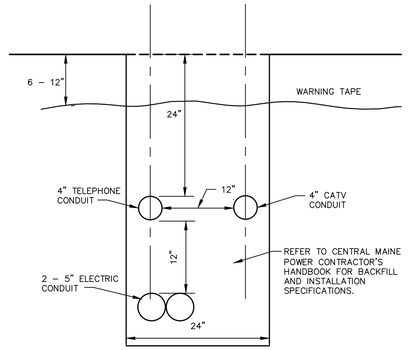


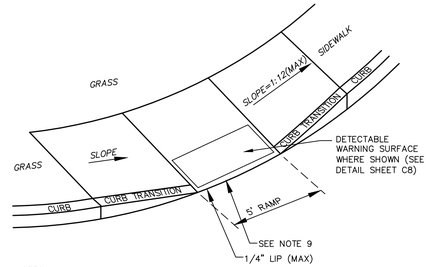
PAVEMENT SAW CUT SECTION "FULL DEPTH RECONSTRUCTION"
NOT TO SCALE

PAVEMENT/GRAVEL SECTIONS
N.T.S.

A

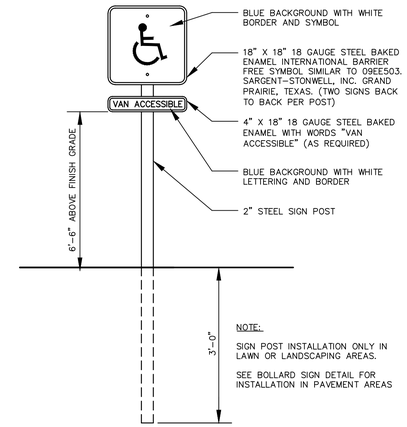


B UTILITY TRENCH
N.T.S.



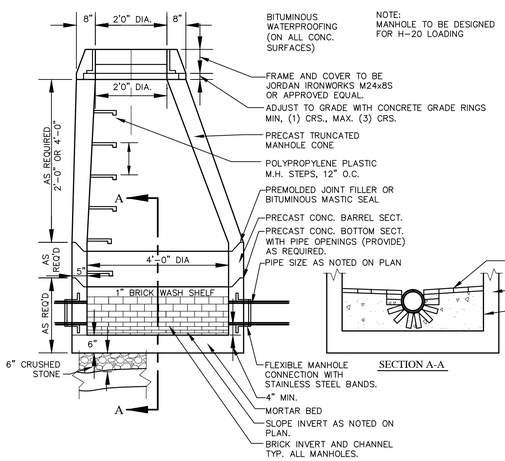
NOTES:
1. THE MAXIMUM ALLOWABLE SIDEWALK AND CURB RAMP CROSS SLOPE SHALL BE 1.5% (1% MIN).
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE CURB RAMPS SHALL BE 7.5%.
4. A MINIMUM OF 3 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.)
5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
6. BASE OF RAMP SHALL BE GRADED TO PREVENT PONDING.
7. SEE TYPICAL SIDEWALK SECTION FOR RAMP CONSTRUCTION.
8. WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5'x5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200 FEET.
9. ELIMINATE ALL CURBING AT RAMP (OTHER THAN VERTICAL CURBING, WHICH SHALL BE SET FLUSH) WHERE IT ABUTS ROADWAY.

C TIP DOWN SIDEWALK RAMP
N.T.S.

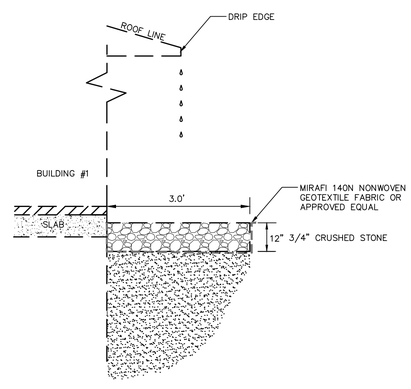


NOTE:
SIGN POST INSTALLATION ONLY IN LAWN OR LANDSCAPING AREAS.
SEE BOLLARD SIGN DETAIL FOR INSTALLATION IN PAVEMENT AREAS

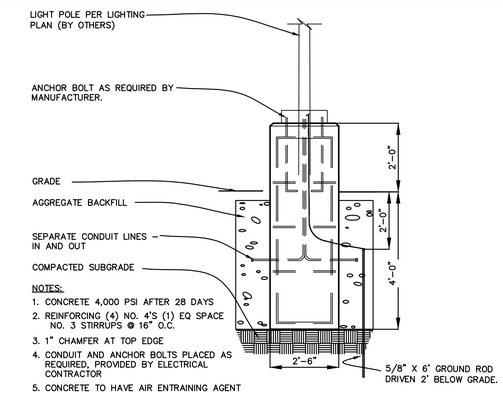
D BARRIER FREE PARKING SIGN DETAIL (IN GRASS)
N.T.S.



E SANITARY SEWER DETAIL
N.T.S.

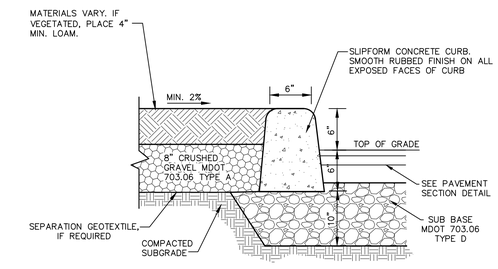


F ROOF DRIPEDGE
N.T.S.



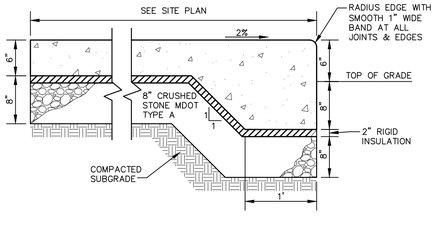
NOTES:
1. CONCRETE 4,000 PSI AFTER 28 DAYS
2. REINFORCING (4) NO. 4'S (1) EQ SPACE NO. 3 STIRRUPS @ 16" O.C.
3. 1" CHAMFER AT TOP EDGE
4. CONDUIT AND ANCHOR BOLTS PLACED AS REQUIRED, PROVIDED BY ELECTRICAL CONTRACTOR
5. CONCRETE TO HAVE AIR ENTRAINING AGENT

G LIGHT POLE BASE
N.T.S.



NOTES:
1. CONCRETE SHALL BE CAST-IN-PLACE 5000 PSI W/FIBER REINFORCEMENT.
2. APPLY MEDIUM BROOM FINISH PERPENDICULAR TO DIRECTION OF TRAVEL.
3. PROVIDE 1-1/2" DEEP TOOLED CONTROL JOINT PERPENDICULAR TO WALK AT 5' O.C.
4. PROVIDE EXPANSION JOINT AT 20' INTERVALS ON SIDEWALK ONLY.
5. PROVIDE ISOLATION JOINT W/SELF LEVELING SEALER WHERE WALK ABUTS ANY VERTICAL SURFACE.

H VERTICAL SLIPFORM CONCRETE CURB
N.T.S.



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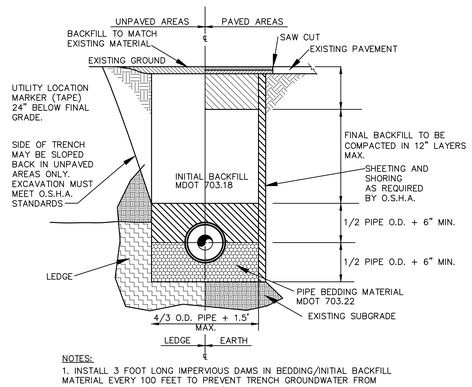
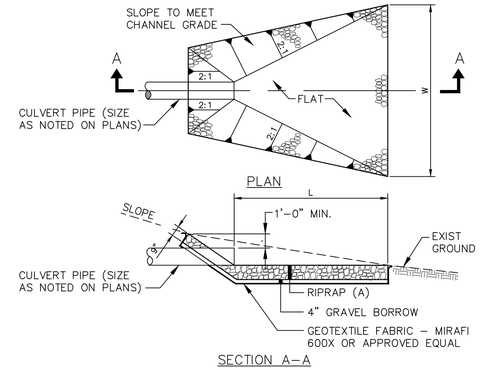
3. PROVIDE 1-1/2" DEEP TOOLED CONTROL JOINT PERPENDICULAR TO WALK AT 5' O.C.
4. PROVIDE EXPANSION JOINT AT 20' INTERVALS.
5. PROVIDE ISOLATION JOINT W/SELF LEVELING SEALER WHERE WALK ABUTS ANY VERTICAL SURFACE.

I INTEGRAL CONCRETE CURB AND SIDEWALK
N.T.S.



NOTES:
1. INSTALL 3 FOOT LONG IMPERVIOUS DAMS IN BEDDING/INITIAL BACKFILL MATERIAL EVERY 100 FEET TO PREVENT TRENCH GROUNDWATER FROM BEING CHANNELED ALONG BEDDING/INITIAL BACKFILL
2. REFER TO LATEST MDOT SPECIFICATIONS FOR BEDDING AND BACKFILL REQUIREMENTS.
3. INITIAL BACKFILL TO BE 12 INCHES OVER TOP OF PVC PIPE ONLY.

J TYPICAL PIPE TRENCH DETAIL
N.T.S.



SECTION A–A

OUTLET	DIA.	SLOPE	D50	X	A	W	L
18" CULVERT	18"	.01	6"	3'	1.50'	3'	6'

K RIPRAP INLET/OUTLET PROTECTION
N.T.S.

