SEBAGO
TECHNICS

October 2, 2012
09006

Ms. Christine Woodruff
Maine Department of Environmental Protection
312 Canco Road
Portland, Maine 04102

NRPA Individual Permit Application – Embankment Repairs and Trail Improvements on Back Cove Trail, Portland, Maine – NRPA Permit No. L-24096-4E-A-N

Dear Christine:

We revised the NRPA application submitted on September 4, 2012 for embankment repairs and trail improvements along Back Cove.

1. As discussed during an onsite meeting, the embankment slope that will replace the failing retaining wall was steepened from 2:1 (H: V) to 1.5:1 (H: V) so that impacts to the coastal wetland are minimized. Revised drawings showing the steepened slope are enclosed.

2. Language was added to the Alternatives Analysis and Avoidance/Minimization Statement (Attachment 2) to show that the proposed 10-feet wide esplanade complies with the minimum standards of Chapter 5-3.1, AASHTO Guide for the Planning, Design and Operation of Bicycle Facilities.

3. The Mitigation Plan (Attachment D) of the original application was revised to show Planting Area #3 adjacent to the trail and north of the sandpipers roosting area.

Upon your review of the enclosed supporting information, please contact me if you have any questions.

Sincerely,

SEBAGO TECHNICS, INC.

Craig Burgess

Craig A. Burgess, P.E.
Project Engineer

CAB:cab/
Enc.

cc: Bradley Roland, P.E. – City of Portland

Attachment 2

Alternatives Analysis and Avoidance/Minimization Statement

The concrete retaining wall located near the Seaside Nursing Home is a critical component of the entire Back Cove Trail system. Without it, the trail would no longer be continuous requiring pedestrians to cross into vehicular roadway traffic creating an undesirable safety hazard. The wall currently does not provide protection from erosion for the trail and a new method of stabilization is necessary to prevent further damage. The affected section of trail is in a high pedestrian traffic area near the Seaside Nursing Home, Payson Park, and a gravel public parking lot. There are two wheel chair ramps providing handicap access to the Back Cove Trail in the area of the retaining wall requiring a safe and stabilized trail.

The proposed alternative to stabilize the area includes installation of a riprap embankment in place of the concrete retaining wall. The existing deteriorated wall will be demolished, and fill material will be installed to create the embankment to match the existing slope on either side of the wall. The slope at the toe of the embankment will be 2:1. A vegetated buffer will be planted at the top of the slope adjacent to the stone dust trail and riprap will be placed on the slope, again to match the adjacent embankments.

A riprap embankment will match the existing slope treatment present around Back Cove. The adjacent sections of trail with riprap and a vegetated buffer are stable and have experienced little damage from the extreme storms that took place in the spring of 2007 and 2010.

An alternative that was considered was to stabilize the existing concrete wall. This would not be ideal because the wall has already been damaged by wave and tidal action and is no longer structurally suitable. The concrete has advanced deterioration resulting in eroded concrete and exposed rebar at the base of the wall. Field inspections suggest the wall is beyond repair and does not provide adequate protection of the trail system. A new concrete retaining wall system would require relocation further into the resource and substantive ground and soil improvements to create a stabilized base for the wall. A new wall would also be subject to the same damaging erosion forces and water would eventually be able to reach the soil behind the wall. The same would be true for walls made of other materials like masonry blocks or timbers. A driven sheet pile wall would provide more protection for the soil behind the wall, however, for such a small area, this option would not be cost effective.

A riprap embankment will provide the best option for shoreline stabilization. This treatment method has already been successful on Back Cove and will provide a continuous shoreline next to Back Cove Trail. In addition, maintenance and repair of a riprap embankment is much easier to complete than the repair of a retaining wall.

The existing 2-foot wide esplanade and guardrail adjacent to the failing retaining wall does not meet Chapter 5-3.1, AASHTO Guide for the Planning, Design and Operation of Bicycle Facilities. Back Cove Trail is very busy trail for two-way bicycle and foot traffic in Portland. Proposed trail improvements, including the riprap embankment and buffer, a 10-foot wide esplanade and 10-foot wide two-way trail (Back Cove Trail), comply with the minimum standards of Table 5-1, Chapter 5-3.1. A wider esplanade will better protect trail users from high volume traffic and vehicular splash along Baxter Boulevard (ME U.S. Route 1). Also, expanding the esplanade will provide additional median space for snow storage and

create a more suitable growing environment for large Linden trees which will provide shade and improve perceptions of safety.

