CITY OF LEWISTON
PLANNING BOARD MEETING
Monday, February 22, 2016 – 5:30 P.M.
City Council Chambers – First Floor
Lewiston City Building
27 Pine Street, Lewiston, ME

AGENDA

I. ROLL CALL

II. ADJUSTMENTS TO THE AGENDA

III. CORRESPONDENCE

IV. PUBLIC HEARINGS:

a) An application submitted by Hebert Construction on behalf of the Lewiston School Department for the construction of a classroom addition at the Farwell Elementary School located at 84 Farwell Street.
b) Public hearing to review and provide a recommendation for the City Council's consideration adoption of a new comprehensive plan for the City of Lewiston.

V. OTHER BUSINESS:

a) Any other business Planning Board Members may have relating to the duties of the Lewiston Planning Board.

VI. READING OF THE MINUTES: Motion to adopt the January 11, 2016, January 25, 2016 and February 1, 2016 and February 8, 2016 draft minutes.

VII. ADJOURNMENT

The City of Lewiston is an EOE. For more information please visit our website @ www.lewistonmaine.gov and click on the Non-Discrimination Policy.

CITY OF LEWISTON

Department of Planning & Code Enforcement

Lewiston
All-America City
2007

TO: **Planning Board**
FROM: **David Hediger, City Planner**
DATE: **January 25, 2016**
RE: **February 22, 2016 Planning Board Agenda Item IV(a)**

An application submitted by Hebert Construction on behalf of the Lewiston School Department for the construction of a classroom addition at the Farwell Elementary School located at 84 Farwell Street.

Hebert Construction has submitted an application on behalf of the Lewiston School Department for the construction of a new 7,500 square foot addition to the Farwell Elementary School. The addition will consist of six classrooms and a new parking 21 space parking lot resulting in two net new parking spaces.

This 6.01 acre parcel is located in the Neighborhood Conservation "A" (NCA) district in which municipal buildings and facilities are allowed as a conditional use. Therefore, the application references both the development review criteria of Article XIII, Section 4 and the conditional use criteria of Article X, Section 3.

Previous approvals by the Board include approval on September 26, 2005 for the construction of a new 50,000 SF school and on May 9, 2011 for a bus entrance and additional parking resulting in 7,392 SF of new impervious area.

Staff has worked closely with the applicant to address a number of concerns. At this time, the applicants have submitted revised applications with no outstanding items. Staff notes the following with respect to the applicants request for approval:

- The proposed improvements will result in 13,839 SF of new impervious area with 41,000 SF of disturbed area. While the project is located in the urban impaired watershed of Jepson Brook, the stormwater design is limited to quantity/flooding standards and does not need to include water quality. The applicant has designed a detention pond to the city's satisfaction.
- Certain channelized sections of Jepson Brook approach exceeding capacity during certain storm events due in part to years of unregulated development and uncontrolled runoff from properties in the watershed. This was shared with the applicant. With the sites proposed improvements, the applicant was able to compensate for 8,140 SF impervious roof area that was pervious untreated resulting in 23,520 SF of impervious area being treated for flood standards. This additional effort is appreciated by city staff in effort to reduce the flooding of Jepson Brook.

- The project will result in the loss of 19 parking spaces to be replaced with 21 new spaces. The new total amount of parking spaces shall be 88. Article XII, Section 17(d) requires 1.5 parking spaces per classroom. The total number of classrooms including the resource rooms is 26 which results in a minimum for 39 parking spaces required. Recognizing parking can be tight at times, the applicant has made an effort to ensure parking continues to exceed code requirements and to not lose any spaces. The new parking area proposed will be dedicated to staff and somewhat separated from main traffic aisles which is expected to help with traffic flow during busy periods of the day.
- The applicant is requesting a modification of the 30' NCA side yard requirement to construct paved parking no closer than 15' from the side property line pursuant to Article IX, Section 3(10). Existing impervious areas closer than 15' predate the current zoning provisions and did not require modifications. Staff supports the requested modification.
- NCA district requires that any side or rear yard for uses other than residential located within 50' of a dwelling shall be maintained as a buffer area meeting the standard of Article XIII. To meet this requirement, the applicant will be planting row of 3' to 5' tall plantings along the property line of the single family home at 88 Warren Avenue. Existing impervious areas predate the current zoning provisions and were not required to be buffered.
- When the new school/expansion was approved in 2005 enrollment was expected to increase by 121 students with an additional 20 staff. At that time when considering only the new student increase, a traffic movement permit (TMP) was not required. With this proposed classroom expansion, it is expected an additional 100 students will attend Farwell. The total increase since 2005 remains under the TMP threshold of 238 students, at which time traffic analysis and study may be required.

The Fire Department's concerns will be addressed through the building permit process. All other concerns raised by staff at this time have been addressed. Staff recommends approval with the following condition:

- Inspection of the stormwater system shall be provided to the city by the designing engineer along with a final written statement indicating that the stormwater system has been completed in accordance with the approved plans prior issuance of a certificate of occupancy.

ACTIONS NECESSARY

Make finding that the application meets all of the necessary criteria contained in the Zoning and Land Use Code, including Article IX, Section 3(10), Article X, Section 3, and Article XIII, Section 4 of the Zoning and Land Use Code and to grant approval to Hebert Construction and the Lewiston School Department for the construction of a six classroom addition and a new parking 21 space parking lot (including, if any, specific conditions raised by the Planning Board or staff).

Lewiston Fire Department

Paul M. LeClair
Fire Chief

Bruce McKay
Assistant Chief

PLANS REVIEW

Project: **Farwell School Expansion – 84 Farwell St.**

Date: 2-9-2016

By: Certified Fire Inspector / Certified Fire Investigator Paul Ouellette

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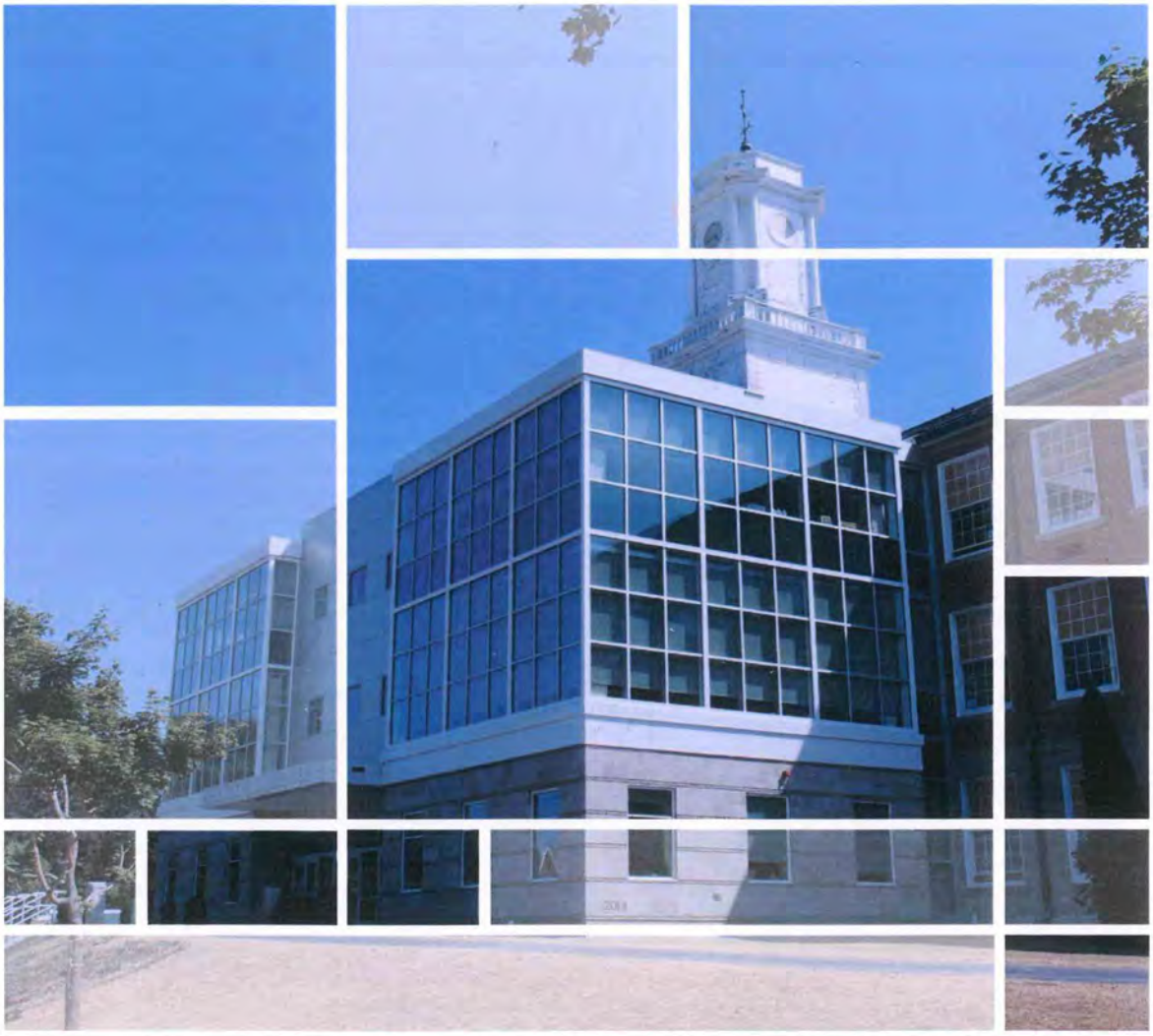
Following my site review of the Farwell School expansion project I only have one question. I noted in the application where the wet sprinkler system, #2, will be carried over to the new addition by Eastern Fire Protection and there will be adequate water supply to cover the new addition from the existing system. However, I did not see anywhere within the application where they will carry over the fire alarm system and by whom. The fire alarm system, with additional pull stations at the exit doors, would be required.

Please feel free to contact me if you have comments or questions @ 513-3002 ext. 3605

Insp. Ouellette

2 College St~ Lewiston, Maine~04240~Tel. 207-513-3002~Fax 207-783-6138~TTY/TDD~207-795-0084
www.lewiston.me.us

HEBERT
CONSTRUCTION



LEWISTON SCHOOL DEPARTMENT
FARWELL ELEMENTARY SCHOOL
CLASSROOM ADDITION
110 Farwell Street / Lewiston, Maine

City of Lewiston Planning Board
Development Review and Conditional Use Application

Revised: February 22, 2016

hebertconstruction.com

9 Gould Road, Lewiston, ME 04240
Telephone: 207.783.2091
Fax: 207.782.4938

LEWISTON SCHOOL DEPARTMENT
FARWELL ELEMENTARY SCHOOL ADDITION
110 Farwell Street, Lewiston

City of Lewiston
Preliminary Review Responses
February 17, 2016

PLANNING & CODE ENFORCEMENT

Q: Application should reference all of the conditional use criteria in Article X, Section 3 including subsections 4 and 5.
A: Article X, section 3 and subsections 4 and 5 have been referenced in the revised application.

Q: Application references 86 existing spaces, 89 proposed. Site plan shows 12 new spaces. Narrative references 22. This all needs to be clarified. Narrative should also reference the current demand for parking based upon the code requirements, what is available, and what is proposed.
A: The site plan shows twenty-one new spaces. To summarize, the existing parking spaces today are at 85 spaces. With the deletion of nineteen spaces as a result of the addition and the added twenty-one spaces, the new total amount of parking spaces is 88. Code requires 1.5 parking spaces per classroom. Total classrooms including the resource rooms are 26. 1.5 x 26 = 39 spaces per code. This amount of spaces however does not meet the need for the School. The total of 88 parking spaces meets the School's needs.

Q: Property is located in the NCA district with a 30' side yard. Parking improvements are shown 12' 9" from side property line. A modification will be needed. Reference must be made to Article IX, Sections 3(9), (10) and (11). With the modification being greater than 50%, a boundary survey will need to be provided prior to any site activity. Limiting the yard modification to 15' would avoid the need for the survey. Regardless, appropriate section must be referenced in application. If a survey remains required, this may be requested as a condition of approval which staff would support.
A: We have modified the plans to eliminate one parking space located in the bottom left corner of the proposed new parking area. Also, the added tip downs have been moved back into the existing paved sidewalk in the direction towards Farewell St. Also, we have introduced more of a radius via the new painted side walk. These changes mitigate the need for a new site survey and modification.

Q: NCA district requires that any side or rear yard for uses other than residential located within 50' of a dwelling shall be maintained as a buffer area meeting the standard of Article XIII. This means either 6' tall opaque fencing and/or evergreen plantings 3' to 5' tall upon planting must be shown on the plan in vicinity of the areas with new pavement closer than 50'.
A: Hebert understands that NCA district requires the 50' set back from the property line and not

the dwelling. The plans now show a row of 3' to 5' plantings on the edge of the Ernest & Rolande Provencher property line.

Q: Site plan and grading plans differ with respect to parking area/impervious area and stormdrain/CB locations. This must be corrected.
A: This issue goes away with the new drawing.

Q: *Detail and/or note referencing proposed pole light needed: must be full cut off fixture and not exceed 20' in height.*
A: Noted on Sheet 2 and Construction Note #1 on Sheet 3. Hebert has also attached a generic cut sheet in the application.

<u>PUBLIC WORKS DEPARTMENT</u>

Q: The proposed impervious area is listed as 9,165 and 13,839 square feet, which is correct?
A: The application has been adjusted to reflect the 13,839 square feet number.

Q: The traffic assessment states that there will be no increase in traffic. Will the proposed project result in an increase in employees, busing, and parent drop off?
A: The site plan shows twenty-one new spaces. To summarize, the existing parking spaces today are at 85 spaces. With the deletion of nineteen spaces as a result of the addition and the added twenty-one spaces, the new total amount of parking spaces is 88. Code requires 1.5 parking spaces per classroom. Total classrooms including the resource rooms are 26. 1.5 x 26 = 39 spaces per code. This amount of spaces however does not meet the need for the School. The total of 88 parking spaces meets the School's needs.

Q: The zoning summary states that this project drains to the City's combined sewer system, however, it drains into a separated system.
A: The word "combined" has been changed to "separated" where applicable.

Q: The Development Review Checklist indicates no proposed light fixtures; however, three are shown on the plans.
A: The application has been modified to include light fixtures.

Q: Basic Standard – Section 2.2 references a Wet Pond, this should reference a Detention Basin.
A: The terminology has been changed from "Wet Pond" to "Detention Basin" on the plans.

Q: Hydrocad Model – Existing Conditions – Subcatchment WS2 – Tc Flow Path B to C is based on short grass pastured, however, it is pavement.
A: This has been adjusted in the revised stormwater report.

Q: Hydrocad Model – The lawn in the existing condition is based on an n value of 0.15, the lawn in the proposed condition is based on an n value of 0.24, and these should be based on the same n value.
A: This has been adjusted in the revised stormwater report.

Q: Sheet 1 – The areas listed in the Site Tabulation table under existing conditions does not equal the total area of the site, please revise.
A: Site tabs have been adjusted accordingly on Sheet 1.

Q: Sheet 1 – Three lights are shown on the plans, please provide a detail indicating that they will be full cut off light fixtures.
A: "Full cut-off" fixture designation has been added to the plan and on revised Construction Note #1

Q: Sheet 2 – Sediment traps should be added to the catch basins that are downstream of the proposed disturbed area during construction.
A: Sediment traps have been added to the 5 catch basins on Sheet 2 and are detailed on Sheet 3.

Q: Sheet 2 – The rim elevation of the proposed catch basin is listed as 272.5', however, based on the location of the 273 contour this elevation may be incorrect, please verify.
A: This has been changed on Sheet 2.

Q: Sheet 2 – The proposed 12" storm drain between the outlet control structure and the existing catch basin is designed to slope at 5%. If this slope were reduced it may be possible to lower the bottom elevation of the pond, and the elevation of the 12" storm drain entering the pond, which may make it possible to lower the 12" storm drain and provide more cover over the pipe.
A: Thank you for this thought – it is a good one. In our considerations during the design, there were two reasons for keeping the bottom of the pond elevation as high as possible. The first was to preclude a situation in which the groundwater would be above the pond bottom. While we did not complete a geotechnical investigation for the pond, one of the borings drilled within 200 feet of the pond site, indicated groundwater at or near elevation 275 feet plus or minus. The second consideration was to limit the depth of the pond in an attempt to make it "safer" for students.

Q: Sheet 3 – A detail for a Stabilized Construction Entrance and Catch Basin Sediment Hoods should be added to the plans.
A: Both these details have been added to Sheet 3.

Q: Sheet 3 – Construction Note #1 references a City street specification, this may not be the correct light fixture for this project.
A: This note has been revised to state "full cut off fixtures" not to exceed a 20 foot height

<u>FIRE DEPARTMENT</u>

Q: I noted in the application where the wet sprinkler system, #2, will be carried over to the new addition by Eastern Fire Protection and there will be adequate water supply to cover the new addition from the existing system. However, I did not see anywhere within the application where they will carry over the fire alarm system and by whom. The fire alarm system, with additional pull stations at the exit doors, would be required.
A: The existing fire alarm system will be extended into the new addition. All horn strobes, pull stations, emergency lighting and exit signs will be shown on the architect's life safety plan being

submitted to the State Fire Marshall's office as well as our "for construction" drawings which will be submitted to the City for a building permit. E.R. Field will extend the existing system into the new addition.

Development Review Application

City of Auburn Planning and Permitting Department
City of Lewiston Department of Planning and Code Enforcement

PROJECT NAME: Farwell Elementary School Addition

PROPOSED DEVELOPMENT ADDRESS: 110 Farwell Street

PARCEL ID#:

REVIEW TYPE: Site Plan/Special Exception □ Site Plan Amendment ■
Subdivision □ Subdivision Amendment □

PROJECT DESCRIPTION: Construction of a new 7,500 SF addition that includes six (6) new classrooms as well as expanded parking (21 new spaces to offset to deletion of 19 existing)

CONTACT INFORMATION:

Applicant

Name: Hebert Construction
Address: 9 Gould Rd. Lewiston, ME
Zip Code 04240
Work #: 207-783-2091
Cell #:
Fax #: 207-782-4938
Home #:
Email: shebert@hebertconstruction.com

Property Owner

Name: City of Lewiston
Address:
Zip Code
Work #:
Cell #:
Fax #:
Home #:
Email:

Project Representative

Name: Joe Perryman, Director of Facilities
Address: 36 Oak Street
Zip Code 04240
Work #: 207-795-4100
Cell #:
Fax #:
Home #:
Email: jperryman@lewistonpublicschools.org

Other professional representatives for the project (surveyors, engineers, etc.),

Name: Foreside Architects
Address: P.O. Box 66736, Falmouth, ME
Zip Code 04105
Work #: 207-781-3344
Cell #:
Fax #:
Home #:
Email: mburnes@foresidearchitects.com

PROJECT DATA

The following information is required where applicable, in order to complete the application

IMPERVIOUS SURFACE AREA/RATIO

Existing Total Impervious Area	129,245	sq. ft.
Proposed Total Paved Area	93,510	sq. ft.
Proposed Total Impervious Area	142,719	sq. ft.
Proposed Impervious Net Change	13,474	sq. ft.
Impervious surface ratio existing	49.3	% of lot area
Impervious surface ratio proposed	54.6	% of lot area

BUILDING AREA/LOT COVERAGE

Existing Building Footprint	41,940	sq. ft.
Proposed Building Footprint	49,574	sq. ft.
Proposed Building Footprint Net change	7,634	sq. ft.
Existing Total Building Floor Area	57,766	sq. ft.
Proposed Total Building Floor Area	65,400	sq. ft.
Proposed Building Floor Area Net Change	7,634	sq. ft
New Building	Yes	(yes or no)
Building Area/Lot coverage existing	16	% of lot area
Building Area/Lot coverage proposed	18.9	% of lot area

ZONING

Existing	Neighborhood Conservation "A"
Proposed, if applicable	N/A

LAND USE

Existing	Elementary School
Proposed	Elementary School

RESIDENTIAL, IF APPLICABLE

Existing Number of Residential Units	N/A
Proposed Number of Residential Units	N/A
Subdivision, Proposed Number of Lots	N/A

PARKING SPACES

Existing Number of Parking Spaces	86 Spaces
Proposed Number of Parking Spaces	88 Spaces
Required Number of Parking Spaces	44 Spaces
Number of Handicapped Parking Spaces	4 Spaces (4 Existing)

ESTIMATED COST OF PROJECT

$1,200,000.00

DELEGATED REVIEW AUTHORITY CHECKLIST

SITE LOCATION OF DEVELOPMENT AND STORMWATER MANAGEMENT

Existing Impervious Area	130,328	sq. ft.
Proposed Disturbed Area	41,000	sq. ft.
Proposed Impervious Area	13,474	sq. ft.

1. ***If the proposed disturbance is greater than one acre, then the applicant shall apply for a Maine Construction General Permit (MCGP) with MDEP.***
2. ***If the proposed impervious area is greater than one acre including any impervious area crated since 11/16/05, then the applicant shall apply for a MDEP Stormwater Management Permit, Chapter 500, with the City.***
3. ***If total impervious area (including structures, pavement, etc) is greater than 3 acres since 1971 but less than 7 acres, then the applicant shall apply for a Site Location of Development Permit with the City. If more than 7 acres then the application shall be made to MDEP unless determined otherwise.***
4. ***If the development is a subdivision of more than 20 acres but less than 100 acres then the applicant shall apply for a Site Location of Development Permit with the City. If more than 100 acres then the application shall be made to MDEP unless determined otherwise.***

TRAFFIC ESTIMATE

Total traffic estimated in the peak hour-existing (Since July 1, 1997) 51 new trips since 2005 passenger car equivalents (PCE)

Total traffic estimated in the peak hour-proposed (Since July 1, 1997) 92 new trips since 2005 passenger car equivalents (PCE)

If the proposed increase in traffic exceeds 100 one-way trips in the peak hour then a traffic movement permit will be required.

Zoning Summary

1. Property is located in the NCA - Neighborhood Conservation "A' zoning district.
2. Parcel Area: 6.02 acres / 262,080 square feet(sf).

Regulations	Required/Allowed	Provided
Min Lot Area	20,000 sq. ft.	262,081 sq. ft.
Street Frontage	125 ft	434 ft
Min Front Yard	20 ft	229 ft
Min Rear Yard	30 ft	68 ft
Min Side Yard	30 ft	48 ft
Max. Building Height	35 ft	30 ft
Use Designation	Municipal bldg. (cond. use)	same
Parking Requirement	1.5 spaces/ per classroom	
Total Parking:	44	88
Overlay zoning districts (if any):	N/A	
Urban impaired stream watershed?	YES/NO If yes, watershed name	Jepson Brook (flow drains to City's comb. sewer)

DEVELOPMENT REVIEW APPLICATION SUBMISSION

Submission shall include payment of fee and fifteen (15) complete packets containing the following materials:

1. Full size plans containing the information found in the attached sample plan checklist.
2. Application form that is completed and signed.
3. Cover letter stating the nature of the project.
4. All written submittals including evidence of right, title and interest.
5. Copy of the checklist completed for the proposal listing the material contained in the submitted application.

Refer to the application checklist for a detailed list of submittal requirements.

L/A's development review process and requirements have been made similar for convenience and to encourage development. Each Citys ordinances are available online at their prospective websites:
Auburn: www.auburnmaine.org under City Departments/ Planning and Permitting/Land Use Division/ Zoning Ordinance
Lewiston: http://www.ci.lewiston.me.us/clerk/ordinances.htm Refer to Appendix A of the Code of Ordinances

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, I certify that the City's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

This application is for development review only; a Performance Guarantee, Inspection Fee, Building Permit Application and other associated fees and permits will be required prior to construction.

Signature of Applicant:	Date:
Simon M. Hebert	February 18, 2016

Development Review Checklist

City of Auburn Planning and Permitting Department
City of Lewiston Department of Planning and Code Enforcement

THE FOLLOWING INFORMATION IS REQUIRED WHERE APPLICABLE TO BE SUBMITTED FOR AN APPLICATION TO BE COMPLETE

PROJECT NAME: Farwell Elementary School Addition

PROPOSED DEVELOPMENT ADDRESS and PARCEL #: 110 Farwell St

Required Information		Check Submitted		Applicable Ordinance	
Site Plan		**Applicant**	**Staff**	**Lewiston**	**Auburn**
	Owner's Names/Address	Y			
	Names of Development	Y			
	Professionally Prepared Plan	Y			
	Tax Map or Street/Parcel Number	Y			
	Zoning of Property	Y			
	Distance to Property Lines	Y			
	Boundaries of Abutting land	Y			
	Show Setbacks, Yards and Buffers	Y			
	Airport Area of Influence (Auburn only)	N/A			
	Parking Space Calcs	Y			
	Drive Openings/Locations	Y			
	Subdivision Restrictions	N/A			
	Proposed Use	Y			
	PB/BOA/Other Restrictions	Y			
	Fire Department Review				
	Open Space/Lot Coverage	Y			
	Lot Layout (Lewiston only)	Y			
	Existing Building (s)	Y			
	Existing Streets, etc.	Y			
	Existing Driveways, etc.	Y			
	Proposed Building(s)	Y			
	Proposed Driveways	Y			
Landscape Plan					
	Greenspace Requirements	N/A			
	Setbacks to Parking	N/A			
	Buffer Requirements	Y			
	Street Tree Requirements	N/A			
	Screened Dumpsters	N/A			
	Additional Design Guidelines	N/A			

	Planting Schedule	Y			
Stormwater & Erosion Control Plan					
	Compliance w/ chapter 500	N/A			
	Show Existing Surface Drainage	Y			
	Direction of Flow	Y			
	Location of Catch Basins, etc.	Y			
	Drainage Calculations	Y			
	Erosion Control Measures	Y			
	Maine Construction General Permit				
	Bonding and Inspection Fees	N/A			
	Post-Construction Stormwater Plan	Y			
	Inspection/monitoring requirements	Y			
	Third Party Inspections (Lewiston only)	Y			
Lighting Plan					
	Full cut-off fixtures	Y			
	Meets Parking Lot Requirements	Y			
Traffic Information					
	Access Management	Y			
	Signage	Y			
	PCE - Trips in Peak Hour	N			
	Vehicular Movements	N			
	Safety Concerns	N			
	Pedestrian Circulation	N			
	Police Traffic	N			
	Engineering Traffic	N			
Utility Plan					
	Water	N/A			
	Adequacy of Water Supply	N/A			
	Water main extension agreement	N/A			
	Sewer	Y			
	Available city capacity	Y			
	Electric	N/A			
	Natural Gas	N/A			
	Cable/Phone	N/A			
Natural Resources					
	Shoreland Zone	N/A			
	Flood Plain	N/A			
	Wetlands or Streams	N/A			
	Urban Impaired Stream	N/A			
	Phosphorus Check	N/A			
	Aquifer/Groundwater Protection	N/A			
	Applicable State Permits	N/A			
	No Name Pond Watershed (Lewiston only)	N/A			

	Lake Auburn Watershed (Auburn only)	N/A			
	Taylor Pond Watershed (Auburn only)	N/A			
Right Title or Interest					
	Verify	Y			
	Document Existing Easements, Covenants, etc.	Y			
Technical & Financial Capacity					
	Cost Est./Financial Capacity	Y			
	Performance Guarantee				
State Subdivision Law					
	Verify/Check	N/A			
	Covenants/Deed Restrictions	N/A			
	Offers of Conveyance to City	N/A			
	Association Documents	N/A			
	Location of Proposed Streets & Sidewalks	N/A			
	Proposed Lot Lines, etc.	N/A			
	Data to Determine Lots, etc.	N/A			
	Subdivision Lots/Blocks	N/A			
	Specified Dedication of Land	N/A			
Additional Subdivision Standards					
	Single-Family Cluster (Lewiston only)	N/A			
	Multi-Unit Residential Development (Lewiston only)	N/A			
	Mobile Home Parks	N/A			
	Private Commercial or Industrial Subdivisions (Lewiston only)	N/A			
	PUD (Auburn only)	N/A			
A jpeg or pdf of the proposed site plan		Y			
Final sets of the approved plans shall be submitted digitally to the City, on a CD or DVD, in AutoCAD format R 14 or greater, along with PDF images of the plans for archiving	Upon Approval				

LEWISTON SCHOOL DEPARTMENT
FARWELL ELEMENTARY SCHOOL ADDITION
110 Farwell Street, Lewiston

City of Lewiston
Development Review Application
February 22, 2016

PROJECT DESCRIPTION

The City of Lewiston School Department is planning on adding a 7,634 sq. ft., single-story, addition off of the south wall of the existing school building. The new structure will add six (6) new 850 sq. ft. classrooms and an ADA bathroom in each. A 30'-0" corridor will connect the new structure to the existing school and will have a teacher's lounge, storage space, and a faculty toilet. Construction will also include the addition of twenty-four new parking spaces to replace the nineteen lost due to the location of the addition. The addition will tie into the existing structure at "Stair C." The total area of site disturbance for both the addition and parking spaces will be approximately 41,000 sq. ft. New impervious area created by the building addition and parking area is 13,474 sq. ft.

APPROVAL CRITERIA (Art. XIII – Sec. 4)

a. Utilization of the Site:

   The existing site has been fully developed since the construction of the original school building in 1951. That building was replaced in 2005/2006 with a new facility and updated site layout. A new bus entrance was added off Farwell Street and expanding parking along the existing emergency access drive in 2011. The proposed addition will be located along parallel to the south end of the building and tie in at Stair C. The proposed parking area will be located in the current green space west of the existing parking area and east of the proposed addition. No environmentally sensitive areas will be impacted as a result of this project.

b. Traffic Movement in and out of the Development Area:

   Previous improvements to the parking area eliminated any conflict between parent and bus drop off. This greatly minimized queue distance and impact. The additional parking spaces added as part of this project will provide dedicated staff parking to reduce demand on the existing parking lot. There will be an increase in drop-off traffic of only two buses.

   Furthermore, enrollment will increase by 100 students with an additional 9 staff; 525 total students and 92 total staff. The 100 students will all be from out of district and will be transported using the two added buses. However; not assuming that, this increase in students since 2005 will be 221; increasing the trips at peak hour from 51 to 92. Both the number of students and trips are below the 238 students and 100 trips/hour that would require a traffic moving permit. Therefore, no permit is needed.

c. Access into the Site:

The existing emergency access road - currently gated - will be removed. This change has been approved by the local fire department under the assumption they will be able to reach from both sides of the new single-story structure. Pedestrian crosswalks will remain as existing and current entrances on Farwell Street will not be modified.

d. Internal vehicular circulation

The twenty-one new parking spaces will be dedicated staff parking. These spots will be filled prior to arrival of students and emptied after students have left. It will have no effect on peak parking lot volume. Previous parking area improvements in 2011 eliminated conflict between parent and bus drop off and has been properly enforced with signage.

There is the potential of an increase in peak trips per hour from 51 to 92, but it is staffs' understanding that given the 100 new students commuting from out of district, the majority of them will arrive by bus. The increase in peak trips/hour is still below the threshold that would require a traffic movement permit.

The site plan shows twenty-one new spaces. To summarize, there are 86 existing parking spaces. With the deletion of nineteen spaces as a result of the new structure and the addition of twenty-one space, the new total amount of spaces is 88. Code requires 1.5 spaces per classroom. Total classrooms, including the resource rooms, are 26; therefore, only 39 spaces are need. Spaces provided exceed spaces required while also meeting the school's needs.

e. Pedestrian Circulation

There will be a single lane exit from the proposed parking area that intersects the existing pedestrian sidewalk. A tip down and warning track will be installed on both sides of the exit lane in addition to sidewalk striping. A four foot wide asphalt pedestrian sidewalk will be added along the south wall of the addition, allowing pedestrian traffic to travel from one side of the site to the other. All other pedestrian circulation will remain as existing.

f. Stormwater Management

A stormwater report was prepared by Summit Geoengineering services (SGS) and can be found in Appendix 4.

g. Erosion Control

Please refer to the SGS stormwater report.

h. Water Supply:

Water supply for the existing building is currently from Farwell Street. The supply for the proposed addition will come from the existing service.

i. Sewage Disposal:

Sewage disposal for the proposed addition will be tap into the city sewer line at the corner of Homefield Street and Columbia Street. Based on state guidelines of 10 gpd/student and 12 gpd/teachers and other employees, the estimated new water usage and sewage generation is 2,550 gpd. Historical water use records of Farwell School indicate usage quantities significantly less than this guideline. Thus, the 2,550 gpd proposed is a conservative estimate.

j. Utilities:

Power will be brought to the addition from the existing building. Furthermore, the existing fire alarm system will be extended into the new addition; all horn strobes, pull stations, emergency lighting and exist signage will be shown on the architect's life safety plan being submitted to the State Fire Marshal's office as well as our "for construction" drawings which will be submitted to the City for a building permit. E.R. Field will extend the existing system into the new addition.

k. Natural Features:

Eight Arborvitae plants will be installed along the northwest property line to serve as a buffer. This work has been requested by the abutter and approved by the Lewiston Public Schools Department.

l. Groundwater Protection

No hazardous materials or chemicals will be added to the site as part of this project. The stormwater runoff will continue to be directed into the City's sewer system and not infiltrated.

m. Water and Air Pollution

Water and sewer services for the proposed addition will be from the City's piping system. There is no unusual air polluting operations or pieces of equipment employed at Farwell Elementary School.

n. Exterior Lighting

New downward facing light fixtures – minimizing the impact to neighbors – will be installed at each entrance to the proposed addition. As well as one new exterior light where the proposed parking lot will exit into the existing parking area. All existing exterior lighting is to remain.

o. Waste Disposal

The waste for the proposed addition will not be tied in to the existing buildings system. Waste for the existing taps into Farwell Street while waste for the proposed addition will tap into Homefield Street.

p. Lot Layout: Not Applicable

q. Landscaping:

Eight Arborvitae plants will be installed along the northwest property line to serve as a buffer. This work has been requested by the abutter and approved by the Lewiston Public Schools Department.

Any soils disturbed during construction not within the proposed building or parking lot footprint will be replanted and brought back to its condition prior to construction.

r. Shoreland relationship: Not Applicable

s. Open Space:

The existing Recreation areas and open space provided are adequate.

t. Technical and financial capacity:

Please reference Appendix 3 for proof of financial capacity.

<u>CONDITIONAL USE (Art. X – Sec. 3)</u>

The school building use is classified as Conditional Use for the Neighborhood Conservation "A" District. The following standards will be maintained.

1. The proposed elementary school addition is of such a character that the site will not have a significant adverse impact upon the value or quiet possession of the surrounding properties.
    a. The size of the addition to the previously approved school building is minor and still within the allowable lot coverage ratio for the property.
    b. The amount and type of traffic to be generated, hours of operation, expanse of pavement and the number of parking spaces will remain relatively unchanged from the current conditions with the exception of the 6,000 sq. ft. expanded staff parking.
    c. The proposed addition and parking area will cause construction related noises during the construction phase. Once completed, there will be no additional generation of noise, dust, odor, vibration, glare, smoke, litter or other nuisances.

2. Vehicular and pedestrian access to, from, and within the site will not be change from existing conditions; nor will traffic increase because of this project.

3. Municipal services will not be over-burdened or create hazards by the proposed addition and parking area.
    a. Please refer to the SGS stormwater report in Appendix 4.

4. The proposed elementary school addition will be erected on a site with Class D soil classification. The proposed site will have adequate capacity and stability to support all necessary loadings. Specified fill will also meet required building and drainage standards.
    a. This project will have no impact on the quality or quantity of groundwater available to the abutting properties.
    b. Physical characteristics of the site have been taken into consideration with the design and will not have any adverse impacts upon surrounding properties.

5. The proposed structure will be single story and replicate the education wing of the existing school. The proposed exterior building materials will match existing masonry, window, and bent metal specifications as best as current manufactured products allow.

APPENDICIES

1. DEEDS
2. FIRE SUPPRESSION SYSTEM ASSESMENT
3. FINANCIAL CAPACITY
4. SGS STORMWATER REPORT
5. SGS GEOTECHNICAL REPORT
6. LIFE SAFETY & DESIGN PLANS

Know all Men by these Presents,

That I, Ralph J. Berube, of Lewiston, in the County of Androscoggin, and State of Maine, in consideration of one dollar and other valuable consideration, paid by the Inhabitants of the City of Lewiston, a municipal corporation located at Lewiston in said County of Androscoggin, State of Maine, the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell, and convey unto the said Inhabitants of the City of Lewiston, its successors ~~heirs~~ and assigns forever

$11.00
Doc. Rev.
Stamps
Cancelled

Certain lots or parcels of land situated in said Lewiston, and being lots numbered 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 62, 63, 64, 65, 66, the westerly half of Lot 67, Lots 69, 70, 72, 73, 74, 75, 76, 77, 78, 79, 80 and 81 on a Plan of Homefield made by John A. Jones, C.E., dated 1897, recorded in Androscoggin Registry of Deeds, Volume 2, Page 7, and being all and the same premises described in deed from James A. Pulsifer to me, recorded in said Registry, Book 586, Page 323, together with all my right, title and interest in and to Homefield Street and Columbia Street, as designated on said Plan, to which deed and the record thereof reference is hereby made and the same is incorporated as a part of this description.

To have and to hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Inhabitants of the City of Lewiston, its successors ~~heirs~~ and assigns to it and their use and behoof forever.

And I do covenant with the said Grantee, its successors ~~heirs and assigns~~, that I am lawfully seized in fee of the premises; that they are free of all incumbrances;

that I have good right to sell and convey the same to the said grantee to hold as aforesaid; and that I and my heirs shall and will warrant and defend the same to the said Grantee, its successors ~~heirs~~ and assigns forever, against the lawful claims and demands of all persons.

In witness whereof, I, the said Ralph J. Berube and Valeda Berube wife of the said Ralph J. Berube joining in this deed as Grantor, and relinquishing and conveying my right by descent and all other rights in the above described premises have hereunto set our hand s and seal s this 7th day of September in the year of our Lord one thousand nine hundred and fifty-one.

Signed, Sealed and Delivered in the Presence of
Frank M. Coffin to both

Ralph J. Berube (SEAL)
Valeda Berube (SEAL)

State of Maine, Androscoggin } ss. September 7, 19 51

Personally appeared the above named Ralph J. Berube and acknowledged the foregoing ~~above~~ instrument to be his free act and deed.

Before me, Frank Morey Coffin
Justice of the Peace

Received September 14, 19 51 *at* 9 *o'clock* -- *M.* A. *M. and recorded from the original.*

EASTERN FIRE PROTECTION

FIRE PROTECTION CONTRACTORS AND ENGINEERS

January 16, 2016

Mr. Simon Hebert

HEBERT CONSTRUCTION, LLC
9 Gould Road
Lewiston, ME 04240

Email: *shebert@hebertconstruction.com*

RECEIVED
JAN 21 2016
HEBERT CONSTRUCTION

RE: FARWELL SCHOOL – 2016 ADDITION
FIRE SPRINKLER SYSTEM – SIZE & CAPACITY

Simon,

The existing wet sprinkler system # 2 will be extended to provide coverage to the 7,000 sq.ft. addition; the combined area protected will be approximately 34,000 sq.ft. which is less than the per system area of 52,000 sq.ft. allowed by NFPA 13.

The existing water supply, sprinkler riser and piping arrangement is adequate to supply the hydraulic demand of the new addition.

Please let me know if you have any questions or require additional information.

Sincerely,

Paul Tardif

(207) 942-8014 - Fax: (207) 942.5202
408 Harlow St, Bangor, Maine 04401

LEWISTON PUBLIC SCHOOLS

36 Oak Street
Lewiston, ME 04240
www.lewistonpublicschools.org
TDD: 207-795-4100
FAX: 207-795-4177

Administration: 207-795-4100
Business: 207-795-4104
Curriculum: 207-795-4103
ELL Program: 207-795-4105
Maintenance: 207-795-4107
Nutrition: 207-795-4106
Payroll: 207-795-4109
Special Education: 207-795-4108
Technology: 207-753-6416

Simon Hebert
Project Manager
Hebert Construction, LLC
shebert@hebertconstruction.com

Via email – 2/5/2016

Simon,

This letter confirms Lewiston Public Schools has the financial capacity to finance the Farwell Elementary School Classroom Addition project.

Attached with this letter are the minutes from the meeting of Lewiston City Council on November 17, 2015, which include the Passed Vote 6-1 in favor of the appropriation for the project, with funding from issuance of a Public Improvement Bond.

Best,

Elaine Runyon
Chief Administrative Office

Cc: Louie Turcotte, Director of Facilities

CITY OF LEWISTON

CITY COUNCIL NOVEMBER 17, 2015

REGULAR MEETING HELD IN THE COUNCIL ROOM AT 5:30 P.M.

THE HONORABLE ROBERT E. MACDONALD, MAYOR, PRESIDING.

PRESENT: Mayor Macdonald, Councilors Dubois, D'Auteuil, Libby, Bouchard, Cloutier, Cayer and Lachance, City Administrator Edward Barrett and City Clerk Kathleen Montejo.

EXECUTIVE SESSION

VOTE (292-2015)

Motion by Councilor Dubois, seconded by Councilor Lachance:

To enter into an Executive Session pursuant to MRSA Title 1, section 405 (6) (D) to discuss Labor Negotiations regarding the American Federation of State, County and Municipal Employees (AFSCME Council #93) Local 1458-000, on behalf of the Lewiston Public Works Unit. Passed - Vote 7-0

Executive Session began at 5:32pm and ended at 5:48pm.

VOTE (293-2015)

Motion by Councilor Cloutier, seconded by Councilor Cayer:

To enter into an Executive Session, pursuant to MRSA Title 1, section 405 (6) (c), to discuss Acquisition of Property, of which the premature disclosure of the information would prejudice the competitive bargaining position of the City. Passed - Vote 7-0

Executive Session began at 5:48pm and ended at 6:29pm.

THE HONORABLE ROBERT E. MACDONALD, MAYOR, PRESIDING.

PRESENT: Mayor Macdonald, Councilors Dubois, D'Auteuil, Libby, Bouchard, Cloutier, Cayer and Lachance, City Administrator Edward Barrett and City Clerk Kathleen Montejo.

Pledge of Allegiance to the Flag.
Moment of Silence. Mayor Macdonald stated this Moment of Silence was dedicated to those who lost their lives in the Paris attacks. He noted the City illuminated the City Hall clock tower with the colors of the flag of France to show solidarity for their country.

PUBLIC COMMENT PERIOD

Charles Soule of 135 Bartlett St apologized for speaking out against the Bates College student influence regarding the November 3 election. He noted he was called an "eccentric" by the Lewiston Sun Journal newspaper and he was shocked at that because every voter has a right to run in every election should they so choose. Melissa Dunn spoke about some issues residents

have been having due to their Muslin faith, in light of the Paris attacks. Marcus Talarico noted the Paris attacks were devastating and should be condemned by all residents.

UPDATE FROM THE LEWISTON YOUTH ADVISORY COUNCIL

Eric Hall, president of LYAC, spoke about their Jeopardy game regarding Lewiston trivia, and he said it went very well. He noted they are seeking photos of Lewiston neighborhoods to post on the website.

PUBLIC HEARING ON THE RENEWAL APPLICATION FOR A SPECIAL AMUSEMENT PERMIT FOR LIVE ENTERTAINMENT FOR LBK EVENTS, LLC, 1 BATES STREET

Mayor Macdonald opened the public hearing. No members of the public spoke for or against this issue. The Mayor then closed the hearing.

VOTE (294-2015)

Motion by Councilor Cayer, seconded by Councilor Libby:

To grant a Special Amusement permit for live entertainment to LBK Events, LLC, 1 Bates Street. Passed - Vote 7-0

PUBLIC HEARING AND FIRST PASSAGE FOR LAND USE CODE AMENDMENTS REGARDING THE ABILITY TO DIVIDE LOTS IN THE SHORELAND ZONING DISTRICT

Mayor Macdonald opened the public hearing. No members of the public spoke for or against this issue. The Mayor then closed the hearing.

VOTE (295-2015)

Motion by Councilor Bouchard, seconded by Councilor Lachance:

That the proposed amendments to Appendix A, Article V, “Administration and Enforcement”, Section 3 “General provisions”, of the City Zoning and Land Use Code, receive first passage by a roll call vote and that the public hearing on said ordinance be continued to the next regularly scheduled City Council meeting. Passed - Vote 7-0

PUBLIC HEARING REGARDING PROPOSED BOND ISSUE FOR FARWELL SCHOOL EXPANDED CLASSROOM SPACE

Mayor Macdonald opened the public hearing. No members of the public spoke for or against this issue. The Mayor then closed the hearing. It was noted the proposed amount of $2,331,000 can be adjusted to $1,896,000.

VOTE (296-2015)

Motion by Councilor Libby, seconded by Councilor Cloutier:

To approve the Order authorizing the issuance of $2,331,000 in FY2017 Public Improvement Bonds and making an appropriation for the Farwell Additional Classroom Space Project:

Ordered, that $2,331,000 be appropriated for financing the Farwell Additional Classroom Space Project;

Be It Further Ordered that to meet this appropriation, $2,331,000 shall be raised by Public Improvement Bond Issue(s);

Be It Further Ordered that the City Council instruct the Finance Director to advertise for bids for $2,331,000 or increments thereof, Public Improvement Bonds; to award the loan; and to employ Locke Lord LLP to furnish the legal opinion for the same; provided that, in the alternative, the Finance Director is authorized to award the loan to the Maine Municipal Bond Bank;

Be It Further Ordered that the bonds shall be signed by the City Treasurer and Mayor;

Be It Further Ordered that the date, maturities, denominations, interest rate or rates, place or places of payment, form or other details of the bonds and of the provisions for the sale thereof shall be determined by the Finance Director;

Be It Further Ordered that bonds issued hereunder may be subject to call for redemption on such terms as may be determined by the Finance Director; and

Be It Further Ordered, on or before the call date, the Finance Director is authorized to refund/advance refund this bond series if a net present value benefit is derived.

Passed - Vote 6-1 (Councilor Lachance opposed)

RESOLVE AUTHORIZING THE TRANSFER OF $26,920 FROM GENDRON BUSINESS PARK PHASE II PROJECT FOR THE PURPOSE OF REPLACING LIGHTING AT THE LEWISTON PUBLIC LIBRARY

VOTE (297-2015)

Motion by Councilor Cayer, seconded by Councilor Cloutier:

To approve the Resolve authorizing the transfer of $26,920 from the Gendron Business Park Phase II Project for the purpose of replacing lighting at the Lewiston Public Library:

Whereas, problems have been recently identified with the vintage 1999 metal halide lighting in the grand reading rooms of the original library building; and

Whereas, in in the midst of annual bulb replacement, wiring problems were identified at certain fixtures resulting from the intense heat generated by the metal halide bulbs and inadequate ventilation around the fixtures; and

Whereas, an option to simply repairing the existing fixtures would be to replace them with LED fixtures, reducing energy costs and annual bulb replacement expenses including the need to rent a

lift necessary to reach the fixtures; and

Whereas, the cost to upgrade the system to LED lights is estimated at $26,920; and

Whereas, such an upgrade will pay for itself in about five years through energy and out of pocket maintenance cost savings; and

Whereas, funds to undertake this project are available from a completed capital project – Gendron Business Park Phase II;

Now, therefore, be it resolved by the City Council of the City of Lewiston that the amount of $26,920 is hereby transferred from the Gendron Business Park Phase II project, account number 7702-702702, for the purposes of installing LED lighting in the Lewiston Public Library.

Passed - Vote 7-0

ORDER AUTHORIZING THE TRANSFER OF $184,500 FROM THE CITY'S 2015 TELEPHONE PROJECT TO THE FY2016 SCHOOL TELEPHONE PROJECT

VOTE (298-2015)

Motion by Councilor Cayer, seconded by Councilor Libby:

To approve the Order authorizing the transfer of $184,500 from the City's 2105 Telephone Project to the FY2016 School Telephone Project:

Whereas, in the FY2016 LCIP, the City Council approved $500,000 to fund a Citywide Telephone project with equal cost-sharing between the City and the School Department; and

Whereas, upon further research into the infrastructure needs to implement this project, it has been determined that the cost-sharing amounts needed adjustment; and

Whereas, given the number of switches and telephones in the school system, their apportionment of the project should increase from $250,000 to $434,500; and

Whereas, the City's appropriation for the project was $250,000 and our revised apportionment is $65,500; and

Whereas, in preparation for bidding this project, it was discovered that the Power Over Ethernet switches at Lewiston High School required for the proper operation of the proposed new telephone system have exceeded their end of live by five years and were provided by a company that no longer exists; and

Whereas, these switches must be replaced at an additional cost of $100,000; and

Whereas, the additional $100,000 required to complete the project at the Lewiston High School will be included in the FY2017 LCIP;

Now, Therefore, Be It Resolved by the City Council of the City of Lewiston that $184,500 from the City's Telephone Project is hereby transferred to the Lewiston School Department's Telephone Project.

Passed - Vote 7-0

RESOLVE APPROPRIATING $6,000 IN UNANTICIPATED REVENUES FOR THE PURPOSE OF REPLACING A POLICE VEHICLE

VOTE (299-2015)

Motion by Councilor Bouchard, seconded by Councilor Libby:

To approve the Resolve appropriating $6,000 in unanticipated Revenues for the purpose of replacing a Police Vehicle.

Whereas, a police patrol vehicle was extensively damaged in a recent accident in which the employee operating the vehicle was not at fault; and

Whereas, our insurer has determined that the cruiser is beyond repair, will pay the City $11,475, and we anticipate recovering the City's $1,000 deductible from the other party's insurer; and

Whereas, the proceeds from insurance recoveries are automatically appropriated toward addressing the item that was damaged and can, therefore, be used toward purchase of a replacement vehicle; and

Whereas, the damaged vehicle was scheduled to be transferred to the detective division to replace a 2004 unit with about 116,000 miles; and

Whereas, this unit still needs to be replaced; and

Whereas, the Police Department recommends that a relatively new program car be purchased for this purpose; and

Whereas, the Department anticipates that the cost of such a unit will be about $18,000; and

Whereas, $12,545.65 in abandoned cash from within the Department's evidence room has been recently released to the City and deposited in the City's General Fund; and

Whereas, using $6,000 from this source in conjunction with the insurance recovery on the totaled vehicle will allow the purchase of a replacement vehicle;

Now, therefore, be it resolved by the City Council of the City of Lewiston that

The amount of $6,000 is hereby appropriated within the General Fund for the purpose of purchasing a replacement vehicle for the criminal investigation division of the Police Department. Passed - Vote 7-0

ORDER ACCEPTING DONATION OF THE PROPERTY AT 35 ELLIS STREET REAR

VOTE (300-2015)

Motion by Councilor Cayer, seconded by Councilor Bouchard:

To approve the Order accepting donation of the property at 35 Ellis Street Rear:

Whereas, the owners of the property at 35 Ellis Street Rear have approached the City with an offer to donate this vacant land to the City; and

Whereas, the property is crossed by No Name Stream and is largely covered by wetlands and the stream's flood plain, restricting its potential for development; and

Whereas, the property is adjacent to other City owned parcels in the immediate area; and

Whereas, ownership of the property may be beneficial to the City as future mitigation property for wetland impacts elsewhere in the area or as an element of the City's watershed management plan for the No Name Stream watershed; and

Whereas, given the parcels location and the presence of wetlands and flood plain, the property has a limited market value; and

Whereas, the Planning Board has review this offer and recommends that it be accepted;

Now, therefore, be it ordered by the City Council of the City of Lewiston that the City Administrator is hereby authorized to execute the required documents to accept ownership of the parcel of vacant land located at 35 Ellis Street Rear.

Passed – Vote 7-0

ORDER AUTHORIZING THE CITY ADMINISTRATOR TO EXECUTE THE SECOND AMENDMENT #2 TO INTERLOCAL COOPERATION AGREEMENT #2 FOR LAKE AUBURN INTAKE & WATER TREATMENT

VOTE (301-2015)

Motion by Councilor Lachance, seconded by Councilor Bouchard:

To approve the Order authorizing the City Administrator to execute the Second Amendment #2 to Interlocal Cooperation Agreement #2 for Lake Auburn Intake & Water Treatment:

Whereas, Maine Law permits municipalities to enter into interlocal cooperation agreements to make efficient use of their powers and to cooperate with other municipalities or political subdivisions on a basis of mutual advantage to provide services and facilities to the local

communities; and

Whereas, on October 3rd, 1997, the City of Lewiston and the Auburn Water District signed an Interlocal Agreement for the Lake Auburn Intake and Water Pretreatment facilities at the lake, an agreement which remains in effect and binding on both parties; and

Whereas, the parties completed a joint ultra-violet (UV) light water treatment facility in 2012 to comply with the Safe Drinking Water Act; and

Whereas, the complexity of the operation of the UV light treatment plant requires management and oversight by a Class IV Water Treatment Operator as mandated and licensed by the Maine Drinking Water Program; and

Whereas, on June 4, 2013, the City of Lewiston and the Auburn Water District signed an Interlocal Agreement Amendment #1 for hiring of a Licensed Class IV Treatment Operator/Manager to manage the UV Facility, subject to a 50/50 cost sharing arrangement with the Lewiston Water Division; and

Whereas, the Trustees of the Auburn Water District approved moving forward with the hiring of up to 2 additional Licensed Class IV operators to assist with operations of the UV Facility under the direction of the Water Treatment Manager at their October 21, 2015 meeting, subject to a 50/50 cost sharing arrangement with the Lewiston Water Division; and

Whereas, the attached proposed Amendment to the 1997 agreement has been signed by the current Auburn Water District Acting Superintendent and has been reviewed and is recommended by City of Lewiston staff; and

Whereas, the funding for the Water Treatment Plant is available in the City of Lewiston Water Utility budget;

Now, therefore, be it Ordered by the City Council of the City of Lewiston that the City Administrator is Authorized to execute the Second Amendment #2 to Interlocal Cooperation Agreement #2 For Lake Auburn Intake & Water Treatment.

Passed - Vote 7-0

RESOLVE AUTHORIZING THE LEWISTON RECREATION DIVISION TO INTRODUCE NEW, SELF-SUPPORTING RECREATIONAL PROGRAMS THAT ARE CURRENTLY NO ANTICIPATED IN THE 2016 ACTIVITIES ACCOUNT BUDGET

VOTE (302-2015)

Motion by Councilor Bouchard, seconded by Councilor Lachance:

To approve the Resolve authorizing the Lewiston Recreation Division to introduce new, self-supporting recreational programs that are currently not anticipated in the 2016 Activities Account Budget:

Whereas, the Lewiston Recreation Division would like to introduce new, self-supporting programs to expand its offerings to the community, allow the Division to remain competitive and grow, and be consistent with other Recreation Departments throughout the State of Maine; and

Whereas, investigating expanded program offerings is one effort of the Department aimed at reducing its overall impact on the City's general fund budget by increasing program revenues to offset overhead and administrative expenses; and

Whereas, in order to ensure that these new programs will be self-supporting, Division staff will survey the public to determine if there is sufficient public interest; and

Whereas, such programs will only be offered when the minimum required number of participants enroll in them and will not be offered if enrollment is inadequate to meet program costs; and

Whereas, the initial new program is anticipated to be a Ski/Snowboard program to be offered for four weeks this winter at Mt. Abram to allow families of all abilities to have the opportunity to enroll; and

Whereas, this program will only be offered if a minimum of 15 individuals sign up, at which point the program would be self-supporting and have no impact on taxpayers;

Now, therefore, be it Resolved by the City Council of the City of Lewiston that the City Administrator/Recreation Division is authorized to offer the Ski/Snowboard program at Mt. Abram as a new program and to add other new programs once the Division has determined that adequate interest exists to ensure that they are self-supporting and will not require subsidies from the taxpayer.

Passed - Vote 7-0

ORDER TAKING POSSESSION OF TAX ACQUIRED PROPERTY AT 422 PLEASANT STREET

VOTE (303-2015)

Motion by Councilor Cayer, seconded by Councilor Bouchard:

To approve the Order taking possession of Tax Acquired Property at 422 Pleasant Street:

Whereas, the property located at 422 Pleasant Street is a single family home that has been vacant for some time and on which the City is owed $18,564 in back taxes and utilities; and

Whereas, the property has suffered from vandalism; however, Code has inspected it and believes it remains suitable for rehabilitation and future occupancy; and

Whereas, Bank of America has foreclosed on this property and taken ownership; however, it has not paid the City the amounts due nor has it exercised appropriate stewardship over it; and

Whereas, a tax lien has matured on this property; and

Whereas, taking possession of this property will potentially allow the City to recover at least a portion of what it is owed and to proceed to return this property to productive use;

Now, therefore, be it Ordered by the City Council of the City of Lewiston that, based on a matured tax lien, the City take formal possession of the property located at 422 Pleasant Street.

Passed - Vote 7-0

ORDER APPROVING THE CITY'S COMMITMENT OF $38,737 IN NEIGHBORHOOD STABILIZATION PROGRAM GRANT FUNDING TO THE REHABILITATION OF 46 LISBON STREET AND AUTHORIZING THE CITY ADMINISTRATOR TO EXECUTE A JOINT DEVELOPMENT AGREEMENT BETWEEN THE CITY AND THE BUILDING OWNERS TO EFFECT THE SAME

VOTE (304-2015)

Motion by Councilor Cayer, seconded by Councilor Bouchard:

To approve the Order approving the City's commitment of $38,737 in Neighborhood Stabilization Program Grant Funding to the rehabilitation of 46 Lisbon Street and authorizing the City Administrator to execute a Joint Development Agreement between the City and the building owners to effect the same:

Whereas, PoMo &Co., owners of 46 Lisbon Street, have plans to fully redevelop the building resulting in the creation of two apartments and two floors of commercial space; and

Whereas, debt on the estimated project costs of $420,000 cannot currently be supported by market rents; and

Whereas, the City previously received approximately $1.47 million in federal Neighborhood Stabilization Program Grant funding which was fully expended to rehabilitate six properties in Lewiston that resulted in the creation of 12 new housing units that were income restricted to renters or owners making less than 120% of the area median income; and

Whereas, $38,737 of that grant funding has been recaptured through the sale of two of the rehabilitated properties and the city wishes to use these funds to further the goals of the Neighborhood Stabilization Program; and

Whereas, redevelopment of 46 Lisbon Street will further the goals of the Neighborhood Stabilization Program by renovating a vacant building and returning it to productive use, increasing the supply of affordable housing, increasing owner occupancy, and will save a building that without significant new investment would contribute to the deterioration of the neighborhood;

Now, therefore, be it ordered by the City Council of the City of Lewiston that the City commits $38,757 in Neighborhood Stabilization Program funding to 46 Lisbon Street in the form of a

grant and authorizes the City Administrator to execute a JOINT DEVELOPMENT AGREEMENT [NSP FUNDS] BETWEEN CITY OF LEWISTON, MAINE AND POMO & CO. FOR THE RE-DEVELOPMENT OF 46 LISBON STREET, which details how the funds are to be invested and disbursed.

Passed - Vote 7-0

ORDER AUTHORIZING THE CITY ADMINISTRATOR TO EXECUTE A COLLECTIVE BARGAINING AGREEMENT WITH THE ASSOCIATION OF FEDERAL, STATE, COUNTY AND MUNICIPAL EMPLOYEES (AFSCME) LOCAL 1458-00, ON BEHALF OF THE LEWISTON PUBLIC WORKS UNIT

VOTE (305-2015)

Motion by Councilor Cloutier, seconded by Councilor Libby:

To approve the Order authorizing the City Administrator to Execute a Collective Bargaining Agreement with the Association of Federal, State, County and Municipal Employees (AFSCME) Local 1458-00, on behalf of the Lewiston Public Works Unit:

Whereas, the City has been working for the last sixteen moths with the AFSCME negotiating

team to reach agreement on a new collective bargaining agreement; and

Whereas, the negotiated agreement has been approved by the ASCME membership; and

Whereas, the terms and conditions of the proposed agreement fall within the negotiating guidelines provided by the City Council;

Now, therefore, be it Ordered by the City Council of the City of Lewiston that the City

Administrator is hereby authorized to execute a collective bargaining agreement with the

Association of Federal, State, County and Municipal Employees Local 1458-00 in accordance

with the terms and conditions outlined on the attached memorandum from Deputy City

Administrator Phil Nadeau.

Passed - Vote 7-0

RESOLVE AUTHORIZING THE TRANSFER OF $11, 587 FROM THE GENERAL FUND'S HEALTH INSURANCE ACCOUNT TO THE CITY CLERK'S OFFICE TO COVER ELECTION EXPENSES

VOTE (306-2015)

Motion by Councilor Libby, seconded by Councilor Cloutier:

To approve the Resolve authorizing the transfer of $11,587 from the General Fund's Health

Insurance Account to the City Clerk's Office to cover election expenses:

Whereas, the City Clerk's election budget inadvertently did not provide funding for printing the November municipal election ballots at a cost of $4,354; and

Whereas, in addition, that budget did not include funding for costs associated with the Mayoral Run Off Election required by City Charter in instances where no candidate received a majority of the votes, such election estimated to cost $7,233; and

Whereas, given the relatively small size of the City Clerk's budget, these costs cannot be covered through transfers within the Department; and

Whereas, sufficient funds to cover these expenses are available within the General Fund's employee Health Insurance account;

Now, therefore, be it resolved by the City Council of the City of Lewiston that the amount of $11,587 is hereby transferred from the General Fund's Health Insurance Account, account number 4921-417100, to the City Clerk's election budget (41440) for the purposes of addressing anticipated shortfalls in this budget.

Passed - Vote 7-0

REPORTS AND UPDATES

The City Clerk provided an update on the logistics of the upcoming Mayoral Run-off Election.

OTHER BUSINESS

No other business was presented at this time.

EXECUTIVE SESSION

VOTE (307-2015)

Motion by Councilor Dubois, seconded by Councilor Lachance:

To enter into an Executive Session pursuant to MRSA Title 1, section 405 (6) (D) to discuss Labor Negotiations regarding the city's six employee unions - International Association of Firefighters, Local 785; Maine State Employees Association, Local 1989; Maine Association of Police; Lewiston Police Supervisory Command Unit; Lewiston Professional Technical Unit, Local 3855 and Lewiston Public Works Unit, Local 1458. Passed - Vote 7-0

Executive Session began at 8:12pm and ended at 8:47pm.

VOTE (308-2015)

Motion by Councilor Libby, seconded by Councilor Cayer:

To enter into an Executive Session pursuant to MRSA Title 1, section 405 (6) (e) to discuss a legal matter. Passed - Vote 7-0

Executive Session began at 8:47pm and ended at 9:29pm.

VOTE (309-2015)

Motion by Councilor Bouchard, seconded by Councilor D'Auteuil:

To adjourn at 9:29P.M. Passed - Vote 7-0

A true record, Attest:

Kathleen M. Montejo, MMC
City Clerk
Lewiston, Maine

SUMMIT
GEOENGINEERING SERVICES

Stormwater Report

FARWELL SCHOOL ADDITION
FARWELL STREET
LEWISTON, MAINE

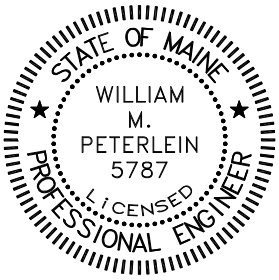
Prepared for:

Hebert Construction Corp.
9 Gould Road
Lewiston, Maine

Prepared by:

Summit Geoengineering Services, Inc.
P.O. Box 7216
Lewiston, Maine 04243

SGS #16001
February 2016



STORMWATER REPORT

FARWELL SCHOOL ADDITION
FARWELL STREET
LEWISTON, MAINE

The City of Lewiston School Department is planning on adding a 7,634 sq. ft., single-story, addition south of the existing school building. The new structure will add six (6) new 850 sq. ft. classrooms and an ADA bathroom in each. A 30'-0" corridor will connect the new structure to the existing school and will have a teacher's lounge, storage space, and a faculty toilet. Construction will also include the addition of twenty-four new parking spaces to replace the nineteen lost due to the location of the addition. The addition will tie into the existing structure at "Stair C."

This storm water report is prepared as part of a Development Review application for the construction of the new addition and the associated parking lot.

Based on direction from the Maine DEP via the City of Lewiston, stormwater control for the site requires inclusion of only the developed and impervious areas created with this building addition project. Due to flooding issues with conveyances downstream of the site (Jepson Brook), the City has asked the Applicant to control additional stormwater that was not treated in the site improvements made in 2011. Stormwater control is limited to flooding only; no quality treatment will be required.

The building addition and parking lot construction is expected to disturb a total of 41,000 square feet of area. The total net <u>additiona</u>l impervious area (over and above the existing) created by the construction is 13,474 square feet.

Erosion control information is included on the project plans and in this stormwater report. All stormwater improvements and erosion control measures have been designed to meet City and State requirements.

Reference is made to the following site development drawings.

Sheet 1 Site and Demolition Plan
Sheet 2 Grading and Utility Plan
Sheet 3 Construction Notes and Details

Basic Standards

For this project, Basic Standards include the following elements.

- Erosion and Sedimentation Control Plan
    - General practices.
    - Temporary erosion and sedimentation control measures.
    - Temporary mulch/vegetation.
    - Permanent seeding.
    - Dust control.
    - Winter Construction

- Inspection and maintenance.
    - Inspection of Temporary E&S Control Measures.
    - Inspection of Permanent E&S Control Measures.
    - Emergency measures.
    - Annual maintenance.
    - General maintenance.

- Housekeeping.

Information on each of these elements is presented in Appendix A. Included are inspection and maintenance forms for during construction and post construction, a City of Lewiston Annual Stormwater Management Facilities Certification Form.

General Standards

General Standards are not required to be met for this project.

Flooding Standards

The flooding standards are met by the construction of a dry–type detention pond. The detention pond is required, at a minimum, to reduce the peak flow generated from the existing (2015) site conditions. Reference should be made to Sheets SW-1 and SW-2 included in Appendix D.

The Control Point for our stormwater study is the existing catch basin just south of the south corner of the existing school. This is the location that the stormwater from all proposed construction will flow to.

The total new impervious area created with the proposed construction of the building addition and the new parking area is approximately 13,474 square feet.

In the interest of compensating for impervious area created in 2011 for which stormwater control was not applied, we have added the roof runoff from the western-most section of the existing south wing (WS#1). This is a total area of 8,140 square feet. The total impervious areas in WS#2 and WS#3 is 15,380 square feet. Thus a total of 23,520 = (8,140 + 15,380) square feet of impervious area is being treated for flood control. This almost doubles the impervious area created by the new construction. We note that the City has not required that this additional impervious be treated. The Applicant's treatment of this roof area is intended to assist the City by reducing the peak flows into Jepson Brook.

The soil at this site is mapped as Woodbridge Loam, 0% to 8% slopes, which is classified as Hydrologic Soil Group C.

"Pre-development" Flow Rates. For this project the "pre-development" stormwater runoff is modelled with three subwatersheds, as shown on Sheet SW-1. The Hydrocad data is included in Appendix C.1.

The following table lists peak runoff and total volumes from the existing conditions.

"PREDEVELOPMENT" RUNOFF DATA		
Event	**Peak Flow (cfs)**	**Volume (ac-ft)**
2 yr	1.58	0.171
10 yr	3.24	0.335
25 yr	4.13	0.423

Post Development Flow Rates.

The hydrologic model of the site after construction of the addition and parking is shown on the attached Sheet SW-2 in Appendix D. The model boundaries match the boundaries for the existing conditions. Post development runoff from all of the building addition and the majority of the new parking is directed into the detention pond. In addition, the stormwater from the westerly section of the existing building roof is directed to the pond. Flow from the pond is controlled with an outlet structure, detailed on Sheet 3 of the plan set. The detention pond is intended to drain completely after the end of storm events. The peak water level in the pond for the 2, 10, and 25 year events are elevation 268.42, 269.02, and 269.25 feet, respectively. The top of the pond berm is elevation 272 feet.

Due to the limited opportunities for an emergency spillway, the top of the outlet structure (elevation 270 feet) will be fitted with a 2 foot diameter grate. This grate is intended to act as an emergency spillway. The outlet structure was modelled for the 100 year storm event assuming that all other outlets were

blocked. The peak water elevation in the pond under this condition is 270.32 feet, which is 1.68 feet below the top of the pond berm. We note that the peak water elevation in the 25 year event is 269.25 feet, which is below the top of the structure. In the event the emergency outlet and all other outlets are blocked. The water will back up into the inlet ditch and flow into the new parking area east of the pond, where it will flow to the existing catch basin labelled as Pond 3 in our model.

The following table summarizes the peak runoff and total volumes from the post-construction conditions.

"POSTDEVELOPMENT" RUNOFF DATA		
Event	**Peak Flow (cfs)**	**Volume (ac-ft)**
2 yr	0.96	0.200
10 yr	1.93	0.370
25 yr	2.43	0.460

Summary

A comparison of the "predevelopment" and post development peak flow rates is summarized in the following table.

STORMWATER RUNOFF SUMMARY – PEAK FLOW			
Storm Event	**2 yr**	**10 yr**	**25 yr**
"Predevelopment"	1.58 cfs	3.24 cfs	4.13 cfs
Post Development	0.96 cfs	1.93 cfs	2.43 cfs

In all cases the post development flow rates are less than the "pre-development" flow rates.

MS4 Area

Stormwater discharge from the wet pond will be into the City's MS4 Area.
A qualified Third Party Inspector will be engaged by the Applicant's representative:

Louie Turcotte
Lewiston School Department
36 Oak Street
Lewiston, ME 04240
Office: 795-4107
Cell: 754-5847

at least annually to inspect the pond in accordance with the approved Post-Construction Stormwater Management Plan (PCSMP). If the pond and other stormwater features associated with the 2016 addition require maintenance to function as intended, the Qualified Third Party shall note the deficiencies and the remedies. The Applicant's representative shall take the required actions to address any deficiencies. The Qualified Third Party Inspector shall provide, on or by May 31 of each year, a completed and signed City of Lewiston Annual Stormwater Management Facilities Certification (SMF) Form, certifying that the SMF have been inspected, and that they are adequately maintained and functioning as intended by the PCSMP, or that they require maintenance or repair, in order to function as intended by the PCSMP The Qualified Third Party shall provide a record of the required maintenance or deficiency and corrective actions taken.

