U.S. Army Corps of Engineers
Kansas City District

Specifications for Operable Unit 2 - Soils Remediation

Cornell-Dubilier Electronics Superfund Site
South Plainfield, NJ

USACE Contract No. W912DQ-06-D-0006
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Cornell-Dubilier Electronics Superfund Site
OU2 – Soils Remedy
Middlesex County, New Jersey

Bid Schedules

Item	Description	Unit	Estimated Quantity	Unit Cost	Total
001	**General Activities**				
001A	Work Plans	L.S.	1		
001B	General Conditions	L.S.	1		
001C	Temporary Facilities	L.S.	1		
001D	Air Monitoring	L.S.	1		
002	**Excavation**				
002A	Clearing and Grubbing	Acre	10		
002B	Excavation, Handling and Stockpiling of Material Located Within Excavation Limits	C.Y.	87,300		
002C	Post-Excavation Confirmatory Sampling	Sample	610		
002D	Utility Protection During Excavation	L.S.	1		
002E	Dewatering & Liquid Treatment	Gals	500,000		
002F	Removal & Off-Site Disposal of Existing Bituminous Pavement Located Outside of Excavation Limits	C.Y.	6,300		
002G	Bedrock Removal for Associated Stormwater Piping	C.Y.	3,300		
003	**Backfill / Restoration**				
003A	Bituminous Base Coarse and Surface Coarse	S.Y.	98,000		
003B	Dense Graded Aggregate Backfill	Tons	24,600		
003C	Geotextile	S.F.	480,600		
003D	Imported Backfill	C.Y.	1,000		
003E	Backfill Replacement of Overcut for Benching and for Overburden Material Not Requiring Treatment and Disposal	C.Y.	2,300		
003F	Backfill Replacement Using Soils Treated On-Site	C.Y.	62,100		

Cornell-Dubilier Electronics Superfund Site
OU2 – Soils Remedy
Middlesex County, New Jersey

Bid Schedules

Item	Description	Unit	Estimated Quantity	Unit Cost	Total
004	**Storm water System, Piping, Catch Basins, Storm water Detention Basin**	L.S.	1		
005	**LTTD**				
005A	Mobilization / Demobilization	Each	2		
005B	Permitting / Engineering	L.S.	1		
005C	Performance Testing	L.S.	1		
005D	Indirect Fire, LTTD System Rental, & Operation, and Equipment Maintenance	Tons	104,700		
006	**Soil Disposal**				
006A	Sampling, Characterization, & Off-Site Disposal of Non-RCRA/ Non-TSCA Soil > IGWSCC	Tons	100		
006B	Sampling, Characterization, & Off-Site Disposal of RCRA Soil Not Requiring Pre-Treatment and > IGWSCC	Tons	400		
006C	Sampling, Characterization, & Off-Site Disposal of RCRA Soil Not Meeting LDRS for Organics/ Inorganics and > IGWSCC	Tons	400		
006D	Sampling, Characterization, & Off-Site Disposal of TSCA Soil (PCBs ≥ 50 ppm)	Tons	100		
006E	Sampling, Characterization, & Off-Site Disposal of Mixed TSCA and RCRA Soil (HOCs < 1,000 ppm)	Tons	400		
006F	Sampling, Characterization, & Off-Site Disposal of Mixed TSCA and RCRA Soil (HOCs ≥ 1,000 ppm)	Tons	400		

Cornell-Dubilier Electronics Superfund Site
OU2 – Soils Remedy
Middlesex County, New Jersey

Bid Schedules

Item	Description	Unit	Estimated Quantity	Unit Cost	Total
006G	Sampling, Characterization, & Off-Site Disposal of Mixed TSCA and RCRA Soil (RCRA Metals, Organics, PCBs < 100 ppm, and ***Can*** Treat Non-PCB UHCs to meet LDRs)	Tons	400		
006H	Sampling, Characterization, & Off-Site Disposal of Mixed TSCA and RCRA Soil (RCRA Metals, Organics, PCBs < 100 ppm, and ***Cannot*** Treat Non-PCB UHCs to meet LDRs)	Tons	400		
006I	Sampling, Characterization, & Off-Site Disposal of Mixed TSCA and RCRA Soil (RCRA Metals, Organics Failure and PCBs ≥ 100 ppm)	Tons	400		
007	**Debris Disposal**				
007A	Sampling, Characterization, & Off-Site Disposal of Non-RCRA /Non-TSCA Debris > IGWSCC	Tons	8,600		
007B	Sampling, Characterization, & Off-Site Disposal of RCRA Debris Not Requiring Pre-Treatment and > IGWSCC	Tons	2,300		
007C	Sampling, Characterization, & Off-Site Disposal of RCRA Debris Not Meeting LDRS for Organics/ Inorganics and > IGWSCC	Tons	2,300		
007D	Sampling, Characterization, & Off-Site Disposal of TSCA Debris (PCBs ≥ 50 ppm)	Tons	25,200		
007E	Sampling, Characterization, & Off-Site Disposal of Mixed TSCA and RCRA Debris (VOCs < 500 ppm)	Tons	6,050		

Cornell-Dubilier Electronics Superfund Site
OU2 – Soils Remedy
Middlesex County, New Jersey

Bid Schedules

Item	Description	Unit	Estimated Quantity	Unit Cost	Total
007F	Sampling, Characterization, & Off-Site Disposal of Mixed TSCA and RCRA Debris (VOCs $\geq$ 500 ppm)	Tons	6,050		

Total _____

SECTION 00102

LIST OF DRAWINGS
01/07

PART 1 GENERAL

1.1 SUMMARY

This section lists the drawings for the project pursuant to contract clause "DFARS 252.236-7001, Contract Drawings, Maps and Specifications."

1.2 CONTRACT DRAWINGS

Contract drawings are as follows:

DRAWING NO.	REVISION NO.	TITLE
G-01	-	Cover Sheet
G-02	-	Index of Drawings,Legend,Abbreviations and General Notes
G-03	-	Existing Site Plan
G-04	-	Bedrock Contour Plan
G-05	-	Limits of Contamination
G-06	-	Excavation Plan
G-06A	-	Excavation Plan 0'-2' Depth
G-06B	-	Excavation Plan 2'-6' Depth
G-06C	-	Excavation Plan 6'-Bottom Depth
G-07	-	Cross Section - 1
G-08	-	Cross Section - 2
G-09	-	Cross Section - 3
G-10	-	Proposed Remediation Plan
G-11	-	Subgrade Grading Plan
G-12	-	Paving and Drainage Plan
G-13	-	Miscellaneous Details - 1
G-14	-	Miscellaneous Details - 2
G-15	-	Miscellaneous Details -3
G-16	-	Miscellaneous Details - 4
G-17	-	Miscellaneous Details - 5

1.3 SUPPLEMENTARY DRAWINGS

These supplementary drawings may not be a part of the contract but are included with the drawings for information.

1.3.1 Reference Drawing (1956)

The following reference drawing is available from the Contracting Officer and is intended only to show site conditions in December 1956. Drawing is the property of the Government and shall not be used for any purpose other than that intended by the contract.

DRAWING NO.	TITLE
4740	Cornell-Dubilier Electronics Corp, Et. Al, Prepared by Factory Insurance Association, Easter Regional Office South Plainfield, NJ Dated 03/17/1954 Updated December 18, 1956

1.3.2 Reference Drawings (2006)

The following reference drawings from the Cornell-Dubilier Electronics Superfund Site OU-2 Building Demolition are available from the Contracting Officer and is intended only to show site conditions in June 2006. Drawings are the property of the Government and shall not be used for any purpose other than that intended by the contract.

DRAWING NO.	REVISION NO.	TITLE
G-01	-	Cover Sheet
G-02	-	Index of Drawings,Legend,Abbreviations
G-03	-	Site Plan/Cluster Designations
G-04	-	Cluster 1-BLDG'S 1,1A,1B,1C,1D,6 Plan And Elevations
G-05	-	Cluster 1-BLDG'S 1,1A,1B Miscellaneous Waste
G-06	-	Cluster 1-BLDG'S 1C,1D,6 Miscellaneous Waste
G-07	-	Cluster 1-PCB Remediation Waste Floors and Walls
G-08	-	Cluster 1-BLDG'S 1,1A,1B,1C,1D, 6 Photographs
G-09	-	Cluster 2-BLDG'S 2,2A,3/4,4A Plan And Elevations
G-10	-	Cluster 2-BLDG'S 2,2A,3/4 Miscellaneous Waste
G-11	-	Cluster 2-BLDG 4A Miscellaneous Waste
G-12	-	Cluster 2-PCB Remediation Waste Floors and Walls
G-13	-	Cluster 2-BLDG'S 2,2A,3/4,4A Photographs
G-14	-	Cluster 3-BLDG'S 5,5A Plan And Elevations
G-15	-	Cluster 3-BLDG'S 5,5A Miscellaneous Waste
G-16	-	Cluster 3-PCB Remediation Waste Floors and Walls
G-17	-	Cluster 3-BLDG'S 5,5A Photographs
G-18	-	Cluster 4-BLDG 8 Plan And Elevations
G-19	-	Cluster 4-BLDG 8 Miscellaneous Waste
G-20	-	Cluster 4-BLDG 8 Photographs
G-21	-	Cluster 5-BLDG'S 9,9A,9B,9C,17 Plan And Elevations
G-22	-	Cluster 5-BLDG'S 9,9A Miscellaneous Waste
G-23	-	Cluster 5-BLDG'S 9B,9C,17 Miscellaneous Waste
G-24	-	Cluster 5-PCB Remediation Waste Floors and Walls
G-25	-	Cluster 5-BLDG'S 9,9A,9B,9C,17 Photographs
G-26	-	Cluster 6-BLDG's 10,10A Plan And Elevations
G-27	-	Cluster 6-BLDG 10 Miscellaneous Waste
G-28	-	Cluster 6-PCB Remediation Waste Floors and Walls
G-29	-	Cluster 6-BLDG's 10,10A Photographs
G-30	-	Cluster 7-BLDG's 11,12 Plan And Elevations
G-31	-	Cluster 7-BLDG's 11,12 Miscellaneous Waste
G-32	-	Cluster 7-PCB Remediation Waste Floors and Walls
G-33	-	Cluster 7-BLDG's 11,12 Photographs
G-34	-	Cluster 8-BLDG 13 Plan And Elevations
G-35	-	Cluster 8-BLDG 13 Miscellaneous Waste
G-36	-	Cluster 8-RCRA Hazardous Masonry Walls
G-37	-	Cluster 8-15,16,18 Plan Elevations

DRAWING NO.	REVISION NO.	TITLE
G-38	-	Cluster 8-15,16,18 Miscellaneous Waste
G-39	-	Cluster 8-RCRA Hazardous Masonry Walls
G-40	-	Cluster 8-BLDG'S 13,15,16,18 Photographs
G-41	-	Cluster 9-BLDG 7 Plan And Elevations
G-42	-	Cluster 9-BLDG 7 Miscellaneous Waste
G-43	-	Cluster 9-BLDG 7 Photographs
G-44	-	Cluster 10-Water Tower Plan And Elevations
G-45	-	Cluster 10-Water Tower Miscellaneous Waste
G-46	-	Cluster 10-Water Tower Photographs
G-47	-	Cluster 11-BLDG 14 Plan And Elevations
G-48	-	Cluster 11-BLDG 14 Plan Miscellaneous Waste
G-49	-	Cluster 11-BLDG 14 Photographs
G-50	-	Cluster 12-Oil Tank Plan And Elevations
G-51	-	Cluster 12-Oil Tank Miscellaneous Waste
G-52	-	Cluster 12-Oil Tank Photographs
G-53	-	Site Utility Plan
G-54	-	Site Details 1
G-55	-	Site Details 2

1.3.3 Boring Logs

The Government does not guarantee that borings indicate actual conditions, except for the locations and the time that they were made as part of the Remedial Investigation Report and the Predesign Investigation Report.

-- End of Document --

SECTION 01110

SUMMARY OF WORK
07/06

PART 1 GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

1.1.1 Project Description

Provide all labor, materials, equipment, site management, home office support, and incidental items necessary to accomplish performance requirements for the Remedial Action (RA) at the Cornell-Dubilier Electronics Superfund Site, Operable Unit 02 (OU-2), in the Borough of South Plainfield, Middlesex County, New Jersey. The Cornell-Dubilier Electronics Site is on the National Priorities List due to contamination found in the soil and building materials.

The Site remediation has been separated into multiple Operable Units. Operable Unit-1 (OU-1) consists of the residential, commercial, and municipal properties in the vicinity of the former Cornell-Dubilier Electronics facility and is being addressed by others. OU-2 consists of contaminated facility site soils and buildings. The groundwater and sediments in the adjacent Bound Brook will be addressed by the USEPA as part of future Operable Units.

This contract addresses the remediation of OU-2 site soils. The remedial action selected in the Record of Decision (ROD) dated September 2004 for OU-2 soils includes:

a. excavation of an estimated 107,000 cubic yards of contaminated soil containing polychlorinated biphenyls (PCBs) at concentrations greater than 500 ppm and contaminated soils that exceed New Jersey's Impact to Groundwater Soil Cleanup Criteria (IGWSCC) for contaminants other than PCBs;

b. on-site treatment of excavated soil amenable to treatment by low temperature thermal desorption (LTTD), followed by backfilling of excavated areas with treated soils;

c. transportation of contaminated soil and debris not suitable for on-site LTTD treatment to an off-site facility(s) for disposal, with treatment as necessary;

d. excavation of an estimated 7,500 cubic yards of contaminated soil and debris from the capacitor disposal areas and transportation for disposal off site, with treatment as necessary [Note: this excavation is being addressed under separate contract and is not to be considered part of this contract];

e. installation of a multi-layer cap or hardscape;

f. installation of engineering controls;

g. property restoration; and

h. implementation of institutional controls.

1.1.2 Goals

The following goals are for excavation and remediation.

1.1.2.1 Excavating Contaminated Soils

Excavation will be performed to remove contaminated soil and encountered subsurface debris. Contaminated soils will be managed as described below in paragraph REMEDIATION.

1.1.2.2 Excavating Contaminated Debris

Excavation will be performed to remove contaminated soil and encountered subsurface debris. Based on the remedial investigations, the subsurface debris is anticipated to include concrete, cobbles and boulders, scrap metal and utilities. All subsurface concrete debris found to be within ten feet of soil contamination and subsurface metal debris will be disposed in a TSCA/RCRA permitted facility. Analytical testing for potentially contaminated debris shall be performed in accordance with disposal facility requirements. All surface debris and other concrete debris will be disposed in a non-hazardous landfill following sampling for disposal facility requirements.

1.1.2.3 Remediation

In accordance with the ROD, all in-situ soil and debris containing Total PCBs at concentrations equal to or greater than 500 ppm, and/or containing other chemical contaminants greater than NJDEP IGWSCC standards, shall be excavated and treated on-site or transported for off-site disposal. Material that is treated on-site shall have Total PCB concentrations less than 10 ppm and other chemical contaminant concentrations less the NJDEP IGWSCC standards confirmed by analytical results prior to reuse on-site. Low temperature thermal desorption will be utilized to remediate the contaminated soils. Soils with concentrations less than 500 ppm Total PCBs but greater than 10 ppm Total PCBs are to be capped with a multi-layer cap or hardscaped. Soils with concentrations between 2 ppm and 10 ppm Total PCBs are subject to engineering controls. Dioxins are also a concern at the site and EPA has selected a remedial goal of 5 ppb for site soil.

Table 01110-3, which can be found at the end of this section, outlines the NJDEP IGWSCC standards to which the Contractor shall adhere.

1.1.3 Information Resources

The following information resources are listed for information purposes only.

Feasibility Study for Operable Unit 2 (OU-2) Facility Soils and Buildings, Tetra Tech-Foster Wheeler, Inc., April 2004;

Record of Decision, Cornell-Dubilier Electronics Superfund Site, South Plainfield, New Jersey, United States Environmental Protection Agency, Region II, September 2004;

Final Remedial Investigation Report for Operable Unit 2 (OU-2) On-Site Soils and Buildings - Volume I and II, Tetra Tech-Foster Wheeler, Inc.,

December 2002;

Final Soils Field Sampling Plan, Malcolm Pirnie, Inc., August 2006;

Final Soils Quality Assurance Project Plan, Malcolm Pirnie, Inc., August 2006;

Final Soils Safety and Health Plan, Malcolm Pirnie, Inc., July 2006; and

Final Pre-Design Investigation Report, Malcolm Pirnie, Inc., August 2007.

1.1.4 Location and Site Description

The Cornell-Dubilier Electronics Superfund Site (the Site) is located at 333 Hamilton Boulevard in the Borough of South Plainfield, Middlesex County, New Jersey as shown in the drawings. The Site consists of approximately 22 acres including the Hamilton Industrial Park, contaminated portions of the Bound Brook adjacent to and downstream of the industrial park, and contaminated residential, municipal, and commercial properties in the vicinity of the former Cornell-Dubilier Electronics Corporation, Inc. (Cornell-Dubilier Electronics) facility. Former buildings on the Site have been demolished and their footprints covered with temporary asphalt pavement. The only remaining structure at the site is a water tower, which is to be protected during the performance of the work. The Site is bounded by the Lehigh Valley Railroad to the northeast, Factory Street to the southeast, Spicer Avenue to the southwest, and by Hamilton Boulevard. The area is a busy, heavily developed mixed use neighborhood.

The developed portion of the facility (the northwestern portion) comprises approximately 45 percent of the total land area which formerly contained buildings, a system of catch basins to channel storm water flow, and paved roadways. Several of the catch basins drain into a storm water collection system whose outfalls discharge at various locations along Bound Brook. The other 55 percent of the property is predominantly vegetated. The central part of the undeveloped portion is primarily an open field, with some wooded areas to the northeast and south, and a deteriorated, partially paved area in the middle. The northeast and southeast boundaries consist primarily of wetland areas adjacent to Bound Brook, which flows from the eastern corner across the northeastern border of the undeveloped portion of the facility (Foster Wheeler, 2002).

1.1.5 Site History and Background

Cornell-Dubilier Electronics operated what is now the Hamilton Industrial Park from 1936 to 1962, manufacturing electronic components including capacitors. Polychlorinated biphenyls (PCBs) and chlorinated organic degreasing solvents were used in the manufacturing process. Based on historic site practices, portions of the Site have the potential to be contaminated with asbestos, lead, mercury, PCBs, TCE and dechlorination products, and other constituents of potential concern (COPCs).

Previous studies and evaluations which are listed in paragraph: Information Resources document the presence of hazards at the site including the presence of contaminants associated with the site buildings which have been demolished and removed from the site.

1.1.6 Project Sequencing

The remediation of the Site includes the following two major components in their anticipated order of occurrence:

Capacitor Disposal Area (CDA) excavation and waste disposal (by separate Contract)

Soils excavation and on-site LTTD treatment and Site paving / restoration (this Contract).

1.1.6.1 CDA Contract

The CDA is currently being remediated under a separate Government contract. That contract addresses the approximate location of the CDA as determined during the RI and as presented in the ROD. The full depth of contamination within the CDA will be addressed as part of the CDA program under that separate contract. At the conclusion of the CDA remediation, the contractor responsible for that effort will be providing the Contracting Officer with survey mapping showing the exact extent of the CDA remediation. That survey mapping will be incorporated into this contract as appropriate. The Contractor shall coordinate with the Contracting Officer to confirm the overall effort conducted as part of the CDA contract and shall adjust the implementation of this contract accordingly.

1.1.6.2 Soil Excavation and LTTD Treatment under this Contract

Under this contract, the Contractor shall: excavate all site soils contaminated in excess of ROD cleanup criteria, perform size separation of excavated materials, treat amenable materials using an on-site LTTD unit provided by the Contractor, dispose off-site all materials that are not amenable to treatment by LTTD, backfill to suitable subgrades using either treated material or imported backfill, install site drainage features, and pave to final grades.

1.1.6.3 Overall Implementation Schedule

The CDA contract will be completed under separate contract by others by mid 2008. Implementation of this contract is anticipated next with procurement, fabrication, and installation of the LTTD system occurring first, followed by excavation and treatment of contaminated soils.

The Contractor shall develop an overall construction schedule in accordance with the requirements of these contract documents. Sequencing of site excavation shall be specified in the construction schedule.

1.1.7 Method of Contracting and Project Execution

This is a cost reimbursable contract. The Bid Schedules have been configured for the Contractor to provide pricing to excavate and remediate the contaminated soils. It is anticipated that the work addressed by this contract would be performed in a two to three year period; however, it is possible that the work will be executed over a multi-year duration to accommodate the Government funding allocation.

1.1.8 Scope of Work

The Work to be performed includes procurement and installation of a LTTD unit, hazardous materials excavation, soils treatment using LTTD, on-site

backfilling of soils which are treated to below remediation standards, and off-site disposal of soils and debris which are not amenable to treatment and remain above remediation standards. The work shall consist of furnishing all labor, materials, tools, equipment and supervision to remediate the Cornell-Dubilier site soils and debris. The items of work include, but are not limited to:

a. Acquiring and paying the costs of all necessary permits/equivalencies and licenses. The Contractor shall be responsible for all fines related to compliance with permits or permit equivalencies obtained for the site. All permits shall be obtained in the Contractor's name. USEPA will be designated as the generator for hazardous waste manifesting. Contractor shall obtain and pay for all variances and approvals, including but not limited to the following:
   (1) Provisional General Hazardous Waste Generator ID No. for the site if necessary.
   (2) Notification to Borough of South Plainfield Police and Fire Departments for emergency purposes and for traffic routing.
   (3) Borough of South Plainfield Sewer Department, American Water Company and applicable utility companies.
b. Implementing site monitoring and controls including temporary chain link fencing and security, as discussed in detail in the following Sections:
   (1) 02310 EXCAVATION
   (2) 01356A STORM WATER POLLUTION PREVENTION MEASURES
   (3) 01500A TEMPORARY CONSTRUCTION FACILITIES
   (4) 02821A FENCING
   (5) 01351 SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW)
c. Excavation and backfilling as specified in Section 02310 EXCAVATION.
d. Sampling, testing, treatment, removal and disposal of hazardous materials including soil and debris at an approved disposal facility as specified in Sections 02181 REMEDIATION OF CONTAMINATED SOILS BY THERMAL DESORPTION and 02350 WASTE TRANSPORTATION AND DISPOSAL.
e. Site grading as specified in Section 02310 EXCAVATION.
f. Site paving as specified in Section 02742 HOT MIX BITUMINOUS PAVEMENT.
g. Site drainage as specified in Section 02630 STORM DRAINAGE.

1.1.9 Related Work Not Included

Related work at the site not included in this contract:

a. Excavation and removal of capacitors and debris from the former Capacitor Disposal Area (CDA) shown on the Excavation Plan Drawings. This work is currently being performed by others under separate contract.

1.2 LIMITS OF WORK

The limits of work are designated as indicated on the Contract Drawings. Contractor shall not work beyond the limits indicated on the drawings without prior approval from the Contracting Officer.

The Contractor shall satisfy the requirements of all access agreements for the work obtained by the Government.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES.:

SD-01 Preconstruction Submittals

Quality of Life Plan; G.

1.4 PERMITS

The Contractor is responsible for complying with all local, state, and federal permit requirements necessary to perform the work defined in this contract.

1.5 EXISTING WORK

In addition to "FAR 52.236-9, Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements":

a. Remove or alter existing work in such a manner as to prevent injury or damage to any portions of the existing work which are to remain.

1.6 LOCATION OF UNDERGROUND FACILITIES

Utility locations shown on the contract drawings are for information purposes only. The Contractor shall contact all local utilities and identify all underground utilities prior to start of excavation and submit underground utility mapping to the Contracting Officer 15 calendar days in advance of any site work in accordance with Section 02310 EXCAVATION.

1.6.1 Notification Prior to Excavation

Notify the Contracting Officer at least 15 days prior to starting excavation work.

1.6.2 Existing Water Supply Line

The Contractor shall note the presence of a 36-inch water supply line that traverses the excavation areas as shown in the Contract Drawings. At this time, the requirements of this contract call for full protection of that water supply line during all performance of work and removal of all contaminated soil around the line. The Government is currently discussing the proposed work with the utility owner, New Jersey American Water and those discussion may lead to additional requirements under this contract.

1.7 ENVIRONMENTAL PROTECTION

Protect human and natural environments during excavation and restoration. Environmental protection requires consideration of air, water, and land resources and involves noise, solid waste management, and management of other pollutants. Prevent, abate, and control all environmental pollution arising from the construction activities in performance of this contract. Comply with all federal, state, and local laws and regulations. Perform all work in such a manner as to minimize the pollution of air, water, or land, and, within reasonable limits, control noise and disposal of solid

waste materials, as well as other pollutants. Do not remove, cut, deface, injure, or destroy trees or shrubs, except in areas to be cleared, without the Contracting Officer's permission.

1.8 QUALITY OF LIFE REQUIREMENTS

The Contractor shall note that the planned remedial activities at the site will impact the surrounding community. The following considerations would have the greatest potential to impact the quality of life of residents in the vicinity of the OU-2 remedial action:

a. Air Quality
b. Noise
c. Lighting
d. Odor
e. Traffic
f. Working Hours

Minimizing impact requires consideration of how the remedial activities may affect these areas and developing criteria that will accomplish this goal. The Contractor shall be required to submit a Quality of Life Plan within 30 days of the Notice to Proceed that will describe how impacts to the surrounding residential areas will be minimized and the criteria that will be required to do so. The plan should, at a minimum, include the considerations and criteria presented in Table 01110-1 below. Where multiple criteria exist, the plan should incorporate the more stringent of the two. Table 01110-2 is a summary of the South Plainfield Code, Chapter 5, Section 135-5. The South Plainfield Code, Chapter 5, Section 135-5 is attached as Appendix A to this specification.

TABLE 01110-1

QUALITY OF LIFE REQUIREMENTS

QUALITY OF LIFE CONSIDERATION	ASSOCIATED REMEDIAL ACTIVITY	SPECIFICATION REFERENCE	LOCAL THRESHOLD CRITERIA
Air Quality	Material excavation LTTD treatment Site paving/restoration	01351 02181	None
Noise	Material excavation LTTD treatment Site paving/restoration	01351 02181 02320	South Plainfield Code, Chapter 5, Section 135-5
Lighting	Material excavation LTTD treatment Site paving/restoration	01351	None
Odor	Material excavation LTTD treatment Site paving/restoration	02181	None
Traffic	Off-site disposal	01500A	None
Working Hours	Material excavation LTTD treatment Site paving/restoration	01140	None

TABLE 01110-2

BOROUGH OF SOUTH PLAINFIELD NOISE ORDINANCES[1]

Time of Day	Maximum Permissible Continuous Airborne Sound (dBA)	Maximum Permissible Impulsive[2] Sound (decibels)
7 am to 10 pm	65	80
10 pm to 7 am	50	80

1. As they relate to construction projects
2. Impulsive sound is defined in the South Plainfield Code as a "Sound of short duration, usually less than one (1) second, with an abrupt onset and rapid decay. Examples of sources of impulsive sound include explosions, drop forge impacts, and the discharge of firearms."

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SOIL CLEANUP CRITERIA (mg/kg)
(LAST REVISED - 5/12/99)

This listing represents the combination of Tables 3-2 and 7-1 from the Department of Environmental Protection and Energy's February 3, 1992 proposed rule entitled Cleanup Standards for Contaminated Sites, N.J.A.C. 7:26D, as corrected based upon errors identified by the Department during or subsequent to the comment period as well as new toxicological or other information obtained since the rule proposal. Please refer to the respective footnotes for more detail. Notwithstanding, where the following criteria are based on human health impacts, the Department shall still consider environmental impacts when establishing site specific cleanup criteria. This along with other site-specific factors including background conditions may result in site specific cleanup criteria which differ from the criteria listed below. Therefore, this list shall not be assumed to represent approval by the Department of any remedial action or to represent the Department's opinion that a site requires remediation.

Note: Material bracketed **[thus]** is deleted and material underlined **thus** is added

Contaminant	CASRN	Residential Direct Contact Soil Cleanup Criteria (a) (b) (RDCSCC)	Non- Residential Direct Contact Soil Cleanup Criteria (a) (b) (NRDCSCC)	Impact to Ground water Soil Cleanup Criteria (b) (IGWSCC)
Acenaphthene	83-32-9	3400	10000(c)	100
Acetone (2-propanone)	67-64-1	1000(d)	1000(d)	100
Acrylonitrile	107-13-1	1	5	1
Aldrin	309-00-2	0.040	0.17	50
Anthracene	120-12-7	10000(c)	10000(c)	100
Antimony	7440-36-0	14	340	(h)
Arsenic	7440-38-2	20 (e)	20 (e)	(h)
Barium	7440-39-3	700	47000(n)	(h)
Benzene	71-43-2	3	13	1
Benzo(b)fluoranthene (3,4-Benzofluoranthene)	205-99-2	0.9	4	50
Benzo(a)anthracene (1,2-Benzanthracene)	56-55-3	0.9	4	500
Benzo(a)pyrene (BaP)	50-32-8	0.66(f)	0.66(f)	100
Benzo(k)fluoranthene	207-08-9	0.9	4	500
Benzyl Alcohol	100-51-6	10000(c)	10000(c)	50
Beryllium	7440-41-7	**[1(f)]** **2 (e)**	**[1(f)]** **2 (e)**	(h)
Bis(2-chloroethyl) ether	111-44-4	0.66(f)	3	10

SOIL CLEANUP CRITERIA (mg/kg)
(LAST REVISED - 5/12/99)

Contaminant	CASRN	(RDCSCC)	(NRDCSCC)	(IGWSCC)
Bis(2-chloroisopropyl)ether	108-60-1	2300	10000(c)	10
Bis(2-ethylhexyl) phthalate	117-81-7	49	210	100
Bromodichloromethane (Dichlorobromomethane)	75-27-4	11	46	1
Bromoform	75-25-2	86	370	1
Bromomethane (Methyl bromide)	74-83-9	79	1000 (d)	1
2-Butanone (Methyl ethyl ketone) (MEK)	78-93-3	1000 (d)	1000 (d)	50
Butylbenzyl phthalate	85-68-7	1100	10000 (c)	100
Cadmium	7440-43-9	[1] 39	100	(h)
Carbon tetrachloride	56-23-5	2 (k)	4 (k)	1
4-Chloroaniline (*p*-Chloroaniline)	106-47-8	230	4200	(r)
Chlorobenzene	108-90-7	37	680	1
Chloroform	67-66-3	19 (k)	28 (k)	1
4-Chloro-3-methyl phenol (*p*-Chloro-*m*-cresol)	59-50-7	10000 (c)	10000 (c)	100
Chloromethane (Methyl chloride)	74-87-3	520	1000 (d)	10
2-Chlorophenol (*o*-Chlorophenol)	95-57-8	280	5200	10
Chromium – hexavalent (VI)	18540-29-9	240; 270 (g); (i)	6100; 20 (g); (i)	(h)
Chromium – trivalent (III)	16065-83-1	120,000	(j)	(l)
Chrysene	218-01-9	9	40	500
Copper	7440-50-8	600 (m)	600 (m)	(h)
Cyanide	57-12-5	1100	21000 (o)	(h)
4,4'-DDD (p,p'-TDE)	72-54-8	3	12	50
4,4'-DDE (p,p'-DDX)	72-55-9	2	9	50
4,4'-DDT	50-29-3	2	9	500
Dibenz(a,h)anthracene	53-70-3	0.66 (f)	0.66 (f)	100
Dibromochloromethane (Chlorodibromomethane)	124-48-1	110	1000 (d)	1
Di-n-butyl phthalate	84-74-2	5700	10000 (c)	100
Di-n-octyl phthalate	117-84-0	1100	10000 (c)	100
1,2-Dichlorobenzene (*o*-Dichlorobenzene)	95-50-1	5100	10000 (c)	50
1,3-Dichlorobenzene (*m*-Dichlorobenzene)	541-73-1	5100	10000 (c)	100

SOIL CLEANUP CRITERIA (mg/kg)
(LAST REVISED - 5/12/99)

Contaminant	CASRN	(RDCSCC)	(NRDCSCC)	(IGWSCC)
1,4-Dichlorobenzene (*p*-Dichlorobenzene)	106-46-7	570	10000 (c)	100
3,3'-Dichlorobenzidine	91-94-1	2	6	100
1,1-Dichloroethane	75-34-3	570	1000 (d)	10
1,2-Dichloroethane	107-06-2	6	24	1
1,1-Dichloroethene	75-35-4	8	150	10
1,2-Dichloroethene (trans)	156-60-5	1000 (d)	1000 (d)	50
1,2-Dichloroethene (cis)	156-59-2	79	1000 (d)	1
2,4-Dichlorophenol	120-83-2	170	3100	10
1,2-Dichloropropane	78-87-5	10	43	(r)
1,3-Dichloropropene(cis and trans)	542-75-6	4	5 (k)	1
Dieldrin	60-57-1	0.042	0.18	50
Diethyl phthalate	84-66-2	10000 (c)	10000 (c)	50
2,4-Dimethyl phenol	105-67-9	1100	10000 (c)	10
Dimethyl phthalate	131-11-3	10000 (c)	10000 (c)	50
2,4-Dinitrophenol	51-28-5	110	2100	10
Dinitrotoluene(2,4-/2,6-mixture)	25321-14-6	1 (l)	4 (l)	10 (l)
Endosulfan	115-29-7	340	6200	50
Endrin	72-20-8	17	310	50
Ethylbenzene	100-41-4	1000 (d)	1000 (d)	100
Fluoranthene	206-44-0	2300	10000 (c)	100
Fluorene	86-73-7	2300	10000 (c)	100
Heptachlor	76-44-8	0.15	0.65	50
Hexachlorobenzene	118-74-1	0.66 (f)	2	100
Hexachlorobutadiene	87-68-3	1	21	100
Hexachlorocyclopentadiene	77-47-4	400	7300	100
Hexachloroethane	67-72-1	6	100	100
Indeno(1,2,3-cd)pyrene	193-39-5	0.9	4	500
Isophorone	78-59-1	1100	10000 (c)	50
Lead	7439-92-1	400 (p)	600 (q)	(h)

SOIL CLEANUP CRITERIA (mg/kg)
(LAST REVISED - 5/12/99)

Contaminant	CASRN	(RDCSCC)	(NRDCSCC)	(IGWSCC)
Lindane (gamma BHC) (gamma HCH)	58-89-9	0.52	2.2	50
2-Methylphenol (*o*-creosol)	95-48-7	2800	10000 (c)	(r)
4-Methylphenol (*p*-creosol)	106-44-5	2800	10000 (c)	(r)
Methoxychlor	72-43-5	280	5200	50
Mercury	7439-97-6	14	270	(h)
4-Methyl-2-pentanone (MIBK)	108-10-1	1000 (d)	1000 (d)	50
Methylene chloride (Dichloromethane)	75-09-2	49	210	1
Naphthalene	91-20-3	230	4200	100
Nickel	7440-02-0	250	2400 (k) (n)	(h)
Nitrobenzene	98-95-3	28	520	10
N-Nitrosodiphenylamine	86-30-6	140	600	100
N-Nitrosodi-n-propylamine	621-64-7	0.66 (f)	0.66 (f)	10
PCBs (Polychlorinated biphenyls)	1336-36-3	0.49	2	50
Pentachlorophenol	87-86-5	6	24	100
Phenol	108-95-2	10000 (c)	10000 (c)	50
Pyrene	129-00-0	1700	10000 (c)	100
Selenium	7782-49-2	63	3100 (n)	(h)
Silver	7440-22-4	110	4100 (n)	(h)
Styrene	100-42-5	23	97	100
1,1,1,2-Tetrachloroethane	630-20-6	170	310	1
1,1,2,2-Tetrachloroethane	79-34-5	34	70 (k)	1
Tetrachloroethene (Tetrachloroethylene) (PCE)	127-18-4	4 (k)	6 (k)	1
Thallium	7440-28-0	2 (f)	2 (f)	(h)
Toluene	108-88-3	1000 (d)	1000 (d)	500
Toxaphene	8001-35-2	0.10 (k)	0.2 (k)	50
1,2,4-Trichlorobenzene	120-82-1	68	1200	100
1,1,1-Trichloroethane	71-55-6	210	1000 (d)	50
1,1,2-Trichloroethane	79-00-5	22	420	1
Trichloroethene (Trichloroethylene) (TCE)	79-01-6	23	54 (k)	1

SOIL CLEANUP CRITERIA (mg/kg)
(LAST REVISED - 5/12/99)

Contaminant	CASRN	(RDCSCC)	(NRDCSCC)	(IGWSCC)
2,4,5-Trichlorophenol	95-95-4	5600	10000 (c)	50
2,4,6-Trichlorophenol	88-06-2	62	270	10
Vanadium	7440-62-2	370	7100 (n)	(h)
Vinyl chloride	75-01-4	2	7	10
Xylenes (Total)	1330-20-7	410	1000 (d)	[10] 67 (s)
Zinc	7440-66-6	1500 (m)	1500 (m)	(h)

Footnotes:

(a) Criteria are health based using an incidental ingestion exposure pathway except where noted below.
(b) Criteria are subject to change based on site specific factors (e.g., aquifer classification, soil type, natural background, environmental impacts, etc.).
(c) Health based criterion exceeds the 10,000 mg/kg maximum for total organic contaminants.
(d) Health based criterion exceeds the 1000 mg/kg maximum for total volatile organic contaminants.
(e) Cleanup standard proposal was based on natural background.
(f) Health based criterion is lower than analytical limits; cleanup criterion based on practical quantitation level.
(g) Criterion based on the inhalation exposure pathway.
(h) The impact to ground water values for inorganic constituents will be developed based upon site specific chemical and physical parameters.
(i) Site specific determination required for SCC for the allergic contact dermatitis exposure pathway.
(j) Contaminant not regulated for this exposure pathway.
(k) Criteria based on inhalation exposure pathway, which yielded a more stringent criterion than the incidental ingestion exposure pathway.
(l) No criterion derived for this contaminant.
(m) Criterion based on ecological (phytotoxicity) effects.
(n) Level of the human health based criterion is such that evaluation for potential environmental impacts on a site by site basis is recommended.
(o) Level of the criterion is such that evaluation for potential acute exposure hazard is recommended.
(p) Criterion based on the USEPA Integrated Exposure Uptake Biokinetic (IEUBK) model utilizing the default parameters. The concentration is considered to protect 95% of target population (children) at a blood lead level of 10 *u*g/dl.
(q) Criteria were derived from a model developed by the Society for Environmental Geochemistry and Health (SEGH) and were designed to be protective for adults in the workplace.
(r) Insufficient information available to calculate impact to ground water criteria.
(s) Criterion based on new drinking water standard.

SECTION 01140

WORK RESTRICTIONS
04/06

PART 1 GENERAL

1.1 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Name and experience of the Project Manager; G

List of Contact Personnel; G

1.2 PROJECT MANAGEMENT

The Contractor shall provide an overall project management team including a project manager and administrative personnel qualified and capable of providing management for project including construction supervision, expediting labor relations, staffing and recordkeeping. The contractor shall submit a detailed project organizational chart, which shows the key individuals directly involved in the project.

The Project Manager shall take overall responsibility for conducting the work and for assuring the work is conducted in accordance with the requirements of the contract documents. The Project Manager shall be responsible for communication and information exchange with the Contracting Officer and shall represent the Contractor in all project related activities. The project manager, at a minimum, shall have authority to sign payment requests and change orders. The Contractor shall submit within 14 calendar days following notice to proceed, the name and experience of the Project Manager in writing to the Contracting Officer.

1.3 SPECIAL SCHEDULING REQUIREMENTS

a. Have materials, equipment, and personnel required to perform the work at the site prior to the commencement of the work. Specific items of work to which this requirement applies include:

(1) Temporary Facility Trailers in accordance with Section 01110 SUMMARY OF WORK and Section 01500A TEMPORARY CONSTRUCTION FACILITIES.

b. The temporary facility will remain in operation during the entire construction period. The Contractor shall conduct his operations so as to cause the least possible interference with normal operations of the activity.

c. Permission to interrupt any Activity roads, railroads, and/or utility service shall be requested in writing a minimum of 15 calendar days prior to the desired date of interruption.

d. The work under this contract requires special attention to the scheduling and conduct of the work in connection with existing operations. Identify on the construction schedule each factor which constitutes a potential interruption to operations.

1.4 DATA RETRIEVAL

The Contractor shall provide a data retrieval recordkeeping system as approved by the Contracting Officer which will make available in a timely manner records of all site activity, quantities of materials delivered to the site, quantity of materials utilized, water discharged, waste quantities produced, laboratory results, waste transportation activity information and all other information required to support requests for payment.

1.5 CONTRACTOR ACCESS AND USE OF PREMISES

1.5.1 Activity Regulations

Ensure that Contractor personnel employed on the Activity become familiar with and obey Activity regulations including safety, fire, traffic and security regulations. Keep within the limits of the work and avenues of ingress and egress. Wear hard hats in designated areas. Do not enter any restricted areas unless required to do so and until cleared for such entry. The Contractor's equipment shall be conspicuously marked for identification. Contractor Activity and access shall be in accordance with Section 01110 SUMMARY OF WORK.

1.5.1.1 Subcontractors and Personnel Contacts

Furnish a list of contact personnel for the Contractor and subcontractors including addresses and telephone numbers for use in the event of an emergency. As changes occur and additional information becomes available, correct and change the information contained in previous lists.

1.5.1.2 Identification Badges

Not used.

1.5.1.3 Personnel Entry Approval

Failure to obtain entry approval will not affect the contract price or time of completion.

1.5.2 Working Hours

Work shall be performed over a 24-hour period, Monday through Sunday.

1.5.3 Work Outside Regular Hours

Work outside regular working hours requires Contracting Officer approval. Make application 7 calendar days prior to such work to allow arrangements to be made by the Government for inspecting the work in progress. During periods of darkness, the different parts of the work shall be lighted in a manner approved by the Contracting Officer.

1.5.4 Exclusionary Period

There have been no exclusionary periods considered in computing the time

allowed for the performance of this contract.

1.5.5 Utility Cutovers and Interruptions

a. Make utility cutovers and interruptions after normal business working hours or on Saturdays, Sundays, and Government holidays; cutovers and interruptions shall be strictly scheduled through the Contracting Officer. Conform to procedures required in the paragraph "Work Outside Regular Hours."

b. Interruption to water, sanitary sewer, storm sewer, telephone service, electric service, air conditioning, heating, fire alarm, and compressed air shall be considered utility cutovers pursuant to the paragraph entitled "Work Outside Regular Hours."

1.6 SECURITY REQUIREMENTS

Contract Clause "FAR 52.204-2, Security Requirements and Alternate II," "FAC 5252.236-9301, Special Working Conditions and Entry to Work Area," and Section 01540 apply.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01201

PRE-CONSTRUCTION AND PRE-WORK CONFERENCES
08/06

PART 1 GENERAL

1.1 PRE-CONSTRUCTION CONFERENCE

Within 15 calendar days after issuance of the Notice to Proceed (NTP), the Contractor shall meet with the Contracting Officer for a Pre-Construction Conference. The purpose of this conference is to discuss the contract clauses (Division 0) and project schedules including: submittals, safety, payrolls, labor relations, environmental protection, work plan and schedules, schedule of values, payment procedures, and procurement of materials. The principal features of work will be reviewed and any questions regarding the Contract and the Site will be addressed. Attendance by the Contractors Superintendent, quality control personnel, safety personnel, and any major Subcontractor's Superintendent is required.

1.2 PRE-WORK CONFERENCE

Within 30 calendar days after the Pre-Construction Conference and prior to mobilization, a Pre-Work Conference will be held between the Contractor and Contracting Officer. Attendance by the Contractor's superintendent, quality control personnel, safety personnel, and any major subcontractor's superintendents shall be required. The purpose of this conference is to review submittals, safety, payrolls and labor relations, environmental protection, project schedules and payment, and procurement of materials.

1.2.1 Pre-Work Conference Requirements

Unless specified otherwise, at least 14 calendar days prior to the Pre-Work Conference and no later than 30 days after the Notice To Proceed, the Contractor shall submit 6 copies of the following for review at the Pre-Work Conference:

a. Initial Project Schedule, in accordance with SECTION 01320
b. Site Safety and Health Plan, in accordance with SECTION 01351
c. Air Monitoring Plan, in accordance with SECTION 01351
d. Soil Erosion and Sediment Control Plan, in accordance with SECTION 01356A
e. Sampling and Analysis Plan, in accordance with SECTION 01450A
f. Contractor Quality Control Plan, in accordance with SECTION 01451A
g. Security Plan, in accordance with SECTION 01540
h. Temporary Site Facility Layout Plan, in accordance with SECTION 01500A
i. Excavation and Handling Plan, in accordance with SECTION 02310
j. List of Subcontractors
k. Letter appointing Superintendent
l. LTTD Sequencing and Scheduling Plan in accordance with Section 02181 REMEDIATION OF CONTAMINATED SOILS BY THERMAL DESORPTION
m. Lead Compliance Plan in accordance with Section 13281A LEAD BASED PAINT AWARENESS
n. Housekeeping Plan in accordance with Section 01500A TEMPORARY CONSTRUCTION FACILITIES

o. Waste Management Plan and Addendum in accordance with Section 02350 WASTE TRANSPORTATION AND DISPOSAL
p. Quality of Life Plan in accordance with Section 01110 SUMMARY OF WORK.
q. A Decontamination Pad layout in accordance with Section 01500A TEMPORARY CONSTRUCTION FACILITIES.

These will be briefly reviewed to provide the Contracting Officer with a general understanding of the Contractor Quality Control (CQC) Plan and other submitted documents. The Contractor's schedule, particularly for the initial startup period, will be discussed. Questions concerning the administrative requirements outlined during the Pre-Construction Conference or any other aspect of the project may also be addressed.

1.3 PRE-CONSTRUCTION QUALITY CONTROL CONFERENCE

After the Pre-Work Conference, before start of construction, a Pre-Construction Quality Control Conference will be held between the Contractor and Contracting Officer. The purpose of this conference is to discuss the quality control procedures to be used for all on-site and off-site work, and defining the interrelationship of the Contractor's Management and the Contracting Officer's Quality Assurance.

1.4 PRE-CONSTRUCTION SAFETY CONFERENCE

The Contractor shall meet with the Contracting Officer for a Pre-Construction Safety Conference, before start of construction. The purpose of this conference is to discuss how work will be implemented including, but not limited to, work procedures, safety considerations associated with those work procedures, heavy equipment to be used, training to operate equipment, and safety requirements, such as training and safety equipment

1.5 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-11 Closeout Submittals

Pre-Construction Conference Meeting Minutes; G, A/E

Pre-Work Conference Meeting Minutes; G, A/E

Pre-Construction Quality Control Conference Meeting Minutes; G, A/E

Pre-Construction Safety Conference Meeting Minutes; G, A/E

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 GENERAL

The Contractor shall schedule and administer the Pre-Construction Conference, Pre-Work Conference, Pre-Construction Quality Control Conference and Pre-Construction Safety Conference, as specified in Paragraphs 1.1 through 1.4 of this section.

The Contractor shall record the minutes of the meetings including significant proceedings and decisions arising from the four (4) conferences (Pre-Construction Conference Meeting Minutes, Pre-Work Conference Meeting Minutes, Pre-Construction Quality Control Conference Meeting Minutes, and Pre-Construction Safety Conference Meeting Minutes), and within five (5) calendar days after each meeting furnish 10 copies of the minutes to the Contracting Officer. After the Contracting Officer's review and approval, the Contractor shall distribute copies to each participant in the meeting and to parties affected by decisions made at the meeting.

3.2 GENERAL CONFERENCE MEETING REQUIREMENTS

The Contractor shall administer the following general requirements for the conference meetings:

a. Prepare agenda for conferences.
b. Make physical arrangements for conferences.
c. Preside at conferences.

Record the minutes including a detailed description of proceedings and decisions.

The Contractor shall provide and pay for up to five off-site locations to teleconference into the meetings via phone.

-- End of Section --

SECTION 01202

PROJECT PROGRESS MEETINGS
08/06

PART 1 GENERAL

1.1 SCOPE OF WORK

This section describes the minimum requirements for conducting Project Progress Meetings during execution of the construction work.

The Contractor shall schedule and administer Project Progress Meetings at a minimum of one per week and such additional meetings as required. Meetings shall be scheduled when requested by either the Contracting Officer or the Contractor during any stage of this project when it is deemed necessary to raise any significant questions, establish new guidelines, introduce a new aspect to the project, or any other items that will affect the progress of work. The Contractor shall attend these meetings with all necessary personnel as determined by the Contracting Officer for the duration of this contract.

Meetings and conferences shall take place at the project site or some other location that is satisfactory to both the Contracting Officer and the Contractor.

1.2 ATTENDANCE

The following persons shall attend the Progress Meetings:

Contracting Officer or its representative.

Contractor's Site Superintendent.

Contractor's Project Manager.

Contractor's Quality Control Manager and/or Key Quality Control Staff.

Contractor's Safety and Health Manager and/or Safety and Health Officer.

Subcontractors as appropriate to the agenda.

Suppliers as appropriate to the agenda.

Others as requested by the Contracting Officer or as appropriate to the agenda.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-11 Closeout Submittals

Project Progress Meeting Minutes; G

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 GENERAL

The Contractor shall schedule and administer Project Progress Meetings at a minimum of once per week and additional meetings as required, and if requested by the Contracting Officer.

3.2 GENERAL MEETING REQUIREMENTS

The Contractor shall administer the following general requirements for the Progress Meetings:

a. Prepare agenda for meetings.

b. Make physical arrangements for meetings.

c. Preside at meetings.

d. Record the minutes including a detailed description of proceedings and decisions.

The Contractor shall be responsible for recording Project Progress Meeting Minutes and including any significant proceedings and decisions. The Contractor shall reproduce and submit to the Contracting Officer within three (3) calendar days after each meeting three (3) copies of the minutes of the meeting. After the Contracting Officer's review and approval, the Contractor shall distribute copies to each participant in the meeting and to parties affected by decisions made at the meeting.

The Contractor shall provide and pay for up to five off-site locations to teleconference into the meetings via phone.

3.3 SUGGESTED AGENDA

The following is a suggested agenda for Project Progress Meetings:

a. Review and approval of minutes of previous meeting.

b. Review of Health and Safety.

c. Review of work progress.

d. Field observations, problems, conflicts.

e. Problems which impede the schedule, and proposed corrective actions.

f. Review of off-site delivery schedules.

g. Corrective measures and procedures to regain projected schedule.

h. Revisions to project schedule.

i. Progress during succeeding work period.

j. Coordination of schedules.

k. Review of submittal schedules; expedite as required.

l. Pending changes and substitutions.

m. Review of proposed changes for effect on construction and on completion date, and effect on other contracts of the project.

n. Decision of other business, as appropriate.

-- End of Section --

SECTION 01270A

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 SCOPE:

This is a cost reimbursable contract. This section covers the methods and procedures which will be used to measure Contractor's work and to request payment. The general outline of the principal features of each bid Item as listed does not in any way limit the responsibility of the bidder for making a thorough investigation of the drawings and specifications to determine the scope of work included in each bid Item. Payment to the contractor of the amounts based on the quantities of work as measured in accordance with the specified methods of measurement and the prices stipulated in the accepted bid, will constitute complete compensation for all work shown on the Drawings, included in the specifications or other contract documents, and all costs of accepting the general risks, liabilities and obligations expressed or implied. Payment under all bid Items shall include, but not necessarily be limited to, compensation for furnishing all plant, supervision, labor, equipment, overhead, profit, materials and services, and performing all work required to accomplish and complete the work specified under each Item and all other work required.

1.2 DESCRIPTION OF BID ITEMS

1.2.1 LUMP SUM BID ITEMS

Payment Items for the work of this contract for which contract lump sum payments will be made are listed in the Bid Schedule and described below. All costs for Items of work, which are not specifically mentioned to be included in a particular lump sum or unit price payment Item, shall be included in the listed lump sum Item most closely associated with the work involved. The lump sum price and payment made for each Item listed shall constitute full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for which separate payment is not otherwise provided.

The quantities of work performed under lump sum bid Items will not be measured except for the purposes of determining reasonable interim payments.

Interim payments will be made in accordance with the estimated value of work done as determined by the Contracting Officer or as specified in this section and in accordance with Clause: PAYMENTS UNDER FIXED-PRICE CONSTRUCTION CONTRACTS of the Contract Clauses.

1.2.2 UNIT PRICE BID ITEMS

Payment Items for the work of this contract on which the contract unit price payments will be made are listed in the Bid Schedule and described below. The unit price and payment made for each Item listed shall constitute full compensation for furnishing all labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for each of the unit price Items.

Payments will be made for unit price bid Items in accordance with the measurement methods set forth in this section or, where specified payment limits are unclear, as determined reasonably by the Contracting Officer, at the unit prices entered in the bid schedule.

Interim measurements and/or payments may be adjusted to account for partially completed work.

1.3 GENERAL ACTIVITIES (WORK ITEMS 001A THROUGH 001G)

1.3.1 Work Plans (Work Item 001A)

This Item shall be presented in the proposal as a lump sum estimate, which shall include all Items described herein, and no separate quantity measurement shall be made. This Item shall include the costs to prepare and submit the initial project schedule and the work plans or work plan amendments required by the Contract Documents. This will include one series of modifications as requested in writing by the Contracting Officer following review of the DRAFT deliverables

1.3.2 General Conditions (Work Item 001B)

This Item shall be presented in the proposal as a lump sum estimate for General Conditions provided, which shall include all Items described herein, and no separate quantity measurement shall be made. General Conditions shall include all of the Items required under these Contract Documents but not covered under other work Items, including but not limited to the following: the Contractor's cost for insurance, bonds, fees, permits, and other similar expenses directly related to and required by these Contract Documents; project-dedicated supervisory staff and equipment; home office support, project signs and warning signs; site security; compliance with specified regulatory requirements; construction period planning; administration; coordination with municipalities, subcontractors, disposal facilities, as necessary; Contractor quality control; environmental protection and spill control/emergency response; site health and safety, temporary environmental controls; decontamination facilities; project photographs and videotaping; record surveys; mobilization / demobilization (non-LTTD related); updated project schedules; surveying; erosion and sediment control; site fencing and gates; and any submittals not included under the Item for Work Plans.

Construction of the storm water detention basin, storm water piping, and catch basins shall be included under Item 004.

1.3.3 Temporary Facilities (Work Item 001C)

This Item shall be presented in the proposal as a lump sum estimate for temporary facilities provided. The proposal shall estimate the cost for temporary facilities, which shall be full compensation for all labor, material, equipment, and incidentals required to maintain and safely and properly operate all required construction trailers, including associated amenities and all utilities.

1.3.4 Air Monitoring (Work Item 001D)

This Item shall be presented in the proposal as a lump sum estimate for air monitoring services. The proposal shall estimate the cost for air monitoring services, which shall be full compensation for all labor, material, equipment, laboratory subcontract costs, and incidentals required to provide all air monitoring as required by Section 01351, Safety, Health, and Emergency Response (HTRW), and as otherwise specified.

1.4 EXCAVATION (WORK ITEMS 002A THROUGH 002G)

1.4.1 Clearing and Grubbing (Work Item 002A)

Measurement for this unit cost Item shall be per acre of clearing and grubbing on-site prior to excavation. The proposal shall estimate the cost for clearing and grubbing, which shall be full compensation for all labor, material, equipment and incidentals required for clearing and grubbing as specified in Section 02231, Clearing and Grubbing and as shown on the Contract Drawings.

