PLANNING BOARD MEETING AGENDA

Thursday September 17, 2020
Burgess Meeting Room, Berwick Town Hall
6:30 p.m.

Call to Order

Pledge of Allegiance

Introduction of Board Members

Approval of Minutes

- September 3, 2020

Public Hearing

- Site Plan Review. Adult Use Cultivation Facility, Medical Marijuana Production Facility, Marijuana Testing Facility. Off Portland Street (R72-17). RC/I Zone. 3G's Realty.

Old Business

- Site Plan Review. Adult Use Cultivation Facility, Medical Marijuana Production Facility, Marijuana Testing Facility. Off Portland Street (R72-17). RC/I Zone. 3G's Realty.

New Business

- Sketch Plan. Major Subdivision. Norman Court & Haflinger Lane. R2 Zone. LRB Leasing.
- Conditional Use Amendment. Adult Use Marijuana Storefront. 513 Portland Street (R72-5). RC/I Zone. Tricann Alternatives.

Public Comment

Informational Items

Adjournment

PLANNING BOARD MEETING MINUTES

Thursday September 3, 2020
Burgess Meeting Room, Berwick Town Hall
6:30 p.m.

Call to Order

Pledge of Allegiance

Introduction of Board Members

Dave Andreesen; Nichole Fecteau; Frank Underwood; Michael LaRue
Regular Member Absent: *Sean Winston*
Alternate Member Present: *David Ross-Lyons (voting member)*
Staff Members Present: *James Bellissimo, Director of Community Development & Planning; Jenifer McCabe, Code Enforcement Officer; Mary Costigan, Town Attorney*

Approval of Minutes

- August 20, 2020

Motion: Dave Andreesen motioned to approve the minutes as presented.
Second: David Ross-Lyons

VOTED – 3-0 in favor
Motion Passed

In favor: Dave Andreesen; David Ross-Lyons; Nichole Fecteau
Opposed: None
Abstain: None

Public Hearing

- Site Plan Amendment & Expansion. Medical Marijuana Storefront & Adult Use Marijuana Production Facility. 357 Portland Street (R70 12-1 & 12-2). Paper Birch Property.

Dave Andreesen recused himself. Nichole Fecteau was recognized as Chair.

Paul Amatucci of 12 Perrys Way said a particular issue in the area is water. Mr. Amatucci said several wet areas in the neighborhood have dried up. Mr. Amatucci asked the Board to

especially consider water resources in the area ongoing for any use and testing may be required at some point to determine the aquifer's capacity.

Old Business

- Site Plan Review. Adult Use Marijuana Cultivation Facility. 11 Pond Road (R70-16) RC/I Zone. CAF Realty of Maine.
    - Planner Memo

      James Bellissimo read his memo which summarized the issues to date (Page 7 in Packet). Within the memo, Mr. Bellissimo read the proposed Conditions of Approval.

    - Town Attorney

      Mary Costigan discussed the Planning Board' role in making a decision. Ms. Costigan said the decision is easier when it is made based on objective criterion. Ms. Costigan spoke to the issue of whether the project conformed to the Comprehensive Plan and she said it does because it is a permittable use in the zone. Ms. Costigan said the solution is to rezone the area and not to deny the application.

      Ms. Costigan also addressed the easement issue as it relates to right, title and interest. There is a recent case which was references that is not applicable to the project.

    - Board Deliberation & Applicant Response

      Frank Underwood summarized the project to date. Mr. Underwood asked several questions on the application regarding the ascetics, drainage, the septic, how the building will be built.

      Mike Sievert said the barn will be stick built and the heat will be electric and comes from the lights. Mr. Sievert said test pits were dug for the septic and the pond is now lined which meets the third-party review suggested amendment. The new septic system has been designed and approved by the Code Enforcement Office. The floor drains will go into the holding tank. Mr. Underwood said there should be considerations for a hydrogeologic survey. Jenifer McCabe, Code Enforcement Officer, confirmed the septic has been approved.

      Frank Underwood highlighted the changes to the site plan since the beginning to show how the plan has changed based on all the feedback.

      The Board reviewed each Finding of Fact.

      After Board deliberation the fence will be changed from a 4' fence with barbed wire to an electric 4' fence.

      Frank Underwood asked for the applicant to remove the proposed expansion building so the Board is only dealing with one building. The Board agreed it would be

removed from the plan and would be considered a Phase II but be required to come back to Planning Board when the easement issues were resolved.

Mr. Underwood asked about licensing and if the State imposing addition conditions, would the Planning Board have an opportunity to further review. James Bellissimo said the Select Board can impose conditions and the recommendations can come from the Planning Department.

Jennifer McCabe suggested the fence be a paddock style fence with electric instead of a barbed wire fence. David Ayer said he would cooperate on the type of fence.

Mary Costigan recommended that the Board member state they reviewed all materials before voting. Michael LaRue, Frank Underwood, David Ross-Lyons and Nichole Fecteau said they reviewed the material.

Motion: Michael LaRue motioned to approve the Findings of Fact as amended.
Second: David Ross-Lyons

VOTED – 4-0 in favor
Motion Passed

In favor: David Ross-Lyons; Nichole Fecteau; Michael LaRue; Frank Underwood
Opposed: None
Abstain: None

The Board reviewed and amended Conditions of Approval.

Frank Underwood asked if the Board should require a hydrogeological study because in the case of well contamination it would be a way to know whether or not the contaminants came from the cultivation. Mr. Underwood asked for the future expansion building to be taken off due to the existing easement issues.

James Bellissimo said the Select Board will hold a Public Hearing on each license and can impose restrictions and can revoke licenses and the State of Maine Office of Marijuana Policy is requiring a local license before they grant any licenses.

Motion: Michael LaRue motioned to approve the Conditions of Approval as amended.
Second: David Ross-Lyons

VOTED – 4-0 in favor
Motion Passed

In favor: David Ross-Lyons; Nichole Fecteau; Michael LaRue; Frank Underwood
Opposed: None
Abstain: None

Motion: Michael LaRue motioned to approve the application.
Second: Frank Underwood

VOTED – 4-0 in favor
Motion Passed

In favor: David Ross-Lyons; Nichole Fecteau; Michael LaRue; Frank Underwood
Opposed: None
Abstain: None

- Site Plan Amendment & Expansion. Medical Marijuana Storefront & Adult Use Marijuana Production Facility. 357 & 359 Portland Street (R70 12-1 & 12-2). Paper Birch Property.

Geoff Aleva introduced himself as the representative of Paper Birch Properties. Mr. Aleva said the DOT permit has been updated and approved based on the new uses. The Storefront is proposed to be Phase I and the Adult Use Production Facility be Phase II. Mr. Aleva addressed the South Berwick Water District's comments and said their project is 3,500 feet from the well and 1,200' from their recharge area. Mr. Aleva said the water usage would be qual to the amount of usage of eight single-family households.

Motion: David Ross-Lyons motioned to approve the Findings of Fact as amended.
Second: Michael LaRue

VOTED – 4-0 in favor
Motion Passed

In favor: David Ross-Lyons; Nichole Fecteau; Michael LaRue; Frank Underwood
Opposed: None
Abstain: None

Motion: Frank Underwood motioned to approve the Conditions of Approval as amended.
Second: David Ross-Lyons

VOTED – 4-0 in favor
Motion Passed

In favor: David Ross-Lyons; Nichole Fecteau; Michael LaRue; Frank Underwood
Opposed: None
Abstain: None

Motion: Frank Underwood motioned to approve the application.
Second: Michael LaRue

VOTED – 4-0 in favor
Motion Passed

In favor: David Ross-Lyons; Nichole Fecteau; Michael LaRue; Frank Underwood

Opposed: None

Abstain: None

New Business

- Subdivision Amendment (Lot line adjustment). Pleasant Drive (R32 17-3 & 21). R2 Zone. Civil Consultants on behalf of Timothy George.

Dave Andreesen re-joined the Planning Board

James Bellissimo explained the lot line adjustment would make one lot more conforming while keeping another lot conforming. The amendment would put a barn on the correct property and will meet all applicable setbacks.

Motion: Nichole Fecteau motioned to approve the application with the Findings of Fact.
Second: Frank Underwood.

VOTED – 5-0 in favor
Motion Passed

In favor: David Ross-Lyons; Nichole Fecteau; Michael LaRue; Frank Underwood; Dave Andreesen

Opposed: None

Abstain: None

Public Comment

Heidi Leveille asked what the regulations are on alarm systems. Ms. Leveille played a clip of an alarm playing at 357 Portland Street.

Informational Items

Adjournment

Motion: Nichole Fecteau
Second: David Ross-Lyons

VOTED – 5-0 in favor
Motion Passed

In favor: Dave Andreesen; David Ross-Lyons; Nichole Fecteau
Opposed: None
Abstain: None

Minutes prepared by Berwick Planner James Bellissimo, for consideration at the next Berwick Planning Board meeting.

Signed as Approved by the Board:

_____ _____

PLANNING BOARD MEMORANDUM
TOWN OF BERWICK, PLANNING DEPARTMENT

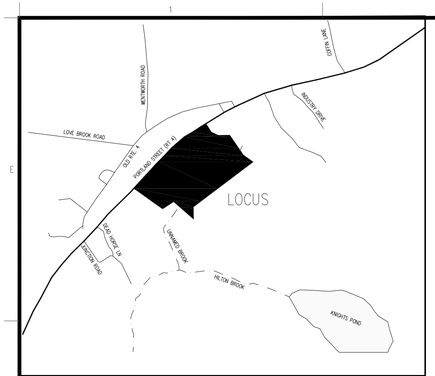
TO: BERWICK PLANNING BOARD; JENIFER MCCABE, CODE ENFORCEMENT OFFICER
FROM: JAMES BELLISSIMO, DIRECTOR OF COMMUNITY DEVELOPMENT & PLANNING
SUBJECT: 3G'S REALTY, LLC – SITE PLAN REVIEW – ADULT USE MARIJUANA CULTIVATION
DATE: SEPTEMBER 10, 2020
CC:

DEP requested no further wetland impact and because of this, the buildings have been moved and overall Site Plan & Stormwater Management have been amended.

Each tenant will require an individual license.

The project is outside of the South Berwick Water District recharge area.

12 abutters were sent notices via mail September 9. The Public Hearing notice was posted in the paper September 10, 2020.



LOCUS

SCS Soil Line

High Intensity Soil Line

HIGH INTENSITY SOIL SURVEY LEGEND:

Em: ELMWOOD – SANDY LOAM – MODERATELY WELL DRAINED
Swx: SWANTON – SANDY LOAM – SOMEWHAT POORLY DRAINED
Sw: SWANTON – SANDY LOAM – POORLY DRAINED

HIGH INTENSITY SOIL SURVEY SLOPES:

A: 0–3%
B: 3–8%
C: 8–15%
D: 15–25%
E: >25%

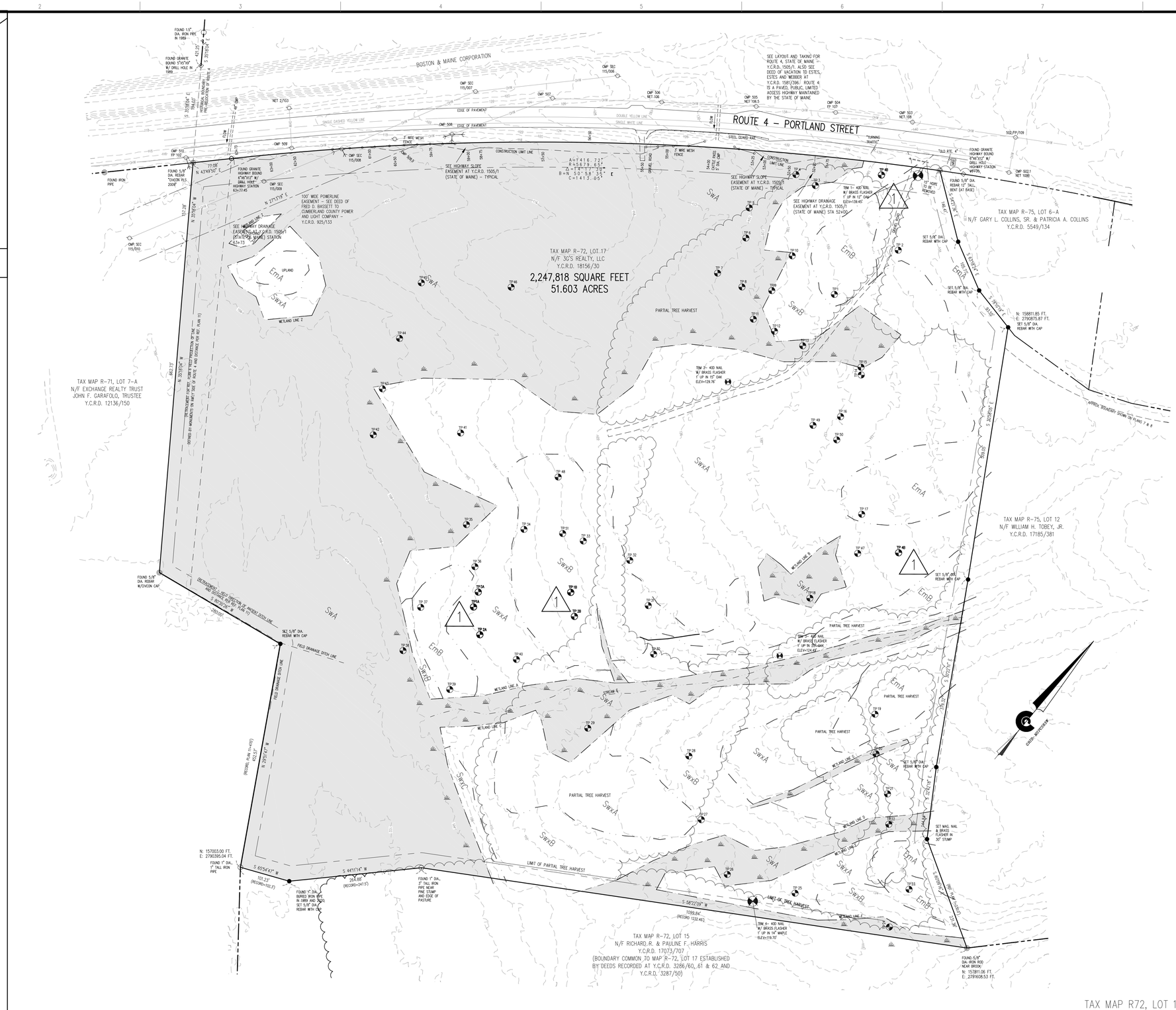
NOTES:

1. PLANIMETRIC DETAIL DEPICTED HEREON IS THE RESULT OF AN ON-THE-GROUND FIELD SURVEY BY CIVIL CONSULTANTS ON IN FEBRUARY, 2020.
2. HIGH INTENSITY CLASS A SOIL SURVEY WAS PERFORMED WITHIN THE PROJECT AREA BY KENNETH GARDNER, MAINE SOIL SCIENTIST #61 AND LICENSED SITE EVALUATOR, ON 2-4-2020 AND 3-9-2020. REFER TO SOILS REPORT, 3 G'S REALTY, LLC, BERWICK, ME DATED MARCH 18, 2020. THE REMAINDER OF THE SOILS SHOWN HEREON ARE BASED ON YORK COUNTY SOILS SURVEY (WEB SOILS).
3. TEST PITS AND BORINGS WERE PERFORMED BY KENNETH GARDNER, MAINE SOILS SCIENTIST #61 AND LICENSED SITE EVALUATOR, IN FEBRUARY AND MARCH OF 2020. TEST PITS WERE PERFORMED IN THE AREA OF THE PROPOSED DEVELOPMENT AND AT THE LOCATIONS OF THE STORMWATER BEST MANAGEMENT PRACTICES.
4. THE EDGE OF WETLAND AREAS DEPICTED HEREON ARE BASED ON FIELD LOCATION OF WETLAND DELINEATION FLAGS SET BY KENNETH GARDNER, MAINE SOILS SCIENTIST #61. THE WETLAND FLAGS WERE LOCATED ON THE GROUND BY INSTRUMENT SURVEY.
5. THE 2' CONTOUR INTERVAL INFORMATION OUTSIDE THE DEVELOPED AREA OF THE SITE AS DEPICTED HEREON IS TAKEN FROM LIDAR DATA FILES OBTAINED FROM THE STATE OF MAINE OFFICE OF GIS.
6. THE PERIMETER BOUNDARY DEPICTED HEREON IS BASED ON REFERENCE PLAN 1.

REFERENCE PLANS:

1. BOUNDARY AND EXISTING CONDITIONS PLAN OF LAND OF 3G'S REALTY, LLC – MAP R72/LOT 17, ROUTE 4 (PORTLAND STREET), BERWICK, YORK COUNTY, MAINE. PREPARED FOR: SCOTT KEARNAN, 309 OLD COLONY AVENUE, SOUTH BOSTON, MA 02127. PREPARED BY: CIVIL CONSULTANTS, DATED xxxxxxx

State of Maine
Soil Scientist
#61
Kenneth Robert Gardner



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NO.	REVISIONS	INT.	DATE
1	ADDITIONAL TEST PITS	NJR	9/14/20

RECORD OWNER:
3G'S REALTY, LLC

OWNER ADDRESS:
309 OLD COLONY AVENUE
SOUTH BOSTON, MA 02127

PROPOSED SITE DEVELOPMENT
LAND OF 3G'S REALTY LLC - MAP R72/ LOT 17
ROUTE 4 (PORTLAND STREET)
BERWICK, YORK COUNTY, MAINE

PREPARED FOR:
SCOTT KEARNAN
CLIENT ADDRESS: 309 OLD COLONY AVENUE, SOUTH BOSTON, MA 02127

1"=100'
0' 100'

DATE: 05/29/2020
DRAWN BY: NJR
CHECKED BY: KRG
APPROVED BY: KRG

SOIL PLAN

PROJECT NO: 19-352.00

SP1

SHEET: 1 OF 1

COORDINATE FILE: J:\AAA\1935200\CARLSON\SURVEY\POINTS\MSPCS83W-NAVD88.CRD
CADD FILE: J:\aaa\2019\1935200\CARLSON\ENGINEERING\1935200-E-ST.DWG
PLOT DATE: 2/20/2020

The seal affixed above applies to this report,
Appendices A through D, and Stormwater Plans D1, D2& D3.

Site Location of Development Application

Chapter 12 – Stormwater Management Plan

"3 G's INDUSTRIAL DEVELOPMENT"

BERWICK, MAINE

Prepared for

3 G's Realty, LLC.
309 Old Colony Avenue
South Boston, Massachusetts, 02127

April 2020
(Rev September 2020)

CIVIL
CONSULTANTS

Engineers

Planners

Surveyors

Stormwater Management Narrative

MAINE DEP SITE LAW– Chapter 12

STORMWATER MANAGEMENT PLAN

"3 G's Industrial Development"
Portland Street
Berwick, Maine

Prepared for:

3 G's Realty, LLC.
309 Old Colony Avenue
South Boston, MA 02127

April, 2020
(Revised September 2020)

INTRODUCTION:

The proposed site is located on Map R-72, Lot 17 as shown on the Town of Berwick tax maps. The project is situated on the east side of Route 4 South near the intersection with Old Route 4. The applicant intends to develop an industrial use, including 10 *adult-use marijuana cultivation* facilities and 2 general industrial/warehouse buildings. All buildings will be pre-engineered metal structures that will have a footprint of 6,600 sf each.

Stormwater treatment and runoff control facilities are also proposed to provide the required levels of treatment and flooding protection.

Of the lots 52 acres, approximately 25 acres are wetlands. ~~It is proposed that 14,899 sf of wetland will be impacted by the project, which will require a Tier 1 NRPA permit~~. *No wetland impacts are proposed as part of this development.*

The proposed storm water BMP's that will be used to treat runoff and limit peak flows will be two wet ponds and a grassed underdrained filter. A roadside treatment buffer is also proposed to provide pollutant removed for runoff leaving the access drive, which has been considered a linear portion of the development.

DESIGN REQUIREMENTS:

This Site Law project is required to meet basic, general and flooding standards of DEP Chapter 500.

A nearby pond (Knights Pond) is a lake most at risk for new development. However; it has been determined that the proposed project is not within the watershed, precluding the need for a phosphorus control plan.

Refer to the treatment calculations included in this submittal for additional information regarding the treatment plan and BMP sizing.

The analysis for this report also includes the 2-, 10-, and 25-year event to predict the downstream effects of the proposed site coverage changes.

EXISTING DRAINAGE CONDITIONS:

The flows from the site drain to a large on-site wetland via a wet hay field or by an unnamed stream that traverses the site. This large wetland feeds Hilton Brook, which feeds Lovers Brook and eventually drains to the Great Works River.

The site is currently a mixture of woodland and cleared areas with a large active hay field. There is a large contiguous wetland located around the perimeter of the project area, with much of the wetland in the hay field. An isolated wetland is located ~~in~~ *at the edge of* the proposed area of development

~~(requiring the NRPA permit)~~. No impacts to the contiguous wetlands are proposed.

Soils in the watershed are predominantly hydrologic soil type D (Swanton) with pockets of C soils (Elmwood), as determined by a HISS performed by Ken Gardner, CSS #61. Soils outside of the subject lot were determined using the Web Soil Survey from the USGS. See sheet D1 for the soil plan and HSG designations.

The project is not located in a flood zone. See Appendix E for a copy of the applicable FEMA map.

PROPOSED DRAINAGE:

The proposed stormwater management system has been designed to treat the developed and impervious area as well as limit flows off site to levels to the greatest extent practicable. This will ensure that the proposed storm water management measures will maintain the runoff to the adjacent wetlands similarly to that which originally existed prior to development.

To treat the runoff from the new paved areas, several BMPs are proposed. Two of these will be conventional wet ponds, along with a grassed underdrained filter. A roadside buffer is also proposed to provide treatment of the access road that will replace the existing gravel drive.

The proposed BMP's have been analyzed and designed to meet the treatment and flooding standards as required by DEP regulations.

See the attached calculations for additional information.

ANALYSIS:

The overall perimeter of the watershed remained the same for both Pre- and Post Development. There were two subcatchments identified for the Pre Development analysis. Five subcatchments were used to model the site for the Post Development analysis. The additional subcatchments are required to evaluate the flows to proposed BMPs and developed area.

For further details regarding subcatchment determination, refer to the project drawings and D1 & D2 included in the appendix of this report.

METHODOLOGY:

All runoff calculations were performed using methods based on USDA–SCS Technical Release No. 20 (also known as TR-20). The 2-, 10-, and 25-year events (Type III rainfall distribution) were used for the site-specific analysis to determine pre- and post-development peak discharge rates and required stormwater treatment & conveyance systems.

Runoff curve numbers (CN) and times of concentration (Tc) were determined by the methods outlined in USDA-SCS Technical Release No. 55 (better known as TR-55). On site watershed areas were determined using two-foot contour data provided by field survey crews and previously compiled topography plans.

The detailed analysis for this project was performed by computer utilizing "HYDROCAD" stormwater modeling software. The computer printouts are attached.

The attached Pre- and Post Development plans (D1 & D2) show subcatchment boundaries, hydraulic flow lines, existing and proposed roads, and drainage features and facilities. Land cover type

boundaries used in the model for on-site areas are also shown on the plan (i.e. tree lines, wetlands, etc).

BMP SIZING:

The proposed filter and wet pond BMP systems have been sized to detain the storm events as required to treat the new developed area, and to meet the Flooding Standards per Chapter 500 to the extent practical, as well as the Town regulations.

The proposed buffer at the access drive has been sized as a roadside buffer treating two lanes of traffic.

The storm intensities have been obtained from Appendix H of Chapter 500 for York County.

FLOW RATES:

TWO-YEAR EVENT -

Discharge Point Desig Pre/Post	Peak Runoff(in cfs) Pre	Post	Change (cfs)
OUT 1	51.61	*50.85*	*-0.76*

TEN-YEAR EVENT -

Discharge Point Desig Pre/Post	Peak Runoff(in cfs) Pre	Post	Change (cfs)
OUT 1	107.23	*107.43*	*+0.20*

TWENTY-FIVE-YEAR EVENT -

Discharge Point Desig Pre/Post	Peak Runoff(in cfs) Pre	Post	Change (cfs)
OUT 1	156.25	*156.03*	*-0.22*

The analysis reveals that the proposed BMP's will maintain expected flows at or below current levels for all storms evaluated.

Please see Appendix D for the stormwater maintenance and inspection plan.

CONCLUSIONS:

The proposed site modification will reduce, or maintain approximately the same, flow rates exiting the site for all evaluated storm events required by the DEP.

Runoff has been treated as required per the general and flooding standards of Chapter 500 through the use of grading and vegetated filter BMPs.

It is our opinion that there will be no adverse downstream impacts as a result of this project, and surrounding natural resources have been sufficiently protected by the proposed stormwater management plan.

J:\aaa\2019\1935200\MDEP\SITE_LOCATION\DRAINAGE_CH_12\COMPONENTS\20200908(rev1)_1935200-DRAINAGE_NARRATIVE.docx

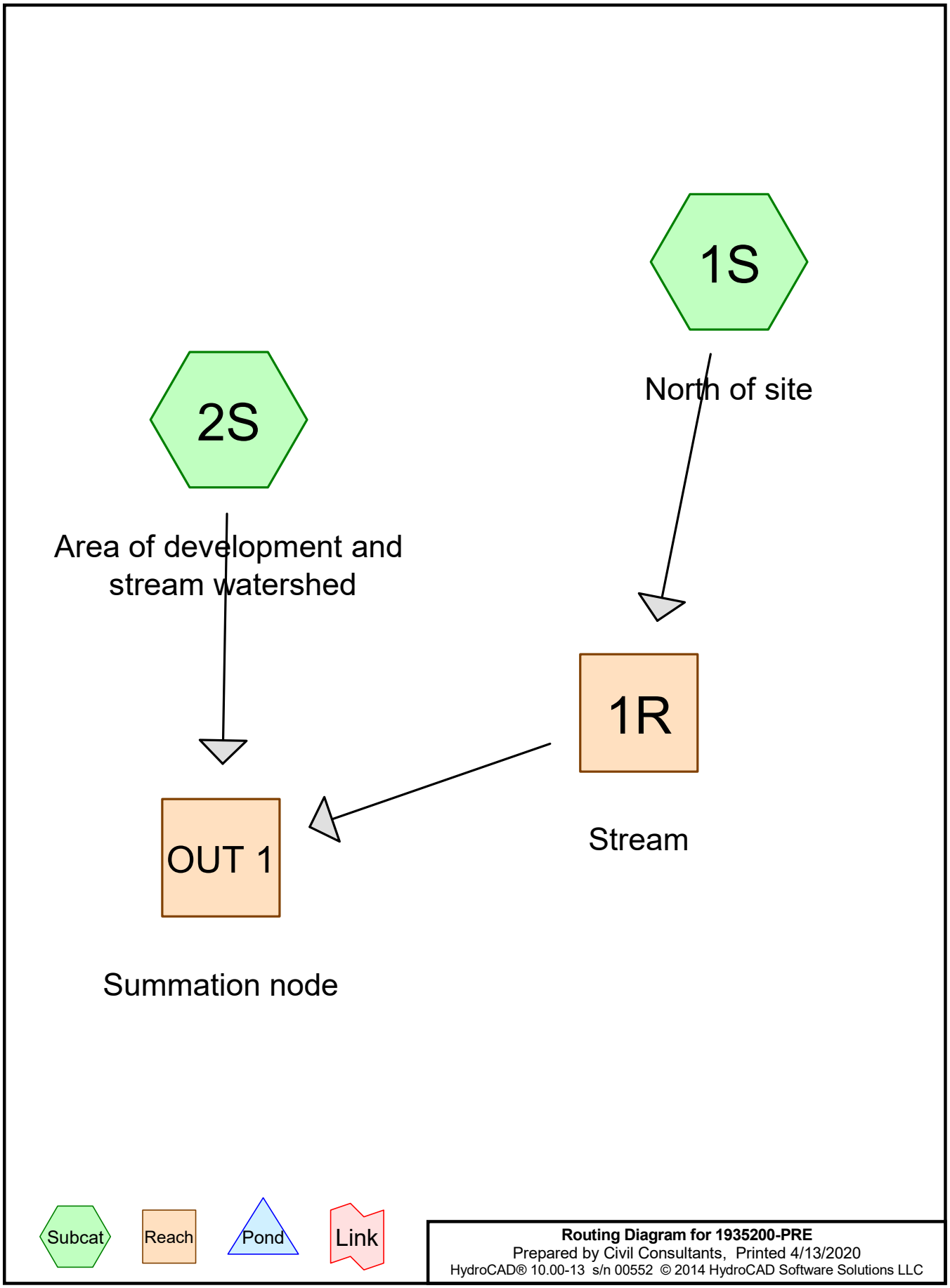
CIVIL
CONSULTANTS

Engineers

Planners

Surveyors

Pre-Development Calculations


1S
North of site
2S
Area of development and stream watershed
1R
Stream
OUT 1
Summation node
Subcat
Reach
Pond
Link
Routing Diagram for 1935200-PRE
Prepared by Civil Consultants, Printed 4/13/2020
HydroCAD® 10.00-13 s/n 00552 © 2014 HydroCAD Software Solutions LLC

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
10.895	HSG A	1S, 2S
1.329	HSG B	1S, 2S
4.203	HSG C	2S
59.587	HSG D	1S, 2S
0.000	Other	
76.014		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatch Numbers
0.000	0.728	0.000	0.000	0.000	0.728	1/8 acre lots, 65% imp	
4.605	0.138	0.000	0.319	0.000	5.062	50-75% Grass cover, Fair	
0.000	0.000	0.634	25.256	0.000	25.890	>75% Grass cover, Good	
0.459	0.321	0.000	0.321	0.000	1.101	Paved parking	
1.928	0.142	0.000	2.912	0.000	4.982	Paved roads w/open ditches, 50% imp	
0.230	0.000	0.000	0.000	0.000	0.230	Roofs	
3.673	0.000	3.569	25.866	0.000	33.108	Woods, Fair	
0.000	0.000	0.000	4.913	0.000	4.913	Woods/grass comb., Fair	
10.895	**1.329**	**4.203**	**59.587**	**0.000**	**76.014**	**TOTAL AREA**	

Time span=0.00-84.00 hrs, dt=0.01 hrs, 8401 points x 4
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: North of site Runoff Area=11.537 ac 21.65% Impervious Runoff Depth=1.22"
Flow Length=265' Slope=0.0100 '/' Tc=28.5 min CN=76 Runoff=9.24 cfs 1.175 af

Subcatchment 2S: Area of development Runoff Area=64.477 ac 2.79% Impervious Runoff Depth=1.22"
Flow Length=1,665' Tc=41.0 min CN=76 Runoff=43.43 cfs 6.567 af

Reach 1R: Stream Avg. Flow Depth=0.29' Max Vel=2.50 fps Inflow=9.24 cfs 1.175 af
n=0.030 L=1,600.0' S=0.0163 '/' Capacity=81.30 cfs Outflow=8.37 cfs 1.175 af

Reach OUT 1: Summation node Inflow=51.62 cfs 7.742 af
Outflow=51.62 cfs 7.742 af

Total Runoff Area = 76.014 ac Runoff Volume = 7.742 af Average Runoff Depth = 1.22"
94.35% Pervious = 71.719 ac 5.65% Impervious = 4.295 ac

Time span=0.00-84.00 hrs, dt=0.01 hrs, 8401 points x 4
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: North of site Runoff Area=11.537 ac 21.65% Impervious Runoff Depth=2.45"
Flow Length=265' Slope=0.0100 '/' Tc=28.5 min CN=76 Runoff=19.13 cfs 2.359 af

Subcatchment 2S: Area of development Runoff Area=64.477 ac 2.79% Impervious Runoff Depth=2.45"
Flow Length=1,665' Tc=41.0 min CN=76 Runoff=89.77 cfs 13.182 af

Reach 1R: Stream Avg. Flow Depth=0.44' Max Vel=3.21 fps Inflow=19.13 cfs 2.359 af
n=0.030 L=1,600.0' S=0.0163 '/' Capacity=81.30 cfs Outflow=17.92 cfs 2.359 af

Reach OUT 1: Summation node Inflow=107.23 cfs 15.541 af
Outflow=107.23 cfs 15.541 af

Total Runoff Area = 76.014 ac Runoff Volume = 15.541 af Average Runoff Depth = 2.45"
94.35% Pervious = 71.719 ac 5.65% Impervious = 4.295 ac

Time span=0.00-84.00 hrs, dt=0.01 hrs, 8401 points x 4
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: North of site Runoff Area=11.537 ac 21.65% Impervious Runoff Depth=3.55"
Flow Length=265' Slope=0.0100 '/' Tc=28.5 min CN=76 Runoff=27.84 cfs 3.416 af

Subcatchment 2S: Area of development Runoff Area=64.477 ac 2.79% Impervious Runoff Depth=3.55"
Flow Length=1,665' Tc=41.0 min CN=76 Runoff=130.52 cfs 19.092 af

Reach 1R: Stream Avg. Flow Depth=0.55' Max Vel=3.63 fps Inflow=27.84 cfs 3.416 af
n=0.030 L=1,600.0' S=0.0163 '/' Capacity=81.30 cfs Outflow=26.36 cfs 3.416 af

Reach OUT 1: Summation node Inflow=156.26 cfs 22.508 af
Outflow=156.26 cfs 22.508 af

Total Runoff Area = 76.014 ac Runoff Volume = 22.508 af Average Runoff Depth = 3.55"
94.35% Pervious = 71.719 ac 5.65% Impervious = 4.295 ac

Summary for Subcatchment 1S: North of site

Runoff = 27.84 cfs @ 12.39 hrs, Volume= 3.416 af, Depth= 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
1.928	83	Paved roads w/open ditches, 50% imp, HSG A
2.043	36	Woods, Fair, HSG A
0.459	98	Paved parking, HSG A
0.230	49	50-75% Grass cover, Fair, HSG A
0.723	93	Paved roads w/open ditches, 50% imp, HSG D
4.913	82	Woods/grass comb., Fair, HSG D
0.319	84	50-75% Grass cover, Fair, HSG D
0.321	98	Paved parking, HSG B
0.321	98	Paved parking, HSG D
0.142	89	Paved roads w/open ditches, 50% imp, HSG B
0.138	69	50-75% Grass cover, Fair, HSG B
11.537	76	Weighted Average
9.040		78.35% Pervious Area
2.497		21.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	75	0.0100	0.06		**Sheet Flow, 1.1** Woods: Light underbrush n= 0.400 P2= 3.30"
6.3	190	0.0100	0.50		**Shallow Concentrated Flow, 1.2** Woodland Kv= 5.0 fps
28.5	265	Total			

Summary for Subcatchment 2S: Area of development and stream watershed

Runoff = 130.52 cfs @ 12.57 hrs, Volume= 19.092 af, Depth= 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
1.630	36	Woods, Fair, HSG A
4.375	49	50-75% Grass cover, Fair, HSG A
0.230	98	Roofs, HSG A
2.189	93	Paved roads w/open ditches, 50% imp, HSG D
0.728	85	1/8 acre lots, 65% imp, HSG B
3.569	73	Woods, Fair, HSG C
0.634	74	>75% Grass cover, Good, HSG C
25.256	80	>75% Grass cover, Good, HSG D
25.866	79	Woods, Fair, HSG D
64.477	76	Weighted Average
62.679		97.21% Pervious Area
1.798		2.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0100	0.06		**Sheet Flow, 2.1** Woods: Light underbrush n= 0.400 P2= 3.30"
5.2	170	0.0120	0.55		**Shallow Concentrated Flow, 2.2** Woodland Kv= 5.0 fps
2.0	130	0.0460	1.07		**Shallow Concentrated Flow, 2.3** Woodland Kv= 5.0 fps
2.0	115	0.0350	0.94		**Shallow Concentrated Flow, 2.4** Woodland Kv= 5.0 fps
3.9	1,150	0.0150	4.88	78.11	**Trap/Vee/Rect Channel Flow, 2.5** Bot.W=10.00' D=1.00' Z= 6.0 '/' Top.W=22.00' n= 0.030 Stream, clean & straight
41.0	1,665	Total			

Summary for Reach 1R: Stream

Inflow Area = 11.537 ac, 21.65% Impervious, Inflow Depth = 3.55" for 25-year event
Inflow = 27.84 cfs @ 12.39 hrs, Volume= 3.416 af
Outflow = 26.36 cfs @ 12.49 hrs, Volume= 3.416 af, Atten= 5%, Lag= 5.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs / 4
Max. Velocity= 3.63 fps, Min. Travel Time= 7.3 min
Avg. Velocity = 0.90 fps, Avg. Travel Time= 29.8 min

Peak Storage= 11,617 cf @ 12.49 hrs
Average Depth at Peak Storage= 0.55'
Bank-Full Depth= 1.00' Flow Area= 16.0 sf, Capacity= 81.30 cfs

10.00' x 1.00' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 6.0 '/' Top Width= 22.00'
Length= 1,600.0' Slope= 0.0163 '/'
Inlet Invert= 134.00', Outlet Invert= 108.00'

‡

Summary for Reach OUT 1: Summation node

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

Inflow Area = 76.014 ac, 5.65% Impervious, Inflow Depth = 3.55" for 25-year event
Inflow = 156.26 cfs @ 12.53 hrs, Volume= 22.508 af
Outflow = 156.26 cfs @ 12.53 hrs, Volume= 22.508 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs / 4

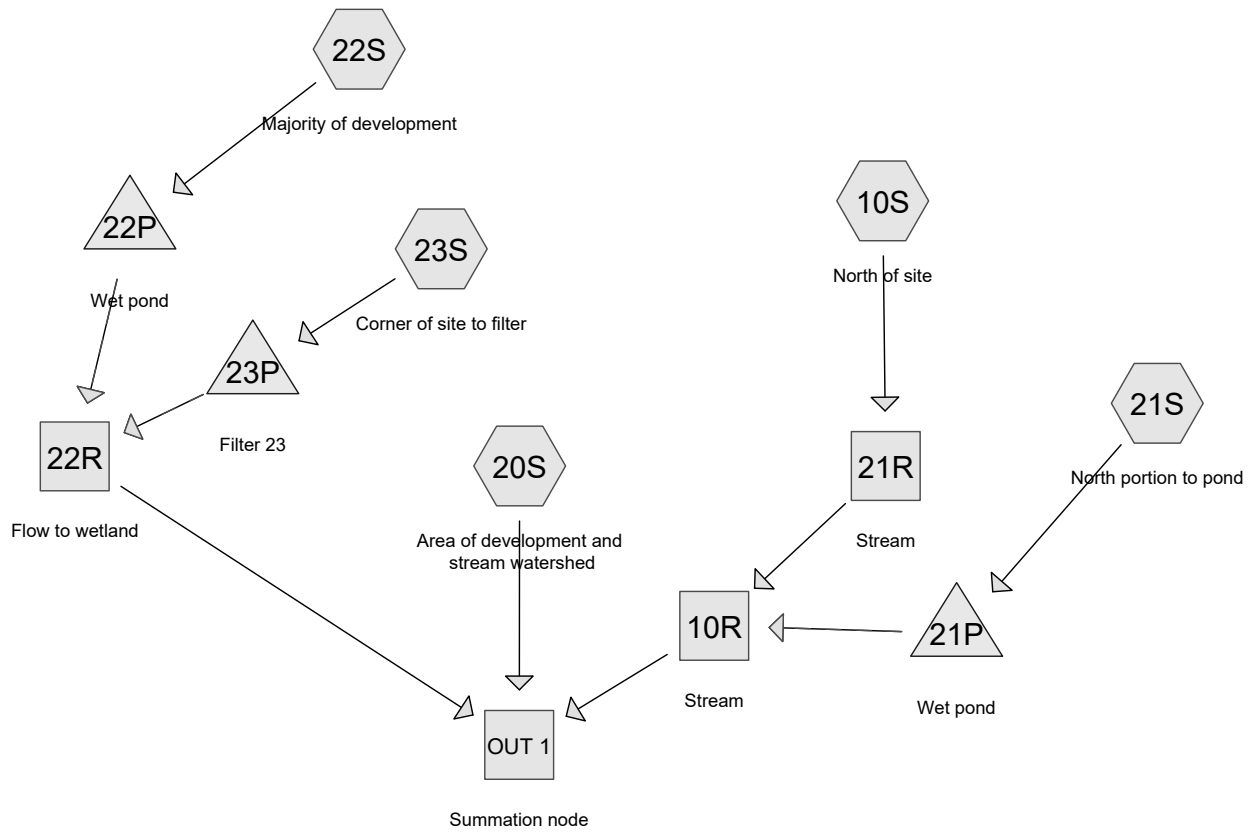
CIVIL
CONSULTANTS

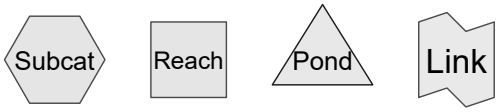
Engineers

Planners

Surveyors

Post-Development Calculations





Routing Diagram for 1935200-Post
Prepared by Civil Consultants, Printed 9/9/2020
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.728	85	1/8 acre lots, 65% imp, HSG B (20S)
4.605	49	50-75% Grass cover, Fair, HSG A (10S, 20S)
0.138	69	50-75% Grass cover, Fair, HSG B (10S)
0.319	84	50-75% Grass cover, Fair, HSG D (10S)
0.800	74	>75% Grass cover, Good, HSG C (20S, 21S)
25.571	80	>75% Grass cover, Good, HSG D (20S, 21S, 22S, 23S)
0.459	98	Paved parking, HSG A (10S)
0.321	98	Paved parking, HSG B (10S)
0.624	98	Paved parking, HSG C (21S)
4.183	98	Paved parking, HSG D (10S, 21S, 22S, 23S)
1.928	83	Paved roads w/open ditches, 50% imp, HSG A (10S)
0.142	89	Paved roads w/open ditches, 50% imp, HSG B (10S)
2.912	93	Paved roads w/open ditches, 50% imp, HSG D (10S, 20S)
0.230	98	Roofs, HSG A (20S)
3.673	36	Woods, Fair, HSG A (10S, 20S)
2.779	73	Woods, Fair, HSG C (20S, 21S)
21.686	79	Woods, Fair, HSG D (20S, 21S)
4.913	82	Woods/grass comb., Fair, HSG D (10S)
76.011	**78**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
10.895	HSG A	10S, 20S
1.329	HSG B	10S, 20S
4.203	HSG C	20S, 21S
59.584	HSG D	10S, 20S, 21S, 22S, 23S
0.000	Other	
76.011		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchr Numbers
0.000	0.728	0.000	0.000	0.000	0.728	1/8 acre lots, 65% imp	
4.605	0.138	0.000	0.319	0.000	5.062	50-75% Grass cover, Fair	
0.000	0.000	0.800	25.571	0.000	26.371	>75% Grass cover, Good	
0.459	0.321	0.624	4.183	0.000	5.587	Paved parking	
1.928	0.142	0.000	2.912	0.000	4.982	Paved roads w/open ditches, 50% imp	
0.230	0.000	0.000	0.000	0.000	0.230	Roofs	
3.673	0.000	2.779	21.686	0.000	28.138	Woods, Fair	
0.000	0.000	0.000	4.913	0.000	4.913	Woods/grass comb., Fair	
10.895	**1.329**	**4.203**	**59.584**	**0.000**	**76.011**	**TOTAL AREA**	

Time span=0.00-84.00 hrs, dt=0.01 hrs, 8401 points x 4
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10S: North of site Runoff Area=11.537 ac 21.65% Impervious Runoff Depth=1.22"
Flow Length=265' Slope=0.0100 '/' Tc=28.5 min CN=76 Runoff=9.24 cfs 1.175 af

Subcatchment 20S: Area of development Runoff Area=58.735 ac 3.06% Impervious Runoff Depth=1.22"
Flow Length=1,665' Tc=41.0 min CN=76 Runoff=39.56 cfs 5.982 af

Subcatchment 21S: North portion to pond Runoff Area=1.718 ac 60.65% Impervious Runoff Depth=2.26"
Flow Length=535' Tc=14.3 min CN=90 Runoff=3.48 cfs 0.324 af

Subcatchment 22S: Majority of Runoff Area=2.862 ac 86.37% Impervious Runoff Depth=2.85"
Flow Length=734' Tc=3.7 min CN=96 Runoff=9.64 cfs 0.679 af

Subcatchment 23S: Corner of site to filter Runoff Area=1.159 ac 83.87% Impervious Runoff Depth=2.74"
Flow Length=735' Tc=3.5 min CN=95 Runoff=3.85 cfs 0.265 af

Reach 10R: Stream Avg. Flow Depth=0.30' Max Vel=2.56 fps Inflow=9.07 cfs 1.499 af
n=0.030 L=700.0' S=0.0164 '/' Capacity=81.74 cfs Outflow=8.90 cfs 1.499 af

Reach 21R: Stream Avg. Flow Depth=0.30' Max Vel=2.53 fps Inflow=9.24 cfs 1.175 af
n=0.030 L=900.0' S=0.0158 '/' Capacity=80.25 cfs Outflow=8.94 cfs 1.175 af

Reach 22R: Flow to wetland Avg. Flow Depth=0.08' Max Vel=1.25 fps Inflow=5.14 cfs 0.942 af
n=0.030 L=535.0' S=0.0224 '/' Capacity=135.24 cfs Outflow=4.08 cfs 0.942 af

Reach OUT 1: Summation node Inflow=50.85 cfs 8.422 af
Outflow=50.85 cfs 8.422 af

Pond 21P: Wet pond Peak Elev=130.99' Storage=34,535 cf Inflow=3.48 cfs 0.324 af
Primary=0.30 cfs 0.324 af Secondary=0.00 cfs 0.000 af Outflow=0.30 cfs 0.324 af

Pond 22P: Wet pond Peak Elev=119.77' Storage=49,318 cf Inflow=9.64 cfs 0.679 af
Primary=3.03 cfs 0.641 af Secondary=1.92 cfs 0.036 af Outflow=4.95 cfs 0.677 af

Pond 23P: Filter 23 Peak Elev=119.82' Storage=5,839 cf Inflow=3.85 cfs 0.265 af
Primary=0.20 cfs 0.265 af Secondary=0.00 cfs 0.000 af Outflow=0.20 cfs 0.265 af

Total Runoff Area = 76.011 ac Runoff Volume = 8.425 af Average Runoff Depth = 1.33"
88.45% Pervious = 67.230 ac 11.55% Impervious = 8.781 ac

Time span=0.00-84.00 hrs, dt=0.01 hrs, 8401 points x 4
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10S: North of site Runoff Area=11.537 ac 21.65% Impervious Runoff Depth=2.45"
Flow Length=265' Slope=0.0100 '/' Tc=28.5 min CN=76 Runoff=19.13 cfs 2.359 af

Subcatchment 20S: Area of development Runoff Area=58.735 ac 3.06% Impervious Runoff Depth=2.45"
Flow Length=1,665' Tc=41.0 min CN=76 Runoff=81.78 cfs 12.008 af

Subcatchment 21S: North portion to pond Runoff Area=1.718 ac 60.65% Impervious Runoff Depth=3.78"
Flow Length=535' Tc=14.3 min CN=90 Runoff=5.70 cfs 0.541 af

Subcatchment 22S: Majority of Runoff Area=2.862 ac 86.37% Impervious Runoff Depth=4.43"
Flow Length=734' Tc=3.7 min CN=96 Runoff=14.64 cfs 1.057 af

Subcatchment 23S: Corner of site to filter Runoff Area=1.159 ac 83.87% Impervious Runoff Depth=4.32"
Flow Length=735' Tc=3.5 min CN=95 Runoff=5.90 cfs 0.417 af

Reach 10R: Stream Avg. Flow Depth=0.48' Max Vel=3.39 fps Inflow=21.28 cfs 2.900 af
n=0.030 L=700.0' S=0.0164 '/' Capacity=81.74 cfs Outflow=21.01 cfs 2.900 af

Reach 21R: Stream Avg. Flow Depth=0.46' Max Vel=3.23 fps Inflow=19.13 cfs 2.359 af
n=0.030 L=900.0' S=0.0158 '/' Capacity=80.25 cfs Outflow=18.73 cfs 2.359 af

Reach 22R: Flow to wetland Avg. Flow Depth=0.15' Max Vel=1.72 fps Inflow=13.19 cfs 1.472 af
n=0.030 L=535.0' S=0.0224 '/' Capacity=135.24 cfs Outflow=11.37 cfs 1.472 af

Reach OUT 1: Summation node Inflow=107.43 cfs 16.380 af
Outflow=107.43 cfs 16.380 af

Pond 21P: Wet pond Peak Elev=131.19' Storage=36,563 cf Inflow=5.70 cfs 0.541 af
Primary=2.58 cfs 0.541 af Secondary=0.00 cfs 0.000 af Outflow=2.58 cfs 0.541 af

Pond 22P: Wet pond Peak Elev=119.88' Storage=50,689 cf Inflow=14.64 cfs 1.057 af
Primary=5.00 cfs 0.878 af Secondary=7.99 cfs 0.177 af Outflow=12.99 cfs 1.055 af

Pond 23P: Filter 23 Peak Elev=120.20' Storage=7,349 cf Inflow=5.90 cfs 0.417 af
Primary=2.00 cfs 0.417 af Secondary=0.00 cfs 0.000 af Outflow=2.00 cfs 0.417 af

Total Runoff Area = 76.011 ac Runoff Volume = 16.383 af Average Runoff Depth = 2.59"
88.45% Pervious = 67.230 ac 11.55% Impervious = 8.781 ac

Time span=0.00-84.00 hrs, dt=0.01 hrs, 8401 points x 4
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10S: North of site Runoff Area=11.537 ac 21.65% Impervious Runoff Depth=3.55"
Flow Length=265' Slope=0.0100 '/' Tc=28.5 min CN=76 Runoff=27.84 cfs 3.416 af

Subcatchment 20S: Area of development Runoff Area=58.735 ac 3.06% Impervious Runoff Depth=3.55"
Flow Length=1,665' Tc=41.0 min CN=76 Runoff=118.89 cfs 17.392 af

Subcatchment 21S: North portion to pond Runoff Area=1.718 ac 60.65% Impervious Runoff Depth=5.04"
Flow Length=535' Tc=14.3 min CN=90 Runoff=7.50 cfs 0.722 af

Subcatchment 22S: Majority of Runoff Area=2.862 ac 86.37% Impervious Runoff Depth=5.73"
Flow Length=734' Tc=3.7 min CN=96 Runoff=18.67 cfs 1.366 af

Subcatchment 23S: Corner of site to filter Runoff Area=1.159 ac 83.87% Impervious Runoff Depth=5.61"
Flow Length=735' Tc=3.5 min CN=95 Runoff=7.56 cfs 0.542 af

Reach 10R: Stream Avg. Flow Depth=0.60' Max Vel=3.86 fps Inflow=32.05 cfs 4.138 af
n=0.030 L=700.0' S=0.0164 '/' Capacity=81.74 cfs Outflow=31.74 cfs 4.138 af

Reach 21R: Stream Avg. Flow Depth=0.56' Max Vel=3.64 fps Inflow=27.84 cfs 3.416 af
n=0.030 L=900.0' S=0.0158 '/' Capacity=80.25 cfs Outflow=27.33 cfs 3.416 af

Reach 22R: Flow to wetland Avg. Flow Depth=0.19' Max Vel=1.97 fps Inflow=21.26 cfs 1.905 af
n=0.030 L=535.0' S=0.0224 '/' Capacity=135.24 cfs Outflow=18.42 cfs 1.905 af

Reach OUT 1: Summation node Inflow=156.03 cfs 23.435 af
Outflow=156.03 cfs 23.435 af

Pond 21P: Wet pond Peak Elev=131.31' Storage=37,810 cf Inflow=7.50 cfs 0.722 af
Primary=4.60 cfs 0.712 af Secondary=0.56 cfs 0.009 af Outflow=5.16 cfs 0.722 af

Pond 22P: Wet pond Peak Elev=119.93' Storage=51,226 cf Inflow=18.67 cfs 1.366 af
Primary=5.85 cfs 1.077 af Secondary=11.03 cfs 0.287 af Outflow=16.87 cfs 1.363 af

Pond 23P: Filter 23 Peak Elev=120.37' Storage=8,089 cf Inflow=7.56 cfs 0.542 af
Primary=4.87 cfs 0.542 af Secondary=0.07 cfs 0.000 af Outflow=4.94 cfs 0.542 af

Total Runoff Area = 76.011 ac Runoff Volume = 23.438 af Average Runoff Depth = 3.70"
88.45% Pervious = 67.230 ac 11.55% Impervious = 8.781 ac

Summary for Subcatchment 10S: North of site

Runoff = 27.84 cfs @ 12.39 hrs, Volume= 3.416 af, Depth= 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
1.928	83	Paved roads w/open ditches, 50% imp, HSG A
2.043	36	Woods, Fair, HSG A
0.459	98	Paved parking, HSG A
0.230	49	50-75% Grass cover, Fair, HSG A
0.723	93	Paved roads w/open ditches, 50% imp, HSG D
4.913	82	Woods/grass comb., Fair, HSG D
0.319	84	50-75% Grass cover, Fair, HSG D
0.321	98	Paved parking, HSG B
0.321	98	Paved parking, HSG D
0.142	89	Paved roads w/open ditches, 50% imp, HSG B
0.138	69	50-75% Grass cover, Fair, HSG B
11.537	76	Weighted Average
9.040		78.35% Pervious Area
2.497		21.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	75	0.0100	0.06		**Sheet Flow, 1.1** Woods: Light underbrush n= 0.400 P2= 3.30"
6.3	190	0.0100	0.50		**Shallow Concentrated Flow, 1.2** Woodland Kv= 5.0 fps
28.5	265	Total			

Summary for Subcatchment 20S: Area of development and stream watershed

Runoff = 118.89 cfs @ 12.57 hrs, Volume= 17.392 af, Depth= 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
1.630	36	Woods, Fair, HSG A
4.375	49	50-75% Grass cover, Fair, HSG A
0.230	98	Roofs, HSG A
2.189	93	Paved roads w/open ditches, 50% imp, HSG D
0.728	85	1/8 acre lots, 65% imp, HSG B
2.670	73	Woods, Fair, HSG C
0.637	74	>75% Grass cover, Good, HSG C
24.710	80	>75% Grass cover, Good, HSG D
21.566	79	Woods, Fair, HSG D
58.735	76	Weighted Average
56.937		96.94% Pervious Area
1.798		3.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0100	0.06		**Sheet Flow, 20.1** Woods: Light underbrush n= 0.400 P2= 3.30"
5.2	170	0.0120	0.55		**Shallow Concentrated Flow, 20.2** Woodland Kv= 5.0 fps
2.0	130	0.0460	1.07		**Shallow Concentrated Flow, 20.3** Woodland Kv= 5.0 fps
2.0	115	0.0350	0.94		**Shallow Concentrated Flow, 20.4** Woodland Kv= 5.0 fps
3.9	1,150	0.0150	4.88	78.11	**Trap/Vee/Rect Channel Flow, 20.5** Bot.W=10.00' D=1.00' Z= 6.0 '/' Top.W=22.00' n= 0.030 Stream, clean & straight
41.0	1,665	Total			

