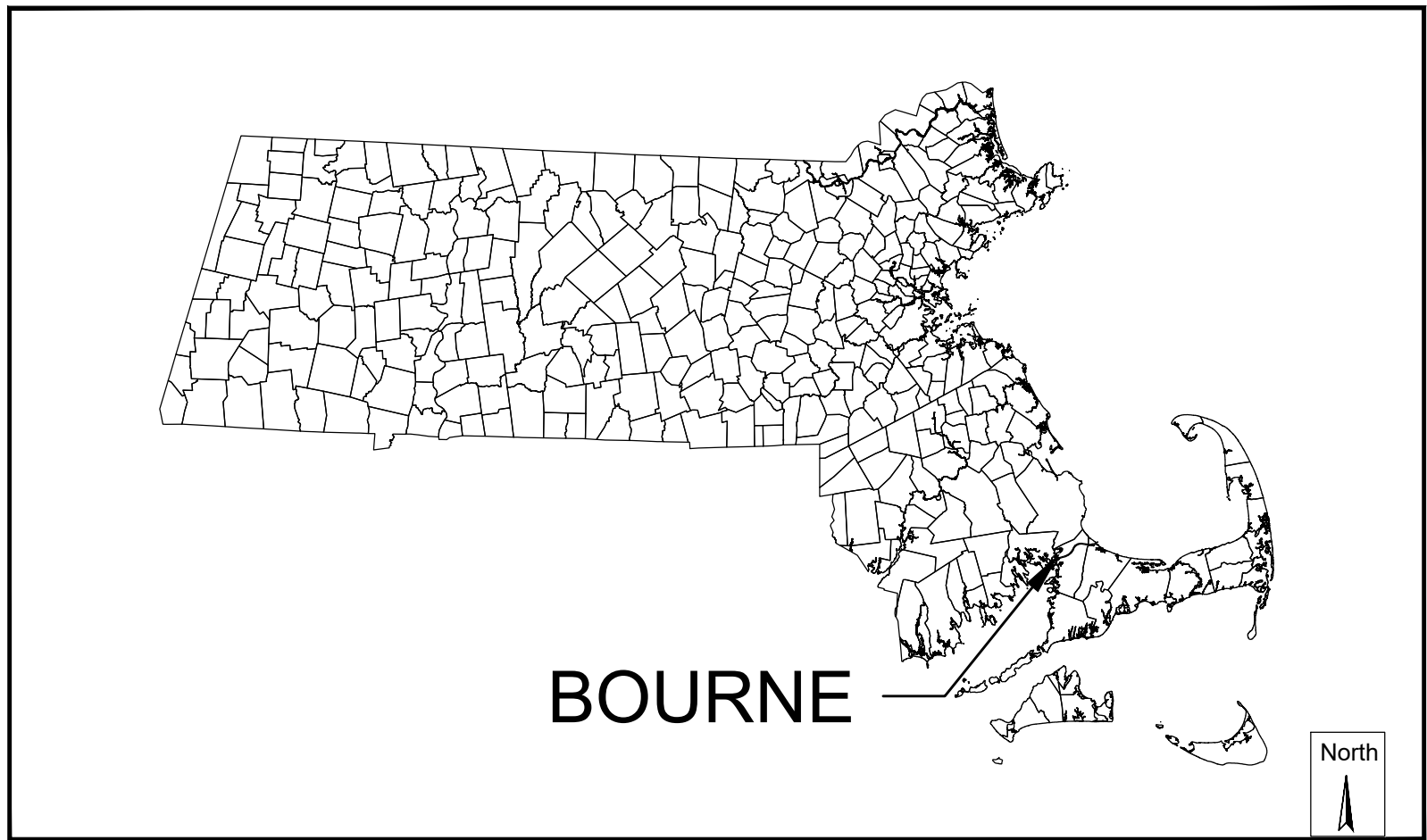
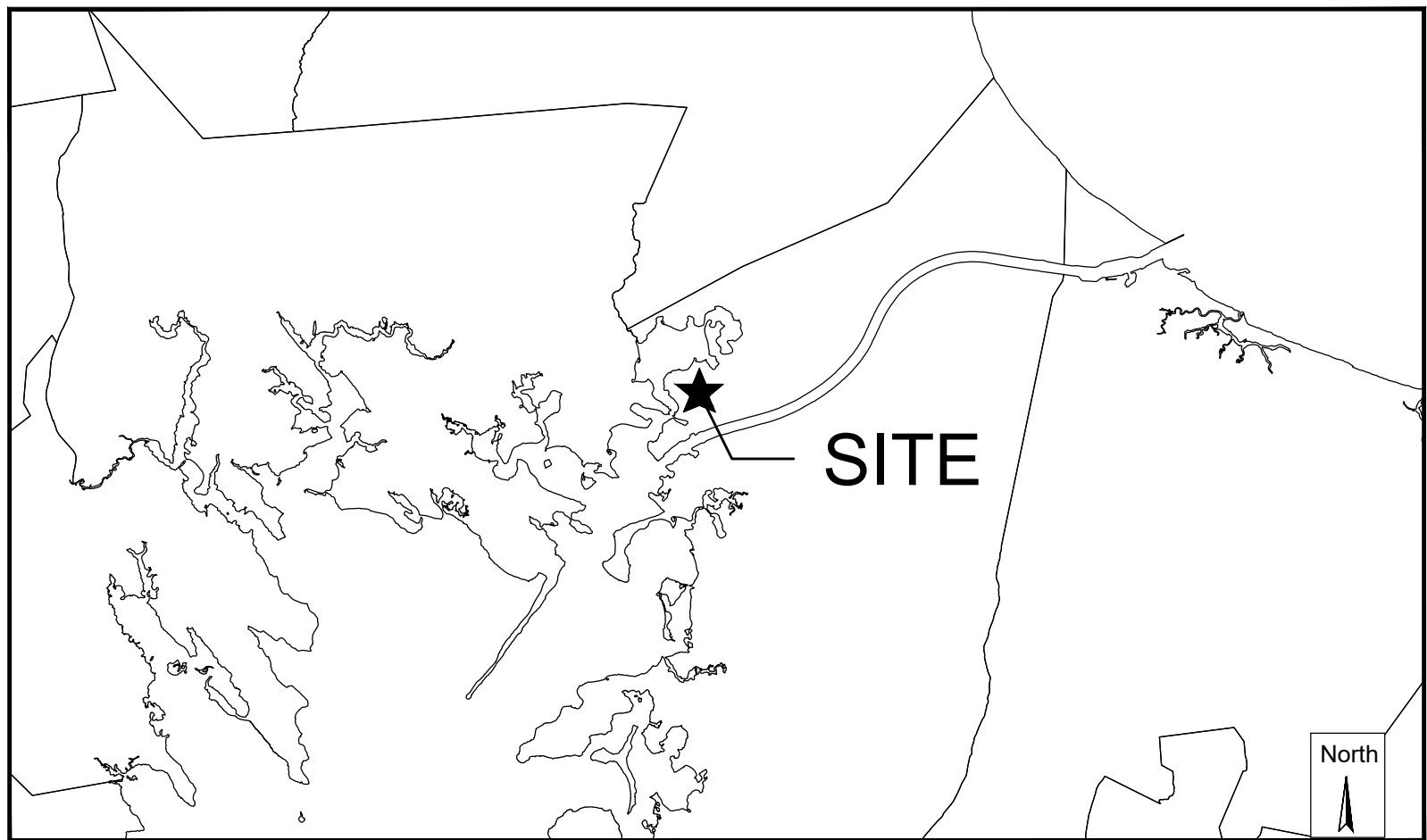


ELECTRIC AVENUE CAPE COD BOAT RAMP STORMWATER RETROFIT PROJECT- PERMITTING PLANS BOURNE, MASSACHUSETTS NOVEMBER 2023



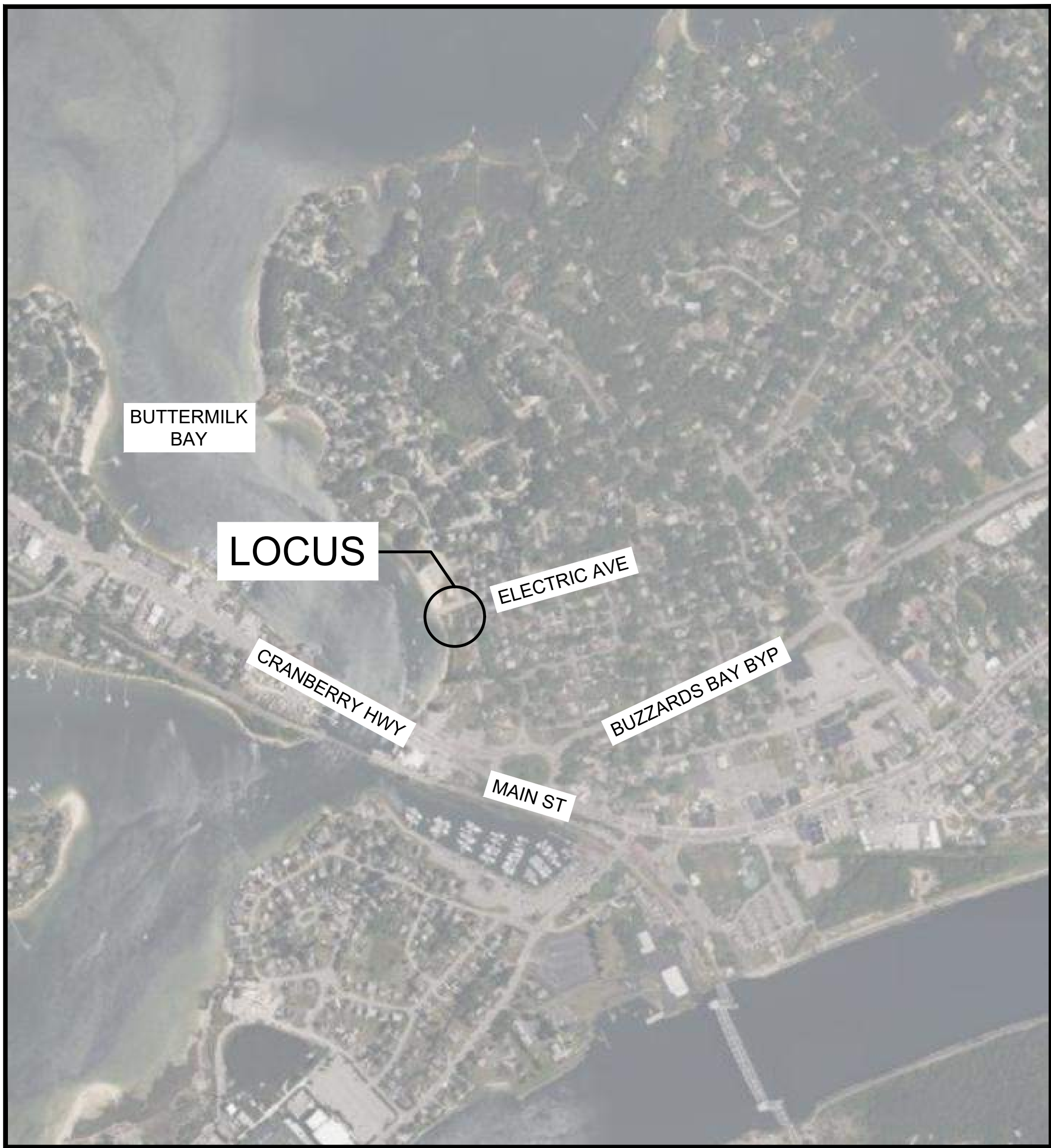
MASSACHUSETTS

Graphic Scale
0 150000
SCALE IN FEET
1:150000



BOURNE

Graphic Scale
0 12000
SCALE IN FEET
1:12000



VICINITY MAP

Graphic Scale
1-inch = 500-feet

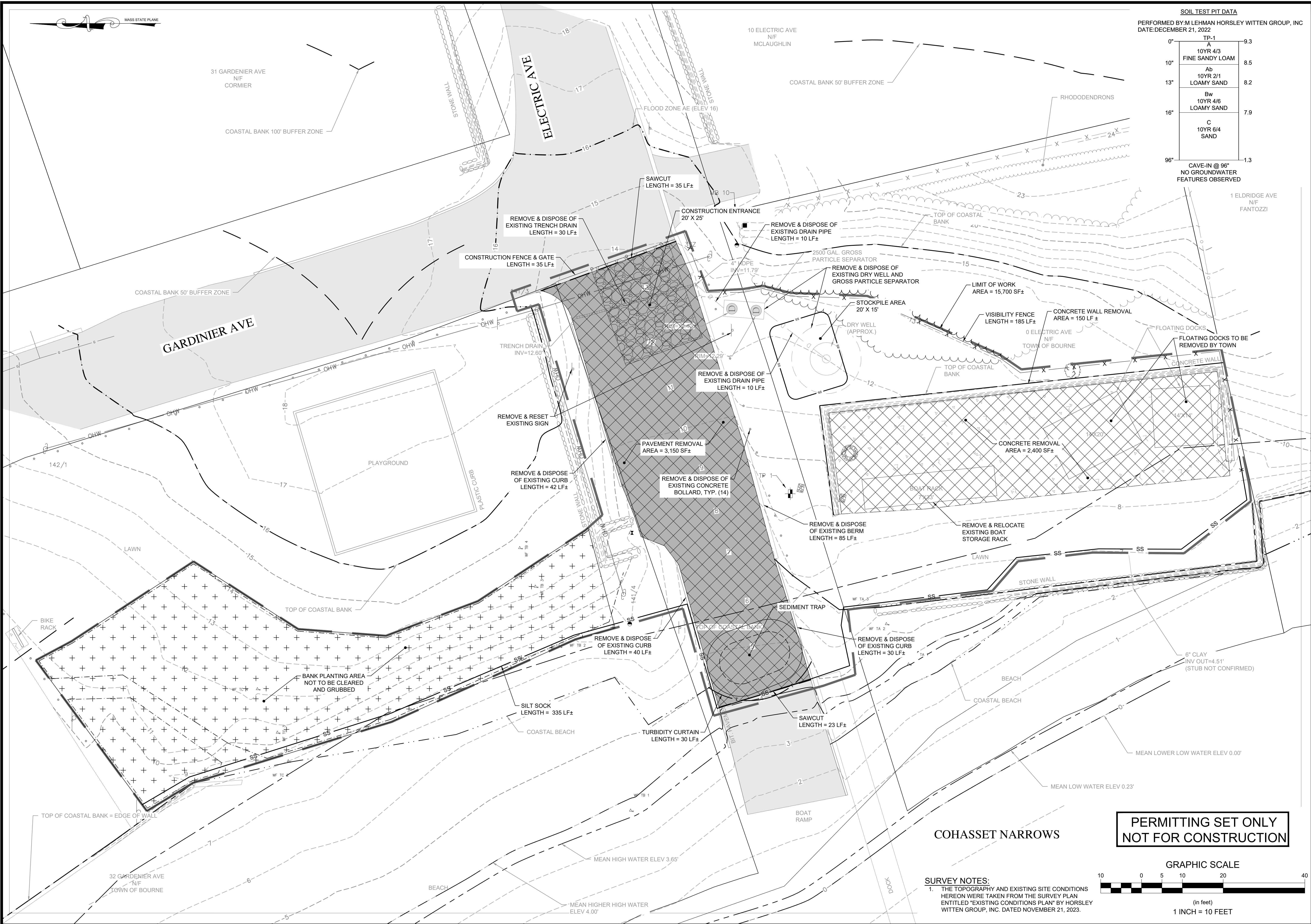
Sheet List Table	
Sheet Number	Sheet Title
1	COVER SHEET
2	NOTES & LEGEND
3	EROSION & SEDIMENT CONTROL PLAN
4	SITE & GRADING PLAN
5	DETAILS (1)
6	DETAILS (2)
7	LANDSCAPE PLAN
8	LANDSCAPE DETAILS

- GENERAL NOTES:
- THIS PLAN SET IS FOR PERMITTING ONLY AND NOT FOR CONSTRUCTION.
 - THE TOPOGRAPHY AND EXISTING SITE CONDITIONS DEPICTED HEREON ARE THE RESULT OF AN ON THE GROUND FIELD SURVEY CONDUCTED BY THE HORSLEY WITTEN GROUP, INC. DECEMBER 28, 2022. HORIZONTAL DATUM IS MASS STATE PLANE COORDINATE SYSTEM. DATUM ESTABLISHED BY RTK GPS. THE ELEVATIONS DEPICTED HEREON WERE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.
 - PROPERTY LINES APPROXIMATE ONLY.
 - ABUTTER INFORMATION FROM ASSESSOR'S MAP.
 - SITE INFORMATION:
 - MAP: 23.1
 - PARCEL: 152
 - ADDRESS: 0 ELECTRIC AVENUE
 - ZONING DISTRICT: R40
 - THE PROPERTY IS LOCATED WITHIN F.I.R.M ZONE AE (ELEV. 16) AS SHOWN ON COMMUNITY PANEL NO. 25001C0501J DATED JULY 16, 2014.
 - THE WETLAND DELINEATION SHOWN HEREON WAS CONDUCTED BY THE HORSLEY WITTEN GROUP, INC. ON DECEMBER 2, 2022.

Plan Set:		ELECTRIC AVENUE CAPE COD BOAT RAMP STORMWATER RETROFIT PROJECT- PERMITTING PLANS BOURNE, MASSACHUSETTS																																																			
Prepared For:		Town of Bourne 24 Perry Ave Bourne, MA (508) 759-0600																																																			
Prepared By:		Horsley Witten Group, Inc. Sustainable Environmental Solutions www.horsleywitten.com																																																			
Headquarters 90 Route 6A Sandwich, MA 02563 (508) 833-6600 voice (508) 833-3150 fax		112 Water Street 6th Floor Boston, MA 02109 (857) 263-8193 voice (617) 574-4799 fax																																																			
One Turks Head Place Suite 300 Providence, RI 02906 (401) 272-1717 voice (401) 439-8368 fax		113 R2 Water Street Exeter, NH 03833 (603) 658-1660 voice																																																			
Date Issued: NOVEMBER 2023	Registration: 	Revisions <table><tr><td>Rev</td><td>Date</td><td>By</td><td>Appr</td><td>Description</td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table>	Rev	Date	By	Appr	Description																																														Project Number: 22032
Rev	Date	By	Appr	Description																																																	
Designed By: JLV	Drawn By: JLV	Checked By: MW	Sheet Number: 1 of 8																																																		
Drawing Number: C - 1																																																					

PERMITTING SET ONLY
NOT FOR CONSTRUCTION

last modified: 11/30/23 printed: 11/30/23 by jv H:\Projects\2022\2023 CC Boat Ramp SW Retrofits\Drawings\ELECTRIC AVE\2023 ELECTRIC ESC.dwg



SOIL TEST PIT DATA			
PERFORMED BY: M LEHMAN HORSLEY WITTEN GROUP, INC			
DATE: DECEMBER 21, 2022			
0"	TP-1	9.3	
10"	A		
	10YR 4/3	8.5	
	FINE SANDY LOAM		
13"	Ab		
	10YR 2/1	8.2	
	LOAMY SAND		
16"	Bw		
	10YR 4/6	7.9	
	LOAMY SAND		
96"	C		
	10YR 6/4	1.3	
	SAND		
CAVE-IN @ 96"			
NO GROUNDWATER FEATURES OBSERVED			

Revisions

Rev	Date	By	Appr	Description
1				
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Horsley Witten Group, Inc.

