Town of Kittery Maine
Town Planning Board Meeting
August 27 , 2020

ITEM 1 –Route 236 / MacKenzie Lane – Preliminary Site Plan Review
Action: Close or continue public hearing; approve or deny plan Owner/applicant Robert T. Brennan, Jr. requests consideration of a preliminary site plan for a 1,672 sf 1-story building proposed for a car wash on a 324,233 sf lot located at the corner of Route 236 and MacKenzie Lane (Tax Map 289, Lot 25D) in the Commercial (C-2) Zone. Agent is Ryan McCarthy, Tidewater Engineering, Inc.

PROJECT TRACKING

REQ'D	ACTION	COMMENTS	STATUS
NO	Sketch Plan Review	None.	N/A
YES	Site Visit	July 7, 2020	HELD
YES	Determination of Completeness/Acceptance	June 25, 2020	ACCEPTED
YES	Public Hearing	July 23, 2020; August 27,2020	ONGOING
YES	Final Plan Review and Decision	TBD	TBD

Plan Review Notes reflect comments and recommendations regarding applicability of Town Land Use Development Code, and standard planning and development practices. Only the PB makes final decisions on code compliance and approves, approves with conditions or denies final plans. Prior to the signing of the approved Plan any **Conditions of Approval related to the Findings of Fact along with waivers and variances (by the BOA) must be placed on the Final Plan and recorded at the York County Registry of Deeds. PLACE THE MAP AND LOT NUMBER IN 1/4" HIGH LETTERS AT LOWER RIGHT BORDER OF ALL PLAN SHEETS.** As per Section 16.4.4.L - Grading/Construction Final Plan Required. - Grading or construction of roads, grading of land or lots, or construction of buildings is prohibited until the original copy of the approved final plan endorsed has been duly recorded in the York County registry of deeds when applicable.

Background

The Planning Board ("Board") has accepted the preliminary plan as complete at their June 25, 2020 Meeting and now is charged to hold a public hearing. The proposed development is a 1,672 sf 24-hour two-bay car wash on an existing vacant lot located in the Commercial C-2 zone. The proposal includes four vacuum bays, one parking space for an employee who will service the business periodically and queuing space for 8-12 cars.

On June 25, 2020, the Board was first introduced to the plan. The questions and topics emanating from that meeting were as follows:

1. Installation of bathroom facilities and type of disposal system to be installed;
2. widening MacKenzie Lane to include a turn lane onto Route 236;
3. backlit signage and its permissibility;
4. extent and constitution of the wetland along MacKenzie Lane; and
5. the operation and maintenance of the business and site.

Subsequent to the June 25, 2020 meeting, the Board held a site walk to orient itself with the site elements. Major topics stemming from that site walk regarded the following:

1. The site's traffic flow and circulation;
2. Location of, and proximity of utilities and natural features to the road;
3. Location and constitution of the wetland along MacKenzie;
4. Natural features to remain, removed and replaced on the site.

The Planning Board opened the public hearing at their July 23, 2020 meeting. The applicant, responding to Town staff comments from the June 25, 2020 meeting, designed a conceptual 'road expansion' depicting the widening of MacKenzie Lane to accommodate a right-hand turn lane onto Route 236. Before proceeding to an advance design, the applicant sought an preliminary endorsement from the Board to proceed with the road expansion without doing an comprehensive traffic study. The Board agreed with the condition that the remaining comments from the Department of Public Works enumerated in an email correspondent, dated July 23, 2020, be satisfactorily resolved. Other issues that were raised during the hearing regarded the soil composition and its ability to support the proposed building, appurtenant infrastructure as well as the stormwater design component and the permissibility of backlit signage and whether or not a bathroom is required by local and state code. Otherwise, the Board found the site plan to be in a satisfactory state. Due to the pandemic, the Board decided to continue the public hearing to the August 27, 2020 meeting so as to give the public more time to provide comments and the applicant adequate time to provide revise the plan.

Staff Review and Comments

An updated plan set was submitted on July 31, 2020 that incorporated revisions as discussed at the July 23, 2020 meeting with the exception the placement of an bathroom facility. An email correspondence from the Code Enforcement Office, Craig Alfis, dated August 20, 2020, stated the state plumbing code requires it, but defers to the Local Plumbing Inspector for a determination. Mr. Alfis reviewed the requirements the Unified Plumbing Code and concluded that the use (car wash) will require the installation of a one toilet facility, pursuant to §422.2(2) of the 2015 Unified Plumbing Code. Accordingly, a unisex toilet facility and its appurtenant components will need to be depicted in the next rendition of the site plan.

Meanwhile, during the intermediary period between meetings, Town staff, via the Technical Review Committee ("TRC") reviewed the revised plan as well. A major concern from the TRC was the addition of more volume to existing traffic numbers by the new use on MacKenzie Lane as this is already issue prone intersection. After a long discussion, it was decided to investigate the possibility of placing a traffic light at the intersection of Rt. 236 and MacKenzie Lane to improve the vehicle flow. The Town pinged Randy Dunton, P.E. of Gorrill Palmer, who previously was contracted by the Town to perform a traffic analysis of the Rt. 236 corridor[1]. Mr. Dunton reviewed the proposed site plan and supplemental application information and concluded that a traffic light was not warranted due to both the anticipated of volume of additional traffic and location of the lot's driveway which allows for adequate queuing along MacKenzie Lane.

Along with the TRC review, the Town had CMA Engineers, Inc. review the proposed preliminary site plan. The outstanding issues emerging from that review are as follows:

1. The constitution of the existing fill is unknown and additional documentation is required to fully comprehend the existing conditions and to determine that the project will function as designed.
2. The rainfall data inputted into the analysis was incorrect as the Kittery LUDC requires applicants use values from Portsmouth, NH instead of Kittery, ME, which was used in this analysis.
3. The Board may want confirmation from Maine Inland Fisheries and Wildlife that the proposed project shall not encroach upon cottontail habitat.
4. The Board will need to identify whether or not the enough screening is provided along MacKenzie Lane.

[1] https://www.kitteryme.gov/sites/g/files/vyhlif3316/f/uploads/route_236_final_report.pdf

Recommendations

By in large, the preliminary site plan appears to be more complete than the last revision and ready to proceed to final plan review. The Board should provide comments to the applicant and any other suggestions and considerations. Thereafter, the Board should entertain a motion to close the public hearing or continue the public hearing to the September 10, 2020 meeting if more time is need by the Board. If the Board closes the public hearing, a vote to approve or deny the preliminary site plan should occur. If the Board decides to vote for approval, the following conditions are recommend to be appended to the vote:

1. Prior to final plan approval, the Applicant shall confirm that the soils are suitable to support the project's and its associated elements as describe in a review letter authored by Jodie Bray Strickland's, P.E., CMA Engineers, Inc., dated August 18, 2020.

2. The next plan submission shall incorporate an onsite bathroom that is in compliant with applicable local and state plumbing codes.

3. The next plan submission shall address satisfactorily all of CMA's comments.

4. Prior to final plan approval, the applicant shall get confirmation from Maine Inland Fisheries and Wildlife stating the project can move forward as proposed.

Recommended motions

Below are recommended motions based on how the Board would like to proceed. Again, procedurally, the Board needs to vote to continue or close the public hearing. If the Board decides to close the public hearing, a vote to approve or deny the preliminary site plan should occur.

Continuing the public hearing

Move to continue the public hearing to the September 10, 2020 Planning Board meeting for a preliminary site plan application, dated March 5, 2020 and last revised on July 31, 2020 from owner/applicant Robert T. Brennan, Jr., for a 1,672 sf 1-story building proposing a car wash on a 324,233 sf lot located at the corner of Route 236 and MacKenzie Lane (Tax Map 289, Lot 25D) in the Commercial (C-2) Zone.

Closing the public hearing

Move to close the public hearing for a preliminary site plan application dated March 5, 2020 and last revised on July 31, 2020 from owner/application Robert T. Brennan, Jr., for a 1,672 sf 1-story building proposed for a car wash on a 324,233 sf lot located at 2 MacKenzie Lane (Tax Map 289, Lot 25D) in the Commercial (C-2) Zone.

Vote to approve

Move to approve the preliminary site plan application dated March 5, 2020 and last revised on July 31, 2020 from owner/applicant Robert T. Brennan, Jr., for a 1,672 sf 1-story building proposed for a car wash on a 324,233 sf lot located at the corner of Route 236 and MacKenzie Lane (Tax Map 289, Lot 25D) in the Commercial (C-2) Zone with the conditions as enumerated in 'Recommendations section of the Planner's Review Notes, dated August 27, 2020.

Vote to deny

Move to deny the preliminary site plan application dated March 5, 2020 and last revised on July 31, 2020 from owner/applicant Robert T. Brennan, Jr., for a 1,672 sf 1-story building proposed for a car wash

on a 324,233 sf lot located at the corner of Route 236 and MacKenzie Lane (Tax Map 289, Lot 25D) in the Commercial (C-2) Zone.

CMA ENGINEERS, INC.
CIVIL | ENVIRONMENTAL | STRUCTURAL

35 Bow Street
Portsmouth
New Hampshire
03801-3819

P: 603|431|6196
www.cmaengineers.com

August 18, 2020

Bart McDonough, Town Planner
Town of Kittery
200 Rogers Road
Kittery, Maine 03904

RE: Town of Kittery, Planning Board Services
Site Plan Review
Kittery Car Wash (Route 236) Tax Map 28, Lot 25D
CMA #591.131

Dear Bart:

CMA Engineers has received the following information for Assignment #131 for the site plan review for the proposed Kittery Car Wash at the intersection of Route 236 and MacKenzie Lane in Kittery (Tax Map 28, Lot 25D).

1) Site Plan Application Kittery Car Wash Route 236 Kittery, Maine, Prepared for Robert T. Brennan, Jr. 1991 SE 20th Street Cape Coral, FL 33990 by Tidewater Engineering & Surveying, Inc. of Kittery, ME dated March 2020 and revised July 31, 2020.
2) Revised Submission #2-Kittery Car Wash, Tax Map 28, Lot 25D Route 236 prepared by Ryan McCarthy of Tidewater Engineering & Surveying, Inc. of Kittery, ME dated July 31, 2020.

We have reviewed the information submitted for conformance with the Kittery Land Use and Development Code (LUDC) and general engineering practices and offer the comments below that correspond directly to the Town's Ordinances.

General

The project includes construction of a two-bay automatic car wash, four vacuum spaces and associated paved areas for vehicle movement. There are wetlands on the site but all construction is outside of the wetlands with no impacts to them. The applicant has requested a waiver for construction of a sidewalk.

It is noted that the facility is proposed to be located in an area that has received undesignated fill materials. The soils report notes that, and the topography indicates a history of filling. The materials used for fills are not described in any detail. Planning Board may wish to request of the applicant a narrative of the history of the site, and characterization of the materials present, and confirm that the proposed project including sitework, installation of the proposed wash tanks can be constructed as intended with the underlying fills. As described below, the stormwater management plan specifies that at the proposed pond that all fill materials be excavated to native soils and replaced with filter materials, which is appropriate.

16.3 Land Use Zone Regulations

Article II. Zone Definitions, Uses, Standards

The property is located in the residential rural and commercial zones. All development is proposed in the commercial zone with no development proposed in the residential zone portion of the site.

16.3.2.11 Commercial (C-2 Route 236 Commercial zone)

16.3.2.11.B. 2.p. Business service is listed as an allowed use in the C-2 zone.

16.3.2.11.D.4.a. It is not clear that the proposed street trees adequately screen the parking from MacKenzie Road.

16.8 Design and Performance Standards-Built Environment

Article IV. Street and Pedestrian Ways/Sidewalks Site Design Standards

The applicant has provided a right turn lane per the request of the Technical Review Committee and comments of the Department of Public Works. These parties should review the right turn lane design to see if it meets their intentions.

The applicant has requested a waiver on installation of a sidewalk on MacKenzie Lane. The board should determine if a waiver is appropriate.

Article V: Acceptance of Streets and Ways

The applicant has proposed that conveyance of a 10-foot wide easement (180-feet long) on MacKenzie Drive adjacent to the right turn lane to the Town of Kittery be a condition of site plan approval and be required to be completed prior to the issuance of an occupancy permit. The Town should review the easement request

Article VI. Water Supply

The applicant is proposing to connect to the Kittery Water District water supply. KWD has provided certification that there is adequate supply for the project. KWD should review components of the design.

Article VII. Sewage Disposal

16.8.7.2.D. The applicant is not proposing to provide on-site restrooms because there will be no full-time on-site employees. There is no non-domestic discharge license required because the applicant is proposing to install a recovery/recycling water system for treatment of the wash water. Wastewater is stored in a tank until being pumped out and disposed of off-site. The applicant is confirming with the State of Maine if a restroom is required. Are on-site bathrooms required by the Planning Board?

Article VIII. Surface Drainage

The applicant has presented a Stormwater Management Plan for the project. Stormwater management and treatment are accomplished through the use of a stormwater management pond and control structure. The rainfall amounts were calculated using values for Kittery, Maine when the ordinance species rainfall amounts for Portsmouth, NH. The applicant should verify that the values used meet the requirements of the ordinance.

The design is logical and meets the intent of the Kittery LUDC. All post construction flows are decreased from pre-construction conditions.

The site contains fill that will be removed to the depth of native soil and replaced with filter materials in the area of the pond. We note that the excavated soils should be disposed of properly.
It appears that the stormwater management system design meets the intent of the ordinance by reducing and treating stormwater flows.
The applicant should comply with the post construction stormwater management plan requirements.

Article IX. Parking, Loading and Traffic
The applicant has provided parking for the owner and a service vehicle and four vacuum spaces. This appears sufficient for the proposed use.

The applicant has provided a traffic report and a right turn lane onto Route 236. It does not appear that a full traffic impact analysis is warranted.

Article X. Signs
The applicant is proposing to install a freestanding sign and a menu sign. The code enforcement officer should review the signs for conformance with the Ordinances.

Article XVII. Utilities
All utilities to the site are proposed to be underground.

Article XVIII. Landscaping
The applicant has met the required number of streetside trees through a combination of proposed trees and existing mature trees. It is not clear that there is adequate parking screening from MacKenzie Road. The applicant has provided the 20' planter strip. Do the proposed landscaping elements satisfy the Board's requirements?

Article XXIV. Exterior Lighting
The applicant proposes recessed lighting under the building eaves, lighting on the vacuum booms and directional lights above the road sign. There are no proposed pole mounted lights. The applicant has provided a lighting plan outside of the design plans. It appears that the Ordinance is met. The sign lighting should be reviewed for conformance by the code enforcement officer.

16.9 Design and Performance Standards-Built Environment
Article II. Retention of Open Spaces and Natural Historic Features
Development is limited to the current open field with no clearing of wooded areas. There was a New England cottontail spotted on-site but a potential cottontail habitat was not indicated. The Maine Inland Fisheries and Wildlife was contacted, but no comments have been received. Does the Board require confirmation from Fisheries and Wildlife?

Article III. Conservation of Wetlands Including Vernal Pools

The wetlands have been delineated by a Maine Soil Scientist and a drainage ditch and a wetland greater than 1 acre in size have been identified. The identification of the drainage ditch outside of the wetland greater than 1 acre allows the setback to the driveway to be less than the amount required if the drainage ditch was included in the larger wetland complex. The board should determine if the classification of a drainage ditch is acceptable.

Article IV. Wetland Setbacks for Special Situations

The north wetland is greater than 1 acre and size and must meet Table 16.9 Setbacks of 150 feet. However, under Special Uses the setback for an auto wash may be reduced to 100 feet through the use of best management practices. The stormwater management plan uses storage and infiltration capacity to reduce stormwater flows to the wetland for a 24-hour storm before overflowing into the outlet structure. The board should decide if this is sufficient to meet the Ordinance and the reduced setback.

Should you have any questions, please do not hesitate to call.

Very truly yours,
CMA ENGINEERS, INC.

Jodie Bray Strickland, P.E.
Project Engineer

cc: Ryan McCarthy, P.E., L.S., Tidewater Engineering & Surveying, Inc.

Bart McDonough

From: Craig Alfis
Sent: Thursday, August 20, 2020 10:26 AM
To: Bart McDonough
Cc: Dave Evans
Subject: Car Wash Bathroom Requirements

Hi Bart,

As discussed we reached out to the State Plumbing Inspector who relayed that a bathroom is required by code, but the authority having jurisdiction is the Local Plumbing Inspector. I reviewed the 2015 Unified Plumbing Code and determined that a minimum of a single unisex bathroom will be required. Section 422.1 requires that "plumbing fixtures shall be provided for the type of building occupancy and in the minimum number shown in Table 422.1". Table 422.1, Occupancy Type B covers "business occupancy (office, professional or service type transactions)- banks, vet clinics, hospitals, car wash....." and requires a minimum of one male bathroom for up to 50 males and one female bathroom for up to 15 females. In cases of total occupant loads of less than 10 Section 422.2(2) allows for "one toilet facility, designed for use by no more than one person at a time, shall be permitted for use by both sexes", therefore negating the need to have two bathrooms as required by Table 422.1. Let me know if you have any questions.

Craig Alfis
Code Enforcement Officer
Town of Kittery
207-475-1308

kitteryme.gov/code-enforcement

ABBREVIATIONS

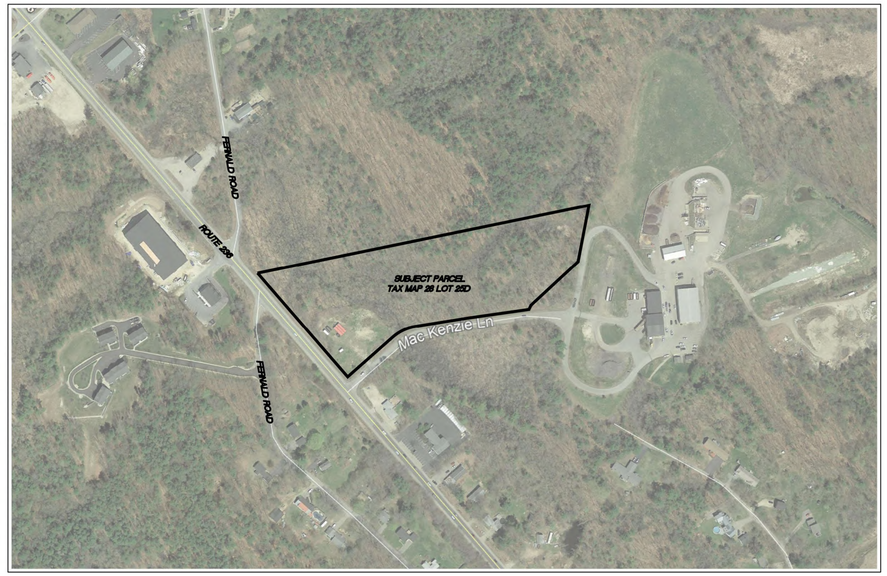
BOTTOM OF CURB	BC
BITUMINOUS CONCRETE CURB	BCC
BEST MGMT PRACTICE	BMP
CATCH BASIN	CB
CAPE COD BERM	CCB
CORRUGATED METAL PIPE	CMP
CLEANOUT	CO
CHAIN LINK FENCE	CLF
CONCRETE SURFACE	CONC.
DOUBLE YELLOW LINE	DYL
DRILL HOLE FOUND/SET	DHF/DHS
DRAIN MANHOLE	DMH
IRON PIPE/PIN FOUND	IPF
IRON REBAR FOUND/SET	IRF/IRS
EMERGENCY SPILLWAY	ES
FLARED END SECTION	FES
HIGH DENSITY POLYETHYLENE	HDPE
INVERT ELEVATION	INV.=
LINEAL FEET	LF
LIMIT OF WORK	LOW
MATCH EXISTING	ME
METAL PICKET FENCE	MPF
NOW OR FORMERLY	N/F
OUTLET CONTROL STRUCTURE	OCS
RAILROAD SPIKE FOUND/SET	RRSF/RRSS
RIM ELEVATION	RIM=
ROOF DRAIN	RD
SINGLE WHITE LINE	SWL
SINGLE YELLOW LINE	SYL
SLIPFORM CONC. CURB	SFC
SLOPED GRANITE CURB	SGC
SLOPED CONCRETE CURB	SCC
SPLIT RAIL FENCE	SRF
TEMPORARY BENCHMARK	TBM
TOP OF CURB	TC
TOP OF FOUNDATION	TF
UNDERDRAIN	UD
UTILITY POLE	UP
VERTICAL GRANITE CURB	VGC
VINYL PICKET FENCE	VPF
VINYL STOCKADE FENCE	VSF
WOOD PICKET FENCE	WPF
WOOD STOCKADE FENCE	WSF

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINE
98	98	MINOR CONTOUR
100	100	MAJOR CONTOUR
		EDGE OF PAVEMENT
		FENCE
		GUIDERAIL
		CONSTRUCTION FENCE
		STONE WALL
		TREE LINE
		SIGN
		LIGHT POLE
	2'R	CURB/PAVEMENT RADIUS
		ACCESSIBLE PAVEMENT MARKINGS
		IRON PIPE/IRON PIN
		BOLLARD
		UTILITY POLE
		GUY WIRE
		WATER VALVE
		WATER SHUTOFF
		HYDRANT
		CATCH BASIN
		DRAIN MANHOLE
		SEWER MANHOLE
SS		SEWER SERVICE CONNECTION
D	PD	DRAIN PIPE
G	PG	GAS LINE
OHW	OHW	OVERHEAD WIRES
UGU	UGU	UNDERGROUND UTILITIES
S	PS	SEWER LINE
W	PW	WATER LINE
FM	FM	FORCE MAIN
RD	RD	ROOF DRAIN
		FLARED END SECTION
		PROPOSED BUILDING PAD FOOTPRINT
		RIPRAP AREA
		CONSTRUCTION ENTRANCE
TP4		TEST PIT LOCATION
TC 101.5 BC 100.5	TC 101.5 BC 100.5	TOP/BOTTOM CURB ELEVATION
100.5x	100.5x	SPOT ELEVATION
		WETLANDS
		FLOW DIRECTION

SITE PLAN APPLICATION
KITTERY CAR WASH
ROUTE 236
KITTERY, MAINE

PREPARED FOR:
ROBERT T. BRENNAN, Jr.
1911 SE 20TH STREET
CAPE CORAL, FL 33990



SCALE: 1" = 250'

SHEET INDEX:

TIDEWATER
ENGINEERING & SURVEYING, INC.

ISSUED FOR TOWN REVIEW
NOT FOR CONSTRUCTION

DIG SAFE ME NH VT
CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION

TAX MAP 28 LOT 25D

STATE OF MAINE
RYAN M. MCCARTHY
#12895
LICENSED PROFESSIONAL ENGINEER
JULY 31, 2020
NOT VALID UNLESS SIGNED AND STAMPED

NO.	DATE:	SUBMISSION/REVISION DESCRIPTION
2	7/31/20	ADDED RIGHT TURN LANE TO MACKENZIE LANE
1	5/6/20	ISSUED FOR REVIEW BY TOWN OF KITTERY

TIDEWATER
ENGINEERING & SURVEYING, INC.
89 Route 236 Suite 3, Kittery, ME 03904
(207)439-2222 • www.tidewatercivil.com

CLIENT: ROBERT T. BRENNAN, JR.
1911 SE 20TH STREET
CAPE CORAL, FL 33990

PROJECT: KITTERY CAR WASH
ROUTE 236, KITTERY, MAINE 03904

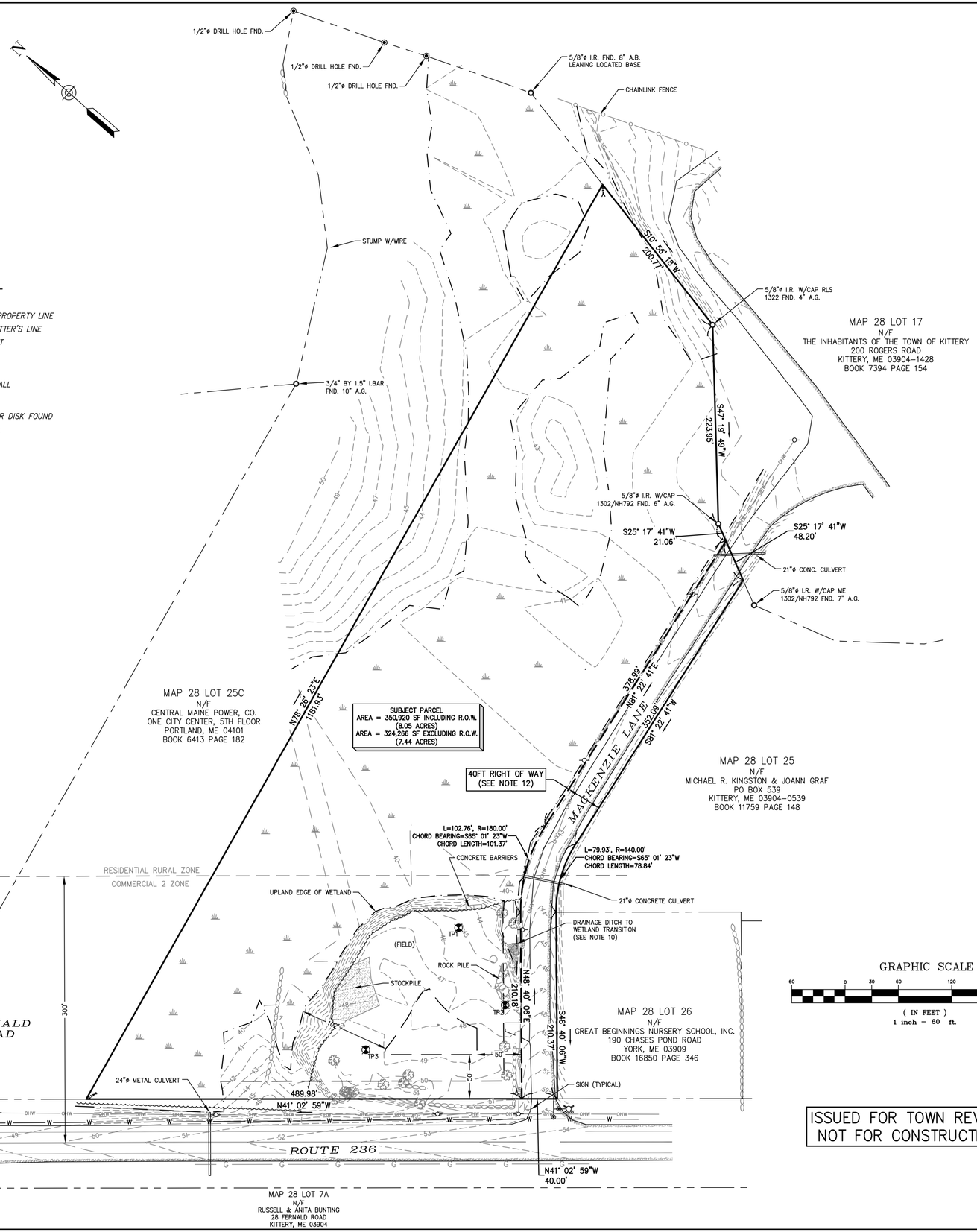
SHEET: COVER SHEET

JOB #: 19-134
DATE: MARCH 2020
SCALE: AS NOTED
DRAWING
C1

LOCUS MAP (NOT TO SCALE)

LEGEND

- SUBJECT PARCEL PROPERTY LINE
- APPROXIMATE ABUTTER'S LINE
- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- EDGE OF WETLAND
- EXISTING STONE WALL
- WETLAND SYMBOL
- IRON PIPE, ROD, OR DISK FOUND
- DRILL HOLE FOUND
- UTILITY POLE
- SIGN
- WATER VALVE
- HYDRANT
- TREE



GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

ISSUED FOR TOWN REVIEW
NOT FOR CONSTRUCTION

GENERAL NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT A BOUNDARY RETRACEMENT AND EXISTING CONDITIONS SURVEY OF TAX MAP 28 LOT 25D IN THE TOWN OF KITTERY, MAINE.

2. OWNER OF RECORD:
   ROBERT T. BRENNAN, JR.
   1911 SE 20TH STREET CAPE CORAL, FL 33990
   Y.C.R.D. BOOK 18014 PAGE 294

3. THE PROPERTY IS LOCATED WITHIN THE COMMERCIAL C-2 & RURAL R-RL ZONING DISTRICTS. THE FOLLOWING DIMENSIONAL REGULATIONS ARE IN EFFECT AT THE TIME OF THIS SURVEY AND ARE SUBJECT TO THE REVIEW BY THE TOWN OF KITTERY.

   COMMERCIAL C-2:

MINIMUM LAND AREA:	40,000 SF
MINIMUM STREET FRONTAGE:	150 FEET
MINIMUM FRONT YARD SETBACK:	50 FEET
MINIMUM SIDE/REAR YARD SETBACK:	30 FEET
MAXIMUM COVERAGE:	40%
MAXIMUM BUILDING HEIGHT:	40 FEET

   RURAL R-RL:

MINIMUM LAND AREA:	40,000 SF
MINIMUM STREET FRONTAGE:	150 FEET
MINIMUM FRONT YARD SETBACK:	40 FEET
MINIMUM SIDE/REAR YARD SETBACK:	20 FEET
MAXIMUM COVERAGE:	15%
MAXIMUM BUILDING HEIGHT:	35 FEET

4. ZONING REGULATIONS ARE SUBJECT TO CHANGE. OWNER SHALL CONFIRM ALL ZONING REGULATIONS WITH THE TOWN OF KITTERY PRIOR TO ANY DEVELOPMENT.

5. BASIS OF BEARING IS MAINE STATE PLANE (NAD83) WEST ZONE, US FOOT. ELEVATIONS AND TOPOGRAPHY SHOWN HEREON CORRESPOND TO NAVD88.

