



engineering and constructing a better tomorrow

May 10, 2011

Mr. Joseph T. Martella II, Senior Engineer  
RIDEM Office of Waste Management  
Site Remediation Program  
235 Promenade Street  
Providence, RI 02908

**RE: Park Parcel Phase I  
Recommended Remedial Action  
Former Gorham Manufacturing Facility  
333 Adelaide Avenue, Providence, Rhode Island  
MACTEC Project No. 3650100157.01**

Dear Mr. Martella:

On behalf of Textron, this letter summarizes the recommended remedial action for the Phase I area of the Park Parcel on Parcel D of the Former Gorham Manufacturing Site in Providence, Rhode Island (Figure 1). The Phase I area extends from the western end of Adelaide Avenue north and east to the storm water detention basin behind the retail building. The original remedial approach was selected from among the three alternatives, presented in the July 2006 Supplemental Site Investigation Report (SIR) and June 2007 Supplemental SIR Report Addendum, and as detailed in the July 2007 Draft Remedial Action Work Plan (RAWP).

Based on recent discussions between Textron and the Rhode Island Department of Environmental Management (RIDEM), the Phase I area remediation of the Park Parcel has been revised to incorporate the following documents and actions:

- Supplemental remedial actions outlined in the Supplemental Removal Action Work Plan, dated October 26, 2006, regarding additional response actions at the former slag pile area;
- Response to RIDEM Comments by Textron, dated February 27, 2007, regarding the soil removal from the western peninsula; and
- Results of the site walk of RIDEM and MACTEC in August 2010 regarding the extent of the soil cover and impermeable cap over the former slag pile area.

### **Park Parcel Phase I Remediation**

A phased remediation approach has been developed for the entire Park Parcel. Phase I will occur first and includes the portion of the Park Parcel that is closest to the High School (Parcel B) and proposed open space/fields (Parcel C). Phase II consists of Mashapaug Cove and Phase III consists of the open area north of the stormwater detention basin that will be used for the staging of materials and equipment necessary to complete Phase I and Phase II activities. This area will be referred to as the “lay down” area for the remainder of this document. Groundwater remediation is also being planned for the former Gorham Site.

### **Western Shoreline Soil Excavation**

Concentrations of petroleum aromatic hydrocarbons (PAHs), lead and dioxin exceeding RIDEM’s applicable cleanup standards were detected in surface soils along the western shoreline of Parcel D. These isolated locations will be excavated and the soil moved to a nearby area of the Phase I Park Parcel proposed for soil cover. These soil removal areas include the southwestern corner of Parcel D at SS-210/SS-SI210 (PAHs and lead) within a storm water drainage ditch (Attachment A, Drawing C-106) and two locations on the western peninsula near SS-206 (lead and dioxin), as shown on Attachment A, Drawing C-101. Soil will be removed from these areas, approximately 10 feet x 10 feet to a depth of one foot below ground surface. Confirmatory soil samples will be collected from the bottom of the excavation areas for comparison to RI Residential DEC for PAHs, metals and risk-based derived dioxin concentration of 0.0043 micrograms per kilogram ( $\mu\text{g}/\text{kg}$ ) or parts per trillion (July 2006 SIR). Once these cleanup criteria are met, the three areas will be backfilled with clean material.

The excavated area at SS-210/SS-SI210 will be covered with geotextile fabric and backfilled with stone from the Former Slag Pile stockpile in order to secure this area within the storm water drainage ditch. The two western peninsula locations will be backfilled with clean soil meeting RI residential DEC criteria. Limited tree clearing will be conducted to access these locations and support the removal of soil and backfill with clean material.

### **Former Slag Area Removal and Testing**

In response to RIDEM comments regarding the potential leaching of metals from the soil within the former slag pile area, soil will be excavated at two locations in the former slag pile area (Figure 2) and transported offsite for disposal. Following removal of soil from the two locations, up to ten test pits will be conducted along the perimeter of the former slag pile removal area (Figure 2) and at locations

within the former slag pile. These test pit locations will be coordinated with RIDEM. Confirmatory soil sampling will be conducted at the excavations and test pits for total lead and Synthetic Precipitation Leaching Procedure (SPLP) for metals. This data will be used to determine future soil management requirements, as necessary.

### **Park Parcel Soil Cap**

The Phase I remedial action will also include the installation of soil caps as shown on Attachment A, Drawings C-104, C-105 and C-106. The soil caps will contain historic fill material, prevent direct contact exposure, and restrict the potential migration of contaminants through the action of wind erosion and surface run-off into Mashapaug Pond. The low-permeability section of the cap above the former slag area will restrict water infiltration and reduce potential leaching of metals from vadose zone soil to groundwater. This is viewed as a conservative measure as historic groundwater monitoring data from monitoring well GZA-5, which was located within the footprint of the former slag pile prior to its removal, did not indicate that metals were leaching from the slag pile.

The Phase I soil cap contains three distinct components. These components are color-coded on Attachment A, Drawings C-104, C-105 and C-106, and include a fill area cap (blue), a wetland buffer cap (green), and a former slag area cap (yellow). Refer to Attachment A, Drawing C-503 for cross sections of the cap across Phase I. All of the trees located within the proposed cap areas will be removed and chipped prior to grading and construction of the soil caps.

Fill Area Cap: The fill area extends along the top of the western slope and extends along the shoreline of the Mashapaug Inner Cove (Attachment A, Drawings C-104, C-105 and C-106). This fill material consists of casting sands, concrete, rubble, and other debris. The fill was historically characterized through soil borings and test pits. Soil excavated from SS-210/SS-SI210 will be spread within the southwestern most fill area (Attachment A, Drawing C-106) and capped. Soil removed from the western peninsula will be spread under the fill area cap south of Mashapaug Inner Cove. The fill areas (blue) will be capped with two feet of clean soil (18" cover soil and 6" topsoil). The finished surface will be seeded or stabilized with erosion control matting. The fill area cap located along Parcels B and C will match the existing grade at the High School and proposed grade at the Parcel C boundaries. Note that the soil cap in the northwest corner of Parcel C has been extended to follow the grade and fill material further down slope to address elevated PAHs, lead and dioxin concentrations within the drainage swale (SS-SI-001) (Attachment A, Drawing C-106). The soil cap along the western shoreline

has been extended south to the base of the 24-inch tree (co-located with SS-106) to encompass the historical lead exceedance found in this area (Attachment A, Drawing C-106).