Summary for Subcatchment 21S: North portion to pond

Runoff = 7.50 cfs @ 12.19 hrs, Volume= 0.722 af, Depth= 5.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.624	98	Paved parking, HSG C
0.163	74	>75% Grass cover, Good, HSG C
0.109	73	Woods, Fair, HSG C
0.284	80	>75% Grass cover, Good, HSG D
0.120	79	Woods, Fair, HSG D
0.418	98	Paved parking, HSG D
1.718	90	Weighted Average
0.676		39.35% Pervious Area
1.042		60.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	50	0.0100	0.08		**Sheet Flow, 21.1** Grass: Dense n= 0.240 P2= 3.30"
1.2	50	0.0100	0.70		**Shallow Concentrated Flow, 21.2** Short Grass Pasture Kv= 7.0 fps
1.1	135	0.0100	2.03		**Shallow Concentrated Flow, 21.3** Paved Kv= 20.3 fps
1.4	300	0.0060	3.51	2.76	**Pipe Channel, 21.4** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
14.3	535	Total			

Summary for Subcatchment 22S: Majority of development

Runoff = 18.67 cfs @ 12.05 hrs, Volume= 1.366 af, Depth= 5.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
2.472	98	Paved parking, HSG D
0.390	80	>75% Grass cover, Good, HSG D
2.862	96	Weighted Average
0.390		13.63% Pervious Area
2.472		86.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.0150	1.08		**Sheet Flow, 22.1** Smooth surfaces n= 0.011 P2= 3.30"
0.5	75	0.0150	2.49		**Shallow Concentrated Flow, 22.2** Paved Kv= 20.3 fps
2.4	609	0.0090	4.30	3.38	**Pipe Channel, 22.3** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
3.7	734	Total			

Summary for Subcatchment 23S: Corner of site to filter

Runoff = 7.56 cfs @ 12.05 hrs, Volume= 0.542 af, Depth= 5.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.187	80	>75% Grass cover, Good, HSG D
0.972	98	Paved parking, HSG D
1.159	95	Weighted Average
0.187		16.13% Pervious Area
0.972		83.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0200	1.22		**Sheet Flow, 23.1** Smooth surfaces n= 0.011 P2= 3.30"
0.4	75	0.0200	2.87		**Shallow Concentrated Flow, 23.2** Paved Kv= 20.3 fps
2.4	610	0.0090	4.30	3.38	**Pipe Channel, 23.3** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
3.5	735	Total			

Summary for Reach 10R: Stream

[61] Hint: Exceeded Reach 21R outlet invert by 0.35' @ 12.47 hrs

Inflow Area = 13.255 ac, 26.70% Impervious, Inflow Depth = 3.75" for 25-year event
Inflow = 32.05 cfs @ 12.43 hrs, Volume= 4.138 af
Outflow = 31.74 cfs @ 12.47 hrs, Volume= 4.138 af, Atten= 1%, Lag= 2.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs / 4
Max. Velocity= 3.86 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 0.57 fps, Avg. Travel Time= 20.4 min

Peak Storage= 5,756 cf @ 12.47 hrs
Average Depth at Peak Storage= 0.60'
Bank-Full Depth= 1.00' Flow Area= 16.0 sf, Capacity= 81.74 cfs

10.00' x 1.00' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 6.0 '/' Top Width= 22.00'
Length= 700.0' Slope= 0.0164 '/'
Inlet Invert= 119.50', Outlet Invert= 108.00'

‡

Summary for Reach 21R: Stream

Inflow Area = 11.537 ac, 21.65% Impervious, Inflow Depth = 3.55" for 25-year event
Inflow = 27.84 cfs @ 12.39 hrs, Volume= 3.416 af
Outflow = 27.33 cfs @ 12.45 hrs, Volume= 3.416 af, Atten= 2%, Lag= 3.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs / 4
Max. Velocity= 3.64 fps, Min. Travel Time= 4.1 min
Avg. Velocity = 1.02 fps, Avg. Travel Time= 14.8 min

Peak Storage= 6,759 cf @ 12.45 hrs
Average Depth at Peak Storage= 0.56'
Bank-Full Depth= 1.00' Flow Area= 16.0 sf, Capacity= 80.25 cfs

10.00' x 1.00' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 6.0 '/' Top Width= 22.00'
Length= 900.0' Slope= 0.0158 '/'
Inlet Invert= 134.00', Outlet Invert= 119.75'

‡

Summary for Reach 22R: Flow to wetland

Inflow Area = 4.021 ac, 85.65% Impervious, Inflow Depth > 5.69" for 25-year event
Inflow = 21.26 cfs @ 12.10 hrs, Volume= 1.905 af
Outflow = 18.42 cfs @ 12.14 hrs, Volume= 1.905 af, Atten= 13%, Lag= 2.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs / 4
Max. Velocity= 1.97 fps, Min. Travel Time= 4.5 min
Avg. Velocity = 0.36 fps, Avg. Travel Time= 25.0 min

Peak Storage= 4,995 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 0.50' Flow Area= 40.0 sf, Capacity= 135.24 cfs

30.00' x 0.50' deep channel, n= 0.030 Short grass
Side Slope Z-value= 100.0 '/' Top Width= 130.00'
Length= 535.0' Slope= 0.0224 '/'
Inlet Invert= 115.50', Outlet Invert= 103.50'

‡

Summary for Reach OUT 1: Summation node

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

Inflow Area = 76.011 ac, 11.55% Impervious, Inflow Depth = 3.70" for 25-year event
Inflow = 156.03 cfs @ 12.53 hrs, Volume= 23.435 af
Outflow = 156.03 cfs @ 12.53 hrs, Volume= 23.435 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs / 4

Summary for Pond 21P: Wet pond

Inflow Area = 1.718 ac, 60.65% Impervious, Inflow Depth = 5.04" for 25-year event
Inflow = 7.50 cfs @ 12.19 hrs, Volume= 0.722 af
Outflow = 5.16 cfs @ 12.35 hrs, Volume= 0.722 af, Atten= 31%, Lag= 9.5 min
Primary = 4.60 cfs @ 12.35 hrs, Volume= 0.712 af
Secondary = 0.56 cfs @ 12.35 hrs, Volume= 0.009 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs / 4
Starting Elev= 130.00' Surf.Area= 7,476 sf Storage= 26,024 cf
Peak Elev= 131.31' @ 12.35 hrs Surf.Area= 10,597 sf Storage= 37,810 cf (11,787 cf above start)

Plug-Flow detention time= 1,630.0 min calculated for 0.124 af (17% of inflow)
Center-of-Mass det. time= 361.3 min (1,152.7 - 791.4)

Volume	Invert	Avail.Storage	Storage Description
#1	123.00'	45,745 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
123.00	1,169	0	0	1,169
124.00	1,758	1,454	1,454	1,773
126.00	3,104	4,799	6,252	3,163
128.00	4,677	7,727	13,980	4,796
130.00	7,476	12,044	26,024	7,649
132.00	12,456	19,721	45,745	12,678

Device	Routing	Invert	Outlet Devices
#1	Primary	127.50'	**18.0" Round Culvert** L= 105.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 127.50' / 126.92' S= 0.0055 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	127.50'	**6.0" Round Culvert (6" underdrain)** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 127.50' / 127.50' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf
#3	Device 2	127.50'	**1.7" Vert. Orifice/Grate (flow control at underdrain)** C= 0.600
#4	Device 3	130.00'	**6.000 in/hr Exfiltration (Trench drain) over Horizontal area above 130.00'** Excluded Horizontal area = 7,476 sf
#5	Device 1	130.95'	**24.0" Horiz. Beehive Grate** C= 0.600 Limited to weir flow at low heads
#6	Secondary	131.25'	**15.0' long x 10.0' breadth Broad-Crested Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=4.60 cfs @ 12.35 hrs HW=131.31' TW=120.06' (Dynamic Tailwater)
- **1=Culvert** (Passes 4.60 cfs of 11.75 cfs potential flow)
  - **2=Culvert (6" underdrain)** (Passes 0.15 cfs of 1.41 cfs potential flow)
    - **3=Orifice/Grate (flow control at underdrain)** (Orifice Controls 0.15 cfs @ 9.31 fps)
      - **4=Exfiltration (Trench drain)** (Passes 0.15 cfs of 0.43 cfs potential flow)
  - **5=Beehive Grate** (Weir Controls 4.45 cfs @ 1.96 fps)

Secondary OutFlow Max=0.56 cfs @ 12.35 hrs HW=131.31' TW=120.06' (Dynamic Tailwater)
- **6=Broad-Crested Weir** (Weir Controls 0.56 cfs @ 0.61 fps)

Summary for Pond 22P: Wet pond

Inflow Area = 2.862 ac, 86.37% Impervious, Inflow Depth = 5.73" for 25-year event
Inflow = 18.67 cfs @ 12.05 hrs, Volume= 1.366 af
Outflow = 16.87 cfs @ 12.08 hrs, Volume= 1.363 af, Atten= 10%, Lag= 1.9 min
Primary = 5.85 cfs @ 12.08 hrs, Volume= 1.077 af
Secondary = 11.03 cfs @ 12.08 hrs, Volume= 0.287 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs / 4
Starting Elev= 118.60' Surf.Area= 10,229 sf Storage= 36,226 cf
Peak Elev= 119.93' @ 12.08 hrs Surf.Area= 12,442 sf Storage= 51,226 cf (15,000 cf above start)

Plug-Flow detention time= 968.7 min calculated for 0.532 af (39% of inflow)
Center-of-Mass det. time= 303.6 min (1,059.0 - 755.4)

Volume	Invert	Avail.Storage	Storage Description
#1	113.00'	65,720 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
113.00	3,133	0	0	3,133
114.00	4,250	3,677	3,677	4,270
116.00	6,654	10,815	14,492	6,730
118.00	9,298	15,878	30,370	9,448
120.00	12,573	21,789	52,159	12,806
121.00	14,574	13,561	65,720	14,849

Device	Routing	Invert	Outlet Devices
#1	Primary	116.10'	**18.0" Round Culvert** L= 63.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 116.10' / 115.60' S= 0.0079 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	116.10'	**6.0" Round Culvert (6" underdrain)** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 116.10' / 116.10' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf
#3	Device 2	116.10'	**1.7" Vert. Orifice/Grate (flow control at underdrain)** C= 0.600
#4	Device 3	118.60'	**6.000 in/hr Exfiltration (Trench drain) over Horizontal area above 118.60'** Excluded Horizontal area = 10,229 sf
#5	Device 1	119.50'	**24.0" Horiz. Beehive Grate** C= 0.600 Limited to weir flow at low heads
#6	Secondary	119.70'	**40.0' long x 12.0' breadth Broad-Crested Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=5.84 cfs @ 12.08 hrs HW=119.93' TW=115.67' (Dynamic Tailwater)
└─**1=Culvert** (Passes 5.84 cfs of 11.78 cfs potential flow)
  └─**2=Culvert (6" underdrain)** (Passes 0.15 cfs of 1.41 cfs potential flow)
    └─**3=Orifice/Grate (flow control at underdrain)** (Orifice Controls 0.15 cfs @ 9.33 fps)
      └─**4=Exfiltration (Trench drain)** (Passes 0.15 cfs of 0.31 cfs potential flow)
  └─**5=Beehive Grate** (Weir Controls 5.69 cfs @ 2.13 fps)

Secondary OutFlow Max=11.00 cfs @ 12.08 hrs HW=119.93' TW=115.67' (Dynamic Tailwater)
└─**6=Broad-Crested Weir** (Weir Controls 11.00 cfs @ 1.22 fps)

Summary for Pond 23P: Filter 23

Inflow Area =	1.159 ac,	83.87% Impervious,	Inflow Depth =	5.61"	for 25-year event
Inflow =	7.56 cfs @	12.05 hrs,	Volume=	0.542 af	
Outflow =	4.94 cfs @	12.12 hrs,	Volume=	0.542 af,	Atten= 35%, Lag= 4.4 min
Primary =	4.87 cfs @	12.12 hrs,	Volume=	0.542 af	
Secondary =	0.07 cfs @	12.12 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 120.37' @ 12.12 hrs Surf.Area= 11,105 sf Storage= 8,089 cf
Flood Elev= 121.00' Surf.Area= 11,613 sf Storage= 10,953 cf

Plug-Flow detention time= 226.4 min calculated for 0.542 af (100% of inflow)
Center-of-Mass det. time= 226.5 min (987.0 - 760.5)

Volume	Invert	Avail.Storage	Storage Description
#1	116.92'	2,072 cf	**90.00'W x 37.00'L x 1.83'H Prismatoid - FILTER Z=0.3** 6,222 cf Overall x 33.3% Voids
#2	116.30'	333 cf	**90.00'W x 37.00'L x 1.00'H Prismatoid - GRAVEL** 3,330 cf Overall x 10.0% Voids
#3	118.75'	8,548 cf	**Ponding over filter surface (Conic)** Listed below (Recalc)
		10,953 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
118.75	2,816	0	0	2,816
119.00	2,985	725	725	2,992
119.50	3,333	1,579	2,304	3,354
120.00	4,020	1,836	4,139	4,049
120.50	4,405	2,106	6,245	4,451
121.00	4,812	2,304	8,548	4,875

Device	Routing	Invert	Outlet Devices
#1	Primary	116.00'	**15.0" Round Culvert - outlet** L= 32.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 116.00' / 115.80' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 6	116.30'	**8.0" Round Culvert-collector X 2.00** L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 116.30' / 116.00' S= 0.0046 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf

#3	Device 2	116.30'	**6.000 in/hr Exfiltration over Surface area**
#4	Secondary	120.35'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#5	Device 1	120.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Device 1	116.00'	**2.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=4.86 cfs @ 12.12 hrs HW=120.37' TW=115.69' (Dynamic Tailwater)
└─**1=Culvert - outlet** (Passes 4.86 cfs of 9.03 cfs potential flow)
  ├─**5=Orifice/Grate** (Weir Controls 4.64 cfs @ 1.99 fps)
  └─**6=Orifice/Grate** (Orifice Controls 0.22 cfs @ 9.97 fps)
    └─**2=Culvert-collector** (Passes 0.22 cfs of 5.13 cfs potential flow)
      └─**3=Exfiltration** (Passes 0.22 cfs of 1.54 cfs potential flow)

Secondary OutFlow Max=0.07 cfs @ 12.12 hrs HW=120.37' TW=115.69' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 0.07 cfs @ 0.34 fps)

CIVIL
CONSULTANTS

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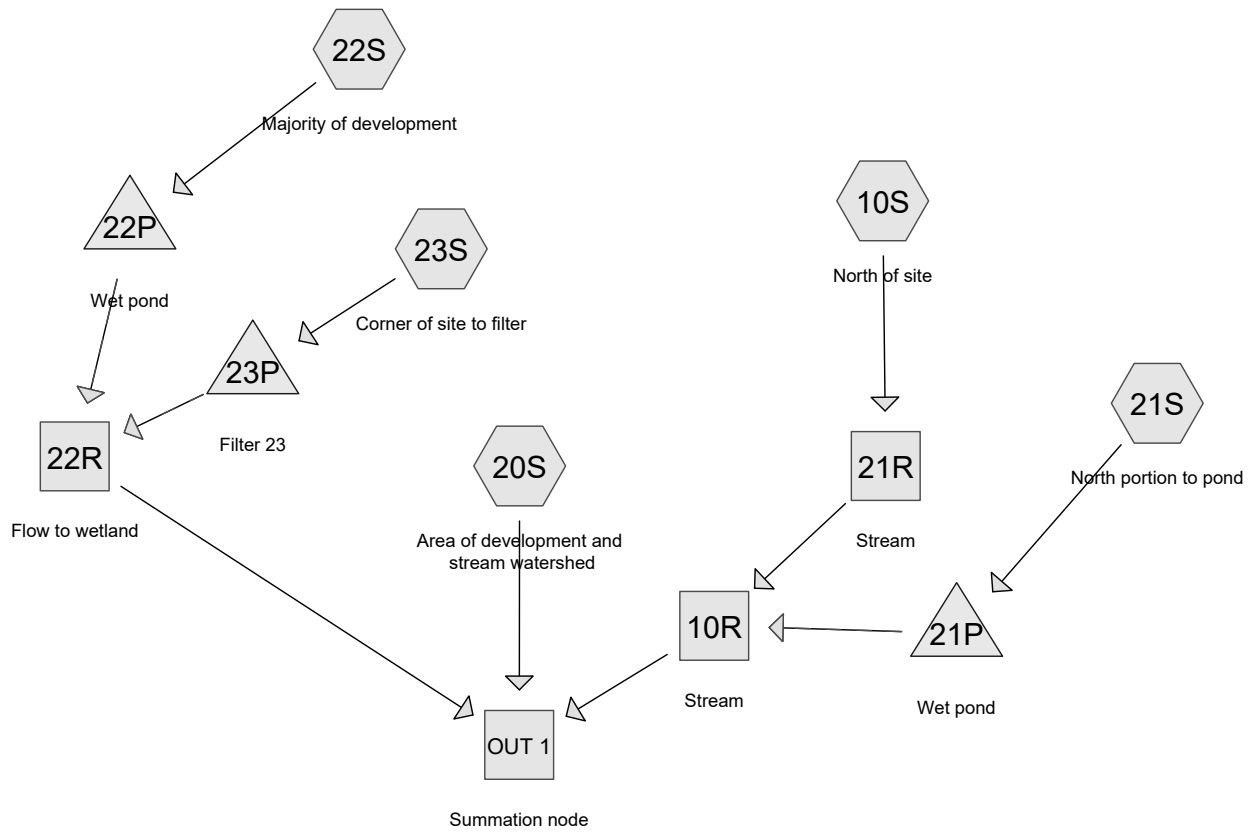
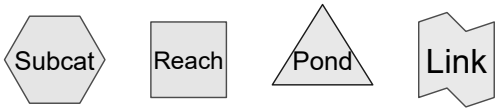
Surveyors

Pond Overflow Calculations





Routing Diagram for 1935200-Post_overflow
Prepared by Civil Consultants, Printed 9/9/2020
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.728	85	1/8 acre lots, 65% imp, HSG B (20S)
4.605	49	50-75% Grass cover, Fair, HSG A (10S, 20S)
0.138	69	50-75% Grass cover, Fair, HSG B (10S)
0.319	84	50-75% Grass cover, Fair, HSG D (10S)
0.800	74	>75% Grass cover, Good, HSG C (20S, 21S)
25.571	80	>75% Grass cover, Good, HSG D (20S, 21S, 22S, 23S)
0.459	98	Paved parking, HSG A (10S)
0.321	98	Paved parking, HSG B (10S)
0.624	98	Paved parking, HSG C (21S)
4.183	98	Paved parking, HSG D (10S, 21S, 22S, 23S)
1.928	83	Paved roads w/open ditches, 50% imp, HSG A (10S)
0.142	89	Paved roads w/open ditches, 50% imp, HSG B (10S)
2.912	93	Paved roads w/open ditches, 50% imp, HSG D (10S, 20S)
0.230	98	Roofs, HSG A (20S)
3.673	36	Woods, Fair, HSG A (10S, 20S)
2.779	73	Woods, Fair, HSG C (20S, 21S)
21.686	79	Woods, Fair, HSG D (20S, 21S)
4.913	82	Woods/grass comb., Fair, HSG D (10S)
76.011	**78**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
10.895	HSG A	10S, 20S
1.329	HSG B	10S, 20S
4.203	HSG C	20S, 21S
59.584	HSG D	10S, 20S, 21S, 22S, 23S
0.000	Other	
76.011		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchr Numbers
0.000	0.728	0.000	0.000	0.000	0.728	1/8 acre lots, 65% imp	
4.605	0.138	0.000	0.319	0.000	5.062	50-75% Grass cover, Fair	
0.000	0.000	0.800	25.571	0.000	26.371	>75% Grass cover, Good	
0.459	0.321	0.624	4.183	0.000	5.587	Paved parking	
1.928	0.142	0.000	2.912	0.000	4.982	Paved roads w/open ditches, 50% imp	
0.230	0.000	0.000	0.000	0.000	0.230	Roofs	
3.673	0.000	2.779	21.686	0.000	28.138	Woods, Fair	
0.000	0.000	0.000	4.913	0.000	4.913	Woods/grass comb., Fair	
10.895	**1.329**	**4.203**	**59.584**	**0.000**	**76.011**	**TOTAL AREA**	

Time span=0.00-84.00 hrs, dt=0.01 hrs, 8401 points x 4
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10S: North of site Runoff Area=11.537 ac 21.65% Impervious Runoff Depth=3.55"
Flow Length=265' Slope=0.0100 '/' Tc=28.5 min CN=76 Runoff=27.84 cfs 3.416 af

Subcatchment 20S: Area of development Runoff Area=58.735 ac 3.06% Impervious Runoff Depth=3.55"
Flow Length=1,665' Tc=41.0 min CN=76 Runoff=118.89 cfs 17.392 af

Subcatchment 21S: North portion to pond Runoff Area=1.718 ac 60.65% Impervious Runoff Depth=5.04"
Flow Length=535' Tc=14.3 min CN=90 Runoff=7.50 cfs 0.722 af

Subcatchment 22S: Majority of Runoff Area=2.862 ac 86.37% Impervious Runoff Depth=5.73"
Flow Length=734' Tc=3.7 min CN=96 Runoff=18.67 cfs 1.366 af

Subcatchment 23S: Corner of site to filter Runoff Area=1.159 ac 83.87% Impervious Runoff Depth=5.61"
Flow Length=735' Tc=3.5 min CN=95 Runoff=7.56 cfs 0.542 af

Reach 10R: Stream Avg. Flow Depth=0.60' Max Vel=3.86 fps Inflow=31.94 cfs 3.882 af
n=0.030 L=700.0' S=0.0164 '/' Capacity=81.74 cfs Outflow=31.62 cfs 3.882 af

Reach 21R: Stream Avg. Flow Depth=0.56' Max Vel=3.64 fps Inflow=27.84 cfs 3.416 af
n=0.030 L=900.0' S=0.0158 '/' Capacity=80.25 cfs Outflow=27.33 cfs 3.416 af

Reach 22R: Flow to wetland Avg. Flow Depth=0.20' Max Vel=2.02 fps Inflow=22.83 cfs 1.443 af
n=0.030 L=535.0' S=0.0224 '/' Capacity=135.24 cfs Outflow=19.95 cfs 1.443 af

Reach OUT 1: Summation node Inflow=155.97 cfs 22.717 af
Outflow=155.97 cfs 22.717 af

Pond 21P: Wet pond Peak Elev=131.51' Storage=39,924 cf Inflow=7.50 cfs 0.722 af
Outflow=4.87 cfs 0.466 af

Pond 22P: Wet pond Peak Elev=120.00' Storage=52,100 cf Inflow=18.67 cfs 1.366 af
Outflow=16.65 cfs 1.085 af

Pond 23P: Filter 23 Peak Elev=120.75' Storage=9,754 cf Inflow=7.56 cfs 0.542 af
Outflow=6.20 cfs 0.358 af

Total Runoff Area = 76.011 ac Runoff Volume = 23.438 af Average Runoff Depth = 3.70"
88.45% Pervious = 67.230 ac 11.55% Impervious = 8.781 ac

Summary for Subcatchment 10S: North of site

Runoff = 27.84 cfs @ 12.39 hrs, Volume= 3.416 af, Depth= 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
1.928	83	Paved roads w/open ditches, 50% imp, HSG A
2.043	36	Woods, Fair, HSG A
0.459	98	Paved parking, HSG A
0.230	49	50-75% Grass cover, Fair, HSG A
0.723	93	Paved roads w/open ditches, 50% imp, HSG D
4.913	82	Woods/grass comb., Fair, HSG D
0.319	84	50-75% Grass cover, Fair, HSG D
0.321	98	Paved parking, HSG B
0.321	98	Paved parking, HSG D
0.142	89	Paved roads w/open ditches, 50% imp, HSG B
0.138	69	50-75% Grass cover, Fair, HSG B
11.537	76	Weighted Average
9.040		78.35% Pervious Area
2.497		21.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	75	0.0100	0.06		**Sheet Flow, 1.1** Woods: Light underbrush n= 0.400 P2= 3.30"
6.3	190	0.0100	0.50		**Shallow Concentrated Flow, 1.2** Woodland Kv= 5.0 fps
28.5	265	Total			

Summary for Subcatchment 20S: Area of development and stream watershed

Runoff = 118.89 cfs @ 12.57 hrs, Volume= 17.392 af, Depth= 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
1.630	36	Woods, Fair, HSG A
4.375	49	50-75% Grass cover, Fair, HSG A
0.230	98	Roofs, HSG A
2.189	93	Paved roads w/open ditches, 50% imp, HSG D
0.728	85	1/8 acre lots, 65% imp, HSG B
2.670	73	Woods, Fair, HSG C
0.637	74	>75% Grass cover, Good, HSG C
24.710	80	>75% Grass cover, Good, HSG D
21.566	79	Woods, Fair, HSG D
58.735	76	Weighted Average
56.937		96.94% Pervious Area
1.798		3.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0100	0.06		**Sheet Flow, 20.1** Woods: Light underbrush n= 0.400 P2= 3.30"
5.2	170	0.0120	0.55		**Shallow Concentrated Flow, 20.2** Woodland Kv= 5.0 fps
2.0	130	0.0460	1.07		**Shallow Concentrated Flow, 20.3** Woodland Kv= 5.0 fps
2.0	115	0.0350	0.94		**Shallow Concentrated Flow, 20.4** Woodland Kv= 5.0 fps
3.9	1,150	0.0150	4.88	78.11	**Trap/Vee/Rect Channel Flow, 20.5** Bot.W=10.00' D=1.00' Z= 6.0 '/' Top.W=22.00' n= 0.030 Stream, clean & straight
41.0	1,665	Total			

Summary for Subcatchment 21S: North portion to pond

Runoff = 7.50 cfs @ 12.19 hrs, Volume= 0.722 af, Depth= 5.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.624	98	Paved parking, HSG C
0.163	74	>75% Grass cover, Good, HSG C
0.109	73	Woods, Fair, HSG C
0.284	80	>75% Grass cover, Good, HSG D
0.120	79	Woods, Fair, HSG D
0.418	98	Paved parking, HSG D
1.718	90	Weighted Average
0.676		39.35% Pervious Area
1.042		60.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	50	0.0100	0.08		**Sheet Flow, 21.1** Grass: Dense n= 0.240 P2= 3.30"
1.2	50	0.0100	0.70		**Shallow Concentrated Flow, 21.2** Short Grass Pasture Kv= 7.0 fps
1.1	135	0.0100	2.03		**Shallow Concentrated Flow, 21.3** Paved Kv= 20.3 fps
1.4	300	0.0060	3.51	2.76	**Pipe Channel, 21.4** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
14.3	535	Total			

Summary for Subcatchment 22S: Majority of development

Runoff = 18.67 cfs @ 12.05 hrs, Volume= 1.366 af, Depth= 5.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
2.472	98	Paved parking, HSG D
0.390	80	>75% Grass cover, Good, HSG D
2.862	96	Weighted Average
0.390		13.63% Pervious Area
2.472		86.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.0150	1.08		**Sheet Flow, 22.1** Smooth surfaces n= 0.011 P2= 3.30"
0.5	75	0.0150	2.49		**Shallow Concentrated Flow, 22.2** Paved Kv= 20.3 fps
2.4	609	0.0090	4.30	3.38	**Pipe Channel, 22.3** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
3.7	734	Total			

Summary for Subcatchment 23S: Corner of site to filter

Runoff = 7.56 cfs @ 12.05 hrs, Volume= 0.542 af, Depth= 5.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.187	80	>75% Grass cover, Good, HSG D
0.972	98	Paved parking, HSG D
1.159	95	Weighted Average
0.187		16.13% Pervious Area
0.972		83.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0200	1.22		**Sheet Flow, 23.1** Smooth surfaces n= 0.011 P2= 3.30"
0.4	75	0.0200	2.87		**Shallow Concentrated Flow, 23.2** Paved Kv= 20.3 fps
2.4	610	0.0090	4.30	3.38	**Pipe Channel, 23.3** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
3.5	735	Total			

Summary for Reach 10R: Stream

[61] Hint: Exceeded Reach 21R outlet invert by 0.35' @ 12.47 hrs

Inflow Area = 13.255 ac, 26.70% Impervious, Inflow Depth = 3.51" for 25-year event
Inflow = 31.94 cfs @ 12.43 hrs, Volume= 3.882 af
Outflow = 31.62 cfs @ 12.47 hrs, Volume= 3.882 af, Atten= 1%, Lag= 2.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs / 4
Max. Velocity= 3.86 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 0.83 fps, Avg. Travel Time= 14.0 min

Peak Storage= 5,741 cf @ 12.47 hrs
Average Depth at Peak Storage= 0.60'
Bank-Full Depth= 1.00' Flow Area= 16.0 sf, Capacity= 81.74 cfs

10.00' x 1.00' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 6.0 '/' Top Width= 22.00'
Length= 700.0' Slope= 0.0164 '/'
Inlet Invert= 119.50', Outlet Invert= 108.00'

‡

Summary for Reach 21R: Stream

Inflow Area = 11.537 ac, 21.65% Impervious, Inflow Depth = 3.55" for 25-year event
Inflow = 27.84 cfs @ 12.39 hrs, Volume= 3.416 af
Outflow = 27.33 cfs @ 12.45 hrs, Volume= 3.416 af, Atten= 2%, Lag= 3.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs / 4
Max. Velocity= 3.64 fps, Min. Travel Time= 4.1 min
Avg. Velocity = 1.02 fps, Avg. Travel Time= 14.8 min

Peak Storage= 6,759 cf @ 12.45 hrs
Average Depth at Peak Storage= 0.56'
Bank-Full Depth= 1.00' Flow Area= 16.0 sf, Capacity= 80.25 cfs

10.00' x 1.00' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 6.0 '/' Top Width= 22.00'
Length= 900.0' Slope= 0.0158 '/'
Inlet Invert= 134.00', Outlet Invert= 119.75'

‡

Summary for Reach 22R: Flow to wetland

Inflow Area = 4.021 ac, 85.65% Impervious, Inflow Depth = 4.31" for 25-year event
Inflow = 22.83 cfs @ 12.09 hrs, Volume= 1.443 af
Outflow = 19.95 cfs @ 12.14 hrs, Volume= 1.443 af, Atten= 13%, Lag= 2.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs / 4
Max. Velocity= 2.02 fps, Min. Travel Time= 4.4 min
Avg. Velocity = 0.48 fps, Avg. Travel Time= 18.4 min

Peak Storage= 5,289 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 0.50' Flow Area= 40.0 sf, Capacity= 135.24 cfs

30.00' x 0.50' deep channel, n= 0.030 Short grass
Side Slope Z-value= 100.0 '/' Top Width= 130.00'
Length= 535.0' Slope= 0.0224 '/'
Inlet Invert= 115.50', Outlet Invert= 103.50'

‡

Summary for Reach OUT 1: Summation node

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

Inflow Area = 76.011 ac, 11.55% Impervious, Inflow Depth = 3.59" for 25-year event
Inflow = 155.97 cfs @ 12.53 hrs, Volume= 22.717 af
Outflow = 155.97 cfs @ 12.53 hrs, Volume= 22.717 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs / 4

Summary for Pond 21P: Wet pond

Inflow Area = 1.718 ac, 60.65% Impervious, Inflow Depth = 5.04" for 25-year event
Inflow = 7.50 cfs @ 12.19 hrs, Volume= 0.722 af
Outflow = 4.87 cfs @ 12.37 hrs, Volume= 0.466 af, Atten= 35%, Lag= 10.7 min
Secondary = 4.87 cfs @ 12.37 hrs, Volume= 0.466 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs / 4

Starting Elev= 130.00' Surf.Area= 7,476 sf Storage= 26,024 cf
Peak Elev= 131.51' @ 12.37 hrs Surf.Area= 11,107 sf Storage= 39,924 cf (13,900 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 94.1 min (885.4 - 791.4)

Volume	Invert	Avail.Storage	Storage Description
#1	123.00'	45,745 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
123.00	1,169	0	0	1,169
124.00	1,758	1,454	1,454	1,773
126.00	3,104	4,799	6,252	3,163
128.00	4,677	7,727	13,980	4,796
130.00	7,476	12,044	26,024	7,649
132.00	12,456	19,721	45,745	12,678

Device	Routing	Invert	Outlet Devices
#1	Secondary	131.25'	**15.0' long x 10.0' breadth Broad-Crested Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Secondary OutFlow Max=4.86 cfs @ 12.37 hrs HW=131.51' TW=120.07' (Dynamic Tailwater)
└**1=Broad-Crested Weir** (Weir Controls 4.86 cfs @ 1.27 fps)

Summary for Pond 22P: Wet pond

Inflow Area = 2.862 ac, 86.37% Impervious, Inflow Depth = 5.73" for 25-year event
Inflow = 18.67 cfs @ 12.05 hrs, Volume= 1.366 af
Outflow = 16.65 cfs @ 12.09 hrs, Volume= 1.085 af, Atten= 11%, Lag= 2.1 min
Secondary = 16.65 cfs @ 12.09 hrs, Volume= 1.085 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs / 4
Starting Elev= 118.60' Surf.Area= 10,229 sf Storage= 36,226 cf
Peak Elev= 120.00' @ 12.09 hrs Surf.Area= 12,565 sf Storage= 52,100 cf (15,874 cf above start)

Plug-Flow detention time= 587.6 min calculated for 0.253 af (19% of inflow)
Center-of-Mass det. time= 69.0 min (824.4 - 755.4)

Volume	Invert	Avail.Storage	Storage Description
#1	113.00'	65,720 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
113.00	3,133	0	0	3,133
114.00	4,250	3,677	3,677	4,270
116.00	6,654	10,815	14,492	6,730
118.00	9,298	15,878	30,370	9,448
120.00	12,573	21,789	52,159	12,806
121.00	14,574	13,561	65,720	14,849

Device	Routing	Invert	Outlet Devices
#1	Secondary	119.70'	**40.0' long x 12.0' breadth Broad-Crested Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Secondary OutFlow Max=16.63 cfs @ 12.09 hrs HW=120.00' TW=115.68' (Dynamic Tailwater)
└─**1=Broad-Crested Weir** (Weir Controls 16.63 cfs @ 1.41 fps)

Summary for Pond 23P: Filter 23

Inflow Area = 1.159 ac, 83.87% Impervious, Inflow Depth = 5.61" for 25-year event
Inflow = 7.56 cfs @ 12.05 hrs, Volume= 0.542 af
Outflow = 6.20 cfs @ 12.10 hrs, Volume= 0.358 af, Atten= 18%, Lag= 2.8 min
Secondary = 6.20 cfs @ 12.10 hrs, Volume= 0.358 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 120.75' @ 12.10 hrs Surf.Area= 11,403 sf Storage= 9,754 cf
Flood Elev= 121.00' Surf.Area= 11,613 sf Storage= 10,953 cf

Plug-Flow detention time= 190.9 min calculated for 0.358 af (66% of inflow)
Center-of-Mass det. time= 92.8 min (853.3 - 760.5)

Volume	Invert	Avail.Storage	Storage Description
#1	116.92'	2,072 cf	**90.00'W x 37.00'L x 1.83'H Prismatoid - FILTER Z=0.3** 6,222 cf Overall x 33.3% Voids
#2	116.00'	333 cf	**90.00'W x 37.00'L x 1.00'H Prismatoid - GRAVEL** 3,330 cf Overall x 10.0% Voids
#3	118.75'	8,548 cf	**Ponding over filter surface (Conic)** Listed below (Recalc)
		10,953 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
118.75	2,816	0	0	2,816
119.00	2,985	725	725	2,992
119.50	3,333	1,579	2,304	3,354
120.00	4,020	1,836	4,139	4,049
120.50	4,405	2,106	6,245	4,451
121.00	4,812	2,304	8,548	4,875

Device	Routing	Invert	Outlet Devices
#1	Secondary	120.35'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Secondary OutFlow Max=6.19 cfs @ 12.10 hrs HW=120.74' TW=115.69' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 6.19 cfs @ 1.57 fps)

Time span=0.00-84.00 hrs, dt=0.01 hrs, 8401 points x 4
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10S: North of site Runoff Area=11.537 ac 21.65% Impervious Runoff Depth=5.80"
Flow Length=265' Slope=0.0100 '/' Tc=28.5 min CN=76 Runoff=45.22 cfs 5.575 af

Subcatchment 20S: Area of development Runoff Area=58.735 ac 3.06% Impervious Runoff Depth=5.80"
Flow Length=1,665' Tc=41.0 min CN=76 Runoff=193.11 cfs 28.383 af

Subcatchment 21S: North portion to pond Runoff Area=1.718 ac 60.65% Impervious Runoff Depth=7.50"
Flow Length=535' Tc=14.3 min CN=90 Runoff=10.91 cfs 1.073 af

Subcatchment 22S: Majority of Runoff Area=2.862 ac 86.37% Impervious Runoff Depth=8.22"
Flow Length=734' Tc=3.7 min CN=96 Runoff=26.38 cfs 1.960 af

Subcatchment 23S: Corner of site to filter Runoff Area=1.159 ac 83.87% Impervious Runoff Depth=8.10"
Flow Length=735' Tc=3.5 min CN=95 Runoff=10.71 cfs 0.782 af

Reach 10R: Stream Avg. Flow Depth=0.79' Max Vel=4.47 fps Inflow=52.10 cfs 6.392 af
n=0.030 L=700.0' S=0.0164 '/' Capacity=81.74 cfs Outflow=51.74 cfs 6.392 af

Reach 21R: Stream Avg. Flow Depth=0.73' Max Vel=4.22 fps Inflow=45.22 cfs 5.575 af
n=0.030 L=900.0' S=0.0158 '/' Capacity=80.25 cfs Outflow=44.51 cfs 5.575 af

Reach 22R: Flow to wetland Avg. Flow Depth=0.24' Max Vel=2.26 fps Inflow=33.41 cfs 2.278 af
n=0.030 L=535.0' S=0.0224 '/' Capacity=135.24 cfs Outflow=29.92 cfs 2.278 af

Reach OUT 1: Summation node Inflow=251.08 cfs 37.053 af
Outflow=251.08 cfs 37.053 af

Pond 21P: Wet pond Peak Elev=131.64' Storage=41,485 cf Inflow=10.91 cfs 1.073 af
Outflow=9.48 cfs 0.817 af

Pond 22P: Wet pond Peak Elev=120.07' Storage=53,099 cf Inflow=26.38 cfs 1.960 af
Outflow=23.94 cfs 1.679 af

Pond 23P: Filter 23 Peak Elev=120.86' Storage=10,282 cf Inflow=10.71 cfs 0.782 af
Outflow=9.47 cfs 0.599 af

Total Runoff Area = 76.011 ac Runoff Volume = 37.773 af Average Runoff Depth = 5.96"
88.45% Pervious = 67.230 ac 11.55% Impervious = 8.781 ac

CIVIL
CONSULTANTS

Engineers

Planners

Surveyors

APPENDICIES

A – Location & Topographic Plan

B – Soils Information

C – Supplemental Calculations

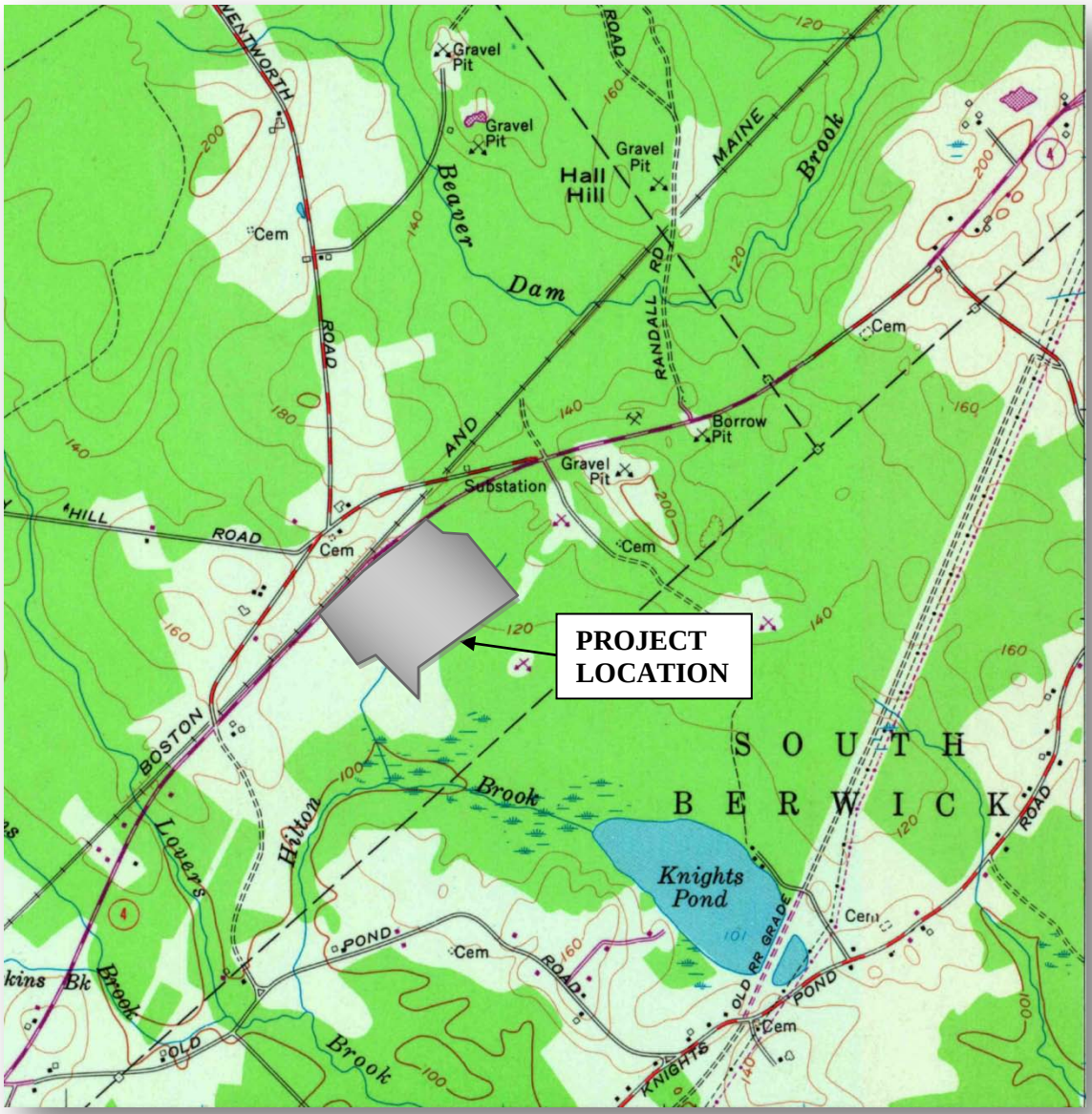
D – Stormwater Maintenance Plan and Inspection Log

E – FIRM Flood Mapping

F – Drainage & Site Plans

APPENDIX A

LOCATION AND TOPOGRAPHIC PLAN



Portion of

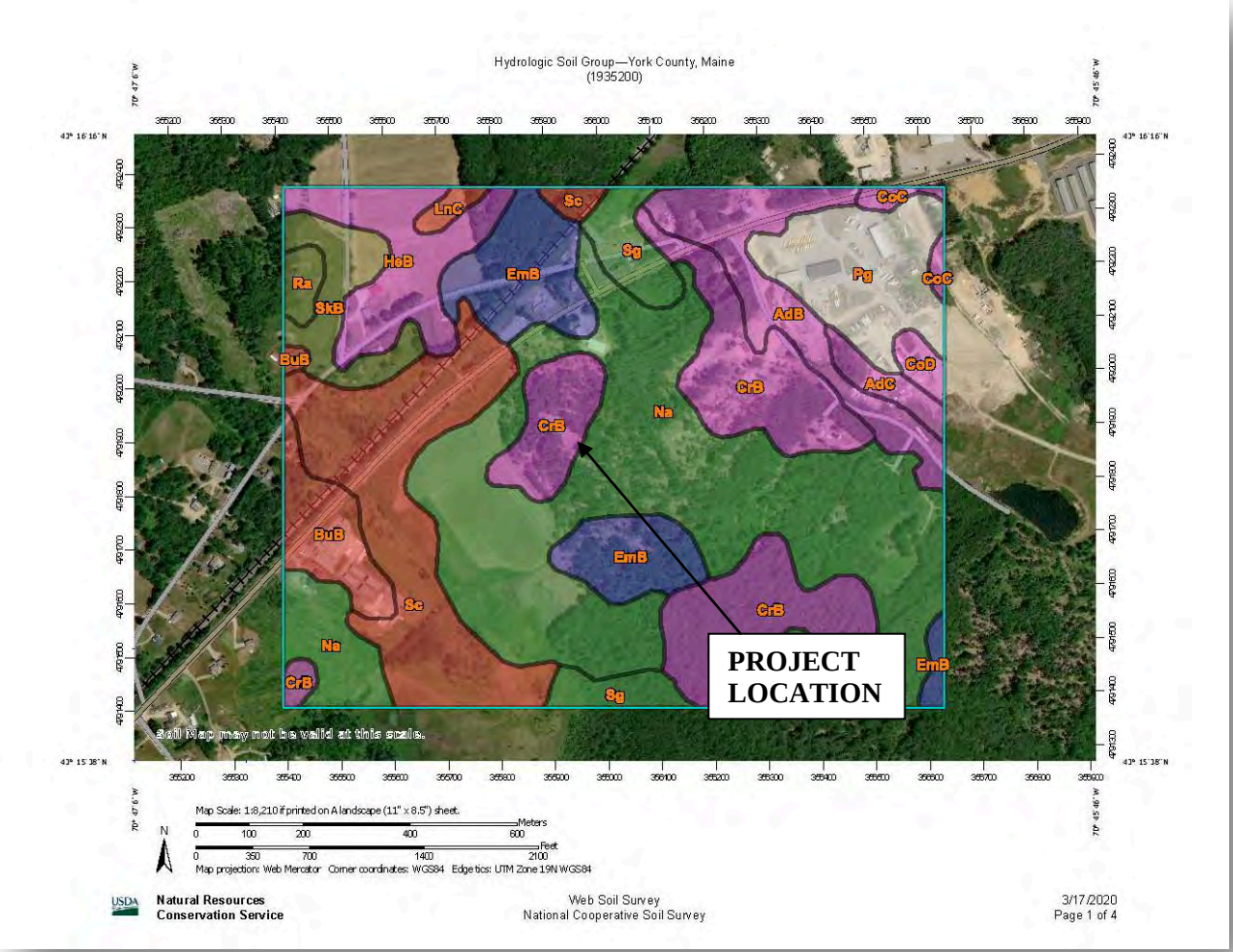
U.S.G.S. Map for Somersworth

NEW HAMPSHIRE

Not To Scale

APPENDIX B

Soil Exploration Results & Medium Intensity Soil Survey Plan



Portions of

USDA Soil Conservation Service – WEB SOIL SURVEY
YORK COUNTY, MAINE

Hydrologic Soil Group—York County, Maine
(1935200)

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 16, Sep 16, 2019

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

Date(s) aerial images were photographed: 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.

Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

3/17/2020
Page 2 of 4

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AdB	Adams loamy sand, 0 to 8 percent slopes	A	17.0	5.7%
AdC	Adams loamy sand, 8 to 15 percent slopes	A	3.4	1.1%
BuB	Buxton silt loam, 3 to 8 percent slopes	D	9.6	3.2%
CoC	Colton gravelly sandy loam, 8 to 15 percent slopes	A	1.9	0.6%
CoD	Colton gravelly sandy loam, 15 to 25 percent slopes	A	2.0	0.7%
CrB	Croghan loamy sand, 0 to 8 percent slopes	A	46.2	15.5%
EmB	Elmwood fine sandy loam, 0 to 8 percent slopes	B	23.1	7.8%
HeB	Hermon sandy loam, 3 to 8 percent slopes	A	15.7	5.3%
LnC	Lyman loam, 8 to 15 percent slopes, rocky	D	1.5	0.5%
Na	Naumburg sand	A/D	99.6	33.5%
Pg	Pits, gravel		18.6	6.2%
Ra	Raynham silt loam	C/D	2.3	0.8%
Sc	Scantic silt loam, 0 to 3 percent slopes	D	37.0	12.5%
Sg	Sebago peat	A/D	9.8	3.3%
SkB	Skerry fine sandy loam, 0 to 8 percent slopes	C/D	9.6	3.2%
Totals for Area of Interest			**297.2**	**100.0%**

APPENDIX C

Supplemental Stormwater Calculations

Conveyance Systems. Calculations for sizing on-site conveyance structures, including culverts are included in the HydroCad print outs included in this report. Stabilization calculations are included here. Ditch stabilization is per MDOT Highway design manual. Riprap sizing and erosion control measures are shown and noted on the Site Plans. These plans also show scaled drawings and cross sections of these conveyance systems and associated practices.

Grassed Filter. A grassed filter will be located east of the development and will receive flow from the southwest corner of the lot.

Wet ponds. Two wet ponds are proposed to treat the majority of the site. One is located just west of the development, with another located south of the eastern portion of the site..

Riprap Outlet Calculations.

Based upon guidelines set forth in the 1991 Maine Erosion Control BMPs, the geometry presented in the table on the project drawings will be used for the control structure discharge pipe outlets with the following gradation:

d_{50} Gradation range for d_{50} of 6"
100% of weight to be stones smaller than 9"
50% of weight to be stones smaller than 6"

DRAINAGE CULVERT & RIPRAP SIZING Based on Manning's "n" = 0.012, Q=k*s^(0.5)

Culvert (Sheet C6)	Diam. (in)	Slope (ft/ft)	Capacity (cfs)	Design flow (cfs) (25 year event)	Velocity (fps)	Tailwater (feet	Apron Length (feet)	Width W1 (feet)	Width W2 (feet)	Min d50 (inches)	Spec d50 (inches)	Notes
Pond 21P out	18	0.005	8.05	5.11	4.7	0.60	14	4.50	15	2.2	5	
Pond 22P out	18	0.0079	10.11	8.45	5.99	0.60	14	4.50	15	4.3	5	
Filter 23P out	15	0.0077	6.14	4.16	5.07	0.50	11	3.75	13	2.4	5	
Typ 24" CPP	24	0.0075	21.23	20.39	7.11	0.80	18	6.00	20	7.6	8	Max flow through 24" pipe (to Pond 22P)
Typ 18" CPP	18	0.008	10.18	8.60	2.7	0.60	14	4.50	15	4.4	5	Max flow through 18" pipe (to Pond 21P)
Typ 12" CPP	12	0.008	3.45	3.00	--	--	--	--	--	--	--	Approximate, subsurface drain pipe

NOTE: Where amount or velocity of flow from the culvet is not know/evaluated, a conservative flow has been assumed as well as a velocity that will require the installation of outlet protection.

Apron sizing determined using Maine Erosion & Sediment Control BMP Manual for high flow pipes

Table 3-1
Conveyance Factors (Standard Units)

Design Manning's Values for ADS Thermoplastic Pipe *		
Product	**Diameter**	**Design Manning's "n"**
N-12, MEGA GREEN, N-12 STIB, N-12 WTIB, HP STORM, SaniTite, SaniTite HP, N-12 Low Head	4" - 60"	"n" = 0.012
Single Wall Highway and Heavy Duty *	18" - 24" 12" - 15" 10" 8" 3" - 6"	"n" = 0.020 "n" = 0.018 "n" = 0.017 "n" = 0.016 "n" = 0.015
TripleWall and Smoothwall Sewer & Drain	3" - 6"	"n" = 0.009 **
Conveyance Equations: k = Q/(s^0.5) Q = k s^0.5		

Conveyance Factors for Circular Pipe Flowing Full																			
Manning's "n" Values																			
Dia. (in.)	**Area (sq. ft.)**	**0.009**	**0.010**	**0.011**	**0.012**	**0.013**	**0.014**	**0.015**	**0.016**	**0.017**	**0.018**	**0.019**	**0.020**	**0.021**	**0.022**	**0.023**	**0.024**	**0.025**
3	0.05	1.3	1.1	1.0	1.0	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5
4	0.09	2.7	2.5	2.2	2.1	1.9	1.8	1.6	1.5	1.5	1.4	1.3	1.2	1.2	1.1	1.1	1.0	1.0
6	0.20	8.1	7.3	6.6	6.1	5.6	5.2	4.9	4.6	4.3	4.1	3.8	3.6	3.5	3.3	3.2	3.0	2.9
8	0.35	17.5	15.7	14.3	13.1	12.1	11.2	10.5	9.8	9.2	8.7	8.3	7.9	7.5	7.1	6.8	6.5	6.3
10	0.55	31.6	28.5	25.9	23.7	21.9	20.3	19.0	17.8	16.8	15.8	15.0	14.2	13.6	12.9	12.4	11.9	11.4
12	0.79	51.5	46.3	42.1	38.6	35.6	33.1	30.9	28.9	27.2	25.7	24.4	23.2	22.1	21.1	20.1	19.3	18.5
15	1.23	93.3	84.0	76.3	70.0	64.6	60.0	56.0	52.5	49.4	46.7	44.2	42.0	40.0	38.2	36.5	35.0	33.6
18	1.77	151.7	136.6	124.1	113.8	105.0	97.5	91.0	85.3	80.3	75.9	71.9	68.3	65.0	62.1	59.4	56.9	54.6
21	2.41	228.9	206.0	187.3	171.6	158.4	147.1	137.3	128.7	121.2	114.4	108.4	103.0	98.1	93.6	89.6	85.8	82.4
24	3.14	326.8	294.1	267.3	245.1	226.2	210.1	196.1	183.8	173.0	163.4	154.8	147.0	140.0	133.7	127.9	122.5	117.6
27	3.98	447.3	402.6	366.0	335.5	309.7	287.6	268.4	251.6	236.8	223.7	211.9	201.3	191.7	183.0	175.0	167.8	161.0
30	4.91	592.5	533.2	484.7	444.3	410.2	380.9	355.5	333.3	313.7	296.2	280.6	266.6	253.9	242.4	231.8	222.2	213.3
33	5.94	763.9	687.5	625.0	572.9	528.9	491.1	458.3	429.7	404.4	382.0	361.9	343.8	327.4	312.5	298.9	286.5	275.0
36	7.07	963.4	867.1	788.2	722.6	667.0	619.3	578.0	541.9	510.0	481.7	456.4	433.5	412.9	394.1	377.0	361.3	346.8
42	9.62	1453.2	1307.9	1189.0	1089.9	1006.1	934.2	871.9	817.5	769.4	726.6	688.4	654.0	622.8	594.5	568.7	545.0	523.2
45	11.04	1746.8	1572.1	1429.2	1310.1	1209.3	1122.9	1048.1	982.6	924.8	873.4	827.4	786.1	748.6	714.6	683.5	655.0	628.8
48	12.57	2074.8	1867.4	1697.6	1556.1	1436.4	1333.8	1244.9	1167.1	1098.4	1037.4	982.8	933.7	889.2	848.8	811.9	778.1	746.9
54	15.90	2840.5	2556.4	2324.0	2130.4	1966.5	1826.0	1704.3	1597.8	1503.8	1420.2	1345.5	1278.2	1217.4	1162.0	1111.5	1065.2	1022.6
60	19.63	3762.0	3385.8	3078.0	2821.5	2604.4	2418.4	2257.2	2116.1	1991.6	1881.0	1782.0	1692.9	1612.3	1539.0	1472.1	1410.7	1354.3
72	28.27	6117.3	5505.6	5005.1	4588.0	4235.1	3932.6	3670.4	3441.0	3238.6	3058.7	2897.7	2752.8	2621.7	2502.5	2393.7	2294.0	2202.2

* Corrugated Polyethylene Pipe Association (2000) "Hydraulic Considerations for Corrugated Polyethylene Pipe"
** "Lingedburg, Michael, "Civil Engineer Reference Manual"[4]

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Project: 19-352.00 3Gs Berwick
Date: Rev September 2020

STORMWATER TREATMENT SPREADSHEET

	Area (See D3)	BMP Type	Developed area	Linear non-impv	Drives	Linear Impv.	Buildings	Lawn	Min BMP size	BMP provided	Untreated developed	Untreated linear dvlpd	Untreated linear impv	Untreated impervious	Treated impervious
A	Route 4 entrance	Untreated	5,432	3,325	0	2,107	0	0	Untreated area	Untreated	5432	3325	2107	0	0
B	Entry drive	Buffer	24,209	12,811	0	11,398	0	0	35 ft buffer	75' Roadside buffer	0	0	0	0	11,398
C	Intersection to dvlpmnt	Untreated	17,749	0	4,065	1,440	2,050	10,194	Untreated area	Untreated	17749	0	1440	6115	0
D	Area of industrial bldgs	Wet Pond	74,835	0	32,189	0	13,200	29,446	See attached	Wetpond 21 P	0	0	0	0	45,389
E	Main area of dvlpmnt	Wet Pond	124,668	0	63,130	0	44,550	16,988	See attached	Wetpond 22 P	0	0	0	0	107,680
F	Septic & grading	Untreated	38,442	0	0	0	0	38,442	Untreated area	Untreated	38442	0	0	0	0
G	Corner of devlpmnt	Filter	50,486	0	22,940	0	19,384	8,162	3,799 sf filter	3,782 sf Grassed Filter 23 P	0	0	0	0	42,324
	TOTAL		335,821	16,136	122,324	14,945	79,184	103,232			61623	3325	3547	6115	206791

TOTAL IMPERVIOUS AREA	216,453	sf	*4.969* *acres*
TOTAL DEVELOPED AREA	335,821	sf	*7.71* *acres*

PERCENT DEVELOPED AREA TREATED	82 %	>	80% MINIMUM REQUIRED TREATMENT
PERCENT IMPV AREA TREATED	97 %	>	95% MINIMUM REQUIRED TREATMENT
PERCENT LINEAR DEVELOPMENT TREATED	79 %	>	50% MINIMUM REQUIRED TREATMENT
PERCENT LINEAR IMPV AREA TREATED	76 %	>	75% MINIMUM REQUIRED TREATMENT

Project: 19-352.00 3Gs Berwick
Date: Rev September 2020

BMP Sizing: Grassed Filter 23P

Sizing per Chapter 502, Section 7.1

Filter must detain a runoff volume equal to the sum of 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped/grassed area.

