

Jeffrey Ribeiro

From: Amy Ball <aball@horsleywitten.com>
Sent: Friday, October 09, 2015 10:01 AM
To: Monica Mejia
Cc: Jeffrey Ribeiro; Jonathon Idman; Richardson, Bill; Magner, Maryann; Baptiste, Irvin
Subject: Provincetown Airport - clarification on topography and groundwater elevations
Attachments: 09 - 4027_GD-REV1.pdf; 10-11 - HW-4027_DE-REV1.pdf

Hi Monica –

Please accept my apologies for not getting back to you sooner. When we spoke, you had questioned the need for invoking the flexibility clause with respect to the groundwater elevations, specific to MPS #s WR7.8 and CR3.4, which require a 3-foot separation to groundwater for infiltration practices. I believe the confusion was a result of the table included in the Stormwater Management Report, which depicts the results of test pits we performed to support the stormwater design. The table provides both depth to seasonal groundwater, as well as an adjusted groundwater elevation. The numbers that should be followed are the actual groundwater elevations, ranging from elevation 6.2 to 6.4 feet above mean sea level. Please disregard the adjusted elevations (which are two feet lower in elevation) as per this excerpt from Appendix G that was included in the Stormwater Management Report:

Provincetown Airport

hand-dug test pits for parking lot stormwater design

20-Apr-15; updated for clarification 9 October 2015

<u>test pit #</u>	<u>ground</u>	<u>depth to seasonal groundwater</u>			<u>Adjusted GW</u>
	<u>elevation</u> (feet)	(inches)	(feet)	GW elevation	<u>elevation</u> (feet)
1	6.7	6	0.50	6.2	4.2
2	7.8	17	1.42	6.4	4.4
3	7.1	11	0.92	6.2	4.2
4	7.7	18	1.50	6.2	4.2 - hand aug

NOTE: based upon assumes Airport-specific datum; to correct for NAVD must subtract 2 feet in general - water levels about 1 " below mottling

The long explanation is that the topography surveyed at the Airport is in a specific datum relative to an Airport benchmark. The topography and the grading for the parking lot had originally been corrected to conform to NAVD (as noted in the table). However, the remaining portions of the Airport topography were in the Airport datum. It would have been an enormous undertaking to adjust all of the data by hand, and since it didn't make sense to use two different datums on the plans, we reverted back to the "Airport datum" for the parking lot area. Unfortunately, a couple of the adjusted labels surrounding the parking lot area were overlooked. The two attached sheets (Sheets 9 and 10) provide the corrected data. The changes are off-set with a square or "cloud." With these corrected contours, and using

only the Airport datum (not NAVD), there is a 2 to 3 foot separation for infiltration for the parking lot, but the separation is not 3 feet across the entire area, thus, the request for flexibility from those applicable MPSs in our DRI application.

As to your question regarding whether we used the groundwater measurements taken with the water level meter or the observed mottling (redoximorphic features) to determine groundwater, we used the mottling, as it is more accurate.

Hopefully this will clarify the confusion on these couple of plans (and not add to it!). I am in the field for the rest of the day, but please feel free to call my cell phone (508-246-5378) if you have any questions or require further clarification.

Thank you.

Amy

Amy M. Ball, PWS, CWS

Project Manager - Senior Ecologist

Horsley Witten Group, Inc.