APPENDIX A

BASIC STANDARDS

1.0 EROSION AND SEDIMENT CONTROL

The following plans are included in the Site Review Application to satisfy the Basic Standards Submission requirements:

Sheet 1 Site and Demolition Plan
Sheet 2 Grading and Utility Plan
Sheet 3 Construction Notes and Details

The Basic Standards herein are for temporary and permanent measures directly associated with the construction activities at the site.

Erosion and sediment control on Site will be implemented in accordance with the "Maine Erosion and Sediment Control BMPs" published by the MDEP. The following are general guidelines and preventative measures to control erosion and sediment during construction activities.

General Practices

- Sediment barriers (e.g., bark mulch berm) will be installed prior to beginning soil disturbance activities (e.g., grubbing, grading) at the perimeter of the property. Sediment barriers will be maintained until the disturbed area is permanently stabilized.
- Exposed soils that will not be worked for more than 7 days will be stabilized with mulch or other non-erodible cover.
- Erosion and sediment control features will be inspected and repaired weekly and before and after every storm event.
- All temporary soil stockpiles will be surrounded by silt fence and otherwise protected from creating down-slope sediment issues
- Temporary erosion and sediment control measures will be removed within 30 days after permanent stabilization is attained.
- Stabilization of soil during the winter shall be in accordance with this document and the notes on the construction drawings.

Temporary Erosion and Sediment Control Measures

Temporary erosion and sediment control measures will be in-place prior to beginning construction activities and will be maintained for the duration of the construction project. Silt fencing will be installed along the property lines adjacent to all disturbed areas.

Temporary Mulch/Vegetation

Exposed soil areas that will not be worked for more than 7 days will be mulched. Mulch shall consist of hay or straw that is air-dried, free of undesirable seeds and coarse materials. Mulch will be applied at 2 bales (70-90 pounds) per 1,000 square feet to cover 75-90% of the ground surface. Mulch will be kept moist or anchored in-place to prevent wind disturbance. Erosion control mix and chemical mulches with binder can also be used on site if applied in accordance with MDEP's BMPs.

Temporary vegetation will be used in areas that will not be brought to final grade for a year or less. Preparation of the seedbed will be necessary to ensure sufficient vegetative growth. Soil tests are recommended to determine the appropriate application rate of lime and fertilizer. If soil testing is not feasible, then fertilizer will be applied at a rate of 15 pounds per 1,000 square feet of 10-10-10 (N-P205-K20) or equivalent. Apply limestone (equivalent to 50% calcium plus magnesium oxide) at a rate of 150 pounds per 1,000 square feet. If the soil has been compacted during construction then the soil should be loosened to a depth of approximately 2 inches. Seeding recommendations are provided in the table below.

TEMPORARY GROUND STABILIZATION		
Seed	Pounds per 1,000 sq ft	Recommended Seeding Dates
Winter Rye	2.5	August 30-October 1
Oats	2.0	April 1-July 1 August 30-September 30
Annual Ryegrass	1.0	April 1-July 1
Sudangrass	1.0	May 15-August 30
Perennial	1.0	August 30-September 30

Note: Mulch shall be applied at the rates previously specified following the seed application.

Permanent Stabilization

Areas that will not be worked for more than one year or have been final graded will be permanently stabilized within 7 days. Permanent stabilization at this site will include road sub-base/pavement, permanent seeding, and permanent landscaping. Permanent seeding will be performed upon completion of construction activities. The type of seeding mix to be used for permanent seeding is noted on Sheet 3 CONSTRUCTION NOTES/DETAILS. All disturbed areas not otherwise stabilized shall be graded, smoothed, and prepared for final seeding. Four inches of loam (minimum) shall be spread over the disturbed areas and

smoothed to a uniform surface. Soil tests are recommended to determine the appropriate application rate of lime and fertilizer. If soil testing is not feasible, then fertilizer can be applied at a rate of 15 pounds per 1,000 square feet of 10-20-20 (N-P205-K20) or equivalent. Apply limestone (equivalent to 50% calcium plus magnesium oxide) at a rate of 150 pounds per 1,000 square feet. Both the lime and fertilizer should be worked into the ground to a depth of 4 inches as practical. The seedbed should be subsequently rolled to firm prior to seeding. Mulch will be applied at 2 bales (70-90 pounds) per 1,000 square feet to cover 75-90% of the ground surface. Mulch will be kept moist or anchored in-place to prevent wind disturbance. Erosion control mix and chemical mulches with binder can also be used on site if applied in accordance with MDEP's BMPs.

If hydro-seeding is used lime and fertilizer may be added with the seed and applied simultaneously. The use of straw mulch and adhesive material or 500 pounds of wood fiber mulch provides sufficient erosive protection. Seeding rates will be increased by 10% if hydro-seeding practices are employed.

All construction activities at the site are planned to be completed during the winter/spring of 2016. For this construction period, dormant seeding will be performed. The seed mixture described Sheet 3 CONSTRUCTION NOTES/DETAILS. Mulch should be applied according to the temporary mulching practices discussed previously. Dormant seeding requires inspection in the spring. All areas where cover is inadequate shall be immediately reseeded and mulched as soon as possible.

Erosion and sediment control features will not be removed until after all disturbed areas have been stabilized with permanent seeding exhibiting at least 90% vegetative cover.

Dust Control

Dust control methods will be employed on site to prevent movement of dust from exposed soil surfaces that could potentially create hazards to wildlife, humans, or plant life both onsite and offsite. Dust generated by activities at the Site, including dust associated with traffic to and from the Site, will be controlled by sweeping, paving, watering or other best management practices for control of fugitive emissions.

Preventive measures will include the following, as needed:

- Traffic will be restricted to predetermined routes (the existing driveways). Exit and entrance during construction will be limited to these locations.
- Natural vegetation and existing paved areas will be maintained to the extent practical.
- Excavation activities will be conducted in phases to reduce the area of land disturbed at any one time.

- Mulching and vegetative practices (e.g., temporary and permanent mulching, temporary and permanent vegetative cover) will be employed to reduce the need for dust control.
- Paved surfaces and roadways will be swept (e.g., mechanical sweeper) where necessary to prevent dust buildup.

Construction will begin immediately following the receipt of all necessary permits. The anticipated construction timeframe is winter-spring 2016.

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.

- *Site Stabilization*. For winter stabilization, hay mulch is applied at twice the standard temporary stabilization rate. At the end of each construction day, areas that have been brought to final grade must be stabilized. Mulch may not be spread on top of snow.

- *Sediment Barriers*. All areas within 75 feet of a protected natural resource must be protected with a double row of sediment barriers.

- *Ditches*. All vegetated ditch lines that have not been stabilized by November 1, or will be worked during the winter construction period, must be stabilized with an appropriate stone lining backed by an appropriate gravel bed or geotextile unless specifically released from this standard by the Department.

- *Slopes*. Mulch netting must be used to anchor mulch on all slopes greater than 8% unless erosion control blankets or erosion control mix is being used on these slopes.

2.0 INSPECTION AND MAINTENANCE PLAN

2.1 Construction Inspections

Inspections and maintenance of erosion and sedimentation control measures and stormwater control facilities will be performed during construction. Inspections will include:

- Vehicle entry and exit locations.
- Disturbed and impervious areas.
- Paved and impervious areas
- Pond Construction
- Erosion control measures.
- Materials storage areas exposed to precipitation.

These areas will be inspected at least once per week as well as before and after a storm event, and prior to completing permanent stabilization measures.

An inspection check list sheet is included at the end of this section. The Contractor will be responsible for maintaining and preserving all erosion and sediment control features associated with the Site during construction. Any problems, damage, or costs directly associated with the performance of or lack of erosion control measures and maintenance are the sole responsibility of the Contractor.

In addition to the above, the applicant will retain the services of a professional engineer to inspect the construction and stabilization of all stormwater management structures. If necessary, the inspecting engineer will interpret the pond's construction plan for the contractor. Once all stormwater management structures are constructed and stabilized, the inspecting engineer will notify the department in writing within 30 days to state that the pond has been completed.

2.2 Post-Construction Inspections

The site Applicant will be responsible for long term inspection and maintenance of the detention pond and ensuring that the pond was construction in accordance with the design intents after construction is completed. An inspection checklist is included at the end of this section.

The Applicant shall pay for the services of a qualified Third Party to conduct inspections of the site, as needed, for compliance with the provisions of the Erosion and Sedimentation Control Plan. The person responsible for coordinating the Third Party and for performing any required maintenance is:

Louie Turcotte
Lewiston School Department
36 Oak Street
Lewiston, ME 04240
Office: 795-4107

Cell: 754-5847
Lewiston School Department

The Third Party inspector will provide to the City of Lewiston documentation on management of the stormwater facilities as required (refer to attached MS4 requirements).

2.3 Housekeeping

During and after construction, good housekeeping practices will be employed to minimize potential environmental impacts, specifically:

- Spill Prevention. Both petroleum and non-petroleum products utilized during construction will be stored in compatible and properly labeled containers. When not in use, these containers will be closed and storedin a secure area. A spill kit will be kept in close proximity to the secured area. Temporary fuel storage tanks mobilized to the site for construction will be double-walled. Both preventative and routine maintenance will be conducted to minimize the potential for fuel releases. These activities will be conducted offsite during construction.
- Groundwater Protection. Petroleum, non-petroleum, and other hazardous materials will not be handled on site.
- Fugitive Sediment and Dust. During construction, tracking of mud from construction vehicles into the public road will be minimized. During wet periods, the public road will be swept weekly, at a minimum, to control the amount of mud leaving the Site. During dry periods, fugitive sediment and dust will be controlled on site using a water truck, or similar, as necessary.
- Debris and other Materials. Litter, construction debris and chemicals will be stored in a manner such that the exposure to stormwater is minimized. Litter and construction debris will be separated and containerized, as necessary, for proper disposal. Chemicals will be stored in compatible and properly labeled containers and stored in a secure area equipped with a spill kit.

CONSTRUCTION INSPECTION

AND

MAINTENANCE FORMS

CONSTRUCTION

EROSION AND SEDIMENTATION CONTROL MAINTENANCE LOG

2016 FARWELL SCHOOL ADDITION, FARWELL STREET, LEWISTON, MAINE

Inspections to be performed once per week, before and after storms, and prior to completing permanent stabilization.

ITEM	DEFECTS	DESCRIPTION OF DEFECTS AND REPAIRS/MAINTENANCE	
Vehicle Entrances and Exits	Yes No		
Disturbed Areas	Yes No		
Impervious Areas	Yes No		
Pond Construction	Yes No		
Erosion and Sedimentation Control	Yes No		
DATE:	**BY:**	**COMPANY:**	**QUALS/POSITION:**

REMARKS:

Disturbed Areas: Inspect mulched and temporary seed areas for rill erosion. Add additional mulch if less than 90% coverage is observed. Inspect nets after rain events for dislocation or failure.

Impervious Areas: Sweep or wash pavement as necessary to keep dust levels to a minimum. Wash water should be directed to an approved sediment trap, such as a "Filter Sock". Accumulated sediment shall be removed and stored or disposed of appropriately. Information on "filter socks" can be found at www.filtrexx.com.

Erosion and Sedimentation Control: Inspect silt fence for erosion or sedimentation below them. Replace silt fence where evidence of undercutting or impounding of water behind the fence occur. Replace fabric that has decomposed. Remove sediment deposits behind silt fence when deposits reach ½ the height of the fence.

Vehicle Entrances and Exits: Check for mudding and clogging of stone and replace as necessary. Sweep or wash pavement at exits where mud has been tracked onto the travelled way.

Pond Construction: Confirm that pond is constructed in accordance with plans. Observe for seepage in sidewalls during construction. Consider additional construction requirements for construction during the winter, including the effects of snow and freezing temperatures

EROSION AND SEDIMENTATION CONTROL MAINTENANCE LOG

2016 FARWELL SCHOOL ADDITION, FARWELL STREET, LEWISTON, MAINE

Inspections for the Wet Pond to be performed once per year in accordance with the Post-construction Stormwater Management Plan.

ITEM	DEFECTS	DESCRIPTION OF DEFECTS AND REPAIRS/MAINTENANCE	
Pond Inlets and Outlets	Yes / No		
Pond Slopes	Yes / No		
Paved Areas	Yes/No		
Catch Basins	Yes/No		
Maintenance Dredging	Yes/No		
DATE:	**BY:**	**COMPANY:**	**QUALS/POSITION:**

Pond Inlets and Outlets: Inspect for proper function and remove any accumulated debris.

Pond Slopes: Inspect for erosion, destabilization of site slopes, embankment settling, or signs of structural failure. Repair slopes as necessary immediately upon the identification of problems.

Paved Areas: Remove accumulated winter sand and debris from all pavement areas annually. Wash water should be directed to an approved sediment trap, such as a "Filter Sock". Accumulated sediment shall be removed and stored or disposed of appropriately. Information on "filter socks" can be found at www.filtrexx.com.

Catch Basins: Remove and legally dispose of accumulated debris and sediment from the bottom of the structure, inlet grates, inflow channels to the basin, and pipes between basins.

Maintenance Dredging: Dredge accumulated sediments from the pond every 15 to 20 years.

MS4 AREA REQUIREMENTS

Stormwater discharge from the wet pond will be into the City's MS4 Area.
A qualified Third Party Inspector will be engaged by the Applicant's representative:

Louie Turcotte
Lewiston School Department
36 Oak Street
Lewiston, ME 04240
Office: 795-4107
Cell: 754-5847

at least annually to inspect the wet pond in accordance with the approved Post-Construction Stormwater Management Plan (PCSMP) for the stormwater facilities associated with the 2016 building addition and the pond. If the pond requires maintenance to function as intended, the Qualified Third Party shall note the deficiencies and the remedies. The Applicant's representative shall take the required actions to address any deficiencies. The Qualified Third Party Inspector shall provide, on or by May 31 of each year, a completed and signed City of Lewiston Annual Stormwater Management Facilities Certification (SMF) Form, certifying that the SMF have been inspected, and that they are adequately maintained and functioning as intended by the PCSMP, or that they require maintenance or repair, in order to function as intended by the PCSMP The Qualified Third Party shall provide a record of the required maintenance or deficiency and corrective actions taken.

CITY OF LEWISTON

Annual Stormwater Management Facilities Certification

I, _____, certify the following:

1. I am making this Annual Stormwater Management Facilities Certification for the following property:

2016 Farwell School Addition, Farwell Street

2. The owner of the Property is:

Lewiston School Department
36 Oak Street
Lewiston, Maine 04240

3. I am a Qualified Third-Party Inspector hired by the owner of the Property.

4. I have knowledge of erosion and sedimentation control and have reviewed approved Post-Construction Stormwater Management Plan for the property.

5. On _____, I inspected the Stormwater Management Facilities, including but not limited to the catch basins, drainage ditches, paved areas, and pond located around the 2016 addition.

6. At the time of my inspection of the Stormwater Management Facilities on the Property, I identified the following needs for routine maintenance or deficiencies in the Stormwater Management Facilities:

7. On _____, the Owner of the property took or had taken the following routine maintenance or the following corrective action(s) to address the deficiencies in the Stormwater Management Facilities stated in 5 above:

8. As of the date of this certification, the Stormwater Management Facilities are functioning as intended by the approved Post-Construction Stormwater Management Plan for the Property.

Date:_____

By:_____

Print Name:_____

Personally appeared the above-named_____, of _____, and acknowledged the foregoing Annual Certification to be said person's free act and deed in said capacity.

Before me, Notary Public, on this date: _____

Signature; _____

Mail this certification to the City of Lewiston at the following address:

Director of Planning and Code Enforcement
City Building
27 Pine Street
Lewiston, Maine 04240

Director of Public Works
103 Adams Avenue
Lewiston, Maine 04240

APPENDIX B

GENERAL STANDARDS COMPUTATIONS

Summary for Pond P2 ALT: Dry Pond

[81] Warning: Exceeded Pond P1 by 0.05' @ 12.55 hrs

Inflow Area = 1.334 ac, 40.49% Impervious, Inflow Depth > 4.62"
Inflow = 3.86 cfs @ 12.22 hrs, Volume= 0.513 af
Outflow = 3.72 cfs @ 12.28 hrs, Volume= 0.399 af, Atten= 4%, Lag= 3.5 min
Primary = 3.72 cfs @ 12.28 hrs, Volume= 0.399 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 270.32' @ 12.28 hrs Surf.Area= 3,022 sf Storage= 5,823 cf

Plug-Flow detention time= 140.2 min calculated for 0.398 af (78% of inflow)
Center-of-Mass det. time= 59.3 min (855.7 - 796.4)

Volume	Invert	Avail.Storage	Storage Description
#1	267.50'	12,728 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
267.50	1,421	0	0
268.00	1,621	761	761
269.00	2,054	1,838	2,598
269.50	2,274	1,082	3,680
270.00	2,664	1,235	4,915
271.00	3,785	3,225	8,139
272.00	5,392	4,589	12,728

Device	Routing	Invert	Outlet Devices
#1	Primary	270.00'	**24.0" Horiz. Top Grate** C= 0.600 Limited to weir flow at low heads

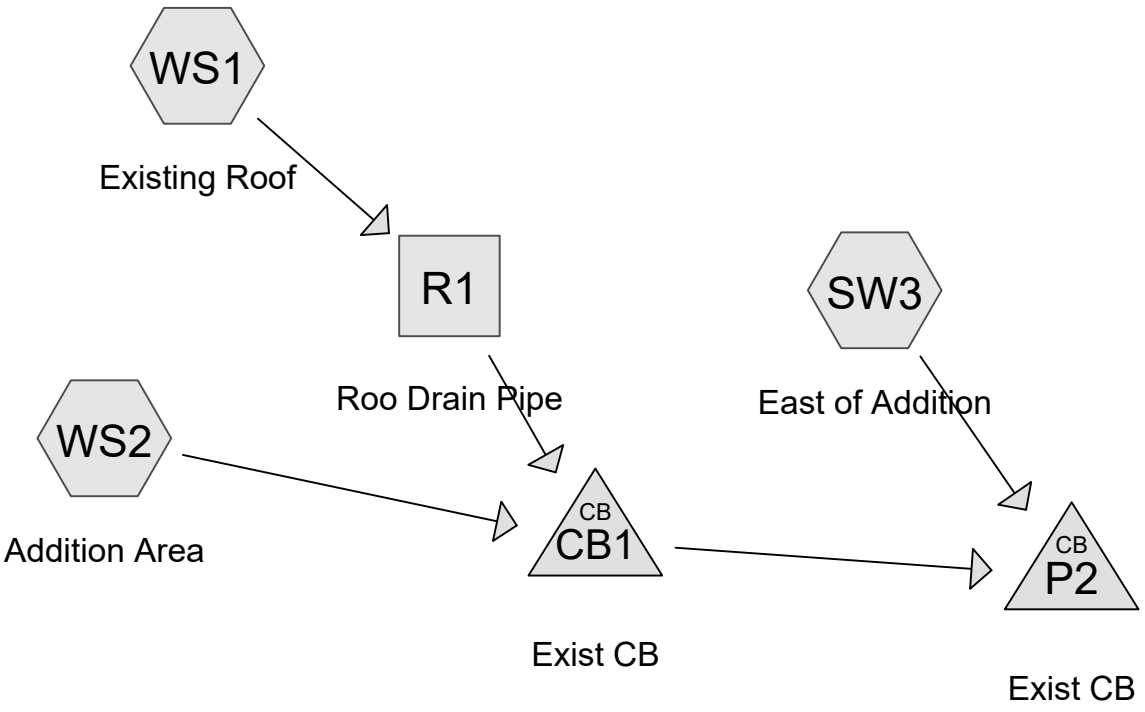
Primary OutFlow Max=3.70 cfs @ 12.28 hrs HW=270.32' (Free Discharge)
└**1=Top Grate** (Weir Controls 3.70 cfs @ 1.85 fps)

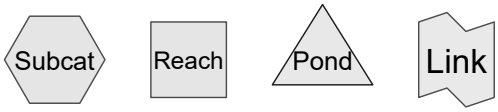
APPENDIX C

FLOODING STANDARDS COMPUTATIONS

APPENDIX C.1

PRE-DEVELOPMENT COMPUTATIONS





Routing Diagram for Existing Condition
Prepared by Microsoft, Printed 2/12/2016
HydroCAD® 10.00-12 s/n 01406 © 2014 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.047	74	>75% Grass cover, Good, HSG C (SW3, WS2)
0.276	98	Paved parking, HSG C (SW3, WS2)
0.187	98	Unconnected roofs, HSG C (WS1)
1.510	**81**	**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	WS1	0.00	0.00	100.0	0.2000	0.009	5.0	0.0	0.0
2	R1	271.00	268.10	45.0	0.0644	0.010	8.0	0.0	0.0
3	CB1	268.00	266.03	205.0	0.0096	0.025	18.0	0.0	0.0
4	P2	265.93	265.15	78.0	0.0100	0.020	18.0	0.0	0.0

Time span=1.00-24.00 hrs, dt=0.05 hrs, 461 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 SW3: East of Addition Runoff Area=20,615 sf 17.22% Impervious Runoff Depth>1.12"
Flow Length=160' Slope=0.0150 '/' Tc=16.5 min CN=78 Runoff=0.44 cfs 0.044 af

Subcatchment WS1: Existing Roof Runoff Area=8,140 sf 100.00% Impervious Runoff Depth>2.77"
Flow Length=150' Tc=1.4 min CN=98 Runoff=0.59 cfs 0.043 af

Subcatchment WS2: Addition Area Runoff Area=37,035 sf 22.90% Impervious Runoff Depth>1.19"
Flow Length=270' Tc=12.1 min CN=79 Runoff=0.93 cfs 0.084 af

Reach R1: Roo Drain Pipe Avg. Flow Depth=0.17' Max Vel=8.12 fps Inflow=0.59 cfs 0.043 af
8.0" Round Pipe n=0.010 L=45.0' S=0.0644 '/' Capacity=3.99 cfs Outflow=0.59 cfs 0.043 af

Pond CB1: Exist CB Peak Elev=268.64' Inflow=1.18 cfs 0.127 af
18.0" Round Culvert n=0.025 L=205.0' S=0.0096 '/' Outflow=1.18 cfs 0.127 af

Pond P2: Exist CB Peak Elev=266.61' Inflow=1.58 cfs 0.171 af
18.0" Round Culvert n=0.020 L=78.0' S=0.0100 '/' Outflow=1.58 cfs 0.171 af

Total Runoff Area = 1.510 ac Runoff Volume = 0.171 af Average Runoff Depth = 1.36"
69.34% Pervious = 1.047 ac 30.66% Impervious = 0.463 ac

Summary for Subcatchment SW3: East of Addition

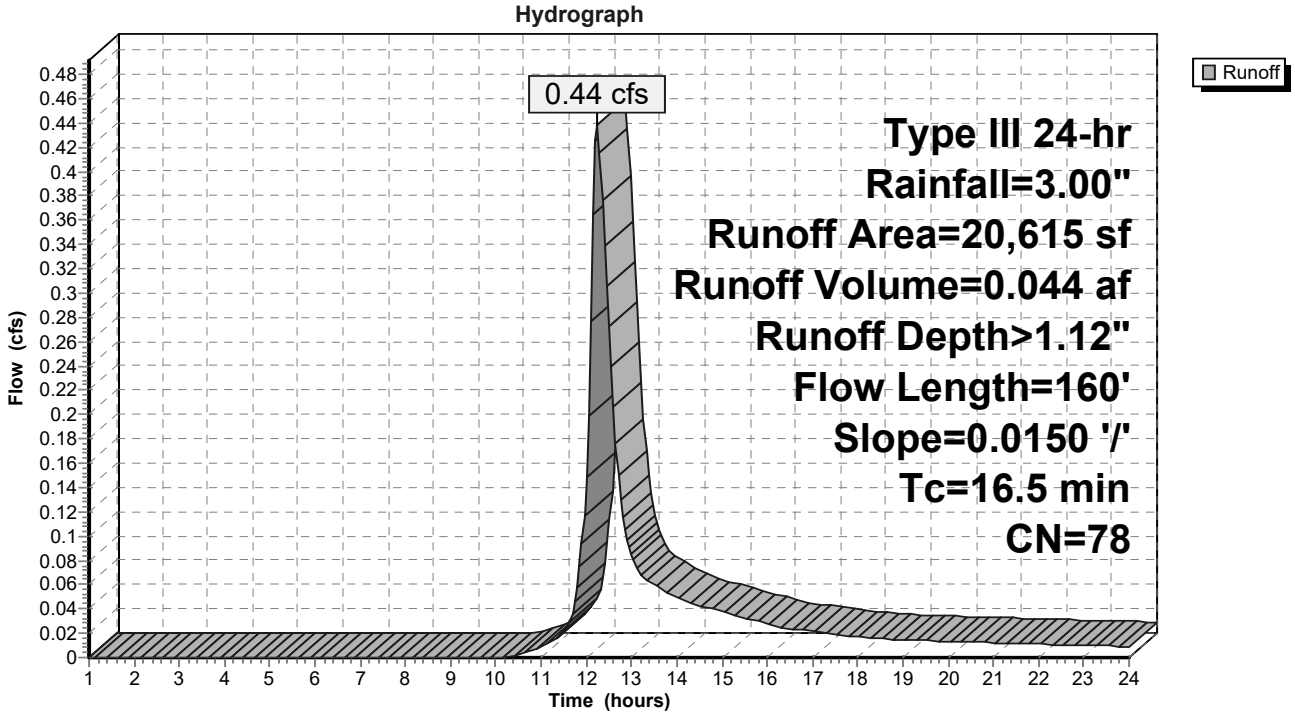
Runoff = 0.44 cfs @ 12.24 hrs, Volume= 0.044 af, Depth> 1.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

Area (sf)	CN	Description
3,550	98	Paved parking, HSG C
17,065	74	>75% Grass cover, Good, HSG C
20,615	78	Weighted Average
17,065		82.78% Pervious Area
3,550		17.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	160	0.0150	0.16		**Sheet Flow, SEG AB** Grass: Short n= 0.150 P2= 3.00"

Subcatchment SW3: East of Addition



Hydrograph for Subcatchment SW3: East of Addition

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.03	0.00	0.00
1.25	0.04	0.00	0.00
1.50	0.04	0.00	0.00
1.75	0.05	0.00	0.00
2.00	0.06	0.00	0.00
2.25	0.07	0.00	0.00
2.50	0.08	0.00	0.00
2.75	0.08	0.00	0.00
3.00	0.09	0.00	0.00
3.25	0.10	0.00	0.00
3.50	0.11	0.00	0.00
3.75	0.12	0.00	0.00
4.00	0.13	0.00	0.00
4.25	0.14	0.00	0.00
4.50	0.15	0.00	0.00
4.75	0.16	0.00	0.00
5.00	0.17	0.00	0.00
5.25	0.18	0.00	0.00
5.50	0.19	0.00	0.00
5.75	0.20	0.00	0.00
6.00	0.22	0.00	0.00
6.25	0.23	0.00	0.00
6.50	0.24	0.00	0.00
6.75	0.26	0.00	0.00
7.00	0.27	0.00	0.00
7.25	0.29	0.00	0.00
7.50	0.30	0.00	0.00
7.75	0.32	0.00	0.00
8.00	0.34	0.00	0.00
8.25	0.36	0.00	0.00
8.50	0.39	0.00	0.00
8.75	0.41	0.00	0.00
9.00	0.44	0.00	0.00
9.25	0.47	0.00	0.00
9.50	0.50	0.00	0.00
9.75	0.53	0.00	0.00
10.00	0.57	0.00	0.00
10.25	0.61	0.00	0.00
10.50	0.65	0.00	0.00
10.75	0.70	0.01	0.01
11.00	0.75	0.01	0.01
11.25	0.81	0.02	0.01
11.50	0.89	0.03	0.02
11.75	1.07	0.08	0.05
12.00	1.50	0.23	0.15
12.25	1.93	0.45	**0.44**
12.50	2.11	0.54	0.27
12.75	2.19	0.59	0.13
13.00	2.25	0.63	0.09
13.25	2.30	0.66	0.07
13.50	2.35	0.69	0.06
13.75	2.39	0.72	0.05
14.00	2.43	0.74	0.05
14.25	2.47	0.77	0.05
14.50	2.50	0.79	0.04
14.75	2.53	0.81	0.04
15.00	2.56	0.83	0.04
15.25	2.59	0.85	0.04
15.50	2.61	0.86	0.03
15.75	2.64	0.88	0.03
16.00	2.66	0.89	0.03
16.25	2.68	0.90	0.03
16.50	2.70	0.92	0.02
16.75	2.71	0.93	0.02
17.00	2.73	0.94	0.02
17.25	2.74	0.95	0.02
17.50	2.76	0.96	0.02
17.75	2.77	0.97	0.02
18.00	2.78	0.98	0.02
18.25	2.80	0.99	0.02
18.50	2.81	0.99	0.02
18.75	2.82	1.00	0.02
19.00	2.83	1.01	0.01
19.25	2.84	1.02	0.01
19.50	2.85	1.02	0.01
19.75	2.86	1.03	0.01
20.00	2.87	1.04	0.01
20.25	2.88	1.04	0.01
20.50	2.89	1.05	0.01
20.75	2.90	1.06	0.01
21.00	2.91	1.06	0.01
21.25	2.92	1.07	0.01
21.50	2.93	1.08	0.01
21.75	2.93	1.08	0.01
22.00	2.94	1.09	0.01
22.25	2.95	1.09	0.01
22.50	2.96	1.10	0.01
22.75	2.97	1.10	0.01
23.00	2.97	1.11	0.01
23.25	2.98	1.11	0.01
23.50	2.99	1.12	0.01
23.75	2.99	1.12	0.01
24.00	**3.00**	**1.13**	0.01

Summary for Subcatchment WS1: Existing Roof

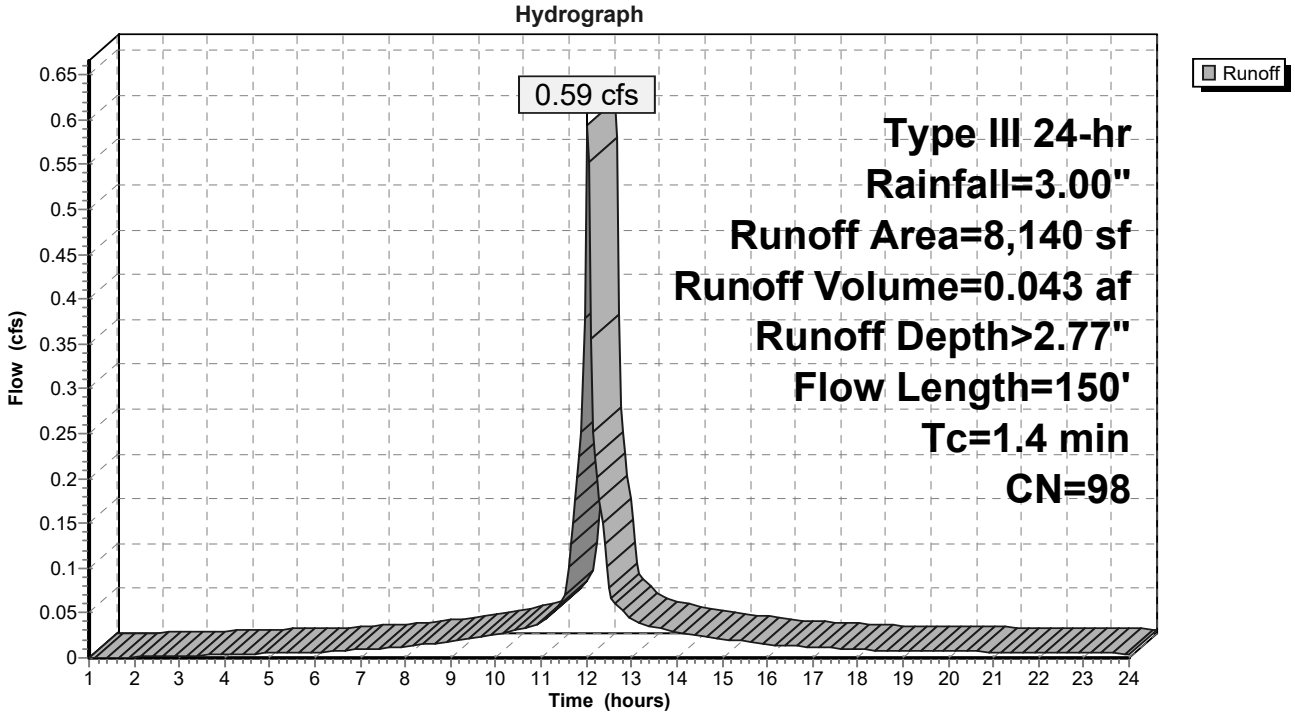
Runoff = 0.59 cfs @ 12.02 hrs, Volume= 0.043 af, Depth> 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

Area (sf)	CN	Description
8,140	98	Unconnected roofs, HSG C
8,140		100.00% Impervious Area
8,140		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	50	0.0050	0.67		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
0.1	100	0.2000	16.35	2.23	**Pipe Channel, SEG BC ROOF DRAIN** 5.0" Round Area= 0.1 sf Perim= 1.3' r= 0.10' n= 0.009 PVC, smooth interior
1.4	150	Total			

Subcatchment WS1: Existing Roof



Hydrograph for Subcatchment WS1: Existing Roof

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.03	0.00	0.00
1.25	0.04	0.00	0.00
1.50	0.04	0.00	0.00
1.75	0.05	0.00	0.00
2.00	0.06	0.00	0.00
2.25	0.07	0.00	0.00
2.50	0.08	0.01	0.00
2.75	0.08	0.01	0.00
3.00	0.09	0.01	0.00
3.25	0.10	0.01	0.00
3.50	0.11	0.02	0.00
3.75	0.12	0.02	0.00
4.00	0.13	0.03	0.00
4.25	0.14	0.03	0.00
4.50	0.15	0.04	0.00
4.75	0.16	0.04	0.00
5.00	0.17	0.05	0.01
5.25	0.18	0.06	0.01
5.50	0.19	0.06	0.01
5.75	0.20	0.07	0.01
6.00	0.22	0.08	0.01
6.25	0.23	0.09	0.01
6.50	0.24	0.10	0.01
6.75	0.26	0.11	0.01
7.00	0.27	0.12	0.01
7.25	0.29	0.14	0.01
7.50	0.30	0.15	0.01
7.75	0.32	0.16	0.01
8.00	0.34	0.18	0.01
8.25	0.36	0.20	0.01
8.50	0.39	0.22	0.02
8.75	0.41	0.24	0.02
9.00	0.44	0.26	0.02
9.25	0.47	0.29	0.02
9.50	0.50	0.32	0.02
9.75	0.53	0.35	0.02
10.00	0.57	0.38	0.03
10.25	0.61	0.42	0.03
10.50	0.65	0.46	0.03
10.75	0.70	0.50	0.04
11.00	0.75	0.55	0.04
11.25	0.81	0.61	0.05
11.50	0.89	0.69	0.06
11.75	1.07	0.85	0.18
12.00	1.50	1.28	**0.58**
12.25	1.93	1.71	0.20
12.50	2.11	1.88	0.08
12.75	2.19	1.96	0.05
13.00	2.25	2.02	0.04
13.25	2.30	2.07	0.04
13.50	2.35	2.12	0.03
13.75	2.39	2.17	0.03
14.00	2.43	2.20	0.03
14.25	2.47	2.24	0.03
14.50	2.50	2.27	0.02
14.75	2.53	2.30	0.02
15.00	2.56	2.33	0.02
15.25	2.59	2.36	0.02
15.50	2.61	2.38	0.02
15.75	2.64	2.41	0.02
16.00	2.66	2.43	0.01
16.25	2.68	2.45	0.01
16.50	2.70	2.46	0.01
16.75	2.71	2.48	0.01
17.00	2.73	2.50	0.01
17.25	2.74	2.51	0.01
17.50	2.76	2.53	0.01
17.75	2.77	2.54	0.01
18.00	2.78	2.55	0.01
18.25	2.80	2.57	0.01
18.50	2.81	2.58	0.01
18.75	2.82	2.59	0.01
19.00	2.83	2.60	0.01
19.25	2.84	2.61	0.01
19.50	2.85	2.62	0.01
19.75	2.86	2.63	0.01
20.00	2.87	2.64	0.01
20.25	2.88	2.65	0.01
20.50	2.89	2.66	0.01
20.75	2.90	2.67	0.01
21.00	2.91	2.68	0.01
21.25	2.92	2.69	0.01
21.50	2.93	2.69	0.01
21.75	2.93	2.70	0.01
22.00	2.94	2.71	0.01
22.25	2.95	2.72	0.01
22.50	2.96	2.73	0.01
22.75	2.97	2.73	0.01
23.00	2.97	2.74	0.01
23.25	2.98	2.75	0.01
23.50	2.99	2.76	0.01
23.75	2.99	2.76	0.00
24.00	**3.00**	**2.77**	0.00

Summary for Subcatchment WS2: Addition Area

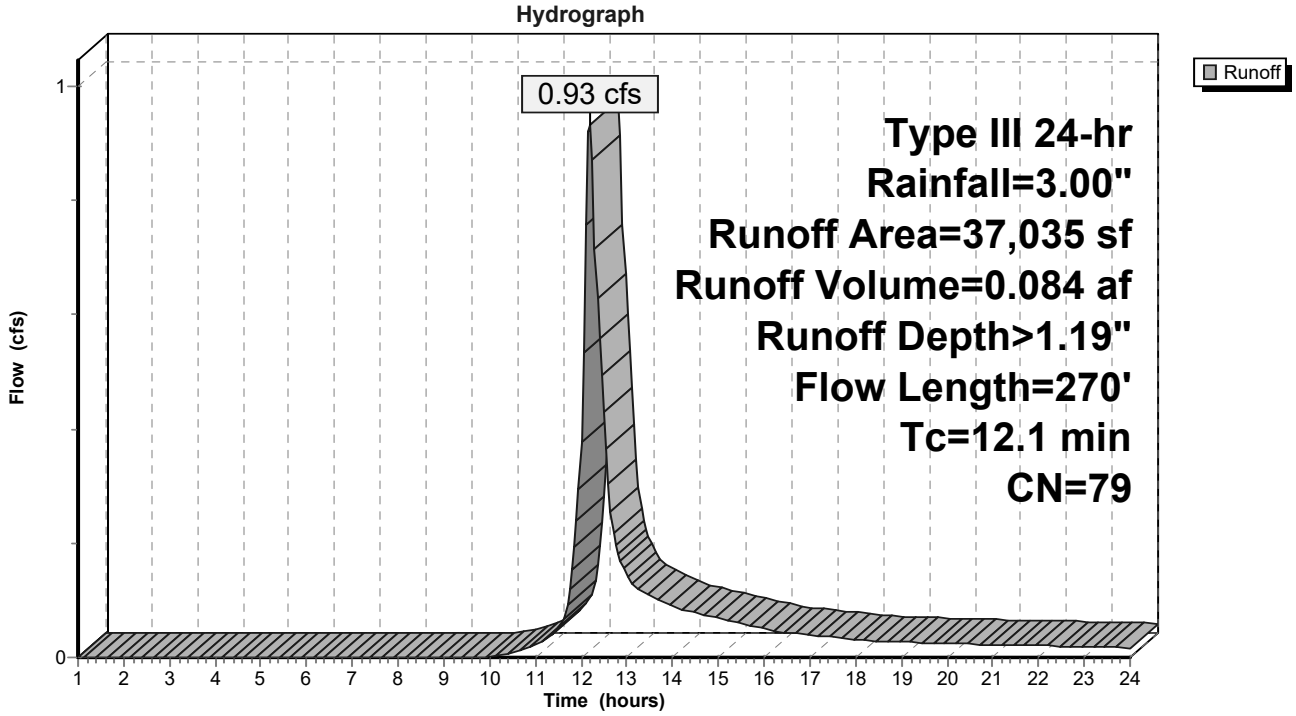
Runoff = 0.93 cfs @ 12.18 hrs, Volume= 0.084 af, Depth> 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

Area (sf)	CN	Description
8,480	98	Paved parking, HSG C
28,555	74	>75% Grass cover, Good, HSG C
37,035	79	Weighted Average
28,555		77.10% Pervious Area
8,480		22.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	135	0.0300	0.21		**Sheet Flow, SEG AB** Grass: Short n= 0.150 P2= 3.00"
1.2	135	0.0080	1.82		**Shallow Concentrated Flow, SEG BC** Paved Kv= 20.3 fps
12.1	270	Total			

Subcatchment WS2: Addition Area



Hydrograph for Subcatchment WS2: Addition Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.03	0.00	0.00	14.00	2.43	0.79	0.09
1.25	0.04	0.00	0.00	14.25	2.47	0.82	0.08
1.50	0.04	0.00	0.00	14.50	2.50	0.84	0.08
1.75	0.05	0.00	0.00	14.75	2.53	0.86	0.07
2.00	0.06	0.00	0.00	15.00	2.56	0.88	0.07
2.25	0.07	0.00	0.00	15.25	2.59	0.90	0.06
2.50	0.08	0.00	0.00	15.50	2.61	0.92	0.06
2.75	0.08	0.00	0.00	15.75	2.64	0.93	0.05
3.00	0.09	0.00	0.00	16.00	2.66	0.94	0.05
3.25	0.10	0.00	0.00	16.25	2.68	0.96	0.05
3.50	0.11	0.00	0.00	16.50	2.70	0.97	0.04
3.75	0.12	0.00	0.00	16.75	2.71	0.98	0.04
4.00	0.13	0.00	0.00	17.00	2.73	0.99	0.04
4.25	0.14	0.00	0.00	17.25	2.74	1.00	0.04
4.50	0.15	0.00	0.00	17.50	2.76	1.01	0.04
4.75	0.16	0.00	0.00	17.75	2.77	1.02	0.03
5.00	0.17	0.00	0.00	18.00	2.78	1.03	0.03
5.25	0.18	0.00	0.00	18.25	2.80	1.04	0.03
5.50	0.19	0.00	0.00	18.50	2.81	1.05	0.03
5.75	0.20	0.00	0.00	18.75	2.82	1.06	0.03
6.00	0.22	0.00	0.00	19.00	2.83	1.07	0.03
6.25	0.23	0.00	0.00	19.25	2.84	1.07	0.03
6.50	0.24	0.00	0.00	19.50	2.85	1.08	0.03
6.75	0.26	0.00	0.00	19.75	2.86	1.09	0.03
7.00	0.27	0.00	0.00	20.00	2.87	1.10	0.02
7.25	0.29	0.00	0.00	20.25	2.88	1.10	0.02
7.50	0.30	0.00	0.00	20.50	2.89	1.11	0.02
7.75	0.32	0.00	0.00	20.75	2.90	1.12	0.02
8.00	0.34	0.00	0.00	21.00	2.91	1.12	0.02
8.25	0.36	0.00	0.00	21.25	2.92	1.13	0.02
8.50	0.39	0.00	0.00	21.50	2.93	1.13	0.02
8.75	0.41	0.00	0.00	21.75	2.93	1.14	0.02
9.00	0.44	0.00	0.00	22.00	2.94	1.15	0.02
9.25	0.47	0.00	0.00	22.25	2.95	1.15	0.02
9.50	0.50	0.00	0.00	22.50	2.96	1.16	0.02
9.75	0.53	0.00	0.00	22.75	2.97	1.16	0.02
10.00	0.57	0.00	0.00	23.00	2.97	1.17	0.02
10.25	0.61	0.00	0.00	23.25	2.98	1.17	0.02
10.50	0.65	0.01	0.01	23.50	2.99	1.18	0.02
10.75	0.70	0.01	0.01	23.75	2.99	1.18	0.02
11.00	0.75	0.02	0.02	24.00	**3.00**	**1.19**	0.02
11.25	0.81	0.03	0.03				
11.50	0.89	0.04	0.05				
11.75	1.07	0.09	0.12				
12.00	1.50	0.26	**0.38**				
12.25	1.93	0.48	**0.82**				
12.50	2.11	0.59	0.43				
12.75	2.19	0.64	0.20				
13.00	2.25	0.67	0.15				
13.25	2.30	0.71	0.12				
13.50	2.35	0.74	0.11				
13.75	2.39	0.77	0.10				

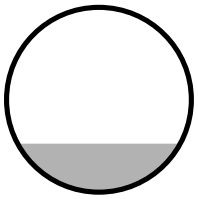
Summary for Reach R1: Roo Drain Pipe

Inflow Area = 0.187 ac,100.00% Impervious, Inflow Depth > 2.77"
Inflow = 0.59 cfs @ 12.02 hrs, Volume= 0.043 af
Outflow = 0.59 cfs @ 12.02 hrs, Volume= 0.043 af, Atten= 1%, Lag= 0.2 min

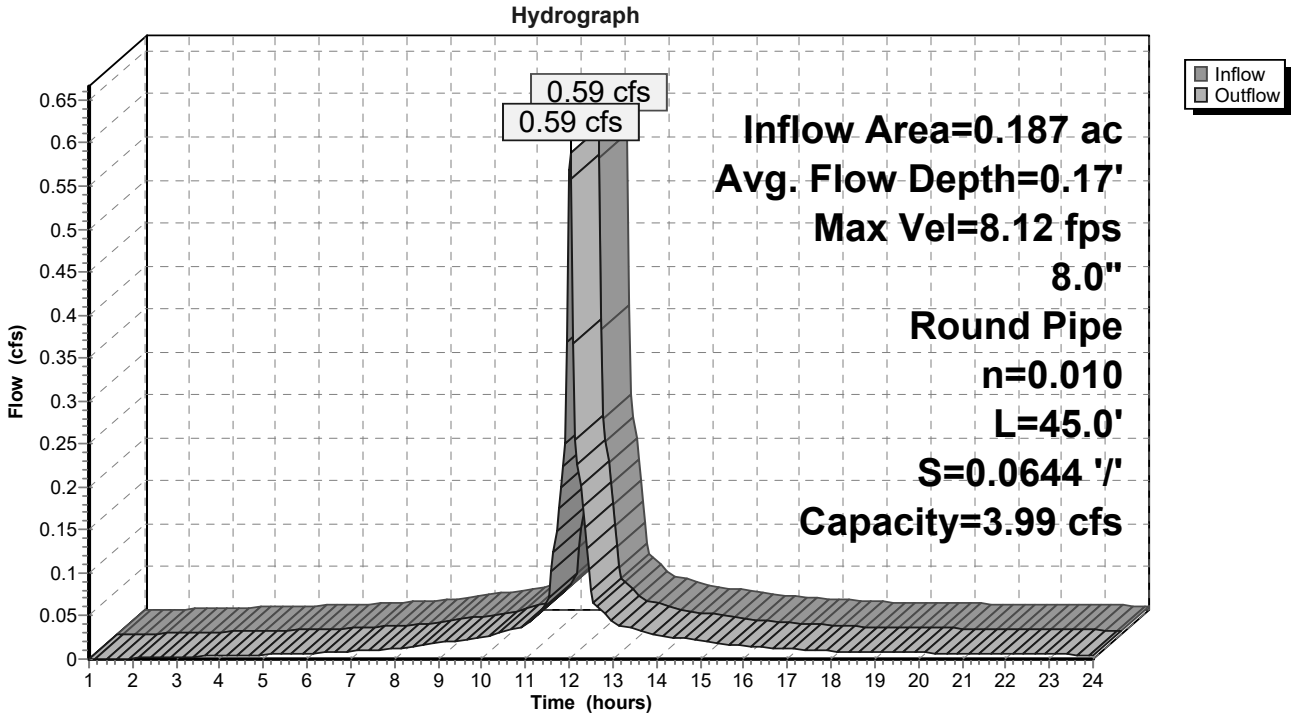
Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.12 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.62 fps, Avg. Travel Time= 0.3 min

Peak Storage= 3 cf @ 12.02 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 3.99 cfs

8.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 45.0' Slope= 0.0644 '/'
Inlet Invert= 271.00', Outlet Invert= 268.10'



Reach R1: Roo Drain Pipe



Hydrograph for Reach R1: Roo Drain Pipe

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
1.00	0.00	0	271.00	0.00
1.50	0.00	0	271.00	0.00
2.00	0.00	0	271.01	0.00
2.50	0.00	0	271.01	0.00
3.00	0.00	0	271.01	0.00
3.50	0.00	0	271.01	0.00
4.00	0.00	0	271.02	0.00
4.50	0.00	0	271.02	0.00
5.00	0.01	0	271.02	0.01
5.50	0.01	0	271.02	0.01
6.00	0.01	0	271.02	0.01
6.50	0.01	0	271.02	0.01
7.00	0.01	0	271.02	0.01
7.50	0.01	0	271.03	0.01
8.00	0.01	0	271.03	0.01
8.50	0.02	0	271.03	0.02
9.00	0.02	0	271.03	0.02
9.50	0.02	0	271.04	0.02
10.00	0.03	0	271.04	0.03
10.50	0.03	0	271.04	0.03
11.00	0.04	0	271.05	0.04
11.50	0.06	1	271.06	0.06
12.00	**0.58**	**3**	**271.17**	**0.57**
12.50	0.08	1	271.06	0.08
13.00	0.04	1	271.05	0.04
13.50	0.03	0	271.04	0.03
14.00	0.03	0	271.04	0.03
14.50	0.02	0	271.04	0.02
15.00	0.02	0	271.03	0.02
15.50	0.02	0	271.03	0.02
16.00	0.01	0	271.03	0.01
16.50	0.01	0	271.03	0.01
17.00	0.01	0	271.03	0.01
17.50	0.01	0	271.02	0.01
18.00	0.01	0	271.02	0.01
18.50	0.01	0	271.02	0.01
19.00	0.01	0	271.02	0.01
19.50	0.01	0	271.02	0.01
20.00	0.01	0	271.02	0.01
20.50	0.01	0	271.02	0.01
21.00	0.01	0	271.02	0.01
21.50	0.01	0	271.02	0.01
22.00	0.01	0	271.02	0.01
22.50	0.01	0	271.02	0.01
23.00	0.01	0	271.02	0.01
23.50	0.01	0	271.02	0.01
24.00	0.00	0	271.02	0.00

Summary for Pond CB1: Exist CB

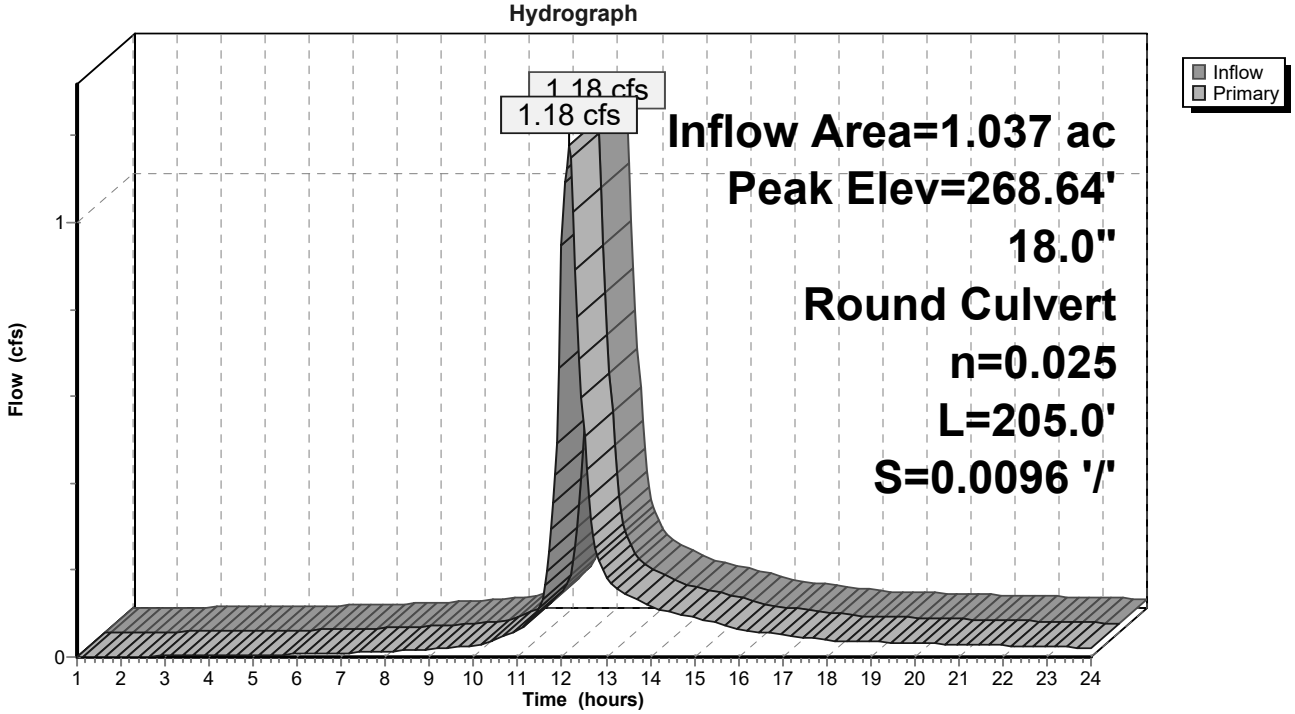
Inflow Area =	1.037 ac, 36.79% Impervious, Inflow Depth > 1.47"				
Inflow =	1.18 cfs @	12.16 hrs,	Volume=	0.127 af	
Outflow =	1.18 cfs @	12.16 hrs,	Volume=	0.127 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.18 cfs @	12.16 hrs,	Volume=	0.127 af	

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 268.64' @ 12.16 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	268.00'	**18.0" Round Culvert** L= 205.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 268.00' / 266.03' S= 0.0096 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

Primary OutFlow Max=1.17 cfs @ 12.16 hrs HW=268.64' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.17 cfs @ 2.42 fps)

Pond CB1: Exist CB



Hydrograph for Pond CB1: Exist CB

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	268.00	0.00	14.00	0.12	268.21	0.12
1.25	0.00	268.00	0.00	14.25	0.11	268.20	0.11
1.50	0.00	268.01	0.00	14.50	0.10	268.19	0.10
1.75	0.00	268.02	0.00	14.75	0.10	268.19	0.10
2.00	0.00	268.02	0.00	15.00	0.09	268.18	0.09
2.25	0.00	268.02	0.00	15.25	0.08	268.17	0.08
2.50	0.00	268.03	0.00	15.50	0.08	268.17	0.08
2.75	0.00	268.03	0.00	15.75	0.07	268.16	0.07
3.00	0.00	268.03	0.00	16.00	0.06	268.15	0.06
3.25	0.00	268.03	0.00	16.25	0.06	268.15	0.06
3.50	0.00	268.04	0.00	16.50	0.06	268.15	0.06
3.75	0.00	268.04	0.00	16.75	0.05	268.14	0.05
4.00	0.00	268.04	0.00	17.00	0.05	268.14	0.05
4.25	0.00	268.04	0.00	17.25	0.05	268.13	0.05
4.50	0.00	268.04	0.00	17.50	0.05	268.13	0.05
4.75	0.00	268.05	0.00	17.75	0.04	268.13	0.04
5.00	0.01	268.05	0.01	18.00	0.04	268.12	0.04
5.25	0.01	268.05	0.01	18.25	0.04	268.12	0.04
5.50	0.01	268.05	0.01	18.50	0.04	268.12	0.04
5.75	0.01	268.05	0.01	18.75	0.04	268.12	0.04
6.00	0.01	268.05	0.01	19.00	0.04	268.12	0.04
6.25	0.01	268.05	0.01	19.25	0.03	268.11	0.03
6.50	0.01	268.06	0.01	19.50	0.03	268.11	0.03
6.75	0.01	268.06	0.01	19.75	0.03	268.11	0.03
7.00	0.01	268.06	0.01	20.00	0.03	268.11	0.03
7.25	0.01	268.06	0.01	20.25	0.03	268.11	0.03
7.50	0.01	268.07	0.01	20.50	0.03	268.11	0.03
7.75	0.01	268.07	0.01	20.75	0.03	268.11	0.03
8.00	0.01	268.07	0.01	21.00	0.03	268.11	0.03
8.25	0.01	268.07	0.01	21.25	0.03	268.10	0.03
8.50	0.02	268.08	0.02	21.50	0.03	268.10	0.03
8.75	0.02	268.08	0.02	21.75	0.03	268.10	0.03
9.00	0.02	268.09	0.02	22.00	0.03	268.10	0.03
9.25	0.02	268.09	0.02	22.25	0.03	268.10	0.03
9.50	0.02	268.09	0.02	22.50	0.03	268.10	0.03
9.75	0.02	268.10	0.02	22.75	0.02	268.10	0.02
10.00	0.03	268.10	0.03	23.00	0.02	268.10	0.02
10.25	0.03	268.11	0.03	23.25	0.02	268.09	0.02
10.50	0.04	268.12	0.04	23.50	0.02	268.09	0.02
10.75	0.05	268.14	0.05	23.75	0.02	268.09	0.02
11.00	0.06	268.15	0.06	24.00	0.02	268.09	0.02
11.25	0.08	268.17	0.08				
11.50	0.11	268.20	0.11				
11.75	0.29	268.32	0.29				
12.00	**0.94**	**268.57**	**0.94**				
12.25	**1.02**	**268.59**	**1.02**				
12.50	0.51	268.42	0.51				
12.75	0.25	268.29	0.25				
13.00	0.19	268.26	0.19				
13.25	0.16	268.23	0.16				
13.50	0.14	268.22	0.14				
13.75	0.13	268.22	0.13				

Summary for Pond P2: Exist CB

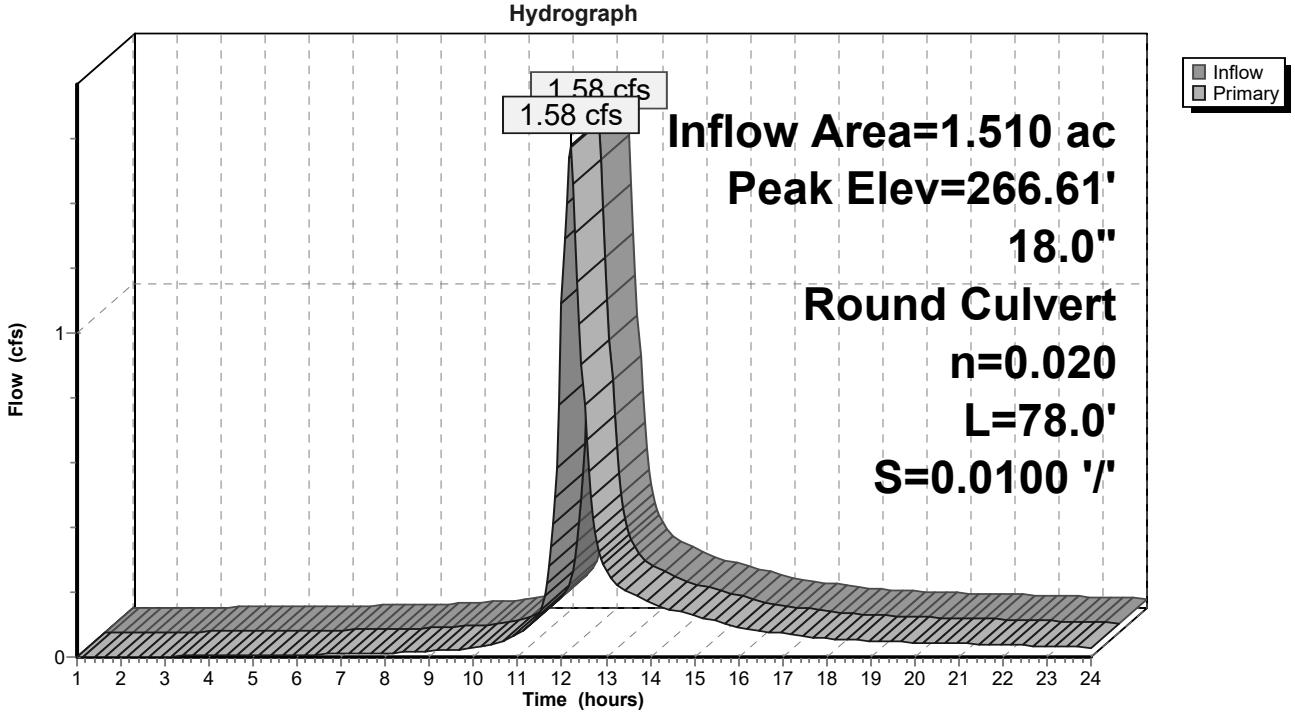
Inflow Area = 1.510 ac, 30.66% Impervious, Inflow Depth > 1.36"
Inflow = 1.58 cfs @ 12.19 hrs, Volume= 0.171 af
Outflow = 1.58 cfs @ 12.19 hrs, Volume= 0.171 af, Atten= 0%, Lag= 0.0 min
Primary = 1.58 cfs @ 12.19 hrs, Volume= 0.171 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 266.61' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	265.93'	**18.0" Round Culvert** L= 78.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 265.93' / 265.15' S= 0.0100 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.56 cfs @ 12.19 hrs HW=266.60' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.56 cfs @ 2.99 fps)

Pond P2: Exist CB



Hydrograph for Pond P2: Exist CB

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	265.93	0.00	14.00	0.17	266.15	0.17
1.25	0.00	265.93	0.00	14.25	0.15	266.14	0.15
1.50	0.00	265.93	0.00	14.50	0.14	266.13	0.14
1.75	0.00	265.94	0.00	14.75	0.14	266.13	0.14
2.00	0.00	265.95	0.00	15.00	0.13	266.12	0.13
2.25	0.00	265.95	0.00	15.25	0.12	266.11	0.12
2.50	0.00	265.95	0.00	15.50	0.11	266.11	0.11
2.75	0.00	265.96	0.00	15.75	0.10	266.10	0.10
3.00	0.00	265.96	0.00	16.00	0.09	266.09	0.09
3.25	0.00	265.96	0.00	16.25	0.09	266.09	0.09
3.50	0.00	265.96	0.00	16.50	0.08	266.08	0.08
3.75	0.00	265.96	0.00	16.75	0.08	266.08	0.08
4.00	0.00	265.97	0.00	17.00	0.07	266.08	0.07
4.25	0.00	265.97	0.00	17.25	0.07	266.07	0.07
4.50	0.00	265.97	0.00	17.50	0.06	266.07	0.06
4.75	0.00	265.97	0.00	17.75	0.06	266.06	0.06
5.00	0.01	265.97	0.01	18.00	0.06	266.06	0.06
5.25	0.01	265.97	0.01	18.25	0.05	266.06	0.05
5.50	0.01	265.97	0.01	18.50	0.05	266.05	0.05
5.75	0.01	265.98	0.01	18.75	0.05	266.05	0.05
6.00	0.01	265.98	0.01	19.00	0.05	266.05	0.05
6.25	0.01	265.98	0.01	19.25	0.05	266.05	0.05
6.50	0.01	265.98	0.01	19.50	0.05	266.05	0.05
6.75	0.01	265.98	0.01	19.75	0.05	266.05	0.05
7.00	0.01	265.98	0.01	20.00	0.05	266.05	0.05
7.25	0.01	265.99	0.01	20.25	0.04	266.04	0.04
7.50	0.01	265.99	0.01	20.50	0.04	266.04	0.04
7.75	0.01	265.99	0.01	20.75	0.04	266.04	0.04
8.00	0.01	265.99	0.01	21.00	0.04	266.04	0.04
8.25	0.01	266.00	0.01	21.25	0.04	266.04	0.04
8.50	0.02	266.00	0.02	21.50	0.04	266.04	0.04
8.75	0.02	266.00	0.02	21.75	0.04	266.04	0.04
9.00	0.02	266.01	0.02	22.00	0.04	266.04	0.04
9.25	0.02	266.01	0.02	22.25	0.04	266.04	0.04
9.50	0.02	266.01	0.02	22.50	0.04	266.03	0.04
9.75	0.02	266.02	0.02	22.75	0.03	266.03	0.03
10.00	0.03	266.02	0.03	23.00	0.03	266.03	0.03
10.25	0.03	266.03	0.03	23.25	0.03	266.03	0.03
10.50	0.04	266.04	0.04	23.50	0.03	266.03	0.03
10.75	0.06	266.06	0.06	23.75	0.03	266.03	0.03
11.00	0.07	266.07	0.07	24.00	0.03	266.03	0.03
11.25	0.10	266.10	0.10				
11.50	0.14	266.13	0.14				
11.75	0.34	266.24	0.34				
12.00	**1.09**	**266.49**	**1.09**				
12.25	**1.46**	**266.58**	**1.46**				
12.50	0.78	266.40	0.78				
12.75	0.38	266.26	0.38				
13.00	0.27	266.21	0.27				
13.25	0.22	266.18	0.22				
13.50	0.20	266.17	0.20				
13.75	0.19	266.16	0.19				

Summary for Subcatchment SW3: East of Addition

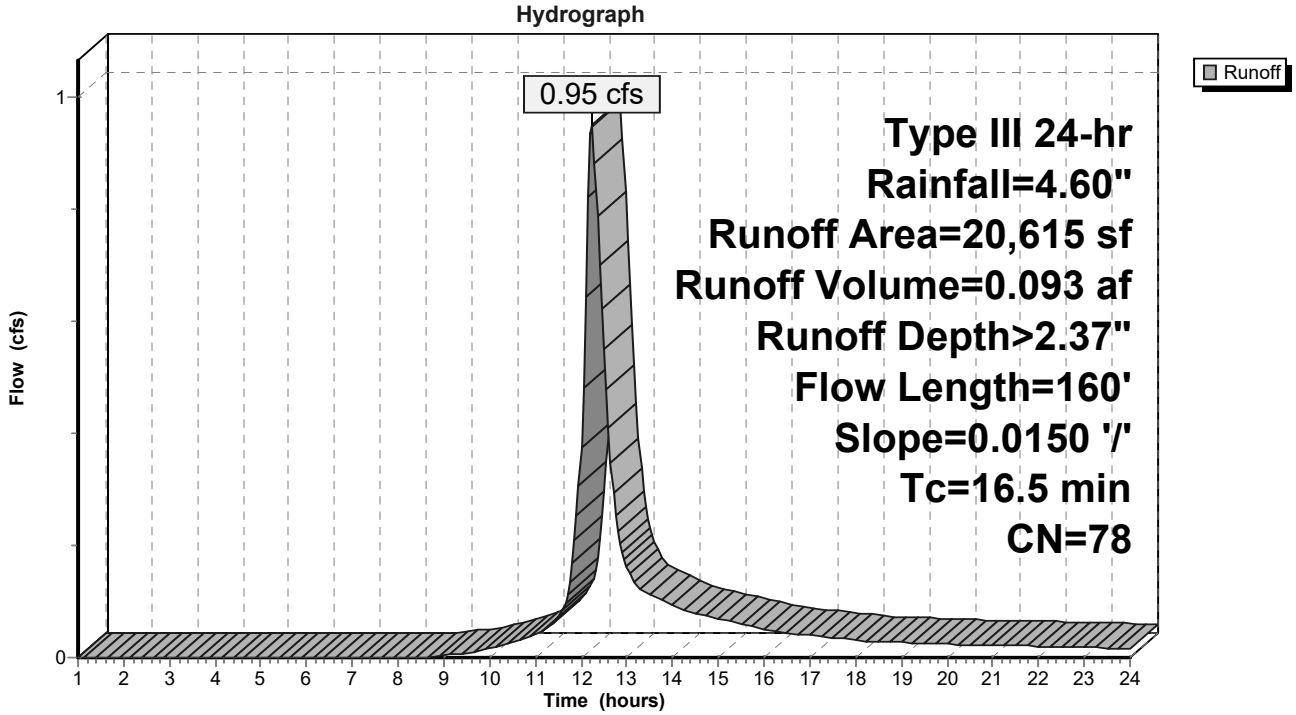
Runoff = 0.95 cfs @ 12.23 hrs, Volume= 0.093 af, Depth> 2.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.60"

Area (sf)	CN	Description
3,550	98	Paved parking, HSG C
17,065	74	>75% Grass cover, Good, HSG C
20,615	78	Weighted Average
17,065		82.78% Pervious Area
3,550		17.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	160	0.0150	0.16		**Sheet Flow, SEG AB** Grass: Short n= 0.150 P2= 3.00"

Subcatchment SW3: East of Addition



Hydrograph for Subcatchment SW3: East of Addition

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.25	0.06	0.00	0.00
1.50	0.07	0.00	0.00
1.75	0.08	0.00	0.00
2.00	0.09	0.00	0.00
2.25	0.10	0.00	0.00
2.50	0.12	0.00	0.00
2.75	0.13	0.00	0.00
3.00	0.14	0.00	0.00
3.25	0.15	0.00	0.00
3.50	0.17	0.00	0.00
3.75	0.18	0.00	0.00
4.00	0.20	0.00	0.00
4.25	0.21	0.00	0.00
4.50	0.23	0.00	0.00
4.75	0.24	0.00	0.00
5.00	0.26	0.00	0.00
5.25	0.28	0.00	0.00
5.50	0.30	0.00	0.00
5.75	0.31	0.00	0.00
6.00	0.33	0.00	0.00
6.25	0.35	0.00	0.00
6.50	0.37	0.00	0.00
6.75	0.39	0.00	0.00
7.00	0.42	0.00	0.00
7.25	0.44	0.00	0.00
7.50	0.47	0.00	0.00
7.75	0.50	0.00	0.00
8.00	0.52	0.00	0.00
8.25	0.56	0.00	0.00
8.50	0.59	0.00	0.00
8.75	0.63	0.00	0.00
9.00	0.67	0.00	0.00
9.25	0.72	0.01	0.01
9.50	0.76	0.01	0.01
9.75	0.81	0.02	0.01
10.00	0.87	0.03	0.02
10.25	0.93	0.04	0.02
10.50	1.00	0.06	0.03
10.75	1.07	0.08	0.03
11.00	1.15	0.10	0.04
11.25	1.25	0.13	0.05
11.50	1.37	0.18	0.07
11.75	1.63	0.29	0.14
12.00	2.30	0.66	0.37
12.25	2.97	1.10	**0.95**
12.50	3.23	1.29	0.55
12.75	3.35	1.39	0.25
13.00	3.45	1.46	0.16
13.25	3.53	1.52	0.13
13.50	3.60	1.58	0.11
13.75	3.67	1.63	0.10
14.00	3.73	1.67	0.09
14.25	3.79	1.72	0.08
14.50	3.84	1.76	0.08
14.75	3.88	1.80	0.07
15.00	3.93	1.83	0.07
15.25	3.97	1.86	0.07
15.50	4.01	1.89	0.06
15.75	4.04	1.92	0.06
16.00	4.08	1.95	0.05
16.25	4.10	1.97	0.05
16.50	4.13	1.99	0.04
16.75	4.16	2.01	0.04
17.00	4.18	2.03	0.04
17.25	4.21	2.05	0.04
17.50	4.23	2.07	0.04
17.75	4.25	2.09	0.03
18.00	4.27	2.10	0.03
18.25	4.29	2.12	0.03
18.50	4.30	2.13	0.03
18.75	4.32	2.15	0.03
19.00	4.34	2.16	0.03
19.25	4.36	2.17	0.03
19.50	4.37	2.19	0.03
19.75	4.39	2.20	0.02
20.00	4.40	2.21	0.02
20.25	4.42	2.22	0.02
20.50	4.43	2.24	0.02
20.75	4.45	2.25	0.02
21.00	4.46	2.26	0.02
21.25	4.47	2.27	0.02
21.50	4.49	2.28	0.02
21.75	4.50	2.29	0.02
22.00	4.51	2.30	0.02
22.25	4.52	2.31	0.02
22.50	4.54	2.32	0.02
22.75	4.55	2.33	0.02
23.00	4.56	2.34	0.02
23.25	4.57	2.35	0.02
23.50	4.58	2.36	0.02
23.75	4.59	2.37	0.02
24.00	**4.60**	**2.38**	0.02

