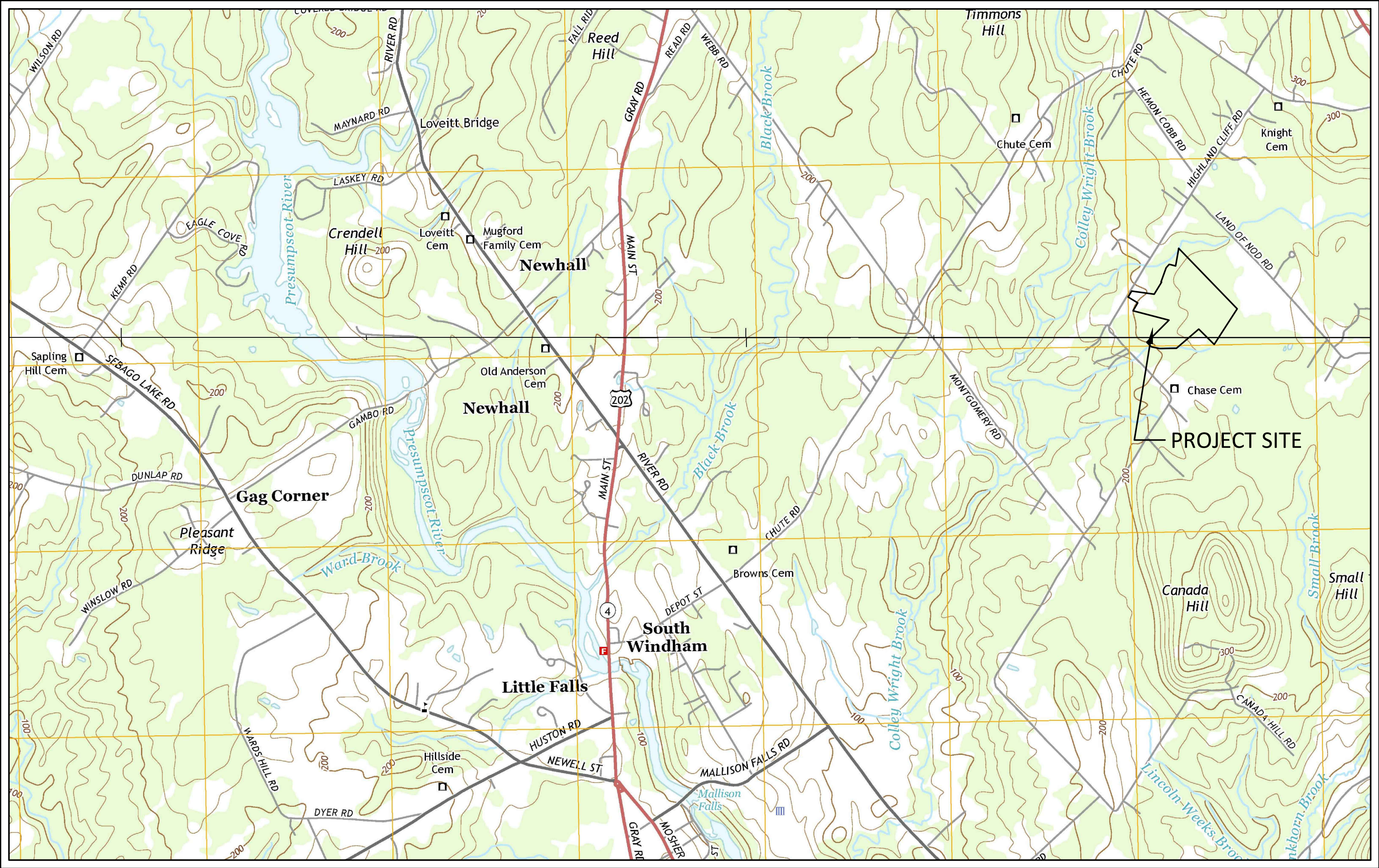


HIGHLAND WOODS SUBDIVISION

HIGHLAND CLIFF ROAD
WINDHAM, MAINE

CONSULTANTS	
CIVIL ENGINEER	DM ROMA CONSULTING ENGINEERS
LAND SURVEYOR	SURVEY, INC.
SITE EVALUATOR	MAINELY SOILS, LLC
WETLAND SCIENTIST	MAINELY SOILS, LLC
GEOLOGIST	SUMMIT GEOENGINEERING SERVICES



PROJECT VICINITY MAP

ISSUED FOR PERMIT REVIEW - NOT FOR CONSTRUCTION
NOVEMBER 5, 2018

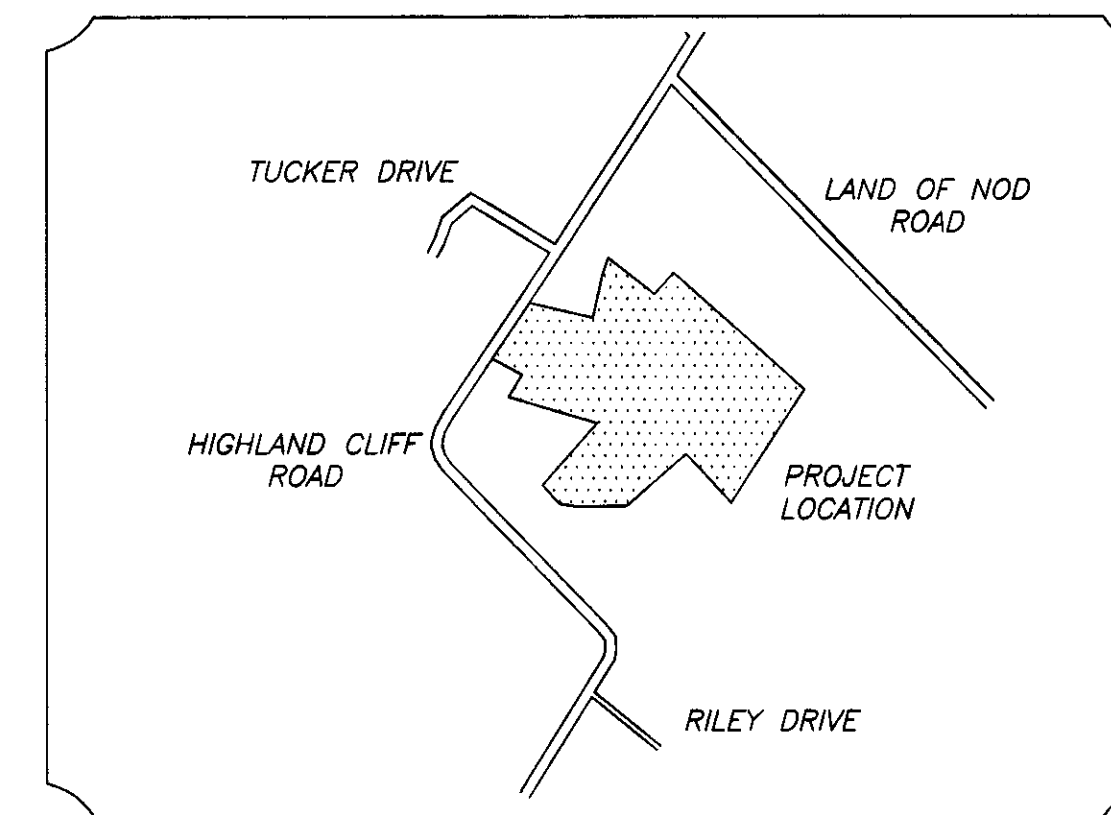
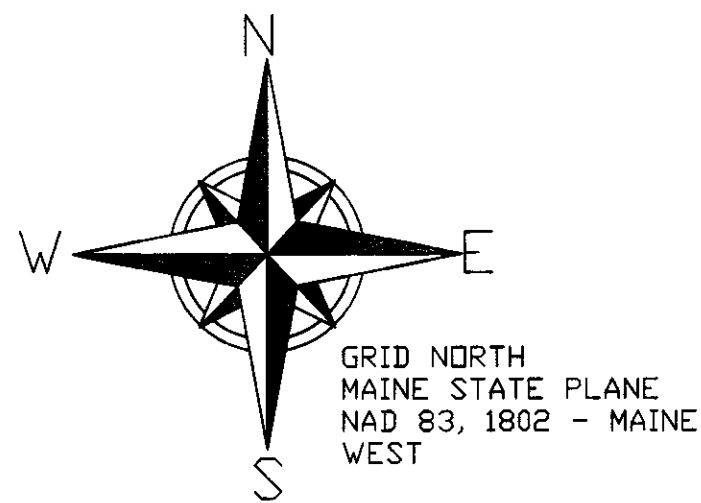
PREPARED BY:

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 310 - 0506

APPLICANT:
MTR DEVELOPMENT, LLC
P.O. BOX 1028
WESTBROOK, MAINE 04098

HIGHLAND WOODS SUBDIVISION
DRAWING SHEET INDEX

PAGE NO.	DESCRIPTION
1	TITLE SHEET
2	BOUNDARY SURVEY
3	SUBDIVISION PLAN
4	PLAN OF WASTEWATER DISPOSAL SYSTEMS
5	PLAN & PROFILE
6	PLAN & PROFILE
7	PLAN & PROFILE
8	STORMWATER POND PLAN
9	STORMWATER POND PLAN
10	DETAILS
11	DETAILS



LOCATION MAP
(NOT TO SCALE)

SURVEY NOTES:

- (1) THE RECORD OWNER OF THE PROPERTY IS MICHAEL ATKINSON AS DESCRIBED IN A DEED RECORDED IN BOOK 14889 PAGE 98 IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
- (2) THE PARCEL IS SHOWN AS LOT 36 ON THE TOWN OF WINDHAMS ASSESSORS MAP 7.
- (3) BEARINGS ARE GRID NORTH, MAINE STATE PLANE 1802 WEST
- (4) BOUNDARIES SHOWN HEREON REPRESENT A RETRACEMENT OF PLAN REFERENCE 2.

PLAN REFERENCES:

- (1) PLAN OF PROPERTY HIGHLAND CLIFF ROAD WINDHAM, MAINE MICHAEL A. ATKINSON DATED MAY 2004 BY SURVEY INC.
- (2) STANDARD BOUNDARY SURVEY HIGHLAND CLIFF ROAD WINDHAM, MAINE FOR: MICHAEL A. ATKINSON DATED MAY 1996 BY SURVEY INC.
- (3) STANDARD BOUNDARY SURVEY LAND OF MICHAEL A. ATKINSON HIGHLAND CLIFF ROAD WINDHAM, ME. DATED MARCH 10, 1993 BY S.C. HORNE CONSTRUCTION SURVEYING RECORDED IN PLAN BOOK 193 PAGE 108 IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
- (4) PLAN OF LAND ON HIGHLAND CLIFF ROAD IN WINDHAM, MAINE FOR JOYCE FULLERTON DATED SEPTEMBER 2016 BY WAYNE T. WOOD & CO,

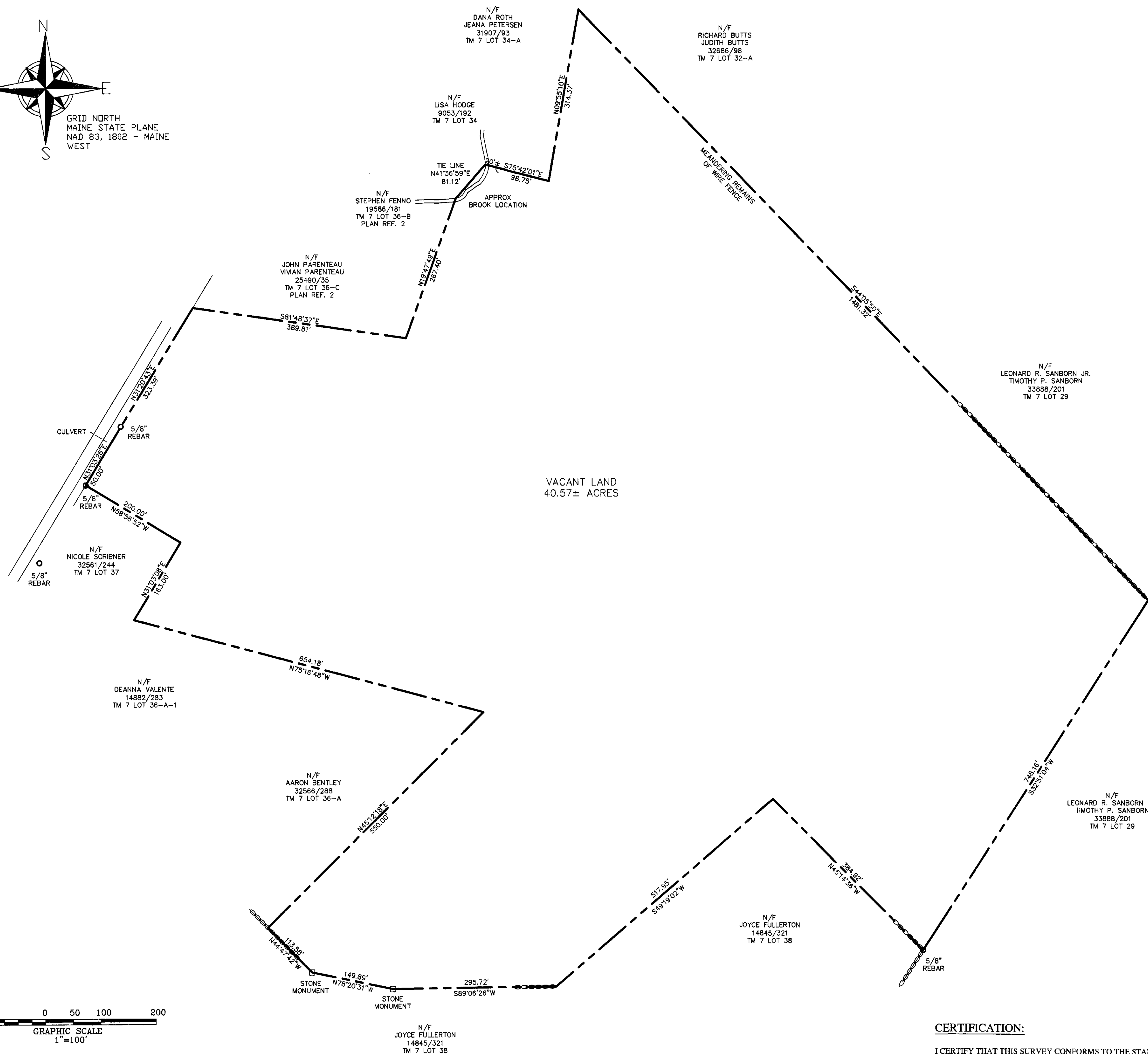
BOUNDARY SURVEY
HIGHLAND CLIFF ROAD
WINDHAM, MAINE