Handling, sampling, and off-site disposal of cleared materials will be measured and paid under the appropriate subcategories under Item 007.

1.4.2 Excavation, Handling and Stockpiling of Material Located Within Excavation Limits(Work Item 002B)

Measurement for this unit cost Item shall be per cubic yard of excavated material on Site, measured in-place as directed by Contracting Officer. The proposal shall estimate the cost for excavation of on-site materials (soil and debris)within the excavation limits as shown on the drawings, which shall be full compensation for all labor, material, equipment, surveys and incidentals required for excavation, analytical sampling, temporary stockpiling, and on-site hauling, as directed by Contracting Officer and as specified in Section 02310, Excavation.

1.4.3 Post-Excavation Confirmatory Sampling (Work Item 002C)

Measurement for this unit cost Item shall be per sample for post excavation sidewall and floor samples. The proposal shall estimate the cost for post-excavation confirmatory sampling, which shall be full compensation for all labor, material, equipment and incidentals required for post-excavation confirmatory sampling as specified in Section 01450A, Chemical Data Quality Control.

1.4.4 Utility Protection During Excavation (Work Item 002D)

This Item shall be presented in the proposal as a lump sum. This Item includes all costs associated with utility protection during excavation. Specific utility protection work includes, but is not limited to:

a. Protection of existing water mains
b. Protection of existing sewer mains
c. Protection of existing gas mains
d. All required coordination with public utilities
e. Temporary utility bypasses if necessary (with the exception of the 36" water main)
f. Utility test pits
g. Total cost of any and all repairs and loss-of-services expenses for impacted parties to any utilities negatively impacted by work performed under this contract

1.4.5 Dewatering and Liquid Treatment (Work Item 002E)

Measurement for this unit cost Item shall be per gallon of dewatering and liquid treatment during excavation activities. The proposal shall include all costs associated with pumping, handling, temporary storage, analytical sampling, pre-treatment (as necessary), and off-site disposal of hazardous liquids generated as a result of decontamination operations and/or precipitation entering open excavations during remediation activities. The Contractor shall provide temporary cover over open excavations, and implement other site controls as necessary to limit the amount of precipitation and surface runoff entering open excavations.

1.4.6 Removal and Off-Site Disposal of Existing Bituminous Pavement Located Outside of Excavation Limits (Work Item 002F)

Measurement for this unit cost Item shall be per cubic yard of excavated pavement outside the excavation limits. This Item shall include all costs associated with the removal and off-site disposal of the existing bituminous pavement located outside of the excavation limits, to a properly permitted facility, or facility approved by Contracting Officer. Contractor shall perform analytical tests as necessary for off-site disposal of this material at no additional cost to Contracting Officer.

Excavation, handling, sampling, and off-site disposal of bituminous pavement located within the excavation limits will be covered under one of the appropriate subcategories under Item 007.

1.4.7 Bedrock Removal for Associated Stormwater Piping(Work Item 002G)

Measurement for this unit cost Item shall be per cubic yard of excavated bedrock on-Site for the purposes of storm water drainage system construction including conveyance piping and storm water detention basin. The quantity for this Item shall be measured in-place as directed by Contracting Officer. The proposal shall estimate the cost for all labor, equipment, and materials required for removal of up to approximately 4 feet depth of bedrock for the storm water detention basin and limited removal of approximately 8 feet depth of bedrock for the stormwater conveyance piping.

1.5 BACKFILL / RESTORATION (WORK ITEMS 003A THROUGH 003G)

1.5.1 Bituminous Base Course and Surface Course (Work Item 003A)

Measurement for this unit cost Item shall be per square yard of bituminous base course (NJDOT I-2) and bituminous surface course (NJDOT I-4) furnished and placed to the thickness shown on the Contract Drawings. The proposal shall estimate the cost for the bituminous base course, which shall be full compensation for all labor, material, equipment and incidentals required for purchase, importation, placement, and compaction of bituminous base course as shown and as specified in Section 02742, Hot Mix Bituminous Pavement.

1.5.3 Dense Graded Aggregate (Work Item 003B)

Measurement for this unit cost Item shall be per ton of Dense Graded Aggregate furnished and placed on-site for sub-base material and trench backfill. The proposal shall estimate the cost for Dense Graded Aggregate, which shall be full compensation for all labor, material, equipment and incidentals required for purchase, importation, placement, and compaction of dense graded aggregate as specified in Section 02320, Backfill and Compaction and as shown on the Contract Drawings.

1.5.4 Geotextile (Work Item 003C)

Measurement for this unit cost Item shall be per square foot of geotextile furnished and installed. The proposal shall estimate the cost for geotextile, which shall be full compensation for all labor, material, equipment, and incidentals required for purchase, importation, and placement of geotextile as shown and specified in Section 02373, Geotextile and shown on the Contract Drawings.

1.5.5 Imported Backfill (Work Item 003D)

Measurement for this unit cost Item shall be per cubic yard of imported backfill furnished, placed and compacted on-site. The quantity for this item shall be measured in-place on-site by surveying, as directed by Contracting Officer. The proposal shall estimate the cost for imported backfill, which shall be full compensation for all labor, material, equipment and incidentals required for purchase, importation, placement, and compaction of imported backfill as specified in Section 02320, Backfill and Compaction and as shown on the Contract Drawings. This Item shall also include the cost of analytical sampling of proposed sources of imported backfill materials.

1.5.6 Backfill Replacement of Overcut for Benching and for Overburden Material Not Requiring Treatment and Disposal (Work Item 003E)

Measurement for this unit cost Item shall be per cubic yard of excavated soil overcut for benching and for overburden not requiring treatment and disposal and will be reused on-Site. The quantity for this Item shall be measured in-place after reuse by surveying, as directed by Contracting Officer. The proposal shall estimate the cost for backfill and on-site reuse of soil overcut for benching and for overburden not requiring treatment and disposal, which shall be full compensation for all labor, material, equipment, surveys and incidentals required for analytical

sampling, on-site hauling, placement, compaction, and grading as directed by Contracting Officer and as specified in Sections 02310, Excavation; and 02320, Backfill and Compaction. Soils proposed for reuse on-site as excavation backfill shall have contaminant concentrations below the cleanup criteria specified in the ROD and shall be in conformance with NJDEP Residential/Non-Residential Direct Contact Cleanup Criteria.

1.5.7 Backfill Replacement Using Soils Treated On-Site(Work Item 003F)

Measurement for this unit cost Item shall be per cubic yard of excavated soil treated on Site. The quantity for this Item shall be measured in-place after reuse and compaction by surveying, as directed by Contracting Officer. The proposal shall estimate the cost for backfill and on-site reuse of soil treated on Site, which shall be full compensation for all labor, material, equipment, surveys and incidentals required for analytical sampling, on-site hauling, placement, compaction, and grading as directed by Contracting Officer and as specified in Sections 02310, Excavation; and 02320, Backfill and Compaction. Soils proposed for reuse on-site as excavation backfill shall have contaminant concentrations below the treatment goals specified in the ROD and shall be in conformance with NJDEP Residential/Non-Residential Direct Contact Cleanup Criteria.

1.6 STORMWATER SYSTEM, PIPING, CATCH BASINS, STORMWATER DETENTION BASIN (WORK ITEM 004)

This Item shall be presented in the proposal as a lump sum estimate. The proposal shall estimate the cost for installing all proposed catch basins on-Site and shall be full compensation Measurement for this unit cost Item shall be per linear foot of stormwater piping, catch basins, and a detention basin installed on Site. The proposal shall estimate the cost for the storm water system and shall be full compensation for all labor, material, equipment, surveys and incidentals required for installation of all stormwater system components including but not limited to; geotextile, cushion sand, outfall riser pipe, stormwater conveyance system and pipe connections, grout, testing, geomembrane, and all other miscellaneous appurtenances as directed by the Contracting Officer, as specified in Section 02630, Storm Drainage, and as shown on the contract drawings.

Removal of bedrock shall be paid for under Item 002G.

1.7 LTTD (WORK ITEMS 005A THROUGH 005E)

1.7.1 Mobilization / Demobilization (Work Item 005A)

Measurement for this unit cost Item shall be paid for on a lump sum per event basis (one for mobilization, one for demobilization) and include all labor, equipment and materials necessary to properly mobilize, set up, deconstruct, and demobilize all equipment as specified in Section 02181, Remediation of Contaminated Soils by Thermal Desorption.

1.7.2 Permitting / Engineering (Work Item 005B)

This Item shall be presented in the proposal as a lump sum estimate, which shall include all labor, equipment, deliverables, and materials necessary to obtain a NJDEP permit for the successful operation of the indirect-fire low-temperature thermal desorption unit, as specified in Section 02181, Remediation of Contaminated Soils by Thermal Desorption.

1.7.3 Performance Testing (Work Item 005C)

This Item shall be presented in the proposal as a lump sum estimate, which shall include the performance testing of the LTTD system specified in Section 02181, Remediation of Contaminated Soils by Thermal Desorption, and shall be full compensation for all labor, material, equipment, sampling, monitoring and incidentals required for performance testing. The purpose of this testing is to provide proof-of-performance for the operation of the proposed LTTD system to treat the constituents of concern.

Treated soil meeting the treatment criteria shall be paid for under Item 005D.

1.7.4 Indirect Fire, LTTD System Rental, Operation, and Equipment Maintenance (Work Item 005D)

Measurement for this unit cost Item shall be based on the total cost required by the contractor to treat each ton of treated soil. Measurement will be based on the actual tonnage of material treated as measured by the LTTD system scale.

The unit cost will include all labor, equipment, materials, and energy sources to efficiently start up, and operate the complete system, based on the specifications for operation identified in Section 02181, Remediation of Contaminated Soils by Thermal Desorption, and the specified operational hours as identified in Section 01140, Work Restrictions. This includes the operation of all vapor and gas treatment systems as required by the NJDEP and EPA permits for the site, the baghouse, condensers, other materials and air handling equipment, feed prep buildings, heat exchangers, continuous emissions monitoring equipment, and all other handling and treatment systems required. The unit cost will also include removal and disposal, including any required analytical sampling, of baghouse bags, condenser liquids, process wastewater and all other waste material associated with the operation and maintenance of the LTTD system as specified in Section 02181, Remediation of Contaminated Soils by Thermal Desorption.

1.8 Soil Disposal (WORK ITEMS 006A THROUGH 006I)

1.8.1 Sampling, Characterization, & Off-Site Disposal of Non-RCRA/Non-TSCA Soil > IGWSCC (Work Item 006A)

Measurement for this unit cost Item shall be per ton of Non-RCRA/Non-TSCA Soil greater than New Jersey's Impact to Groundwater Standards (IGWSCC) sampled, characterized, and disposed off-site at a properly permitted facility. The proposal shall estimate the cost for off-site disposal of this soil which shall be full compensation for all labor materials, equipment, and incidentals required for environmental controls, analytical sampling (as necessary to facilitate off-site disposal), loading, and off-site disposal as specified in Section 02350, Waste Transportation and Disposal. Payment will not be made until Contractor submits all weight tickets and required documentation indicating the actual tonnage of material disposed off-site. Payment will be made upon receipt of the certificate of disposal by the Contracting Officer.

1.8.2 Sampling, Characterization, & Off-Site Disposal of RCRA Soil Not Requiring Pre-Treatment and > IGWSCC (Work Item 006B)

Measurement for this unit cost Item shall be per ton of RCRA Soil Not Requiring Pre-Treatment and greater than IGWSCC sampled, characterized, and disposed off-site at a properly permitted facility. The proposal shall estimate the cost for off-site disposal of this soil, which shall be full compensation for all labor materials, equipment, and incidentals required for environmental controls, analytical sampling (as necessary to facilitate off-site disposal), loading, and off-site disposal as specified in Section 02350, Waste Transportation and Disposal. Payment will not be made until Contractor submits all weight tickets and required documentation indicating the actual tonnage of material disposed off-site. Payment will be made upon receipt of the certificate of disposal by the Contracting Officer.

1.8.3 Sampling, Characterization, & Off-Site Disposal of RCRA Soil Not Meeting LDRs for Organics/Inorganics and > IGWSCC (Work Item 006C)

Measurement for this unit cost Item shall be per ton of RCRA Soil Not Meeting LDRS for Organics/Inorganics and greater than IGWSCC sampled, characterized, and disposed off-site at a properly permitted facility. The proposal shall estimate the cost for off-site disposal of this soil, which shall be full compensation for all labor materials, equipment, and incidentals required for environmental controls, analytical sampling (as necessary to facilitate off-site disposal), loading, and off-site disposal as specified in Section 02350, Waste Transportation and Disposal. Payment will not be made until Contractor submits all weight tickets and required documentation indicating the actual tonnage of material disposed off-site. Payment will be made upon receipt of the certificate of disposal by the Contracting Officer.

1.8.4 Sampling, Characterization, & Off-Site Disposal of TSCA Soil (PCBs $\geq$ 50 ppm) (Work Item 006D)

Measurement for this unit cost Item shall be per ton of hazardous soil TSCA waste with PCB Concentrations greater than or equal to 50 ppm), sampled, characterized, and disposed off-site at a properly permitted facility. The proposal shall estimate the cost for off-site disposal of these hazardous soils which shall be full compensation for all labor materials, equipment, and incidentals required for environmental controls, analytical sampling (as necessary to facilitate off-site disposal of TSCA Waste), loading, and off-site disposal as specified in Section 02350, Waste Transportation and Disposal. Payment will not be made until Contractor submits all weight tickets and required documentation indicating the actual tonnage of material disposed off-site. Payment will be made upon receipt of the certificate of disposal by the Contracting Officer.

1.8.5 Sampling, Characterization, & Off-Site Disposal of Mixed TSCA and RCRA Soil (HOCs < 1,000 ppm) (Work Item 006E)

Measurement for this unit cost Item shall be per ton of hazardous soil Mixed TSCA & RCRA waste with Halogenated Organic Compound (HOC) Concentrations less than 1,000 ppm) sampled, characterized, and disposed off-site at a properly permitted facility. The proposal shall estimate the cost for off-site disposal of these hazardous soils, which shall be full

compensation for all labor materials, equipment, and incidentals required for environmental controls, analytical sampling (as necessary to facilitate off-site disposal), loading, and off-site disposal as specified in Section 02350, Waste Transportation and Disposal. Payment will not be made until Contractor submits all weight tickets and required documentation indicating the actual tonnage of material disposed off-site. Payment will be made upon receipt of the certificate of disposal by the Contracting Officer.

1.8.6 Sampling, Characterization, & Off-Site Disposal of Mixed TSCA and RCRA Soil (HOCs $\geq$ 1,000 ppm) (Work Item 006F)

Measurement for this unit cost Item shall be per ton of hazardous soil (Mixed TSCA & RCRA waste with HOC Concentrations greater than or equal to 1,000 ppm) sampled, characterized, and disposed off-site at a properly permitted facility. The proposal shall estimate the cost for off-site disposal of these hazardous soils, which shall be full compensation for all labor materials, equipment, and incidentals required for environmental controls, analytical sampling (as necessary to facilitate off-site disposal), loading, and off-site disposal as specified in Section 02350, Waste Transportation and Disposal. Payment will not be made until Contractor submits all weight tickets and required documentation indicating the actual tonnage of material disposed off-site. Payment will be made upon receipt of the certificate of disposal by the Contracting Officer.

1.8.7 Sampling, Characterization, & Off-Site Disposal of Mixed TSCA and RCRA Soil (RCRA Metals, Organics, PCBs < 100 ppm, and ***Can*** Treat Non-PCB UHCs to meet LDRs) (Work Item 006G)

Measurement for this unit cost Item shall be per ton of hazardous soil (Mixed TSCA and RCRA Soil (RCRA Metals, Organics, PCBs less than 100 ppm, and ***Can*** Treat Non-PCB Underlying Hazardous Constituents (UHCs) to meet LDRs)), sampled, characterized, and disposed off-site at a properly permitted facility. The proposal shall estimate the cost for off-site disposal of these hazardous soils which shall be full compensation for all labor materials, equipment, and incidentals required for environmental controls, analytical sampling (as necessary to facilitate off-site disposal), loading and off-site disposal as specified in Section 02350 Waste Transportation and Disposal. Payment will not be made until Contractor submits all weight tickets and required documentation indicating the actual tonnage of material disposed off-site. Payment will be made upon receipt of the certificate of disposal by the Contracting Officer.

1.8.8 Sampling, Characterization, & Off-Site Disposal of Mixed TSCA and RCRA Soil (RCRA Metals, Organics, PCBs < 100 ppm, and ***Cannot*** Treat Non-PCB UHCs to meet LDRs) (Work Item 006H)

Measurement for this unit cost Item shall be per ton of hazardous soil (Mixed TSCA and RCRA Soil (RCRA Metals, Organics, PCBs less than 100 ppm, and ***Cannot*** Treat Non-PCB UHCs to meet LDRs))sampled, characterized, and disposed off-site at a properly permitted facility. The proposal shall estimate the cost for off-site disposal of these hazardous soils, which shall be full compensation for all labor materials, equipment, and incidentals required for environmental controls, analytical sampling (as necessary to facilitate off-site disposal), loading and off-site disposal

as specified in Section 02350 Waste Transportation and Disposal. Payment will not be made until Contractor submits all weight tickets and required documentation indicating the actual tonnage of material disposed off-site. Payment will be made upon receipt of the certificate of disposal by the Contracting Officer.

1.8.9 Sampling, Characterization, & Off-Site Disposal of Mixed TSCA and RCRA Soil (RCRA Metals, Organics Failure and PCBs $\geq$ 100 ppm) (Work Item 006I)

Measurement for this unit cost Item shall be per ton of hazardous soil Mixed TSCA and RCRA Soil (RCRA Metals, Organics Failure and PCBs greater than or equal to 100 ppm)) sampled, characterized, and disposed off-site at a properly permitted facility. The proposal shall estimate the cost for off-site disposal of these hazardous soils, which shall be full compensation for all labor materials, equipment, and incidentals required for environmental controls, analytical sampling (as necessary to facilitate off-site disposal), loading and off-site disposal as specified in Section 02350, Waste Transportation and Disposal. Payment will not be made until Contractor submits all weight tickets and required documentation indicating the actual tonnage of material disposed off-site. Payment will be made upon receipt of the certificate of disposal by the Contracting Officer.

1.9 Debris Disposal (WORK ITEMS 007A THROUGH 007F)

1.9.1 Sampling, Characterization, & Off-Site Disposal of Non-RCRA/Non-TSCA Debris > IGWSCC (Work Item 007A)

Measurement for this unit cost Item shall be per ton of Non-RCRA/Non-TSCA Debris greater than IGWSCC sampled, characterized, and disposed off-site at a properly permitted facility. The proposal shall estimate the cost for off-site disposal of this debris, which shall be full compensation for all labor materials, equipment, and incidentals required for environmental controls, analytical sampling (as necessary to facilitate off-site disposal), loading, and off-site disposal as specified in 02350, Transportation and Disposal. Payment will not be made until Contractor submits all weight tickets and required documentation indicating the actual tonnage of material disposed off-site. Payment will be made upon receipt of the certificate of disposal by the Contracting Officer.

1.9.2 Sampling, Characterization, & Off-Site Disposal of RCRA Debris Not Requiring Pre-Treatment and > IGWSCC (Work Item 007B)

Measurement for this unit cost Item shall be per ton of RCRA Debris Not Requiring Pre-Treatment and greater than IGWSCC sampled, characterized, and disposed off-site at a properly permitted facility. The proposal shall estimate the cost for off-site disposal this debris, which shall be full compensation for all labor materials, equipment, and incidentals required for environmental controls, analytical sampling (as necessary to facilitate off-site disposal), loading, and off-site disposal as specified in Section 02350 Waste Transportation and Disposal. Payment will not be made until Contractor submits all weight tickets and required documentation indicating the actual tonnage of material disposed off-site. Payment will be made upon receipt of the certificate of disposal by the Contracting Officer.

1.9.3 Sampling, Characterization, & Off-Site Disposal of RCRA Debris Not Meeting for Organics/Inorganics and > IGWSCC (Work Item 007C)

Measurement for this unit cost Item shall be per ton of RCRA Debris Not Meeting for Organics/Inorganics and greater than IGWSCC sampled, characterized, and disposed off-site at a properly permitted facility. The proposal shall estimate the cost for off-site disposal of this debris, which shall be full compensation for all labor materials, equipment, and incidentals required for environmental controls, analytical sampling (as necessary to facilitate off-site disposal), loading, and off-site disposal as specified in Section 02350, Waste Transportation and Disposal. Payment will not be made until Contractor submits all weight tickets and required documentation indicating the actual tonnage of material disposed off-site. Payment will be made upon receipt of the certificate of disposal by the Contracting Officer.

1.9.4 Sampling, Characterization, & Off-Site Disposal of TSCA Debris (PCBs $\geq$ 50 ppm) (Work Item 007D)

Measurement for this unit cost Item shall be per ton of hazardous debris (TSCA waste with PCB Concentrations greater than or equal to 50 ppm) sampled, characterized, and disposed off-site at a properly permitted facility. The proposal shall estimate the cost for off-site disposal of this hazardous debris, which shall be full compensation for all labor materials, equipment, and incidentals required for environmental controls, analytical sampling (as necessary to facilitate off-site disposal), loading, and off-site disposal as specified in Section 02350, Waste Transportation and Disposal. Payment will not be made until Contractor submits all weight tickets and required documentation indicating the actual tonnage of material disposed off-site. Payment will be made upon receipt of the certificate of disposal by the Contracting Officer.

1.9.5 Sampling, Characterization, & Off-Site Disposal of Mixed TSCA and RCRA Debris (VOCs < 500 ppm) (Work Item 007E)

Measurement for this unit cost Item shall be per ton of hazardous debris (Mixed TSCA & RCRA waste with VOC Concentrations less than 500 ppm) sampled, characterized, and disposed off-site at a properly permitted facility. The proposal shall estimate the cost for off-site disposal of this hazardous debris, which shall be full compensation for all labor materials, equipment, and incidentals required for environmental controls, analytical sampling (as necessary to facilitate off-site disposal), loading, and off-site disposal as specified in Section 02350, Waste Transportation and Disposal. Payment will not be made until Contractor submits all weight tickets and required documentation indicating the actual tonnage of material disposed off-site. Payment will be made upon receipt of the certificate of disposal by the Contracting Officer.

1.9.6 Sampling, Characterization, & Off-Site Disposal of Mixed TSCA and RCRA Debris (VOCs $\geq$ 500 ppm) (Work Item 007F)

Measurement for this unit cost Item shall be per ton of hazardous debris(Mixed TSCA & RCRA debris with VOC Concentrations greater than or equal to 500 ppm), sampled, characterized, and disposed off-site at a properly permitted facility. The proposal shall estimate the cost for off-site disposal of this hazardous debris which shall be full compensation for all labor materials, equipment, and incidentals required for

environmental controls, analytical sampling (as necessary to facilitate off-site disposal), loading, and off-site disposal as specified in Section 02350, Waste Transportation and Disposal. Payment will not be made until Contractor submits all weight tickets and required documentation indicating the actual tonnage of material disposed off-site. Payment will be made upon receipt of the certificate of disposal by the Contracting Officer.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01312A

QUALITY CONTROL SYSTEM (QCS)

PART 1 GENERAL

1.1 REFERENCES

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2003) Safety and Health Requirements Manual (Contractors shall always check for the most current updates to the EM at http://www.usace.army.mil/publications/eng-manuals/)

1.2 GENERAL

The Government will use the Resident Management System for Windows (RMS) to assist in its monitoring and administration of this contract. The Contractor shall use the Government-furnished Construction Contractor Module of RMS, referred to as QCS, to record, maintain, and submit various information throughout the contract period. The Contractor module, user manuals, updates, and training information can be downloaded from the RMS web site.This joint Government-Contractor use of RMS and QCS will facilitate electronic exchange of information and overall management of the contract. QCS provides the means for the Contractor to input, track, and electronically share information with the Government in the following areas:

Administration
Finances
Quality Control
Submittal Monitoring
Scheduling
Import/Export of Data

1.2.1 Correspondence and Electronic Communications

For ease and speed of communications, both Government and Contractor will, to the maximum extent feasible, exchange correspondence and other documents in electronic format. Correspondence, pay requests and other documents comprising the official contract record shall also be provided in paper format, with signatures and dates where necessary. Paper documents will govern, in the event of discrepancy with the electronic version.

1.2.2 Other Factors

Particular attention is directed to Contract Clause, "Schedules for Construction Contracts", Contract Clause, "Payments", Section 01320, PROJECT SCHEDULE, Section 01330, SUBMITTAL PROCEDURES, and Section 01451A, CONTRACTOR QUALITY CONTROL, which have a direct relationship to the reporting to be accomplished through QCS. Also, there is no separate payment for establishing and maintaining the QCS database; all costs associated therewith shall be included in the contract pricing for the work.

1.3 QCS SOFTWARE

QCS is a Windows-based program that can be run on a stand-alone personal computer or on a network. The Government will make available the QCS software to the Contractor after award of the construction contract. Prior to the Pre-Construction Conference, the Contractor shall be responsible to download, install and use the latest version of the QCS software from the Government's RMS Internet Website. Upon specific justification and request by the Contractor, the Government can provide QCS on CD-ROM. Any program updates of QCS will be made available to the Contractor via the Government RMS Website as they become available.

1.4 SYSTEM REQUIREMENTS

The following is the minimum system configuration that the Contractor shall have to run QCS:

QCS and QAS System

Hardware

IBM-compatible PC with 1000 MHz Pentium or higher processor

256+ MB RAM for workstation / 512+ MB RAM for server

4 GB hard drive disk space for sole use by the QCS system

3 1/2 inch high-density floppy drive

Compact disk (CD) Reader, 8x speed or higher

SVGA or higher resolution monitor (1024 x 768, 256 colors)

Mouse or other pointing device

Windows compatible printer. (Laser printer must have 4 MB+ of RAM)

Connection to the Internet, minimum 56k BPS

Software

MS Windows 2000 or higher

QAS-Word Processing software: MS Word 2000 or newer

Latest version of: Netscape Navigator, Microsoft Internet Explorer, or other browser that supports HTML 4.0 or higher

Electronic mail (E-mail) MAPI compatible

Virus protection software that is regularly upgraded with all issued manufacturer's updates and is carried throughout the life of the Contract

1.5 RELATED INFORMATION

1.5.1 QCS User Guide

After contract award, the Contractor shall download instructions for the

installation and use of QCS from the Government RMS Internet Website; the Contractor can obtain the current address from the Government. In case of justifiable difficulties, the Government will provide the Contractor with a CD-ROM containing these instructions.

1.6 CONTRACT DATABASE

Prior to the pre-construction conference, the Government will provide the Contractor with basic contract award data to use for QCS. The Government will provide data updates to the Contractor as needed, generally by using the Government's SFTP repository built into QCS import/export function. These updates will generally consist of submittal reviews, correspondence status, QA comments, and other administrative and QA data.

1.7 DATABASE MAINTENANCE

The Contractor shall establish, maintain, and update data for the contract in the QCS database throughout the duration of the contract. The Contractor shall establish and maintain the QCS database at the Contractor's site office. Submit data updates to the Government (e.g., daily reports, submittals, RFI's, schedule updates, payment requests, etc.) using the Government's SFTP repository built into QCS export function. If permitted by the Contracting Officer, e-mail or CD-ROM may be used instead of E-mail (see Paragraph DATA SUBMISSION VIA CD-ROM). The QCS database typically shall include current data on the following items:

1.7 Administration

1.7.1 Contractor Information

The database shall contain the Contractor's name, address, telephone numbers, management staff, and other required items. Within 14 calendar days of receipt of QCS software from the Government, deliver Contractor administrative data in electronic format.

1.7.2 Subcontractor Information

The database shall contain the name, trade, address, phone numbers, and other required information for all subContractors. A subcontractor must be listed separately for each trade to be performed. Assign each subcontractor/trade a unique Responsibility Code, provided in QCS. Within 14 calendar days of receipt of QCS software from the Government, deliver subcontractor administrative data in electronic format.

1.7.3 Correspondence

Identify all Contractor correspondence to the Government with a serial number. Prefix correspondence initiated by the Contractor's site office with "S". Prefix letters initiated by the Contractor's home (main) office with "H". Letters shall be numbered starting from 0001. (e.g., H-0001 or S-0001). The Government's letters to the Contractor will be prefixed with "C".

1.7.3.1 Request For Information (RFI)

Exchange all Requests For Information (RFI) using the Built-in RFI generator and tracker in QCS.

1.7.3.2 Equipment

The Contractor's QCS database shall contain a current list of equipment planned for use or being used on the jobsite, including the most recent and planned equipment inspection dates.

1.7.3.3 EM 385-1-1, Corps of Engineers Safety Manual and RMS Linkage

Upon request, the Contractor can obtain a copy of the current version of the Safety Manual, EM 385-1-1, on CD. Data on the CD will be accessible through QCS, or in stand-alone mode.

1.7.3.4 Management Reporting

QCS includes a number of reports that Contractor management can use to track the status of the project. The value of these reports is reflective of the quality of the data input, and is maintained in the various sections of QCS. Among these reports are: Progress Payment Request worksheet, QA/QC comments, Submittal Register Status, Three-Phase Inspection checklists.

1.7.4 Finances

1.7.4.1 Pay Activity Data

The QCS database shall include a list of pay activities that the Contractor shall develop in conjunction with the construction schedule. The sum of all pay activities shall be equal to the total contract amount, including modifications. Group pay activities Contract Line Item Number (CLIN); the sum of the activities shall equal the amount of each CLIN. The total of all CLINs equals the Contract Amount.

1.7.4.2 Payment Requests

Prepare all progress payment requests using QCS. Complete the payment request worksheet, prompt payment certification, and payment invoice in QCS. Update the work completed under the contract, measured as percent or as specific quantities, at least monthly. After the update, generate a payment request report using QCS. Submit the payment request, prompt payment certification, and payment invoice with supporting data using the Government's SFTP repository built into QCS export function. If permitted by the Contracting Officer, e-mail or a CD-ROM may be used. A signed paper copy of the approved payment request is also required, which will govern in the event of discrepancy with the electronic version.

1.7.5 Quality Control (QC)

QCS provides a means to track implementation of the 3-phase QC Control System, prepare daily reports, identify and track deficiencies, document progress of work, and support other Contractor QC requirements. Maintain this data on a daily basis. Entered data will automatically output to the QCS generated daily report. Provide the Government a Contractor Quality Control (CQC) Plan within the time required in Section 01451A, CONTRACTOR QUALITY CONTROL. Within seven calendar days of Government acceptance, submit a QCS update reflecting the information contained in the accepted CQC Plan: schedule, pay activities, features of work, submittal register, QC requirements, and equipment list.

1.7.5.1 Daily Contractor Quality Control (CQC) Reports.

QCS includes the means to produce the Daily CQC Report. The Contractor may use other formats to record basic QC data. However, the Daily CQC Report generated by QCS shall be the Contractor's official report. Summarize data from any supplemental reports by the Contractor and consolidate onto the QCS-generated Daily CQC Report. Submit daily CQC Reports as required by Section 01451A, CONTRACTOR QUALITY CONTROL. Electronically submit reports to the Government within 24 hours after the date covered by the report. Also provide the Government a signed, printed copy of the daily CQC report.

1.7.5.2 Deficiency Tracking.

The Contractor shall use QCS to track deficiencies. Deficiencies identified by the Contractor will be numerically tracked using QC punch list items. The Contractor shall maintain a current log of its QC punch list items in the QCS database. The Government will log the deficiencies it has identified using its QA punch list items. The Government's QA punch list items will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of both QC and QA punch list items.

1.7.5.3 Three-Phase Control Meetings

The Contractor shall maintain scheduled and actual dates and times of preparatory and initial control meetings in QCS.

1.7.5.4 Labor and Equipment Hours

Log labor and equipment exposure hours on a daily basis. This data will be rolled up into a monthly exposure report.

1.7.5.5 Accident/Safety Reporting

The Government will issue safety comments, directions, or guidance whenever safety deficiencies are observed. The Government's safety comments will be included in its export file to the Contractor. Regularly update the correction status of the safety comments. In addition, utilize QCS to advise the Government of any accidents occurring on the jobsite. This brief supplemental entry is not to be considered as a substitute for completion of mandatory reports, e.g., ENG Form 3394 and OSHA Form 300.

1.7.5.6 Features of Work

The Contractor shall include a complete list of the features of work in the QCS database. A feature of work may be associated with multiple pay activities. However, each pay activity (see subparagraph "Pay Activity Data" of paragraph "Finances") will only be linked to a single feature of work.

1.7.5.7 QC Requirements

Develop and maintain a complete list of QC testing and required structural and life safety special inspections required by the International Code Council (ICC), transferred and installed property, and user training requirements in QCS. Update all data on these QC requirements as work progresses, and promptly provide this information to the Government via QCS.

1.7.5.8 Hazard Analysis

Use QCS to develop a hazard analysis for each feature of work included in the CQC Plan. The hazard analysis shall address any hazards, or potential hazards, that may be associated with the work

1.7.6 Submittal Management

The Government will provide the initial submittal register in electronic format. Thereafter, the Contractor shall maintain a complete list of all submittals, including completion of all data columns. Dates on which submittals are received and returned by the Government will be included in its export file to the Contractor. The Contractor shall use QCS to track and transmit all submittals. ENG Form 4025, submittal transmittal form, and the submittal register update shall be produced using QCS. QCS and RMS will be used to update, store and exchange submittal registers and transmittals, but will not be used for storage of actual submittals.
storage of actual submittals.

1.7.7 Schedule

The Contractor shall develop a construction schedule consisting of pay activities, in accordance with Contract Clause "Schedules for Construction Contracts", or Section 01320, PROJECT SCHEDULE, as applicable. This schedule shall be input and maintained in the QCS database either manually or by using the Standard Data Exchange Format (SDEF) (see Section 01320 PROJECT SCHEDULE). The updated schedule data shall be included with each pay request submitted by the Contractor.

1.7.8 Import/Export of Data

QCS includes the ability to export Contractor data to the Government and to import submittal register and other Government-provided data from RMS, and schedule data using SDEF.

1.8 IMPLEMENTATION

Contractor use of QCS as described in the preceding paragraphs is mandatory. Ensure that sufficient resources are available to maintain its QCS database, and to provide the Government with regular database updates. QCS shall be an integral part of the Contractor's management of quality control.

1.9 DATA SUBMISSION VIA CD-ROM

The Government-preferred method for Contractor's submission of QCS data is by using the Government's SFTP repository built into QCS export function. Other data should be submitted using E-mail with file attachment(s). For locations where this is not feasible, the Contracting Officer may permit use of CD-ROM for data transfer. Export data onto CDs using the QCS built-in export function. If used, submit CD-ROMs in accordance with the following:

1.9.1 File Medium

Submit required data on CD-ROM. They shall conform to industry standards used in the United States. All data shall be provided in English.

1.9.2 CD-ROM Labels

Affix a permanent exterior label to each CD-ROM submitted. The label shall indicate in English, the QCS file name, full contract number, contract name, project location, data date, name and telephone number of person responsible for the data.

1.9.3 File Names

The files will be automatically named by the QCS software. The naming convention established by the QCS software shall not be altered in any way by the Contractor.

1.10 MONTHLY COORDINATION MEETING

Update the QCS database each workday. At least monthly, generate and submit an export file to the Government with schedule update and progress payment request. As required in Contract Clause "Payments", at least one week prior to submittal, meet with the Government representative to review the planned progress payment data submission for errors and omissions. Make all required corrections prior to Government acceptance of the export file and progress payment request. Payment requests accompanied by incomplete or incorrect data submittals will be returned. The Government will not process progress payments until an acceptable QCS export file is received.

1.11 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the requirements of this specification. Take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, will be deemed sufficient for the purpose of notification.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01320

PROJECT SCHEDULE

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

ER 1-1-11	(1995) Progress, Schedules, and Network Analysis Systems

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Preliminary Project Schedule; G

Submit a Preliminary Project Schedule for approval within 14 days after Notice to Proceed defining the Contractor's planned operations for the first 60 calendar days.

The data disk, reports, and network diagrams required for each submission are contained in the paragraph entitled SUBMISSION REQUIREMENTS.

Initial Project Schedule; G

Submit Initial Project Schedule for approval at least 14 days prior to the Pre-Work Conference defining the Contractor's planned operations. Submit a revised project schedule, if necessary, for approval.

The data disk, reports, and network diagrams required for each submission are contained in the paragraph entitled SUBMISSION REQUIREMENTS.

Periodic Schedule Update; G

Submit periodic schedule update based on the results of progress meetings, specified in "Periodic Progress Meetings." Submit updates every two weeks at a minimum. These submissions shall enable the Contracting Officer to assess Contractor's progress.

The data disk, reports, and network diagrams required for each submission are contained in the paragraph entitled SUBMISSION REQUIREMENTS.

1.3 SUBMISSION REQUIREMENTS

Provide the Standard Activity Coding Dictionary in accordance with the activity coding structure defined in the Standard Data Exchange Format (SDEF) in ER 1-1-11, Appendix A. This exact structure is mandatory, even if some fields are not used. Submit the following for the preliminary submission, initial submission, and every Periodic Schedule Update throughout the life of the project:

1.3.1 Data Disks

Provide data containing the project schedule on CD-R's. Adhere to the SDEF format specified in ER 1-1-11, Appendix A.

1.3.1.1 File Medium

Submit required data on CD-Rs, unless otherwise approved by the Contracting Officer.

1.3.1.2 Disk Label

Affix a permanent exterior label to each disk submitted. Indicate the type of schedule (Preliminary, Initial, Update, or Change), full contract number, project name, project location, data date, and name and telephone number or person responsible for the schedule.

1.3.1.3 File Name

Submit each file with a name related to either the schedule data date, project name, or contract number. Develop a naming convention that will ensure that the names of the files submitted are unique, and submit the file naming convention to the Contracting Officer for approval.

1.3.2 Narrative Report

Provide a Narrative Report with the preliminary, initial, and each update of the project schedule. Include a description of activities along the two most critical paths, a description of current and anticipated problem areas or delaying factors and their impact, and an explanation of corrective actions taken or required to be taken. The narrative report is expected to relay the Contractor's thorough analysis of the schedule output and its plans to compensate for any problems, either current or potential, which are revealed through that analysis.

1.3.3 Approved Changes Verification

Include only project schedule changes that have been previously approved by the Contracting Officer in the schedule submission. The Narrative Report shall specifically reference, on an activity by activity basis, all changes made since the previous period and relate each change to documented, approved schedule changes.

1.3.4 Schedule Reports

The format for each activity for the schedule reports listed below shall

contain: Activity Numbers, Activity Description, Original Duration, Remaining Duration, Early Start Date, Early Finish Date, Late Start Date, Late Finish Date, Total Float. Actual Start and Actual Finish Dates shall be printed for those activities in progress or completed.

1.3.4.1 Activity Report

A list of all activities sorted according to activity number.

1.3.4.2 Logic Report

A list of Preceding and Succeeding activities for every activity in ascending order by activity number. Preceding and succeeding activities shall include all information listed above in paragraph Schedule Reports. Leave a blank line between each activity grouping.

1.3.4.3 Total Float Report

A list of all incomplete activities sorted in ascending order of total float. List activities that have the same amount of total float in ascending order of Early Start Dates. Do not show completed activities on this report.

1.3.4.4 Earnings Report

A compilation of the Contractor's Total Earnings on the project from the NTP until the most recent Monthly Progress Meeting. Reflect the Earnings of specific activities based on the agreements made in the field and approved between the Contractor and Contracting Officer at the most recent Monthly Progress Meeting. Provided that the Contractor has provided a complete schedule update. Group activities by Work Breakdown Structure (WBS) and sort by activity numbers. This report shall sum all activities in a WBS and provide a WBS percent complete; and complete and sum all WBS to provide a total project percent complete. The printed report shall contain, for each activity: the Activity Number, Activity Description, Original Budgeted Amount, Total Quantity, Quantity to Date, Percent Complete (based on cost), Earnings to Date, and fee.

1.3.5 Network Diagram

The network diagram is required on the initial schedule submission and on monthly schedule update submissions. The network diagram depicts and displays order and interdependence of activities and the sequence in which the work is to be accomplished. The Contracting Officer will use the following conditions to review compliance with this paragraph:

1.3.5.1 Continuous Flow

Show a continuous flow from left to right with no arrows from right to left on diagrams. Show the activity number, description, duration, and estimated earned value on the diagram.

1.3.5.2 Project Milestone Dates

Show dates for start of project, contract required interim completion dates, and contract completion dates on the diagram.

1.3.5.3 Banding

Group activities to assist in the understanding of the activity sequence. Typically, this flow will group activities by category of work, work area and/or responsibility.

1.3.5.4 S-Curves

Earnings curves showing projected early and late earnings and earnings to date.

1.4 QUALIFICATIONS

Designate an authorized representative responsible for the preparation of all required project schedule reports.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

Provide a Project Schedule as described below. The scheduling of construction shall be the responsibility of the Contractor who shall actively participate in its development. Subcontractors and suppliers working on the project shall also contribute in developing and maintaining an accurate Project Schedule. The approved Project Schedule shall be used to measure the progress of the work, and to aid in evaluating time extensions.

The contractor shall show the dates for the beginning and completion of each major operation or segment of work. This list must include, but is not limited to:

a. All State and local permits

b. Mobilization

c. Health and safety requirements

d. Securing site utilities and temporary facilities

e. Erosion Control

f. Project closeout and demolition

3.2 BASIS FOR PAYMENT

The schedule shall be the basis for measuring Contractor progress. Lack of an approved schedule and scheduling personnel will result in an inability of the Contracting Officer to evaluate Contractor's progress. Verified, approved actual costs will be the basis for Contractor payment.

3.3 PRELIMINARY PROJECT SCHEDULE

Utilize the computer software system to produce the Preliminary Project Schedule that is capable of providing all requirements of this

specification and submit to the Contracting Officer prior to use. Failure to meet the requirements of this specification shall result in the disapproval of the schedule. Manual methods used to produce any required information require approval by the Contracting Officer.

3.4 INITIAL PROJECT SCHEDULE

Utilize the computer software system to produce the Initial Project Schedule that is capable of providing all requirements of this specification and submit to the Contracting Officer prior to use. Failure to meet the requirements of this specification shall result in the disapproval of the schedule. Manual methods used to produce any required information require approval by the Contracting Officer.

3.4.1 Use of the Critical Path Method

The Contractor shall provide the Project Schedule in the Precedence Diagram Method (PDM) and in the form of a GANTT chart.

3.4.2 Level of Detail Required

Failure to develop or update the Initial Project Schedule or provide data at the appropriate level of detail, as specified by the Contracting Officer, shall result in the disapproval of the schedule. The Contracting Officer will use the following conditions to determine the appropriate level of detail to be used in the Initial Project Schedule:

3.4.2.1 Activity Durations

Contractor submissions shall follow the direction of the Contracting Officer regarding reasonable activity durations. Reasonable durations are those that allow the progress of activities to be accurately determined between payment periods (usually less than 2 percent of all non-procurement activities' Original Durations are greater than 20 days). The chronological order of the start of each major operation or segment of work will determine the vertical location of its bar on the chart. Provide bold vertical lines, at one-week intervals, with the consecutive numbering of each week on the horizontal time scale. Identify the first work day of each work item on the horizontal time scale.

3.4.2.2 Procurement Activities

Include tasks related to the procurement of long lead materials, equipment, or services as separate activities in the Initial Project Schedule. Long lead materials and equipment are materials that have a procurement cycle of over 90 days. Examples of procurement process activities include, but are not limited to: submittals, approvals, procurement, design, fabrication, and delivery.

3.4.2.3 Government Activities

Show government and other agency activities that could impact progress. These activities include approvals, inspections, utility interruptions, government Furnished Equipment (GFE) and Notice to Proceed (NTP) for phasing requirements.

3.4.2.4 Responsibility

Identify all activities in the Initial Project Schedule by the party

responsible to perform the work. Responsibility includes the subcontracting firm, contractor work force, or government agency performing a given task. Activities shall not belong to more than one responsible party. Identify the responsible party for each activity by the Responsibility Code.

3.4.2.5 Work Areas

Identify all activities in the Initial Project Schedule by the work area in which the activity occurs. Provide a separate horizontal bar for each work activity or operation. Activities shall not be allowed to cover more than one work area. Identify the work area of each activity by the Work Area Code.

3.4.2.6 Modification or Claim Number

Identify any activity that is added or changed by contract modification or used to justify claimed time by a mod or claim code that changed the activity. Activities shall not belong to more than one modification or claim item. Identify the modification or claim number of each activity by the Mod or Claim Number. Whenever possible, changes shall be added to the schedule by adding new activities. Existing activities shall not normally be changed to reflect modifications.

3.4.2.7 Work Breakdown Structure (WBS)

Identify all activities in the Initial Project Schedule by the WBS to which the activity belongs.

3.4.2.8 Phase of Work

Identify all activities in the Initial Project Schedule by the phases of work in which the activity occurs. Activities shall not contain work in more than one phase of work. The project phase of each activity shall be by the unique Phase of Work Code.

3.4.2.9 Category of Work

Identify all activities in the Initial Project Schedule according to the category of work which best describes the activity. Category of work refers, but is not limited, to the procurement chain of activities including such items as submittals, approvals, procurement, excavation, transportation, disposal, restoration, fabrication, delivery, installation, start-up, and testing. Identify the category of work for each activity by the Category of Work Code.

3.4.2.10 Feature of Work

Identify all activities in the Initial Project Schedule according to the feature of work to which the activity belongs. Feature of work refers, but is not limited to, a work breakdown structure for the project. Identify the feature of work for each activity by the Feature of Work Code.

3.4.3 Scheduled Project Completion

Extend the schedule interval from NTP to the contract completion date.

3.4.3.1 Project Start Date

Start the schedule no earlier than the date on which the NTP was acknowledged. Include as the first activity in the Initial Project Schedule an activity called "Start Project". The "Start Project" activity shall have an "ES" constraint date equal to the date that the NTP was acknowledged, and a zero day duration.

3.4.3.2 Constraint of Last Activity

Completion of the last activity in the schedule shall be constrained by the contract completion date. Calculation on project updates shall be such that if the early finish of the last activity falls after the contract completion date, then the float calculation shall reflect a negative float on the critical path. Include as the last activity in the Initial Project Schedule an activity called "End Project". The "End Project" activity shall have an "LF" constraint date equal to the completion date for the project, and a zero day duration.

3.4.3.3 Early Project Completion

In the event the Initial Project Schedule show completion of the project prior to the contract completion date, identify those activities that have been accelerated and/or those activities that are scheduled in parallel to support the Contractor's "early" completion. Specifically address each of the activities noted in the narrative report at every Initial Project Schedule update period to assist the Contracting Officer in evaluating the Contractor's ability to actually complete prior to the contract period.

3.4.4 Interim Completion Dates

Contractually specified interim completion dates shall also be constrained to show negative float if the early finish date of the last activity in that phase falls after the interim completion date.

3.4.4.1 Start Phase

Include as the first activity for a project phase an activity called "Start Phase X" where "X" refers to the phase of work. The "Start Phase X" activity shall have an "ES" constraint date equal to the date on which the NTP was acknowledged, and a zero day duration.

3.4.4.2 End Phase

Include as the last activity in a project phase an activity called "End Phase X" where "X" refers to the phase of work. The "End Phase X" activity shall have an "LF" constraint date equal to the completion date for the project, and a zero day duration.

3.4.4.3 Phase X

Include a hammock type activity for each project phase called "Phase X" where "X" refers to the phase of work. The "Phase X" activity shall be logically tied to the earliest and latest activities in the phase.

3.4.5 Default Progress Data Disallowed

Do not automatically update actual start and finish dates by default mechanisms that may be included in CPM scheduling software systems. Actual

Start and Finish dates on the CPM schedule shall match those dates provided from Contractor Quality Control Reports. Failure to document the Actual Start and Finish dates on the Daily Quality Control report for every in-progress or completed activity, and failure to ensure that the data contained on the Daily Quality Control reports is the sole basis for schedule updating shall result in the disapproval of the Contractor's schedule and the inability of the Contracting Officer to evaluate Contractor progress for payment purposes. Updating of the percent complete and the remaining duration of any activity shall be independent functions. Disable program features that calculate one of these parameters from the other.

3.4.6 Out-of-Sequence Progress

Activities that have posted progress without all preceding logic being satisfied (Out-of-Sequence Progress) will be allowed only on a case-by-case approval of the Contracting Officer. Propose logic corrections to eliminate all out of sequence progress or justify not changing the sequencing for approval prior to submitting an updated Initial Project Schedule.

3.4.7 Negative Lags

Lag durations contained in the project schedule shall not have a negative value.

3.5 PERIODIC PROGRESS MEETINGS

Progress meetings to discuss payment shall include a monthly onsite meeting or other regular intervals mutually agreed to at the pre-work conference. During this meeting the Contractor shall describe, on an activity by activity basis, all proposed revisions and adjustments to the project schedule required to reflect the current status of the project. The Contracting Officer will approve activity progress, proposed revisions, and adjustments as appropriate.

3.5.1 Meeting Attendance

The Contractor's Project Manager and Scheduler shall attend the regular progress meeting.

3.5.2 Update Submission Following Progress Meeting

Submit a complete update of the project schedule containing all approved progress, revisions, and adjustments based on the regular progress meeting no later than four(4) working days after the monthly progress meeting.

3.5.3 Progress Meeting Contents

Updated information, including Actual Start Dates, Actual Finish Dates, Remaining Durations, and Cost-to-Date shall be subject to the approval of the Contracting Officer. As a minimum, address the following items on an activity by activity basis during each progress meeting.

3.5.3.1 Start and Finish Dates

T he Actual Start and Actual Finish dates for each activity currently in-progress or completed.

3.5.3.2 Time Completion

The estimated Remaining Duration for each activity in-progress. Base time-based progress calculations on Remaining Duration for each activity.

3.5.3.3 Cost Completion

The earnings for each activity started. Payment will be based on earnings for each in-progress or completed activity. Payment for individual activities will not be made for work that contains quality defects. A portion of the overall project amount may be retained based on delays of activities.

3.5.3.4 Logic Changes

Identify and discuss all logic changes. This list includes, but it is not limited to:

NTP on change orders;

change orders to be incorporated into the schedule;

contractor-proposed changes in work sequence;

corrections to schedule logic for out-of-sequence progress;

lag durations; and

any other changes that have been made pursuant to contract provisions.

3.5.3.5 Other Changes

Other changes required due to delays in completion of any activity or group of activities include:

delays beyond the Contractor's control, such as strikes and unusual weather;

delays encountered due to submittals, government activities, deliveries or work stoppages which make re-planning the work necessary; and

changes required to correct a schedule that does not represent the actual or planned prosecution and progress of the work.

Indicate progress of each activity to date of submission. Show changes occurring since previous submission of schedule, major changes in scope or quantities (if any), activities modified since previous submission, and revised projections of progress and completion.

3.6 REQUESTS FOR TIME EXTENSIONS

In the event the Contractor believes it is entitled to an extension of the contract performance period, completion date, or any interim milestone date, furnish the following for a determination by the Contracting Officer: justification, project schedule data, and supporting evidence as the Contracting Officer may deem necessary. Submission of proof of excusable delay, based on revised activity logic, duration, and costs (updated to the specific date that the delay occurred) is a condition

precedent to any approvals by the Government. In response to each Request For Proposal issued by the Government, the Contractor shall submit a schedule impact analysis demonstrating whether or not the change contemplated by the Government impacts the critical path.

3.6.1 Justification of Delay

The project schedule shall clearly display that the Contractor has used, in full, all the float time available for the work involved with this request. The Contracting Officer's determination as to the number of allowable days of contract extension shall be based upon the project schedule updates in effect for the time period in question, and other factual information. Actual delays that are found to be caused by the Contractor's own actions, which result in the extension of the schedule, will not be a cause for a time extension to the contract completion date.

3.6.2 Submission Requirements

Submit a justification for each request for a change in the contract completion date of under 2 weeks based upon the most recent schedule update at the time of the NTP or constructive direction issued for the change. Such a request shall be in accordance with the requirements of other appropriate Contract Clauses and shall include, as a minimum:

a. A list of affected activities, with their associated project schedule activity number.

b. A brief explanation of the causes of the change.

c. An analysis of the overall impact of the changes proposed.

d. A sub-network of the affected area.

Identify activities impacted in each justification for change by a unique activity code contained in the required data file.

3.6.3 Additional Submission Requirements

For any requested time extension of over 2 weeks, the Contracting Officer may request an interim update with revised activities for a specific change request. Provide this disk within 4 days of the Contracting Officer's request.

3.7 DIRECTED CHANGES

If the NTP is issued for changes prior to settlement of price, fee and/or time, submit proposed schedule revisions to the Contracting Officer within two (2) weeks of the NTP being issued. The proposed revisions to the schedule will be approved by the Contracting Officer prior to inclusion of those changes within the project schedule. If the Contractor fails to submit the proposed revisions, the Contracting Officer may furnish the Contractor with suggested revisions to the project schedule. Include these revisions in the project schedule until revisions are submitted, and final changes and impacts have been negotiated. If the Contractor has any objections to the revisions furnished by the Contracting Officer, the Contractor shall advise the Contracting Officer within two (2) weeks of receipt of the revisions. Regardless of the objections, continue to update the schedule with the Contracting Officer's revisions until a mutual agreement in the revisions is reached. If the Contractor fails to submit

alternative revisions within 2 weeks of receipt of the Contracting Officer's proposed revisions, the Contractor will be deemed to have concurred with the Contracting Officer's proposed revisions. The proposed revisions will then be the basis for an equitable adjustment for performance of the work.

3.8 OWNERSHIP OF FLOAT

Float available in the schedule, at any time, shall not be considered for exclusive use of either the Government or the Contractor.

3.9 TRANSFER OF SCHEDULE DATA INTO RMS/QCS

The Contractor shall download and upload the schedule data into the Resident Management System (RMS) prior to RMS databases being transferred to the Government and is considered to be additional supporting data in a form and detail required by the Contracting Officer pursuant to FAR 52.232-5 - Payments under Fixed-Price Construction Contracts. The receipt of a proper payment request pursuant to FAR 52.232-27 - Prompt Payment for Construction Contracts is contingent upon the Government receiving both acceptable and approvable hard copies and electronic export from QCS of the application for progress payment.

-- End of Section --

SECTION 01330

SUBMITTAL PROCEDURES
10/06

PART 1 GENERAL

1.1 DEFINITIONS

1.1.1 Submittal

Contract Clauses "FAR 52.236-5, Material and Workmanship," paragraph (b) and "FAR 52.236-21, Specifications and Drawings for Construction," paragraphs (d), (e), and (f) apply to all "submittals."

1.1.2 Submittal Descriptions (SD)

Submittals requirements are specified in the technical sections. Submittals are identified by SD numbers and titles as follows.

SD-01 Preconstruction Submittals

Certificates of insurance.
Surety bonds.
List of proposed subcontractors.
List of proposed products.
Construction Progress Schedule.
Submittal register.
Schedule of prices.
Health and safety plan.
Work plan.
Quality control plan.
Environmental protection plan.

SD-02 Shop Drawings

Drawings, diagrams and schedules specifically prepared to illustrate some portion of the work.

Diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to the Contractor for integrating the product or system into the project.

