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Union Pacific Railroad

Environmental Management Group
9451 Atkinson Street, Suite 100 ☐ Roseville, California 95747
Lauren A. Mancuso (916) 789-5184
Manager Environmental Site Remediation Facsimile (402) 501-2396

June 22, 2015

Ms. Karel Detterman
Alameda County Health Care Services Agency
Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: Submittal of the Addendum to the Revised Surface Improvement Work Plan, 744 and 758 High Street, Oakland, California, Fuel Leak Case No. RO1135 and GeoTracker Global ID T0600101305

Dear Ms. Detterman:

On behalf of Union Pacific Railroad (UPRR), enclosed is the Addendum to the Revised Surface Improvement Work Plan (work plan), which describes the plan to conduct surface improvements at the 744 and 758 High Street site in Oakland, California. This work plan was revised in response to May 11, 2015 comments from the Alameda County Health Care Services Agency; these comments and responses to comments are enclosed.

I declare, under penalty of perjury, that the information and recommendations contained in the attached document is true and correct to the best of my knowledge.

If you have any questions or comments after reviewing this material, please feel free to contact me by email at LAMANCUS@up.com or by phone at (916) 789-5184.

Sincerely,

Lauren A. Mancuso
Manager of Site Remediation
Union Pacific Railroad Company

C: David Hodson/CH2M HILL

Enclosure: Response to Comments and above mentioned work plan

CH2M HILL
155 Grand Avenue
Suite 800
Oakland, CA 94612
Tel 510.251.2888
Fax 510.622.9000

June 22, 2015

Ms. Karel Detterman
Alameda County Health Care Services Agency
Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: Addendum to the Revised Surface Improvement Work Plan, 744 and 758 High Street, Oakland, California
Fuel Leak Case No. RO1135 and GeoTracker Global ID T0600101305

Dear Ms. Detterman:

On behalf of Union Pacific Railroad Company (UPRR), CH2M HILL (CH2M) has prepared this addendum to describe the plan for proposed surface improvements for the former UPRR property located within the current property located at 750 High Street, Oakland, California (the site). A site location map is presented on Figure 1 enclosed with this addendum. This addendum was prepared in response to identifying the need to revise the approach to implement surface improvements at the site. The Revised Surface Improvement Work Plan, 744 and 758 High Street, Oakland, California (Revised Work Plan) (CH2M, 2014a) presented the plan to implement surface improvements at the site, consisting of creating a soil-cement-treated surface from the existing ground surface. The revised approach to implement surface improvements consists of surface soil removal and application of asphalt pavement over the soil-cement-treated surface. The Revised Work Plan was revised in response to Alameda County Health Care Services Agency Environmental Health Services (ACEH) comments (ACEH, 2014) on the original version (CH2M, 2014b) of the Revised Work Plan.

The *Site Conceptual Model Update and Soil and Groundwater Investigation Report* (Site Investigation Report) (CH2M, 2013) presented the recommendation to pave the unpaved area south of the building supply warehouse to limit potential worker exposure to chemicals of potential concern in shallow soil. As presented in this addendum, soil-cement surface treatment of the existing surface soil and asphalt paving is recommended for the unpaved area of the site. The purpose of the soil-cement surface treatment and asphalt paving is to limit potential worker exposure to chemicals of potential concern in shallow soil and create a surface that allows for existing lumber yard-related operations to continue at the site.

Site background information is presented in the *Soil and Groundwater Investigation and Updated Site Conceptual Model Report* (CH2M, 2015).

Previous Geotechnical Sampling and Evaluation

To evaluate the technical effectiveness of soil-cement treatment at the site, a four-point composite surface soil sample was collected in May 2014 from the top 8 inches of the unpaved area and submitted for geotechnical analysis. Specifically, the soil sample was analyzed for the following laboratory test:

- Particle size analysis (ASTM International [ASTM] D422)
- Liquid and plastic limits (Atterberg Limits) analysis (ASTM D4318)
- Proctor compaction analysis (ASTM D1557 Method C)

- Corrosivity analysis for sulfate (ASTM D4327)
- Unconfined compressive strength (ASTM D1633 Method B)

The soil sample was classified as dark brown, low plastic, poorly graded sand with silt and gravel (SP-SM) that contained hot-mix asphalt grindings. The particle size test results were used to determine which methods of the proctor compaction and the unconfined compressive strength tests should be run. Because the sample contains relatively uniform disturbed aggregates and soils from 2 inches to passing No.200 sieve, Method C of ASTM D1557 and Method B of ASTM D1633 were conducted for the proctor compaction and the unconfined compressive strength tests, respectively. The soil sample had a sulfate content of 426 milligrams per kilogram, which indicate that Type II cement can be used during soil-cement treatment. The proctor compaction test results indicate that when the soil is mixed with 6 percent cement, it will have an optimum moisture content of 6.4 percent and a maximum dry density of 134.8 pounds per cubic foot. The 7-day unconfined compressive strength of 495 pounds per square inch (psi) was achieved for the soil mixed with 6 percent cement and 8 percent water. This unconfined compressive strength is above the minimum recommended unconfined compressive strength (300 psi) (Gaspard, 2000) for soil-cement treatment.

Geotechnical reports are included as Attachment 1.

Scope of Work

This addendum proposes soil-cement surface treatment and surface asphalt paving of the approximate 0.35-acre unpaved area within the southern portion of the site (Figure 2). Soil-cement surface treatment, also referred to as cement-stabilized base or cement-treated aggregate base, is a highly compacted mixture of soil/aggregate, cement, and water. Soil-cement surface treatment will be constructed at the site by mixing cement and water with existing soil/aggregate to create strong, impermeable, and solid surface to replace the unpaved area of the site. Prior to soil-cement surface treatment of the existing surface soil, approximately 300 cubic yards of surface soil will be removed to establish the necessary grade to incorporate the cement for the soil-cement surface treatment and surface asphalt pavement. Following excavation and soil-cement surface treatment of the existing ground surface, asphalt pavement will be applied to the soil-cement surface to establish a surface consistent with the surrounding surface at the site.

Field Preparations

The following activities will be completed before fieldwork begins at the site:

- Prepare a site-specific health and safety plan (HASP)
- Obtain entry approval from the property owner
- Obtain an Alameda County Grading Permit, if necessary
- Initiate a utility location survey using Underground Service Alert
- Contact UPRR's fiber optic hotline and complete UPRR fiber optic notifications
- Conduct a third-party utility location survey
- Notify ACEH of the field investigation schedule
- Temporarily relocate surface features and obstacles, including lumber racks, material stockpiles, etc. from the unpaved area

Health and Safety Plan

Contractors involved in the work will be responsible for operating in accordance with the most current requirements of State and Federal Standards for Hazardous Waste Operations and Emergency Response (California Code of Regulations [CCR], Title 8, Section 5192; 29 *Code of Federal Regulations* [CFR] 1910.120). Onsite personnel are responsible for operating in accordance with all applicable regulations of the Occupational Safety and Health Administration (OSHA) outlined in the State General Industry and Construction Safety Orders (CCR, Title 8) and Federal Construction Industry Standards (29 CFR 1910 and 29 CFR 1926), as well as other applicable federal, state, and local laws and regulations. All personnel shall operate in compliance with all California OSHA requirements. In addition, California OSHA's Construction Safety Orders (especially CCR, Title 8, Sections 1539 and 1541) will be followed as appropriate.

A site-specific HASP will be prepared for the site in accordance with current health and safety standards as specified by the federal and California OSHAs and submitted to ACEH prior to initiation of field work.

The provisions of the HASP are mandatory for all personnel involved in the work. The contractor and its subcontractors conducting the work in association with this addendum will either adopt and abide by the HASP or shall develop their own safety plans that, at a minimum, meet the requirements of the HASP. All onsite personnel shall read the HASP and sign the "Plan Acceptance Form" before starting site activities.

