

SHEET INDEX:

1. SV-100: EXISTING CONDITIONS PLAN
 2. SV-100: EXISTING CONDITIONS PLAN- EXTENDED VIEW
 3. C-001: DEMO & EROSION CONTROL PLAN
 4. C-100: SITE PLAN
 5. C-101: PROPOSED UTILITY AND GRADING PLAN
 6. C-101A: PROPOSED UTILITY AND GRADING PLAN - DETAIL VIEW
 7. C-102: PROPOSED STORAGE BUILDING DETAIL VIEWS
 8. C-103: DETAILS AND NOTES
 9. C-104: DETAILS AND NOTES
 10. C-105: DETAILS AND NOTES
 11. C-106: DETAILS AND NOTES
 12. C-107: DETAILS AND NOTES
 13. PRE - DA
 14. POST - DA
 15. A100- PROPOSED STORAGE BUILDING LIFE SAFETY PLAN
- DETAIL VIEWS & NOTES
16. S-100 - FOUNDATION PLAN - GENERAL NOTES
 17. S-101 - FOUNDATION PLAN
 18. S-102 - FOUNDATION PLAN - SECTIONS
 19. M-100 - MECHANICAL SERIES PENDING FROM EDS (100% SUBMITTAL)
 20. M-101 - MECHANICAL SERIES PENDING FROM GERRISH (100% SUBMITTAL)
 21. L-1 - LANDSCAPE SERIES PENDING FROM GERRISH (100% SUBMITTAL)

NOTE: A, S, M, & L SERIES NOT INCLUDED IN RIDEM PERMIT SET

RIARNG MIDDLETOWN ARMORY

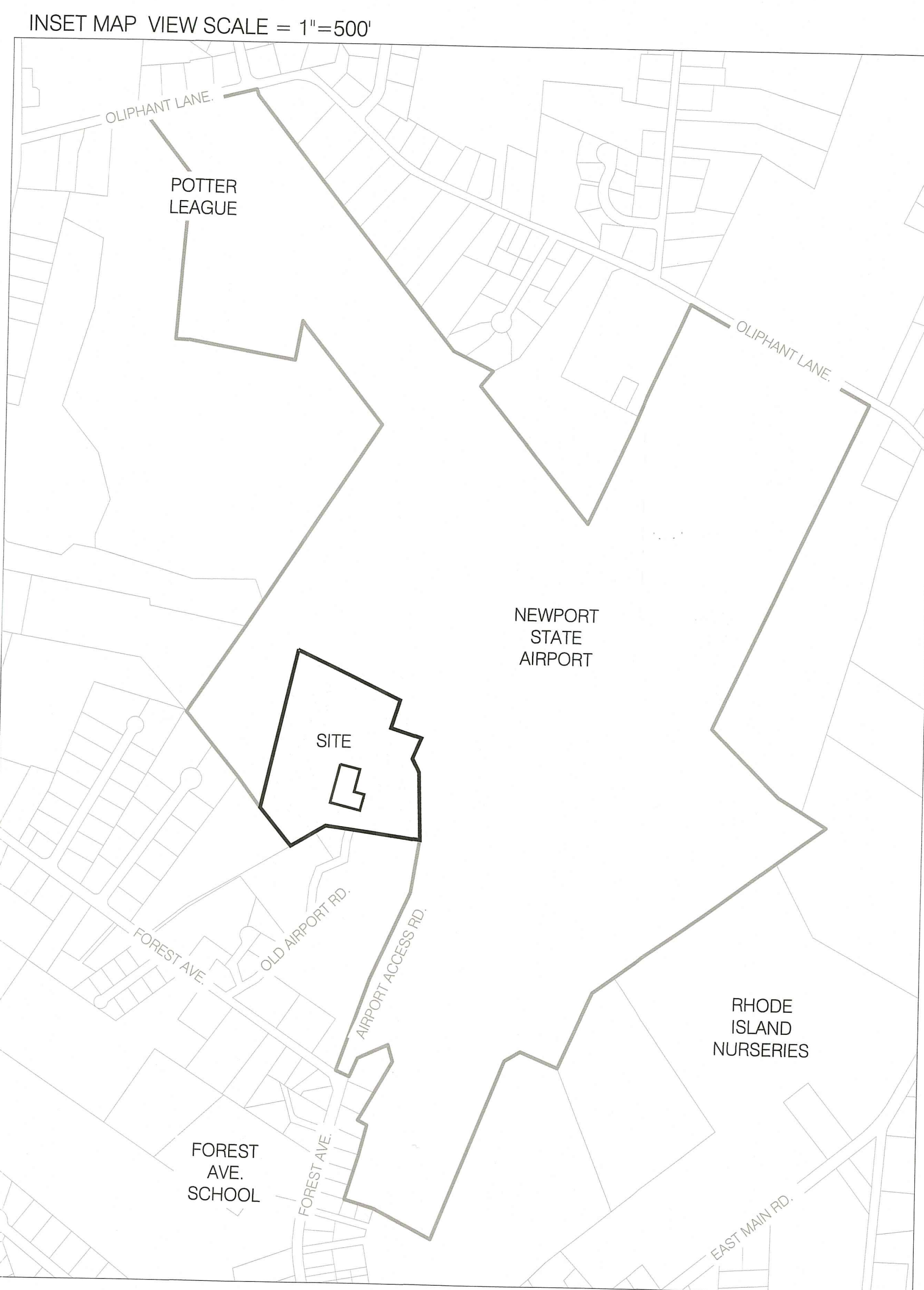
COVER SHEET
 PLAN SET - 90% SUBMISSION SET
 APPLICANT:

RHODE ISLAND ARMY NATIONAL GUARD

PREPARED BY:
 NARRAGANSETT ENGINEERING INC.

DATE: 6-27-2022

REV.1 8/29/22 PER RIDEM COMMENTS, MISC SITE EDITS



RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 FRESHWATER WETLANDS PROGRAM
 APPROVED WITH CONDITIONS AS
 SPECIFIED IN THE LETTER OF APPROVAL
 DATED: NOV 02 2022 FILE #: 22-0320
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Nancy L. Freeman

DEED RESEARCH										
CLIENT: RHODE ISLAND ARMY NATIONAL GUARD										
PROJECT # 202112 TOWN OF MIDDLETOWN										
NO.	PLAT	LOT	BOOK	PAGE	OWNER OF RECORD	DATE	8/18/2020	DEED	OTHER	DATE FILED
1	112	24A	66	543	STATE OF RHODE ISLAND & RI AIRPORT CORP			X		
2	112	1	1125	256	MCDONALD'S REAL ESTATE COMPANY, C/O JOHN PINCKNEY			X		
3	112	2	932	111	FREEDOM HOUSING CORP. C/O PHOENIX PROPERTY MGMT			X		
4	112	2A	1590	273	1397 WMR PROPERTIES LLC			X		
5	112	3	348	195	D E FOODS INC			X		
6	112	4	831	162	JALARAM VANI LLC			X		
7	112	5	1026	22	NEWPORT PROPERTIES LLC			X		
8	112	24	1478	68	RIMI FOREST MHP LLC			X		
9	112	24B	260	4	FRAZIER WALTER, JR			X		
10	112	25	344	67	MEDEIROS WILLIAM C JR & AMELIA K			X		
11	112	25A	316	308	DUFFY ROBERT J & ROBERTA E			X		
12	112	14	1446	235	MOR ENTERPRISES LLC			X		
13	112	17	313	22	FULLER KIMBERLY B			X		
14	112	6C	1553	295	BURNLEY TYLER & ANNA			X		
15	112	33	1270	175	SAMJUL ENTERPRISES LLC			X		
16	112	35	253	13	LACERDA HENRY A JR			X		
17	112	36	380	189	COOK JAY C & MAUREEN M			X		
18	112	49	1549	135	CHEN YUN			X		
19	112	50	94	507	MEDEIROS WILLIAM C JR & AMELIA K			X		
20	112	707	142	180	RK MIDDLETOWN VILLAGE LLC C/O RK CENTERS			X		
21	112	708	689	232	CRYSTAL SPRING WATER COMPANY			X		
22	112	64	1540	6	AUSTIN HOLDINGS CORP			X		
23	112	83	1080	30	SEAL ROCK LLC			X		
24	112	84	1427	158	SMITH TIMOTHY			X		
25	112	85	571	253	CUNNINGHAM KIERAN G & SHARON L			X		
26	112	86	1318	170	CUNNINGHAM KIERAN & SHARON			X		
27	112	505	687	51	BRENNAN REALTY LLC NO.7			X		
28	112	510	1454	236	GUNHA TERESA M			X		
29	112	603	1278	65	ANTHONY RAYMOND JOSEPH			X		
30	112	604	1386	258	SILVIA RICHARD B			X		
31	118	13	489	39	VANBRU LIMITED PARTNERSHIP FOR REALTY C/O RHODE ISLAND NURSERIES			X		
32	118	15	489	39	VANBRU LIMITED PARTNERSHIP FOR REALTY C/O RHODE ISLAND NURSERIES			X		
33	118	18	489	39	VANBRU LIMITED PARTNERSHIP FOR REALTY C/O RHODE ISLAND NURSERIES			X		
34	113	85	1225	177	VANBRU LIMITED PARTNERSHIP FOR REALTY C/O RHODE ISLAND NURSERIES DUGAN KEVIN J			X		
35	113	122	483	63	GREENWOOD GAIL A & HENRY W MOTT IV			X		
36	113	125	1333	248	RIPA LLOYD V JR & SARAH R			X		
37	113	126	491	172	RIPA LLOYD V JR & SARAH ROY			X		
38	113	127	431	174	RIPA LLOYD V JR & SARAH ROY			X		
39	113	128	1528	85	HORGAN SHALIN M & EMILY A MCCAFFREY			X		
40	113	129	1173	105	ROMAN EDUARDO GARCIA			X		
41	113	153	1574	194	BREEN RICHARD R ET AL			X		

FEMA FLOOD MAP PER NFHL, ZONE X



ZONING DIMENSIONAL TABLE PER TOWN OF MIDDLETOWN GIS- ZONE LI

ZONING DISTRICT DIMENSIONAL REGULATIONS										
Zoning District and Use	Minimum Lot Size		Maximum Percentage of Lot to be Occupied	Maximum Height of Building		Minimum Yard Dimension			Accessory Buildings Minimum Distance in Feet to	
	Area (S.F.)	Width/Frontage (Ft.)		Principal and Accessory Buildings	Principal (Ft.)	Accessory (Ft.)	Front (Ft.)	Side (Ft.)	Rear (Ft.)	Side Lot Lines
LI Industrial District										
Any permitted use	40,000	150	35%	40	20	10	35	40	25	10



CERTIFICATION
 CERTIFICATION THIS SURVEY HAS BEEN CONDUCTED AND THE PLAN HAS BEEN PREPARED PURSUANT TO 435-RICR00-00-1.9 OF THE RULES AND REGULATIONS ADOPTED BY THE RHODE ISLAND STATE BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS ON DECEMBER 31, 2020 (EFFECTIVE DATE), AS FOLLOWS:
 CLASS I
 CLASS III (PHYSICAL FEATURES) TOPOGRAPHIC SURVEY 1-2

THE PURPOSE FOR THE CONDUCT OF THE SURVEY AND FOR THE PREPARATION OF THE PLAN IS AS FOLLOWS: FOR THE PREPARATION OF A PLAN SET FOR USE IN RIDEM PERMITTING



FOR SURVEY ELEMENTS ONLY
 NEAL HINGORANY REG. 2515
 COA: A38

Drawn by LD
 Checked by NKH & EC

Revised on 8/29/22
 - MISC. SITE EDITS PER RIARNG
 - RESPONSE TO RIDEM COMMENTS
 FOR P.E. ELEMENTS ONLY



Project
 RI ARMY NATIONAL GUARD



MIDDLETOWN ARMORY SITE IMPROVEMENTS

106 AIRPORT ACCESS RD
 MIDDLETOWN, RI 02842

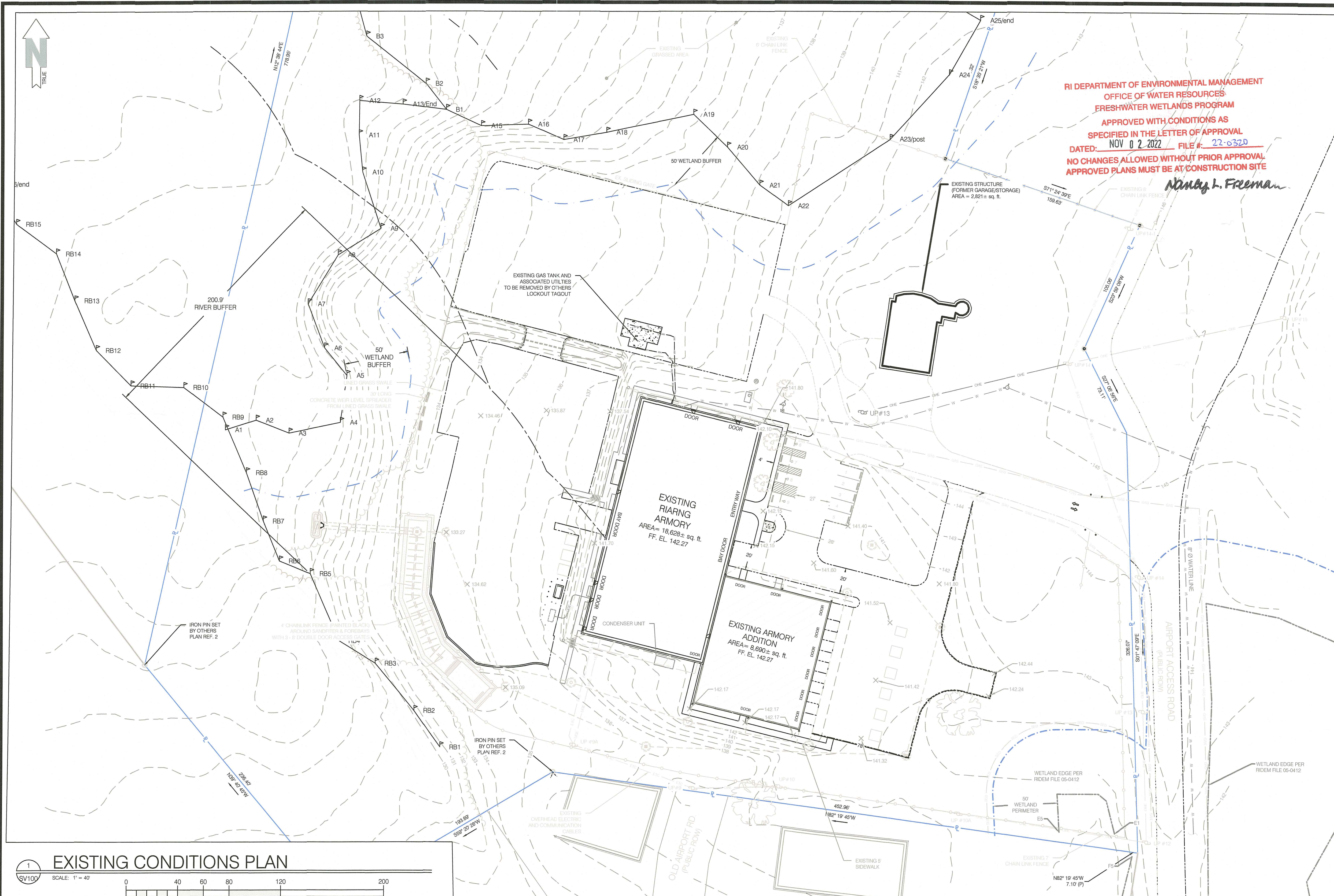
Drawing Status
 90% SET
 RI Environmental Management
 OCT 06 2022
 Office of Water Resources

Issued On:
 Sheet Contents
 COVER

Project Number: 21-0135

Drawing No.
COVER
 Sheet

I:\PROJECTS\21-0135-RIARNG-MIDDLETOWN-ARMORY\GIS\21-0135-RIARNG (SITE IMPROVEMENTS) DWG COVER.dwg - 9/16/2022 Neal Hingorany



PLAN REFERENCE:

- "ARMORY FOR THE ARMY NATIONAL GUARD" NEWPORT STATE AIRPORT, MIDDLETOWN, CIVIL AS - BUILT DRAWINGS SHEETS C-1 TO C-15, PREPARED BY DAVID PRESBY ARCHITECT, DATED 3/30/1984
- "EXHIBIT A" PREPARED FOR THE RHODE ISLAND NATIONAL GUARD MILITARY STAFF OFFICE OF THE ADJUTANT GENERAL, PREPARED BY CROSSMAN ENGINEERING, DATED MARCH, 2019.
- NOTE: PROPERTY LINE OWNERSHIP INFORMATION PROVIDED BY RIANG
- PLAN SET PREPARED BY NARRAGANSETT ENGINEERING INC. * READINESS CENTER ADDITION* DATED 6-12-21

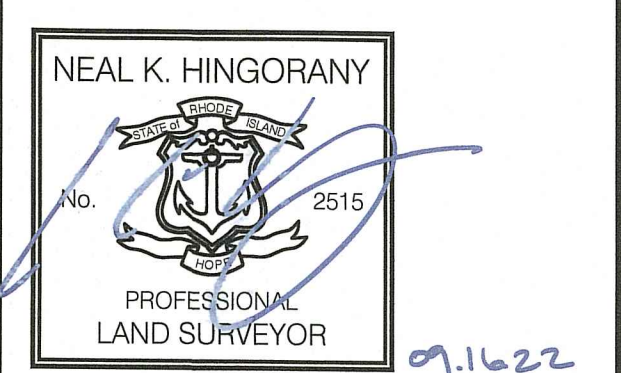
SITE NOTES:

- ZONING INFORMATION SHOWN FROM RECORD INFORMATION, MAPS AND/OR GIS. ZONING DATA MAY VARY BASED ON USE, LOT SIZE, ORIENTATION AND OTHER FACTORS AND IS SHOWN FOR REFERENCE INFORMATION ONLY.
- ZONING DATA MUST BE CONFIRMED WITH ZONING OFFICIAL AND/OR LEGAL COUNSEL FOR USE IN DESIGN OR PERMITTING.
- COORDINATE SYSTEM IS NAD83 / NAVD 88
- TOPOGRAPHY IS MIX OF ON GROUND SHOTS, UAV DATA AND RI SPRING 2011 LIDAR.
 - AREA OF CONCERN: UAV DERIVED POINT CLOUD WITH GPS SHOTS
 - OUTSIDE AREA OF CONCERN: SPRING 2011 LIDAR WITH GPS SHOTS
- ALL PROPOSED ITEMS MUST BE LAID OUT BY REGISTERED SURVEYOR AS NOTED.
- PLAN IS NOT AS-BUILT UTILITY PLAN.
- THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT OF PROBATE SEARCH, AND IS SUBJECT TO THE RESTRICTIONS, COVENANTS AND/OR EASEMENTS THAT MAY BE CONTAINED THEREIN. LOCATION OF SUBSURFACE MAINS, SURFACE FEATURES, AND LATERALS ARE OMITTED. CONTRACTOR TO CALL DIG SAFE AND/OR APPLICABLE UTILITY COMPANIES PRIOR TO ANY CONSTRUCTION. DIG SAFE TEL: #1-800-344-7233 (1-800-DIG-SAFE).
- WATER - SURFACE FEATURES SHOWN. UNDERGROUND SHOWN PER DIG SAFE AND PLAN REF. 1
- SEWER - SURFACE FEATURES SHOWN. UNDERGROUND SHOWN PER DIG SAFE AND PLAN REF. 1
- GAS - SURFACE FEATURES SHOWN. UNDERGROUND SHOWN PER DIG SAFE AND PLAN REF. 1
- ELECTRIC - SURFACE/OVERHEAD FEATURES SHOWN. UNDERGROUND SHOWN PER DIG SAFE
- STORM DRAIN - SURFACE FEATURES SHOWN. UNDERGROUND SHOWN PER PLAN REF. 1 AND FIELD INVESTIGATION
- NOTE: ALL SURFACE, SUBSURFACE AND OVERHEAD UTILITY FEATURES MEET QUALITY LEVEL C AS PRESCRIBED BY ASCE 38-02
- REFERENCE PREVIOUS RIDEM APPLICATION # 15-0128, 17-0015
- ABUTTING PROPERTY LINE INFORMATION SHOWN PER TOWN OF MIDDLETOWN GIS
- SITE IS LOCATED IN SURFACE WATER PROTECTION AREA
- SITE MAY BE EXEMPT FROM MUNICIPAL ZONING REQUIREMENTS DUE TO STATE OWNERSHIP
- ELEVATIONS SHOWN WITH* PER UAV DATA



Certification
 CERTIFICATION THIS SURVEY HAS BEEN CONDUCTED AND THE PLAN HAS BEEN PREPARED PURSUANT TO 435-RICR00-00-1.9 OF THE RULES AND REGULATIONS ADOPTED BY THE RHODE ISLAND STATE BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS ON DECEMBER 31, 2020 (EFFECTIVE DATE), AS FOLLOWS:
 CLASS II (PHYSICAL FEATURES) TOPOGRAPHIC SURVEY T-2

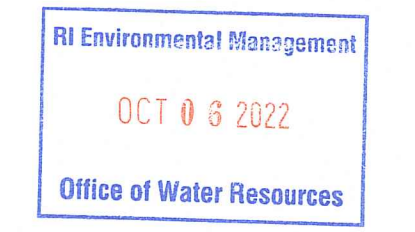
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FOR SURVEY ELEMENTS ONLY
 NEAL HINGORANY REG. 2515
 COA: A38

Drawn by LD
 Checked by NKH & EC

Revised on 8/29/22
 - MISC. SITE EDITS PER RIANG
 - RESPONSE TO RIDEM COMMENTS



Project
RI ARMY NATIONAL GUARD

MIDDLETOWN ARMORY SITE IMPROVEMENTS

106 AIRPORT ACCESS RD
 MIDDLETOWN, RI 02842

Drawing Status
90% SET

Issued On:
 Sheet Contents
EXISTING CONDITIONS PLAN

Project Number: 21-0135

Drawing No.
SV100

Sheet 1 OF 16

LEGEND	
	BRUSH LINE (APPROXIMATE)
	DIMENSION - EXISTING
	DIMENSION - PLAN / DEED
	DIMENSION - PROPOSED
	DIMENSION - SURVEY
	EDGE OF PAVEMENT - EXISTING
	EDGE OF PAVEMENT - PROPOSED
	ELECTRIC - OVERHEAD (OHE)
	ELECTRIC, TELEPHONE, CABLE (ETC)
	ELECTRIC - UNDERGROUND (UGE)
	FENCE - METAL
	FENCE - WOOD
	FLOW ARROWS
	GAS (G)
	GRADE CONTOUR - EXISTING
	GRADE CONTOUR - PROPOSED
	LIMIT OF DISTURBANCE / SEDIMENT CONTROL
	PROPERTY LINE - ABUTTING
	PROPERTY LINE - EXISTING
	SANITARY SEWER (S)
	SEDIMENT CONTROL
	SETBACKS
	STONE WALL
	STORM DRAIN (SD)
	50' WETLAND PERIMETER
	200' WETLAND PERIMETER
	VEGETATED WETLANDS
	RIVERBANK WETLANDS
	BAILEY'S BROOK
	GROUND CONTROL POINT (GCP)
	CATCH BASIN
	DRILL HOLE
	ELECTRIC BOX (ETC)
	FIRE HYDRANT
	GATE VALVE
	GRANITE BOUND, EXISTING
	LOW WATER LINE
	LIMIT OF DISTURBANCE MARKER
	MANHOLE (MH-TYPE)
	REBAR / STEEL PIPE FOUND
	SPIKE
	SPOT GRADE - EXISTING
	SPOT GRADE - PROPOSED
	STRUCTURE, EXISTING
	STRUCTURE, PROPOSED
	SURVEY MONUMENT TO BE SET
	FLOW ARROW
	TREE
	UTILITY POLE
	LIGHT POLE
	WATER SHUT OFF
	WETLAND FLAG LOCATION
	SOIL EVALUATION
	SOIL EVALUATION BY OTHERS

1 EXISTING CONDITIONS PLAN
 SCALE: 1" = 40'

NAME	RIM ELEVATION	NORTHING	EASTING	INVERT IN	INVERT IN PIPE	FROM STRUCTURE	INVERT OUT	INVERT OUT PIPE	TO STRUCTURE	NOTES
CB-1	141.88	162976.1130	386969.7230	NONE	NONE	NONE	139.24	Ø15" N-12 - 80' at 1.5% SLOPE	CB-2	
CB-2	141.46	162908.2600	387021.1000	138.04		CB-1	138.04	Ø15" N-12 - 95' at 1.5% SLOPE	CB-3	
CB-3	140.52	162810.2767	386995.3184	136.62		CB-2	136.62	Ø15" N-12 - 198' at 1.5% SLOPE	CB-4	NORTHING & EASTING IS CENTER OF STRUCTURE / CENTER OF DUAL GRATES
CB-4	137.00	162816.8233	386792.4797	133.55		CB-3	133.55	Ø18" N-12 - 112' at 2.0% SLOPE	CB-5	
CB-5	133.90	162862.6871	386683.0358	131.31		CB-4	132.10 (1) 132.10 (2)	Ø18" N-12 - 123' at 2.6% SLOPE (1) Ø6" SCHEDULE 40 PVC WEIR - 17' (2)	DMH-8 (1) FOREBAY-1 - EL 131.20 (2)	
CB-7	133.20	163033.2470	386637.1936	131.30		DMH-8	132.10	Ø6" SCHEDULE 40 PVC WEIR - 18'	FOREBAY-2 at ELEVATION 131.20	
DMH-1 (EX)	139.46	162899.1020	386727.9595	136.65 (1) 135.75 (2)		DOWNSPOUTS (1) DOWNSPOUTS (2)	136.05	Ø12" PVC	DMH-2 (EX)	EXISTING DRAINAGE MAN HOLE
DMH-2 (EX)	140.49	163095.2690	386777.6445	133.54 (1) 133.59 (2) 133.8 (3)		DOWNSPOUTS (1) DOWNSPOUTS (2) DMH-1 (3)	133.94	Ø15" PVC		EXISTING DRAINAGE MAN HOLE EXISTING DRAINAGE SWALE
DMH-3	141.54	162936.2619	386948.4786	138.54		DOWNSPOUTS	138.54	Ø12" N-12 - 116' at 2.0% SLOPE	DMH-4	
DMH-4	142.08	162817.8514	386919.1025	136.14		DOWNSPOUTS	136.14	Ø12" N-12 - 90' at 2.0% SLOPE	DMH-5	
DMH-5	141.88	162835.9870	386824.7804	134.34 (1) 134.34 (2)		DMH-4 / DOWNSPOUTS (1) DOWNSPOUT (2)	134.34	Ø12" N-12 - 164' at 2.0% SLOPE	DMH-6	
DMH-6	134.80	162888.0007	386662.9330	131.00		DMH-5	131.00	Ø6" N-12 - 23' at	SANDFILTER P1 at EL 131.20	
DMH-8	134.10	162982.3068	386634.7442	127.80		DMH-8	127.70 (1) 127.70 (2)	Ø24" N-12 - 15' at 1.5% SLOPE (1) Ø18" N-12 - 45' at 4.9% SLOPE (2)	DMH-9 (1) CB-7 (2)	
DMH-9	133.9 2x2' GRATE	162983.7062	386613.7975	127.47 (1) 128.5 (2) 131.80 (3)		DMH-9 (1) UNDERDRAIN (2) NONE (3)	127.47 (24" N12)	Ø24" N-12 - 72' at 1.5% SLOPE	PLUNGE POOL / FLARED END SECTION - EL 126.50	

N:\PROJECTS\21-0135-RIANG-MIDDLETOWN ARMORY\G1\21-0135-RIANG (SITE IMPROVEMENTS).DWG SV100 - 9/16/2022 Neal Hingorany



RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 FRESHWATER WETLANDS PROGRAM
 APPROVED WITH CONDITIONS AS
 SPECIFIED IN THE LETTER OF APPROVAL
 DATED: NOV 02 2022 FILE #: 22-0370
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Nancy L. Freeman

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 NEWPORT STATE AIRPORT, MIDDLETOWN, CIVIL AS-
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 ENGINEERING INC. "READINESS CENTER ADDITION"
 DATED 6-12-21

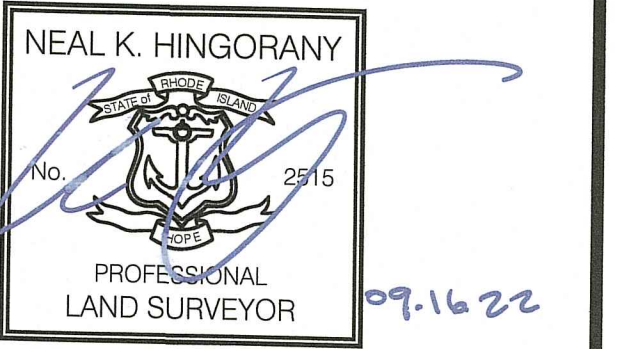
BENCHMARK NOTE:
 NEI WILL ALWAYS PROVIDE A MINIMUM OF TWO SITE BENCHMARKS. CONTRACTOR TO VERIFY ALL
 BENCHMARKS EXIST PRIOR TO CONSTRUCTION. ELEVATIONS OF ALL BENCHMARKS TO BE SHOT IN
 FIELD (WITH SUITABLE EQUIPMENT) AND DIFFERENTIAL TO BE VERIFIED, IF VERTICAL DIFFERENTIAL
 EXCEEDS 0.05 IT SHALL BE IMMEDIATELY REPORTED TO NEI. DIFFERENTIAL IN EXCESS OF 0.05
 INDICATES THAT BENCHMARKS MAY HAVE BEEN DISTURBED AND ARE NOT SUITABLE FOR USE.

UNMANNED AERIAL VEHICLE (UAV) NOTES:
 1. THIS PLAN IS BASED ON A PRIVATE UAV FLIGHT PROVIDED BY NARRAGANSETT ENGINEERING INC.
 AND OTHER REFERENCE MATERIAL AS LISTED HEREON. THE UAV FLIGHT TOOK PLACE ON
 MARCH 6th, 2020; RMS ERROR OF GROUND CONTROL POINTS (COMPUTED) = 0.211. IMAGES
 WERE TAKEN AT 150ft. ABOVE GROUND LEVEL, PIXEL SIZE IS 0.08" EXPECTED VERTICAL
 TOLERANCE (RMS ERROR, Z) = 0.04
 2. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND IS SUBJECT TO THE
 RESTRICTIONS, COVENANTS AND/OR EASEMENTS THAT MAY BE CONTAINED THEREIN.
 3. ELEVATIONS WERE COMPUTED FROM A PRIVATE UAV FLIGHT USING PHOTOGRAMMETRY
 SOFTWARE AND TESTED AGAINST FOUR GROUND CONTROL POINTS WITH AN AVERAGE
 VERTICAL ACCURACY OF .08 ft. THERE MAY BE ANOMALIES IN THE DATA AND SHOULD BE FIELD
 VERIFIED PRIOR TO CONSTRUCTION.
 4. ORTHOGRAPHY PHOTO DEVELOPED BY DATA AND PICTURES COLLECTED BY THE UAV TO
 ACCURATELY INTERPOLATE AND DEPICT THE SITE.
 5. UAV FLOWN BY FAA CERTIFIED PILOT AND WAS PROPERLY INSURED DURING FLIGHT.
 6. CLICK HERE FOR THE WEB MODEL VIEWER OF UAV DATA



Certification
 CERTIFICATION THIS SURVEY HAS BEEN CONDUCTED
 AND THE PLAN HAS BEEN PREPARED PURSUANT TO
 435-RICR00-00-1.9 OF THE RULES AND REGULATIONS
 ADOPTED BY THE RHODE ISLAND STATE BOARD OF
 REGISTRATION FOR PROFESSIONAL LAND
 SURVEYORS ON DECEMBER 31, 2020 (EFFECTIVE
 DATE), AS FOLLOWS:
 CLASS I
 CLASS III (PHYSICAL FEATURES) TOPOGRAPHIC
 SURVEY T-2

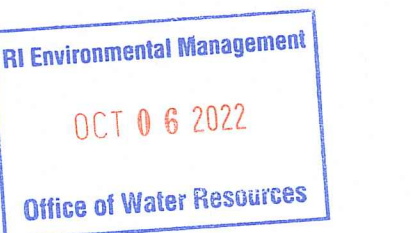
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FOR SURVEY ELEMENTS ONLY
 NEAL HINGORANY REG. 2515
 COA: A38

Drawn by LD
 Checked by NKH & EC

Revised on 8/29/22
 MISC. SITE EDITS PER RIARNG
 RESPONSE TO RIDEM COMMENTS



Project

RI ARMY
 NATIONAL GUARD



MIDDLETOWN
 ARMORY SITE
 IMPROVEMENTS

106 AIRPORT ACCESS RD
 MIDDLETOWN, RI 02842

Drawing Status
 90% SET

Issued On:

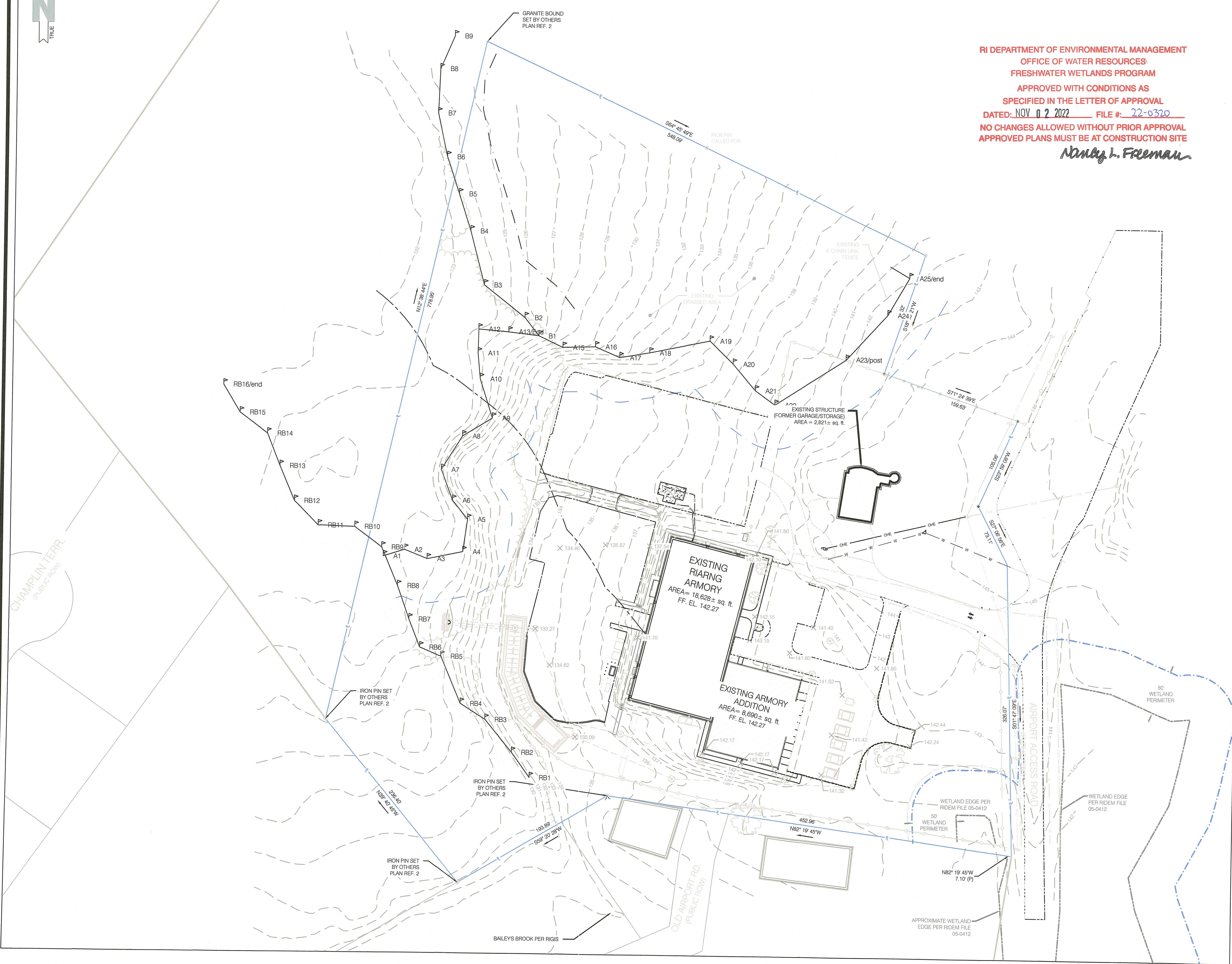
Sheet Contents
 EXISTING CONDITIONS
 PLAN

Project Number. 21-0135

Drawing No.

SV101

Sheet 2 OF 16

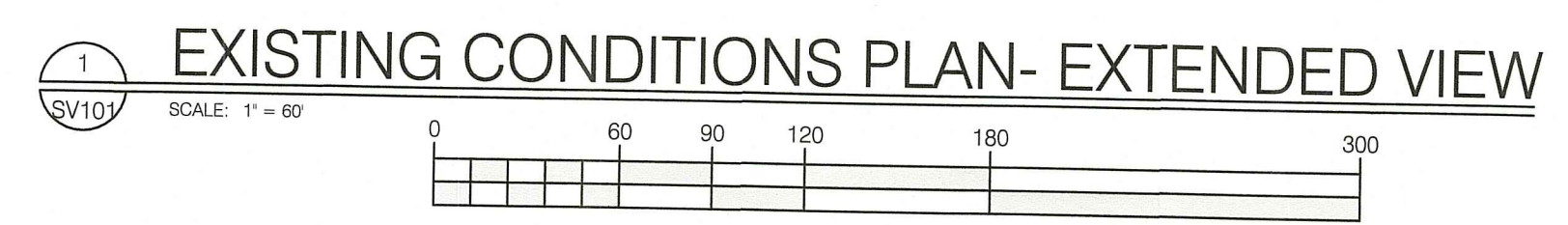


LEGEND

- BRUSH LINE (APPROXIMATE)
- 100.00' DIMENSION - EXISTING
- 100.00' (D) DIMENSION - PLAN / DEED
- 100.00' DIMENSION - PROPOSED
- 100.00' (S) DIMENSION - SURVEY
- EDGE OF PAVEMENT - EXISTING
- EDGE OF PAVEMENT - PROPOSED
- OHE ELECTRIC - OVERHEAD (OHE)
- ETC ELECTRIC, TELEPHONE, CABLE (ETC)
- UGE ELECTRIC - UNDERGROUND (UGE)
- FENCE - METAL
- FENCE - WOOD
- FLOW ARROWS
- GAS (G)
- 100.00' GRADE CONTOUR - EXISTING
- 100.00' GRADE CONTOUR - PROPOSED
- 1000' LIMIT OF DISTURBANCE / SEDIMENT CONTROL
- PROPERTY LINE - ABUTTING
- PROPERTY LINE - EXISTING
- SAN SANITARY SEWER (S)
- SED SEDIMENT CONTROL
- SETBACKS
- STONE WALL
- SD STORM DRAIN (SD)
- 50' WETLAND PERIMETER
- 200' WETLAND PERIMETER
- VEGETATED WETLANDS
- RIVERBANK WETLANDS
- BAILEYS BROOK
- GROUND CONTROL POINT (GCP)
- CATCH BASIN
- DRILL HOLE
- ELECTRIC BOX (ETC)
- FIRE HYDRANT
- GATE VALVE
- GRANITE BOUND, EXISTING
- LOW WATER LINE
- LIMIT OF DISTURBANCE MARKER
- MANHOLE (MH-TYPE)
- REBAR / STEEL PIPE FOUND
- SPIKE
- SPOT GRADE - EXISTING
- SPOT GRADE - PROPOSED
- STRUCTURE, EXISTING
- STRUCTURE, PROPOSED
- SURVEY MONUMENT TO BE SET
- FLOW ARROW
- TREE
- UTILITY POLE
- LIGHT POLE
- WATER SHUT OFF
- WETLAND FLAG LOCATION
- SOIL EVALUATION
- SOIL EVALUATION BY OTHERS

UAV SURFACE TOLERANCE TEST - RIARNG - MARCH, 2020

POINT #	DESCRIPTION	SURVEYED EL.	SURFACE EL.	VERTICAL DIFFERENCE	HORIZONTAL DIFFERENCE
45	DMH.01	140.49	140.42	0.07	0.05
87	EOP.31	141.53	141.52	0.01	0.06
876	M2.02	141.21	141.230	-0.02	0.04
2	IPFOUND.01	145.71	145.800	-0.09	0.1
1	IPFOUND.02	142.65	142.77	-0.12	0.08
44	TOPCULVERT15PVC	134.86	134.95	-0.09	0.05
79	EOP.58	141.51	141.42	0.09	0.09
78	EOP.59	141.55	141.60	-0.05	0.04
47	EOP.46	137.54	137.62	-0.08	0.12
57	MH.01	139.45	139.64	-0.19	0.06
	Std. Dev.			0.086	0.027
	Root Mean Square Error			0.298	0.233



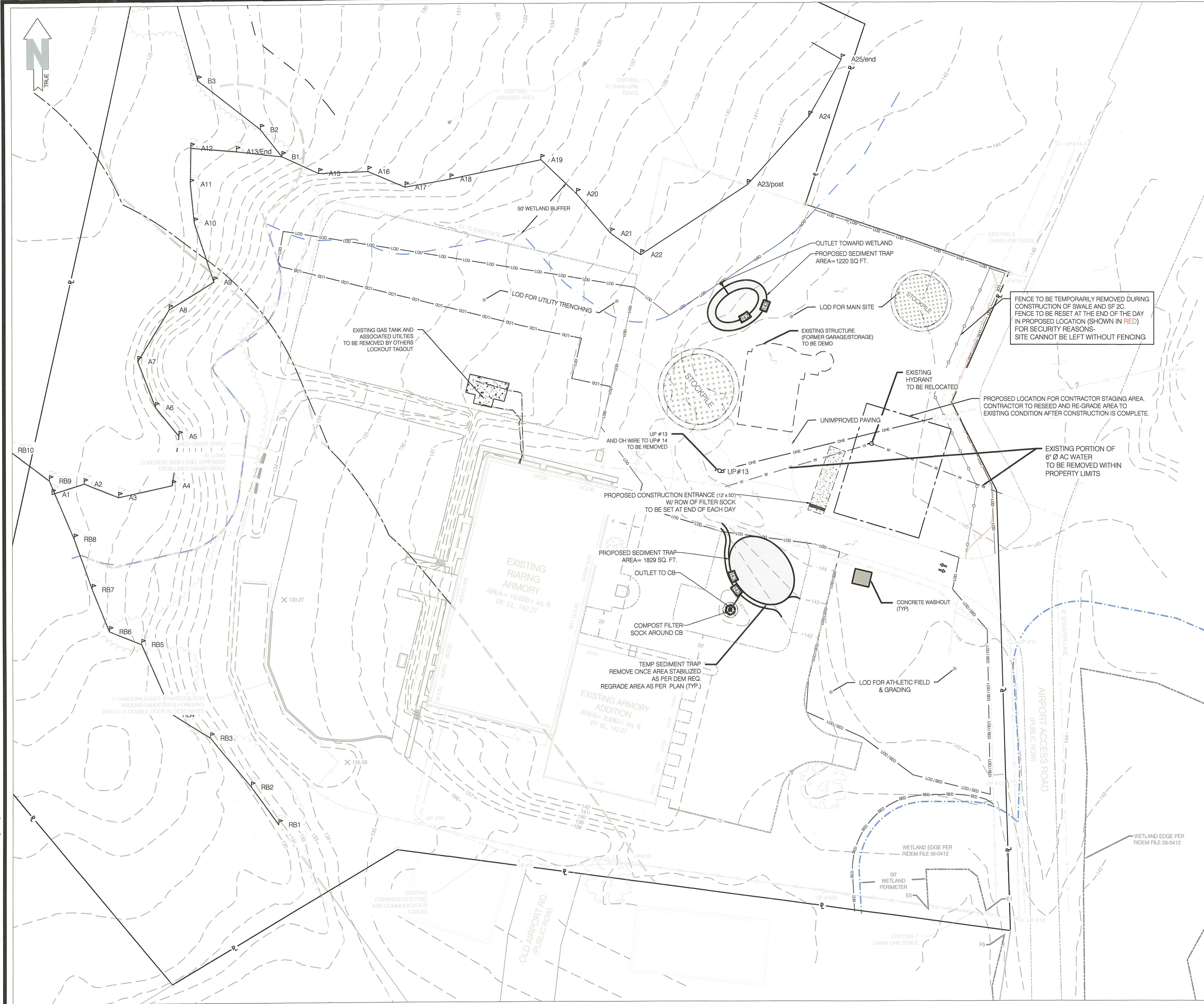
- ABBREVIATIONS:
- W: WATER
 - SAN: SANITARY SEWER
 - SD: STORM DRAIN
 - G: NATURAL GAS
 - E/ELEC: ELECTRIC
 - EX/EXIST: EXISTING
 - PR/PROP: PROPOSED
 - TOW: TOP OF WALL
 - BOW: BOTTOM OF WALL

EXISTING COVERAGE

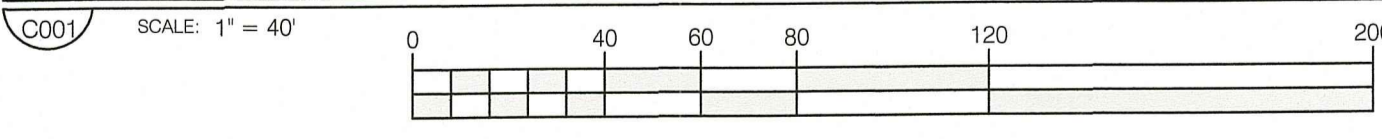
LOT SIZE	501,244 SQ FT	100%
IMPERVIOUS (BUILDINGS)	27,318 SQ FT	5.45%
IMPERVIOUS (CONCRETE & PAVING)	89,052 SQ FT	17.76%
PERVIOUS	384,874 SQ FT	76.79%

N:\PROJECTS\21-0135 - RIARNG - MIDDLETOWN ARMORY\GIS\21-0135 - RIARNG (SITE IMPROVEMENTS).DWG SV101 - 9/16/2022 Neal Hingorany