Drawings prepared by or for the Contractor to show how multiple systems and interdisciplinary work will be coordinated.

SD-03 Product Data

Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance and other characteristics of materials, systems or equipment for some portion of the work.

Samples of warranty language when the contract requires extended product warranties.

SD-04 Samples

Fabricated or unfabricated physical examples of materials, equipment or workmanship that illustrate functional and aesthetic characteristics of a material or product and establish standards by which the work can be judged.

Color samples from the manufacturer's standard line (or custom color samples if specified) to be used in selecting or approving colors for the project.

Field samples and mock-ups constructed on the project site establish standards by which the ensuring work can be judged. Includes assemblies or portions of assemblies which are to be incorporated into the project and those which will be removed at conclusion of the work.

SD-05 Design Data

Design calculations, mix designs, analyses or other data pertaining to a part of work.

SD-06 Test Reports

Report signed by authorized official of testing laboratory that a material, product or system identical to the material, product or system to be provided has been tested in accord with specified requirements. (Testing must have been within three years of date of contract award for the project.)

Report which includes findings of a test required to be performed by the Contractor on an actual portion of the work or prototype prepared for the project before shipment to job site.

Report which includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.

Investigation reports.

Daily logs and checklists.

Final acceptance test and operational test procedure.

SD-07 Certificates

Statements printed on the manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements. Must be dated after award of project contract and clearly name the project.

Document required of Contractor, or of a manufacturer, supplier, installer or subcontractor through Contractor, the purpose of which is to further quality of orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel qualifications.

Confined space entry permits.

Text of posted operating instructions.

SD-11 Closeout Submittals

Documentation to record compliance with technical or administrative requirements or to establish an administrative mechanism.

1.1.3 Approving Authority

Office or designated person authorized to approve submittal.

1.1.4 Work

As used in this section, on- and off-site construction required by contract documents, including labor necessary to produce submittals, construction, materials, products, equipment, and systems incorporated or to be incorporated in such construction.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Submittal register; G

1.3 USE OF SUBMITTAL REGISTER

Submittal register will be delivered to the Contractor. Register will have the following fields completed, to the extent that will be required by the Government during subsequent usage.

Column (c): Lists specification section in which submittal is required.

Column (d): Lists each submittal description (SD No. and type, e.g. SD-04 Drawings) required in each specification section.

Column (e): Lists one principal paragraph in specification section where a material or product is specified. This listing is only to facilitate locating submitted requirements. Do not consider entries in column (e) as limiting project requirements.

Column (f): Indicate approving authority for each submittal. A "G" indicates approval by Contracting Officer; a blank indicates approval by QC manager.

Prepare and maintain submittal register, as the work progresses. Do not change data which is output in columns (c), (d), (e), and (f) as delivered by Government; retain data which is output in columns (a), (g), (h), and (i) as approved.

1.3.1 Submittal Register

Submit submittal register as an electronic database, using submittals management program furnished to Contractor. The Contractor shall provide,

at a minimum, the submittals indicated in the submittal register prepared for each phase of work. The submittal register is included at the end of this section. Verify that all submittals required for project are listed and add missing submittals.

Contractor shall complete the following columns of the Submittal Register:

a. Activity No.
b. Transmittal No.
g. Contractor: Schedule Dates - Submit
h. Contractor: Schedule Dates - Approval Needed By
i. Contractor: Schedule Dates - Material Needed By
j. Contractor Action - Action Code
k. Contractor Action - Date of Action
l. Date Fwd to Approving Authority

1.3.2 Contractor Action Code and Action Code

Entries used shall be as follows (others may be prescribed by Transmittal Form):

NR - Not Received

AN - Approved as noted

A - Approved

RR - Disapproved, Revise, and Resubmit

1.4 PROCEDURES FOR SUBMITTALS

1.4.1 Reviewing, Certifying, Approving Authority

QC organization shall be responsible for reviewing and certifying that submittals are in compliance with contract requirements. Approving authority on submittals is QC manager unless otherwise specified for specific submittal. At each "Submittal" paragraph in individual specification sections, a notation "G," following a submittal item, indicates Contracting Officer is approving authority for that submittal item.

1.4.2 Constraints

a. Submittals listed or specified in this contract shall conform to provisions of this section, unless explicitly stated otherwise.

b. Submittals shall be complete for each definable feature of work; components of definable feature interrelated as a system shall be submitted at same time.

c. When acceptability of a submittal is dependent on conditions, items, or materials included in separate subsequent submittals, submittal will be returned without review.

d. Approval of a separate material, product, or component does not imply approval of assembly in which item functions.

1.4.3 Scheduling

a. Coordinate scheduling, sequencing, preparing and processing of submittals with performance of work so that work will not be delayed by submittal processing. Allow for potential requirements to resubmit.

b. Except as specified otherwise, allow review period, beginning with receipt by approving authority, that includes at least 15 working days for submittals for QC Manager approval and 20 working days for submittals for Contracting Officer approval. Period of review for submittals with Contracting Officer approval begins when Government receives submittal from QC organization.Period of review for each resubmittal is the same as for initial submittal.

1.4.4 Variations

Variations from contract requirements require Government approval pursuant to contract Clause entitled "FAR 52.236-21, Specifications and Drawings for Construction" and will be considered where advantageous to Government.

1.4.4.1 Considering Variations

Discussion with Contracting Officer prior to submission, will help ensure functional and quality requirements are met and minimize rejections and resubmittals. When contemplating a variation which results in lower cost, consider submission of the variation as a Value Engineering Change Proposal (VECP).

1.4.4.2 Proposing Variations

When proposing variation, deliver written request to the Contracting Officer, with documentation of the nature and features of the variation and why the variation is desirable and beneficial to Government. If lower cost is a benefit, also include an estimate of the cost saving. In addition to documentation required for variation, include the submittals required for the item. Clearly mark the proposed variation in all documentation.

1.4.4.3 Warranting That Variations Are Compatible

When delivering a variation for approval, Contractor warrants that this contract has been reviewed to establish that the variation, if incorporated, will be compatible with other elements of work.

1.4.4.4 Review Schedule Is Modified

In addition to normal submittal review period, a period of 10 working days will be allowed for consideration by the Government of submittals with variations.

1.4.5 Disapproved Submittals

The Contractor shall make all corrections required by the Contracting Officer and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. If the contractor considers any correction indicated on the submittals to constitute a change to the Contract, a notice in accordance with the Contract Clause "Changes" shall be given promptly to the Contracting Officer.

CAUTION: The Contractor is cautioned that for each Contractor's resubmittal required beyond the initial submittal and one resubmittal for corrections required by the Contracting Officer, the Contracting Officer will assess Administrative Deduction in the amount of $500.00 from the progress payments due the Contractor.

1.4.6 Contractor's Responsibilities

The Contractor shall review shop drawings, product data and samples prior to submission to determine and verify the following:

a. Field measurements
b. Field construction criteria

The review and approval of shop drawings or samples by the Contracting Officer shall not relieve the Contractor from its responsibility with regard to the fulfillment of the terms of the contract. All risks of error and omission are assigned and assumed by the Contractor and the Contracting Officer will have no responsibility.

No portion of the work requiring a shop drawing, working drawings, sample, or catalog data shall be started nor shall any materials be fabricated, installed or used on the sites prior to the approval of the Contracting Officer. Fabrication performed, materials purchased or on-site construction accomplished which does not conform to approved shop drawings and data shall be at the Contractor's risk. The Contracting Officer will not be liable for any expense for delay due to corrections or remedies required to accomplish conformity.

Project work, materials, fabrication and installation shall conform to approved shop drawings, working drawings, applicable samples and catalog data.

Contractor's responsibilities shall also include the following:

a. Determine and verify field measurements, materials, field construction criteria; review each submittal; and check and coordinate each submittal with requirements of the work and contract documents.

b. Transmit submittals to QC organization in accordance with schedule on approved Submittal Register, and to prevent delays in the work, delays to Government, or delays to separate Contractors.

c. Advise Contracting Officer of variation, as required by paragraph entitled "Variations."

d. Correct and resubmit submittal as directed by approving authority. When resubmitting disapproved transmittals or transmittals noted for resubmittal, the Contractor shall provide copy of that previously submitted transmittal including all reviewer comments for use by approving authority. Direct specific attention in writing or on resubmitted submittal, to revisions not requested by approving authority on previous submissions.

e. Furnish additional copies of submittal when requested by Contracting Officer, to a limit of 20 copies per submittal.

f. Complete work which must be accomplished as basis of a submittal

in time to allow submittal to occur as scheduled.

g. Ensure no work has begun until submittals for that work have been returned as "approved," or "approved as noted", except to the extent that a portion of work must be accomplished as basis of submittal.

1.4.7 QC Organization Responsibilities

a. Note date on which submittal was received from Contractor on each submittal.

b. Review each submittal; and check and coordinate each submittal with requirements of work and contract documents.

c. Review submittals for conformance with project design concepts and compliance with contract documents.

d. Act on submittals, determining appropriate action based on QC organization's review of submittal.

(1) When QC manager is approving authority, take appropriate action on submittal from the possible actions defined in paragraph entitled, "Actions Possible."

(2) When Contracting Officer is approving authority or when variation has been proposed, forward submittal to Government with certifying statement or return submittal marked "not reviewed" or "revise and resubmit" as appropriate. The QC organization's review of submittal determines appropriate action.

e. Ensure that material is clearly legible.

f. Stamp each sheet of each submittal with QC certifying statement or approving statement, except that data submitted in bound volume or on one sheet printed on two sides may be stamped on the front of the first sheet only.

(1) When approving authority is Contracting Officer, QC organization will certify submittals forwarded to Contracting Officer with the following certifying statement:

"I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated with contract Number [_____], is in compliance with the contract drawings and specification, can be installed in the allocated spaces, and is submitted for Government approval.

Certified by Submittal Reviewer _____, Date _____
(Signature when applicable)

Certified by QC Manager _____, Date _____"
(Signature)

(2) When approving authority is QC Manager, QC Manager will use the following approval statement when returning submittals to Contractor as "Approved" or "Approved as Noted."

"I hereby certify that the (material) (equipment) (article) shown and

marked in this submittal and proposed to be incorporated with contract Number [_____], is in compliance with the contract drawings and specification, can be installed in the allocated spaces, and is [_____] approved for use.

Certified by Submittal Reviewer _____, Date _____
(Signature when applicable)

Approved by QC Manager _____, Date _____"
(Signature)

g. Sign certifying statement or approval statement. The person signing certifying statements shall be QC organization member designated in the approved QC plan. The signatures shall be in original ink. Stamped signatures are not acceptable.

h. Update submittal register as submittal actions occur and maintain the submittal register at project site until final acceptance of all work by Contracting Officer.

i. Retain a copy of approved submittals at project site, including Contractor's copy of approved samples.

1.4.8 Government's Responsibilities

When approving authority is Contracting Officer, the Government will:

a. Note date on which submittal was received from QC manager, on each submittal for which the Contracting Officer is approving authority.

b. Review submittals for approval within scheduling period specified and only for conformance with project design concepts and compliance with contract documents.

c. Identify returned submittals with one of the actions defined in paragraph entitled "Actions Possible" and with markings appropriate for action indicated.

1.4.9 Actions Possible

Submittals will be returned with one of the following notations:

a. Submittals marked "not reviewed" will indicate submittal has been previously reviewed and approved, is not required , does not have evidence of being reviewed and approved by Contractor, or is not complete. A submittal marked "not reviewed" will be returned with an explanation of the reason it is not reviewed. Resubmit submittals returned for lack of review by Contractor or for being incomplete, with appropriate action, coordination, or change.

b. Submittals marked "approved" "approved as submitted" authorize Contractor to proceed with work covered.

c. Submittals marked "approved as noted" or "approval except as noted; resubmission not required" authorize Contractor to proceed with work as noted provided Contractor takes no exception to the notations.

d. Submittals marked "revise and resubmit" or "disapproved" indicate

submittal is incomplete or does not comply with design concept or requirements of the contract documents and shall be resubmitted with appropriate changes. No work shall proceed for this item until resubmittal is approved.

1.5 FORMAT OF SUBMITTALS

1.5.1 Transmittal Form

Transmit each submittal, except sample installations and sample panels, to office of approving authority. Transmit submittals with transmittal form prescribed by Contracting Officer and standard for project. The transmittal form shall identify Contractor, indicate date of submittal, and include information prescribed by transmittal form and required in paragraph entitled "Identifying Submittals." Process transmittal forms to record actions regarding sample panels and sample installations.

1.5.2 Identifying Submittals

Identify submittals, except sample panel and sample installation, with the following information permanently adhered to or noted on each separate component of each submittal and noted on transmittal form. Mark each copy of each submittal identically, with the following:

a. Project title and location.

b. Construction contract number.

c. Section number of the specification section by which submittal is required.

d. Submittal description (SD) number of each component of submittal.

e. When a resubmission, add alphabetic suffix on submittal description, for example, SD-10A, to indicate resubmission.

f. Name, address, and telephone number of subcontractor, supplier, manufacturer and any other second tier Contractor associated with submittal.

g. Product identification and location in project.

1.5.3 Format for SD-02 Shop Drawings

a. Shop drawings shall not be less than 8 1/2 by 11 inches nor more than 30 by 42 inches.

b. Present 8 1/2 by 11 inches sized shop drawings as part of the bound volume for submittals required by section. Present larger drawings in sets.

c. Include on each drawing the drawing title, number, date, and revision numbers and dates, in addition to information required in paragraph entitled "Identifying Submittals."

d. Dimension drawings, except diagrams and schematic drawings; prepare drawings demonstrating interface with other trades to scale. Shop drawing dimensions shall be the same unit of measure as indicated on the contract drawings. Identify materials and

products for work shown.

e. Drawings shall include the nameplate data, size and capacity. Also include applicable federal, military, industry and technical society publication references.

1.5.4 Format of SD-03 Product Data and SD-08 Manufacturer's Instruction

a. Present product data submittals for each section as a complete, bound volume. Include table of contents, listing page and catalog item numbers for product data.

b. Indicate, by prominent notation, each product which is being submitted; indicate specification section number and paragraph number to which it pertains.

c. Supplement product data with material prepared for project to satisfy submittal requirements for which product data does not exist. Identify this material as developed specifically for project, with information and format as required for submission of SD-07 Certificates.

e. Product data shall include the manufacturer's name, trade name, place of manufacture, and catalog model or number. Submittals shall also include applicable federal, military, industry and technical society publication references. Should manufacturer's data require supplemental information for clarification, the supplemental information shall be submitted as specified for SD-07 Certificates.

f. Where equipment or materials are specified to conform to industry and technical society reference standards of the organizations such as American National Standards Institute (ANSI), ASTM International (ASTM), National Electrical Manufacturer's Association (NEMA), Underwriters Laboratories (UL), and Association of Edison Illuminating Companies (AEIC), submit proof of such compliance. The label or listing by the specified organization will be acceptable evidence of compliance. In lieu of the label or listing, submit a certificate from an independent testing organization, competent to perform testing, and approved by the Contracting Officer. The certificate shall state that the item has been tested in accordance with the specified organization's test methods and that the item complies with the specified organization's reference standard.

g. Submit manufacturer's instruction prior to installation.

1.5.5 Format of SD-04 Samples

a. Furnish samples in sizes below, unless otherwise specified or unless the manufacturer has prepackaged samples of approximately same size as specified:

(1) Sample of Equipment or Device: Full size.

(2) Sample of Materials Less Than 2 by 3 inches: Built up to 8 1/2 by 11 inches.

(3) Sample of Materials Exceeding 8 1/2 by 11 inches: Cut down to

8 1/2 by 11 inches and adequate to indicate color, texture, and material variations.

(4) Sample of Linear Devices or Materials: 10 inch length or length to be supplied, if less than 10 inches. Examples of linear devices or materials are conduit and handrails.

(5) Sample of Non-Solid Materials: Pint. Examples of non-solid materials are sand and paint.

(6) Color Selection Samples: 2 by 4 inches.

(7) Sample Panel: 4 by 4 feet.

(8) Sample Installation: 100 square feet.

b. Samples Showing Range of Variation: Where variations are unavoidable due to nature of the materials, submit sets of samples of not less than three units showing extremes and middle of range.

c. Reusable Samples: Incorporate returned samples into work only if so specified or indicated. Incorporated samples shall be in undamaged condition at time of use.

d. Recording of Sample Installation: Note and preserve the notation of area constituting sample installation but remove notation at final clean up of project.

e. When color, texture or pattern is specified by naming a particular manufacturer and style, include one sample of that manufacturer and style, for comparison.

1.5.6 Format of SD-05 Design Data and SD-07 Certificates

a. Provide design data and certificates on 8 1/2 by 11 inches paper. Provide a bound volume for submittals containing numerous pages.

1.5.7 Format of SD-06 Test Reports and SD-09 Manufacturer's Field Reports

a. Provide reports on 8 1/2 by 11 inches paper in a complete bound volume.

b. Indicate by prominent notation, each report in the submittal. Indicate specification number and paragraph number to which it pertains.

1.5.8 Format of SD-10 Operation and Maintenance Data (O&M)

a. O&M Data format shall comply with the requirements specified in specific equipment sections.

1.5.9 Format of SD-01 Preconstruction Submittals and SD-11 Closeout Submittals

a. When submittal includes a document which is to be used in project or become part of project record, other than as a submittal, do not apply Contractor's approval stamp to document, but to a separate sheet accompanying document.

1.6 QUANTITY OF SUBMITTALS

1.6.1 Number of Copies of SD-02 Shop Drawings

a. Submit six copies of submittals of shop drawings requiring review and approval only by QC organization and seven copies of shop drawings requiring review and approval by Contracting Officer.

1.6.2 Number of Copies of SD-03 Product Data and SD-08 Manufacturer's Instructions

Submit in compliance with quantity requirements specified for shop drawings.

1.6.3 Number of Samples SD-04 Samples

a. Submit two samples, or two sets of samples showing range of variation, of each required item. One approved sample or set of samples will be retained by approving authority and one will be returned to Contractor.

b. Submit one sample panel. Include components listed in technical section or as directed.

c. Submit one sample installation, where directed.

d. Submit one sample of non-solid materials.

1.6.4 Number of Copies SD-05 Design Data and SD-07 Certificates

a. Submit in compliance with quantity requirements specified for shop drawings.

1.6.5 Number of Copies SD-06 Test Reports and SD-09 Manufacturer's Field Reports

a. Submit in compliance with quantity with quality requirements specified for shop drawings.

1.6.6 Number of Copies of SD-10 Operation and Maintenance Data

Submit five copies of O&M Data to the Contracting Officer for review and approval.

1.6.7 Number of Copies of SD-01 Preconstruction Submittals and SD-11 Closeout Submittals

a. Unless otherwise specified, submit administrative submittals compliance with quantity requirements specified for shop drawings.

1.7 FORWARDING SUBMITTALS

1.7.1 Submittals Required from the Contractor

As soon as practicable after award of contract, and before procurement of fabrication, forward to the Contracting Officer submittals required in the technical sections of this specification, including shop drawings, product data and samples.

The Contracting Officer for this project will review and approve for the Government those submittals reserved for Government approval to verify submittals comply with the contract requirements.

1.7.1.1 O&M Data

The Contracting Officer will review and approve all O&M Data to verify the submittals comply with the contract requirements. Submit data specified for a given item within 30 calendar days after the item is delivered to the contract site.

a. In the event the Contractor fails to deliver O&M Data within the time limits specified, the Contracting Officer may withhold from progress payments 50 percent of the price of the item with which such O&M Data are applicable.

1.8 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.8.1 Designer of Record Approved

Designer of Record approval is required for extensions of design, critical materials, any deviations from the solicitation, the accepted proposal, or the completed design, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction", they are considered to be "shop drawings". The Contractor shall provide the Government the number of copies designated hereinafter of all Designer of Record approved submittals. The Government may review any or all Designer of Record approved submittals for conformance to the Solicitation and Accepted Proposal. The Government will review all submittals designated as deviating from the Solicitation or Accepted Proposal, as described below. Generally, design submittals should be identified as SD-05 DESIGN DATA submittals.

1.8.2 Government Approved

Government approval is required for extensions of design, critical materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Government approval is required for any deviations from the Solicitation or Accepted Proposal and other items as designated by the Contracting Officer.Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," they are considered to be "shop drawings."

1.8.3 Government Reviewed Design or Extension of Design

The Government will review all design submittals for conformance with the technical requirements of the solicitation. Government review is required for extension of design construction submittals, used to define contract conformity, and for deviation from the completed design. Review will be only for conformance with the contract requirements. Included are only those construction submittals for which the Designer of Record design documents do not include enough detail to ascertain contract compliance. The Government may, but is not required, to review extensions of design such as structural steel or reinforcement shop drawings.

1.8.4 Information Only

All submittals not requiring Government approval will be for information only. All submittals not requiring Designer of Record or Government approval will be for information only. They are not considered to be "shop drawings" within the terms of the Contract Clause referred to above.

All submittals not requiring Government approval will be for information only. They are not considered to be "shop drawings" within the terms of the Contract Clause referred to above.

1.9 APPROVED SUBMITTALS

The Contracting Officer's approval of submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory and that design, general method of construction, materials, detailing and other information appear to meet the Solicitation and Accepted Proposal. Approval will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for the design of adequate connections and details, and the satisfactory construction of all work. After submittals have been approved by the Contracting Officer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.10 DISAPPROVED SUBMITTALS

The Contractor shall make all corrections required by the Contracting Officer and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal.The Contractor shall make all corrections required by the Contracting Officer, obtain the Designer of Record's approval when applicable, and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. Any "information only" submittal found to contain errors or unapproved deviations from the Solicitation or Accepted Proposal shall be resubmitted as one requiring "approval" action, requiring both Designer of Record and Government approval. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice in accordance with the Contract Clause "Changes" shall be given promptly to the Contracting Officer.

1.11 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained. No payment for materials incorporated in the work will be made if all required Designer of Record or required Government approvals have not been obtained. No payment will be made for any materials incorporated into the work for any conformance review submittals or information only submittals found to contain errors or deviations from the Solicitation or Accepted Proposal.

1.12 GENERAL

The Contractor shall make submittals as required by the specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all

submittals shall be the same as those used in the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, all items shall be checked and approved by the Contractor's Quality Control (CQC) System Manager and the Designer of Record, if applicable, and each item shall be stamped, signed, and dated by the CQC System Manager indicating action taken. Proposed deviations from the contract requirements shall be clearly identified. Submittals shall include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Submittals requiring Government approval shall be scheduled and made prior to the acquisition of the material or equipment covered thereby. Samples remaining upon completion of the work shall be picked up and disposed of in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

1.13 SUBMITTAL REGISTER

Per paragraph 1.3, Contractor shall provide, at a minimum, submittals indicated per the "Submittal Register".

1.14 SCHEDULING

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of 15 calendar days exclusive of mailing time) shall be allowed and shown on the register for review and approval. No delay damages or time extensions will be allowed for time lost in late submittals.

1.15 TRANSMITTAL FORM (ENG FORM 4025)

The sample transmittal form (ENG Form 4025) attached to this section shall be used for submitting both Government approved and information only submittals in accordance with the instructions on the reverse side of the form. These forms will be furnished to the Contractor. This form shall be properly completed by filling out all the heading blank spaces and identifying each item submitted. Special care shall be exercised to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.

1.16 SUBMITTAL PROCEDURES

Submittals shall be made as follows:

1.16.1 Procedures

The Government will further discuss detailed submittal procedures with the Contractor at the Preconstruction Conference.

1.16.2 Deviations

For submittals which include proposed deviations requested by the Contractor, the column "variation" of ENG Form 4025 shall be checked. The Contractor shall set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the

right to rescind inadvertent approval of submittals containing unnoted deviations.

1.17 CONTROL OF SUBMITTALS

The Contractor shall carefully control his procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

1.18 GOVERNMENT APPROVED SUBMITTALS

Upon completion of review of submittals requiring Government approval, the submittals will be identified as having received approval by being so stamped and dated. 4 copies of the submittal will be retained by the Contracting Officer and 2 copies of the submittal will be returned to the Contractor. If the Government performs a conformance review of other Designer of Record approved submittals, the submittals will be so identified and returned, as described above.

1.19 INFORMATION ONLY SUBMITTALS

Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe. For design-build construction the Government will retain 2 copies of information only submittals.

1.20 STAMPS

Stamps used by the Contractor on the submittal data to certify that the submittal meets contract requirements shall be similar to the following:

CONTRACTOR

(Firm Name)

_____ Approved

_____ Approved with corrections as noted on submittal data and/or attached sheets(s).

SIGNATURE: _____

TITLE: _____

DATE: _____

For design-build construction, both the Contractor Quality Control System Manager and the Designer of Record shall stamp and sign to certify that the submittal meets contract requirements.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

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CONTRACT NO.

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		01110	SD-01 Preconstruction Submittals															
			Quality of Life Plan	1.8	G													
		01140	SD-01 Preconstruction Submittals															
			Name and experience of the	1.2	G													
			Project Manager															
			List of Contact Personnel	1.5.1.1	G													
		01201	SD-11 Closeout Submittals															
			Pre-Construction Conference	3.1	G	A/E												
			Meeting Minutes															
			Pre-Work Conference Meeting	3.1	G	A/E												
			Minutes															
			Pre-Construction Quality Control	3.1	G	A/E												
			Conference Meeting Minutes															
			Pre-Construction Safety	3.1	G	A/E												
			Conference Meeting Minutes															
		01202	SD-11 Closeout Submittals															
			Project Progress Meeting	3.2	G													
			Minutes															
		01320	SD-01 Preconstruction Submittals															
			Preliminary Project Schedule	3.3	G													
			Initial Project Schedule	3.4	G													
			Periodic Schedule Update	1.3	G													
		01330	SD-01 Preconstruction Submittals															
			Submittal register	1.3.1	G													
		01351	SD-01 Preconstruction Submittals															

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		01351	Name of the Contractor's Site	1.10.3	G													
			Safety and Health Officer															
			Certificate Numbers of the	1.10.3														
			Contractor's Safety and Health															
			Manager															
			Site Safety and Health Plan	1.6	G													
			(SSHP)															
			Air Monitoring Plan	1.15.1	G													
			Spill Prevention and Control Plan	1.17	G													
			Dust Control Plan	1.38	G													
			Health and Safety Training	1.12														
			Documentation															
			SD-02 Shop Drawings															
			Work Zones	1.29.1	G	A/E												
			Decontamination Facilities	1.30.1	G	A/E												
			SD-03 Product Data															
			Exposure Monitoring/Air	1.15.1														
			Sampling Program															
			Site Control Log	1.29.2														
			Employee Certificates	1.14.6														
			SD-06 Test Reports															
			Weekly Safety Reports	1.10.3.2	G													
			Accident Reports	1.10.3.2	G													
			Daily Safety Inspection Log	1.10.3.2														
			SD-07 Certificates															
			PCB Protection Plan	1.9.3	G	A/E												

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		01351	Training certification	1.9.4														
			CIH qualifications	1.9.5	G	A/E												
			SD-08 Manufacturer's Instructions															
			Medical Certifications	1.8														
			Training certificates	1.8														
			Respirator Fit-Test Certificates	1.8														
			List of Field Personnel	1.8														
			Safety and Health Phase-Out	1.39	G													
			Report															
			Vehicle decontamination	1.9.5														
			verification															
		01356A	SD-01 Preconstruction Submittals															
			Soil Erosion and Sediment	1.4	G													
			Control Plan															
			SD-07 Certificates															
			Mill Certificate or Affidavit	2.1.3														
		01362	SD-01 Preconstruction Submittals															
			Perimeter Air Monitoring Plan	1.5	G	A/E												
			(PAMP)															
			SD-09 Manufacturer's Field															
			Reports															
			Air Sampling and Monitoring	1.9.5.1														
			Logs															
			Air Sample Analysis Results	1.9.5.2														
			Monthly Air Monitoring Report	1.9.5.3														
			Compilation															

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		01362	Meteorological Readings	1.9.2.2														
		01380	SD-11 Closeout Submittals															
			Pre-Construction and Post	1.2.1	G													
			Construction Photographs															
			Progress Photographs	1.2.2														
		01381	SD-11 Closeout Submittals															
			Pre-Construction, Progress and	1.2.1														
			Post-Construction Video															
		01450A	SD-01 Preconstruction Submittals															
			Quality Assurance Project Plan	3.3.1	G													
			CONTRACT CHEMICAL	3.2														
			QUALITY CONTROL (CCQC)															
			PLAN															
			SD-03 Product Data															
			FIELD SCREENING TEST	2.2	G													
			SD-06 Test Reports															
			Chemical Data Packages	3.5	G													
			Daily Chemical Quality Control	3.7														
			Reports															
			Quality Control Summary Report	3.5	G													
		01451A	SD-01 Preconstruction Submittals															
			Contractor Quality Control (CQC)	3.2	G													
			Plan															
			SD-06 Test Reports															
			Daily CQC Reports	3.7.1														
		01500A	SD-01 Preconstruction Submittals															

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		01500A	Temporary Site Facilities Layout	1.1.1	G	A/E													
			Plan																
			Trailer's Floor Plan	1.1.1	G	A/E													
			Electrical Supply and Lighting	1.3.1	G	A/E													
			Shop Drawings																
			Water Supply, Contaminated	1.3.1	G	A/E													
			Washwater Handling and Sanitary																
			Facilities																
			Housekeeping Plan	1.1.1															
			Decontamination Pad Layout	1.10.2	G	A/E													
		01525	SD-01 Preconstruction Submittals																
			Accident Prevention Plan	1.7	G														
			Activity Hazard Analysis (AHA)	1.8	G														
			SD-06 Test Reports																
			Monthly Exposure Reports	1.13.2	G														
			Accident Reports	1.13.1	G														
			Regulatory Citations and	1.5															
			Violations																
			SD-07 Certificates																
			Confined Space Entry Permit	1.10															
			Hot Work Permit	1.10															
		01540	SD-01 Preconstruction Submittals																
			Security Plan	3.2	G	A/E													
		01550	SD-04 Samples																
			Initial Site Drawings	3.3.1	G	A/E													
			Record Topographic Maps	3.3.2	G	A/E													

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		01550	Record Survey	3.3.3	G	A/E												
			SD-07 Certificates															
			Surveyor Elevation/Location	1.3	G	A/E												
			Certifications															
			SD-11 Closeout Submittals															
			Surveyor Field Notes Data	3.6	G	A/E												
			Surveyor in Place Volume	3.6	G	A/E												
			Calculations For Aggregate Base															
			And Backfill Material															
		01580	SD-02 Shop Drawings															
			Preliminary one line	1.4.1.1	G	A/E												
			Preliminary drawing indicating	1.4.1.2	G	A/E												
			layout and text content															
			SD-04 Samples															
			Final rendering	1.4.1.3	G													
			Final framed rendering	1.4.1.4	G													
		01700	SD-11 Closeout Submittals															
			Remedial Unit Closeout	3.1	G													
			Information															
			Record Drawings	1.4.1	G	A/E												
		02181	SD-02 Shop Drawings															
			Layout	3.3	G													
			Low Temperature Thermal	1.1	G													
			Desorption System															
			Mass and Energy Balance	2.1.1	G													

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		02181	Process and Instrumentation	2.1.1	G													
			Diagram															
			Equipment Protocol	3.1.5														
			SD-03 Product Data															
			Sequencing and Scheduling	2.1.4	G													
			Mobilization Plan	2.1.2	G													
			Startup Plan	3.7.1	G													
			Proof of Performance Test	3.1.2	G													
			Protocol;															
			CEM Certification Protocol	3.1.2.1	G													
			Emission Testing Protocol	3.1.2.2	G													
			Operating Plan	3.9	G													
			Demobilization Plan	3.11	G													
			Utilities	3.10														
			Equipment	3.3.1	G													
			Instrumentation and Controls	2.4	G													
			Ambient Air Emissions and Noise	2.2.1														
			Control															
			Redundancies	2.4.2														
			Logs	3.6														
			Control System	3.7.1														
			SD-06 Test Reports															
			Logs	3.6														
			Startup	3.7	G													
			Field Proof of Performance	3.8.4	G													
			Report															

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		02181	SD-07 Certificates															
			NJDEP Air Quality Permit	3.1.1														
			Equivalency Application															
		02231	SD-03 Product Data															
			Nonsaleable Materials	3.6	G													
			SD-04 Samples															
			Tree wound paint	2.1														
			Herbicide	2.2														
		02310	SD-01 Preconstruction Submittals															
			Excavation Support System Plan	1.8	G	A/E												
			Excavation Schedule	1.5	G													
			Dewatering Work Plan	1.9	G													
			Excavation and Material Handling	1.7	G													
			Plan															
			SD-03 Product Data															
			Notification of Opening of any	3.2														
			Excavation															
			SD-06 Test Reports															
			Field Measurement Data	1.6	G													
			SD-07 Certificates															
			Contaminated Water Handling	3.2.2.3	G	A/E												
			Plan															
		02320	SD-06 Test Reports															
			Testing	3.7	G	A/E												
			Borrow Site Testing	3.7.3	G	A/E												
			Off-Site Soils Chemical Testing	2.1	G	A/E												

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		02320	SD-07 Certificates															
			Commercial Testing Laboratory	3.7														
			Qualifications															
		02350	SD-01 Preconstruction Submittals															
			Waste Management Plan and	3.1.2	G	A/E												
			Addendum															
			Security Plan for Hazardous	3.2.5.1	G													
			Materials Shipments															
			Traffic Control Plan	3.2.2	G													
			Notices of Non-Compliance and	3.2														
			Notices of Violation															
			Hazardous Waste Manifest	3.1.1	G													
			EPA Form 8700-12, Notification	3.2.3	G													
			of Hazardous Waste Activity															
			SD-06 Test Reports															
			Hazardous Waste Manifest	3.3.1														
			Annual and/or Biennial Reports															
			State Reporting Requirements	1.5	G													
			Transportation and Disposal	3.3.1														
			Tracking Form															
			Discrepancy Reports	3.3.1														
			Exception Reports	3.3.1														
			Toxic Substance Control Act PCB	3.3.1	G													
			Reporting Requirements															
			Final Disposal Report	1.5	G													
			Final Disposal Report	3.3.1	G													

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		02350	SD-07 Certificates															
			Qualifications	1.4	G													
			Regulatory specialist and	1.4.1	G													
			transportation and disposal															
			coordinator															
			Off-Site Policy Compliance	1.4.3														
			Certification															
			Certificates of Disposal	1.7.2														
			Certificates of Disposal	3.2.4														
			Shipping Documents and	3.2.4														
			Packagings Certification															
			PCB-Contaminated Soil and	1.7.1	G	A/E												
			Debris Disposal Plan															
			SD-11 Closeout Submittals															
			Closeout Report	1.7.2	G	A/E												
		02372	SD-02 Shop Drawings															
			Proposed Layout Drawings	3.1	G													
			As-Built Drawings	3.9	G													
			SD-03 Product Data															
			Tests, Inspections, and	2.2	G													
			Verifications															
			Field Seaming	3.3	G													
			Qualifications	1.3	G													
			SD-04 Samples															
			Samples	3.4														
			SD-06 Test Reports															

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		02372	Materials	2.1	G													
			Surface Preparation	3.1.1	G													
			Non-Destructive Field Seam	3.5.1	G													
			Continuity Testing															
			Tests	3.5	G													
		02373	SD-04 Samples															
			Manufacturing Quality Control	2.2														
			Sampling And Testing															
			Quality Assurance Samples and	3.1														
			Tests															
			SD-07 Certificates															
			Geotextile	2.1.1														
		02630	SD-03 Product Data															
			Placing Pipe	3.3														
			SD-04 Samples															
			Pipe for Culverts and Storm	2.1														
			Drains															
			SD-07 Certificates															
			Resin Certification	2.1.1														
			Pipeline Testing	3.7														
			Hydrostatic Test on Watertight	2.5														
			Joints															
			Determination of Density	3.6.4														
			Frame and Cover for Gratings	2.2.5														
		02650	SD-03 Product Data															
			Storage Tank Handling Plan	1.7	G													

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		02650	Qualifications	1.4	G													
			Salvage Rights	3.12.4														
			SD-06 Test Reports															
			Backfill Material	2.1	G	A/E												
			Tank Sampling And Analytical	3.2														
			Program															
			Contaminated Water Disposal	3.4.2	G													
			Soil Examination, Testing, and	3.10	G	A/E												
			Analysis															
			Backfilling	3.11	G													
			Tank Closure Report	3.14														
		02742	SD-05 Design Data															
			Mix Design	1.4.1	G	A/E												
			SD-06 Test Reports															
			Specific gravity of asphalt	3.7.1.5														
			Specific gravity of mineral filler	3.7.1.4														
			Aggregates tests	3.7.2.1														
			Bituminous Mix Tests	3.7.2.2														
			Pavement Courses Testing	3.7.2.3														
		02821A	SD-07 Certificates															
			Chain Link Fence	2.1.1														

SECTION 01351

SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW)
04/06

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (ACGIH)

ACGIH-02	(1996) Chemical Substances and Physical Agents and Biological Exposure Indices
ACGIH TLVs/BEIs	(2006) TLVs and BEIs

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z87.1	(2003) Standard for Occupational and Educational Eye and Face Protection
ANSI Z89.1	(2003) Requirements for Industrial Head Protection

AMERICAN PETROLEUM INSTITUTE (API)

API PUBL 2219	(1999) Safe Operation of Vacuum Trucks in Petroleum Service
API RP 1604	(1996; R 2001) Closure of Underground Petroleum Storage Tanks
API Std 2015	(2001) Requirements for Safe Entry and Cleaning of Petroleum Storage Tanks

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

NIOSH METHOD 7105	(1994) NIOSH Manual of Analytical Methods(NMAM)
NIOSH 85-115	(1985) Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2003) Safety and Health Requirements Manual (Contractors shall always check for the most current updates to the EM at http://www.usace.army.mil/publications/eng-manuals/)
ER 385-1-92	(2003) Safety - Safety and Occupational Health Document Requirements for

	Hazardous, Toxic, and Radioactive Waste (HTRW) and Ordnance and Explosive Waste (OEW) Activities

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA (NAAQS)	Air Quality Guidelines - National Ambient Air Quality Standards (NAAQS)

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1904	Recording and Reporting Occupational Injuries and Illnesses
29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1910.120	Hazardous Waste Operations and Emergency Response
29 CFR 1910.145	specifications For Accident Prevention Signs And Tags
29 CFR 1910.1000	Air Contaminants
29 CFR 1910.1001	Asbestos
29 CFR 1926	Safety and Health Regulations for Construction
29 CFR 1926.1101	Asbestos
29 CFR 1926.65	Hazardous Waste Operations and Emergency Response
40 CFR 761	Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions
49 CFR 171	General Information, Regulations, and Definitions
49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements

NEW JERSEY ADMINISTRATIVE CODE (NJAC)

NJAC 8:60	(2004) New Jersey Administrative Code Title 8 Health
NJAC 12:120	(2004) New Jersey Administrative Code Title 12 Labor

1.2 DESCRIPTION OF WORK

This section provides requirements for implementing practices and procedures for working safely and in compliance with the regulations and guidelines listed above, while performing remedial activities at the

Cornell-Dubilier Electronics Site - OU-2. This section primarily addresses Safety, Health, and emergency response for potential chemical and physical hazards associated with: the excavation of soils and debris contaminated with PCBs, volatile and semi-volatile organic compounds, and metals; on-site treatment by low temperature thermal desorption; off site transportation; and site restoration. For Safety and Occupational Health requirements, refer to Section 01525 SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS. Specific LTTD requirements are also included in Section 02181 REMEDIATION OF CONTAMINATED SOILS BY THERMAL DESORPTION.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Name of the Contractor's Site Safety and Health Officer (SSHO); G

Certificate Numbers of the Contractor's Safety and Health Manager, a Certified Industrial Hygienist; G

Site Safety and Health Plan (SSHP); G

Air Monitoring Plan (AMP); G

Spill Prevention and Control Plan;G

Dust Control Plan; G

Health and Safety Training Documentation;

SD-02 Shop Drawings

Work Zones; G, A/E

Drawings including initial work zone boundaries: Exclusion Zone (EZ), including restricted and regulated areas; Contamination Reduction Zone (CRZ); and Support Zone (SZ).

Decontamination Facilities; G, A/E

Drawings showing the layout of the personnel and equipment decontamination areas.

SD-03 Product Data

Exposure Monitoring/Air Sampling Program

Personnel exposure monitoring/sampling results.

Site Control Log

Record of each entry and exit into the site, as specified.

Employee Certificates

A certificate for each worker performing cleanup operations with potential for contaminant-related occupational exposure signed by the safety and health manager and the occupational physician indicating the workers meet the training and medical surveillance requirements of this contract.

SD-06 Test Reports

Weekly Safety Reports; G

Submit reports as their incidence occurs, in accordance with the requirements of the paragraph entitled, "Reports."

Accident Reports; G

Daily Safety Inspection Log;

SD-07 Certificates

PCB Protection Plan; G, A/E, DO

Training certification;

CIH qualifications; G, A/E, DO

SD-08 Personnel Statements/Certificates

Medical Certifications;

Training certificates;

Respirator Fit-Test Certificates;

List of Field Personnel;

Safety and Health Phase-Out Report; G.

Vehicle decontamination verification

1.4 REGULATORY REQUIREMENTS

Work performed under this contract shall comply with EM 385-1-1, OSHA requirements in 29 CFR 1910 and 29 CFR 1926, especially OSHA's Standards 29 CFR 1926.65 and 29 CFR 1910.120 and state specific OSHA requirements where applicable. Matters of interpretation of standards shall be submitted to the Contracting Officer for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements shall apply.

1.5 PRECONSTRUCTION SAFETY CONFERENCE

A preconstruction safety conference shall be conducted prior to the start of site activities and after submission of the Contractor's Accident Prevention Plan/Site Safety and Health Plan (APP/SSHP). The objective of the meeting will be to discuss health and safety concerns related to the chemical and physical hazards associated with the impending work, discuss

project health and safety organization and expectations, review and answer comments and concerns regarding the APP/SSHP or other health and safety concerns the Contractor may have. The Contractor shall ensure that those individuals responsible for health and safety at the project level are available and attend this meeting.

1.6 SITE SAFETY AND HEALTH PLAN (SSHP)

1.6.1 Development and Implementation

The Contractor shall develop a SSHP for the project and provide to the Contracting Officer at least 14 calendar days prior to the Pre-Work Conference and no later than 30 days after the NTP. Once the SSHP is accepted the Contractor shall review and update the accepted plan for site-specific conditions, as necessary, if conditions change. The SSHP shall meet the requirements of Section 01.A.09 and Appendix A of EM 385-1-1 and 29 CFR 1910.120/29 CFR 1926.65 (b)(4). The Safety and Health Manager shall be responsible for the development, implementation and oversight of the SSHP. The SSHP shall establish, in detail, the protocols necessary for the anticipation, recognition, evaluation, and control of hazards associated with each task performed. The SSHP shall address site-specific safety and health requirements and procedures based upon site-specific conditions. The sampling objectives contained in the Contractor's Safety and Health Plan shall include specific compound concentrations for upgrade of level of protection, stop work, etc. and specific reporting requirements.

At a minimum, the SSHP shall incorporate a site-specific Activity Hazard Analysis meeting the requirements of Section 01:A.12 and 01.A.13 and Figure 1-2 of EM 385-1-1; shall reference a separate Accident Prevention Plan as specified in Appendix A of EM 385-1-1; and shall address each of the following elements in Appendix C of ER 385-1-92 as they pertain to this site:

1. Site Description and Contamination Characterization;
2. Hazard/Risk Analysis;
3. Occupational Exposure Action Levels;
4. Staff Organization, Qualifications and Responsibilities;
5. Training;
6. Personal Protective Equipment;
7. Medical Surveillance requirements for the project;
8. Exposure Monitoring/Air Sampling;
9. Heat/Cold Stress Monitoring and Management;
10. Standard Operating Safety Procedures, Engineering Controls, and Work Practices;
11. Site Control Measures;
12. Personal Hygiene and Decontamination;
13. Equipment Decontamination;
14. Emergency Equipment and First Aid Requirements;
15. Emergency Response and Contingency Procedures;
16. Accident Prevention;
17. Logs, Reports and Recordkeeping.

The SSHP shall be considered a living document and shall be updated as occupational safety and health conditions change during project execution and improved as occupational safety and health lessons are learned during the course of the project.

1.6.2 Acceptance and Modifications

Prior to submittal, the SSHP shall be signed and dated by the Safety and Health Manager and the Site Superintendent. The SSHP shall be submitted for review seven days prior to the Preconstruction Safety Conference. The SSHP shall be submitted for review and approval by the government safety officer. Deficiencies in the SSHP will be discussed at the pre-work safety conference, and the SSHP shall be revised to correct the deficiencies and resubmitted for acceptance. On-site work shall not begin until the plan has been accepted. A copy of the written SSHP shall be maintained on site. Changes and modifications to the accepted SSHP shall be made with the knowledge and concurrence of the Safety and Health Manager, the Site Superintendent, and the Contracting Officer's Representative. If any unforeseen hazard becomes evident during the performance of the work, the SSHO shall bring such hazard to the attention of the Safety and Health Manager, the Site Superintendent, and the Contracting Officer's Representative, both verbally and in writing, for resolution as soon as possible. In the interim, necessary action shall be taken to re-establish and maintain safe working conditions in order to safeguard on-site personnel, visitors, the public, and the environment. Disregard for the provisions of this specification or the accepted SSHP shall be cause for stopping of work until the matter has been rectified.

1.6.3 Availability

The SSHP shall be made available in accordance with 29 CFR 1910.120, (b)(1)(v) and 29 CFR 1926.65, (b)(1)(v).

1.7 SITE DESCRIPTION AND CONTAMINATION CHARACTERIZATION

1.7.1 Project/Site Conditions

The SSHP shall include a site description and contamination characterization section that addresses the following elements:

a. Description of site location, topography, size, and past uses of the site.

b. A list of contaminants that may present occupational health and safety hazards. This list shall be created by researching sources of information from past site investigation activities. The contamination characterization shall be reviewed and revised if new chemicals are identified as work progresses.

1.7.2 Information Resources

The information resources are in Section 01110 SUMMARY OF WORK.

1.8 HAZARD/RISK ANALYSIS

The SSHP shall include a safety and health hazard/risk analysis for each site task and operation to be performed. The hazard/risk analysis shall provide information necessary for determining safety and health procedures, equipment, and training to protect on-site personnel, the environment, and the public. Available site information shall be reviewed when preparing the "Hazard/Risk Analysis" section of the SSHP. Submit Medical Certifications for all field personnel. Submit a statement reflecting the number of the Contractor's employees who have completed required health and safety training courses. Submit a copy of Training certificates and

refresher training certificates for all field personnel including, at a minimum, health and safety training required by OSHA 29 CFR 1910.120; and First aid/CPR training. Submit a copy of Respirator Fit-Test Certificates for all field personnel. Submit a List of Field Personnel specifying names of all the field personnel who will be on site. The following elements, as a minimum, shall be addressed.

1.8.1 Site Tasks and Operations

The SSHP will include a comprehensive section that addresses tasks and objectives of site operations and logistics and resources required to reach those tasks and objectives. Based on the soil excavation and treatment required, the following are anticipated major site tasks and operations to be performed: site preparation, work zone construction, excavation, grading, backfilling, on-site soil treatment, utility termination and deactivation, transportation and disposal of materials, surveying, paving, equipment decontamination, and demobilization. This is not a complete list of site tasks and operations, therefore, it shall be expanded and/or revised, during preparation of the SSHP, as necessary.

1.8.2 Hazards

The following potential hazards may be encountered during site work. These are not complete lists, therefore, they shall be expanded and/or revised as necessary during preparation of the SSHP. For those hazards that are evaluated and found not to be a potential hazard on this site, a negative declaration shall be given to establish that adequate consideration was given to the topic with a brief justification for its omission or reduced level of detail.

1.8.2.1 Physical Hazards

The Hazard/Risk Analysis section of the SSHP shall describe the physical hazards associated with anticipated site operations. These include, but are not limited to: heavy equipment operation; slips, trips, and falls; overhead and belowground utilities; etc.

1.8.2.2 Chemical Hazards

The Hazard/Risk Analysis section of the SSHP shall describe chemical, physical, and toxicological properties of contaminants; sources and pathways of employee exposures; anticipated on-site and off-site exposure level potentials; and regulatory (including federal, state, and local) or recommended protective exposure/dose standards. The SSHP shall also address employee exposure to hazardous substances brought on site, and shall comply with the requirements of 29 CFR 1910.1200 and 29 CFR 1926.59, Hazard Communication.

1.8.2.3 Physical Agents

The SSHP shall evaluate hazards associated with ordnance, noise, and heat/cold stress in accordance with ACGIH TLVs/BEIs. Although ordnance is not expected at this site, the Contractor shall include in the SSHP, at a minimum, the basic steps for initial response in the unlikely event that ordnance is discovered.

1.8.2.4 Biological Hazards

Potential hazards associated with poisonous plants, insects, and animals

shall be evaluated in the SSHP.

1.8.3 Action Levels

1.8.3.1 General

Action levels shall be established for the situations listed below, at a minimum. Current EPA (NAAQS) National Ambient Air Quality Standards (NAAQS), ACGIH-02 Threshold Limit Values, or other applicable exposure standards and guidelines shall be utilized in developing the action levels. The action levels and required actions (engineering controls, changes in PPE, etc.) shall be presented in the SSHP in both text and tabular form. Initial action levels for workers appear in Table 01351-1 . Perimeter air monitoring shall be completed in accordance with 01362 PERIMETER AIR MONITORING.

TABLE 01351-1 MINIMUM ACCEPTABLE WORKER ACTION LEVELS

CONTAMINANT AND MEDIUM	LEVEL (a)	ACTION TO BE TAKEN (a)
Lead in air(b)	30 ug per cubic meter	Upgrade to Level C
Dust in air (total above background)	2.5 mg per cubic meter	Upgrade to Level C
Combustible gas in air	more than 10 percent LEL	Stop work; Ventilate workspace
	more than 25 percent LEL	Stop work; Vacate area
Oxygen in air	less than 19.5 percent	Stop work; Ventilate workspace
	more than 22 percent	Stop work; Vacate area
Total VOCs	> 5 ppm over background sustained for 15 minutes	Upgrade to Level C
	>15 ppm over background for any period of time	Upgrade to Level C

Notes:

(a) Changes in these initial action levels may be required during the course of this project but will only occur with submission of written documentation by the Contractor CIH specifying the technical basis for such a change and the written approval of the Contracting Officer's Representative.

(b) Estimated lead air levels will be based on anticipated soil contaminant levels.

1.9 QUALITY ASSURANCE

1.9.1 Training

Instruct employees on the dangers of PCB exposure, on respirator use, decontamination, and applicable OSHA and EPA regulations.

1.9.2 Certified Industrial Hygienist (CIH)

Obtain the services of an industrial hygienist certified by the American Board of Industrial Hygiene to certify training, and review and approve the PCB removal plan, including determination of the need for personnel protective equipment (PPE) in performing PCB removal work.

1.9.3 Regulation Documents

Maintain at the job site one readily available copy each of 29 CFR 1910.1000, 40 CFR 761, and all contractor prepared plans required under "Submittals" paragraphs.

1.5.4 PCB Protection Plan

Prepare and submit a protection plan, prepared by the CIH, covering protection of workers and the environment from PCB hazards no later than 30 days after the Notice to Proceed. Specific protection requirements shall be determined by the CIH and, as a minimum, shall be as specified herein.

1.9.4 Training Certification

Submit certificates signed and dated by the CIH and by each employee stating that the employee has received training.

1.9.5 CIH Qualifications

Submit the name, address, and telephone number of the industrial hygienist selected to perform the duties in paragraph entitled "Certified Industrial Hygienist." Submit proper documentation that the industrial hygienist is certified, including certification number and date of certification and recertification.

1.5.11 Vehicle Decontamination Verification

Provide documentation verifying that vehicles and containers were decontaminated prior to leaving the disposal site, were properly operating, and were covered, within 24 hours after removal of waste from the site. Documentation shall consist of a sign-off sheet as approved by the Contracting Officer.

1.10 STAFF ORGANIZATION, QUALIFICATION AND RESPONSIBILITIES

Develop an organizational structure that sets forth lines of authority (chain of command), responsibilities, and communication procedures concerning site safety, health, and emergency response. This organizational structure shall cover management, supervisors and employees of the Contractor and subcontractors. The structure shall include the means for coordinating and controlling work activities of subcontractors

and suppliers. The SSHP shall include a description of this organizational structure as well as qualifications and responsibilities of the individuals listed below. The Contractor shall obtain the Contracting Officer's Representative's acceptance before replacing any member of the safety and health staff. Requests for replacement shall include the names, qualifications, duties, and responsibilities of each proposed replacement.

1.10.1 Safety and Health Manager

The Safety and Health Manager shall be a Certified Industrial Hygienist (CIH; certified by the American Board of Industrial Hygiene). The name, qualifications (education summary and documentation), and work experience summary shall be included in the SSHP along with a copy of a current valid ABIH confirmation of eligibility.

1.10.1.1 Qualifications

The Safety and Health Manager shall have the following additional qualifications:

a. A minimum of three years experience developing and implementing safety and health programs at chemically contaminated material cleanup project sites.

b. Documented experience in supervising professional and technician level personnel.

c. Documented experience in developing worker exposure assessment programs and air monitoring programs and techniques.

d. Documented experience developing personal protective equipment programs, including programs for working in and around potentially toxic, flammable and combustible atmospheres and confined spaces.

e. Working knowledge of state and Federal occupational safety and health regulations.

f. Documented experience supervising construction safety personnel, performing health and safety audits, developing health and safety action item lists, and providing documented health and safety follow-up for environmental (HTRW) sites.

1.10.1.2 Responsibilities

The Safety and Health Manager shall:

a. Be responsible for the development, implementation, oversight, and enforcement of the SHP and SSHP.

b. Sign and date the SSHP prior to submittal.

c. Conduct initial site-specific training.

d. Be present on site during the first day of remedial activities and at the startup of each new phase.

e. Visit the site at least once per field event to audit the effectiveness of the SSHP.

f. Be available for emergencies.

g. Provide onsite consultation as needed to ensure that the SSHP is fully implemented.

h. Coordinate any modifications to the SSHP with the Site Superintendent, the SSHO, and the Contracting Officer's Representative.

i. Provide continued support for upgrading/downgrading of the level of personal protection.

j. Be responsible for evaluating air monitoring/sampling data and recommending changes to engineering controls, work practices, and PPE.

k. Review accident reports and results of daily inspections.

l. Serve as a member of the Contractor's quality control staff.

m. Conduct monthly site inspection and report finding to USACE during the period of work activities on-site.

1.10.2 Additional Certified Health and Safety Support Personnel

During the development of the SHP and SSHP, the designated Safety and Health Manager shall utilize, as necessary, the services of a qualified and competent industrial hygienist for health related hazards and strategies, and a qualified and competent safety professional for physical safety hazards and strategies.

1.10.3 Site Safety and Health Officer (SSHO)

An industrial hygienist, or safety professional, and one alternate, responsible to the Contractor's Safety and Health Manager, shall be designated as the Site Safety and Health Officer (SSHO). The Name of the Contractor's Site Safety and Health Officer, Certificate Numbers of the Contractor's Safety and Health Manager, qualifications (education and training summary and documentation), and work experience of the SSHO and alternate shall be included in the SSHP.