The filtration BMPs are sized based on the available volume between the surface of the filter and the lowest outlet.

The area of the filter (surface area of the filter) must be no less than the sum of 7% of the impervious area and 3% of the landscaped area draining to the filter.

The filters were sized to meed the more restrictive of the volume requirement or the surface requirement. Both are reported below.

Min volume=	(Impervious area/12*1 inch)+(Lawn/12*0.4 inch) =					3,799	cu ft
Min area =	(Impervious area*0.07)+(Lawn*0.03) =					3,208	sq ft
Provided =	3782	sf *depth	1.25	ft	=	**4728**	**cf OK**

(basin elev 118.75, orifice @ 120.00)

Sediment volume required = **5** cu ft vailable = 37 cu ft **> Required, OK**

(10 storms * acres sanded * 500 lbs / 90 lbs/cf) (Catch basin w/3 ft sump.)

Hydrograph for Pond 23P: Filter 23

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	116.30	0.00	0.00	**0.00**
2.00	0.00	0	116.30	0.00	0.00	0.00
4.00	0.00	0	116.30	0.00	0.00	0.00
6.00	0.00	0	116.30	0.00	0.00	0.00
8.00	0.00	0	116.30	0.00	0.00	0.00
10.00	0.01	16	116.35	0.01	0.01	0.00
12.00	**0.61**	**266**	**116.96**	**0.10**	**0.10**	0.00
14.00	**0.05**	**569**	**117.17**	**0.11**	**0.11**	0.00
16.00	0.03	116	116.65	0.08	0.08	0.00
18.00	0.02	19	116.36	0.02	0.02	0.00
20.00	0.01	17	116.35	0.01	0.01	0.00
22.00	0.01	15	116.35	0.01	0.01	0.00
24.00	0.01	14	116.34	0.01	0.01	0.00
26.00	0.00	3	116.31	0.00	0.00	0.00
28.00	0.00	2	116.30	0.00	0.00	0.00
30.00	0.00	1	116.30	0.00	0.00	0.00
32.00	0.00	1	116.30	0.00	0.00	0.00
34.00	0.00	1	116.30	0.00	0.00	0.00
36.00	0.00	1	116.30	0.00	0.00	0.00
38.00	0.00	1	116.30	0.00	0.00	0.00
40.00	0.00	1	116.30	0.00	0.00	0.00
42.00	0.00	0	116.30	0.00	0.00	0.00
44.00	0.00	0	116.30	0.00	0.00	0.00
46.00	0.00	0	116.30	0.00	0.00	0.00
48.00	0.00	0	116.30	0.00	0.00	0.00
50.00	0.00	0	116.30	0.00	0.00	0.00
52.00	0.00	0	116.30	0.00	0.00	0.00
54.00	0.00	0	116.30	0.00	0.00	0.00
56.00	0.00	0	116.30	0.00	0.00	0.00
58.00	0.00	0	116.30	0.00	0.00	0.00
60.00	0.00	0	116.30	0.00	0.00	0.00
62.00	0.00	0	116.30	0.00	0.00	0.00
64.00	0.00	0	116.30	0.00	0.00	0.00
66.00	0.00	0	116.30	0.00	0.00	0.00
68.00	0.00	0	116.30	0.00	0.00	0.00
70.00	0.00	0	116.30	0.00	0.00	0.00
72.00	0.00	0	116.30	0.00	0.00	0.00
74.00	0.00	0	116.30	0.00	0.00	0.00
76.00	0.00	0	116.30	0.00	0.00	0.00
78.00	0.00	0	116.30	0.00	0.00	0.00
80.00	0.00	0	116.30	0.00	0.00	0.00
82.00	0.00	0	116.30	0.00	0.00	0.00
84.00	0.00	0	116.30	0.00	0.00	0.00

24 hr draindown

WET POND 21 SIZING (Revised 9-9-2020)

[ ] = Input

Pond 21

Sizing Requirements:

Impervious area =	45,389	sf								
Landscaped area =	29,446	sf								
Permanent Pool Volume Req'd=	45,389	*	2 inch*(1 ft/12 inches)	+	29,446	*	0.8 inch*(1 ft/12 inches) =	9,528	cf	
Channel Protection Volume Req'd =	45,389	*	1 inch*(1 ft/12 inches)	+	29,446	*	0.4 inch*(1 ft/12 inches) =	4,764	cf	

See HydroCAD printout for volumes provided:

Permanent Pool Volume Req'd=	9,528	
Permanent Pool Volume Provided=	26,024	Greater than required, OK.
Channel Protection Volume Req'd =	4,764	
Channel Protection Volume Provided =	8,137	Greater than required, OK.

Siting Requirements:

Depth to groundwater: See Test Pit info by Kenneth Gardner

TP 47:

Existing grade =	131.65	ft	
Depth to SGWT =	1.15	ft	
SGWT =	130.5	ft	
Proposed outlet elev =	127.45	ft	
Separation from SGWT =	-3.05	ft	Less than 1 ft separation, see Chapter 4 of BMP Manual for add'l requirements.

* Surface of pond to be at 130.00, receiving area to stabilized for resulting flow.

Depth to bedrock:

Existing grade =	131.65	ft	
Bedrock present?	No	ft	6
Bedrock elev =	N/A	ft	
Bottom of pond =	123	ft	
Separation from bedrock =	N/A	ft	Greater than 1 ft separation, OK.

Shape Requirements:

Basin shape: See Plan

Basin length = 100 ft
Basin width = 33 ft
Length/Width Ratio = 3.0 /1

Accepable design.

Permanent pool depth:

Volume 1 ft below permanent pool depth = (see HydroCAD)	19302	cf
Surface area at elevation of volume above =	5995	sf
Mean depth =	3.2	ft

Inlet Design:

Sediment Pretreatment:

Sanded area =	0.63	acres	
Min volume of sediment basin =	35	cf	
Volume available =	37	cf	(1 CB, conservative)
Years available =	1.06	years	

Outlet Design:

Minimum trench length req'd =	14.29	ft
Trench Provided =	15	ft

Greater than required, OK.

Hydrograph for Pond 21P: Wet pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	26,024	130.00	0.00	0.00	**0.00**
2.00	0.00	26,024	130.00	0.00	0.00	0.00
4.00	0.00	26,024	130.00	0.00	0.00	0.00
6.00	0.00	26,024	130.00	0.00	0.00	0.00
8.00	0.00	26,024	130.00	0.00	0.00	0.00
10.00	0.00	26,024	130.00	0.00	0.00	0.00
12.00	**0.15**	26,134	130.01	0.00	0.00	0.00
14.00	**0.05**	**27,023**	**130.13**	**0.04**	**0.04**	0.00
16.00	0.03	**27,026**	**130.13**	**0.04**	**0.04**	0.00
18.00	0.02	26,921	130.12	0.04	0.04	0.00
20.00	0.01	26,797	130.10	0.03	0.03	0.00
22.00	0.01	26,687	130.09	0.03	0.03	0.00
24.00	0.01	26,590	130.07	0.02	0.02	0.00
26.00	0.00	26,453	130.06	0.02	0.02	0.00
28.00	0.00	26,345	130.04	0.01	0.01	0.00
30.00	0.00	26,264	130.03	0.01	0.01	0.00
32.00	0.00	26,204	130.02	0.01	0.01	0.00
34.00	0.00	26,158	130.02	0.01	0.01	0.00
36.00	0.00	26,124	130.01	0.00	0.00	0.00
38.00	0.00	26,099	130.01	0.00	0.00	0.00
40.00	0.00	26,080	130.01	0.00	0.00	0.00
42.00	0.00	26,066	130.01	0.00	0.00	0.00
44.00	0.00	26,055	130.00	0.00	0.00	0.00
46.00	0.00	26,047	130.00	0.00	0.00	0.00
48.00	0.00	26,041	130.00	0.00	0.00	0.00
50.00	0.00	26,037	130.00	0.00	0.00	0.00
52.00	0.00	26,034	130.00	0.00	0.00	0.00
54.00	0.00	26,031	130.00	0.00	0.00	0.00
56.00	0.00	26,029	130.00	0.00	0.00	0.00
58.00	0.00	26,028	130.00	0.00	0.00	0.00
60.00	0.00	26,027	130.00	0.00	0.00	0.00
62.00	0.00	26,026	130.00	0.00	0.00	0.00
64.00	0.00	26,025	130.00	0.00	0.00	0.00
66.00	0.00	26,025	130.00	0.00	0.00	0.00
68.00	0.00	26,025	130.00	0.00	0.00	0.00
70.00	0.00	26,024	130.00	0.00	0.00	0.00
72.00	0.00	26,024	130.00	0.00	0.00	0.00
74.00	0.00	26,024	130.00	0.00	0.00	0.00
76.00	0.00	26,024	130.00	0.00	0.00	0.00
78.00	0.00	26,024	130.00	0.00	0.00	0.00
80.00	0.00	26,024	130.00	0.00	0.00	0.00
82.00	0.00	26,024	130.00	0.00	0.00	0.00
84.00	0.00	26,024	130.00	0.00	0.00	0.00

Stage-Area-Storage for Pond 21P: Wet pond

Elevation (feet)	Surface (sq-ft)	Horizontal (sq-ft)	Storage (cubic-feet)
123.00	1,169	1,169	0
123.20	1,277	1,277	245
123.40	1,390	1,390	511
123.60	1,508	1,508	801
123.80	1,631	1,631	1,115
124.00	1,758	1,758	1,454
124.20	1,875	1,875	1,817
124.40	1,997	1,997	2,204
124.60	2,122	2,122	2,616
124.80	2,251	2,251	3,053
125.00	2,383	2,383	3,516
125.20	2,520	2,520	4,007
125.40	2,660	2,660	4,525
125.60	2,804	2,804	5,071
125.80	2,952	2,952	5,647
126.00	3,104	3,104	6,252
126.20	3,247	3,247	6,887
126.40	3,393	3,393	7,551
126.60	3,542	3,542	8,245
126.80	3,695	3,695	8,968
127.00	3,850	3,850	9,723
127.20	4,009	4,009	10,509
127.40	4,171	4,171	11,327
127.60	4,337	4,337	12,177
127.80	4,505	4,505	13,061
128.00	4,677	4,677	13,980
128.20	4,927	4,927	14,940
128.40	5,185	5,185	15,951
128.60	5,448	5,448	17,014
128.80	5,718	5,718	18,131
129.00	5,995	5,995	19,302
129.20	6,278	6,278	20,529
129.40	6,568	6,568	21,814
129.60	6,864	6,864	23,157
129.80	7,167	7,167	24,560
130.00	7,476	7,476	26,024
130.20	7,917	7,917	27,563
130.40	8,371	8,371	29,191
130.60	8,837	8,837	30,912
130.80	9,316	9,316	32,727
131.00	9,808	9,808	34,639
131.20	10,312	10,312	36,651
131.40	10,829	10,829	38,765
131.60	11,359	11,359	40,984
131.80	11,901	11,901	43,310
132.00	**12,456**	**12,456**	**45,745**

WET POND 22 SIZING (Revised 9-9-2020)

[ ] = Input

Pond 22

Sizing Requirements:

Impervious area =	107,680	sf								
Landscaped area =	16,988	sf								
Permanent Pool Volume Req'd=	107,680	*	2 inch*(1 ft/12 inches)	+	16,988	*	0.8 inch*(1 ft/12 inches) =	19,079	cf	
Channel Protection Volume Req'd =	107,680	*	1 inch*(1 ft/12 inches)	+	16,988	*	0.4 inch*(1 ft/12 inches) =	9,540	cf	

See HydroCAD printout for volumes provided:

Permanent Pool Volume Req'd=	19,079	
Permanent Pool Volume Provided=	36,226	Greater than required, OK.
Channel Protection Volume Req'd =	9,540	
Channel Protection Volume Provided =	9,873	Greater than required, OK.

Siting Requirements:

Depth to groundwater: See Test Pit info by Kenneth Gardner

TP 1:

Existing grade =	118	ft	
Depth to SGWT =	0.75	ft	
SGWT =	117.25	ft	
Proposed outlet elev =	118.6	ft	
Separation from SGWT =	1.35	ft	Greater than 1 ft separation, OK.

Depth to bedrock:

Existing grade =	118	ft	
Bedrock present?	No	ft	6
Bedrock elev =	112	ft	
Bottom of pond =	113	ft	
Separation from bedrock =	N/A	ft	Greater than 1 ft separation, OK.

Shape Requirements:

Basin shape: See Plan

Basin length = 155 ft
Basin width = 45 ft
Length/Width Ratio = 3.4 /1

Accepable design.

Permanent pool depth:

Volume 1 ft below permanent pool depth = (see HydroCAD)	26765	cf
Surface area at elevation of volume above =	8734	sf
Mean depth =	3.1	ft

Inlet Design:

Sediment Pretreatment:

Sanded area =	1.60	acres	
Min volume of sediment basin =	89	cf	
Volume available =	105	cf	(3 CB's, conservative)
Years available =	1.18	years	

Outlet Design:

Minimum trench length req'd =	28.62	ft
Trench Provided =	33	ft

Greater than required, OK.

Hydrograph for Pond 21P: Wet pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	26,024	130.00	0.00	0.00	**0.00**
2.00	0.00	26,024	130.00	0.00	0.00	0.00
4.00	0.00	26,024	130.00	0.00	0.00	0.00
6.00	0.00	26,024	130.00	0.00	0.00	0.00
8.00	0.00	26,024	130.00	0.00	0.00	0.00
10.00	0.00	26,024	130.00	0.00	0.00	0.00
12.00	**0.15**	26,134	130.01	0.00	0.00	0.00
14.00	**0.05**	**27,023**	**130.13**	**0.04**	**0.04**	0.00
16.00	0.03	**27,026**	**130.13**	**0.04**	**0.04**	0.00
18.00	0.02	26,921	130.12	0.04	0.04	0.00
20.00	0.01	26,797	130.10	0.03	0.03	0.00
22.00	0.01	26,687	130.09	0.03	0.03	0.00
24.00	0.01	26,590	130.07	0.02	0.02	0.00
26.00	0.00	26,453	130.06	0.02	0.02	0.00
28.00	0.00	26,345	130.04	0.01	0.01	0.00
30.00	0.00	26,264	130.03	0.01	0.01	0.00
32.00	0.00	26,204	130.02	0.01	0.01	0.00
34.00	0.00	26,158	130.02	0.01	0.01	0.00
36.00	0.00	26,124	130.01	0.00	0.00	0.00
38.00	0.00	26,099	130.01	0.00	0.00	0.00
40.00	0.00	26,080	130.01	0.00	0.00	0.00
42.00	0.00	26,066	130.01	0.00	0.00	0.00
44.00	0.00	26,055	130.00	0.00	0.00	0.00
46.00	0.00	26,047	130.00	0.00	0.00	0.00
48.00	0.00	26,041	130.00	0.00	0.00	0.00
50.00	0.00	26,037	130.00	0.00	0.00	0.00
52.00	0.00	26,034	130.00	0.00	0.00	0.00
54.00	0.00	26,031	130.00	0.00	0.00	0.00
56.00	0.00	26,029	130.00	0.00	0.00	0.00
58.00	0.00	26,028	130.00	0.00	0.00	0.00
60.00	0.00	26,027	130.00	0.00	0.00	0.00
62.00	0.00	26,026	130.00	0.00	0.00	0.00
64.00	0.00	26,025	130.00	0.00	0.00	0.00
66.00	0.00	26,025	130.00	0.00	0.00	0.00
68.00	0.00	26,025	130.00	0.00	0.00	0.00
70.00	0.00	26,024	130.00	0.00	0.00	0.00
72.00	0.00	26,024	130.00	0.00	0.00	0.00
74.00	0.00	26,024	130.00	0.00	0.00	0.00
76.00	0.00	26,024	130.00	0.00	0.00	0.00
78.00	0.00	26,024	130.00	0.00	0.00	0.00
80.00	0.00	26,024	130.00	0.00	0.00	0.00
82.00	0.00	26,024	130.00	0.00	0.00	0.00
84.00	0.00	26,024	130.00	0.00	0.00	0.00

Stage-Area-Storage for Pond 22P: Wet pond

Elevation (feet)	Surface (sq-ft)	Horizontal (sq-ft)	Storage (cubic-feet)
113.00	3,133	3,133	0
113.20	3,343	3,343	647
113.40	3,559	3,559	1,338
113.60	3,783	3,783	2,072
113.80	4,013	4,013	2,851
114.00	4,250	4,250	3,677
114.20	4,466	4,466	4,549
114.40	4,688	4,688	5,464
114.60	4,915	4,915	6,424
114.80	5,147	5,147	7,430
115.00	5,385	5,385	8,484
115.20	5,628	5,628	9,585
115.40	5,876	5,876	10,735
115.60	6,130	6,130	11,936
115.80	6,389	6,389	13,188
116.00	6,654	6,654	14,492
116.20	6,899	6,899	15,847
116.40	7,147	7,147	17,252
116.60	7,401	7,401	18,706
116.80	7,659	7,659	20,212
117.00	7,921	7,921	21,770
117.20	8,187	8,187	23,381
117.40	8,458	8,458	25,045
117.60	8,734	8,734	26,765
117.80	9,014	9,014	28,539
118.00	9,298	9,298	30,370
118.20	9,603	9,603	32,260
118.40	9,914	9,914	34,212
118.60	10,229	10,229	36,226
118.80	10,549	10,549	38,304
119.00	10,874	10,874	40,446
119.20	11,204	11,204	42,654
119.40	11,539	11,539	44,928
119.60	11,879	11,879	47,270
119.80	12,223	12,223	49,680
120.00	12,573	12,573	52,159
120.20	12,961	12,961	54,712
120.40	13,356	13,356	57,344
120.60	13,756	13,756	60,055
120.80	14,162	14,162	62,847
121.00	**14,574**	**14,574**	**65,720**

Stormwater Maintenance & Inspection Plan

Prepared by: Neil J. Rapoza, PE, CIVIL CONSULTANTS

During the construction of the 3 G's Industrial Development, maintenance of all erosion, sedimentation, and stormwater flow control structures and devices will be the responsibility of the contractor on site. Upon stabilization of the completed Development (or current phase), the developer will assume all responsibilities. The developer will be responsible for the required maintenance of the stormwater treatment system.

The developer will be responsible for the maintenance of all erosion, sedimentation, and stormwater flow control structures and devices within the limits of the development and will retain that responsibility until such time as another individual and/or agency (acceptable to the Town and DEP) accepts the responsibility.

During and after construction all erosion control devices and structures shall be checked monthly and after each "significant rainfall"**. Necessary repairs will be made to correct undermining or deterioration of the devices and/or structures. Sediment in the pretreatment structures and forebays will be removed annually or as needed to maintain functionality of the structure.

The developer shall maintain inspection logs as shown below (or similar) of all stormwater and erosion control measures. The log shall reflect the dates of the inspections and describe actions taken (if any) and be kept on file for a minimum of 5 years. This logbook will be made available to the Town or DEP upon request.

Where a major storm event is noted in the plan, this is classified as a rainfall exceeding 3.2 inches (2yr) storm event.

** significant rainfall is ½" in 24 hr

Sweeping

Paved surfaces shall be swept or vacuumed at least annually in the Spring to remove all Winter sand, and periodically during the year on an as-needed basis to minimize transportation of sediment during rainfall events.

Roadways and Parking Surfaces				
	Spring	Fall or Yearly	After a Major Storm	Every 2– 5 Years
Clear accumulated winter sand in parking lots and along roadways	**X**			
Sweep pavement to remove sediment	**X**			
Grade road shoulders and remove excess sand either manually or by a front-end loader	**X**			
Grade gravel roads and gravel shoulders	**X**			
Clean-out the sediment within water bars or open top culverts	**X**			
Ensure that stormwater is not impeded by accumulations of material or false ditches in the shoulder	**X**			

Catch Basins & Culverts

Applicable structures: P1

All catch basins, and any other field inlets throughout the collection system, need to be inspected on a monthly basis to assure that the inlet entry point is clear of debris and will allow the intended water entry. These will be cleared, if necessary on a yearly basis or when sediment reaches two thirds of total volume. Catch basins need to be vacuumed and cleaned of all accumulated sediment. This work must be done by a vacuum truck. The removed material must be disposed of in accordance with the Maine Solid Waste Disposal Rules.

Catch Basins Systems				
	Spring	Fall or Yearly	After a Major Storm	Every 2– 5 Years
Remove and legally dispose of accumulated sediments and debris from the bottom of the basin, inlet grates, inflow channels to the basin, and pipes between basins.	**X**	**X**		
Remove floating debris and floating oils (using oil absorptive pads) from any trap designed for such	**X**	**X**		

Culverts				
	Spring	Fall or Yearly	After a Major Storm	Every 2– 5 Years
Remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit	**X**	**X**	**X**	
Repair any erosion damage at the culvert's inlet and outlet	**X**	**X**	**X**	

Detention Ponds (Wet Ponds) *Applicable structures: 21P, 22P*

After each significant rainfall event, or at least monthly, the detention basin shall be visually inspected to assure that the outlet structure is not blocked and that no sign of erosion is apparent within the berm or riprap.

Any sign of erosion or blockage shall be immediately repaired.

The pond shall be inspected on an annual basis to assure that significant sediment accumulation has not occurred. Whenever the sediment is within three inches of the outlet invert the accumulated sediment shall be removed and disposed of properly.

On a semi-annual basis, remove debris from the level lip spreader, outlets and emergency overflow channel. Examine the sediment accumulation in the forebay sump.

On a semi-annual basis, inspect and remove debris from the control structure; check the orifice and all openings, and the elevation of any outlet weirs.

Remove sediment if it occupies 15% of the pond volume. In larger ponds with a permanent pool of water, the sediment can be measured by measuring bottom surface elevations and comparing with records of initial construction.

During the active dewatering process, inspection of the dewatering facility should be reviewed frequently. Observe where possible the visual quality of the effluent and determine if additional treatment can be provided.

Stormwater Detention and Retention Facilities (Wet Ponds)				
	Spring	Fall or Yearly	After a Major Storm	Every 2-5 years
Inspect the embankments for settlement, slope erosion, internal piping, and downstream swamping. A professional engineer must review these immediately.		X	X	
Mow the embankment to control woody vegetation		X		
Inspect the outlet control structure for broken seals, obstructed orifices, and plugged trash racks	X	X	X	
Remove and dispose of sediments and debris within the control structure		X		X
Repair any damage to trash racks or debris guards		X		
Mow vegetated spillways to control woody vegetation and replace any dislodged stone in riprap spillways		X		
Remove and dispose of accumulated sediments within the impoundment and forebay		X		X
The gravel trench outlet should be inspected after every major storm in the first few months to ensure proper function and thereafter, the gravel trench should be inspected at least once every six months	X	X	X	
The top several inches of the gravel in the outlet trench must be replaced with fresh material when water ponds above the permanent pool for more than 72 hours. The removed sediments should be disposed of in an acceptable manner.				X
Wet ponds should be inspected annually for erosion, destabilization of side slopes, embankment settling, and other signs of structural failure. Corrective action should be taken immediately upon identification of problems. Contact design engineer.		X		

Vegetated Areas

All areas of maintained lawn are to be inspected regularly for signs of erosions and channelization. Areas where erosion is occurring or areas of sparse growth shall be replanted and stabilized. Channelized flows from the eroded land shall be diverted to buffers or other areas able to withstand the high sediment load in the erosive runoff.

	Spring	Fall or Yearly	After a Major Storm	Every 2– 5 Years
Vegetated Areas				
Inspect all slopes and embankments	**X**		**X**	
Replant bare areas or areas with sparse growth	**X**		**X**	
Armor areas with fill erosions with an appropriate lining or divert the erosive flows to on-site areas able to withstand concentrated flows. Any materials used to armor/stabilize the affected areas shall be submitted to the Town and Engineer for review and approval prior to installation.	**X**		**X**	

Vegetated Buffers

Applicable structures: P2

Inspect and remove dead wood and debris with minimal disturbance. Inspect for bypass and channelization; repair as it is occurring and remove sediment build-up to assure sheet flow conditions. Replant trees and bushes if needed. Perform inspection on a semi-annual basis.

Buffers				
	Spring	Fall Or Yearly	After a Manor Storm	Every 2-5 Years
Inspect treatment buffers for evidence of erosion, concentrated flow. Or encroachment by development		**X**		
Manage the buffers vegetation with the requirements in any deed restrictions		**X**		
Mow vegetation in non-wooded buffers no shorter than six inches and less no more than twice per year		**X**		
Repair any sign of erosion within a buffer		**X**		
Inspect and repair down-slope of all spreaders and turn-outs for erosion		**X**		
Clean-out any accumulation of sediment within the spreader bays or turn-out pools		**X**		

Model Maintenance Plan

The following techniques should be followed to maintain the integrity of buffers from initial planning through post-construction:

A. Construction Stage

1. Pre-construction stakeout of buffers to define the Limit of Disturbance (LOD) project.
2. Set LOD based on drip line of the forested buffer as indicated on plans.
3. Conduct pre-construction meeting to familiarize contractors and foremen with LOD and buffer limit.
4. Mark the LOD with silt fence barrier, signs or other methods to exclude construction equipment, as indicated on project plans.

B. Post Development Stage

1. Mark buffer boundaries with permanent signs (or fences) describing allowable uses.
2. Educate maintenance personnel on the purpose, limits and allowable uses of the buffer, as indicated in deed restrictions.
3. Conduct periodic "buffer walks" to inspect the condition of the buffer network (using volunteers, where possible).

Filtration Facilities

Applicable structures: 23P

Soil Filter Inspection: The soil filter should be inspected after every major storm in the first few months to ensure proper function. Thereafter, the filter should be inspected at least once every six months to ensure that it is draining between 24 and 48 hours.

Soil Filter Replacement: The top several inches of the filter shall be replaced with fresh material when water ponds on the surface of the bed for more than 72 hours. The removed sediments should be disposed in an acceptable manner.

Sediment Removal: Sediment and plant debris should be removed from the pre-treatment structure at least annually.

Mowing: Filters with grass cover should be mowed no more than 2 times per growing season to maintain grass heights less than 12 inches.

Fertilization: Fertilization of the underdrained filter area should be avoided unless absolutely necessary to establish vegetation.

Harvesting and Weeding: Harvesting and pruning of excessive growth will need to be done occasionally. Weeding to control unwanted or invasive plants may also be necessary.

Filtration Facilities				
	Spring	Fall or Yearly	After a Major Storm	Every 2– 5 Years
The soil filter should be inspected after every major storm in the first few months to ensure proper function. Thereafter, the filter should be inspected at least once every six months to ensure that it is draining between 24 and 48 hours	**X**	**X**	**X**	
The top several inches of the filter shall be replaced with fresh material when water ponds on the surface of the bed for more than 72 hours. The removed sediments should be disposed in an acceptable manner				**X**
Sediment and plant debris should be removed from the pre-treatment structure at least annually	**X**			
Filters with grass cover should be mowed no more than 2 times per growing season to maintain grass heights less than 12 inches				
Fertilization of the underdrained filter area should be avoided unless absolutely necessary to establish vegetation				
Harvesting and pruning of excessive growth will need to be done occasionally. Weeding to control unwanted or invasive plants may also be necessary		**X**		

J:\aaa\2019\1935200\MDEP\SITE_LOCATION\DRAINAGE_CH_12\COMPONENTS\20200908(rev_1)_1935200-DEP_Appendix.docx

Stormwater Maintenance

3 G's Industrial Development

Maintenance Log

This log is intended to accompany the Stormwater Management Facilities Maintenance Plan for the 3 G's Industrial Development. The following items shall be checked, cleaned and maintained on regular basis as specified in the Maintenance Plan and as described in the table below. This log shall be kept on file for a minimum of five years and shall be available for review by MDEP. Qualified personnel familiar with drainage systems and soils shall perform all inspections.

Item	Maintenance Required & Frequency					Date Completed	Maintenance Personnel	Comments
Sweeping of Roads		Spring	Fall or Yearly	After a Major Storm	Every 2– 5 Years			
	Clear accumulated winter sand in parking lots and along roadways	**X**						
	Sweep pavement to remove sediment	**X**						
	Grade road shoulders and remove excess sand either manually or by a front-end loader	**X**						
	Grade gravel roads and gravel shoulders	**X**						
	Clean-out the sediment within water bars or open top culverts	**X**						
	Ensure that stormwater is not impeded by accumulations of material or false ditches in the shoulder	**X**						

Item	Maintenance Required & Frequency					Date Completed	Maintenance Personnel	Comments
Catch Basins and Culverts (P1)		Spring	Fall or Yearly	After a Major Storm	Every 2– 5 Years			
	Remove and legally dispose of accumulated sediments and debris from the bottom of the basin, inlet grates, inflow channels to the basin, and pipes between basins.	**X**	**X**					
	Remove floating debris and floating oils (using oil absorptive pads) from any trap designed for such	**X**	**X**					
	Remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit	**X**	**X**	**X**				
	Repair any erosion damage at the culvert's inlet and outlet	**X**	**X**	**X**				

Item	Maintenance Required & Frequency	Date Completed	Maintenance Personnel	Comments
Bioretention Cells & Filters (23P)				

Filtration Facilities

	Spring	Fall or Yearly	After a Major Storm	Every 2– 5 Years
The soil filter should be inspected after every major storm in the first few months to ensure proper function. Thereafter, the filter should be inspected at least once every six months to ensure that it is draining between 24 and 48 hours	**X**	**X**	**X**	
The top several inches of the filter shall be replaced with fresh material when water ponds on the surface of the bed for more than 72 hours. The removed sediments should be disposed in an acceptable manner				**X**
Sediment and plant debris should be removed from the pre-treatment structure at least annually	**X**			
Filters with grass cover should be mowed no more than 2 times per growing season to maintain grass heights less than 12 inches				
Fertilization of the underdrained filter area should be avoided unless absolutely necessary to establish vegetation				
Harvesting and pruning of excessive growth will need to be done occasionally. Weeding to control unwanted or invasive plants may also be necessary		**X**		

CIVIL
CONSULTANTS
P.O. Box 100 South Berwick, Maine 03908 207-384-2550

Stormwater Management System

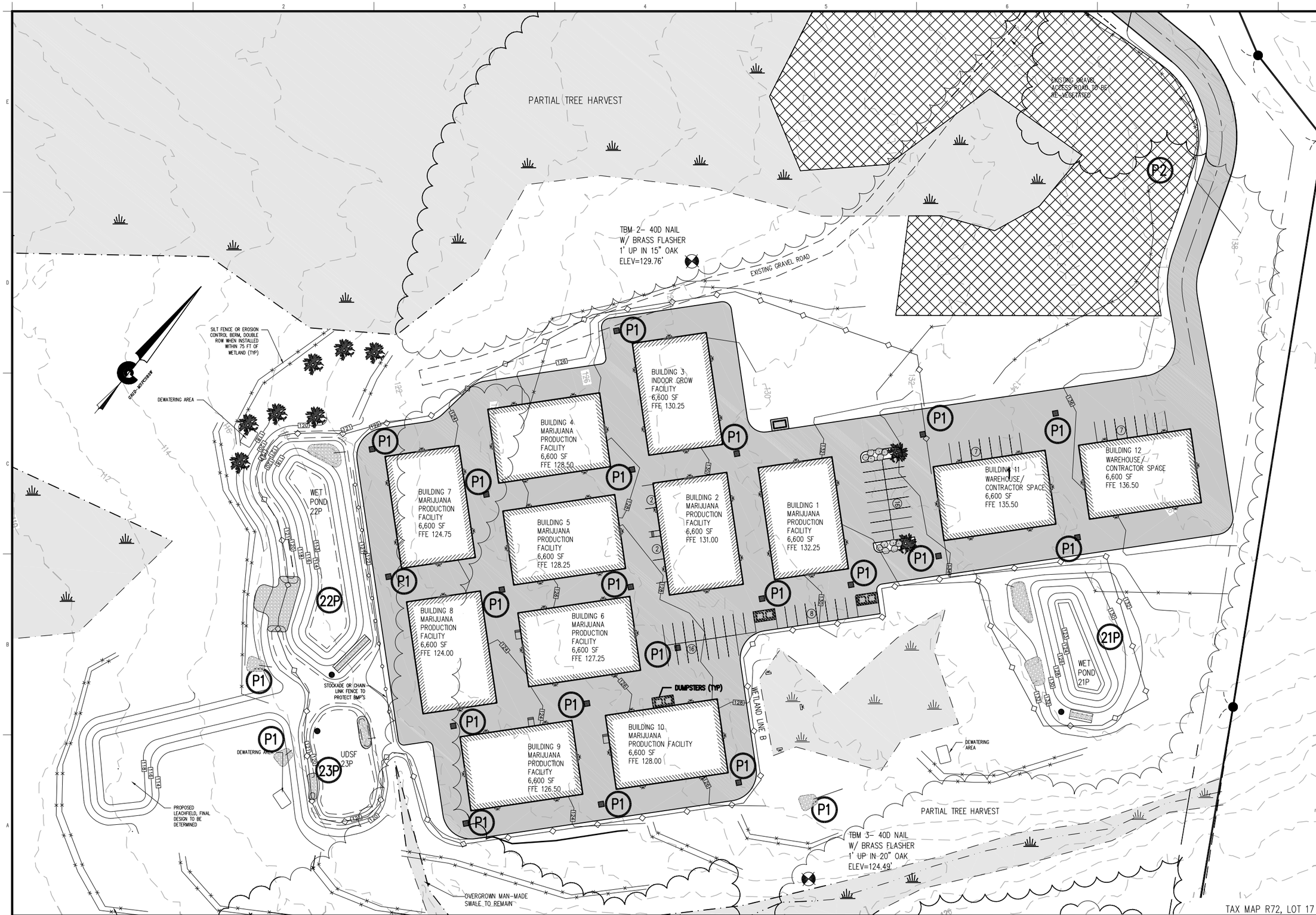
3 G's Industrial Development

Inspection & Maintenance Checklist

BMP/System Component	Date Inspected	Inspector	Cleaning/Repair Needed *(List Items/Comments)*	Date of Cleaning/Repair	Performed By

CIVIL
CONSULTANTS

P.O. Box 100 South Berwick, Maine 03908 207-384-2550



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CIVIL CONSULTANTS
Engineers
Planners
Surveyors
P.O. Box 100
South Berwick
Maine
03908
207-384-2550
www.civcon.com

NO.	REVISIONS	INT.	DATE
1	REVISED LAYOUT, WETLAND AVOIDANCE	NJR	9/8/20

RECORD OWNER:
3G'S REALTY, LLC

OWNER ADDRESS:
309 OLD COLONY AVENUE,
SOUTH BOSTON, MA 02127

PROPOSED SITE DEVELOPMENT
LAND OF 3G'S REALTY LLC - MAP R72/ LOT 17
ROUTE 4 (PORTLAND STREET)
BERWICK, YORK COUNTY, MAINE

PREPARED FOR:
SCOTT KEARNAN
CLIENT ADDRESS: 309 OLD COLONY AVENUE, SOUTH BOSTON, MA 02127

1"=80'
0' 40'

DATE: 4/13/20
DRAWN BY: NJR
CHECKED BY:
APPROVED BY:

TREATMENT BMP LOCATION PLAN

PROJECT NO: 19-352.00

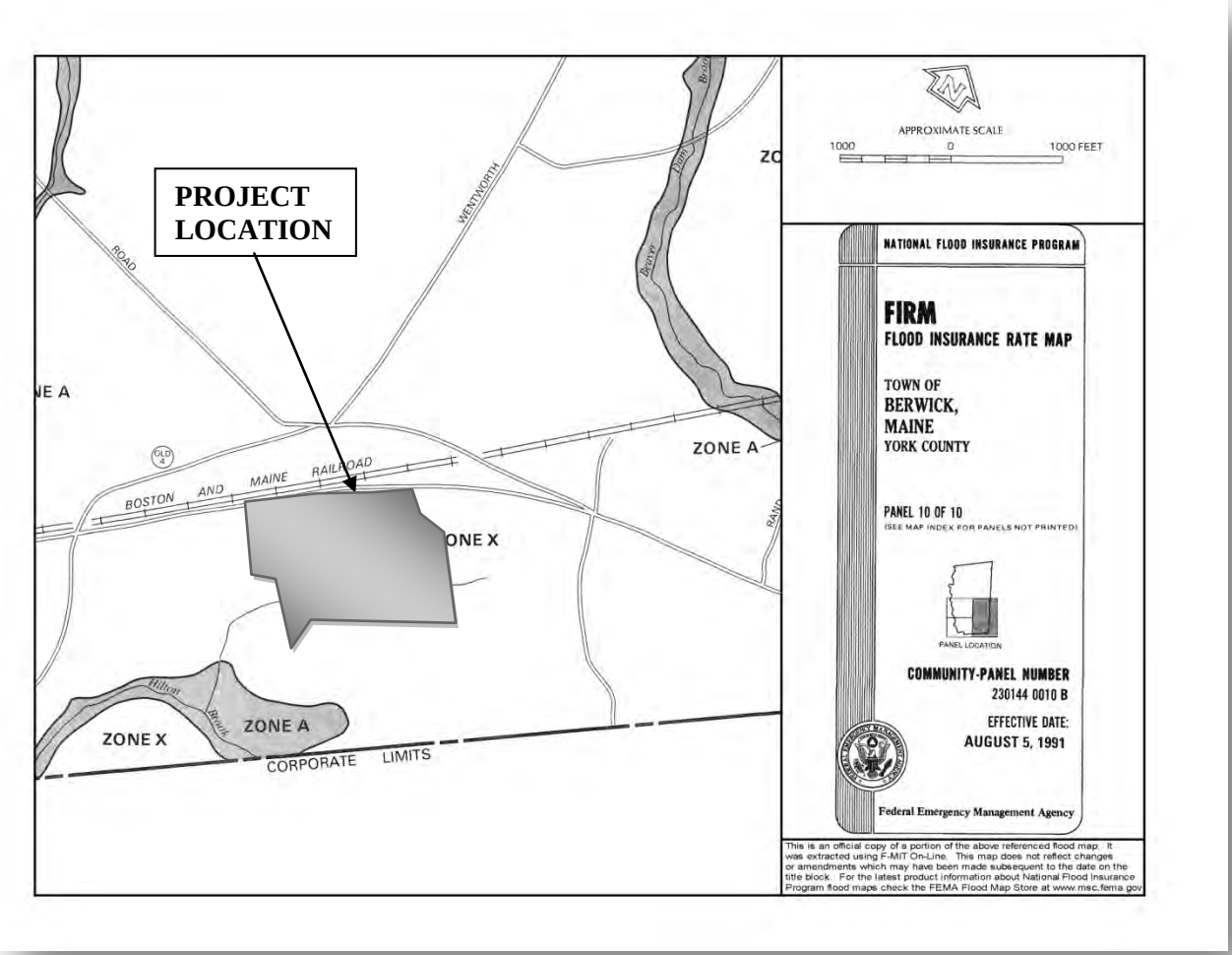
BMP1

SHEET: 1 OF 1

COORDINATE FILE: J:\AAA\1935200\CARLSON\SURVEY\POINTS\MSPCS83W-NAVD88.CRD
CADD FILE: J:\aaa\2019\1935200\CARLSON\ENGINEERING\1935200-E-ST.DWG
PLOT DATE: 2/20/2020

APPENDIX E

NATIONAL FLOOD INSURANCE RATE MAP- FIRM



Reduced Scale Sketch Reproduced from Portion of

Town of Berwick, ME
Panel 2301440010 D
(Effective dates: June 17, 2002)

CIVIL
CONSULTANTS

Engineers

Planners

Surveyors

APPENDIX F

All plans at ½ scale 11x17 prints, 22x34 included with application

D1 – Pre-Development Stormwater Management Plan

D2 – Post-Development Stormwater Management Plan

D3 – Stormwater Treatment Plan

L1 – Site Plan*

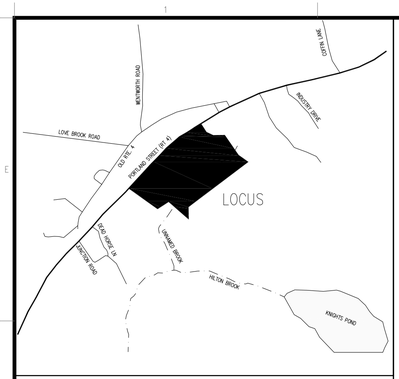
L2 – Site Plan*

L3 – Utility Plan and Details*

L4 – Notes and Details*

L5 – Notes and Details*

L6 – Notes and Details*



LOCUS

REFERENCE PLANS:

1. BOUNDARY AND EXISTING CONDITIONS PLAN OF LAND OF 3G'S REALTY, LLC – MAP R72/LOT 17, ROUTE 4 (PORTLAND STREET, BERWICK, YORK COUNTY, MAINE. PREPARED FOR SCOTT KEARNAN, 309 OLD COLONY AVENUE, SOUTH BOSTON, MA 02127. PREPARED BY CIVIL CONSULTANTS, DATED 2–25–2020

NOTES:

1. THE DEVELOPMENT CONSISTS OF CONSTRUCTING 9 NEW BUILDINGS INTENDED TO BE LEASED SPACES FOR THE USE OF CULTIVATING PLANTS INDOORS, INCLUDING MARIJUANA. THE BUILDINGS HOUSING THIS TYPE OF USE REQUIRE A 1000' SEPARATION FROM THE NEAREST MARIJUANA RELATED BUILDING ON ADJACENT LOTS. A SETBACK TO THE USE ON MAP R72 LOT 5 (TRICANN ALTERNATIVES) IS INDICATED ON THIS PLAN, WITH ANY STRUCTURE SHOWN INSIDE THIS SETBACK BEING NON–MARIJUANA RELATED USES.
2. BOUNDARY AND PLANIMETRIC DETAIL DEPICTED HEREON IS THE RESULT OF AN ON–THE–GROUND FIELD SURVEY BY CIVIL CONSULTANTS IN FEBRUARY 2020. AT THE TIME OF THE FIELD SURVEY, THE GROUND WAS COVERED WITH 4–12 INCHES OF SNOW. FEATURES OBSCURED BY SNOW MAY NOT BE REFLECTED HEREON.
3. NORTH AS DEPICTED HEREON IS REFERENCED TO GRID NORTH, NAD83, MAINE STATE PLANE COORDINATE SYSTEM WEST ZONE. COORDINATE VALUES AND ORIENTATION ARE DERIVED FROM A GPS SURVEY COMPUTED UTILIZING THE NGS OPUS ON–LINE PROCESSING SERVICE. REFERENCE FRAME IS NAD83 2011 EPOCH 2010.0000. THE SURVEY IS TIED TO CORS STATIONS BOSTON WAAS 1 CORS (ZBW1), BARTLETT CORS (BARN) AND BRUNSWICK 1 CORS (BRU1). DISTANCES DEPICTED HEREON ARE GRID. TO CONVERT GRID DISTANCES TO GROUND DISTANCES, MULTIPLY THE GRID DISTANCE BY 1.0000050.
4. ELEVATIONS DEPICTED HEREON ARE REFERENCED TO NAVD88, DERIVED FROM THE ABOVE REFERENCED GPS SURVEY.
5. ASSESSOR'S INFORMATION: TOWN OF BERWICK ASSESSOR'S MAP R72, LOT 17
6. RECORD OWNERS AND DEED REFERENCES: 3G'S REALTY, LLC – Y.C.R.D. 18156/30
7. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS NEED TO CONTACT DIGSAFE AND FIELD VERIFY ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
8. THE LOCUS PARCEL IS LOCATED IN "ZONE X", ON THE NATIONAL FLOOD INSURANCE PROGRAM, FLOOD INSURANCE RATE MAP (FIRM) FOR THE TOWN OF BERWICK, MAINE, YORK COUNTY, COMMUNITY PANEL NUMBER 230144 0010 B, EFFECTIVE DATE AUGUST 5, 1991. ZONE X IS DEFINED AS "AREAS DETERMINED TO BE OUTSIDE THE 500–YEAR FLOODPLAIN.
9. THE LOCUS PARCEL IS LOCATED IN THE RURAL COMMERCIAL/INDUSTRIAL ZONE (RC/I). BASIC LAND USE ORDINANCE DIMENSIONAL REQUIREMENTS ARE AS FOLLOWS:

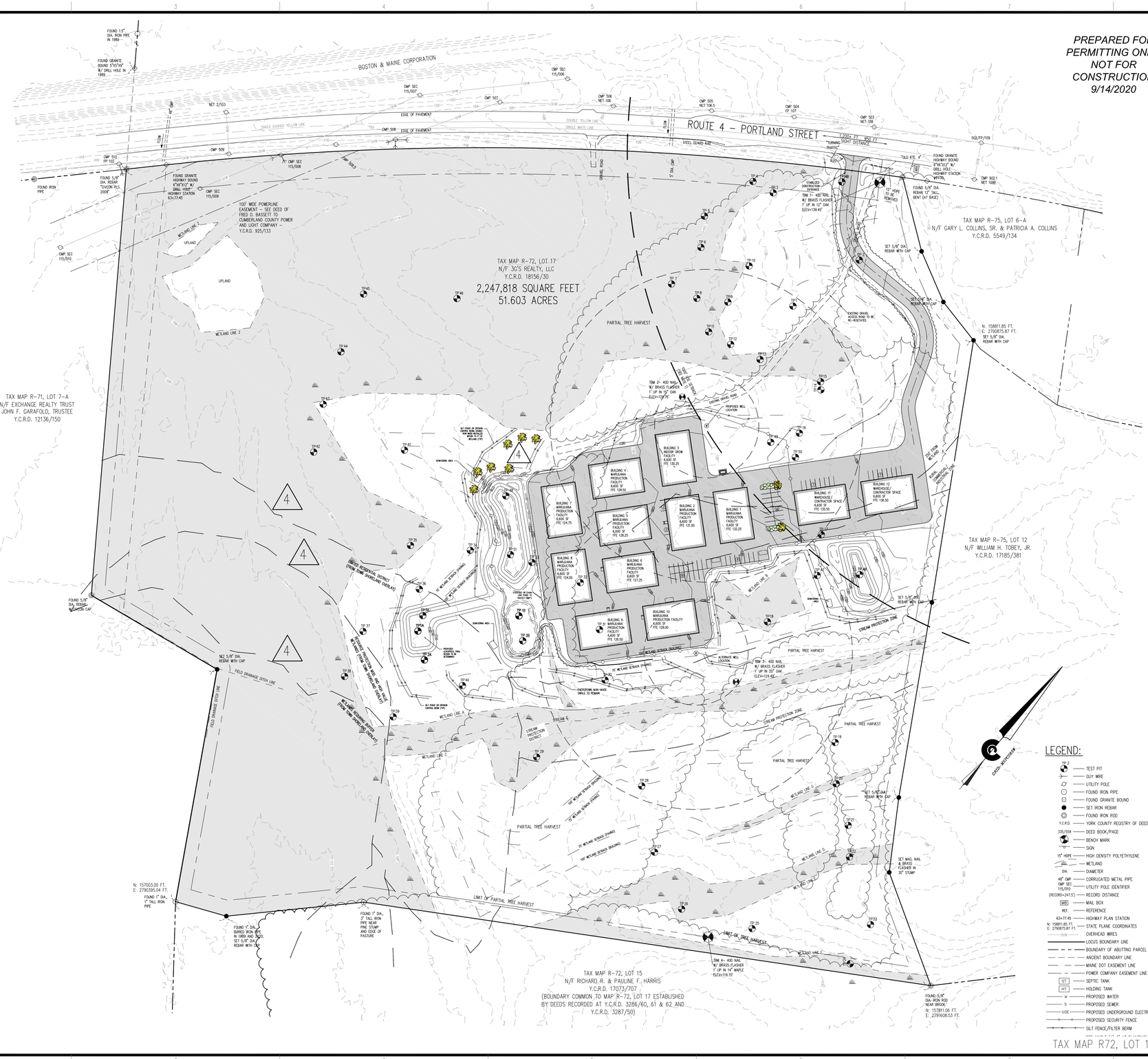
REQUIREMENT	MINIMUM	PROVIDED
LOT SIZE	90,000 S.F. (ON–SITE SEPTIC DISPOSAL)	1,139,595 S.F. UPLAND
LOT WIDTH	200'	>200'
FRONTAGE	200'	>200'
FRONT YARD SETBACK	50'	>500'
SIDE YARD SETBACK	25'	50'
REAR YARD SETBACK	25'	>500
BUILDING HEIGHT	45' (MAXIMUM)	>35'
MAXIMUM LOT COVERAGE	80%	9.9%

PORTIONS OF THE PARCEL ARE ALSO LOCATED IN THE RESOURCE PROTECTION DISTRICT (RP) (WITHIN 250' BUFFER AROUND WETLANDS OF MODERATE AND HIGH VALUE). SHORELAND ZONING ORDINANCE DIMENSIONAL REQUIREMENTS ARE AS FOLLOWS:

REQUIREMENT	MINIMUM	PROVIDED
LOT SIZE	40,000 S.F.	1,139,595 S.F. UPLAND
LOT WIDTH	200'	>200'
FRONTAGE	200'	>200'
FRONT YARD SETBACK	50'	>500'
SIDE YARD SETBACK	25'	50'
REAR YARD SETBACK	30'	>500
BUILDING HEIGHT	35' (MAXIMUM)	>35'
MAXIMUM LOT COVERAGE	10%	9.9%
WETLAND SETBACK	100' (75' PAVEMENT)	CONFORMS

FOR COMPLETE ZONING INFORMATION REFER TO THE TOWN OF BERWICK LAND USE ORDINANCE.

10. CONTOURS AS SHOWN ARE BASED ON LIDAR DATA FROM THE MAINE OFFICE OF GIS. SEE PROJECT DATA FILES FOR ADDITIONAL ON–THE–GROUND SPOT ELEVATIONS.
11. WETLAND LINES AND TEST PITS WHERE IDENTIFIED BY KENNETH GARDNER, MAINE SOIL SCIENTIST (#61) IN JANUARY 2020. THE LOCATIONS OF THE WETLAND FLAGS AND TEST PITS WERE FIELD SURVEYED BY CIVIL CONSULTANTS BY ON–THE–GROUND INSTRUMENT SURVEY.
12. SIGHT DISTANCE INDICATED ON PLANS IS BASED ON INFORMATION GATHERED BY CIVIL CONSULTANTS ON 4–8–2020.
13. ANY BUILDING MOUNTED LIGHTS SHALL BE LED SHIELDED AND DOWNLIT TO REDUCE GLARE VISIBLE FROM ROUTE 4 OR ABUTTING PROPERTIES.
14. KNOX BOX FOR BUILDING ACCESS WILL BE INSTALLED AT THE SECURITY GATE, OR AT A LOCATION DETERMINED BY THE BERWICK FIRE DEPARTMENT.



STATE OF MAINE
Neil J. Rapoza
12169
LICENSED
PROFESSIONAL ENGINEER
9/14/2020

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Engineers
Planners
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South Berwick
Maine
03908
207-384-2550
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NO.	REVISIONS	INT.	DATE
6	ADDED TEST PIT INFO, REVISED DETAILS	NJR	9/14/20
5	REVISED LAYOUT, WETLAND AVOIDANCE	NJR	9/8/20
4	REVISED PER TOWN PLANNER COMMENTS	NJR	7/29/20
3	REVISED NOTES SHEET L6	NJR	6/4/20
2	RELOCATED ENTRANCE PER DOT REVIEW	NJR	5/1/20
1	ISSUED FOR SUBMISSION TO DEP	NJR	4/24/20
	ISSUED FOR SUBMISSION TO TOWN		

RECORD OWNER:
3G'S REALTY, LLC

OWNER ADDRESS:
309 OLD COLONY AVENUE,
SOUTH BOSTON, MA 02127

PROPOSED SITE DEVELOPMENT
LAND OF 3G'S REALTY LLC - MAP R72/ LOT 17
ROUTE 4 (PORTLAND STREET)
BERWICK, YORK COUNTY, MAINE

PREPARED FOR:
SCOTT KEARNAN
CLIENT ADDRESS: 309 OLD COLONY AVENUE, SOUTH BOSTON, MA 02127

1"=100'
0' 100'

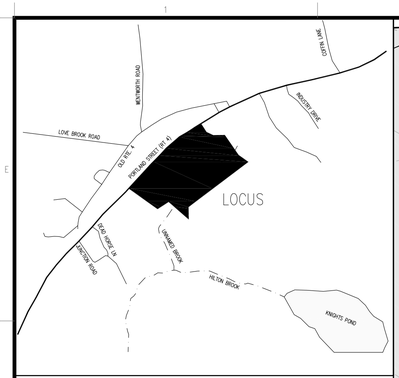
DATE: 04/09/2020
DRAWN BY: NJR
CHECKED BY: GRA
APPROVED BY: NJR

SITE PLAN

PROJECT NO: 19–352.00

L1

SHEET: 1 OF 6



LOCUS

REFERENCE PLANS:

1. BOUNDARY AND EXISTING CONDITIONS PLAN OF LAND OF 3G'S REALTY, LLC – MAP R72/LOT 17, ROUTE 4 (PORTLAND STREET, BERWICK, YORK COUNTY, MAINE. PREPARED FOR SCOTT KEARNAN, 309 OLD COLONY AVENUE, SOUTH BOSTON, MA 02127. PREPARED BY CIVIL CONSULTANTS, DATED 2–25–2020.