SITE NOTES:
 1. ZONING INFORMATION SHOW FROM RECORD INFORMATION, MAPS AND / OR GIS. ZONING DATA MAY VARY BASED ON USE, LOT SIZE, ORIENTATION AND OTHER FACTORS AND IS SHOWN FOR REFERENCE INFORMATION ONLY.
 2. ZONING DATA MUST BE CONFIRMED WITH ZONING OFFICIAL AND / OR LEGAL COUNSEL FOR USE IN DESIGN OR PERMITTING.
 3. COORDINATE SYSTEM IS NAD83 / NAVD 83
 4. TOPOGRAPHY IS MIX OF ON GROUND SHOTS, UAV DATA AND RI SPRING 2011 LIDAR.
 - AREA OF CONCERN: UAV DERIVED POINT CLOUD WITH GPS SHOTS
 - OUTSIDE AREA OF CONCERN: SPRING 2011 LIDAR WITH GPS SHOTS
 5. ALL PROPOSED ITEMS MUST BE LAID OUT BY REGISTERED SURVEYOR AS NOTED.
 6. PLAN IS NOT AS-BUILT UTILITY PLAN
 7. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT OF PROBATE SEARCH, AND IS SUBJECT TO THE RESTRICTIONS, COVENANTS AND/OR EASEMENTS THAT MAY BE CONTAINED THEREIN.
 8. LOCATION OF SUBSURFACE MAINS, SURFACE FEATURES, AND LATERALS ARE OMITTED. CONTRACTOR TO CALL DIG SAFE AND/OR APPLICABLE UTILITY COMPANIES PRIOR TO ANY CONSTRUCTION. DIG SAFE TEL #: 1-800-344-7233 (1-800-DIG-SAFE).
 A. WATER - SURFACE FEATURES SHOWN. UNDERGROUND SHOWN PER DIG SAFE AND PLAN REF. 1
 B. SEWER - SURFACE FEATURES SHOWN. UNDERGROUND SHOWN PER DIG SAFE AND PLAN REF. 1
 C. GAS - SURFACE FEATURES SHOWN. UNDERGROUND SHOWN PER DIG SAFE AND PLAN REF. 1
 D. ELECTRIC - SURFACE/OVERHEAD FEATURES SHOWN. UNDERGROUND SHOWN PER DIG SAFE
 E. STORM DRAIN - SURFACE FEATURES SHOWN. UNDERGROUND SHOWN PER PLAN REF. 1 AND FIELD INVESTIGATION
 NOTE: ALL SURFACE, SUBSURFACE AND OVERHEAD UTILITY FEATURES MEET QUALITY LEVEL C AS PRESCRIBED BY ASCE 38-02.
 9. REFERENCE PREVIOUS RIDEM APPLICATION # 15-0128, 17-0015
 10. ABUTTING PROPERTY LINE INFORMATION SHOWN PER TOWN OF MIDDLETOWN GIS
 11. SITE IS LOCATED IN SURFACE WATER PROTECTION AREA
 12. SITE MAY BE EXEMPT FROM MUNICIPAL ZONING REQUIREMENTS DUE TO STATE OWNERSHIP
 13. ELEVATIONS SHOWN WITH * PER UAV DATA



DEMO & EROSION CONTROL PLAN



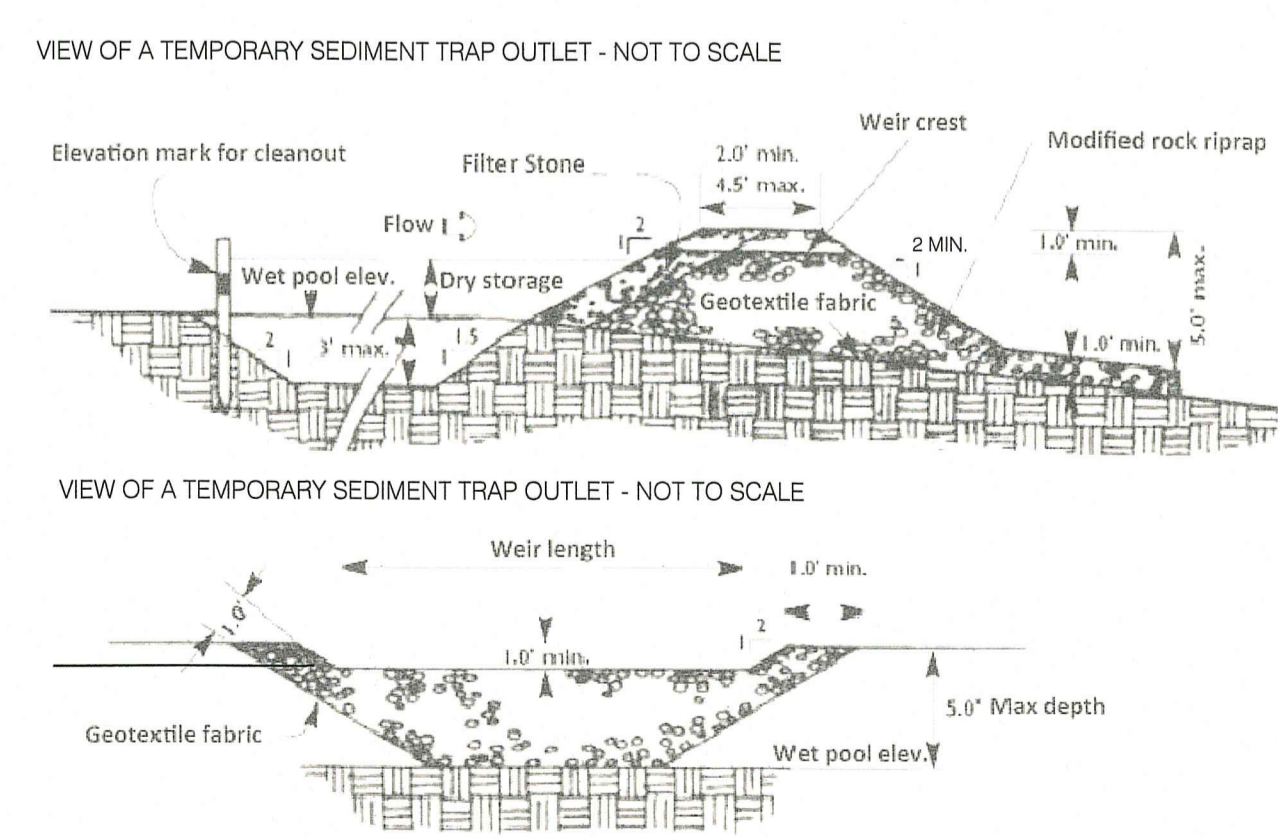
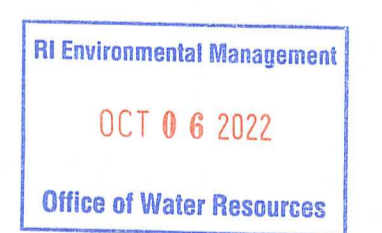
**RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM**
APPROVED WITH CONDITIONS AS
SPECIFIED IN THE LETTER OF APPROVAL
DATED: **NOV 0 2 2022** FILE #: **22-0320**
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Nancy L. Freeman

EROSION AND SEDIMENT CONTROL NOTES:

- ALL EROSION CONTROL SHALL BE IN ACCORDANCE WITH RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST REVISION
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION AND MAINTENANCE OF ALL SEDIMENT AND EROSION CONTROL MEASURES SHOWN ON THESE PLANS
- EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED ONCE WEEKLY OR AFTER EVERY RAINFALL EVENT GREATER THAN 0.25 INCHES.
- SEDIMENT BUILD UP GREATER THAN ONE-HALF THE BARRIER HEIGHT SHALL BE REMOVED AND DISPOSED OF PROPERLY AS REQUIRED. ANY SEDIMENT BUILD UP OUTSIDE OF THE SEDIMENT BARRIER SHALL BE REMOVED IMMEDIATELY
- CONTRACTOR SHALL MAINTAIN A RESERVE OF EROSION CONTROL MATERIALS FOR EMERGENCY USE AND ROUTINE MAINTENANCE
- THE CONTROLS SHOWN ON THESE PLANS ARE INTENDED AS MINIMUM MEASURES. ADDITIONAL MEASURES MAY BE REQUIRED AND SHALL BE IMPLEMENTED BY THE CONTRACTOR IF WARRANTED OR REQUESTED BY THE OWNER, OWNERS REPRESENTATIVE, ENGINEER, OR ANY APPLICABLE REGULATING AGENCY.
- PRIOR TO THE START OF ANY LAND CLEARING / GRUBBING OR OTHER CONSTRUCTION ACTIVITY THE PERIMETER CONTROLS SHALL BE PLACED, PROPERLY CONSTRUCTED AND CLEARLY VISIBLE. THESE CONTROLS SHALL REPRESENT THE LIMITS OF WORK AND WORKERS SHALL BE NOTIFIED THAT NO CONSTRUCTION ACTIVITY IS ALLOWED BEYOND THESE CONTROLS
- IF OR AS POSSIBLE CONSTRUCTION SHALL BE PHASED TO LIMIT TO THE MAXIMUM EXTENT PRACTICABLE THE AMOUNT OF EXPOSED SOILS. ALL DISTURBED AREAS SHALL BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 14 DAYS OF COMPLETION OF GRADING ACTIVITIES
- THE CONTRACTOR SHALL SCHEDULE WORK IN A WAY TO ALLOW POSITIVE DRAINAGE OF SUBGRADE THROUGHOUT CONSTRUCTION
- CONSTRUCTION ENTRANCES PER RIDOT STANDARD DETAIL 9.9.0 SHALL BE EMPLOYED AT ALL POINTS OF INGRESS AND EGRESS FROM THE SITE
- TEMPORARY DIVERSIONS, SEDIMENT BASINS, AND TEMPORARY SWALES MAY BE USED AND SHALL BE SIZED ACCORDING TO THE RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK
- CATCH BASINS AND STORM DRAINS SHALL BE PROTECTED PER RIDOT STANDARD DETAIL 9.8.0 IN GRASSED AREAS OR SEDIMENT BAGS IN PAVED AREAS
- TEMPORARY SEDIMENT STOCK PILES SHALL BE KEPT MOIST AND COVERED AT ALL TIMES. CALCIUM CHLORIDE SHALL ONLY BE USED IF AN APPROVAL FROM THE TOWN/CITY OR OTHER APPLICABLE AGENCY HAS BEEN GRANTED
- DEWATERING FROM EXCAVATIONS WILL BE CONVEYED BY HOSE TO AN UPLAND AREAS AND DISCHARGED INTO A DEWATERING BASIN PER RIDOT STANDARD 9.7.0. HAYBALE CORRALS, OR SEDIMENTATION BAGS. THE CONTRACTOR SHALL ENSURE THAT NO CONTAMINATE IS PRESENT IN ANY WATERS PRIOR TO DISCHARGE FROM SITE AND IS RESPONSIBLE FOR ALL ENGINEERING, EQUIPMENT, MATERIAL AND LABOR REQUIRED FOR THE SITE WATER REMOVAL DURING CONSTRUCTION
- CONSTRUCTION WASTE MATERIALS SHALL BE KEPT ON-SITE AND DISPOSED OF IN AN APPROVED AND APPROPRIATE MANNER IN ACCORDANCE WITH ALL APPLICABLE REGULATORY AGENCIES.
- RIPRAP SHALL BE USED WHERE NECESSARY TO CONTROL EXIT VELOCITIES
- NON MOBILE (I.E. TRACKED MACHINERY) SHALL BE MAINTAINED WITHIN THE LIMIT OF DISTURBANCE DEFINED BY SEDIMENT BARRIER
- NEWLY VEGETATED AREAS SHALL BE REGULARLY INSPECTED AND MAINTAINED TO ENSURE ESTABLISHMENT OF APPROPRIATE VEGETATION
- THE CONTRACTOR SHALL NOT REMOVE ANY EROSION AND SEDIMENTATION CONTROL MEASURES UNTIL FINAL ACCEPTANCE OF THE SITE HAS OCCURRED
- ALL DRAINAGE STRUCTURES SHALL BE CLEARED OF ACCUMULATED SEDIMENT PRIOR TO THE FINAL SITE ACCEPTANCE

NOTE:
THE USE OF HAY IS NOT ALLOWED. ALL REFERENCES TO HAY, SHALL BE TAKEN TO MEAN STRAW.

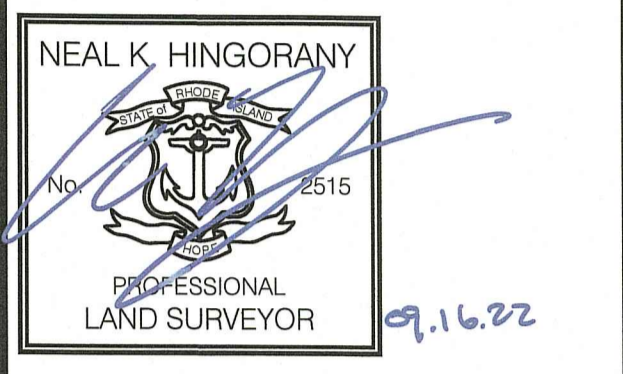


PROVIDE 15 MIL POLY LINER FROM BOTTOM TO ELEV 140.4 (DO NOT LINE CRUSHED STONE OUTLET). REMOVE LINER ONCE SITE IS STABILIZED



Certification
CERTIFICATION THIS SURVEY HAS BEEN CONDUCTED AND THE PLAN HAS BEEN PREPARED PURSUANT TO 435-RICR00-00-1.9 OF THE RULES AND REGULATIONS ADOPTED BY THE RHODE ISLAND STATE BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS ON DECEMBER 31, 2020 (EFFECTIVE DATE), AS FOLLOWS:
CLASS I
CLASS II (PHYSICAL FEATURES) TOPOGRAPHIC SURVEY T-2

THE PURPOSE FOR THE CONDUCT OF THE SURVEY AND FOR THE PREPARATION OF THE PLAN IS AS FOLLOWS: FOR THE PREPARATION OF A PLAN SET FOR USE IN RIDEM PERMITTING



FOR SURVEY ELEMENTS ONLY
NEAL HINGORANY REG. 2515
COA: A38

Drawn by **LD**
Checked by **NKH & EC**

Revised on **8/29/22**
- **MISC. SITE EDITS PER RIARNG**
- **RESPONSE TO RIDEM COMMENTS**
FOR P.E ELEMENTS ONLY



Project
RI ARMY NATIONAL GUARD



MIDDLETOWN ARMORY SITE IMPROVEMENTS

106 AIRPORT ACCESS RD
MIDDLETOWN, RI 02842

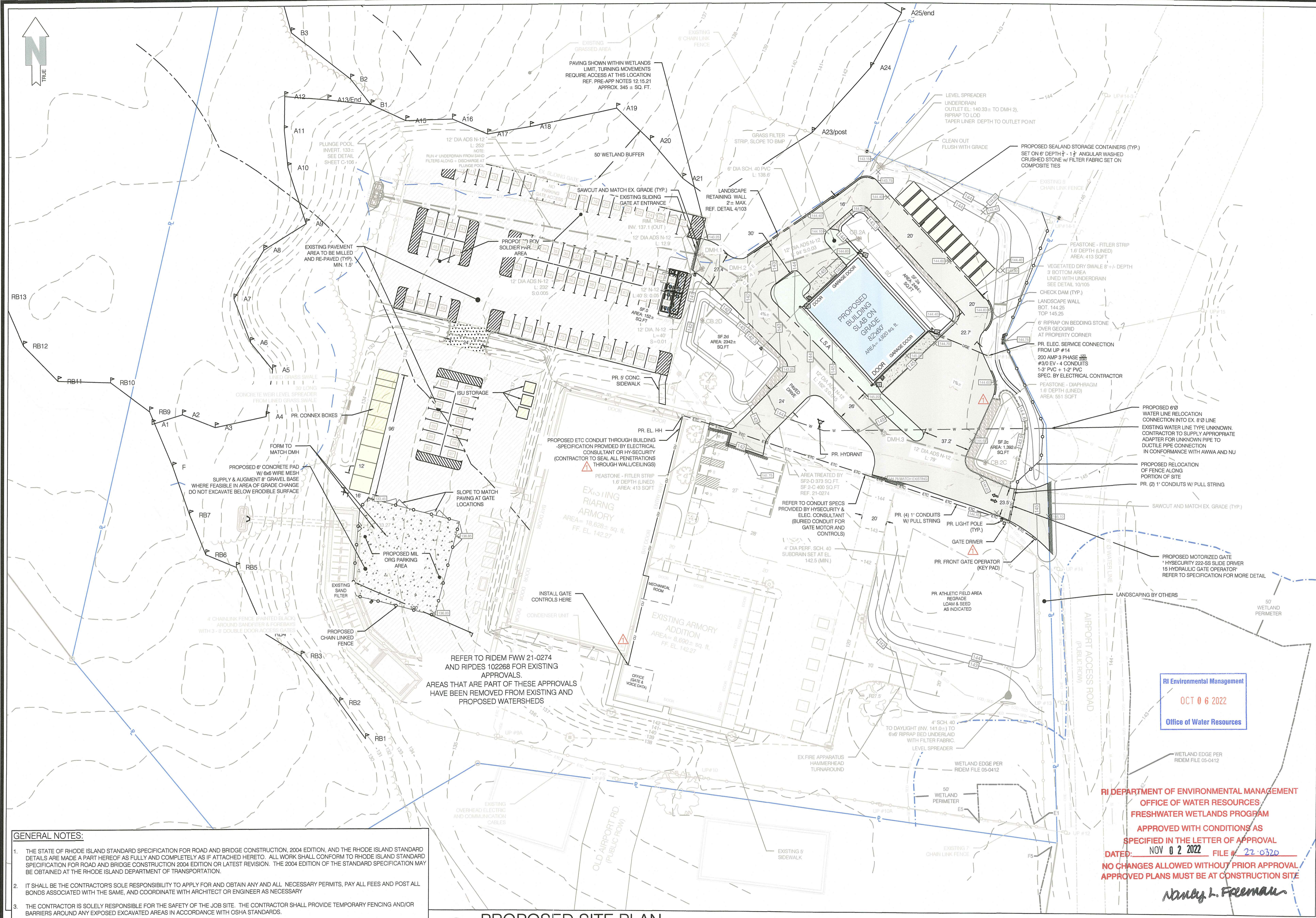
Drawing Status
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Issued On:
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DEMO AND EROSION CONTROL PLAN

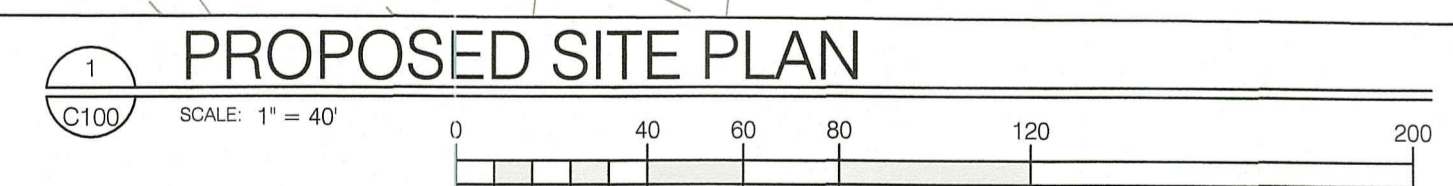
Project Number: 21-0135

Drawing No.
C001

N:\PROJECTS\21-0135-RIARNG-MIDDLETOWN ARMORY\01\0135-RIARNG (SITE IMPROVEMENTS).DWG C001 ---- 9/16/2022 Neal Hingorany



- GENERAL NOTES:**
- THE STATE OF RHODE ISLAND STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION, 2004 EDITION, AND THE RHODE ISLAND STANDARD DETAILS ARE MADE A PART HEREOF AS FULLY AND COMPLETELY AS IF ATTACHED HERETO. ALL WORK SHALL CONFORM TO RHODE ISLAND STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION 2004 EDITION OR LATEST REVISION. THE 2004 EDITION OF THE STANDARD SPECIFICATION MAY BE OBTAINED AT THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION.
 - IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO APPLY FOR AND OBTAIN ANY AND ALL NECESSARY PERMITS, PAY ALL FEES AND POST ALL BONDS ASSOCIATED WITH THE SAME, AND COORDINATE WITH ARCHITECT OR ENGINEER AS NECESSARY.
 - THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE SAFETY OF THE JOB SITE. THE CONTRACTOR SHALL PROVIDE TEMPORARY FENCING AND/OR BARRIERS AROUND ANY EXPOSED EXCAVATED AREAS IN ACCORDANCE WITH OSHA STANDARDS.
 - IN THE CASE THAT ANY DEVIATION / ALTERATION / OR IMPROVEMENT FROM THE APPROVED PLANS IS NECESSARY THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE ENGINEER AND OWNER PRIOR TO OCCURRENCE OF DEVIATION.
 - ALL WORK SHALL BE LIMITED TO THE AREAS WITHIN THE LIMIT OF DISTURBANCE DISPLAYED ON THESE PLANS OR PROPERTY LINE IF LIMIT OF DISTURBANCE IS UNCLEAR. ANY AREA DISTURBED OUTSIDE OF THE LIMIT OF DISTURBANCE SHALL BE REPAIRED AND RESTORED TO ITS ORIGINAL CONDITION AT NO COST TO THE OWNER OR ENGINEER, AND PERFORMED TO THE ENGINEER'S SATISFACTION.
 - ALL SITE WORK SHALL MEET OR EXCEED THE SITE WORK SPECIFICATION SHOWN ON THESE PLANS AND/OR ACCOMPANYING SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING IF ANY CONFLICTS WITH EXISTING CONDITIONS OR PROPOSED CONDITIONS EXIST. IF ANY CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER PRIOR TO INSTALLATION OF ANY PORTION OF THE SITE WORK THAT WOULD BE AFFECTED.
 - EXCAVATED ROCK SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED OF UNLESS OTHER ARRANGEMENTS ARE MADE WITH THE OWNER. SUITABLE ROCK MAY BE UTILIZED IN FILL AREAS WITH WRITTEN PERMISSION OF THE OWNERS REPRESENTATIVES.
 - DEBRIS, ORGANICS AND OTHER UNSUITABLE MATERIALS UNCOVERED DURING THE COURSE OF SITE EXCAVATION SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
 - THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MAINTAINING THE INTEGRITY OF ALL EXISTING UTILITIES THAT SERVICE THE SITE AND NEIGHBORING AREAS. IF ANY DAMAGE OCCURS TO EXISTING UTILITIES IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PAY ALL COSTS ASSOCIATED WITH REPAIR OF UTILITIES AS DIRECTED BY THE ENGINEER, UTILITY OWNER, OR GOVERNING AGENCY.
 - THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR QUANTITY TAKE-OFF IN COMPUTING ANY ESTIMATES.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL TEMPORARY SEDIMENTATION AND EROSION CONTROLS.
 - THE LOCATION OF EXISTING UTILITIES AS SHOWN ARE APPROXIMATE AND SHALL BE VERIFIED BY THE CONTRACTOR. "DIG SAFE" AND PRIVATE COMPANY SHALL BE CONTACTED BY THE CONTRACTOR AS PART OF THIS VERIFICATION.
 - NO EXCAVATION SHALL PROCEED UNTIL UTILITY COMPANIES ARE NOTIFIED IN ADVANCE.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING TREES.
 - CONTRACTOR TO LOAM AND SEED ALL DISTURBED AREAS WITH APPROPRIATE SEED MIXTURES INCLUDING REGRADING & RESEEDING STAGING AREA BACK TO EXISTING CONDITIONS AFTER CONSTRUCTION IS COMPLETE.



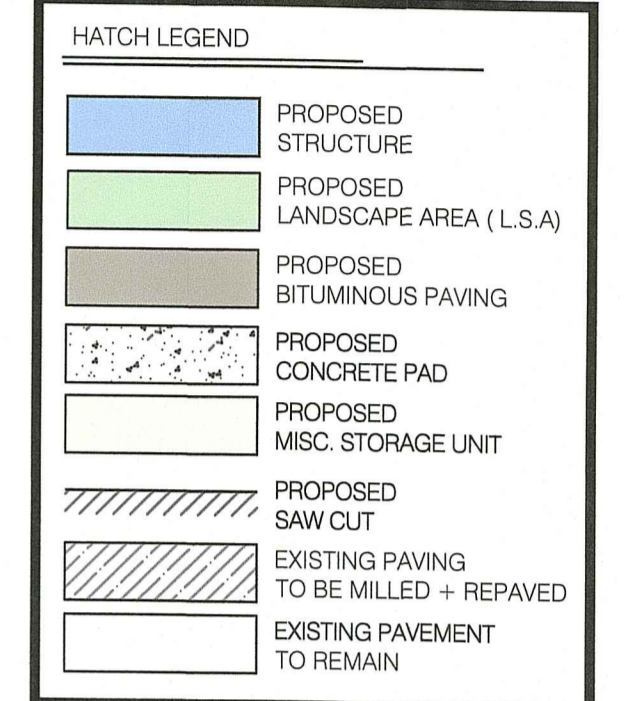
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 - SEWER - SURFACE FEATURES SHOWN. UNDERGROUND SHOWN PER DIG SAFE AND PLAN REF. 1
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 - ADJUTING PROPERTY LINE INFORMATION SHOWN PER TOWN OF MIDDLETOWN GIS
 - SITE IS LOCATED IN SURFACE WATER PROTECTION AREA
 - SITE MAY BE EXEMPT FROM MUNICIPAL ZONING REQUIREMENTS DUE TO STATE OWNERSHIP
 - ELEVATIONS SHOWN WITH "P" PER UAV DATA

Drainage Structure Rim and Invert Table

Type	Designation	Rim	Inv. Out	Inv. In	Inv. A (ft)	Inv. C (ft)	Inv. D (ft)	Inv. E (ft)	Notes
	Plunge Pool	na	133						
DMH	1	140.25	137	137.05					12' N-12
DMH	2	141.7	137.45	137.05	137.88	137.53	137.7	138.94	See Plan for ø
DMH	3	144.15	141	141.05					12' N-12
CB	2A	143.7	140.7						In SF 2A
CB	2D	142.7	139.7						In SF 2D
CB	2C	144.3	141.3						In SF 2C
SF	0	140	135.84	137					
CB	1	140.2	137.1						

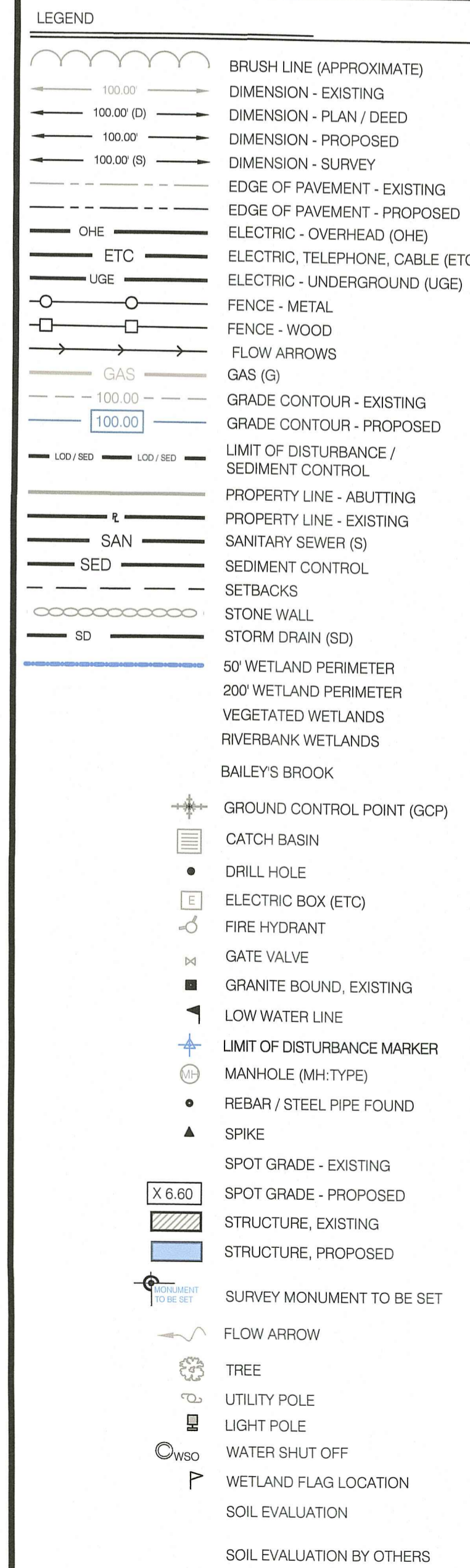
Sand Filter Elevations

Type	Designation	Top of Filter	Overflow Invert
SF	2A	143.3	143.7
SF	2C	143.9	144.3
SF	2D	142.3	142.7



PROPOSED COVERAGE

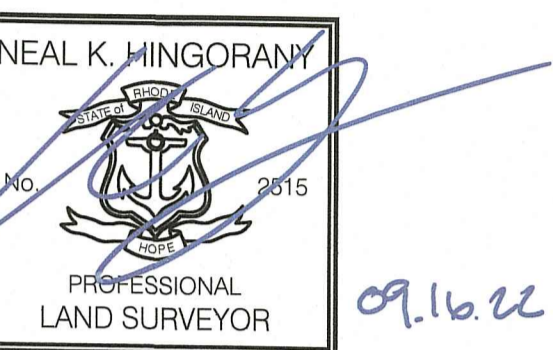
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IMPERVIOUS (CONCRETE & PAVING)	103,600 SQ FT	20.67%
PERVIOUS	362,326 SQ FT	72.29%



RI Environmental Management
 OCT 0 6 2022
 Office of Water Resources
 RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 FRESHWATER WETLANDS PROGRAM
 APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL
 DATED: NOV 0 2 2022 FILE # 22-0320
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE
 Nancy L. Freeman



Certification
 CERTIFICATION THIS SURVEY HAS BEEN CONDUCTED AND THE PLAN HAS BEEN PREPARED PURSUANT TO 485-RICR00-001.9 OF THE RULES AND REGULATIONS ADOPTED BY THE RHODE ISLAND STATE BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS ON DECEMBER 31, 2020 (EFFECTIVE DATE), AS FOLLOWS:
 CLASS I
 CLASS II (PHYSICAL FEATURES) TOPOGRAPHIC SURVEY I-2
 THE PURPOSE FOR THE CONDUCT OF THE SURVEY AND FOR THE PREPARATION OF THE PLAN IS AS FOLLOWS: FOR THE PREPARATION OF A PLAN SET FOR USE IN RIDEM PERMITTING



FOR SURVEY ELEMENTS ONLY
 NEAL HINGORANY REG. 2515
 COA: A38

Drawn by LD
 Checked by NKH & EC

Revised on 8/29/22
 - MISC. SITE EDITS PER RIARNG
 - RESPONSE TO RIDEM COMMENTS
 FOR P.E. ELEMENTS ONLY

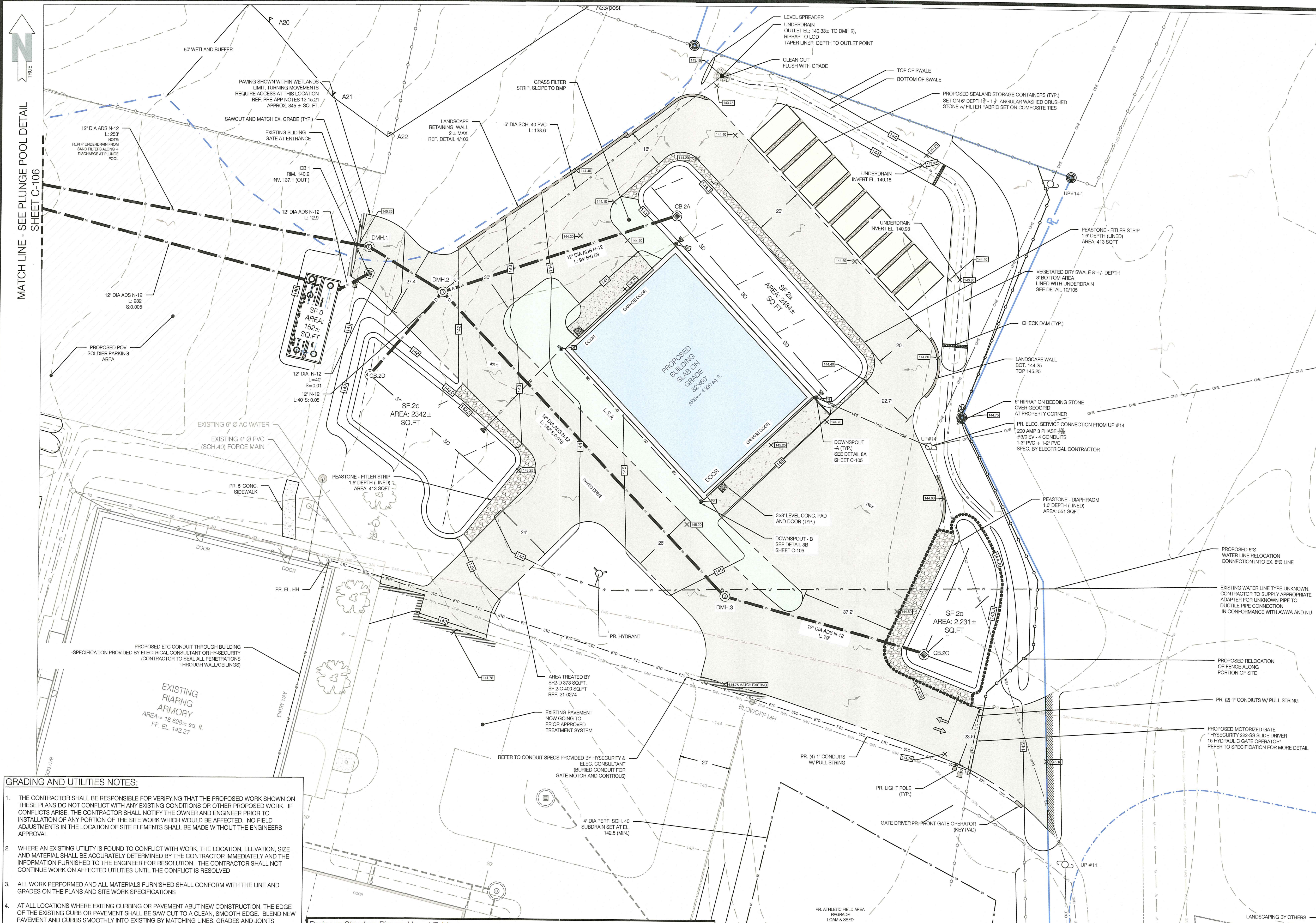


Project
RI ARMY NATIONAL GUARD
MIDDLETOWN ARMORY SITE IMPROVEMENTS
 106 AIRPORT ACCESS RD
 MIDDLETOWN, RI 02842

Drawing Status
90% SET
 Issued On:
 Sheet Contents
PROPOSED SITE PLAN

Project Number: 21-0135
 Drawing No.
C100
 Sheet 4 OF 16

N:\PROJECTS\21_0135_RIARNG\MIDDLETOWN_ARMORY\DWG\C100 - 9/16/2022 Neal Hingorany

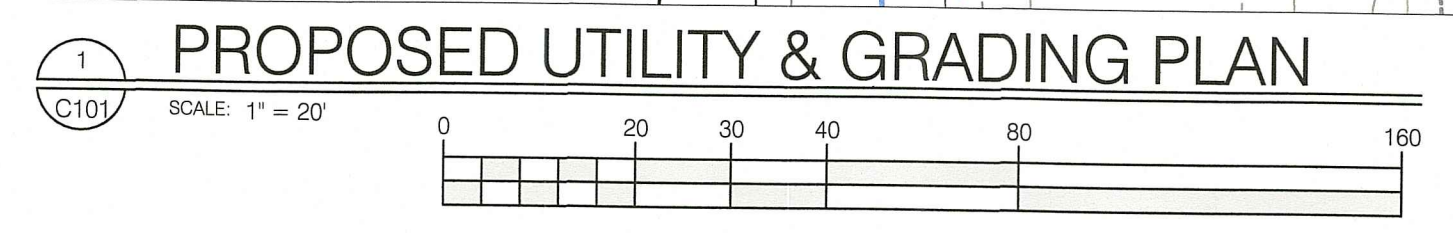


GRADING AND UTILITIES NOTES:

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT THE PROPOSED WORK SHOWN ON THESE PLANS DO NOT CONFLICT WITH ANY EXISTING CONDITIONS OR OTHER PROPOSED WORK. IF CONFLICTS ARISE, THE CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER PRIOR TO INSTALLATION OF ANY PORTION OF THE SITE WORK WHICH WOULD BE AFFECTED. NO FIELD ADJUSTMENTS IN THE LOCATION OF SITE ELEMENTS SHALL BE MADE WITHOUT THE ENGINEERS APPROVAL.
- WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH WORK, THE LOCATION, ELEVATION, SIZE AND MATERIAL SHALL BE ACCURATELY DETERMINED BY THE CONTRACTOR IMMEDIATELY AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION. THE CONTRACTOR SHALL NOT CONTINUE WORK ON AFFECTED UTILITIES UNTIL THE CONFLICT IS RESOLVED.
- ALL WORK PERFORMED AND ALL MATERIALS FURNISHED SHALL CONFORM WITH THE LINE AND GRADES ON THE PLANS AND SITE WORK SPECIFICATIONS.
- AT ALL LOCATIONS WHERE EXISTING CURBING OR PAVEMENT ADJUT NEW CONSTRUCTION, THE EDGE OF THE EXISTING CURB OR PAVEMENT SHALL BE SAW CUT TO A CLEAN, SMOOTH EDGE. BLEND NEW PAVEMENT AND CURBS SMOOTHLY INTO EXISTING BY MATCHING LINES, GRADES AND JOINTS.
- ALL UTILITY COVERS, GRATES, AND THE LIKE SHALL BE BE FLUSH WITH THE SURROUNDING SURFACE OR PAVEMENT FINISH. RIM ELEVATIONS ARE APPROXIMATE AND FINAL ELEVATIONS ARE TO BE SET FLUSH AND CONSISTENT WITH GRADING.
- THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION OF PRIVATE UTILITIES BY THE UTILITY COMPANY, AS REQUIRED.
- THE CONTRACTOR SHALL PROTECT ALL UNDERGROUND UTILITY FACILITIES FROM EXCESSIVE VEHICULAR LOADINGS. ANY DAMAGE RESULTING TO THESE FACILITIES SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT THE CONTRACTORS EXPENSE.
- ALL WATER WORKS SHALL HAVE 5 FEET OF COVER.
- GAS, ELECTRIC, AND COMMUNICATIONS ROUTING ARE SUBJECT TO REVIEW AND APPROVAL BY UTILITY COMPANY.
- DURING CONSTRUCTION CONTRACTOR SHALL PROTECT EXISTING UTILITIES BY PROVIDING TEMPORARY SUPPORTS OR SHEETING AS REQUIRED AT NOT ADDITIONAL COST TO THE OWNER.
- EXCAVATION REQUIRED WITHIN THE PROXIMITY OF EXISTING UTILITY LINES SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINE OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATION AT NO COST TO THE OWNER.
- PITCH EVENLY BETWEEN ALL SPOT GRADES.
- THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND DISPOSAL OF ANY, ROCKS, DEBRIS, ORGANICS, OR THE LIKE UNCOVERED IN THE COURSE OF WORK.

Drainage Structure Rim and Invert Table								
Type	Designation	Rim	Inv. Out	Inv. In	Inv. A (ft)	Inv. C (ft)	Inv. D (ft)	Notes
	Plunge Pool	na	138					
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DMH	2	141.7	137.45	137.05	137.86	137.53	137.7	See Plan for Ø
DMH	3	144.15	141	141.05				12" N-12
CB	2A	143.7	140.7					In SF 2A
CB	2D	142.7	139.7					In SF 2D
CB	2C	144.3	141.3					In SF 2C
SF	0	140	135.84	137				
CB	1	140.2	137.1					

Sand Filter Elevations			
Type	Designation	Top of Filter	Overflow Invert
SF	2A	143.3	143.7
SF	2C	143.9	144.3
SF	2D	142.3	142.7



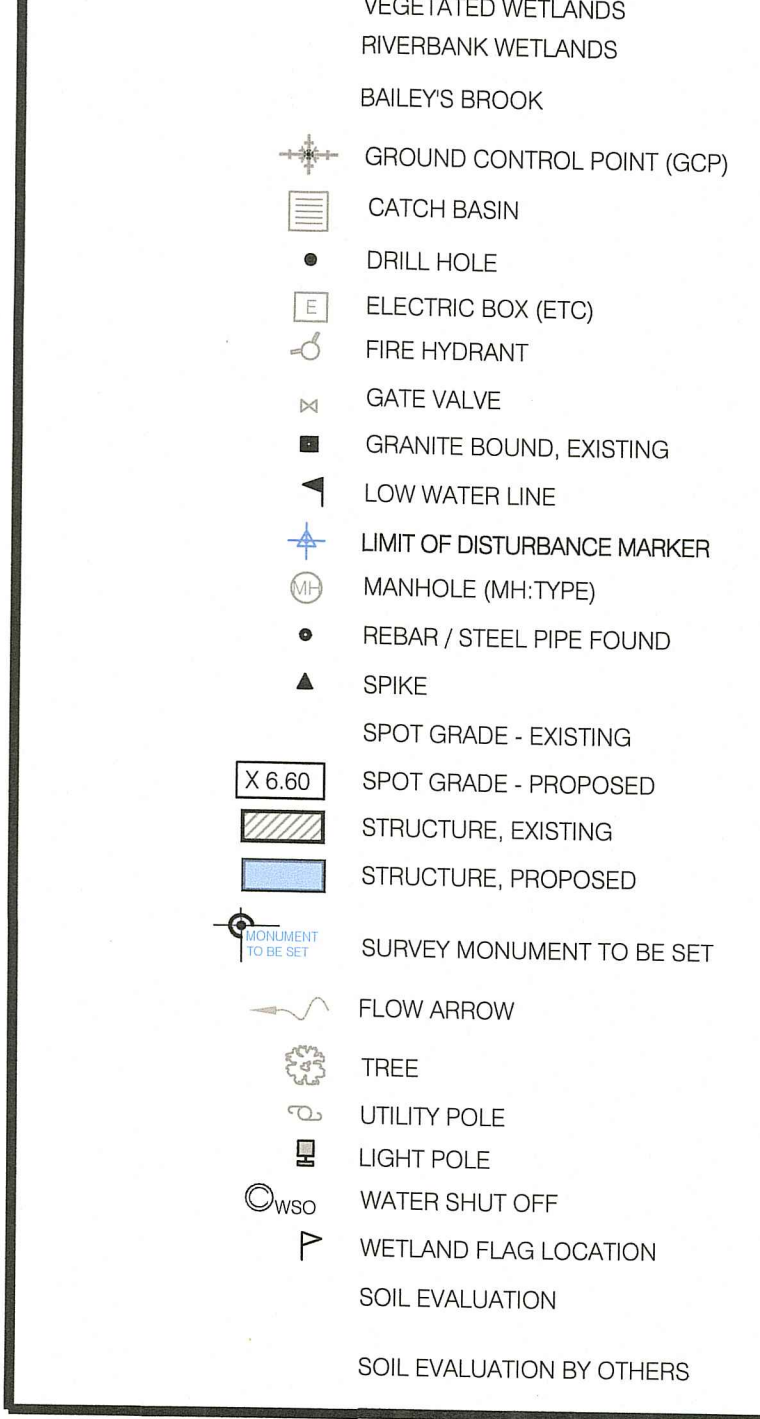
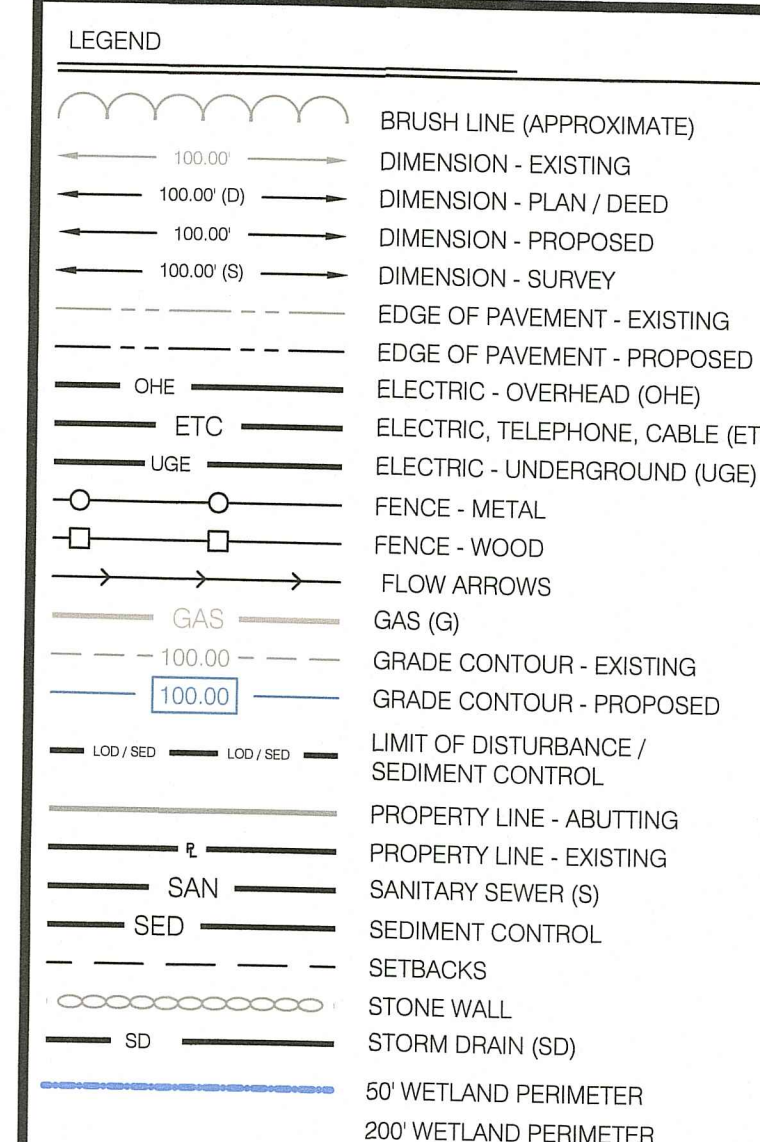
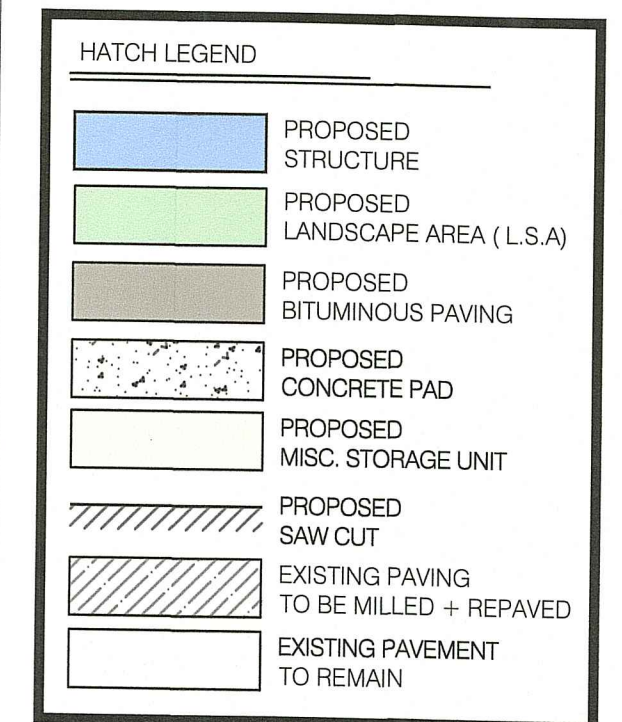
RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS AS
SPECIFIED IN THE LETTER OF APPROVAL
DATED: NOV 02 2022 FILE #: 22-0310
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Walter J. Freeman

RI Environmental Management
 OCT 06 2022
 Office of Water I.