Permitting, Notifications, Utility Clearance, and Site Preparation

The following activities will be completed prior to beginning the removal action:

- Grading permits will be obtained, if necessary, from Alameda County. The current estimate is that approximately 300 cubic yards of surface soil will be removed from the site. The removal action will be conducted under this grading permit.
- The areas for the removal will be marked in the field in white paint and Underground Service Alert will be contacted for utility clearance at least 3 working days before beginning fieldwork. In addition, a private subsurface utility service will be retained by the property developer for the site to complete a supplemental search for underground utilities within the work area. A work zone will be established around the work area. A temporary fence will be erected around the work area. The fence will remain in place during the work activities. The work zone may be modified as appropriate during planning and construction. Access to the work zone will be restricted to personnel required to conduct and oversee the work activities.
- Other site preparation activities include moving the lumber racks, clearing and grubbing of shrubs and grasses/weeds and debris from the work zone, setting up and providing dust monitoring and control for the work, setting up best management practices for stormwater pollution protection, and preparing a contractor staging area for equipment and decontamination areas.

Excavation and Grading

Within the unpaved area, up to 300 cubic yards of surface soil will be removed and loaded into trucks for disposal. Excavation will be conducted up to approximately 1.1 feet. Figure 3 shows the excavation extent within the unpaved area. The excavation activities will create an approximate uniform 5-inch depression within the unpaved area to incorporate soil-cement surface treatment of the existing soil base and surface asphalt pavement. Following removal of approximately 300 cubic yards of surface soil, the surface soil will be graded to maintain existing flow patterns. Figure 4 shows the post-removal grading plan.

Groundwater is not expected to be encountered during excavation. Excavation will not proceed beneath the groundwater table; therefore, groundwater management is not anticipated.

Excavated soil will be either directly loaded into haul trucks or rail cars for transportation offsite.

Waste Transportation and Disposal

During excavation activities, soil will be directly loaded into trucks and gondola rail cars. The soil will be loaded using appropriate equipment, such as a front-end loader.

Soil samples collected from the surface soil to be excavated indicates that some of the soil is characterized as non-hazardous waste and some of the soil is characterized as California hazardous waste. Non-hazardous waste will be segregated and transported by haul trucks to Altamont Landfill located in Livermore, California. California hazardous waste will be segregated and transported by gondola rail cars to Buttonwillow Landfill located in Buttonwillow, California.

When haul trucks are used, truck drivers will remain in the trucks while loading is in progress to minimize the potential for exposing the driver to dust during loading. Loading will be performed in a manner that minimizes the potential for spill or dust creation, such as by minimizing drop distances. If needed, water spraying may be implemented to suppress potential dust while loading. Once the loading is complete, the axle scales will be checked to confirm that the truck is within legal load limits. If necessary, adjustments will be made to the load until the legal load limit is reached.

When gondola rail cars are used, they will be staged on the railroad tracks located adjacent to the work zone and southeast of the site.

Each load of solid waste that is transported offsite for disposal will be accompanied by a waste manifest or bill of lading, following regulatory procedures.

Minor quantities of liquid and sludge may be generated as a result of decontamination, excavation dewatering, and site cleanup. Liquid and sludge waste will be hauled offsite by a tank truck to a private treatment and disposal facility permitted for and capable of handling the wastewater. A U.S. Department of Transportation-licensed transporter will transport the liquid and sludge waste.

Decontamination

The purpose of a decontamination program is to reduce potential distribution and exposure of contaminated media.

Equipment

A dry broom will be used to remove the bulk of any soil or debris that remains on heavy equipment, such as that used for excavation, after exiting the exclusion zone. In most cases, this will be sufficient to allow egress from the site. If dry-broom cleaning is not successful in cleaning the equipment, a pressure washer or steam cleaner will be used to clean the equipment. Personnel operating the pressure washer or steam cleaner will wear appropriate personal protection equipment (PPE), as required by the site-specific HASP. The equipment will be placed in a temporary decontamination cell that will allow collection of the wash water and debris removed from the equipment. The temporary decontamination cell will be constructed with plastic film on the ground and soil berms under the edges of the plastic to contain the water. The temporary decontamination cell material, debris, and wastewater will be appropriately disposed.

Personnel

It is anticipated that this work will be performed in modified Level D PPE, consisting of coveralls, steel-toe work boots, safety glasses, hard hats, traffic vests, and ear protection, as required for worker protection.

Personnel will use disposable PPE to minimize the need for decontamination when exiting the exclusion zone. Used PPE will be doffed and placed in garbage bags in the decontamination zone. The garbage bags containing the used PPE will be placed in the contaminated soil stockpile areas and disposed with the waste soil.

Soil-cement Surface Treatment

The results of the geotechnical sampling and analysis were used to design the approach for the soil-cement surface treatment. Based on the geotechnical analysis results, the optimum cement and water ratios to achieve the unconfined compressive strength higher than the target value of 300 psi were determined to be 6 and 8 percent, respectively. Six percent cement equates to 28.7 tons of Type II Portland cement (approximately 6 percent). Eight percent water equates to 6,081 gallons of water (approximately 8 percent). Cement and water will be manually spread across the surface of the treatment area. The cement and water will be thoroughly mixed in situ with the top 8 inches of surface material to create a homogenous layer. Following mixing, the treatment area will be spread out with the mixture uniformly and compacted with a roller to a minimum of 95 percent of the maximum dry density, as determined from the proctor compaction test results. The addition of the cement will raise the grade of the surface treatment area approximately 0.5 inch. The interface between the existing asphalt and surface treatment area will be graded to create a smooth transition between the two areas. A minimum of four compaction tests will be conducted throughout the area to verify the level of the compaction achieved.

After the compaction levels have been achieved and the finished surface level has been verified, the completed cement-treated surface will be covered with an asphaltic emulsion curing seal. The asphaltic emulsion curing seal will be applied on the same day as completion of final compaction and as soon after final compaction is practicable. The surface will be kept moist until the curing seal is applied.

Asphalt Paving

Seventy-two hours after application of curing seal, approximately 4 inches of hot-mix asphalt pavement will be applied to the soil-cement-treated surface to meet the surrounding asphalt surface.

Dust Monitoring and Suppression

The purpose of a dust monitoring program is to identify dust sources and receptors, and to provide dust monitoring measures, worker protection criteria, and dust-suppression measures.

Dust Sources and Receptors

The primary dust sources within the work zone will be exposed soil during excavation and loading activities. Potential dust receptors include commercial/industrial workers, the nearby community, offsite pedestrians, and vehicle traffic around the site.

Dust Monitoring

Dust monitoring will be performed during activities that might create dust, such as excavation and truck loading.

An industry standard dust inhalation model using the highest concentration of constituents in surface soil samples collected from the unpaved area was used as an initial assessment tool to evaluate potential exposure of constituents due to dust inhalation during proposed soil disturbance activities. Two assumptions were made in this model—one being the highest concentrations of metals and polycyclic aromatic hydrocarbons (PAHs) present in shallow soil samples are uniformly distributed, and second, the highest concentrations have been quantified. In addition, a safety factor (K-value) of 4 was used when calculating the potential for over-exposure to compensate for possible errors in the model. Based on the

model, an average of 5.99 milligram per cubic meter (mg/m^3) of total dust (above background) in an 8-hour period would need to be mechanically generated in breathable air for an onsite worker to exceed the one or more of the established permissible exposure limits or threshold limit values, according to the current analytical data.