NOTES:

1. THE DEVELOPMENT CONSISTS OF CONSTRUCTING 9 NEW BUILDINGS INTENDED TO BE LEASED SPACES FOR THE USE OF CULTIVATING PLANTS INDOORS, INCLUDING MARIJUANA. THE BUILDINGS HOUSING THIS TYPE OF USE REQUIRE A 1000' SEPARATION FROM THE NEAREST MARIJUANA RELATED BUILDING ON ADJACENT LOTS. A SETBACK TO THE USE ON MAP R72 LOT 5 (TRICANN ALTERNATIVES) IS INDICATED ON THIS PLAN, WITH ANY STRUCTURE SHOWN INSIDE THIS SETBACK BEING NON–MARIJUANA RELATED USES.
2. BOUNDARY AND PLANMETRIC DETAIL DEPICTED HEREON IS THE RESULT OF AN ON–THE–GROUND FIELD SURVEY BY CIVIL CONSULTANTS IN FEBRUARY 2020. AT THE TIME OF THE FIELD SURVEY, THE GROUND WAS COVERED WITH 4–12 INCHES OF SNOW. FEATURES OBSCURED BY SNOW MAY NOT BE REFLECTED HEREON.
3. NORTH AS DEPICTED HEREON IS REFERENCED TO GRID NORTH, NAD83, MAINE STATE PLANE COORDINATE SYSTEM WEST ZONE. COORDINATE VALUES AND ORIENTATION ARE DERIVED FROM A GPS SURVEY COMPUTED UTILIZING THE NGS OPUS ON–LINE PROCESSING SERVICE. REFERENCE FRAME IS NAD83 2011 EPOCH 2010.0000. THE SURVEY IS TIED TO CORS STATIONS BOSTON MAAS 1 CORS (ZBW1), BARTLETT CORS (BARN) AND BRUNSWICK 1 CORS (BRU1). DISTANCES DEPICTED HEREON ARE GRID. TO CONVERT GRID DISTANCES TO GROUND DISTANCES, MULTIPLY THE GRID DISTANCE BY 1.0000050).
4. ELEVATIONS DEPICTED HEREON ARE REFERENCED TO NAVD88, DERIVED FROM THE ABOVE REFERENCED GPS SURVEY.
5. ASSESSOR'S INFORMATION: TOWN OF BERWICK ASSESSOR'S MAP R72, LOT 17
6. RECORD OWNERS AND DEED REFERENCES: 3G'S REALTY, LLC – Y.C.R.D. 18156/30
7. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS NEED TO CONTACT DIGSAFE AND FIELD VERIFY ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
8. THE LOCUS PARCEL IS LOCATED IN "ZONE X", ON THE NATIONAL FLOOD INSURANCE PROGRAM, FLOOD INSURANCE RATE MAP (FIRM) FOR THE TOWN OF BERWICK, MAINE, YORK COUNTY, COMMUNITY PANEL NUMBER 230144 0010 B, EFFECTIVE DATE AUGUST 5, 1991. ZONE X IS DEFINED AS "AREAS DETERMINED TO BE OUTSIDE THE 500–YEAR FLOODPLAIN.
9. THE LOCUS PARCEL IS LOCATED IN THE RURAL COMMERCIAL/INDUSTRIAL ZONE (RC/I). BASIC LAND USE ORDINANCE DIMENSIONAL REQUIREMENTS ARE AS FOLLOWS:

REQUIREMENT	MINIMUM	PROVIDED
LOT SIZE	90,000 S.F. (ON–SITE SEPTIC DISPOSAL)	1,139,595 S.F. UPLAND
LOT WIDTH	200'	>200'
FRONTAGE	200'	>200'
FRONT YARD SETBACK	50'	>600'
SIDE YARD SETBACK	25'	50'
REAR YARD SETBACK	25'	>500
BUILDING HEIGHT	45' (MAXIMUM)	>35'
MAXIMUM LOT COVERAGE	80%	9.9%

PORTIONS OF THE PARCEL ARE ALSO LOCATED IN THE SHORELAND ZONE (WITHIN 250' OF 10 ACRE FRESHWATER WETLAND). SHORELAND ZONING ORDINANCE DIMENSIONAL REQUIREMENTS ARE AS FOLLOWS:

REQUIREMENT	MINIMUM	PROVIDED
LOT SIZE	90,000 S.F. (ON–SITE SEPTIC DISPOSAL)	1,139,595 S.F. UPLAND
LOT WIDTH	200'	>200'
FRONTAGE	200'	>200'
FRONT YARD SETBACK	50'	>600'
SIDE YARD SETBACK	25'	50'
REAR YARD SETBACK	30'	>500
BUILDING HEIGHT	35' (MAXIMUM)	>35'
MAXIMUM LOT COVERAGE	20%	9.9%
WETLAND SETBACK	100' PRIMARY STRUCTURE, 75' PAVEMENT	CONFORMS

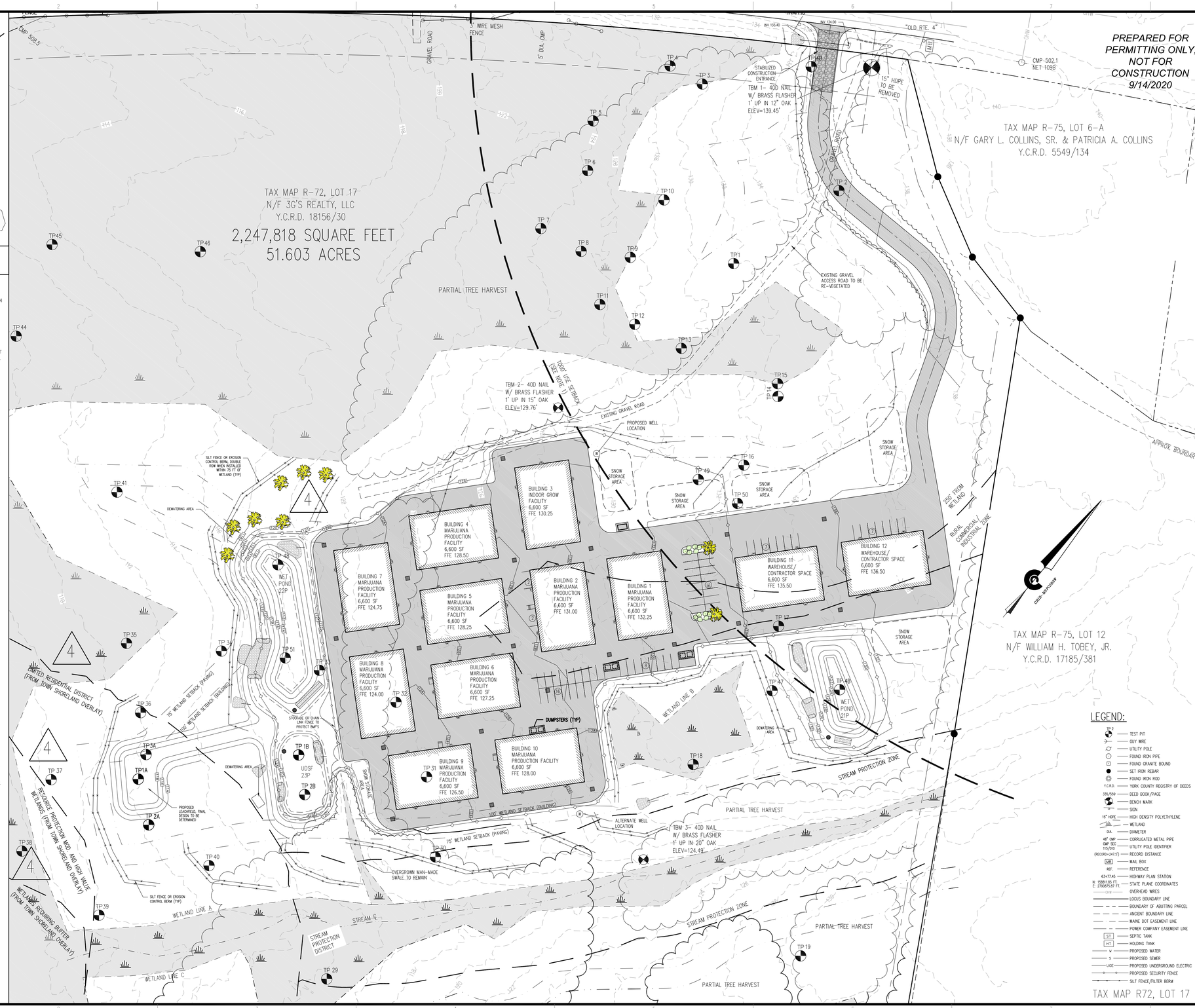
FOR COMPLETE ZONING INFORMATION REFER TO THE TOWN OF BERWICK LAND USE ORDINANCE.

10. CONTOURS AS SHOWN ARE BASED ON LIDAR DATA FROM THE MAINE OFFICE OF GIS. SEE PROJECT DATA FILES FOR ADDITIONAL ON–THE–GROUND SPOT ELEVATIONS.
11. WETLAND LINES AND TEST PITS WHERE IDENTIFIED BY KENNETH GARDNER, MAINE SOIL SCIENTIST (#61) IN JANUARY 2020. THE LOCATIONS OF THE WETLAND FLAGS AND TEST PITS WERE FIELD SURVEYED BY CIVIL CONSULTANTS BY ON–THE–GROUND INSTRUMENT SURVEY.
12. DUMPSTERS SHOWN ON PLAN ARE FOR INERT (NON–MARIJUANA) WASTE. MARIJUANA PLANT WASTE SHALL BE STORED SECURELY PRIOR TO BEING MIXED WITH INERT WASTE PER ADULT USE MARIJUANA RULES 18–691 C.M.R., CHAPTER 1, SECTION 9.

PARKING NOTES:

1. THE PROPOSED USES WILL BE EITHER MARIJUANA GROW FACILITIES OR WAREHOUSE/INDUSTRIAL SPACES. THE TABLE BELOW INDICATES THE PARKING REQUIREMENTS AND AVAILABLE SPACES.
2. PARKING REQUIREMENTS PER TOWN OF BERWICK LAND USE ORDINANCE §7.B.C.3.i:

USE	SPACES/UNIT	UNITS	REQUIRED
INDUSTRIAL (GROW FACILITY)	1/EMPLOYEE	30 EMPLOYEES (3/BLDG)	30
WAREHOUSE/INDUSTRIAL	1/ 500 S.F.	13,200 SF	27
		TOTAL REQUIRED	57
		TOTAL PROVIDED	58



STATE OF MAINE
Neil J. Rapoza
12169
LICENSED
PROFESSIONAL ENGINEER
9/14/2020

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NO.	REVISIONS	INT.	DATE
6	ADDED TEST PIT INFO, REVISED DETAILS	NJR	9/14/20
5	REVISED LAYOUT, WETLAND AVOIDANCE	NJR	9/8/20
4	REVISED PER TOWN PLANNER COMMENTS	NJR	7/29/20
3	REVISED NOTES SHEET L6	NJR	6/4/20
2	RELOCATED ENTRANCE PER DOT REVIEW	NJR	5/1/20
1	ISSUED FOR SUBMISSION TO DEP	NJR	4/24/20
	ISSUED FOR SUBMISSION TO TOWN		

RECORD OWNER:
3G'S REALTY, LLC

OWNER ADDRESS:
309 OLD COLONY AVENUE,
SOUTH BOSTON, MA 02127

PROPOSED SITE DEVELOPMENT
LAND OF 3G'S REALTY LLC - MAP R72/ LOT 17
ROUTE 4 (PORTLAND STREET)
BERWICK, YORK COUNTY, MAINE

PREPARED FOR:
SCOTT KEARNAN
CLIENT ADDRESS: 309 OLD COLONY AVENUE, SOUTH BOSTON, MA 02127

1"=60'
0' 60'

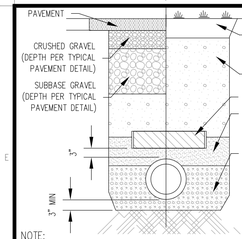
DATE: 04/07/2020
DRAWN BY: NJR
CHECKED BY: GRA
APPROVED BY: NJR

SITE PLAN

PROJECT NO: 19–352.00

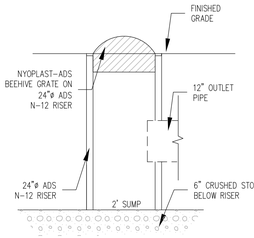
L2

SHEET: 2 OF 6

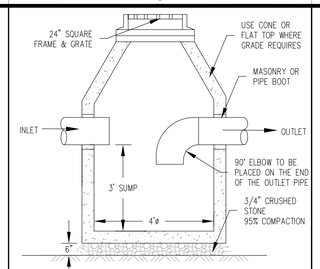


NOTE:
2"x2' STYROFOAM INSULATION BOARD SHALL BE PLACED IN AREAS WHERE COVER OVER LINE IS LESS THAN 2.5', OR WHERE SHOWN.

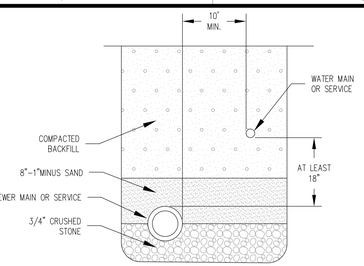
DRAINLINE TRENCH DETAIL
NOT TO SCALE



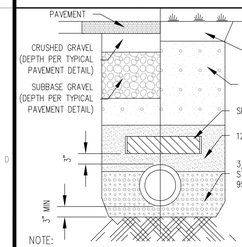
DRAIN-STRUCTURE-NYOPLAST
NOT TO SCALE



CATCH BASIN WITH ELBOW
NOT TO SCALE

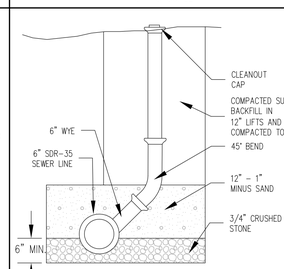


SEWER AND WATER SEPARATION DETAIL
NOT TO SCALE

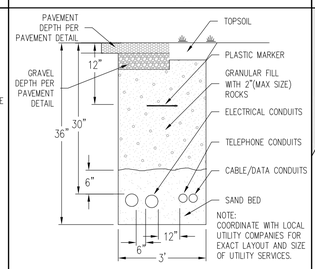


NOTE:
2"x2' STYROFOAM INSULATION BOARD SHALL BE PLACED IN AREAS WHERE COVER OVER LINE IS LESS THAN 4' OR WHERE SHOWN.

SEWER LINE TRENCH WITH INSULATION
NOT TO SCALE

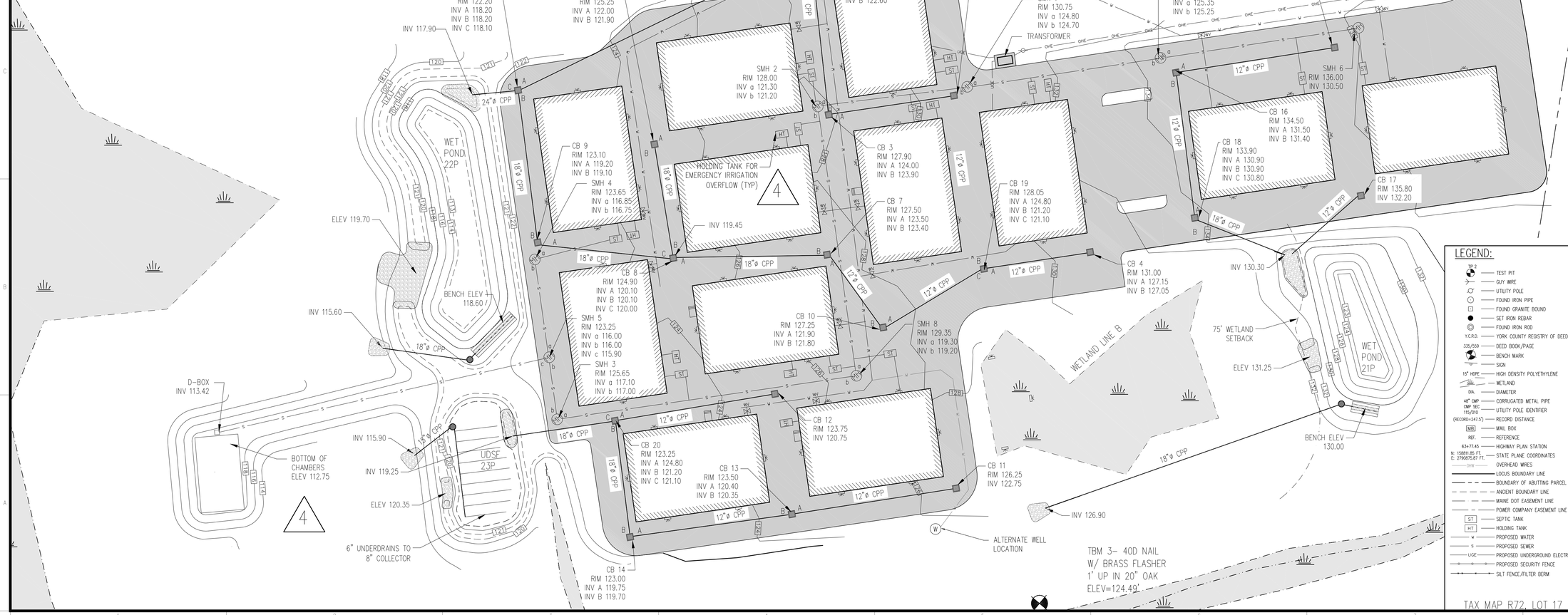


SEWER SERVICE CLEANOUT
NOT TO SCALE



NOTE:
COORDINATE WITH LOCAL UTILITY COMPANIES FOR EXACT LAYOUT AND SIZE OF UTILITY SERVICES.

ELECTRIC & TELEPHONE TRENCH DETAIL
NOT TO SCALE



LEGEND:

- TP 2 — TEST PIT
- GUY WIRE
- UTILITY POLE
- FOUND IRON PIPE
- FOUND GRANITE BOUND
- SET IRON REBAR
- FOUND IRON ROD
- Y.C.R.D. — YORK COUNTY REGISTRY OF DEEDS
- 333/559 — DEED BOOK/PAGE
- BENCH MARK
- SIGN
- 15" HDPE — HIGH DENSITY POLYETHYLENE
- WETLAND
- DIA. — DIAMETER
- 48" CMP — CORRUGATED METAL PIPE
- CMP SEC 115/010 — UTILITY POLE IDENTIFIER
- (RECORD=247.5') — RECORD DISTANCE
- MB — MAIL BOX
- REF. — REFERENCE
- 63+77.45 — HIGHWAY PLAN STATION
- N: 158811.85 FT. E: 279087.87 FT. — STATE PLANE COORDINATES
- OHW — OVERHEAD WIRES
- LOCUS BOUNDARY LINE
- BOUNDARY OF ABUTTING PARCEL
- ANCIENT BOUNDARY LINE
- MAINE DOT EASEMENT LINE
- POWER COMPANY EASEMENT LINE
- ST — SEPTIC TANK
- HT — HOLDING TANK
- W — PROPOSED WATER
- S — PROPOSED SEWER
- UGE — PROPOSED UNDERGROUND ELECTRIC
- PROPOSED SECURITY FENCE
- SILT FENCE/FILTER BERM

STATE OF MAINE — Neil J. Rapoza 12169 — LICENSED PROFESSIONAL ENGINEER — 9/14/2020

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1"=40'
0' 40'

DATE: 04/09/2020
DRAWN BY: NJR
CHECKED BY: GRA
APPROVED BY: NJR

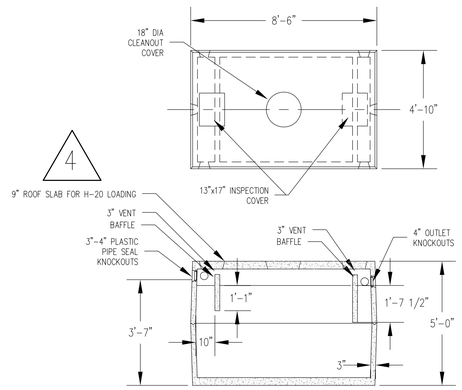
UTILITIES PLAN AND DETAILS

PROJECT NO: 19-352.00

L3

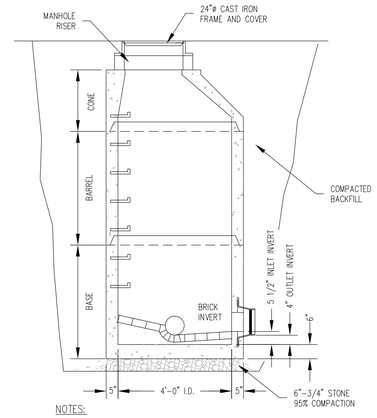
SHEET: 3 OF 6

COORDINATE FILE: J:\AAA\1935200\CARLSON\SURVEY\POINTS\MSPCS83W-NAVD88.CRD
CADD FILE: J:\aaa\2019\1935200\CARLSON\ENGINEERING\1935200-E-ST.DWG
PLOT DATE: 9/14/2020



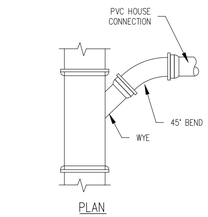
NOTES:
1. CONCRETE: 4,000 PSI AFTER 28 DAYS.
2. REINFORCING: 6X6/10X10 W.W.M. & FIBERS.
3. HEAVY DUTY SEPTIC TANK TOPS REINFORCED WITH 5/8" REBAR @ 12" O.C. EACH WAY.
4. KEYED JOINT SEALED WITH BUTY RUBBER.
5. EXCAVATION MUST BE AT LEAST 12" WIDER AND LONGER THAN TANK SIZE.

SEPTIC TANK DETAIL
NOT TO SCALE

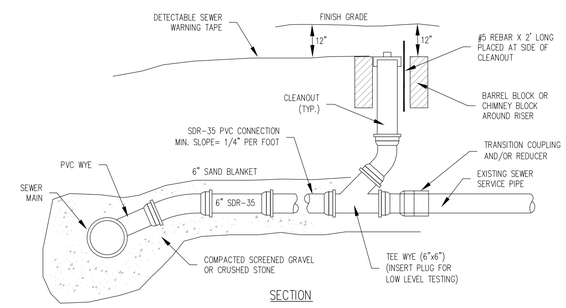


NOTES:
1. CONCRETE: 4,000 PSI AFTER 28 DAYS.
2. REINFORCING: H-20 LOADING 4 X 4/4 X 4 W.W.M.
3. SHIPLAP JOINTS SEALED WITH 1 STRIP OF 1" DIA. BUTYL RUBBER SEALANT.
4. EXTERIOR ASPHALT COATED. (SANITARY MANHOLES ONLY)
5. LOCK JOINT FLEXIBLE PIPE SLEEVES, CAST IN.
6. EACH CASTING TO HAVE LIFTING HOLES CAST IN.
7. MANHOLE STEPS @ 12" O.C. (WHEN REQUIRED)
8. PROVIDE 2" LIP AT TOP OF CONE TO ACCOMODATE VACUUM TESTING. (SANITARY MANHOLES ONLY)

SEWER MANHOLE DETAIL
NOT TO SCALE

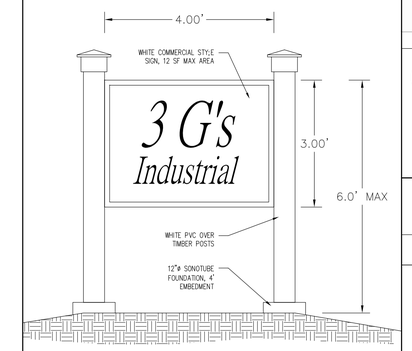


SERVICE CONNECTION NOTES:
1. SEE DETAILS FOR SERVICE CONNECTION REQUIREMENTS.
2. SERVICE CONNECTION SHALL BE INSTALLED BELOW WATER MAIN WHERE POSSIBLE.
3. CLEANOUTS SHALL BE INSTALLED AT EACH SERVICE CONNECTION.
4. REBAR SHALL BE PLACED AT SIDE OF CLEANOUT.
5. CLEANOUT SHALL BE USED TO PLUG AND TEST ALL NEW LATERALS WITH MINIMAL INTERRUPTION TO OPERATION OF HOMEOWNER SANITARY SYSTEM.
6. CLEANOUT RISER PIPE AND FITTINGS SHALL BE INCIDENTAL AND SHALL NOT BE CONSIDERED FOR PAYMENT.
7. CLEANOUTS SHALL BE PLACED EVERY 75 FEET AND AT BENDS IN PIPING.

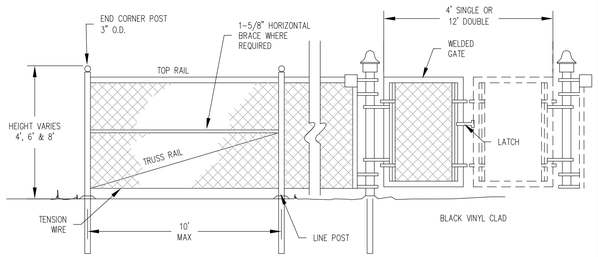


SERVICE CONNECTION DETAIL
NOT TO SCALE

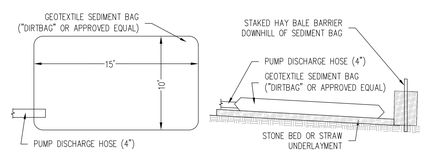
PREPARED FOR PERMITTING ONLY, NOT FOR CONSTRUCTION 9/14/2020



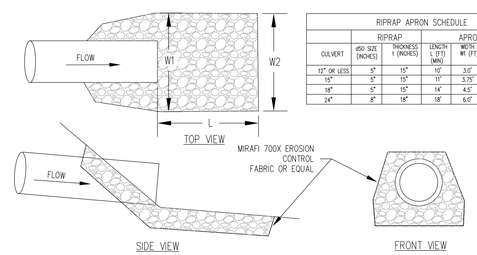
SIGN DETAIL
NOT TO SCALE



CHAIN LINK FENCE
NOT TO SCALE

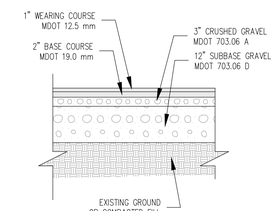


DEWATERING DETAIL
NOT TO SCALE

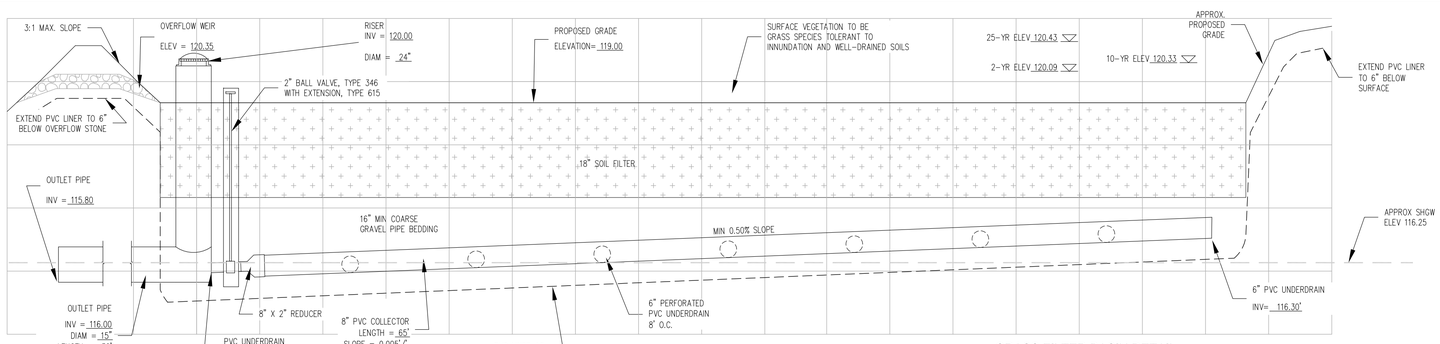


RIPRAP APRON SCHEDULE					
	RIPRAP		APRON		
CULVERT	d50 SIZE (INCHES)	THICKNESS 1 (INCHES)	LENGTH L (FT) (MIN)	WIDTH W1 (FT)	WIDTH W2 (FT)
12" OR LESS	5"	15"	10'	3.0'	12'
15"	5"	15"	11'	3.75'	13'
18"	5"	15"	14'	4.5'	15'
24"	8"	18"	18'	6.0'	20'

RIPRAP APRON PIPE OUTLET DETAIL
NOT TO SCALE



TYPICAL PAVEMENT SECTION
NOT TO SCALE



GRASS FILTER BASIN DETAIL
NOT TO SCALE

GRASSED SOIL FILTER MAINTENANCE NOTES:

SOIL FILTER INSPECTION: THE SOIL FILTER SHOULD BE INSPECTED AFTER EVERY MAJOR STORM IN THE FIRST FEW MONTHS TO ENSURE PROPER FUNCTION. THEREAFTER, THE FILTER SHOULD BE INSPECTED AT LEAST ONCE EVERY SIX MONTHS TO ENSURE THAT IT IS DRAINING BETWEEN 24 AND 48 HOURS.

SOIL FILTER REPLACEMENT: THE TOP SEVERAL INCHES OF THE FILTER SHALL BE REPLACED WITH FRESH MATERIAL WHEN WATER PONDS ON THE SURFACE OF THE BED FOR MORE THAN 72 HOURS. THE REMOVED SEDIMENTS SHOULD BE DISPOSED IN AN ACCEPTABLE MANNER.

SEDIMENT REMOVAL: SEDIMENT AND PLANT DEBRIS SHOULD BE REMOVED FROM THE PRE-TREATMENT STRUCTURE AT LEAST ANNUALLY.

MOWING: FILTERS WITH GRASS COVER SHOULD BE MOWED NO MORE THAN 2 TIMES PER GROWING SEASON TO MAINTAIN GRASS HEIGHTS LESS THAN 12 INCHES.

FERTILIZATION: FERTILIZATION OF THE UNDERDRAINED FILTER AREA SHOULD BE AVOIDED UNLESS ABSOLUTELY NECESSARY TO ESTABLISH VEGETATION.

HARVESTING AND WEEDING: HARVESTING AND PRUNING OF EXCESSIVE GROWTH WILL NEED TO BE DONE OCCASIONALLY. WEEDING TO CONTROL UNWANTED OR INVASIVE PLANTS MAY ALSO BE NECESSARY.

GRASSED FILTER SEEDING MIX	
TYPE	APPLICATION RATE
CREEPING RED FESCUE	20 LBS/ACRE
TALL FESCUE	20 LBS/ACRE
BIRDSFOOT TREFOIL	8 LBS/ACRE
TOTAL	48 LBS/ACRE

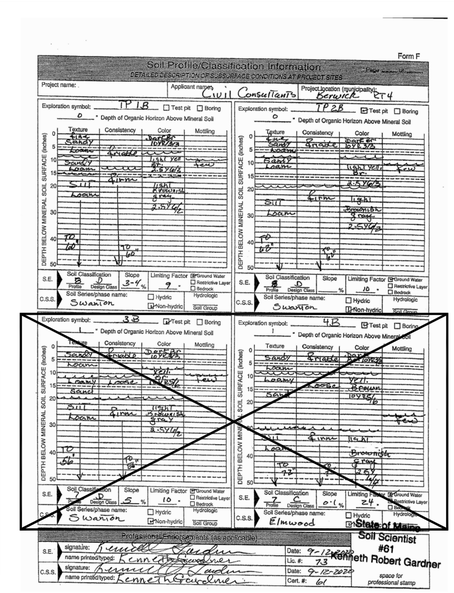
UNDERDRAIN PIPE BEDDING MATERIAL		
COMPONENT MATERIAL	GRADATION OF MATERIAL	
	SIEVE NO.	PERCENT BY WEIGHT PASSING STANDARD SIEVE
UNDERDRAIN BACKFILL MATERIAL (MDOT 703.22 TYPE C)	1"	100
	¾"	90 TO 100
	⅜"	0 TO 75
	4	0 TO 25
	10	0 TO 5

GRASSED FILTER MEDIA			
COMPONENT MATERIAL	PERCENT OF MIXTURE BY VOLUME	GRADATION OF MATERIAL	
		SIEVE NO.	PERCENT BY WEIGHT PASSING STANDARD SIEVE
MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH, WITH FINES AS INDICATED	20 TO 25	200	< 5
LOAMY COARSE SAND (MDOT 703.01)	75 TO 80	⅜"	100
		4	95 TO 100
		8	80 TO 100
		16	50 TO 85
		30	25 TO 60
		60	10 TO 30
		100	2 TO 10
		200	0 TO 5

CONSTRUCTION OVERSIGHT NOTES:

INSPECTION OF THE FILTER/BIORETENTION BASINS SHALL BE PROVIDED FOR EACH PHASE OF CONSTRUCTION BY THE DESIGN ENGINEER WITH REQUIRED REPORTING TO THE DEP. AT A MINIMUM, INSPECTIONS WILL OCCUR:

- AFTER PRELIMINARY CONSTRUCTION OF THE FILTER GRADES AND ONCE THE UNDERDRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED;
- AFTER THE DRAINAGE LAYER IS CONSTRUCTED AND PRIOR TO THE INSTALLATION OF THE FILTER MEDIA;
- AFTER THE FILTER MEDIA HAS BEEN INSTALLED AND SEEDED (OR PLANTED AND MULCHED IF BIORETENTION BASIN);
- AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS;
- ALL MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN WILL BE APPROVED BY THE DESIGN ENGINEER AFTER TESTS BY A CERTIFIED LABORATORY SHOW THAT THEY ARE PASSING DEP SPECIFICATIONS.



STATE OF MAINE — Neil J. Rapoza 12169 — LICENSED PROFESSIONAL ENGINEER — 9/14/2020

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NO.	REVISIONS	INT.	DATE
6	ADDED TEST PIT INFO, REVISED DETAILS	NJR	9/14/20
5	REVISED LAYOUT, WETLAND AVOIDANCE	NJR	9/8/20
4	REVISED PER TOWN PLANNER COMMENTS	NJR	7/29/20
3	REVISED NOTES SHEET L6	NJR	6/4/20
2	RELOCATED ENTRANCE PER DOT REVIEW	NJR	5/1/20
1	ISSUED FOR SUBMISSION TO DEP	NJR	4/24/20
	ISSUED FOR SUBMISSION TO TOWN		

RECORD OWNER: 3G'S REALTY, LLC

OWNER ADDRESS: 309 OLD COLONY AVENUE, SOUTH BOSTON, MA 02127

PROPOSED SITE DEVELOPMENT
LAND OF 3G'S REALTY LLC - MAP R72/ LOT 17
ROUTE 4 (PORTLAND STREET)
BERWICK, YORK COUNTY, MAINE

PREPARED FOR: SCOTT KEARNAN

CLIENT ADDRESS: 309 OLD COLONY AVENUE, SOUTH BOSTON, MA 02127

0' 1"

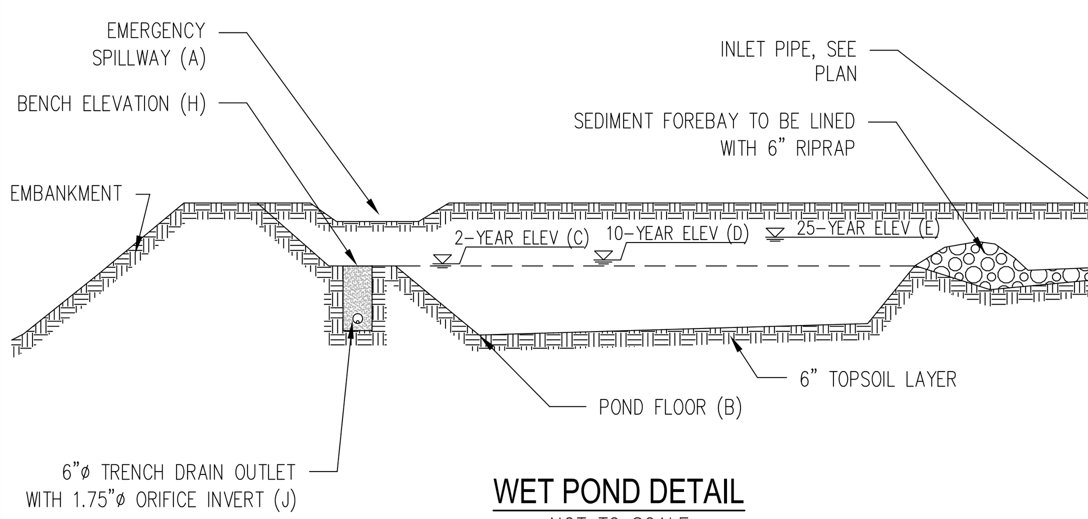
DATE: 04/09/2020
DRAWN BY: NJR
CHECKED BY: GRA
APPROVED BY: NJR

NOTES AND DETAILS

PROJECT NO: 19-352.00

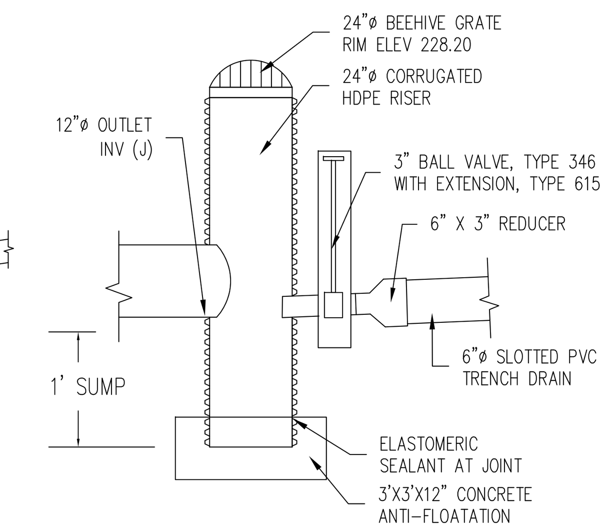
L4

SHEET: 4 OF 6



WET POND DETAIL

NOT TO SCALE



OUTLET RISER DETAIL

NOT TO SCALE

	WET POND SCHEDULE												
	SPILLWAY ELEV	BASIN FLOOR	2-YR ELEV	10-YR ELEV	25-YR ELEV	TEST PIT	DEPTH (inches)	EXIST GRADE	SHWT ELEV	BENCH ELEV	DRAIN INVERT ELEV	TRENCH PERC RATE (in/hr)	BEDRCK /WATER
	A	B	C	D	E					H	J		
POND 21	131.25	123.00	130.99	131.19	131.31	TP-4B	72.00	133.00	131.00	130.00	127.45	6.00	112.00 (BOTTOM PIT)
POND 22	119.70	113.00	119.77	119.88	119.93	TP-48	71.00	118.00	117.00	118.60	116.10	6.00	112.00 (BOTTOM PIT)

WET POND MAINTENANCE NOTES:

GENERAL INSPECTION: THE POND SHOULD BE INSPECTED AFTER EVERY MAJOR STORM IN THE FIRST FEW MONTHS TO ENSURE PROPER FUNCTION. THEREAFTER, THE POND SHOULD BE INSPECTED AT LEAST ONCE EVERY SIX MONTHS TO ENSURE THAT THE POND IS SLOWLY EMPTYING THROUGH THE GRAVEL FILTER TRENCH FOR A SHORT TIME AFTER THE STORM (12–24 HOURS).

INLETS AND OUTLETS: THE INLET AND OUTLET OF THE PONDS SHOULD BE CHECKED PERIODICALLY TO ENSURE THAT FLOW STRUCTURES ARE NOT BLOCKED BY DEBRIS. ALL DITCHES OR PIPES CONNECTING PONDS IN SERIES SHOULD BE CHECKED FOR DEBRIS THAT MAY OBSTRUCT FLOW.

GRAVEL TRENCH: THE GRAVEL TRENCH SHOULD BE CLEAR OF CLOGGING MATERIAL (E.G. DECAYING LEAVES) SO THAT DISCHARGE THROUGH THE TRENCH IS NOT IMPEDED. THE TOP SEVERAL INCHES OF THE GRAVEL IN THE OUTLET TRENCH SHOULD BE REPLACED WITH FRESH MATERIAL WHEN WATER PONDS ABOVE THE PERMANENT POOL FOR MORE THAN 72 HOURS. THE SEDIMENTS REMOVED FROM THE WET POND SHOULD BE DISPOSED OF IN ACCORDANCE WITH APPLICABLE REGULATIONS.

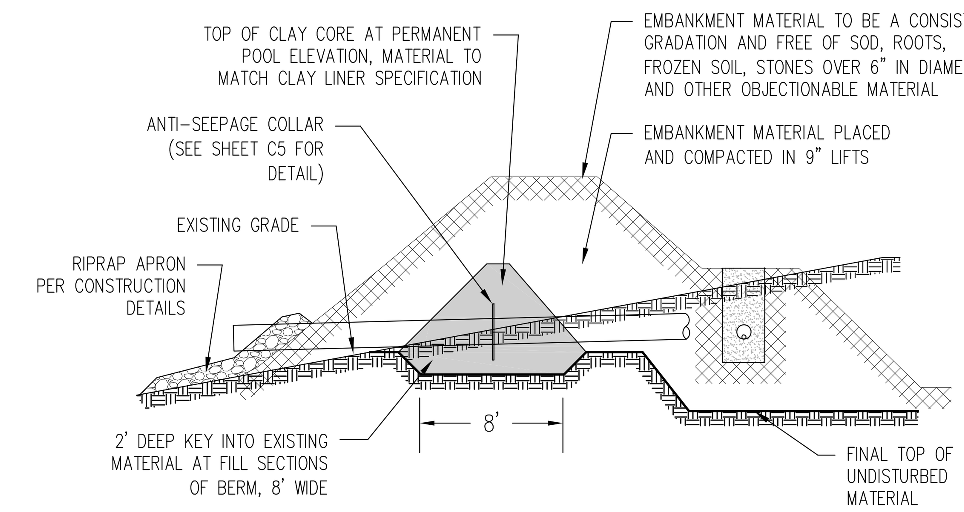
EMBANKMENTS: WET PONDS SHOULD BE INSPECTED ANNUALLY FOR EROSION, SIDE SLOPE DESTABILIZATION, EMBANKMENT SETTLING OR OTHER SIGNS OF STRUCTURAL FAILURE. CORRECTIVE ACTIONS SHOULD BE TAKEN IMMEDIATELY UPON IDENTIFICATION OF A PROBLEM.

CONSTRUCTION OVERSIGHT NOTES:

INSPECTION OF WET PONDS SHALL BE PROVIDED FOR EACH PHASE OF CONSTRUCTION BY THE DESIGN ENGINEER WITH REQUIRED REPORTING TO THE DEP. AT A MINIMUM, INSPECTIONS WILL OCCUR:

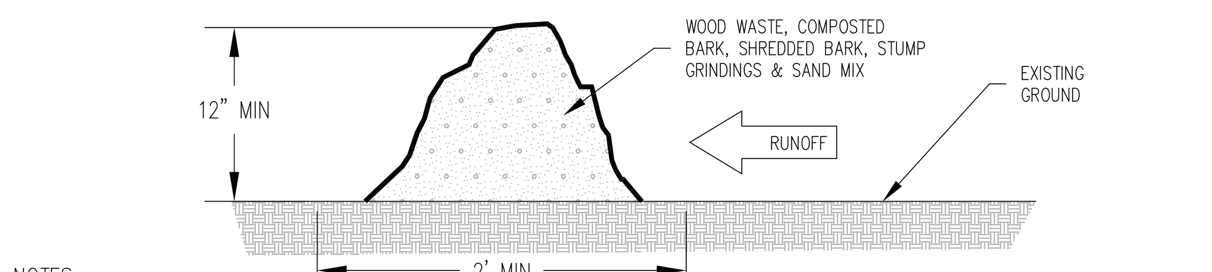
- AFTER AREA IS CLEARED, GRUBBED AND SHAPED, PRIOR TO PLACEMENT OF LINER
- AFTER PLACEMENT OF THE LINER;
- AFTER PLACEMENT OF TOPSOIL LAYER AND SEDIMENT BASIN;
- AFTER PRELIMINARY CONSTRUCTION OF THE GRAVEL TRENCH AND OUTLET CONTROL DEVICES ONCE THE UNDERDRAIN PIPE IS INSTALLED BUT NOT BACKFILLED;
- AFTER THE POND EMBANKMENTS HAVE BEEN STABILIZED;
- AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND POND CONDITIONS AND MAKE CORRECTIONS.

UNDERDRAIN PIPE BEDDING MATERIAL		
COMPONENT MATERIAL	GRADATION OF MATERIAL	
	SIEVE NO.	PERCENT BY WEIGHT PASSING STANDARD SIEVE
UNDERDRAIN BACKFILL MATERIAL (MDOT 703.22 TYPE B)	1"	90 TO 100
	¾"	75 TO 100
	4	50 TO 100
	20	15 TO 80
	50	0 TO 15
	200	0 TO 5



WET POND EMBANKMENT DETAIL

NOT TO SCALE

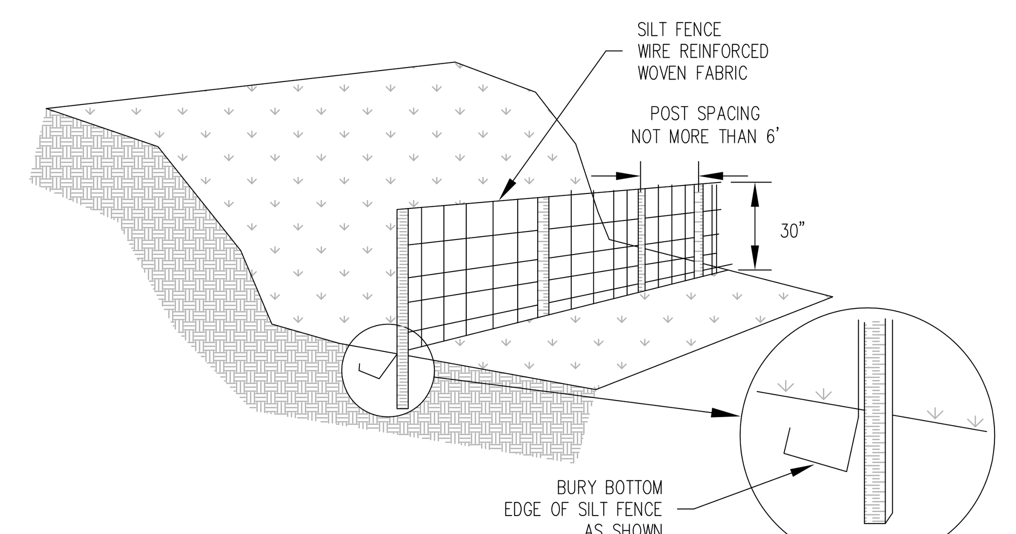


NOTES:

1. THIS BERM MAY BE USED IN PLACE OF FILTER FENCE WHERE APPLICABLE. THE MIXTURE OF THE BERM MATERIAL NEEDS TO BE A WELL-GRADE BLEND OF ORGANIC & MINERAL SUBSTANCE CONFORMING TO THE FOLLOWING STANDARDS:
   ORGANIC MATTER CONTENT: BETWEEN 80% AND 100%
   MOISTURE CONTENT: 30%-60%
   PH: BETWEEN 5.0 AND 8.0
   PARTICLE SIZE BY WEIGHT SHALL BE 100% PASSING A 5" SCREEN AND A MINIMUM OF 70% MAXIMUM OF 85%, PASSING A 0.75" SCREEN.
   LARGE PORTION OF SILTS, CLAYS OR FINE SANDS ARE NOT ACCEPTABLE MIX
2. THE BERM SHALL BE PLACED ALONG A RELATIVELY LEVEL CONTOUR WHEREVER POSSIBLE. THE EXISTING SURFACE MUST BE SCOURED AND THE MIXTURE KEYED IN LIKE ANY OTHER SEDIMENT CONTROL MEASURE.
3. IF FILTER BERM IS DOWNSLOPE OF A 8% OR GREATER SLOPE (OR IF THERE IS FLOWING WATER), ADDITIONAL SUPPORT IS REQUIRED (i.e. SILT FENCE).

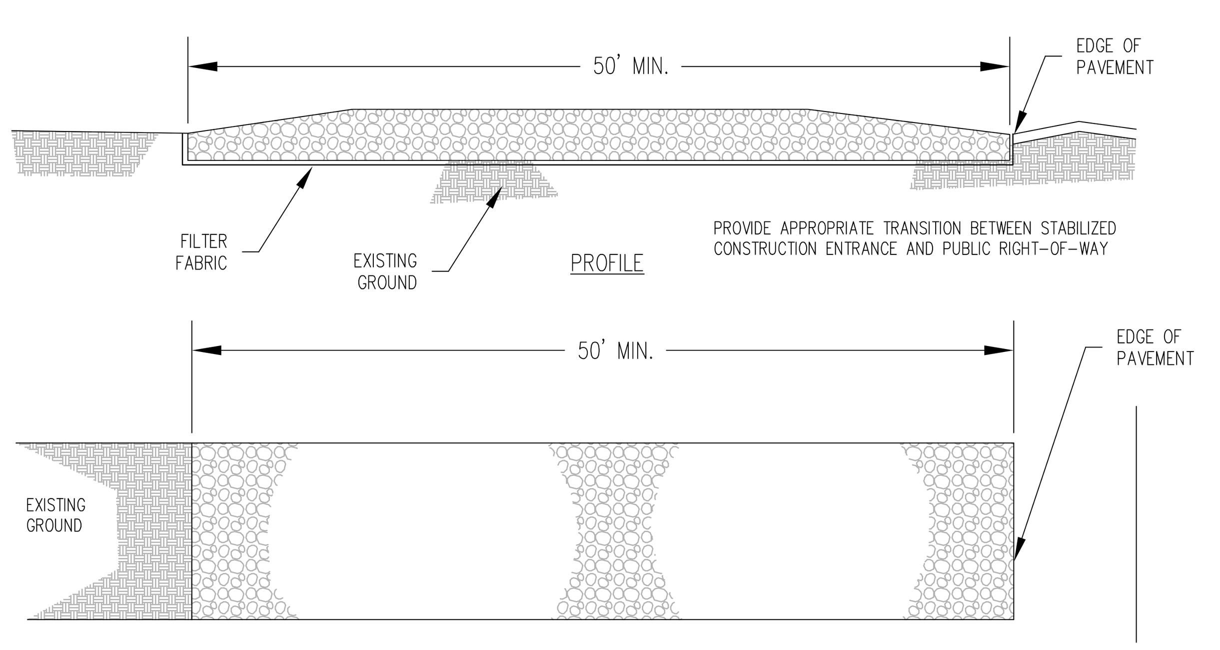
FILTER BERM DETAIL

NOT TO SCALE



SILT FENCE DETAIL

NOT TO SCALE

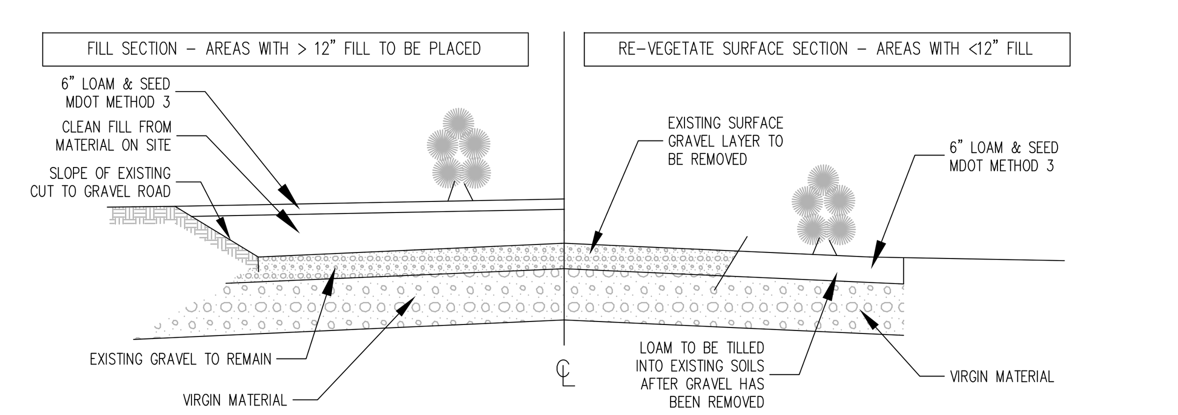


CONSTRUCTION SPECIFICATIONS

1. STONE SIZE – AASHTO DESIGNATION M43, SIZE NO 2 (2-1/2" TO 1-1/2"). USE CRUSHED STONE.
2. LENGTH – AS EFFECTIVE, BUT NOT LESS THAT 50 FEET.
3. THICKNESS – NOT LESS THAN EIGHT (8) INCHES.
4. WIDTH – NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
5. WASHING – WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY. WHEN WASHING IS REQUIRED IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH, OR WATER COURSE THROUGH USE OF SAND BAGS, GRAVEL, BOARDS, OR OTHER APPROVED METHODS.
6. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY VIA VACUUM SWEEPING.