6. THE BOUNDARY SHOWN HEREON IS DETERMINED FROM WRITTEN RECORDS AND FIELD EVIDENCE RECOVERED AT THE TIME OF THIS SURVEY BY TIDEWATER ENGINEERING & SURVEYING, INC AND MAY BE SUBJECT TO CHANGE IF OTHER EVIDENCE BECOMES AVAILABLE.

7. ABUTTER LINES SHOWN HEREON SHALL BE CONSIDERED APPROXIMATE AND ARE FOR REFERENCE PURPOSES ONLY. ABUTTER LINES SHALL NOT BE RELIED UPON AS BOUNDARY INFORMATION.

8. EASEMENTS OR UNWRITTEN RIGHTS MAY EXIST THAT ENCUMBER OR BENEFIT THE PROPERTY NOT SHOWN HEREON.

9. THE WETLANDS SHOWN HEREON WERE DELINEATED BY JOSEPH W. NOEL, STATE OF MAINE SOIL SCIENTIST #209, ON NOVEMBER 4, 2019. THE TEST PITS SHOWN HEREON WERE CONDUCTED BY JOSEPH W. NOEL ON FEBRUARY 28, 2020. REFERENCE IS MADE TO A REPORT BY JOSEPH W. NOEL DATED MARCH 2, 2020.

10. A PORTION OF THE WETLAND DELINEATED BY JOSEPH W. NOEL MEETS THE DEFINITION OF A DRAINAGE DITCH PER THE TOWN OF KITTERY LAND USE AND DEVELOPMENT CODE. SEE LETTER FROM JOSEPH W. NOEL DATED MARCH 2, 2020 FOR FURTHER DETAIL.

11. UTILITY LOCATIONS SHOWN ON THESE PLANS ARE APPROXIMATE AND MAY NOT BE ENTIRELY ACCURATE OR COMPLETE.

12. MACKENZIE LANE IS A 40 FOOT WIDE RIGHT OF WAY GRANTED TO THE TOWN OF KITTERY OVER THE LAND OF THE RECORD OWNER AS ESTABLISHED PER AN AGREEMENT BETWEEN HECTOR W. MACKENZIE JR., JUDITH M. MACKENZIE AND THE TOWN OF KITTERY RECORDED AT THE Y.C.R.D. IN BOOK 2278 PAGE 17. THE AGREEMENT MAKES REFERENCE TO A SURVEY PLAN TO BE RECORDED AT THE Y.C.R.D. THAT DEPICTS THE EASEMENT LOCATION, HOWEVER NO SUCH PLAN WAS RECOVERED BY THIS OFFICE. EASEMENT LOCATION SHOWN HEREON IS BASED UPON A COMBINATION OF THE AS-BUILT LOCATION OF THE ROAD AND THE NORTHWESTERLY SIDELINE OF TAX MAP 28 LOT 26.

REFERENCE PLANS:

1. "PLAN OF "FARMINGDALE ESTATES" FERNALD ROAD KITTERY MAINE" PREPARED BY ANDERSON ASSOCIATES DATED OCTOBER 1983 AND RECORDED AT THE YORK COUNTY REGISTRY OF DEEDS (Y.C.R.D.) IN PLAN BOOK 127 PAGE 39.

2. "STANDARD BOUNDARY SURVEY OF LAND OF THE TOWN OF KITTERY" PREPARED BY CIVIL CONSULTANTS DATED APRIL 23, 1993 AND RECORDED AT THE Y.C.R.D. IN PLAN BOOK 222 PAGE 28.

3. "STANDARD BOUNDARY SURVEY OF LAND OF THE TOWN OF KITTERY" PREPARED BY CIVIL CONSULTANTS DATED APRIL 23, 1993 AND RECORDED AT THE Y.C.R.D. IN PLAN BOOK 223 PAGE 37.

4. "MAINE STATE HIGHWAY COMMISSION RIGHT OF WAY MAP STATE HIGHWAY "100" KITTERY-ELIOT YORK COUNTY FEDERAL AID SECONDARY PROJECT S-0100(5) S.H.C. FILE NO. 16-112 SHEETS 3-4" DATED JANUARY 1956 AND RECORDED AT THE Y.C.R.D. IN PLAN BOOK 29 PAGE 30.

5. "SUBDIVISION OF LAND OF PETER J. PAUL TRUSTEE OF THE PAOLUCCI REALTY TRUST" PREPARED BY CIVIL CONSULTANTS DATED APRIL 18, 2013 AND RECORDED AT THE Y.C.R.D. IN PLAN BOOK 366 PAGE 28.

6. CENTRAL MAINE POWER CO. SECTION 141 115 KV BOLT HILL-YORK MILE 2 799-T141-2, FOUND AT THE KITTERY TOWN HALL.

REFERENCE DEEDS:

1. YORK COUNTY REGISTRY OF DEEDS (Y.C.R.D.) BOOK 18014 PAGE 294: LAGASSE REMOVAL, LLC TO ROBERT T. BRENNAN, JR.

2. Y.C.R.D. BOOK 1408 PAGE 546, FRANK JEWETT & FRANCES JEWETT TO JOHN F. PERRY & THERESA H. PERRY.

3. Y.C.R.D. BOOK 6413 PAGE 182, HECTOR W. MACKENZIE, JR. TO CENTRAL MAINE POWER COMPANY.

APPROVAL OF THE PLANNING BOARD OF KITTERY, MAINE

CHAIR _____ DATE _____

CERTIFICATION:

I HEREBY CERTIFY THAT THIS SURVEY WAS PERFORMED UNDER MY DIRECT SUPERVISION AND THAT THE RESULTS DEPICTED HEREON ARE IN COMPLIANCE WITH CHAPTER 90: STANDARDS OF PRACTICE, PARTS I AND II AS ADOPTED BY THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS, WITH THE EXCEPTION THAT A WRITTEN REPORT HAS NOT BEEN PRODUCED AT THIS TIME.

RYAN M. MCCARTHY, P.L.S. 2515 — JULY 31, 2020 DATE

STATE OF MAINE · RYAN M. MCCARTHY No. 2515 · PROFESSIONAL LAND SURVEYOR

TAX MAP 28 LOT 25D

STATE OF MAINE · RYAN M. MCCARTHY #12895 · LICENSED PROFESSIONAL ENGINEER

JULY 31, 2020

NOT VALID UNLESS SIGNED AND STAMPED

NO.	DATE:	SUBMISSION/REVISION DESCRIPTION
2	7/31/20	ADDED RIGHT TURN LANE TO MACKENZIE LANE
1	5/6/20	ISSUED FOR REVIEW BY TOWN OF KITTERY

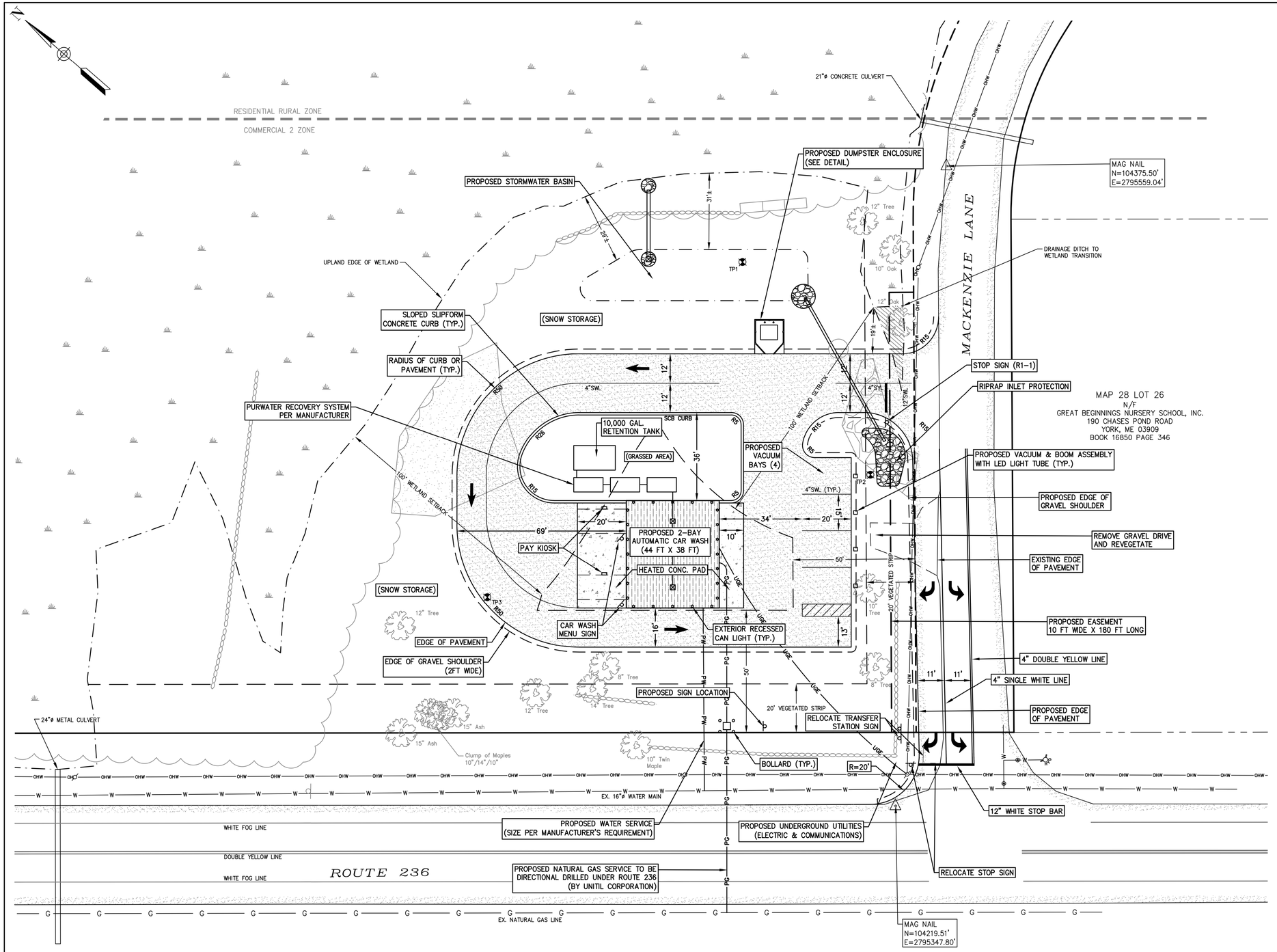
TIDEWATER
ENGINEERING & SURVEYING INC.
89 Route 236 Suite 3, Kittery, ME 03904
(207)439-2222 • www.tidewatercivil.com

CLIENT: ROBERT T. BRENNAN, JR.
1911 SE 20TH STREET
CAPE CORAL, FL 33990

PROJECT: KITTERY CAR WASH
ROUTE 236, KITTERY, MAINE 03904

SHEET: BOUNDARY & EXISTING CONDITIONS PLAN

JOB #: 19-134
DATE: MARCH 2020
SCALE: 1" = 60'
DRAWING
C2



GENERAL NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE PROPOSED COMMERCIAL DEVELOPMENT ON TAX MAP 28 LOT 25D IN THE TOWN OF KITTERY, MAINE.

2. OWNER OF RECORD:
   ROBERT T. BRENNAN, JR.
   1911 SE 20TH STREET CAPE CORAL, FL 33990
   Y.C.R.D. BOOK 18014 PAGE 294

3. THE PROPOSED DEVELOPMENT IS LOCATED WITHIN THE COMMERCIAL C-2 ZONING DISTRICT. THE FOLLOWING DIMENSIONAL REGULATIONS ARE IN EFFECT AT THE TIME OF THIS SURVEY AND ARE SUBJECT TO THE REVIEW BY THE TOWN OF KITTERY.

   COMMERCIAL C-2:

MINIMUM LAND AREA:	40,000 SF
MINIMUM STREET FRONTAGE:	150 FEET
MINIMUM FRONT YARD SETBACK:	50 FEET
MINIMUM SIDE/REAR YARD SETBACK:	30 FEET
MAXIMUM COVERAGE:	40%
MAXIMUM BUILDING HEIGHT:	40 FEET

4. ZONING REGULATIONS ARE SUBJECT TO CHANGE. OWNER SHALL CONFIRM ALL ZONING REGULATIONS WITH THE TOWN OF KITTERY PRIOR TO ANY DEVELOPMENT.

5. THE BASIS OF BEARING IS MAINE STATE PLANE (NAD83) WEST ZONE, US FOOT. ELEVATIONS AND TOPOGRAPHY SHOWN HEREON CORRESPOND TO NAVD88.

6. THE BOUNDARY SHOWN HEREON IS PER SHEET C2. SEE SHEET C2 FOR FURTHER DETAIL.

7. UTILITY LOCATIONS SHOWN ON THESE PLANS ARE APPROXIMATE AND MAY NOT BE ENTIRELY ACCURATE OR COMPLETE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL UTILITIES, BOTH OVERHEAD AND UNDERGROUND, THROUGHOUT THE COURSE OF THE WORK. THIS INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AND DIG SAFE AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES.

8. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS, AND REPORT ANY DISCREPANCIES TO TIDEWATER ENGINEERING & SURVEYING, INC. THE CONTRACTOR SHALL PROCEED WITH THE WORK ONLY AFTER ANY DISCREPANCIES HAVE BEEN RESOLVED BY TIDEWATER ENGINEERING & SURVEYING, INC.

9. THE CONTRACTOR SHALL, ON A DAILY BASIS, THOROUGHLY SECURE ALL EXCAVATIONS UPON COMPLETION OF OPERATIONS IN THE IMMEDIATE AREA OF EXCAVATION.

10. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL LOCAL, STATE AND FEDERAL PERMITS REQUIRED FOR THE CONSTRUCTION OF THE PROPOSED DEVELOPMENT SHOWN WITHIN THIS PLAN SET. THE CONTRACTOR SHALL NOT PROCEED WITH SAID WORK UNTIL ALL CONDITIONS OF SAID PERMITS ARE MET.

11. ALL WATER UTILITY WORK AND MATERIALS SHALL COMPLY WITH THE KITTERY WATER DISTRICT'S REQUIREMENTS, SPECIFICATION AND THIS PLAN SET. THE PROPOSED WATER SERVICE SHALL BE SIZED BY THE MANUFACTURER TO MEET THE USAGE DEMANDS OF THE CAR WASH EQUIPMENT TO BE INSTALLED.

12. THE CONTRACTOR IS RESPONSIBLE FOR SEQUENCING OF WORK, MEANS AND METHODS OF CONSTRUCTION AND FOR IMPLEMENTATION OF A SAFETY PLAN.

    THE PROPOSED DEVELOPMENT IS ANTICIPATED TO RESULT IN LESS THAN ONE AREA OF DISTURBED AREA AND LESS THAN ONE ACRE OF IMPERVIOUS SURFACES, THEREFORE A MAINE DEP STORMWATER PERMIT IS NOT REQUIRED.

    ESTIMATED DISTURBANCE AREA = 32,100 SF
    ESTIMATED IMPERVIOUS AREA = 16,097 SF

13. SEE LIGHTING PHOTOMETRIC PLAN AND PRODUCT SHEET BY R.A.B. LIGHTING SUBMITTED TO THE TOWN OF KITTERY AS PART OF THIS SITE PLAN APPLICATION FOR LIGHTING SPECIFICATIONS.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

DIG SAFE
ME NH VT
811 or 1-888-DIG-SAFE
CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION

ISSUED FOR TOWN REVIEW
NOT FOR CONSTRUCTION

TAX MAP 28 LOT 25D

STATE OF MAINE
RYAN M. MCCARTHY
#12895
LICENSED PROFESSIONAL ENGINEER
JULY 31, 2020
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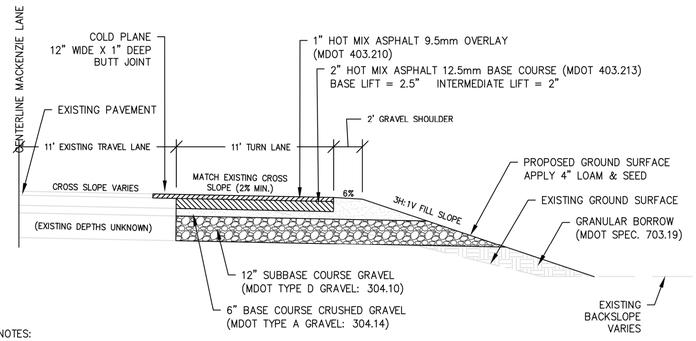
CLIENT: ROBERT T. BRENNAN, JR.
1911 SE 20TH STREET
CAPE CORAL, FL 33990

PROJECT: KITTERY CAR WASH
ROUTE 236, KITTERY, MAINE 03904

SHEET: PROPOSED SITE & UTILITY PLAN

JOB #: 19-134
DATE: MARCH 2020
SCALE: 1" = 20'
DRAWING
C3

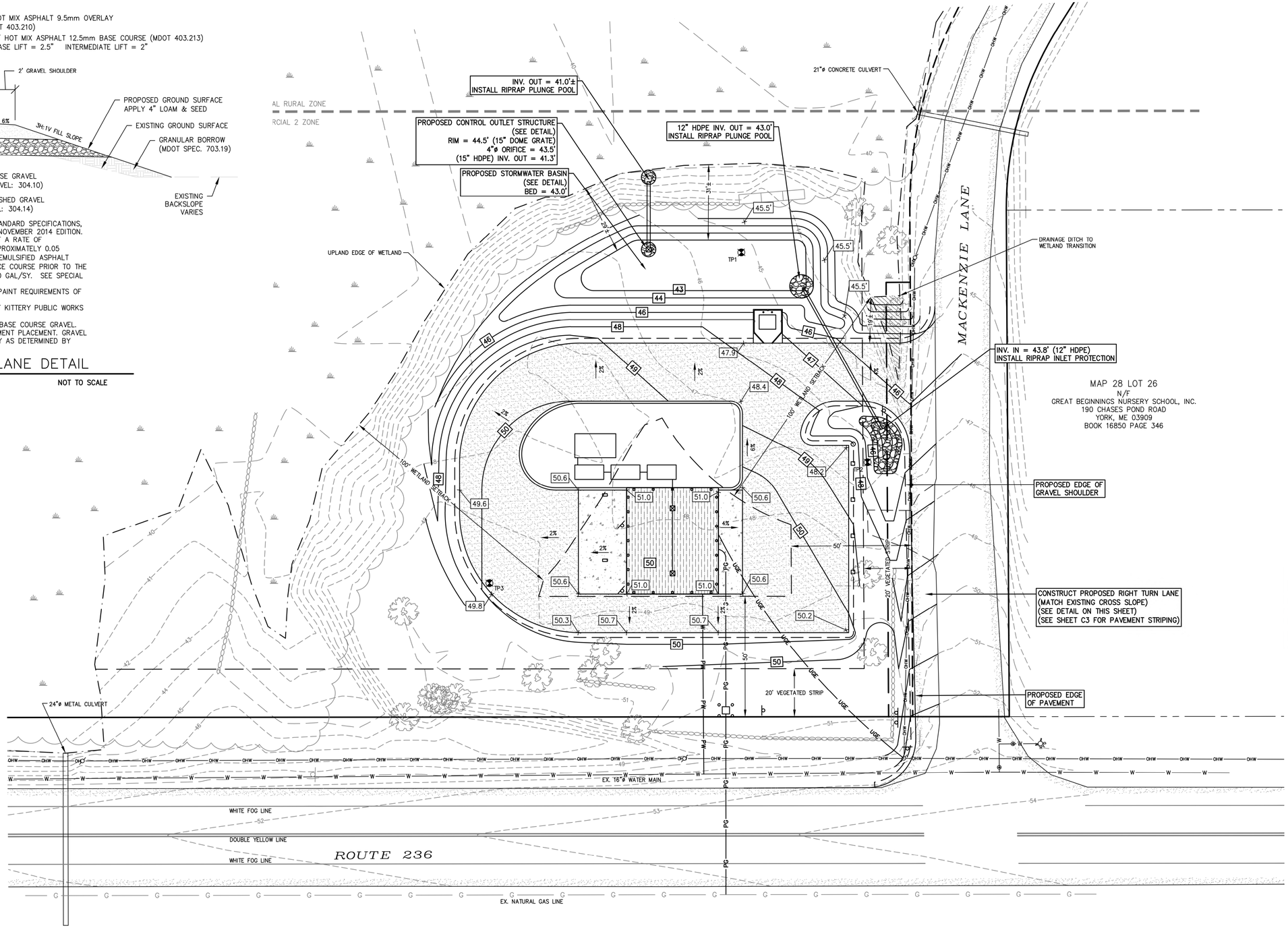


NOTES:

1. ALL WORK COMPLETED SHALL CONFORM TO THE MAINE DOT STANDARD SPECIFICATIONS, NOVEMBER 2014 EDITION AND MAINE DOT STANDARD DETAILS, NOVEMBER 2014 EDITION.
2. APPLY BITUMINOUS TACK COAT TO ANY EXISTING PAVEMENT AT A RATE OF APPROXIMATELY 0.030 GAL/SY, AND ON MILLED PAVEMENT APPROXIMATELY 0.05 GAL/SF PRIOR TO PLACING A NEW COURSE. A FOG COAT OF EMULSIFIED ASPHALT SHALL BE APPLIED BETWEEN SHIM/BASE COURSES AND SURFACE COURSE PRIOR TO THE PLACEMENT OF HMA LAYERS AT A RATE NOT TO EXCEED 0.030 GAL/SY. SEE SPECIAL PROVISION 403 SPECIFIC TO THIS PROJECT.
3. ALL PAVEMENT MARKINGS SHALL MEET THE APPLICATION AND PAINT REQUIREMENTS OF SECTION 627 OF THE MDOT STANDARD SPECIFICATIONS.
4. ALL TESTING TO BE COMPLETED AS DIRECTED BY THE TOWN OF KITTERY PUBLIC WORKS DEPARTMENT. THIS WILL INCLUDE THE FOLLOWING...
   a. SIEVE ANALYSIS/GRADATION REPORT ON BASE AND SUBBASE COURSE GRAVEL.
   b. MINIMUM OF THREE COMPACTION TESTS PRIOR TO PAVEMENT PLACEMENT. GRAVEL MUST BE COMPACTED TO 95% OF THE MAXIMUM DENSITY AS DETERMINED BY AASHTO T180, METHOD C OR D.

RIGHT–TURN LANE DETAIL

NOT TO SCALE



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

MAP 28 LOT 7A
N/F
RUSSELL & ANITA BUNTING
28 FERNALD ROAD
KITTERY, ME 03904
BOOK 3289 PAGE 298

ISSUED FOR TOWN REVIEW
NOT FOR CONSTRUCTION

TAX MAP 28 LOT 25D

DIG SAFE
ME NH VT
811 or 1-888-DIG-SAFE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
CONTACT DIG SAFE 72 HOURS
PRIOR TO CONSTRUCTION

STATE OF MAINE
RYAN M. MCCARTHY
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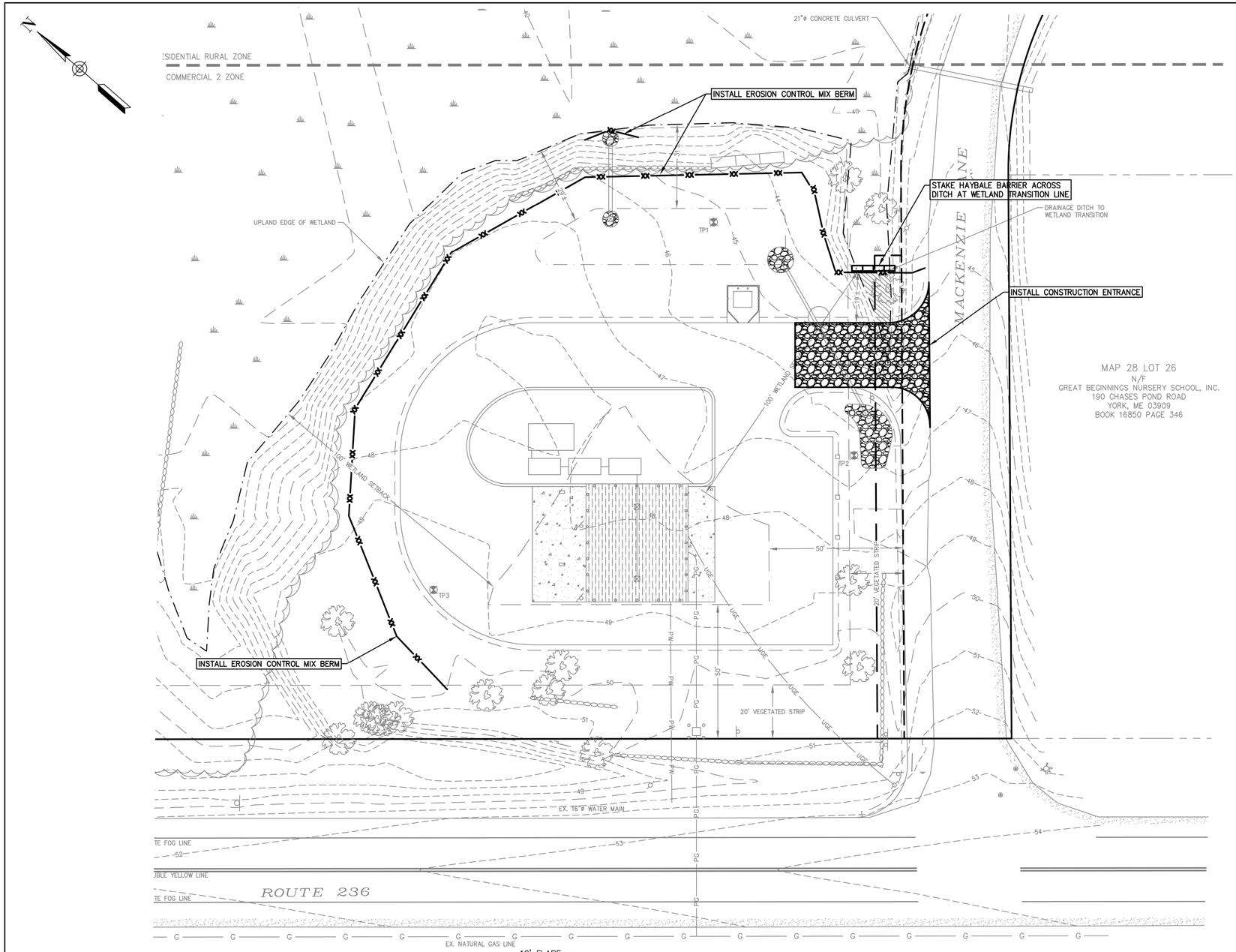
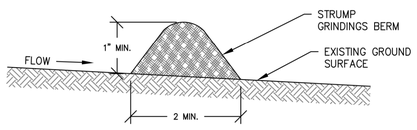
CLIENT: ROBERT T. BRENNAN, JR.
1911 SE 20TH STREET
CAPE CORAL, FL 33990

PROJECT: KITTERY CAR WASH
ROUTE 236, KITTERY, MAINE 03904

SHEET: PROPOSED GRADING & STORMWATER PLAN

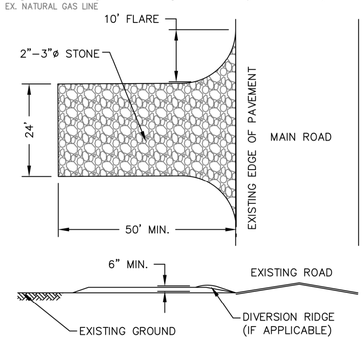
JOB #: 19–134
DATE: MARCH 2020
SCALE: 1" = 20'
DRAWING
C4





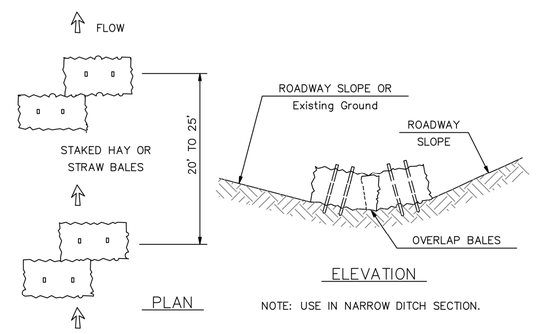
NOTES:
1. IT MAY BE NECESSARY TO CUT, PACK DOWN OR REMOVE TALL GRASSES, BRUSH OR WOODY VEGETATION TO AVOID VOIDS AND BRIDGES THAT ALLOW THE WASHING AWAY OF FINE SOIL PARTICLES.
2. THE ECM BERM SHOULD BE A MINIMUM OF 12" HIGH AND A MINIMUM OF 2' WIDE. ON LONGER OR STEEPER SLOPES, THE BERM WILL NEED TO BE WIDER AND HIGHER.
3. BERMS COMPOSED OF ECM CAN BE RESHAPED WHEN NECESSARY.

EROSION CONTROL MIX (ECM) BERM DETAIL
NOT TO SCALE



NOTES:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT–OF–WAYS. THIS MAY REQUIRED TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT–OF–WAYS.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP.
4. STONE SHALL BE 2"–3" COURSE AGGREGATE AND A MINIMUM OF 6" THICK.
5. DIVERSION BERM REQUIRED WHERE SLOPE OF DRIVEWAY EXCEED 2% TOWARDS MAIN ROAD.

TEMPORARY CONSTRUCTION ENTRANCE
NOT TO SCALE



NOTE: USE IN NARROW DITCH SECTION.