Considering dust becomes visible at approximately 2 mg/m^3, following a regimen of visual dust monitoring and wetting material if it does become airborne, should be adequate to protect workers from inhalation hazards to metals and PAHs. However, because nuisance dust can also be an issue from exposure standpoint, onsite dust monitoring will be conducted during soil disturbance activities. An action level of 1.5 mg/m^3 total dust will be used, which would be half the threshold limit value of 3 mg/m^3 for "respirable fraction" dust. If dust levels exceed the action level, work will be suspended until dust levels can be maintained below the action level using dust-suppression measures.

Real-time, data-logging aerosol monitors (e.g., Personal DataRam or PDM-3 Miniram particular monitors, or equivalent) will be used for the dust monitoring throughout the work day to provide the real-time data and information on the effectiveness of engineering controls. Results will be downloaded on a daily basis and maintained in the project files for future reference.

Dust-suppression Measures

Dust-suppression measures to be implemented include having a water truck or fire hydrant with sufficient hose available at all times during soil excavation, handling, and loading activities. A specified worker will provide dust suppression (e.g., water) to generating sources as necessary; however, the amount of water will be limited to avoid generating surface water runoff. If the dust cannot be suppressed using the identified measures, then work will cease until additional measures can be implemented or until meteorological conditions are favorable.

Schedule and Reporting

The proposed work will be conducted within 4 weeks of receiving acceptance of this work plan. Work may be conducted on weekdays, weekends, or nights to limit any inconvenience to lumber-related operations at the site. Following completion of the proposed work, ACEH will be informed that the paving has been completed.

Works Cited

Alameda County Health Care Services Agency Environmental Health Services (ACEH). 2014. Email from Karel Detterman/ACEH to David Hodson/CH2M HILL. RE: Submittal of the Surface Improvement Work Plan, 744 and 758 High Street, Oakland, California, Fuel Leak Case No. RO1135 and GeoTracker Global ID T0600101305. September 26.

CH2M HILL (CH2M). 2013. *Site Conceptual Model Update and Soil and Groundwater Investigation Report, 744 and 758 High Street, Oakland, California.* November 8.

CH2M HILL (CH2M). 2014a. *Revised Surface Improvement Work Plan, 744 and 758 High Street, Oakland, California, California Fuel Leak Case No. RO1135 and GeoTracker Global ID T0600101305*. October 24.

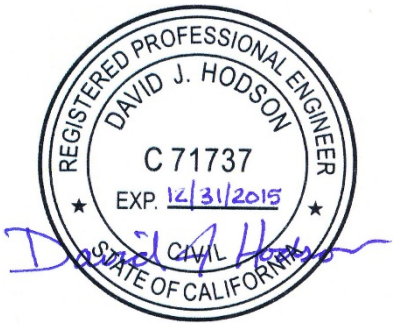
CH2M HILL (CH2M). 2014b. *Surface Improvement Work Plan, 744 and 758 High Street, Oakland, California, California Fuel Leak Case No. RO1135 and GeoTracker Global ID T0600101305*. July 15.

CH2M HILL (CH2M). 2015. *Soil and Groundwater Investigation and Updated Site Conceptual Model Report, 744 and 758 High Street, Oakland, California, California Fuel Leak Case No. RO1135 and GeoTracker Global ID T0600101305*. May 8.

Gaspard, Kevin J. 2000. *Evaluation of Cement Treated Base Courses*. Technical Assistance Report Number 00-1TA. December.

Please contact me at (510) 316-2323 if you have any questions.

Sincerely,
CH2M HILL

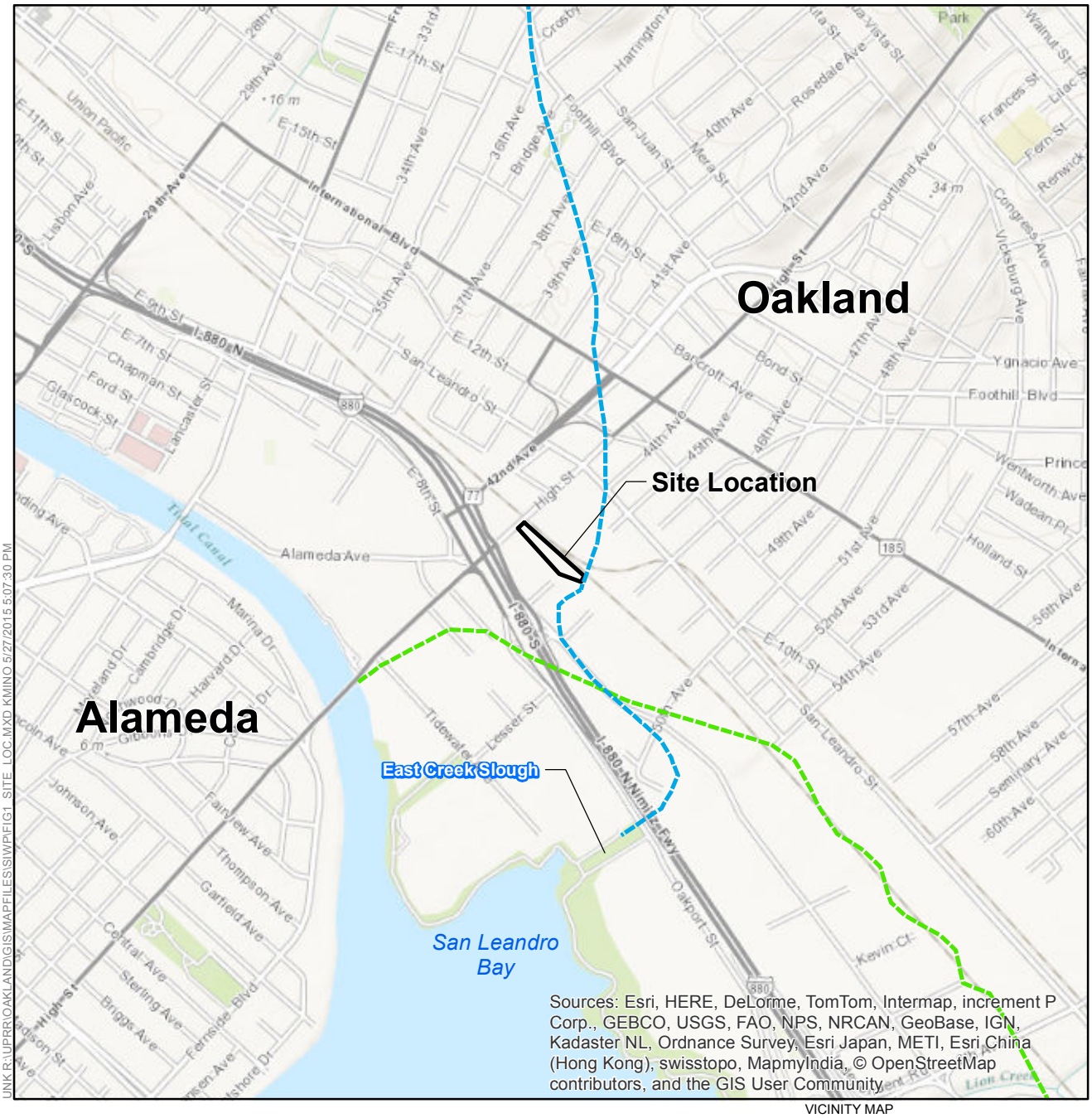


David Hodson, P.E.
Project Manager

Enclosures:

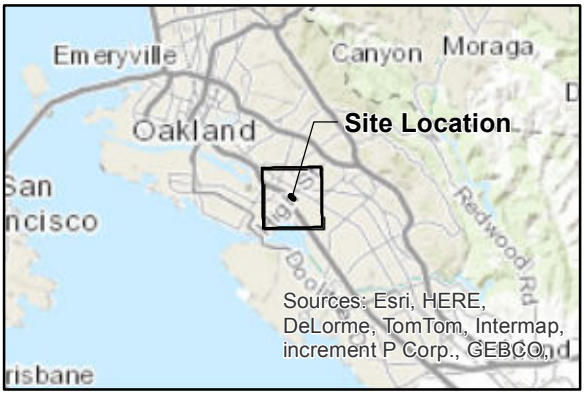
Figure 1	Site Location Map
Figure 2	Surface Improvement Map
Figure 3	Existing Conditions
Figure 4	Surface Soil Removal
Figure 5	Post-removal Grading
Figure 6	Final Grading
Attachment 1	Geotechnical Reports

Figures



UNK R:\UPRR\OAKLAND\GIS\MAPFILES\SIWPFIG1_SITE_LOC.MXD KMINO 5/27/2015 5:07:30 PM

VICINITY MAP



LEGEND

- Site Location
- Approximate Location of Peralta Creek
- Approximate Boundary of 1850 Tidal Marshes

Note:
Creek and historical shoreline features from Sowers and Richard (2009)

Reference:
Sowers, J.M., and C.M. Richard. 2009. Creek & Watershed Map of Oakland & Berkeley (Fourth Edition). Oakland Museum of California, Oakland, CA.
http://www.museumca.org/creeks/images/TitleBlockOak.gif.
Accessed on March 10, 2013.

