



TOWN OF BRUNSWICK
STAFF REVIEW COMMITTEE

STAFF REVIEW COMMITTEE
- AGENDA -
BRUNSWICK TOWN HALL
85 UNION STREET
ROOM 206
WEDNESDAY, AUGUST 3, 2016, 10:00 A.M.

1. **Case #16-018 – Church Rd Hair Salon:** The Staff Review Committee will review and take action on a **Minor Development Review** application submitted for Annamaria Horne and Vance Horne by representative, Patrick Harty to redevelop a former office with a new hair salon at 56 Church Road in the **Church Road Industrial Park (I2) Zoning District; Assessor’s Map U31, Lot 36A.**
2. **Case # 16-027 – 720 Old Portland Rd. Greenhouse:** The Staff Review Committee will review and take action on a **Minor Development Review** application submitted by Sitelines, PA to construct a 1,800 square foot greenhouse at 720 Old Portland Road in the **Rural Mixed Use 5 (MU5) Zoning District; Assessor’s Map 11, Lot 12.***
3. **Case #16-028 – Hancock Mid-Coast, LLC:** The Staff Review Committee will review and take action on a **Minor Development Review** application submitted by Main-Land Development Consultants, Inc. to demolish an existing 2,497 square foot storage building and construct a new 9,246 square foot warehouse building at 158 Church Road in the **Church Road Industrial Park (I2) Zoning District; and the Natural Resource Protection Zone (NRPZ); Assessor’s Map 17, Lot 22.****
4. **Adjourn**

***Case #16-027 – 720 Old Portland Rd, Vehicle Greenhouse added to the agenda 7/15/2016**

****Case #16-028 – Hancock Mid-Coast, LLC added to the agenda 7/21/2016**

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

**MINOR DEVELOPMENT REVIEW
APPLICATION**

1. Project Name: PROPOSED HAIR SALON, 50 CHURCH ROAD, BRUNSWICK

2. Project Applicant

Name: ANNAMARIA & VANCE HORNE
Address: S ARROWHEAD RIDGE RD
FREEPORT, ME 04032
Phone Number: 319-3302

3. Authorized Representative

Name: PATRICK HARTY, PLS
Address: 540 BAY ROAD
BOWDOINHAM, ME 04008
Phone Number: 729-4571

4. List of Design Consultants. Indicate the registration number, address and phone number of any engineer, surveyor, architect, landscape architect or planner used:

1. PATRICK HARTY, PLS 2089 729-4571
2. THOMAS SAUCIER, PE 6085 23 WHITNEY WAY, TOPSHAM 449-4275
3. _____

5. Physical location of property being affected: 50 CHURCH ROAD

6. Lot Size: 13,320 SQ. FT.

7. Zoning District: IZ - CHURCH RD INDUSTRIAL PARK

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

APPLICANT IS PROPERTY OWNER - CORD DEED BOOK 3316 PAGE 092
APPLICANT HAS NO INTEREST IN ABUTTING PROPERTY.

9. Assessor's Tax Map U-31 Lot Number 36A of subject property.

10. Brief description of proposed use: EXISTING STRUCTURE TO BE
REMODELED INTO A 3 SEAT HAIR SALON

11. Describe specific physical improvements to be done: SMALL ADDITION TO THE
BUILDING IS PROPOSED. A PAVED PARKING LOT WILL
BE CONSTRUCTED BEHIND THE EXISTING STRUCTURE

Owner Signature: _____

Applicant Signature (if different): Patrick Harty, PLS

Required Attachments (by Applicant):

- Final Plan Check List
- Final Plan Check List Addendum for Open Space Developments (if applicable)
- Request for Waivers (if applicable)
- Required Copies of Final Plan

Required Attachment (by Planning and Development Department):

- Listing of all owners of property within 200-foot radius of property under review.

FINAL PLAN REQUIREMENTS

Key: "O" = omit; "S"=submit; "NA"=not applicable; "W" = waiver; "P" = pending

Item	O	S	NA	W	P	Comments
Scale, date, north point, area, number of lots (if subdivision)		✓				
Boundaries of all lots and tracts with accurate distances and bearings, locations of all permanent monuments property identified as existing or proposed.		✓				
Certification by a professional land surveyor that the land has been surveyed and the boundaries established in accordance with the State of Maine Board of Licensure for Professional Surveyors standards for Category 1 (Standard Boundary Survey), conditions 1, 2, or 3.		✓				
Existing zoning district and overlay designation.		✓				
Names of engineer and surveyor; and professional registration numbers of those who prepared the plan.		✓				
Names of current owner(s) of subject parcel and abutting parcels.		✓				
Name, location, width of paving and rights-of-way, profile, cross-section dimensions, curve radii of existing and proposed streets; profiles of center-lines of proposed streets, at a horizontal scale of 1" equals 50' and vertical scale of 1 inch equals 5 feet, with all elevations referred to in U.S.G.S. datum.			✓			
A general road plan noting circulation, direction, traffic control devices, street lighting and type of lighting proposed.		✓				
Existing and proposed easements associated with the development.			✓			
Kind, location, profile and cross-section of all proposed drainage facilities, both within the development and outside of it, and a storm-water management plan which includes the submission requirements listed in the storm-water management checklist available in the Planning Department.		✓				
Location of features, natural and artificial, affecting the development, such as water bodies, wetlands, streams, vegetation, rail-roads, ditches and buildings.		✓				

S N/A W

Location of existing and proposed utilities; water, sewer, electrical lines, and profiles of underground facilities. Tentative locations of any private wells.		✓				
Existing and proposed location, size, profile and cross section of sanitary sewers; description, plan and location of other means of sewage disposal with evidence of soil suitability.			✓			
Topography with counter intervals of not more than 2 feet.		✓				
A Class A (high intensity) Soil Survey prepared in accordance with the standards of the Maine Association of Professional Soil Scientists.					✓	
Location of all existing trees over 10 inches in diameter, locations of tree stands, and a plan showing all trees to be removed as a result of the development proposal.		✓				
Lighting plan showing details of all proposed lighting and the location of that lighting in relation to the site.		✓				
Existing locations and proposed locations, widths and profiles of sidewalks.		✓				
Location map.		✓				
Approximate locations and dimensions of proposed parking areas.		✓				
Proposed ownership and approximate location and dimensions of open spaces for conservation and recreation.			✓			
Grading, erosion control, and landscaping plan; proposed finished grades, slopes, swells, and ground cover or other means of stabilization.		✓				
Reference to special conditions stipulated by the Planning Board, with conditions either set forth in full or on the plan or identified as specific documents filed with the Board.			✓			
A wetlands map drawn by a specialist delineating wetland boundaries in accordance with the methods prescribed by the US Army Corps of Engineers.			✓			
Dedicated public open spaces, areas protected by conservation easements, and existing and proposed open spaces or recreation areas.			✓			

FINAL PLAN/SUPPORTING DOCUMENTS

Key: "O" = omit; "S"=submit; "NA"=not applicable; "W" = waiver; "P" = pending

Item	O	S	NA	W	P	Comments
Documentation of Ownership or contract.		✓				
Drafts of legal documents appropriate to the application, including: deeds, easements, conservation easements, deed restrictions or covenants, home/property owners association declarations and by-laws, and such other agreements or documents as are necessary to show the manner in which conservation land will be owned, maintained, and protected.			✓			
Draft performance guarantee or conditional agreement.			✓			
Disclosure of any required permits from the Department of Environmental Protection, Marine Resources, US Army Corps of Engineers, Department of Inland Fisheries and Wildlife, or other agencies, as applicable; or, if a permit has already been granted, a copy of that permit.			✓			
Any additional studies required by the Planning Board which are deemed necessary in accordance with this Ordinance.			✓			
Storm water management program for the proposed project prepared by a professional engineer.		✓				
A storm water management checklist prepared by the Cumberland County Soil and Water Conservation District, made available at the Brunswick Department of Planning and Development.			✓			

5 N/A W

An erosion and sedimentation control checklist prepared by the Cumberland County Soil and Water Conservation District.			✓			
A statement from the Brunswick-Topsham Water District of conditions under which water will be provided.			✓			
A statement from the Brunswick-Topsham Water District of its review and comments on the proposed use if the project involves development within the Aquifer Protection Zone.			✓			
A Statement from the Fire Chief recommending the number, size, and location of hydrants, available pressure levels, road layout and street and project name, and any other fire protection measures to be taken.			✓			
A statement from the Superintendent of the Brunswick Sewer District of the conditions under which the Sewer District will provide sewerage disposal service and approval of the sanitary sewers proposed within the development.			✓			
Where a septic system is to be used, evidence of soil suitability.			✓			
All applicable materials necessary for the reviewing entity to review the proposal in accordance with the Criteria of Section 411.		✓				
A plan of all buildings with new construction or expansion of an existing facility, including type, size, and footprint, floor layout, setback, elevation of first floor slab, storage, and loading areas.		✓				
An elevation view of all sides of each building proposed indicating height, color, bulk, surface treatment, and signage.			✓			
A circulation plan describing all pedestrian and vehicle traffic flow on surrounding road systems.			✓			
The size and proposed location of water supply and sewage disposal systems and provision for future expansion of those systems.			✓			
A site landscaping plan indicating grade change, vegetation to be preserved, new plantings used to stabilize areas of cut and fill, screening, the size, location and purpose and type of vegetation.		✓				

Warranty Deed

Know All Men by These Presents,

That COPPER TOPS, a Maine Corporation, duly organized and existing, and having a principal place of business at Brunswick, County of Cumberland and State of Maine (address: 56 Church Road, Brunswick, ME 04011) in consideration of one Dollar and other good and valuable considerations, paid by

- VANCE L. HORNE and ANNAMARIA HORNE-

of Freeport, County of Cumberland and State of Maine (address: 5 Arrowhead Ridge Road, Freeport, ME 04032), the receipt whereof it does hereby acknowledge, does hereby give, grant, bargain, sell and convey unto the said

- VANCE L. HORNE and ANNAMARIA HORNE -

as joint tenants and not as tenants-in-common, and their heirs and assigns, and the survivor of them, and the heirs and assigns of the survivor of them, forever,

A CERTAIN LOT OR PARCEL OF LAND, together with the buildings thereon, situated on the southerly side of the Church Road, so-called, in the Town of Brunswick, County of Cumberland and State of Maine, and more specifically bounded and described as follows:

BEGINNING at a point on the southerly side of said Church Road where the northerly line of land now or formerly of Archille Bisson intersects said Church Road; thence in a general southwesterly direction along the northerly line of land now or formerly of said Bisson, a distance of two hundred and seventy (270) feet to a point; thence easterly a distance of two hundred (200) feet to the westerly sideline of said Church Road; thence northerly along the westerly sideline of said Church Road one hundred and forty (140) feet to the point begun at.

MEANING AND INTENDING to convey a triangular parcel of land, said parcel being a portion of the premises that was conveyed to Archille Bisson by Octave Castonguay by his Deed of Warranty dated December 12, 1933, and recorded in the Cumberland County Registry of Deeds in Book 1427, Page 477.

FOR SOURCE OF TITLE, reference may be made to the Warranty Deed of Daniel Leveris and Jane M. Leveris to Copper Tops, dated May 2, 2007, and recorded in the Cumberland County Registry of Deeds in Book 25081, Page 204.

MAINE REAL ESTATE TAX PAID

TO HAVE AND TO HOLD, the aforegranted and bargained premises with all the privileges and appurtenances thereof, to the said

- VANCE L. HORNE and ANNAMARIA HORNE -

as joint tenants and not as tenants-in-common, and their heirs and assigns, and the survivor of them, and the heirs and assigns of the survivor of them, to them and their use and behoof forever.

AND IT DOES COVENANT with the said Grantees, as aforesaid, that it is lawfully seized in fee of the premises; that they are free of all encumbrances, except as aforesaid; that is has good right to sell and convey the same to the said Grantees to hold as aforesaid; and that it and its successors and assigns shall and will WARRANT AND DEFEND the same to the said Grantees, their heirs and assigns forever, against the lawful claims and demands of all persons.

IN WITNESS WHEREOF, the said COPPER TOPS has caused this instrument to be signed in its corporate name and sealed with its corporate seal by James T. Welner, IV, its President, and Andrew C. Miller, its Treasurer thereunto duly authorized, this 5th day of May, 2016.

Signed, sealed and delivered
in the presence of

[Signature]

To Both

COPPER TOPS

By: [Signature]

James T. Welner, IV
Its President,

By: [Signature]

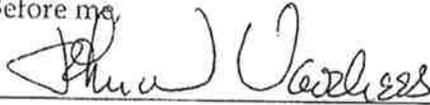
Andrew C. Miller
Its Treasurer,

STATE OF MAINE
SAGADAHOC, ss

May 5, 2016

Then personally appeared the above-named, JAMES T. WELNER, IV, in his capacity as President, and ANDREW C. MILLER, in his capacity as Treasurer, of COPPER TOPS, and acknowledged the foregoing instrument to be their free act and deed, and the free act and deed of said corporation.

Before me,



Notary Public (Seal)

John W. Voorhees

Typed or Printed Name of Notary
Notary Public, Maine
My Commission Expires August 18, 2019

My Commission Expires: _____

Received
Recorded Register of Deeds
May 17, 2016 01:46:46P
Cumberland County
Nancy A. Lane

July 06, 2016

Town of Brunswick
Anna Breinich, Director of Planning & Development
85 Union Street
Brunswick, ME 04011

**Re: STAFF DEVELOPMENT REVIEW APPLICATION
56 CHURCH ROAD, BRUNSWICK, ME**

Dear Ms. Breinich,

We are working with property owners Vance Horne and Annamaria Horne to assist them with acquiring local permits on their proposed development at 56 Church Road, Brunswick. The existing building on site is to be renovated into a three seat hair salon. The existing utilities currently servicing the property are proposed to remain. The parking area will be expanded to the rear of the structure, and surface water drainage will be managed with ditching and tying into the Town's existing storm water drainage system.

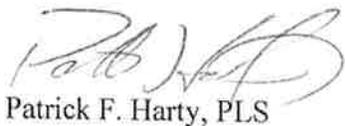
One waiver is being requested: A waiver to preparing a High Intensity Soil Survey. Note 7 on the site plan references the USDA SCS medium intensity soil survey for Cumberland County. The small 13,320 sq. ft. lot is classified in the said soil survey as Winsor Loamy Sand 0-8 percent slopes (WmB).

Attached is copy of the Horne's deed to the premises, and a report by Thomas Saucier, PE of Site Design Associates, addressing the grading and drainage plan.

The following Exhibit A addresses all of the zoning Ordinance Chapter Five: Development Review Plan Standards.

Do not hesitate to call and discuss any questions or comments you may have with this application. We look forward to meeting with you soon to review the application and proposed site plan.

Sincerely,



Patrick F. Harty, PLS

EXHIBIT A
DEVELOPMENT REVIEW PLAN STANDARDS

- 501.1 The property has existing improvements on site. The site has an existing building, paved driveway, with the remaining area effectively lawn. A mature cedar hedge along the north line by Church Road is to remain. The mature trees surrounding the property are located on abutting lands.
- 501.2 The parcel area is 13,320 square feet. The net site area is 13,320 square feet.
- 502 The parcel is not in a flood hazard areas as shown on the FEMA FIRM 230042 0015B dated 01/15/86.
- 503 There are no steep slopes and embankments on site.
- 504 Attached is a report prepared by Thomas Saucier, PE to address storm water management.
- 505 The property is served by the Brunswick Sewer District, therefore no subsurface wastewater disposal system is proposed. The existing impervious area is to be increased by approximately 3300 square feet. Increase in storm water runoff will be managed through infiltration and by tying into the existing storm water drainage system.
- 506 Erosion and sedimentation control measures are shown on the proposed site plan.
- 507 The existing sewer line connected to the municipal sewer system will continue to be used.
- 508 The existing water line connected to the public water supply will continue to be used.
- 509 The proposed project is a use change to an existing structure. The proposed improvements are minor, and will not impact local sewer, water, traffic, and school systems.
- 510 Since the proposed development is not expected to impact municipal infrastructure and/or service systems, the applicants should not be required to provide any development impact fees.
- 511 No new streets are proposed. Existing curb cuts are to be used and improved.
- 512 The existing front driveway will continue to provide parking. The bulk of the new parking is to be located to the rear of the existing structure.
- 512.2 The planning staff has indicated a three seat hair salon requires nine parking spaces. Proposed are eight regular and one handicap parking space.
- 512.3 The proposed parking area is an addition to an existing developed site. No parking is proposed within the boundary setbacks. The existing structure will provide a screen to the new rear parking area.
- 512.4 The new parking area surface will be bituminous pavement. A light on the rear of the structure, illuminating the parking lot, will provide favorable conditions for personal safety, pedestrian travel, and vehicular travel.
- 512.5 A bicycle rack is proposed to be installed to the rear of the existing structure. A paved walking path along the south building line will provide safe access from the rear parking area to the main salon entrance.
- 512.6 Since the required number of parking spaces has been met, there is no alternative parking plan proposed.
- 513 Existing curb cuts will be used and improved. The distance between the east curb cut and the Bath Iron Works curb cut is approximately 70 feet. The distance between the west curb cut and the ME Vocational Region 10 curb cut is approximately 50 feet.
- 514 Loading requirements are not applicable to the proposed use.
- 515.1 The existing loop driveway is to be maintained, with low shrubs and flower beds installed within the island to screen parked vehicles.
- 515.2 The proposed shrubs located within the island area will be consistent with the abutting commercial facilities landscaping. The cedar hedge screening the Bath Iron Works structure will remain.
- 515.3 Very little tree and shrub vegetation currently exists on the property. However the proposed facility will be well screened by existing trees and shrubs located on abutting property, in close proximity to the lot lines.

- 515.4 Proposed are three exterior lights, all to be less than 200 watts. Since the areas requiring lighting are small, residential type lights will be utilized.
- 515.5 There is an existing sign on the premises. Proposed is a new sign at the same location as the existing sign.
- 515.6 The property is not in the Village Review Zone.
- 515.7 The property is not in the Cooks Corner District.
- 516 The main entrance to the salon is to be located at the front of the existing building, close to the south corner of the structure. A small addition is proposed to the rear of the existing structure.
- 517 There are no known historic resources on site, so preservation is not applicable.
- 518 A handicap accessible parking space is proposed to be located closest to the main salon entrance. Exterior walkway finished grade will be slightly lower the finished floor grade, allowing A.D.A. accessibility.
- 519.1 The Recreational Requirements for Residential Developments is not applicable.
- 519.2 There is no reserved land; therefore this section is not applicable.
- 519.3 Since the proposed development is an improvement to an existing facility, there should be no fee for land for recreation purposes.
- 519.4 No recreation or conservation land is proposed; therefore this section is not applicable.
- 520 The property owners have available a letter from a bank indicating sufficient funding for the project.
- 521 A performance guarantee is not applicable to this project.
- 522 Homeowners/Property Owners associations are not applicable to this project.
- 524.1 Construction will be performed Monday through Saturday, between 7 AM and 7PM. Work on holidays will not be permitted.
- 524.2 Exposed gravel areas will be treated with water or calcium chloride to control dust and other airborne particles. All parking areas are to be paved, with the remaining areas loamed and seeded in order to eliminate long term dust and siltation problems.

Site Design Associates
Consulting Engineering and Land Planning

July 6, 2016

Pat Harty, PLS
Harty and Harty Professional Land Surveyors
Via Email

RE: Proposed Site Plan
56 Church Road
Brunswick, Maine

Dear Pat:

Per your request, we have reviewed the grading and drainage plan you prepared for the subject project, in order to determine what stormwater treatment capacity is available on the site of the proposed development.

It is our understanding from you that the project will involve the creation of approximately 3,450 sf of new impervious surface. Based on our review of the plans, it is clear that this project will not exceed the threshold of 1 acre of disturbed area which would require a permit from the Maine Department of Environmental Protection under the Stormwater Law.

Typically, for a project with a relatively small increase impervious area, the focus of a stormwater management plan would be temporary erosion control measures during construction, and stabilizing the site subsequent to construction. In this case, an opportunity exists to provide treatment of runoff from some areas of the site.

The surficial soil type is Windsor loamy sand, which is typical of this area of Brunswick. Windsor soils are very well drained and are a Hydrologic Soils Group A soil type. These soils are generally conducive to infiltration of stormwater runoff. Your site plan incorporates a shallow swale in the sandy soils to provide for infiltration of the stormwater runoff from a portion of the developed site.

Based on your grading plan it appears that approximately 2800 sf of impervious area and 2600 sf of developed area will drain to the shallow swale. Per DEP Best Management Practices, the goal is to treat a volume equal to 1 inch from paved surfaces and 0.4 inches from other developed areas. The design treatment volume in this case would be 320 cubic feet. This volume is available in the proposed swale at elevation 99.6. For runoff volumes in excess of the treatment volume, a catch basin with a rim elevation of 99.6 is proposed to be installed and tied into the municipal system.

23 Whitney Way – Topsham, Maine 04086
Phone: (207) 449-4275 email: info@sitedesignassociates.biz

If you have any questions regarding our analysis, or require additional information, please do not hesitate to contact me.



Sincerely,
Site Design Associates

A handwritten signature in black ink, appearing to read "Tom Saucier".

Tom Saucier, P.E.
President

DRAFT FINDINGS OF FACT
Minor Development Review
720 Old Portland Road
Staff Review Committee Review Date: August 3, 2016

Project Name: Greenhouse
Address: 720 Old Portland Road
Brunswick, ME 04011
Case Number: 16-018
Tax Map: Assessor's Map 11, Lot 12
Zoning: Rural Mixed Use 5 (MU5) Zoning District
Applicant: David Palm

Authorized Representative: Sitelines PA
8 Cumberland Street
Brunswick, ME 04011

Staff reviewed the application and has made a determination of completeness.

PROJECT SUMMARY

Staff review is based on the Minor Development Review application for a hydroponic greenhouse prepared by Sitelines, P.A. which includes a site plan prepared by Sitelines, P.A. entitled "Site Development Plan" dated June 13, 2016 with a most recent revision date of July 14, 2016.

The project site was formerly developed with a single family residence and associated subsurface wastewater disposal system (septic system), an outbuilding (garage) and a gravel driveway. The residence and garage were demolished in the year 2015 leaving only the foundations in place.

The proposed activity is the construction of a new 30-foot wide by 60-foot long (1,800 square feet), and widening an existing gravel driveway to approximately 20 feet wide. A portion of the proposed greenhouse structure will be constructed directly adjacent to the location of the existing septic system. The existing septic system is proposed to be removed and a new wastewater disposal system may be provided if required as a condition of approval; however, no wastewater disposal system is proposed at this time. The proposed development will be used as a commercial greenhouse for growing crops for distribution off-site. No on-site retail use is proposed as part of the development. The property is located in the Rural Mixed Use 5 (MU5) Zoning District, Assessor's Map 11, Lot 12.

Review Standards from Section 411 of the Town of Brunswick Zoning Ordinance

411.1 Ordinance Provisions

The proposed development complies with all applicable provisions and standards of the MU5 Zoning District. *The Committee finds that the provisions of Section 411.1 are satisfied.*

411.2 Preservation of Natural Features

The development does not occur within or cause harm to any land which is not suitable for development. The proposed disturbance will be located primarily within an area of existing

development with few trees in the project area. Selective cutting of vegetation within the 25-foot front yard setback and minor clearing within the right of way of the Old Portland Road to expand the width of the existing driveway, and for underground utility service is proposed. Clearing limits are shown on the site plan within the limits of the right of way associated with Old Portland Road and thinning existing vegetation within the front yard setback. *The Committee finds that the provisions of Section 411.2 are satisfied.*

411.3 Surface Waters, Wetlands and Marine Resources

Surface waters and marine resources were not identified at the project site. Wetlands are located within the parcel boundary; however, no disturbance to wetlands is proposed. *The Committee finds that the provisions of Section 411.3 are satisfied.*

411.4 Flood Hazard Areas

The FEMA Flood Insurance Rate Map indicates that the project is not located within a FEMA flood hazard area; therefore there is minimal risk of flooding. *The Committee finds that the provisions of Section 411.4 are satisfied.*

411.5 Stormwater Management

The project site contains existing developed area and upland scrub brush meadow on a knoll above a perimeter of freshwater wetlands. The proposed development is in essentially the same location as the previous developed area. The application indicates that the proposed development will not have a discernible impact on the peak rates or volume of stormwater runoff. *The Committee finds that the provisions of Section 411.5 are satisfied.*

411.6 Groundwater

The project will not be served by public water or sewer. The site of the proposed greenhouse will utilize a private well for waters, and supplement with rainwater collected on-site with rain barrels. The site is not located within an Aquifer Protection Zone. The Committee finds that the development will not alone or in conjunction with existing activities adversely affect the quality or quantity of groundwater. *The Committee finds that the provisions of Section 411.6 are satisfied.*

411.7 Erosion and Sedimentation Control

The disturbed area of the site is proposed to be contained with silt sock and other sedimentation control measures to minimize the transport of sediment to the greatest extent practicable. *The Committee finds that the provisions of Section 411.7 are satisfied.*

411.8 Sewage Disposal

The existing septic leach field will be removed. No wastewater disposal system is proposed. If required, design of a new wastewater disposal system will be by others and submitted for the acceptance of the Code Enforcement Officer (CEO). *The Committee finds that the provisions of Section 411.8 are satisfied conditional upon the applicant obtaining approval for wastewater disposal prior to receiving a building permit.*

411.9 Water Supply

The project will be serviced by an existing on-site well. The proposed activity will not withdraw or introduce water to the groundwater in excess of a typical home to ensure no adverse impact to groundwater. The applicant indicated to staff that water supply would be supplemented with rain barrels on the project site, most likely, advantageously placed to collect roof runoff. *The Committee finds that the provisions of Section 411.9 are satisfied.*

411.10 Aesthetic, Cultural and Natural Values

Several trees and areas of existing vegetation are depicted on the site plan. No undue adverse effects have been identified regarding impacts to the scenic or natural beauty of the area, historic sites, significant wildlife habitat, or rare and irreplaceable natural areas, as identified by the Maine Department of Environmental Protection, the Maine Department of Inland Fisheries & Wildlife, or by the Town of Brunswick. *The Committee finds that the provisions of Section 411.10 are satisfied.*

411.11 Community Impact

No new impacts to traffic, the public school system, recreation, public safety, and public works resources have been identified. *The Committee finds that the provisions of Section 411.11 are satisfied.*

411.12 Traffic

The proposed project is not anticipated to cause unreasonable public road congestion or unsafe conditions. The applicant indicates that site distance at the location of the existing curb cut is adequate for the speed limit on Old Portland Road. *The Committee finds that the provisions of Section 411.12 are satisfied.*

411.13 Pedestrian and Bicycle Access and Safety

The proposed commercial greenhouse is located on a single lot directly adjacent to the Old Portland Road and is unlikely to negatively affect bicycle and pedestrian access and safety. *The Committee finds that the provisions of Section 411.13 are not applicable.*

411.14 Development Patterns

The proposed greenhouse and associated driveway will be constructed in essentially the same location as existing developed areas. The width of the existing gravel driveway will be expanded to provide off-street parking and travel areas. A private septic system will be designed and installed to serve the proposed development. *The Committee finds that the provisions of Section 411.14 are satisfied.*

411.15 Architectural Compatibility

A photograph of the greenhouse that is proposed to be installed is provided in the application. The type of construction is compatible with existing development patterns along Old Portland Road. *The Committee finds that the provisions of Section 411.15 are satisfied.*

411.16 Municipal Solid Waste Disposal

The Solid Waste Impact Fee is based on 1-ton of solid waste per year, with an associated impact fee of \$258.56. *The Committee finds that the provisions of Section 411.16 are satisfied conditional upon the payment of the municipal solid waste impact fee prior to receiving a building permit.*

411.17 Recreation Needs

A recreation impact fee is not required for the proposed commercial use. *The Committee finds that the provisions of Section 411.17 are not applicable.*

411.18 Access for Persons with Disabilities

All grades and slopes on this relatively flat site will be accessible to those with disabilities. *The Committee finds that the provisions of Section 411.18 are satisfied.*

411.19 Financial Capacity and Maintenance

Upon approval, the applicant will demonstrate adequate financial capacity to complete and maintain the project. The application states that since no improvements will be made within the public right-of-way and the site improvements are relatively modest, the requirement for a performance guarantee is not anticipated. *The Committee finds that the provisions of Section 411.19 are satisfied conditioned upon the applicant provides proof of financial capacity and maintenance to the satisfaction of the Director of Planning and Development.*

411.20 Noise and Dust

During construction, work will be done in consideration of reasonable times and decibel levels, and in accordance with Section 524.1 of the Brunswick Zoning Ordinance. Best Management Practices will be used in order to prevent dust migration during demolition and construction. Upon project completion the proposed development is not anticipated to generate unreasonable noise or dust. *The Committee finds that the provisions of Section 411.20 are satisfied.*

411.21 Right, Title and Interest

The applicant has sufficient right, title and interest to develop the land. *The Committee finds that the provisions of Section 411.21 are satisfied.*

411.22 Payment of Application Fees

The applicant has paid all applicable development review application fees. *The Committee finds that the provisions of Section 411.22 are satisfied.*

**DRAFT MOTIONS
GREENHOUSE
STAFF REVIEW COMMITTEE APPROVAL DATE: August 3, 2016
CASE NUMBER: 16-027**

Motion 1: That the Minor Development Review Final Site Plan application is deemed complete.

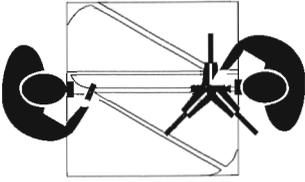
Motion 2: That the Committee approves the following requested waivers:

1. Section 412.2.B.8 - Profile, cross-section dimensions, curve radii of existing streets.
3. Section 412.2.C.14 – Elevation views of building

Motion 3: That the Minor Development Review Final Site Plan is approved with the following conditions:

1. That the Committee's review and approval does hereby refer to these findings of fact, the plans and materials submitted by the applicant and the written and oral comments of the applicant, its representatives, reviewing officials, and members of the public as reflected in the public record. Any changes to the approved plan not called for in these conditions of approval or otherwise approved by the Director of Planning and Development as a minor modification shall require a review and approval in accordance with the Brunswick Zoning Ordinance.
2. That prior to the issuance of a building permit, the applicant shall obtain approval for a new wastewater discharge system.
3. That prior to the issuance of a building permit, the applicant shall pay the municipal solid waste impact fee.
4. That prior to the issuance of a building permit, the applicant provides documentation of financial capacity to complete the project, to the satisfaction of the Director of Planning and Development.

** Please note that Development Review Site Plan approvals by the Planning Board or Staff Review Committee shall expire at the end of two years after the date of final approval unless all construction has been completed by that date (Section 407.4.B of the Brunswick Zoning Ordinance).*



July 7, 2016

3135-7

Mr. Jared Woolston
Director of Planning and Development
Town of Brunswick
85 Union Street
Brunswick, Maine 04011

Re: Minor Development Review Application
PRIVATE GREENHOUSE
720 OLD PORTLAND ROAD, BRUNSWICK, MAINE
Tax Map 11, Lot 12

Dear Jared:

On behalf of David Palm (dba Ginsabi, LLC), Sitelines, PA is pleased to submit the enclosed Minor Development Review Final Application and supporting materials for the redevelopment of a parcel in the MU5 zone located on Old Portland Road. The applicant intends to use the site for construction of a 60' x 30' greenhouse structure. The greenhouse will be used for growing plants and herbs for sale at local farmer's markets. There will be no wholesale or retail sales on the parcel.

PROPERTY

Ginsabi, LLC has purchased 2 acres from the parcel of land located at 720 Old Portland Road. The parcel has frontage and an existing curb cut on Old Portland Road. The majority of the site remains undeveloped; however, there is some existing gravel surface and unoccupied foundations on the property. The house and smaller garage were demolished in 2015. The existing concrete and fieldstone foundations will be demolished and removed. The existing impervious area includes approximately 11,850 s.f. of impervious area. The property is located in the rural Portland Road Area (MU5) Zoning district, in which "Greenhouse" is a Permitted Use. The greenhouse structure will be constructed adjacent to the location of the previous single-family home.

The parcel is located next to a large wetland complex and there is a 75-foot setback from the upland limits of the wetlands. No new constructions is proposed within or adjacent to the 75-foot setback. There is a foundation from a previous garage at the edge of the 75-foot setback. Discussions with the new owner indicate that they will not be removing the foundation at this time.

SITE DESIGN

The proposed project consists of construction of a 60'x30' (1,800 s.f.) greenhouse structure and gravel access. The development of the site as proposed will result in approximately the same impervious area as previous uses of the site. Some of the previous vegetated areas have become overgrown with weeds during the prolonged vacancy since the site was last used.

SITELINES, PA

ENGINEERS ■ PLANNERS ■ SURVEYORS ■ LANDSCAPE ARCHITECTS
8 Cumberland Street ■ Brunswick, ME 04011 ■ TEL 207-725-1200 ■ FAX 207-725-1114 ■ www.sitelinespa.com

Ginsabi LLC will be an agricultural greenhouse growing operation. Ginsabi LLC will be producing ginger and turmeric roots for sale to restaurants, health food stores and to the general public through primarily local farmer's markets. There will be no sales directly on site. The growing of the plants will be done hydroponically which is growing in a neutral growing media using a recirculating fertilizer/nutrient solution so there will be no fertilizer runoff concerns.

The greenhouse will utilize primarily collected rainwater from the roof for irrigation of the plants with a private well system as back up. However, the existing septic disposal area will be removed and no new septic system is proposed. Electric service will be extended from the utilities in the Old Portland Road right-of-way (ROW).

Review Standards

To facilitate your review of our proposal, the following issues are summarized in accordance with *CHAPTER 5: DEVELOPMENT REVIEW PLAN STANDARDS* of the Ordinance.

501 PRESERVATION OF NATURAL FEATURES AND NET SITE AREA:

Existing woody vegetation will be retained to the extent practical. With the exception of maintenance of vegetation on the frontage, no clearing of vegetation is proposed.

502 FLOOD HAZARD AREA:

The site is located within Zone C, designated as "areas of minimal flooding" on the Flood Insurance Rate Map (FIRM) for the Town of Brunswick.

503 STEEP SLOPES AND EMBANKMENTS.

There are no steep slopes or embankments on this site.

504 STORM WATER MANAGEMENT:

The development site sits atop of a small knoll surrounded by low-lying wetland areas. Runoff from the building and gravel area will flow to the perimeter of the project area. The large wetland complex will absorb and attenuate any increased peak runoff from the developed portion of the site. The relatively small development within the 2-acre parcel to be subdivided will not have a discernible impact on the peak rates or volume of runoff. The meadow/brush terrain between the development site and the wetlands will provide removal of coarse sediments that may occur.

The greenhouse will be similar in same size and location as the previous single-family home. Review of historical imagery indicates that there was an active driveway and un-vegetated area in front of the buildings. This area will again be used by the new owner for vehicle access and parking. While the use of this area will impact the weeds that have grown since the property last uses, it does not represent an increase from the historical development of the site. Also, since it will only be the owner using the site on a regular basis, the impacts to the existing vegetation are expected to be minimal. The relatively small amount of impervious area does not trigger any state review thresholds for stormwater management.



505 GROUNDWATER:

The project will be serviced by a private well. At this time, the applicant does not propose to construct a subsurface disposal system on the parcel. Whereas the use will not withdraw or introduce water to the groundwater in excess of a typical home, there will be no adverse impact.

506 EROSION AND SEDIMENTATION:

The disturbed areas of the site will be isolated with silt sock and other measures to minimize the transport of sediment from the work site to the wetlands.

507 SEWAGE DISPOSAL:

The existing septic leach field will be removed. No subsurface disposal system is proposed at this time as the site will not have sanitary facilities or any sinks, since it will not be occupied or used more than regular, short visits by the proprietor. Design of a new system, if desired, will be by others and submitted to the Codes Enforcement Officer.

Ginsabi LLC is a sole-proprietor business with one primary employee (and family periodically helping). Time working in the greenhouse will generally be 1-2 hrs./day with a few days early on in season of 5-6 hours per day maximum. The plan is to get composting toilet in the near future. The owner used one of these in his Nursery operation back in Wisconsin and only had to remove the composted material about once a year. Most composting toilets are large enough to be used by 4 people in a household so it should be more than sufficient, since Ginsabi LLC is not a daily, long term use facility. The owner lives 2 miles from the property, so he can go there initially for bathroom usage when required. The composting toilet would also be a beneficial addition to the location as the location has wetlands on site and the composting toilet will not be adding potentially harmful human waste pathogens to the ground.

508 WATER SYSTEM:

The project will use water from the existing on-site well.

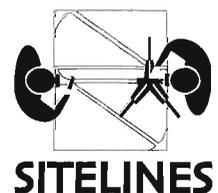
509 COMMUNITY FACILITIES IMPACT ANALYSIS:

There are no anticipated impacts on public services such as police, fire and public works. The project will not be served by public water or sewer.

No added impact to the school system will result.

510 DEVELOPMENT IMPACT FEES:

The Solid Waste Impact Fee is based on regular generation rates of waste. The use will generate of solid waste consistent with a single-family home. As such, the solid waste is typically estimated at 1-ton per year, with an associated impact fee of \$258.56.



There are no sewer or water impact fees for the project.

The Recreation Impact fee is not applicable to this project.

511 DEVELOPMENT OF NEW STREETS:

There are no new streets proposed.

512 OFF STREET PARKING:

Greenhouse is not listed under section 512 and the use with a minimum number of parking spaces. As such, the number of spaces would be determined "as appropriate to the circumstances" per 512.2.A.6. In this instance, the greenhouse will be tended by a single individual. There are no plans for wholesale or retail sales from the facility. As such, a minimum of 2 parking spaces are proposed, just in case another vehicle does arrive. The parking spaces will be available on the gravel surfaced area in front of the greenhouse. While the spaces will not be marked on the ground, given that it is a gravel surface, the approximate location of the available parking is shown on the plan.

513 CURB CUTS:

The existing curb cut will be used on Old Portland Road. Sight Distance at the location is adequate for the speed limit.

514 OFF STREET LOADING:

There are no requirements for off street loading associated with this project.

515 APPEARANCE ASSESSMENT:

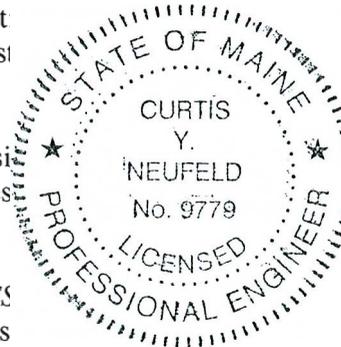
The greenhouse structure will be a tradit
parcel frontage will screen the proposed st

existing vegetation on the
of Old Portland Road.

516 BUILDING CONFIGURATION:

The building will be set to the westerly si
location will allow for the most pres
appearance from Old Portland Road.

side parcel boundary. The
areas and minimize the



517 PRESERVATION OF HISTORIC RES

There are no known historic resources ass

518 ACCESS FOR PERSONS WITH DISABILITIES:

The proposed greenhouse will be utilized only by the owner. No provisions for persons with disabilities are necessary.

519 RECREATIONAL REQUIREMENTS FOR RESIDENTIAL DEVELOPMENTS:

As a greenhouse, this section is not applicable.



**MINOR DEVELOPMENT REVIEW
APPLICATION**

1. Project Name: Greenhouse

2. Project Applicant
Name: David Palm
Address: 18 Prout Road
Freeport, ME 04032
Phone Number: _____

3. Authorized Representative
Name: Sitelines PA
Address: 8 Cumberland Street
Brunswick, ME 04011
Phone Number: 207-725-1200, x18

4. List of Design Consultants. Indicate the registration number, address and phone number Of any engineer, surveyor, architect, landscape architect or planner used:

- 1. Curtis Neufeld, PE 9779
- 2. _____
- 3. _____

5. Physical location of property being affected: 720 Old Portland Road

6. Lot Size: 51 Acres

7. Zoning District: MU5

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

9. Assessor's Tax Map 11 Lot Number 12 of subject property.

10. Brief description of proposed use: Greenhouse

11. Describe specific physical improvements to be done: Construction of 60'x30' greenhouse

Owner Signature: _____

Applicant Signature (if different): _____

Required Attachments (by Applicant):

- Final Plan Check List
- Final Plan Check List Addendum for Open Space Developments (if applicable)
- Request for Waivers (if applicable)
- Required Copies of Final Plan

Required Attachment (by Planning and Development Department):

- Listing of all owners of property within 200-foot radius of property under review. G

FINAL PLAN REQUIREMENTS

Key: "O" = omit; "S"=submit; "NA"=not applicable; "W" = waiver; "P" = pending

Item	O	S	NA	W	P	Comments
Scale, date, north point, area, number of lots (if subdivision)		X				
Boundaries of all lots and tracts with accurate distances and bearings, locations of all permanent monuments property identified as existing or proposed.		X				
Certification by a professional land surveyor that the land has been surveyed and the boundaries established in accordance with the State of Maine Board of Licensure for Professional Surveyors standards for Category 1 (Standard Boundary Survey), conditions 1, 2, or 3.		X				
Existing zoning district and overlay designation.		X				
Names of engineer and surveyor; and professional registration numbers of those who prepared the plan.		X				
Names of current owner(s) of subject parcel and abutting parcels.		X				
Name, location, width of paving and rights-of-way, profile, cross-section dimensions, curve radii of existing and proposed streets; profiles of center-lines of proposed streets, at a horizontal scale of 1" equals 50' and vertical scale of 1 inch equals 5 feet, with all elevations referred to in U.S.G.S. datum.				X		No new roads or changes to existing roads are proposed.
A general road plan noting circulation, direction, traffic control devices, street lighting and type of lighting proposed.		X				
Existing and proposed easements associated with the development.			X			None
Kind, location, profile and cross-section of all proposed drainage facilities, both within the development and outside of it, and a storm-water management plan which includes the submission requirements listed in the storm-water management checklist available in the Planning Department.			X			Surface drainage only to adjacent wetlands
Location of features, natural and artificial, affecting the development, such as water bodies, wetlands, streams, vegetation, rail-roads, ditches and buildings.		X				

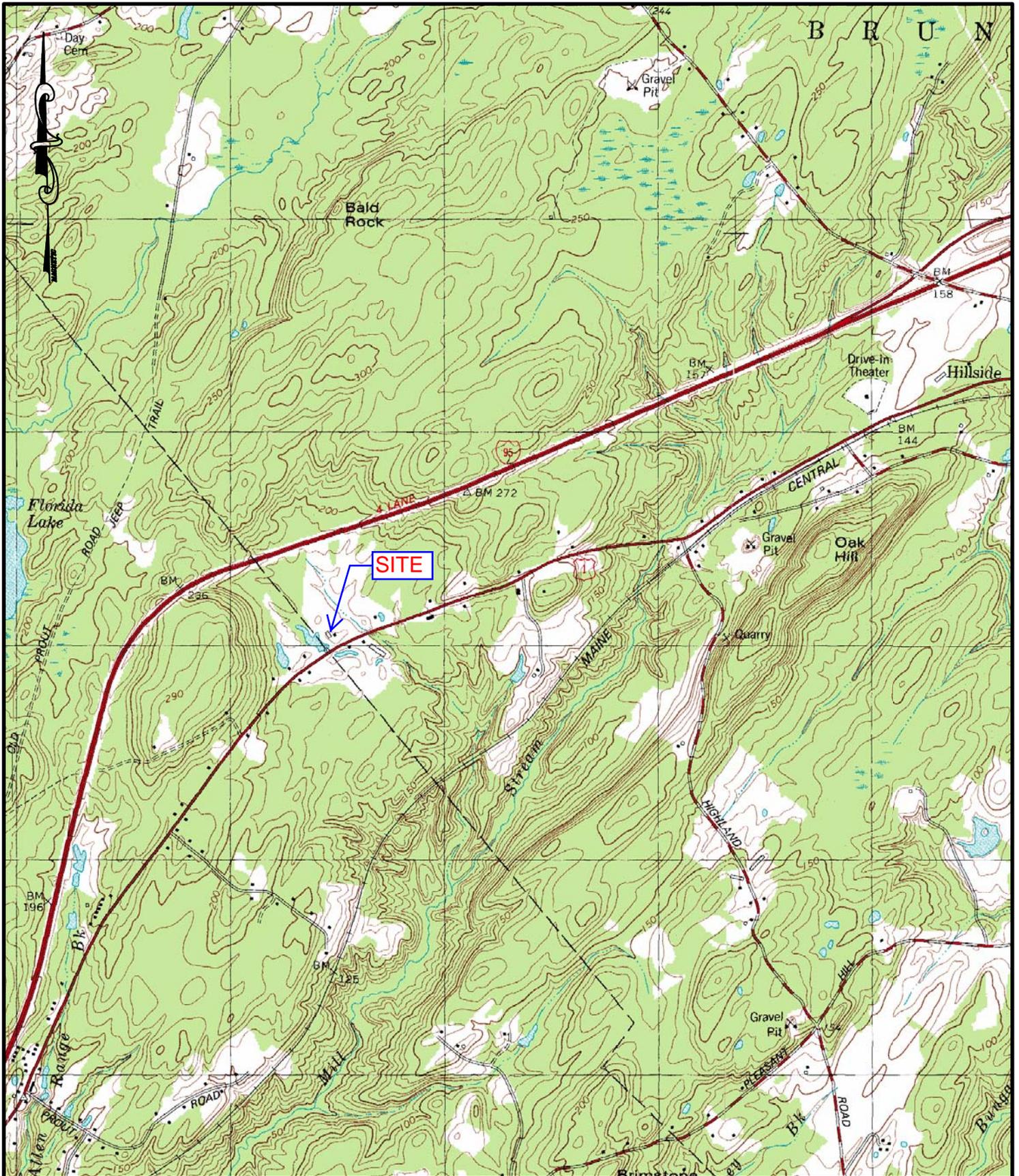
Location of existing and proposed utilities; water, sewer, electrical lines, and profiles of underground facilities. Tentative locations of any private wells.		X				
Existing and proposed location, size, profile and cross section of sanitary sewers; description, plan and location of other means of sewage disposal with evidence of soil suitability.		X				
Topography with counter intervals of not more than 2 feet.		X				
A Class A (high intensity) Soil Survey prepared in accordance with the standards of the Maine Association of Professional Soil Scientists.			X			Only one site that will use existing system or one located adjacent
Location of all existing trees over 10 inches in diameter, locations of tree stands, and a plan showing all trees to removed as a result of the development proposal.			X			No trees in project work area.
Lighting plan showing details of all proposed lighting and the location of that lighting in relation to the site.			X			None proposed.
Existing locations and proposed locations, widths and profiles of sidewalks.			X			None proposed.
Location map.		X				
Approximate locations and dimensions of proposed parking areas.		X				
Proposed ownership and approximate location and dimensions of open spaces for conservation and recreation.			X			None proposed.
Grading, erosion control, and landscaping plan; proposed finished grades, slopes, swells, and ground cover or other means of stabilization.			X			Only disturbance for foundations and septic
Reference to special conditions stipulated by the Planning Board, with conditions either set forth in full or on the plan or identified as specific documents filed with the Board.					X	None anticipated.
A wetlands map drawn by a specialist delineating wetland boundaries in accordance with the methods prescribed by the US Army Corps of Engineers.		X				
Dedicated public open specs, areas protected by conservation easements, and existing and proposed open spaces or recreation areas.			X			None proposed.

FINAL PLAN/SUPPORTING DOCUMENTS

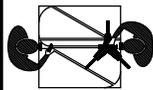
Key: "O" = omit; "S"=submit; "NA"=not applicable; "W" = waiver; "P" = pending

Item	O	S	NA	W	P	Comments
Documentation of Ownership or contract.		X				
Drafts of legal documents appropriate to the application, including: deeds, easements, conservation easements, deed restrictions or covenants, home/property owners association declarations and by-laws, and such other agreements or documents as are necessary to show the manner in which conservation land will be owned, maintained, and protected.			X			
Draft performance guarantee or conditional agreement.			X			No Public Improvements
Disclosure of any required permits from the Department of Environmental Protection, Marine Resources, US Army Corps of Engineers, Department of Inland Fisheries and Wildlife, or other agencies, as applicable; or, if a permit has already been granted, a copy of that permit.			X			No state permits are required.
Any additional studies required by the Planning Board which are deemed necessary in accordance with this Ordinance.					X	None anticipated.
Storm water management program for the proposed project prepared by a professional engineer.			X			See cover letter.
A storm water management checklist prepared by the Cumberland County Soil and Water Conservation District, made available at the Brunswick Department of Planning and Development.			X			No soils will be disturbed except for foundation

An erosion and sedimentation control checklist prepared by the Cumberland County Soil and Water Conservation District.			X			
A statement from the Brunswick-Topsham Water District of conditions under which water will be provided.			X			Private well
A statement from the Brunswick-Topsham Water District of its review and comments on the proposed use if the project involves development within the Aquifer Protection Zone.			X			Private well
A Statement from the Fire Chief recommending the number, size, and location of hydrants, available pressure levels, road layout and street and project name, and any other fire protection measures to be taken.					X	
A statement from the Superintendent of the Brunswick Sewer District of the conditions under which the Sewer District will provide sewerage disposal service and approval of the sanitary sewers proposed within the development.			X			No septic proposed
Where a septic system is to be used, evidence of soil suitability.			x			Potential area shown
All applicable materials necessary for the reviewing entity to review the proposal in accordance with the Criteria of Section 411.		X				
A plan of all buildings with new construction or expansion of an existing facility, including type, size, and footprint, floor layout, setback, elevation of first floor slab, storage, and loading areas.		X				
An elevation view of all sides of each building proposed indicating height, color, bulk, surface treatment, and signage.				X		Building will be screened from view
A circulation plan describing all pedestrian and vehicle traffic flow on surrounding road systems.		X				
The size and proposed location of water supply and sewage disposal systems and provision for future expansion of those systems.			X			No future expansion planned
A site landscaping plan indicating grade change, vegetation to be preserved, new plantings used to stabilize areas of cut and fill, screening, the size, location and purpose and type of vegetation.			X			Existing woody vegetation remain on frontage to screen new buildings.



SHEET: 1 OF 1



SITELINES
ENGINEERS PLANNERS

8 CUMBERLAND ST. BRUNSWICK, ME 04011
(207) 725-1200 FAX 725-1114

USGS MAP

720 OLD PORTLAND ROAD
BRUNSWICK, MAINE

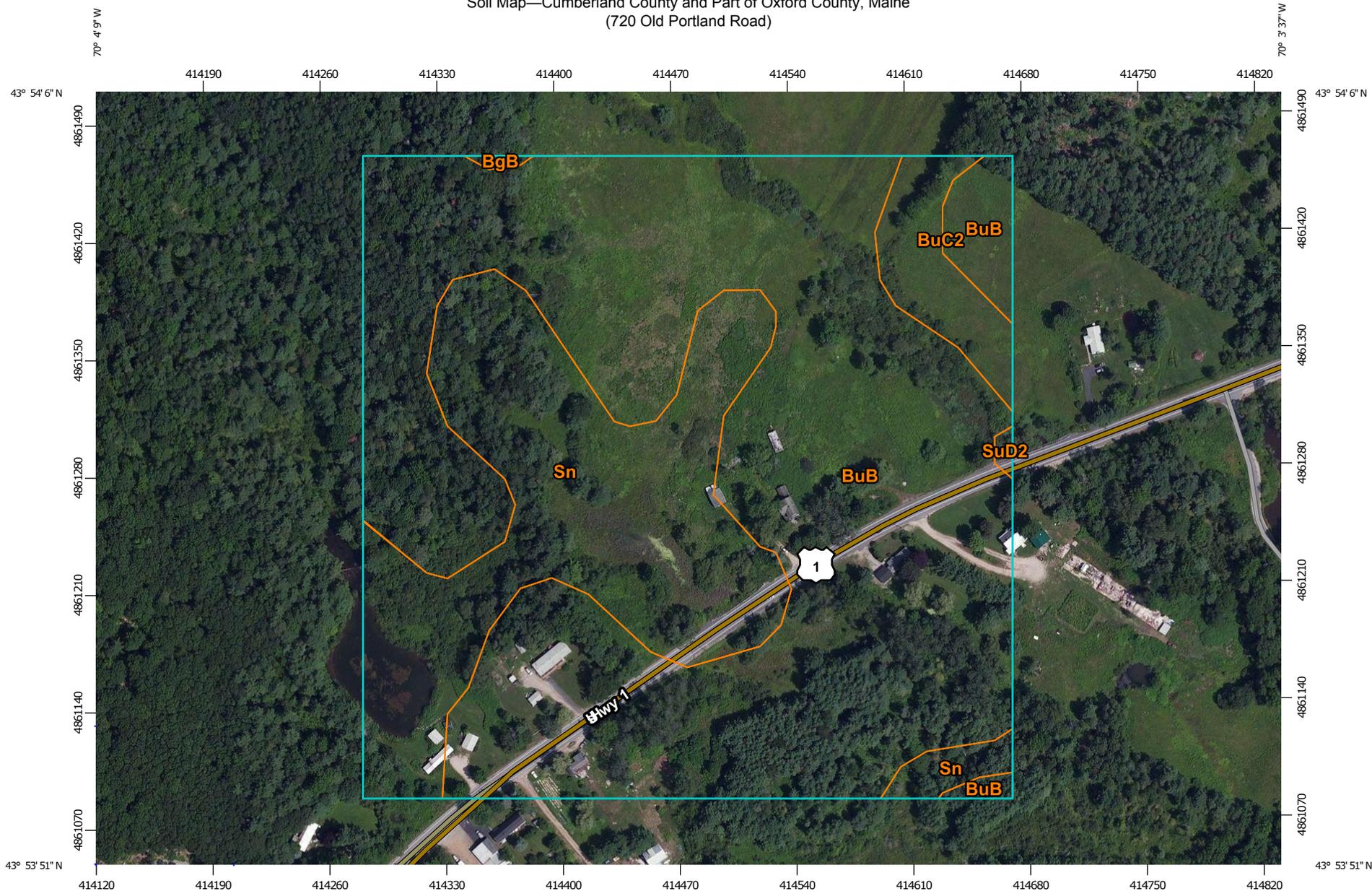
DATE: 6-13-16

SCALE: 1" = 2000'

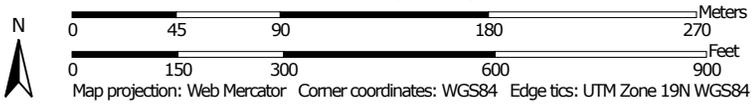
JOB: 3135

FILE: 3135-maps

Soil Map—Cumberland County and Part of Oxford County, Maine
(720 Old Portland Road)



Map Scale: 1:3,250 if printed on A landscape (11" x 8.5") sheet.



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

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

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Cumberland County and Part of Oxford County, Maine

Survey Area Data: Version 9, Sep 13, 2014

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

Date(s) aerial images were photographed: Jun 20, 2010—Jul 18, 2010

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

Map Unit Legend

Cumberland County and Part of Oxford County, Maine (ME005)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BgB	Belgrade very fine sandy loam, 0 to 8 percent slopes	0.1	0.1%
BuB	Buxton silt loam, 3 to 8 percent slopes	25.7	69.4%
BuC2	Buxton silt loam, 8 to 15 percent slopes, eroded	1.4	3.8%
Sn	Scantic silt loam, 0 to 3 percent slopes	9.8	26.5%
SuD2	Suffield silt loam, 15 to 25 percent slopes, eroded	0.1	0.2%
Totals for Area of Interest		37.0	100.0%



Photograph 1: Existing Fieldstone foundation for house



Photograph 2: Survey Control



Photograph 3: Existing Concrete Foundation



Photograph 4: looking towards site entrance from Location of the Demolished Garage



Photograph 5: existing concrete foundation of former barn



Minor Development Review
720 Old Portland Road
June 13, 2016



Photograph 6: Existing Maple Tree

Minor Development Review
720 Old Portland Road
June 13, 2016

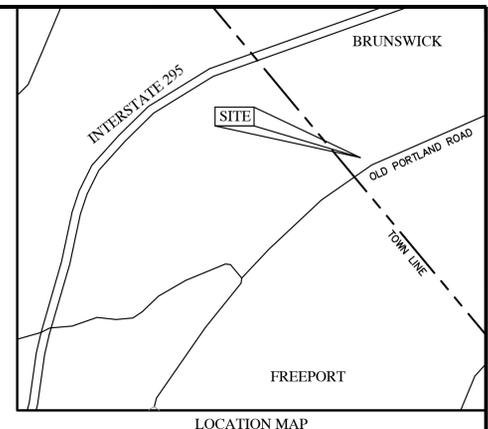
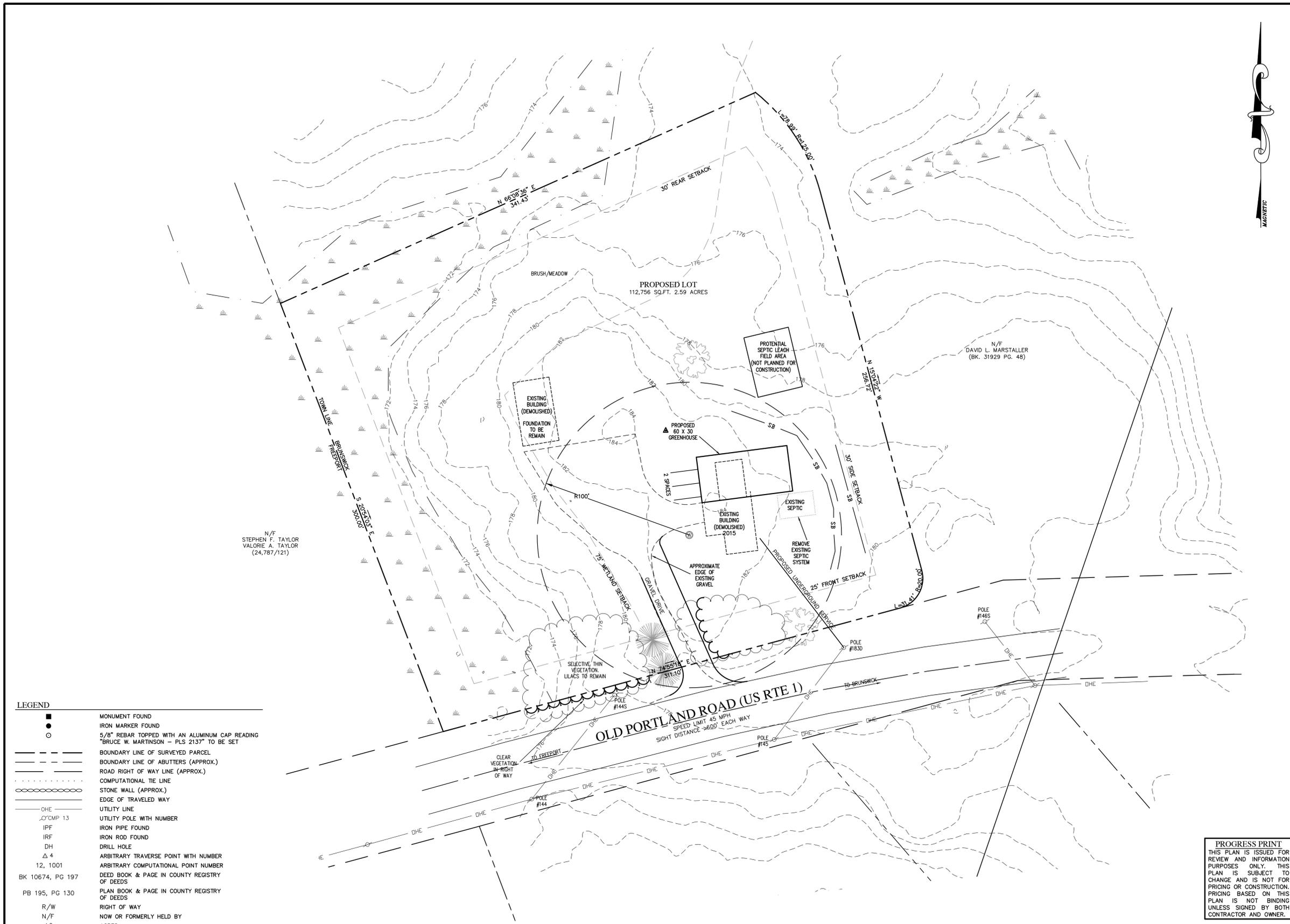


Photograph 7: Looking South on Route 1 from Existing Site Entrance



Photograph 8: Looking North on Route 1 from Existing Site Entrance

Photographs taken by Sitelines PA, August 12, 2015



LOCATION MAP
1" = 1000'

PLAN REFERENCE:
1. PRELIMINARY PLAN OF LAND ON OLD PORTLAND ROAD IN BRUNSWICK, MAINE FOR DAVID MARSTALLER, PREPARED BY WAYNE WOOD & CO., DATED JUN 2015, NOT RECORDED.

- GENERAL NOTES:
- TITLE REFERENCE FOR PARCEL: CCRD PROPOSED LOT TO BE DETERMINED
 - THIS IS NOT A SURVEY. BOUNDARY INFORMATION SHOWN IS FOR PROPOSED PARCEL. CONTOUR ELEVATION FROM LIDAR INFORMATION FROM MAINE STATE GIS DATA CATALOGUE.
 - AREA INFORMATION:
PROPOSED LOT AREA: 112,756 SQ.FT. 2.59 ACRES
 - TAX MAP REFERENCE:
TAX MAP 11, LOT 12
 - ELEVATION DATUM:
NGVD 29, BASED ON LIDAR 2-FOOT CONTOURS
 - PARCEL IS NOT LOCATED WITHIN THE 100-YEAR FLOOD ZONE
 - PARCEL IS LOCATED IN THE M05 ZONE:
MINIMUM LOT AREA 2 ACRES
MAXIMUM DENSITY 1 UNIT PER 2 ACRES
MINIMUM LOT WIDTH 150 FEET
MINIMUM FRONT YARD 25 FT
MINIMUM REAR YARD 30 FT
MINIMUM SIDE YARD 30 FT
MAXIMUM IMPERVIOUS SURFACE COVERAGE 25%
MAXIMUM BUILDING FOOTPRINT PER STRUCTURE 10,000 S.F
 - NO POLE MOUNTED SITE LIGHTING IS PROPOSED
 - EXISTING WELL PROPOSED TO SERVE THE BUILDING
 - FUTURE DEVELOPMENT ON THE PARCEL MAY BE SUBJECT TO REVIEW
 - THERE ARE WETLANDS ON THE PARCEL. NO IMPACTS PROPOSED.
 - CURRENT OWNER IS DAVID L. MARSTALLER, 25 BEECH HILL RD, FREEPORT, ME 04032 CCRD BOOK 31929 PAGE 48)
 - STORMWATER SHALL BE DIRECTED TO LOW AREAS FOR INFILTRATION.
 - PARCEL SOILS ARE BUXTON SANDY LOAM AND SCANTIC

NOTE:
THE PURPOSE OF THIS PLAN IS TO DEMONSTRATE THE PROPOSED REDEVELOPMENT OF THE LOT AS SHOWN COMPLIES WITH THE APPLICABLE TOWN ORDINANCES. THE OWNER IS SPECIFICALLY CAUTIONED THE TOPOGRAPHIC INFORMATION SHOWN IS TAKEN FROM STATE GEOGRAPHIC INFORMATION SYSTEM (GIS) DATA AND MAY NOT BE RELIABLE FOR CONSTRUCTION OF IMPROVEMENTS OTHER THAN THOSE SHOWN. THE CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING A LOCAL BENCHMARK AND VERIFYING GRADES TO HIS SATISFACTION PRIOR TO STARTING WORK.

LEGEND

■	MONUMENT FOUND
●	IRON MARKER FOUND
○	5/8" REBAR TOPPED WITH AN ALUMINUM CAP READING "BRUCE W. MARTINSON - PLS 2137" TO BE SET
---	BOUNDARY LINE OF SURVEYED PARCEL
- - - -	BOUNDARY LINE OF ABUTTERS (APPROX.)
---	ROAD RIGHT OF WAY LINE (APPROX.)
.....	COMPUTATIONAL TIE LINE
○ ○ ○ ○	STONE WALL (APPROX.)
---	EDGE OF TRAVELED WAY
---	UTILITY LINE
○ CMP 13	UTILITY POLE WITH NUMBER
IPF	IRON PIPE FOUND
IRF	IRON ROD FOUND
DH	DRILL HOLE
△ 4	ARBITRARY TRAVERSE POINT WITH NUMBER
12, 1001	ARBITRARY COMPUTATIONAL POINT NUMBER
BK 10674, PG 197	DEED BOOK & PAGE IN COUNTY REGISTRY OF DEEDS
PB 195, PG 130	PLAN BOOK & PAGE IN COUNTY REGISTRY OF DEEDS
R/W	RIGHT OF WAY
N/F	NOW OR FORMERLY HELD BY
AC.	ACRES
±	MORE OR LESS
⊙	SEWER MANHOLE
⊙	LIGHT POLE
⊙	CATCH BASIN
⊙	WATER SHUT OFF
⊙	HYDRANT
⊙	SIGN
⊙	WATER VALVE
⊙	ELEVATION TEMPORARY BENCH MARK
⊙	TEST PIT

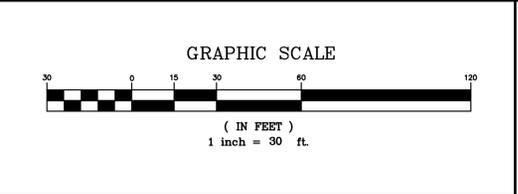
- 07-14-16 SUBMITTED TO TOWN OF BRUNSWICK CYN
- 06-16-16 SUBMITTED TO CLIENT CYN

PROGRESS PRINT
THIS PLAN IS ISSUED FOR REVIEW AND INFORMATION PURPOSES ONLY. THIS PLAN IS SUBJECT TO CHANGE AND IS NOT FOR PRICING OR CONSTRUCTION. PRICING BASED ON THIS PLAN IS NOT BINDING UNLESS SIGNED BY BOTH CONTRACTOR AND OWNER.

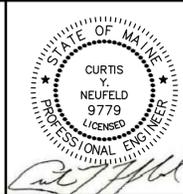
SITE DEVELOPMENT PLAN

SITE REDEVELOPMENT
720 OLD PORTLAND ROAD, BRUNSWICK, MAINE 04011

DAVID PALM
18 PROUT ROAD, FREEPORT, ME 04032



CALL DIG SAFE UTILITY LOCATION
1-888-344-7233
STATE LAW REQUIRES ADVANCE NOTICE OF AT LEAST 3 BUSINESS DAYS BEFORE YOU DIG, GRADE OR EXCAVATE FOR THE MARKING OF UNDERGROUND UTILITIES



SITELINES, PA ENGINEERS • PLANNERS • SURVEYORS LANDSCAPE ARCHITECTS 8 CUMBERLAND STREET, BRUNSWICK, ME 04011 207.725.1200 www.sitelinespa.com	
FIELD WK: ---	SCALE: 1" = 30'
DRN BY: RPL	JOB #: 3135
CH'D BY: CYN	MAP/LOT: 11/12
DATE: 06-13-16	FILE: 3135-SITE





APPLICATION FOR MINOR DEVELOPMENT REVIEW
TOWN OF BRUNSWICK

“MATERIAL STORAGE BUILDING
REPLACEMENT”
AT
158 CHURCH ROAD, BRUNSWICK, MAINE

PREPARED FOR: HANCOCK MID-COAST, LLC

TABLE OF CONTENTS

HANCOCK LUMBER MINOR DEVELOPMENT REVIEW APPLICATION

Tab Number

1. Project Narrative/Cover Letter
Minor Development Review Application
Agent Authorization Letter
Staff Review Committee Workshop Cover Letter
Bicycle and Pedestrian Advisory Cover Letter
2. Warranty Deed
3. USGS Location Map
Town of Brunswick Map 17
FIRM – Town of Brunswick
NRCS Soils Map
4. Stormwater Management Plan
Stormwater Maintenance Plan
Stormwater Inspection and Maintenance Log
Pre-Development Stormwater Report
Post-Development Stormwater Report
D1.1 Pre-Development Drainage Plan
D2.1 Post-Development Drainage Plan
5. Erosion and Sedimentation Control Narrative
6. Landscape Recommendations Letter
7. Site Lighting Specifications
Site Lighting Layout Plan
8. Building Plan and Elevations
A1 Floor Plan
A3 Elevations
9. Permit Application Drawings
S1.1 Partial Existing Conditions Plan
C1.1 Existing Conditions and Demolition Plan
C2.1 Site Layout Plan
C3.1 Site Grading and Utility Plan
C9.1 Site Details
C9.2 Site Details



MAIN-LAND

DEVELOPMENT
CONSULTANTS, INC.

ENGINEERS, SURVEYORS, SCIENTISTS

P.O. BOX Q LIVERMORE FALLS, ME 04254
TEL: (207) 897-6752/FAX: (207) 897-5404
WWW.MAIN-LANDDCI.COM

June 24, 2016

Town of Brunswick
Planning and Development
Attn: Jared Woolston
85 Union Street
Brunswick, Maine 04011

Subject: Minor Review Application – Hancock Lumber – Material Storage Building Replacement

Dear Jared,

Hancock Lumber is proposing the construction of a new material storage building to replace an existing, aging material storage building. The existing facility is located at the intersection of Church Road and Greenwood Road in the Town of Brunswick, Tax Map 17, Lot 22. The 13 acre site contains an existing retail store, lumber storage, several outbuildings, paved and gravel surfaces and appurtenances. Impervious area on site totals 6.9 acres.

The proposed project involves demolition of a 2,497 square foot building and construction of a new 9,246 square foot warehouse building. 22 new parking spaces, to take the place of 11 spaces lost due to construction of the new building, will be added at the rear of the existing retail facility by striping existing paved areas. As the new building and additional parking will be located in areas that are already paved or covered by a building, the project will not create any new impervious area.

On September 18, 2012 Permit # 120269 was issued for the construction of (4) 3' x 22' "open lumber sheds". It is unclear how these sheds were considered by the Town, with respect to the overall site planning gross floor area expansion. If these open lumber sheds must be applied to this application, they will add an additional 264 square feet of new gross floor area, bringing the total new gross floor area to be considered for this application to 7,697 (7,433 sf plus 264 sf). The new gross floor area created is still below the 10,000 square foot threshold prescribed by the Minor Review process.

The new warehouse building will provide required storage for a growing business. Also of note, the new warehouse location will meet the Town's 15' side property line setback, which makes the new structure more conforming than the previous building.

The following sections are intended to address the Chapter 5: Development Review Standards. It is organized with the Review Standards in italics followed by Main-Land's response on behalf of the Applicant.

501 Preservation of Natural Features and Net Site Area

501.1 Natural Features

There are no natural, scenic, or historic features that will be impacted by the proposed development. The existing stream/impoundment along the northwest property boundary is outside of the proposed work limits and no existing trees will be cut.

501.2 Net Site Area

The portion of the property subject to Development Review will remain unchanged with respect to Net Site Area. The proposed warehouse is replacing an existing warehouse at its current location and will not create any new impervious or disturbed area.

502 Flood Hazard Areas

This section does not apply to the proposed development as no portion of the site is within the 100 year flood zone. See Section 3 of this application for the FIRM, panel 15 of 35.

503 Steep Slopes and Embankments

The proposed construction is on an existing developed site. The site is relatively flat with no steep slopes, and the only embankments that exist are those associated with the stream/ponds at the northwest portion of the site. The stream embankments are stabilized and no disturbance in these areas is proposed. The Section 503 criteria does not apply to this development.