TEMPORARY HAY BALE BARRIER
NOT TO SCALE

STANDARD EROSION AND SEDIMENTATION CONTROL MEASURES:

1. ALL WORK SHALL COMPLY WITH THE CURRENT VERSION OF THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL PUBLISHED BY MAINE DEP. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING AND MAINTAINING ALL EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH SAID MANUAL.
2. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN PLACE PRIOR TO ANY SOIL DISTURBING ACTIVITIES.
3. THE CONTRACTOR SHALL STRIP AND GRADE ONLY THOSE AREAS SUBJECT TO IMMEDIATE CONSTRUCTION. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN 7 DAYS OF FINAL GRADING. ANY EXPOSED SOIL THAT WILL NOT BE WORKED FOR MORE THAN 7 DAYS SHALL BE STABILIZED WITH MULCH. STABILIZE AREAS WITHIN 75 FEET OF A WETLAND OR WATER BODY WITHIN 48 HOURS OF THE INITIAL DISTURBANCE OF THE SOIL OR PRIOR TO ANY STORM EVENT, WHICHEVER COMES FIRST.
4. ALL TOPSOIL STRIPPED FROM THE AREA SHALL BE STOCKPILED, TEMPORARILY MULCHED WITH HAY AND SURROUNDED BY A HAY BALE BARRIER UNTIL IT IS SPREAD AND FINAL GRADING IS COMPLETE.
5. PERMANENT STABILIZATION MUST BE IMPLEMENTED WITHIN 60 DAYS OF SOIL DISTURBANCE OR BY OCTOBER 1, WHICH EVER IS EARLIER.
6. PERMANENT SEEDING WILL BE DONE AS EARLY AS POSSIBLE IN THE GROWING SEASON. PERMANENT SEEDING SHOULD BE MADE PRIOR TO AUGUST 15. IF SEEDING CANNOT BE DONE PRIOR TO OCTOBER 1, DORMANT SEEDING WILL BE DONE ACCORDING TO THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL WITH TEMPORARY MULCHING.
7. TOPSOIL WILL BE UNIFORMLY SPREAD A MINIMUM OF 4 INCHED DEEP OVER ALL AREAS TO BE RE–VEGETATED. WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF TWO (2) INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED.
8. LIME SHALL BE APPLIED AS FAR IN ADVANCE OF SEEDING AS POSSIBLE. WORK LIME AND FERTILIZER INTO THE SOIL TO A DEPTH OF 4 INCHES EITHER BEFORE OR DURING FINAL SEED BED PREPARATION.
9. IF SEEDING DOES NOT TAKE AT LEAST 80% IN ANY AREA WITHIN 30 DAYS IT SHOULD BE RESEEDED IMMEDIATELY OR TEMPORALLY MULCHED AND RESEEDED WITHIN ONE PLANTING SEASON.
10. SEDIMENT CONTROL BARRIERS CAN BE REMOVED UPON STABILIZATION OF THE FINISHED GRADES AND USED AS ADDITIONAL MULCHING MATERIAL (IF APPLICABLE).
11. THE SEEDED AREAS SHALL BE INSPECTED EVERY 15 DAYS AND MAINTAINED BY WATERING, WEEDING, MOWING, TRIMMING, REGRADING AND REPLANTING AS REQUIRED TO ESTABLISH A LAWN FREE OF ERODED OR BARE AREAS.
12. BIODEGRADABLE EROSION CONTROL BLANKET SHALL BE INSTALLED ON ALL SLOPES TO BE VEGETATED THAT ARE GREATER THAN 3:1 SLOPE UNLESS OTHERWISE SPECIFIED ON THE PLANS.
13. MINIMUM APPLICATION RATES:

TEMPORARY HAY OR STRAW MULCH:	2 BALES PER 1,000 SF (DOUBLE IN WINTER)	
EROSION CONTROL MIX:	< 3:1 SLOPE = 2 INCHES 3:1–2:1 SLOPE = 4 INCHES	
TEMPORARY SEEDING:		
WINTER RYE	112 LB/ACRE	(FALL)
OATS	80 LB/ACRE	(SPRING)
ANNUAL RYEGRASS	40 LB/ACRE	
SUDANGRASS	40 LB/ACRE	(SUMMER)
PERENNIAL	40 LB/ACRE	

14. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, OR HYDROSEED (SLURRY INCLUDING SEED AND FERTILIZER). HYDROSEEDINGS, WHICH INCLUDE MULCH, MAY BE LEFT ON SOIL SURFACE. SEEDING RATES MUST BE INCREASED 10% WHEN HYDROSEEDING.
15. ALL TEMPORARY SEDIMENT CONTROL MEASURED SHALL BE REMOVED WITHIN 30 DAYS AFTER PERMANENT STABILIZATION IS ATTAINED. REMOVE ANY ACCUMULATED SEDIMENTS AND RESTABALIZE IF NECESSARY.

MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES

A. GENERAL: THE FOLLOWING GENERAL INSPECTION AND MAINTENANCE PRACTICES SHALL BE USED THROUGHOUT THE PROJECT.

1. ALL CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE EACH WEEK AND FOLLOWING ANY STORM EVENT OF 0.5 INCHES OR GREATER.
2. ALL MEASURES SHALL BE MAINTAINED IN GOOD WORKING ORDER. IF A REPAIR IS NECESSARY, IT SHALL BE COMPLETED WITHIN 24 HOURS.
3. BUILT UP SEDIMENT SHALL BE REMOVED FROM SILT FENCE OR SEDIMENT BARRIERS WHEN IT HAS REACHED ONE THIRD THE HEIGHT OF THE FENCE OR BALE, OR WHEN "BULGES" OCCURS.
4. ALL DIVERSION DIKES SHALL BE INSPECTED AND ANY BREACHES PROMPTLY REPAIRED.
5. TEMPORARY SEEDING AND PLANTING SHALL BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND UNHEALTHY GROWTH.
6. A MAINTENANCE INSPECTION REPORT SHALL BE MADE AFTER EACH INSPECTION.
7. THE CONTRACTOR'S SITE SUPERINTENDENT SHALL BE RESPONSIBLE FOR INSPECTIONS, MAINTENANCE AND REPAIR ACTIVITIES, AND FILLING OUT THE INSPECTION AND MAINTENANCE REPORT.
8. THE OWNER'S AUTHORIZED REPRESENTATIVE SHALL INSPECT THE SITE ON A PERIODIC BASIS TO REVIEW COMPLIANCE WITH THE PLANS.
9. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
   a. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
   b. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   c. A MINIMUM OF 3 INCHES OF NON–EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED OR
   d. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED,
10. SODDING – SODDING IS DONE WHERE IT IS DESIRABLE TO RAPIDLY ESTABLISH COVER ON A DISTURBED AREA. SODDING AN AREA MAY BE SUBSTITUTED FOR PERMANENT SEEDING PROCEDURES ANYWHERE ON SITE. PREPARATION, FERTILIZING, AND PLACEMENT OF SOD SHALL BE PERFORMED ACCORDING TO SUPPLIER'S SPECIFICATIONS. SODDING IS RECOMMENDED FOR STEEP SLOPED AREAS. AREAS IMMEDIATELY ADJACENT TO SENSITIVE WATER COURSES, EASILY ERODIBLE SOILS (FINE SAND/SILT) ETC.

ISSUED FOR TOWN REVIEW
NOT FOR CONSTRUCTION

TAX MAP 28 LOT 25D

STATE OF MAINE
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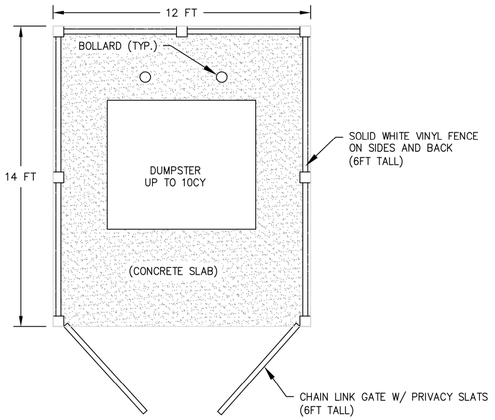
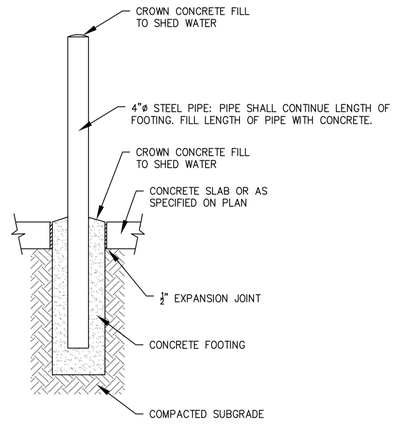
SHEET: EROSION AND SEDIMENT CONTROL PLAN

JOB #: 19–134
DATE: MARCH 2020
SCALE: 1" = 20'
DRAWING
C5



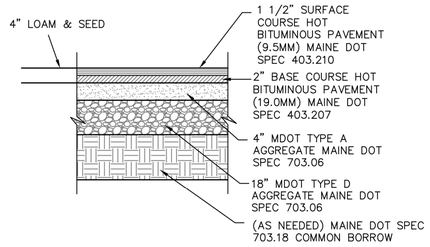
DUMPSTER ENCLOSURE DETAIL

NOT TO SCALE



BOLLARD DETAIL

NOT TO SCALE

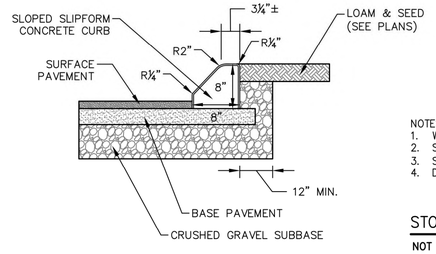


TYPICAL PAVEMENT SECTION

NOT TO SCALE

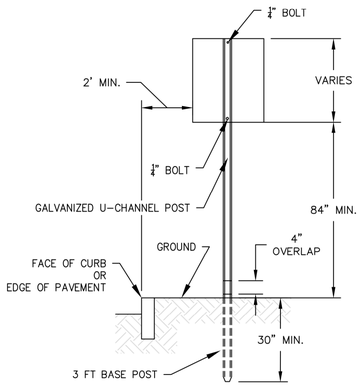
GENERAL MATERIAL NOTES – APPLIED TO ALL DETAILS UNLESS OTHERWISE NOTED.

1. MATERIAL AND CONSTRUCTION METHODS SHALL CONFORM TO THE STATE OF MAINE STANDARD SPECIFICATIONS REVISION OF NOV. 2014.
2. ALL ORGANIC MATERIALS, ROCKS, DEBRIS/RUBBISH AND BOULDERS WITHIN TWO FEET BELOW THE SUBGRADE OF THE ROAD MUST BE REMOVED AND REPLACED WITH SUITABLE COMPACTED FILL MEETING MAINE DOT SPEC 703.20 GRAVEL BORROW.
3. FILL UNDER PAVEMENT OR CONCRETE AREAS SHALL BE INSTALLED AND COMPACTED IN ACCORDANCE WITH THE STATE OF MAINE STANDARD SPECIFICATIONS.



SLOPED SLIPFORM CONCRETE CURB DETAIL

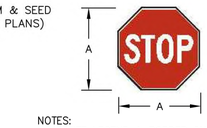
NOT TO SCALE



NOTES:
1. POSTS SHALL BE PLUMB; ANY POST BENT OR OTHERWISE DAMAGED SHALL BE REMOVED AND PROPERLY REPLACED.
2. POSTS MAY BE SET OR DRIVEN.
3. WHEN POSTS ARE SET, HOLES SHALL BE DUG TO PROPER DEPTH. AFTER INSERTING POSTS, THE HOLES SHALL BE BACKFILLED WITH SUITABLE MATERIAL IN 6" LIFTS AND THOROUGHLY COMPACTED.
4. WHEN POSTS ARE DRIVEN, A SUITABLE DRIVING CAP SHALL BE USED. POSTS SHALL NOT BE DRIVEN WHILE SIGN IS ATTACHED.
5. SIGNS SHALL MEET THE REQUIREMENTS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND INSTALLED IN ACCORDANCE WITH THE MANUAL.
6. THE POST SHALL NOT EXTEND ABOVE THE TOP OF THE SIGN.
7. POST SHALL BE GALVANIZED GRADE 60 STEEL (ASTM A-499) OR GRADE 1070-1080 (ASTM A-576).
8. ALL POST SHALL UTILIZE BREAKAWAY DEVICES AND INSTALLED PER MANUFACTURES RECOMMENDATIONS.

BREAK AWAY SIGN POST

NOT TO SCALE

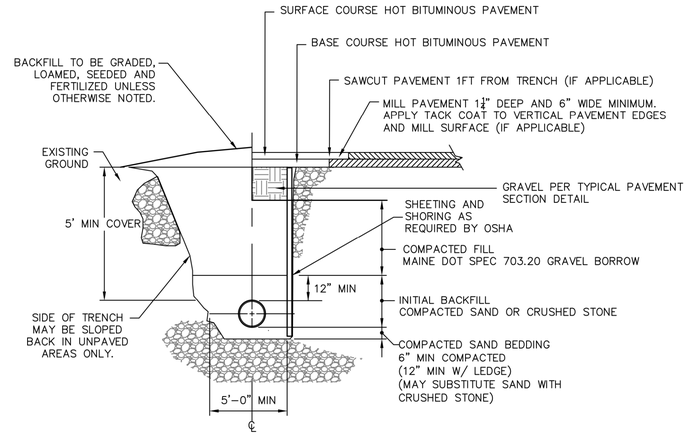


MUTCD R1-1

NOTES:
1. WHITE LEGEND & BORDER ON RED BACKGROUND
2. SIGN SHALL BE RETROFLECTIVE
3. SIGN SHALL COMPLY W/ MUTCD STANDARDS
4. DIMENSIONS
   A = 30" FOR SIGN AT CAR WASH DRIVEWAY
   A = 36" FOR SIGN ON MACKENZIE LANE

STOP SIGN (R1-1)

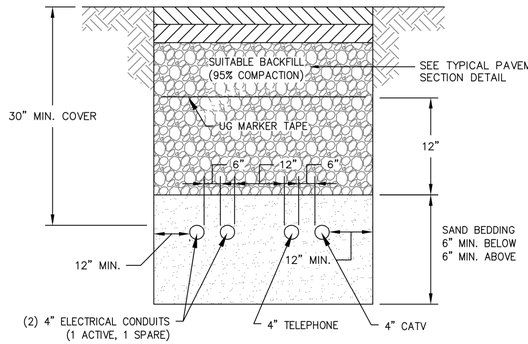
NOT TO SCALE



NOTES: 1. ALL EXCAVATION MUST MEET OSHA STANDARDS.

PIPE TRENCH DETAIL

NOT TO SCALE



1. INSTALL CONDUIT PER THE REQUIREMENTS AND SPECIFICATION OF RESPECTIVE UTILITY COMPANY.
2. CONDUIT SHALL BE SCH. 80 PIPE UNLESS OTHERWISE SPECIFIED BY UTILITY COMPANY.
3. ADDITIONAL SPARE CONDUITS MAY BE INSTALLED PROVIDED A MINIMUM OF 6" OF CLEARANCE IS PROVIDED BETWEEN CONDUIT.
4. BACKFILL MATERIAL SHALL CONFORM TO TYPICAL PAVEMENT SECTION DETAIL IF LOCATED UNDER THE ROAD.
5. ALL UTILITIES AND CONDUIT SHALL BE REVIEWED AND APPROVED PRIOR TO INSTALLATION AND INSPECTED PRIOR TO BACKFILLING.
6. CONCRETE ENCASEMENT MAY REQUIRED IN REPLACE OF THE SAND BEDDING PER THE UTILITY COMPANY.

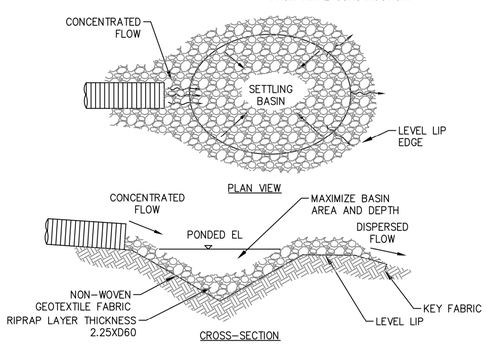
UNDERGROUND UTILITY TRENCH

NOT TO SCALE

PLUNGE POOL SIZING (MINIMUM)				
SIZE	RIPRAP SIZING D50	WIDTH OF PLUNGE POOL OR APRON	LENGTH FOR SLOW FLOWS (NO PRESSURE HEAD)	LENGTH FOR HIGH FLOWS (WITH PRESSURE HEAD)
12"	5"	3-4'	4-6'	8-10'
18"	8"	4-6'	6-8'	12-18'
24"	10"	6-8'	8-10'	18-22'
30"	12"	8-10'	12-14'	22-28'
36"	14"	10-12'	14-16'	28-32'
THE DIAMETER OF THE LARGEST STONE SIZE IN THE MIX SHOULD BE ABOUT 1.5 TIMES THE D50 AND THE SMALLEST ONE ABOUT ONE HALF THE SIZE. THE THICKNESS OF RIPRAP SHOULD NEVER BE LESS THAN 2 TIMES THE ROCK D50.				

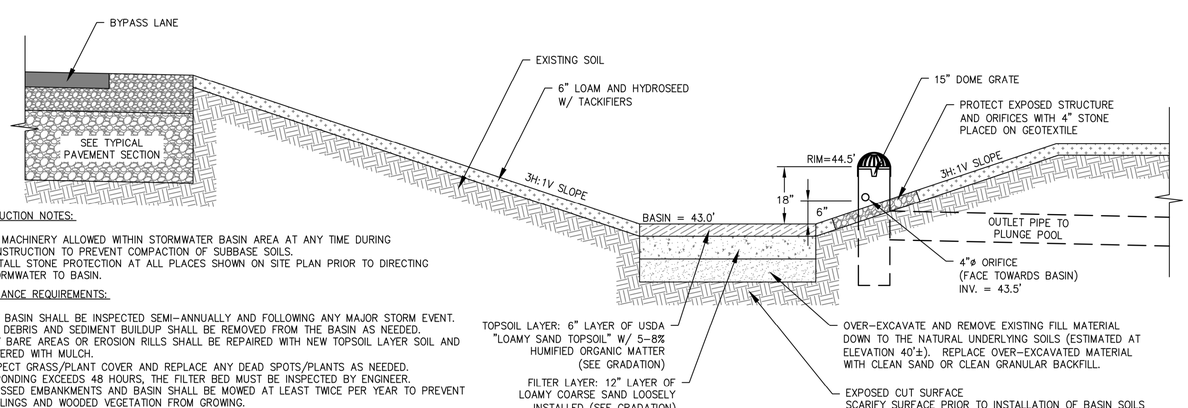
CONSTRUCTION SPECIFICATIONS

- IF THE PIPE DISCHARGES ONTO A FLAT AREA THE APRON SHOULD HAVE A WIDTH THAT IS THREE TIMES THE OUTLET PIPE'S DIAMETER. IF THE PIPE FLOWS HAVE THE POTENTIAL OF CAUSING A GULLY, A LEVEL SPREADER SHOULD BE PROVIDED.
- THE CHANNEL SIDE SLOPES SHOULD BE NO STEEPER THAN 2:1. RIPRAP ON THE SIDES OF THE PLUNGE POOL SHOULD EXTEND TO THE TOP OF THE CHANNEL.
- THE PLUNGE POOL SIZING AND THE MEDIAN SIZED RIPRAP CAN BE DETERMINED FROM THE FOLLOWING TABLE. THE THICKNESS OF RIPRAP SHOULD NOT BE LESS THAN 2 TIMES THE ROCK D50
- A GEOTEXTILE OR APPROPRIATE GRAVEL FILTER SHOULD BE USED TO PROTECT AGAINST PIPING OF SOIL FINES FROM BENEATH THE ROCK.
- IN A CHANNEL THAT CAN BE REVEGETATED, SEED AND MULCH SHOULD BE APPLIED WITHIN 7 DAYS FROM FINAL CONSTRUCTION.



PLUNGE POOL DETAIL

NOT TO SCALE



CONSTRUCTION NOTES:

1. NO MACHINERY ALLOWED WITHIN STORMWATER BASIN AREA AT ANY TIME DURING CONSTRUCTION TO PREVENT COMPACTION OF SUBBASE SOILS.
2. INSTALL STONE PROTECTION AT ALL PLACES SHOWN ON SITE PLAN PRIOR TO DIRECTING STORMWATER TO BASIN.

MAINTENANCE REQUIREMENTS:

1. THE BASIN SHALL BE INSPECTED SEMI-ANNUALLY AND FOLLOWING ANY MAJOR STORM EVENT.
2. ALL DEBRIS AND SEDIMENT BUILDUP SHALL BE REMOVED FROM THE BASIN AS NEEDED.
3. ANY BARE AREAS OR EROSION RILLS SHALL BE REPAIRED WITH NEW TOPSOIL LAYER SOIL AND COVERED WITH MULCH.
4. INSPECT GRASS/PLANT COVER AND REPLACE ANY DEAD SPOTS/PLANTS AS NEEDED.
5. IF PONDING EXCEEDS 48 HOURS, THE FILTER BED MUST BE INSPECTED BY ENGINEER.
6. GRASSED EMBANKMENTS AND BASIN SHALL BE MOWED AT LEAST TWICE PER YEAR TO PREVENT SAPLINGS AND WOODED VEGETATION FROM GROWING.
7. WEEDING TO CONTROL UNWANTED OR INVASIVE PLANTS SHALL BE DONE AS NECESSARY.

TOPSOIL LAYER GRADATION

SIEVE #	% PASSING BY WEIGHT
4	75-95
10	60-90
40	35-85
200	25-70
200 (CLAY)	< 5.0

FILTER LAYER GRADATION

SIEVE #	% PASSING BY WEIGHT
10	85-100
20	70-100
60	15-40
200	8-15
200 (CLAY)	< 5.0

STORMWATER BASIN CROSS SECTION

NOT TO SCALE

ISSUED FOR TOWN REVIEW
NOT FOR CONSTRUCTION

TAX MAP 28 LOT 25D

STATE OF MAINE
RYAN M. MCCARTHY
#12895
LICENSED PROFESSIONAL ENGINEER
JULY 31, 2020
NOT VALID UNLESS SIGNED AND STAMPED

NO.	DATE:	SUBMISSION/REVISION DESCRIPTION
2	7/31/20	ADDED RIGHT TURN LANE TO MACKENZIE LANE
1	5/6/20	ISSUED FOR REVIEW BY TOWN OF KITTERY

TIDEWATER
ENGINEERING & SURVEYING, INC.
89 Route 236 Suite 3, Kittery, ME 03904
(207)439-2222 • www.tidewatercivil.com

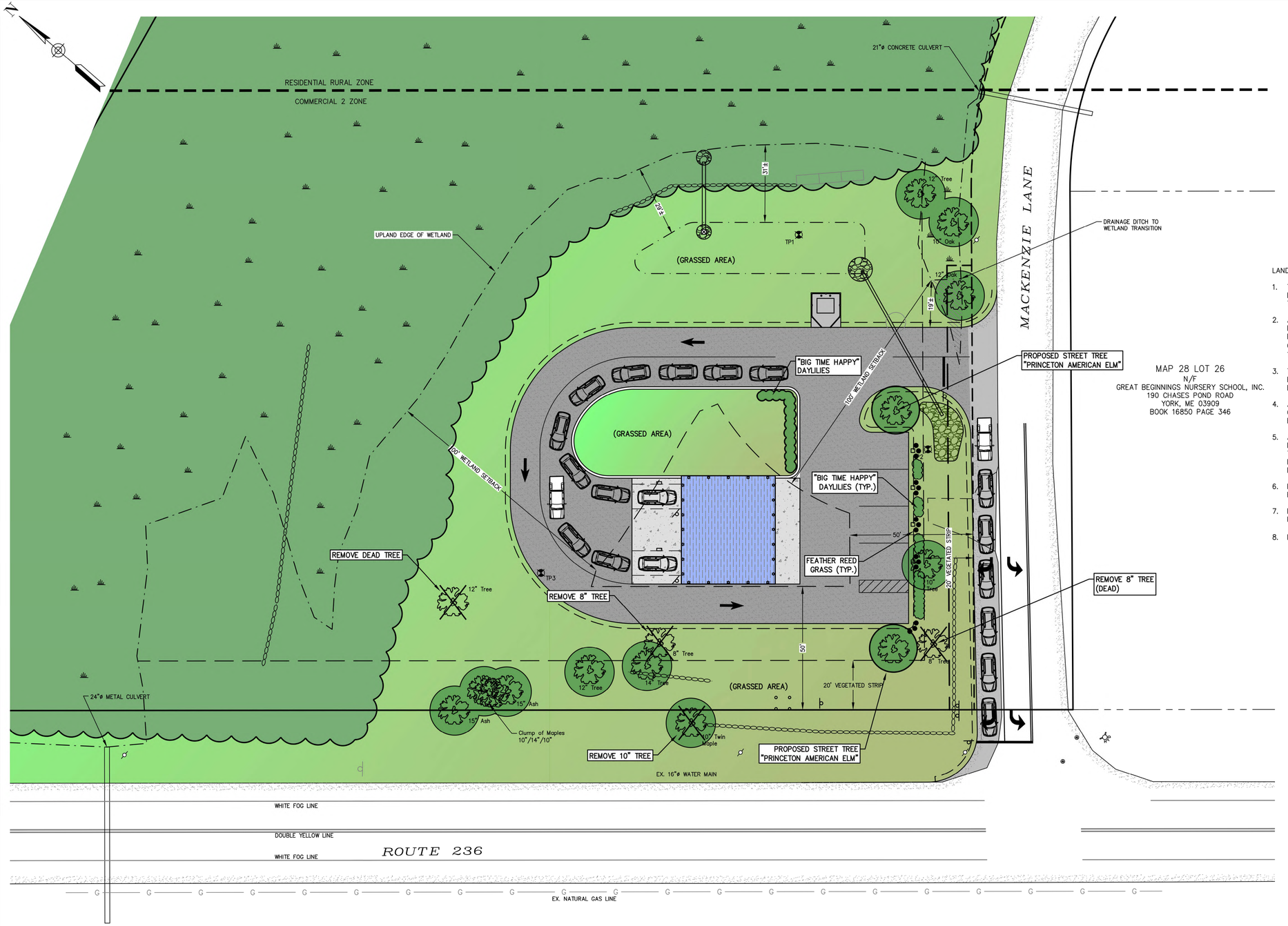
CLIENT: ROBERT T. BRENNAN, JR.
1911 SE 20TH STREET
CAPE CORAL, FL 33990

PROJECT: KITTERY CAR WASH
ROUTE 236, KITTERY, MAINE 03904

SHEET: CONSTRUCTION DETAILS

JOB #: 19-134
DATE: MARCH 2020
SCALE: 1" = 20'
DRAWING

C6



LANDSCAPING NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE EXISTING WOODED AREAS, EXISTING TREES AND PROPOSED ADDITIONAL LANDSCAPING ASSOCIATED WITH THE PROPOSED KITTERY CAR WASH DEVELOPMENT.
2. ALL EXISTING TREES WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED FROM DAMAGE BY INSTALLING SNOW FENCE OR SIMILAR MATERIAL AROUND EACH TREE. SAID SNOW FENCE SHALL BE LOCATED ALONG THE DRIP EDGE OF THE TREE'S CANOPY. CONTRACTOR TO AVOID SOIL COMPACTION OVER THE TREE'S ROOT SYSTEM.
3. THE STUMPS OF ALL TREES SHOWN ON THIS PLAN TO BE REMOVED SHALL BE GROUND TO AT LEAST 6 INCHES BELOW GRADE OR REMOVED BY EXCAVATION.
4. ALL PROPOSED TREES AND PLANTS THAT DO NOT SURVIVE FOR A PERIOD OF TWO YEARS FOLLOWING THE DATE OF INSTALLATION SHALL BE REPLACED BY THE OWNER.
5. ALL AREAS TO BE MAINTAINED AS GRASS SHALL BE COVERED WITH SIX INCHES OF LOAM AND HYDROSEEDED. HYDROSEED SHALL INCLUDE TACKIFIERS. CONTRACTOR SHALL BE RESPONSIBLE FOR WATERING HYDROSEEDED AREAS ON A DAILY BASIS OR AS RECOMMENDED BY INSTALLER.
6. REFERENCE IS MADE TO SHEET C5 FOR EROSION AND SEDIMENT CONTROL REQUIREMENTS.
7. PROPOSED PLANTS SELECTED FROM THE APPROVED PLANT MATERIALS LIST FOUND WITHIN SECTION III OF THE KITTERY DESIGN HANDBOOK.
8. LANDSCAPE REQUIREMENTS PER §16.3.2.11.D(4) C-2 ZONE STANDARDS:

   (a) PARKING: THE PROPOSED VACUUM BAY PARKING STALLS TO BE SCREENED AS SHOWN ON THE PLAN.

   (c) LANDSCAPING SITE IMPROVEMENTS:

   [1] LANDSCAPE PLANTER STRIP: A 20 FOOT DEEP VEGETATED LANSCAPE PLANTER STRIP IS PROVIDED ALONG BOTH ROUTE 236 AND MACKENZIE LANE. THIS LANDSCAPE STRIP INCLUDES A COMBINATION OF MOWED GRASS SURFACES, TREES AND PLANTS. ALL VEGETATION SHALL BE MAINTAINED IN GOOD CONDITION.

   [1][b] STREET-SIDE TREES: A MINIMUM OF ONE STREET TREE PER 50 FEET OF STREET FRONTAGE REQUIRED.