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



PROPOSED RE-VEGETATED ROAD SECTION

NOT TO SCALE

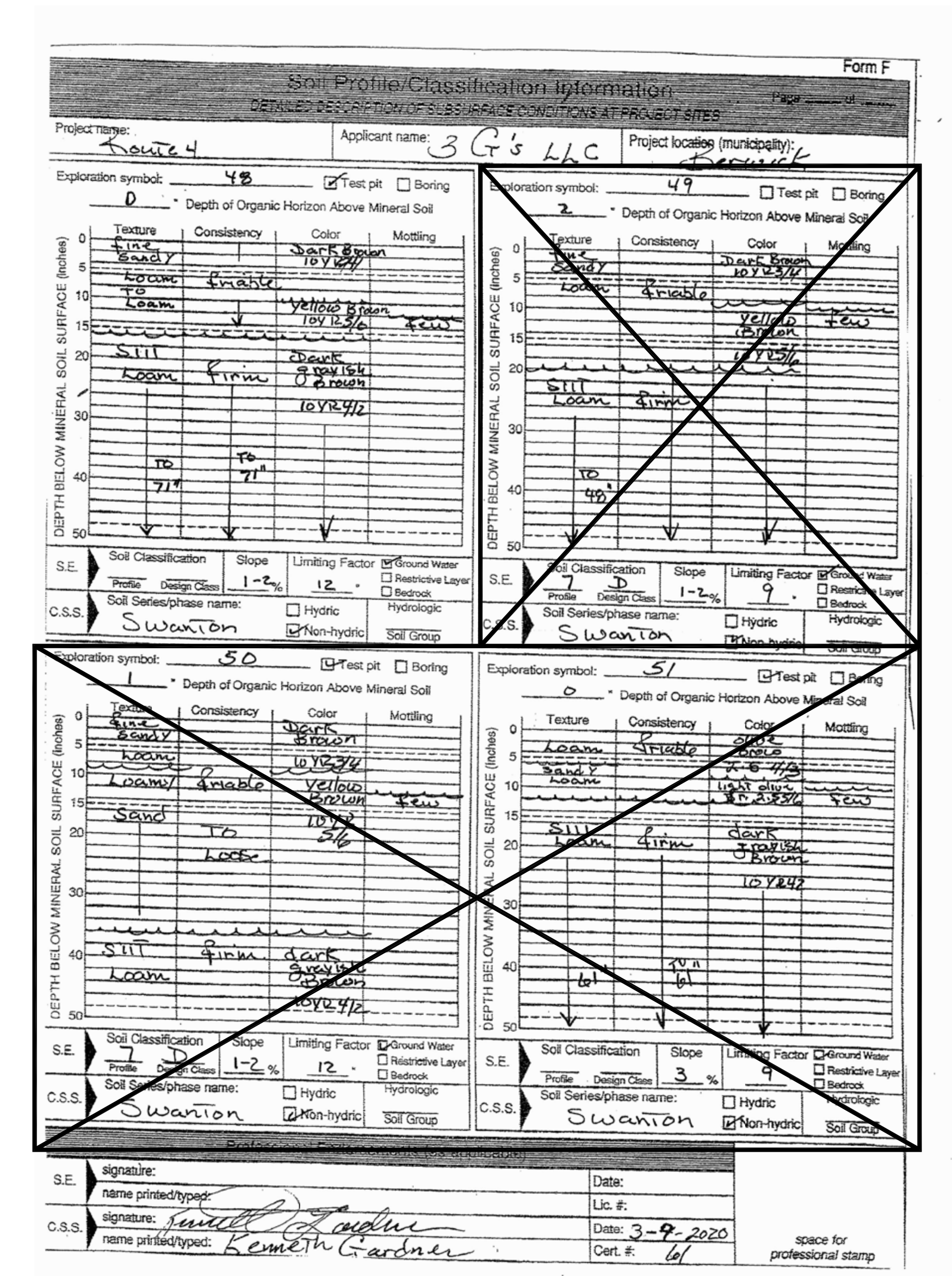
RE-VEGETATED GRAVEL ROADWAY NOTES:

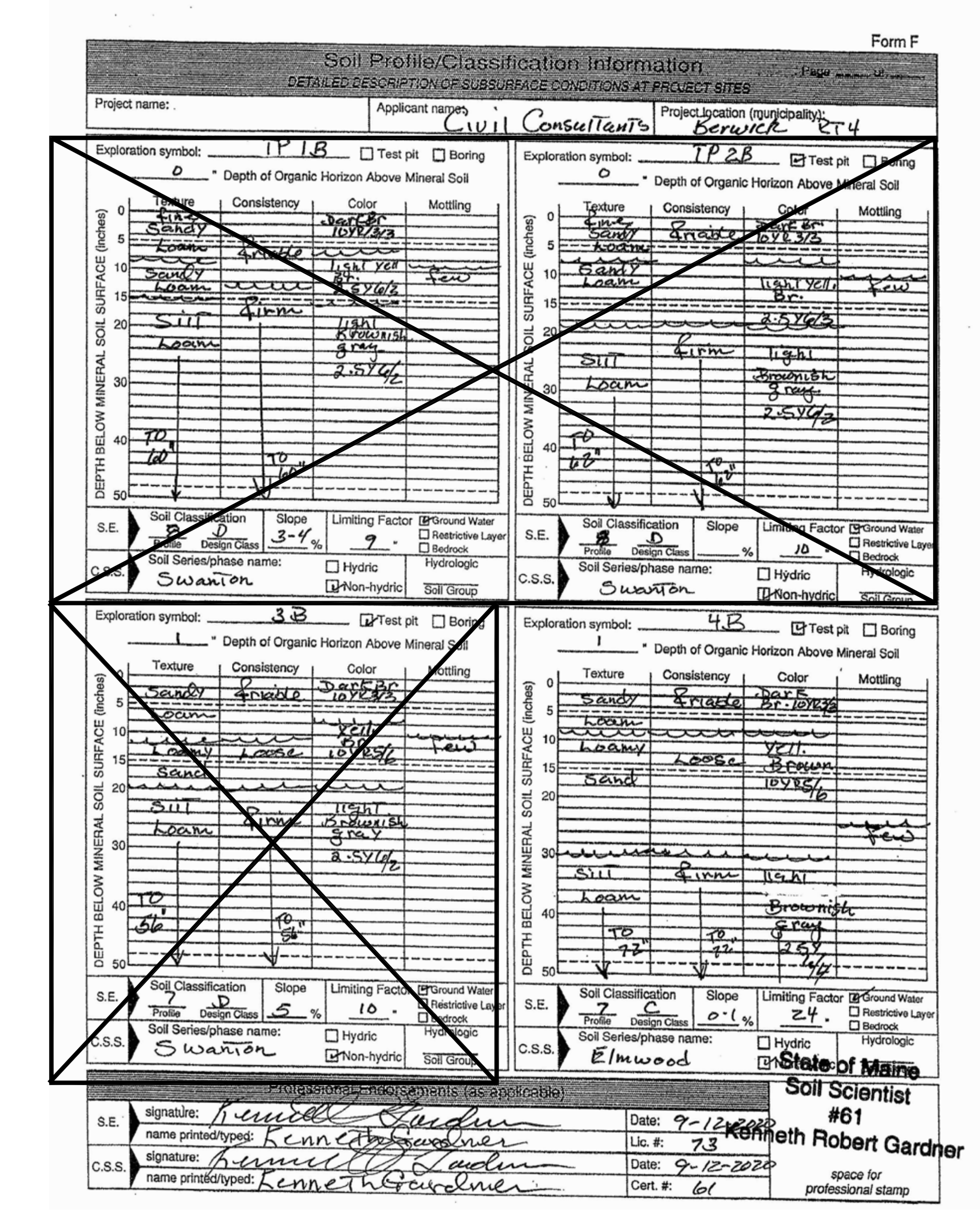
1. WHERE FILL IS NOT PROPOSED, GRAVEL MATERIAL SHALL BE REMOVED FROM THE ROADWAY AREAS THAT ARE TO BE RE-VEGETATED.
2. WHERE FILL OVER THE EXISTING GRAVEL ROADWAY IS PROPOSED, MATERIAL REMOVED FROM THE NEW ROAD LOCATION MAY BE USED TO BRING THE AREA TO 6" BELOW FINISH GRADE
3. 6" OF TOPSOIL TO BE TILLED INTO EXISTING/FILL BASE MATERIAL OVER AREAS TO BE RECLAIMED. THE FOLLOWING LOAM MIXTURE SHALL BE USED (MDOT STANDARD SPECIFICATIONS, SECT. 615):

CONTENT	% BY VOLUME
HUMUS (5.5–8.0 pH)	10%–20% (DETERMINED BY IGNITION TEST)
SAND (2.0mm–0.05mm)	45%–75%
SILT (0.05mm–0.002mm)	20%–40%
CLAY (< 0.002mm)	5%–15%

LOAM SHALL BE SCREENED, LOOSE, FRIABLE, AND FREE FROM REFUSE, LARGE STONES, CLODS, ROOTS, OR OTHER UNDESIRABLE FOREIGN MATTER. IT SHALL BE REASONABLY FREE OF WEEDS, ROOTS, OR RHIZOMES.

4. THE RECLAIMED AREAS SHALL BE SEEDED USING SEEDING METHOD NUMBER 3 AS DESCRIBED BY THE MDOT STANDARD SPECIFICATIONS, SECT. 618.





EROSION AND SEDIMENT CONTROL PRACTICES

1. NO SOIL SHALL BE DISTURBED DURING THE PERIOD OF MARCH 1 THROUGH APRIL 15, NOR DURING ANY OTHER PERIOD WHEN SOILS ARE SATURATED DUE TO RAIN OR SNOW MELT.
2. DISTURBED SOILS SHALL BE STABILIZED WITHIN ONE (1) WEEK FROM THE TIME IT WAS LAST ACTIVELY WORKED USING TEMPORARY OR PERMANENT MEASURES SUCH AS PLACEMENT OF RIPRAP, MULCH OR EROSION CONTROL BLANKET, OR OTHER COMPARABLE MEASURES.
3. HAY OR STRAW MULCH SHALL BE APPLIED AT A RATE OF AT LEAST ONE (1) BALE PER 500 SQUARE FEET (1-2 TONS PER ACRE).
4. IF MULCH IS LIKELY TO BE REMOVED DUE TO TO STEEP SLOPES OR WIND, IT SHALL BE ANCHORED WITH NETTING, PEG OR TWINE, OR OTHER SUITABLE METHOD AND SHALL BE MAINTAINED UNTIL A CATCH OF VEGETATION IS ESTABLISHED OVER THE ENTIRE DISTURBED AREA.
5. IN ADDITION TO PLACEMENT OF RIPRAP, MULCH OR EROSION CONTROL BLANKETS, ADDITIONAL STEPS SHALL BE TAKEN WHERE NECESSARY IN ORDER TO PREVENT SEDIMENTATION OF THE WATER. EVIDENCE OF SEDIMENTATION INCLUDES VISIBLE GULLY EROSION, DISCOLORATION OF WATER BY SUSPENDED PARTICLES AND SLUMPING OF BANKS, SILT FENCES, STAKED HAY BALES AND OTHER SEDIMENTATION CONTROL MEASURES, WHERE PLANNED FOR, SHALL BE IN PLACE PRIOR TO COMMENCEMENT OF WORK, BUT SHALL ALSO BE INSTALLED WHENEVER NECESSARY DUE TO SEDIMENTATION.
6. MULCH OR OTHER TEMPORARY MEASURES SHALL BE MAINTAINED UNTIL THE SITE IS PERMANENTLY STABILIZED WITH VEGETATION OR OTHER PERMANENT CONTROL MEASURES AFTER WHICH TEMPORARY MEASURES WILL BE REMOVED.
7. PERMANENT RE-VEGETATION OF ALL DISTURBED AREAS, USING NATIVE PLANT MATERIAL WHEN POSSIBLE, SHALL OCCUR WITHIN 30 DAYS FROM THE TIME THE AREAS WERE LAST ACTIVELY WORKED, OR FOR FALL AND WINTER ACTIVITIES, BY JUNE 15, EXCEPT WHERE PRECLUDED BY THE TYPE OF ACTIVITY (E.G. RIRRAP, ROAD SURFACES, ETC.). THE VEGETATIVE COVER SHALL BE MAINTAINED.
8. EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT NO MORE THAN 2 ACRES OF THE SITE IS OPEN AT ANY TIME. AN AREA CONSIDERED OPEN IS ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MATS, RIPRAP OR GRAVEL BASE ON A ROAD. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS EXPECTED TO BE UNDER TAKEN DURING THE PROCEEDING 15 DAYS AND THAT CAN BE MULCHED IN ONE DAY PRIOR TO ANY SNOW EVENT. ALL AREA SHALL BE CONSIDERED TO BE DENUDED UNTIL THE SUBBASE GRAVEL IS INSTALLED IN ROADWAY AREAS OR THE AREAS OF FUTURE LOAM AND SEED HAVE BEEN LOAMED, SEEDED AND MULCHED. A COVER OF EROSION CONTROL MIX PERFORMS THE BEST.
9. ANY ADDED MEASURES, WHICH MAY BE NECESSARY TO CONTROL EROSION/SEDIMENTATION, MUST BE BE INSTALLED. THESE MAY BE DEPENDENT UPON SITE AND WEATHER CONDITIONS AND THE ACTUAL SITE SIZE. TO MINIMIZE AREAS WITHOUT EROSION CONTROL PROTECTION, CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED.
10. SEDIMENT BARRIERS (SILT FENCE OR EROSION CONTROL BERM) SHALL BE INSTALLED DOWNGRADE OF MATERIAL STOCKPILES. STORMWATER SHALL BE PREVENTED FROM RUNNING ONTO MATERIAL STOCKPILES.
11. DISPOSAL OF COLLECTED DEBRIS MUST BE IN CONFORMANCE WITH MAINE SOLID WASTE LAW, TITLE 38 MRSA SECTION 1301 ET. SEQ.
12. LIME AND FERTILIZER APPLICATION RATES SHALL NOT EXCEED THE FOLLOWING:

    GROUND LIMESTONE: 3 TONS/ACRE (130 LBS./1000 S.F.)
    FERTILIZER, 10-10-10 OF EQUIVALENT: 600 LBS./ACRE (14 LBS./1000 S.F.)

FERTILIZER SHALL NOT BE APPLIED BEFORE START OF THE GROWING SEASON NOR AFTER SEPTEMBER 30. FERTILIZED AREAS SHALL BE MULCHED TO REDUCE OFF-SITE TRANSPORT OF NUTRIENTS UNTIL USED BY VEGETATIVE GROWTH.

SEEDING MIXTURE AND SCHEDULE:

SPREAD TOPSOIL UNIFORMLY 6" DEEP OVER AREAS TO BE RECLAIMED. THE FOLLOWING SEED MIXTURE SHALL BE USED:

LAWNS:

KENTUCKY BLUEGRASS	0.46 LBS./1000 S.F.
CREEPING RED FESCUE	0.46 LBS./1000 S.F.
PERENNIAL RYE GRASS	0.11 LBS./1000 S.F.
TOTAL	1.03 LBS./1000 S.F.

APPLY LIME AND FERTILIZER AS SPECIFIED UNDER THE EROSION AND SEDIMENTATION CONTROL NOTES. WORK INTO THE TOP (4) INCHES OF SOIL PRIOR TO SEEDING. AFTER SEEDING, APPLY MULCH HAY AS SPECIFIED. ON FLAT AREAS AND NOT EXPOSED TO WIND, THE MULCH WILL BE ANCHORED BY WETTING DOWN. IN OTHER AREAS, JUTE NETTING SHALL BE USED FOR ANCHORAGE. THE ABOVE SEEDING SCHEDULE IS APPLICABLE IF SEEDING DURING THE GROWING SEASON (APRIL 15 TO JUNE 15 AND AUGUST 30 TO SEPTEMBER 30). BETWEEN JUNE 15 AND AUGUST 30, SEEDING WILL BE DELAYED UNTIL AUGUST 30. IF SOIL IS DISTURBED BETWEEN OCTOBER 1 AND NOVEMBER 1, DELAY SEEDING UNTIL NOVEMBER 1. AFTER NOVEMBER 1 AND BEFORE A SNOW COVER FORMS, THE SAME PROCEDURE WILL BE FOLLOWED EXCEPT THE SEED RATE WILL BE DOUBLED. AFTER SNOW COVER AND BEFORE APRIL 15, SEEDING WILL BE DELAYED UNTIL APRIL 15. HAY MULCH WILL BE APPLIED AT A RATE OF 150 LBS./1000 SQUARE FEET. THIS WILL BE ANCHORED BY NON-ASPHALTIC TACKIFIER SPRAYED ON LAWNS AND JUTE NETTING IN DRAINAGE WAYS AND OTHER AREAS.

ALL EROSION CONTROL MEASURES SHALL CONFORM TO THE MAINE EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES, MARCH 2003.

PREPARED FOR PERMITTING ONLY, NOT FOR CONSTRUCTION 9/14/2020

9/14/2020

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DATE: 04/09/2020
DRAWN BY: NJR
CHECKED BY: GRA
APPROVED BY: NJR

NOTES AND DETAILS

PROJECT NO: 19-352.00

L5

SHEET: 5 OF 6

MAINTENANCE PROCEDURES

THE FOLLOWING PROCEDURES WILL BE FOLLOWED FOR MAINTENANCE OF THE STORMWATER MANAGEMENT FACILITIES AND EROSION & SEDIMENTATION CONTROL (ESC) MEASURES AT THIS SITE. NOTE: FOR THE PURPOSES OF THESE PROCEDURES, A SIGNIFICANT RAINFALL IS 1/2" IN A 24 HOUR PERIOD.

CONSTRUCTION INSPECTIONS WILL BE PERFORMED AT LEAST ONCE A WEEK AS WELL AS BEFORE, AND WITHIN 24 HOURS AFTER A STORM EVENT.

IF INSPECTIONS IDENTIFY AREAS IN NEED OF REPAIR, THOSE REPAIRS SHALL BE STARTED BY THE END OF THE NEXT WORK DAY AND COMPLETED WITHIN SEVEN DAYS (OR BEFORE THE NEXT STORM EVENT).

ALL CONSTRUCTION INSPECTIONS SHALL BE CONDUCTED BY SOMEONE WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT.

THE SCOPE OF CONSTRUCTION INSPECTIONS INCLUDES THE EROSION CONTROL MEASURES AS WELL AS DISTURBED AREAS, MATERIAL STORAGE AREAS, AND LOCATIONS WHERE VEHICLES ENTER AND EXIT THE SITE (STABILIZED CONSTRUCTION ENTRANCE).

THE CONTRACTOR WILL BE RESPONSIBLE FOR INSPECTION AND MAINTENANCE OF ALL STORMWATER AND ESC MEASURES UNTIL FINAL STABILIZATION OF THE SITE IS ACHIEVED. UPON STABILIZATION, 3 G'S REALTY LLC WILL BE RESPONSIBLE FOR LONG-TERM INSPECTION AND MAINTENANCE OF STORMWATER MANAGEMENT AND EROSION CONTROL MEASURES.

MAINTENANCE LOG
THE RESPONSIBLE PARTY SHALL ESTABLISH A MAINTENANCE LOG/PLAN FOR USE IN RECORDING MAINTENANCE ACTIVITIES. AS A MINIMUM, THE LOG SHALL INCLUDE THE DATE(S) OF ACTIVITIES, WHO PERFORMED THE DUTIES, WHAT WAS DONE (I.E. LOOKED AT DETENTION BERMS, CLEANED DROP INLETS, ETC.), THE RESULTS OF THE ACTIVITY (I.E. ALL STRUCTURES WERE IN GOOD SHAPE, OR, POND #44 NEEDS TO BE REPAIRED). IF ANY ITEM NEEDS TO BE REPAIRED, A FOLLOW-UP ENTRY SHALL SHOW THE DATE THAT REPAIRS WERE COMPLETED.

CONSTRUCTION INSPECTION AND CORRECTIVE ACTION DOCUMENTATION RECORDS WILL BE MAINTAINED BY THE CONTRACTOR FOR A MINIMUM OF THREE YEARS AND PROVIDED TO 3 G'S REALTY LLC.

LAND GRADING AND SLOPE STABILIZATION
ALL SLOPES SHOULD BE CHECKED PERIODICALLY TO SEE THAT VEGETATION IS IN GOOD CONDITION. ANY RILLS OR DAMAGE FROM EROSION AND ANIMAL BURROWING SHOULD BE REPAIRED IMMEDIATELY TO AVOID FURTHER DAMAGE. IF SEEPS DEVELOP ON THE SLOPES, THE AREA SHOULD BE EVALUATED TO DETERMINE IF THE SEEP WILL CAUSE AN UNSTABLE CONDITION. SUBSURFACE DRAINS OR GRAVEL MULCHING MAY BE REQUIRED TO SOLVE SEEP PROBLEMS. DIVERSIONS, BERMS, AND WATERWAYS IN THE LAND GRADING AREA SHOULD BE CHECKED TO SEE THAT THEY ARE FUNCTIONING PROPERLY. PROBLEMS FOUND DURING THE INSPECTIONS SHOULD BE REPAIRED. SLOPES AND ASSOCIATED PRACTICES UTILIZING VEGETATION SHOULD BE LIMED AND FERTILIZED AS NECESSARY TO KEEP THE VEGETATION HEALTHY. ENCROACHMENT OF UNDESIRABLE VEGETATION SUCH AS WEEDS AND WOODY GROWTH THAT IS NOT PLANNED SHOULD BE CONTROLLED TO AVOID PROBLEMS OF BANK STABILITY IN THE FUTURE.

STRAW OR HAY BALE BARRIER, SILT FENCE AND FILTER BERM
HAY BALE BARRIERS, SILT FENCES AND FILTER BERMS SHALL BE INSPECTED AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. THEY SHALL BE REPAIRED IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OF THE EDGES OF THE BARRIER, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, SEDIMENT BARRIERS SHALL BE REPLACED WITH A TEMPORARY CHECK DAM.

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

SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN THE DEPOSITS REACH APPROXIMATELY ONE-HALF OF THE HEIGHT OF THE BARRIER.

FILTER BERMS SHOULD BE RESHAPED AS NEEDED.

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

TEMPORARY CHECK DAMS
REGULAR INSPECTIONS MUST BE MADE TO ENSURE THAT THE CENTER OF THE CHECK DAM IS LOWER THAN THE EDGES. EROSION CAUSED BY HIGH FLOWS AROUND THE EDGES OF THE CHECK DAM MUST BE CORRECTED. IF EVIDENCE OF SILTATION IN THE WATER IS APPARENT DOWNSTREAM OF THE CHECK DAM, THE CHECK DAM MUST BE INSPECTED AND ADJUSTED.

CHECK DAMS MUST BE CHECKED FOR SEDIMENT ACCUMULATION AFTER EACH SIGNIFICANT RAINFALL. SEDIMENT MUST BE REMOVED WHEN IT REACHES ONE HALF THE ORIGINAL HEIGHT OF BEFORE.

IF IT POSSIBLE, LEAVE THE CHECK DAM IN PLACE PERMANENTLY. IN TEMPORARY DITCHES AND SWALES, CHECK DAMS MUST BE REMOVED WHEN A PERMANENT LINING HAS BEEN ESTABLISHED. IF A CHECK DAM MUST BE REMOVED FROM A GRASS LINED DITCH, WAIT UNTIL THE GRASS HAS MATURED TO PROTECT THE DITCH OR SWALE. THE AREA BENEATH THE CHECK DAM MUST BE SEEDED AND MULCHED REMOVAL.

STABILIZED CONSTRUCTION ENTRANCE (ANTI-TRACKING PAD)
EXITS SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. WHEN THE CONTROL PAD BECOMES INEFFECTIVE, THE STONE SHALL BE REMOVED ALONG WITH THE COLLECTED SOIL MATERIAL AND REDISTRIBUTED ON SITE IN A STABLE MANNER AND THE ENTRANCE RECONSTRUCTED. THE CONTRACTOR SHALL SWEEP OR WASH PAVEMENT AT EXITS, WHICH HAVE EXPERIENCED MUD-TRACKING ONTO THE PAVEMENT OR TRAVELED WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH AGGREGATE, WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES OR WATERWAYS.

OVERWINTER CONSTRUCTION

MAINE EROSION AND SEDIMENT CONTROL BMP (2016)

THE WINTER CONSTRUCTION PERIOD IS FROM NOVEMBER 1 THROUGH APRIL 15. IF THE CONSTRUCTION SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE, 75% MATURE VEGETATION COVER OR RIPRAP BY NOVEMBER 15 THEN THE SITE NEEDS TO BE PROTECTED WITH OVER-WINTER STABILIZATION. AN AREA CONSIDERED OPEN IS ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MATS, RIPRAP OR GRAVEL BASE ON A ROAD.

WINTER EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY TIME. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS EXPECTED TO BE UNDER TAKEN DURING THE PROCEEDING 15 DAYS AND THAT CAN BE MULCHED IN ONE DAY PRIOR TO ANY SNOW EVENT. ALL AREA SHALL BE CONSIDERED TO BE DENUDED UNTIL THE SUBBASE GRAVEL IS INSTALLED IN ROADWAY AREAS OR THE AREAS OF FUTURE LOAM AND SEED HAVE BEEN LOAMED, SEEDED AND MULCHED. A COVER OF EROSION CONTROL MIX PERFORMS THE BEST.

ANY ADDED MEASURES, WHICH MAY BE NECESSARY TO CONTROL EROSION/SEDIMENTATION, MUST BE BE INSTALLED. THESE MAY BE DEPENDENT UPON SITE AND WEATHER CONDITIONS AND THE ACTUAL SITE SIZE. TO MINIMIZE AREAS WITHOUT EROSION CONTROL PROTECTION, CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED.

1. NATURAL RESOURCES PROTECTION
ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCE, IF NOT STABILIZED WITH A MINIMUM OF 75% MATURE VEGETATION CATCH, SHALL BE MULCHED BY DECEMBER 1 AND ANCHORED WITH PLASTIC NETTING OR PROTECTED WITH AN EROSION CONTROL COVER.

DURING WINTER CONSTRUCTION, A DOUBLE ROW OF SEDIMENT BARRIERS (I.E. SILT FENCE BACKED WITH HAY BALES OR EROSION CONTROL MIX) WILL BE PLACED BETWEEN ANY NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE. EXISTING PROJECTS NOT STABILIZED BY DECEMBER 1 SHALL BE PROTECTED WITH THE SECOND LINE OF SEDIMENT BARRIER TO ENSURE FUNCTIONALITY DURING THE SPRING THAW AND RAINS.

2. SEDIMENT BARRIERS
DURING FROZEN CONDITIONS, SEDIMENT BARRIERS MAY CONSIST OF EROSION CONTROL MIX BERMS OR ANY OTHER RECOGNIZED SEDIMENT BARRIERS AS FROZEN SOIL PREVENTS THE PROPER INSTALLATION OF HAY BALES AND SEDIMENT SILT FENCES.

3. MULCHING
ALL AREA SHALL BE CONSIDERED TO BE DENUDED UNTIL SEEDED AND MULCHED. HAY AND STRAW MULCH SHALL BE APPLIED AT A RATE OF 150 LB. PER 1,000 SQUARE FEET OR 3 TONS/ACRE (TWICE THE NORMAL ACCEPTED RATE OF 75 LBS./1,000 S.F. OR 1.5 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED. EROSION CONTROL MIX MUST BE APPLIED WITH A MINIMUM 4 INCH THICKNESS.

MULCH SHALL NOT BE SPREAD ON TOP OF SNOW. THE SNOW WILL BE REMOVED DOWN TO A ONE INCH DEPTH OR LESS PRIOR TO APPLICATION. AFTER EACH DAY OF FINAL GRADING, THE AREA WILL BE PROPERLY STABILIZED WITH ANCHORED HAY OR STRAW OR EROSION CONTROL MATTING. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED OR ADEQUATELY ANCHORED SO THAT GROUND SURFACE IS NOT VISIBLE THOUGH THE MULCH. BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15, ALL MULCH SHALL BE ANCHORED BY EITHER MULCH NETTING, ASPHALT EMULSION CHEMICAL, TRACKING OR WOOD CELLULOSE FIBER. THE COVER WILL BE CONSIDERED SUFFICIENT WHEN THE GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH.

AFTER NOVEMBER 1ST, MULCH AND ANCHORING OF ALL EXPOSED SOIL SHALL OCCUR AT THE END OF EACH FINAL GRADING WORKDAY.

4. SOIL STOCKPILES
STOCKPILES OF SOIL OR SUBSOIL WILL BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR WITH A FOUR-INCH LAYER OF EROSION CONTROL MIX. THIS WILL BE DONE WITHIN 24 HOURS OF STOCKING AND REESTABLISHED PRIOR TO ANY RAINFALL OR SNOWFALL. ANY SOIL STOCKPILE WILL NOT BE PLACED (EVEN COVERED WITH MULCH) WITHIN 100 FEET FROM ANY NATURAL RESOURCES.

5. SEEDING
BETWEEN THE DATES OF OCTOBER 15 AND APRIL 1, LOAM OR SEED WILL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES FINISHED AREAS SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS NOVEMBER 1ST AND THE EXPOSED AREA HAS BEEN LOAMED, FINAL GRADED WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED.

DORMANT SEEDING MAY BE SELECTED TO BE PLACED PRIOR TO THE PLACEMENT OF MULCH AND EROSION CONTROL BLANKETS. IF DORMANT SEEDING IS USED FOR THE SITE, ALL DISTURBED AREAS SHALL RECEIVE 4" OF LOAM AND SEED AT AN APPLICATION RATE OF 5LBS/1,000 S.F. ALL AREAS SEEDED DURING THE WINTER WILL BE INSPECTED IN THE SPRING FOR ADEQUATE CATCH. ALL AREAS INSUFFICIENTLY VEGETATED (LESS THAN 75% CATCH) SHALL BE REVEGETATED BY REPLACING LOAM, SEED AND MULCH. IF DORMANT SEEDING IS NOT USED FOR THE SITE, ALL DISTURBED AREAS SHALL BE REVEGETATED IN THE SPRING.

OVERWINTER STABILIZATION

MAINE EROSION AND SEDIMENT CONTROL BMP (3/2016)

1. STABILIZATION OF DITCHES AND CHANNELS
ALL STONE-LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED AND STABILIZED BY NOVEMBER 15. ALL GRASS-LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED AND STABILIZED BY SEPTEMBER 1. IF A DITCH OR CHANNEL IS NOT GRASS-LINED BY SEPTEMBER 1, THEN ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE DITCH FOR LATE FALL AND WINTER MUST BE TAKEN.

SOD LINING: A DITCH OR CHANNEL MUST BE LINED WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES: PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL, AND ANCHORING THE SOD AT THE BASE OF THE DITCH WITH JUTE OR PLASTIC MESH TO PREVENT THE SOD FROM SLOUGHING DURING FLOW CONDITIONS.

STONE LINING: A DITCH OR CHANNEL MUST BE LINED WITH STONE RIPRAP BY NOVEMBER 15. A REGISTERED PROFESSIONAL ENGINEER MUST DETERMINE THE STONE SIZE AND LINING THICKNESS NEEDED TO WITHSTAND THE ANTICIPATED FLOW VELOCITIES AND FLOW DEPTHS WITHIN THE DITCH. IF NECESSARY, THE CONTRACTOR WILL REGRADE THE DITCH PRIOR TO PLACING THE STONE LINING TO PREVENT THE STONE LINING FROM REDUCING THE DITCH'S CROSS-SECTIONAL AREA.

2. STABILIZATION OF DISTURBED SLOPES
ALL STONE-COVERED SLOPES MUST BE CONSTRUCTED AND STABILIZED BY NOVEMBER 15. ALL SLOPES TO BE VEGETATED MUST BE SEEDED AND MULCHED BY SEPTEMBER 1. THE DEPARTMENT WILL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 15% TO BE A SLOPE. IF A SLOPE TO BE VEGETATED IS NOT STABILIZED BY SEPTEMBER 1, THEN ONE OF THE FOLLOWING ACTIONS MUST BE TAKEN TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.

TEMPORARY VEGETATION AND EROSION CONTROL MATS: BY OCTOBER 1, THE DISTURBED SLOPE MUST BE SEEDED WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1,000 SQUARE FEET FOLLOWED BY INSTALLATION OF EROSION CONTROL MATS OR ANCHORED MULCH OVER THE SEEDING. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE SLOPE BY NOVEMBER 1, THEN THE CONTRACTOR WILL COVER THE SLOPE WITH A LAYER OF EROSION CONTROL MIX OR STONE RIPRAP AS DESCRIBED IN THE FOLLOWING STANDARDS.

SOD: THE DISTURBED SLOPE MUST BE STABILIZED WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE CONTRACTOR PINNING THE SOD ONTO THE SLOPE WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE CONTRACTOR WILL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V) OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.

EROSION CONTROL MIX: EROSION CONTROL MIX MUST BE PROPERLY INSTALLED BY NOVEMBER 15. THE CONTRACTOR WILL NOT USE EROSION CONTROL MIX TO STABILIZE SLOPES HAVING GRADES GREATER THAT 50% (2H:1V) OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.

STONE RIPRAP: PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15. THE DEVELOPMENT'S OWNER WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY ON THE SLOPE AND TO DESIGN A FILTER LAYER TO BE INSTALLED BENEATH THE RIPRAP.

3. STABILIZATION OF DISTURBED SOILS
TEMPORARY VEGETATION: BY OCTOBER 1, SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3-LBS PER 1,000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75-LBS PER 1,000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 1, THEN MULCH THE AREA FOR OVERWINTER PROTECTION AS FOLLOWS.

MULCH: BY NOVEMBER 15, MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150-LBS PER 1,000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. IMMEDIATELY AFTER APPLYING THE MULCH, ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

MAINTENANCE
MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION SEASON. AFTER EACH RAINFALL, SNOW STORM OR PERIOD OF THAWING AND RUNOFF, THE SITE CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES AND PERFORM REPAIRS AS NEEDED TO INSURE THEIR CONTINUOUS FUNCTION.
FOLLOWING THE TEMPORARY AND OR FINAL SEEDING AND MULCHING, THE CONTRACTOR SHALL IN THE SPRING INSPECT AND REPAIR ANY DAMAGES AND/OR BARE SPOTS. AN ESTABLISHED VEGETATIVE COVER MEANS A MINIMUM OF 85% TO 90% OF AREAS VEGETATED WITH VIGOROUS GROWTH.

STABILIZATION SCHEDULE BEFORE WINTER
SEPTEMBER 15 ALL DISTURBED AREAS MUST BE SEEDED AND MULCHED. ALL SLOPES MUST BE STABILIZED. SEEDED AND MULCHED. ALL GRASS-LINED DITCHES AND CHANNELS MUST BE STABILIZED WITH MULCH OR AN EROSION CONTROL BLANKET.

OCTOBER 1 IF THE SLOPE IS STABILIZED WITH AN EROSION CONTROL BLANKET AND SEEDED. ALL DISTURBED AREAS TO BE PROTECTED WITH ANNUAL GRASS MUST BE SEEDED AT A SEEDING RATE OF 3-LBS PER 1,000 SQUARE FEET AND MULCHED.

NOVEMBER 15 ALL STONE-LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED AND STABILIZED. SLOPES THAT ARE COVERED WITH RIPRAP MUST BE CONSTRUCTED BY THIS DATE.

DECEMBER 1 ALL DISTURBED AREAS WHERE GROWTH OF VEGETATION FAILS TO BE AT LEAST THREE INCHES TALL OR AT LEAST 75% OF THE DISTURBED SOIL IS COVERED VEGETATION, MUST BE PROTECTED FOR OVER-WINTER.
NOTE: THE DATES GIVEN ARE FOR PROJECTS IN SOUTH-CENTRAL MAINE.

PREPARED FOR PERMITTING ONLY, NOT FOR CONSTRUCTION 9/14/2020

HOUSEKEEPING NOTES

*PER ME DEP CHAPTER 500 – APPENDIX 'C'

1. SPILL PREVENTION. CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM CONSTRUCTION AND WASTE MATERIALS STORED ON SITE TO ENTER STORMWATER, WHICH INCLUDES STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER. THE SITE CONTRACTOR OR OPERATOR MUST DEVELOP, AND IMPLEMENT AS NECESSARY, APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING MEASURES.

2. GROUNDWATER PROTECTION. DURING CONSTRUCTION, LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO AN INFILTRATION AREA. AN "INFILTRATION AREA" IS ANY AREA OF THE SITE THAT BY DESIGN OR AS A RESULT OF SOILS, TOPOGRAPHY AND OTHER RELEVANT FACTORS ACCUMULATES RUNOFF THAT INFILTRATES INTO THE SOIL. DIKES, BERMS, SUMPS, AND OTHER FORMS OF SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS. ANY PROJECT PROPOSING INFILTRATION OF STORMWATER MUST PROVIDE ADEQUATE PRE-TREATMENT OF STORMWATER PRIOR TO DISCHARGE OF STORMWATER TO THE INFILTRATION AREA, OR PROVIDE FOR TREATMENT WITHIN THE INFILTRATION AREA, IN ORDER TO PREVENT THE ACCUMULATION OF FINES, REDUCTION IN INFILTRATION RATE, AND CONSEQUENT FLOODING AND DESTABILIZATION.

3. FUGITIVE SEDIMENT AND DUST. ACTIONS MUST BE TAKEN TO ENSURE THAT ACTIVITIES DO NOT RESULT IN NOTICEABLE EROSION OF SOILS OR FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION. OIL MAY NOT BE USED FOR DUST CONTROL, BUT OTHER WATER ADDITIVES MAY BE CONSIDERED AS NEEDED. A STABILIZED CONSTRUCTION ENTRANCE (SCE) SHOULD BE INCLUDED TO MINIMIZE TRACKING OF MUD AND SEDIMENT. IF OFF-SITE TRACKING OCCURS, PUBLIC ROADS SHOULD BE SWEPT IMMEDIATELY AND NO LESS THAN ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS. OPERATIONS DURING DRY MONTHS, THAT EXPERIENCE FUGITIVE DUST PROBLEMS, SHOULD WET DOWN UNPAVED ACCESS ROADS ONCE A WEEK OR MORE FREQUENTLY AS NEEDED WITH A WATER ADDITIVE TO SUPPRESS FUGITIVE SEDIMENT AND DUST.

4. DEBRIS AND OTHER MATERIALS. MINIMIZE THE EXPOSURE OF CONSTRUCTION DEBRIS, BUILDING AND LANDSCAPING MATERIALS, TRASH, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE AND OTHER MATERIALS TO PRECIPITATION AND STORMWATER RUNOFF. THESE MATERIALS MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.

5. EXCAVATION DE-WATERING. EXCAVATION DE-WATERING IS THE REMOVAL OF WATER FROM TRENCHES, FOUNDATIONS, COFFER DAMS, PONDS, AND OTHER AREAS WITHIN THE CONSTRUCTION AREA THAT RETAIN WATER AFTER EXCAVATION. IN MOST CASES THE COLLECTED WATER IS HEAVILY SILTED AND HINDERS CORRECT AND SAFE CONSTRUCTION PRACTICES. THE COLLECTED WATER REMOVED FROM THE PONDED AREA, EITHER THROUGH GRAVITY OR PUMPING, MUST BE SPREAD THROUGH NATURAL WOODED BUFFERS OR REMOVED TO AREAS THAT ARE SPECIFICALLY DESIGNED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE, LIKE A COFFERDAM SEDIMENTATION BASIN. AVOID ALLOWING THE WATER TO FLOW OVER DISTURBED AREAS OF THE SITE. EQUIVALENT MEASURES MAY BE TAKEN IF APPROVED BY THE DEPARTMENT.

6. AUTHORIZED NON-STORMWATER DISCHARGES. IDENTIFY AND PREVENT CONTAMINATION BY NON-STORMWATER DISCHARGES. WHERE ALLOWED NON-STORMWATER DISCHARGES EXIST, THEY MUST BE IDENTIFIED AND STEPS SHOULD BE TAKEN TO ENSURE THE IMPLEMENTATION OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR THE NON-STORMWATER COMPONENT(S) OF THE DISCHARGE. AUTHORIZED NON-STORMWATER DISCHARGES ARE:

   (a) DISCHARGES FROM FIREFIGHTING ACTIVITY;
   (b) FIRE HYDRANT FLUSHINGS;
   (c) VEHICLE WASHWATER IF DETERGENTS ARE NOT USED AND WASHING IS LIMITED TO THE EXTERIOR OF VEHICLES (ENGINE, UNDERCARRIAGE AND TRANSMISSION WASHING IS PROHIBITED);
   (d) DUST CONTROL RUNOFF IN ACCORDANCE WITH PERMIT CONDITIONS AND APPENDIX (C)(3);
   (e) ROUTINE EXTERNAL BUILDING WASHDOWN, NOT INCLUDING SURFACE PAINT REMOVAL, THAT DOES NOT INVOLVE DETERGENTS;
   (f) PAVEMENT WASHWATER (WHERE SPILLS/LEAKS OF TOXIC OR HAZARDOUS MATERIALS HAVE NOT OCCURRED, UNLESS ALL SPILLED MATERIAL HAD BEEN REMOVED) IF DETERGENTS ARE NOT USED;
   (g) UNCONTAMINATED AIR CONDITIONING OR COMPRESSOR CONDENSATE;
   (h) UNCONTAMINATED GROUNDWATER OR SPRING WATER;
   (i) FOUNDATION OR FOOTER DRAIN-WATER WHERE FLOWS ARE NOT CONTAMINATED;
   (j) UNCONTAMINATED EXCAVATION DEWATERING (SEE REQUIREMENTS IN APPENDIX C(5));
   (k) POTABLE WATER SOURCES INCLUDING WATERLINE FLUSHINGS; AND
   (l) LANDSCAPE IRRIGATION.

7. UNAUTHORIZED NON-STORMWATER DISCHARGES THE DEPARTMENT'S APPROVAL UNDER THIS CHAPTER DOES NOT AUTHORIZE A DISCHARGE THAT IS MIXED WITH A SOURCE OF NON-STORMWATER, OTHER THAN THOSE DISCHARGES IN COMPLIANCE WITH APPENDIX C (6). SPECIFICALLY, THE DEPARTMENT'S APPROVAL DOES NOT AUTHORIZE DISCHARGES OF THE FOLLOWING:

   (a) WASTEWATER FROM THE WASHOUT OR CLEANOUT OF CONCRETE, STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS OR OTHER CONSTRUCTION MATERIALS;
   (b) FUELS, OILS OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE;
   (c) SOAPS, SOLVENTS, OR DETERGENTS USED IN VEHICLE AND EQUIPMENT WASHING; AND
   (d) TOXIC OR HAZARDOUS SUBSTANCES FROM A SPILL OR OTHER RELEASE.

TAX MAP R72, LOT 17

STATE OF MAINE
Neil J. Rapoza
12169
LICENSED
PROFESSIONAL ENGINEER
9/14/2020

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NO.	REVISIONS	INT.	DATE
6	ADDED TEST PIT INFO, REVISED DETAILS	NJR	9/14/20
5	REVISED LAYOUT, WETLAND AVOIDANCE	NJR	9/8/20
4	REVISED PER TOWN PLANNER COMMENTS	NJR	7/29/20
3	REVISED NOTES SHEET L6	NJR	6/4/20
2	RELOCATED ENTRANCE PER DOT REVIEW	NJR	5/1/20
1	ISSUED FOR SUBMISSION TO DEP	NJR	4/24/20
	ISSUED FOR SUBMISSION TO TOWN		

RECORD OWNER: 3G'S REALTY, LLC
OWNER ADDRESS: 309 OLD COLONY AVENUE, SOUTH BOSTON, MA 02127

PROPOSED SITE DEVELOPMENT
LAND OF 3G'S REALTY LLC - MAP R72/ LOT 17
ROUTE 4 (PORTLAND STREET)
BERWICK, YORK COUNTY, MAINE

PREPARED FOR:
SCOTT KEARNAN
CLIENT ADDRESS: 309 OLD COLONY AVENUE, SOUTH BOSTON, MA 02127

0" 1"

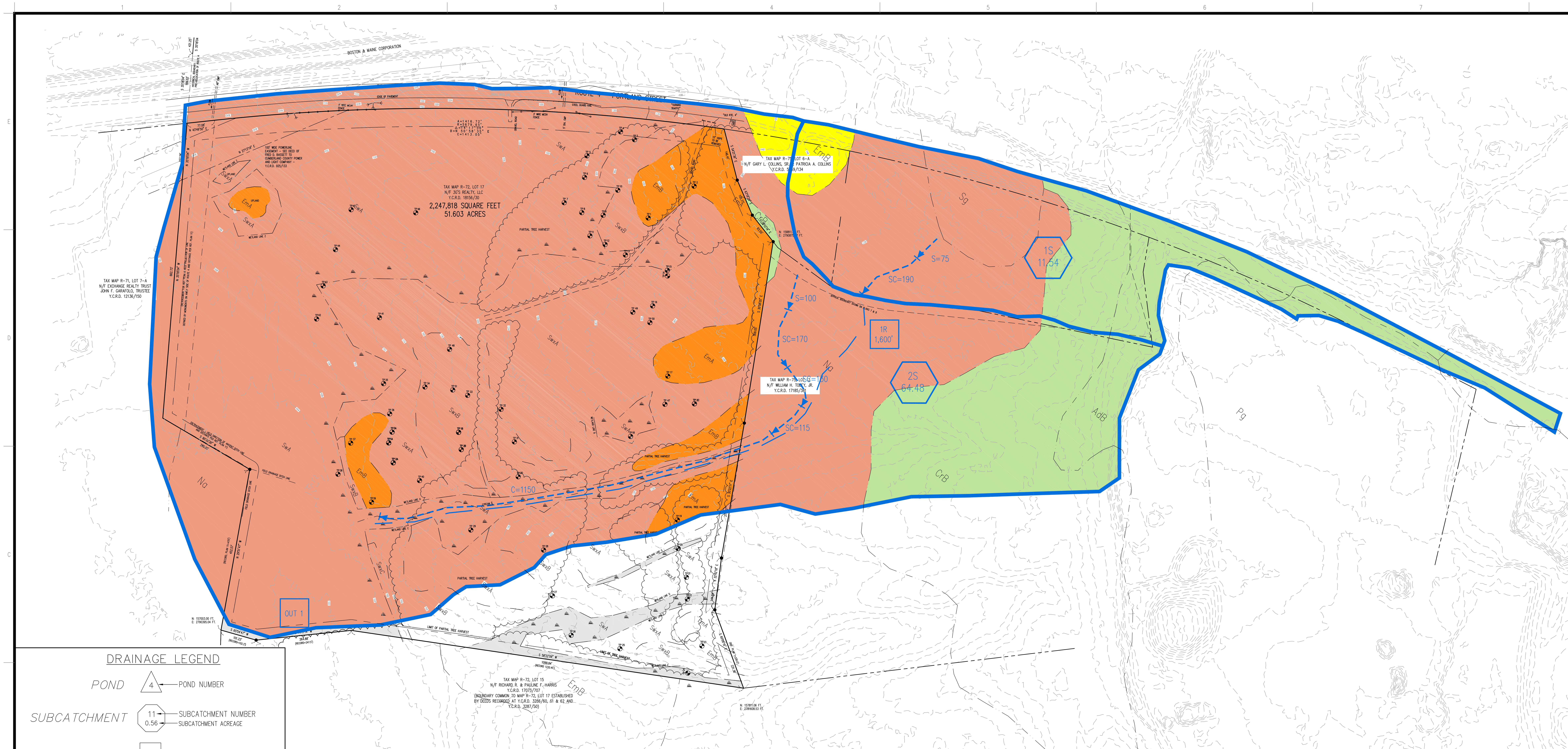
DATE: 04/09/2020
DRAWN BY: NJR
CHECKED BY: GRA
APPROVED BY: NJR

NOTES AND DETAILS

PROJECT NO: 19-352.00

L6

SHEET: 6 OF 6



DRAINAGE LEGEND

POND — 4 — POND NUMBER

SUBCATCHMENT — 11 — SUBCATCHMENT NUMBER; 0.56 — SUBCATCHMENT ACREAGE

REACH — 50 — REACH NUMBER

Tc COMPONENTS
S = Sheet
SC = Shallow Concentrated
C = Channel

ROUTING DIRECTION

SOILS LEGEND

A Soils:
SCS Soils: Ad (Adams)
HISS Soils:

B Soils:
SCS Soils: Cr (Croghan)
HISS Soils: Cr (Croghan)

C Soils:
SCS Soils:
HISS Soils: Filled Land (Elmwood similar)

D Soils:
SCS Soils: Na (Naumburg), Br (Brayton)
HISS Soils: Sw (Swanton)

HIGH INTENSITY SOIL SURVEY WAS PERFORMED BY KENNETH GARDNER, MAINE CSS #61, ON DECEMBER 5, 2019.

Subcatchment Boundaries Pre–Development
Subcatchment Boundaries Post–Development
SCS Soil Line
High Intensity Soil Line
Tc Flow Path & Direction Pre–Development
Tc Flow Path & Direction Post–Development

LEGEND:

TP 2 — TEST PIT
GUY WIRE
UTILITY POLE
FOUND IRON PIPE
FOUND GRANITE BOUND
SET IRON REBAR
FOUND IRON ROD
Y.C.R.D. — YORK COUNTY REGISTRY OF DEEDS
335/559 — DEED BOOK/PAGE
BENCH MARK
SIGN
15" HDPE — HIGH DENSITY POLYETHYLENE
WETLAND
DIA. — DIAMETER
48" CMP — CORRUGATED METAL PIPE
CMP SEC 115/010 — UTILITY POLE IDENTIFIER
(RECORD=247.5') — RECORD DISTANCE
MB — MAIL BOX
REF. — REFERENCE
63+77.45 — HIGHWAY PLAN STATION
N: 158811.85 FT. E: 2790875.87 FT. — STATE PLANE COORDINATES
OHW — OVERHEAD WIRES
LOCUS BOUNDARY LINE
BOUNDARY OF ABUTTING PARCEL
ANCIENT BOUNDARY LINE
MAINE DOT EASEMENT LINE
POWER COMPANY EASEMENT LINE
ST — SEPTIC TANK
HT — HOLDING TANK
W — PROPOSED WATER
S — PROPOSED SEWER
UGE — PROPOSED UNDERGROUND ELECTRIC
PROPOSED SECURITY FENCE
SILT FENCE/FILTER BERM
RED MAPLE (4'–6' AT PLANTING)

TAX MAP R72, LOT 17

STATE OF MAINE — Neil J. Rapoza — 12169 — LICENSED PROFESSIONAL ENGINEER — 9/10/2020

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OWNER ADDRESS:
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PROPOSED SITE DEVELOPMENT
LAND OF 3G'S REALTY LLC - MAP R72/ LOT 17
ROUTE 4 (PORTLAND STREET)
BERWICK, YORK COUNTY, MAINE

PREPARED FOR:
SCOTT KEARNAN

CLIENT ADDRESS: 309 OLD COLONY AVENUE, SOUTH BOSTON, MA 02127

1"=150'
0' 150'

DATE: 04/29/2020
DRAWN BY: NJR
CHECKED BY:
APPROVED BY:

PRE-DEVELOPMENT STORMWATER MANAGEMENT PLAN

PROJECT NO: 19–352.00

D1

SHEET: 1 OF 3

DRAINAGE LEGEND

POND — 4 — POND NUMBER

SUBCATCHMENT — 11 — SUBCATCHMENT NUMBER; 0.56 — SUBCATCHMENT ACREAGE

REACH — 50 — REACH NUMBER

Tc COMPONENTS — S = Sheet; SC = Shallow Concentrated; C = Channel

SOILS LEGEND

*NOT HATCHED FOR CLARITY, SEE SHEET D1

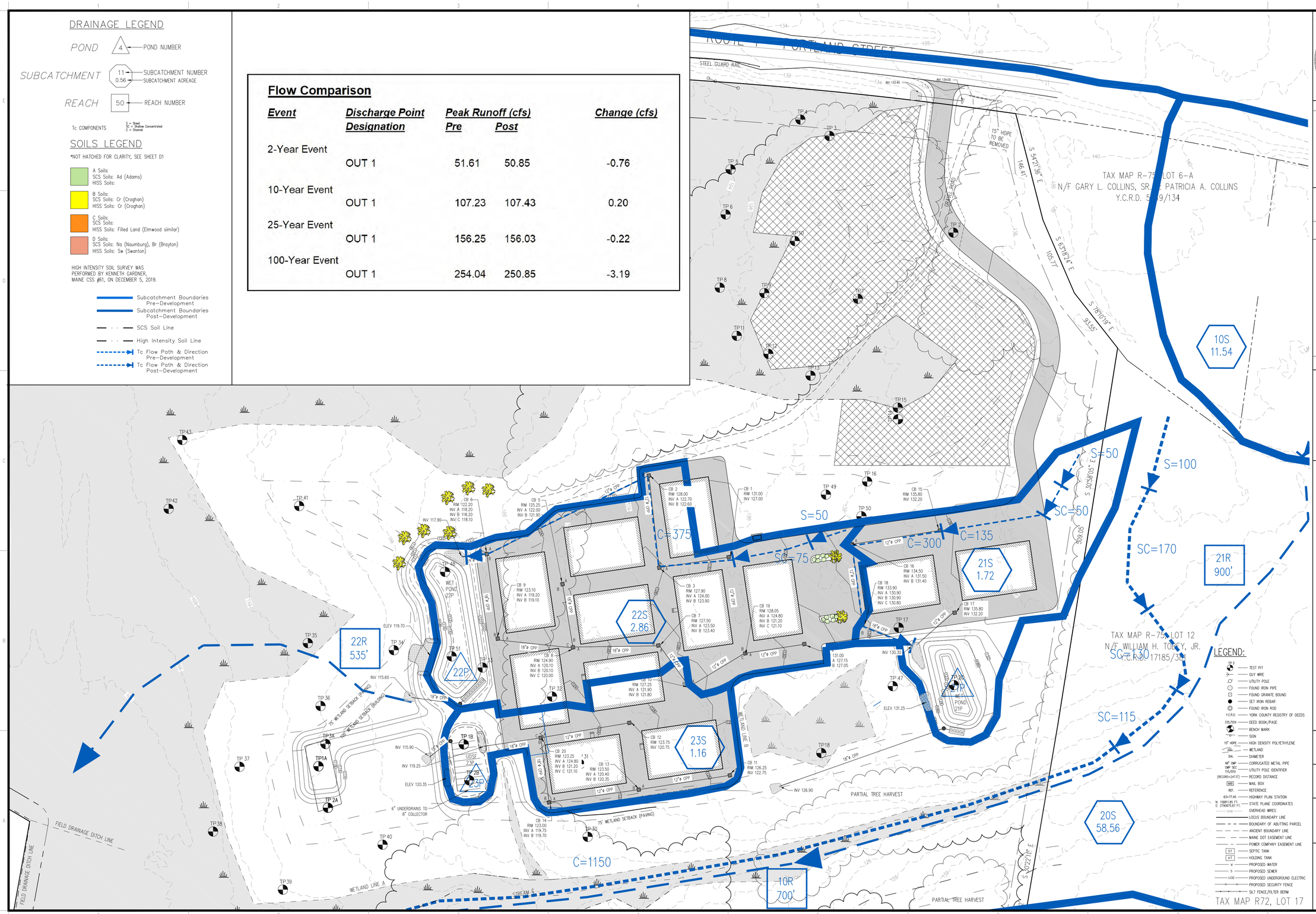
- A Soils: SCS Soils: Ad (Adams); HISS Soils:
- B Soils: SCS Soils: Cr (Croghan); HISS Soils: Cr (Croghan)
- C Soils: SCS Soils: ; HISS Soils: Filled Land (Elmwood similar)
- D Soils: SCS Soils: Na (Naumburg), Br (Brayton); HISS Soils: Sw (Swanton)

HIGH INTENSITY SOIL SURVEY WAS PERFORMED BY KENNETH GARDINER, MAINE CSS #61, ON DECEMBER 5, 2019.