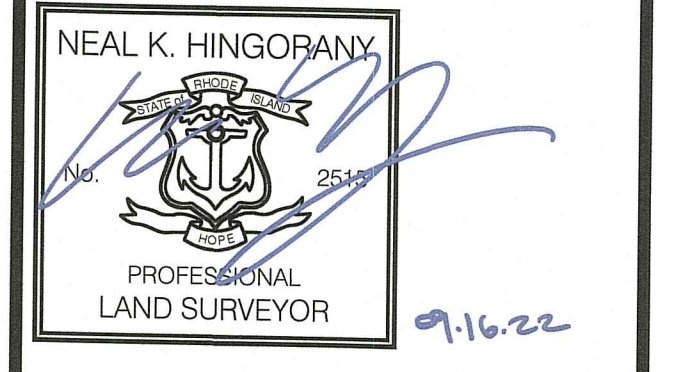
ABBREVIATIONS:

- W: WATER
- SAN: SANITARY SEWER
- SD: STORM DRAIN
- G: NATURAL GAS
- E/ELEC: ELECTRIC
- EX/EXIST: EXISTING
- PR/PROP: PROPOSED
- TOW: TOP OF WALL
- BOW: BOTTOM OF WALL



Certification
 CERTIFICATION THIS SURVEY HAS BEEN CONDUCTED AND THE PLAN HAS BEEN PREPARED PURSUANT TO 435-RICR00-00-1.9 OF THE RULES AND REGULATIONS ADOPTED BY THE RHODE ISLAND STATE BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS ON DECEMBER 31, 2020 (EFFECTIVE DATE), AS FOLLOWS:
 CLASS I
 CLASS III (PHYSICAL FEATURES) TOPOGRAPHIC SURVEY T-2

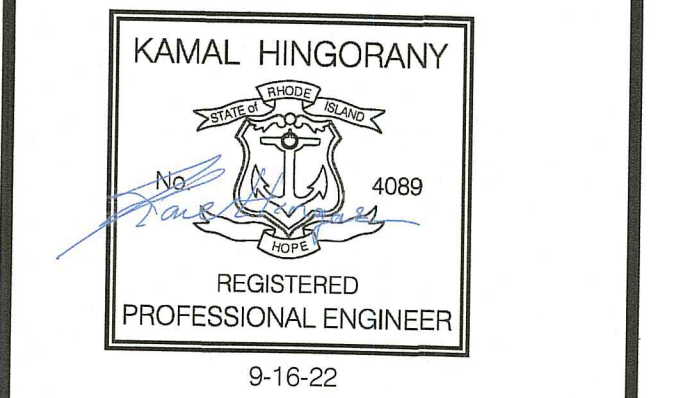
THE PURPOSE FOR THE CONDUCT OF THE SURVEY AND FOR THE PREPARATION OF THE PLAN IS AS FOLLOWS: FOR THE PREPARATION OF A PLAN SET FOR USE IN RIDEM PERMITTING



FOR SURVEY ELEMENTS ONLY
 NEAL HINGORANY REG. 2515
 COA: A38

Drawn by LD
 Checked by NKH & EC

Revised on 8/29/22
 - MISC. SITE EDITS PER RIARRING
 - RESPONSE TO RIDEM COMMENTS
 FOR P.E. ELEMENTS ONLY



Project

RI ARMY NATIONAL GUARD

MIDDLETOWN ARMORY SITE IMPROVEMENTS

106 AIRPORT ACCESS RD
 MIDDLETOWN, RI 02842

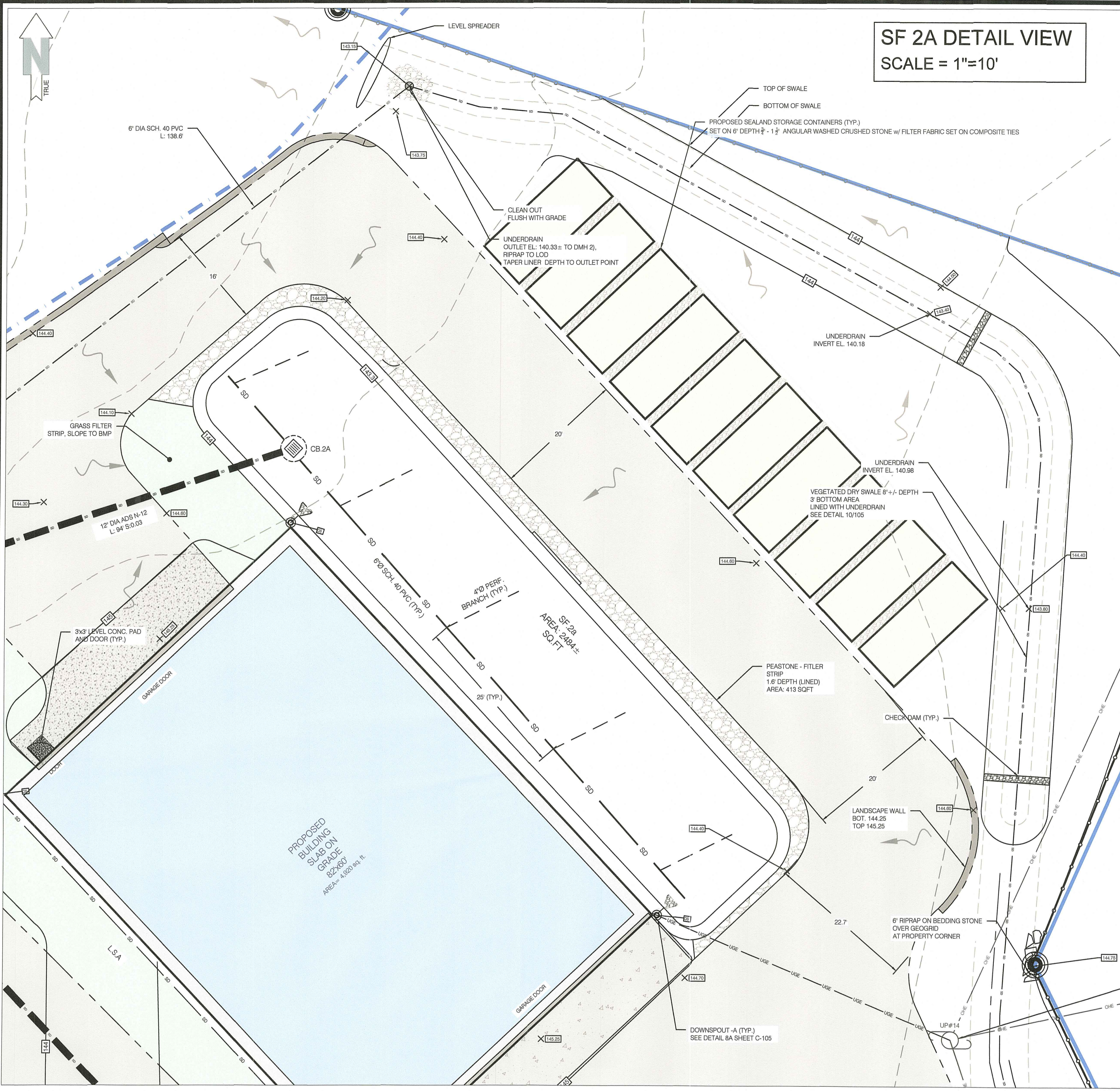
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Issued On:

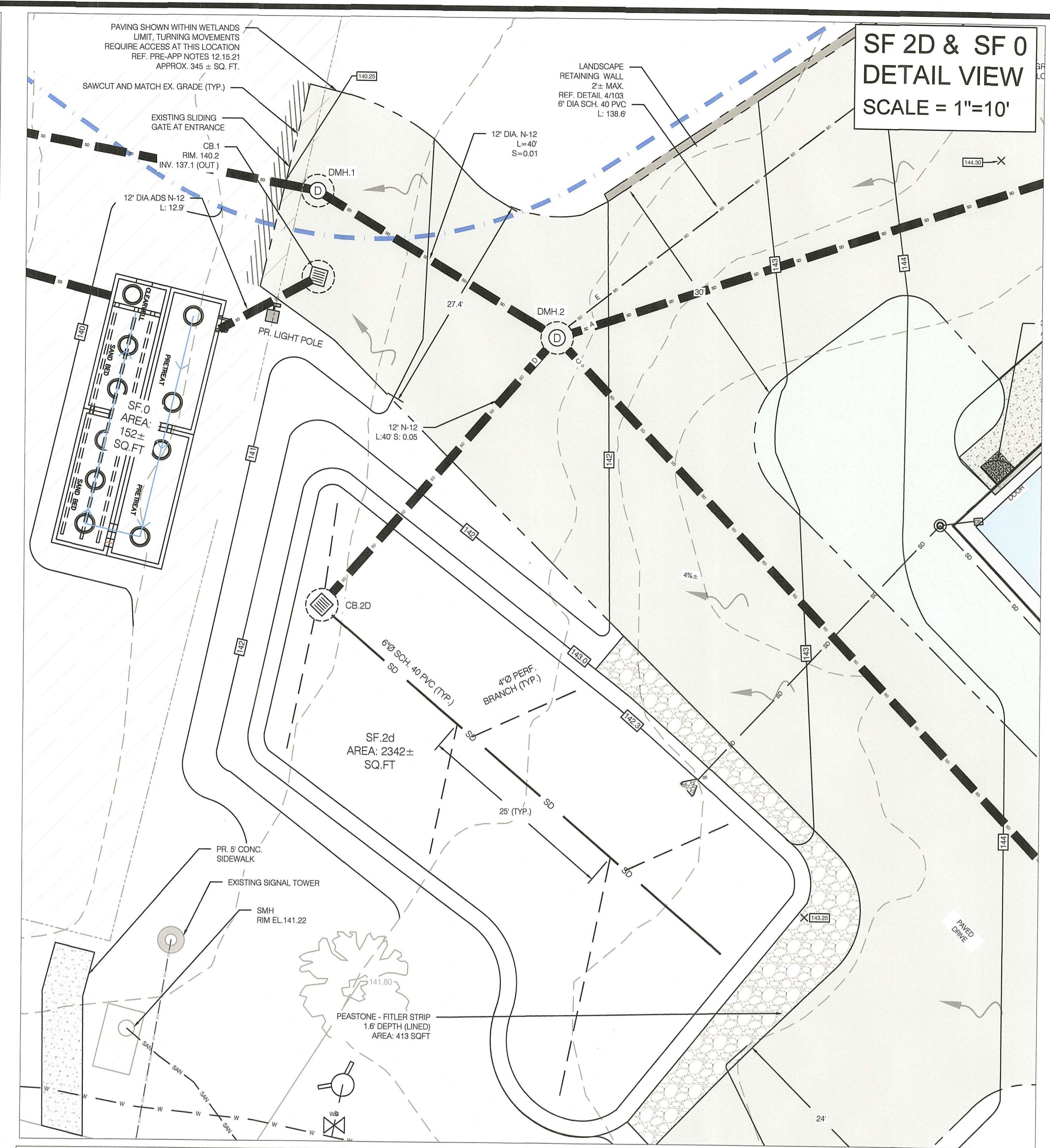
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PROPOSED UTILITY & GRADING PLAN

Project Number: 21-0135
 Drawing No. **C101**

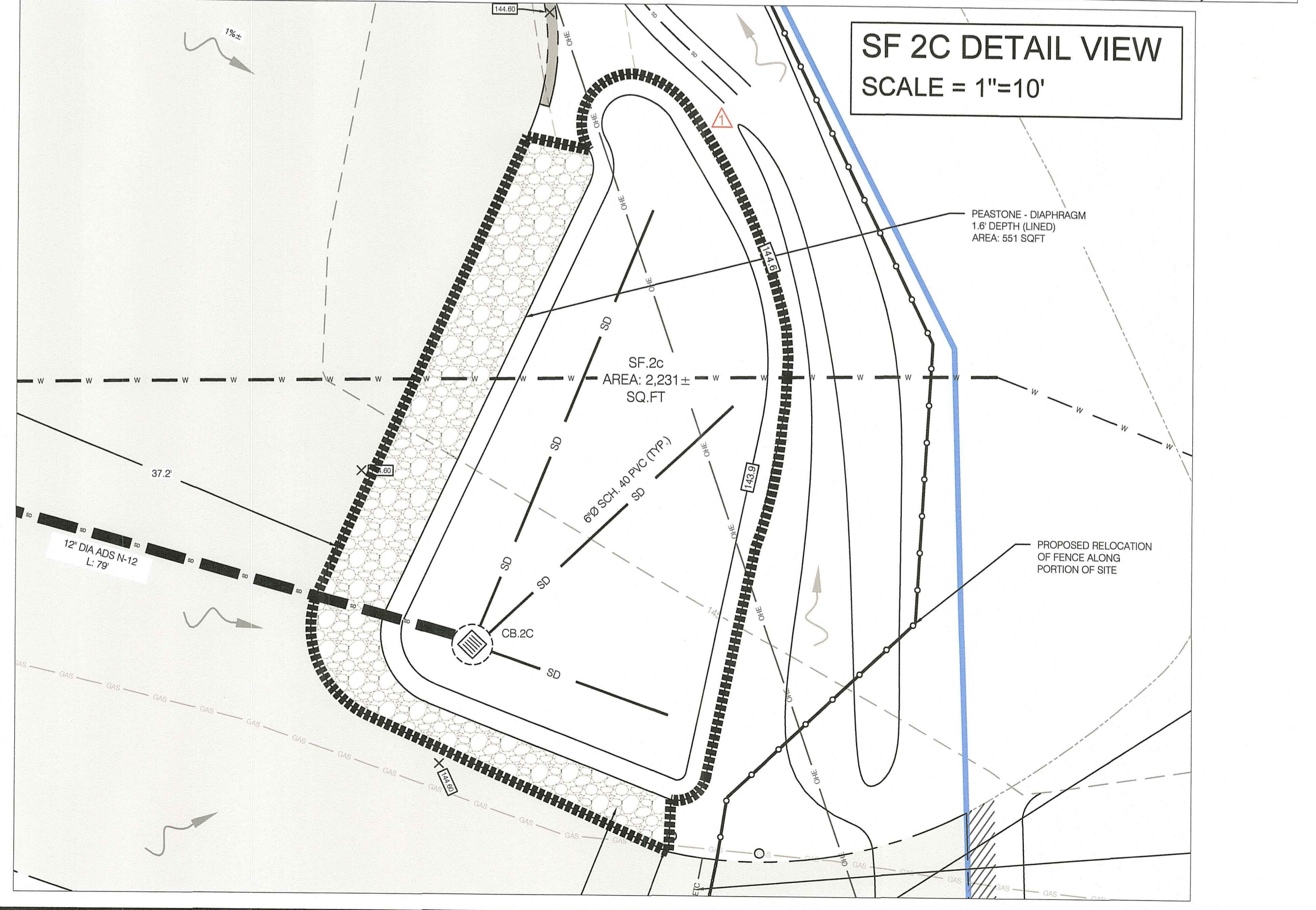
Sheet 5 OF 16



SF 2A DETAIL VIEW
SCALE = 1"=10'



SF 2D & SF 0
DETAIL VIEW
SCALE = 1"=10'



SF 2C DETAIL VIEW
SCALE = 1"=10'

Drainage Structure Rim and Invert Table									
Type	Designation	Rim	Inv. Out	Inv. In	Inv. A (ft)	Inv. C (ft)	Inv. D (ft)	Inv. E (ft)	Notes
-	Plunge Pool	na	133						
DMH	1	140.25	137	137.05					12" N-12
DMH	2	141.7	137.45	137.05	137.88	137.53	137.7	138.94	See Plan for Ø
DMH	3	144.15	141	141.05					12" N-12
CB	2A	143.7	140.7						In SF 2A
CB	2D	142.7	139.7						In SF 2D
CB	2C	144.3	141.3						In SF 2C
SF	0	140	135.84	137					
CB	1	140.2	137.1						

Sand Filter Elevations			
Type	Designation	Top of Filter	Overflow Invert
SF	2A	143.3	143.7
SF	2C	143.9	144.3
SF	2D	142.3	142.7

DETAIL NOTE:
FOR CB 2A, 2C, AND 2D SEE
DETAIL 1/106

FOR SAND FILTERS A, C AND D
SEE TYPICAL CROSS SECTION
DETAIL 1/106

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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Nancy L. Freeman



Certification

RI Environmental Management
OCT 06 2022
Office of Water Resources

Drawn by: LD
Checked by: NKH & EC

Revised on:
8/29/22
- MISC. SITE EDITS PER RIARNG
- RESPONSE TO RIDEM COMMENTS

FOR P.E. ELEMENTS ONLY



Project

RI ARMY
NATIONAL GUARD



MIDDLETOWN
ARMORY SITE
IMPROVEMENTS

106 AIRPORT ACCESS RD
MIDDLETOWN, RI 02842

Drawing Status
90% SET

Issued On:
Sheet Contents
PROPOSED UTILITY &
GRADING PLAN DETAIL
VIEW

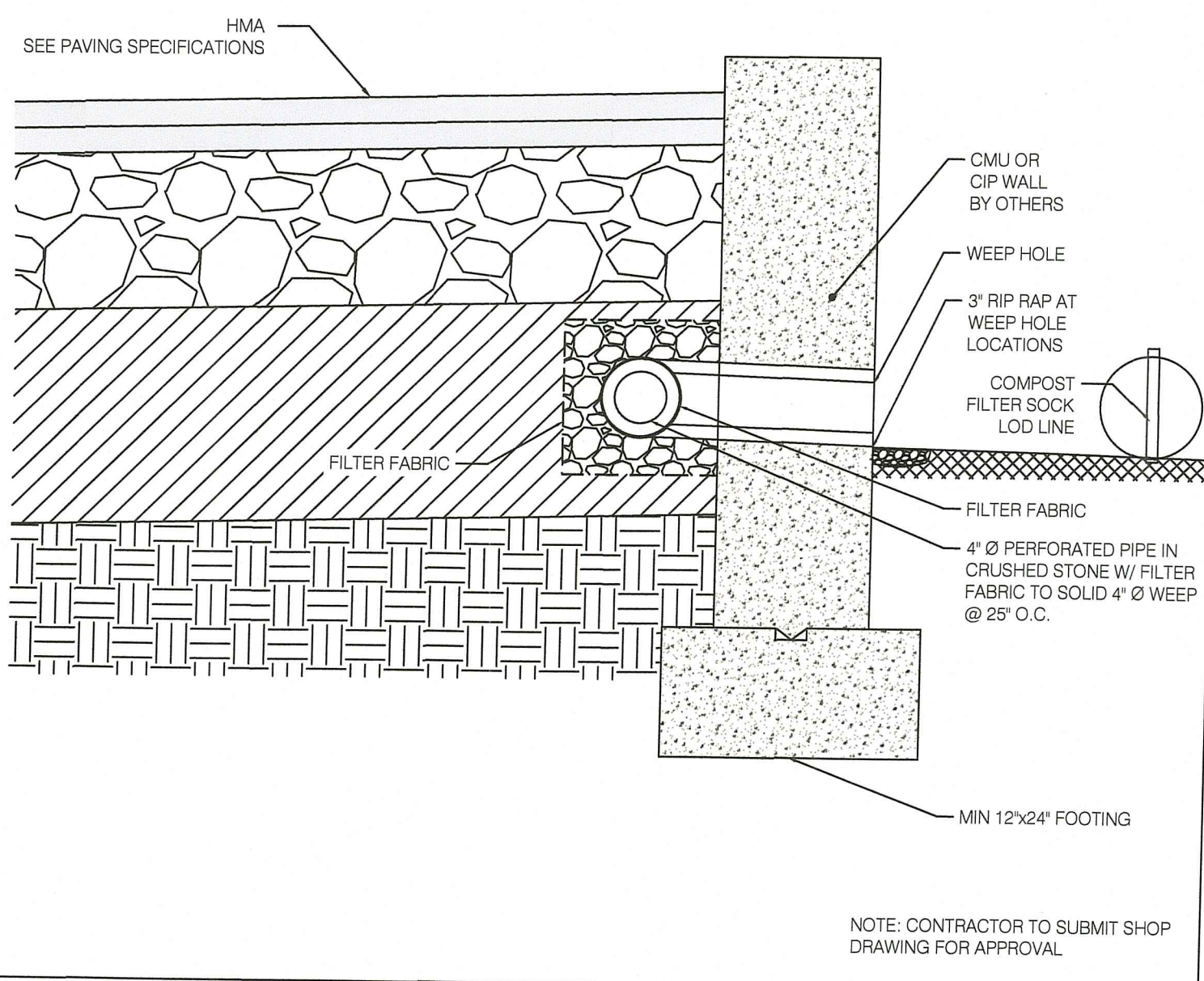
Project Number: 21-0135

Drawing No.
C101A

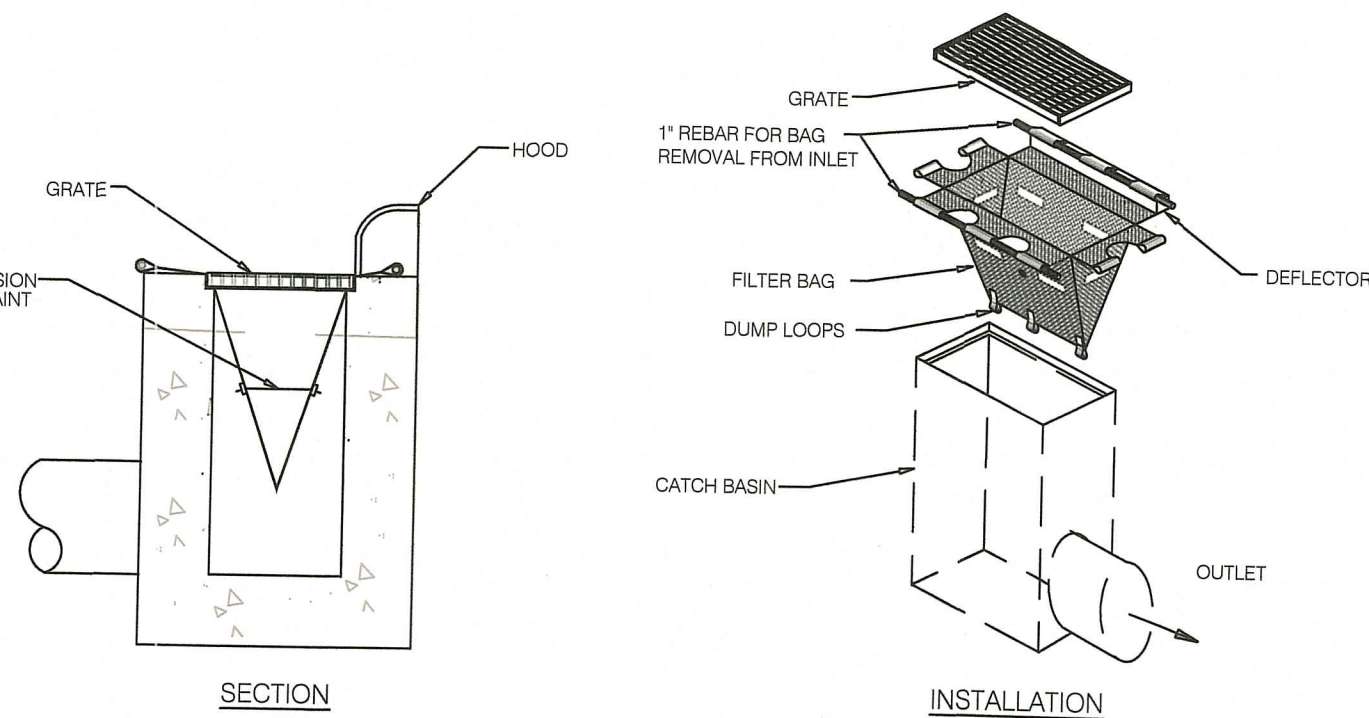
Sheet 6 OF 16

N:\PROJECTS\21_0135 - RI ARMY NATIONAL GUARD\21-0135 - RIARNG (SITE IMPROVEMENTS)\DWG\C101A - 9/16/2022 Neal Hingorany

SCHEMATIC ONLY



NOTE: CONTRACTOR TO SUBMIT SHOP DRAWING FOR APPROVAL



SECTION INSTALLATION

- NOTES:
1. INLET MAINTENANCE SHALL BE DOCUMENTED IN PROJECT LOG BOOK.
 2. FILTER TYPES SHALL BE APPROVED BY THE INSPECTOR PRIOR TO INSTALLATION.
 3. FILTER BAGS MAY BE REMOVED WHEN SITE IS STABILIZED AT THE DIRECTION OF THE ENGINEER.
 4. FILTER BAGS SHALL BE REMOVED PRIOR TO STREET ACCEPTANCE.
 5. FILTER BAGS SHALL BE CLEANED OR REPLACED ON A REGULAR BASIS (NOT BE MORE THAN HALF FULL AT ANY TIME).
 6. FILTER BAGS SHALL NOT BE ALLOWED IN EXISTING TOWN OR RIDOT ROADS.

CATCH BASIN INLET PROTECTION

SCALE: N.T.S.

LOAM AND SEED:

- GENERAL:
1. ALL DISTURBED AREAS TO BE LOAMED AND SEEDED PER "RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK" AS AMENDED OR REVISED.
 2. FOR NON-NATIVE PLANTING SEEDING DATES ARE APRIL 1 THROUGH JUNE 15 AND AUGUST 15 THROUGH SEPTEMBER 30, DATE MAY BE EXTENDED 15 DAYS IN NEWPORT COUNTY.
 3. FOR NATIVE PLANTING SEEDING DATES ARE BETWEEN AUGUST AND SEPTEMBER.

SEED BED PREPARATION:

1. LOOSEN SOIL TO A DEPTH OF FIVE INCHES BY RAKING, DISCING, DRAGGING OR TRAVERSING WITH TRACKED MACHINERY, OVER COMPACTION SHALL BE AVOIDED. CLEAR MARKS SHALL BE PERPENDICULAR TO ANTICIPATED DIRECTION OF SURFACE WATER FLOW.
2. APPLY TOPSOIL, IF NECESSARY.
3. APPLY SLOW RELEASE FERTILIZER NOT TO EXCEED 1500 LBS PER ACRE OR 36 LBS PER 1,000 SF USING THE FOLLOWING PERCENTAGES BY WEIGHT:
 - 10% AVAILABLE NITROGEN (N)
 - 20% AVAILABLE PHOSPHORIC ACID (P)
 - 20% AVAILABLE POTASSIUM (K)
4. REMOVE FROM SURFACE ALL STONES LARGER THAN 2" IN DIAMETER, ALL DEBRIS, TREE ROOTS OR OTHER UNSUITABLE MATERIAL.
5. INSPECT AREA TO BE SEEDED IMMEDIATELY PRIOR TO SEEING FOR ANY COMPACTED AREAS, IF COMPACTED AREAS EXIST SCARIFY PRIOR TO COMMENCING SEEDING.

SEEDING:

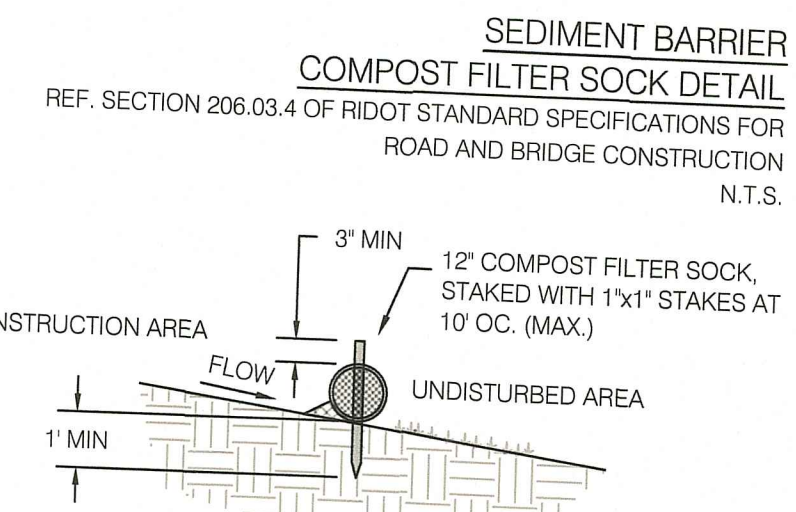
1. APPLY SELECTED SEED AT RATES PROVIDED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL, CULTIPACKER TYPE SEEDER OR HYDROSEEDER.
2. NORMAL SEEDING DEPTH IS .25 TO .5 INCH. HYDROSEEDINGS MAY BE LEFT ON THE SOIL SURFACE.
3. WHERE FEASIBLE, EXCEPT WHERE EITHER CULTIPACKER TYPE SEEDER OR HYDROSEEDER IS USED, FIRM THE SEEDBED FOLLOWING SEEDING OPERATION WITH ROLLER, OR LIGHT DRAG.
4. SEEDING RATES SHALL BE INCREASED BY 10% WHEN USING HYDROSEEDING.
5. USE OF STRAW MULCH HELD WITH ADHESIVE MATERIALS OR 500 LBS PER ACRE OF WOOD FIBER MULCH IS RECOMMENDED FOR PROTECTION FROM SOIL EROSION.
6. IF SEEDING CAN NOT BE COMPLETED WITHIN SEEDING DATES USE MULCHING TO PROTECT SITE AND DELAY SEEDING UNTIL THE NEXT RECOMMENDED SEEDING PERIOD.

RECOMMENDED SEEDING:

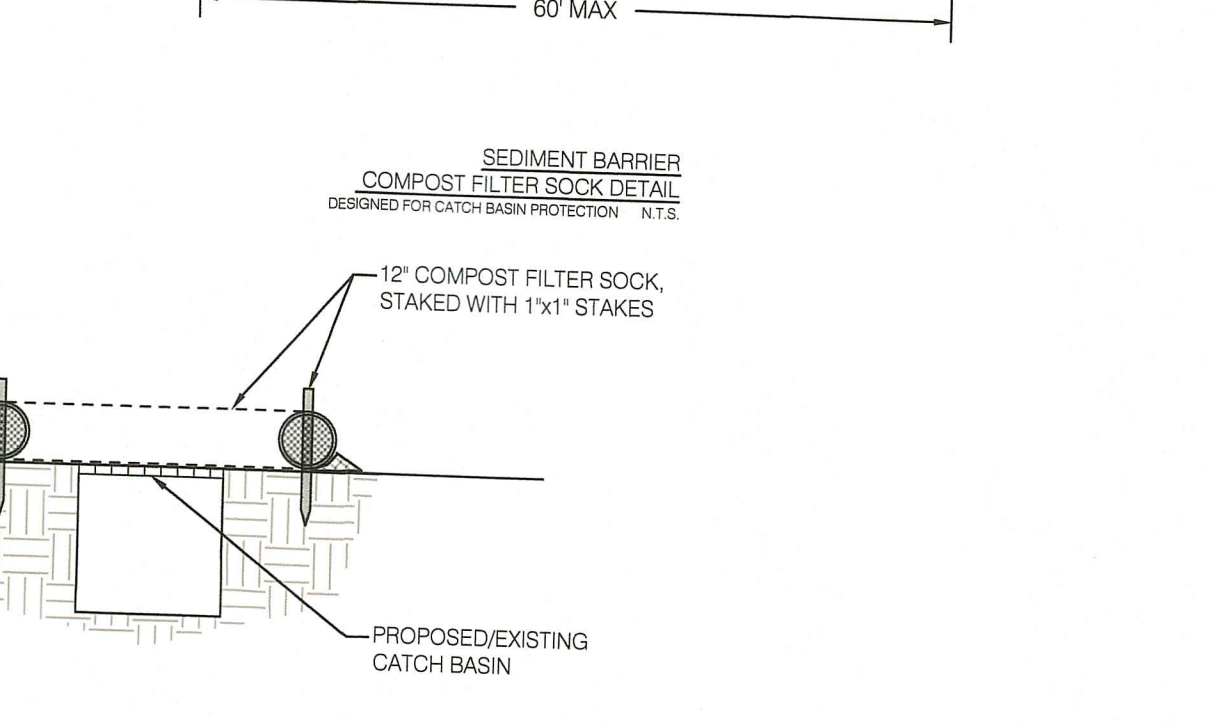
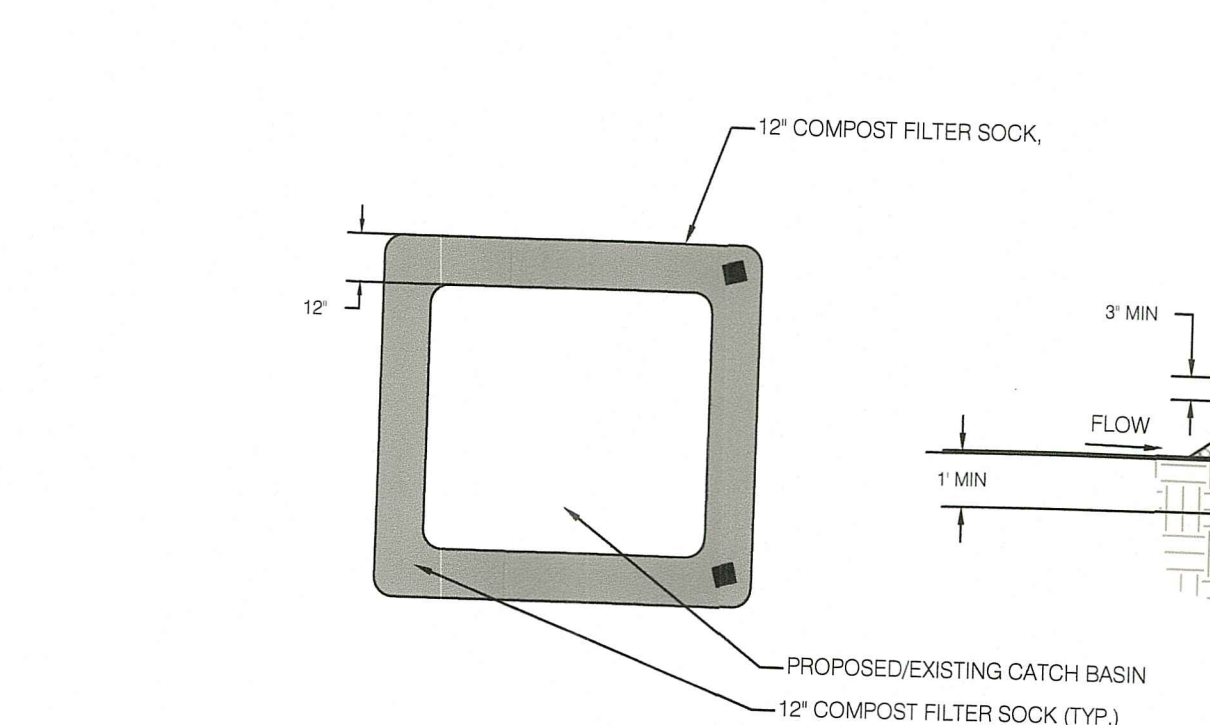
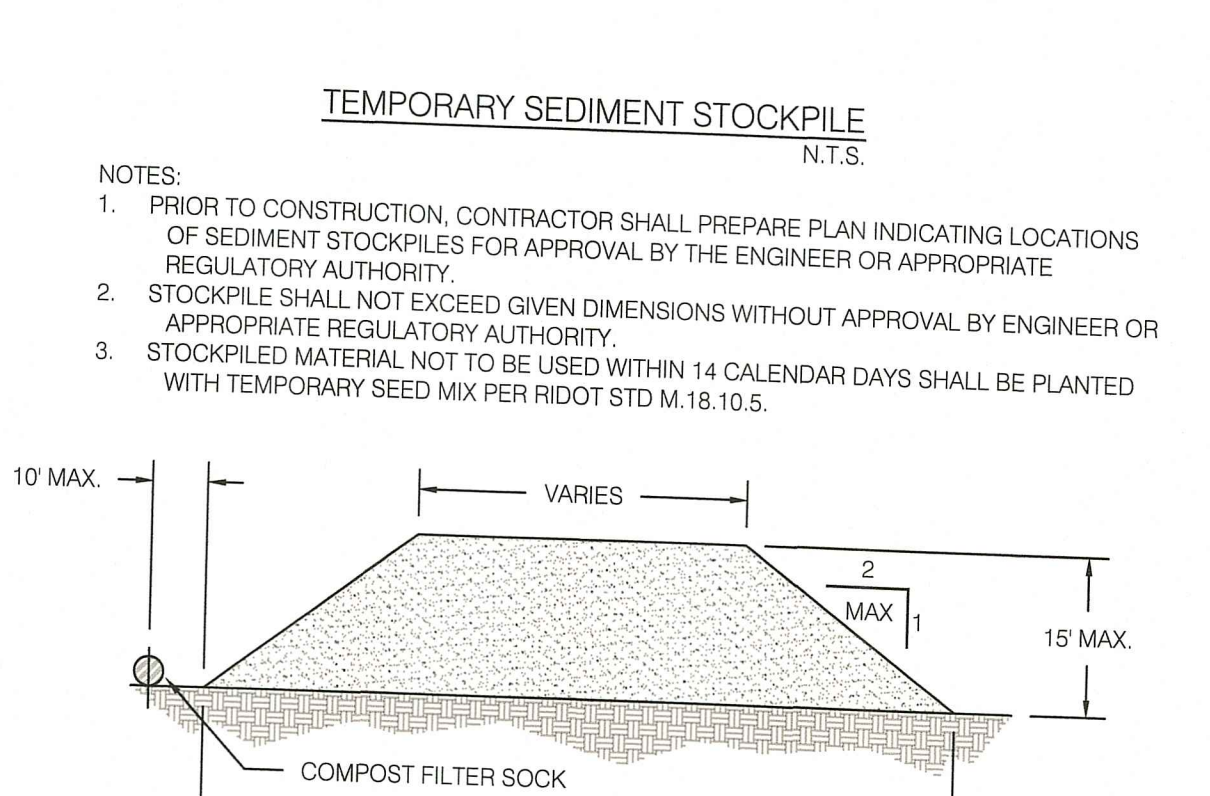
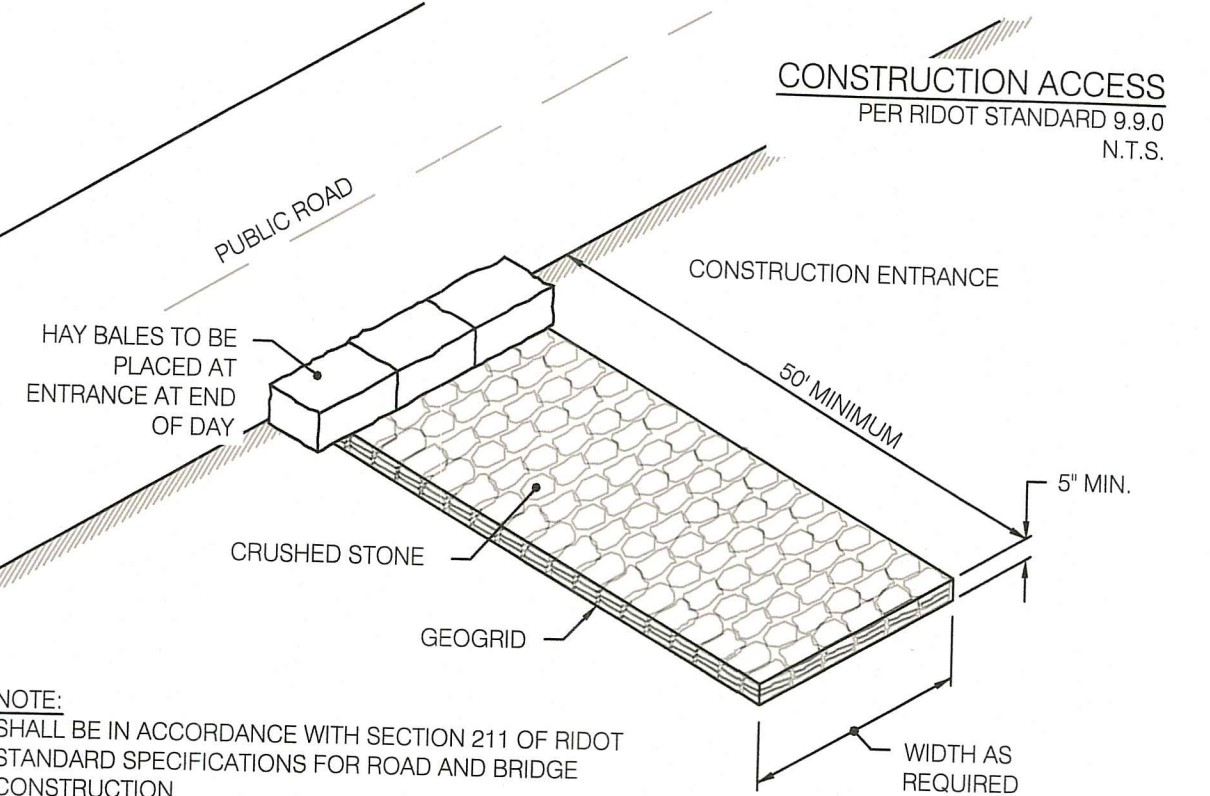
SEED MIXTURE NO. 1			
• KENTUCKY BLUE GRASS	22.5 LBS/AC	0.5 LBS/1000 SF	
• CREEPING RED FESCUE	105 LBS/AC	2.5 LBS/1000 SF	
• PERENNIAL RYEGRASS	22.5 LBS/AC	0.5 LBS/1000 SF	

NOTES: WHERE CONFUSION OR UNCERTAINTY EXISTS IN LOAMING AND SEEDING CONSULT THE "RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK" AS AMENDED OR REVISED, ENGINEER, LANDSCAPE ARCHITECT

- A. INSTALLATION. COMPOST FILTER SOCKS SHALL BE CONSTRUCTED AT THE LOCATIONS, AND IN ACCORDANCE WITH THE DETAILS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER. THE FOLLOWING STIPULATIONS ALSO APPLY:
1. COMPOST FILTER SOCKS MAY BE EITHER FABRICATED ON SITE OR DELIVERED TO THE SITE.
 2. COMPOST MEDIA SHALL CONFORM TO AASHTO MP 9-06 AND RIDOT SECTION 206.
 3. TRENCHING IS NOT REQUIRED. COMPOST FILTER SOCKS SHALL BE PLACED OVER THE TOP OF GROUND, WOODEN STAKES SHALL BE DRIVEN THROUGH THE CENTER OF THE FILTER SOCKS TO ANCHOR THEM TO THE GROUND, TO ENSURE OPTIMUM PERFORMANCE. HEAVY VEGETATION SHALL BE CUT DOWN OR REMOVED, AND EXTREMELY UNEVEN SURFACES SHALL BE GRADED TO ENSURE THAT THE COMPOST FILTER SOCK UNIFORMLY CONTACTS THE GROUND SURFACE.
 4. FILTER SOCKS SHALL BE PLACED IN A CONTINUOUS LINE. WHERE ENDS INTERSECT THEY SHALL BE SLEEVED TO CREATE AN INTERLOCK WITH A TWO (2) FOOT OVERLAP. AFTER ONE SECTION IS FILLED AND THE ENDS TIED OFF, THE NEXT SECTION SHALL BE PULLED OVER THE TIED OFF END OF THE PREVIOUS SECTION, TO CREATE A 2 FOOT OVERLAP. THE OVERLAP SHALL BE STAKED. THE INTERSECTING OVERLAPS SHALL BE CONSTRUCTED TO ENSURE THAT STORMWATER DOES NOT BREAK THROUGH AT THESE INTERSECTION POINTS.
- B. REMOVAL. THIS WORK, IF REQUIRED, SHALL INCLUDE THE REMOVAL OF THE COMPOST FILTER SOCK AND STAKES, UNLESS BIODEGRADABLE. THE MESH FILTER SOCK MATERIAL SHALL BE CUT OPEN AND THE MESH REMOVED. IN GENERAL, THE COMPOST FILTER MATERIAL MAY BE LEFT IN PLACE, HOWEVER THE MATERIAL WILL BE RAKED OUT LEVELED TO SURROUNDING GRADES. THEN SEED. PRIOR TO SUCH REMOVAL, HOWEVER, ALL SILT, MUD AND DEBRIS ENTRAPPED OUTSIDE OF THE COMPOST FILTER SOCK SHALL BE REMOVED AND THE AREA CLEANED UP IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF SECTION 212 OF RIDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.



COMPOST FILTER SOCK DETAIL



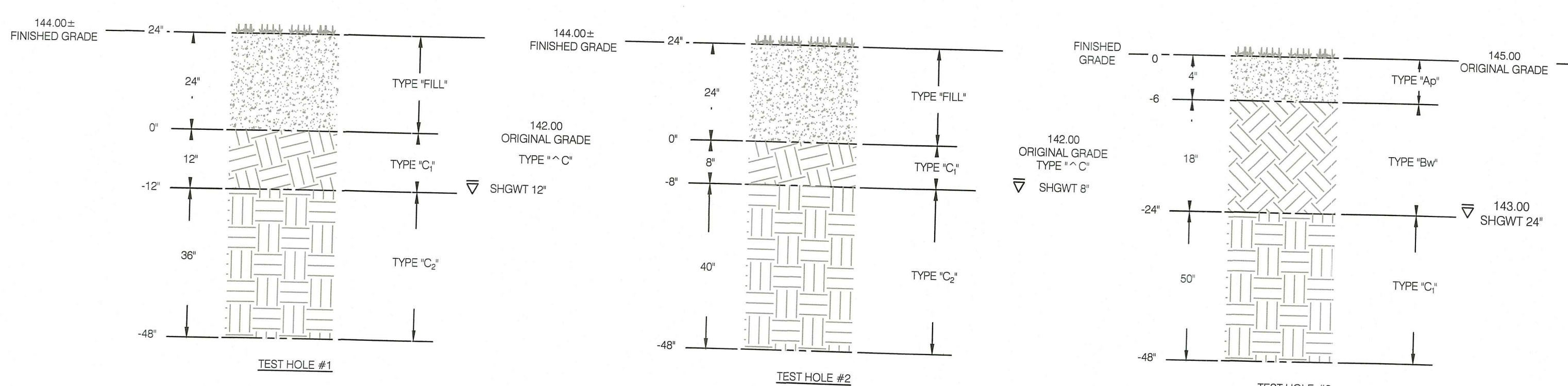
EROSION CONTROL DETAILS

SCALE: NOT TO SCALE

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL
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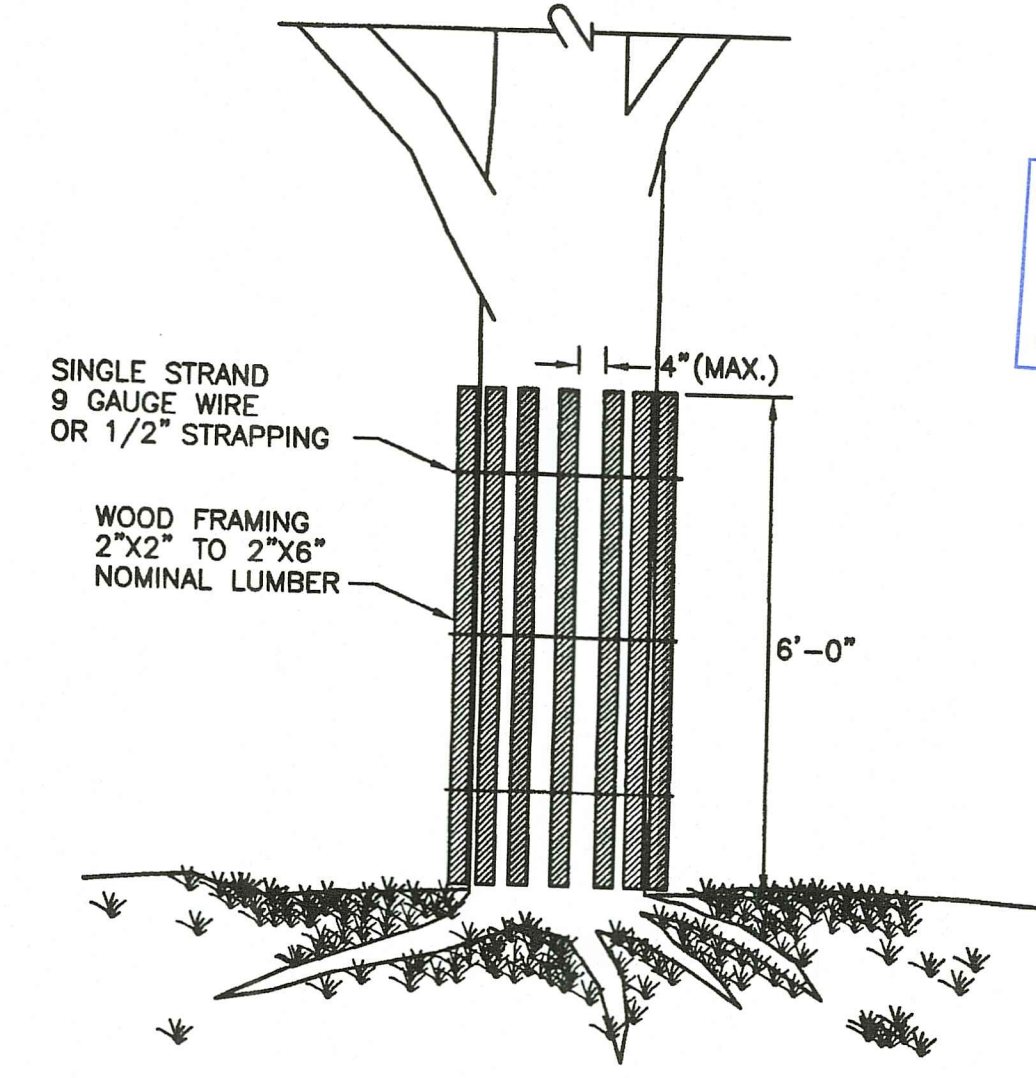
Nancy L. Freeman

RI Environmental Management
OCT 06 2022
Office of Water Resources



SOIL EVALUATION PROFILES

SCALE: NOT TO SCALE



NOTE: SHALL BE IN ACCORDANCE WITH SECTION L.11 OF THE STANDARD SPECIFICATIONS.