3.	04–21–20	SUBMITTED TO TOWN FOR FINAL REVIEW	JJM
2.	02–19–20	REVISED PER TOWN COMMENTS	JJM
1.	02–04–20	SUBMITTED TO TOWN FOR SKETCH REVIEW	JJM

PROGRESS PRINT
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TITLE:
SITE DETAILS - 1 OF 2

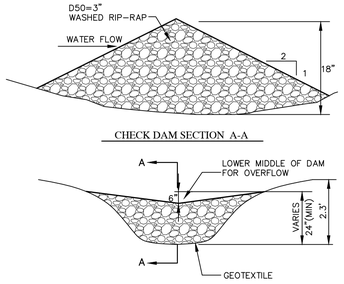
PROJECT:
MARIJUANA STORE – ADULT USE
4 BUSINESS PARKWAY, BRUNSWICK, ME 04011

OWNER:
GJORIS LLC
135 MAINE STREET, SUITE 129, BRUNSWICK, ME 04011

STATE OF MAINE
JOSEPH J. MARDEN
12828
LICENSED
PROFESSIONAL ENGINEER
05–06–20

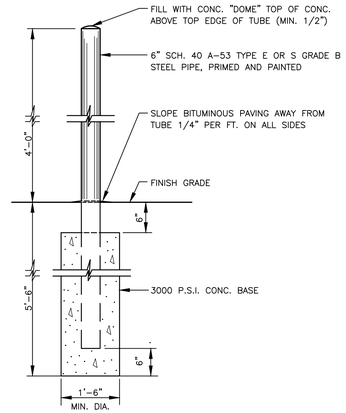
SITELINES
119 PURINTON ROAD, SUITE A
BRUNSWICK, MAINE 04011
207.725.1200
CIVIL ENGINEERS ▪ PLANNERS ▪ LAND SURVEYORS

FIELD WK: MC/MH	SCALE: NTS	SHEET: C5
DRN BY: JJM	JOB #: 3781.02	
CH'D BY: CYN	MAP/LOT: 17/66	
DATE: 01-30-20	FILE: 3781.02-COVER-DET	

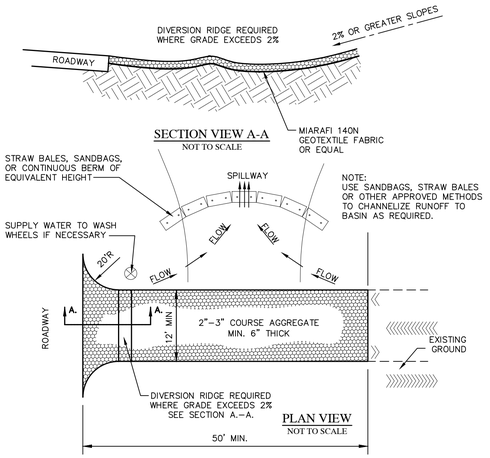


STONE CHECK DAM IN DRAINAGE-WAY
NOT TO SCALE

A CHECK DAM DETAIL
N.T.S.



B TYPICAL BOLLARD DETAIL
N.T.S.

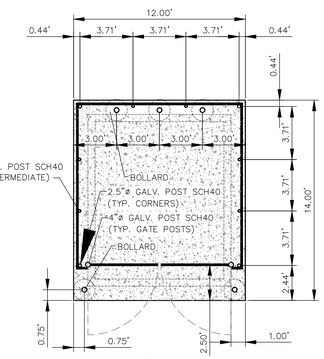


NOTE:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR, AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.

2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAYS.

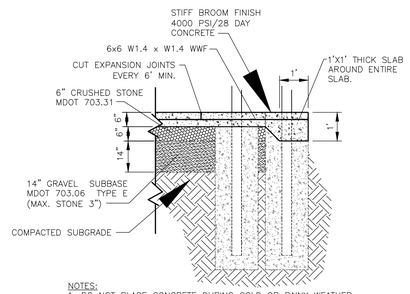
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR BASIN.

C STABILIZED CONSTRUCTION ENTRANCE
N.T.S.



NOTE:
FENCE GATE TO BE DESIGNED BY FENCE INSTALLER. COORDINATE WITH OWNER.

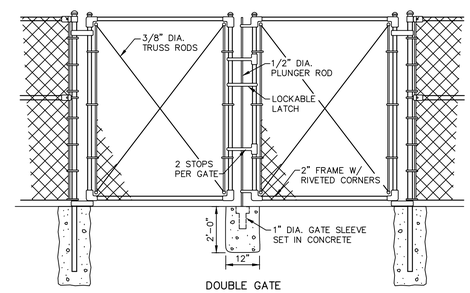
DUMPSTER ENCLOSURE LAYOUT
NOT TO SCALE



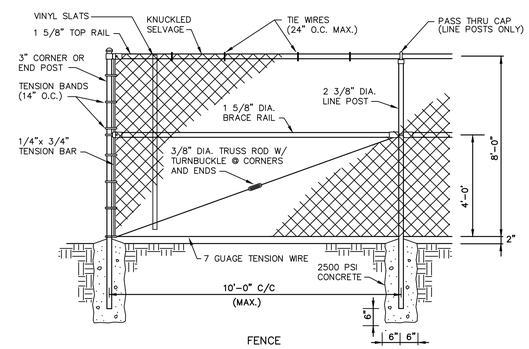
NOTES:
1. DO NOT PLACE CONCRETE DURING COLD OR RAINY WEATHER CONDITIONS.

2. CONTRACTOR MAY USE PRE-CAST CONCRETE BOLLARDS.

CONCRETE DUMPSTER PAD
NOT TO SCALE



DOUBLE GATE



FENCE

D DUMPSTER PAD DETAILS
N.T.S.

E NOT USED
N.T.S.

F NOT USED
N.T.S.

G NOT USED
N.T.S.

3.	04-21-20	SUBMITTED TO TOWN FOR FINAL REVIEW	JJM
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SITE DETAILS - 2 OF 2

PROJECT:
MARIJUANA STORE – ADULT USE
4 BUSINESS PARKWAY, BRUNSWICK, ME 04011

OWNER:
GJORIS LLC
135 MAINE STREET, SUITE 129, BRUNSWICK, ME 04011

STATE OF MAINE
JOSEPH J. MARDEN
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FIELD WK: MC/MH	SCALE: NTS	SHEET:
DRN BY: JJM	JOB #: 3781.02	C6
CH'D BY: CYN	MAP/LOT: 17/66	
DATE: 01-30-20	FILE: 3781.02-COVER-DET	

X:\LAND PROJECTS\3781.02 GJORIS 4 BUSINESS PKWY BRUNSWICK\DWG\3781.02-COVER-DET.DWG, C6 DETAILS, 5/6/2020 8:39:32 AM, JOSEPH MARDEN
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X:\LAND PROJECTS\3781.02 GJORIS 4 BUSINESS PKWY BRUNSWICK\DWG\3781.02-COVER-DET.DWG, C7 EROSION, 5/6/2020 8:39:33 AM, JOSEPH MARDEN

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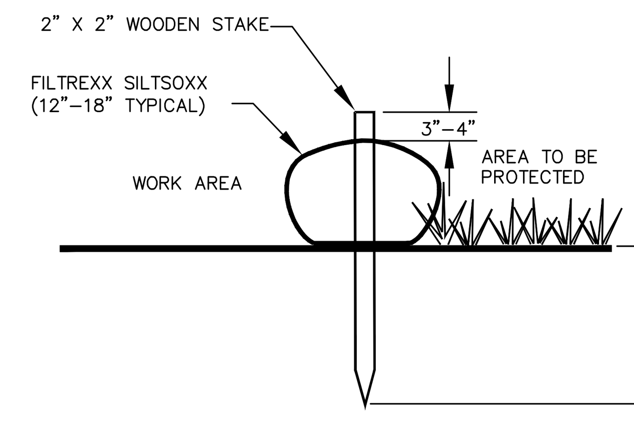
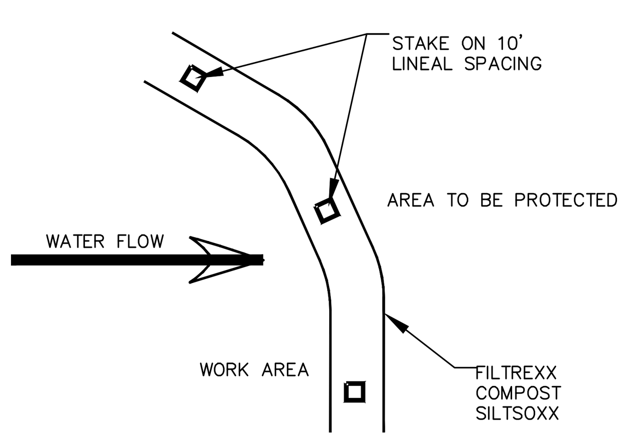