Sustainable Environmental Solutions

90 Route 6A

Sandwich, MA 02563

508-833-6600 voice

508-833-3150 fax

Checked By:

Drawn By:

Designed By:

Date:

NOVEMBER 2023

JULY

JULY

NOVEMBER 2023

Plan Title:

Plan Set:

Prepared For:

Town of Bourne

24 Perry Ave

Bourne, MA

Phone: (508) 759-0600

Fax: ---

Survey Provided By:

Horsley Witten Group, Inc.

90 Route 6A

Sandwich, MA 02563

Phone: (508) 833-6600

Fax: (508) 833-3150

Dated: December 28, 2022

Registration:

COMMONWEALTH OF MASSACHUSETTS

RICHARD A. CLAYTON

CIVIL

REGISTERED PROFESSIONAL ENGINEER

11/30/23

Project Number:

22032

Sheet:

3 of 8

Sheet Number:

C - 3

PERMITTING SET ONLY

NOT FOR CONSTRUCTION

GRAPHIC SCALE

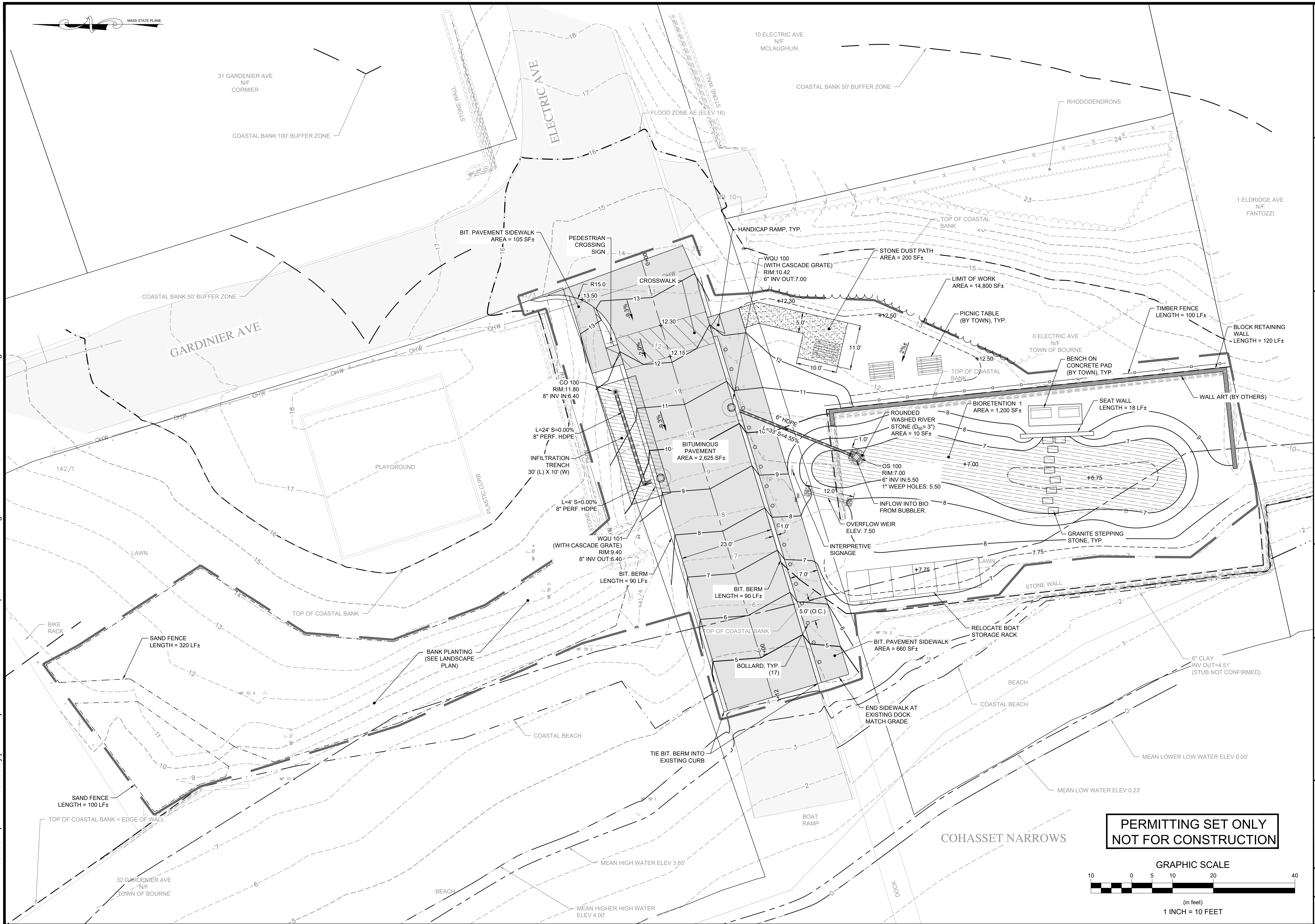
10 0 5 10 20 40

(in feet)

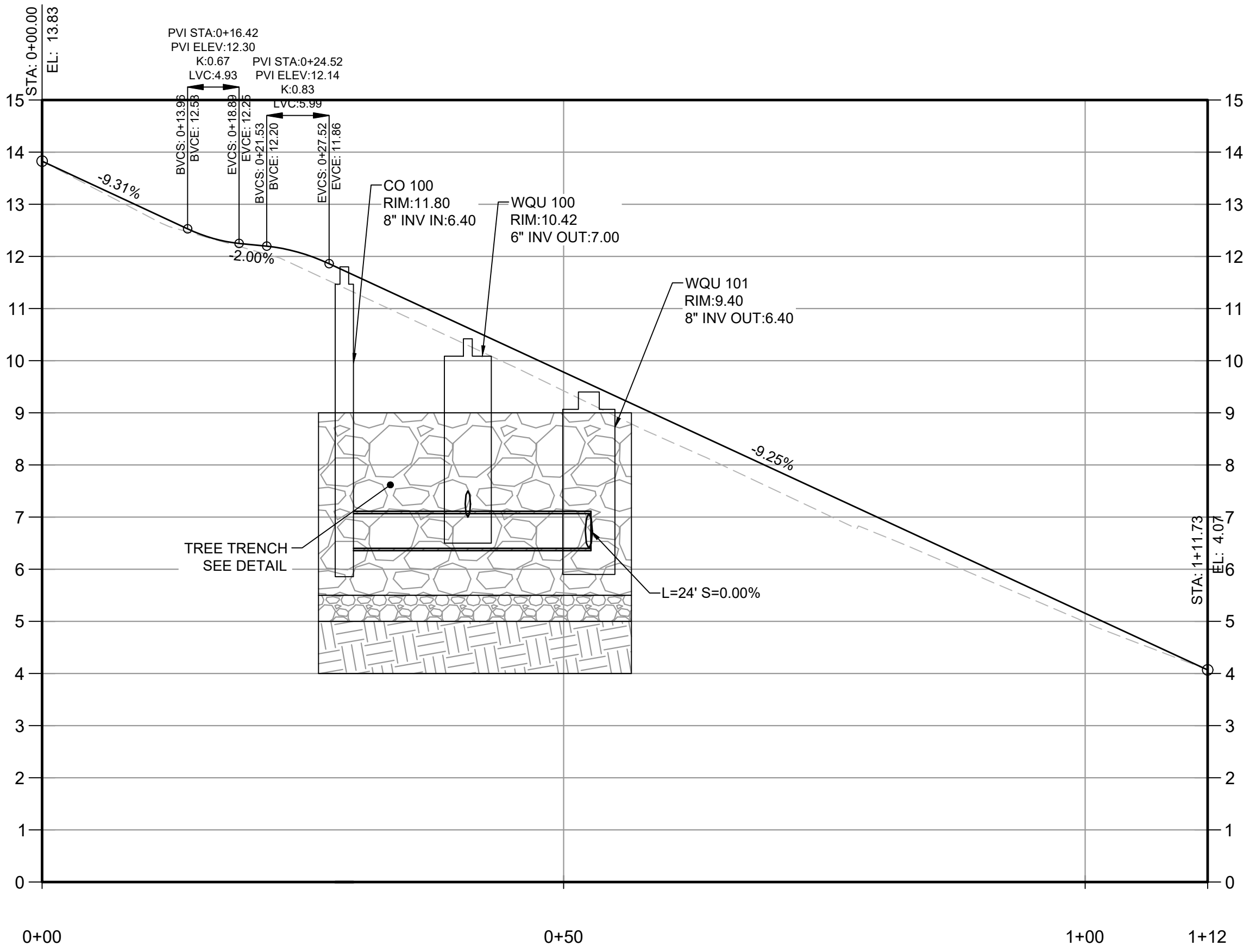
1 INCH = 10 FEET

SURVEY NOTES:

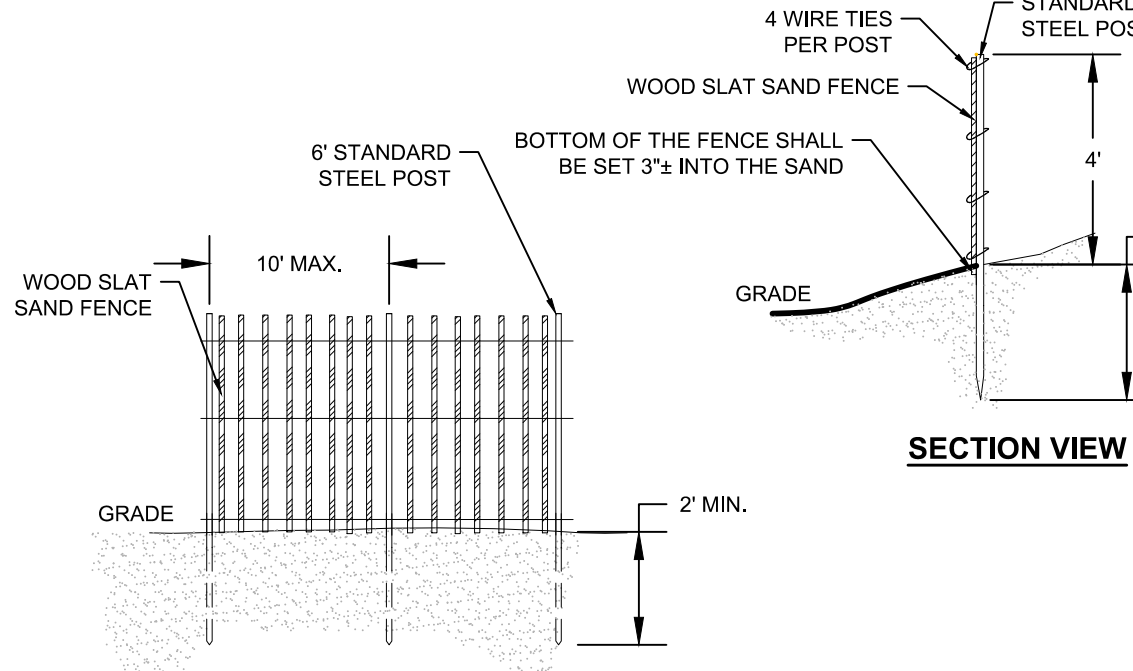
1. THE TOPOGRAPHY AND EXISTING SITE CONDITIONS HEREON WERE TAKEN FROM THE SURVEY PLAN ENTITLED "EXISTING CONDITIONS PLAN" BY HORSLEY WITTEN GROUP, INC. DATED NOVEMBER 21, 2023.

[illegible]

last modified: 11/30/23 printed: 11/30/23 by iv H:\Projects\2022\2023 CC Boat Ramp SW Retrofits\Drawings\ELECTRIC AVE\2023 ELECTRIC DE.dwg



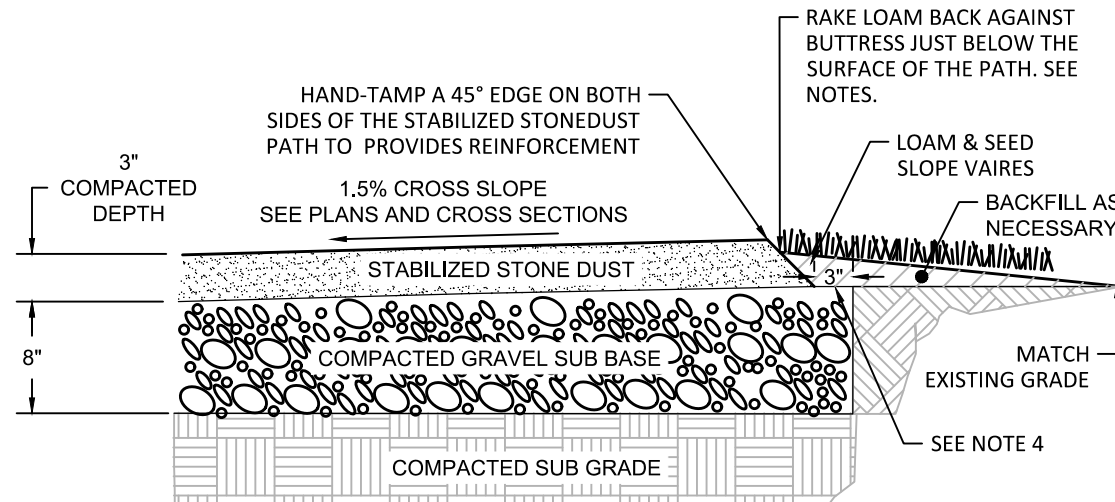
ELECTRIC AVE PROFILE
HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 2'



SAND FENCE
NOT TO SCALE

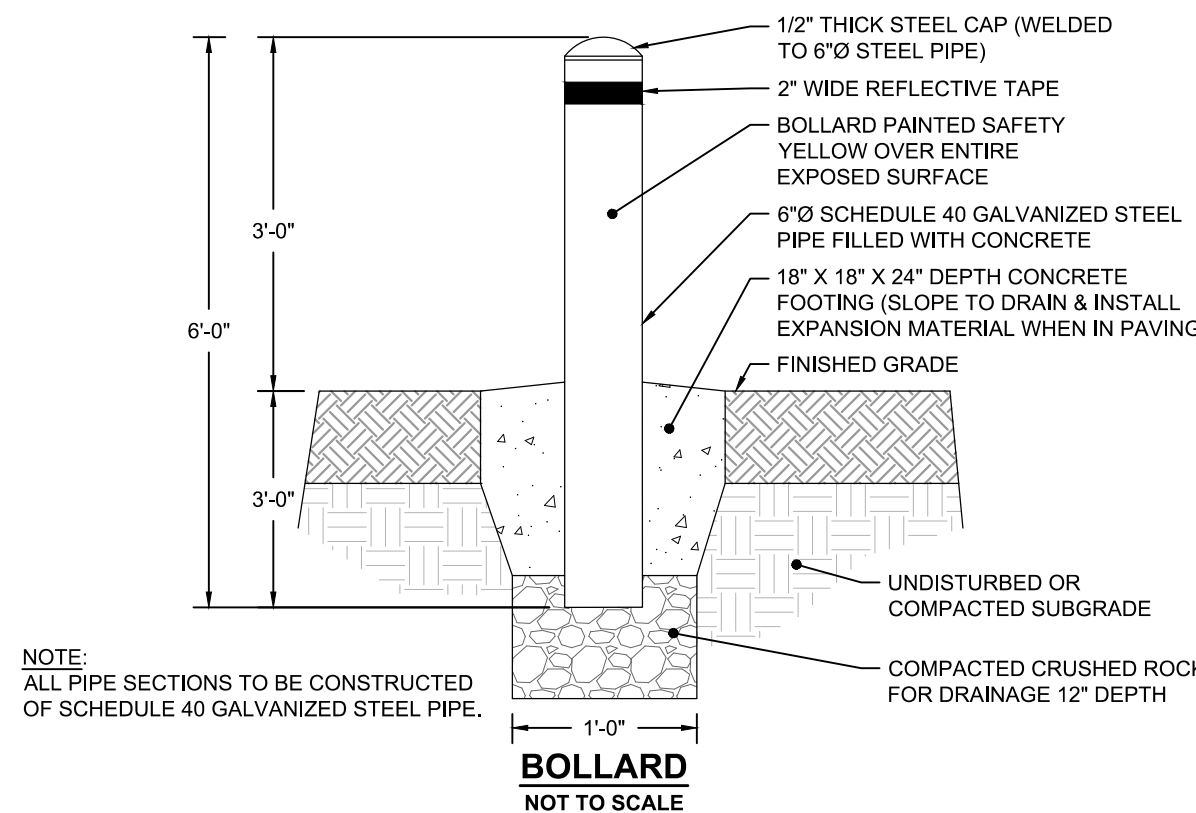
- NOTES:
1. DETECTABLE WARNING PANEL: NON SLIP SURFACE FULLY EMBEDDED AND MEETING ADA REQUIREMENTS INSTALLED AT ALL ROADWAY CROSSING. 3" MIN. IN WIDTH IN DIRECTION OF TRAVEL AND 5' MAX. FROM FACE OF CURB.