   ROUTE 236:

   240 LF OF OPEN FRONTAGE / 50 = 5 TREES REQUIRED

   NUMBER OF EXISTING TREES = 11 TREES
   NUMBER OF TREES TO BE REMOVED = 4 TREES
   NUMBER OF TREES TO BE PLANTED = 1 TREE

   TOTAL NUMBER OF TREES PROVIDED = 8 TREES

   MACKENZIE LANE:

   220 LF OF OPEN FRONTAGE / 50 = 5 TREES REQUIRED

   NUMBER OF EXISTING TREES = 6 TREES
   NUMBER OF TREES TO BE REMOVED = 1 TREES
   NUMBER OF TREES TO BE PLANTED = 1 TREE

   TOTAL NUMBER OF TREES PROVIDED = 6 TREES

TREE AND PLANT SCHEDULE:

BOTANICAL NAME	COMMON NAME	QUANTITY	SIZE
ULMUS AMERICANA	PRINCETON AMERICAN ELM	2	2-2½" CALIPER
CALAMOGROSTIS ACUTIFLORA	REED GRASS	15	1 GALLON
HEMEROCALLIS	BIG TIME HAPPY DAYLILY	50	1 GALLON

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

DIG SAFE ME NH VT 811 or 1-888-DIG-SAFE (811) UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION

ISSUED FOR TOWN REVIEW
NOT FOR CONSTRUCTION

TAX MAP 28 LOT 25D

STATE OF MAINE
RYAN M. MCCARTHY
#12895
LICENSED PROFESSIONAL ENGINEER
JULY 31, 2020
NOT VALID UNLESS SIGNED AND STAMPED

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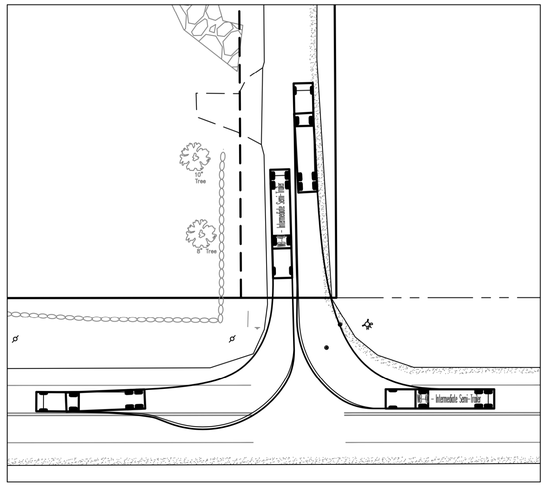
CLIENT: ROBERT T. BRENNAN, JR.
1911 SE 20TH STREET
CAPE CORAL, FL 33990

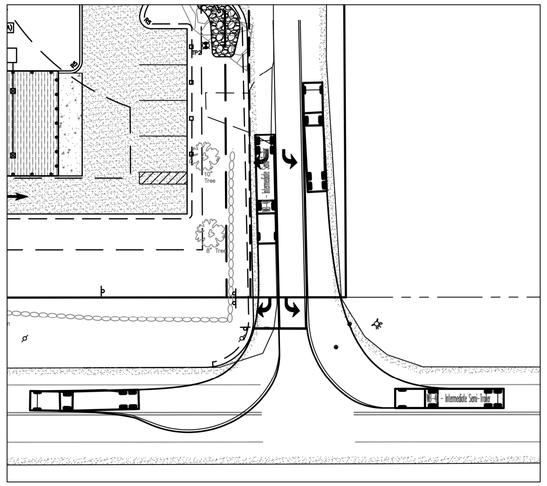
PROJECT: KITTERY CAR WASH
ROUTE 236, KITTERY, MAINE 03904

SHEET: PROPOSED LANDSCAPING PLAN

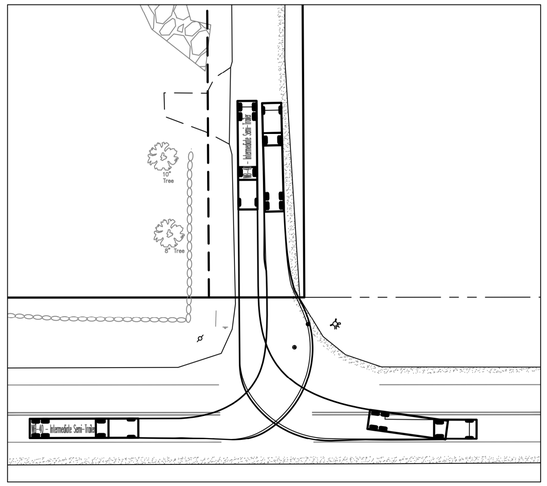
JOB #: 19-134
DATE: MARCH 2020
SCALE: 1" = 20'
DRAWING
C7



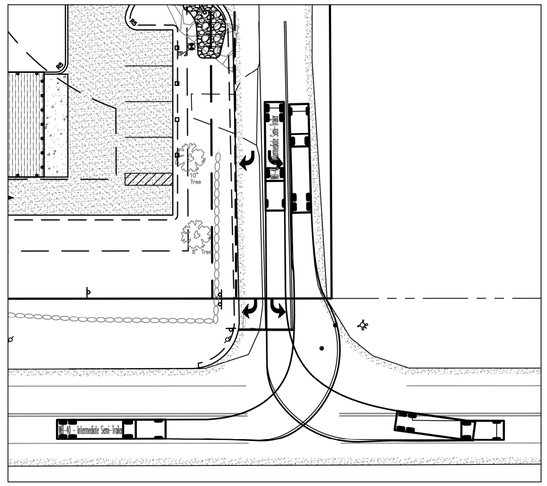
WB-40: RIGHT TURN MOVEMENTS (EXISTING CONDITIONS)



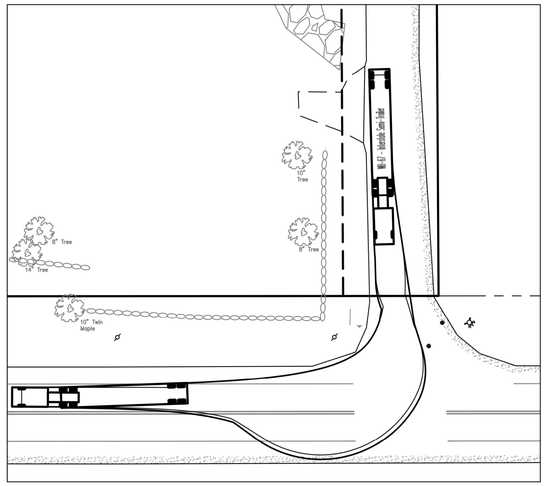
WB-40: RIGHT TURN MOVEMENTS (PROPOSED CONDITIONS)



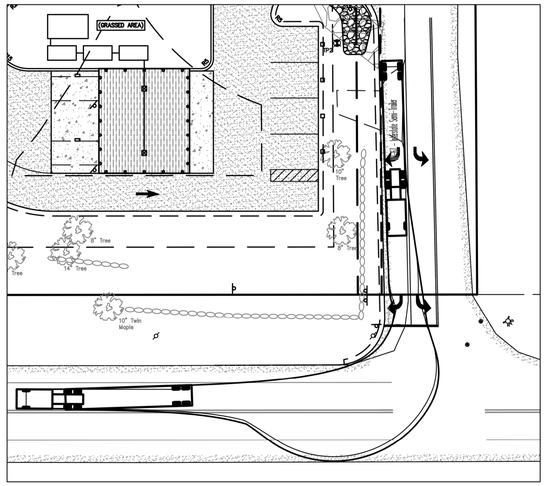
WB-40: LEFT TURN MOVEMENTS (EXISTING CONDITIONS)



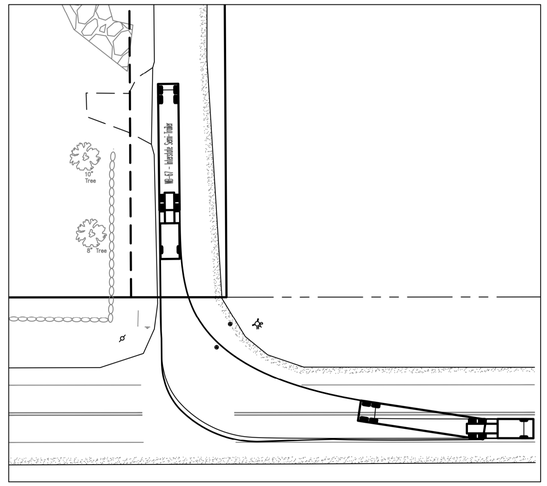
WB-40: LEFT TURN MOVEMENTS (PROPOSED CONDITIONS)



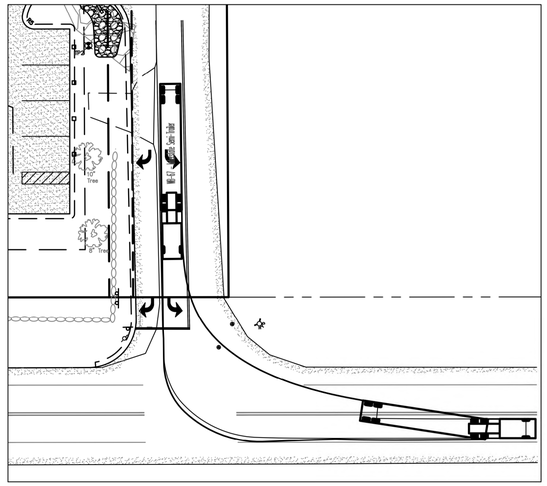
WB-67: RIGHT TURN MOVEMENT (EXISTING CONDITIONS)



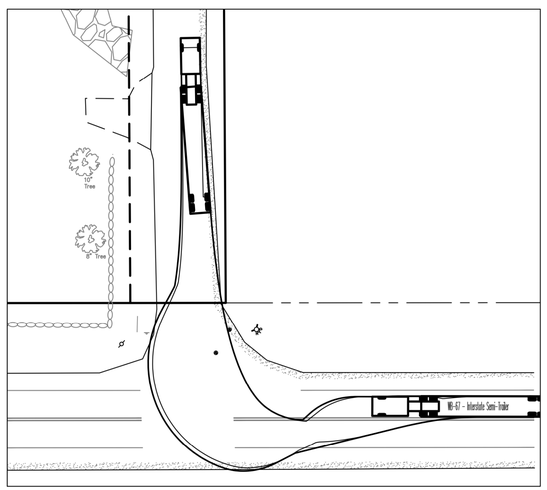
WB-67: RIGHT TURN MOVEMENT (PROPOSED CONDITIONS)



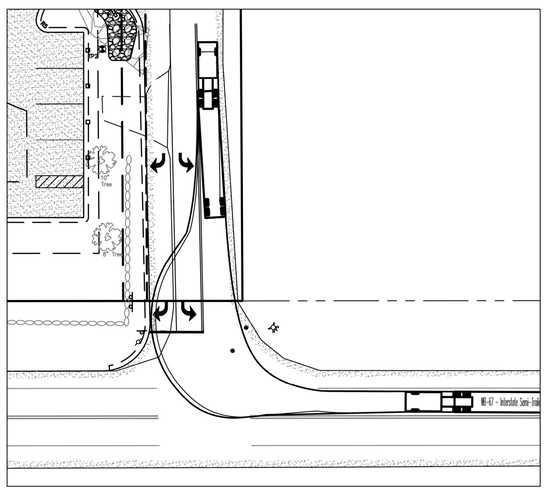
WB-67: LEFT TURN MOVEMENT (EXISTING CONDITIONS)



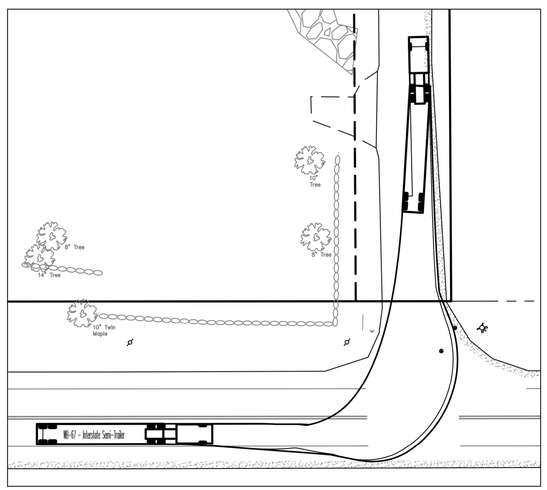
WB-67: LEFT TURN MOVEMENT (PROPOSED CONDITIONS)



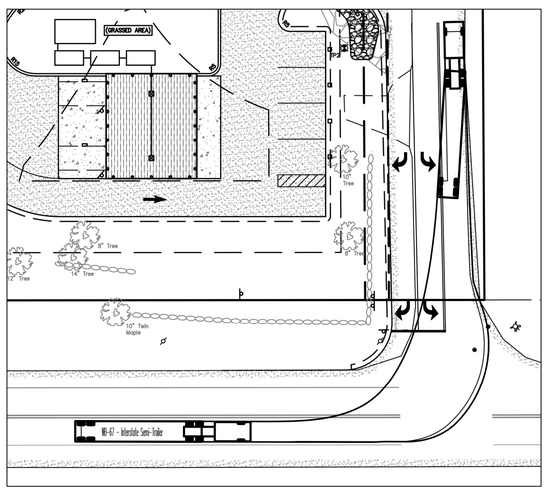
WB-67: RIGHT TURN MOVEMENT (EXISTING CONDITIONS)



WB-67: RIGHT TURN MOVEMENT (PROPOSED CONDITIONS)



WB-67: LEFT TURN MOVEMENT (EXISTING CONDITIONS)



WB-67: LEFT TURN MOVEMENT (PROPOSED CONDITIONS)

TAX MAP 28
LOT 25D

STATE OF MAINE
RYAN M. MCCARTHY
#12895
LICENSED PROFESSIONAL ENGINEER

JULY 31, 2020

NOT VALID UNLESS SIGNED AND STAMPED

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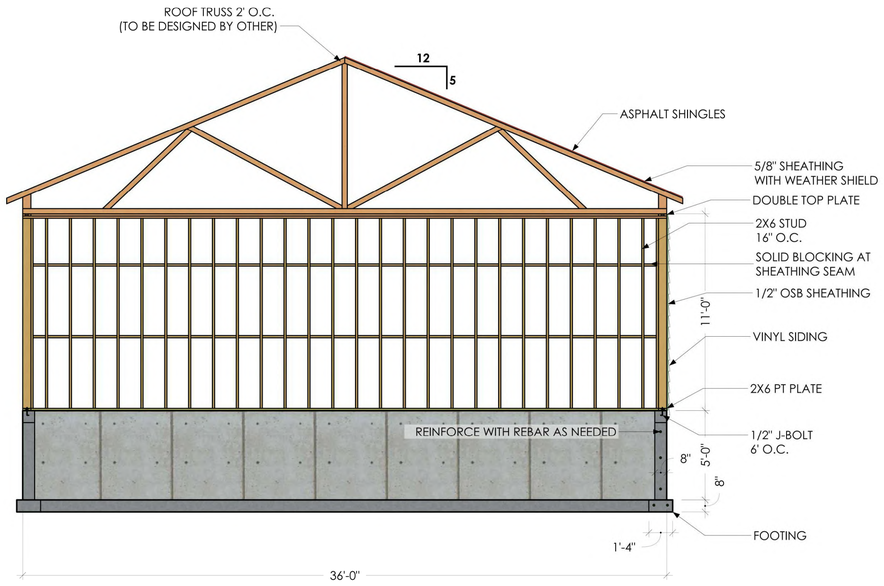
CLIENT: ROBERT T. BRENNAN, JR.
1911 SE 20TH STREET
CAPE CORAL, FL 33990

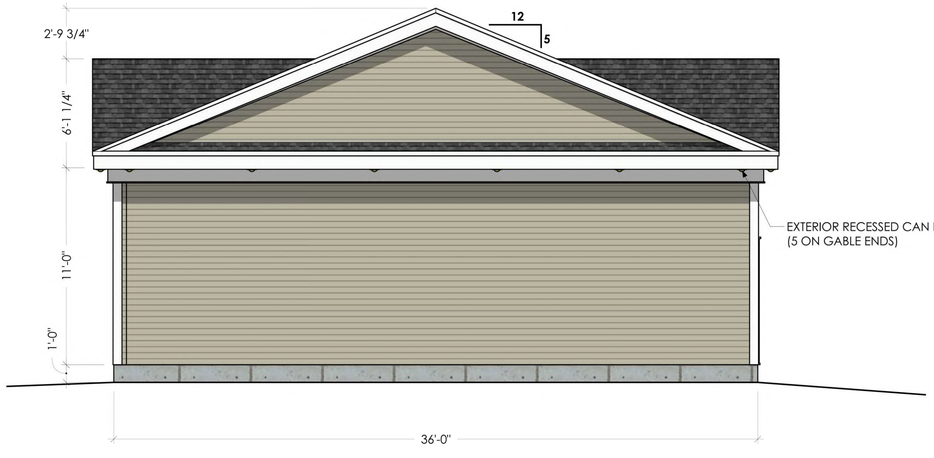
PROJECT: KITTERY CAR WASH
ROUTE 236, KITTERY, MAINE 03904

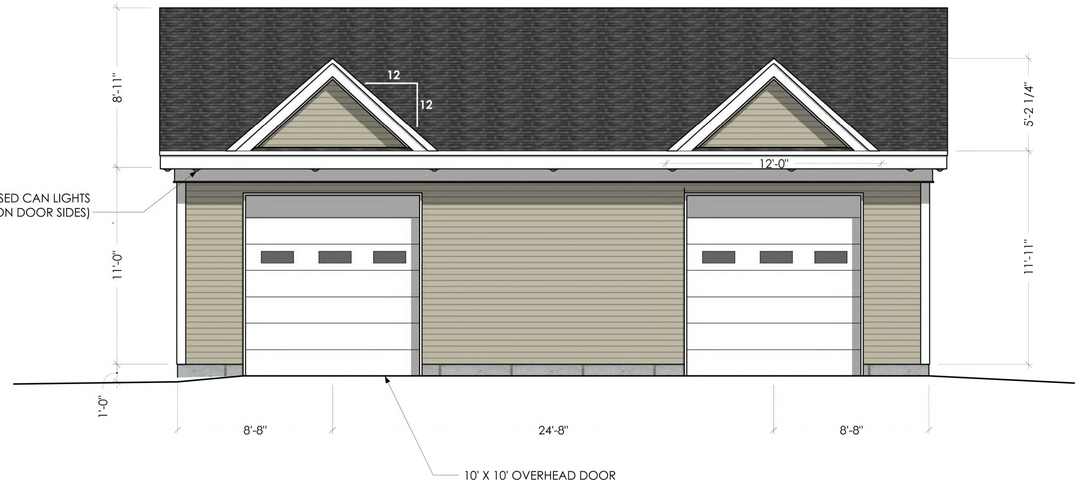
SHEET: WB-40 & WB-67 TURNING MANEUVERS

JOB #: 19-134
DATE: MARCH 2020
SCALE: 1" = 20'
DRAWING

C8







J·W·H
Drafting & Design

John W. Hutchins
P: 207· 608·2171
E: jwhutchins@yahoo.com
A: 455 Main Street
Springvale, ME 04083

PROJECT LOCATION:
McKenzie Lane
Kittery, Maine

CLIENT:
Aaron Wiswell
P.O. Box 623
North Berwick 03906

PROJECT NAME
Two Bay Carwash

DISCLAMER:
All plans provided are based on information given by the client. Dimensions and specifications shown hereon should be verified by a contractor before construction begins. Client and contractor are responsible for errors or omissions. Contractor assumes all liability for building construction. Plans and specifications have not been prepared by a registered architect or engineer of their choice if stamp is required.

ISSUED: 03/04/2020
RE: 07/29/2020

SHEET:
A1

SCALE:
1/4" = 1'

July 31, 2020

Mr. Bart McDonough
Town Planner
Kittery Planning & Development
200 Rogers Road
Kittery, ME 03904

Re: Revised Submission #2 – Kittery Car Wash
Tax Map 28 Lot 25D, Route 236
Job No. 19-134

Dear Mr. McDonough:

Tidewater Engineering & Surveying, Inc. has revised the plans and documents associated with the Kittery Car Wash site plan application to address review comments by the Town staff and Planning Board members. This submission also provides an engineered design of the proposed right turn lane.

The following documents are provided for review.

1. Updated Project Narrative
2. Lighting Photometric Plan and Product Sheets;
3. Updated Stormwater Report dated July 31, 2020;
4. Updated Site Plan Set – Revision 2 dated July 31, 2020;

We look forward to continuing the review process of this application and obtaining comments from CMA Engineers. If you have any questions, please do not hesitate to contact me at (207) 439-2222 or ryan@tidewatercivil.com.

Sincerely,

Ryan M. McCarthy, P.E., P.L.S.

President
Tidewater Engineering & Surveying, Inc.
(207) 439-2222
ryan@tidewatercivil.com
Enclosures

PROJECT NARRATIVE (REVISED 7/31/2020)

Introduction:

The applicant is proposing to construct a two-bay automatic car wash, four vacuum spaces and associated paved area for vehicular circulation on Tax Map 28 Lot 26D. The parcel is located at the intersection of Route 236 and Mackenzie Lane. The site is approximately 7.44 acres and contains a gravel driveway, an open field with stockpiled material, woods and wetlands. The proposed development will be limited to the open field area and will not result in any impacts to the on-site wetlands.

The following summary is provided to aid in the Town's review of the proposed development.

Waivers Requested:

Sidewalks: The applicant has requested a waiver for the requirement to install a sidewalk along MacKenzie Lane pursuant to Table 1 Design and Construction Standards for Streets and Pedestrianways. As there are no sidewalks along Route 236 and MacKenzie Lane provides access to only the Town's Resource Recovery Facility, the need for a sidewalk is minimal.

Chapter 16.3: Land Use Zone Regulations

The property is located with the C-2 (Commercial) zone and is not subject to any overlay districts. The proposed car wash use is classified as a service business which is a permitted use within the C-2 zone. Both the Kittery LUDC and the Kittery Design Handbook have been referenced during the design process to a building and site design that meets the goals and vision of the Town.

Building Design Standards:

An architectural rendering is provided within this submission for review by Town staff and Board members. The proposed building is New-England in style. Reverse gables are provided over each garage door to add to the character of the building and break up the roof line.

Landscaping/Site Improvements:

A vegetated landscape planter strip in excess of the minimum 20-foot width is provided along both Route 236 and Mackenzie Lane. This planter strip is fully vegetated with grass and scattered mature trees, with the exception of the driveway. One street tree for each 50 feet of street frontage is required per the LUDC and existing large healthy trees are to be preserved when practical. It is the intent of the applicant to maintain the existing healthy trees where feasible and to add two street trees on each end of the vacuum bay stalls. Perennials are proposed in front of the vacuum bay stalls and along the side of the central landscaped island that faces MacKenzie Lane. See Sheet C7 Landscape Plan for further detail.

Outdoor Service and Storage Areas:

A dumpster within a fenced enclosure is proposed on the site. A detail for the enclosure can be found on Sheet C6 Construction Details which includes solid vinyl fence panels and a chain link front gate with privacy slates. The dumpster will not be used for disposal of hazardous wastes. Trash and waste from the receptables at the vacuum bay stalls will be disposed of within the dumpster. The only waste from the car wash building will be empty soap containers and the boxes they are delivered in.

Chapter 16.8: Design and Performance Standards

Article I. Purpose: No additional comment.

Article II. Monuments: Not applicable. This standard applies to new lots and streets within subdivisions.

Article III. Street Signage: Not applicable. No streets proposed.

Article IV. Streets and Pedestrian Ways/Sidewalks Site Design Standards:

No new streets are proposed. The driveway is proposed to be located off Mackenzie Lane and not Route 236 to comply with the requirement that access be provided on the street where there is a lesser potential for traffic congestion and hazards. The proposed driveway is located as far from the intersection with Route 236 as possible to minimize conflicts between vehicles waiting at the stop sign and vehicles entering or exiting the proposed development.

A right turn lane is proposed to be constructed on MacKenzie Lane as requested by the Town's Technical Review Committee to improve traffic flow and stacking at the stop sign. Although right turn lanes are typically shorter than proposed, the applicant has agreed to extend the right turn lane the entire length from Route 236 to the proposed driveway to the car wash. This will allow approximately seven (7) vehicles to stack at the stop sign prior to blocking the driveway to the car wash. This is demonstrated on Sheet C7 Proposed Landscape Plan.

The right turn lane has been designed to comply with the Secondary Collector specifications (as directed by the Kittery Public Works Director) found within Table 1 Design and Construction Standards for Streets and Pedestrianways of Chapter 16.8.4 of the Kittery Land Use and Development Code. A construction detail for the right turn lane can be found on Sheet C4 Proposed Grading & Stormwater Plan. A waiver to the requirements for sidewalks is requested.

Per the letter dated July 23, 2020 from the Department of Public Works, it is understood that large trucks, including tractor-trailer trucks, use MacKenzie Lane to access the Kittery Resource Recovery Facility. The letter also states that the design of the right turn lane is to support the

truck traffic and provide a sufficient turning radius for large vehicles entering and existing MacKenzie Lane from both directions on Route 236. To address this request, we have added Sheet C8 to the plan set that depicts truck maneuvers for both a WB-40 and WB-67 Interstate Semi-Trailer design truck. Each truck maneuver is shown in both the existing conditions and proposed conditions to demonstrate the improvements to the intersection.

The location of the proposed stop bar has been positioned to provide sufficient space for a WB-40 traveling south on Route 236 to turn left onto MacKenzie Lane without crossing into the left turn lane on MacKenzie Lane. The proposed stop bar also coincides with the location of the existing stop sign on MacKenzie Lane. During the July 23rd Planning Board meeting, one member of the Board requested the stop bars for the right and left turn lane be staggered. Although staggering the stop bars may be an option for signalized intersections, it is not recommended for unsignalized (stop sign) intersections due to sight distance and safety concerns.

Article V. Acceptance of Streets and Ways: The proposed right turn lane will be constructed within the public way known as MacKenzie Lane and will become the responsibility of the Town of Kittery once constructed. A additional 10 foot wide easement is proposed to be granted to the Town of Kittery in the location shown on Sheet C3. It is proposed the conveyance of this easement be a condition of the site plan approval and be required to be completed prior to the issuance of an occupancy permit.

Article VI. Water Supply: Water to be supplied by the Kittery Water District. A letter of approval from the District is provided that indicates there is adequate capacity to supply the development.

Article VII. Sewage Disposal:

Not applicable. No subsurface wastewater disposal system is necessary for this development as no restrooms are proposed in the building. The car wash is fully automated, eliminating the need for an on-site attendant. The owner is able to control the car wash remotely from a computer and can also view the car wash (both inside and outside) via security cameras. The owner will visit the site intermittently on an as-needed basis to fill the bulk soap dispensers and check on the site. On average, this site visit takes 15 to 30 minutes to complete. In the event the mechanic equipment requires servicing, a third-party technician will visit the site to make repairs. The dumpster is maintained by a third-party waste management company and the grounds by a landscaping contractor. As such, it is our opinion that an employee bathroom is not required or necessary for this site, similar to a free-standing ATM or a utility communication building. Note: We are currently seeking an opinion on this from the State of Maine to confirm if a restroom is required.

A non-domestic waste discharge license from Maine DEP is also not required for this development as the applicant plan to install a Purwater recovery/recycling system along with a 10,000-gallon retention tank. The recovery system uses a series of chambers that act as grit and

oil/water separators. As the water passes through the chambers, oils are trapped at the surface and particles settle to the bottom. The water is then pumped to a series of cyclonic separators that remove much smaller particulates. Ozone is added to the water to eliminate odors. It is a continuous cycle. Dirty water passes to a 10,000-gallon underground tank where it is stored. Once the storage tank is full, it is pumped out and disposed of properly off-site. No wastewater is discharged to the ground or on site.

Article VIII. Surface Drainage:

A stormwater management report has been provided to support a design that limits peak discharge to pre-development levels for the two-year and twenty-five year, twenty-four hour storm event.

An Erosion and Sediment Control plan has also been provided to protect the adjacent wetlands and maintain a stabilized and controlled site during construction.

The stormwater basin has been designed with a filter media to provide treatment to the stormwater as it infiltrates down into the underlying soils. Test pits completed on the site (see wetland report by Joseph Noel: Stormwater Report, Appendix B) indicate that the area of the proposed development is composed of a fill material. Test pit 1 located within the stormwater basin indicates the fill to include 8% asphalt and metal debris down to a depth of 63 inches. The natural underlying soils and ground water table was observed at this depth, which coincides with the approximate elevation of the adjacent wetlands. To prevent direct infiltration of stormwater through the existing fill material, the stormwater basin will be over-excavated down to the natural underlying soils and backfilled with clean sand or granular fill. See "Stormwater Basin Cross Section" on Sheet C6 Construction Details.

Article IX. Parking, Loading and Traffic:

The automatic car wash is designed so that it does not need to be staffed during hours of operation. The owner will visit the site intermittently to maintain the equipment, disposal of trash and perform other duties; therefore, one parking space is provided for the owner and/or a service vehicle. Given the type of business, parking spaces for customers are not necessary, however four vacuum spaces are provided for customer use.

No off-street loading bays are necessary for the proposed use.

<u>Vehicular Traffic Report</u>

The 10th edition of the ITE Trip Generation Manual was used to estimate the peak hour number of trips generated by the proposed development as follows.

Land Use Code 948: Automated Car Wash

Building Gross Floor Area (GFA) = 1672 SF = 1.672 Units
Units = per 1,000 SF of GFA

Weekday – Peak Hour of Adjacent Street	14.2 trips/unit x 1.672 = 24 trips
Weekday – PM Peak Hour of Generator	11.66 trips/unit x 1.672 = 20 trips
Saturday – Peak Hour of Generator	30.4 trips/unit x 1.672 = 51 trips

Based upon the above data, the highest peak hour trip rate of 51 trips is estimated to occur on a Saturday. We then compared this estimation to the maximum output possible by the car wash based upon the equipment operation as follows.

Average duration per wash = 6 minutes
Number of washes possible per hour = 60 minutes / 6 min. per wash = 10 washes
Number of car wash bays = 2
Maximum number of washes per hour = 10 washes x 2 bays = 20 washes
Number of trips possible per hour = 20 washes x 2 trips/wash = 40 trips per hour

Based upon the above analysis, the calculation by the ITE manual of 51 trips in the peak hour is verified to be reasonably accurate for the proposed car wash.

The ITE manual does not provide data to be able to estimate the number of vehicles trips per day, however based upon data records provided by the application for other car washes he owns, the proposed development is not anticipated to generate more than 400 vehicle trips per day. For example, the busiest day at their one-bay car wash located in North Berwick occurred on a Saturday and generated 79 washes. This amounts to 158 vehicle trips in that day. The proposed car wash in Kittery will have two bays, so a conservative estimate of vehicle trips per day for this development is 316 trips. For comparison, this would equate to both car wash bays operating at full capacity (10 washes per bay per hour) for 8 hours straight. It is our opinion that it is unlikely that the proposed car wash would experience such a high demand.