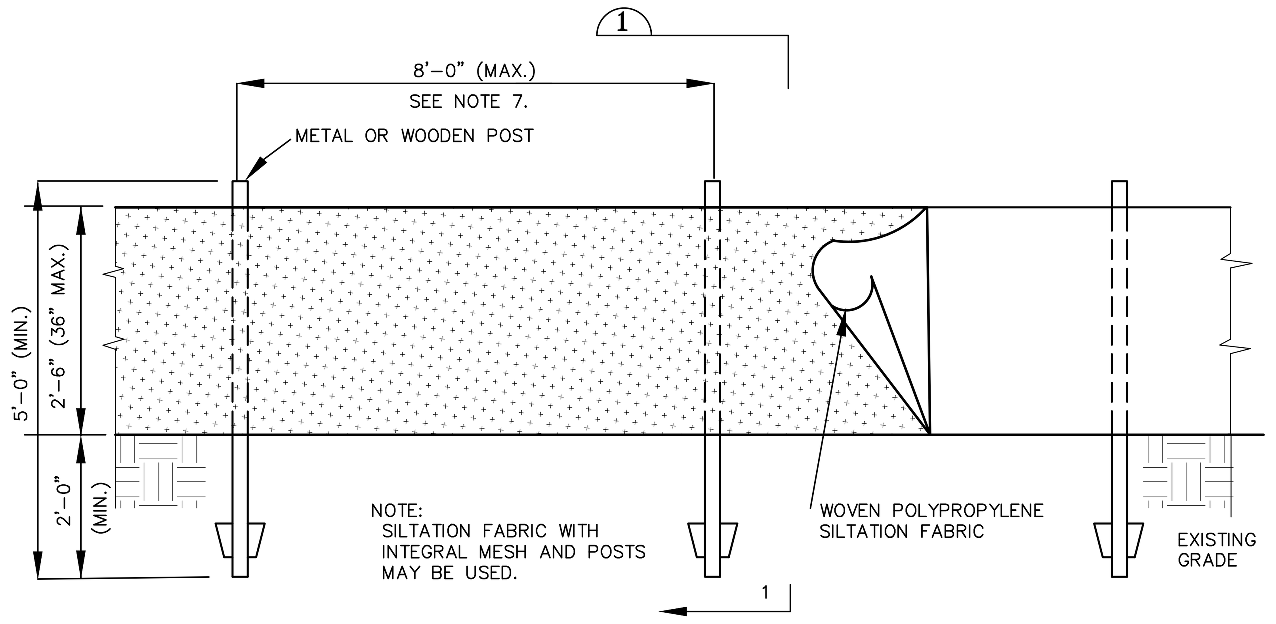
SECTION



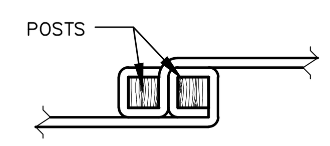
PLAN

NOTES:
1. ALL MATERIALS TO MEET FILTREXX SPECIFICATIONS
2. SILTSOXX COMPOST/SOIL/ROCK/SEED FILL TO MEET APPLICATION REQUIREMENTS
3. SILTSOXX DEPICTED IS FOR MINIMUM SLOPES. GREATER SLOPES MAY REQUIRE LARGER SOCKS PER THE ENGINEER.
4. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.
5. THE SILTSOXX SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

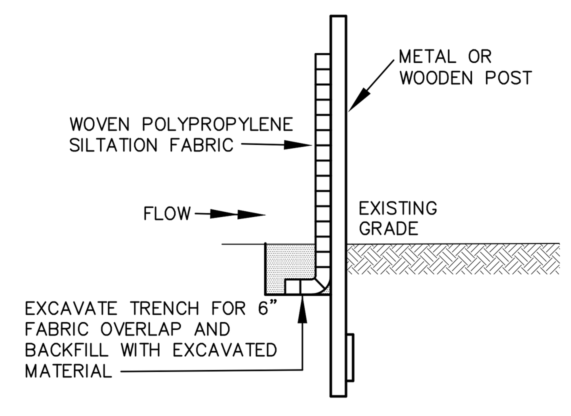
A FILTREXX SILTSOXX DETAIL "SEDIMENT BARRIER OPTION"
N.T.S.



ELEVATION



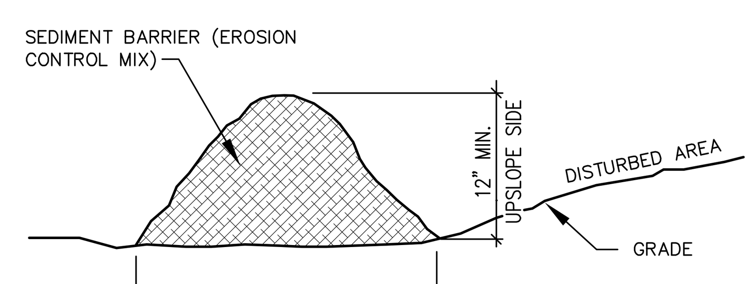
TOP VIEW



SECTION 1

INSTALLATION:
1. EXCAVATE A 6" X 6" TRENCH ALONG THE LINE OF PLACEMENT FOR THE FILTER BARRIER.
2. UNROLL A SECTION AT A TIME AND POSITION THE POSTS AGAINST THE BACK (DOWNSTREAM) WALL OF THE TRENCH.
3. DRIVE POSTS INTO THE GROUND UNTIL APPROXIMATELY 2" OF FABRIC IS LYING ON THE TRENCH BOTTOM.
4. LAY THE TOE–IN FLAP OF FABRIC ONTO THE UNDISTURBED BOTTOM OF THE TRENCH. BACK FILL THE TRENCH AND TAMP THE SOIL.
5. JOIN SECTION AS SHOWN IN TOP VIEW.
6. BARRIER SHALL BE MIRAFI SILT FENCE (100X) OR APPROVED EQUIVALENT.
7. A STONE "FILLET" MAY BE USED FOR ANCHORING FABRIC IF IT CANNOT BE KEYED IN.

B SILT FENCE DETAIL "SEDIMENT BARRIER OPTION"
N.T.S.



NOTES:
1. THE EROSION CONTROL MIX SHALL CONTAIN A WELL GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4" DIAMETER. EROSION CONTROL MIX MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS, AND MATERIAL TOXIC TO PLANT GROWTH.

2.PLACE BARRIER ALONG A RELATIVELY FLAT CONTOUR. CUT TALL GRASSES OR WOODY VEGETATION TO AVOID CREATING VOIDS AND BRIDGES WHERE FINES CAN WASH UNDER THE BARRIER THROUGH GRASS BLADES AND BRANCHES.

3.PLACEMENT OF BARRIER SHOULD BE:
– AT TOE OF THE SLOPE.
– FROZEN GROUND, BEDROCK OR ROOTED FORESTED AREAS.
– THE EDGE OF GRAVEL AND AREAS UNDER CONSTRUCTION.

4. REMOVE SEDIMENT DEPOSITS WHEN THEY REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER.

5. WHEN BARRIER IS DECOMPOSED, CLOGGED WITH SEDIMENT, ERODED OR INEFFECTIVE, IT MUST BE REPLACED OR REPAIRED. THE BARRIER SHOULD BE RESHAPED AS NECESSARY.

C EROSION CONTROL BERM "SEDIMENT BARRIER OPTION"
N.T.S.

EROSION AND SEDIMENTATION NOTES:
1. CONTRACTOR SHALL FOLLOW BEST MANAGEMENT PRACTICES OF THE CUMBERLAND COUNTY SOIL CONSERVATION SERVICE AND THE MAINE DEP BEST MANAGEMENT PRACTICES HANDBOOK.

GENERAL EROSION AND SEDIMENTATION CONTROL PRACTICES:
EROSION/SEDIMENT CONTROL DEVICES:
THE FOLLOWING EROSION SEDIMENTATION CONTROL DEVICES ARE PROPOSED FOR CONSTRUCTION ON THIS PROJECT. INSTALL THESE DEVICES AS INDICATED ON THE PLANS.

1. SEDIMENT BARRIER: SILTSOXX OR APPROVED EQUAL WILL BE INSTALLED ALONG THE DOWN GRADING EDGES OF DISTURBED AREAS TO TRAP RUNOFF BORNE SEDIMENTS UNTIL THE SITE IS STABILIZED. IN AREAS WHERE STORMWATER DISCHARGES THE SEDIMENT BARRIER WILL BE REINFORCED WITH HAY BALES TO HELP MAINTAIN THE INTEGRITY OF THE SEDIMENT BARRIER AND TO PROVIDE ADDITIONAL TREATMENT.

2. HAY BALES: HAY BALES TO BE PLACED IN LOW FLOW DRAINAGE SWALES AND PATHS TO TRAP SEDIMENTS AND REDUCE RUNOFF VELOCITIES. DO NOT PLACE HAY BALES IN FLOWING WATER OR STREAMS.

3. RIPRAP: PROVIDE RIPRAP IN AREAS WHERE CULVERTS DISCHARGE OR AS SHOWN ON THE PLANS.

4. LOAM, SEED, & MULCH: ALL DISTURBED AREAS, WHICH ARE NOT OTHERWISE TREATED, SHALL RECEIVE PERMANENT SEEDING AND MULCH TO STABILIZE THE DISTURBED AREAS. THE DISTURBED AREAS WILL BE REVEGETATED WITHIN 5 DAYS OF FINAL GRADING. SEEDING REQUIREMENTS ARE PROVIDED AT THE END OF THIS SPECIFICATION.

5. STRAW AND HAY MULCH: USED TO COVER DENUDED AREAS UNTIL PERMANENT SEED OR EROSION CONTROL MEASURES ARE IN PLACE. MULCH BY ITSELF CAN BE USED ON SLOPES LESS THAN 15% IN SUMMER AND 8% IN WINTER. JUTE MESH IS TO BE USED OVER MULCH ONLY.

6. IN LIEU OF MULCH, USE EROSION CONTROL BLANKET (EQUAL TO NORTH AMERICAN GREEN SC150) TO STABILIZE AREAS OF CONCENTRATED FLOW AND DRAINAGE WAYS.