90 Route 6A, Sandwich, MA 02563

(508) 833-6600 - office

(508) 246-5378 - cell

www.horsleywitten.com

Sustainable Environmental Solutions



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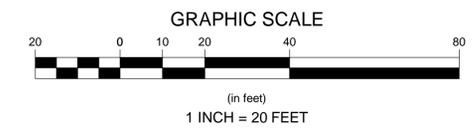
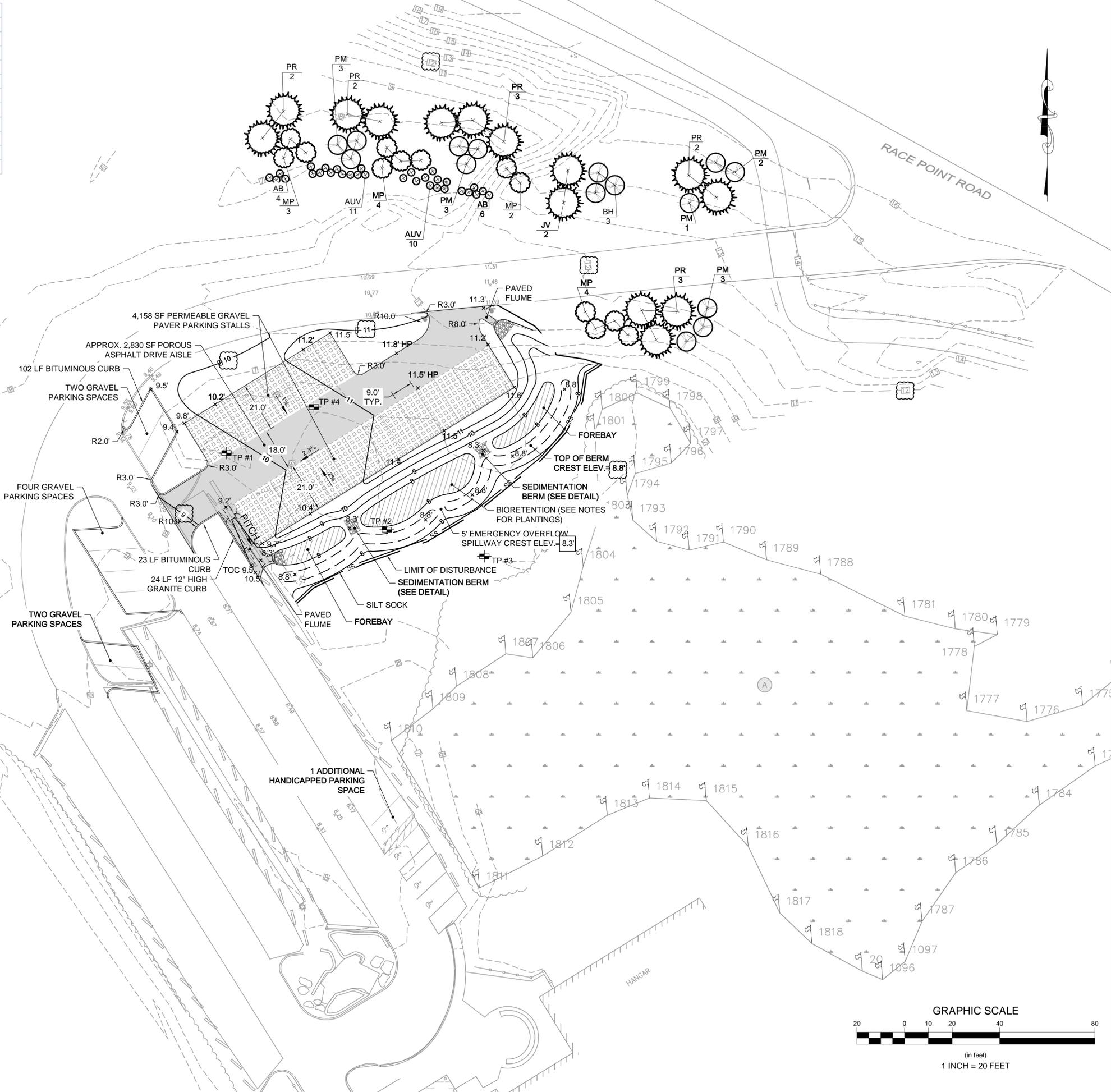
Planting Schedule for Parking Lot (Phase 1)					
Key	Qty	Botanical Name	Common Name	Size	Spacing
Evergreens					
JV	2	<i>Juniperus virginiana</i>	Eastern red cedar	8' - 10' h.	As Shown
PR	12	<i>Pinus rigida</i>	Pitch Pine	6/7 B&B	As Shown
Shrubs					
BH	3	<i>Baccharis halimifolia</i>	Groundsel	#1	As Shown
MP	13	<i>Morella pensylvanica</i>	Northern bayberry	24" / 30" B&B	As Shown
PM	12	<i>Prunus maritima</i>	Beach Plum	3' / 4' B&B	As Shown
Groundcovers/Grasses					
AB	10	<i>Ammophila breviligulata</i>	American Beach Grass	3" av pots	12"-18" O.C.
AUV	21	<i>Arctostaphylos uva-ursi</i>	Bearberry	#2	2' O.C.