Update: As the development is estimated to generated less than 400 vehicle trips per day and less than 40 parking spaces, a “traffic impact analysis” in accordance with Section 16.10.5.2D(1) will not be required, provided a right turn lane on MacKenzie Lane is constructed. Reference is made to condition #2 of the motion to accept the preliminary plan application as complete at the June 25, 2020 Planning Board Meeting and subsequently confirmed at the July 23, 2020 Planning Board Meeting.

Please see narrative above under *Article IV. Streets and Pedestrian Ways/Sidewalks Site Design Standards* for more detailed information regarding the proposed right turn lane.

Article X. Signs:

The applicant is proposing to install one freestanding sign along the frontage of Route 236 as shown on the plan. The proposed design and dimensions of the sign are enclosed in this submission. Each face of the sign is 32.5 square feet therefore the total area including both sides is 65 square feet. The LUDC allows a minimum sign area of 72 square feet, therefore the proposed sign area complies. The proposed location of the freestanding sign location complies with Section 16.8.10.3.C as it is approximately 50 feet from the centerline and 30 feet from the edge of pavement of Route 236. Each side of the sign will be illuminated using overhead directional lights mounted to the signpost. See details provided within the lighting submission.

The applicant is also proposing to install a menu sign adjacent to the entrance of each car wash bay that displays the selection and price of each type of wash. This type of sign is most similar to a food menu sign that you would see at a fast food restaurant. The LUDC allows up to two food menu signs, each with an area of up to 32 square feet. The applicant is proposing two menu signs that are 4 feet wide by 8 feet tall each (32 sf each). A photo of the menu sign proposed is enclosed in this submission.

Article XI through Article XVI: Not applicable.

Article XVII. Utilities: All utilities (electric, communications, water, natural gas) to the site will be underground.

Article XVIII. Landscaping: The required number of streetside trees have been met by using a combination of the existing mature trees on the site and two proposed street trees adjacent to the vacuum bay stalls. A vegetated buffer strip exceeding the 20-foot minimum width is also provided. Reference is made to Sheet C7 Proposed Landscape Plan.

Article XIX. Sprinklers: Automatic sprinkler system not required.

Article XX through Article XXIII: Not applicable.

Article XXIV. Exterior Lighting: The applicant proposes to install recessed lighting under the eaves around the building. The vacuums proposed for this site mount the hoses from an overhead swivel boom. This keeps the hoses from dragging on the ground and allows easier access to both sides of the vehicle. Lighting is provided on the inside of the boom that shines down onto the spaces. No pole mounted lights are proposed, except for the directional lights mounted above the road sign. See photometric plan and product sheets for more detailed information.

Article XXV through XXVIII: Not applicable.

Chapter 16.9: Design and Performance Standards

Article I. General:

16.9.1.1 Agriculture: Not applicable

16.9.1.2 Mineral/Earth Material Exploration and Removal: Not applicable.

16.9.1.3 Prevention of Erosion: See Sheet C5 Erosion and Sediment Control Plan.

16.9.1.4 Soil Suitability: Not applicable. No subsurface wastewater disposal system proposed.

16.9.1.5 Water Quality and Wastewater Pollution:

Stormwater design protects water quality of runoff to wetlands. No subsurface wastewater disposal system proposed.

16.9.1.6 Air Pollution: Development will not adversely impact air quality.

16.9.1.7 Buffer Area: Not applicable. No residential abutters.

16.9.1.8 Floodplain Areas: Not applicable. Not located within a FEMA flood zone.

16.9.1.9 Noise Abatement: Excessive noise from the development is not anticipated.

16.9.1.10 Radiation: No radiation expected to be generated from the site.

Article II. Retention of Open Spaces and Natural or Historic Features:

The proposed development is limited to the area of the property that is currently an open field. No clearing of wooded areas is proposed. The site is not located within a Resource Protection or Shoreland Overlay Zone. The majority of the property will remain wooded. No land is proposed to be dedicated to the Town.

The Town of Kittery GIS map indicates that that a New England cottontail was spotted in the woods/wetlands to the rear of proposed development but does not indicate a “potential cottontail habitat”. As the proposed development will not result in any clearing of the wooded areas, we do not anticipate any impacts to a potential cottontail habitat. Furthermore, we have coordinated with a Maine Inland Fisheries and Wildlife biologist regarding the proposed development but have not received comments.

Article III. Conservation of Wetlands Including Vernal Pools:

On-site wetlands have been delineated by Joseph W. Noel, Maine Soil Scientist #209. The proposed development has been designed to minimize impacts to the wetlands. There is a drainage ditch located along the side of Mackenzie Lane that widens out to the large wetland located to the north of the site. Per the report by Mr. Noel, the wetland area that is less than 12 feet in width meets the definition of a drainage ditch per the LUDC. The areas wider than 12 feet in width along this drainage ditch are considered wetlands. See report by Mr. Noel for further detail.

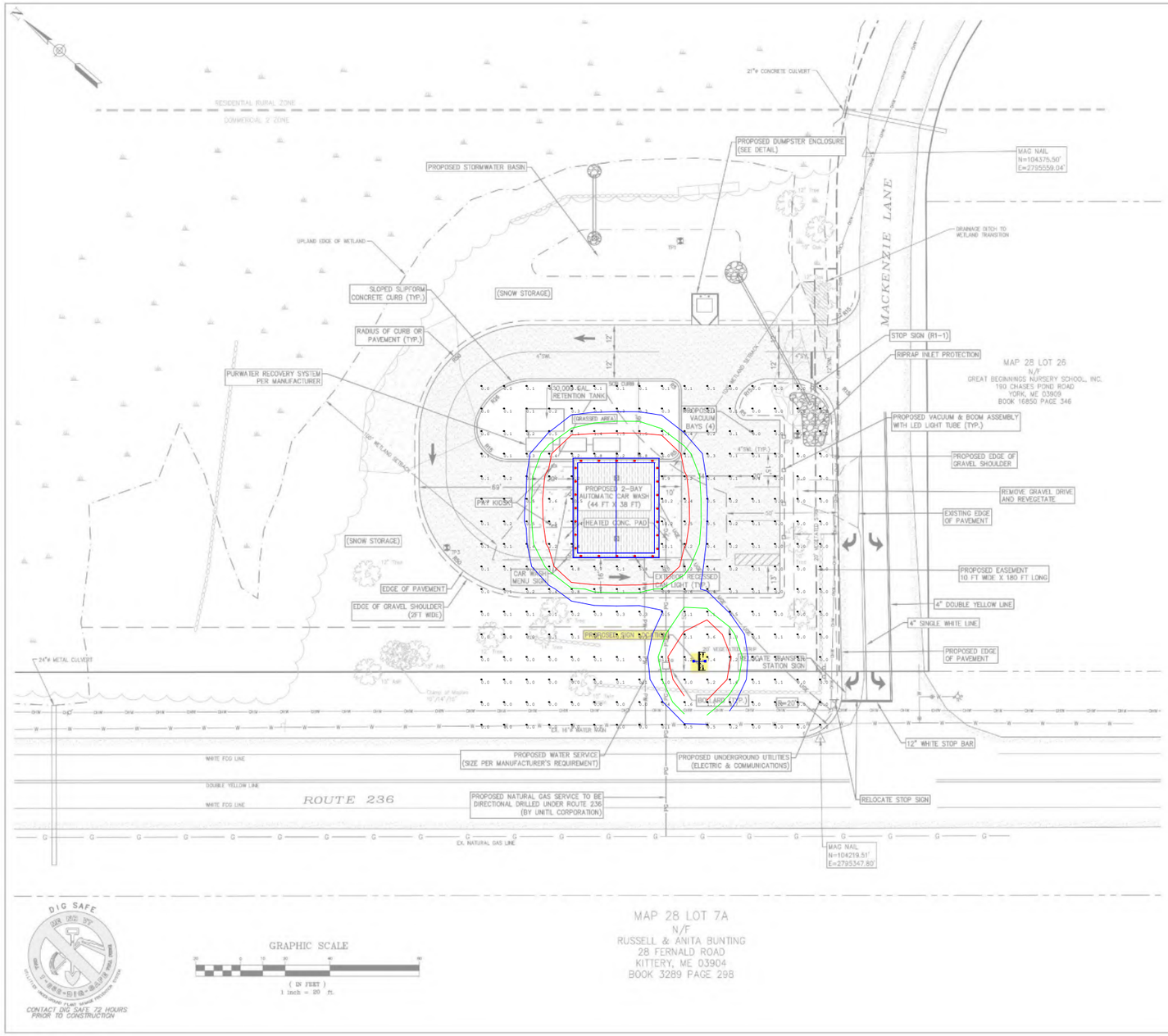
Article IV. Wetland Setbacks for Special Situations: The wetland to the rear (north) of the proposed development is greater than 1 acre in size, therefore the proposed development must meet the setbacks as specified in Table 16.9. Please note that under the Special Uses category, the setback of 150 feet that applies to an auto wash use may be reduced to 100 feet if BMPs are incorporated into the stormwater management plan for protecting water quality. We feel the design has satisfied this requirement as the majority of the runoff from the site is collected and routed to the stormwater basin located to the rear of the property. This stormwater basin is designed with an elevated control outlet orifice that will allow stormwater to pond up to 12 inches deep before overflowing into the control outlet structure. This volume is capable of storing and infiltrating the runoff generated from 24-hour storm with a rainfall depth of 2 inches. Furthermore, the car wash will incorporate a closed Purwater recovery/recycling system and 10,000-gallon retention tank, eliminating the need for a subsurface wastewater disposal system.

Article V. Timber Harvesting: Not applicable.

Article VI. Overboard Discharge Systems: No overboard discharge system proposed.

Article VII. Non-Storm Water Discharge: No unauthorized discharges expected.

Article VIII. Floodplain Management: Site not within a flood zone or floodplain.



GENERAL NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE PROPOSED COMMERCIAL DEVELOPMENT ON TAX MAP 28 LOT 25D IN THE TOWN OF KITTERY, MAINE.
2. OWNER OF RECORD:
   ROBERT T. BRENNAN, JR.
   1911 SE 20TH STREET CAPE CORAL, FL 33990
   Y.C.R.D. BOOK 18014 PAGE 294
3. THE PROPOSED DEVELOPMENT IS LOCATED WITHIN THE COMMERCIAL C-2 ZONING DISTRICT. THE FOLLOWING DIMENSIONAL REGULATIONS ARE IN EFFECT AT THE TIME OF THIS SURVEY AND ARE SUBJECT TO THE REVIEW BY THE TOWN OF KITTERY.

   COMMERCIAL C-2:

MINIMUM LAND AREA:	40,000 SF
MINIMUM STREET FRONTAGE:	150 FEET
MINIMUM FRONT YARD SETBACK:	50 FEET
MINIMUM SIDE/REAR YARD SETBACK:	30 FEET
MAXIMUM COVERAGE:	40%
MAXIMUM BUILDING HEIGHT:	40 FEET

4. ZONING REGULATIONS ARE SUBJECT TO CHANGE. OWNER SHALL CONFIRM ALL ZONING REGULATIONS WITH THE TOWN OF KITTERY PRIOR TO ANY DEVELOPMENT.
5. THE BASIS OF BEARING IS MAINE STATE PLANE (NAD83) WEST ZONE, US FOOT. ELEVATIONS AND TOPOGRAPHY SHOWN HEREON CORRESPOND TO NAVD88.
6. THE BOUNDARY SHOWN HEREON IS PER SHEET C2. SEE SHEET C2 FOR FURTHER DETAIL.
7. UTILITY LOCATIONS SHOWN ON THESE PLANS ARE APPROXIMATE AND MAY NOT BE ENTIRELY ACCURATE OR COMPLETE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL UTILITIES, BOTH OVERHEAD AND UNDERGROUND, THROUGHOUT THE COURSE OF THE WORK. THIS INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AND DIG SAFE AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES.
8. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS, AND REPORT ANY DISCREPANCIES TO TIDEWATER ENGINEERING & SURVEYING, INC. THE CONTRACTOR SHALL PROCEED WITH THE WORK ONLY AFTER ANY DISCREPANCIES HAVE BEEN RESOLVED BY TIDEWATER ENGINEERING & SURVEYING, INC.
9. THE CONTRACTOR SHALL, ON A DAILY BASIS, THOROUGHLY SECURE ALL EXCAVATIONS UPON COMPLETION OF OPERATIONS IN THE IMMEDIATE AREA OF EXCAVATION.
10. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL LOCAL, STATE AND FEDERAL PERMITS REQUIRED FOR THE CONSTRUCTION OF THE PROPOSED DEVELOPMENT SHOWN WITHIN THIS PLAN SET. THE CONTRACTOR SHALL NOT PROCEED WITH SAID WORK UNTIL ALL CONDITIONS OF SAID PERMITS ARE MET.
11. ALL WATER UTILITY WORK AND MATERIALS SHALL COMPLY WITH THE KITTERY WATER DISTRICTS REQUIREMENTS, SPECIFICATION AND THIS PLAN SET. THE PROPOSED WATER SERVICE SHALL BE SIZED BY THE MANUFACTURER TO MEET THE USAGE DEMANDS OF THE CAR WASH EQUIPMENT TO BE INSTALLED.
12. THE CONTRACTOR IS RESPONSIBLE FOR SEQUENCING OF WORK, MEANS AND METHODS OF CONSTRUCTION AND FOR IMPLEMENTATION OF A SAFETY PLAN.

    THE PROPOSED DEVELOPMENT IS ANTICIPATED TO RESULT IN LESS THAN ONE AREA OF DISTURBED AREA AND LESS THAN ONE ACRE OF IMPERVIOUS SURFACES, THEREFORE A MAINE DEP STORMWATER PERMIT IS NOT REQUIRED.

    ESTIMATED DISTURBANCE AREA = 32,100 SF
    ESTIMATED IMPERVIOUS AREA = 16,097 SF
13. SEE LIGHTING PHOTOMETRIC PLAN AND PRODUCT SHEET BY R.A.B. LIGHTING SUBMITTED TO THE TOWN OF KITTERY AS PART OF THIS SITE PLAN APPLICATION FOR LIGHTING SPECIFICATIONS.

DRAFT

NOT VALID UNLESS SIGNED AND STAMPED

NO.	DATE:	SUBMISSION/REVISION DESCRIPTION
2	7/30/20	ADDED RIGHT TURN LANE TO MACKENZIE LANE
1	5/8/20	ISSUED FOR REVIEW BY TOWN OF KITTERY

TIDEWATER ENGINEERING & SURVEYING, Inc.
89 Route 236 Suite 3 Kittery, ME 03904
(207)439-2222 • www.tidewatercivil.com

CLIENT: ROBERT T. BRENNAN, JR.
1911 SE 20TH STREET
CAPE CORAL, FL 33990

PROJECT: KITTERY CAR WASH
ROUTE 236, KITTERY, MAINE 03904

SHEET: PROPOSED SITE & UTILITY PLAN

JOB #:	19-134
DATE:	MARCH 2020
SCALE:	1" = 20'

DRAWING
C3

Scale: 1 inch= 55 Ft.

HOLBROOK-ASSOCIATED
Electrical Manufacturer's Representatives

Prepared For:
Tidewater Engineering & Surveying, Inc
Ryan M. McCarthy
89 Route 236 Suite 3
Kittery, ME 03904

Job Name:
Kittery Car Wash & Sign

Lighting Layout
Exterior

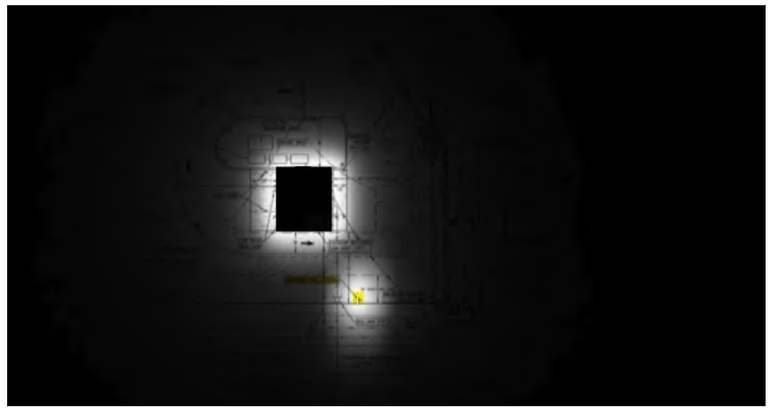
Scale: as noted	Inside Rep: CRobbins
Date:7/30/2020	Outside Rep:
Filename: Kittery Car Wash and Sign.AGI	
Drawn By:JHolbrook	

Filename: C:\Users\jholbrook\Documents\AGI32 - Designs\2020 Designs\RAB\Kittery Car Wash\Kittery Car Wash and Sign.AGI

Calculation Summary											
Label	**CalcType**	**Units**	**Avg**	**Max**	**Min**	**Avg/Min**	**Max/Min**	**Description**	**PtSpcLr**	**PtSpcTb**	**Meter Type**
Ground	Illuminance	Fc	0.96	10.5	0.0	N.A.	N.A.	Readings Taken @ 0'-0" AFG	10	10	Horizontal
Sign_Side	Illuminance	Fc	13.42	25.7	6.9	1.94	3.72	Readings Taken Vertically	2	2	Normal

Luminaire Schedule			All quotes/orders generated from this layout must be forwarded to the Local Rep Agency				
Symbol	**Qty**	**Tag**	**Label**	**Arrangement**	**LLF**	**Description**	**BUG Rating**
	24	A	C6R12940UNVW	SINGLE	1.000	DOWN LIGHT	N.A.
	2	B	WPLED18N	SINGLE	1.000	WALLPACK	B1-U1-G0

Expanded Luminaire Location Summary						
LumNo	**Label**	**X**	**Y**	**MTG HT**	**Orient**	**Tilt**
1	C6R12940UNVW	284.424	262.872	11.6	0	0
2	C6R12940UNVW	292.322	262.88	11.6	0	0
3	C6R12940UNVW	300.219	262.887	11.6	0	0
4	C6R12940UNVW	308.117	262.895	11.6	0	0
5	C6R12940UNVW	316.014	262.903	11.6	0	0
6	C6R12940UNVW	318.295	259.59	11.6	0	0
7	C6R12940UNVW	284.375	220.766	11.6	270	0
8	C6R12940UNVW	281.988	259.685	11.6	180	0
9	C6R12940UNVW	292.33	220.72	11.6	270	0
10	C6R12940UNVW	300.285	220.674	11.6	270	0
11	C6R12940UNVW	308.241	220.628	11.6	270	0
12	C6R12940UNVW	316.196	220.582	11.6	270	0
13	C6R12940UNVW	281.988	253.77	11.6	180	0
14	C6R12940UNVW	281.988	247.854	11.6	180	0
15	C6R12940UNVW	281.988	241.939	11.6	180	0
16	C6R12940UNVW	281.988	236.024	11.6	180	0
17	C6R12940UNVW	281.988	230.108	11.6	180	0
18	C6R12940UNVW	281.988	224.193	11.6	180	0
19	C6R12940UNVW	318.292	253.629	11.6	0	0
20	C6R12940UNVW	318.289	247.668	11.6	0	0
21	C6R12940UNVW	318.285	241.708	11.6	0	0
22	C6R12940UNVW	318.282	235.747	11.6	0	0
23	C6R12940UNVW	318.279	229.786	11.6	0	0
24	C6R12940UNVW	318.276	223.825	11.6	0	0
25	WPLED18N	339.4	174.1	18.6	0	-30
26	WPLED18N	334.4	174.1	18.6	180	-30
Total Quantity: 26						



C6R12940UNVW

WPLED18N ON AN ARMSV24

NOTES:
* The light loss factor (LLF) is a product of many variables, only lamp lumen depreciation (LLD) has been applied to the calculated results unless otherwise noted. The LLD is the result (quotient) of mean lumens / initial lumens per lamp manufacturers' specifications.

* Illumination values shown (in footcandles) are the predicted results for planes of calculation either horizontal, vertical or inclined as designated in the calculation summary. Meter orientation is normal to the plane of calculation.

* The calculated results of this lighting simulation represent an anticipated prediction of system performance. Actual measured results may vary from the anticipated performance and are subject to means and methods which are beyond the control of Holbrook-Associated.

* Mounting height determination is job site specific, our lighting simulations assume a mounting height (insertion point of the luminaire symbol) to be taken at the top of the symbol for ceiling mounted luminaires and at the bottom of the symbol for all other luminaire mounting configurations.

* It is the Owner's responsibility to confirm the suitability of the existing or proposed poles and bases to support the proposed fixtures, based on the weight and EPA of the proposed fixtures and the owner's site soil conditions and wind zone. It is recommended that a professional engineer licensed to practice in the state the site is located be engaged to assist in this determination.

* The landscape material shown hereon is conceptual, and is not intended to be an accurate representation of any particular plant, shrub, bush, or tree, as these materials are living objects, and subject to constant change. The conceptual objects shown are for illustrative purposes only. The actual illumination values measured in the field will vary.

* Photometric model elements such as buildings, rooms, plants, furnishings or any architectural details which impact the dispersion of light must be detailed by the customer documents for inclusion in the Holbrook-Asociated lighting design model. Holbrook-Associated is not responsible for any inaccuracies caused by incomplete information on the part of the customer, and reserves the right to use best judgement when translating customer requests into photometric studies.

* RAB Lighting Inc. luminaire and product designs are protected under U.S. and International intellectual property laws. Patents issued or pending apply.

HOLBROOK-ASSOCIATED
Electrical Manufacturer's Representatives

Prepared For:
Tidewater Engineering & Surveying, Inc
Ryan M. McCarthy
89 Route 236 Suite 3
Kittery, ME 03904

Job Name:
Kittery Car Wash & Sign

Lighting Layout
Exterior

Scale: as noted	Inside Rep: CRobbins
Date:7/30/2020	Outside Rep:
Filename: Kittery Car Wash and Sign.AGI	
Drawn By:JHolbrook	

Filename: C:\Users\jholbrook\Documents\AGI32 - Designs\2020 Designs\RAB\Kittery Car Wash\Kittery Car Wash and Sign.AGI

WPLED18N

Ultra-high efficiency LED 18 Watt wall pack. patent-pending thermal management system. 100,000 hour L70 lifespan. 5-year, no-compromise warranty.

Color: Bronze

Weight: 7.5 lbs

Project:	**Type:**
Prepared By:	**Date:**

Driver Info

Type	Constant Current
120V	0.17A
208V	0.11A
240V	0.09A
277V	0.08A
Input Watts	20.5W

LED Info

Watts	18W
Color Temp	4000K (Neutral)
Color Accuracy	71 CRI
L70 Lifespan	100,000
Lumens	2,659
Efficacy	129.7 lm/W

Technical Specifications

Listings

UL Listed:

Suitable for wet locations. Suitable for mounting within 1.2m (4ft) of the ground.

DLC Listed:

This product is on the Design Lights Consortium (DLC) Qualified Products List and is eligible for rebates from DLC Member Utilities. DLC Product Code: P00001769

IESNA LM-79 & LM-80 Testing:

RAB LED luminaires and LED components have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80.

LED Characteristics

Lifespan:

100,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations

LED:

Multi-chip, high-output, long-life LED

Color Consistency:

3-step MacAdam Ellipse binning to achieve consistent fixture-to-fixture color

Color Stability:

LED color temperature is warrantied to shift no more than 200K in color temperature over a 5-year period

Color Uniformity:

RAB's range of Correlated Color Temperature follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2017.

Construction

Maximum Ambient Temperature:

Suitable for use in 40°C (104°F)

Cold Weather Starting:

Minimum starting temperature is -40°C (-40°F)

Thermal Management:

Superior heat sinking with external Air-Flow fins

Finish:

Our environmentally friendly polyester powder coatings are formulated for high-durability and long-lasting color

Reflector:

Semi-specular, vacuum-metalized polycarbonate

Gaskets:

High-temperature silicone gaskets

ARMSV24

Color: Bronze

Weight: 2.6 lbs

Project:	Type:
Prepared By:	Date:

Technical Specifications

Other

Threads:

1/2" NPS at the fixture Side

Buy American Act Compliance:

RAB values USA manufacturing! Upon request, RAB may be able to manufacture this product to be compliant with the Buy American Act (BAA). Please contact customer service to request a quote for the product to be made BAA compliant.

Construction

Diameter:

Diameter of the tube is 1"

Mounting:

The wall plate does not mount to a junction box but directly to the mounting surface with the proper hardware for the surface

Accessory Only:

LPACK LED fixture sold separately

Arm:

Use to extend fixtures away from wall and to adjust the aiming angle of the light fixture. Great for facade and sign lighting.

Swivel Plate:

Die cast aluminum Swivel Plate adjusts 30° in both directions and mounts to RAB's WPLED10, WPLED13, WPLED18, WPLED20 and WPLED26 fixtures

Construction:

All aluminum construction 1" diameter, thick extension rod. Secures to Wall Mounting Plate with (2) stainless steel set screws.

Max Weight Capacity:

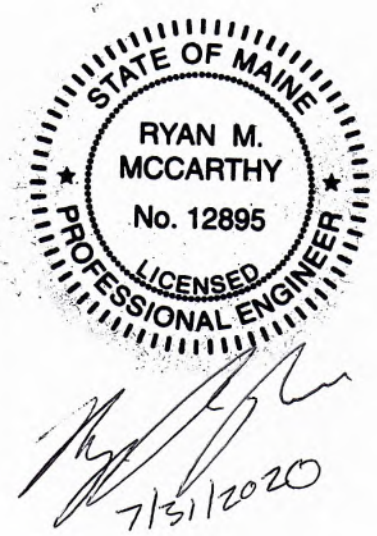
9.0 lbs.

STORMWATER REPORT

~~March 5, 2020~~
~~Revised May 6, 2020~~
Revised July 31, 2020

Project:

Kittery Car Wash
Tax Map 28 Lot 25D
Route 236
Kittery, ME 03904



Prepared for:

Robert T. Brennan, Jr.
1911 SE 20th Street
Cape Coral, FL 33990

Prepared by:

TIDEWATER
ENGINEERING & SURVEYING INC.

89 Route 236 Suite 3
Kittery, Maine 03904

Project No. 19-134

1. NARRATIVE

The project site is located on Tax Map 28 Lot 25D and is an existing undeveloped property. This application proposes to develop the site to accommodate a two-bay automatic car wash.

The total lot size is 7.44 acres and consists of both upland areas and wetlands. The proposed development will be confined to the upland area directly adjacent to Route 236 and MacKenzie Lane. Test pits completed on the site indicate that this upland area is mostly fill material that was brought onto the site. The proposed development has been designed so that wetlands impacts are not necessary. The proposed development is estimated to result in approximately 16,600 sf of impervious area and 32,100 sf of disturbed area. As the development is estimated to result in less than 1 acre of disturbed area and less than 1 acre of impervious surfaces, a Maine DEP Stormwater Permit-by-Rule from Maine DEP is not required.

Per the Town of Kittery Land Use & Development Code Section 16.8.8.1, the peak stormwater discharge from the site in the post-development conditions must be limited to the pre-development peak discharge for the 2-year and 25-year, 24-hour storm event. This report provides calculations and documentation to support that the proposed site plan and stormwater management system will meet this requirement.

2. SITE SOILS AND VEGETATIVE COVER

The York County Soil Survey, prepared by the USDA-NRCS, indicates the following soil types within the project subcatchment area:

Symbol	Soils Name, Type, & Slope	Hydrologic Soil Group
Bm	Biddeford mucky peat	D
LnB	Lyman loam	D
PeB	Peru fine sandy loam	C/D
Pg	Pits, gravel	(NONE)
Sc	Scantic silt loam	D

The York County Soil Survey indicates the site is primarily HSG D, however, does not account for the filled area where the development is proposed. As a result, test pits were completed and the fill was found to consist of dark colored, coarse textured soil (i.e. cobbly to stony fine sandy loam to loamy sand) that is representative of HSG B. For purposes of this analysis, HSG B was used for the upland fill areas and HSG D for all wetland areas.

See Appendix for York County Soil Survey data and report by Joseph W. Noel, Maine Certified Soil Scientist #209.

3. DESIGN METHODOLOGY

A computer-aided design software package, HydroCAD (v 10.00), was used to model the pre-development and post-development hydrology of the stormwater runoff generated from

the site. The model is based on the SCS TR-20 program and is subject to cumulative rainfall/volume dependent routing calculations. Hydrographs are prepared for each element of the watershed and routed through the storage-indication method to produce various time-based results.

Rainfall data for the 2-year and 25-year 24-hour duration storm event was obtained from the National Oceanic and Atmospheric Administration (NOAA) Precipitation Frequency Data Server for the subject parcel's location.

2-year 24-hour recurrence interval	3.30 inches
25-year 24-hour recurrence interval	6.58 inches

4. EXISTING DRAINAGE CONDITIONS

The entire site generally slopes and drains away from Route 236 and MacKenzie Lane to a wetland located to the rear and side of the property. For purposes of this analysis, the existing conditions subcatchment (EX-1) was limited to the portion of the property within the C-2 zoning district and includes offsite areas that flow onto the site from Route 236 and MacKenzie Lane.

5. PROPOSED WATERSHED ANALYSIS

For the proposed analysis, the existing conditions subcatchment was divided into three smaller subcatchments (PR-1, PR-2 and PR-3) that reflect the stormwater hydrology of the proposed site. The overall runoff characteristics will remain similar to the existing conditions with the stormwater ultimately flowing to the existing wetland located to the rear of the property. Peak flows during each design storm have been mitigated by the installation of a stormwater basin with a control outlet structure.

Subcatchment PR-1 consists of the areas of the site that will continue to flow directly to the wetland and will not be intercepted by the proposed stormwater basins. Most of this area is will remain the same vegetative cover as in the existing conditions except for a portion of the proposed driveway entrance off MacKenzie Lane.