TREE PROTECTION DEVICE

SCALE: NOT TO SCALE



Certification

Drawn by LD
Checked by NKH & EC
Revised on 8/29/22
- MISC. SITE EDITS PER RIARNG
- RESPONSE TO RIDEM COMMENTS
FOR P.E. ELEMENTS ONLY
KAMAL HINGORANY
REGISTERED PROFESSIONAL ENGINEER
9-16-22

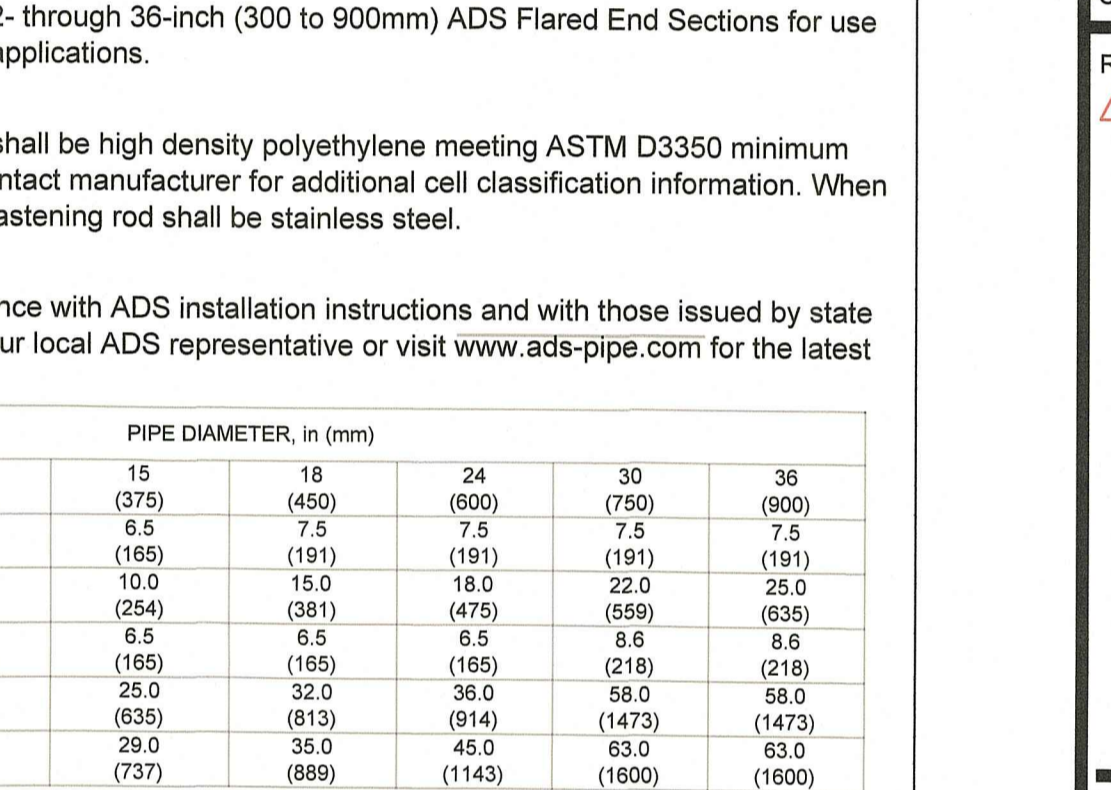
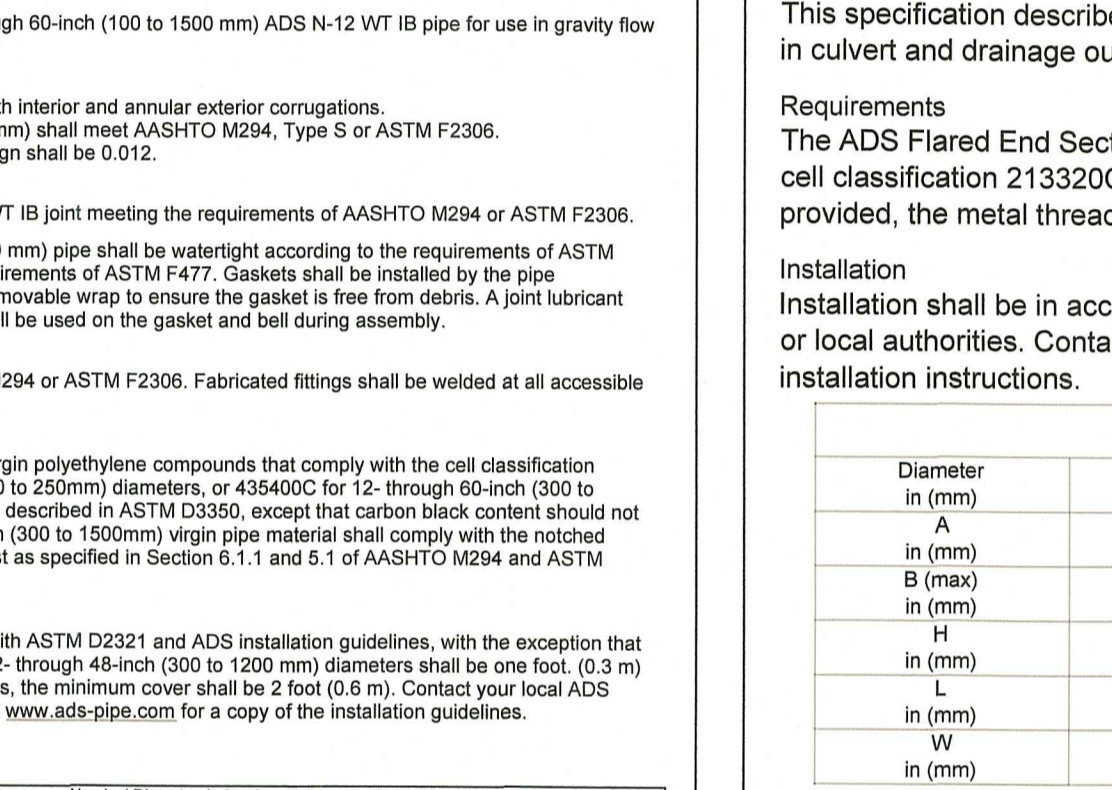
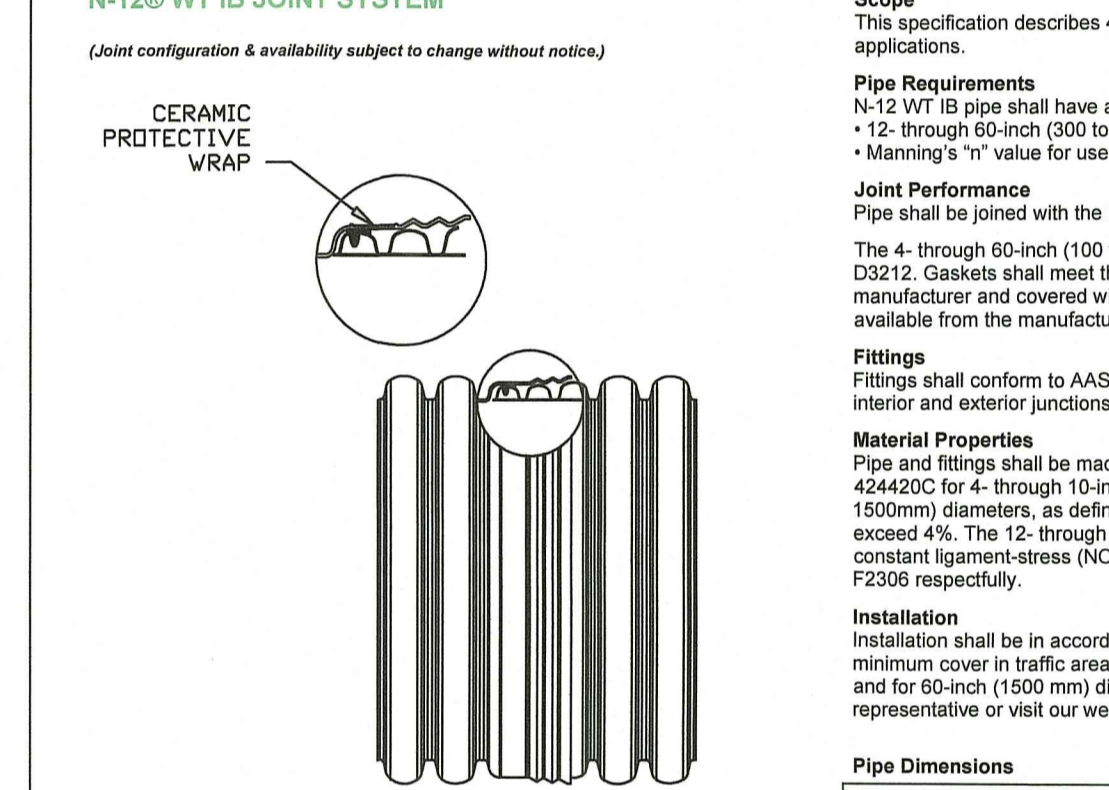
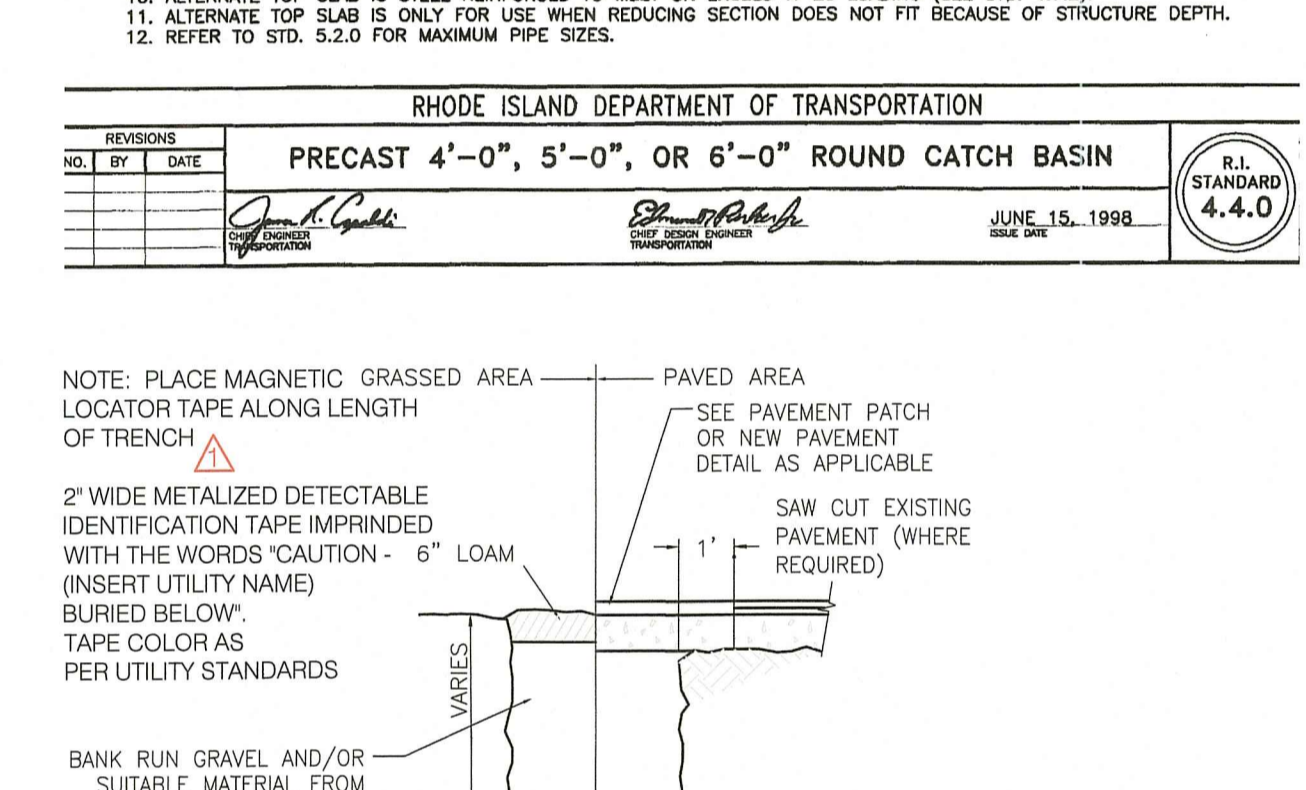
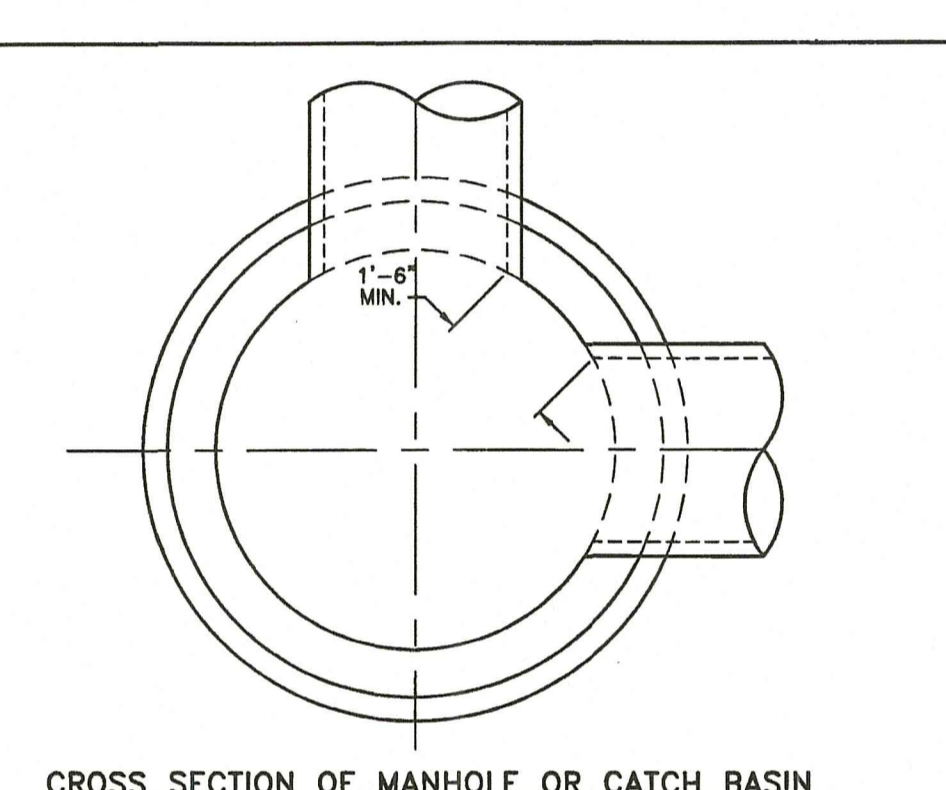
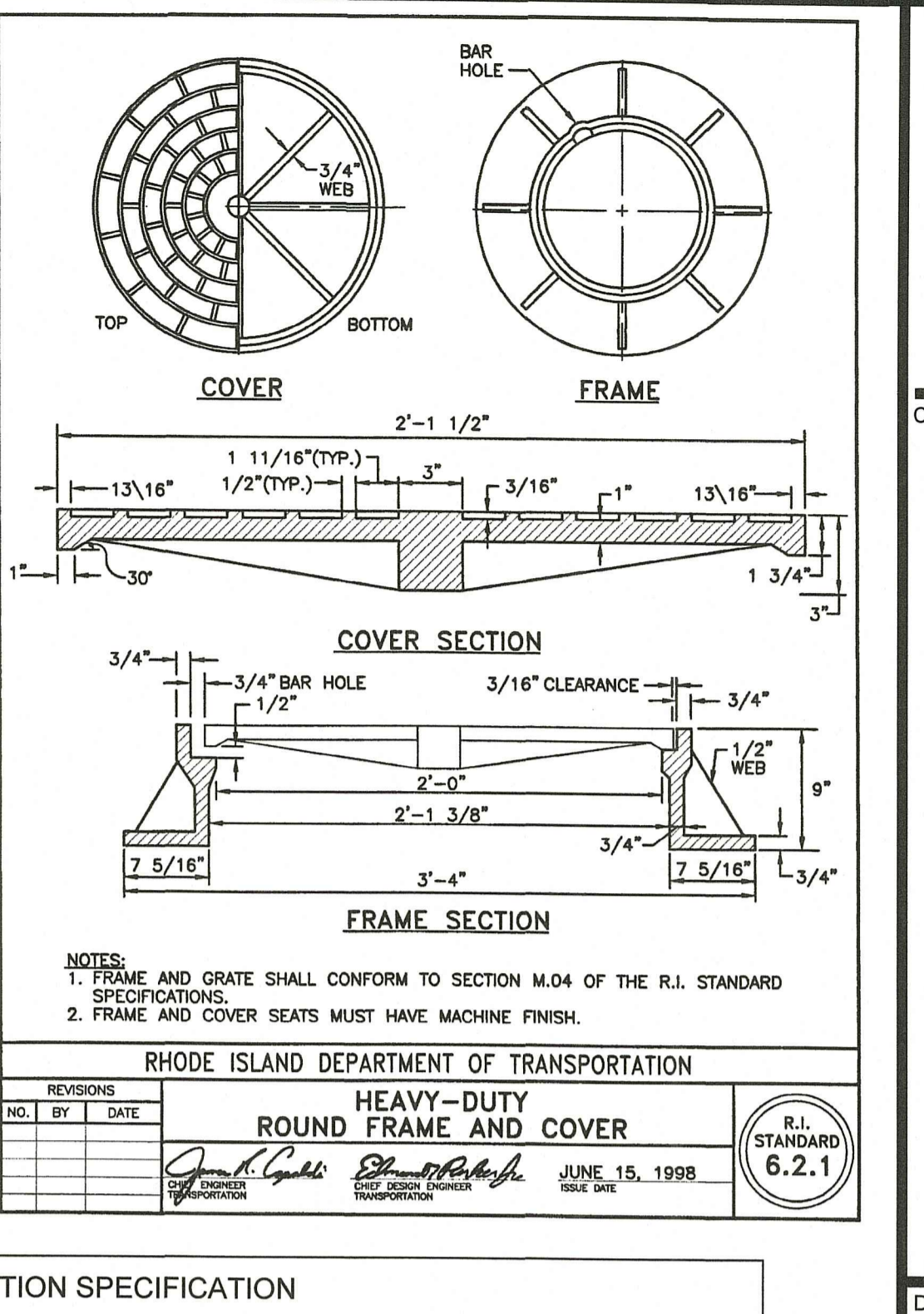
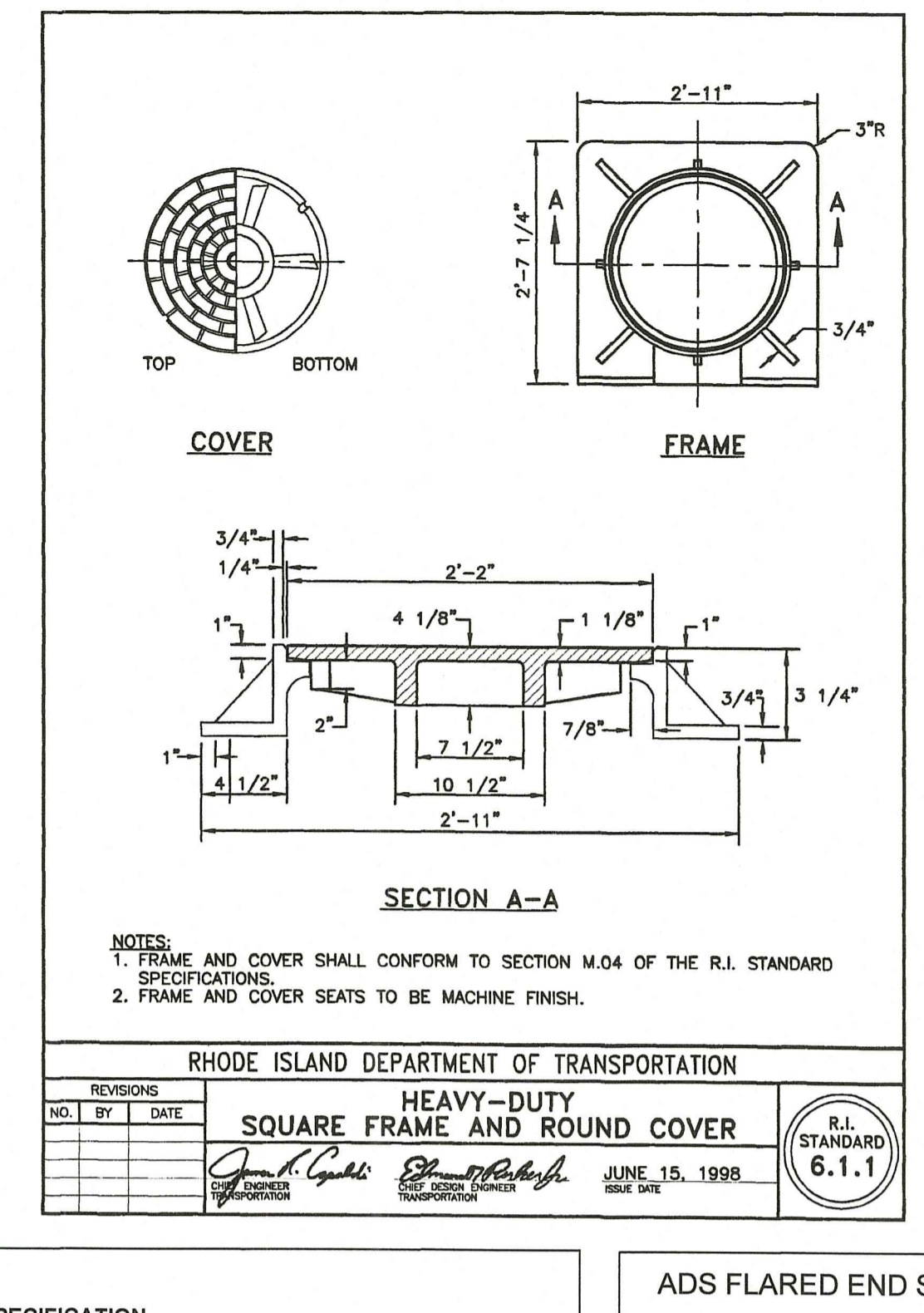
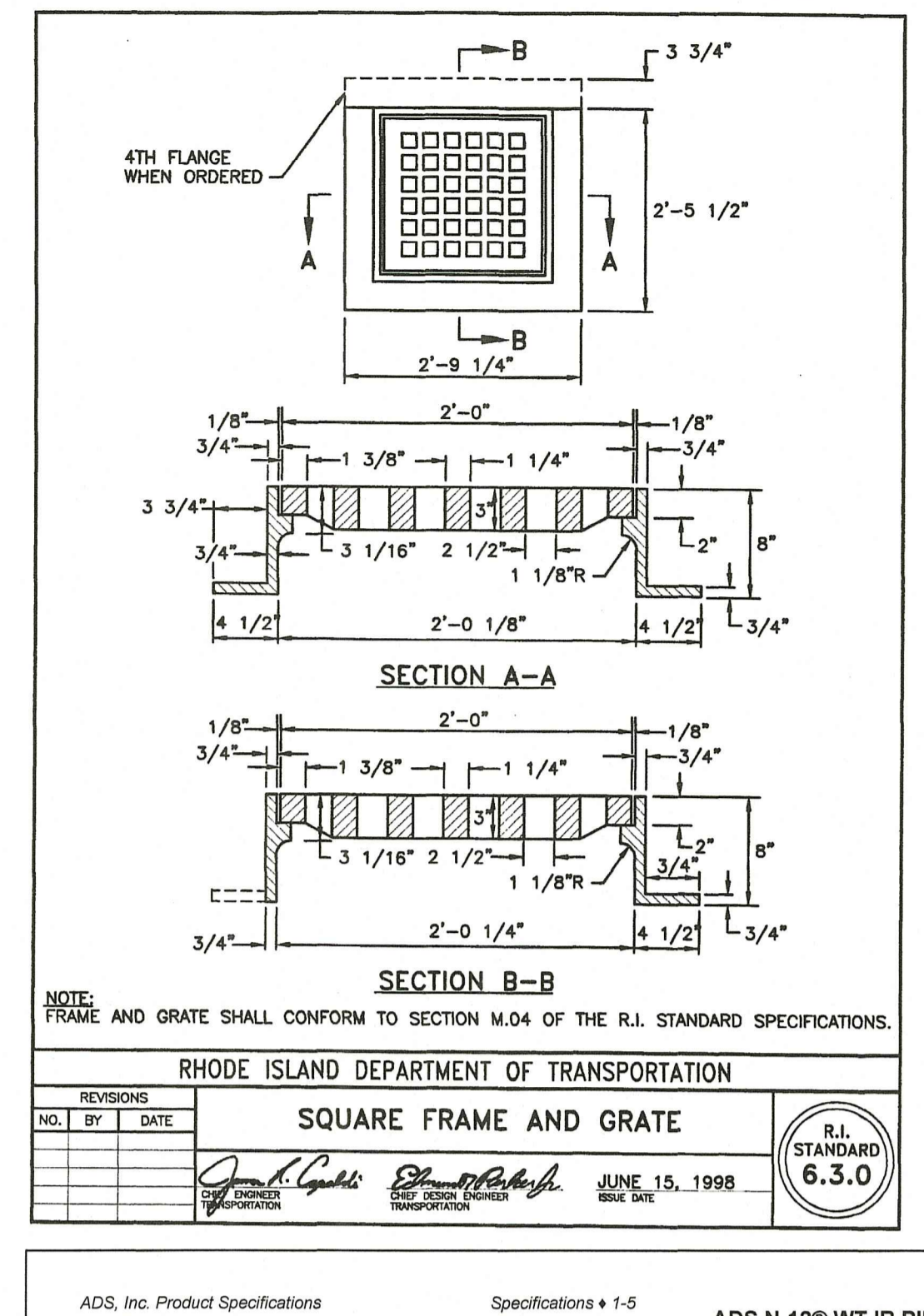
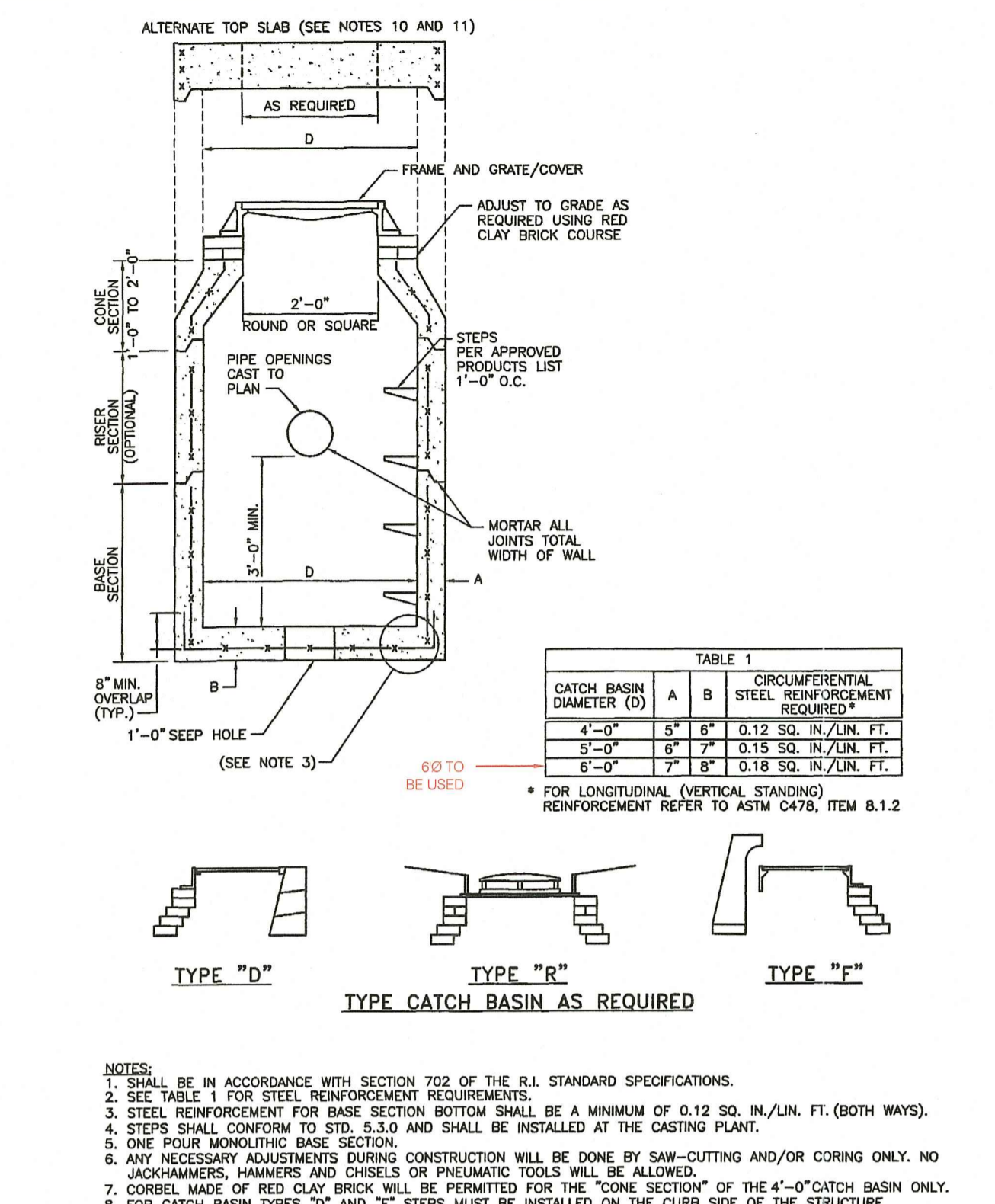
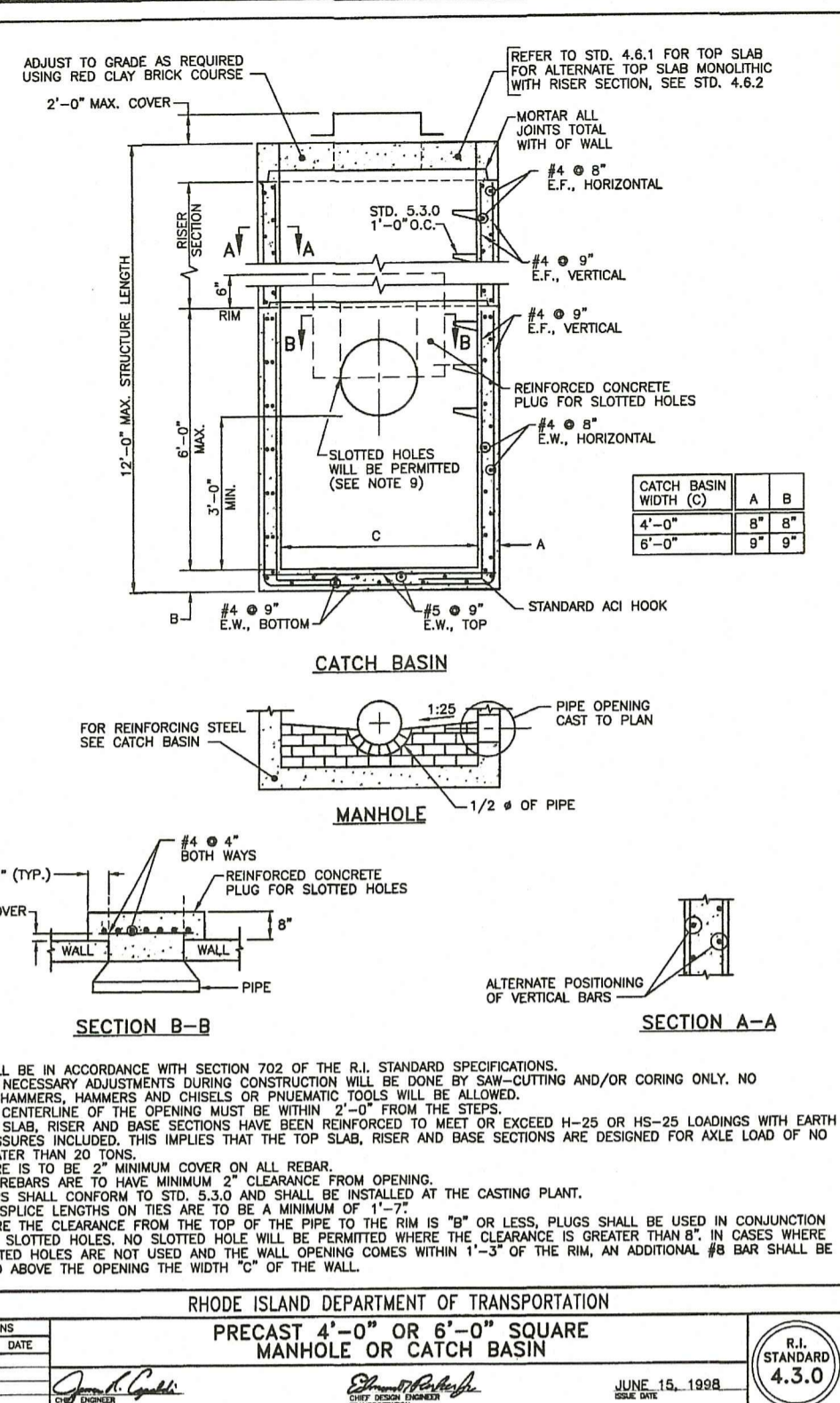
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RI ARMY NATIONAL GUARD
MIDDLETOWN ARMORY SITE IMPROVEMENTS
106 AIRPORT ACCESS RD
MIDDLETOWN, RI 02842

Drawing Status
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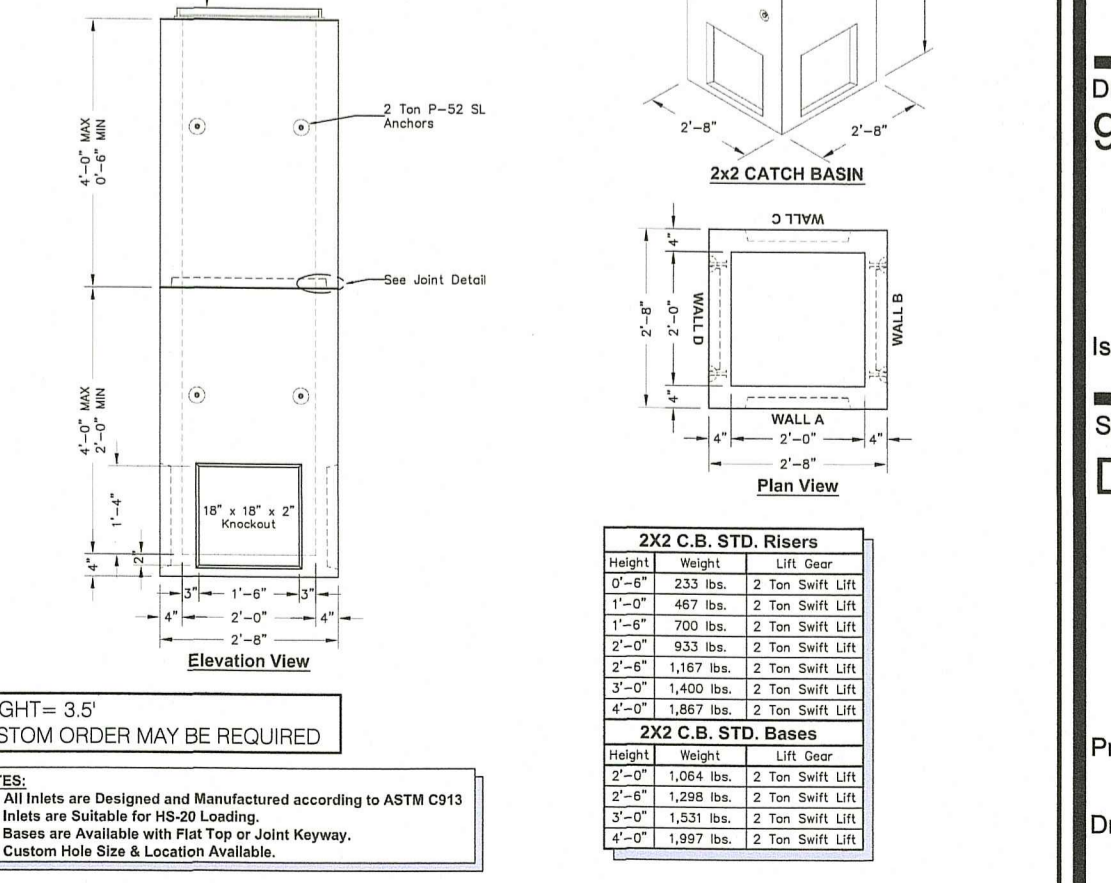
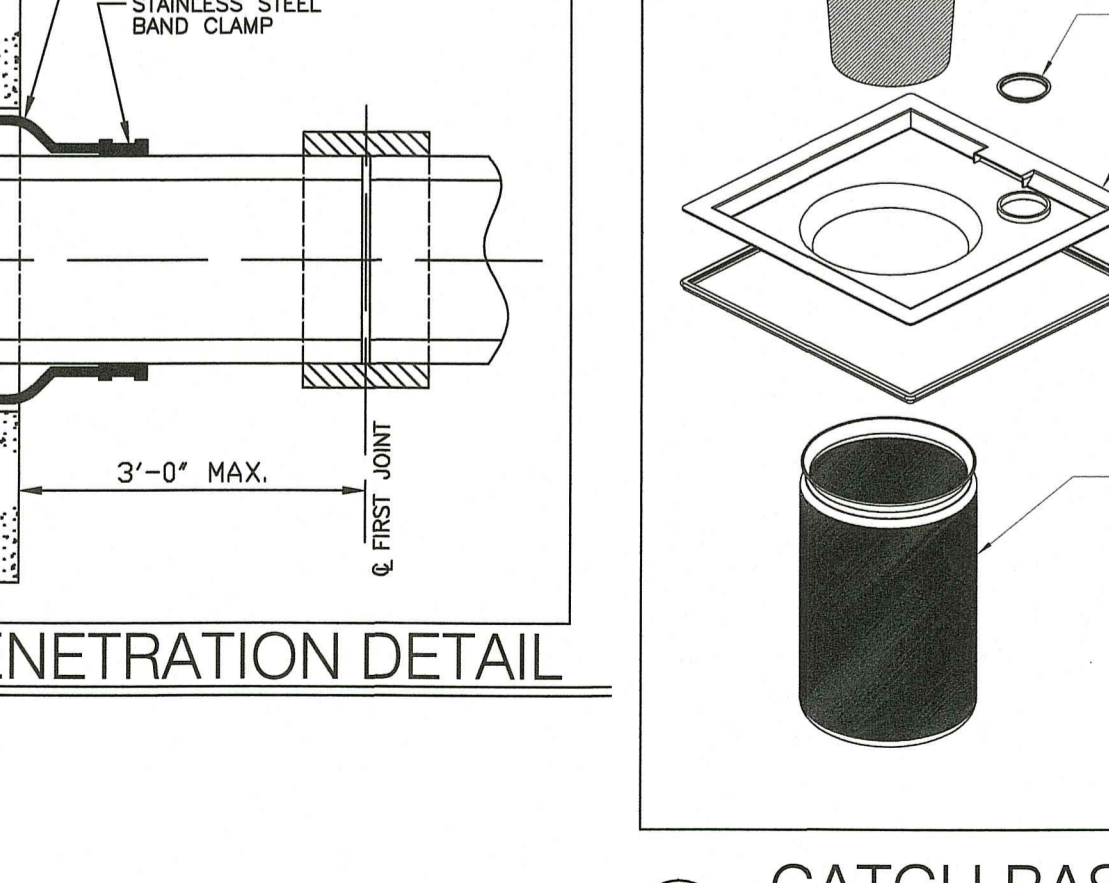
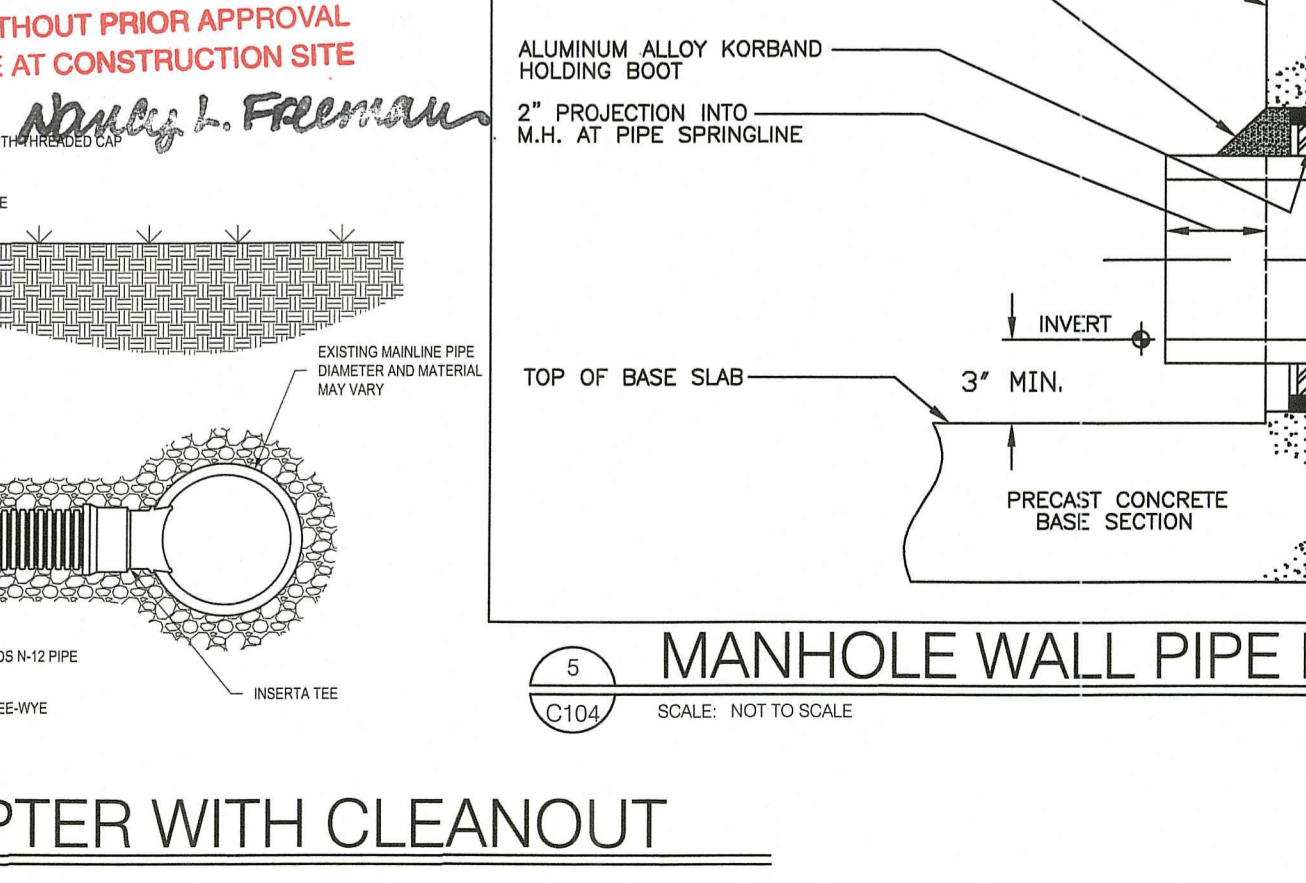
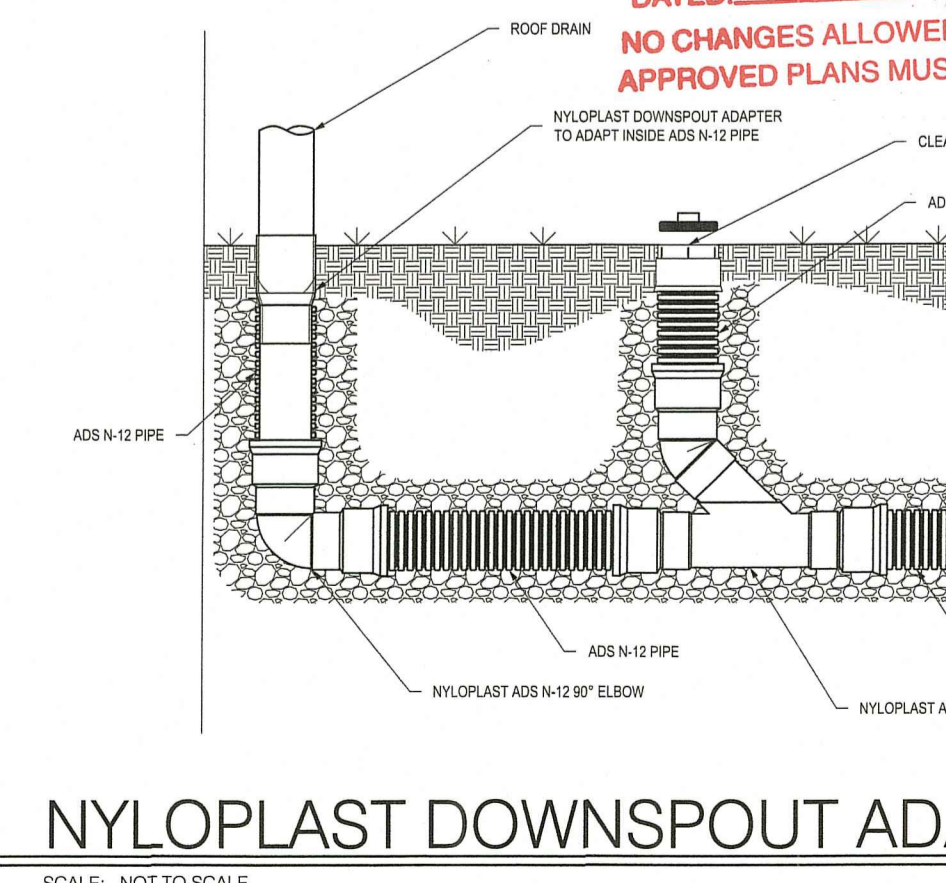
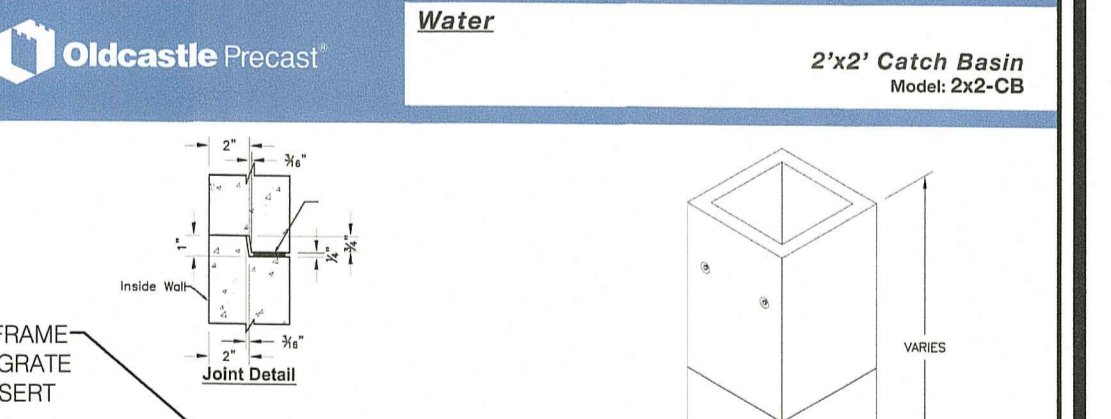
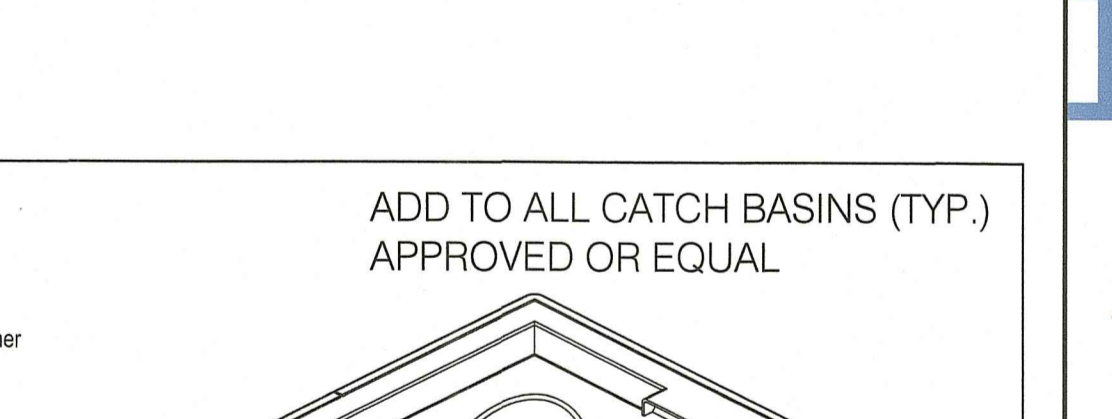
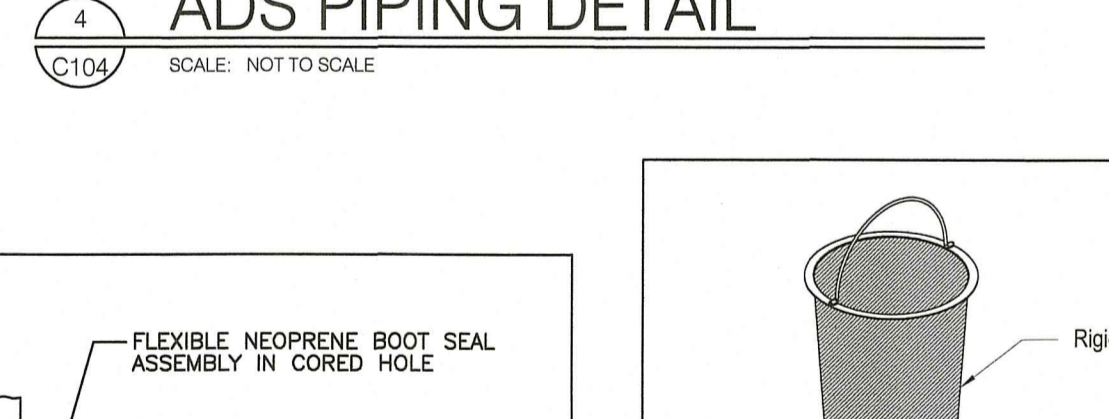
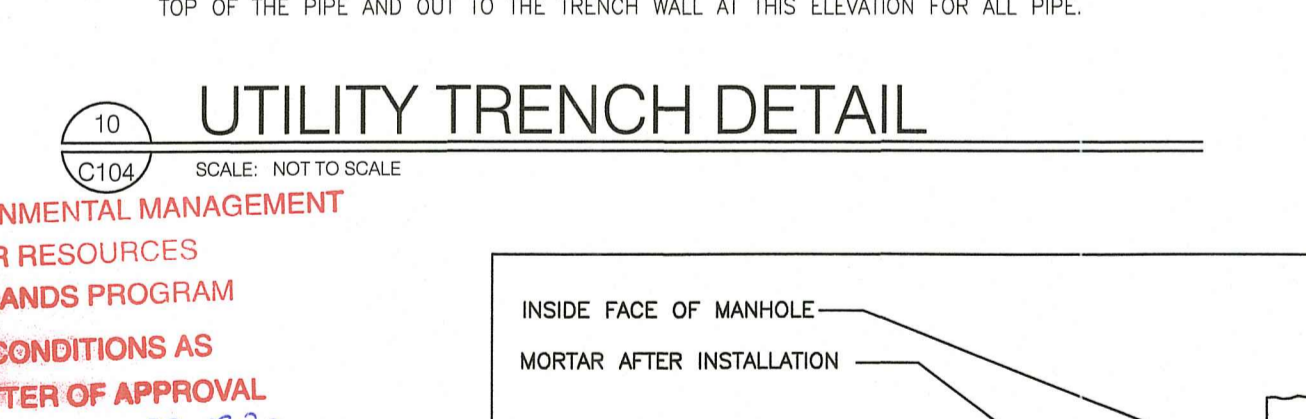
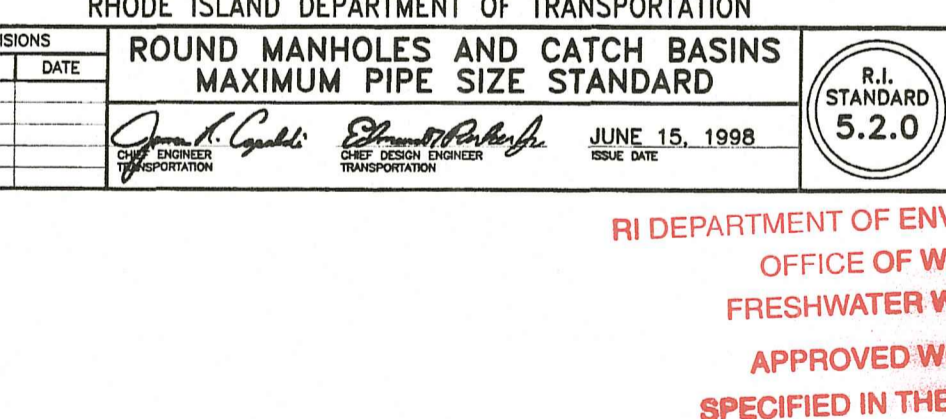
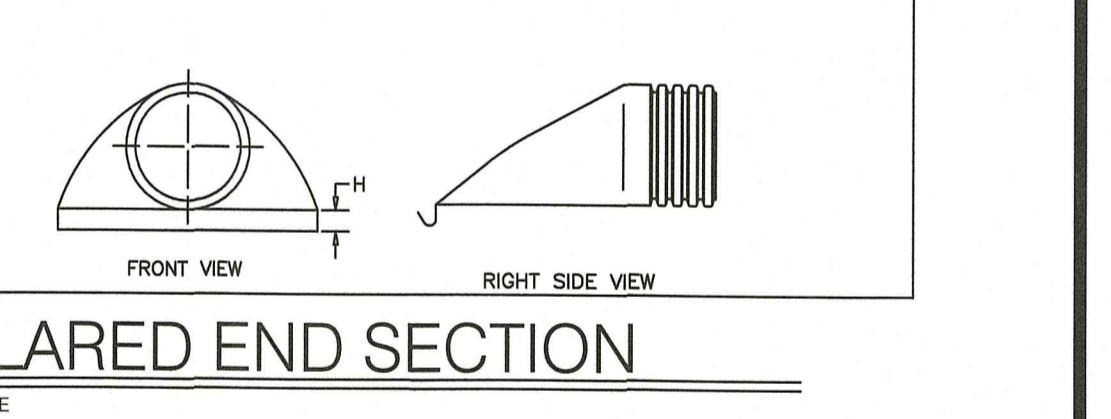
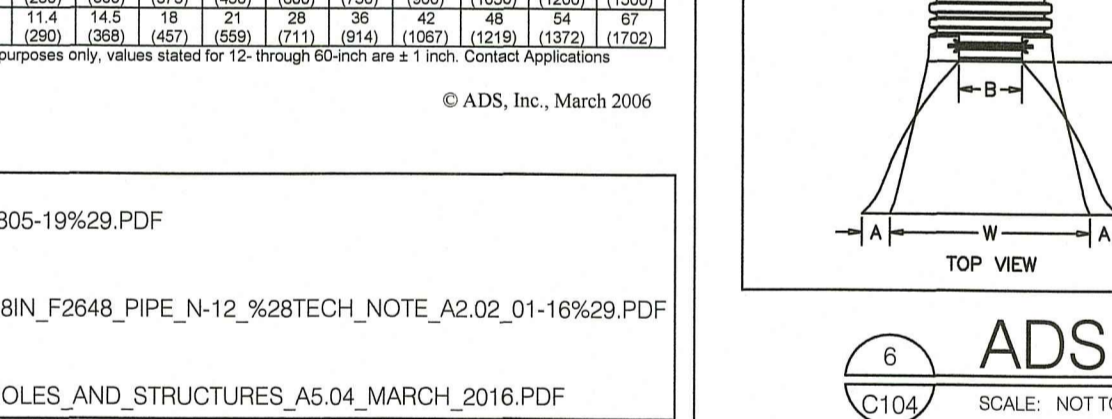
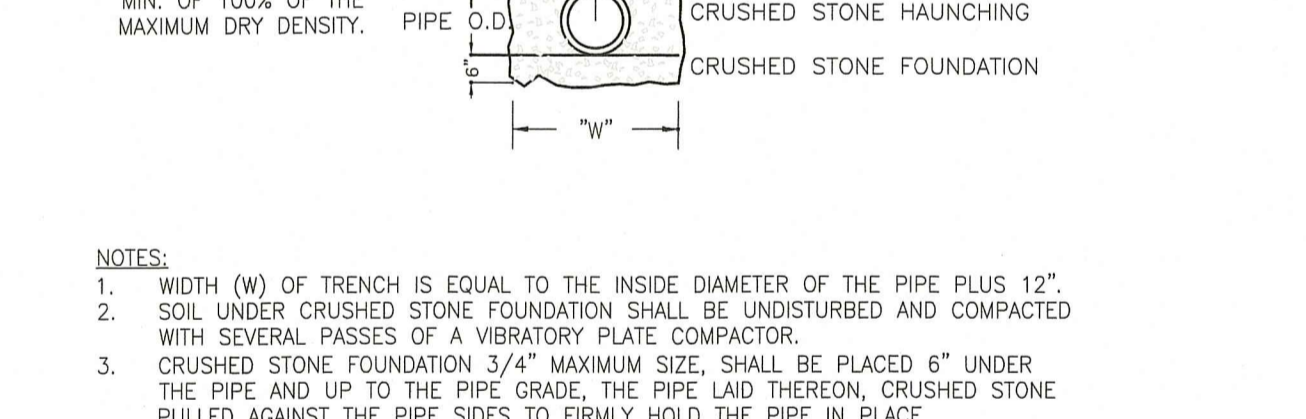
Issued On:
Sheet Contents
DETAILS AND NOTES