FOR: **CHRIS WILSON**
PO BOX 1028
WESTBROOK, MAINE 04098
(OWNER OF RECORD)

SURVEY BY: **SURVEY, INC.**
P.O. BOX 210
WINDHAM, ME 04062
(207) 892-2556
INFO@SURVEYINCORPORATED.COM

DWN: WCS
DAT
CHK: DRR
JOB NO. 18066

100 0 50 100 200
GRAPHIC SCALE
1"=100'

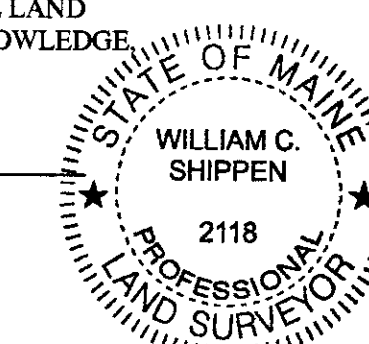


CERTIFICATION:

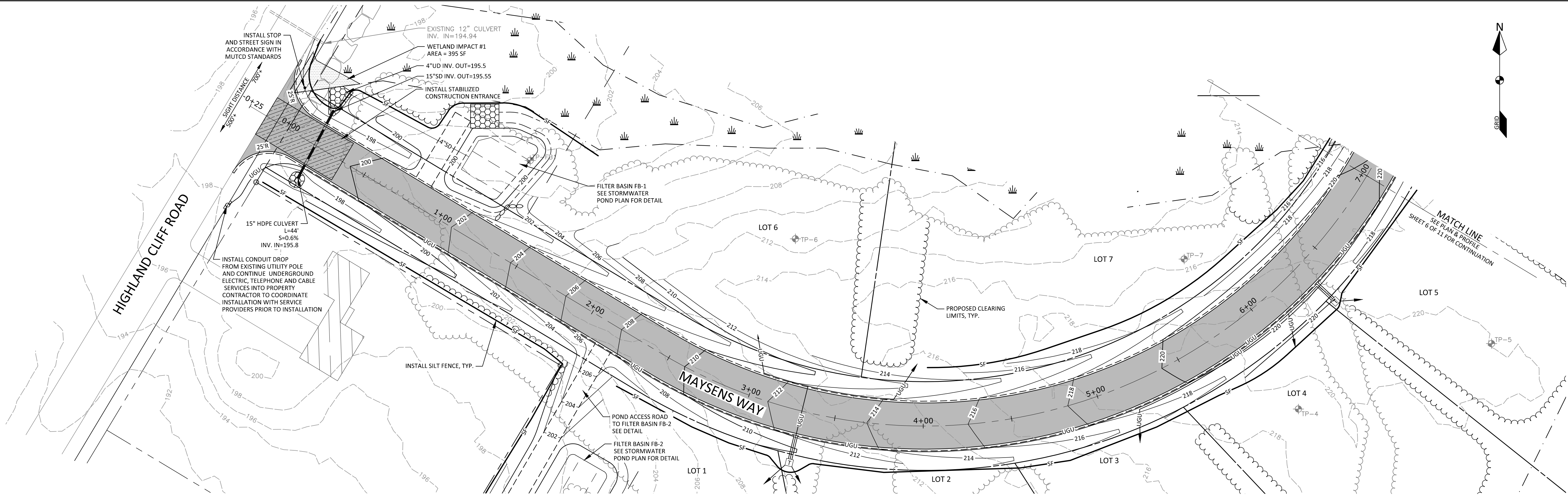
I CERTIFY THAT THIS SURVEY CONFORMS TO THE STANDARDS OF THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS AND IS CORRECT TO THE BEST OF MY KNOWLEDGE INFORMATION AND BELIEF.

WILLIAM C. SHIPPEN

7-12-18
P.L.S. 2118

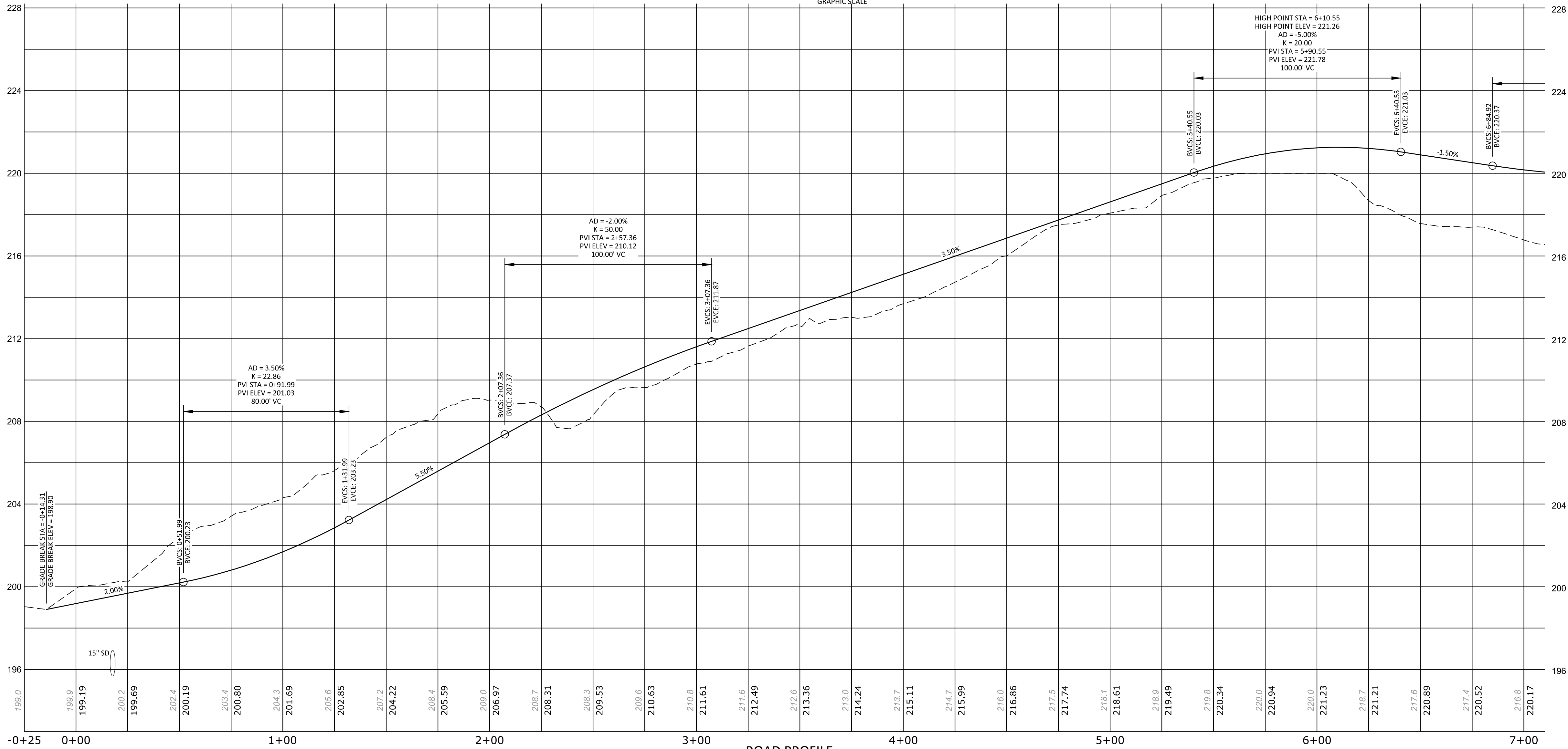
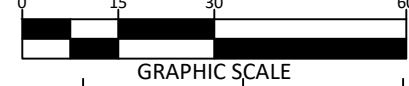


GENERAL NOTES:
1. THERE WILL BE APPROXIMATELY 14,365 S.F. OF TOTAL WETLAND IMPACT ASSOCIATED WITH THE PROPOSED DEVELOPMENT.



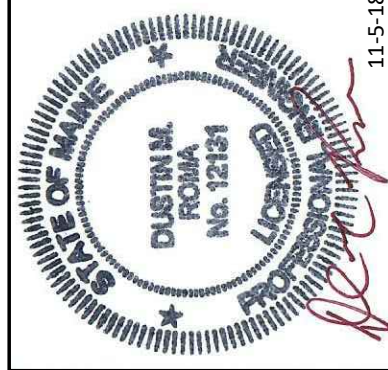
ROAD PLAN

SCALE: 1"=30'



ROAD PROFILE

SCALE: HORIZ.: 1"=30' VERT.: 1"=3'

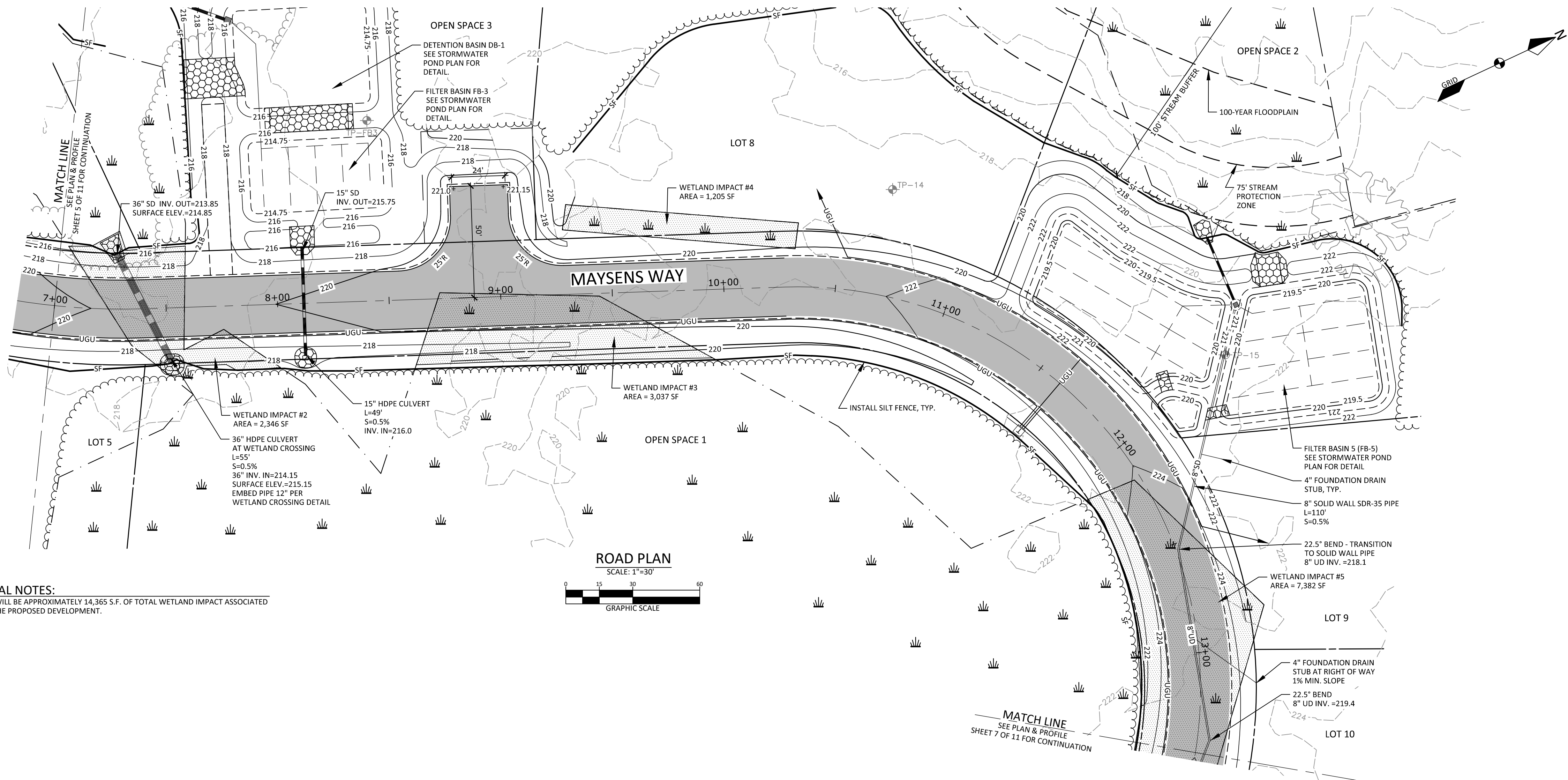


DM ROMA
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WINDHAM, ME 04062
(207) 310-0506