1.10.3.1 Qualifications

The SSHO shall have the following qualifications:

a. A minimum of 3 years experience in implementing safety and health programs at chemically contaminated material cleanup project sites where Level C personal protective equipment was required.

b. Documented experience in construction techniques and construction safety procedures.

c. Working knowledge of Federal and State occupational safety and health regulations.

d. Specific training in personal and respiratory protective equipment program implementation, confined space program oversight, and in the proper use of air monitoring/sampling instruments.

e. A 10-hour Construction Safety Course meeting the requirements of EM 385-1-1, paragraph 01.A.17.

1.10.3.2 Responsibilities

The SSHO shall:

a. Assist and represent the Safety and Health Manager in on-site training and the day-to-day on-site implementation and enforcement of the accepted SSHP.

b. Be assigned to the site on a full-time basis for the duration of field activities excluding site grading, filling, paving, site restoration, and demobilization. The SSHO shall be at the site on a part-time basis during these activities. The SSHO may have other duties besides safety- and health-related duties, but health and safety duties shall come first. If operations are performed during more than one work shift per day, an SSHO shall be present for each shift.

c. Have authority to enforce site compliance with specified safety and health requirements, Federal, State and OSHA regulations, and all aspects of the SSHP including, but not limited to, activity hazard analyses, air monitoring/sampling, use of PPE, decontamination, site control, standard operating procedures used to minimize hazards, safe use of engineering controls, the emergency response plan, confined space entry procedures, spill containment program, and preparation of records by performing a daily safety and health inspection and documenting results on the Daily Safety Inspection Log.

d. Have authority to stop work if unacceptable health or safety conditions exist, and take necessary action to re-establish and maintain safe working conditions.

e. Consult with and coordinate any modifications to the SSHP with the Safety and Health Manager, the Site Superintendent, and the Contracting Officer's Representative.

f. Serve as a member of the Contractor's quality control staff on matters relating to safety and health. Attend the pre-construction conference, pre-work meetings including preparatory inspection meeting, and periodic in-progress meetings.

g. Conduct accident investigations and prepare Accident Reports. ENG Form 3394 USACE Accident Investigation form will be filled out and submitted to USACE Safety Officer for pen and ink changes, and final submitted within 2 working days.

h. Review results of daily quality control inspections and document safety and health findings into the Daily Safety Inspection Log. Prepare and submit Weekly Safety Reports.

i. In coordination with site management and the Safety and Health Manager, recommend corrective actions for identified deficiencies and oversee the corrective actions.

j. Maintain a deficiency tracking log per EM 385-1-1, paragraph 01.A.12(d), on a health and safety bulletin board as specified in EM 385-1-1, paragraph 01A.06.

k. Maintain applicable safety reference material on the job site.

l. Participate in initial pre-entry briefing and conduct periodic safety briefings.

1.10.4 Safety and Health Technicians

For each work crew in the exclusion zone, one person designated as a Safety and Health Technician shall perform air monitoring, decontamination, and safety oversight activities on behalf of the SSHO. They shall have appropriate training equivalent to the SSHO in each specific area for which they have responsibility and shall report to and be under the supervision of the SSHO.

1.10.5 Occupational Physician

1.10.5.1 Qualifications

The services of a licensed physician, who is certified in occupational medicine by the American Board of Preventative Medicine, or who, by necessary training and experience is Board eligible, shall be utilized. The physician shall be familiar with this site's hazards and the scope of this project. The medical consultant's name, qualifications, and knowledge of the site's conditions and proposed activities shall be included in the SSHP.

1.10.5.2 Responsibilities

The physician shall be responsible for the determination of medical surveillance protocols and for review of examination/test results performed in compliance with 29 CFR 1910.120(f) and 29 CFR 1926.65(f) and paragraph: MEDICAL SURVEILLANCE.

1.10.6 Persons Certified in First Aid and CPR

At least two persons who are currently certified in first aid and CPR by the American Red Cross or other approved agency shall be on site at all times during site operations. They shall be trained in universal precautions and the use of PPE as described in the Bloodborne Pathogens Standard of 29 CFR 1910.1030. These persons may perform other duties but shall be immediately available to render first aid when needed. These persons should also have had required training in the use of defibrillator. Contractor shall provide and maintain a defibrillator on-site during working operations.

1.11 1.10 EMERGENCY MEDICAL TREATMENT

Contractors will arrange for their own emergency medical treatment. Government has no responsibility to provide emergency medical treatment.

1.12 TRAINING

Personnel shall receive training in accordance with the Contractor's written safety and health training program and 29 CFR 1910.120, 29 CFR 1926.65, 29 CFR 1926.21, ER 385-1-92, and EM 385-1-1. The SSHP shall include a section describing training requirements. Copies of current Health and Safety Training Documentation shall be submitted prior to initial entry onto the work site and attached to the SSHP. Copies of recent training certificates shall be kept on site, along with medical

surveillance, fit testing, and physician's or health care provider's written opinion that employee is fit for duty.

1.12.1 General Hazardous Waste Operations Training

All personnel shall have successfully completed 40 hours of hazardous waste instruction off the site; 3 days actual field experience under the direct supervision of a trained, experienced supervisor; and 8 hours refresher training annually. On-site supervisors shall have completed the above training and 8 hours of additional, specialized training covering at least the following topics: the employer's safety and health program, personal protective equipment program, spill containment program, and health hazard monitoring procedures and techniques.

1.12.2 Site-Specific Training

Site-specific training covering site hazards, procedures, and all contents of the approved SSHP shall be conducted by the SSHO for all on-site employees, including those assigned only to the Support Zone, prior to the commencement of work; for visitors prior to entering the site; and on an ongoing basis.

Site-specific training sessions shall be documented in accordance with Section 01.B.05.b of EM 385-1-1.

1.12.3 Initial Session (Pre-entry Briefing)

Prior to commencement of on-site field activities, all site employees, including those assigned only to the Support Zone, shall attend a site-specific safety and health training session. This session shall be conducted by the Safety and Health Manager and the SSHO to ensure that all personnel are familiar with the requirements and responsibilities for maintaining a safe and healthful work environment. Procedures and contents of the accepted SSHP and Sections 01.B.02 and 28.A.02(4)(c) of EM 385-1-1 shall be thoroughly discussed. The Contracting Officer's Representative will be notified at least 5 days prior to the initial site-specific training session so government personnel involved in the project may attend.

1.12.4 Periodic Sessions

Periodic on-site training shall be conducted by the SSHO at least weekly for personnel assigned to work at the site during the following week. The training shall address safety and health procedures, work practices, any changes in the SSHP, activity hazard analyses, work tasks, or schedule; results of previous week's air monitoring/sampling, review of safety discrepancies and accidents. Detailed meeting minutes of safety discussions at weekly meetings shall be prepared and retained for reference.

If an operational change affecting on-site fieldwork is made, a meeting prior to implementation of the change shall be convened to explain safety and health procedures. Site-specific training sessions for new personnel, visitors, and suppliers shall be conducted by the SSHO using the training curriculum outlines developed by the Safety and Health Manager.

1.12.5 Training for Hazardous Materials Shipments

Training for hazardous materials shipments shall be provided to employees transporting hazardous materials in accordance with the regulatory requirements issued 25 March 2003 by the Research and Special Programs

Administration (RSPA) of the Department of Transportation (DOT).

1.12.6 Other Training

The Safety and Health Manager shall provide training as specified by 29 CFR 1910.146, for employees who are required to supervise, standby, or enter permit-required confined spaces. Persons involved in any aspect of the transportation of hazardous materials shall be trained in accordance with 49 CFR 172 Subpart H.

Persons involved in removing asbestos shall be trained in accordance with NJAC 12:120 and NJAC 8:60.

1.13 PERSONAL PROTECTIVE EQUIPMENT

1.13.1 General

In accordance with 29 CFR 1910.120(g)(5) and 29 CFR 1926.65(g)(5), a written Personal Protective Equipment (PPE) Program which addresses the elements listed in that regulation, and which complies with respiratory protection program requirements of 29 CFR 1910.134, is to be included in the employer's Safety and Health Program. The SSHP shall detail the minimum PPE ensembles (including respirators) and specific materials from which the PPE components are constructed for each site-specific task and operation to be performed, based upon the hazard/risk analysis. Components of levels of protection (B, C, D and modifications) must be relevant to site-specific conditions, including heat and cold stress potential and safety hazards. Only respirators approved by NIOSH shall be used. On-site personnel shall be provided with appropriate PPE. Protective equipment and clothing shall be kept clean and well maintained. The PPE section of the SSHP shall include site-specific procedures to determine PPE program effectiveness and for on-site fit-testing of respirators, cleaning, maintenance, inspection, and storage of PPE. All PPE shall meet with the following standards: ANSI Z87.1, ANSI Z89.1, 29 CFR 1910.1001 and 29 CFR 1926.1101.

1.13.2 Levels of Protection

The Safety and Health Manager shall establish appropriate levels of protection for each work activity based on review of historical site information, existing data, an evaluation of the potential for exposure (inhalation, dermal, ingestion, and injection) during each task, past air monitoring results, and a continuing safety and health monitoring program. The Safety and Health Manager shall also establish action levels for upgrade or downgrade in levels of PPE from the following specified minimum levels of protection. Protocols and the communication network for changing the level of protection shall be described in the SSHP. The PPE reassessment protocol shall address air monitoring results, potential for exposure, changes in site conditions, work phases, job tasks, weather, temperature extremes, individual medical considerations, etc.

1.13.2.1 Components of Levels of Protection

The following items constitute minimum protective clothing and equipment ensembles to be used during this project:

Level D:

Work clothing, as dictated by the weather

Reflectorized vest or other outer garment

Safety (steel toe/shank) shoes or boots

Hard hat

Safety glasses, goggles, or face shield

Hearing protection (where required as specified in Paragraph 1.21.11 Hearing Protection and Noise Control)

Nitrile, neoprene, or natural rubber gloves (when handling contaminated wastes, soils, or water)

Modified Level D:

Level D PPE and:

Disposable, hooded, one-piece, full-body coveralls constructed of spun-bonded olefin or polypropylene fabrics (e.g., Tyvek, or equivalent).

Disposable boot covers of (minimum) 60 mil rubberized PVC.

Level C:

Modified Level D PPE and:

Full-facepiece, air purifying respirator equipped with filter cartridges approved by NIOSH for organic vapors, and rated as P100 for particulates.

1.13.3 Initial Minimum Levels of PPE by Task

The initial minimum protective equipment requirements for each major task and operation are listed below. Available site information shall be reviewed and the list of tasks and operations and these levels of protection shall be expanded and/or revised during preparation of the SSHP.

OPERATION	INITIAL LEVEL OF PROTECTION
Site Preparation/Mobilization	Level D, modified
Civil Surveying	Level D
Chemical Sampling	Level C
Work Zone Construction	Level D, modified
Excavation	Level C
Soil Removal and Stockpiling	Level C
Soil Treatment	Level C
Site Restoration and Backfilling	Level D
Equipment Decontamination	Level C
Demobilization	Level D

1.13.4 PPE for Government Personnel

Ten clean sets of PPE and clothing (excluding safety shoes, which will be provided by individual visitors, as necessary), and two pairs of air purifying negative pressure respirators shall be available for use by the Contracting Officer's Representative or the Designated Representative or official visitors. The items shall be cleaned and maintained by the Contractor, stored and clearly marked: "FOR USE BY GOVERNMENT PERSONNEL ONLY." The Contractor shall provide basic training in the use and limitations of the PPE provided, and institute administrative controls to check prerequisites prior to issuance. Such prerequisites include meeting minimum training requirements for the work tasks to be performed and medical clearance for site hazards and respirator use.

1.14 MEDICAL SURVEILLANCE PROGRAM

The Safety and Health Manager, in conjunction with the Occupational Physician, shall detail, in the Contractor's Safety and Health Program and the SSHP, the Medical Surveillance Program that includes scheduling of examinations, certification of fitness for duty, compliance with OSHA requirements, and information provided to the physician. Examinations shall be performed by or under the supervision of a licensed physician, preferably one knowledgeable in occupational medicine, and shall be provided without cost to the employee, without loss of pay and at a reasonable time and place. Medical surveillance protocols and examination and test results shall be reviewed by the Occupational Physician. The Medical Surveillance Program shall contain the requirements specified below. Personnel working in contaminated areas of the site shall have been examined as prescribed in 29 CFR 1910.120, and 29 CFR 1926.65, and determined medically fit to perform their duties.

1.14.1 Frequency of Examinations

Employees shall have been provided with medical examinations as specified, within the past 12 months and shall receive exams annually thereafter (if contract duration exceeds one year); on termination of employment; reassignment in accordance with 29 CFR 1910.120(e)(3)(i)(C), and 29 CFR 1926.65(e)(3)(i)(C); if the employee develops signs or symptoms of illness related to workplace exposures; if the physician determines examinations need to be conducted more often than once a year; and when an employee develops a lost time injury or illness during the period of this Contract. The supervisor shall be provided with a written statement signed by the physician prior to allowing the employee to return to the work site

after injury or illness resulting in a lost workday, as defined in 29 CFR 1904.12(f).

1.14.2 Content of Examinations

The following elements shall be included in the Medical Surveillance Program. Additional elements may be included at the discretion of the occupational physician responsible for reviewing the medical surveillance protocols.

a. Complete medical and occupational history (initial exam only)

b. General physical examination of major organ systems

c. Pulmonary function testing including FVC and FEV1.0

d. CBC with differential

e. Blood chemistry screening profile (e.g., SMAC 20/25)

f. Urinalysis with microscopic examination and bioassay

g. Audiometric testing (as required by Hearing Conservation Program)

h. Visual acuity

i. Chest X-ray (This test should be performed no more frequently than every four years, unless directed by Occupational Physician.)

j. Electrocardiogram (as directed by Occupational Physician)

1.14.3 Information Provided to the Occupational Physician

The physician shall be furnished with the following:

a. Site information from paragraph: SITE DESCRIPTION AND CONTAMINATION CHARACTERIZATION

b. Information on the employee's anticipated or measured exposure/dose

c. A description of any PPE used or to be used

d. A description of the employee's duties as they relate to the employee's exposures (including physical demands on the employee and heat/cold stress)

e. A copy of 29 CFR 1910.120, or 29 CFR 1926.65

f. Information from previous examinations not readily available to the examining physician

g. A copy of Section 5.0 of NIOSH 85-115

h. Information required by 29 CFR 1910.134

i. A copy of OSHA Respirator Medical Evaluation Questionnaire (Appendix C to Section 29 CFR 1910.134).

1.14.4 Physician's Written Opinion

Before work begins a copy of the physician's written opinion for each employee shall be obtained and furnished to the Safety and Health Manager and the employee. The opinion shall address the employee's ability to perform hazardous remediation work and shall contain the following:

a. The physician's recommended limitations upon the employee's assigned work and/or PPE usage;

b. The physician's opinion about increased risk to the employee's health resulting from work; and

c. A statement that the employee has been informed and advised about the results of the examination.

1.14.5 Medical Records

Documentation of medical exams shall be provided as part of the Certificate of Worker or Visitor Acknowledgment. Medical records shall be maintained in accordance with 29 CFR 1910.120, and 29 CFR 1926.65.

1.14.6 Employee Certificates

Documentation that employees have current satisfactory medical examinations shall be provided on employee certificates.

1.14.7 Site Specific Medical Surveillance

Prior to onsite work, medical surveillance program participants shall undergo medical testing for lead. The Contractor shall provide an explanation of the site specific medical surveillance testing in the APP/SSHP.

1.15 AIR MONITORING AND SAMPLING

The Safety and Health Manager shall prepare and implement an exposure monitoring/air sampling program to identify and quantify safety and health hazards and airborne levels of hazardous substances in order to assure proper selection of engineering controls, work practices and personal protective equipment for affected site personnel and the community.

1.15.1 General Requirements

a. An Air Monitoring Plan (AMP) shall provide for Exposure Monitoring/Air Sampling Program for occupational and non-occupational exposures. The AMP shall be approved by the signature of the Safety and Health Manager (a CIH) and submitted for review and approval by the Contracting Officer's Representative at least 14 calendar days prior to the Pre-Work Conference and no later than 30 days after the NTP. The AMP shall be designed to detect and quantify respirable dust, lead, volatile organic compounds, oxygen levels, combustible gases, and airborne asbestos. Action levels shall be established by the Contractor as specified in the paragraph Action Levels. Initial action levels for workers are provided in Table 01351-1. Perimeter air monitoring shall be completed in accordance with 01362 PERIMETER AIR MONITORING.

b. The AMP shall be developed and implemented to ensure that the proper level of PPE is used, to document that the level of worker protection is adequate and to ensure compliance with the action levels established in the SSHP. The AMP shall consider the potential presence of tenants in structures adjacent to ongoing demolition and off-site residential properties and provide for action limits in the vicinity of the work and the site perimeter to protect these tenants.

c. During each on-site activity air contaminant levels shall be monitored in each medium through which contaminants can enter the worker's breathing zone or the neighboring properties (perimeter air sampling) during intrusive activities (or at the discretion of the SSHO). The types of measurements to be collected shall be listed in the AMP with the instruments specified.

d. Information gathered during the AMP shall be documented.

e. All required air monitoring/sampling instrumentation shall be provided by the Contractor and shall be maintained and calibrated according to NIOSH, OSHA, and EPA methods and/or manufacturer's recommendations. Air samples will be taken in appropriate workers breathing zones to provide a negative air exposure in accordance with 29 CFR 1926.62. Such maintenance and calibration data shall be recorded and included in the project documents.

f. All air monitoring/sampling equipment shall be operated by personnel trained in its specific use.

g. The Safety and Health Manager shall follow the action levels prescribed in the SSHP/AMP or present new action levels which the Contracting Officer's Representative will duly consider. New action levels, if presented, shall be defined in the Contractor's SSHP. If, during the course of the construction project, unanticipated airborne hazards arise for which the established action levels do not provide adequate protection, the Safety and Health Manager shall establish action levels and protection procedures and standard equipment that will provide adequate protection from the new hazard. Establishment of additional action levels and protection procedures and equipment shall be made with the concurrence of the Contracting Officer's Representative. If initial air monitoring results are negative (i.e., no exceedances above action levels), Contractor may petition the Contracting Officer to reduce air monitoring frequency. In such a case, the Contractor shall archive all sample cassettes for future reference.

h. At the beginning of each work activity requiring air monitoring/sampling, the Contractor shall complete monitoring/sampling at the locations and frequencies stated in the SSHP. Criteria for modification of the monitoring locations or frequencies shall be discussed in the SSHP. Modifications shall not be implemented without written authorization from the Contracting Officer's Representative.

i. When project operations involve intrusive activities such as subsurface drilling, excavation, cutting of gas mains, fuel lines, or sewer lines, the Contractor shall utilize a combination of combustible gas indicator and oxygen monitor. Such monitoring

shall be conducted close to the sources of potential leaks and in locations where leaked vapor could accumulate. If concentrations exceed the action levels, the Contractor shall stop work and ventilate the area. Any cutting or hot work done on fuel lines or storage tanks will be done in accordance with applicable API and OSHA standards. When natural gas or sewer lines are involved, the contractor shall require the on-site presence of the utility company representative. All sources of ignition within 100 feet of any minor incident and 500 feet of any gas main shall be extinguished.

1.15.2 Real-Time Air Monitoring

a. Furnish and maintain all continuous emission monitors to meet requirements specified in Section 02181 REMEDIATION OF CONTAMINATED SOILS BY THERMAL DESORPTION. All equipment shall be intrinsically safe.

a. Furnish and maintain real-time air monitoring equipment to include: an organic vapor monitor (photoionization detector or flame ionization detector), explosimeter, oxygen meter, and all necessary calibration/audit equipment and supplies. All equipment shall be intrinsically safe.

b. Perform real-time air monitoring for an adequate period prior to commencement of work to establish baseline conditions for total organic vapors, explosive gases, oxygen, and respirable airborne particulates. For the establishment of baseline conditions, monitoring shall be performed near each anticipated active work zone and at each approved perimeter monitoring location. Total organic vapors baseline will be established based on consistent readings from the organic vapor monitor.

c. Provide real-time monitoring for dust using a total airborne dust monitor (MIE-Ram-1 or equivalent) with datalogging capabilities within 10 feet (downwind) at appropriate areas adjacent to excavation, soil stockpiling, screening, and pretreatment, fill placement and compaction. Perimeter dust monitoring shall be conducted at a minimum of four locations near the site perimeter alternating between the Lehigh Valley RR and Factory Street borders and the Spicer Avenue and Hamilton Boulevard borders. All samplers will be programmed for continuous operation during each work shift with multiple sampling events at each location.

d. Provide real-time monitoring for explosive gases during excavation. This monitoring shall be performed every 30 minutes or less during excavation and subgrade work within 10 feet of active work areas and at a minimum of two perimeter locations as described for dust monitoring.

e. Provide real-time air monitoring for volatile organic compounds with a photoionization detector or flame ionization detector (PID - FID or equivalent). Monitored levels in excess of the on-site action levels established by the Safety and Health Manager and CIH shall require upgrades in levels of protection and/or site evacuation.

f. Monitoring for organic vapor concentrations will be conducted in accordance with Table 01351-1.

If the organic vapor level in any active working location exceeds 250 ppm for any two successive readings within a 15-minute period, or if the explosimeter indicates over 10 percent of the lower explosive limit on any signal reading, then that work location shall be shut down and personnel evacuated upwind and the Contracting Officer's Representative shall be notified immediately. Work shall not resume until:

Appropriate corrective measures are implemented; and

Authorization to continue work is given by the Safety and Health Manager based on lower air contamination levels.

g. A data sheet shall be developed and implemented by the Safety and Health Manager upon which the following real-time monitoring data shall be recorded:

Date and time of monitoring;

Air monitoring location;

Instrument, model number, serial number;

Calibration/background levels;

Results of monitoring; and

Interpretation of the data and any further recommendations by the Safety and Health Manager or the SSHO in consultation with the Safety and Health Manager.

g. The person conducting the sampling shall sign and date all data sheets. These results shall be given verbally to the Contracting Officer's Representative following each sampling event that indicates concentrations in excess of the action levels, and documented in writing by the end of each work day with three copies provided.

1.15.3 Lead Air Sampling

The Contractor is required to excavate and dispose of lead hot spots. Submit a Lead Compliance plan no later than 30 days of the NTP. Perform lead air sampling during the initial stages of activities that involve the mechanical disturbance of lead-contaminated soil. Samples shall be collected and analyzed in accordance with NIOSH METHOD 7105. Analysis shall be performed at a laboratory accredited by the AIHA. Although lead airborne concentration is not expected to exceed the OSHA Permissible Exposure Limit (PEL) requirements during this project, if the limits are exceeded, the Contractor shall be required to comply with 29 CFR 1926.62, the OSHA Lead Exposure in Construction Rule.

1.15.4 Meteorological Monitoring

Provide a portable meteorological station for the measurement of wind speed, wind direction, ambient air temperature, atmospheric pressure, atmospheric humidity, solar insulation, and atmospheric precipitation. Specify the calibration, audit, data reduction and document control of the meteorological equipment and data. The equipment and its placement shall

be in conformance with EPA Ambient Monitoring guidelines for Prevention of Significant Deterioration (PSD). Standards as specified in PSD regulations promulgated by EPA under the Clean Air Act Amendments of 1977 (Public Law 95-95) on August 7, 1980, as replaced, modified, or amended shall be used. The station shall be installed in an area relatively free of trees and houses. The station shall include a continuous readout temperature gauge and a rainfall gauge and be able to produce a 24-hour average figure for each parameter such that the weather influences on the air samples can be characterized. In addition, visual wind direction indicators shall be established in a central location at each active work area. Meteorological monitoring results shall be documented in the daily safety log.

1.16 HEAT STRESS MONITORING AND MANAGEMENT

The Safety and Health Manager shall develop a heat stress and cold stress monitoring program for on-site activities. Details of the monitoring program, including schedules for work and rest, and physiological monitoring requirements, shall be described in the SSHP. Personnel shall be trained to recognize the symptoms of heat and cold stress. The SSHO and an alternate person shall be designated, in writing, to be responsible for the heat and cold stress monitoring program.

1.16.1 Heat Stress

Physiological monitoring shall commence when the ambient temperature is above 70 degrees F. Monitoring frequency shall increase as the ambient temperature increases or as slow recovery rates are observed. An adequate supply of cool drinking water shall be provided for the workers. The current TLVs for Heat Stress as recommended by the American Conference of Governmental Industrial Hygienists (ACGIH) can be used in determining protocols for prevention of heat stress (ACGIH TLVs/BEIs).

1.16.2 Cold Stress

To guard against cold injury, appropriate clothing and warm shelter for rest periods shall be provided. Procedures to monitor and avoid cold stress shall be followed in accordance with the current TLVs for Cold Stress as recommended by the ACGIH (ACGIH TLVs/BEIs).

1.17 SPILL PREVENTION CONTROL

Provide methods, means, and facilities required to prevent contamination of soil, water, atmosphere, uncontaminated structures, equipment, or material by the discharge of wastes from spills due to Contractor's operations. Measures shall be taken to prevent contaminated materials, chemicals, fuels, oils, greases, bituminous materials, waste washings, herbicides and insecticides, harmful materials, decontamination water, condensate, biological and concrete materials, and surface drainage from entering any groundwater sources, utilities, drainage or storage, and to prevent release into the air.

Develop and implement written spill prevention and control. These procedures shall address contaminated material, shock sensitive wastes, laboratory waste packs, material handling equipment, and appropriate procedures for drum and container handling, opening, sampling, shipping, and transport. These procedures shall describe prevention measures, such as building berms or dikes; spill control measures and material to be used (e.g., booms, vermiculite); location of the spill control material; personal protective equipment required to cleanup spills; disposal of

contaminated material; and who is responsible to report the spill. Storage of contaminated material or hazardous materials shall be appropriately bermed, diked and/or contained to prevent any spillage of material on uncontaminated soil. If the spill or discharge is reportable, and/or human health or the environment are threatened, the National Response Center, the NJDEP, and the Contracting Officer's Representative shall be notified within two hours of spill occurrence.

Provide emergency measures required to contain any spillage and to remove spilled materials and soils or liquids that become contaminated due to spillage. Properly dispose of collected spill material. This includes spillage during soil excavation and loading, dewatering, treatment and discharge, or equipment and personnel decontamination.

If a spill occurs, notify the Contracting Officer immediately. Take immediate measures to control and contain the spill within the site boundaries. This includes the following: isolate hazardous areas and keep unnecessary people away; prevent people from touching spilled material; stay upwind, keep out of low areas; and keep combustibles away from the spilled material.

The Contractor shall implement, maintain, supervise, and be responsible for a comprehensive Spill Prevention and Control Plan, which shall be submitted no later than 30 days after the Notice to Proceed (NTP). This plan shall document procedures to be implemented to minimize the occurrence of spills and provide contingency measures for potential spills and discharges. This Plan shall include a description of spill prevention procedures to be implemented for the following:

a. Site drainage;

b. Bulk storage;

c. Truck loading/unloading; and,

d. Project site production or work.

After each spill, a spill report shall be submitted, the minimum requirements of which shall be outlined in the Spill Prevention and Control Plan.

The Plan shall ensure that sufficient inspections and tests are performed on a continual basis to enable the Contractor to certify, in writing, that the Spill Prevention and Control Plan conforms to any maximum spillage item with respect to the quality of materials, workmanship, construction, finish notification, and reporting requirements under federal, state and local laws and regulations.

Use appropriate vehicles and operating practices to prevent spillage or leakage of contaminated materials from occurring during operations. Inspect vehicles leaving the contaminated soil removal site to ensure that no contaminated soil adheres to the wheels or undercarriage. Immediately report any spills to the Contracting Officer and provide cleanup in accordance with 40 CFR 761, Subpart G.

1.18 MATERIALS TRANSFER SAFETY

Liquids and residues shall be removed from the tanks using explosion-proof or air-driven pumps. Pump motors and suction hoses shall be bonded to the

tank and grounded to prevent electrostatic ignition hazards. Use of a hand pump will be permitted to remove the last of the liquid from the bottom of the tanks. If a vacuum truck is used for removal of liquids or residues, the area of operation for the vacuum truck shall be vapor free. The truck shall be located upwind from the tank and outside the path of probable vapor travel. The vacuum pump exhaust gases shall be discharged through a hose of adequate size and length downwind of the truck and tank area. Vacuum truck operating and safety practices shall conform to API PUBL 2219. Tank residues shall be collected in drums, tanks, or tank trucks labeled according to 49 CFR 171 and 49 CFR 172 and disposed of as specified. After the materials have been transferred and the tanks have been exposed, fittings and lines leading to the tanks shall be disconnected and drained of their contents. The contents of the lines shall not spill to the environment during cutting or disconnecting of tank fittings. Materials drained shall be transferred into DOT-approved drums for storage and/or transportation. Only non-sparking or non-heat producing tools shall be used to disconnect and drain or to cut through tank fittings. Electrical equipment (e.g., pumps, portable hand tools, etc.) used for tank preparation shall be explosion-proof. Following cutting or disconnecting of the fittings, openings leading to the tanks shall be plugged.

1.19 DRUM AND CONTAINER HANDLING

The Contractor shall develop a written program for drum and container handling as part of the SSHP which will be approved by the Contracting Officer.

1.20 CONFINED SPACE ENTRY PROCEDURES

Entry into and work in a confined space will not be allowed when oxygen readings are less than 19.5% or greater than 23.5% or if the Lower Flammable Limit (LFL) reading is greater than 10%, unless these conditions are adequately addressed in the confined space entry program and a Confined Space Entry Permit has been submitted. In addition, action levels for toxic atmospheres shall be determined.

Confined spaces have not been identified on the site at this time. In the event a confined space in encountered, a permit shall be prepared and signed off on by the Contractor's qualified person. The permit-required confined space entry program shall include the elements specified in 29 CFR 1926 and provide the following site-specific information:

a. Identification and evaluation of permit spaces.

b. Measures to prevent unauthorized entry.

c. Entry permit system

d. Entry equipment and personal protective equipment.

e. Entry procedures.

f. Permit spaces training.

g. Rescue and emergency procedures.

h. Employee participation.

The permit space program can be modified to reflect changing site

conditions or work operations, and shall be reviewed by the Safety and Health Manager or designee if any of the following conditions occur:

a. Occurrence of unauthorized entry of a permit space

b. Discovery of a permit space not covered by the permit.

c. Detection of a condition prohibited by the permit.

d. Occurrence of an injury or a near-miss during entry.

e. Change in the use or configuration of a confined space.

f. Employee complaints of permit space program ineffectiveness.

1.21 HOT WORK

Hot work will not be permitted on or within tanks or anywhere else on-site. Prior to conducting hot work, a hot work permit shall be prepared by the person to be conducting the hot work and reviewed and signed of on by the Contractor's qualified person. An additional hot work permit may need to be obtained from local authorities or in the case of military or other federal installations, the fire marshal. An example format for a hot work permit shall be included in the SSHP. The permit shall describe compliance with the following procedures. After tank interiors have been decontaminated, hot work may be conducted only when the tank is inerted, and to the extent necessary to begin dismantling the tanks. After decontamination of tank interiors, hot work shall not be performed unless monitoring indicates atmospheres within and immediately surrounding the tanks are less than 8% oxygen inside the tank and less than 10% of the LFL outside the tank; continuous monitoring shall continue until the hot work is completed. The hot work prohibition includes welding, cutting, grinding, sawing, or other similar operations which could be expected to potentially generate combustion-producing temperatures or sparks, or which could produce potentially hazardous fumes or vapors. An individual at each hot work site shall be designated as a fire watch. This person's sole responsibility shall be to monitor the hot work and have immediate access to the fire extinguisher located at each hot work site. A new permit shall be obtained at the start of each work shift during which hot work will be conducted.

1.22 SAFETY PROCEDURES, ENGINEERING CONTROLS, AND WORK PRACTICES

The SSHP shall describe the standard operating safety procedures, engineering controls and safe work practices to be implemented for the work covered. These shall include, but not be limited to, the following:

1.22.1 General Site Rules/Prohibitions

General site rules/prohibitions (buddy system, eating, drinking, and smoking restrictions, etc.). Such rules/prohibitions include:

a. Work in the Exclusion Zone and Contamination Reduction Zone shall be performed with the "buddy system." Each person working in the work area shall maintain contact with another person at all times and take responsibility for continual knowledge of that person's status.

b. Eating, drinking, smoking, chewing gum or tobacco, and other

practices that increase the probability of hand-to-mouth transfer and ingestion of material is prohibited within the Exclusion Zone and Contamination Reduction Zone.

c. Hands and face shall be thoroughly washed upon leaving the work area and before eating, drinking, or other activities.

d. Whenever decontamination procedures for protective clothing are in effect, the entire body shall be thoroughly washed as soon as possible after the protective clothing is removed.

e. Medicine and alcohol can increase the effects of exposure to toxic chemicals. Therefore:

(1) Personnel using prescription drugs shall inform the doctor who prescribed them of their potential contact with toxic materials.

(2) Personnel who take over-the-counter drugs within a day before work on a site must inform the SSHO of the warnings listed on the drug's container (the part of the label that says, for example, "Do not take this medication if you are operating a motor vehicle").

(3) Alcoholic beverage intake shall be prohibited during project operations. Personnel under the influence of alcohol or recreational or illegal drugs shall not be allowed on site.

f. During on site maintenance to be performed on equipment capable of storing and releasing energy, the requirements of 29 CFR 1910.147, lock out/tag out, shall be adhered to by the Contractor and all of his personnel and subcontractors.

1.22.2 Work Permit Requirements

Prior to any excavation work, the New Jersey One-Call System will be contacted for mark-outs of nearest utilities, and utility clearances shall be documented as specified in Section 02310 EXCAVATION. Contractor shall obtain a copy of the New Jersey One-Call mark-out ticket for comparison to field mark-outs prior to commencing any excavation activities.

1.22.3 Confined Space Entry Procedures

Excavations greater than 4 feet in depth shall be considered confined space. Confined space entry procedures are included in Section 1.19 CONFINED SPACE ENTRY PROCEDURES of this specification.

1.22.4 Fire Protection and Prevention

Every member of the site team shall be responsible to observe and report fires and conditions that could lead to fires. The Contractor shall observe the fire prevention and protection requirements described in EM 385-1-1, the USACE Health and Safety Requirements Manual, including:

a. Do not use fires or open flame devices.

b. Prohibit smoking within the Exclusion Zone.

c. Place at least four fire extinguishers, rated at least

20-A:120-B:C within the Exclusion Zone. Another fire extinguisher shall be placed in the Support Zone.

Contractor personnel shall fight fires on site that cannot be controlled through the use of extinguishers, only if the Contractor has designated and trained a fire brigade, as described in OSHA Standard 29 CFR 1910.58. Otherwise, contractor personnel shall quickly evacuate the site and notify the appropriate authorities listed in the SSHP.

Written procedures that address fire protection/prevention consistent with EM 385-1-1 Section 9 (a-k) shall be included in the SSHP: flammable and combustible liquids, liquified petroleum gas, temporary heating devices, first response fire protection, fire fighting equipment, fire detection and employee fire alarm systems, fire fighting organizations training and drilling, fire patrols, and wild land fire control.

1.22.5 Electrical Safety

Electrical installations and appliances used by the Contractor shall meet applicable National Electrical Code specifications. All electrical devices utilized by the Contractor or subcontractors on this project shall be grounded and utilize ground fault circuit interrupter (GFCI) protected outlets.

1.22.6 Excavation and Trench Safety

Perform excavation and trench work in accordance with 29 CFR 1926, Subpart P and Section 25 of EM 385-1-1.

1.22.7 Guarding of Machinery and Equipment

Guard machinery and equipment in accordance with EM 385-1-1 Section 16.B.

1.22.8 Lockout/Tagout

Conduct lockout/tagout operations in accordance with EM 385-1-1 Section 12 (A-E).

1.22.9 Fall Protection

Comply with fall protection procedures in 29 CFR 1926 subpart M.

1.22.10 Hazard Communication

Provide hazard communication in accordance with 29 CFR 1910.1200/29 CFR 1926.59.

1.22.11 Hearing Protection and Noise Control

Measure and document the noise exposure of on-site personnel in compliance with 29 CFR 1910.95 and EM 385-1-1. Institute noise abatement measures to meet the requirements of Occupational Noise Exposure for public health and safety. Contractor personnel shall be provided, as a minimum, protection against the effects of hazardous noise exposure whenever the sound-pressure level exceeds 85 dB(A) on a 8-hour time weighted-average. When personnel are subjected to sound-pressure levels exceeding the limits specified in the regulations, feasible engineering or administrative controls shall be utilized. If engineering or administrative fail to reduce sound-pressure levels within the specified limit, the Contractor shall evaluate hearing

protective devices based on dosimetry using generally accepted calculation methods. Personal protective equipment shall be evaluated, selected, provided and used in accordance with the hearing conservation program.

Sound-pressure level measurements shall be made by qualified personnel using calibrated instruments. Ear insert devices shall be fitted to the exposed individual by an individual trained in such fitting and able to recognize the difference between a good and poor fit. Noise hazard areas shall be marked with caution signs indicating both the presence of hazardous noise levels and the requirement for hearing protection.

1.22.12 Hearing Conservation

Measure and document the noise exposure of on-site personnel in compliance with 29 CFR 1910.95, Occupational Noise Exposure. If necessary, the Contractor shall make hearing protection available to all affected personnel. Whenever employee noise exposures equal or exceed an 8-hour time-weighted average of 85 dB(A), a Hearing Conservation Program shall be implemented including employee notification, audiometric testing, and training per 29 CFR 1910.95(c).

1.22.13 Illumination

Illumination levels in the working zone shall be maintained at a minimum of 10 foot-candles. Supplementary lighting, if necessary, shall be provided by the Contractor.

Light levels at the site perimeter shall not exceed 1 foot-candle. Illumination monitoring at the perimeter of the site shall be used to assess any impact to the surrounding community. Perimeter monitoring for illumination using a foot-candle meter will be conducted at a minimum of four locations chosen with the intent to evaluate light emission in all directions. Readings will be taken three times between 10 PM and dawn during nighttime activities.

1.22.14 Sanitation

Provide the following items to maintain a sanitary work environment:

a. Portable toilet facilities;

b. A source of potable water for employee consumption;

c. A source of water and a location at which employees may wash up; and

d. If food is consumed at the work site, clean locations for food storage and consumption shall be provided.

1.23 TANK PURGING FOR PERMIT-REQUIRED CONFINED SPACE ENTRIES

Tanks shall be purged for confined space entry. The flammable vapors shall be reduced to less than 10% of the LFL and the oxygen content shall be between 19.5% and 23.5%. Confined space entry into the tanks shall not be attempted unless absolutely necessary, as for example, to remove sludge from the tank. When necessary, entry into the tank will be in accordance with permit-required procedures specified in paragraph 1.19 CONFINED SPACE ENTRY of this specification. Flammable vapors may be exhausted from the tank by any of the methods from API RP 1604 listed below, or any method

approved by the Contracting Officer. The APP/SSHP shall specify the purging method to be used.

a. Ventilation by Eductor-Type Air Movers: The eductor-type air mover shall be properly bonded and grounded to prevent the generation and discharge of static electricity. When using this method, the fill (drop) tube shall remain in place to ensure ventilation at the bottom of the tank. Tanks equipped with fill (drop) tubes that are not removable shall be purged by this method. An eductor extension shall be used to discharge vapors a minimum of 12 feet above grade or 3 feet above adjacent roof lines, whichever is greater. If this is not possible, alternative methods shall be proposed and approved prior to purging. Noise levels generated by these devices as a result of high airflow may exceed OSHA PELs. Noise levels shall be evaluated and appropriate hearing protection shall be provided.

b. Ventilation by Diffused Air Blowers: When using this purging method, the air-diffusing pipe is properly bonded and grounded to prevent the discharge of a spark. Fill (drop) tubes shall be removed to allow proper diffusion of the air in the tank. Air supply shall be from a compressor that has been checked to ensure that Grade D breathing air is being supplied. Air pressure in the tank shall not exceed 5 psi gauge to avoid tank failure.

c. Commercial Emulsifiers and Volatile Fuel Encapsulators: These products are completely miscible in water, aid in the elimination of flammable vapors, and are biodegradable. Regulatory requirements for treatment and disposal of the water shall be determined prior to using this method. Standing outside the tank, the operator shall rinse the tank with a 3-to-6 percent solution of the product using a pressure sprayer through a tank opening. Explosive concentrations shall be measured at several levels (top, middle, and bottom) within the tank. If readings are greater than 10% of the LFL, the tank shall be rinsed again. When LFL readings are acceptable, the water in the tank shall be pumped out for disposal.

1.24 TANK INERTING (NO ENTRY)

Following the removal of tank contents but prior to excavation of the tanks and tank preparation activities, the tanks shall be inerted only by introducing an inert gas, carbon dioxide (CO_2) or liquid nitrogen (N_2), to remove flammable vapors. Before inerting, all openings in the tanks shall be plugged with threaded or expansion type plugs except the vent tube and the opening to be used for introducing the inert gas. Within 30 minutes prior to initiating any activities (e.g., excavating, preparation, removal, opening, demolition, transportation, or other similar activities) involving a tank which has been inerted, the inerted nature of the tank (oxygen levels less than 8%) shall be verified.

a. CO_2 fire extinguishers shall not be used for inerting the tank interiors. If a compressed gas (e.g., CO_2 or N_2) is introduced into the tank the following requirements shall be met to prevent the buildup of static electricity:

(1) The UST and the compressed gas supply tank shall be bonded together and grounded.

(2) The compressed gas shall be supplied only at low flows.

(3) The liquid or gas shall be released at the tank bottom so that static electricity is not generated by liquid falling to the bottom of the tank. The tank shall be slowly filled from the bottom up.

b. Dry ice, which evolves CO_2 gas as it evaporates, if used, shall be introduced in the amount of at least 3 lbs per 100 gallons of tank capacity. Skin contact with dry ice shall be prevented by wearing heavy cloth gloves.

c. Sufficient quantities of inert gas (CO_2 or N_2) shall be introduced into the tanks to lower the oxygen content to less than 8%. Pressure inside the tank shall not exceed 5 psi. Prior to proceeding with additional activities on the tank (e.g., excavating), the oxygen content of the tanks shall be monitored to confirm that it is less than 8%. Additional oxygen level monitoring shall be conducted at least hourly while activities involving the tanks are underway but prior to decontamination of tank interiors; at least daily during periods in which the tanks are not being disturbed but prior to decontamination of their interiors; or as directed by the Contracting Officer. If monitoring of tank interiors indicates that oxygen levels are not remaining below 8%, additional inert gas shall be introduced and more frequent oxygen monitoring shall be initiated.

d. During inerting procedures, an extension vent tube a minimum of 12 feet above grade or 3 feet above any adjacent (within 75 feet) roof lines, whichever is greater shall be used to discharge tank vapors. If this is not possible, alternative methods shall be proposed and approved prior to inerting. Continuous combustible gas/oxygen monitoring shall be conducted at the vent and inert gas introduction holes.

1.25 TANK ATMOSPHERE TESTING

The air within the storage tanks shall be monitored to ensure the space is either adequately purged and safe for personnel entry, or to ensure the tank has been adequately inerted and the oxygen content is less than 8%. In both instances, monitoring shall be performed at the top, bottom, and middle areas of the tanks to ensure stratification has not occurred. Monitoring results shall be reported to project personnel to ensure safe operations. Data shall be recorded as specified in paragraph EXPOSURE MONITORING/AIR SAMPLING PROGRAM.

1.25.1 Monitoring to Ensure Purging

When monitoring to ensure purging, both oxygen content and LFL readings are required. Prior to obtaining LFL readings, the Contractor shall monitor the oxygen content of the space and verify that the combustible gas indicators are operating within the oxygen limits identified by the CGI manufacturer. Personnel shall not be permitted to enter spaces with oxygen levels less than 19.5%, except in emergencies, and then only when equipped with the proper PPE and when following permit-required confined space entry procedures. Toxic air contaminants shall be monitored as specified in paragraph EXPOSURE MONITORING/AIR SAMPLING PROGRAM.

1.25.2 Monitoring to Ensure Inerting

Inerted tanks shall be monitored to ensure oxygen readings remain below a maximum allowable percentage of 8% by volume.

1.26 TANK LIFTING

Tanks shall be lifted using equipment with a rated capacity greater than the load to be lifted. Tanks shall be lifted by lifting eyes or by straps under the ends of the tanks. Tanks shall not be lifted by the manhole flange or by removing the bungs. Personnel shall be directed to remain away from the ends of the tanks and tanks shall be positioned, whenever possible, with the ends oriented away from occupied or traveled areas, due to potential for rupture. During transportation, the tanks shall be secured to prevent movement.

1.27 TANK DEMOLITION

Excavated tanks shall be demolished before being removed from the site unless they are transported directly to a state certified tank destruction facility. Demolition will not be permitted until a decontamination of the interiors and exteriors is complete. Demolition shall involve opening the tanks sufficiently to permanently prohibit further use as containers of liquids. Tanks shall be inerted and tested before they are opened. Plans and procedures, including a list of materials and supplies, for safely and effectively demolishing the tanks shall be submitted in the APP/SSHP.

1.28 TANK CLEANING

Safety practices and procedures for the cleaning of the storage tanks shall conform to API Std 2015. Opening of the tanks to permit decontamination shall be conducted utilizing only methods approved in the APP/SSHP. The interior and exterior of the tank shall be decontaminated prior to removing it from the work site unless the tank is being transported directly to a state certified tank destruction facility. Plans and procedures, including materials and supplies, for safely and effectively opening the tanks, cleaning surfaces of the interior and exterior of the tanks, and disposing of the decontamination fluids shall be submitted in the SSHP. Volatile organic solvents shall not be permitted to be utilized for decontamination procedures. Personnel shall not enter any of the storage tanks as a part of this project, except when following permit-required confined space entry procedures. Decontamination fluids shall be collected and disposed. Upon completion of this project, written certification shall be made that the tank was properly decontaminated prior to being removed from the site.

1.29 SITE CONTROL MEASURES

To prevent the spread of contamination and control the flow of personnel, vehicles, and materials into and out of work areas, site control measures shall be established and described in the SSHP. The SSHP shall describe the methodology to be used by the Safety and Health Manager and SSHO in determining work zone designations and their modifications, and procedures to limit the spread of contamination. The SSHP shall include procedures for the implementation and enforcement of safety and health rules for all persons on the site, including employers, employees, outside Contractors, government representatives, and visitors.

1.29.1 Work Zones

Initial anticipated limits of construction are shown on the Work Zone Drawings. Using this guidance, work zone boundaries (Exclusion Zone, including restricted and regulated areas; Contamination Reduction Zone; and Support Zone) and access points shall be established and the boundary

delineations shall be included in the SSHP. Delineation of work zone boundaries shall be based on the contamination characterization data and the hazard/risk analysis to be performed as described in paragraph: HAZARD/RISK ANALYSIS. As work progresses and field conditions are monitored, work zone boundaries may be modified with approval of the Contracting Officer's Representative or the Designated Representative. Work zones shall be clearly identified and marked in the field (using fences, tape, signs, etc.). A site map, showing work zone boundaries and locations of decontamination facilities, shall be posted in the on-site office. Work zones shall consist of the following:

1.29.1.1 Exclusion Zone (EZ)

The EZ is the area where hazardous contamination is either known or expected to occur and the greatest potential for exposure exists. At a minimum, all soil excavation areas and soil handling/treatment areas shall be designated as the EZ. Entry into these areas shall be controlled and exit may only be made through the Contamination Reduction Zone (CRZ).

1.29.1.2 Contamination Reduction Zone (CRZ)

The CRZ is the transition area between the EZ and the Support Zone. The personnel and equipment decontamination areas shall be separate and unique areas located in the CRZ.

1.29.1.3 Support Zone (SZ)

The Support Zone is defined as areas of the site, other than Exclusion Zones and Contamination Reduction Zones, where workers do not have the potential to be exposed to hazardous substances or dangerous conditions resulting from hazardous waste operations. The SZ shall be secured against active or passive contamination. Site offices, parking areas, and other support facilities shall be located in the SZ.

1.29.2 Site Control Log

A Site Control Entry/Exit Log of personnel visiting, entering, or working on the site shall be maintained. The log shall include the following: date, name, agency or company, time entering and exiting site, time entering and exiting the Exclusion Zone (if applicable), and personal protective equipment utilized. Before visitors are allowed to enter the Contamination Reduction Zone or Exclusion Zone, they shall show proof of current training, medical surveillance and respirator fit testing (if respirators are required for the tasks to be performed) and shall fill out the Certificate of Worker or Visitor Acknowledgment. This visitor information, including date, shall be recorded in the log.

1.29.3 Communication

The SSHP shall identify the method by which Contractor personnel will communicate in the event of an emergency. An alarm system with means of on-site and off-site communication shall be provided and installed in accordance with 29 CFR 1910.165. Communications with the office trailer, if it is outside vocal range, will be by radio. Communications between Contractor and other organizations (e.g., the Contracting Officer's Representative or the emergency response contractor) will be over the telephone. At least the following emergency telephone numbers must appear in the SSHP.

Name, address, and phone number of medical treatment facility and physician;

Ambulance service's telephone number;

Fire department's telephone number;

Police department's telephone number;

EPA Region II's telephone number;

NJDEP spill control phone numbers; and

Contracting Officer's Representative's telephone number.

1.29.4 Site Security

Site security shall be specified in the SSHP and in accordance with Section 01110 SUMMARY OF WORK.

1.30 CONTAMINATION MONITORING, DECONTAMINATION, AND PERSONAL HYGIENE

Personnel entering the Exclusion or Contamination Reduction Zones or otherwise exposed or subject to exposure to hazardous chemical contaminated material vapors, liquids, or contaminated solids shall adhere to approved contamination monitoring, decontamination, and personal hygiene protocol, which will be detailed in the SSHP. Contamination monitoring and decontamination shall be performed in the CRZ prior to entering the Support Zone from the Exclusion Zone. Chapter 10.0 of NIOSH 85-115 shall be consulted when preparing decontamination procedures. Employees shall be trained in the procedures and the procedures shall be enforced throughout site operations. Persons disregarding these provisions of the SSHP shall be barred from the site. Minimum acceptable contamination limits are provided in table 01351-1 in the Action Levels paragraph.

1.30.1 Decontamination Facilities

A personnel decontamination facility shall be provided in the CRZ. This facility shall be used by both Contractor personnel and government representatives. The decontamination facility shall provide for separation of street clothing and contaminated PPE and shall be equipped with heating, lighting, ventilation, a change room and lockers, hot and cold water, towels, soap in sufficient quantities for all anticipated personnel, and waste water storage facilities for controlling the disposal of used water.

1.30.2 Procedures

The SSHP shall outline procedures to be used for contamination monitoring and decontamination of site personnel.

Personnel performing or supervising remedial work within the EZ or CRZ or those workers exposed (or subject to exposure) to hazardous chemical contaminated material vapors, liquids, or contaminated solids shall be instructed by the Contractor in the requirements and advised to observe and adhere to the personal hygiene-related provisions of this paragraph. A detailed discussion of personnel contamination monitoring, decontamination, and sanitation protocols to be followed by site workers shall be submitted as part of the SSHP.

Any person found to be disregarding the personal hygiene-related provisions of the SSHP shall be barred from the site. The following personal hygiene conditions and procedures shall be followed by personnel exiting the EZ:

a. Contained storage and legal disposal of used disposable outerwear shall be provided.

b. All outerwear shall be removed prior to entering the lunch area or smoking area, and prior to washing hands.

c. All personnel shall be monitored for contamination prior to exiting the site.

d. Hand and face washing facilities shall be provided.

e. Contractor personnel shall be required to thoroughly clean their hands and other exposed areas before entering the smoking or lunch area.

f. A facility for changing into and out of and storing work clothing separate from street clothing shall be provided.

g. Disposable outerwear shall not be reused, and when removed, shall be placed inside disposal containers provided for that purpose located in the CRZ.

h. Smoking and chewing of tobacco or chewing gum shall be prohibited except in a designated smoking area, provided by the Contractor, in the SZ.

i. Eating and drinking shall be prohibited except in a designated lunch or break area, provided by the Contractor in the SZ.

1.31 EQUIPMENT DECONTAMINATION

Vehicles and equipment used in the EZ shall be monitored for contamination and decontaminated in the CRZ prior to leaving the site. The procedures for contamination monitoring and decontamination of vehicles and equipment shall be addressed in the SSHP. All monitoring and decontamination results shall be submitted to the Contracting Officer's Representative in a timely manner.

1.31.1 Decontamination Facilities

An equipment decontamination station shall be provided within the CRZ for decontaminating vehicles and equipment leaving the EZ. The decontamination station shall include the following: A traffic surface pad of sufficient strength to support traffic. The pad shall be constructed to capture decontamination water, including overspray, and shall allow for collection and removal of the decontamination water using sumps, dikes and ditches as required. In addition, the following facilities will also be included: high-pressure, low volume, water wash area for equipment and vehicles; a steam cleaning system for use after the mud and/or site material has been cleaned from the equipment; a designated "clean area" in the CRZ for performing equipment maintenance. Equipment within the EZ or CRZ shall be decontaminated before maintenance is performed.

1.31.2 Procedures

Procedures for equipment decontamination shall be developed and used to prevent the spread of contamination into the SZ and off site areas. These procedures shall address disposal of contaminated products and spent materials used on the site, including containers, fluids, oils, etc. The production of large quantities of contaminated water should be avoided. Dry decontamination techniques should be utilized where possible, and all equipment decontamination water will be collected for characterization. Any item taken into the EZ shall be assumed to be contaminated and shall be inspected and/or decontaminated before the item leaves the area. Vehicles, equipment, and materials shall be cleaned and decontaminated prior to leaving the site.

Construction material shall be handled in such a way as to minimize the potential for contaminants being spread and/or carried off site. Prior to exiting the site, vehicles and equipment shall be monitored to ensure the adequacy of decontamination.