BIORETENTION AND FOREBAY PLANTINGS (IN HATCHED AREA) TO INCLUDE:

- NORTHERN BAYBERRY (MORELLA PENSYLVANICA)
- VIRGINIA ROSE (ROSA VIRGINIANA)
- SWITCH GRASS (PANICUM VIRGATUM)
- DWARF HUCKLEBERRY (GAYLUSSACIA DUMOSA)

BIORETENTION SIDE SLOPE PLANTINGS TO INCLUDE:

- AMERICAN BEACHGRASS (AMMOPHILA BREVILIGULATA)
- BEARBERRY (ARCTOSTAPHYLOS UVA-URSI)
- SEASIDE GOLDENROD (SOLIDAGO SEMPERVIRENS)
- BEACH HEATH (HUDSONIA TOMENTOSA)
- LITTLE BLUESTEM (SCHIZACHYRIUM SCOPARIUM)



REV. NO.	DATE	DESCRIPTION
1	10/08/15	REVISED ELEVATIONS

Horley Wilton Group, Inc.
 80 Route 6A
 Sandwich, MA 02563
 Tel: 609 683-6669
 www.horleywilton.com

34.3 CONGRESS STREET
 BOSTON, MA 02210
 Tel: 617-242-9222
 Fax: 617-242-9824
 www.jacobs.com

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PROVINCETOWN MUNICIPAL AIRPORT
 PROVINCETOWN, MASSACHUSETTS

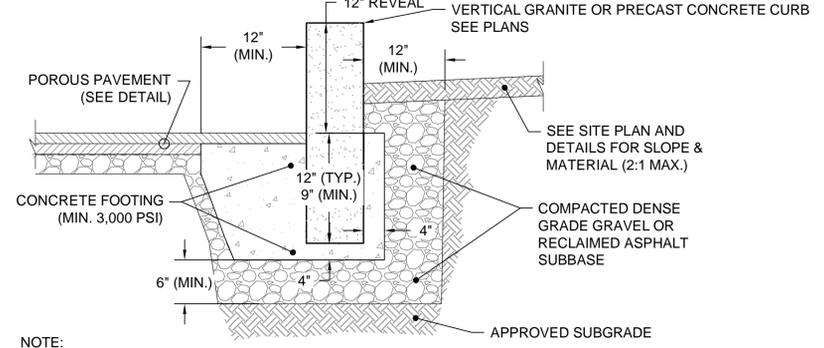
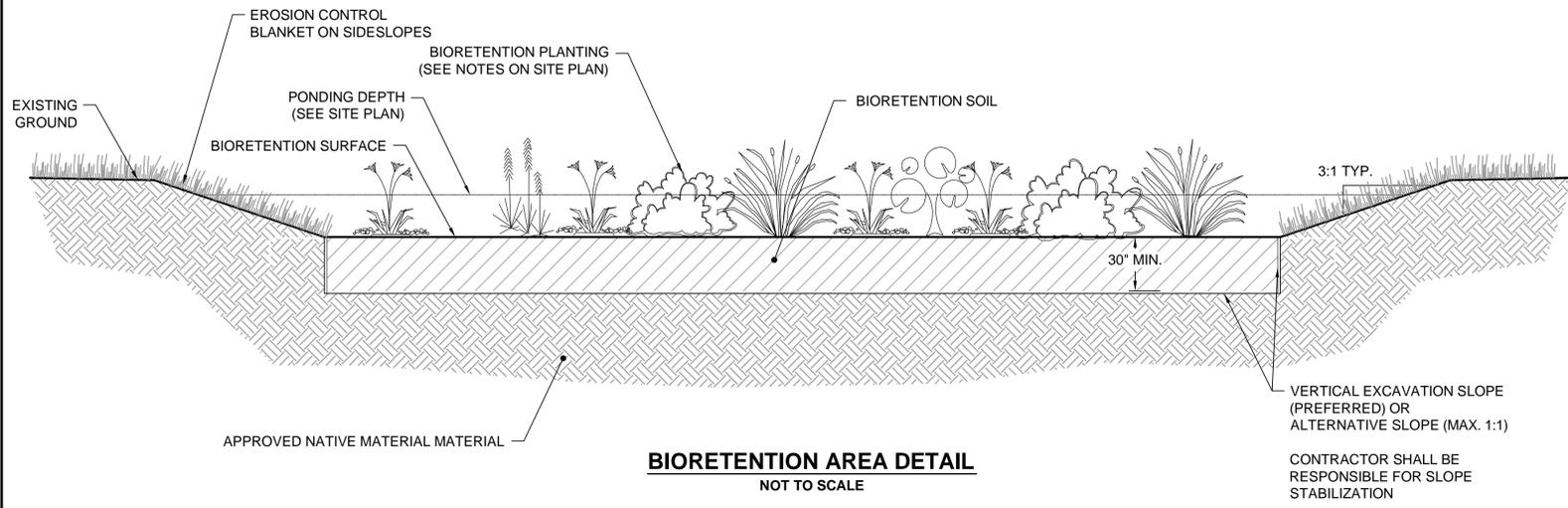
**PROPOSED PHASE 1
 PARKING LOT GRADING AND DRAINAGE**