- Subcatchment Boundaries Pre-Development
- Subcatchment Boundaries Post-Development
- SCS Soil Line
- High Intensity Soil Line
- Tc Flow Path & Direction Pre-Development
- Tc Flow Path & Direction Post-Development

Flow Comparison

Event	Discharge Point Designation	Peak Runoff (cfs) Pre	Peak Runoff (cfs) Post	Change (cfs)
2-Year Event				
	OUT 1	51.61	50.85	-0.76
10-Year Event				
	OUT 1	107.23	107.43	0.20
25-Year Event				
	OUT 1	156.25	156.03	-0.22
100-Year Event				
	OUT 1	254.04	250.85	-3.19



STATE OF MAINE — Neil J. Rapoza 12169 — LICENSED PROFESSIONAL ENGINEER — 9/10/2020

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1	ISSUED FOR SUBMISSION TO DEP / ISSUED FOR SUBMISSION TO TOWN	NJR	4/24/20

RECORD OWNER: 3G'S REALTY, LLC
OWNER ADDRESS: 309 OLD COLONY AVENUE, SOUTH BOSTON, MA 02127

PROPOSED SITE DEVELOPMENT
LAND OF 3G'S REALTY LLC - MAP R72/ LOT 17
ROUTE 4 (PORTLAND STREET)
BERWICK, YORK COUNTY, MAINE

PREPARED FOR: SCOTT KEARNAN
CLIENT ADDRESS: 309 OLD COLONY AVENUE, SOUTH BOSTON, MA 02127

1"=60' (0' – 60')

DATE: 04/29/2020
DRAWN BY: NJR
CHECKED BY:
APPROVED BY:

POST-DEVELOPMENT STORMWATER MANAGEMENT PLAN

PROJECT NO: 19-352.00

D2

SHEET: 2 OF 3

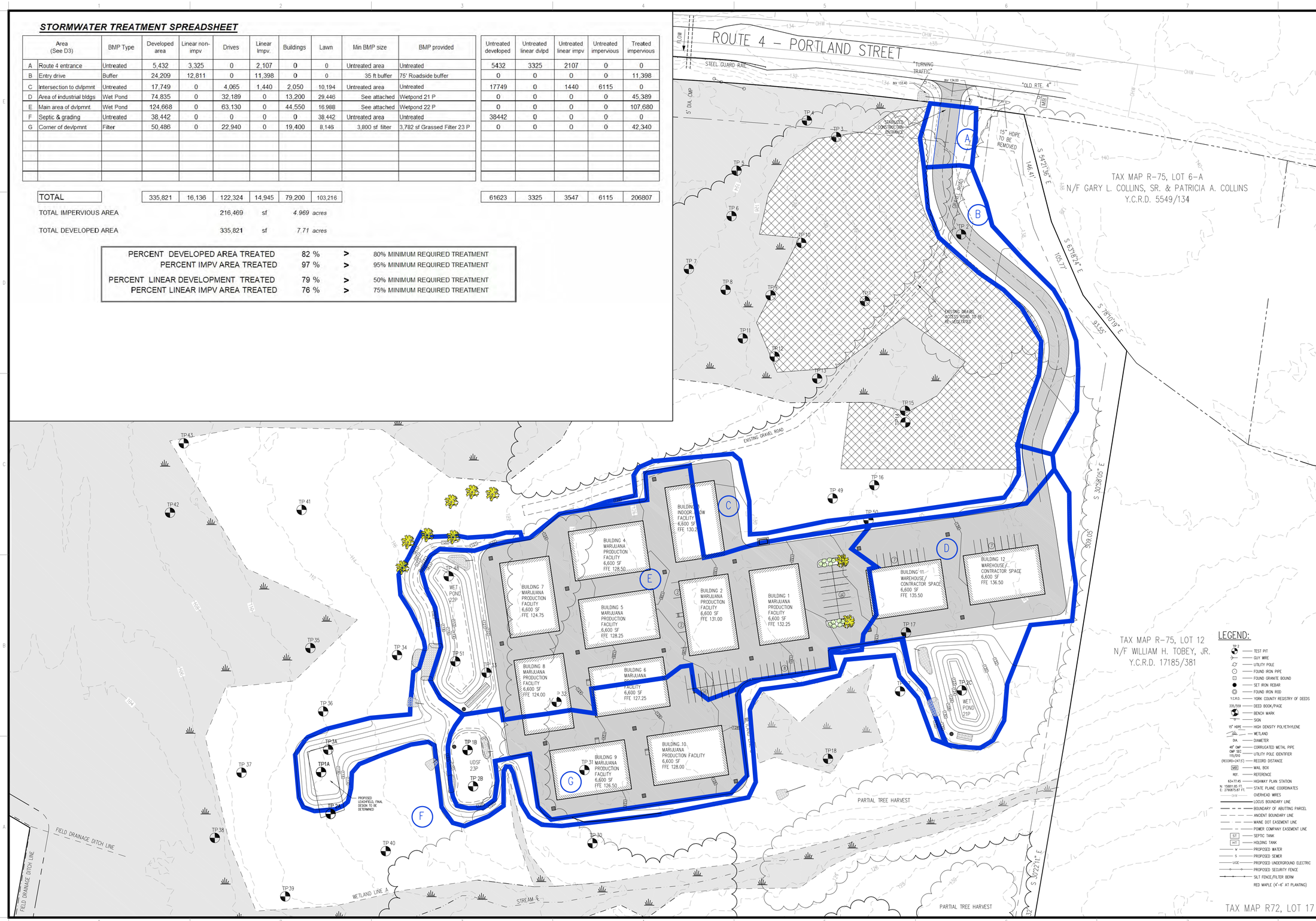
STORMWATER TREATMENT SPREADSHEET

	Area (See D3)	BMP Type	Developed area	Linear non-impv	Drives	Linear Impv.	Buildings	Lawn	Min BMP size	BMP provided	Untreated developed	Untreated linear dvlpd	Untreated linear impv	Untreated impervious	Treated impervious
A	Route 4 entrance	Untreated	5,432	3,325	0	2,107	0	0	Untreated area	Untreated	5432	3325	2107	0	0
B	Entry drive	Buffer	24,209	12,811	0	11,398	0	0	35 ft buffer	75' Roadside buffer	0	0	0	0	11,398
C	Intersection to dvlpmnt	Untreated	17,749	0	4,065	1,440	2,050	10,194	Untreated area	Untreated	17749	0	1440	6115	0
D	Area of industrial bldgs	Wet Pond	74,835	0	32,189	0	13,200	29,446	See attached	Wetpond 21 P	0	0	0	0	45,389
E	Main area of dvlpmnt	Wet Pond	124,668	0	63,130	0	44,550	16,988	See attached	Wetpond 22 P	0	0	0	0	107,680
F	Septic & grading	Untreated	38,442	0	0	0	0	38,442	Untreated area	Untreated	38442	0	0	0	0
G	Corner of devlpmnt	Filter	50,486	0	22,940	0	19,400	8,146	3,800 sf filter	3,782 sf Grassed Filter 23 P	0	0	0	0	42,340
	TOTAL		335,821	16,136	122,324	14,945	79,200	103,216			61623	3325	3547	6115	206807

TOTAL IMPERVIOUS AREA 216,469 sf 4.969 acres

TOTAL DEVELOPED AREA 335,821 sf 7.71 acres

PERCENT DEVELOPED AREA TREATED	82 %	>	80% MINIMUM REQUIRED TREATMENT
PERCENT IMPV AREA TREATED	97 %	>	95% MINIMUM REQUIRED TREATMENT
PERCENT LINEAR DEVELOPMENT TREATED	79 %	>	50% MINIMUM REQUIRED TREATMENT
PERCENT LINEAR IMPV AREA TREATED	76 %	>	75% MINIMUM REQUIRED TREATMENT



STATE OF MAINE
Neil J. Rapoza
12169
LICENSED
PROFESSIONAL ENGINEER
9/10/2020

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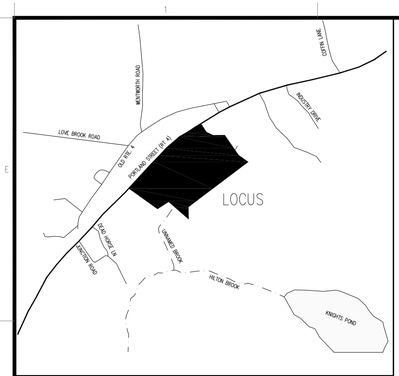
POST-DEVELOPMENT STORMWATER TREATMENT PLAN

PROJECT NO: 19-352.00

D3

SHEET: 3 OF 3



LOCUS

REFERENCE PLANS:

1. BOUNDARY AND EXISTING CONDITIONS PLAN OF LAND OF 3G'S REALTY, LLC – MAP R72/LOT 17, ROUTE 4 (PORTLAND STREET, BERWICK, YORK COUNTY, MAINE. PREPARED FOR: SCOTT KEARNAN, 309 OLD COLONY AVENUE, SOUTH BOSTON, MA 02127. PREPARED BY: CIVIL CONSULTANTS, DATED: 2–25–2020

NOTES:

1. THE DEVELOPMENT CONSISTS OF CONSTRUCTING 9 NEW BUILDINGS INTENDED TO BE LEASED SPACES FOR THE USE OF CULTIVATING PLANTS INDOORS, INCLUDING MARIJUANA. THE BUILDINGS HOUSING THIS TYPE OF USE REQUIRE A 1000' SEPARATION FROM THE NEAREST MARIJUANA RELATED BUILDING ON ADJACENT LOTS. A SETBACK TO THE USE ON MAP R72 LOT 5 (TRICANN ALTERNATIVES) IS INDICATED ON THIS PLAN, WITH ANY STRUCTURE SHOWN INSIDE THIS SETBACK BEING NON–MARIJUANA RELATED USES.
2. BOUNDARY AND PLANIMETRIC DETAIL DEPICTED HEREON IS THE RESULT OF AN ON–THE–GROUND FIELD SURVEY BY CIVIL CONSULTANTS IN FEBRUARY 2020. AT THE TIME OF THE FIELD SURVEY, THE GROUND WAS COVERED WITH 4–12 INCHES OF SNOW. FEATURES OBSCURED BY SNOW MAY NOT BE REFLECTED HEREON.
3. NORTH AS DEPICTED HEREON IS REFERENCED TO GRID NORTH, NAD83, MAINE STATE PLANE COORDINATE SYSTEM WEST ZONE. COORDINATE VALUES AND ORIENTATION ARE DERIVED FROM A GPS SURVEY COMPUTED UTILIZING THE NGS OPUS ON–LINE PROCESSING SERVICE. REFERENCE FRAME IS NAD83 2011 EPOCH 2010.0000. THE SURVEY IS TIED TO CORS STATIONS BOSTON WAAS 1 CORS (ZBW1), BARTLETT CORS (BARN) AND BRUNSWICK 1 CORS (BRU1). DISTANCES DEPICTED HEREON ARE GRID. TO CONVERT GRID DISTANCES TO GROUND DISTANCES, MULTIPLY THE GRID DISTANCE BY 1.0000050.
4. ELEVATIONS DEPICTED HEREON ARE REFERENCED TO NAVD88, DERIVED FROM THE ABOVE REFERENCED GPS SURVEY.
5. ASSESSOR'S INFORMATION: TOWN OF BERWICK ASSESSOR'S MAP R72, LOT 17
6. RECORD OWNERS AND DEED REFERENCES: 3G'S REALTY, LLC – Y.C.R.D. 18156/30
7. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS NEED TO CONTACT DIGSAFE AND FIELD VERIFY ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
8. THE LOCUS PARCEL IS LOCATED IN "ZONE X", ON THE NATIONAL FLOOD INSURANCE PROGRAM, FLOOD INSURANCE RATE MAP (FIRM) FOR THE TOWN OF BERWICK, MAINE, YORK COUNTY, COMMUNITY PANEL NUMBER 230144 0010 B, EFFECTIVE DATE AUGUST 5, 1991. ZONE X IS DEFINED AS "AREAS DETERMINED TO BE OUTSIDE THE 500–YEAR FLOODPLAIN.
9. THE LOCUS PARCEL IS LOCATED IN THE RURAL COMMERCIAL/INDUSTRIAL ZONE (RC/I). BASIC LAND USE ORDINANCE DIMENSIONAL REQUIREMENTS ARE AS FOLLOWS:

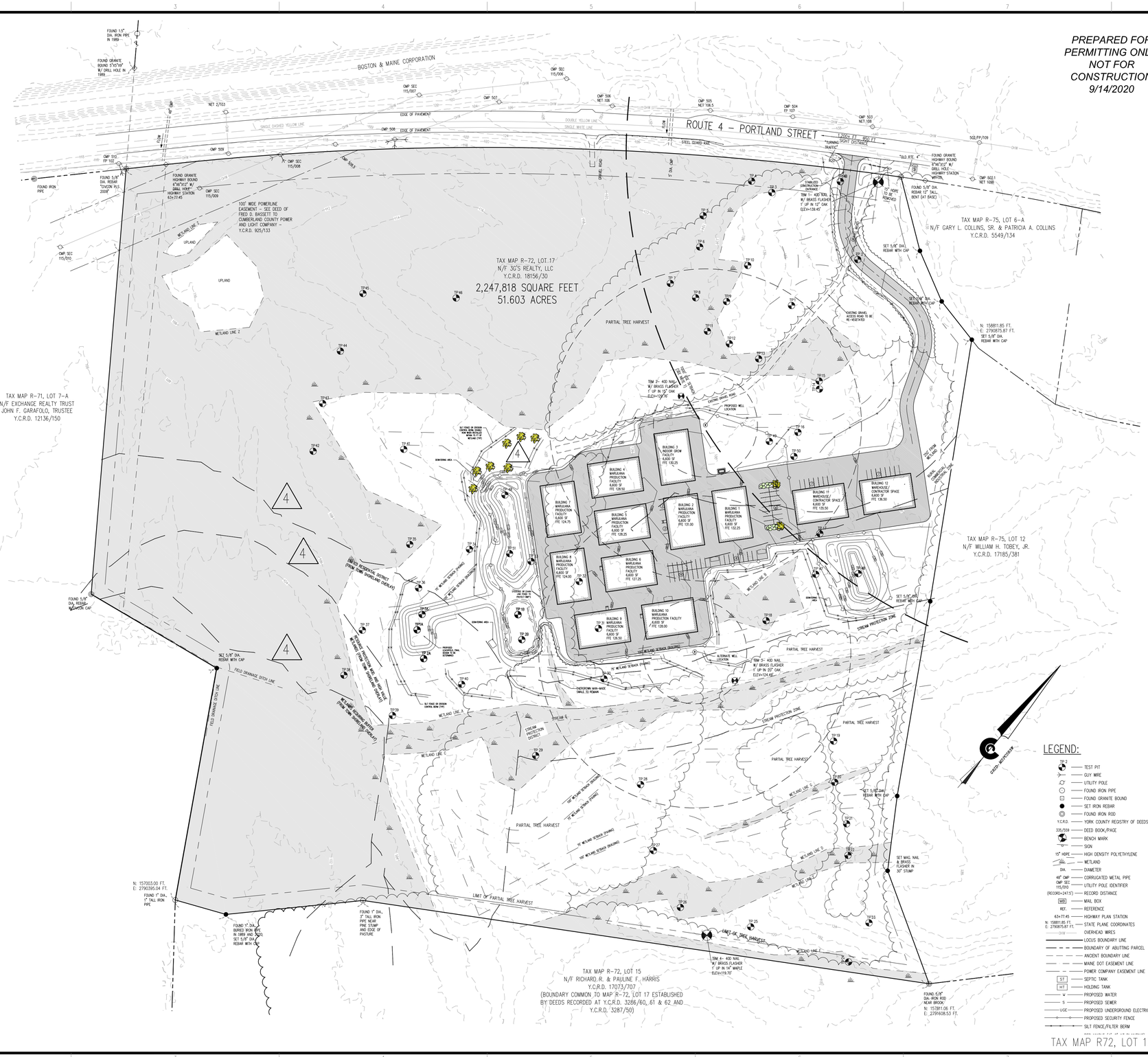
REQUIREMENT	MINIMUM	PROVIDED
LOT SIZE	90,000 S.F. (ON–SITE SEPTIC DISPOSAL)	1,139,595 S.F. UPLAND
LOT WIDTH	200'	>200'
FRONTAGE	200'	>200'
FRONT YARD SETBACK	50'	>500'
SIDE YARD SETBACK	25'	50'
REAR YARD SETBACK	25'	>500
BUILDING HEIGHT	45' (MAXIMUM)	>35'
MAXIMUM LOT COVERAGE	80%	9.9%

PORTIONS OF THE PARCEL ARE ALSO LOCATED IN THE RESOURCE PROTECTION DISTRICT (RP) (WITHIN 250' BUFFER AROUND WETLANDS OF MODERATE AND HIGH VALUE). SHORELAND ZONING ORDINANCE DIMENSIONAL REQUIREMENTS ARE AS FOLLOWS:

REQUIREMENT	MINIMUM	PROVIDED
LOT SIZE	40,000 S.F.	1,139,595 S.F. UPLAND
LOT WIDTH	200'	>200'
FRONTAGE	200'	>200'
FRONT YARD SETBACK	50'	>500'
SIDE YARD SETBACK	25'	50'
REAR YARD SETBACK	30'	>500
BUILDING HEIGHT	35' (MAXIMUM)	>35'
MAXIMUM LOT COVERAGE	10%	9.9%
WETLAND SETBACK	100' (75' PAVEMENT)	CONFORMS

FOR COMPLETE ZONING INFORMATION REFER TO THE TOWN OF BERWICK LAND USE ORDINANCE.

10. CONTOURS AS SHOWN ARE BASED ON LIDAR DATA FROM THE MAINE OFFICE OF GIS. SEE PROJECT DATA FILES FOR ADDITIONAL ON–THE–GROUND SPOT ELEVATIONS.
11. WETLAND LINES AND TEST PITS WHERE IDENTIFIED BY KENNETH GARDNER, MAINE SOIL SCIENTIST (#61) IN JANUARY 2020. THE LOCATIONS OF THE WETLAND FLAGS AND TEST PITS WERE FIELD SURVEYED BY CIVIL CONSULTANTS BY ON–THE–GROUND INSTRUMENT SURVEY.
12. SIGHT DISTANCE INDICATED ON PLANS IS BASED ON INFORMATION GATHERED BY CIVIL CONSULTANTS ON 4–8–2020.
13. ANY BUILDING MOUNTED LIGHTS SHALL BE LED SHIELDED AND DOWNLIT TO REDUCE GLARE VISIBLE FROM ROUTE 4 OR ABUTTING PROPERTIES.
14. KNOX BOX FOR BUILDING ACCESS WILL BE INSTALLED AT THE SECURITY GATE, OR AT A LOCATION DETERMINED BY THE BERWICK FIRE DEPARTMENT.



STATE OF MAINE — Neil J. Rapoza — 12169 — LICENSED — PROFESSIONAL ENGINEER — 9/14/2020

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LAND OF 3G'S REALTY LLC - MAP R72/ LOT 17
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PREPARED FOR:
SCOTT KEARNAN
309 OLD COLONY AVENUE, SOUTH BOSTON, MA 02127
CLIENT ADDRESS:

1"=100'
0' 100'

DATE: 04/09/2020
DRAWN BY: NJR
CHECKED BY: GRA
APPROVED BY: NJR

SITE PLAN

PROJECT NO: 19–352.00

L1

SHEET: 1 OF 6

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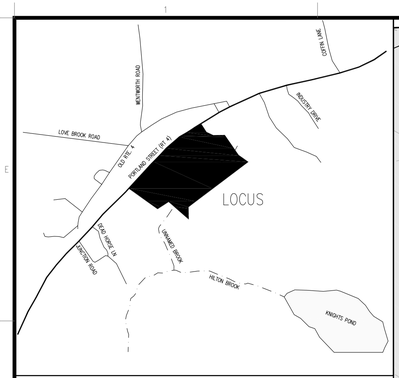
PLOT DATE: 9/14/2020



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SIDE YARD SETBACK	25'	50'
REAR YARD SETBACK	25'	>500
BUILDING HEIGHT	45' (MAXIMUM)	>35'
MAXIMUM LOT COVERAGE	80%	9.9%

PORTIONS OF THE PARCEL ARE ALSO LOCATED IN THE SHORELAND ZONE (WITHIN 250' OF 10 ACRE FRESHWATER WETLAND). SHORELAND ZONING ORDINANCE DIMENSIONAL REQUIREMENTS ARE AS FOLLOWS:

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SIDE YARD SETBACK	25'	50'
REAR YARD SETBACK	30'	>500
BUILDING HEIGHT	35' (MAXIMUM)	>35'
MAXIMUM LOT COVERAGE	20%	9.9%
WETLAND SETBACK	100' PRIMARY STRUCTURE, 75' PAVEMENT	CONFORMS

FOR COMPLETE ZONING INFORMATION REFER TO THE TOWN OF BERWICK LAND USE ORDINANCE.

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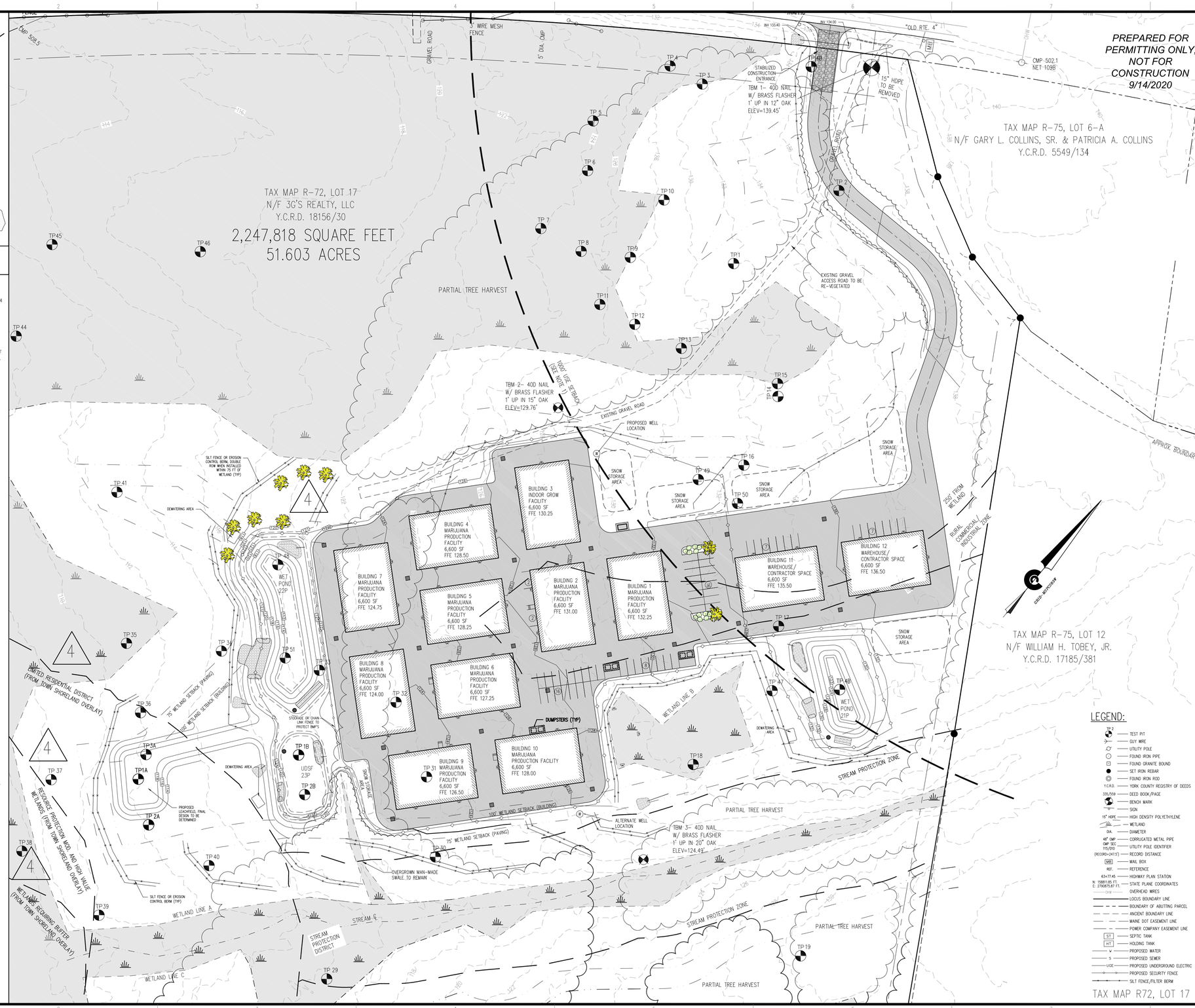
12. DUMPSTERS SHOWN ON PLAN ARE FOR INERT (NON–MARIJUANA) WASTE. MARIJUANA PLANT WASTE SHALL BE STORED SECURELY PRIOR TO BEING MIXED WITH INERT WASTE PER ADULT USE MARIJUANA RULES 18–691 C.M.R., CHAPTER 1, SECTION 9.

PARKING NOTES:

1. THE PROPOSED USES WILL BE EITHER MARIJUANA GROW FACILITIES OR WAREHOUSE/INDUSTRIAL SPACES. THE TABLE BELOW INDICATES THE PARKING REQUIREMENTS AND AVAILABLE SPACES.
2. PARKING REQUIREMENTS PER TOWN OF BERWICK LAND USE ORDINANCE §7.B.C.3.i:

USE	SPACES/UNIT	UNITS	REQUIRED
INDUSTRIAL (GROW FACILITY)	1/EMPLOYEE	30 EMPLOYEES (3/BLDG)	30
WAREHOUSE/INDUSTRIAL	1/ 500 S.F.	13,200 SF	27
		TOTAL REQUIRED	57
		TOTAL PROVIDED	58



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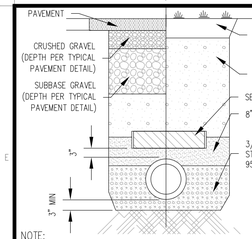
APPROVED BY: NJR

SITE PLAN

PROJECT NO: 19–352.00

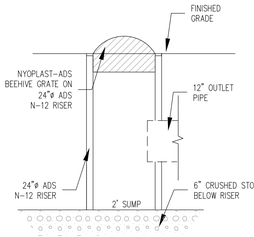
L2

SHEET: 2 OF 6

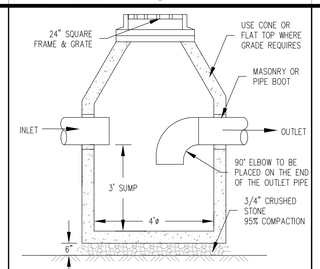


NOTE:
2"x2' STYROFOAM INSULATION BOARD SHALL BE PLACED IN AREAS WHERE COVER OVER LINE IS LESS THAN 2.5', OR WHERE SHOWN.

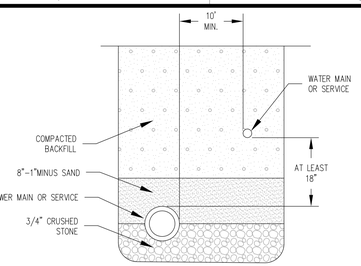
DRAINLINE TRENCH DETAIL
NOT TO SCALE



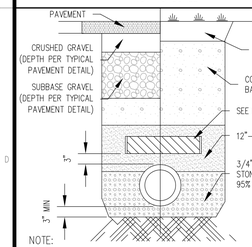
DRAIN-STRUCTURE-NYOPLAST
NOT TO SCALE



CATCH BASIN WITH ELBOW
NOT TO SCALE

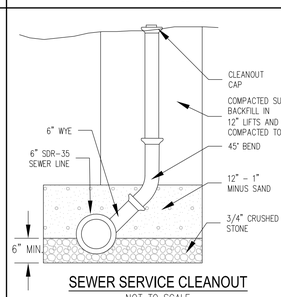


SEWER AND WATER SEPARATION DETAIL
NOT TO SCALE

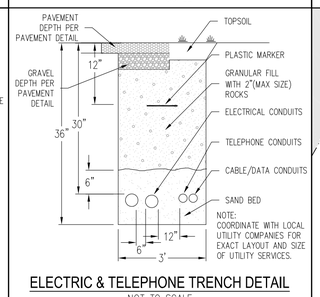


NOTE:
2"x2' STYROFOAM INSULATION BOARD SHALL BE PLACED IN AREAS WHERE COVER OVER LINE IS LESS THAN 4' OR WHERE SHOWN.

SEWER LINE TRENCH WITH INSULATION
NOT TO SCALE

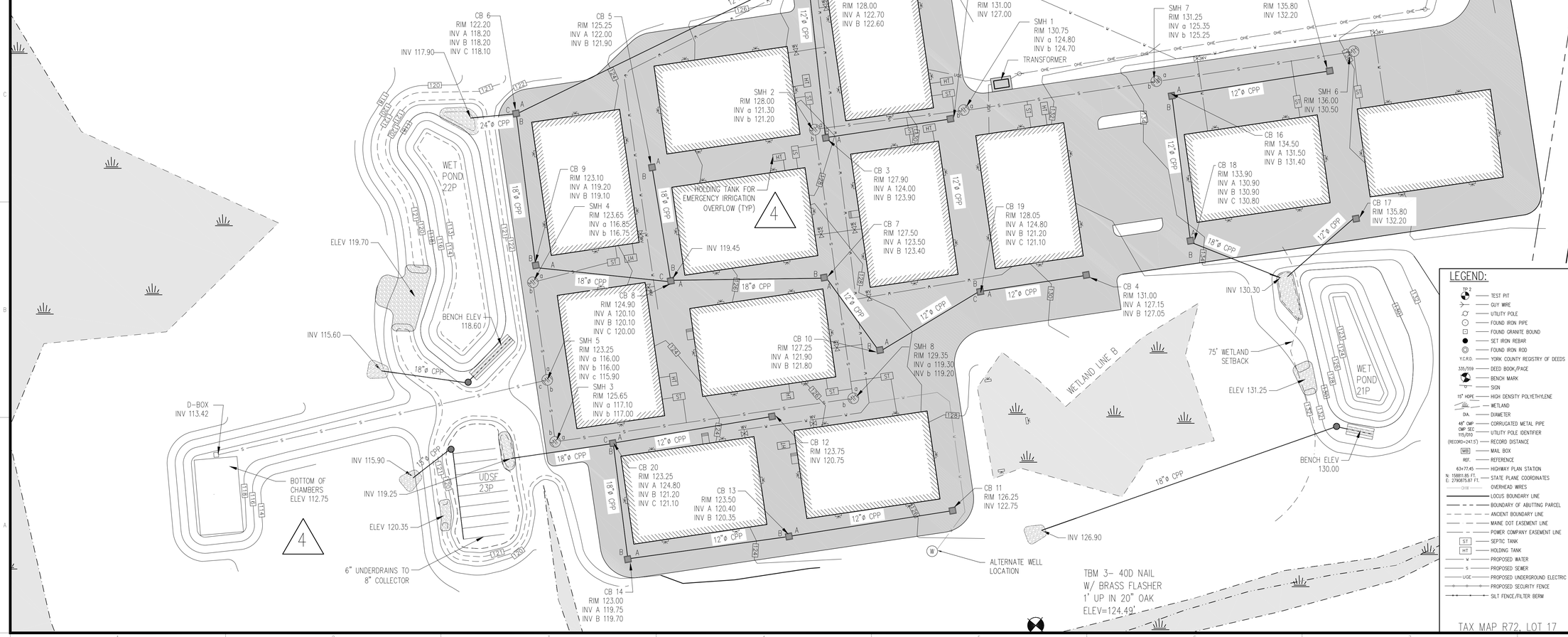


SEWER SERVICE CLEANOUT
NOT TO SCALE



NOTE:
COORDINATE WITH LOCAL UTILITY COMPANIES FOR EXACT LAYOUT AND SIZE OF UTILITY SERVICES.

ELECTRIC & TELEPHONE TRENCH DETAIL
NOT TO SCALE



LEGEND:

- TP 2 — TEST PIT
- GUY WIRE
- UTILITY POLE
- FOUND IRON PIPE
- FOUND GRANITE BOUND
- SET IRON REBAR
- FOUND IRON ROD
- Y.C.R.D. — YORK COUNTY REGISTRY OF DEEDS
- 333/559 — DEED BOOK/PAGE
- BENCH MARK
- SIGN
- 15" HDPE — HIGH DENSITY POLYETHYLENE
- WETLAND
- DIA. — DIAMETER
- 48" CMP — CORRUGATED METAL PIPE
- CMP SEC 115/D10 — UTILITY POLE IDENTIFIER
- (RECORD=247.5') — RECORD DISTANCE
- MB — MAIL BOX
- REF. — REFERENCE
- 63+77.45 — HIGHWAY PLAN STATION
- N: 158811.85 FT. E: 279087.87 FT. — STATE PLANE COORDINATES
- OHW — OVERHEAD WIRES
- LOCUS BOUNDARY LINE
- BOUNDARY OF ABUTTING PARCEL
- ANCIENT BOUNDARY LINE
- MAINE DOT EASEMENT LINE
- POWER COMPANY EASEMENT LINE
- ST — SEPTIC TANK
- HT — HOLDING TANK
- W — PROPOSED WATER
- S — PROPOSED SEWER
- UGE — PROPOSED UNDERGROUND ELECTRIC
- PROPOSED SECURITY FENCE
- SILT FENCE/FILTER BERM

STATE OF MAINE — Neil J. Rapoza 12169 — LICENSED PROFESSIONAL ENGINEER — 9/14/2020

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Maine
03908
207-384-2550
www.civcon.com

NO.	REVISIONS	INT.	DATE
6	ADDED TEST PIT INFO, REVISED DETAILS	NJR	9/14/20
5	REVISED LAYOUT, WETLAND AVOIDANCE	NJR	9/8/20
4	REVISED PER TOWN PLANNER COMMENTS	NJR	7/29/20
3	REVISED NOTES SHEET L6	NJR	6/4/20
2	RELOCATED ENTRANCE PER DOT REVIEW	NJR	5/1/20
1	ISSUED FOR SUBMISSION TO DEP ISSUED FOR SUBMISSION TO TOWN	NJR	4/24/20

RECORD OWNER: 3G'S REALTY, LLC
OWNER ADDRESS: 309 OLD COLONY AVENUE, SOUTH BOSTON, MA 02127

PROPOSED SITE DEVELOPMENT
LAND OF 3G'S REALTY LLC - MAP R72/ LOT 17
ROUTE 4 (PORTLAND STREET)
BERWICK, YORK COUNTY, MAINE

PREPARED FOR:
SCOTT KEARNAN
CLIENT ADDRESS: 309 OLD COLONY AVENUE, SOUTH BOSTON, MA 02127

1"=40'
0' 40'

DATE: 04/09/2020
DRAWN BY: NJR
CHECKED BY: GRA
APPROVED BY: NJR

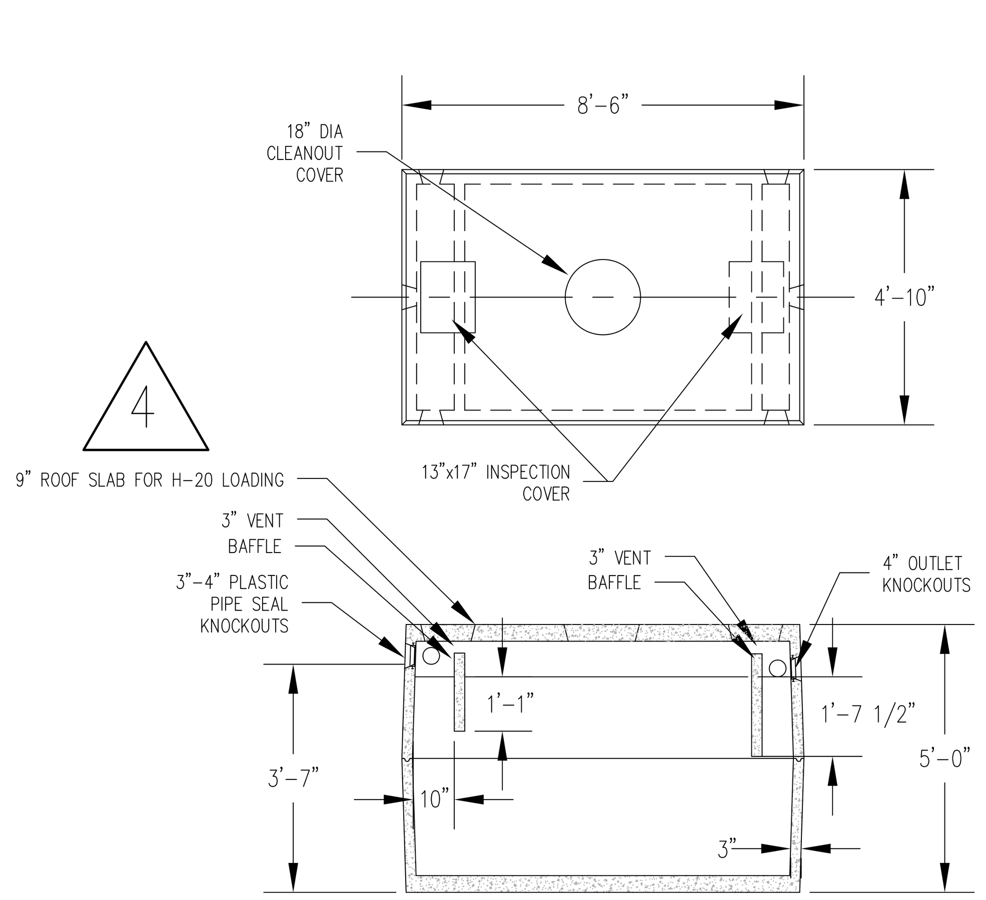
UTILITIES PLAN AND DETAILS

PROJECT NO: 19-352.00

L3

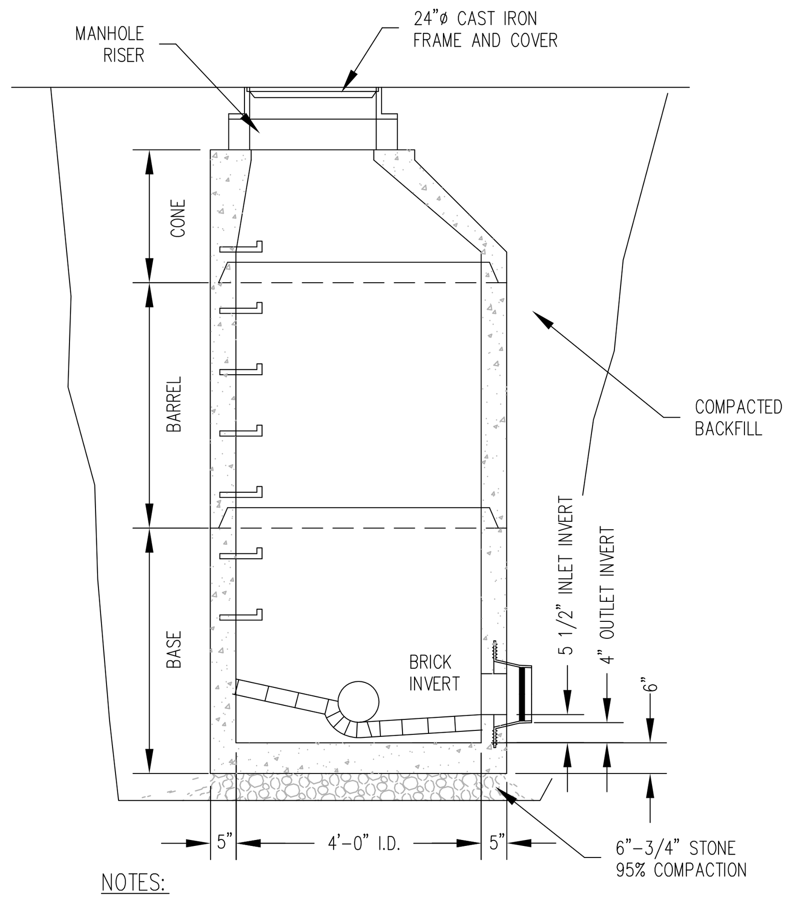
SHEET: 3 OF 6

COORDINATE FILE: J:\AAA\1935200\CARLSON\SURVEY\POINTS\MSPCS83W-NAVD88.CRD
CADD FILE: J:\aaa\2019\1935200\CARLSON\ENGINEERING\1935200-E-ST.DWG
PLOT DATE: 9/14/2020



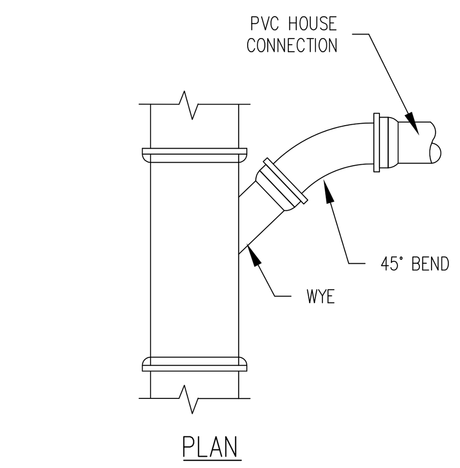
NOTES:
1. CONCRETE: 4,000 PSI AFTER 28 DAYS.
2. REINFORCING: 6X6/10X10 W.W.M. & FIBERS.
3. HEAVY DUTY SEPTIC TANK TOPS REINFORCED WITH 5/8" REBAR @ 12" O.C. EACH WAY.
4. KEYED JOINT SEALED WITH BUTY RUBBER.
5. EXCAVATION MUST BE AT LEAST 12" WIDER AND LONGER THAN TANK SIZE.

SEPTIC TANK DETAIL
NOT TO SCALE



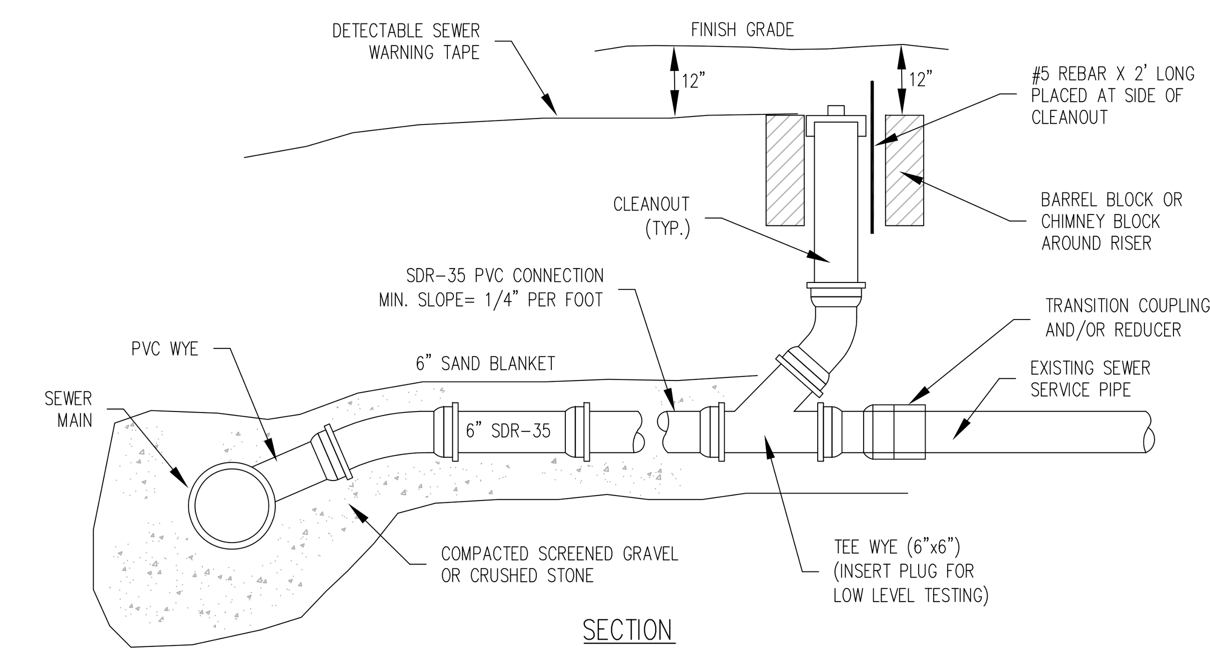
NOTES:
1. CONCRETE: 4,000 PSI AFTER 28 DAYS.
2. REINFORCING: H-20 LOADING 4 X 4/4 X 4 W.W.M.
3. SHIPLAP JOINTS SEALED WITH 1 STRIP OF 1" DIA. BUTYL RUBBER SEALANT.
4. EXTERIOR ASPHALT COATED. (SANITARY MANHOLES ONLY)
5. LOCK JOINT FLEXIBLE PIPE SLEEVES, CAST IN.
6. EACH CASTING TO HAVE LIFTING HOLES CAST IN.
7. MANHOLE STEPS @ 12" O.C. (WHEN REQUIRED)
8. PROVIDE 2" LIP AT TOP OF CONE TO ACCOMODATE VACUUM TESTING. (SANITARY MANHOLES ONLY)

SEWER MANHOLE DETAIL
NOT TO SCALE



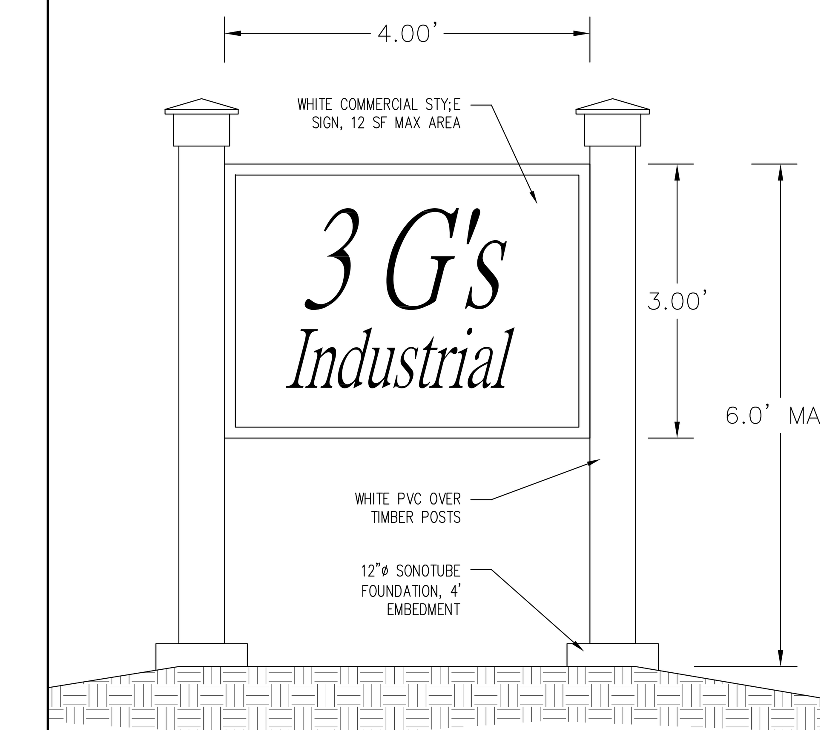
SERVICE CONNECTION NOTES:

1. SEE DETAILS FOR SERVICE CONNECTION REQUIREMENTS.
2. SERVICE CONNECTION SHALL BE INSTALLED BELOW WATER MAIN WHERE POSSIBLE.
3. CLEANOUTS SHALL BE INSTALLED AT EACH SERVICE CONNECTION.
4. REBAR SHALL BE PLACED AT SIDE OF CLEANOUT.
5. CLEANOUT SHALL BE USED TO PLUG AND TEST ALL NEW LATERALS WITH MINIMAL INTERRUPTION TO OPERATION OF HOMEOWNER SANITARY SYSTEM.
6. CLEANOUT RISER PIPE AND FITTINGS SHALL BE INCIDENTAL AND SHALL NOT BE CONSIDERED FOR PAYMENT.
7. CLEANOUTS SHALL BE PLACED EVERY 75 FEET AND AT BENDS IN PIPING.

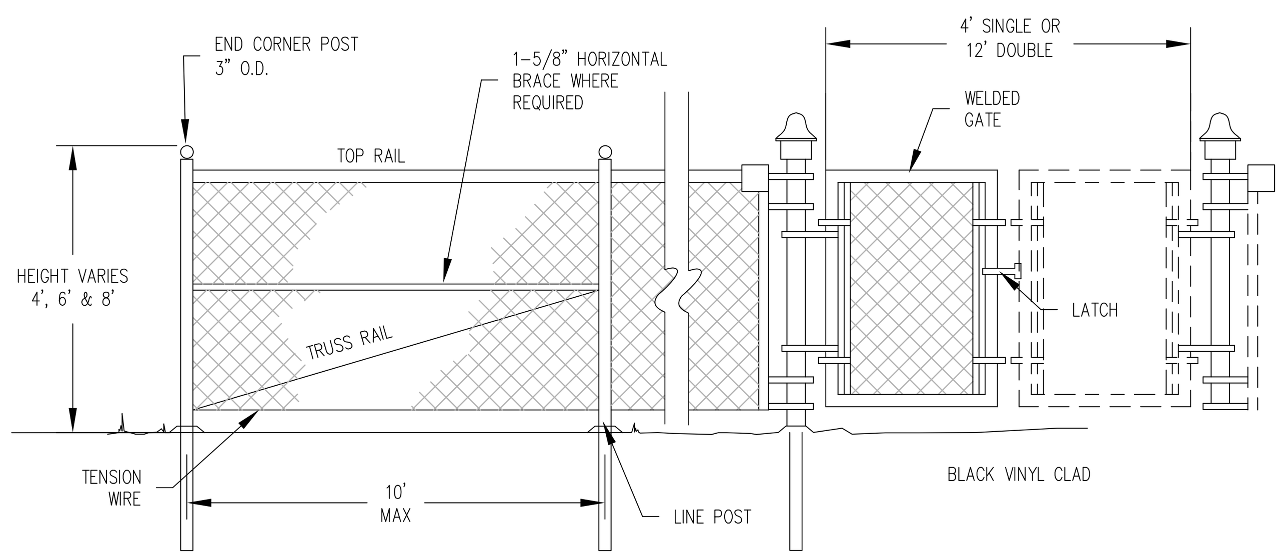


SERVICE CONNECTION DETAIL
NOT TO SCALE

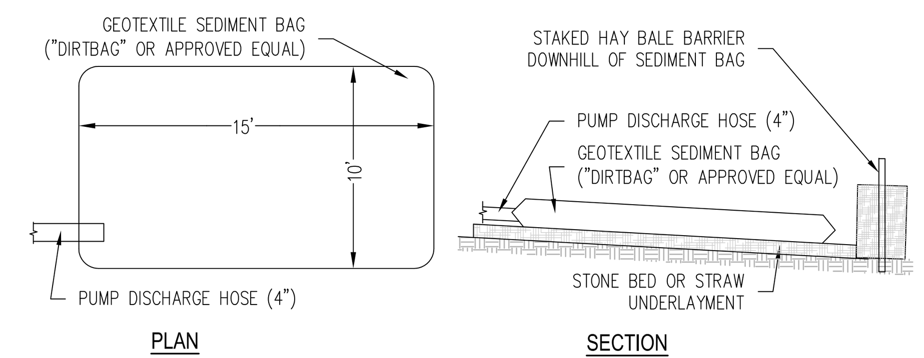
PREPARED FOR PERMITTING ONLY, NOT FOR CONSTRUCTION 9/14/2020



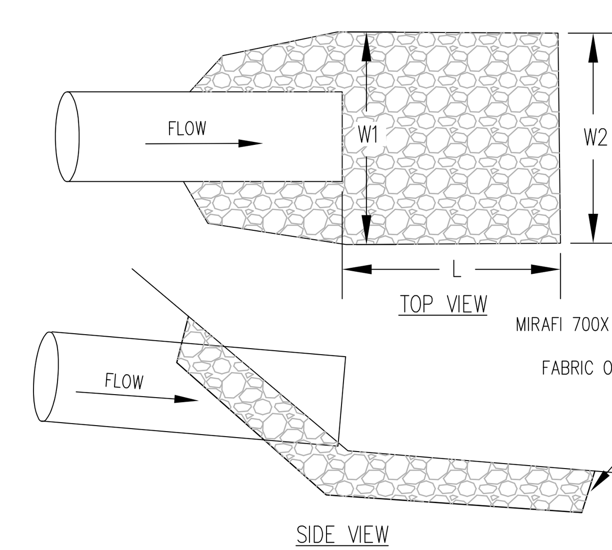
SIGN DETAIL
NOT TO SCALE



CHAIN LINK FENCE
NOT TO SCALE

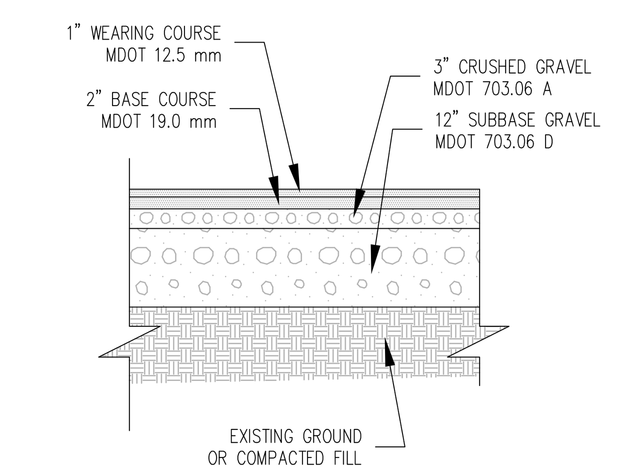


DEWATERING DETAIL
NOT TO SCALE

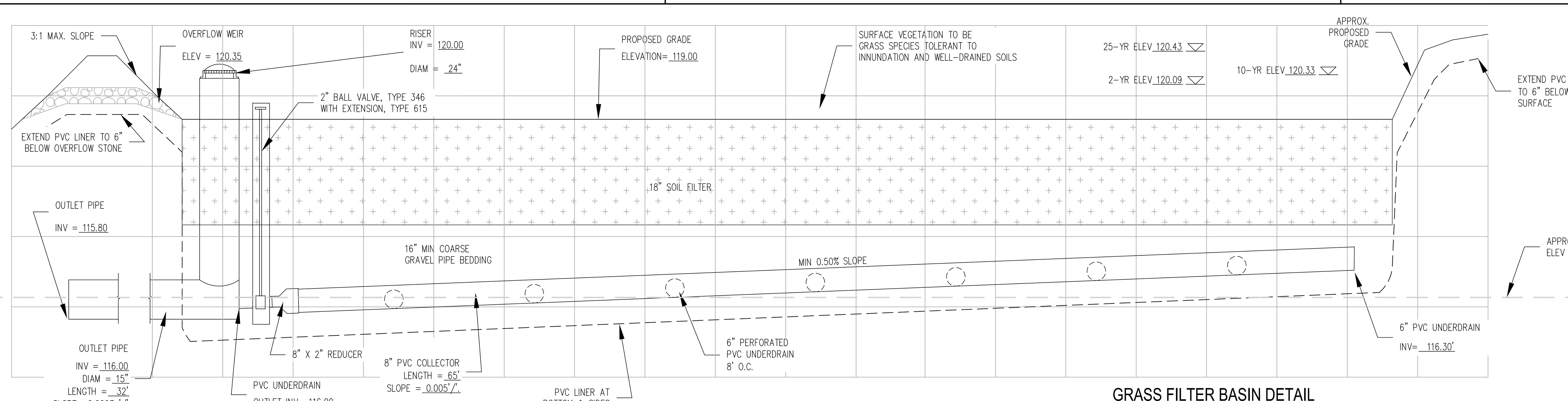


RIPRAP APRON SCHEDULE					
	RIPRAP		APRON		
CULVERT	d50 SIZE (INCHES)	THICKNESS t (INCHES)	LENGTH L (FT) (MIN)	WIDTH W1 (FT)	WIDTH W2 (FT)
12" OR LESS	5"	15"	10'	3.0'	12'
15"	5"	15"	11'	3.75'	13'
18"	5"	15"	14'	4.5'	15'
24"	8"	18"	18'	6.0'	20'

RIPRAP APRON PIPE OUTLET DETAIL
NOT TO SCALE



TYPICAL PAVEMENT SECTION
NOT TO SCALE



GRASS FILTER BASIN DETAIL
NOT TO SCALE

GRASSED SOIL FILTER MAINTENANCE NOTES:

SOIL FILTER INSPECTION: THE SOIL FILTER SHOULD BE INSPECTED AFTER EVERY MAJOR STORM IN THE FIRST FEW MONTHS TO ENSURE PROPER FUNCTION. THEREAFTER, THE FILTER SHOULD BE INSPECTED AT LEAST ONCE EVERY SIX MONTHS TO ENSURE THAT IT IS DRAINING BETWEEN 24 AND 48 HOURS.