TEMPORARY EROSION/SEDIMENTATION CONTROL MEASURES:
PROVIDE THE FOLLOWING TEMPORARY EROSION/SEDIMENTATION CONTROL MEASURES DURING CONSTRUCTION OF THE DEVELOPMENT:

1. SEDIMENT BARRIER ALONG THE DOWNGRADIENT SIDE OF THE PARKING AREAS AND OF ALL FILL SECTIONS. THE SEDIMENT BARRIER WILL REMAIN IN PLACE UNTIL THE SITE IS 85% REVEGETATED.

2. HAY BALES PLACED AT KEY LOCATIONS TO SUPPLEMENT THE SEDIMENT BARRIER.

3. PROTECT TEMPORARY STOCKPILES OF STUMPS, GRUBBINGS, OR COMMON EXCAVATION AS FOLLOWS:
A. SOIL STOCKPILE SIDE SLOPES SHALL NOT EXCEED 2:1.
B. AVOID PLACING TEMPORARY STOCKPILES IN AREAS WITH SLOPES OVER 10 PERCENT, OR NEAR DRAINAGE SWALES. SEE ITEM 3 IN CONSTRUCTION PHASE NOTES BELOW.
C. STABILIZE STOCKPILES WITHIN 7 DAYS BY TEMPORARILY SEEDING WITH A HYDROSEED METHOD CONTAINING AN EMULSIFIED MULCH TACKIFIER OR BY COVERING THE STOCKPILE WITH MULCH.
D. SURROUND STOCKPILE SOIL WITH SEDIMENT BARRIER AT BASE OF PILE.

4. ALL DENUDED AREAS WHICH HAVE BEEN ROUGH GRADED AND ARE NOT LOCATED WITHIN THE BUILDING PAD, OR PARKING AND DRIVEWAY SUBBASE AREA SHALL RECEIVE MULCH WITHIN 30 DAYS OF INITIAL DISTURBANCE OF SOIL OR WITHIN 7 DAYS AFTER COMPLETING THE ROUGH GRADING OPERATIONS. IN THE EVENT THE CONTRACTOR COMPLETES FINAL GRADING AND INSTALLATION OF LOAM AND SOD WITHIN THE TIME PERIODS PRESENTED ABOVE, INSTALLATION OF MULCH AND NETTING, WHERE APPLICABLE, IS NOT REQUIRED.

5. IF WORK IS CONDUCTED BETWEEN OCTOBER 15 AND APRIL 15, ALL DENUDED AREAS ARE TO BE COVERED WITH HAY MULCH, APPLIED AT TWICE THE NORMAL APPLICATION RATE, AND ANCHORED WITH FABRIC NETTING. THE PERIOD BETWEEN FINAL GRADING AND MULCHING SHALL BE REDUCED TO A 15 DAY MAXIMUM.

6. TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED ONCE THE SITE HAS BEEN STABILIZED OR IN AREAS WHERE PERMANENT EROSION CONTROL MEASURES HAVE BEEN INSTALLED.

7. WHENEVER PRACTICABLE, NO DISTURBANCE ACTIVITIES SHOULD TAKE PLACE WITHIN 50 FEET OF ANY WETLAND. IF DISTURBANCE ACTIVITIES TAKE PLACE BETWEEN 30 FEET AND 50 FEET OF ANY WETLAND, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE WETLAND, PERIMETER EROSION CONTROLS MUST BE DOUBLED. IF DISTURBANCE ACTIVITIES TAKE PLACE LESS THAN 30 FEET FROM ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED AND DISTURBED AREAS MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 7 DAYS.

8. AREAS WITHIN 75 FT OF A WETLAND WILL BE STABILIZED WITHIN 48 HOURS OF INITIAL DISTURBANCE OF THE SOIL OR PRIOR TO ANY STORM EVENT, WHICHEVER COMES FIRST.

9. ALL AREAS WITHIN 75 FEET OF A WETLAND MUST BE PROTECTED WITH A DOUBLE ROW OF SEDIMENT BARRIERS DURING WINTER CONSTRUCTION (NOVEMBER 1 THROUGH APRIL 15).

10. TEMPORARY SEDIMENT BASINS MAY BE INSTALLED DOWNGRADIENT OF THE DISTURBED AREAS. THESE BASINS MUST BE DESIGNED TO PROVIDE STORAGE FOR EITHER THE CALCULATED RUNOFF FROM A 2–YEAR, 24–HOUR STORM OR PROVIDE FOR 3,600 CUBIC FEET OF CAPACITY PER ACRE DRAINING TO THE BASIN. OUTLET STRUCTURES MUST DISCHARGE WATER FROM THE SURFACE OF THE BASIN WHENEVER POSSIBLE. EROSION CONTROLS AND VELOCITY DISSIPATION DEVICES MUST BE USED IF THE DISCHARGING WATERS ARE LIKELY TO CREATE EROSION. ACCUMULATED SEDIMENT MUST BE REMOVED AS NEEDED FROM THE BASIN TO MAINTAIN AT LEAST ½ OF THE DESIGN CAPACITY OF THE BASIN.

PERMANENT EROSION CONTROL MEASURES:
THE FOLLOWING PERMANENT CONTROL MEASURES ARE REQUIRED BY THIS EROSION/SEDIMENTATION CONTROL PLAN:

1. ALL AREAS DISTURBED DURING CONSTRUCTION, BUT NOT SUBJECT TO OTHER RESTORATION (PAVING, RIPRAP, ETC.), WILL BE LOAMED, LIMED, FERTILIZED AND SEEDED. NATIVE TOPSOIL SHALL BE STOCKPILED AND REUSED FOR FINAL RESTORATION WHEN IT IS OF SUFFICIENT QUALITY.

2. SLOPES GREATER THAN 2:1 WILL RECEIVE RIPRAP. (NONE ANTICIPATED)

POST-CONSTRUCTION REVEGETATION:
THE FOLLOWING GENERAL PRACTICES WILL BE USED TO PREVENT EROSION AS SOON AS AN AREA IS READY TO UNDERGO FINAL GRADING.

1. A MINIMUM OF 6" OF LOAM WILL BE SPREAD OVER DISTURBED AREAS AND GRADED TO A UNIFORM DEPTH AND NATURAL APPEARANCE, OR STONE WILL BE PLACED ON SLOPES TO STABILIZE SURFACES.

2. IF FINAL GRADING IS REACHED DURING THE NORMAL GROWING SEASON (4/15 TO 9/15), PERMANENT SEEDING WILL BE DONE AS SPECIFIED BELOW. PRIOR TO SEEDING, LIMESTONE SHALL BE APPLIED AT A RATE OF 138 LBS/1000 SQ. FT. AND 10:20:20 FERTILIZER AT A RATE OF 18.4 LBS/1000 SQ.FT WILL BE APPLIED. BROADCAST SEEDING AT THE FOLLOWING RATES:

LAWNS SHALL BE: ALLEN, STERLING & LATHROP 'TUFFTURF', 70% DIAMOND TALL FESCUE, 20% PLEASURE OLUS PERENNIAL RYEGRASS, 10% BARON KENTUCKY BLUEGRASS. SEEDING RATE SHALL BE 7–LBS./1,000 SQ. FT.

SWALES SHALL BE: WILDFLOWER MEADOW: (SEED) FESTUCA OVINA SHEEP FESCUE; SOW AT A RATE OF 12 OZ. PER 1,000 SQFT. TRIFOLIUM REPENS WHITE CLOVER; SOW AT A RATE OF ½ OZ.PER 1,000 SQFT. (FLOWERS) ACHILLEA MILLEFOLIUM YARROW, AQUILEGEA CANADENSIS COLUMBINE, ASCLEPIAS TUBEROSE BUTTERFLY MILKWEED, ASTER NOVAE–ANGLIAE NEW–ENGLAND ASTER, BAPTISIA AUSTRALIS WILD INDIGO, BOLTONIA ASTEROIDS FALSE ASTER, CHRYSANTHEMUM LEUCANTHEMUM OXEYE DAISY, DIGITALIS PURPUREA FOXGLOVE, ECHINACEA PURPUREA PURPLE CONEFLOWER, LUPINUS PERENNIS LUPINE, MONARDA FISTULOSA BERGAMOT, PAPAVER ORIENTALE ORIENTAL POPY, RUDBECKIA HIRTA BLACK–EYED SUSAN, SALVIA OFFICINALIS SAGE; SOW AT A RATE OF 1/3 OZ. EACH PER 1,000 SQFT. OR 4 OZ. PER 1,000 SQFT. IN COMBINATION

3. AN AREA SHALL BE MULCHED IMMEDIATELY AFTER IS HAS BEEN SEEDED. MULCHING SHALL CONSIST OF HAY MULCH, HYDRO–MULCH, JUTE NET OVER MULCH, PRE–MANUFACTURED EROSION MATS OR ANY SUITABLE SUBSTITUTE DEEMED ACCEPTABLE BY THE DESIGNER.
A. HAY MULCH SHALL BE APPLIED AT THE RATE OF 2 TONS PER ACRE. HAY MULCH SHALL BE SECURED BY EITHER: (NOTE: SOIL SHALL NOT BE VISIBLE)
I. BEING DRIVEN OVER BY TRACKED CONSTRUCTION EQUIPMENT ON GRADES OF 5% AND LESS.
II. BLANKETED BY TACKED PHOTODEGRADABLE/BIODEGRADABLE NETTING, OR WITH SPRAY, ON GRADES GREATER THAN 5%.
III. SEE NOTE 6, GENERAL NOTES, AND NOTE 8, WINTER CONSTRUCTION.
B. HYDRO–MULCH SHALL CONSIST OF A MIXTURE OF EITHER ASPHALT, WOOD FIBER OR PAPER FIBER AND WATER SPRAYED OVER A SEEDED AREA. HYDRO–MULCH SHALL NOT BE USED BETWEEN 9/15 AND 4/15.