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 AIP NO. 3-25-0043-36-2013

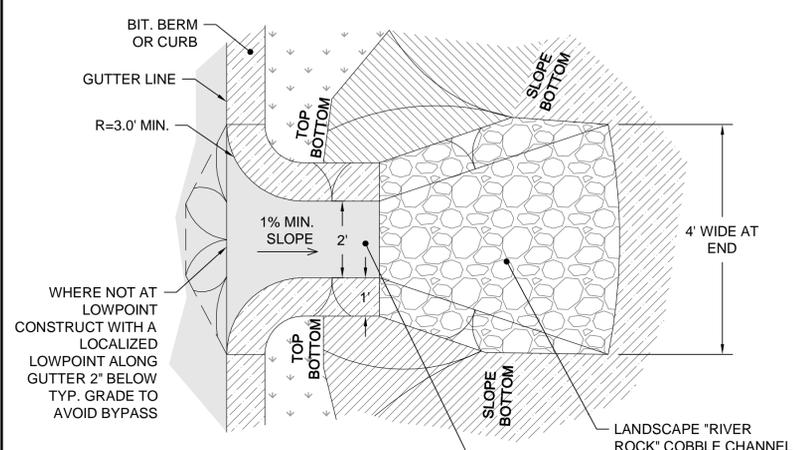
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SHEET 9 OF 15