Wetland Buffer Cap: As the Park Parcel cap abuts the shore of Mashapaug Cove, special considerations for wetlands have been included as part of Phase I. The wetland buffer cap consists of the area within 50' of the Inner Cove shoreline. The wetland delineation was completed in May 2007 and the location of the wetland boundary and high water mark was surveyed. Refer to Attachment A, Drawings C-104 and C-105 for the location of these site features. The “delineated” wetlands are typically located 5' to 10' upland from the shoreline. Thus, the limit of work (LOW) for Phase I will be along a 10' setback from the shoreline of Mashapaug Cove such that all of the remediation work within the freshwater wetlands will be conducted in the future as part of the Mashapaug Cove sediment remediation (Phase II Park Parcel remediation). This will allow for improved access to the wetland area for the capping and construction of a natural transition zone from the wetlands into the Cove (Attachment A, Drawing C-503). Note that the wetland cap has been extended to include SD-002 (lead contaminated soil), as shown in Attachment A, Drawing C-104. In accordance with state regulations, remediation activities in the wetland shall be exempt from the State wetland regulations as this work is part of a remedial action under the RIDEM Remediation Regulations. However, future construction work within the Park Parcel not conducted under the Remediation Regulations will need to comply with the state wetland regulations.

The contractor will attempt to save as many large trees within the buffer zone as possible as these provide habitat for the Mashapaug Cove wildlife. Clearing and grubbing of the wetland buffer zone scrub material will be conducted to support the installation of the soil cap. One foot of soil at the toe of the LOW will be removed to allow the soil cap to key into the existing grade above the wetland boundary. Twelve inches of clean soil will then be spread throughout the buffer zone to provide the soil cap. The finished surface for the wetland buffer cap will be stabilized with erosion control matting, and wetland vegetation will be planted. The July 2007 Draft RAWP includes the proposed wetland restoration and planting plan details.

Former Slag Area Cap: Following the grading of the existing soil, the former slag area will be capped with 6” sand, 40-mil geomembrane, drainage composite layer, 12” clean cover soil, and 6” clean fill topsoil (Attachment A, Drawing C-503). The finished surface of the former slag area will be seeded or stabilized with erosion control matting. The haul road access to the former slag area will be improved during construction and removed after construction is complete.

Fencing: The existing chain link fence will be relocated along the boundary between Parcels C and D, extending from Adelaide Avenue to the existing chain link fence in the northwest corner of the high school parking lot. The chain link fence and access gate in the northwest corner of the retail property will be replaced or reset and will extend east to the storm water detention basin fencing.

This fence will remain in place until all three phases of remediation on the Park Parcel have been completed or when the City of Providence has completed the installation of the planned walking path and fence/plantings along the water side of the path to restrict access to the steep slope down to the shoreline and until the Mashapaug Cove sediments (Phase II) and remaining Park Parcel surface soils have been remediated (Phase III).

### **Groundwater Monitoring Wells**

As groundwater infiltration and flow from the Park Parcel to Mashapaug Pond play a critical role in the Site conceptual model, MACTEC will restore monitoring well GZA-5 and maintain existing monitoring wells within the Phase I Cap. These monitoring wells will provide information about groundwater flow and aid in monitoring of remedial actions. Monitoring well GZA-5 was removed during the slag excavation activities in the summer of 2006 and will be re-installed through the Phase I Cap as a shallow well to straddle the groundwater table (Attachment A, Drawing C-105). The number of existing monitoring wells maintained during the soil cap construction may be modified pending the design of the groundwater treatment system and monitoring network.

Existing monitoring wells within the cap (e.g., GZA-3) will be secured and maintained during the construction of the soil cap. Also, a new shallow monitoring well will be installed on the east side of the former slag area cap, outside the cap and close to the edge of the cove. This new well, together with the reinstalled GZA-5 and MW-237S (located on the west side of the former slag area cap), will be included in a targeted monitoring program for potential leaching of metals from the former slag pile area. The future groundwater monitoring program for the Phase I Park Parcel will be developed within the revised RAWP for review and approval by RIDEM.

### **Proposed Actions**

Based on the surface and subsurface soil results collected between 1998 and 2007 for the Park Parcel Phase I area and our site walk with RIDEM in August 2010, the site investigation has now been completed. Textron has subsequently revised the proposed remedial action from the July 2007 Draft

RAWP to incorporate recent agreements with RIDEM. This proposed Phase I Park Parcel remedial action will not interfere with any future groundwater remedy as well as the Phase II and Phase III remedies proposed for the Site.

Textron seeks a program letter from RIDEM based on the recommended remedial action for the Phase I area of the Park Parcel. With the program letter in place, Textron and RIDEM can plan a public meeting and response to comments and schedule the remediation of the Park Parcel Phase I area (Parcel D).

Please call Greg Simpson (401-457-2635) or David Heislein (781-213-5655) if you have any questions and to schedule a project status meeting to discuss this remedial action and the path forward.

Sincerely,

**MACTEC Engineering and Consulting, Inc.**



David E. Heislein  
Project Manager



Philip J. Muller  
Project Engineer  
for PJM with permission

Attachments: Figure 1 – Site Location  
Figure 2 – Former Slag Pile Area Supplemental Removal Action  
Attachment A Preliminary Design Drawings

cc: T. Deller, City of Providence  
A. Rose, Environmental Justice League of Rhode Island  
G. Simpson, Textron, Inc. (Electronic)

MACTEC Project File [P:\3650\00157 - Textron Gorham\4.0 Project Deliverables\4.1 Reports\Park Parcel Phase I Remediation\c10510ra.docx]