4. CONSTRUCTION SHALL BE PLANNED TO ELIMINATE THE NEED FOR SEEDING BETWEEN SEPTEMBER 15 AND APRIL 15. SHOULD SEEDING BE NECESSARY BETWEEN SEPTEMBER 15 AND APRIL 15 THE FOLLOWING PROCEDURE SHALL BE FOLLOWED. ALSO REFER TO NOTE 9 OF WINTER CONSTRUCTION.
A. ONLY UNFROZEN LOAM SHALL BE USED.
B. LOAMING, SEEDING AND MULCHING WILL NOT BE DONE OVER SNOW OR ICE COVER. IF SNOW EXISTS, IT MUST BE REMOVED PRIOR TO PLACEMENT OF SEED.
C. WHERE PERMANENT SEEDING IS NECESSARY, ANNUAL WINTER RYE (1.2 LBS/1000 SQ.FT) SHALL BE ADDED TO THE PREVIOUSLY NOTED AREAS.
D. WHERE TEMPORARY SEEDING IS REQUIRED, ANNUAL WINTER RYE (2.6 LBS/1000 SQ. FT.) SHALL BE SOWN INSTEAD OF THE PREVIOUSLY NOTED SEEDING RATE.
E. FERTILIZING, SEEDING AND MULCHING SHALL BE APPLIED TO LOAM THE DAY THE LOAM IS SPREAD BY MACHINERY.
F. ALTERNATIVE HAY MULCH SHALL BE SECURED WITH PHOTODEGRADABLE/BIODEGRADABLE NETTING. TRACKING BY MACHINERY ALONE WILL NOT SUFFICE.

5. FOLLOWING FINAL SEEDING, THE SITE WILL BE INSPECTED EVERY 30 DAYS UNTIL 85% COVER HAS BEEN ESTABLISHED. RESEEDING WILL BE CARRIED OUT BY THE CONTRACTOR WITHIN 10 DAYS OF NOTIFICATION BY THE ENGINEER THAT THE EXISTING CATCH IS INADEQUATE.

MONITORING SCHEDULE:
THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING, MONITORING, MAINTAINING, REPAIRING, REPLACING AND REMOVING ALL OF THE EROSION AND SEDIMENTATION CONTROLS OR APPOINTING A QUALIFIED SUBCONTRACTOR TO DO SO. MAINTENANCE MEASURES WILL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION CYCLE. AFTER EACH RAINFALL, A VISUAL INSPECTION WILL BE MADE OF ALL EROSION AND SEDIMENTATION CONTROLS AS FOLLOWS:

1. HAY BALE BARRIERS, SEDIMENT BARRIER, AND STONE CHECK DAMS SHALL BE INSPECTED AND REPAIRED ONCE A WEEK OR IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL. SEDIMENT TRAPPED BEHIND THESE BARRIERS SHALL BE EXCAVATED WHEN IT REACHES A DEPTH OF 6" AND REDISTRIBUTED TO AREAS UNDERGOING FINAL GRADING. SHOULD THE HAY BALE BARRIERS PROVE TO BE INEFFECTIVE, THE CONTRACTOR SHALL INSTALL SEDIMENT BARRIER BEHIND THE HAY BALES.

2. VISUALLY INSPECT RIPRAP ONCE A WEEK OR AFTER EACH SIGNIFICANT RAINFALL AND REPAIR AS NEEDED. REMOVE SEDIMENT TRAPPED BEHIND THESE DEVICES ONCE IT ATTAINS A DEPTH EQUAL TO 1/2 THE HEIGHT OF THE DAM OR RISER. DISTRIBUTE REMOVED SEDIMENT OFF–SITE OR TO AN AREA UNDERGOING FINAL GRADING.

3. REVEGETATION OF DISTURBED AREAS WITHIN 25' OF DRAINAGE–COURSE/STREAM WILL BE SEEDED WITH THE "MEADOW AREA MIX" AND INSPECTED ON A WEEKLY BASIS OR AFTER EACH SIGNIFICANT RAINFALL AND RESEEDED AS NEEDED. EXPOSED AREAS WILL BE RESEEDED AS NEEDED UNTIL THE AREA HAS OBTAINED 100% GROWTH RATE. PROVIDE PERMANENT RIPRAP FOR SLOPES IN EXCESS OF 3:1 AND WITHIN 25' OF DRAINAGE COURSE.

HOUSEKEEPING:
SPILL PREVENTION. CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM CONSTRUCTION AND WASTE MATERIALS STORED ON SITE TO ENTER STORMWATER, WHICH INCLUDES STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER. THE SITE CONTRACTOR MUST DEVELOP, AND IMPLEMENT AS NECESSARY, APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING MEASURES.

NOTE: ANY SPILL OR RELEASE OF TOXIC OR HAZARDOUS SUBSTANCES MUST BE REPORTED TO THE DEPARTMENT. FOR OIL SPILLS, CALL 1–800–482–0777 WHICH IS AVAILABLE 24 HOURS A DAY. FOR SPILLS OF TOXIC OR HAZARDOUS MATERIAL, CALL 1–800–452–4664 WHICH IS AVAILABLE 24 HOURS A DAY. FOR MORE INFORMATION, VISIT THE DEPARTMENTS WEBSITE AT : HTTP://WWW.MAINE.GOV/DEP/SPILLS/EMERGSPILLRESP/

GROUNDWATER PROTECTION. DURING CONSTRUCTION, LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO AN INFILTRATION AREA. AN "INFILTRATION AREA" IS ANY AREA OF THE SITE THAT BY DESIGN OR AS A RESULT OF SOILS, TOPOGRAPHY AND OTHER RELEVANT FACTORS ACCUMULATES RUNOFF THAT INFILTRATES INTO THE SOIL. DIKES, BERMS, SUMPS, AND OTHER FORMS OF SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS. ANY PROJECT PROPOSING INFILTRATION OF STORMWATER MUST PROVIDE ADEQUATE PRE–TREATMENT OF STORMWATER PRIOR TO DISCHARGE OF STORMWATER TO THE INFILTRATION AREA, OR PROVIDE FOR TREATMENT WITHIN THE INFILTRATION AREA, IN ORDER TO PREVENT THE ACCUMULATION OF FINES, REDUCTION IN INFILTRATION RATE, AND CONSEQUENT FLOODING AND DESTABILIZATION.

NOTE: LACK OF APPROPRIATE POLLUTANT REMOVAL BEST MANAGEMENT PRACTICES (BMPS) MAY RESULT IN VIOLATIONS OF THE GROUNDWATER QUALITY STANDARD ESTABLISHED BY 38 M.R.S.A. §465–C(1).

FUGITIVE SEDIMENT AND DUST. ACTIONS MUST BE TAKEN TO ENSURE THAT ACTIVITIES DO NOT RESULT IN NOTICEABLE EROSION OF SOILS OR FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION. OIL MAY NOT BE USED FOR DUST CONTROL, BUT OTHER WATER ADDITIVES MAY BE CONSIDERED AS NEEDED. A STABILIZED CONSTRUCTION ENTRANCE (SCE) SHALL BE INSTALLED AT THE END OF THE EXIST PAVED ACCESS TO THE SITE TO MINIMIZE TRACKING OF MUD AND SEDIMENT. IF OFF–SITE TRACKING OCCURS, PUBLIC ROADS SHOULD BE SWEPT IMMEDIATELY AND NO LESS THAN ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS. OPERATIONS DURING DRY MONTHS, THAT EXPERIENCE FUGITIVE DUST PROBLEMS, SHOULD WET DOWN UNPAVED ACCESS ROADS ONCE A WEEK OR MORE FREQUENTLY AS NEEDED WITH A WATER ADDITIVE TO SUPPRESS FUGITIVE SEDIMENT AND DUST.

DEBRIS AND OTHER MATERIALS. MINIMIZE THE EXPOSURE OF CONSTRUCTION DEBRIS, BUILDING AND LANDSCAPING MATERIALS, TRASH, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE AND OTHER MATERIALS TO PRECIPITATION AND STORMWATER RUNOFF. THESE MATERIALS MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.

EXCAVATION DE–WATERING. EXCAVATION DE–WATERING IS THE REMOVAL OF WATER FROM TRENCHES, FOUNDATIONS, COFFER DAMS, PONDS, AND OTHER AREAS WITHIN THE CONSTRUCTION AREA THAT RETAIN WATER AFTER EXCAVATION. NO EXCAVATION DEWATERING IS ANTICIPATED FOR THIS PROJECT. SHOULD IT BE NECESSARY, THE COLLECTED WATER REMOVED FROM THE PONDED AREA, EITHER THROUGH GRAVITY OR PUMPING, MUST BE SPREAD THROUGH NATURAL WOODED BUFFERS OR REMOVED TO AREAS THAT ARE SPECIFICALLY DESIGNED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE, LIKE A COFFERDAM SEDIMENTATION BASIN. AVOID ALLOWING THE WATER TO FLOW OVER DISTURBED AREAS OF THE SITE. A DEWATERING DISCHARGE PLAN SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE FOR APPROVAL.