Summary for Subcatchment WS1: Existing Roof

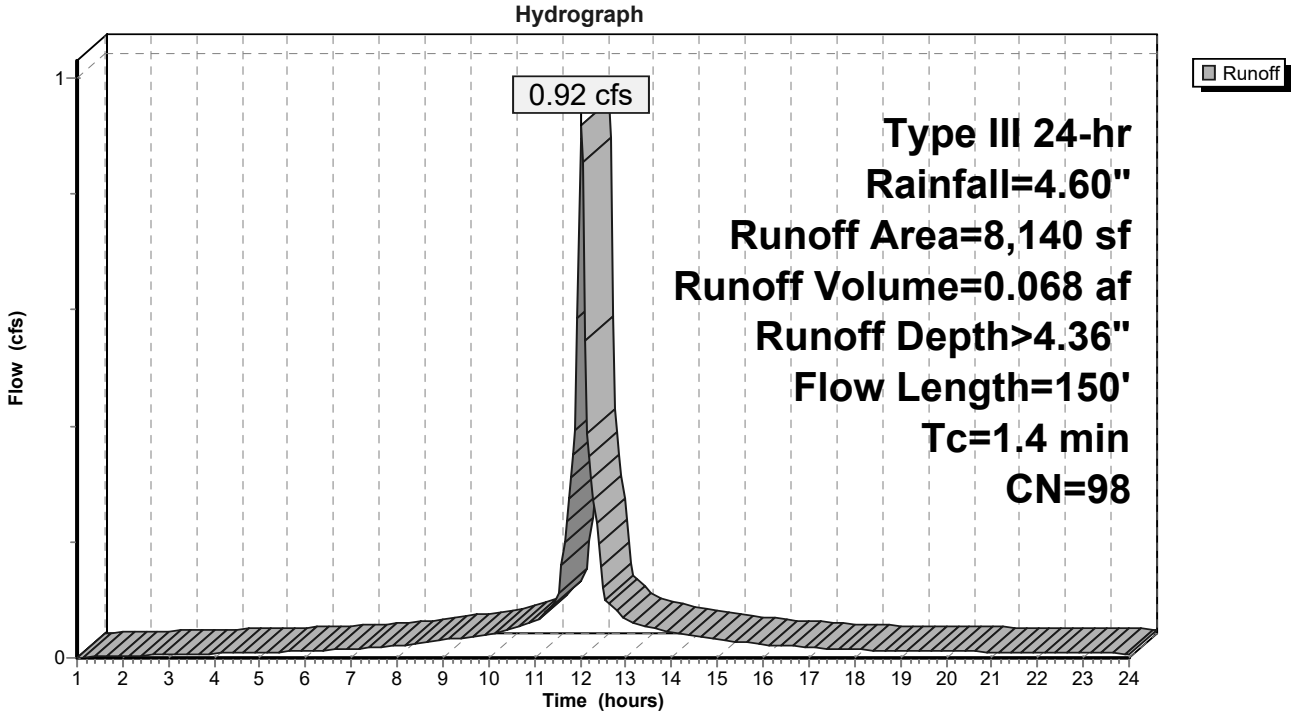
Runoff = 0.92 cfs @ 12.02 hrs, Volume= 0.068 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.60"

Area (sf)	CN	Description
8,140	98	Unconnected roofs, HSG C
8,140		100.00% Impervious Area
8,140		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	50	0.0050	0.67		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
0.1	100	0.2000	16.35	2.23	**Pipe Channel, SEG BC ROOF DRAIN** 5.0" Round Area= 0.1 sf Perim= 1.3' r= 0.10' n= 0.009 PVC, smooth interior
1.4	150	Total			

Subcatchment WS1: Existing Roof



Hydrograph for Subcatchment WS1: Existing Roof

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.25	0.06	0.00	0.00
1.50	0.07	0.00	0.00
1.75	0.08	0.01	0.00
2.00	0.09	0.01	0.00
2.25	0.10	0.01	0.00
2.50	0.12	0.02	0.00
2.75	0.13	0.03	0.00
3.00	0.14	0.03	0.01
3.25	0.15	0.04	0.01
3.50	0.17	0.05	0.01
3.75	0.18	0.06	0.01
4.00	0.20	0.07	0.01
4.25	0.21	0.08	0.01
4.50	0.23	0.09	0.01
4.75	0.24	0.10	0.01
5.00	0.26	0.11	0.01
5.25	0.28	0.13	0.01
5.50	0.30	0.14	0.01
5.75	0.31	0.16	0.01
6.00	0.33	0.17	0.01
6.25	0.35	0.19	0.01
6.50	0.37	0.20	0.01
6.75	0.39	0.22	0.01
7.00	0.42	0.24	0.02
7.25	0.44	0.27	0.02
7.50	0.47	0.29	0.02
7.75	0.50	0.31	0.02
8.00	0.52	0.34	0.02
8.25	0.56	0.37	0.02
8.50	0.59	0.40	0.03
8.75	0.63	0.44	0.03
9.00	0.67	0.48	0.03
9.25	0.72	0.52	0.03
9.50	0.76	0.56	0.04
9.75	0.81	0.61	0.04
10.00	0.87	0.66	0.04
10.25	0.93	0.72	0.05
10.50	1.00	0.79	0.05
10.75	1.07	0.86	0.06
11.00	1.15	0.94	0.06
11.25	1.25	1.03	0.08
11.50	1.37	1.15	0.10
11.75	1.63	1.41	0.27
12.00	2.30	2.07	**0.89**
12.25	2.97	2.73	0.31
12.50	3.23	3.00	0.12
12.75	3.35	3.12	0.08
13.00	3.45	3.22	0.06
13.25	3.53	3.30	0.06
13.50	3.60	3.37	0.05
13.75	3.67	3.44	0.05
14.00	3.73	3.50	0.04
14.25	3.79	3.55	0.04
14.50	3.84	3.60	0.04
14.75	3.88	3.65	0.04
15.00	3.93	3.69	0.03
15.25	3.97	3.74	0.03
15.50	4.01	3.77	0.03
15.75	4.04	3.81	0.03
16.00	4.08	3.84	0.02
16.25	4.10	3.87	0.02
16.50	4.13	3.90	0.02
16.75	4.16	3.92	0.02
17.00	4.18	3.95	0.02
17.25	4.21	3.97	0.02
17.50	4.23	3.99	0.02
17.75	4.25	4.01	0.02
18.00	4.27	4.03	0.01
18.25	4.29	4.05	0.01
18.50	4.30	4.07	0.01
18.75	4.32	4.09	0.01
19.00	4.34	4.10	0.01
19.25	4.36	4.12	0.01
19.50	4.37	4.14	0.01
19.75	4.39	4.15	0.01
20.00	4.40	4.17	0.01
20.25	4.42	4.18	0.01
20.50	4.43	4.20	0.01
20.75	4.45	4.21	0.01
21.00	4.46	4.22	0.01
21.25	4.47	4.24	0.01
21.50	4.49	4.25	0.01
21.75	4.50	4.26	0.01
22.00	4.51	4.28	0.01
22.25	4.52	4.29	0.01
22.50	4.54	4.30	0.01
22.75	4.55	4.31	0.01
23.00	4.56	4.32	0.01
23.25	4.57	4.33	0.01
23.50	4.58	4.34	0.01
23.75	4.59	4.35	0.01
24.00	**4.60**	**4.36**	0.01

Summary for Subcatchment WS2: Addition Area

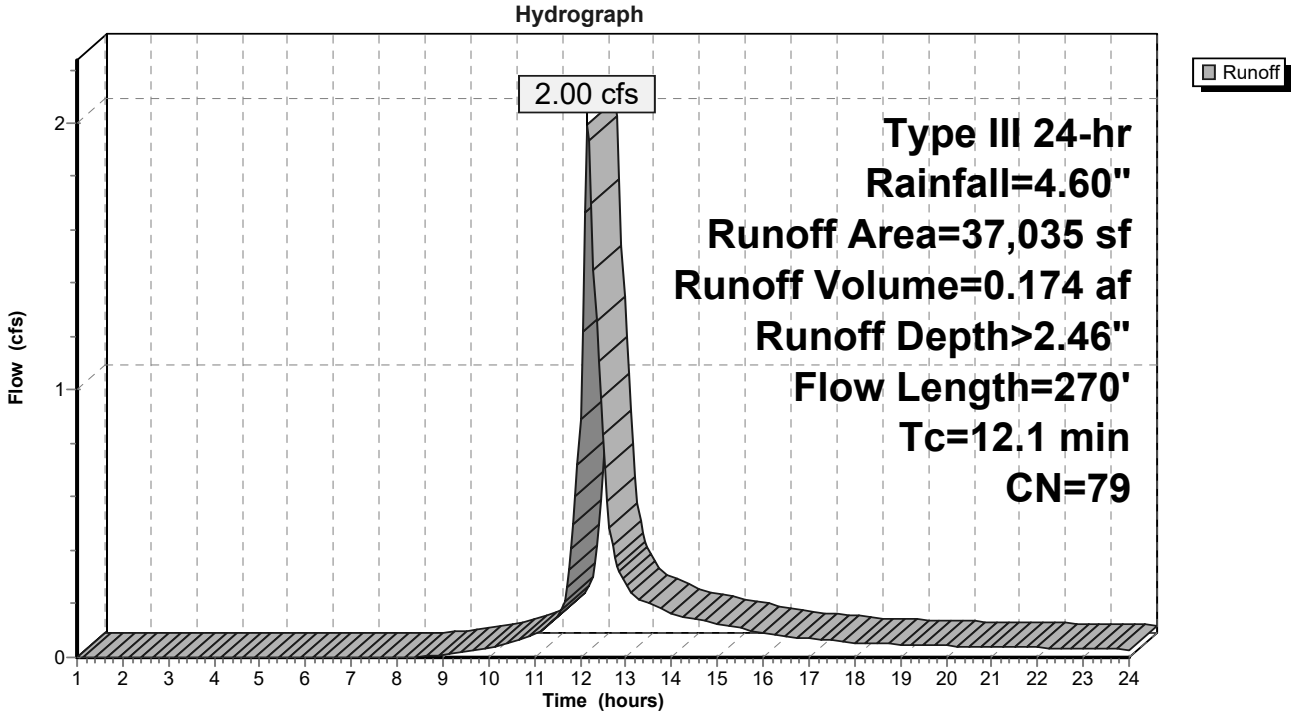
Runoff = 2.00 cfs @ 12.17 hrs, Volume= 0.174 af, Depth> 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.60"

Area (sf)	CN	Description
8,480	98	Paved parking, HSG C
28,555	74	>75% Grass cover, Good, HSG C
37,035	79	Weighted Average
28,555		77.10% Pervious Area
8,480		22.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	135	0.0300	0.21		**Sheet Flow, SEG AB** Grass: Short n= 0.150 P2= 3.00"
1.2	135	0.0080	1.82		**Shallow Concentrated Flow, SEG BC** Paved Kv= 20.3 fps
12.1	270	Total			

Subcatchment WS2: Addition Area



Hydrograph for Subcatchment WS2: Addition Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.25	0.06	0.00	0.00
1.50	0.07	0.00	0.00
1.75	0.08	0.00	0.00
2.00	0.09	0.00	0.00
2.25	0.10	0.00	0.00
2.50	0.12	0.00	0.00
2.75	0.13	0.00	0.00
3.00	0.14	0.00	0.00
3.25	0.15	0.00	0.00
3.50	0.17	0.00	0.00
3.75	0.18	0.00	0.00
4.00	0.20	0.00	0.00
4.25	0.21	0.00	0.00
4.50	0.23	0.00	0.00
4.75	0.24	0.00	0.00
5.00	0.26	0.00	0.00
5.25	0.28	0.00	0.00
5.50	0.30	0.00	0.00
5.75	0.31	0.00	0.00
6.00	0.33	0.00	0.00
6.25	0.35	0.00	0.00
6.50	0.37	0.00	0.00
6.75	0.39	0.00	0.00
7.00	0.42	0.00	0.00
7.25	0.44	0.00	0.00
7.50	0.47	0.00	0.00
7.75	0.50	0.00	0.00
8.00	0.52	0.00	0.00
8.25	0.56	0.00	0.00
8.50	0.59	0.00	0.00
8.75	0.63	0.00	0.01
9.00	0.67	0.01	0.01
9.25	0.72	0.01	0.02
9.50	0.76	0.02	0.02
9.75	0.81	0.03	0.03
10.00	0.87	0.04	0.04
10.25	0.93	0.05	0.04
10.50	1.00	0.07	0.06
10.75	1.07	0.09	0.07
11.00	1.15	0.12	0.09
11.25	1.25	0.15	0.11
11.50	1.37	0.20	0.16
11.75	1.63	0.32	0.33
12.00	2.30	0.71	**0.89**
12.25	2.97	1.16	**1.70**
12.50	3.23	1.36	0.84
12.75	3.35	1.45	0.37
13.00	3.45	1.53	0.27
13.25	3.53	1.59	0.22
13.50	3.60	1.65	0.20
13.75	3.67	1.70	0.18
14.00	3.73	1.75	0.17
14.25	3.79	1.79	0.15
14.50	3.84	1.83	0.14
14.75	3.88	1.87	0.13
15.00	3.93	1.91	0.13
15.25	3.97	1.94	0.12
15.50	4.01	1.97	0.11
15.75	4.04	2.00	0.10
16.00	4.08	2.03	0.09
16.25	4.10	2.05	0.08
16.50	4.13	2.07	0.08
16.75	4.16	2.09	0.07
17.00	4.18	2.11	0.07
17.25	4.21	2.13	0.07
17.50	4.23	2.15	0.06
17.75	4.25	2.17	0.06
18.00	4.27	2.18	0.06
18.25	4.29	2.20	0.05
18.50	4.30	2.21	0.05
18.75	4.32	2.23	0.05
19.00	4.34	2.24	0.05
19.25	4.36	2.26	0.05
19.50	4.37	2.27	0.05
19.75	4.39	2.28	0.04
20.00	4.40	2.29	0.04
20.25	4.42	2.31	0.04
20.50	4.43	2.32	0.04
20.75	4.45	2.33	0.04
21.00	4.46	2.34	0.04
21.25	4.47	2.35	0.04
21.50	4.49	2.36	0.04
21.75	4.50	2.38	0.04
22.00	4.51	2.39	0.04
22.25	4.52	2.40	0.04
22.50	4.54	2.41	0.03
22.75	4.55	2.42	0.03
23.00	4.56	2.43	0.03
23.25	4.57	2.43	0.03
23.50	4.58	2.44	0.03
23.75	4.59	2.45	0.03
24.00	**4.60**	**2.46**	0.03

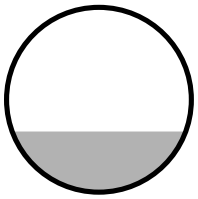
Summary for Reach R1: Roo Drain Pipe

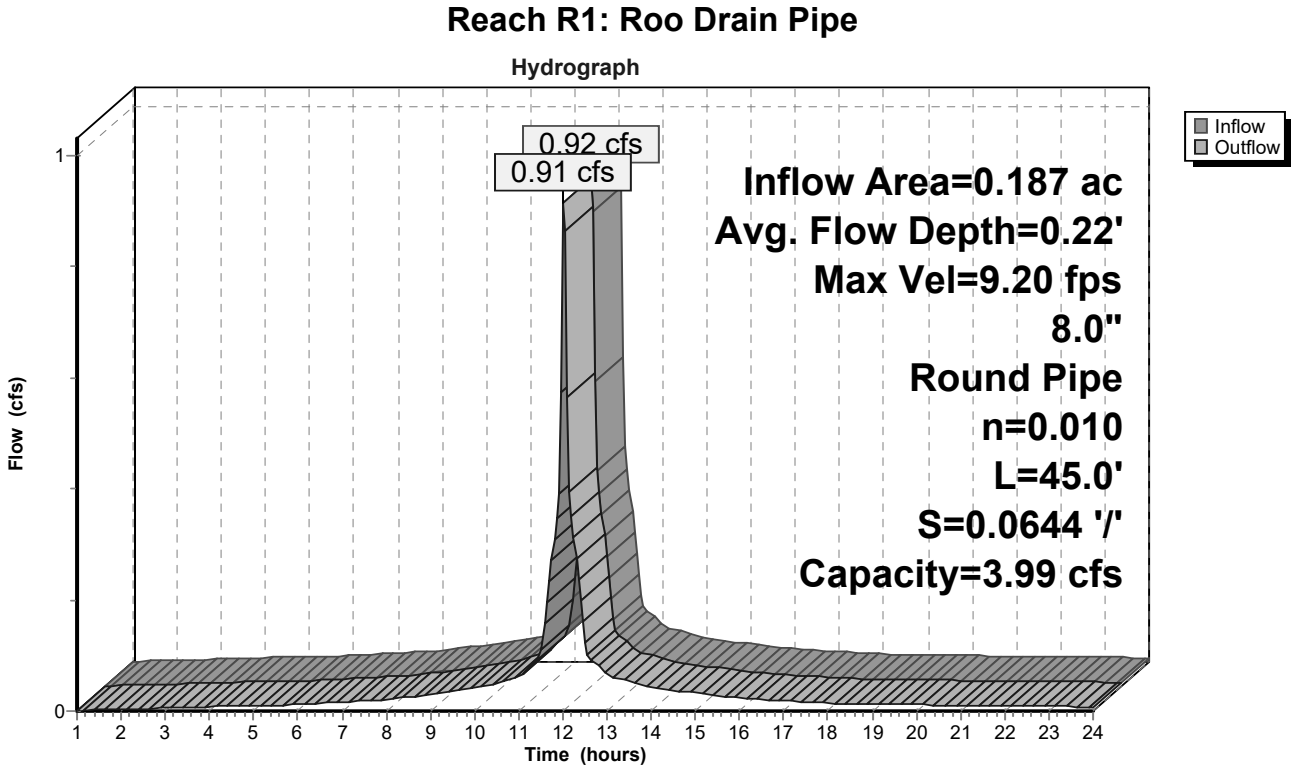
Inflow Area = 0.187 ac,100.00% Impervious, Inflow Depth > 4.36"
Inflow = 0.92 cfs @ 12.02 hrs, Volume= 0.068 af
Outflow = 0.91 cfs @ 12.02 hrs, Volume= 0.068 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.20 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.01 fps, Avg. Travel Time= 0.2 min

Peak Storage= 4 cf @ 12.02 hrs
Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 3.99 cfs

8.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 45.0' Slope= 0.0644 '/'
Inlet Invert= 271.00', Outlet Invert= 268.10'





Hydrograph for Reach R1: Roo Drain Pipe

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
1.00	0.00	0	271.00	0.00
1.50	0.00	0	271.01	0.00
2.00	0.00	0	271.01	0.00
2.50	0.00	0	271.02	0.00
3.00	0.01	0	271.02	0.01
3.50	0.01	0	271.02	0.01
4.00	0.01	0	271.02	0.01
4.50	0.01	0	271.02	0.01
5.00	0.01	0	271.02	0.01
5.50	0.01	0	271.03	0.01
6.00	0.01	0	271.03	0.01
6.50	0.01	0	271.03	0.01
7.00	0.02	0	271.03	0.02
7.50	0.02	0	271.03	0.02
8.00	0.02	0	271.03	0.02
8.50	0.03	0	271.04	0.03
9.00	0.03	0	271.04	0.03
9.50	0.04	0	271.04	0.04
10.00	0.04	0	271.05	0.04
10.50	0.05	1	271.05	0.05
11.00	0.06	1	271.06	0.06
11.50	0.10	1	271.07	0.10
12.00	**0.89**	**4**	**271.21**	**0.88**
12.50	0.12	1	271.08	0.12
13.00	0.06	1	271.06	0.07
13.50	0.05	1	271.05	0.05
14.00	0.04	1	271.05	0.04
14.50	0.04	0	271.05	0.04
15.00	0.03	0	271.04	0.03
15.50	0.03	0	271.04	0.03
16.00	0.02	0	271.04	0.02
16.50	0.02	0	271.03	0.02
17.00	0.02	0	271.03	0.02
17.50	0.02	0	271.03	0.02
18.00	0.01	0	271.03	0.01
18.50	0.01	0	271.03	0.01
19.00	0.01	0	271.03	0.01
19.50	0.01	0	271.03	0.01
20.00	0.01	0	271.03	0.01
20.50	0.01	0	271.03	0.01
21.00	0.01	0	271.02	0.01
21.50	0.01	0	271.02	0.01
22.00	0.01	0	271.02	0.01
22.50	0.01	0	271.02	0.01
23.00	0.01	0	271.02	0.01
23.50	0.01	0	271.02	0.01
24.00	0.01	0	271.02	0.01

Summary for Pond CB1: Exist CB

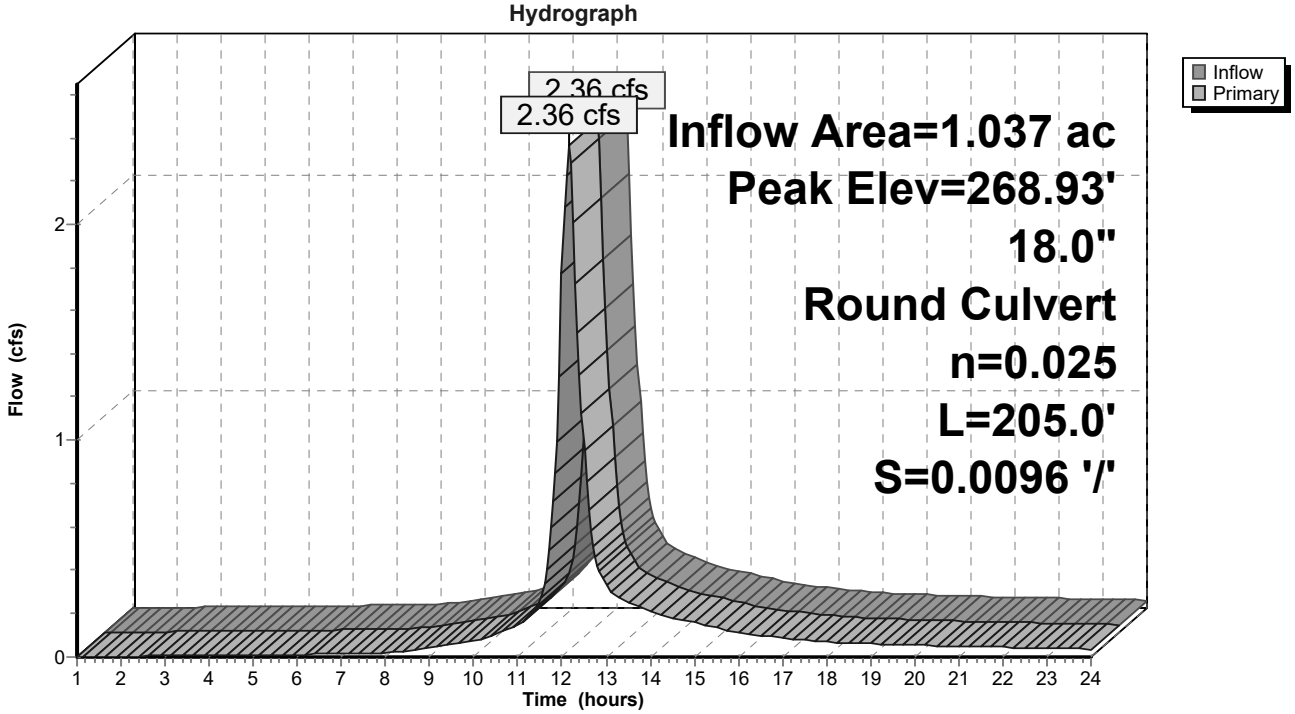
Inflow Area =	1.037 ac, 36.79% Impervious, Inflow Depth > 2.80"				
Inflow	=	2.36 cfs @	12.16 hrs, Volume=	0.242 af	
Outflow	=	2.36 cfs @	12.16 hrs, Volume=	0.242 af, Atten= 0%, Lag= 0.0 min	
Primary	=	2.36 cfs @	12.16 hrs, Volume=	0.242 af	

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 268.93' @ 12.16 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	268.00'	**18.0" Round Culvert** L= 205.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 268.00' / 266.03' S= 0.0096 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

Primary OutFlow Max=2.35 cfs @ 12.16 hrs HW=268.93' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.35 cfs @ 2.92 fps)

Pond CB1: Exist CB



Hydrograph for Pond CB1: Exist CB

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	268.00	0.00	14.00	0.21	268.27	0.21
1.25	0.00	268.02	0.00	14.25	0.19	268.26	0.19
1.50	0.00	268.03	0.00	14.50	0.18	268.25	0.18
1.75	0.00	268.03	0.00	14.75	0.17	268.24	0.17
2.00	0.00	268.04	0.00	15.00	0.16	268.24	0.16
2.25	0.00	268.04	0.00	15.25	0.15	268.23	0.15
2.50	0.00	268.04	0.00	15.50	0.14	268.22	0.14
2.75	0.00	268.05	0.00	15.75	0.12	268.21	0.12
3.00	0.01	268.05	0.01	16.00	0.11	268.20	0.11
3.25	0.01	268.05	0.01	16.25	0.10	268.19	0.10
3.50	0.01	268.05	0.01	16.50	0.10	268.19	0.10
3.75	0.01	268.05	0.01	16.75	0.09	268.18	0.09
4.00	0.01	268.06	0.01	17.00	0.09	268.18	0.09
4.25	0.01	268.06	0.01	17.25	0.08	268.17	0.08
4.50	0.01	268.06	0.01	17.50	0.08	268.17	0.08
4.75	0.01	268.06	0.01	17.75	0.07	268.16	0.07
5.00	0.01	268.06	0.01	18.00	0.07	268.16	0.07
5.25	0.01	268.06	0.01	18.25	0.07	268.16	0.07
5.50	0.01	268.07	0.01	18.50	0.06	268.15	0.06
5.75	0.01	268.07	0.01	18.75	0.06	268.15	0.06
6.00	0.01	268.07	0.01	19.00	0.06	268.15	0.06
6.25	0.01	268.07	0.01	19.25	0.06	268.15	0.06
6.50	0.01	268.07	0.01	19.50	0.06	268.15	0.06
6.75	0.01	268.08	0.01	19.75	0.06	268.14	0.06
7.00	0.02	268.08	0.02	20.00	0.05	268.14	0.05
7.25	0.02	268.08	0.02	20.25	0.05	268.14	0.05
7.50	0.02	268.08	0.02	20.50	0.05	268.14	0.05
7.75	0.02	268.09	0.02	20.75	0.05	268.14	0.05
8.00	0.02	268.09	0.02	21.00	0.05	268.14	0.05
8.25	0.02	268.09	0.02	21.25	0.05	268.14	0.05
8.50	0.03	268.10	0.03	21.50	0.05	268.13	0.05
8.75	0.03	268.11	0.03	21.75	0.05	268.13	0.05
9.00	0.04	268.12	0.04	22.00	0.05	268.13	0.05
9.25	0.05	268.13	0.05	22.25	0.04	268.13	0.04
9.50	0.06	268.15	0.06	22.50	0.04	268.13	0.04
9.75	0.07	268.16	0.07	22.75	0.04	268.13	0.04
10.00	0.08	268.17	0.08	23.00	0.04	268.12	0.04
10.25	0.09	268.18	0.09	23.25	0.04	268.12	0.04
10.50	0.11	268.20	0.11	23.50	0.04	268.12	0.04
10.75	0.13	268.21	0.13	23.75	0.04	268.12	0.04
11.00	0.15	268.23	0.15	24.00	0.04	268.12	0.04
11.25	0.19	268.26	0.19				
11.50	0.26	268.30	0.26				
11.75	0.60	268.45	0.60				
12.00	**1.77**	**268.79**	**1.77**				
12.25	**2.01**	**268.85**	**2.01**				
12.50	0.96	268.57	0.96				
12.75	0.46	268.40	0.46				
13.00	0.34	268.34	0.34				
13.25	0.28	268.31	0.28				
13.50	0.25	268.30	0.25				
13.75	0.23	268.28	0.23				

Summary for Pond P2: Exist CB

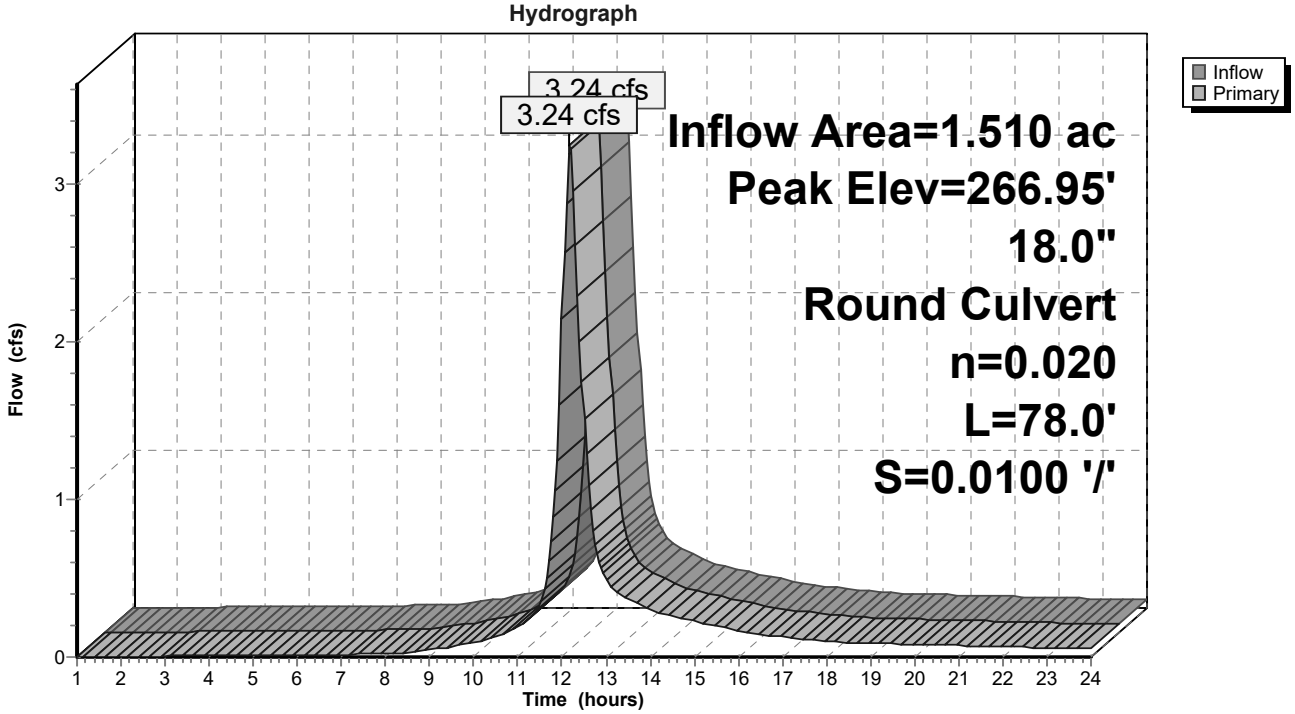
Inflow Area =	1.510 ac, 30.66% Impervious, Inflow Depth > 2.66"				
Inflow	=	3.24 cfs @	12.18 hrs, Volume=	0.335 af	
Outflow	=	3.24 cfs @	12.18 hrs, Volume=	0.335 af, Atten= 0%, Lag= 0.0 min	
Primary	=	3.24 cfs @	12.18 hrs, Volume=	0.335 af	

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 266.95' @ 12.18 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	265.93'	**18.0" Round Culvert** L= 78.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 265.93' / 265.15' S= 0.0100 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.21 cfs @ 12.18 hrs HW=266.94' (Free Discharge)
└**1=Culvert** (Barrel Controls 3.21 cfs @ 3.57 fps)

Pond P2: Exist CB



Hydrograph for Pond P2: Exist CB

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	265.93	0.00	14.00	0.30	266.22	0.30
1.25	0.00	265.95	0.00	14.25	0.28	266.21	0.28
1.50	0.00	265.96	0.00	14.50	0.26	266.20	0.26
1.75	0.00	265.96	0.00	14.75	0.24	266.19	0.24
2.00	0.00	265.96	0.00	15.00	0.23	266.18	0.23
2.25	0.00	265.97	0.00	15.25	0.21	266.17	0.21
2.50	0.00	265.97	0.00	15.50	0.20	266.17	0.20
2.75	0.00	265.97	0.00	15.75	0.18	266.16	0.18
3.00	0.01	265.97	0.01	16.00	0.16	266.15	0.16
3.25	0.01	265.98	0.01	16.25	0.15	266.14	0.15
3.50	0.01	265.98	0.01	16.50	0.14	266.13	0.14
3.75	0.01	265.98	0.01	16.75	0.14	266.13	0.14
4.00	0.01	265.98	0.01	17.00	0.13	266.12	0.13
4.25	0.01	265.98	0.01	17.25	0.12	266.12	0.12
4.50	0.01	265.98	0.01	17.50	0.11	266.11	0.11
4.75	0.01	265.98	0.01	17.75	0.11	266.11	0.11
5.00	0.01	265.99	0.01	18.00	0.10	266.10	0.10
5.25	0.01	265.99	0.01	18.25	0.09	266.10	0.09
5.50	0.01	265.99	0.01	18.50	0.09	266.09	0.09
5.75	0.01	265.99	0.01	18.75	0.09	266.09	0.09
6.00	0.01	265.99	0.01	19.00	0.09	266.09	0.09
6.25	0.01	265.99	0.01	19.25	0.09	266.09	0.09
6.50	0.01	266.00	0.01	19.50	0.08	266.09	0.08
6.75	0.01	266.00	0.01	19.75	0.08	266.08	0.08
7.00	0.02	266.00	0.02	20.00	0.08	266.08	0.08
7.25	0.02	266.00	0.02	20.25	0.08	266.08	0.08
7.50	0.02	266.01	0.02	20.50	0.08	266.08	0.08
7.75	0.02	266.01	0.02	20.75	0.07	266.08	0.07
8.00	0.02	266.01	0.02	21.00	0.07	266.08	0.07
8.25	0.02	266.01	0.02	21.25	0.07	266.07	0.07
8.50	0.03	266.02	0.03	21.50	0.07	266.07	0.07
8.75	0.04	266.03	0.04	21.75	0.07	266.07	0.07
9.00	0.04	266.05	0.04	22.00	0.07	266.07	0.07
9.25	0.05	266.06	0.05	22.25	0.06	266.07	0.06
9.50	0.07	266.07	0.07	22.50	0.06	266.07	0.06
9.75	0.08	266.08	0.08	22.75	0.06	266.06	0.06
10.00	0.09	266.09	0.09	23.00	0.06	266.06	0.06
10.25	0.11	266.11	0.11	23.25	0.06	266.06	0.06
10.50	0.13	266.12	0.13	23.50	0.06	266.06	0.06
10.75	0.16	266.14	0.16	23.75	0.05	266.06	0.05
11.00	0.19	266.16	0.19	24.00	0.05	266.05	0.05
11.25	0.24	266.19	0.24				
11.50	0.33	266.23	0.33				
11.75	0.74	266.38	0.74				
12.00	**2.15**	**266.73**	**2.15**				
12.25	**2.96**	**266.90**	**2.96**				
12.50	1.51	266.59	1.51				
12.75	0.71	266.38	0.71				
13.00	0.50	266.30	0.50				
13.25	0.41	266.27	0.41				
13.50	0.37	266.25	0.37				
13.75	0.34	266.24	0.34				

Summary for Subcatchment SW3: East of Addition

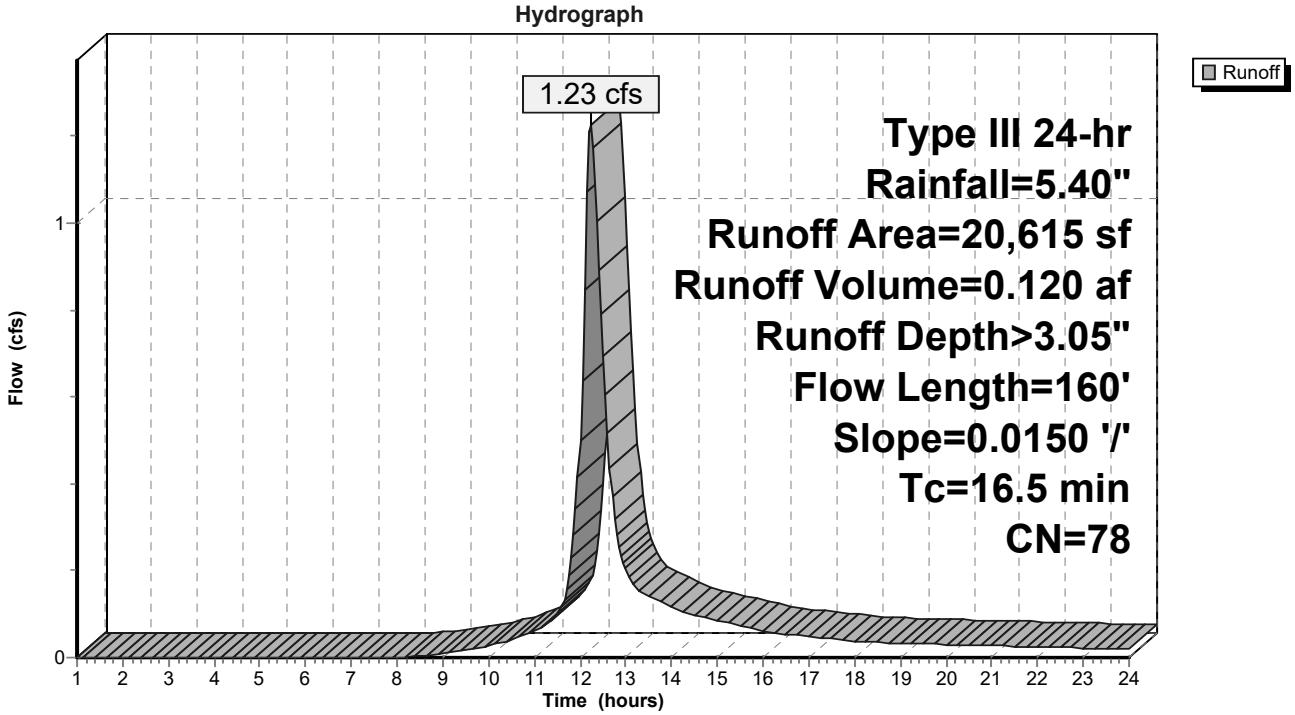
Runoff = 1.23 cfs @ 12.23 hrs, Volume= 0.120 af, Depth> 3.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.40"

Area (sf)	CN	Description
3,550	98	Paved parking, HSG C
17,065	74	>75% Grass cover, Good, HSG C
20,615	78	Weighted Average
17,065		82.78% Pervious Area
3,550		17.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	160	0.0150	0.16		**Sheet Flow, SEG AB** Grass: Short n= 0.150 P2= 3.00"

Subcatchment SW3: East of Addition



Hydrograph for Subcatchment SW3: East of Addition

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.25	0.07	0.00	0.00
1.50	0.08	0.00	0.00
1.75	0.09	0.00	0.00
2.00	0.11	0.00	0.00
2.25	0.12	0.00	0.00
2.50	0.14	0.00	0.00
2.75	0.15	0.00	0.00
3.00	0.17	0.00	0.00
3.25	0.18	0.00	0.00
3.50	0.20	0.00	0.00
3.75	0.21	0.00	0.00
4.00	0.23	0.00	0.00
4.25	0.25	0.00	0.00
4.50	0.27	0.00	0.00
4.75	0.29	0.00	0.00
5.00	0.31	0.00	0.00
5.25	0.33	0.00	0.00
5.50	0.35	0.00	0.00
5.75	0.37	0.00	0.00
6.00	0.39	0.00	0.00
6.25	0.41	0.00	0.00
6.50	0.44	0.00	0.00
6.75	0.46	0.00	0.00
7.00	0.49	0.00	0.00
7.25	0.52	0.00	0.00
7.50	0.55	0.00	0.00
7.75	0.58	0.00	0.00
8.00	0.62	0.00	0.00
8.25	0.65	0.00	0.00
8.50	0.69	0.01	0.00
8.75	0.74	0.01	0.01
9.00	0.79	0.02	0.01
9.25	0.84	0.02	0.01
9.50	0.90	0.03	0.02
9.75	0.96	0.05	0.02
10.00	1.02	0.06	0.03
10.25	1.09	0.08	0.03
10.50	1.17	0.11	0.04
10.75	1.26	0.14	0.05
11.00	1.35	0.17	0.06
11.25	1.46	0.22	0.08
11.50	1.61	0.28	0.11
11.75	1.92	0.44	0.19
12.00	2.70	0.92	0.50
12.25	3.48	1.48	**1.22**
12.50	3.79	1.72	0.69
12.75	3.94	1.84	0.32
13.00	4.05	1.93	0.20
13.25	4.14	2.00	0.16
13.50	4.23	2.07	0.14
13.75	4.31	2.14	0.13
14.00	4.38	2.19	0.12
14.25	4.44	2.25	0.10
14.50	4.50	2.30	0.10
14.75	4.56	2.34	0.09
15.00	4.61	2.39	0.09
15.25	4.66	2.43	0.08
15.50	4.71	2.46	0.07
15.75	4.75	2.50	0.07
16.00	4.78	2.53	0.06
16.25	4.82	2.56	0.06
16.50	4.85	2.59	0.05
16.75	4.88	2.61	0.05
17.00	4.91	2.64	0.05
17.25	4.94	2.66	0.05
17.50	4.96	2.68	0.04
17.75	4.99	2.70	0.04
18.00	5.01	2.72	0.04
18.25	5.03	2.74	0.04
18.50	5.05	2.76	0.03
18.75	5.07	2.77	0.03
19.00	5.09	2.79	0.03
19.25	5.11	2.81	0.03
19.50	5.13	2.82	0.03
19.75	5.15	2.84	0.03
20.00	5.17	2.85	0.03
20.25	5.19	2.87	0.03
20.50	5.20	2.88	0.03
20.75	5.22	2.90	0.03
21.00	5.23	2.91	0.03
21.25	5.25	2.93	0.03
21.50	5.27	2.94	0.03
21.75	5.28	2.95	0.03
22.00	5.30	2.96	0.02
22.25	5.31	2.98	0.02
22.50	5.32	2.99	0.02
22.75	5.34	3.00	0.02
23.00	5.35	3.01	0.02
23.25	5.36	3.02	0.02
23.50	5.38	3.03	0.02
23.75	5.39	3.04	0.02
24.00	**5.40**	**3.05**	0.02

Summary for Subcatchment WS1: Existing Roof

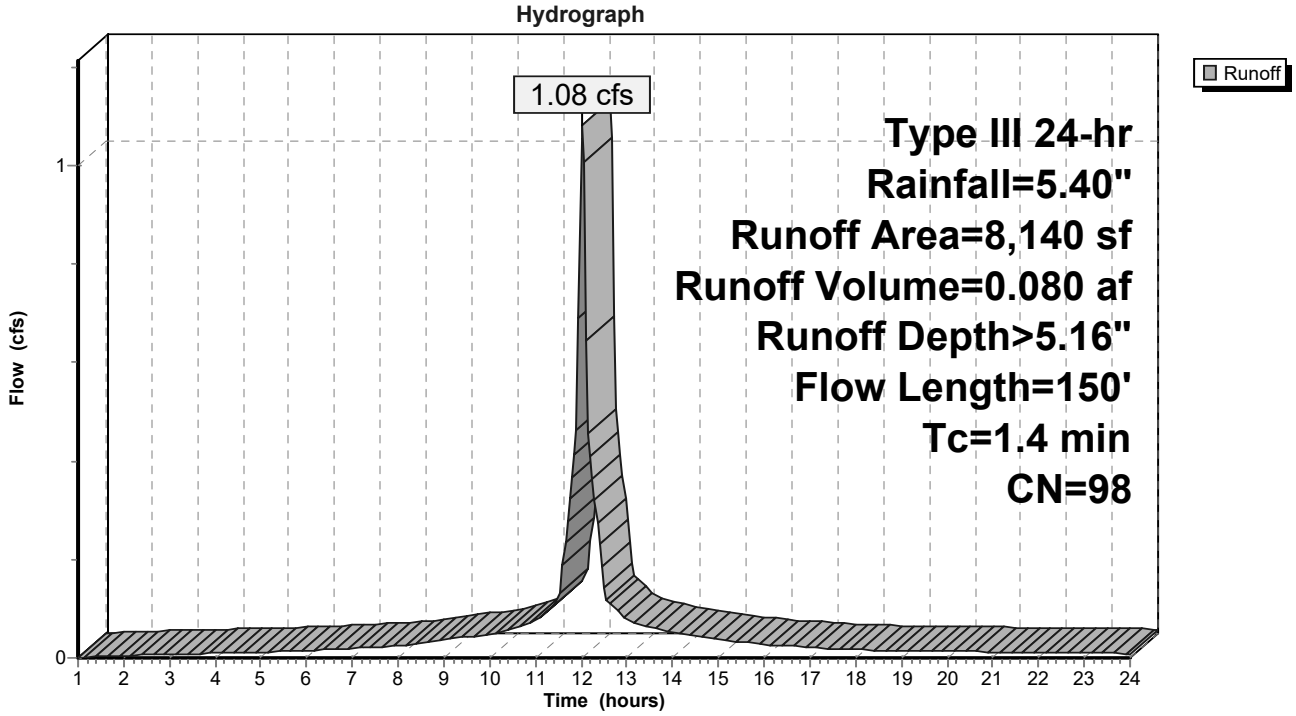
Runoff = 1.08 cfs @ 12.02 hrs, Volume= 0.080 af, Depth> 5.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.40"

Area (sf)	CN	Description
8,140	98	Unconnected roofs, HSG C
8,140		100.00% Impervious Area
8,140		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	50	0.0050	0.67		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
0.1	100	0.2000	16.35	2.23	**Pipe Channel, SEG BC ROOF DRAIN** 5.0" Round Area= 0.1 sf Perim= 1.3' r= 0.10' n= 0.009 PVC, smooth interior
1.4	150	Total			

Subcatchment WS1: Existing Roof



Hydrograph for Subcatchment WS1: Existing Roof

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.25	0.07	0.00	0.00
1.50	0.08	0.01	0.00
1.75	0.09	0.01	0.00
2.00	0.11	0.02	0.00
2.25	0.12	0.02	0.01
2.50	0.14	0.03	0.01
2.75	0.15	0.04	0.01
3.00	0.17	0.05	0.01
3.25	0.18	0.06	0.01
3.50	0.20	0.07	0.01
3.75	0.21	0.08	0.01
4.00	0.23	0.09	0.01
4.25	0.25	0.11	0.01
4.50	0.27	0.12	0.01
4.75	0.29	0.13	0.01
5.00	0.31	0.15	0.01
5.25	0.33	0.17	0.01
5.50	0.35	0.18	0.01
5.75	0.37	0.20	0.01
6.00	0.39	0.22	0.01
6.25	0.41	0.24	0.02
6.50	0.44	0.26	0.02
6.75	0.46	0.28	0.02
7.00	0.49	0.31	0.02
7.25	0.52	0.33	0.02
7.50	0.55	0.36	0.02
7.75	0.58	0.39	0.02
8.00	0.62	0.42	0.02
8.25	0.65	0.46	0.03
8.50	0.69	0.50	0.03
8.75	0.74	0.54	0.03
9.00	0.79	0.59	0.04
9.25	0.84	0.64	0.04
9.50	0.90	0.69	0.04
9.75	0.96	0.75	0.05
10.00	1.02	0.81	0.05
10.25	1.09	0.88	0.05
10.50	1.17	0.96	0.06
10.75	1.26	1.04	0.07
11.00	1.35	1.13	0.07
11.25	1.46	1.24	0.09
11.50	1.61	1.39	0.12
11.75	1.92	1.69	0.32
12.00	2.70	2.47	**1.05**
12.25	3.48	3.25	0.36
12.50	3.79	3.56	0.14
12.75	3.94	3.70	0.10
13.00	4.05	3.81	0.08
13.25	4.14	3.91	0.07
13.50	4.23	4.00	0.06
13.75	4.31	4.07	0.06
14.00	4.38	4.14	0.05
14.25	4.44	4.21	0.05
14.50	4.50	4.27	0.04
14.75	4.56	4.32	0.04
15.00	4.61	4.38	0.04
15.25	4.66	4.43	0.04
15.50	4.71	4.47	0.03
15.75	4.75	4.51	0.03
16.00	4.78	4.55	0.03
16.25	4.82	4.58	0.03
16.50	4.85	4.61	0.02
16.75	4.88	4.65	0.02
17.00	4.91	4.67	0.02
17.25	4.94	4.70	0.02
17.50	4.96	4.73	0.02
17.75	4.99	4.75	0.02
18.00	5.01	4.77	0.02
18.25	5.03	4.80	0.02
18.50	5.05	4.82	0.02
18.75	5.07	4.84	0.02
19.00	5.09	4.86	0.01
19.25	5.11	4.88	0.01
19.50	5.13	4.89	0.01
19.75	5.15	4.91	0.01
20.00	5.17	4.93	0.01
20.25	5.19	4.95	0.01
20.50	5.20	4.97	0.01
20.75	5.22	4.98	0.01
21.00	5.23	5.00	0.01
21.25	5.25	5.01	0.01
21.50	5.27	5.03	0.01
21.75	5.28	5.04	0.01
22.00	5.30	5.06	0.01
22.25	5.31	5.07	0.01
22.50	5.32	5.09	0.01
22.75	5.34	5.10	0.01
23.00	5.35	5.11	0.01
23.25	5.36	5.13	0.01
23.50	5.38	5.14	0.01
23.75	5.39	5.15	0.01
24.00	**5.40**	**5.16**	0.01

Summary for Subcatchment WS2: Addition Area

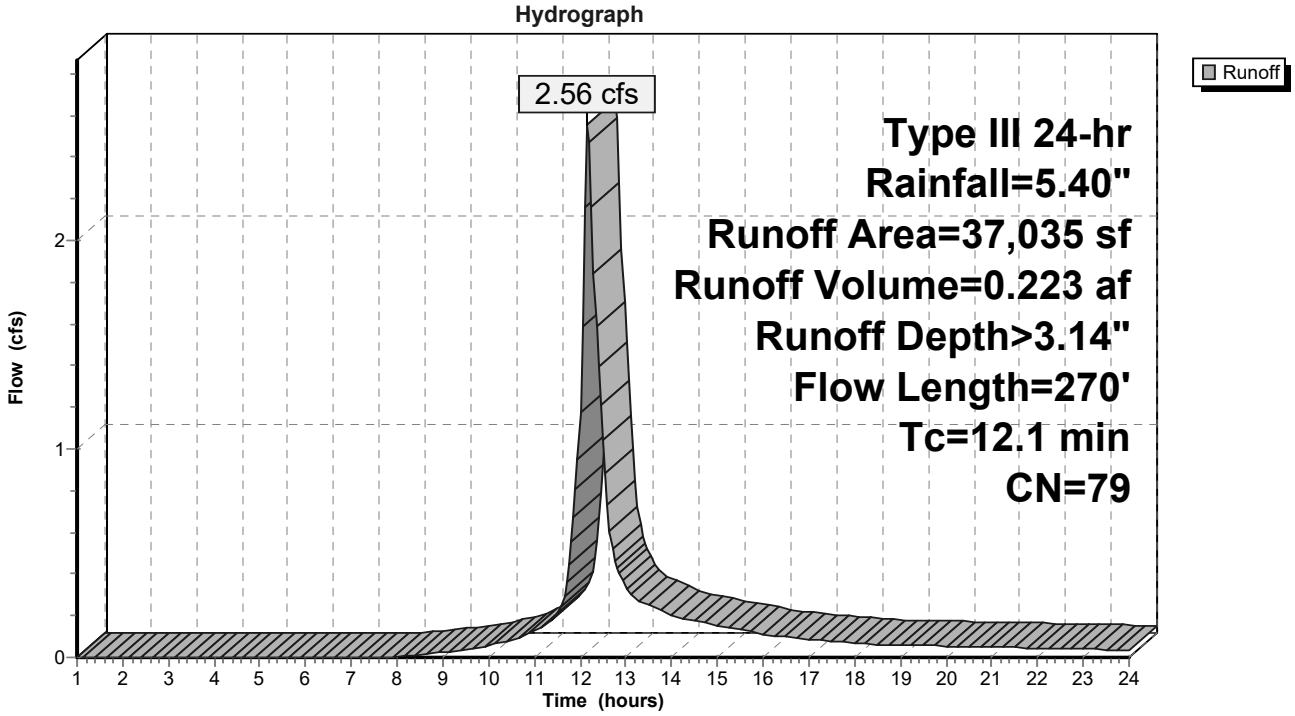
Runoff = 2.56 cfs @ 12.17 hrs, Volume= 0.223 af, Depth> 3.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.40"

Area (sf)	CN	Description
8,480	98	Paved parking, HSG C
28,555	74	>75% Grass cover, Good, HSG C
37,035	79	Weighted Average
28,555		77.10% Pervious Area
8,480		22.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	135	0.0300	0.21		**Sheet Flow, SEG AB** Grass: Short n= 0.150 P2= 3.00"
1.2	135	0.0080	1.82		**Shallow Concentrated Flow, SEG BC** Paved Kv= 20.3 fps
12.1	270	Total			

Subcatchment WS2: Addition Area



Hydrograph for Subcatchment WS2: Addition Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.25	0.07	0.00	0.00
1.50	0.08	0.00	0.00
1.75	0.09	0.00	0.00
2.00	0.11	0.00	0.00
2.25	0.12	0.00	0.00
2.50	0.14	0.00	0.00
2.75	0.15	0.00	0.00
3.00	0.17	0.00	0.00
3.25	0.18	0.00	0.00
3.50	0.20	0.00	0.00
3.75	0.21	0.00	0.00
4.00	0.23	0.00	0.00
4.25	0.25	0.00	0.00
4.50	0.27	0.00	0.00
4.75	0.29	0.00	0.00
5.00	0.31	0.00	0.00
5.25	0.33	0.00	0.00
5.50	0.35	0.00	0.00
5.75	0.37	0.00	0.00
6.00	0.39	0.00	0.00
6.25	0.41	0.00	0.00
6.50	0.44	0.00	0.00
6.75	0.46	0.00	0.00
7.00	0.49	0.00	0.00
7.25	0.52	0.00	0.00
7.50	0.55	0.00	0.00
7.75	0.58	0.00	0.00
8.00	0.62	0.00	0.00
8.25	0.65	0.01	0.01
8.50	0.69	0.01	0.01
8.75	0.74	0.01	0.02
9.00	0.79	0.02	0.02
9.25	0.84	0.03	0.03
9.50	0.90	0.04	0.04
9.75	0.96	0.06	0.05
10.00	1.02	0.08	0.06
10.25	1.09	0.10	0.07
10.50	1.17	0.12	0.09
10.75	1.26	0.15	0.10
11.00	1.35	0.19	0.12
11.25	1.46	0.24	0.16
11.50	1.61	0.31	0.22
11.75	1.92	0.48	0.45
12.00	2.70	0.97	**1.17**
12.25	3.48	1.55	**2.16**
12.50	3.79	1.80	1.05
12.75	3.94	1.91	0.46
13.00	4.05	2.00	0.34
13.25	4.14	2.08	0.27
13.50	4.23	2.15	0.25
13.75	4.31	2.22	0.23
14.00	4.38	2.28	0.21
14.25	4.44	2.33	0.19
14.50	4.50	2.38	0.18
14.75	4.56	2.43	0.17
15.00	4.61	2.47	0.15
15.25	4.66	2.51	0.14
15.50	4.71	2.55	0.13
15.75	4.75	2.59	0.12
16.00	4.78	2.62	0.11
16.25	4.82	2.65	0.10
16.50	4.85	2.67	0.10
16.75	4.88	2.70	0.09
17.00	4.91	2.73	0.09
17.25	4.94	2.75	0.08
17.50	4.96	2.77	0.08
17.75	4.99	2.79	0.07
18.00	5.01	2.81	0.07
18.25	5.03	2.83	0.06
18.50	5.05	2.85	0.06
18.75	5.07	2.87	0.06
19.00	5.09	2.88	0.06
19.25	5.11	2.90	0.06
19.50	5.13	2.92	0.06
19.75	5.15	2.93	0.05
20.00	5.17	2.95	0.05
20.25	5.19	2.96	0.05
20.50	5.20	2.98	0.05
20.75	5.22	2.99	0.05
21.00	5.23	3.00	0.05
21.25	5.25	3.02	0.05
21.50	5.27	3.03	0.05
21.75	5.28	3.05	0.05
22.00	5.30	3.06	0.04
22.25	5.31	3.07	0.04
22.50	5.32	3.08	0.04
22.75	5.34	3.09	0.04
23.00	5.35	3.11	0.04
23.25	5.36	3.12	0.04
23.50	5.38	3.13	0.04
23.75	5.39	3.14	0.04
24.00	**5.40**	**3.15**	0.04

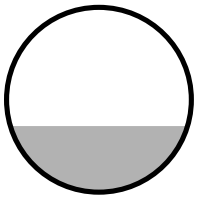
Summary for Reach R1: Roo Drain Pipe

Inflow Area = 0.187 ac,100.00% Impervious, Inflow Depth > 5.16"
Inflow = 1.08 cfs @ 12.02 hrs, Volume= 0.080 af
Outflow = 1.07 cfs @ 12.02 hrs, Volume= 0.080 af, Atten= 1%, Lag= 0.2 min

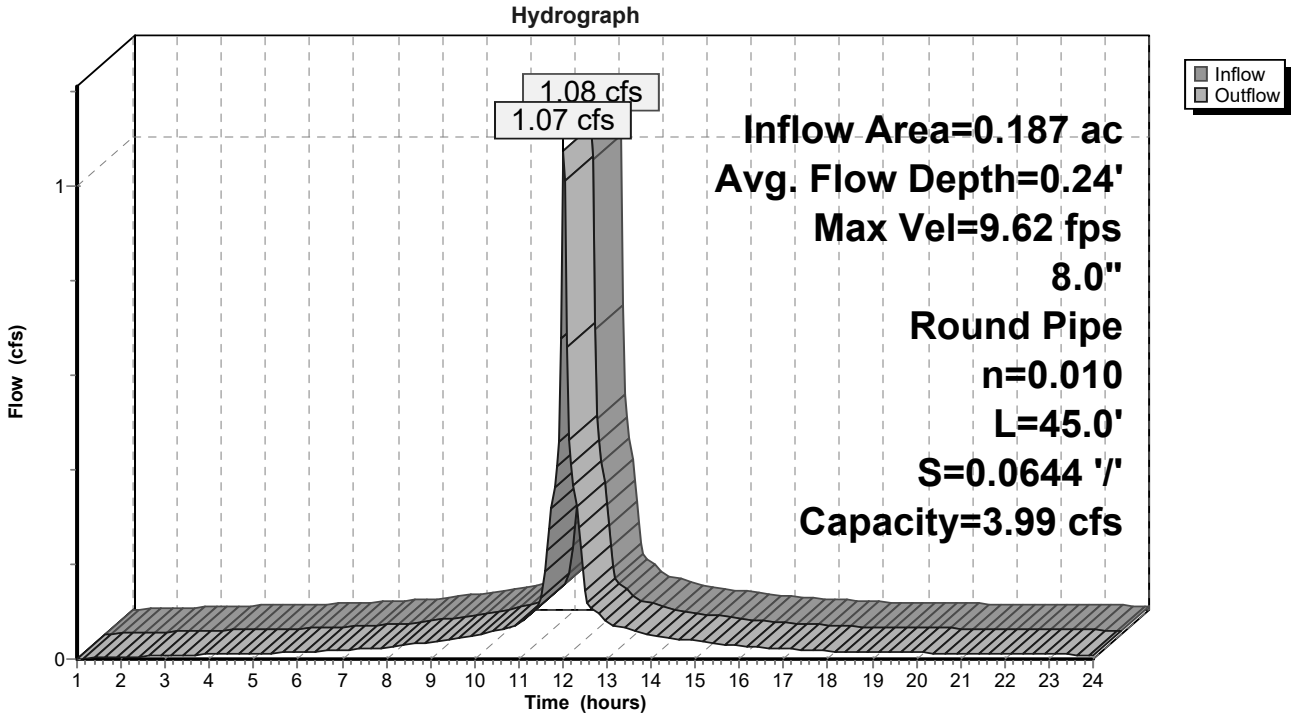
Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.62 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.18 fps, Avg. Travel Time= 0.2 min

Peak Storage= 5 cf @ 12.02 hrs
Average Depth at Peak Storage= 0.24'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 3.99 cfs

8.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 45.0' Slope= 0.0644 '/'
Inlet Invert= 271.00', Outlet Invert= 268.10'



Reach R1: Roo Drain Pipe



Hydrograph for Reach R1: Roo Drain Pipe

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
1.00	0.00	0	271.00	0.00
1.50	0.00	0	271.01	0.00
2.00	0.00	0	271.02	0.00
2.50	0.01	0	271.02	0.01
3.00	0.01	0	271.02	0.01
3.50	0.01	0	271.02	0.01
4.00	0.01	0	271.02	0.01
4.50	0.01	0	271.03	0.01
5.00	0.01	0	271.03	0.01
5.50	0.01	0	271.03	0.01
6.00	0.01	0	271.03	0.01
6.50	0.02	0	271.03	0.02
7.00	0.02	0	271.03	0.02
7.50	0.02	0	271.04	0.02
8.00	0.02	0	271.04	0.02
8.50	0.03	0	271.04	0.03
9.00	0.04	0	271.04	0.04
9.50	0.04	1	271.05	0.04
10.00	0.05	1	271.05	0.05
10.50	0.06	1	271.06	0.06
11.00	0.07	1	271.06	0.07
11.50	0.12	1	271.08	0.12
12.00	**1.05**	**5**	**271.23**	**1.04**
12.50	0.14	1	271.09	0.14
13.00	0.08	1	271.06	0.08
13.50	0.06	1	271.06	0.06
14.00	0.05	1	271.05	0.05
14.50	0.04	1	271.05	0.04
15.00	0.04	0	271.05	0.04
15.50	0.03	0	271.04	0.03
16.00	0.03	0	271.04	0.03
16.50	0.02	0	271.04	0.02
17.00	0.02	0	271.04	0.02
17.50	0.02	0	271.03	0.02
18.00	0.02	0	271.03	0.02
18.50	0.02	0	271.03	0.02
19.00	0.01	0	271.03	0.01
19.50	0.01	0	271.03	0.01
20.00	0.01	0	271.03	0.01
20.50	0.01	0	271.03	0.01
21.00	0.01	0	271.03	0.01
21.50	0.01	0	271.03	0.01
22.00	0.01	0	271.03	0.01
22.50	0.01	0	271.02	0.01
23.00	0.01	0	271.02	0.01
23.50	0.01	0	271.02	0.01
24.00	0.01	0	271.02	0.01

Summary for Pond CB1: Exist CB

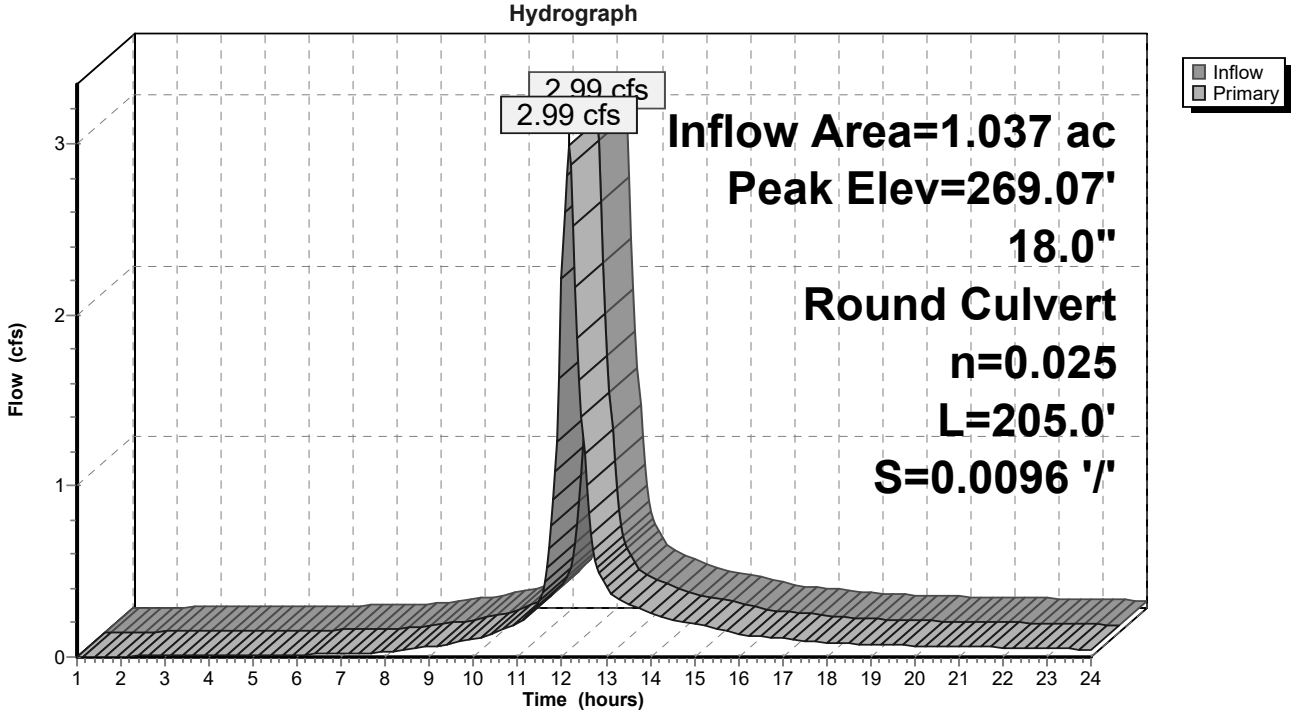
Inflow Area =	1.037 ac, 36.79% Impervious, Inflow Depth > 3.51"				
Inflow =	2.99 cfs @	12.16 hrs,	Volume=	0.303 af	
Outflow =	2.99 cfs @	12.16 hrs,	Volume=	0.303 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.99 cfs @	12.16 hrs,	Volume=	0.303 af	

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 269.07' @ 12.16 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	268.00'	**18.0" Round Culvert** L= 205.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 268.00' / 266.03' S= 0.0096 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

Primary OutFlow Max=2.98 cfs @ 12.16 hrs HW=269.07' (Free Discharge)
└─**1=Culvert** (Barrel Controls 2.98 cfs @ 3.10 fps)

Pond CB1: Exist CB



Hydrograph for Pond CB1: Exist CB

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	268.00	0.00	14.00	0.26	268.30	0.26
1.25	0.00	268.03	0.00	14.25	0.23	268.29	0.23
1.50	0.00	268.04	0.00	14.50	0.22	268.28	0.22
1.75	0.00	268.04	0.00	14.75	0.21	268.27	0.21
2.00	0.00	268.04	0.00	15.00	0.19	268.26	0.19
2.25	0.01	268.05	0.01	15.25	0.18	268.25	0.18
2.50	0.01	268.05	0.01	15.50	0.17	268.24	0.17
2.75	0.01	268.05	0.01	15.75	0.15	268.23	0.15
3.00	0.01	268.05	0.01	16.00	0.14	268.22	0.14
3.25	0.01	268.06	0.01	16.25	0.13	268.21	0.13
3.50	0.01	268.06	0.01	16.50	0.12	268.21	0.12
3.75	0.01	268.06	0.01	16.75	0.11	268.20	0.11
4.00	0.01	268.06	0.01	17.00	0.11	268.20	0.11
4.25	0.01	268.06	0.01	17.25	0.10	268.19	0.10
4.50	0.01	268.07	0.01	17.50	0.10	268.19	0.10
4.75	0.01	268.07	0.01	17.75	0.09	268.18	0.09
5.00	0.01	268.07	0.01	18.00	0.08	268.17	0.08
5.25	0.01	268.07	0.01	18.25	0.08	268.17	0.08
5.50	0.01	268.07	0.01	18.50	0.08	268.17	0.08
5.75	0.01	268.07	0.01	18.75	0.08	268.17	0.08
6.00	0.01	268.08	0.01	19.00	0.07	268.16	0.07
6.25	0.02	268.08	0.02	19.25	0.07	268.16	0.07
6.50	0.02	268.08	0.02	19.50	0.07	268.16	0.07
6.75	0.02	268.08	0.02	19.75	0.07	268.16	0.07
7.00	0.02	268.09	0.02	20.00	0.07	268.16	0.07
7.25	0.02	268.09	0.02	20.25	0.06	268.15	0.06
7.50	0.02	268.09	0.02	20.50	0.06	268.15	0.06
7.75	0.03	268.10	0.03	20.75	0.06	268.15	0.06
8.00	0.03	268.11	0.03	21.00	0.06	268.15	0.06
8.25	0.04	268.12	0.04	21.25	0.06	268.15	0.06
8.50	0.04	268.13	0.04	21.50	0.06	268.15	0.06
8.75	0.05	268.14	0.05	21.75	0.06	268.14	0.06
9.00	0.06	268.15	0.06	22.00	0.06	268.14	0.06
9.25	0.07	268.16	0.07	22.25	0.05	268.14	0.05
9.50	0.08	268.17	0.08	22.50	0.05	268.14	0.05
9.75	0.09	268.18	0.09	22.75	0.05	268.14	0.05
10.00	0.11	268.19	0.11	23.00	0.05	268.14	0.05
10.25	0.12	268.21	0.12	23.25	0.05	268.13	0.05
10.50	0.15	268.23	0.15	23.50	0.05	268.13	0.05
10.75	0.17	268.24	0.17	23.75	0.05	268.13	0.05
11.00	0.20	268.26	0.20	24.00	0.04	268.13	0.04
11.25	0.25	268.29	0.25				
11.50	0.34	268.34	0.34				
11.75	0.77	268.51	0.77				
12.00	**2.21**	**268.90**	**2.21**				
12.25	**2.52**	**268.97**	**2.52**				
12.50	1.19	268.64	1.19				
12.75	0.56	268.44	0.56				
13.00	0.42	268.38	0.42				
13.25	0.34	268.34	0.34				
13.50	0.31	268.33	0.31				
13.75	0.28	268.31	0.28				