504 Stormwater Management

See Section 4 of this application for the Stormwater Management Plan.

505 Groundwater

The proposed development will not impact the existing groundwater quality or quantity. The proposed building will be replacing an existing structure in its current location. Additionally, there will be no wastewater disposal associated with this development or storage of any hazardous materials. The Section 505 criteria does not apply to this development.

506 Erosion and Sedimentation Control

See Section 5 of this application for the Erosion and Sedimentation Control Plan.

507 Sewage Disposal

This section does not apply to the proposed development. The proposed development does not require or have provisions for wastewater disposal. Additionally, there will be no new employees added as a result of the new development, therefore, no change in flow rates.



508 Water Systems

This section does not apply to the proposed development. The proposed development does not require or have provisions for water systems. Additionally, there will be no new employees added as a result of the new development, therefore, no change in flow rates.

Tim Herrick, Technical Support Manager for the Topsham and Brunswick Water District and Jefferey Emerson, Deputy Fire Chief for the Brunswick Fire Department have been contacted and received plans to review for consideration of a hydrant relocation as shown on the plans. No formal acceptance or rejection has been determined to date.

509 Community Facilities Impact Analysis

The proposed development is fully contained within an existing site and proposes no change of use or increased impact on or off of the site. Use of the facility will remain the same, with no additional impacts on the community facilities.

510 Development Impact Fees

This section does not apply to the proposed development. With the exception of electrical/power, the proposed development makes no provision for use of municipal infrastructure.

511 Development of New Streets

This section does not apply to the proposed development. No new streets are proposed as part of this development. Additionally, there is no change of use proposed, nor is the development anticipated to increase traffic in or out of the site. If there are any adverse impacts that result from construction traffic at the existing street entrances, the applicant will restore, at a minimum, the entrances to existing conditions.

512 Off-Street Parking

The current development has 31 dedicated parking spaces. Of the 31 spaces, two are ADA accessible. These spaces are used for employee and customer parking. Delivery vehicles generally do not require dedicated parking during normal hours of operation. When not in use, or after normal hours of operation, delivery vehicles are parked at the back portion of the development, behind locked gates, and generally outside of public view.

The 31 existing, dedicated parking spaces, are adequate for the current use. However, provisions have been made to add 10 new parking spots creating a total of 41 parking spaces including 2 ADA accessible spaces. The new spaces created at the rear of the retail facility will primarily be for employee parking except in rare instances when overflow is required, with 4 spaces at the north for contractor pick-up.

512.1 Parking Requirements for Residential and Related Uses

This section does not apply to the proposed development.

512.2 Parking Requirements for Non-residential Uses

The Provisional Parking Requirements for Non-residential use require that the new warehouse provide 19 new spaces (9,246 sf/1000 sf x 2 spaces/1000 sf). As noted above, the applicant is proposing 10 new spaces and requests that the remaining 9 spaces not be required given that there is no proposed change of use or new employees being added.



512.3 Design of Parking Areas

The Applicant requests that these standards not be applied, beyond what is stated above, given that the proposed development is an addition to the existing, functional site.

512.4 Construction of Parking Areas

See Sections 7 and 9 of this application for plans showing exterior lighting, parking lot layout, and respective details meeting the standards of this provision.

512.5 Bicycle and Pedestrian Access and Circulation

The Applicant requests that these standards not be applied, beyond what is stated above, given that the proposed development is an addition to the existing, functional site. Also, given the nature of the business and products sold, pedestrian and bicycle traffic entering and exiting the site is extremely rare.

The creation of a new sidewalk, per the ordinance, would create an unnecessary safety hazard as well as remove existing pervious/lawn area from the green strip located along Church Road. The creation of a sidewalk along Church Road would create potential safety hazards by creating the only sidewalk along this immediate stretch of road. In order to access this stretch of sidewalk, pedestrians and bicyclists would have to travel along roadways and shoulders that do not currently have sidewalks to access, at most, 475 feet of new sidewalk. As previously stated, the construction of a new sidewalk would require development of a significant portion of the green strip along Church Road further reducing the limited green space of this industrial site.

512.6 Parking Plan Alternatives

This section does not apply to the proposed development. The Applicant is not proposing and Parking Plan Alternatives per this section provisions.

513 Curb Cuts and Highway Access

The existing development is served by two entrances along Church Road. One entrance is intended to serve the retail traffic entering and exiting the site, and a second entrance is primarily for material delivery traffic, but does also service the retail space.

The applicant is not proposing any change of use within the development. The new material storage warehouse is not intended to generate additional or new traffic, therefore, there will be no increase in traffic as a result of the warehouse construction.

514 Off Street-Loading Requirements

The new warehouse can accommodate up to eight loading bays. At this time, only four overhead doors are proposed for loading/unloading, but up to four additional doors may be installed in the future. All loading/unloading will take place within the existing development. Tractor trailers and large delivery vehicles are expected to load/unload at the northern bays. Pick-up trucks and small box trucks are expected to be loaded at the southern end of the new warehouse.



515 Appearance Assessment

515.1 Relation of Project to Site

The proposed, modern warehouse is intended to replace a dated, aging warehouse. The proposed warehouse will be similar in size, color, and height of other structures within the development. See Section 8 of this application for warehouse elevation views.

515.2 Relationship of the Project to Surrounding Property

The proposed warehouse will be replacing an existing warehouse in the same approximate location. The new warehouse will be located entirely outside of the 15' side yard setback. This is an improvement on the current layout since portions of the existing structure are within the 15' side yard setback.

The quality and character of the proposed warehouse is consistent with the existing development and allowable uses in the I2 district.

515.3 Relationship of Landscape design to project

This project proposes no new landscaping. The applicant intends to maintain all existing vegetated areas to the greatest practical extent. See Section 6 of this application for landscape recommendations by Bret LeBleu, Maine Licensed Landscape Architect.

515.4 Relationship of Lighting to project

All proposed exterior lights are wall mounted and downward facing. See Section 7 of this application for lighting specifications sheets and a Photometric plan.

515.5 Relationship of signs to the project

This project proposes no new road or building signage.

515.6 Village Review Overlay District

This section does not apply.

515.7 Cook's Corner District

This section does not apply.

516 Building Configuration

The proposed warehouse is intended to replace an existing warehouse in its current location. The new warehouse will have a modern look that is consistent with other structures within the development.

517 Preservation of Historic Resources

This proposed warehouse is located on a fully developed site with no know historical resources. This section does not apply to the development.



518 Access for Persons with Disabilities

The new warehouse is intended primarily for employee use with limited public access inside of the building. A ramp is provided on the southwest side of the building, adjacent to the travel way that is for use by forklifts, but is designed to meet ADA criteria.

519 Recreational Requirements for Residential Developments

This section does not apply to the proposed development.

520 Fiscal Capacity

If requested by the Planning Board, the applicant will provide documentation demonstrating fiscal capacity.

521 Performance Guarantee

If applicable, a performance guarantee will be filed in accordance with final plan approval.

522 Home-owners/Property Owners Associations

This section does not apply to the proposed development.

Main-Land looks forward to meeting with town staff and moving forward in the review process for this project. Please let me know if you have any questions or need additional materials.

Sincerely,

Main-Land Development Consultants, Inc.



Robert D. Lightbody, P.E.
Project Manager/Project Engineer



Town of Brunswick, Maine

INCORPORATED 1739

DEPARTMENT OF PLANNING AND DEVELOPMENT

85 UNION STREET

BRUNSWICK, MAINE 04011-1583

TELEPHONE 207-725-6660

FAX 207-725-6663

**BRUNSWICK DEPARTMENT OF PLANNING AND DEVELOPMENT
DEVELOPMENT REVIEW PACKET
MINOR REVIEW**

This Packet Includes:

- I. Summary of the Review Process
- II. Sketch Plan Application Form and Submission Checklist
- III. Final Plan Application Form and Submission Checklist

Note that this review process summary and the submission checklist are provided only as a ready reference for your convenience. For a complete reading of the provisions governing development review in Brunswick, the applicant must refer to the Brunswick Zoning Ordinance, copies of, which are available for a fee from the Codes Enforcement Office.

The purpose of Development Review is to ensure that the development of land occurs in a manner that conforms to the Brunswick Zoning Ordinance and reasonably protects public facilities, the natural environment and neighboring uses. Development review includes subdivision and site plan reviews. In order to expedite smaller projects, review is classified into “Major” and “Minor” review. Major review is conducted by the Planning Board, and Minor review is conducted by the Staff Review Committee. Applicants are advised that even if Development Review is not required for your particular project, a building, electrical or plumbing permit may be. For further information, contact the Codes Enforcement Office.

APPLICABILITY/MINOR REVIEW

Minor Review is conducted by the Staff Review Committee, and involves one phase: final review. The following activities are subject to Minor Development Review.

- A. Development activity, or combination of activities that, within any five year period results construction that falls within the following thresholds:
 - In the MU4 (Fox Run), CC (Cooks Corner), I2 (Church Road Industrial Park), I3 (Bath Road Industrial Park), I4 (Exit 22), HC2 (Inner Bath Road):
 - Between 2,000 and 9,999 square feet of new gross floor area;
 - Between 2,000 and 9,999 square feet of new impervious surface; OR
 - Cumulative Total of between 3,000 and 14,999 square feet of gross floor area and impervious surface combined.
 - In ALL OTHER ZONING DISTRICTS:
 - Between 1,000 and 4,999 square feet of new gross floor area;
 - Between 1,000 and 4,999 square feet of new impervious surface; OR
 - Cumulative Total of between 1,500 and 7,499 square feet of gross floor area and impervious surface combined.
- B. Construction of 1 drive-up windows.
- C. Marine Activities that involve the creation of less than 5,000 square feet of new impervious surface.
- D. Development subject to Special Permit (Section 701) that results in the creation of less than 5,000 square feet of new impervious surface.

Note that these Development Review Thresholds shall be based upon cumulative development over a five-year period. If any threshold is exceeded during that period, all development that has occurred within that time frame shall be subject to major review.

Restrictions on Activities During Review:

Applications are considered to be “pending” from the date of the submission of an application until the plan is either approved, approved with conditions or denied by the Staff Review Committee. Demolition, excavation, filling, grading, removal of topsoil, and clearing of vegetation are prohibited on any portion of a property that has a pending application. Such activities may cause the application to be denied, and the application process shall be terminated. If an applicant is refiled on that property, a detailed plan for the remediation of any adverse impacts associated with the restricted activity will be required.

If you have a pending application, you may legally conduct certain activities. This includes the development of a lot not included in a subdivision or proposed subdivision unless such lot is subject to a pending site plan application; activities required for the routine maintenance of existing structures or uses or to remedy a fire hazard; non-disruptive activities associated with information gathering needed for the pending application; and activities that are unrelated to the pending application as determined by the Codes Enforcement Officer.

REVIEW PROCESS

Final Plan

Once the Staff Review Committee votes to deem a Final Plan application to be complete, the Committee shall undertake its review. The Committee may either vote to approve, approve with conditions, or deny the final application. Appeals to a Staff Review Committee action may be made to the Planning Board.

Required Notification

All owners of property within a 200-foot radius of the boundaries of the proposed development shall be notified about the application and the time of the Staff Review Committee meeting. The Planning Office is responsible for identifying and notifying these property owners.

Determination of Completeness of an Application

An application is considered to be complete when an application form and all plan requirements or waiver requests have been submitted to the Director of Planning & Development. Within five working days of receiving an application, the Director of planning and Development shall determine whether the application is complete. If an item is missing from the application and not waiver has been requested for it, the Director of Planning and Development shall notify the applicant in writing that the application is not complete and request the additional information. The applicant shall submit the additional information as soon as possible and the procedure shall be repeated until the application is complete. No item will be placed on the Staff Review Committee’s agenda until the application is complete. Complete means that all submission requirements or waiver requests have been submitted; any additional information requested at a previous meeting has been provided and all conditions of any relevant prior approval for the property have been fulfilled, unless the application describes the manner in which unfilled applications will be addressed.

Time Frames for Minor Project Review

10 copies of a complete application are required after a determination is made by the Planning Office that the application is complete. Such materials shall be submitted at least 15 days prior to the Staff Review Committee meeting.

Review Criteria

The Planning Board may not approve a final plan unless it finds that all provisions of Section 411 have been satisfied. Section 411 has been included in this packet.

Waivers

Requests for Waivers must be identified when an application is submitted. The applicant must provide the reasons for the waiver, in accordance with Section 410 of the Zoning Ordinance, which is included in this packet.

Impact Fees

The Town of Brunswick has several impact fees, which must be paid prior to the issuance of a building permit for an approved project. The fee formulae currently in effect are provided at the end of this packet.

Application Fees

The following application fees shall be paid for any project undergoing development review. For all projects a \$20.00 fee is assessed to cover the cost of abutter mailings. For projects that require a public hearing an additional \$200.00 fee will be assessed to cover the costs of advertising the public hearing.

Fee for Minor Development Review:

- For projects with new building construction of more than 2,500 sq. ft. the cost equals the total amount of square footage for all buildings multiplied by \$0.10.
- All other development requiring Minor Development Review: \$150.00

**MINOR DEVELOPMENT REVIEW
APPLICATION**

1. Project Name: Material Warehouse Replacement

2. Project Applicant

Name: Mike Hall
Address: P.O. Box 299, Casco, Maine
4 Edes Falls Road, Casco, Maine 04015
Phone Number: 207-627-4201

3. Authorized Representative

Name: Main-Land Development Consultants Robert Lightbody PE
Address: P.O. box Q, Livermore Falls, Maine 04254
Phone Number: 207-897-6752

4. List of Design Consultants. Indicate the registration number, address and phone number Of any engineer, surveyor, architect, landscape architect or planner used:

1. Main-Land Development Consultants Robert Lightbody PE #13893
2. _____
3. _____

5. Physical location of property being affected: 158 Church Road, Brunswick, Maine

6. Lot Size: 13.14 Acres

7. Zoning District: I2 -Church Road Industrial Park

8. Indicate the interest of the applicant in the property and abutting property. For example, is the applicant the owner of the property and abutting property? If not, who owns the property subject to this application?
The applicant owns the property in question and has no interest in abutting properties.

9. Assessor's Tax Map 17 Lot Number 22 of subject property.

10. Brief description of proposed use: The Building is proposed to be used as a material storage unit.

11. Describe specific physical improvements to be done: The applicant proposes to demolish a nonconforming structure and replace it with a conforming structure that will have increased storage capacity

Owner Signature: _____

Applicant Signature (if different): Robert D Lightbody (Agent)

Required Attachments (by Applicant):

- Final Plan Check List
- Final Plan Check List Addendum for Open Space Developments (if applicable)
- Request for Waivers (if applicable)
- Required Copies of Final Plan

Required Attachment (by Planning and Development Department):

- Listing of all owners of property within 200-foot radius of property under review.

FINAL PLAN REQUIREMENTS

Key: "O" = omit; "S"=submit; "NA"=not applicable; "W" = waiver; "P" = pending

Item	O	S	NA	W	P	Comments
Scale, date, north point, area, number of lots (if subdivision)		✓				
Boundaries of all lots and tracts with accurate distances and bearings, locations of all permanent monuments property identified as existing or proposed.		✓				
Certification by a professional land surveyor that the land has been surveyed and the boundaries established in accordance with the State of Maine Board of Licensure for Professional Surveyors standards for Category 1 (Standard Boundary Survey), conditions 1, 2, or 3.		✓				
Existing zoning district and overlay designation.		✓				
Names of engineer and surveyor; and professional registration numbers of those who prepared the plan.		✓				
Names of current owner(s) of subject parcel and abutting parcels.		✓				
Name, location, width of paving and rights-of-way, profile, cross-section dimensions, curve radii of existing and proposed streets; profiles of center-lines of proposed streets, at a horizontal scale of 1" equals 50' and vertical scale of 1 inch equals 5 feet, with all elevations referred to in U.S.G.S. datum.		✓				
A general road plan noting circulation, direction, traffic control devices, street lighting and type of lighting proposed.		✓				
Existing and proposed easements associated with the development.			✓			No know easements
Kind, location, profile and cross-section of all proposed drainage facilities, both within the development and outside of it, and a storm-water management plan which includes the submission requirements listed in the storm-water management checklist available in the Planning Department.		✓				
Location of features, natural and artificial, affecting the development, such as water bodies, wetlands, streams, vegetation, rail-roads, ditches and buildings.		✓				

Location of existing and proposed utilities; water, sewer, electrical lines, and profiles of underground facilities. Tentative locations of any private wells.		✓				
Existing and proposed location, size, profile and cross section of sanitary sewers; description, plan and location of other means of sewage disposal with evidence of soil suitability.			✓			There is no sewer work associated with the proposed development.
Topography with counter intervals of not more than 2 feet.		✓				
A Class A (high intensity) Soil Survey prepared in accordance with the standards of the Maine Association of Professional Soil Scientists.				✓		
Location of all existing trees over 10 inches in diameter, locations of tree stands, and a plan showing all trees to removed as a result of the development proposal.				✓		
Lighting plan showing details of all proposed lighting and the location of that lighting in relation to the site.		✓				
Existing locations and proposed locations, widths and profiles of sidewalks.				✓		
Location map.		✓				
Approximate locations and dimensions of proposed parking areas.		✓				
Proposed ownership and approximate location and dimensions of open spaces for conservation and recreation.			✓			
Grading, erosion control, and landscaping plan; proposed finished grades, slopes, swells, and ground cover or other means of stabilization.		✓				
Reference to special conditions stipulated by the Planning Board, with conditions either set forth in full or on the plan or identified as specific documents filed with the Board.			✓			
A wetlands map drawn by a specialist delineating wetland boundaries in accordance with the methods prescribed by the US Army Corps of Engineers.			✓			
Dedicated public open specs, areas protected by conservation easements, and existing and proposed open spaces or recreation areas.			✓			

FINAL PLAN/SUPPORTING DOCUMENTS

Key: "O" = omit; "S"=submit; "NA"=not applicable; "W" = waiver; "P" = pending

Item	O	S	NA	W	P	Comments
Documentation of Ownership or contract.		✓				
Drafts of legal documents appropriate to the application, including: deeds, easements, conservation easements, deed restrictions or covenants, home/property owners association declarations and by-laws, and such other agreements or documents as are necessary to show the manner in which conservation land will be owned, maintained, and protected.		✓				
Draft performance guarantee or conditional agreement.					✓	
Disclosure of any required permits from the Department of Environmental Protection, Marine Resources, US Army Corps of Engineers, Department of Inland Fisheries and Wildlife, or other agencies, as applicable; or, if a permit has already been granted, a copy of that permit.			✓			
Any additional studies required by the Planning Board which are deemed necessary in accordance with this Ordinance.			✓			
Storm water management program for the proposed project prepared by a professional engineer.		✓				
A storm water management checklist prepared by the Cumberland County Soil and Water Conservation District, made available at the Brunswick Department of Planning and Development.			✓			

An erosion and sedimentation control checklist prepared by the Cumberland County Soil and Water Conservation District.			✓			
A statement from the Brunswick-Topsham Water District of conditions under which water will be provided.					✓	
A statement from the Brunswick-Topsham Water District of its review and comments on the proposed use if the project involves development within the Aquifer Protection Zone.					✓	
A Statement from the Fire Chief recommending the number, size, and location of hydrants, available pressure levels, road layout and street and project name, and any other fire protection measures to be taken.					✓	
A statement from the Superintendent of the Brunswick Sewer District of the conditions under which the Sewer District will provide sewerage disposal service and approval of the sanitary sewers proposed within the development.			✓			
Where a septic system is to be used, evidence of soil suitability.			✓			
All applicable materials necessary for the reviewing entity to review the proposal in accordance with the Criteria of Section 411.		✓				
A plan of all buildings with new construction or expansion of an existing facility, including type, size, and footprint, floor layout, setback, elevation of first floor slab, storage, and loading areas.		✓				
An elevation view of all sides of each building proposed indicating height, color, bulk, surface treatment, and signage.		✓				
A circulation plan describing all pedestrian and vehicle traffic flow on surrounding road systems.		✓				
The size and proposed location of water supply and sewage disposal systems and provision for future expansion of those systems.		✓				
A site landscaping plan indicating grade change, vegetation to be preserved, new plantings used to stabilize areas of cut and fill, screening, the size, location and purpose and type of vegetation.		✓				

January 15, 2016

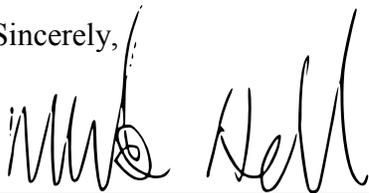
Main-Land Development Consultants, Inc.
42 Church Street
PO Box Q
Livermore Falls, ME 04254

SUBJECT: Agent Authorization

To Whom It May Concern:

Hancock Lumber Company declares Main-Land Development Consultants, Inc. (Main-Land) as their authorized agent and representative for the construction of a new material storage warehouse at the intersection of Church Road and Greenwood Road in Brunswick, Maine. Main-Land is authorized to pursue local, state, and federal permitting, including signing application forms.

Sincerely,

A handwritten signature in black ink, appearing to read "Mike Hall". The signature is written in a cursive style with a horizontal line underneath it.

Mike Hall, Retail Operations Manager



MAIN-LAND

DEVELOPMENT
CONSULTANTS, INC.

ENGINEERS, SURVEYORS, SCIENTISTS

P.O. BOX Q LIVERMORE FALLS, ME 04254
TEL: (207) 897-6752/FAX: (207) 897-5404
WWW.MAIN-LANDDCI.COM

July 20, 2016

Town of Brunswick
Planning and Development
Attn: Jared Woolston
85 Union Street
Brunswick, Maine 04011

Subject: Minor Review Application – Hancock Lumber – Material Storage Building Replacement

Dear Jared and Members of the Staff Review Committee,

Thank you for allowing Main-Land Development Consultants, Inc. the opportunity to meet with the Staff Review Committee to discuss the proposed warehouse and associated site construction for Hancock Lumber located at 158 Church Road, at the intersection of Church Road and Greenwood Road. The entire project parcel is located in the Large Scale Business and Institutional District I2 (Church Road Industrial Park), a growth district.

Of particular concern to the applicant is the requirement of Ordinance section 512.5 Bicycle and Pedestrian Access and Circulation. Most concerning is subsection C; *In Growth Areas, all applications with parking plans containing 10 or more new parking spaces shall provide sidewalks on portions of their frontage that abut a public road.* In this case, it appears the applicant would be required to provide 466+/- linear feet of sidewalk along Church Road and 672 +/- linear feet along Greenwood Road. This is a total of 1,138 linear feet of new sidewalk.

The applicant has several concerns related to this requirement. The concerns include safety, winter maintenance, reduction of green space, and cost/return on investment.

The information presented below describes existing site conditions, more clearly defines modifications to provisional standards, and provides a basis for the request.

Project Background

Hancock Lumber is proposing the construction of a new material storage building to replace an existing, aging material storage building. The existing facility is located at the intersection of Church Road and Greenwood Road in the Town of Brunswick, Tax Map 17, Lot 22. The 13 acre site contains an existing retail store, lumber storage, several outbuildings, paved and gravel surfaces and appurtenances. Impervious area on site totals 6.9 acres.

The proposed project involves demolition of a 2,497 square foot building and construction of a new 9,246 square foot warehouse building. 22 new parking spaces, to take the place of 11 spaces lost due to construction of the new building, will be added at the rear of the existing retail facility by striping existing

paved areas. As the new building and additional parking will be located in areas that are already paved or covered by a building, the project will not create any new impervious area.

As described above, the minimum parking requirements and the fact that the project is located within a Growth District are the defining factors for the sidewalk requirements.

Required Parking

The current development has 31 dedicated parking spaces. Of the 31 spaces, two are ADA accessible. These spaces are used for employee and customer parking. Delivery vehicles generally do not require dedicated parking during normal hours of operation. When not in use, or after normal hours of operation, delivery vehicles are parked at the back portion of the development, behind locked gates, and generally outside of public view.

The new warehouse does not contemplate a change of use with respect to on-site sales or increased customer volume. No new employees are project to be hired as a result of this project. The main goal of the warehouse is to bring some material currently being stored outside, into the dry, and provide additional storage for millwork. Based on current and anticipated uses, the Applicant does not need new parking spaces to maintain operations.

The 31 existing, dedicated parking spaces, are adequate for the current use. However, provisions have been made to add 10 new parking spots creating a total of 41 parking spaces including 2 ADA accessible spaces. The new spaces created at the rear of the retail facility will primarily be for employee parking except in rare instances when overflow is required, with 4 spaces at the north for contractor pick-up.

The applicant requests that the Staff Review Committee allow a modification of the current Provisional Standards. Specifically, the applicant requests that no more than 10 new spaces be required. As mentioned previously, the current 31 spaces meet the needs operational needs of the applicant, and there is no proposed change of use or anticipated increase in retail sales.

Section 512.2 A.2 Provisional Parking Standards for industrial/warehouses uses, requires 2 spaces per 1,000 square feet of floor area. The new building as proposed is approximately 52' wide by 177' long, or approximately 9,246 sf. Therefore, the new warehouse requires 19 new spaces (9,246 sf/1000 sf x 2 spaces). This scenario is somewhat confusing in the fact that it does not account for the 2,497 sf storage building that is being eliminated. Currently, there is parking that accommodates the 2,497 sf storage building. If the 9,246 sf storage space is reduced by the existing 2,497 sf storage space, this results in a net increase of 6,749 sf further reducing the required parking spaces to 14 spaces (6,749 sf/1000 sf x 2 spaces).

Under the "Second Draft Zoning Ordinance" dated July 2015 proposed parking requirements Table 4.7.1A: Minimum Number of Off-Street Vehicle Parking Spaces, Warehousing and Storage uses require 1 parking space per 2,500 sf. Under this provision, the applicant would be required to provide 4 new parking spaces (9,246 sf/2,500 sf x 2 spaces).

4 new parking spaces instead of the currently required 19 is a substantial change in the Minimum Parking requirement standard, and in and of itself eliminates the requirement to provide 1,138 lf of new sidewalk.



Public Safety

Of greatest concern to the applicant is Public Safety on and around the property. Although no formal studies or surveys have been performed, the applicant knows of no instances when they have served bicycle or pedestrian clients. This is reasonably explained by the nature of the business and the contractor/industrial clients that they serve.

The applicant is concerned of the possible hazards of transporting unsecured lumber or other building materials on and off site by means of bicycle and to some degree by foot. The majority of sales at this location are in the form of lumber and building materials. Therefore, the majority of the material/items leaving the site are long, heavy, bulky, and generally require motorized means of transport, often making pedestrian or bicycle transport awkward or impractical.

Given existing development along Church Road and Greenwood Road and the fact that the project parcel is located at the very southern corner of the I2 district, new sidewalks would not lead to further sidewalks. Therefore, once patrons leave the site by bicycle or foot, they would have only the road shoulders to travel on and be subject to large volumes of vehicular traffic with no means of protection from said traffic. The Applicant would not want to be seen as promoting this kind of a safety hazard to its customers.

Winter Maintenance

The applicant is concerned about the feasibility of the Town of Brunswick Public Works department to maintain the sidewalk in a timely fashion during winter storm events. The concern lies mainly with the fact that the sidewalks are in a remote section of the Town that up until this time, has not required this level of maintenance, since no other sidewalks are close to this project site. Maintenance of this section of sidewalk would require the Public Works Department to mobilize equipment specifically to maintain this section of sidewalk. Proper maintenance of sidewalks during the winter months will be essential in minimizing further safety concerns for the general public.

Reduction of Green Space

The applicant wishes to maintain, to the greatest practical extent, the limited green space that exists on site. The reduced green space of particular concern is along Church Road (the front of the property). The addition of sidewalks along Church Road would create 2,200 sf to 2,300 sf of new impervious area or a 15% Green Space reduction along Church Road. The creation of sidewalk along Church Road also has the potential to jeopardize several large, mature trees along the front of the property, that currently provide shade and a visual screen of the property.

Although, not as significant to the overall Green Space, the construction of sidewalk along Greenwood Road has other challenges. First, construction of a sidewalk in this location would likely reduce the amount of natural screening between Greenwood Road and areas of the site that are typically used for material storage, thus creating visual impacts for the abutting property owners on the west side of Greenwood Road.

Visual observations indicate that mailboxes and utility poles will require relocation for a sidewalk located adjacent to the paved shoulder along the Greenwood Road travel way.



Project Cost

Obviously, there are monetary costs associated with this proposed development. The applicant has estimated that the cost for a properly constructed (sub-base/base material, concrete/paving, and incidental landscaping) is approximately \$28,000 or roughly 5% of the overall project costs. This is a significant cost considering that the installation of a sidewalk is unlikely to offset any of the construction costs by attracting new customers.

The Applicant requests that the Staff Review Committee carefully consider the needs of the project and the goals of the Town. If consideration to the "Second Draft Zoning Ordinance" is given, many of the items laid out above will no longer apply. However, please understand that the Applicant intends to work with the Town to identify solutions that will both benefit daily/long-term operational needs, as well as the growth goals of the Town of Brunswick.

Main-Land looks forward to meeting with Town staff and moving forward in the review process for this project. Please let me know if you have any questions or need additional materials.

Sincerely,

Main-Land Development Consultants, Inc.



Robert D. Lightbody, P.E.
Project Engineer/Project Manager





MAIN-LAND

DEVELOPMENT
CONSULTANTS, INC.

ENGINEERS, SURVEYORS, SCIENTISTS

P.O. BOX Q LIVERMORE FALLS, ME 04254
TEL: (207) 897-6752/FAX: (207) 897-5404
WWW.MAIN-LANDDCI.COM

July 21, 2016

Town of Brunswick
Planning and Development
Attn: Jared Woolston
85 Union Street
Brunswick, Maine 04011

Subject: Minor Review Application – Hancock Lumber – Material Storage Building Replacement

Dear Jared and Members of the Bicycle and Pedestrian Advisory Committee,

Thank you for allowing Main-Land Development Consultants, Inc., on behalf of Hancock Mid-Coast, LLC the opportunity to meet with the Staff Review Committee at yesterday's workshop to discuss the proposed warehouse and associated site construction for Hancock Lumber located at 158 Church Road, at the intersection of Church Road and Greenwood Road. The entire project parcel is located in the Large Scale Business and Institutional District I2 (Church Road Industrial Park) which is a growth district.

As discussed during the Staff Review workshop, the Applicant is requesting that the "Second Draft Zoning Ordinance", Chapter 4, Section 4.7 Parking and Loading provision be considered for the proposed development. The new information provided below is intended to supplement the July 20, 2016 letter provided to the Staff Review Committee.

In order to further address Staff comments, employee counts are provided and calculations have been performed to identify parking provisions required by the existing ordinance, as well as those required by the "Second Draft Zoning Ordinance."

Existing Development

The current development utilizes up to 20 employees and has 31 dedicated parking spaces. Of the 31 spaces, two are ADA accessible. These 31 spaces are used for employee and customer parking. Delivery vehicles generally do not require dedicated parking during normal hours of operation. When not in use, or after normal hours of operation, delivery vehicles are parked at the back portion of the development, behind locked gates, and generally outside of public view.

The new warehouse does not contemplate a change of use with respect to on-site sales or increased customer volume. No new employees are projected to be hired as a result of this project. The main goal of the warehouse is to bring material currently being stored outside, into the dry, and provide additional storage space for millwork. Based on current and anticipated uses, the Applicant does not need new/additional parking spaces to maintain operations. The current parking provisions have proven to me more than adequate in the past.

MINOR REVIEW APPLICATION - BICYCLE AND PEDESTRIAN ADVISORY COMMITTEE
HANCOCK LUMBER, BRUNSWICK, ME

Per the request of the Staff Review Committee, provisions of the current ordinance, Section 512.2 Parking Requirements for Nonresidential Uses, the Applicant is required to provide 64 parking spaces.

Provisional Parking Standard

Principal Use	Minimum Number of Vehicle Parking Spaces per 1,000 square feet	Existing Area (sf)	Required Parking Spaces
1. Retail or Service Business uses	4 spaces	11,865	48 spaces
2. Industrial/Warehouse uses	2 spaces	5,253	11 spaces
3. Office uses	3 spaces	1,648	5 spaces
Total Required spaces			64 spaces

64 parking space is over twice the amount of existing parking spaces and far exceeds what the Applicant requires to efficiently operate. Currently there are no on-site provisions for bicycle parking.

Proposed Development

The Minor Development Review Application, dated June 24, 2016, as submitted to the Town of Brunswick provides 41 parking spaces, including additional provisions for Employee Overflow Parking, at the rear of the site, as needed. The Applicant wishes to maintain this 41 space parking count and not create further, additional parking spaces.

Under provisions of the “Second Draft Zoning Ordinance,” Table 4.7.1.A Minimum Number of Off-Street Vehicle Parking Spaces, and based on the floor areas proposed in the Minor Review Application and Plans, the Applicant is required to provide 50 parking spaces.

Minimum Number of Off-Street Vehicle Parking Space

Principal Use	Minimum Number of Vehicle Parking Spaces	Existing Area (sf)	Required Parking Spaces
Office	1 per 400 sf	1,648	5 spaces
Retail, Class II	1 per 300 sf	11,865	40 spaces
Warehousing and Storage	1 per 2,500 sf	12,002	5 spaces
Total Required spaces			50 spaces

In keeping with the “Second Draft Zoning Ordinance,” Section 4.7.2. Minimum Bicycle Parking Requirements, the ordinance requires the Applicant provide 2 bicycle parking spaces for every 10 vehicle parking spaces provided. This requires the dedication of 10 bicycle parking spaces.

Upon acceptance, the site plans will be updated for the Minor Review Application to reflect the bicycle spaces. The new bicycle spaces are anticipated to be located between the main entrances along Church Road.

The Applicant formally requests that the Staff Review Committee and Bicycle and Pedestrian Advisory Committee consider the Criteria for Applying Provisional Standards and allow the Applicant to provide 41 vehicle parking spaces (including 2 ADA spaces), 10 bicycle spaces, and not require the construction of any new sidewalk along the property that abuts Church Road and Greenwood Road.



MINOR REVIEW APPLICATION - BICYCLE AND PEDESTRIAN ADVISORY COMMITTEE
HANCOCK LUMBER, BRUNSWICK, ME

Main-Land looks forward to meeting with Town staff and moving forward in the review process for this project. Please let me know if you have any questions or need additional materials.

Sincerely,

Main-Land Development Consultants, Inc.



Robert D. Lightbody, P.E.
Project Engineer/Project Manager



SHORT FORM WARRANTY DEED

MARRINER LUMBER CO. f/k/a Everett Mariner, Inc., a Maine corporation with a place of business at 158 Church Road, Brunswick, Maine 04011 ("Grantor"), FOR CONSIDERATION PAID, grants to HANCOCK MID-COAST, LLC, a Maine limited liability company, whose mailing address is 4 Edes Fall Road, Casco, Maine 04015 ("Grantee"), with WARRANTY COVENANTS, certain real property, together with any improvements thereon, located at Church Road and Greenwood Road, Brunswick, Cumberland County, Maine and more particularly described on Exhibit A attached hereto and made a part hereof.

The Grantor and Grantee agree that the warranty covenants do not apply to any discrepancies between the Historic Description and the Survey Description described on Exhibit A.

IN WITNESS WHEREOF, Marriner Lumber Co. has caused this instrument to be executed by Neil W. Lamb, its President, thereunto duly authorized, this 1st day of September, 2004.

WITNESSETH:

MARRINER LUMBER CO.

Richard A. Mad
Name:

By: Neil W. Lamb
Name: Neil W. Lamb
Title: President

State of Maine
County of Cumberland, ss.

September 1, 2004

PERSONALLY APPEARED the above-named Neil W. Lamb, President of Marriner Lumber Co. as aforesaid, and acknowledged the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of said corporation.

Before me,

John C. Lightbody
Name: John C. Lightbody
Title: attorney

MAINE REAL ESTATE TAX PAID

Exhibit A

A certain lot or parcel of land with buildings thereon, situated in Brunswick, in the County of Cumberland and State of Maine, and bounded and described as follows (the "Survey Description"):

Beginning at a point where the northwesterly sideline of the Church Road intersects the northeasterly sideline of the Greenwood Road;

Thence N 55° 30' W along the sideline of said Greenwood Road a distance of 671.5 feet, more or less, to a point and land now or formerly owned by the Town of Brunswick described in a deed recorded in the Cumberland County Registry of Deeds in Book 19018, Page 149 and depicted on an unrecorded plan entitled "Land to be Conveyed by Marriner Lumber Co. to the Town of Brunswick" prepared by Robert M. Spivey, PLS dated February 19, 2003;

Thence N 35° 57' E along land of said Town of Brunswick a distance of 1022.8 feet, more or less, to land now or formerly of Rohan Corporation as described in deed recorded in said Registry of Deeds in Book 10976, Page 60;

Thence S 56° 21' E along said land of Rohan Corporation a distance of 334.20 feet, more or less to an iron rebar and land now or formerly of Donald A. LaCasse;

Thence S 39° 05' W along land of said LaCasse 100 feet to an iron rebar;

Thence S 56° 21' E along land of said LaCasse a distance of 42.8 feet to an iron rebar and land now or formerly of Carolyn E. Carter;

Thence S 45° 06' W along land of said Carter a distance of 101.6 feet to an iron rebar and land now or formerly of Michael & Juanita Hennessey;

Thence S 41° 11' W along land of said Hennessey a distance of 100.4 feet to an iron rebar and land now or formerly of Conrad and Vivian Thibeault;

Thence N 56° 21' W a distance of 28.4 feet to an iron rebar and the northeasterly corner of land of said Thibeault;

Thence S 39° 05' W along land of said Thibeault a distance of 200 feet to an iron rebar;

Thence S 56° 21' E a distance of 352.0 feet, more or less, along land of said Thibeault to the northwesterly sideline of Church Road;

Thence S 41° 16' W along the northwesterly sideline of Church Street distance of 132.7 feet, more or less, to a point;

Thence continuing along the northwesterly sideline of Church Street a distance of 407.3 feet,

more or less, to the northeasterly sideline of Greenwood Road and the point of beginning.

Reference is made to Standard Boundary Survey for Marriner Lumber Co. prepared by Robert M. Spivey, P.L.A. dated January 10, 2000 and recorded in said Registry of Deeds in Plan Book 200, Page 81.

The property described in the preceding paragraphs is historically described as follows (the "Historic Description"):

Parcel One:

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

Beginning at a point where the northwesterly sideline of the Church Road intersects the northeasterly sideline of the Greenwood Road; thence running northwesterly along said sideline of said Greenwood Road one thousand five hundred ninety-six (1,596) feet to a point; thence northeasterly along other land of Everett Marriner parallel to said Church Road approximately one thousand fifty (1,050) feet to land now or formerly of Harold Curtis; thence southeasterly along said Curtis' land thirteen hundred (1300) feet, more or less, to the land of Louis J. Tetreault; thence running in a southwesterly direction along land of said Tetreault, land of Carl E. Estes, land of Emily Stanwood, and land of Conrad Thibeault, four hundred five (405) feet, more or less, to the most westerly corner of said Thibeault land, thence southeasterly along said Thibeault land three hundred and fifty (350) feet, more or less, to the northwesterly sideline of said Church Road; thence southwesterly along said Church Road to land now or formerly of Horace Ames; thence northwesterly, southwesterly and southeasterly around said Ames land and back to the northwesterly sideline of said Church Road; thence southwesterly along the northwesterly sideline of said Church Road to the point of beginning.

Being the same premises conveyed to Everett Marriner, Inc., by Derril O. Lamb, Jr., by deed dated May 1, 1972 and recorded at Cumberland County Registry of Deeds in Book 3342, Page 335. Everett Marriner, Inc. changed its name to Marriner Lumber Co. by virtue of Articles of Amendment filed with the State of Maine Secretary of State, dated December 21, 1972 and filed on December 26, 1972 with the State of Maine Secretary of State. Further title reference is made to deed of Marriner Lumber Co. to D & N Partnership No. 1 dated February 12, 1985 and recorded in said Registry of Deeds in Book 6686, Page 337 and a reconveyance of said parcel of land by deed dated October 2, 1996 and recorded in said Registry of Deeds in Book 12789, Page 320.

Parcel Two:

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

Beginning at an iron pin driven in the ground on the Church Road, so-called, in said Brunswick, and running in a general northwesterly direction one hundred (100) feet along land now or

formerly of Everett Marriner, Inc., to an iron pin driven in the ground; thence running in a general northeasterly direction one hundred (100) feet along land now or formerly of Everett Marriner to an iron pin driven in the ground; thence running in a general southeasterly direction one hundred (100) feet along land now or formerly of W. Everett Marriner to an iron pin driven in the ground; thence running in a general southwesterly direction one hundred (100) feet along Church Road, so-called, to the point of beginning.

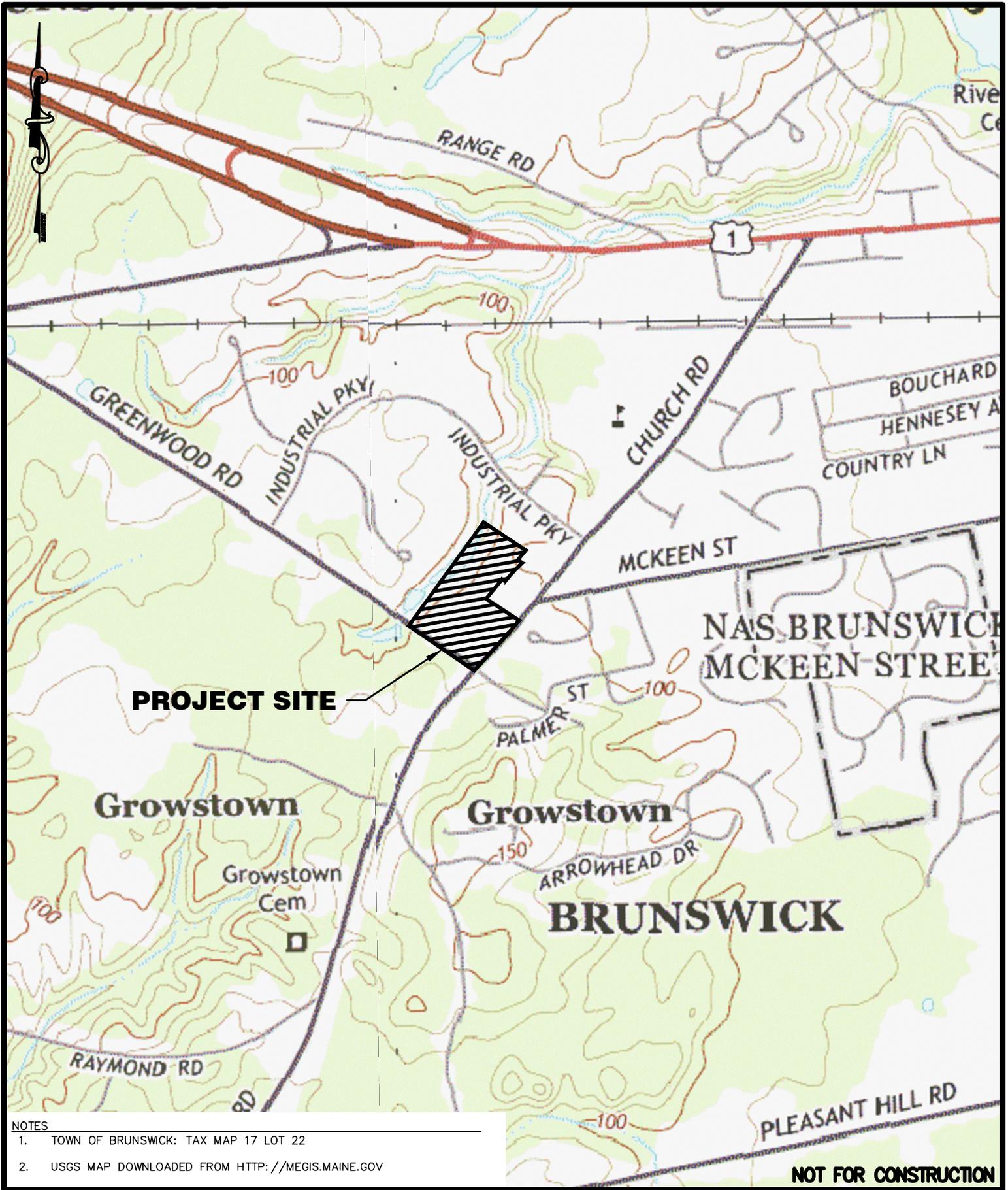
Being the same as premises conveyed to Marriner Lumber Co. by Beatrice Ames by deed dated June 6, 1980 and recorded at Cumberland County Registry of Deeds in Book 4613, Page 118.

Excepting from the above-described Parcels One and Two the land described in a deed from Marriner Lumber Co. to the Town of Brunswick dated March 7, 2003 and recorded in said Registry of Deeds in Book 19018, Page 149.

The properties are conveyed subject to any Central Maine Power Company and New England Telephone & Telegraph Company easements of record.

S:\m\mco03\closing docs\Warr Deed Cumb rev 8-31.DOC

Received
Recorded Register of Deeds
Sep 01, 2004 12:05:30P
Cumberland County
John B O'Brien



PROJECT SITE

- NOTES
1. TOWN OF BRUNSWICK: TAX MAP 17 LOT 22
 2. USGS MAP DOWNLOADED FROM [HTTP://MEGIS.MAINE.GOV](http://MEGIS.MAINE.GOV)

NOT FOR CONSTRUCTION

PROJECT: **HANCOCK LUMBER**
 CHURCH & GREENWOOD ROADS, BRUNSWICK, MAINE

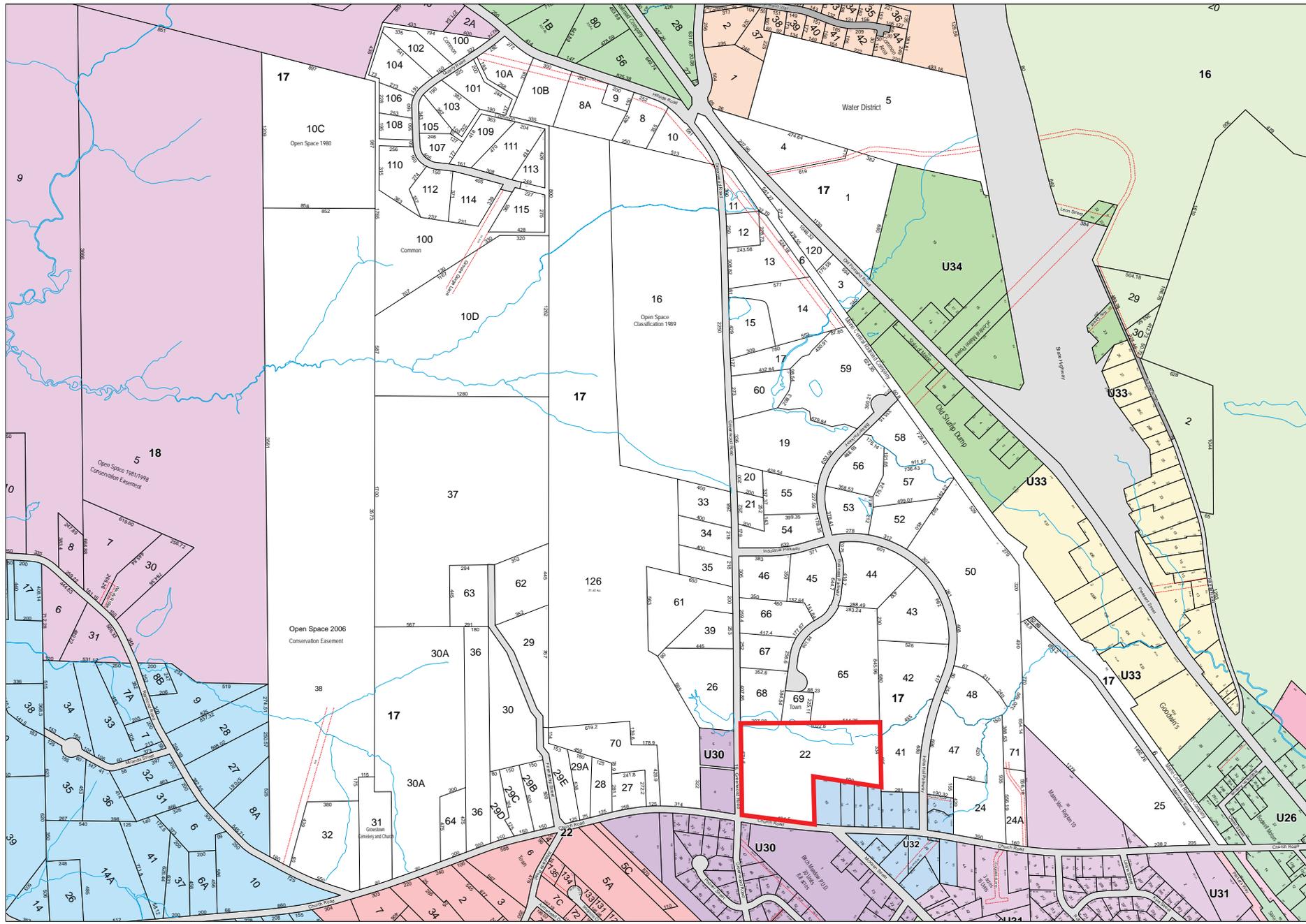
DRAWING: **USGS SITE MAP**

SCALE: 1" = 1,000'

MLDC NO. 15-221
 PROJ. MGR: RDL
 DRAWN BY: EKB
 CHECKED BY: RDL
 REVISION NO. N/A
 ISSUE DATE: 2016-05-04
 ISSUED FOR: REVIEW

MAIN-LAND
 DEVELOPMENT
 CONSULTANTS, INC.

42 CHURCH ST. LIVERMORE FALLS, MAINE
 PH: (207) 897-6752 FAX: (207) 897-5404
WWW.MAIN-LANDDCI.COM



- Legend**
- Public Road
 - Private Road
 - ROW
 - Water
 - Hydrography Line
 - ROW Property Access
 - Other Road
 - Town Boundary
 - Other Lot Boundary
 - Parcels_Lines

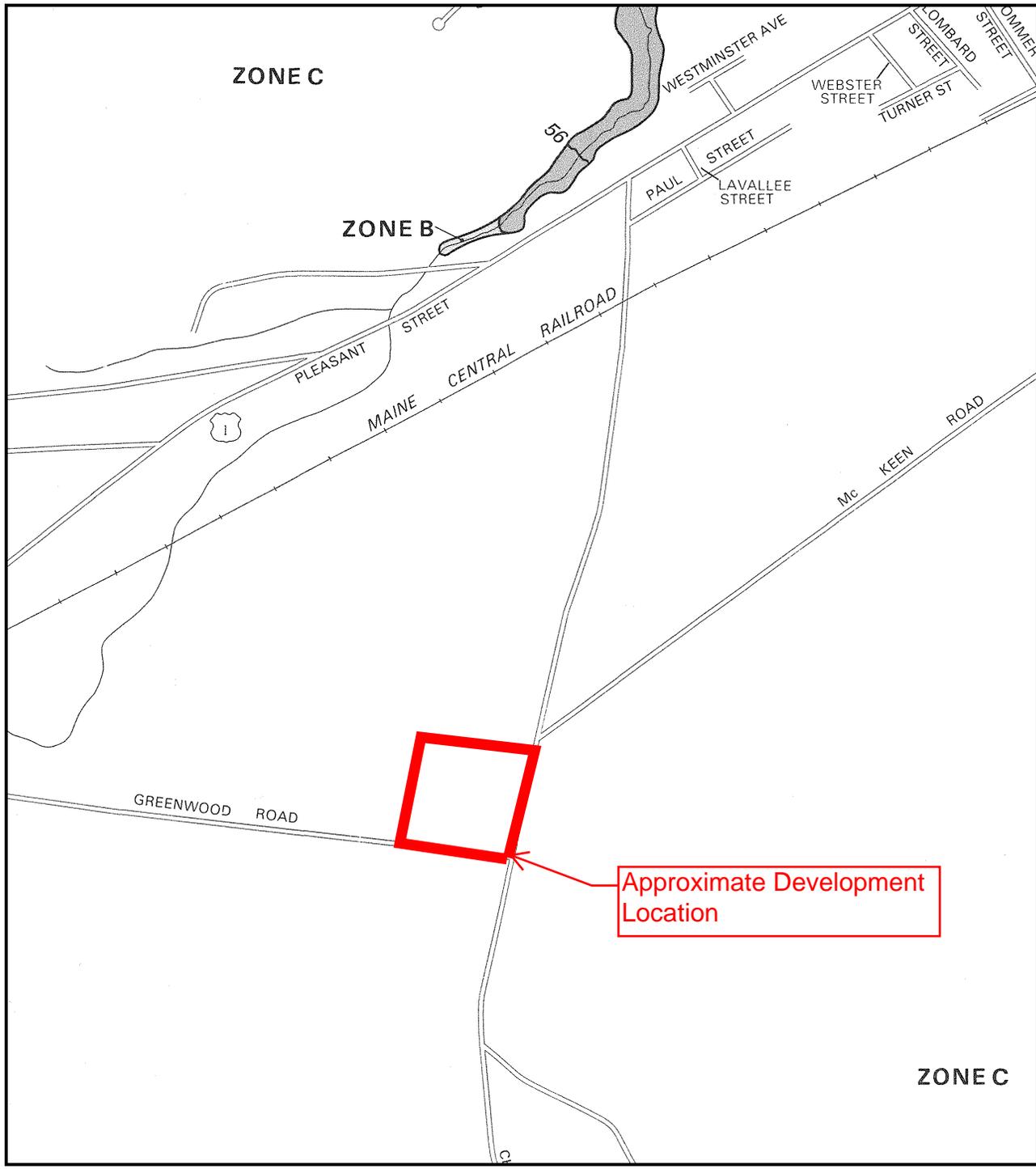
Disclaimer:
The information is provided as a reasonably accurate point of reference, but is not guaranteed and is not to be used for conveyances.
The Town of Brunswick shall not be held responsible for the accuracy or misuse of this data.
Copyright Town of Brunswick.



1 inch = 300 feet

Revised To: April 1, 2015
Maps Prepared by:
Town of Brunswick

MAP
17



APPROXIMATE SCALE

1000 0 1000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

**FIRM
FLOOD INSURANCE RATE MAP**

TOWN OF
BRUNSWICK, MAINE
CUMBERLAND COUNTY

PANEL 15 OF 35
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
230042 0015 B

EFFECTIVE DATE:
JANUARY 3, 1986

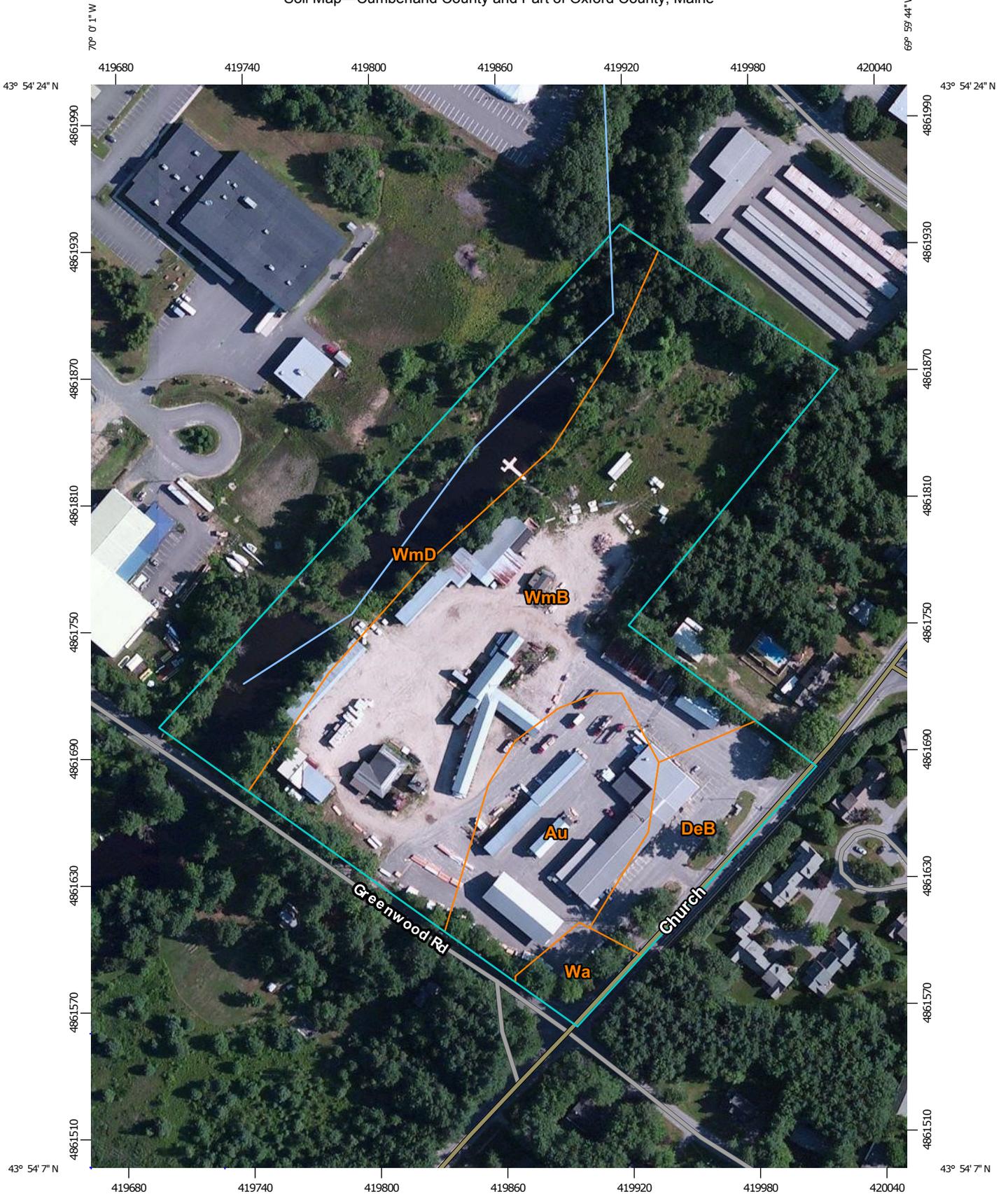


Federal Emergency Management Agency

ZONE C

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

Soil Map—Cumberland County and Part of Oxford County, Maine



Map Scale: 1:2,500 if printed on A portrait (8.5" x 11") sheet.



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



Natural Resources Conservation Service

Web Soil Survey National Cooperative Soil Survey

6/14/2016 Page 1 of 3

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

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

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

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

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

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Cumberland County and Part of Oxford County, Maine

Survey Area Data: Version 11, Sep 17, 2015

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

Date(s) aerial images were photographed: Jul 17, 2010—Jul 27, 2010

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

Map Unit Legend

Cumberland County and Part of Oxford County, Maine (ME005)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Au	Au Gres loamy sand	2.1	13.9%
DeB	Deerfield loamy sand, 3 to 8 percent slopes	1.3	8.3%
Wa	Walpole fine sandy loam	0.4	2.5%
WmB	Windsor loamy sand, 0 to 8 percent slopes	8.0	53.1%
WmD	Windsor loamy sand, 15 to 35 percent slopes	3.4	22.3%
Totals for Area of Interest		15.1	100.0%



MAIN-LAND

DEVELOPMENT
CONSULTANTS, INC.

ENGINEERS, SURVEYORS, SCIENTISTS

P.O. BOX Q LIVERMORE FALLS, ME 04254
TEL: (207) 897-6752/FAX: (207) 897-5404
WWW.MAIN-LANDDCI.COM

STORMWATER MANAGEMENT PLAN

Hancock Lumber Material Storage Building

158 Church Road, Brunswick

June 24, 2016

Site Description

The existing site is Hancock Lumber's Brunswick yard and retail facility. It is a 13 acre parcel covered with gravel/paved parking and drives, a retail store, several open storage buildings, and an enclosed warehouse that is proposed to be demolished as part of this project. The site is located on the north side of the intersection of Church Road and Greenwood Road. The project site is bordered to the west by an unnamed stream/freshwater pond. With the exception of a small portion of the site located at the northwest corner of the property, the site is almost entirely developed and has been in existence prior to 1974.

The site slopes very gradually from Church Road and Greenwood road towards the two ponds at the western edge of the site, where the overall site drains. The ponds receive the drainage from overland flow and through a series of storm drainage networks. Drainage from this site ultimately flows downstream, where it is received by the Androscoggin River.

Soils at the site are generally deep, well drained sand and gravel, belonging to hydrologic soils group (HSG) A. In the existing condition project area, very little stormwater runs off the site surface, per visual observations. Stormwater in the project area is primarily collected through an existing drainage network. No wetlands were found on site.

Proposed Development

The proposed construction consists of a new 9,264 sf materials storage warehouse with associated parking, utilities, and appurtenances. The development is accessed by two existing entrances off of Church Road. In total, the project will not create any new impervious area. In fact, new pervious lawn area will be created behind the new warehouse slightly reducing the overall impervious area. Since all of the proposed development will be on existing paved and/or gravel areas that include buildings, the new development will be "traded" for a larger building with less paved/gravel area. Therefore, no net increase in impervious area will occur.

Stormwater Management

The new development will result in an overall decrease of stormwater runoff during the 24 hour-2-year, 10 year, and 25 year storm event (see OVERALL table below). The 2, 10, and 25-year, 24-hour storm events were considered in this model as per the Maine DEP Chapter 500 Stormwater Management standards.

The existing drainage network affected by the new construction will be replaced with a new network installed in the same general areas. The existing pavement in the construction area will be removed, regraded to match existing drainage patterns and then repaved. A new roofline drip strip will also be constructed to control and treat the runoff from the new roof.

To model stormwater runoff, Main-Land identified two Watershed Analysis Point(s) (WAP). WAP A, which is the northern most existing pond to the west, captures nearly all of the affected area. WAP B, captures a very small area that drains towards the abutter to the north and ultimately re-enters the property and drains to the same pond as WAP A.

Although two WAP's were used when modeling the site, the runoff was evaluated from an overall, combined runoff from the site. The combined runoff approach was used because visual observations along with existing site grading indicate that when water runs off the site at WAP B, it travels north for approximately 50 feet and crosses back onto the project property, then travels northwest towards the existing ponds (WAP A).

The small flow increases at WAP A are primarily the result of collecting, treating, and redirecting stormwater from the new warehouse roof to a roof dripline filter which ultimately outlets at WAP A through a subsurface drainage network. Collection of the roof runoff is intended to reduce flows that currently drain to an abutting property.

Overall, stormwater runoff from the site is decreased.

WAP A	Pre-Dev. (cfs)	Post-Dev. (cfs)	Difference (cfs)
2-Year	5.54	5.80	0.26
10-Year	8.35	8.69	0.34
25-Year	10.58	10.96	0.38

WAP B	Pre-Dev. (cfs)	Post-Dev. (cfs)	Difference (cfs)
2-Year	0.58	0.00	(0.58)
10-Year	0.88	0.00	(0.88)
25-Year	1.11	0.01	(1.10)

OVERALL	Pre-Dev. (cfs)	Post-Dev. (cfs)	Difference (cfs)
2-Year	6.03	5.80	(0.23)
10-Year	9.10	8.69	(0.41)
25-Year	11.55	10.96	(0.59)

In conclusion, as stated above, please note that the overall flow leaving the site is minimal, and reduces the flow to direct abutters, thus improving the overall drainage conditions.

STORMWATER MAINTENANCE PLAN

HANCOCK LUMBER COMPANY- BRUNSWICK, MAINE

June 24, 2016

The purpose of this Plan is to insure proper function of the infrastructure constructed as part of this project. The infrastructure will include the stormwater control devices including but not limited to: roads, roof dripline filtration, culverts, and stormdrains constructed for the above titled project. The tasks detailed in this Plan are the responsibility of Hancock Lumber Company.

INSPECTIONS & MAINTENANCE:

The site will be inspected and maintained according to the following schedule and procedure.

Roads:

Inspection:

The roads will be inspected at least annually to insure proper function and to insure structural integrity. This inspection will take place in September. Road inspections will be simple visual inspections, looking at the road surface.

Maintenance:

Road maintenance will include the re-grading of the gravel surfaces when necessary to prevent or repair erosion and to insure safe drivability. This should be performed once a year at a minimum, and shall occur in April or May. Areas with evidence of excessive potholing, wash-boarding, or other erosion will be repaired. If the addition of surface gravel is necessary, the area shall be prepared by scarifying the existing gravel surface to a minimum depth of two inches. The repaired area shall be compacted using a roller or whacker plate.

In the spring of each year, the roads, where paved, will be swept to remove sand from the road surface, and prevent the sedimentation of downstream areas. The sweeping of the roads should be done in April of each year.

When the road surface shows signs of wear, the road will be resurfaced with pavement. This is not anticipated for at least ten years.

Roof Dripline Filtration:

Inspections:

During construction, inspection by a professional engineer will consist of weekly visits to the site to inspect the installation of the roof dripline filtration construction, reservoir course, treatment filter, and underdrain bed from initial ground disturbance to final stabilization of the structure. An inspection of the underdrained bed outlet shall also be performed one year after the final stabilization.

Monthly inspections of the roof dripline filter will take place for two years after construction is completed. Inspections will occur through the months of March to November, and will be conducted immediately after a significant rain event.

The monthly inspections will include but not be limited to:

Inspection of the outlet structure to determine if the structure is clogged, and to insure proper function. Blockages or obstructions will be removed. If the structure does not appear to be functioning as designed, a Professional Engineer will be retained to determine if corrective measures are required. Any recommended corrective measures would then be implemented as soon as practical.

Roof dripline filters have an underdrained, crushed stone trench outlet that may clog due to leaves or other debris. The filter should drain down to a point where the reservoir course top is visible within 24 hours of a storm event.

Inspection of downstream drainage structures to confirm proper flow of water out of the trench, and to insure proper sizing of these structures. Litter and debris will be removed from all flow areas to assure continued flow. If the structures appear unable to adequately handle actual flows, a Professional Engineer will be consulted as above. Any areas that exhibit signs of erosion or are otherwise inadequately stabilized will be repaired as necessary.

Long Term Inspections:

At the completion of the two years of monthly inspections, the roof dripline filters will be inspected on a semi-annual basis, in the spring and the fall of each year. The long-term inspections will include: a determination of whether the accumulation of sediment in the roof dripline

MAINTENANCE PLAN
HANCOCK LUMBER COMPANY

filter has reached the point, as described below, where removal of the sediment from the structure is necessary.

Sediment Removal:

The dripline filtration structure should be cleaned of sediment at that point when the design capacity of the filter has been reduced by 15%. Based upon studies in Washington D.C. and Canada, the expected volume-lost-to-sediment rate is 0.5% to 1.0% per year. It is expected that the filter will require sediment removal every 15 to 20 years. Based upon these assumptions, the sediment removal schedule will be every 15 years, except where:

Intervening annual sediment accumulation inspections indicate that more frequent cleaning will occur, or;

A thorough 15th-year sediment accumulation inspection indicates that the scheduled cleaning is not yet necessary.

When sediment removal is required, it will be undertaken during dry weather conditions when inflow to the filter is at or near its annual low level.

Outlet: The outlet of the filter will be inspected for stability; blockage by debris; uneven settling around any structures; excessive sediment around the outlet. The underdrained gravel trench outlet may clog due to leaves or other debris. The filter should drain down to a point where the gravel reservoir course top is visible within 24 hours of a storm event. These inspections may need to be more frequent if debris proves to be a problem. If problems are identified, they will be corrected by the end of October, if possible.

Downstream Areas: To insure that the dripline filter is not causing erosion problems or other difficulties to downstream areas, these areas will be inspected for erosion and instability. If problems are identified, they will be corrected by the end of October, if possible.

Maintenance:

To insure proper functioning of the filter, some routine maintenance is required.

The underdrained gravel trench outlet may clog due to leaves or other debris. The reservoir course should drain down to a point where the gravel trench top is

MAINTENANCE PLAN
HANCOCK LUMBER COMPANY

visible within 24 hours of a storm event. If water stands over the trench outlet for more than 72 hours, replace the top several inches of stone with clean stone material. Dispose of the removed material in a manner acceptable with the Erosion and Sedimentation Control Plan.

Sediment removal: If sediment deposition in the filter is found to be significant, regular removal of sediment may be required to maintain reservoir volume, and to prevent clogging or blocking of the primary outlet. Sediment will be spread on a relatively flat area, seeded with grass and mulched with hay in accordance with the Erosion Control Plan developed for this project.

Culverts and Storm Drains:

Inspection:

The stormwater control devices will be inspected on an annual basis in September of each year. The inspection will include a review of the structural integrity of each device, a review of the inlets and outlets of the ponds, and a review of the downstream discharge areas of all pipes and channels.

Culvert and storm drain inspections should include a review of the condition of the inlets and outlets of each culvert, the integrity of the pipe, and the stability of the upstream and downstream areas around each culvert.

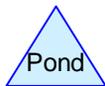
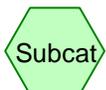
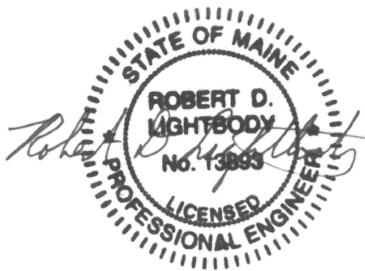
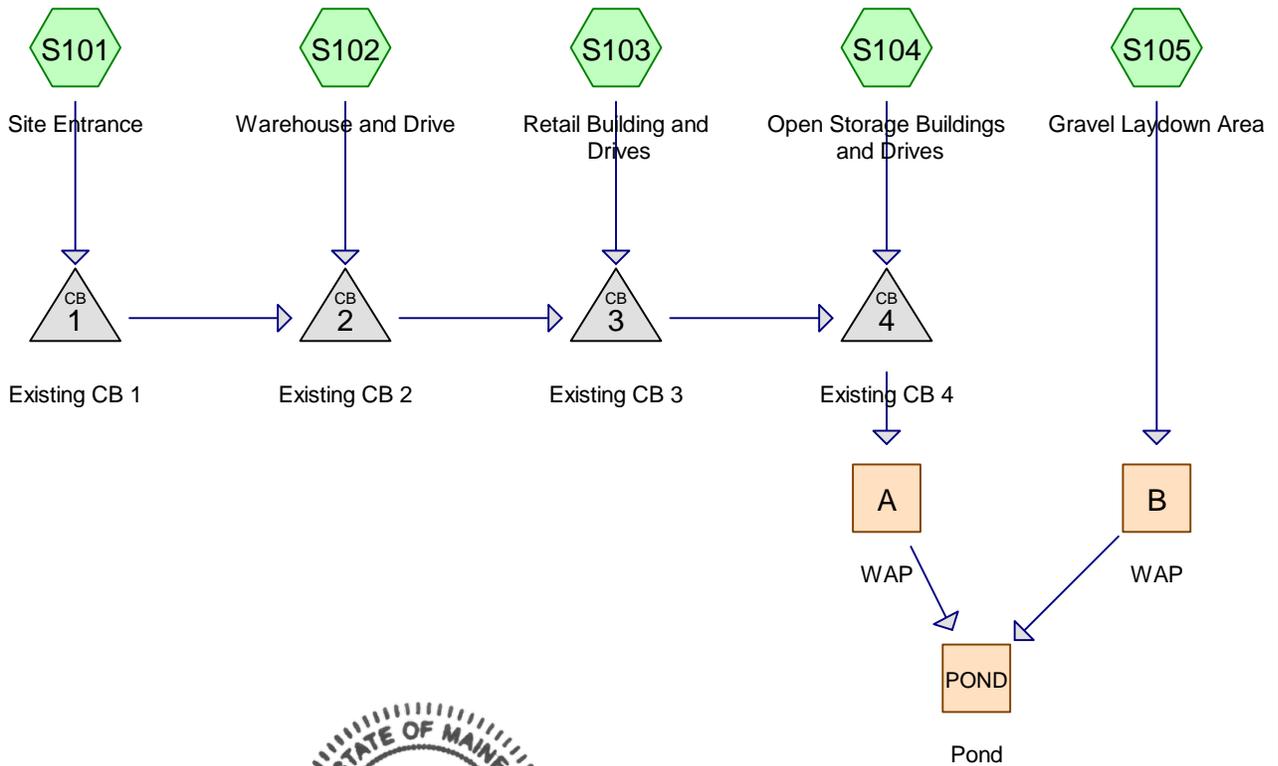
Maintenance:

The inlets and outlets of the culverts and storm drains should be cleaned on a regular basis to insure that sediment does not discharge downstream or does not clog the pipe. If necessary, sediment should be removed from within the culvert.