HANDICAP RAMP
NOT TO SCALE



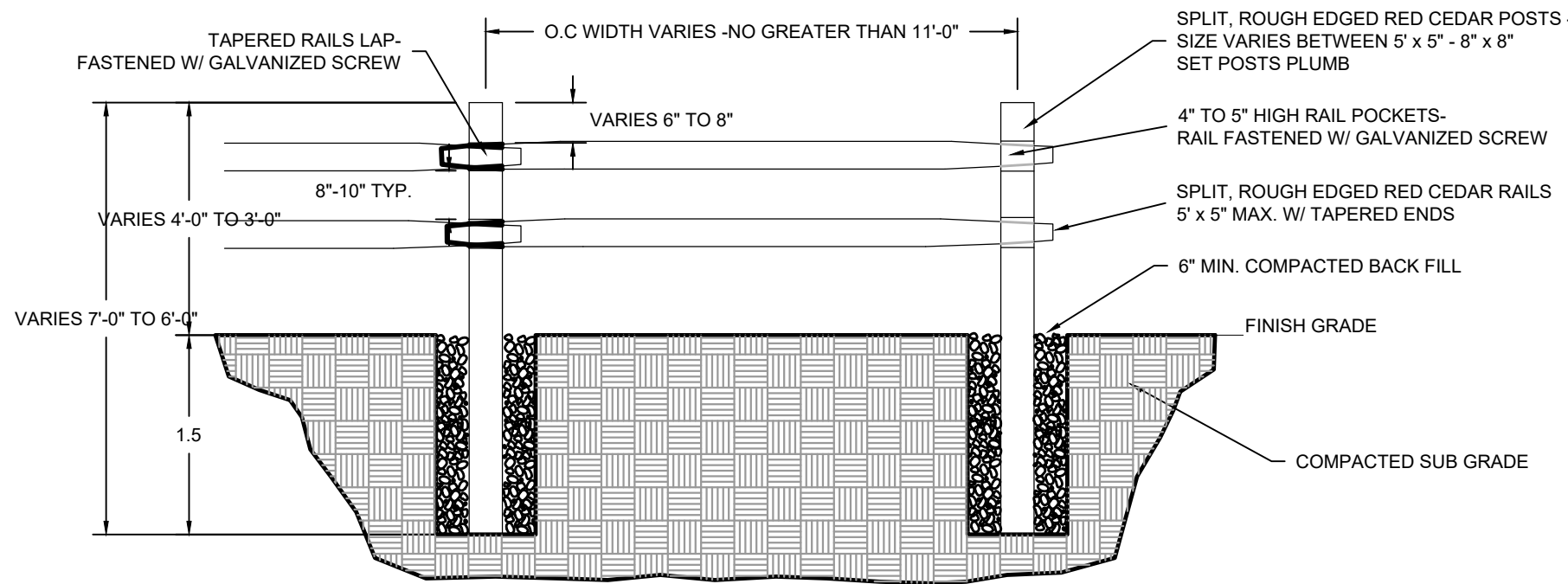
- GENERAL NOTES:
1. SEE PLANS AND CROSS SECTIONS FOR PATH WIDTH.
 2. STABILIZED STONE DUST TO BE ORGANIC-LOCK.
 3. BACKFILL ALONG PATH EDGE TO MATCH EXISTING GRADES AS NECESSARY.
 4. EXTEND GRAVEL SUB BASE BEYOND PATH WIDTH ON BOTH SIDES OF PATH TO THE DIMENSION SHOWN.
 5. TAMP BACKFILLED MATERIAL ALONG EDGE OF PATH TO ENSURE POSITIVE DRAINAGE OFF STONE DUST PATH. CLEAN EDGE SHOULD NOT PROTRUDE ABOVE THE PATH AS THIS WILL PREVENT PATH FROM SHEDDING RUNOFF.

STONE DUST PATH
NOT TO SCALE

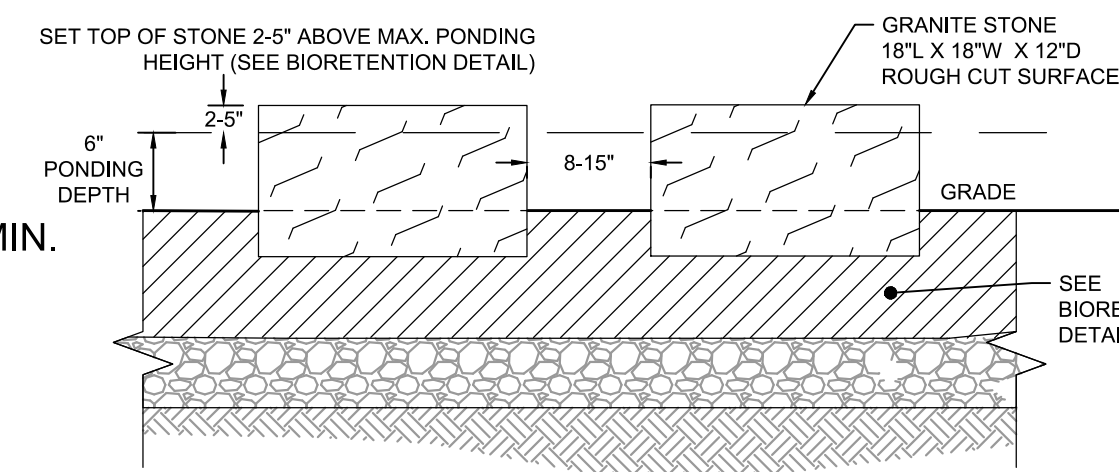


- NOTE:
- ALL PIPE SECTIONS TO BE CONSTRUCTED OF SCHEDULE 40 GALVANIZED STEEL PIPE.

BOLLARD
NOT TO SCALE

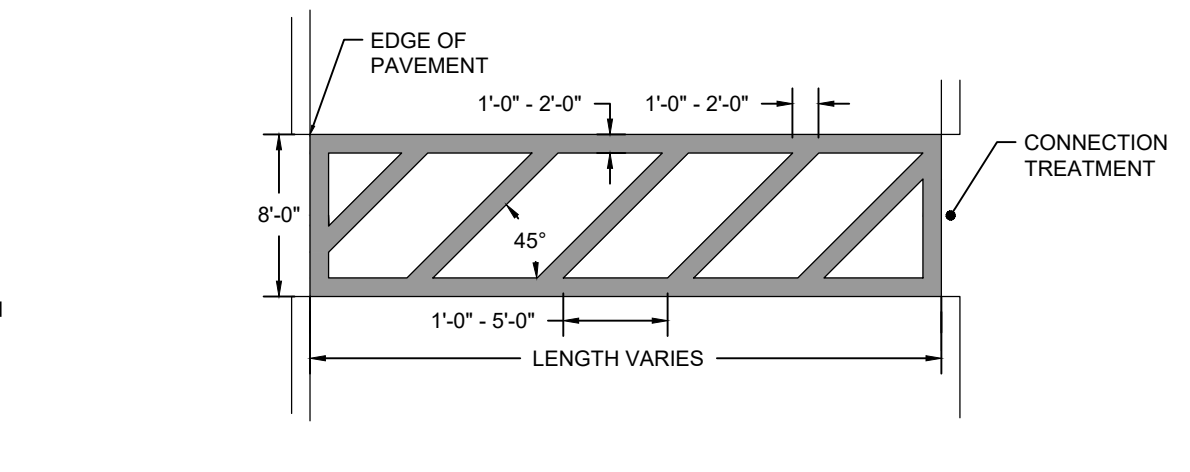


TIMBER FENCE
NOT TO SCALE

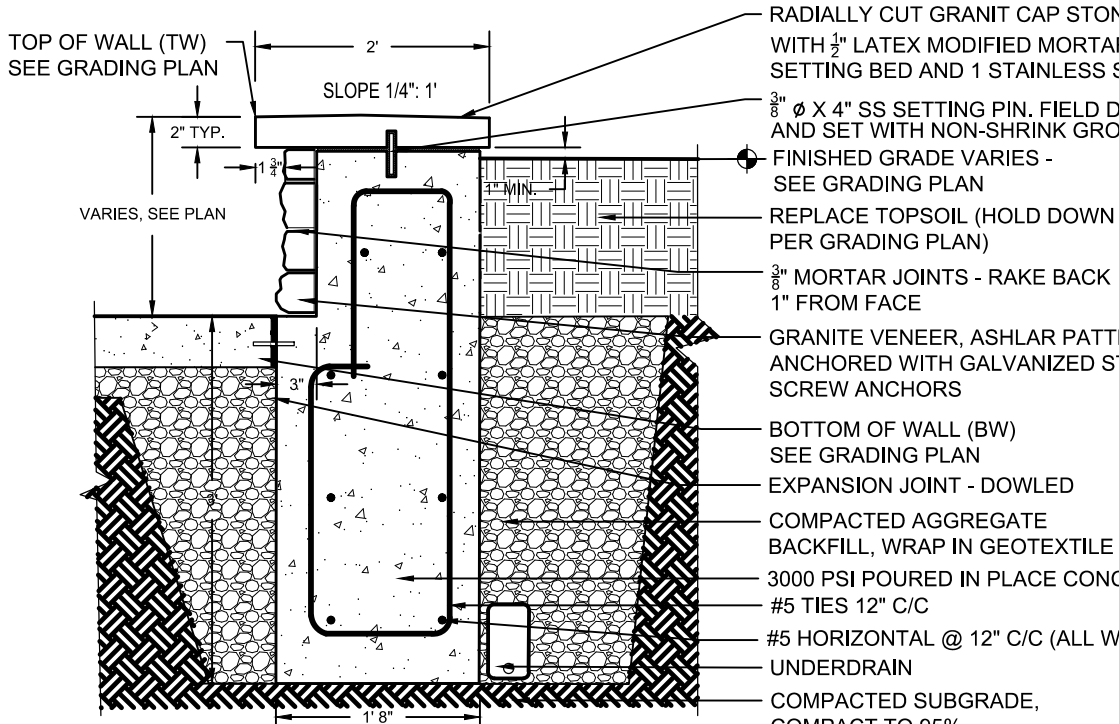


- NOTES:
1. SET STONE 6" IN GRADE AND BACKFILL SO THERE IS NO MOVEMENT OF STONE.
 2. STONES SHOULD BE FLAT-TOPPED FOR STEPPING ON. MIN. 1" WIDTH AND LENGTH, MAX 2". HEIGHT DEPENDENT ON PONDING DEPTH. SEE BIORETENTION DETAIL.
 3. PLACE STONES 8-15' AWAY FROM EACH OTHER.
 4. FINAL PLACEMENT OF STONES TO BE LOCATED IN THE FIELD.

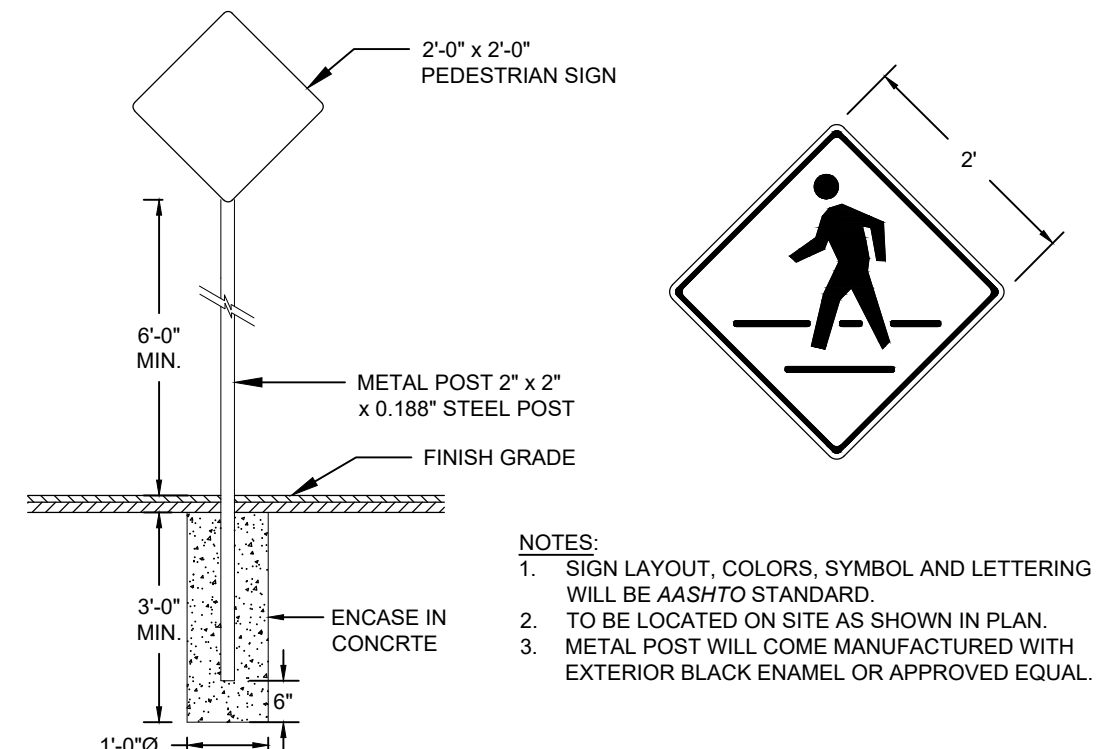
GRANITE STEPPING STONE
NOT TO SCALE



CROSSWALK
NOT TO SCALE

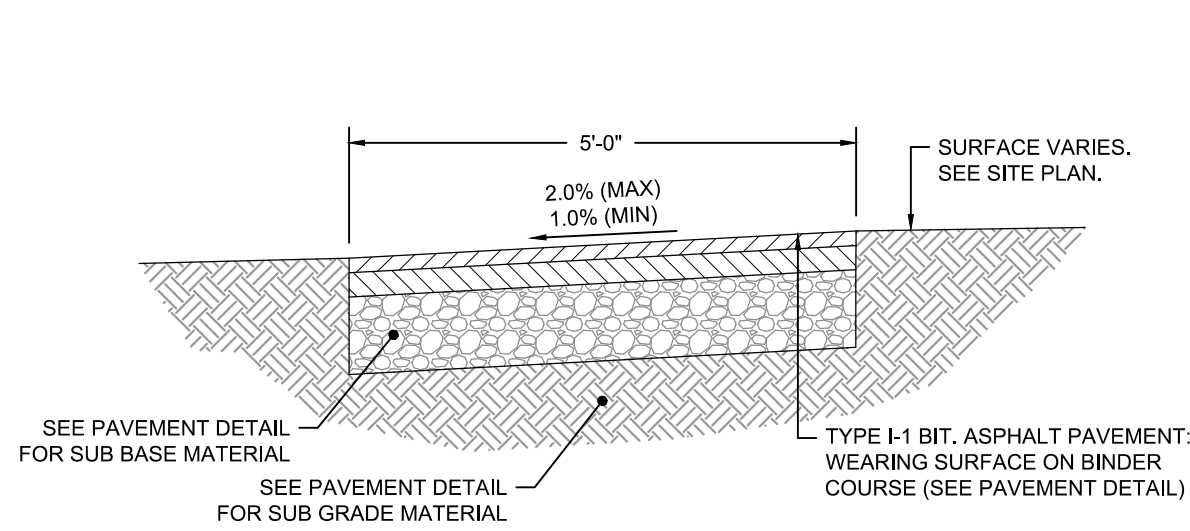


SEAT WALL
NOT TO SCALE

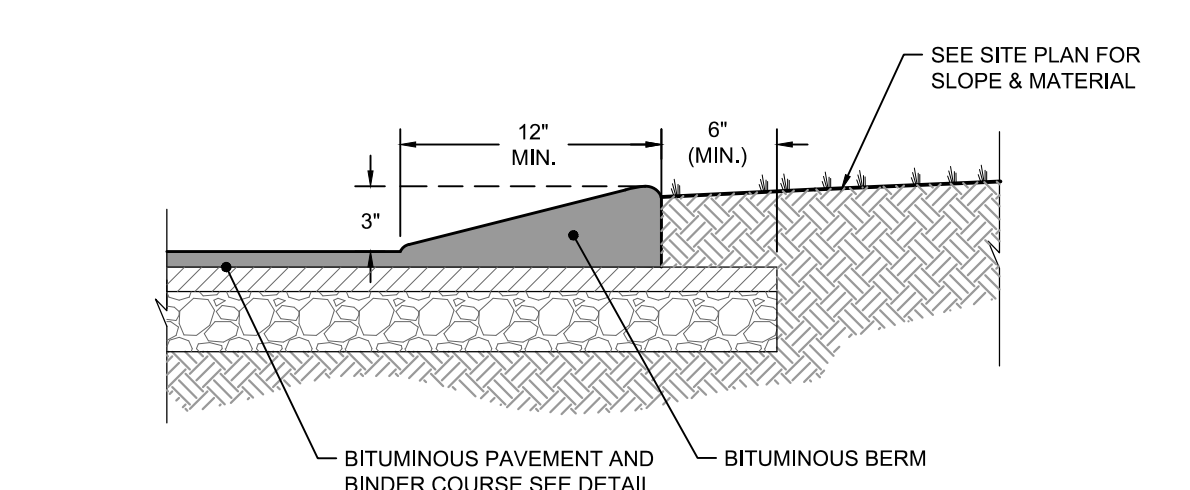


PEDESTRIAN CROSSING SIGN
NOT TO SCALE

- NOTES:
1. SIGN LAYOUT, COLORS, SYMBOL AND LETTERING WILL BE AASHTO STANDARD.
 2. TO BE LOCATED ON SITE AS SHOWN IN PLAN.
 3. METAL POST WILL COME MANUFACTURED WITH EXTERIOR BLACK ENAMEL OR APPROVED EQUAL.