SOIL FILTER REPLACEMENT: THE TOP SEVERAL INCHES OF THE FILTER SHALL BE REPLACED WITH FRESH MATERIAL WHEN WATER PONDS ON THE SURFACE OF THE BED FOR MORE THAN 72 HOURS. THE REMOVED SEDIMENTS SHOULD BE DISPOSED IN AN ACCEPTABLE MANNER.

SEDIMENT REMOVAL: SEDIMENT AND PLANT DEBRIS SHOULD BE REMOVED FROM THE PRE-TREATMENT STRUCTURE AT LEAST ANNUALLY.

MOWING: FILTERS WITH GRASS COVER SHOULD BE MOWED NO MORE THAN 2 TIMES PER GROWING SEASON TO MAINTAIN GRASS HEIGHTS LESS THAN 12 INCHES.

FERTILIZATION: FERTILIZATION OF THE UNDERDRAINED FILTER AREA SHOULD BE AVOIDED UNLESS ABSOLUTELY NECESSARY TO ESTABLISH VEGETATION.

HARVESTING AND WEEDING: HARVESTING AND PRUNING OF EXCESSIVE GROWTH WILL NEED TO BE DONE OCCASIONALLY. WEEDING TO CONTROL UNWANTED OR INVASIVE PLANTS MAY ALSO BE NECESSARY.

GRASSED FILTER SEEDING MIX	
TYPE	APPLICATION RATE
CREEPING RED FESCUE	20 LBS/ACRE
TALL FESCUE	20 LBS/ACRE
BIRDSFOOT TREFOIL	8 LBS/ACRE
TOTAL	48 LBS/ACRE

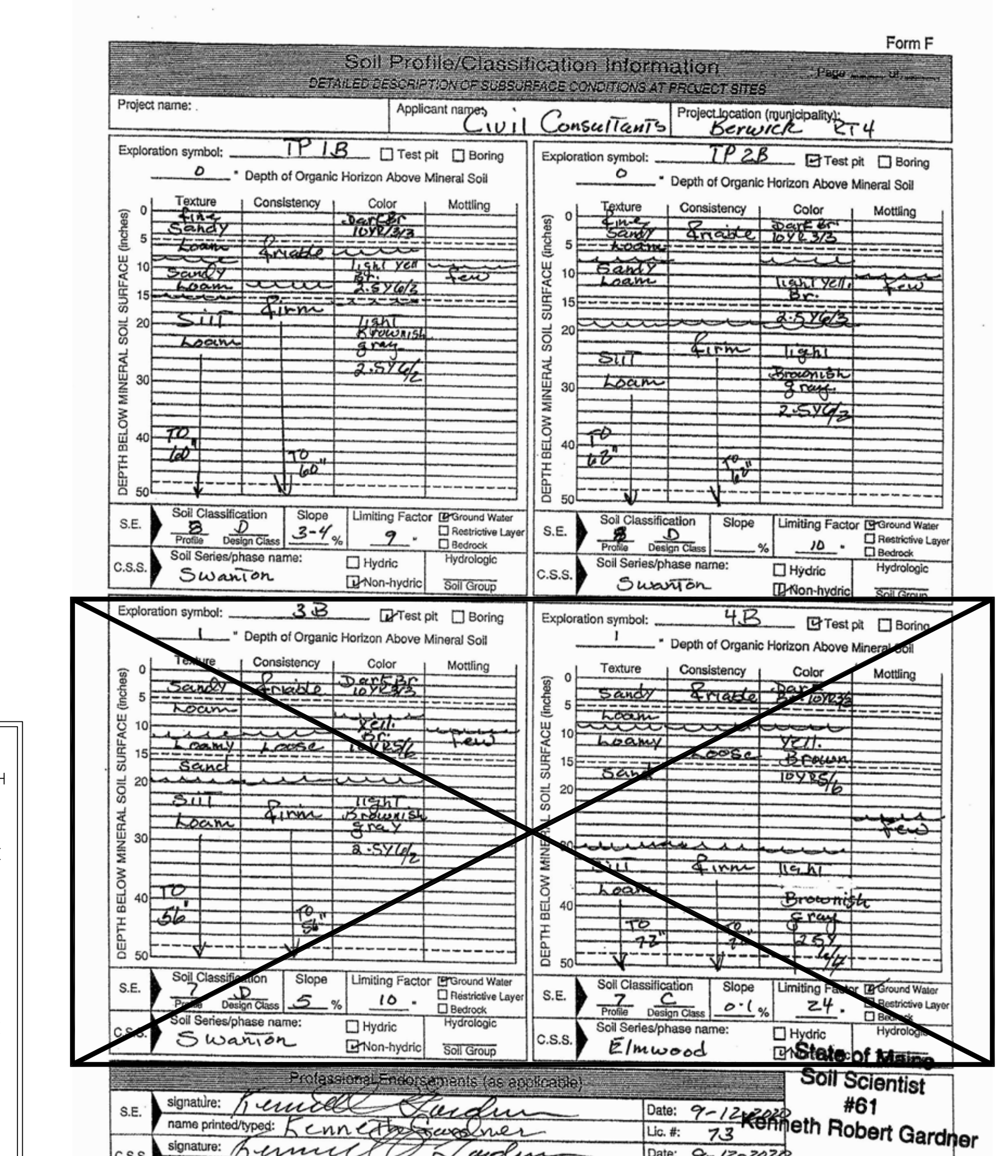
UNDERDRAIN PIPE BEDDING MATERIAL		
COMPONENT MATERIAL	GRADATION OF MATERIAL	
	SIEVE NO.	PERCENT BY WEIGHT PASSING STANDARD SIEVE
UNDERDRAIN BACKFILL MATERIAL (MDOT 703.22 TYPE C)	1"	100
	¾"	90 TO 100
	⅜"	0 TO 75
	4	0 TO 25
	10	0 TO 5

GRASSED FILTER MEDIA			
COMPONENT MATERIAL	PERCENT OF MIXTURE BY VOLUME	GRADATION OF MATERIAL	
		SIEVE NO.	PERCENT BY WEIGHT PASSING STANDARD SIEVE
MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH, WITH FINES AS INDICATED	20 TO 25	200	< 5
LOAMY COARSE SAND (MDOT 703.01)	75 TO 80	⅜"	100
		4	95 TO 100
		8	80 TO 100
		16	50 TO 85
		30	25 TO 60
		60	10 TO 30
		100	2 TO 10
		200	0 TO 5

CONSTRUCTION OVERSIGHT NOTES:

INSPECTION OF THE FILTER/BIORETENTION BASINS SHALL BE PROVIDED FOR EACH PHASE OF CONSTRUCTION BY THE DESIGN ENGINEER WITH REQUIRED REPORTING TO THE DEP. AT A MINIMUM, INSPECTIONS WILL OCCUR:

- AFTER PRELIMINARY CONSTRUCTION OF THE FILTER GRADES AND ONCE THE UNDERDRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED;
- AFTER THE DRAINAGE LAYER IS CONSTRUCTED AND PRIOR TO THE INSTALLATION OF THE FILTER MEDIA;
- AFTER THE FILTER MEDIA HAS BEEN INSTALLED AND SEEDED (OR PLANTED AND MULCHED IF BIORETENTION BASIN);
- AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS;
- ALL MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN WILL BE APPROVED BY THE DESIGN ENGINEER AFTER TESTS BY A CERTIFIED LABORATORY SHOW THAT THEY ARE PASSING DEP SPECIFICATIONS.



TAX MAP R72, LOT 17

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Maine
03908
207-384-2550
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NO.	REVISIONS	INT.	DATE
6	ADDED TEST PIT INFO, REVISED DETAILS	NJR	9/14/20
5	REVISED LAYOUT, WETLAND AVOIDANCE	NJR	9/8/20
4	REVISED PER TOWN PLANNER COMMENTS	NJR	7/29/20
3	REVISED NOTES SHEET L6	NJR	6/4/20
2	RELOCATED ENTRANCE PER DOT REVIEW	NJR	5/1/20
	ISSUED FOR SUBMISSION TO DEP		
1	ISSUED FOR SUBMISSION TO TOWN	NJR	4/24/20

RECORD OWNER:
3G'S REALTY, LLC

OWNER ADDRESS:
309 OLD COLONY AVENUE,
SOUTH BOSTON, MA 02127

PROPOSED SITE DEVELOPMENT LAND OF 3G'S REALTY LLC - MAP R72/ LOT 17 ROUTE 4 (PORTLAND STREET) BERWICK, YORK COUNTY, MAINE

PREPARED FOR:
SCOTT KEARNAN

CLIENT ADDRESS: 309 OLD COLONY AVENUE, SOUTH BOSTON, MA 02127

DATE: 04/09/2020
DRAWN BY: NJR
CHECKED BY: GRA
APPROVED BY: NJR

NOTES AND DETAILS

PROJECT NO: 19-352.00

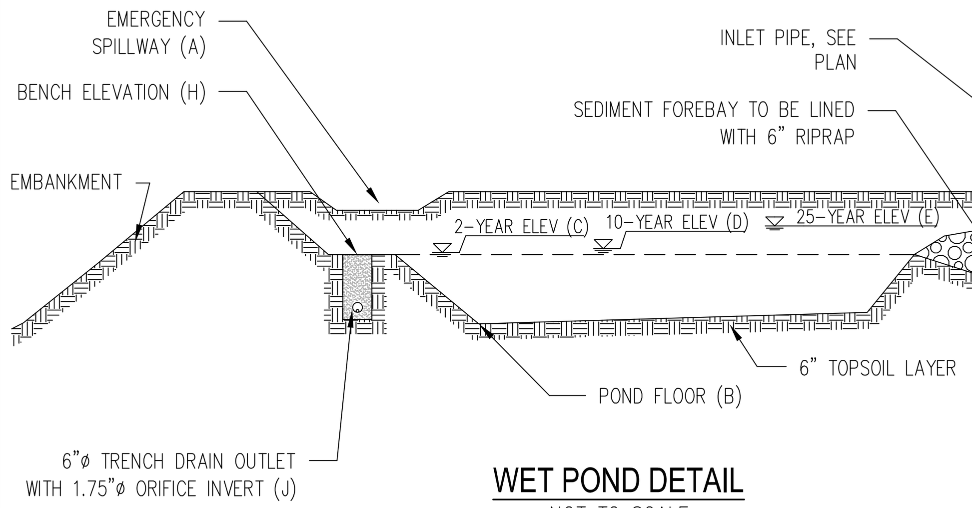
L4

SHEET: 4 OF 6

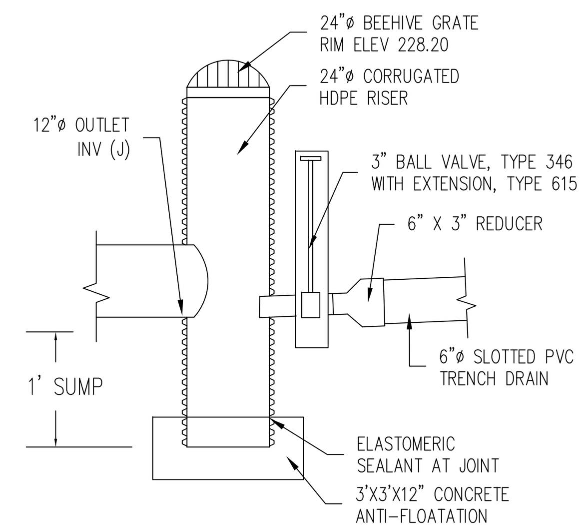
COORDINATE FILE: J:\AAA\1935200\CARLSON\SURVEY\POINTS\MSPCS83W-NAVD88.CRD

CADD FILE: J:\aaa\2019\1935200\CARLSON\ENGINEERING\1935200-E-ST.DWG

PLOT DATE: 9/14/2020



WET POND DETAIL
NOT TO SCALE



OUTLET RISER DETAIL
NOT TO SCALE

WET POND MAINTENANCE NOTES:

GENERAL INSPECTION: THE POND SHOULD BE INSPECTED AFTER EVERY MAJOR STORM IN THE FIRST FEW MONTHS TO ENSURE PROPER FUNCTION. THEREAFTER, THE POND SHOULD BE INSPECTED AT LEAST ONCE EVERY SIX MONTHS TO ENSURE THAT THE POND IS SLOWLY EMPTYING THROUGH THE GRAVEL FILTER TRENCH FOR A SHORT TIME AFTER THE STORM (12–24 HOURS).

INLETS AND OUTLETS: THE INLET AND OUTLET OF THE PONDS SHOULD BE CHECKED PERIODICALLY TO ENSURE THAT FLOW STRUCTURES ARE NOT BLOCKED BY DEBRIS. ALL DITCHES OR PIPES CONNECTING PONDS IN SERIES SHOULD BE CHECKED FOR DEBRIS THAT MAY OBSTRUCT FLOW.

GRAVEL TRENCH: THE GRAVEL TRENCH SHOULD BE CLEAR OF CLOGGING MATERIAL (E.G. DECAYING LEAVES) SO THAT DISCHARGE THROUGH THE TRENCH IS NOT IMPEDED. THE TOP SEVERAL INCHES OF THE GRAVEL IN THE OUTLET TRENCH SHOULD BE REPLACED WITH FRESH MATERIAL WHEN WATER PONDS ABOVE THE PERMANENT POOL FOR MORE THAN 72 HOURS. THE SEDIMENTS REMOVED FROM THE WET POND SHOULD BE DISPOSED OF IN ACCORDANCE WITH APPLICABLE REGULATIONS.

EMBANKMENTS: WET PONDS SHOULD BE INSPECTED ANNUALLY FOR EROSION, SIDE SLOPE DESTABILIZATION, EMBANKMENT SETTLING OR OTHER SIGNS OF STRUCTURAL FAILURE. CORRECTIVE ACTIONS SHOULD BE TAKEN IMMEDIATELY UPON IDENTIFICATION OF A PROBLEM.

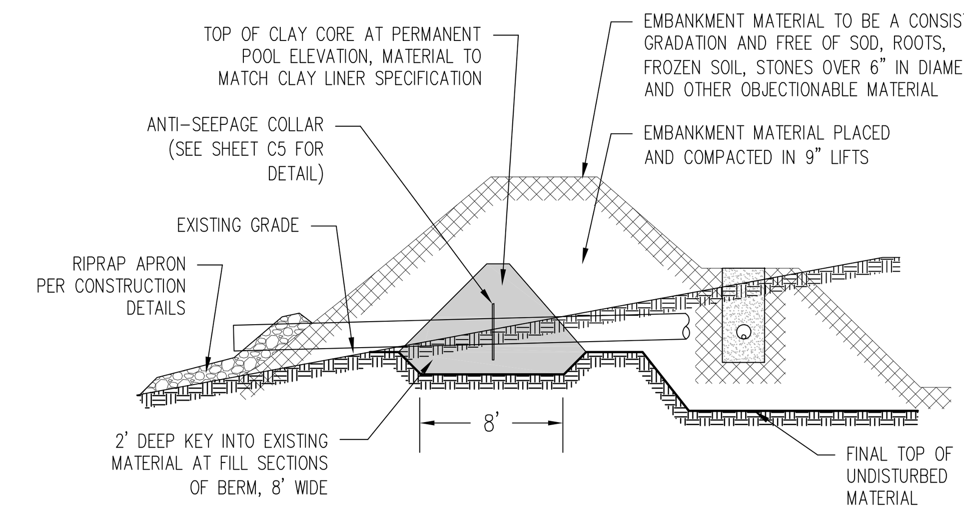
CONSTRUCTION OVERSIGHT NOTES:

INSPECTION OF WET PONDS SHALL BE PROVIDED FOR EACH PHASE OF CONSTRUCTION BY THE DESIGN ENGINEER WITH REQUIRED REPORTING TO THE DEP. AT A MINIMUM, INSPECTIONS WILL OCCUR:

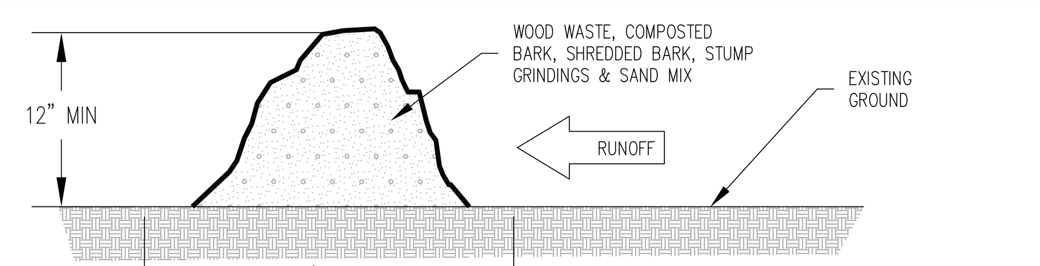
- AFTER AREA IS CLEARED, GRUBBED AND SHAPED, PRIOR TO PLACEMENT OF LINER
- AFTER PLACEMENT OF THE LINER;
- AFTER PLACEMENT OF TOPSOIL LAYER AND SEDIMENT BASIN;
- AFTER PRELIMINARY CONSTRUCTION OF THE GRAVEL TRENCH AND OUTLET CONTROL DEVICES ONCE THE UNDERDRAIN PIPE IS INSTALLED BUT NOT BACKFILLED;
- AFTER THE POND EMBANKMENTS HAVE BEEN STABILIZED;
- AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND POND CONDITIONS AND MAKE CORRECTIONS.

UNDERDRAIN PIPE BEDDING MATERIAL		
COMPONENT MATERIAL	GRADATION OF MATERIAL	
	SIEVE NO.	PERCENT BY WEIGHT PASSING STANDARD SIEVE
UNDERDRAIN BACKFILL MATERIAL (MDOT 703.22 TYPE B)	1"	90 TO 100
	¾"	75 TO 100
	4	50 TO 100
	20	15 TO 80
	50	0 TO 15
	200	0 TO 5

	WET POND SCHEDULE												
	SPILLWAY ELEV	BASIN FLOOR	2-YR ELEV	10-YR ELEV	25-YR ELEV	TEST PIT	DEPTH (inches)	EXIST GRADE	SHWT ELEV	BENCH ELEV	DRAIN INVERT ELEV	TRENCH PERC RATE (in/hr)	BEDRCK /WATER
	A	B	C	D	E					H	J		
POND 21	131.25	123.00	130.99	131.19	131.31	TP-4B	72.00	133.00	131.00	130.00	127.45	6.00	112.00 (BOTTOM PIT)
POND 22	119.70	113.00	119.77	119.88	119.93	TP-48	71.00	118.00	117.00	118.60	116.10	6.00	112.00 (BOTTOM PIT)

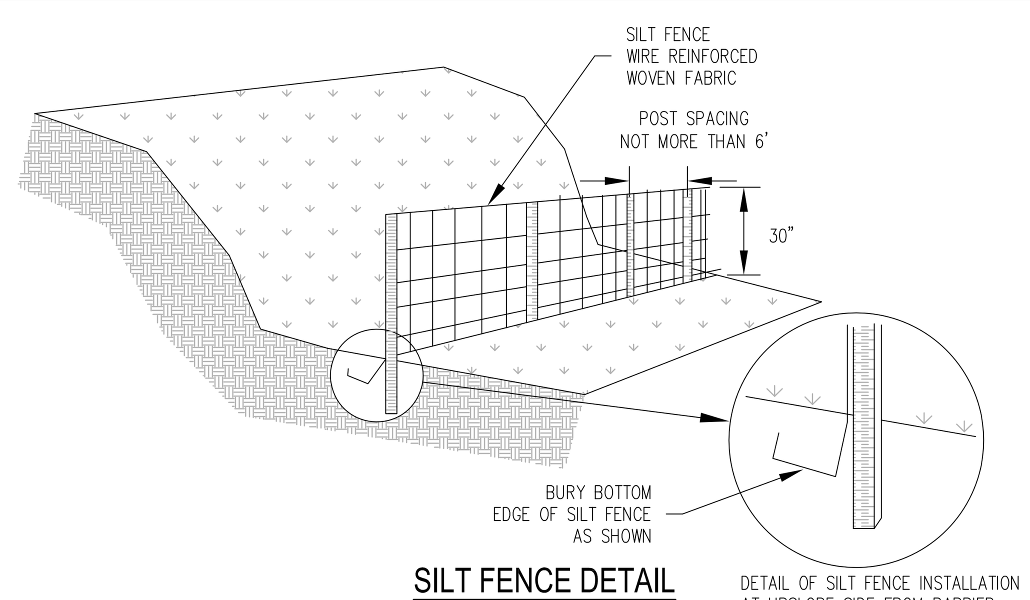


WET POND EMBANKMENT DETAIL
NOT TO SCALE



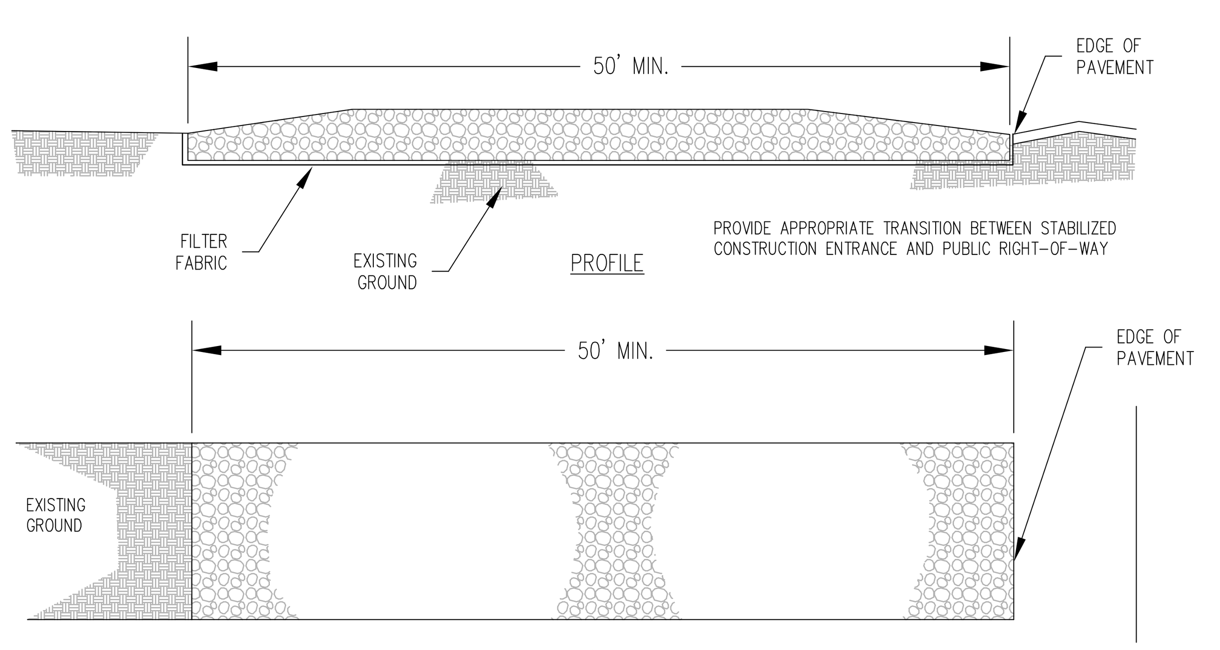
NOTES:
1. THIS BERM MAY BE USED IN PLACE OF FILTER FENCE WHERE APPLICABLE. THE MIXTURE OF THE BERM MATERIAL NEEDS TO BE A WELL-GRADE BLEND OF ORGANIC & MINERAL SUBSTANCE CONFORMING TO THE FOLLOWING STANDARDS:
   ORGANIC MATTER CONTENT: BETWEEN 80% AND 100%
   MOISTURE CONTENT: 30%–60%
   PH: BETWEEN 5.0 AND 8.0
   PARTICLE SIZE BY WEIGHT SHALL BE 100% PASSING A 5" SCREEN AND A MINIMUM OF 70% MAXIMUM OF 85%, PASSING A 0.75" SCREEN.
   LARGE PORTION OF SILTS, CLAYS OR FINE SANDS ARE NOT ACCEPTABLE MIX
2. THE BERM SHALL BE PLACED ALONG A RELATIVELY LEVEL CONTOUR WHEREVER POSSIBLE. THE EXISTING SURFACE MUST BE SCOURED AND THE MIXTURE KEYED IN LIKE ANY OTHER SEDIMENT CONTROL MEASURE.
3. IF FILTER BERM IS DOWNSLOPE OF A 8% OR GREATER SLOPE (OR IF THERE IS FLOWING WATER), ADDITIONAL SUPPORT IS REQUIRED (i.e. SILT FENCE).

FILTER BERM DETAIL
NOT TO SCALE



SILT FENCE DETAIL
NOT TO SCALE

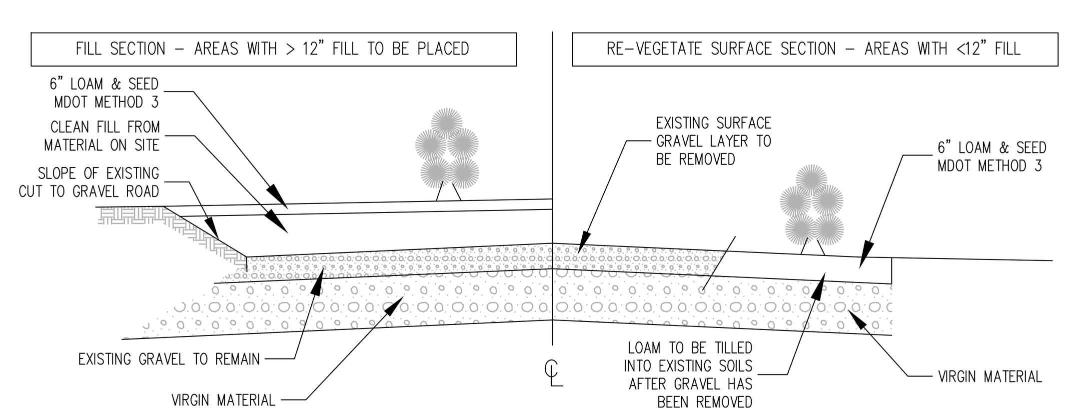
DETAIL OF SILT FENCE INSTALLATION AT UPSLOPE SIDE FROM BARRIER



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE – AASHTO DESIGNATION M43, SIZE NO 2 (2-1/2" TO 1-1/2"). USE CRUSHED STONE.
2. LENGTH – AS EFFECTIVE, BUT NOT LESS THAT 50 FEET.
3. THICKNESS – NOT LESS THAN EIGHT (8) INCHES.
4. WIDTH – NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
5. WASHING – WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY. WHEN WASHING IS REQUIRED IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH, OR WATER COURSE THROUGH USE OF SAND BAGS, GRAVEL, BOARDS, OR OTHER APPROVED METHODS.
6. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY VIA VACUUM SWEEPING.

STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



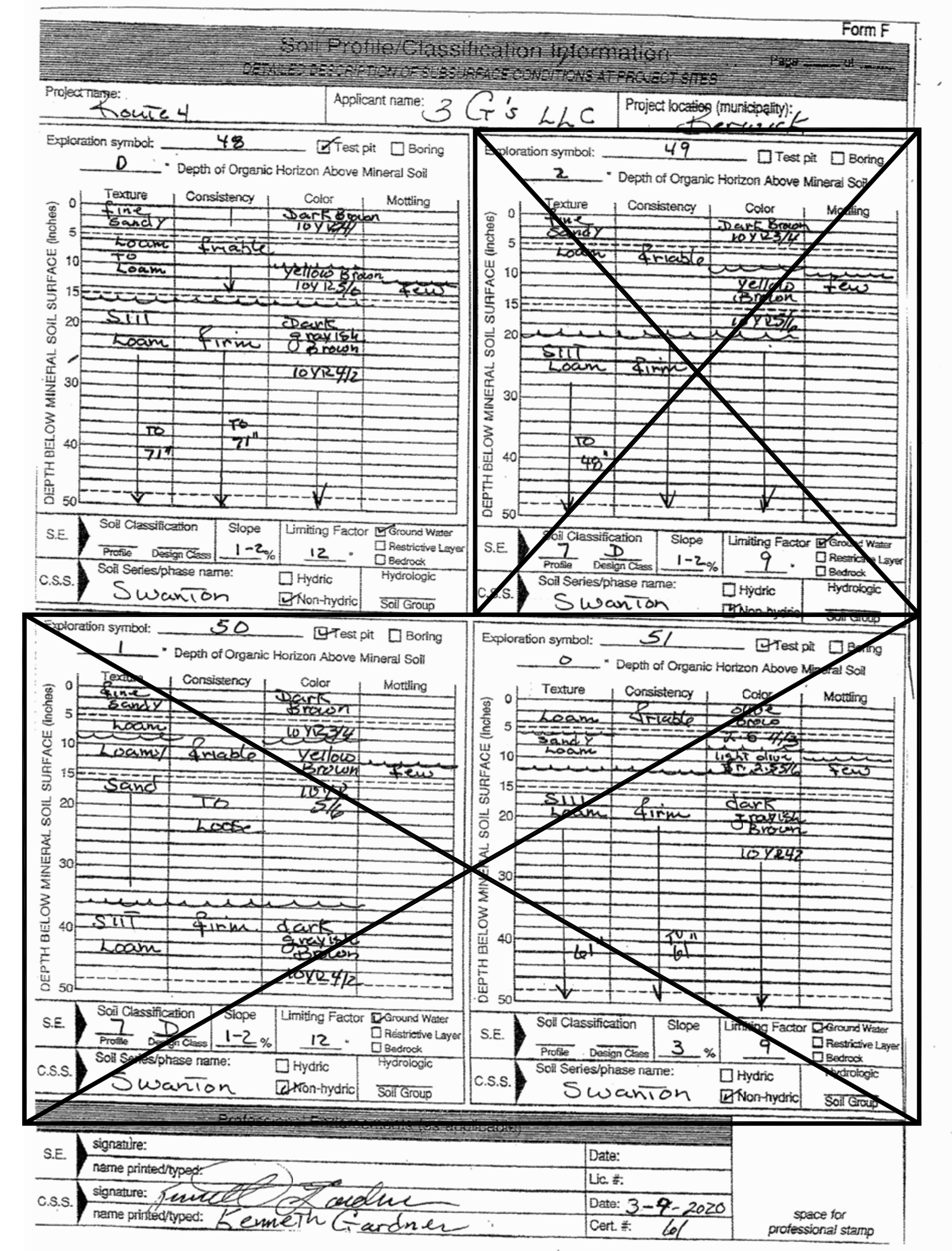
PROPOSED RE-VEGETATED ROAD SECTION
NOT TO SCALE

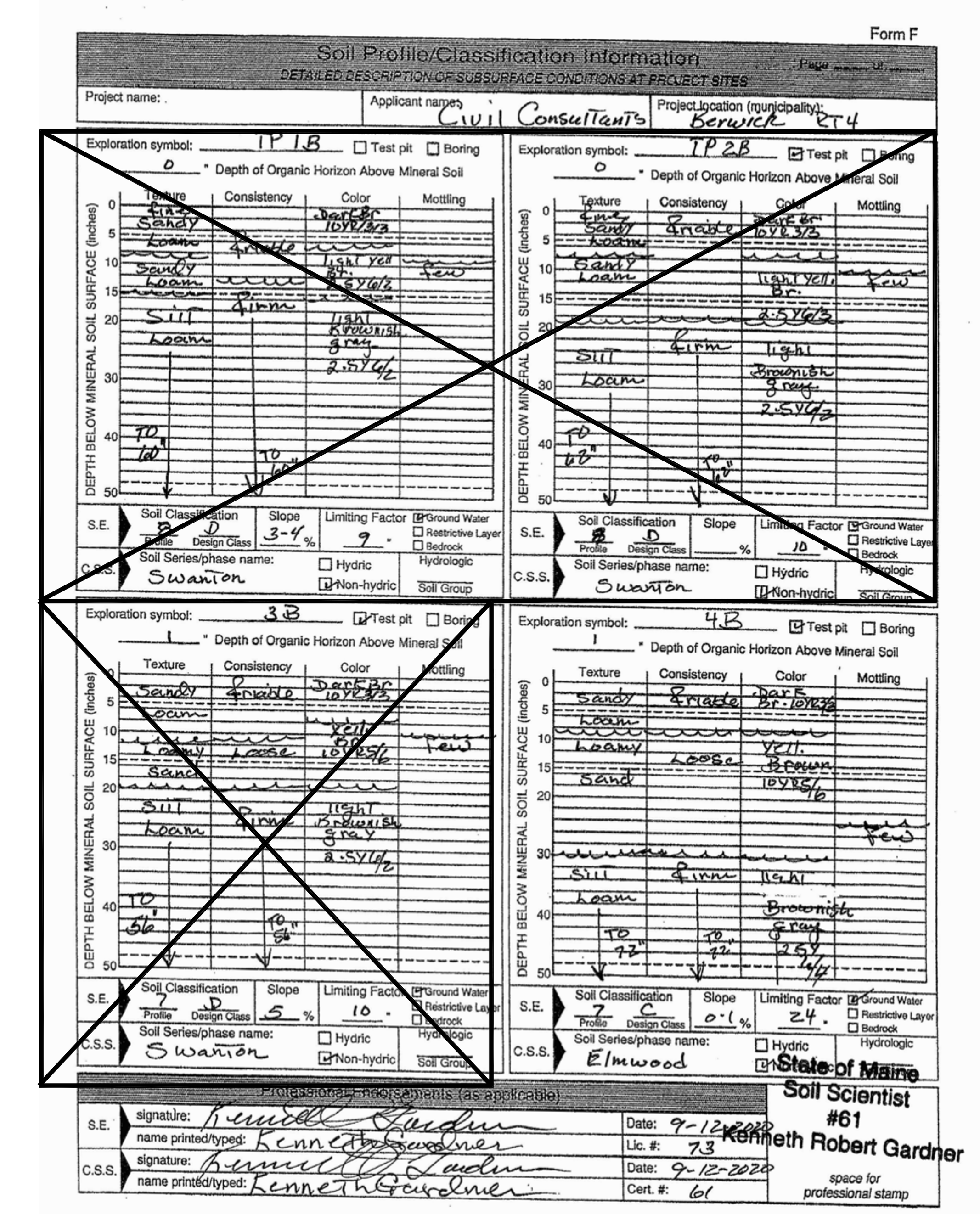
RE-VEGETATED GRAVEL ROADWAY NOTES:

1. WHERE FILL IS NOT PROPOSED, GRAVEL MATERIAL SHALL BE REMOVED FROM THE ROADWAY AREAS THAT ARE TO BE RE-VEGETATED.
2. WHERE FILL OVER THE EXISTING GRAVEL ROADWAY IS PROPOSED, MATERIAL REMOVED FROM THE NEW ROAD LOCATION MAY BE USED TO BRING THE AREA TO 6" BELOW FINISH GRADE
3. 6" OF TOPSOIL TO BE TILLED INTO EXISTING/FILL BASE MATERIAL OVER AREAS TO BE RECLAIMED. THE FOLLOWING LOAM MIXTURE SHALL BE USED (MDOT STANDARD SPECIFICATIONS, SECT. 615):

CONTENT	% BY VOLUME
HUMUS (5.5–8.0 pH)	10%–20% (DETERMINED BY IGNITION TEST)
SAND (2.0mm–0.05mm)	45%–75%
SILT (0.05mm–0.002mm)	20%–40%
CLAY (< 0.002mm)	5%–15%

   LOAM SHALL BE SCREENED, LOOSE, FRIABLE, AND FREE FROM REFUSE, LARGE STONES, CLODS, ROOTS, OR OTHER UNDESIRABLE FOREIGN MATTER. IT SHALL BE REASONABLY FREE OF WEEDS, ROOTS, OR RHIZOMES.
4. THE RECLAIMED AREAS SHALL BE SEEDED USING SEEDING METHOD NUMBER 3 AS DESCRIBED BY THE MDOT STANDARD SPECIFICATIONS, SECT. 618.


Form F
Soil Profile/Classification Information
DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES
Project name: Route 4 — Applicant name: 3 G's LLC — Project location (municipality): Berwick
Exploration symbol: 48 / 49 / 50 / 51
Soil Series/phase name: Swanton
Date: 3-9-2020
name printed/typed: Kenneth Gardner
Cert. #: 61


Form F
Soil Profile/Classification Information
DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES
Applicant name: Civil Consultants — Project location (municipality): Berwick RT 4
Exploration symbol: TP 1B / TP 2B / 3B / 4B
Soil Series/phase name: Swanton / Elmwood
State of Maine Soil Scientist #61 Kenneth Robert Gardner
Date: 9-12-2020
Lic #: 73
Cert. #: 61

EROSION AND SEDIMENT CONTROL PRACTICES

1. NO SOIL SHALL BE DISTURBED DURING THE PERIOD OF MARCH 1 THROUGH APRIL 15, NOR DURING ANY OTHER PERIOD WHEN SOILS ARE SATURATED DUE TO RAIN OR SNOW MELT.
2. DISTURBED SOILS SHALL BE STABILIZED WITHIN ONE (1) WEEK FROM THE TIME IT WAS LAST ACTIVELY WORKED USING TEMPORARY OR PERMANENT MEASURES SUCH AS PLACEMENT OF RIPRAP, MULCH OR EROSION CONTROL BLANKET, OR OTHER COMPARABLE MEASURES.
3. HAY OR STRAW MULCH SHALL BE APPLIED AT A RATE OF AT LEAST ONE (1) BALE PER 500 SQUARE FEET (1–2 TONS PER ACRE).
4. IF MULCH IS LIKELY TO BE REMOVED DUE TO TO STEEP SLOPES OR WIND, IT SHALL BE ANCHORED WITH NETTING, PEG OR TWINE, OR OTHER SUITABLE METHOD AND SHALL BE MAINTAINED UNTIL A CATCH OF VEGETATION IS ESTABLISHED OVER THE ENTIRE DISTURBED AREA.
5. IN ADDITION TO PLACEMENT OF RIPRAP, MULCH OR EROSION CONTROL BLANKETS, ADDITIONAL STEPS SHALL BE TAKEN WHERE NECESSARY IN ORDER TO PREVENT SEDIMENTATION OF THE WATER. EVIDENCE OF SEDIMENTATION INCLUDES VISIBLE GULLY EROSION, DISCOLORATION OF WATER BY SUSPENDED PARTICLES AND SLUMPING OF BANKS, SILT FENCES, STAKED HAY BALES AND OTHER SEDIMENTATION CONTROL MEASURES, WHERE PLANNED FOR, SHALL BE IN PLACE PRIOR TO COMMENCEMENT OF WORK, BUT SHALL ALSO BE INSTALLED WHEREVER NECESSARY DUE TO SEDIMENTATION.
6. MULCH OR OTHER TEMPORARY MEASURES SHALL BE MAINTAINED UNTIL THE SITE IS PERMANENTLY STABILIZED WITH VEGETATION OR OTHER PERMANENT CONTROL MEASURES AFTER WHICH TEMPORARY MEASURES WILL BE REMOVED.
7. PERMANENT RE-VEGETATION OF ALL DISTURBED AREAS, USING NATIVE PLANT MATERIAL WHEN POSSIBLE, SHALL OCCUR WITHIN 30 DAYS FROM THE TIME THE AREAS WERE LAST ACTIVELY WORKED, OR FOR FALL AND WINTER ACTIVITIES, BY JUNE 15, EXCEPT WHERE PRECLUDED BY THE TYPE OF ACTIVITY (E.G. RIRRAP, ROAD SURFACES, ETC.). THE VEGETATIVE COVER SHALL BE MAINTAINED.
8. EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT NO MORE THAN 2 ACRES OF THE SITE IS OPEN AT ANY TIME. AN AREA CONSIDERED OPEN IS ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MATS, RIPRAP OR GRAVEL BASE ON A ROAD. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS EXPECTED TO BE UNDER TAKEN DURING THE PROCEEDING 15 DAYS AND THAT CAN BE MULCHED IN ONE DAY PRIOR TO ANY SNOW EVENT. ALL AREA SHALL BE CONSIDERED TO BE DENUDED UNTIL THE SUBBASE GRAVEL IS INSTALLED IN ROADWAY AREAS OR THE AREAS OF FUTURE LOAM AND SEED HAVE BEEN LOAMED, SEEDED AND MULCHED. A COVER OF EROSION CONTROL MIX PERFORMS THE BEST.
9. ANY ADDED MEASURES, WHICH MAY BE NECESSARY TO CONTROL EROSION/SEDIMENTATION, MUST BE BE INSTALLED. THESE MAY BE DEPENDENT UPON SITE AND WEATHER CONDITIONS AND THE ACTUAL SITE SIZE. TO MINIMIZE AREAS WITHOUT EROSION CONTROL PROTECTION, CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED.
10. SEDIMENT BARRIERS (SILT FENCE OR EROSION CONTROL BERM) SHALL BE INSTALLED DOWNGRADE OF MATERIAL STOCKPILES. STORMWATER SHALL BE PREVENTED FROM RUNNING ONTO MATERIAL STOCKPILES.
11. DISPOSAL OF COLLECTED DEBRIS MUST BE IN CONFORMANCE WITH MAINE SOLID WASTE LAW, TITLE 38 MRSA SECTION 1301 ET. SEQ.
12. LIME AND FERTILIZER APPLICATION RATES SHALL NOT EXCEED THE FOLLOWING:

    GROUND LIMESTONE: 3 TONS/ACRE (130 LBS./1000 S.F.)
    FERTILIZER, 10–10–10 OF EQUIVALENT: 600 LBS./ACRE
    (14 LBS./1000 S.F.)

FERTILIZER SHALL NOT BE APPLIED BEFORE START OF THE GROWING SEASON NOR AFTER SEPTEMBER 30. FERTILIZED AREAS SHALL BE MULCHED TO REDUCE OFF-SITE TRANSPORT OF NUTRIENTS UNTIL USED BY VEGETATIVE GROWTH.

SEEDING MIXTURE AND SCHEDULE:

SPREAD TOPSOIL UNIFORMLY 6" DEEP OVER AREAS TO BE RECLAIMED. THE FOLLOWING SEED MIXTURE SHALL BE USED:

LAWNS:

KENTUCKY BLUEGRASS	0.46 LBS./1000 S.F.
CREEPING RED FESCUE	0.46 LBS./1000 S.F.
PERENNIAL RYE GRASS	0.11 LBS./1000 S.F.
TOTAL	1.03 LBS./1000 S.F.

APPLY LIME AND FERTILIZER AS SPECIFIED UNDER THE EROSION AND SEDIMENTATION CONTROL NOTES. WORK INTO THE TOP (4) INCHES OF SOIL PRIOR TO SEEDING. AFTER SEEDING, APPLY MULCH HAY AS SPECIFIED. ON FLAT AREAS AND NOT EXPOSED TO WIND, THE MULCH WILL BE ANCHORED BY WETTING DOWN. IN OTHER AREAS, JUTE NETTING SHALL BE USED FOR ANCHORAGE. THE ABOVE SEEDING SCHEDULE IS APPLICABLE IF SEEDING DURING THE GROWING SEASON (APRIL 15 TO JUNE 15 AND AUGUST 30 TO SEPTEMBER 30). BETWEEN JUNE 15 AND AUGUST 30, SEEDING WILL BE DELAYED UNTIL AUGUST 30. IF SOIL IS DISTURBED BETWEEN OCTOBER 1 AND NOVEMBER 1, DELAY SEEDING UNTIL NOVEMBER 1. AFTER NOVEMBER 1 AND BEFORE A SNOW COVER FORMS, THE SAME PROCEDURE WILL BE FOLLOWED EXCEPT THE SEED RATE WILL BE DOUBLED. AFTER SNOW COVER AND BEFORE APRIL 15, SEEDING WILL BE DELAYED UNTIL APRIL 15. HAY MULCH WILL BE APPLIED AT A RATE OF 150 LBS./1000 SQUARE FEET. THIS WILL BE ANCHORED BY NON-ASPHALTIC TACKIFIER SPRAYED ON LAWNS AND JUTE NETTING IN DRAINAGE WAYS AND OTHER AREAS.

ALL EROSION CONTROL MEASURES SHALL CONFORM TO THE MAINE EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES, MARCH 2003.

PREPARED FOR PERMITTING ONLY, NOT FOR CONSTRUCTION 9/14/2020

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NO.	REVISIONS	INT.	DATE
6	ADDED TEST PIT INFO, REVISED DETAILS	NJR	9/14/20
5	REVISED LAYOUT, WETLAND AVOIDANCE	NJR	9/8/20
4	REVISED PER TOWN PLANNER COMMENTS	NJR	7/29/20
3	REVISED NOTES SHEET L6	NJR	6/4/20
2	RELOCATED ENTRANCE PER DOT REVIEW	NJR	5/1/20
	ISSUED FOR SUBMISSION TO DEP		
1	ISSUED FOR SUBMISSION TO TOWN	NJR	4/24/20

RECORD OWNER:
3G'S REALTY, LLC
OWNER ADDRESS:
309 OLD COLONY AVENUE,
SOUTH BOSTON, MA 02127

PROPOSED SITE DEVELOPMENT
LAND OF 3G'S REALTY LLC - MAP R72/ LOT 17
ROUTE 4 (PORTLAND STREET)
BERWICK, YORK COUNTY, MAINE

PREPARED FOR:
SCOTT KEARNAN
CLIENT ADDRESS: 309 OLD COLONY AVENUE, SOUTH BOSTON, MA 02127

DATE: 04/09/2020
DRAWN BY: NJR
CHECKED BY: GRA
APPROVED BY: NJR

NOTES AND DETAILS

PROJECT NO: 19-352.00

L5

SHEET: 5 OF 6

MAINTENANCE PROCEDURES

THE FOLLOWING PROCEDURES WILL BE FOLLOWED FOR MAINTENANCE OF THE STORMWATER MANAGEMENT FACILITIES AND EROSION & SEDIMENTATION CONTROL (ESC) MEASURES AT THIS SITE. NOTE: FOR THE PURPOSES OF THESE PROCEDURES, A SIGNIFICANT RAINFALL IS 1/2" IN A 24 HOUR PERIOD.

CONSTRUCTION INSPECTIONS WILL BE PERFORMED AT LEAST ONCE A WEEK AS WELL AS BEFORE, AND WITHIN 24 HOURS AFTER A STORM EVENT.

IF INSPECTIONS IDENTIFY AREAS IN NEED OF REPAIR, THOSE REPAIRS SHALL BE STARTED BY THE END OF THE NEXT WORK DAY AND COMPLETED WITHIN SEVEN DAYS (OR BEFORE THE NEXT STORM EVENT).

ALL CONSTRUCTION INSPECTIONS SHALL BE CONDUCTED BY SOMEONE WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT.

THE SCOPE OF CONSTRUCTION INSPECTIONS INCLUDES THE EROSION CONTROL MEASURES AS WELL AS DISTURBED AREAS, MATERIAL STORAGE AREAS, AND LOCATIONS WHERE VEHICLES ENTER AND EXIT THE SITE (STABILIZED CONSTRUCTION ENTRANCE).

THE CONTRACTOR WILL BE RESPONSIBLE FOR INSPECTION AND MAINTENANCE OF ALL STORMWATER AND ESC MEASURES UNTIL FINAL STABILIZATION OF THE SITE IS ACHIEVED. UPON STABILIZATION, 3 G'S REALTY LLC WILL BE RESPONSIBLE FOR LONG-TERM INSPECTION AND MAINTENANCE OF STORMWATER MANAGEMENT AND EROSION CONTROL MEASURES.

MAINTENANCE LOG
THE RESPONSIBLE PARTY SHALL ESTABLISH A MAINTENANCE LOG/PLAN FOR USE IN RECORDING MAINTENANCE ACTIVITIES. AS A MINIMUM, THE LOG SHALL INCLUDE THE DATE(S) OF ACTIVITIES, WHO PERFORMED THE DUTIES, WHAT WAS DONE (I.E. LOOKED AT DETENTION BERMS, CLEANED DROP INLETS, ETC.), THE RESULTS OF THE ACTIVITY (I.E. ALL STRUCTURES WERE IN GOOD SHAPE, OR, POND #44 NEEDS TO BE REPAIRED). IF ANY ITEM NEEDS TO BE REPAIRED, A FOLLOW-UP ENTRY SHALL SHOW THE DATE THAT REPAIRS WERE COMPLETED.

CONSTRUCTION INSPECTION AND CORRECTIVE ACTION DOCUMENTATION RECORDS WILL BE MAINTAINED BY THE CONTRACTOR FOR A MINIMUM OF THREE YEARS AND PROVIDED TO 3 G'S REALTY LLC.

LAND GRADING AND SLOPE STABILIZATION
ALL SLOPES SHOULD BE CHECKED PERIODICALLY TO SEE THAT VEGETATION IS IN GOOD CONDITION. ANY RILLS OR DAMAGE FROM EROSION AND ANIMAL BURROWING SHOULD BE REPAIRED IMMEDIATELY TO AVOID FURTHER DAMAGE. IF SEEPS DEVELOP ON THE SLOPES, THE AREA SHOULD BE EVALUATED TO DETERMINE IF THE SEEP WILL CAUSE AN UNSTABLE CONDITION. SUBSURFACE DRAINS OR GRAVEL MULCHING MAY BE REQUIRED TO SOLVE SEEP PROBLEMS. DIVERSIONS, BERMS, AND WATERWAYS IN THE LAND GRADING AREA SHOULD BE CHECKED TO SEE THAT THEY ARE FUNCTIONING PROPERLY. PROBLEMS FOUND DURING THE INSPECTIONS SHOULD BE REPAIRED. SLOPES AND ASSOCIATED PRACTICES UTILIZING VEGETATION SHOULD BE LIMED AND FERTILIZED AS NECESSARY TO KEEP THE VEGETATION HEALTHY. ENCROACHMENT OF UNDESIRABLE VEGETATION SUCH AS WEEDS AND WOODY GROWTH THAT IS NOT PLANNED SHOULD BE CONTROLLED TO AVOID PROBLEMS OF BANK STABILITY IN THE FUTURE.

STRAW OR HAY BALE BARRIER, SILT FENCE AND FILTER BERM
HAY BALE BARRIERS, SILT FENCES AND FILTER BERMS SHALL BE INSPECTED AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. THEY SHALL BE REPAIRED IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OF THE EDGES OF THE BARRIER, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, SEDIMENT BARRIERS SHALL BE REPLACED WITH A TEMPORARY CHECK DAM.

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

SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN THE DEPOSITS REACH APPROXIMATELY ONE-HALF OF THE HEIGHT OF THE BARRIER.

FILTER BERMS SHOULD BE RESHAPED AS NEEDED.

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

TEMPORARY CHECK DAMS
REGULAR INSPECTIONS MUST BE MADE TO ENSURE THAT THE CENTER OF THE CHECK DAM IS LOWER THAN THE EDGES. EROSION CAUSED BY HIGH FLOWS AROUND THE EDGES OF THE CHECK DAM MUST BE CORRECTED. IF EVIDENCE OF SILTATION IN THE WATER IS APPARENT DOWNSTREAM OF THE CHECK DAM, THE CHECK DAM MUST BE INSPECTED AND ADJUSTED.

CHECK DAMS MUST BE CHECKED FOR SEDIMENT ACCUMULATION AFTER EACH SIGNIFICANT RAINFALL. SEDIMENT MUST BE REMOVED WHEN IT REACHES ONE HALF THE ORIGINAL HEIGHT OF BEFORE.

IF IT POSSIBLE, LEAVE THE CHECK DAM IN PLACE PERMANENTLY. IN TEMPORARY DITCHES AND SWALES, CHECK DAMS MUST BE REMOVED WHEN A PERMANENT LINING HAS BEEN ESTABLISHED. IF A CHECK DAM MUST BE REMOVED FROM A GRASS LINED DITCH, WAIT UNTIL THE GRASS HAS MATURED TO PROTECT THE DITCH OR SWALE. THE AREA BENEATH THE CHECK DAM MUST BE SEEDED AND MULCHED REMOVAL.

STABILIZED CONSTRUCTION ENTRANCE (ANTI-TRACKING PAD)
EXITS SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. WHEN THE CONTROL PAD BECOMES INEFFECTIVE, THE STONE SHALL BE REMOVED ALONG WITH THE COLLECTED SOIL MATERIAL AND REDISTRIBUTED ON SITE IN A STABLE MANNER AND THE ENTRANCE RECONSTRUCTED. THE CONTRACTOR SHALL SWEEP OR WASH PAVEMENT AT EXITS, WHICH HAVE EXPERIENCED MUD-TRACKING ONTO THE PAVEMENT OR TRAVELED WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH AGGREGATE, WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES OR WATERWAYS.

OVERWINTER CONSTRUCTION

MAINE EROSION AND SEDIMENT CONTROL BMP (2016)

THE WINTER CONSTRUCTION PERIOD IS FROM NOVEMBER 1 THROUGH APRIL 15. IF THE CONSTRUCTION SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE, 75% MATURE VEGETATION COVER OR RIPRAP BY NOVEMBER 15 THEN THE SITE NEEDS TO BE PROTECTED WITH OVER-WINTER STABILIZATION. AN AREA CONSIDERED OPEN IS ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MATS, RIPRAP OR GRAVEL BASE ON A ROAD.

WINTER EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY TIME. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS EXPECTED TO BE UNDER TAKEN DURING THE PROCEEDING 15 DAYS AND THAT CAN BE MULCHED IN ONE DAY PRIOR TO ANY SNOW EVENT. ALL AREA SHALL BE CONSIDERED TO BE DENUDED UNTIL THE SUBBASE GRAVEL IS INSTALLED IN ROADWAY AREAS OR THE AREAS OF FUTURE LOAM AND SEED HAVE BEEN LOAMED, SEEDED AND MULCHED. A COVER OF EROSION CONTROL MIX PERFORMS THE BEST.

ANY ADDED MEASURES, WHICH MAY BE NECESSARY TO CONTROL EROSION/SEDIMENTATION, MUST BE BE INSTALLED. THESE MAY BE DEPENDENT UPON SITE AND WEATHER CONDITIONS AND THE ACTUAL SITE SIZE. TO MINIMIZE AREAS WITHOUT EROSION CONTROL PROTECTION, CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED.

1. NATURAL RESOURCES PROTECTION
ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCE, IF NOT STABILIZED WITH A MINIMUM OF 75% MATURE VEGETATION CATCH, SHALL BE MULCHED BY DECEMBER 1 AND ANCHORED WITH PLASTIC NETTING OR PROTECTED WITH AN EROSION CONTROL COVER.