0 750 1,500
Feet

N

FIGURE 1
SITE LOCATION MAP
ADDENDUM TO THE
REVISED SURFACE IMPROVEMENT WORK PLAN,
744 AND 758 HIGH STREET, OAKLAND, CALIFORNIA

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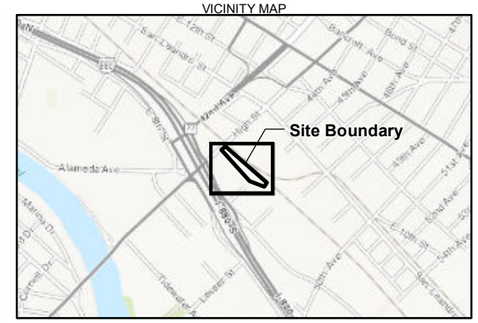
VICINITY MAP



LEGEND

- Active Rail Line
- Site Boundary
- Unpaved Area (0.35 acres)

0 35 70
Feet

N

FIGURE 2
SURFACE IMPROVEMENT MAP
ADDENDUM TO THE
REVISED SURFACE IMPROVEMENT WORK PLAN,
744 AND 758 HIGH STREET, OAKLAND, CALIFORNIA

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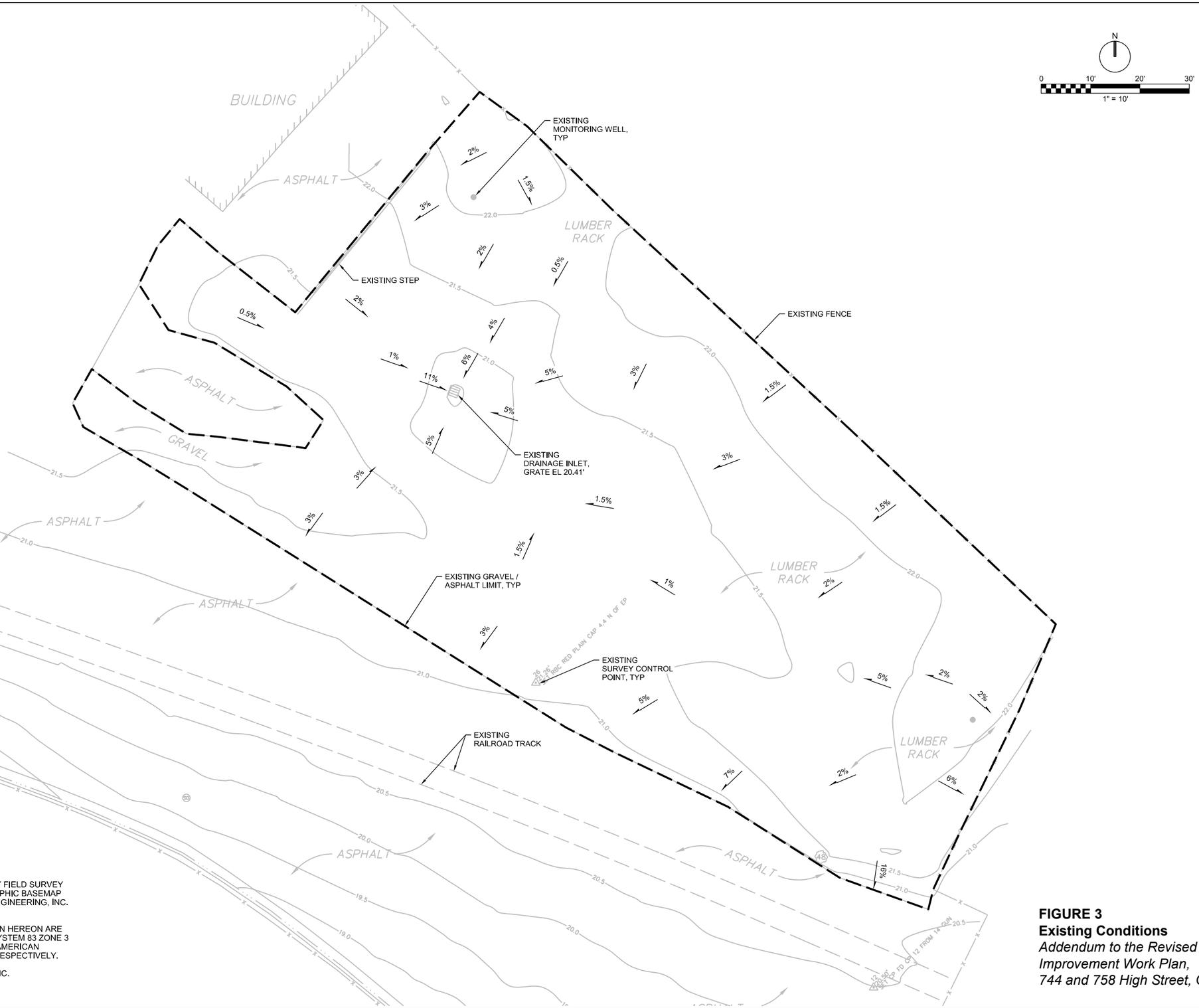

BASIS OF TOPOGRAPHY:

TOPOGRAPHIC BASEMAP PREPARED BY FIELD SURVEY PERFORMED IN MARCH 2015. TOPOGRAPHIC BASEMAP COMPILED BY MERIDIAN SURVEYING ENGINEERING, INC. AND IS DATED MARCH 2015.

COORDINATES AND ELEVATIONS SHOWN HEREON ARE BASED ON CALIFORNIA COORDINATE SYSTEM 83 ZONE 3 (NAD83 2011) EPOCH 2010 AND NORTH AMERICAN VERTICAL DATUM OF 1988 GEOID 21A, RESPECTIVELY.