An alternative that was examined was to design a narrower esplanade in accordance with Chapter 5-3.1 to accommodate a guardrail. The minimum railing height on a shared-use path should be 42 inches to prevent bicyclist from flipping over the top. Installing a guardrail in a high volume area such as Baxter Boulevard would create a greater risk of injury to a bicyclist striking a post and make it more difficult for bicyclists and foot traffic using the roadway to avoid errant vehicles. Along the entire length of Back Cove Trail, bicyclists and foot traffic can move freely between the trail and roadway.

Attachment D

Project Mitigation (*Appendix D*)

As part of the prior NRPA permit for retaining wall repairs, the City of Portland agreed to a mitigation plan that included plantings for upland stabilization and screening of waterfowl roosting areas along two sections of the Back Cove recreational trail. The original mitigation plan was revised to include a third section of plantings north of the sandpiper roosting area and along the trail in accordance with IF&W and MDEP. Figure 11 shows the three proposed planting areas and their proximity to the trail, parking lot and field areas.

The three proposed planting areas shall be planted with 24”-36” Rosa Rugusa plants. New plantings shall be planted 3-feet on center in a loosely offset pattern within upland areas close to the trail and outside the coastal wetland. The City arborist will maintain mitigation plantings as part of the maintenance plan for adjacent Yardscaping Gardens at Back Cove.