**Legend**

--- Approximate Parcel Boundaries

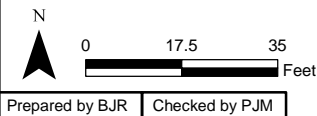
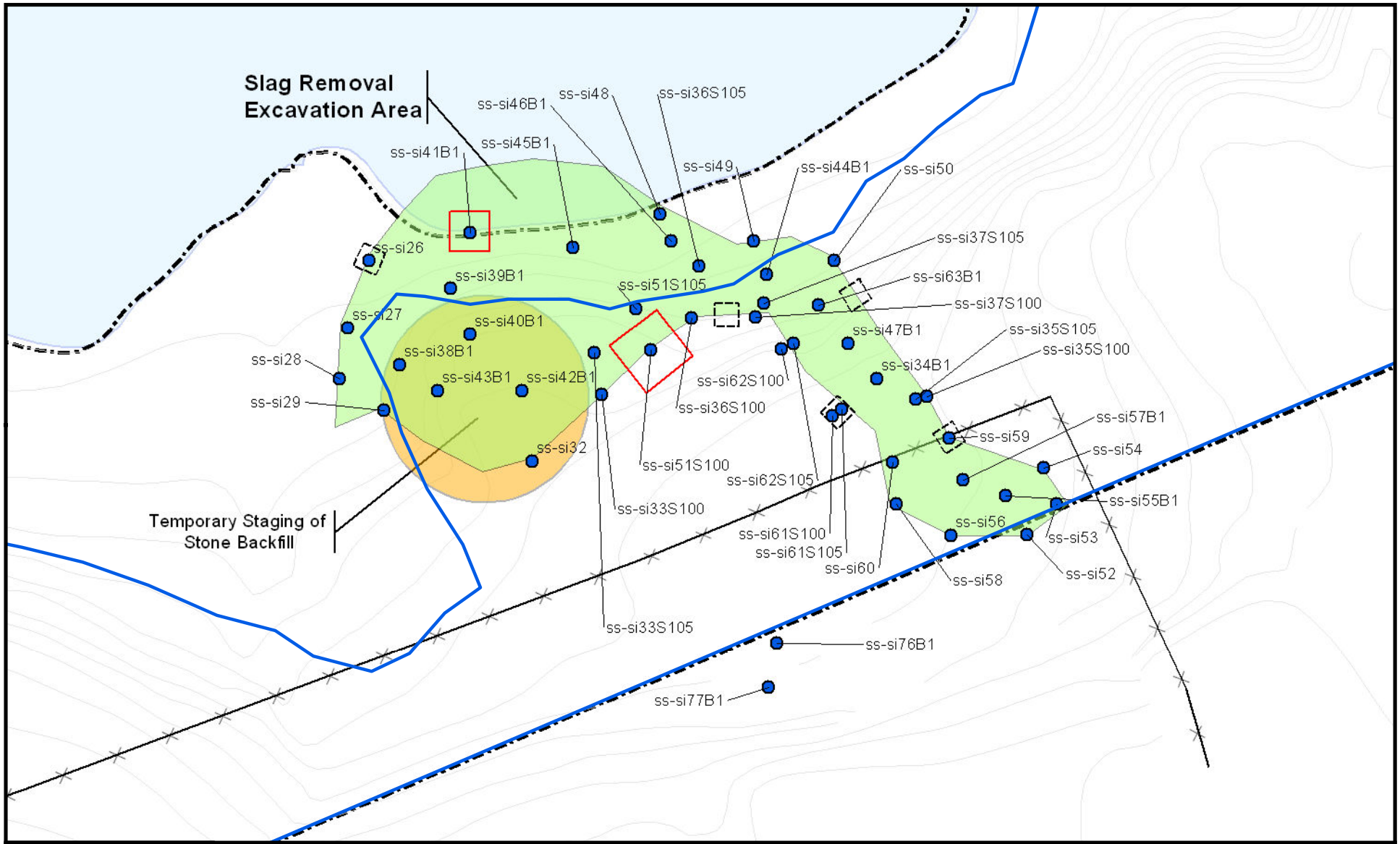
N

0 175 350 Feet

Prepared by BJR	Checked by PJM
-----------------	----------------

Figure 1  
Site Location

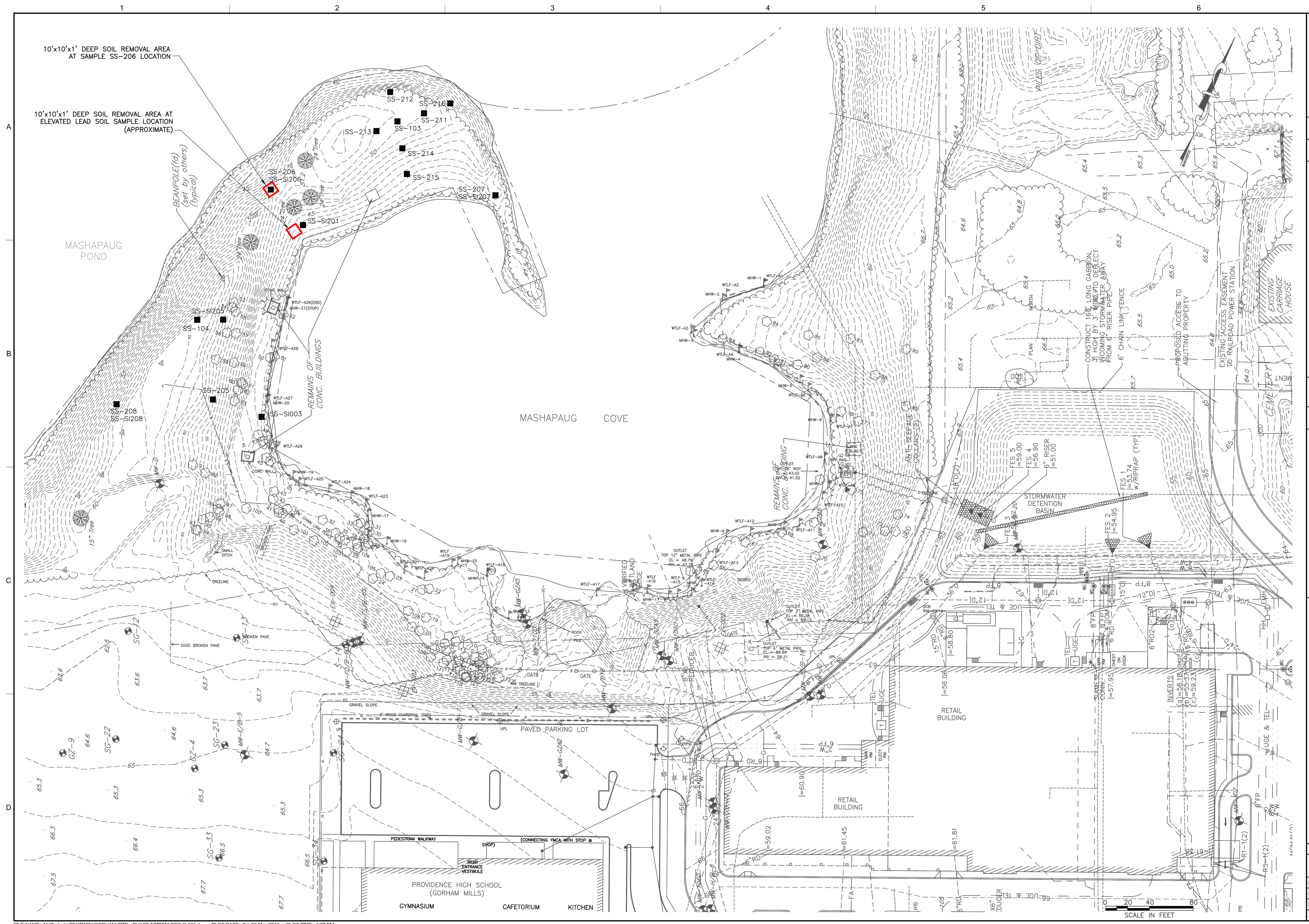
333 Adelaide Avenue  
Providence, RI  
MACTEC, Inc.