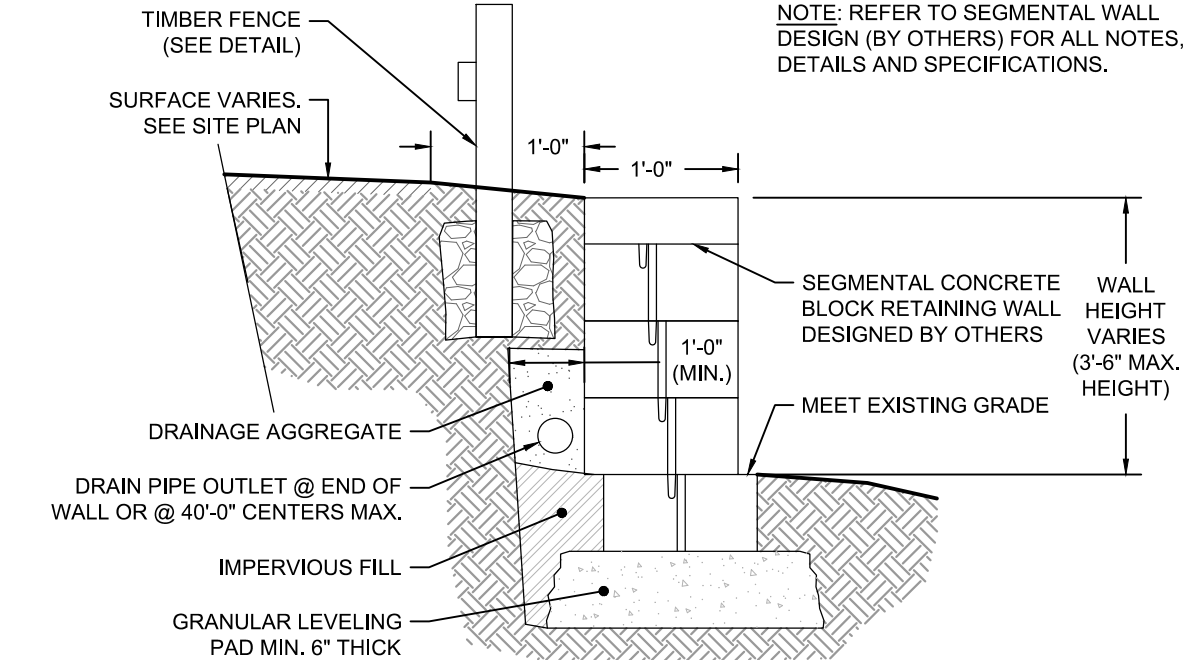


BITUMINOUS PAVEMENT SIDEWALK
NOT TO SCALE

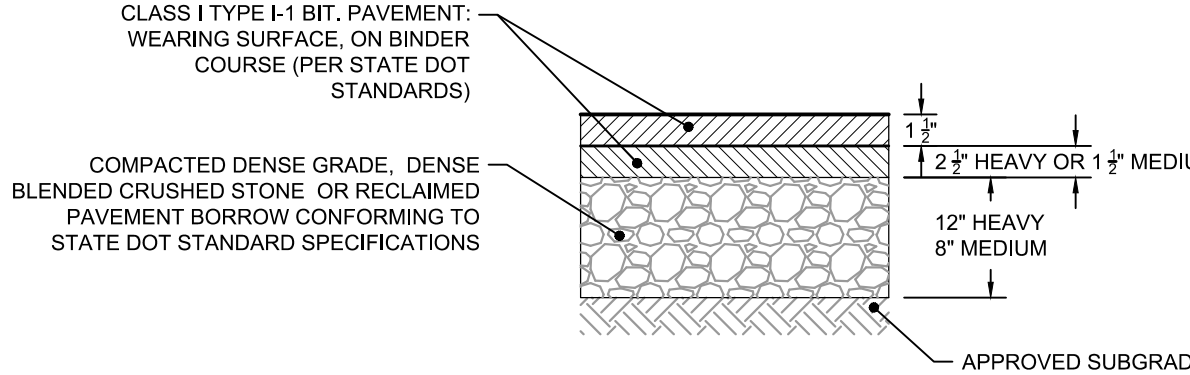


BITUMINOUS BERM
NOT TO SCALE

- NOTES:
1. BERM TO BE CONSTRUCTED OF BITUMINOUS WEARING SURFACE COURSE AS SHOWN.
 2. BERM TO BE CONSTRUCTED INTEGRAL WITH BITUMINOUS WEARING SURFACE.
 3. WHEN BERM IS TO BE CONSTRUCTED ON A FRESH LAID BITUMINOUS SURFACE, THAT SURFACE MUST FIRST BE CLEANED.
 4. BERM TO BE FOUNDED ENTIRELY ON THE BASE COURSE.
 5. FINISH GRADE AT THE BACK OF THE BERM IS TO BE BROUGHT TO THE TOP OF THE BACK EDGE OF BERM.



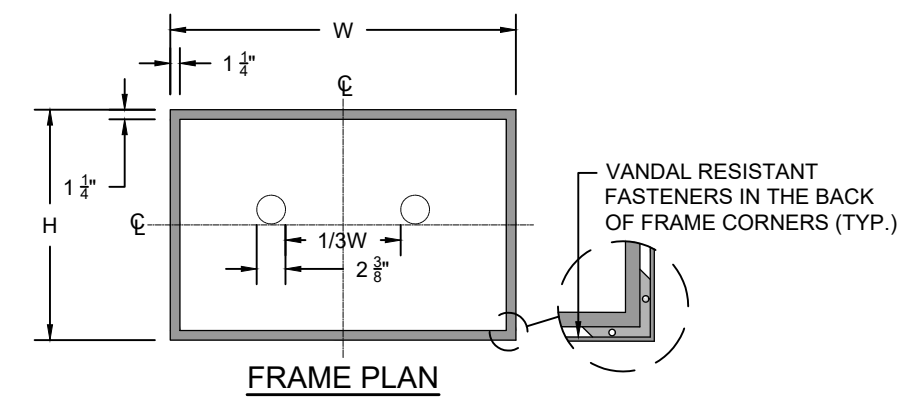
BLOCK RETAINING WALL
NOT TO SCALE



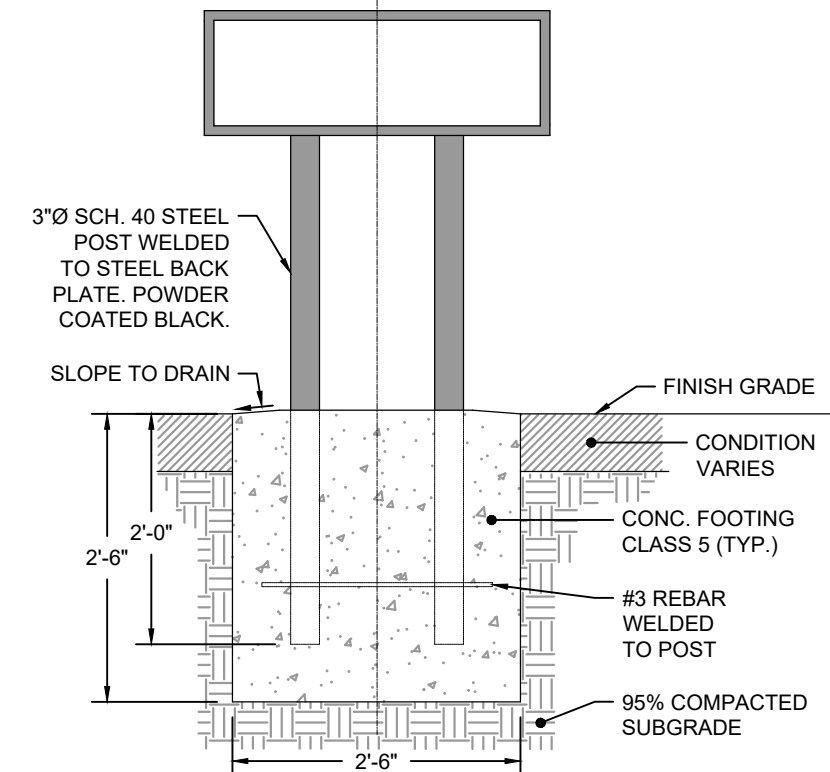
BITUMINOUS PAVEMENT
NOT TO SCALE

- GENERAL NOTES:
1. SUB-GRADE (EXISTING MATERIAL) SHALL CONSIST OF INERT MATERIAL THAT IS HARD, DURABLE STONE AND/OR COARSE SAND, FREE FROM LOAM AND CLAY TO A DEPTH NOT LESS THAN 4-FT BELOW THE FINISH PAVEMENT SURFACE. EXCAVATE SANDY-LOAM AND/OR LOAMY-SAND TOPSOIL MATERIAL FROM ALL PAVED AREAS PRIOR TO SUB-BASE INSTALLATION.
 2. PLACE SUB-BASE IN MAXIMUM 8" LIFTS (COMPACTED TO 95%).
 3. COMPACT SUB-GRADE FILL TO 95% COMPACTION.
 4. SEE SITE LAYOUT PLAN FOR PAVEMENT WIDTH AND LOCATION.
 5. SWEEEP PLANS FOR PAVEMENT SLOPE AND CROSS SLOPE.
 6. SWEEP CLEAN THE EXISTING BINDER COURSE SURFACE PRIOR TO INSTALLING THE WEARING COURSE BY A STREET SWEEPING MACHINE.
 7. APPLY A TACK COAT PER SPECIFICATIONS.

FRAMING METHOD 1 (PREFERRED)



FRAME PLAN

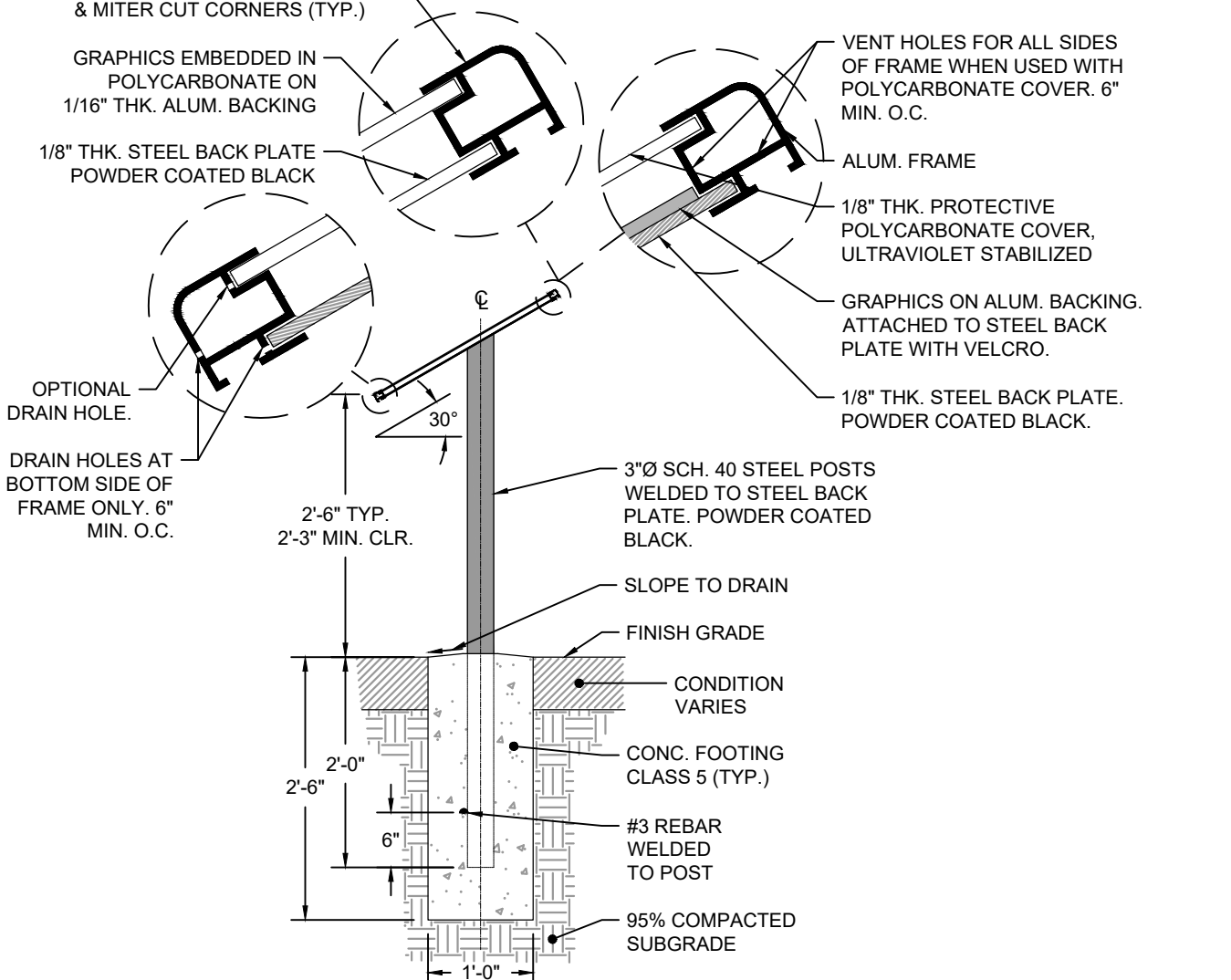


FRONT ELEVATION EMBEDMENT FOOTING METHOD

- NOTES:
1. PANEL SIZE (WH): 2'-0"x1'-0", 2'-0"x2'-0", 3'-0"x2'-0", 3'-0"x3'-0" (OR CUSTOM SIZE AS APPROVED).
 2. NO FIELD WELDING.
 3. CONTRACTOR TO ENSURE THAT DRAINAGE HOLES ARE DRILLED AS SPECIFIED.
 4. CONTRACTOR/OWNER TO ENSURE THAT THE GRAPHIC PANEL TYPE MEETS THE SPECIFICATIONS.
 5. DELIVER THE FOLLOWING ITEMS TO THE OWNER: FRAME TOUCH UP PAINT, EXTRA VANDAL-RESISTANT FASTENERS AND BIT/TOOL REQUIRED TO INSTALL/REMOVE THE FASTENERS.
 6. THE COMPLETE SYSTEM, EXCEPT CONCRETE FOOTING, IS AVAILABLE FROM SOLE SOURCE PROPRIETOR: ARTCRAFT DISPLAY GRAPHICS INC. #115-153 BROADWAY ST. PORT CONQUILIAM, B.C. CANADA V2C 6P3. PHONE: 1-800-994-8451. WWW.ARTCRAFT.COM (OR APPROVED EQUAL).
 7. EQUAL PRODUCT TO BE VANDAL-RESISTANT AND GRAFFITI-RESISTANT. GRAPHIC PANEL TO BE REPLACEABLE, WATERPROOF AND NON-FADING. MATERIALS TO BE RECYCLABLE.
 8. PROVIDE FINAL GRAPHIC FILES ON CD TO OWNER WITH RECORD DOCUMENT AT PROJECT CLOSE OUT.
 9. PROVIDE TEN YEAR MANUFACTURER'S MATERIAL AND WORKMANSHIP WARRANTY ON ALL PRODUCTS.

INTERPRETIVE SIGN
NOT TO SCALE

FRAMING METHOD 2 (AS APPROVED)



SIDE ELEVATION EMBEDMENT FOOTING METHOD

PERMITTING SET ONLY
NOT FOR CONSTRUCTION

Revisions

Rev	Date	By	Appr	Description
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Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com
90 Route 6A
Sandwich, MA 02563
508-833-6600 voice
508-833-3150 fax

Prepared For:

Town of Bourne
24 Ferry Ave
Bourne, MA
Phone: (508) 759-0600
Fax: ---

Survey Provided By:

Horsley Witten Group, Inc.
90 Route 6A
Sandwich, MA 02563
Phone: (508) 833-3150
Fax: (508) 833-3150
Date: December 28, 2022

Registration:

Project Number:

22032

Sheet:

5 of 8

Sheet Number:

C - 5

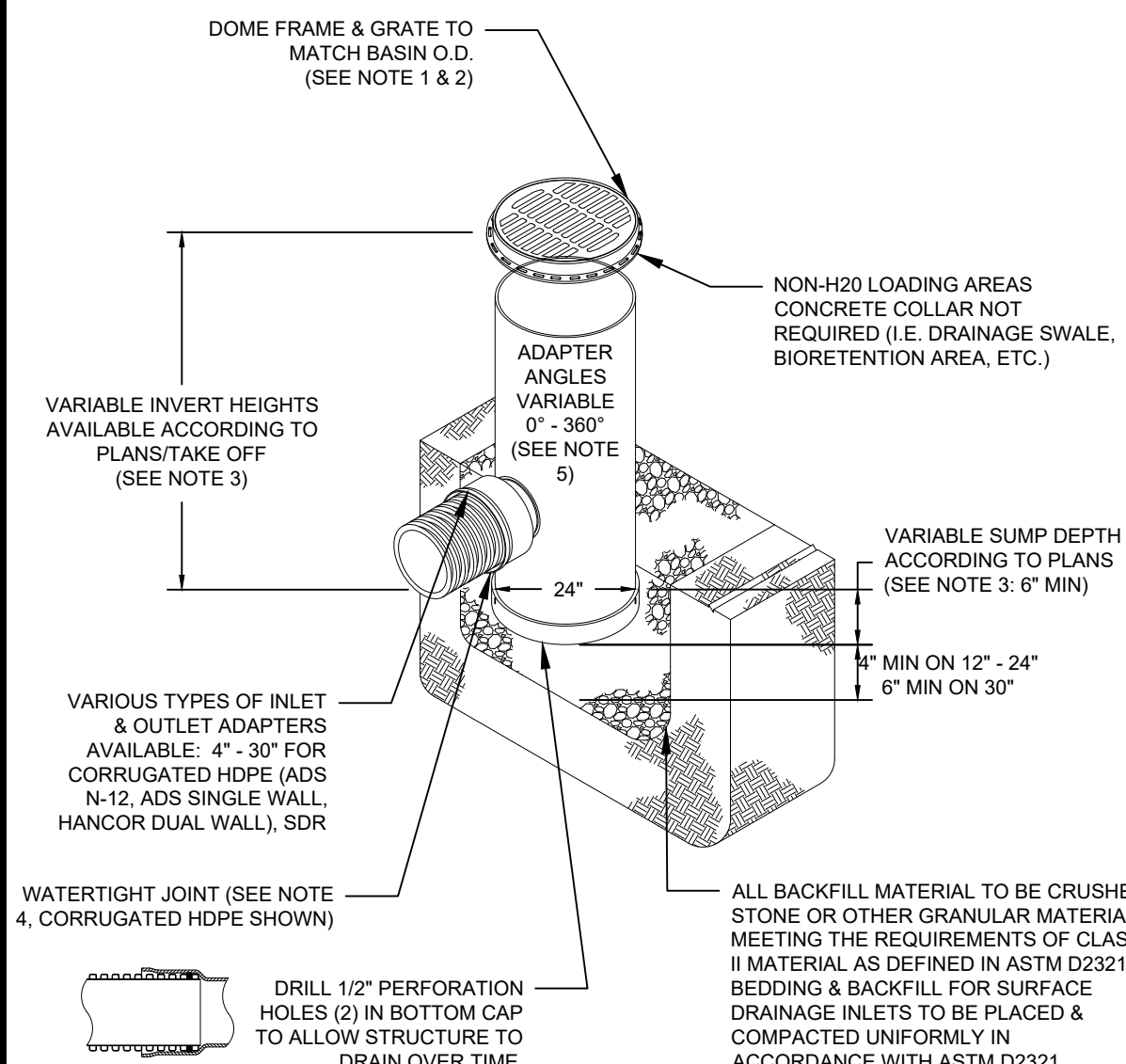
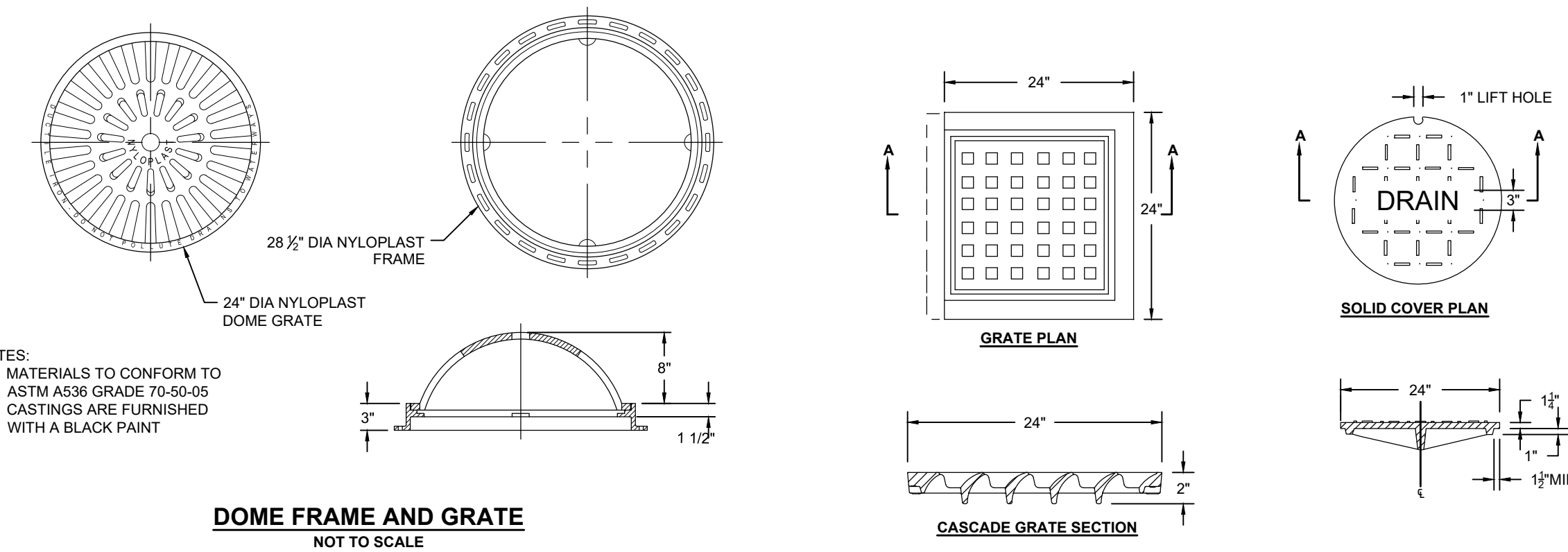
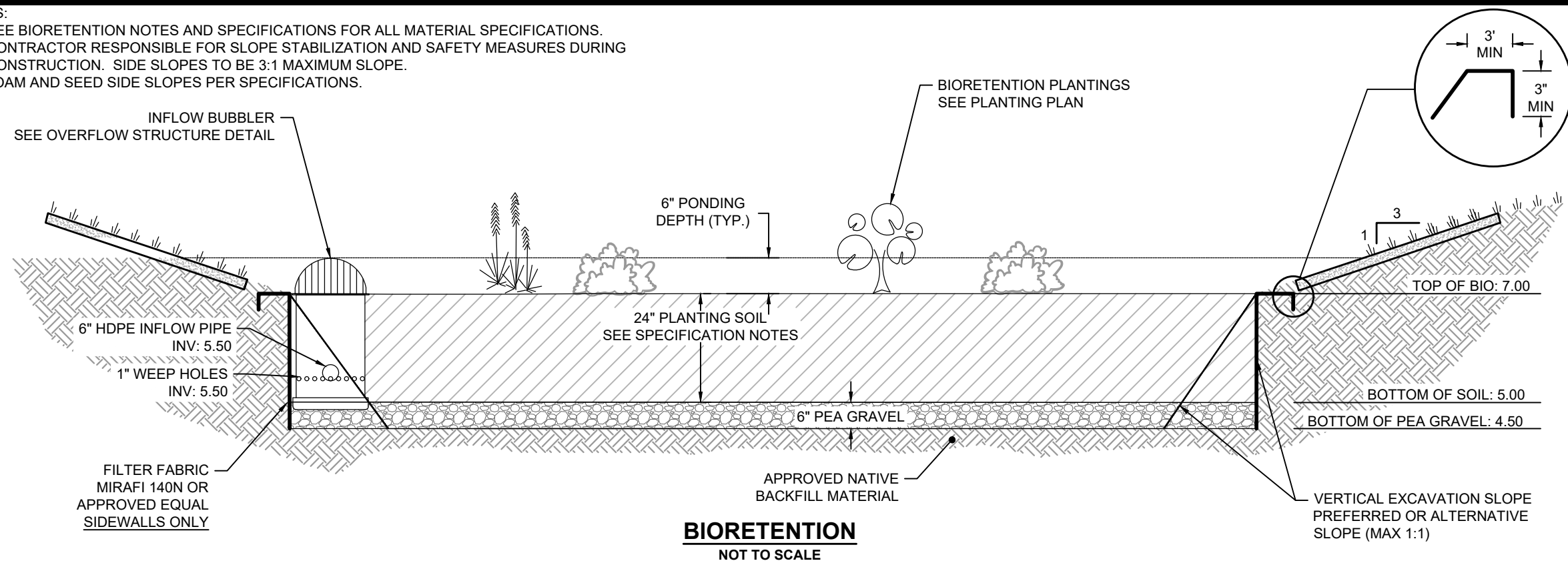
Plan Set:

ELECTRIC AVENUE
CAPE COD BOAT RAMP STORMWATER
RETROFIT PROJECT - PERMITTING PLANS
BOURNE, MASSACHUSETTS

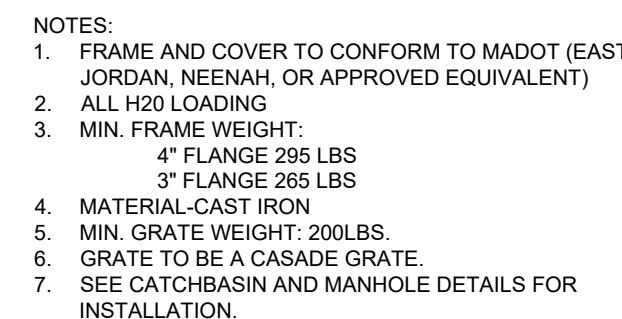
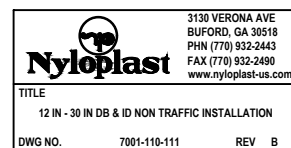
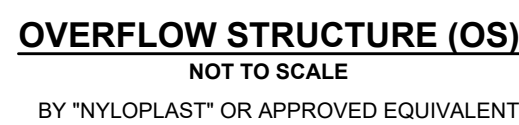
Plan Title:

DETAILS (1)

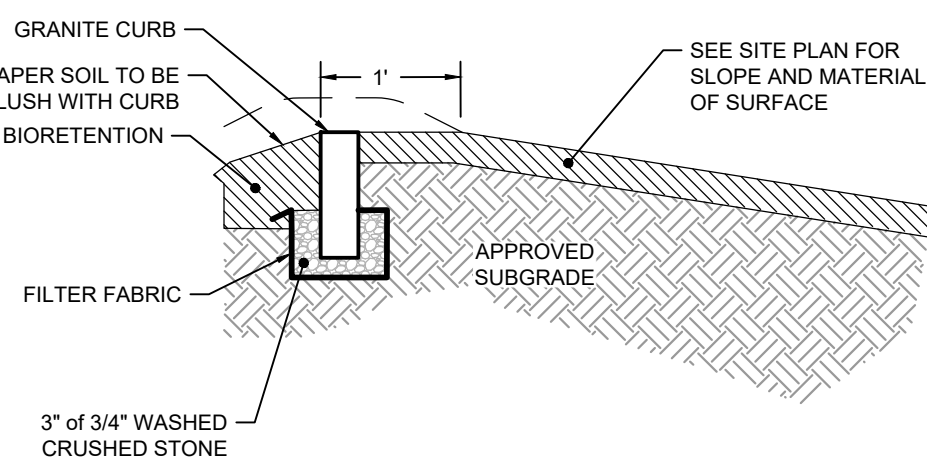
- NOTES:
1. SEE BIORETENTION NOTES AND SPECIFICATIONS FOR ALL MATERIAL SPECIFICATIONS.
 2. CONTRACTOR RESPONSIBLE FOR SLOPE STABILIZATION AND SAFETY MEASURES DURING CONSTRUCTION. SIDE SLOPES TO BE 3:1 MAXIMUM SLOPE.
 3. LOAM AND SEED SIDE SLOPES PER SPECIFICATIONS.



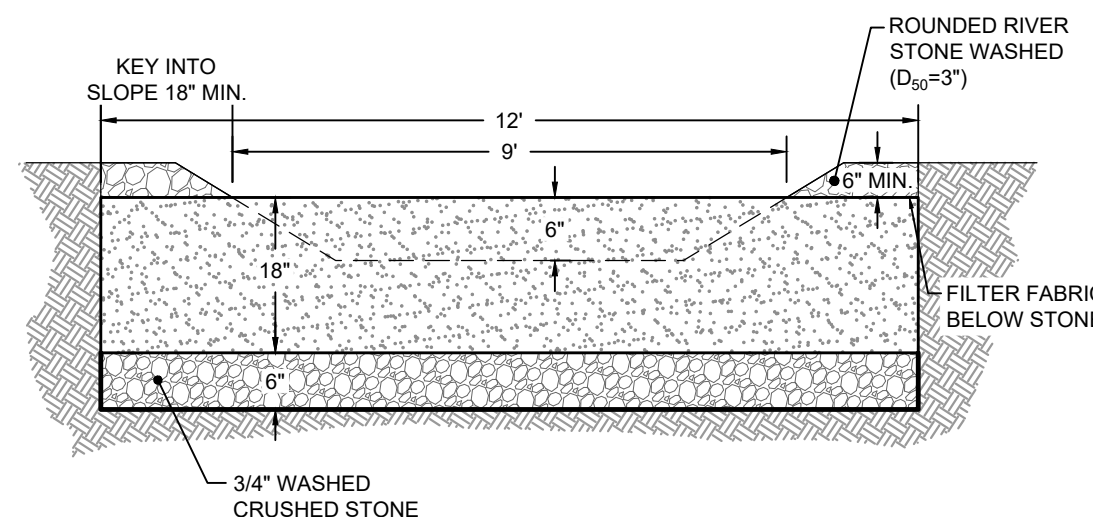
- NOTES:
1. GRATES/SOLID COVER TO BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
 2. FRAMES TO BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
 3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS RISERS ARE NEEDED FOR BASINS OVER 8" DUE TO SHIPPING RESTRICTIONS SEE DRAWING NO. 7001-110-065
 4. CONNECT STUB JOINT TIGHTNESS TO CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL & SDR 35 FIVE)
 5. ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012, 7001-110-013, & 7001-110-014



DRAINAGE STRUCTURE FRAME AND COVER/GRATE
NOT TO SCALE

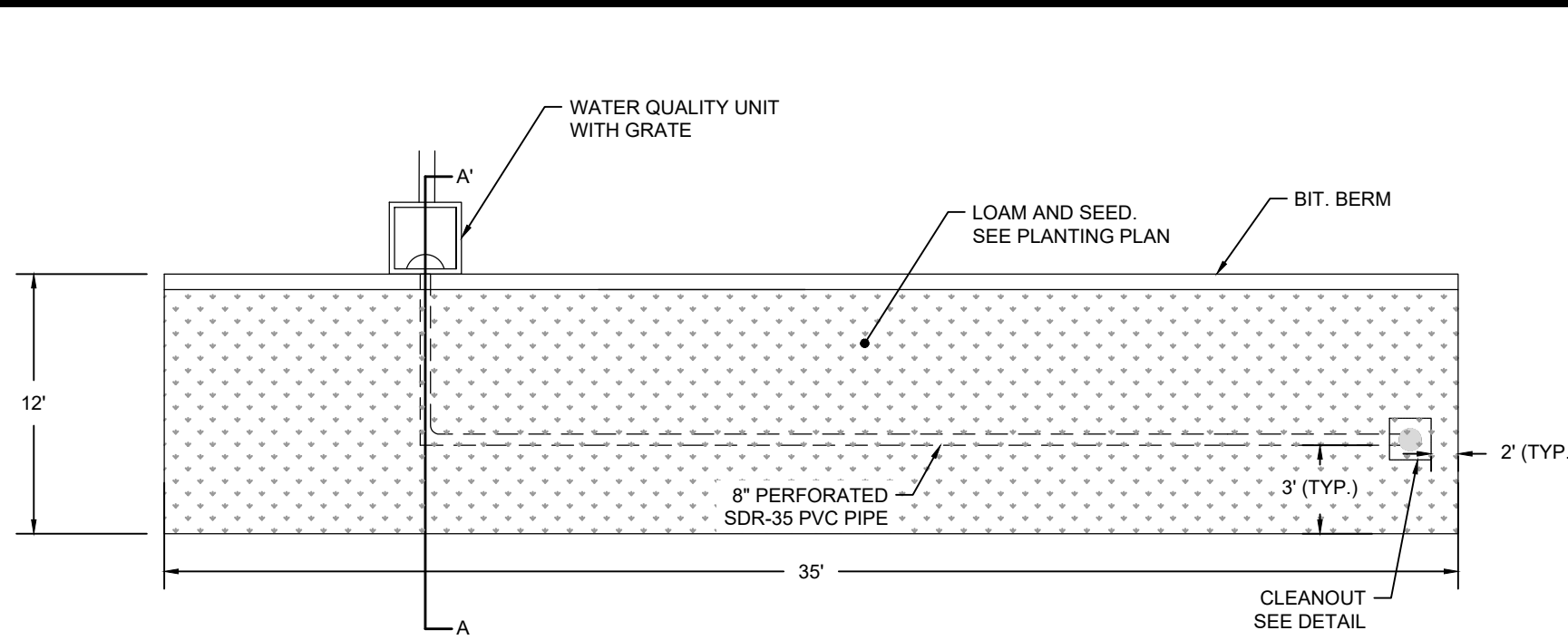


PROFILE

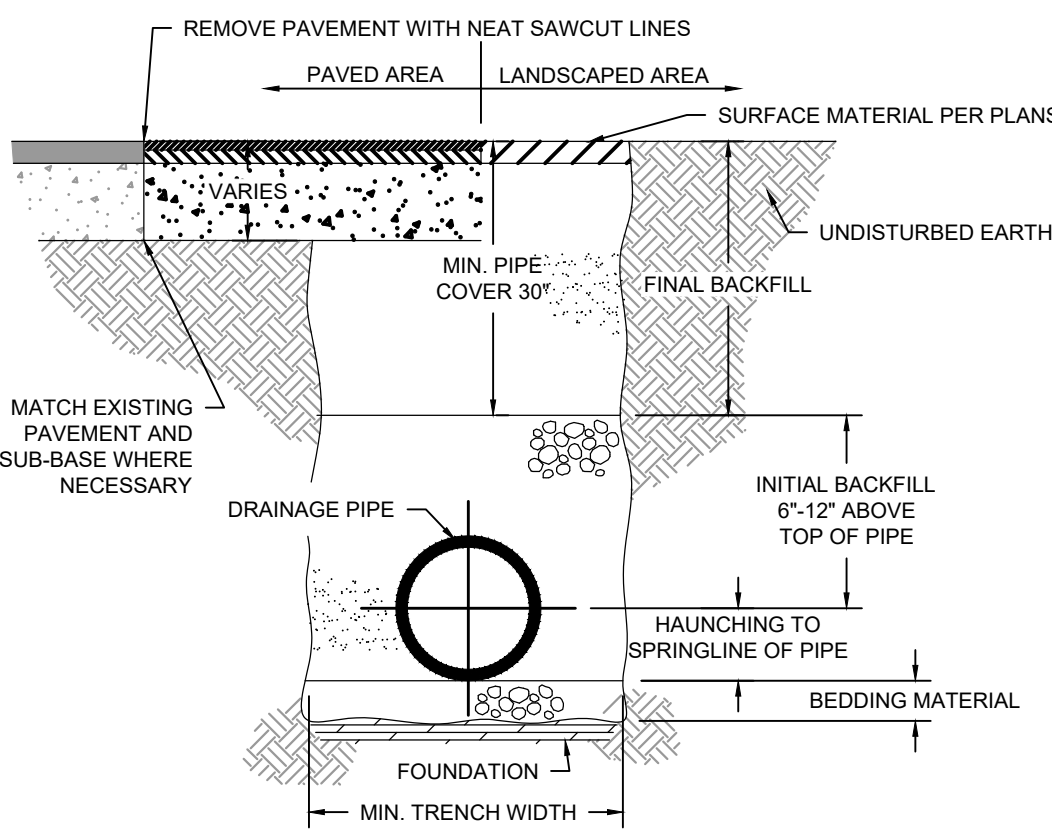


- NOTES:
1. KEY CURB A MINIMUM OF 18" INTO COMPACTED BERM TO PREVENT FLOW DIVERSION.
 2. SUBGRADE TO BE UNIFORM AND SMOOTH. REMOVE ALL ROCKS, CLODS, VEGETATION OR OTHER OBJECTS.
 3. LOAM & HAND SEED PRIOR TO MAT INSTALLATION.
 4. SEED PER SPECIFICATIONS.