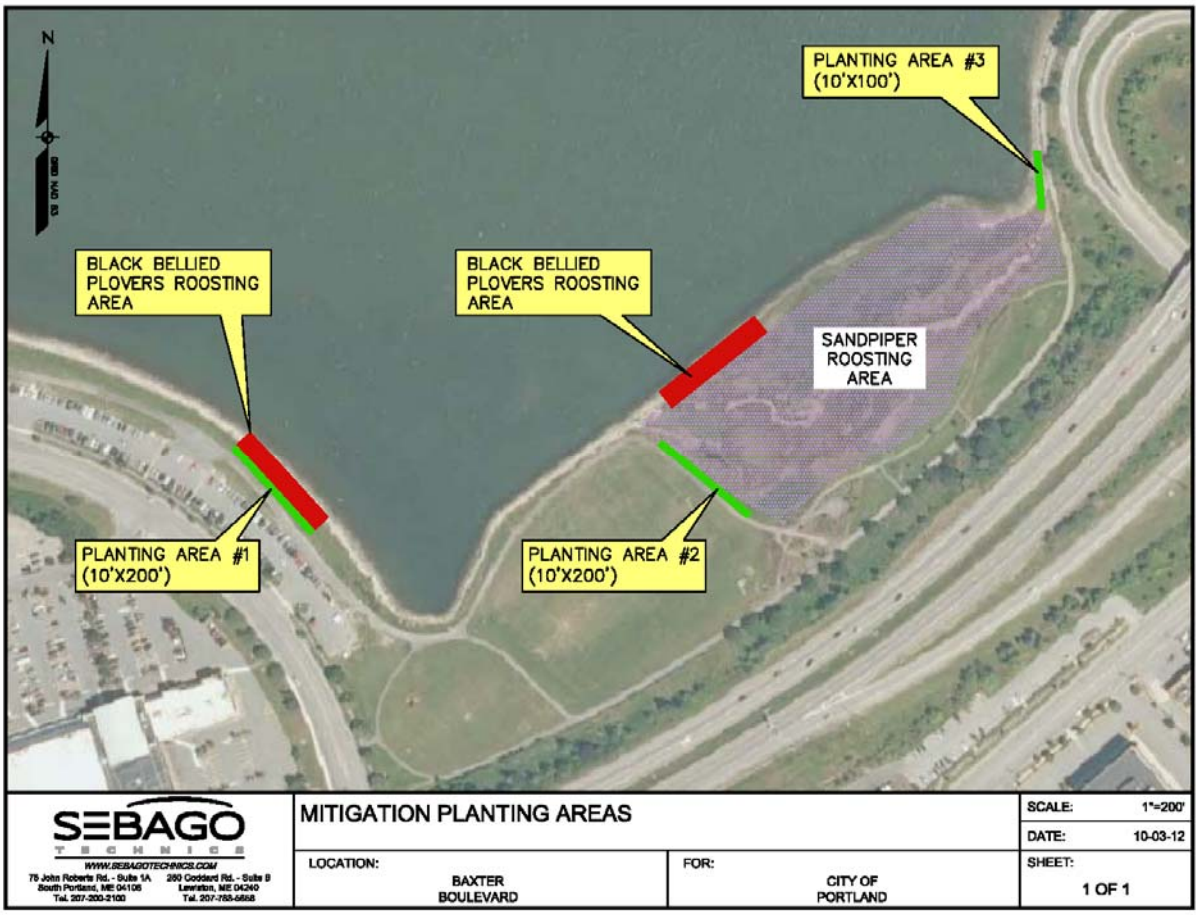
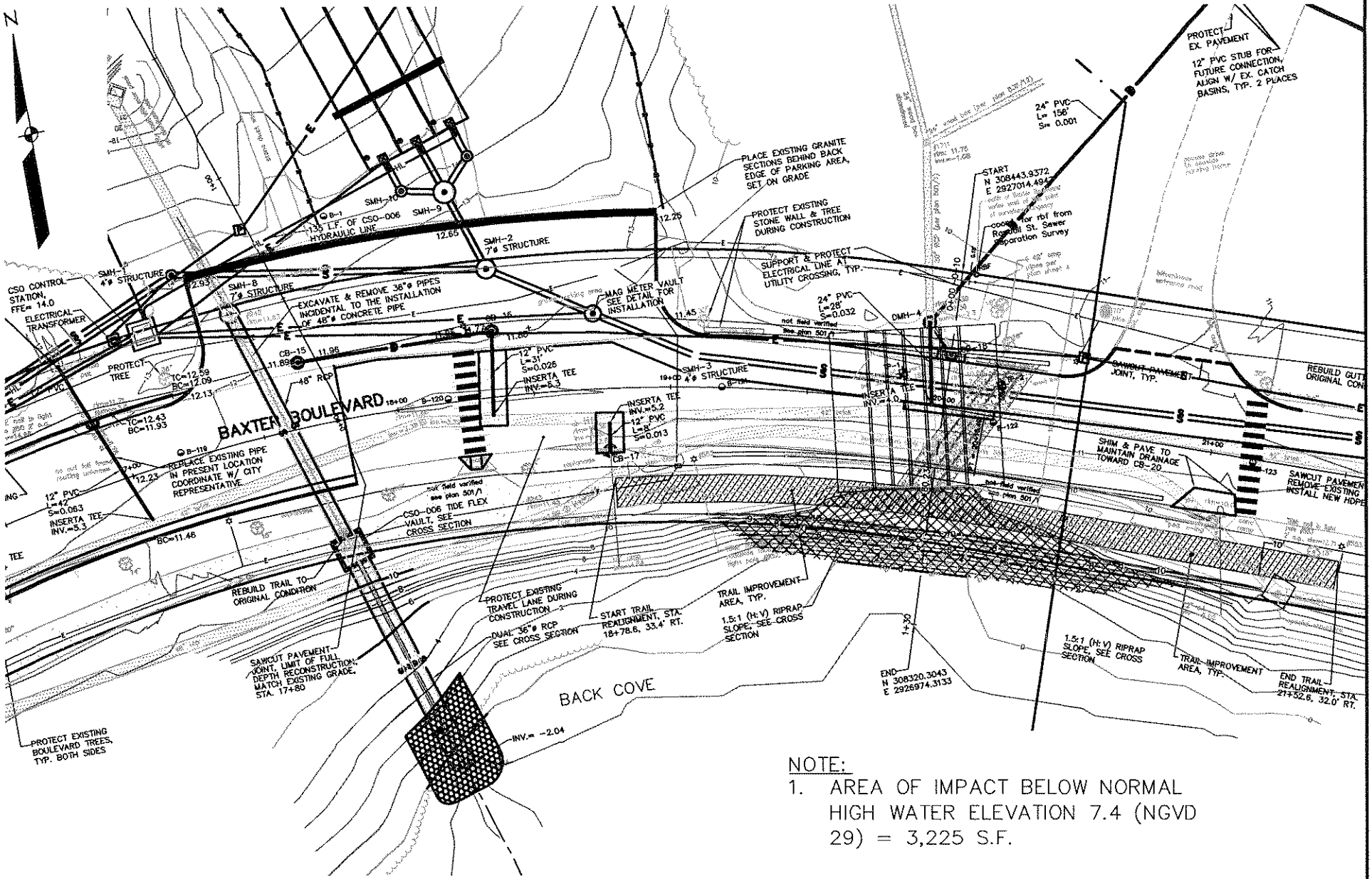


Figure 11: Proposed Mitigation Planting Areas



NOTE:

1. AREA OF IMPACT BELOW NORMAL HIGH WATER ELEVATION 7.4 (NGVD 29) = 3,225 S.F.

SEBAGO TECHNICS

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Tel. 207-783-5656

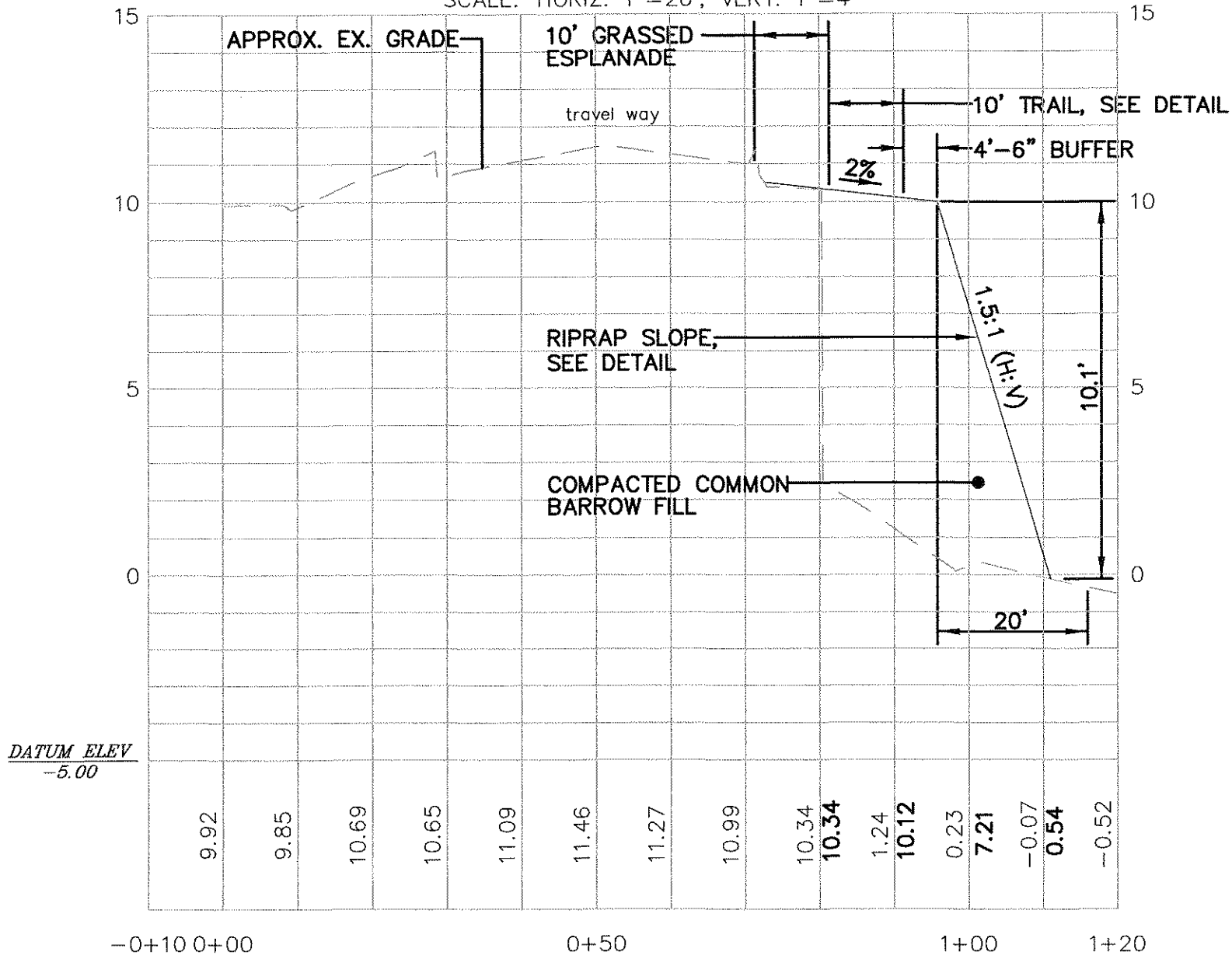
SITE PLAN
OF RIPRAP SLOPE

LOCATION: BAXTER BOULEVARD	FOR: CITY OF PORTLAND

SCALE:	1"=50'
DATE:	10-01-12
SHEET:	1 OF 3

09006pp1.dwg, TAB: army corps 1

TRAIL IMPROVEMENT AREA CROSS SECTION
SCALE: HORIZ. 1"=20', VERT. 1"=4'