- Legend**
- Approximate Fill Area
  - Additional Removal Area
  - Test Pit (Final Locations To Be Determined In Field)
  - Previous Sample Locations
  - Initially Excavated Area
  - City Fence
  - Elevation
  - Approximate Park Parcel Boundary
  - Mashapaug Cove

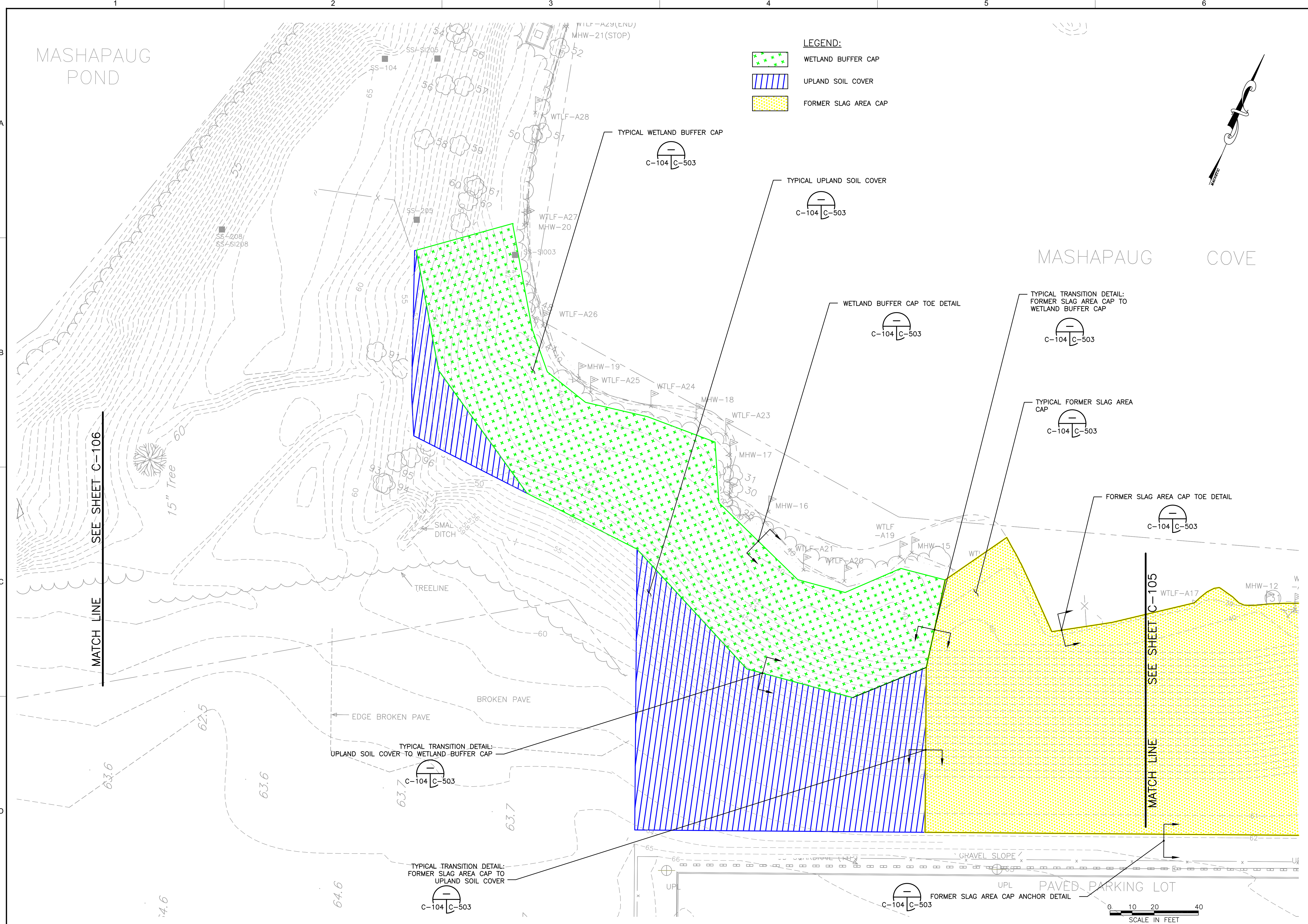
Figure 2  
 Former Slag Pile Area  
 Supplemental Removal Action  
  