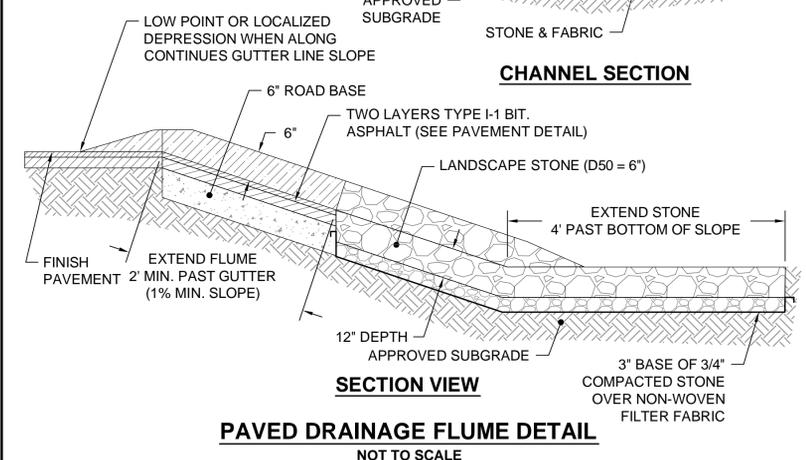
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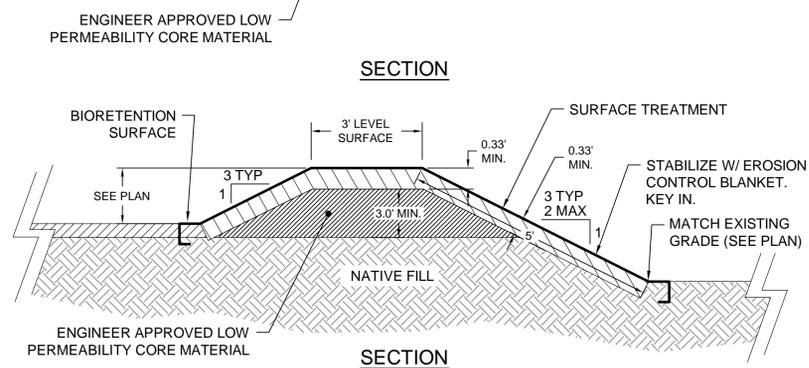
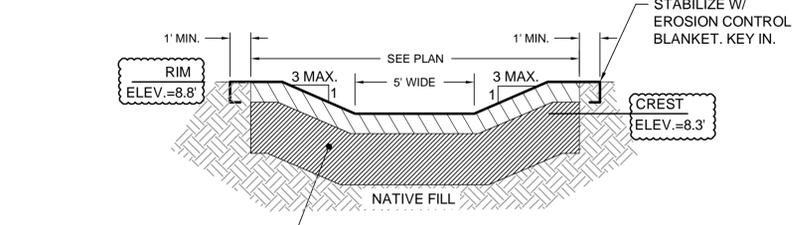
- NOTE:
1. VERTICAL CURB MIN. HEIGHT = 24" MIN. WIDTH = 6"
 2. VERTICAL CURBING TO BE INSTALLED AS SHOWN ON THE SITE PLAN.
 3. PROVIDE CURB EXPANSION JOINTS AT 5'-0" TO 6'-0" O.C.
 4. CURB REPLACEMENT IN EXISTING PAVEMENT - SAWCUT EDGE MIN. 12" FROM CURB.
 5. CONCRETE CURB - PROVIDE 1" CHAMFER OF EDGE ALONG PAVEMENT SIDE FACE FOR CONCRETE CURB.
 6. CONCRETE CURB - TO HAVE A MINIMUM CONCRETE STRENGTH OF 4,000 PSI
 7. CEMENT MORTAR JOINTS & INSTALL PREFORMED (1/2") EXPANSION JOINT WHERE REQUIRED.



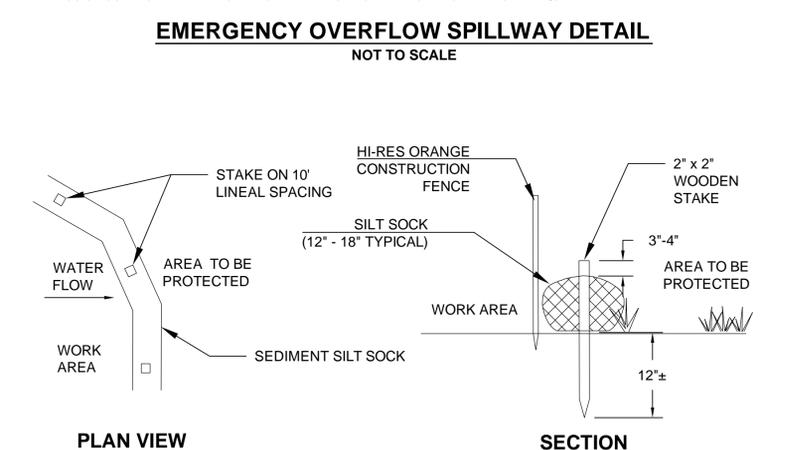
- NOTES:
1. THE STONE END SECTION TO BE UNDERCUT SO THAT THE INVERT OF THE APRON TO BE AT THE SAME GRADE (FLUSH) WITH THE TOP OF STONE.
 2. THE WIDTH OF THE END OF THE APRON TO BE EQUAL TO THE BOTTOM WIDTH OF THE RECEIVING CHANNEL. MAXIMUM TAPER TO RECEIVING CHANNEL 5:1.
 3. THE GEOTEXTILE FILTER FABRIC TO BE MIRAFI 140N OR EQUIVALENT