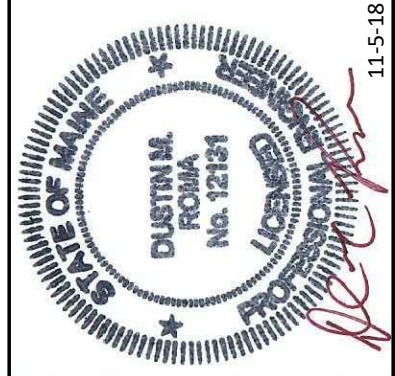
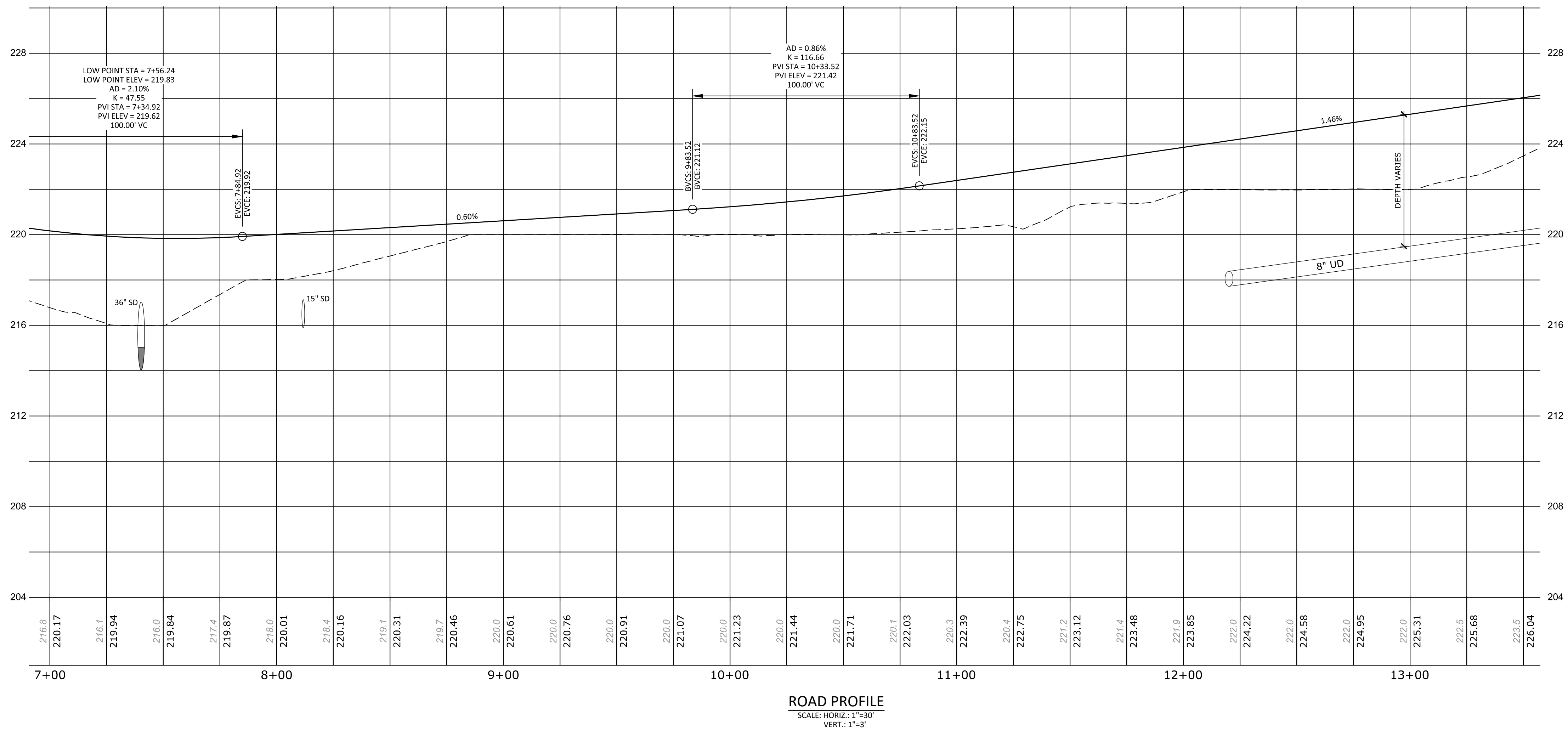
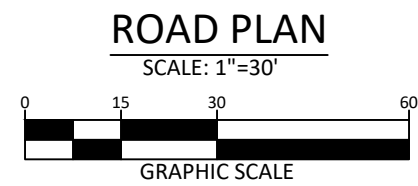
REV.	DATE	BY	DESCRIPTION
A	6-1-18	DMR	ISSUED FOR PRELIMINARY SUBDIVISION REVIEW
B	7-23-18	DMR	REVISED PER TOWN REVIEW COMMENTS
C	11-5-18	DMR	ISSUED FOR PERMIT REVIEW

ROADWAY PLAN & PROFILE
HIGHLAND WOODS SUBDIVISION
HIGHLAND CLIFF ROAD
WINDHAM, MAINE
FOR: MTR DEVELOPMENT, LLC.
P.O. BOX 103
WESTBROOK, ME 04098

17001 JOB NUMBER:
AS NOTED SCALE:
11-5-2018 DATE:
SHEET 5 OF 11
PP-1



GENERAL NOTES:
1. THERE WILL BE APPROXIMATELY 14,365 S.F. OF TOTAL WETLAND IMPACT ASSOCIATED WITH THE PROPOSED DEVELOPMENT.

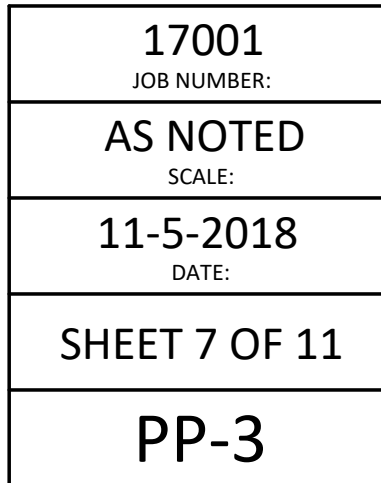
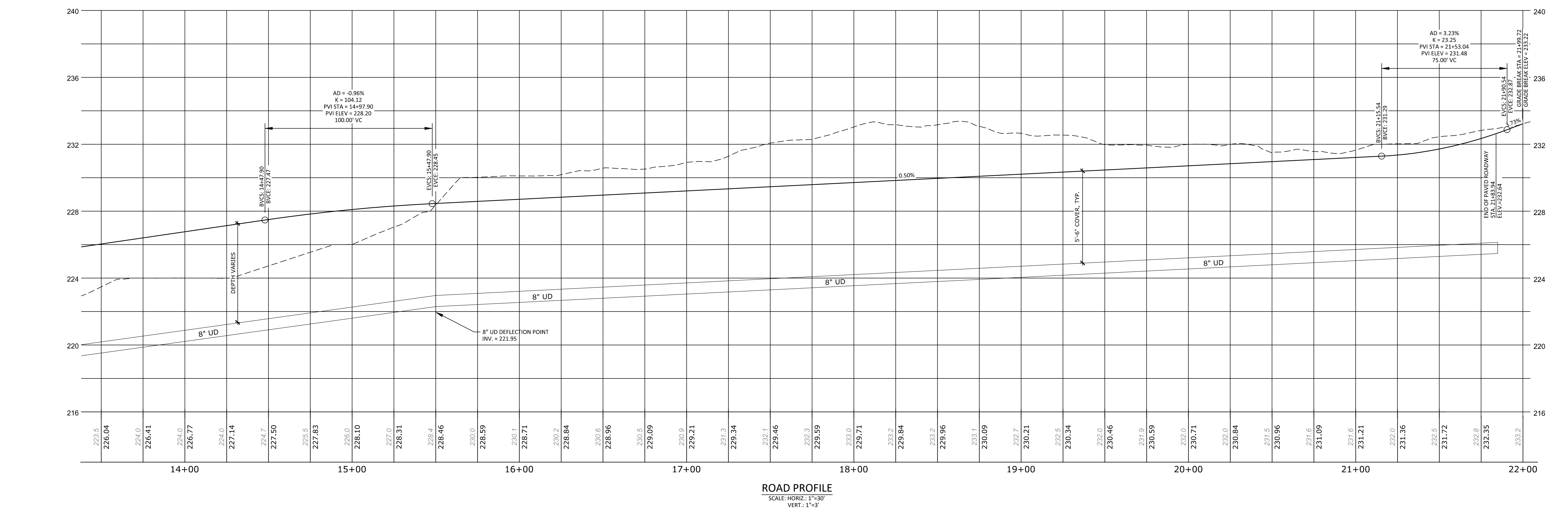


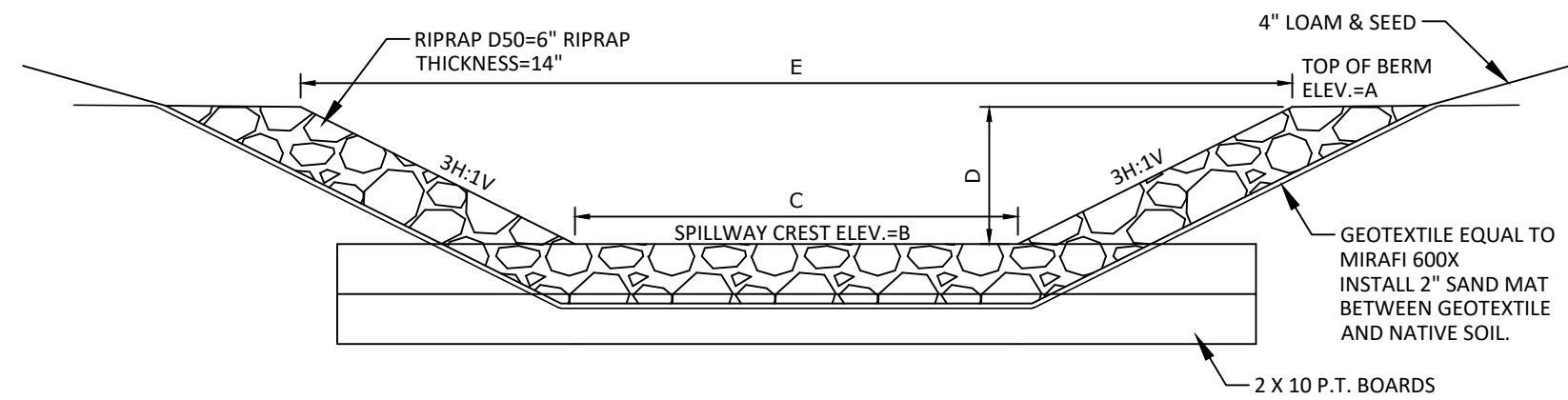
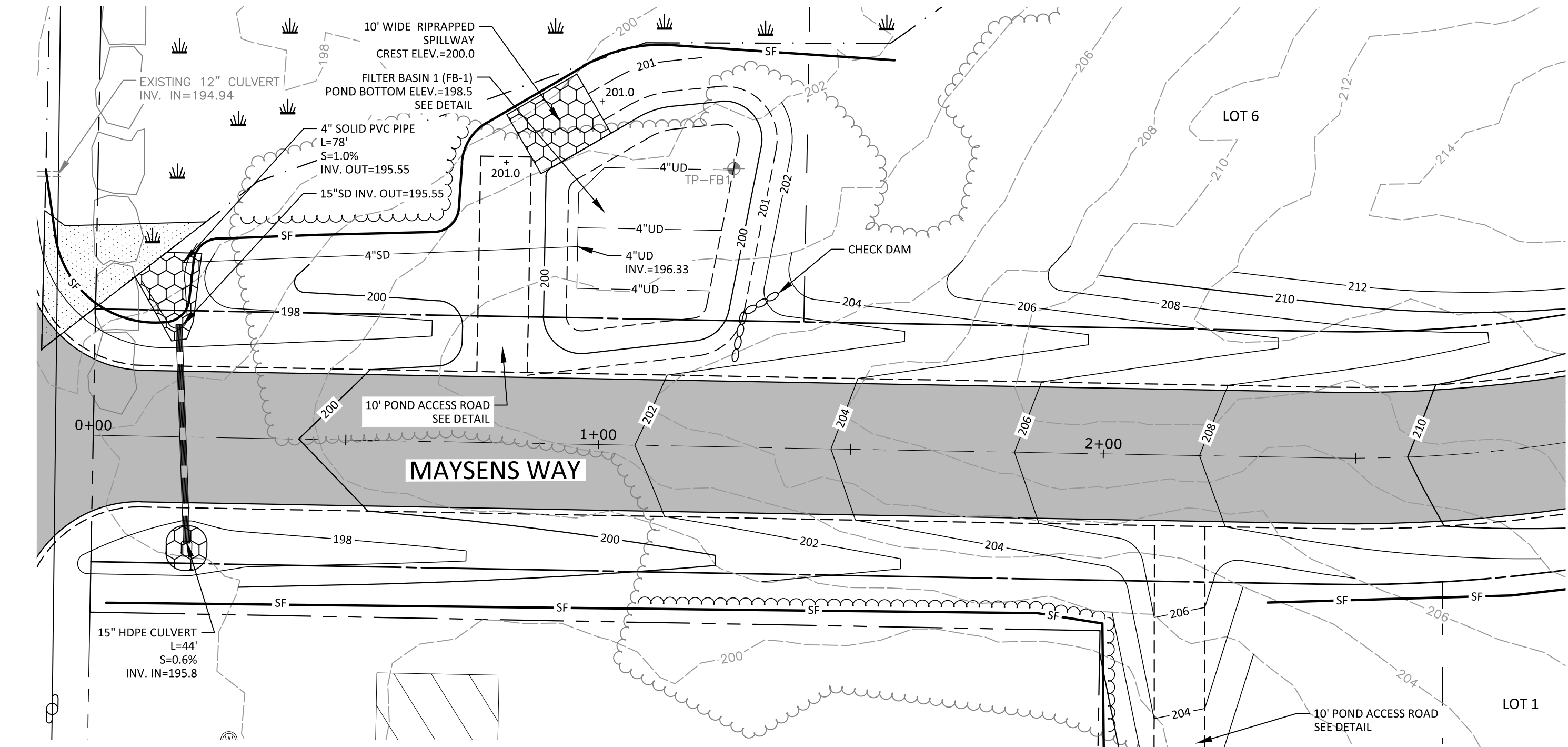
DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 310 - 0506