Summary for Pond P2: Exist CB

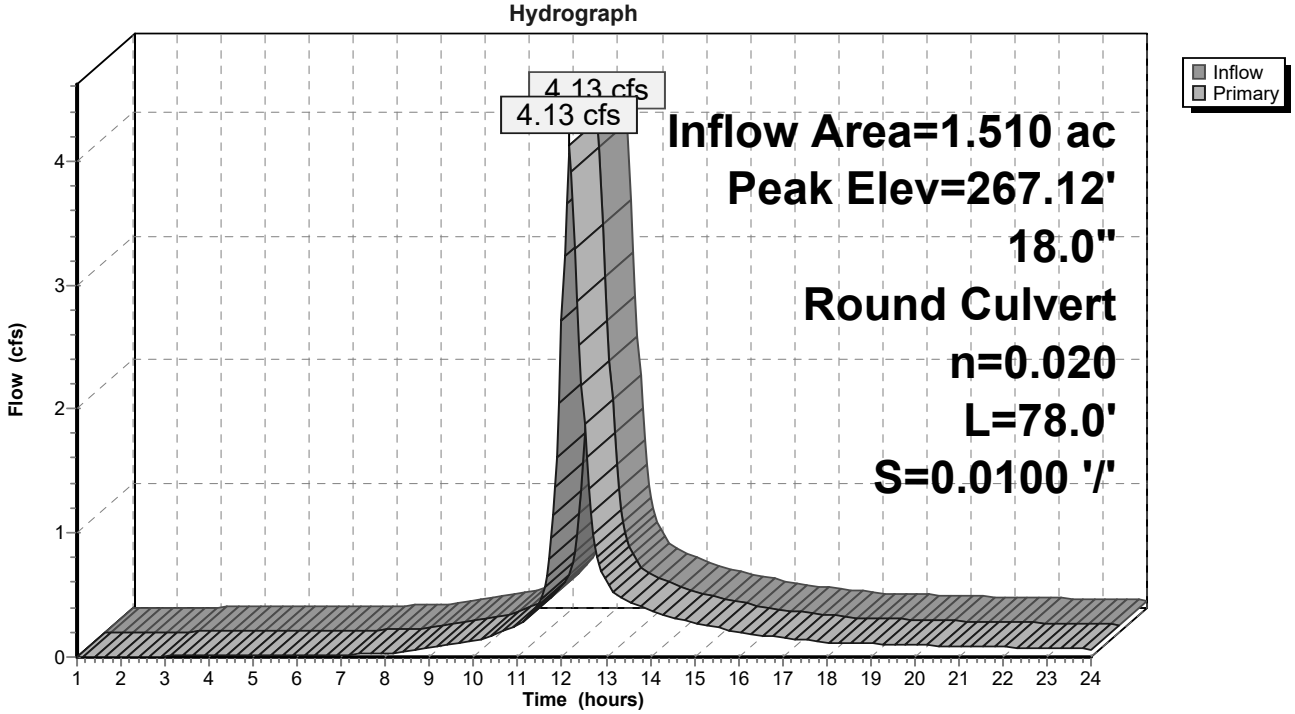
Inflow Area =	1.510 ac, 30.66% Impervious, Inflow Depth > 3.36"				
Inflow	=	4.13 cfs @	12.18 hrs, Volume=	0.423 af	
Outflow	=	4.13 cfs @	12.18 hrs, Volume=	0.423 af, Atten= 0%, Lag= 0.0 min	
Primary	=	4.13 cfs @	12.18 hrs, Volume=	0.423 af	

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 267.12' @ 12.18 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	265.93'	**18.0" Round Culvert** L= 78.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 265.93' / 265.15' S= 0.0100 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.08 cfs @ 12.18 hrs HW=267.11' (Free Discharge)
└**1=Culvert** (Barrel Controls 4.08 cfs @ 3.77 fps)

Pond P2: Exist CB

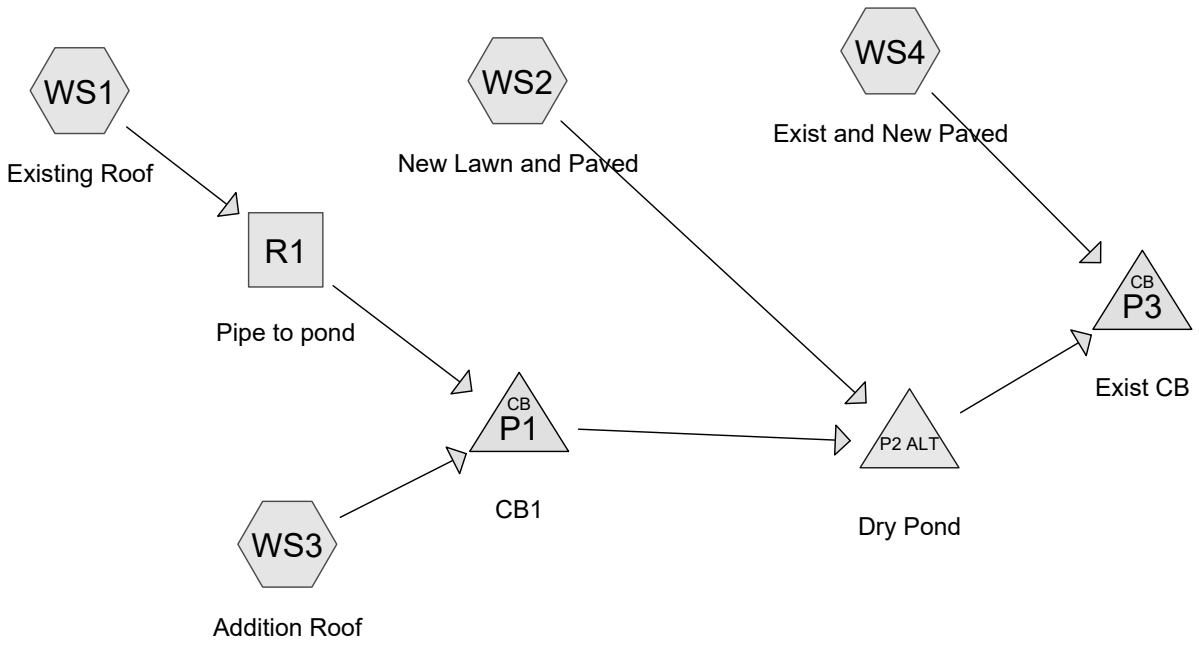


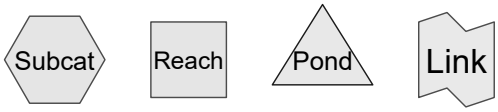
Hydrograph for Pond P2: Exist CB

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	265.93	0.00	14.00	0.37	266.25	0.37
1.25	0.00	265.96	0.00	14.25	0.34	266.24	0.34
1.50	0.00	265.96	0.00	14.50	0.32	266.23	0.32
1.75	0.00	265.97	0.00	14.75	0.30	266.22	0.30
2.00	0.00	265.97	0.00	15.00	0.28	266.21	0.28
2.25	0.01	265.97	0.01	15.25	0.26	266.20	0.26
2.50	0.01	265.97	0.01	15.50	0.24	266.19	0.24
2.75	0.01	265.98	0.01	15.75	0.22	266.18	0.22
3.00	0.01	265.98	0.01	16.00	0.20	266.17	0.20
3.25	0.01	265.98	0.01	16.25	0.18	266.16	0.18
3.50	0.01	265.98	0.01	16.50	0.17	266.15	0.17
3.75	0.01	265.98	0.01	16.75	0.17	266.15	0.17
4.00	0.01	265.99	0.01	17.00	0.16	266.14	0.16
4.25	0.01	265.99	0.01	17.25	0.15	266.13	0.15
4.50	0.01	265.99	0.01	17.50	0.14	266.13	0.14
4.75	0.01	265.99	0.01	17.75	0.13	266.12	0.13
5.00	0.01	265.99	0.01	18.00	0.12	266.12	0.12
5.25	0.01	265.99	0.01	18.25	0.11	266.11	0.11
5.50	0.01	265.99	0.01	18.50	0.11	266.11	0.11
5.75	0.01	266.00	0.01	18.75	0.11	266.11	0.11
6.00	0.01	266.00	0.01	19.00	0.11	266.10	0.11
6.25	0.02	266.00	0.02	19.25	0.10	266.10	0.10
6.50	0.02	266.00	0.02	19.50	0.10	266.10	0.10
6.75	0.02	266.01	0.02	19.75	0.10	266.10	0.10
7.00	0.02	266.01	0.02	20.00	0.10	266.10	0.10
7.25	0.02	266.01	0.02	20.25	0.09	266.09	0.09
7.50	0.02	266.01	0.02	20.50	0.09	266.09	0.09
7.75	0.03	266.02	0.03	20.75	0.09	266.09	0.09
8.00	0.03	266.03	0.03	21.00	0.09	266.09	0.09
8.25	0.04	266.04	0.04	21.25	0.09	266.09	0.09
8.50	0.05	266.05	0.05	21.50	0.08	266.09	0.08
8.75	0.06	266.06	0.06	21.75	0.08	266.08	0.08
9.00	0.07	266.07	0.07	22.00	0.08	266.08	0.08
9.25	0.08	266.09	0.08	22.25	0.08	266.08	0.08
9.50	0.10	266.10	0.10	22.50	0.08	266.08	0.08
9.75	0.11	266.11	0.11	22.75	0.07	266.08	0.07
10.00	0.13	266.12	0.13	23.00	0.07	266.07	0.07
10.25	0.16	266.14	0.16	23.25	0.07	266.07	0.07
10.50	0.19	266.16	0.19	23.50	0.07	266.07	0.07
10.75	0.22	266.18	0.22	23.75	0.07	266.07	0.07
11.00	0.26	266.20	0.26	24.00	0.06	266.07	0.06
11.25	0.33	266.23	0.33				
11.50	0.44	266.28	0.44				
11.75	0.95	266.45	0.95				
12.00	**2.71**	**266.85**	**2.71**				
12.25	**3.74**	**267.04**	**3.74**				
12.50	1.88	266.68	1.88				
12.75	0.88	266.43	0.88				
13.00	0.62	266.35	0.62				
13.25	0.50	266.30	0.50				
13.50	0.45	266.28	0.45				
13.75	0.41	266.27	0.41				

APPENDIX C.2

POST-DEVELOPMENT HYDROCAD OUTPUT





Routing Diagram for Proposed Conditions
Prepared by Microsoft, Printed 2/12/2016
HydroCAD® 10.00-12 s/n 01406 © 2014 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.851	74	>75% Grass cover, Good, HSG C (WS2, WS4)
0.119	98	Paved parking, HSG C (WS4)
0.178	98	Paved roads w/curbs & sewers, HSG C (WS2)
0.175	98	Roofs, HSG C (WS3)
0.187	98	Unconnected roofs, HSG C (WS1)
1.510	**84**	**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	WS1	0.00	0.00	100.0	0.2000	0.009	5.0	0.0	0.0
2	WS3	0.00	0.00	160.0	0.0940	0.010	6.0	0.0	0.0
3	R1	270.30	269.90	80.0	0.0050	0.013	8.0	0.0	0.0
4	P1	269.90	269.00	170.0	0.0053	0.013	12.0	0.0	0.0
5	P2 ALT	266.50	266.00	20.0	0.0250	0.013	12.0	0.0	0.0
6	P3	265.93	265.15	78.0	0.0100	0.020	18.0	0.0	0.0

Summary for Subcatchment WS1: Existing Roof

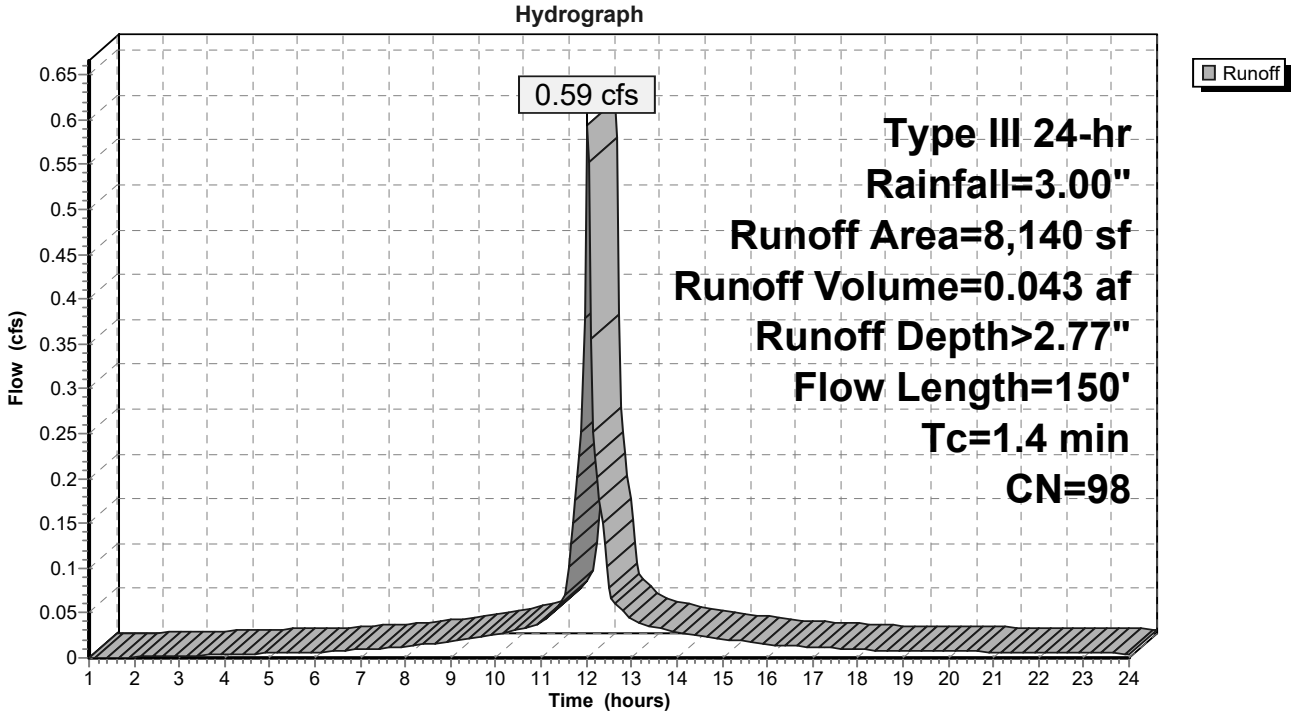
Runoff = 0.59 cfs @ 12.02 hrs, Volume= 0.043 af, Depth> 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

Area (sf)	CN	Description
8,140	98	Unconnected roofs, HSG C
8,140		100.00% Impervious Area
8,140		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	50	0.0050	0.67		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
0.1	100	0.2000	16.35	2.23	**Pipe Channel, SEG BC ROOF DRAIN** 5.0" Round Area= 0.1 sf Perim= 1.3' r= 0.10' n= 0.009 PVC, smooth interior
1.4	150	Total			

Subcatchment WS1: Existing Roof



Hydrograph for Subcatchment WS1: Existing Roof

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.03	0.00	0.00
1.25	0.04	0.00	0.00
1.50	0.04	0.00	0.00
1.75	0.05	0.00	0.00
2.00	0.06	0.00	0.00
2.25	0.07	0.00	0.00
2.50	0.08	0.01	0.00
2.75	0.08	0.01	0.00
3.00	0.09	0.01	0.00
3.25	0.10	0.01	0.00
3.50	0.11	0.02	0.00
3.75	0.12	0.02	0.00
4.00	0.13	0.03	0.00
4.25	0.14	0.03	0.00
4.50	0.15	0.04	0.00
4.75	0.16	0.04	0.00
5.00	0.17	0.05	0.01
5.25	0.18	0.06	0.01
5.50	0.19	0.06	0.01
5.75	0.20	0.07	0.01
6.00	0.22	0.08	0.01
6.25	0.23	0.09	0.01
6.50	0.24	0.10	0.01
6.75	0.26	0.11	0.01
7.00	0.27	0.12	0.01
7.25	0.29	0.14	0.01
7.50	0.30	0.15	0.01
7.75	0.32	0.16	0.01
8.00	0.34	0.18	0.01
8.25	0.36	0.20	0.01
8.50	0.39	0.22	0.02
8.75	0.41	0.24	0.02
9.00	0.44	0.26	0.02
9.25	0.47	0.29	0.02
9.50	0.50	0.32	0.02
9.75	0.53	0.35	0.02
10.00	0.57	0.38	0.03
10.25	0.61	0.42	0.03
10.50	0.65	0.46	0.03
10.75	0.70	0.50	0.04
11.00	0.75	0.55	0.04
11.25	0.81	0.61	0.05
11.50	0.89	0.69	0.06
11.75	1.07	0.85	0.18
12.00	1.50	1.28	**0.58**
12.25	1.93	1.71	0.20
12.50	2.11	1.88	0.08
12.75	2.19	1.96	0.05
13.00	2.25	2.02	0.04
13.25	2.30	2.07	0.04
13.50	2.35	2.12	0.03
13.75	2.39	2.17	0.03
14.00	2.43	2.20	0.03
14.25	2.47	2.24	0.03
14.50	2.50	2.27	0.02
14.75	2.53	2.30	0.02
15.00	2.56	2.33	0.02
15.25	2.59	2.36	0.02
15.50	2.61	2.38	0.02
15.75	2.64	2.41	0.02
16.00	2.66	2.43	0.01
16.25	2.68	2.45	0.01
16.50	2.70	2.46	0.01
16.75	2.71	2.48	0.01
17.00	2.73	2.50	0.01
17.25	2.74	2.51	0.01
17.50	2.76	2.53	0.01
17.75	2.77	2.54	0.01
18.00	2.78	2.55	0.01
18.25	2.80	2.57	0.01
18.50	2.81	2.58	0.01
18.75	2.82	2.59	0.01
19.00	2.83	2.60	0.01
19.25	2.84	2.61	0.01
19.50	2.85	2.62	0.01
19.75	2.86	2.63	0.01
20.00	2.87	2.64	0.01
20.25	2.88	2.65	0.01
20.50	2.89	2.66	0.01
20.75	2.90	2.67	0.01
21.00	2.91	2.68	0.01
21.25	2.92	2.69	0.01
21.50	2.93	2.69	0.01
21.75	2.93	2.70	0.01
22.00	2.94	2.71	0.01
22.25	2.95	2.72	0.01
22.50	2.96	2.73	0.01
22.75	2.97	2.73	0.01
23.00	2.97	2.74	0.01
23.25	2.98	2.75	0.01
23.50	2.99	2.76	0.01
23.75	2.99	2.76	0.00
24.00	**3.00**	**2.77**	0.00

Summary for Subcatchment WS2: New Lawn and Paved

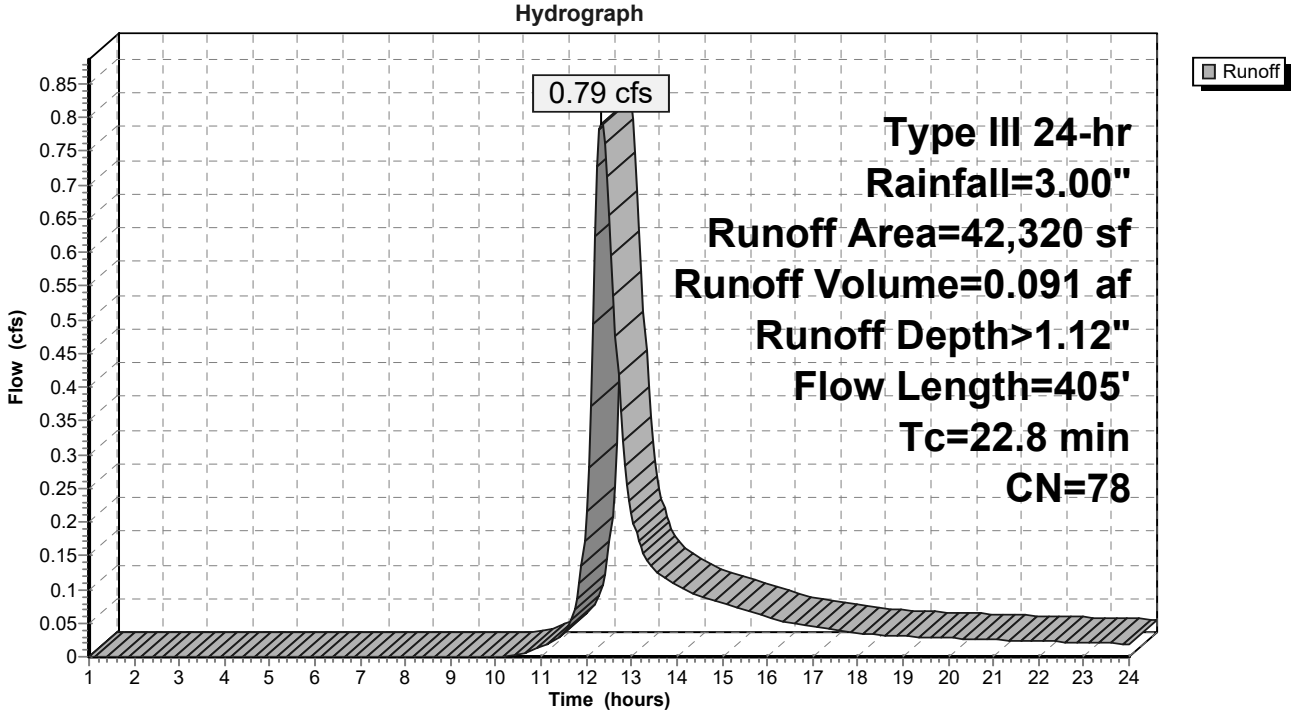
Runoff = 0.79 cfs @ 12.34 hrs, Volume= 0.091 af, Depth> 1.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

Area (sf)	CN	Description
7,746	98	Paved roads w/curbs & sewers, HSG C
34,574	74	>75% Grass cover, Good, HSG C
42,320	78	Weighted Average
34,574		81.70% Pervious Area
7,746		18.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	15	0.0100	0.09		**Sheet Flow, SEG AB** Grass: Short n= 0.150 P2= 3.00"
18.7	160	0.0110	0.14		**Sheet Flow, SEG BC** Grass: Short n= 0.150 P2= 3.00"
1.2	230	0.0100	3.28	22.94	**Trap/Vee/Rect Channel Flow, SEG CD Ditch to pond** Bot.W=4.00' D=1.00' Z= 3.0 '/' Top.W=10.00' n= 0.035 Earth, dense weeds
22.8	405	Total			

Subcatchment WS2: New Lawn and Paved



Hydrograph for Subcatchment WS2: New Lawn and Paved

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.03	0.00	0.00
1.25	0.04	0.00	0.00
1.50	0.04	0.00	0.00
1.75	0.05	0.00	0.00
2.00	0.06	0.00	0.00
2.25	0.07	0.00	0.00
2.50	0.08	0.00	0.00
2.75	0.08	0.00	0.00
3.00	0.09	0.00	0.00
3.25	0.10	0.00	0.00
3.50	0.11	0.00	0.00
3.75	0.12	0.00	0.00
4.00	0.13	0.00	0.00
4.25	0.14	0.00	0.00
4.50	0.15	0.00	0.00
4.75	0.16	0.00	0.00
5.00	0.17	0.00	0.00
5.25	0.18	0.00	0.00
5.50	0.19	0.00	0.00
5.75	0.20	0.00	0.00
6.00	0.22	0.00	0.00
6.25	0.23	0.00	0.00
6.50	0.24	0.00	0.00
6.75	0.26	0.00	0.00
7.00	0.27	0.00	0.00
7.25	0.29	0.00	0.00
7.50	0.30	0.00	0.00
7.75	0.32	0.00	0.00
8.00	0.34	0.00	0.00
8.25	0.36	0.00	0.00
8.50	0.39	0.00	0.00
8.75	0.41	0.00	0.00
9.00	0.44	0.00	0.00
9.25	0.47	0.00	0.00
9.50	0.50	0.00	0.00
9.75	0.53	0.00	0.00
10.00	0.57	0.00	0.00
10.25	0.61	0.00	0.00
10.50	0.65	0.00	0.00
10.75	0.70	0.01	0.01
11.00	0.75	0.01	0.01
11.25	0.81	0.02	0.02
11.50	0.89	0.03	0.04
11.75	1.07	0.08	0.07
12.00	1.50	0.23	0.22
12.25	1.93	0.45	**0.73**
12.50	2.11	0.54	**0.65**
12.75	2.19	0.59	0.36
13.00	2.25	0.63	0.21
13.25	2.30	0.66	0.15
13.50	2.35	0.69	0.13
13.75	2.39	0.72	0.12
14.00	2.43	0.74	0.11
14.25	2.47	0.77	0.10
14.50	2.50	0.79	0.09
14.75	2.53	0.81	0.08
15.00	2.56	0.83	0.08
15.25	2.59	0.85	0.07
15.50	2.61	0.86	0.07
15.75	2.64	0.88	0.06
16.00	2.66	0.89	0.06
16.25	2.68	0.90	0.05
16.50	2.70	0.92	0.05
16.75	2.71	0.93	0.05
17.00	2.73	0.94	0.05
17.25	2.74	0.95	0.04
17.50	2.76	0.96	0.04
17.75	2.77	0.97	0.04
18.00	2.78	0.98	0.04
18.25	2.80	0.99	0.03
18.50	2.81	0.99	0.03
18.75	2.82	1.00	0.03
19.00	2.83	1.01	0.03
19.25	2.84	1.02	0.03
19.50	2.85	1.02	0.03
19.75	2.86	1.03	0.03
20.00	2.87	1.04	0.03
20.25	2.88	1.04	0.03
20.50	2.89	1.05	0.03
20.75	2.90	1.06	0.03
21.00	2.91	1.06	0.03
21.25	2.92	1.07	0.02
21.50	2.93	1.08	0.02
21.75	2.93	1.08	0.02
22.00	2.94	1.09	0.02
22.25	2.95	1.09	0.02
22.50	2.96	1.10	0.02
22.75	2.97	1.10	0.02
23.00	2.97	1.11	0.02
23.25	2.98	1.11	0.02
23.50	2.99	1.12	0.02
23.75	2.99	1.12	0.02
24.00	**3.00**	**1.13**	0.02

Summary for Subcatchment WS3: Addition Roof

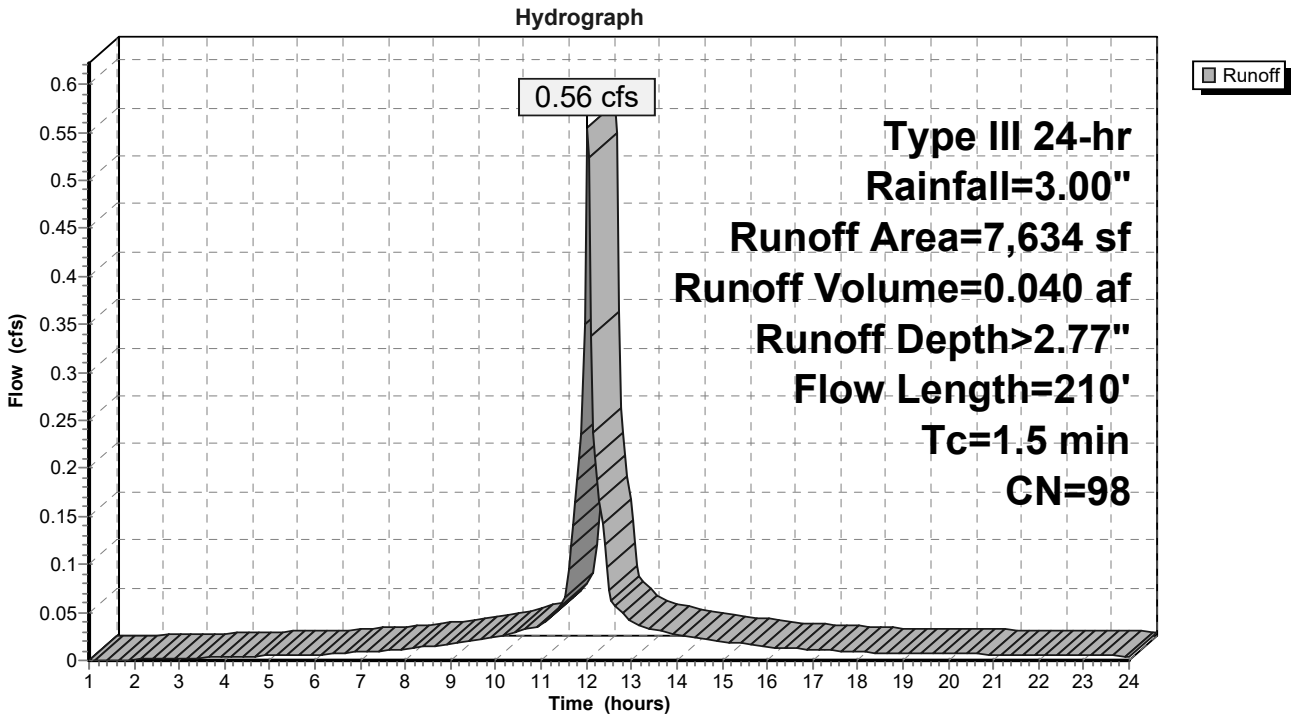
Runoff = 0.56 cfs @ 12.02 hrs, Volume= 0.040 af, Depth> 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

Area (sf)	CN	Description
7,634	98	Roofs, HSG C
7,634		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	50	0.0050	0.67		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
0.2	160	0.0940	11.39	2.24	**Pipe Channel, SEG BC Roof Drain** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.010 PVC, smooth interior
1.5	210	Total			

Subcatchment WS3: Addition Roof



Hydrograph for Subcatchment WS3: Addition Roof

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.03	0.00	0.00
1.25	0.04	0.00	0.00
1.50	0.04	0.00	0.00
1.75	0.05	0.00	0.00
2.00	0.06	0.00	0.00
2.25	0.07	0.00	0.00
2.50	0.08	0.01	0.00
2.75	0.08	0.01	0.00
3.00	0.09	0.01	0.00
3.25	0.10	0.01	0.00
3.50	0.11	0.02	0.00
3.75	0.12	0.02	0.00
4.00	0.13	0.03	0.00
4.25	0.14	0.03	0.00
4.50	0.15	0.04	0.00
4.75	0.16	0.04	0.00
5.00	0.17	0.05	0.00
5.25	0.18	0.06	0.01
5.50	0.19	0.06	0.01
5.75	0.20	0.07	0.01
6.00	0.22	0.08	0.01
6.25	0.23	0.09	0.01
6.50	0.24	0.10	0.01
6.75	0.26	0.11	0.01
7.00	0.27	0.12	0.01
7.25	0.29	0.14	0.01
7.50	0.30	0.15	0.01
7.75	0.32	0.16	0.01
8.00	0.34	0.18	0.01
8.25	0.36	0.20	0.01
8.50	0.39	0.22	0.01
8.75	0.41	0.24	0.02
9.00	0.44	0.26	0.02
9.25	0.47	0.29	0.02
9.50	0.50	0.32	0.02
9.75	0.53	0.35	0.02
10.00	0.57	0.38	0.02
10.25	0.61	0.42	0.03
10.50	0.65	0.46	0.03
10.75	0.70	0.50	0.03
11.00	0.75	0.55	0.04
11.25	0.81	0.61	0.05
11.50	0.89	0.69	0.06
11.75	1.07	0.85	0.16
12.00	1.50	1.28	**0.54**
12.25	1.93	1.71	0.19
12.50	2.11	1.88	0.07
12.75	2.19	1.96	0.05
13.00	2.25	2.02	0.04
13.25	2.30	2.07	0.04
13.50	2.35	2.12	0.03
13.75	2.39	2.17	0.03
14.00	2.43	2.20	0.03
14.25	2.47	2.24	0.02
14.50	2.50	2.27	0.02
14.75	2.53	2.30	0.02
15.00	2.56	2.33	0.02
15.25	2.59	2.36	0.02
15.50	2.61	2.38	0.02
15.75	2.64	2.41	0.02
16.00	2.66	2.43	0.01
16.25	2.68	2.45	0.01
16.50	2.70	2.46	0.01
16.75	2.71	2.48	0.01
17.00	2.73	2.50	0.01
17.25	2.74	2.51	0.01
17.50	2.76	2.53	0.01
17.75	2.77	2.54	0.01
18.00	2.78	2.55	0.01
18.25	2.80	2.57	0.01
18.50	2.81	2.58	0.01
18.75	2.82	2.59	0.01
19.00	2.83	2.60	0.01
19.25	2.84	2.61	0.01
19.50	2.85	2.62	0.01
19.75	2.86	2.63	0.01
20.00	2.87	2.64	0.01
20.25	2.88	2.65	0.01
20.50	2.89	2.66	0.01
20.75	2.90	2.67	0.01
21.00	2.91	2.68	0.01
21.25	2.92	2.69	0.01
21.50	2.93	2.69	0.01
21.75	2.93	2.70	0.01
22.00	2.94	2.71	0.01
22.25	2.95	2.72	0.01
22.50	2.96	2.73	0.01
22.75	2.97	2.73	0.01
23.00	2.97	2.74	0.01
23.25	2.98	2.75	0.00
23.50	2.99	2.76	0.00
23.75	2.99	2.76	0.00
24.00	**3.00**	**2.77**	0.00

Summary for Subcatchment WS4: Exist and New Paved

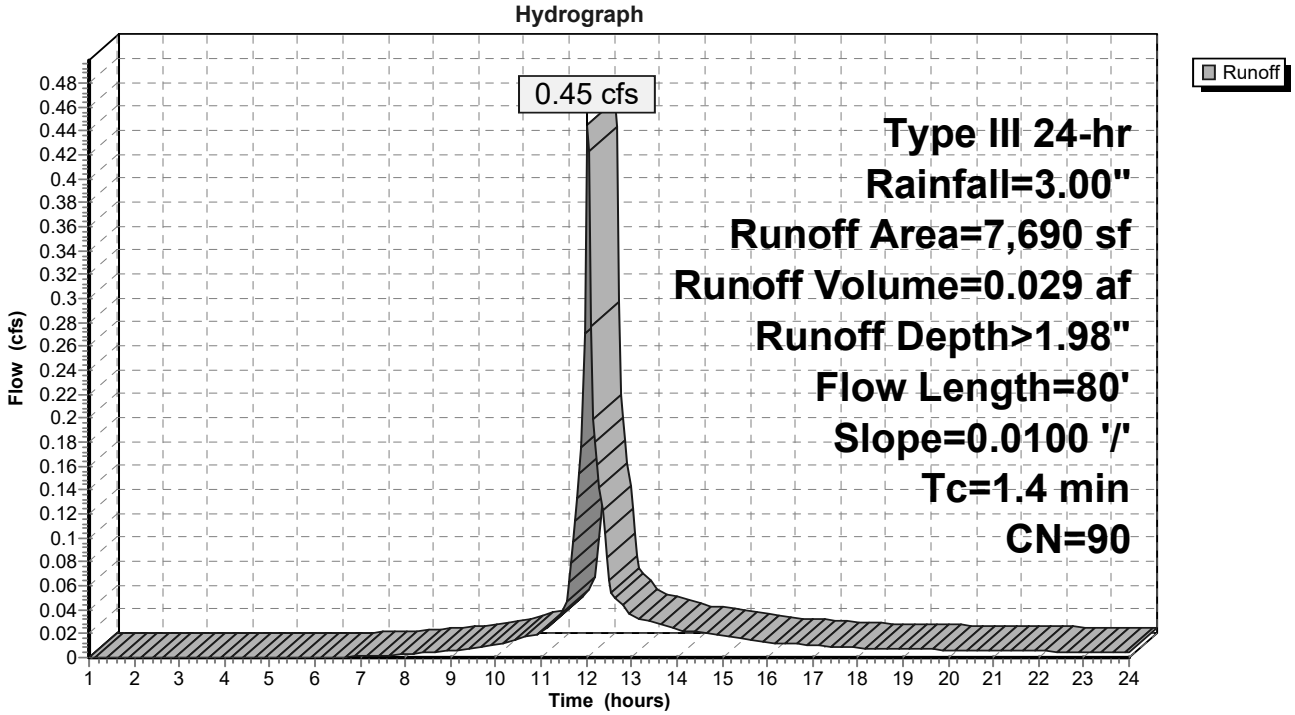
Runoff = 0.45 cfs @ 12.02 hrs, Volume= 0.029 af, Depth> 1.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

Area (sf)	CN	Description
5,175	98	Paved parking, HSG C
2,515	74	>75% Grass cover, Good, HSG C
7,690	90	Weighted Average
2,515		32.70% Pervious Area
5,175		67.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	80	0.0100	0.97		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"

Subcatchment WS4: Exist and New Paved



Hydrograph for Subcatchment WS4: Exist and New Paved

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.03	0.00	0.00
1.25	0.04	0.00	0.00
1.50	0.04	0.00	0.00
1.75	0.05	0.00	0.00
2.00	0.06	0.00	0.00
2.25	0.07	0.00	0.00
2.50	0.08	0.00	0.00
2.75	0.08	0.00	0.00
3.00	0.09	0.00	0.00
3.25	0.10	0.00	0.00
3.50	0.11	0.00	0.00
3.75	0.12	0.00	0.00
4.00	0.13	0.00	0.00
4.25	0.14	0.00	0.00
4.50	0.15	0.00	0.00
4.75	0.16	0.00	0.00
5.00	0.17	0.00	0.00
5.25	0.18	0.00	0.00
5.50	0.19	0.00	0.00
5.75	0.20	0.00	0.00
6.00	0.22	0.00	0.00
6.25	0.23	0.00	0.00
6.50	0.24	0.00	0.00
6.75	0.26	0.00	0.00
7.00	0.27	0.00	0.00
7.25	0.29	0.00	0.00
7.50	0.30	0.01	0.00
7.75	0.32	0.01	0.00
8.00	0.34	0.01	0.00
8.25	0.36	0.02	0.00
8.50	0.39	0.02	0.00
8.75	0.41	0.03	0.00
9.00	0.44	0.03	0.01
9.25	0.47	0.04	0.01
9.50	0.50	0.05	0.01
9.75	0.53	0.07	0.01
10.00	0.57	0.08	0.01
10.25	0.61	0.10	0.01
10.50	0.65	0.12	0.02
10.75	0.70	0.14	0.02
11.00	0.75	0.17	0.02
11.25	0.81	0.21	0.03
11.50	0.89	0.25	0.04
11.75	1.07	0.36	0.11
12.00	1.50	0.68	**0.43**
12.25	1.93	1.04	0.16
12.50	2.11	1.18	0.06
12.75	2.19	1.25	0.05
13.00	2.25	1.31	0.04
13.25	2.30	1.36	0.03
13.50	2.35	1.40	0.03
13.75	2.39	1.44	0.03
14.00	2.43	1.47	0.02
14.25	2.47	1.50	0.02
14.50	2.50	1.53	0.02
14.75	2.53	1.56	0.02
15.00	2.56	1.59	0.02
15.25	2.59	1.61	0.02
15.50	2.61	1.63	0.02
15.75	2.64	1.65	0.01
16.00	2.66	1.67	0.01
16.25	2.68	1.69	0.01
16.50	2.70	1.71	0.01
16.75	2.71	1.72	0.01
17.00	2.73	1.74	0.01
17.25	2.74	1.75	0.01
17.50	2.76	1.76	0.01
17.75	2.77	1.78	0.01
18.00	2.78	1.79	0.01
18.25	2.80	1.80	0.01
18.50	2.81	1.81	0.01
18.75	2.82	1.82	0.01
19.00	2.83	1.83	0.01
19.25	2.84	1.84	0.01
19.50	2.85	1.85	0.01
19.75	2.86	1.86	0.01
20.00	2.87	1.87	0.01
20.25	2.88	1.87	0.01
20.50	2.89	1.88	0.01
20.75	2.90	1.89	0.01
21.00	2.91	1.90	0.01
21.25	2.92	1.91	0.01
21.50	2.93	1.92	0.01
21.75	2.93	1.92	0.01
22.00	2.94	1.93	0.01
22.25	2.95	1.94	0.01
22.50	2.96	1.95	0.00
22.75	2.97	1.95	0.00
23.00	2.97	1.96	0.00
23.25	2.98	1.97	0.00
23.50	2.99	1.97	0.00
23.75	2.99	1.98	0.00
24.00	**3.00**	**1.98**	0.00

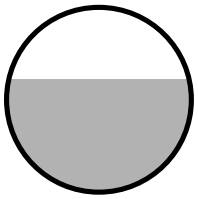
Summary for Reach R1: Pipe to pond

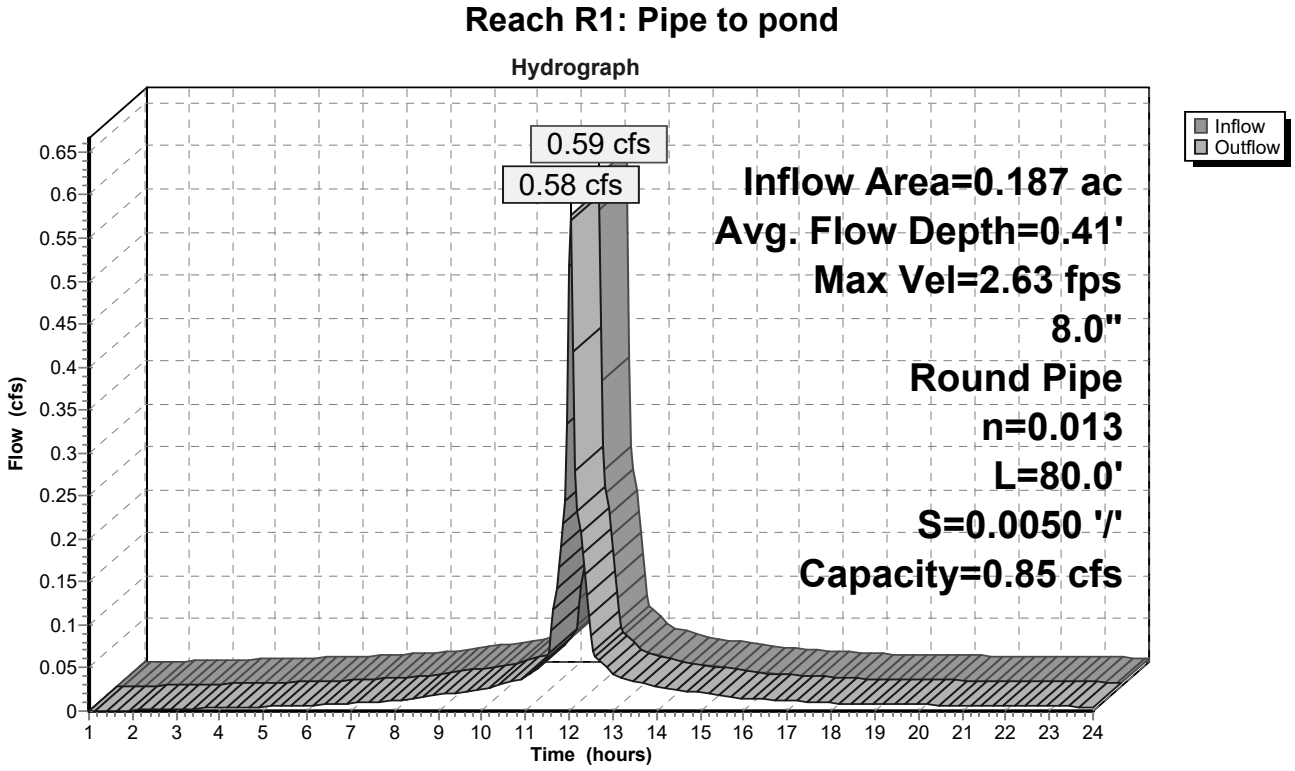
Inflow Area = 0.187 ac,100.00% Impervious, Inflow Depth > 2.77"
Inflow = 0.59 cfs @ 12.02 hrs, Volume= 0.043 af
Outflow = 0.58 cfs @ 12.04 hrs, Volume= 0.043 af, Atten= 3%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.63 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.89 fps, Avg. Travel Time= 1.5 min

Peak Storage= 18 cf @ 12.03 hrs
Average Depth at Peak Storage= 0.41'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 0.85 cfs

8.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 80.0' Slope= 0.0050 '/'
Inlet Invert= 270.30', Outlet Invert= 269.90'





Hydrograph for Reach R1: Pipe to pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
1.00	0.00	0	270.30	0.00
1.50	0.00	0	270.30	0.00
2.00	0.00	0	270.32	0.00
2.50	0.00	0	270.32	0.00
3.00	0.00	0	270.33	0.00
3.50	0.00	0	270.33	0.00
4.00	0.00	0	270.33	0.00
4.50	0.00	1	270.33	0.00
5.00	0.01	1	270.34	0.01
5.50	0.01	1	270.34	0.01
6.00	0.01	1	270.34	0.01
6.50	0.01	1	270.34	0.01
7.00	0.01	1	270.35	0.01
7.50	0.01	1	270.35	0.01
8.00	0.01	1	270.36	0.01
8.50	0.02	1	270.36	0.02
9.00	0.02	1	270.37	0.02
9.50	0.02	2	270.37	0.02
10.00	0.03	2	270.38	0.03
10.50	0.03	2	270.39	0.03
11.00	0.04	3	270.40	0.04
11.50	0.06	4	270.42	0.06
12.00	**0.58**	**17**	**270.69**	**0.52**
12.50	0.08	**4**	**270.44**	**0.09**
13.00	0.04	3	270.40	0.04
13.50	0.03	2	270.39	0.03
14.00	0.03	2	270.38	0.03
14.50	0.02	2	270.38	0.02
15.00	0.02	2	270.37	0.02
15.50	0.02	1	270.37	0.02
16.00	0.01	1	270.36	0.01
16.50	0.01	1	270.36	0.01
17.00	0.01	1	270.35	0.01
17.50	0.01	1	270.35	0.01
18.00	0.01	1	270.35	0.01
18.50	0.01	1	270.35	0.01
19.00	0.01	1	270.35	0.01
19.50	0.01	1	270.34	0.01
20.00	0.01	1	270.34	0.01
20.50	0.01	1	270.34	0.01
21.00	0.01	1	270.34	0.01
21.50	0.01	1	270.34	0.01
22.00	0.01	1	270.34	0.01
22.50	0.01	1	270.34	0.01
23.00	0.01	1	270.34	0.01
23.50	0.01	1	270.34	0.01
24.00	0.00	1	270.33	0.00

Summary for Pond P1: CB1

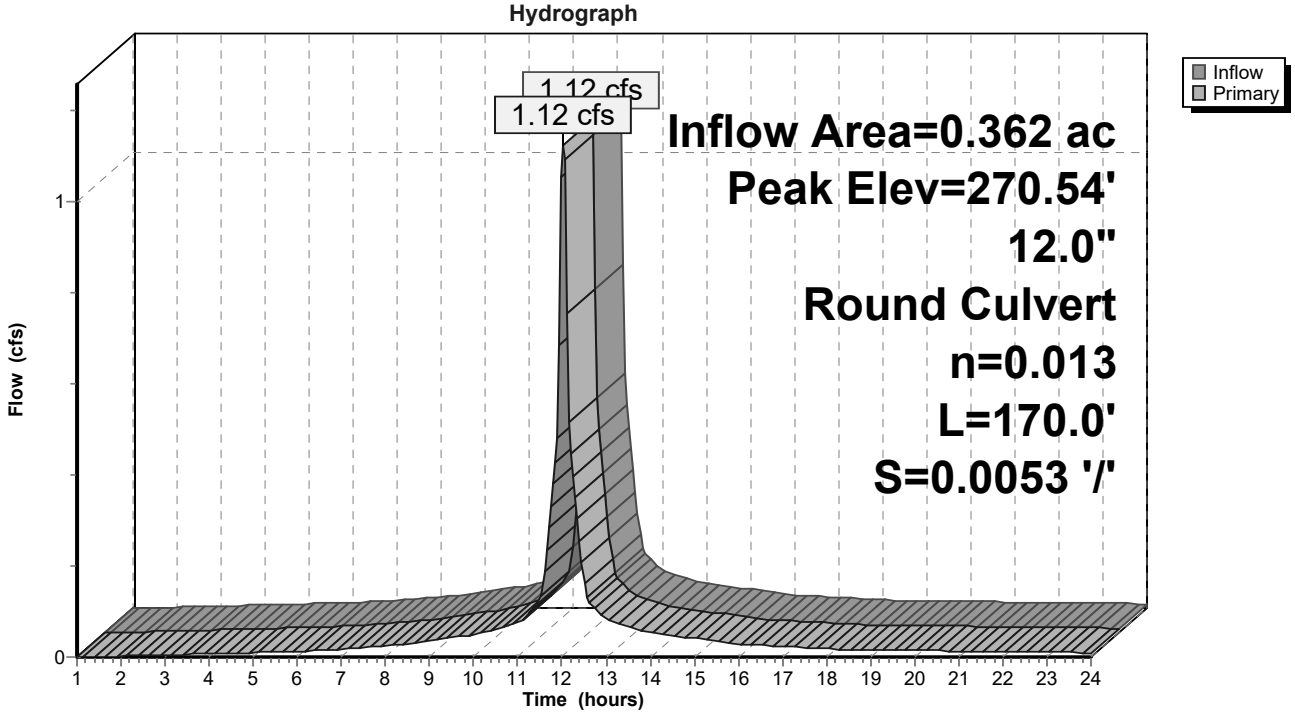
Inflow Area =	0.362 ac,100.00% Impervious, Inflow Depth > 2.77"				
Inflow	=	1.12 cfs @	12.03 hrs, Volume=	0.084 af	
Outflow	=	1.12 cfs @	12.03 hrs, Volume=	0.084 af, Atten= 0%, Lag= 0.0 min	
Primary	=	1.12 cfs @	12.03 hrs, Volume=	0.084 af	

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 270.54' @ 12.03 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	269.90'	**12.0" Round Culvert** L= 170.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.90' / 269.00' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.08 cfs @ 12.03 hrs HW=270.52' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.08 cfs @ 3.00 fps)

Pond P1: CB1



Hydrograph for Pond P1: CB1

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	269.90	0.00
1.25	0.00	269.90	0.00
1.50	0.00	269.91	0.00
1.75	0.00	269.92	0.00
2.00	0.00	269.93	0.00
2.25	0.00	269.93	0.00
2.50	0.00	269.93	0.00
2.75	0.00	269.94	0.00
3.00	0.00	269.94	0.00
3.25	0.01	269.94	0.01
3.50	0.01	269.95	0.01
3.75	0.01	269.95	0.01
4.00	0.01	269.95	0.01
4.25	0.01	269.95	0.01
4.50	0.01	269.96	0.01
4.75	0.01	269.96	0.01
5.00	0.01	269.96	0.01
5.25	0.01	269.96	0.01
5.50	0.01	269.96	0.01
5.75	0.01	269.96	0.01
6.00	0.01	269.97	0.01
6.25	0.01	269.97	0.01
6.50	0.01	269.97	0.01
6.75	0.02	269.98	0.02
7.00	0.02	269.98	0.02
7.25	0.02	269.98	0.02
7.50	0.02	269.98	0.02
7.75	0.02	269.99	0.02
8.00	0.02	269.99	0.02
8.25	0.03	270.00	0.03
8.50	0.03	270.00	0.03
8.75	0.03	270.01	0.03
9.00	0.04	270.01	0.04
9.25	0.04	270.01	0.04
9.50	0.04	270.02	0.04
9.75	0.05	270.02	0.05
10.00	0.05	270.03	0.05
10.25	0.06	270.04	0.06
10.50	0.06	270.04	0.06
10.75	0.07	270.05	0.07
11.00	0.08	270.06	0.08
11.25	0.10	270.08	0.10
11.50	0.12	270.10	0.12
11.75	0.33	270.23	0.33
12.00	**1.05**	**270.51**	**1.05**
12.25	**0.40**	**270.26**	**0.40**
12.50	0.16	270.13	0.16
12.75	0.11	270.09	0.11
13.00	0.08	270.06	0.08
13.25	0.07	270.06	0.07
13.50	0.07	270.05	0.07
13.75	0.06	270.04	0.06
14.00	0.05	270.03	0.05
14.25	0.05	270.03	0.05
14.50	0.05	270.03	0.05
14.75	0.04	270.02	0.04
15.00	0.04	270.02	0.04
15.25	0.04	270.01	0.04
15.50	0.04	270.01	0.04
15.75	0.03	270.00	0.03
16.00	0.03	270.00	0.03
16.25	0.03	270.00	0.03
16.50	0.03	269.99	0.03
16.75	0.02	269.99	0.02
17.00	0.02	269.99	0.02
17.25	0.02	269.99	0.02
17.50	0.02	269.98	0.02
17.75	0.02	269.98	0.02
18.00	0.02	269.98	0.02
18.25	0.02	269.98	0.02
18.50	0.02	269.98	0.02
18.75	0.02	269.98	0.02
19.00	0.02	269.97	0.02
19.25	0.02	269.97	0.02
19.50	0.02	269.97	0.02
19.75	0.01	269.97	0.01
20.00	0.01	269.97	0.01
20.25	0.01	269.97	0.01
20.50	0.01	269.97	0.01
20.75	0.01	269.97	0.01
21.00	0.01	269.97	0.01
21.25	0.01	269.97	0.01
21.50	0.01	269.97	0.01
21.75	0.01	269.97	0.01
22.00	0.01	269.96	0.01
22.25	0.01	269.96	0.01
22.50	0.01	269.96	0.01
22.75	0.01	269.96	0.01
23.00	0.01	269.96	0.01
23.25	0.01	269.96	0.01
23.50	0.01	269.96	0.01
23.75	0.01	269.96	0.01
24.00	0.01	269.96	0.01

Summary for Pond P2 ALT: Dry Pond

Inflow Area = 1.334 ac, 40.49% Impervious, Inflow Depth > 1.57"
Inflow = 1.38 cfs @ 12.04 hrs, Volume= 0.174 af
Outflow = 0.78 cfs @ 12.52 hrs, Volume= 0.171 af, Atten= 44%, Lag= 29.0 min
Primary = 0.78 cfs @ 12.52 hrs, Volume= 0.171 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 268.42' @ 12.52 hrs Surf.Area= 1,804 sf Storage= 1,485 cf

Plug-Flow detention time= 40.7 min calculated for 0.171 af (98% of inflow)
Center-of-Mass det. time= 29.6 min (841.6 - 812.0)

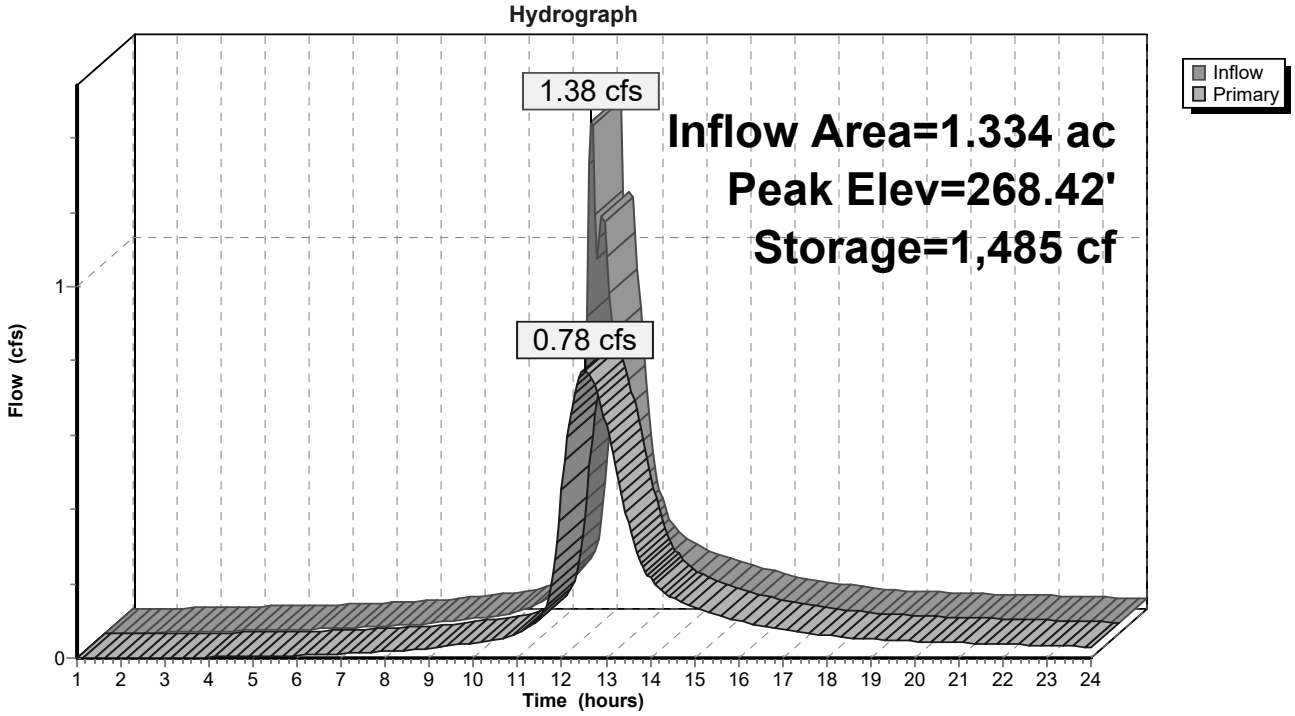
Volume	Invert	Avail.Storage	Storage Description
#1	267.50'	12,728 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
267.50	1,421	0	0
268.00	1,621	761	761
269.00	2,054	1,838	2,598
269.50	2,274	1,082	3,680
270.00	2,664	1,235	4,915
271.00	3,785	3,225	8,139
272.00	5,392	4,589	12,728

Device	Routing	Invert	Outlet Devices
#1	Primary	266.50'	**12.0" Round Outlet** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 266.50' / 266.00' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	267.50'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	268.50'	**8.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	270.00'	**24.0" Horiz. Top Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.77 cfs @ 12.52 hrs HW=268.42' (Free Discharge)
└─**1=Outlet** (Passes 0.77 cfs of 3.56 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.77 cfs @ 3.95 fps)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  └─**4=Top Grate** (Controls 0.00 cfs)

Pond P2 ALT: Dry Pond



Hydrograph for Pond P2 ALT: Dry Pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
1.00	0.00	0	267.50	0.00
1.50	0.00	0	267.50	0.00
2.00	0.00	2	267.50	0.00
2.50	0.00	5	267.50	0.00
3.00	0.00	11	267.51	0.00
3.50	0.01	17	267.51	0.00
4.00	0.01	25	267.52	0.00
4.50	0.01	34	267.52	0.00
5.00	0.01	44	267.53	0.00
5.50	0.01	54	267.54	0.01
6.00	0.01	65	267.55	0.01
6.50	0.01	75	267.55	0.01
7.00	0.02	85	267.56	0.01
7.50	0.02	95	267.57	0.01
8.00	0.02	106	267.57	0.02
8.50	0.03	118	267.58	0.02
9.00	0.04	134	267.59	0.03
9.50	0.04	150	267.60	0.03
10.00	0.05	166	267.61	0.04
10.50	0.07	186	267.63	0.05
11.00	0.09	221	267.65	0.07
11.50	0.16	287	267.70	0.11
12.00	**1.27**	727	267.98	0.45
12.50	**0.81**	**1,484**	**268.42**	**0.78**
13.00	0.30	1,081	268.19	0.63
13.50	0.20	605	267.90	0.37
14.00	0.16	427	267.79	0.22
14.50	0.14	360	267.75	0.16
15.00	0.12	326	267.72	0.14
15.50	0.10	301	267.71	0.12
16.00	0.09	276	267.69	0.10
16.50	0.08	254	267.67	0.09
17.00	0.07	236	267.66	0.08
17.50	0.06	222	267.65	0.07
18.00	0.05	208	267.64	0.06
18.50	0.05	196	267.64	0.05
19.00	0.05	188	267.63	0.05
19.50	0.04	182	267.63	0.05
20.00	0.04	176	267.62	0.04
20.50	0.04	171	267.62	0.04
21.00	0.04	166	267.62	0.04
21.50	0.04	162	267.61	0.04
22.00	0.03	158	267.61	0.04
22.50	0.03	154	267.61	0.04
23.00	0.03	150	267.60	0.03
23.50	0.03	146	267.60	0.03
24.00	0.03	142	267.60	0.03

Summary for Pond P3: Exist CB

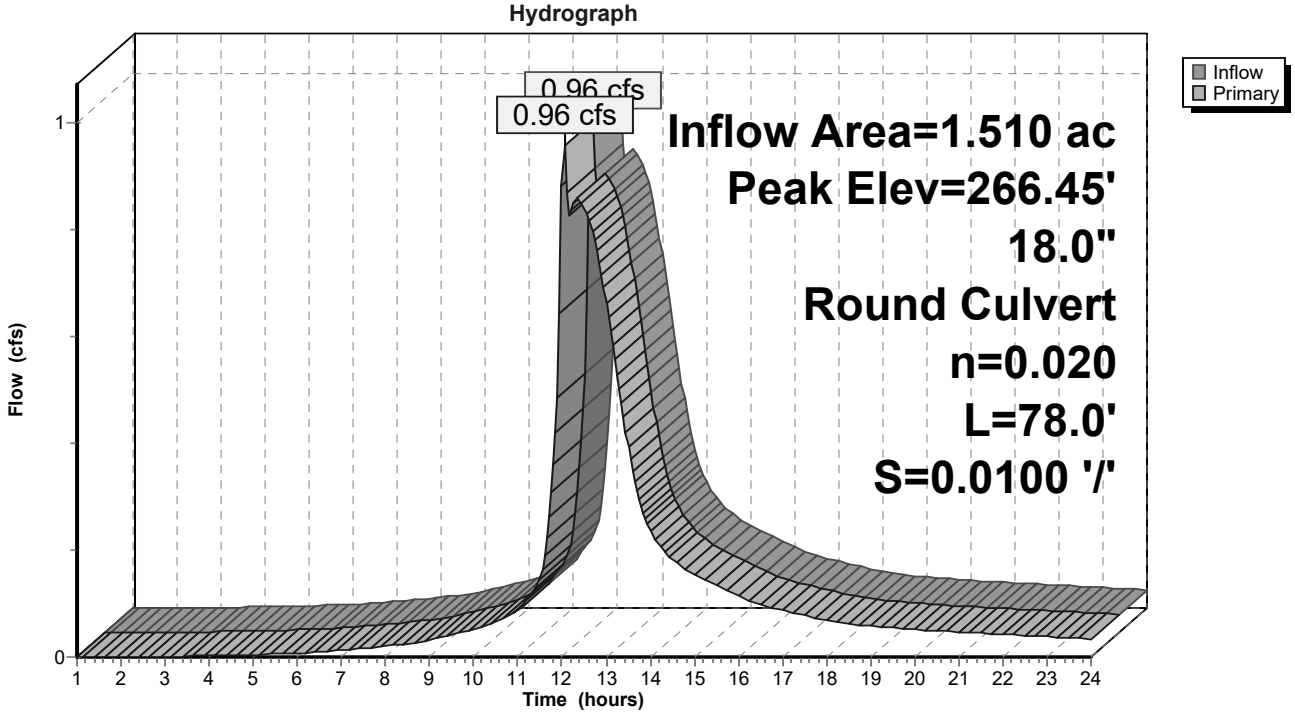
Inflow Area =	1.510 ac, 43.62% Impervious, Inflow Depth > 1.59"				
Inflow =	0.96 cfs @	12.05 hrs,	Volume=	0.200 af	
Outflow =	0.96 cfs @	12.05 hrs,	Volume=	0.200 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.96 cfs @	12.05 hrs,	Volume=	0.200 af	

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 266.45' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	265.93'	**18.0" Round Culvert** L= 78.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 265.93' / 265.15' S= 0.0100 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.95 cfs @ 12.05 hrs HW=266.45' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.95 cfs @ 2.63 fps)

Pond P3: Exist CB



Hydrograph for Pond P3: Exist CB

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	265.93	0.00
1.25	0.00	265.93	0.00
1.50	0.00	265.93	0.00
1.75	0.00	265.93	0.00
2.00	0.00	265.93	0.00
2.25	0.00	265.94	0.00
2.50	0.00	265.94	0.00
2.75	0.00	265.95	0.00
3.00	0.00	265.95	0.00
3.25	0.00	265.95	0.00
3.50	0.00	265.95	0.00
3.75	0.00	265.96	0.00
4.00	0.00	265.96	0.00
4.25	0.00	265.96	0.00
4.50	0.00	265.96	0.00
4.75	0.00	265.97	0.00
5.00	0.00	265.97	0.00
5.25	0.00	265.97	0.00
5.50	0.01	265.97	0.01
5.75	0.01	265.97	0.01
6.00	0.01	265.98	0.01
6.25	0.01	265.98	0.01
6.50	0.01	265.99	0.01
6.75	0.01	265.99	0.01
7.00	0.01	265.99	0.01
7.25	0.01	266.00	0.01
7.50	0.02	266.00	0.02
7.75	0.02	266.01	0.02
8.00	0.02	266.01	0.02
8.25	0.02	266.01	0.02
8.50	0.03	266.02	0.03
8.75	0.03	266.02	0.03
9.00	0.03	266.03	0.03
9.25	0.04	266.04	0.04
9.50	0.04	266.04	0.04
9.75	0.05	266.05	0.05
10.00	0.05	266.05	0.05
10.25	0.06	266.06	0.06
10.50	0.06	266.07	0.06
10.75	0.08	266.08	0.08
11.00	0.09	266.09	0.09
11.25	0.11	266.11	0.11
11.50	0.15	266.13	0.15
11.75	0.31	266.22	0.31
12.00	**0.88**	**266.43**	**0.88**
12.25	**0.85**	**266.42**	**0.85**
12.50	0.84	266.41	0.84
12.75	0.78	266.40	0.78
13.00	0.66	266.36	0.66
13.25	0.53	266.31	0.53
13.50	0.40	266.26	0.40
13.75	0.30	266.22	0.30
14.00	0.24	266.19	0.24
14.25	0.20	266.17	0.20
14.50	0.18	266.16	0.18
14.75	0.17	266.15	0.17
15.00	0.15	266.14	0.15
15.25	0.14	266.13	0.14
15.50	0.13	266.13	0.13
15.75	0.12	266.12	0.12
16.00	0.11	266.11	0.11
16.25	0.11	266.10	0.11
16.50	0.10	266.10	0.10
16.75	0.09	266.09	0.09
17.00	0.09	266.09	0.09
17.25	0.08	266.08	0.08
17.50	0.08	266.08	0.08
17.75	0.07	266.08	0.07
18.00	0.07	266.07	0.07
18.25	0.06	266.07	0.06
18.50	0.06	266.06	0.06
18.75	0.06	266.06	0.06
19.00	0.06	266.06	0.06
19.25	0.06	266.06	0.06
19.50	0.05	266.06	0.05
19.75	0.05	266.06	0.05
20.00	0.05	266.05	0.05
20.25	0.05	266.05	0.05
20.50	0.05	266.05	0.05
20.75	0.05	266.05	0.05
21.00	0.05	266.05	0.05
21.25	0.05	266.05	0.05
21.50	0.04	266.05	0.04
21.75	0.04	266.04	0.04
22.00	0.04	266.04	0.04
22.25	0.04	266.04	0.04
22.50	0.04	266.04	0.04
22.75	0.04	266.04	0.04
23.00	0.04	266.04	0.04
23.25	0.04	266.04	0.04
23.50	0.04	266.04	0.04
23.75	0.04	266.03	0.04
24.00	0.03	266.03	0.03

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	WS1	0.00	0.00	100.0	0.2000	0.009	5.0	0.0	0.0
2	WS3	0.00	0.00	160.0	0.0940	0.010	6.0	0.0	0.0
3	R1	270.30	269.90	80.0	0.0050	0.013	8.0	0.0	0.0
4	P1	269.90	269.00	170.0	0.0053	0.013	12.0	0.0	0.0
5	P2 ALT	266.50	266.00	20.0	0.0250	0.013	12.0	0.0	0.0
6	P3	265.93	265.15	78.0	0.0100	0.020	18.0	0.0	0.0