 333 Adelaide Avenue  
 Providence, Rhode Island



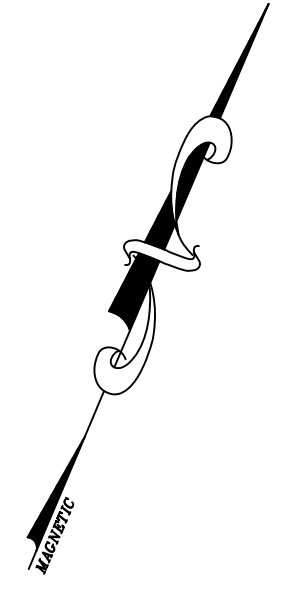


		<b>CIVIL</b> <b>EXISTING CONDITION AND SOIL REMOVAL PLAN</b>	
Remedial Design - Phase 1 Recreational Cap FORMER GORHAM MANUFACTURING SITE 333 Adelaide Avenue Providence, Rhode Island			
MACTEC Engineering and Consulting, Inc. P.O. Box 7050, 511 Congress Street Providence, RI 02902-7050 (401) 775-5401		VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING.	
DATE	6/29/07	PROJ	3650050041
DWG	C-101	SHEET	3 OF 16
SUBMITTAL TO RIDEM DRAFT SUBMITTAL TO RIDEM		REVISION CHECK DR JPM DEH APVD	
NO. DATE B 5/06/11 A 6/29/07		DSGN JPM DEH APVD	

THIS DRAWING IS THE PROPERTY OF MACTEC, INCLUDING ALL PATENTED AND PATENTABLE FEATURES, AND/OR CONFIDENTIAL INFORMATION AND ITS USE IS CONDITIONED UPON THE USER'S AGREEMENT NOT TO REPRODUCE THE DRAWING, IN WHOLE OR PART, NOR THE MATERIAL DESCRIBED THEREON, NOR THE USE OF THE DRAWING FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY MACTEC.

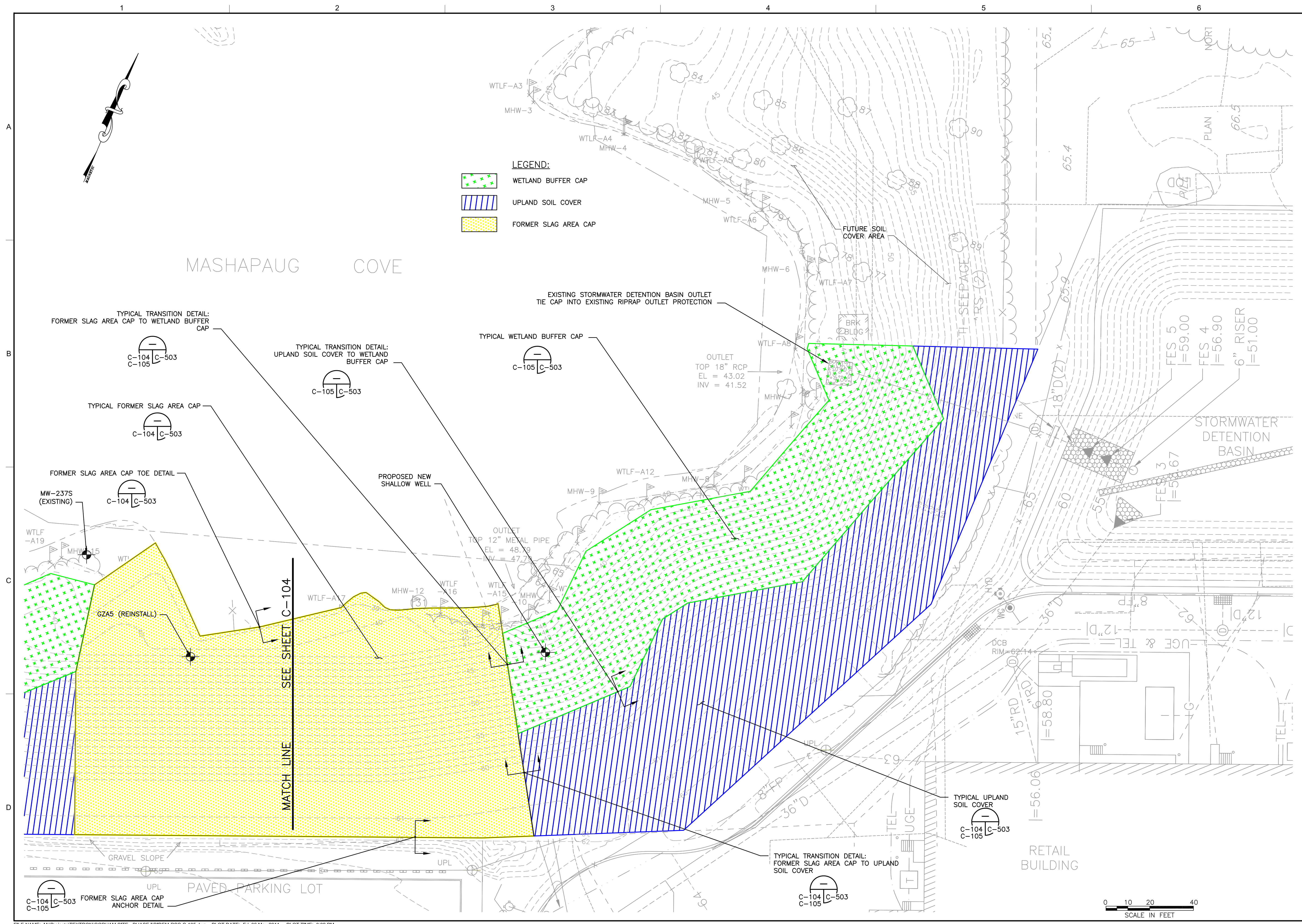


- LEGEND:**
- WETLAND BUFFER CAP
  - UPLAND SOIL COVER
  - FORMER SLAG AREA CAP



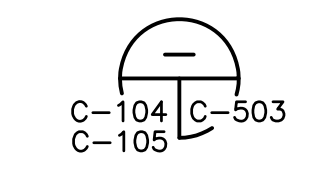
<p><b>MACTEC</b></p> <p>MACTEC Engineering and Consulting, Inc.          P.O. Box 7050, 511 Congress Street          Providence, Rhode Island 02902          (401) 775-5401</p>		<p><b>CIVIL</b></p> <p><b>FINAL GRADE PLAN 1</b></p>		<p>Remedial Design - Phase 1 Recreational Cap          FORMER GORHAM MANUFACTURING SITE          333 Adelaide Avenue          Providence, Rhode Island</p>	
DATE	6/29/07	NO.	A	DATE	6/29/07
PROJ	3650050041	NO.	B	DATE	5/06/11
DWG	C-104	NO.	A	DATE	6/29/07
SHEET	6 OF 16	NO.	A	DATE	6/29/07
REVISION	BY	CHK	APVD	REVISION	BY
SUBMITTAL TO RIDEM	JPM	RHH	APVD	DRAFT SUBMITTAL TO RIDEM	JPM
JPM	DR	RHH	APVD	JPM	DR
WJW	DEH	APVD	WJW	DEH	APVD