1.32 EMERGENCY EQUIPMENT AND FIRST AID REQUIREMENTS

An Emergency Response Plan that meets the requirements of 29 CFR 1910.120 (1), and 29 CFR 1926.65 (1), shall be developed and implemented as a section of the SSHP. In the event of any emergency associated with remedial action, the Contractor shall, without delay, alert all on-site employees that there is an emergency situation; take action to remove or otherwise minimize the cause of the emergency; alert the Contracting Officer's Representative; and institute measures necessary to prevent repetition of the conditions or actions leading to, or resulting in, the emergency. Employees that are required to respond to hazardous emergency situations shall be trained to respond to such expected emergencies. The plan shall be rehearsed regularly as part of the overall training program for site operations. The plan shall be reviewed periodically and revised as necessary to reflect new or changing site conditions or information. The following elements, as a minimum, shall be addressed in the plan:

a. Meetings with the local emergency response agencies shall be held during preparation of the Emergency Response Plan. Agencies to be contacted include local fire, police, and rescue authorities with jurisdiction and nearby medical facilities that may be utilized for emergency treatment of injured personnel. At these meetings, the agencies shall be notified of upcoming site activities and potential emergency situations. The response capabilities shall be ascertained and a response commitment obtained. The Contractor shall ensure the Emergency Response Plan for the site is compatible and integrated with the disaster, fire and/or emergency response plans of local, state, and federal agencies. Prior to commencing work, the Contractor shall contact the nearest medical provider and advise them as to where the work is located and for when it is scheduled.

b. Personnel roles, lines of authority, communications for emergencies.

c. Emergency recognition and prevention.

d. Site topography, layout, and prevailing weather conditions.

e. Criteria and procedures for site evacuation (emergency alerting

procedures, employee alarm system, emergency PPE and equipment, safe distances, places of refuge, evacuation routes, site security and control).

f. Specific procedures for decontamination and medical treatment of injured personnel.

g. Route maps to nearest prenotified medical facility. Site-support vehicles shall be equipped with maps. At the beginning of project operations, drivers of the support vehicles shall become familiar with the emergency route and the travel time required. The Contractor shall visit the hospital designated in the SSHP to determine whether they can handle the types of injury (including chemically contaminated patients) that might occur at the site.

h. Emergency alerting and response procedures including posted instructions and a list of names and telephone numbers of emergency contacts (physician, nearby medical facility, fire and police departments, ambulance service, Federal, State, and local environmental agencies; as well as Safety and Health Manager, the Site Superintendent, the Contracting Officer's Representative and/or their alternates).

i. Criteria for initiating community alert program, contacts, and responsibilities.

j. Procedures for reporting incidents to appropriate government agencies. In the event that an incident such as an explosion or fire, or a spill or release of toxic materials occurs during the course of the project, the appropriate government agencies shall be immediately notified. In addition, the Contracting Officer's Representative shall be verbally notified immediately and receive a written notification within 24 hours. The report shall include the following items:

(1) Name, organization, telephone number, and location of the Contractor;

(2) Name and title of the person(s) reporting;

(3) Date and time of the incident;

(4) Location of the incident (i.e., site location, facility name);

(5) Brief summary of the incident giving pertinent details including type of operation ongoing at the time of the incident;

(6) Cause of the incident, if known;

(7) Casualties (fatalities, disabling injuries);

(8) Details of any existing chemical hazard or contamination;

(9) Estimated property damage, if applicable;

(10) Nature of damage, effect on contract schedule;

(11) Action taken to ensure safety and security; and

(12)Other damage or injuries sustained, public or private.

k. Procedures for critique of emergency responses and follow-up.

1.33 EMERGENCY RESPONSE AND CONTINGENCY PROCEDURES

An Emergency Response Plan, that meets the requirements of 29 CFR 1910.120 (l) and 29 CFR 1926.65 (l), shall be developed and implemented as a section of the APP/SSHP. In the event of any emergency associated with remedial action, the Contractor shall, without delay, alert all onsite employees and as necessary offsite emergency responders that there is an emergency situation; take action to remove or otherwise minimize the cause of the emergency; alert the Contracting Officer; and institute measures necessary to prevent repetition of the conditions or actions leading to, or resulting in, the emergency. Employees that are required to respond to hazardous emergency situations shall be trained to their level of responsibility according to 29 CFR 1910.120 (q) and 29 CFR 1926.65 (q) requirements. The plan shall be rehearsed regularly as part of the overall training program for site operations. The plan shall be reviewed periodically and revised as necessary to reflect new or changing site conditions or information. Copies of the Emergency Response Portion of the accepted APP/SSHP shall be provided to the affected local emergency response agencies. The following elements, as a minimum, shall be addressed in the plan:

a. Pre-emergency planning. The Contractor shall coordinate with local emergency response providers during preparation of the Emergency Response Plan. At a minimum, coordinate with local fire, rescue, hazardous materials response teams, police and emergency medical providers to assure all organizations are capable and willing to respond to and provide services for on-site emergencies. The Contractor shall ensure the Emergency Response Plan for the site is compatible and integrated with the local fire, rescue, medical and police security services available from local emergency response planning agencies.

b. Personnel roles, lines of authority, communications for emergencies.

c. Emergency recognition and prevention.

d. Site topography, layout, and prevailing weather conditions.

e. Criteria and procedures for site evacuation (emergency alerting procedures, employee alarm system, emergency PPE and equipment, safe distances, places of refuge, evacuation routes, site security and control).

f. Specific procedures for decontamination and medical treatment of injured personnel.

g. Route maps to nearest prenotified medical facility. Site-support vehicles shall be equipped with maps. At the beginning of project operations, drivers of the support vehicles shall become familiar with the emergency route and the travel time required.

h. Emergency alerting and response procedures including posted instructions and a list of names and telephone numbers of emergency contacts (physician, nearby medical facility, fire and police departments, ambulance service, Federal, state, and local environmental agencies; as well as Safety and Health Manager, the Site

Superintendent, the Contracting Officer and/or their alternates).

i. Criteria for initiating community alert program, contacts, and responsibilities.

j. Procedures for reporting incidents to appropriate government agencies. In the event that an incident such as an explosion or fire, or a spill or release of toxic materials occurs during the course of the project, the appropriate government agencies shall be immediately notified. In addition, the Contracting Officer and the local district safety office shall be verbally notified immediately of all incidents and near-misses and receive a written notification within 24 hours. The report shall include the following items:

(1) Name, organization, telephone number, and location of the Contractor.

(2) Name and title of the person(s) reporting.

(3) Date and time of the incident.

(4) Location of the incident, i.e., site location, facility name.

(5) Brief summary of the incident giving pertinent details including type of operation ongoing at the time of the incident.

(6) Cause of the incident, if known.

(7) Casualties (fatalities, disabling injuries).

(8) Details of any existing chemical hazard or contamination.

(9) Estimated property damage, if applicable.

(10) Nature of damage, effect on contract schedule.

(11) Action taken to ensure safety and security.

(12) Other damage or injuries sustained, public or private.

k. Procedures for critique of emergency responses and follow-up.

1.34 ACCIDENT PREVENTION

An Accident Prevention Plan shall be developed meeting the requirements of Section 01525 SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS. Daily safety and health inspections shall be conducted to ensure that the work is being performed in accordance with the SSHP and all USACE and OSHA regulations. If there is an accident/incident, the Contracting Officer shall be notified immediately and an Accident Report filed within two days.

1.35 CERTIFICATE OF WORKER/VISITOR ACKNOWLEDGEMENT

A copy of a Contractor-generated certificate of worker/visitor acknowledgement shall be completed and submitted for each visitor allowed to enter Contamination Reduction or Exclusion Zones, and for each employee, following the example certificate at the end of this section.

1.36 INSPECTIONS

The SSHO shall perform daily inspections of the job site and the work in progress to ensure compliance with EM 385-1-1, the Safety and Health Program, the SSHP and other occupational health and safety requirements of the Contract, and to determine the effectiveness of the SSHP. Procedures for correcting deficiencies (including actions, timetable and responsibilities) shall be described in the SSHP. Follow-up inspections to ensure correction of deficiencies shall be conducted and documented. Daily safety inspection logs shall be used to document the inspections, noting safety and health deficiencies, deficiencies in the effectiveness of the SSHP, and corrective actions taken. The SSHO's Daily Inspection Log shall be attached to and submitted with the Daily Quality Control Reports. Each entry shall include the date, work area checked, employees present in work area, PPE and work equipment being used in each area, special safety and health issues and notes, and signature of preparer. In the event of an accident, the Contracting Officer's Representative shall be notified according to EM 385-1-1, Section 01.D. Within two working days of any reportable accident, an Accident Report shall be completed on ENG Form 3394 and submitted.

1.37 MONTHLY EXPOSURE REPORTS

Monthly exposure reporting to the Contracting Officer is required to be attached to the monthly billing request. This report is a compilation of employee-hours worked each month for all site workers, both prime and subcontractor. The Contracting Officer will provide copies of any special forms.

1.38 DUST AND EMISSION CONTROL

Dust control shall be used throughout the work at the site. A separate Dust Control Plan shall be referenced in the Site Safety and Health Plan (SSHP) and be incorporated by reference in the Air Monitoring Plan. The Dust Control Plan shall be submitted no later than 30 days after the NTP. The Dust Control Plan shall identify materials, equipment, and methods to be used to monitor and control dust during project operations, including provisions for supplying clean water and supplying trailer-mounted water spraying equipment. At a minimum, the following provisions shall be incorporated into the Dust Control Plan:

a. The use of real-time airborne monitoring equipment to measure dust levels along the perimeter of the excavations and at the site perimeter.

b. The use of water-based dust suppressing agent to prevent the creation and dispersion of dust. Methods that generate slippery conditions or sticky mud shall be avoided.

c. Trucks carrying the debris shall be covered and sealed to control dust releases and shall have a double, positive locking mechanism on the tailgates.

d. Haul roads shall be treated as necessary to minimize dusty conditions.

e. The SSHO shall ensure that dust suppression practices are effective and being utilized.

Maintain strict dust control at all times to prevent dust particles with PCB attached from becoming airborne. Sprinkle or treat the soil at the site and other areas disturbed by operations with dust suppressants or water.

1.39 SAFETY AND HEALTH PHASE-OUT REPORT

A Safety and Health Phase-Out Report shall be submitted within 10 days following completion of the work, prior to final acceptance of the work. The following minimum information shall be included:

a. Summary of the overall performance of safety and health (accidents or incidents including near misses, unusual events, lessons learned, etc.).

b. Final decontamination documentation including procedures and techniques used to decontaminate equipment, vehicles, and on-site facilities.

c. Summary of exposure monitoring and air sampling accomplished during the project.

d. Signatures of Safety and Health Manager and SSHO.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 PROTECTION OF WORKERS AND THE ENVIRONMENT

Protect workers and the environment from PCB hazards in accordance with the PCB protection plan and, as a minimum, as specified herein.

3.1.1 Worker Safety

Provide portable decontamination and shower rooms. Workers shall wear and use PPE, as recommended by the industrial hygienist, upon entering a PCB control area. If PPE is not required by the CIH, specify in the PCB removal work plan. Keep work footwear inside work area until completion of the job. Have available one set of PPE required for use by Contracting Officer for inspection of work. Do not carry out PCB handling operations in confined spaces. Do not delay aid to a seriously injured worker for reasons of decontamination.

3.1.2 PCB Control Area

Establish a PCB control area to prevent unauthorized entry of personnel. Rope off area and provide 29 CFR 1910.145 signs at approaches and around perimeter. Locate signs at such a distance that personnel may read the sign and take the necessary precautions before entering the area. Allow only personnel briefed on the elements and trained as specified herein into the area. Do not permit food, drink, or smoking materials in the control area. Smoking is not permitted within 50 feet of the PCB control area. Provide "No Smoking" signs as directed by the Contracting Officer.

3.1.3 Air Quality

Include provisions to ensure that airborne PCB concentrations below the PEL of air defined herein are not exceeded outside of the PCB control area or

by workers inside the PCB control area. Provide air monitoring, personnel monitoring, and sampling to ensure workers safety as determined by the CIH and as specified herein. As a minimum, sample the air daily at the following locations: at locations being disturbed, within the breathing zone of workers, and at the downwind border of the control area. Measure using instrument capable of detecting airborne PCBs at concentrations below OSHA PEL, or use a direct reading total particulate meter correlated to a worst case amount of PCBs attached to the particulate. When airborne concentrations exceed PEL at the breathing zone of workers, provide respirators and additional worker protection as dictated in the Site Health and Safety Plan. If airborne concentration exceeds PEL at boundary of control area, immediately stop work and notify the Contracting Officer.

3.1.4 Special Hazards

a. Do not expose PCBs to open flames or other high temperature sources since toxic decomposition by-products may be produced.

b. Do not heat PCBs to temperatures of 135 degrees F or higher without Contracting Officer's concurrence.

TASK HAZARD AND CONTROL REQUIREMENTS SHEET

Task _____

Initial Anticipated Hazards_____

Initial PPE_____

Initial Controls_____

Initial Exposure Monitoring _____

HAZWOPER Medical Surveillance Required yes no

HAZWOPER Training Required yes no

EXAMPLE CERTIFICATE OF WORKER/VISITOR ACKNOWLEDGMENT

PROJECT NAME CONTRACT NO.
PROJECT ADDRESS
CONTRACTOR'S NAME
(EMPLOYEE'S) (VISITOR'S) NAME

The contract for the above project requires the following: that you be provided with and complete formal and site-specific training; that you be supplied with proper personal protective equipment excluding respirators; that you be trained in its use; and that you receive a medical examination to evaluate your physical capacity to perform your assigned work tasks, under the environmental conditions expected, while wearing the required personal protective equipment. These things are to be done at no cost to you. By signing this certification, you are acknowledging that your employer has met these obligations to you.

I HAVE READ, UNDERSTAND AND AGREE TO FOLLOW THE SITE SAFETY AND HEALTH PLAN FOR THIS SITE.

Name Date

_____ _____

FORMAL TRAINING: I have completed the following formal training courses that meet OSHA's requirements:

	Date Completed
40 hour:	_____
8 hour supervisory:	_____
8 hour refresher:	_____

_____

SITE-SPECIFIC TRAINING: I have completed the site-specific training required by this Contract. The Site Safety and Health Officer conducted the training.

_____

RESPIRATORY PROTECTION: I have been trained in accordance with the criteria in (the Contractor's) (my Employer's) Respiratory Protection program. I have been trained in the proper work procedures and use and limitations of the respirator(s) I will wear. I have been trained in and will abide by the facial hair policy.

RESPIRATOR FIT-TEST TRAINING: I have been trained in the proper selection, fit, use, care, cleaning, and maintenance, and storage of the respirator(s) that I will wear. I have been fit-tested in accordance with the criteria in (the Contractor's) (my employer's) Respiratory Program and have received a satisfactory fit. (I have been assigned my individual respirator.) I have been taught how to properly perform positive and negative pressure fit-check upon donning negative pressure respirators each time.

MEDICAL EXAMINATION: I have had a medical examination within the last twelve months that was paid for by my employer. The examination included health history, pulmonary function tests, and may have included an evaluation of a chest X-ray. A physician made determination regarding my physical capacity to perform work tasks on the project while wearing protective equipment including a respirator. I was personally provided a copy and informed of the results of that examination. My employer's industrial hygienist evaluated the medical certification provided by the physician and checked the appropriate blank below. The physician determined that there:

_____ were no limitations to performing the required work tasks;

_____ were identified physical limitations to performing the required work tasks.

Date medical exam completed: _____

(Employee's) (Visitor's) Signature:

_____

Date: _____

Printed Name:_____

Social Security Number:_____

Contractor's Site Safety and Health Officer Signature:

_____

Printed Name: _____

Date: _____

Social Security Number: _____

-- End of Section --

SECTION 01356A

STORM WATER POLLUTION PREVENTION MEASURES

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM D 4439	(2002) Geosynthetics
ASTM D 4491	(1999a) Water Permeability of Geotextiles by Permittivity
ASTM D 4533	(2004) Trapezoid Tearing Strength of Geotextiles
ASTM D 4632	(1991; R 2003) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	(2004) Determining Apparent Opening Size of a Geotextile
ASTM D 4873	(2002) Identification, Storage, and Handling of Geosynthetic Rolls and Samples

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION (NJDEP)

NJDEP DSW	General Permit for Construction Activity Stormwater

NEW JERSEY ADMINISTRATIVE CODE (NJAC)

NJAC 7:14	Water Pollution Control Act, including 7:14A, Pollutant Discharge Elimination System

NEW JERSEY STATE SOIL CONSERVATION COMMITTEE (SCS)

SCS Standards	Standards for Soil Erosion and Sediment Control in New Jersey (July 1999)

1.2 GENERAL

Contractor shall implement the storm water pollution prevention measures to prevent sediment from entering streams or water bodies as specified in this Section in a manner which will meet the requirements of Section 01110 SUMMARY OF WORK and the requirements of the National Pollution Discharge Elimination System (NPDES) permit equivalency for the project.

Contractor shall construct and maintain erosion and sediment control

structures in accordance with SCS Standards and the Freehold Conservation District requirements.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Soil Erosion and Sediment Control Plan; G

SD-07 Certificates

Mill Certificate or Affidavit;

Certificate attesting that the Contractor has met all specified requirements.

1.4 EROSION AND SEDIMENT CONTROLS

Develop, implement, maintain, supervise, and be responsible for a comprehensive Soil Erosion and Sediment Control Plan that is certified by the New Jersey Natural Resources Conservation Program. The plan shall be submitted 14 days prior to the Pre-Work Conference and no later than 30 days after the Notice to Proceed. The Plan shall specifically address each work area; multiple submittals are expected as work progresses. The purpose of this plan is to prevent runoff from the site entering and polluting surface waters, air, land, or groundwater.

Comply with NJAC 7:14 Appendix B, NJDEP DSW, and the SCS Standards.

In accordance with Section 02310 EXCAVATION, the Contracting Officer has the authority to limit the surface area of erodible earth material exposed by clearing and grubbing and excavation and fill operations; and to direct the Contractor to provide immediate, permanent, or temporary pollution control measures to prevent contamination of adjacent properties, streams, or other watercourses. Such work may involve the use of temporary mulches, mats, or other control devices or methods as necessary to control erosion. Cut and fill slopes shall be mulched as the excavation proceeds, to the extent directed by the Contracting Officer. Incorporate all permanent erosion control features into the project at the earliest practicable time as outlined in the accepted schedule. Temporary pollution control measures shall be used to correct conditions that develop during construction; that are needed prior to installation of permanent pollution control features; or that are needed temporarily to control erosion that develops during normal construction practices but are not associated with permanent control features on the project.

In the event of conflict between these requirements and pollution control laws, rules or regulations, or other federal, state, or local agencies, the more restrictive laws, rules, or regulations shall apply.

Contractor shall control sediment at the washdown facilities, control sediment that may be entrained by rainwater running off the site, curtail work, and reduce the exposed surface when heavy rain is predicted.

The controls and measures required by the Contractor are described below.

1.4.1 Stabilization Practices

The stabilization practices to be implemented shall include mulching, geotextiles, erosion control matts, protection of trees, preservation of mature vegetation, etc. On the daily CQC Report, the Contractor shall record the dates when the major grading activities occur (e.g., clearing and grubbing, excavation, and grading); when construction activities temporarily or permanently cease on a portion of the site; and when stabilization practices are initiated. Except as provided in paragraphs UNSUITABLE CONDITIONS and NO ACTIVITY FOR LESS THAN 21 DAYS, stabilization practices shall be initiated as soon as practicable, but no more than 14 days, in any portion of the site where construction activities have temporarily or permanently ceased.

1.4.1.1 Unsuitable Conditions

Where the initiation of stabilization measures by the fourteenth day after construction activity temporarily or permanently ceases is precluded by unsuitable conditions caused by the weather, stabilization practices shall be initiated as soon as practicable after conditions become suitable.

1.4.1.2 No Activity for Less Than 21 Days

Where construction activity will resume on a portion of the site within 21 days from when activities ceased (e.g., the total time period that construction activity is temporarily ceased is less than 21 days), then stabilization practices do not have to be initiated on that portion of the site by the fourteenth day after construction activity temporarily ceased.

1.4.2 Structural Practices

Structural practices shall be implemented to divert flows from exposed soils, temporarily store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Contractor shall implement structural practices as necessary to provide storm sewer inlet protection meeting the requirements of the Standard for Storm Sewer Inlet Protection, Ch.30 of the SCS Standards. Structural practices shall be implemented in a timely manner during the construction process to minimize erosion and sediment runoff. Structural practices shall include the following devices and shall meet the requirements of Ch.25 of the SCS Standards.

1.4.2.1 Silt Fences

The Contractor shall provide silt fences as a temporary structural practice to minimize erosion and sediment runoff. Silt fences shall be properly installed to effectively retain sediment immediately after completing each phase of work where erosion would occur in the form of sheet and rill erosion (e.g. clearing and grubbing, excavation, and grading). Silt fences shall be field determined as required to control erosion. Final removal of silt fence barriers shall be upon approval by the Contracting Officer.

1.4.2.2 Straw Bales

The Contractor shall provide bales of straw as a temporary structural practice to minimize erosion and sediment runoff. Bales shall be properly placed to effectively retain sediment immediately after completing each phase of work (e.g., clearing and grubbing, excavation, and grading) in

each independent runoff area (e.g., after clearing and grubbing in an area between a ridge and drain, bales shall be placed as work progresses; bales shall be removed/replaced/relocated as needed for work to progress in the drainage area). Areas where straw bales are to be used are to be field determined as required to control erosion. Bales shall not be used around catch basins. Final removal of straw bale barriers shall be upon approval by the Contracting Officer. At minimum, rows of bales of straw shall be provided as follows:

a. Along the downhill perimeter edge of all areas disturbed.

b. Along the top of the slope or top bank of drainage ditches, channels, swales, etc. that traverse disturbed areas.

c. Along the toe of all cut slopes and fill slopes of the construction areas.

d. Perpendicular to the flow in the bottom of new drainage ditches, channels, and swales. Rows shall be spaced as field determined as required to control erosion.

e. At the entrance to storm receivers and culverts that receive runoff from disturbed areas.

1.4.2.3 Coir Wattles

The Contractor shall supply coir wattles as displayed on the contract drawings to minimize erosion and sediment runoff. Coir wattles shall be used around catch basins.

1.4.2.4 Stabilized Construction Access

Contractor shall construct one or more stabilized construction access meeting the requirements of the Standard for Stabilized Construction Access, Ch.29 of the SCS Standards, for ingress and egress to the construction area.

PART 2 PRODUCTS

2.1 COMPONENTS FOR SILT FENCES

2.1.1 Filter Fabric

The geotextile shall comply with the requirements of ASTM D 4439, and shall consist of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. The filament shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of ester, propylene, or amide, and shall contain stabilizers and/or inhibitors added to the base plastic to make the filaments resistance to deterioration due to ultraviolet and heat exposure. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0 to 120 degrees F. The fabric shall incorporate a drawstring in the top portion of the fence for added strength. The filter fabric shall meet the following requirements:

FILTER FABRIC FOR SILT SCREEN FENCE

PHYSICAL PROPERTY	TEST PROCEDURE	STRENGTH REQUIREMENT
Grab Tensile	ASTM D 4632	100 lbs. min.
Elongation (%)		30 % max.
Trapezoid Tear	ASTM D 4533	55 lbs. min.
Permittivity	ASTM D 4491	0.2 sec-1
AOS (U.S. Std Sieve)	ASTM D 4751	20-100

2.1.2 Silt Fence Stakes and Posts

The Contractor may use either wooden stakes or steel posts for fence construction. Wooden stakes utilized for silt fence construction, shall have a minimum cross section of 2 inches by 2 inches when oak is used and 4 inches by 4 inches when pine is used, and shall have a minimum length of 5 feet. Steel posts (standard "U" or "T" section) utilized for silt fence construction, shall have a minimum weight of 1.33 pounds per linear foot and a minimum length of 5 feet.

2.1.3 Mill Certificate or Affidavit

A mill certificate or affidavit shall be provided attesting that the fabric and factory seams meet chemical, physical, and manufacturing requirements specified above. The mill certificate or affidavit shall specify the actual Minimum Average Roll Values and shall identify the fabric supplied by roll identification numbers. The Contractor shall submit a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the filter fabric.

2.1.4 Identification Storage and Handling

Filter fabric shall be identified, stored and handled in accordance with ASTM D 4873.

2.2 COMPONENTS FOR STRAW BALES

The straw in the bales shall be stalks from oats, wheat, rye, barley, rice, or from grasses such as byhalia, bermuda, etc., furnished in air dry condition. The bales shall have a standard cross section of 14 inches by 18 inches. All bales shall be either wire-bound or string-tied. The Contractor may use either wooden stakes or steel posts to secure the straw bales to the ground. Wooden stakes utilized for this purpose, shall have a minimum dimensions of 2 inches x 2 inches in cross section and shall have a minimum length of 3 feet. Steel posts (standard "U" or "T" section) utilized for securing straw bales, shall have a minimum weight of 1.33 pounds per linear foot and a minimum length of 3 feet.

PART 3 EXECUTION

3.1 INSTALLATION OF SILT FENCES

Silt fences shall extend a minimum of 24 inches above the ground surface and shall not exceed 34 inches above the ground surface. Filter fabric shall be from a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, filter fabric shall be

spliced together at a support post, with a minimum 6 inch overlap, and securely sealed. A trench shall be excavated approximately 4 inches wide and 6 inches deep on the upslope side of the location of the silt fence. The 4-inch by 6-inch trench shall be backfilled and the soil compacted over the filter fabric. Silt fences shall be removed upon approval by the Contracting Officer.

3.2 INSTALLATION OF STRAW BALES

Straw bales shall be placed in paved areas where the excavation of an anchor trench is not feasible. Use sand bags on either side of the bales to secure them from movement.

3.3 MAINTENANCE

The Contractor shall maintain the temporary and permanent vegetation, erosion and sediment control measures, and other protective measures in good and effective operating condition by performing routine inspections to determine condition and effectiveness, by restoration of destroyed vegetative cover, and by repair of erosion and sediment control measures and other protective measures. The following procedures shall be followed to maintain the protective measures.

3.3.1 Silt Fence Maintenance

Silt fences shall be inspected in accordance with paragraph INSPECTIONS. Any required repairs shall be made within 24 hours of the discrepancy's discovery. Close attention shall be paid to the repair of damaged silt fence resulting from end runs and undercutting. Should the fabric on a silt fence decompose or become ineffective, and the barrier is still necessary, the fabric shall be replaced within 24 hours of the discrepancy's discovery. Sediment deposits shall be removed when deposits reach one-third of the height of the barrier. When a silt fence is no longer required, it shall be removed. The immediate area occupied by the fence and any sediment deposits shall be shaped to an acceptable grade. The areas disturbed by this shaping shall receive temporary erosion control if required.

3.3.2 Straw Bale Maintenance

Straw bale barriers shall be inspected in accordance with paragraph INSPECTIONS. Close attention shall be paid to the repair of damaged bales, end runs and undercutting beneath bales. Necessary repairs to barriers or replacement of bales shall be accomplished within 24 hours of the discrepancy's discovery. Sediment deposits shall be removed when deposits reach one-half of the height of the barrier. Bale rows used to retain sediment shall be turned uphill at each end of each row. When a straw bale barrier is no longer required, it shall be removed. The immediate area occupied by the bales and any sediment deposits shall be shaped to an acceptable grade.

3.4 INSPECTIONS

3.4.1 General

The Contractor shall inspect disturbed areas of the construction site, areas used for storage of materials that are exposed to precipitation that have not been finally stabilized, stabilization practices, structural practices, other controls, and area where vehicles exit the site at least

once every seven (7) calendar days and within 24 hours of the end of any storm that produces 0.5 inches or more rainfall at the site. Where sites have been finally stabilized, such inspection shall be conducted at least once every month.

3.4.2 Inspections Details

Disturbed areas and areas used for material storage that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the Soil Erosion and Sediment Control Plan shall be observed to ensure that they are operating correctly. Discharge locations or points shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Locations where vehicles exit the site shall be inspected for evidence of offsite sediment tracking.

3.4.3 Inspection Reports

For each inspection conducted, the Contractor shall prepare a report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the Soil Erosion and Sediment Control Plan, maintenance performed, and actions taken. The report shall be furnished to the Contracting Officer within 24 hours of the inspection as a part of the Contractor's daily CQC REPORT. A copy of the inspection report shall be maintained on the job site.

-- End of Section --

SECTION 01362

PERIMETER AIR MONITORING
06/08

PART 1 GENERAL

1.1 SCOPE OF WORK

This section describes the responsibilities of the Contractor for monitoring potentially contaminated particulates at the site perimeter fenceline. This section is to be used in the preparation of Perimeter Air Monitoring Plan (PAMP). The Contracting Officer is committed that the work performed under these specifications will be actively managed so that airborne dust and contaminants generated by site activities are maintained below the applicable allowable levels established for general public exposure.

Matters of interpretation of these standards associated with perimeter air monitoring shall be identified and submitted to the Contracting Officer. All matters of interpretation shall be resolved before starting work. Where the requirements of this Specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements shall apply.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 200-1-5	(1997) Design, Installation and Utilization of Fixed-Fenceline Sample Collection and Monitoring Systems (FFMS)

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Perimeter Air Monitoring Plan (PAMP); G, A/E

SD-09 Progress Reports

Air Sampling and Monitoring Logs

The air sampling and monitoring log shall be submitted on a weekly basis during the course of the project site work and include (but is not limited to):

a. sample collection dates and times
b. sampling equipment and media
c. results of direct-reading instruments
d. summary printouts for instrumentation using automatic data logging
e. documentation of action level exceedances and corrective actions

Air Sample Analysis Results

Monthly Air Monitoring Report Compilation

Meteorological Readings

1.4 REGULATORY REQUIREMENTS

Work performed under this contract shall comply with EM 200-1-5 and all applicable Federal, State, and local safety and occupational health laws and regulations.

1.5 PERIMETER AIR MONITORING PLAN (PAMP)

The Contractor shall develop, submit for government review and implement after government acceptance a written PAMP for Remedial Action operations.

1.5.1 Contents

A PAMP shall be prepared covering remediation activities to be performed by the Contractor and all subcontractors in accordance with EM 200-1-5. The PAMP shall establish, in detail, the protocols necessary for the anticipation, recognition, evaluation, and control of emissions associated with each task performed based upon site-specific conditions.

The PAMP shall be a stand-alone plan and shall include, but not be limited to, the following:

a. Control of airborne contaminant emissions.
b. Air quality monitoring and sampling procedures.
c. Collection of meteorological data.
d. Detailed descriptions of equipment, O&M procedures, and calibrations schedules.
e. Organizational structure indicating personnel responsibilities.
f. The qualifications of the Air Quality Monitoring Specialist.
g. Plans for response if and when the action levels have been exceeded.

1.5.2 Acceptance and Modification

The PAMP shall be submitted to the Contracting Officer for review and approval. Any deficiencies in the PAMP will be discussed at the pre-construction safety conference, and the PAMP shall be revised to correct the deficiencies and resubmitted for acceptance. Onsite work shall not begin until the plan has been accepted by the Contracting Officer.

The Contractor shall keep a copy of the written PAMP on site for review by the USACE and its representatives. As work proceeds, the PAMP shall be adapted to new situations and new conditions. Changes and modifications to the accepted PAMP shall be made with the knowledge and concurrence of the Air Quality Specialist (AQS), the Site Superintendent, and the Contracting

Officer. The requested modification shall not be implemented until authorized in writing by the Contracting Officer. Should the Contracting Officer require a modification of any portion or provision of the PAMP, the Contracting Officer will notify the Contractor in writing of such modifications.

The Contracting Officer may stop all site work at any point if the Contractor shows any disregard for the provisions of this specification or the accepted PAMP.

1.6 SITE DESCRIPTION AND CONTAMINATION CHARACTERIZATION

Project site conditions are detailed in 01110 Scope Of Work.

1.7 AIR QUALITY PROTECTION PRINCIPLES

The Contractor shall provide all equipment, materials, and personnel necessary to monitor and quantify dust and vapor levels at the site perimeter fenceline. The PAMP shall describe procedures, equipment, and training needed to monitor and quantify the amount of airborne particulate and airborne organic vapors generated by site work activities. The Contractor shall operate a program of equipment maintenance in accordance with the manufacturer's specifications. The Contracting Officer may reject the use of equipment if, in his opinion, it provides less protection than that specified in the PAMP.

1.7.1 Action Levels

The Contractor shall perform remediation in a manner such that ambient air quality objectives at the site perimeter are achieved in accordance with the action levels presented in Table 01362-1. The action levels and required actions shall be presented in the PAMP in both text and tabular form in accordance with Table 01362-1.

The Contractor shall notify the Contracting Officer every time a community action level is exceeded as well as actions taken.

TABLE 01362-1 SITE PERIMETER ACTION LEVELS

Analyte	Action Level	Frequency [2,3] per location	Analytical Method	Action Required
Background Site Perimeter - Upwind (1 location[5])				
Real Time Respirable Dust (PM10)	None	Continuously during the work day. Log 15-minute averages.	Direct Reading dust meter with data logger	None

Analyte	Action Level	Frequency [2,3] per location	Analytical Method	Action Required
Real Time Vapor Monitoring	None	Continuously during the work day. Log 15-minute averages.	Direct Reading Photoionization meter with data logger	None
Combustible gas in air	None	Twice per day, once in morning and once in evening.	Direct Reading instrument with data logger	None
Oxygen	None	Twice per day, once in morning and once in evening.	Direct Reading instrument with data logger	None
Site Perimeter -Downwind (3 locations[5])				
Real Time Respirable Dust (PM10)	150 ug/m³,[1] (15 minute) 100 ug/m³,[1] (work shift)	Continuously during the work day. Log 15-minute averages.	Direct Reading dust meter with data logger	First Instance: Evaluate engineering controls, implement dust control. After an Hour: The above steps plus Stop work and notify Contract Officer. Resume work after CO acceptance.

Analyte	Action Level	Frequency [2,3] per location	Analytical Method	Action Required
Real Time Vapor Monitoring	2 ppm [1] (15 minute) 0.5 ppm [1] (work shift)	Continuously during the work day. Log 15-minute averages.	Direct Reading Photoionization meter with data logger	First Instance: Evaluate engineering controls, implement vapor emission control. After an Hour: The above steps plus Stop work and notify Contract Officer. Resume work after CO acceptance of control measures.
Combustible gas in air	more than 10 percent LEL	Twice per day, once in morning and once in evening.	Direct Reading instrument with data logger	Evacuate area.
Oxygen	Less than 19.5 percent or more than 22 percent	Twice per day, once in morning and once in evening.	Direct Reading instrument with data logger	Evacuate area if oxygen levels out of range.

Note:

1. Ambient concentrations, over background.
2. Frequencies listed in the table are for active construction periods. The Contracting Officer may modify this frequency.
3. Sampling will comply with EPA protocols and will achieve detection limits to demonstrate compliance with specified action levels.
4. Total dust and compound-specific action levels are evaluated using data corrected for upwind values.
5. Four locations (north, south, east and west).
6. If perimeter action levels are exceeded, the Contractor shall stop work and initiate dust controls or other remedy actions immediately.

1.8 STAFF ORGANIZATION, QUALIFICATIONS, AND RESPONSIBILITIES

The Contractor's project team shall include:

1.8.1 Air Quality Specialist

The services of an Air Quality Specialist (AQS), who is experienced in air monitoring and sampling, shall be utilized. The Safety and Health Manager (SHM) can also serve as the AQS if he/she meets the qualification requirements of an AQS listed in Paragraph QUALIFICATIONS below. This

specialist shall be familiar with this site's hazards and the scope of this project.

1.8.1.1 Qualifications

The Contractor shall document the specialist's name, and qualifications in the PAMP. The Contractor shall demonstrate to the Contracting Officer that this AQS has the following credentials:

a. At least three years of experience in air monitoring or sampling, including the following:
   (1) Serving in responsible professional charge on at least one project in which the impacts of site work on community air was measured.
   (2) At least 100 hours of hands-on experience (each) in taking ambient air measurements and samples by EPA methods.
b. A scientific or engineering college degree that included the study of air quality issues. The Contracting Officer may accept equivalent training at his or her sole discretion.
c. Appropriate credentials for working on the site under the SSHP.
d. Demonstrable familiarity with EM 200-1-5.
e. Professional certification appropriate to this effort.
   (1) Although the Contracting Officer may accept other credentials, the Certified Industrial Hygienist credential offered by the American Board of Industrial Hygiene and the Qualified Environmental Professional credential offered by the Institute for Professional Environmental Practice are both deemed appropriate.

1.8.1.2 Responsibilities

This AQS shall be responsible for:

a. Preparation of the air monitoring and sampling protocols for the site work,
b. Selecting the equipment to be used for air monitoring and sampling
c. Determining the times, durations, and locations of air measurements and samples
d. Develop protocols to determine upwind location and to adjust monitoring and sample results for ambient background.
e. Approving the qualifications of any technicians that will collect air measurements or samples
f. Interpreting the results of the air monitoring and sampling effort
g. Approving and signing reports of air quality that the Contractor provides to the Contracting Officer or his representatives.
h. Periodically evaluating if the selected equipment and protocols are adequately representing perimeter conditions.
i. Periodically audit the implementation of the PAMP, and take corrective action when necessary.

1.8.2 Air Monitoring and Sampling Technician (AM&ST)

During intrusive activities by the Contractor, an AM&ST shall perform the air monitoring activities as specified in the PAMP. The Site Safety and Health Officer (SSHO) can also serve as the AM&ST, if the AQS approves. The AM&ST shall have appropriate training approved by the Air Quality Specialist.

1.9 AIR QUALITY MONITORING AND SAMPLING

1.9.1 General

The monitoring specified in the PAMP shall detect and quantify vapors, dust, and pesticides.

The Contractor shall collect, at minimum, the number of air quality measurements and samples as shown in Table 01362-1. The Contractor shall use monitoring and analytical sampling / methods that accurately measure at detection limits that are consistent with the action levels listed in Table 01362-1.

1.9.1.1 Continuous Air Monitoring Equipment

The continuous air monitoring equipment shall be capable of providing the following:

a. Downloadable data capable of providing continuous graph of readings.
b. Auto-Dialer, emergency lights or other alerting systems to promptly and effectively notify the Contractor that action levels have been exceeded.

The AQS shall certify that the air monitoring equipment proposed is consistent with Perimeter Air Monitoring objectives and associated action levels presented in Tables 01362-1. Air monitoring methods and equipment locations shall be proposed by the Contractor in the PAMP. Footnote 5 on that table requests one upwind and three downwind locations.

1.9.1.2 Sampling Frequency

Sampling shall be conducted at the frequencies defined in Table 01362-1. The Contracting Officer may direct a change in air sampling frequency.

1.9.1.3 Subsurface Concentrations

Subsurface contaminant concentrations will vary as the excavation progresses. Site maximum concentrations shall be used to establish site action levels.

1.9.1.4 Equipment Calibration

Equipment utilized for air monitoring or sampling in accordance with this section shall be calibrated before and after each use, as required, and maintained as per specified methods, manufacturer's recommendations, and good industrial hygiene practices. Test instruments used in the calibration of air sampling equipment shall be calibrated and traceable to NIST standards.

1.9.1.5 Equipment Calibration Log

The Contractor shall document, in the site log or site files, the regular calibration of each instrument used. Only individuals trained to operate this equipment shall do so.

1.9.2 Meteorological Monitoring

The Contractor shall furnish, install and maintain a portable

meteorological station in accordance with paragraph METEOROLOGICAL MONITORING of 01351 SAFETY, HEALTH AND EMERGENCY RESPONSE for the continuous observation and recording of wind speed, wind direction, ambient air temperature, atmospheric pressure, atmospheric humidity, solar insolation, and atmospheric precipitation.

1.9.2.1 Meteorological Data

The station shall be capable of recording all measured parameters every 5 minutes. The station shall also transmit real-time data back to a central location so that the real-time particulate and vapor monitoring can be correlated to wind direction.

1.9.2.2 Meteorological Readings

Meteorological data collected by the station shall be effectively logged on each day of intrusive site work, so that the weather influences on the air samples can be characterized. Contractor shall maintain records, written or electronic, of the meteorological monitoring results for the duration of the project.

1.9.2.3 Visual Wind Direction Indicators

Visual wind direction indicators shall be established in a central location at each active work area.

1.9.3 Real-time Air Monitoring

The Contractor shall collect each air measurement over a duration that the AQS determines will yield an accurate representation of the air quality at that time and location.

1.9.4 Air Sampling

The sampling and analytical procedures to be followed for the collection, handling, and analysis of air samples are those prescribed by EPA Analytical Procedures listed in Table 01362-1. Air samples shall be collected by drawing a known volume of air into a collector as specified in the EPA sampling guide. The analytical results shall be compared to Action Levels established in Table 01362-1 standards and, if appropriate, action shall be undertaken (i.e., evaluation of work practices). The calibration protocols described in the EPA methods shall be followed. A qualified laboratory shall perform analysis by EPA methods described in Table 01362-1 within 48 hours. A laboratory is "qualified" if it holds certificates required by the New Jersey Department of Environmental Protection for analysis of air samples for the contaminants of interest. NOTE: Monthly samples shall be analyzed with a seven-day turnaround time.

1.9.5 Air Sampling and Monitoring Results Reporting

1.9.5.1 Air Sampling and Monitoring Logs

The Contractor shall maintain an up-to-date log for all sampling activities. A copy of the log shall be submitted to the Contracting Officer weekly during the course of the project site work. The log shall contain sufficient information to verify that proper procedures were followed, and confirm the accuracy of results.

1.9.5.2 Daily Air Monitoring Summary Report

The daily air monitoring summary report shall discuss calibration, calibration check, general observations, weather conditions, and discussion of all required corrective action. In addition, the report shall contain additional information where real-time sampling is utilized.

The Air Sample Analysis Results shall be collected and submitted. A summary of real-time monitoring results shall be presented in tabular form. The table shall include results from all monitoring locations including background and at the minimum contain the following:

a. For dust, peak 15-minute average and daily time-weighted average with all results exceeding action levels clearly delineated and associated corrective action described.
b. For vapor, peak 15-minute average and daily time-weighted average with all results exceeding action levels clearly delineated and associated corrective action described.
c. Comparison of results corrected for background to peak 15-minute average, and time weighted average action levels.
d. Summary of meteorological conditions during the sampling period.

1.9.5.3 Monthly Air Monitoring Report Compilation

Within 5 working days of month's end, the Contractor shall compile and submit copies of each Daily Air Monitoring Summary Report and the weekly air sampling results, for which results were received from the previous calendar month.

1.10 RESPONSE TO AIR EMISSIONS

Contractor shall compare the highest of direct reading measurements for organic vapor and dust downwind of the site (minus the value upwind) to the action levels in Table 01362-1. If the wind is blowing from a direction for which there is no monitor, the upwind value shall be assumed to be the lowest of the values collected by any of the monitors.

When the ambient air monitoring system reveals that action level has been exceeded for 15 or more minutes, the Contractor shall evaluate its engineering controls, and implement emission controls. If its process modifications succeed, contractor shall report the exceedance in its daily air monitoring summary report.

When the air monitoring system reveals that the action level has been exceeded for an hour or more, Contractor shall temporarily suspend intrusive activities, notify the Contracting Officer, and implement corrective action to reduce site-related emissions to below required action levels. The adequacy of these controls is subject to acceptance by the Contracting Officer's representative prior to restarting intrusive activities. Of course, Contractor shall report the exceedance in its daily air monitoring summary report.

Site emissions control measures that may be needed to reduce the emissions to below action levels may include, but are not limited to:

a. Adding moisture to the soil
b. Applying a vapor barrier (plastic) to the soil or soil piles
c. Using a misting system with an odor neutralizing additive
d. Applying foam to the soil or soil piles

e. Reducing the speed of equipment that disturbs the soil
f. Reducing the speed of equipment that disturbs the soil
g. Installing barriers to reduce wind speed
h. Limiting the rate of excavation

When the ambient air sampling system reveals that action level has been exceeded, the AQS shall use that information to modify the action levels to which the direct-reading measurements are compared so that they will protect the community.

1.11 INSPECTIONS

The Contractor shall perform daily inspections of the job site and the surrounding work in progress in accordance with paragraph INSPECTIONS in 01351 - SAFETY, HEALTH AND EMERGENCY RESPONSE to ensure compliance with PAMP. The Contracting Officer may stop all site work at any point if the Contractor shows any disregard for the provisions of this specification or the accepted PAMP.

1.12 DUST AND EMISSION CONTROL

Dust control shall be used throughout the work at the site and offsite in accordance with the Contractor's approved Dust Control Plan as required by in section 01351 SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW).The AQS shall ensure that dust suppression practices are effective and being utilized. Visual surveillance shall be conducted along construction access roads to the Site at least once a day.

PART 2 PRODUCTS

2.1 GENERAL

The Contractor shall provide all necessary sampling devices, pumps and collection media and support equipment to perform the sampling per the approved Perimeter Air Monitoring Plan.

PART 3 EXECUTION

3.1 TITLE

How to install.

-- End of Section --

SECTION 01380

PROJECT PHOTOGRAPHS
08/06

PART 1 GENERAL

1.1 SCOPE OF WORK

The Contractor shall furnish color photographs, taken on a digital camera by an experienced professional photographer using suitable equipment, to record the important features of the site prior to the commencement of work, during construction, and after the work has been completed. The Contractor shall not be permitted to take its own photographs for use as a submittal under this section.

The actual number and location of views to be taken will be as directed by the Contracting Officer. All photographs are government property and shall not be released by the Contractor to the public or news media.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-11 Closeout Submittals

Pre-Construction and Post Construction Photographs; G

Progress Photographs; (FIO)

1.2.1 Pre-Construction and Post Construction Photographs

The Contractor shall submit to the Contracting Officer prints of photographs taken prior to the commencement of work (pre-construction) and after the completion of work (post-construction

1.2.2 Progress Photographs

The Contractor shall submit to the Contracting Officer prints of construction progress.

1.3 PRE-CONSTRUCTION PHOTOGRAPHS

Before work begins, the Contractor shall document existing conditions by taking a minimum of 50 exposures including views of the general site showing all areas affected by the project, including the remedial action area and all areas used for project support. No intrusive work shall commence prior to completion of pre-construction photo documentation activities.

The Contractor shall also document the existing site conditions such as the adjacent structural conditions, public roads, curbs, sidewalk, plants, and temporary facility areas. The actual number of exposures shall be determined based on the existing condition but shall not be less than 50.

The location of the pre-construction photographs shall be designated by the Contracting Officer.

1.4 PROGRESS PHOTOGRAPHS

After construction operations have been started at the site, the Contractor shall photographically record all construction activities. A minimum of 25 progress photographs shall be taken every two (2) weeks throughout the duration of the contract. The location of the progress photographs shall be designated by the Contracting Officer. The progress photographs shall be 8"x 10" and shall include a minimum coverage of the following:

a. Contaminated soil excavation;
b. Contaminated material handling, storage and sampling;
c. Unanticipated events such as discovery of additional contaminated material or USTs;
d. Contaminated soil treatment using LTTD;
e. Odor control practices;
f. Backfill, compaction and grading;
g. Site restoration;
h. Soil erosion and sediment control practices;
i. Dewatering activities;
j. Wastewater treatment system, including at least one photograph of each major component of the system;
k. Discharge of treated water sampling;
l. Site or task-specific employee respiratory and personnel protection;
m. Unanticipated events such as spillage of container contents or related accidents;
n. Truck loading and decontamination;
o. Employee decontamination;
p. Failure of side slopes, if any;
q. Dust control practices;
r. Temporary facilities construction and status;
s. Site or task-specific employee respiratory and personnel protection;
t. An additional 10 photos from each major point of the compass prior to backfilling any excavation; and
u. An additional 4 photos of open excavations following removal of unexpected subsurface structures and/or major buried objects as determined by the Contracting Officer.

1.5 POST-CONSTRUCTION PHOTOGRAPHS

After completion of work the Contractor shall take a minimum of 50 exposures of the site. The Contractor shall also document the conditions of the adjacent properties, public roads, curbs, plants and sidewalk. The locations shall be designated by the Contracting Officer. All Contracting Officer designated photographs taken during the pre-construction phase of the project shall be retaken as closely as possible to their original positions during the post-construction phase.

1.6 DELIVERY OF PRINTS

The Contractor shall submit to the Contracting Officer four (4) 8"x10" prints of each photograph taken prior to the commencement of work (pre-construction) and after the completion of work (post-construction), within 14 calendar days after taking the photographs, or as approved by the

Contracting Officer.

The Contractor shall submit to the Contracting Officer three (3) 8"x10" prints of construction (progress photographs) along with the prints within 14 calendar days after taking the photographs or as approved by the Contracting Officer.

All video and photographs are U.S. Government property and shall not be released by the Contractor to the public or news media. The photographs should be enclosed back-to-back in double-face plastic sleeves punched to fit standard three-ring binders, provided by the Contractor.

In addition to the color prints, the Contractor shall provide the Contracting Officer with digital copies of all photos on CD. Descriptively name all photo files on the CD.

1.7 PRINTS

All prints shall be color prints; of standard commercial quality; sized as previously described; and on single weight glossy paper. Each 8"x10" print shall include an information box in the lower right hand corner or taped to the back of photos. The box shall be typewritten and arranged as follows:

REMEDIAL ACTION
CORNELL-DUBILIER ELECTRONICS SUPERFUND SITE - OU2

IFB Project No._____C.O.E. Contract No._____
Designer:_____
Contractor:_____
Phone:_____ Address:_____
Property Designation_____
Photograph No._____
Date:_____
Time:_____
Description:_____

1.8 VIEWS REQUIRED

Prints shall illustrate condition and location of work and the state of progress.

Consult with the Contracting Officer at each period of photography for recommendations concerning views required.

The control number and location of views to be taken before, during, and after completion shall be as directed by the Contracting Officer.

PART 2 PRODUCTS

2.1 DIGITAL CAMERA

The digital camera shall meet the following minimum requirements:

a. 4.0 megapixel (2,240 x 1,680 Resolution) or higher
b. 48 Bit Color Depth
c. 512 MB flash card or better
d. 3x Optical Zoom
e. 1.8" TFT LCD Monitor
f. 3 Modes Built in Flash
g. Wide aperture setting (f-stop)

The Contractor shall also provide a camera meeting these requirements to the Contracting Officer for the duration of the contract as specified in Section 01500A DIGITAL CAMERA.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01381

VIDEOTAPING
08/06

PART 1 GENERAL

1.1 SCOPE OF WORK

The Contractor shall furnish all labor, materials and equipment to furnish color audio/video taping of the project site to record the site features prior to the commencement of work and after the work has been completed, and any important site features during construction. All videotapes are government property and shall not be released by the Contractor to the public or news media.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-11 Closeout Submittals

Pre-Construction, Progress and Post-Construction Video; (FIO)

1.2.1 Pre-Construction, Progress and Post-Construction Video

The Contractor shall furnish to the Contracting Officer an original and two copies of each video. Each video shall be a continuous, color recording of the site including adjoining properties, public roads, curbs, sidewalks, plants, etc. using either VHS or DVD technology.

1.3 VIDEO QUALITY

The Contracting Officer reserves the right to reject the videotape because of poor quality, unintelligible audio, or uncontrolled pan or zoom. Any taping rejected by the Contracting Officer shall be re-taped at no cost to the Government. Under no circumstances shall construction begin until the Contracting Officer has received and accepted the videotape.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 VIDEO SURVEY

Furnish a continuous, color videotape recording along the Construction Limits.

Coverage shall include, but not be limited to, all existing roadways, sidewalks, curbs, driveways, buildings and structures, above ground utilities, landscaping, trees, signage, fencing and other physical features located within the Construction Limits and any other adjacent properties.

The coverage may be expanded if directed by the Contracting Officer.

All taping shall be done during daylight hours. No taping shall be performed if weather is not acceptable to the Contracting Officer.

In order to produce the proper detail and perspective, artificial lighting shall be required for all interior taping and where it is necessary to fill in the shadow area caused by trees, utility poles, road signs, and other such objects.

The post construction Video survey indicate that coverage shall include, but not be limited to all existing roadways, haul roads, sidewalks, curbs, building and structures, above ground utilities, landscaping, trees, signage, fencing and other physical features at the project site.

3.2 AUDIO AND VIDEO

Audio/video recordings shall be provided using the most recent video technology available.

Each recording shall begin with the Contracting Officer's name, Contract name and number, Contractor's name, date and location information such as street name, direction of travel, viewing side, etc.

Information appearing on the recording must be continuous and run simultaneously by computer-generated transparent digital information. No editing or overlaying of information at a later date will be acceptable.

3.2.1 DIGITAL INFORMATION

Digital information should be as follows:

Upper left corner
- a. Name of Contractor
- b. Day, date and time
- c. Name of project

Lower left corner
- a. Route of travel
- b. Viewing side
- c. Direction of travel

Time must be accurate to within 1/10 of a second and be continuously generated.

Written documentation must coincide with the information on the tape to facilitate easy retrieval of information.

The video system shall have the capability of transferring individual frames of video electronically into hard copy prints or photographic negatives.

Audio shall be recorded in a clear, professional and concise manner at the same time as the video recording and shall include the same information as on the viewing screen. Special commentary shall be given for unusual conditions of streets, foundations, buildings, sidewalks and curbing, trees and shrubbery, etc.

All tapes/DVDs and containers shall bear labels with the following

information:

a. Tape Number
b. Project Name and Number
c. Project Site
d. Date of Taping
e. Contracting Officer's Name
f. Location and Standing Limit of Tape

-- End of Section --

SECTION 01420

SOURCES FOR REFERENCE PUBLICATIONS
07/06

PART 1 GENERAL

1.1 REFERENCES

Various publications are referenced in other sections of the specifications to establish requirements for the work. These references are identified in each section by document number, date and title. The document number used in the citation is the number assigned by the standards producing organization, (e.g. ASTM B 564 Nickel Alloy Forgings). However, when the standards producing organization has not assigned a number to a document, an identifying number has been assigned for reference purposes.