Subcatchment PR-2 includes both areas of the site to be developed and areas that will remain unchanged. Approximately 3/4rds of the proposed paved surface and half of the proposed building runoff is included in this subcatchment. Runoff from this area is routed directly to the proposed stormwater basin.

Subcatchment PR-3 also includes areas of the site to be developed, areas that will remain unchanged, and a portion of MacKenzie Lane including the proposed right turn. The remaining 1/4th of the proposed paved surface and half of the proposed building runoff is included in this subcatchment. Runoff from this area is routed to a culvert adjacent to the proposed driveway that outlets to the proposed stormwater basin.

The proposed stormwater basin has been designed to mitigate any increase in peak flows from the site due to the development. A control outlet structure will allow stormwater within the basin to pond to a depth of 12 inches before reaching two 4" diameter orifices in the side of the structure. This orifice will limit the rate at which stormwater is discharged to the wetland. During larger storm events, the stormwater in the basin will reach the top of the control outlet structure and flow through the emergency overflow grate.

6. ANALYSIS AND RESULTS

The table below summarizes the results of the HydroCAD analysis for the 2-year and 25-year 24-hour storm event.

Table 1: Pre & Post Peak Discharge Results

Storm Event	PRE	POST	Change (+/-)
2-year 24 hour storm	2.30 cfs	2.04 cfs	- 0.26 cfs
25-year 24 hour storm	9.39 cfs	9.35 cfs	- 0.04 cfs

*HydroCAD results are provided in Appendix.

7. CONCLUSIONS

This stormwater report provides a comparative analysis of the peak stormwater runoff generated from the site in the pre-development conditions and the post-development conditions. The design reduces the post-development peak flows below the pre-development peak flows for both the 2-year and 25-year 24-hour storm event due to the design of the stormwater basin and control outlet structure.

As a result, it is the opinion of Tidewater Engineering & Surveying, Inc that there will be no adverse impacts or increased flooding on abutting properties as a result of this development if the designed stormwater measures are constructed properly.

Appendix A

USDA-NRCS Soils Map

TIDEWATER
ENGINEERING & SURVEYING INC.

Hydrologic Soil Group—York County, Maine
(Kittery Car Wash)

Map Scale: 1:1,980 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

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

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

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

Soil Rating Lines

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

Soil Rating Points

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

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: York County, Maine
Survey Area Data: Version 18, Sep 16, 2019

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

Date(s) aerial images were photographed: Dec 31, 2009—Sep 9, 2017

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Bm	Biddeford mucky peat, 0 to 3 percent slopes	D	6.4	75.1%
LnB	Lyman loam, 3 to 8 percent slopes, rocky	D	0.9	10.7%
MrC2	Marlow fine sandy loam, 8 to 15 percent slopes	C	0.0	0.3%
PeB	Peru fine sandy loam, 3 to 8 percent slopes	C/D	0.8	9.0%
Pg	Pits, gravel		0.4	4.6%
Sc	Scantic silt loam, 0 to 3 percent slopes	D	0.0	0.3%
Totals for Area of Interest			**8.6**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Appendix B

Wetland & Soil Report by Joseph W. Noel

TIDEWATER
ENGINEERING & SURVEYING INC.

JOSEPH W. NOEL
P.O. BOX 174
SOUTH BERWICK, MAINE 03908
(207) 384-5587

*CERTIFIED SOIL SCIENTIST * WETLAND SCIENTIST * LICENSED SITE EVALUATOR*

March 2, 2020

Mr. Ryan M. McCarthy, P.E.
Tidewater Engineering & Surveying LLC
89 Route 236, Suite 3
Kittery, Maine 03904

RE: Wetland Delineation, Tax Map 28 - Lot 25D, Route 236, Kittery, Maine, JWN #19-129

Dear Ryan:

On November 4, 2019, February 28, 2020 and March 1, 2020, site visits were conducted at the above-referenced property. The purpose of the initial on-site was to identify and flag the wetland boundaries. The second visit was to conduct test pits where the commercial development is proposed and the third visit was to take pertinent photos.

Wetland Discussion

To determine the wetland boundary, the methodologies in the U.S. Army Corps of Engineers document *Corps of Engineers Wetlands Delineation Manual* (1987) along with the required *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, (Version 2.0) were used. The wetland boundary was field delineated with sequentially numbered blue flagging. Flagged sequences were differentiated by the placement of a letter before the numbers (e.g., A1, A2, etc.). These flags were survey located by Tidewater Engineering & Surveying LLC and placed on the project plans.

On February 28, 2020, you requested my opinion on whether a portion of the wetland designated as the "A" series would meet the Town of Kittery's Land Use and Development Code definition of a drainage ditch for setback purposes. Provided for this review by Tidewater Engineering & Surveying LLC was a plan with a portion of the located wetland with the "A" series sequences that designated the area that was 12 feet or less (i.e., between wetland flags A3 and A4 to A7). Per Section 16.2.2, a Drainage Ditch is:

> *A man-made, regularly maintained channel, trench or swale for conducting water that has a direction of flow to remove surface water or groundwater from land by means of gravity. For the purpose of this title, any new activity that reroutes a streambed or dredges a wetland is not considered to be a "drainage ditch". Where a drainage ditch widens out into a larger wetland, a route no more than 12*

feet in with can be considered to be the drainage ditch. The remainder is considered wetland unless it is demonstrated that the originally developed drainage ditch was designed to be greater than 12 feet in width.

A small portion of the "A" series wetland appears to meet the Town of Kittery's definition of a drainage ditch. This small area (that is ≤12 feet wide per the project plans) is a regularly maintained roadside ditch/swale along MacKenzie Lane that drains surface water into the rest of the delineated wetland. This small-maintained ditched area is also between two uplands (filled area of the property and MacKenzie Lane – refer to attached photos). It is important to note that this is my professional opinion and the Town of Kittery has the final say on drainage ditch interpretations.

Test Pit Discussion

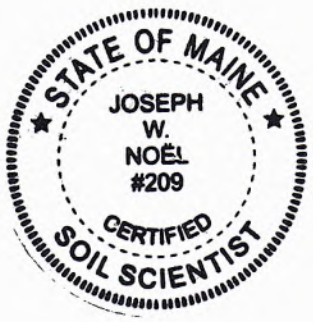
Three backhoe excavated test pits were conducted within the area planned for development. This area had been filled some time ago. You requested soil information for a better characterization of the fill material and the site's capacity for water infiltration. Specifically, determine the hydrologic soil group that would best fit these filled areas (i.e., anthropogenic landform).

Three test pits logs are attached. These test pits found approximately 5 feet of dark colored, coarse textured soil (i.e., cobbly to stony fine sandy loam to loamy sand) with varying amounts of debris, such as: cement, asphalt, brick, metal, etc. (contained debris ranging from ~5% to ~30%). The undersigned estimated that the hydrologic soil group "B" would be a best fit to characterize the filled area. The surrounding wetland areas would classify as hydrologic soil group "D".

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

Sincerely,

Joseph W. Noel
Maine Certified Soil Scientist #209
Wetland Scientist



PHOTOS
Tax Map 28 – Lot 25D, Route 236, Kittery, Maine
(Photos taken by Joseph W. Noel on March 1, 2020)

View Of The Wetland Area That Meets The Town of Kittery's Definition Of A Drainage Ditch

Another View Of The Wetland Area That Meets The Local Definition Of A Drainage Ditch

SOIL PROFILE/CLASSIFICATION INFORMATION

Project Name:

Applicant Name: *TIDEWATER ENGINEERING & SURVEYING LLC*

Project Location (municipality) *TAX MAP 28 - LOT 25D, ROUTE 236, KITTERY, ME*

Observation Hole *1* ■ Test Pit ☐ Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–50	COBBLY FINE SANDY LOAM TO SANDY LOAM FILL MATERIAL ~8% OF ASPHLAT & METAL DEBRIS	FRIABLE	DARK YELLOWISH BROWN (10YR 3/4) & 10YR 3/6)	NONE
	L.O.E. @ 63"			OBWT @ 63"

Soil Classification		Slope	Limiting Factor	
12 Profile	*B* Condition	*~3* %	*63* "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ■ Pit Depth

UDORTHENTS - HYD GRP ESTIMATED B - NON-HYDRIC

Observation Hole *2* ■ Test Pit ☐ Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–50	STONY SANDY LOAM FILL MATERIAL ~20% OF CONCRETE POSTS WITH REBAR AND STEEL DEBRIS	FRIABLE	DARK BROWN (10YR 3/3) & DARK YELLOWISH BROWN (10YR 3/6)	NONE
	L.O.E. @ 48"			

Soil Classification		Slope	Limiting Factor	
12 Profile	*B* Condition	*~3* %	*48* "	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ■ Pit Depth

UDORTHENTS - HYD GRP ESTIMATED B - NON-HYDRIC

Backhoe excavated test pits were conducted on February 28, 2020.
Refer to letter/report dated March 2, 2020 for additional information.

Observation Hole *3* ■ Test Pit ☐ Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–50	VERY COBBLY TO GRAVELLY SANDY LOAM TO LOAMY SAND FILL MATERIAL ~25% OF COARSE FRAGMENTS WITH SOME DEBRIS (E.G., BRICKS)	FRIABLE	MOSTLY VERY DARK GRAYISH BROWN (10YR 3/2)	NONE
	L.O.E. @ 40"			

Soil Classification		Slope	Limiting Factor	
12 Profile	*B* Condition	*~3* %	*40* "	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ■ Pit Depth

UDORTHENTS - ESTIMATED HYD GRP B - NON-HYDRIC

Observation Hole _____ ☐ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–50				

Soil Classification		Slope	Limiting Factor	
Profile	Condition	%	"	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Jonathan W. Hall

Signature

221 209

SE # SS#

3/2/2020

Date

Appendix C

NOAA Rainfall Data

TIDEWATER
ENGINEERING & SURVEYING INC.

NOAA Atlas 14, Volume 10, Version 3
Location name: Kittery, Maine, USA*
Latitude: 43.1183°, Longitude: -70.756°
Elevation: 41.88 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.307 (0.233-0.404)	0.370 (0.280-0.488)	0.473 (0.358-0.626)	0.558 (0.420-0.743)	0.675 (0.494-0.936)	0.763 (0.548-1.08)	0.855 (0.600-1.25)	0.959 (0.640-1.43)	1.11 (0.716-1.71)	1.23 (0.780-1.94)
10-min	0.435 (0.330-0.573)	0.524 (0.397-0.691)	0.669 (0.505-0.887)	0.790 (0.594-1.05)	0.956 (0.699-1.33)	1.08 (0.777-1.53)	1.21 (0.850-1.78)	1.36 (0.909-2.03)	1.57 (1.02-2.43)	1.75 (1.11-2.75)
15-min	0.511 (0.388-0.674)	0.616 (0.467-0.813)	0.787 (0.595-1.04)	0.929 (0.698-1.24)	1.12 (0.823-1.56)	1.27 (0.914-1.80)	1.43 (1.00-2.09)	1.60 (1.07-2.39)	1.85 (1.20-2.86)	2.05 (1.30-3.23)
30-min	0.687 (0.521-0.906)	0.829 (0.628-1.09)	1.06 (0.801-1.40)	1.25 (0.941-1.67)	1.52 (1.11-2.11)	1.71 (1.23-2.43)	1.92 (1.35-2.83)	2.16 (1.45-3.24)	2.51 (1.62-3.88)	2.80 (1.77-4.41)
60-min	0.863 (0.655-1.14)	1.04 (0.789-1.37)	1.33 (1.01-1.76)	1.58 (1.18-2.10)	1.91 (1.40-2.65)	2.16 (1.55-3.06)	2.42 (1.71-3.56)	2.73 (1.82-4.08)	3.18 (2.05-4.91)	3.55 (2.25-5.59)
2-hr	1.15 (0.879-1.51)	1.40 (1.07-1.84)	1.80 (1.37-2.37)	2.14 (1.61-2.83)	2.60 (1.91-3.60)	2.94 (2.13-4.16)	3.31 (2.35-4.87)	3.75 (2.51-5.59)	4.42 (2.86-6.81)	4.99 (3.17-7.83)
3-hr	1.36 (1.04-1.77)	1.65 (1.26-2.16)	2.14 (1.63-2.80)	2.54 (1.92-3.35)	3.09 (2.29-4.27)	3.50 (2.55-4.95)	3.94 (2.81-5.81)	4.48 (3.01-6.67)	5.31 (3.44-8.16)	6.01 (3.82-9.42)
6-hr	1.77 (1.36-2.29)	2.16 (1.66-2.81)	2.81 (2.15-3.67)	3.35 (2.55-4.39)	4.09 (3.04-5.63)	4.64 (3.40-6.54)	5.24 (3.76-7.69)	5.97 (4.02-8.84)	7.08 (4.61-10.9)	8.04 (5.13-12.6)
12-hr	2.23 (1.72-2.88)	2.75 (2.12-3.55)	3.60 (2.77-4.67)	4.31 (3.30-5.61)	5.28 (3.95-7.23)	6.00 (4.41-8.41)	6.78 (4.89-9.92)	7.74 (5.23-11.4)	9.20 (6.01-14.0)	10.5 (6.69-16.3)
24-hr	2.63 (2.04-3.37)	3.30 (2.56-4.24)	4.41 (3.41-5.67)	5.32 (4.10-6.89)	6.58 (4.95-8.99)	7.50 (5.56-10.5)	8.52 (6.20-12.5)	9.81 (6.65-14.4)	11.9 (7.76-18.0)	13.6 (8.76-21.2)
2-day	2.93 (2.29-3.74)	3.77 (2.94-4.81)	5.14 (4.00-6.58)	6.28 (4.86-8.09)	7.85 (5.96-10.7)	8.98 (6.73-12.6)	10.3 (7.59-15.2)	12.0 (8.15-17.6)	14.9 (9.77-22.6)	17.5 (11.3-27.0)
3-day	3.19 (2.50-4.04)	4.09 (3.20-5.20)	5.58 (4.35-7.11)	6.81 (5.29-8.73)	8.50 (6.48-11.6)	9.72 (7.32-13.7)	11.1 (8.27-16.5)	13.0 (8.88-19.1)	16.3 (10.7-24.7)	19.2 (12.4-29.6)
4-day	3.44 (2.70-4.35)	4.38 (3.44-5.55)	5.92 (4.63-7.53)	7.20 (5.60-9.21)	8.96 (6.84-12.2)	10.2 (7.71-14.3)	11.7 (8.70-17.3)	13.7 (9.32-20.0)	17.1 (11.2-25.8)	20.2 (13.0-31.1)
7-day	4.16 (3.28-5.24)	5.15 (4.06-6.50)	6.78 (5.32-8.58)	8.12 (6.35-10.3)	9.98 (7.64-13.5)	11.3 (8.55-15.8)	12.8 (9.57-18.9)	14.9 (10.2-21.7)	18.4 (12.2-27.8)	21.6 (14.0-33.2)
10-day	4.85 (3.84-6.09)	5.88 (4.64-7.39)	7.56 (5.95-9.54)	8.95 (7.01-11.4)	10.9 (8.33-14.6)	12.3 (9.25-16.9)	13.8 (10.3-20.1)	15.9 (10.9-23.1)	19.4 (12.8-29.1)	22.5 (14.6-34.4)
20-day	6.87 (5.47-8.58)	8.00 (6.36-10.00)	9.85 (7.80-12.3)	11.4 (8.96-14.4)	13.5 (10.3-17.9)	15.0 (11.3-20.4)	16.7 (12.3-23.7)	18.7 (12.9-27.0)	21.8 (14.5-32.6)	24.4 (15.8-37.2)
30-day	8.54 (6.82-10.6)	9.75 (7.77-12.1)	11.7 (9.31-14.7)	13.4 (10.6-16.8)	15.6 (12.0-20.5)	17.3 (13.0-23.3)	19.1 (13.9-26.6)	21.0 (14.6-30.2)	23.8 (15.9-35.4)	26.0 (16.9-39.6)
45-day	10.6 (8.50-13.2)	11.9 (9.53-14.8)	14.0 (11.2-17.5)	15.8 (12.5-19.8)	18.2 (14.0-23.8)	20.1 (15.1-26.7)	22.0 (15.9-30.2)	23.9 (16.6-34.1)	26.3 (17.6-39.1)	28.2 (18.4-42.9)
60-day	12.3 (9.91-15.3)	13.7 (11.0-17.0)	16.0 (12.8-19.8)	17.8 (14.2-22.3)	20.4 (15.6-26.5)	22.4 (16.8-29.6)	24.3 (17.6-33.3)	26.2 (18.3-37.4)	28.6 (19.2-42.4)	30.3 (19.8-46.0)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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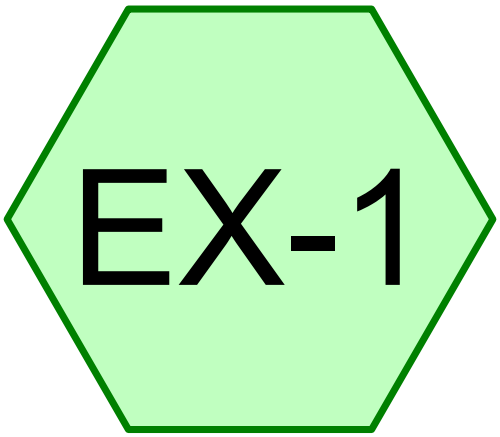
PF graphical

Appendix D

Pre-Development HydroCAD Results & Drainage Plan

TIDEWATER
ENGINEERING & SURVEYING INC.



Existing Subcatchment

Subcat Reach Pond Link

Routing Diagram for Existing Conditions
Prepared by HP Inc., Printed 3/4/2020

Summary for Subcatchment EX-1: Existing Subcatchment

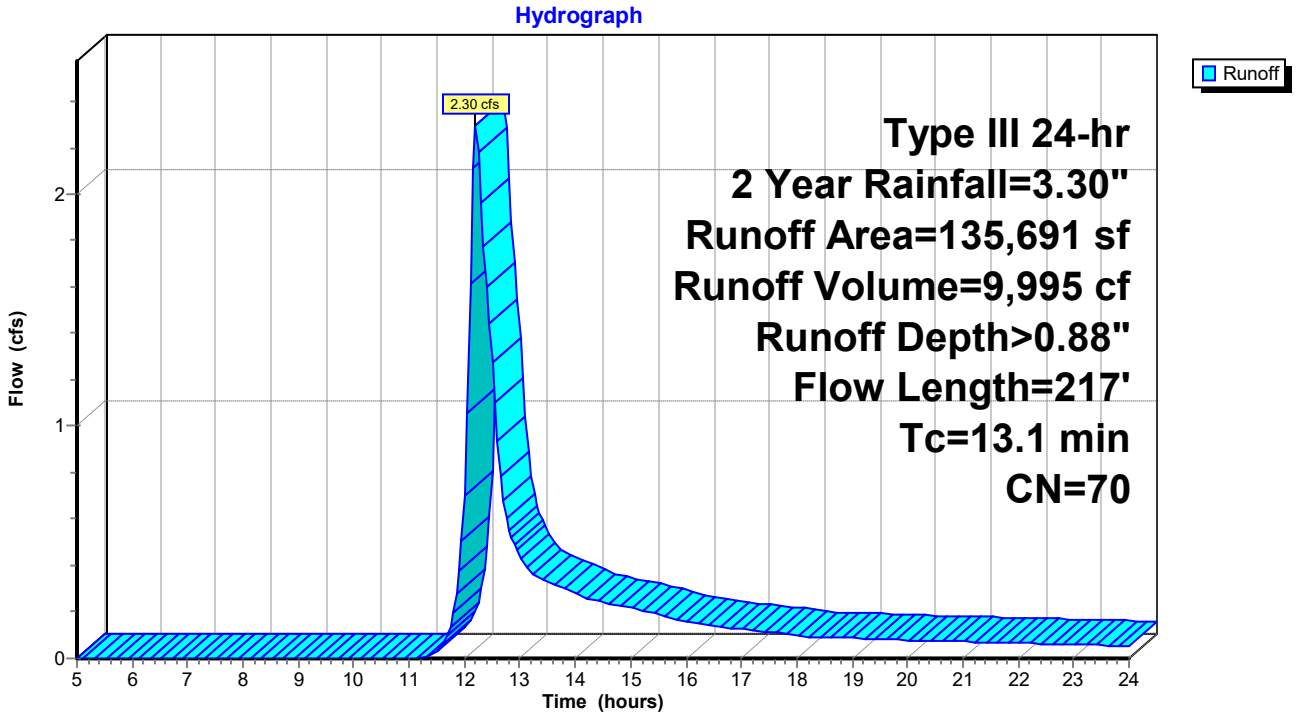
Runoff = 2.30 cfs @ 12.21 hrs, Volume= 9,995 cf, Depth> 0.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=3.30"

Area (sf)	CN	Description
56,478	61	>75% Grass cover, Good, HSG B
13,300	98	Paved parking, HSG B
481	96	Gravel surface, HSG B
148	55	Woods, Good, HSG B
14,065	55	Woods, Good, HSG B
952	80	>75% Grass cover, Good, HSG D
50,268	77	Woods, Good, HSG D
135,691	70	Weighted Average
122,391		90.20% Pervious Area
13,300		9.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0300	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.30"
1.2	110	0.0450	1.48		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	7	0.4300	4.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.1	217	Total			

Subcatchment EX-1: Existing Subcatchment



Summary for Subcatchment EX-1: Existing Subcatchment

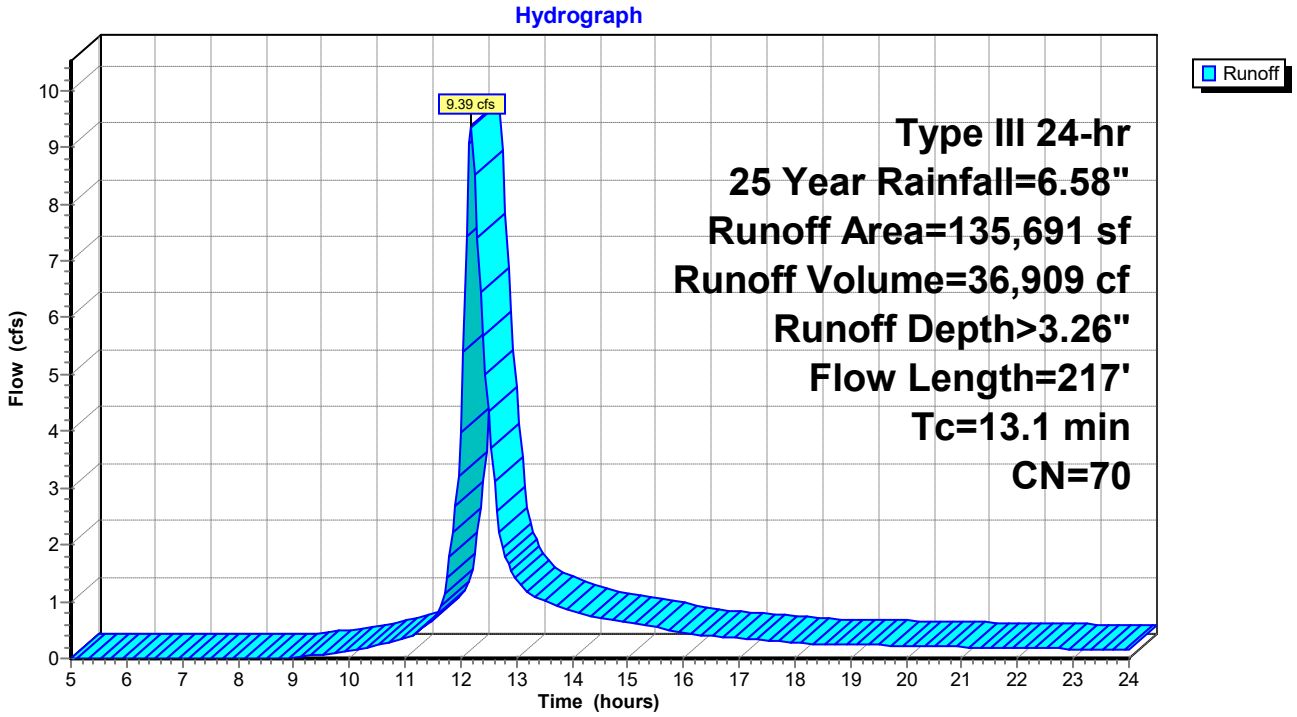
Runoff = 9.39 cfs @ 12.19 hrs, Volume= 36,909 cf, Depth> 3.26"

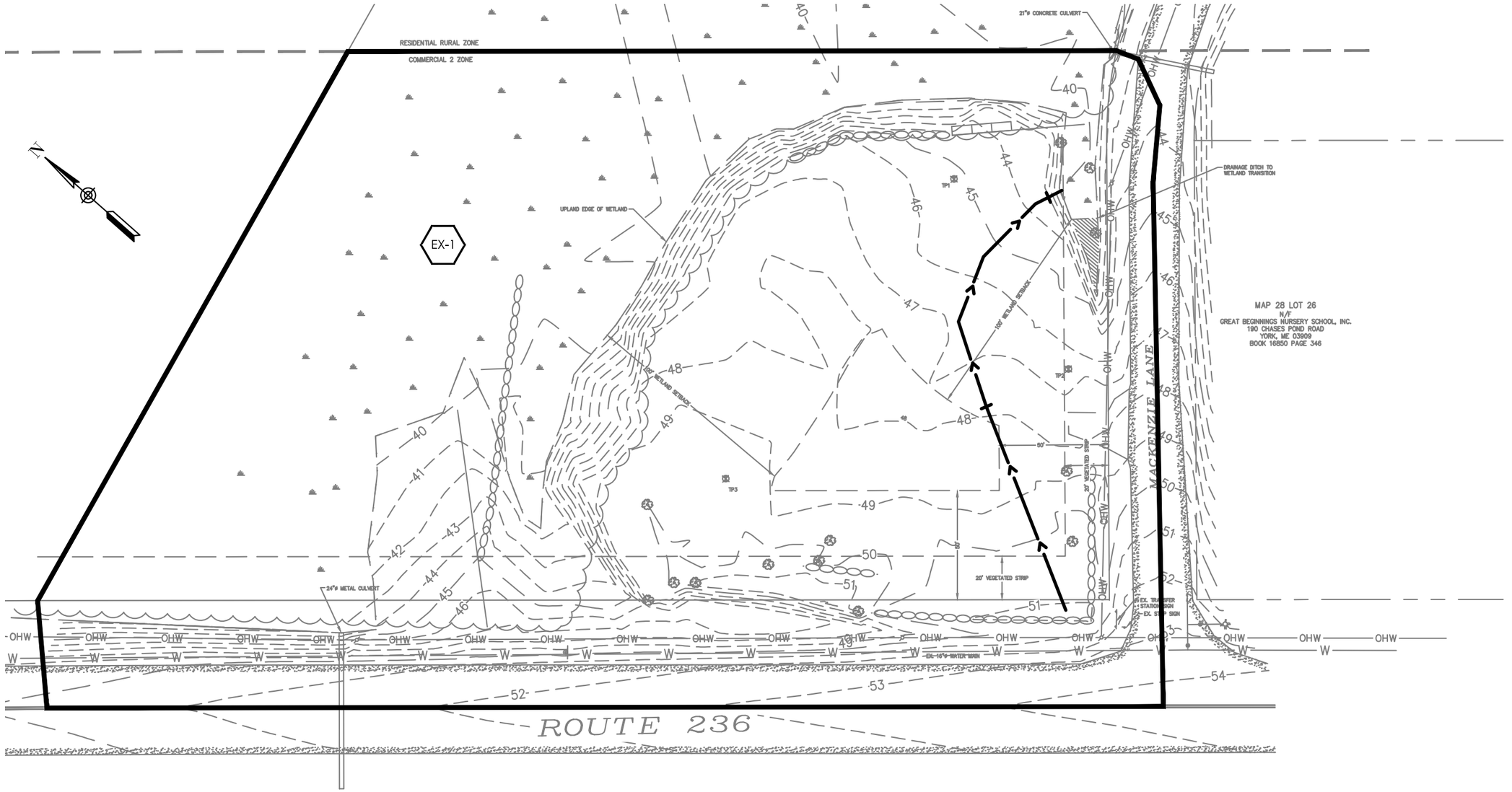
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=6.58"

Area (sf)	CN	Description
56,478	61	>75% Grass cover, Good, HSG B
13,300	98	Paved parking, HSG B
481	96	Gravel surface, HSG B
148	55	Woods, Good, HSG B
14,065	55	Woods, Good, HSG B
952	80	>75% Grass cover, Good, HSG D
50,268	77	Woods, Good, HSG D
135,691	70	Weighted Average
122,391		90.20% Pervious Area
13,300		9.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	100	0.0300	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.30"
1.2	110	0.0450	1.48		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	7	0.4300	4.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.1	217	Total			

Subcatchment EX-1: Existing Subcatchment





LEGEND

- A — SUBCATCHMENT
- 1P — POND
- FLOWPATH Tc

POST–DEVELOPMENT DRAINAGE NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE SUBCATCHMENT LIMITS, CORRESPONDING NODES AND FLOW PATHS ASSOCIATED WITH THE HYDROCAD ANALYSIS INCLUDED IN THE STORMWATER REPORT FOR A SITE PLAN APPLICATION LOCATED ON TAX MAP 28 LOT 25D.

2. THE PROPOSED DEVELOPMENT ON THE SITE AS–SHOWN CORRESPONDS WITH THE SITE PLAN APPLICATION SUBMITTED TO THE TOWN OF KITTER FOR REVIEW AND APPROVAL BY THE PLANNING BOARD.