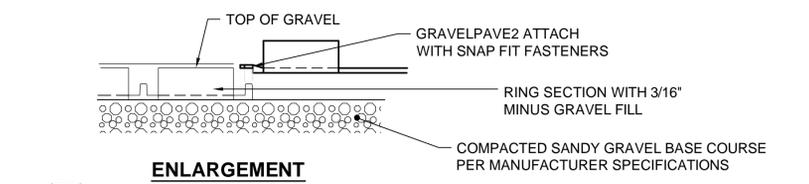
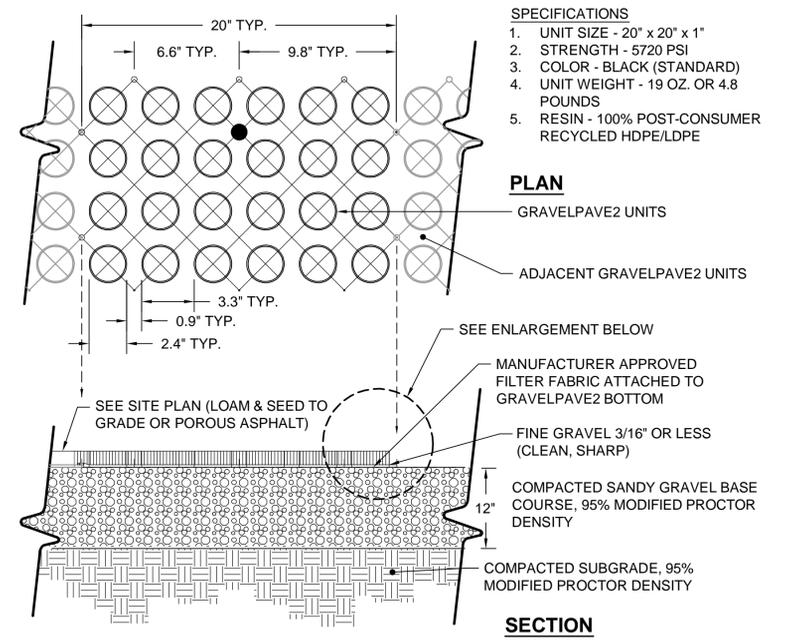
- NOTES:
1. EROSION CONTROL BLANKET TO BE NORTH AMERICAN GREEN BIONET OR APPROVED EQUIVALENT.



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- NOTES:
1. SILT SOCK MANUFACTURER TO BE SILT SOXX OR ENGINEER APPROVED EQUAL.
 2. ALL MATERIAL TO MEET MANUFACTURER'S SPECIFICATIONS.
 3. SEDIMENT SILT SOCK TO BE FILLED WITH LEAF COMPOST AND/OR WOODY MULCH PER MANUFACTURER'S REQUIREMENTS.
 4. FOLLOWING CONSTRUCTION AND SITE STABILIZATION, COMPOST MATERIAL TO BE REMOVED OR DISPERSED ON SITE, AS APPROVED BY THE ENGINEER.



- NOTES:
1. GRAVELPAVE2 PAVERS SHALL BE MANUFACTURED BY INVISIBLE STRUCTURES, INC. OR AN ENGINEER APPROVED EQUAL.
 2. SANDY GRAVEL ROAD BASE MATERIAL SHALL PASS THE FOLLOWING SIEVE ANALYSIS:
- | % PASSING | SIEVE SIZE |
|-----------|------------|
| 100 | 3/4" |
| 85 | 3/8" |
| 60 | #4 |
| 30 | #40 |
| <3 | #200 |
3. EXTERIOR EDGE SHALL BE ANCHORED PER MANUFACTURER'S REQUIREMENTS OR AS APPROVED BY THE ENGINEER.



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1	10/08/15		

HORSLY WILTON GROUP, INC.
 80 ROUTE 6A
 SANDWICH, MA 02563
 TEL: (508) 858-9999
 WWW.HORSLYWILTON.COM

JACOBS
 34.3 CONGRESS STREET
 BOSTON, MA 02210
 TEL: 617-242-9222
 FAX: 617-242-9824
 WWW.JACOBS.COM

SCALE: AS NOTED
 DATE: APRIL 2015
 DESIGNED BY: RAC
 DRAWN BY: GSC
 CHECKED BY: RAC

PROVINCETOWN MUNICIPAL AIRPORT
 PROVINCETOWN, MASSACHUSETTS
**PROPOSED PHASE 1
 GRADING AND DRAINAGE DETAILS 1**

JACOBS PROJ. NO.:
AIP NO. 3-25-0043-36-2013

DRAWING NO.