REV	DATE	BY	DESCRIPTION
A	6-4-18	DMR	ISSUED FOR PRELIMINARY SUBDIVISION REVIEW
B	7-23-18	DMR	REVISED PER TOWN REVIEW COMMENTS
C	11-5-18	DMR	ISSUED FOR PERMIT REVIEW

ROADWAY PLAN & PROFILE
HIGHLAND WOODS SUBDIVISION
HIGHLAND CLIFF ROAD
WINDHAM, MAINE
FOR: MTR DEVELOPMENT, LLC.
P.O. BOX 103
WESTBROOK, ME 04098

17001 JOB NUMBER:
AS NOTED SCALE:
11-5-2018 DATE:
SHEET 6 OF 11
PP-2





SPILLWAY DATA					
POND ID	A	B	C	D	E
FB-1	201.00	200.00	10'	1.00'	16.0'
FB-2	201.00	200.00	10'	1.00'	16.0'
FB-3	217.00	216.25	35'	0.75'	39.5'
DB-1	218.00	216.75	10'	1.25'	17.5'

RIPRAPPED SPILLWAY CROSS-SECTION
NOT TO SCALE

FILTER BASIN 1 & 2 (FB-1 & FB-2)

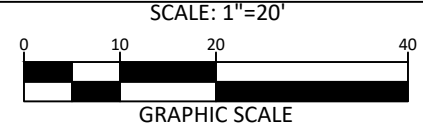
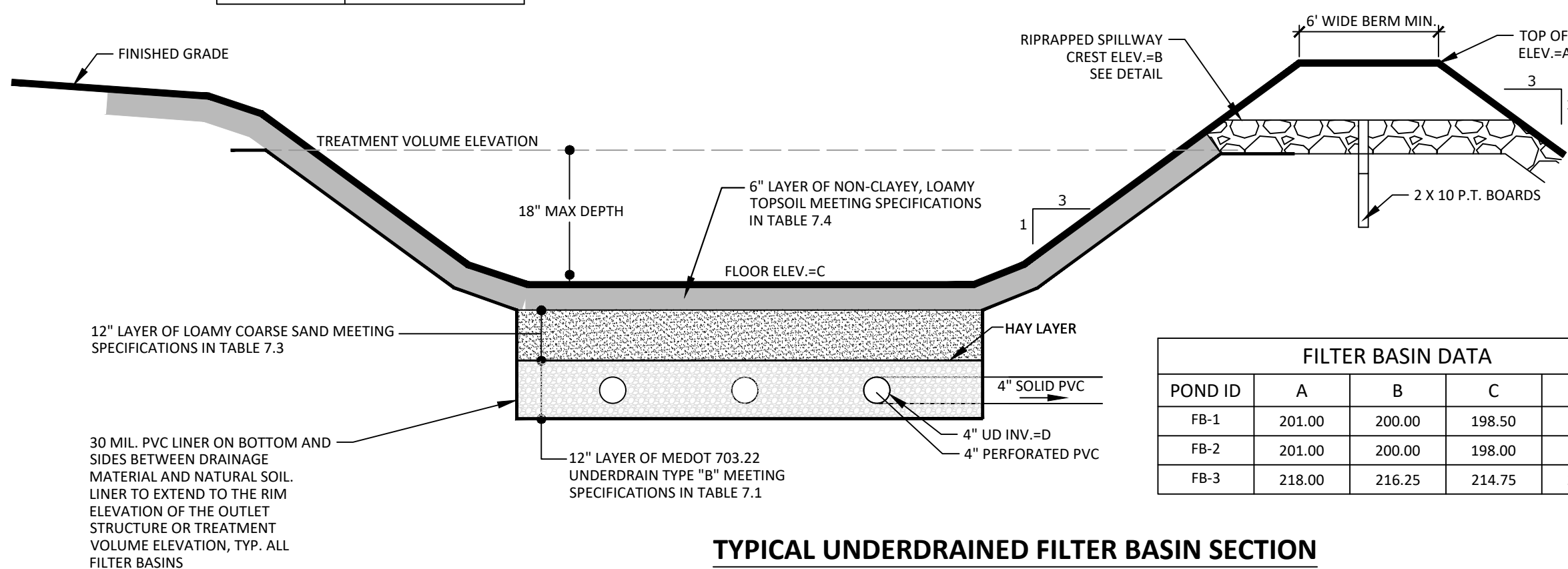


TABLE 7.1 UNDERDRAIN 703.22 TYPE "B"	
SIEVE SIZE	% PASSING BY WEIGHT
1"	90-100
1/2"	75-100
#4	50-100
#20	15-80
#50	0-15
#200	0-5

TABLE 7.3 LOAMY COARSE SAND	
SIEVE SIZE	% PASSING BY WEIGHT
#10	85-100
#20	70-100
#60	15-40
#200	8-15
200 CLAY	<2.0

TABLE 7.4 SANDY LOAM	
SIEVE SIZE	% PASSING BY WEIGHT
#4	75-95
#10	60-90
#40	35-85
#200	20-70
200 CLAY	<2.0



TYPICAL UNDERDRAINED FILTER BASIN SECTION
NOT TO SCALE

FILTER BASIN DATA				
POND ID	A	B	C	D
FB-1	201.00	200.00	198.50	196.33
FB-2	201.00	200.00	198.00	195.83
FB-3	218.00	216.25	214.75	212.58

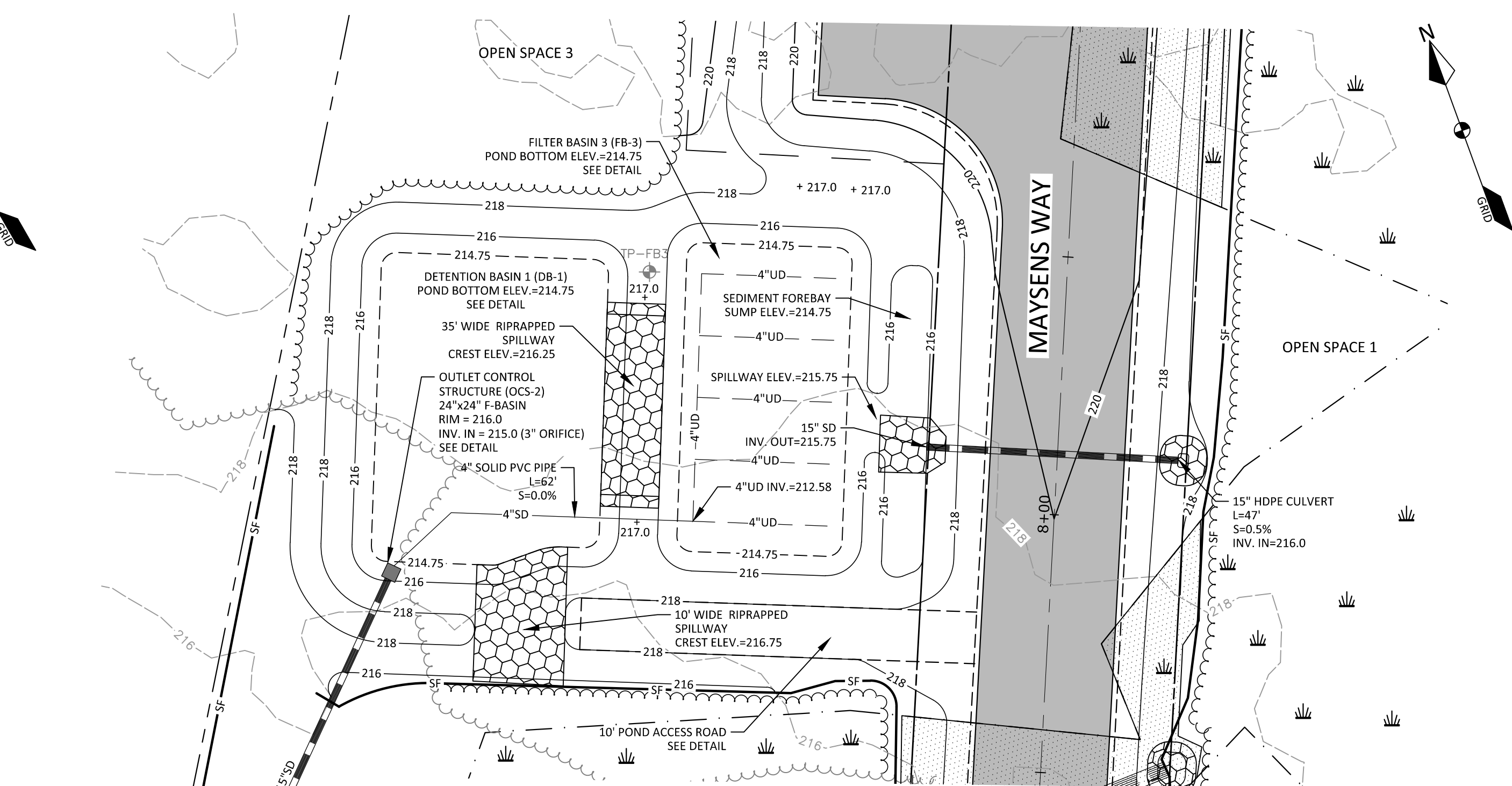
GENERAL NOTES:

1. CONSTRUCTION SEQUENCE: THE SOIL FILTER MEDIA AND VEGETATION MUST NOT BE INSTALLED UNTIL THE AREA THAT DRAINS TO THE FILTER HAS BEEN PERMANENTLY STABILIZED WITH PAVEMENT OR OTHER STRUCTURE, 90% VEGETATION COVER, OR OTHER PERMANENT STABILIZATION UNLESS THE RUNOFF FROM THE CONTRIBUTING DRAINAGE AREA IS DIVERTED AROUND THE FILTER UNTIL STABILIZATION IS COMPLETED.

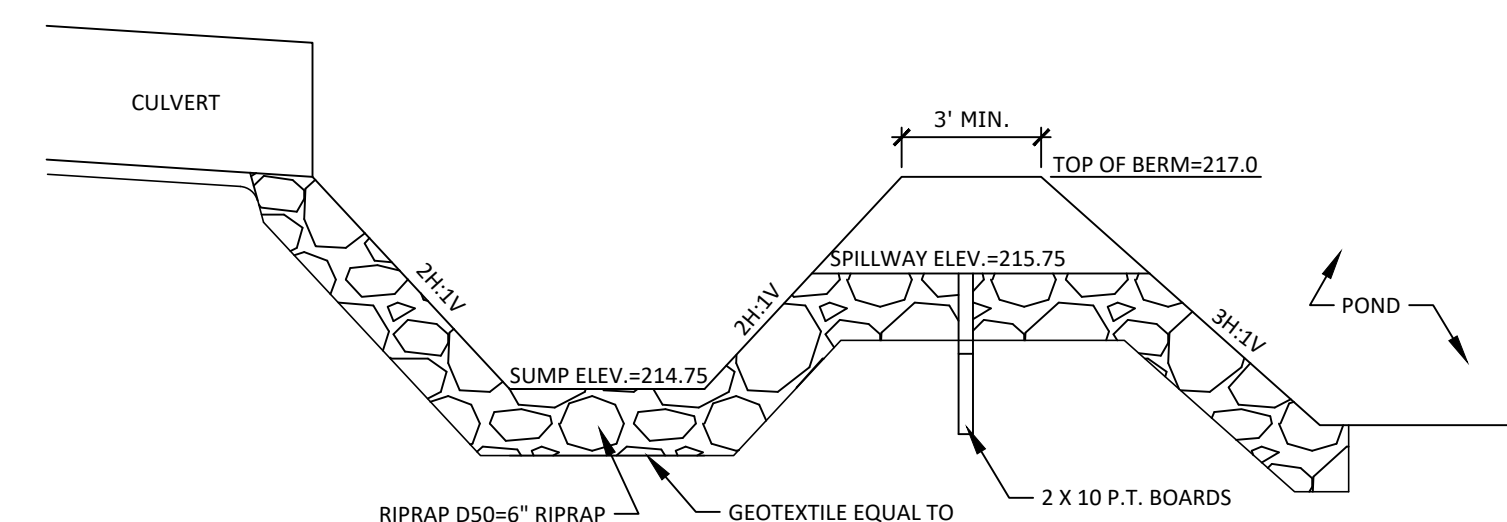
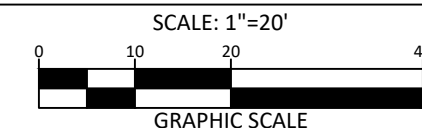
2. COMPACTION OF SOIL FILTER: FILTER SOIL MEDIA AND UNDERDRAIN BEDDING MATERIAL MUST BE COMPACTED BETWEEN 90% AND 92% STANDARD PROCTOR. THE BED SHOULD BE INSTALLED IN AT LEAST TWO LIFTS TO PREVENT POCKETS OF LOOSE MEDIA.