RESPONSIBLE PARTY:

Inspections and maintenance will be the responsibility of Hancock Lumber Company. This work should be done as part of their on-going maintenance and upkeep of the overall project site.

Written reports of inspections and maintenance work will be kept to show the work has been completed as proposed. These reports will be kept by Hancock Lumber Company, along with other relevant Maine DEP documentation.



Routing Diagram for Pre-Development
 Prepared by Main-Land Development Consultants, Inc, Printed 6/22/2016
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Pre-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Printed 6/22/2016

Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.030	39	>75% Grass cover, Good, HSG A (S101)
0.180	96	Gravel surface, HSG A (S105)
1.367	98	Paved parking, HSG A (S101, S102, S103, S104)
0.463	98	Roofs, HSG A (S101, S102, S103, S104, S105)
2.040	97	TOTAL AREA

Pre-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Printed 6/22/2016

Page 3

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
2.040	HSG A	S101, S102, S103, S104, S105
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
2.040		TOTAL AREA

Pre-Development

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.030	0.000	0.000	0.000	0.000	0.030	>75% Grass cover, Good	S101
0.180	0.000	0.000	0.000	0.000	0.180	Gravel surface	S105
1.367	0.000	0.000	0.000	0.000	1.367	Paved parking	S101, S102, S103, S104
0.463	0.000	0.000	0.000	0.000	0.463	Roofs	S101, S102, S103, S104, S105
2.040	0.000	0.000	0.000	0.000	2.040	TOTAL AREA	

Pre-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Printed 6/22/2016

Page 5

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	1	96.28	96.12	58.6	0.0027	0.013	12.0	0.0	0.0
2	2	96.02	95.71	102.0	0.0030	0.013	18.0	0.0	0.0
3	3	95.60	95.23	102.9	0.0036	0.013	24.0	0.0	0.0
4	4	95.12	93.21	295.7	0.0065	0.013	24.0	0.0	0.0

Pre-Development

Type III 24-hr 2-Year Rainfall=3.10"

Prepared by Main-Land Development Consultants, Inc

Printed 6/22/2016

HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Page 6

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 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 S101: Site Entrance Runoff Area=0.400 ac 92.50% Impervious Runoff Depth=2.45"
Flow Length=187' Tc=5.6 min CN=94 Runoff=1.09 cfs 0.082 af

Subcatchment S102: Warehouse and Drive Runoff Area=0.190 ac 100.00% Impervious Runoff Depth=2.87"
Flow Length=50' Slope=0.0500 '/' Tc=0.5 min CN=98 Runoff=0.65 cfs 0.045 af

Subcatchment S103: Retail Building and Runoff Area=0.780 ac 100.00% Impervious Runoff Depth=2.87"
Flow Length=290' Tc=3.5 min CN=98 Runoff=2.50 cfs 0.186 af

Subcatchment S104: Open Storage Buildings Runoff Area=0.460 ac 100.00% Impervious Runoff Depth=2.87"
Flow Length=330' Tc=3.4 min CN=98 Runoff=1.48 cfs 0.110 af

Subcatchment S105: Gravel Laydown Area Runoff Area=0.210 ac 14.29% Impervious Runoff Depth=2.65"
Flow Length=48' Slope=0.0100 '/' Tc=7.3 min CN=96 Runoff=0.58 cfs 0.046 af

Reach A: WAP Inflow=5.54 cfs 0.423 af
Outflow=5.54 cfs 0.423 af

Reach B: WAP Inflow=0.58 cfs 0.046 af
Outflow=0.58 cfs 0.046 af

Reach POND: Pond Inflow=6.03 cfs 0.470 af
Outflow=6.03 cfs 0.470 af

Pond 1: Existing CB 1 Peak Elev=97.01' Inflow=1.09 cfs 0.082 af
12.0" Round Culvert n=0.013 L=58.6' S=0.0027 '/' Outflow=1.09 cfs 0.082 af

Pond 2: Existing CB 2 Peak Elev=96.75' Inflow=1.55 cfs 0.127 af
18.0" Round Culvert n=0.013 L=102.0' S=0.0030 '/' Outflow=1.55 cfs 0.127 af

Pond 3: Existing CB 3 Peak Elev=96.67' Inflow=4.06 cfs 0.313 af
24.0" Round Culvert n=0.013 L=102.9' S=0.0036 '/' Outflow=4.06 cfs 0.313 af

Pond 4: Existing CB 4 Peak Elev=96.29' Inflow=5.54 cfs 0.423 af
24.0" Round Culvert n=0.013 L=295.7' S=0.0065 '/' Outflow=5.54 cfs 0.423 af

Total Runoff Area = 2.040 ac Runoff Volume = 0.470 af Average Runoff Depth = 2.76"
10.29% Pervious = 0.210 ac 89.71% Impervious = 1.830 ac

Pre-Development

Summary for Subcatchment S101: Site Entrance

Runoff = 1.09 cfs @ 12.08 hrs, Volume= 0.082 af, Depth= 2.45"

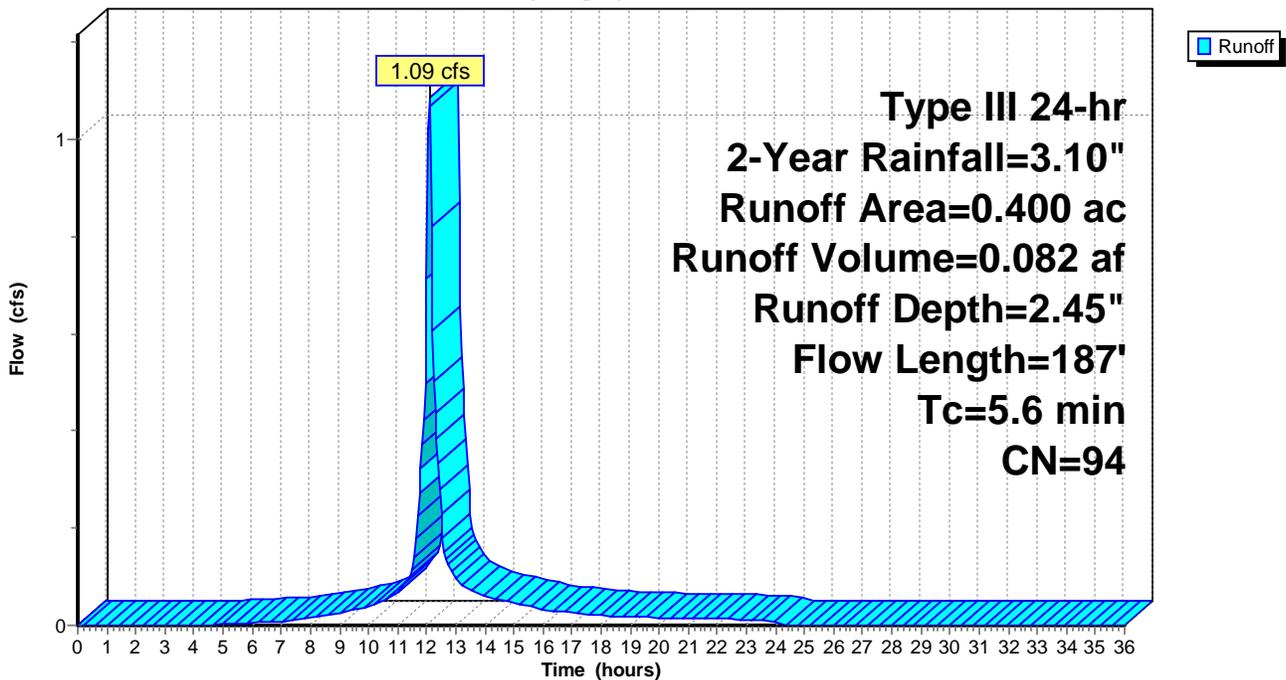
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-Year Rainfall=3.10"

Area (ac)	CN	Description
0.321	98	Paved parking, HSG A
0.049	98	Roofs, HSG A
0.030	39	>75% Grass cover, Good, HSG A
0.400	94	Weighted Average
0.030		7.50% Pervious Area
0.370		92.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	15	0.0060	0.07		Sheet Flow, Grass: Short n= 0.150 P2= 3.10"
1.8	135	0.0150	1.28		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
0.3	37	0.0130	2.31		Shallow Concentrated Flow, Paved Kv= 20.3 fps
5.6	187	Total			

Subcatchment S101: Site Entrance

Hydrograph



Pre-Development

Summary for Subcatchment S102: Warehouse and Drive

Runoff = 0.65 cfs @ 12.01 hrs, Volume= 0.045 af, Depth= 2.87"

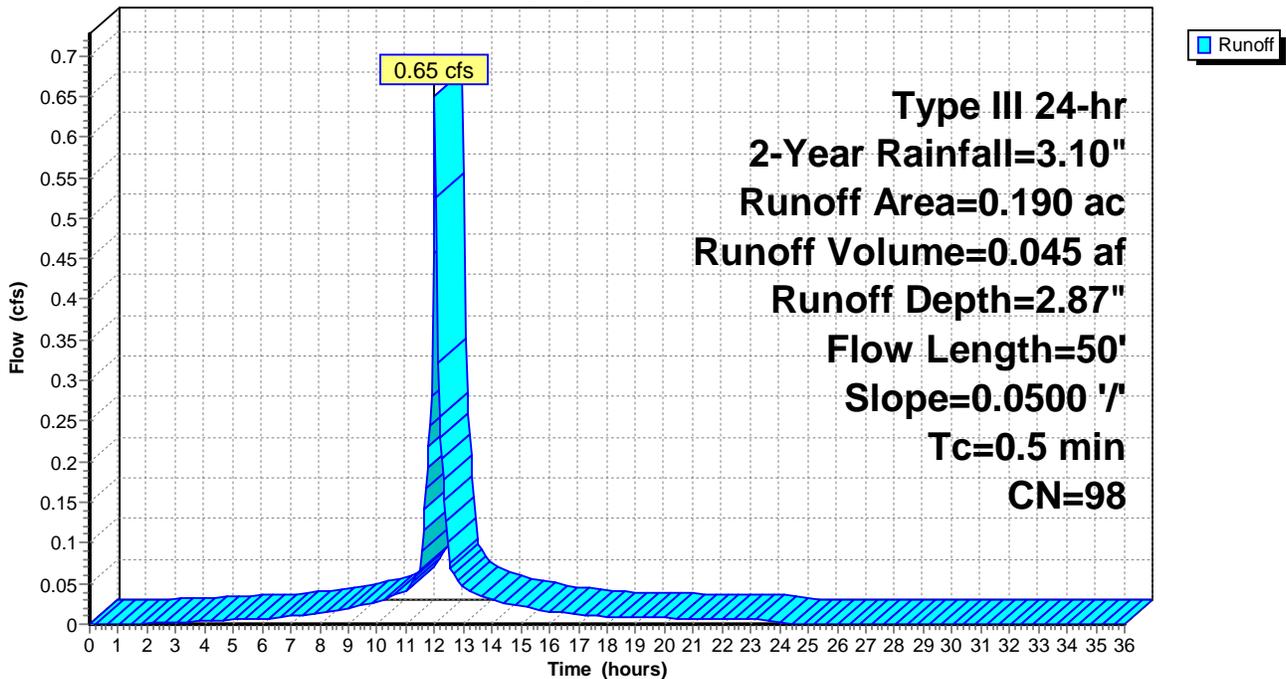
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (ac)	CN	Description
0.156	98	Paved parking, HSG A
0.034	98	Roofs, HSG A
0.190	98	Weighted Average
0.190		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	50	0.0500	1.70		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"

Subcatchment S102: Warehouse and Drive

Hydrograph



Pre-Development

Summary for Subcatchment S103: Retail Building and Drives

Runoff = 2.50 cfs @ 12.05 hrs, Volume= 0.186 af, Depth= 2.87"

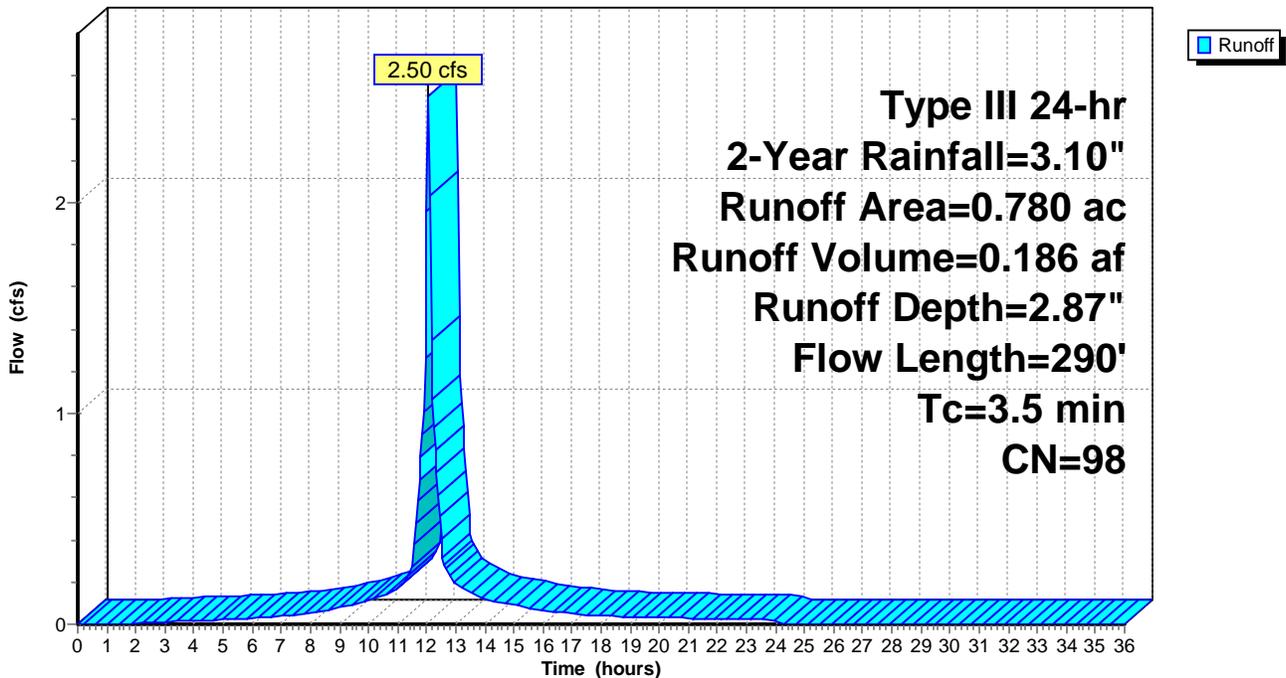
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-Year Rainfall=3.10"

Area (ac)	CN	Description
0.540	98	Paved parking, HSG A
0.240	98	Roofs, HSG A
0.780	98	Weighted Average
0.780		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	150	0.0067	0.95		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
0.9	140	0.0180	2.72		Shallow Concentrated Flow, Paved Kv= 20.3 fps
3.5	290	Total			

Subcatchment S103: Retail Building and Drives

Hydrograph



Pre-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Rainfall=3.10"

Printed 6/22/2016

Page 10

Summary for Subcatchment S104: Open Storage Buildings and Drives

Runoff = 1.48 cfs @ 12.05 hrs, Volume= 0.110 af, Depth= 2.87"

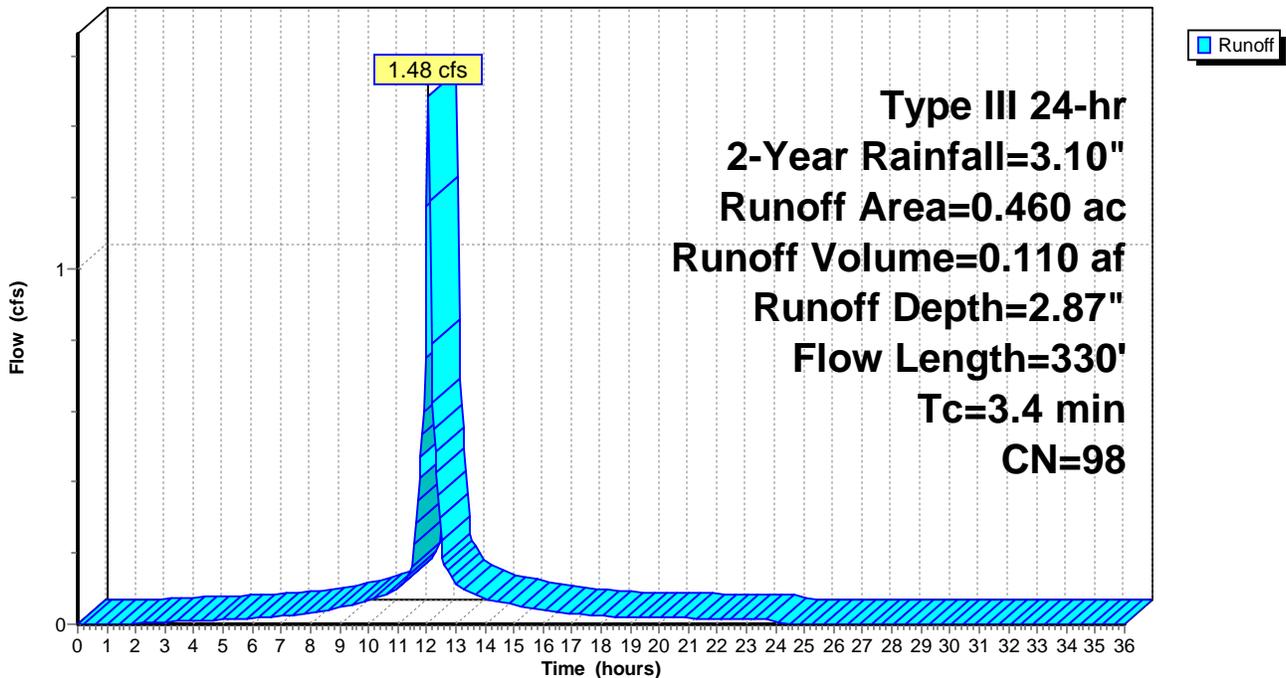
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-Year Rainfall=3.10"

Area (ac)	CN	Description
0.350	98	Paved parking, HSG A
0.110	98	Roofs, HSG A
0.460	98	Weighted Average
0.460		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	150	0.0167	1.37		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
1.6	180	0.0083	1.85		Shallow Concentrated Flow, Paved Kv= 20.3 fps
3.4	330	Total			

Subcatchment S104: Open Storage Buildings and Drives

Hydrograph



Pre-Development

Summary for Subcatchment S105: Gravel Laydown Area

Runoff = 0.58 cfs @ 12.10 hrs, Volume= 0.046 af, Depth= 2.65"

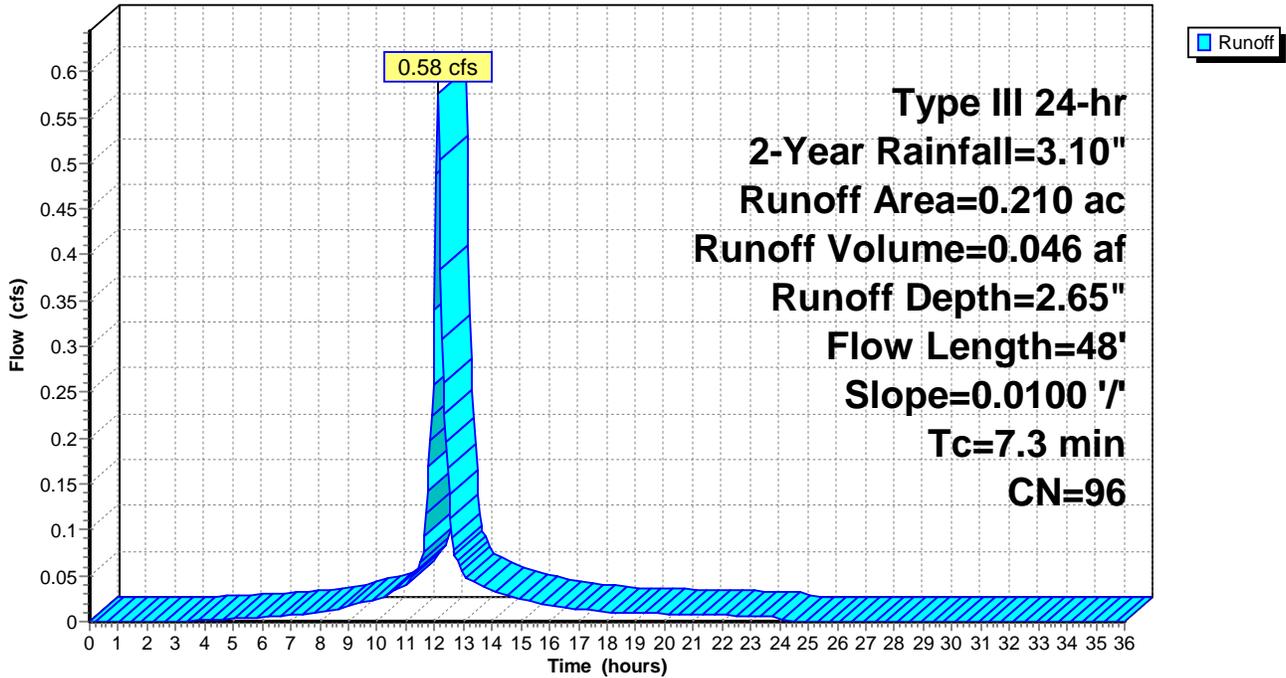
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-Year Rainfall=3.10"

Area (ac)	CN	Description
0.180	96	Gravel surface, HSG A
0.030	98	Roofs, HSG A
0.210	96	Weighted Average
0.180		85.71% Pervious Area
0.030		14.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	48	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 3.10"

Subcatchment S105: Gravel Laydown Area

Hydrograph



Pre-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Rainfall=3.10"

Printed 6/22/2016

Page 12

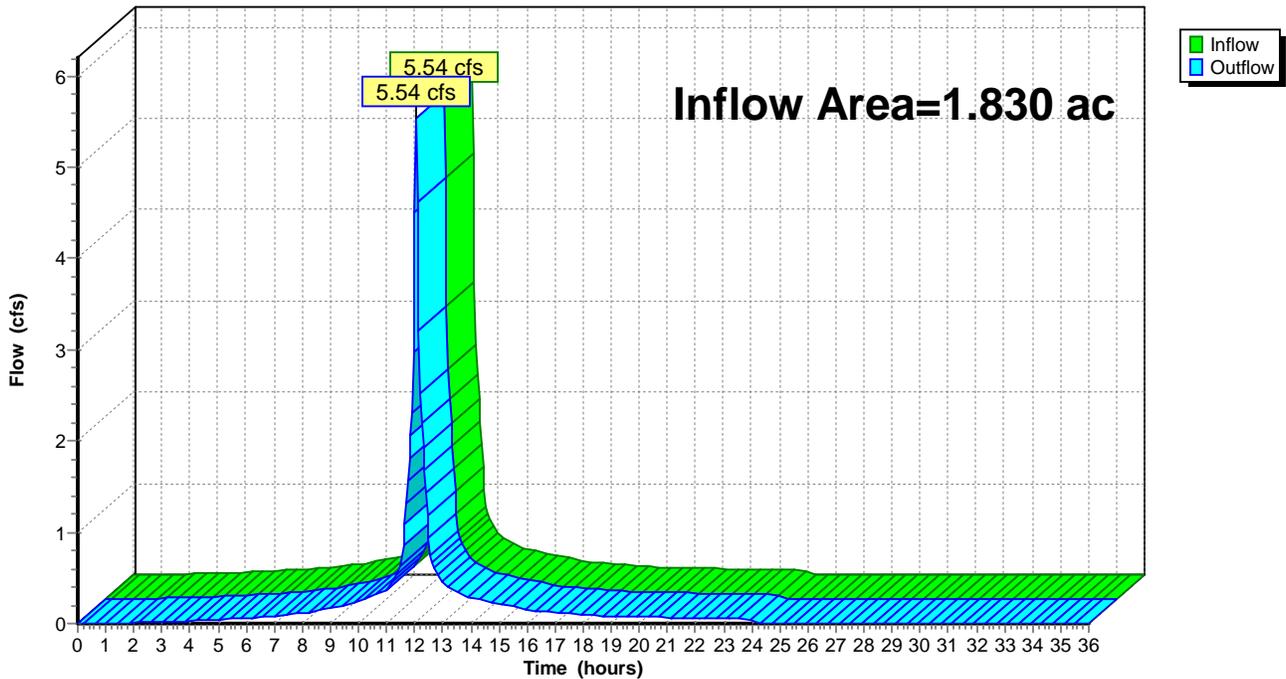
Summary for Reach A: WAP

Inflow Area = 1.830 ac, 98.36% Impervious, Inflow Depth = 2.78" for 2-Year event
Inflow = 5.54 cfs @ 12.05 hrs, Volume= 0.423 af
Outflow = 5.54 cfs @ 12.05 hrs, Volume= 0.423 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach A: WAP

Hydrograph



Pre-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Rainfall=3.10"

Printed 6/22/2016

Page 13

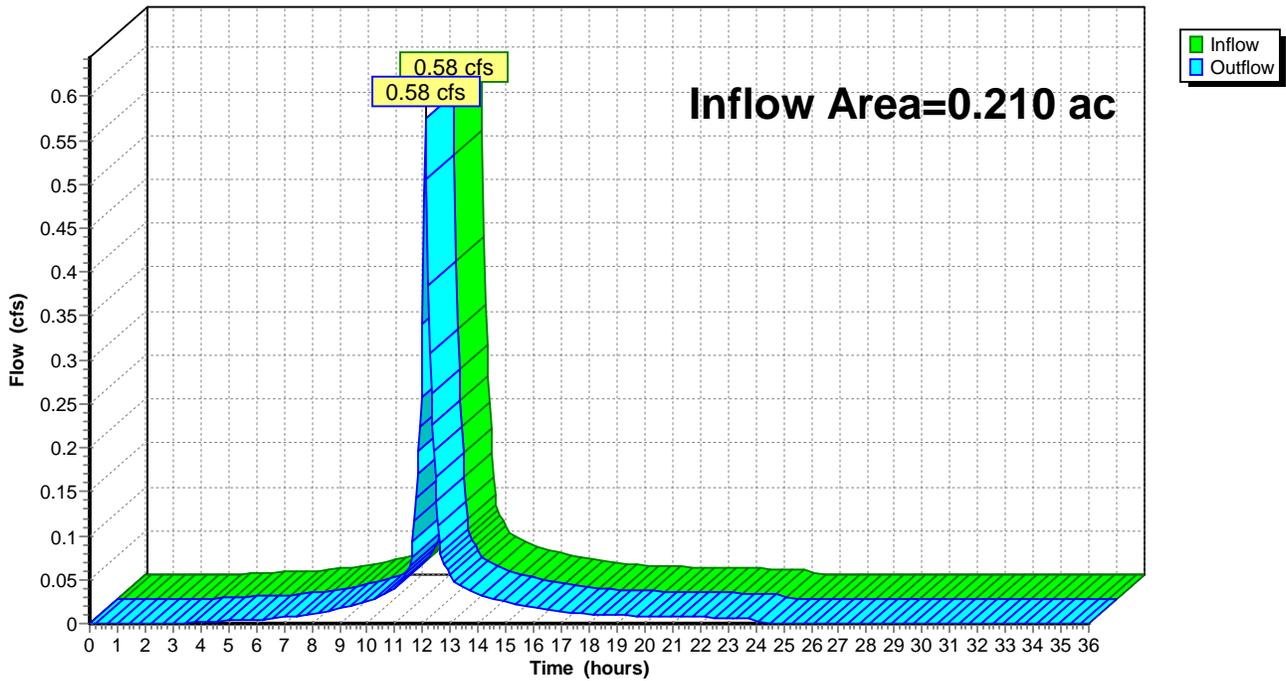
Summary for Reach B: WAP

Inflow Area = 0.210 ac, 14.29% Impervious, Inflow Depth = 2.65" for 2-Year event
Inflow = 0.58 cfs @ 12.10 hrs, Volume= 0.046 af
Outflow = 0.58 cfs @ 12.10 hrs, Volume= 0.046 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach B: WAP

Hydrograph



Pre-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Rainfall=3.10"

Printed 6/22/2016

Page 14

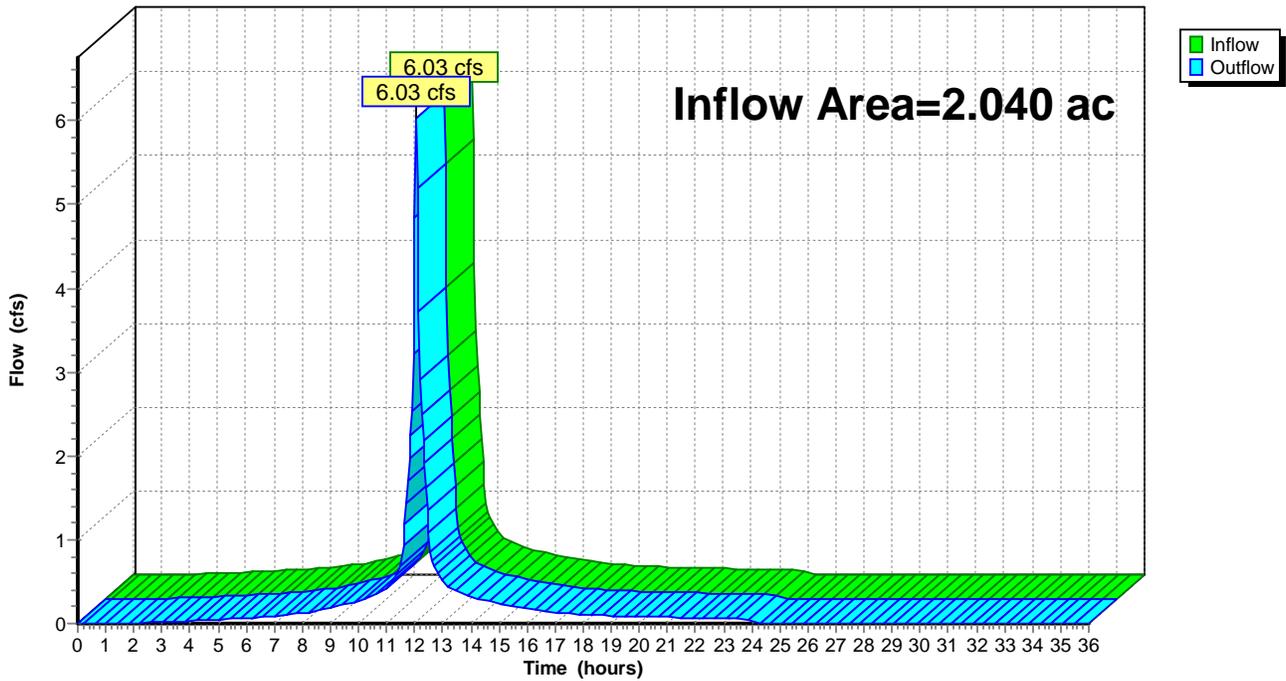
Summary for Reach POND: Pond

Inflow Area = 2.040 ac, 89.71% Impervious, Inflow Depth = 2.76" for 2-Year event
Inflow = 6.03 cfs @ 12.05 hrs, Volume= 0.470 af
Outflow = 6.03 cfs @ 12.05 hrs, Volume= 0.470 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach POND: Pond

Hydrograph



Pre-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Rainfall=3.10"

Printed 6/22/2016

Page 15

Summary for Pond 1: Existing CB 1

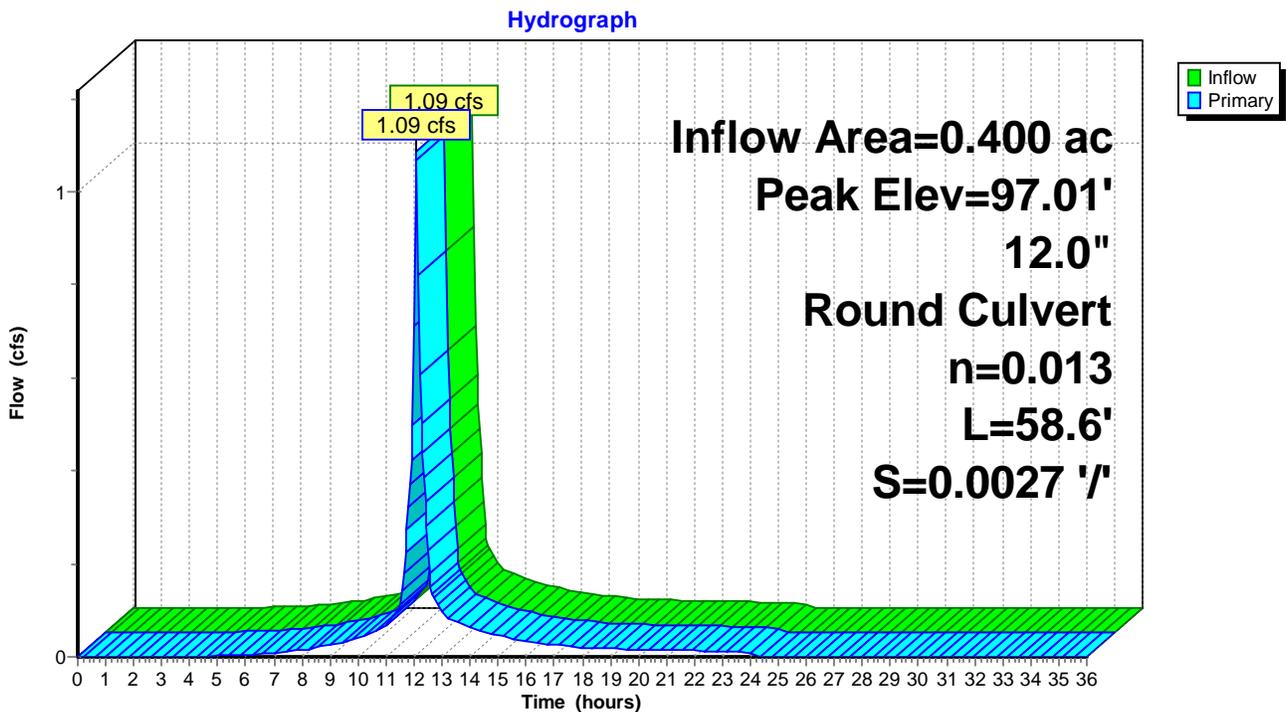
Inflow Area = 0.400 ac, 92.50% Impervious, Inflow Depth = 2.45" for 2-Year event
Inflow = 1.09 cfs @ 12.08 hrs, Volume= 0.082 af
Outflow = 1.09 cfs @ 12.08 hrs, Volume= 0.082 af, Atten= 0%, Lag= 0.0 min
Primary = 1.09 cfs @ 12.08 hrs, Volume= 0.082 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 97.01' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	96.28'	12.0" Round CMP_Round 12" L= 58.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 96.28' / 96.12' S= 0.0027 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.05 cfs @ 12.08 hrs HW=97.00' (Free Discharge)
↑1=CMP_Round 12" (Barrel Controls 1.05 cfs @ 2.45 fps)

Pond 1: Existing CB 1



Pre-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Rainfall=3.10"

Printed 6/22/2016

Page 16

Summary for Pond 2: Existing CB 2

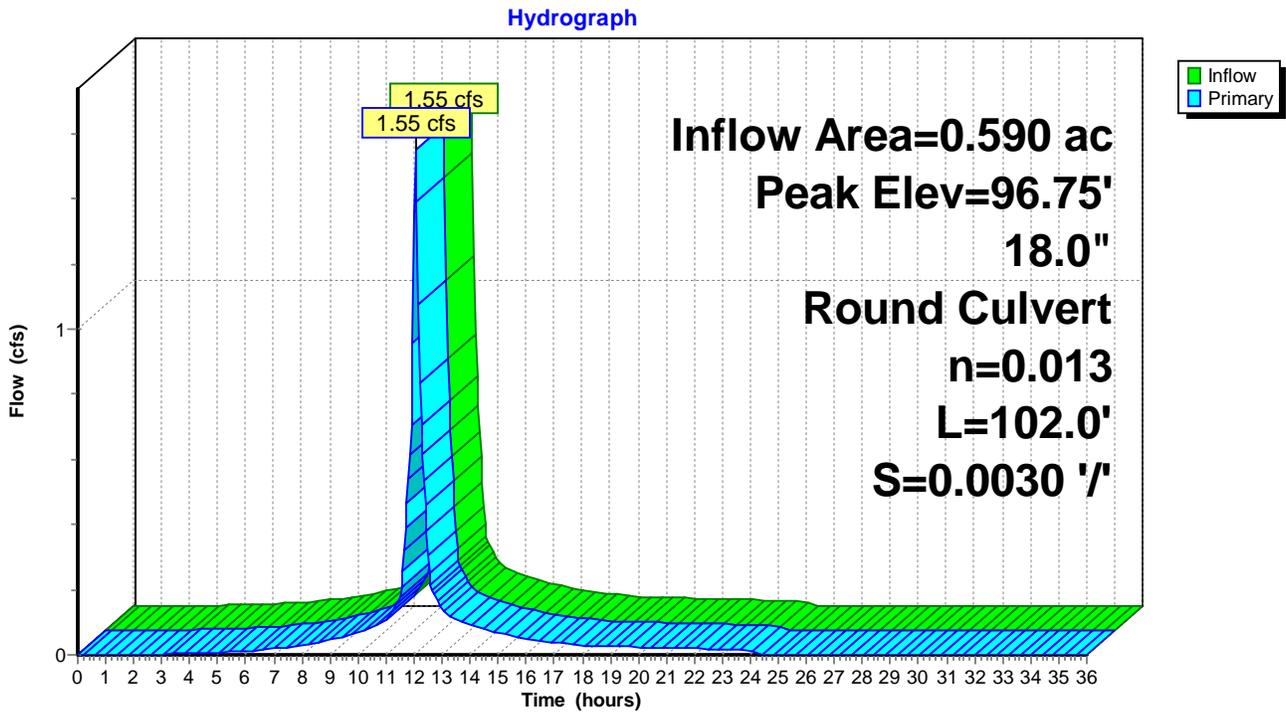
Inflow Area = 0.590 ac, 94.92% Impervious, Inflow Depth = 2.58" for 2-Year event
Inflow = 1.55 cfs @ 12.05 hrs, Volume= 0.127 af
Outflow = 1.55 cfs @ 12.05 hrs, Volume= 0.127 af, Atten= 0%, Lag= 0.0 min
Primary = 1.55 cfs @ 12.05 hrs, Volume= 0.127 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 96.75' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	96.02'	18.0" Round Culvert L= 102.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 96.02' / 95.71' S= 0.0030 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.54 cfs @ 12.05 hrs HW=96.74' (Free Discharge)
↑**1=Culvert**(Barrel Controls 1.54 cfs @ 2.67 fps)

Pond 2: Existing CB 2



Pre-Development

Summary for Pond 3: Existing CB 3

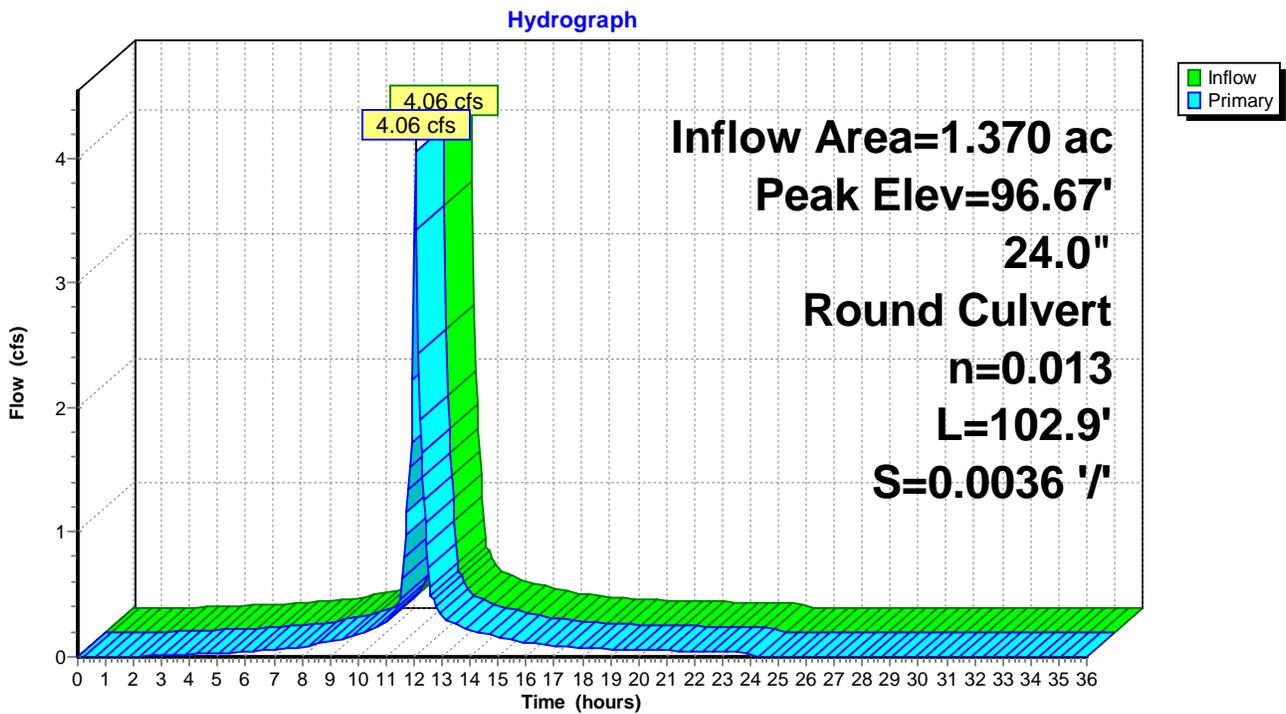
Inflow Area = 1.370 ac, 97.81% Impervious, Inflow Depth = 2.74" for 2-Year event
Inflow = 4.06 cfs @ 12.05 hrs, Volume= 0.313 af
Outflow = 4.06 cfs @ 12.05 hrs, Volume= 0.313 af, Atten= 0%, Lag= 0.0 min
Primary = 4.06 cfs @ 12.05 hrs, Volume= 0.313 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 96.67' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	95.60'	24.0" Round Culvert L= 102.9' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.60' / 95.23' S= 0.0036 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=4.03 cfs @ 12.05 hrs HW=96.67' (Free Discharge)
↑**1=Culvert**(Barrel Controls 4.03 cfs @ 3.43 fps)

Pond 3: Existing CB 3



Pre-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Rainfall=3.10"

Printed 6/22/2016

Page 18

Summary for Pond 4: Existing CB 4

Inflow Area = 1.830 ac, 98.36% Impervious, Inflow Depth = 2.78" for 2-Year event
Inflow = 5.54 cfs @ 12.05 hrs, Volume= 0.423 af
Outflow = 5.54 cfs @ 12.05 hrs, Volume= 0.423 af, Atten= 0%, Lag= 0.0 min
Primary = 5.54 cfs @ 12.05 hrs, Volume= 0.423 af

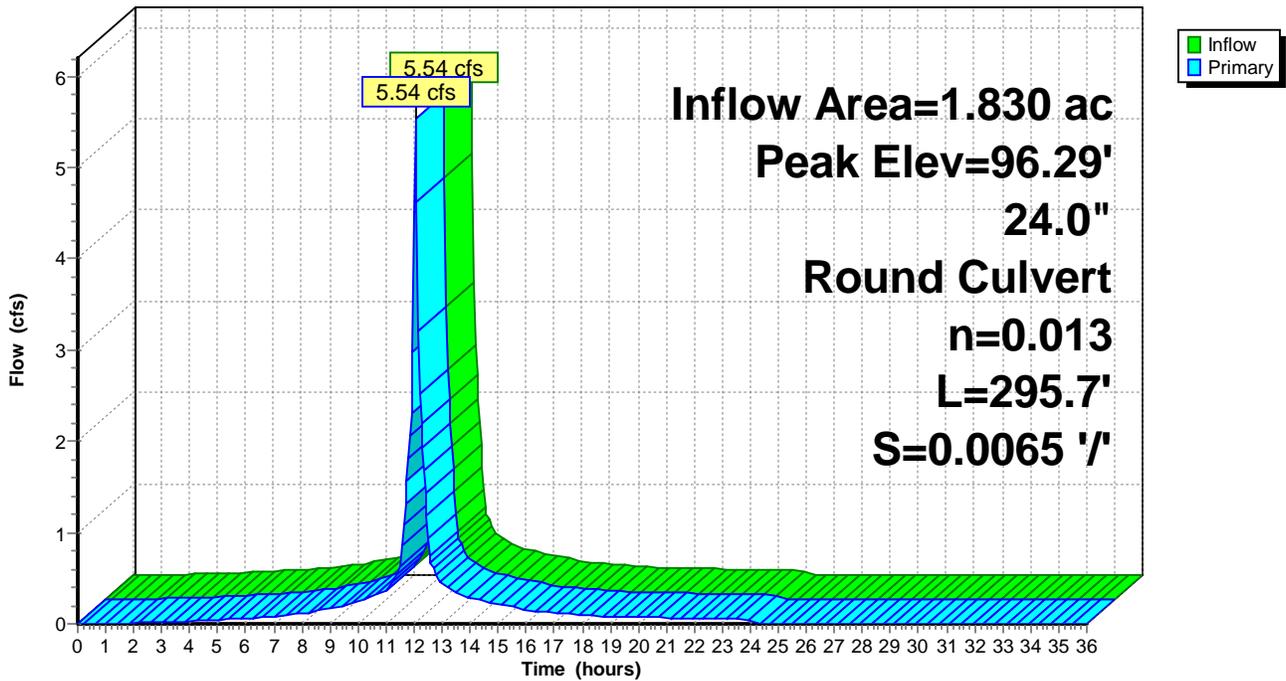
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 96.29' @ 12.05 hrs

Device #1	Routing	Invert	Outlet Devices
	Primary	95.12'	24.0" Round Culvert L= 295.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.12' / 93.21' S= 0.0065 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=5.51 cfs @ 12.05 hrs HW=96.28' (Free Discharge)
↑**1=Culvert** (Inlet Controls 5.51 cfs @ 2.90 fps)

Pond 4: Existing CB 4

Hydrograph



Pre-Development

Type III 24-hr 10-Year Rainfall=4.60"

Prepared by Main-Land Development Consultants, Inc

Printed 6/22/2016

HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Page 19

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 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 S101: Site Entrance Runoff Area=0.400 ac 92.50% Impervious Runoff Depth=3.91"
Flow Length=187' Tc=5.6 min CN=94 Runoff=1.69 cfs 0.130 af

Subcatchment S102: Warehouse and Drive Runoff Area=0.190 ac 100.00% Impervious Runoff Depth=4.36"
Flow Length=50' Slope=0.0500 '/' Tc=0.5 min CN=98 Runoff=0.97 cfs 0.069 af

Subcatchment S103: Retail Building and Runoff Area=0.780 ac 100.00% Impervious Runoff Depth=4.36"
Flow Length=290' Tc=3.5 min CN=98 Runoff=3.74 cfs 0.284 af

Subcatchment S104: Open Storage Buildings Runoff Area=0.460 ac 100.00% Impervious Runoff Depth=4.36"
Flow Length=330' Tc=3.4 min CN=98 Runoff=2.21 cfs 0.167 af

Subcatchment S105: Gravel Laydown Area Runoff Area=0.210 ac 14.29% Impervious Runoff Depth=4.14"
Flow Length=48' Slope=0.0100 '/' Tc=7.3 min CN=96 Runoff=0.88 cfs 0.072 af

Reach A: WAP Inflow=8.35 cfs 0.650 af
Outflow=8.35 cfs 0.650 af

Reach B: WAP Inflow=0.88 cfs 0.072 af
Outflow=0.88 cfs 0.072 af

Reach POND: Pond Inflow=9.10 cfs 0.723 af
Outflow=9.10 cfs 0.723 af

Pond 1: Existing CB 1 Peak Elev=97.24' Inflow=1.69 cfs 0.130 af
12.0" Round Culvert n=0.013 L=58.6' S=0.0027 '/' Outflow=1.69 cfs 0.130 af

Pond 2: Existing CB 2 Peak Elev=96.94' Inflow=2.39 cfs 0.200 af
18.0" Round Culvert n=0.013 L=102.0' S=0.0030 '/' Outflow=2.39 cfs 0.200 af

Pond 3: Existing CB 3 Peak Elev=96.96' Inflow=6.13 cfs 0.483 af
24.0" Round Culvert n=0.013 L=102.9' S=0.0036 '/' Outflow=6.13 cfs 0.483 af

Pond 4: Existing CB 4 Peak Elev=96.62' Inflow=8.35 cfs 0.650 af
24.0" Round Culvert n=0.013 L=295.7' S=0.0065 '/' Outflow=8.35 cfs 0.650 af

Total Runoff Area = 2.040 ac Runoff Volume = 0.723 af Average Runoff Depth = 4.25"
10.29% Pervious = 0.210 ac 89.71% Impervious = 1.830 ac

Pre-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 20

Summary for Subcatchment S101: Site Entrance

Runoff = 1.69 cfs @ 12.08 hrs, Volume= 0.130 af, Depth= 3.91"

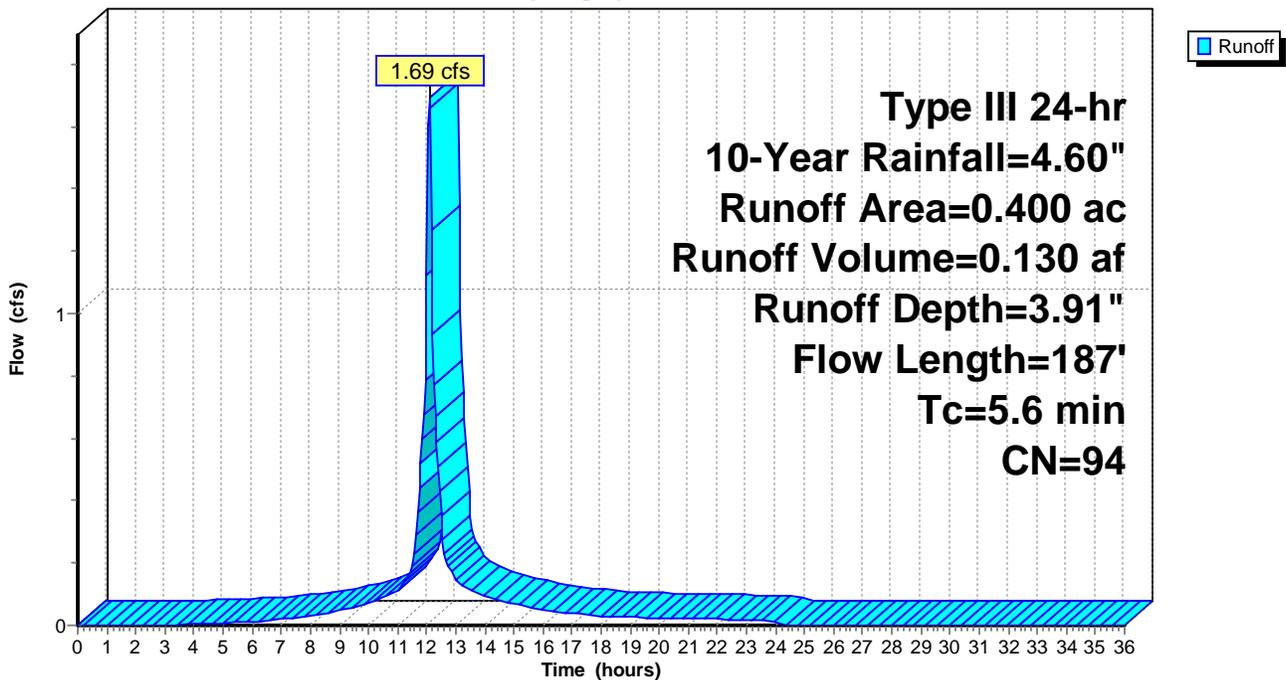
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Year Rainfall=4.60"

Area (ac)	CN	Description
0.321	98	Paved parking, HSG A
0.049	98	Roofs, HSG A
0.030	39	>75% Grass cover, Good, HSG A
0.400	94	Weighted Average
0.030		7.50% Pervious Area
0.370		92.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	15	0.0060	0.07		Sheet Flow, Grass: Short n= 0.150 P2= 3.10"
1.8	135	0.0150	1.28		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
0.3	37	0.0130	2.31		Shallow Concentrated Flow, Paved Kv= 20.3 fps
5.6	187	Total			

Subcatchment S101: Site Entrance

Hydrograph



Pre-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 21

Summary for Subcatchment S102: Warehouse and Drive

Runoff = 0.97 cfs @ 12.01 hrs, Volume= 0.069 af, Depth= 4.36"

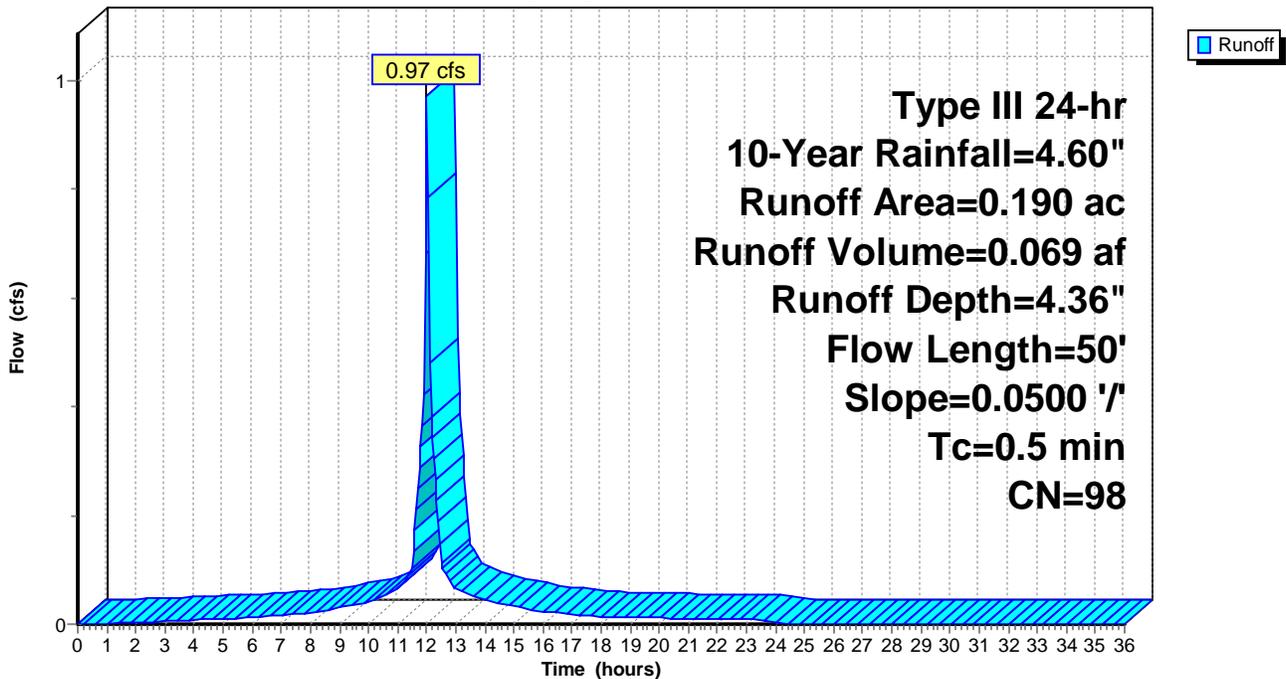
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Year Rainfall=4.60"

Area (ac)	CN	Description
0.156	98	Paved parking, HSG A
0.034	98	Roofs, HSG A
0.190	98	Weighted Average
0.190		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	50	0.0500	1.70		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"

Subcatchment S102: Warehouse and Drive

Hydrograph



Pre-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 22

Summary for Subcatchment S103: Retail Building and Drives

Runoff = 3.74 cfs @ 12.05 hrs, Volume= 0.284 af, Depth= 4.36"

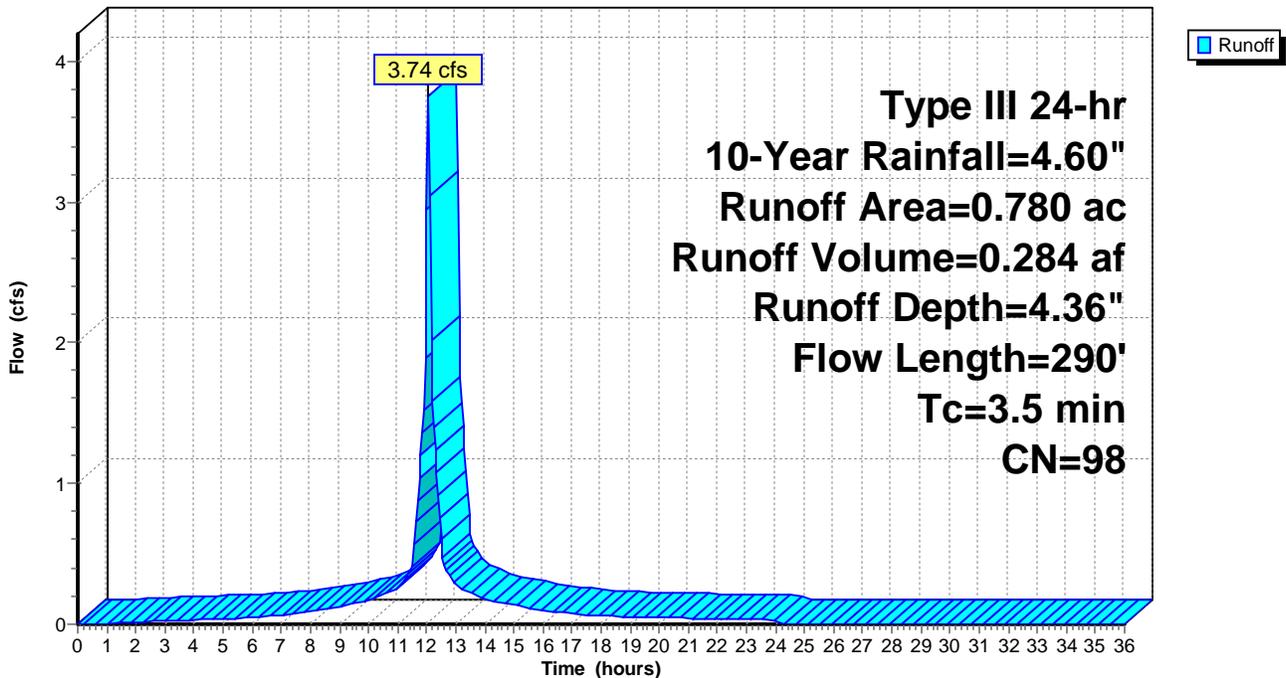
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Year Rainfall=4.60"

Area (ac)	CN	Description
0.540	98	Paved parking, HSG A
0.240	98	Roofs, HSG A
0.780	98	Weighted Average
0.780		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	150	0.0067	0.95		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
0.9	140	0.0180	2.72		Shallow Concentrated Flow, Paved Kv= 20.3 fps
3.5	290	Total			

Subcatchment S103: Retail Building and Drives

Hydrograph



Pre-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 23

Summary for Subcatchment S104: Open Storage Buildings and Drives

Runoff = 2.21 cfs @ 12.05 hrs, Volume= 0.167 af, Depth= 4.36"

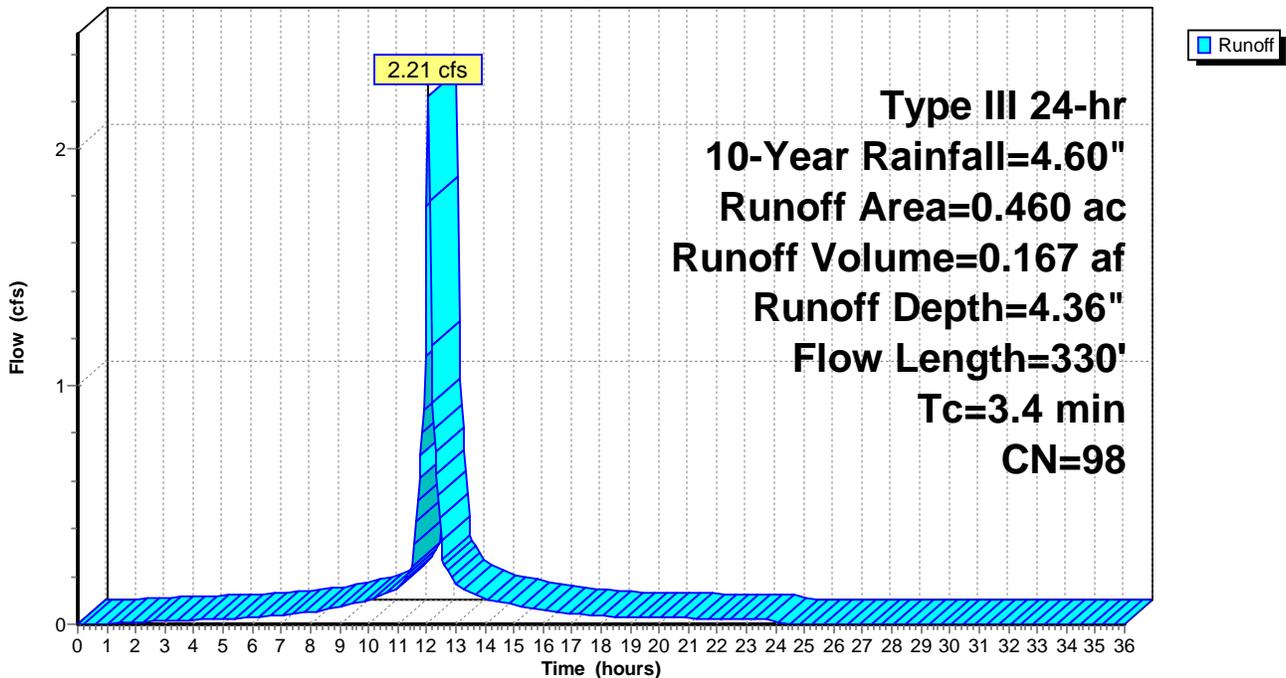
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Year Rainfall=4.60"

Area (ac)	CN	Description
0.350	98	Paved parking, HSG A
0.110	98	Roofs, HSG A
0.460	98	Weighted Average
0.460		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	150	0.0167	1.37		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
1.6	180	0.0083	1.85		Shallow Concentrated Flow, Paved Kv= 20.3 fps
3.4	330	Total			

Subcatchment S104: Open Storage Buildings and Drives

Hydrograph



Pre-Development

Summary for Subcatchment S105: Gravel Laydown Area

Runoff = 0.88 cfs @ 12.10 hrs, Volume= 0.072 af, Depth= 4.14"

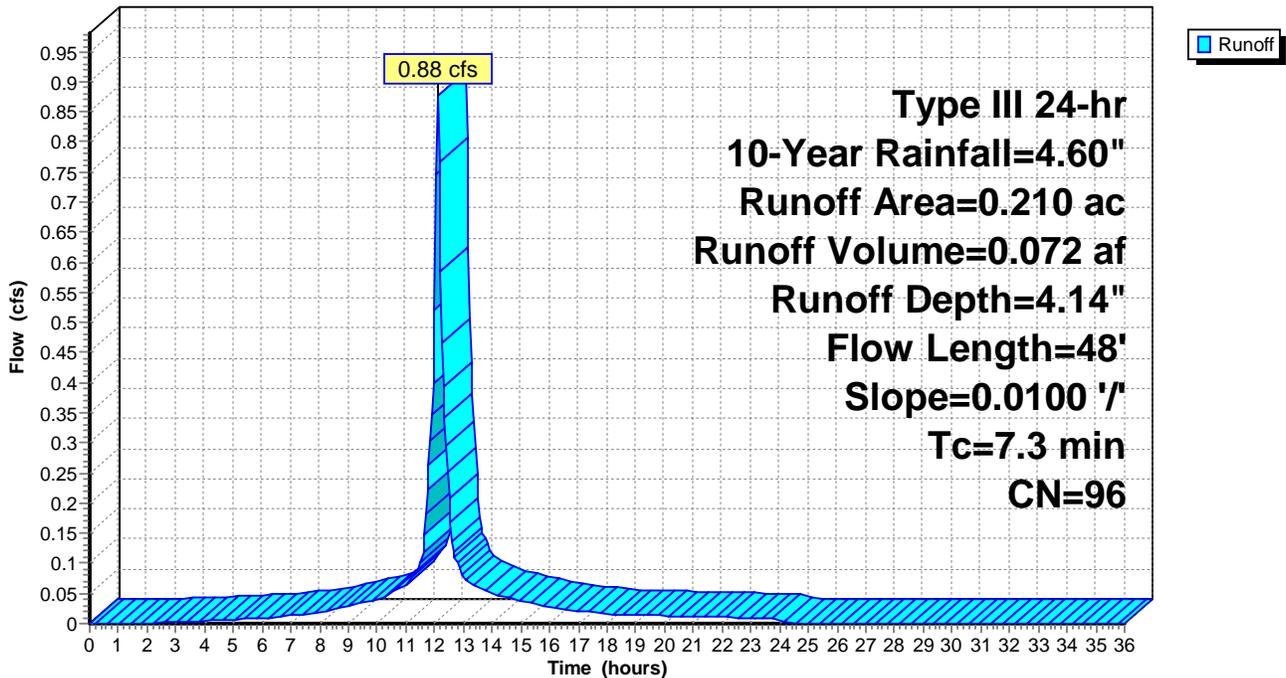
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (ac)	CN	Description
0.180	96	Gravel surface, HSG A
0.030	98	Roofs, HSG A
0.210	96	Weighted Average
0.180		85.71% Pervious Area
0.030		14.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	48	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 3.10"

Subcatchment S105: Gravel Laydown Area

Hydrograph



Pre-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 25

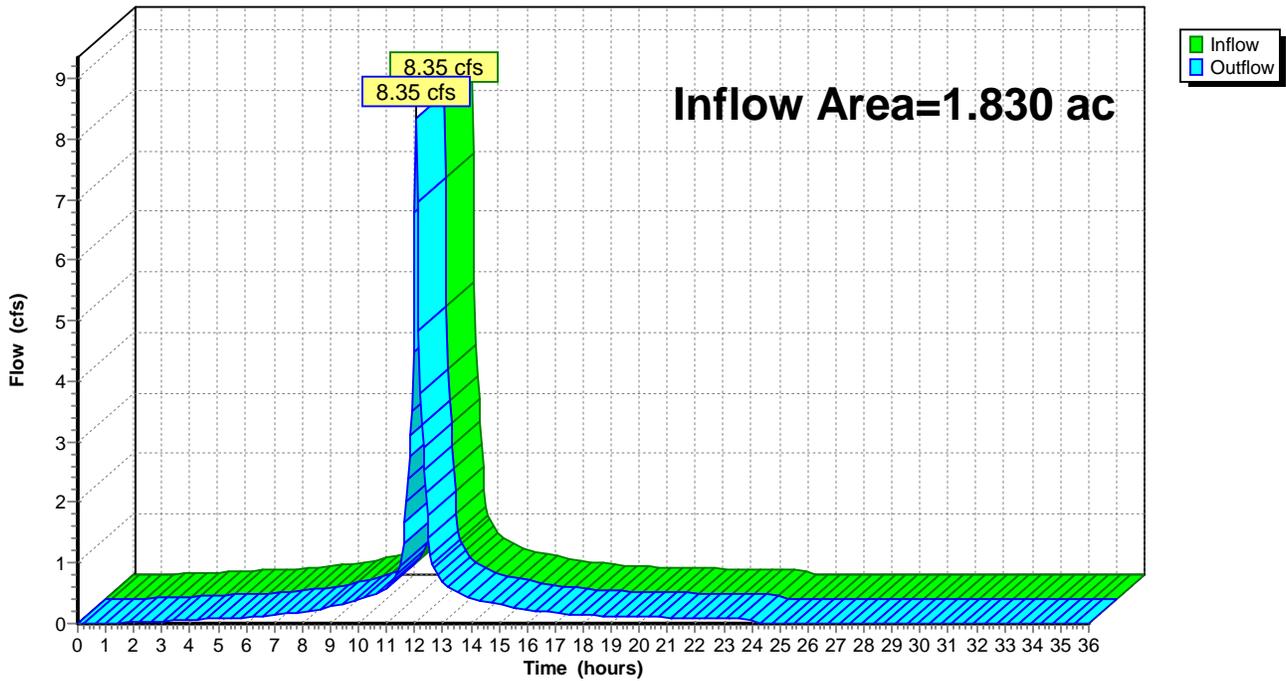
Summary for Reach A: WAP

Inflow Area = 1.830 ac, 98.36% Impervious, Inflow Depth = 4.27" for 10-Year event
Inflow = 8.35 cfs @ 12.05 hrs, Volume= 0.650 af
Outflow = 8.35 cfs @ 12.05 hrs, Volume= 0.650 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach A: WAP