Summary for Subcatchment WS1: Existing Roof

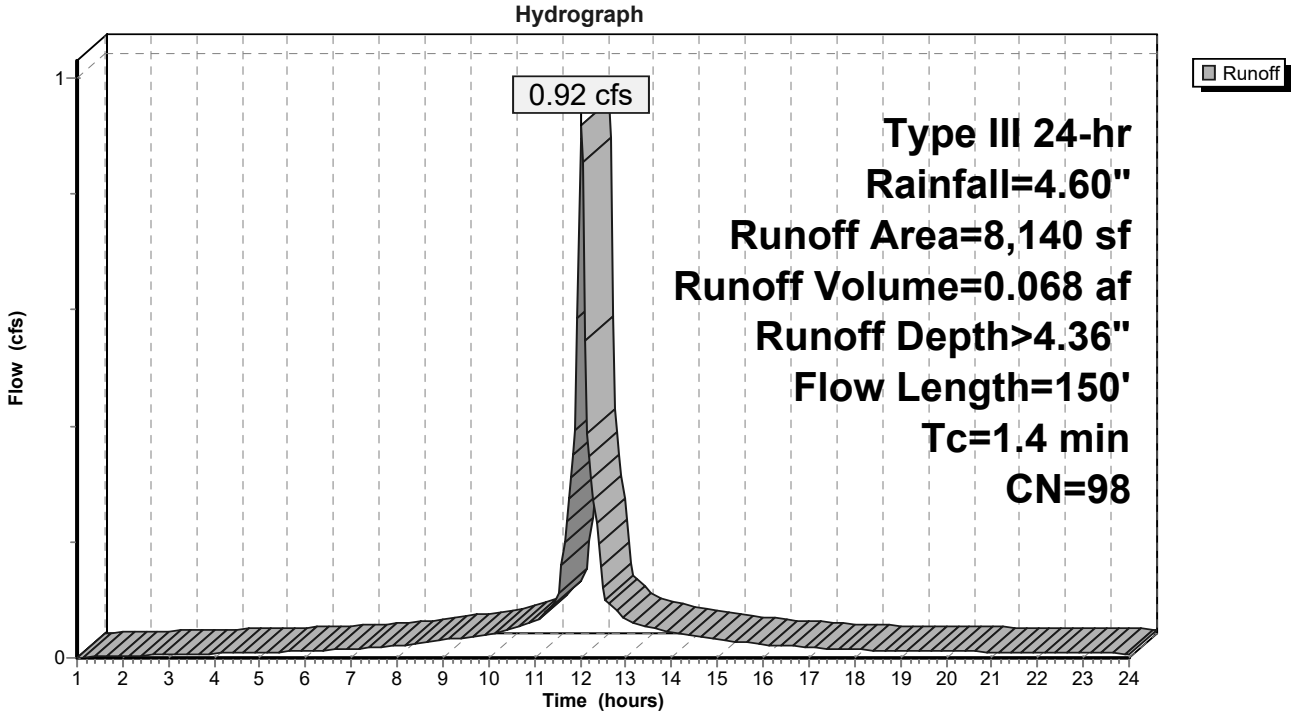
Runoff = 0.92 cfs @ 12.02 hrs, Volume= 0.068 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.60"

Area (sf)	CN	Description
8,140	98	Unconnected roofs, HSG C
8,140		100.00% Impervious Area
8,140		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	50	0.0050	0.67		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
0.1	100	0.2000	16.35	2.23	**Pipe Channel, SEG BC ROOF DRAIN** 5.0" Round Area= 0.1 sf Perim= 1.3' r= 0.10' n= 0.009 PVC, smooth interior
1.4	150	Total			

Subcatchment WS1: Existing Roof



Hydrograph for Subcatchment WS1: Existing Roof

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.25	0.06	0.00	0.00
1.50	0.07	0.00	0.00
1.75	0.08	0.01	0.00
2.00	0.09	0.01	0.00
2.25	0.10	0.01	0.00
2.50	0.12	0.02	0.00
2.75	0.13	0.03	0.00
3.00	0.14	0.03	0.01
3.25	0.15	0.04	0.01
3.50	0.17	0.05	0.01
3.75	0.18	0.06	0.01
4.00	0.20	0.07	0.01
4.25	0.21	0.08	0.01
4.50	0.23	0.09	0.01
4.75	0.24	0.10	0.01
5.00	0.26	0.11	0.01
5.25	0.28	0.13	0.01
5.50	0.30	0.14	0.01
5.75	0.31	0.16	0.01
6.00	0.33	0.17	0.01
6.25	0.35	0.19	0.01
6.50	0.37	0.20	0.01
6.75	0.39	0.22	0.01
7.00	0.42	0.24	0.02
7.25	0.44	0.27	0.02
7.50	0.47	0.29	0.02
7.75	0.50	0.31	0.02
8.00	0.52	0.34	0.02
8.25	0.56	0.37	0.02
8.50	0.59	0.40	0.03
8.75	0.63	0.44	0.03
9.00	0.67	0.48	0.03
9.25	0.72	0.52	0.03
9.50	0.76	0.56	0.04
9.75	0.81	0.61	0.04
10.00	0.87	0.66	0.04
10.25	0.93	0.72	0.05
10.50	1.00	0.79	0.05
10.75	1.07	0.86	0.06
11.00	1.15	0.94	0.06
11.25	1.25	1.03	0.08
11.50	1.37	1.15	0.10
11.75	1.63	1.41	0.27
12.00	2.30	2.07	**0.89**
12.25	2.97	2.73	0.31
12.50	3.23	3.00	0.12
12.75	3.35	3.12	0.08
13.00	3.45	3.22	0.06
13.25	3.53	3.30	0.06
13.50	3.60	3.37	0.05
13.75	3.67	3.44	0.05
14.00	3.73	3.50	0.04
14.25	3.79	3.55	0.04
14.50	3.84	3.60	0.04
14.75	3.88	3.65	0.04
15.00	3.93	3.69	0.03
15.25	3.97	3.74	0.03
15.50	4.01	3.77	0.03
15.75	4.04	3.81	0.03
16.00	4.08	3.84	0.02
16.25	4.10	3.87	0.02
16.50	4.13	3.90	0.02
16.75	4.16	3.92	0.02
17.00	4.18	3.95	0.02
17.25	4.21	3.97	0.02
17.50	4.23	3.99	0.02
17.75	4.25	4.01	0.02
18.00	4.27	4.03	0.01
18.25	4.29	4.05	0.01
18.50	4.30	4.07	0.01
18.75	4.32	4.09	0.01
19.00	4.34	4.10	0.01
19.25	4.36	4.12	0.01
19.50	4.37	4.14	0.01
19.75	4.39	4.15	0.01
20.00	4.40	4.17	0.01
20.25	4.42	4.18	0.01
20.50	4.43	4.20	0.01
20.75	4.45	4.21	0.01
21.00	4.46	4.22	0.01
21.25	4.47	4.24	0.01
21.50	4.49	4.25	0.01
21.75	4.50	4.26	0.01
22.00	4.51	4.28	0.01
22.25	4.52	4.29	0.01
22.50	4.54	4.30	0.01
22.75	4.55	4.31	0.01
23.00	4.56	4.32	0.01
23.25	4.57	4.33	0.01
23.50	4.58	4.34	0.01
23.75	4.59	4.35	0.01
24.00	**4.60**	**4.36**	0.01

Summary for Subcatchment WS2: New Lawn and Paved

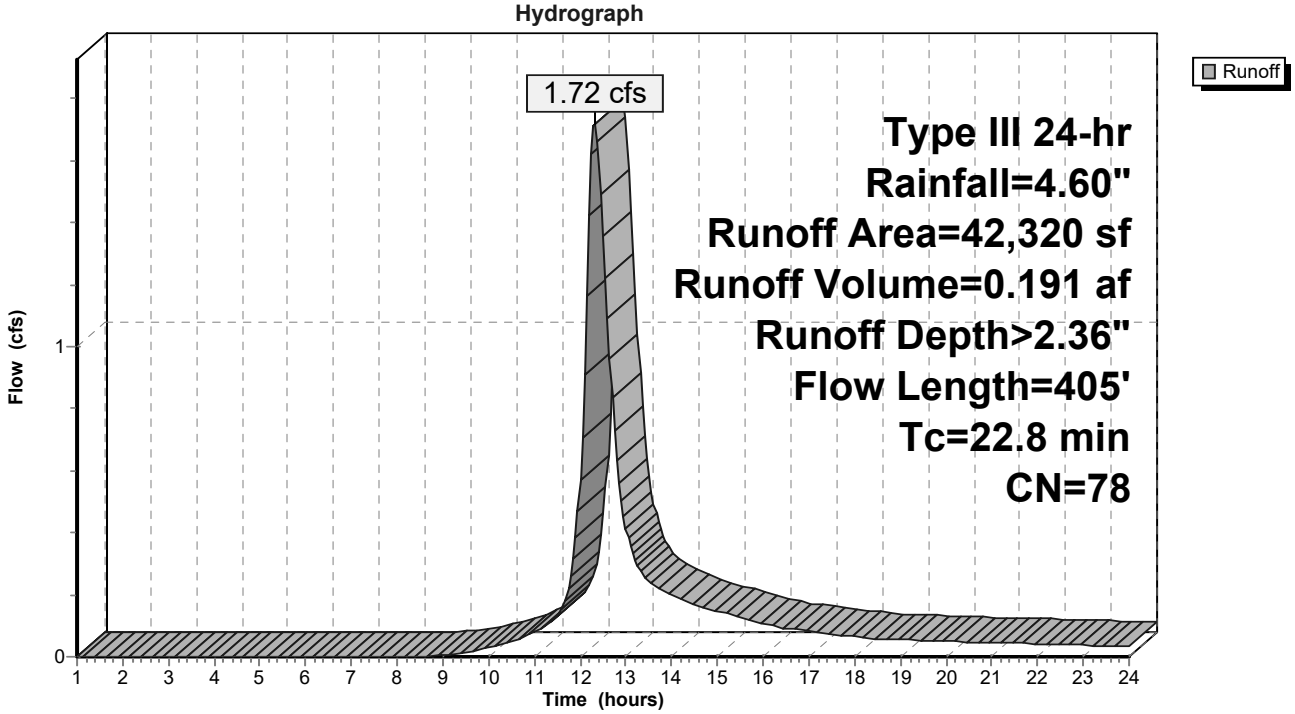
Runoff = 1.72 cfs @ 12.32 hrs, Volume= 0.191 af, Depth> 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.60"

Area (sf)	CN	Description
7,746	98	Paved roads w/curbs & sewers, HSG C
34,574	74	>75% Grass cover, Good, HSG C
42,320	78	Weighted Average
34,574		81.70% Pervious Area
7,746		18.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	15	0.0100	0.09		**Sheet Flow, SEG AB** Grass: Short n= 0.150 P2= 3.00"
18.7	160	0.0110	0.14		**Sheet Flow, SEG BC** Grass: Short n= 0.150 P2= 3.00"
1.2	230	0.0100	3.28	22.94	**Trap/Vee/Rect Channel Flow, SEG CD Ditch to pond** Bot.W=4.00' D=1.00' Z= 3.0 '/' Top.W=10.00' n= 0.035 Earth, dense weeds
22.8	405	Total			

Subcatchment WS2: New Lawn and Paved



Hydrograph for Subcatchment WS2: New Lawn and Paved

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.25	0.06	0.00	0.00
1.50	0.07	0.00	0.00
1.75	0.08	0.00	0.00
2.00	0.09	0.00	0.00
2.25	0.10	0.00	0.00
2.50	0.12	0.00	0.00
2.75	0.13	0.00	0.00
3.00	0.14	0.00	0.00
3.25	0.15	0.00	0.00
3.50	0.17	0.00	0.00
3.75	0.18	0.00	0.00
4.00	0.20	0.00	0.00
4.25	0.21	0.00	0.00
4.50	0.23	0.00	0.00
4.75	0.24	0.00	0.00
5.00	0.26	0.00	0.00
5.25	0.28	0.00	0.00
5.50	0.30	0.00	0.00
5.75	0.31	0.00	0.00
6.00	0.33	0.00	0.00
6.25	0.35	0.00	0.00
6.50	0.37	0.00	0.00
6.75	0.39	0.00	0.00
7.00	0.42	0.00	0.00
7.25	0.44	0.00	0.00
7.50	0.47	0.00	0.00
7.75	0.50	0.00	0.00
8.00	0.52	0.00	0.00
8.25	0.56	0.00	0.00
8.50	0.59	0.00	0.00
8.75	0.63	0.00	0.00
9.00	0.67	0.00	0.01
9.25	0.72	0.01	0.01
9.50	0.76	0.01	0.02
9.75	0.81	0.02	0.02
10.00	0.87	0.03	0.03
10.25	0.93	0.04	0.04
10.50	1.00	0.06	0.05
10.75	1.07	0.08	0.06
11.00	1.15	0.10	0.08
11.25	1.25	0.13	0.10
11.50	1.37	0.18	0.14
11.75	1.63	0.29	0.22
12.00	2.30	0.66	0.57
12.25	2.97	1.10	**1.62**
12.50	3.23	1.29	**1.36**
12.75	3.35	1.39	0.73
13.00	3.45	1.46	0.42
13.25	3.53	1.52	0.29
13.50	3.60	1.58	0.24
13.75	3.67	1.63	0.22
14.00	3.73	1.67	0.20
14.25	3.79	1.72	0.18
14.50	3.84	1.76	0.17
14.75	3.88	1.80	0.16
15.00	3.93	1.83	0.15
15.25	3.97	1.86	0.14
15.50	4.01	1.89	0.13
15.75	4.04	1.92	0.12
16.00	4.08	1.95	0.11
16.25	4.10	1.97	0.10
16.50	4.13	1.99	0.09
16.75	4.16	2.01	0.09
17.00	4.18	2.03	0.08
17.25	4.21	2.05	0.08
17.50	4.23	2.07	0.07
17.75	4.25	2.09	0.07
18.00	4.27	2.10	0.06
18.25	4.29	2.12	0.06
18.50	4.30	2.13	0.06
18.75	4.32	2.15	0.06
19.00	4.34	2.16	0.06
19.25	4.36	2.17	0.05
19.50	4.37	2.19	0.05
19.75	4.39	2.20	0.05
20.00	4.40	2.21	0.05
20.25	4.42	2.22	0.05
20.50	4.43	2.24	0.05
20.75	4.45	2.25	0.05
21.00	4.46	2.26	0.05
21.25	4.47	2.27	0.04
21.50	4.49	2.28	0.04
21.75	4.50	2.29	0.04
22.00	4.51	2.30	0.04
22.25	4.52	2.31	0.04
22.50	4.54	2.32	0.04
22.75	4.55	2.33	0.04
23.00	4.56	2.34	0.04
23.25	4.57	2.35	0.04
23.50	4.58	2.36	0.04
23.75	4.59	2.37	0.03
24.00	**4.60**	**2.38**	0.03

Summary for Subcatchment WS3: Addition Roof

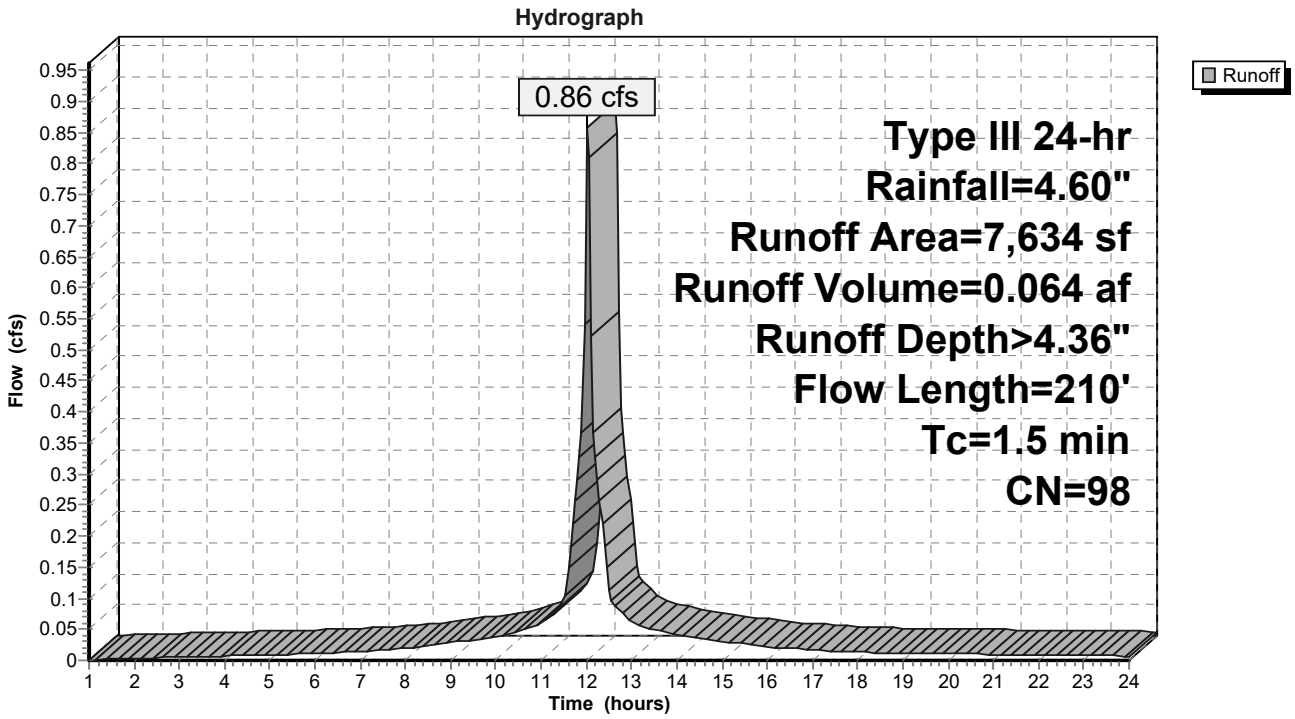
Runoff = 0.86 cfs @ 12.02 hrs, Volume= 0.064 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.60"

Area (sf)	CN	Description
7,634	98	Roofs, HSG C
7,634		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	50	0.0050	0.67		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
0.2	160	0.0940	11.39	2.24	**Pipe Channel, SEG BC Roof Drain** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.010 PVC, smooth interior
1.5	210	Total			

Subcatchment WS3: Addition Roof



Hydrograph for Subcatchment WS3: Addition Roof

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.25	0.06	0.00	0.00
1.50	0.07	0.00	0.00
1.75	0.08	0.01	0.00
2.00	0.09	0.01	0.00
2.25	0.10	0.01	0.00
2.50	0.12	0.02	0.00
2.75	0.13	0.03	0.00
3.00	0.14	0.03	0.01
3.25	0.15	0.04	0.01
3.50	0.17	0.05	0.01
3.75	0.18	0.06	0.01
4.00	0.20	0.07	0.01
4.25	0.21	0.08	0.01
4.50	0.23	0.09	0.01
4.75	0.24	0.10	0.01
5.00	0.26	0.11	0.01
5.25	0.28	0.13	0.01
5.50	0.30	0.14	0.01
5.75	0.31	0.16	0.01
6.00	0.33	0.17	0.01
6.25	0.35	0.19	0.01
6.50	0.37	0.20	0.01
6.75	0.39	0.22	0.01
7.00	0.42	0.24	0.01
7.25	0.44	0.27	0.02
7.50	0.47	0.29	0.02
7.75	0.50	0.31	0.02
8.00	0.52	0.34	0.02
8.25	0.56	0.37	0.02
8.50	0.59	0.40	0.02
8.75	0.63	0.44	0.03
9.00	0.67	0.48	0.03
9.25	0.72	0.52	0.03
9.50	0.76	0.56	0.03
9.75	0.81	0.61	0.04
10.00	0.87	0.66	0.04
10.25	0.93	0.72	0.04
10.50	1.00	0.79	0.05
10.75	1.07	0.86	0.05
11.00	1.15	0.94	0.06
11.25	1.25	1.03	0.07
11.50	1.37	1.15	0.09
11.75	1.63	1.41	0.26
12.00	2.30	2.07	**0.83**
12.25	2.97	2.73	0.29
12.50	3.23	3.00	0.11
12.75	3.35	3.12	0.08
13.00	3.45	3.22	0.06
13.25	3.53	3.30	0.05
13.50	3.60	3.37	0.05
13.75	3.67	3.44	0.05
14.00	3.73	3.50	0.04
14.25	3.79	3.55	0.04
14.50	3.84	3.60	0.04
14.75	3.88	3.65	0.03
15.00	3.93	3.69	0.03
15.25	3.97	3.74	0.03
15.50	4.01	3.77	0.03
15.75	4.04	3.81	0.02
16.00	4.08	3.84	0.02
16.25	4.10	3.87	0.02
16.50	4.13	3.90	0.02
16.75	4.16	3.92	0.02
17.00	4.18	3.95	0.02
17.25	4.21	3.97	0.02
17.50	4.23	3.99	0.02
17.75	4.25	4.01	0.01
18.00	4.27	4.03	0.01
18.25	4.29	4.05	0.01
18.50	4.30	4.07	0.01
18.75	4.32	4.09	0.01
19.00	4.34	4.10	0.01
19.25	4.36	4.12	0.01
19.50	4.37	4.14	0.01
19.75	4.39	4.15	0.01
20.00	4.40	4.17	0.01
20.25	4.42	4.18	0.01
20.50	4.43	4.20	0.01
20.75	4.45	4.21	0.01
21.00	4.46	4.22	0.01
21.25	4.47	4.24	0.01
21.50	4.49	4.25	0.01
21.75	4.50	4.26	0.01
22.00	4.51	4.28	0.01
22.25	4.52	4.29	0.01
22.50	4.54	4.30	0.01
22.75	4.55	4.31	0.01
23.00	4.56	4.32	0.01
23.25	4.57	4.33	0.01
23.50	4.58	4.34	0.01
23.75	4.59	4.35	0.01
24.00	**4.60**	**4.36**	0.01

Summary for Subcatchment WS4: Exist and New Paved

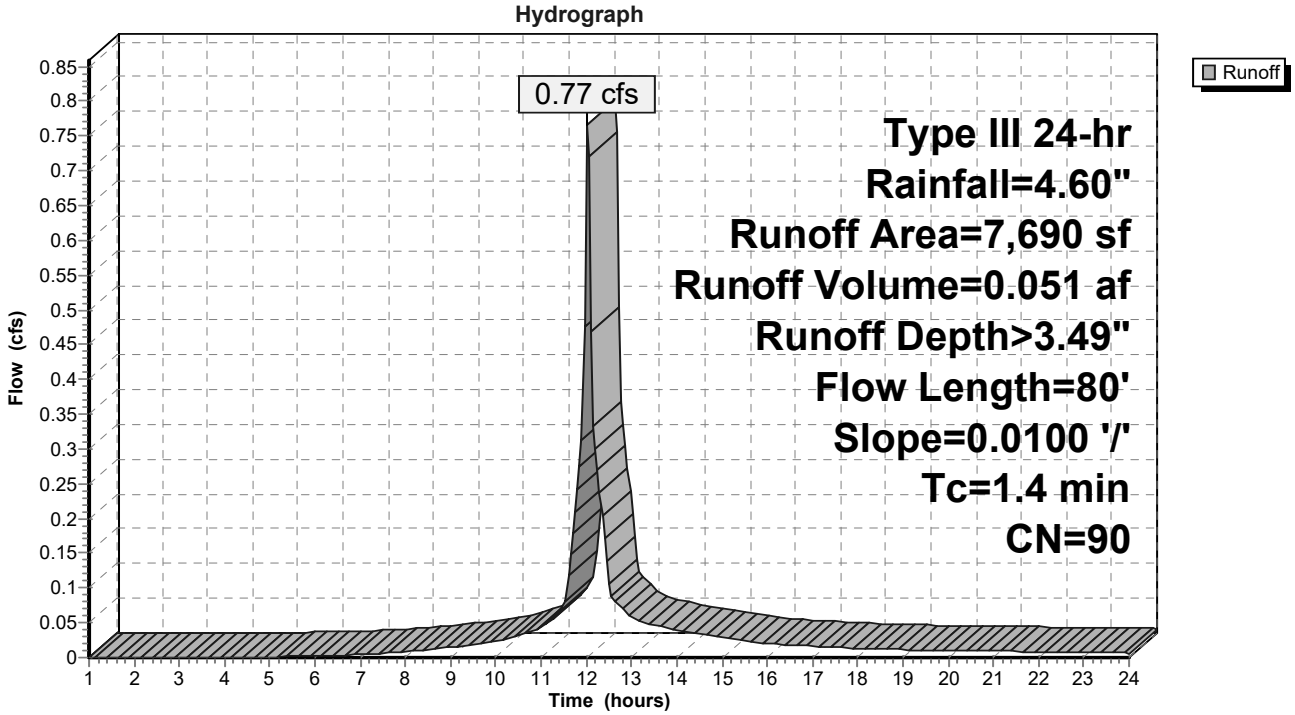
Runoff = 0.77 cfs @ 12.02 hrs, Volume= 0.051 af, Depth> 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.60"

Area (sf)	CN	Description
5,175	98	Paved parking, HSG C
2,515	74	>75% Grass cover, Good, HSG C
7,690	90	Weighted Average
2,515		32.70% Pervious Area
5,175		67.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	80	0.0100	0.97		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"

Subcatchment WS4: Exist and New Paved



Hydrograph for Subcatchment WS4: Exist and New Paved

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.25	0.06	0.00	0.00
1.50	0.07	0.00	0.00
1.75	0.08	0.00	0.00
2.00	0.09	0.00	0.00
2.25	0.10	0.00	0.00
2.50	0.12	0.00	0.00
2.75	0.13	0.00	0.00
3.00	0.14	0.00	0.00
3.25	0.15	0.00	0.00
3.50	0.17	0.00	0.00
3.75	0.18	0.00	0.00
4.00	0.20	0.00	0.00
4.25	0.21	0.00	0.00
4.50	0.23	0.00	0.00
4.75	0.24	0.00	0.00
5.00	0.26	0.00	0.00
5.25	0.28	0.00	0.00
5.50	0.30	0.00	0.00
5.75	0.31	0.01	0.00
6.00	0.33	0.01	0.00
6.25	0.35	0.01	0.00
6.50	0.37	0.02	0.00
6.75	0.39	0.02	0.00
7.00	0.42	0.03	0.00
7.25	0.44	0.04	0.01
7.50	0.47	0.04	0.01
7.75	0.50	0.05	0.01
8.00	0.52	0.06	0.01
8.25	0.56	0.08	0.01
8.50	0.59	0.09	0.01
8.75	0.63	0.11	0.01
9.00	0.67	0.13	0.01
9.25	0.72	0.15	0.02
9.50	0.76	0.18	0.02
9.75	0.81	0.21	0.02
10.00	0.87	0.24	0.02
10.25	0.93	0.27	0.03
10.50	1.00	0.32	0.03
10.75	1.07	0.37	0.04
11.00	1.15	0.42	0.04
11.25	1.25	0.49	0.06
11.50	1.37	0.58	0.07
11.75	1.63	0.79	0.21
12.00	2.30	1.35	**0.74**
12.25	2.97	1.95	0.27
12.50	3.23	2.20	0.11
12.75	3.35	2.31	0.07
13.00	3.45	2.40	0.06
13.25	3.53	2.48	0.05
13.50	3.60	2.55	0.05
13.75	3.67	2.61	0.04
14.00	3.73	2.66	0.04
14.25	3.79	2.72	0.04
14.50	3.84	2.76	0.03
14.75	3.88	2.81	0.03
15.00	3.93	2.85	0.03
15.25	3.97	2.89	0.03
15.50	4.01	2.93	0.02
15.75	4.04	2.96	0.02
16.00	4.08	2.99	0.02
16.25	4.10	3.02	0.02
16.50	4.13	3.05	0.02
16.75	4.16	3.07	0.02
17.00	4.18	3.09	0.02
17.25	4.21	3.12	0.02
17.50	4.23	3.14	0.01
17.75	4.25	3.16	0.01
18.00	4.27	3.17	0.01
18.25	4.29	3.19	0.01
18.50	4.30	3.21	0.01
18.75	4.32	3.23	0.01
19.00	4.34	3.24	0.01
19.25	4.36	3.26	0.01
19.50	4.37	3.27	0.01
19.75	4.39	3.29	0.01
20.00	4.40	3.30	0.01
20.25	4.42	3.32	0.01
20.50	4.43	3.33	0.01
20.75	4.45	3.34	0.01
21.00	4.46	3.36	0.01
21.25	4.47	3.37	0.01
21.50	4.49	3.38	0.01
21.75	4.50	3.39	0.01
22.00	4.51	3.41	0.01
22.25	4.52	3.42	0.01
22.50	4.54	3.43	0.01
22.75	4.55	3.44	0.01
23.00	4.56	3.45	0.01
23.25	4.57	3.46	0.01
23.50	4.58	3.47	0.01
23.75	4.59	3.48	0.01
24.00	**4.60**	**3.49**	0.01

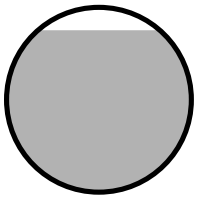
Summary for Reach R1: Pipe to pond

Inflow Area = 0.187 ac,100.00% Impervious, Inflow Depth > 4.36"
Inflow = 0.92 cfs @ 12.02 hrs, Volume= 0.068 af
Outflow = 0.89 cfs @ 12.04 hrs, Volume= 0.068 af, Atten= 3%, Lag= 1.1 min

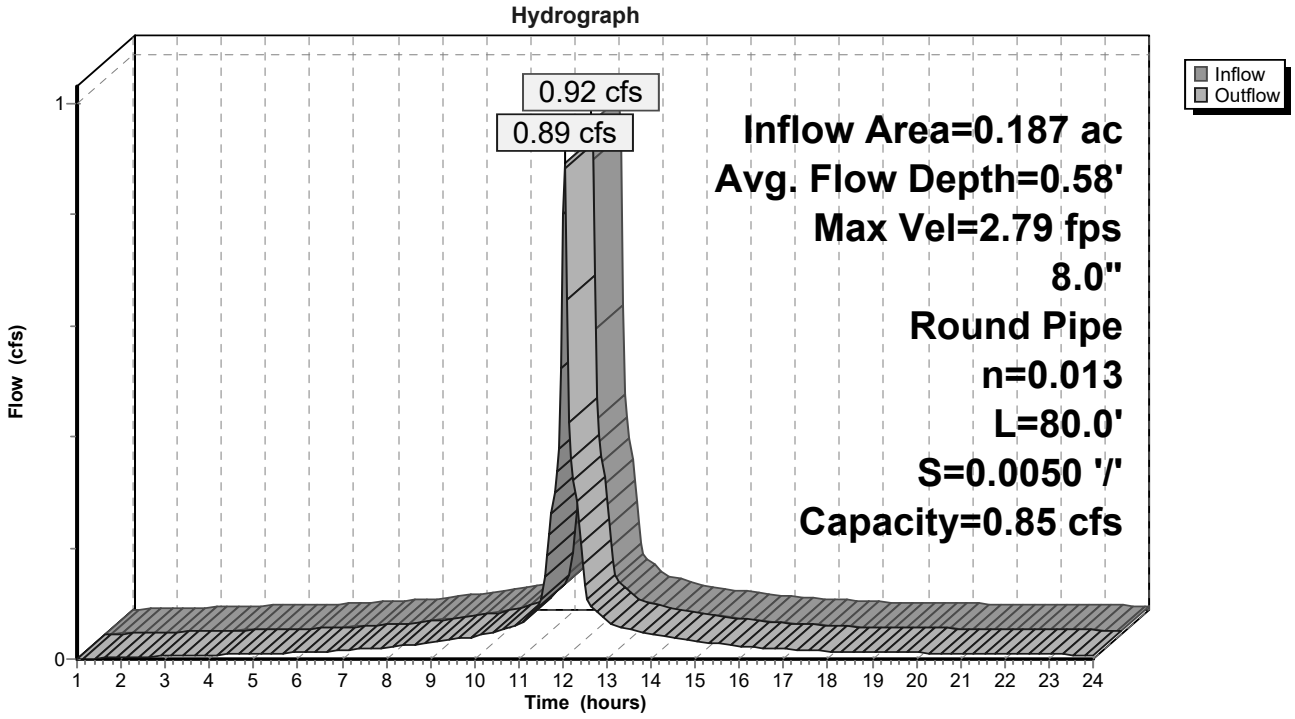
Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.79 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.02 fps, Avg. Travel Time= 1.3 min

Peak Storage= 26 cf @ 12.03 hrs
Average Depth at Peak Storage= 0.58'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 0.85 cfs

8.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 80.0' Slope= 0.0050 '/'
Inlet Invert= 270.30', Outlet Invert= 269.90'



Reach R1: Pipe to pond



Hydrograph for Reach R1: Pipe to pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
1.00	0.00	0	270.30	0.00
1.50	0.00	0	270.32	0.00
2.00	0.00	0	270.33	0.00
2.50	0.00	1	270.33	0.00
3.00	0.01	1	270.34	0.01
3.50	0.01	1	270.34	0.01
4.00	0.01	1	270.34	0.01
4.50	0.01	1	270.35	0.01
5.00	0.01	1	270.35	0.01
5.50	0.01	1	270.35	0.01
6.00	0.01	1	270.35	0.01
6.50	0.01	1	270.36	0.01
7.00	0.02	1	270.36	0.02
7.50	0.02	1	270.37	0.02
8.00	0.02	2	270.37	0.02
8.50	0.03	2	270.38	0.03
9.00	0.03	2	270.39	0.03
9.50	0.04	2	270.39	0.04
10.00	0.04	3	270.40	0.04
10.50	0.05	3	270.41	0.05
11.00	0.06	3	270.42	0.06
11.50	0.10	5	270.45	0.10
12.00	**0.89**	**24**	**270.84**	**0.80**
12.50	0.12	**6**	**270.47**	**0.13**
13.00	0.06	4	270.43	0.07
13.50	0.05	3	270.41	0.05
14.00	0.04	3	270.40	0.04
14.50	0.04	2	270.40	0.04
15.00	0.03	2	270.39	0.03
15.50	0.03	2	270.38	0.03
16.00	0.02	2	270.37	0.02
16.50	0.02	2	270.37	0.02
17.00	0.02	1	270.37	0.02
17.50	0.02	1	270.36	0.02
18.00	0.01	1	270.36	0.01
18.50	0.01	1	270.36	0.01
19.00	0.01	1	270.36	0.01
19.50	0.01	1	270.36	0.01
20.00	0.01	1	270.35	0.01
20.50	0.01	1	270.35	0.01
21.00	0.01	1	270.35	0.01
21.50	0.01	1	270.35	0.01
22.00	0.01	1	270.35	0.01
22.50	0.01	1	270.35	0.01
23.00	0.01	1	270.35	0.01
23.50	0.01	1	270.35	0.01
24.00	0.01	1	270.34	0.01

Summary for Pond P1: CB1

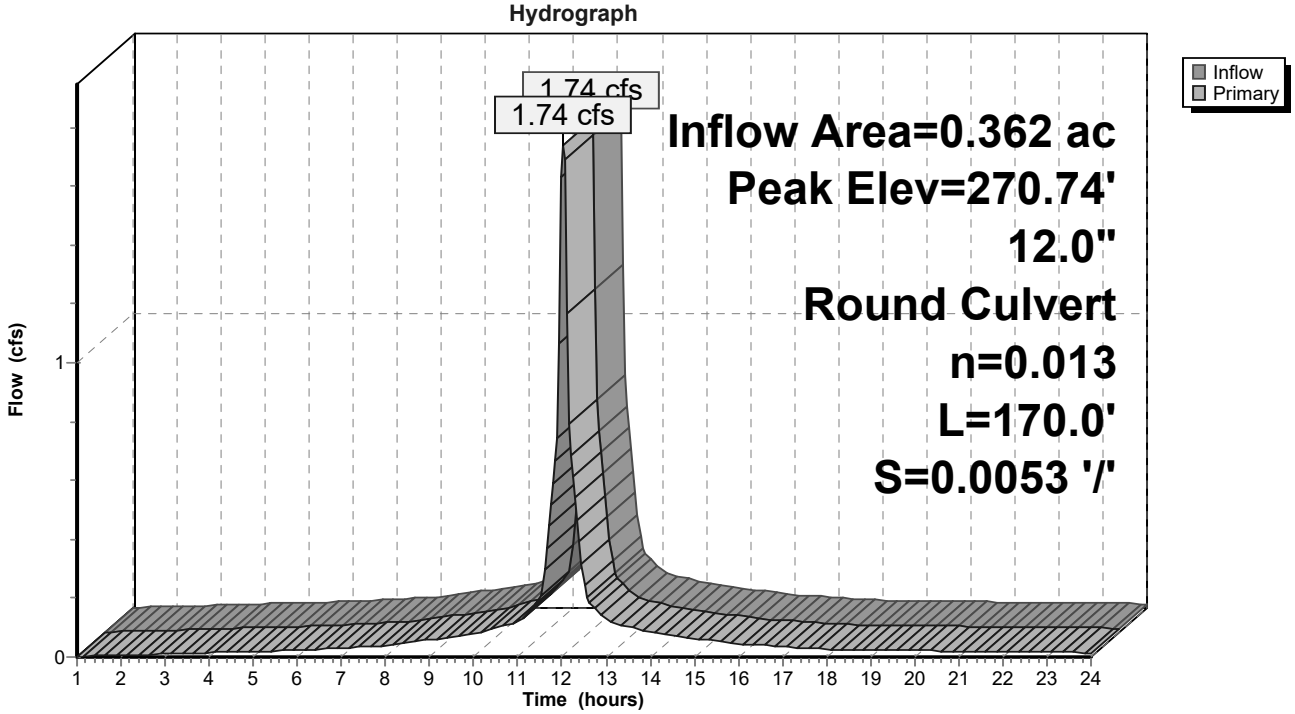
Inflow Area =	0.362 ac,100.00% Impervious, Inflow Depth > 4.36"				
Inflow	=	1.74 cfs @	12.03 hrs, Volume=	0.132 af	
Outflow	=	1.74 cfs @	12.03 hrs, Volume=	0.132 af, Atten= 0%, Lag= 0.0 min	
Primary	=	1.74 cfs @	12.03 hrs, Volume=	0.132 af	

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 270.74' @ 12.03 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	269.90'	**12.0" Round Culvert** L= 170.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.90' / 269.00' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.67 cfs @ 12.03 hrs HW=270.72' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.67 cfs @ 2.43 fps)

Pond P1: CB1



Hydrograph for Pond P1: CB1

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	269.91	0.00
1.25	0.00	269.93	0.00
1.50	0.00	269.94	0.00
1.75	0.00	269.94	0.00
2.00	0.01	269.95	0.01
2.25	0.01	269.95	0.01
2.50	0.01	269.95	0.01
2.75	0.01	269.96	0.01
3.00	0.01	269.96	0.01
3.25	0.01	269.96	0.01
3.50	0.01	269.97	0.01
3.75	0.01	269.97	0.01
4.00	0.01	269.97	0.01
4.25	0.02	269.97	0.02
4.50	0.02	269.98	0.02
4.75	0.02	269.98	0.02
5.00	0.02	269.98	0.02
5.25	0.02	269.98	0.02
5.50	0.02	269.98	0.02
5.75	0.02	269.99	0.02
6.00	0.02	269.99	0.02
6.25	0.02	269.99	0.02
6.50	0.03	269.99	0.03
6.75	0.03	270.00	0.03
7.00	0.03	270.00	0.03
7.25	0.03	270.01	0.03
7.50	0.04	270.01	0.04
7.75	0.04	270.01	0.04
8.00	0.04	270.02	0.04
8.25	0.04	270.02	0.04
8.50	0.05	270.03	0.05
8.75	0.05	270.03	0.05
9.00	0.06	270.04	0.06
9.25	0.06	270.04	0.06
9.50	0.07	270.05	0.07
9.75	0.07	270.06	0.07
10.00	0.08	270.06	0.08
10.25	0.09	270.07	0.09
10.50	0.10	270.08	0.10
10.75	0.11	270.09	0.11
11.00	0.12	270.10	0.12
11.25	0.15	270.12	0.15
11.50	0.19	270.15	0.19
11.75	0.52	270.31	0.52
12.00	**1.63**	**270.70**	**1.63**
12.25	**0.61**	**270.35**	**0.61**
12.50	0.25	270.18	0.25
12.75	0.17	270.13	0.17
13.00	0.13	270.10	0.13
13.25	0.11	270.09	0.11
13.50	0.10	270.08	0.10
13.75	0.09	270.07	0.09
14.00	0.08	270.07	0.08
14.25	0.08	270.06	0.08
14.50	0.07	270.05	0.07
14.75	0.07	270.05	0.07
15.00	0.06	270.04	0.06
15.25	0.06	270.04	0.06
15.50	0.05	270.03	0.05
15.75	0.05	270.03	0.05
16.00	0.04	270.02	0.04
16.25	0.04	270.02	0.04
16.50	0.04	270.02	0.04
16.75	0.04	270.01	0.04
17.00	0.04	270.01	0.04
17.25	0.03	270.01	0.03
17.50	0.03	270.00	0.03
17.75	0.03	270.00	0.03
18.00	0.03	270.00	0.03
18.25	0.03	269.99	0.03
18.50	0.03	269.99	0.03
18.75	0.03	269.99	0.03
19.00	0.02	269.99	0.02
19.25	0.02	269.99	0.02
19.50	0.02	269.99	0.02
19.75	0.02	269.99	0.02
20.00	0.02	269.99	0.02
20.25	0.02	269.99	0.02
20.50	0.02	269.99	0.02
20.75	0.02	269.98	0.02
21.00	0.02	269.98	0.02
21.25	0.02	269.98	0.02
21.50	0.02	269.98	0.02
21.75	0.02	269.98	0.02
22.00	0.02	269.98	0.02
22.25	0.02	269.98	0.02
22.50	0.02	269.98	0.02
22.75	0.02	269.98	0.02
23.00	0.02	269.98	0.02
23.25	0.02	269.97	0.02
23.50	0.02	269.97	0.02
23.75	0.01	269.97	0.01
24.00	0.01	269.97	0.01

Summary for Pond P2 ALT: Dry Pond

Inflow Area = 1.334 ac, 40.49% Impervious, Inflow Depth > 2.91"
Inflow = 2.40 cfs @ 12.04 hrs, Volume= 0.323 af
Outflow = 1.78 cfs @ 12.46 hrs, Volume= 0.319 af, Atten= 26%, Lag= 24.9 min
Primary = 1.78 cfs @ 12.46 hrs, Volume= 0.319 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 269.02' @ 12.46 hrs Surf.Area= 2,063 sf Storage= 2,640 cf

Plug-Flow detention time= 34.8 min calculated for 0.318 af (98% of inflow)
Center-of-Mass det. time= 26.7 min (830.5 - 803.8)

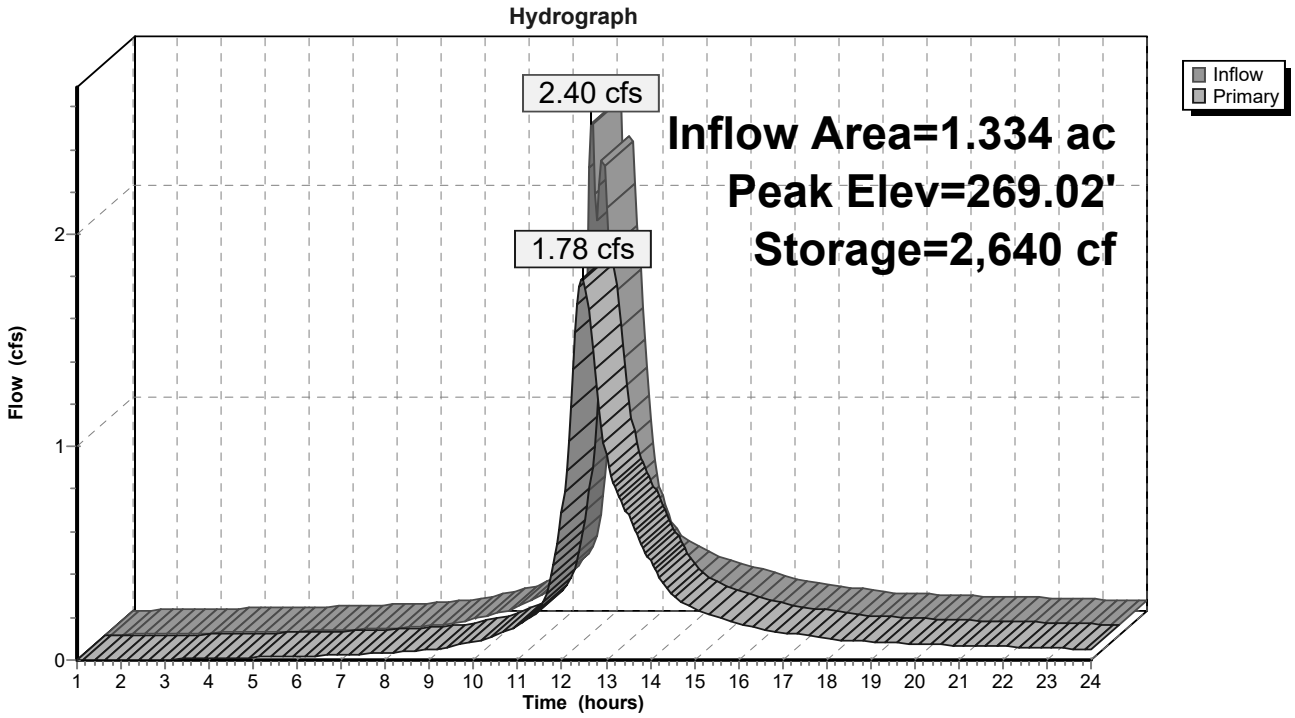
Volume	Invert	Avail.Storage	Storage Description
#1	267.50'	12,728 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
267.50	1,421	0	0
268.00	1,621	761	761
269.00	2,054	1,838	2,598
269.50	2,274	1,082	3,680
270.00	2,664	1,235	4,915
271.00	3,785	3,225	8,139
272.00	5,392	4,589	12,728

Device	Routing	Invert	Outlet Devices
#1	Primary	266.50'	**12.0" Round Outlet** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 266.50' / 266.00' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	267.50'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	268.50'	**8.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	270.00'	**24.0" Horiz. Top Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.78 cfs @ 12.46 hrs HW=269.02' (Free Discharge)
└─**1=Outlet** (Passes 1.78 cfs of 4.24 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.07 cfs @ 5.42 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 0.72 cfs @ 2.45 fps)
  └─**4=Top Grate** (Controls 0.00 cfs)

Pond P2 ALT: Dry Pond



Hydrograph for Pond P2 ALT: Dry Pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
1.00	0.00	0	267.50	0.00
1.50	0.00	4	267.50	0.00
2.00	0.01	11	267.51	0.00
2.50	0.01	21	267.51	0.00
3.00	0.01	33	267.52	0.00
3.50	0.01	47	267.53	0.00
4.00	0.01	62	267.54	0.01
4.50	0.02	76	267.55	0.01
5.00	0.02	88	267.56	0.01
5.50	0.02	97	267.57	0.02
6.00	0.02	105	267.57	0.02
6.50	0.03	115	267.58	0.02
7.00	0.03	126	267.59	0.02
7.50	0.04	139	267.60	0.03
8.00	0.04	150	267.60	0.03
8.50	0.05	164	267.61	0.04
9.00	0.06	185	267.63	0.05
9.50	0.08	216	267.65	0.07
10.00	0.11	252	267.67	0.09
10.50	0.15	299	267.70	0.12
11.00	0.20	359	267.74	0.16
11.50	0.33	463	267.81	0.25
12.00	**2.20**	**1,244**	**268.29**	**0.69**
12.50	**1.60**	**2,627**	**269.01**	**1.77**
13.00	0.54	1,885	268.64	0.96
13.50	0.35	1,207	268.27	0.68
14.00	0.28	747	267.99	0.47
14.50	0.24	534	267.86	0.31
15.00	0.21	457	267.81	0.24
15.50	0.18	413	267.78	0.20
16.00	0.15	375	267.75	0.17
16.50	0.13	341	267.73	0.15
17.00	0.12	318	267.72	0.13
17.50	0.11	297	267.70	0.12
18.00	0.09	278	267.69	0.10
18.50	0.08	261	267.68	0.09
19.00	0.08	250	267.67	0.08
19.50	0.08	242	267.67	0.08
20.00	0.07	234	267.66	0.08
20.50	0.07	227	267.66	0.07
21.00	0.07	222	267.65	0.07
21.50	0.06	216	267.65	0.07
22.00	0.06	211	267.65	0.06
22.50	0.06	206	267.64	0.06
23.00	0.05	201	267.64	0.06
23.50	0.05	195	267.63	0.05
24.00	0.05	190	267.63	0.05

Summary for Pond P3: Exist CB

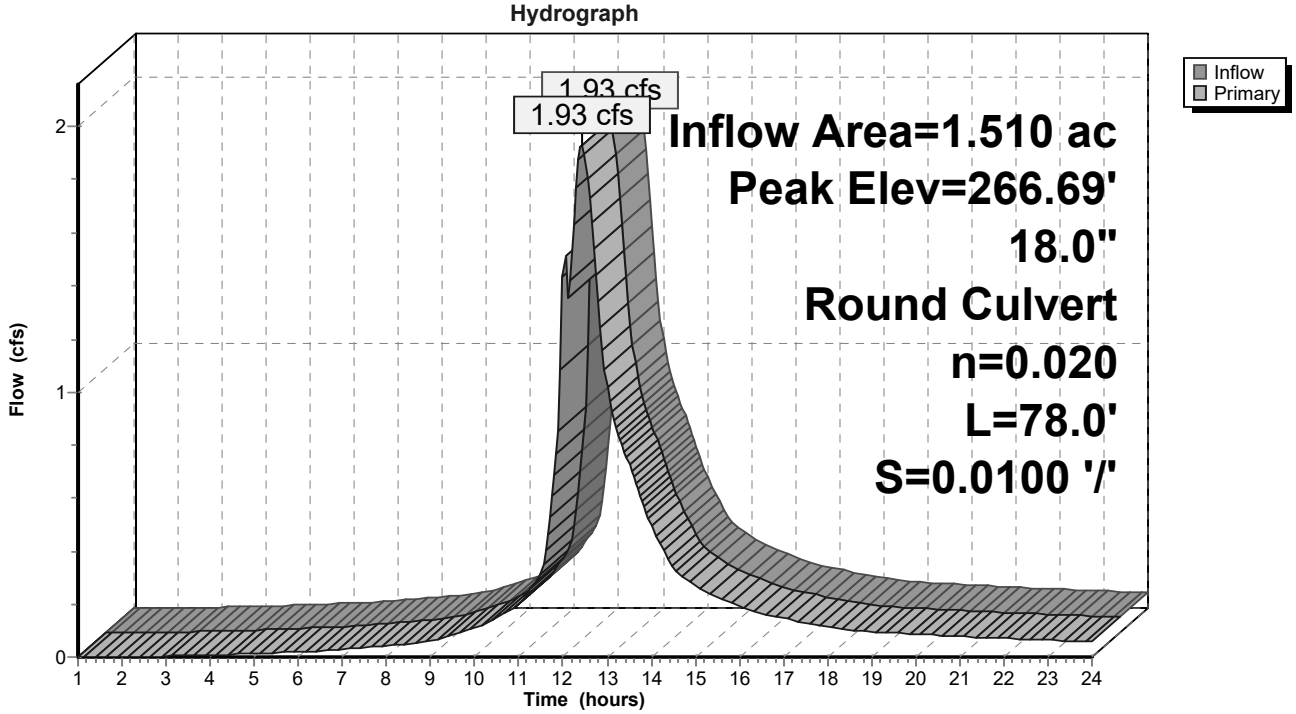
Inflow Area = 1.510 ac, 43.62% Impervious, Inflow Depth > 2.94"
Inflow = 1.93 cfs @ 12.42 hrs, Volume= 0.370 af
Outflow = 1.93 cfs @ 12.42 hrs, Volume= 0.370 af, Atten= 0%, Lag= 0.0 min
Primary = 1.93 cfs @ 12.42 hrs, Volume= 0.370 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 266.69' @ 12.42 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	265.93'	**18.0" Round Culvert** L= 78.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 265.93' / 265.15' S= 0.0100 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.92 cfs @ 12.42 hrs HW=266.68' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.92 cfs @ 3.15 fps)

Pond P3: Exist CB



Hydrograph for Pond P3: Exist CB

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	265.93	0.00	14.00	0.50	266.30	0.50
1.25	0.00	265.93	0.00	14.25	0.41	266.27	0.41
1.50	0.00	265.94	0.00	14.50	0.34	266.24	0.34
1.75	0.00	265.95	0.00	14.75	0.30	266.22	0.30
2.00	0.00	265.95	0.00	15.00	0.27	266.20	0.27
2.25	0.00	265.95	0.00	15.25	0.25	266.19	0.25
2.50	0.00	265.96	0.00	15.50	0.23	266.18	0.23
2.75	0.00	265.96	0.00	15.75	0.21	266.17	0.21
3.00	0.00	265.96	0.00	16.00	0.19	266.16	0.19
3.25	0.00	265.97	0.00	16.25	0.18	266.15	0.18
3.50	0.00	265.97	0.00	16.50	0.17	266.15	0.17
3.75	0.01	265.97	0.01	16.75	0.15	266.14	0.15
4.00	0.01	265.98	0.01	17.00	0.15	266.13	0.15
4.25	0.01	265.98	0.01	17.25	0.14	266.13	0.14
4.50	0.01	265.99	0.01	17.50	0.13	266.12	0.13
4.75	0.01	265.99	0.01	17.75	0.12	266.12	0.12
5.00	0.01	266.00	0.01	18.00	0.12	266.11	0.12
5.25	0.02	266.00	0.02	18.25	0.11	266.11	0.11
5.50	0.02	266.00	0.02	18.50	0.10	266.10	0.10
5.75	0.02	266.01	0.02	18.75	0.10	266.10	0.10
6.00	0.02	266.01	0.02	19.00	0.10	266.10	0.10
6.25	0.02	266.01	0.02	19.25	0.09	266.09	0.09
6.50	0.02	266.02	0.02	19.50	0.09	266.09	0.09
6.75	0.03	266.02	0.03	19.75	0.09	266.09	0.09
7.00	0.03	266.02	0.03	20.00	0.09	266.09	0.09
7.25	0.03	266.03	0.03	20.25	0.08	266.09	0.08
7.50	0.03	266.03	0.03	20.50	0.08	266.08	0.08
7.75	0.04	266.04	0.04	20.75	0.08	266.08	0.08
8.00	0.04	266.04	0.04	21.00	0.08	266.08	0.08
8.25	0.05	266.05	0.05	21.25	0.08	266.08	0.08
8.50	0.05	266.05	0.05	21.50	0.07	266.08	0.07
8.75	0.06	266.06	0.06	21.75	0.07	266.08	0.07
9.00	0.06	266.07	0.06	22.00	0.07	266.07	0.07
9.25	0.07	266.08	0.07	22.25	0.07	266.07	0.07
9.50	0.08	266.09	0.08	22.50	0.07	266.07	0.07
9.75	0.10	266.10	0.10	22.75	0.07	266.07	0.07
10.00	0.11	266.11	0.11	23.00	0.06	266.07	0.06
10.25	0.13	266.12	0.13	23.25	0.06	266.07	0.06
10.50	0.15	266.14	0.15	23.50	0.06	266.06	0.06
10.75	0.17	266.15	0.17	23.75	0.06	266.06	0.06
11.00	0.20	266.17	0.20	24.00	0.06	266.06	0.06
11.25	0.25	266.19	0.25				
11.50	0.32	266.23	0.32				
11.75	0.61	266.34	0.61				
12.00	1.43	266.57	1.43				
12.25	**1.63**	**266.62**	**1.63**				
12.50	**1.87**	**266.67**	**1.87**				
12.75	1.44	266.57	1.44				
13.00	1.02	266.47	1.02				
13.25	0.84	266.42	0.84				
13.50	0.73	266.38	0.73				
13.75	0.61	266.34	0.61				

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	WS1	0.00	0.00	100.0	0.2000	0.009	5.0	0.0	0.0
2	WS3	0.00	0.00	160.0	0.0940	0.010	6.0	0.0	0.0
3	R1	270.30	269.90	80.0	0.0050	0.013	8.0	0.0	0.0
4	P1	269.90	269.00	170.0	0.0053	0.013	12.0	0.0	0.0
5	P2 ALT	266.50	266.00	20.0	0.0250	0.013	12.0	0.0	0.0
6	P3	265.93	265.15	78.0	0.0100	0.020	18.0	0.0	0.0

Summary for Subcatchment WS1: Existing Roof

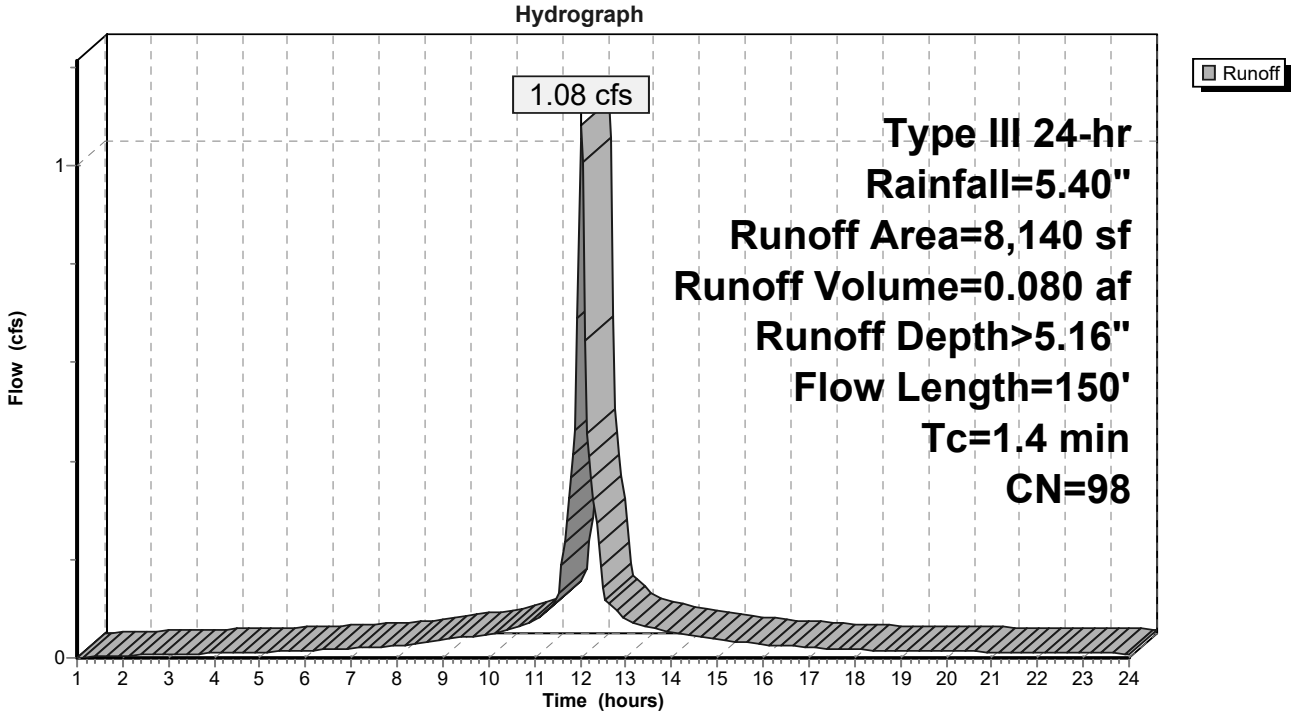
Runoff = 1.08 cfs @ 12.02 hrs, Volume= 0.080 af, Depth> 5.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.40"

Area (sf)	CN	Description
8,140	98	Unconnected roofs, HSG C
8,140		100.00% Impervious Area
8,140		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	50	0.0050	0.67		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
0.1	100	0.2000	16.35	2.23	**Pipe Channel, SEG BC ROOF DRAIN** 5.0" Round Area= 0.1 sf Perim= 1.3' r= 0.10' n= 0.009 PVC, smooth interior
1.4	150	Total			

Subcatchment WS1: Existing Roof



Hydrograph for Subcatchment WS1: Existing Roof

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.25	0.07	0.00	0.00
1.50	0.08	0.01	0.00
1.75	0.09	0.01	0.00
2.00	0.11	0.02	0.00
2.25	0.12	0.02	0.01
2.50	0.14	0.03	0.01
2.75	0.15	0.04	0.01
3.00	0.17	0.05	0.01
3.25	0.18	0.06	0.01
3.50	0.20	0.07	0.01
3.75	0.21	0.08	0.01
4.00	0.23	0.09	0.01
4.25	0.25	0.11	0.01
4.50	0.27	0.12	0.01
4.75	0.29	0.13	0.01
5.00	0.31	0.15	0.01
5.25	0.33	0.17	0.01
5.50	0.35	0.18	0.01
5.75	0.37	0.20	0.01
6.00	0.39	0.22	0.01
6.25	0.41	0.24	0.02
6.50	0.44	0.26	0.02
6.75	0.46	0.28	0.02
7.00	0.49	0.31	0.02
7.25	0.52	0.33	0.02
7.50	0.55	0.36	0.02
7.75	0.58	0.39	0.02
8.00	0.62	0.42	0.02
8.25	0.65	0.46	0.03
8.50	0.69	0.50	0.03
8.75	0.74	0.54	0.03
9.00	0.79	0.59	0.04
9.25	0.84	0.64	0.04
9.50	0.90	0.69	0.04
9.75	0.96	0.75	0.05
10.00	1.02	0.81	0.05
10.25	1.09	0.88	0.05
10.50	1.17	0.96	0.06
10.75	1.26	1.04	0.07
11.00	1.35	1.13	0.07
11.25	1.46	1.24	0.09
11.50	1.61	1.39	0.12
11.75	1.92	1.69	0.32
12.00	2.70	2.47	**1.05**
12.25	3.48	3.25	0.36
12.50	3.79	3.56	0.14
12.75	3.94	3.70	0.10
13.00	4.05	3.81	0.08
13.25	4.14	3.91	0.07
13.50	4.23	4.00	0.06
13.75	4.31	4.07	0.06
14.00	4.38	4.14	0.05
14.25	4.44	4.21	0.05
14.50	4.50	4.27	0.04
14.75	4.56	4.32	0.04
15.00	4.61	4.38	0.04
15.25	4.66	4.43	0.04
15.50	4.71	4.47	0.03
15.75	4.75	4.51	0.03
16.00	4.78	4.55	0.03
16.25	4.82	4.58	0.03
16.50	4.85	4.61	0.02
16.75	4.88	4.65	0.02
17.00	4.91	4.67	0.02
17.25	4.94	4.70	0.02
17.50	4.96	4.73	0.02
17.75	4.99	4.75	0.02
18.00	5.01	4.77	0.02
18.25	5.03	4.80	0.02
18.50	5.05	4.82	0.02
18.75	5.07	4.84	0.02
19.00	5.09	4.86	0.01
19.25	5.11	4.88	0.01
19.50	5.13	4.89	0.01
19.75	5.15	4.91	0.01
20.00	5.17	4.93	0.01
20.25	5.19	4.95	0.01
20.50	5.20	4.97	0.01
20.75	5.22	4.98	0.01
21.00	5.23	5.00	0.01
21.25	5.25	5.01	0.01
21.50	5.27	5.03	0.01
21.75	5.28	5.04	0.01
22.00	5.30	5.06	0.01
22.25	5.31	5.07	0.01
22.50	5.32	5.09	0.01
22.75	5.34	5.10	0.01
23.00	5.35	5.11	0.01
23.25	5.36	5.13	0.01
23.50	5.38	5.14	0.01
23.75	5.39	5.15	0.01
24.00	**5.40**	**5.16**	0.01

Summary for Subcatchment WS2: New Lawn and Paved

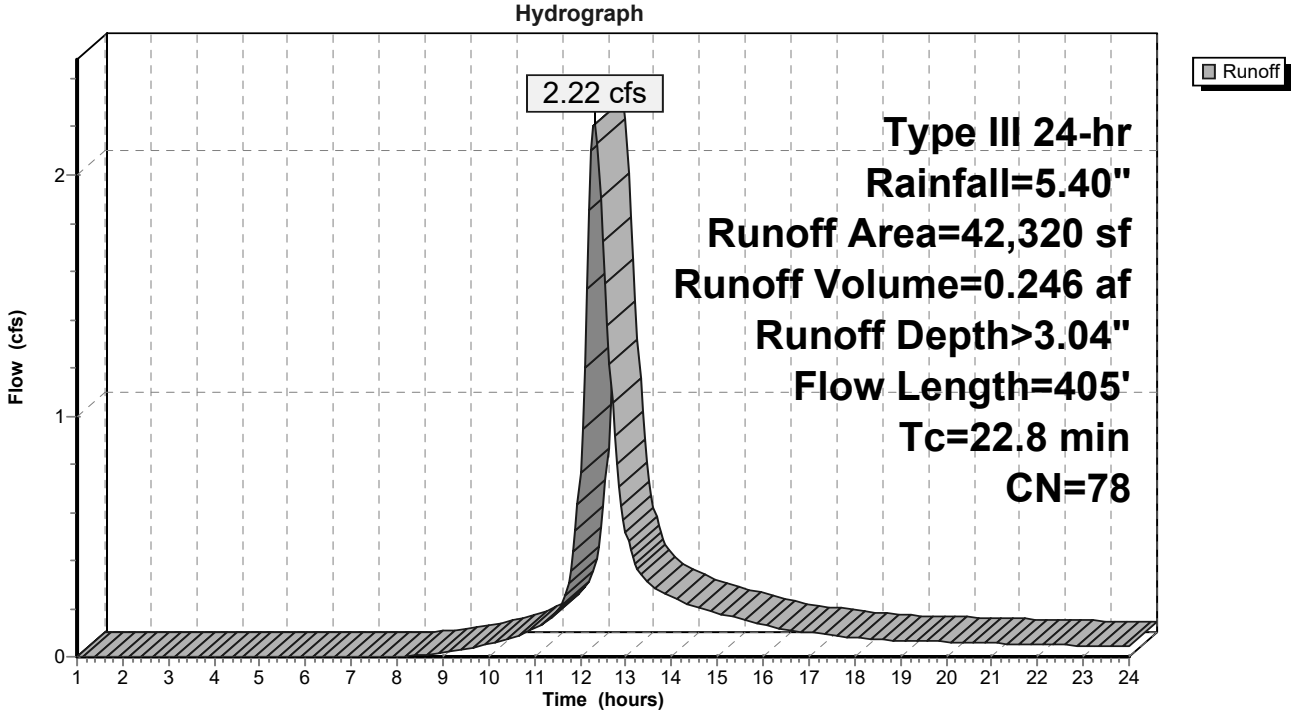
Runoff = 2.22 cfs @ 12.32 hrs, Volume= 0.246 af, Depth> 3.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.40"

Area (sf)	CN	Description
7,746	98	Paved roads w/curbs & sewers, HSG C
34,574	74	>75% Grass cover, Good, HSG C
42,320	78	Weighted Average
34,574		81.70% Pervious Area
7,746		18.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	15	0.0100	0.09		**Sheet Flow, SEG AB** Grass: Short n= 0.150 P2= 3.00"
18.7	160	0.0110	0.14		**Sheet Flow, SEG BC** Grass: Short n= 0.150 P2= 3.00"
1.2	230	0.0100	3.28	22.94	**Trap/Vee/Rect Channel Flow, SEG CD Ditch to pond** Bot.W=4.00' D=1.00' Z= 3.0 '/' Top.W=10.00' n= 0.035 Earth, dense weeds
22.8	405	Total			

Subcatchment WS2: New Lawn and Paved



Hydrograph for Subcatchment WS2: New Lawn and Paved

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00	14.00	4.38	2.19	0.25
1.25	0.07	0.00	0.00	14.25	4.44	2.25	0.22
1.50	0.08	0.00	0.00	14.50	4.50	2.30	0.21
1.75	0.09	0.00	0.00	14.75	4.56	2.34	0.19
2.00	0.11	0.00	0.00	15.00	4.61	2.39	0.18
2.25	0.12	0.00	0.00	15.25	4.66	2.43	0.17
2.50	0.14	0.00	0.00	15.50	4.71	2.46	0.16
2.75	0.15	0.00	0.00	15.75	4.75	2.50	0.15
3.00	0.17	0.00	0.00	16.00	4.78	2.53	0.13
3.25	0.18	0.00	0.00	16.25	4.82	2.56	0.12
3.50	0.20	0.00	0.00	16.50	4.85	2.59	0.11
3.75	0.21	0.00	0.00	16.75	4.88	2.61	0.11
4.00	0.23	0.00	0.00	17.00	4.91	2.64	0.10
4.25	0.25	0.00	0.00	17.25	4.94	2.66	0.10
4.50	0.27	0.00	0.00	17.50	4.96	2.68	0.09
4.75	0.29	0.00	0.00	17.75	4.99	2.70	0.09
5.00	0.31	0.00	0.00	18.00	5.01	2.72	0.08
5.25	0.33	0.00	0.00	18.25	5.03	2.74	0.07
5.50	0.35	0.00	0.00	18.50	5.05	2.76	0.07
5.75	0.37	0.00	0.00	18.75	5.07	2.77	0.07
6.00	0.39	0.00	0.00	19.00	5.09	2.79	0.07
6.25	0.41	0.00	0.00	19.25	5.11	2.81	0.07
6.50	0.44	0.00	0.00	19.50	5.13	2.82	0.06
6.75	0.46	0.00	0.00	19.75	5.15	2.84	0.06
7.00	0.49	0.00	0.00	20.00	5.17	2.85	0.06
7.25	0.52	0.00	0.00	20.25	5.19	2.87	0.06
7.50	0.55	0.00	0.00	20.50	5.20	2.88	0.06
7.75	0.58	0.00	0.00	20.75	5.22	2.90	0.06
8.00	0.62	0.00	0.00	21.00	5.23	2.91	0.06
8.25	0.65	0.00	0.00	21.25	5.25	2.93	0.05
8.50	0.69	0.01	0.01	21.50	5.27	2.94	0.05
8.75	0.74	0.01	0.01	21.75	5.28	2.95	0.05
9.00	0.79	0.02	0.02	22.00	5.30	2.96	0.05
9.25	0.84	0.02	0.03	22.25	5.31	2.98	0.05
9.50	0.90	0.03	0.03	22.50	5.32	2.99	0.05
9.75	0.96	0.05	0.04	22.75	5.34	3.00	0.05
10.00	1.02	0.06	0.05	23.00	5.35	3.01	0.05
10.25	1.09	0.08	0.06	23.25	5.36	3.02	0.04
10.50	1.17	0.11	0.08	23.50	5.38	3.03	0.04
10.75	1.26	0.14	0.10	23.75	5.39	3.04	0.04
11.00	1.35	0.17	0.12	24.00	**5.40**	**3.05**	0.04
11.25	1.46	0.22	0.14				
11.50	1.61	0.28	0.19				
11.75	1.92	0.44	0.30				
12.00	2.70	0.92	0.77				
12.25	3.48	1.48	**2.10**				
12.50	3.79	1.72	**1.72**				
12.75	3.94	1.84	0.92				
13.00	4.05	1.93	0.52				
13.25	4.14	2.00	0.37				
13.50	4.23	2.07	0.30				
13.75	4.31	2.14	0.27				