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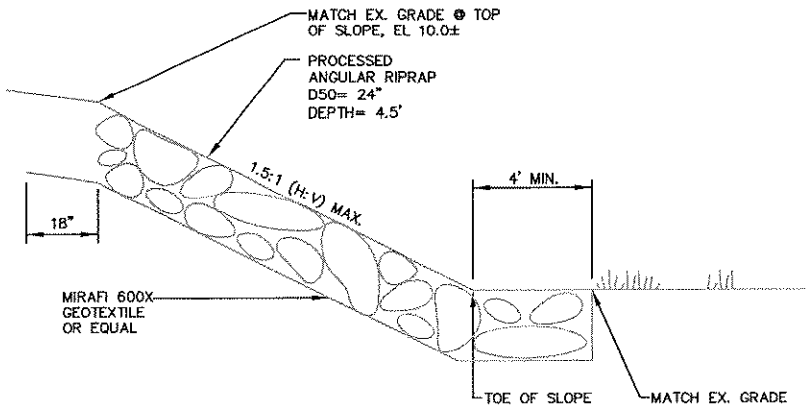
SECTION
OF RIPRAP SLOPE

LOCATION: BAXTER BOULEVARD

FOR: CITY OF PORTLAND

SCALE: 1"=20'
DATE: 10-01-12
SHEET: 2 OF 3

09006xs1.dwg, TAB: army corps 2



NOTES:
1. UNLESS NOTED OTHERWISE, RIPRAP SLOPE SHALL MATCH EXISTING GRADE, UNLESS SLOPE IS STEEPER THAN 1.5:1 (H:V).
2. INSTALL GEOTEXTILE FABRIC PER MANUFACTURER'S RECOMMENDATIONS.

TYPICAL RIPRAP SLOPE
NOT TO SCALE

RIPRAP SLOPE CONSTRUCTION NOTES

PRE-CONSTRUCTION

1. MEET ON SITE WITH OWNER, SITE CONTRACTOR, AND THE DESIGN ENGINEER TO DISCUSS SCOPE OF WORK AND EXPECTATIONS. DETERMINE LIMITS OF TIDAL "SPARTINA" GRASS.
2. CONTRACTOR SHALL HAVE ALL MATERIALS APPROVED BY THE DESIGN ENGINEER PRIOR TO INSTALLATION.
3. SEE LAYOUT & DEMOLITION PLAN FOR LIMITS OF EXISTING PIPE REMOVAL.

CONSTRUCTION PHASE

1. STABILIZE DISTURBED AREAS IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL BMP MANUAL, LATEST EDITION. SEE THE EROSION & SEDIMENT CONTROL NOTES AND PLAN FOR ADDITIONAL REQUIREMENTS. . PROTECT NEARBY TREES, WHICH ARE PROPOSED TO REMAIN. TO THE EXTENT PRACTICAL, PROTECT THE ROOT ZONE OF THESE TREES.
2. THE CONTRACTOR SHALL CONSIDER THE TIDE SCHEDULE CAREFULLY; AND SHALL SCHEDULE WORK TO AVOID INTERRUPTIONS OF DAYLIGHT WORKING HOURS WITH HIGH TIDES. WORKING WITHIN TIDAL WATERS IS NOT PERMITTED.
3. THE CONTRACTOR SHALL ONLY WORK IN AREAS THAT CAN BE COMPLETED DURING EACH CONSTRUCTION DAY. NO AREAS SHALL BE EXCAVATED BY THE CONTRACTOR AND LEFT EXPOSED, AS THESE AREAS WILL BE SUBJECT TO EROSION FROM TIDAL SURGES OR STORM EVENTS.
4. WITHIN VEGETATIVE AREA PROPOSED TO BE DISTURBED, CAREFULLY REMOVE THE TOP ORGANIC LAYER (12"±) BELOW ELEVATION DETERMINED AT PRECONSTRUCTION MEETING. REMOVE USING METHOD THAT WILL KEEP THE VEGETATION SYSTEM INTACT. STOCKPILE THE ORGANIC LAYER IN A MANNER SO THAT MATERIAL CAN BE REUSED. REMOVE ONLY ENOUGH VEGETATION NEEDED TO INSTALL THE TIDE GATE VAULT AND SEWER PIPE IN ACCORDANCE WITH THE CROSS-SECTION.
5. LOW PERMEABILITY DAMS OF NATURAL CLAY, BETONITE OR FLOWABLE FILL SHALL BE INSTALLED AS SHOWN TO MINIMIZE TIDAL FLOW THROUGH THE BACKFILL. DAMS SHALL EXTEND A MINIMUM 1 FOOT BELOW THE TRENCH BOTTOM, 1 FOOT BEYOND THE SIDEWALLS AND UP TO ELEVATION 7.8 OR TOP OF FINISHED GRADE. DAMS SHALL BE A MINIMUM OF 2 FEET THICKNESS.
6. INSTALL RIPRAP SLOPE IN ACCORDANCE WITH THE DETAILS. ONCE THE TIDE FLEX VAULT, SEWER PIPE, BOX CULVERT AND RIPRAP SLOPE ARE COMPLETELY INSTALLED, THE CONTRACTOR SHALL GRADE THE DISTURBED AREAS UNIFORMLY TO MATCH EXISTING TOPOGRAPHY (U.N.O.) AND THE NEW RIPRAP EDGE. SEE RIPRAP DETAIL.
7. PLACE EXISTING ORGANIC MATERIAL IN DISTURBED VEGETATIVE AREAS BELOW ELEVATION 10, WORKING FROM THE OUTFALL TO THE VAULT. DISTURBED VEGETATIVE AREAS ABOVE ELEVATION 10 SHALL HAVE LOAM AND SEED.
8. INSPECT THE SITE EVERY TWO WEEKS FOR SIGNS OF EROSION AND ESTABLISHMENT OF VEGETATION. REPAIR ERODED AREAS AND REPLANT VEGETATION TO ESTABLISH 75% VEGETATION CATCH, AS REQUIRED.
9. IN AREAS REQUIRING REPLANTING, INSTALL EROSION CONTROL FABRIC EQUAL TO NORTH AMERICAN GREEN C125BN PER MANUFACTURER'S RECOMMENDATIONS. USING RAZOR BLADE, CAREFULLY CUT HOLES 1 FOOT O.C. AND IN ROWS SPACED 1 FOOT. STAGGER HOLES BETWEEN ROWS. PLANT CORD GRASS SPARTINA PATENS (SALT MEADOW GRASS) AND SPARTINA ALTERNIFLORA (SMOOTH CORD GRASS) IN ALTERNATING FASHION.
10. VEGETATIVE PLUGS IN CUT HOLES.
11. CONTINUE TO INSPECT THE SITE EVERY TWO WEEKS FOR SIGNS OF EROSION AND ESTABLISHMENT OF VEGETATION.
12. THE COST OF REMOVING, STACKING AND REPLACING THE TOP ORGANIC LAYER IN AREAS DISTURBED ALONG BACK COVE FOR PIPE INSTALLATION SHALL BE CONSIDERED INCIDENTAL TO THE APPROPRIATE PIPE ITEM.