AUTHORIZED NON–STORMWATER DISCHARGES. IDENTIFY AND PREVENT CONTAMINATION BY NON–STORMWATER DISCHARGES. WHERE ALLOWED NON–STORMWATER DISCHARGES ARE NECESSARY, THEY MUST BE IDENTIFIED AND STEPS SHOULD BE TAKEN TO ENSURE THE IMPLEMENTATION OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR THE NON–STORMWATER COMPONENT(S) OF THE DISCHARGE. AUTHORIZED NON–STORMWATER DISCHARGES ARE:

(a) DISCHARGES FROM FIREFIGHTING ACTIVITY;
(b) PAVEMENT WASHWATER (WHERE SPILLS/LEAKS OF TOXIC OR HAZARDOUS MATERIALS HAVE NOT OCCURRED, UNLESS ALL SPILLED MATERIAL HAD BEEN REMOVED) IF DETERGENTS ARE NOT USED;
(c) UNCONTAMINATED GROUNDWATER OR SPRING WATER;
(d) FOUNDATION OR FOOTER DRAIN–WATER WHERE FLOWS ARE NOT CONTAMINATED;
(e) UNCONTAMINATED EXCAVATION DEWATERING (SEE REQUIREMENTS IN APPENDIX C(5));
(f) POTABLE WATER SOURCES INCLUDING WATERLINE FLUSHINGS; AND
(g) LANDSCAPE IRRIGATION.

UNAUTHORIZED NON–STORMWATER DISCHARGES. THE CONTRACTOR IS NOT AUTHORIZED A DISCHARGE THAT IS MIXED WITH A SOURCE OF NON STORMWATER. SPECIFICALLY, THE DEPARTMENT'S APPROVAL DOES NOT AUTHORIZE DISCHARGES OF THE FOLLOWING:

(a) WASTEWATER FROM THE WASHOUT OR CLEANOUT OF CONCRETE, STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS OR OTHER CONSTRUCTION MATERIALS;
(b) FUELS, OILS OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE;
(c) SOAPS, SOLVENTS, OR DETERGENTS USED IN VEHICLE AND EQUIPMENT WASHING; AND
(d) TOXIC OR HAZARDOUS SUBSTANCES FROM A SPILL OR OTHER RELEASE.

CONSTRUCTION PHASE:
THE FOLLOWING GENERAL PRACTICES WILL BE USED TO PREVENT EROSION DURING CONSTRUCTION OF THIS PROJECT.

1. INSTALL STABILIZED CONSTRUCTION ENTRANCE AND MAINTAIN UNTIL SITE IS PAVED.

2. ONLY THOSE AREAS NECESSARY FOR CONSTRUCTION WILL BE DISTURBED.

3. PRIOR TO THE START OF CONSTRUCTION, SEDIMENT BARRIER WILL BE INSTALLED ACROSS THE SLOPE(S), ON THE CONTOUR, AT OR JUST BELOW THE LIMITS OF CLEARING OR GRUBBING, AND/OR JUST ABOVE ANY ADJACENT TRAVELLED WAY TO PROTECT IT FROM CONSTRUCTION–RELATED EROSION.

4. CLEAR AND GRUB WORK SITE AS NEEDED TO EXECUTE PLANS USING CAUTION NOT TO OVER EXPOSE THE SITE.

5. STORMWATER MANAGEMENT SYSTEM WILL BE INSTALLED PRIOR TO CONSTRUCTION OF SITE ELEMENTS THAT DISCHARGE TO THESE SYSTEMS. CATCH BASIN INLET PROTECTION SHALL BE INSTALLED IN ALL NEW AND EXISTING CATCH BASINS THAT WILL RECEIVE RUNOFF FROM THE PROJECT. NO STORMWATER SHOULD BE DIRECTED TO ANY STORMWATER BASINS UNTIL THE SITE IS COMPLETELY STABILIZED.

6. DISTURBED AREAS WILL BE PERMANENTLY STABILIZED WITHIN 15 DAYS OF FINAL GRADING, OR TEMPORARILY STABILIZED WITHIN 30 DAYS OF THE INITIAL DISTURBANCES OF SOILS. DISTURBED AREAS WILL BE STABILIZED BEFORE STORMS. LOAM WILL BE SAVED FOR LATER USE WHERE POSSIBLE. EXCESS SOIL MATERIALS WILL BE USED AS FILL OR REMOVED FROM SITE TO AN APPROVED LOCATION.

7. AT A MINIMUM, THE EROSION CONTROL MEASURES SHALL BE REVIEWED AND REPAIRED ONCE A WEEK OR IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL OR SNOWMELT. SEDIMENT TRAPPED BEHIND THESE BARRIERS SHALL BE EXCAVATED WHEN IT REACHES A DEPTH OF 6 INCHES AND BE DISCARDED ON THE SITE. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED AS INDICATED ON THE DRAWINGS.

8. CONSTRUCT PAVEMENT AREAS AND BUILDINGS.

9. LOAM, LIME, FERTILIZE, SEED, AND MULCH LANDSCAPED AND OTHER DISTURBED AREAS.

10. ONCE THE SITE IS STABILIZED AND A 90% CATCH OF VEGETATION HAS BEEN OBTAINED, REMOVE ALL TEMPORARY EROSION CONTROL MEASURES.

11. TOUCH UP LOAM AND SEED.

NOTE: ALL DENUDED AREAS NOT SUBJECT TO FINAL PAVING, RIPRAP OR GRAVEL SHALL BE REVEGETATED.

EROSION CONTROL DURING WINTER CONSTRUCTION:
1. WINTER CONSTRUCTION PERIOD: NOVEMBER 1 THROUGH APRIL 15.

2. WINTER EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME.

3. EXPOSED AREA SHALL BE LIMITED TO THOSE AREAS TO BE MULCHED IN ONE DAY PRIOR TO ANY SNOW EVENT. AT THE END OF EACH WORK WEEK NO AREAS MAY BE LEFT UNSTABILIZED OVER THE WEEKEND.

4. CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED, SUCH THAT NO LARGER AREA OF THE SITE IS WITHOUT EROSION CONTROL PROTECTION AS LISTED IN ITEM 2 ABOVE.

5. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED WITH STRAW OR HAY AT A RATE OF 150 LB. PER 1000 S.F. (WITH OR WITHOUT SEEDING) OR DORMANT SEEDED, MULCHED AND ANCHORED SUCH THAT SOIL SURFACE IS NOT VISIBLE THROUGH THE MULCH. NOTE: AN AREA IS ALSO CONSIDERED STABLE IF SODDED, COVERED WITH GRAVEL (PARKING LOTS) OR STRUCTURAL SAND.

6. BETWEEN THE DATES OF OCTOBER 15 AND APRIL 1, LOAM OR SEED WILL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES THE SLOPES SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1 AND IF THE EXPOSED AREA HAS BEEN LOAMED, FINAL GRADED WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED. IF CONSTRUCTION CONTINUES DURING FREEZING WEATHER, ALL EXPOSED AREAS SHALL BE CONTINUOUSLY GRADED BEFORE FREEZING AND THE SURFACE TEMPORARILY PROTECTED FROM EROSION BY THE APPLICATION OF MULCH. SLOPES SHALL NOT BE LEFT UNEXPOSED OVER THE WINTER OR ANY OTHER EXTENDED TIME OF WORK SUSPENSION UNLESS TREATED IN THE ABOVE MANNER. UNTIL SUCH TIME AS WEATHER CONDITIONS ALLOW, DITCHES TO BE FINISHED WITH THE PERMANENT SURFACE TREATMENT, EROSION SHALL BE CONTROLLED BY THE INSTALLATION OF BALES OF HAY, SEDIMENT BARRIER OR STONE CHECK DAMS IN ACCORDANCE WITH THE STANDARD DETAILS SHOWN ON THE DESIGN DRAWINGS. NOTE: DORMANT SEEDING SHOULD NOT BE ATTEMPTED UNLESS SOIL TEMPERATURE REMAINS BELOW 50 DEGREES AND DAY TIME TEMPERATURES REMAIN IN THE 30'S.

7. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS, SLOPES GREATER THAN 3% FOR SLOPES EXPOSED TO DIRECT WINDS AND FOR ALL OTHER SLOPES GREATER THAN 8%. VEGETATED DRAINAGE SWALES SHALL BE LINED WITH STRAW–COCONUT EROSION CONTROL BLANKET (NORTH AMERICAN GREEN SC150 OR APPROVED EQUAL).

8. BETWEEN THE DATES OF OCTOBER 15 TO NOVEMBER 1, WINTER RYE IS RECOMMENDED FOR STABILIZATION. AFTER NOVEMBER 1, WINTER RYE IS NOT EFFECTIVE. AROUND NOVEMBER 15 OR LATER, ONCE TEMPERATURES OF THE AIR AND SOIL PERMIT, DORMANT SEEDING IS EFFECTIVE.

9. IN THE EVENT OF SNOWFALL (FRESH OR CUMULATIVE) GREATER THAN 1 INCH DURING WINTER CONSTRUCTION PERIOD ALL SNOW SHALL BE REMOVED FROM THE AREAS OF SEEDING AND MULCHING PRIOR TO PLACEMENT.

SITE INSPECTION AND MAINTENANCE:
1. WEEKLY INSPECTIONS, AS WELL AS ROUTINE INSPECTIONS FOLLOWING RAIN FALLS, SHALL BE CONDUCTED BY THE GENERAL CONTRACTOR OF ALL TEMPORARY AND PERMANENT EROSION CONTROL DEVICES UNTIL FINAL ACCEPTANCE OF THE PROJECT (85% GRASS CATCH). NECESSARY REPAIRS SHALL BE MADE TO CORRECT UNDERMINING OR DETERIORATION. FINAL ACCEPTANCE SHALL INCLUDE A SITE INSPECTION TO VERIFY THE STABILITY OF ALL DISTURBED AREAS AND SLOPES. UNTIL FINAL INSPECTION, ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL IMMEDIATELY BE CLEANED, AND REPAIRED BY THE GENERAL CONTRACTOR AS REQUIRED. DISPOSAL OF ALL TEMPORARY EROSION AND CONTROL DEVICES SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.