Summary for Subcatchment WS3: Addition Roof

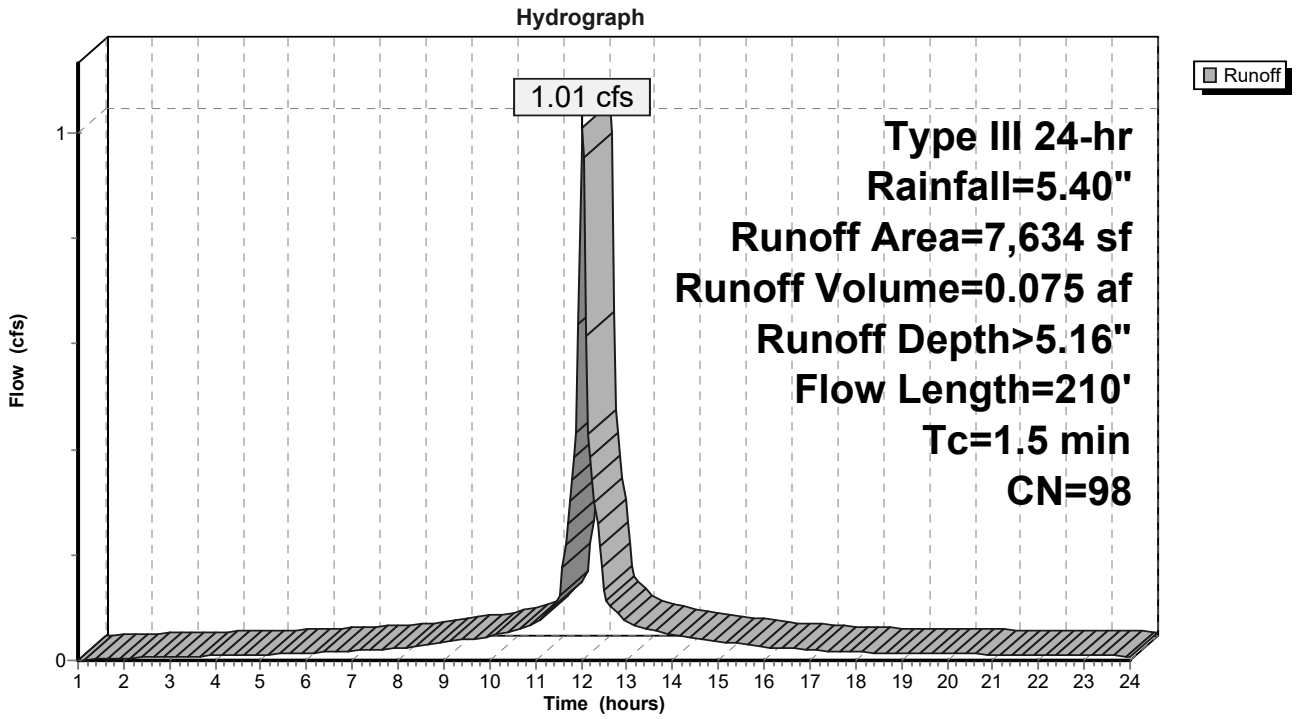
Runoff = 1.01 cfs @ 12.02 hrs, Volume= 0.075 af, Depth> 5.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.40"

Area (sf)	CN	Description
7,634	98	Roofs, HSG C
7,634		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	50	0.0050	0.67		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
0.2	160	0.0940	11.39	2.24	**Pipe Channel, SEG BC Roof Drain** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.010 PVC, smooth interior
1.5	210	Total			

Subcatchment WS3: Addition Roof



Hydrograph for Subcatchment WS3: Addition Roof

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.25	0.07	0.00	0.00
1.50	0.08	0.01	0.00
1.75	0.09	0.01	0.00
2.00	0.11	0.02	0.00
2.25	0.12	0.02	0.00
2.50	0.14	0.03	0.01
2.75	0.15	0.04	0.01
3.00	0.17	0.05	0.01
3.25	0.18	0.06	0.01
3.50	0.20	0.07	0.01
3.75	0.21	0.08	0.01
4.00	0.23	0.09	0.01
4.25	0.25	0.11	0.01
4.50	0.27	0.12	0.01
4.75	0.29	0.13	0.01
5.00	0.31	0.15	0.01
5.25	0.33	0.17	0.01
5.50	0.35	0.18	0.01
5.75	0.37	0.20	0.01
6.00	0.39	0.22	0.01
6.25	0.41	0.24	0.01
6.50	0.44	0.26	0.02
6.75	0.46	0.28	0.02
7.00	0.49	0.31	0.02
7.25	0.52	0.33	0.02
7.50	0.55	0.36	0.02
7.75	0.58	0.39	0.02
8.00	0.62	0.42	0.02
8.25	0.65	0.46	0.03
8.50	0.69	0.50	0.03
8.75	0.74	0.54	0.03
9.00	0.79	0.59	0.03
9.25	0.84	0.64	0.04
9.50	0.90	0.69	0.04
9.75	0.96	0.75	0.04
10.00	1.02	0.81	0.05
10.25	1.09	0.88	0.05
10.50	1.17	0.96	0.06
10.75	1.26	1.04	0.06
11.00	1.35	1.13	0.07
11.25	1.46	1.24	0.09
11.50	1.61	1.39	0.11
11.75	1.92	1.69	0.30
12.00	2.70	2.47	**0.98**
12.25	3.48	3.25	0.34
12.50	3.79	3.56	0.13
12.75	3.94	3.70	0.09
13.00	4.05	3.81	0.07
13.25	4.14	3.91	0.06
13.50	4.23	4.00	0.06
13.75	4.31	4.07	0.05
14.00	4.38	4.14	0.05
14.25	4.44	4.21	0.04
14.50	4.50	4.27	0.04
14.75	4.56	4.32	0.04
15.00	4.61	4.38	0.04
15.25	4.66	4.43	0.03
15.50	4.71	4.47	0.03
15.75	4.75	4.51	0.03
16.00	4.78	4.55	0.03
16.25	4.82	4.58	0.02
16.50	4.85	4.61	0.02
16.75	4.88	4.65	0.02
17.00	4.91	4.67	0.02
17.25	4.94	4.70	0.02
17.50	4.96	4.73	0.02
17.75	4.99	4.75	0.02
18.00	5.01	4.77	0.02
18.25	5.03	4.80	0.01
18.50	5.05	4.82	0.01
18.75	5.07	4.84	0.01
19.00	5.09	4.86	0.01
19.25	5.11	4.88	0.01
19.50	5.13	4.89	0.01
19.75	5.15	4.91	0.01
20.00	5.17	4.93	0.01
20.25	5.19	4.95	0.01
20.50	5.20	4.97	0.01
20.75	5.22	4.98	0.01
21.00	5.23	5.00	0.01
21.25	5.25	5.01	0.01
21.50	5.27	5.03	0.01
21.75	5.28	5.04	0.01
22.00	5.30	5.06	0.01
22.25	5.31	5.07	0.01
22.50	5.32	5.09	0.01
22.75	5.34	5.10	0.01
23.00	5.35	5.11	0.01
23.25	5.36	5.13	0.01
23.50	5.38	5.14	0.01
23.75	5.39	5.15	0.01
24.00	**5.40**	**5.16**	0.01

Summary for Subcatchment WS4: Exist and New Paved

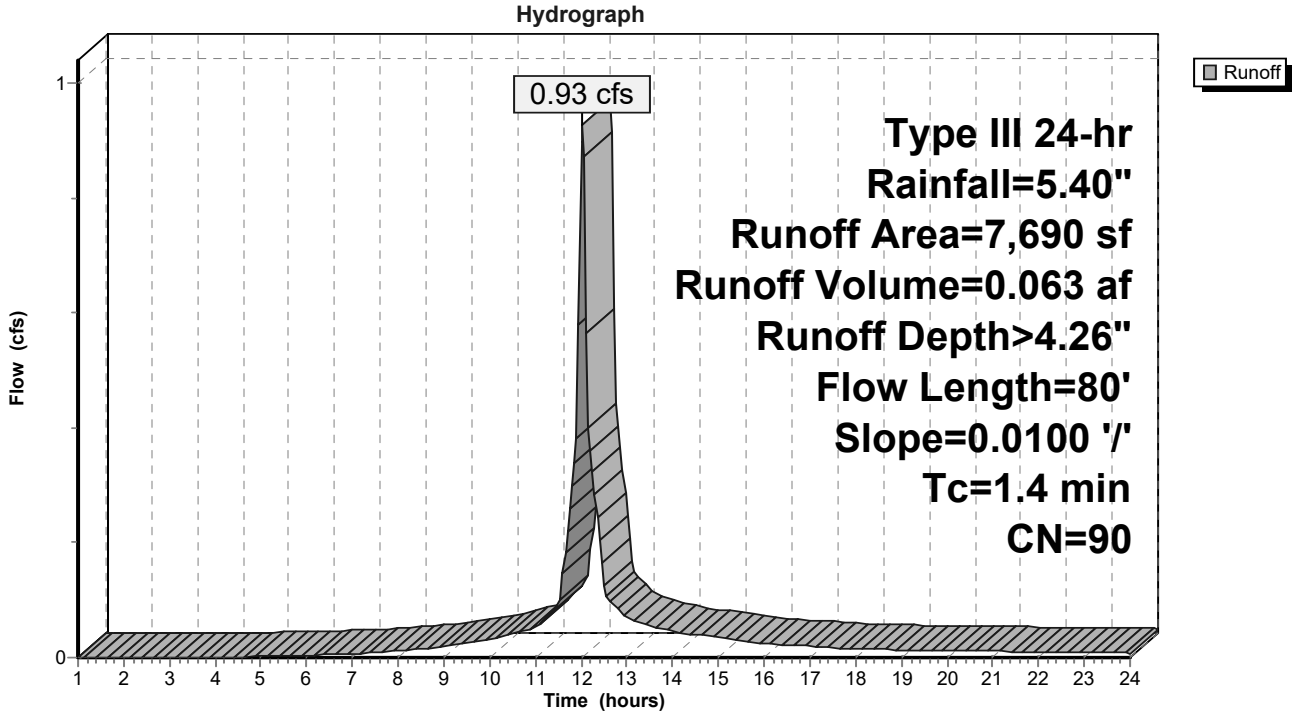
Runoff = 0.93 cfs @ 12.02 hrs, Volume= 0.063 af, Depth> 4.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.40"

Area (sf)	CN	Description
5,175	98	Paved parking, HSG C
2,515	74	>75% Grass cover, Good, HSG C
7,690	90	Weighted Average
2,515		32.70% Pervious Area
5,175		67.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	80	0.0100	0.97		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"

Subcatchment WS4: Exist and New Paved



Hydrograph for Subcatchment WS4: Exist and New Paved

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.25	0.07	0.00	0.00
1.50	0.08	0.00	0.00
1.75	0.09	0.00	0.00
2.00	0.11	0.00	0.00
2.25	0.12	0.00	0.00
2.50	0.14	0.00	0.00
2.75	0.15	0.00	0.00
3.00	0.17	0.00	0.00
3.25	0.18	0.00	0.00
3.50	0.20	0.00	0.00
3.75	0.21	0.00	0.00
4.00	0.23	0.00	0.00
4.25	0.25	0.00	0.00
4.50	0.27	0.00	0.00
4.75	0.29	0.00	0.00
5.00	0.31	0.01	0.00
5.25	0.33	0.01	0.00
5.50	0.35	0.01	0.00
5.75	0.37	0.02	0.00
6.00	0.39	0.02	0.00
6.25	0.41	0.03	0.00
6.50	0.44	0.03	0.01
6.75	0.46	0.04	0.01
7.00	0.49	0.05	0.01
7.25	0.52	0.06	0.01
7.50	0.55	0.07	0.01
7.75	0.58	0.09	0.01
8.00	0.62	0.10	0.01
8.25	0.65	0.12	0.01
8.50	0.69	0.14	0.02
8.75	0.74	0.16	0.02
9.00	0.79	0.19	0.02
9.25	0.84	0.22	0.02
9.50	0.90	0.25	0.03
9.75	0.96	0.29	0.03
10.00	1.02	0.33	0.03
10.25	1.09	0.38	0.04
10.50	1.17	0.44	0.04
10.75	1.26	0.50	0.05
11.00	1.35	0.57	0.05
11.25	1.46	0.66	0.07
11.50	1.61	0.77	0.09
11.75	1.92	1.02	0.26
12.00	2.70	1.71	**0.90**
12.25	3.48	2.43	0.32
12.50	3.79	2.72	0.13
12.75	3.94	2.86	0.09
13.00	4.05	2.97	0.07
13.25	4.14	3.06	0.06
13.50	4.23	3.14	0.06
13.75	4.31	3.21	0.05
14.00	4.38	3.28	0.05
14.25	4.44	3.34	0.04
14.50	4.50	3.40	0.04
14.75	4.56	3.45	0.04
15.00	4.61	3.50	0.03
15.25	4.66	3.55	0.03
15.50	4.71	3.59	0.03
15.75	4.75	3.63	0.03
16.00	4.78	3.67	0.02
16.25	4.82	3.70	0.02
16.50	4.85	3.73	0.02
16.75	4.88	3.76	0.02
17.00	4.91	3.79	0.02
17.25	4.94	3.82	0.02
17.50	4.96	3.84	0.02
17.75	4.99	3.87	0.02
18.00	5.01	3.89	0.01
18.25	5.03	3.91	0.01
18.50	5.05	3.93	0.01
18.75	5.07	3.95	0.01
19.00	5.09	3.97	0.01
19.25	5.11	3.99	0.01
19.50	5.13	4.00	0.01
19.75	5.15	4.02	0.01
20.00	5.17	4.04	0.01
20.25	5.19	4.06	0.01
20.50	5.20	4.07	0.01
20.75	5.22	4.09	0.01
21.00	5.23	4.10	0.01
21.25	5.25	4.12	0.01
21.50	5.27	4.13	0.01
21.75	5.28	4.15	0.01
22.00	5.30	4.16	0.01
22.25	5.31	4.18	0.01
22.50	5.32	4.19	0.01
22.75	5.34	4.20	0.01
23.00	5.35	4.22	0.01
23.25	5.36	4.23	0.01
23.50	5.38	4.24	0.01
23.75	5.39	4.25	0.01
24.00	**5.40**	**4.26**	0.01

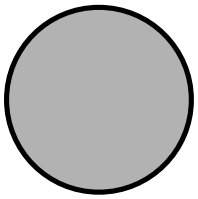
Summary for Reach R1: Pipe to pond

Inflow Area = 0.187 ac,100.00% Impervious, Inflow Depth > 5.16"
Inflow = 1.08 cfs @ 12.02 hrs, Volume= 0.080 af
Outflow = 0.86 cfs @ 12.08 hrs, Volume= 0.080 af, Atten= 21%, Lag= 3.3 min

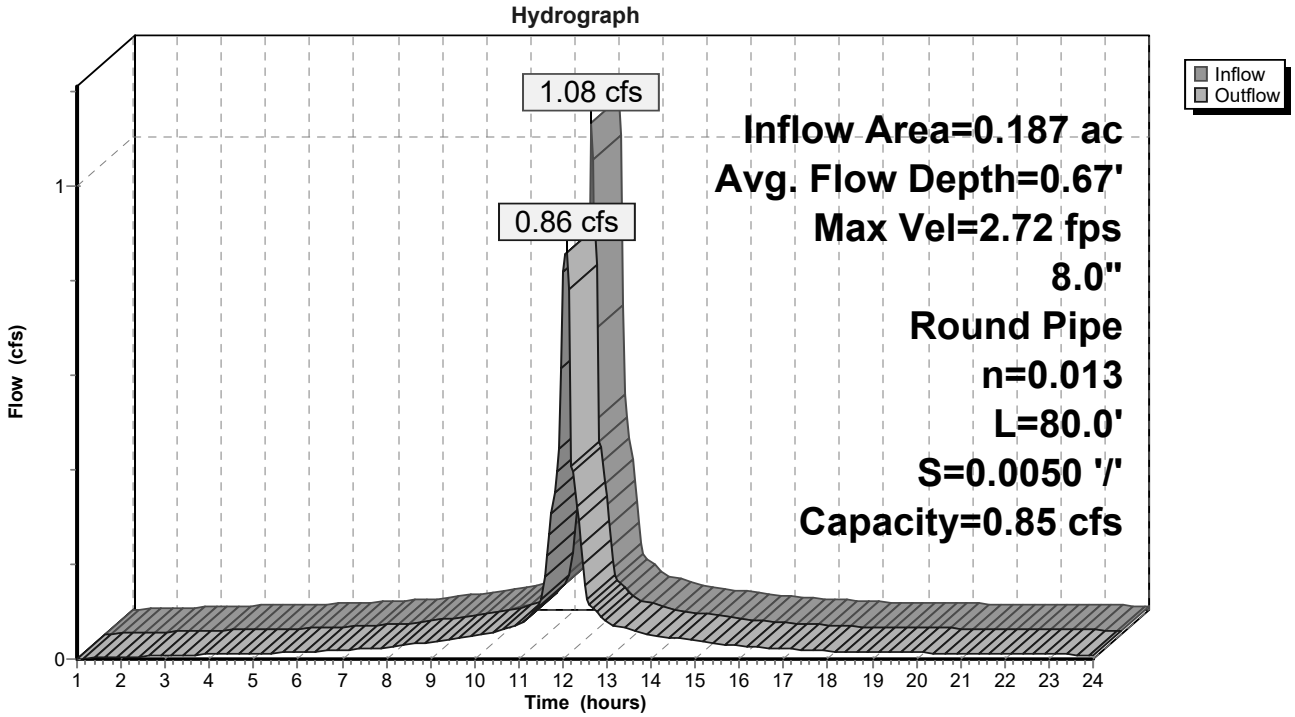
Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.72 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.07 fps, Avg. Travel Time= 1.2 min

Peak Storage= 28 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.67'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 0.85 cfs

8.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 80.0' Slope= 0.0050 '/'
Inlet Invert= 270.30', Outlet Invert= 269.90'



Reach R1: Pipe to pond



Hydrograph for Reach R1: Pipe to pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
1.00	0.00	0	270.30	0.00
1.50	0.00	0	270.33	0.00
2.00	0.00	1	270.33	0.00
2.50	0.01	1	270.34	0.01
3.00	0.01	1	270.34	0.01
3.50	0.01	1	270.35	0.01
4.00	0.01	1	270.35	0.01
4.50	0.01	1	270.35	0.01
5.00	0.01	1	270.35	0.01
5.50	0.01	1	270.36	0.01
6.00	0.01	1	270.36	0.01
6.50	0.02	1	270.36	0.02
7.00	0.02	2	270.37	0.02
7.50	0.02	2	270.37	0.02
8.00	0.02	2	270.38	0.02
8.50	0.03	2	270.39	0.03
9.00	0.04	2	270.39	0.04
9.50	0.04	3	270.40	0.04
10.00	0.05	3	270.41	0.05
10.50	0.06	3	270.42	0.06
11.00	0.07	4	270.43	0.07
11.50	0.12	5	270.47	0.12
12.00	**1.05**	**28**	**270.97**	**0.82**
12.50	0.14	6	270.49	**0.15**
13.00	0.08	4	270.44	0.08
13.50	0.06	4	270.42	0.06
14.00	0.05	3	270.41	0.05
14.50	0.04	3	270.40	0.04
15.00	0.04	2	270.40	0.04
15.50	0.03	2	270.39	0.03
16.00	0.03	2	270.38	0.03
16.50	0.02	2	270.38	0.02
17.00	0.02	2	270.37	0.02
17.50	0.02	2	270.37	0.02
18.00	0.02	1	270.36	0.02
18.50	0.02	1	270.36	0.02
19.00	0.01	1	270.36	0.01
19.50	0.01	1	270.36	0.01
20.00	0.01	1	270.36	0.01
20.50	0.01	1	270.36	0.01
21.00	0.01	1	270.36	0.01
21.50	0.01	1	270.35	0.01
22.00	0.01	1	270.35	0.01
22.50	0.01	1	270.35	0.01
23.00	0.01	1	270.35	0.01
23.50	0.01	1	270.35	0.01
24.00	0.01	1	270.35	0.01

Summary for Pond P1: CB1

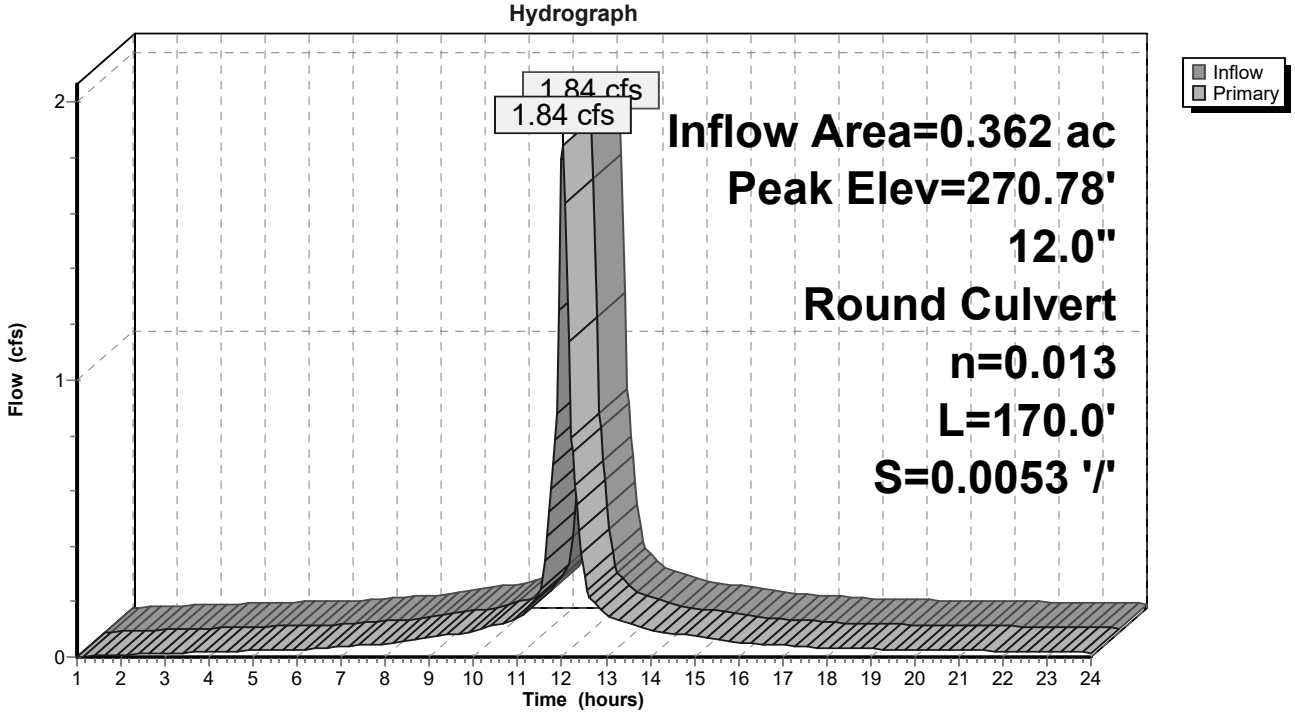
Inflow Area = 0.362 ac,100.00% Impervious, Inflow Depth > 5.16"
Inflow = 1.84 cfs @ 12.03 hrs, Volume= 0.156 af
Outflow = 1.84 cfs @ 12.03 hrs, Volume= 0.156 af, Atten= 0%, Lag= 0.0 min
Primary = 1.84 cfs @ 12.03 hrs, Volume= 0.156 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 270.78' @ 12.03 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	269.90'	**12.0" Round Culvert** L= 170.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 269.90' / 269.00' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.80 cfs @ 12.03 hrs HW=270.76' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.80 cfs @ 2.50 fps)

Pond P1: CB1



Hydrograph for Pond P1: CB1

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	269.92	0.00
1.25	0.00	269.94	0.00
1.50	0.01	269.95	0.01
1.75	0.01	269.95	0.01
2.00	0.01	269.96	0.01
2.25	0.01	269.96	0.01
2.50	0.01	269.96	0.01
2.75	0.01	269.97	0.01
3.00	0.01	269.97	0.01
3.25	0.02	269.97	0.02
3.50	0.02	269.98	0.02
3.75	0.02	269.98	0.02
4.00	0.02	269.98	0.02
4.25	0.02	269.98	0.02
4.50	0.02	269.99	0.02
4.75	0.02	269.99	0.02
5.00	0.02	269.99	0.02
5.25	0.02	269.99	0.02
5.50	0.03	269.99	0.03
5.75	0.03	269.99	0.03
6.00	0.03	270.00	0.03
6.25	0.03	270.00	0.03
6.50	0.03	270.00	0.03
6.75	0.03	270.01	0.03
7.00	0.04	270.01	0.04
7.25	0.04	270.02	0.04
7.50	0.04	270.02	0.04
7.75	0.04	270.02	0.04
8.00	0.05	270.03	0.05
8.25	0.05	270.03	0.05
8.50	0.06	270.04	0.06
8.75	0.06	270.05	0.06
9.00	0.07	270.05	0.07
9.25	0.08	270.06	0.08
9.50	0.08	270.06	0.08
9.75	0.09	270.07	0.09
10.00	0.09	270.07	0.09
10.25	0.10	270.08	0.10
10.50	0.12	270.09	0.12
10.75	0.13	270.10	0.13
11.00	0.14	270.11	0.14
11.25	0.18	270.14	0.18
11.50	0.23	270.17	0.23
11.75	0.61	270.35	0.61
12.00	**1.80**	**270.76**	**1.80**
12.25	**0.74**	**270.40**	**0.74**
12.50	0.29	270.21	0.29
12.75	0.19	270.15	0.19
13.00	0.15	270.12	0.15
13.25	0.13	270.11	0.13
13.50	0.12	270.10	0.12
13.75	0.11	270.09	0.11
14.00	0.10	270.08	0.10
14.25	0.09	270.07	0.09
14.50	0.09	270.07	0.09
14.75	0.08	270.06	0.08
15.00	0.07	270.06	0.07
15.25	0.07	270.05	0.07
15.50	0.06	270.04	0.06
15.75	0.06	270.04	0.06
16.00	0.05	270.03	0.05
16.25	0.05	270.03	0.05
16.50	0.05	270.02	0.05
16.75	0.04	270.02	0.04
17.00	0.04	270.02	0.04
17.25	0.04	270.01	0.04
17.50	0.04	270.01	0.04
17.75	0.03	270.01	0.03
18.00	0.03	270.00	0.03
18.25	0.03	270.00	0.03
18.50	0.03	270.00	0.03
18.75	0.03	270.00	0.03
19.00	0.03	270.00	0.03
19.25	0.03	270.00	0.03
19.50	0.03	270.00	0.03
19.75	0.03	270.00	0.03
20.00	0.03	269.99	0.03
20.25	0.03	269.99	0.03
20.50	0.02	269.99	0.02
20.75	0.02	269.99	0.02
21.00	0.02	269.99	0.02
21.25	0.02	269.99	0.02
21.50	0.02	269.99	0.02
21.75	0.02	269.99	0.02
22.00	0.02	269.99	0.02
22.25	0.02	269.98	0.02
22.50	0.02	269.98	0.02
22.75	0.02	269.98	0.02
23.00	0.02	269.98	0.02
23.25	0.02	269.98	0.02
23.50	0.02	269.98	0.02
23.75	0.02	269.98	0.02
24.00	0.02	269.97	0.02

Summary for Pond P2 ALT: Dry Pond

Inflow Area = 1.334 ac, 40.49% Impervious, Inflow Depth > 3.62"
Inflow = 2.86 cfs @ 12.27 hrs, Volume= 0.402 af
Outflow = 2.25 cfs @ 12.46 hrs, Volume= 0.397 af, Atten= 21%, Lag= 11.0 min
Primary = 2.25 cfs @ 12.46 hrs, Volume= 0.397 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 269.25' @ 12.46 hrs Surf.Area= 2,166 sf Storage= 3,134 cf

Plug-Flow detention time= 32.5 min calculated for 0.396 af (99% of inflow)
Center-of-Mass det. time= 25.2 min (825.7 - 800.4)

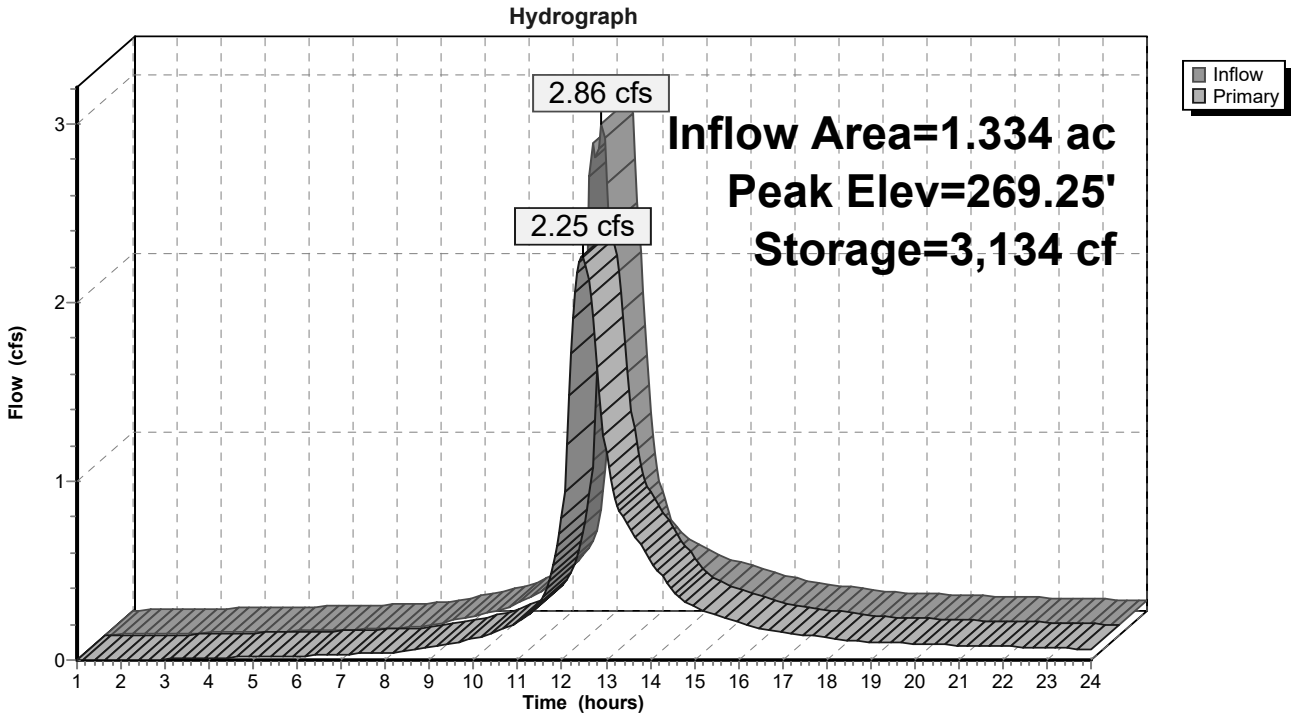
Volume	Invert	Avail.Storage	Storage Description
#1	267.50'	12,728 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
267.50	1,421	0	0
268.00	1,621	761	761
269.00	2,054	1,838	2,598
269.50	2,274	1,082	3,680
270.00	2,664	1,235	4,915
271.00	3,785	3,225	8,139
272.00	5,392	4,589	12,728

Device	Routing	Invert	Outlet Devices
#1	Primary	266.50'	**12.0" Round Outlet** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 266.50' / 266.00' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	267.50'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	268.50'	**8.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	270.00'	**24.0" Horiz. Top Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.25 cfs @ 12.46 hrs HW=269.25' (Free Discharge)
└─**1=Outlet** (Passes 2.25 cfs of 4.48 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.16 cfs @ 5.90 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 1.09 cfs @ 3.12 fps)
  └─**4=Top Grate** (Controls 0.00 cfs)

Pond P2 ALT: Dry Pond



Hydrograph for Pond P2 ALT: Dry Pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
1.00	0.00	0	267.50	0.00
1.50	0.01	6	267.50	0.00
2.00	0.01	17	267.51	0.00
2.50	0.01	31	267.52	0.00
3.00	0.01	46	267.53	0.00
3.50	0.02	64	267.54	0.01
4.00	0.02	80	267.56	0.01
4.50	0.02	93	267.56	0.01
5.00	0.02	104	267.57	0.02
5.50	0.03	113	267.58	0.02
6.00	0.03	122	267.58	0.02
6.50	0.03	132	267.59	0.03
7.00	0.04	143	267.60	0.03
7.50	0.04	155	267.61	0.04
8.00	0.05	167	267.62	0.04
8.50	0.07	188	267.63	0.05
9.00	0.09	221	267.65	0.07
9.50	0.11	260	267.68	0.09
10.00	0.14	303	267.71	0.12
10.50	0.19	357	267.74	0.16
11.00	0.26	427	267.79	0.21
11.50	0.42	550	267.87	0.32
12.00	**2.56**	**1,533**	**268.45**	**0.79**
12.50	**2.01**	**3,116**	**269.25**	**2.24**
13.00	0.67	2,107	268.75	1.16
13.50	0.43	1,421	268.39	0.75
14.00	0.35	929	268.10	0.56
14.50	0.29	643	267.93	0.40
15.00	0.26	524	267.85	0.30
15.50	0.22	466	267.81	0.25
16.00	0.19	420	267.78	0.21
16.50	0.16	381	267.76	0.18
17.00	0.14	353	267.74	0.16
17.50	0.13	331	267.73	0.14
18.00	0.11	309	267.71	0.12
18.50	0.10	289	267.70	0.11
19.00	0.10	277	267.69	0.10
19.50	0.09	268	267.68	0.10
20.00	0.09	261	267.68	0.09
20.50	0.08	253	267.67	0.09
21.00	0.08	246	267.67	0.08
21.50	0.08	240	267.66	0.08
22.00	0.07	234	267.66	0.08
22.50	0.07	227	267.66	0.07
23.00	0.06	221	267.65	0.07
23.50	0.06	215	267.65	0.06
24.00	0.06	208	267.64	0.06

Summary for Pond P3: Exist CB

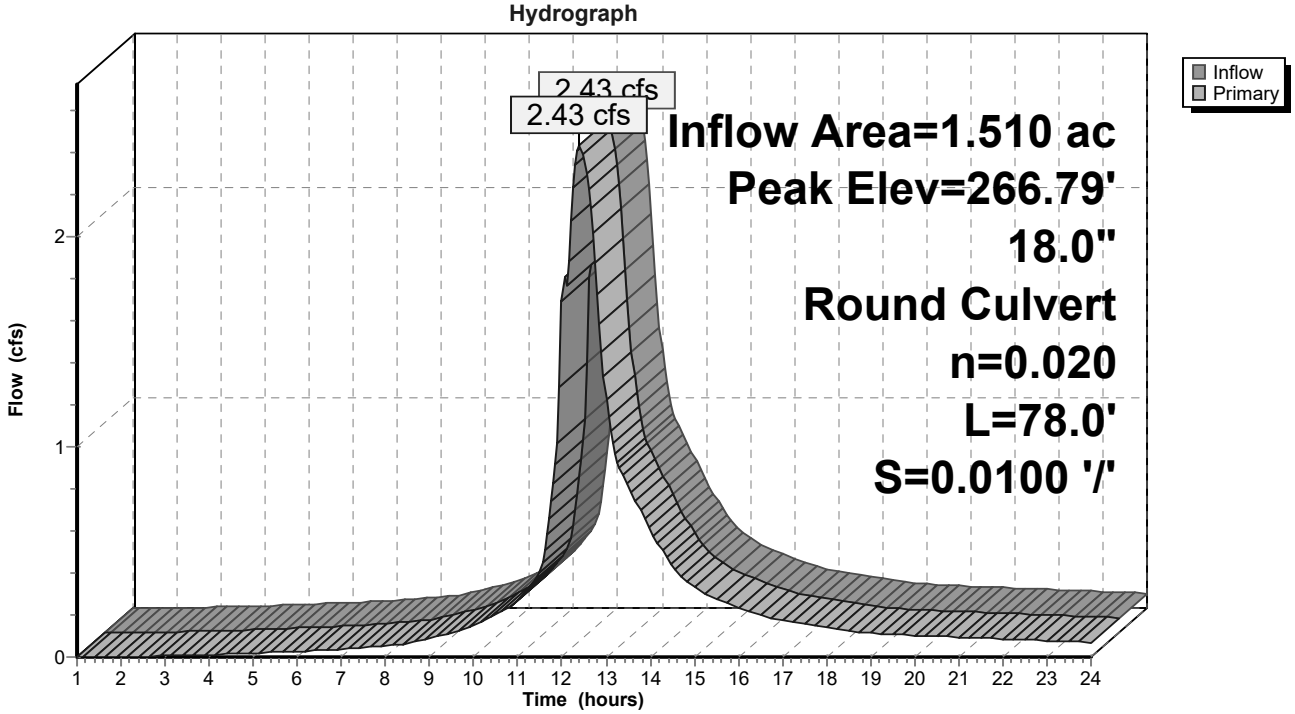
Inflow Area = 1.510 ac, 43.62% Impervious, Inflow Depth > 3.65"
Inflow = 2.43 cfs @ 12.41 hrs, Volume= 0.460 af
Outflow = 2.43 cfs @ 12.41 hrs, Volume= 0.460 af, Atten= 0%, Lag= 0.0 min
Primary = 2.43 cfs @ 12.41 hrs, Volume= 0.460 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 266.79' @ 12.41 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	265.93'	**18.0" Round Culvert** L= 78.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 265.93' / 265.15' S= 0.0100 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.43 cfs @ 12.41 hrs HW=266.79' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.43 cfs @ 3.34 fps)

Pond P3: Exist CB

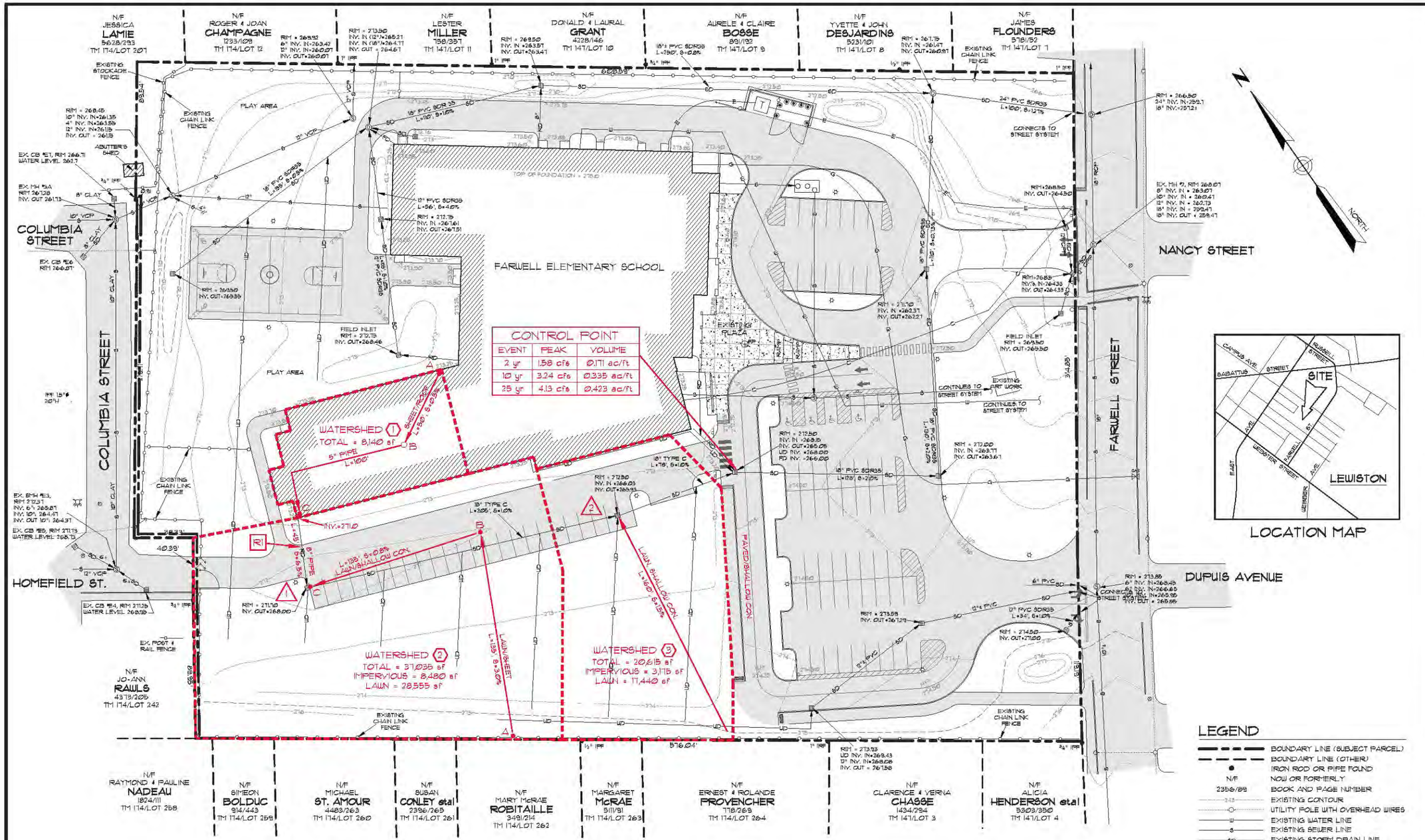


Hydrograph for Pond P3: Exist CB

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	265.93	0.00	14.00	0.61	266.34	0.61
1.25	0.00	265.94	0.00	14.25	0.52	266.31	0.52
1.50	0.00	265.95	0.00	14.50	0.44	266.28	0.44
1.75	0.00	265.95	0.00	14.75	0.37	266.25	0.37
2.00	0.00	265.95	0.00	15.00	0.33	266.23	0.33
2.25	0.00	265.96	0.00	15.25	0.30	266.22	0.30
2.50	0.00	265.96	0.00	15.50	0.28	266.21	0.28
2.75	0.00	265.97	0.00	15.75	0.26	266.20	0.26
3.00	0.00	265.97	0.00	16.00	0.23	266.19	0.23
3.25	0.01	265.97	0.01	16.25	0.22	266.18	0.22
3.50	0.01	265.98	0.01	16.50	0.20	266.17	0.20
3.75	0.01	265.98	0.01	16.75	0.19	266.16	0.19
4.00	0.01	265.99	0.01	17.00	0.18	266.15	0.18
4.25	0.01	265.99	0.01	17.25	0.17	266.15	0.17
4.50	0.02	266.00	0.02	17.50	0.16	266.14	0.16
4.75	0.02	266.00	0.02	17.75	0.15	266.13	0.15
5.00	0.02	266.01	0.02	18.00	0.14	266.13	0.14
5.25	0.02	266.01	0.02	18.25	0.13	266.12	0.13
5.50	0.02	266.01	0.02	18.50	0.12	266.12	0.12
5.75	0.02	266.02	0.02	18.75	0.12	266.11	0.12
6.00	0.03	266.02	0.03	19.00	0.12	266.11	0.12
6.25	0.03	266.02	0.03	19.25	0.11	266.11	0.11
6.50	0.03	266.03	0.03	19.50	0.11	266.11	0.11
6.75	0.03	266.03	0.03	19.75	0.11	266.10	0.11
7.00	0.04	266.04	0.04	20.00	0.10	266.10	0.10
7.25	0.04	266.04	0.04	20.25	0.10	266.10	0.10
7.50	0.04	266.05	0.04	20.50	0.10	266.10	0.10
7.75	0.05	266.05	0.05	20.75	0.10	266.10	0.10
8.00	0.05	266.05	0.05	21.00	0.09	266.09	0.09
8.25	0.06	266.06	0.06	21.25	0.09	266.09	0.09
8.50	0.07	266.07	0.07	21.50	0.09	266.09	0.09
8.75	0.08	266.08	0.08	21.75	0.09	266.09	0.09
9.00	0.09	266.09	0.09	22.00	0.09	266.09	0.09
9.25	0.10	266.10	0.10	22.25	0.08	266.09	0.08
9.50	0.12	266.11	0.12	22.50	0.08	266.08	0.08
9.75	0.13	266.12	0.13	22.75	0.08	266.08	0.08
10.00	0.15	266.14	0.15	23.00	0.08	266.08	0.08
10.25	0.17	266.15	0.17	23.25	0.08	266.08	0.08
10.50	0.20	266.17	0.20	23.50	0.07	266.08	0.07
10.75	0.23	266.18	0.23	23.75	0.07	266.07	0.07
11.00	0.27	266.20	0.27	24.00	0.07	266.07	0.07
11.25	0.33	266.23	0.33				
11.50	0.41	266.27	0.41				
11.75	0.74	266.38	0.74				
12.00	1.69	266.63	1.69				
12.25	**2.23**	**266.75**	**2.23**				
12.50	**2.36**	**266.78**	**2.36**				
12.75	1.87	266.67	1.87				
13.00	1.23	266.52	1.23				
13.25	0.93	266.44	0.93				
13.50	0.81	266.41	0.81				
13.75	0.71	266.37	0.71				

APPENDIX D

SHEET SW-1 & SW-2



NOTES

1) EXISTING CONDITIONS, INCLUDING BOUNDARY, TOPOGRAPHY AND UTILITY DATA WAS TAKEN FROM A SET OF PLANS ENTITLED "FARWELL ELEMENTARY SCHOOL", DATED JANUARY 2006. PREPARED BY PINKHAM & GREER CONSULTING ENGINEERS. OBTAINED FROM THE CITY OF LEWISTON.

2) ALL BOOK AND PAGE NUMBERS REFER TO THE ANDROSCOGGIN COUNTY REGISTRY OF DEEDS.

3) OWNER OF RECORD - CITY OF LEWISTON
TAX MAP 147, LOT 5

4) THE PARCEL IS LOCATED IN THE NEIGHBORHOOD CONSERVATION "A" ZONING DISTRICT. MINIMUM BUILDING SETBACKS: FRONT = 20, SIDE & REAR = 30'

5) THE PARCEL IS NOT LOCATED WITHIN A 100-YEAR FLOOD HAZARD AREA AS SHOWN ON THE FEMA, FLOOD INSURANCE RATE MAP PANEL #230001 C0327E, DATED JULY 8, 2013.

NO.	REVISION	DATE
1	CONTROL POINT DATA	2-12-16

SHEET TITLE: **EXISTING CONDITIONS WATERSHED PLAN**

SCALE: AS NOTED
DATE: FEBRUARY 2016
DRAWN BY: KRF
CHECKED BY: WMP

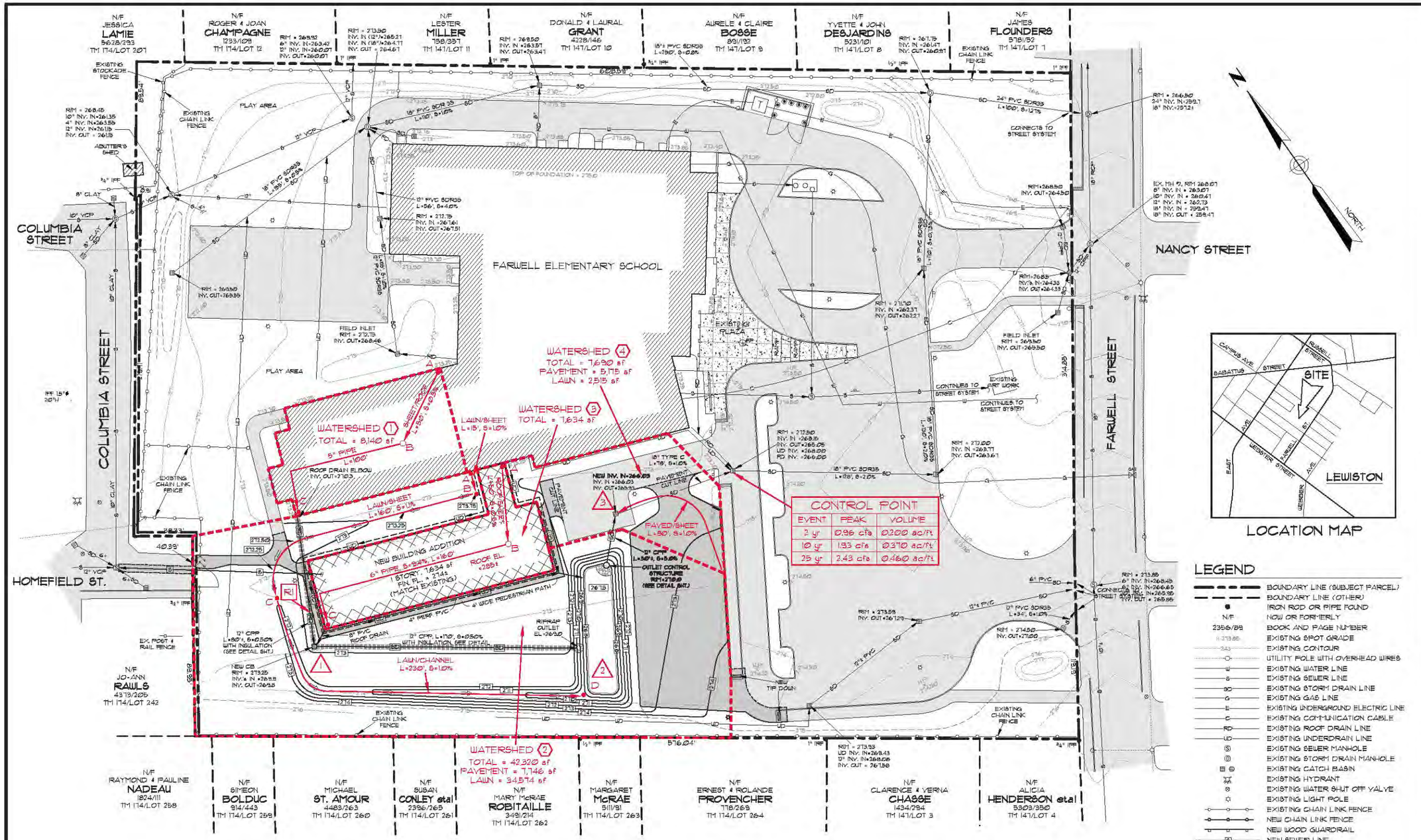
PROJECT: **FARWELL SCHOOL EXPANSION**
84 FARWELL STREET - LEWISTON, MAINE

CLIENT: HEBERT CONSTRUCTION, LLC
9 GOULD ROAD - LEWISTON, MAINE

SUMMIT GEOENGINEERING SERVICES
www.summitgeoeng.com
175 PLEASANT STREET
ROCKLAND, ME 04841
Tel.: (207) 596-7861
145 LISBON ST. - SUITE 601
LEWISTON, ME 04240
Tel.: (207) 576-5369

JOB NO. - 16001

SHEET SW-1



LOCATION MAP

LEGEND

- BOUNDARY LINE (SUBJECT PARCEL)
- BOUNDARY LINE (OTHER)
- IRON ROD OR PIPE FOUND
- N/F — NOW OR FORMERLY
- 2356/88 — BOOK AND PAGE NUMBER
- EXISTING SPOT GRADE
- EXISTING CONTOUR
- EXISTING UTILITY POLE WITH OVERHEAD WIRES
- EXISTING WATER LINE
- EXISTING SEWER LINE
- EXISTING STORM DRAIN LINE
- EXISTING GAS LINE
- EXISTING UNDERGROUND ELECTRIC LINE
- EXISTING COMMUNICATION CABLE
- EXISTING ROOF DRAIN LINE
- EXISTING UNDERDRAIN LINE
- EXISTING SEWER MANHOLE
- EXISTING STORM DRAIN MANHOLE
- EXISTING CATCH BASIN
- EXISTING HYDRANT
- EXISTING WATER SHUT OFF VALVE
- EXISTING LIGHT POLE
- EXISTING CHAIN LINK FENCE
- NEW CHAIN LINK FENCE
- NEW WOOD GUARDRAIL
- NEW SEWER LINE
- NEW STORM DRAIN LINE
- NEW FOUNDATION UNDERDRAIN
- NEW CATCH BASIN
- NEW CONTOUR
- NEW SPOT GRADE
- EXISTING BUILDING
- EXISTING PAVEMENT
- NEW BUILDING
- NEW PAVEMENT
- WATERSHED NUMBER
- POND NUMBER
- REACH NUMBER

NOTES

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TAX MAP 147, LOT 5

4) THE PARCEL IS LOCATED IN THE NEIGHBORHOOD CONSERVATION "A" ZONING DISTRICT.
MINIMUM BUILDING SETBACKS: FRONT = 20', SIDE & REAR = 30'

5) THE PARCEL IS NOT LOCATED WITHIN A 100-YEAR FLOOD HAZARD AREA AS SHOWN ON THE FEMA FLOOD INSURANCE RATE MAP PANEL #230001 C0327E, DATED JULY 8, 2013.

SCALE : 1" = 30'
0 15 30 60 90 120

NO.	REVISION	DATE
1	REDUCE PAVEMENT, WATERSHED 2	2-23-16

SHEET TITLE: **PROPOSED CONDITIONS WATERSHED PLAN**

SCALE: AS NOTED
DATE: FEBRUARY 2016
DRAWN BY: KRF
CHECKED BY: WMP

PROJECT: **FARWELL SCHOOL EXPANSION**
84 FARWELL STREET - LEWISTON, MAINE

CLIENT: HEBERT CONSTRUCTION, LLC
9 GOULD ROAD - LEWISTON, MAINE

SUMMIT GEOENGINEERING SERVICES
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JOB NO. - 16001

SHEET SW-2

SUMMIT
GEOENGINEERING SERVICES

February 16, 2016
SGS #16001

Hebert Construction
9 Gould Road
Lewiston, Maine 04240
Attn: Simon Hebert

Reference: 2005 SGS Geotechnical Report, Farwell School
Farwell Street, Lewiston, Maine

Dear Simon;

The attached report was prepared by Summit Geoengineering Services (SGS) for the Lewiston School Department in 2005. This report was prepared for the construction of the new school.

Although no borings were completed directly within the proposed addition footprint, the overall soil conditions encountered in the 2005 investigation are anticipated to extend into the proposed addition area. Therefore the recommendations contained in the 2005 geotechnical report apply to the new addition.

The exception to this is the Seismic Site Class. In the original report a site classification of E was recommended in accordance with the 2003 IBC. Upon further review and additional analyses and in accordance with the 2012 IBC, we recommend that a Seismic Site Class of D be used for the addition. All other foundation design recommendations in the report apply to the new addition.

If there are any questions, please do not hesitate to contact me.

Sincerely,
Summit Geoengineering Services, Inc.

William M. Peterlein, P.E.
President & Principal Engineer

STATE OF MAINE
WILLIAM M. PETERLEIN 5787
LICENSED PROFESSIONAL ENGINEER

P.O. Box 7216, Lewiston, Maine 04243, (207) 576-3313
173 Pleasant Street, Rockland, Maine 04841, (207) 318-7761

SUMMIT
GEOENGINEERING SERVICES

Geotechnical Report

Proposed School Building
Farwell Elementary School
Lewiston, Maine

Prepared for:

Semple & Drane Architects, P.A.

Prepared by:

Summit Geoengineering Services
Project #7904
June 2005

P.O. Box 7216, Lewiston, Maine 04243, (207) 576-3313
173 Pleasant Street, Rockland, Maine 04841, (207) 318-7761

SUMMIT
GEOENGINEERING SERVICES

June 2, 2005
Summit #7904

Steve Drane
Semple & Drane Architects, P.A.
496 Congress Street
Portland, Maine 04101

Reference: Geotechnical Investigation
Proposed Farwell School, Lewiston, Maine

Dear Steve;

We have completed the geotechnical investigation in connection with the construction of a new Farwell elementary school building replacing the existing elementary school building located in Lewiston, Maine. Our scope of services included performing 9 test borings at the proposed site and preparing this report summarizing our findings and geotechnical recommendations.

The soil at the site generally consists of topsoil or pavement overlying sandy fill overlying silty clay and sandy glacial marine overlying glacial till overlying bedrock. At some of the boring locations, bedrock was encountered ranging in depth of approximately 17.8 to 20.8 feet, elevations 79.2 to 78.7 feet. Groundwater was encountered at all of the boring locations with a depth range of 3 to 7.9 feet, elevation 95.5 to 90.6 feet. A groundwater observation well was installed at boring B-8 to obtain groundwater level measurements over time.

The soils are suitable to support the proposed building using conventional spread footings and slab on grade foundation system. Seasonal high groundwater could become present at or above exterior footing depths depending on proposed site grading.

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,

William M. Peterlein, P.E.
Principal Geotechnical Engineer

STATE OF MAINE
WILLIAM M. PETERLEIN
5787
LICENSED
PROFESSIONAL ENGINEER

P.O. Box 7216, Lewiston, Maine 04243, (207) 576-3313
173 Pleasant Street, Rockland, Maine 04841, (207) 318-7761

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SECTION 2 PROJECT AND SITE DESCRIPTION 4
SECTION 3 EXPLORATION AND LABORATORY RESULTS 5
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3.2 Laboratory Results 5
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SECTION 1
INTRODUCTION

1.1 Introduction

The Lewiston School Department is planning to construct a new elementary school building to replace the existing elementary school building located on Farwell Street in Lewiston, Maine. As part of this planning, Summit Geoengineering Services (Summit) was asked to perform a geotechnical investigation and prepare this report with earthwork and foundation design and construction recommendations. This work was completed in accordance with our proposal dated March 23, 2005

1.2 Scope of Services

Our scope of services for the proposed new Farwell elementary school, in general, was to consist of drilling 9 test borings in the vicinity of the proposed building area, performing analyses, and preparing a geotechnical report. One groundwater observation well was installed within the proposed elevator pit area to obtain groundwater measurements.

SECTION 2
PROJECT AND SITE DESCRIPTION

The project consists of constructing a new Farwell elementary school with an approximate footprint of 41,760 square feet. The new two-story building will be located west of the existing school building, which will be demolished. A new parking lot will be constructed south and east and new playground areas will be constructed north and west of the new school building. The building is proposed to be steel framed using conventional spread footings with slab on grade foundation. An elevator pit will be constructed with a slab at 4 feet below the finish floor.

Existing grades within the building footprint range from 99 feet in elevation at the south and west grading downward to 97 feet in elevation toward the north. It is anticipated that the proposed finish floor elevation will be at or near the existing building finish floor elevation. In general the site is relatively flat and should require little cut or fill. Along the northeastern edge of the site, outside the proposed or existing building footprints, the existing grade drops from 99 to 94 feet with an approximate slope of 2 horizontal to 1 vertical or less.

Currently, an existing pavement area and a small portion of the existing school building toward the east and an existing playground and playfield area toward the west occupy the building footprint. Two exterior modular classrooms are also located within the existing pavement area and proposed building footprint.

SECTION 3
EXPLORATION

3.1 Exploration

The subsurface conditions were explored by drilling 9 borings at the proposed building site. Northern Test Borings drilled borings B-1 through B-9 on April 18, 2005 under contract to Summit. Borings B-1 through B-9 were drilled to depths of 22 feet or refusal ranging from depths of 17.8 to 20.8 feet, elevations 79.1 to 78.7 feet, where encountered using 2-1/4 inch hollow stem augers. Standard 24-inch long split spoon samples were obtained at 5-foot intervals. A groundwater observation well was installed at boring B-8. Summit was on site to coordinate and observe the exploration. The locations of the borings are shown on Figure 1, located in Appendix A. Logs of the borings and a summary table are included in Appendix B.

3.2 Laboratory Testing

Two samples, #7904-1 from boring B-2 at a depth of 0.5 to 2.5 feet, and #7904-2 from boring B-3 at a depth of 0.5 to 2.0 feet, consisting of existing base/subbase soil were submitted for laboratory grain size analysis by ASTM D422. Results from the grain size analysis are included in Appendix C. Results from the grain size analysis are summarized on the following table:

LABORATORY RESULTS SUMMARY TABLE					
Sample Number	**Sample Location**	**%Gravel**	**%Sand**	**%Silt/Clay**	**Soil Type**
#7904-1	B-2, S-1, 0.5' to 2.5'	19.2%	72.2%	8.6%	SW-SM
#7904-2	B-3, S-1, 0.5' to 2.0'	23.5%	67.9%	8.6%	SW-SM

Note: Based on ASTM D422 and Unified Soil Classification System particle distribution.

SECTION 4
SUBSURFACE CONDITIONS

The soils at the site generally consists of the following surface layer: 3 to 4 inches of ***topsoil***, 4 inches of ***woodchips***, or 1.5 to 4 inches of ***pavement*** overlying 12 to 21 inches of ***base/subbase***. Underlying the surface layer is 0.5 to 7.3 feet of ***fill/reworked marine*** (where encountered) overlying 7.5 to 19.2 feet of ***glacial marine*** overlying ***glacial till*** overlying ***bedrock*** encountered at borings B-1, B-3, B-6, and B-7 at a depth range of 17.8 to 20.8 feet, elevations 79.2 to 78.7 feet. Additional information is presented on the subsurface conditions summary table located in Appendix B.

4.1 Soil

The ***topsoil*** encountered at the site generally consists of dark brown silty fine sand with rootlets and was generally damp. The topsoil is classified as a SM soil in accordance with the Unified Soil Classification System (USCS).

The existing ***base/subbase*** encountered at the site generally consists of brown sand with some gravel and little silt. The base/subbase, based on the grain size analysis (samples #7904-1, and #7904-2), is classified as borderline SW-SM, well-graded sand with little silt soil using the USCS and contained 8.6 percent passing the #200 (0.075 mm) sieve. SPT N values for the base/subbase ranged from 8 to 11 blows per foot (bpf) and averaged 9 bpf, which indicate compact soil conditions.

The ***fill/reworked marine*** encountered at the site generally consists of dark brown, brown to slightly olive, and/or gray sand with some to trace silt, gravel, and clay. The fill was generally moist and is classified as SP, SM, and SM-SC soil in accordance with the USCS. SPT N values for the fill/reworked marine ranged from 3 to 14 bpf and averaged 10 bpf, which indicate compact soil conditions.

The ***glacial marine*** encountered at the site generally consists of brown, olive brown, and/or gray with slight mottling sand with some to little silt and clay or silty clay with some to trace sand. The glacial marine ranged from damp to wet and is classified as SP, SM, SM-SC, and CL soil in accordance with the USCS. SPT N values for the glacial till ranged from 4 to 32 blows per foot (bpf) and averaged 15 bpf, which indicate firm/loose to stiff/dense soil conditions.

The ***glacial till*** encountered at the site generally consists of olive brown and/or gray with slight mottling sand with some to little silt, clay, and gravel or silty clay with some to trace sand and gravel. The glacial till ranged from damp to wet and is classified as SM, SM-SC, and CL soil in accordance with the USCS. SPT N values for the glacial till ranged from 12 to 57 blows per foot (bpf) and averaged 34 bpf, which indicate stiff/dense soil conditions.

4.2 Bedrock

Bedrock was encountered at borings B-1, B-3, B-6, and B-7 at a depth range of 17.8 to 20.8 feet, elevations 79.2 to 78.7 feet. The Bedrock Geologic Map by the Maine Department of Conservation indicates that the bedrock within the site location is part of the Patch Mountain Member (Ssp) consisting of thin-bedded calc-silicate granofels, quartz-plagioclase-biotite granofels, and marble. No bedrock samples were recovered for verification. Specific bedrock depths and corresponding elevations are listed on a subsurface conditions summary table, included under Appendix B.

4.3 Groundwater

Groundwater was encountered at all of the boring locations at a depth ranging from 3.0 to 7.9 feet, elevations 90.6 to 95.5 feet. Groundwater depths were determined from moisture changes during SPT split spoon sampling, water measurement taken in open auger holes, and a groundwater monitoring well installed at boring B-8. Detailed groundwater depths and corresponding elevations are listed on a subsurface conditions summary table, included under Appendix B.

SECTION 5
FOUNDATION RECOMMENDATIONS

5.1 General

Based on the anticipated finish floor elevations and associated footing depth, the footings will be constructed on glacial marine, imported or existing fill. With proper preparation, these soils will be suitable to construct the proposed building using conventional spread footing and slab on grade foundations. Seasonal high groundwater could be at or above footing depths at various locations within the building footprint depending on final site grading. The southern corner of the proposed building will be constructed within the footprint of the existing Farwell school building and pavement areas requiring removal of construction debris prior to construction of footings and slabs.

5.2 Allowable Bearing Pressures

The footings for the proposed Farwell school building can be proportioned using an allowable bearing pressure of 3,000 psf. The associated immediate settlement is estimated to be 1 inches or less. Differential settlement is estimated to be minimal due to a relatively uniform subgrade conditions. This allowable bearing pressure and associated settlement is based on the following assumptions:

- All subgrade soil beneath the footings is proof-rolled. Proof rolling should consist of a minimum of three passes in a north-south direction and then three passes in an east-west direction using a large (5 ton at drum static weight) vibratory roller.

- Subgrade softening due to hydrostatic pumping from vibratory proof rolling on subgrade soils or excess hydrostatic pressure could occur if wet soil conditions exist or groundwater is at or above subgrade elevations, particularly for footing excavations. To reduce the effects of disturbance from hydrostatic pumping, proof rolling may be performed using a static mode. Footings trenches should be dewatered prior to proof-rolling or constructing the footings. Soft soil in areas that become disturbed within the building footprint should be removed and replaced with crushed stone or Structural Backfill placed directly on the subgrade soil or on geotextile placed on the subgrade soil. Geotextile beneath footings, if used, should be non-woven, and have a minimum weight of 10oz per square yard.

- All foundation and construction debris from the existing building and pavement areas are removed from within the proposed building footprints.

5.3 Frost Protection

Based on the required frost protection depth, the frost walls for the building should be constructed at a minimum depth of 4.5 feet. This frost penetration depth is based on a design air-freezing index of 1,400 degree days for the Lewiston area. We recommend that the Foundation Backfill have a maximum particle size limited to 6 inches and meet the following gradation specifications passing the 3-inch sieve:

FOUNDATION BACKFILL	
Sieve Size	**Percent finer**
3 inch	100
No. 40	0 to 70
No. 200	0 to 5

The Foundation Backfill should be compacted to a minimum of 95 percent of its maximum dry density, determined in accordance with ASTM D1557.

5.4 Building Slab

We recommend all slabs be constructed on a minimum 12-inch thick layer of Structural Backfill soil. The Structural Backfill should have a maximum particle size limited to 6 inches and meet the following gradation specifications passing the 3-inch sieve:

STRUCTURAL BACKFILL	
Sieve Size	**Percent finer**
3 inch	100
1/4 inch	0 to 70
No. 200	0 to 10

Reference: MDOT Specification 703.20, Gravel Borrow

The Structural Backfill should be placed in 6 to 12-inch lifts and should be compacted to 95 percent of its maximum dry density determined in accordance with ASTM D1557.

Backfill required beneath the Structural Fill should consist of Granular Borrow (MDOT 703.19). The portion of Granular Borrow soil passing the 3-inch sieve should meet the following:

GRANULAR BORROW	
Sieve Size	**Percent finer**
3"	100
No. 40	0 to 70
No. 200	0 to 20

Reference: MDOT Specification 703.19, Granular Borrow

The maximum particle size should be limited to 6 inches. Granular Borrow should be placed in a maximum of 12-inch lifts, and should be compacted to 95 percent, in accordance with ASTM D1557. Glacial marine soils and existing fill should be proof rolled prior to placing Granular Borrow

For the conditions described above, slabs can be designed using a subgrade modulus of 175 pci.

We recommend that a vapor barrier be placed directly beneath the slab, in lieu of being separated from the slab by a granular layer. This will reduce the potential for moisture to collect and be trapped in the granular layer rain, wet-curing, wet-grinding or cutting. In the event that the granular layer can be kept dry, it can be placed between the vapor barrier and the slab. Sand should not be used for this application, due to the difficulty in obtaining compaction. The vapor barrier should be durable enough to withstand foot traffic and care should be taken to avoid puncturing the barrier. In order to minimize the curling of the slabs, we recommend that the surface be wet cured (using burlap for example) for a minimum period of 7 days after placement.

5.5 Groundwater Control

Seasonal high groundwater may be present within footing depths depending on final site grading. Based on this, we recommend installation of perimeter underdrains at the base of footings. It is also generally good practice to install underdrains to account for unobserved conditions or future changes in local hydrogeology. Underdrains should consist of 4 inch rigid perforated PVC surrounded by 6 inches of ¾ inch crushed stone wrapped in geotextile filter fabric. We recommend that the ground surface slope away from the building to prevent water runoff from infiltration the foundation backfill.

5.6 Radon Potential

Federal EPA mapping data indicate that radon concentrations are considered high in the Lewiston area. The EPA recommends taking remedial measures if the radon level in a school building is 4 pCi/L or higher. Information from the Maine Radiation Control Program indicated that for Androscoggin County, the potential for radon levels 4 pCi/L or higher is 47% for basements, 19% for first floors, and 36% for both basement and first floors.