0 25 50 100

STATE OF MAINE
RYAN M. MCCARTHY
#12895
LICENSED PROFESSIONAL ENGINEER

MARCH 5, 2020

NOT VALID UNLESS SIGNED AND STAMPED

TIDEWATER
ENGINEERING & SURVEYING, INC.
89 Route 236 Suite 3, Kittery, ME 03904
(207)439-2222 • www.tidewatercivil.com

EXISTING DRAINAGE PLAN

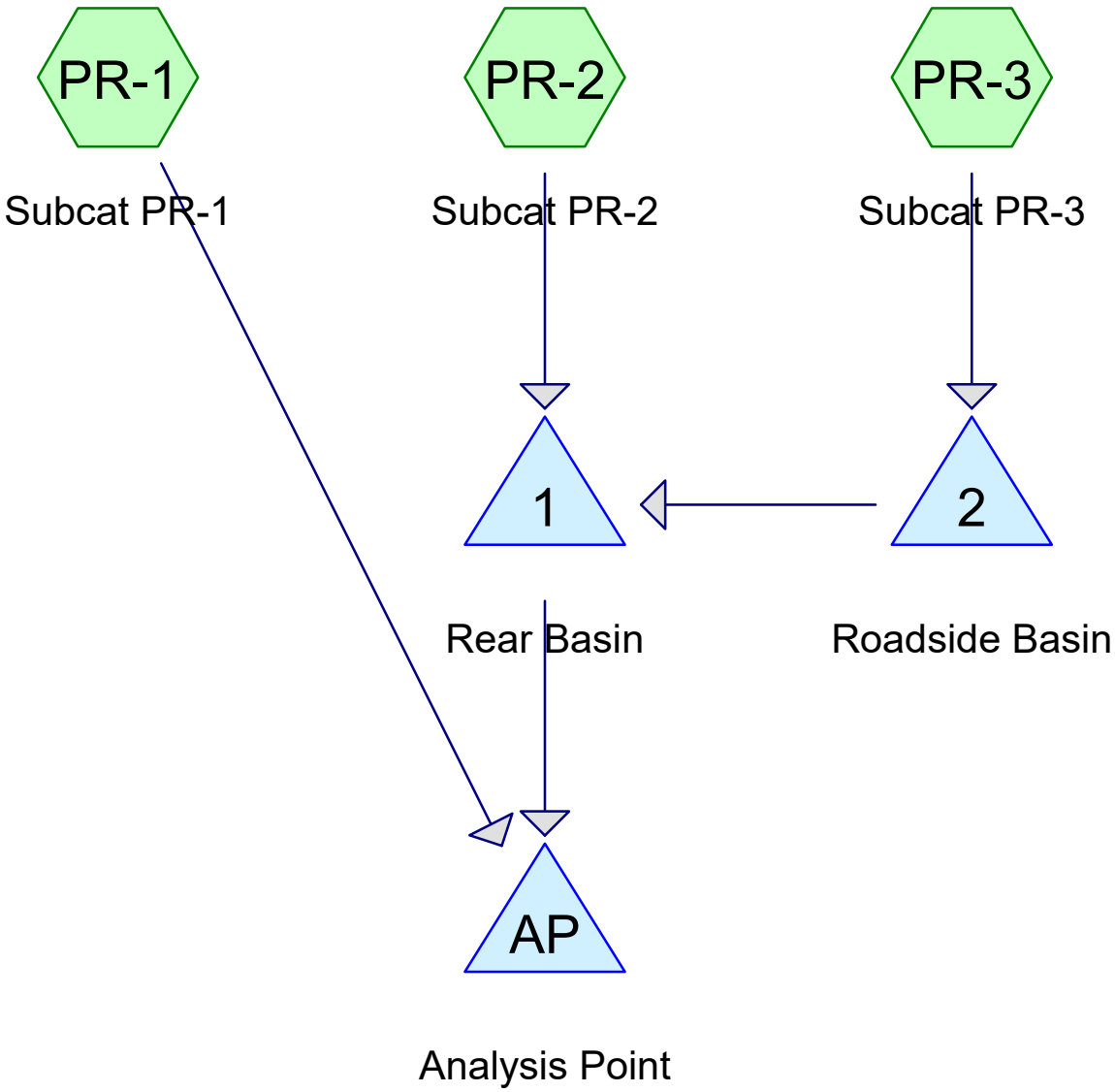
PREPARED FOR
ROBERT T. BRENNAN, JR.
1911 SE 20TH STREE, CAPE CORAL, FL 33990
FOR A PROPOSED CAR WASH ON
TAX MAP 28 LOT 25D
KITTERY, YORK COUNTY, MAINE

JOB #:	19–134
DATE:	MAR. 5, 2020
SCALE:	1" = 150'
SHEET:	1 OF 1

Appendix E

Post-Development HydroCAD Results & Drainage Plan

TIDEWATER
ENGINEERING & SURVEYING INC.



Subcat Reach Pond Link

Routing Diagram for Proposed Conditions
Prepared by HP Inc., Printed 7/31/2020

Time span=5.00-24.00 hrs, dt=0.05 hrs, 381 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 PR-1: Subcat PR-1 Runoff Area=95,155 sf 12.85% Impervious Runoff Depth>1.04"
Flow Length=100' Slope=0.0700 '/' Tc=12.8 min CN=73 Runoff=2.00 cfs 8,279 cf

Subcatchment PR-2: Subcat PR-2 Runoff Area=26,893 sf 38.66% Impervious Runoff Depth>1.16"
Tc=6.0 min CN=75 Runoff=0.80 cfs 2,602 cf

Subcatchment PR-3: Subcat PR-3 Runoff Area=13,643 sf 61.34% Impervious Runoff Depth>1.76"
Tc=6.0 min CN=84 Runoff=0.64 cfs 2,006 cf

Pond 1: Rear Basin Peak Elev=43.85' Storage=1,794 cf Inflow=1.43 cfs 4,606 cf
Discarded=0.06 cfs 2,434 cf Primary=0.18 cfs 1,560 cf Outflow=0.24 cfs 3,994 cf

Pond 2: Roadside Basin Peak Elev=44.17' Storage=22 cf Inflow=0.64 cfs 2,006 cf
15.0" Round Culvert n=0.013 L=80.0' S=0.0100 '/' Outflow=0.64 cfs 2,004 cf

Pond AP: Analysis Point Inflow=2.04 cfs 9,840 cf
Primary=2.04 cfs 9,840 cf

Total Runoff Area = 135,691 sf Runoff Volume = 12,887 cf Average Runoff Depth = 1.14"
77.16% Pervious = 104,696 sf 22.84% Impervious = 30,995 sf

Summary for Subcatchment PR-1: Subcat PR-1

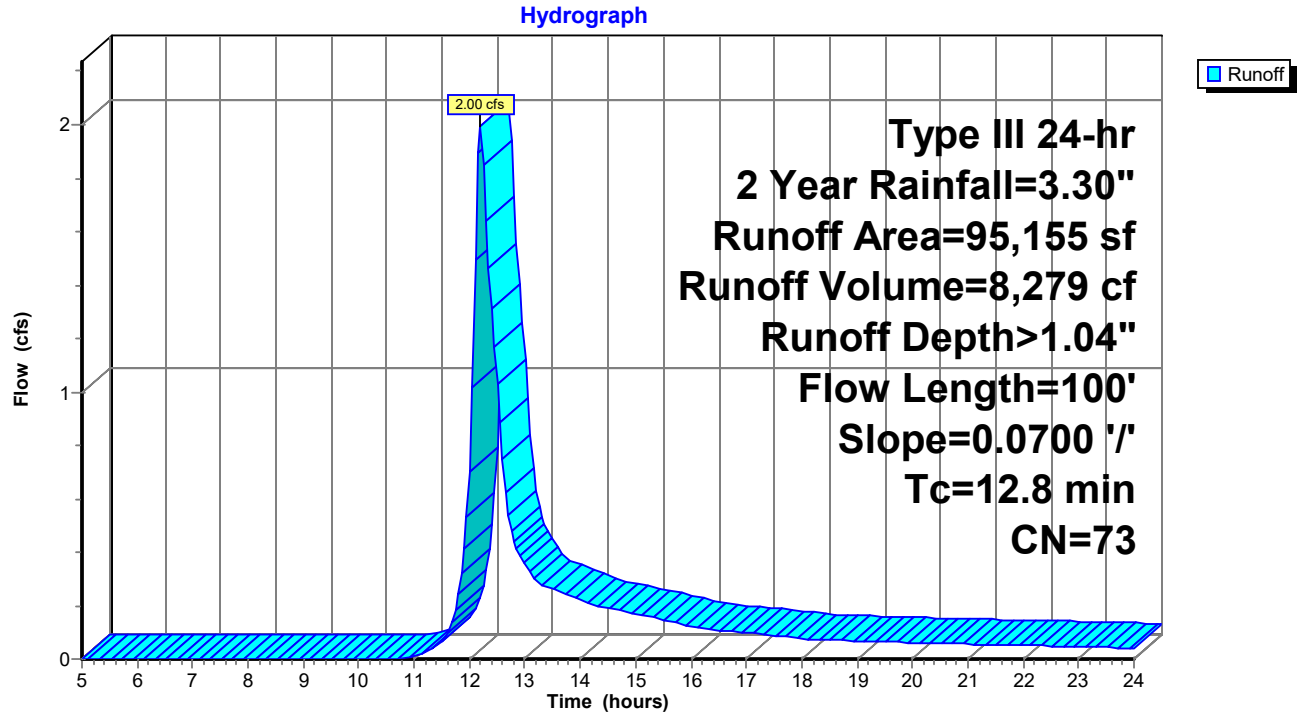
Runoff = 2.00 cfs @ 12.20 hrs, Volume= 8,279 cf, Depth> 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=3.30"

Area (sf)	CN	Description
11,252	98	Paved parking, HSG B
944	98	Paved parking, HSG B
0	61	>75% Grass cover, Good, HSG B
16,285	61	>75% Grass cover, Good, HSG B
1,242	61	>75% Grass cover, Good, HSG B
148	55	Woods, Good, HSG B
14,065	55	Woods, Good, HSG B
34	98	Paved parking, HSG D
50,268	77	Woods, Good, HSG D
917	80	>75% Grass cover, Good, HSG D
95,155	73	Weighted Average
82,925		87.15% Pervious Area
12,230		12.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0700	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"

Subcatchment PR-1: Subcat PR-1



Summary for Subcatchment PR-2: Subcat PR-2

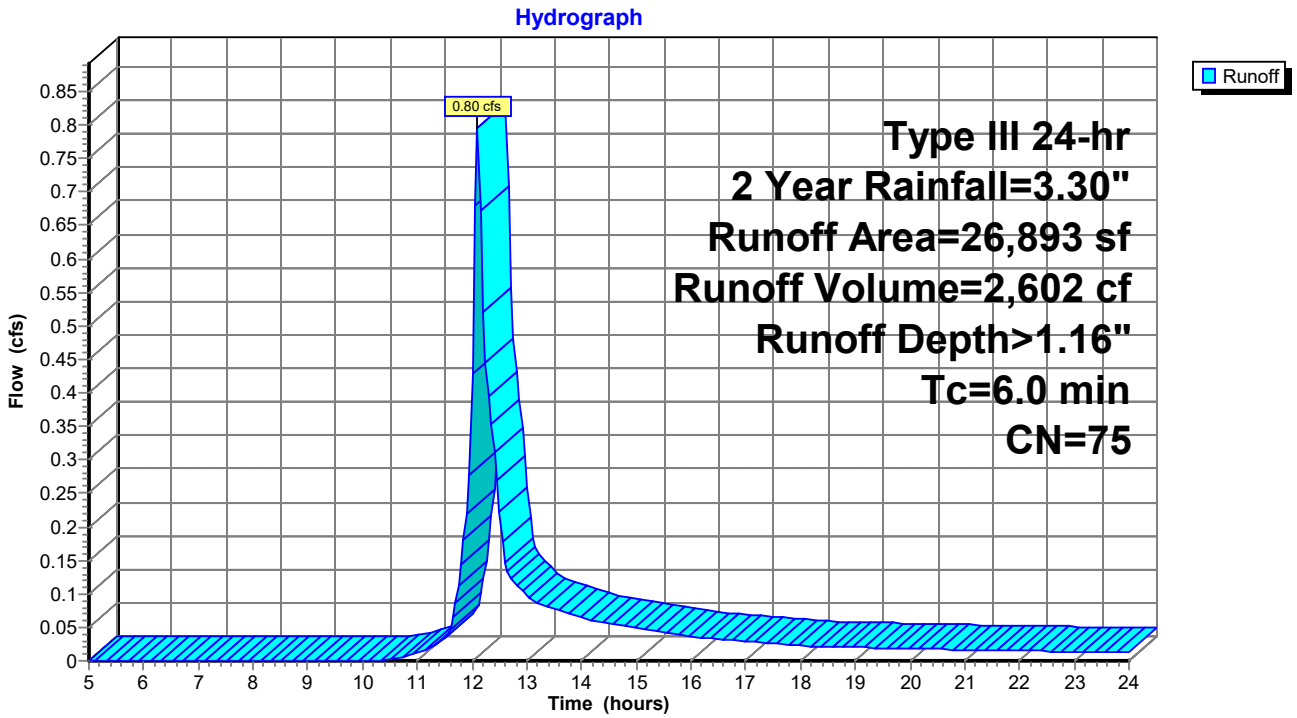
Runoff = 0.80 cfs @ 12.10 hrs, Volume= 2,602 cf, Depth> 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=3.30"

Area (sf)	CN	Description
13,527	61	>75% Grass cover, Good, HSG B
9,561	98	Paved parking, HSG B
836	98	Roofs, HSG B
2,969	61	>75% Grass cover, Good, HSG B
26,893	75	Weighted Average
16,496		61.34% Pervious Area
10,397		38.66% Impervious Area

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

Subcatchment PR-2: Subcat PR-2



Summary for Subcatchment PR-3: Subcat PR-3

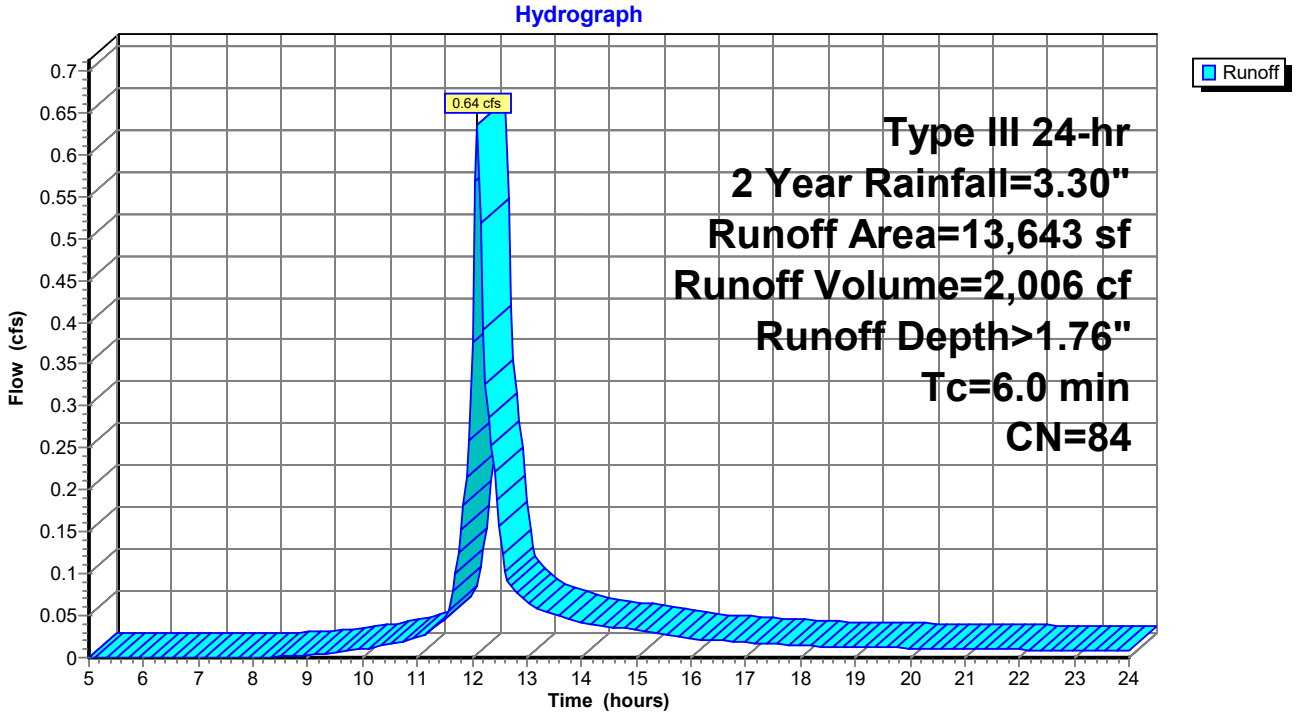
Runoff = 0.64 cfs @ 12.09 hrs, Volume= 2,006 cf, Depth> 1.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=3.30"

Area (sf)	CN	Description
5,245	61	>75% Grass cover, Good, HSG B
3,877	98	Paved parking, HSG B
3	98	Paved parking, HSG B
836	98	Roofs, HSG B
3,652	98	Paved parking, HSG B
30	61	>75% Grass cover, Good, HSG B
13,643	84	Weighted Average
5,275		38.66% Pervious Area
8,368		61.34% Impervious Area

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

Subcatchment PR-3: Subcat PR-3



Summary for Pond 1: Rear Basin

[79] Warning: Submerged Pond 2 Primary device # 1 INLET by 0.05'

Inflow Area = 40,536 sf, 46.29% Impervious, Inflow Depth > 1.36" for 2 Year event
Inflow = 1.43 cfs @ 12.10 hrs, Volume= 4,606 cf
Outflow = 0.24 cfs @ 12.64 hrs, Volume= 3,994 cf, Atten= 84%, Lag= 32.3 min
Discarded = 0.06 cfs @ 12.64 hrs, Volume= 2,434 cf
Primary = 0.18 cfs @ 12.64 hrs, Volume= 1,560 cf

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 43.85' @ 12.64 hrs Surf.Area= 2,435 sf Storage= 1,794 cf
Flood Elev= 45.00' Surf.Area= 3,663 sf Storage= 5,277 cf

Plug-Flow detention time= 173.6 min calculated for 3,994 cf (87% of inflow)
Center-of-Mass det. time= 113.3 min (957.6 - 844.3)

Volume	Invert	Avail.Storage	Storage Description
#1	43.00'	5,277 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

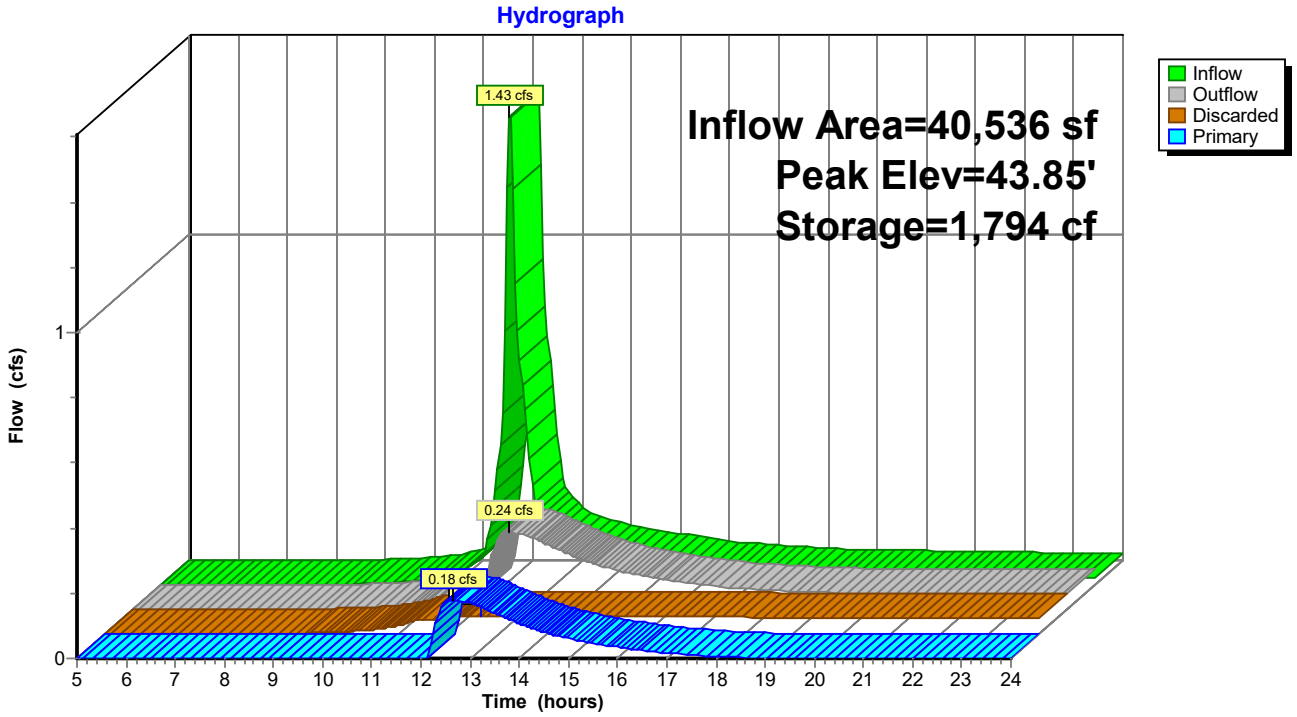
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
43.00	1,790	0	0
44.00	2,550	2,170	2,170
45.00	3,663	3,107	5,277

Device	Routing	Invert	Outlet Devices
#1	Primary	41.30'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 41.30' / 41.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	44.50'	**15.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	43.50'	**4.0" Vert. Orifice/Grate** C= 0.600
#4	Discarded	43.00'	**1.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.06 cfs @ 12.64 hrs HW=43.85' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.18 cfs @ 12.64 hrs HW=43.85' (Free Discharge)
└**1=Culvert** (Passes 0.18 cfs of 8.20 cfs potential flow)
  ├**2=Orifice/Grate** (Controls 0.00 cfs)
  └**3=Orifice/Grate** (Orifice Controls 0.18 cfs @ 2.06 fps)

Pond 1: Rear Basin



Summary for Pond 2: Roadside Basin

Inflow Area = 13,643 sf, 61.34% Impervious, Inflow Depth > 1.76" for 2 Year event
Inflow = 0.64 cfs @ 12.09 hrs, Volume= 2,006 cf
Outflow = 0.64 cfs @ 12.10 hrs, Volume= 2,004 cf, Atten= 0%, Lag= 0.4 min
Primary = 0.64 cfs @ 12.10 hrs, Volume= 2,004 cf

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 44.17' @ 12.10 hrs Surf.Area= 74 sf Storage= 22 cf
Flood Elev= 46.00' Surf.Area= 268 sf Storage= 312 cf

Plug-Flow detention time= 1.7 min calculated for 2,004 cf (100% of inflow)
Center-of-Mass det. time= 1.1 min (828.7 - 827.6)

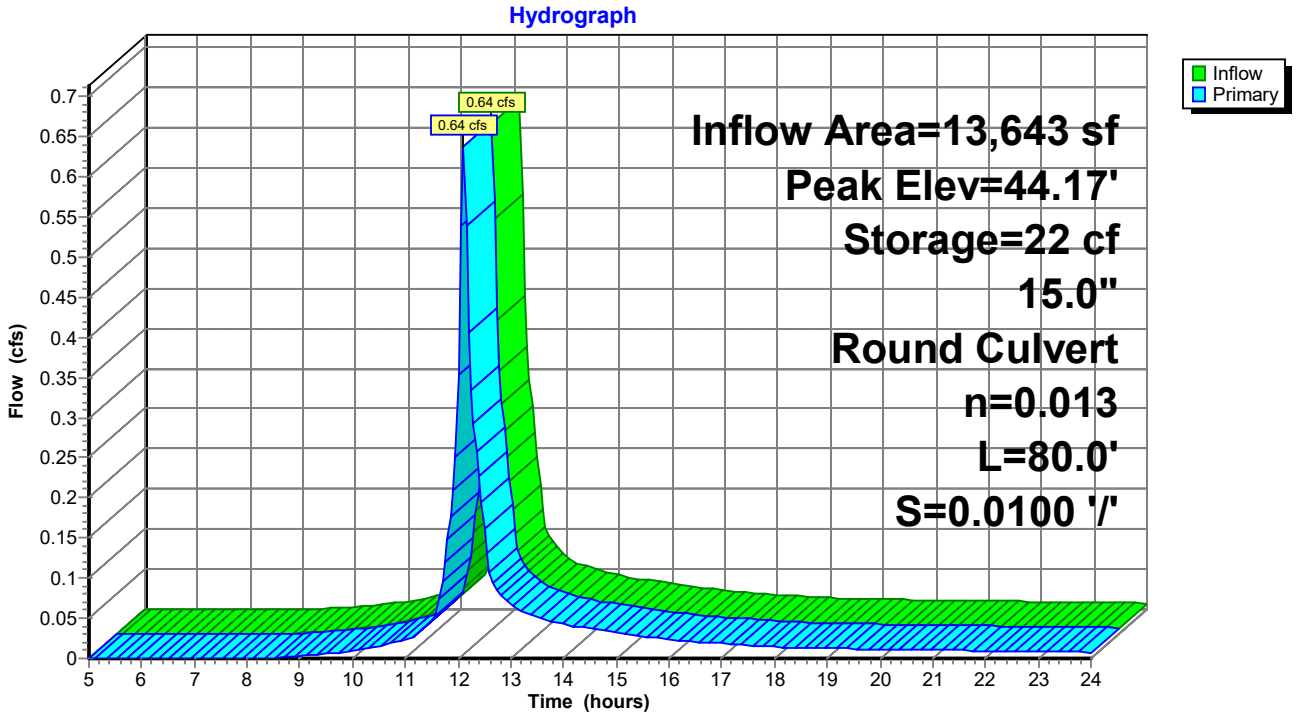
Volume	Invert	Avail.Storage	Storage Description
#1	43.80'	312 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
43.80	46	0	0
45.00	137	110	110
46.00	268	203	312

Device	Routing	Invert	Outlet Devices
#1	Primary	43.80'	**15.0" Round Culvert** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 43.80' / 43.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.64 cfs @ 12.10 hrs HW=44.17' (Free Discharge)
1=Culvert (Inlet Controls 0.64 cfs @ 2.08 fps)

Pond 2: Roadside Basin



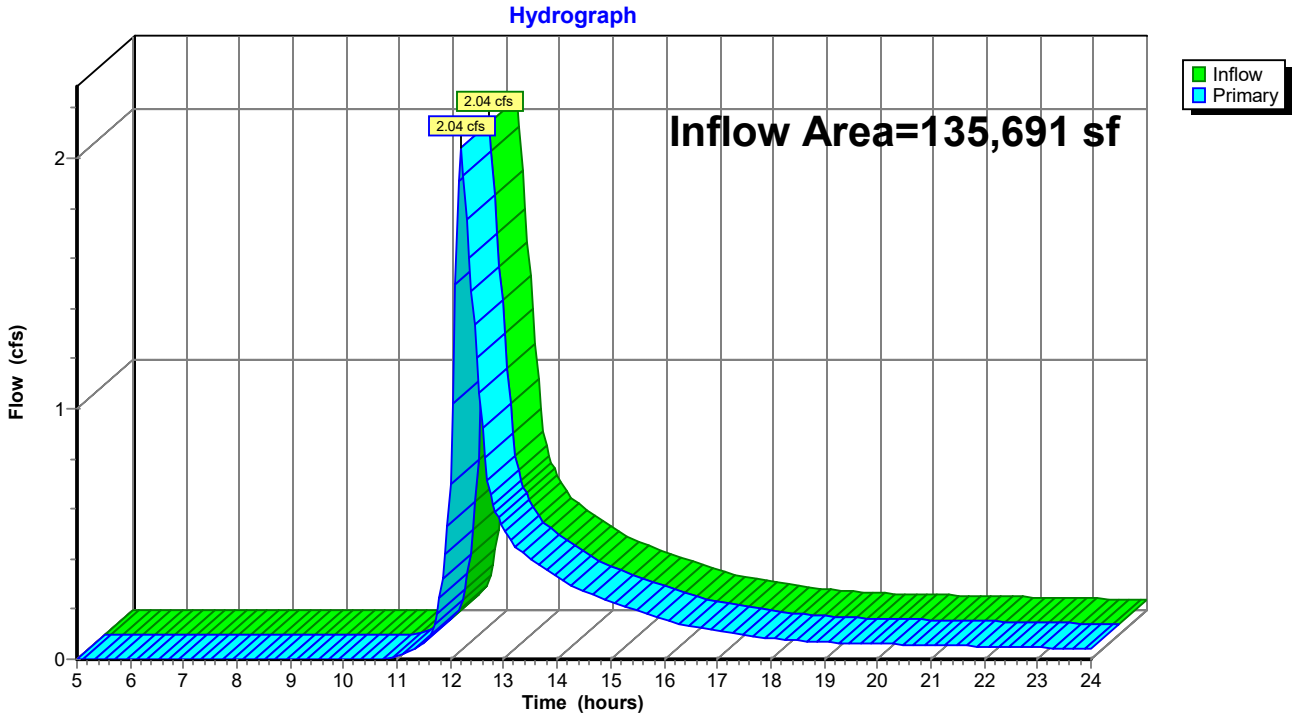
Summary for Pond AP: Analysis Point

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

Inflow Area = 135,691 sf, 22.84% Impervious, Inflow Depth > 0.87" for 2 Year event
Inflow = 2.04 cfs @ 12.20 hrs, Volume= 9,840 cf
Primary = 2.04 cfs @ 12.20 hrs, Volume= 9,840 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

Pond AP: Analysis Point



Time span=5.00-24.00 hrs, dt=0.05 hrs, 381 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 PR-1: Subcat PR-1 Runoff Area=95,155 sf 12.85% Impervious Runoff Depth>3.57"
Flow Length=100' Slope=0.0700 '/' Tc=12.8 min CN=73 Runoff=7.27 cfs 28,288 cf

Subcatchment PR-2: Subcat PR-2 Runoff Area=26,893 sf 38.66% Impervious Runoff Depth>3.78"
Tc=6.0 min CN=75 Runoff=2.68 cfs 8,468 cf