FILTRATION BMPs CONSTRUCTION OVERSIGHT NOTES:

- INSPECTION BY THE DESIGN ENGINEER OR SUITABLE THIRD PARTY WILL OCCUR AT A MINIMUM:
 - AFTER THE 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 SEEDING.
 - AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS.
- TESTING AND SUBMITTALS: THE CONTRACTOR SHALL IDENTIFY THE LOCATION OF THE SOURCE OF EACH COMPONENT OF THE FILTER MEDIA. ALL RESULTS OF FIELD AND LABORATORY TESTING SHALL BE SUBMITTED TO THE PROJECT ENGINEER FOR CONFIRMATION. THE CONTRACTOR SHALL:
 - SELECT SAMPLES FOR SAMPLING OF EACH TYPE OF MATERIAL TO BE BLENDED FOR THE MIXED FILTER MEDIA AND SAMPLES OF THE UNDERDRAIN BEDDING MATERIAL. SAMPLES MUST BE A COMPOSITE OF THREE DIFFERENT LOCATIONS (GRABS) FROM THE STOCKPILE OR PIT FACE. SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY.
 - PERFORM A SIEVE ANALYSIS CONFORMING TO ASTM C136 (STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES 1996A) ON EACH TYPE OF THE SAMPLE MATERIAL. THE RESULTING SOIL FILTER MEDIA MIXTURE MUST HAVE 8% TO 12% BY WEIGHT PASSING THE #200 SIEVE, A CLAY CONTENT OF LESS THAN 2% (DETERMINED BY HYDROMETER GRAIN SIZE ANALYSIS) AND HAVE 10% DRY WEIGHT OF ORGANIC MATTER.
 - PERFORM A PERMIABILITY TEST ON THE SOIL FILTER MEDIA MIXTURE CONFORMING TO ASTM D2434 WITH THE MIXTURE COMPACTED TO 90-92% OF MAXIMUM DRY DENSITY BASED ON ASTM D698

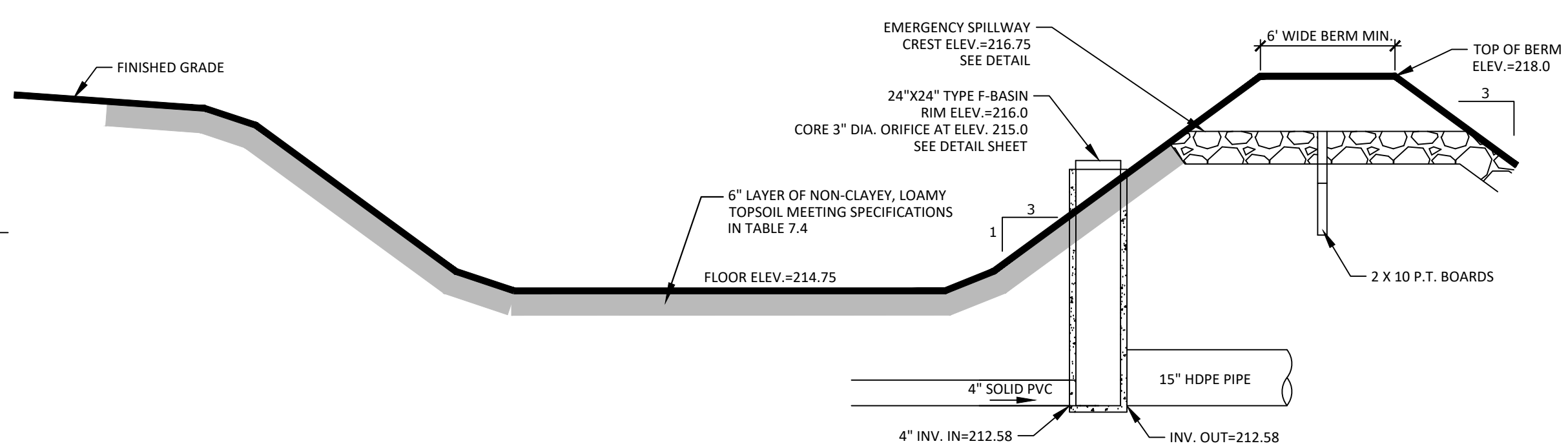


FILTER BASIN 3 (FB-3) & DETENTION BASIN 1 (DB-1)



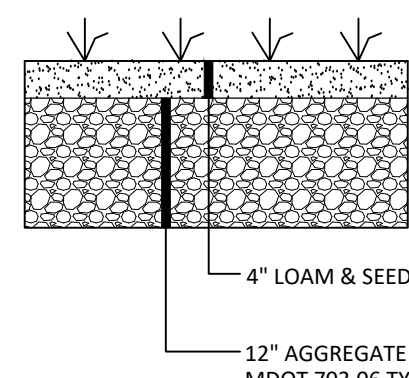
SEDIMENT FOREBAY FOR FILTER BASIN 3 (FB-3)

NOT TO SCALE

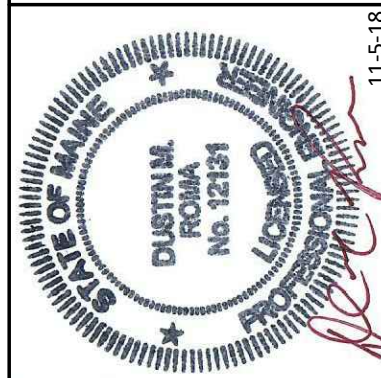


DETENTION BASIN 1 SECTION (DB-1)

NOT TO SCALE



TYPICAL POND ACCESS ROAD SECTION
NOT TO SCALE



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C	11-5-18	DMR	ISSUED FOR PERMIT REVIEW

STORMWATER POND PLAN

HIGHLAND WOODS SUBDIVISION
HIGHLAND CLIFF ROAD
WINDHAM, MAINE

FOR: MTR DEVELOPMENT, LLC.
P.O. BOX 105
WESTBROOK, MAINE 04098

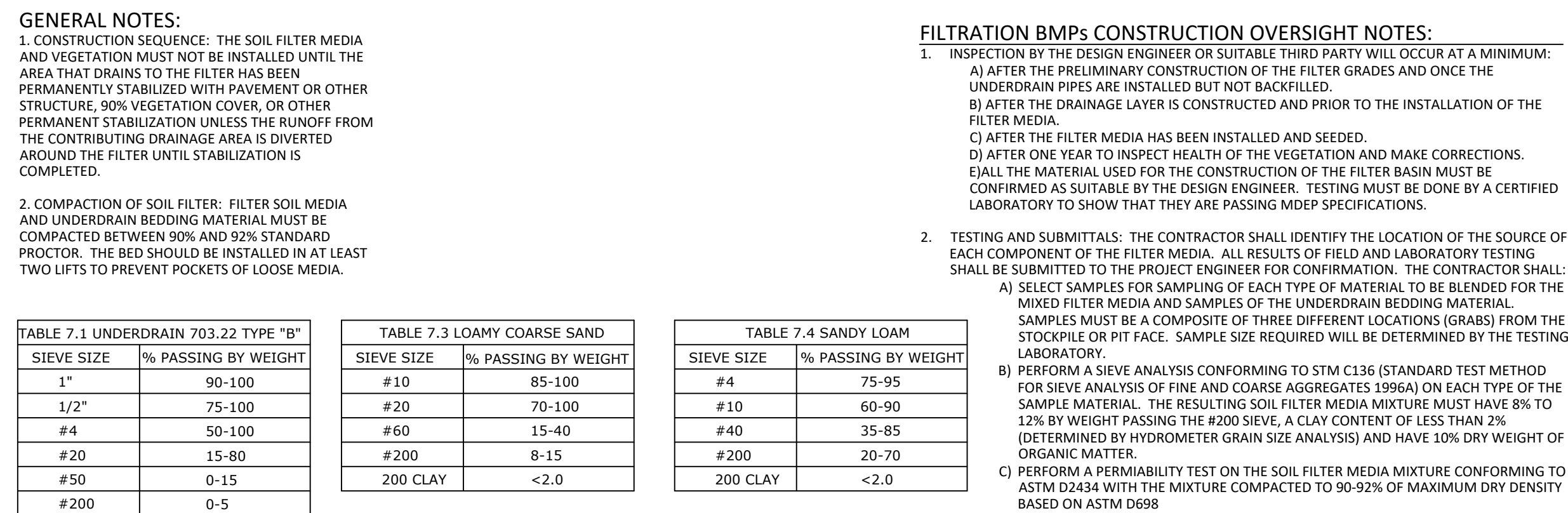
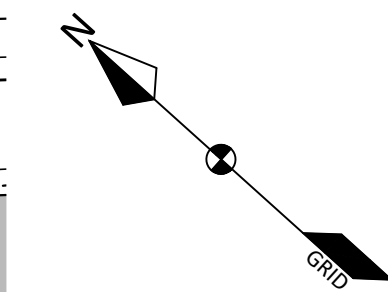
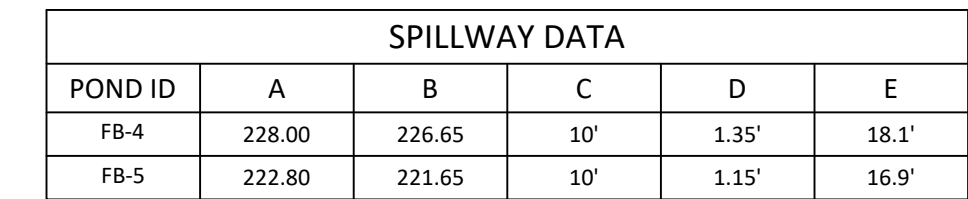
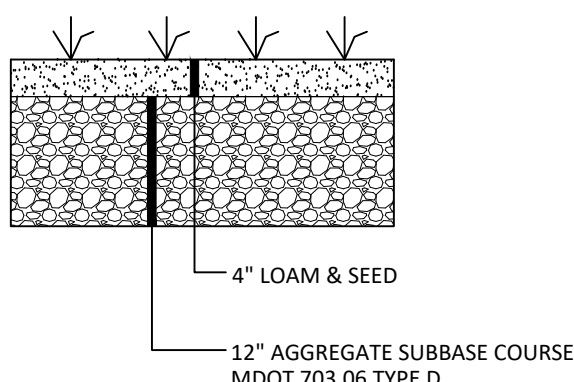
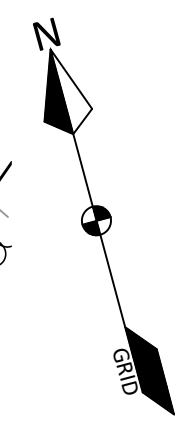
17001
JOB NUMBER:

AS NOTED
SCALE:

11-5-2018
DATE:

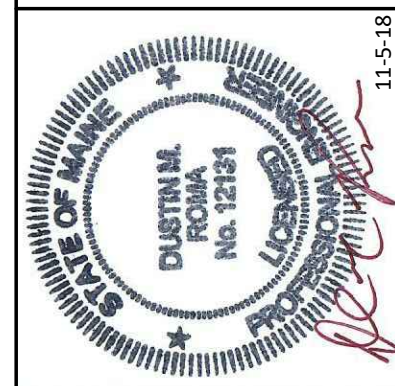
SHEET 8 OF 11

SP-1



SIEVE SIZE	% PASSING BY WEIGHT
#10	85-100
#20	70-100
#60	15-40
#200	8-15
200 CLAY	<2.0

SIEVE SIZE	% PASSING BY WEIGHT
#4	75-95
#10	60-90
#40	35-85
#200	20-70
200 CLAY	<2.0



DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 310 - 0506

REV	DATE	BY	DESCRIPTION
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STORMWATER POND PLAN

HIGHLAND WOODS SUBDIVISION
HIGHLAND CLIFF ROAD
WINDHAM, MAINE

FOR:
MTR DEVELOPMENT, LLC.
P.O. BOX 1028

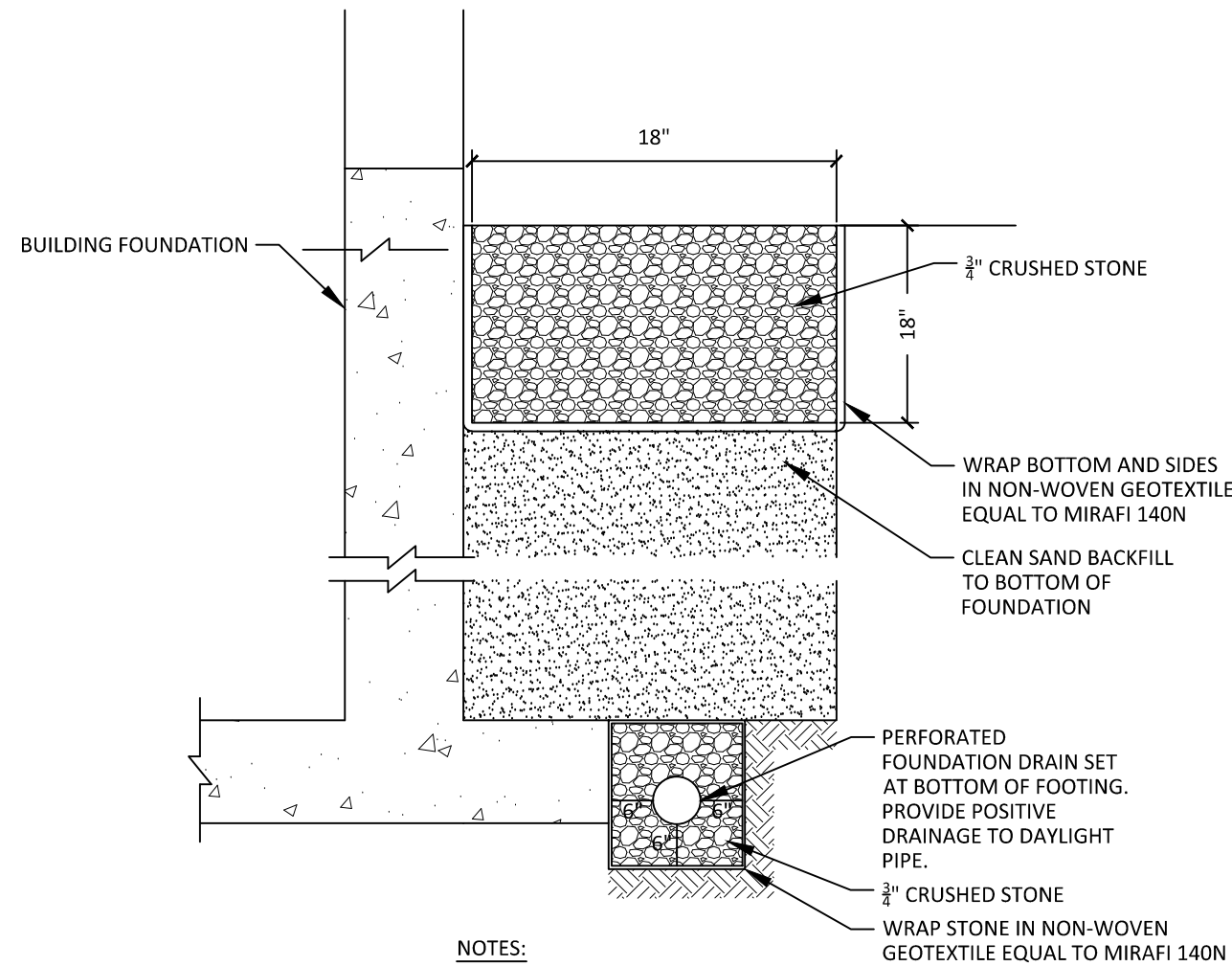
17001
JOB NUMBER:

AS NOTED
SCALE:

11-5-2018
DATE:

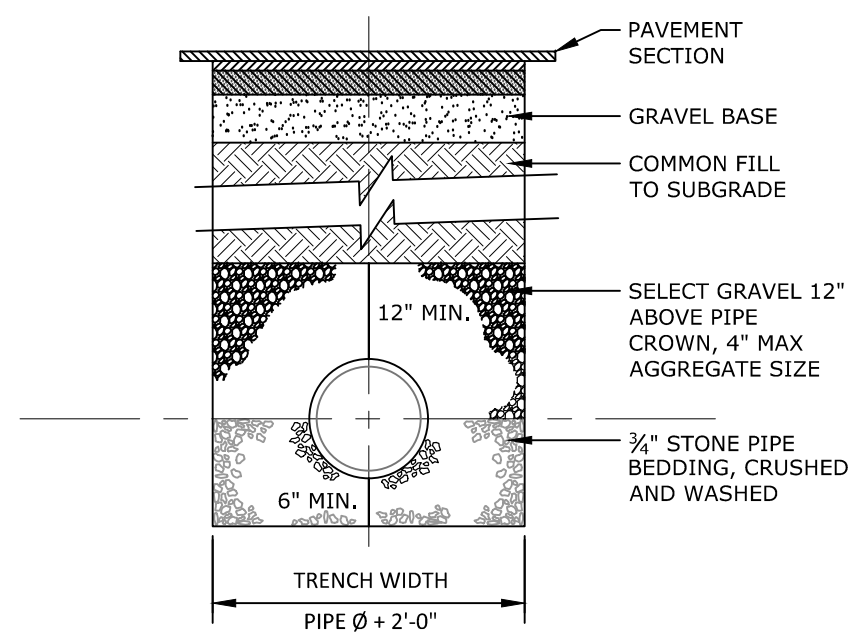
SHEET 9 OF 11

SP-2

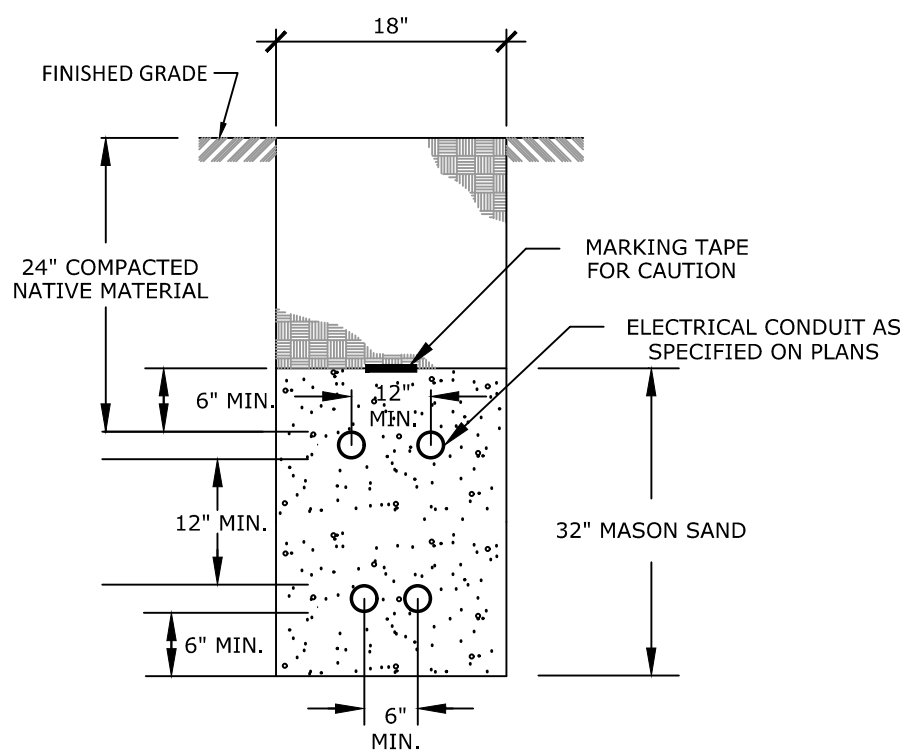


NOTES:
1. ALL NEW BUILDINGS REQUIRE ROOF DRIP EDGES

ROOF DRIP EDGE
NOT TO SCALE

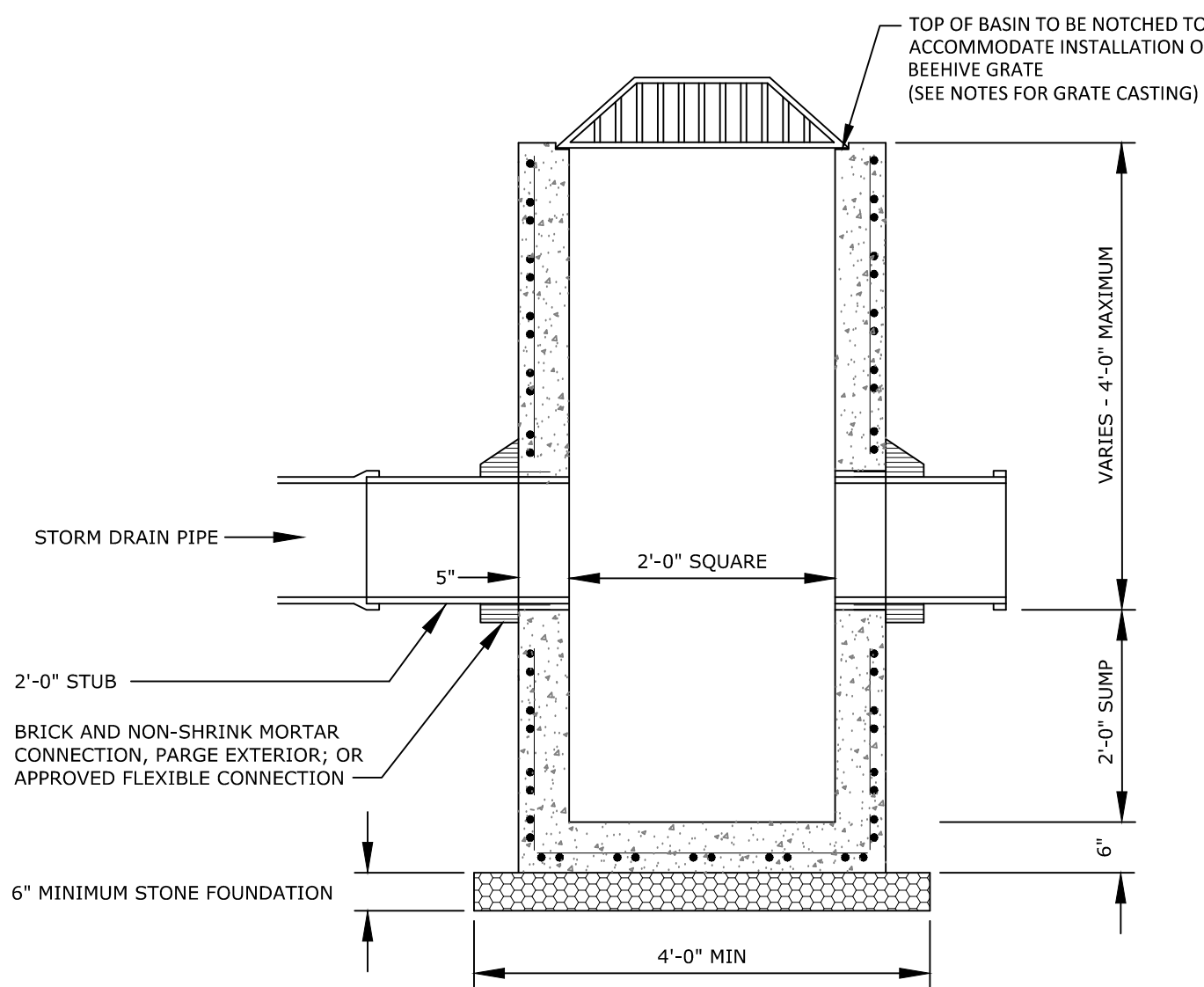


TYPICAL TRENCH SECTION
NOT TO SCALE



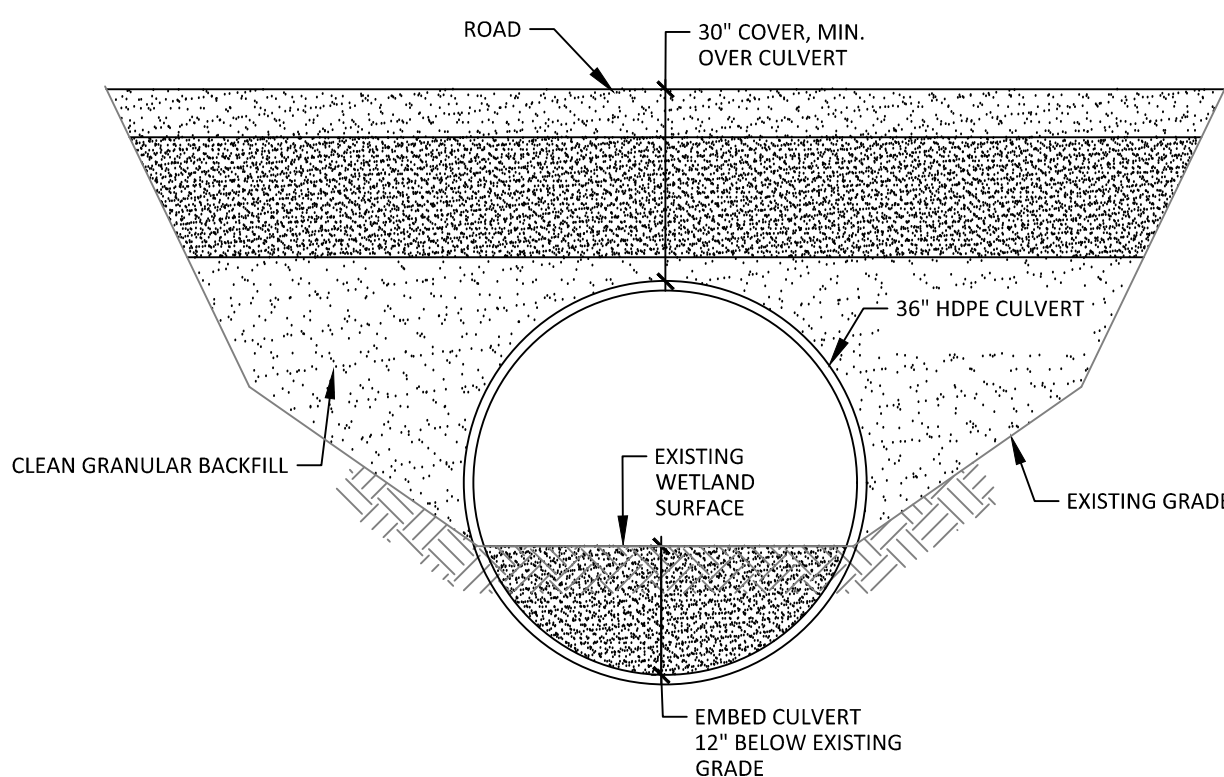
TRENCH DETAIL - ELECTRICAL CONDUIT
NOT TO SCALE

- NOTES:
- ALL CONDUITS SHALL BE 4" DIA. PVC SCH 40 EXCEPT FOR ROAD CROSSINGS SHALL BE PVC SCH 80
 - INSTALLATION SHOULD NOT ALLOW THE INTER-TWINING OF CABLES.
 - BEDDING AND BACKFILL SHALL BE FREE OF ROOTS, STUMPS AND OTHER DEBRIS.
 - COMMUNICATION CABLE AND POWER CABLE SHALL HAVE NO LESS THAN 12 INCHES OF RADIAL SEPARATION.