DURING WINTER CONSTRUCTION, A DOUBLE ROW OF SEDIMENT BARRIERS (I.E. SILT FENCE BACKED WITH HAY BALES OR EROSION CONTROL MIX) WILL BE PLACED BETWEEN ANY NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE. EXISTING PROJECTS NOT STABILIZED BY DECEMBER 1 SHALL BE PROTECTED WITH THE SECOND LINE OF SEDIMENT BARRIER TO ENSURE FUNCTIONALITY DURING THE SPRING THAW AND RAINS.

2. SEDIMENT BARRIERS
DURING FROZEN CONDITIONS, SEDIMENT BARRIERS MAY CONSIST OF EROSION CONTROL MIX BERMS OR ANY OTHER RECOGNIZED SEDIMENT BARRIERS AS FROZEN SOIL PREVENTS THE PROPER INSTALLATION OF HAY BALES AND SEDIMENT SILT FENCES.

3. MULCHING
ALL AREA SHALL BE CONSIDERED TO BE DENUDED UNTIL SEEDED AND MULCHED. HAY AND STRAW MULCH SHALL BE APPLIED AT A RATE OF 150 LB. PER 1,000 SQUARE FEET OR 3 TONS/ACRE (TWICE THE NORMAL ACCEPTED RATE OF 75 LBS./1,000 S.F. OR 1.5 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED. EROSION CONTROL MIX MUST BE APPLIED WITH A MINIMUM 4 INCH THICKNESS.

MULCH SHALL NOT BE SPREAD ON TOP OF SNOW. THE SNOW WILL BE REMOVED DOWN TO A ONE INCH DEPTH OR LESS PRIOR TO APPLICATION. AFTER EACH DAY OF FINAL GRADING, THE AREA WILL BE PROPERLY STABILIZED WITH ANCHORED HAY OR STRAW OR EROSION CONTROL MATTING. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED OR ADEQUATELY ANCHORED SO THAT GROUND SURFACE IS NOT VISIBLE THOUGH THE MULCH. BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15, ALL MULCH SHALL BE ANCHORED BY EITHER MULCH NETTING, ASPHALT EMULSION CHEMICAL, TRACKING OR WOOD CELLULOSE FIBER. THE COVER WILL BE CONSIDERED SUFFICIENT WHEN THE GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH.

AFTER NOVEMBER 1ST, MULCH AND ANCHORING OF ALL EXPOSED SOIL SHALL OCCUR AT THE END OF EACH FINAL GRADING WORKDAY.

4. SOIL STOCKPILES
STOCKPILES OF SOIL OR SUBSOIL WILL BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR WITH A FOUR-INCH LAYER OF EROSION CONTROL MIX. THIS WILL BE DONE WITHIN 24 HOURS OF STOCKING AND REESTABLISHED PRIOR TO ANY RAINFALL OR SNOWFALL. ANY SOIL STOCKPILE WILL NOT BE PLACED (EVEN COVERED WITH MULCH) WITHIN 100 FEET FROM ANY NATURAL RESOURCES.

5. SEEDING
BETWEEN THE DATES OF OCTOBER 15 AND APRIL 1, LOAM OR SEED WILL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES FINISHED AREAS SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS NOVEMBER 1ST AND THE EXPOSED AREA HAS BEEN LOAMED, FINAL GRADED WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED.

DORMANT SEEDING MAY BE SELECTED TO BE PLACED PRIOR TO THE PLACEMENT OF MULCH AND EROSION CONTROL BLANKETS. IF DORMANT SEEDING IS USED FOR THE SITE, ALL DISTURBED AREAS SHALL RECEIVE 4" OF LOAM AND SEED AT AN APPLICATION RATE OF 5LBS/1,000 S.F. ALL AREAS SEEDED DURING THE WINTER WILL BE INSPECTED IN THE SPRING FOR ADEQUATE CATCH. ALL AREAS INSUFFICIENTLY VEGETATED (LESS THAN 75% CATCH) SHALL BE REVEGETATED BY REPLACING LOAM, SEED AND MULCH. IF DORMANT SEEDING IS NOT USED FOR THE SITE, ALL DISTURBED AREAS SHALL BE REVEGETATED IN THE SPRING.

OVERWINTER STABILIZATION

MAINE EROSION AND SEDIMENT CONTROL BMP (3/2016)

1. STABILIZATION OF DITCHES AND CHANNELS
ALL STONE-LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED AND STABILIZED BY NOVEMBER 15. ALL GRASS-LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED AND STABILIZED BY SEPTEMBER 1. IF A DITCH OR CHANNEL IS NOT GRASS-LINED BY SEPTEMBER 1, THEN ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE DITCH FOR LATE FALL AND WINTER MUST BE TAKEN.

SOD LINING: A DITCH OR CHANNEL MUST BE LINED WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES: PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL, AND ANCHORING THE SOD AT THE BASE OF THE DITCH WITH JUTE OR PLASTIC MESH TO PREVENT THE SOD FROM SLOUGHING DURING FLOW CONDITIONS.

STONE LINING: A DITCH OR CHANNEL MUST BE LINED WITH STONE RIPRAP BY NOVEMBER 15. A REGISTERED PROFESSIONAL ENGINEER MUST DETERMINE THE STONE SIZE AND LINING THICKNESS NEEDED TO WITHSTAND THE ANTICIPATED FLOW VELOCITIES AND FLOW DEPTHS WITHIN THE DITCH. IF NECESSARY, THE CONTRACTOR WILL REGRADE THE DITCH PRIOR TO PLACING THE STONE LINING TO PREVENT THE STONE LINING FROM REDUCING THE DITCH'S CROSS-SECTIONAL AREA.

2. STABILIZATION OF DISTURBED SLOPES
ALL STONE-COVERED SLOPES MUST BE CONSTRUCTED AND STABILIZED BY NOVEMBER 15. ALL SLOPES TO BE VEGETATED MUST BE SEEDED AND MULCHED BY SEPTEMBER 1. THE DEPARTMENT WILL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 15% TO BE A SLOPE. IF A SLOPE TO BE VEGETATED IS NOT STABILIZED BY SEPTEMBER 1, THEN ONE OF THE FOLLOWING ACTIONS MUST BE TAKEN TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.

TEMPORARY VEGETATION AND EROSION CONTROL MATS: BY OCTOBER 1, THE DISTURBED SLOPE MUST BE SEEDED WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1,000 SQUARE FEET FOLLOWED BY INSTALLATION OF EROSION CONTROL MATS OR ANCHORED MULCH OVER THE SEEDING. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE SLOPE BY NOVEMBER 1, THEN THE CONTRACTOR WILL COVER THE SLOPE WITH A LAYER OF EROSION CONTROL MIX OR STONE RIPRAP AS DESCRIBED IN THE FOLLOWING STANDARDS.

SOD: THE DISTURBED SLOPE MUST BE STABILIZED WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE CONTRACTOR PINNING THE SOD ONTO THE SLOPE WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE CONTRACTOR WILL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V) OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.

EROSION CONTROL MIX: EROSION CONTROL MIX MUST BE PROPERLY INSTALLED BY NOVEMBER 15. THE CONTRACTOR WILL NOT USE EROSION CONTROL MIX TO STABILIZE SLOPES HAVING GRADES GREATER THAT 50% (2H:1V) OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.

STONE RIPRAP: PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15. THE DEVELOPMENT'S OWNER WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY ON THE SLOPE AND TO DESIGN A FILTER LAYER TO BE INSTALLED BENEATH THE RIPRAP.

3. STABILIZATION OF DISTURBED SOILS
TEMPORARY VEGETATION: BY OCTOBER 1, SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3-LBS PER 1,000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75-LBS PER 1,000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 1, THEN MULCH THE AREA FOR OVERWINTER PROTECTION AS FOLLOWS.

MULCH: BY NOVEMBER 15, MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150-LBS PER 1,000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. IMMEDIATELY AFTER APPLYING THE MULCH, ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

MAINTENANCE
MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION SEASON. AFTER EACH RAINFALL, SNOW STORM OR PERIOD OF THAWING AND RUNOFF, THE SITE CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES AND PERFORM REPAIRS AS NEEDED TO INSURE THEIR CONTINUOUS FUNCTION.
FOLLOWING THE TEMPORARY AND OR FINAL SEEDING AND MULCHING, THE CONTRACTOR SHALL IN THE SPRING INSPECT AND REPAIR ANY DAMAGES AND/OR BARE SPOTS. AN ESTABLISHED VEGETATIVE COVER MEANS A MINIMUM OF 85% TO 90% OF AREAS VEGETATED WITH VIGOROUS GROWTH.

STABILIZATION SCHEDULE BEFORE WINTER
SEPTEMBER 15 ALL DISTURBED AREAS MUST BE SEEDED AND MULCHED. ALL SLOPES MUST BE STABILIZED. SEEDED AND MULCHED. ALL GRASS-LINED DITCHES AND CHANNELS MUST BE STABILIZED WITH MULCH OR AN EROSION CONTROL BLANKET.

OCTOBER 1 IF THE SLOPE IS STABILIZED WITH AN EROSION CONTROL BLANKET AND SEEDED. ALL DISTURBED AREAS TO BE PROTECTED WITH ANNUAL GRASS MUST BE SEEDED AT A SEEDING RATE OF 3-LBS PER 1,000 SQUARE FEET AND MULCHED.

NOVEMBER 15 ALL STONE-LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED AND STABILIZED. SLOPES THAT ARE COVERED WITH RIPRAP MUST BE CONSTRUCTED BY THIS DATE.

DECEMBER 1 ALL DISTURBED AREAS WHERE GROWTH OF VEGETATION FAILS TO BE AT LEAST THREE INCHES TALL OR AT LEAST 75% OF THE DISTURBED SOIL IS COVERED VEGETATION, MUST BE PROTECTED FOR OVER-WINTER.
NOTE: THE DATES GIVEN ARE FOR PROJECTS IN SOUTH-CENTRAL MAINE.

PREPARED FOR PERMITTING ONLY, NOT FOR CONSTRUCTION 9/14/2020

HOUSEKEEPING NOTES

*PER ME DEP CHAPTER 500 – APPENDIX 'C'

1. SPILL PREVENTION. CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM CONSTRUCTION AND WASTE MATERIALS STORED ON SITE TO ENTER STORMWATER, WHICH INCLUDES STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER. THE SITE CONTRACTOR OR OPERATOR MUST DEVELOP, AND IMPLEMENT AS NECESSARY, APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING MEASURES.

2. GROUNDWATER PROTECTION. DURING CONSTRUCTION, LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO AN INFILTRATION AREA. AN "INFILTRATION AREA" IS ANY AREA OF THE SITE THAT BY DESIGN OR AS A RESULT OF SOILS, TOPOGRAPHY AND OTHER RELEVANT FACTORS ACCUMULATES RUNOFF THAT INFILTRATES INTO THE SOIL. DIKES, BERMS, SUMPS, AND OTHER FORMS OF SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS. ANY PROJECT PROPOSING INFILTRATION OF STORMWATER MUST PROVIDE ADEQUATE PRE-TREATMENT OF STORMWATER PRIOR TO DISCHARGE OF STORMWATER TO THE INFILTRATION AREA, OR PROVIDE FOR TREATMENT WITHIN THE INFILTRATION AREA, IN ORDER TO PREVENT THE ACCUMULATION OF FINES, REDUCTION IN INFILTRATION RATE, AND CONSEQUENT FLOODING AND DESTABILIZATION.

3. FUGITIVE SEDIMENT AND DUST. ACTIONS MUST BE TAKEN TO ENSURE THAT ACTIVITIES DO NOT RESULT IN NOTICEABLE EROSION OF SOILS OR FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION. OIL MAY NOT BE USED FOR DUST CONTROL, BUT OTHER WATER ADDITIVES MAY BE CONSIDERED AS NEEDED. A STABILIZED CONSTRUCTION ENTRANCE (SCE) SHOULD BE INCLUDED TO MINIMIZE TRACKING OF MUD AND SEDIMENT. IF OFF-SITE TRACKING OCCURS, PUBLIC ROADS SHOULD BE SWEPT IMMEDIATELY AND NO LESS THAN ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS. OPERATIONS DURING DRY MONTHS, THAT EXPERIENCE FUGITIVE DUST PROBLEMS, SHOULD WET DOWN UNPAVED ACCESS ROADS ONCE A WEEK OR MORE FREQUENTLY AS NEEDED WITH A WATER ADDITIVE TO SUPPRESS FUGITIVE SEDIMENT AND DUST.

4. DEBRIS AND OTHER MATERIALS. MINIMIZE THE EXPOSURE OF CONSTRUCTION DEBRIS, BUILDING AND LANDSCAPING MATERIALS, TRASH, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE AND OTHER MATERIALS TO PRECIPITATION AND STORMWATER RUNOFF. THESE MATERIALS MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.

5. EXCAVATION DE-WATERING. EXCAVATION DE-WATERING IS THE REMOVAL OF WATER FROM TRENCHES, FOUNDATIONS, COFFER DAMS, PONDS, AND OTHER AREAS WITHIN THE CONSTRUCTION AREA THAT RETAIN WATER AFTER EXCAVATION. IN MOST CASES THE COLLECTED WATER IS HEAVILY SILTED AND HINDERS CORRECT AND SAFE CONSTRUCTION PRACTICES. THE COLLECTED WATER REMOVED FROM THE PONDED AREA, EITHER THROUGH GRAVITY OR PUMPING, MUST BE SPREAD THROUGH NATURAL WOODED BUFFERS OR REMOVED TO AREAS THAT ARE SPECIFICALLY DESIGNED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE, LIKE A COFFERDAM SEDIMENTATION BASIN. AVOID ALLOWING THE WATER TO FLOW OVER DISTURBED AREAS OF THE SITE. EQUIVALENT MEASURES MAY BE TAKEN IF APPROVED BY THE DEPARTMENT.

6. AUTHORIZED NON-STORMWATER DISCHARGES. IDENTIFY AND PREVENT CONTAMINATION BY NON-STORMWATER DISCHARGES. WHERE ALLOWED NON-STORMWATER DISCHARGES EXIST, THEY MUST BE IDENTIFIED AND STEPS SHOULD BE TAKEN TO ENSURE THE IMPLEMENTATION OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR THE NON-STORMWATER COMPONENT(S) OF THE DISCHARGE. AUTHORIZED NON-STORMWATER DISCHARGES ARE:

   (a) DISCHARGES FROM FIREFIGHTING ACTIVITY;
   (b) FIRE HYDRANT FLUSHINGS;
   (c) VEHICLE WASHWATER IF DETERGENTS ARE NOT USED AND WASHING IS LIMITED TO THE EXTERIOR OF VEHICLES (ENGINE, UNDERCARRIAGE AND TRANSMISSION WASHING IS PROHIBITED);
   (d) DUST CONTROL RUNOFF IN ACCORDANCE WITH PERMIT CONDITIONS AND APPENDIX (C)(3);
   (e) ROUTINE EXTERNAL BUILDING WASHDOWN, NOT INCLUDING SURFACE PAINT REMOVAL, THAT DOES NOT INVOLVE DETERGENTS;
   (f) PAVEMENT WASHWATER (WHERE SPILLS/LEAKS OF TOXIC OR HAZARDOUS MATERIALS HAVE NOT OCCURRED, UNLESS ALL SPILLED MATERIAL HAD BEEN REMOVED) IF DETERGENTS ARE NOT USED;
   (g) UNCONTAMINATED AIR CONDITIONING OR COMPRESSOR CONDENSATE;
   (h) UNCONTAMINATED GROUNDWATER OR SPRING WATER;
   (i) FOUNDATION OR FOOTER DRAIN-WATER WHERE FLOWS ARE NOT CONTAMINATED;
   (j) UNCONTAMINATED EXCAVATION DEWATERING (SEE REQUIREMENTS IN APPENDIX C(5));
   (k) POTABLE WATER SOURCES INCLUDING WATERLINE FLUSHINGS; AND
   (l) LANDSCAPE IRRIGATION.

7. UNAUTHORIZED NON-STORMWATER DISCHARGES THE DEPARTMENT'S APPROVAL UNDER THIS CHAPTER DOES NOT AUTHORIZE A DISCHARGE THAT IS MIXED WITH A SOURCE OF NON-STORMWATER, OTHER THAN THOSE DISCHARGES IN COMPLIANCE WITH APPENDIX C (6). SPECIFICALLY, THE DEPARTMENT'S APPROVAL DOES NOT AUTHORIZE DISCHARGES OF THE FOLLOWING:

   (a) WASTEWATER FROM THE WASHOUT OR CLEANOUT OF CONCRETE, STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS OR OTHER CONSTRUCTION MATERIALS;
   (b) FUELS, OILS OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE;
   (c) SOAPS, SOLVENTS, OR DETERGENTS USED IN VEHICLE AND EQUIPMENT WASHING; AND
   (d) TOXIC OR HAZARDOUS SUBSTANCES FROM A SPILL OR OTHER RELEASE.

TAX MAP R72, LOT 17

STATE OF MAINE
Neil J. Rapoza
12169
LICENSED
PROFESSIONAL ENGINEER
9/14/2020

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CIVIL CONSULTANTS
Engineers
Planners
Surveyors
P.O. Box 100
South Berwick
Maine
03908
207-384-2550
www.civcon.com

NO.	REVISIONS	INT.	DATE
6	ADDED TEST PIT INFO, REVISED DETAILS	NJR	9/14/20
5	REVISED LAYOUT, WETLAND AVOIDANCE	NJR	9/8/20
4	REVISED PER TOWN PLANNER COMMENTS	NJR	7/29/20
3	REVISED NOTES SHEET L6	NJR	6/4/20
2	RELOCATED ENTRANCE PER DOT REVIEW	NJR	5/1/20
1	ISSUED FOR SUBMISSION TO DEP	NJR	4/24/20
	ISSUED FOR SUBMISSION TO TOWN		

RECORD OWNER:
3G'S REALTY, LLC
OWNER ADDRESS:
309 OLD COLONY AVENUE
SOUTH BOSTON, MA 02127

PROPOSED SITE DEVELOPMENT
LAND OF 3G'S REALTY LLC - MAP R72/ LOT 17
ROUTE 4 (PORTLAND STREET)
BERWICK, YORK COUNTY, MAINE

PREPARED FOR:
SCOTT KEARNAN
CLIENT ADDRESS: 309 OLD COLONY AVENUE, SOUTH BOSTON, MA 02127

0" 1"

DATE: 04/09/2020
DRAWN BY: NJR
CHECKED BY: GRA
APPROVED BY: NJR

NOTES AND DETAILS

PROJECT NO: 19-352.00

L6

SHEET: 6 OF 6

CIVIL CONSULTANTS MEMORANDUM

TO: BERWICK PLANNING DEPARTMENT

FROM: NEIL J. RAPOZA, PE

SUBJECT: Resource Protection clarification

DATE: 10 SEPTEMBER, 2020

PROJECT: 19-352.00 – 3 G'S DEVELOPMENT, BERWICK, ME

This memo is intended to provide information regarding the application for a Site Plan Review to allow the construction of a new industrial development in on Portland Street as it pertains to Shoreland Zoning and Resource Protection.

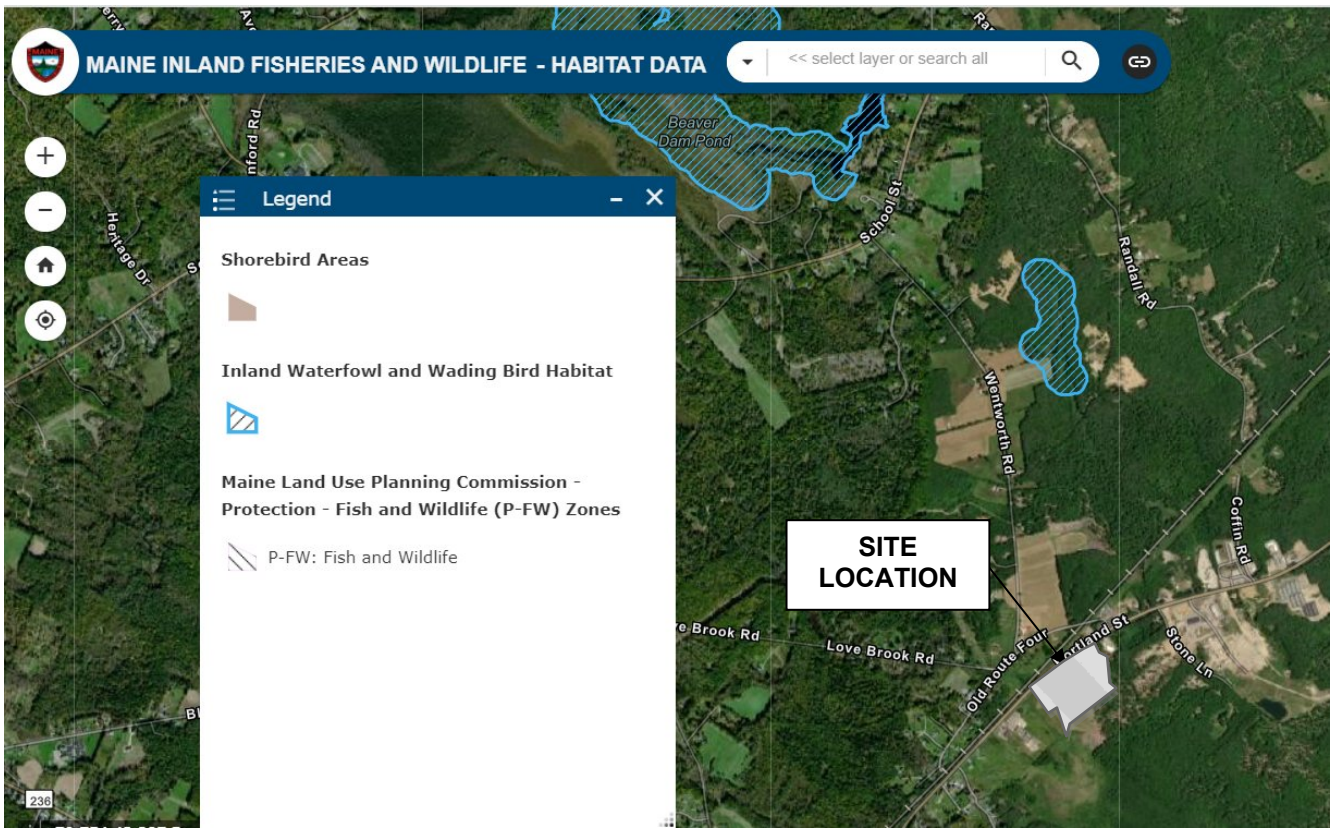
Section 14.13 of the Shoreland Zoning establishes the Districts and the triggers that require developments to meet the more stringent use and dimensional regulations. 14.13.A establishes what land is determined to be in the 'Resource Protection District' (RP). Item 14.13.A.1 is the rule that is being addressed. It reads as follows:

Areas within 250 feet, horizontal distance, of the upland edge of freshwater wetlands, and wetlands associated with great ponds and rivers, which are rated "moderate" or "high" value waterfowl and wading bird habitat, including nesting and feeding areas, by the Maine Department of Inland Fisheries and Wildlife (MDIF&W) that are depicted on a Geographic Information System (GIS) data layer maintained by either MDIF&W or the Department as of - 137 - December 31, 2008. For the purposes of this paragraph "wetlands associated with great ponds and rivers" shall mean areas characterized by non-forested wetland vegetation and hydric soils that are contiguous with a great pond or river, and have a surface elevation at or below the water level of the great pond or river during the period of normal high water. "Wetlands associated with great ponds or rivers" are considered to be part of that great pond or river.

This is intended to protect areas that are rated as "moderate" or "high" value waterfowl. In order to be considered part of the RP zone per this rule, the area must first be noted as a valued waterfowl habitat by the IF&W and the DEP, as noted on the mapping available online. If it is a valued habitat, then the area within 250 ft of the wetland is considered in the RP zone.

As it pertains to this site, the mapping indicates that no valued waterfowl habitat is associated with the surrounding wetlands. The development will maintain wetland setbacks as required in the Shoreland Zoning, but is not located in the Resource Protection Zone.

The project also does not "trip" the 4 other criteria listed in 14.13.A, which include floodplains, steep slopes, eroded areas, and isolated wetlands.



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CIVIL CONSULTANTS MEMORANDUM

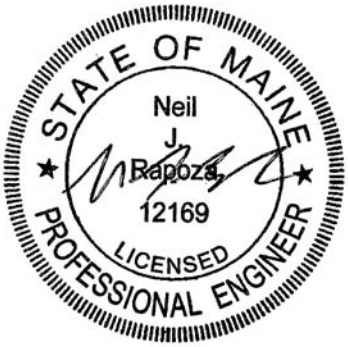
TO: BERWICK PLANNING DEPARTMENT

FROM: NEIL J. RAPOZA, PE

SUBJECT: PROJECT NARRATIVE

DATE: 8 APRIL, 2020 (REVISED 10 SEPTEMBER, 2020)

PROJECT: 19-352.00 – 3 G'S DEVELOPMENT, BERWICK, ME



This narrative is intended to provide information regarding the application for a Site Plan Review to allow the construction of a new industrial development in on Portland Street.

The proposed development will be located on Berwick Tax Map R-72 Lot 17. The lot has been historically used by previous owners as a large hay field and for timber harvesting. The project would involve the construction of 12 new industrial building; with 10 buildings housing marijuana grow facilities. The remaining 2 buildings would be utilized as general industrial buildings, with specific use per the lease holders. All of the proposed structures will be similar pre-engineered metal buildings with a footprint of 6,600 sf each. The project will result in a total of 7.6 acres of developed area, with 3.0 acres of pavement and 1.8 acres of building area.

It is expected that each grow facility will have 3 full-time employees. For the purpose of determining the required parking, it is conservatively assumed that the general industrial buildings will have 27 employees total (1/500 sf). This results in a requirement for 57 available parking spaces, which are indicated on the plan. The hours of operation will be 7am to 7pm, weekdays and weekends. There will be no public access to the site, and all grow facilities will be surrounded by security fencing. There are 10 fenced dumpster enclosures indicated for the grow buildings, with refuse handling at the industrial buildings to be determined by the users of those spaces.

The development will be served by a new on-site septic and private well(s). The septic system will be designed by Civil Consultants based on soils information from Ken Gardner. It has been determined that an elevated system will be acceptable in the location indicated on the plans.

Access to the site will be via an existing gravel driveway that will be improved to accommodate the proposed use. An application has been submitted to the Maine DOT for the change in use.

The 52 acre lot has 25 acres of wetlands on the western portion of the lot, and an unnamed stream flowing northeast to southwest across the property. The size of the contiguous wetlands results in the lot being in the Resource Protection Zone per Town regulations. The dimensional requirements are met with the development as shown on the project drawings, with a 100 ft setback to the wetlands maintained around the perimeter of the proposed work.

A Site Location of Development Act permit will be required to be issued by the Maine DEP. This will require both treatment of stormwater from the site and control of the flows that the downstream wetlands and waterways receive. This application will be submitted upon receiving requested input from various agencies. The Stormwater Management Plan submitted with this application is a copy of that which was prepared for the DEP submission. It is proposed that 2 wet ponds be constructed to provide treatment and runoff attenuation, along with an underdrained grass filter. A system of catch basins and culverts will direct flows to the treatment areas. A roadside treatment buffer is also proposed to provide pollutant removed for runoff leaving the access drive.

A Stormwater Maintenance and Inspection Plan has been prepared that will be utilized by the applicant to ensure that the treatment ponds and other structures perform as intended.

The site was heavily logged in recent years. It is the intention of the applicant to provide site stabilization and plantings to supplement existing vegetation as recommended by the DEP.

~~To complete the planned development, a total of 14,899 sf of wetland impact is proposed. The impacted wetlands are an isolated wetland in and upland area and a man-made wetland created by a drainage swale, and will not affect the contiguous portion of the wetlands or the stream. This will require a Tier 1 NRPA permit, the application for which has been submitted to the DEP~~.

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CIVIL CONSULTANTS

P. O. Box 100
South Berwick
Maine
03908
207-384-2550
FAX 384-2112

August 17, 2020

Attn: James Bellissimo, Planner
Town of Berwick
11 Sullivan Street
Berwick, ME 03901

RE: **3 G's Industrial Development,**
Portland Street, Berwick, Maine
Berwick Tax Map R-72, Lot 17

Mr. Bellissimo,

Per request of the Town, this letter is intended to serve as clarification regarding the application for the development proposed by 3 G's Realty, LLC on Tax Map R-72, Lot 17.

The "Proposed Use" was indicated as 'Marijuana Grow Facilities' in the accepted application. To clarify, it is intended that the "Proposed Use" will be classified as "Adult Use and Medical Marijuana Cultivation Facility, including Marijuana Testing Facility, and General Industrial Buildings". This does not indicate any change to the site design or development intent.

Should you have any questions or comments, please call at your convenience.

Respectfully yours,
CIVIL CONSULTANTS

Neil J. Rapoza, P.E.,
Sr. Project Engineer

STATE OF MAINE
Neil J. Rapoza 12169
LICENSED
PROFESSIONAL ENGINEER

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SECTION 1
DEVELOPMENT DESCRIPTION
(REVISED 8 SEPTEMBER 2020)

A. Narrative

1. Objectives And Details

The project will consist of development located on an existing lot recently purchased by the applicant. The development will be a phased project that will create 10 buildings with the appropriate facilities for *adult-use marijuana cultivation and testing*, 2 buildings for commercial & industrial use, along with associated driveway and required stormwater treatment and runoff control facilities.

Of the site's 51.6 acres, approximately 24.9 acres has been delineated as wetland area. Approximately 25.6 acres of the lot is covered by woodland that is either in its natural state or logged within the last 3 years. The remainder is an area of wetland fields that have been utilized as hay fields for 20+ years, including an existing gravel access drive.

The majority of the lot is within the resource protection zone as defined by Town regulations. All development will be separated from the adjacent wetlands as required by the Town and DEP requirements. It is proposed that approximately *342,850* sf of undeveloped land will be altered by the development. This is area that will be cleared and re-graded to allow for the installation of the proposed buildings, parking areas, subsurface disposal fields, and stormwater BMPs. A total of *211,700* sf of new impervious area will be created.

The proposed storm water BMP's that will be used to treat runoff, and limit peak flows will be a grassed filter along with 2 wet ponds.

B. Topographic Map

(Next Page)

Town of Berwick Planning Board
Conditional Use Findings of Fact
Applicant: 3G's Realty
Off Portland Street (Tax Map R-72, Lot 17)
September 17, 2020

3G's Realty proposed to construct 12 industrial buildings: 10 for Adult Use and Medical Marijuana Cultivation and Testing and 2 for general industrial buildings with specific uses to be determined. Depending on the use, the 2 general buildings could require an additional Conditional Use at a later date. Each building will be 6,600 ft^2 for a total of 79,200 ft^2. The project overall will result in 7.6 acres of developed area, with 3 acres of pavement and 1.8 acres of building area.

The 12 industrial buildings are expected to have 57 employees and the parking area has 57 parking stalls. The expected added trips per day is 153 and 26 during the peak hour. The hours of operation will be 7am to 7pm each day. The facilities will be surrounded by security fencing. 10 fenced dumpster enclosures are indicated for the grow buildings. T

25 out of the 52 acres of the lot are wetlands and some of the contiguous wetlands are within the Resource Protection District which has an associated 100' setback. A Site Location of Development Permit is required with the DEP. 2 wet ponds and roadside buffers are components of the stormwater system. The site was heavily forested by the previous owner, all existing and new disturbance will be stabilized with buildings or pavement will be revegetated with grass/landscaping. A Class A Soil Survey was completed by excavating 51 test pits and a soil report and map was included in the submittal.

An odor control plan was submitted. Correspondence with both Police and Fire Departments have been submitted as part of the application packet. The project is set out in three phases. Phase I is set to begin December of 2020.

At the August 6 Planning Board meeting, one waiver was approved by vote of 5-0: 9.8.F.2.b.i – Map at a scale of not less than once inch to 40'. The plan is 1" = 60'. The Board voted to find the application complete by vote of 5-0.

Findings of Facts

1. Conformance with the Comprehensive Plan: *All proposed conditional uses and site plans shall conform to the Comprehensive Plan of the Town of Berwick and with the provisions of all pertinent federal, state and local codes, ordinances, and regulations.*

   The application conforms to the Comprehensive Plan because the uses, Adult Use Marijuana Cultivation Facility, Medical Marijuana Production Facility and Testing Facilities are permitted uses within the RC/I Zone and it meets all pertinent federal, state, local codes, ordinances and regulations.

2. Preserve and enhance the landscape: *The landscape shall be preserved in its natural state insofar as practicable by minimizing tree removal, disturbance of soil, retaining existing vegetation during construction. After construction is complete, landscape shall be designed and planted that will define, soften or screen the appearance of off street parking areas from the right of way and abutting properties and/or structures in order to enhance the physical design of the building(s) or site, and to minimize the encroachment of the proposed use on the neighboring land uses.*

   No trees are proposed to be removed during construction. The applicant proposed several plantings to soften the appearance from Route 4. Other plantings are proposed in the parking area.

3. Relationship of the proposed buildings to the environment: *Proposed structures shall be related harmoniously to the terrain and to the existing buildings in the vicinity which have a visual relationship to the proposed buildings. Special attention shall be paid to the bulk, location and height of the building(s) and such natural features such as slope, soil type and drainage ways.*

   Neighboring buildings include an industrial building and storage facilities. This standard has been met.

4. Vehicular access: *The proposed site layout shall provide for safe access and egress from public and private roads by providing adequate location, numbers and controls of access points including site distances, turning lanes, traffic signalization when required by existing and projected traffic flow on municipal road systems.*

   A DOT entrance permit has been granted.

5. Parking and circulation: *The layout and design of all vehicular and pedestrian circulation, including walkways, interior drives, and parking areas shall provide for safe general interior circulation, separation of pedestrian and vehicular traffic, service traffic, loading areas, and arrangements and use of parking areas.*

   All areas of vehicular circulation have at least 25'.

6. Surface water drainage: *Adequate provision shall be made for surface drainage so that removal of surface waters will not adversely affect neighboring properties, downstream conditions, soil erosion or the public storm drainage system. Whenever possible, on-site absorption of unpolluted run-off waters shall be utilized to permit groundwater recharge on the site.*

   The project is required to meet DEP Chapter 500 standards.

7. Existing utilities**:** *The development shall not impose an unreasonable burden on sewers, sanitary and storm drains, water lines or other public utilities.*

   This standard has been met.

8. Advertising features: *The size, location, design, lighting and materials of all exterior signs and outdoor advertising structures or features shall not detract from the design of proposed buildings and structures and the surrounding properties.*

   This standard has been met.

9. Special features of the development: *Exposed storage areas, exposed machinery installation, service areas, truck loading areas, utility buildings and similar structures shall have sufficient setback and screening to provide an audio/visual buffer to minimize their adverse impact on other land uses within the development area and surrounding properties*

   Not Applicable

10. Exterior lighting: *All exterior lighting shall be designed to minimize adverse impact on neighboring properties.*

    Lighting is proposed to be mounted to the building and have a shield to direct the light downward.

11. Emergency vehicle access**:** *Provisions shall be made for providing and maintaining convenient and safe emergency vehicle access to all buildings and structures.*

    This standard has been met.

12. Municipal services: *The development will not have an unreasonable adverse impact on the municipal services including municipal road systems, fire department, police department, solid waste program, sewer treatment plant, school, open spaces, recreational programs and facilities, and other municipal service and facilities.*

    No adverse impacts to services have been identified.

13. Will not result in water or air pollution**:** *In making this determination, it shall at a minimum consider: The elevation of the land above sea level and its relationship to the floodplains, the nature of soils and subsoils and their ability to adequately support waste disposal; the slope of the land and its attest on effluents; and the applicable state and local health and water resources regulations*

    The primary contamination risk of cultivation is a concentration of nitrates in the water. A holding tank is proposed to capture wastewater from cultivation and any excess water that goes through floor drains. The water is required be tested annually.

14. Has sufficient water available for the reasonable foreseeable needs of the development *(this is usually considered to be ten years approximately).*

    This standard has been met.

    Will not cause an unreasonable burden on an existing water supply*, if a municipal or community* water supply is to be utilized.

    This standard is not applicable, the water supply comes from a well.

15. Will not cause soil erosion or reduction in the capacity of the land to hold water *so that dangerous or unhealthy conditions may result.*

    No soil erosion issues have been identified.

16. Will provide for adequate sewerage waste disposal.

A new septic system will be designed by Civil Consultants based on soils information from Ken Gardner.

17. Will not have adverse effects on the scenic or natural beauty of the area, aesthetics, or rare and irreplaceable natural areas.

    The site is not in a location not identified as a rare or irreplaceable area.

18. Whenever situated in whole or in part within 250 feet of any pond, lake or river, will not adversely affect the quality of such body of water or affect the shoreline of such body of water, based on the standards outlined in Section 9.8.I.1.j.

    The project is subject to a Site Location of Development Permit through the DEP.

19. Low Impact Design: *Each applicant is required to submit a statement to the Planning Board documenting proposed Low Impact Design (LID) for the site, which will help to reduce storm water volumes and help to enhance storm water quality. LID includes, but is not limited to, green roofs, rain gardens, tree wells, infiltration basins and permeable pavement.*

    2 wet ponds, an under drained grass filter, catch basins, culverts and roadside treatment buffers are proposed as part of the Site Location of Development Permit and Stormwater Management.

I, David Andreesen, certify that I am Acting Chair of the Planning Board of the Town of Berwick, Maine, a Planning Board established pursuant to Maine State Statute (30-A § 4401) and I further certify that this decision was approved by the Planning Board at its meeting of September 17, 2020.

Waiver Approved

1. 9.8.F.2.b.i – Map at a scale of not less than once inch to 40'. The plan is 1"=60'

Findings of Fact _____

Conditions of Approval

1. A water sample shall be tested for priority pollutants and nutrients before any cultivation wastewater is discharged to a holding tank, and then tested annually or at the time it is pumped thereafter. Holding tank pump records and testing results shall be provided to the Community Development & Planning Office and provided to the facility where the wastewater will be treated.

2. If an odor violation is determined by the Code Enforcement Officer, the applicant shall resolve the issue within five days. The Code Enforcement Officer may revoke the Certificate of Occupancy if the odor issues are not resolved within five days.

3. If well water or ground water is contaminated with nitrates or other byproducts as a result of production beyond safe concentrations, the cost to remediate the nitrates or other contamination levels shall be at the applicant's (property owner) expense.

4. All pesticides and chemicals stored on site shall have a secondary containment.

5. Dumpsters shall remain locked at all times.

Application _____

_____ _____

David Andreesen, Planning Board Chair Date

Tricann Adult Use Building and Operating Plan

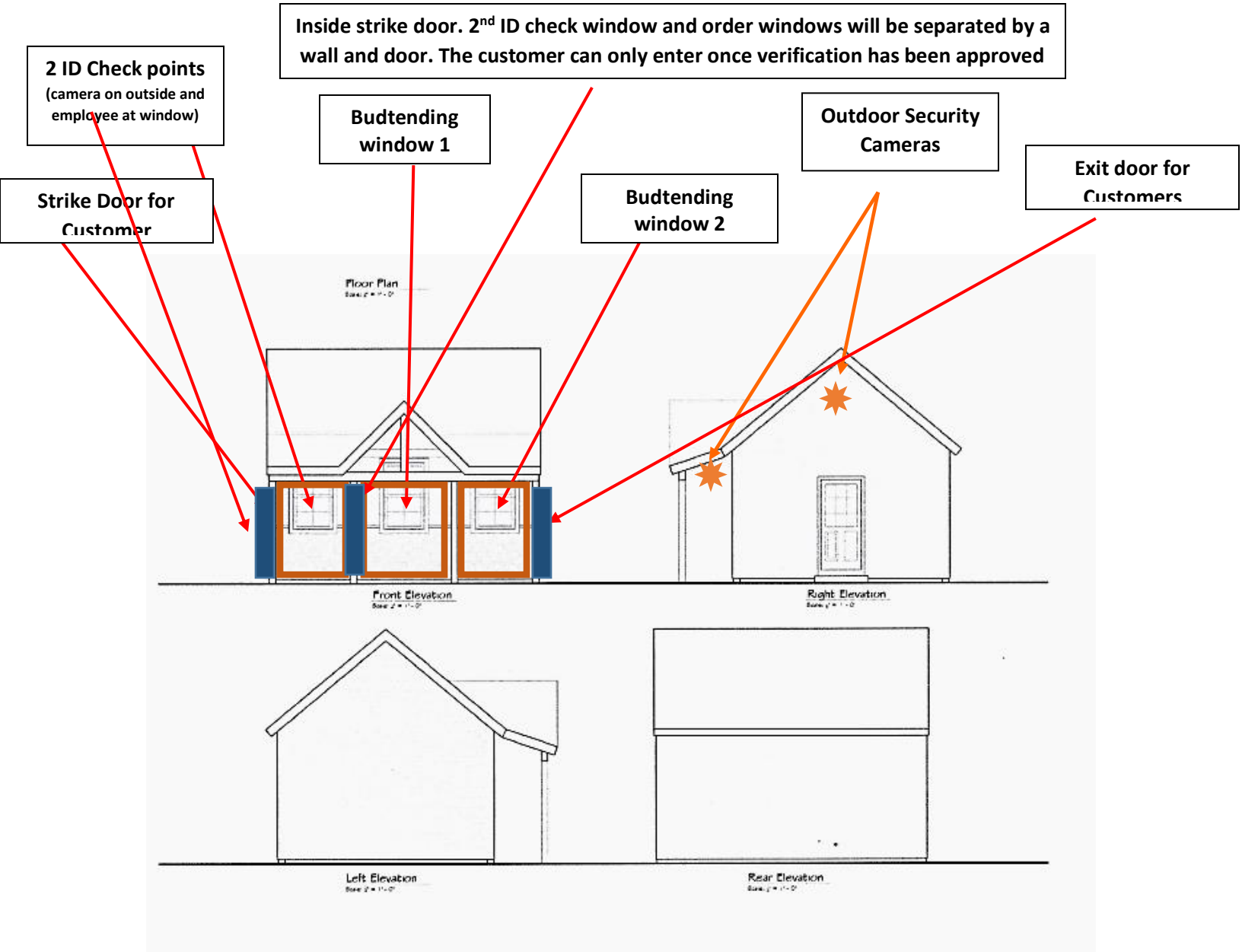
From the building schematic below, we plan on having 3 separate windows (ID Check window, and two (2) budtending windows). The new plan will be completely closed in (the walls are shown in **orange**, with an entrance door (doors are shown in **blue**) for the first window and then another door to access the 2 ordering windows and 3rd door for custmers to exit. The exit door will not allow people to enter, only exit.

No one will have access to go inside the budtending space, aside from the employees. The lock on the employee entrance door will be fingerprint accessible.

Camera locations are indicated on both schematics using ✸ symbol. Seacoast security will be outfitting the buidling with all of the necessary cameras and locations.

The building will be located in the upper side parking lot (see diagram of building placement below) and operating hours are 7am – 7pm.

The white arrows indicate the flow of traffic in and out of the parking lot. We are repainting the lot to have all of the parking spaces face in the direction of the flow seen below


Inside strike door. 2nd ID check window and order windows will be separated by a wall and door. The customer can only enter once verification has been approved
2 ID Check points
(camera on outside and employee at window)
Budtending window 1
Outdoor Security Cameras
Exit door for Customers
Strike Door for Customer
Budtending window 2
Floor Plan
Front Elevation
Right Elevation
Left Elevation
Rear Elevation

Floor Plan Description

Please see floor plan below

The free standing building will be a 20’ x 20’ building.

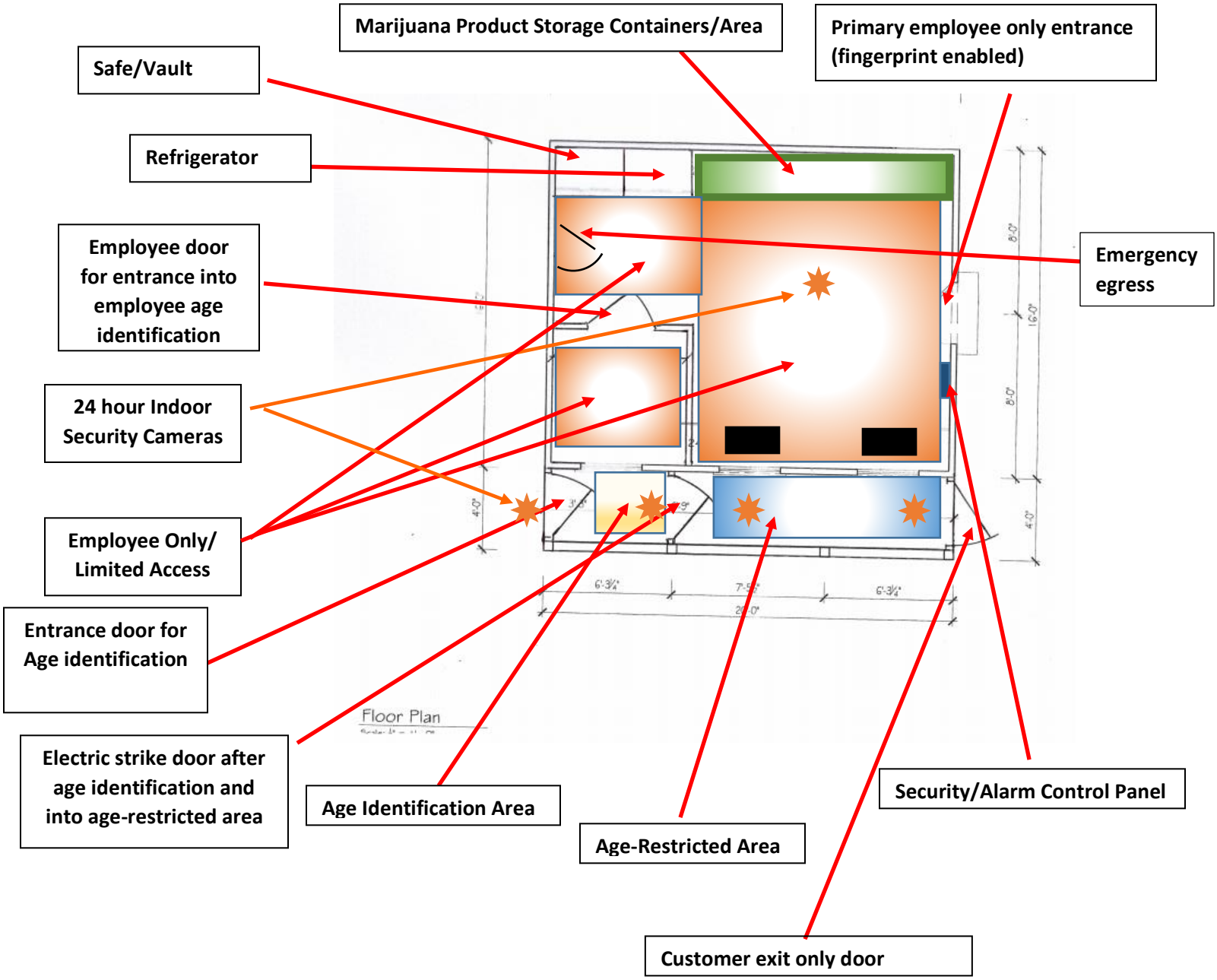
Process/Flow for customers

- Customer will present ID to the camera and employee will buzz customer into building. Once inside, the customer will present ID to employee.
- Once verified, employee will buzz the person into the age-restricted area (only 2 people allowed at one time in this area for social distancing)
- There will be 2 budtending windows (6 ft apart from one another), where customers can place their order, pay for thier order and pick up their order.
- Once they have completed their sale, they will then exit out the exit only door.

Building floorplan written overview

- Employees will enter through the primary employee door located on the side of the building. This door will be enabled with fingerprint access only. The other door is for an emergency egress.
- Maximum 3 employees in building per shift
- Areas that are gradient orange are employee only/limited access areas
- Customer will present ID on camera in order to enter into the buidling. Once in the building (the yellow gradient area), the person will present ID again to the employee and once verified, the person will be buzzed into the age-restricted area.
- Blue gradient area is age-restricted area (customer will have no access to marijuana products, all products will be packaged in the employee/limited access area via employee and given to patient after transaction has been completed)
- In the age-restricted area, there will be two budtending windows. There the person will be able to view products on a digital pad and place order with the budtender. Once the person has received their product/s, they will then exit out the exit only door.
- Dark blue box located next to employee entrance will be where the alarm/security box is located (for employees to arm and disarm the system). Current security company is Seacoast Security and we will continue to use them to outfit the building with all of the necessary camera locations.
- Green gradient area is where all non-refrigerated marijuana products will be during open hours. After hours, products will be place in the vault.

- A locked refrigerator will be in the buidling for all perisable marijuana items
- Receiving of product will be via employee entrance. Receiving of product will occur during business hours (7am – 7pm)
- Electrical equiptment will consist of 2 computers/digital displays (black boxes). Located in front of order windows. Current POS system being used is Proteus, which will be linked to Metrcs.



Town of Berwick Planning Board
Conditional Use Findings of Fact

Applicant: Aaron Barth (Tricann)
513 Portland Street (Tax Map R-072, Lot 5)
September 17, 2017

Tricann Alternatives requested to build a 20'x20' building designed for purchase of Adult Use Marijuana. This building is proposed to be temporary until renovations are complete in the office building. The operation plan will require approval from the Maine Office of Marijuana Policy. The building has a security system with cameras. There are two proposed ID check points. Three employees and two customers will be the maximum capacity of the building. The hours of operation are proposed to be 7am-7pm.

Findings of Fact

1. Conformance with the Comprehensive Plan: *All proposed conditional uses and site plans shall conform to the Comprehensive Plan of the Town of Berwick and with the provisions of all pertinent federal, state and local codes, ordinances, and regulations.*

   The application conforms to the Comprehensive Plan because an Adult Use Storefront is an appropriate commercial use within the RC/I zoning district.

2. Preserve and enhance the landscape: *The landscape shall be preserved in its natural state insofar as practicable by minimizing tree removal, disturbance of soil, retaining existing vegetation during construction. After construction is complete, landscape shall be designed and planted that will define, soften or screen the appearance of off street parking areas from the right of way and abutting properties and/or structures in order to enhance the physical design of the building(s) or site, and to minimize the encroachment of the proposed use on the neighboring land uses.*

   Existing parking areas will be utilized and no trees will be removed during construction.

3. Relationship of the proposed buildings to the environment: *Proposed structures shall be related harmoniously to the terrain and to the existing buildings in the vicinity which have a visual relationship to the proposed buildings. Special attention shall be paid to the bulk, location and height of the building(s) and such natural features such as slope, soil type and drainage ways.*

   This standard has been met.

4. Vehicular access: *The proposed site layout shall provide for safe access and egress from public and private roads by providing adequate location, numbers and controls of access points including site distances, turning lanes, traffic signalization when required by existing and projected traffic flow on municipal road systems.*

   The applicant does not plan to modify the existing access to the site.

5. Parking and circulation: *The layout and design of all vehicular and pedestrian circulation, including walkways, interior drives, and parking areas shall provide for safe general interior circulation,*

separation of pedestrian and vehicular traffic, service traffic, loading areas, and arrangements and use of parking areas.

The site provides enough parking for this operation. No new points of access are being provided.

6. Surface water drainage: *Adequate provision shall be made for surface drainage so that removal of surface waters will not adversely affect neighboring properties, downstream conditions, soil erosion or the public storm drainage system. Whenever possible, on-site absorption of unpolluted run-off waters shall be utilized to permit groundwater recharge on the site.*

   No adverse drainage issues have been identified.

7. Existing utilities**:** *The development shall not impose an unreasonable burden on sewers, sanitary and storm drains, water lines or other public utilities.*

   There will be no unreasonable impacts to the existing utilities. The applicant has indicated that the water usage is normal amounts of any type of operation

8. Advertising features: *The size, location, design, lighting and materials of all exterior signs and outdoor advertising structures or features shall not detract from the design of proposed buildings and structures and the surrounding properties.*

   No signage has been proposed with this application. Any proposed signage shall meet the sign ordinance standards found in section 7.12 of the zoning ordinance.

9. Special features of the development: *Exposed storage areas, exposed machinery installation, service areas, truck loading areas, utility buildings and similar structures shall have sufficient setback and screening to provide an audio/visual buffer to minimize their adverse impact on other land uses within the development area and surrounding properties.*

   Not Applicable

10. Exterior lighting: *All exterior lighting shall be designed to minimize adverse impact on neighboring properties.*

    No additional lighting is proposed

11. Emergency vehicle access**:** *Provisions shall be made for providing and maintaining convenient and safe emergency vehicle access to all buildings and structures.*

    The current layout of the site has adequate access for emergency vehicles.

12. Municipal services: *The development will not have an unreasonable adverse impact on the municipal services including municipal road systems, fire department, police department, solid waste program, sewer treatment plant, school, open spaces, recreational programs and facilities, and other municipal service and facilities.*

    No adverse impacts on municipal services have been identified.

13. Will not result in water or air pollution**:** *In making this determination, it shall at a minimum consider: The elevation of the land above sea level and its relationship to the floodplains, the nature of soils*

and subsoils and their ability to adequately support waste disposal; the slope of the land and its attest on effluents; and the applicable state and local health and water resources regulations.

Not Applicable

14. Has sufficient water available for the reasonable foreseeable needs of the development *(this is usually considered to be ten years approximately).*

    This standard has been met.

Will not cause an unreasonable burden on an existing water supply*, if a municipal or community* water supply is to be utilized.

This standard is not applicable.

15. Will not cause soil erosion or reduction in the capacity of the land to hold water *so that dangerous or unhealthy conditions may result.*

    Basic Performance Standards specified in the Maine DEP Chapter 500 Appendix A shall be utilized.

16. Will provide for adequate sewerage waste disposal.

    This standard has been met by the use of an onsite septic disposal system

17. Will not have adverse effects on the scenic or natural beauty of the area, aesthetics, or rare and irreplaceable natural areas.

    The project is not in an area defined as scenic, rare or irreplaceable.

18. The developer has adequate financial and technical capacity to meet the above stated standards.

    The applicant is currently running a successful operation from the site and will only be expanding the opportunity to sell Adult Recreation Retail Marijuana on this site

19. Whenever situated in whole or in part within 250 feet of any pond, lake or river, will not adversely affect the quality of such body of water or affect the shoreline of such body of water, based on the standards outlined in Section 9.8.I.1.j.

    This standard does not apply because the site is not located near any type of water body.

20. Low Impact Design: *Each applicant is required to submit a statement to the Planning Board documenting proposed Low Impact Design (LID) for the site, which will help to reduce storm water volumes and help to enhance storm water quality. LID includes, but is not limited to, green roofs, rain gardens, tree wells, infiltration basins and permeable pavement.*

    Not Applicable

I, David Andreesen, certify that I am Chair of the Planning Board of the Town of Berwick, Maine, a Planning Board established pursuant to Maine State Statute (30-A § 4401) and I further certify that this decision was approved by the Planning Board at its meeting of September 17, 2020

Findings of Fact Approved

Conditions of Approval

1. When the office building is ready for Occupancy for an Adult Use Storefront, the Conditional Use for the temporary building shall cease. At that time, the building will require a new approval or be moved within 30 days.

Application _____

_____ _____

David Andreesen, Planning Board Chair Date