Subcatchment PR-3: Subcat PR-3 Runoff Area=13,643 sf 61.34% Impervious Runoff Depth>4.74"
Tc=6.0 min CN=84 Runoff=1.67 cfs 5,387 cf

Pond 1: Rear Basin Peak Elev=44.77' Storage=4,459 cf Inflow=4.35 cfs 13,852 cf
Discarded=0.08 cfs 3,161 cf Primary=2.23 cfs 9,585 cf Outflow=2.31 cfs 12,746 cf

Pond 2: Roadside Basin Peak Elev=44.43' Storage=44 cf Inflow=1.67 cfs 5,387 cf
15.0" Round Culvert n=0.013 L=80.0' S=0.0100 '/' Outflow=1.67 cfs 5,384 cf

Pond AP: Analysis Point Inflow=9.35 cfs 37,873 cf
Primary=9.35 cfs 37,873 cf

Total Runoff Area = 135,691 sf Runoff Volume = 42,143 cf Average Runoff Depth = 3.73"
77.16% Pervious = 104,696 sf 22.84% Impervious = 30,995 sf

Summary for Subcatchment PR-1: Subcat PR-1

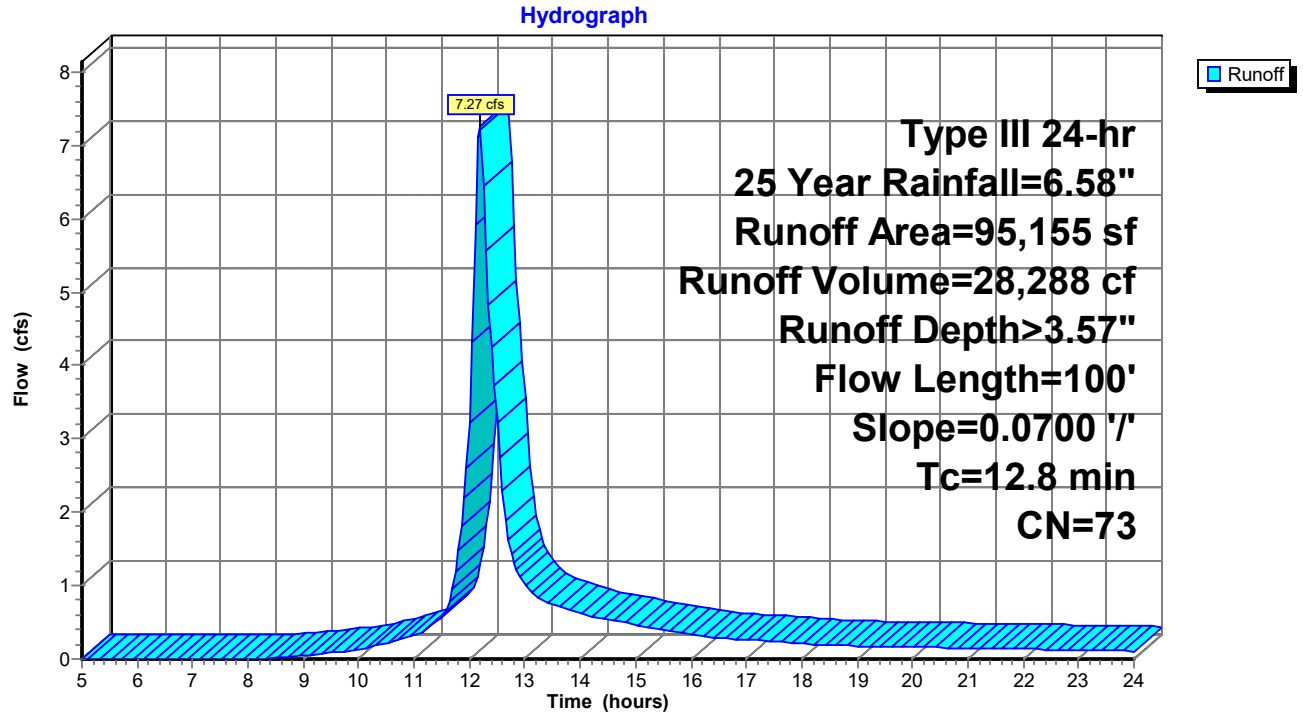
Runoff = 7.27 cfs @ 12.18 hrs, Volume= 28,288 cf, Depth> 3.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=6.58"

Area (sf)	CN	Description
11,252	98	Paved parking, HSG B
944	98	Paved parking, HSG B
0	61	>75% Grass cover, Good, HSG B
16,285	61	>75% Grass cover, Good, HSG B
1,242	61	>75% Grass cover, Good, HSG B
148	55	Woods, Good, HSG B
14,065	55	Woods, Good, HSG B
34	98	Paved parking, HSG D
50,268	77	Woods, Good, HSG D
917	80	>75% Grass cover, Good, HSG D
95,155	73	Weighted Average
82,925		87.15% Pervious Area
12,230		12.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0700	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"

Subcatchment PR-1: Subcat PR-1



Summary for Subcatchment PR-2: Subcat PR-2

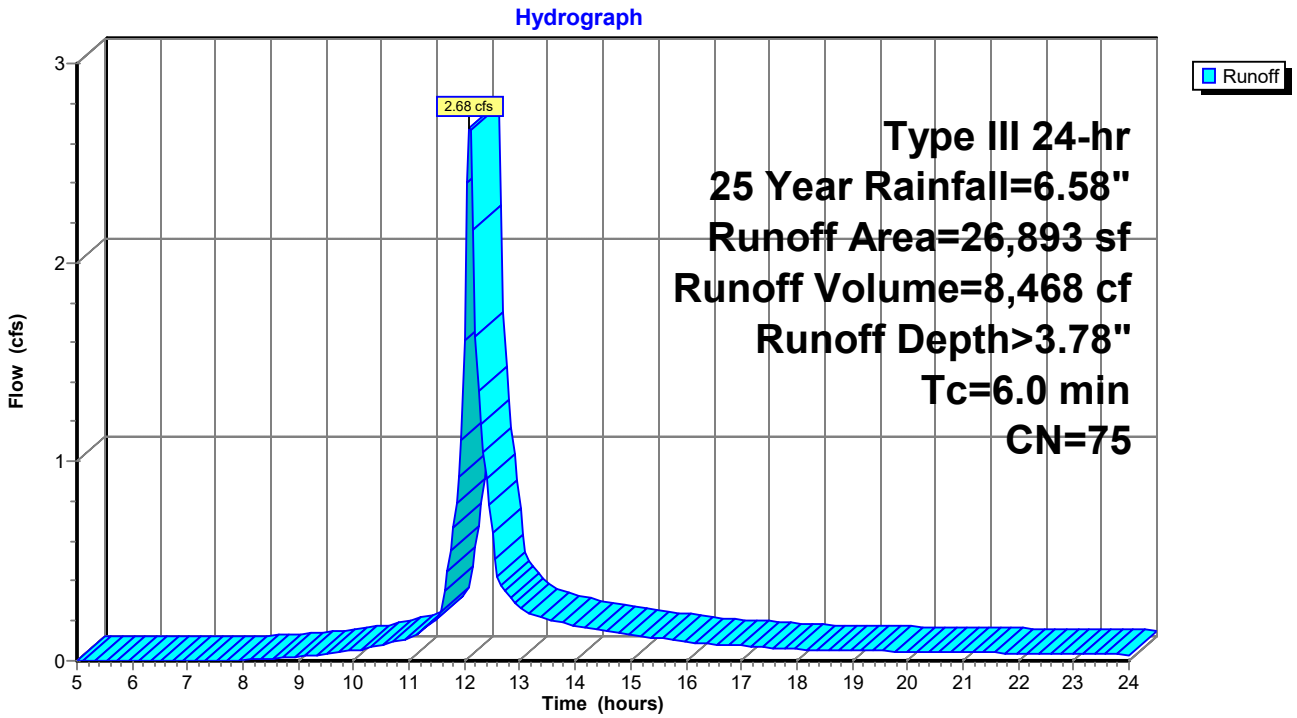
Runoff = 2.68 cfs @ 12.09 hrs, Volume= 8,468 cf, Depth> 3.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=6.58"

Area (sf)	CN	Description
13,527	61	>75% Grass cover, Good, HSG B
9,561	98	Paved parking, HSG B
836	98	Roofs, HSG B
2,969	61	>75% Grass cover, Good, HSG B
26,893	75	Weighted Average
16,496		61.34% Pervious Area
10,397		38.66% Impervious Area

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

Subcatchment PR-2: Subcat PR-2



Summary for Subcatchment PR-3: Subcat PR-3

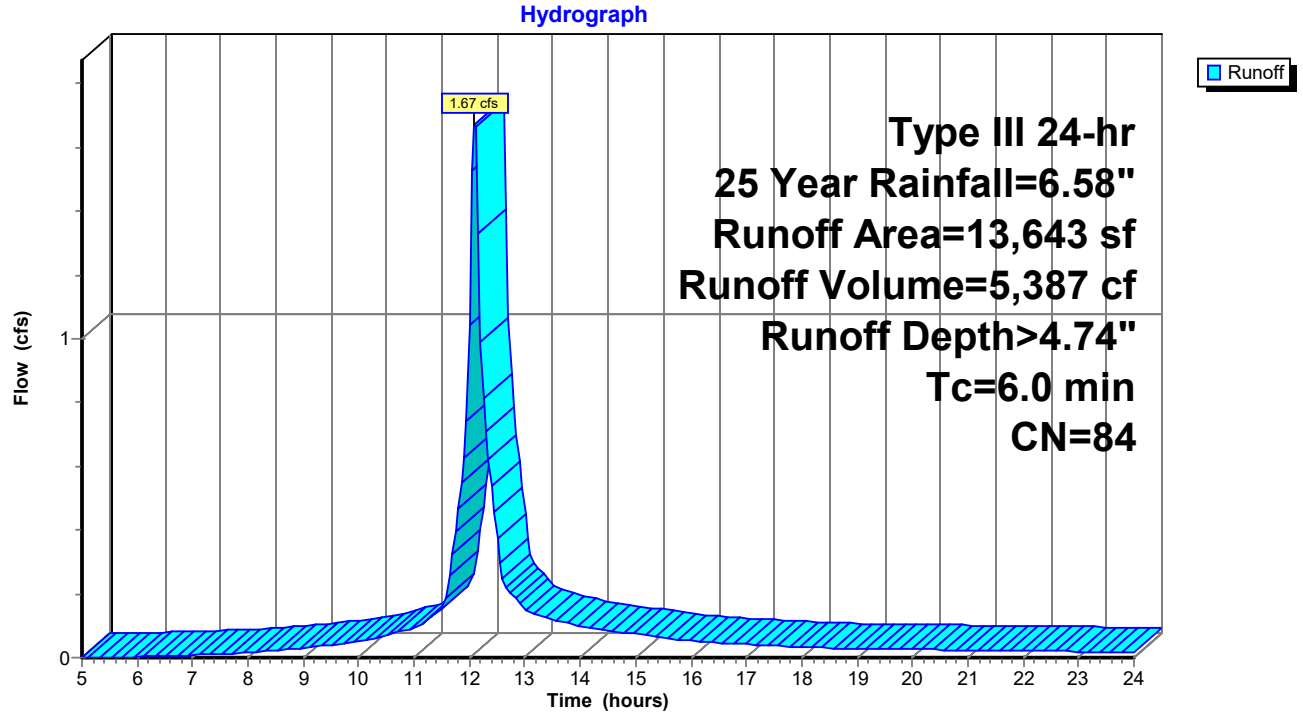
Runoff = 1.67 cfs @ 12.09 hrs, Volume= 5,387 cf, Depth> 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=6.58"

Area (sf)	CN	Description
5,245	61	>75% Grass cover, Good, HSG B
3,877	98	Paved parking, HSG B
3	98	Paved parking, HSG B
836	98	Roofs, HSG B
3,652	98	Paved parking, HSG B
30	61	>75% Grass cover, Good, HSG B
13,643	84	Weighted Average
5,275		38.66% Pervious Area
8,368		61.34% Impervious Area

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

Subcatchment PR-3: Subcat PR-3



Summary for Pond 1: Rear Basin

[81] Warning: Exceeded Pond 2 by 0.60' @ 12.60 hrs

Inflow Area = 40,536 sf, 46.29% Impervious, Inflow Depth > 4.10" for 25 Year event
Inflow = 4.35 cfs @ 12.09 hrs, Volume= 13,852 cf
Outflow = 2.31 cfs @ 12.25 hrs, Volume= 12,746 cf, Atten= 47%, Lag= 9.1 min
Discarded = 0.08 cfs @ 12.25 hrs, Volume= 3,161 cf
Primary = 2.23 cfs @ 12.25 hrs, Volume= 9,585 cf

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 44.77' @ 12.25 hrs Surf.Area= 3,406 sf Storage= 4,459 cf
Flood Elev= 45.00' Surf.Area= 3,663 sf Storage= 5,277 cf

Plug-Flow detention time= 104.6 min calculated for 12,746 cf (92% of inflow)
Center-of-Mass det. time= 64.0 min (877.5 - 813.5)

Volume	Invert	Avail.Storage	Storage Description
#1	43.00'	5,277 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

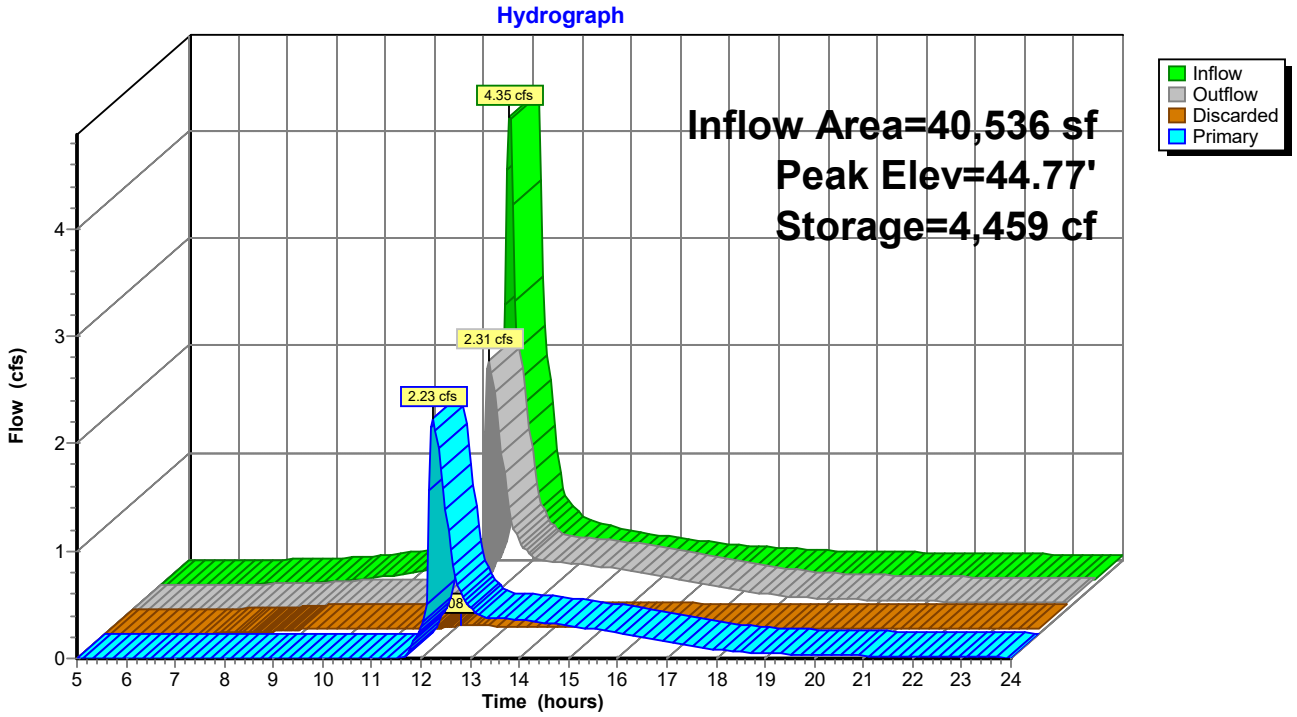
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
43.00	1,790	0	0
44.00	2,550	2,170	2,170
45.00	3,663	3,107	5,277

Device	Routing	Invert	Outlet Devices
#1	Primary	41.30'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 41.30' / 41.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	44.50'	**15.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	43.50'	**4.0" Vert. Orifice/Grate** C= 0.600
#4	Discarded	43.00'	**1.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.08 cfs @ 12.25 hrs HW=44.77' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=2.22 cfs @ 12.25 hrs HW=44.77' (Free Discharge)
└**1=Culvert** (Passes 2.22 cfs of 9.96 cfs potential flow)
  ├**2=Orifice/Grate** (Weir Controls 1.78 cfs @ 1.69 fps)
  └**3=Orifice/Grate** (Orifice Controls 0.44 cfs @ 5.05 fps)

Pond 1: Rear Basin



Summary for Pond 2: Roadside Basin

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

Inflow Area = 13,643 sf, 61.34% Impervious, Inflow Depth > 4.74" for 25 Year event
Inflow = 1.67 cfs @ 12.09 hrs, Volume= 5,387 cf
Outflow = 1.67 cfs @ 12.10 hrs, Volume= 5,384 cf, Atten= 0%, Lag= 0.4 min
Primary = 1.67 cfs @ 12.10 hrs, Volume= 5,384 cf

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 44.43' @ 12.10 hrs Surf.Area= 94 sf Storage= 44 cf
Flood Elev= 46.00' Surf.Area= 268 sf Storage= 312 cf

Plug-Flow detention time= 1.1 min calculated for 5,370 cf (100% of inflow)
Center-of-Mass det. time= 0.8 min (800.4 - 799.6)

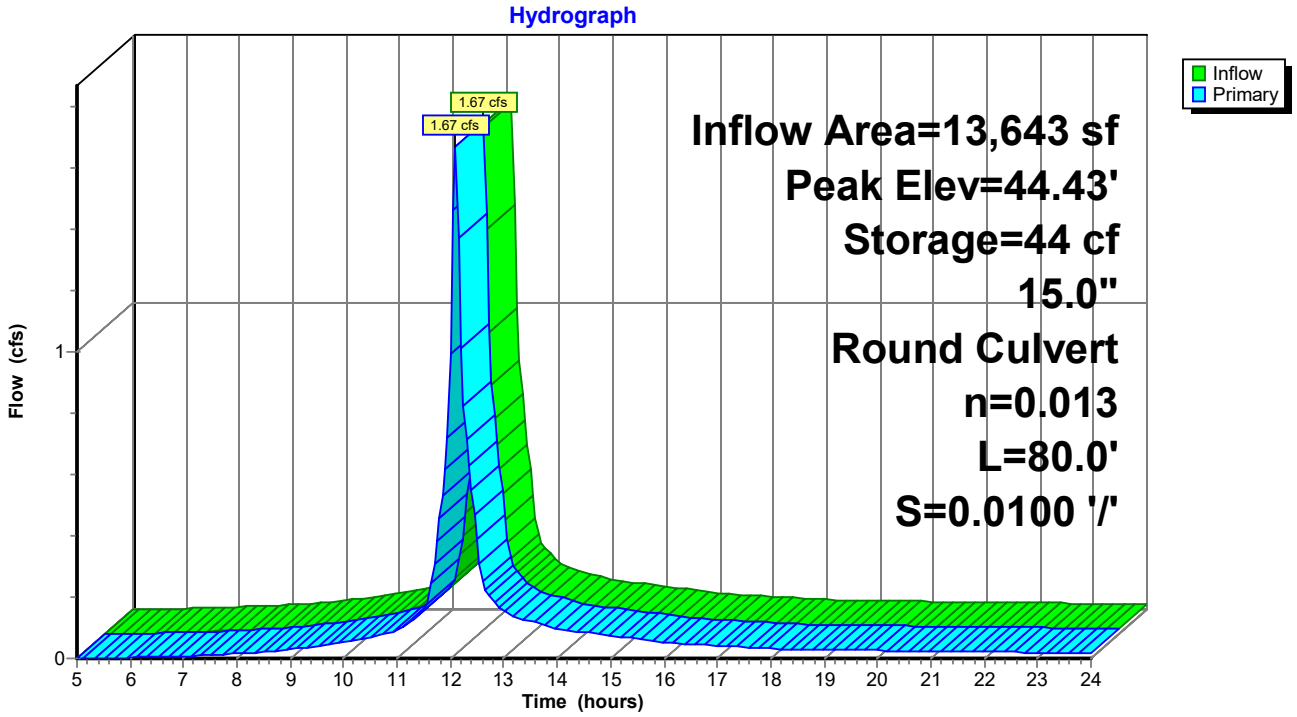
Volume	Invert	Avail.Storage	Storage Description
#1	43.80'	312 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
43.80	46	0	0
45.00	137	110	110
46.00	268	203	312

Device	Routing	Invert	Outlet Devices
#1	Primary	43.80'	**15.0" Round Culvert** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 43.80' / 43.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.65 cfs @ 12.10 hrs HW=44.43' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 1.65 cfs @ 2.69 fps)

Pond 2: Roadside Basin



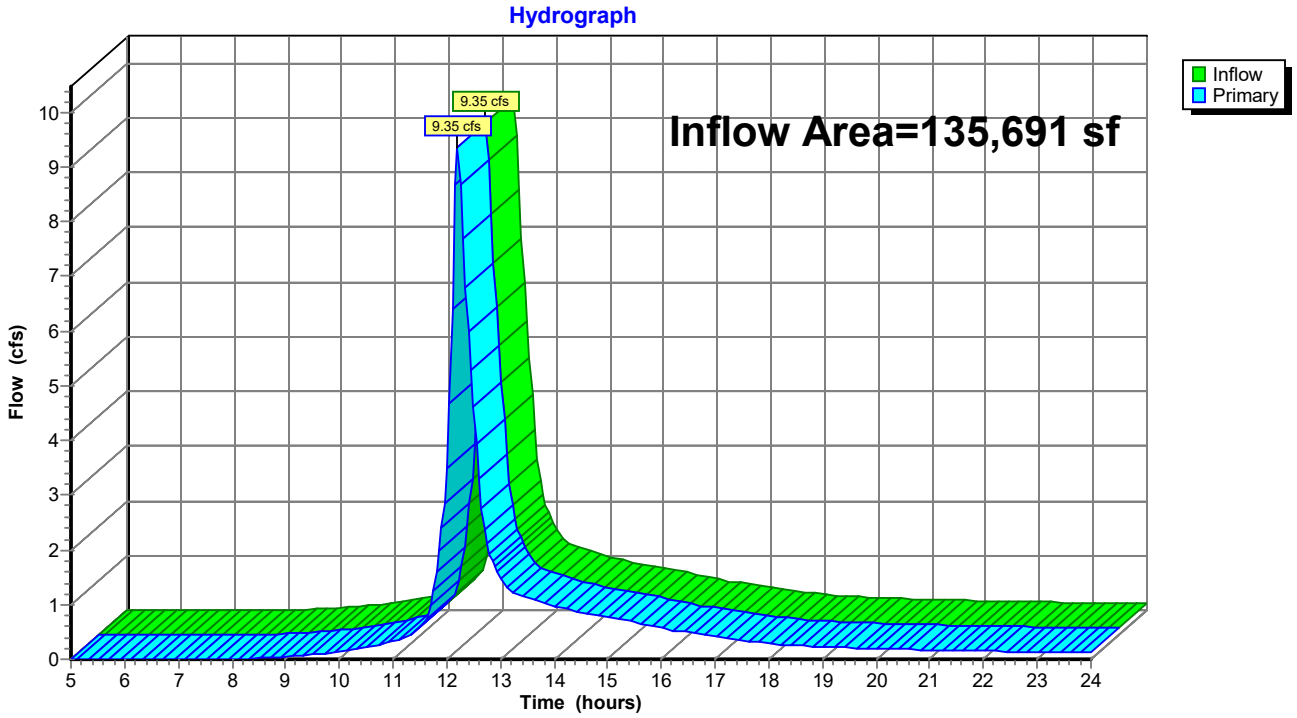
Summary for Pond AP: Analysis Point

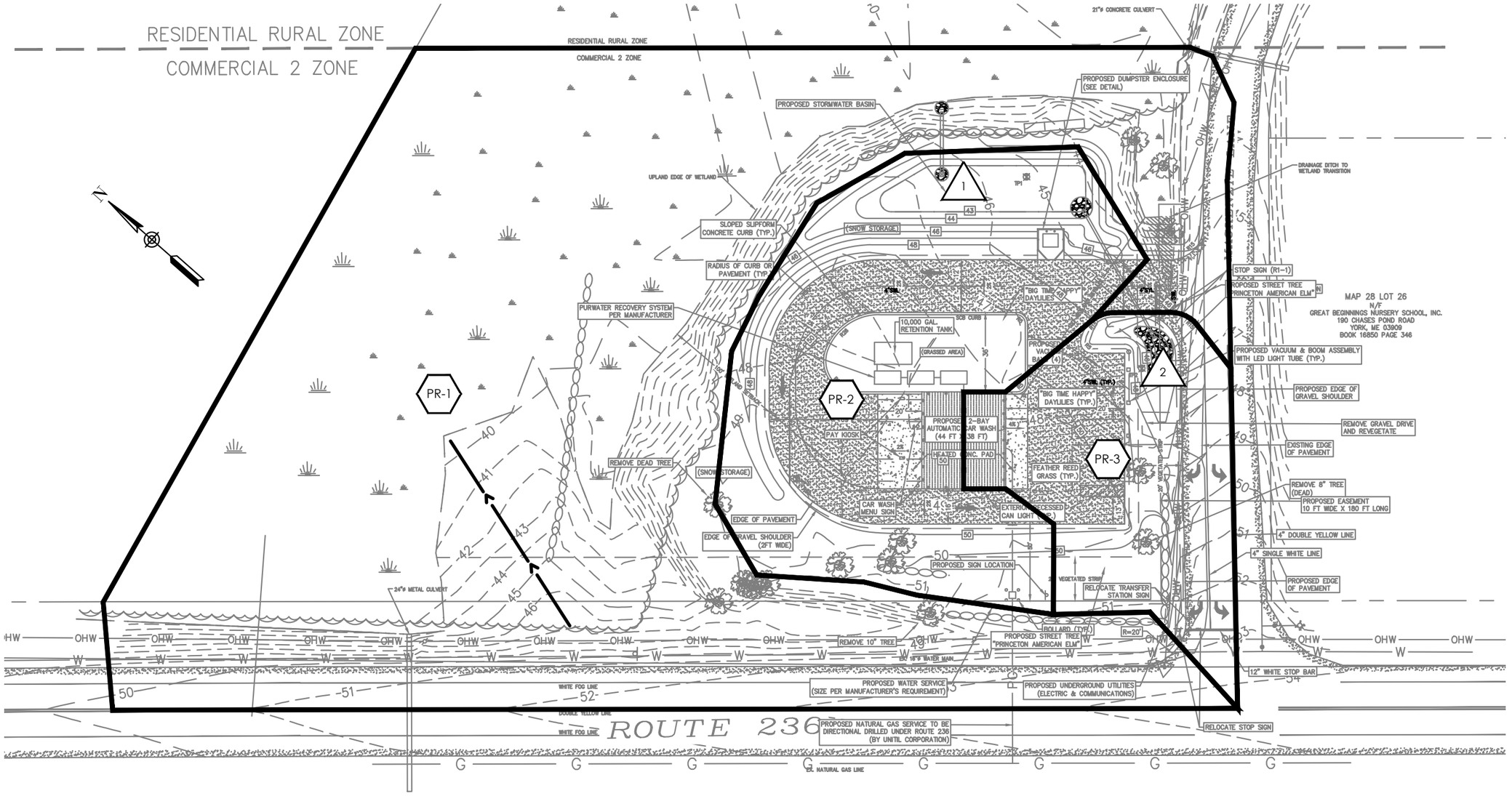
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 135,691 sf, 22.84% Impervious, Inflow Depth > 3.35" for 25 Year event
Inflow = 9.35 cfs @ 12.20 hrs, Volume= 37,873 cf
Primary = 9.35 cfs @ 12.20 hrs, Volume= 37,873 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

Pond AP: Analysis Point





0 25 50 100

LEGEND

- (A) SUBCATCHMENT
- (P) POND
- FLOWPATH Tc

POST–DEVELOPMENT DRAINAGE NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE SUBCATCHMENT LIMITS, CORRESPONDING NODES AND FLOW PATHS ASSOCIATED WITH THE HYDROCAD ANALYSIS INCLUDED IN THE STORMWATER REPORT FOR A SITE PLAN APPLICATION LOCATED ON TAX MAP 28 LOT 25D.
2. THE PROPOSED DEVELOPMENT ON THE SITE AS–SHOWN CORRESPONDS WITH THE SITE PLAN APPLICATION SUBMITTED TO THE TOWN OF KITTER FOR REVIEW AND APPROVAL BY THE PLANNING BOARD.

NO.	DATE:	SUBMISSION/REVISION DESCRIPTION
2	7/31/20	ADDED RIGHT TURN LANE PAVEMENT
1	5/6/20	REVISED BASIN SIZE & CONTROL OUTLET

STATE OF MAINE
RYAN M. MCCARTHY
#12895
LICENSED PROFESSIONAL ENGINEER
JULY 31, 2020

NOT VALID UNLESS SIGNED AND STAMPED

TIDEWATER
ENGINEERING & SURVEYING, INC.
89 Route 236 Suite 3, Kittery, ME 03904
(207)439-2222 • www.tidewatercivil.com

PROPOSED DRAINAGE PLAN

PREPARED FOR
ROBERT T. BRENNAN, JR.
1911 SE 20TH STREE, CAPE CORAL, FL 33990
FOR A PROPOSED CAR WASH ON
TAX MAP 28 LOT 25D
KITTERY, YORK COUNTY, MAINE

JOB #:	19–134
DATE:	MAR. 5, 2020
SCALE:	1" = 50'
SHEET:	1 OF 1