Project Number: 21-0135
Drawing No.
C103
Sheet 8 OF 16

N:\PROJECTS\21.0135 - RIARNG - MIDDLETOWN ARMORY\G101.0135 - RIARNG - MIDDLETOWN ARMORY\DWG C103 - 9/16/2022 Neal Hingorany



	4 FT. MANHOLE OR CATCH BASIN	5 FT. MANHOLE OR CATCH BASIN	6 FT. MANHOLE OR CATCH BASIN
MAX. PIPE O.D. STRAIGHT THRU TO 45° DEFLECTION	33 1/2" O.D. 27" R.C. PIPE	44" O.D. 36" R.C. PIPE	51" O.D. 42" R.C. PIPE
MAX. PIPE O.D. 90° DEFLECTION	23" O.D. 18" R.C. PIPE	33 1/2" O.D. 27" R.C. PIPE	37" O.D. 30" R.C. PIPE



	Class NMA5	Recommended Lift Thickness		Typical Use
		Min. Inches	Max. Inches	
Dense Base Courses	Class 19.0 HMA	3	5	Base or other underlying layers. Preferred mix for lifts greater than or equal to 3"
	Class 12.5 HMA	2	3	Surface, Base or other underlying layers. Patching, Utilities, Waterways
Dense Surface Courses	Class 9.5 HMA	1 1/2	2 1/4	Surface, Bridges, Driveways, Leveling, Patching, Utilities, Waterways, Misc.
	Class 4.75 HMA	3/4	1 1/4	Surface, Surface for Bike Paths, Sidewalks, Leveling, Patching, Utilities, Waterways, Misc.
Special Courses and Other Courses	Friction Course (FC)	1 1/2		Limited Access, Interstate Highways, High Speed Facilities
	Friction Course for Shoulders			
	PPEST	1		Pavement Preservation Overlay
	SMA	Varies		Base and/or Surface

HMA = Hot Mix Asphalt, NMA5 = Nominal Maximum Aggregate Size, FC = Friction Course, PPEST = Paver Placed Elastomeric Surface Treatment, SMA = Stone Matrix Asphalt

- Notes:
- "Class" refers to dense HMA courses. "Class" is followed by a number representing the NMA5 of the mix in millimeters.
 - Minimum lift thickness may be calculated as 4 times the NMA5. For example: Class 12.5 HMA, 4 x 12.5mm = 50 mm or 2 inches as a lift thickness (this rule excludes special courses). In general, using more lifts will provide for a smoother pavement; the largest NMA5 should be used for each lift.
 - Surface course binder shall be modified for all paver placed surface courses unless otherwise designated. Other additives for binder will be specified in the Contract Documents as required, e.g. WMA, anti-stripping.
 - The term "binder" refers to liquid asphalt.
 - The term "modified" refers to the polymer modification of binder.

Ver 2.4 07/2019

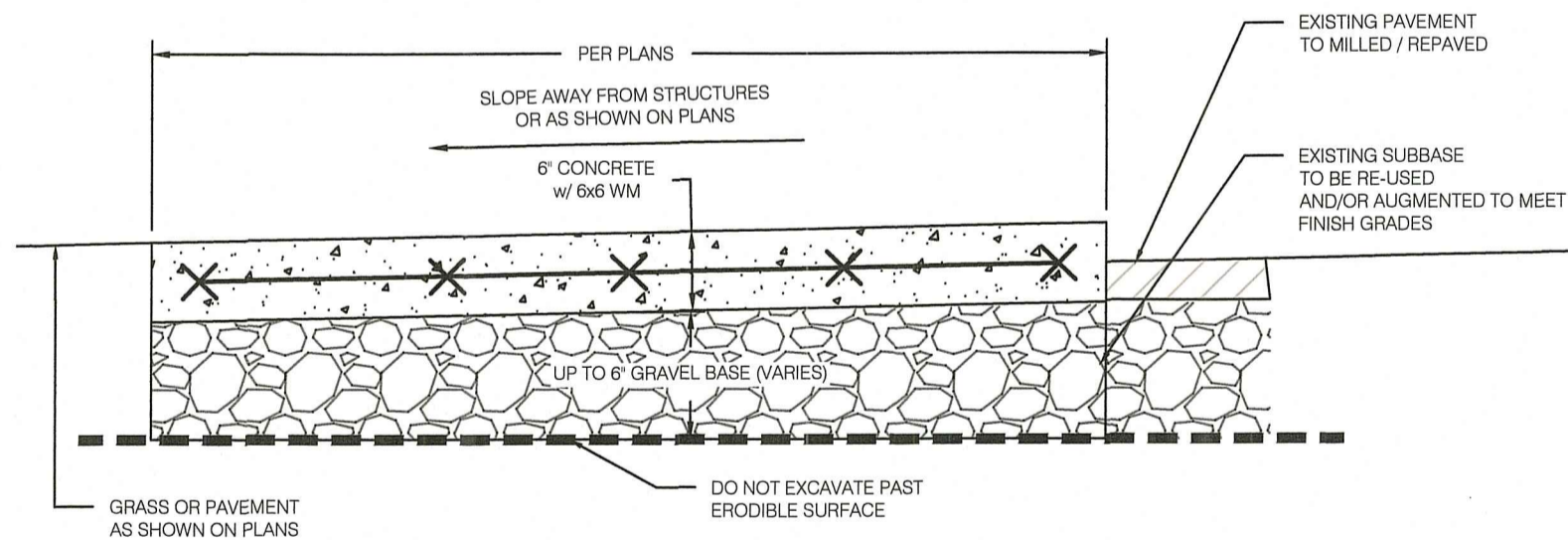
RIDOT HMA MATRIX

US STANDARD SIEVE SIZE	PERCENT PASSING (%)			
	CHOKER COURSE (AASHTO NO. 57)	FILTER COURSE (AASHTO NO M-6)	RESERVOIR COURSE (AASHTO NO. 3)	RESERVOIR COURSE (AASHTO NO. 5)
6 INCHES 150 MM	-	-	-	-
2 1/2 INCHES 63 MM	-	-	100	-
2 INCHES 50 MM	-	-	90 - 100	-
1 1/2 INCHES 37.5 MM	100	-	35 - 70	100
1 INCH 25 MM	95 - 100	-	0 - 15	90 - 100
3/4 INCH 19 MM	-	-	-	20 - 55
1/2 INCH 12.5 MM	25 - 60	-	0 - 5	0 - 10
3/8 INCH 9.5 MM	-	100	-	0 - 5
#4 4.75 MM	0 - 10	70 - 100	-	-
#8 2.36 MM	0 - 5	-	-	-
#200 0.075 MM	-	0 - 6**	-	-
% COMPACTION ASTM D698 / AASHTO T99	95	95	95	95

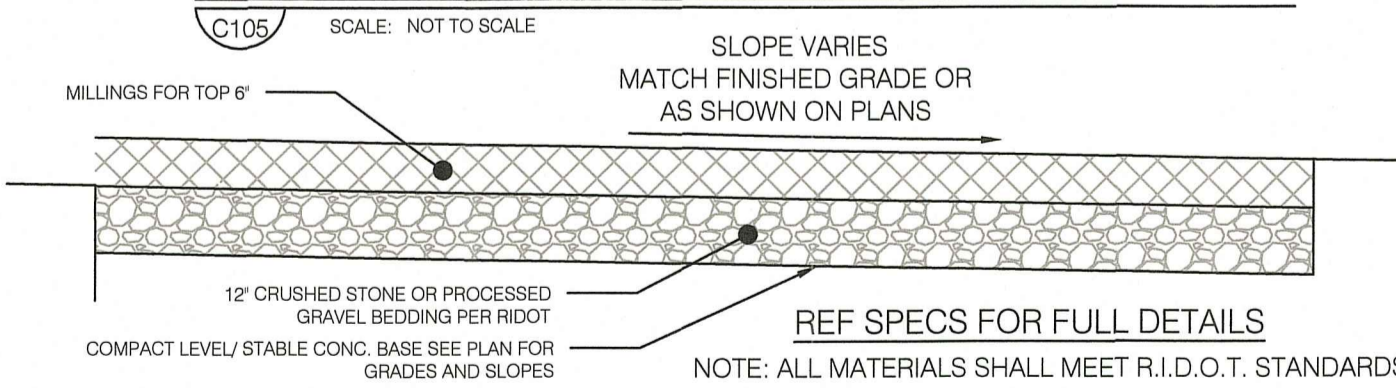
STD GRADATIONS TABLE F-7 RIDEM

NOTES:

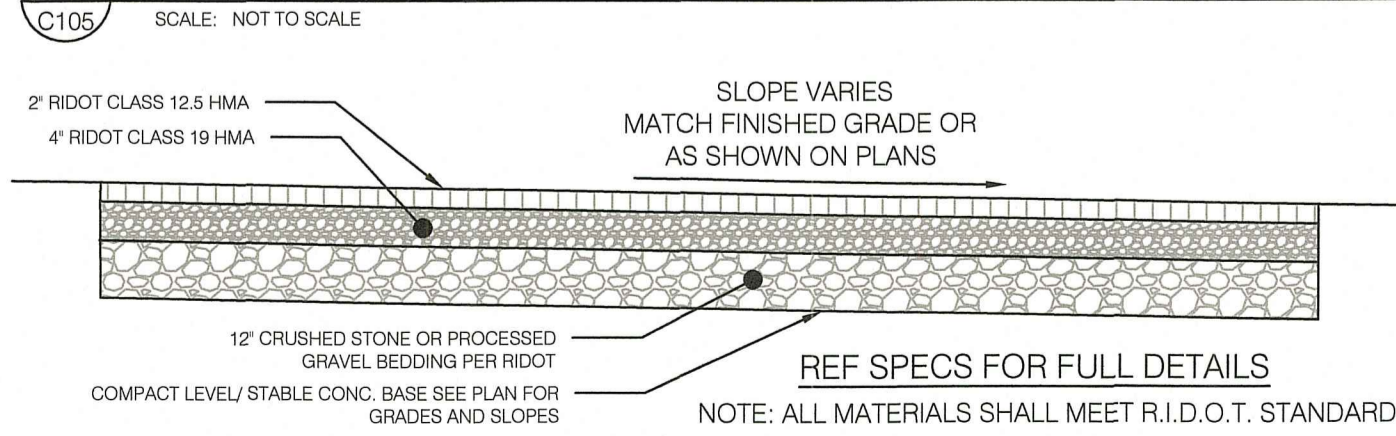
- MAXIMUM CROSS SLOPE = 2%. GRADE OS SHOWN ON PLANS
- MAXIMUM GRADIENT = 5%
- PROVIDE EXPANSION JOINT AT FACE OF ABUTTING SLABS AND STRUCTURES
- GRAVEL BORROW BASE SHALL COMPACT TO ACHIEVE SOIL DENSITY VALUES OF 95% MODIFIED PROCTOR DENSITY (AASHTO T180)
- REINFORCE THE CONCRETE SLAB WITH #6 X 6" WIRE MESH
- PROVIDE CONTROL JOINT 1/4 TIMES THE DEPTH OF THE SLAB. DISTANCE BETWEEN CONTROL JOINTS TO BE 5' MAXIMUM
- PROVIDE EXPANSION JOINT WITH PRE-MOLDED FILLER. RECESS FILLER JOINT TO BE INSTALLED AT 20' INTERVALS. PROVIDE EXPANSION JOINT AT FACE OF ABUTTING SLABS AND STRUCTURES.
- PORTLAND CEMENT CONCRETE SIDEWALK, CLASS A (RIDOT 601.01.1) SHALL BE AN AIR-ENTRAINED 4,000 PSI, 1 1/2" MIN.
- GRAVEL FOR THE SIDEWALK BASE SHALL BE IN ACCORDANCE WITH M.01.09 GRADATION II
- WORK TO BE IN ACCORDANCE WITH SECTION 905 OF THE RI STANDARD SPECIFICATIONS



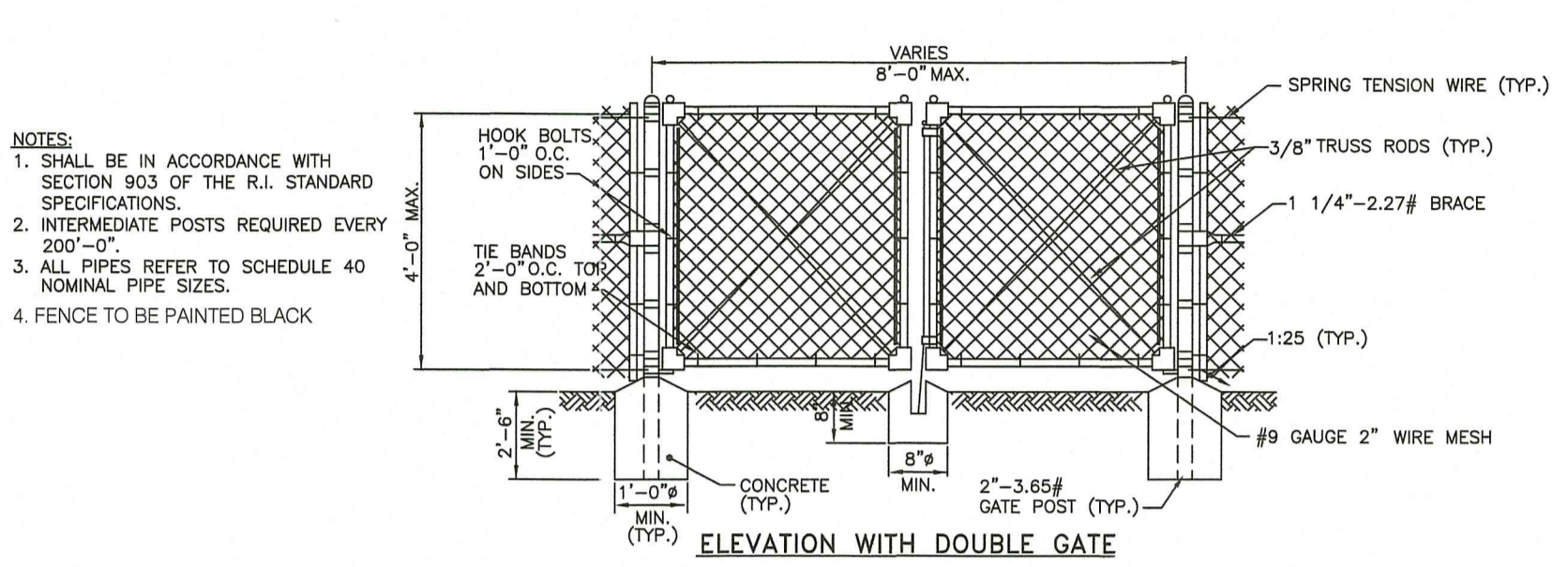
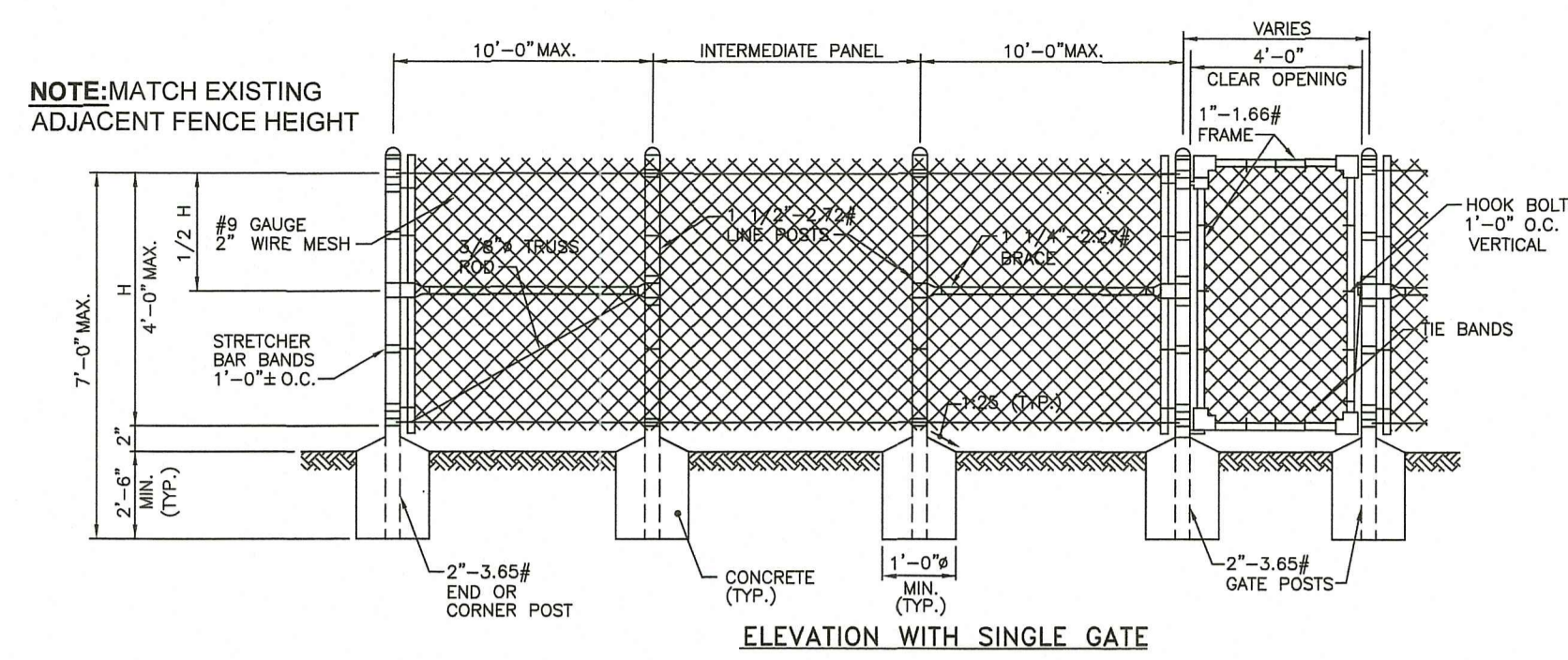
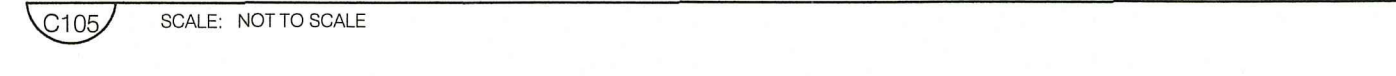
CONCRETE PAD- MILL ORG PARKING



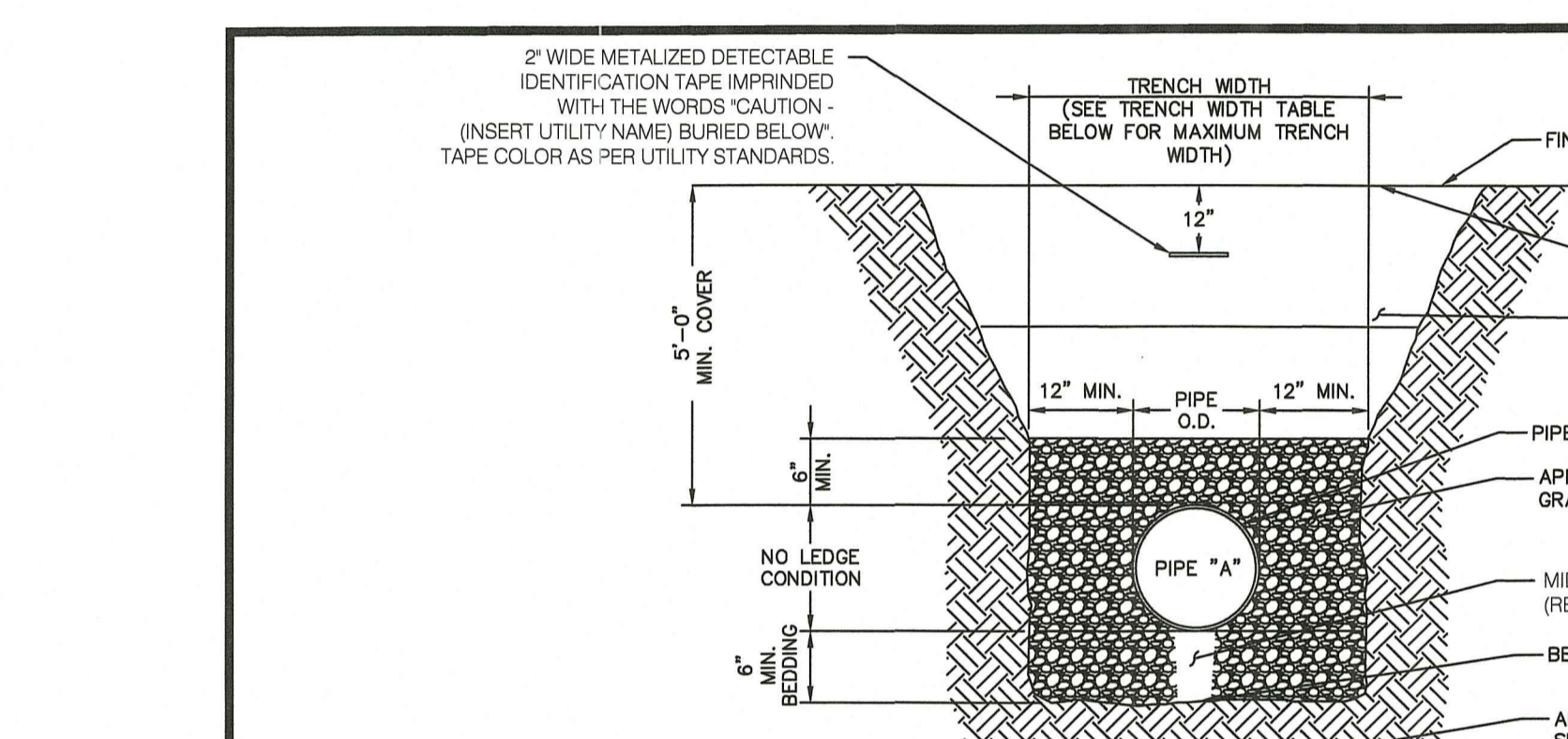
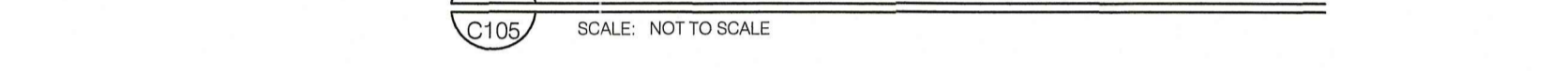
BASE BID: MILLINGS TYPICAL CROSS SECTION AT NEW PARKING LOT



PARKING LOT CROSS SECTION



CHAIN LINK FENCE



NOTES:

- MAINTAIN UNIFORM TRENCH WIDTH TO 6" OVER PIPE.
- IF SHEETING IS REQUIRED TO REMAIN, CUT OFF TWO (2) FEET BELOW FINISH GRADE.
- IF GROUNDWATER IS ENCOUNTERED, WRAP STONE WITH MIRAFIL 140N FILTER FABRIC OR APPROVED EQUAL.
- SEE PAVEMENT REPAIR DETAILS FOR ROAD WORK AREAS.
- PROVIDE 6" MIN. BEDDING FOR AREAS OF EXCAVATION IN ROCK.
- LOOSELY PLACE SUITABLE BACKFILL OR CLEAN WASHED 2" CRUSHED STONE IN MIDDLE BEDDING AREA. DO NOT COMPACT MIDDLE BEDDING AREA.
- ALL TRENCHES SHALL BE SUFFICIENTLY WIDE TO ACCOMMODATE TRENCH BOX.
- PER RIDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, APPROVED SUBGRADE SHOULD NOT CONSIST OF UNSUITABLE SOIL. UNSUITABLE SOILS IS DEFINED AS THOSE SOILS OTHER THAN MUCK, WHICH DUE TO THEIR CONSOLIDATION PROPERTIES, DEGREE OF SATURATION, GRADATION, OR OTHER DELTERIOUS CHARACTERISTICS WILL NOT PROVIDE A STABLE SUBGRADE OR SIDE SLOPES, CANNOT BE USED AS, OR SUPPORT EMBANKMENT, OR CANNOT BE PLACED AND COMPACTED AS BACKFILL.

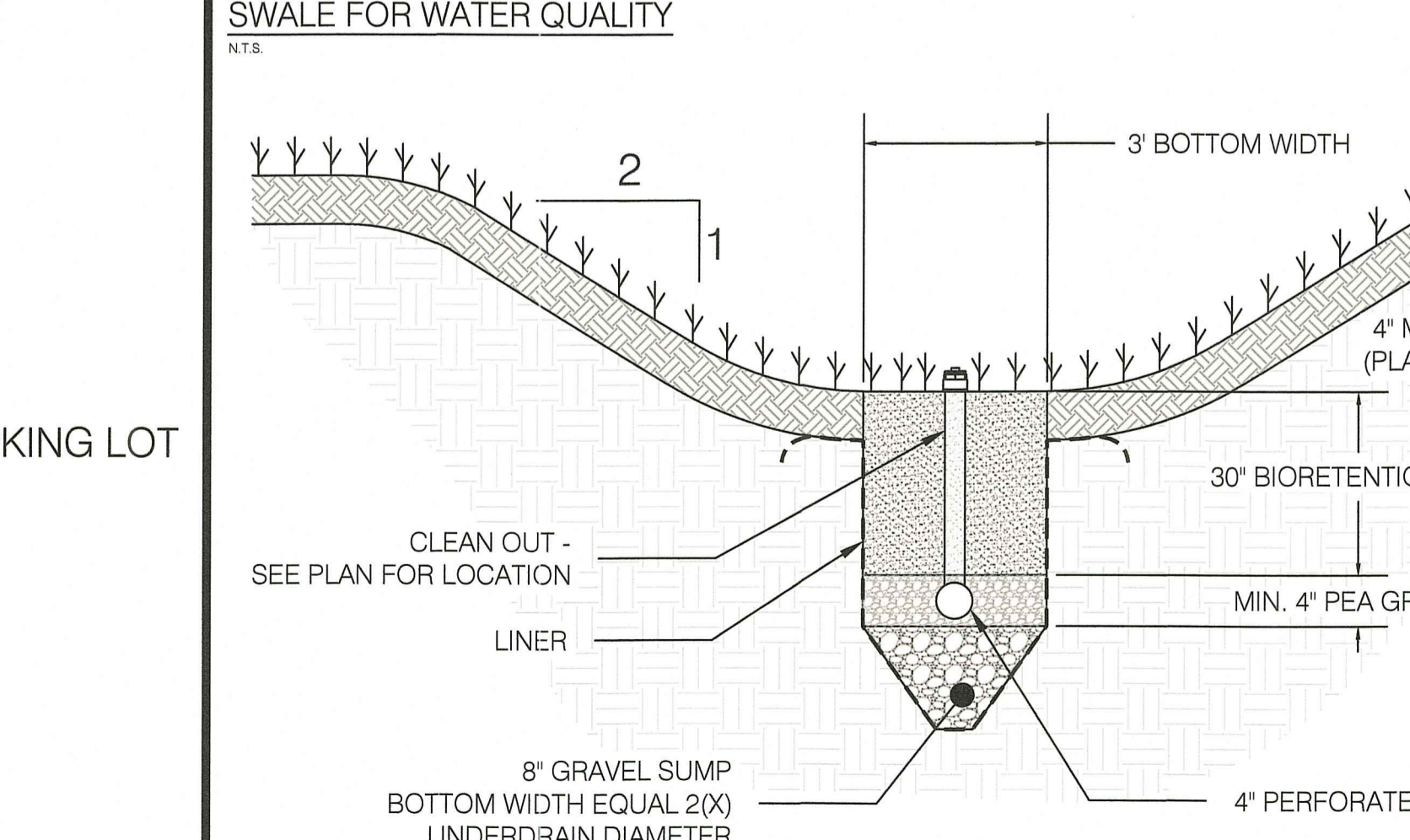
PIPE SIZE	MAX (ONE PIPE) (6)
15" OR LESS	4'-0"
18"	5'-0"
24"	5'-6"
30"	6'-0"
36"	6'-6"
42"	7'-0"
48"	7'-6"
MANHOLES	O.D. + 6'-0"
CATCH BASINS*	O.D. + 6'-0"

* FOR ROCK EXCAVATION SUBTRACT 1'-0"

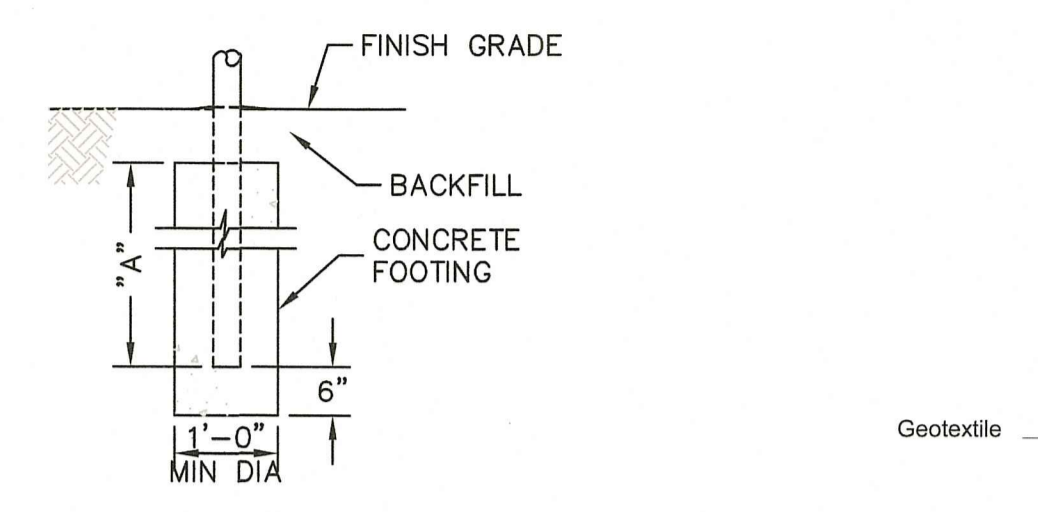
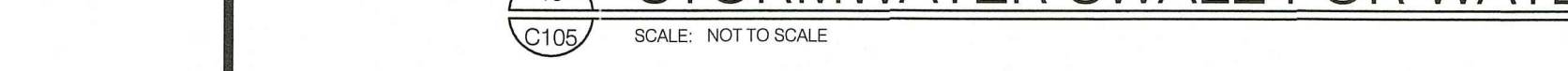
TYPICAL PIPE TRENCH



STORMWATER CONVEYANCE SWALE FOR WATER QUALITY



STORMWATER SWALE FOR WATER QUALITY

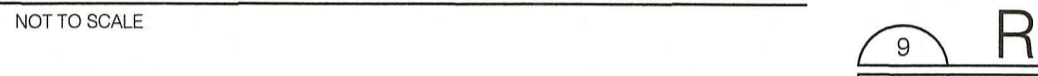


FENCE FOOTING DETAIL

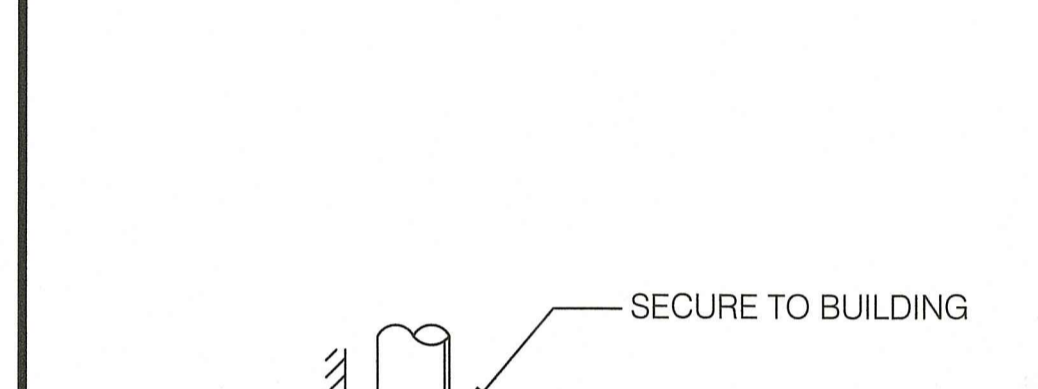
"A" 2'-6" FOR FENCE ≤ 6'
 3'-0" FOR FENCE > 6'
 5'-0" FOR ALL END AND GATE POSTS

NOTE: POST DIMENSIONS SHOWN ARE OD NOMINAL

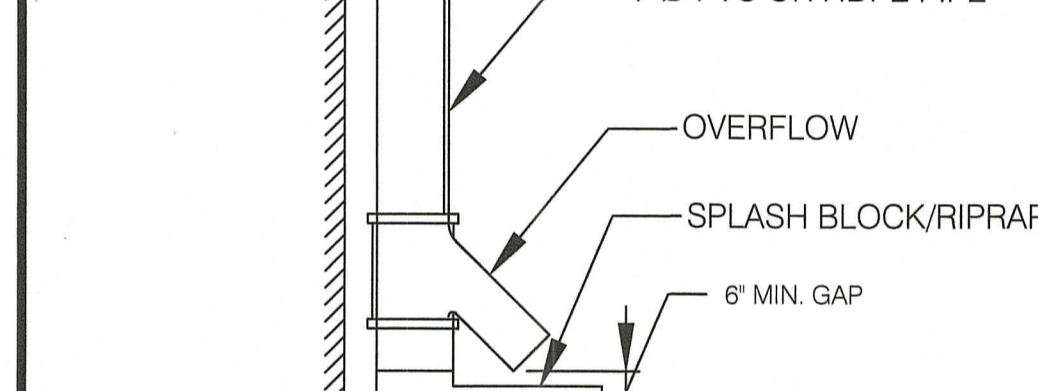
FENCE FOOTING DETAIL



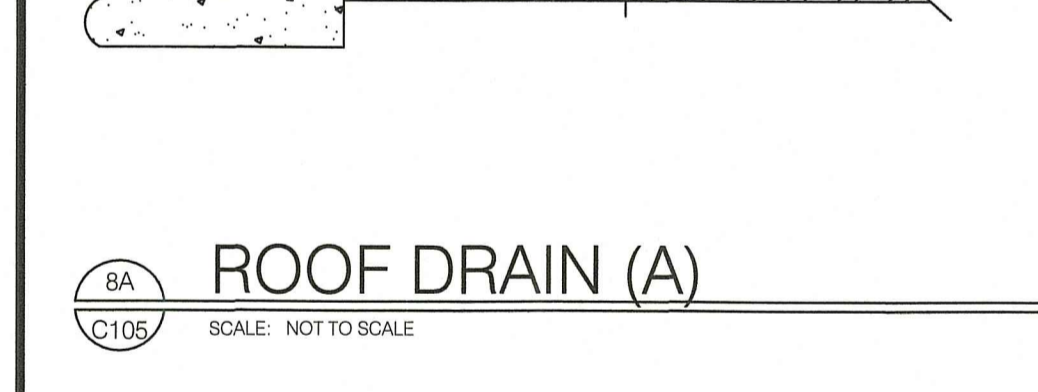
ROCK RIP-RAP LINED WATERWAY DESIGN



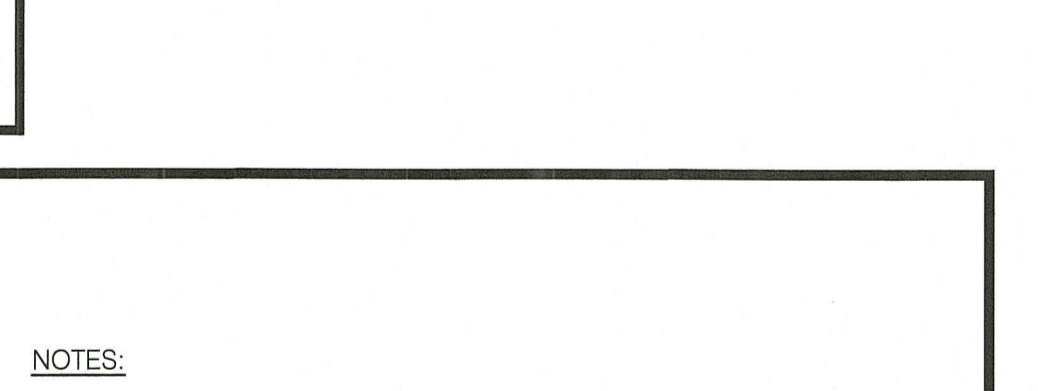
ROCK RIP-RAP LINED WATERWAY DESIGN



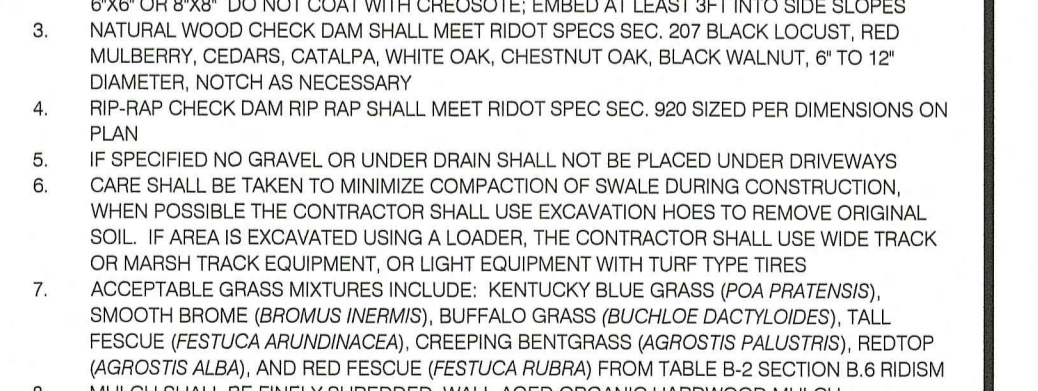
ROCK RIP-RAP LINED WATERWAY DESIGN



ROCK RIP-RAP LINED WATERWAY DESIGN



ROCK RIP-RAP LINED WATERWAY DESIGN



ROCK RIP-RAP LINED WATERWAY DESIGN



ROCK RIP-RAP LINED WATERWAY DESIGN



Design Values

D₅₀ dia. = 4.0 Rock_{max} in. thickness = 0.5 ft.