1.2 ORDERING INFORMATION

The addresses of the standards publishing organizations whose documents are referenced in other sections of these specifications are listed below, and if the source of the publications is different from the address of the sponsoring organization, that information is also provided. Documents listed in the specifications with numbers which were not assigned by the standards producing organization should be ordered from the source by title rather than by number.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
444 North Capital Street, NW, Suite 249
Washington, DC 20001
Ph: 202-624-5800
Fax: 202-624-5806
E-Mail: info@aashto.org
Internet: http://www.aashto.org

AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (ACGIH)
1330 Kemper Meadow Drive
Cincinnati, OH 45240
Ph: 513-742-2020
Fax: 513-742-3355
E-mail: mail@acgih.org
Internet: http://www.acgih.org

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
1819 L Street, NW, 6th Floor
Washington, DC 20036
Ph: 202-293-8020
Fax: 202-293-9287
E-mail: info@ansi.org
Internet: http://www.ansi.org/

--- ANSI documents beginning with the letter "S" can be ordered from:

Acoustical Society of America (ASA)
2 Huntington Quadrangle, Suite 1NO1

Melville, NY 11747-4502
Ph: 516-576-2360
Fax: 516-576-2377
E-mail: asa@aip.org
Internet: http://asa.aip.org

AMERICAN PETROLEUM INSTITUTE (API)
1220 L Street, NW
Washington, DC 20005-4070
Ph: 202-682-8000
Fax: 202-682-8223
Internet: http://www.api.org

AMERICAN WELDING SOCIETY (AWS)
550 N.W. LeJeune Road
Miami, FL 33126
Ph: 800-443-9353 - 305-443-9353
Fax: 305-443-7559
E-mail: info@aws.org
Internet: http://www.aws.org

AMERICAN WOOD-PRESERVERS' ASSOCIATION (AWPA)
P.O. Box 361784
Birmingham, AL 35236-1784
Ph: 205-733-4077
Fax: 205-733-4075
E-mail: email@awpa.com
Internet: http://www.awpa.com

ASME INTERNATIONAL (ASME)
Three Park Avenue, M/S 10E
New York, NY 10016
Ph: 212-591-7722 or 800-843-2763
Fax: 212-591-7674
E-mail: infocentral@asme.org
Internet: http://www.asme.org

ASTM INTERNATIONAL (ASTM)
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken, PA 19428-2959
Ph: 610-832-9500
Fax: 610-832-9555
E-mail: service@astm.org
Internet: http://www.astm.org

GEOSYNTHETIC INSTITUTE (GSI)
475 Kedron Avenue
Folsom, PA 19033
Ph: 610-522-8440
Fax: 610-522-8441
Internet: http://www.geosynthetic-institute.org

ISA - THE INSTRUMENTATION, SYSTEMS AND AUTOMATION SOCIETY (ISA)
67 Alexander Drive
Research Triangle Park, NC 27709
Ph: 919-549-8411
Fax: 919-549-8288
E-mail: info@isa.org

Internet: http://www.isa.org

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
1 Batterymarch Park
Quincy, MA 02169-7471
Ph: 617-770-3000
Fax: 617-770-0700
E-mail: webmaster@nfpa.org
Internet: http://www.nfpa.org

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)
Mail Stop C-13
4676 Columbia Parkway
Cincinnati, OH 45226-1998
Ph: 800-356-4674
Fax: 513-533-8573
E-mail: pubstaff@cdc.gov
Internet: http://www.cdc.gov/niosh/homepage.html

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST)
100 Bureau Drive
Stop 2100
Gaithersburg, MD 20899-2100
Ph: 301-975-NIST
Internet: http://www.nist.gov
Order Publications From:
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U.S. Government Printing Office (GPO)
732 North Capitol Street, NW
Washington, DC 20401
Ph: 888-293-6498 or 202-512-1530
Fax: 202-512-1262
E-mail: gpoaccess@gpo.gov
Internet: http://www.gpoaccess.gov
or
National Technical Information Service (NTIS)
5285 Port Royal Road
Springfield, VA 22161
Ph: 703-605-6585
Fax: 703-605-6900
E-mail: info@ntis.gov
Internet: http://www.ntis.gov

NEW JERSEY ADMINISTRATIVE CODE (NJAC)
OFFICE OF ADMINISTRATIVE LAW
P.O. Box 049, Trenton, NJ 08625-0049
Ph: 1-800-833-9844 (via LexisNexis)

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION (NJDEP)

401 E. State St.
7th Floor, East Wing
P.O. Box 402
Trenton, NJ 08625-0402
Ph: 609-292-2885
Fax: 609-292-7695
Internet:

NEW JERSEY DEPARTMENT OF TRANSPORTATION (NJDOT)

P.O. Box 600
Trenton, NJ 08625-0600
Internet:

NEW JERSEY STATE SOIL CONSERVATION COMMITTEE (SCS)

New Jersey Department of Agriculture
PO Box 330, Trenton, New Jersey 08625
609-292-5540
609-633-7229 (fax)
E-mail: james.sadley@ag.state.nj.us
Internet:

U.S. ARMY CORPS OF ENGINEERS (USACE)
Order CRD-C DOCUMENTS from:
U.S. Army Engineer Waterways Experiment Station
ATTN: Technical Report Distribution Section, Services Branch, TIC
3909 Halls Ferry Road
Vicksburg, MS 39180-6199
Ph: 601-634-2664
Fax: 601-634-2388
E-mail: mtc-info@erdc.usace.army.mil
Internet: http://www.wes.army.mil/SL/MTC/handbook.htm

Order Other Documents from:
USACE Publications Depot
Attn: CEHEC-IM-PD
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Hyattsville, MD 20781-1102
Ph: 301-394-0081
Fax: 301-394-0084
E-mail: pubs-army@usace.army.mil
Internet: http://www.usace.army.mil/publications
or http://www.hnd.usace.army.mil/techinfo/engpubs.htm

United States Code (USC)
Order documents from:
Superintendent of Documents
U.S.Government Printing Office (GPO)
732 North Capitol Street, NW
Washington, DC 20401
Ph: 888-293-6498 or 202-512-1530
Fax: 202-512-1262
E-mail: gpoaccess.gov
Internet: http://www.gpoaccess.gov

U.S. DEPARTMENT OF DEFENSE (DOD)
Directorate for Public Inquiry and Analysis
Office of the Secretary of Defense (Public Affairs)
Room 3A750 -- The Pentagon
1400 Defense Pentagon
Washington, DC 20301-1400

Ph: 703-428-0711
E-mail: pia@hq.afis.asd.mil
Internet: http://www.dod.gov

Order DOD Documents from:
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5285 Port Royal Road
Springfield, VA 22161
Ph: 703-605-6585
FAX: 703-605-6900
E-mail: info@ntis.gov
Internet: http://www.ntis.gov

Order Military Specifications, Standards and Related Publications from:
Department of Defense Single Stock Point for (DODSSP)
Defense Automation and Production Service (DAPS)
Building 4D
700 Robbins Avenue
Philadelphia, PA 19111-5098
Ph: 215-697-2179
Fax: 215-697-1462
Internet: http://www.dodssp.daps.mil
www.daps.dla.mil

- - - - - Detail Series Documents - - - - -

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
Ph: 202-272-0167
Internet: http://www.epa.gov

--- Some EPA documents are available only from:
National Technical Information Service (NTIS)
5285 Port Royal Road
Springfield, VA 22161
Ph: 703-605-6585
Fax: 703-605-6900
E-mail: info@ntis.gov
Internet: http://www.ntis.gov

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)
8601 Adelphi Road
College Park, MD 20740-6001
Ph: 866-272-6272
Fax: 301-837-0483
Internet: http://www.archives.gov

Order documents from:
Superintendent of Documents
U.S.Government Printing Office (GPO)
732 North Capitol Street, NW
Washington, DC 20401
Ph: 202-512-1800
Fax: 202-512-2104
E-mail: contactcenter@gpo.gov
Internet: http://www.gpoaccess.gov

-- End of Section --

SECTION 01450A

CHEMICAL DATA QUALITY CONTROL

PART 1 GENERAL

1.1 GENERAL

The Contractor is responsible for chemical data quality control and establishing an effective chemical data QC system that meets requirements for chemical and measurement DQOs applicable to the project. The chemical data QC system shall consist of chemical Quality Management staff responsible for sampling and measurement plans, analytical procedures, data reporting requirements, and the organization necessary to produce the required chemical data. The system shall cover chemical measurements for both Contractor- and subcontractor-produced chemical data.

The Contractor is responsible for chemical sample acquisition, sample analyses, and instrument measurements of chemical parameters.

1.2 SCOPE OF WORK

This section covers requirements for chemical data quality control, sampling, testing, and measurements applicable to the remedial action of contaminated sites. This section is to be used for the preparation of a Quality Assurance Project Plan (QAPP), including quality assurance (QA) and quality control (QC) procedures for the sampling, measurement, and testing addressed by the plans.

The sampling, measurement, and testing to be conducted for this project will include:

a. Characterization of surface and subsurface soil and debris to determine compliance with remedial action goals;

b. Air monitoring;

c. Water sampling;

d. Characterization of backfill materials and topsoil;

e. Characterization of treated site soils to comply with reuse requirements;

f. Characterization of site debris to comply with handling, transportation, and disposal requirements; and

g. Health and safety sampling and measurements.

1.3 REFERENCES

The publications listed below form a part of this specification to the extent referenced. Publications are referred to by basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM D 4397	(2002) Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications

U.S. DEPARTMENT OF DEFENSE (DOD)

DOD QSM	(2006) Department of Defense Quality Systems Manual (QSM) for Environmental Laboratories, Version 3

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 200-1-2	(1998) Technical Project Planning Guidance for HTRW Data Quality Design
EM 200-1-3	(2001) Requirements for the Preparation of Sampling and Analysis Plans
EM 200-1-6	(1997) Chemical Quality Assurance for HTRW Projects
ER 1110-1-263	(1998) Chemical Data Quality Management for Hazardous, Toxic, Radioactive Waste Remedial Activities

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA-500/B-04/900A	(2005) Uniform Federal Policy for Quality Assurance Project Plans, Part 1: UFP-QAPP Manual
EPA-500/B-04/900B	(2005) Uniform Federal Policy for Quality Assurance Project Plans, Part 2B: Quality Assurance/Quality Control Compendium: Minimum QA/QC Activities
EPA-500/B-04/900C	(2005) Uniform Federal Policy for Quality Assurance Project Plans, Part 2A: UFP-QAPP Workbook
EPA QA/G-4	(2000) Guidance for the Data Quality Objectives Process

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 268	Land Disposal Restrictions
40 CFR 761	Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions
49 CFR 171 - 178	Hazardous Materials Regulations

NEW JERSEY ADMINISTRATIVE CODE (NJAC)

NJAC 7:9	Water Pollution Control, including 7:9B, Surface Water Quality Standards

NJAC 7:14	Water Pollution Control Act, including 7:14A, Pollutant Discharge Elimination System
NJAC 7:18	Regulations Governing Certification of Laboratories and Environmental Measures
NJAC 7:26D	(2008) Remediation Standards
NJAC 7:26E	(2008) Technical Requirements for Site Remediation

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Quality Assurance Project Plan (QAPP); G.

The Contractor shall develop a QAPP and submit it to the Contracting Officer for approval prior to the Pre-Work Conference. The QAPP shall address site-specific sampling and analysis and shall be submitted to the Contracting Officer for approval 14 days prior to the Pre-Work Conference and no later than 30 days after the Notice to Proceed. The QAPP shall be prepared in accordance with the USEPA's Uniform Federal Policy for Implementing Environmental Quality Systems (UFP) and EPA-500/B-04/900A, EPA-500/B-04/900B and EPA-500/B-04/900C.

CONTRACT CHEMICAL QUALITY CONTROL (CCQC) PLAN

The Contractor shall develop a Contract Chemical Quality Control Plan (CCQC) and submit it to the Contracting Officer coincident with, or included in the CQC Plan required in Section 01451A Contractor Quality Control.

SD-03 Product Data

FIELD SCREENING TEST; G

SD-06 Reports

Chemical Data Packages; G.

The chemical data packages shall be submitted to the Contracting Officer for approval within 2 weeks of sample collection for on-site laboratory analysis and 6 weeks of sample collection for off-site laboratory analysis.

Daily Chemical Quality Control Reports(DCQCRs).

Submit DCQCRs coincident with or included in the Daily CQC

reports required in Section 01312A QUALITY CONTROL SYSTEM.

Quality Control Summary Report (QCSRs); G.

For each remedial area, submit QCSRs to the Contracting Officer for approval within 2 weeks following data validation and review.

1.5 DATA QUALITY OBJECTIVES (DQOS)

1.5.1 General

Perform sampling, analysis, and other data collection so that resulting data meet and support remedial action goals, project goals, and data use requirements. The Contractor shall be responsible for developing appropriate DQOs to ensure that this requirement is met.

1.5.2 Definition

DQOs are qualities and quantitative statement, developed using the DQO Process, that clarify study objectives, define the appropriate type of data, and specify tolerable levels of potential decision errors, that will be used as the basis for establishing the quality and quantity of data needed to support decisions, DQOs define the performance criteria that limit the probabilities of making decision errors by considering the purpose of collecting the data; defining the appropriate type of data needed; and specifying tolerable probabilities of making decision errors. The DQO Process as described by EPA QA/G-4 is a seven-step planning approach to develop sampling designs for data collection activities that support decision making. The final outcome of the DQO Process is a design for collecting data (e.g., the number of samples to collect, and when, where, and how to collect samples), together with the limits on the probabilities of making decision errors.

Definitive data are analytical data that are suitable for final decision making. The chemical Data collected on debris, thermally treated soil, excavation limit soil, test pit soil and water sample data shall be definitive data.

Screening data are analytical data that are of sufficient quality to support an intermediate or preliminary decision, but must eventually be supported by definitive data before a project is completed. Screening data such as air sample data can be collected with portable field instruments (such as photoionization detectors, pH meters, test kits etc. This data can be used to identify the presence of a target compound or group of compounds without actually identifying or quantifying the specific compound(s). Screening data can be used to identify media or samples that can be subject to further analysis. During this sampling event, screening data will consist of photoionization detector readings collected during safety and health monitoring as described in Section 01351 SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW).

1.5.2.1 Constituents To Be Sampled

Constituents to be sampled include but are not limited to:

a. Debris samples shall be analyzed in accordance with disposal facility sampling criteria and Table 01450A-1 below. Samples of debris to be disposed off-site as non-hazardous waste shall be analyzed for, at a minimum, PCBs. Debris sample for disposal

off-site shall be analyzed in accordance with disposal facility requirements. The analytical results obtained by the Contractor shall be sufficient to address and and all requirement of the selected disposal facility and to confirm PCBs are not present in debris transported off-site for non-hazardous waste disposal. The sampling objectives to be contained in the Contractor's QAPP shall included specific disposal facility requirements for sampling and analysis and reporting in order for the facility to accept the debris.

b. Soil samples shall be analyzed in accordance with disposal facility sampling criteria and Table 01450A-1 below. The analytical results obtained by the Contractor shall be sufficient to characterize the treated soil to determine whether additional treatment or off-site disposal is necessary, to confirm the final limits of excavation and to define the nature and extent of contamination in the test pit. Sampling objectives to be contained in the Contractor's QAPP shall include compound concentrations as stated in the remediation goals.

1.5.3 Development

DQOs shall clearly define the final uses of data. Contractor-developed DQOs shall be developed in accordance with EM 200-1-2, EM 200-1-3, and EM 200-1-6. Project-specific DQOs shall be included in the QAPP and consist of:

Data Use Background - Project-specific data needs, short-term decisions that will be made during the project planning phase, and long-term decisions that will be made prior to project closeout. A brief summary of types of samples and level of required analyses (screening versus definitive) should be included.

Measurement Quality Objectives for Data - Applicable QA elements to be applied to the project and measurement quality objectives (MQOs) established for key data quality indicator terms, including precision, accuracy, representativeness, completeness, and comparability, in accordance with EM 200-1-6 and EM 200-1-3.

DQOs shall also be specified at a minimum for method sensitivity (detection, quantification, and reporting limits) and Type I and Type II errors. For this project, the Type I error has been established as 0.05; the Type II error will be either 0.05 or 0.10.

1.6 RESPONSIBILITIES AND MINIMUM PERSONNEL QUALIFICATIONS

1.6.1 Contractor Chemical Quality Control Coordinator

The Chemical Quality Control Coordinator shall ensure that all site-specific chemical data-related objectives are attained, including QC responsibility for DQOs, sampling and analysis, data documentation and validation, and discussions of data in final project reports.

The Chemical Quality Control Coordinator need not be present on site during routine sampling, but shall be available for consultation with government and Contractor personnel.

At a minimum, the Chemical Quality Control Coordinator shall have the following qualifications:

The Contractor's Chemical Quality Control Coordinator shall have as a minimum a B.S. in Chemistry, a minimum of three years of experience with Hazardous Toxic and Radioactive Waste (HTRW) Chemical Quality Control including responsibilities for HTRW DQO definitions, HTRW sampling and analysis, HTRW project requirements for data documentation and data validation, and final HTRW project reports.

1.6.2 Project Chemist

The Project Chemist shall ensure that all chemistry-related goals of the site-specific program are attained. The Project Chemist shall be on site periodically during sampling events and shall be available for consultation with government personnel.

At a minimum, the Project Chemist shall have a degree in chemistry or radiochemistry and 3 years' experience related to analytical work for contamination cleanup projects.PART 2 PRODUCTS

2.1 PLASTIC SHEETING

ASTM D 4397.

2.2 FIELD SCREENING TEST

Field test capable of detecting PCBs down to at least 1 ppm, with less than 5 percent false negatives, and providing on site results within 2 hours of taking sample. Field screening may be used as part of Post-Excavation Confirmatory Sampling.

PART 3 EXECUTION

3.1 DATA QUALITY MANAGEMENT AND CONTROL

Chemical data quality management and control shall be accomplished in accordance with the requirements in ER 1110-1-263, EM 200-1-2, EM 200-1-3, and EM 200-1-6.

Chemical data quality control, as part of overall contractor quality control, shall be accomplished with the three-phase process described in the above documents. All chemical data will be checked in accordance with this process.

3.2 CONTRACT CHEMICAL QUALITY CONTROL (CCQC) PLAN

3.2.1 General

The CCQC Plan shall identify personnel, qualifications and procedures for implementing a chemical data quality control system for the Contractor and all subcontractors. The CCQC Plan shall include analytical capabilities and procedures, QAPP responsibility, a corporate verification letter from management committing the assigned personnel to the project, organizational chart including DQO and submittal responsibilities and sequence for chemical data quality verification. Chemical measurements including sampling and/or chemical parameter measurement will not be permitted to begin until after acceptance of the CCQC Plan and production and the Contracting Officer or designated representative approval of a Quality Assurance Project Plan (QAPP).

3.2.2 Contents of CCQC Plan

The CCQC Plan shall include, as a minimum, the following to cover all contract related chemical measurements performed both by the Contractor and all subcontractors.

a. The CCQC Plan shall include names, education, experience qualifications, authorities, and decision-making responsibilities of all chemical quality management and support personnel. The CCQC Plan shall contain a copy of a letter from the project QC manager designating and authorizing a Chemical Data Quality Manager and the Chemical Data Quality Control Organization Staff.

b. The CCQC Plan shall include a diagram, flow chart, or figure clearly depicting the chemical data quality management and support staff and the authority and responsibility of each as pertaining to chemical sampling and analysis, procedures for corrective actions, deliverables and submittals, deviations and changes, chemical quality documentation, data validation, minimum data reporting requirements, and DQOs for chemical parameter measurement by the Contractor and Subcontractors. The contents of this section must be included in the applicable "Project Organization" elements of the Quality Assurance Project Plan (QAPP).

c. The CCQC shall include the Contractor's Chemical Quality Control Coordinator's qualifications.

3.2.3 Acceptance of Plan

Acceptance of the CCQC Plan is required prior to the submission of the Contractor's QAPP and prior to the performance of chemical data related activities. Acceptance is conditional and will be predicated on satisfactory performance during the remedial action. The Contracting Officer or designated representative reserves the right to require the Contractor to make changes in the CCQC Plan (including personnel changes as necessary), to achieve the specified chemical data quality.

3.2.4 Notification of Changes

After acceptance of the CCQC Plan, the Contracting Officer or designated representative must be notified by the Contractor in writing a minimum of five days prior to making any proposed or within two days of making any unavoidable changes. Changes that include personnel changes, authoritative changes, responsibility changes, subcontractor changes pertaining to chemical data quality, etc. are subject to acceptance by the Contracting Officer or designated representative.

3.2.5 CCQC Plan Coordination Meeting

After the Pre-Work Conference, before second Notice to Proceed and start of construction, and prior to acceptance by the Contracting Officer or designated representative of the CCQC Plan, the Contractor shall meet with the Contracting Officer or designated representative and discuss the Contractor's quality control system. The coordination meeting shall be held the same day as any CQC coordination meeting required in Section 01451A CONTRACTOR QUALITY CONTROL, when possible. During the meeting, a mutual understanding of the system details shall be developed, including the forms

for recording the CCQC operations, control activities, testing, deficiency list, and preparatory inspections, administration of the system for both onsite and offsite work, maintenance of a deficiency tracking system, and the interrelationship of Contractor's management and control with the Contracting Officer's quality assurance. Minutes of the meeting shall be prepared by the Contracting Officer or designated representative and signed by both the Contractor and the Contracting Officer or designated representative. The minutes shall become a part of the contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CCQC system or procedures which may require corrective action by the Contractor.

3.3 QUALITY ASSURANCE PROJECT PLAN

3.3.1 General

The Contractor shall develop a Quality Assurance Project Plan (QAPP) in accordance with the requirements of paragraph SUBMITTALS. The QAPP shall describe site-specific project requirements for all field and laboratory activities related to the acquisition of chemical samples, measurements and data and act as a sampling and analysis plan.

3.4 SAMPLING AND MEASUREMENTS

3.4.1 General

Provide 24-hour notice (unless longer is specified) to the Contracting Officer prior to sampling. Sampling and analytical methods and procedures for sampling shall be in accordance with the approved QAPP. Sampling and analyses shall be performed in accordance with the schedule as shown in TABLE 01450A-1 and subsequent paragraphs.

TABLE 01450A-1

SOIL/DEBRIS SAMPLING FREQUENCY REQUIREMENTS(a)

COMPONENT	MATERIAL ORIGINS	FREQUENCY
PCBs, organics, dioxins	LTTD proof of performance test	Every 15 minutes of test
Dioxins	Pre-excavation (in situ) proximate to dioxin detection area - see drawings	4 samples, one at each corner of the 10' x 10' established around existing data point at center
PCBs, organics, and inorganics	Post-excavation debris slated for off-site disposal	per disposal facility requirements
PCBs and IGWSCC (b) listed contaminants	Post-treatment verification sample	1 sample per each day's treated volume
PCBs and IGWSCC listed contaminants	Post-Excavation Soil Confirmation Sampling - Sidewall	1 sample/30 lf and min. of one sample per sidewall
PCBs and IGWSCC listed contaminants	Post-Excavation Soil Confirmation Sampling - Base	1 sample/900 sq ft and min. of one sample per base
PCBs and IGWSCC listed contaminants	Pre- and Post-LTTD treatment pad construction and demolition	5 samples at regular spacing as approved by Contracting Officer
PCBs and IGWSCC listed contaminants	Pre-excavation sampling outside of OU-2 boundary	As determined by Contracting Officer

Notes:

(a) This table may not represent all testing requirements. Refer to specific sections for detailed testing requirements.
(b) The Contractor may propose performance of a statistically based correlation study to see whether PCB analyses can be used as a surrogate for PCBs and all other IGWSCC contaminant analyses. The Contractor shall NOT reduce sampling requirements from those shown on Table 1 until results of the correlations study are approved by the Contracting Officer. Once the study is approved, tests to confirm the correlation study is still accurate shall be performed once every 7 days.

3.4.2 Debris Samples (Table 1)

The Contractor shall collect and analyze samples of all material to be disposed of in a TSCA/RCRA permitted facility in accordance with the

disposal facility requirements. All material to be disposed of as non-hazardous waste shall be sampled and analyzed for PCBs as well as disposal facility requirements. Samples of non-hazardous waste shall be obtained from the roll off containers prior to transportation to the approved offsite disposal facility. The number of debris samples to be collected shall be in accordance with Table 1 above and the disposal facility requirements and shall be the responsibility of the Contractor. Transportation shall be in accordance with 49 CFR 171 - 178.

3.4.3 Composite Testing of Stockpiled Material (Lead Hot Spots Only)

Take composite samples from stockpiled material prior to removing from site for the purposes of determining RCRA metal concentrations only. Disposal of PCB contaminated waste shall be based on in-situ concentrations. Frequency of stockpile composite samples shall be in accordance with disposal facility requirements. To develop a composite sample of the size necessary to run the required tests, take several samples from different areas along the surface and in the center of the stockpile. Combine these samples and thoroughly mix to develop the composite sample.

3.4.4 Post-Excavation Confirmatory Sampling (Table 1)

The Contractor shall collect and analyze soil samples at the limits of excavation to confirm the final limits of excavation in accordance with Section 02310 EXCAVATION and Table 01450A-1. The Contractor shall collect samples from each sidewall and from the bottom of each excavation and test using field screening test. Sample locations shall be biased towards areas most likely to have contamination, based upon field indicators such as field instrument measurements, visual contamination or former drum areas. In the event that remediation goals are exceeded, additional excavation will be performed, as described herein. Samples shall then be collected from the base and sidewalls of the new excavation. These samples will be collected and analyzed in the same manner as described herein. In the event groundwater is encountered, samples will not be collected at the base of the excavation.

The Contractor may propose the use of field screening to the Contracting Officer or designated representative for consideration. The Contractor shall be responsible for the accuracy of any field screening performed. Field screening will not relieve the Contractor of the performance of laboratory analysis for PCBs, SVOC, and lead to confirm that the excavation limits are below the remediation goals.

3.4.5 Thermally-Treated Soil Samples Day Piles (Table 1)

The Contractor shall collect and analyze treated soil samples from the output of the low temperature thermal desorption unit for soil characterization to determine whether additional treatment prior to backfilling, backfilling without additional treatment, or offsite disposal is warranted in accordance with Section 02320 BACKFILL AND COMPACTION and Table 01450A-1. Treatment shall be in compliance with the remediation goals in Section 01110 SUMMARY OF WORK. Backfilling of treated soil shall be in accordance with 40 CFR 268 and the remediation goals in Section 01110 SUMMARY OF WORK.

3.4.6 Backfill Samples

Off-site fill must meet NJDEP requirements in NJAC 7:26E-6.4 with regard to condition and quality, and be analyzed for site contaminants. Specific

sampling shall also include total contaminant levels for SVOCs, including PAHs, VOCs, pesticides, PCBs, and TAL metals. Sampling frequency shall be 1 sample per 5,000 cubic yards. Results of Chemical Sampling shall be comparable to NJAC 7:26D Soil Cleanup Criteria - Residential Direct Contact for acceptance.

3.4.7 Water Sampling

Collect and analyze water removed from excavations and decontamination activities in accordance with federal, state, and local requirements prior to on-site use, on-site discharge of treated water, or off-site disposal. State regulations include NJAC 7:9, NJAC 7:14 f, NJAC 7:26D, and NJAC 7:26E. There will be no on-site surface discharges unless a NJPDES permit equivalency is in place (see Section 02320). The sampling objectives to be contained in the Contractor's QAPP shall include specific compound concentrations acceptable for on-site use, on-site discharge and off-site disposal at a specific facility.

3.4.8 Wipe Samples

40 CFR 761. A 10 cm by 10 cm template gauze pad or glass wool of known size which has been saturated in the laboratory with hexane and stored in sealed glass vials. Wipe immediately after exposing medium to air. Place sample in precleaned glass bottle, cap, label, and place in ice chest until analyzed. Wipe sampling may not be necessary unless metal debris is unearthed during excavation activities and the proposed disposal facility requires such sampling. Wipe sampling may also be used as part of the required decontamination of the LTTD as discussed in Section 02181 REMEDIATION OF CONTAMINATED SOILS BY THERMAL DESORPTION.

3.5 CHEMICAL DATA PACKAGES AND OTHER MEASUREMENT DATA

Produce and provide analytical data packages and other measurement data as an attachment to the Quality Control Summary Reports (QCSRs) and in accordance with EM 200-1-6. Data compilations shall be submitted to the Contracting Officer and to NJDEP, Bureau of Management, and shall contain information to demonstrate that the project's DQOs have been fulfilled. Completed sample reports shall at a minimum show sample identification for the location, date, time, sample method, contamination level, name of individual sampler, identification of laboratory, and quality control procedures.

3.6 SELECTION AND USE OF ANALYTICAL TESTING LABORATORIES

3.6.1 General

Propose on-site and off-site analytical laboratories to be used for sample analyses. Analysis of some samples may be through a USEPA Division of Environmental Science and Assessment (DESA) or USEPA Certified Laboratory Program (CLP) lab. Validate analytical laboratories as described below.

3.6.2 Laboratory Validation and Approval

Validate analytical laboratories in accordance with ER 1110-1-263. NJDEP approval pursuant to NJAC 7:18 also is required. All project laboratories performing definitive chemical analyses must be accredited by the National Environmental Laboratory Accreditation Program (NELAP). The Contractor is responsible for the data quality of all chemical data. Subcontracted laboratories shall be in compliance with all requirements of DOD QSM. In

addition, laboratories that analyze samples for disposal services must meet all of the requirements of the disposal facility, including disposal state certification or approval, as applicable.

Laboratory validation will include:

Submittal of Laboratory Quality Management Manuals by candidate laboratories, for review by the Contractor and USACE;

Successful analysis of performance audit samples submitted by USACE or a vendor approved by USACE, NJDEP, and NELAP;

A successful laboratory inspection by USACE personnel, including acceptable deficiency resolution and validation award by the USACE HTRW Mandatory Center of Expertise Laboratory Validation Committee.

3.6.3 Laboratory Performance

Provide and/or require continued acceptable analytical performance and establish a procedure to address data deficiencies noted by review and/or quality assurance sample results. Provide and implement a mechanism for providing all analytical laboratories with the QAPP, monitoring all laboratories' performance, and performing corrective action procedures. The Contractor is responsible for acquiring analytical services with additional NELAP-accredited (or USACE-certified) or validated laboratories in the event that a project laboratory loses its validation status during the project.

3.7 DAILY CHEMICAL QUALITY CONTROL REPORTS (DCQCRS)

3.7.1 General

DCQCRs shall be provided coincident with or included in the CQC reports required by Section 01110 SUMMARY OF WORK. The DCQCRs shall be generated by on-site personnel responsible for chemical measurements and sample acquisition and provide factual evidence that required chemical data QC activities have been performed.

3.7.2 Contents of DCQCRs

The DCQCRs shall contain at a minimum the following elements:

General identifying information as required of the Contractor for CQC reports;

Weather including temperature, wind speed and direction, barometric reading, significant wind changes, etc.;

Chemical data acquisition performed, including QA/QC samples and measurements, in the field and in the laboratory;

Chemical data QC activities implemented as part of the three-phase control system that were implemented;

Sampling and sample shipments including shipment and delivery problems which may affect project DQO requirements;

Chemical parameter measurement problems which may affect project DQO requirements, including instrument malfunction, performance requirement

failure, etc.;

Sample and measurement problems that may affect project DQO requirements;

Any sampling performed as contingency sampling;

Corrective actions and/or deviations from the approved QAPP, including approvals;

A summary of the feedback procedure for any corrective actions taken;

Confirmation that all deviations or actions jeopardizing project DQOs have been forwarded to project management; and

Signatures of responsible authority and initials of all persons conducting changes/corrective actions.

3.8 QUALITY CONTROL SUMMARY REPORTS (QCSRS)

3.8.1 General

QCSRs shall be provided that include a summary of all chemical sampling and measurement activities. The summary must include an evaluation of the achievement of the chemical DQOs.

3.8.2 Contents of QCSRs

The QCSRs shall contain at a minimum the following elements:

Summary of project scope and description;

Summary of DCQCRs;

Summary of deviations from the design chemical sample and measurement specifications;

Summary of chemical samples and measurements performed as contingent measurements;

Summary discussion of resulting data including achieving minimum data reporting requirements;

Summary of achievement of project DQOs;

Presentation and evaluation of data, including an overall assessment of data quality and usability;

Internal QC data generated during the project, including summaries of QC information from blanks, matrix spikes, surrogates, duplicates, laboratory control samples, batch identifiers, and chemical yields;

A list of affected sample results, including appropriate data qualifier flag, where such results are negatively affected by adverse QC criteria;

A summary of field and laboratory oversight activities;

Conclusions and recommendations; and

Attachments, including final data packages required by Section 01450A CHEMICAL DATA QUALITY CONTROL, and, if applicable, government-provided Chemical Quality Assurance Reports.

3.9 CONTROL OF CHEMICAL DATA QUALITY

3.9.1 General

Contractor chemical data quality control is the means by which the Contractor assures that all chemical parameter measurement data complies with the DQOs, ARARs, and the requirements of the QAPP. The Contractor shall utilize the three phase control system which includes a preparatory, initial and follow-up phase for each definable feature of work. The Contractor's three phase control process shall assure that minimum data reporting requirements are achieved and shall be implemented according to Section 01451A CONTRACTOR QUALITY CONTROL. When possible, the three phase chemical data control process shall be combined with that under Section 01451A CONTRACTOR QUALITY CONTROL.

3.9.2 Three Phase Process

The preparatory phase shall include a review of the specification, QAPP, and all relevant SOPs for the chemical parameter measurement and/or chemical sample acquisition and shipment. It shall include a physical examination of all required forms, materials and equipment to ensure conformance with the QAPP and that all materials are on site. It shall include a demonstration of sampling procedures by the Contractor's field sampling personnel.

The initial phase shall be performed at the initiation of each definable work feature by the CQC Representative to confirm compliance with the QAPP, including: instrument calibration, operation and performance checks, sample acquisition, labeling, and shipment in accordance with required SOPs, sampling equipment decontamination and completion of all required documentation.

The follow-up phase shall require daily inspections to ensure compliance with the QAPP and shall not be complete without the DCQCR.

3.10 DOCUMENTATION

Documentation records are required to provide factual evidence that required chemical data have been produced and that chemical data quality has been achieved.

3.11 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, whether delivered to the Contractor on site or through the Contractor's management level, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been made. No part of the time lost or additional expenses incurred due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

-- End of Section --

SECTION 01451A

CONTRACTOR QUALITY CONTROL

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM D 3740	(2001) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
ASTM E 329	(2002) Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Contractor Quality Control (CQC) Plan;G

SD-06 Reports

Daily CQC Reports

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clause titled "Inspection of Construction." The quality control system shall consist of plans, procedures, and organization necessary to produce an end product which complies with the contract requirements. The system shall cover all construction design and construction operations, both onsite and offsite, and shall be keyed to the proposed construction sequence. The site quality control manager, the site project manager, and the site project superintendent will be held responsible for the quality of work on the job and is subject to removal by the Contracting Officer for

non-compliance with the quality requirements specified in the contract. The site project superintendent in this context shall be the highest level manager responsible for the overall construction activities at the site, including quality and production. The site project superintendent shall maintain a physical presence at the site at all times, except as otherwise acceptable to the Contracting Officer, and shall be responsible for all construction and construction related activities at the site.

3.2 CONTRACTOR QUALITY CONTROL PLAN

The Contractor shall furnish for review the Contractor Quality Control (CQC) Plan proposed to implement the requirements of the Contract Clause titled "Inspection of Construction." The plan shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. The plan shall be submitted for approval 14 days prior to the Pre-Work Conference and no later than 30 days after the Notice to Proceed. The Government will consider an interim plan for the first 30 days of operation. Construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. Work outside of the features of work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of work to be started.

3.2.1 Content of the CQC Plan

The CQC Plan shall include, as a minimum, the following to cover all construction operations, both onsite and offsite, including work by subContractors, fabricators, suppliers, and purchasing agents:

a. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. The staff shall include a CQC System Manager who shall report to the project superintendent.

b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.

c. A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities. Copies of these letters shall also be furnished to the Government.

d. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with Section 01330 SUBMITTAL PROCEDURES.

e. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. (Laboratory facilities approved

by the Contracting Officer shall be used.)

f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.

g. Procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified deficiencies have been corrected.

h. Reporting procedures, including proposed reporting formats.

i. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable feature under a particular section. This list will be agreed upon during the coordination meeting.

3.2.2 Acceptance of Plan

Acceptance of the Contractor's plan is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The Government reserves the right to require the Contractor to make changes in his CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

3.2.3 Notification of Changes

After acceptance of the CQC Plan, the Contractor shall notify the Contracting Officer in writing of any proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

3.3 COORDINATION MEETING

After the Pre-work Conference, before start of construction, Post-award Conference, before start of design or construction, and prior to acceptance by the Contracting Officer of the CQC Plan, the Contractor shall meet with the Contracting Officer or Authorized Representative and discuss the Contractor's quality control system. The CQC Plan shall be submitted for review a minimum of 7 calendar days prior to the Coordination Meeting. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, design activities, control activities, testing, administration of the system for both onsite and offsite work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. Minutes of the meeting shall be prepared by the Government and signed by both the Contractor and the Contracting Officer. The minutes shall become a part of the contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

3.4 QUALITY CONTROL ORGANIZATION

3.4.1 Personnel Requirements

The requirements for the CQC organization are a CQC System Manager, and sufficient number of additional qualified personnel to ensure safety and contract compliance. The Safety and Health Manager shall receive direction and authority from the CQC System Manager and shall serve as a member of the CQC staff. Personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly will also be included as part of the CQC organization. The Contractor's CQC staff shall maintain a presence at the site at all times during progress of the work and have complete authority and responsibility to take any action necessary to ensure contract compliance. The CQC staff shall be subject to acceptance by the Contracting Officer. The Contractor shall provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization. Complete records of all letters, material submittals, shop drawing submittals, schedules and all other project documentation shall be furnished to the CQC organization by the Contractor within 24 hours. The CQC organization shall be responsible to maintain these documents and records at the site at all times, except as otherwise acceptable to the Contracting Officer.

In addition to using the RMS, accidents shall be reported immediately verbally to the Contracting Officer with a written report of the incident with 24 hours of occurrence of the same.

3.4.2 CQC System Manager

The Contractor shall identify as CQC System Manager an individual within the onsite work organization who shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor. The CQC System Manager shall be a graduate engineer, graduate architect, or a graduate of construction management, with a minimum of 10 years construction experience on construction similar to this contract. This CQC System Manager shall be on the site at all times during construction and shall be employed by the prime Contractor. The CQC System Manager shall be assigned no other duties. An alternate for the CQC System Manager shall be identified in the plan to serve in the event of the System Manager's absence. The requirements for the alternate shall be the same as for the designated CQC System Manager.

3.4.3 Additional Requirement

In addition to the above experience and/or education requirements the CQC System Manager shall have completed the course entitled "Construction Quality Management For Contractors".

3.4.4 Organizational Changes

The Contractor shall maintain the CQC staff at full strength at all times. When it is necessary to make changes to the CQC staff, the Contractor shall revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

3.5 SUBMITTALS AND DELIVERABLES

Submittals, if needed, shall be made as specified in Section 01330

SUBMITTAL PROCEDURES. The CQC organization shall be responsible for certifying that all submittals and deliverables are in compliance with the contract requirements.

3.6 CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. At least three phases of control shall be conducted by the CQC System Manager for each definable feature of the construction work as follows:

3.6.1 Preparatory Phase

This phase shall be performed prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase shall include:

a. A review of each paragraph of applicable specifications, reference codes, and standards. A copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field shall be made available by the Contractor at the preparatory inspection. These copies shall be maintained in the field and available for use by Government personnel until final acceptance of the work.

b. A review of the contract drawings.

c. A check to assure that all materials and/or equipment have been tested, submitted, and approved.

d. Review of provisions that have been made to provide required control inspection and testing.

e. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.

f. A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.

g. A review of the appropriate activity hazard analysis to assure safety requirements are met.

h. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.

i. A check to ensure that the portion of the plan for the work to be performed has been accepted by the Contracting Officer.

j. Discussion of the initial control phase.

k. The Government shall be notified at least 48 hours in advance of beginning the preparatory control phase. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the

foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC System Manager and attached to the daily CQC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

3.6.2 Initial Phase

This phase shall be accomplished at the beginning of a definable feature of work. The following shall be accomplished:

a. A check of work to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.

b. Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.

c. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.

d. Resolve all differences.

e. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.

f. The Government shall be notified at least 48 hours in advance of beginning the initial phase. Separate minutes of this phase shall be prepared by the CQC System Manager and attached to the daily CQC report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.

g. The initial phase should be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.

3.6.3 Follow-up Phase

Daily checks shall be performed to assure control activities, including control testing, are providing continued compliance with contract requirements, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Final follow-up checks shall be conducted and all deficiencies corrected prior to the start of additional features of work which may be affected by the deficient work. The Contractor shall not build upon nor conceal non-conforming work.

3.6.4 Additional Preparatory and Initial Phases

Additional preparatory and initial phases shall be conducted on the same definable features of work if: the quality of on-going work is unacceptable; if there are changes in the applicable CQC staff, onsite production supervision or work crew; if work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

3.7 TESTS

3.7.1 Testing Procedure

The Contractor shall perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements. Upon request, the Contractor shall furnish to the Contracting Officer duplicate samples of test specimens for possible testing by the Government. Testing includes operation and/or acceptance tests when specified. The Contractor shall procure the services of a Corps of Engineers approved testing laboratory or establish an approved testing laboratory at the project site. The Contractor shall perform the following activities and record and provide the following data:

a. Verify that testing procedures comply with contract requirements.

b. Verify that facilities and testing equipment are available and comply with testing standards.

c. Check test instrument calibration data against certified standards.

d. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.

e. Results of all tests taken, both passing and failing tests, shall be recorded on the Daily CQC reports for the date taken. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test shall be given. If approved by the Contracting Officer, actual test reports may be submitted later with a reference to the test number and date taken. An information copy of tests performed by an offsite or commercial test facility shall be provided directly to the Contracting Officer. Failure to submit timely test reports as stated may result in nonpayment for related work performed and disapproval of the test facility for this contract.

3.7.2 Testing Laboratories

3.7.2.1 Capability Check

The Government reserves the right to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing procedures and techniques. Laboratories utilized for testing soils, concrete, asphalt, and steel shall meet criteria detailed in ASTM D 3740 and ASTM E 329.

3.7.3 Onsite Laboratory

The Government reserves the right to utilize the Contractor's control testing laboratory and equipment to make assurance tests, and to check the Contractor's testing procedures, techniques, and test results at no additional cost to the Government.

3.8 COMPLETION INSPECTION

3.8.1 Punch-Out Inspection

Near the end of the work, or any increment of the work the CQC Manager shall conduct an inspection of the work. A punch list of items which do not conform to the approved drawings and specifications shall be prepared and included in the CQC documentation, as required by paragraph DOCUMENTATION. The list of deficiencies shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished, the Contractor shall notify the Government that the facility is ready for the Government Pre-Final inspection.

3.8.2 Pre-Final Inspection

The Government will perform the pre-final inspection to verify that the facility is complete and ready to be occupied. A Government Pre-Final Punch List may be developed as a result of this inspection. The Contractor's CQC System Manager shall ensure that all items on this list have been corrected before notifying the Contracting Officer, so that a Final inspection can be scheduled. Any items noted on the Pre-Final inspection shall be corrected in a timely manner. These inspections and any deficiency corrections required by this paragraph shall be accomplished within the time slated for completion of the entire work or any particular increment of the work if the project is divided into increments by separate completion dates.

3.8.3 Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person, and the Contracting Officer's Representative shall be in attendance at the final acceptance inspection. Additional Government personnel may also be in attendance. The final acceptance inspection will be formally scheduled by the Contracting Officer based upon results of the Pre-Final inspection. Notice shall be given to the Contracting Officer at least 14 days prior to the final acceptance inspection and shall include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection.

3.9 DOCUMENTATION

The Contractor shall maintain current records providing factual evidence that all required quality control activities and/or tests have been performed. These records shall include the work of subcontractors and suppliers and shall be on an acceptable form that includes, as a minimum, the following information:

a. Contractor/subcontractor and their area of responsibility.

b. Operating plant/equipment with hours worked, idle, or down for repair.

c. Work performed each day, giving location, description, and by whom.

d. Test and/or control activities performed with results and references to specifications/drawings requirements. The control phase shall be identified (Preparatory, Initial, Follow-up). List of deficiencies noted, along with corrective action.

e. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.

f. Submittals and deliverables reviewed, with contract reference, by whom, and action taken.

g. Offsite surveillance activities, including actions taken.

h. Job safety evaluations stating what was checked, results, and instructions or corrective actions.

i. Instructions given/received and conflicts in plans and/or specifications.

j. Contractor's verification statement.

These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The signed original and one copy of these records in report form shall be furnished to the Contracting Officer daily within 24 hours after the date covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, one report shall be prepared and submitted for every 7 days of no work and on the last day of a no work period. All calendar days shall be accounted for throughout the life of the contract. The first report following a day of no work shall be for that day only. Reports shall be signed and dated by the CQC System Manager. The report from the CQC System Manager shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel.

3.10 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply within 24 hours, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

-- End of Section --

SECTION 01500A

TEMPORARY CONSTRUCTION FACILITIES
04/06

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

1.1.1 Temporary Site Facilities Layout Plan

The Contractor shall prepare a Temporary Site Facilities Layout Plan, a Trailer's Floor Plan, and a Housekeeping Plan and submit them to the Contracting Officer for approval at least 14 calendar days prior to the Pre-Work Conference and no later than 30 days after the Notice to Proceed. The Temporary Site Facilities Layout Plan shall indicate the proposed location and dimensions of any area to be fenced and used by the Contractor, the number of trailers to be used, avenues of ingress/egress to the fenced area and details of the fence installation. Any areas which may have to be graveled to prevent the tracking of mud shall also be identified. The Contractor shall also indicate if the use of a supplemental or other staging area is desired.

The facilities shall consist of the following:

a. Combined USACE and EPA Field Offices (60 feet x 23 feet)

b. Safety, Security, Communications and Contractor's Offices

c. Emergency Medical Facility

d. Personal Hygiene and Decontamination Facilities

e. Equipment Storage and Lunch Areas

f. On-Site Contaminated Equipment Areas

g. Parking Area

h. Outdoor Lighting within the designated support zone to ensure adequate visibility after dark

1.1.2 Identification of Employees

The Contractor shall be responsible for furnishing to each employee, and for requiring each employee engaged on the work to display, identification as approved and directed by the Contracting Officer. Prescribed identification shall immediately be delivered to the Contracting Officer for cancellation upon release of any employee. When required, the Contractor shall obtain and provide fingerprints of persons employed on the project. Contractor and subcontractor personnel shall wear identifying markings on hard hats clearly identifying the company for whom the employee works.

1.1.3 Employee Parking

Contractor employees shall park privately owned vehicles in an area

designated by the Contracting Officer. This area will be within reasonable walking distance of the construction site. Contractor employee parking shall not interfere with existing and established parking requirements of the military installation.

1.1.4 Structures

All structures other than storage sheds installed under this section shall be provided with, as a minimum, the following services:

a. Lighting: Electric light, non-glare type luminaries to provide a minimum illumination level of 50 foot-candles at desk height level.

b. Heating and Cooling: Adequate equipment to maintain an ambient air temperature of 70 degrees Fahrenheit (F) +/- 3 degrees.

c. Potable bottled water.

d. Fire Extinguisher: Non-toxic, dry chemical, fire extinguisher meeting Underwriters Laboratories, Inc., approval for Class A, Class B, and Class C fires with a minimum rating of 2A:10B.

e. Janitorial services on a daily basis including, but not limited to, sweeping, emptying waste baskets, servicing of toilets, weekly mopping of floors, sanitizing toilet seats, providing towels and soap to the lavatories and monthly washing of floors and windows (inside and out). The time of the cleaning shall be coordinated with the Contracting Officer.

f. Sufficient supply of electrical outlets.

All structures and facilities shall be designed for year-round operation.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Temporary Site Facilities Layout Plan;G, A/E

Trailer's Floor Plan; G, A/E

Electrical Supply and Lighting Shop Drawings; G, A/E

Water Supply, Contaminated Washwater Handling and Sanitary Facilities; G, A/E

Housekeeping Plan; G, A/E

Decontamination Pad Layout; G, A/E

1.3 AVAILABILITY AND USE OF UTILITY SERVICES

1.3.1 Payment for Utility Services

The Contractor shall be responsible for providing all utilities to the site necessary to do the work. The Contractor shall be responsible for the operation of all systems, including maintenance, to assure that necessary services are provided. The Contractor shall be responsible for all telephone charges. All electric power shall be purchased directly by the Contractor. The Contractor is required to coordinate, maintain, and pay for all required utilities available to the Contractor from existing outlets and supplies, as specified in the contract. Unless otherwise provided in the contract, the amount of each utility service consumed shall be charged to or paid for by the Contractor. The Contractor shall submit for review Electrical Supply and Lighting Shop Drawings and Water Supply, Contaminated Washwater Handling and Sanitary Facilities source points, layout locations, fixtures, materials and methods of disposal.

Existing utility lines are available for the Contractor to tie into. Any extension, connection or alteration needed for temporary power will be performed by the Contractor at the Contractor's expense and coordinated with Borough of South Plainfield and the property owners. All modifications to existing utilities for temporary construction facilities and existing temporary utilities will be removed at the completion of the project by the Contractor.

1.3.2 Electrical

The Contractor shall make the necessary arrangements with the appropriate power authority for service and shall be responsible for installation, maintenance and shutoff costs for onsite power connections. All power service lines shall be removed prior to project closeout.

1.3.3 Water and Sanitation

The Contractor is responsible for providing or arranging for a potable water supply for any water to be used on the site during the duration of the Contract. The Contractor shall provide and maintain within the construction area minimum field-type sanitary facilities approved by the Contracting Officer. Government toilet facilities will not be available to Contractor's personnel.

1.3.4 Telephone

The Contractor shall make arrangements and pay all costs for telephone facilities desired. The Contractor shall make the necessary arrangements with the local Telephone Company to install equipment and services to meet site requirements and shall be responsible for all related installation service and shutoff costs.

1.4 BULLETIN BOARD, PROJECT SIGN, AND PROJECT SAFETY SIGN

1.4.1 Bulletin Board

Immediately upon beginning of work, the Contractor shall provide a weatherproof glass-covered bulletin board not less than 36 by 48 inches in size for displaying the Equal Employment Opportunity poster, a copy of the wage decision contained in the contract, Wage Rate Information poster, and other information approved by the Contracting Officer. The bulletin board

shall be located at the project site in a conspicuous place easily accessible to all employees, as approved by the Contracting Officer. Legible copies of the aforementioned data shall be displayed until work is completed. Upon completion of work the bulletin board shall be removed by and remain the property of the Contractor.

1.5 PROTECTION AND MAINTENANCE OF TRAFFIC

During construction the Contractor shall provide access and temporary relocated roads as necessary to maintain traffic. The Contractor shall maintain and protect traffic on all affected roads during the construction period except as otherwise specifically directed by the Contracting Officer. Measures for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment and the work, and the erection and maintenance of adequate warning, danger, and direction signs, shall be as required by the State and local authorities having jurisdiction. The traveling public shall be protected from damage to person and property. The Contractor's traffic on roads selected for hauling material to and from the site shall interfere as little as possible with public traffic. The Contractor shall investigate the adequacy of existing roads and the allowable load limit on these roads. The Contractor shall be responsible for the repair of any damage to roads caused by construction operations. The Contractor shall allow site tenants access to their buildings at all times; any interruptions to such access shall be coordinated through the Contracting Officer.

The Contractor shall note that the Borough of South Plainfield may extend New Market Avenue through the western portion of the project site; this roadway extension is not currently shown on the project drawings and is currently in the planning stages. The Contractor shall maintain traffic access on town and county roads adjacent to and within the project site throughout the length of the contract in accordance with Borough of Sough Plainfield requirements. Portions of the remediation may require coordination with the Borough of South Plainfield for maintenance and/or relocation of the Borough of South Plainfield road located within the project site if that road is constructed. The contractor shall maintain access for all Borough of South Plainfield roads.

1.5.1 Haul Roads

The Contractor shall, at its own expense and only if necessary, construct access and haul roads necessary for proper prosecution of the work under this contract. Haul roads shall be constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided. The Contractor shall provide necessary lighting, signs, barricades, and distinctive markings for the safe movement of traffic. The method of dust control, although optional, shall be adequate to ensure safe operation at all times. Location, grade, width, and alignment of construction and hauling roads shall be subject to approval by the Contracting Officer. Lighting shall be adequate to assure full and clear visibility for full width of haul road and work areas during any night work operations. Upon completion of the work, haul roads designated by the Contracting Officer shall be removed.

1.5.2 Barricades

The Contractor shall erect and maintain temporary barricades to limit public access to hazardous areas. Such barricades shall be required

whenever safe public access to paved areas such as roads, parking areas or sidewalks is prevented by construction activities or as otherwise necessary to ensure the safety of both pedestrian and vehicular traffic. Barricades shall be securely placed, clearly visible with adequate illumination to provide sufficient visual warning of the hazard during both day and night.

1.6 CONTRACTOR'S TEMPORARY FACILITIES

1.6.1 Administrative Field Offices

The Contractor shall provide and maintain administrative field office facilities within the construction area at the designated site. Government office and warehouse facilities will not be available to the Contractor's personnel.

1.6.2 Storage Area

The Contractor shall construct a temporary 6 foot high chain link fence around trailers and materials in addition to the temporary fence constructed. Fence posts may be driven, in lieu of concrete bases, where soil conditions permit. Trailers, materials, or equipment shall not be placed or stored outside the fenced area unless such trailers, materials, or equipment are assigned a separate and distinct storage area by the Contracting Officer away from the vicinity of the construction site but within the military boundaries. Trailers, equipment, or materials shall not be open to public view with the exception of those items which are in support of ongoing work on any given day. Materials shall not be stockpiled outside the fence in preparation for the next day's work. Mobile equipment, such as tractors, wheeled lifting equipment, cranes, trucks, and like equipment, shall be parked within the fenced area at the end of each work day.

1.6.3 Supplemental Storage Area

Upon Contractor's request, the Contracting Officer will designate another or supplemental area for the Contractor's use and storage of trailers, equipment, and materials. This area may not be in close proximity of the construction site but shall be within the military boundaries. Fencing of materials or equipment will not be required at this site; however, the Contractor shall be responsible for cleanliness and orderliness of the area used and for the security of any material or equipment stored in this area. Utilities will not be provided to this area by the Government.

1.6.4 Appearance of Trailers

Trailers utilized by the Contractor for administrative or material storage purposes shall present a clean and neat exterior appearance and shall be in a state of good repair. Trailers which, in the opinion of the Contracting Officer, require exterior painting or maintenance will not be allowed on the Site.

1.6.5 Maintenance of Storage Area

Fencing shall be kept in a state of good repair and proper alignment. Should the Contractor elect to traverse, with construction equipment or other vehicles, grassed or unpaved areas which are not established roadways, such areas shall be covered with a layer of gravel as necessary to prevent rutting and the tracking of mud onto paved or established roadways; gravel gradation shall be at the Contractor's discretion. Grass

located within the boundaries of the construction site shall be mowed for the duration of the project. Grass and vegetation along fences, buildings, under trailers, and in areas not accessible to mowers shall be edged or trimmed neatly.

1.6.6 New Building

New buildings shall not be constructed on the Site.

1.6.7 Security Provisions

Adequate outside security lighting shall be provided at the Contractor's temporary facilities. The Contractor shall be responsible for the security of its own equipment; in addition, the Contractor shall notify the appropriate law enforcement agency requesting periodic security checks of the temporary project field office.

1.7 GOVERNMENT'S FIELD OFFICES

1.7.1 General

All structures other than storage sheds installed under this section shall be provided with, as a minimum, the following services:

1.7.2 U.S. Environmental Protection Agency (USEPA) and U.S. Army Corps Of Engineers (USACE) Field Offices

The Contractor shall furnish at the job site, prior to the start of work, a 60 feet by 23 feet field office for the use by USEPA and USACE representatives for the duration of the contract. Field office and contents will remain the property of the Contractor. The exact location will be designated by the Contracting Officer. The approximate location of field offices is shown on Drawing G-03. The building shall be well constructed and properly ventilated and shall contain a closet, door and windows which shall be capable of being locked, four (4) chairs, one (1) plan rack and drawing board, two (2) desks, and one (1) two-drawer filing cabinet. Two of the chairs for use by government personnel should have ergonomic features: adjustable lumbar support, pneumatic seat height adjustment, adjustable arms, contoured front edge. The Contractor shall also provide adequate electric lighting, minimum 6 duplex electrical receptacles, drinking water, heat, plumbed toilet facilities, air conditioning, janitorial services and maintenance services. In addition the Contractor shall make arrangements and pay connection fees and monthly usage for electrical and 4-line telephone service, one dedicated to fax, one dedicated to modem and two dedicated to voice. The Contractor shall arrange to transfer EPA's existing on-site telephone service, including voicemail, to the new trailer. The actual phone number will be provided in the field. The field office shall be removed from the project site when and as directed by the Contracting Officer.

The Contractor shall also supply one 30 foot flagpole with accessories to be posted as directed outside the Contracting Officer's trailer and one American flag, approximately three feet by four feet.

Contractor shall supply toner cartridges for printers and copiers; paper, paper towels, toilet paper, cups and miscellaneous supplies for the trailers for the duration of the contract. In addition to the above, the Contractor shall provide the following computers and office equipment, and other items for use by the USACE during the contract.