Hydrograph



Pre-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 26

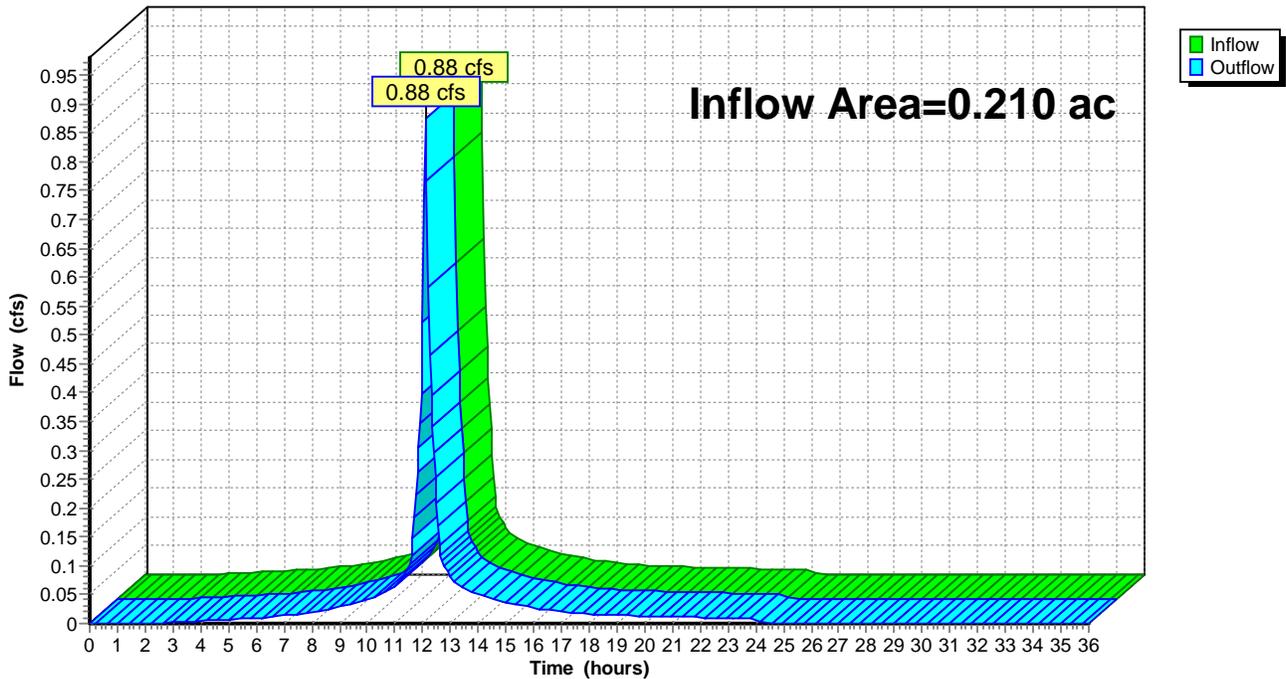
Summary for Reach B: WAP

Inflow Area = 0.210 ac, 14.29% Impervious, Inflow Depth = 4.14" for 10-Year event
Inflow = 0.88 cfs @ 12.10 hrs, Volume= 0.072 af
Outflow = 0.88 cfs @ 12.10 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach B: WAP

Hydrograph



Pre-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 27

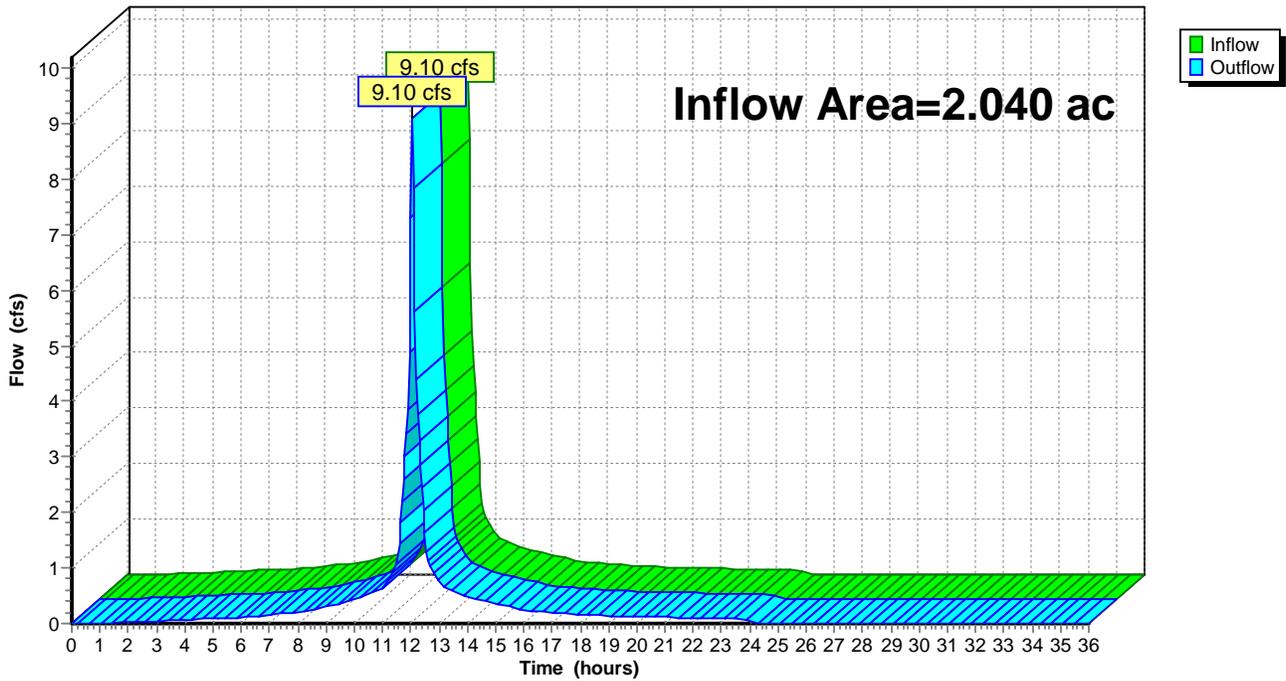
Summary for Reach POND: Pond

Inflow Area = 2.040 ac, 89.71% Impervious, Inflow Depth = 4.25" for 10-Year event
Inflow = 9.10 cfs @ 12.05 hrs, Volume= 0.723 af
Outflow = 9.10 cfs @ 12.05 hrs, Volume= 0.723 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach POND: Pond

Hydrograph



Pre-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 28

Summary for Pond 1: Existing CB 1

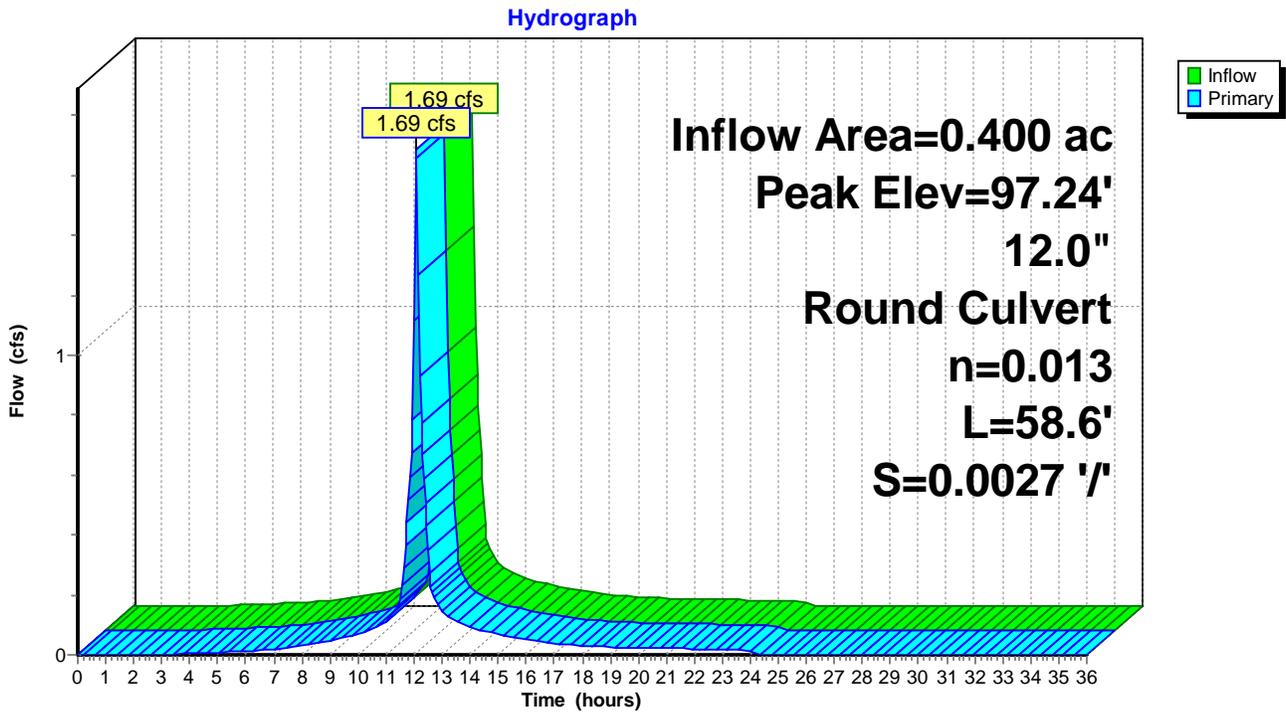
Inflow Area = 0.400 ac, 92.50% Impervious, Inflow Depth = 3.91" for 10-Year event
Inflow = 1.69 cfs @ 12.08 hrs, Volume= 0.130 af
Outflow = 1.69 cfs @ 12.08 hrs, Volume= 0.130 af, Atten= 0%, Lag= 0.0 min
Primary = 1.69 cfs @ 12.08 hrs, Volume= 0.130 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 97.24' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	96.28'	12.0" Round CMP_Round 12" L= 58.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 96.28' / 96.12' S= 0.0027 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.64 cfs @ 12.08 hrs HW=97.22' (Free Discharge)
↑1=CMP_Round 12" (Barrel Controls 1.64 cfs @ 2.75 fps)

Pond 1: Existing CB 1



Pre-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 29

Summary for Pond 2: Existing CB 2

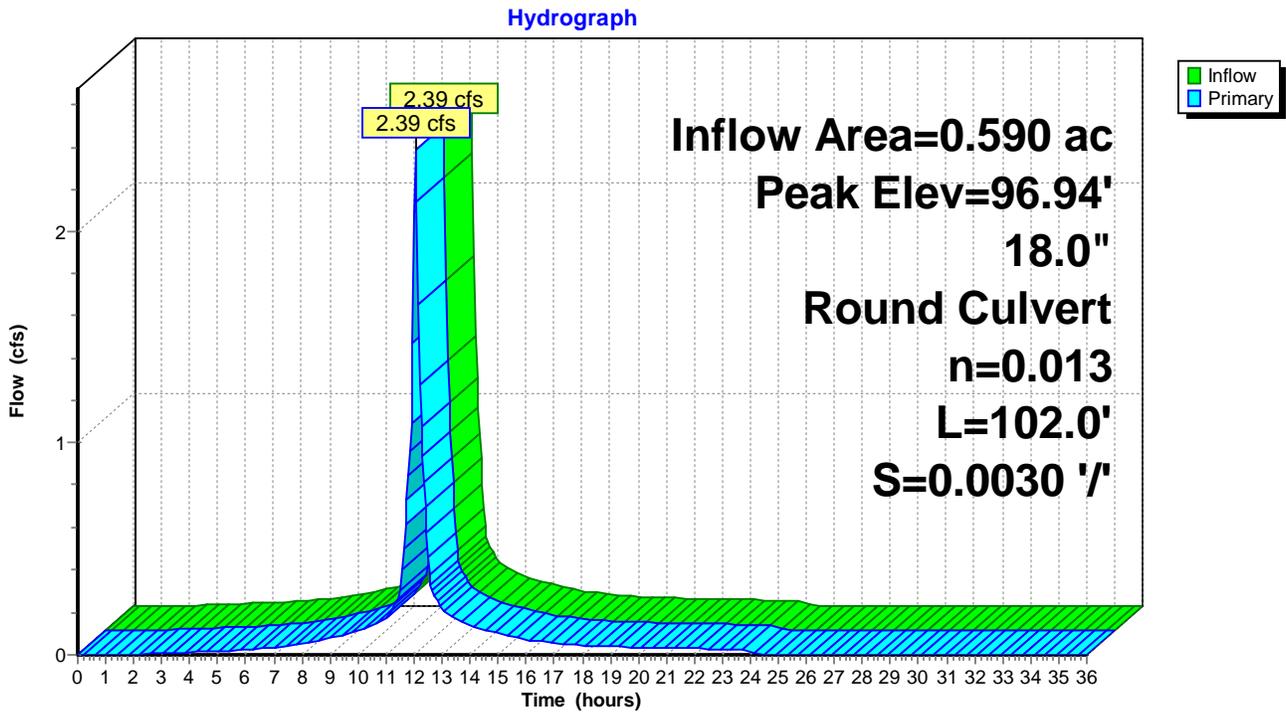
Inflow Area = 0.590 ac, 94.92% Impervious, Inflow Depth = 4.06" for 10-Year event
Inflow = 2.39 cfs @ 12.05 hrs, Volume= 0.200 af
Outflow = 2.39 cfs @ 12.05 hrs, Volume= 0.200 af, Atten= 0%, Lag= 0.0 min
Primary = 2.39 cfs @ 12.05 hrs, Volume= 0.200 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 96.94' @ 12.05 hrs

Device #1	Routing	Invert	Outlet Devices
	Primary	96.02'	18.0" Round Culvert L= 102.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 96.02' / 95.71' S= 0.0030 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.37 cfs @ 12.05 hrs HW=96.94' (Free Discharge)
↑1=Culvert (Barrel Controls 2.37 cfs @ 2.99 fps)

Pond 2: Existing CB 2



Pre-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 30

Summary for Pond 3: Existing CB 3

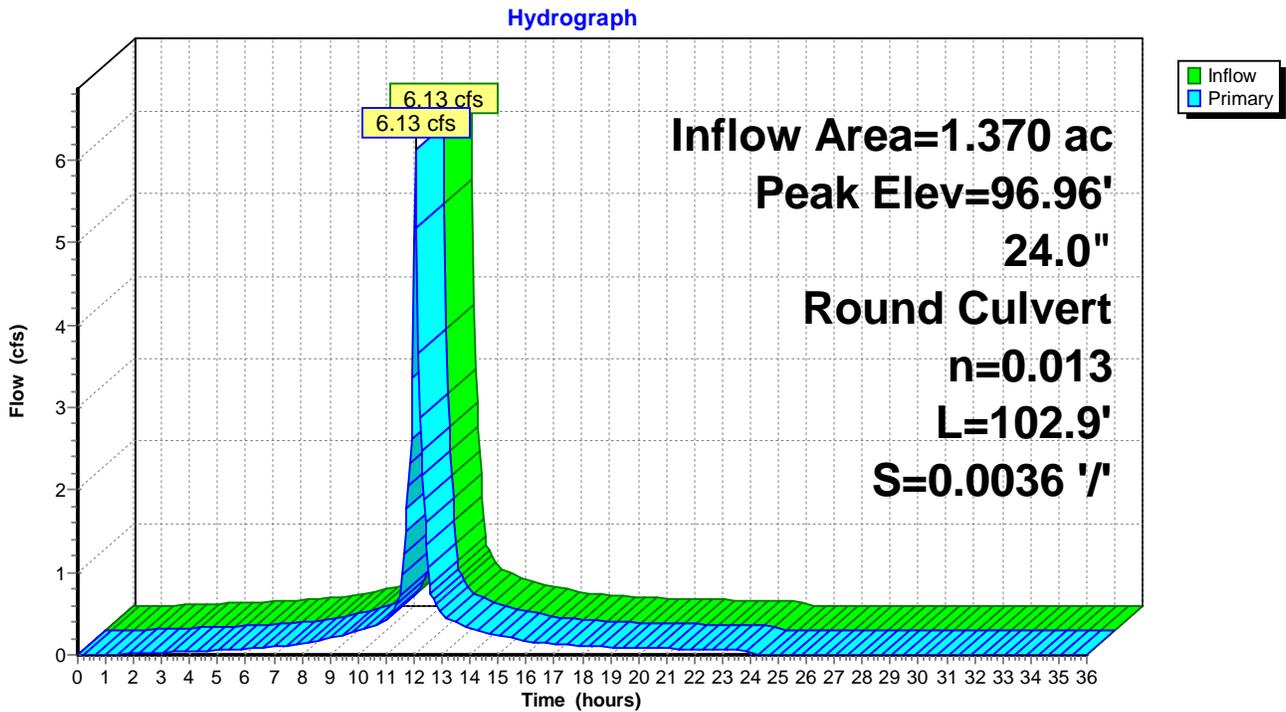
Inflow Area = 1.370 ac, 97.81% Impervious, Inflow Depth = 4.23" for 10-Year event
Inflow = 6.13 cfs @ 12.05 hrs, Volume= 0.483 af
Outflow = 6.13 cfs @ 12.05 hrs, Volume= 0.483 af, Atten= 0%, Lag= 0.0 min
Primary = 6.13 cfs @ 12.05 hrs, Volume= 0.483 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 96.96' @ 12.05 hrs

Device #1	Routing	Invert	Outlet Devices
	Primary	95.60'	24.0" Round Culvert L= 102.9' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.60' / 95.23' S= 0.0036 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=6.09 cfs @ 12.05 hrs HW=96.96' (Free Discharge)
↑**1=Culvert** (Barrel Controls 6.09 cfs @ 3.80 fps)

Pond 3: Existing CB 3



Pre-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 31

Summary for Pond 4: Existing CB 4

Inflow Area = 1.830 ac, 98.36% Impervious, Inflow Depth = 4.27" for 10-Year event
Inflow = 8.35 cfs @ 12.05 hrs, Volume= 0.650 af
Outflow = 8.35 cfs @ 12.05 hrs, Volume= 0.650 af, Atten= 0%, Lag= 0.0 min
Primary = 8.35 cfs @ 12.05 hrs, Volume= 0.650 af

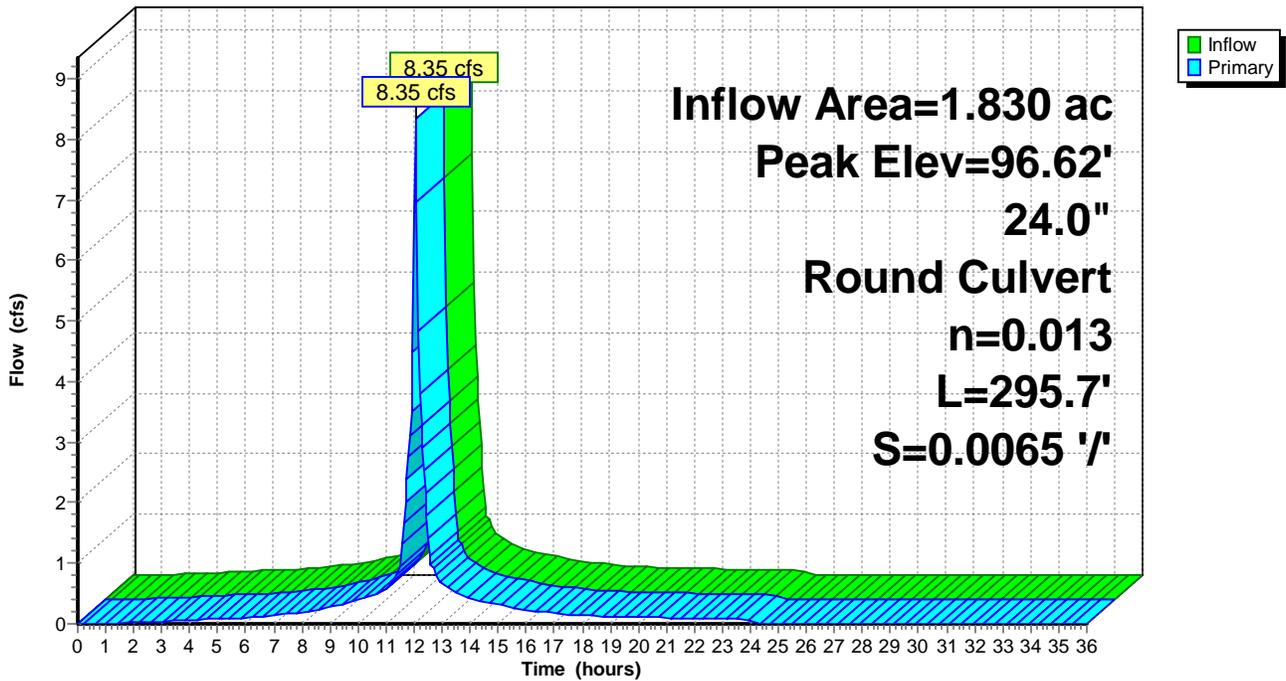
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 96.62' @ 12.05 hrs

Device #1	Routing	Invert	Outlet Devices
	Primary	95.12'	24.0" Round Culvert L= 295.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.12' / 93.21' S= 0.0065 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=8.30 cfs @ 12.05 hrs HW=96.62' (Free Discharge)
↑**1=Culvert** (Inlet Controls 8.30 cfs @ 3.29 fps)

Pond 4: Existing CB 4

Hydrograph



Pre-Development

Type III 24-hr 25-Year Rainfall=5.80"

Prepared by Main-Land Development Consultants, Inc

Printed 6/22/2016

HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Page 32

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 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 S101: Site Entrance Runoff Area=0.400 ac 92.50% Impervious Runoff Depth=5.10"
Flow Length=187' Tc=5.6 min CN=94 Runoff=2.17 cfs 0.170 af

Subcatchment S102: Warehouse and Drive Runoff Area=0.190 ac 100.00% Impervious Runoff Depth=5.56"
Flow Length=50' Slope=0.0500 '/' Tc=0.5 min CN=98 Runoff=1.23 cfs 0.088 af

Subcatchment S103: Retail Building and Runoff Area=0.780 ac 100.00% Impervious Runoff Depth=5.56"
Flow Length=290' Tc=3.5 min CN=98 Runoff=4.73 cfs 0.362 af

Subcatchment S104: Open Storage Buildings Runoff Area=0.460 ac 100.00% Impervious Runoff Depth=5.56"
Flow Length=330' Tc=3.4 min CN=98 Runoff=2.80 cfs 0.213 af

Subcatchment S105: Gravel Laydown Area Runoff Area=0.210 ac 14.29% Impervious Runoff Depth=5.33"
Flow Length=48' Slope=0.0100 '/' Tc=7.3 min CN=96 Runoff=1.11 cfs 0.093 af

Reach A: WAP Inflow=10.58 cfs 0.833 af
Outflow=10.58 cfs 0.833 af

Reach B: WAP Inflow=1.11 cfs 0.093 af
Outflow=1.11 cfs 0.093 af

Reach POND: Pond Inflow=11.55 cfs 0.926 af
Outflow=11.55 cfs 0.926 af

Pond 1: Existing CB 1 Peak Elev=97.45' Inflow=2.17 cfs 0.170 af
12.0" Round Culvert n=0.013 L=58.6' S=0.0027 '/' Outflow=2.17 cfs 0.170 af

Pond 2: Existing CB 2 Peak Elev=97.09' Inflow=3.05 cfs 0.258 af
18.0" Round Culvert n=0.013 L=102.0' S=0.0030 '/' Outflow=3.05 cfs 0.258 af

Pond 3: Existing CB 3 Peak Elev=97.17' Inflow=7.78 cfs 0.620 af
24.0" Round Culvert n=0.013 L=102.9' S=0.0036 '/' Outflow=7.78 cfs 0.620 af

Pond 4: Existing CB 4 Peak Elev=96.90' Inflow=10.58 cfs 0.833 af
24.0" Round Culvert n=0.013 L=295.7' S=0.0065 '/' Outflow=10.58 cfs 0.833 af

Total Runoff Area = 2.040 ac Runoff Volume = 0.926 af Average Runoff Depth = 5.45"
10.29% Pervious = 0.210 ac 89.71% Impervious = 1.830 ac

Pre-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 33

Summary for Subcatchment S101: Site Entrance

Runoff = 2.17 cfs @ 12.08 hrs, Volume= 0.170 af, Depth= 5.10"

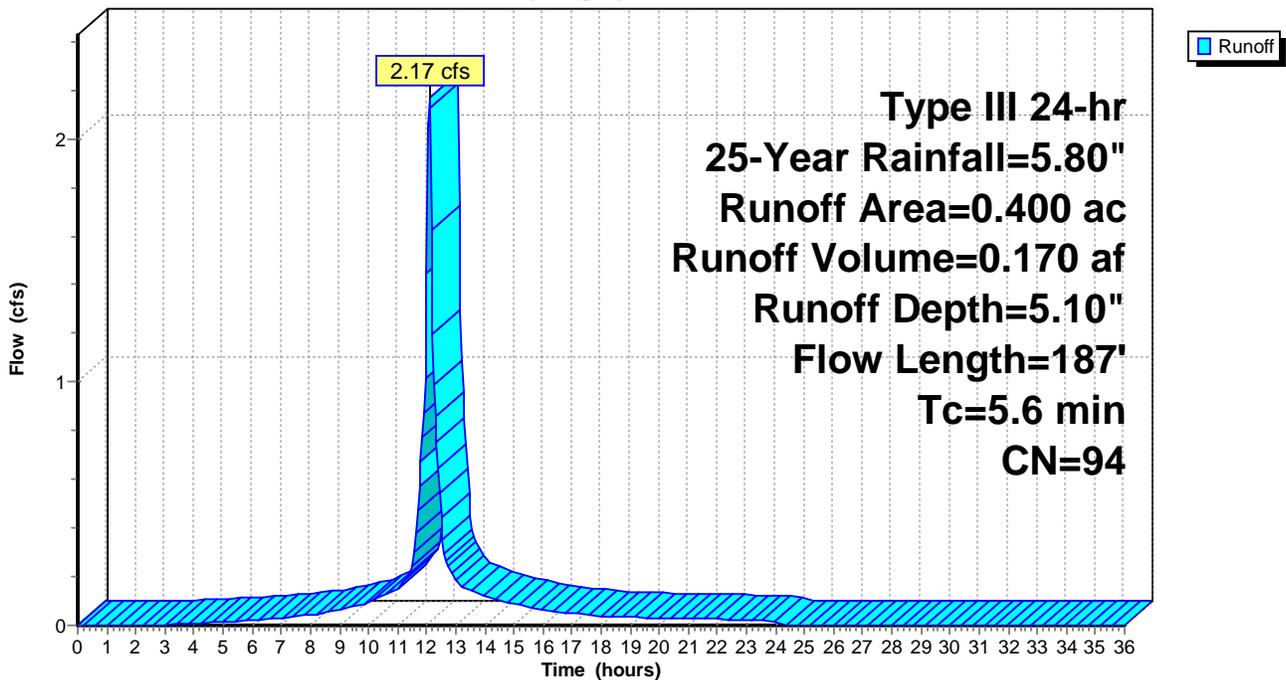
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-Year Rainfall=5.80"

Area (ac)	CN	Description
0.321	98	Paved parking, HSG A
0.049	98	Roofs, HSG A
0.030	39	>75% Grass cover, Good, HSG A
0.400	94	Weighted Average
0.030		7.50% Pervious Area
0.370		92.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	15	0.0060	0.07		Sheet Flow, Grass: Short n= 0.150 P2= 3.10"
1.8	135	0.0150	1.28		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
0.3	37	0.0130	2.31		Shallow Concentrated Flow, Paved Kv= 20.3 fps
5.6	187	Total			

Subcatchment S101: Site Entrance

Hydrograph



Pre-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 34

Summary for Subcatchment S102: Warehouse and Drive

Runoff = 1.23 cfs @ 12.01 hrs, Volume= 0.088 af, Depth= 5.56"

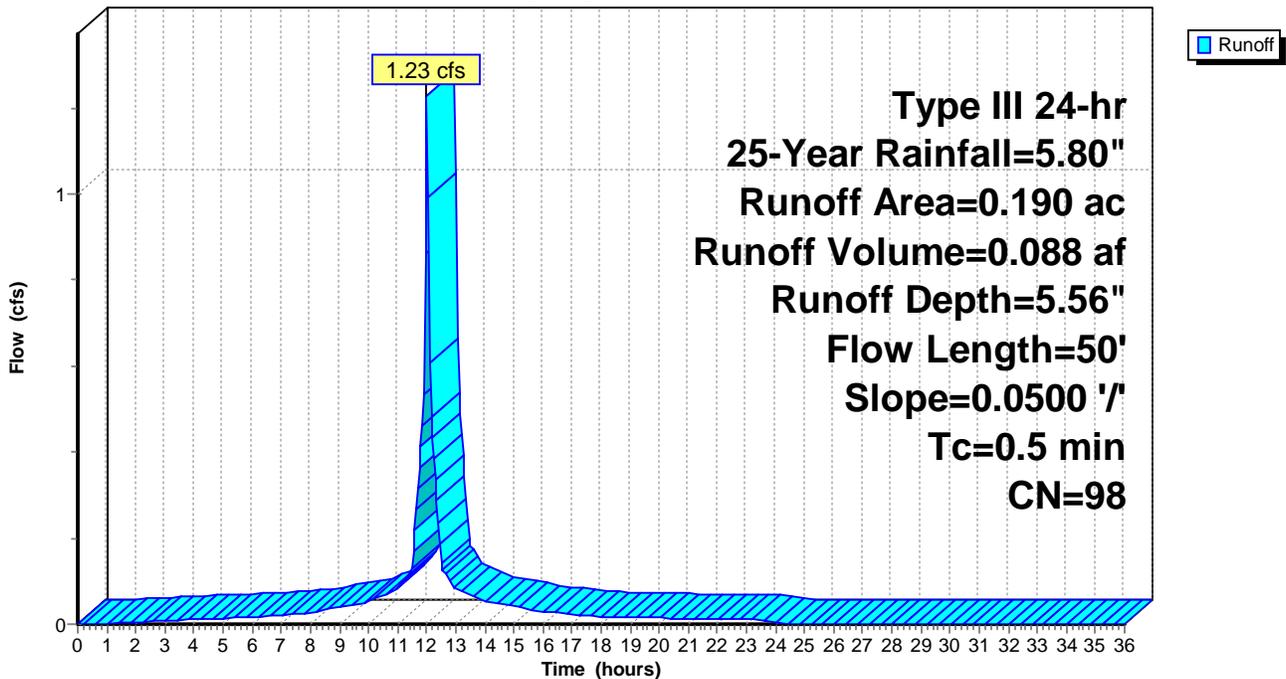
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-Year Rainfall=5.80"

Area (ac)	CN	Description
0.156	98	Paved parking, HSG A
0.034	98	Roofs, HSG A
0.190	98	Weighted Average
0.190		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	50	0.0500	1.70		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"

Subcatchment S102: Warehouse and Drive

Hydrograph



Pre-Development

Summary for Subcatchment S103: Retail Building and Drives

Runoff = 4.73 cfs @ 12.05 hrs, Volume= 0.362 af, Depth= 5.56"

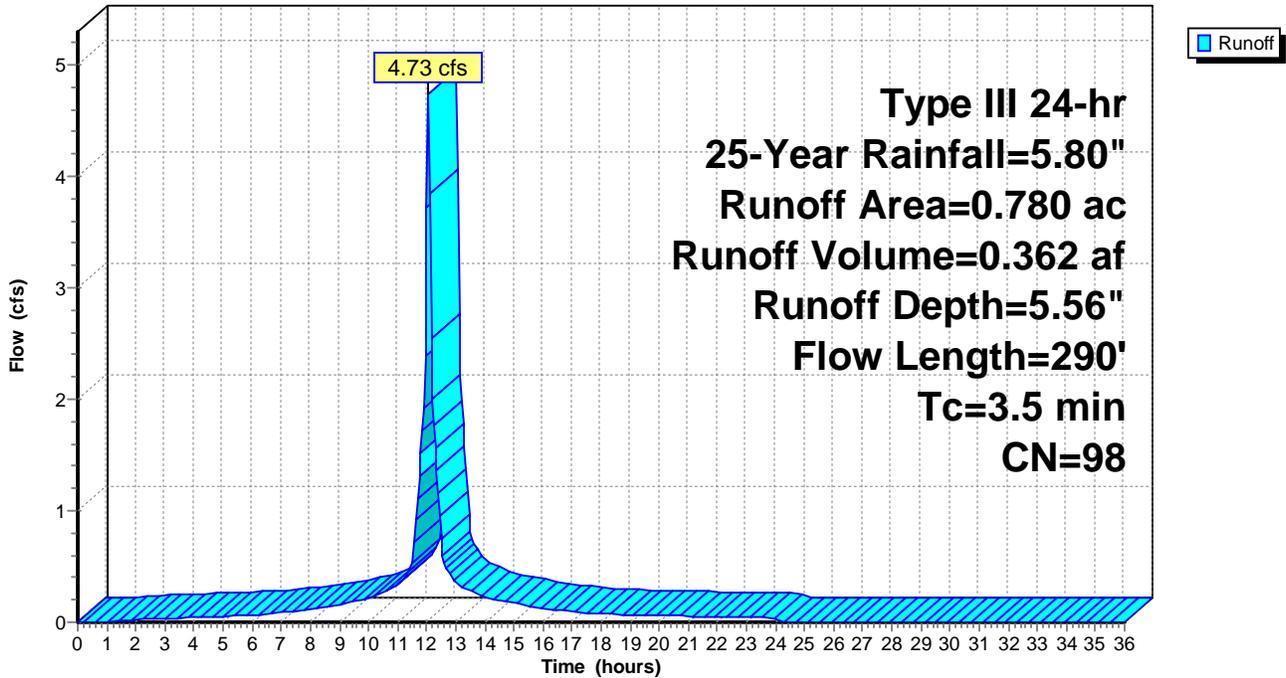
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-Year Rainfall=5.80"

Area (ac)	CN	Description
0.540	98	Paved parking, HSG A
0.240	98	Roofs, HSG A
0.780	98	Weighted Average
0.780		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	150	0.0067	0.95		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
0.9	140	0.0180	2.72		Shallow Concentrated Flow, Paved Kv= 20.3 fps
3.5	290	Total			

Subcatchment S103: Retail Building and Drives

Hydrograph



Pre-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 36

Summary for Subcatchment S104: Open Storage Buildings and Drives

Runoff = 2.80 cfs @ 12.05 hrs, Volume= 0.213 af, Depth= 5.56"

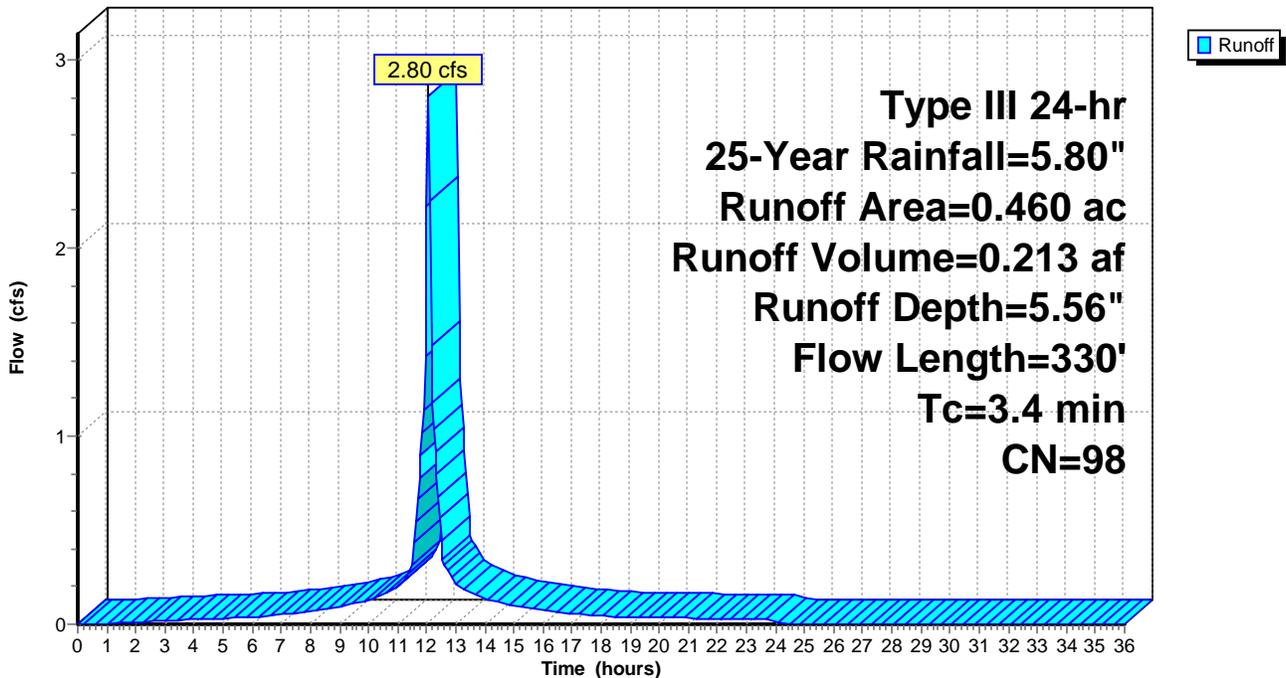
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-Year Rainfall=5.80"

Area (ac)	CN	Description
0.350	98	Paved parking, HSG A
0.110	98	Roofs, HSG A
0.460	98	Weighted Average
0.460		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	150	0.0167	1.37		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
1.6	180	0.0083	1.85		Shallow Concentrated Flow, Paved Kv= 20.3 fps
3.4	330	Total			

Subcatchment S104: Open Storage Buildings and Drives

Hydrograph



Pre-Development

Summary for Subcatchment S105: Gravel Laydown Area

Runoff = 1.11 cfs @ 12.10 hrs, Volume= 0.093 af, Depth= 5.33"

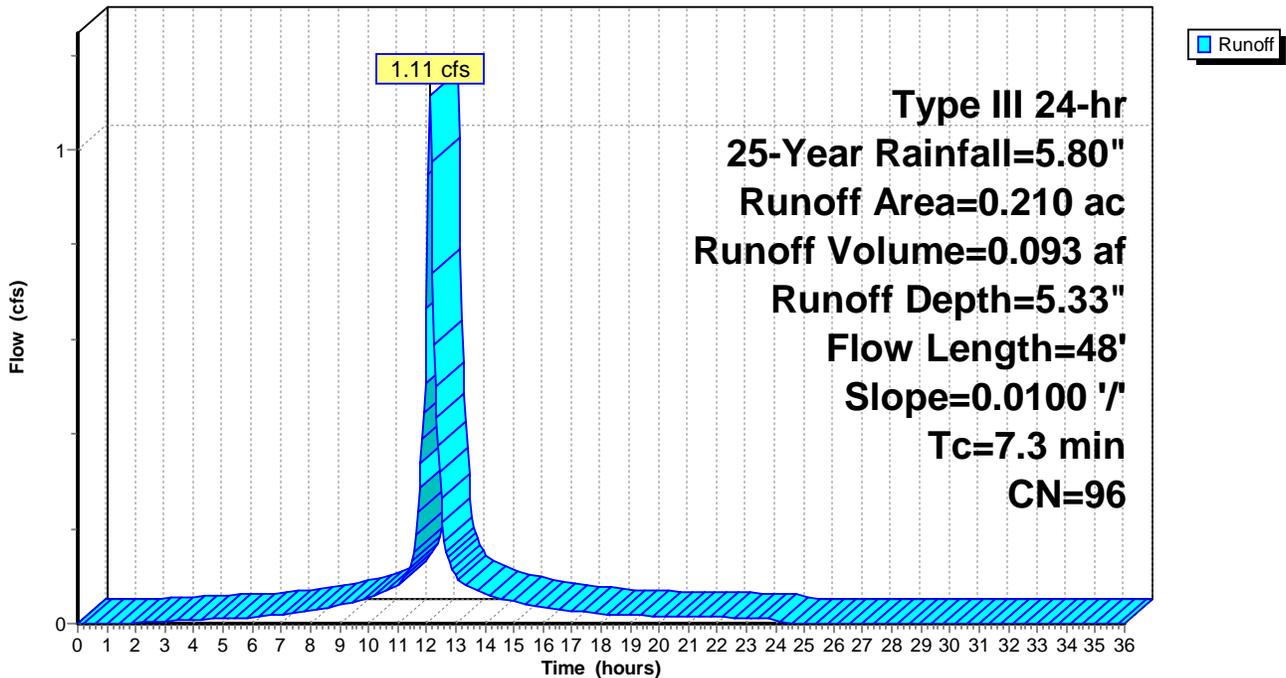
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-Year Rainfall=5.80"

Area (ac)	CN	Description
0.180	96	Gravel surface, HSG A
0.030	98	Roofs, HSG A
0.210	96	Weighted Average
0.180		85.71% Pervious Area
0.030		14.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	48	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 3.10"

Subcatchment S105: Gravel Laydown Area

Hydrograph



Pre-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 38

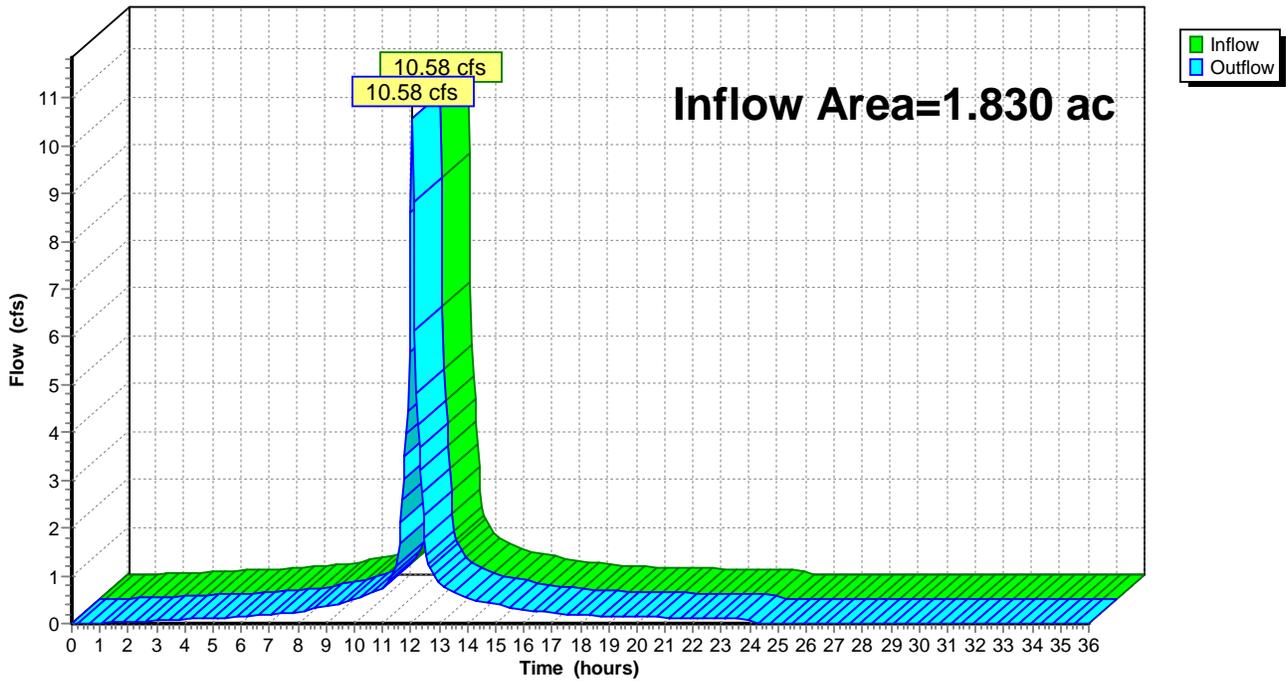
Summary for Reach A: WAP

Inflow Area = 1.830 ac, 98.36% Impervious, Inflow Depth = 5.46" for 25-Year event
Inflow = 10.58 cfs @ 12.05 hrs, Volume= 0.833 af
Outflow = 10.58 cfs @ 12.05 hrs, Volume= 0.833 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach A: WAP

Hydrograph



Pre-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 39

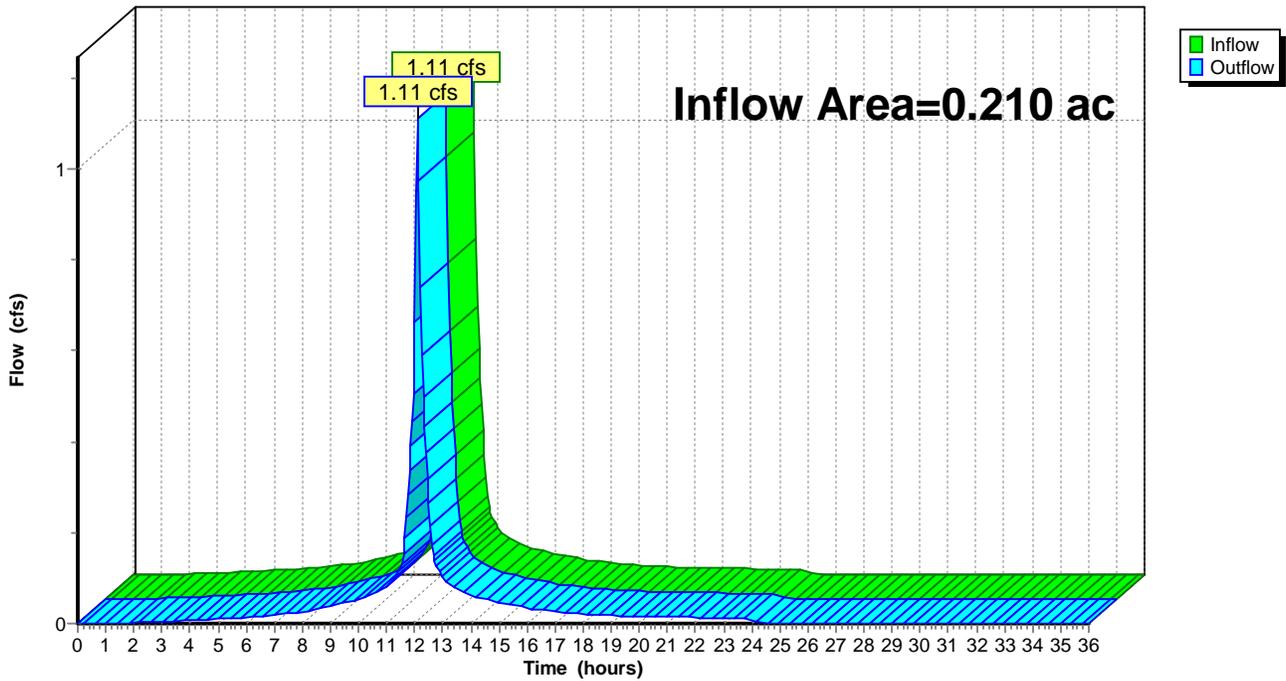
Summary for Reach B: WAP

Inflow Area = 0.210 ac, 14.29% Impervious, Inflow Depth = 5.33" for 25-Year event
Inflow = 1.11 cfs @ 12.10 hrs, Volume= 0.093 af
Outflow = 1.11 cfs @ 12.10 hrs, Volume= 0.093 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach B: WAP

Hydrograph



Pre-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 40

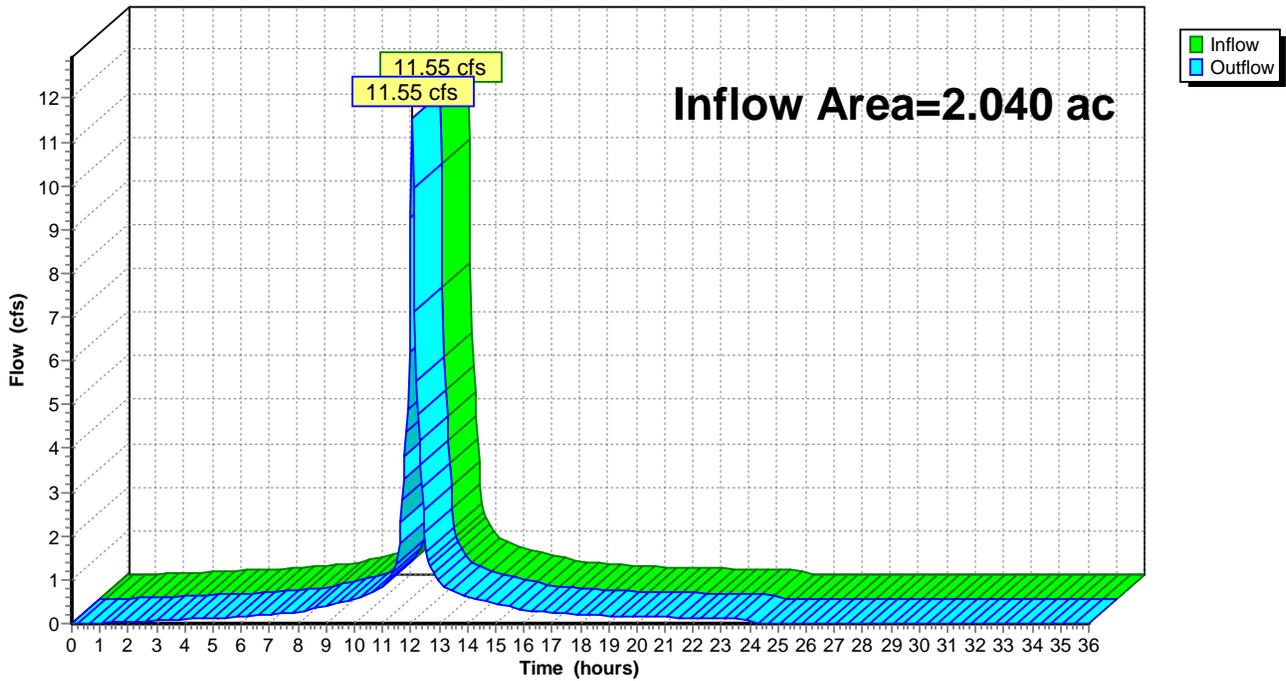
Summary for Reach POND: Pond

Inflow Area = 2.040 ac, 89.71% Impervious, Inflow Depth = 5.45" for 25-Year event
Inflow = 11.55 cfs @ 12.05 hrs, Volume= 0.926 af
Outflow = 11.55 cfs @ 12.05 hrs, Volume= 0.926 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach POND: Pond

Hydrograph



Pre-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 41

Summary for Pond 1: Existing CB 1

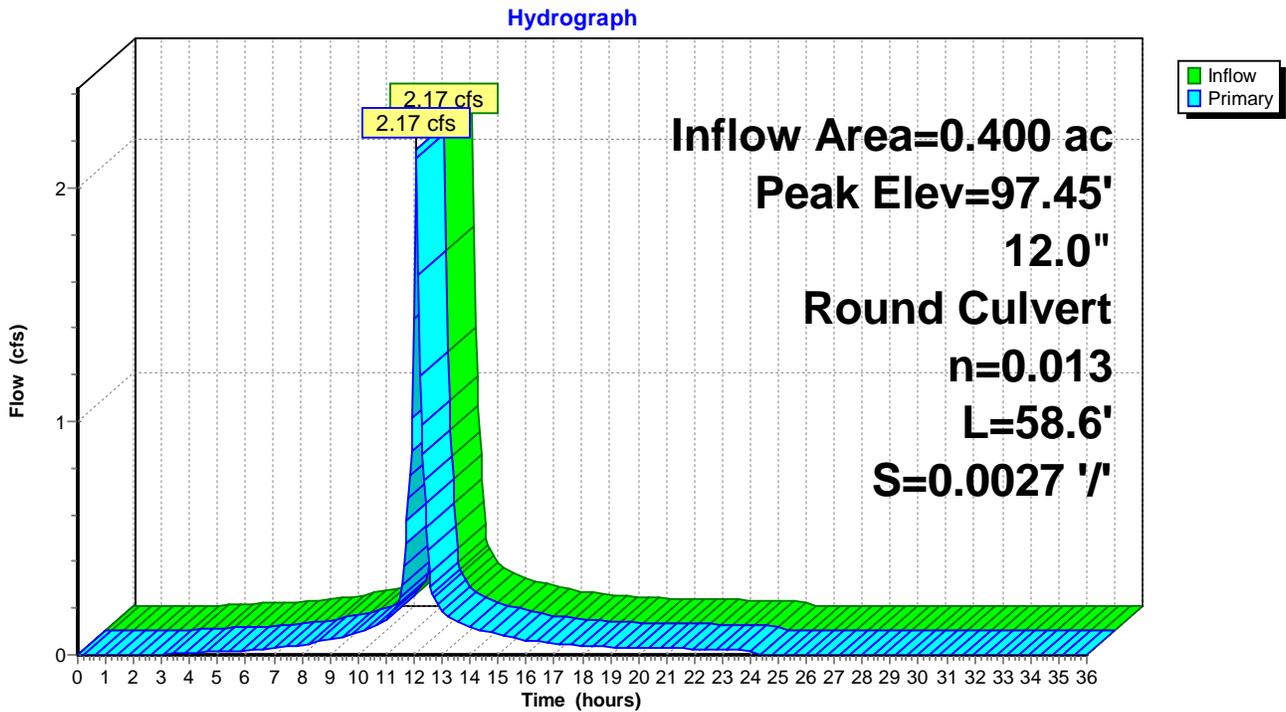
Inflow Area = 0.400 ac, 92.50% Impervious, Inflow Depth = 5.10" for 25-Year event
Inflow = 2.17 cfs @ 12.08 hrs, Volume= 0.170 af
Outflow = 2.17 cfs @ 12.08 hrs, Volume= 0.170 af, Atten= 0%, Lag= 0.0 min
Primary = 2.17 cfs @ 12.08 hrs, Volume= 0.170 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 97.45' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	96.28'	12.0" Round CMP_Round 12" L= 58.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 96.28' / 96.12' S= 0.0027 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.10 cfs @ 12.08 hrs HW=97.42' (Free Discharge)
↑1=CMP_Round 12" (Barrel Controls 2.10 cfs @ 2.94 fps)

Pond 1: Existing CB 1



Pre-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 42

Summary for Pond 2: Existing CB 2

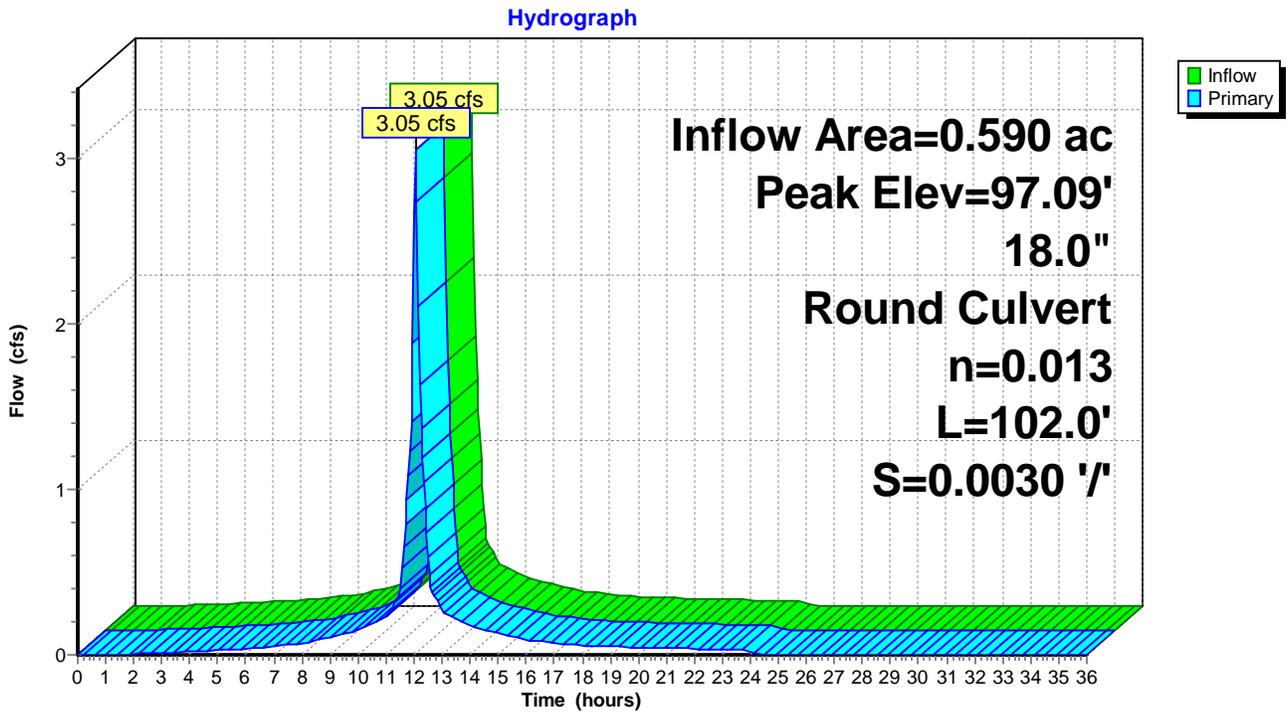
Inflow Area = 0.590 ac, 94.92% Impervious, Inflow Depth = 5.25" for 25-Year event
Inflow = 3.05 cfs @ 12.05 hrs, Volume= 0.258 af
Outflow = 3.05 cfs @ 12.05 hrs, Volume= 0.258 af, Atten= 0%, Lag= 0.0 min
Primary = 3.05 cfs @ 12.05 hrs, Volume= 0.258 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 97.09' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	96.02'	18.0" Round Culvert L= 102.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 96.02' / 95.71' S= 0.0030 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.03 cfs @ 12.05 hrs HW=97.08' (Free Discharge)
↑**1=Culvert** (Barrel Controls 3.03 cfs @ 3.18 fps)

Pond 2: Existing CB 2



Pre-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 43

Summary for Pond 3: Existing CB 3

Inflow Area = 1.370 ac, 97.81% Impervious, Inflow Depth = 5.43" for 25-Year event
Inflow = 7.78 cfs @ 12.05 hrs, Volume= 0.620 af
Outflow = 7.78 cfs @ 12.05 hrs, Volume= 0.620 af, Atten= 0%, Lag= 0.0 min
Primary = 7.78 cfs @ 12.05 hrs, Volume= 0.620 af

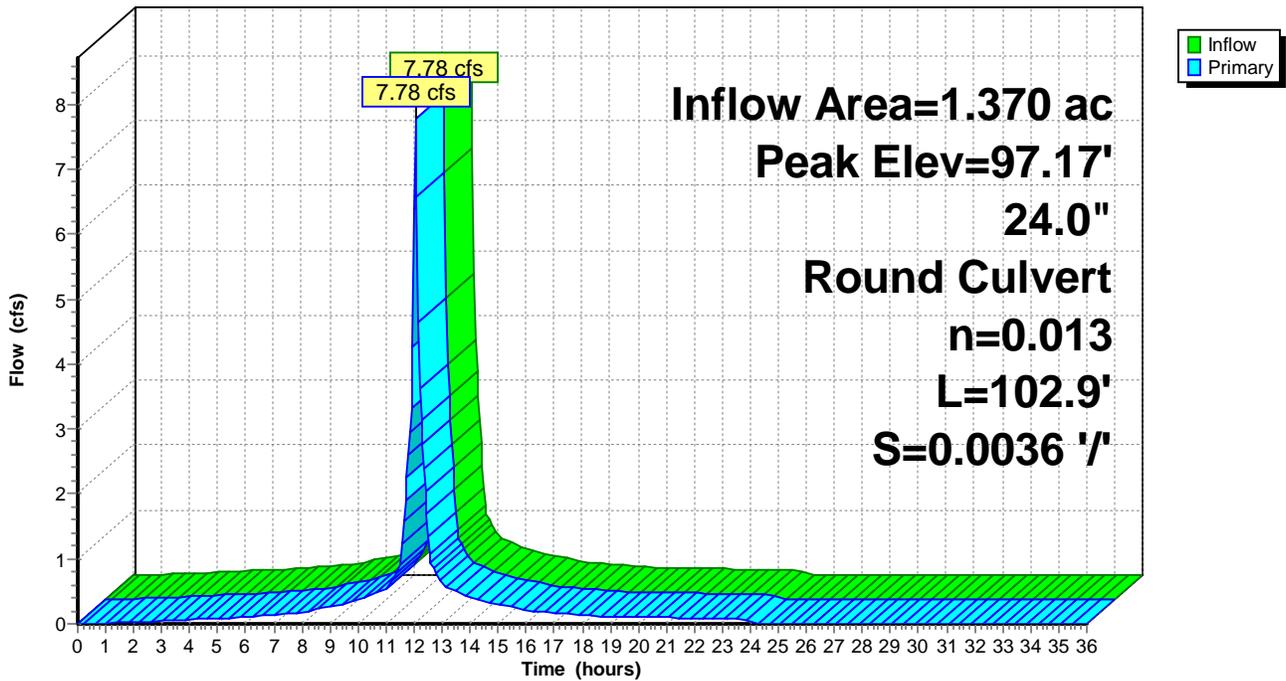
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 97.17' @ 12.05 hrs

Device #1	Routing	Invert	Outlet Devices
	Primary	95.60'	24.0" Round Culvert L= 102.9' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.60' / 95.23' S= 0.0036 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=7.74 cfs @ 12.05 hrs HW=97.17' (Free Discharge)
↑ **1=Culvert** (Barrel Controls 7.74 cfs @ 4.02 fps)

Pond 3: Existing CB 3

Hydrograph



Pre-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 44

Summary for Pond 4: Existing CB 4

Inflow Area = 1.830 ac, 98.36% Impervious, Inflow Depth = 5.46" for 25-Year event
Inflow = 10.58 cfs @ 12.05 hrs, Volume= 0.833 af
Outflow = 10.58 cfs @ 12.05 hrs, Volume= 0.833 af, Atten= 0%, Lag= 0.0 min
Primary = 10.58 cfs @ 12.05 hrs, Volume= 0.833 af

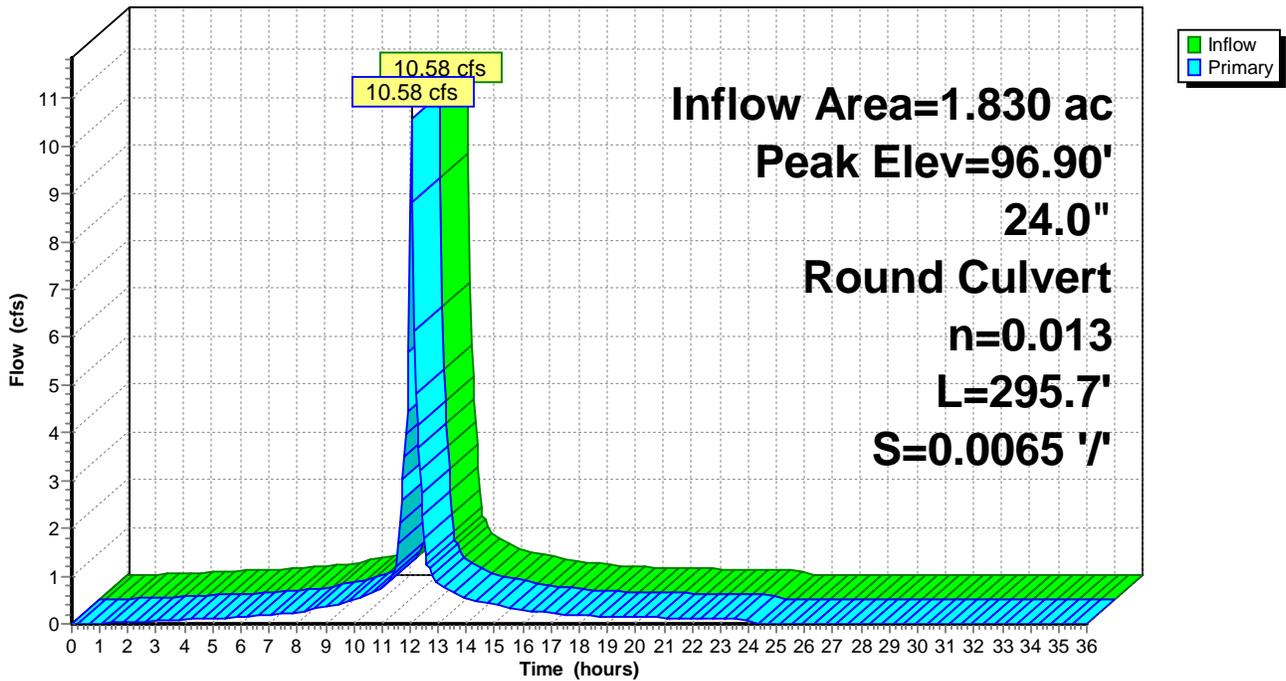
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 96.90' @ 12.05 hrs

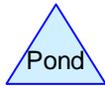
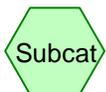
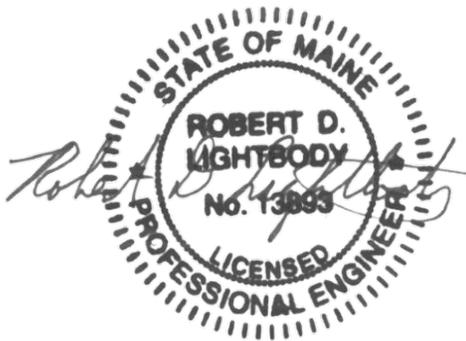
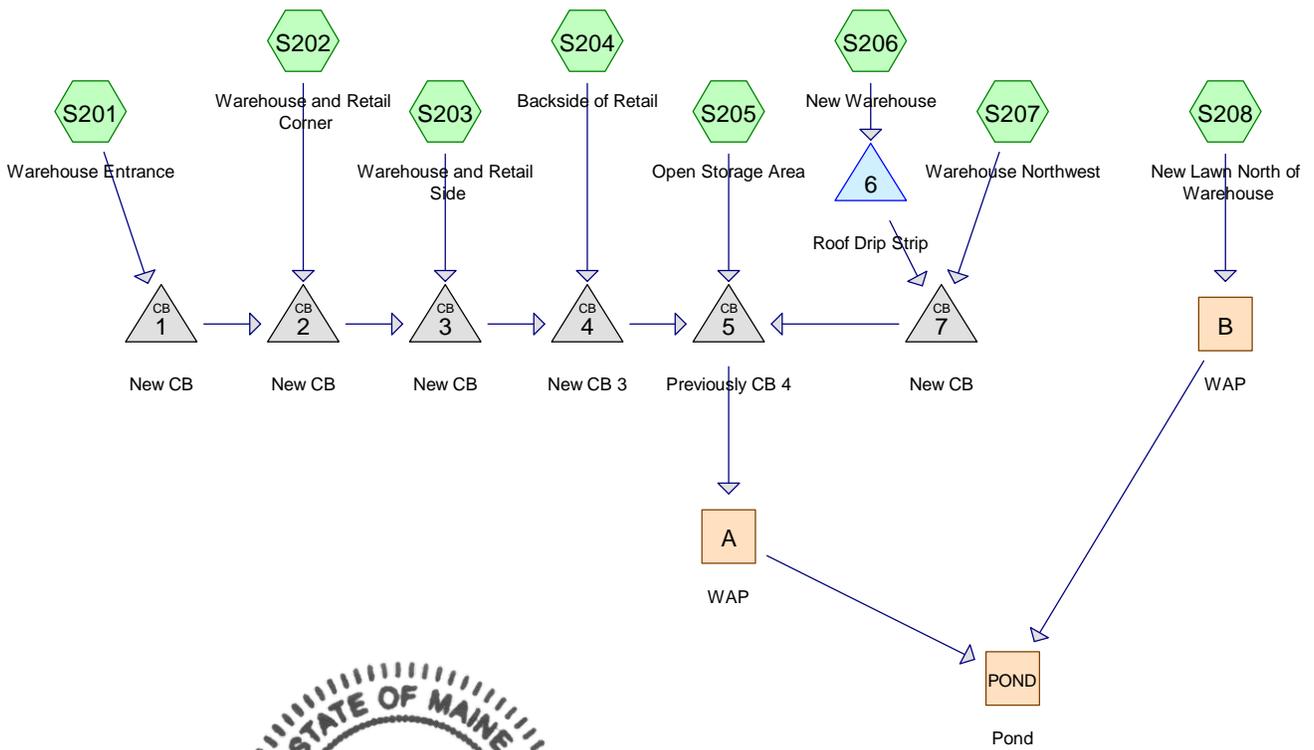
Device #1	Routing	Invert	Outlet Devices
	Primary	95.12'	24.0" Round Culvert L= 295.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.12' / 93.21' S= 0.0065 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=10.53 cfs @ 12.05 hrs HW=96.89' (Free Discharge)
↑**1=Culvert** (Inlet Controls 10.53 cfs @ 3.58 fps)

Pond 4: Existing CB 4

Hydrograph





Routing Diagram for Post-Development
 Prepared by Main-Land Development Consultants, Inc, Printed 6/22/2016
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Post-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Printed 6/22/2016

Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.101	39	>75% Grass cover, Good, HSG A (S201, S208)
0.020	96	Gravel surface, HSG A (S205)
1.270	98	Paved parking, HSG A (S201, S202, S203, S204, S205, S207)
0.010	40	Roof Drip Line Filter (S206)
0.529	98	Roofs, HSG A (S201, S204, S206)
0.110	98	Roofs, HSG C (S205)
2.040	95	TOTAL AREA

Post-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Printed 6/22/2016

Page 3

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
1.920	HSG A	S201, S202, S203, S204, S205, S206, S207, S208
0.000	HSG B	
0.110	HSG C	S205
0.000	HSG D	
0.010	Other	S206
2.040		TOTAL AREA

Post-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Printed 6/22/2016

Page 4

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.101	0.000	0.000	0.000	0.000	0.101	>75% Grass cover, Good	S201, S208
0.020	0.000	0.000	0.000	0.000	0.020	Gravel surface	S205
1.270	0.000	0.000	0.000	0.000	1.270	Paved parking	S201, S202, S203, S204, S205, S207
0.000	0.000	0.000	0.000	0.010	0.010	Roof Drip Line Filter	S206
0.529	0.000	0.110	0.000	0.000	0.639	Roofs	S201, S204, S205, S206
1.920	0.000	0.110	0.000	0.010	2.040	TOTAL AREA	

Post-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Printed 6/22/2016

Page 5

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	1	96.90	96.70	54.0	0.0037	0.013	15.0	0.0	0.0
2	2	96.60	96.40	59.8	0.0033	0.013	15.0	0.0	0.0
3	3	96.30	95.70	107.0	0.0056	0.013	18.0	0.0	0.0
4	4	95.60	95.10	83.8	0.0060	0.013	24.0	0.0	0.0
5	5	95.10	93.62	295.7	0.0050	0.013	24.0	0.0	0.0
6	6	98.33	96.40	195.4	0.0099	0.010	6.0	0.0	0.0
7	7	96.30	95.70	61.9	0.0097	0.013	12.0	0.0	0.0

Post-Development

Type III 24-hr 2-Year Rainfall=3.10"

Prepared by Main-Land Development Consultants, Inc

Printed 6/22/2016

HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Page 6

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 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 S201: Warehouse Entrance Runoff Area=0.389 ac 92.29% Impervious Runoff Depth=2.35"
Flow Length=136' Tc=4.7 min CN=93 Runoff=1.06 cfs 0.076 af

Subcatchment S202: Warehouse and Retail Runoff Area=0.040 ac 100.00% Impervious Runoff Depth=2.87"
Flow Length=46' Slope=0.0300 '/' Tc=0.6 min CN=98 Runoff=0.14 cfs 0.010 af

Subcatchment S203: Warehouse and Retail Runoff Area=0.070 ac 100.00% Impervious Runoff Depth=2.87"
Flow Length=25' Slope=0.0400 '/' Tc=0.3 min CN=98 Runoff=0.24 cfs 0.017 af

Subcatchment S204: Backside of Retail Runoff Area=0.710 ac 100.00% Impervious Runoff Depth=2.87"
Flow Length=237' Tc=3.1 min CN=98 Runoff=2.30 cfs 0.170 af

Subcatchment S205: Open Storage Area Runoff Area=0.480 ac 95.83% Impervious Runoff Depth=2.87"
Flow Length=330' Tc=3.4 min CN=98 Runoff=1.55 cfs 0.115 af

Subcatchment S206: New Warehouse Runoff Area=0.240 ac 95.83% Impervious Runoff Depth=2.65"
Flow Length=58' Slope=0.0800 '/' Tc=0.5 min CN=96 Runoff=0.79 cfs 0.053 af

Subcatchment S207: Warehouse Northwest Runoff Area=0.040 ac 100.00% Impervious Runoff Depth=2.87"
Flow Length=13' Slope=0.0800 '/' Tc=0.1 min CN=98 Runoff=0.14 cfs 0.010 af

Subcatchment S208: New Lawn North of Runoff Area=0.071 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=14' Slope=0.0100 '/' Tc=2.7 min CN=39 Runoff=0.00 cfs 0.000 af