VERIFY SCALE  
 BAR IS ONE INCH ON ORIGINAL DRAWING.  
 DATE 6/29/07  
 PROJ 3650050041  
 DWG C-104  
 SHEET 6 OF 16

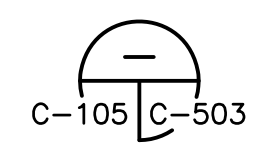


- LEGEND:**
- WETLAND BUFFER CAP
  - UPLAND SOIL COVER
  - FORMER SLAG AREA CAP

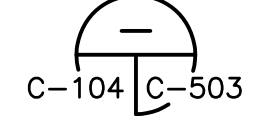
TYPICAL TRANSITION DETAIL:  
FORMER SLAG AREA CAP TO WETLAND BUFFER CAP



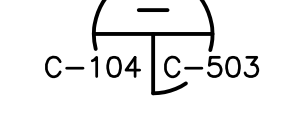
TYPICAL TRANSITION DETAIL:  
UPLAND SOIL COVER TO WETLAND BUFFER CAP



TYPICAL FORMER SLAG AREA CAP



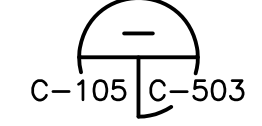
FORMER SLAG AREA CAP TOE DETAIL



MW-237S  
(EXISTING)

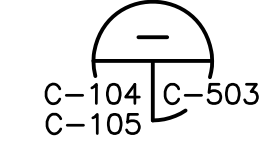
PROPOSED NEW  
SHALLOW WELL

TYPICAL WETLAND BUFFER CAP

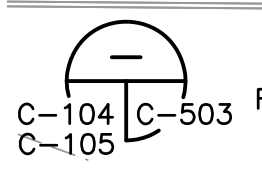


OUTLET  
TOP 12" METAL PIPE  
EL = 48.79  
INV = 47.23

TYPICAL TRANSITION DETAIL:  
FORMER SLAG AREA CAP TO UPLAND  
SOIL COVER

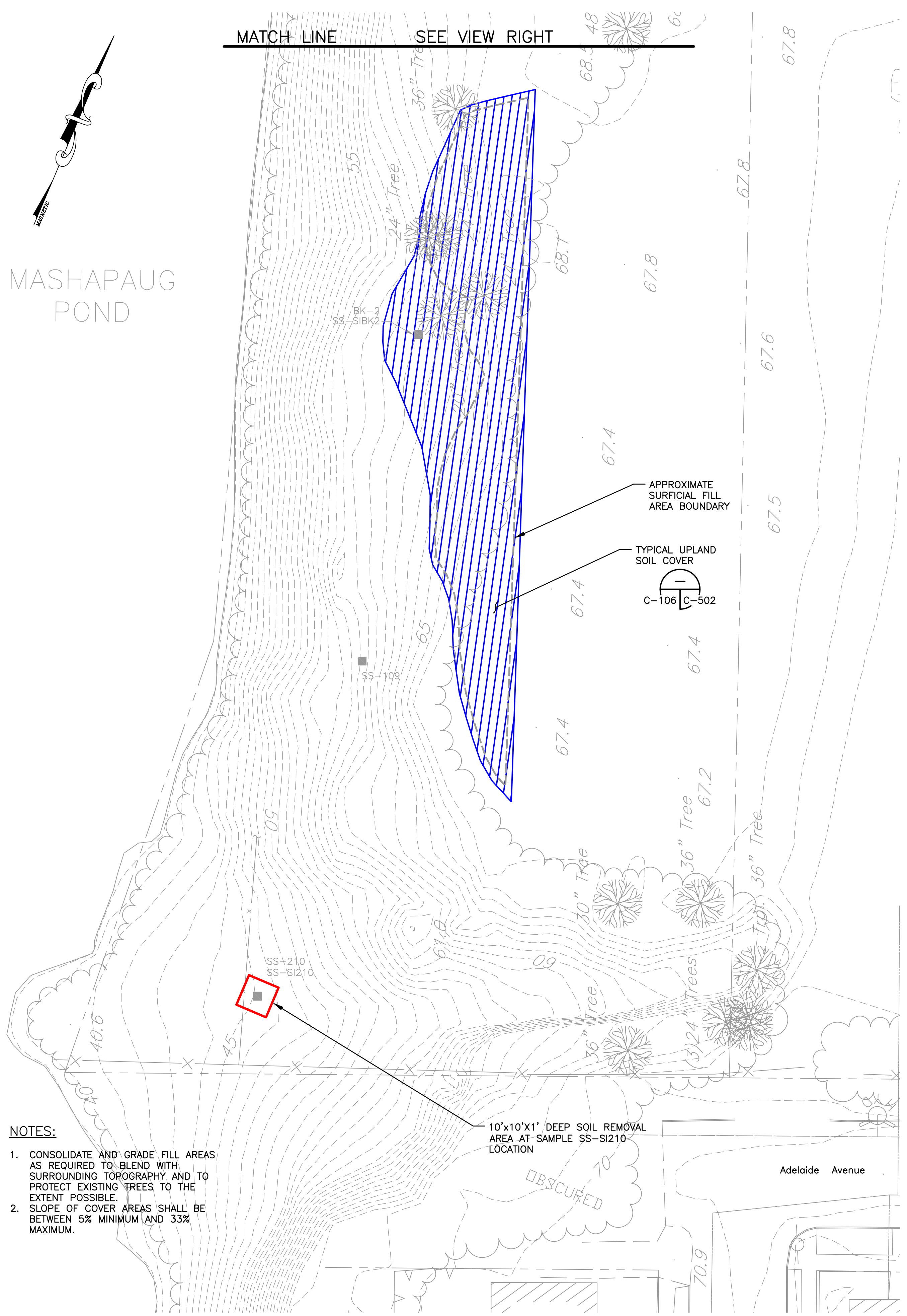


FORMER SLAG AREA CAP  
ANCHOR DETAIL



		<b>CIVIL</b> <b>FINAL GRADE PLAN 2</b>	
MACTEC Engineering and Consulting, Inc. P.O. Box 7050, 511 Congress Street Providence, Rhode Island 02902 (401) 775-5401		Remedial Design - Phase 1 Recreational Cap FORMER GORHAM MANUFACTURING SITE 333 Adelade Avenue Providence, Rhode Island	
VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING.		DATE: 6/29/07 PROJ: 3650050041 DWG: C-105 SHEET: 7 OF 16	
REVISIONS:		DSGN: JPM DR: DR CHK: RHH DEH: DEH WJW: WJW	
NO. DATE A 6/29/07 B 5/06/11		REVISION DRAFT SUBMITTAL TO RIDEM SUBMITTAL TO RIDEM	
BY: JPM DEH APVD: WJW		BY: JPM DEH APVD: WJW	