Rock Gradation Envelope

% Passing	Diameter, in. (weight lbs.)
D ₁₀₀	6 - 8 (15 - 36)
D ₈₅	6 - 8 (15 - 36)
D ₅₀	4 - 6 (5 - 15)
D ₁₀	3 - 5 (2 - 10)

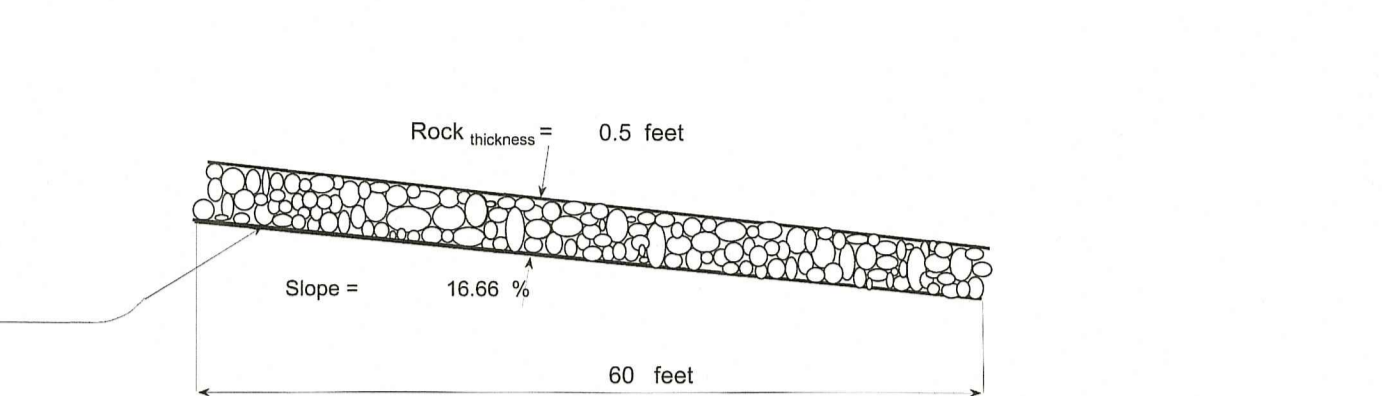
Coefficient of Uniformity, (D₈₅)/D₁₀ < 1.7

Quantities

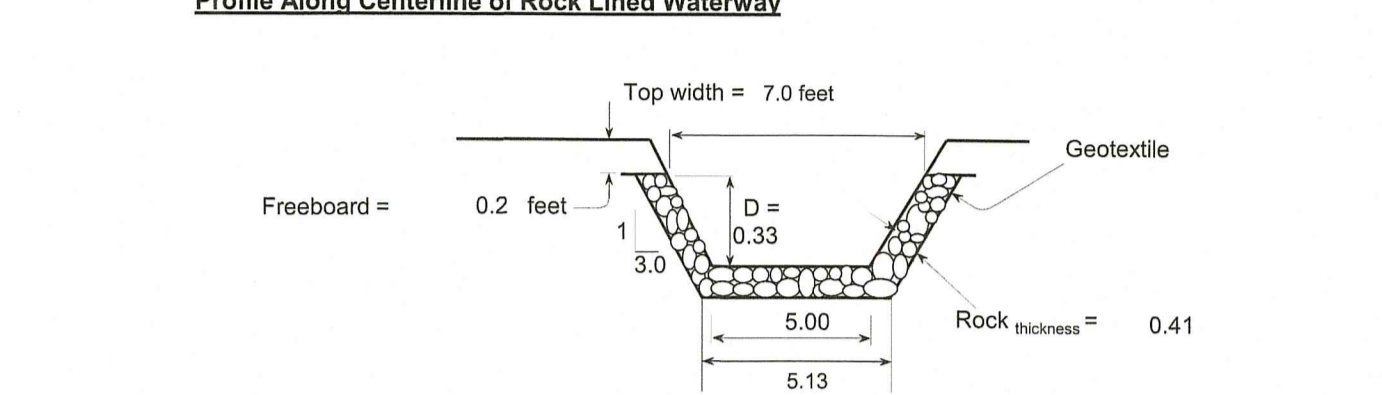
Rock = 8 yd³

Geotextile (WCS-13)^a = 85 yd²

Notes: ^a Geotextile Class I (Non-woven) shall be overlapped and anchored (18-in. minimum along sides and 24-in. minimum on the ends) --- quantity not included.



Profile Along Centerline of Rock Lined Waterway



Rock Lined WW Cross Section

Profile, Cross Sections, and Quantities

Profile, Cross Sections, and Quantities

Profile, Cross Sections, and Quantities

Profile, Cross Sections, and Quantities

Profile, Cross Sections, and Quantities

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Profile, Cross Sections, and Quantities

NET
 Narragansett Engineering Inc.
 Civil Survey - Structural - Environmental Design
 3102 East Main Road, Portsmouth RI 02871
 Tel: 401.683.6630 www.net-cds.com

Certification

LD

Checked by NKH & EC

Revised on 8/29/22

MISC. SITE EDITS PER RIARNG

RESPONSE TO RIDEM COMMENTS

FOR P.E. ELEMENTS ONLY

KAMAL HINGORANY

REGISTERED PROFESSIONAL ENGINEER

9-16-22

Project

RI ARMY NATIONAL GUARD

MIDDLETOWN ARMORY SITE IMPROVEMENTS

106 AIRPORT ACCESS RD MIDDLETOWN, RI 02842

Drawing Status 90% SET

Issued On:

Sheet Contents

DETAILS AND NOTES

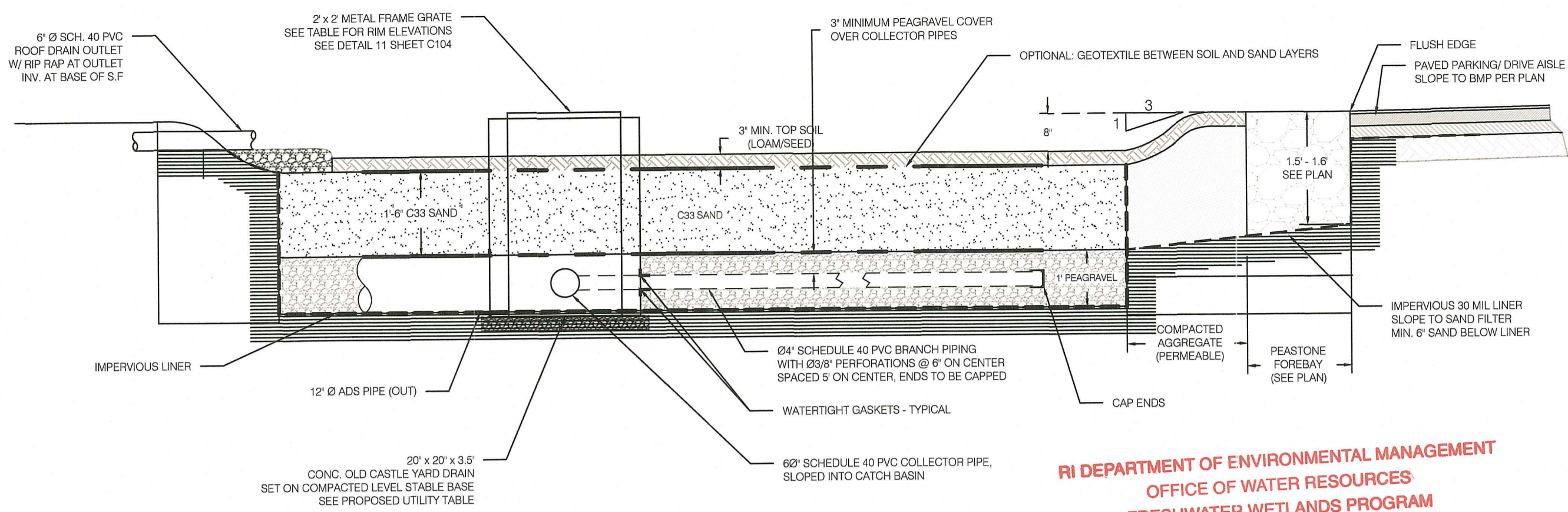
Project Number: 21-0135

Drawing No.

C105

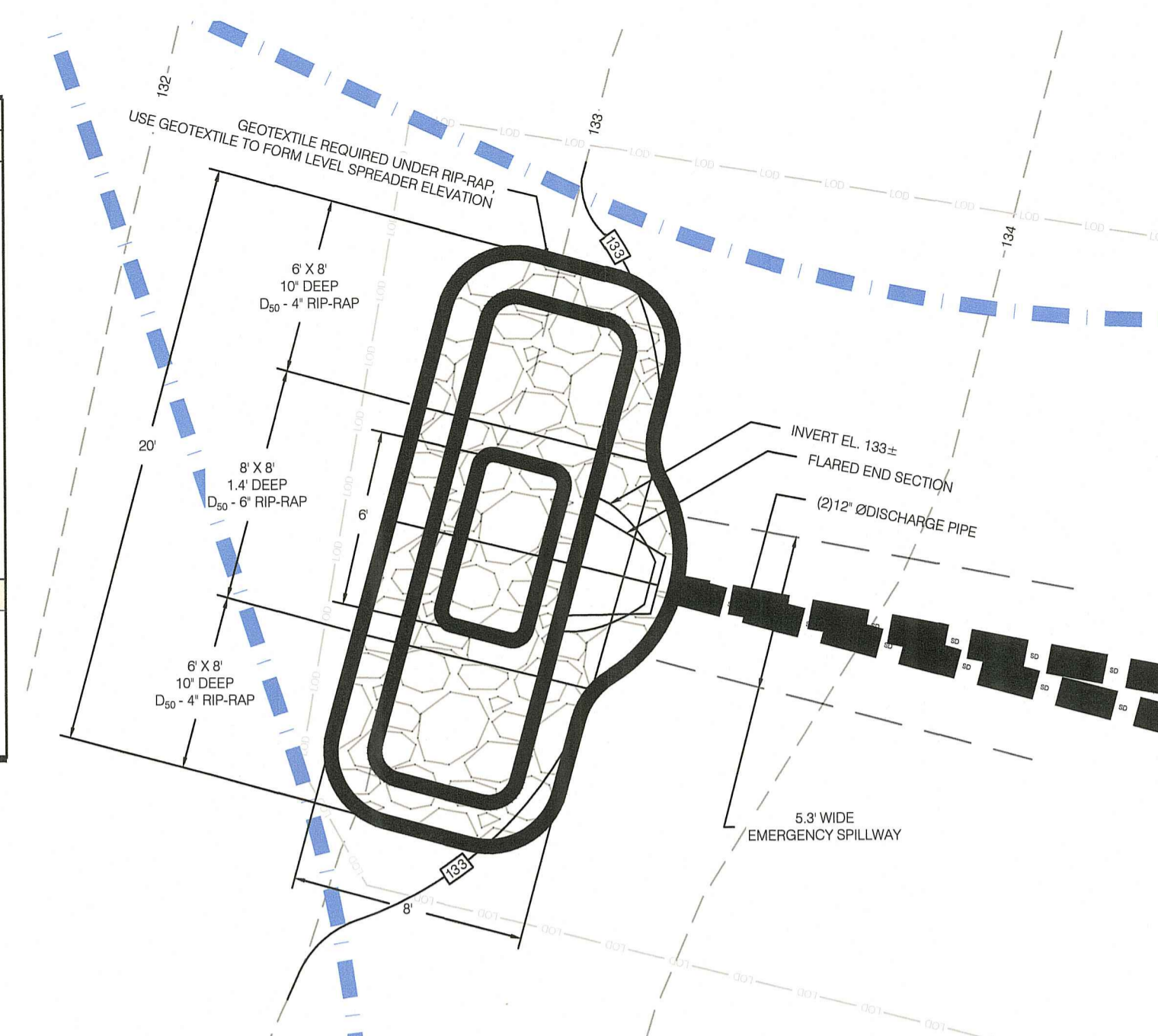
Sheet 10 OF 16

PROJECT: 21-0135 - RIARNG-MIDDLETOWN ARMORY SITE IMPROVEMENTS.DWG C105 - 09/16/2022 Neal Hingorany



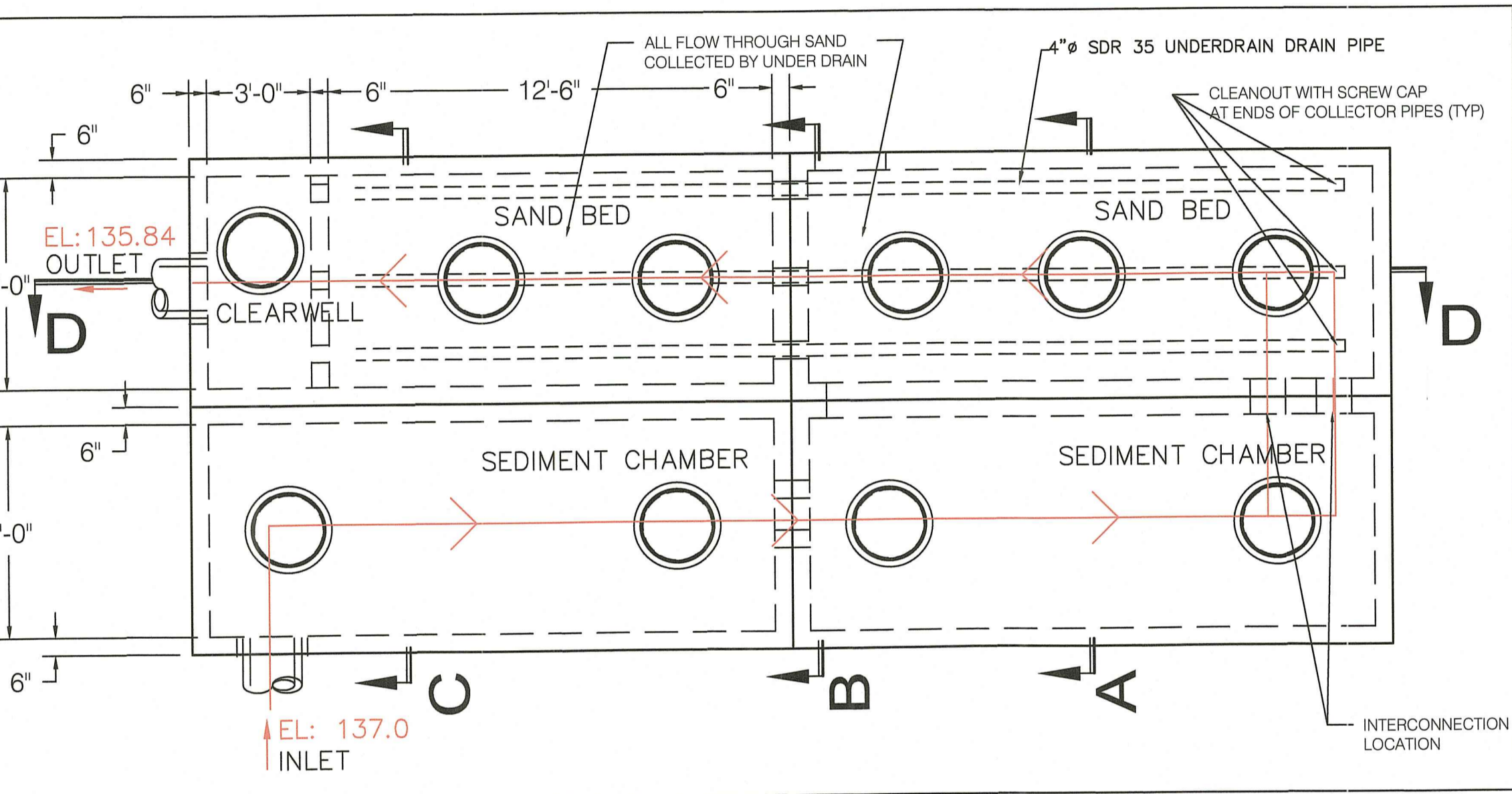
Drainage Structure Rim and Invert Table									
Type	Designation	Rim	Inv. Out	Inv. In	Inv. A (ft)	Inv. C (ft)	Inv. D (ft)	Inv. E (ft)	Notes
Plunge Pool									
DMH	1	140.25	137	137.05					12" N-12
DMH	2	141.7	137.45		137.88	137.53	137.7	138.94	See Plan for Ø
DMH	3	144.15	141	141.05					12" N-12
CB	2A	143.7	140.7						In SF 2A
CB	2D	142.7	139.7						In SF 2D
CB	2C	144.3	141.3						In SF 2C
SF	0	140	135.84	137					
CB	1	140.2	137.1						

Sand Filter Elevations			
Type	Designation	Top of Filter	Overflow Invert
SF	2A	143.3	143.7
SF	2C	143.9	144.3
SF	2D	142.3	142.7



1 SAND FILTER CROSS SECTION TYPICAL FOR SF 2A, 2C, 2D
SCALE: NOT TO SCALE

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL
DATED: NOV 02 2022 FILE #: 22-032D
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE
Nancy L. Freeman



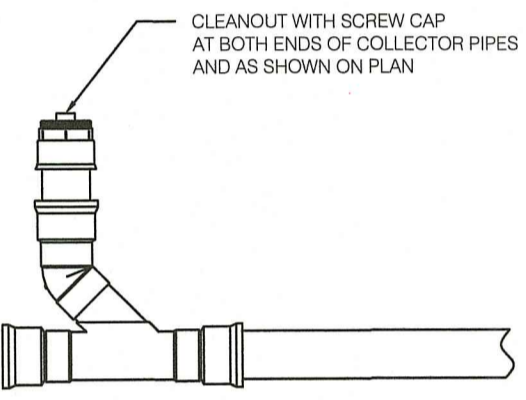
2 SAND FILTER PLAN VIEW TYPICAL FOR SF 0
SCALE: N.T.S.

Impermeable Liner	ASTM D 751 (thickness) ASTM D 412 (tensile strength 1,100 lb., elongation 200%) ASTM D 624 (tear resistance - 150 lb./in) ASTM D 471 (water adsorption: +8 to -2% mass)	30 mil thickness	Liner to be ultraviolet resistant. A geotextile fabric should be used to protect the liner from puncture. All seams to be constructed per manufacturer's instructions.
-------------------	--	------------------	--

LINER NOTES:
INSTALL LINER IN CONTINUOUS LENGTHS OVER THE LONGEST DIMENSIONAL RUN, WHERE CUTTING IS REQUIRED OVERLAP EACH SIDE PER MFR SPEC.
TAPE/SEAL PER MFR SPEC.
BARRIER REQUIRES CARE TO INSTALL. DO NOT PUNCTURE
CONTRACTOR TO SUBMIT SPEC FOR APPROVAL
BOUANCY CALCULATIONS
SURGE AND SAND FILTERS ARE BASED ON THE SAME CONCRETE TANK DESIGN. ONE SURGE TANK WILL BE REVIEWED, WITH ALL COVER MATERIAL EXCLUDED FROM THE CALCULATION TO BE CONSERVATIVE.
TANK EXTERIOR VOLUME: 17X7X0.5 = 71.4 CU FT PER TANK
DISPLACED WATER = 62.43 LBS/CU X 71.4 CU FT = 44,575 LBS
TANK WEIGHT
TOP AND BOTTOM : 17X7X0.5 = 59.5 CU FT X 150LBS/CUFT X2 = 17,850 LBS
SIDES 2X(16X5X0.5) + (7X5X0.5)X2 = 115 CU FT X 150 LBS/CUFT = 17,250
SUB TOTAL EQUALS 35,100 LBS
PLUS 7" ANTI-FLotation TOP OR BOTTOM SLAB = 7X17X0.58X150 = 10,412 LBS
TOTAL EQUALS 45,512, WHICH EXCEEDS EMPTY TANK BOUANCY WITH GW AT TOP OF TANK.

5 TANK BOUANCY CALCULATIONS
SCALE: NOT TO SCALE

7 PLUNGE POOL DETAIL
SCALE: 1" = 5'



8 CLEAN OUT - TYP.
SCALE: NOT TO SCALE

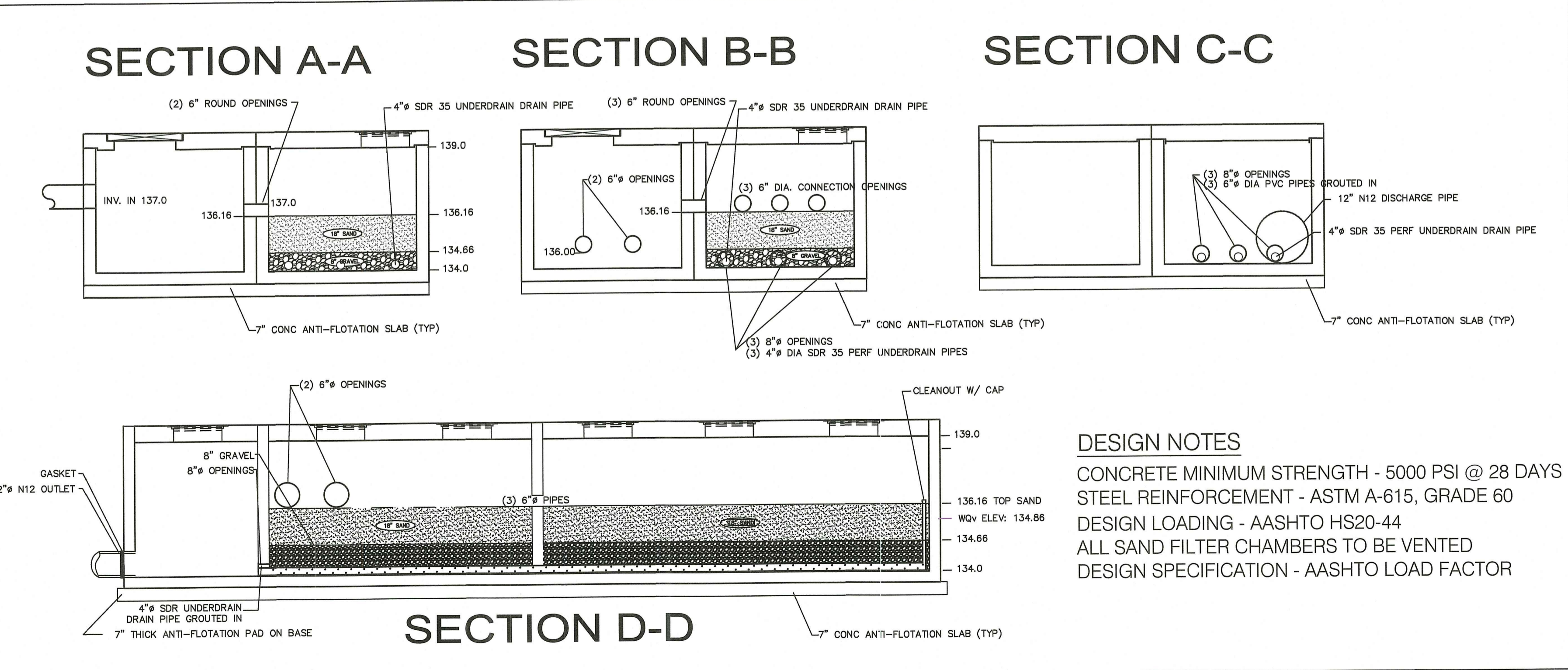
Sieve size	Percent passing by mass
9.5 mm (3/8 in.)	100
4.75 mm (No. 4)	95 to 100
2.36 mm (No. 8)	80 to 100
1.18 mm (No. 16)	50 to 85
600 µm (No. 30)	25 to 60
300 µm (No. 50)	5 to 30 (AASHTO 10 to 30)
150 µm (No. 100)	0 to 10 (AASHTO 2 to 10)

6 AASTO C33 FINE AGGREGATE SAND GRADATION
SCALE: NOT TO SCALE

Material Specifications for Sand Filters

Parameter	Specification	Size	Notes
Sand	clean AASHTO M-6 or ASTM C-33 concrete sand	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No rock dust can be used for sand.
Underdrain gravel	RIDOT Specs. Sec. 300 AASHTO M-43	0.25" to 0.75"	Must be washed, clean gravel; refer to Appendix Section F.4.1, Part 2 for applicable material specs.
Geotextile Fabric (if required)	ASTM D-751 (puncture strength - 125 lb.) ASTM D-1117 (Mullen Burst Strength - 400 psi) ASTM D-1682 (Tensile Strength - 300 lb.)	0.08" thick equivalent opening size of #80 sieve	Must maintain 125 gpm per sq. ft. flow rate. Note: a 4" pea gravel layer may be substituted for geotextiles meant to separate filter layers.
Impermeable Liner	ASTM D 751 (thickness) ASTM D 412 (tensile strength 1,100 lb., elongation 200%) ASTM D 624 (Tear resistance - 150 lb./in) ASTM D 471 (water adsorption: +8 to -2% mass)	30 mil thickness	Liner to be ultraviolet resistant. A geotextile fabric should be used to protect the liner from puncture. All seams to be constructed per manufacturer's instructions.
Underdrain Piping	RIDOT Specs. Sec. 703 ASTM D-1785 or AASHTO M-278	4-6" rigid schedule 40 PVC	3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes.
Concrete (Cast-in-place)	See RIDOT Specs. Sec. 600 f _c = 3500 psi, normal weight, air-entrained; reinforcing bars to meet ASTM 615-60	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) not using previously approved local or RI standards requires design drawings sealed and approved by a RI-licensed structural PE.
Concrete (pre-cast) non-rebar steel	See RIDOT Specs. Sec. 600 per pre-cast manufacturer ASTM A-36	n/a	SEE ABOVE NOTE structural steel to be hot-dipped galvanized ASTM A123

4 SAND FILTER MATERIAL SPECIFICATIONS
SCALE: NOT TO SCALE



3 SAND FILTER/STORAGE TANKS SECTIONAL VIEWS TYPICAL FOR SF 0
SCALE: N.T.S.

DESIGN NOTES

CONCRETE MINIMUM STRENGTH - 5000 PSI @ 28 DAYS
STEEL REINFORCEMENT - ASTM A-615, GRADE 60
DESIGN LOADING - AASHTO HS20-44
ALL SAND FILTER CHAMBERS TO BE VENTED
DESIGN SPECIFICATION - AASHTO LOAD FACTOR

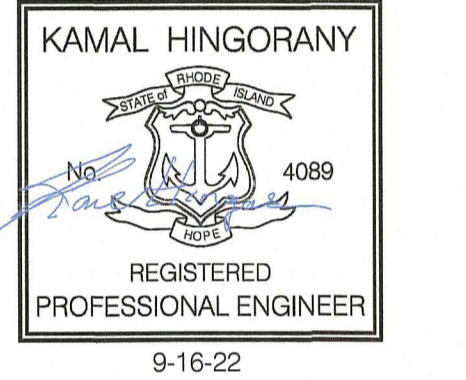
Certification



Drawn by LD
Checked by NKH & EC

Revised on 8/29/22
MISC. SITE EDITS PER RIARNG
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NATIONAL GUARD



MIDDLETOWN
ARMORY SITE
IMPROVEMENTS

106 AIRPORT ACCESS RD
MIDDLETOWN, RI 02842

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90% SET

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Sheet Contents
SAND FILTER DETAILS

Project Number. 21-0135

Drawing No.

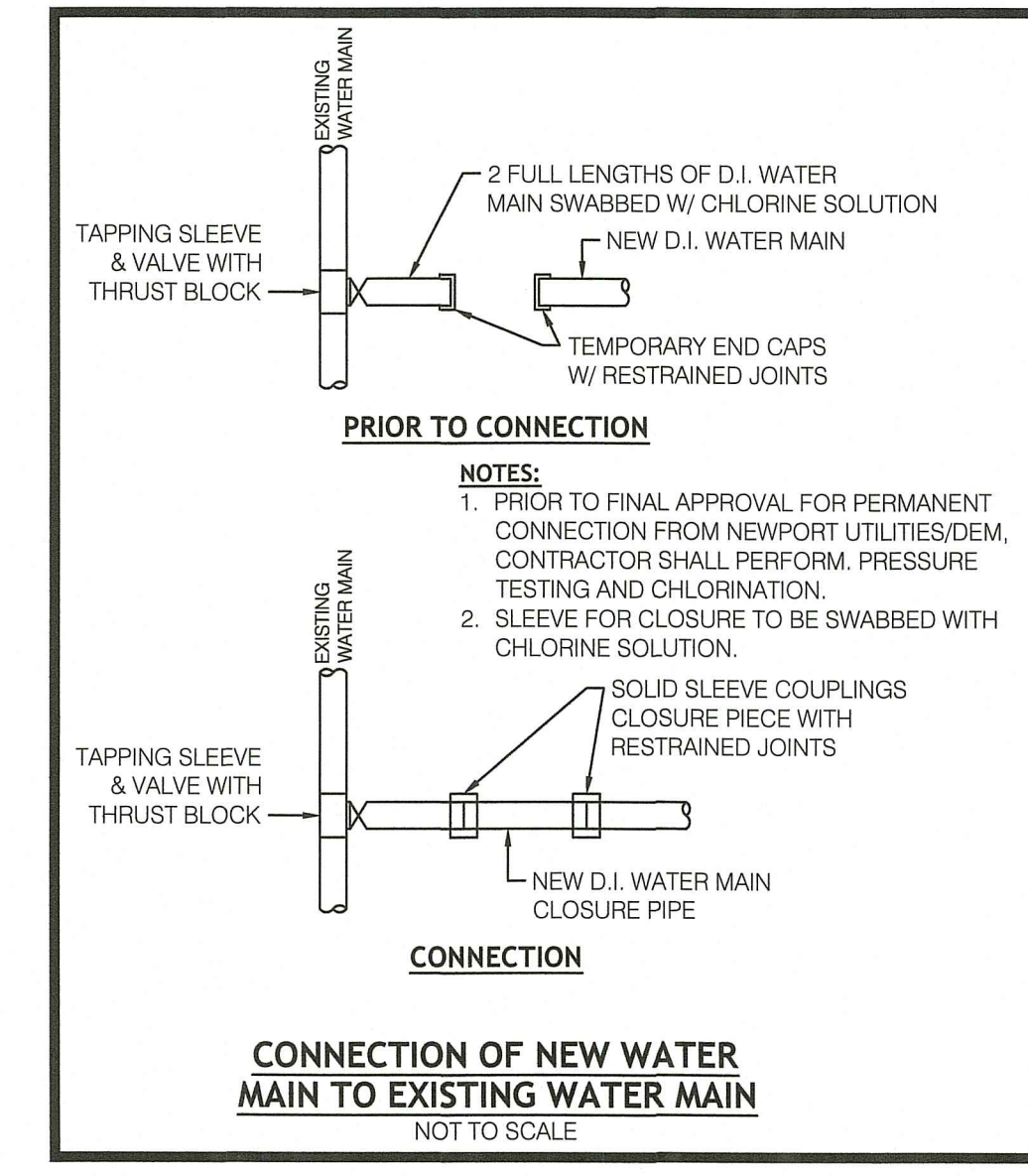
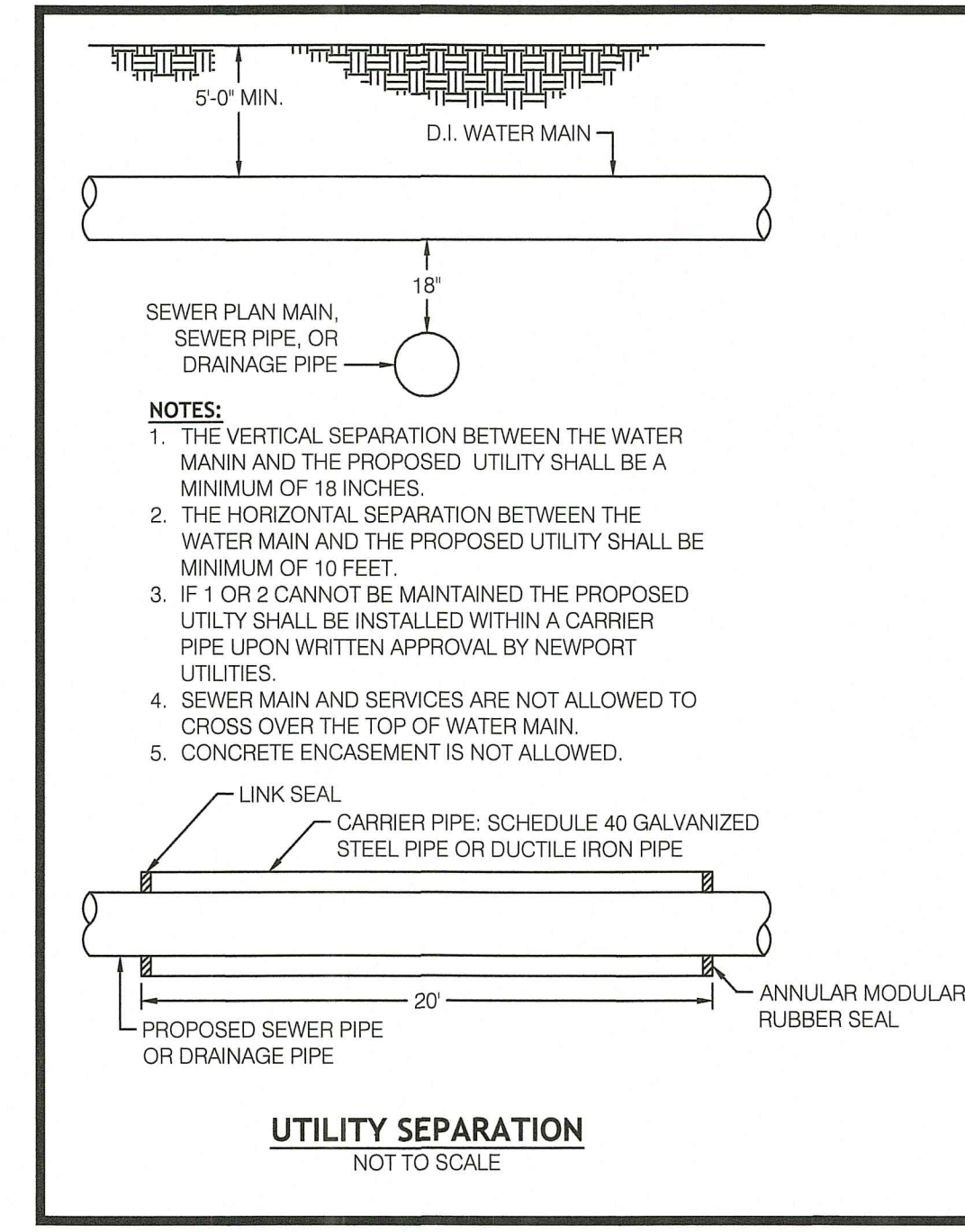
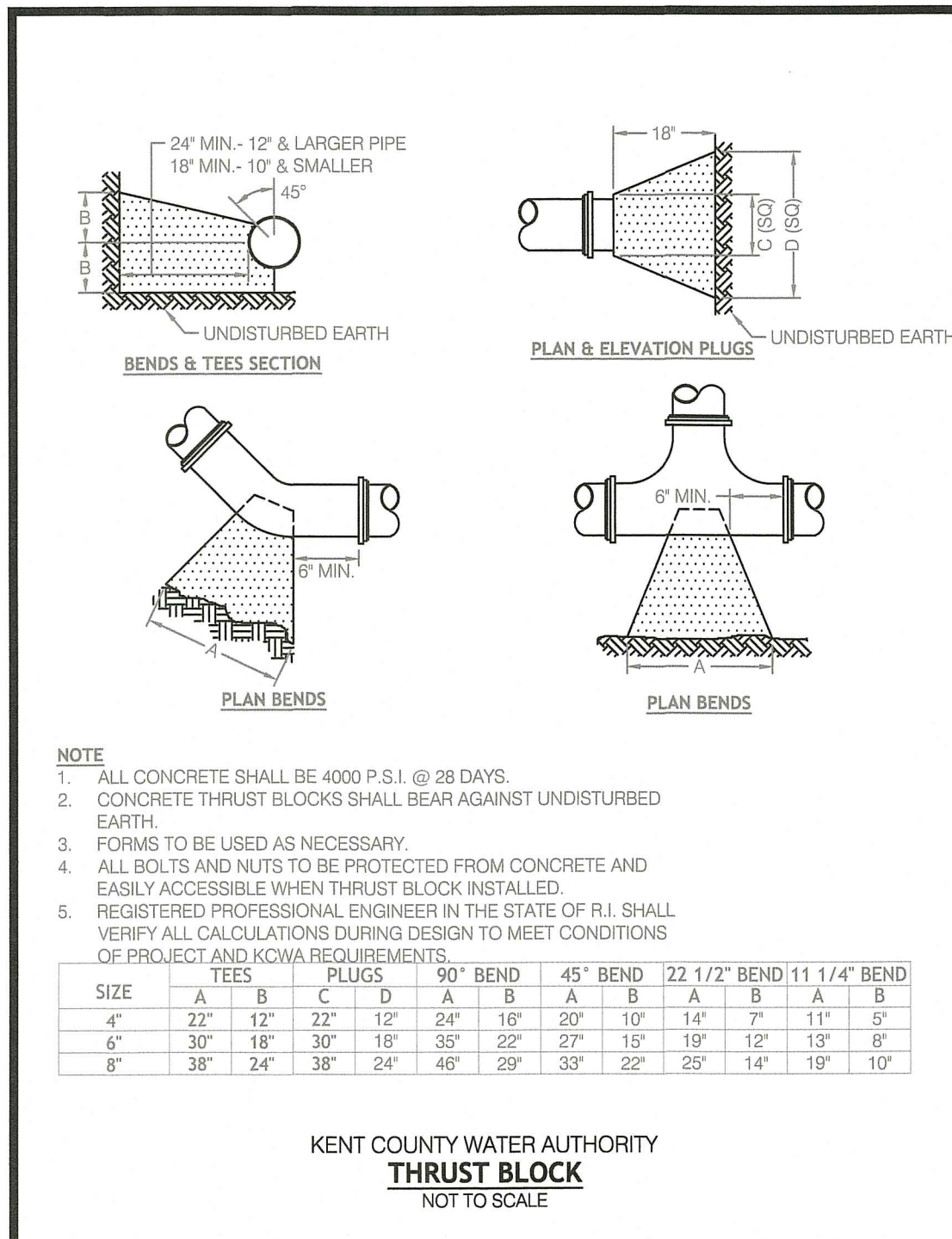
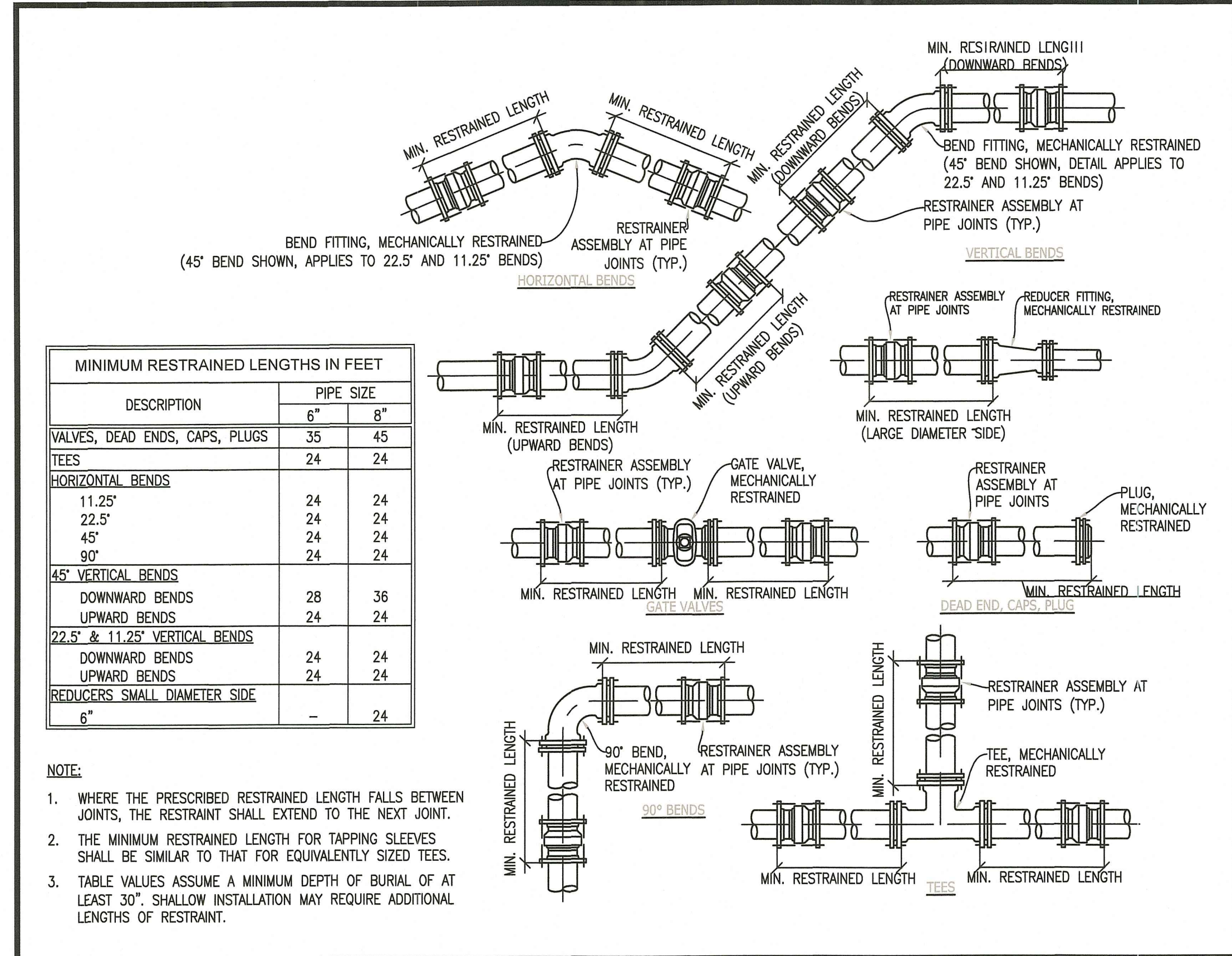
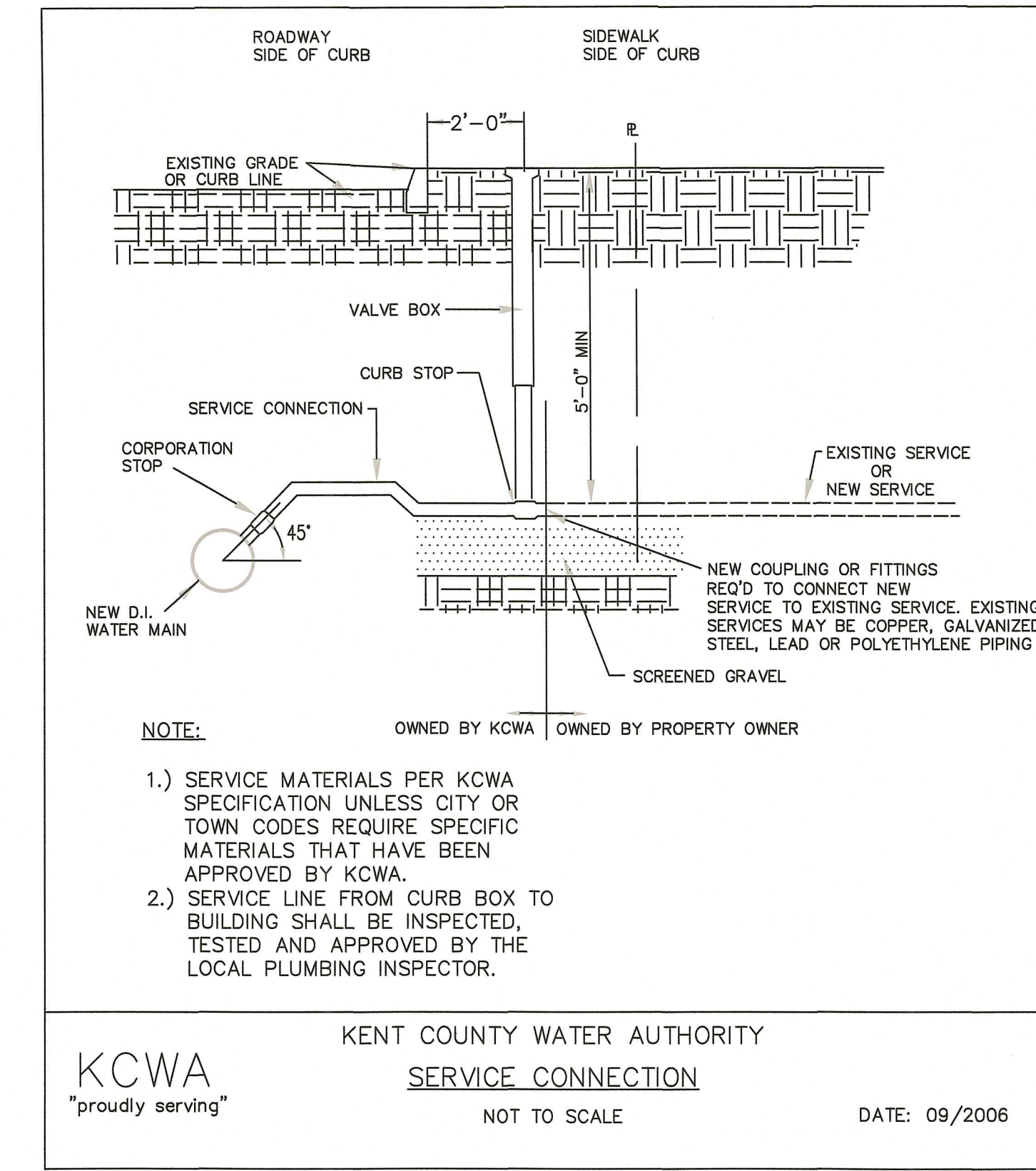
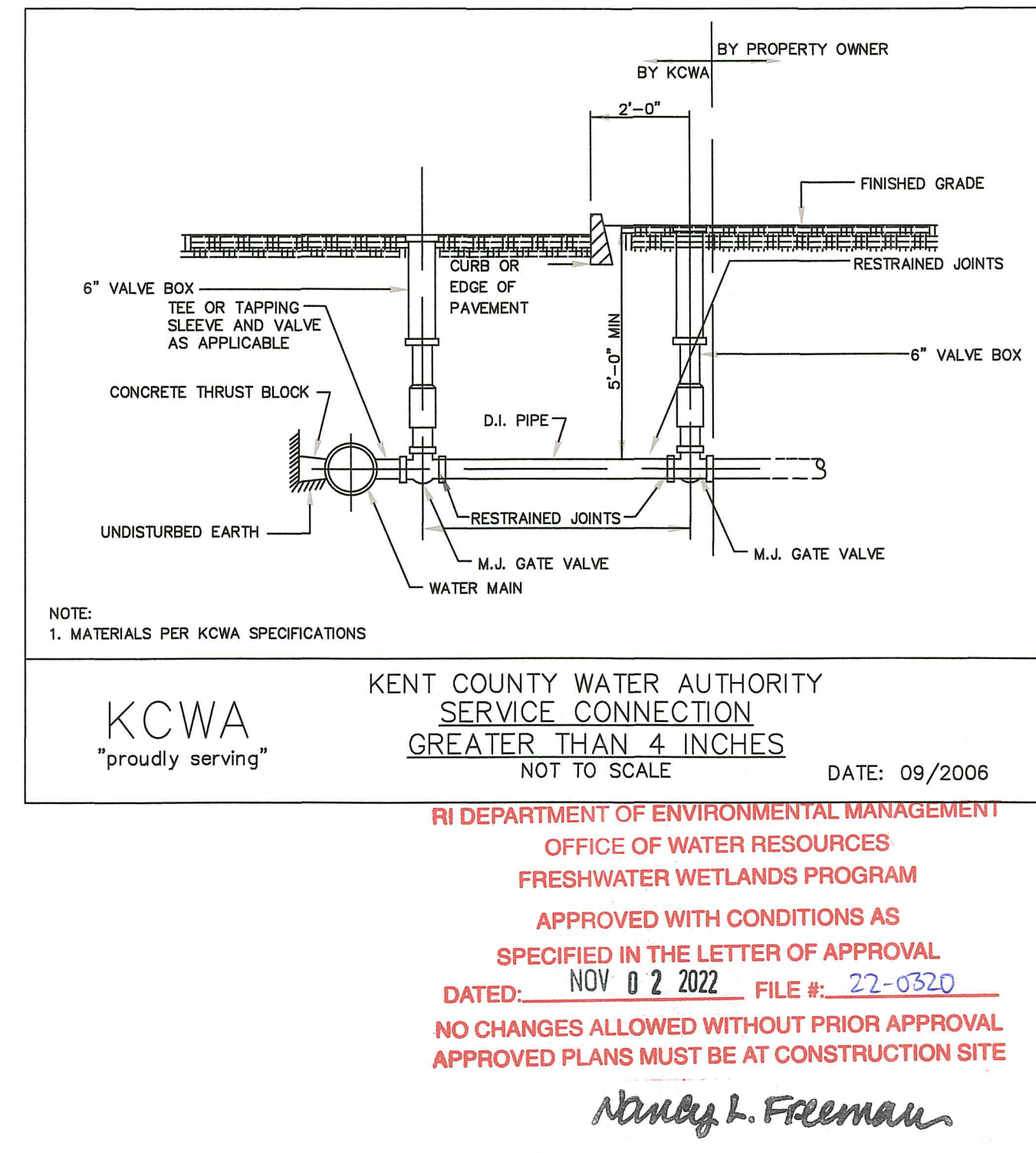
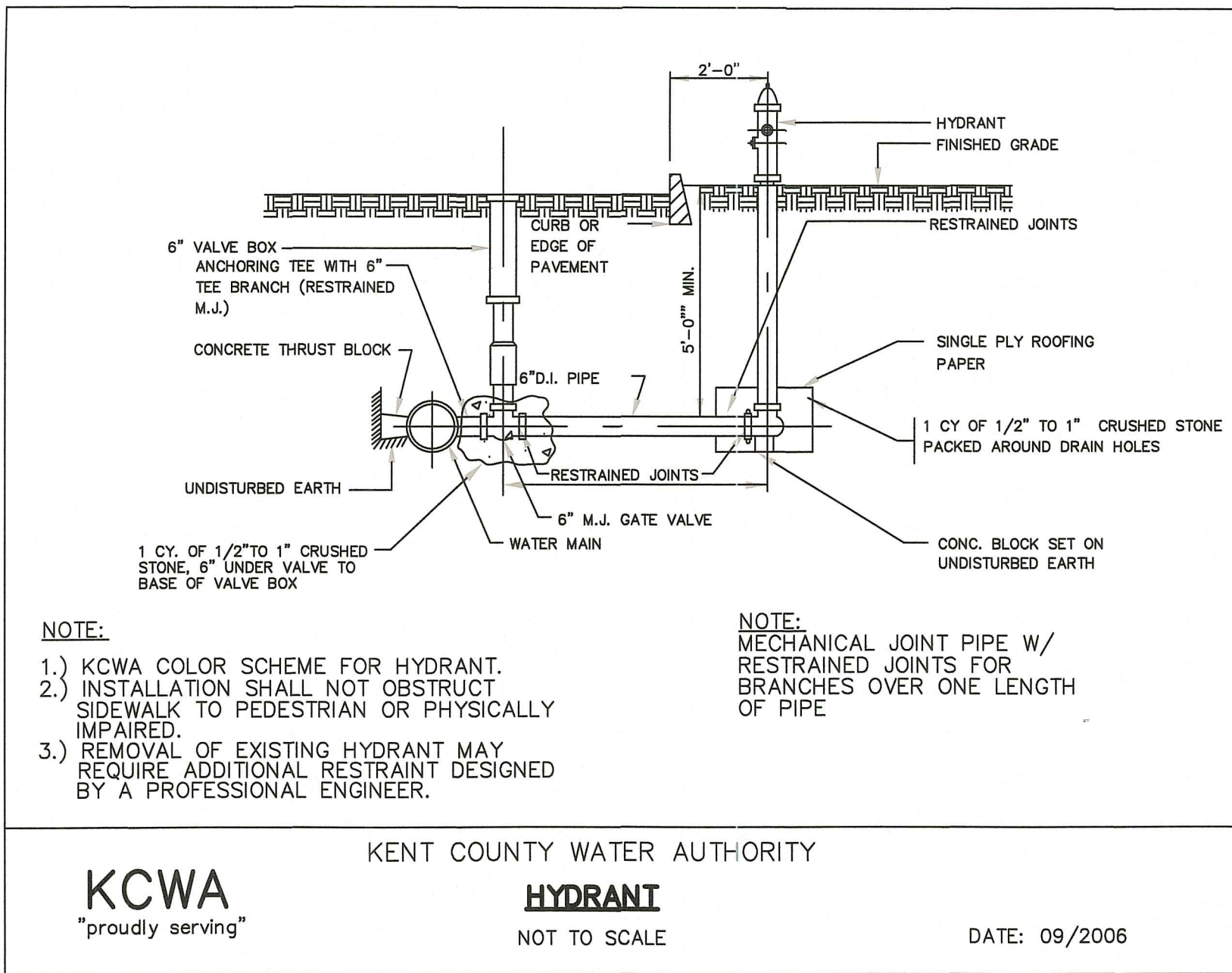
C106