1.7.2.1 USACE Personal Computers

The Contractor shall provide three (3) personal computers with the following hardware:

Desktop:

a. Dell mini tower with Intel Pentium 4 Processor 3GHz or equivalent;
b. High speed cache memory controller with at least 512 KB L2 PIPELINE BURST CACHE;
c. Operating Systems: Microsoft Window XP professional, SP2 with media;
d. File System: NTFS file system for all operating systems;
e. (1) 3.5 inch 1.44 MB diskette drives with hard drive controller;
f. Hard drive controller with 60 GB hard drive with access time of 9 ms;
g. Front and rear USB Ports;
h. 3 COM 10/100MB Base-T Ethernet Network Interface Card (NIC);
i. Microsoft TCP/IP;
j. Sound Card WI SPEAKERS;
k. Enhanced 101 keyboard;
l. 6 outlet surge protector;
m. Memory: 1.0GB DDR;
n. 17" LCD Flat Panel SVGA high resolution COLOR monitor or better with refresh rate 75Hz or better and 8Mb Color Graphics;
o. 3 Button ergonomic mouse and mouse pad;
p. 16X DVD +/-RW and 16X DVD w/SonicRecordNow! Deluxe or equivalent;
q. Diamond Viper V770D Video Card or better;
r. Modem V.90 0r V.92 56KB Baud (U.S. Robotics or equal);
s. DSL or Cable Modem;
t. Audio: Integrated Audio;
u. PS2 Serial Port enable;
v. Microsoft Office 2000 Professional Suite;
w. Lotus Smart Suite and Adobe Acrobat Reader;
x. Signature card reader: Gradkell Computer Inc. Part# 050-0300 Description: Argus 300 (card reader and PCI adapter package) for CEFMS: phone# (256)-722-8585 X37 (Mr. Wayne Wright)
y. Norton Antivirus Software 2002 and periodic updates license during the duration of the contract.
z. Limited Warranty Plus NBD On-Site Service for the duration of the contract
aa. Gold Technical Support, Optiplex for the duration of the contract.

Notebook:

a. Latitude D610: Intel Pentium M Processor 730 (1.60 GHz) 14.1 XGA, Intel GMA 900 or equivalent;
b. Operating Systems: Microsoft Windows XP professional, SP2, with media;
c. Memory: 1GB DDR2 533Mhz SDRAM, 2 DIMMS;
d. Hard Drives: 60GB;
e. Floppy Drive;
f. Mouse: Dell USB 2 button optical mouse;
g. Modem V.90 0r V.92 56KB Baud (U.S. Robotics or equal)
h. DSL or Cable Modem
i. 65 W A/C /Adapter;
j. 8X DVD+/- RW w/Sonic Digital Media and Cyberlink PowerDVD;
k. Nylon Classic Carrying Case;

l. Microsoft Office 2000 Professional Suite;
m. Lotus Smart Suite and Adobe Acrobat Reader;
n. Signature card reader: Gradkell Computer Inc. Part# 050-0300 Description: Argus 300 (card reader and PCI adapter package) for CEFMS: phone# (256)-722-8585 X37 (Mr. Wayne Wright)
o. Norton Antivirus Software 2002 and periodic updates license during the duration of the contract.
p. 6 outlet surge protector;
q. Limited Warranty Plus NBD On-Site Service for the duration of the contract
r. NTFS File system for all Operating system

The Contractor shall also make arrangements and pay all connection costs and fees for either Business DSL or Cable Modem Service to the field office for data line connection. These services shall be arranged for the entire contract duration. The field office shall be removed from the project site when and as directed by the Contracting Officer.

DSL or Cable Modem Service: The Contractor shall provide Business DSL or Cable modem service with all required equipment (modems, filters, etc.). DSL service shall be 1.5Mbps downstream/384Kbps upstream. Service shall utilize a Static IP address for the connection. Contractor shall pay all costs associated with this service including any ISP fees. DSL or Cable Modem service shall be a 'dedicated' service, and this line shall not be shared with any other Users (i.e., Contractors Field Office Trailer and USACE Field Office Trailer shall not utilize the same DSL or Cable Modem line via an Ethernet Switch/Hub).

The contractor will agree to accept responsibilities and comply with procedures indicated below in connection with the furnishing of Contractor-owned computers for use by Government personnel in accordance with contract requirements.

a. The computers must be dedicated exclusively for Government use. Contractor will not use any computer it supplies which is designated for use by the Government. Contractor will assure that the Central Processing Unit (CPU) is electronically isolated from the contractor's and not inter-connected via Local Area Network (LAN).

b. Normal access to the computer shall be restricted to Corps of Engineers personnel. Contractor shall set up computers in a secure area and give the keys to the Government. Contractors must immediately notify Government personnel when emergency access to the computer location was exercised by non-Government individuals, and what the circumstances were.

c. If the CPU hard drive fails, the Government will furnish an equivalent hard drive to the owner of the computer, and the old hard-drive will be returned to the Government. Contractor shall not remove any hard drive nor proceed with any repair of the computer unless an authorized Government employee witnesses and approves of the repair.

d. At the time of return of the computer, the Contractor will allow the Government to first remove all information from the hard-drive.

e. The Contractor agrees to provide a written certification signed by an authorized officer of the company agreeing to the above policy.

1.7.2.2 USEPA Personal Computers

The Contractor shall provide one (1) personal computer with the following:

Desktop:

a. Dell mini tower with Intel Pentium 4 Processor 3GHz or equivalent;
b. High speed cache memory controller with at least 512 KB L2 PIPELINE BURST CACHE;
c. Operating Systems: Microsoft Window XP professional, SP2 with media;
d. File System: NTFS file system for all operating systems;
e. (1) 3.5 inch 1.44 MB diskette drives with hard drive controller;
f. Hard drive controller with 60 GB hard drive with access time of 9 ms;
g. Front and rear USB Ports;
h. 3 COM 10/100MB Base-T Ethernet Network Interface Card (NIC);
i. Microsoft TCP/IP;
j. Sound Card WI SPEAKERS;
k. Enhanced 101 keyboard;
l. 6 outlet surge protector;
m. Memory: 1.0GB DDR;
n. 17" LCD Flat Panel SVGA high resolution COLOR monitor or better with refresh rate 75Hz or better and 8Mb Color Graphics;
o. 3 Button ergonomic mouse and mouse pad;
p. 16X DVD +/-RW and 16X DVD w/SonicRecordNow! Deluxe or equivalent;
q. Diamond Viper V770D Video Card or better;
r. Modem V.90 0r V.92 56KB Baud (U.S. Robotics or equal);
s. DSL or Cable Modem;
t. Audio: Integrated Audio;
u. PS2 Serial Port enable;
v. Microsoft Office 2000 Professional Suite;
w. Word Perfect Office X3;
x. Lotus Smart Suite and Adobe Acrobat Reader;
y. Signature card reader: Gradkell Computer Inc. Part# 050-0300 Description: Argus 300 (card reader and PCI adapter package) for CEFMS: phone# (256)-722-8585 X37 (Mr. Wayne Wright)
z. Norton Antivirus Software 2002 and periodic updates license during the duration of the contract.
aa. Limited Warranty Plus NBD On-Site Service for the duration of the contract
bb. Gold Technical Support, Optiplex for the duration of the contract.

Notebook:

a. Latitude D610: Intel Pentium M Processor 730 (1.60 GHz) 14.1 XGA, Intel GMA 900 or equivalent;
b. Operating Systems: Microsoft Windows XP professional, SP2, with media;
c. Memory: 1GB DDR2 533Mhz SDRAM, 2 DIMMS;
d. Hard Drives: 60GB;
e. Floppy Drive;
f. Mouse: Dell USB 2 button optical mouse;
g. Modem V.90 0r V.92 56KB Baud (U.S. Robotics or equal)
h. DSL or Cable Modem
i. 65 W A/C /Adapter;
j. 8X DVD+/- RW w/Sonic Digital Media and Cyberlink PowerDVD;
k. Nylon Classic Carrying Case;

l. Microsoft Office 2000 Professional Suite;
m. Word Perfect Office X3;
n. Lotus Smart Suite and Adobe Acrobat Reader;
o. Signature card reader: Gradkell Computer Inc. Part# 050-0300 Description: Argus 300 (card reader and PCI adapter package) for CEFMS: phone# (256)-722-8585 X37 (Mr. Wayne Wright);
p. Norton Antivirus Software 2002 and periodic updates license during the duration of the contract;
q. 6 outlet surge protector;
r. Limited Warranty Plus NBD On-Site Service for the duration of the contract;
s. NTFS File system for all Operating system

1.7.2.3 Printers

The Contractor shall provide two Hewlett Packard LaserJet 4100 Series Printer or equivalent LaserJet Printer.

1.7.2.4 Copier

The Contractor shall provide a plain-paper, desktop, autofeed, reduction, enlargement, sorting, stapling, monochrome, minimum 10 copies per minute. The copier shall be equipped with individual trays for 8.5" x 11", 8.5" x 14", and 11" x 17" paper. The supply of paper and toner shall be replenished by the Contractor as required by the Contracting Officer. The Contractor shall also provide copier service as required.

1.7.2.5 Fax Machine

The Contractor shall provide a monochrome fax machine with a minimum feed of three (3) - 8 ½" x 11" pages per minute. The fax machine shall be capable of receiving on plain white bond paper.

1.7.2.6 Telephone

The Contractor shall provide four 2-line phones with conferencing and speaker phone capabilities compatible with phone service. Telephones shall be installed on each of the two desks, the secretarial desk and the conference table.

1.7.2.7 Telephone Answering Machine

The Contractor shall provide a standard telephone answering machine, compatible with standard telephone line and local service, with remote message retrieval ability.

1.7.2.8 First Aid Kit

The Contractor shall provide a first aid kit. As a minimum the kit shall include antiseptic kit, eyewash solution, bandages, insect sting medication, aspirin and acetaminophen, and coldpack.

1.7.2.9 Fire Extinguisher

The Contractor shall provide a fire extinguisher of the type as required for a trailer the same size as office.

1.7.2.10 Digital Camera

The Contractor shall provide a digital camera meeting the same requirements as specified in 01380 Project Photographs for the duration of the contract.

1.7.2.11 Partitioned Meeting Area

The Contractor shall provide one partitioned meeting area having a minimum of 160 square feet of floor area. The meeting area shall contain the following equipment:

a. One office conference table, 3-1/2 feet by 10 feet with laminated top.

b. Eight straight backed office chairs.

c. Bulletin board, 4 feet by 6 feet.

d. Waste basket.

e. Vertical filing plan rack for twelve sets of 30 inch by 48 inch plans.

1.7.2.12 Secretarial Area

The Contractor shall provide an open secretarial area having a minimum of 150 square feet of floor area. This area shall contain, as a minimum, the following equipment:

a. One L-type secretarial desk and chair, meeting ER 386-1-96 ergonomic standards including adjustable chairs, adjustable keyboard shelf, wrist pads, etc.

b. One typewriter, IBM electric or equivalent.

c. One drafting table and chair.

d. One electronic calculator with answer registered to at least eleven figures.

e. One telephone with extension and intercom connection to each of the two office areas described, with current local telephone directory.

f. One office table, 3 feet by 8 feet with laminated top.

g. Two, four drawer, lockable filing cabinets, legal size.

h. Three-tier book case, 3 feet wide by 3 feet high by 12 inches deep.

i. Waste basket.

j. One paper towel dispenser with towels.

k. One paper cup dispenser with cups.

l. One water cooler/heater.

m. One refrigerator.

n. Toilet facilities as specified.

The Contractor shall provide qualified full time secretarial services on a daily basis (minimum 40 hrs per week) in the Contracting Officer's trailer for the use of the Contracting Officer.

1.8 SAFETY, SECURITY, COMMUNICATIONS, AND CONTRACTOR'S OFFICES

1.8.1 Safety, Security, and Communications Offices

A partitioned area shall be provided for safety, security and communications personnel, having a minimum floor space of 196 square feet. This area shall contain, as a minimum, the following equipment:

a. Two office desks with lockable drawers, and three office chairs.

b. Two telephones having a circuit separate from all others on site.

c. One office table measuring 3 feet by 8 feet.

d. Two lockable, four drawer filing cabinets.

e. A minimum of two windows providing visibility of the site.

f. One base and six portable two-way radios. All sets shall be intrinsically safe, capable of transmitting to and receiving from any other set, at any point within the Federal Creosote Site. All portable units shall be rechargeable, and shall be capable of operating continuously without recharge for three hours.

1.8.2 Contractor's Offices

A partitioned office shall be provided for the use of the Contractor, having a minimum of 96 square feet of floor area. The office shall contain at least two operable windows with screens and shall be supplied with the following equipment:

a. One office desk with lockable drawers and chair.

b. One telephone with extension and intercom connection to the secretarial station.

c. One fire resistant, 4 drawer, lockable filing cabinet.

d. One electronic calculator with answer registered to at least eleven figures.

1.9 EMERGENCY MEDICAL FACILITY

The emergency medical facility shall consist of an area having a minimum floor space of 96 square feet. The facilities shall contain, as a minimum, the following equipment and supplies:

a. Two stretchers.

b. One set of crutches.

c. Two self contained air respiratory devices.

d. One cot.

e. Three blankets.

f. First aid medications appropriate for the initial treatment of burns, abrasions, fractures, and ingestion or dermal contact with on-site hazardous waste.

1.10 PERSONNEL HYGIENE AND DECONTAMINATION FACILITIES (SHOWER TRAILER)

1.10.1 Personnel Hygiene

The Contractor shall provide the equipment and fixtures specified below in order to provide for the proper hygiene and decontamination of all on-site personnel.

a. Shower facilities with at least one shower for on-site personnel.

b. Locker room for on-site personnel.

c. An area where all personnel safety equipment and protective clothing can be stored.

d. Toilet facilities with at least one toilet and sink for every six on-site personnel.

e. Sanitary waste holding tank and piping from Personnel Hygiene Facility and site offices including excavation and backfill.

All equipment and fixtures shall be properly supplied and maintained in a clean condition. Drain water from all washing facilities shall be conveyed to an on-site holding tank for subsequent disposal at an approved sewage receiving facility.

1.10.2 Decontamination Pad

The Contractor shall provide a decontamination pad as shown on the contract drawings and as described in Section 01351 SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW). The Contractor shall submit a Decontamination Pad Layout with all provisions to the Contracting Officer for approval at least 14 calendar days prior to the Pre-Work Conference and no later than 30 days after the Notice to Proceed.

1.11 EQUIPMENT STORAGE/LUNCH AREA

The Contractor shall provide a separate uncontaminated lunch area of sufficient size for all Contractor personnel on site. Such an area may be combined with Equipment Storage in one facility, as specified below. The Contractor shall furnish all the furniture required in the lunch room to accommodate the maximum number of Contractor personnel working on any single day.

A separate or partitioned equipment storage area shall also be provided and shall have access through a lockable door. The area for equipment storage shall not be less than 96 square feet. Sufficient shelving shall be installed for storage and inventory control of small items. In addition, this area shall contain one four drawer lockable filing cabinet and a

wooden lockable locker sufficient for the storage of surveying and testing instruments.

1.12 ON-SITE CONTAMINATED EQUIPMENT AREA

The Contractor shall provide an on-site contaminated equipment storage area at the entrance point to each Contamination Reduction Zone facility area (lined with polyethylene).

Each contaminated equipment storage area shall include but not necessarily be limited to the following:

a. Boot rack for washing and storage.

b. Drums for the disposal of protective clothing.

c. A 10 foot by 10 foot temporary structure for the storage of contaminated materials with equipment used daily.

d. Emergency eyewash and shower and fire extinguisher.

1.13 PARKING

At least five parking spaces shall be reserved for the use of the Contracting Officer and his/her representatives, including visitors.

1.14 Outdoor Lighting

The Contractor shall determine the extent of existing outdoor lighting within the Support Zone. If there is no lighting or existing lighting does not meet the requirements below, the Contractor shall furnish and install a complete operating outdoor lighting system throughout the designated Support Zone.

The lighting system shall include wood-pole-mounted 400-watt high pressure sodium luminaries supported on 4-foot steel arms with 30-foot mounting height above grade. Provide one pole at or adjacent to the Support Zone. The system shall include all equipment and materials (such as transformers and circuit protective devices) and conductors.

1.15 CLEANUP

Construction debris, waste materials, packaging material and the like shall be removed from the work site daily. Any dirt or mud which is tracked onto paved or surfaced roadways shall be cleaned away. Materials resulting from demolition activities which are salvageable shall be stored within the fenced area described above or at the supplemental storage area. Stored material not in trailers, whether new or salvaged, shall be neatly stacked when stored.

1.16 RESTORATION OF STORAGE AREA

Upon completion of the project and after removal of trailers, materials, and equipment from within the fenced area, the fence shall be removed and will become the property of the Contractor. Areas used by the Contractor for the storage of equipment or material, or other use, shall be restored to the original or better condition. Gravel used to traverse grassed areas shall be removed and the area restored to its original condition, including top soil and seeding as necessary.

1.17 ELECTRICAL WORK

All work shall be performed by experienced electricians under the general supervision and control of a State, City, or County licensed electrician with verifiable credentials. Proof of licensing of supervising electricians shall be provided to the COR. The licensed electrical contractor shall verify in writing to the COR that unlicensed electrical technician(s) is/are familiar with the applicable code requirements and have received safety and health training on the hazards involved.

-- End of Section --

SECTION 01525

SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS
04/06

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A10.32	Personal Fall Protection - Safety Requirements for Construction and Demolition Operations
ANSI Z359.1	(1992; R 1999) Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 241	(2004) Safeguarding Construction,Alteration, and Demolition Operations
NFPA 51B	(2003) Fire Prevention During Welding, Cutting, and Other Hot Work
NFPA 70	(2005; TIA 2005) National Electrical Code
NFPA 70E	(2004) Electrical Safety in the Workplace

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2003) Safety and Health Requirements Manual (Contractors shall always check for the most current updates to the EM at http://www.usace.army.mil/publications/eng-manuals/)
ER 385-1-92	(2003) Safety - Safety and Occupational Health Document Requirements for Hazardous, Toxic, and Radioactive Waste (HTRW) and Ordnance and Explosive Waste (OEW) Activities

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1910.146	Permit-required Confined Spaces
29 CFR 1915	Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment

29 CFR 1926	Safety and Health Regulations for Construction
29 CFR 1926.500	Fall Protection

1.2 DESCRIPTION OF WORK

This section provides requirements for implementing practices and procedures for working safely and in compliance with OSHA and USACE regulations while performing remedial activities at the Cornell-Dubilier Electronics Site - OU-2. This section primarily addresses the safety and health occupational requirements for the site. For Safety and Health emergency response requirements, refer to Section 01351 SAFETY, HEALTH, AND EMERGENCY RESPONSE.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

Government acceptance is required for submittals with a "G, A" designation.

SD-01 Preconstruction Submittals

Accident Prevention Plan(APP); G

Activity Hazard Analysis (AHA); G

Submit all training curriculums for Contractor-provided site-specific training courses.

SD-06 Test Reports

Monthly Exposure Reports; G

Submit monthly exposure reports, including exposure monitoring and sampling results.

Accident Reports; G

Regulatory Citations and Violations;

SD-07 Work Certificates

Confined Space Entry Permit

Hot Work Permit

1.4 DEFINITIONS

a. High Visibility Accident. Any mishap which may generate publicity and/or high visibility.

b. Medical Treatment. Treatment administered by a physician or by registered professional personnel under the standing orders of a

physician. Medical treatment does not include first aid treatment even though provided by a physician or registered personnel.

c. Recordable Injuries or Illnesses. Any work-related injury or illness that results in:

(1) Death, regardless of the time between the injury and death, or the length of the illness;

(2) Days away from work (any time lost after day of injury/illness onset);

(3) Restricted work;

(4) Transfer to another job;

(5) Medical treatment beyond first aid;

(6) Loss of consciousness; or

(7) A significant injury or illness diagnosed by a physician or other licensed health care professional, even if it did not result in (1) through (6) above.

d. "USACE" property and equipment specified in USACE EM 385-1-1 should be interpreted as Government property and equipment.

1.5 REGULATORY REQUIREMENTS

In addition to the detailed requirements included in the provisions of this contract, work performed under this contract shall comply with EM 385-1-1, and applicable federal, state, and local safety and occupational health laws and regulations. This includes, but is not limited to, Occupational Safety and Health Administration (OSHA) Standards, 29 CFR 1910, especially Section 120, "Hazardous Waste Site Operations and Emergency Response" and 29 CFR 1926, especially Section 65, "Hazardous Waste Site Operations and Emergency Response" and EPA (SOSG). Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements shall apply.

The Contractor is required to submit any Regulatory Citations and Violations to the Contracting Officer.

1.6 SITE QUALIFICATIONS, DUTIES AND MEETINGS

1.6.1 Personnel Qualifications

1.6.1.1 Site Safety and Health Officer (SSHO)

Site Safety and Health Officer (SSHO) shall be provided at the work site at all times to perform safety and occupational health management, surveillance, inspections, and safety enforcement for the Contractor. The SSHO shall meet the requirements of Section 01351 SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW).

1.6.1.2 Certified Industrial Hygienist (CIH)

Provide a Certified Industrial Hygienist (CIH) at the work site to perform safety and occupational health management, surveillance, inspections, and safety enforcement for the Contractor. The CIH shall be the safety and occupational health "competent person" as defined by USACE EM 385-1-1. The CIH shall have no other duties than safety and occupational health management, inspections, and/or industrial hygiene.

1.6.1.3 Competent Person for Confined Space Entry

Provide a competent person for confined space meeting the definition and requirements of EM 385-1-1.

1.6.2 Personnel Duties

1.6.2.1 Site Safety and Health Officer (SSHO)/Superintendent

The SSHO shall complete the personnel duties described in Section 01351 SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW).

1.6.2.2 Certified Industrial Hygienist (CIH)

a. Perform safety and occupational health management, surveillance, inspections, and safety enforcement for the project.

b. Perform as the safety and occupational health "competent person" as defined by USACE EM 385-1-1.

c. Be on-site at least weekly and/or whenever work or testing is being performed.

d. Conduct and document safety inspections.

e. Shall have no other duties other than safety and occupational health management, inspections, and enforcement on this contract.

If the CIH is appointed as the SSHO all duties of that position shall also be performed.

1.6.3 Meetings

1.6.3.1 Preconstruction Conference

a. Contractor representatives who have a responsibility or significant role in accident prevention on the project shall attend the preconstruction conference. This includes the project superintendent, site safety and health officer, quality control supervisor, or any other assigned safety and health professionals who participated in the development of the APP (including the Activity Hazard Analyses (AHAs) and special plans, program and procedures associated with it).

b. The Contractor shall discuss the details of the submitted APP to include incorporated plans, programs, procedures and a listing of anticipated AHAs that will be developed and implemented during the performance of the contract. This list of proposed AHAs will be reviewed at the conference and an agreement will be reached between the Contractor and the Contracting Officer's representative as to which phases will require an analysis. In addition, a schedule for the

preparation, submittal, review, and acceptance of AHAs shall be established to preclude project delays.

c. Deficiencies in the submitted APP will be brought to the attention of the Contractor at the preconstruction conference, and the Contractor shall revise the plan to correct deficiencies and re-submit it for acceptance. Work shall not begin until there is an accepted APP.

d. The functions of a Preconstruction conference may take place at the Post-Award Kickoff meeting for Design Build Contracts.

1.6.3.2 Safety Meetings

Safety meetings shall be conducted and documented as required by EM 385-1-1. Minutes showing contract title, signatures of attendees and a list of topics discussed shall be attached to the Contractors' daily quality control report.

1.7 ACCIDENT PREVENTION PLAN (APP)

An Accident Prevention Plan shall be developed in accordance with EM 385-1-1 and ER 385-1-92 Appendix C and submitted for government approval prior to work initiation and no later than 30 days after the NTP. The plan shall be job-specific and include any unusual or unique aspects of the project. Daily safety and health inspections shall be conducted to ensure that the work is being performed in accordance with the SSHP and all USACE and OSHA regulations. If there is an accident/incident, the Contracting Officer shall be notified immediately and an Accident Report filed within two days.

1.7.1 EM 385-1-1 Contents

In addition to the requirements outlined in Appendix A of USACE EM 385-1-1, the following is required:

a. Confined Space Entry Plan. Develop a confined space entry plan in accordance with USACE EM 385-1-1, applicable OSHA standards 29 CFR 1910, 29 CFR 1915, and 29 CFR 1926, and any other federal, state and local regulatory requirements identified in this contract. Identify the qualified person's name and qualifications, training, and experience. Delineate the qualified person's authority to direct work stoppage in the event of hazardous conditions. Include procedure for rescue by contractor personnel and the coordination with emergency responders. (If there is no confined space work, include a statement that no confined space work exists and none will be created.)

b. Fall Protection and Prevention (FP&P) Plan. The plan shall be site specific and address all fall hazards in the work place and during different phases of construction. It shall address how to protect and prevent workers from falling to lower levels when they are exposed to fall hazards above 1.8 m (6 feet). A qualified person for fall protection shall prepare and sign the plan. The plan shall include fall protection and prevention systems, equipment and methods employed for every phase of work, responsibilities, assisted rescue, self-rescue and evacuation procedures, training requirements, and monitoring methods. Fall Protection and Prevention Plan shall be revised every six months, reflecting any changes during the course of construction due to changes in personnel, equipment, systems or work habits. The accepted Fall Protection and Prevention Plan shall be kept and maintained at the job site for the duration of the project. The Fall

Protection and Prevention Plan shall be included in the Accident Prevention Plan (APP).

c. Site Safety and Health Plan. The safety and health aspects prepared in accordance with Section 01351 SAFETY HEALTH AND EMERGENCY RESPONSE (HTRW).

d. PCB Plan. The safety and health aspects of Polychlorinated Biphenyls work, prepared in accordance with Section 01351 SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW).

e. Excavation Plan. The safety and health aspects prepared in accordance with Section 02310 EXCAVATION.

1.8 ACTIVITY HAZARD ANALYSIS (AHA)

AHAs for each major phase of work, shall be submitted and updated during the project. The AHAs format shall be in accordance with Figure 1-1 of EM 385-1-1. The analysis shall define the activities to be performed for a major phase of work, identify the sequence of work, the specific hazards anticipated, and the control measures to be implemented to eliminate or reduce each hazard to an acceptable level. Work shall not proceed on that phase until the AHA has been accepted and a preparatory meeting has been conducted by the Contractor to discuss its contents with everyone engaged in the activities, including the onsite Government representatives. The AHAs shall be continuously reviewed and, when appropriate, modified to address changing site conditions or operations.

1.9 SAFETY AND HEALTH PROGRAM

Contractor shall be aware that the current site owner may be operating at the site during demolition activities. Coordination with the site owner's health and safety program may be required.

1.10 DISPLAY OF SAFETY INFORMATION

Within one calendar day after commencement of work, erect a safety bulletin board at the job site. The safety bulletin board shall include information and be maintained as required by EM 385-1-1, section 01.A.06. Additional items required to be posted include:

a. Confined space entry permit.

b. Hot work permit.

1.11 SITE SAFETY REFERENCE MATERIALS

Maintain safety-related references applicable to the project, including those listed in the article "References." Maintain applicable equipment manufacturer's manuals.

1.12 EMERGENCY MEDICAL TREATMENT

Contractors will arrange for their own emergency medical treatment. Government has no responsibility to provide emergency medical treatment.

1.13 REPORTS

1.13.1 Accident Reports

a. For recordable injuries and illnesses, and property damage accidents resulting in at least $2,000 in damages, the Prime Contractor shall conduct an accident investigation to establish the root cause(s) of the accident, complete the USACE Accident Report Form 3394 and provide the report to the Contracting Officer within 2 calendar day(s) of the accident. The Contracting Officer will provide copies of any required or special forms.

1.13.2 Monthly Exposure Reports

Monthly exposure reporting to the Contracting Officer is required to be attached to the monthly billing request. This report is a compilation of employee-hours worked each month for all site workers, both prime and subcontractor. The Contracting Officer will provide copies of any special forms.

1.14 HOT WORK

Hot work shall be in accordance with Section 01351 SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW). CONTRACTORS ARE REQUIRED TO MEET ALL CRITERIA BEFORE A PERMIT IS ISSUED. The Contractor will provide at least two (2) twenty (20) pound 4A:20 BC rated extinguishers for normal "Hot Work". All extinguishers shall be current inspection tagged, approved safety pin and tamper resistant seal. It is also mandatory to have a designated FIRE WATCH for any "Hot Work" done at this activity. The Fire Watch shall be trained in accordance with NFPA 51B and remain on-site for a minimum of 30 minutes after completion of the task or as specified on the hot work permit.

When starting work in the facility, Contractors shall require their personnel to familiarize themselves with the location of the nearest fire alarm boxes and place in memory the emergency Fire Division phone number. ANY FIRE, NO MATTER HOW SMALL, SHALL BE REPORTED TO THE RESPONSIBLE FIRE DIVISION IMMEDIATELY.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 CONSTRUCTION AND/OR OTHER WORK

The Contractor shall comply with USACE EM 385-1-1, NFPA 241, the APP, the AHA, Federal and/or State OSHA regulations, and other related submittals and activity fire and safety regulations. The most stringent standard shall prevail.

3.1.1 Hazardous Material Use

Each hazardous material must receive approval prior to being brought onto the job site or prior to any other use in connection with this contract. Allow a minimum of 10 working days for processing of the request for use of a hazardous material.

3.1.2 Hazardous Material Exclusions

Notwithstanding any other hazardous material used in this contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation (with the exception of radioactive material and devices used in accordance with USACE EM 385-1-1 such as nuclear density meters for compaction testing and laboratory equipment with radioactive sources) as well as materials which contain asbestos, mercury or polychlorinated biphenyls, di-isocynates, lead-based paint are prohibited. The Contracting Officer, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials.

3.1.3 Unforeseen Hazardous Material

The design has identified materials such as contaminated soils and buried debris. If additional material, not indicated, that may be hazardous to human health upon disturbance during construction operations is encountered, stop that portion of work and notify the Contracting Officer immediately. Within 14 calendar days the Government will determine if the material is hazardous. If material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without change. If material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification pursuant to "FAR 52.243-4, Changes" and "FAR 52.236-2, Differing Site Conditions."

3.2 PRE-OUTAGE COORDINATION MEETING

Contractors are required to apply for utility outages at least 15 days in advance. As a minimum, the request should include the location of the outage, utilities being affected, duration of outage and any necessary sketches. Special requirements for electrical outage requests are contained elsewhere in this specification section. Once approved, and prior to beginning work on the utility system requiring shut down, the Contractor shall attend a pre-outage coordination meeting with the Contracting Officer and the Public Utilities representative(s) to review the scope of work and the lock-out/tag-out procedures for worker protection. No work will be performed on energized electrical circuits unless proof is provided that no other means exist.

3.3 FALL HAZARD PROTECTION AND PREVENTION PROGRAM

The Contractor shall establish a fall protection and prevention program, for the protection of all employees exposed to fall hazards. The program shall include company policy, identify responsibilities, education and training requirements, fall hazard identification, prevention and control measures, inspection, storage, care and maintenance of fall protection equipment and rescue and evacuation procedures.

3.3.1 Training

The Contractor shall institute a fall protection training program. As part of the Fall Hazard Protection and Prevention Program, the Contractor shall provide training for each employee who might be exposed to fall hazards. A competent person for fall protection shall provide the training. Training requirements shall be in accordance with USACE EM 385-1-1, section 21.A.16.

3.3.2 Fall Protection Equipment and Systems

The Contractor shall enforce use of the fall protection equipment and systems designated for each specific work activity in the Fall Protection and Prevention Plan and/or AHA at all times when an employee is exposed to a fall hazard. Employees shall be protected from fall hazards as specified in EM 385-1-1, section 21. In addition to the required fall protection systems, safety skiff, personal floatation devices, life rings etc., are required when working above or next to water in accordance with USACE EM 385-1-1, paragraphs 05.H. and 05.I. Personal fall arrest systems are required when working from an articulating or extendible boom, swing stages, or suspended platform. In addition, personal fall arrest systems are required when operating other equipment such as scissor lifts if the work platform is capable of being positioned outside the wheelbase. The need for tying-off in such equipment is to prevent ejection of the employee from the equipment during raising, lowering, or travel. Fall protection must comply with 29 CFR 1926.500, Subpart M, USACE EM 385-1-1 and ANSI A10.32.

3.3.2.1 Personal Fall Arrest Equipment

Personal fall arrest equipment, systems, subsystems, and components shall meet ANSI Z359.1. Only a full-body harness with a shock-absorbing lanyard or self-retracting lanyard is an acceptable personal fall arrest body support device. Body belts may only be used as a positioning device system (for uses such as steel reinforcing assembly and in addition to an approved fall arrest system). Harnesses shall have a fall arrest attachment affixed to the body support (usually a Dorsal D-ring) and specifically designated for attachment to the rest of the system. Only locking snap hooks and carabiners shall be used. Webbing, straps, and ropes shall be made of synthetic fiber. The maximum free fall distance when using fall arrest equipment shall not exceed 1.8 m (6 feet). The total fall distance and any swinging of the worker (pendulum-like motion) that can occur during a fall shall always be taken into consideration when attaching a person to a fall arrest system.

3.3.3 Existing Anchorage

Existing anchorages, to be used for attachment of personal fall arrest equipment, shall be certified (or re-certified) by a qualified person for fall protection in accordance with ANSI Z359.1. Exiting horizontal lifeline anchorages shall be certified (or re-certified) by a registered professional engineer with experience in designing horizontal lifeline systems.

3.3.4 Horizontal Lifelines

Horizontal lifelines shall be designed, installed, certified and used under the supervision of a qualified person for fall protection as part of a complete fall arrest system which maintains a safety factor of 2 (29 CFR 1926.500).

3.3.5 Guardrails and Safety Nets

Guardrails and safety nets shall be designed, installed and used in accordance with EM 385-1-1 and 29 CFR 1926 Subpart M.

3.3.6 Rescue and Evacuation Procedures

When personal fall arrest systems are used, the contractor must ensure that the mishap victim can self-rescue or can be rescued promptly should a fall occur. A Rescue and Evacuation Plan shall be prepared by the contractor and include a detailed discussion of the following: methods of rescue; methods of self-rescue; equipment used; training requirement; specialized training for the rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility. The Rescue and Evacuation Plan shall be included in the Activity Hazard Analysis (AHA) for the phase of work, in the Fall Protection and Prevention (FP&P) Plan, and the Accident Prevention Plan (APP).

3.4 SCAFFOLDING

Employees shall be provided with a safe means of access to the work area on the scaffold. Climbing of any scaffold braces or supports not specifically designed for access is prohibited. Access to scaffold platforms greater than 6 m (20 feet) in height shall be accessed by use of a scaffold stair system. Vertical ladders commonly provided by scaffold system manufacturers shall not be used for accessing scaffold platforms greater than 6 m (20 feet) in height. The use of an adequate gate is required. Contractor shall ensure that employees are qualified to perform scaffold erection and dismantling. Do not use scaffold without the capability of supporting at least four times the maximum intended load or without appropriate fall protection as delineated in the accepted fall protection and prevention plan. Stationary scaffolds must be attached to structural building components to safeguard against tipping forward or backward. Special care shall be given to ensure scaffold systems are not overloaded. Side brackets used to extend scaffold platforms on self-supported scaffold systems for the storage of material is prohibited. The first tie-in shall be at the height equal to 4 times the width of the smallest dimension of the scaffold base. Work platforms shall be placed on mud sills. Scaffold or work platform erectors shall have fall protection during the erection and dismantling of scaffolding or work platforms that are more than six feet. Delineate fall protection requirements when working above six feet or above dangerous operations in the Fall Protection and Prevention (FP&P) Plan and Activity Hazard Analysis (AHA) for the phase of work.

3.4.1 Stilts

The use of stilts for gaining additional height in construction, renovation, repair or maintenance work is prohibited.

3.5 EQUIPMENT

3.5.1 Material Handling Equipment

a. Material handling equipment such as forklifts shall not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions.

b. The use of hooks on equipment for lifting of material must be in accordance with manufacturer's printed instructions.

c. Operators of forklifts or power industrial trucks shall be licensed in accordance with OSHA.

3.6 EXCAVATIONS

Excavation work will be performed in accordance with the 29 CFR 1926 and the Contractor's approved Excavation Plan as described in Section 02310 EXCAVATION.

3.6.1 Utility Locations

Prior to digging, the appropriate digging permit must be obtained. All underground utilities in the work area must be positively identified by a private utility locating service in addition to any station locating service and coordinated with the station utility department. Any markings made during the utility investigation must be maintained throughout the contract.

3.6.2 Utility Location Verification

The Contractor must physically verify underground utility locations by hand digging using wood or fiberglass handled tools when any adjacent construction work is expected to come within three feet of the underground system. Digging within 0.061 m (2 feet) of a known utility must not be performed by means of mechanical equipment; hand digging shall be used. If construction is parallel to an existing utility the utility shall be exposed by hand digging every 30.5 m (100 feet) if parallel within 1.5 m (5 feet) of the excavation.

3.6.3 Shoring Systems

Trench and shoring systems must be identified in the accepted safety plan and AHA. Manufacture tabulated data and specifications or registered engineer tabulated data for shoring or benching systems shall be readily available on-site for review. Job-made shoring or shielding shall have the registered professional engineer stamp, specifications, and tabulated data. Extreme care must be used when excavating near direct burial electric underground cables.

3.6.4 Trenching Machinery

Trenching machines with digging chain drives shall be operated only when the spotters/laborers are in plain view of the operator. Operator and spotters/laborers shall be provided training on the hazards of the digging chain drives with emphasis on the distance that needs to be maintained when the digging chain is operating. Documentation of the training shall be kept on file at the project site.

3.7 UTILITIES WITHIN CONCRETE SLABS

Utilities located within concrete slabs or pier structures, bridges, and the like, are extremely difficult to identify due to the reinforcing steel used in the construction of these structures. Whenever contract work involves concrete chipping, saw cutting, or core drilling, the existing utility location must be coordinated with station utility departments in addition to a private locating service. Outages to isolate utility systems shall be used in circumstances where utilities are unable to be positively identified. The use of historical drawings does not alleviate the contractor from meeting this requirement.

3.8 ELECTRICAL

Electrical installations and appliances used by the Contractor shall meet applicable National Electrical Code specifications. All electrical devices utilized by the Contractor or subcontractors on this project shall be grounded and utilize ground fault circuit interrupter (GFCI) protected outlets.

3.8.1 Conduct of Electrical Work

Underground electrical spaces must be certified safe for entry before entering to conduct work. Cables that will be cut must be positively identified and de-energized prior to performing each cut. Positive cable identification must be made prior to submitting any outage request for electrical systems. Arrangements are to be coordinated with the Contracting Officer and Station Utilities for identification. The Contracting Officer will not accept an outage request until the Contractor satisfactorily documents that the circuits have been clearly identified. Perform all high voltage cable cutting remotely using hydraulic cutting tool. When racking in or live switching of circuit breakers, no additional person other than the switch operator will be allowed in the space during the actual operation. Plan so that work near energized parts is minimized to the fullest extent possible. Use of electrical outages clear of any energized electrical sources is the preferred method. When working in energized substations, only qualified electrical workers shall be permitted to enter. When work requires Contractor to work near energized circuits as defined by the NFPA 70, high voltage personnel must use personal protective equipment that includes, as a minimum, electrical hard hat, safety shoes, insulating gloves with leather protective sleeves, fire retarding shirts, coveralls, face shields, and safety glasses. In addition, provide electrical arc flash protection for personnel as required by NFPA 70E. Insulating blankets, hearing protection, and switching suits may also be required, depending on the specific job and as delineated in the Contractor's AHA.

3.8.2 Portable Extension Cords

Portable extension cords shall be sized in accordance with manufacturer ratings for the tool to be powered and protected from damage. All damaged extension cords shall be immediately removed from service. Portable extension cords shall meet the requirements of NFPA 70.

3.9 WORK IN CONFINED SPACES

The Contractor shall comply with the requirements in Section 06.I of USACE EM 385-1-1, OSHA 29 CFR 1910.146 and OSHA 29 CFR 1926.21(b)(6). Any potential for a hazard in the confined space requires a permit system to be used.

a. Entry Procedures. Prohibit entry into a confined space by personnel for any purpose, including hot work, until the qualified person has conducted appropriate tests to ensure the confined or enclosed space is safe for the work intended and that all potential hazards are controlled or eliminated and documented. (See Section 06.I.06 of USACE EM 385-1-1 for entry procedures.) All hazards pertaining to the space shall be reviewed with each employee during review of the AHA.

b. Forced air ventilation is required for all confined space entry

operations and the minimum air exchange requirements must be maintained to ensure exposure to any hazardous atmosphere is kept below its' action level.

c. Sewer wet wells require continuous atmosphere monitoring with audible alarm for toxic gas detection.

-- End of Section --

SECTION 01540

SECURITY
08/06

PART 1 GENERAL

1.1 SCOPE OF WORK

The Contractor shall furnish all labor, materials, equipment and incidentals necessary to provide security for the duration of the project. Work shall be performed as specified herein and identified in the Contractor's approved Security Plan.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2003) Safety and Health Requirements Manual (Contractors shall always check for the most current updates to the EM at http://www.usace.army.mil/publications/eng-manuals/)

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910	Occupational Safety and Health Standards

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Security Plan;G, A/E

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 GENERAL

The Contractor shall be responsible for maintaining site security and furnishing all labor, materials, equipment and incidentals to provide security for the project site, for all non-working hours, seven (7) days a week, including holidays, throughout the duration of the contract, including mobilization and demobilization.

The Contractor shall establish a security program prior to any field construction activities.

The Contractor shall be both responsible and liable for site security. The Contractor's security firm shall be identified in the Security Plan and approved by the Contracting Officer.

Maintain/erect warning and security signs around the site perimeter.

The Contractor shall provide control of all persons and vehicles entering and leaving the work sites.

The Contractor shall provide security identification specific to the site, for all on-site personnel and Contractor personnel authorized to enter the site.

3.2 SECURITY PLAN

The Contractor shall prepare and submit a Security Plan to the Contracting Officer for approval at least 14 calendar days prior to Pre-Work Conference and no later than 30 days after the Notice to Proceed.

3.2.1 Security Plan Objectives

The principal objectives of the Security Plan are:

a. Deter, restrict, and/or control financial losses to the Government and the Contractor. This includes prevention or detection of the following: theft, vandalism, sabotage, and arson.

b. To keep unauthorized people from entering the site and receiving any injuries.

c. To keep unauthorized people from entering the site and removing equipment, or hazardous substances.

d. To keep unauthorized people from taking action on the site that might exacerbate the environmental problem or interfere with its remediation.

3.2.2 Security Plan Contents

The plan shall address as a minimum, the following:

a. Number of security personnel and security organization.

b. Duties of each position in the organization.

c. Name and experience of the proposed security firm.

d. Names and qualification of security personnel.

e. Description of proposed daily security operations.

f. Method and frequency for conducting security checks.

g. Description of how a breach of security will be handled. A breach of security shall include, but not be limited to, unauthorized

personnel located on the site, unauthorized personnel attempting to gain access to the site, broken fences and unlocked gates, and unauthorized personnel in the work zones.

h. Location of security check points.

i. Number of hand-held two-way radios with channel frequencies and appropriate license. Provide the Contracting Officer with one of these radios.

j. List of personnel to be contacted in case of emergency.

k. Safety training of security personnel.

3.3 SECURITY PERSONNEL

Conditions of employment for all site Security Officers shall include the following:

a. Detailed pre-employment history establishing moral character and dependability.

b. Applicant shall submit to a current physical examination provided by the Contractor's designated physician. This physical shall include drug testing, a list of all medicines applicant is currently taking, and any medication applicant has taken during the last year. Physical shall also include vital statistics, and tests to ensure the capabilities of applicant functioning on site without health restrictions.

c. Investigation which clears applicant of felony convictions.

d. Failure to maintain attentive and alert status in performance of duties, which includes sleeping while on duty and intoxication on the job, are completely unacceptable and shall be grounds for not employing or for terminating employment.

e. Site Security Officers shall have 40 hours of Health and Safety Training in an approved course meeting the requirements of Section 126(b) (2) of 29 CFR 1910.

f. Site Security Personnel shall have detailed knowledge of EM 385-1-1 and the Security Plan and have no less than eight hours of training in the Site Safety and Emergency Response Plan and their individual duties in evacuation of injured and disabled employees from both contaminated and non-contaminated areas of this project.

g. In general, Site Security Officers shall be physically fit, literate in the English language, experienced, stable, reliable, and possess the physical and psychological skills that are necessary to control unauthorized persons on the site.

h. All security personnel shall comply with the requirements for personnel including training and medical monitoring.

3.4 SITE SECURITY REQUIREMENTS

Site security requirements shall include the following:

a. A Security Officer shall be on the site all non-working hours per day including holidays, weekends or days where no activities are in progress for the entire duration of the construction activities. A Security Officer shall patrol the Support, Contamination Reduction, and Exclusion Zones.

b. A Security Center Office shall be established at the Support Zone. A small, temporary trailer or office building shall be equipped with a telephone, two-way radios, lights, and a desk. The office shall be established for the purposes of record-keeping and administering security.

c. Maintain a log of all security incidents. This log shall be furnished to the Contracting Officer upon request.

d. A chain link fence has been installed around the perimeter of construction areas as shown on the Contract Drawings.

e. Gates in all fences shall remain closed, except when in use by authorized personnel.

f. The Contracting Officer will have the right of approval and rejection of any and all security-assigned personnel of the Contractor for the duration of the contract. If approved by the Contracting Officer, the Contractor may designate a member of their staff as Site Security Officer, during normal working hours. The Contracting Officer may revoke this approval without cause or justification, at which time the Contractor shall immediately provide independent site security.

g. Security Officers shall be responsible for touring the perimeter of the site on an hourly basis when there is no construction activity being performed, during the entire contract duration. The exact timing of the hourly tours shall be varied as to not allow a definable routine to develop. There shall be a log of the tours, with observed conditions recorded and maintained, at the Security Center Office.

h. Security Officers shall be responsible for controlling conditions to ensure against any unauthorized entry. Should persons attempt unauthorized entry, the Security Officer shall be responsible for warning the individuals. If unauthorized persons ignore the warnings, the security officer shall notify appropriate law enforcement personnel to remove the persons.

i. The Contracting Officer will maintain a list of personnel approved to be present on the job site. A copy of the list will be provided to the Contractor. Only authorized personnel may make changes to the job site list.

j. A copy of the emergency checklist, providing all emergency numbers for hospitals, ambulance service, law enforcement, paramedics, and fire departments, shall be posted in all on-site offices and at the designated project information board.

k. Temporary lighting shall be provided to ensure effective surveillance at night at active construction areas.

3.5 PERSONNEL IDENTIFICATION

Provide security identification, specific to the site for all on-site personnel and Contractor personnel entering the site, showing:

a. Name of individual
b. Occupation
c. Name of employer

The Contractor shall be responsible for and guarantee that security identification shall be worn by each individual and visible at all times while the individual is on site. Badge assignments shall be based on criteria included in the Contractor's Site Safety and Health Plan (SSHP) or as established by the Contracting Officer.

Improperly identified personnel shall be excluded from the site.

3.6 ENTRANCE CONTROL

Provide control of all persons, equipment, and vehicles entering and leaving the site. Entrance control shall include the following:

a. Require each person to display proper identification.

b. Require all personnel and visitors having access to the site to sign in and sign out, and maintain a log of all site access.

c. Vehicular access beyond the fence gate to the Support Zone shall be restricted to authorized vehicles only. Use of site-designated parking areas shall be restricted to vehicles of Government, Contractor, subcontractors, on duty service personnel assigned to the site and visitors approved by the Contracting Officer.

d. The Contractor shall accommodate and coordinate visits with local law enforcement agencies, including police, sheriff, highway patrol, emergency medical care units, fire department, and utility emergency teams.

e. Site visitors shall not be permitted to enter active work areas unless approved by the Contracting Officer.

f. The Contractor shall maintain a list of persons authorized for site entry and submit a copy of the list to the Contracting Officer on request.

3.7 BONDING AND UNIFORM REQUIREMENTS

The security firm shall be bonded.

Each Security Officer shall wear a uniform that displays the name of the security firm. These uniforms are to be complete, including hat, shirt, trousers, belt, and boots. Uniforms shall be pressed and boots shined. The officer shall present a neat, professional appearance.

During patrols, security personnel shall be in proper safety attire.

3.8 VISITOR CONTROL

All visitors must be approved by the Contracting Officer.

All visitors shall be required to read and sign an approved synopsis of the SSHP prior to entering the site.

Visitors shall be escorted at all times, except USEPA employees and representatives, USACE employees and representatives, and NJDEP employees and representatives who may proceed without escorts.

3.9 TRAFFIC CONTROL

In addition to the traffic control requirements specified in Section 02350 WASTE TRANSPORTATION AND DISPOSAL, the Contractor shall be responsible for controlling vehicular traffic on and through the site in order to assure safe and efficient operations.

Parking areas shall be regulated to insure free entry and egress to and from the site.

3.10 NON-PERMITTED PROCEDURES

Security personnel shall, in general, monitor, authorize entry, and inspect all areas of the project on a continuing basis and shall not serve any production work effort of the project.

In scheduling the site security personnel, the same employee shall not be scheduled for consecutive shifts.

The Security Officer shall remain on the site until the next shift replacement arrives. The site shall not be left unsecured.

-- End of Section --

SECTION 01550

SURVEYING

PART 1 GENERAL

1.1 SCOPE OF WORK

Contractor shall develop and make detail surveys and measurements required for soil remediation activities, including preconstruction, postconstruction, and topographic surveys.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-04 Drawings

Initial Site Drawings; G, A/E

Record Topographic Maps; G, A/E

Record topographic maps after site restoration and paving.

Record Survey; G, A/E

SD-07 Certificates

Surveyor Elevation/Location Certifications; G, A/E

SD-11 Closeout Submittals

Surveyor Field Notes Data; G, A/E

Submit original and one copy of Surveyor's field book, calculations, and graphical layouts to the Contracting Officer upon completion of each phase of survey work. Include an accurate log of control and survey work as it progresses, all field notes, notations, and descriptions used and compiled during the field survey.

Surveyor in Place Volume Calculations For Aggregate Base And Backfill Material; G, A/E

1.3 QUALITY CONTROL

Maintain responsibility for all surveying performed at the site. The surveyor shall be a qualified and Registered Land Surveyor in the State of New Jersey. The surveyor shall have a minimum of two years of experience in construction surveying and layout and maintenance of record construction drawings, with a record of performing horizontal and vertical control requirements as stated in this section.

Submit Surveyor Elevation/Location Certifications verifying accuracy of survey work to the Contracting Officer. Certificates signed by the Surveyor stating that elevations and locations of site construction features are in conformance, or nonconformance, with Contract Documents shall be submitted to the Contracting Officer at the completion of each phase of work requiring services of the Surveyor.

The Contractor shall submit certification from their surveyor for each proposed payment volume as it applies to the Bid Schedule.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 GENERAL

Contractor shall provide all slope stakes, batter boards, and all other working lines, elevations and cut sheets.

Provide all material required for benchmarks, control points, batter boards, grade stakes, and structure and elevation stakes.

Contractor shall be solely responsible for all locations, dimensions and levels.

Safeguard all points, stakes, grade marks, monuments and benchmarks made or established for the work. Re-establish same if disturbed.

Keep transit and leveling instruments on the site at all times and a skilled instrument person available whenever necessary for layout of the work.

Keep professional, accurate, well organized, and legible notes of all measurements and calculations.

3.2 INSPECTION

3.2.1 Existing Conditions

Verify and define the existing conditions and location of structures within the construction limits.

3.2.2 Work Control Points

Establish the exact location of all work site reference and survey control points, which will be provided during the Pre-Work Conference, prior to the start of work. All work shall be referenced to and established from the control points (shown on the Contract Drawings), re-established where necessary, and maintained throughout the life of the contract. Horizontal and vertical control points shall be referenced to the permanent control monuments to an accuracy of one part in ten thousand. Any errors or apparent discrepancies found on the Contract Drawings or Specifications shall be called to the Contracting Officer's attention for interpretation prior to proceeding with the work. The Contracting Officer must be promptly notified of any discrepancies discovered. Provide control points at each location of work using closed traverse and leveling loops.

Establish, place, and replace, as required, such additional stakes, markers, and other controls as may be necessary for control, intermediate checks, and guidance of construction operations.

3.3 RECORD INFORMATION

Record information shall meet the requirements in 01700 REMEDIAL PACKAGE CLOSEOUT AND RECORD DOCUMENTS.

3.3.1 Initial Site Drawings

Prepare topographic maps of site properties, property boundary surveys, impacted streets, and utilities. Submit each property map to the Contracting Officer 30 days prior to the start of work on that particular property.

3.3.2 Record Topographic Maps

Prepare and submit within 30 days of completion of site restoration, record topographic maps showing site restoration and paving.

3.3.3 Record Survey

The final record survey shall include all final excavation and backfill limits associated with remedial excavation and/or utility location.

3.4 SAMPLE LOCATIONS

Prepare and submit within 10 days of completion, maps showing all sample locations documentation.

3.5 COORDINATE LIST

Compute the coordinates of each surveyed point on the New Jersey State Plane Coordinate System using the 1983 North American Datum.

3.6 SURVEY NOTES

Record all fieldwork in a clear, legible, and complete manner. The Field Notes shall contain a complete description of the nature and location of the new and existing points. Include a sketch of the point locations and monument witness points in the Field Notes. Submit original and one copy of the Surveyor Field Notes Data to the Contracting Officer upon completion of each phase of survey work. The Surveyor in Place Volume Calculations For Aggregate Base And Backfill Material shall also be submitted.

3.7 SURVEY REQUIREMENTS

Establish lines and levels and locate and layout, utilizing total station instrumentation or similar means, all site features to be constructed or executed. These include, but are not limited to support zone facilities layout and areas of contamination. Re-verify layouts and volumes periodically during construction by the same means.

3.8 UTILITIES

Scan the construction site with electromagnetic or sonic equipment and mark the surface of the ground where existing underground utilities are discovered. Verify the locations, and if possible, elevations of existing

piping, utilities, and record on the Record Drawings all type of underground obstructions not indicated or specified to be removed but indicated or discovered during scanning in locations to be traversed.

-- End of Section --

SECTION 01580

PROJECT IDENTIFICATION
04/06

PART 1 GENERAL

1.1 SCOPE OF WORK

Furnish all labor, equipment, materials and incidentals required to provide and erect an U.S. Army Corps of Engineers (USACE) project site sign, safety signs and a bulletin board.

The Contractor shall provide and erect a USACE project site sign and safety signs meeting the requirements of this section, at a location to be determined by the Contracting Officer. The sign requirements are shown at the end of this section. Wording to be included on the sign shall be provided by the Contracting Officer after award.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN WOOD-PRESERVERS' ASSOCIATION (AWPA)

AWPA C1	(2003) All Timber Products - Preservative Treatment by Pressure Processes
AWPA C2	(2003) Lumber, Timber, Bridge Ties and Mine Ties - Preservative Treatment by Pressure Processes

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Preliminary one line drawings of project rendering; G, A/E

Preliminary drawing indicating layout and text content; G, A/E

SD-04 Samples

Final rendering sample; G

Final framed rendering and copies; G

1.4 QUALITY ASSURANCE

1.4.1 Rendering

Provide the project rendering in accordance with the following drawing stages as required in paragraph entitled "Submittals". The following submittal data is required to properly identify the appropriate view and approve the final rendering of the facility. The final painted rendering will be used to produce the image for the signboard and framed photographic copies provided to the Contracting Officer.