MASHAPAUG POND

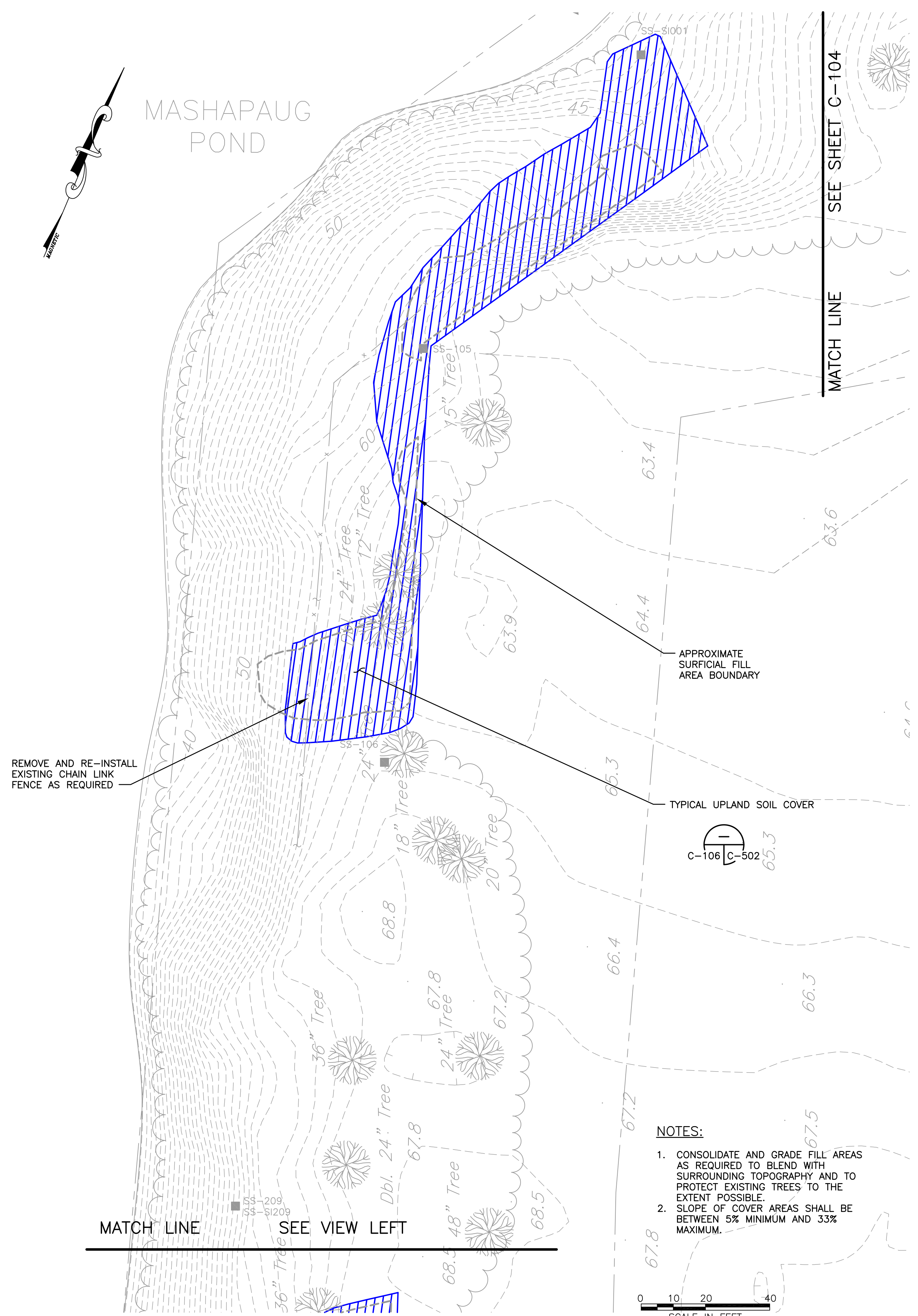


- NOTES:**
1. CONSOLIDATE AND GRADE FILL AREAS AS REQUIRED TO BLEND WITH SURROUNDING TOPOGRAPHY AND TO PROTECT EXISTING TREES TO THE EXTENT POSSIBLE.
  2. SLOPE OF COVER AREAS SHALL BE BETWEEN 5% MINIMUM AND 33% MAXIMUM.

10'x10'x1' DEEP SOIL REMOVAL AREA AT SAMPLE SS-SI210 LOCATION

APPROXIMATE SURFICIAL FILL AREA BOUNDARY  
TYPICAL UPLAND SOIL COVER  
C-106 C-502

MASHAPAUG POND



- NOTES:**
1. CONSOLIDATE AND GRADE FILL AREAS AS REQUIRED TO BLEND WITH SURROUNDING TOPOGRAPHY AND TO PROTECT EXISTING TREES TO THE EXTENT POSSIBLE.
  2. SLOPE OF COVER AREAS SHALL BE BETWEEN 5% MINIMUM AND 33% MAXIMUM.