Sheet 11 OF 16

ALL WORK SHALL CONFORM TO CITY OF NEWPORT DEPARTMENT OF UTILITIES WATER DIVISION RULES AND REGULATIONS FOR WATER SERVICE APPLICATION AND INSTALLATION

NOTE: KENT COUNTY WATER AUTHORITY (KCWA) DETAILS HAVE BEEN SUPPLIED WHERE CITY OF NEWPORT DETAILS ARE NOT AVAILABLE. KCWA DETAILS ARE ROBUST AND FREQUENTLY USED FOR A.I.H.S. WITHOUT A STANDARD DETAIL SET. CITY OF NEWPORT UTILITIES DEPARTMENT IS THE A.H.J. FOR THIS PROJECT, AND IN THE CASE OF ANY CONFLICTS CITY OF NEWPORT UTILITIES DEPARTMENT REQUIREMENTS SUPERSEDE ANY OTHER REFERENCED INFORMATION.

ALL PROPOSED WATER LINE MODIFICATION WORK TO CONFORM TO AMERICAN WATERWORKS STANDARDS LATEST EDITION



PIPE RESTRAINT LENGTHS

Scale: N.T.S.

- APWA Uniform Color Code for marking underground utility lines**
- White:** Proposed excavation
 - Pink:** Temporary survey markings
 - Red:** Electric power lines, cables, conduit and lighting cables
 - Yellow:** Gas, oil, steam, petroleum or gaseous materials
 - Orange:** Communication, alarm or signal lines, cables or conduit
 - Blue:** Potable water
 - Purple:** Reclaimed water, irrigation and slurry lines
 - Green:** Sewers and drain lines



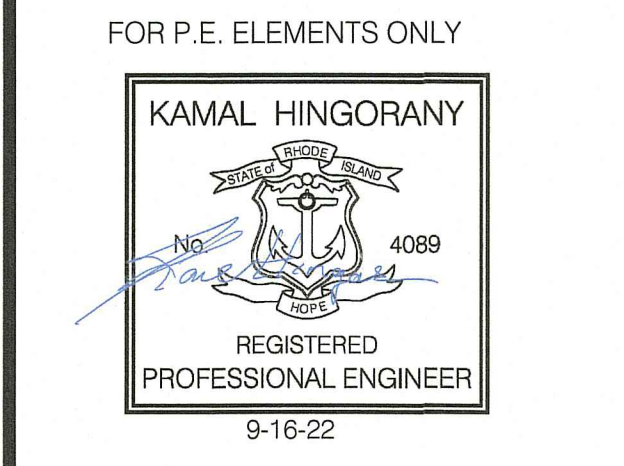
Certification

Drawn by LD
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Revised on
8/29/22
- MISC. SITE EDITS PER RIARNG
- RESPONSE TO RIDEM COMMENTS

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KAMAL HINGORANY
REGISTERED PROFESSIONAL ENGINEER
9-16-22



Project

RI ARMY NATIONAL GUARD

MIDDLETOWN ARMORY SITE IMPROVEMENTS

106 AIRPORT ACCESS RD
MIDDLETOWN, RI 02842

Drawing Status
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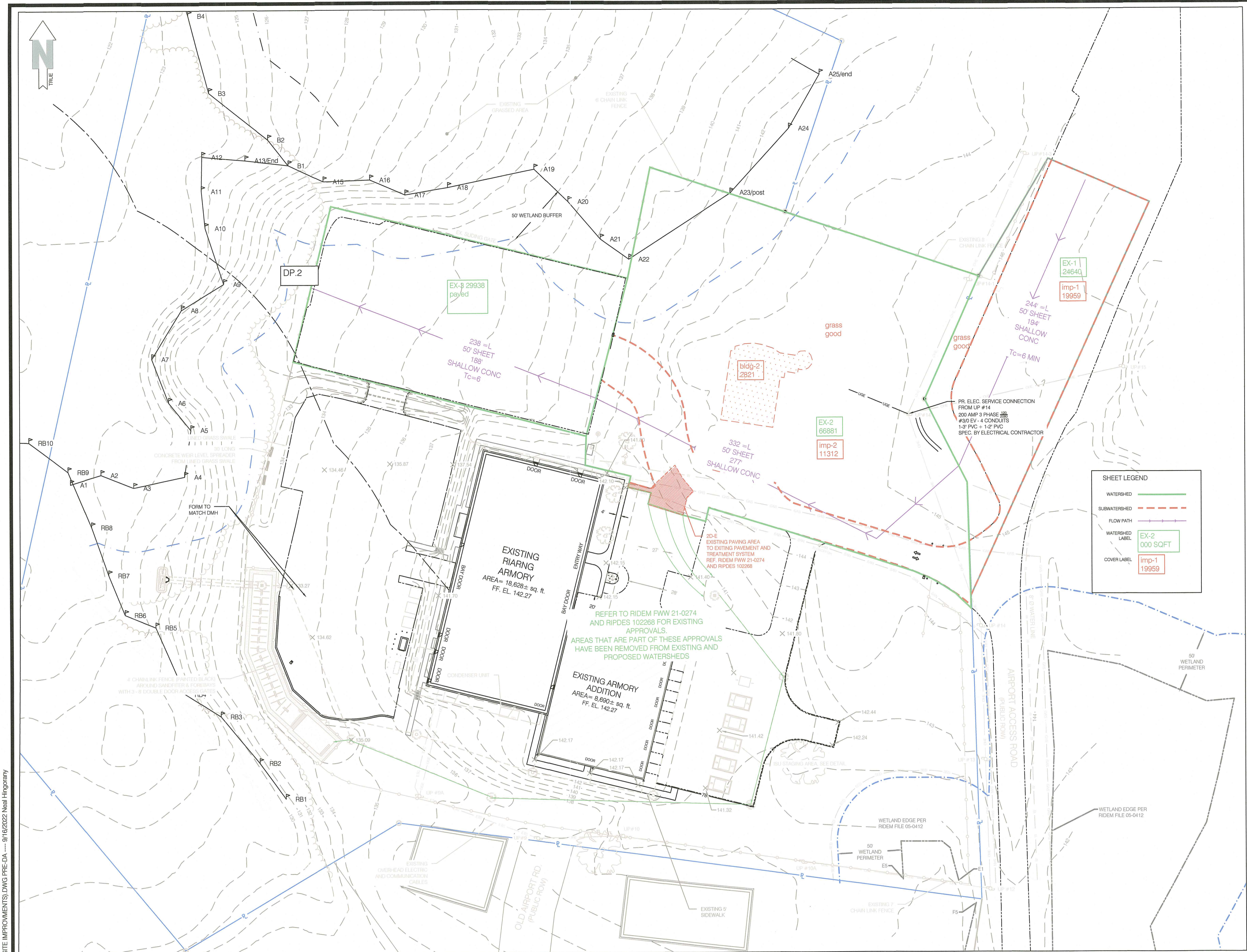
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WATER LINE DETAILS

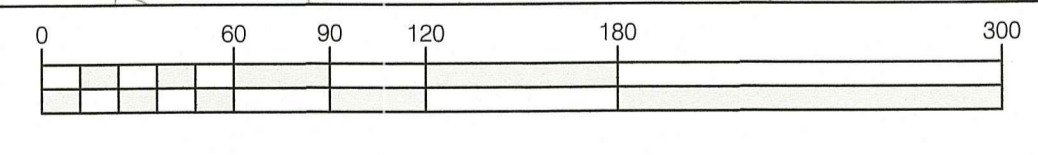
Project Number: 21-0135
Drawing No.
C107

Sheet 12 OF 16

N:\PROJECTS\21-0135-RIARNG-MIDDLETOWN ARMORY\G121-0135-RIARNG (SITE IMPROVEMENTS) DWG C107 - 9/16/2022 Neal Hingorany



1 PRE - DA SCALE: 1" = 60'



Type	Node	X-Pos	Y-Pos	Description	Ground Cover	Soil Group	Cover Index	Land Use	CN	C	Area (acres)	AreaID	Area SqFt	Desc	Notes
Summary	0-Pre			Aggregate flows for Pre-Development Condition											
Watershed	EX1			Existing off site area (Airport Corp), flows to site, Mixed surface							0.57	24640		X	EX1
	EX2			Core Site area, existing building, paving and grass							1.54	66881		X	EX2
	EX3			Existing paved parking lot							0.69	29938		X	EX3
											2.79	121459			Subt. In Hydrocrod *X*
Subarea	Imp1			Paved Impervious in EX1							0.46	19958		In EX1	Imp1
	Imp2			Paved Impervious in EX2							0.26	11312		In EX2	Imp2
	Bldg2			Existing Building (to be demolished) in EX2							0.06	2821		In EX2	Bldg2
	grass1			grass good - in EX1							0.00	4682		In EX1	grass1
	grass2			grass good in EX2							0.11	52748		In EX2	grass2

Certification

Drawn by LD
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8/29/22
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Project
RI ARMY NATIONAL GUARD



MIDDLETOWN ARMORY SITE IMPROVEMENTS

RI Environmental Management
OCT 06 2022
Office of Water Resources

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL
DATED: NOV 02 2022 FILE #: 22-0370
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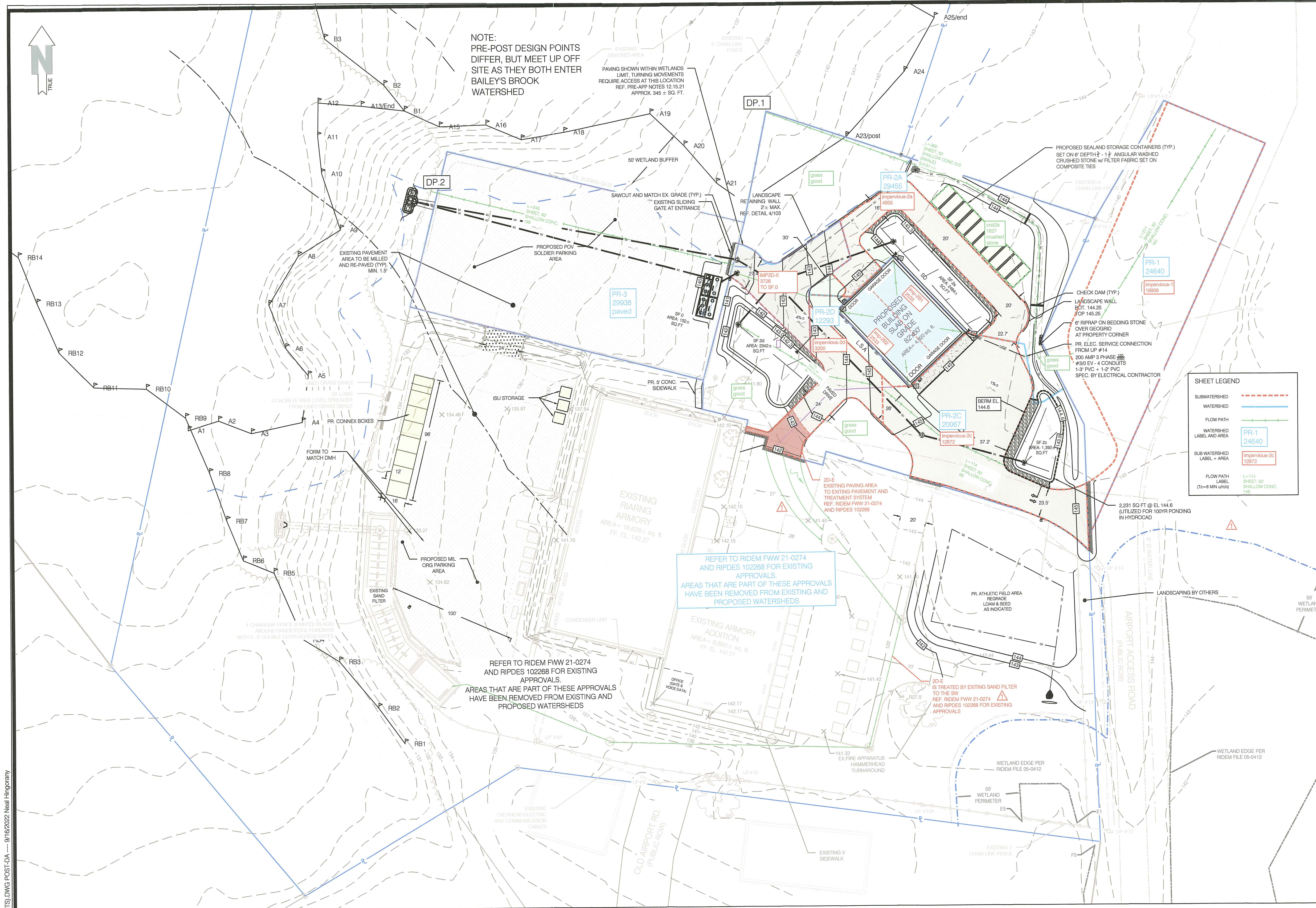
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Project Number: 21-0135
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NOTE:
PRE-POST DESIGN POINTS
DIFFER, BUT MEET UP OFF
SITE AS THEY BOTH ENTER
BAILEY'S BROOK
WATERSHED

SHEET LEGEND

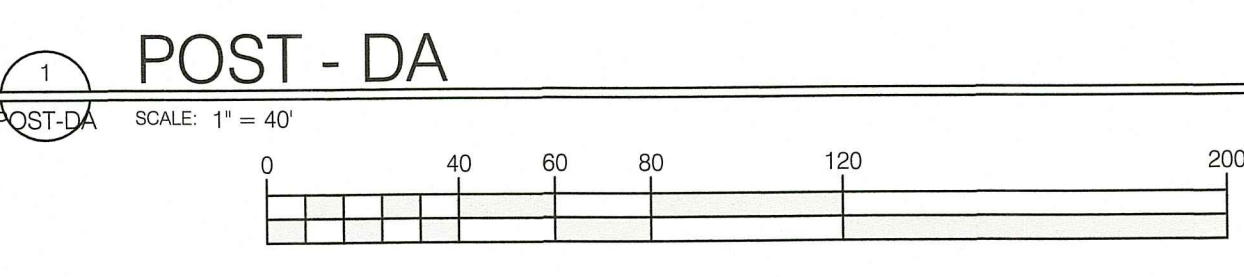
SUBWATERSHED	---
WATERSHED	---
FLOW PATH	---
WATERSHED LABEL AND AREA	PR-1 24640
SUB WATERSHED LABEL + AREA	Impervious-2a 12872
FLOW PATH LABEL (7'-6" MIN W/RS)	L-114 SHEET 50 (SHALLOW CONIC) 146

REFER TO RIDEM FW 21-0274 AND RIDES 102268 FOR EXISTING APPROVALS. AREAS THAT ARE PART OF THESE APPROVALS HAVE BEEN REMOVED FROM EXISTING AND PROPOSED WATERSHEDS

REFER TO RIDEM FW 21-0274 AND RIDES 102268 FOR EXISTING APPROVALS. AREAS THAT ARE PART OF THESE APPROVALS HAVE BEEN REMOVED FROM EXISTING AND PROPOSED WATERSHEDS

RI Environmental Management
OCT 06 2022
Office of Water Resources

Type	Node	X-Pos	Y-Pos	Description	Ground Cover	Soil Group	Cover Index	Land Use	CN	C	Area (acres)	AreaD	Area SuF	HCAD	Notes	Node	WSH
Summary	O-Post	See Model	See Model	Aggregate flows for Post-Development Condition		See model	See Model	See Model	See Model	See Model							
Watershed	PR1			Off Site area (Airport corp), flows to site. Mix of paving and grass	Mixed						0.57		24640	X		PR1	2A
	PR2A			Proposed Area includes SF2A	Mixed, see crs2A - grass 2A						0.68		29455	X		PR2A	2B
	PR2B			Proposed Structure	Unconnected impervious						0.12		5067	X		PR2B	2B
	PR2C			Proposed Area, mix of parking and landscaped area, includes SF2C	Mixed						0.46		20067		see sub	PR2C	2C
	PR2D			Proposed area, includes SF2D	Mixed						0.28		12293		see sub	PR2D	2D
	PR3			Same as existing - no change (paved parking area - to be milled/paved)	Paved						0.60		29938	X		PR3	Subt.
											2.79		121460				
Subwatershed	SF2A			Proposed sand filter - note: peastone area included in pond for 100 year storage (2231 sqft)	Sand Filter						0.06		2484	X	in node PR2A misc	SF2A	2A
Ponds	SF2C			Proposed sand filter	Sand Filter						0.03		1392	X	in node Grass 2C	SF2C	2C
	SF2D			Proposed sand filter	Sand Filter						0.05		2342	X	in node grass 2D	SF2D	2D
				Sand Filter in Tank System for Watershed Imp2D-X (for WG)	Sand Filter						0.00		162	X	underground tank	SF.0	PR1
Subwatersheds	2A-misc			Aggregate of 2A crushed stone, pond end grass	Building Roof						0.51		22029	X		2A-misc	2A
	Imp-2b1			building (north half of roof)	Building Roof						0.06		2353.5	X		Imp-2b1	2B
	Imp-2b2			building (south half of roof)	Building Roof						0.06		2533.5	X		Imp-2b2	2B
	Imp1			Paved Impervious	Paved Parking						0.46		19959	X	in PR1	Imp1	1
	Imp2a			Paved Impervious	Paved Parking						0.11		4942	X		Imp2a	2A
	Imp2c			Paved Impervious	Paved Parking						0.28		12194	X		Imp2c	2C
	Imp2d			Paved Impervious	Paved Parking						0.07		3200	X		Imp2d	2D
	Imp2E			Paved Impervious	Paved Parking						0.09		3726	X		Imp2E	2D
	crs2a			Crushed Stone for storage containers	Paved Parking						0.04		1427	X	in PR2A misc	crs2a	2A
	grass1			grass good	grass good						0.11		4681	X	in PR1	grass1	1
	grass2A			grass good includes SF2A	grass good						0.46		20202	X	in PR2A misc	grass2A	2A
	grass2C			grass good includes SF2C	grass good						0.15		6481	X		grass2C	2C
	grass2D			grass good, includes SF2D	grass good						0.07		3025	X		grass2D	2D
											9.79		121460			Subt. In Hydrocod "X"	



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RI ARMY
NATIONAL GUARD

MIDDLETOWN
ARMORY SITE
IMPROVEMENTS

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Sheet Contents
**DRAINAGE AREA
MAP PROPOSED**

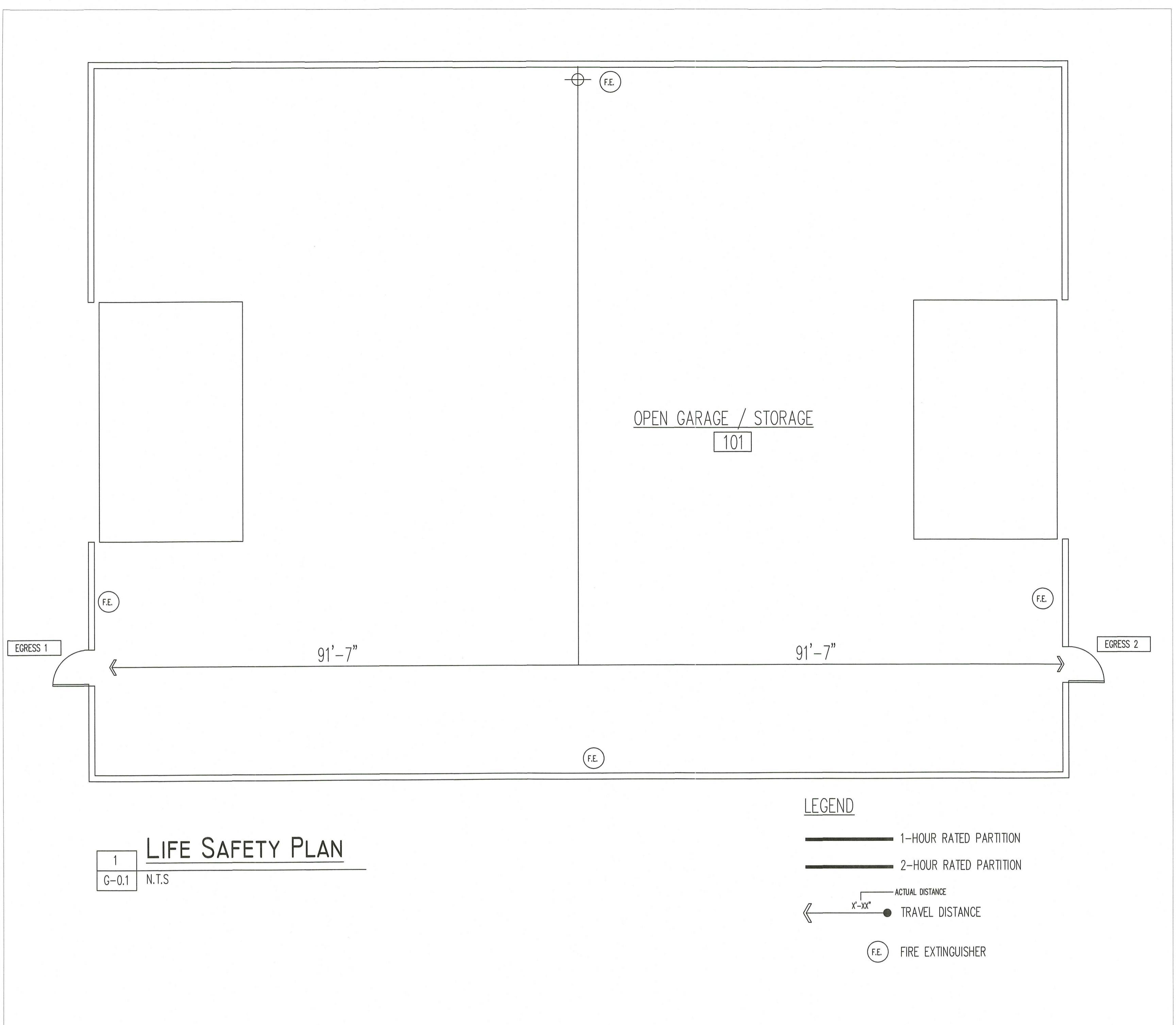
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Life Safety Analysis
APPLICABLE CODES
 RI SBC-1 STATE BUILDING CODE - SBC-2022
 UNIFORM FACILITIES CRITERIA
 2018 INTERNATIONAL BUILDING CODE
 RHODE ISLAND FIRE LAWS (NFPA 1, 2018 / NFPA 101, 2018)

CHAPTER 3:
USE & OCCUPANCY CLASSIFICATION
 GROUND LEVEL (1 LEVEL)
 SECTION 311.3 - STORAGE (LOW HAZARD) (S-2)

CHAPTER 4:
SPECIAL DETAILED REQUIREMENTS
 406.2.4 - FLOOR SURFACES SHALL BE CONCRETE / NON-ABSORBANT MATERIALS
 EXCEPTION 1 - ASPHALT SURFACES PERMITTED AT GROUND LEVEL
 EXCEPTION 2 - S-2 OCCUPANCY SLOPED SLAB NOT REQUIRED

CHAPTER 5:
GENERAL BUILDING HEIGHT & AREA

504.3 - ALLOW. HEIGHT OF BUILDING				
	NS / S	TYPE	ALLOWED	ACTUAL
S-2 (STORAGE)	NS	VB	40'	22'

504.4 - ALLOW FLOORS ABOVE GRADE				
	NS / S	TYPE	ALLOWED	ACTUAL
S-2 (STORAGE)	NS	VB	2 FLR.	1 FLR.

506.2 - ALLOW. AREA FACTOR				
	NS / S	TYPE	ALLOWED	ACTUAL
S-2 (STORAGE)	NS	VB	13,500 SF	4,960 SF

CHAPTER 6:
TYPE(S) OF CONSTRUCTION

601 - FIRE RESIST. RATING FOR BLDG. ELEMENTS	
	RATING (HOURS)
PRIMARY STRUCT. FRAME	0 HOURS
BEARING WALL - EXTERIOR	0 HOURS
BEARING WALL - INTERIOR	0 HOURS
NON-BEARING WALL	0 HOURS
FLOOR CONSTRUCTION	0 HOURS
ROOF CONSTRUCTION	0 HOURS

PER TABLE 602 - FIRE RESISTANCE RATING BASED ON FIRE SEPARATION DISTANCE
 X' > 30' AT THEREFORE NO ADDITIONAL EXTERIOR FIRE RATING BASED ON FIRE SEPARATION DISTANCE IS REQUIRED

CHAPTER 7:

FIRE & SMOKE PROTECTION

720.3 - EXPOSED INSULATION SHALL HAVE FLAME SPREAD <25 AND SMOKE INDEX OF 450

CHAPTER 8:

INTERIOR FINISHES

803.13 - INTERIOR FINISH REQUIREMENTS (NON-SPRINKLED)			
	INT. EXITS	CORR. & ENCL.	ROOM & ENCL.
S-2 (STORAGE)	C	C	C

CLASS A - FLAME SPREAD 0-25 / SMOKE INDEX 0-450
 CLASS B - FLAME SPREAD 26-75 / SMOKE INDEX 0-450
 CLASS C - FLAME SPREAD 76-200 / SMOKE INDEX 0-450

804.2 - INTERIOR FLOOR FINISH CLASS I OR II PER NFPA 253
 806.3 - COMBUSTIBLE DECORATIVE MATERIALS PER 806.4 AND < 10% OF WALL/CEILING AREA THAT IS BEING ATTACHED TO.
 EXCEPTION 3 - NOT APPLICABLE

806.7 - INT. TRIM CLASS C MINIMUM
 806.8 - FLOOR WALL BASE SHALL BE CLASS II OR CLASS I IS REQUIRED FOR FLOOR FINISHES
 807.1 - THERMAL AND SOUND INSULATION SHALL BE PER SECTION 720
 808.1.1.1 - SUSPD ACOUSTIC CEILINGS PER ASTM C635 AND ASTM C636

CHAPTER 9:

FIRE PROTECTION / LIFE SAFETY

903.2.10 - FIRE AREA < 12,000 SF
 NO COMMERCIAL VEHICLES STORED
 NO AUTOMATIC SPRINKLERS REQUIRED

CHAPTER 10:

MEANS OF EGRESS

1003.2 - CEILING HEIGHT NO LESS THAN 7'-6"
 1003.3.3 - HORIZ. PROJECTIONS NO LESS THAN 80" ALLOWED

1004.5 - OCCUPANCY LOAD MATRIX			
	FACTOR	AREA (GROSS)	OCCUPANTS
S-2 (STORAGE)	200 SF GROSS	4,920 SF	24 OCCUP.
TOTAL			24 OCCUP.

1006.3.1 - MIN. NUMBER OF EXITS = 2 (1 - 500 OCCUPANTS)
 2 PROVIDED

1017.2 - EXIT ACCESS TRAVEL DISTANCE		
	NON-SPRINKLED	***
S-2 (STORAGE)	300'	

NOT SPRINKLED

NFPA 101

DETECTION, ALARM & COMMUNICATION

42.3.4.1.1 - STORAGE OCCUPANCIES LIMITED TO LOW HAZARD CONTENTS SHALL NOT BE REQUIRED TO HAVE A FIRE ALARM SYSTEM

CONTRACTOR TO QUOTE CONNECTED ALARM AS BID ALTERNATE

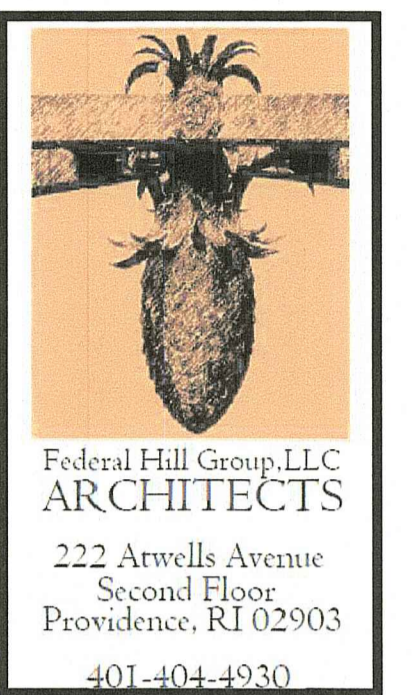


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MIDDLETOWN ARMORY SITE IMPROVEMENTS

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Sheet Contents
PROPOSED STORAGE BUILDING LIFE SAFETY PLAN DETAIL VIEWS & NOTES

Project Number: 21-0135

Drawing No.

A100

Sheet 13 OF 16

DESIGN CODE AND STANDARDS:

1. RISBC-1 RHODE ISLAND BUILDING CODE
2. ASCE STANDARD ASCE/ SEI 7-10: AMERICAN SOCIETY OF CIVIL ENGINEERS; MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURE
3. ACI STANDARD ACI 318M-08: AMERICAN CONCRETE INSTITUTE; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE AND COMMENTARY

DESIGN LOADS:

1. ROOF LIVE LOAD: 20 PSF
2. ROOF SUPERIMPOSED LOAD: 20 PSF
3. SNOW LOAD
 - 3.1. GROUND SNOW LOAD : 30 PSF
 - 3.2. EXPOSURE FACTOR (CE) : 0.9
 - 3.3. THERMAL FACTOR (CT) : 1.0
 - 3.4. IMPORTANCE FACTOR (IS) : 1.1
 - 3.5. RISK CATEGORY : III
 - 3.6. ROOF SLOPE FACTOR (CS) : 0.85
4. WIND LOADS
 - 4.1. WIND SPEED : 139 MPH
 - 4.2. WIND EXPOSURE : C
 - 4.3. RISK CATEGORY : III
 - 4.4. WIND DIRECTIONAL FACTOR : 0.85

AND COMMENTARY

CONCRETE NOTES:

1. ALL CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF ACI 318, "BUILDING CODE REQUIREMENTS OF REINFORCED CONCRETE" AND ACI 301, "SPECIFICATION FOR STRUCTURAL CONCRETE BUILDING
2. CONCRETE MATERIAL SHALL COMPLY WITH
 - A. CEMENT-ASTM C150 TYPE I, LOW ALKALI REQUIRED. SUBMIT MIX DESIGN WHICH CONTAINS ASR TEST RESULTS PER DAFB GUIDE, CERTIFYING ASR MITIGATION
 - B. AGGREGATE -ASTM C33 MAXIMUM AGGREGATE SIZE 3 2"
 - C. WATER - POTABLE
 - D. AIR ENTRAINING ADMIXTURE-ASTM C260
 - E. WATER - REDUCING ADMIXTURE - ASTM C494, INCLUDING SUPER PLASTICIZERS.
 - F. FLY ASH- ASTM C618, CLASS C
3. CONCRETE SHALL DEVELOP THE MAXIMUM 28 DAY COMPRESSIVE STRENGTH (fc) ,(EXPERT AS NOTED ON DRAWING

TYPES OF CONSTRUCTION	TYPES OF CONSTRUCTION
A. FOOTINGS , FOUNDATION , WALLS	4000 PSI
B. INTERIOR SLABS	4000 PSI
C. EXTERIOR SLABS , WALLS AND CURBS (AIR ENTRAINED CONCRETE)	4000 PSI

CONCRETE PROPERTIES SHALL BE ESTABLISHED ON THE BASIS OF FIELD EXPERIENCE AND/ OR TRIAL MIXTURE IN WITH ACI-318-89 SECTIONS 5.2 AND 5.3 WHEN FLY ASH UTILIZED IN THE MIX . MIX SHALL CONTAIN A WATER REDUCER. FLY ASH SHALL BE ADDED AT THE RATE OF NOT MORE THAN 100 POUNDS PER CUBIC YARD AND CEMENT SHALL BE REDUCED BY NOT MORE THAN 15 PERCENT BY WEIGHT.
4. PROPORTION AND DESIGN MIXES TO RESULT IN CONCRETE SLUMP AT POINT OF PLACEMENT OF MORE THAN 4 INCHES. WITH ADDITIONAL SLUMP ALLOWED VIA ADMIXTURES SUCH AS MASTER BUILDERS POLYHEED AND DELVA
5. USE OF AIR ENTRAINING ADMIXTURE IN EXTERIOR EXPOSED CONCRETE TO 3 PERCENT ENTRAINED AIR
6. READY MIX CONCRETE SHALL COMPLY WITH THE REQUIREMENTS OF ASTM C94
7. NO ALUMINUM ITEMS SHALL BE EMBEDDED IN ANY CONCRETE CHLORIDES IN ANY FORM OR CONCENTRATION SHALL NOT BE ADDED TO ANY CONCRETE
8. REINFORCING STEEL:
 - A. REINFORCING BARS -ASTM A615 GRADE 60 , EXPERT TIES & STIRRUPS MAY BE GRADE 40 DEFORMED
 - B. WELDED WIRE FABRIC - ASTM A 185
 - C. ACCESSORIES AND SUPPORTS FOR REINFORCEMENT - COMPLY WITH CRSI RECOMMENDATIONS.
 - D. BARS MARKED CONTINUOUS AND ALL VERTICAL STEEL SHALL BE LAPPED OR EMBEDDED TO DEVELOP THE FULL TENSILE CAPACITY OF THE BAR . LAPS SHALL BE CLASS "B" UNLESS SHOWN OTHERWISE SPLICE TOP BARS NEAR MID SPAN AND SPLICE BOTTOM BARS OVER SUPPORTS

9. CONCRETE WORK EXECUTION:

- A. CONSTRUCT FORM TO CORRECT SIZE , SHAPE , ALIGNMENT , ELEVATION AND POSITION , AND SUPPORT VERTICAL AND LATERAL LOADS
- B. POSITION SUPPORT AND SECURE REINFORCEMENT AGAINST PLACEMENT

MINIMUM CONCRETE COVER FOR REINFORCEMENT SHALL BE UNLESS NOTED OTHERWISE ON THE DRAWINGS

CAST AGAINST & EXPOSED EARTH 3 INCHES

EXPOSED TO EARTH OR WATER 2 INCHES

NOT EXPOSED TO WEATHER OR IN CONTACT WITH EARTH 1/2 INCHES
- C. PLACE CONCRETE IN COMPLIANCE WITH ACI 304" RECOMMEND PRACTICE FOR THE MEASURING , MIXING , TRANSPORTING AND PLACING CONCRETE
- D. CONSOLIDATE PLACED CONCRETE USING MECHANICAL VIBRATING EQUIPMENTS SO THAT CONCRETE IS WORKED AROUND REINFORCEMENTS , EMBEDDED ITEMS AND IN TO FORMS.
- E. ALL CONCRETE IS REINFORCED UNLESS SPECIFICALLY NOTED AS UN REINFORCED. REINFORCED CONCRETE NOT OTHERWISE INDICATED WITH SAME REINFORCEMENT AS OTHER SIMILAR SECTIONS
- F. PROTECT CONCRETE WORK FROM PHYSICAL DAMAGE OR REDUCED STRENGTH DUE TO WEATHER EXTREMES , IN COLD WEATHER. COMPLY WITH ACI 306; IN HOT WEATHER COMPLY WITH ACI 305.
- G. IN CONCERNS OF GRADE BEAMS AND WALLS , PROVIDE CORNER REINFORCEMENT (LAP TWO FEET EACH DIRECTION) IN COURSE FACE, MATCHING SIZE AND SPACING OF HORIZONTAL REINFORCEMENT. PROVIDE THREE # 4 SUPPORT BARS WHERE REQUIRED FOR SUPPORT OR CORNER BARS
- H. AT OPENINGS IN THE WALLS ADD ONE # 5 BAR (OPENING DIMENSION PLUS 60 BAR DIAMETERS) FOR EACH FACE AND EACH SIDE OF OPENING AND ONE # 5 BAR BY 5'-0" DIAGONALLY FOR EACH FACE AND EACH CORNER OF OPENING
- I. PROVIDE ONE # 5 BAR DIAGONALLY AT EACH FACE OF ALL STEPS IN GRADE BEAMS AND FOUNDATION WALLS
- J. LAP REINFORCEMENTS AS FOLLOWS , EXCEPT AS NOTED OTHERWISE ON THE DRAWING # 4 BARS - 12" , # 5 BARS - 15" , # 6 BARS - 26"
- K. PROVIDE CONSTRUCTION JOINTS IN FOOTINGS , GRADE BEAMS AND WALLS AT NOT GREATER THAN 80 FEET IN ANY DIRECTION , KEY OR DOWEL CONSTRUCTION JOINTS
- L. STEEL TROWEL FINISH ALL INTERIOR CONCRETE SLABS , BROOM FINISH ALL EXTERIOR CONCRETE SLABS.
- M. REMOVE FINIS AND PROJECTIONS , REPAIR AND PATCH DEFECTIVE AREAS WITH CEMENT GROUT IMMEDIATELY AFTER REMOVAL

STRUCTURAL STEEL:

1. MATERIALS:

	MINIMUM YIELD:
HOT ROLLED BAR	Fy 50 ksi MIN.
STRUCTURAL STEEL SHEET	Fy 50 ksi MIN.
STRUCTURAL STEEL PLATE	Fy 50 ksi MIN.
COLD FORMED SHAPES	Fy 55 ksi MIN.
ROOF AND WALL SHEETING	Fy 80 ksi MIN. 26GA
ROOF AND WALL SHEETING	Fy 50 ksi MIN. 24GA
BOLTS	A307 AND A325

MBMI METAL BUILDINGS RESERVES THE RIGHT TO SUBSTITUTE THE ABOVE MATERIALS WITH EQUAL OR BETTER MATERIAL
2. WELDING SHALL BE IN CONFORMANCE WITH AWS D1.1 STRUCTURAL WELDING CODE. USE E70XX ELECTRODES, WELDERS SHALL SATISFY AWS QUALIFICATION PROCEDURE
3. BOLTS SHALL BE ASTM A325. ANCHOR BOLTS SHALL BE A307. USE 3/4" Ø MIN. U.N.O.
4. BOLTS SHALL BE INSTALLED IN CONFORMANCE WITH AISC "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS", LATEST EDITION.
5. ALL EXPOSED STEEL SUCH AS EXPOSED BOLTS, WELDS AND ABRASIONS SHALL BE PAINTED W/ APPROVED PRIMER. PRIME ALL FABRICATED STEEL WITH APPROVED PRIMER.
6. PROVIDE 1 1/2 IN. MIN. GROUT BENEATH ALL COLUMN BASE PLATES. USE NON-SHRINK GROUT (EMBECCO 153 OR EQUAL), DRY-PACKED.
7. ALL STRUCTURAL STEEL TO RECEIVE A RUST INHIBITIVE PRIMER THIS PAINT IS NOT INTENDED FOR LONG TERM EXPOSURE TO THE ELEMENTS.
8. PRE-FORMED CLOSURE STRIPS ARE PROVIDED AT THE EAVE BENEATH THE ROOF SHEETS AND AT THE END WALLS BETWEEN THE RAKE TRIM AND THE ENDWALL SHEETS

FOUNDATION NOTES

1. THE ALLOWABLE SOIL BEARING CAPACITY IS ASSUMED TO BE 2500 - 3500 PSF. THE CONTRACTOR AND / OR OWNER SHALL EMPLOY A GEOTECHNICAL ENGINEER TO INVESTIGATE THE SITE AND PROVIDE A WRITTEN REPORT OF SOIL CHARACTERISTICS. THE DESIGN ENGINEER SHALL BE NOTIFIED IMMEDIATELY IF ANY CONDITIONS ARE FOUND DIFFERENT THAN THOSE REPRESENTED IN THIS REPORT . IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE SOIL CONDITIONS BEFORE CONSTRUCTION AND IF UNUSUAL CONDITIONS ARE ENCOUNTERED. TO NOTIFY THE ENGINEER BEFORE CONSTRUCTION BEGINS , THE CONTRACTOR SHALL NOT PROCEED WITH THE WORK IF GROUNDWATER IS ENCOUNTERED DURING EXCAVATION , AND SHALL NOTIFY THE GEOTECHNICAL ENGINEER IMMEDIATELY
2. THE BOTTOM ELEVATION OF EXTERIOR FOOTINGS SHALL BE A MINIMUM OF 4'-0" BELOW OUTSIDE FINISH GRADE. LOWER FOOTINGS AS REQUIRED TO REACH GOOD BEARING SOIL.
3. THOROUGHLY COMPACT THE BOTTOM OF EXCAVATIONS PRIOR TO FORMING FOOTINGS.
4. ALL BACKFILLED USED INSIDE THE BUILDING SHALL BE WELL GRADED GRAVEL WHICH SHALL BE THOROUGHLY COMPACTED IN 8" LAYERS. ON SITE MATERIALS MAY BE USED IF ACCEPTABLE TO THE ENGINEER.
5. ALL FOUNDATION WALL SHALL BE BACKFILLED EVENLY ON BOTH SIDES TO PREVENT UNBALANCED LOADING.
6. ALL CONCRETE SHALL BE PLACED IN DRY EXCAVATIONS. PUMP AWAY GROUND WATER AS REQUIRED.
7. ALL DIMENSIONS SHALL BE VERIFIED BY THE CONTRACTOR AND HOME OWNER PRIOR TO COMMENCEMENT OF WORK.
8. FOR CONSTRUCTION, IT IS THE RESPONSIBILITY OF THE OWNER/CONTRACTOR TO VERIFY ALL GRADES. MAKE SURE THE FOUNDATION DRAWINGS WILL WORK WITH THE EXISTING ELEVATIONS AND GRADES. IF CHANGES TO THE DESIGN ARE REQUIRED, NOTIFY THE ENGINEER PRIOR TO PLACING ANY CONCRETE. CONTRACTOR IS RESPONSIBLE FOR MAN DOOR REQUIREMENTS, AND BLOCK OUTS REQUIRED FOR PLUMBING, ELECTRICAL, ETC. THE CONTRACTOR SHALL ALSO ADEQUATELY BRACE ALL FORMS.
9. COMPACTED BACK FILL SHALL BE USED IN THE EXCAVATION AFTER THE CONCRETE IS SET
10. REFER METAL BUILDING MANUFACTURER'S ANCHOR BOLT PLAN FOR ANCHOR BOLT PLACEMENT
11. NO FLOOD ZONE AND STEEP SLOPE REQUIREMENTS ARE INCLUDED IN THE DESIGN.