The Maine Bedrock Geology Map indicates that the site is underlain by thin-bedded calc-silicate granofels, quartz-plagioclase-biotite granofels, and marble, which are average to less likely than other bedrock types to be a source of radon. Bedrock encountered at the site was present at a depth range of 17.8 to 20.8 feet overlain by moderate to low permeable glacial till soil. Groundwater levels at the site ranged from a depth of 3 to 7.9 feet.

Based on these conditions, the potential for radon exceeding the 4 pCi/L limit to penetrate the proposed school building is moderate. To further evaluate radon potential for the proposed school building, we recommend that tests be performed within the existing school building to further evaluate site radon levels.

5.7 Seismic Design

The soils at the site are categorized as Site Classification E in accordance with the 2003 International Building Code. In accordance with the 1996 BOCA Code, the soil profile type is S_1, with a site coefficient of 1.0.

SECTION 6
PAVEMENT SECTION RECOMMENDATIONS

The subgrade soils beneath new pavement areas will consist of imported granular fill, existing fill, or glacial marine soil. The mean annual freezing index for the Lewiston area is estimated to be 1,000 degree days. The mean annual frost penetration depth is estimated to be 42 inches. Based on this, we recommend a minimum total pavement section thickness of 50% of the mean annual frost depth or 21 inches for parking areas and the access drive. We further recommend that the pavement sections consist of the following materials:

MATERIAL	THICKNESS (in)	SPECIFICATION
Asphalt Surface Coarse	1	MDOT 703.09 Grading D, (or Superpave 9.5mm)
Asphalt Binder Coarse	2	MDOT 703.09 Grading B, (or Superpave 19mm)
Base Gravel	3	MDOT 703.06 Type A
Subbase Gravel	15	MDOT 703.06 Type D

The material specifications are referenced to the 1995 Maine Department of Transportation Standard Specifications for Highways and Bridges and Maine Department of Transportation Standard Specifications, Revision of 2002.

All base and subbase soil should be placed in 9 to 12 inch lifts and be compacted to a minimum of 95 percent of its maximum dry density, determined in accordance with ASTM D1557, Modified Proctor Density. Backfill beneath the subbase soil, if required, should consist of Granular Borrow. Any debris from the existing school that may be present beneath the pavement areas after demolition be removed to a depth of at least 24 inches below the finish pavement surface.

We recommend that all existing fill and/or glacial marine soils be proof-rolled prior to placing subbase soil. Proof rolling should consist of a minimum of three passes in a north-south direction and then three passes in an east-west direction using a large (10 ton operating weight) vibratory roller.

SECTION 7
EARTHWORK CONSIDERATIONS

The sandy glacical marine and existing fill may meet the specifications for Granular Borrow (MDOT 703.19) but will likely contain too high a fines content to meet Structual Backfill, Foundation Backfill, MDOT type A base, or MDOT type D subbase gravel.

Based on our initial grain size analysis, the existing base/subbase gravel observed beneath the existing pavement sections meets the specifications for Granular Borrow but does not meet specifications for Structural Backfill, Foundation Backfill, MDOT Type A Base, or MDOT Type D Subbase gravel. The samples were limited to only particle sizes obtained during SPT split spoon sampling. A more representative sample should be obtained to verify conformance with the specification prior to considering its use.

All existing fill and glacial marine soil within the building area should be proof rolled prior to construction of footings or placing Granular Borrow, and/or Structural Backfill. Silty clay glacial till areas that may become disturbed if the soil is wet from prolonged rainy periods or from seasonal high groundwater and should be over excavated and replaced with a 12-inch thick layer of crushed stone or structural fill placed on the native soil or on geotextile placed on the native soil.

Excavations below 4 feet should be sloped no greater than 1.5H to 1V. These slopes are based on the current OSHA Excavation Guidelines.

Depending on site grading and the presence of seasonal high groundwater, dewatering of footing trenches may be required at the site.

Due to its relatively low permeability, surface water flowing into excavations in the silty clay glacial marine deposits will tend to pond and destabilize the base of the excavations. Surface water should be diverted away from excavations. The glacial marine soils are susceptible to erosion from surface water. This erosion potential should be considered in erosion and sedimentation control designs.

All foundation and construction debris during demolition of the existing building and pavement areas should be removed from within all of the new building footprints. Any former foundation debris that may be present beneath the pavement section should have a minimum of 24 inches of soil cover.

The following recommendations apply to earthwork construction during freezing conditions. In general, these recommendations are intended to minimize the penetration of frost into soil beneath foundations and slabs. The existing glacial marine soils are moderately to highly reactive to frost and should be protected from freezing.

1. Footing excavations should be protected from frost overnight by the use of insulated blankets or by tenting and heating.

2. Footings should not be cast on frozen soil. The frozen zone should be removed and replaced as specified with the appropriate material.

3. Fill areas should be sealed with a 6 or 12 inch loose layer of soil (or otherwise insulated) at the end of the day to protect the compacted soil from freezing. The frozen layers should be removed in the morning prior to placing and compacting the next lift.

4. Due to the difficulty of thawing previously frozen soils (even within a heated building shell), we recommend that the building slab subgrade soil be protected from frost penetration where practical, especially if slabs are planned to be placed during periods of freezing.

5. Frozen foundation and slab subgrade soils will become soft during thaw in the spring. We recommend that heavy traffic be avoided during thawing. Once the soil thaws and the accumulated water in the soil has drained, the subgrade should return to a firm condition. If placement of the footings or slabs occurs during thaw, we recommend that soft areas be removed and replaced as specified with the appropriate material. An alternative may be to use a geotextile fabric and crushed stone to stabilize soft areas.

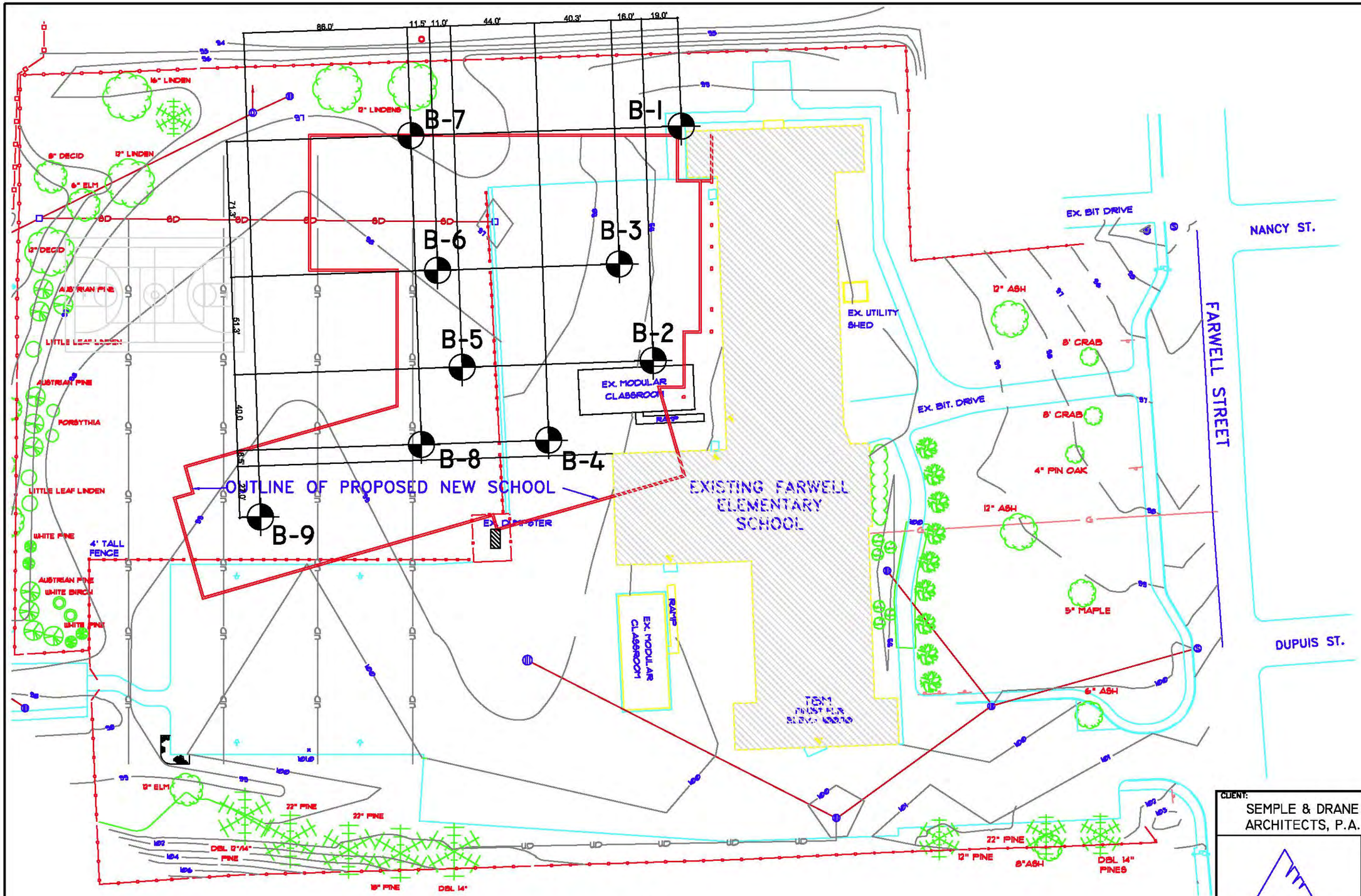
We recommend that all winter concrete construction be performed in accordance with ACI 306, Cold Weather Concreting.

We recommend that a qualified geotechnical consultant be retained to monitor and test soil materials used during construction. Summit would welcome the opportunity to provide this service.

SECTION 8
CLOSURE

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

APPENDIX A
LOCATION PLAN



KEY

⊕ BORING

REFERENCE PLANS:

SITEPLAN PLAN BY SEMPLE & DRANE ARCHITECTS, P.A.

CLIENT: SEMPLE & DRANE ARCHITECTS, P.A.	PROJECT: FARWELL SCHOOL LEWISTON, MAINE
SUMMIT GEOENGINEERING SERVICES 640 Main Street Lewiston, Maine 04240	TITLE: BORING LOCATION PLAN
DRAWN: CWC	SCALE: 1" = 50'
DESIGN: ---	DATE: 6/7/05
APPROVED: WMP	FIGURE: 1
PROJECT NO.: 7904	FILE NO.:

SUMMIT
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EXPLORATION REPORT COVER SHEET

The exploration report has been prepared by the geotechnical engineer from both field and laboratory data. Differences between field logs and exploration reports may exist.

It is common practice in the soil and foundation engineering profession that field logs and laboratory data sheets not be included in engineering reports, because they do no represent the engineer's final opinion as to appropriate descriptions for conditions encountered in the exploration and testing work. The field logs will be retained in our office for review. Results of laboratory tests are generally shown on the borings logs or are described in the text of the report as appropriate.

Drilling and Sampling Symbols:

SS = Split Spoon
ST = Shelby Tube – 2" OD, disturbed
UT = Shelby Tube – 3" OD, undisturbed
HSA = Hollow Stem Auger
CS = Casing – size as noted
Sv = Vane Shear
PP = Pocket Penetrometer
RX = Rock Core – size as noted

Hyd = Hydraulic advance of probes
WOH = Weight of Hammer
WOR = Weight of Rod
GS = Grain Size Data
PI = Plasticity Index
LL = Liquid Limit
w = Natural Water Content
USCS = unified Soil Classification System

Water Level Measurements:

Water levels indicated on the boring logs are the levels measured in the boring at the times indicated. In pervious soils, the indicated elevations are considered reliable groundwater levels. In impervious soils, the accurate determination of groundwater elevations may not be possible, even after several days of observations; additional evidence of groundwater elevations via observation or monitoring wells must be sought.

Gradation Description and Terminology:

Boulders:	Over 8 inches
Cobbles:	8 inches to 3 inches
Gravel:	3 inches to No.4 sieve
Sand:	No.4 to No. 200 sieve
Silt:	No. 200 sieve to 0.005 mm
Clay:	less than 0.005 mm

Trace:	Less than 5%
Little:	5% to 15%
Some:	15% to 25%
Silty, Sandy, etc.:	Greater than 25%

APPENDIX B
BORING LOGS

SUMMIT
GEOENGINEERING SERVICES
640 Main Street
Lewiston, Maine 04240

SOIL BORING LOG

Project: Farwell School Expansion
Semple & Drane Architects
Lewiston, Maine

Boring #: **B-1**
Project #: 7904
Sheet: 1 of 1
Prep by: CWC

Drilling Co:	Northern Test Borings	Ground Elevation:	Approximately 99.5 ft.
Foreman:	Mike Nadeau	Reference:	Estimated from Site Plan by Semple & Drane Architects
Summit:	Craig Coolidge, E.I.T.	Date started:	4/18/2005 Date Comp: 4/18/2005

DRILLING METHOD	SAMPLER
Vehicle: ATV	Type: 24" SS
Model: Diedrich D-50	Hammer: 140 LB
Method: 2-1/4" HSA	Fall: 30"

GROUND WATER DEPTH

Date	Depth	Elevation	Comments
4/18/2005	5.4 ft.	94.1 ft.	Water measured in open hole

Depth (ft.)	SAMPLE DATA No.	Pen/Rec (in.)	Depth (ft)	Blows	ENGINEERING DESCRIPTION	GEOLOGIC DESCRIPTION
	S-1	24/16	0 - 2	1	Dark brown Silty fine SAND, damp, SM	TOPSOIL
1				1	Loose, dark brown to brown SAND, some Silt, damp, SM	3" FILL/REWORKED
				6		
2				8		
3						
4						
5						
	S-2	24/10	5 - 7	2	Very loose, dark brown to brown SAND, some Silt, little Clay, damp to moist, SM-SC	Water at 5.4'
6				1		
				2		
7				5		
						Caved at 7.4'
8						7.5' GLACIAL MARINE
9						
10						
	S-3	24/19	10 - 12	6	Compact, brown SAND, little to trace Silt, wet, SP	
11				9		
				12		
12				12		
13						
14						
15						
	S-4	24/14	15 - 17	6	Compact, brown SAND, some Silt, some to little Clay, wet, SM-SC	
16				7		
				11		
17				11		
18						
19						
					Denser at 19'	19' GLACIAL TILL
20						
	S-5	9/9	20 - 20.8	34	Dense, gray SAND, some Silty and Clay, trace Gravel, damp, SM	
21				50/3"		
					End at 20.8', bedrock refusal	20.8' BEDROCK
22						

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Lewiston, Maine 04240

SOIL BORING LOG

Project: Farwell School Expansion
Semple & Drane Architects
Lewiston, Maine

Boring #: **B-2**
Project #: 7904
Sheet: 1 of 1
Prep by: CWC

Drilling Co: Northern Test Borings
Foreman: Mike Nadeau
Summit: Craig Coolidge, E.I.T.

Ground Elevation: Approximately 99 ft.
Reference: Estimated from Site Plan by Semple & Drane Architects
Date started: 4/18/2005 Date Comp: 4/18/2005

DRILLING METHOD	SAMPLER
Vehicle: ATV	Type: 24" SS
Model: Diedrich D-50	Hammer: 140 LB
Method: 2-1/4" HSA	Fall: 30"

GROUND WATER DEPTH

Date	Depth	Elevation	Comments
4/18/2005	3.5 ft.	95.5 ft.	Observed moisture change

Depth (ft.)	SAMPLE DATA No.	Pen/Rec (in.)	Depth (ft)	Blows	ENGINEERING DESCRIPTION	GEOLOGIC DESCRIPTION
					Bituminous Pavement	PAVEMENT
1	S-1	24/10	0.5 - 2.5	4	Compact, brown SAND, some Gravel, little	1.5"
				7	Silt, damp, SW-SP	BASE/ SUBBASE
2				5	Compact, brown and slightly olive SAND,	13.5"
				5	some to little Silt, little Clay, damp, SM	FILL/REWORKED
3						
						Caved at 3.5', dry
4						
5						
	S-2	24/8	5 - 7	1	Loose, brown and slightly olive SAND,	
6				2	some to little Silt, little Clay, moist, SM	
				2		
7				2		
8						
9						8' GLACIAL MARINE
10						
	S-3	24/24	10 - 12	4	Stiff, olive and slightly mottled Silty CLAY,	
11				8	little fine Sand, damp, CL	
				11		
12				14		
13						
14						
15						
	S-4	24/24	15 - 17	3	Loose, brown SAND, little to trace Silt, wet,	
16				4	SP	
				4		
17				8		
18						
19						
20						19.5'
	S-5	24/24	20 - 22	8	Dense, gray SAND, some Silt, little Clay,	GLACIAL TILL
21				21	trace Gravel, damp, SM-SC	
				24		
22				30		
					End at 22', no refusal encountered	22'

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SOIL BORING LOG

Project: Farwell School Expansion
Semple & Drane Architects
Lewiston, Maine

Boring #: **B-3**
Project #: 7904
Sheet: 1 of 1
Prep by: CWC

Drilling Co: Northern Test Borings
Foreman: Mike Nadeau
Summit: Craig Coolidge, E.I.T.

Ground Elevation: Approximately 98.5 ft.
Reference: Estimated from Site Plan by Semple & Drane Architects
Date started: 4/18/2005 Date Comp: 4/18/2005

DRILLING METHOD	SAMPLER
Vehicle: ATV	Type: 24" SS
Model: Diedrich D-50	Hammer: 140 LB
Method: 2-1/4" HSA	Fall: 30"

GROUND WATER DEPTH

Date	Depth	Elevation	Comments
4/18/2005	3 ft.	96 ft.	Water measured in open hole

Depth (ft.)	SAMPLE DATA No.	Pen/Rec (in.)	Depth (ft)	Blows	ENGINEERING DESCRIPTION	GEOLOGIC DESCRIPTION
					Bituminous Pavement	PAVEMENT
1	S-1	18/10	0.5 - 2	4	Compact, brown SAND, some Gravel, little	4"
				4	Silt, damp, SW-SP	BASE/SUBBASE
2				6	Occasional cobbles and small boulders	17"
						FILL/REWORKED
3						
						Water at 3'
4						Caved at 3.8'
5						
	S-2	10/5	5 - 5.8	16	Dense, gray SAND, little Silt, trace Clay,	
6				50/4"	moist to wet, SM	
					Cobble at 5.8'	6'
7						GLACIAL MARINE
8						
9						
10						
	S-3	24/24	10 - 12	8	Stiff, olive gray and mottled Silty CLAY,	
11				10	trace fine Sand, damp, CL	
				15		
12				20		
13						
14						13.5'
						GLACIAL TILL
15						
	S-4	24/8	15 - 17	28	Dense, olive brown SAND, some Silt and	
16				21	Clay, trace Gravel, moist, SM-SC	
				21		
17				25		
18						
19						
20					End at 19.4', bedrock refusal	19.4'
						BEDROCK
21						
22						

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640 Main Street
Lewiston, Maine 04240

SOIL BORING LOG

Boring #: **B-4**

Project: Farwell School Expansion
Semple & Drane Architects
Lewiston, Maine

Project #: 7904
Sheet: 1 of 1
Prep by: CWC

Drilling Co:	Northern Test Borings	Ground Elevation:	Approximately 98.5 ft.
Foreman:	Mike Nadeau	Reference:	Estimated from Site Plan by Semple & Drane Architects
Summit:	Craig Coolidge, E.I.T.	Date started:	4/18/2005 Date Comp: 4/18/2005

DRILLING METHOD	SAMPLER
Vehicle: ATV	Type: 24" SS
Model: Diedrich D-50	Hammer: 140 LB
Method: 2-1/4" HSA	Fall: 30"

GROUND WATER DEPTH

Date	Depth	Elevation	Comments
4/18/2005	5 ft.	93.5 ft.	Observed moisture change

Depth (ft.)	SAMPLE DATA No.	Pen/Rec (in.)	Depth (ft)	Blows	ENGINEERING DESCRIPTION	GEOLOGIC DESCRIPTION
					Bituminous Pavement	PAVEMENT
1	S-1	24/8	0.5- 2.5	3	Compact, brown SAND, some Gravel, little Silt, damp, SW-SP, mixing with olive Silty Clay	3" BASE/SUBBASE
				4		
2				4		Caved at 2', no water
				3	Firm, olive Silty CLAY, damp, CL	2' GLACIAL MARINE
3						
4						
5						
	S-2	24/18	5 - 7	2	Firm, gray Silty CLAY, little fine Sand, trace organics, damp to moist, CL	PP = 5,000 to 3,000 psf
6				3		
				3		
7				5		
8						
9						
10						
	S-3	24/24	10 - 12	2	Stiff, olive brown to gray and slightly mottled Silty CLAY, damp, CL	PP = 8,000 to 7,000 psf
11				6		
				11		
12				14		
13						
14					Cobble at 13.5'	13.5' GLACIAL TILL
15						
	S-4	24/14	15 - 17	3	Compact, light gray SAND, some Silt, little Clay, trace Gravel, moist, SC-SM	
16				4		
				8		
17				15		
18						
19						
20						
	S-5	24/2	20 - 22	9	Same as above	
21				11		
				17		
22				24		
					End at 22', no refusal encountered	22'

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SOIL BORING LOG

Project: Farwell School Expansion
Semple & Drane Architects
Lewiston, Maine

Boring #: **B-5**
Project #: 7904
Sheet: 1 of 1
Prep by: CWC

Drilling Co:	Northern Test Borings	Ground Elevation:	Approximately 98.5 ft.
Foreman:	Mike Nadeau	Reference:	Estimated from Site Plan by Semple & Drane Architects
Summit:	Craig Coolidge, E.I.T.	Date started:	4/18/2005 Date Comp: 4/18/2005

DRILLING METHOD	SAMPLER
Vehicle: ATV	Type: 24" SS
Model: Diedrich D-50	Hammer: 140 LB
Method: 2-1/4" HSA	Fall: 30"

GROUND WATER DEPTH

Date	Depth	Elevation	Comments
4/18/2005	7.9'	90.6'	Water measured in open hole

Depth (ft.)	SAMPLE DATA No.	Pen/Rec (in.)	Depth (ft)	Blows	ENGINEERING DESCRIPTION	GEOLOGIC DESCRIPTION
	S-1	24/4	0 - 2	5	Wood chips	WOODCHIPS
1				4	Compact, gray SAND, some Gravel, Silt and little Clay, damp, SM	4" FILL/REWORKED
				9		
2				12		
3						2.5' GLACIAL MARINE
4						
5						
	S-2	24/19	5 - 7	1	Soft, dark gray to gray Silty CLAY, little fine Sand, trace organics, small wood pieces, moist, CL	PP = 4,000 psf
6				2		
				2		
7				2		
8						Water at 7.9'
9						
10						
	S-3	24/21	10 - 12	3	Stiff, olive gray Silty CLAY, trace fine Sand, damp, CL	
11				6		PP = 4,000 psf
				15	Compact, brown and slightly mottled SAND, some Silt, little Clay, trace Gravel, moist, SM Cobbles at 12'-13'	11.2'
12				15		
13						
14						
15						
	S-4	24/18	15 - 17	5	Compact, brown and slightly mottled SAND, little Silt and Gravel, wet, SM-SP	
16				7		
				10	Compact, gray SAND, little Silt, trace Gravels and Clay, damp, SM	16' GLACIAL TILL
17				18		
18						
19						
					Denser at 19'	
20						
	S-5	24/24	20 - 22	19	Very dense, gray SAND, little Silt, trace Gravel, damp, SM	
21				27		
				30		
22				36		
					End at 22', no refusal encountered	22'

SUMMIT
GEOENGINEERING SERVICES
640 Main Street
Lewiston, Maine 04240

SOIL BORING LOG

Project: Farwell School Expansion
Semple & Drane Architects
Lewiston, Maine

Boring #: **B-6**
Project #: 7904
Sheet: 1 of 1
Prep by: CWC

Drilling Co: Northern Test Borings
Foreman: Mike Nadeau
Summit: Craig Coolidge, E.I.T.

Ground Elevation: Approximately 98 ft.
Reference: Estimated from Site Plan by Semple & Drane Architects
Date started: 4/18/2005 Date Comp: 4/18/2005

DRILLING METHOD	SAMPLER
Vehicle: ATV	Type: 24" SS
Model: Diedrich D-50	Hammer: 140 LB
Method: 2-1/4" HSA	Fall: 30"

GROUND WATER DEPTH

Date	Depth	Elevation	Comments
4/18/2005	5 ft.	93 ft.	Observed moisture change

Depth (ft.)	SAMPLE DATA No.	Pen/Rec (in.)	Depth (ft)	Blows	ENGINEERING DESCRIPTION	GEOLOGIC DESCRIPTION
	S-1	24/8	0 -21	5	Wood Chips	WOODCHIPS
1				4	Compact, gray SAND some Silt, little Gravel, trace Clay, damp, SM	4" FILL/REWORKED
				10		
2				10		
3						2.5' GLACIAL MARINE
4						
5						
	S-2	24/20	5 - 7	5	Stiff, gray Silty CLAY with little Sand, trace black organics, moist, CL	Caved at 5', dry
6				6		
				3		
7				3		
8						
9						
10						
	S-3	24/22	10 -12	6	Stiff, olive and slightly mottling Silty CLAY, damp, CL	PP = 8,000 psf
11				6		
				12		
12				15		
13						
					Cobbles at 13'	13' GLACIAL TILL
14						
15						
	S-4	24/16	15 - 17	10	Dense, gray and slightly mottled SAND, some Silt, little Gravel and Clay, moist, SM	
16				12		
				18		
17				21		
18						
19						
					End at 19.3', bedrock refusal	19.3' BEDROCK
20						
21						
22						

SUMMIT
GEOENGINEERING SERVICES
640 Main Street
Lewiston, Maine 04240

SOIL BORING LOG

Project:	Farwell School Expansion Semple & Drane Architects Lewiston, Maine
Boring #:	**B-7**
Project #:	7904
Sheet:	1 of 1
Prep by:	CWC

Drilling Co:	Northern Test Borings	Ground Elevation:	Approximately 97 ft.
Foreman:	Mike Nadeau	Reference:	Estimated from Site Plan by Semple & Drane Architects
Summit:	Craig Coolidge, E.I.T.	Date started:	4/18/2005 Date Comp: 4/18/2005

DRILLING METHOD	SAMPLER
Vehicle: ATV	Type: 24" SS
Model: Diedrich D-50	Hammer: 140 LB
Method: 2-1/4" HSA	Fall: 30"

GROUND WATER DEPTH

Date	Depth	Elevation	Comments
4/18/2005	5 ft.	92 ft.	Observed moisture change

Depth (ft.)	SAMPLE DATA No.	Pen/Rec (in.)	Depth (ft)	Blows	ENGINEERING DESCRIPTION	GEOLOGIC DESCRIPTION
	S-1	24/18	0 - 2	2	Dark Brown, Silty fine SAND, damp, SM	TOPSOIL
1				4	Compact, brown SAND, little Silt, damp, SP	4" FILL/REOWRKED
				8		
2				12		
3						2.5' GLACIAL MARINE
4						
5						
	S-2	24/10	5 - 7	2	Compact, dark gray SAND, some Silt, some to little Clay, trace organics, moist, SM	Caved at 5', dry
6				2		
				8		
7				3		
8						
9						
10						
	S-3	24/20	10 - 12	4	Stiff, olive gray and slighty mottled Silty CLAY, trace fine Sand, damp, CL	PP = 8,000 to 7,000 psf
11				6		
				8		
12				12		
					Gray fine SAND at spoon tip, moist	12' GLACIAL TILL
13						
14						
					Cobbles at 14'	
15						
	S-4	24/23	15 - 17	10	Dense, gray SAND with some Silt and Clay, trace Gravel, moist, SM-SC	
16				14		
				16		
17				26		
18					End at 17.8', bedrock refusal	17.8' BEDROCK
19						
20						
21						
22						

SUMMIT
GEOENGINEERING SERVICES
640 Main Street
Lewiston, Maine 04240

SOIL BORING LOG

Boring #: **B-8**

Project: Farwell School Expansion
Semple & Drane Architects
Lewiston, Maine

Project #: 7904
Sheet: 1 of 1
Prep by: CWC

Drilling Co:	Northern Test Borings	Ground Elevation:	Approximately 98.5 ft.
Foreman:	Mike Nadeau	Reference:	Estimated from Site Plan by Semple & Drane Architects
Summit:	Craig Coolidge, E.I.T.	Date started:	4/18/2005 Date Comp: 4/18/2005

DRILLING METHOD	SAMPLER
Vehicle: ATV	Type: 24" SS
Model: Diedrich D-50	Hammer: 140 LB
Method: 2-1/4" HSA	Fall: 30"

GROUND WATER DEPTH

Date	Depth	Elevation	Comments
5/13/2005	6.9 ft.	91.6 ft.	Well measurement
5/31/2005	3.0 ft.	95.5 ft.	Well measurement

Depth (ft.)	SAMPLE DATA No.	Pen/Rec (in.)	Depth (ft)	Blows	ENGINEERING DESCRIPTION	GEOLOGIC DESCRIPTION
	S-1	24/15	0 - 2	3	Dark brown, Silty fine SAND, damp, SM	TOPSOIL
1				5	Compact, brown SAND, trace Silt, damp, SP	4" FILL/REWORKED
				9		
2				12		
					Stiff, olive brown Silty CLAY, little fine Sand, damp, CL	2' GLACIAL MARINE
3						
4						
5						
	S-2	24/19	5 - 7	3	Firm, olive gray Silty CLAY, little fine Sand, trace black organics, moist, CL	PP = 3,000 to 2,000psf
6				1		
				3		
7				7		
8						
9						
10						
	S-3	24/21	10 - 12	6	Stiff, olive brown and gray and slightly mottled Silty CLAY, trace fine Sand, damp, CL	PP = 7,000 to 6,000 psf Caved at 11', trace water
11				9		
				11		
12				20		
					Gray Silty fine SAND seam, moist, SM	12'
13						12.2' GLACIAL TILL
14						
					Occasional Cobbles at 14' to 19'	1" diameter well screened from 13.5 to 18.5'
15						
	S-4	24/22	25 - 17	9	Stiff, olive gray to gray Silty CLAY, little Sand, trace Gravel, damp, CL	Date / Depth
16				9		4/18/2005 15.4*
				11		5/13/2005 6.9
17				18		5/31/2005 3.0
18						*Taken before recharge
19						
20						
	S-5	24/24	20 - 22	19	Hard, gray Silty CLAY with some Sand, moist, CL	
21				26		
				31		
22				44		
					End at 22', no refusal encountered	22'

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SOIL BORING LOG

Project: Farwell School Expansion
Semple & Drane Architects
Lewiston, Maine

Boring #: **B-9**
Project #: 7904
Sheet: 1 of 1
Prep by: CWC

Drilling Co: Northern Test Borings
Foreman: Mike Nadeau
Summit: Craig Coolidge, E.I.T.

Ground Elevation: Approximately 99.5 ft.
Reference: Estimated from Site Plan by Semple & Drane Architects
Date started: 4/18/2005 Date Comp: 4/18/2005

DRILLING METHOD	SAMPLER
Vehicle: ATV	Type: 24" SS
Model: Diedrich D-50	Hammer: 140 LB
Method: 2-1/4" HSA	Fall: 30"

GROUND WATER DEPTH

Date	Depth	Elevation	Comments
4/18/2005	7.9 ft.	91.6 ft.	Water measured in open hole

Depth (ft.)	SAMPLE DATA No.	Pen/Rec (in.)	Depth (ft)	Blows	ENGINEERING DESCRIPTION	GEOLOGIC DESCRIPTION
	S-1	27/17	0 - 2	4	Dark brown, Silty fine SAND, damp, SM	TOPSOIL
1				5	Compact, brown SAND, trace Silt, damp, SP	3" FILL
				6	Stiff, olive gray and mottled Silty CLAY,	9"
2				8	little fine Sand, damp, CL	GLACIAL MARINE
3						
4						
5						
	S-2	24/24	5 - 7	5	Stiff, olive brown and gray and slightly	
6				10	mottled, Silty CLAY, some Sand, damp, CL	
				12		
7				18		
8						Water at 7.9'
9						
10						
	S-3	24/5	10 - 12	10	Dense, olive SAND, some Silt and Clay,	10'
11				14	wet, SM-SC	
				18		
12				25		
13					Occasional small cobbles	
14						
15						
	S-4	24/24	15 - 17	3	Loose, brown and gray fine SAND, some	
16				4	Silt, little Clay, wet, SM-SC	
				3		
17				3		
18						
19						
					Denser at 19'	19'
20						GLACIAL TILL
	S-5	24/8	20 - 22	12	Hard, gray Silty CLAY, some Sand, trace	
21				16	Gravel, moist, CL	
				19		
22				25		
					End at 22', no refusal encountered	22'

APPENDIX C
LABORATORY TESTS

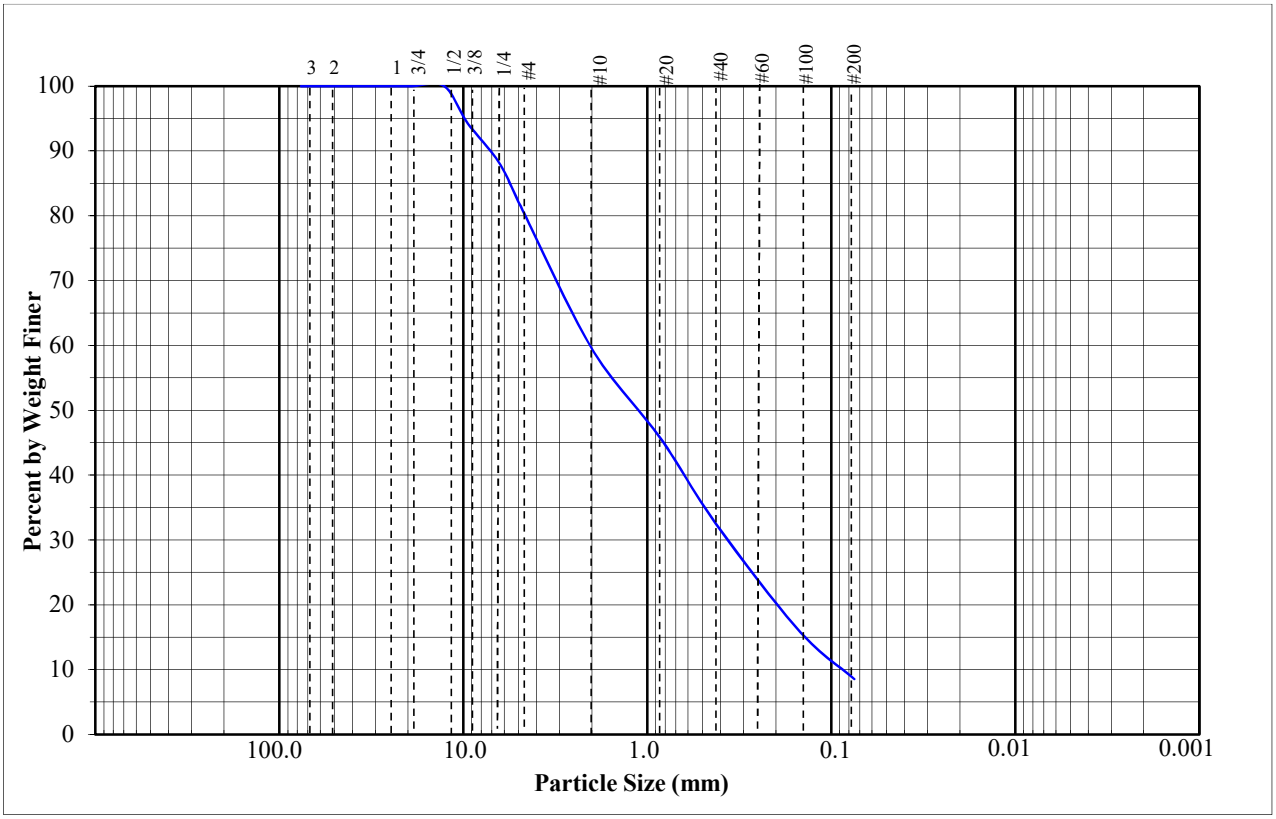
SUMMIT GEOENGINEERING SERVICES
P.O. Box 4698 Augusta, Maine 04330-4698
Phone:(207) 621-8334 Fax:(207) 626-9094

GRAIN SIZE ANALYSIS - ASTM D422

PROJECT NAME:	Farwell School	PROJ #:	7904
CLIENT:	Semple & Drane Architects, P.A.	SAMPLE:	7904-1
SOIL DESCRIP:	Sand, some Gravel, SW-SM	DATE:	6/6/05
INTENDED USE:	Existing Base/Subbase	SOURCE:	B-2, S-1, 0.5' to 2.5'
		TECH:	Craig Coolidge E.I.T.

DATA

PARTICLE SIZE mm		% BY WT FINER
76.20	(3 in)	100.0
50.80	(2 in)	100.0
38.10	(1-1/2 in)	100.0
25.40	(1 in)	100.0
19.05	(3/4 in)	100.0
12.70	(1/2 in)	100.0
9.53	(3/8 in)	94.4
6.35	(1/4 in)	88.1
4.75	(No. 4)	80.8
2.00	(No. 10)	59.5
0.85	(No. 20)	45.7
0.43	(No. 40)	32.6
0.15	(No. 100)	16.0
0.08	(No. 200)	8.6



REMARKS:

Reviewed: Craig Coolidge, E.I.T.
Sent: 6/6/05

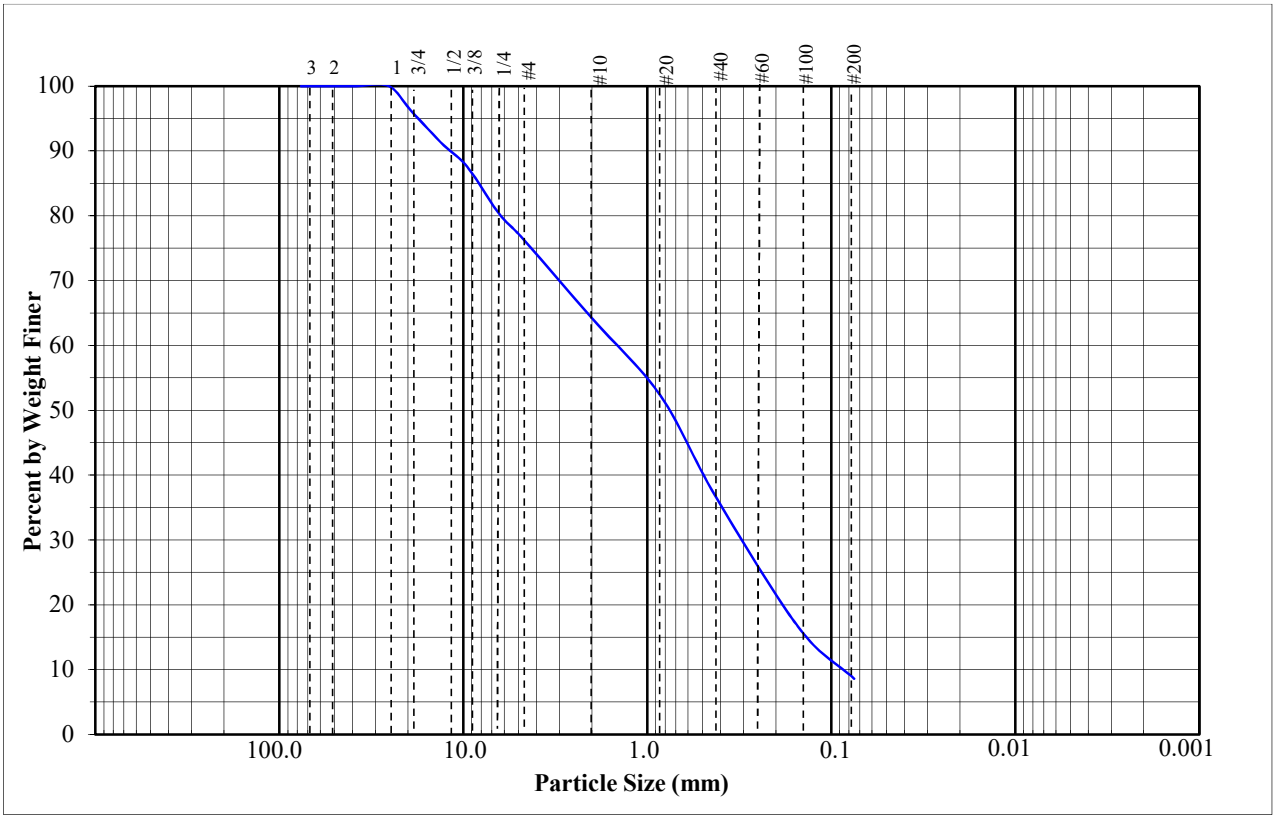
SUMMIT GEOENGINEERING SERVICES
P.O. Box 4698 Augusta, Maine 04330-4698
Phone:(207) 621-8334 Fax:(207) 626-9094

GRAIN SIZE ANALYSIS - ASTM D422

PROJECT NAME:	Farwell School	PROJ #:	7904
CLIENT:	Semple & Drane Architects, P.A.	SAMPLE:	7904-2
SOIL DESCRIP:	Sand, some Gravel, SW-SM	DATE:	6/6/05
INTENDED USE:	Existing Base/Subbase	SOURCE:	B-3, S-1, 0.5' to 2.0'
		TECH:	Craig Coolidge E.I.T.

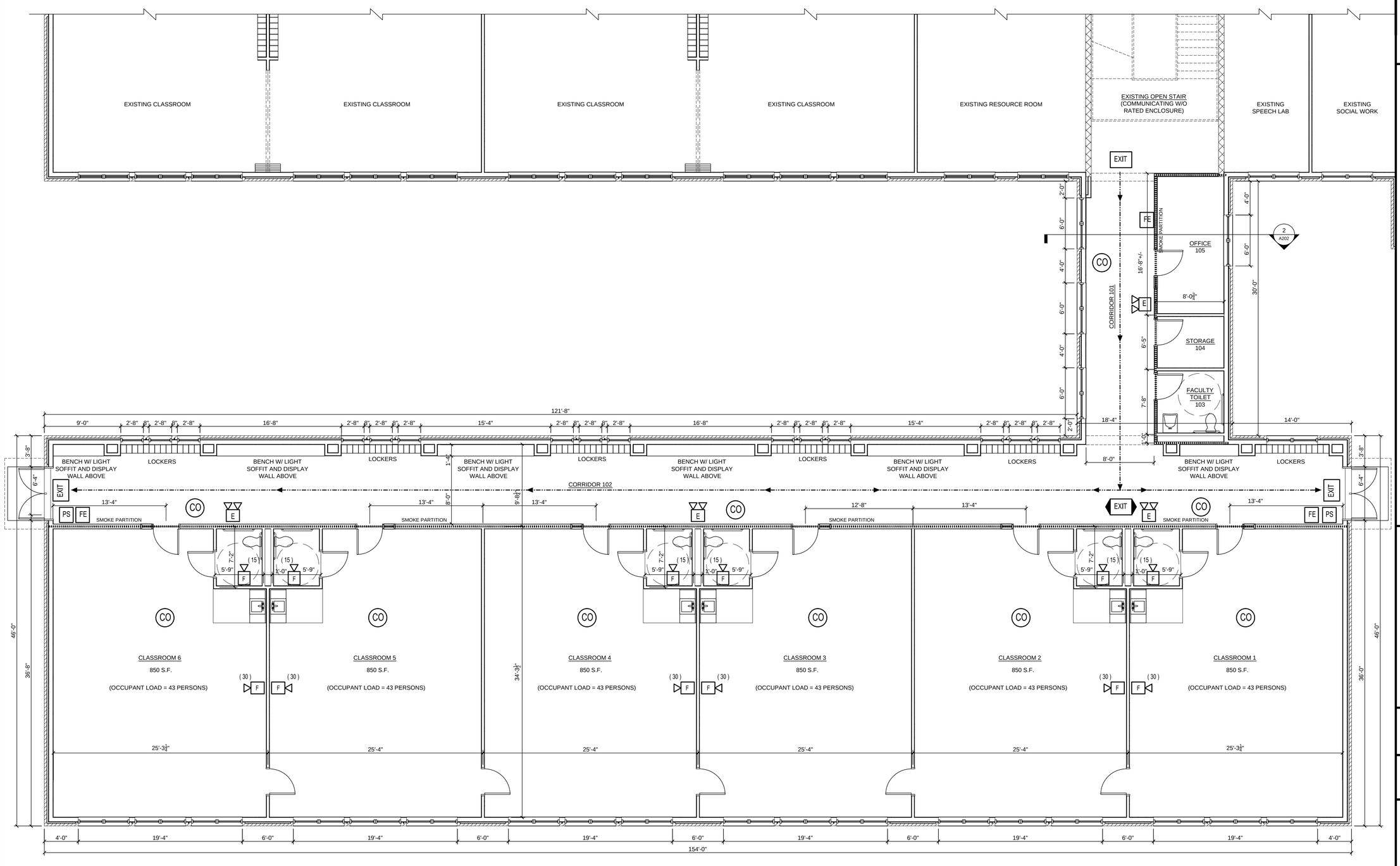
DATA

PARTICLE SIZE mm		% BY WT FINER
76.20	(3 in)	100.0
50.80	(2 in)	100.0
38.10	(1-1/2 in)	100.0
25.40	(1 in)	100.0
19.05	(3/4 in)	96.1
12.70	(1/2 in)	90.8
9.53	(3/8 in)	87.6
6.35	(1/4 in)	80.2
4.75	(No. 4)	76.5
2.00	(No. 10)	64.2
0.85	(No. 20)	52.3
0.43	(No. 40)	36.7
0.15	(No. 100)	16.5
0.08	(No. 200)	8.6



REMARKS:

Reviewed: Craig Coolidge, E.I.T.
Sent: 6/6/05



1 CLASSROOM ADDITION - FLOOR PLAN
3/16" = 1'-0"

SEALANT NOTES:

1.) ALL CORRIDOR SMOKE WALL PARTITIONS SHALL EXTEND TO THE UNDERSIDE OF THE ROOF DECK ABOVE AND BE SEALED WITH AN APPROVED UL CLASSIFIED INTUMESCENT SEALANT CONTINUOUSLY AT TOP AND BOTTOM OF THE WALL AND AT ALL PENETRATIONS.

2.) ALL CLASSROOM DEMISING WALL PARTITIONS SHALL EXTEND TO THE UNDERSIDE OF THE ROOF DECK ABOVE AND BE SEALED WITH AN APPROVED ACOUSTICAL SEALANT CONTINUOUSLY AT TOP AND BOTTOM OF THE WALL AND AT ALL PENETRATIONS.

NOTE: REFER TO SHEET A-002 FOR CODE DATA, LIFE SAFETY LEGEND, AND EXISTING BUILDING/ PROPOSED ADDITION BUILDING LOCUS PLANS.

CODE WALL / EGRESS LEGEND

- SMOKE PARTITIONS
- 1 HR SMOKE BARRIER
- EGRESS PATH

N

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GENERAL NOTES:

1. REPORT AN DISCREPANCIES TO THE DESIGNER OF RECORD. CONTRACTOR SHALL PROCEED WITH WORK ONLY AFTER DISCREPANCIES HAVE BEEN RESOLVED BY THE DESIGNER OF RECORD.

2 .EXISTING BUILDING COMPONENTS AND WORK CURRENTLY COMPLETED AND IN PLACE DURING CONSTRUCTION WHICH IS AFFECTED BY NEW WORK AND DEMOLITION, OR WHICH MAY BE DAMAGED BY THE CONTRACTOR OR ANY SUBCONTRACTOR, SHALL BE REPLACED OR RESTORED TO THE ORIGINAL CONDITION AND COLOR AS APPROVED BY THE DESIGNER OF RECORD.

3. THE BUILDING SHALL BE CONSTRUCTED TO CONFORM W/ ALL GOVERNING CODES INCLUDING 2009 IBC, NFPA 101 2009 AND NFPA 150 PERFORMANCE BASED CRITERIA SHOWN HEREIN, ICC PLUMBING CODE, NEC 2005, AND ANSI.

4. ALL EXISTING CONDITIONS ARE TO BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO FABRICATION. THIS INCLUDES DELIVERY PROCEDURES, DIMENSIONS AND MATERIALS.

5. DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR SHALL VERIFY DIMENSIONS AND CONDITIONS. APPARENT DISCREPANCIES REQUIRING CLARIFICATION SHALL BE DIRECTED TO THE DESIGNER OF RECORD PRIOR TO COMMENCEMENT OF THE WORK IN QUESTION.

6. DEMOLITION MAY REQUIRE SELECTIVE REMOVAL OF EXISTING MATERIALS. TEMPORARY BRACING AND STRUCTURAL SHORING. REMOVAL OF ALL MATERIALS DISMANTLED NOT INTENDED FOR RE-USE SHALL BE DISPOSED OF IN COMPLIANCE WITH LOCAL REGULATIONS.

7. THIS PROJECT SHALL NOT CONTAIN HAZARDOUS MATERIALS OF ANY OF TYPE, INCLUDING BUT NOT LIMITED TO ASBESTOS.

8. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS FROM THE APPROPRIATE OFFICIALS PRIOR TO COMMENCING THE WORK AND INSPECTIONS AND APPROVALS UPON COMPLETION OF THE WORK.

9. WHERE ONLY A SINGLE PRODUCT OR MANUFACTURER IS NAMED, PROVIDE THE PRODUCT INDICATED. SUBSTITUTIONS SHALL BE PERMITTED ONLY WHEN APPROVED BY THE OWNER OR THE OWNER'S AUTHORIZED REPRESENTATIVE THROUGH WRITTEN DIRECTIVE.

10. THE LOCATION OF ALL DOOR FRAMES NOT DIMENSIONED SHALL BE 4" FROM ADJACENT WALLS UNLESS OTHERWISE INDICATED.

11. ALL PARTITIONS SHALL EXTEND FROM FLOOR TO UNDERSIDE OF SUPPORTING STRUCTURE / DECK ABOVE UNLESS OTHERWISE NOTED.

12. INSTALL BLOCKING BEHIND ALL SURFACE APPLIED FIXTURES, TRIM, GRAB BARS, SHELVES, CHAIR RAILS, PICTURE RAILS AND BASE MOLDINGS.

13. AT PROJECT CLOSEOUT, SUBMIT SPECIFIC WARRANTEES, WORKMANSHIP BONDS, MAINTENANCE AGREEMENTS, FINAL CERTIFICATIONS AND SIMILAR DOCUMENTS.

14. COMPLETE FINAL CLEANUP AT PROJECT CLOSEOUT. TOUCH-UP, REPAIR AND RESTORE ALL MARRED EXPOSED FINISHES.

15. IF TWO CONFLICTING CONDITIONS OR DETAILS EXIST IN THIS DRAWING SET OR ASSOCIATED SPECIFICATIONS THE SUBCONTRACTOR SHALL MAKE THEM KNOWN TO THE GENERAL CONTRACTOR AND DESIGNER OF RECORD, IT SHALL BE THE DESIGNER OF RECORD'S CHOICE TO DECIDE WHICH CONDITION OR DETAIL APPLIES, AT NO ADDITIONAL COST.

FORESIDE ARCHITECTS
5 FUNDY ROAD
FALMOUTH, ME 04105
Phone: 207-781-3344
Fax: 207-699-5564
Online @ foresidearchitects.com

Project Status:
DESIGN DEVELOPMENT PROGRESS

PRELIMINARY PLANS Not for Construction

Project Number:
FS28015

FARWELL ELEMENTARY SCHOOL ADDITION AND RENOVATIONS

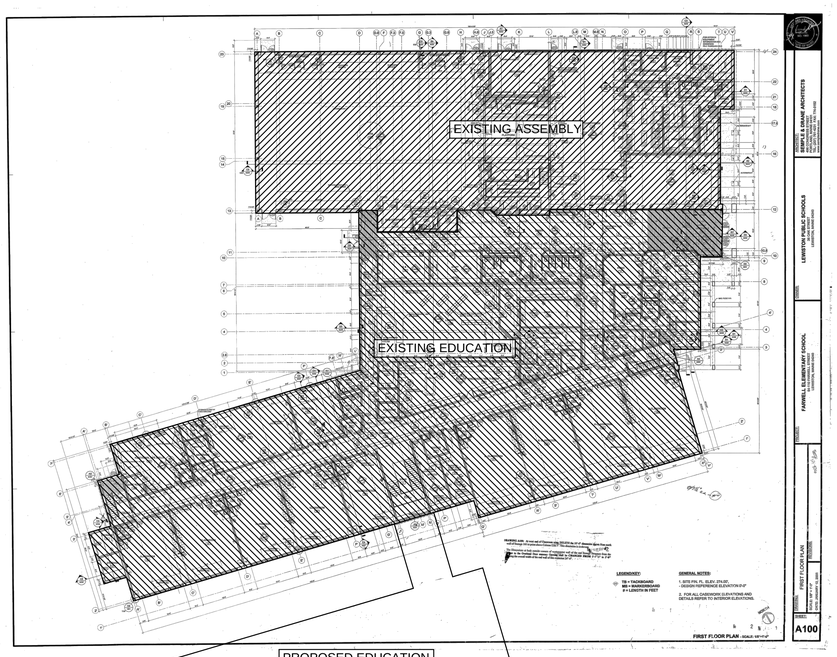
84-110 FARWELL STREET
LEWISTON, MAINE 04240

Drawing Name:
LIFE SAFETY PLAN

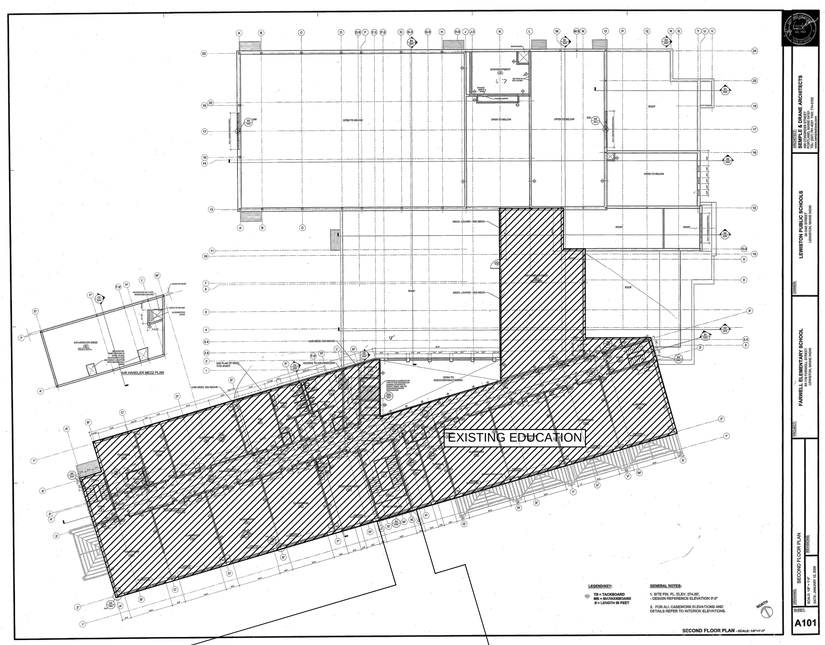
Scale:
AS NOTED

Sheet:
A-001

Date:
FEBRUARY 15, 2016



EXISTING BUILDING FIRST FLOOR PLAN AND PROPOSED ADDITION LOCUS
SCALE: 1/32" = 1'-0"



EXISTING BUILDING SECOND FLOOR PLAN AND PROPOSED ADDITION LOCUS
SCALE: 1/32" = 1'-0"

2009 IBC: CODE DATA		2009 NFPA: CODE DATA	
USE GROUP CLASSIFICATION	EDUCATION GROUP "E"	OCCUPANT LOAD - FLOOR AREA	60,490 SF - EXISTING TOTAL BUILDING AREA (EDUCATIONAL - 45,086 SF/ ASSEMBLY - 15,404 SF) SEPARATED USES - 1HR PARTITION AND FIRE SUPP.
TYPE OF CONSTRUCTION	II B (NON-COMBUSTIBLE)		(PROPOSED NEW EDUCATIONAL ADDITION- 7,634 SF) PROPOSED EDUCATION1ST FLOOR AREA - 34,970 SF SECOND FLOOR AREA - 17,750 SF (EXISTING)
FLOOR AREA	60,490 SF - EXISTING TOTAL BUILDING AREA (EDUCATIONAL - 45,086 SF/ ASSEMBLY - 15,404 SF) SEPARATED USES - 1HR PARTITION AND FIRE SUPP.	OCCUPANT LOAD - EDUCATION	CLASSROOM = 20 SF/OCCUPANT 258 TOTAL OCCUPANTS IN ADDITION
	(PROPOSED NEW EDUCATIONAL ADDITION- 7,634 SF) PROPOSED EDUCATION1ST FLOOR AREA - 34,970 SF SECOND FLOOR AREA - 17,750 SF (EXISTING)	USE GROUP CLASSIFICATION	EDUCATION
TABLE 503 BUILDING AREA (EDUCATION) LIMITATION-SF	14,500 SF	TYPE OF CONSTRUCTION	PROTECTED:TYPE II (000)
506.2 STREET FRONTAGE INCREASE - (50%)	If = [946/1302-.25] x1=.48	ACTUAL BUILDING AREA	52,720 SF TOTAL
506.3 AUTOMATIC SPRINKLER SYSTEM (INCREASE 200%)	29,000 SF	BUILDING HEIGHT	TW0 STORIES
ALLOWABLE (EDUCATION) BUILDING FLOOR AREA-SF	Aa = 14,500 +[14,500 x .48] + [14,500 x 2] = 50,460 SF	FIRE SUPPRESSION	SUPERVISED FIRE SUPPRESSION PROVIDED
BUILDING HEIGHT	TWO STORY	FIREWALL	NOT REQUIRED
FIRE SUPPRESSION	FULLY SUPERVISED FIRE SUPPRESSION	STAIR ENCLOSURES	N/A
FIRE WALL	SEPARATED USES - 1HR PARTITION AND FIRE SUPP.	SHAFTS	N/A
STAIR ENCLOSURES	N/A	EXIT CORRIDORS	SMOKE PARTITION NO CLOSERS REQUIRED ON CLASSROOM DOORS
SHAFTS	N/A	INTERIOR LOAD BEARING WALLS	0 HR
EXIT CORRIDORS	NO FIRE OR SMOKE RATING REQUIRED	STRUCTURAL MEMBER SUPPORTING FLOORS AND ROOF	0 HR
INTERIOR LOAD BEARING WALLS	0 HR	FLOOR CONSTRUCTION	0 HR
STRUCTURAL MEMBER SUPPORTING WALLS	0 HR	ROOF CONSTRUCTION	0 HR
FLOOR CONSTRUCTION	0 HR	FIRE EXTINGUISHERS	LOCATIONS TO BE VERIFIED IN FIELD BY FIRE CHIEF PRIOR TO INSTALLATION
ROOF CONSTRUCTION	0 HR	ARRANGEMENT OF MEANS OF EGRESS:	
FIRE EXTINGUISHERS	LOCATIONS TO BE VERIFIED IN FIELD BY FIRE CHIEF PRIOR TO INSTALLATION	DEAD END CORRIDORS	N0T TO EXCEED 50 FT (W/ FIRE SUPPRESSION)
FLAME SPREAD RATINGS:		COMMON PATH OF TRAVEL	N0T TO EXCEED 75 FT (1ST 100' W/ FIRE SUPPR.)
REQUIRED VERTICAL EXITS	CLASS A OR B	CORRIDOR WIDTH	72 MIN
EXIT CORRIDORS	CLASS A, B OR C	FLAME SPREAD RATINGS:	
ROOMS OR ENCLOSED SPACES	CLASS A, B OR C	INTERIOR FINISH REQUIREMENTS	
INTERIOR FLOOR FINISH REQUIREMENTS	CLASS I OR II	EXIT WALL & CEILING	CLASS A
CORRIDORS PROVIDING EXIT ACCESS	CLASS I OR II	EXIT ACCESS CORRIDORS WALL & CEILING	CLASS A OR B
ROOMS OR ENCLOSED SPACES	CLASS I OR II	OTHER WALL & CEILING	CLASS A OR B
		INTERIOR FLOOR FINISH REQUIREMENTS	
GENERAL NOTES:	1. ALL PENETRATIONS OF FIRE & SMOKE RATED WALLS AND FLOORS SHALL BE SEALED WITH PROPER APPROVED MATERIALS AND FIRE DAMPERS, AS REQUIRED. 2. ALL WORK SHALL CONFORM TO LOCAL AND STATE CODES, ORDINANCES AND REQUIREMENTS, ACCESSIBILITY PER A.D.A.A.G.	EXIT WALL & CEILING	CLASS I OR II
		EXIT ACCESS CORRIDORS WALL & CEILING	CLASS I OR II
		GENERAL NOTES:	1. ALL PENETRATIONS OF FIRE & SMOKE RATED WALLS AND FLOORS SHALL BE SEALED WITH PROPER APPROVED MATERIALS AND FIRE DAMPERS, AS REQUIRED. 2. ALL WORK SHALL CONFORM TO LOCAL AND STATE CODES, ORDINANCES AND REQUIREMENTS, ACCESSIBILITY PER A.D.A.A.G.