MERIDIAN SURVEYING ENGINEERING, INC.
2958 VAN NESS AVENUE
SAN FRANCISCO, CA 94109

FIGURE 3
Existing Conditions
Addendum to the Revised Surface Improvement Work Plan,
744 and 758 High Street, Oakland, California

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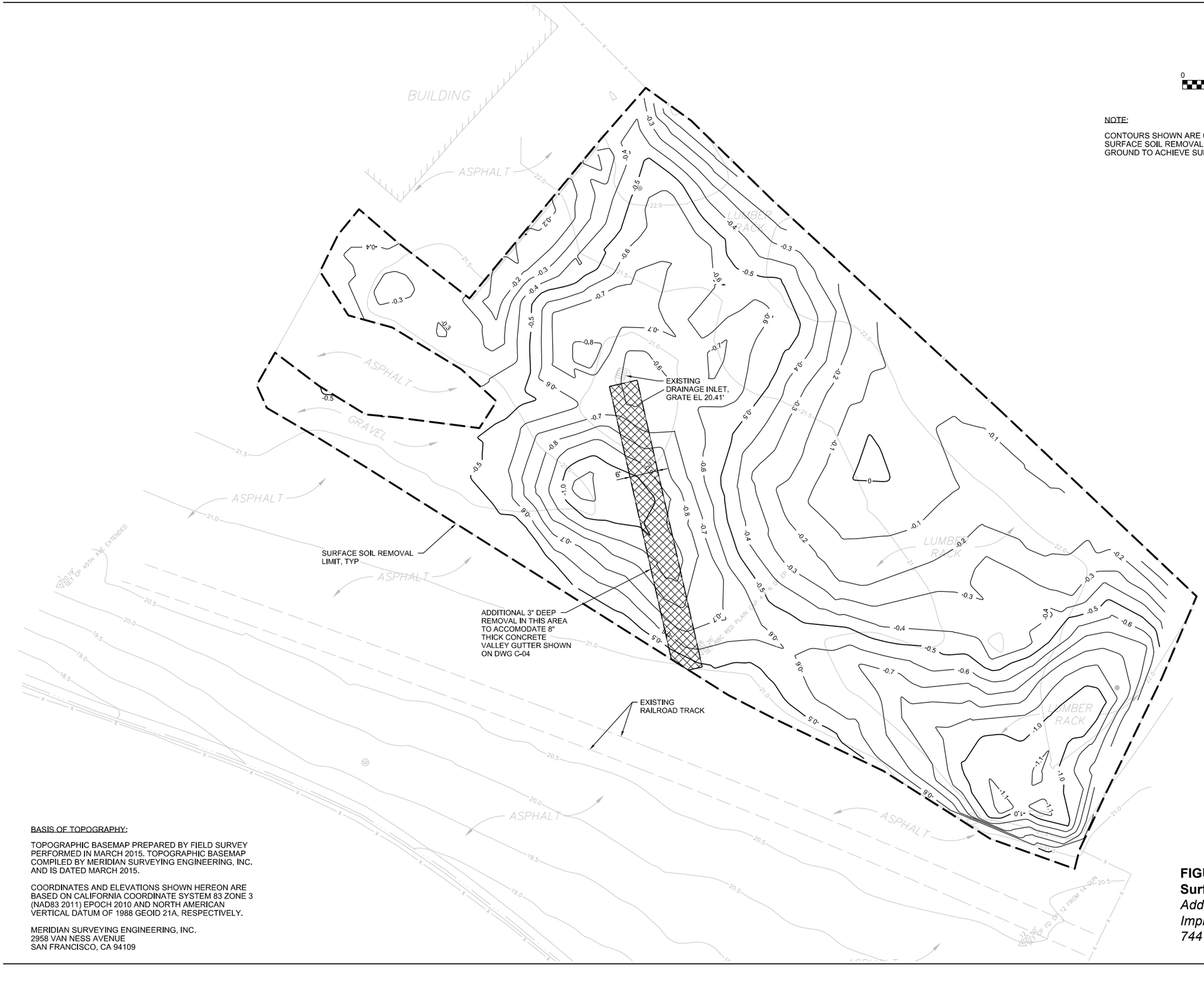

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FIGURE 4
Surface Soil Removal
Addendum to the Revised Surface Improvement Work Plan,
744 and 758 High Street, Oakland, California

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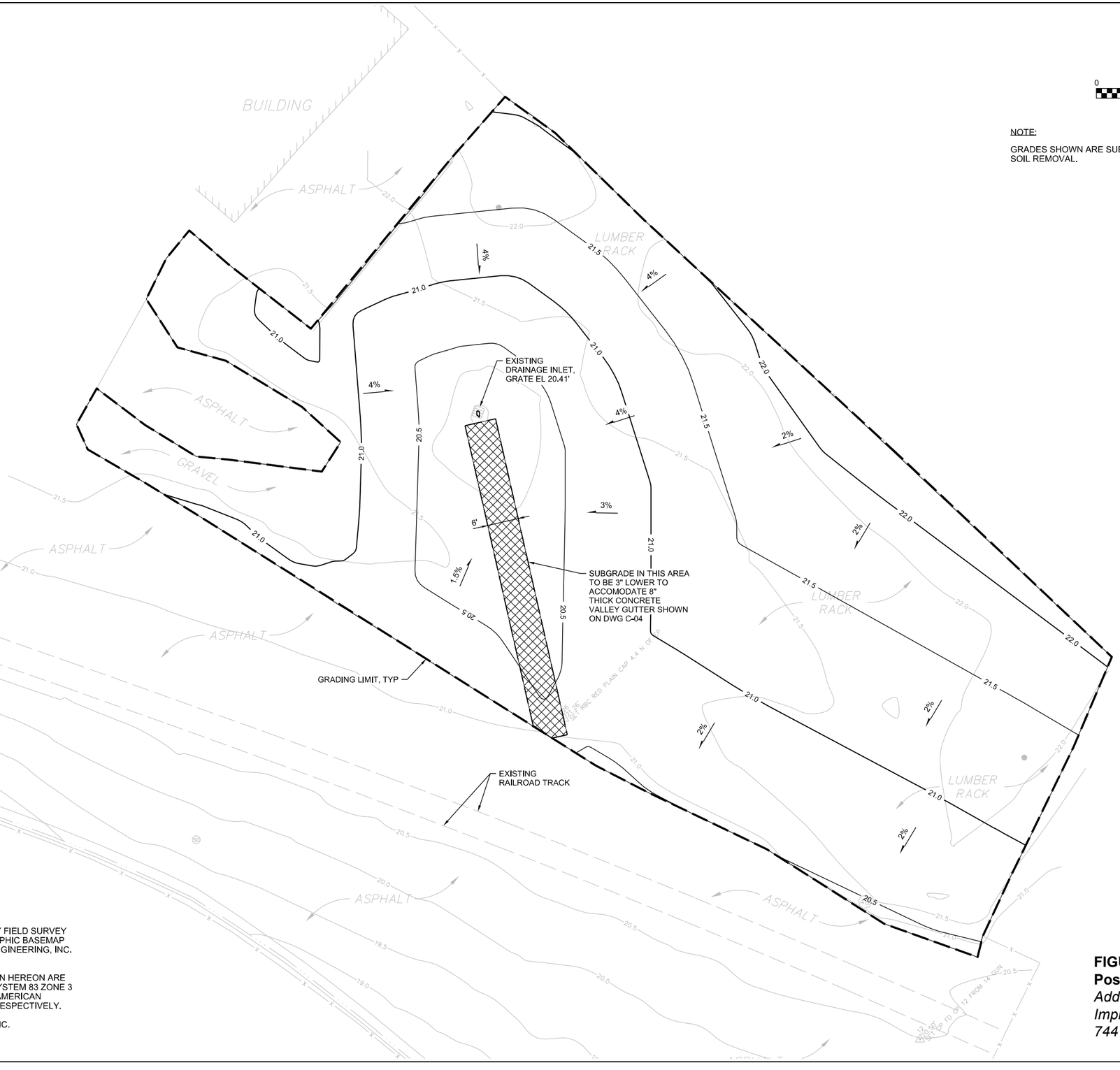

NOTE:

GRADES SHOWN ARE SUBGRADE FOLLOWING SURFACE SOIL REMOVAL.