Reach A: WAP Inflow=5.80 cfs 0.449 af
Outflow=5.80 cfs 0.449 af

Reach B: WAP Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Reach POND: Pond Inflow=5.80 cfs 0.449 af
Outflow=5.80 cfs 0.449 af

Pond 1: New CB Peak Elev=97.52' Inflow=1.06 cfs 0.076 af
15.0" Round Culvert n=0.013 L=54.0' S=0.0037 '/' Outflow=1.06 cfs 0.076 af

Pond 2: New CB Peak Elev=97.26' Inflow=1.16 cfs 0.086 af
15.0" Round Culvert n=0.013 L=59.8' S=0.0033 '/' Outflow=1.16 cfs 0.086 af

Pond 3: New CB Peak Elev=96.89' Inflow=1.34 cfs 0.102 af
18.0" Round Culvert n=0.013 L=107.0' S=0.0056 '/' Outflow=1.34 cfs 0.102 af

Pond 4: New CB 3 Peak Elev=96.53' Inflow=3.64 cfs 0.272 af
24.0" Round Culvert n=0.013 L=83.8' S=0.0060 '/' Outflow=3.64 cfs 0.272 af

Pond 5: Previously CB 4 Peak Elev=96.30' Inflow=5.80 cfs 0.449 af
24.0" Round Culvert n=0.013 L=295.7' S=0.0050 '/' Outflow=5.80 cfs 0.449 af

Post-Development

Prepared by Main-Land Development Consultants, Inc

HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Rainfall=3.10"

Printed 6/22/2016

Page 7

Pond 6: Roof Drip Strip

Peak Elev=99.05' Storage=0.006 af Inflow=0.79 cfs 0.053 af
6.0" Round Culvert n=0.010 L=195.4' S=0.0099 '/ Outflow=0.51 cfs 0.053 af

Pond 7: New CB

Peak Elev=96.75' Inflow=0.61 cfs 0.063 af
12.0" Round Culvert n=0.013 L=61.9' S=0.0097 '/ Outflow=0.61 cfs 0.063 af

Total Runoff Area = 2.040 ac Runoff Volume = 0.449 af Average Runoff Depth = 2.64"
6.42% Pervious = 0.131 ac 93.58% Impervious = 1.909 ac

Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Rainfall=3.10"

Printed 6/22/2016

Page 8

Summary for Subcatchment S201: Warehouse Entrance

Runoff = 1.06 cfs @ 12.07 hrs, Volume= 0.076 af, Depth= 2.35"

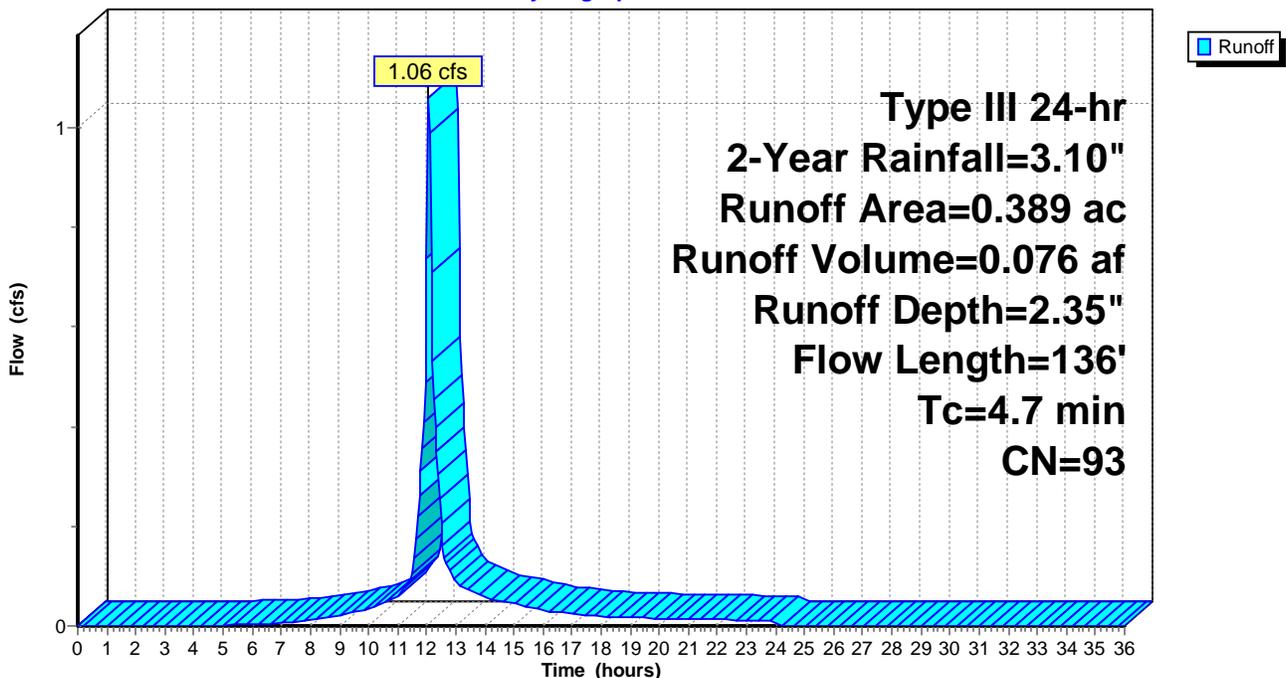
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-Year Rainfall=3.10"

Area (ac)	CN	Description
0.310	98	Paved parking, HSG A
0.049	98	Roofs, HSG A
0.030	39	>75% Grass cover, Good, HSG A
0.389	93	Weighted Average
0.030		7.71% Pervious Area
0.359		92.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	14	0.0060	0.07		Sheet Flow, Grass: Short n= 0.150 P2= 3.10"
1.4	122	0.0200	1.41		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
4.7	136	Total			

Subcatchment S201: Warehouse Entrance

Hydrograph



Post-Development

Summary for Subcatchment S202: Warehouse and Retail Corner

Runoff = 0.14 cfs @ 12.01 hrs, Volume= 0.010 af, Depth= 2.87"

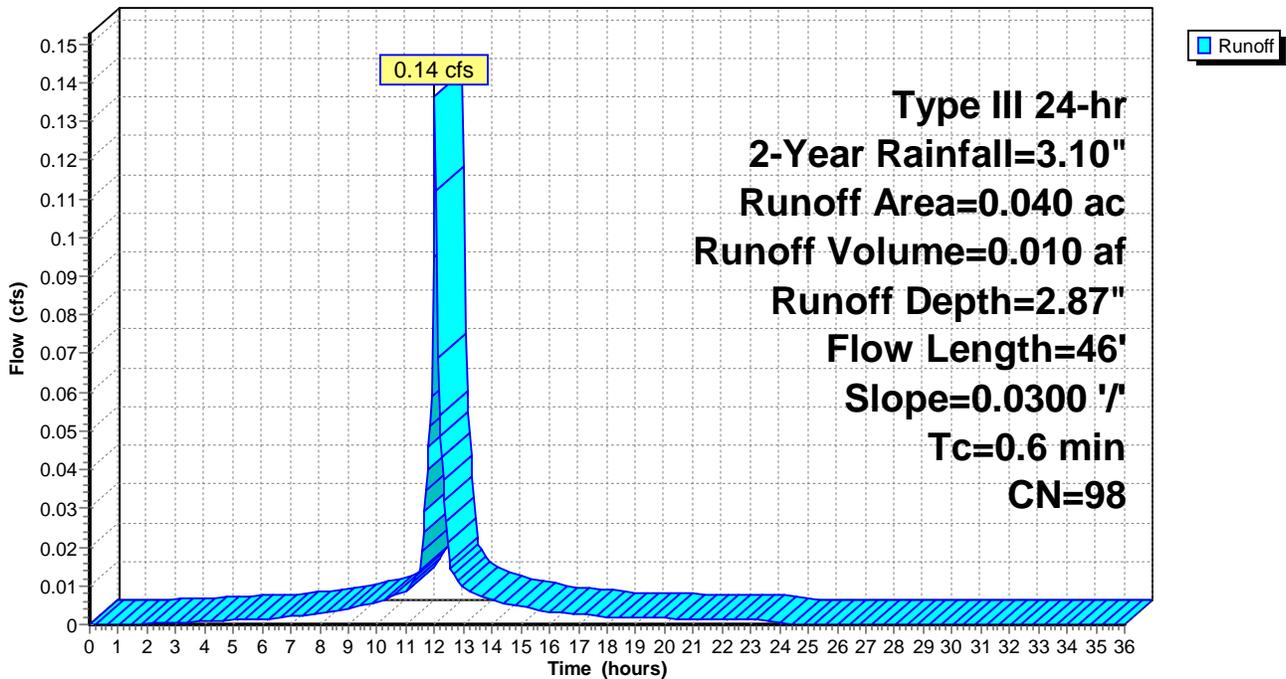
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (ac)	CN	Description
0.040	98	Paved parking, HSG A
0.040		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	46	0.0300	1.36		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"

Subcatchment S202: Warehouse and Retail Corner

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Rainfall=3.10"

Printed 6/22/2016

Page 10

Summary for Subcatchment S203: Warehouse and Retail Side

Runoff = 0.24 cfs @ 12.00 hrs, Volume= 0.017 af, Depth= 2.87"

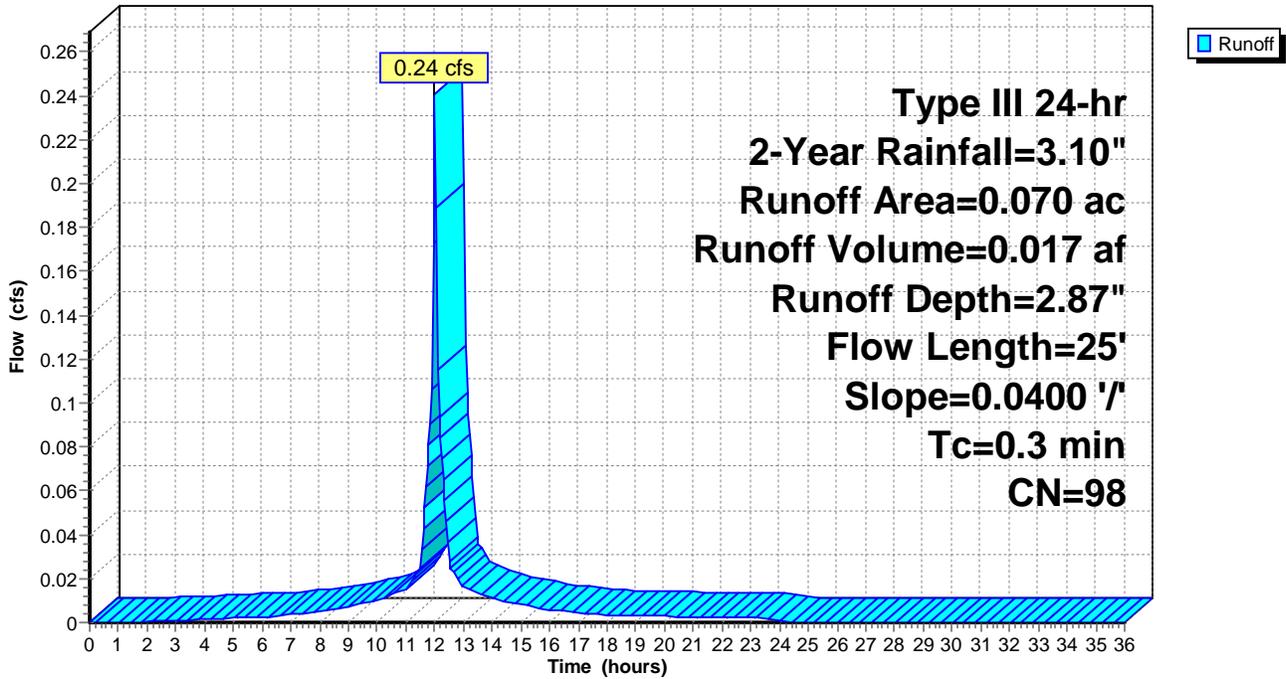
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-Year Rainfall=3.10"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG A
0.070		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	25	0.0400	1.35		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"

Subcatchment S203: Warehouse and Retail Side

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Rainfall=3.10"

Printed 6/22/2016

Page 11

Summary for Subcatchment S204: Backside of Retail

Runoff = 2.30 cfs @ 12.05 hrs, Volume= 0.170 af, Depth= 2.87"

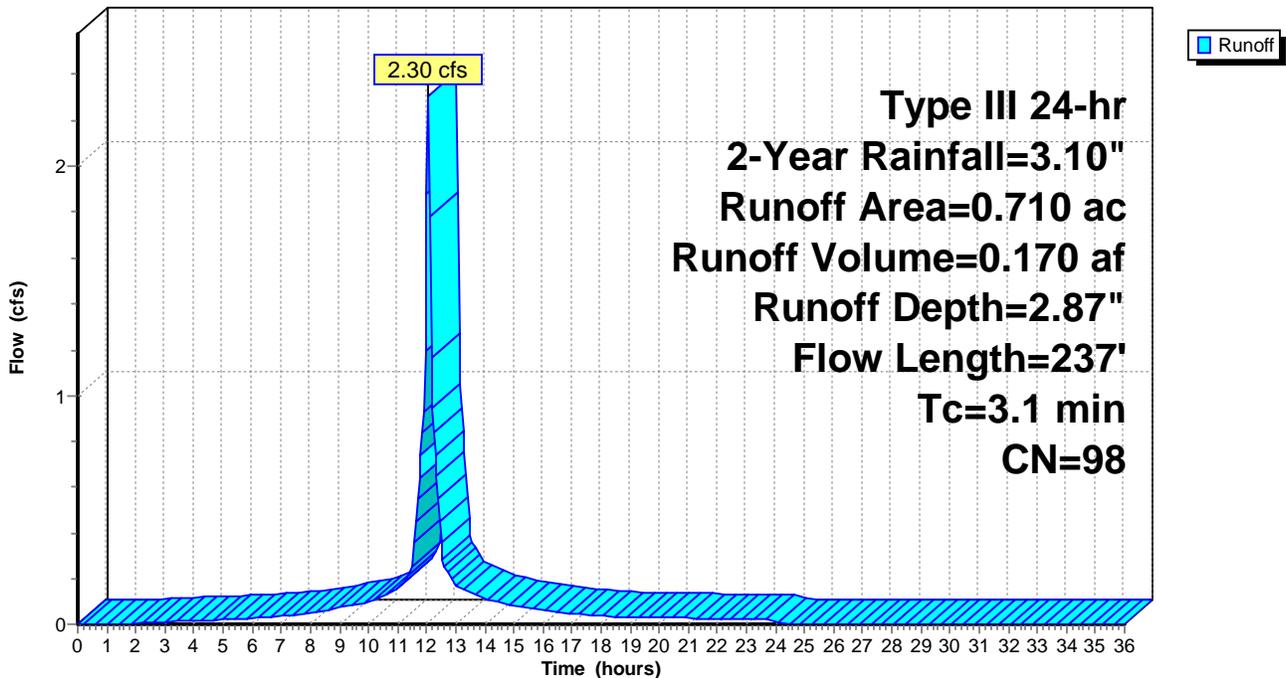
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-Year Rainfall=3.10"

Area (ac)	CN	Description
0.460	98	Paved parking, HSG A
0.250	98	Roofs, HSG A
0.710	98	Weighted Average
0.710		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	150	0.0067	0.95		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
0.5	87	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
3.1	237	Total			

Subcatchment S204: Backside of Retail

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Rainfall=3.10"

Printed 6/22/2016

Page 12

Summary for Subcatchment S205: Open Storage Area

Runoff = 1.55 cfs @ 12.05 hrs, Volume= 0.115 af, Depth= 2.87"

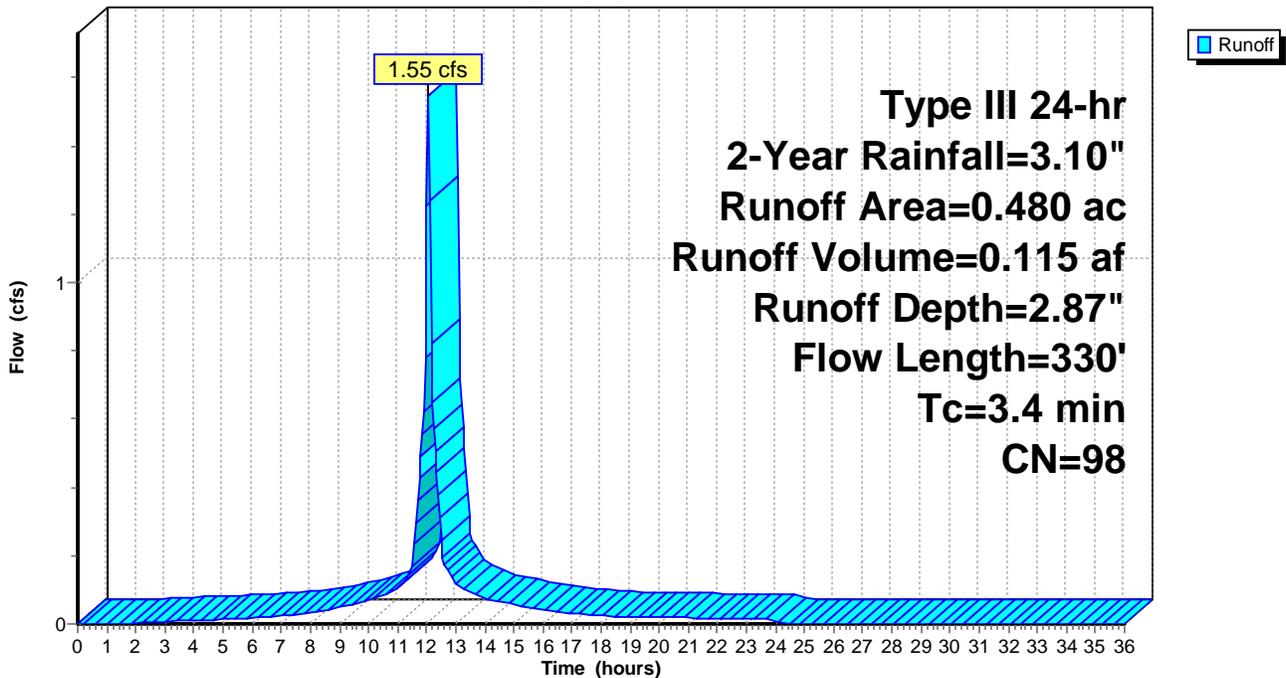
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-Year Rainfall=3.10"

Area (ac)	CN	Description
0.350	98	Paved parking, HSG A
0.110	98	Roofs, HSG C
0.020	96	Gravel surface, HSG A
0.480	98	Weighted Average
0.020		4.17% Pervious Area
0.460		95.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	150	0.0167	1.37		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
1.6	180	0.0083	1.85		Shallow Concentrated Flow, Paved Kv= 20.3 fps
3.4	330	Total			

Subcatchment S205: Open Storage Area

Hydrograph



Post-Development

Summary for Subcatchment S206: New Warehouse

Runoff = 0.79 cfs @ 12.01 hrs, Volume= 0.053 af, Depth= 2.65"

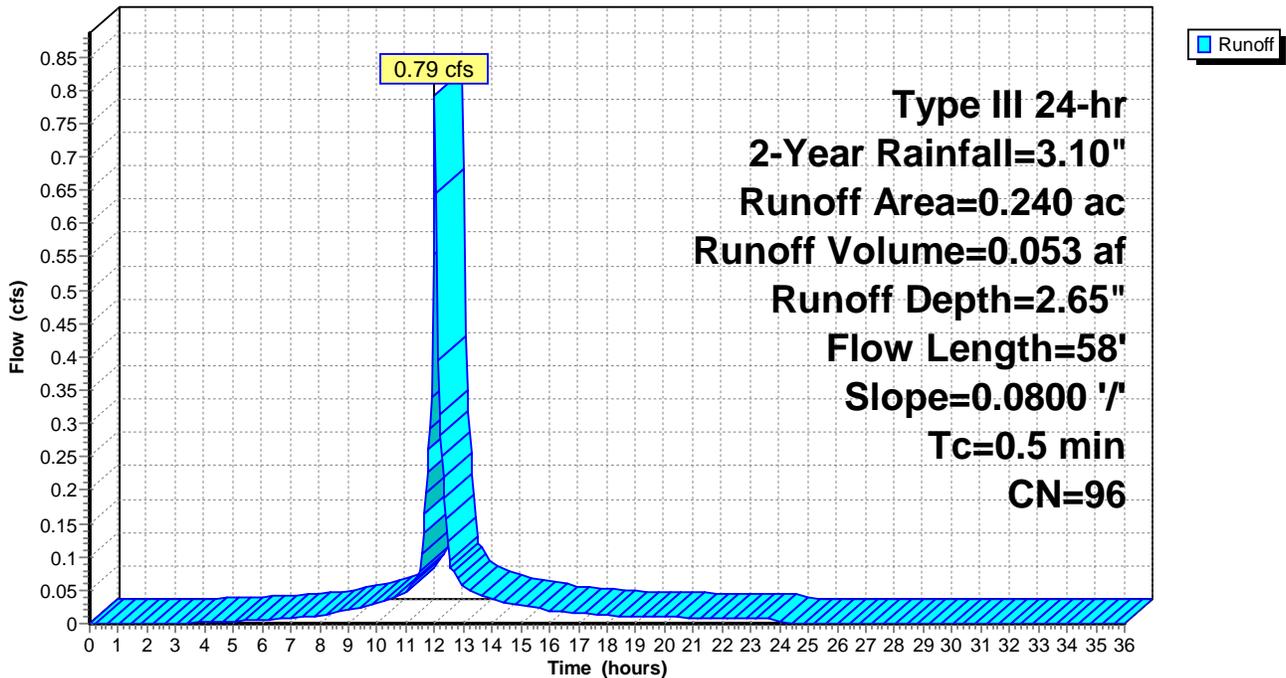
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-Year Rainfall=3.10"

Area (ac)	CN	Description
0.230	98	Roofs, HSG A
* 0.010	40	Roof Drip Line Filter
0.240	96	Weighted Average
0.010		4.17% Pervious Area
0.230		95.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	58	0.0800	2.11		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"

Subcatchment S206: New Warehouse

Hydrograph



Post-Development

Summary for Subcatchment S207: Warehouse Northwest

Runoff = 0.14 cfs @ 12.00 hrs, Volume= 0.010 af, Depth= 2.87"

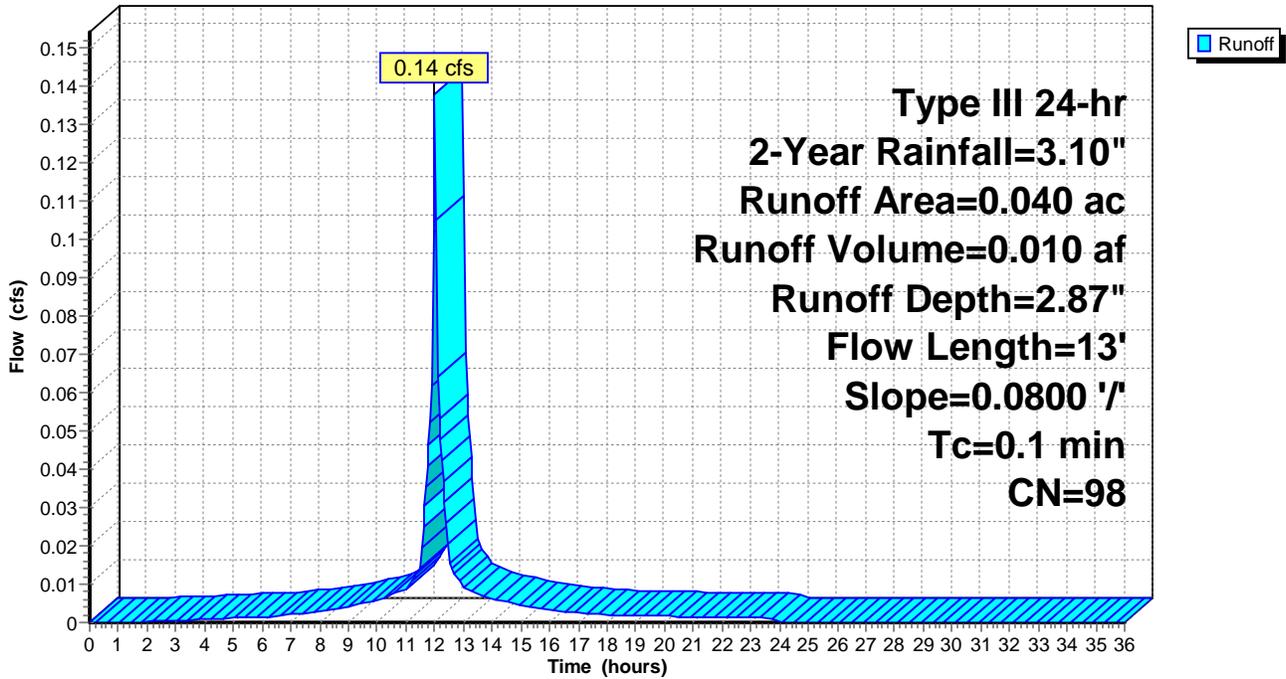
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (ac)	CN	Description
0.040	98	Paved parking, HSG A
0.040		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	13	0.0800	1.57		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"

Subcatchment S207: Warehouse Northwest

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Rainfall=3.10"

Printed 6/22/2016

Page 15

Summary for Subcatchment S208: New Lawn North of Warehouse

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

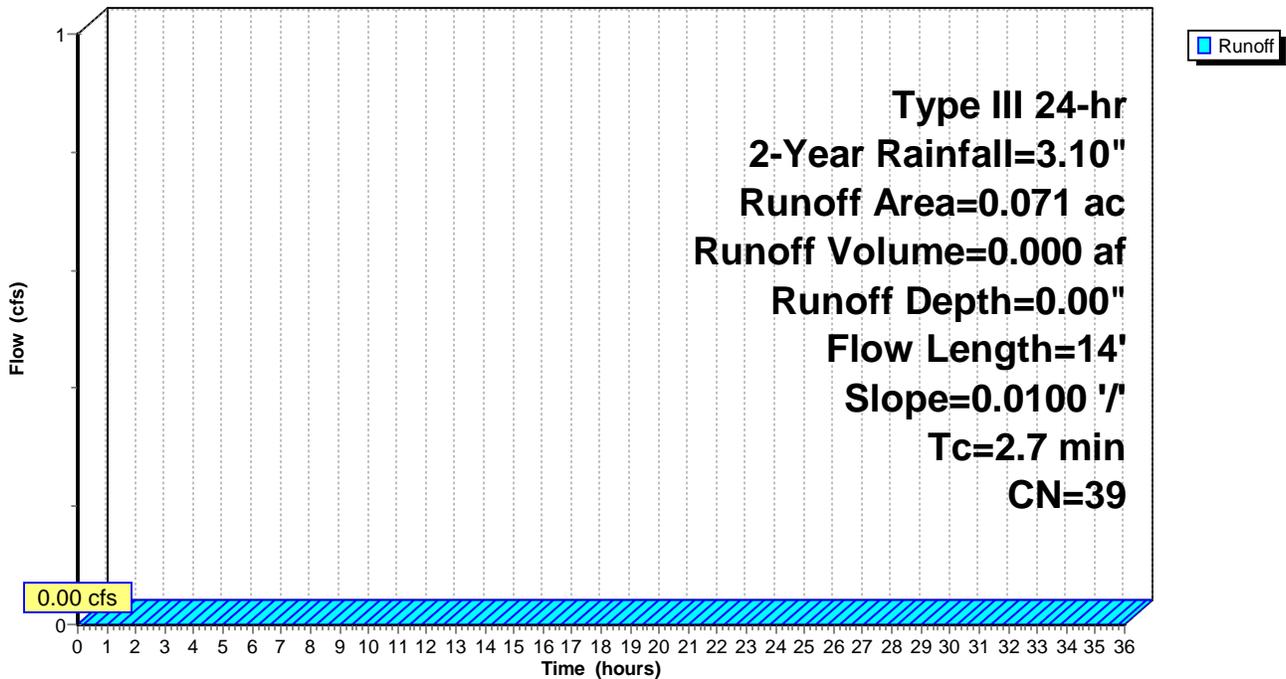
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (ac)	CN	Description
0.071	39	>75% Grass cover, Good, HSG A
0.071		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	14	0.0100	0.09		Sheet Flow, Grass: Short n= 0.150 P2= 3.10"

Subcatchment S208: New Lawn North of Warehouse

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Rainfall=3.10"

Printed 6/22/2016

Page 16

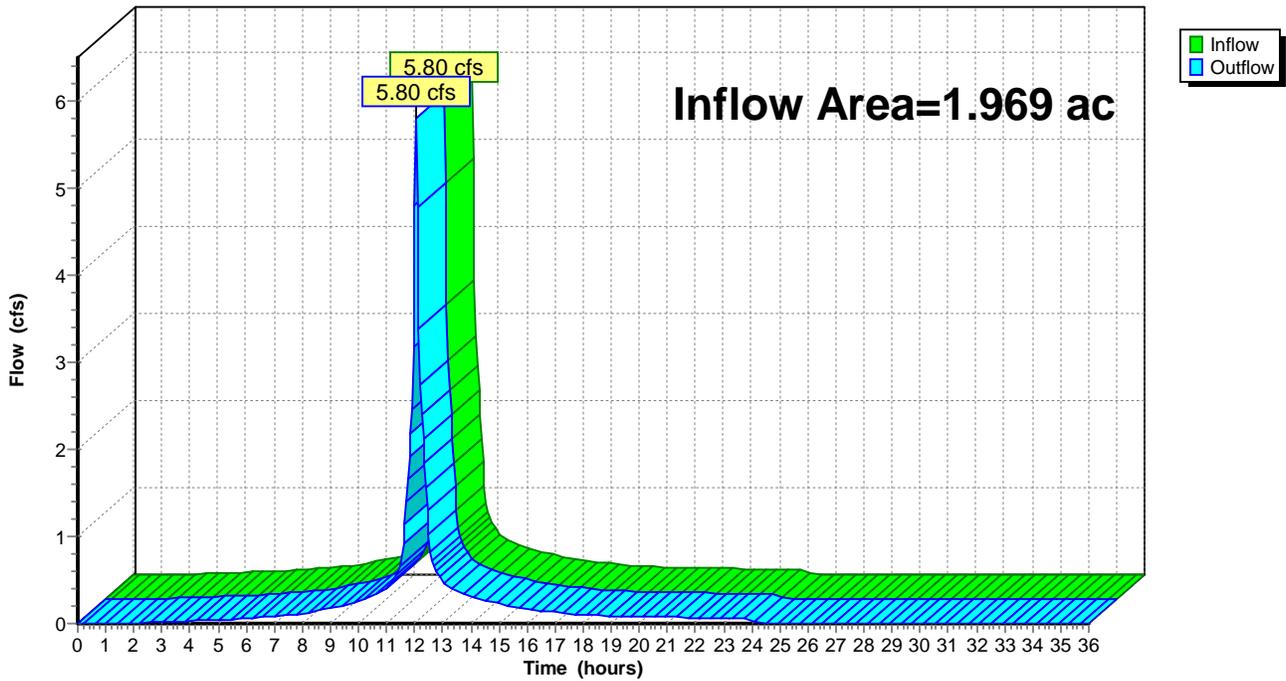
Summary for Reach A: WAP

Inflow Area = 1.969 ac, 96.95% Impervious, Inflow Depth = 2.74" for 2-Year event
Inflow = 5.80 cfs @ 12.05 hrs, Volume= 0.449 af
Outflow = 5.80 cfs @ 12.05 hrs, Volume= 0.449 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach A: WAP

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Rainfall=3.10"

Printed 6/22/2016

Page 17

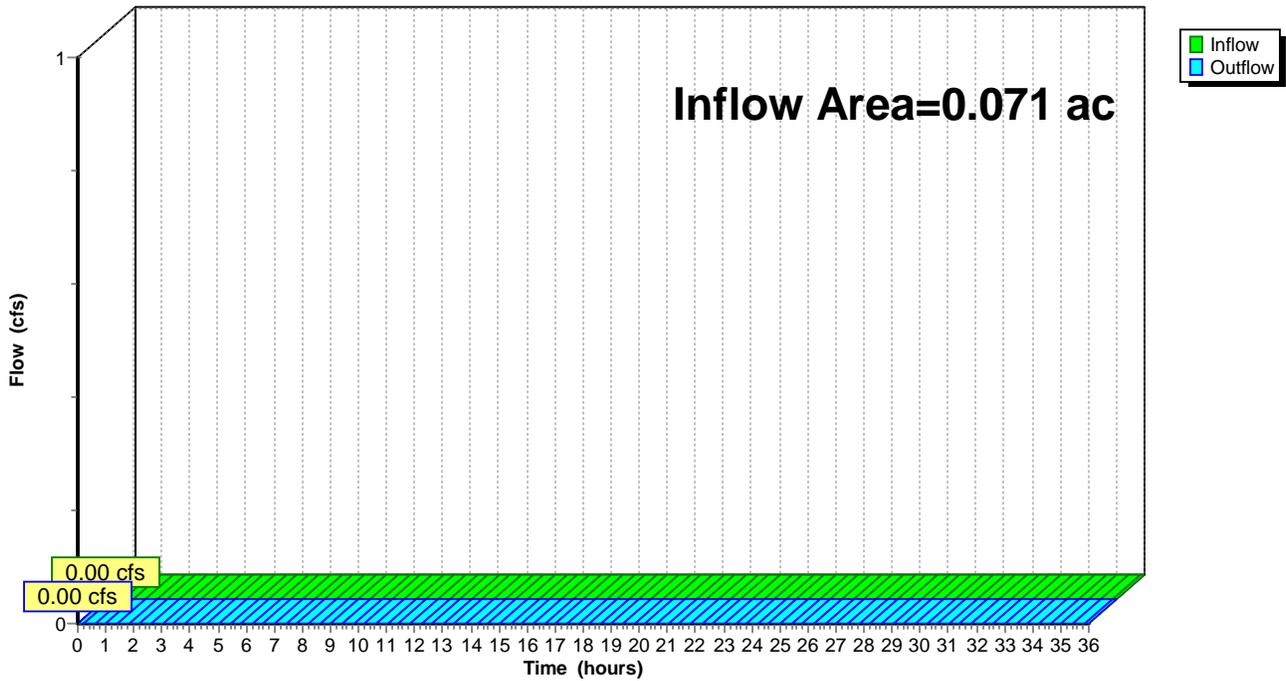
Summary for Reach B: WAP

Inflow Area = 0.071 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach B: WAP

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Rainfall=3.10"

Printed 6/22/2016

Page 18

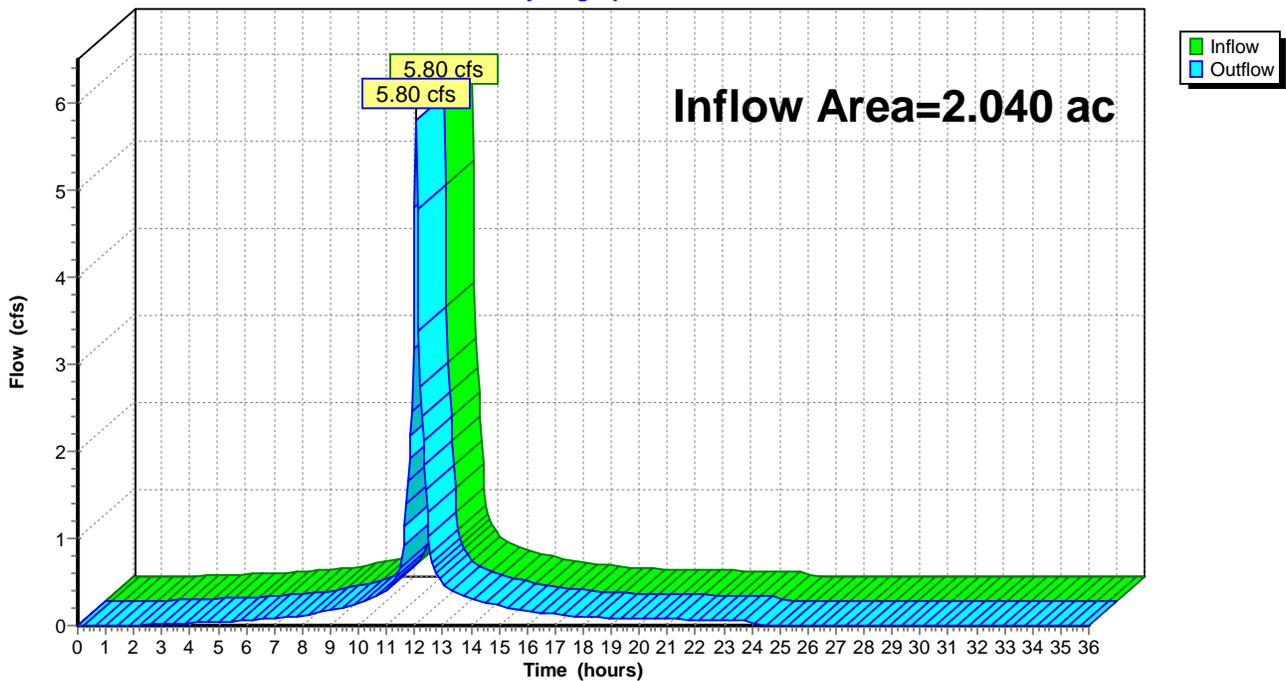
Summary for Reach POND: Pond

Inflow Area = 2.040 ac, 93.58% Impervious, Inflow Depth = 2.64" for 2-Year event
Inflow = 5.80 cfs @ 12.05 hrs, Volume= 0.449 af
Outflow = 5.80 cfs @ 12.05 hrs, Volume= 0.449 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach POND: Pond

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Rainfall=3.10"

Printed 6/22/2016

Page 19

Summary for Pond 1: New CB

Inflow Area = 0.389 ac, 92.29% Impervious, Inflow Depth = 2.35" for 2-Year event
 Inflow = 1.06 cfs @ 12.07 hrs, Volume= 0.076 af
 Outflow = 1.06 cfs @ 12.07 hrs, Volume= 0.076 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.06 cfs @ 12.07 hrs, Volume= 0.076 af

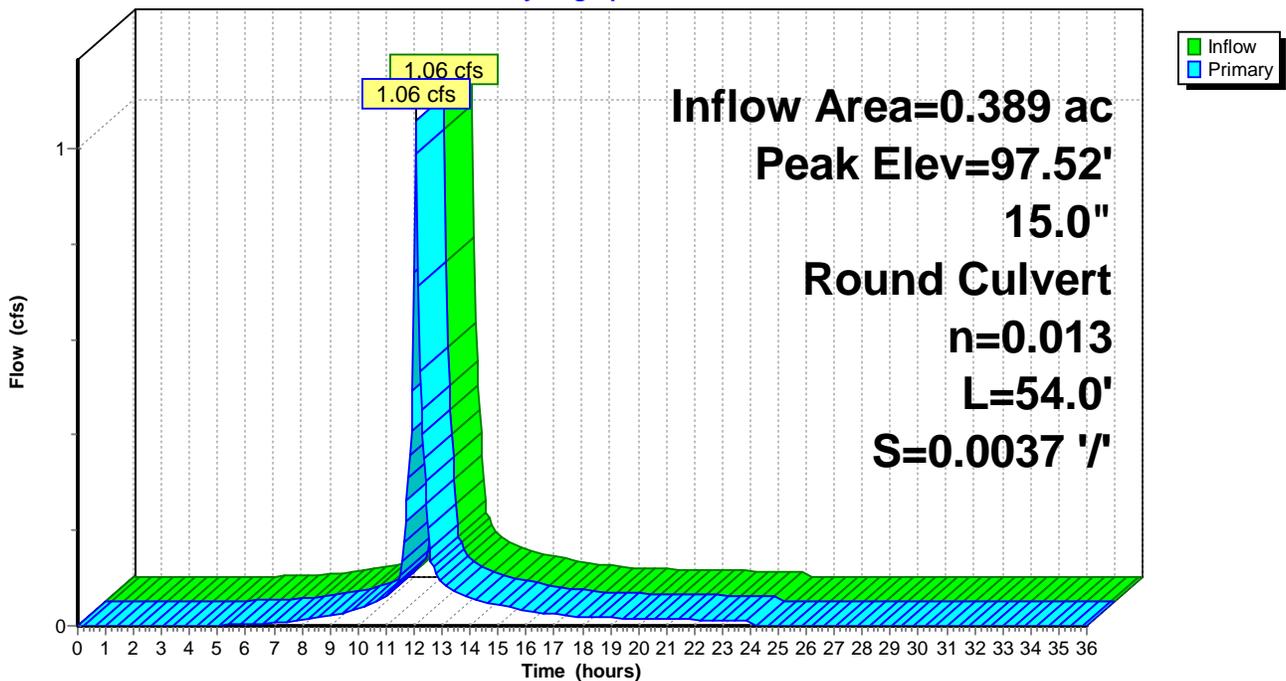
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 97.52' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	96.90'	15.0" Round Culvert L= 54.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 96.90' / 96.70' S= 0.0037 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.02 cfs @ 12.07 hrs HW=97.51' (Free Discharge)
 ↑1=Culvert (Barrel Controls 1.02 cfs @ 2.51 fps)

Pond 1: New CB

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Rainfall=3.10"

Printed 6/22/2016

Page 20

Summary for Pond 2: New CB

Inflow Area = 0.429 ac, 93.01% Impervious, Inflow Depth = 2.40" for 2-Year event
Inflow = 1.16 cfs @ 12.06 hrs, Volume= 0.086 af
Outflow = 1.16 cfs @ 12.06 hrs, Volume= 0.086 af, Atten= 0%, Lag= 0.0 min
Primary = 1.16 cfs @ 12.06 hrs, Volume= 0.086 af

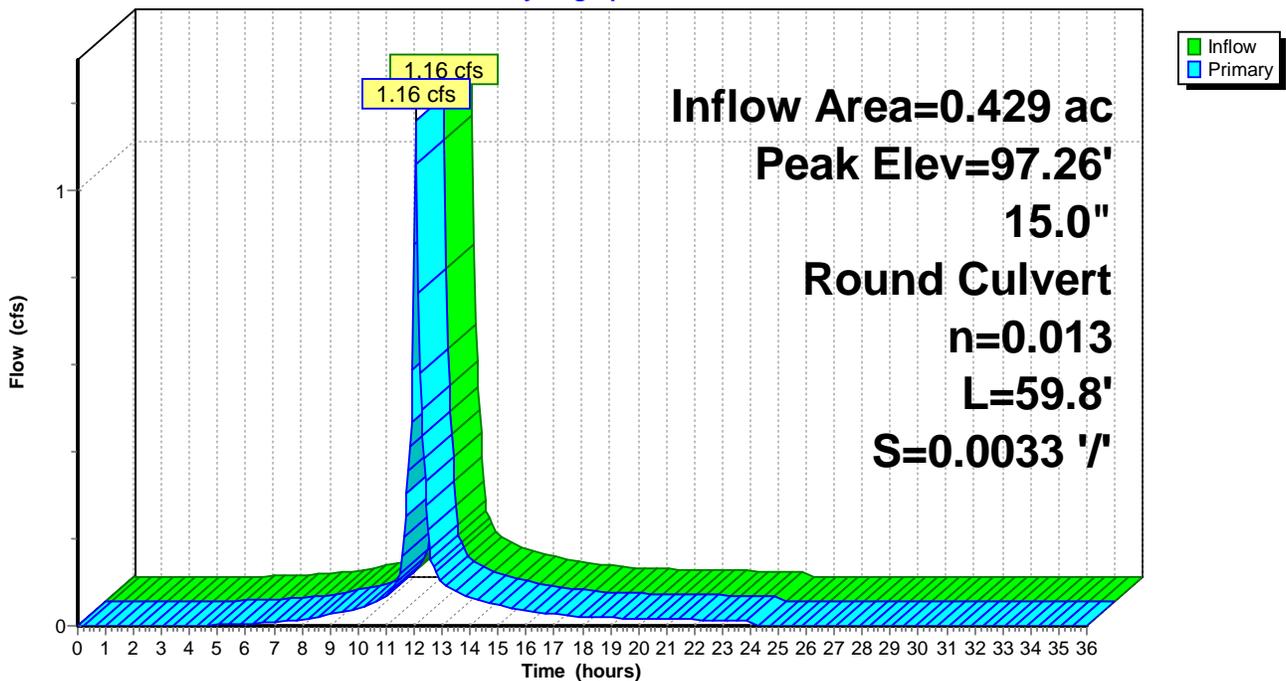
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 97.26' @ 12.06 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	96.60'	15.0" Round CMP_Round 15" L= 59.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 96.60' / 96.40' S= 0.0033 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.13 cfs @ 12.06 hrs HW=97.25' (Free Discharge)
↑1=CMP_Round 15" (Barrel Controls 1.13 cfs @ 2.53 fps)

Pond 2: New CB

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Rainfall=3.10"

Printed 6/22/2016

Page 21

Summary for Pond 3: New CB

Inflow Area = 0.499 ac, 93.99% Impervious, Inflow Depth = 2.46" for 2-Year event
Inflow = 1.34 cfs @ 12.05 hrs, Volume= 0.102 af
Outflow = 1.34 cfs @ 12.05 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min
Primary = 1.34 cfs @ 12.05 hrs, Volume= 0.102 af

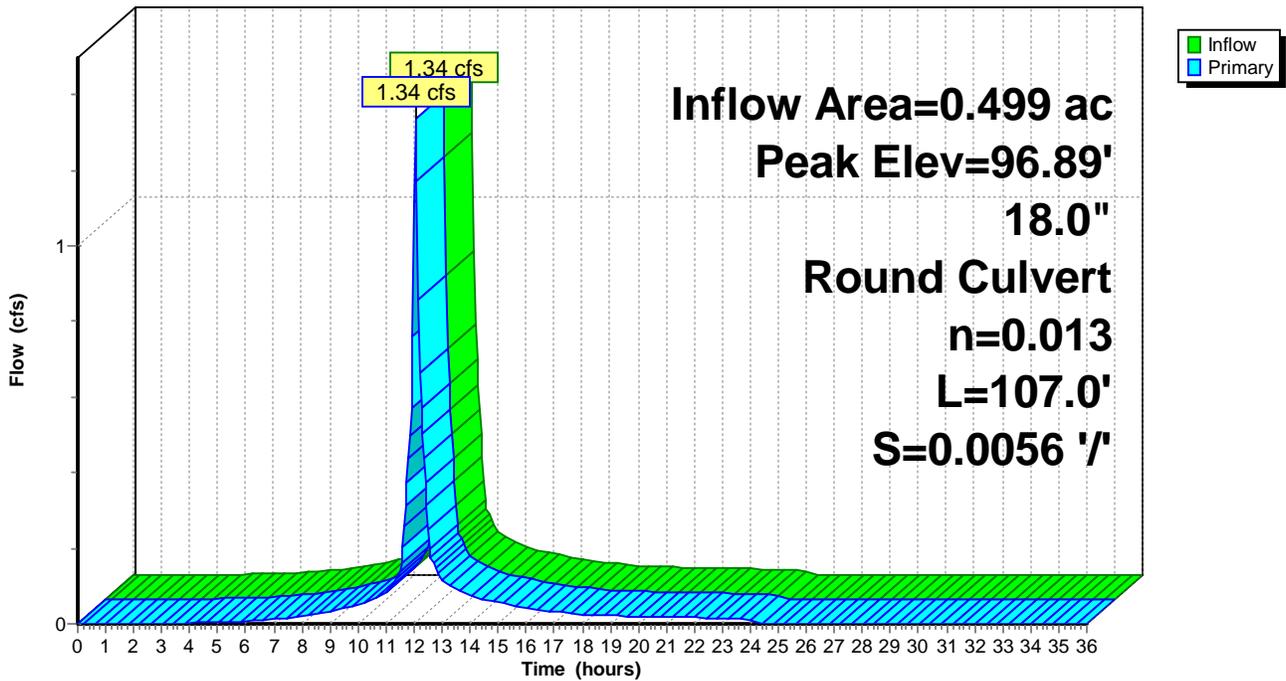
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 96.89' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	96.30'	18.0" Round Culvert L= 107.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 96.30' / 95.70' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.32 cfs @ 12.05 hrs HW=96.89' (Free Discharge)
↑**1=Culvert** (Barrel Controls 1.32 cfs @ 3.04 fps)

Pond 3: New CB

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Rainfall=3.10"

Printed 6/22/2016

Page 22

Summary for Pond 4: New CB 3

Inflow Area = 1.209 ac, 97.52% Impervious, Inflow Depth = 2.70" for 2-Year event
 Inflow = 3.64 cfs @ 12.05 hrs, Volume= 0.272 af
 Outflow = 3.64 cfs @ 12.05 hrs, Volume= 0.272 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.64 cfs @ 12.05 hrs, Volume= 0.272 af

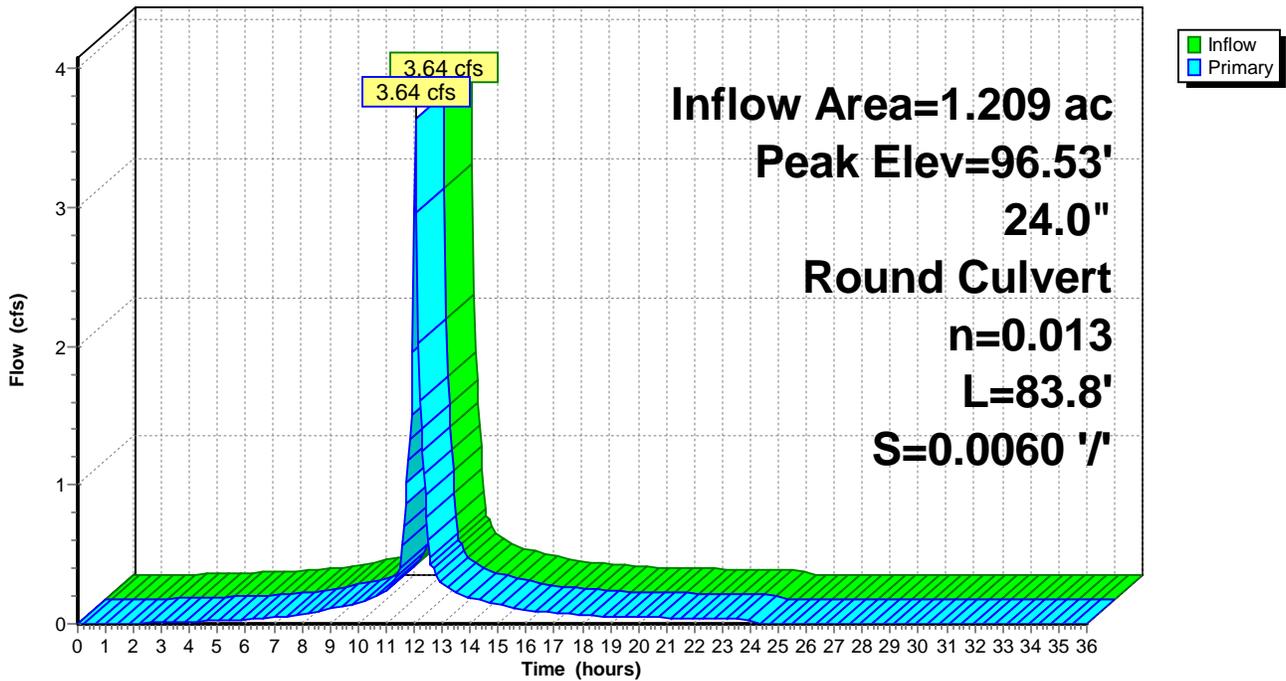
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 96.53' @ 12.05 hrs

Device #1	Routing	Invert	Outlet Devices
	Primary	95.60'	24.0" Round Culvert L= 83.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.60' / 95.10' S= 0.0060 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.63 cfs @ 12.05 hrs HW=96.53' (Free Discharge)
 ↑1=Culvert (Barrel Controls 3.63 cfs @ 3.74 fps)

Pond 4: New CB 3

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Rainfall=3.10"

Printed 6/22/2016

Page 23

Summary for Pond 5: Previously CB 4

Inflow Area = 1.969 ac, 96.95% Impervious, Inflow Depth = 2.74" for 2-Year event
 Inflow = 5.80 cfs @ 12.05 hrs, Volume= 0.449 af
 Outflow = 5.80 cfs @ 12.05 hrs, Volume= 0.449 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.80 cfs @ 12.05 hrs, Volume= 0.449 af

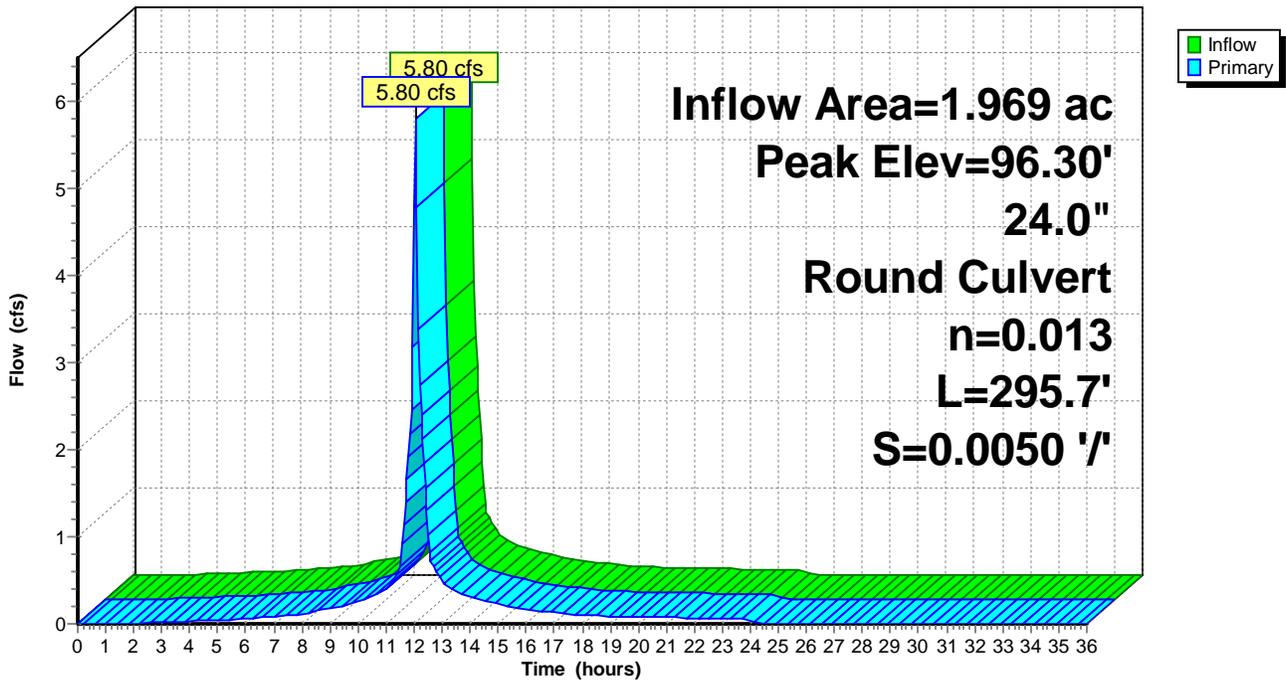
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 96.30' @ 12.05 hrs

Device #1	Routing	Invert	Outlet Devices
	Primary	95.10'	24.0" Round Culvert L= 295.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.10' / 93.62' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=5.79 cfs @ 12.05 hrs HW=96.30' (Free Discharge)
 ↑ **1=Culvert** (Inlet Controls 5.79 cfs @ 2.94 fps)

Pond 5: Previously CB 4

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Rainfall=3.10"

Printed 6/22/2016

Page 24

Summary for Pond 6: Roof Drip Strip

Inflow Area = 0.240 ac, 95.83% Impervious, Inflow Depth = 2.65" for 2-Year event
 Inflow = 0.79 cfs @ 12.01 hrs, Volume= 0.053 af
 Outflow = 0.51 cfs @ 12.08 hrs, Volume= 0.053 af, Atten= 35%, Lag= 4.4 min
 Primary = 0.51 cfs @ 12.08 hrs, Volume= 0.053 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 99.05' @ 12.08 hrs Surf.Area= 0.021 ac Storage= 0.006 af

Plug-Flow detention time= 18.9 min calculated for 0.053 af (100% of inflow)
 Center-of-Mass det. time= 19.3 min (789.1 - 769.9)

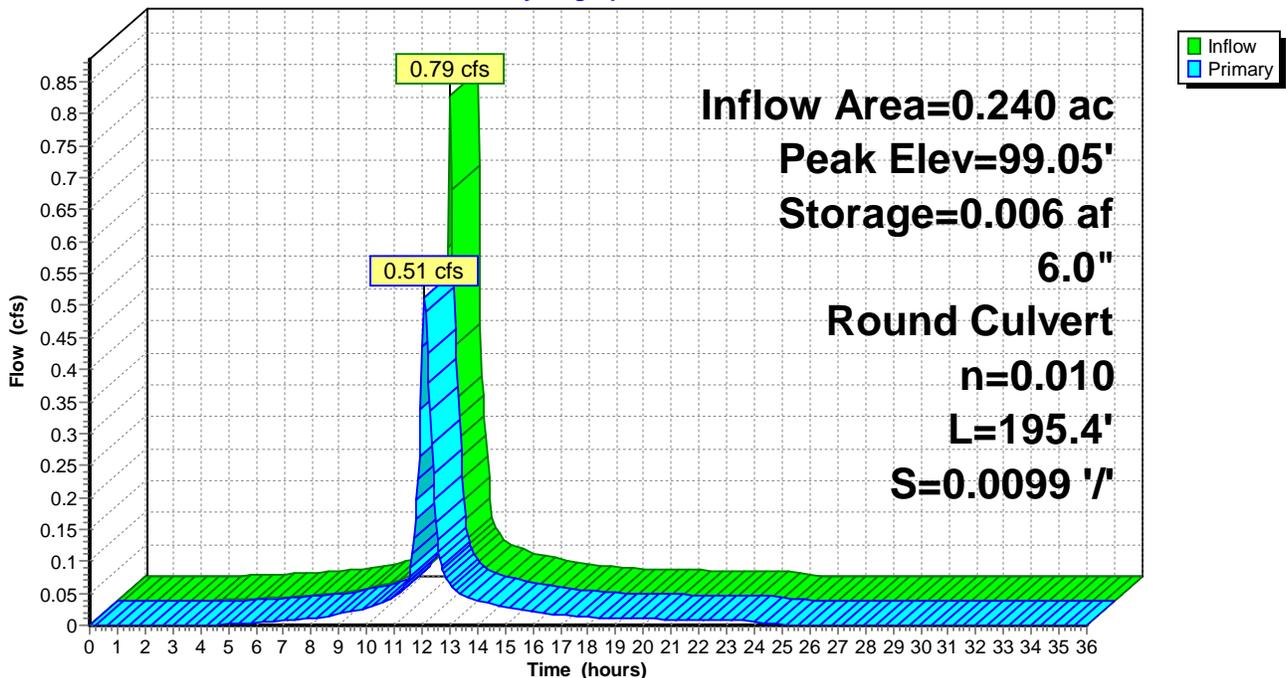
Volume	Invert	Avail.Storage	Storage Description
#1	98.33'	0.013 af	5.00'W x 183.19'L x 1.50'H Prismatic 0.032 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	98.33'	6.0" Round Culvert L= 195.4' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 98.33' / 96.40' S= 0.0099 1/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.51 cfs @ 12.08 hrs HW=99.04' (Free Discharge)
 ←1=Culvert (Inlet Controls 0.51 cfs @ 2.59 fps)

Pond 6: Roof Drip Strip

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Rainfall=3.10"

Printed 6/22/2016

Page 25

Summary for Pond 7: New CB

Inflow Area = 0.280 ac, 96.43% Impervious, Inflow Depth = 2.68" for 2-Year event
Inflow = 0.61 cfs @ 12.05 hrs, Volume= 0.063 af
Outflow = 0.61 cfs @ 12.05 hrs, Volume= 0.063 af, Atten= 0%, Lag= 0.0 min
Primary = 0.61 cfs @ 12.05 hrs, Volume= 0.063 af

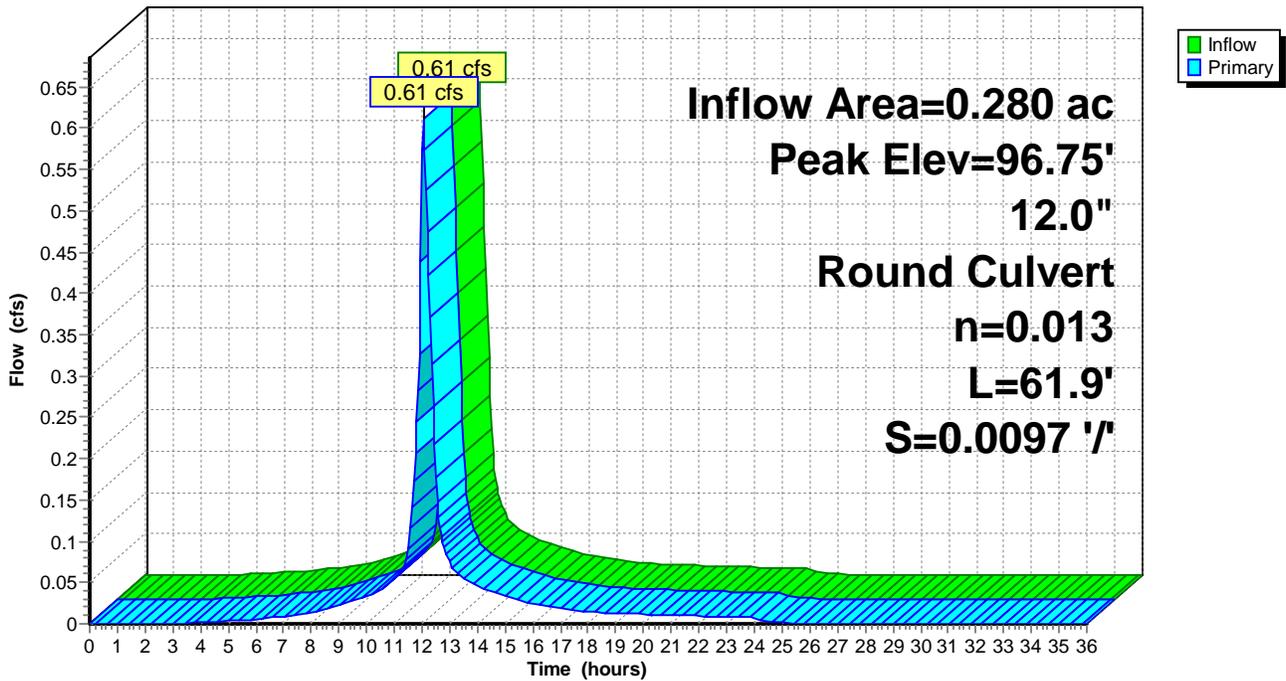
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 96.75' @ 12.05 hrs

Device #1	Routing	Invert	Outlet Devices
	Primary	96.30'	12.0" Round CMP_Round 12" L= 61.9' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 96.30' / 95.70' S= 0.0097 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.61 cfs @ 12.05 hrs HW=96.75' (Free Discharge)
↑1=CMP_Round 12" (Inlet Controls 0.61 cfs @ 1.80 fps)

Pond 7: New CB

Hydrograph



Post-Development

Type III 24-hr 10-Year Rainfall=4.60"

Prepared by Main-Land Development Consultants, Inc

Printed 6/22/2016

HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Page 26

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 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 S201: Warehouse Entrance Runoff Area=0.389 ac 92.29% Impervious Runoff Depth=3.81"
Flow Length=136' Tc=4.7 min CN=93 Runoff=1.67 cfs 0.123 af

Subcatchment S202: Warehouse and Retail Runoff Area=0.040 ac 100.00% Impervious Runoff Depth=4.36"
Flow Length=46' Slope=0.0300 '/' Tc=0.6 min CN=98 Runoff=0.20 cfs 0.015 af

Subcatchment S203: Warehouse and Retail Runoff Area=0.070 ac 100.00% Impervious Runoff Depth=4.36"
Flow Length=25' Slope=0.0400 '/' Tc=0.3 min CN=98 Runoff=0.36 cfs 0.025 af

Subcatchment S204: Backside of Retail Runoff Area=0.710 ac 100.00% Impervious Runoff Depth=4.36"
Flow Length=237' Tc=3.1 min CN=98 Runoff=3.44 cfs 0.258 af

Subcatchment S205: Open Storage Area Runoff Area=0.480 ac 95.83% Impervious Runoff Depth=4.36"
Flow Length=330' Tc=3.4 min CN=98 Runoff=2.31 cfs 0.175 af

Subcatchment S206: New Warehouse Runoff Area=0.240 ac 95.83% Impervious Runoff Depth=4.14"
Flow Length=58' Slope=0.0800 '/' Tc=0.5 min CN=96 Runoff=1.20 cfs 0.083 af

Subcatchment S207: Warehouse Northwest Runoff Area=0.040 ac 100.00% Impervious Runoff Depth=4.36"
Flow Length=13' Slope=0.0800 '/' Tc=0.1 min CN=98 Runoff=0.21 cfs 0.015 af

Subcatchment S208: New Lawn North of Runoff Area=0.071 ac 0.00% Impervious Runoff Depth=0.13"
Flow Length=14' Slope=0.0100 '/' Tc=2.7 min CN=39 Runoff=0.00 cfs 0.001 af

Reach A: WAP Inflow=8.69 cfs 0.693 af
Outflow=8.69 cfs 0.693 af

Reach B: WAP Inflow=0.00 cfs 0.001 af
Outflow=0.00 cfs 0.001 af

Reach POND: Pond Inflow=8.69 cfs 0.694 af
Outflow=8.69 cfs 0.694 af

Pond 1: New CB Peak Elev=97.71' Inflow=1.67 cfs 0.123 af
15.0" Round Culvert n=0.013 L=54.0' S=0.0037 '/' Outflow=1.67 cfs 0.123 af

Pond 2: New CB Peak Elev=97.46' Inflow=1.82 cfs 0.138 af
15.0" Round Culvert n=0.013 L=59.8' S=0.0033 '/' Outflow=1.82 cfs 0.138 af

Pond 3: New CB Peak Elev=97.06' Inflow=2.09 cfs 0.163 af
18.0" Round Culvert n=0.013 L=107.0' S=0.0056 '/' Outflow=2.09 cfs 0.163 af

Pond 4: New CB 3 Peak Elev=96.79' Inflow=5.53 cfs 0.422 af
24.0" Round Culvert n=0.013 L=83.8' S=0.0060 '/' Outflow=5.53 cfs 0.422 af

Pond 5: Previously CB 4 Peak Elev=96.64' Inflow=8.69 cfs 0.693 af
24.0" Round Culvert n=0.013 L=295.7' S=0.0050 '/' Outflow=8.69 cfs 0.693 af

Post-Development

Prepared by Main-Land Development Consultants, Inc

HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 27

Pond 6: Roof Drip Strip

Peak Elev=99.48' Storage=0.010 af Inflow=1.20 cfs 0.083 af
6.0" Round Culvert n=0.010 L=195.4' S=0.0099 '/ Outflow=0.71 cfs 0.083 af

Pond 7: New CB

Peak Elev=96.84' Inflow=0.85 cfs 0.097 af
12.0" Round Culvert n=0.013 L=61.9' S=0.0097 '/ Outflow=0.85 cfs 0.097 af

Total Runoff Area = 2.040 ac Runoff Volume = 0.694 af Average Runoff Depth = 4.08"
6.42% Pervious = 0.131 ac 93.58% Impervious = 1.909 ac

Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 28

Summary for Subcatchment S201: Warehouse Entrance

Runoff = 1.67 cfs @ 12.07 hrs, Volume= 0.123 af, Depth= 3.81"

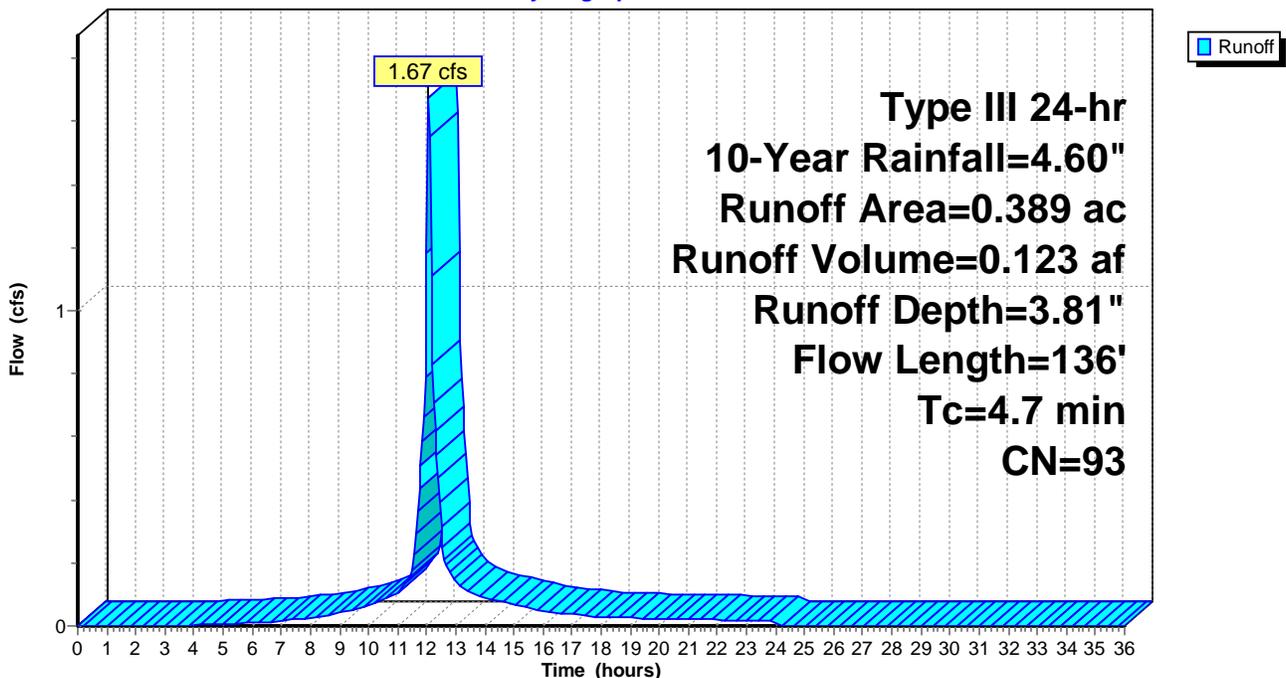
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Year Rainfall=4.60"

Area (ac)	CN	Description
0.310	98	Paved parking, HSG A
0.049	98	Roofs, HSG A
0.030	39	>75% Grass cover, Good, HSG A
0.389	93	Weighted Average
0.030		7.71% Pervious Area
0.359		92.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	14	0.0060	0.07		Sheet Flow, Grass: Short n= 0.150 P2= 3.10"
1.4	122	0.0200	1.41		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
4.7	136	Total			

Subcatchment S201: Warehouse Entrance

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 29

Summary for Subcatchment S202: Warehouse and Retail Corner

Runoff = 0.20 cfs @ 12.01 hrs, Volume= 0.015 af, Depth= 4.36"