IT IS RECOMMENDED THAT THE OWNER HIRE THE SERVICES OF THE DESIGN ENGINEER TO PROVIDE COMPLIANCE INSPECTIONS (DURING ACTIVE CONSTRUCTION) RELATIVE TO IMPLEMENTATION OF THE STORMWATER AND EROSION CONTROL PLANS. SUCH INSPECTIONS SHOULD BE LIMITED TO ONCE A WEEK OR AS NECESSARY AND BE REPORTABLE TO THE OWNER, TOWN AND DEP.

2. SHORT–TERM SEDIMENTATION MAINTENANCE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CLEAN OUT ALL SWALES AND STRUCTURES PRIOR TO TURNING PROJECT OVER.

3. LONG–TERM PROVISIONS FOR PERMANENT MAINTENANCE OF ALL EROSION AND SEDIMENTATION CONTROL DEVICES AFTER ACCEPTANCE OF THE PROJECT SHALL BE THE RESPONSIBILITY OF THE OWNER.

3.	04–21–20	SUBMITTED TO TOWN FOR FINAL REVIEW	JJM
2.	02–19–20	REVISED PER TOWN COMMENTS	JJM
1.	02–04–20	SUBMITTED TO TOWN FOR SKETCH REVIEW	JJM

PROGRESS PRINT
THIS PLAN IS ISSUED FOR REVIEW AND INFORMATION PURPOSES ONLY. THIS PLAN IS SUBJECT TO CHANGE AND IS NOT FOR PRICING OR CONSTRUCTION. PRICING BASED ON THIS PLAN IS NOT BINDING UNLESS SIGNED BY BOTH CONTRACTOR AND OWNER.

STATE OF MAINE
JOSEPH J. MARDEN
12828
LICENSED
PROFESSIONAL ENGINEER
05–06–20

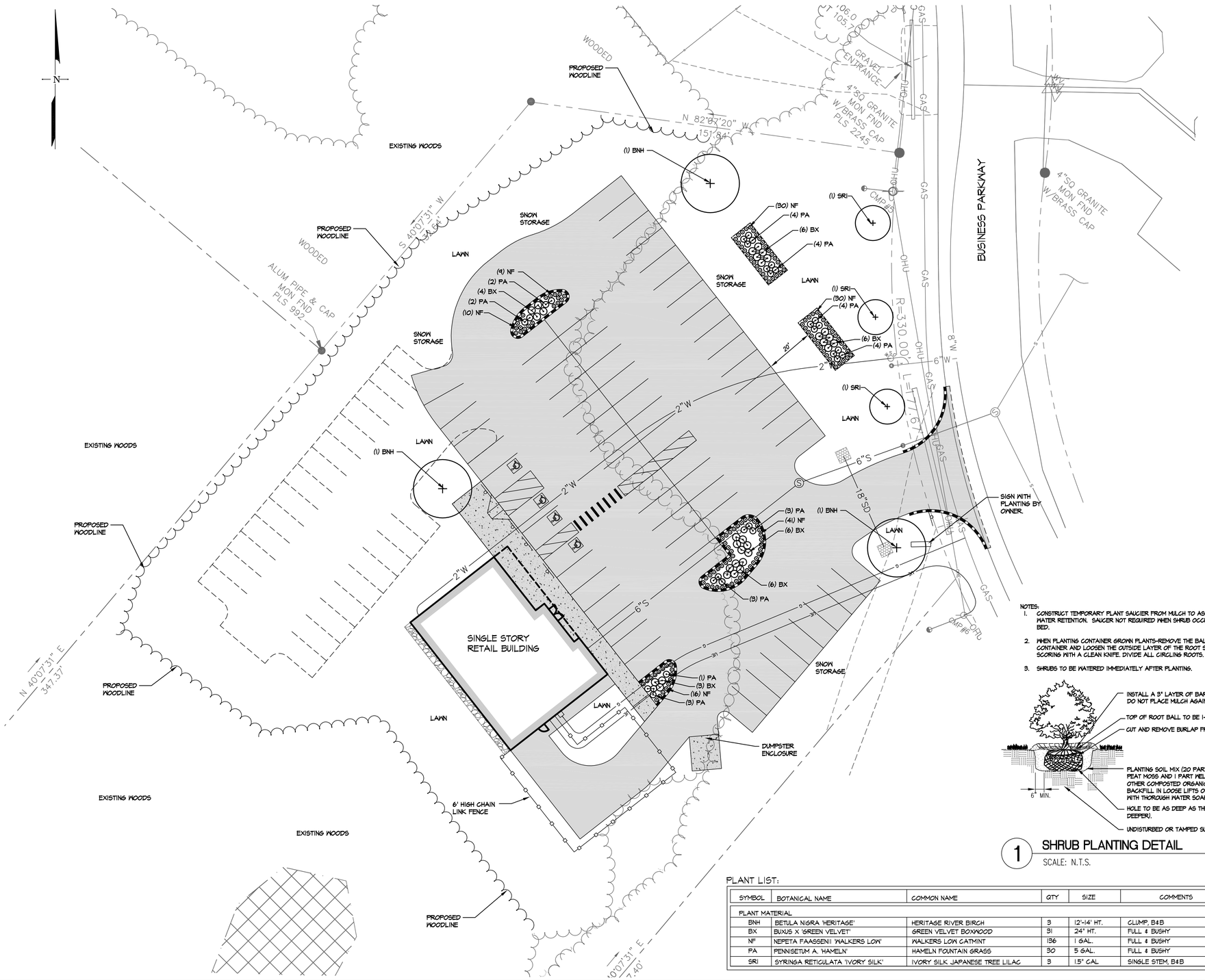
TITLE:
EROSION CONTROL DETAILS AND NOTES

PROJECT:
MARIJUANA STORE – ADULT USE
4 BUSINESS PARKWAY, BRUNSWICK, ME 04011

OWNER:
GJORIS LLC
135 MAINE STREET, SUITE 129, BRUNSWICK, ME 04011

SITELINES
119 PURINTON ROAD, SUITE A
BRUNSWICK, MAINE 04011
207.725.1200
CIVIL ENGINEERS ▪ PLANNERS ▪ LAND SURVEYORS

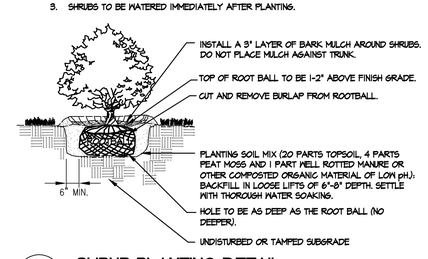
FIELD WK: MC/MH	SCALE: NTS	SHEET:
DRN BY: JJM	JOB #: 3781.02	C7
CH'D BY: CYN	MAP/LOT: 17/66	
DATE: 01-30-20	FILE: 3781.02-COVER-DET	



LANDSCAPE NOTES:

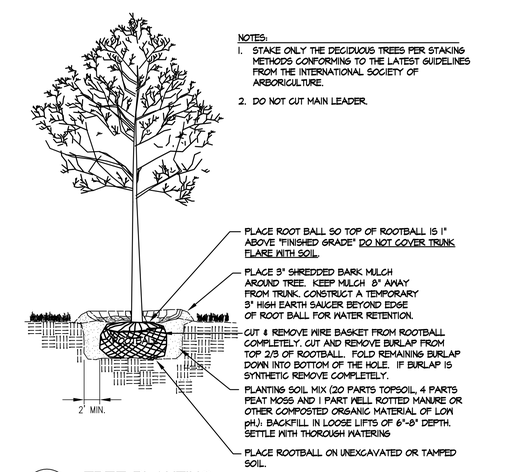
1. PRIOR TO THE START OF ANY EXCAVATION FOR THE PROJECT BOTH ON AND OFF THE SITE, THE CONTRACTOR SHALL NOTIFY DIGSAFE AND BE PROVIDED WITH A DIGSAFE NUMBER INDICATING THAT ALL EXISTING UTILITIES HAVE BEEN LOCATED AND MARKED.
2. CONTRACTOR SHALL VERIFY ALL TREE REMOVALS WITH LANDSCAPE ARCHITECT PRIOR TO START OF CONSTRUCTION. ANY TREES MARKED TO REMAIN THAT ARE DAMAGED OR REMOVED DURING CONSTRUCTION, SHALL BE REPLACED WITH TREES EQUALING THE SPECIES AND CALIPER LOST.
3. LANDSCAPE CONTRACTOR IS ENCOURAGED TO PROVIDE THE LANDSCAPE ARCHITECT WITH CONCERNS AND/OR SUGGESTIONS WITH REGARDS TO PROPOSED PLANT MATERIAL SELECTION PRIOR TO PLACING A PURCHASE ORDER.
4. THE LANDSCAPE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE ALL PLANTINGS SHOWN GRAPHICALLY ON THIS DRAWING. CLARIFY ANY DISCREPANCIES WITH THE LANDSCAPE ARCHITECT PRIOR TO PRICING ANY PLANT MATERIAL.
5. ALL PLANT MATERIALS SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE LATEST EDITION OF THE AMERICAN ASSOCIATION OF NURSERYMEN'S "AMERICAN STANDARD OF NURSERY STOCK".
6. ALL PLANT MATERIALS ARE SUBJECT TO THE APPROVAL OF THE OWNER'S REPRESENTATIVE AT THE SITE. PLANTS WHICH ARE REJECTED SHALL BE REMOVED FROM THE SITE IMMEDIATELY AND REPLACED AT NO ADDITIONAL COST TO THE OWNER.
7. MULCH FOR PLANTED AREAS TO BE AGED SPRUCE AND FIR BARK, PARTIALLY DECOMPOSED, DARK BROWN IN COLOR AND FREE OF WOOD CHIPS THICKER THAN 1/4 INCH.
8. CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM ALL BUILDING FOUNDATIONS, STRUCTURES AND PLANTING BEDS.
9. NO PLANTS SHALL BE PLANTED BEFORE ACCEPTANCE OF ROUGH GRADING AND BEFORE CONSTRUCTION HAS BEEN COMPLETED IN THE IMMEDIATE AREA.
10. ALL SHRUB GROUPINGS SHALL BE INCORPORATED INTO BEDS. WHERE MULCHED PLANT BED ABUTS LAWN, CONTRACTOR SHALL PROVIDE A TURF CUT EDGE.
11. ALL TREES ALONG WALK AND PARKING AREAS SHALL BEGIN BRANCHING AT 6' HT. MIN.
12. ALL PLANT MATERIAL OR REPRESENTATIVE SAMPLES SHALL BE LEGIBLY TAGGED WITH PROPER COMMON AND BOTANICAL NAMES. TAGS SHALL REMAIN ON THE PLANTS UNTIL FINAL ACCEPTANCE.
13. CONTRACTOR SHALL LOAM DISTURBED AREAS AS FOLLOWS:
    - LAWN AREAS 6" DEPTH OF TOPSOIL (LOAM).
    - PLANT BEDS & CURBED PARKING LOT ISLANDS 18" DEPTH OF TOPSOIL (LOAM).
    - TREE LOCATIONS 24" DEPTH OF TOPSOIL (LOAM) IN A 10'X10' SQUARE IN LOCATION WHERE THE PROPOSED TREE IS TO BE PLANTED.
14. LAWN AREAS SHALL BE SEEDED WITH "PARK MIX" AS DISTRIBUTED BY ALLEN STERLING & LOTHRUP OF FALMOUTH MAINE. SPREAD SEED AT A SEEDING RATE OF 5 LBS. PER 1,000 S.F.
15. CONTRACTOR SHALL BEGIN MAINTENANCE IMMEDIATELY AFTER PLANTING AND WILL CONTINUE UNTIL FINAL ACCEPTANCE. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MEANS AND METHODS OF WATERING AND MAINTENANCE.
16. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL PLANT MATERIALS FOR ONE (1) FULL YEAR FROM DATE OF FINAL ACCEPTANCE.
17. SCREENED IMAGES SHOW EXISTING CONDITIONS. WHERE EXISTING CONDITIONS LIE UNDER OR ARE IMPINGED UPON BY PROPOSED BUILDINGS AND OR SITE ELEMENTS, THE EXISTING CONDITION WILL BE REMOVED, ABANDONED AND OR CAPPED OR DEMOLISHED AS REQUIRED.
18. SEE CIVIL DRAWINGS FOR ADDITIONAL SITE INFORMATION.
19. THE CONTRACTOR SHALL INSTALL WATERING BAGS SUCH AS THE TREEGATOR ON ALL TREES AT THE TIME OF INSTALLATION. THESE BAGS SHALL BECOME THE PROPERTY OF THE OWNER.

NOTES:
1. CONSTRUCT TEMPORARY PLANT SAUCER FROM MULCH TO ASSIST WITH WATER RETENTION. SAUCER NOT REQUIRED WHEN SHRUB OCCURS IN A PLANT BED.
2. WHEN PLANTING CONTAINER GROWN PLANTS-REMOVE THE BALL FROM THE CONTAINER AND LOOSEN THE OUTSIDE LAYER OF THE ROOT SYSTEM BY SCORING WITH A CLEAN KNIFE. DIVIDE ALL CIRCLING ROOTS.
3. SHRUBS TO BE WATERED IMMEDIATELY AFTER PLANTING.



1 SHRUB PLANTING DETAIL
SCALE: N.T.S.

NOTES:
1. STAKE ONLY THE DECIDUOUS TREES PER STAKING METHODS CONFORMING TO THE LATEST GUIDELINES FROM THE INTERNATIONAL SOCIETY OF ARBORICULTURE.
2. DO NOT CUT MAIN LEADER.



2 TREE PLANTING
SCALE: N.T.S.

PLANT LIST:

SYMBOL	BOTANICAL NAME	COMMON NAME	QTY	SIZE	COMMENTS
PLANT MATERIAL					
BNH	BETULA NIGRA 'HERITAGE'	HERITAGE RIVER BIRCH	3	12'-14' HT.	CLUMP, B&B
BX	BUXUS X 'GREEN VELVET'	GREEN VELVET BOXWOOD	31	24" HT.	FULL & BUSHY
NF	NEPETA FAASSENII 'WALKERS LOW'	WALKERS LOW CATMINT	136	1 GAL.	FULL & BUSHY
PA	PENNISETUM A. 'HAMELN'	HAMELN FOUNTAIN GRASS	30	5 GAL.	FULL & BUSHY
SRI	SYRINGA RETICULATA 'IVORY SILK'	IVORY SILK JAPANESE TREE LILAC	3	1.5" CAL	SINGLE STEM, B&B

20 0 10 20
GRAPHIC SCALE 1"=20'

REV.	DATE	STATUS	BY	CHKD.	APPD.	REV.	DATE	STATUS	BY	CHKD.	APPD.
B	5/4/20	REVISED PER COMMENTS AND RESUBMITTED	DEPT.	PBB	PBB						
A	4/4/20	ISSUED TO THE TOWN OF BRUNSWICK FOR SITE PLAN REVIEW	DEPT.	PBB	PBB						

LICENSED LANDSCAPE ARCHITECT
PETER B. BIEGEL
No. 2824
STATE OF MAINE
5/4/20

LAND DESIGN SOLUTIONS
LAND PLANNING, SITE PLANNING & LANDSCAPE ARCHITECTURE
1 Faraday Drive, Suite 7, Cumberland, ME 04021 tel:(207) 894-1717

OWNER:
SITELINES
119 PURINTON ROAD, SUITE A, BRUNSWICK, MAINE 04011

DESIGN: PBB
DRAWN: DEPT.
CHKD: PBB
DATE: MARCH 2020
SCALE: 1"=20'

PROPOSED RETAIL BUSINESS
4 BUSINESS PARKWAY, BRUNSWICK, MAINE

LANDSCAPE PLAN

PROJ. NO. 20-110
DWG. NO. L-1
REV. B

PLAN VIEW

NOTES:
1) EXACT MOUNTING DETAILS TO BE DETERMINED AT JOBSITE BY OTHERS.
2) CALCULATIONS MAY or MAY NOT SHOW THE EFFECT OF SHADOWING CAUSED BY BUILDINGS AND OBJECTS WITHIN THE CALCULATED SPACE OR IN THE SITE AREA.
3) READINGS SHOWN ARE INITIAL HORIZONTAL FOOTCANDLES ON A FLAT SITE WITHOUT REFLECTIONS OR OBSTRUCTIONS UNLESS OTHERWISE INDICATED.
4) THIS CALCULATION IS BASED ON LIMITED INFORMATION SUPPLIED BY OTHERS TO SWANEY LIGHTING ASSOCIATES AND STANDARD ASSUMPTIONS OF THE SPACE AND/OR SITE.
5) CONFORMANCE TO CODES AND OTHER LOCAL REQUIREMENTS AS DETERMINED BY THE AHJ ARE THE RESPONSIBILITY OF THE OWNER AND/OR THE OWNER'S REPRESENTATIVE.
6) THIS LAYOUT DRAWING MUST BE COORDINATED WITH THE SITE LOCATION FOR CORRECT FIXTURE ORIENTATION.
7) DOCUMENTS PRINTED OR PLOTTED FROM ELECTRONIC FILES MAY APPEAR AT OTHER THAN THE DESIRED OR ASSUMED GRAPHIC SCALES. IT IS THE RESPONSIBILITY OF THE RECIPIENT TO VERIFY THAT THE PRINTED OR PLOTTED-TO-SCALE DRAWING IS PRINTED TO SCALE.

Calculation Summary

Label	Avg	Max	Min	Avg/Min	Max/Min
SITE	1.07	7.3	0.0	N.A.	N.A.
PARKING	3.59	7.3	0.3	11.97	24.33

Luminaire Schedule (note fixture cataloge numbers are not complete)

Type	Qty	Lum. Lumens	LLF	Lum. Watts	Description
SA	4	23120	0.900	230.6	VP-L-80L-235-3K7-4
SB	2	20234	0.900	235	VP-L-80L-235-3K7-4W
SC	1	8690	0.900	80.52	VP-S-36L-80-5K7-4W

L2

site 4-20-20.AGI

GENERATED BY SWANEY LIGHTING, SCARBOROUGH ME - 207-883-7100 - swaneylighting.com

TITLE
4 BUSINESS PARKWAY
BRUNSWICK, ME
SITE LIGHTING LAYOUT

Date:4/20/2020

GENERATED FOR:
SITELINES

SCALE NOT TO SCALE

Page 1 of 1

SWANEY LIGHTING ASSOCIATES, INC.

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