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DETAIL
OF RIPRAP SLOPE

LOCATION: BAXTER BOULEVARD	FOR: CITY OF PORTLAND	SCALE: NTS
		DATE: 10-01-12
		SHEET: 3 OF 3

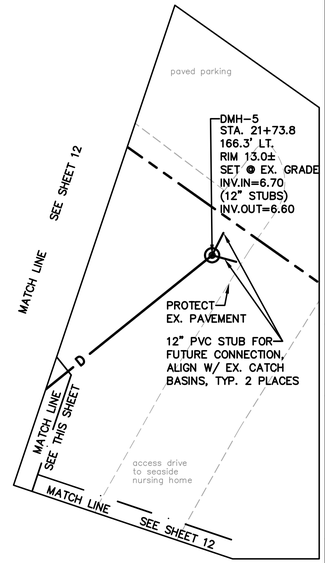
09006D.dwg, TAB: ARMY CORPS 3

N

GRID NAD 83

MATCH LINE SEE SHEET 10

MATCH LINE SEE THIS SHEET



NOTES:

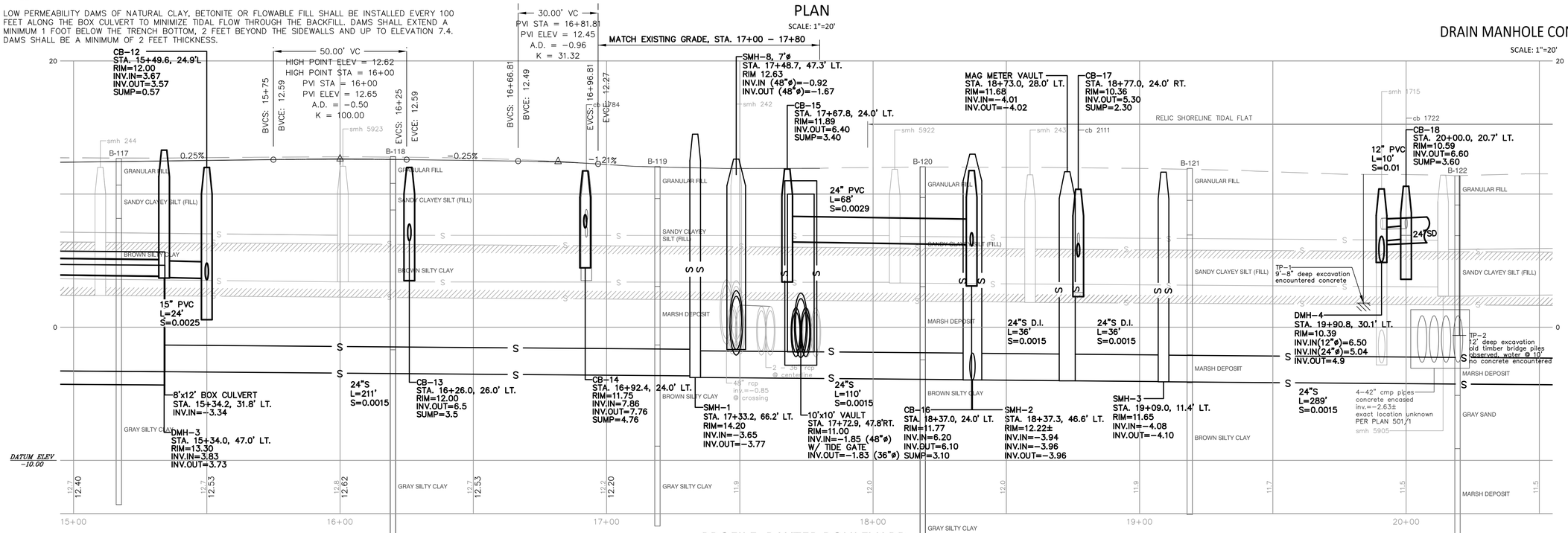
1. CONTRACTOR SHALL PROVIDE AND INSTALL BYPASS DURING CONSTRUCTION OF CSO-006 DIVERSION STRUCTURE. BYPASS PIPING SHALL BE CAPABLE OF PASSING 86 CFS (PREDICTED 25-YEAR STORM FLOW).
2. SEE CROSS SECTION FOR ADDITIONAL TRAIL REALIGNMENT CONSTRUCTION INFORMATION.
3. REFER TO DEMOLITION NOTES FOR INFORMATION ON OLD BRIDGE STRUCTURE BETWEEN STATIONS 9+59.0 AND 10+22.0.
4. LOW PERMEABILITY DAMS OF NATURAL CLAY, BETONITE OR FLOWABLE FILL SHALL BE INSTALLED EVERY 100 FEET ALONG THE BOX CULVERT TO MINIMIZE TIDAL FLOW THROUGH THE BACKFILL. DAMS SHALL EXTEND A MINIMUM 1 FOOT BELOW THE TRENCH BOTTOM, 2 FEET BEYOND THE SIDEWALLS AND UP TO ELEVATION 7.4. DAMS SHALL BE A MINIMUM OF 2 FEET THICKNESS.

PLAN

SCALE: 1"=20'

DRAIN MANHOLE CONNECTION

SCALE: 1"=20'



PROFILE: BAXTER BOULEVARD

STA. 15+00 TO 20+50
SCALE: HORZ. 1"=20'
VERT. 1"=4'