OVERFLOW WEIR
NOT TO SCALE



INFILTRATION TRENCH PLAN VIEW
NOT TO SCALE

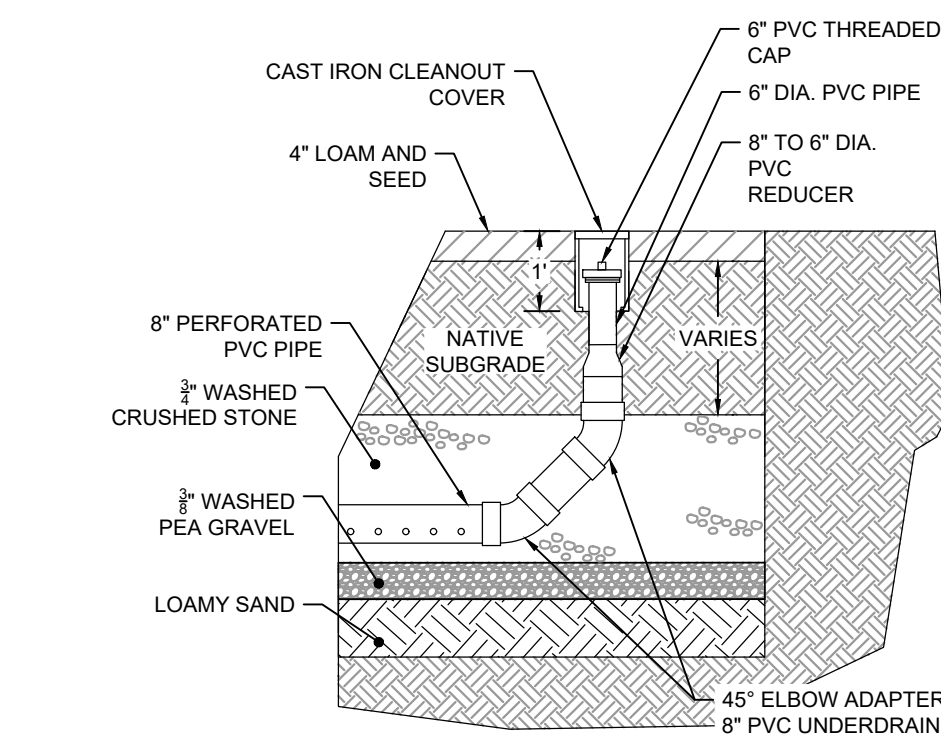


1. **INSTALL DRAIN PIPE AND FITTINGS IN STRICT ACCORDANCE WITH THE INSTALLATION RECOMMENDATIONS OF THE PIPE FITTING MANUFACTURER. SUCH INSTRUCTIONS INCLUDE BUT ARE NOT LIMITED TO CUTTING, SOLVENT CEMENTING AND PRIMING, JOINTS, CONNECTIONS, TRANSITIONS AND ALLOWANCE FOR THERMAL EXPANSION.**
2. **FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH A SUITABLE COMPACTED GRAVEL MATERIAL OR AS AN ALTERNATIVE AND AT THE DISCRETION OF THE ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A WOVEN GEOTEXTILE FABRIC.**
3. **BEDDING, HAUNCHING AND INITIAL BACKFILL: SUFFICIENT MATERIAL SHALL CONSIST OF CLEAN, HARD, PARTICLES OF GRAVEL MEETING THE FOLLOWING:**
 4. **BEDDING: UNLESS OTHERWISE APPROVED BY THE ENGINEER MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D1557, LATEST EDITION UNLESS OTHERWISE SPECIFIED BY THE ENGINEER. MINIMUM BEDDING THICKNESS SHALL BE 4" FOR 4"-24" PIPE, 6" FOR 30"-42", AND 12" FOR 48" AND LARGER PIPE.**
 5. **FINAL BACKFILL: COMPACTED NATIVE GRAVEL OR FLOWABLE FILL.**
 6. **GENERAL BACKFILLING (INCLUDING DISTURBED AREAS SURROUNDING TRENCHES) SHALL BE PLACED AND COMPACTED IN 12" MAXIMUM VERTICAL LIFTS. CONTRACTOR SHALL ACHIEVE 86% COMPACTION FOR BEDDING UNLESS OTHERWISE APPROVED BY THE ENGINEER.**
 7. **TRENCH WIDTH: UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, MINIMUM TRENCH WIDTHS SHALL BE AS FOLLOWS:**

PIPE SIZE	MIN. RECOMMENDED TRENCH WIDTH
4" - 24"	6"
30" - 42"	12"
48" and larger	18"

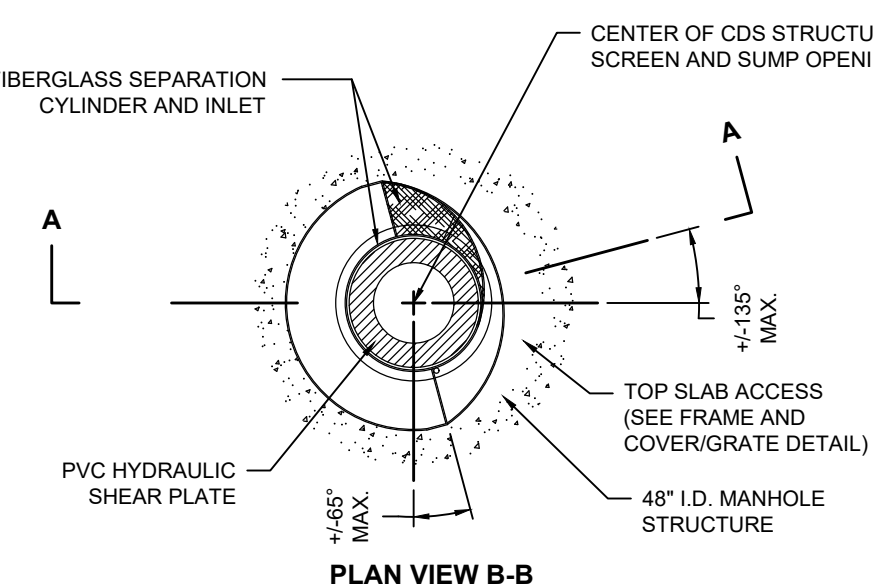
FOLLOWING:		NOMINAL Ø	MIN. RECOMMENDED TRENCH WIDTH
<u>SIEVE SIZE</u>	<u>PERCENT PASSING</u>		
3/4"	85-95	8"	30"
# 4	5-15	10"	36"
# 8	0-3	12"	36"
		15"	42"
		>18"	60"

DRAINAGE PIPE TRENCH
NOT TO SCALE

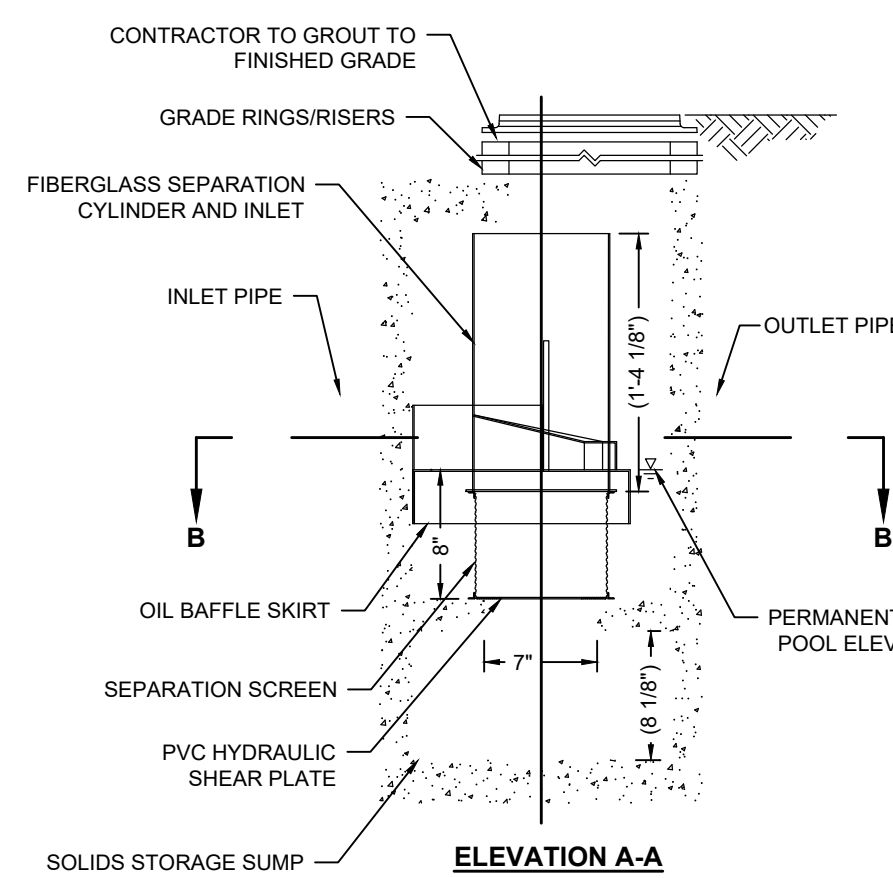


CLEANOUT (CO)
NOT TO SCALE

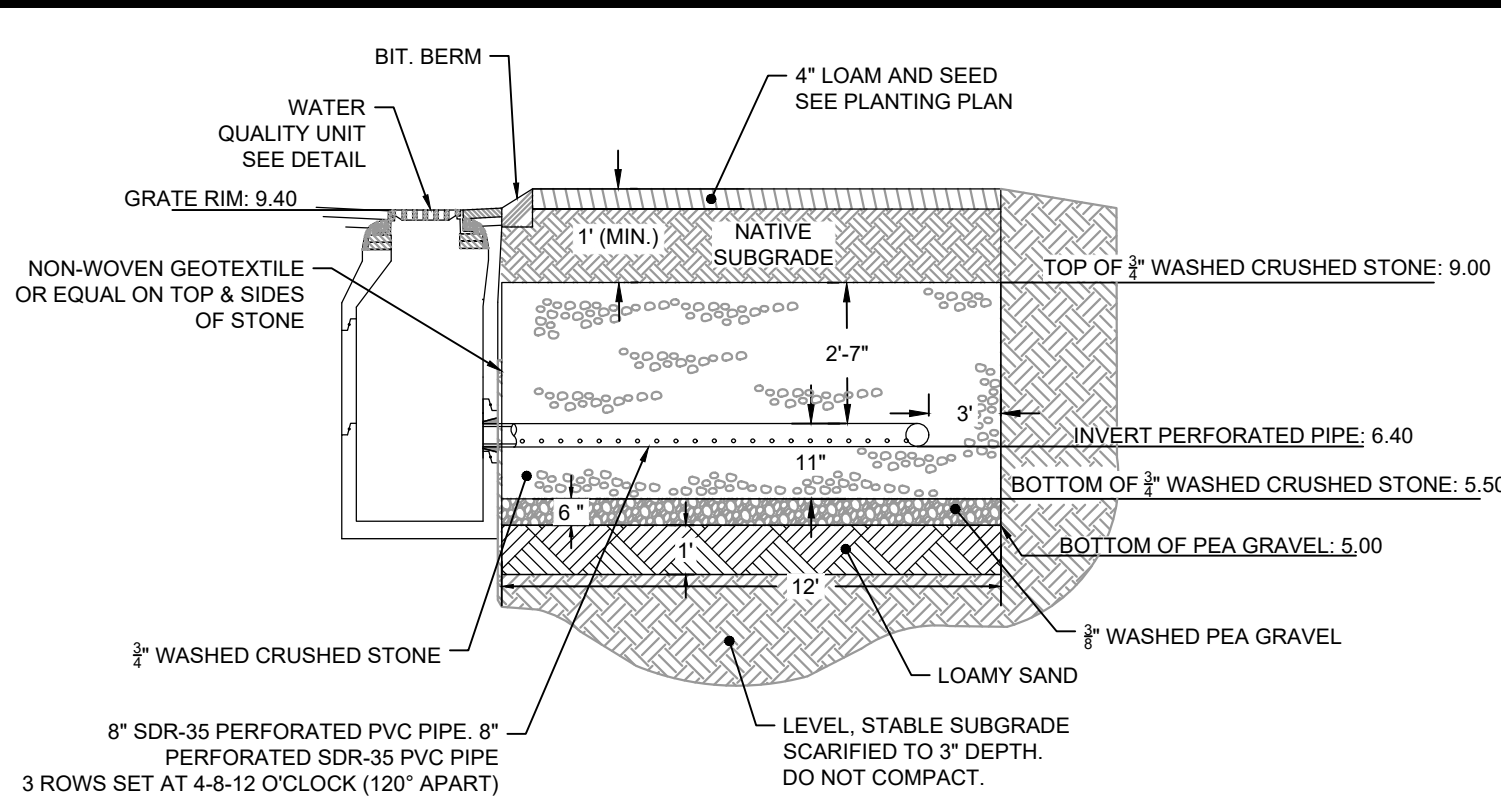
- GENERAL NOTES**
1. CONTENT TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
 2. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONFIRM YOUR CONTENT CONSTRUCTION PROVIDER'S REPRESENTATIVE.
 3. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
 4. STRUCTURE SHALL MEET AASHTO H520 AND CASTINGS SHALL MEET AASHTO M306 LOAD RATING.
 5. PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
- INSTALLATION NOTES**
1. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
 2. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND MOVE CDS MANHOLE STRUCTURE (LIFTING CLIP/GRIP PROVIDED).
 3. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
 4. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PILES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
 5. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT. HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.



PLAN VIEW B-B



WATER QUALITY UNIT (WQU)
CONTECH CDS2015-4-C CDS (OR APPROVED EQUAL)
NOT TO SCALE



INFILTRATION TRENCH CROSS SECTION A-A
NOT TO SCALE

[illegible]

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com
90 Route 6A
Sandwich, MA 02563
508-833-6600 voice
508-833-3150 fax

Date:	NOVEMBER 2023	Designed By:	JLV	Drawn By:	JLV
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ELECTRIC AVENUE
COD BOAT RAMP STORMWATER
FIT PROJECT- PERMITTING PLANS
BOURNE, MASSACHUSETTS

DETAILS (2)

Plan Set:

Prepared For:
Town of Bourne
24 Perry Ave
Bourne, MA
Phone: (508) 759-0600

Survey Provided By:
Horsley Witten Group, Inc.
 90 Route 6A
 Sandwich, MA 02563
 Phone: (508) 833-6600
 Fax: (508) 833-3150
 Dated: December 28, 2022

Registration



Project Number:	Sheet :
22032	6 of 8

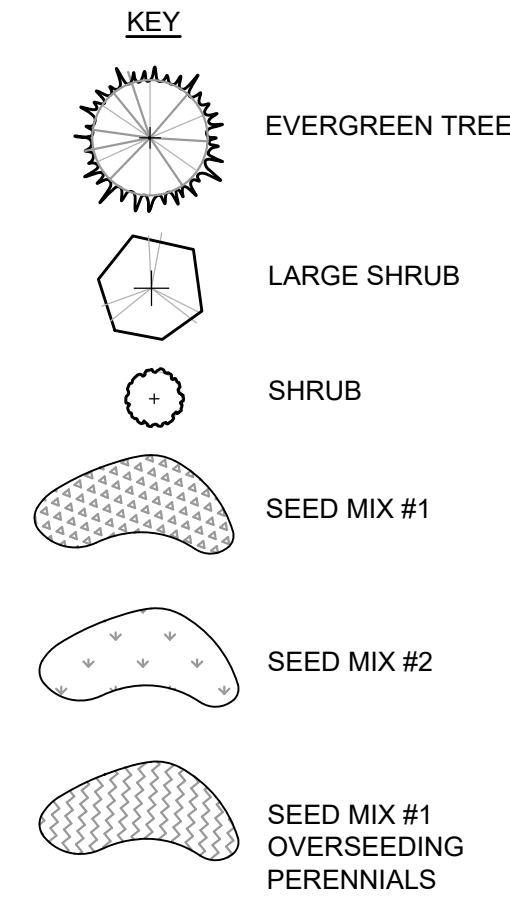
Sheet Number

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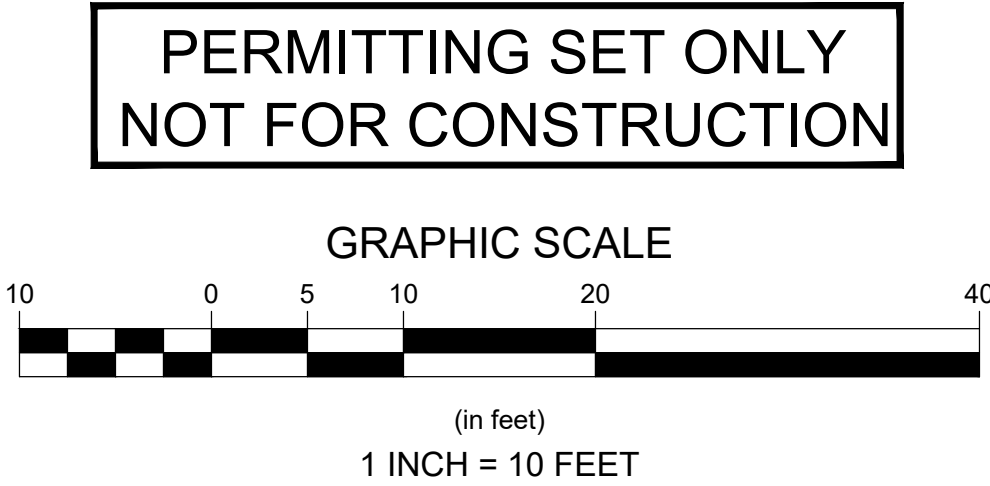
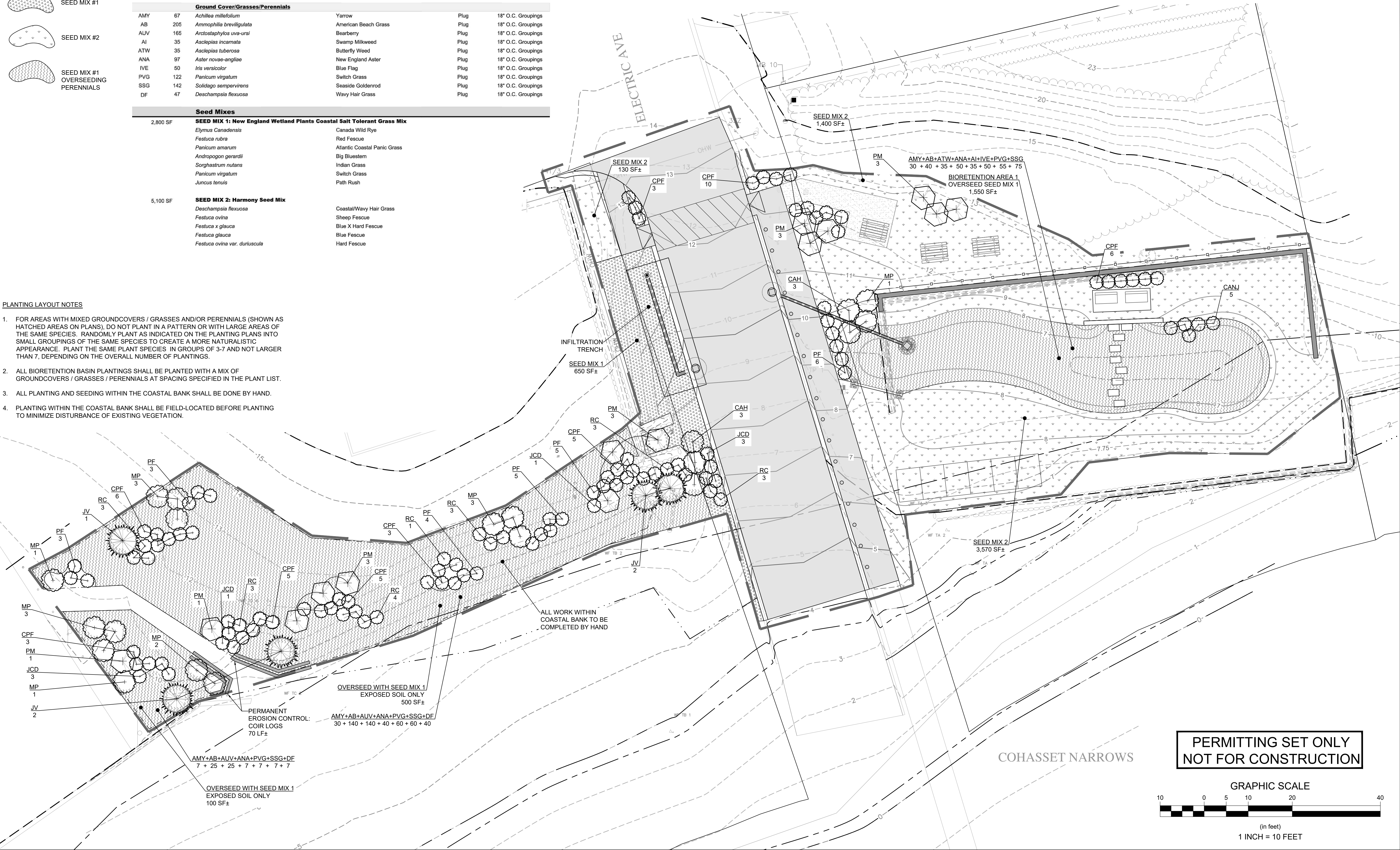
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Master Plant List					
Key	#	Botanical Name	Common Name	Size	Spacing
Trees					
JV	5	<i>Juniperus virginiana</i>	Eastern Red Cedar	8' - 10' h.	As Shown
Shrubs					
CANJ	5	<i>Ceanothus americanus</i>	New Jersey Tea	#3	As Shown
CAH	6	<i>Clethra alnifolia</i>	Summer Sweet	#3	As Shown
CPF	46	<i>Comptonia peregrina</i>	Sweet Fern	#1	As Shown
JCD	8	<i>Juniperus communis</i> 'Depressa'	Common Field Juniper	#1	As Shown
MP	14	<i>Morella pensylvanica</i>	Northern Bayberry	#5	As Shown
PF	26	<i>Potentilla fruticosa</i>	Potentilla/ Shrubby cinquefoil	#3	As Shown
PM	14	<i>Prunus maritima</i>	Beach Plum	#5	As Shown
RC	20	<i>Rosa carolina</i>	Carolina rose	#2	As Shown
Ground Cover/Grasses/Perennials					
AMY	67	<i>Achillea millefolium</i>	Yarrow	Plug	18" O.C. Groupings
AB	205	<i>Ammophila brevifluta</i>	American Beach Grass	Plug	18" O.C. Groupings
AUV	165	<i>Arctostaphylos uva-ursi</i>	Bearberry	Plug	18" O.C. Groupings
AI	35	<i>Asclepias incarnata</i>	Swamp Milkweed	Plug	18" O.C. Groupings
ATW	35	<i>Asclepias tuberosa</i>	Butterfly Weed	Plug	18" O.C. Groupings
ANA	97	<i>Aster novae-angiae</i>	New England Aster	Plug	18" O.C. Groupings
IVE	50	<i>Iris versicolor</i>	Blue Flag	Plug	18" O.C. Groupings
PVG	122	<i>Panicum virgatum</i>	Switch Grass	Plug	18" O.C. Groupings
SSG	142	<i>Solidago sempervirens</i>	Seaside Goldenrod	Plug	18" O.C. Groupings
DF	47	<i>Deschampsia flexuosa</i>	Wavy Hair Grass	Plug	18" O.C. Groupings