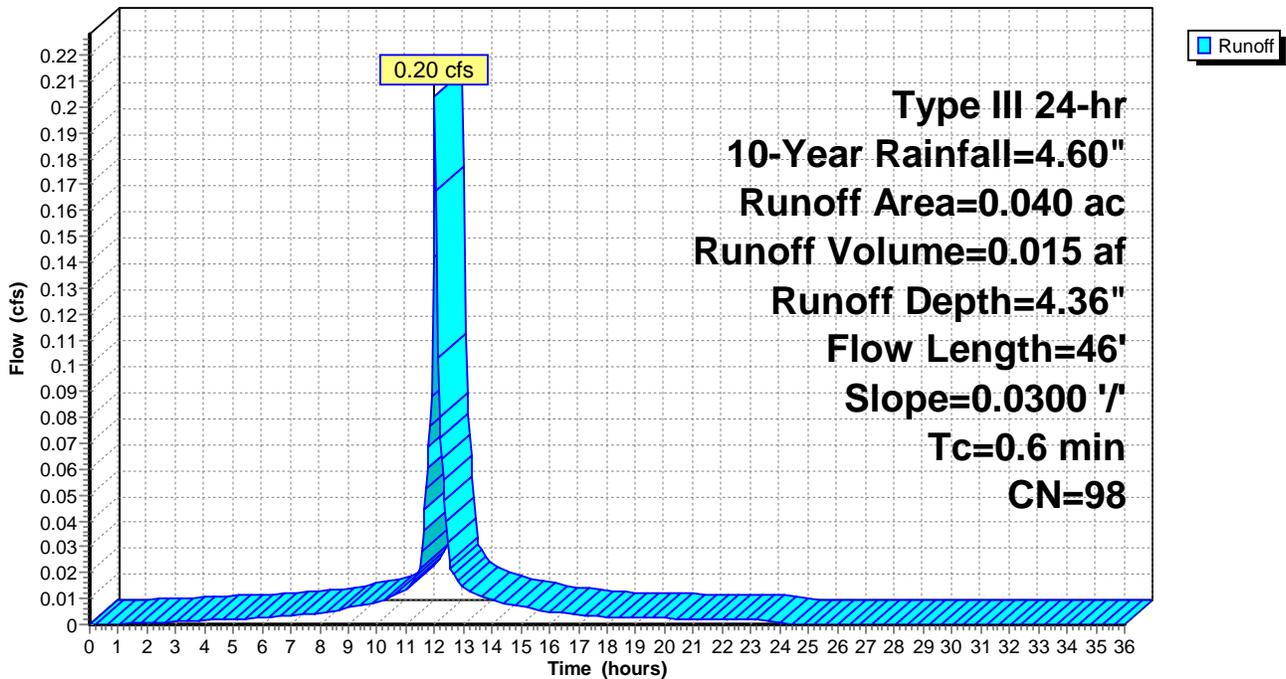
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (ac)	CN	Description
0.040	98	Paved parking, HSG A
0.040		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	46	0.0300	1.36		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"

Subcatchment S202: Warehouse and Retail Corner

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 30

Summary for Subcatchment S203: Warehouse and Retail Side

Runoff = 0.36 cfs @ 12.00 hrs, Volume= 0.025 af, Depth= 4.36"

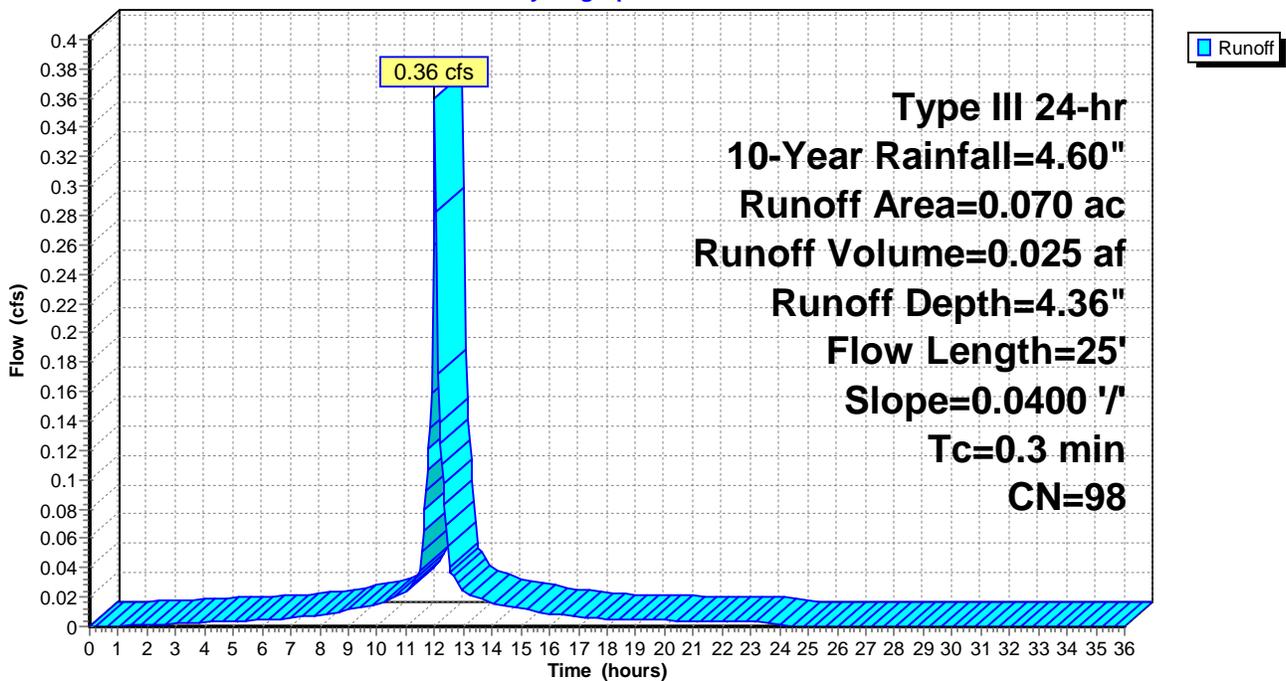
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Year Rainfall=4.60"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG A
0.070		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	25	0.0400	1.35		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"

Subcatchment S203: Warehouse and Retail Side

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 31

Summary for Subcatchment S204: Backside of Retail

Runoff = 3.44 cfs @ 12.05 hrs, Volume= 0.258 af, Depth= 4.36"

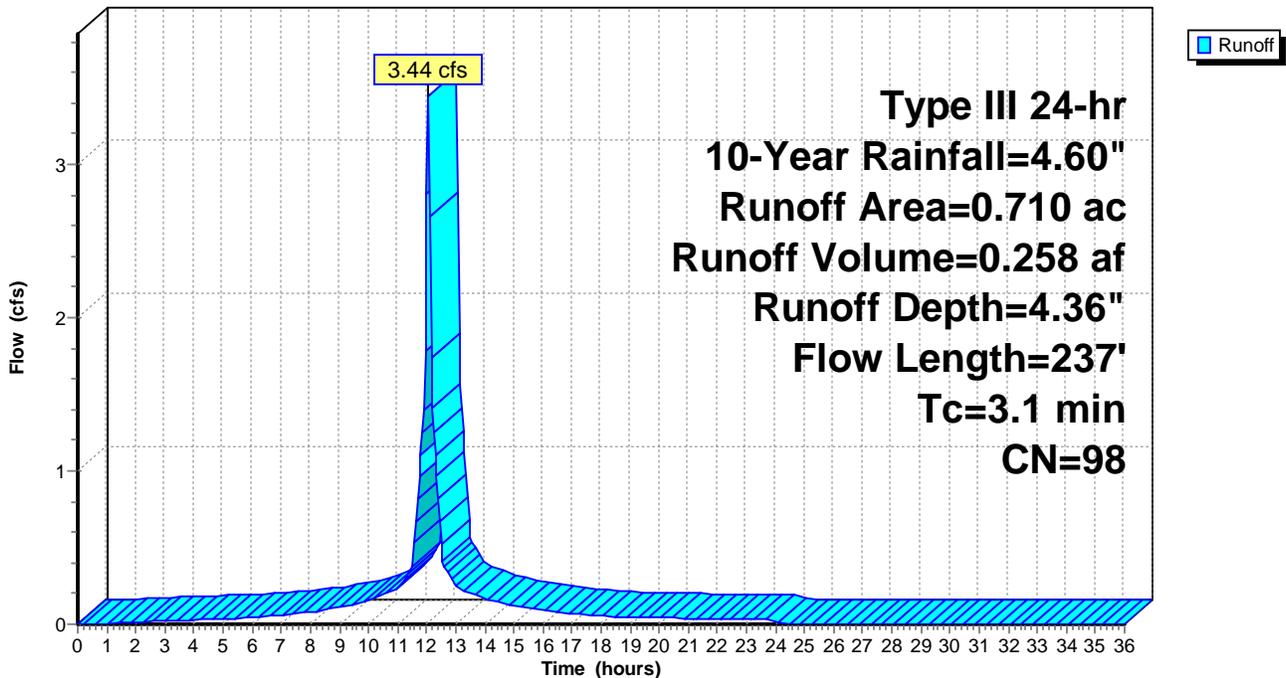
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Year Rainfall=4.60"

Area (ac)	CN	Description
0.460	98	Paved parking, HSG A
0.250	98	Roofs, HSG A
0.710	98	Weighted Average
0.710		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	150	0.0067	0.95		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
0.5	87	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
3.1	237	Total			

Subcatchment S204: Backside of Retail

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 32

Summary for Subcatchment S205: Open Storage Area

Runoff = 2.31 cfs @ 12.05 hrs, Volume= 0.175 af, Depth= 4.36"

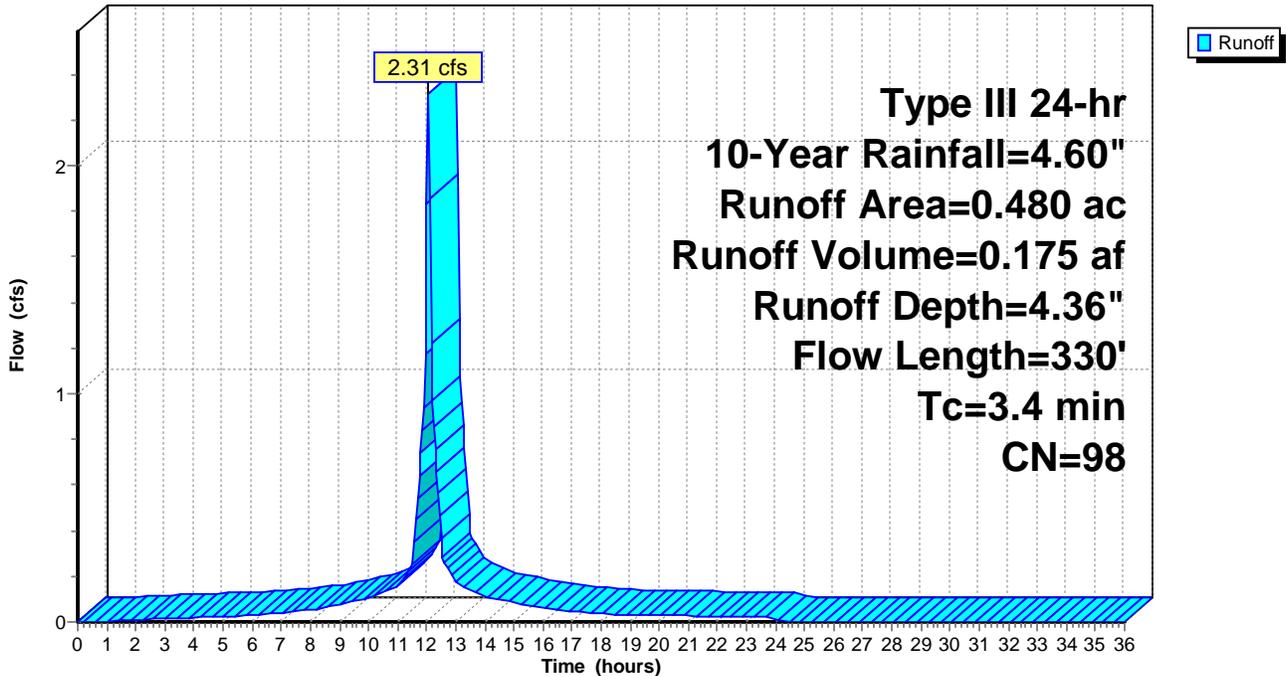
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Year Rainfall=4.60"

Area (ac)	CN	Description
0.350	98	Paved parking, HSG A
0.110	98	Roofs, HSG C
0.020	96	Gravel surface, HSG A
0.480	98	Weighted Average
0.020		4.17% Pervious Area
0.460		95.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	150	0.0167	1.37		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
1.6	180	0.0083	1.85		Shallow Concentrated Flow, Paved Kv= 20.3 fps
3.4	330	Total			

Subcatchment S205: Open Storage Area

Hydrograph



Post-Development

Summary for Subcatchment S206: New Warehouse

Runoff = 1.20 cfs @ 12.01 hrs, Volume= 0.083 af, Depth= 4.14"

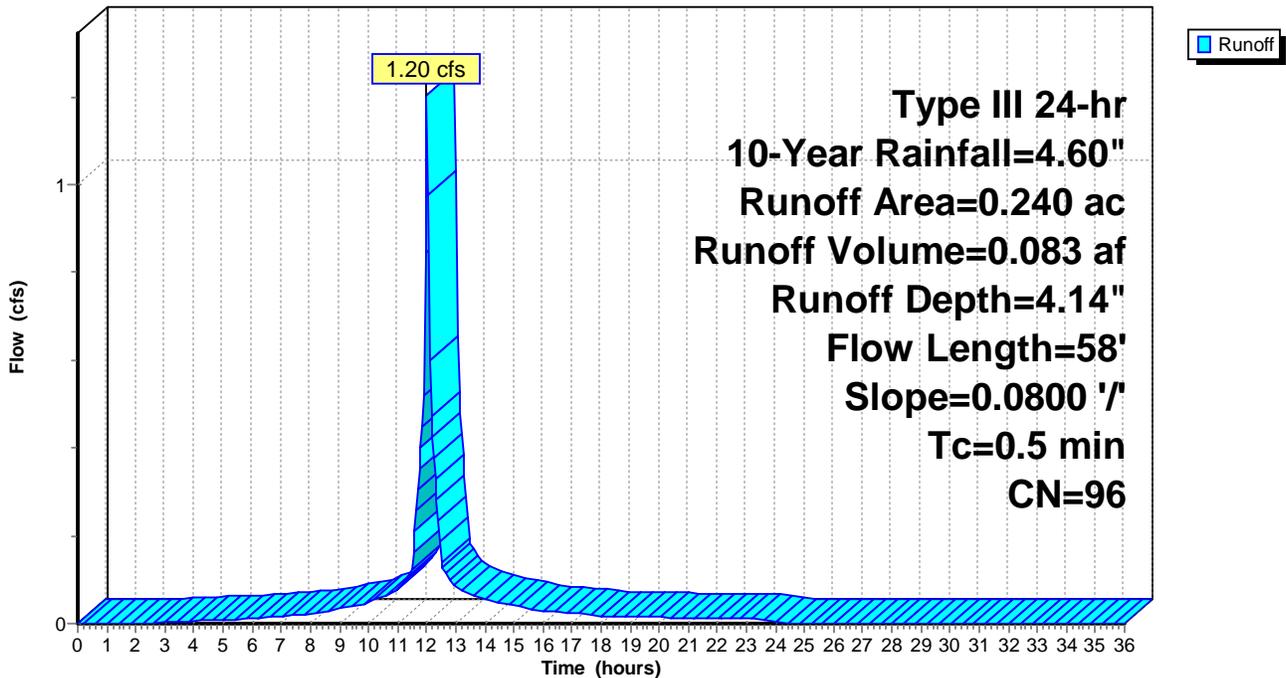
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Year Rainfall=4.60"

Area (ac)	CN	Description
0.230	98	Roofs, HSG A
* 0.010	40	Roof Drip Line Filter
0.240	96	Weighted Average
0.010		4.17% Pervious Area
0.230		95.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	58	0.0800	2.11		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"

Subcatchment S206: New Warehouse

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 34

Summary for Subcatchment S207: Warehouse Northwest

Runoff = 0.21 cfs @ 12.00 hrs, Volume= 0.015 af, Depth= 4.36"

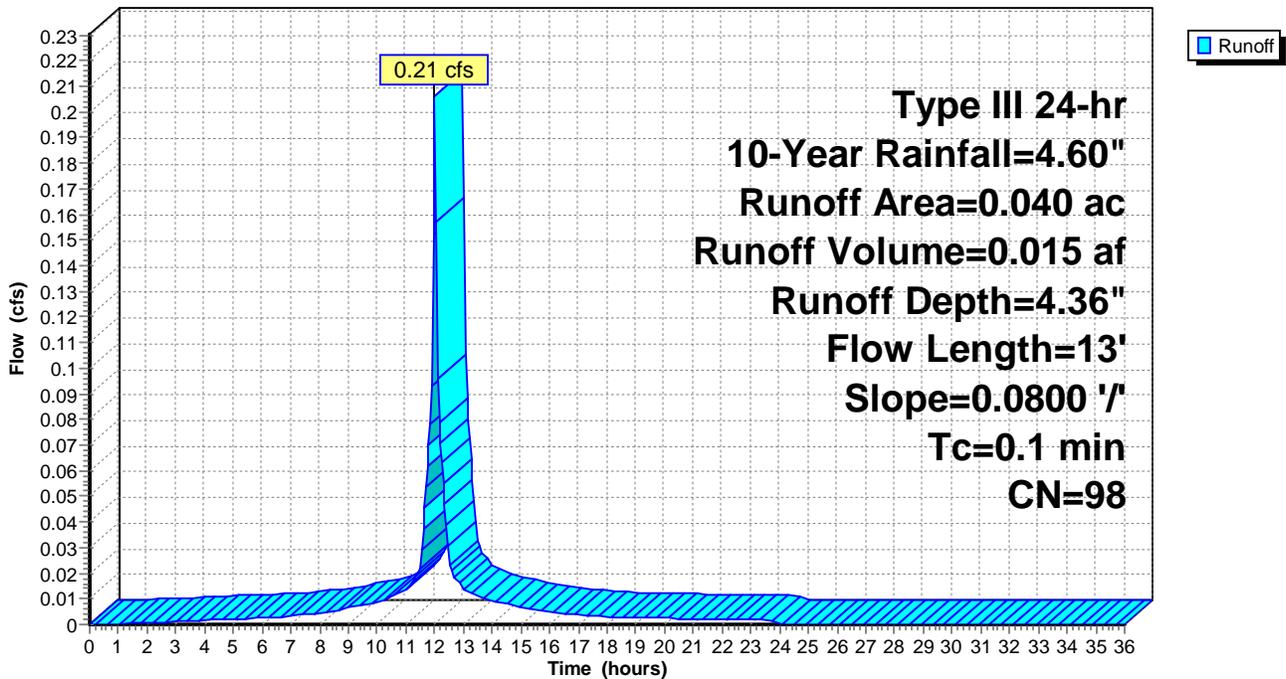
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Year Rainfall=4.60"

Area (ac)	CN	Description
0.040	98	Paved parking, HSG A
0.040		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	13	0.0800	1.57		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"

Subcatchment S207: Warehouse Northwest

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 36

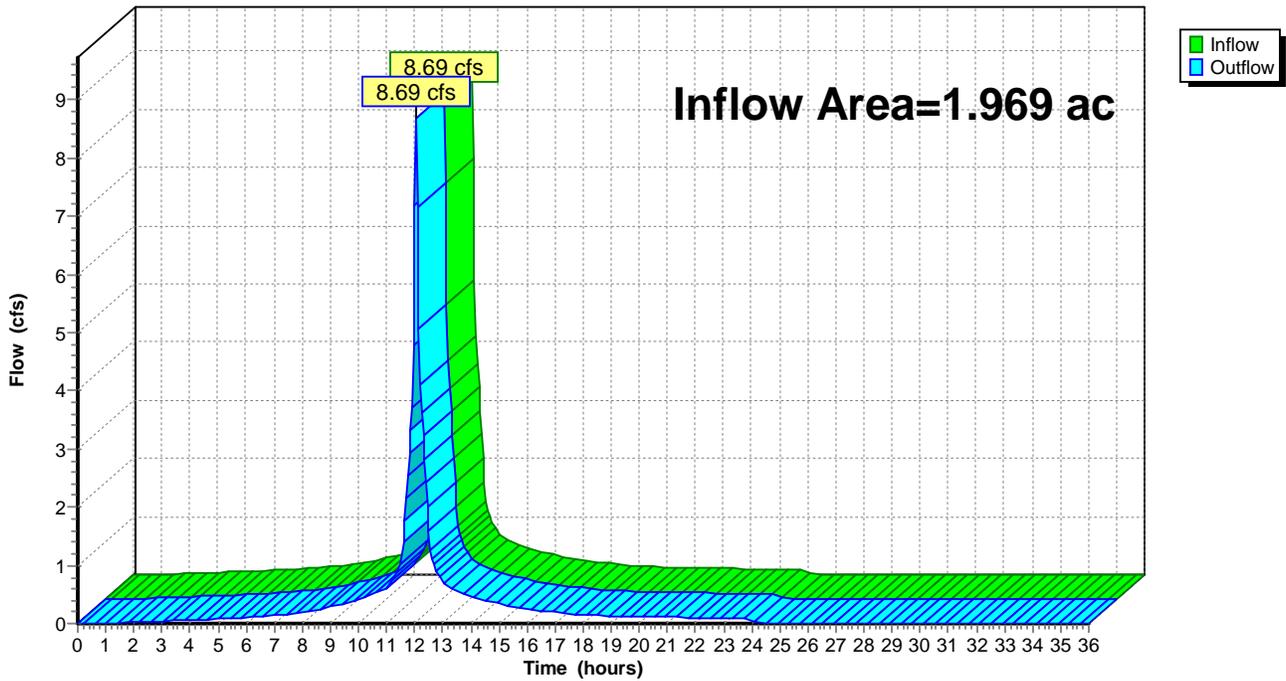
Summary for Reach A: WAP

Inflow Area = 1.969 ac, 96.95% Impervious, Inflow Depth = 4.23" for 10-Year event
Inflow = 8.69 cfs @ 12.05 hrs, Volume= 0.693 af
Outflow = 8.69 cfs @ 12.05 hrs, Volume= 0.693 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach A: WAP

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 37

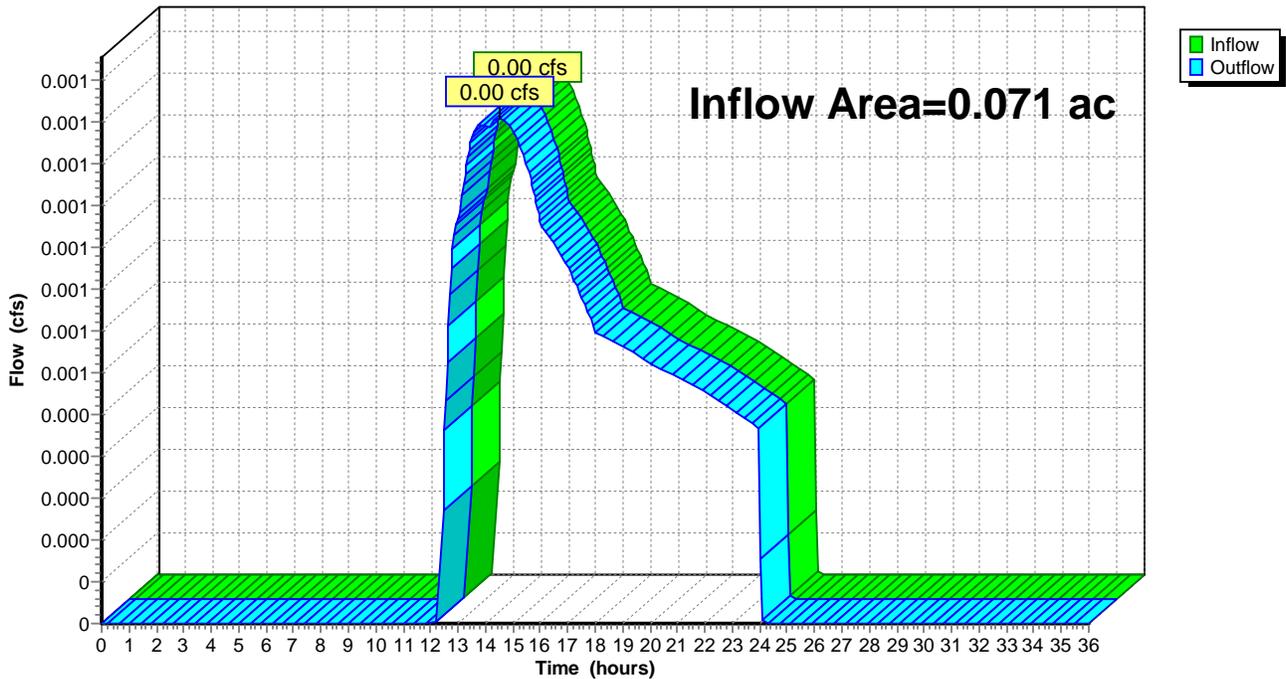
Summary for Reach B: WAP

Inflow Area = 0.071 ac, 0.00% Impervious, Inflow Depth = 0.13" for 10-Year event
Inflow = 0.00 cfs @ 14.52 hrs, Volume= 0.001 af
Outflow = 0.00 cfs @ 14.52 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach B: WAP

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 38

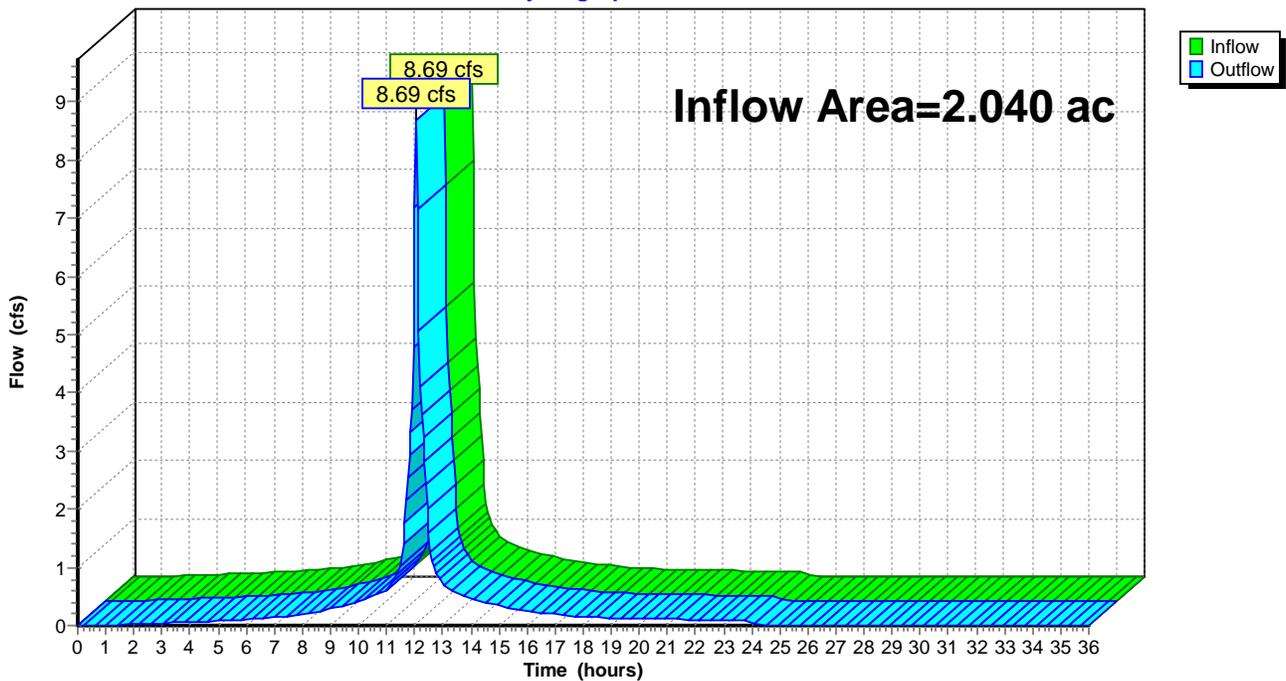
Summary for Reach POND: Pond

Inflow Area = 2.040 ac, 93.58% Impervious, Inflow Depth = 4.08" for 10-Year event
Inflow = 8.69 cfs @ 12.05 hrs, Volume= 0.694 af
Outflow = 8.69 cfs @ 12.05 hrs, Volume= 0.694 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach POND: Pond

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 39

Summary for Pond 1: New CB

Inflow Area = 0.389 ac, 92.29% Impervious, Inflow Depth = 3.81" for 10-Year event
 Inflow = 1.67 cfs @ 12.07 hrs, Volume= 0.123 af
 Outflow = 1.67 cfs @ 12.07 hrs, Volume= 0.123 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.67 cfs @ 12.07 hrs, Volume= 0.123 af

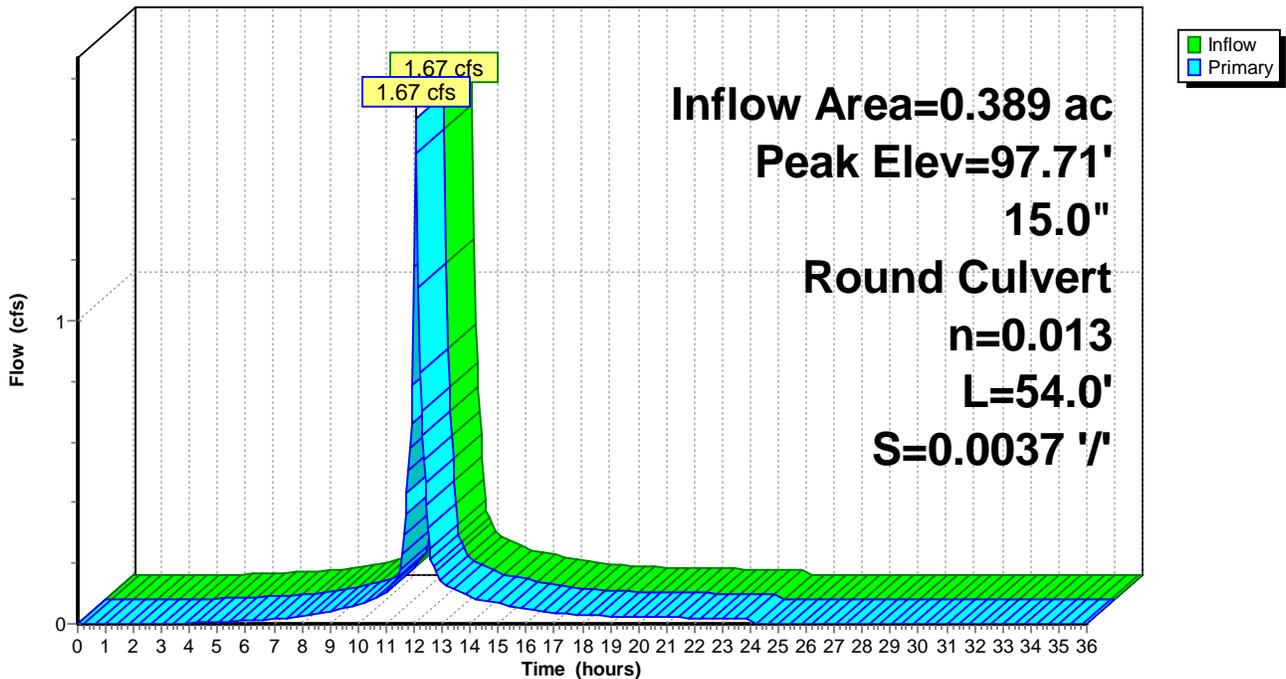
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 97.71' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	96.90'	15.0" Round Culvert L= 54.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 96.90' / 96.70' S= 0.0037 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.61 cfs @ 12.07 hrs HW=97.69' (Free Discharge)
 ↑1=Culvert (Barrel Controls 1.61 cfs @ 2.82 fps)

Pond 1: New CB

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 40

Summary for Pond 2: New CB

Inflow Area = 0.429 ac, 93.01% Impervious, Inflow Depth = 3.86" for 10-Year event
Inflow = 1.82 cfs @ 12.06 hrs, Volume= 0.138 af
Outflow = 1.82 cfs @ 12.06 hrs, Volume= 0.138 af, Atten= 0%, Lag= 0.0 min
Primary = 1.82 cfs @ 12.06 hrs, Volume= 0.138 af

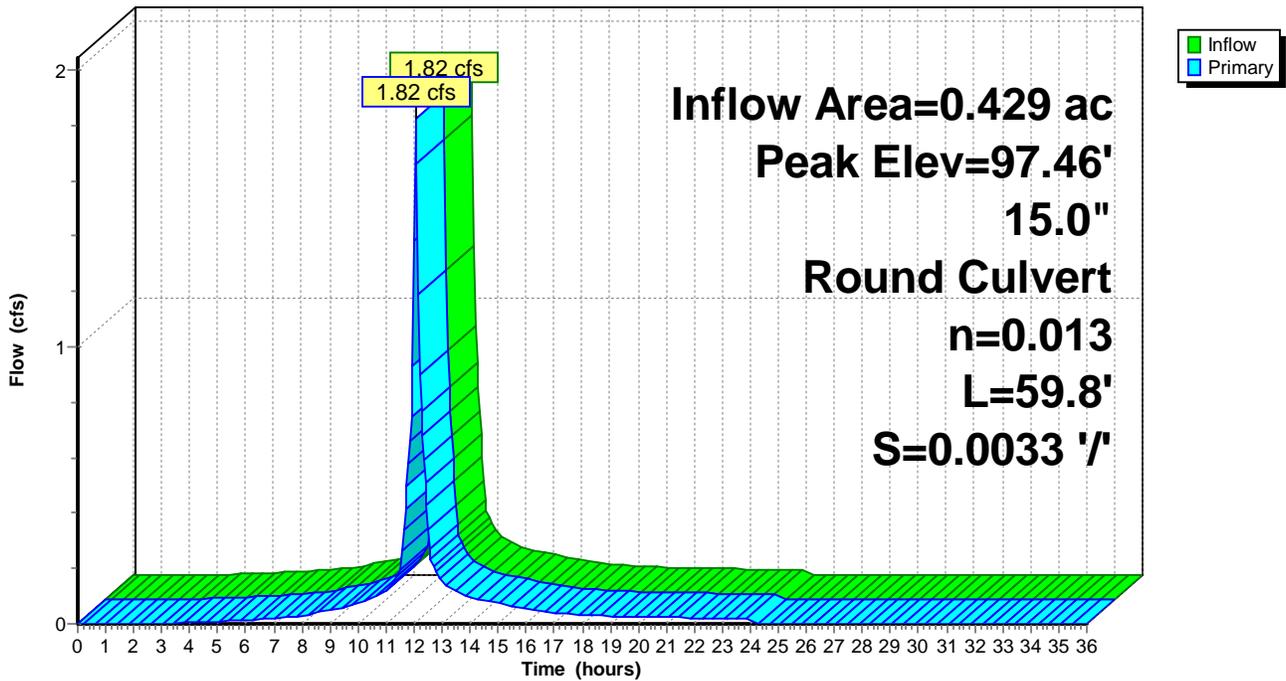
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 97.46' @ 12.06 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	96.60'	15.0" Round CMP_Round 15" L= 59.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 96.60' / 96.40' S= 0.0033 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.77 cfs @ 12.06 hrs HW=97.44' (Free Discharge)
↑1=CMP_Round 15" (Barrel Controls 1.77 cfs @ 2.84 fps)

Pond 2: New CB

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 41

Summary for Pond 3: New CB

Inflow Area = 0.499 ac, 93.99% Impervious, Inflow Depth = 3.93" for 10-Year event
Inflow = 2.09 cfs @ 12.05 hrs, Volume= 0.163 af
Outflow = 2.09 cfs @ 12.05 hrs, Volume= 0.163 af, Atten= 0%, Lag= 0.0 min
Primary = 2.09 cfs @ 12.05 hrs, Volume= 0.163 af

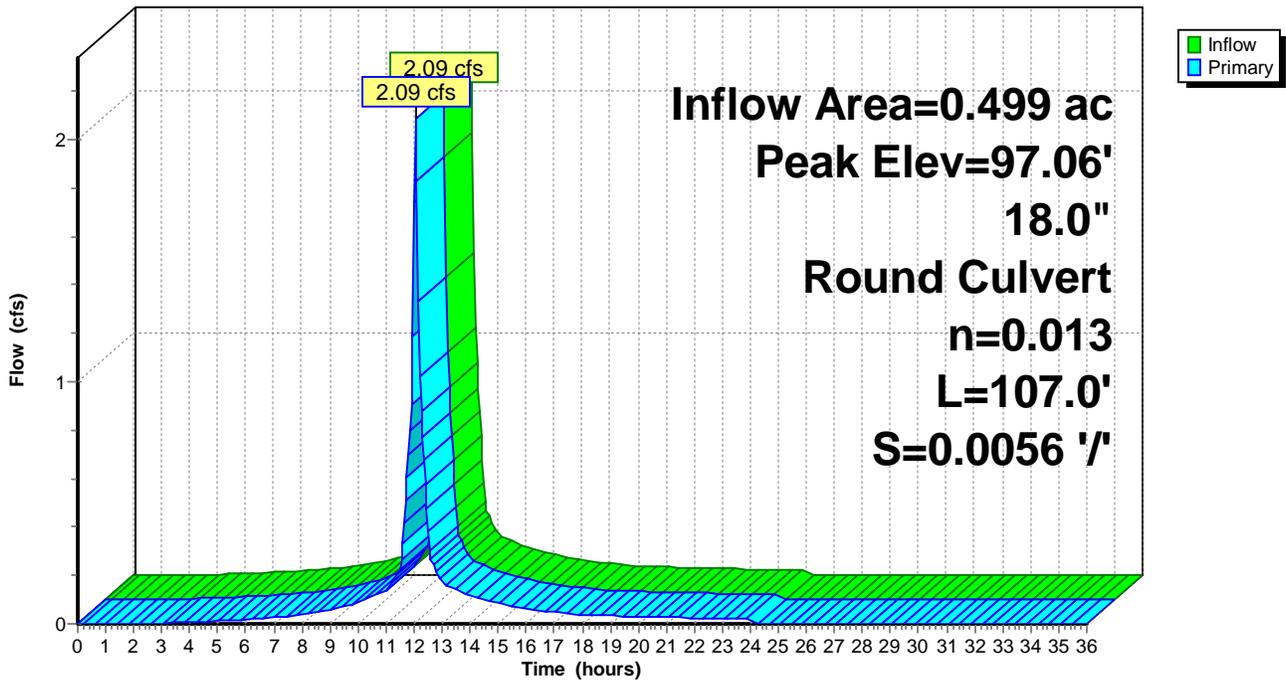
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 97.06' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	96.30'	18.0" Round Culvert L= 107.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 96.30' / 95.70' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.07 cfs @ 12.05 hrs HW=97.06' (Free Discharge)
↑1=Culvert (Barrel Controls 2.07 cfs @ 3.38 fps)

Pond 3: New CB

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 42

Summary for Pond 4: New CB 3

Inflow Area = 1.209 ac, 97.52% Impervious, Inflow Depth = 4.18" for 10-Year event
 Inflow = 5.53 cfs @ 12.05 hrs, Volume= 0.422 af
 Outflow = 5.53 cfs @ 12.05 hrs, Volume= 0.422 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.53 cfs @ 12.05 hrs, Volume= 0.422 af

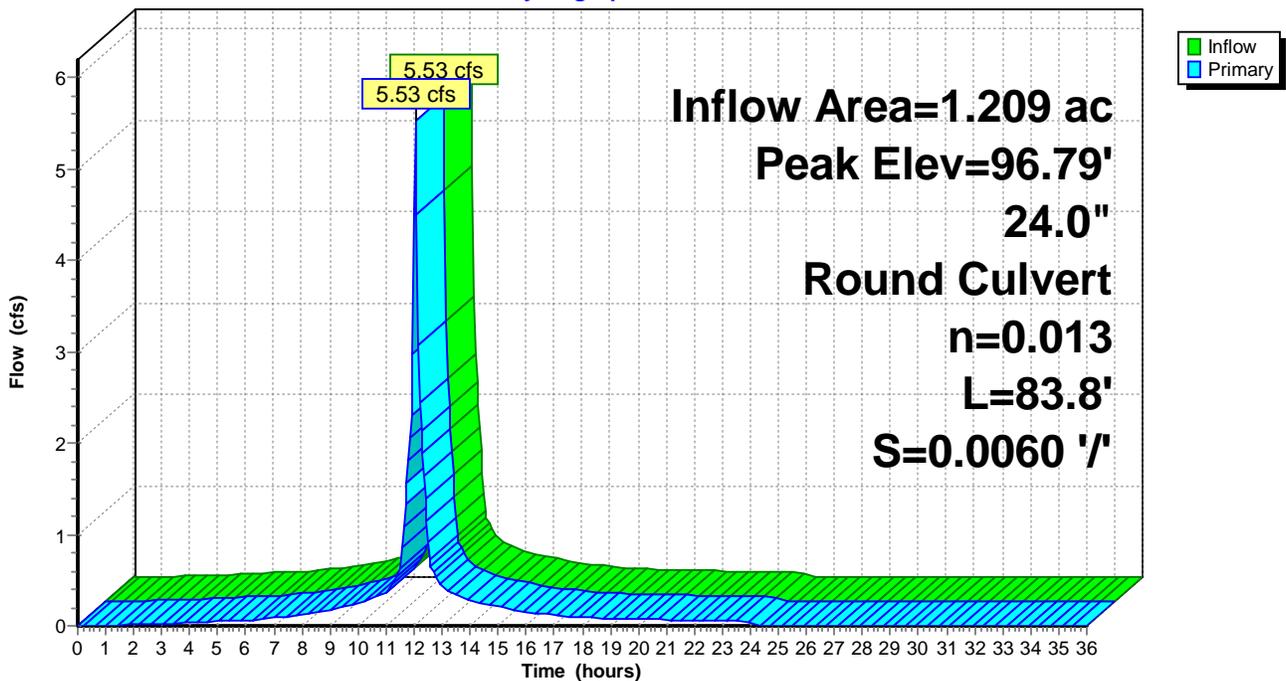
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 96.79' @ 12.05 hrs

Device #1	Routing	Invert	Outlet Devices
	Primary	95.60'	24.0" Round Culvert L= 83.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.60' / 95.10' S= 0.0060 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=5.52 cfs @ 12.05 hrs HW=96.78' (Free Discharge)
 ↑ **1=Culvert** (Barrel Controls 5.52 cfs @ 4.09 fps)

Pond 4: New CB 3

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 43

Summary for Pond 5: Previously CB 4

Inflow Area = 1.969 ac, 96.95% Impervious, Inflow Depth = 4.23" for 10-Year event
 Inflow = 8.69 cfs @ 12.05 hrs, Volume= 0.693 af
 Outflow = 8.69 cfs @ 12.05 hrs, Volume= 0.693 af, Atten= 0%, Lag= 0.0 min
 Primary = 8.69 cfs @ 12.05 hrs, Volume= 0.693 af

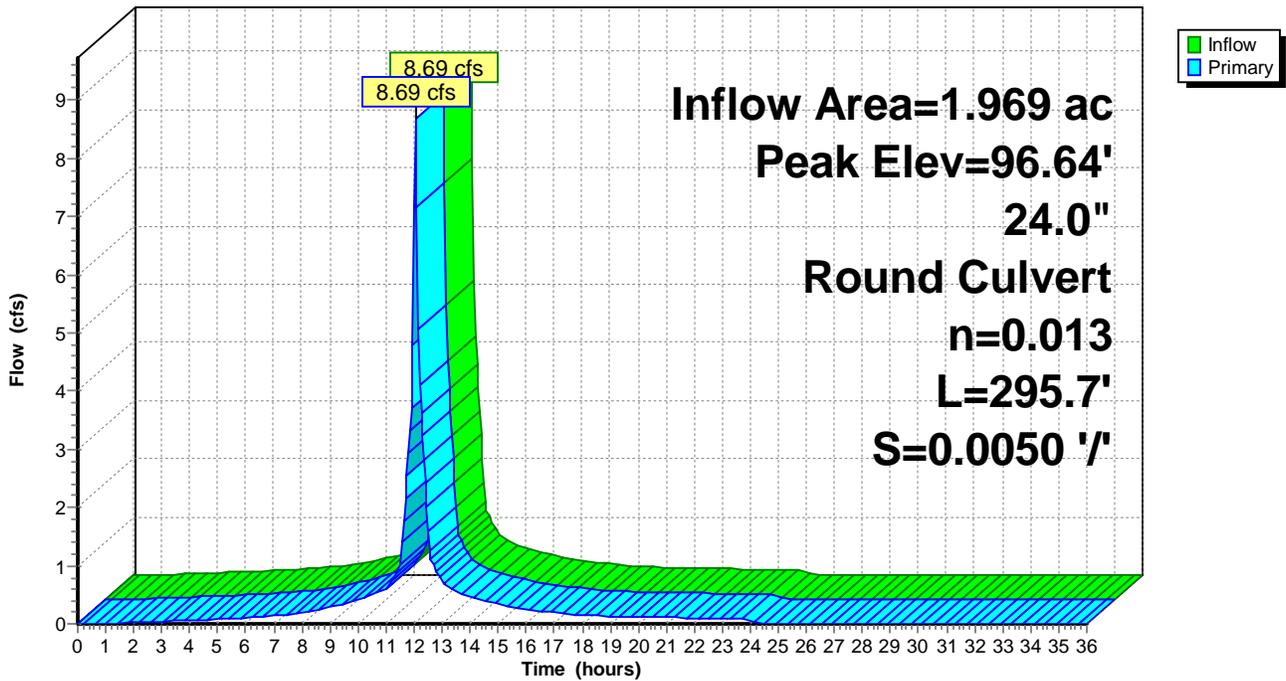
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 96.64' @ 12.05 hrs

Device #1	Routing	Invert	Outlet Devices
	Primary	95.10'	24.0" Round Culvert L= 295.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.10' / 93.62' S= 0.0050 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=8.68 cfs @ 12.05 hrs HW=96.64' (Free Discharge)
 ↑ **1=Culvert** (Inlet Controls 8.68 cfs @ 3.34 fps)

Pond 5: Previously CB 4

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 44

Summary for Pond 6: Roof Drip Strip

Inflow Area = 0.240 ac, 95.83% Impervious, Inflow Depth = 4.14" for 10-Year event
 Inflow = 1.20 cfs @ 12.01 hrs, Volume= 0.083 af
 Outflow = 0.71 cfs @ 12.09 hrs, Volume= 0.083 af, Atten= 41%, Lag= 5.2 min
 Primary = 0.71 cfs @ 12.09 hrs, Volume= 0.083 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 99.48' @ 12.09 hrs Surf.Area= 0.021 ac Storage= 0.010 af

Plug-Flow detention time= 16.9 min calculated for 0.083 af (100% of inflow)
 Center-of-Mass det. time= 16.7 min (776.0 - 759.3)

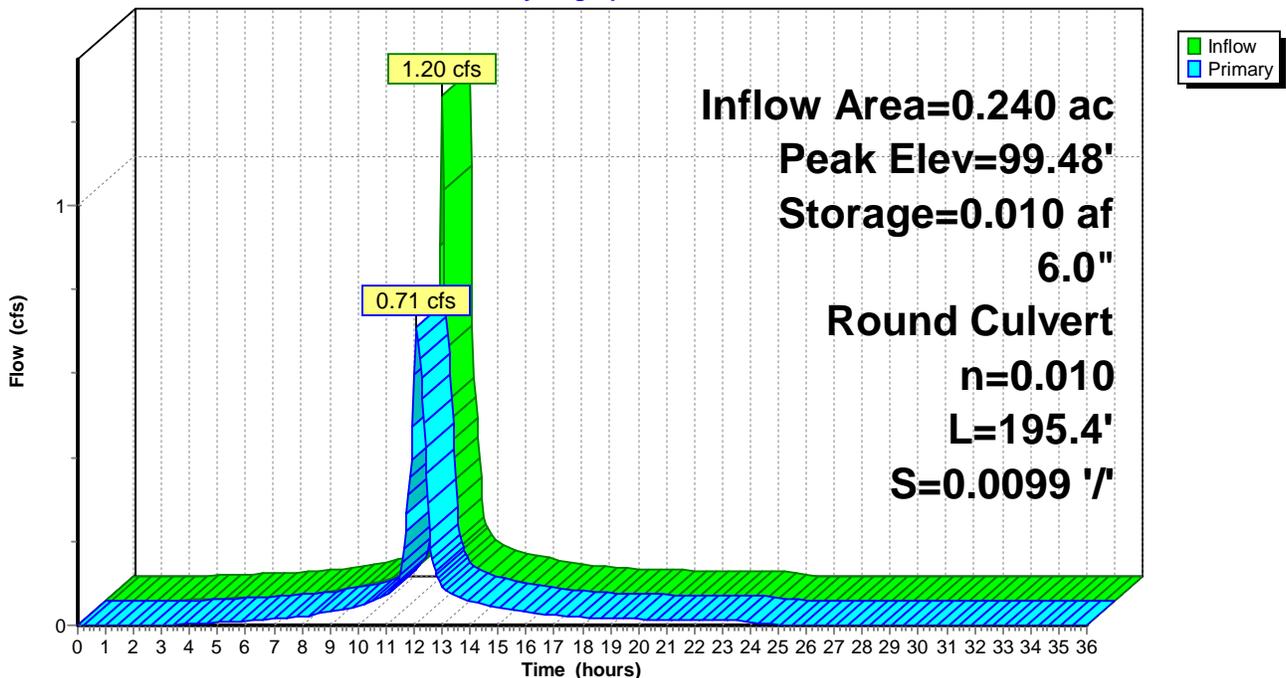
Volume	Invert	Avail.Storage	Storage Description
#1	98.33'	0.013 af	5.00'W x 183.19'L x 1.50'H Prismatic 0.032 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	98.33'	6.0" Round Culvert L= 195.4' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 98.33' / 96.40' S= 0.0099 1/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.71 cfs @ 12.09 hrs HW=99.47' (Free Discharge)
 ←1=Culvert (Inlet Controls 0.71 cfs @ 3.59 fps)

Pond 6: Roof Drip Strip

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Rainfall=4.60"

Printed 6/22/2016

Page 45

Summary for Pond 7: New CB

Inflow Area = 0.280 ac, 96.43% Impervious, Inflow Depth = 4.17" for 10-Year event
 Inflow = 0.85 cfs @ 12.05 hrs, Volume= 0.097 af
 Outflow = 0.85 cfs @ 12.05 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.85 cfs @ 12.05 hrs, Volume= 0.097 af

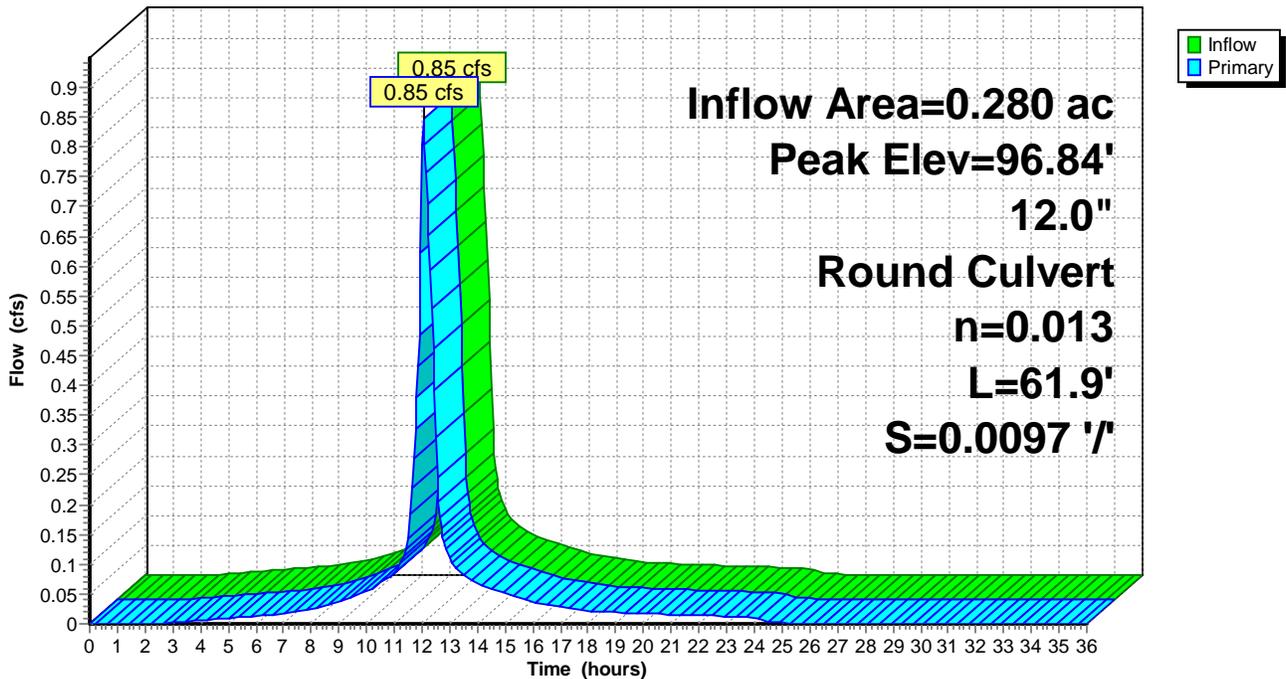
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 96.84' @ 12.05 hrs

Device #1	Routing	Invert	Outlet Devices
	Primary	96.30'	12.0" Round CMP_Round 12" L= 61.9' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 96.30' / 95.70' S= 0.0097 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.85 cfs @ 12.05 hrs HW=96.84' (Free Discharge)
 ↳ 1=CMP_Round 12" (Inlet Controls 0.85 cfs @ 1.97 fps)

Pond 7: New CB

Hydrograph



Post-Development

Type III 24-hr 25-Year Rainfall=5.80"

Prepared by Main-Land Development Consultants, Inc

Printed 6/22/2016

HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Page 46

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 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 S201: Warehouse Entrance Runoff Area=0.389 ac 92.29% Impervious Runoff Depth=4.99"
Flow Length=136' Tc=4.7 min CN=93 Runoff=2.16 cfs 0.162 af

Subcatchment S202: Warehouse and Retail Runoff Area=0.040 ac 100.00% Impervious Runoff Depth=5.56"
Flow Length=46' Slope=0.0300 '/' Tc=0.6 min CN=98 Runoff=0.26 cfs 0.019 af

Subcatchment S203: Warehouse and Retail Runoff Area=0.070 ac 100.00% Impervious Runoff Depth=5.56"
Flow Length=25' Slope=0.0400 '/' Tc=0.3 min CN=98 Runoff=0.45 cfs 0.032 af

Subcatchment S204: Backside of Retail Runoff Area=0.710 ac 100.00% Impervious Runoff Depth=5.56"
Flow Length=237' Tc=3.1 min CN=98 Runoff=4.35 cfs 0.329 af

Subcatchment S205: Open Storage Area Runoff Area=0.480 ac 95.83% Impervious Runoff Depth=5.56"
Flow Length=330' Tc=3.4 min CN=98 Runoff=2.92 cfs 0.222 af

Subcatchment S206: New Warehouse Runoff Area=0.240 ac 95.83% Impervious Runoff Depth=5.33"
Flow Length=58' Slope=0.0800 '/' Tc=0.5 min CN=96 Runoff=1.53 cfs 0.107 af

Subcatchment S207: Warehouse Northwest Runoff Area=0.040 ac 100.00% Impervious Runoff Depth=5.56"
Flow Length=13' Slope=0.0800 '/' Tc=0.1 min CN=98 Runoff=0.26 cfs 0.019 af

Subcatchment S208: New Lawn North of Runoff Area=0.071 ac 0.00% Impervious Runoff Depth=0.39"
Flow Length=14' Slope=0.0100 '/' Tc=2.7 min CN=39 Runoff=0.01 cfs 0.002 af

Reach A: WAP Inflow=10.96 cfs 0.889 af
Outflow=10.96 cfs 0.889 af

Reach B: WAP Inflow=0.01 cfs 0.002 af
Outflow=0.01 cfs 0.002 af

Reach POND: Pond Inflow=10.96 cfs 0.892 af
Outflow=10.96 cfs 0.892 af

Pond 1: New CB Peak Elev=97.84' Inflow=2.16 cfs 0.162 af
15.0" Round Culvert n=0.013 L=54.0' S=0.0037 '/' Outflow=2.16 cfs 0.162 af

Pond 2: New CB Peak Elev=97.60' Inflow=2.35 cfs 0.180 af
15.0" Round Culvert n=0.013 L=59.8' S=0.0033 '/' Outflow=2.35 cfs 0.180 af

Pond 3: New CB Peak Elev=97.18' Inflow=2.69 cfs 0.213 af
18.0" Round Culvert n=0.013 L=107.0' S=0.0056 '/' Outflow=2.69 cfs 0.213 af

Pond 4: New CB 3 Peak Elev=96.97' Inflow=7.04 cfs 0.542 af
24.0" Round Culvert n=0.013 L=83.8' S=0.0060 '/' Outflow=7.04 cfs 0.542 af

Pond 5: Previously CB 4 Peak Elev=96.93' Inflow=10.96 cfs 0.889 af
24.0" Round Culvert n=0.013 L=295.7' S=0.0050 '/' Outflow=10.96 cfs 0.889 af

Post-Development

Type III 24-hr 25-Year Rainfall=5.80"

Prepared by Main-Land Development Consultants, Inc

Printed 6/22/2016

HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Page 47

Pond 6: Roof Drip Strip

Peak Elev=101.78' Storage=0.013 af Inflow=1.53 cfs 0.107 af
6.0" Round Culvert n=0.010 L=195.4' S=0.0099 '/ Outflow=1.05 cfs 0.107 af

Pond 7: New CB

Peak Elev=96.95' Inflow=1.17 cfs 0.125 af
12.0" Round Culvert n=0.013 L=61.9' S=0.0097 '/ Outflow=1.17 cfs 0.125 af

Total Runoff Area = 2.040 ac Runoff Volume = 0.892 af Average Runoff Depth = 5.24"
6.42% Pervious = 0.131 ac 93.58% Impervious = 1.909 ac

Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 48

Summary for Subcatchment S201: Warehouse Entrance

Runoff = 2.16 cfs @ 12.07 hrs, Volume= 0.162 af, Depth= 4.99"

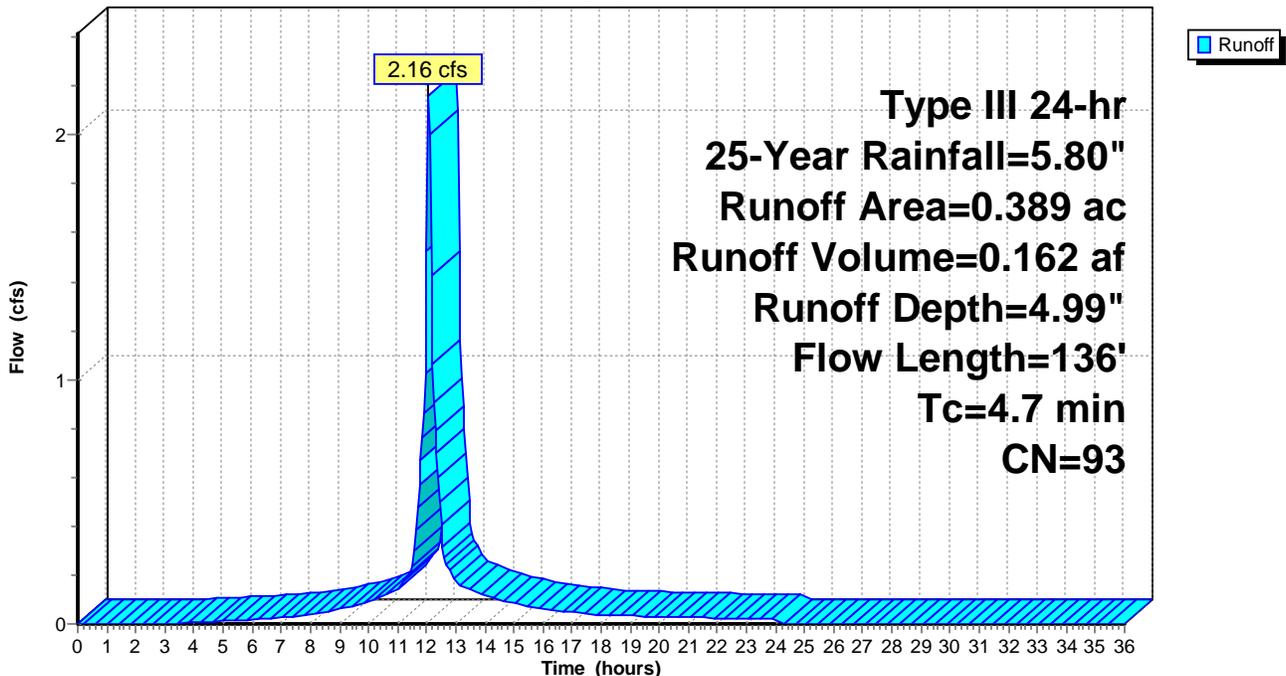
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-Year Rainfall=5.80"

Area (ac)	CN	Description
0.310	98	Paved parking, HSG A
0.049	98	Roofs, HSG A
0.030	39	>75% Grass cover, Good, HSG A
0.389	93	Weighted Average
0.030		7.71% Pervious Area
0.359		92.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	14	0.0060	0.07		Sheet Flow, Grass: Short n= 0.150 P2= 3.10"
1.4	122	0.0200	1.41		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
4.7	136	Total			

Subcatchment S201: Warehouse Entrance

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 49

Summary for Subcatchment S202: Warehouse and Retail Corner

Runoff = 0.26 cfs @ 12.01 hrs, Volume= 0.019 af, Depth= 5.56"

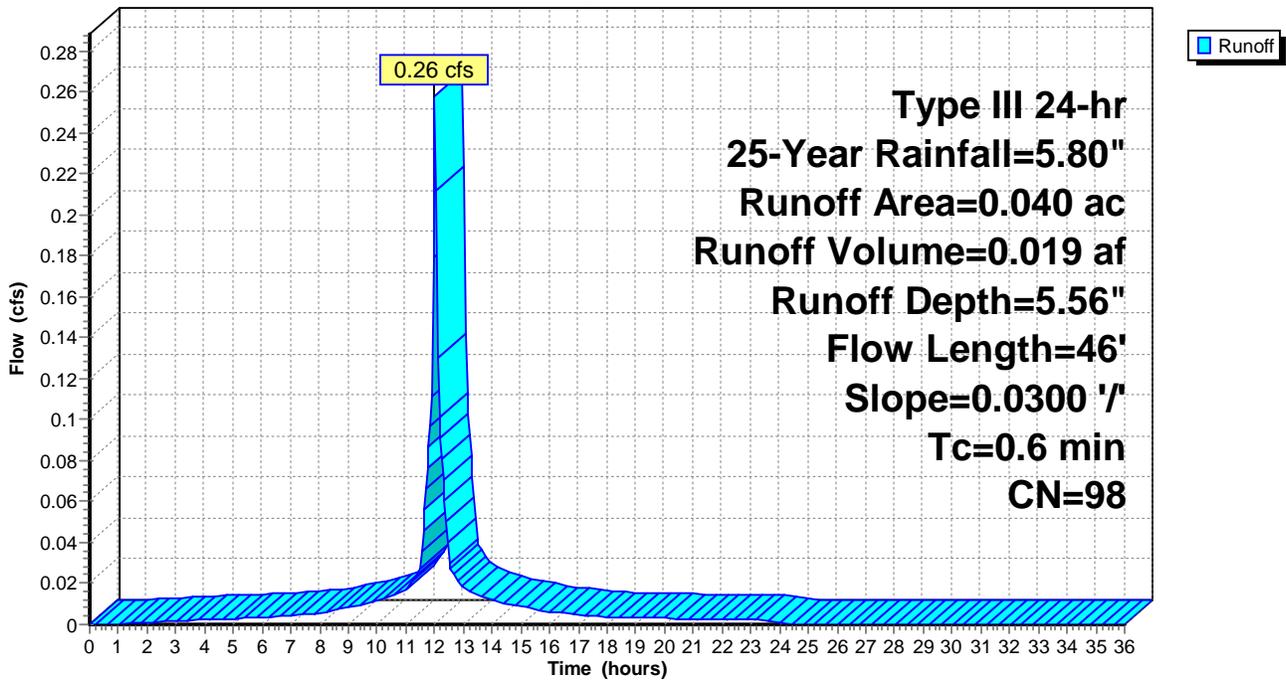
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (ac)	CN	Description
0.040	98	Paved parking, HSG A
0.040		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	46	0.0300	1.36		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"

Subcatchment S202: Warehouse and Retail Corner

Hydrograph



Post-Development

Summary for Subcatchment S203: Warehouse and Retail Side

Runoff = 0.45 cfs @ 12.00 hrs, Volume= 0.032 af, Depth= 5.56"

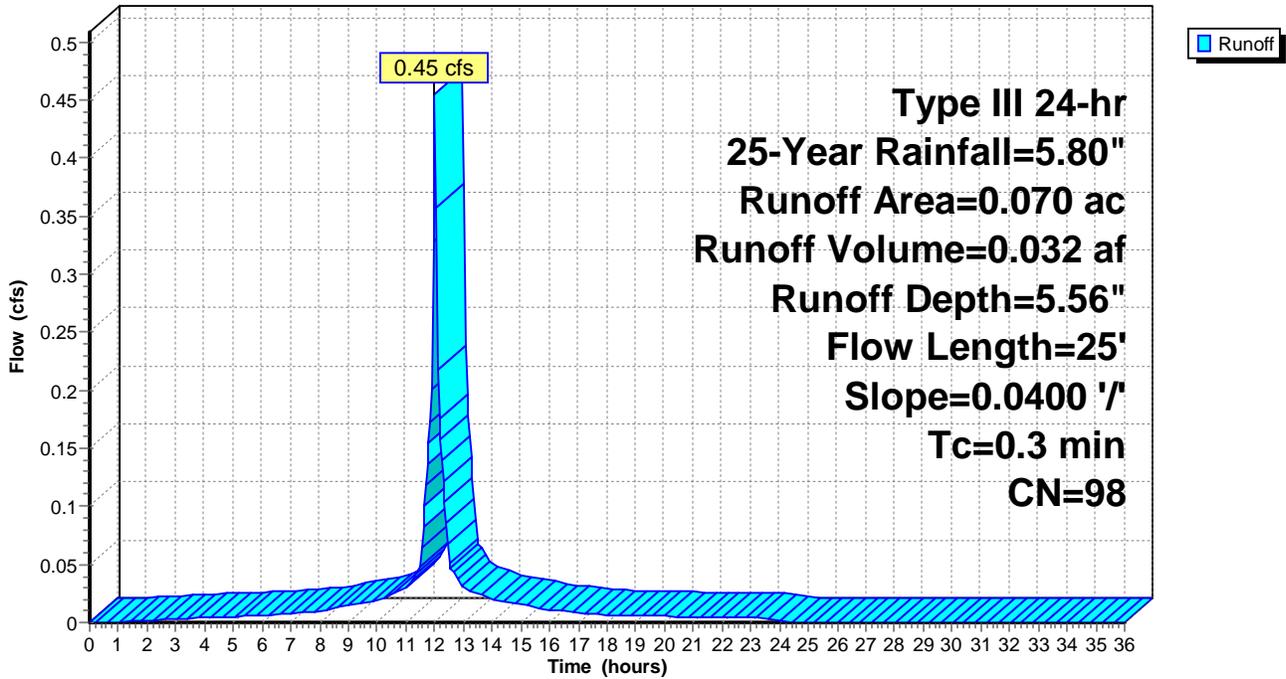
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG A
0.070		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	25	0.0400	1.35		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"

Subcatchment S203: Warehouse and Retail Side

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 51

Summary for Subcatchment S204: Backside of Retail

Runoff = 4.35 cfs @ 12.05 hrs, Volume= 0.329 af, Depth= 5.56"

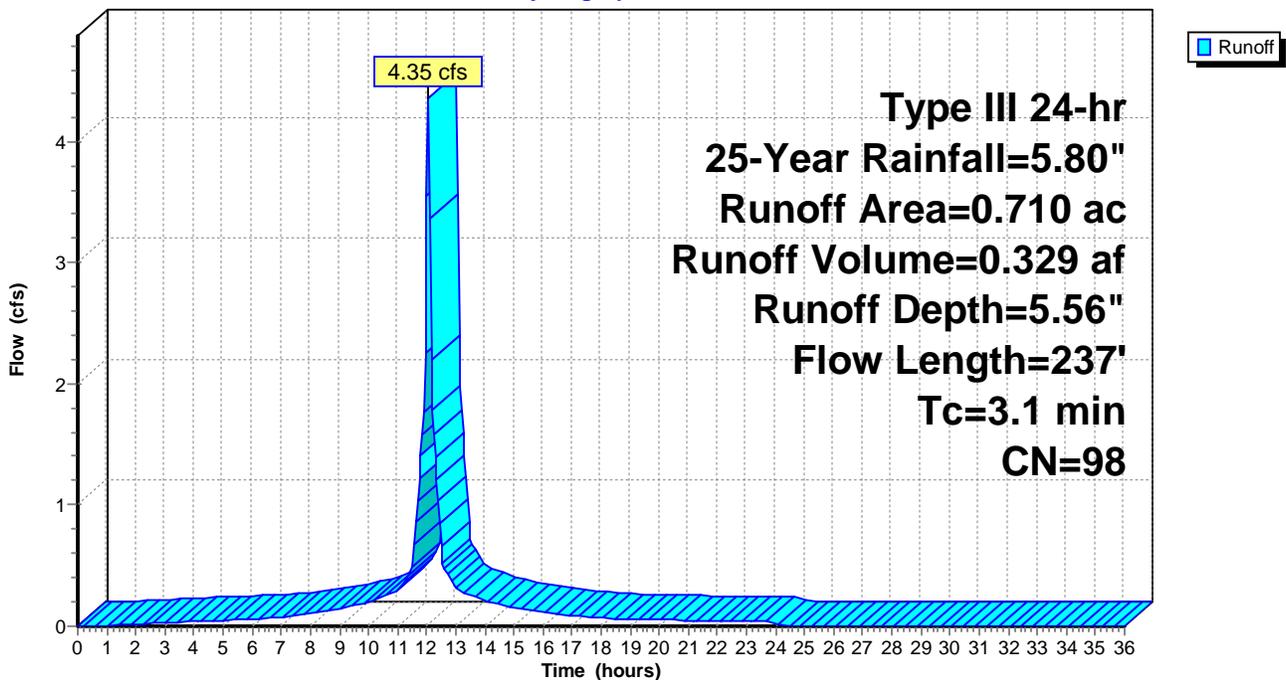
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-Year Rainfall=5.80"

Area (ac)	CN	Description
0.460	98	Paved parking, HSG A
0.250	98	Roofs, HSG A
0.710	98	Weighted Average
0.710		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	150	0.0067	0.95		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
0.5	87	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
3.1	237	Total			

Subcatchment S204: Backside of Retail

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 52

Summary for Subcatchment S205: Open Storage Area

Runoff = 2.92 cfs @ 12.05 hrs, Volume= 0.222 af, Depth= 5.56"