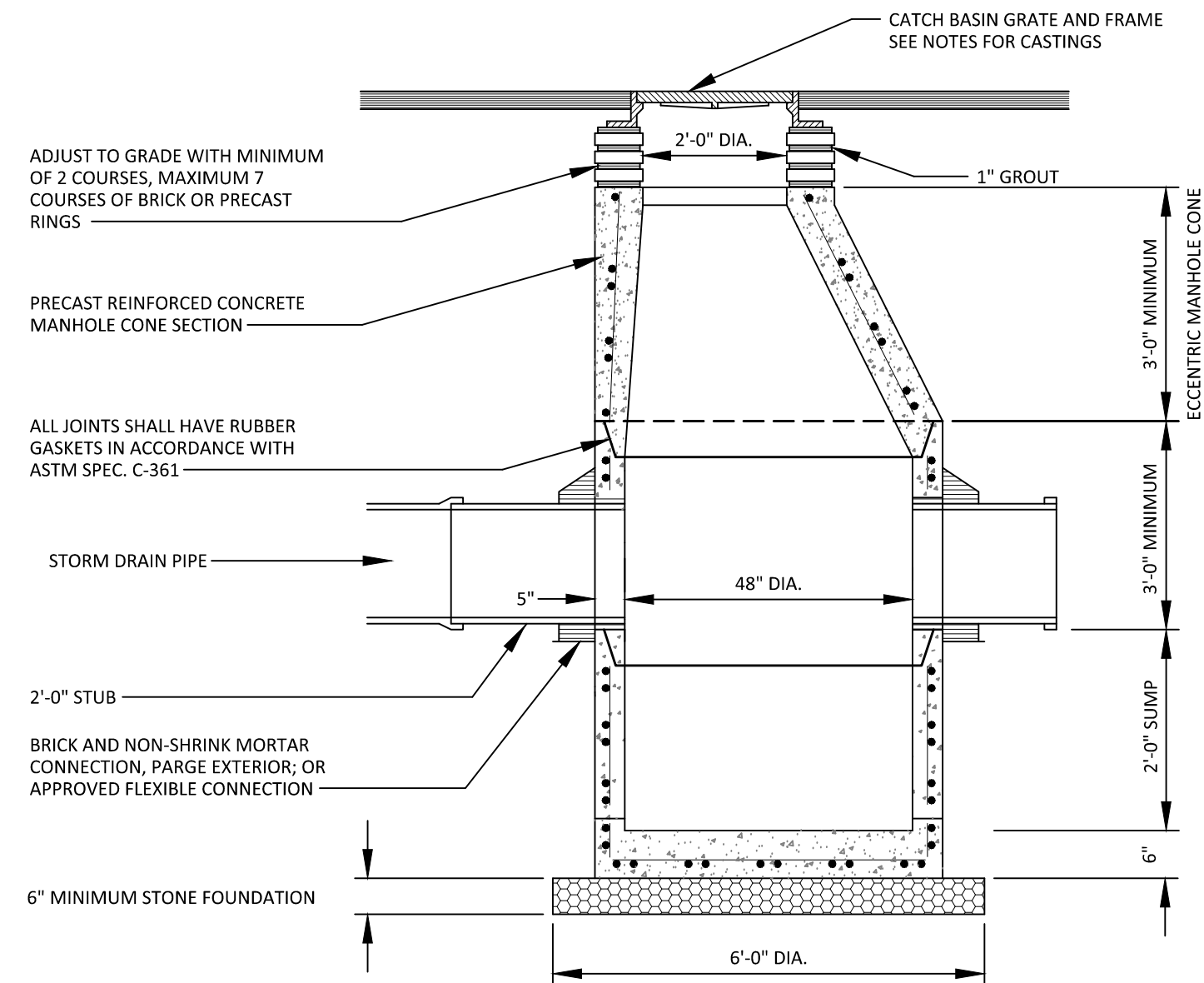


- NOTES:
- CAST IRON GRATE SHALL BE EQUAL TO NEENAH FOUNDRY, PRODUCT NO. R-4345, BEEHIVE LIGHT DUTY GRATE, OR APPROVED EQUIVALENT.
 - SUBMIT SHOP DRAWINGS AND CASTING SPECIFICATIONS TO ENGINEER FOR APPROVAL.

PRECAST CONCRETE CATCH BASIN
24"x24" TYPE F
NOT TO SCALE

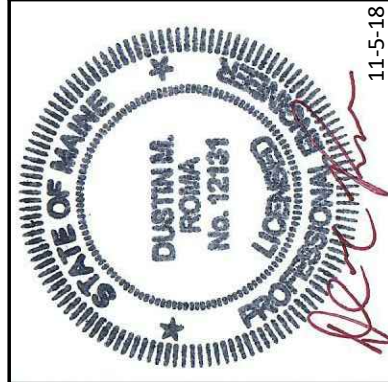


WETLAND CROSSING SECTION
NOT TO SCALE



- NOTES:
- LARGER DIAMETER STRUCTURES MAY BE REQUIRED DUE TO SIZE OR GEOMETRY OF PIPE CONNECTIONS AT MANHOLE. WALL THICKNESS TO INCREASE BY 1" FOR EACH 1'-0" DIA. INCREASE. PROVIDE SHOP DRAWINGS.
 - DRAINAGE STRUCTURES TO BE DESIGNED FOR H-20 LOADING.
 - CAST IRON GRATES SHALL BE EQUAL TO EAST JORDAN IRON WORKS, PRODUCT NO. 00552052807, HEAVY DUTY CASCADE GRATE. SUBMIT CATALOG SHEETS TO ENGINEER FOR APPROVAL.
 - ALTERNATE CURB-INLET GRATE SHALL BE INSTALLED WHERE INDICATED ON PLANS. FOR CURB INLET GRATES, CASTING SHALL BE EQUAL TO NEENAH R-3303.

PRECAST CONCRETE CATCH BASIN
48" DIA. DRAINAGE STRUCTURE
NOT TO SCALE

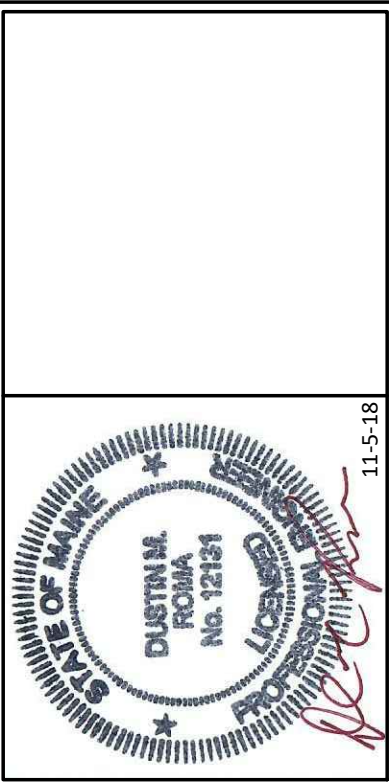
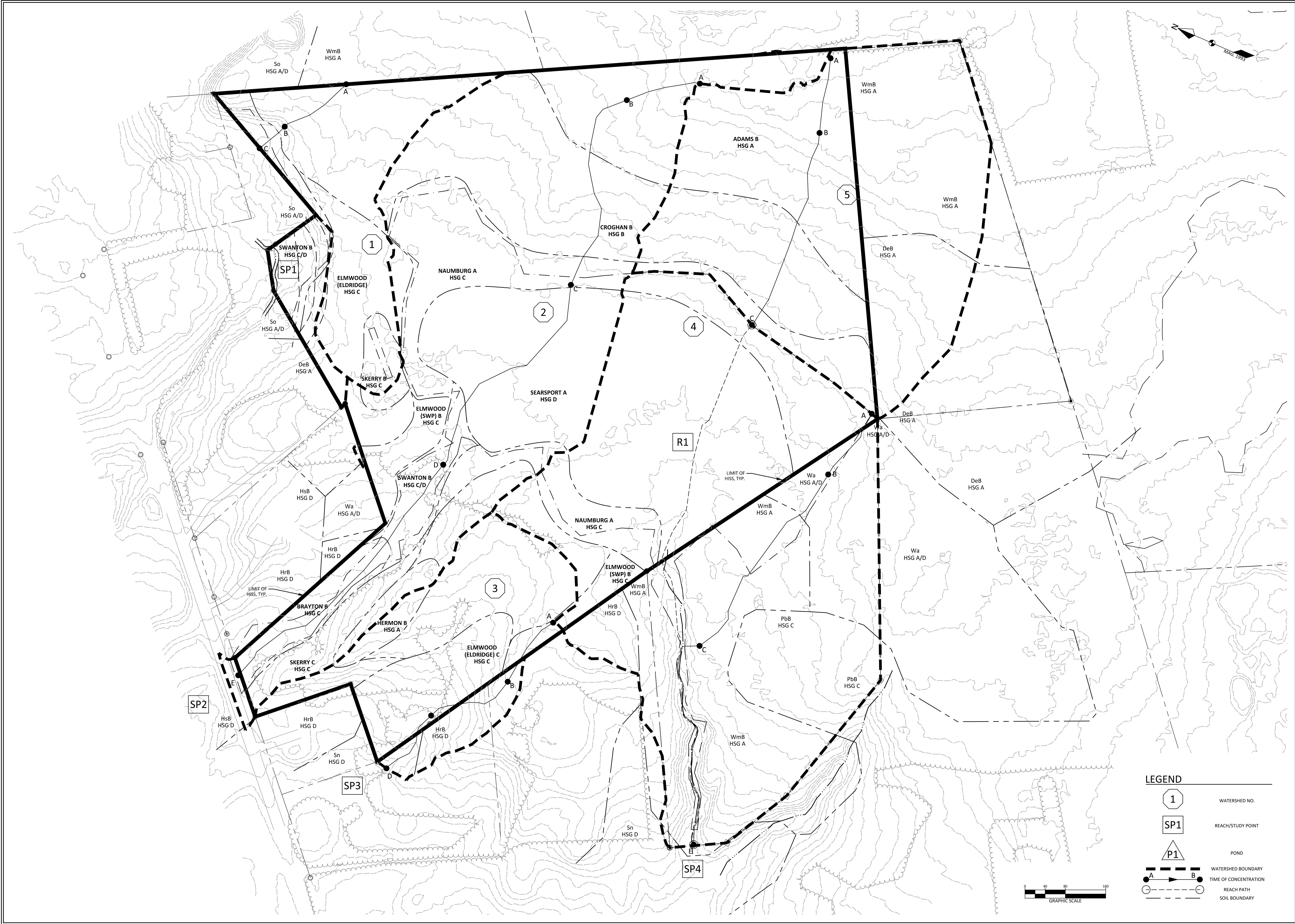


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DETAILS	
HIGHLAND WOODS SUBDIVISION	
HIGHLAND CLIFF ROAD	
WINDHAM, MAINE	
FOR:	
MTR DEVELOPMENT, LLC.	
P.O. BOX 1028	
WESTBROOK, MAINE 04098	