NOT FOR CONSTRUCTION

LDD PROJECT NAME:
BAXTER BOULEVARD
NORTH STORAGE CONDUIT
DRAWING NAME:
090066PP
FIELD BOOK USED:
N/A

REFERENCES:
090066pp1.dwg, TAB: BAXTER 15+00-20+50

DESIGNED BY:	OAM/CAB
DRAWN BY:	BRF/CAB
CHECKED BY:	OAM
SCALE:	AS NOTED
DATE:	10-01-2012

BAXTER BOULEVARD NORTH STORAGE CONDUIT

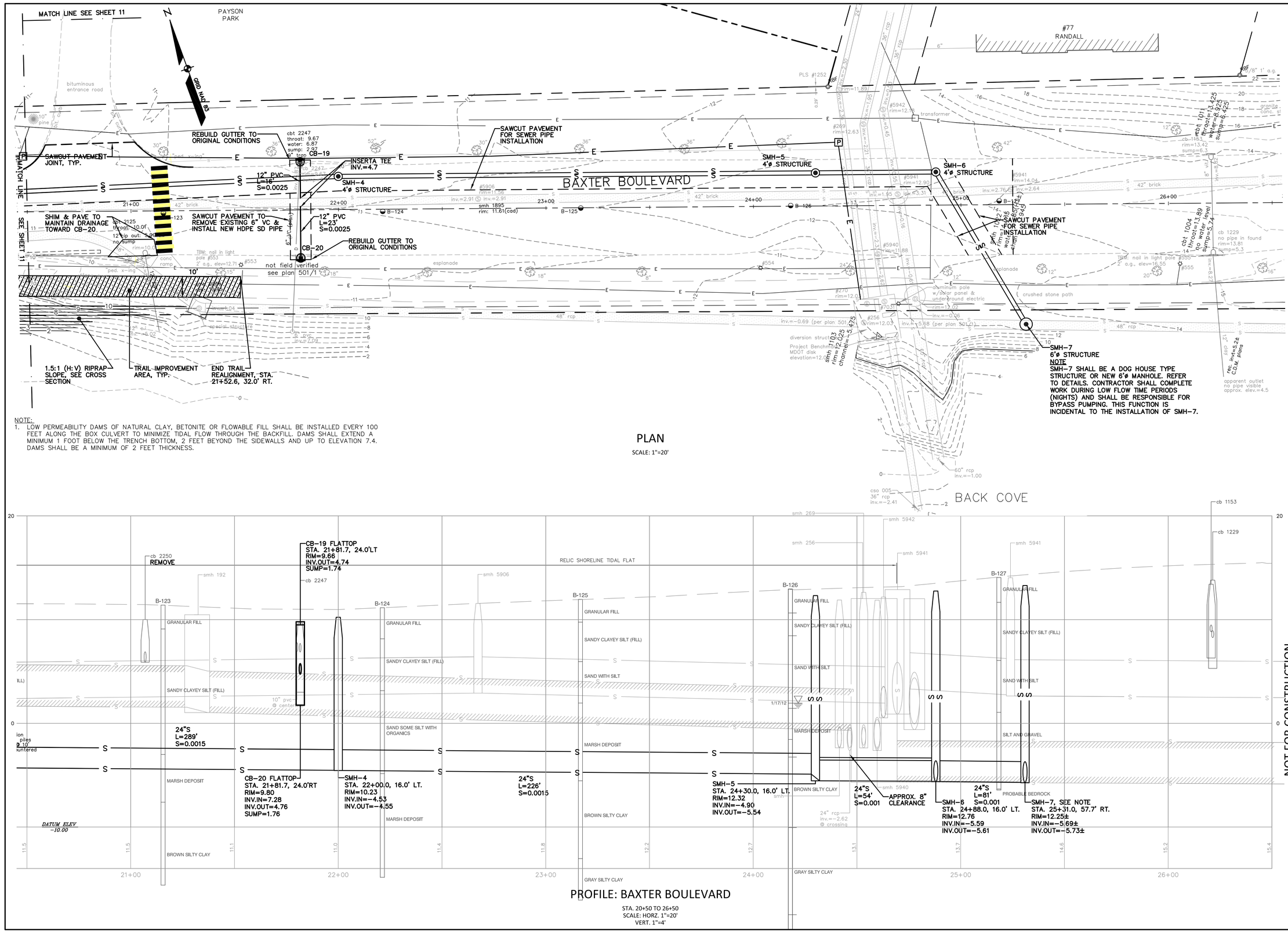
PLAN & PROFILE

STATIONS 15+00 TO 20+50

CITY OF PORTLAND, MAINE
PUBLIC SERVICES DEPARTMENT
ENGINEERING DIVISION

SHEET # 11 OF #PGS

PLAN NUMBER



NOTE:
1. LOW PERMEABILITY DAMS OF NATURAL CLAY, BETONITE OR FLOWABLE FILL SHALL BE INSTALLED EVERY 100 FEET ALONG THE BOX CULVERT TO MINIMIZE TIDAL FLOW THROUGH THE BACKFILL. DAMS SHALL EXTEND A MINIMUM 1 FOOT BELOW THE TRENCH BOTTOM, 2 FEET BEYOND THE SIDEWALLS AND UP TO ELEVATION 7.4. DAMS SHALL BE A MINIMUM OF 2 FEET THICKNESS.

PLAN

SCALE: 1"=20'

PROFILE: BAXTER BOULEVARD

STA. 20+50 TO 26+50
SCALE: HORZ. 1"=20'
VERT. 1"=4'

NOT FOR CONSTRUCTION

LDD PROJECT NAME:
BAXTER BOULEVARD
NORTH STORAGE CONDUIT
DRAWING NAME:
09006PP

FIELD BOOK USED:
N/A

REFERENCES:
09006pp1.dwg, TAB:BAXTER 20+50-26+50

DESIGNED BY:	OAM/CAB
DRAWN BY:	BRF/CAB
CHECKED BY:	OAM
SCALE:	AS NOTED
DATE:	10-01-2012

BAXTER BOULEVARD NORTH STORAGE CONDUIT
PLAN & PROFILE
STATIONS 20+50 TO 26+50

CITY OF PORTLAND, MAINE
PUBLIC SERVICES DEPARTMENT
ENGINEERING DIVISION

SHEET # 12 OF #PGS

PLAN NUMBER