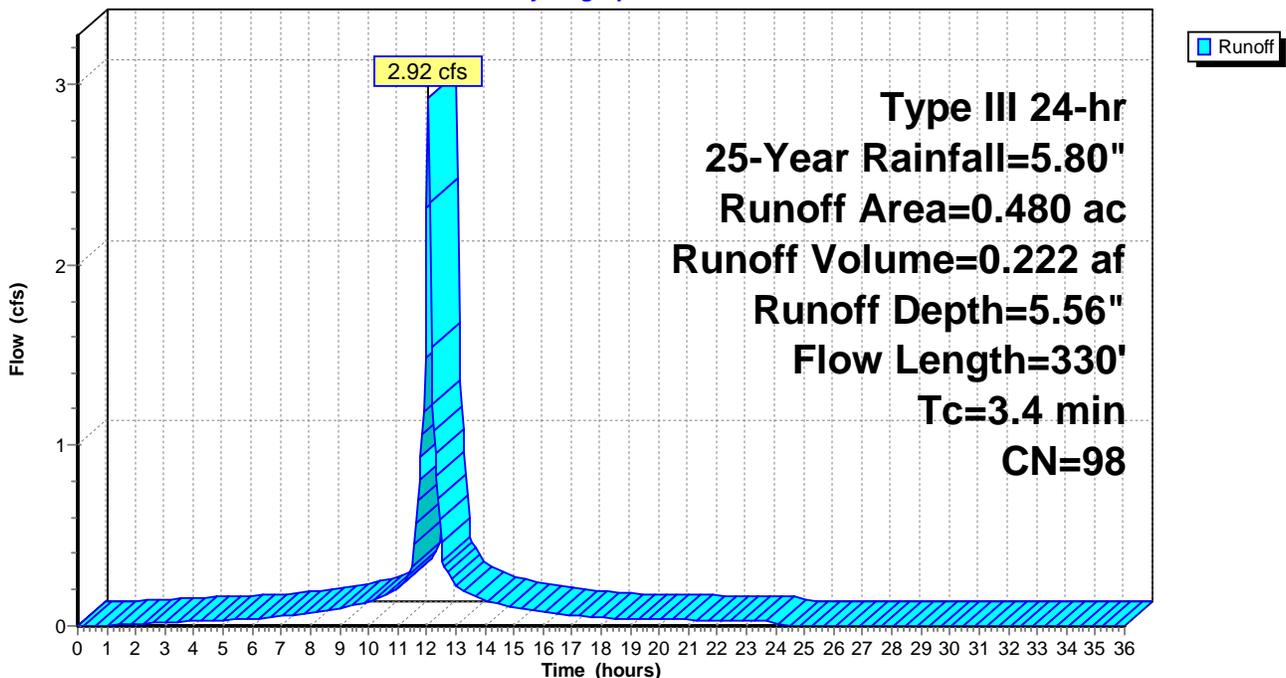
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-Year Rainfall=5.80"

Area (ac)	CN	Description
0.350	98	Paved parking, HSG A
0.110	98	Roofs, HSG C
0.020	96	Gravel surface, HSG A
0.480	98	Weighted Average
0.020		4.17% Pervious Area
0.460		95.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	150	0.0167	1.37		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
1.6	180	0.0083	1.85		Shallow Concentrated Flow, Paved Kv= 20.3 fps
3.4	330	Total			

Subcatchment S205: Open Storage Area

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 53

Summary for Subcatchment S206: New Warehouse

Runoff = 1.53 cfs @ 12.01 hrs, Volume= 0.107 af, Depth= 5.33"

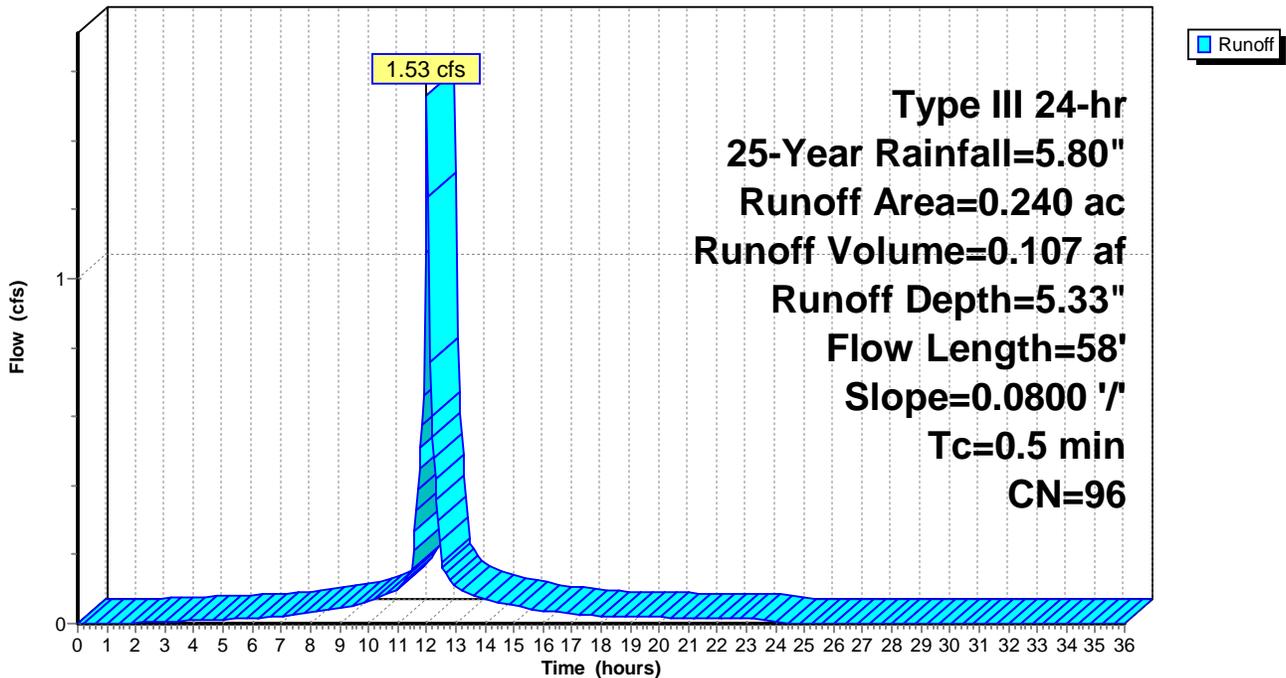
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-Year Rainfall=5.80"

Area (ac)	CN	Description
0.230	98	Roofs, HSG A
* 0.010	40	Roof Drip Line Filter
0.240	96	Weighted Average
0.010		4.17% Pervious Area
0.230		95.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	58	0.0800	2.11		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"

Subcatchment S206: New Warehouse

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 54

Summary for Subcatchment S207: Warehouse Northwest

Runoff = 0.26 cfs @ 12.00 hrs, Volume= 0.019 af, Depth= 5.56"

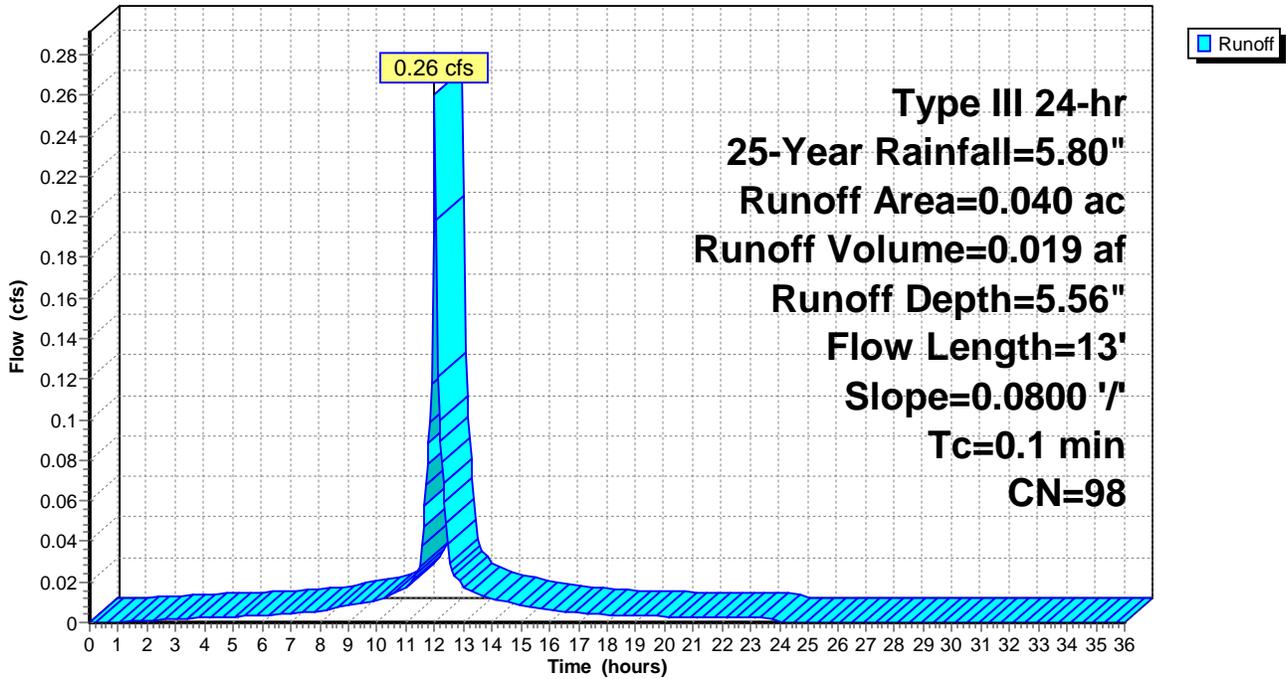
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-Year Rainfall=5.80"

Area (ac)	CN	Description
0.040	98	Paved parking, HSG A
0.040		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	13	0.0800	1.57		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"

Subcatchment S207: Warehouse Northwest

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 55

Summary for Subcatchment S208: New Lawn North of Warehouse

Runoff = 0.01 cfs @ 12.31 hrs, Volume= 0.002 af, Depth= 0.39"

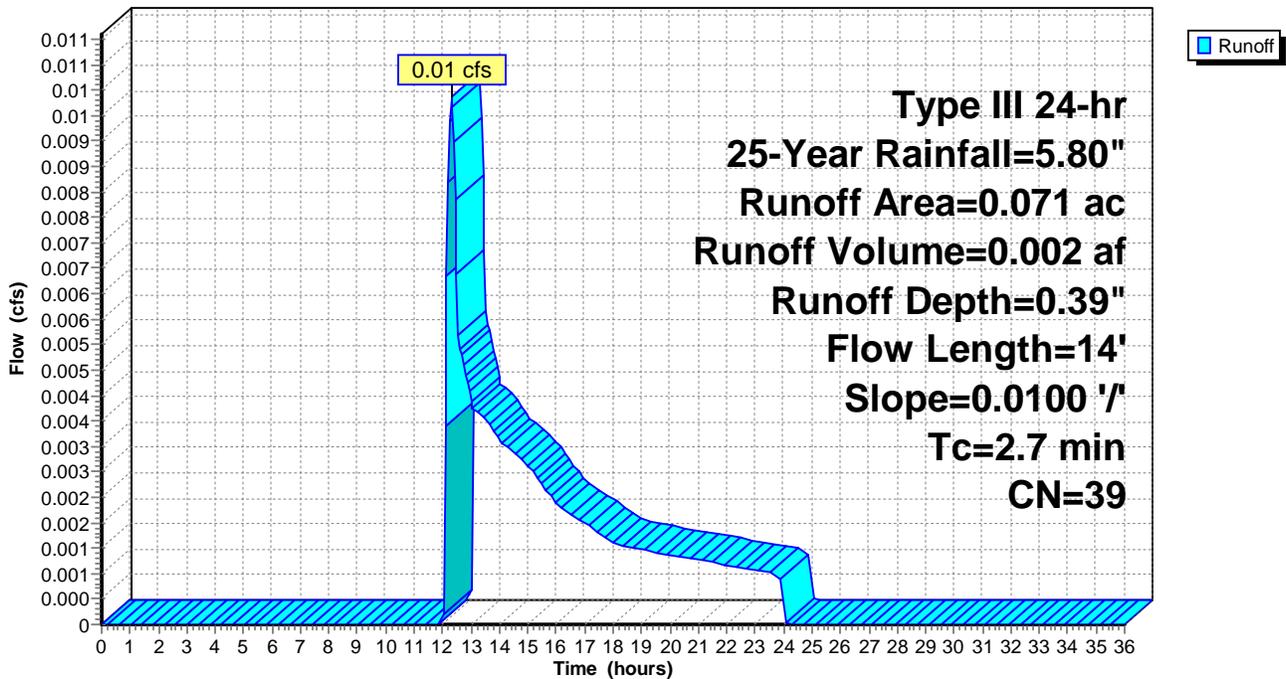
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-Year Rainfall=5.80"

Area (ac)	CN	Description
0.071	39	>75% Grass cover, Good, HSG A
0.071		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	14	0.0100	0.09		Sheet Flow, Grass: Short n= 0.150 P2= 3.10"

Subcatchment S208: New Lawn North of Warehouse

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 56

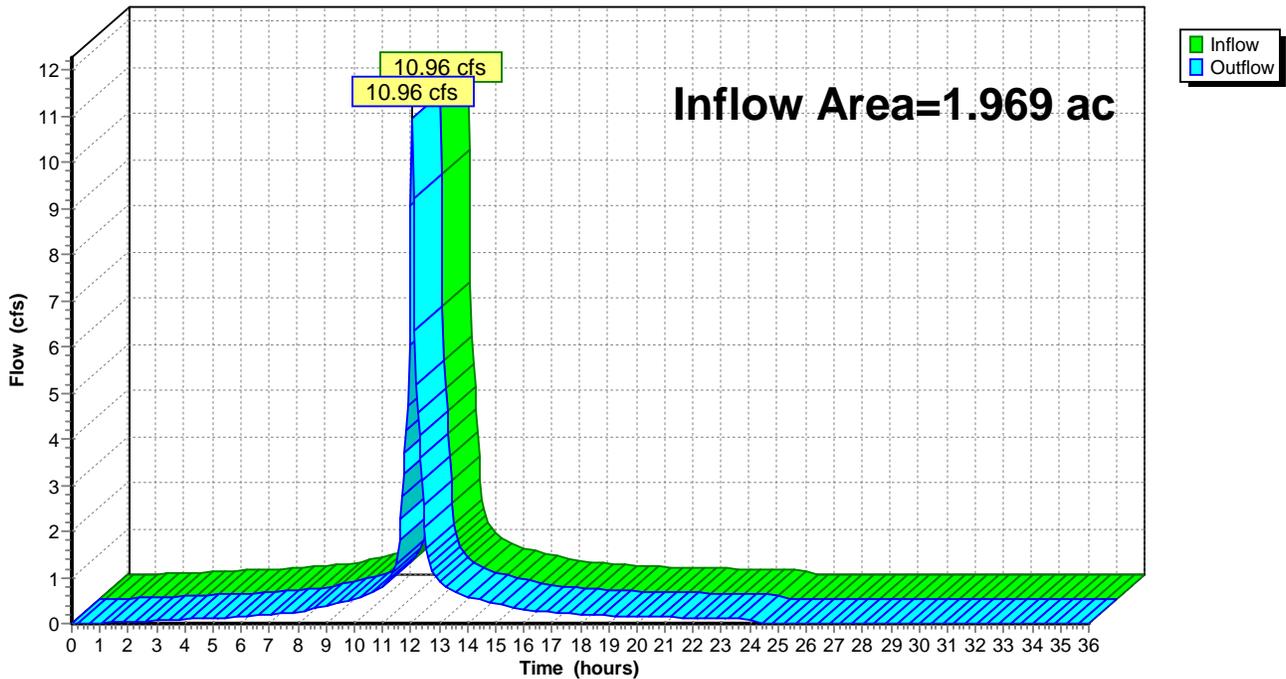
Summary for Reach A: WAP

Inflow Area = 1.969 ac, 96.95% Impervious, Inflow Depth = 5.42" for 25-Year event
Inflow = 10.96 cfs @ 12.05 hrs, Volume= 0.889 af
Outflow = 10.96 cfs @ 12.05 hrs, Volume= 0.889 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach A: WAP

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 57

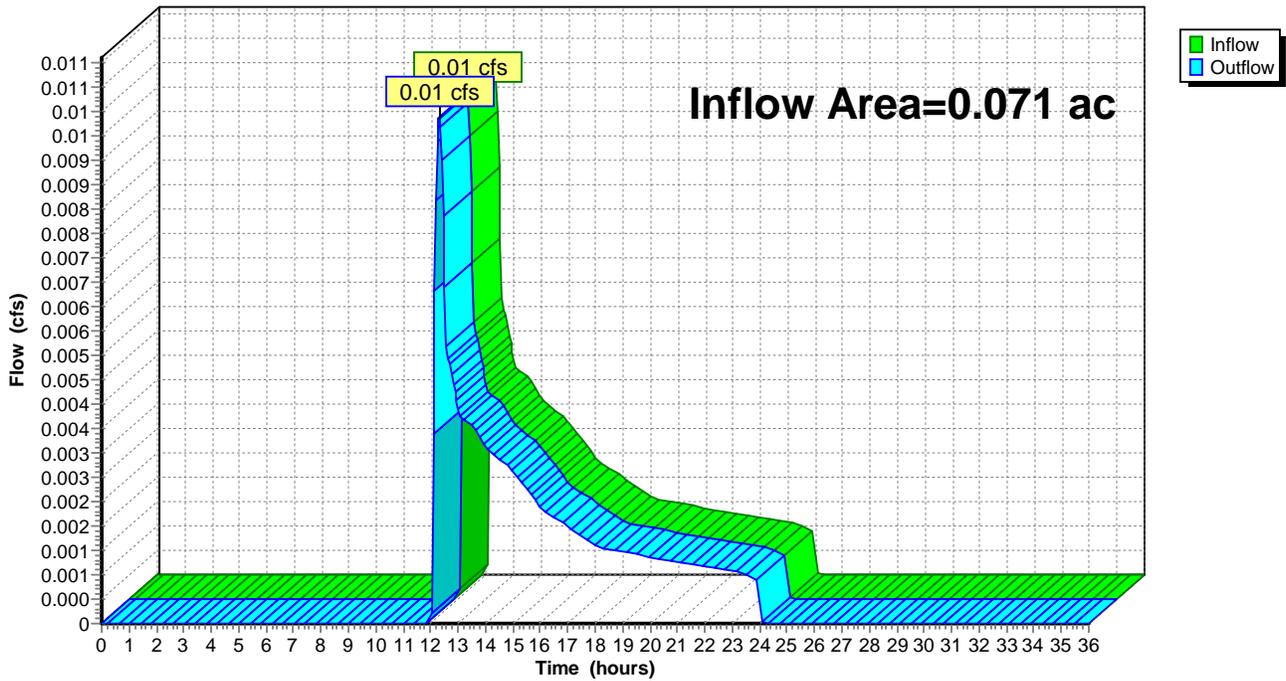
Summary for Reach B: WAP

Inflow Area = 0.071 ac, 0.00% Impervious, Inflow Depth = 0.39" for 25-Year event
Inflow = 0.01 cfs @ 12.31 hrs, Volume= 0.002 af
Outflow = 0.01 cfs @ 12.31 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach B: WAP

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 58

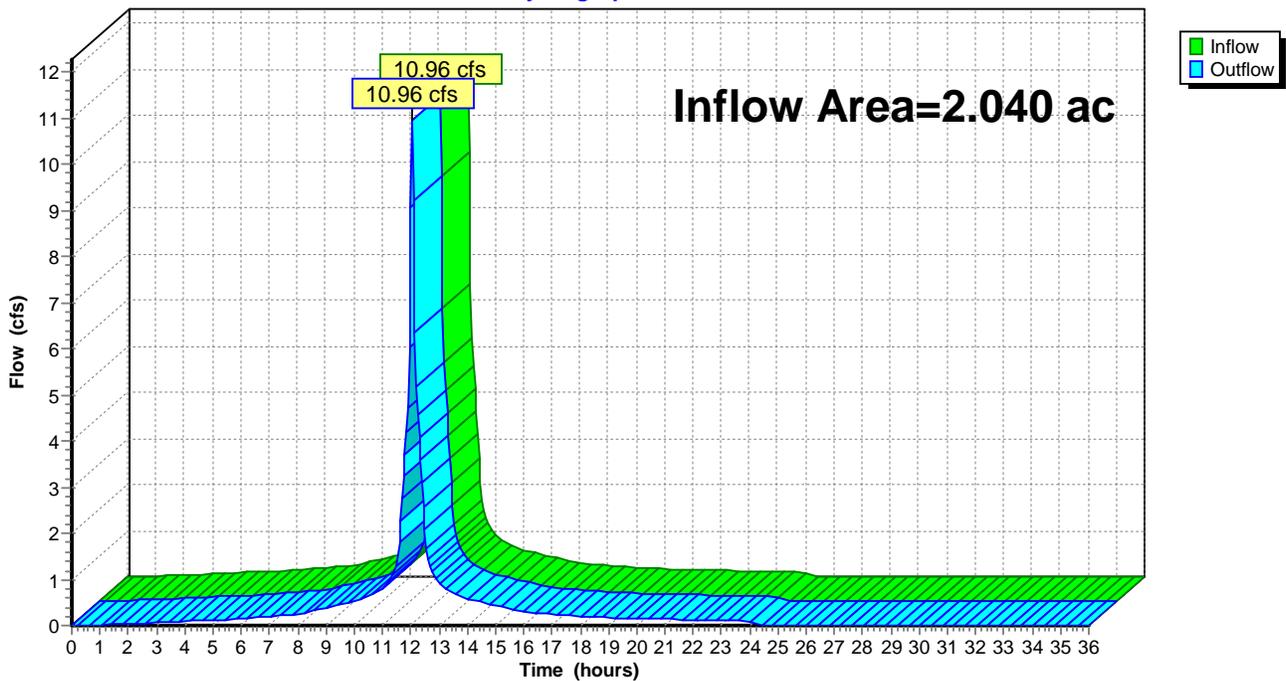
Summary for Reach POND: Pond

Inflow Area = 2.040 ac, 93.58% Impervious, Inflow Depth = 5.24" for 25-Year event
Inflow = 10.96 cfs @ 12.05 hrs, Volume= 0.892 af
Outflow = 10.96 cfs @ 12.05 hrs, Volume= 0.892 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach POND: Pond

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 59

Summary for Pond 1: New CB

Inflow Area = 0.389 ac, 92.29% Impervious, Inflow Depth = 4.99" for 25-Year event
 Inflow = 2.16 cfs @ 12.07 hrs, Volume= 0.162 af
 Outflow = 2.16 cfs @ 12.07 hrs, Volume= 0.162 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.16 cfs @ 12.07 hrs, Volume= 0.162 af

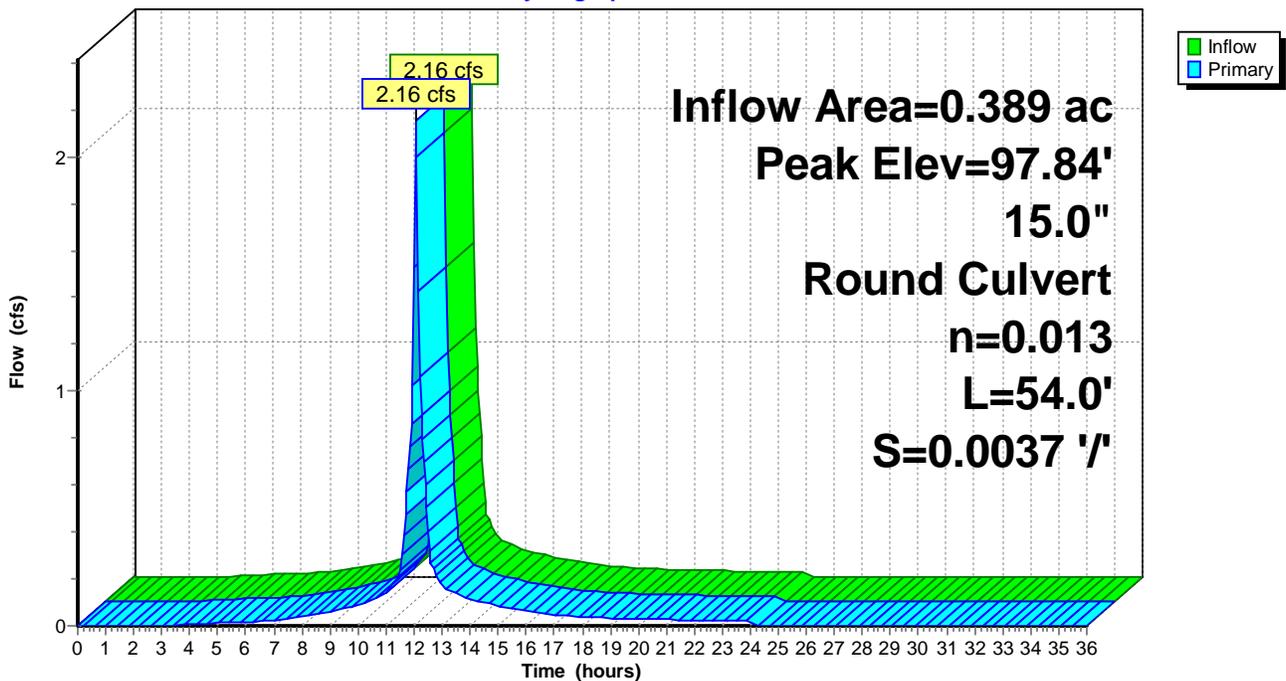
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 97.84' @ 12.07 hrs

Device #1	Routing	Invert	Outlet Devices
	Primary	96.90'	15.0" Round Culvert L= 54.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 96.90' / 96.70' S= 0.0037 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.08 cfs @ 12.07 hrs HW=97.82' (Free Discharge)
 ↑1=Culvert (Barrel Controls 2.08 cfs @ 3.00 fps)

Pond 1: New CB

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 60

Summary for Pond 2: New CB

Inflow Area = 0.429 ac, 93.01% Impervious, Inflow Depth = 5.04" for 25-Year event
Inflow = 2.35 cfs @ 12.06 hrs, Volume= 0.180 af
Outflow = 2.35 cfs @ 12.06 hrs, Volume= 0.180 af, Atten= 0%, Lag= 0.0 min
Primary = 2.35 cfs @ 12.06 hrs, Volume= 0.180 af

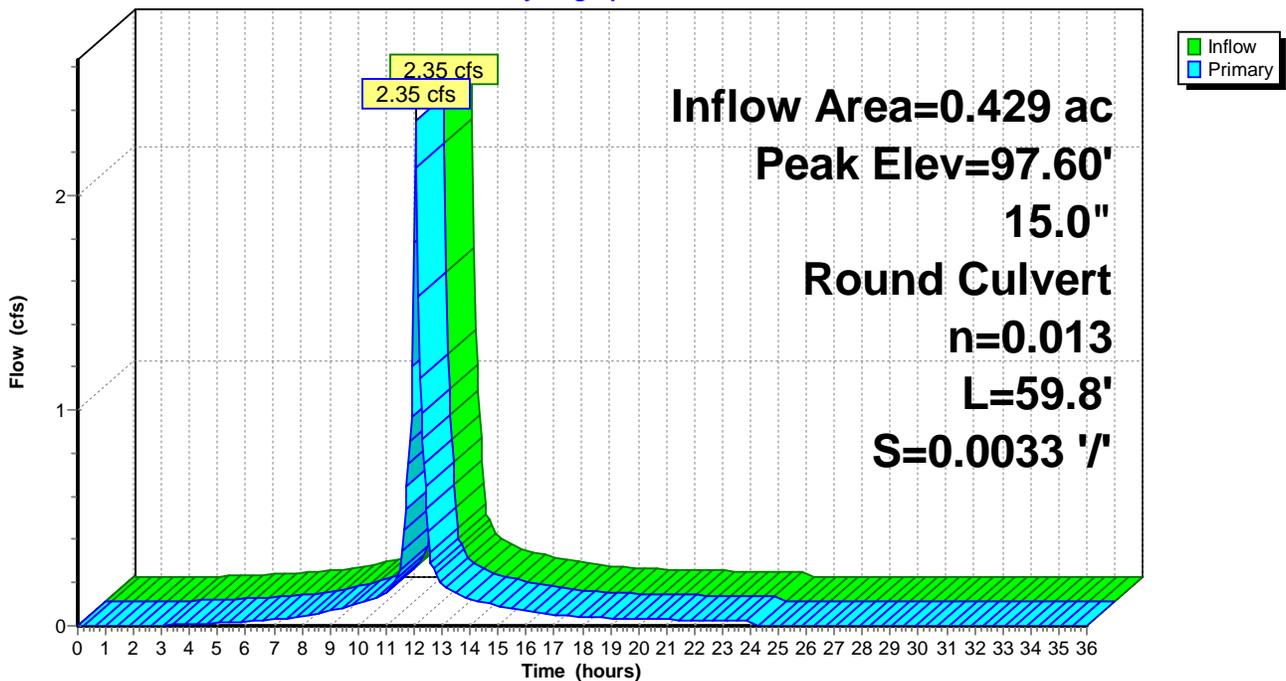
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 97.60' @ 12.06 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	96.60'	15.0" Round CMP_Round 15" L= 59.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 96.60' / 96.40' S= 0.0033 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.28 cfs @ 12.06 hrs HW=97.58' (Free Discharge)
↑1=CMP_Round 15" (Barrel Controls 2.28 cfs @ 3.03 fps)

Pond 2: New CB

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 61

Summary for Pond 3: New CB

Inflow Area = 0.499 ac, 93.99% Impervious, Inflow Depth = 5.11" for 25-Year event
Inflow = 2.69 cfs @ 12.05 hrs, Volume= 0.213 af
Outflow = 2.69 cfs @ 12.05 hrs, Volume= 0.213 af, Atten= 0%, Lag= 0.0 min
Primary = 2.69 cfs @ 12.05 hrs, Volume= 0.213 af

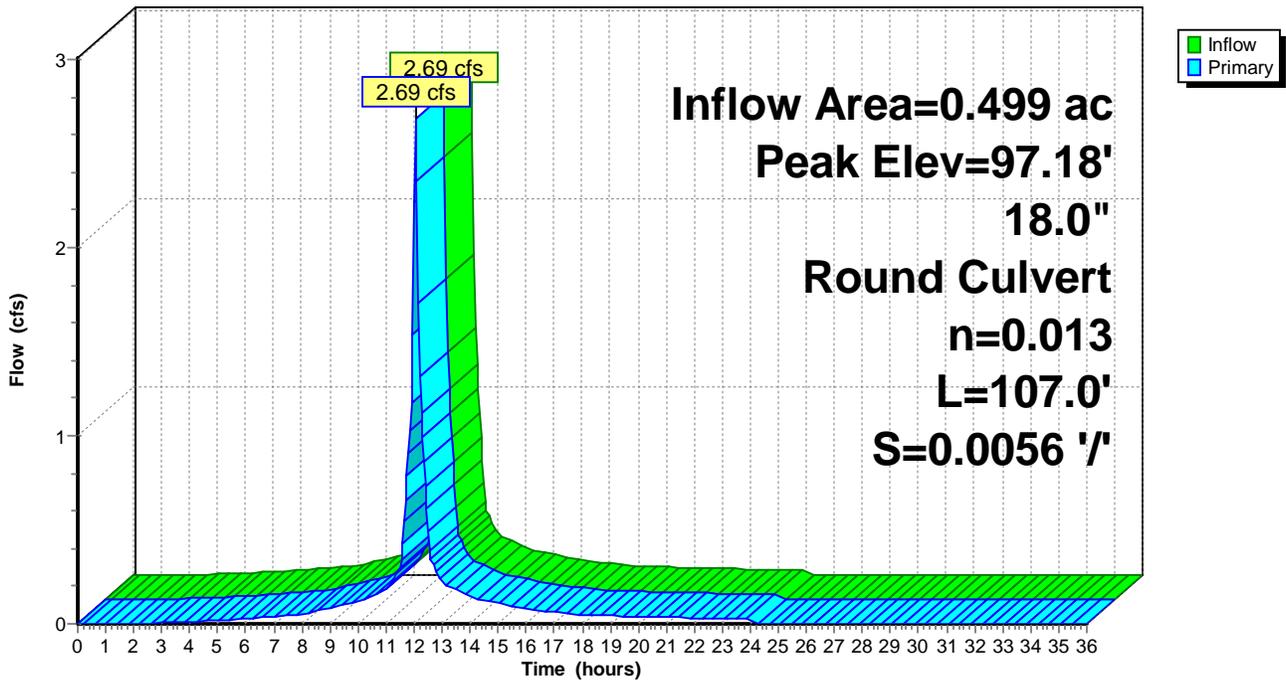
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 97.18' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	96.30'	18.0" Round Culvert L= 107.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 96.30' / 95.70' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.66 cfs @ 12.05 hrs HW=97.17' (Free Discharge)
↑**1=Culvert** (Barrel Controls 2.66 cfs @ 3.58 fps)

Pond 3: New CB

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 62

Summary for Pond 4: New CB 3

Inflow Area = 1.209 ac, 97.52% Impervious, Inflow Depth = 5.38" for 25-Year event
 Inflow = 7.04 cfs @ 12.05 hrs, Volume= 0.542 af
 Outflow = 7.04 cfs @ 12.05 hrs, Volume= 0.542 af, Atten= 0%, Lag= 0.0 min
 Primary = 7.04 cfs @ 12.05 hrs, Volume= 0.542 af

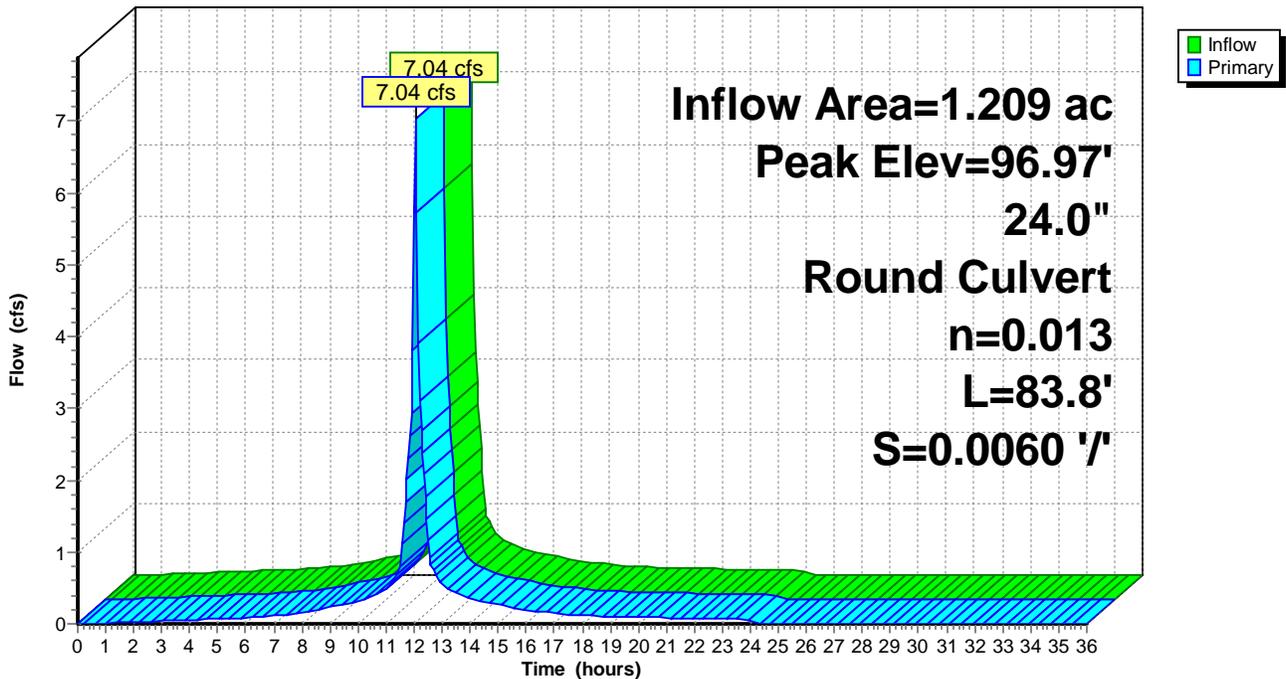
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 96.97' @ 12.05 hrs

Device #1	Routing	Invert	Outlet Devices
	Primary	95.60'	24.0" Round Culvert L= 83.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.60' / 95.10' S= 0.0060 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=7.02 cfs @ 12.05 hrs HW=96.97' (Free Discharge)
 ↑ **1=Culvert** (Barrel Controls 7.02 cfs @ 4.31 fps)

Pond 4: New CB 3

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 63

Summary for Pond 5: Previously CB 4

Inflow Area = 1.969 ac, 96.95% Impervious, Inflow Depth = 5.42" for 25-Year event
Inflow = 10.96 cfs @ 12.05 hrs, Volume= 0.889 af
Outflow = 10.96 cfs @ 12.05 hrs, Volume= 0.889 af, Atten= 0%, Lag= 0.0 min
Primary = 10.96 cfs @ 12.05 hrs, Volume= 0.889 af

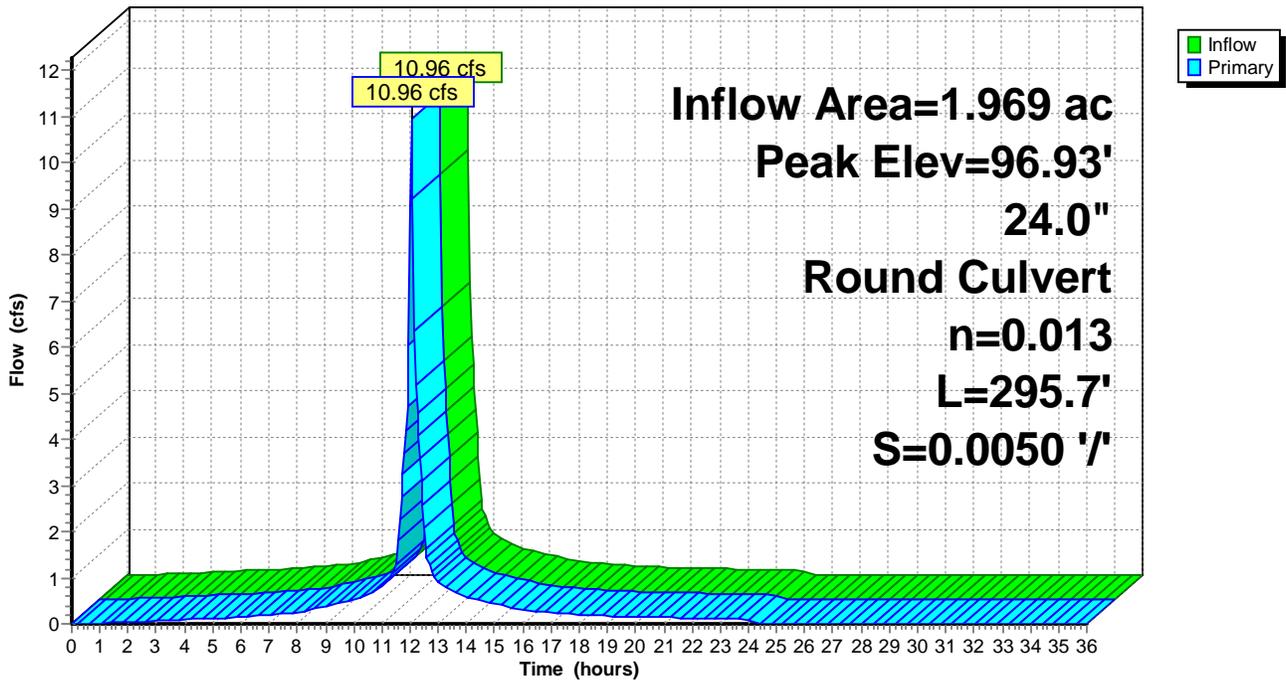
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 96.93' @ 12.05 hrs

Device #1	Routing	Invert	Outlet Devices
	Primary	95.10'	24.0" Round Culvert L= 295.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.10' / 93.62' S= 0.0050 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=10.93 cfs @ 12.05 hrs HW=96.93' (Free Discharge)
↑ **1=Culvert** (Inlet Controls 10.93 cfs @ 3.63 fps)

Pond 5: Previously CB 4

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
 HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 64

Summary for Pond 6: Roof Drip Strip

Inflow Area = 0.240 ac, 95.83% Impervious, Inflow Depth = 5.33" for 25-Year event
 Inflow = 1.53 cfs @ 12.01 hrs, Volume= 0.107 af
 Outflow = 1.05 cfs @ 12.10 hrs, Volume= 0.107 af, Atten= 32%, Lag= 5.6 min
 Primary = 1.05 cfs @ 12.10 hrs, Volume= 0.107 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Peak Elev= 101.78' @ 12.10 hrs Surf.Area= 0.021 ac Storage= 0.013 af

Plug-Flow detention time= 15.1 min calculated for 0.106 af (100% of inflow)
 Center-of-Mass det. time= 15.3 min (769.2 - 753.9)

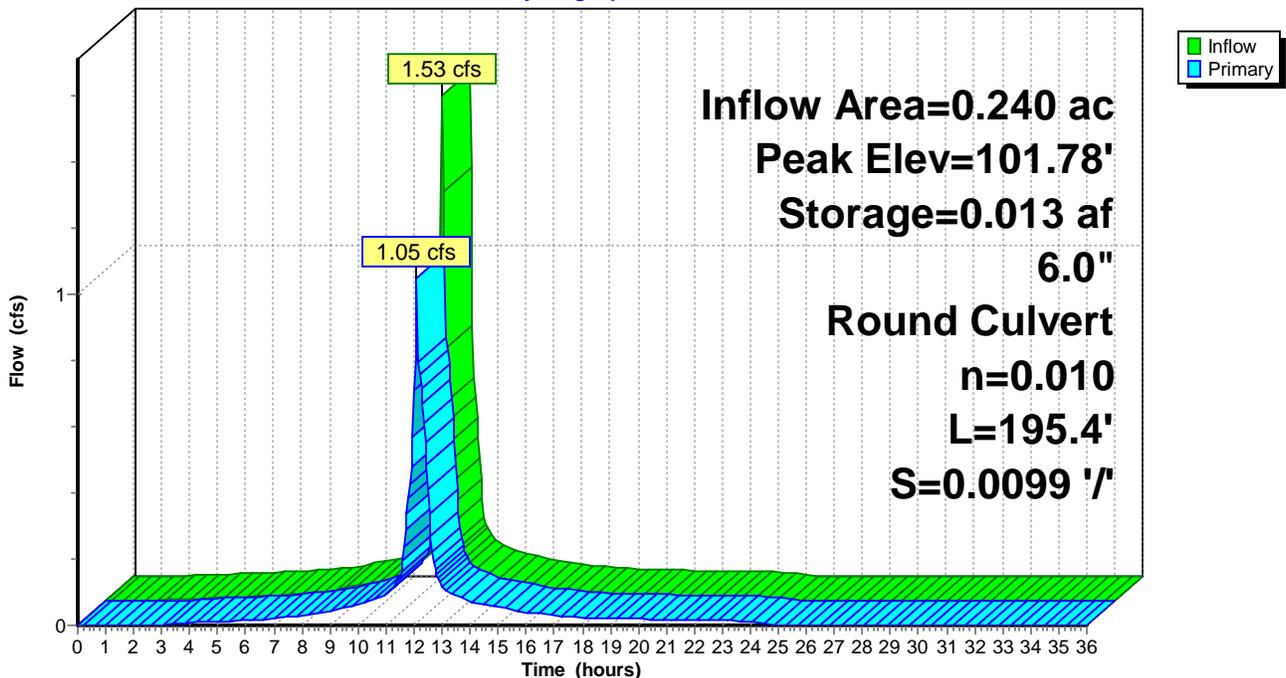
Volume	Invert	Avail.Storage	Storage Description
#1	98.33'	0.013 af	5.00'W x 183.19'L x 1.50'H Prismatic 0.032 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	98.33'	6.0" Round Culvert L= 195.4' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 98.33' / 96.40' S= 0.0099 '/ Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=1.04 cfs @ 12.10 hrs HW=101.76' (Free Discharge)
 ←1=Culvert (Barrel Controls 1.04 cfs @ 5.32 fps)

Pond 6: Roof Drip Strip

Hydrograph



Post-Development

Prepared by Main-Land Development Consultants, Inc
HydroCAD® 10.00-17 s/n 01625 © 2016 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=5.80"

Printed 6/22/2016

Page 65

Summary for Pond 7: New CB

Inflow Area = 0.280 ac, 96.43% Impervious, Inflow Depth = 5.36" for 25-Year event
Inflow = 1.17 cfs @ 12.09 hrs, Volume= 0.125 af
Outflow = 1.17 cfs @ 12.09 hrs, Volume= 0.125 af, Atten= 0%, Lag= 0.0 min
Primary = 1.17 cfs @ 12.09 hrs, Volume= 0.125 af

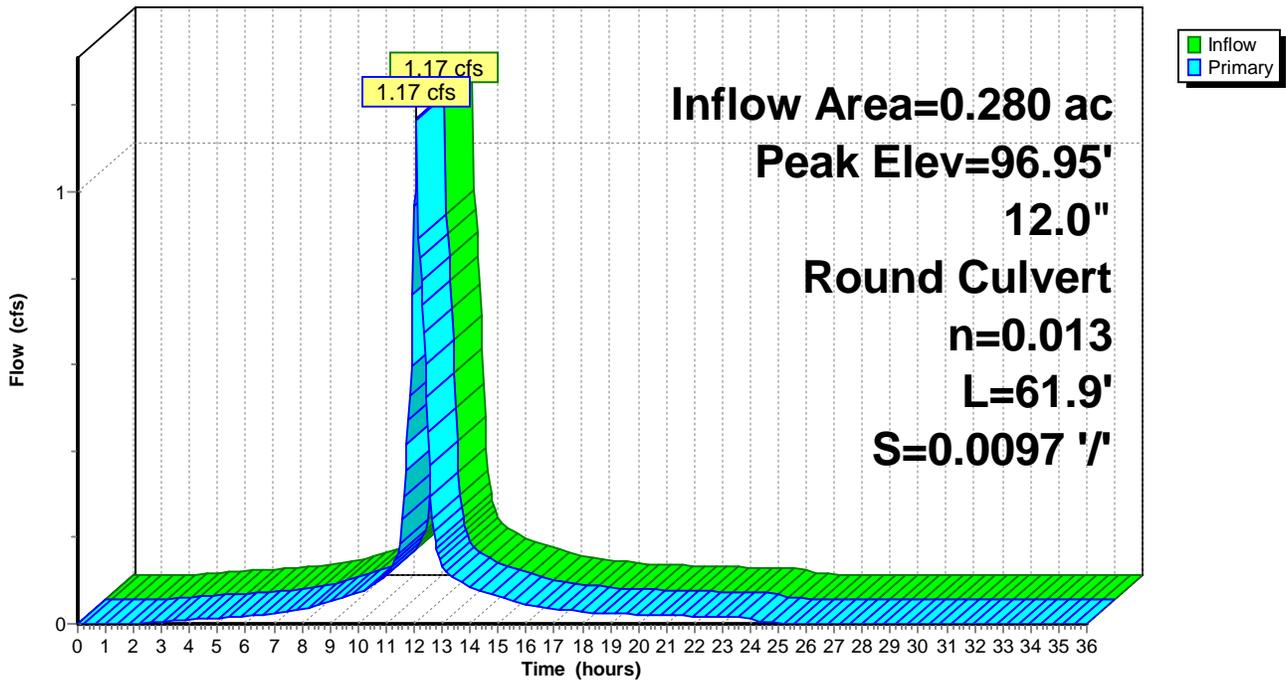
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 96.95' @ 12.09 hrs

Device #1	Routing	Invert	Outlet Devices
	Primary	96.30'	12.0" Round CMP_Round 12" L= 61.9' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 96.30' / 95.70' S= 0.0097 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.15 cfs @ 12.09 hrs HW=96.94' (Free Discharge)
↑1=CMP_Round 12" (Inlet Controls 1.15 cfs @ 2.15 fps)

Pond 7: New CB

Hydrograph



EROSION AND SEDIMENTATION CONTROL PLAN

Hancock Lumber Material Storage Building Replacement
158 Church Road, Brunswick, Maine

Prepared By:

MAIN-LAND DEVELOPMENT CONSULTANTS, INC.
Livermore Falls, Maine
June 24 2016

1. INTRODUCTION:

“A person who conducts, or causes to be conducted, an activity that involves filling, displacing or exposing soil or other earthen materials shall take measures to prevent unreasonable erosion of soil or sediment beyond the project site or into a protected natural resource as defined in 38 M.R.S.A. §480-B. Sediment control measures must be in place before the activity begins. Measures must remain in place and functional until the site is permanently stabilized. Adequate and timely temporary and permanent stabilization measures must be taken.” – Maine DEP Chapter 500 Rules, Appendix A.

This Plan has been developed to insure that construction activities on this project site utilize sound erosion and sedimentation control measures. These measures will prevent or reduce the potential for the deposition of sediments down stream of site. The methods of control consist of preventive measures and remedial measures. Preventive measures are aimed at keeping the soils in their present location through mulching and through the reestablishment of vegetation. Remedial measures deal with the trapping and/or filtering of sediment laden stormwater run-off. Both types of measures will be utilized on this project.

The Erosion and Sedimentation Control Plan is best broken down into Temporary Measures and Permanent Measures.

2. TEMPORARY EROSION CONTROL:

Temporary control measures may consist of a combination of measures where appropriate and/or as shown on the plans.

A. Sediment Filter Berms:

Sediment Filter Berms are the preferred filtering device, but may not be used in wetland areas. The berms shall be placed down slope of all earth moving activities, where water from these disturbed areas will run off. These berms will be placed along an even contour, be at least 24 inches tall, and 3 feet wide at the base. Turn the ends of the berm up-grade to avoid runoff flowing around the berm. In areas of high erosion potential, the berm will be backed by hay bales or silt fencing, as shown on the filter berm detail.

B. Silt Fencing:

Silt fencing may be used in place of, or together with, the sediment filter barriers. The silt fencing will also be anchored at least four inches into the ground and placed along an even contour. Turn the ends of the fence up-grade to avoid runoff flowing around the fence. During frozen conditions, furnish and install Sediment Filter Berms in lieu of silt fencing or hay bales if frozen soil prevents the proper installation of silt fences and hay bales.

C. Temporary Mulch:

Temporary mulch shall be placed on all disturbed areas where seeding, construction or stabilization activities will not take place for over 7 consecutive days. Temporary mulch will also be placed on areas within 75 feet of a natural resource (wetland, stream, etc.) where seeding will not take place for over 48 hours, and on all bare soils outside the road base prior to any predicted significant rain event. A significant rain event is considered to be at least ½ inch of rain or more. Temporary mulch may be hay and shall be applied at a rate of two bales per 1,000 square feet. Soil must not be visible upon completion of application, regardless of rate of application.

D. Topsoil Stockpiles:

Topsoil, removed as part of the construction, will be stockpiled on site for use in areas to be re-vegetated. The location of topsoil stockpiles must not be within 75 feet of a defined natural resource (wetland, stream, etc.), or within 75 feet of a swale or ditch.

Stockpiles shall be mulched with hay at two bales per 1,000 square feet. The area down slope from any stockpile areas will be protected by a sediment filter berm or silt fence placed directly below or down gradient from the stockpile. If the stockpile must be left for more than 30 days, the pile will be seeded with rye grass at a rate of two pounds per 1,000 square feet and mulched in accordance with this paragraph

E. Trench Dewatering

Water from construction trench dewatering or temporary stream diversion will pass first through a proprietary product filter bag or secondary containment structure (e.g. hay bale and fabric lined pool) prior to discharge. The discharge site shall be selected to avoid flooding, icing, and sediment discharges to a protected resource. In no case shall the filter bag or containment structure be located within 100 feet of a protected natural resource.

F. Catch Basins.

Catch basin inlets must be protected with a sediment trap until contributing areas, including paved and grassed island areas, are fully stabilized with pavement or grass. Temporary sediment traps shall be Dandy Bags or approved equal, with appropriate overflow slots. Geotextile cut to fit under the catch basin grate shall not be acceptable.

G. Maintenance of Temporary Measures:

All temporary measures described above shall be inspected weekly and before/after every significant storm event (1/2 inch of rain or greater) throughout the construction of the project. Repairs or replacements of temporary measures will be made as necessary. Once the site is stable, all temporary devices such as hay bale barriers and silt fencing will be removed.

A log shall be kept summarizing the inspections and any corrective action taken. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, materials storage areas, and vehicles access points to the parcel. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and location(s) where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken.

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

4. PERMANENT EROSION CONTROL:

Permanent measures will consist of the placement of culverts; culvert inlet/outlet stabilization; the construction of grass/stone lined ditches; and the re-vegetation of all areas outside the traveled way of the road, and those areas designated as stone lined ditches.

A. Culverts:

All culverts have been sized to handle the peak flows generated by a 25-year, 24-hour rain storm. The locations and sizes of the culverts are shown on the Site Plans. The inlets and outlets of the culverts will be armored with riprap to prevent scouring. This armoring will consist of placing stone possessing a D50 of 6 inches to a depth of 18 inches to the following dimensions: width equal to twice the diameter of the culvert;

length equal to three times the diameter of the culvert, unless noted otherwise.

B. Re-vegetation Measures:

All areas to be permanently re-vegetated with grass will first be covered with loam and then fertilized.

Loam will be placed on all areas to be re-vegetated. Loam will be placed to a minimum depth of 4 inches. Loam will be the stockpiled topsoil, if possible.

Test the loam samples for nutrients at a proficient testing laboratory (The University of Maine provides this service). The areas with loam will then be fertilized with the recommended application rate. Lime will also be applied at a rate of 50 pounds per 1,000 square feet. Both the lime and the fertilizer will be mixed thoroughly with the soil.

All areas to be re-vegetated with permanent grass are to be seeded with the seed mix shown on the table below. This mixture will be applied at a rate of 2 pounds per 1,000 square feet.

General Lawn Areas	Chewing Fescue "Dignity"	35%
	Pennlawn Creeping Red Fescue	35%
	Perennial Rye "Tourstar" (Nutrite)	30%

Mulch will then be spread on all seeded areas at a rate of two bales per 1,000 square feet. Regardless of application rate the soil shall not be visible through the mulch.

Seed and mulch will be placed within five days of final grading of topsoil.

Seeded areas will be inspected after 30 days to determine the success of the seeding. If the ground cover is less than 90%, the area will be reseeded.

C. Critical Areas:

Slopes in excess of 15% will require the placement of a biodegradable netting or matting over the mulch and seed (if the netting has no mulch in it). If stabilization is to take place after October 1, slopes over 8% will be treated with the matting.

D. Maintenance of Permanent Measures:

All measures will be inspected weekly and before and after every significant storm event during construction, and then at least once annually to insure proper function. Any

damaged areas will be repaired or replaced as necessary. Any ditches or culverts not functioning as designed will be redesigned and reconstructed according to specifications prepared by a Professional Engineer.

In any event, seeding should take place either between May 1 and June 15, or August 15 and September 1.

May 29, 2016

Main-Land Development Consultants, Inc.
Robert D. Lightbody, P.E.
42 Church Street
Livermore Falls, ME 04254

Dear Bob,

I have had the opportunity to review the Hancock Lumber site on Church Road in Brunswick with regard to finding additional landscape space. Given that this is a heavily-used existing site, industrial in nature, I do not see any reasonable opportunities to add plant material successfully to the interior of the site.

At the borders of the site, there are many existing mature trees, quite dense in some areas such as the southeast corner of the lot. A dense evergreen hedge exists between the lumber yard site and the property immediately north along Church Road.

The only possible location for additional landscape planting would be in the tree island between the two driveway entrances. However, I hesitate to recommend planting here, given frequency of use and the size of the vehicles using the site, it is important that these entries maintain clear site lines for traffic on coming from and going to the site.

Best Regards,
Bret LeBleu

A handwritten signature in black ink, appearing to read 'B. LeBleu', with a long horizontal stroke extending to the right.

Maine Licensed Landscape Architect



D-Series Size 1 LED Wall Luminaire



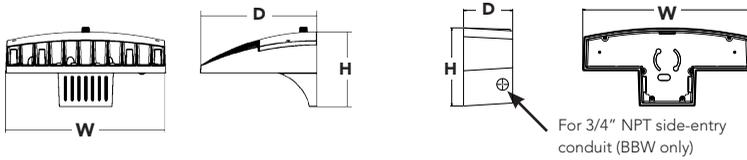
d#series

Specifications Luminaire

Width: 13-3/4" (34.9 cm) **Weight:** 12 lbs (5.4 kg)
Depth: 10" (25.4 cm)
Height: 6-3/8" (16.2 cm)

Back Box (BBW, ELCW)

Width: 13-3/4" (34.9 cm) **BBW Weight:** 5 lbs (2.3 kg)
Depth: 4" (10.2 cm) **ELCW Weight:** 10 lbs (4.5 kg)
Height: 6-3/8" (16.2 cm)



Catalog Number
Notes
Type

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

Introduction

The D-Series Wall luminaire is a stylish, fully integrated LED solution for building-mount applications. It features a sleek, modern design and is carefully engineered to provide long-lasting, energy-efficient lighting with a variety of optical and control options for customized performance.

With an expected service life of over 20 years of nighttime use and up to 74% in energy savings over comparable 250W metal halide luminaires, the D-Series Wall is a reliable, low-maintenance lighting solution that produces sites that are exceptionally illuminated.

Ordering Information

EXAMPLE: DSXW1 LED 20C 1000 40K T3M MVOLT DDBTXD

Series	LEDs	Drive Current	Color temperature	Distribution	Voltage	Mounting	Control Options	Other Options	Finish (required)
DSXW1 LED	10C 10 LEDs (one engine) 20C 20 LEDs (two engines)	350 350 mA	30K 3000 K	T2S Type II Short	MVOLT ¹	Shipped included (blank) Surface mounting bracket BBW Surface-mounted back box (for conduit entry) ³	Shipped installed PE Photoelectric cell, button type ⁴ DMG 0-10V dimming driver (no controls) PIR 180° motion/ambient light sensor, <15' mtg ht ⁵ PIRH 180° motion/ambient light sensor, 15-30' mtg ht ⁵ ELCW Emergency battery backup (includes external component enclosure) ⁶	Shipped installed SF Single fuse (120, 277 or 347V) ⁷ DF Double fuse (208, 240 or 480V) ⁷ HS House-side shield ⁸ SPD Separate surge protection ⁹	DDBXD Dark bronze DBLXD Black DNAXD Natural aluminum DWHXD White DSSXD Sandstone DDBTXD Textured dark bronze DBLBXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white DSSTXD Textured sandstone
		530 530 mA 700 700 mA 1000 1000 mA (1 A)	40K 4000 K 50K 5000 K AMBPC Amber phosphor converted	T2M Type II Medium T3S Type III Short T3M Type III Medium T4M Type IV Medium TFTM Forward Throw Medium ASYDF Asymmetric diffuse	120 ¹ 208 ¹ 240 ¹ 277 ¹ 347 ² 480 ²				

NOTES

- MVOLT driver operates on any line voltage from 120-277V (50/60 Hz). Specify 120, 208, 240 or 277 options only when ordering with fusing (SF, DF options), or photocontrol (PE option).
- Only available with 20C, 700mA or 1000mA. Not available with PIR or PIRH.
- Back box ships installed on fixture. Cannot be field installed. Cannot be ordered as an accessory.
- Photocontrol (PE) requires 120, 208, 240, 277 or 347 voltage option. Not available with motion/ambient light sensors (PIR or PIRH).
- PIR specifies the Sensor Switch SBGR-10-ODP control; PIRH specifies the Sensor Switch SBGR-6-ODP control; see Motion Sensor Guide for details. Includes ambient light sensor. Not available with "PE" option (button type photocell). Dimming driver standard. Not available with 20 LED/1000 mA configuration (DSXW1 LED 20C 1000).
- Cold weather (-20C) rated. Not compatible with conduit entry applications. Not available with BBW mounting option. Not available with fusing. Not available with 347 or 480 voltage options. Emergency components located in back box housing. Emergency mode IES files located on product page at www.lithonia.com
- Single fuse (SF) requires 120, 277 or 347 voltage option. Double fuse (DF) requires 208, 240 or 480 voltage option. Not available with ELCW.
- Also available as a separate accessory; see Accessories information.
- See the electrical section on page 3 for more details.

Accessories

Ordered and shipped separately.

DSXWHS U	House-side shield (one per light engine)
DSXWBSW U	Bird-deterrent spikes
DSXW1WG U	Wire guard accessory
DSXW1VG U	Vandal guard accessory



Performance Data

Lumen Output

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

LEDs	Drive Current (mA)	System Watts	Dist. Type	30K					40K					50K					AMBER				
				Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
10C (10 LEDs)	530mA	20 W	T2S	1,843	1	0	1	92	1,956	1	0	1	98	1,729	1	0	1	86	1,264	0	0	1	63
			T2M	1,756	1	0	1	88	1,864	1	0	1	93	1,648	1	0	1	82	1,205	0	0	1	60
			T3S	1,822	0	0	1	91	1,934	0	0	1	97	1,710	0	0	1	86	1,250	0	0	1	63
			T3M	1,804	1	0	1	90	1,914	1	0	1	96	1,693	1	0	1	85	1,237	0	0	1	62
			T4M	1,767	1	0	1	88	1,876	1	0	1	94	1,658	0	0	1	83	1,212	0	0	1	61
			TFTM	1,837	0	0	1	92	1,950	0	0	1	98	1,724	0	0	1	86	1,260	0	0	1	63
			ASYDF	1,642	1	0	1	82	1,743	1	0	1	87	1,541	1	0	1	77	1,127	0	0	1	56
			T2S	2,272	1	0	1	84	2,409	1	0	1	89	2,421	1	0	1	90	1,544	0	0	1	57
			T2M	2,165	1	0	1	80	2,296	1	0	1	85	2,307	1	0	1	85	1,472	0	0	1	55
	T3S	2,247	1	0	1	83	2,382	1	0	1	88	2,394	1	0	1	89	1,527	0	0	1	57		
	T3M	2,224	1	0	1	82	2,358	1	0	1	87	2,370	1	0	1	88	1,512	0	0	1	56		
	T4M	2,179	1	0	1	81	2,310	1	0	1	86	2,322	1	0	1	86	1,481	0	0	1	55		
	TFTM	2,265	1	0	1	84	2,401	1	0	1	89	2,413	1	0	1	89	1,539	0	0	1	57		
	ASYDF	2,025	1	0	1	75	2,147	1	0	1	80	2,158	1	0	1	80	1,376	1	0	1	51		
	T2S	3,011	1	0	1	75	3,190	1	0	1	80	3,202	1	0	1	80	2,235	1	0	1	58		
	T2M	2,870	1	0	1	72	3,040	1	0	1	76	3,051	1	0	1	76	2,130	1	0	2	55		
	T3S	2,978	1	0	1	74	3,155	1	0	1	79	3,166	1	0	1	79	2,210	1	0	2	57		
	T3M	2,948	1	0	1	74	3,123	1	0	1	78	3,134	1	0	1	78	2,187	1	0	2	56		
	T4M	2,888	1	0	1	72	3,059	1	0	1	76	3,071	1	0	1	77	2,143	1	0	2	55		
	TFTM	3,002	1	0	1	75	3,180	1	0	1	80	3,192	1	0	1	80	2,228	1	0	2	57		
	ASYDF	2,684	1	0	1	67	2,843	1	0	1	71	2,854	1	0	1	71	1,991	1	0	2	51		
	T2S	3,649	1	0	1	101	3,876	1	0	1	108	3,429	1	0	1	95	2,504	1	0	1	70		
	T2M	3,478	1	0	1	97	3,694	1	0	1	103	3,267	1	0	1	91	2,387	1	0	1	66		
	T3S	3,609	1	0	1	100	3,833	1	0	1	106	3,390	1	0	1	94	2,477	1	0	1	69		
	T3M	3,572	1	0	1	99	3,794	1	0	1	105	3,356	1	0	1	93	2,451	1	0	2	68		
	T4M	3,500	1	0	2	97	3,717	1	0	2	103	3,288	1	0	1	91	2,402	1	0	1	67		
	TFTM	3,638	1	0	1	101	3,864	1	0	1	107	3,418	1	0	1	95	2,496	1	0	1	69		
ASYDF	3,252	1	0	2	90	3,454	1	0	2	96	3,056	1	0	2	85	2,232	1	0	1	62			
T2S	4,502	1	0	1	96	4,776	1	0	1	102	4,794	1	0	1	102	3,065	1	0	1	65			
T2M	4,290	1	0	1	91	4,552	1	0	1	97	4,569	1	0	1	97	2,921	1	0	1	62			
T3S	4,452	1	0	1	95	4,723	1	0	2	100	4,741	1	0	2	101	3,031	1	0	1	64			
T3M	4,407	1	0	2	94	4,675	1	0	2	99	4,693	1	0	2	100	3,000	1	0	1	64			
T4M	4,318	1	0	2	92	4,581	1	0	2	97	4,598	1	0	2	98	2,939	1	0	1	63			
TFTM	4,488	1	0	2	95	4,761	1	0	2	101	4,779	1	0	2	102	3,055	1	0	1	65			
ASYDF	4,012	1	0	2	85	4,257	1	0	2	91	4,273	1	0	2	91	2,732	1	0	1	58			
T2S	5,963	1	0	1	80	6,327	1	0	1	84	6,351	1	0	1	85	4,429	1	0	1	61			
T2M	5,683	1	0	2	76	6,029	1	0	2	80	6,052	1	0	2	81	4,221	1	0	2	58			
T3S	5,896	1	0	2	79	6,256	1	0	2	83	6,280	1	0	2	84	4,380	1	0	2	60			
T3M	5,837	1	0	2	78	6,193	1	0	2	83	6,216	1	0	2	83	4,335	1	0	2	59			
T4M	5,719	1	0	2	76	6,067	1	0	2	81	6,090	1	0	2	81	4,248	1	0	2	58			
TFTM	5,944	1	0	2	79	6,307	1	0	2	84	6,330	1	0	2	84	4,415	1	0	2	60			
ASYDF	5,314	1	0	2	71	5,638	2	0	2	75	5,660	2	0	2	75	3,947	1	0	2	54			

Performance Data

Lumen Ambient Temperature (LAT) Multipliers

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

Ambient		Lumen Multiplier
0°C	32°F	1.02
10°C	50°F	1.01
20°C	68°F	1.00
25°C	77°F	1.00
30°C	86°F	1.00
40°C	104°F	0.98

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the **DSXW1 LED 20C 1000** platform in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

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

Operating Hours	0	25,000	50,000	100,000
Lumen Maintenance Factor	1.0	0.95	0.93	0.88

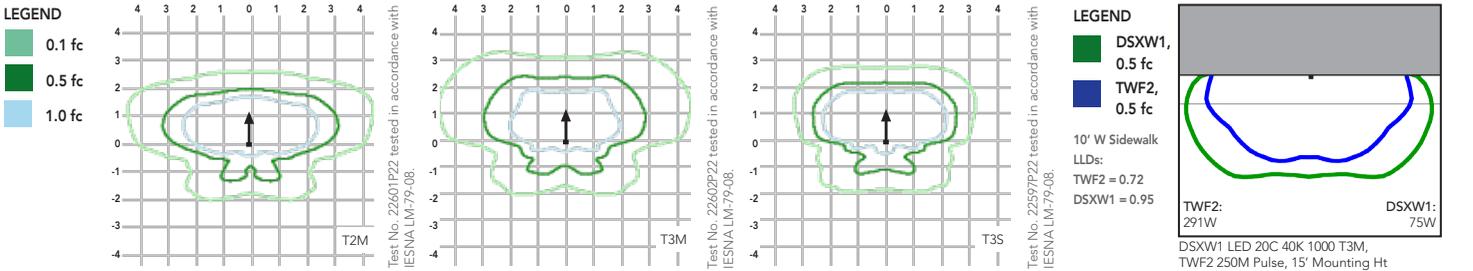
Electrical Load

LEDs	Drive Current (mA)	System Watts	Current (A)					
			120V	208V	240V	277V	347V	480V
10C	350	14 W	0.13	0.07	0.06	0.06	-	-
	530	20 W	0.19	0.11	0.09	0.08	-	-
	700	27 W	0.25	0.14	0.13	0.11	-	-
	1000	40 W	0.37	0.21	0.19	0.16	-	-
20C	350	25 W	0.23	0.13	0.12	0.10	-	-
	530	36 W	0.33	0.19	0.17	0.14	-	-
	700	47 W	0.44	0.25	0.22	0.19	0.15	0.11
	1000	75 W	0.69	0.40	0.35	0.30	0.23	0.17

Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's D-Series Wall Size 1 homepage.

Isofootcandle plots for the DSXW1 LED 20C 1000 40K. Distances are in units of mounting height (15').



Options and Accessories



T3M (left), ASYDF (right) lenses



HS - House-side shields



BSW - Bird-deterrent spikes



WG - Wire guard



VG - Vandal guard



DDL - Diffused drop lens

FEATURES & SPECIFICATIONS

INTENDED USE

The energy savings, long life and easy-to-install design of the D-Series Wall Size 1 make it the smart choice for building-mounted doorway and pathway illumination for nearly any facility.

CONSTRUCTION

Two-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance. The LED driver is mounted to the door to thermally isolate it from the light engines for low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65).

FINISH

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

OPTICS

Precision-molded proprietary acrylic lenses provide multiple photometric distributions tailored specifically to building mounted applications. Light engines are available in 3000 K (80 min. CRI), 4000 K (70 min. CRI) or 5000 K (70 CRI) configurations.

ELECTRICAL

Light engine(s) consist of 10 high-efficacy LEDs mounted to a metal-core circuit board to maximize heat dissipation and promote long life (L88/100,000 hrs at 25°C). Class 1 electronic drivers have a

power factor >90%, THD <20%, and a minimum 2.5KV surge rating. When ordering the SPD option, a separate surge protection device is installed within the luminaire which meets a minimum Category C Low (per ANSI/IEEE C62.41.2).

INSTALLATION

Included universal mounting bracket attaches securely to any 4" round or square outlet box for quick and easy installation. Luminaire has a slotted gasket wireway and attaches to the mounting bracket via corrosion-resistant screws.

LISTINGS

CSA certified to U.S. and Canadian standards. Rated for -40°C minimum ambient.