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FOUNDATION PLAN
GENERAL NOTES

Project Number. 21-0135

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Sheet 14 OF 16

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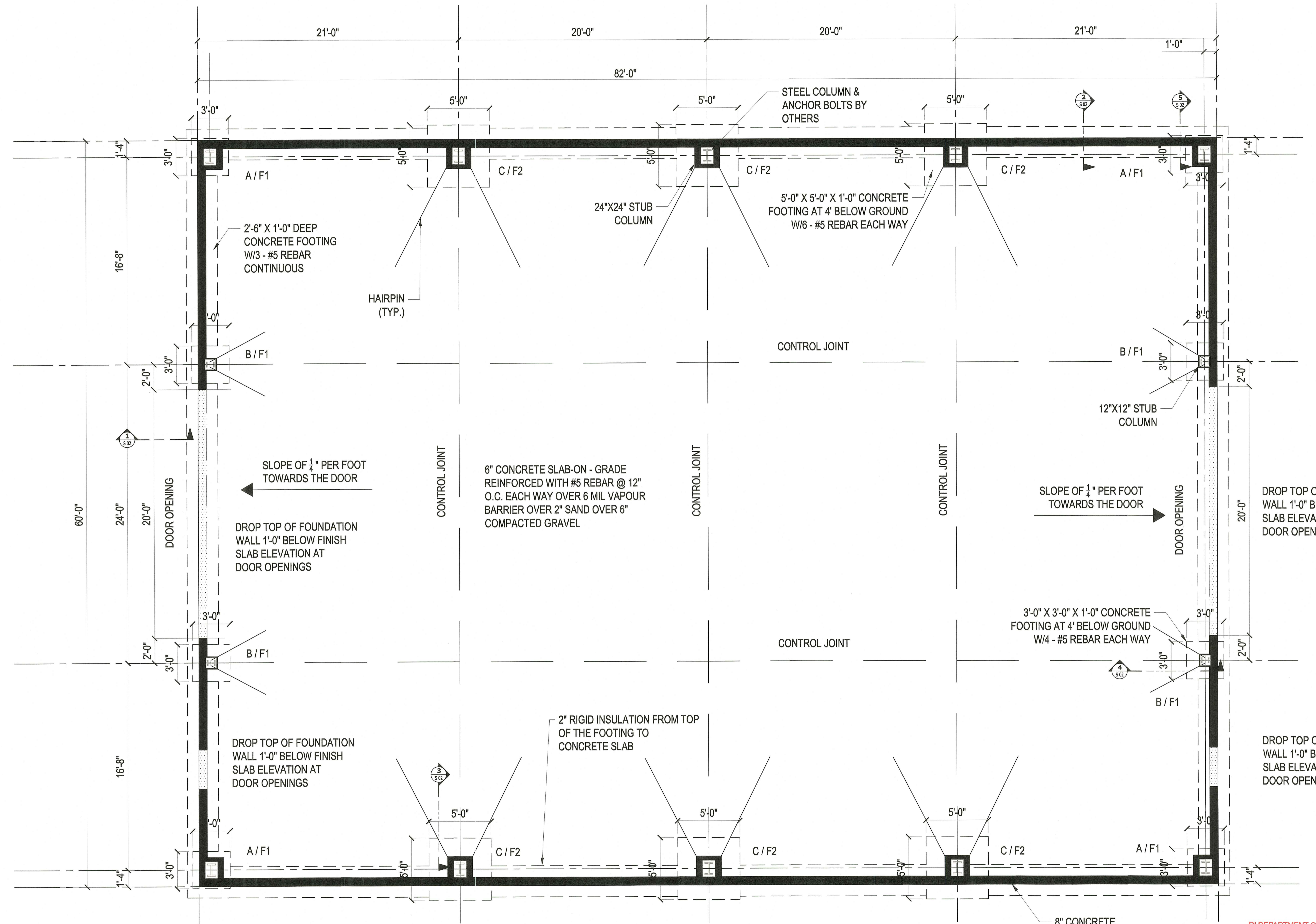
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 Sheet Contents
FOUNDATION PLAN

Project Number: 21-0135

Drawing No.
S101

Sheet 15 OF 16



FOUNDATION PLAN
 Scale: 1/4"=1'-0"

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- RESPONSE TO RIDEM COMMENTS

Project

RI ARMY
NATIONAL GUARD



MIDDLETOWN
ARMORY SITE
IMPROVEMENTS

106 AIRPORT ACCESS RD
MIDDLETOWN, RI 02842

Drawing Status
90% SET

Issued On:

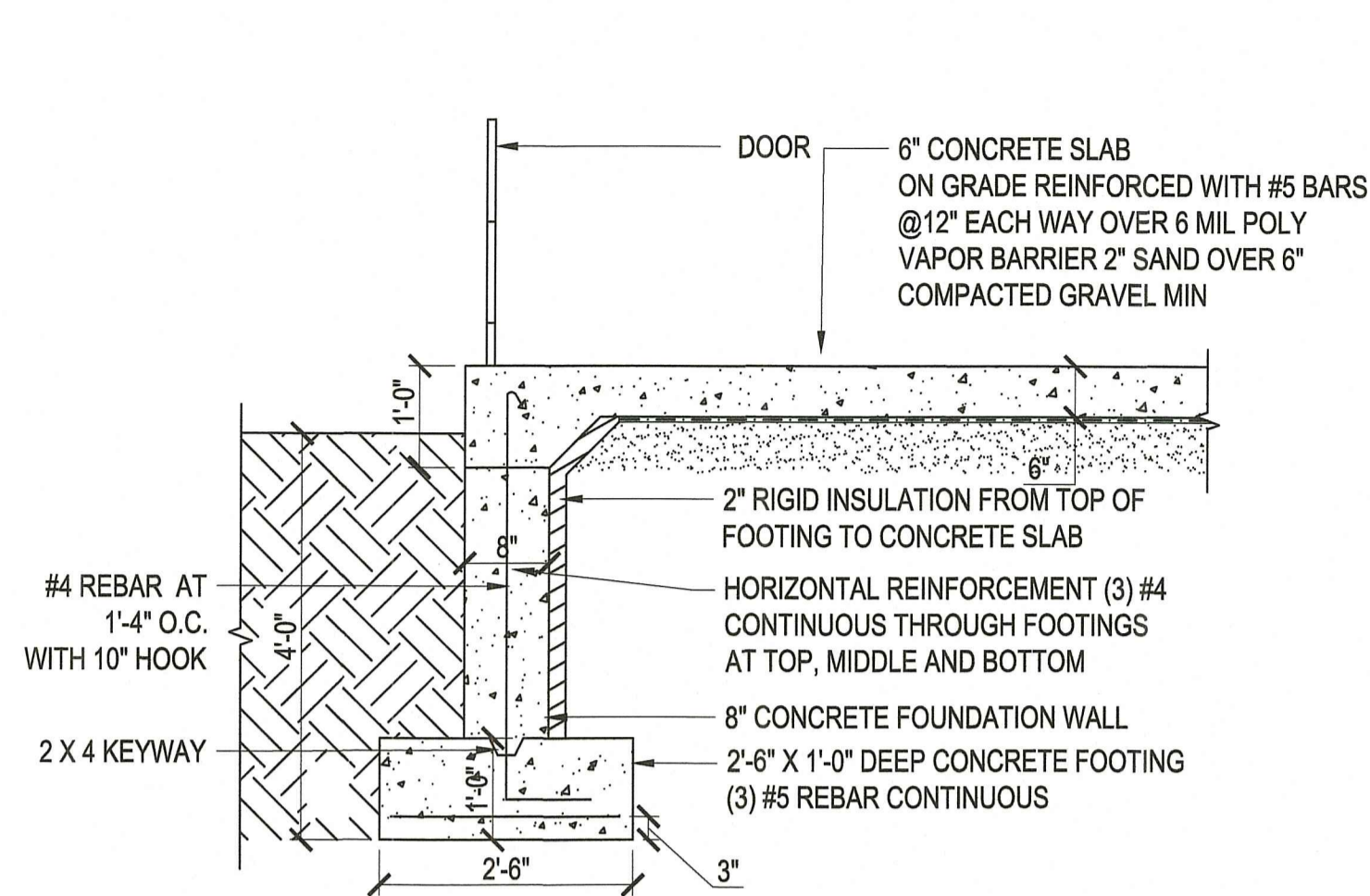
Sheet Contents
FOUNDATION PLAN
SECTIONS

Project Number. 21-0135

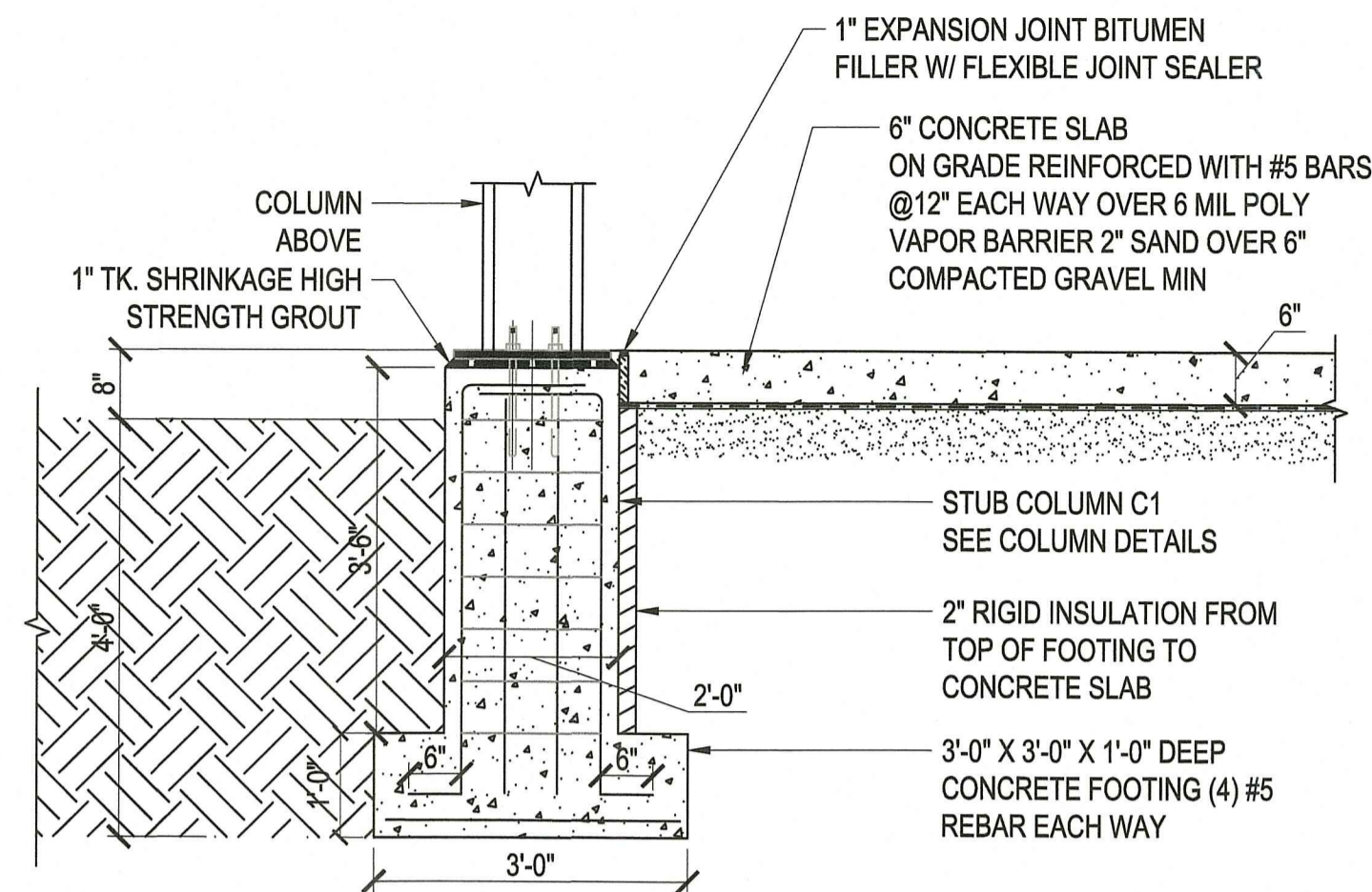
Drawing No.

S102

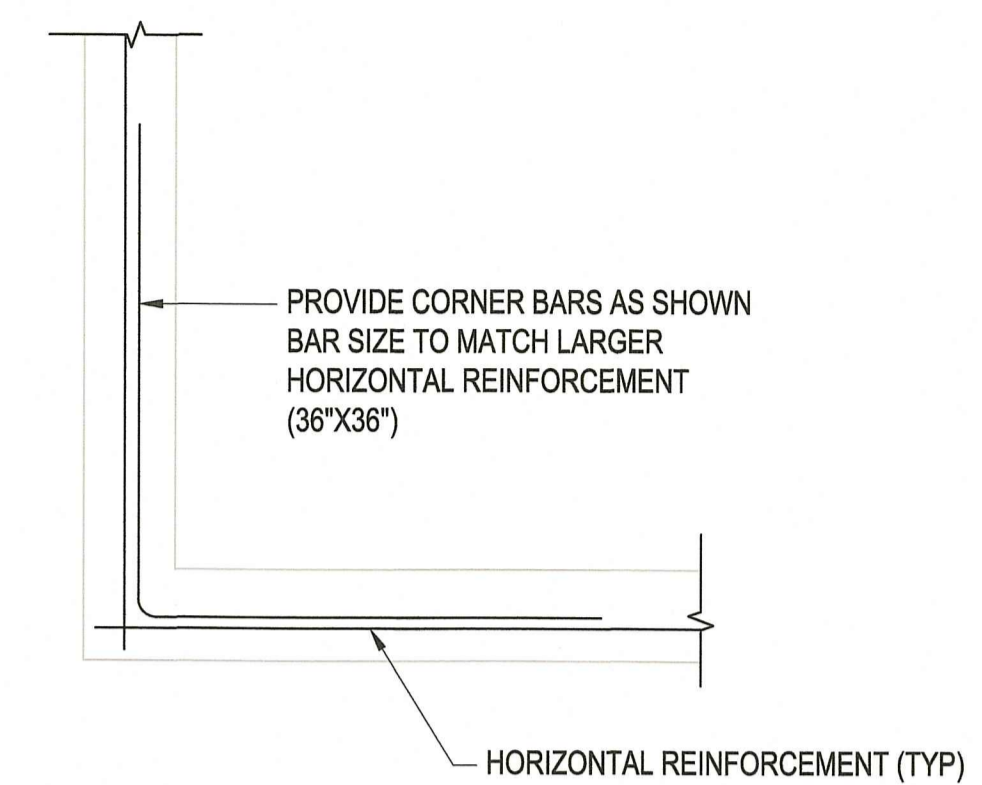
Sheet 16 OF 16



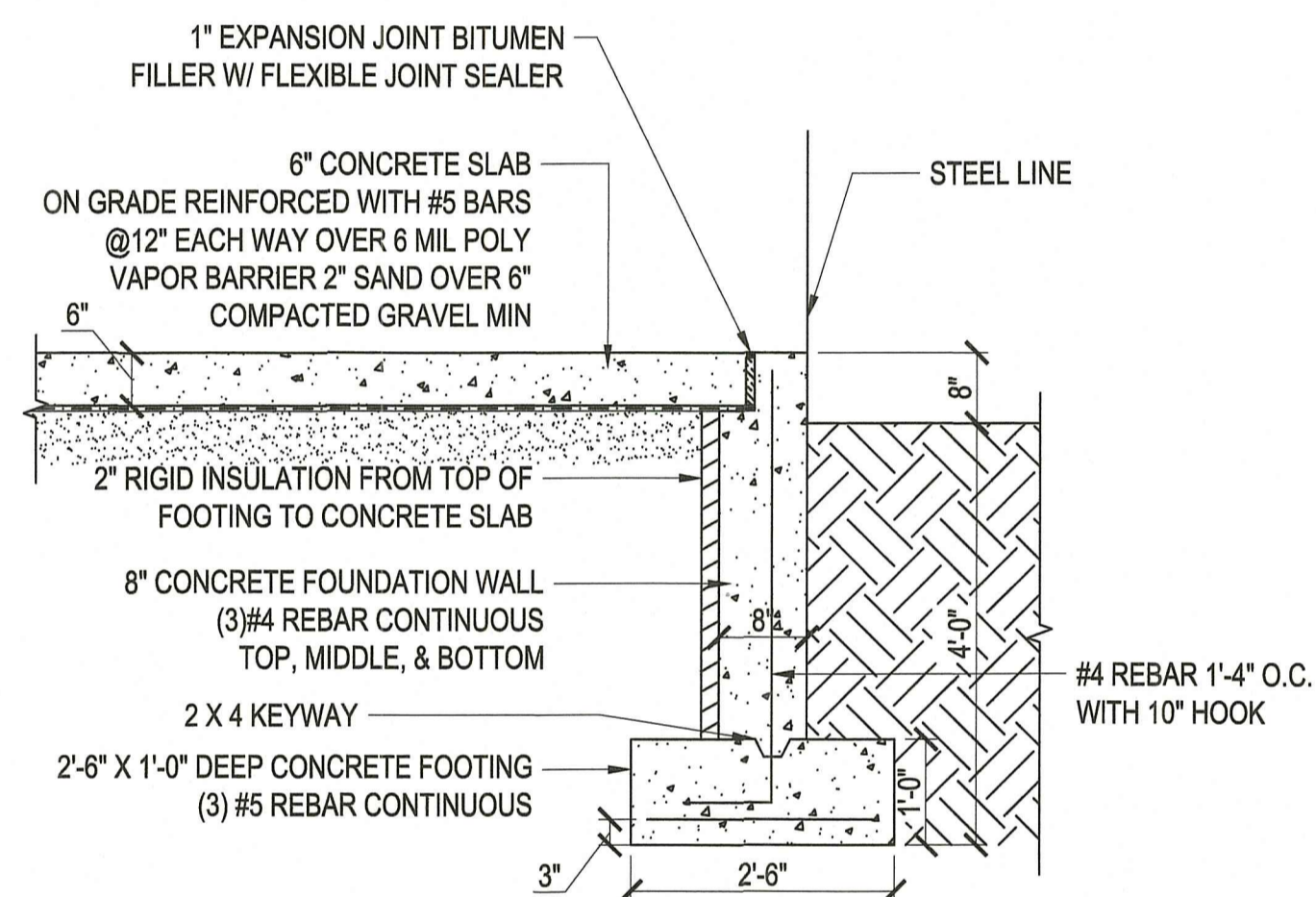
1 SECTION
SCALE: 3/4" = 1'-0"



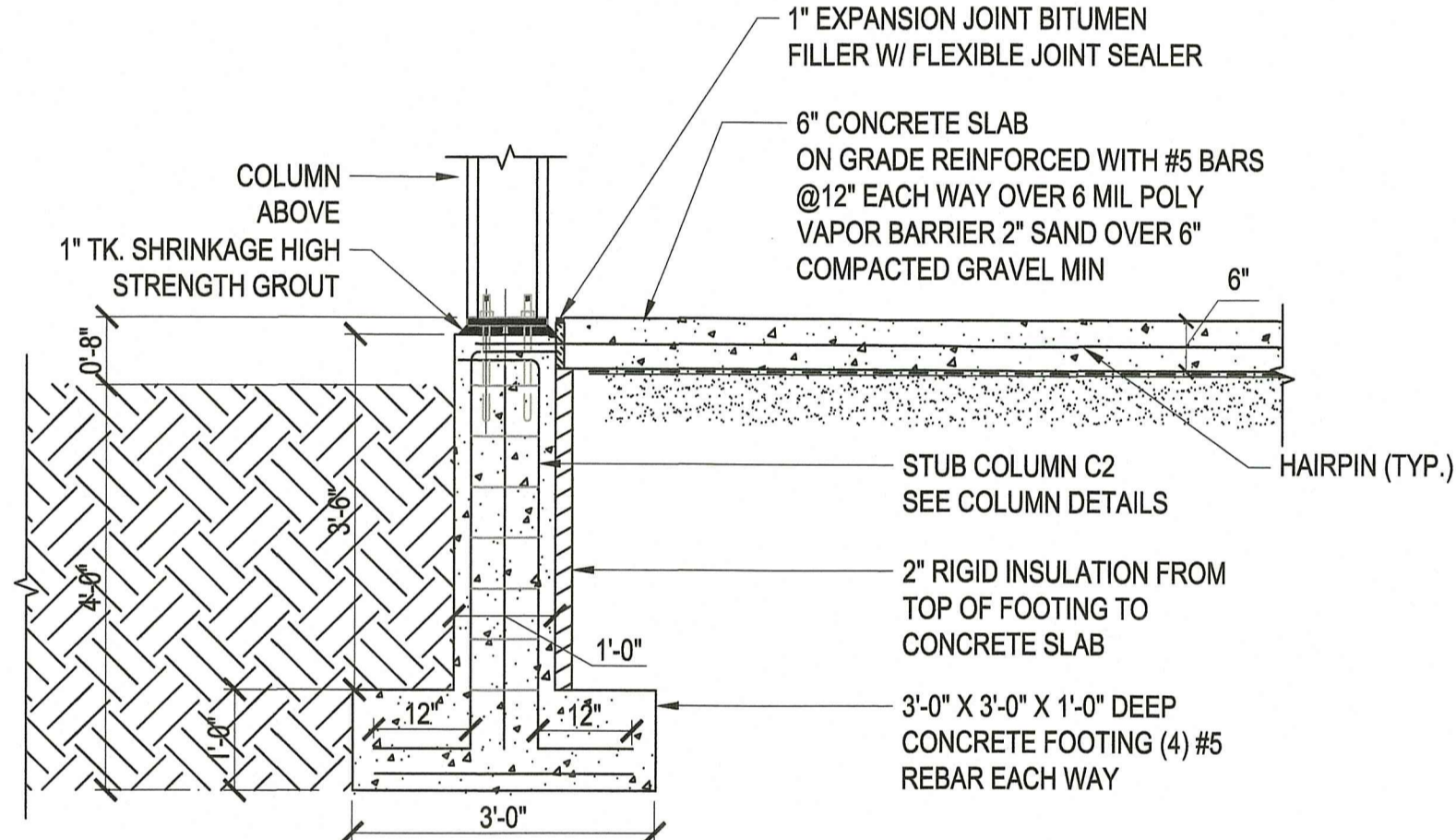
4 SECTION - FOOTING A / F1
SCALE: 3/4" = 1'-0"



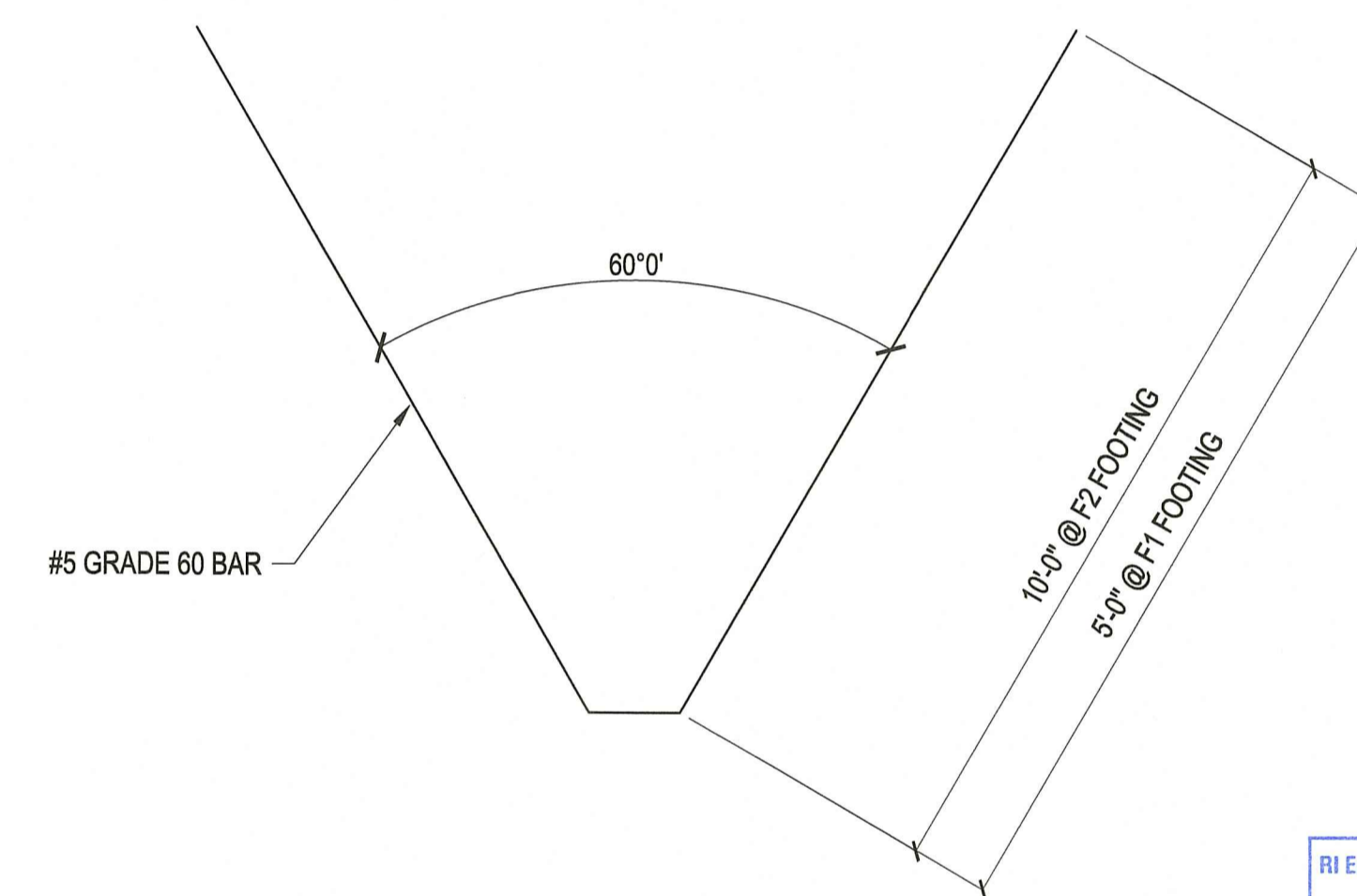
7 TYP. HORIZONTAL WALL REINFORCEMENT
SCALE: 3/4" = 1'-0"



2 SECTION
SCALE: 3/4" = 1'-0"

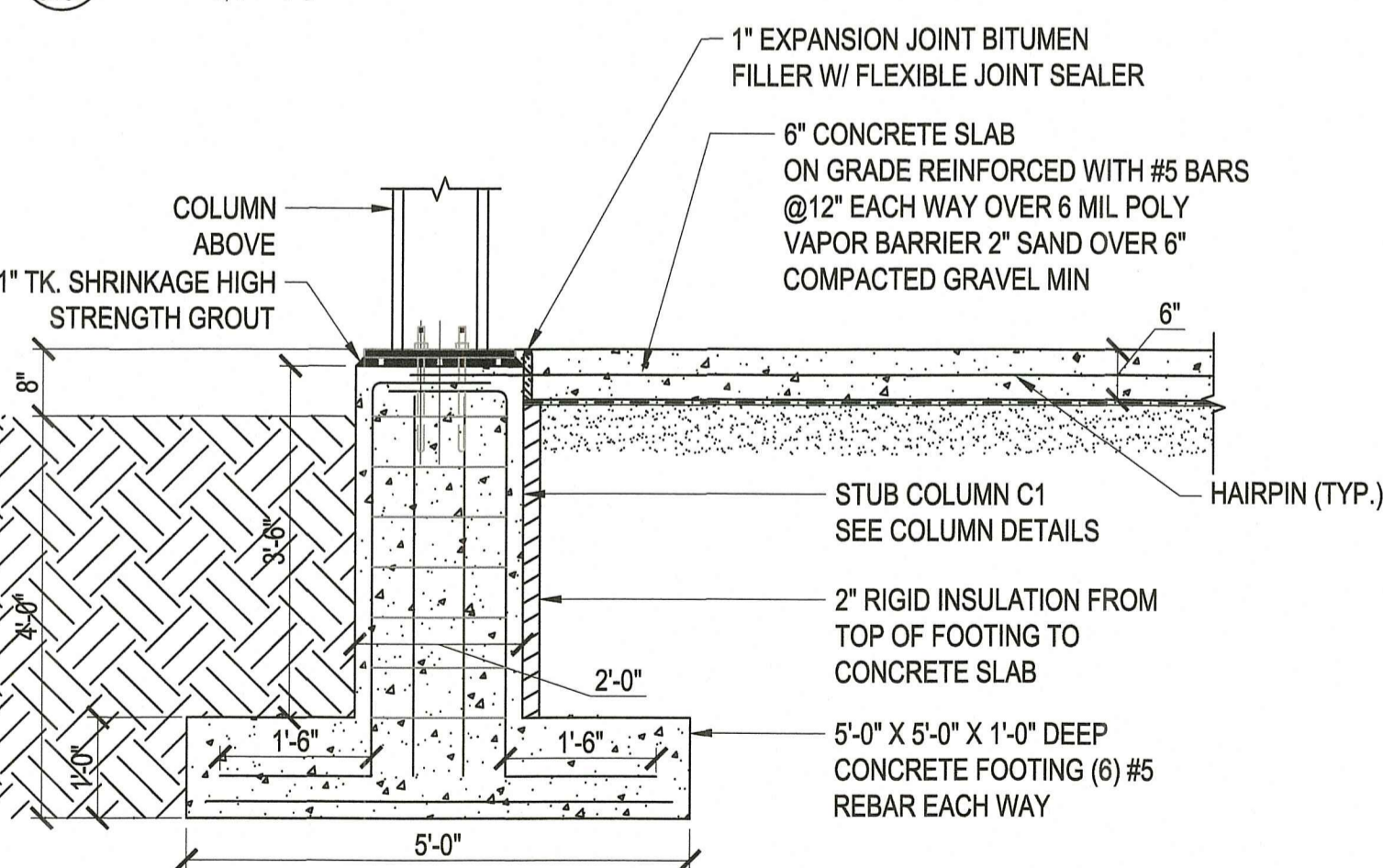


5 SECTION - FOOTING B / F1
SCALE: 3/4" = 1'-0"

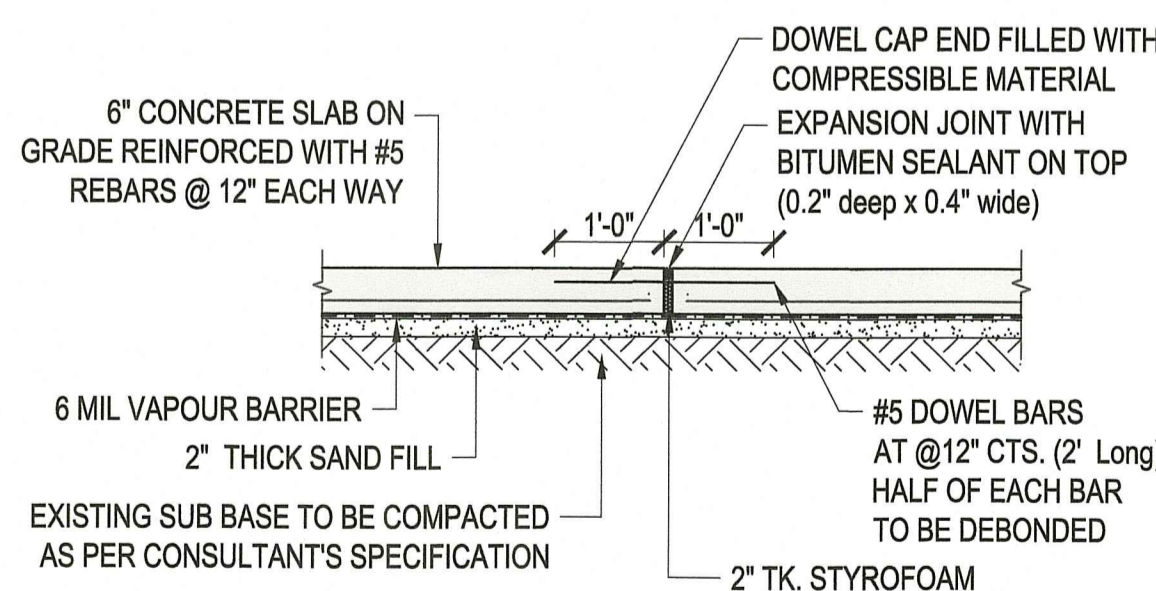


8 HAIRPIN DETAIL (TYP.)
SCALE: 3/4" = 1'-0"

RI Environmental Management
OCT 06 2022
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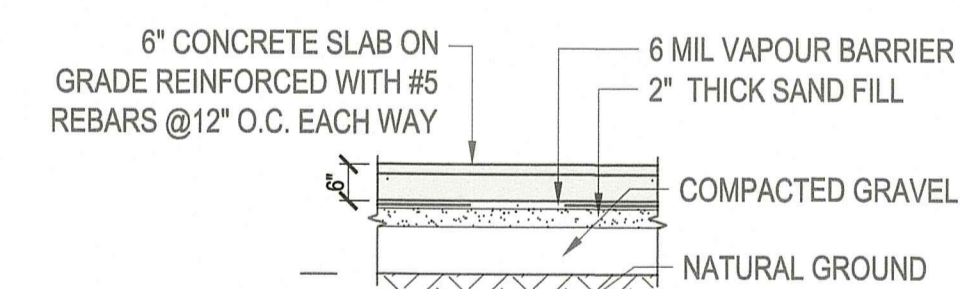


3 TYPICAL SECTION FOR C / F2
SCALE: 3/4" = 1'-0"

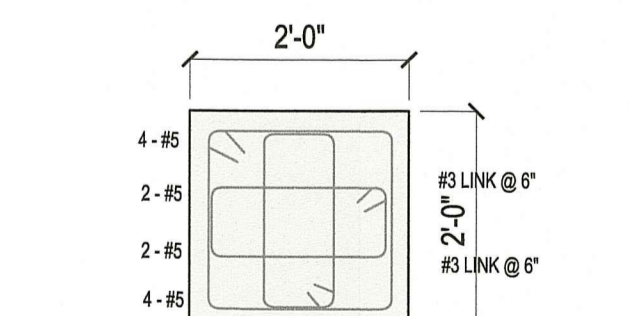


6 TYPICAL CONTROL JOINT
SCALE: 3/4" = 1'-0"

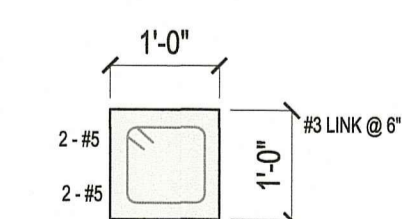
RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS AS
SPECIFIED IN THE LETTER OF APPROVAL
DATED: NOV 02 2022 FILE #: 22-0320
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE
Dorothy L. Freeman



9 GROUND SLAB (TYP.)
SCALE: 3/4" = 1'-0"

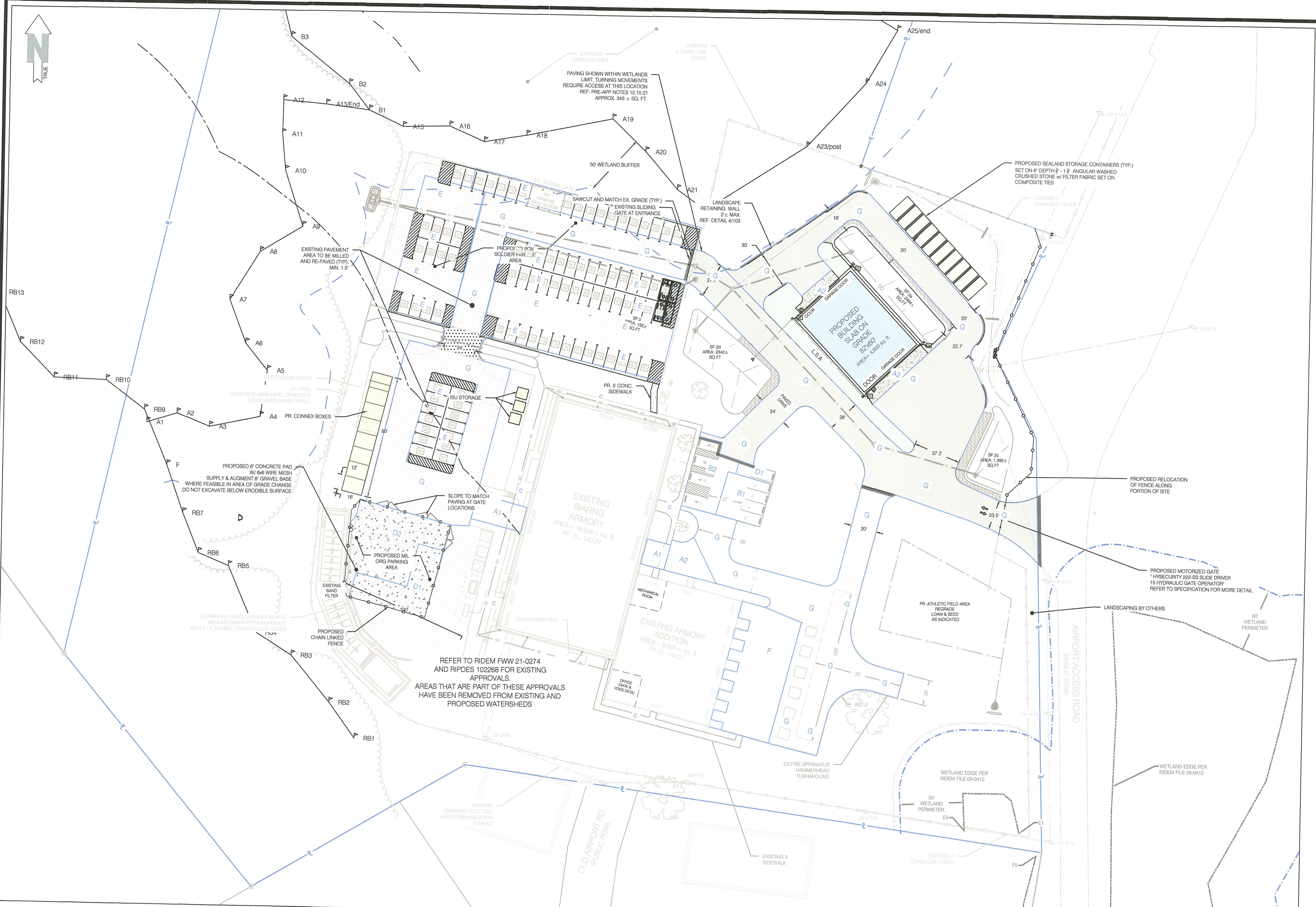


TYPICAL DETAIL OF
STUB COLUMN- C1
(Scale: 3/4" = 1'-0")



TYPICAL DETAIL OF
STUB COLUMN- C2
(Scale: 3/4" = 1'-0")

10 COLUMN DETAILS
SCALE: 3/4" = 1'-0"

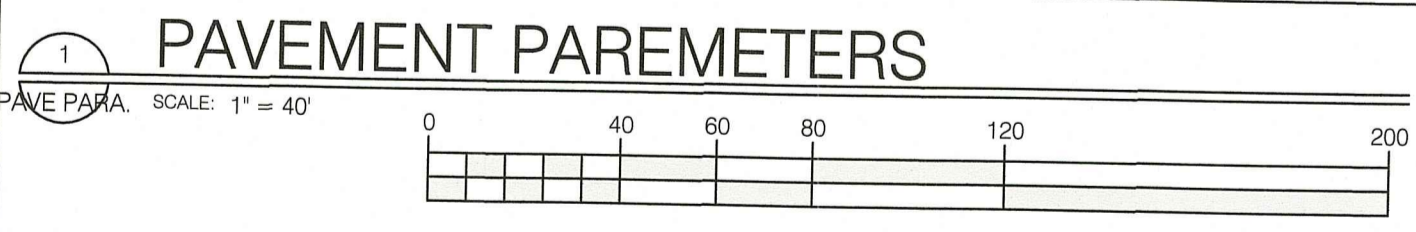


RI Environmental Management
 OCT 06 2022
 Office of Water Resources

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 FRESHWATER WETLANDS PROGRAM
 APPROVED WITH CONDITIONS AS
 SPECIFIED IN THE LETTER OF APPROVAL
 DATED: NOV 02 2022 FILE #: 22-0370
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE
 Nancy L. Freeman

LEGEND

- BRUSH LINE (APPROXIMATE)
- DIMENSION - EXISTING
- DIMENSION - PLAN / DEED
- DIMENSION - PROPOSED
- DIMENSION - SURVEY
- EDGE OF PAVEMENT - EXISTING
- EDGE OF PAVEMENT - PROPOSED
- OHE ELECTRIC - OVERHEAD (OHE)
- ETC ELECTRIC, TELEPHONE, CABLE (ETC)
- UGE ELECTRIC - UNDERGROUND (UGE)
- FENCE - METAL
- FENCE - WOOD
- FLOW ARROWS
- GAS (G)
- GRADE CONTOUR - EXISTING
- GRADE CONTOUR - PROPOSED
- LIMIT OF DISTURBANCE / SEDIMENT CONTROL
- PROPERTY LINE - ABUTTING
- PROPERTY LINE - EXISTING
- SAN SANITARY SEWER (S)
- SED SEDIMENT CONTROL
- SETBACKS
- STONE WALL
- STORM DRAIN (SD)
- 50' WETLAND PERIMETER
- 200' WETLAND PERIMETER
- VEGETATED WETLANDS
- RIVERBANK WETLANDS
- BAILEYS BROOK
- GROUND CONTROL POINT (GCP)
- CATCH BASIN
- DRILL HOLE
- ELECTRIC BOX (ETC)
- FIRE HYDRANT
- GATE VALVE
- GRANITE BOUND, EXISTING
- LOW WATER LINE
- LIMIT OF DISTURBANCE MARKER
- MANHOLE (MH-TYPE)
- REBAR / STEEL PIPE FOUND
- SPIKE
- SPOT GRADE - EXISTING
- SPOT GRADE - PROPOSED
- STRUCTURE, EXISTING
- STRUCTURE, PROPOSED
- SURVEY MONUMENT TO BE SET
- FLOW ARROW
- TREE
- UTILITY POLE
- LIGHT POLE
- WATER SHUT OFF
- WETLAND FLAG LOCATION
- SOIL EVALUATION
- SOIL EVALUATION BY OTHERS



Area Division	Description	Parameter Area		Existing Area		Proposed Area	
		Sq. ft.	SY	Sq. ft.	SY	Sq. ft.	SY
A	Org Loading Ramps, Org Loading Ramp Turn Area	3,690	410	2,031	226	2,906	323
A1	Org Loading Ramps	1,440	160	1,199	133	1,183	131
A2	Org Loading Ramp Turn Area	2,250	250	832	92	1,723	191
B	POV Visitor Parking, Handicapped Parking	2,880	320	3,146	350	2,842	316
B1	POV Visitor Parking	1,260	140	1,260	140	1,260	140
B2	POV Handicapped Parking	1,620	180	1,886	210	1,582	176
C	Sidewalks	6,507	723	3,165	352	3,278	364
D	Org Parking, Org Parking Apron	5,850	650	6,525	725	5,838	649
D1	Org Parking	2,250	250	2,869	319	2,249	250
D2	Org Parking Apron	3,600	400	3,656	406	3,589	399
E	POV Soldier Parking (97 Total Spaces)	33,732	3,748	30,822	3,425	20,599	2,289
F	Org Drill Shed Apron	4,500	500	6,680	742	4,450	494
G	Access Road and Entrance Throat	79,020	8,780	40,445	4,494	52,513	5,835
Total		136,179	15,131	92,814	10,313	92,426	10,270



Certification
 CERTIFICATION THIS SURVEY HAS BEEN CONDUCTED AND THE PLAN HAS BEEN PREPARED PURSUANT TO 435-RICR00-00-1.9 OF THE RULES AND REGULATIONS ADOPTED BY THE RHODE ISLAND STATE BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS ON DECEMBER 31, 2020 (EFFECTIVE DATE), AS FOLLOWS:
 CLASS I
 CLASS III (PHYSICAL FEATURES) TOPOGRAPHIC SURVEY T-2
 THE PURPOSE FOR THE CONDUCT OF THE SURVEY AND FOR THE PREPARATION OF THE PLAN IS AS FOLLOWS: FOR THE PREPARATION OF A PLAN SET FOR USE IN RIDEM PERMITTING

FOR SURVEY ELEMENTS ONLY
 NEAL HINGORANY REG. 2515
 COA: A38

Drawn by LD
 Checked by NKH & EC
 Revised on 8/29/22
 - MISC. SITE EDITS PER RIARNG
 - RESPONSE TO RIDEM COMMENTS

FOR P.E. ELEMENTS ONLY

RI ARMY NATIONAL GUARD



MIDDLETOWN ARMORY SITE IMPROVEMENTS

106 AIRPORT ACCESS RD
 MIDDLETOWN, RI 02842

Drawing Status
 90% SET

Issued On:
 Sheet Contents
 PROPOSED SITE PLAN

Project Number: 1-0-35
 Drawing No.
PAVE PARA.

N:\PROJECTS\21.0135 - RIARNG-MIDDLETOWN ARMORY\G121.0135 - RIARNG (SITE IMPROVEMENTS).DWG PAVE PARA - 9/16/2022 Neal Hingorany