TYPICAL UPLAND SOIL COVER  
C-106 C-502

REMOVE AND RE-INSTALL EXISTING CHAIN LINK FENCE AS REQUIRED

MATCH LINE SEE VIEW LEFT



MACTEC Engineering and Consulting, Inc.  
P.O. Box 7050, 511 Congress Street  
Providence, RI 02902  
(401) 775-5401

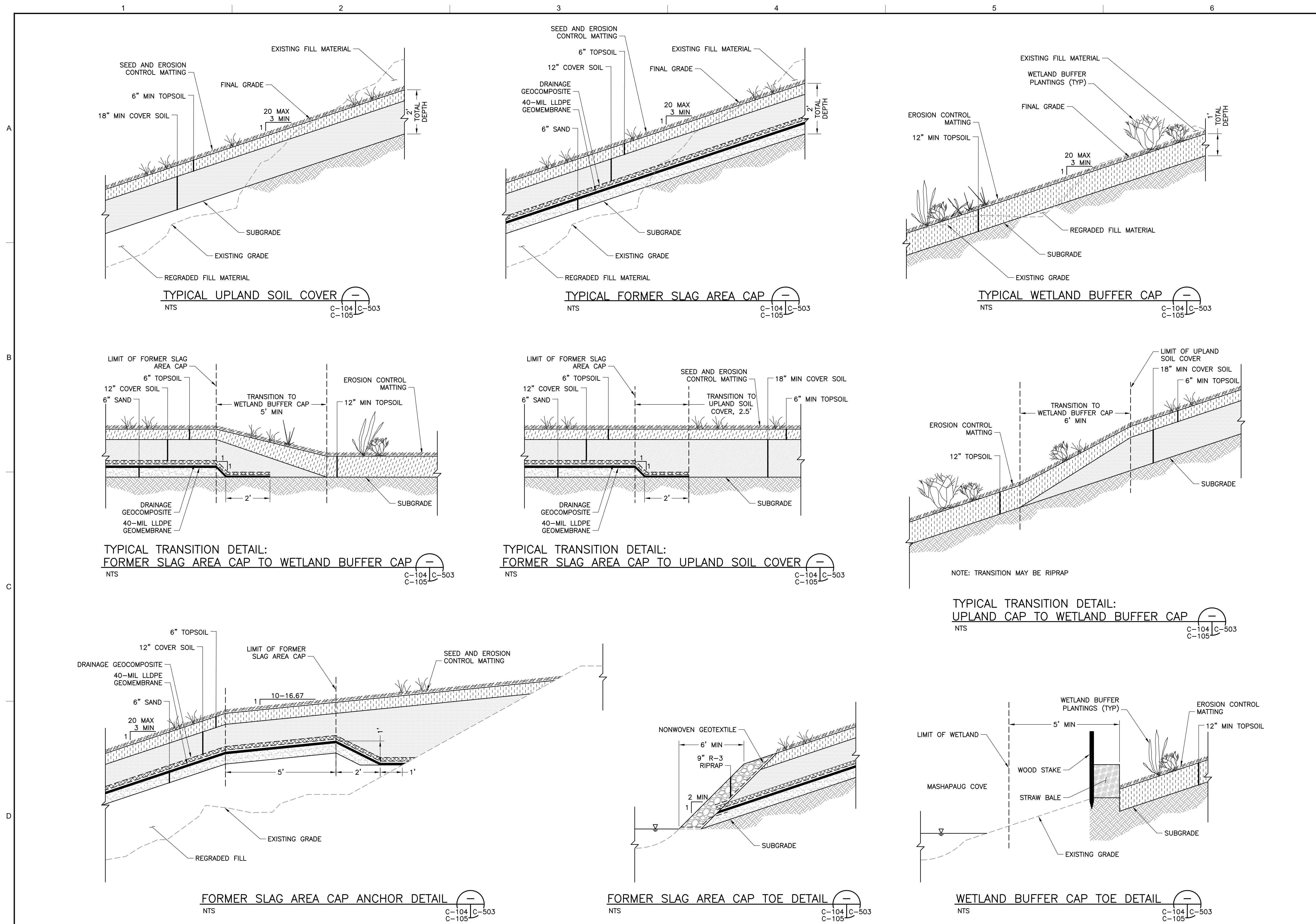
**MACTEC**  
CIVIL  
**FILL AREA REMEDIATION**

Remedial Design - Phase 1 Recreational Cap  
FORMER GORHAM MANUFACTURING SITE  
333 Adelaide Avenue  
Providence, Rhode Island

DATE	6/29/07
PROJ	3650050041
DWG	C-106
SHEET	8 OF 16

NO.	DATE	DR	CHK	APVD
B	5/06/11	JPM	RHH	DEH
A	6/29/07	JPM	CHK	APVD
REVISION				
SUBMITTAL TO RIDEM				
DRAFT SUBMITTAL TO RIDEM				
JPM	DEH	WJW		

THIS DRAWING IS THE PROPERTY OF MACTEC, INCLUDING ALL PATENTED AND PATENTABLE FEATURES, AND/OR CONFIDENTIAL INFORMATION AND ITS USE IS CONDITIONED UPON THE USER'S AGREEMENT NOT TO REPRODUCE THE DRAWING, IN WHOLE OR PART, NOR THE MATERIAL DESCRIBED THEREON, NOR THE USE OF THE DRAWING FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY MACTEC.



SUBMITTAL TO RIDEM		BY		APVD		WJW	
DRAFT SUBMITTAL TO RIDEM		JPM		DEH		DEH	
REVISION		CHK		APVD		KLH	
NO.		DATE		DSGN		JPM	
B		5/06/11		A		6/29/07	
Remedial Design - Phase 1 Recreational Cap		FORMER GORHAM MANUFACTURING SITE		333 Adelante Avenue		Providence, Rhode Island	
MACTEC Engineering and Consulting, Inc.		P.O. Box 7050, 511 Congress Street		Providence, RI 02902		(207) 775-5401	
CIVIL		CIVIL DETAILS 1		VERIFY SCALE		BAR IS ONE INCH ON ORIGINAL DRAWING.	
DATE		6/29/07		PROJ		3650050041	
DWG		C-503		SHEET		14 OF 16	

THIS DRAWING IS THE PROPERTY OF MACTEC, INCLUDING ALL PATENTED AND PATENTABLE FEATURES, AND/OR CONFIDENTIAL INFORMATION AND ITS USE IS CONDITIONED UPON THE USER'S AGREEMENT NOT TO REPRODUCE THE DRAWING, IN WHOLE OR PART, NOR THE MATERIAL DESCRIBED THEREON, NOR THE USE OF THE DRAWING FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY MACTEC.