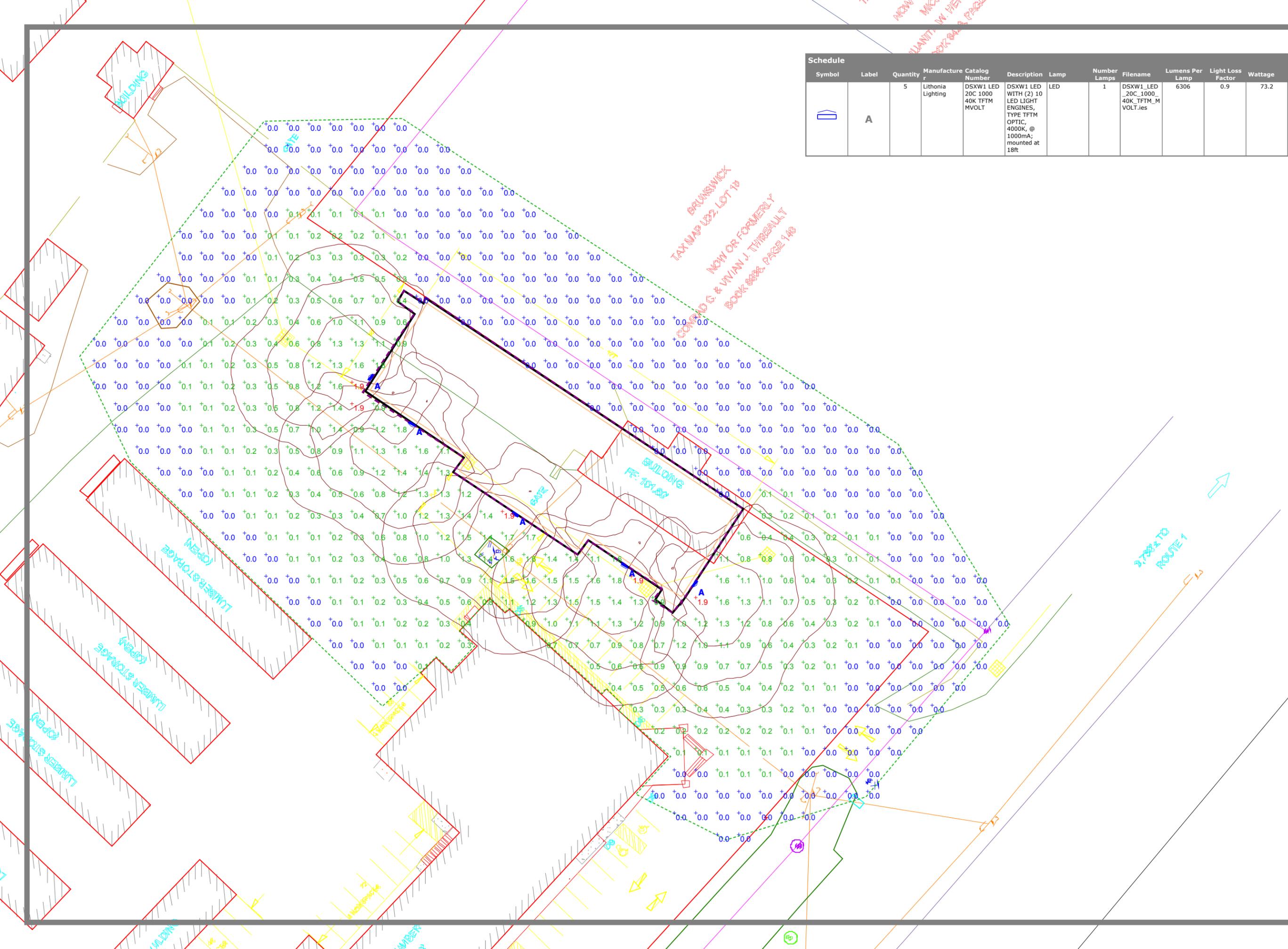
DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org to confirm which versions are qualified.

WARRANTY

Five year limited warranty. Full warranty terms located at www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx.

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





Symbol	Label	Quantity	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Filename	Lumens Per Lamp	Light Loss Factor	Wattage
	A	5	Lithonia Lighting	DSXW1 LED 20C 1000 40K TFTM MVOLT	DSXW1 LED WITH (2) 10 LED LIGHT ENGINES, TYPE TFTM OPTIC, 4000K, @ 1000mA, mounted at 18ft	LED	1	DSXW1_LED_20C_1000_40K_TFTM_MVOLT.ies	6306	0.9	73.2



HANCOCK LUMBER Brunswick, ME Site Lighting Layout

Designer
Heidi G. Connors
Visible Light, Inc.
24 Stickney Terrace
Suite 6
Hampton, NH 03842

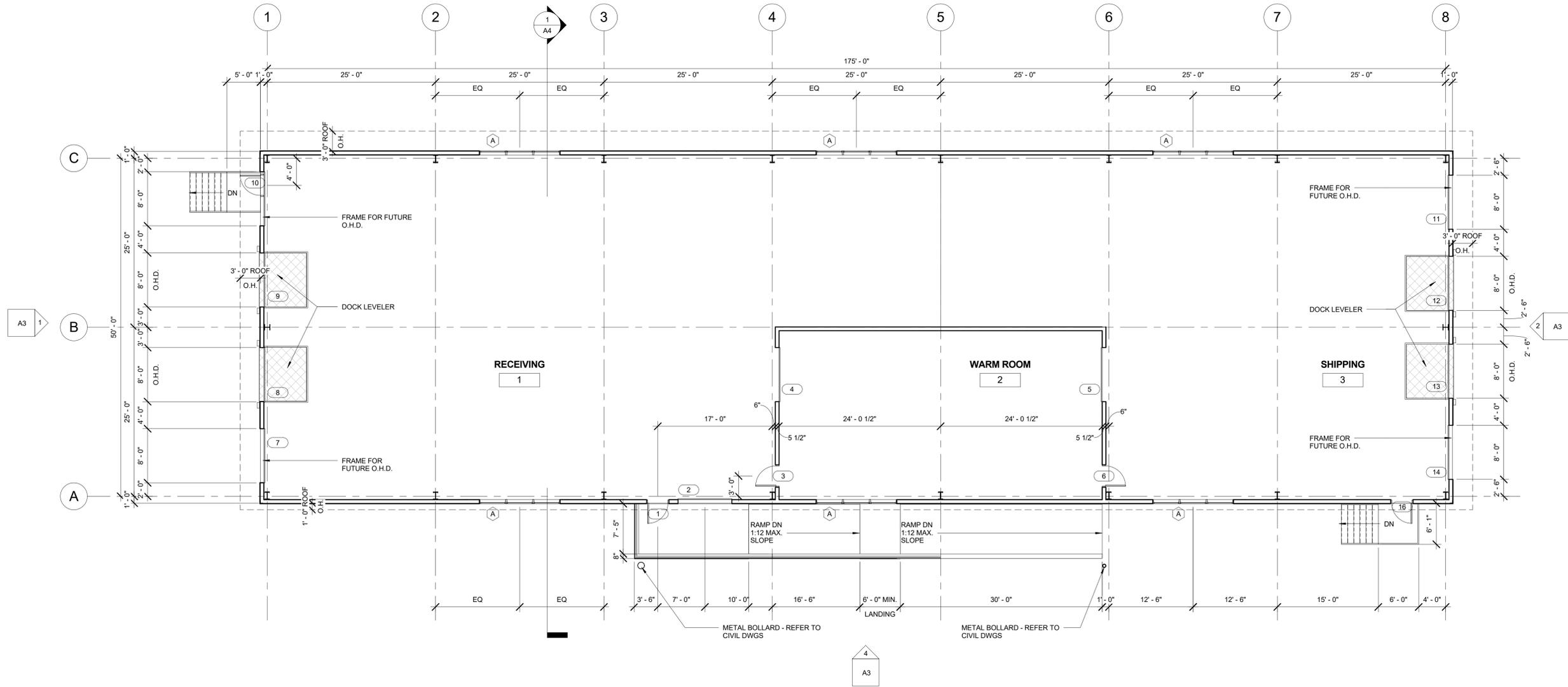
Date
5/23/2016

Scale
1"=40'

Drawing No.

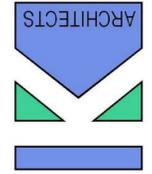
Summary

5/18/2016 12:28:17 PM A3P



1 FLOOR PLAN
1/8" = 1'-0"

KW Architects
Kristi Kenney, RA
PO Box 404
Wells, Maine 04090
(207) 332-9199



Hancock Lumber
Brunswick Warehouse

REVISIONS

#	DATE	DESCRIPTION

DATE:	05/12/16
PROJECT #	15-12-28
DRAWN BY:	A3P
CHECKED BY:	KK
DRAWING SCALE	1/8" = 1'-0"

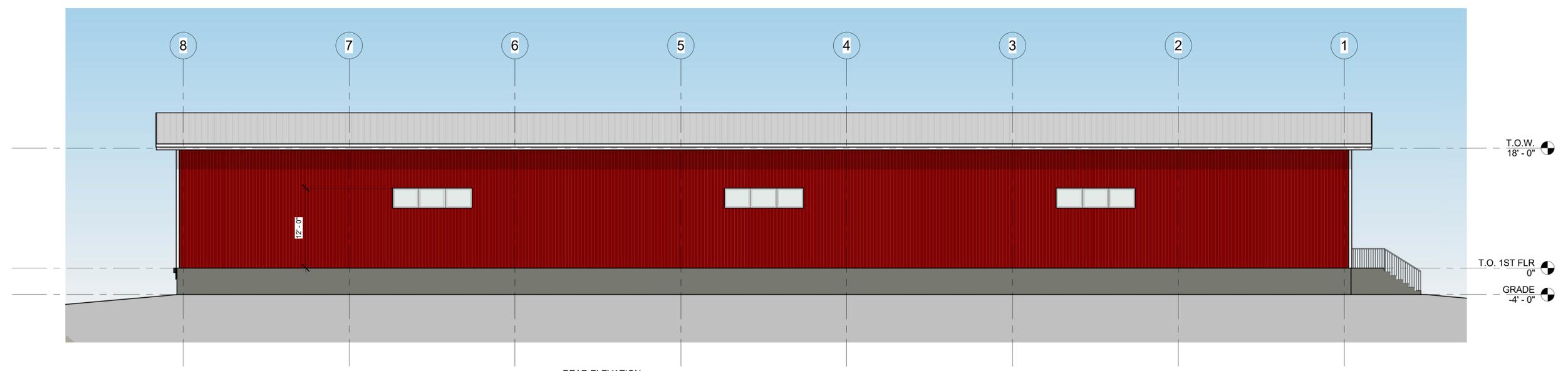
SHEET TITLE
FLOOR PLAN

AI

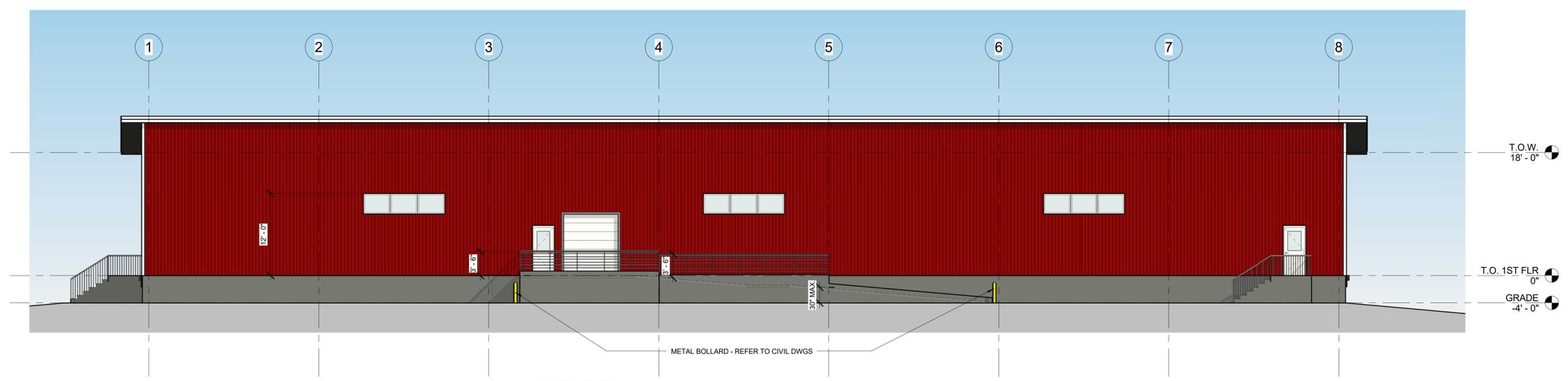
© COPYRIGHT 2016
REPRODUCTION OR RESALE OF
THIS DOCUMENT WITHOUT
WRITTEN PERMISSION OF
KW ARCHITECTS IS PROHIBITED

Permit Drawings

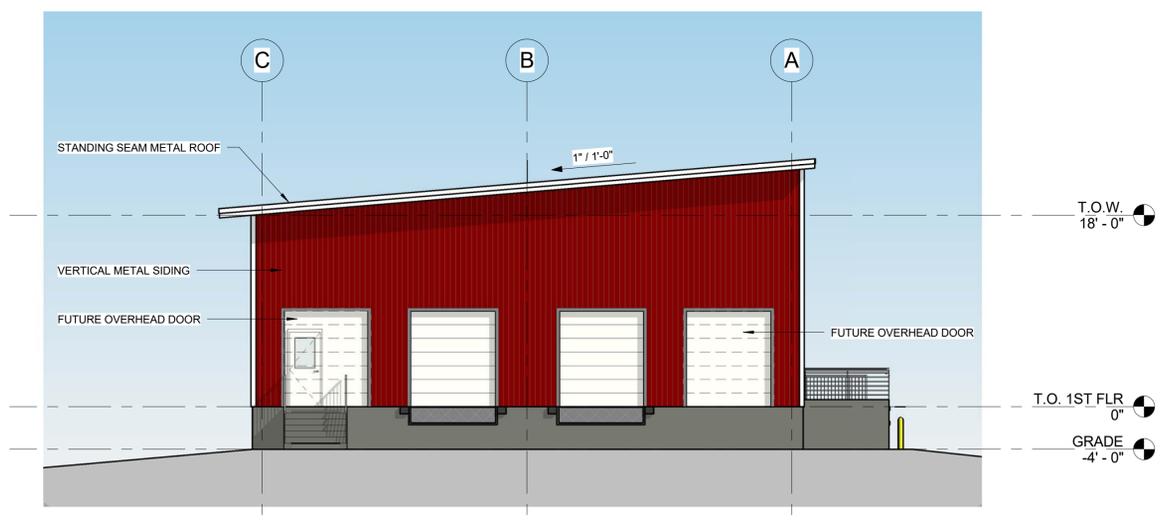
R
O
P
O
N
M
L
K
J
H
G
F
E
D
C
B
A



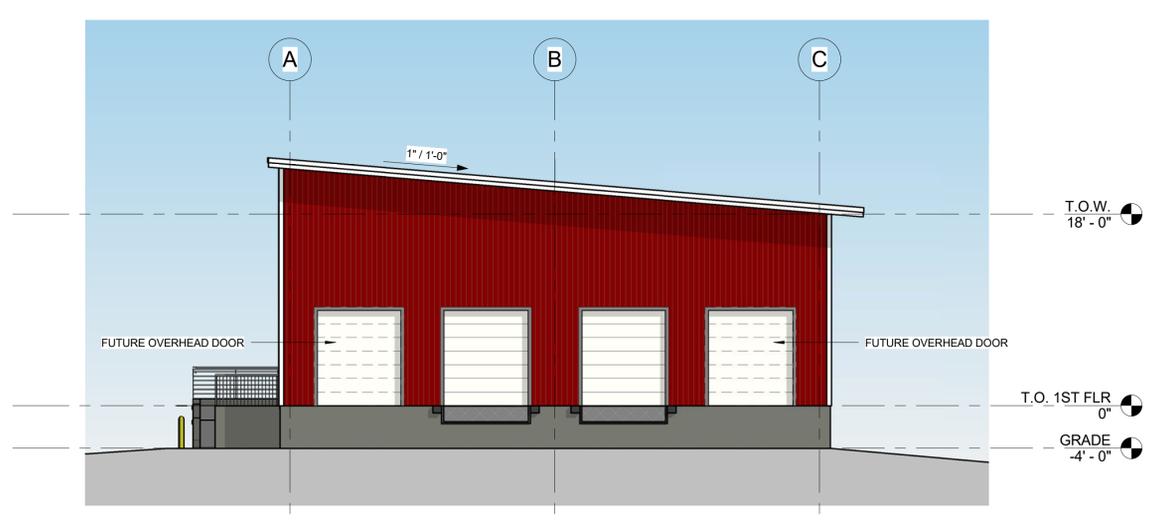
3 REAR ELEVATION
1/8" = 1'-0"



4 FRONT ELEVATION
1/8" = 1'-0"

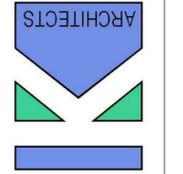


1 LEFT ELEVATION
1/8" = 1'-0"



2 RIGHT ELEVATION
1/8" = 1'-0"

KW Architects
Kristi Kenney, RA
PO Box 404
Wells, Maine 04090
(207) 332-9199



Hancock Lumber
Brunswick Warehouse

REVISIONS		
#	DATE	DESCRIPTION

DATE:	05/18/16
PROJECT #	15-12-28
DRAWN BY:	AJP
CHECKED BY:	KK
DRAWING SCALE	1/8" = 1'-0"

SHEET TITLE
ELEVATIONS

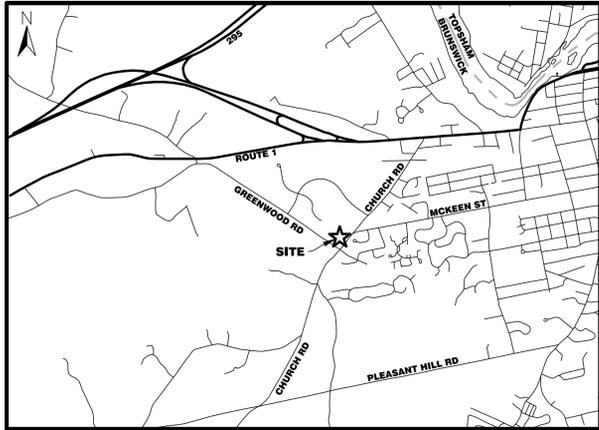
A3

© COPYRIGHT 2016
REPRODUCTION OR RELEASE OF
THIS DOCUMENT WITHOUT
WRITTEN PERMISSION OF
KW ARCHITECTS IS PROHIBITED

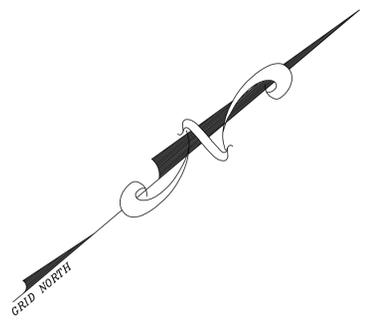
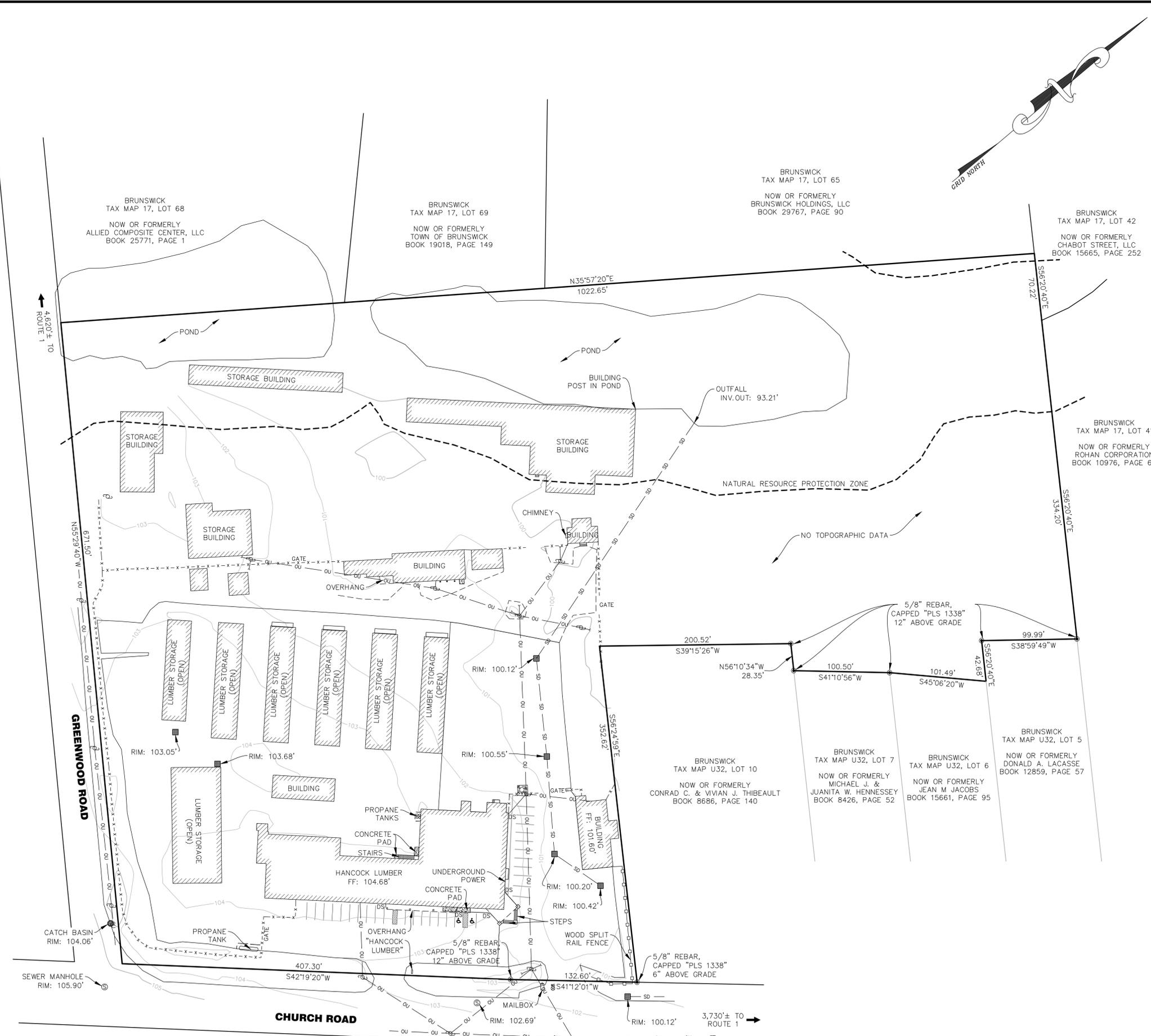
Permit Drawings

5/18/2016 12:28:31 PM AJP

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20



LOCATION MAP 1" = 1/2 MILE



- LEGEND**
- EXISTING MONUMENT, AS NOTED
 - UTILITY POLE & GUY WIRE
 - CATCH BASIN
 - SEWER MANHOLE
 - EXISTING FIRE HYDRANT
 - WATER GATE
 - DOWNSPOUT
 - OVERHEAD UTILITY
 - BOUNDARY LINE (SURVEYED)
 - ABUTTING BOUNDARY LINES (APPROX.)
 - EDGE OF GRAVEL
 - CHAINLINK FENCE
 - STORM DRAIN LINE (APPROX.)
 - MAJOR CONTOUR LINE
 - MINOR CONTOUR LINE
 - NATURAL RESOURCE PROTECTION ZONE (APPROX.)
 - PAVEMENT
 - BUILDINGS

- NOTES**
1. ALL BEARINGS ARE REFERENCED TO MAINE STATE GRID, WEST ZONE, NAD83.
 2. OWNER OF RECORD AT TIME OF SURVEY: HANCOCK MID-COAST, LLC; BOOK 21734, PAGE 76.
 3. TOTAL AREA: 13.14 ACRES.
 4. ALL BOOK AND PAGES REFER TO THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
 5. TOWN OF BRUNSWICK: TAX MAP 17, LOT 22.
 6. CONTOURS SHOWN ARE BASED ON A TOPOGRAPHIC SURVEY COMPLETED BY MAIN-LAND DEVELOPMENT CONSULTANTS, INC ON DECEMBER 17, 2015 AND DECEMBER 31 COVERING A PORTION OF THE SITE WITH A CONTOUR INTERVAL OF 1-FOOT. THE VERTICAL DATUM IS NAVD88 AND BASED ON GPS OBSERVATIONS PROCESSED WITH OPUS.
 7. UNDERGROUND UTILITIES WERE NOT MARKED OR LOCATED BY MAIN-LAND. STORM DRAIN INFRASTRUCTURE SHOWN IS APPROXIMATE AND BASED ON VISIBLE INSPECTION AND ABOVE GROUND FEATURES. MAIN-LAND RECOMMENDS THE USE OF DIG SAFE OR OTHER ENTITIES TO MARK ANY UNDERGROUND UTILITIES PRIOR TO THE BEGINNING OF ANY CONSTRUCTION.
 8. THE SURVEYED PARCEL IS COMPLETELY WITHIN THE TOWN OF BRUNSWICK BUSINESS AND INDUSTRY 2 ZONE.

- PLAN REFERENCES**
1. "STANDARD BOUNDARY SURVEY FOR MARRINER LUMBER CO.," DATED JANUARY 10, 2000, SURVEYED BY ROBERT M. SPIVEY, PLS 1338 AND RECORDED IN PLAN BOOK 200, PAGE 81 ON FEBRUARY 9, 2000.

MAIN-LAND DEVELOPMENT CONSULTANTS, INC.
 42 CHURCH ST. LIVERMORE FALLS, MAINE
 PH: (207) 897-6752 FAX: (207) 897-5404
 WWW.MAIN-LANDDCI.COM

PROJECT
HANCOCK LUMBER
 CHURCH ROAD & GREENWOOD ROAD
 TOWN OF BRUNSWICK, COUNTY OF CUMBERLAND, STATE OF MAINE
OWNER OF RECORD
HANCOCK MID-COAST, LLC
 P.O. BOX 299,
 CASCO, MAINE 04015
MADE FOR
HANCOCK LUMBER COMPANY
 P.O. BOX 299,
 CASCO, MAINE 04015

DRAWING SCALE:
 50 0 25 50
 (IN FEET)
 1 INCH = 50 FT

REVISION NOTES:
 REVISION 1: 2016-06-22 CLB
 ADD NOTE 8 AND NATURAL RESOURCE PROTECTION ZONE.

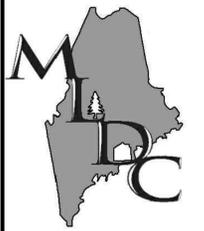
PROJ. MGR: RDL
 DRAWN BY: CLB
 CHECKED BY: TJG
 REVISION NO. 1
 ISSUE DATE: 2016-01-28
 SURVEY DATE: 2015-12-17&31
 ISSUED FOR: FINAL

PARTIAL EXISTING CONDITIONS PLAN

SEAL:

 CHARLES L. BUKER PLS #2397

DRAWING NO.
S1.1
 MLDC NO. 15-221 1 OF 6



MAIN-LAND
DEVELOPMENT
CONSULTANTS, INC.

42 CHURCH ST. LIVERMORE FALLS, MAINE
PH: (207) 897-6752 FAX: (207) 897-5404
WWW.MAIN-LANDDCI.COM

PROJECT
HANCOCK LUMBER

158 CHURCH ROAD, TOWN OF
BRUNSWICK, COUNTY OF
CUMBERLAND, STATE OF MAINE

OWNER OF RECORD

**HANCOCK
MID-COAST, LLC**

P.O. BOX 299,
CASCO, MAINE 04015

MADE FOR

**HANCOCK LUMBER
COMPANY**

P.O. BOX 299,
CASCO, MAINE 04015

DRAWING SCALE:



(IN FEET)
1 INCH = 30 FT

REVISION NOTES:

PROJ. MGR:	RDL
DRAWN BY:	IJAB
CHECKED BY:	RDL
REVISION NO.:	N/A
ISSUE DATE:	2016-06-24
ISSUED FOR:	PERMITTING

NOT FOR CONSTRUCTION

**EXISTING
CONDITIONS AND
DEMOLITION PLAN**

SEAL:

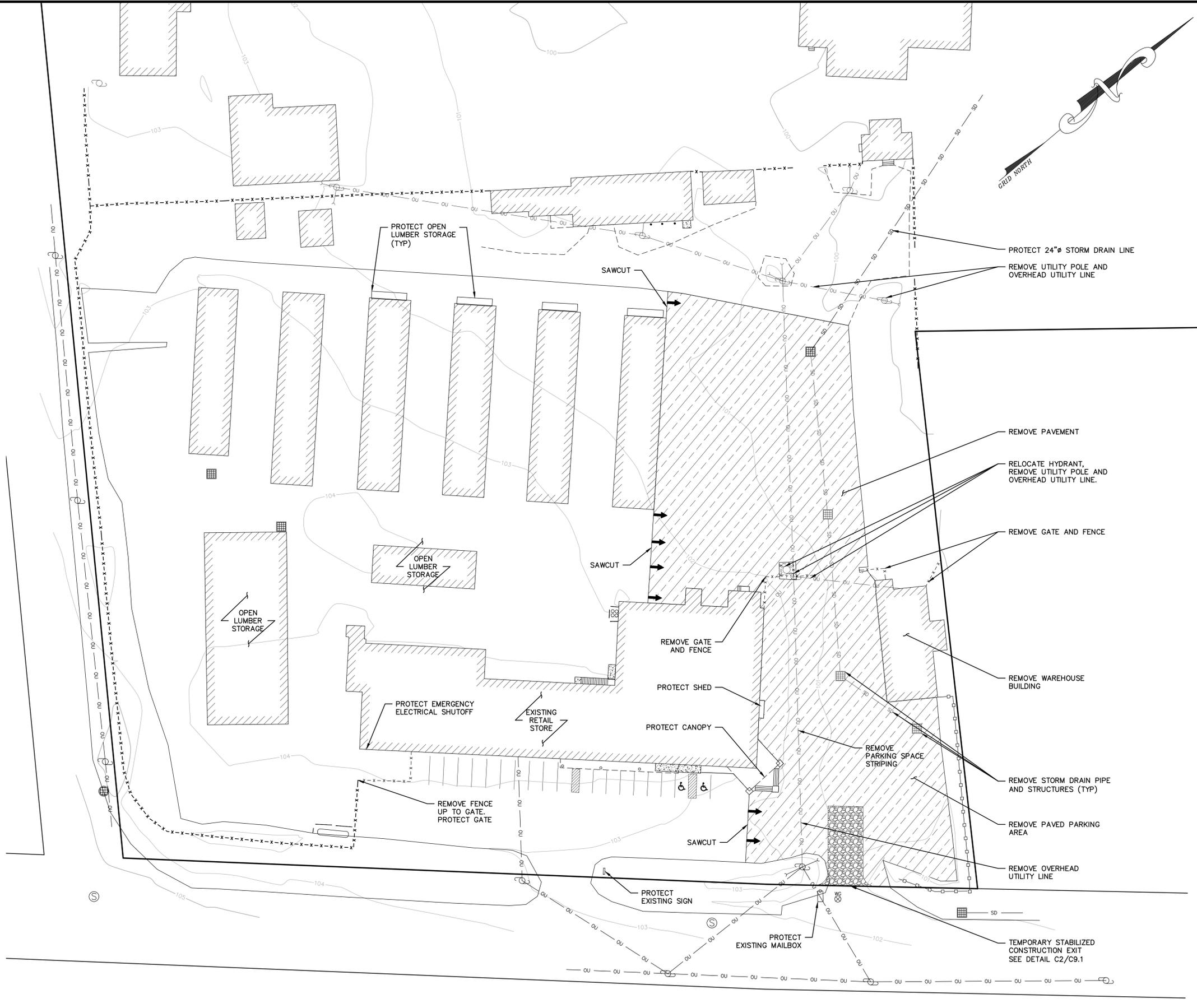


ROBERT D. LIGHTBODY ME PE#13893

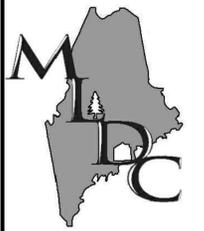
DRAWING NO.

C1.1

MLDC NO. 15-221 2 OF 6



- LEGEND**
- UTILITY POLE
 - CATCH BASIN
 - SEWER MANHOLE
 - EXISTING FIRE HYDRANT
 - WATER GATE
 - OVERHEAD UTILITY
 - PROPERTY BOUNDARY LINE (SURVEYED)
 - ABUTTING BOUNDARY LINES (APPROX.)
 - EDGE OF GRAVEL
 - CHAINLINK FENCE
 - EXISTING STORM DRAIN LINE (APPROXIMATE)
 - MAJOR CONTOUR LINE
 - MINOR CONTOUR LINE
 - EXISTING BUILDING



MAIN-LAND
DEVELOPMENT
CONSULTANTS, INC.

42 CHURCH ST. LIVERMORE FALLS, MAINE
PH: (207) 897-6752 FAX: (207) 897-5404
WWW.MAIN-LANDDCI.COM

PROJECT

HANCOCK LUMBER

158 CHURCH ROAD, TOWN OF
BRUNSWICK, COUNTY OF
CUMBERLAND, STATE OF MAINE

OWNER OF RECORD

**HANCOCK
MID-COAST, LLC**

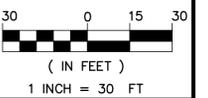
P.O. BOX 299,
CASCO, MAINE 04015

MADE FOR

**HANCOCK LUMBER
COMPANY**

P.O. BOX 299,
CASCO, MAINE 04015

DRAWING SCALE:

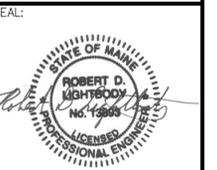


REVISION NOTES:

PROJ. MGR:	RDL
DRAWN BY:	NPO/JAB
CHECKED BY:	RDL
REVISION NO.:	N/A
ISSUE DATE:	2016-06-24
ISSUED FOR:	PERMITTING

NOT FOR CONSTRUCTION

**SITE GRADING
AND UTILITIES
PLAN**

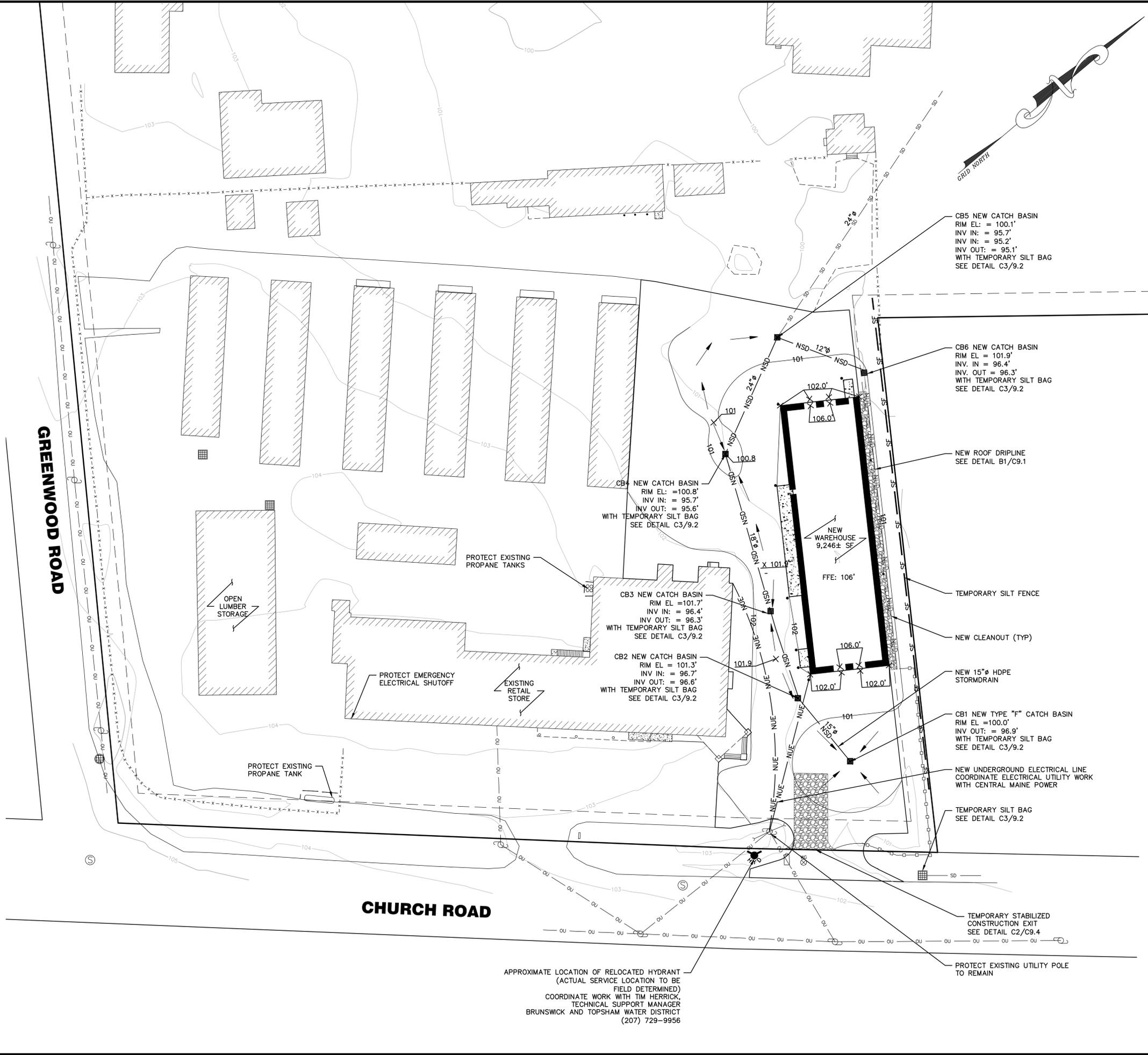


ROBERT D. LIGHTBODY ME PE#13893

DRAWING NO.

C2.2

MLDC NO. 15-221 4 OF 6



LEGEND

- UTILITY POLE
- CATCH BASIN
- SEWER MANHOLE
- EXISTING FIRE HYDRANT
- WATER GATE
- OVERHEAD UTILITY
- PROPERTY BOUNDARY LINE (SURVEYED)
- ABUTTING BOUNDARY LINES (APPROX.)
- EDGE OF GRAVEL
- CHAINLINK FENCE
- EXISTING STORM DRAIN LINE (APPROXIMATE)
- MAJOR CONTOUR LINE
- MINOR CONTOUR LINE
- SPOT GRADE
- NEW MINOR CONTOUR LINE
- NEW MAJOR CONTOUR LINE
- NEW UNDERDRAIN
- NEW STORM DRAIN
- NEW UNDERGROUND ELECTRIC LINE
- FLOW DIRECTION ARROW
- EXISTING BUILDING
- PROPOSED BUILDING

APPROXIMATE LOCATION OF RELOCATED HYDRANT
(ACTUAL SERVICE LOCATION TO BE
FIELD DETERMINED)
COORDINATE WORK WITH TIM HERRICK,
TECHNICAL SUPPORT MANAGER
BRUNSWICK AND TOPSHAM WATER DISTRICT
(207) 729-9956

EXISTING CONDITIONS AND DEMOLITION

- E1. TOPOGRAPHIC AND BOUNDARY SURVEY INFORMATION SHOWN ON PLANS COMPLETED BY MAIN-LAND DEVELOPMENT CONSULTANTS, INC ON DECEMBER 17, 2015 AND DECEMBER 31, 2015.
- E2. CONTRACTOR SHALL VERIFY SITE CONDITIONS, INCLUDING TEST PITS FOR LOCATIONS AND INVERTS OF UTILITIES, AND REPORT ANY DISCREPANCIES TO MAIN-LAND PRIOR TO PROCEEDING WITH THAT PORTION OF THE WORK.
- E3. PRIOR TO REMOVAL OF UTILITIES, VERIFY UTILITY FUNCTION, MATERIAL, USE, AND CURRENT ACTIVITY. REPORT DISCREPANCIES TO MAIN-LAND FOR DIRECTION PRIOR TO COMMENCING THE WORK ON THAT UTILITY.
- E4. SOME EXISTING PIPES COULD BE ASBESTOS CEMENT PIPE. HANDLE AND DISPOSE OF ASBESTOS MATERIALS WITH CARE AND IN ACCORDANCE WITH APPLICABLE CODES AND SAFETY STANDARDS.
- E5. EXCAVATE AND STOCKPILE TOPSOIL ON-SITE. TOPSOIL IS TO REMAIN THE PROPERTY OF THE OWNER. NO TOPSOIL SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR.
- E6. RELOCATE TBM INFORMATION ONTO NEW TBM OF CONTRACTORS CHOICE FOR CONSTRUCTION USE PRIOR TO REMOVAL OF EXISTING TBM.
- E7. PRIOR TO BEGINNING DEMOLITION OR SITE WORK, THE GENERAL CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE CITY OF TOWN OF BRUNSWICK TO DISCUSS THE INSPECTION PROCESS AND PROJECT SCHEDULE.

SITE LAYOUT AND MATERIALS

- L1. DIMENSIONS ARE TO FACE OF CURB AND TO FACE OF FOUNDATION UNLESS NOTED OTHERWISE.
- L2. CATCH BASIN GRATES SHALL BE SET SQUARE TO PAVEMENT EDGES.
- L3. PAVEMENT EDGES SHALL BE TRUE TO LINE. SAWCUT EXISTING PAVEMENT IN SMOOTH, STRAIGHT LINES WHERE NEW PAVEMENT JOINS. PROVIDE TACK COAT LAYER AS SPECIFIED.
- L4. CONTRACTOR SHALL VERIFY SITE CONDITIONS, INCLUDING TEST PITS FOR LOCATIONS AND INVERTS OF UTILITIES, AND REPORT ANY DISCREPANCIES TO MAIN-LAND PRIOR TO PROCEEDING WITH THAT PORTION OF THE WORK.
- L5. PROVIDE TRAFFIC CONTROL SIGNAGE AND STRIPING AS SHOWN AND IN ACCORDANCE WITH U.S.D.O.T. MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

GRADING AND EROSION CONTROL

- G1. ADD 6" LOAM, SEED AND MULCH TO DISTURBED AREAS UNLESS OTHERWISE NOTED.
- G2. GRADE SURFACES TO DRAIN AWAY FROM BUILDINGS. PUDDLING OF WATER IN PAVED OR UNPAVED AREAS WILL NOT BE ACCEPTABLE.
- G3. MAINTAIN TEMPORARY EROSION CONTROL MEASURES FOR THE DURATION OF CONSTRUCTION. INSPECT WEEKLY AND AFTER EACH STORM AND REPAIR AS NEEDED. REMOVE SEDIMENTS FROM THE SITE, PLACE IN AREA OF LOW EROSION POTENTIAL, AND STABILIZE WITH SEED AND MULCH.
- G4. PLACE TEMPORARY SOIL STABILIZATION WITHIN 7 DAYS OF INITIAL DISTURBANCE. PLACE PERMANENT SOIL STABILIZATION WITHIN 7 DAYS OF FINAL GRADING.

UTILITIES

- U1. CATCH BASIN GRATES SHALL BE SET SQUARE TO PAVEMENT EDGES.
- U2. THE ACCURACY AND COMPLETENESS OF SUBSURFACE INFORMATION IS NOT GUARANTEED. VERIFY SITE CONDITIONS INCLUDING TEST PITS FOR LOCATIONS AND INVERTS OF UTILITIES, AND REPORT ANY DISCREPANCIES TO MAIN-LAND PRIOR TO PROCEEDING WITH THAT PORTION OF THE WORK.
- U3. PROVIDE AT LEAST 5' OF SOIL COVER OVER WATER LINES AND SEWER FORCE MAIN. SURROUND WATER PIPE WITH 6 INCHES OF CONCRETE ENCASEMENT, REINFORCED WITH WWF, AT CROSSINGS OF SEWER LINES UNLESS WATER IS ABOVE BY 18" CLEARANCE. ENCASEMENT TO EXTEND 10 FEET BEYOND SEWER LINE IN BOTH DIRECTIONS.
- U4. PROVIDE 4 FOOT WIDE LAYER OF 2-INCH THICK RIGID FOAM INSULATION ON BEDDING MATERIAL 6-INCHES ABOVE OR BELOW SEWER PIPE OR WATER PIPE, WHERE IT CROSSES A STORM DRAIN PIPE WITH LESS THAN 4 FEET OF SEPARATION.
- U5. CLEAN SEDIMENTS FROM NEW AND EXISTING STORM DRAIN PIPES AND CATCH BASINS.
- U6. COORDINATE WORK ON UTILITY LINES OR WITHIN ROAD RIGHT-OF-WAY WITH THE UTILITY COMPANIES AND CITY ROAD DEPARTMENT.
- U7. RESET RIMS OF EXISTING UTILITY STRUCTURES, MANHOLES, AND CATCH BASINS TO NEW GRADE.
- U8. SLOPE CONDUITS AWAY FROM BUILDING TO HANDHOLE OR UTILITY POLE TO AVOID GROUNDWATER SEEPAGE INTO BUILDING.

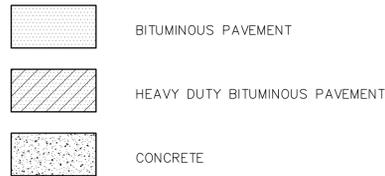
GENERAL NOTES

NOT TO SCALE

A5

HATCH LEGEND

NOT TO SCALE



A4

STANDARD SITE ABBREVIATIONS

NOT TO SCALE

STANDARD SITE ABBREVIATIONS

BIT.	BITUMINOUS
C.O.	CLEAN-OUT
CONC.	CONCRETE
DI.	DRAIN INLET
ELEV.	ELEVATION
EXG.	EXISTING
F.F.E.	FINISHED FLOOR ELEVATION
FT	FEET
IN.	INCHES
INV.	INVERT
MAX.	MAXIMUM
MIN.	MINIMUM
MLDC	MAIN-LAND DEVELOPMENT CONSULTANTS
N.I.C.	NOT IN CONTRACT
NCB	NEW CATCH BASIN
NLP	NEW LIGHT POLE
NS	NEW SEWER
NSD	NEW STORM DRAIN
NSFM	NEW SEWER FORCE MAIN
NSL	NEW SPOT LIGHT
NUD	NEW UNDERDRAIN
NUE	NEW UNDERGROUND ELECTRICAL
NUSC	NEW UNDERGROUND SPARE CONDUIT
NW	NEW WATER
NWF	NEW WALL FIXTURE
P.C.	PRECAST
R	RAMP
S	STRUCTURAL PAD
SQ	SQUARE
T	TRANSITIONAL PAD
TYP	TYPICAL
W/	WITH
UNO	UNLESS NOTED OTHERWISE

A3

SILT FENCE

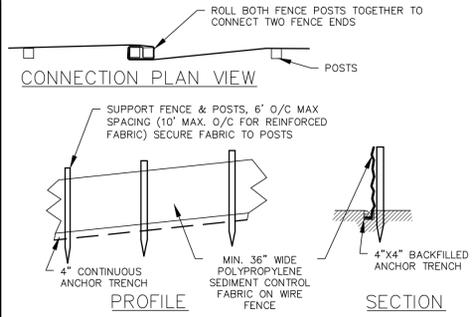
NOT TO SCALE

C4

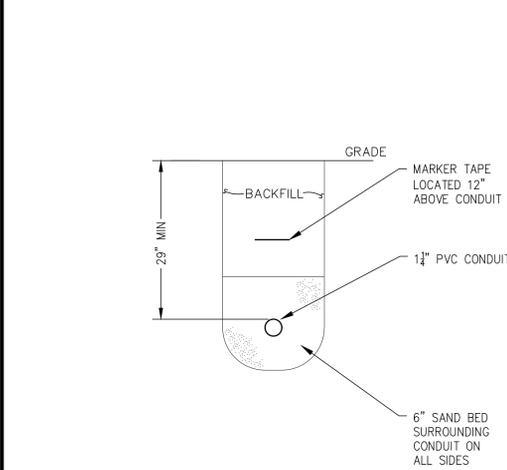
NEW UNDERGROUND LIGHTING CONDUIT

NOT TO SCALE

C3



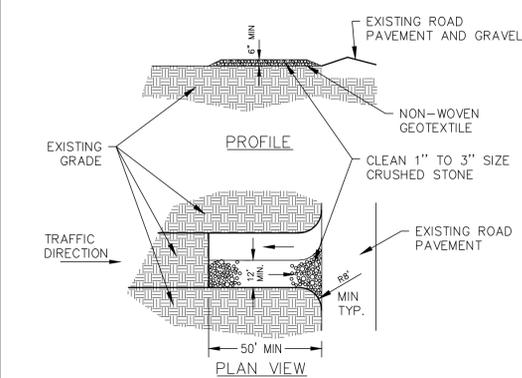
- NOTES:
1. PLACE SILT FENCE OR FILTER BERMS ALONG UNIFORMLY SLOPED SURFACE.
 2. EROSION CONTROL MIX FILTER BERM MAY BE SUBSTITUTED FOR A SILTFENCE. SEE THE SITE GRADING AND EROSION CONTROL PLAN.
 3. EXCAVATE A 4"x4" ANCHOR TRENCH ALONG THE LINE OF PLACEMENT FOR THE FILTER BARRIER.
 4. UNROLL ONE SECTION AT A TIME AND POSITION THE POSTS AGAINST THE BACK (DOWNSTREAM) WALL OF THE TRENCH.
 5. DRIVE THE POSTS INTO THE GROUND UNTIL APPROXIMATELY 2" OF FABRIC IS LYING ON THE TRENCH BOTTOM, JOIN SECTIONS AS SHOWN ABOVE.
 6. LAY THE TOE-IN FLAP OF FABRIC ONTO THE UNDISTURBED BOTTOM OF THE TRENCH, BACKFILL THE TRENCH AND TAMP THE SOIL. TOE-IN CAN ALSO BE ACCOMPLISHED BY LAYING THE FABRIC FLAP ON UNDISTURBED GROUND AND PILING AND TAMPING FILL AT THE BASE, BUT MUST BE ACCOMPLISHED BY AN INTERCEPTION DITCH.
 7. BARRIER SHALL BE MIRAFI SILT FENCE OR APPROVED EQUAL.



TEMP. STABILIZED CONSTRUCTION EXIT

NOT TO SCALE

C2

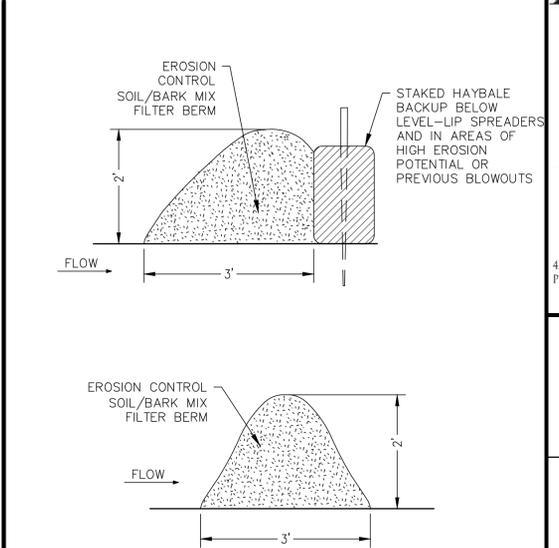


- NOTES:
1. CRUSHED STONE SIZE: 3" TO 1".
 2. THICKNESS: MINIMUM OF 6".
 3. MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC TRAVELED WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE.

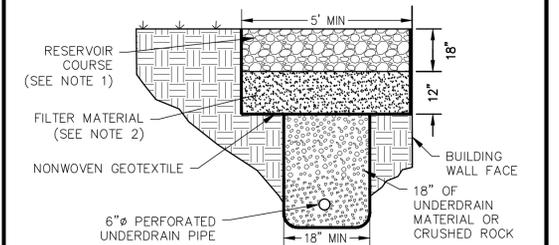
SEDIMENT FILTER BERM

NOT TO SCALE

C1



- NOTES:
1. RESERVOIR COURSE SHALL BE 18 INCHES THICK AT MINIMUM AND SHALL CONSIST OF CLEAN, WASHED 3/4" TO 1" AGGREGATE THAT IS FREE OF DEBRIS.
 2. IF FOUNDATION BACKFILL IS A MINERAL SOIL BETWEEN 4 AND 7% FINES IT MAY BE USED AS THE FILTER MATERIAL.
 3. UNDERDRAIN MATERIAL SHALL BE WELL GRADED, CLEAN, COARSE GRAVEL MEETING THE MDOT SPECIFICATION 703.22 UNDERDRAIN TYPE B FOR UNDERDRAIN BACKFILL. CRUSHED ROCK IS ALSO ACCEPTABLE AND SHOULD BE WRAPPED IN NON-WOVEN GEOTEXTILE FABRIC.



CONC ENCASED DUCT BANK SECTION

NOT TO SCALE

B4

C.I.P. CONCRETE SURFACING

NOT TO SCALE

TYPICAL MAINE DOT GRAVEL SPECS

NOT TO SCALE

ROOF DRIPLINE FILTER

NOT TO SCALE

B1

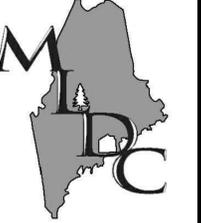
MDOT GRAVEL SPECIFICATIONS SECTION 703.06

SIEVE SIZE	% PASSING BY WEIGHT		
	TYPE A	TYPE B	TYPE C
1/2 INCH	45-70	35-75	
1/4 INCH	30-55	25-60	25-70
No. 40	0-20	0-25	0-30
No. 200	0-5.0	0-5.0	0-5.0
	TYPE D	TYPE E	TYPE F
1/4 INCH	25-70	25-100	60-100
No. 40	0-30	0-50	0-50
No. 200	0-7.0	0-7.0	0-7.0

- NOTE: TYPE A AGGREGATE FOR BASE SHALL ONLY CONTAIN PARTICLES OF ROCK WHICH PASS THE 2 INCH SIEVE.
- NOTE: TYPE B AGGREGATE FOR BASE SHALL ONLY CONTAIN PARTICLES OF ROCK WHICH PASS THE 4 INCH SIEVE.
- NOTE: TYPE C AGGREGATE FOR BASE SHALL ONLY CONTAIN PARTICLES OF ROCK WHICH PASS THE 6 INCH SIEVE.
- NOTE: AGGREGATE FOR SUB-BASE SHALL BE SAND OR GRAVEL OF HARD DURABLE PARTICLES FREE OF VEGETABLE MATTER, LUMPS OF CLAY, AND OTHER DELETERIOUS SUBSTANCES. AGGREGATE FOR SUB-BASE SHALL NOT CONTAIN PARTICLES THAT DO NOT PASS THE 6 INCH SIEVE.

UTILITY LOCATION REQUIREMENTS

- PRIOR TO EXCAVATION, VERIFY THE UNDERGROUND UTILITIES, PIPES, STRUCTURES, AND FACILITIES. PROVIDE THE FOLLOWING MINIMUM MEASURES.
- PRE-MARK THE BOUNDARIES OF YOUR PLANNED EXCAVATION WITH WHITE PAINT, FLAGS, OR STAKES SO UTILITY CREWS KNOW WHERE TO MARK THEIR LINES.
 - CALL DIG SAFE, AT 1-888-DIGSAFE, AT LEAST THREE BUSINESS DAYS - BUT NO MORE THAN 30 CALENDAR DAYS - BEFORE STARTING WORK. DON'T ASSUME SOMEONE ELSE WILL MAKE THE CALL.
 - IF BLASTING, NOTIFY DIG SAFE AT LEAST ONE BUSINESS DAY IN ADVANCE.
 - WAIT THREE BUSINESS DAYS FOR LINES TO BE LOCATED AND MARKED WITH COLOR-CODED PAINT, FLAGS, OR STAKES. NOTE THE COLOR OF THE MARKS AND THE TYPE OF UTILITIES THEY INDICATE. TRANSFER THESE MARKS TO THE AS-BUILT DRAWINGS.
 - CONTACT THE LANDOWNER AND OTHER 'NON-MEMBER' UTILITIES (WATER, SEWER, GAS, ETC) FOR THEM TO MARK THE LOCATIONS OF THEIR UNDERGROUND FACILITIES. TRANSFER THESE MARKS TO THE AS-BUILT DRAWINGS.
 - RE-NOTIFY DIG SAFE AND THE NON-MEMBER UTILITIES IF THE DIGGING, DRILLING, OR BLASTING DOES NOT OCCUR WITHIN 30 CALENDAR DAYS, OR IF THE MARKS ARE LOST DUE TO WEATHER CONDITIONS, SITE WORK ACTIVITY, OR ANY OTHER REASON.
 - HAND DIG WITHIN 18 INCHES IN ANY DIRECTION OF ANY UNDERGROUND LINE UNTIL THE LINE IS EXPOSED. MECHANICAL METHODS MAY BE USED FOR INITIAL SITE PENETRATION, SUCH AS REMOVAL OF PAVEMENT OR ROCK.
 - DIG SAFE REQUIREMENTS ARE IN ADDITION TO TOWN, CITY, AND/OR STATE D.O.T. STREET OPENING PERMIT REQUIREMENTS.
 - FOR COMPLETE DIG SAFE REQUIREMENTS, CALL THE P.U.C. OR VISIT THEIR WEBSITE.
 - IF YOU DAMAGE, DISLOCATE, OR DISTURB ANY UNDERGROUND UTILITY LINE, IMMEDIATELY NOTIFY THE AFFECTED UTILITY. IF DAMAGE CREATES SAFETY CONCERNS, CALL THE FIRE DEPARTMENT AND TAKE IMMEDIATE STEPS TO SAFEGUARD HEALTH AND PROPERTY.
 - ANY TIME AN UNDERGROUND LINE IS DAMAGED OR DISTURBED, OR IF LINES ARE IMPROPERLY MARKED, YOU MUST FILE AND INCIDENT REPORT WITH THE P.U.C. FOR AN INCIDENT REPORT FORM VISIT WWW.STATE.ME.US/MPUC OR CALL THE P.U.C. AT 1-800-452-4699.



MAIN-LAND DEVELOPMENT CONSULTANTS, INC.

42 CHURCH ST. LIVERMORE FALLS, MAINE
PH: (207) 897-6752 FAX: (207) 897-5404
WWW.MAIN-LANDDCI.COM

PROJECT

HANCOCK LUMBER

158 CHURCH ROAD, TOWN OF BRUNSWICK, COUNTY OF CUMBERLAND, STATE OF MAINE

OWNER OF RECORD

HANCOCK MID-COAST, LLC.

PO BOX 299
CASCO, ME 04015

CLIENT/MADE FOR

HANCOCK LUMBER COMPANY

PO BOX 299
CASCO, ME 04015

DRAWING SCALE:

NTS

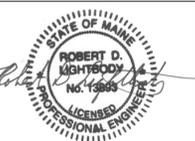
REVISION NOTES:

PROJ. MGR: RDL
DRAWN BY: NPO
CHECKED BY: RDL
REVISION NO: N/A
ISSUE DATE: 2015-06-24
ISSUED FOR: PERMITTING

NOT FOR CONSTRUCTION

SITE DETAILS

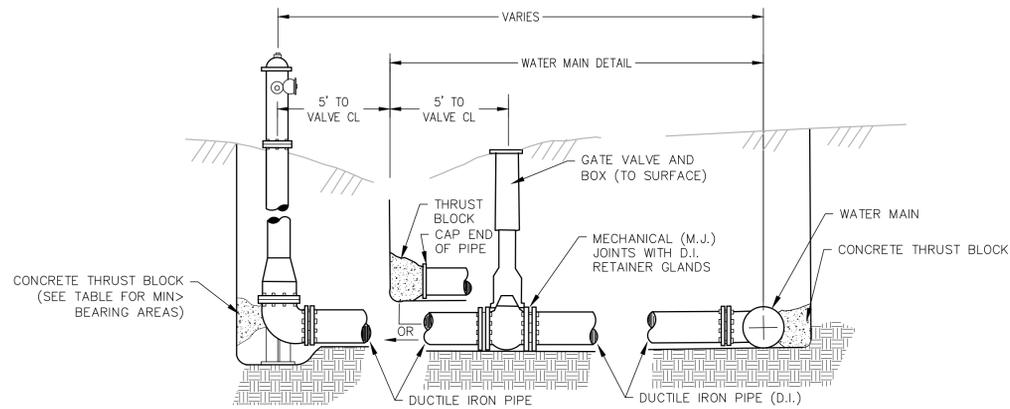
SEAL:



ROBERT D. LIGHTBODY ME PE#13893

DRAWING NO.

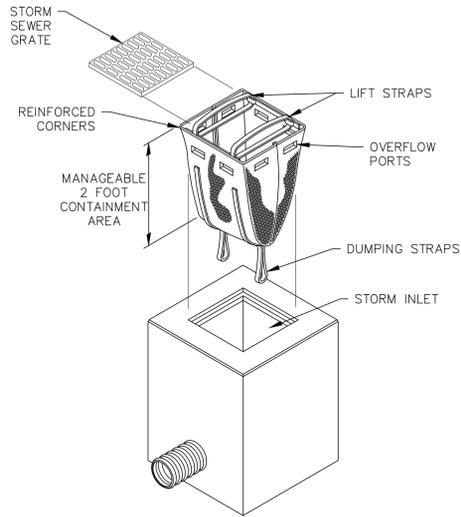
C9.1



WATER MAIN/FIRE HYDRANT

NOT TO SCALE

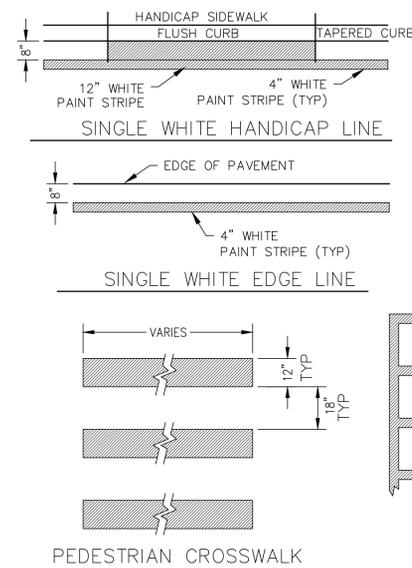
C4



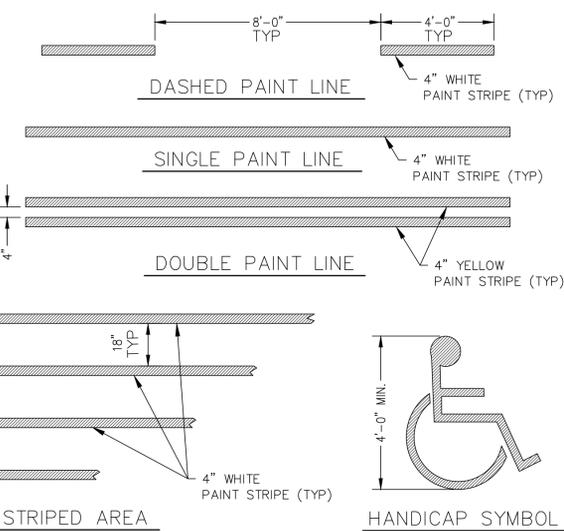
STORM DRAIN INLET EROSION CONTROL

NOT TO SCALE

C3



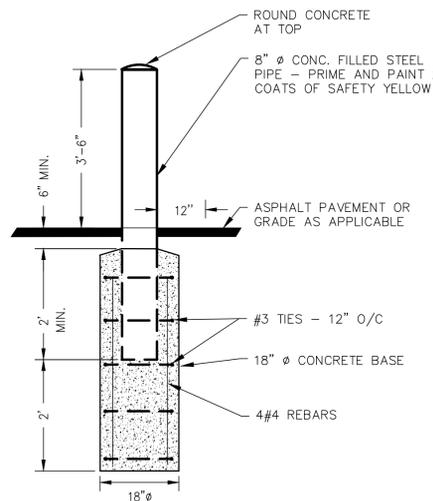
PEDESTRIAN CROSSWALK



TYPICAL PAINT STRIPING

NOT TO SCALE

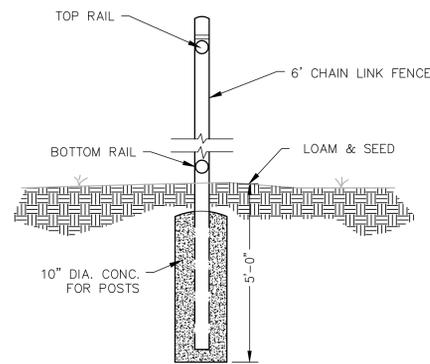
C1



BOLLARD

NOT TO SCALE

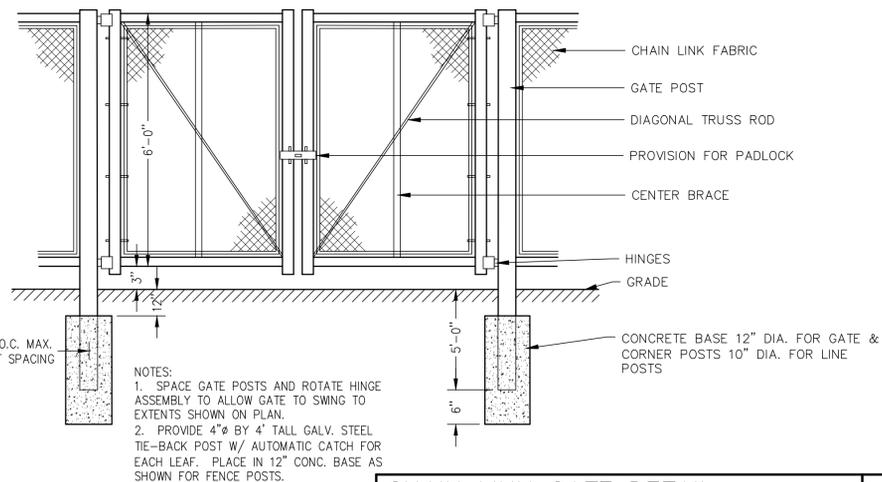
B5



CHAIN LINK FENCE DETAIL

NOT TO SCALE

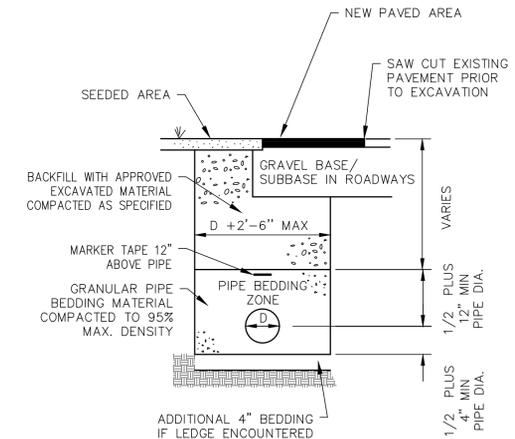
B4



CHAIN LINK GATE DETAIL

NOT TO SCALE

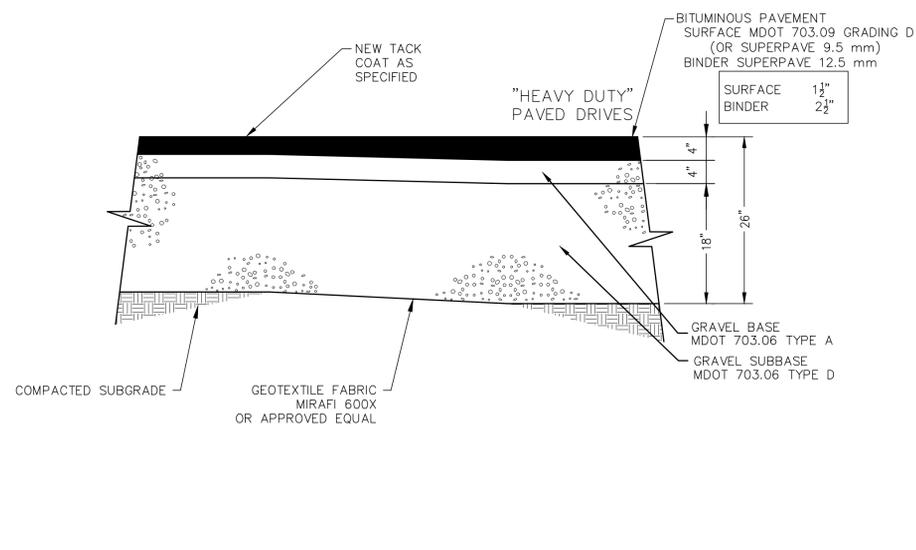
B2



PIPE TRENCH

NOT TO SCALE

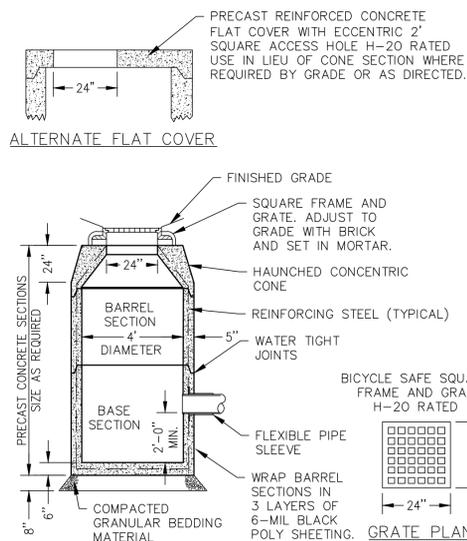
B1



BITUMINOUS PAVEMENT DETAIL

NOT TO SCALE

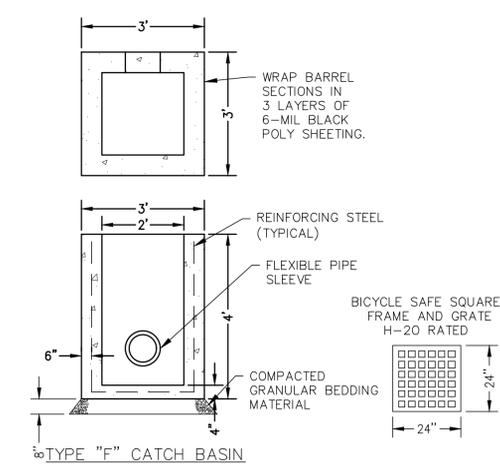
A4



PRECAST CONCRETE CATCH BASIN

NOT TO SCALE

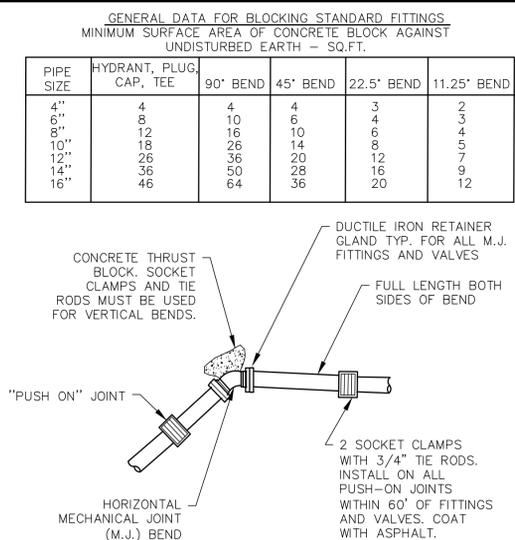
A3



PRECAST CONCRETE CATCH BASIN

NOT TO SCALE

A2



RESTRAINT AT WATER LINE FITTINGS

NOT TO SCALE

A1



MAIN-LAND
DEVELOPMENT
CONSULTANTS, INC.

42 CHURCH ST. LIVERMORE FALLS, MAINE
PH: (207) 897-6752 FAX: (207) 897-5404
WWW.MAIN-LANDDCI.COM

PROJECT
HANCOCK LUMBER

158 CHURCH ROAD, TOWN OF
BRUNSWICK, COUNTY OF
CUMBERLAND, STATE OF MAINE

OWNER OF RECORD
**HANCOCK
MID-COAST, LLC.**

PO BOX 299
CASCO, ME 04015

CLIENT/MADE FOR
**HANCOCK LUMBER
COMPANY**

PO BOX 299
CASCO, ME 04015

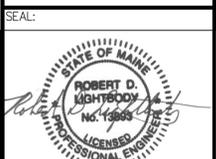
DRAWING SCALE:
NTS

REVISION NOTES:

PROJ. MGR: RDL
DRAWN BY: NPO
CHECKED BY: RDL
REVISION NO. N/A
ISSUE DATE: 2015-06-24
ISSUE FOR: PERMITTING

NOT FOR CONSTRUCTION

SITE DETAILS



ROBERT D. LIGHTBODY ME PE#13893

DRAWING NO.

C9.2

MLDC NO. 15-221 6 OF 6