BASIS OF TOPOGRAPHY:

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FIGURE 5
Post-Removal Grading
Addendum to the Revised Surface Improvement Work Plan,
744 and 758 High Street, Oakland, California

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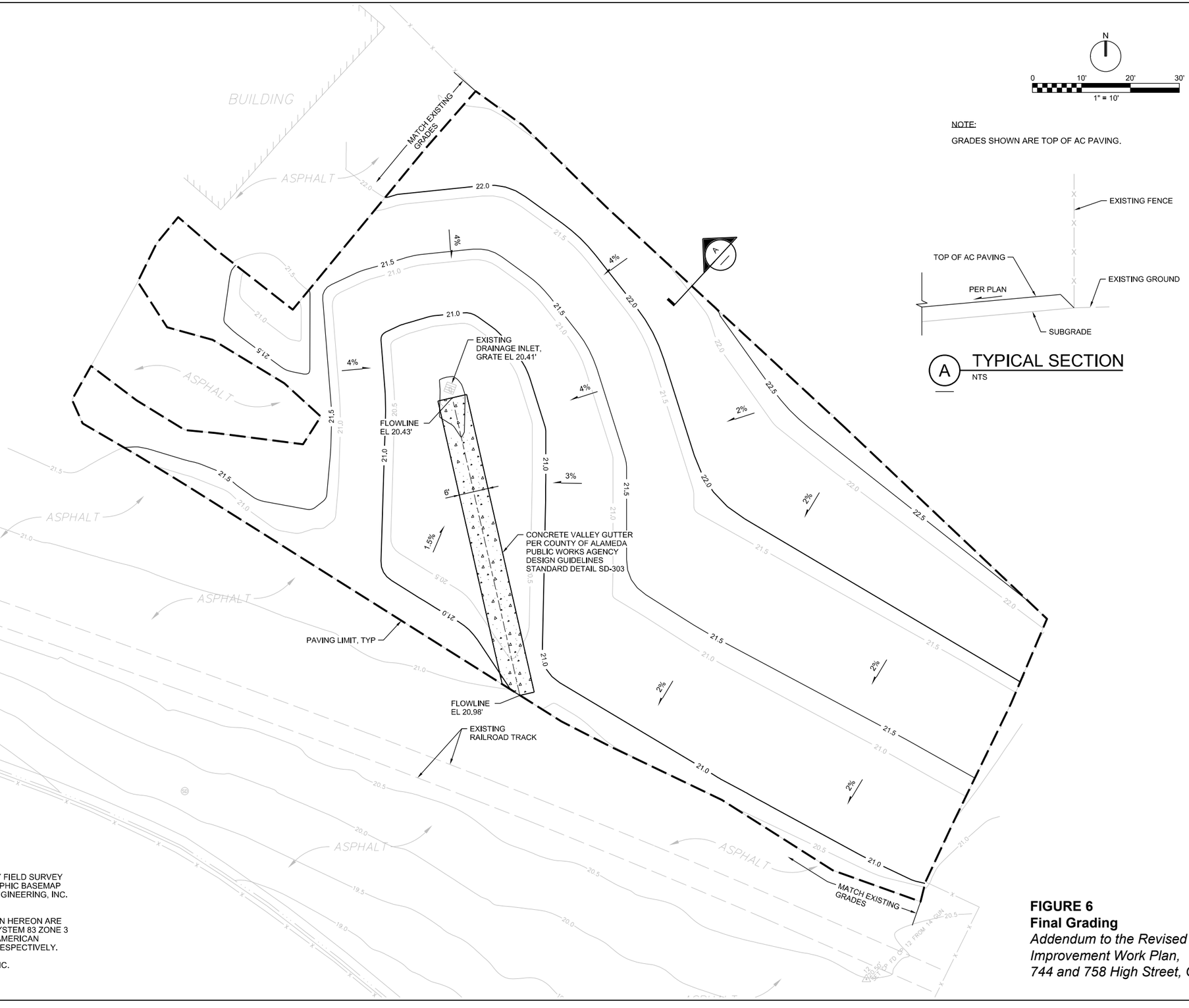

NOTE:

GRADES SHOWN ARE TOP OF AC PAVING.

A TYPICAL SECTION
NTS

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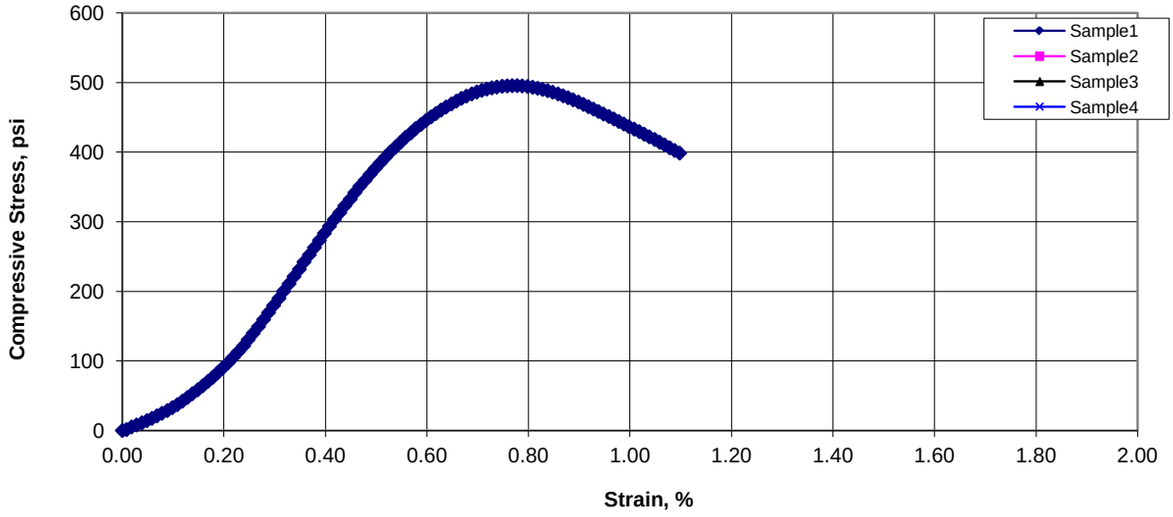
FIGURE 6
Final Grading
Addendum to the Revised Surface Improvement Work Plan,
744 and 758 High Street, Oakland, California

Attachment

Unconfined Compressive Strength of Molded Soil-Cement Cylinders (ASTM D1633 method B)

CTL No.:	095-029	**Project Number:**	468396.10.06.03		
Client:	CH2M Hill	**Date:**	5/21/2014	**By:**	MD/RU
Project Name:	750 High Street				

Compressive Stress vs. Strain



Sample No.:	1	2	3	4
Boring:	TP-1			
Sample:				
Depth, ft.:	0-0.7			
Visual Description:	Dark Brown Poorly Graded SAND w/ Silt & Gravel (Recycled Material-AC Grindings)			
Source of Cement Used:	Basalite			
Type of Cement Used:	Type II-V			
Designed Moisture Content, %:	8.4			
Designed Dry Density, pcf:	128.1			
Designed Cement Content, %:	6.0			
Diameter, in:	5.99			
Height, in:	12.19			
Cross Sectional Area, in^2:	28.19			
Height to Diameter Ratio:	2.0			
As Remolded Moisture Content, %:	10.1			
As Remolded Dry Density, pcf:	125.9			
At Test Moisture Content, %:	8.0			
At Test Dry Density, pcf:	128.3			
At Test Degree Of Saturation, %:	68.8%			
Age of Specimen, Days:	7			
Curing Temperature, °F:	69.0			
Curing Humidity, %:	96			
Max Load, lb:	13970			
Compressive Strength, psi:	495			
Remarks:	Water exuded out of the sample during remolding resulting in an at test moisture content lower than targeted.			