LEGEND - LIFESAFETY

AP	FIRE ALARM ANNUNCIATOR PANEL LOCATION	F (*)	AUDIBLE VISUAL DEVICE (CANDELLA RATING)
		V (*)	VISUAL ONLY DEVICE (CANDELLA RATING)
PS	PULL STATION	CO	CARBON MONOXIDE DETECTOR
KB	KEY BOX WITH TAMPER SWITCH	S	SMOKE DETECTOR
FE	FIRE EXTINGUISHER (ABC TYPE)	H	HEAT DETECTOR
	EMERGENCY LIGHTING		

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Project Status:
DESIGN
DEVELOPMENT
PROGRESS

PRELIMINARY PLANS Not for Construction

Project Number:
FS28015

FARWELL ELEMENTARY SCHOOL ADDITION AND RENOVATIONS

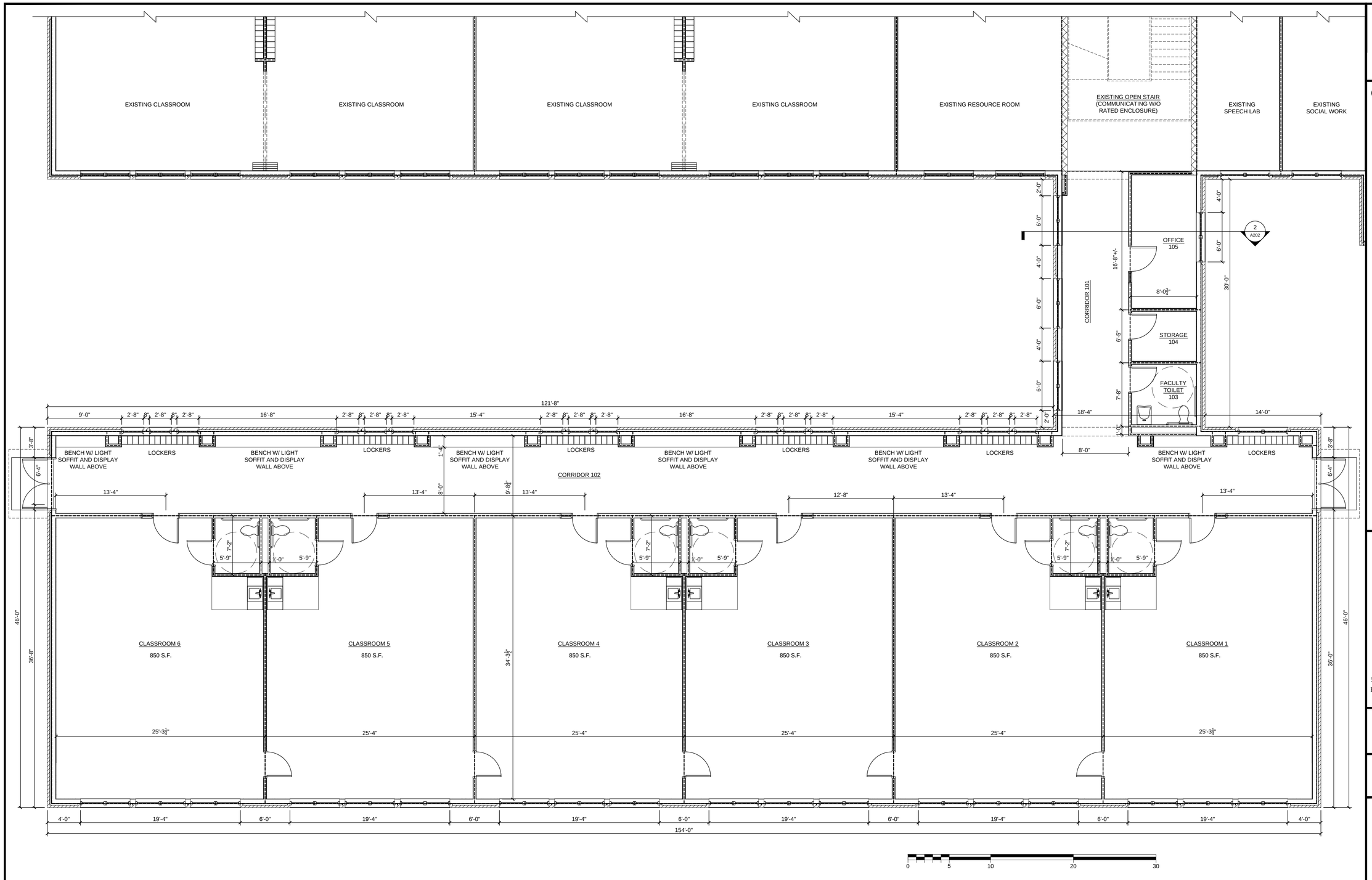
84-110 FARWELL STREET
LEWISTON, MAINE 04240

Drawing Name:
LIFE SAFETY LEGEND AND BUILDING CODE LOCUS PLAN

Scale:
AS NOTED

Sheet:
A-002

Date:
FEBRUARY 15, 2016



1 CLASSROOM ADDITION - FLOOR PLAN
3/16" = 1'-0"

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Project Status:
DESIGN DEVELOPMENT PROGRESS

PRELIMINARY PLANS Not for Construction

Project Number:
FS28015

FARWELL ELEMENTARY SCHOOL ADDITION AND RENOVATIONS

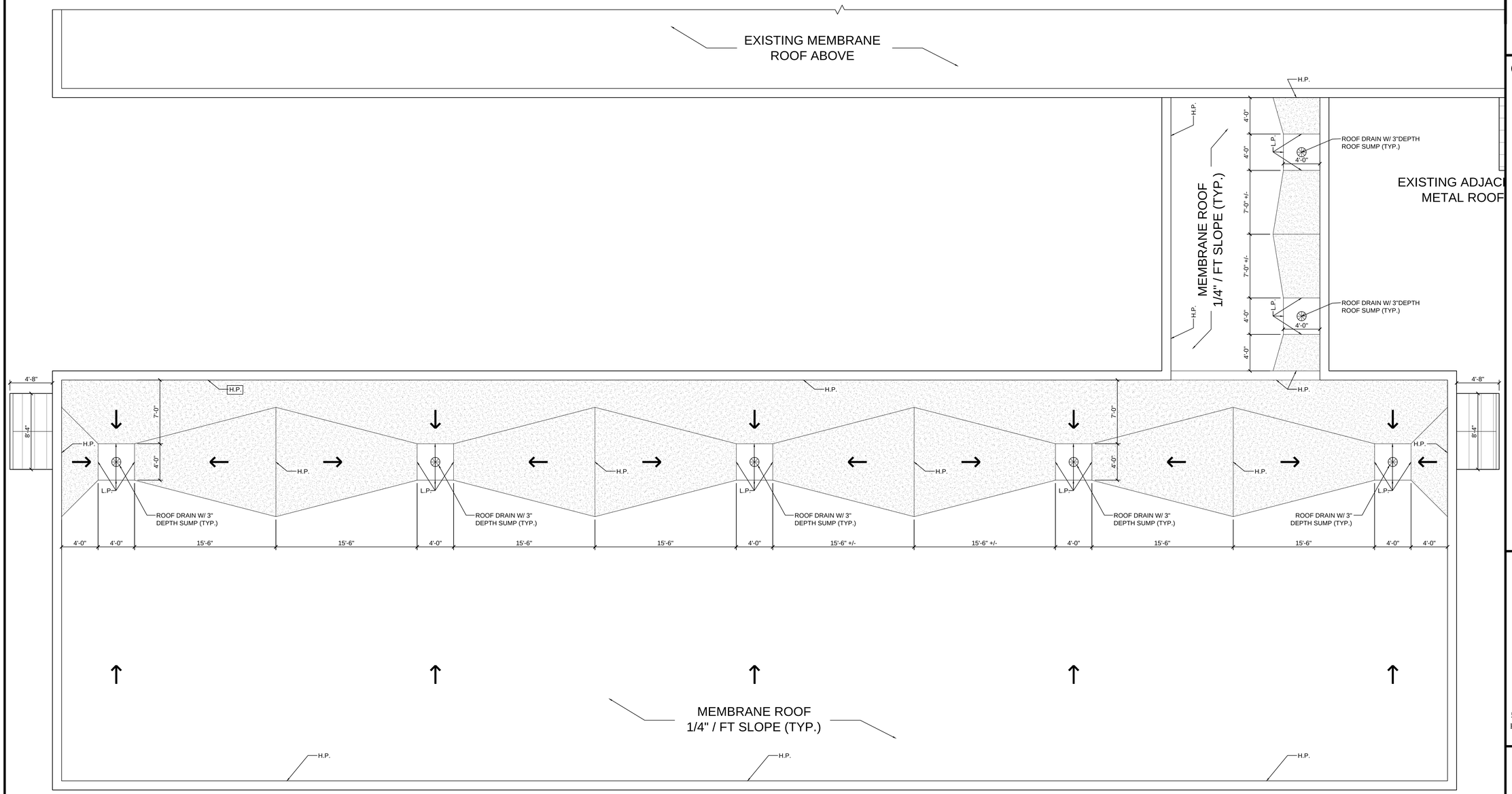
84-110 FARWELL STREET
LEWISTON, MAINE 04240

Drawing Name:
CLASSROOM ADDITION - FLOOR PLAN

Scale:
AS NOTED

Date:
FEBRUARY 15, 2016

Sheet:
A-101



ROOF LEGEND

- EPDM MEMBRANE ROOFING (.060 THK.) 6" RIGID INSULATION, (TWO LAYERS 3")
- EPDM MEMBRANE ROOFING (.060 THK.) 6" TAPERED RIGID INSULATION, (TWO LAYERS 3") MIN., SLOPED TO DRAIN
- 6" FROET ROOF DRAINS W/ INTEGRAL OVERFLOW AND ASSOCIATED PIPING
- DIRECTION OF SLOPE AND INTENDED DRAINAGE FLOW

1 CLASSROOM ADDITION - FLOOR PLAN
3/16" = 1'-0"

N

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Project Status:
DESIGN DEVELOPMENT PROGRESS

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FARWELL ELEMENTARY SCHOOL ADDITION AND RENOVATIONS

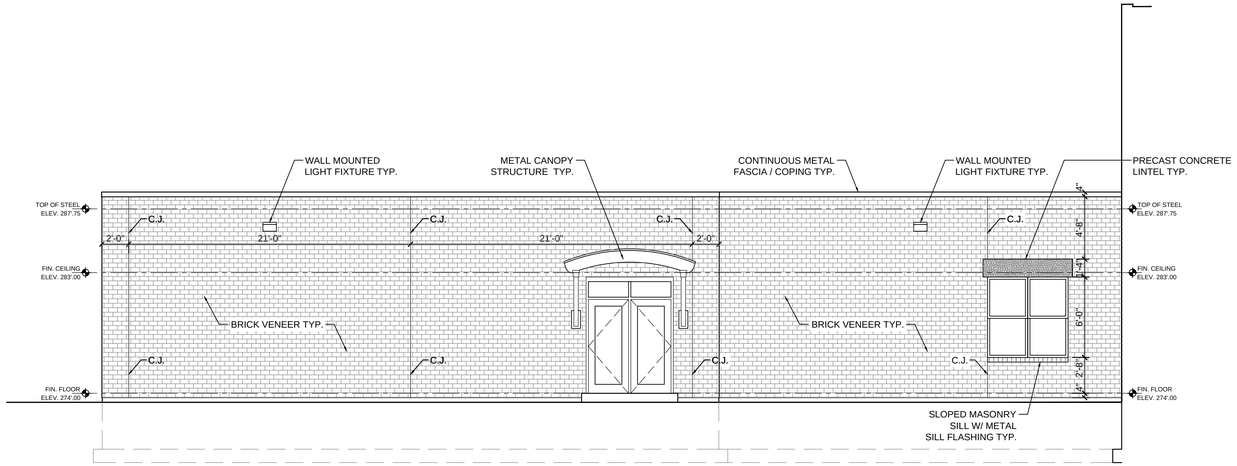
84-110 FARWELL STREET
LEWISTON, MAINE 04240

Drawing Name:
CLASSROOM ADDITION - ROOF PLAN

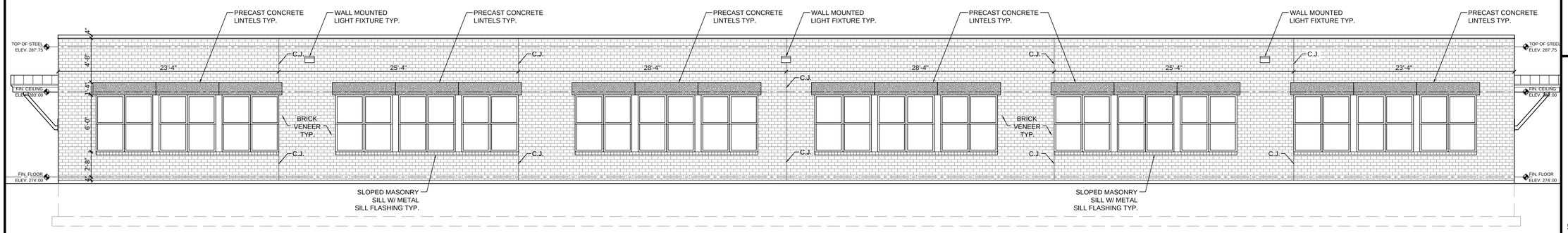
Scale:
AS NOTED

Date:
FEBRUARY 15, 2016

Sheet:
A-102



1 EAST BUILDING ELEVATION
3/16" = 1'-0"



2 SOUTH BUILDING ELEVATION
3/16" = 1'-0"

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Project Status:
DESIGN
DEVELOPMENT
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PRELIMINARY
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Project Number:
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FARWELL ELEMENTARY
SCHOOL ADDITION
AND RENOVATIONS

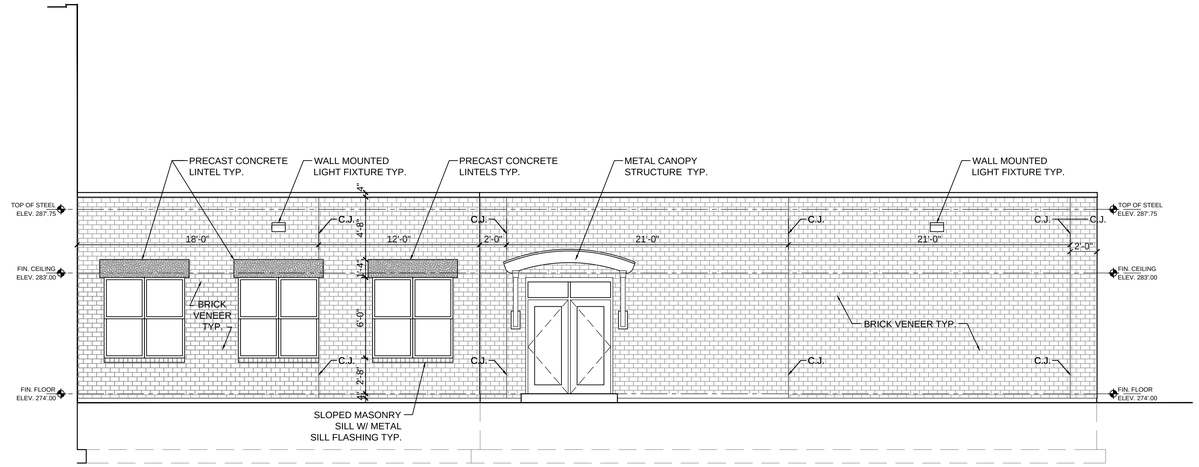
84-110 FARWELL STREET
LEWISTON, MAINE 04240

Drawing Name:
CLASSROOM ADDITION -
BUILDING ELEVATIONS

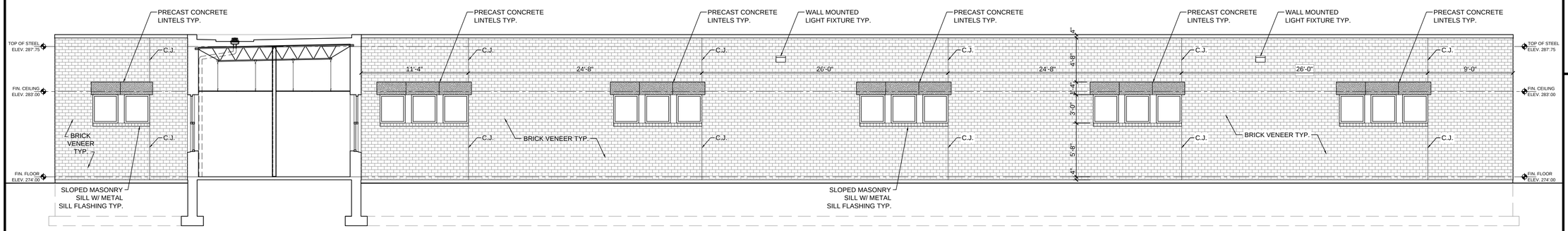
Scale:
AS NOTED

Sheet:
A-201

Date:
FEBRUARY 15, 2016



1 WEST BUILDING ELEVATION
3/16" = 1'-0"



2 NORTH BUILDING ELEVATION
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FARWELL ELEMENTARY SCHOOL ADDITION AND RENOVATIONS

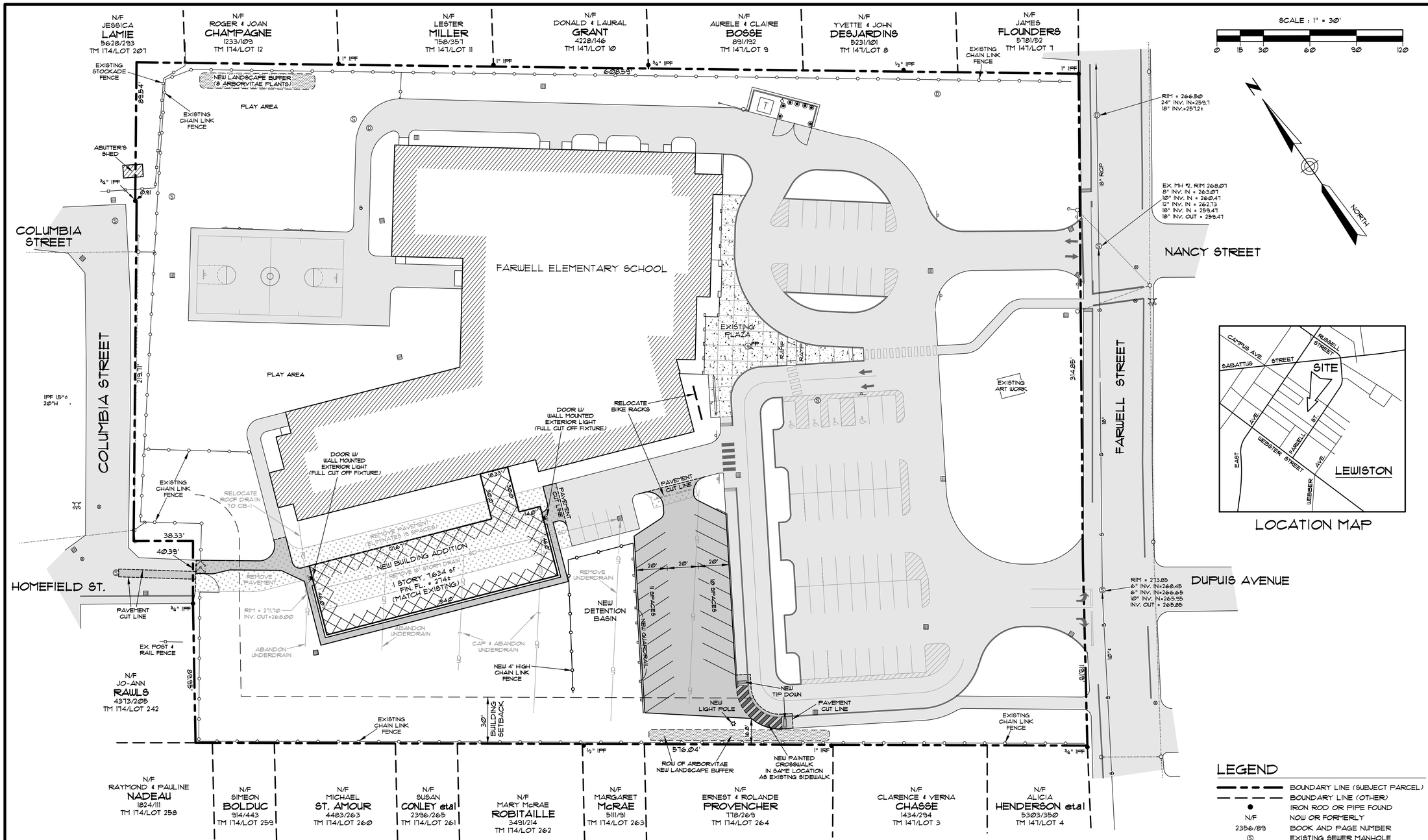
84-110 FARWELL STREET
LEWISTON, MAINE 04240

Drawing Name:
CLASSROOM ADDITION - BUILDING ELEVATIONS

Scale:
AS NOTED

Sheet:
A-202

Date:
FEBRUARY 15, 2016



NOTES

1) EXISTING CONDITIONS, INCLUDING BOUNDARY, TOPOGRAPHY AND UTILITY DATA WAS TAKEN FROM A SET OF PLANS ENTITLED "FARWELL ELEMENTARY SCHOOL", DATED JANUARY 2006. PREPARED BY PINKHAM & GREER CONSULTING ENGINEERS, OBTAINED FROM THE CITY OF LEWISTON.

2) ALL BOOK AND PAGE NUMBERS REFER TO THE ANDROSCOGGIN COUNTY REGISTRY OF DEEDS.

3) OWNER OF RECORD - CITY OF LEWISTON
TAX MAP 147, LOT 5

4) THE PARCEL IS LOCATED IN THE NEIGHBORHOOD CONSERVATION "A" ZONING DISTRICT.
MINIMUM BUILDING SETBACKS: FRONT = 20, SIDE & REAR = 30'

5) THE PARCEL IS NOT LOCATED WITHIN A 100-YEAR FLOOD HAZARD AREA AS SHOWN ON THE F.E.M.A. FLOOD INSURANCE RATE MAP PANEL #230001 C0327E, DATED JULY 8, 2013.

SITE TABULATIONS

TOTAL PARCEL AREA = 262,080 sf / 6.02 ACRES

EXISTING CONDITIONS -
BUILDING - 41,940 sf (16.0%)
PAVEMENT - 87,305 sf (33.3%)
GREEN SPACE - 132,835 sf (50.7%)

PROPOSED CONDITIONS -
BUILDING - 49,574 sf (18.9%)
PAVEMENT - 93,145 sf (35.6%)
GREEN SPACE - 119,361 sf (45.5%)

TOTAL ADDITIONAL IMPERVIOUS AREA = 13,474 sf

APPROVAL

APPROVED BY THE CITY OF LEWISTON PLANNING BOARD

CHAIRMAN DATE

IF DEVELOPMENT HAS NOT OCCURRED AS DEFINED WITHIN THE SCOPE OF THE CITY OF LEWISTON CODE OF ORDINANCES, WITHIN 24 MONTHS OF THE DATE OF APPROVAL, DEVELOPMENT REVIEW APPROVAL SHALL EXPIRE. THE APPLICANT MAY NOT BEGIN CONSTRUCTION OR OPERATION OF THE DEVELOPMENT UNTIL A NEW APPROVAL IS GRANTED (ARTICLE XIII, SECTION 11).

LEGEND

- BOUNDARY LINE (SUBJECT PARCEL)
- BOUNDARY LINE (OTHER)
- IRON ROD OR PIPE FOUND
- N/F — NOW OR FORMERLY
- 2356/89 — BOOK AND PAGE NUMBER
- EXISTING SEWER MANHOLE
- EXISTING STORM DRAIN MANHOLE
- UTILITY POLE WITH OVERHEAD WIRES
- EXISTING CATCH BASIN
- EXISTING HYDRANT
- EXISTING WATER SHUT OFF VALVE
- EXISTING LIGHT POLE
- NEW CATCH BASIN
- NEW LIGHT POLE (FULL CUT OFF FIXTURE)
- EXISTING CHAIN LINK FENCE
- NEW CHAIN LINK FENCE
- NEW WOOD GUARDRAIL
- EXISTING BUILDING
- EXISTING PAVEMENT
- NEW BUILDING
- EXISTING PAVEMENT

NO.	REVISION	DATE
1	PARKING & CROSSWALK ADJUSTMENT	2-12-16

SHEET TITLE: **SITE & DEMOLISION PLAN**

SCALE: AS NOTED
DATE: FEBRUARY 2016
DRAWN BY: KRF
CHECKED BY: WMP

PROJECT: **FARWELL SCHOOL EXPANSION**
84 FARWELL STREET - LEWISTON, MAINE

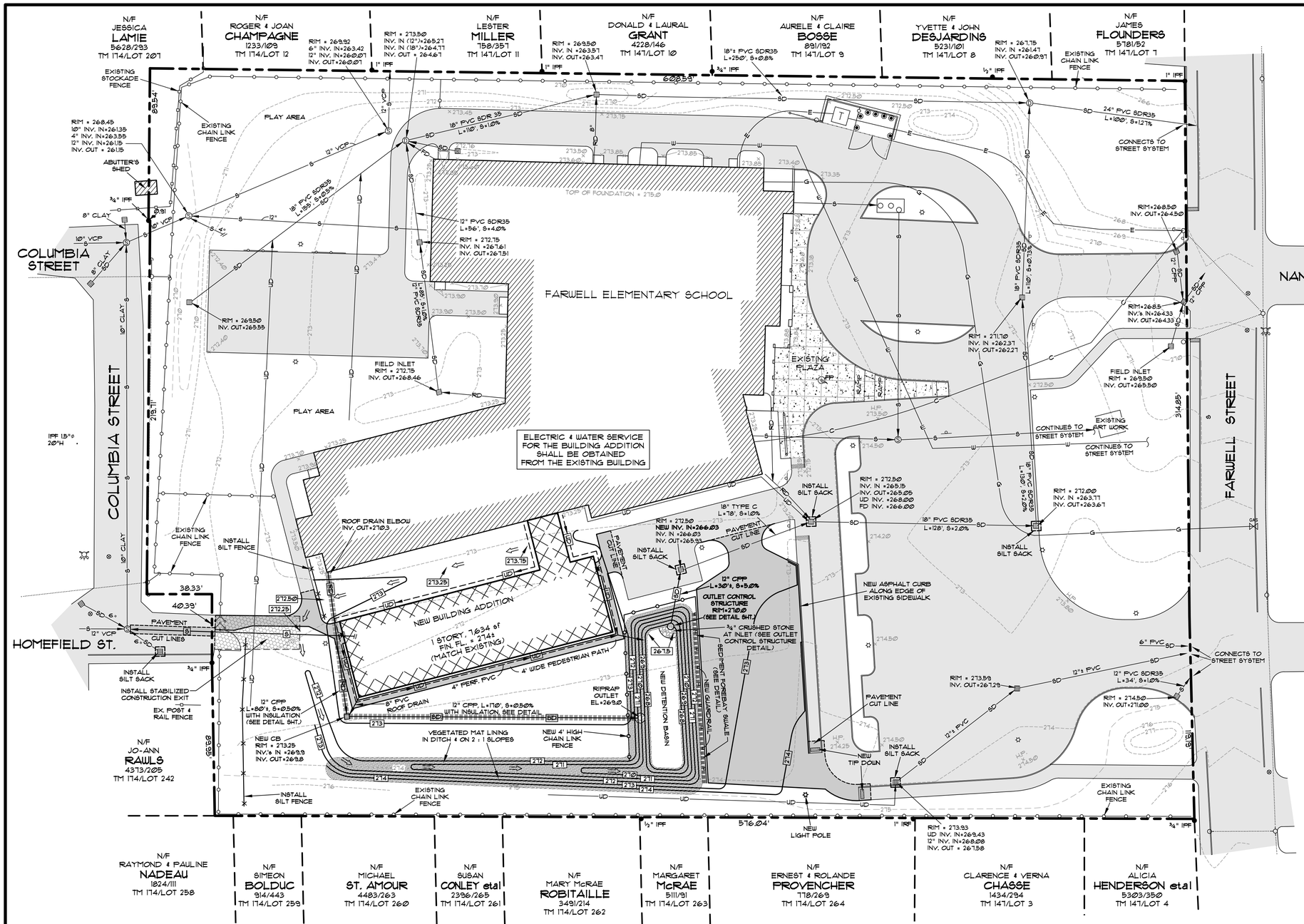
CLIENT: **HEBERT CONSTRUCTION, LLC**
9 GOULD ROAD - LEWISTON, MAINE

SUMMIT GEOENGINEERING SERVICES
173 PLEASANT STREET ROCKLAND, ME 04841 Tel.: (207) 318-7161
145 LISBON ST. - SUITE 601 LEWISTON, ME 04240 Tel.: (207) 576-3313
www.summitgeoeng.com

STATE OF MAINE WILLIAM M. PETERLEIN 5787 LICENSED PROFESSIONAL ENGINEER

JOB NO. - 16001

SHEET 1



NOTES

1) EXISTING CONDITIONS, INCLUDING BOUNDARY, TOPOGRAPHY AND UTILITY DATA WAS TAKEN FROM A SET OF PLANS ENTITLED "FARWELL ELEMENTARY SCHOOL", DATED JANUARY 2006, PREPARED BY PINKHAM & GREER CONSULTING ENGINEERS, OBTAINED FROM THE CITY OF LEWISTON.

2) ALL BOOK AND PAGE NUMBERS REFER TO THE ANDROSCOGGIN COUNTY REGISTRY OF DEEDS.

3) OWNER OF RECORD - CITY OF LEWISTON
TAX MAP 147, LOT 5

4) THE PARCEL IS LOCATED IN THE NEIGHBORHOOD CONSERVATION "A" ZONING DISTRICT.
MINIMUM BUILDING SETBACKS: FRONT = 20, SIDE & REAR = 30'

5) THE PARCEL IS NOT LOCATED WITHIN A 100-YEAR FLOOD HAZARD AREA AS SHOWN ON THE F.E.M.A. FLOOD INSURANCE RATE MAP PANEL #230001 C0327E, DATED JULY 8, 2013.

NO.	REVISION	DATE
1	PARKING & CROSSWALK ADJUSTMENT	2-12-16

SHEET TITLE: **GRADING & UTILITY PLAN**

SCALE: AS NOTED
DATE: FEBRUARY 2016
DRAWN BY: KRF
CHECKED BY: WMP

PROJECT: **FARWELL SCHOOL EXPANSION**
84 FARWELL STREET - LEWISTON, MAINE

CLIENT: HEBERT CONSTRUCTION, LLC
9 GOULD ROAD - LEWISTON, MAINE

SUMMIT GEOENGINEERING SERVICES
173 PLEASANT STREET
ROCKLAND, ME 04841
Tel.: (207) 318-7161
145 LISBON ST. - SUITE 601
LEWISTON, ME 04240
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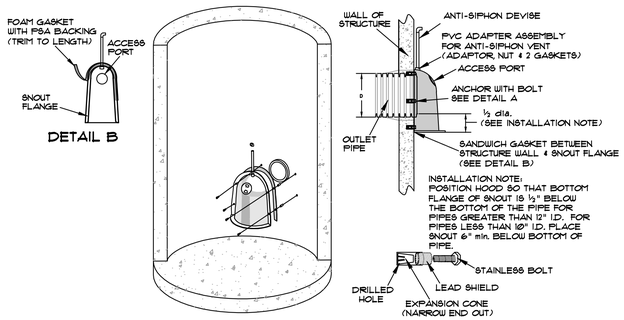
STATE OF MAINE
WILLIAM M. PETERLIN
5787
LICENSED PROFESSIONAL ENGINEER

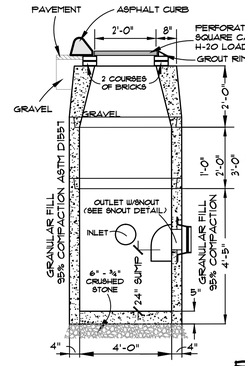
JOB NO. - 16001

SHEET 2



SNOUT INSTALLATION DETAIL

NOT TO SCALE



SECTION VIEW

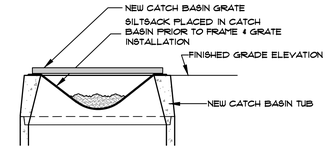
STRUCTURES AND COVERS TO MEET CITY OF LEWISTON STANDARDS

NOTES:

1. CONCRETE: 4000 PSI AFTER 28 DAYS.
2. DESIGN STRUCTURE FOR H-20 LOADING
3. SHIPLAP JOINTS SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
4. EACH CASTING TO HAVE LIFTING HOLES CAST IN.
5. PIPE OPENINGS CAST IN AS REQUIRED.

PRECAST CONCRETE CATCH BASIN DETAIL

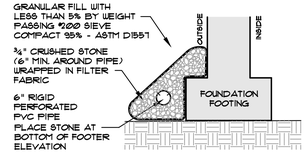
NOT TO SCALE



NOTE:
REMOVE SILT SACK AFTER VEGETATIVE COVER IS GREATER THAN 75% ESTABLISHED.

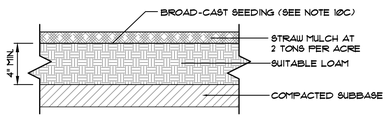
SILTSACK DETAIL

NOT TO SCALE



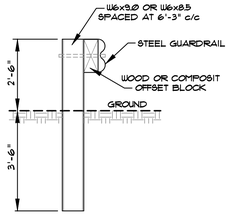
FOUNDATION UNDERDRAIN DETAIL

NOT TO SCALE



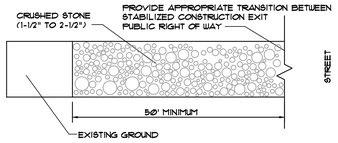
LOAM & SEED DETAIL

NOT TO SCALE



STEEL GUARD RAIL POST DETAIL

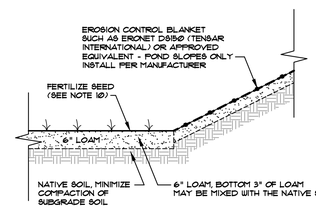
NOT TO SCALE



1. STONE SIZE - AASHTO DESIGNATION M 43, SIZE #2 (2½" - 1½") USE CRUSHED STONE
2. LENGTH - AS EFFECTIVE BUT NOT LESS THAN 50'
3. THICKNESS - NOT LESS THAN 6", STONE SHALL BE PLACED ON GEOTEXTILE.
4. WIDTH - NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS
5. WASHING - WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT OF WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH, OR WATERCOURSE THROUGH USE OF SAND BAGS, GRAVEL, BOARDS, OR OTHER APPROVED METHODS.
6. MAINTENANCE - THE STABILIZED CONSTRUCTION EXIT SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURED USES TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHT OF WAYS MUST BE REMOVED IMMEDIATELY.

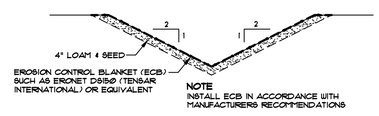
STABILIZED CONSTRUCTION EXIT DETAIL

NOT TO SCALE



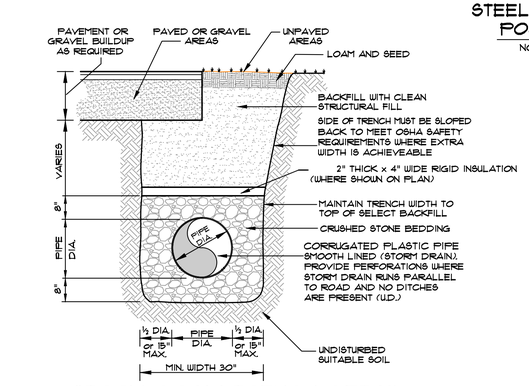
POND STABILIZATION DETAIL

NOT TO SCALE



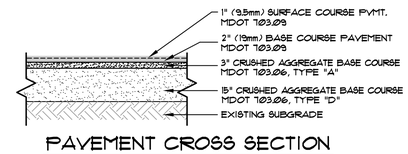
VEGETATED MAT LINED DITCH AND POND SIDE SLOPES

NOT TO SCALE



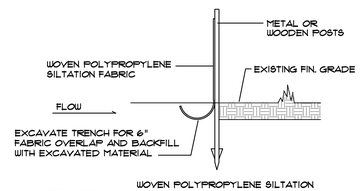
STORM DRAIN TRENCH DETAIL

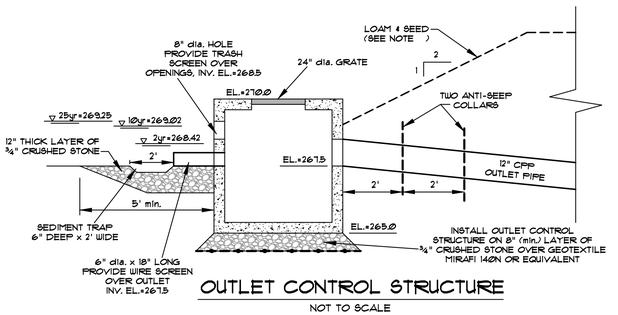
NOT TO SCALE



PAVEMENT CROSS SECTION

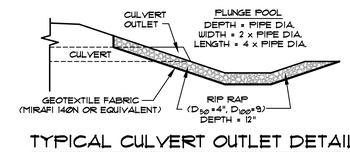
NOT TO SCALE





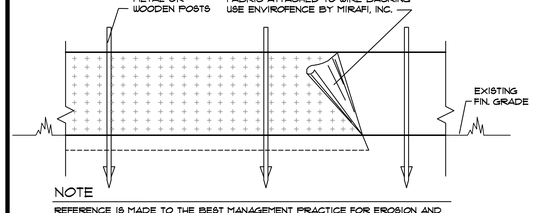
OUTLET CONTROL STRUCTURE

NOT TO SCALE



TYPICAL CULVERT OUTLET DETAIL

NOT TO SCALE



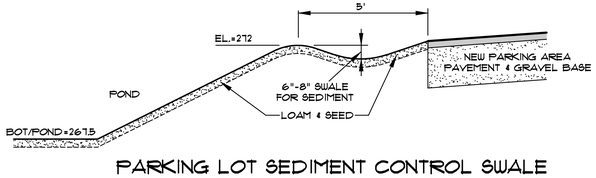
NOTE

REFERENCE IS MADE TO THE BEST MANAGEMENT PRACTICE FOR EROSION AND SEDIMENT CONTROL: B-1 SEDIMENT BARRIERS.

SILTATION FABRIC WITH INTEGRAL MESH AND POSTS MAY BE USED.

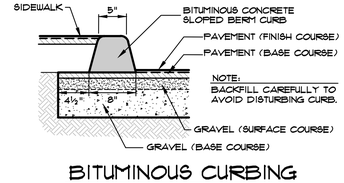
SILT FENCE DETAIL

NOT TO SCALE



PARKING LOT SEDIMENT CONTROL SWALE

NOT TO SCALE



BITUMINOUS CURBING

NOT TO SCALE

GENERAL CONSTRUCTION NOTES

1) THE CONTRACT WORK TO BE PERFORMED ON THIS PROJECT CONSISTS OF FURNISHING ALL REQUIRED LABOR, MATERIALS, EQUIPMENT, IMPLEMENTS, PARTS AND SUPPLIES NECESSARY FOR OR APPURTENANT TO, THE INSTALLATION OF CONSTRUCTION IMPROVEMENTS IN ACCORDANCE WITH THESE DRAWINGS AND AS FURTHER ELABORATED IN ANY ACCOMPANYING SPECS.

2) THE WORK SHALL BE PERFORMED IN A THOROUGH WORKMANLIKE MANNER. ALL CONTRACTORS WORK TO CONFORM TO ALL APPLICABLE OSHA STANDARDS. ANY REFERENCE TO A SPECIFICATION OR DESIGNATION OF THE AMERICAN SOCIETY FOR TESTING MATERIALS, FEDERAL SPECIFICATIONS, OR OTHER STANDARDS, CODES OR ORDERS, REFERS TO THE MOST RECENT OR LATEST SPECIFICATION OR DESIGNATION.

3) ALL CONSTRUCTION WITHIN THE CITY OF LEWISTON AND/OR STATE OF MAINE RIGHT OF WAY SHALL COMPLY WITH CITY PUBLIC WORKS AND/OR MDOT STANDARDS.

4) THE OWNER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS REQUIRED BY THE CITY OF LEWISTON PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FROM THE CITY OF LEWISTON REQUIRED TO PERFORM THE WORK (STREET OPENINGS, BUILDING PERMIT, ETC.). THE CONTRACTOR SHALL POST ALL BONDS AS REQUIRED, PAY ALL FEES, PROVIDE PROOF OF INSURANCE AND PROVIDE TRAFFIC CONTROL NECESSARY FOR THIS WORK.

5) PRIOR TO CONSTRUCTION, THE SITE CONTRACTOR IS TO INFORM ALL AREA UTILITY COMPANIES AND GOVERNMENTAL AGENCIES OF PLANNED CONSTRUCTION. THE SITE CONTRACTOR IS REQUIRED TO CONTACT DIG-SAFE (1-800-225-4977) AT LEAST 3 BUSINESS DAYS PRIOR TO ANY EXCAVATION TO VERIFY ALL UNDERGROUND AND OVERHEAD UTILITY LOCATIONS.

6) THE PROJECT DRAWINGS ARE GENERALLY SCHEMATIC AND INDICATE THE POSSIBLE LOCATION OF EXISTING UNDERGROUND UTILITIES. INFORMATION ON EXISTING UTILITIES HAS BEEN COMPILED FROM AVAILABLE INFORMATION INCLUDING MUNICIPAL RECORD MAPS, AND FIELD SURVEY. IT IS NOT GUARANTEED TO BE CORRECT OR COMPLETE. UTILITIES ARE SHOWN TO ALERT THE CONTRACTOR TO THEIR PRESENCE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF THE EXISTING UTILITIES AS APPROPRIATE. THE CONTRACTOR IS TO PROVIDE ADEQUATE MEANS OF SUPPORT AND PROTECTION DURING THE EXCAVATING AND BACKFILLING OPERATIONS. SHOULD ANY UNCHARTED OR INCORRECTLY CHARTED UTILITIES BE FOUND, THE CONTRACTOR SHALL CONTACT THE DESIGN ENGINEER IMMEDIATELY FOR DIRECTIONS BEFORE PROCEEDING FURTHER WITH THE WORK IN THIS AREA.

7) OSHA REGULATIONS MAKE IT UNLAWFUL TO OPERATE CRANES, BOOMS, HOISTS, ETC. WITHIN TEN FEET (10') OF ANY ELECTRIC LINE . IF THE CONTRACTOR MUST OPERATE CLOSER THAN 10', THE CONTRACTOR MUST CONTACT THE POWER COMPANY TO MAKE ARRANGEMENTS FOR PROPER SAFEGUARDS BEFORE ENCROACHING ON THIS REQUIREMENT.

8) IT IS THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE ALL PLANS, APPROVALS, AND DETAILS FOR ADDITIONAL INFORMATION. THE CONTRACTOR SHALL VERIFY ALL THE SITE CONDITIONS IN THE FIELD AND CONTACT THE DESIGN ENGINEER IF THERE ARE ANY DISCREPANCIES REGARDING THE CONSTRUCTION DOCUMENTS AND/OR FIELD CONDITIONS SO THAT AN APPROPRIATE REVISION CAN BE MADE PRIOR TO BIDDING.

9) ALTERNATIVE METHODS AND PRODUCTS OTHER THAN THOSE SPECIFIED MAY BE USED IF REVIEWED AND APPROVED IN WRITING BY THE OWNER, DESIGN ENGINEER, AND APPROPRIATE GOVERNMENTAL AGENCY PRIOR TO INSTALLATION.

10) ALL EXCAVATION SHALL BE BACKFILLED TO EXISTING GRADE BEFORE THE END OF THE DAY OR ADEQUATELY PROTECTED FROM DANGER TO HUMANS AND ANIMALS.

11) THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL FIELD LAYOUT. THE OWNER WILL PROVIDE A BENCH MARK AT THE CONSTRUCTION SITE FROM WHICH TO BEGIN LAYOUT.

12) THE CONTRACTOR SHALL FURNISH ELECTRICAL POWER, WATER, AND SANITARY FACILITIES FOR HIS EXCLUSIVE USE AT THE CONSTRUCTION SITE SHOULD THE CONTRACTOR DEEM THIS ESSENTIAL FOR THE PROPER PERFORMANCE OF THE CONTRACT.

13) WORK MAY PROGRESS MONDAY THROUGH FRIDAY 7:00 AM TO 7:00 PM. WORK AT OTHER TIMES MAY PROCEED UPON WRITTEN APPROVAL BY THE OWNER AND THE CITY OF LEWISTON.

14) THE CONTRACTOR SHALL GUARANTEE THE FAITHFUL REMEDY OF ANY DEFECTS DUE TO FAULTY MATERIALS OR WORKMANSHIP AND GUARANTEES PAYMENT FOR ANY RESULTING DAMAGE WHICH SHALL APPEAR WITHIN A PERIOD OF ONE (1) YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION OF THE PROJECT.

15) THE CONTRACTOR SHALL PROVIDE AS-BUILT RECORDS OF ALL CONSTRUCTION (INCLUDING UNDERGROUND UTILITIES) TO THE OWNER AT THE END OF CONSTRUCTION.

16) PROPER IMPLEMENTATION AND MAINTENANCE OF EROSION CONTROL MEASURES ARE OF PARAMOUNT IMPORTANCE FOR THE PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL EROSION CONTROL MEASURES SHOWN ON THE PLANS. ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED IF DEEMED NECESSARY BY ONSITE INSPECTIONS OF THE OWNER, THEIR REPRESENTATIVES, OR STATE/LOCAL/ FEDERAL OFFICIALS AT NO ADDITIONAL COST TO THE OWNER.

EROSION & SEDIMENTATION CONTROL NOTES

1) THE CONTRACTOR SHALL INSPECT EROSION & SEDIMENT CONTROL MEASURES WEEKLY AND AFTER HEAVY RAINFALLS THROUGHOUT THE DURATION OF THE PROJECT INCLUDING WEEKENDS AND HOLIDAYS. ALL EROSION AND SEDIMENT CONTROLS SHALL BE MAINTAINED AS STIPULATED IN THE BASIC AND GENERAL STANDARDS SUBMISSION IN THE STORMWATER PERMIT.

2) THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTING THE EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH THE "MAINE EROSION AND SEDIMENT CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES", DATED MARCH 2003 (DEP LW 388) AND IN ACCORDANCE WITH THE STORMWATER REPORT INCLUDED WITH THE PERMIT APPLICATION APPROVED BY THE CITY OF LEWISTON. ADDITIONAL MEASURES SHALL BE INSTALLED IF DEEMED NECESSARY DURING ON-SITE INSPECTIONS BY THE OWNER, THEIR REPRESENTATIVES OR STATE/LOCAL/FEDERAL INSPECTORS AT NO ADDITIONAL COST TO THE OWNER.

3) PRIOR TO CONSTRUCTION, PROPERLY INSTALL SEDIMENT BARRIERS AT THE DOWN GRADIENT EDGE OF THE DISTURBED AREA AND ADJACENT TO DRAINAGE CHANNELS WITHIN THIS AREA, AS SHOWN ON THE SITE PLANS.

4) SILT FENCE AND/OR BARK MULCH BERM LOCATIONS SHOWN ARE APPROXIMATE. INSTALL WHERE APPROPRIATE TO CONTROL ALL SEDIMENTATION. SILT FENCE WILL BE REMOVED AFTER THE SITE IS STABILIZED WITH AT LEAST 90% VEGETATED GROWTH.

5) NO SLOPES, EITHER PERMANENT OR TEMPORARY, SHALL BE STEEPER THAN TWO TO ONE (2 TO 1).

6) ALL GEOTEXTILE TO BE MIRAFI 180N OR EQUIVALENT, UNLESS OTHERWISE NOTED.

7) EROSION CONTROL BLANKET TO CONSIST OF ERONET D8150 (TENSAR INTERNATIONAL) OR APPROVED EQUIVALENT.

8) AREAS DISTURBED DURING CONSTRUCTION SHALL BE MINIMIZED. AREAS SHALL BE TEMPORARILY STABILIZED WITH MULCH OR NON-ERODABLE COVER IF EXPOSED SOILS WILL NOT BE WORKED FOR MORE THAN 7 DAYS. STABILIZE AREAS WITHIN 75' OF THE WETLAND AREA WITHIN 48 HOURS OF THE INITIAL DISTURBANCE OR PRIOR TO ANY STORM EVENT. PERMANENT SEEDING SHALL TAKE PLACE WITHIN 7 DAYS OF FINAL GRADING. REFER TO THE STORMWATER REPORT INCLUDED IN THE APPLICATION APPROVED BY THE CITY OF LEWISTON FOR TEMPORARY & & & CONTROL MEASURES.

9) IF FINAL SEEDING OF THE DISTURBED AREAS IS NOT COMPLETED PRIOR TO MAY 1, 2016, USE TEMPORARY MULCHING OR USE DORMANT SEEDING TO PROTECT THE SITE AND DELAY SEEDING UNTIL MAY 1, 2016. RECOMMENDATIONS FOR DORMANT SEEDING ARE INCLUDED IN NOTE 10E BELOW.

10) REVEGETATION MEASURES WILL COMMENCE UPON COMPLETION OF CONSTRUCTION EXCEPT AS NOTED ABOVE. ALL DISTURBED AREAS NOT OTHERWISE STABILIZED WILL BE GRADED, SMOOTHED AND PREPARED FOR FINAL SEEDING AS FOLLOWS:
   A) 4" OF LOAM WILL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE.
   B) APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST. IF SOIL TESTING IS NOT FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL, FERTILIZER MAY BE APPLIED AT THE RATE OF 1000 POUNDS PER ACRE OR 15 POUNDS PER SQUARE FOOT USING 10-20-20 (N-P205-K20) OR EQUIVALENT. APPLY GROUND LIMESTONE (EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF 3.3 TONS PER ACRE (150 lbs. PER 1000 s.f.)
   C) FOLLOWING SEED BED PREPARATION, DITCHES AND BARK SLOPES WILL BE SEEDED TO A MIXTURE OF 47% CREEPING RED FESCUE, 5% REDTOP AND 48% TALL FESCUE. THE LAWN AREAS WILL BE SEEDED TO A PREMIUM TURF MIXTURE OF 44% KENTUCKY BLUEGRASS, 44% CREEPING RED FESCUE AND 12% PERENNIAL RYEGRASS. SEEDING RATE IS ONE POUND PER 1000 s.f. LAWN QUALITY SOD MAY BE SUBSTITUTED FOR SEED. SEED MIX SHALL CONTAIN 10% ANNUAL RYEGRASS.
   D) HAY MULCH AT THE RATE OF 70-90 lbs PER 1000 s.f. OR A HYDRO-APPLICATION OF ASPHALT, WOOD OR PAPER FIBER SHALL BE APPLIED FOLLOWING SEEDING. A SUITABLE BINDER SUCH AS CURASOL OR RMB PLUS WILL BE USED ON HAY MULCH FOR WIND CONTROL.
   E) DORMANT SEEDING SHALL CONSIST OF THE PREPARATIONS ABOVE WITH THE SEED MIXTURE DOUBLED.

CONSTRUCTION NOTES

1) LIGHT POLES SHALL BE FULL CUTOFF FIXTURES NOT TO EXCEED 20' IN HEIGHT.

2) THE WINTER CONSTRUCTION METHODS NOTED BELOW SHALL BE TAKEN IF THE POND IS CONSTRUCTED BEFORE MAY 1, 2016. IN ADDITION, THE QUALIFIED THIRD PARTY INSPECTOR SHALL BE PRESENT TO OBSERVE THE EXCAVATION AND CONSTRUCTION OF THE POND. SITE VISITS SHALL BE MADE ON EACH DAY THAT POND CONSTRUCTION IS BEING PERFORMED. REPORTS OF FIELD INSPECTIONS WHICH INCLUDE A SUMMARY OF THE WORK COMPLETED AND ANY DIRECTIONS GIVEN OR TAKEN.

3) THE APPLICANT WILL RETAIN THE SERVICES OF A PROFESSIONAL ENGINEER TO INSPECT THE CONSTRUCTION AND STABILIZATION OF ALL STORMWATER MANAGEMENT STRUCTURES TO BE BUILT AS PART OF THE PROJECT. IF NECESSARY, THE INSPECTING ENGINEER WILL INTERPRET THE CONSTRUCTION PLANS FOR THE CONTRACTOR.

WINTER CONSTRUCTION

1) WINTER CONSTRUCTION IS CONSTRUCTION ACTIVITY PERFORMED DURING THE PERIOD FROM NOVEMBER 1 - 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.

2) SITE STABILIZATION - FOR WINTER STABILIZATION, HAY MULCH IS APPLIED AT TWICE THE STANDARD TEMPORARY STABILIZATION RATE. AT THE END OF EACH CONSTRUCTION DAY, AREAS THAT HAVE BEEN BROUGHT TO FINAL GRADE MUST BE STABILIZED. MULCH MAY NOT BE SPREAD ON TOP OF SNOW.

3) SEDIMENT BARRIERS - ALL AREAS WITHIN 75 OF A PROTECTED NATURAL RESOURCE MUST BE PROTECTED WITH A DOUBLE ROW OF SEDIMENT BARRIERS.

4) DITCH - ALL VEGETATIVE DITCH LINES THAT HAVE NOT BEEN STABILIZED BY NOVEMBER 1, OR WILL BE WORKED DURING THE WINTER CONSTRUCTION PERIOD, MUST BE STABILIZED WITH AN APPROPRIATE STONE LINING BACKED BY AN APPROPRIATE GRAVEL BED OR GEOTEXTILE UNLESS SPECIFICALLY RELEASED FROM THIS STANDARD BY THE DEPARTMENT.

5) SLOPES - MULCH NETTING MUST BE USED TO ANCHOR MULCH ON ALL SLOPES GREATER THAN 8% UNLESS EROSION CONTROL BLANKETS OR EROSION CONTROL MIX IS BEING USED ON THESE SLOPES.

NO.	REVISION	DATE
1	OUTLET CONTROL STORM NUMBERS	2-12-16

SHEET TITLE: CONSTRUCTION NOTES & DETAILS

SCALE: AS NOTED
DATE: FEBRUARY 2016
DRAWN BY: KRF
CHECKED BY: WMP

PROJECT: FARWELL SCHOOL EXPANSION
84 FARWELL STREET - LEWISTON, MAINE

CLIENT: HEBERT CONSTRUCTION, LLC
9 GOULD ROAD - LEWISTON, MAINE

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ROCKLAND, ME 04841
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STATE OF MAINE WILLIAM M. PETERLIN 3787 LICENSED PROFESSIONAL ENGINEER

JOB NO. - 16001

SHEET 3

CITY OF LEWISTON

Department of Planning & Code Enforcement

Lewiston
All-America City
2007

TO: **Planning Board**
FROM: **David Hediger, City Planner**
DATE: **February 16, 2016**
RE: **February 22, 2016 Planning Board Agenda Item IV(b)**

Public hearing to review and provide a recommendation for the City Council's consideration adoption of a new comprehensive plan for the City of Lewiston.

Pursuant to Article VII, Section 4(b) of the Zoning and Land Use Code, the planning board shall prepare and maintain a comprehensive plan as defined in Maine's Growth Management Act, 30M.R.S.A. section 4961 as amended (now 30-A M.R.S.A. §§ 4312 – 4350) and shall review and make recommendations on all investigations, reports and plans relating to the planning and development of the city or affecting the comprehensive plan.

The comprehensive plan is the foundation for determining effective public policy, master planning, and land use decisions for the future, and provides an ongoing framework for informed and directed development. The plan shall include goals, objectives, and strategies and utilize maps, graphs, and other imagery tools to analyze, assess, and recommend best practices for values-based planning, economic development, housing, infrastructure, and other improvements. The responsibility of the plan is to reflect and respond to the priorities, values, and requirements of Lewiston's residents, safeguarding the city's history and sense of place while stimulating the conditions for short- and long-term needs and desires of Lewiston.

The current Plan, adopted in 1997, ceased to be consistent with MSRA Title 30-A and Chapter 208 of the State of Maine's Comprehensive Plan Revision Criteria Rule at the end of 2012. Therefore, an update of the 1997 Comprehensive Plan is needed address new and future planning issues to result in a plan consistent with the Growth Management Act.

The city engaged the services of Town Planning and Urban Design Collaborative, LLC (TPUDC) to assist in drafting a plan for adoption by the City Council and for a finding of consistency by the State. Rules contained in Chapter 208 of the Comprehensive Plan Review Criteria contain criteria the Department of Agriculture, Conservation and Forestry uses to review community comprehensive plans for consistency with the goals and guidelines of the Growth Management Act. The State reviewed an early draft of the plan and made a finding of consistency in March 2015. Given some of the pending changes that have since been recommended by the public, staff, and Planning Board, a revised updated plan once adopted by the City Council will be provided to the State to maintain the City's finding of consistency. A finding of consistency under this Chapter 208 is deemed valid for twelve (12) years from the date of issue.

With the planning process kicking off at the end of April 2013, the consultant, staff, and the Planning Board have reached a point where a public hearing must be held to obtain additional

comments and to provide a recommendation for adoption of a new comprehensive plan to the Council pursuant to Article VII, Section 4(b) of the aforementioned code. In addition, a plan submitted for review under Chapter 208 must include the original signature(s) of the municipal officer(s) of the community (i.e. the City Council) under the following certification:

> I (we) certify that this comprehensive plan was prepared with the intent of complying with the Growth Management Act (30 M.R.S.A. §§ 4312 - 4350.), that it includes all of the applicable required elements of the Maine Comprehensive Plan Review Criteria Rule (07-105 CMR 208), and that it is true and accurate.

The Board has completed their extensive review of the plan. Their comments and suggestions are available for viewing at www.lewistonmaine.gov/comprehensiveplan

At this time, the Board is being asked to hold a public hearing, obtain additional input and suggestions, and to provide a favorable recommendation to the City Council to adopt the draft comprehensive plan.

ACTION NECESSARY:

Make a motion pursuant to Article VII, Section 4(b) of the Zoning and Land Use Code to send a favorable recommendation for the City Council's consideration to adopt a new comprehensive plan – Legacy Lewiston – and that the plan was prepared with the intent of complying with the Growth Management Act (30 M.R.S.A. §§ 4312 - 4350.), that it includes all of the applicable required elements of the Maine Comprehensive Plan Review Criteria Rule (07-105 CMR 208).

CITY OF LEWISTON

Department of Planning & Code Enforcement

FROM: **David Hediger, City Planner**
DATE: **February 16, 2016**
RE: **Summary of Planning Board comments and changes to draft comprehensive plan.**

The Planning Board completed their review of the second draft of the comprehensive plan – Legacy Lewiston – in January 2016. This draft was provided to the Board in March 2015 which incorporated initial comments provided to the consultants TPUDC from the Think Tank Committee, City staff, the Planning Board and the community.

The comments provided by the Planning Board on this second draft are extensive. However, the majority of them involve correcting typos, wordsmithing, and providing clarification. Given the size of the document and the large number of changes, the following is a summary of the more substantive changes and comments the Planning Board has noted on this draft of the plan. It should be noted there are many other changes and comments throughout the plan provided by the Board. The listing below attempts to highlight items the Board clearly agreed or remained divided upon which resulted in possible changes to policies, goals, or need for additional clarification. These comments should be considered in full context with the applicable sections of the plan.

1. P. 9: Established Lewistonians, new language: This population knew Lewiston in its heyday as a thriving industrial City, or perhaps are part of families that have long resided in the City. Now in their 70's and older, many may have worked in the mills or manufacturing industries of days gone by. They like to remember their City for what it was before the decline of traditional industries. Generally speaking, they are the parents of the "boomers" widely heralded for their loyalty, hard work, patriotism, respect for authority, self-reliance, and a strong sense of civic obligation. Some Established Lewistonians may find it difficult to get excited about Lewiston again, while others see the potential in change. They can and do provide a wealth of knowledge about the history and unique characteristics of their hometown.
2. P. 9: Another group and picture is added here as follows: "Accomplished Boomers": This population of Lewiston now in their 50's and 60's are beginning to ease into the retirement years. Despite such negative experiences as Vietnam, race riots, and recessions, they have been a fortunate generation with more educational, financial, and social opportunities than any generation before them. They may have grown up and raised families in Lewiston during times of optimism, achievement, and downturns. As a group, they expected the world to improve with time. Their years of experience is an asset as competition from then Next Generation presents challenges having experience and skills with new technologies.
3. P. 10: Additional language to provided clarification on formatting of the plan: The Plan includes columns of "What We Heard" as an attempt to express some of the feedback

received during the planning process. But not all of these comments necessarily reflect the overall consensus of the community or the future direction of Lewiston. Remember ..."

4. P. 14 and 15: The Bates College survey section will be changed to survey of Lewiston colleges after discussion with the Think Tank and Planning Board. The initial survey's timing was poor with Bates students leaving for summer. Staff attempted the survey a second time with other schools included. The section will be update to reflect additional replies. The point of this section is to provide a snapshot of student's thoughts about Lewiston. New language: The survey was administrated in June of 2013 and May of 2015 in attempt to collect a larger sample from students attending Bates College, USM's Lewiston-Auburn College and Kaplan University.
5. P. 30 and infographics throughout the document: The consultant started their work in the summer of 2013. As the Planning Board completed their review, some of the data has become out-of-date. Some census data appears to be for the Lewiston Metropolitan Statistical Area (MSA) instead of just Lewiston. Staff is in the process of updating infographics throughout the plan with new or more accurate date where applicable. For example, page 30 poverty levels will be updated with 2014 data as follows: Lewiston 23.6%, Auburn 17%, Portland 21%, Bangor 25%, and Maine 13.9%.
6. P. 46. Graphic to be deleted or moved to housing section. Interesting figure, but misleading with source being a "property owner"; not representative of the entire downtown or community.
7. P. 51. Add category "Culturally Significant Buildings": Lewiston offers a number of venues that have offered and continue to contribute to the community's identity. The Basilica Saints Peter and Paul, also known as Saints Peter and Paul Church was finished on July 18, 1936, and was dedicated on October 23, 1938. On July 14, 1983, the church was added to the National Register of Historic Places, for being the second largest church in New England. An active church with an impressive presence amongst the city skyline, it also serves as venue for various events. The Androscoggin Bank Colisée is a 4,000 capacity (3,677 seated) multi-purpose arena that opened in 1958. Perhaps best known as the venue for the heavyweight boxing championship rematch between Sonny Liston and Muhammad Ali, the Colisee has and continues to be home to hockey league teams, as well as trade shows, concerts, and other sporting events.
8. P. 55: The Board and Think Tank remained sensitive to naming specific businesses and organizations. However, in this section, the consultant listed many local housing assistance organizations. The Board believes it is necessary to include these organizations:
    - Tedford Housing. They work together with people in their communities to find lasting solutions to the challenges of homelessness, including shelter, housing, and services that empower adults, children and families in need.
    - Veterans Inc.: They help eliminate homelessness among veterans by providing quality services; and opportunities in the areas of health, employment and housing.
    - CEI. They provided financing and technical assistance to small and medium-sized businesses, community facilities, renewable energy, commercial real estate and affordable housing.
9. P. 56: new language: Depending upon the complaint, families have a number or resources

for assistance including code enforcement, the housing authority, general assistance, state health and human services and environmental departments. Tenant advocacy groups may provide assistance for those not able to speak English, unfamiliar with the reporting process, or concerned with authoritative actions by agencies or landlords.

10. P. 59: additional language: The tax credit units are offered at a fixed rent intended to be affordable to families at 50-60% of Area Median Income. The tenant based Section 8 assistance is unique in that it can be throughout the city for an apartment of an assisted family's choosing. This allows the local landlord community to benefit from federal subsidy dollars.
11. P. 62: under the pie charts an asterisk must be added with the following noted: Applying average move rates by household type, approximately one-quarter of these households will move over the next five years. Assuming appropriate residential units are available, Lewiston has the potential to capture a portion of these moving households. Young households are the largest group likely to move and thought should be given to whether Lewiston is in a good position to accumulate and attract those moves.
12. P. 68: new language: Improvements like the bandstand are in part guided by a master plan for the park providing guidance for future improvements. Recent improvements toward the evolution of the park include new planting and upgrades to infrastructure.
13. P. 79: #3 needs to be deleted as the Reservoir not available or safe for swimming. Replace with #3 Rancourt Preserve and Androscoggin Greenway.
14. P. 83: #3 needs to be deleted as the Reservoir not available or safe for swimming. Replace with #3 Rancourt Preserve and Androscoggin Greenway. Description to be added.
15. p. 93: add language to the Public Transit section: Rail service to Lewiston has played a historically large role in the development of Lewiston. Many French-Canadian immigrants arrived in the Lewiston via the Grand Trunk Railway. However, passenger rail service to Lewiston ended in the 1960's. With an apparent resurgence in passenger rail interest and the success of the Amtrak Downeaster from Boston to Portland, connectivity via rail is touted as a means of promoting economic development in Lewiston in addition to improving and providing an alternative form of public transit.
16. p. 93: add language: add to section: The lack of intercity bus services also creates transportation and connectivity barriers for residents.
17. P. 96 and 97: text and map listing roads and levels of services must be updated.
18. P. 105-107: updates being made to Fire and Police data.
19. P. 110: additional language regarding solid waste: These costs may be further reduced upon improved recycling rates. In 2014, 8.7% of Lewiston's residential trash (and small businesses which bring their trash to the solid waste facility AND the schools) was recycled. The city also is home to and has relationships ReEnergy Lewiston LLC which accepts and recycles nearly all solid materials from construction and demolition activities and Cassella Waste Systems, Inc. single bin recycling services that handles many types of recyclables including cardboard, paper, plastic, metal and glass that is baled, remarketed and transformed into new products.
20. P. 121: Under "Organization of the Map", there was much discussion about the Conservation and Growth Map. Not all Board members agree with where growth is projected or limited. However, as noted in the previous paragraph of the plan, the Map is not a zoning map. It is intended to show, in a general sense, the desired pattern and

location of future development. The boundaries shown are imperfect and intended only to reflect the general pattern of desired future development.

21. P.122: Some concern was expressed as to whether the statement "...focus should be made on infill development and redevelopment in areas already served..." conflicts with recommendations elsewhere in the plan for new development (i.e. Geiger Neighborhood and Industrial Village).
22. P. 128: Character District (CD3) Suburban Neighborhood. Planning Board expressed concerns if "expand(ing) the ability to create an "accessory apartment" in existing single family homes" may change the fabric of single family neighborhoods.
23. P. 131. The Summary of Impact to Community Facilities and Services table is helpful and interesting, but some of the statistics are in need of revisiting and updating. As an example, student projections in Lewiston are somewhat of anomaly given the new immigrants in the community. Therefore, the numbers have been updated based upon the Lewiston School Department. Their projections take into consideration that Lewiston's average household size exceeds the state average, in part to new immigrant families. That number is expected to drop in future years, along with enrollment being limited by housing capacity.
24. P. 134: Some Planning Board members expressed concerns with these conceptual plans. For example, Geiger School Neighborhood encourages unrealistic growth where infrastructure does not exist. The image shows too much density and school would have to expand if developed in this pattern. There was also concern with the small lot sizes shown. Other Board members noted that all the plans and images in this section titled "Promote Mixed Use Centers" are conceptual and that needs greater emphasis so that the public does not get distracted by the specifics of the images, rather focus on the ideas and concepts being considered. To make it clear these images are for illustrative purposes only the term "Concept Growth Sector Plan" and/or "concept" is being added where necessary pages 134-163.
25. P. 138 -139: Under "Provide More Housing Choices" the Planning Board expressed some concern with the density shown for housing, lack of parking at the school, house lots being too small for septics, expansion of public utilities needed, and no room for growth of school associated with new residential development. The Board feels the graphics should show less density and make it clearer the development pattern shown is conceptual in nature. The consensus of the Board was that the concept may be appropriate, but the graphic representation is too grand in scale as shown.
26. P. 139: "Cottage Courts" the Planning Board expressed some concern about small lot sizes. It was also noted that if the small greens are to be maintained as part of an association versus the City, historically associations have been problematic in Lewiston due to lack of interest and responsibility by the homeowners. If implemented, thought and consideration is needed of who and how they are maintained.
27. P. 144-145. Urban Farm concept in this part of town caused some concern. Even conceptually, having pigs and chickens in this area is likely problematic. Recognizing much depends upon the size and scale of the operation/farm, livestock versus fruit and vegetables is probably not appropriate for this area.
28. P. 150-151: Lisbon Street Suburban Retrofit Concept. Some Planning Board members noted the area currently lacks creativity; that infill with retail should occur here first before new site developed at exit 80.

29. P. 151: Safe Streets: Some Planning Board members expressed concerns that this is not an appropriate road to be considered for a "complete street". They recognized surrounding streets may be more appropriate and that the level of development shown may accommodate complete streets. They suggested revising the language so that s safe street design and complete street are considered when appropriate without specific streets referenced. Language to be added: Consider, when appropriate, the implementation of complete streets. Additional consideration should be given to seeking alternate routes to avoid congested areas.
30. P. 161-162: Rural Living Hamlet Concept: Some Board members welcomed the desire and ability to preserve open space in rural areas. But, the imagery provided shows a density that would require extension of city sewer. Understanding the images are conceptual, consideration should be given toward amending the graphic to show larger lots.
31. P. 170. Goal amended to "establish a TIF district in Mill, Riverfront, and Centreville zoning districts to support local business".
32. P. 171. Under "Strengthen Regional Alliances" the Planning Board discussed whether this section should speak to Lewiston being a service center community which is to the benefit of surrounding communities and the need for those communities to contribute to Lewiston's expenses.
33. P. 172: Some Board members question whether this number (up to 600 new housing units by 2020) remains realistic given economic conditions.
34. P. 172: Some Planning Board members feel this language ("...focus on providing new, high quality, multifamily residences as opposed to the current trend of building single family homes in area note currently served by water and sewer") is inconsistent with other areas of the plan where competing strategies/policies are recommended. Some questioned whether we looking for in- fill and conservation of rural areas, or new subdivisions and new commercial/village centers.
35. P. 172: Reference to public and providing funding is made. Some Board members have expressed concerns with additional public funds and investment toward subsidized housing and whether additional subsidized units will improve the overall desirability of Lewiston.
36. P. 173: Promote Construction of mixed income ~~affordable~~ housing. The Board noted the goal and policy must also encourage and look to enhance opportunities specifically for market rate units and not just affordable units.
37. P. 174: Delete "Implement Vacancy Housing". There was discussion about whether this section should remain: some thought it was a good idea, others questioned whether it was realistic and how to implement given staffing.
38. P. 175: Establish Land Bank: Concerns were expressed about pursuing land available on the open market to support development. Land banking may be appropriate to support a municipal use (i.e. school, fire, police, etc.). Otherwise, let the private sector resolve title and lien issues. Some Planning Board members have concerns with the City entering into direct negotiations with concerns of collusion. There was also concern that it may become a burden to the finances of the community.
39. P. 176: Delete "Start a Board and Seal Club". Not legally allowed.
40. P. 181: Some Board members question if these numbers (2,000 new jobs by 2020 in Androscoggin County) remains realistic given the current economic climate.

41. P. 192: 2-Way Street Network: Many Board member expressed concerns and doubts with returning or making roads two-way and stressed that while exploring this should be considered, it should not be a priority.
42. P. 193: Board did not want two-way conversions to take precedent over other traffic improvements, while recognizing some downtown roads may make sense to change upon addition studies completed. Language added: While specific streets are referenced as examples, the City's goal should be consider which streets may function more effectively for purposes of improving traffic flow, business activity, and pedestrian acclivity.
43. P. 198: Improving Neighborhood Street and Intersections: The Board noted creating sidewalks 15' wide is challenging to due existing ROW widths, travel lanes, goal of returning to two-way traffic on certain streets, the accommodation of bike lanes, etc. Sidewalks of this width should be allowed only when determined to be appropriate.
44. P. 201: Regional Coordination (Transit): The Board felt MDOT does not do a good job of obtaining public input on improvements. Additional language: The City should look to improve communications with Maine Department of Transportation with respect to community input and involvement on planned improvements. This may also result in greater public participation with meeting held in Lewiston.
45. P. 201: Regional Traffic and Transit Service: additional language: The city should also look to gather support from surrounding communities and explore the possibility of removing the Maine Turnpike toll barrier in Gray/New Gloucester. The toll barrier encourages trucks and commuters to avoid the toll on the turnpike north of the Gray exit - ruining the quality of life and damaging the secondary roads with heavy weight vehicles.
46. P. 206: Delete entire "Create a TDR Program" as staff and Board have since learned (or have been reaffirmed) that TDR's don't work well Maine. Bates students completed a study showing we have too much available land and not enough development pressures for implementation.
47. P. 219: additional language related to solid waste: The city needs to emphasize the financial benefits to the community of recycling and improve upon the existing low rates of 11.2% in fiscal year 2013 and 8.7% is 2015. Additional outreach and education of the benefits of recycling must also be expanded upon. Additional efforts should also be made to increase the use and utilization of the zero- sort recycling facility, an underutilized asset to the community.
48. P. 220: Capital Project Investments: in years past the School Department did not always submit a list of capital improvements for the Planning Board and Council to review. Additional language: Participation and requests by the School Department must be included as part of the process.
49. P. 231: add another sub-category under Resource Allocation titled " Staffing: Additional city staffing must be considered for the successful implementation of this plan. Specifically, the need to right size the Department of Planning and Code Enforcement will assist in moving forward with the vision and guiding principles of this plan in context with the implementation matrix."
50. P. 233-257: Implementation Matrix (also referenced as pages 1-25): changes on these pages relate to the Transformations section of the plan in effort to makes sure the action and parties are consistent with that referenced in the plan.

CITY OF LEWISTON

Department of Planning & Code Enforcement

Lewiston ★★★★★ All-America City 2007

TO: Honorable Mayor, Members of the City Council and Planning Board
FROM: David Hediger, City Planner
DATE: February 13, 2016
RE: Public Hearing for Adoption of the Comprehensive Plan

The Lewiston Planning Board will hold a hearing on Monday, February 22, 2016 at 5:30 p.m. in the City Council Chambers, First Floor of the City Building to review and provide a recommendation for the City Council's consideration adoption of a new comprehensive plan - Legacy Lewiston - for the City of Lewiston. The following summarizes the process thus far:

- March 2013: City entered into a contract with Town Planning & Urban Design Collaborative (TPUDC) to produce a new comprehensive plan.
- April 29, 2013: Kick off meeting held with TPUDC and comprehensive plan Think Tank Committee.
- June 4, 2013: Kick off meeting held with TPUC and City Council.
- June 20-25, 2013: 5 day charrette – Planapalooza - held to gather the public's input on the content of the plan.
- November 2013-February 2014: preliminary draft of plan was provided to staff and Think Tank to review.
- March 2014: staff and Think Tank comments were provided to TPUDC
- August 2014: revised draft of plan was received from TPUDC was released for public comment.
- August –October 2014: public comment period on draft plan.
- October 2014: update was provided to Think Tank.
- November 15, 2014: TPUDC held a public meeting to update public on plan, comments received, and next steps.
- November –December 2014: public comment period extended.
- March 2015: TPUDC provided revised plan based upon comments received.
- March 2015: State provided a finding of consistency on draft plan.
- March-June 2015: Planning Board held public meetings, reviewing and providing comments on the draft plan.
- July-August 2015: staff prepared draft of plan noting Planning Board comments and suggestions.
- September 2015-present: Planning Board finalized their comments and suggestions in preparation for providing a recommendation to the City Council for adoption.

- November 10, 2015: joint City Council/Planning Board workshop on status of comprehensive plan.
- January 11, 2016: Planning Board completed their review of the plan. Staff beings process to make revisions to present at a public hearing.
- February 22, 2016: Planning Board will hold hearing for public input and to provide a recommendation for the City Council's consideration adoption of a new comprehensive plan for the City of Lewiston.

At this time, the Planning Board has completed its review of the draft comprehensive plan and has recommended well over 300 changes. Most of the changes are typos and wordsmithing; however, other recommendations are of more substance. One particular item that has become time consuming relates to the statistics and associated graphics. There are many references to the American Community Survey throughout the plan as this census data is being used to provide specific demographic, housing, social, and economic data. In order to provide a basis for analysis, the plan must include sufficient data to identify current conditions and future trends for each of the topic areas required by the State to be addressed (i.e. housing, population, economy, etc.). The data has led to lengthy discussions about accuracy of the plan, what it suggests about the community, and the importance of including it.

The draft plan may seem very busy and at times is confusing when first reviewing. This is due to the formatting and file type of the plan and the necessity to show all the changes being considered. These changes are being presented to the public and eventually the City Council for comment and review. The Planning Board will be providing a recommendation to adopt the plan which will then be provided to the City Council for their consideration. The Council will be having a workshop (TBA) at which time the plan and the Board's recommendation will be discussed. The Council will then hold a public hearing to adopt the plan. Upon the Council's adoption of the plan a final document will be produced incorporating the changes and recommendations agreed upon by the Council.

A summary of the substantive changes being recommended by the Planning Board will be provided prior to the hearing on February 22nd.

Given the time that has lapsed since this process began, you may be asking why are we doing a comprehensive plan. The current plan, adopted in 1997, ceased to be consistent with MSRA Title 30-A and Chapter 208 of the State of Maine's Comprehensive Plan Revision Criteria Rule at the end of 2012. The proposed Comprehensive Plan will address new and future planning issues and result in a Plan consistent with the Growth Management Act of the State of Maine. The Plan will guide future growth, redevelopment, zoning changes and may support many grant proposals. The Comprehensive Plan is the foundation for determining effective public policy, master planning, and land use decisions for the future, and will provide an ongoing framework for informed and directed development. The Plan includes goals, objectives, and strategies and utilizes maps, graphs, and other imagery tools to analyze, assess, and recommend best practices for values-based planning, economic development, housing, infrastructure, and other improvements. The responsibility of the Plan is to reflect and respond to the priorities, values, and requirements of Lewiston's residents, safeguarding the city's history and sense of place while stimulating the conditions for short- and long-term needs and desires of Lewiston.

Those familiar with comprehensive plans will immediately notice that this plan – Legacy Lewiston – is a departure from a traditional plan. When the consultant TPUDC was chosen to prepare this plan, a large part of that decision was based upon the final document they promised to produce: a plan that was appealing to look at and easy to read and understand. The State's finding that a plan is consistent with law is valid for 12 years from the date of its issuance; however, many of the goals and ideas in this plan go well beyond that time period. Further contmplenation will be needed for many aspects of the plan since it sets a bold, long-term vision to guide growth. The plan touches upon a broad range of development issues and city services to provide a blueprint for smart, sustainable growth that reflects the priorities, values, and requirements of Lewiston's residents, safeguarding the city's history and sense of place but stimulating the conditions for short- and long-term needs and desires of Lewiston.