Seed Mixes			
2,800 SF	SEED MIX 1: New England Wetland Plants Coastal Salt Tolerant Grass Mix		
	<i>Elymus Canadensis</i>	Canada Wild Rye	
	<i>Festuca rubra</i>	Red Fescue	
	<i>Panicum amarum</i>	Atlantic Coastal Panic Grass	
	<i>Andropogon gerardii</i>	Big Bluestem	
	<i>Sorghastrum nutans</i>	Indian Grass	
	<i>Panicum virgatum</i>	Switch Grass	
	<i>Juncus tenuis</i>	Path Rush	
5,100 SF	SEED MIX 2: Harmony Seed Mix		
	<i>Deschampsia flexuosa</i>	Coastal/Wavy Hair Grass	
	<i>Festuca ovina</i>	Sheep Fescue	
	<i>Festuca x glauca</i>	Blue X Hard Fescue	
	<i>Festuca glauca</i>	Blue Fescue	
	<i>Festuca ovina</i> var. <i>duriuscula</i>	Hard Fescue	

- PLANTING LAYOUT NOTES
- FOR AREAS WITH MIXED GROUNDCOVERS / GRASSES AND/OR PERENNIALS (SHOWN AS HATCHED AREAS ON PLANS). DO NOT PLANT IN A PATTERN OR WITH LARGE AREAS OF THE SAME SPECIES. RANDOMLY PLANT AS INDICATED ON THE PLANTING PLANS INTO SMALL GROUPINGS OF THE SAME SPECIES TO CREATE A MORE NATURALISTIC APPEARANCE. PLANT THE SAME PLANT SPECIES IN GROUPS OF 3-7 AND NOT LARGER THAN 7, DEPENDING ON THE OVERALL NUMBER OF PLANTINGS.
 - ALL BIORETENTION BASIN PLANTINGS SHALL BE PLANTED WITH A MIX OF GROUNDCOVERS / GRASSES / PERENNIALS AT SPACING SPECIFIED IN THE PLANT LIST.
 - ALL PLANTING AND SEEDING WITHIN THE COASTAL BANK SHALL BE DONE BY HAND.
 - PLANTING WITHIN THE COASTAL BANK SHALL BE FIELD-LOCATED BEFORE PLANTING TO MINIMIZE DISTURBANCE OF EXISTING VEGETATION.



Revisions

Rev	Date	By	Appr	Description
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
90 Route 6A
Sandwich, MA 02563
508-833-6600 voice
508-833-3150 fax

Task: NOVEMBER 2023
Designed By: KJO/NE
Drawn By: KJK
Checked By: BRK

ELECTRIC AVENUE
CAPE COD BOAT RAMP STORMWATER
RETROFIT PROJECT - PERMITTING PLANS
BOURNE, MASSACHUSETTS

Plan Set:
Plan Title:

Prepared For:
Town of Bourne
24 Perry Ave
Bourne, MA
Phone: (508) 759-0600
Fax: ---

Survey Provided By:
Horsley Witten Group, Inc.
90 Route 6A
Sandwich, MA 02563
Phone: (508) 833-6600
Fax: (508) 833-3150
Dated: December 28, 2022

Registration:

Project Number: 22032
Sheet: 7 of 8
Sheet Number: C - 7

last modified: 11/30/23 printed: 11/30/23 by [H:\Projects\2022\22032 CC Boat Ramp SW Retrofits\Drawings\ELECTRIC AVE\22032 ELECTRIC LA.dwg

GENERAL PLANTING NOTES:

- THE FOLLOWING NOTES ARE PROVIDED AS GENERAL PLANTING GUIDELINES ONLY. THOROUGHLY REVIEW THE PROJECT SPECIFICATIONS FOR ALL LANDSCAPE REQUIREMENTS PRIOR TO THE COMMENCEMENT OF ANY LANDSCAPE WORK. SUBMIT IN WRITING TO THE LANDSCAPE ARCHITECT ANY QUESTIONS OR CLARIFICATIONS REQUIRED AT A MINIMUM OF 30 DAYS PRIOR TO ORDERING ANY MATERIALS OR BEGINNING ANY LANDSCAPE CONSTRUCTION.
- SUBMIT TO THE LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL ALL REQUIRED LANDSCAPE SUBMITTALS AS DESCRIBED IN THE SPECIFICATIONS INCLUDING A PLANT LIST WITH PLANT SIZE AND QUANTITIES TO BE ORDERED PRIOR TO DELIVERY TO THE PROJECT SITE.
- FURNISH AND INSTALL ALL PLANTS AS SHOWN ON THE DRAWINGS AND IN THE SIZE AND QUANTITIES SPECIFIED ON THE PLANTING SCHEDULE. PLANT SUBSTITUTION SELECTION MUST BE APPROVED BY BIOLOGIST OR LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
- ALL PLANTS TO COMPLY WITH APPLICABLE REQUIREMENTS OF ANSI Z60.1 "AMERICAN STANDARD FOR NURSERY STOCK," LATEST EDITION, PUBLISHED BY THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION INC.
- PLANTS TO BE GROWN UNDER CLIMATIC CONDITIONS SIMILAR TO THOSE IN THE LOCALITY OF THE PROJECT FOR AT LEAST TWO (2) YEARS. USE HEALTHY NURSERY GROWN PLANTS THAT HAVE A WELL DEVELOPED ROOT SYSTEM. PLANTS MUST BE FREE OF DISEASE, INSECTS, EGGS OR LARVAE.
- INSTALL PLANTS WITHIN ONE (1) WEEK OF PURCHASE. IF PLANTS ARE TO BE STORED AT THE SITE PRIOR TO PLANTING, IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THEY ARE PROPERLY MAINTAINED, WATERED, AND REMAIN HEALTHY.
- PROCEED WITH PLANTING ONLY WHEN EXISTING AND FORECASTED WEATHER CONDITIONS PERMIT. SUBMIT TO THE LANDSCAPE ARCHITECT IN WRITING THE PROPOSED PLANTING SCHEDULE. OBTAIN APPROVAL OF PLANTING SCHEDULE FROM THE LANDSCAPE ARCHITECT PRIOR TO PERFORMING ANY WORK.
- SEASONS FOR PLANTING:

SPRING:	DECIDUOUS:	APRIL 1 TO JUNE 15
	EVERGREEN:	APRIL 1 TO JUNE 15
	PERENNIALS:	APRIL 15 TO JUNE 1
	GROUNDCOVERS:	APRIL 15 TO JUNE 1
FALL:	DECIDUOUS:	SEPTEMBER 15 TO NOVEMBER 15
	EVERGREEN:	SEPTEMBER 15 TO NOVEMBER 15
	PERENNIALS:	SEPTEMBER 15 TO NOVEMBER 15
	GROUNDCOVERS:	SEPTEMBER 15 TO NOVEMBER 15

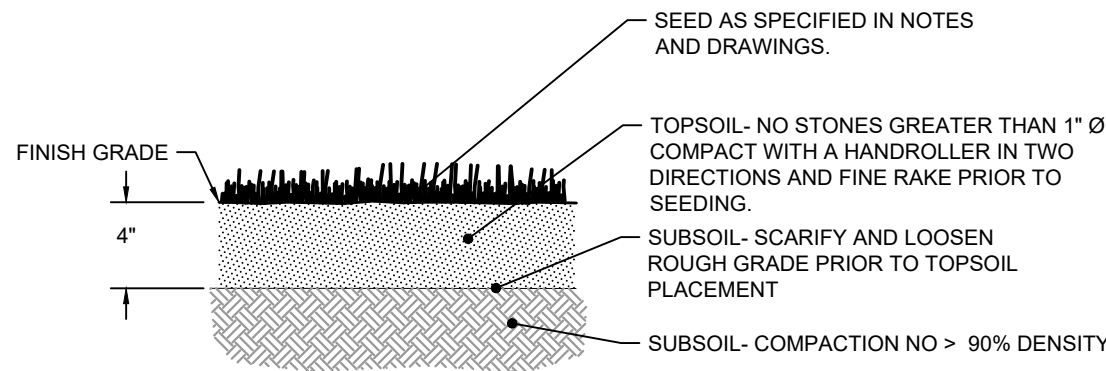
- PLANTING UNDER FROZEN CONDITIONS WILL NOT BE PERMITTED. PLANTING BEFORE OR AFTER THE ABOVE REFERENCED PLANTING DATES WILL INCREASE THE LIKELIHOOD OF PLANT ESTABLISHMENT FAILURE. ANY DEVIATION FROM THE ABOVE REFERENCED PLANTING DATES IS UNDERTAKEN AT SOLE RISK OF THE CONTRACTOR AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ANY ADDITIONAL MAINTENANCE AND WATERING WHICH MAY BE REQUIRED TO ENSURE SATISFACTORY PLANT ESTABLISHMENT.
- FURNISH ONE YEAR MANUFACTURER WARRANTY FOR TREES, PLANTS, AND GROUND COVER AGAINST DEFECTS INCLUDING DEATH AND UNSATISFACTORY GROWTH. EXCEPTIONS ARE DEFECTS RESULTING FROM LACK OF ADEQUATE MAINTENANCE, NEGLIGENCE OR ABUSE BY OWNER, OR ABNORMAL WEATHER CONDITIONS UNUSUAL FOR WARRANTY PERIOD. THE DATE OF FINAL ACCEPTANCE OF ALL COMPLETED PLANTING WORK ESTABLISHES THE END OF INSTALLATION AND INITIAL MAINTENANCE PERIOD AND THE COMMENCEMENT OF THE GUARANTEE PERIOD.
- INSPECT ALL AREAS TO BE PLANTED OR SEEDED PRIOR TO STARTING ANY LANDSCAPE WORK. REPORT ANY DEFECTS SUCH AS INCORRECT GRADING, INCORRECT SUBGRADE ELEVATIONS OR DRAINAGE PROBLEMS, ETC. TO THE LANDSCAPE ARCHITECT AND ENGINEER PRIOR TO BEGINNING WORK. COMMENCEMENT OF WORK INDICATES ACCEPTANCE OF SUBGRADE AREAS TO BE PLANTED, AND THE LANDSCAPE CONTRACTOR ASSUMES RESPONSIBILITY FOR ALL LANDSCAPE WORK.
- PROVIDE PROPER PREPARATION OF ALL PROPOSED PLANTED AND SEEDED AREAS PER THE NOTES AND SPECIFICATIONS.
- ALL PLANT LAYOUT AND ACTUAL PLANTING LOCATIONS ARE TO BE FIELD VERIFIED BY LANDSCAPE ARCHITECT PRIOR TO PLANTING. NOTIFY THE LANDSCAPE ARCHITECT AT A MINIMUM OF 48 HOURS IN ADVANCE PRIOR TO SCHEDULING ANY FIELD INSPECTIONS.
- BALL AND BURLAP: REMOVE BURLAP AND WIRE BASKETS FROM TOPS OF BALLS AND FROM TOP HALF OF ROOTBALL AS INDICATED ON DRAWINGS. REMOVE PALLETS, IF ANY, BEFORE SETTING.
- POTTED PLANTS: REMOVE THE PLANT FROM THE POT AND LOOSEN OR SCORE THE ROOTS BEFORE PLANTING TO PROMOTE OUTWARDS ROOT GROWTH INTO THE SOIL.
- PLUGS: PLANT UPRIGHT AND NOT AT AN ANGLE. DIG PLANTING HOLES LARGE ENOUGH AND DEEP ENOUGH TO ACCOMMODATE THE ENTIRE ROOT MASS. PLANT PLUGS WITH NO TWISTED OR BALLED ROOTS AND WITH NO ROOTS EXPOSED ABOVE THE GRADE LINE. HAND PACK THE SOIL AROUND THE ENTIRE PLUG ROOT MASS.
- DIG THE THE PLANTING HOLE TO THE SAME DEPTH AS THE ROOT BALL AND TWO TO THREE TIMES WIDER. SCORE ALL SIDES OF THE HOLE, PLACE THE PLANT IN THE HOLE SO THE TOP OF ROOT BALL IS EVEN WITH SOIL SURFACE. FILL THE HOLE HALFWAY AND THEN ADD WATER ALLOWING IT TO SEEP INTO BACK FILLED MATERIAL. BE SURE TO REMOVE ALL AIR POCKETS FROM BACK FILLED SOIL. DO NOT SPREAD SOIL ON TOP OF THE ROOTBALL. IF SOIL IS EXTREMELY POOR, REPLACE BACK FILL WITH GOOD QUALITY TOP SOIL. AMEND THE SOIL, AS NECESSARY.
- CREATE A 2" TO 4" BERM AROUND THE EDGE OF PLANTING HOLE WITH REMAINING SOIL TO RETAIN WATER.
- REMOVE ALL PLANT TAGS AND FLAGS FROM THE PLANTS.
- MULCH ALL PLANTING BEDS AS INDICATED ON DRAWINGS. UNLESS NOTED OTHERWISE, ALL PLANTS TO RECEIVE 2-3 INCHES OF MULCH. DO NOT PILE OR MOUND MULCH AROUND THE PLANT STEMS OR TRUNK. DO NOT MULCH WITHIN THE BIORETENTION AREAS.
- TRIM BROKEN AND DEAD BRANCHES FROM SHRUBS AFTER PLANTING. NEVER CUT A LEADER.
- THE SITE IS LOCATED ADJACENT TO A WETLAND RESOURCE AREA, THEREFORE, DO NOT USE NITROGEN CONTAINING FERTILIZERS, PESTICIDES OR CHEMICALS DURING PLANTING AND MAINTENANCE OF THE LANDSCAPING OR LAWN AREAS UNLESS APPROVED BY THE CONSERVATION COMMISSION.

GENERAL SEEDING NOTES:

- SEND A REPRESENTATIVE SAMPLE OF THE TOPSOIL TO A TESTING LABORATORY FOR STANDARD SOIL ANALYSIS AS DESCRIBED IN THE SPECIFICATIONS. SUBMIT TO THE LANDSCAPE ARCHITECT AND ENGINEER TEST RESULTS WITH RECOMMENDED SOIL TREATMENTS TO PROMOTE PLANT AND GRASS GROWTH. CORRECT DEFICIENCIES IN THE LOAM AND STOCKPILED TOPSOIL AS DIRECTED BY THE TESTING AGENCY.
- ALL AREAS THAT ARE DISTURBED AND/OR GRADED DURING CONSTRUCTION ARE TO BE BROUGHT TO FINISHED GRADE WITH AT LEAST 4" MINIMUM DEPTH OF GOOD QUALITY LOAM AND SEEDED WITH A QUICK GERMINATING GRASS SEED SUCH AS NEW ENGLAND EROSION CONTROL RESTORATION MIX OR AS SPECIFIED ON THE PLANS.
- PRIOR TO THE PLACEMENT OF TOP SOIL, LOOSEN THE SUBGRADE OF ALL PROPOSED SEEDED AREAS TO A DEPTH OF 6" AND RAKE TO REMOVE STONES LARGER THAN 1 INCH, STICKS, ROOTS, RUBBISH AND OTHER EXTRANEIOUS MATTER AND LEGALLY DISPOSE TO AN OFF SITE LOCATION.
- DO NOT SPREAD TOPSOIL IF THE SUBGRADE IS FROZEN, EXCESSIVELY WET, COMPACTED OR NOT PROPERLY PREPARED PER THE NOTES AND SPECIFICATIONS.
- SEE SPECIFICATIONS FOR SEASONAL REQUIREMENTS FOR SEEDING.