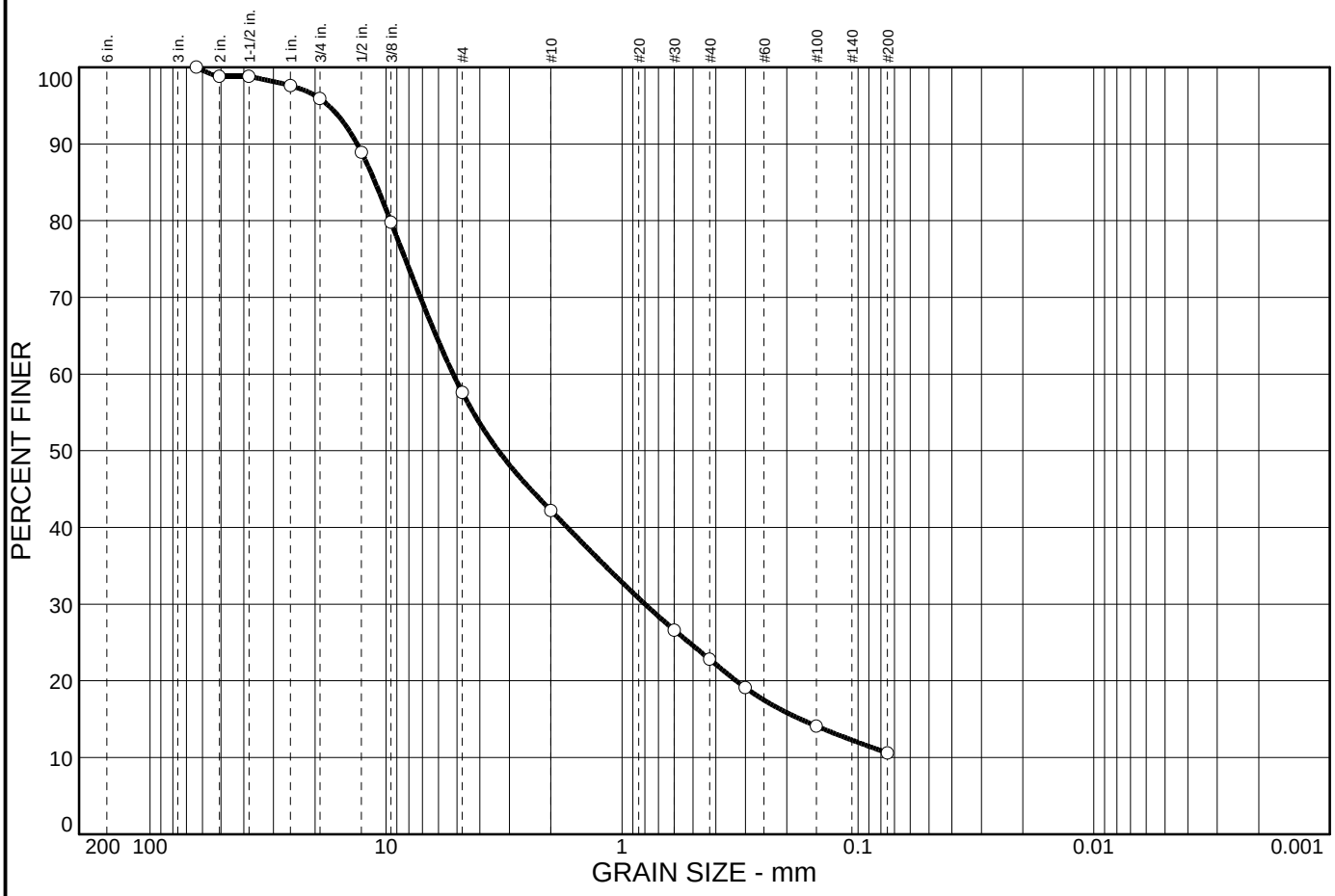
Additional water was added to the sample equal to 30% of the weight of cement to ensure hydration. The as remolded moisture content and dry density reported assume that no hydration has occured. The samples were not soaked prior to testing.

Corrosivity Tests Summary

CTL # 095-029 **Date:** 5/2/2014 **Tested By:** PJ **Checked:** PJ
Client: CH2M Hill **Project:** 750 High Street **Proj. No:** 468396.10.06.03
Remarks:

Sample Location or ID			Resistivity @ 15.5 °C (Ohm-cm)			Chloride	Sulfate		pH	ORP (Redox)		Sulfide	Moisture	Soil Visual Description
			As Rec.	Min	Sat.	mg/kg	mg/kg	%				Qualitative	At Test	
						Dry Wt.	Dry Wt.	Dry Wt.		E_H (mv)	At Test	by Lead	%	
Boring	Sample, No.	Depth, ft.	ASTM G57	Cal 643	ASTM G57	ASTM D4327	ASTM D4327	ASTM D4327	ASTM G51	ASTM G200	Temp °C	Acetate Paper	ASTM D2216	
TP-1	-	0-0.7	-	-	-	-	426	0.0426	-	-	-	-	1.0	Dark Bown Poorly Graded SAND w/ Silt & Gravel (Recycled Material-AC Grindings)

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○		42.4	47.0	10.6		SP-SM		20	22

SIEVE inches size	PERCENT FINER ○		
2.5	100.0		
2	98.8		
1.5"	98.8		
1"	97.6		
3/4"	95.9		
1/2"	88.9		
3/8"	79.8		
	GRAIN SIZE		
D_{60}	5.19		
D_{30}	0.799		
D_{10}			
	COEFFICIENTS		
C_c			
C_u			

SIEVE number size	PERCENT FINER ○		
#4	57.6		
#10	42.2		
#30	26.6		
#40	22.8		
#50	19.1		
#100	14.1		
#200	10.6		

SOIL DESCRIPTION

○ Dark Brown Poorly Graded SAND w/ Silt & Gravel (Recycled Material-AC Grindings)

REMARKS:

○

○ Source: TP-1 Elev./Depth: 0-0.7'