17001
JOB NUMBER:
AS NOTED
SCALE:
11-5-2018
DATE:
SHEET 11 OF 11
D-2

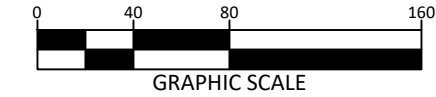
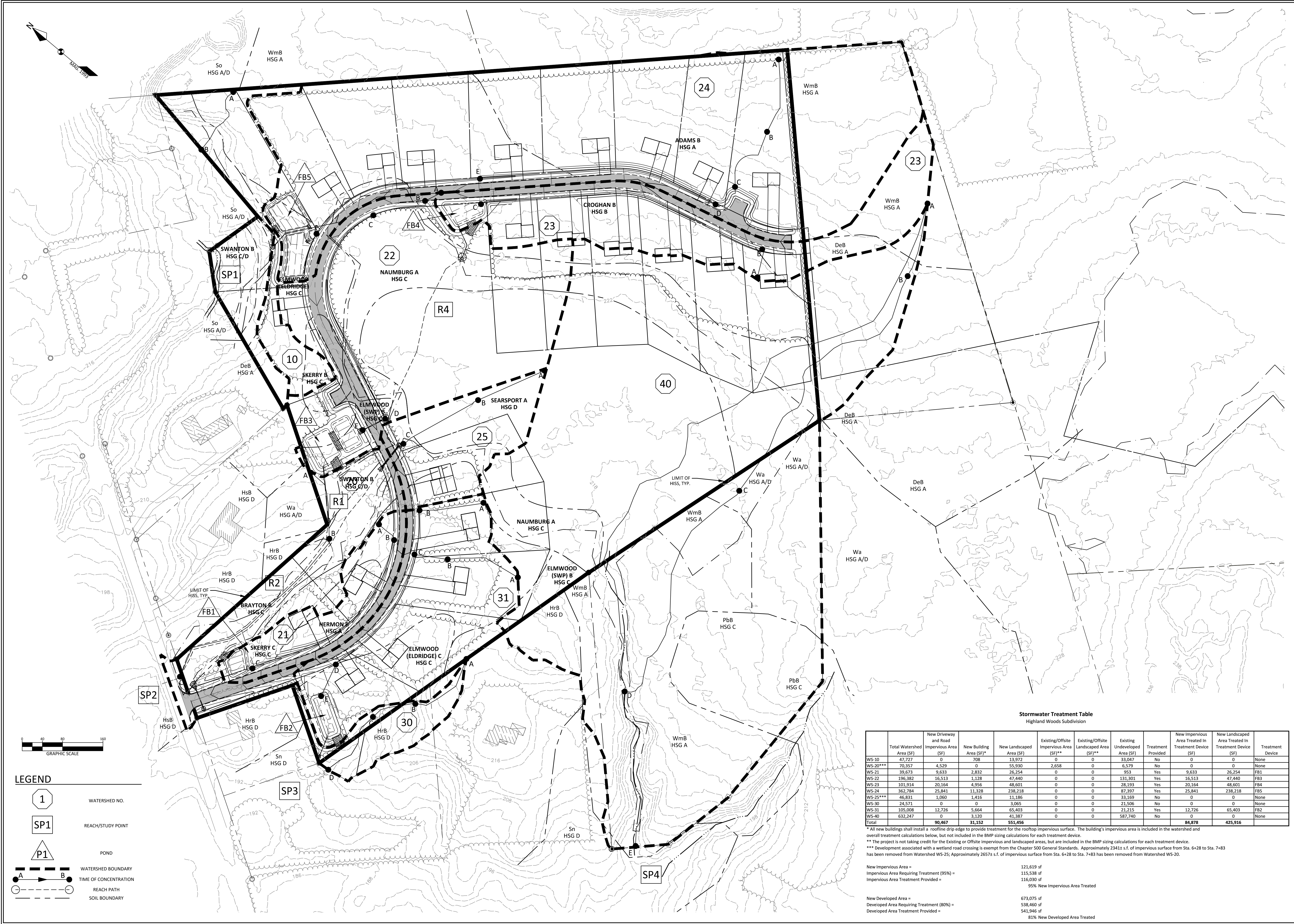


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REV.	DATE	BY	DESCRIPTION
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PRE-DEVELOPMENT WATERSHED MAP
HIGHLAND WOODS SUBDIVISION
HIGHLAND CLIFF ROAD
WINDHAM, MAINE
FOR: MTR DEVELOPMENT, LLC.
P.O. BOX 103
WESTBROOK, ME 04098

17001
JOB NUMBER:
1" = 80'
SCALE:
11-5-2018
DATE:
SHEET 1 OF 2
SWP-1



LEGEND

- 1 WATERSHED NO.
- SP1 REACH/STUDY POINT
- P1 POND
- WATERSHED BOUNDARY
- TIME OF CONCENTRATION
- REACH PATH
- SOIL BOUNDARY

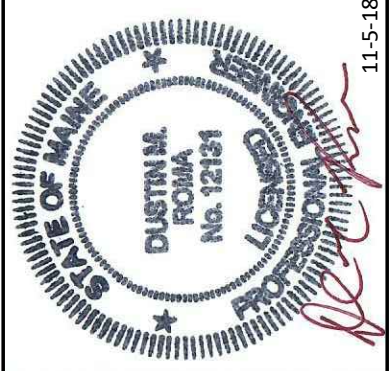
Stormwater Treatment Table
Highland Woods Subdivision

	Total Watershed Area (SF)	New Driveway and Road Impervious Area (SF)	New Building Area (SF)*	New Landscaped Area (SF)	Existing/Offsite Impervious Area (SF)**	Existing/Offsite Landscaped Area (SF)**	Existing Undeveloped Area (SF)	Treatment Provided	New Impervious Area Treated In Treatment Device (SF)	New Landscaped Area Treated In Treatment Device (SF)	Treatment Device
WS-10	47,727	0	708	13,972	0	0	33,047	No	0	0	None
WS-20***	70,357	4,575	0	55,930	2,658	0	6,579	No	0	0	None
WS-21	39,673	9,633	2,832	26,254	0	0	953	Yes	9,633	26,254	FB1
WS-22	196,382	16,513	1,128	47,440	0	0	131,301	Yes	16,513	47,440	FB3
WS-23	101,914	20,164	4,956	48,601	0	0	28,193	Yes	20,164	48,601	FB4
WS-24	362,784	25,841	11,328	238,218	0	0	87,397	Yes	25,841	238,218	FB5
WS-25***	46,831	1,060	1,416	11,186	0	0	33,169	No	0	0	None
WS-30	24,571	0	0	3,065	0	0	21,506	No	0	0	None
WS-31	105,008	12,726	5,664	65,403	0	0	21,215	Yes	12,726	65,403	FB2
WS-40	632,247	0	3,120	41,387	0	0	587,740	No	0	0	None
Total		90,467	31,152	551,456					84,878	425,916	

* All new buildings shall install a rooftop drip edge to provide treatment for the rooftop impervious surface. The building's impervious area is included in the watershed and overall treatment calculations below, but not included in the BMP sizing calculations for each treatment device.
** The project is not taking credit for the Existing or Offsite impervious and landscaped areas, but are included in the BMP sizing calculations for each treatment device.
*** Development associated with a wetland road crossing is exempt from the Chapter 500 General Standards. Approximately 23412 s.f. of impervious surface from Sta. 6+28 to Sta. 7+83 has been removed from Watershed WS-25; Approximately 26572 s.f. of impervious surface from Sta. 6+28 to Sta. 7+83 has been removed from Watershed WS-20.

New Impervious Area = 121,619 sf
Impervious Area Requiring Treatment (95%) = 115,538 sf
Impervious Area Treatment Provided = 116,030 sf
95% New Impervious Area Treated

New Developed Area = 673,075 sf
Developed Area Requiring Treatment (80%) = 538,460 sf
Developed Area Treatment Provided = 541,946 sf
81% New Developed Area Treated



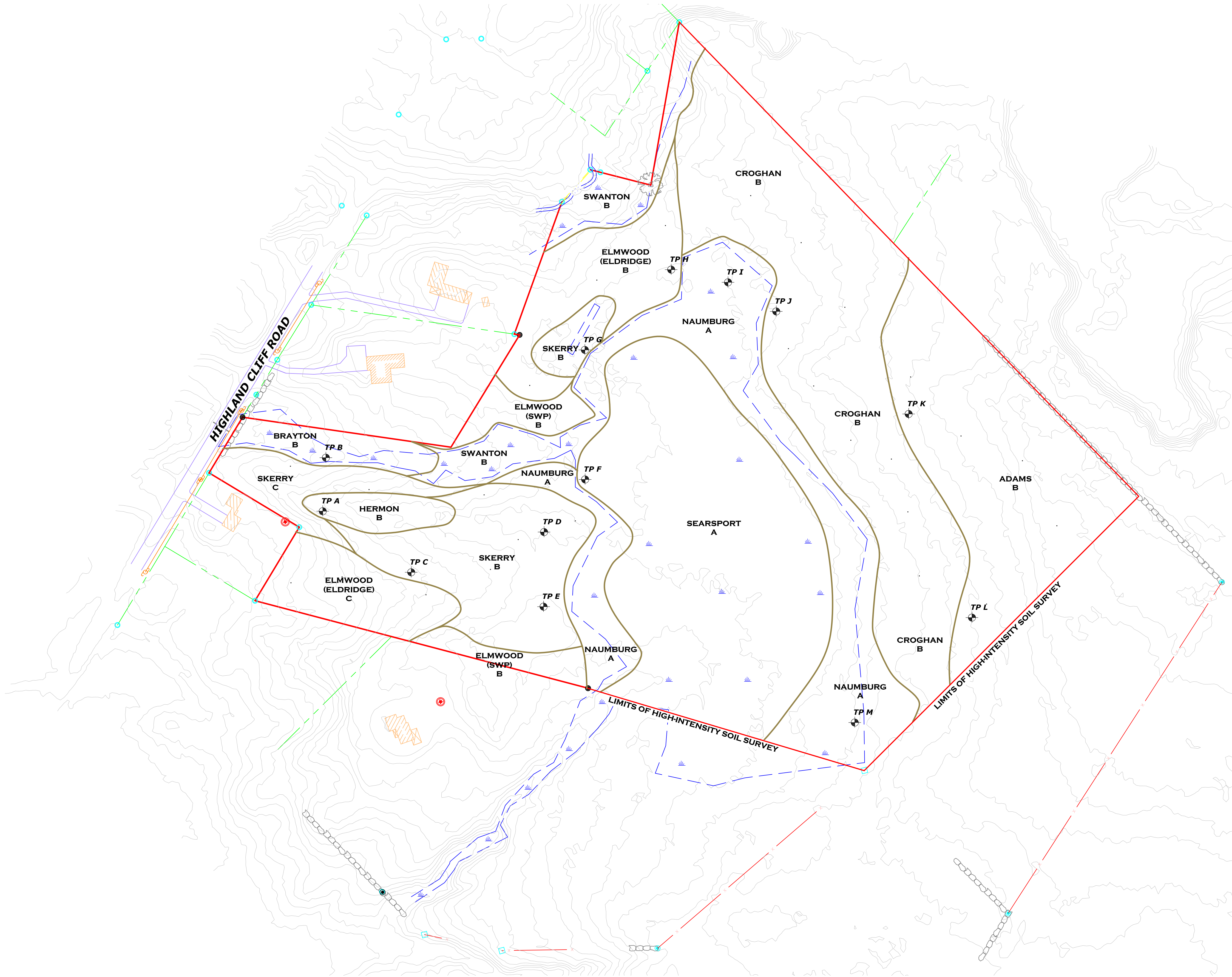
DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 310-0506

REV.	DATE	BY	DESCRIPTION
A	6-1-18	DMR	ISSUED FOR PRELIMINARY SUBDIVISION REVIEW
B	11-5-18	DMR	ISSUED FOR PERMIT REVIEW

POST DEVELOPMENT WATERSHED MAP

HIGHLAND WOODS SUBDIVISION
HIGHLAND CLIFF ROAD
WINDHAM, MAINE
FOR: MTR DEVELOPMENT, LLC.
P.O. BOX 103
WESTBROOK, ME 04098

17001
JOB NUMBER:
1" = 80'
SCALE:
11-5-2018
DATE:
SHEET 2 OF 2
SWP-2



SOILS MAP LEGEND:

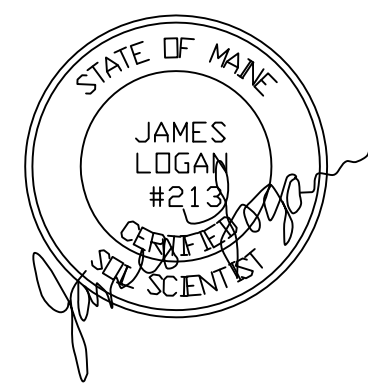
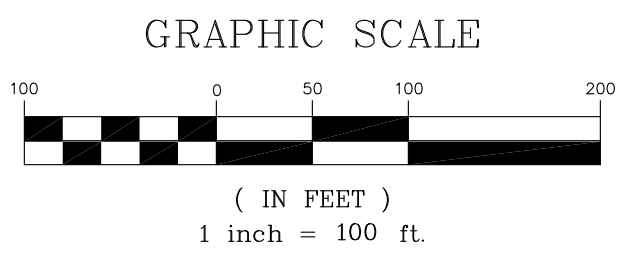
- SOIL TEST PIT (LOCATED BY SUBMETER GPS)
- SOIL BOUNDARY LINE
- LIMITS OF INVESTIGATION
- WETLAND AREA
- STREAM

SLOPE DESIGNATION

- A 0 - 3%
- B 3 - 8%
- C 8 - 20%
- D 20%+

NOTE: SEE ACCOMPANYING SOIL NARRATIVE REPORT, DATED OCTOBER, 2018

THE ACCOMPANYING SOILS SURVEY WAS DONE IN ACCORDANCE WITH THE STANDARDS ADOPTED BY THE MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS, FEBRUARY 1995, AS AMENDED.



**CLASS A HIGH-INTENSITY
SOIL SURVEY
PREPARED FOR
HIGHLAND WOODS
SUBDIVISION
HIGHLAND CLIFF ROAD
(N/F WILSON)
WINDHAM, MAINE**

**LONGVIEW
PARTNERS, LLC**

ENVIRONMENTAL PERMITTING SPECIALISTS

DRAFT: 80 SCALE: 1" = 100' CHECKED: JL PLAN DATE: 10-25-18