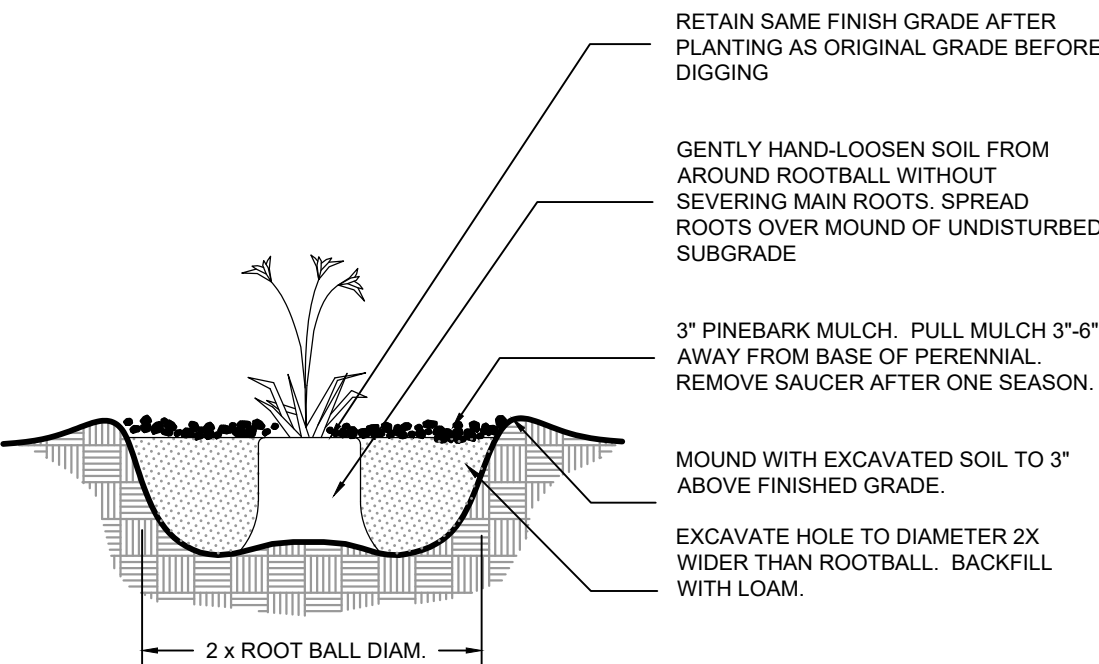
WATERING NOTES:

- PROVIDE PROPER PLANT CARE, MAINTENANCE AND WATERING ON SITE UNTIL SUCH TIME AS THE LANDSCAPING IS ACCEPTED BY THE PROPERTY OWNER AS SATISFACTORY PER THE SPECIFICATIONS OR AS DETERMINED BY ANY WRITTEN AGREEMENTS BETWEEN THE CONTRACTOR AND PROPERTY OWNER.
- ESTABLISH AN APPROPRIATE WATERING SCHEDULE FOR ALL PLANT MATERIAL BASED UPON PLANT SPECIES REQUIREMENTS AND SITE CONDITIONS. PROVIDE SCHEDULE IN WRITING TO THE LANDSCAPE ARCHITECT AND OWNER FOR REVIEW AND APPROVAL. ADHERE TO THE APPROVED SCHEDULE UNTIL PLANTS ARE FULLY ESTABLISHED.
- AT A MINIMUM THE NEWLY SEEDED AREAS SHOULD BE WATERED DAILY UNTIL ESTABLISHMENT AND THEN 2-3 TIMES A WEEK. SPECIAL CARE SHOULD BE TAKEN TO ENSURE THAT THE SEEDED AREAS ARE NOT SATURATED DURING WATERING. IF AN IRRIGATION SYSTEM IS NOT PROVIDED, A TEMPORARY IRRIGATION SYSTEM OR HANDHELD GARDEN HOSE SHALL BE USED FOR WATERING SEEDED AREAS. THE AREA MUST BE MAINTAINED CONSISTENTLY MOIST FOR THE BEST GERMINATION RESULTS. ADDITIONAL WATERING MAY BE REQUIRED IF PLANTING AND SEEDING OCCUR OUTSIDE OF THE RECOMMENDED PLANTING SEASONS.

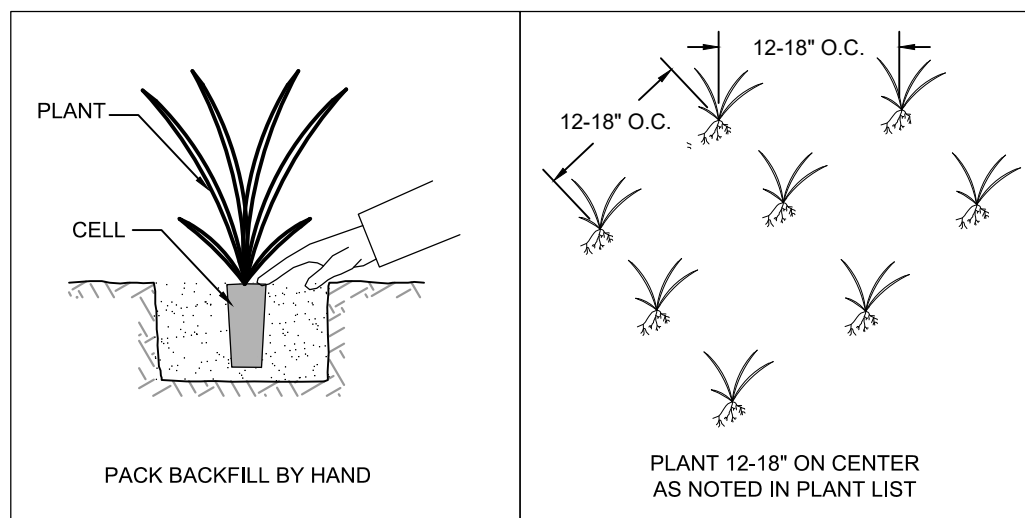


- NOTES:
- SEE LANDSCAPE GRADING SPECIFICATIONS FOR TOPSOIL REQUIREMENTS.
 - CONFIRM SUBGRADES ARE CORRECT AND POSITIVE DRAINAGE IS MAINTAINED PRIOR TO PLACEMENT OF TOPSOIL.
 - NOTIFY ENGINEER/LANDSCAPE ARCHITECT FOR REVIEW OF SUBGRADE PRIOR TO PLACEMENT OF THE TOPSOIL.

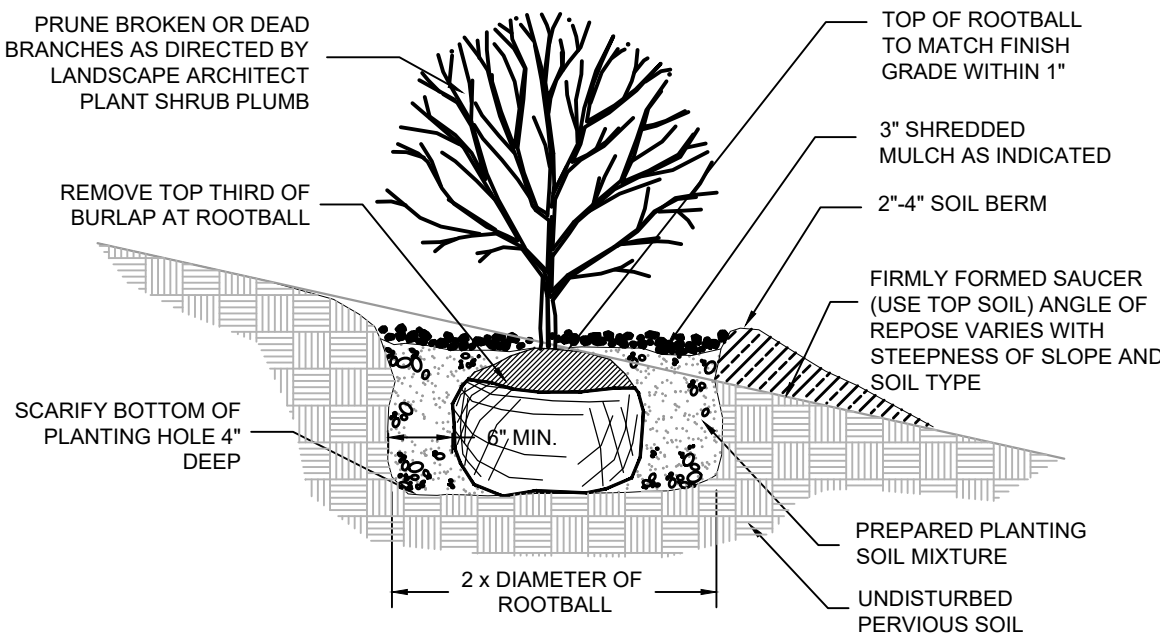
LOAM AND SEED
NOT TO SCALE



PERENNIAL PLANTING
NOT TO SCALE



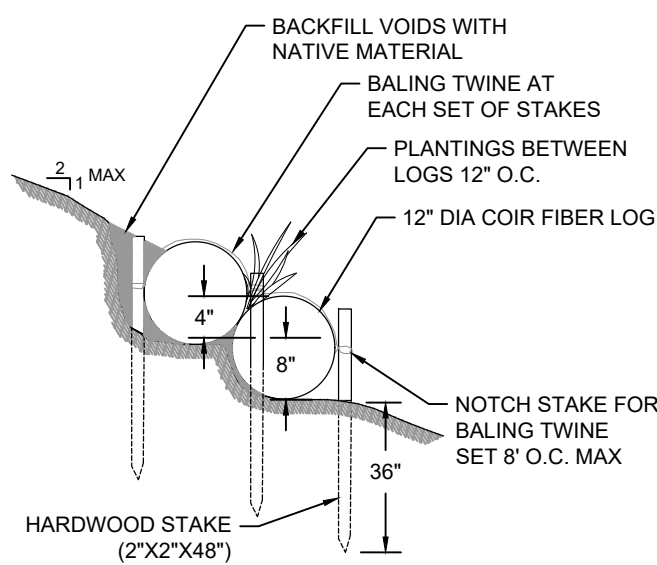
PLUG PLANTING
NOT TO SCALE



- NOTES:
- PLANTING BACKFILL: 1/3 LOAM, 1/3 SAND, 1/3 PEAT. BY VOLUME.
 - WHEN PLANTING ON SLOPE-MODIFY SLOPE AS SHOWN.

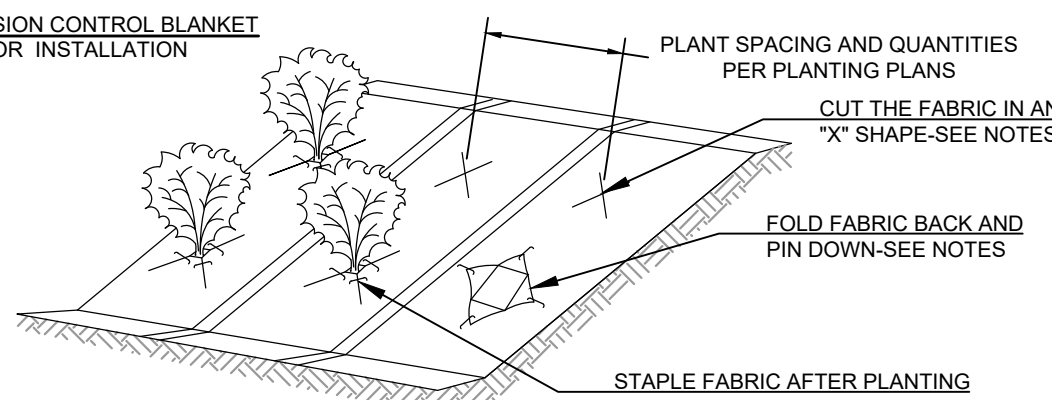
SHRUB PLANTING ON SLOPE
NOT TO SCALE

NOTE:
ALL PLANTINGS TO BE APPROVED BY THE LANDSCAPE ARCHITECT.



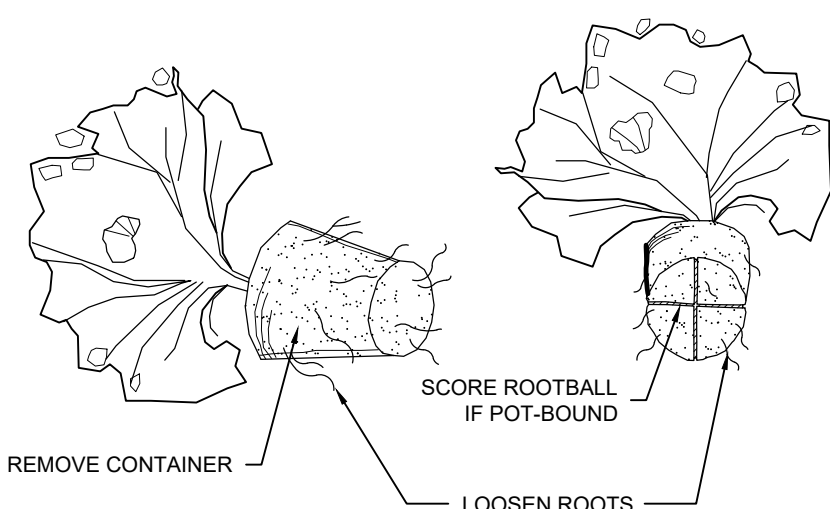
PLANTED COIR LOG
NOT TO SCALE

SEE EROSION CONTROL BLANKET
DETAIL FOR INSTALLATION

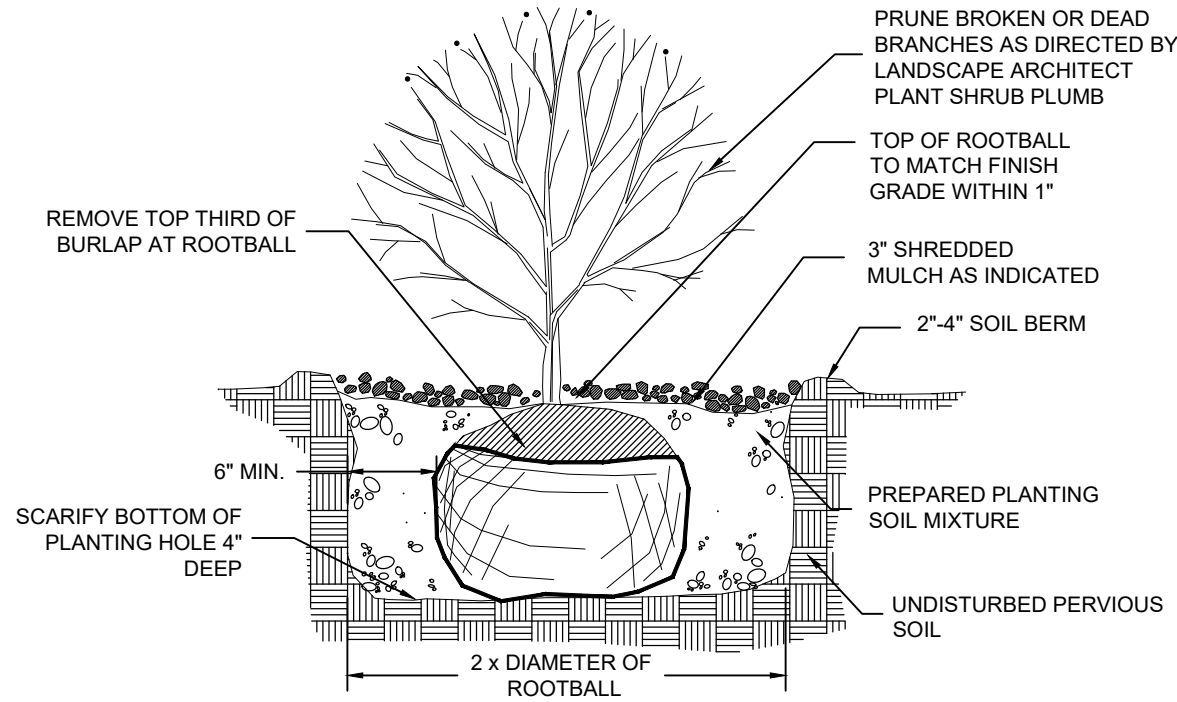


- NOTES:
- CUT THE FABRIC IN AN "X" SHAPE TO ACCOMMODATE 2 TIMES THE DIAMETER OF THE ROOTBALL.
 - FOLD FABRIC BACK AND PIN DOWN TO CREATE A HOLE IN THE MAT.
 - DIG THE HOLE PER PLANTING DETAILS.
 - AFTER PLANTING, FOLD FABRIC BACK INTO PLACE AND STAPLE DOWN AS REQUIRED TO SECURE FABRIC IN PLACE.

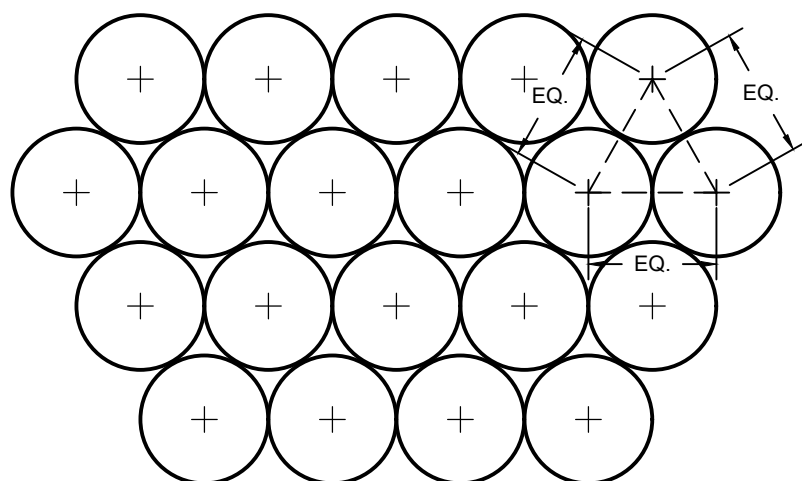
PLANTING IN EROSION CONTROL BLANKET
NOT TO SCALE



CONTAINER PLANT ROOTBALL TREATMENT
NOT TO SCALE



SHRUB PLANTING
NOT TO SCALE



USE EQUIDISTANT TRIANGULAR SPACING FOR PLANTS - FOR ACTUAL SPACING SEE PLANS OR PLANTING SCHEDULE

PLANTING SPACING
NOT TO SCALE

Revisions			
Rev	Date	By	Appr Description



Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com
90 Route 6A
Sandwich, MA 02563
508-833-6600 voice
508-833-3150 fax

Drawn By: KJK
Designed By: KJK/MBE
Checked By: BRK
Date: NOVEMBER 2023

Plan Set: **ELECTRIC AVENUE
CAPE COD BOAT RAMP STORMWATER
RETROFIT PROJECT- PERMITTING PLANS
BOURNE, MASSACHUSETTS**

Plan Title: **PLANTING DETAILS**

Prepared For: **Town of Bourne**
24 Perry Ave
Bourne, MA
Phone: (508) 759-0600
Fax: ----

Survey Provided By: **Horsley Witten Group, Inc.**
90 Route 6A
Sandwich, MA 02563
Phone: (508) 833-6600
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Dated: December 28, 2022



Project Number: 22032
Sheet Number: 8 of 8

PERMITTING SET ONLY
NOT FOR CONSTRUCTION