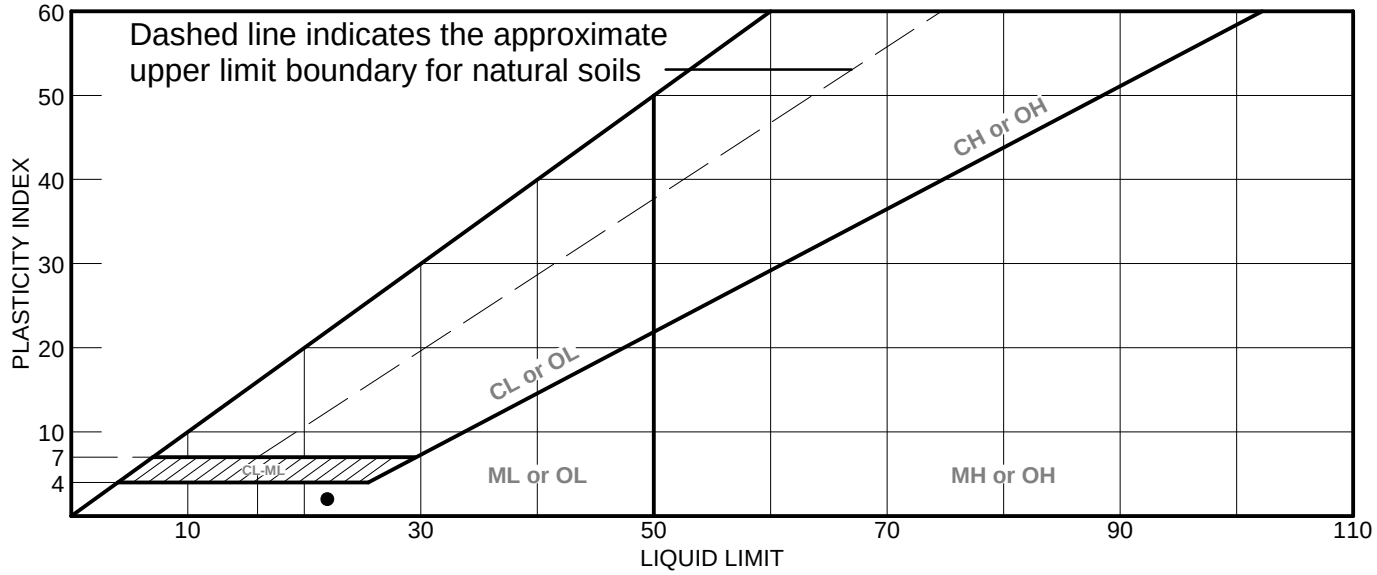
COOPER TESTING LABORATORY

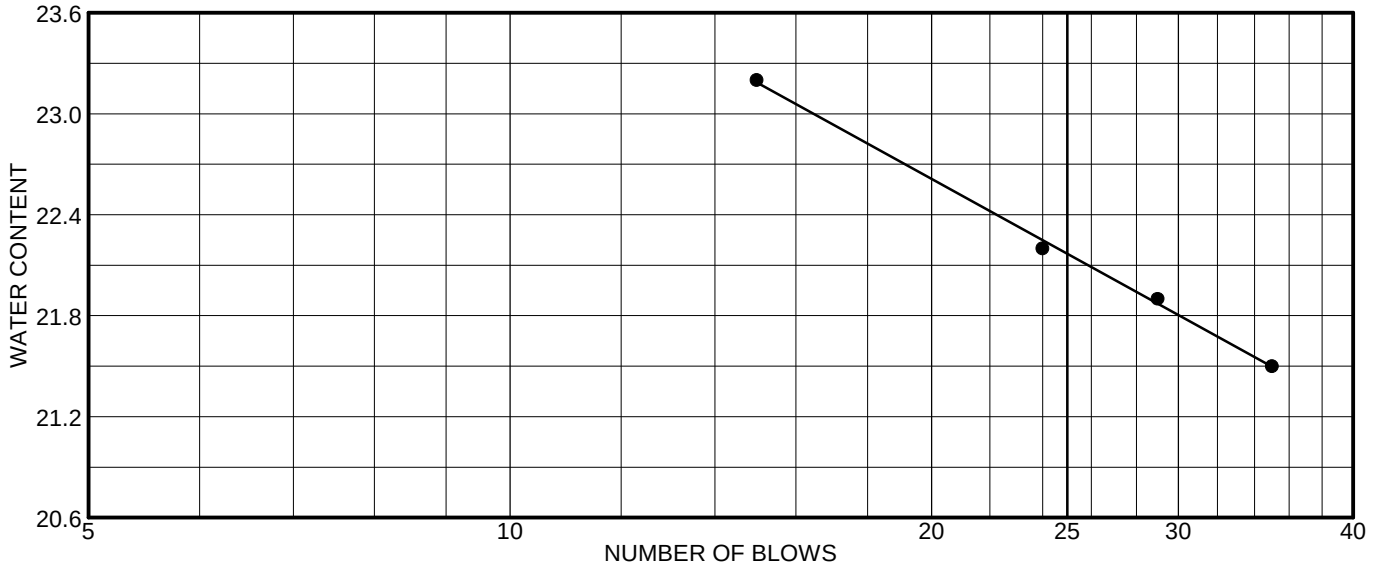
Client: CH2M Hill

Project: 750 High Street - 468396.10.06.03

Project No.: 095-029 Figure

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Dark Brown Poorly Graded SAND w/ Silt & Gravel (Recycled Material-AC Grindings)	22	20	2	22.8	10.6	SP-SM

Project No. 095-029 **Client:** CH2M Hill

Project: 750 High Street - 468396.10.06.03

● **Source:** TP-1 **Elev./Depth:** 0-0.7'

Remarks:

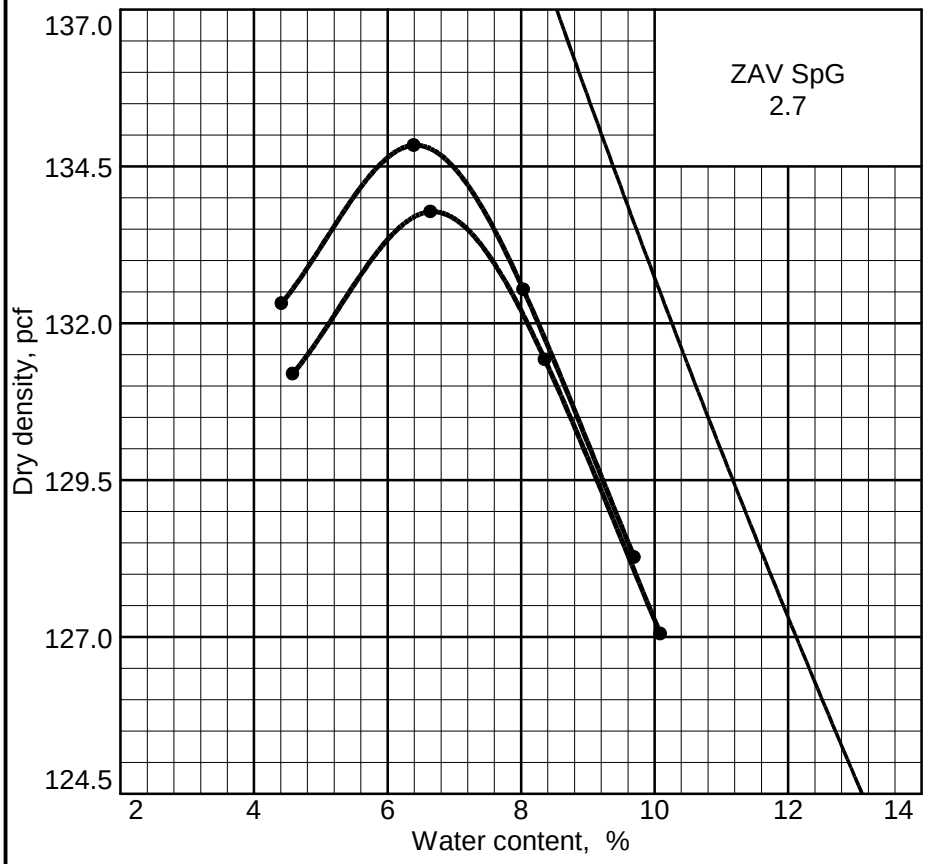
●

LIQUID AND PLASTIC LIMITS TEST REPORT

COOPER TESTING LABORATORY

Figure

COMPACTION TEST REPORT



Curve No.

Test Specification:
ASTM D 1557-00 Method C Modified
Oversize correction applied to each point

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 56
Mold Size: .075 cu.ft.

Test Performed on Material Passing 3/4 in. **Sieve**

Soil Data

NM _____ **Sp.G.** 2.7
LL 22 **PI** 2
%>3/4 in. 4.1 **%<#200** 10.6
USCS SP-SM **AASHTO** _____

TESTING DATA

	1	2	3	4	5	6
WM + WS	16.75	16.73	16.34	16.54		
WM	6.05	6.05	6.05	6.05		
WW + T #1	1240.90	1133.10	1089.70	1329.20		
WD + T #1	1184.00	1068.60	1055.00	1237.90		
TARE #1	327.50	296.40	297.00	332.60		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	6.4	8.0	4.4	9.7		
DRY DENSITY	134.8	132.5	132.3	128.3		

ROCK CORRECTED TEST RESULTS	UNCORRECTED	Material Description
Maximum dry density = 134.8 pcf	133.8 pcf	Dark Brown Poorly Graded SAND w/ Silt & Gravel (Recycled Material-AC Grindings)(treated w/ 6% Cement)
Optimum moisture = 6.4 %	6.7 %	

Project No. 095-029 **Client:** CH2M Hill
Project: 750 High Street - 468396.10.06.03

● **Source:** TP-1 **Elev./Depth:** 0-0.7'

Remarks:

COMPACTION TEST REPORT

COOPER TESTING LABORATORY

Figure