1.4.1.1 Preliminary One Line Drawings

Provide three different views of the facility in a preliminary single line drawing (black and white) format. These three views will represent the best angles at which to view the proposed facility showing the best design features and the three dimensional character of the facility.

1.4.1.2 Preliminary Drawing

Provide a preliminary drawing indicating layout and text content of the project sign.

1.4.1.3 Final Rendering Sample

Provide a photographic copy (8 x 10 inches, minimum size) of final rendering for approval of color, landscaping, and foreground/background development prior to final submittal.

1.4.1.4 Final Framed Rendering and Copies

Provide final full color rendering of the proposed facility as specified.

1.5 PROJECT SIGN

Prior to initiating any work on site, provide one project identification sign at the location designated. Construct the sign in accordance with project sign detail attached at the end of this section. Maintain sign throughout the life of the project. Upon completion of the project, remove the sign from the site. Provide color rendering of the project. Reproduce the rendering on the signboard or enclose a copy of the rendering under a water-proof, transparent cover, and caulk for weather protection.

PART 2 PRODUCTS

2.1 MATERIALS

Materials shall conform to the requirements as shown on the Drawings at the end of this section and shall be suitable for use in an unprotected exterior environment. All lumber and timber materials shall be in conformance with AWPA C1 and AWPA C2.

PART 3 EXECUTION

3.1 GENERAL

The Contractor shall place signs, one every 100 feet, on the work area fence that bear the legend, in letters at least four inches high:

WARNING
HAZARDOUS WORK AREA
DO NOT ENTER UNLESS AUTHORIZED

The Contractor shall post hazard warning banners at areas of special hazard including, but not limited to the perimeter of the Exclusion Zone. The Contractor shall provide all signs required on the Contract Drawings. Letters shall be at least four inches high.

3.2 INSTALLATION REQUIREMENTS

The USACE project site sign and the safety signs are to be mounted on four inch by four inch by eight foot treated timbers and set firmly into the ground above prevailing grade to permit public viewing and shall be installed during site mobilization.

3.3 PROJECT SIGN

Prior to initiating any work on site, provide one project identification sign at the location designated. Construct the sign in accordance with project sign detail attached at the end of this section. The Contractor shall include the EPA contact phone number on a separate sign that shall be placed next to the project sign. This detail is also attached at the end of this section. The Contractor shall verify the accuracy and update the information on the sign with the Contracting Officer Representative as necessary. Maintain signs throughout the life of the project. Upon completion of the project, remove the signs from the site. Provide color rendering of the project. Reproduce the rendering on the signboard or enclose a copy of the rendering under a water-proof, transparent cover, and caulk for weather protection.

The project signs shall be erected as soon as possible and within 15 calendar days after the date of Notice to Proceed.

Panels are fabricated using HDO (High-Density Overlay) plywood with dimensional lumber uprights and bracing. The sign faces are non-reflective vinyl.

All legends are to be die-cut or computer-out in the sizes and type-faces specified and applied to the white panel background following the graphic formats shown on the attached sheets.

No separate payment will be made for maintaining the signs and all costs in connection therewith will be considered the obligation of the Contractor. Upon completion of the project, the Contractor shall remove the signs from the work area.

3.4 BULLETIN BOARD

The USACE project site sign, bulletin board and the safety signs are to be removed from the site after contract completion.

-- End of Section --

All Construction Project Identication signs and Safety Performance signs are to be fabricated and installed as described below. The signs are to be erected at a location designated by the contracting officer and shall conform to size, format, and typographic standards.

The sign panels are to be fabricated from .75" High Density Overlay Plywood.

Sign graphics to be prepared on a white non-reflective vinyl film with positionable adhesive backing.

All graphics except for the Communications Red background with Corps signature on the project sign are to die-cut or computer cut nonreflective vinyl, pre-spaced legends prepared in the sizes and typefaces specified and applied to the background panel following the graphic formats shown.

The 2' x 4' Communications Red panel (to match PMS-032) with full Corps signature (reverse version) is to be screen printed on the white background identification of the District / Division may be applied under the signature with white cut vinyl letters prepared to Corps standards

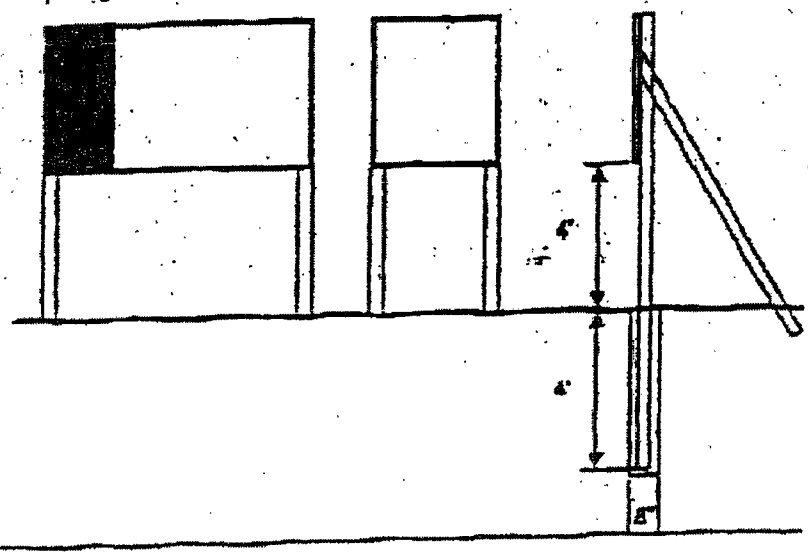
Drill and insert six (6) .375 T-nuts from the front face of the HDO sign panel. Position holes as shown. Flange of T-nut to be flush with sign face

Apply Graphic panel to prepared HDO plywood panel following manufactures instructions

Sign uprights to be structural grade 4" x 4" treated Douglas Fir or Southern Yellow Pine. No 1 or better. Post to be 12' long Drill six (6) .375" mounting holes in uprights to align with T-nuts in sign panel. Countersink (6") back of hole to accept socket head cap screw (4" x .375").

Assemble sign panel and uprights. Install assembled sign panel and uprights in 4' hole. Local soil conditions and/or wind loading may require bolting additional 2" x 4" struts on inside face of uprights to reinforce installation shown.

Shown below the mounting diagram is a panel layout grid with spaces provided for project information. Photocopy this page and use as a worksheet when preparing sign Legend orders.



Construction Project Sign
Legend Group 1

1 _____
2 _____

Legend Group 2 Division/District Names

1 _____
2 _____

Legend Group 3 Project Title

1 _____
2 _____
3 _____

Legend Group 4 Facility Mission

1 _____
2 _____

Legend Group 5a: Contractor/A&E

1 _____
2 _____
3 _____
4 _____
5 _____

Legend Group 5b: Contractor/A&E

1 _____
2 _____
3 _____
4 _____
5 _____

Safety Performance Sign
Legend Group 1: Project Title

1 _____
2 _____

Legend Group 2: Contractor/A&E

1 _____
2 _____

FABRICATION AND MOUNTING GUIDELINES

SAFETY PERFORMANCE SIGN

Each contractor's safety record is to be posted on Corps managed or supervised construction projects and mounted with the construction project identification sign.

The graphic format, color, size and typefaces used on the sign are to be reproduced exactly as specified below. The title with First Aid logo in the top section of the sign and the performance record captions are standard for all signs of the type. Legend Groups 2 and 3 below identify the project and the contractor and are to be placed on the sign as shown.

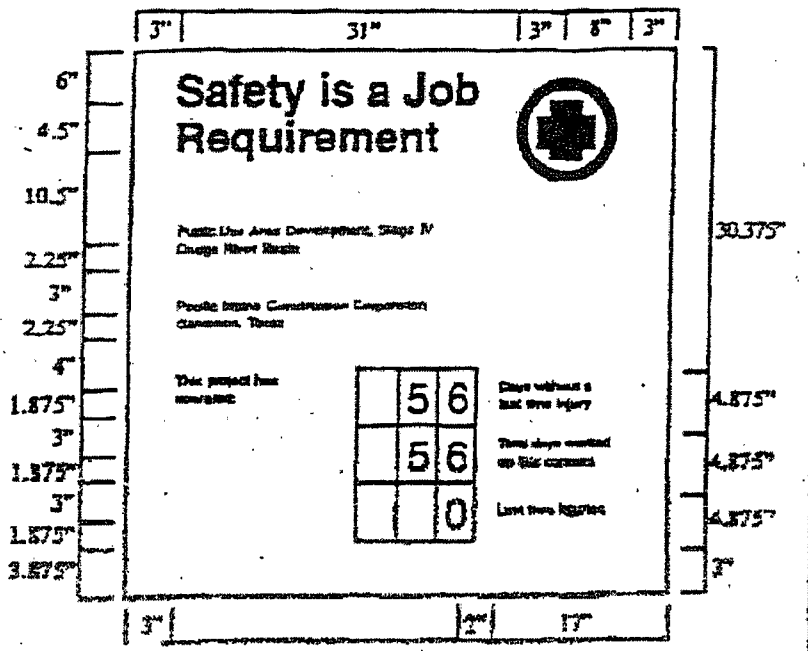
Safety record numbers are mounted on individual metal plates and are screw mounted to the background to allow for daily revisions to posted safety performance record.

Legend Group 1: Standard two-line title "Safety is a Job requirement" with (8 od.) Safety Green First Aid logo.
Color: to match PMS 347
Typeface: 3" Helvetica Bold
Color: Black

Legend Group 2: One to two-line project title legend describes the work being done under this contract and name of host project.
Color: Black
Typeface: 1.5" Helvetica Regular
Maximum line length: 42"

Legend Group 3: One to two-line identification; name of prime contractor and city, state address.
Color: Black
Typeface: 1.5" Helvetica Regular
Maximum line length: 42"

Legend Group 4: Standard safety record captions as shown.
Color: Black
Typeface: 12.5" Helvetica Regular



Sign Type	Legend Size	Panel Size	Post Size	Specification Code	Mounting Height	Color Bkg/Lgd
CID-02	Various	4' X 4'	4" X 4"	HDO-3	48"	WH/BK - GR

Replaceable numbers are to be mounted on white .060 aluminum plates and screw-mounted to background.
Color: Black
Typeface: 3" Helvetica Regular
Plate size: 2.5" X 5"

All typography is flush left and rag right. Upper and lower case with initial capitals only as shown. Letter - and word - spacing to follow Corps standards.

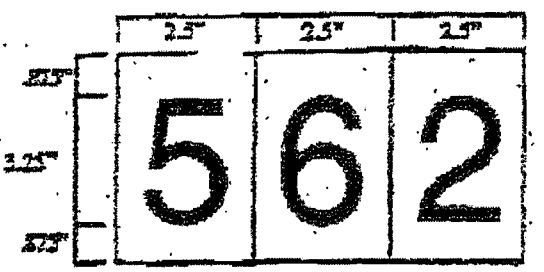
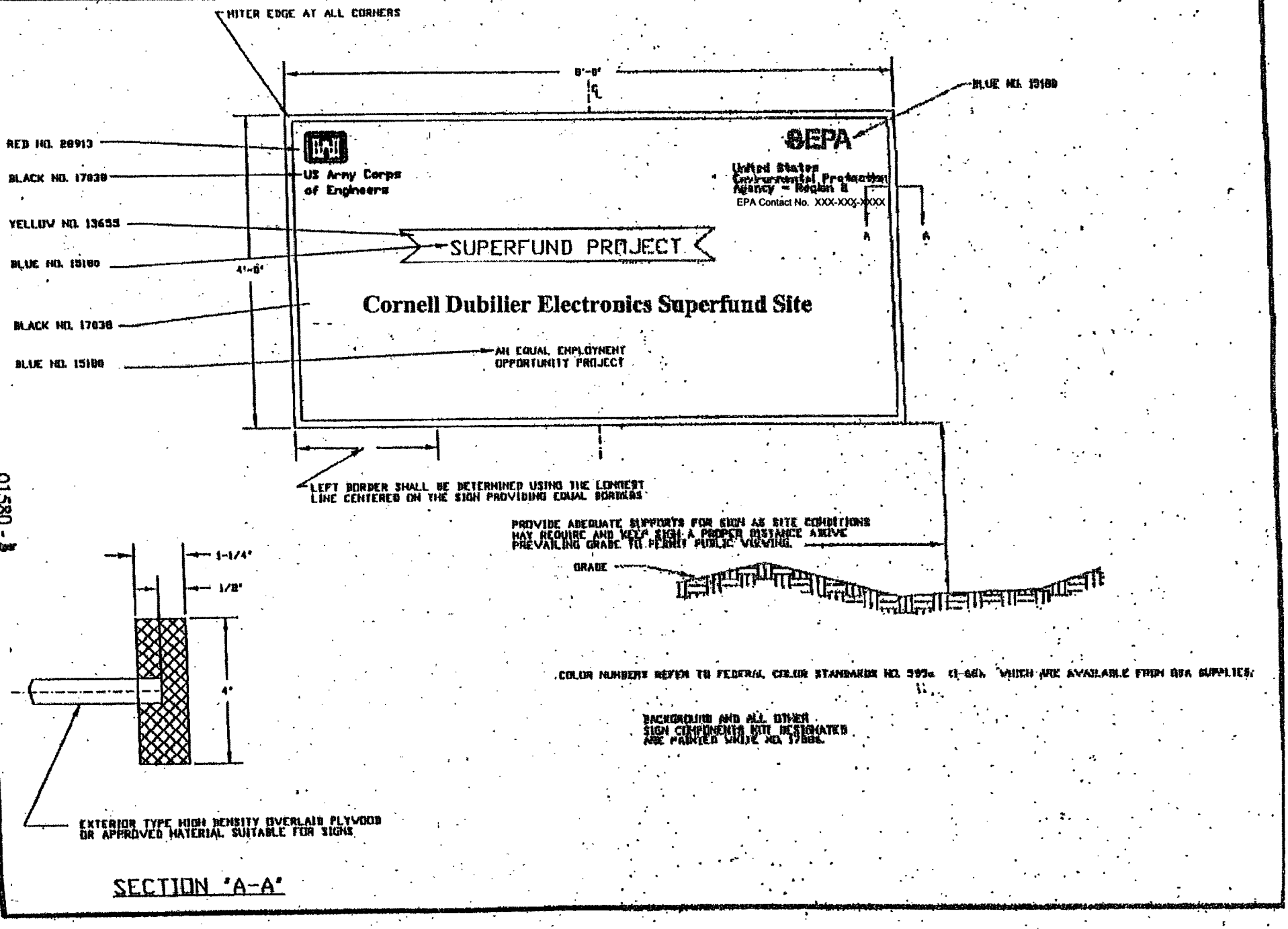


Fig. 4


MITER EDGE AT ALL CORNERS
8'-0"
℄
BLUE NO. 15180
RED NO. 20913
BLACK NO. 17038
YELLOW NO. 13655
BLUE NO. 15180
4'-0"
BLACK NO. 17038
BLUE NO. 15180
US Army Corps of Engineers
EPA
United States Environmental Protection Agency - Region 6
EPA Contact No. XXX-XXX-XXXX
A
A
SUPERFUND PROJECT
Cornell Dubilier Electronics Superfund Site
AN EQUAL EMPLOYMENT OPPORTUNITY PROJECT
LEFT BORDER SHALL BE DETERMINED USING THE LONGEST LINE CENTERED ON THE SIGN PROVIDING EQUAL BORDERS
PROVIDE ADEQUATE SUPPORTS FOR SIGN AS SITE CONDITIONS MAY REQUIRE AND KEEP SIGN A PROPER DISTANCE ABOVE PREVAILING GRADE TO PERMIT PUBLIC VIEWING.
GRADE
1-1/4"
1/2"
4"
EXTERIOR TYPE HIGH DENSITY OVERLAID PLYWOOD OR APPROVED MATERIAL SUITABLE FOR SIGNS.
COLOR NUMBERS REFER TO FEDERAL COLOR STANDARD NO. 595a (1-66), WHICH ARE AVAILABLE FROM GSA SUPPLIES.
BACKGROUND AND ALL OTHER SIGN COMPONENTS NOT DESIGNATED ARE PAINTED WHITE NO. 17886.
SECTION "A-A"

01580 - 09

SECTION 01700

REMEDIAL PACKAGE CLOSEOUT AND RECORD DOCUMENTS

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

1.1.1 Remedial Closeout Package

Remedial closeout package shall consist of a Remedial Action Report that summarizes remedial activities performed at the site. The closeout package shall also contain administrative records for substantial completion and for final acceptance of each remedial unit, certification of decontamination of all equipment, and cleaning of the project site.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by basic designation only.

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 540/R 98-016	(2000) Close Out Procedures for National Priories List Sites

U.S. ARMY CORPS OF ENGINEERS (USACE)

EP 1110-1-19	(2001) A Guide to Preparing and Reviewing Remedial Action Reports of Cost and Performance

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-11 Closeout Submittals

Remedial Unit Closeout Information; G

Record Drawings; G, A/E

1.4 RECORD DOCUMENTS

Maintain at the site the items listed below:

a. Construction schedule and progress record
b. Record drawings showing progress of work (see paragraph RECORD DRAWINGS below)
c. Contract Work Plans
d. Specifications

e. Addenda
f. Modifications to the Contract - Project Change Orders (PCOs)
g. Contracting Officer's Directives
h. Written reports of any significant Quality Assurance problems
i. Daily work activity summary reports, including:
   - Field test records
   - Photographs
   - Videotape
   - Reports on any emergency response actions
   - Manifest documents and variance reports
   - Records of all site work
   - Chain-of-custody documents
   - Railcar/Truckload tickets and shipping papers (manifests)
   - All laboratory analytical results
   - Soil screening measurements
   - All safety and accident incidents
   - Reports on all spill incidents
   - Air monitoring reports and data
   - Other items as may be required by the Contracting Officer

1.4.1 Record Drawings

1.4.1.1 General

The Contractor shall maintain as-built drawings during the construction period and shall submit final record drawings at the completion of individual activities and geophysics. The Government will provide to the Contractor as necessary the CAD (Computer-Aided Drafting) files consisting of compact (computer) disks or magnetic media of the drawing files in the appropriate CAD format (i.e. "Microstation", "Autocad", etc.) for the project. The Contractor is required to make prints or mylars from the CAD files and continuously maintain drawings to show current as-built conditions for the duration of the construction. Except for updates as indicated below, the Contractor may maintain as-built drawings by marking up drawings by hand or by CAD methods. Scanned drawings will not be acceptable. If the Government cannot provide CAD files for the project drawings, mylar (reproducible) drawings will be provided. The Contractor shall then be required to comply with all requirements indicated herein by the use of hand drafting.

1.4.1.2 Progress As-built Prints

During construction the Contractor is responsible for maintaining up to date one set of paper prints to show as-built construction conditions. These prints shall be kept current and available on the job site at all times. All changes from the contract plans which are made in the work or additional information which might be uncovered in the course of construction shall be accordingly and neatly recorded as they occur by means of details and notes. The as-built prints will be jointly inspected for accuracy and completeness by the Contracting Officer's Representative and a responsible representative of the Contractor prior to submission of each monthly pay estimate. Partial payment will be withheld (amount to be determined) if the monthly review of as-built drawings reveals inaccuracies or incompleteness of as-built conditions. Progress as-builts shall show the following information, but not limited thereto:

a. The location and description of any utility lines, valves, or other installations of any kind within the construction area. The location includes dimensions to permanent features. Average depth

below surface shall also be indicated. The location of all underground utility lines, valve boxes or other items shall be located using a minimum of two tie-point dimensions. All dimensions must be taken from permanent structures or points that will remain after the construction work is completed.

b. Correct grade or alignment of roads, structures or utilities if any changes were made from the contract plans.

c. Correct elevations if changes were made in site grading

d. Changes in details of design or additional information obtained from working drawings specified to be prepared and/or furnished by the Contractor including but not limited to fabricated, erection, installation plans and placing details, pipe sizes, insulation material, dimensions of equipment foundations, etc.

e. The topography and grades of all drainage installed or affected as part of the project construction.

f. All changes, which result from contract modifications.

g. Where contract drawings or specifications allow options, only the option selected for construction shall be shown on the as-built prints.

h. Systems designed or enhanced by the Contractor, such as HVAC controls, fire alarm, fire sprinkler and irrigation systems, if applicable.

i. All amendments to the contract drawings issued during the solicitation period shall be posted on the as-built drawings.

1.4.1.3 Hand Drafting

If mylars only are provided to the Contractor, they shall be updated using hand drafting. Only personnel proficient in the preparation of engineering drawings to standards satisfactory and acceptable to the Government shall be employed to modify the mylar reproduction drawings or prepare additional new drawings. All additions and corrections to the contract drawings shall be neat, clean and legible, and shall match the adjacent line work and/or lettering being annotated in type, density, size and style. All drafting work shall be done using the same medium (pencil, plastic lead or ink) that was employed on the original contract drawings and with graphic lead on paper base material. The title block to be used for any new as-built drawings shall be similar to that used on the original contract drawings.

1.4.1.4 Protection of Records

The Contractor shall be responsible for the protection and safety of mylars and CAD record until returned to the Contracting Officer. Any drawings damaged or lost by the Contractor shall be satisfactorily replaced by the Contractor at his expense.

1.4.1.5 50% As-Built Update

At the 50% point in construction of this project (as determined by progress payments) the Contractor will update the CAD files of the project drawings in the appropriate CAD program to show as-built conditions as above, and

submit an updated computer disk and one set of prints to the Contracting Officer for approval. If mylars only are provided to the Contractor, they shall be updated at this stage using hand-drafting as specified herein, and the Contractor shall submit one set of prints to the Contracting Officer for approval. Any required corrections will be made by the Contractor before payment will be approved for this item. The Contractor must use the updated CAD record or mylar drawings to produce required prints.

1.4.1.6 Preliminary Record Drawing Submittal

At least thirty calendar (30) days before the anticipated date of final acceptance inspection the Contractor shall deliver two copies of progress prints showing final as-built conditions to the Contracting Officer for review and approval. These prints shall correctly show all the features of the project as it has been constructed, adding such additional drawings as may be necessary. They shall be printed from the CAD files updated in the appropriate CAD program, or from updated mylars if mylars only were provided to the Contractor. Within ten days, the Government will provide the Contractor one set of prints indicating required corrections to the preliminary submittal. Contractor will correct and resubmit within 5 days. Any required subsequent review and resubmission periods will each be accomplished within 5 days. Upon Government approval of the preliminary submittal, the Contractor will prepare final record drawings.

1.4.1.7 Record Drawing Submission

In the appropriate CAD program each drawing shall be marked with the words "RECORD DRAWING AS-BUILT" followed by the name of the Contractor in font which will print at least 3/16" high. All revisions to the original contract drawings will be dated in the revision block. All prints and mylars must be reproduced from the updated CAD files. If mylars only were provided to the Contractor, they shall be hand-lettered or stamped as indicated above, and revisions shown in revision block. A minimum of 5 calendar days before the anticipated date of final acceptance inspection of the project the Contractor shall deliver to the Contracting Officer:

a. Three (3) CD's (ROM) of CAD files of Record Drawings.
b. One (1) set of Mylar Record Drawings.
c. One (1) copy of prints of Record Drawings.

Failure to make an acceptable submission of Record Drawings will delay the Final Acceptance Inspection for the project and shall be cause for withholding any payment due the Contractor under this contract.

1.4.1.8 Property

All paper prints, reproducible drawings and CAD files will become property of the Government upon final approval. Approval and acceptance of the final record drawings shall be accomplished before final payment is made to the Contractor.

1.4.1.9 Payment

No separate payment will be made for the as-built and record drawings or updating of CAD files required under this contract, and all costs in connection therewith shall be considered a subsidiary obligation of the Contractor.

1.4.1.10 Completion of Work

Upon completing the work under this contract, the Contractor shall furnish a complete set of all shop drawings as finally approved. These drawings shall show all changes and revisions made up to the time the equipment is completed and accepted.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 REMEDIAL CLOSEOUT PACKAGE

The Remedial Unit Closeout Package shall consist of certification of decontamination of the entire site, removal of temporary facilities, and submittal of a Remedial Action Report that summarizes all remedial activities and that includes the Remedial Unit Summary Reports.

Submit the following Remedial Unit Closeout Information for each remedial unit, within 30 days of Final Acceptance Certification for the remedial unit:

a. Substantial Completion Notice (for each remedial unit)
b. Final Acceptance Certification (for each remedial unit)
c. Remedial Action Report (for each remedial package)
d. Remedial Unit Summary Reports (for each remedial unit)

Submit the Remedial Unit Closeout Package that summarizes remedial activities at each remedial unit, for all work under this contract within 30 days of Final Acceptance Certification for the last remedial unit.

3.1.1 Final Decontamination

Decontaminate, without exception, all facilities, equipment, and materials prior to final removal from the site. This includes waste and material, transport vehicles, and all site equipment. Pay special attention to the removal of material on and within the tracks and sprockets of crawler equipment and the tires and axles of trucks and rubber mounted equipment.

Tools and items for which decontamination is difficult or impossible to verify shall remain on site, until completion of the work, for subsequent disposal at an approved disposal facility. Examples of such equipment or materials may include wire, rope, lumber, some personnel protective equipment, etc.

3.2 REMEDIAL UNIT CLOSEOUT

Remedial Unit Closeout Package shall consist of clearing the remedial unit, certifying that the work is complete, and submitting a Remedial Unit Summary Report that summarizes remedial activities.

3.2.1 Clearing the Remedial Unit

Remove and dispose of all waste such as excess construction material, wood, bituminous concrete, debris, and any other foreign material. Disconnect all temporary site facilities, utilities, and signs. Remove all Contractor constructed access roads and parking areas, unless otherwise needed for

additional remedial units. Restore the site to conditions that existed prior to construction.

3.2.2 Administrative Provision

Prior to substantial completion of a remedial unit, the Contracting Officer will present a punch list of work items to be completed in accordance with the Contract Documents. When this punch list is substantially complete, submit written notice with a list of items to be completed or corrected, and the estimated dates of the completion or correction. Should inspection by the Contracting Officer indicate that the work is not substantially complete, notification will be made in writing, listing observed deficiencies. Remedy the deficiencies and send a new written notice of substantial completion. This procedure shall continue until such time when the Contracting Officer is satisfied with such repairs and corrections. When the Contracting Officer finds the work to be substantially complete, he will prepare a Certification of Substantial Completion with a list of deficiencies which require timely correction in accordance with provisions of General Conditions.

3.2.3 Final Acceptance

Upon completion of work, submit to the Contracting Officer written notification that Contract Documents and approved plans have been reviewed, work has been inspected for compliance with Contract Documents and approved plans, work has been completed in accordance with Contract Documents and approved plans, deficiencies listed with Certificate of Substantial Completion have been corrected, and work is complete and ready for final inspection. Should the Contracting Officer find work incomplete, he will promptly provide written notification, listing observed deficiencies. Remedy the deficiencies and send a second request for certification of Final Completion. This procedure will continue until such time when the Contracting Officer is satisfied with such repairs and corrections. When the Contracting Officer finds work is complete, he will consider closeout submittals, and a Final Acceptance Certification will be issued. When the Final Acceptance Certification is received, submit the final invoice for final payment.

3.3 REMEDIAL ACTION REPORT

After successful completion of a remedial package, prepare a Remedial Action Report and submit it to the Contracting Officer. Remedial Action Report is a summary of Remedial Unit Summary Reports. The government will use the Remedial Action Report to document completion of a remedial package (contract) and indicate that the cleanup objectives have been met as well as summary information for subsequent inclusion in the Superfund Site Close Out Report. Prepare the Remedial Action Report in accordance with EPA OSWER Directive 9320.2-09A-P, EPA 540/R 98-016, and EP 1110-1-19. Include, as a minimum, the following essential elements in the Remedial Action Report:

a. Summary of Remedial Activities
   - Demolition/Restoration Activities Performed
   - Total Volume of Soil Excavated
   - Total Volume of Soil Treated On-site and Reused On-Site
   - Total Volume of Soil and Debris Disposed Off-Site (by facility)
   - Total Volume of Backfill Placed
   - Chronology of Significant Events
   - Performance Standards and Construction Quality Control

- Disposal Facilities Used
- Summary of Project Costs
- Observations and Lessons Learned
- Contract Information
- Site Surveys, Maps, and Plans
- Final Inspection and Certification
- Contract Information

-- End of Section --

SECTION 02181

REMEDIATION OF CONTAMINATED SOILS BY THERMAL DESORPTION
04/06

PART 1 GENERAL

1.1 SCOPE OF WORK

Furnish all labor, supervision, materials, equipment, tools, permits and services required to furnish, install, startup, operate and maintain a Low Temperature Thermal Desorption System (LTTD) in accordance with all applicable state and federal regulations and as shown on the Drawings and as specified herein.

The Contractor shall furnish a LTTD complete with desorption chambers, air pollution control system, control room, material handling system and all necessary incidentals required for a complete temporary onsite mobile or transportable system. As referred to in these specifications, the LTTD shall be an indirect-fired system for the separation and collection of PCB, SVOC and VOC-contamination from soils. The LTTD shall not be an incinerator or direct-fired system. The LTTD shall entrain all organic contaminants in a vapor phase, remove those residual vapor-phase contaminants, and be uniquely designed and constructed for easy erection and disassembly should the LTTD need to be moved on-site. The facility shall qualify for minor status with respect to the total emissions generated, including any combustion process, and shall qualify for minor status with respect to Hazardous Air Pollutants.

The LTTD shall have a condensation air treatment system as the Primary air treatment system. The LTTD shall be an externally-fired rotary dryer which volatilizes water and organic contaminants in an inert carrier gas stream or a rotary kiln with distinct zones which volatilizes water and organic contaminants in an anaerobic environment. The LTTD shall contain all air pollution control devices required to meet the emissions criteria defined within this section and set by the NJDEP Air Quality Permit Equivalency requirements.

The LTTD shall attain the remediation goals for treated soils as shown in Section 01110 SUMMARY OF WORK. The LTTD shall operate for 24 hours a day 7 days a week at an appropriate throughput to meet the Project Schedule as approved by the Contracting Officer. Modifications to the system shall be the Contractor's responsibility; however, no modifications shall be performed without the Contracting Officer's approval.

The LTTD shall operate with a solids residence time and temperature capable of removing the contaminants of concern to the remediation goals. The LTTD shall operate at an appropriate temperature and duration required to reduce the PCB, SVOC and VOC-contamination in the soil or other material treated to equal to or less than the remediation goals.

The following services shall be provided:

a. Submit a NJDEP Air Quality Permit Equivalency, in accordance with NJAC 7:27-8, to construct and operate the LTTD at the site for the duration of the project.

b. Perform interim operation of the LTTD, during which time a proof of performance test will be performed to confirm compliance with the NJDEP Air Quality Permit Equivalency and soil sampling will be performed to confirm compliance with remediation goals identified in Section 01110 SUMMARY OF WORK.

c. Perform all acts necessary for the thermal desorption of contaminated soil quantities and types as defined herein and shown on the Contract Drawings, including feed preparation, as necessary, and staging, feeding, processing, sampling, re-use as appropriate, and residue management and monitoring.

d. Effectively and safely handle waste materials prepared for thermal desorption, analysis and disposal at the site.

e. Remove residuals from the LTTD for appropriate management and disposal.

f. Thermally desorb contaminants from the site soils to the objectives specified herein.

g. Perform sampling and analysis required herein and in accordance with the sampling requirements, methodology and quality control requirements defined in Section 01450A CHEMICAL DATA QUALITY CONTROL to assure soil remediation to the remediation goals specified in Section 01110 SUMMARY OF WORK.

h. Provide a proof of performance plan and perform proof of performance test as described in paragraph PROOF OF PERFORMANCE.

1.2 RELATED WORK INCLUDED ELSEWHERE

The following items are related work not included in this section:

a. Safety, Health and Emergency Response is included in Section 01351 SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW).

b. Contractor Quality Control is included in Section 01451A CONTRACTOR QUALITY CONTROL.

c. Contractor Chemical Data Quality Control is included in Section 01450A CHEMICAL DATA QUALITY CONTROL.

d. Temporary Construction Facilities and Utilities are included in Section 01500A TEMPORARY CONSTRUCTION FACILITIES.

e. General Site Preparation is addressed in Section 02310 EXCAVATION.

f. Contaminated Excavation is addressed 02310 EXCAVATION.

1.3 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN WELDING SOCIETY (AWS)

AWS B2.1 (2005; Errata 2006) Welding Procedure and

	Performance Qualification
AWS D1.1/D1.1M	(2006; Errata 2006) Structural Welding Code - Steel

ASME INTERNATIONAL (ASME)

ASME B40.100	(2006) Pressure Gauges and Gauge Attachments
ASME BPVC SEC IX	(2004; 2005 Addenda; 2006 Addenda) Boiler and Pressure Vessel Code; Section IX, Welding and Brazing Qualifications
ASME PTC 19.3	(1974; R 2004) Temperature Measurement Instruments and Apparatus

ASTM INTERNATIONAL (ASTM)

ASTM E 122	(2000) Calculating Sample Size to Estimate, With a Specified Tolerable Error, the Average for Characteristic of a Lot or Process
ASTM E 953	(1988; R 2004) Fusibility of Refuse-Derived Fuel (RDF) Ash

ISA - THE INSTRUMENTATION, SYSTEMS AND AUTOMATION SOCIETY (ISA)

ISA MC96.1	(1982) Temperature Measurement Thermocouples

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 211	(2006) Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances
NFPA 30	(2003; Errata 2004; Errata 2006) Flammable and Combustible Liquids Code
NFPA 31	(2006; Errata 2006) Installation of Oil Burning Equipment
NFPA 54	(2006) National Fuel Gas Code
NFPA 58	(2004) Liquefied Petroleum Gas Code
NFPA 70	(2005; TIA 2005) National Electrical Code
NFPA 82	(2004) Incinerators and Waste and Linen Handling Systems and Equipment

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST)

NIST SP 250	(1998) Calibration Services Users Guide

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 450/4-80/023R	(1985) Guideline for Determination of Good

	Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations)

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 60	Standards of Performance for New Stationary Sources

NEW JERSEY ADMINISTRATIVE CODE (NJAC)

NJAC 7:27-3	Control and Prohibition of Smoke from Combustion of Fuel
NJAC 7:27-4	Control and Prohibition of Particles from Combustion of Fuel
NJAC 7:27-5	Prohibition of Air Pollution
NJAC 7:27-7	Sulfur
NJAC 7:27-8	Permit and Certificates
NJAC 7:27-9	Sulfur in Fuels
NJAC 7:27-16	Control and Prohibition of Air Pollution by Volatile Organic Compounds
NJAC 7:27-17	Control and Prohibition of Air Pollution by Toxic Substances
NJAC 7:27-19	Control and Prohibition of Air Pollution by Oxides of Nitrogen

1.4 DEFINITIONS

1.4.1 PCB and PCBs (Polychlorinated Biphenyls)

PCB and PCBs means any chemical substance that is limited to the biphenyl molecule that has been chlorinated to varying degrees or any combination of substances which contain such substance.

1.4.2 PCB Contaminated Soil

Soils containing concentrations greater than 500 parts per million (ppm) PCBs when tested as specified herein, as defined in the USEPA's Record of Decision for the site. PCB contaminated soil with concentrations greater than 500 ppm will require treatment.

1.4.3 PCB Contaminated Water

PCB contaminated water shall be as determined by NJDEP and shall be as defined in the Contractor's approved Soil Erosion and Sediment Control Plan in Section 01356A STORM WATER POLLUTION PREVENTION MEASURES.

1.5 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When

used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Layout; G

Drawings showing dimensions of the equipment, layout of the LTTD system and subsystems, including location of components, onsite improvements, and utilities and fuel supply system. Drawings indicating dimensions including the distance from the LTTD stack to the property line, layout, location of barriers, capacities, and placement of the stockpiles. Drawings shall be to the approved scale.

Low Temperature Thermal Desorption System; G

Flow diagram for process equipment associated with the LTTD and data, including but not limited to: contaminated material stream flows; direction of material flow, including range of flow rate and range of composition, identified by lines and arrows denoting the direction and destination of the flow; subsystem equipment, operating capacity and operating conditions, pumps, valves and other in-line devices, sizes of conveying devices (pipe, tubing conveyors, feeders, etc.), and number of parallel components or lines.

Mass and Energy Balance; G

Material, mass and energy balances for the entire LTTD.

Process and Instrumentation Diagram; G

Piping and instrumentation diagram indicating: process equipment; instrumentation; piping and valves; stacks, vents and dampers; control equipment (including sensors, process controllers, control operators, valves, interlocks, alarms, and contaminated material feed cut-off systems); labels and other necessary information to correlate to the process flow diagram.

Equipment Protocol; G

As part of Permitting Process, provide package including vendor specifications of the LTTD, flow diagram, and a simplified P&ID.

SD-03 Product Data

Sequencing and Scheduling; G

LTTD system schedule including dates and durations for system procurement, mobilization, start-up, proof of performance, interim operation, production burn, and demobilization prior to beginning site activities.

Mobilization Plan; G

Specific procedures, requirements, and utilities for onsite placement of the LTTD and its subsystems.

Startup Plan; G

Plan identifying instruments requiring calibration and describing the required calibration procedure and tolerances. A detailed description of the control system functions and specific procedures proposed to demonstrate each function and for testing the system with uncontaminated materials.

Proof of Performance Test Protocol; G

Plan identifying requirements to demonstrate contaminated material preparation and feed systems and the treated material and solids captured by the pollution control system handling systems. List of the proposed operating conditions for process parameters to be continuously monitored and recorded during the proof of performance test. The Proof of Performance Test Protocol shall be in accordance with NJAC 7:27-8.

CEM Certification Protocol; G

Plan to meet continuous emission monitor certification as required by the NJDEP in accordance with 40 CFR 60 Appendices B & F and NJAC 7:27-8.

Emission Testing Protocol; G

Plan to meet emission testing requirements as required by the NJDEP Air Quality Permit Equivalency.

Operating Plan; G

Specific detailed procedures for continued operation of the system, based on the interim operation and proof of performance test results; adjustments for variation in the contaminated material feed shall be included. Schedule of inspection and maintenance procedures and activities shall be included. The operating plan shall also include: 1. Emergency shutdown procedures; 2. Routine component calibration (weight belts, hoppers, and similar components); 3. List of Personnel and their roles and responsibilities, including LTTD Operations Manager, Control Room Operators, Site Foreman, Crew Chief and Staffing Plans.

Demobilization Plan; G

Demobilization plan detailing specific procedures to be used for decontamination of system components, test methods for verification of decontamination, and the schedule for equipment decontamination and removal from the site. Demobilization shall include disconnection of utilities, decontamination, disassembly, and removal of LTTD system equipment, materials handling equipment, and structures related to the LTTD system.

Utilities

Peak and average system requirements for electricity, water, waste water disposal, natural gas and other fuels.

Equipment; G

Information on function, design capacity, and expected operational capacity for the following equipment in the LTTD: feed hopper and screening equipment, conveyor system, desorption processing unit, appropriate air pollution control devices, continuous emissions monitors, cyclone, cooler, condensers, baghouse, fans, connective ductwork, ancillary piping, wiring, and controls. Information shall also include equipment specifications identifying manufacturer and model number, materials of construction, interior and exterior dimensions, design limitations, and normal operating conditions. Operating capacity and operating conditions for subsystem equipment; pumps, valves and other in-line devices; sizes of conveying and/or feeding devices; size and number of parallel components or lines.

Instrumentation and Controls; G

Detailed manufacturer's data on the overall controls, sequence of control, description of components, wiring diagrams, logic diagrams, control panel layouts, legends and standard symbols, sensors, process controllers, control operators, valves, alarms, interlocks and contaminated material feed cut-off systems. Data describing in detail the equipment used to monitor stack emissions, including the stack sampling probe, filters, gas transport tubing, sampling pump, moisture removal system, analyzer's calibration system, and data recorder.

Ambient Air Emissions and Noise Control

An analysis of amount of noise generated at a distance of 100 feet for the following hertz octave band frequencies: 31.5, 63, 125, 250, 500, 1000, 2000, 4000, and 8000.

Redundancies

Backup and redundancy analysis containing a failure mode analysis and an emergency manual that indicates responses to be taken under the following circumstances as applicable: (1) sudden loss of integrity of refractory lining, (2) puffing or sudden occurrence of fugitive emissions, (3) failure of temperature monitoring control mechanism, (4) primary or secondary burner and/or air port clogging or failure, (5) electrical power failure (primary or secondary), (6) scrubber water flow or scrubber water makeup flow out of range, (7) excessive solids deposition in the air pollution control system, (8) loss of quench water, (9) increase in gas temperature after quench zone, (10) demister operation failure, (11) fire on LTTD pad, (12) high baghouse temperature, (13) high oxygen alarm in kiln, and (14) kiln overpressure events.

Logs

An operating record as described in this specification. Inspection and maintenance checklists and records of preventive maintenance and repairs. The Contracting Officer or designated representative shall be provided a copy of the operating record at the end of each week.

Control System

Instructions for use of software packages necessary to evaluate the operating data from the control system and daily operating data on magnetic media.

SD-06 Test Reports

Logs

Reports of inspections or tests, including analysis and interpretation of test results. Each report shall be properly identified. Test methods used shall be identified and test results shall be recorded.

Startup; G

Reports containing the results of startup. The reports shall contain the information necessary for making application for an operating permit. The Contractor shall submit reports containing the results of interim operation to the Contracting Officer or designated representative within 10 days of Contractor's receipt of results.

Field Proof of Performance Report; G

Report containing the results of the proof of performance. The report shall contain the information necessary for making application for an operating permit.

SD-07 Certificates

NJDEP Air Quality Permit Equivalency Application

The Contractor shall submit the NJDEP Air Quality Permit Equivalency application to the NJDEP and a copy to the Contracting Officer or designated representative. The Contractor shall supply the Contracting Officer or designated representative with all correspondence between the Contractor and the NJDEP. Correspondence from the Contractor to the NJDEP shall be submitted to the NJDEP and the Contracting Officer or designated representative simultaneously. Prior to commencing the permit application process, the Contractor shall meet with the Contracting Officer to evaluate progress made by the Government in preliminary permitting efforts.

PART 2 PRODUCTS

2.1 SYSTEM DESCRIPTION

2.1.1 System Components

The LTTD shall include, but is not limited to, the following components: feed hopper and screening equipment, conveyor system, desorption processing unit, appropriate air pollution control devices, continuous emissions monitors, cyclone, cooler, condensers, baghouse, fans, connective ductwork, ancillary piping, wiring, and controls. The LTTD shall not include an afterburner.

The Contractor shall provide a Mass and Energy Balance and a Process and Instrumentation Diagram for the LTTD system.

2.1.1.1 Primary Desorption Chamber

The primary desorption chamber volatilizes the compounds of concern. The primary chamber shall be indirectly fired, with the primary chamber operated at a pressure lower than atmospheric in a low oxygen atmosphere. A subatmospheric pressure must be maintained at all times.

2.1.1.2 Air Pollution Control System Requirements

The air pollution control system shall contain a quench, followed by a tertiary treatment system for the vapor phase constituents.

The LTTD shall include particulate removal units (baghouse, electrostatic precipitator, etc.). The exhaust gas shall meet the criteria, including health risk, and state of the art requirements set by NJDEP prior to discharge, and any and all requirements defined in the NJDEP Air Quality Permit Equivalency submitted by the Contractor prior to site mobilization as described in Section 00010. The LTTD shall meet all requirements of the NJDEP, including: NJAC 7:27-3, NJAC 7:27-4, NJAC 7:27-5, NJAC 7:27-7, NJAC 7:27-8, NJAC 7:27-9, NJAC 7:27-16, NJAC 7:27-17, and NJAC 7:27-19.

The LTTD shall include an induced draft fan that maintains a negative pressure through the system in order to minimize fugitive emissions.

Continuous Emission Monitors (CEM) and continuous data recorders to measure and record the air contaminant emissions shall be installed and operated in the exhaust stack of the LTTD. These CEMs shall include, at a minimum, monitoring carbon monoxide (CO), oxygen (O2), and total nonmethane hydrocarbons (NMHC).

These CEMs shall be approved by the NJDEP Bureau of Technical Services (BTS) in accordance with NJAC 7:27-8. These CEMs shall be continuously recorded and maintained on site for the duration of the site activities.

It is anticipated that the stack height shall be a minimum of 60 feet and a maximum of 80 feet above grade. The discharge shall be vertical or as required by a NJDEP risk assessment. The stack shall be located a minimum of 400 feet from the property line unless otherwise approved by the Contracting Officer.

These requirements are a function of the NJDEP Air Quality Permit Equivalency. The final requirements of that equivalency, which the Contractor develops, shall be adhered to.

2.1.2 System Mobilization

The mobilization shall begin only after the Notice to Proceed has been issued as described in Section 00010, and when all utilities, services, and site preparations required by the LTTD are complete. Mobilization shall include transporting all LTTD equipment to the site, setting up the LTTD, and connecting all utilities, monitoring equipment and emission controls, but not operation. Mobilization shall not commence until approval of the Mobilization Plan is received from the Contracting Officer.

2.1.3 Oxygen Requirements

The LTTD shall operate at a maximum oxygen concentration of 4% on wet weight basis.

2.1.4 Sequencing And Scheduling

The LTTD shall process at a sufficient rate to ensure that all project schedules can be met. Documentation of successful accomplishment of the objectives of each phase of operation is required prior to approval to begin the next phase of operations.

2.1.5 Tertiary Treatment

The LTTD shall treat all vapor-phase materials, and cool the offgas via condensers to less than 40 F for removal of organic/water vapors.

2.1.6 Efficiency

The Contractor shall be responsible for selecting the most efficient means of transporting soils for each step of remediation throughout the soil treatment system.

2.1.7 Operation and Maintenance Requirements

The Contractor shall be responsible for all operation and maintenance of the LTTD throughout the life of the project. Operate the LTTD in accordance with all Federal and State regulatory requirements. Repair or replace any malfunctioning equipment immediately to minimize downtime. The Contracting Officer or the designated representative shall be notified immediately of any system downtime.

2.1.8 Training Requirements

The Contractor shall be responsible for training prior to initiating all operations during the project.

2.1.9 Slagging Control

Slagging shall be minimized by operating at 100 degrees F less than the ash fusion temperature of the feed materials, as determined by ASTM E 953.

2.2 REGULATORY REQUIREMENTS

2.2.1 Ambient Air Emissions and Noise Control

The LTTD system shall conform to applicable state, regional, and local regulations regarding ambient air emissions and noise pollution control. A noise analysis predicting the amount of noise generated by the system shall be furnished prior to mobilization. Maximum noise levels approved for site operations shall not be exceeded. Noise levels shall also meet the requirements of Section 01351 SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW).

2.3 ENVIRONMENTAL REQUIREMENTS

2.3.1 Existing Conditions

Generalized characteristics and location of the contaminated materials are as indicated on the drawings and described in the Pre-Design Investigation

Report (Malcolm Pirnie, August 2007), which is available from the Contracting Officer. Thermal properties data is included as Appendix B to this specification.

2.3.2 Erection/Installation

Erection and/or installation shall be performed with minimal damage to the existing site environment. Welding shall be performed in accordance with AWS D1.1/D1.1M by welders certified to have passed qualification tests using procedures covered in AWS B2.1 or ASME BPVC SEC IX. The Contractor shall require any welder to retake the test when, in the opinion of the Contracting Officer, the work creates reasonable doubt as to the welder's proficiency.

2.4 INSTRUMENTATION AND CONTROLS

Continuous emission monitors shall be in accordance with the appropriate Performance Specifications and EPA 450/4-80/023R. Systems shall be adequately protected from damage from onsite activity.

2.4.1 Control Room

A fully enclosed control room provided with system controls, instrument readouts, and data recording devices shall be maintained. The control room shall be heated and air conditioned, permitting year round occupancy, and shall meet instrumentation and control equipment manufacturer's operating specifications. If the control room is located in the exclusion zone, provision shall be made for personnel to use protective clothing and equipment. If the control room is located in the support zone, a radio intercommunication system with two communication channels between the control room and thermal desorption system operating area shall be provided to allow control room operators to communicate with system operators.

2.4.2 Redundancies

Fully redundant backup capability within each subsystem to safely terminate system operations at the control room and at the thermal desorption system shall be provided. Duplexing or redundancies within the instrumentation and control systems shall be adequate to provide uninterrupted continuous monitoring of the emissions and to demonstrate operation in accordance with the approved operating conditions.

2.4.3 Displays and Data

Monitored parameters and excursion alarms shall be displayed locally and displayed and recorded in the control room. Process and emissions data shall be maintained in the control room and recorded electronically, in appropriate format. Flow information shall include rate monitoring, integration and totalizing. Hard copies of recorded data and summaries of recorded data shall be maintained in the control room. The copies shall be available upon request.

2.4.4 Instrumentation, Sensors, Recorders, and Sampling

2.4.4.1 Instrumentation

Instrumentation and equipment including sensors, local indicators, connecting devices, recorders, analyzers and components necessary to monitor and control the safe and efficient operation of the system shall be

provided.

2.4.5 Sampling

Stack sampling port and equipment for collecting discrete and composite samples shall be provided with adequate access for personnel and equipment. Such sampling ports must conform with requirements in 40 CFR 60, Appendix A.

2.4.6 Interlocks and Alarms

2.4.6.1 Visible Alarms

Visible alarms shall consist of lights on the main control panel, flashing symbols on the screen of the microprocessor controller in the control room and, for each interlock that stops the contaminated material feed system, lights at the equipment location.

2.4.6.2 Audible Alarms

Audible alarm activation shall be provided for each interlock that stops the feed to the thermal processing unit.

2.4.6.3 Remote Alarms

Auto dialing to the indicated remote locations shall be provided for each interlock that stops the contaminated material feed to the thermal processing unit.

2.4.7 Electrical Work

All electrical work, wiring, and controls shall conform to the applicable requirements of NFPA 70.

2.4.8 Thermometers

ASME PTC 19.3, with wells and temperature range suitable for the use encountered.

2.4.9 Draft Gauges

Gauges shall conform to ASME B40.100 with a diaphragm or bellows actuating system and a circular scale. The gauges shall have a zero adjustment screw. Suitable shutoff cocks shall be provided.

2.4.10 Pressure Gauges

Gauges shall conform to ASME B40.100 and be of pressure detecting class, single Bourdon tube style, and suitable for detecting air pressure.

2.4.11 Thermocouples

Sensors shall conform to ISA MC96.1, Type K, and shall be provided in the combustion chamber or as otherwise appropriate. The thermocouple shall be suitable for continuous operation and control at temperatures up to 2800 degrees F, accurate to 0.75 %, and shall be long enough to be inserted 6 inches into the furnace. The thermocouple shall be provided with an adjustable flange and with a high-temperature metal alloy, closed-end, protecting tube suitable for insertion into the furnace without support of

the projecting end. Compensating lead wire 16 gauge in diameter and 100 feet long with a weatherproof braid shall be supplied for connecting the thermocouple to the instrument. The installed unit shall indicate gas passage temperatures and shall control burner operation.

2.5 CONTAMINATED MATERIAL FEED SYSTEM

2.5.1 Support Equipment

The Contractor shall manage and pre-treat, if necessary, the excavated soils in an appropriate manner such that the resulting pretreated soils possess characteristics suitable for introduction into the LTTD. Pretreatment may consist of sorting, shaking, crushing or other processes to make soils suitable for treatment in the LTTD. Screening equipment shall remove rocks, boulders, oversize vegetation, metal debris, oversize construction debris material or other materials which exceed the capacity of the LTTD. Those materials amenable to treatment shall be crushed, chipped, or shredded with proper machinery until it is reduced to a size that the LTTD can accept. Those materials greater than two inches in any dimension, non-amendable to treatment shall be disposed off site in accordance with Section 02350 WASTE TRANSPORTATION AND DISPOSAL.

2.5.2 Capacity

Capacity of the contaminated material feed system shall be consistent with the capacity of the thermal desorption system.

2.5.3 Metering

The contaminated material feed system shall be capable of weighing the contaminated materials (liquid and solid) introduced into the thermal desorption system with an accuracy of plus or minus 2% of actual weight.

2.5.4 Conveyors

Contaminated material feed conveyors shall be covered and vented to the air pollution control devices if they emit more than 0.5 pounds per hour of total volatile organic compounds or 0.1 pound per hour of any toxic volatile organic substance (TVOS) listed in NJAC 7:27-17.3.

2.6 TREATED MATERIAL AND RESIDUES

Equipment and storage facilities shall be provided for removing, handling and storing residues resulting from thermal treatment, including treated material and solids captured by the pollution control system and other items, including but not limited to: treated soils pending analysis, baghouse dust, recycle water, organic phase oil, bags (used in baghouse), and demister filters.

The Contractor shall be responsible for the physical segregation of batches of treated soils pending receipt of post-treatment analytical results. The Contractor shall follow Table 01450A-1 in Section 01450A CHEMICAL DATA QUALITY CONTROL in regards to sample collection frequency and analyses and Sections 01450A CHEMICAL DATA QUALITY CONTROL and 01451A CONTRACTOR QUALITY CONTROL in regard to quality control requirements. The Contractor shall collect samples of the treated soils and conduct analytical testing to ascertain their suitability for onsite backfill with respect to the remediation goals contained in Section 01110 SUMMARY OF WORK.

2.6.1 Capacity

Capacity for treated material and solids captured by the pollution control system removal, handling, and storage systems shall be consistent with the capacity of the thermal desorption system.

2.6.2 Segregation of Materials

Separate storage for treated material and solids captured by the pollution control system handling systems shall be adequate for segregating a minimum of seven days production to allow for results from sampling and analyses prior to additional treatment or reuse.

2.6.3 Rehydration

Treated material handling systems shall include provisions for rehydration, prior to storage, of material leaving the thermal desorption system in order to reduce the fugitive emissions and to confine the materials to the proper storage area.

2.7 AIR SUPPLY AND POLLUTION CONTROL SYSTEMS

2.7.1 Air Supply

A forced draft (FD) blower/fan or fans shall be used to provide combustion air for the burners.

2.7.2 Induced Draft (ID) Fan

The induced draft (ID) blower/fan or fans shall be used to maintain negative pressure throughout the system.

2.7.3 Fugitive Emissions Control

Emissions from the combustion zone shall be controlled by keeping the combustion zone sealed and maintaining a combustion zone pressure lower than atmospheric pressure.

2.7.4 Quench

Off-gases from the primary soil treatment zone shall be cooled to temperatures protective of downstream units and equipment.

2.7.5 Stack Support

Stack support shall be in accordance with NFPA 82 and NFPA 211, as applicable. Vertical and lateral supports for exterior chimneys shall withstand wind forces of 110 mph.

2.7.6 Water and Liquid Waste

The air pollution control system shall be designed to minimize water consumption and liquid waste generation. Liquids in the air pollution control system shall be recirculated to the maximum extent practicable without compromising control efficiency prior to wasting to the liquid waste system.

2.8 PROCESS RESIDUALS

2.8.1 Liquid Wastes

Residual liquid wastes from the air pollution control system and liquids collected from the any other component/step of the process shall be sampled, treated and disposed of in accordance with regulatory and contract requirements. The excess non-contact process water from heat exchangers, condensers or other equipment shall be containerized and used on site as needed for dust suppression and wetland maintenance, discharged on site or disposed off site, at the Contractor's discretion, following appropriate permitting and sampling to assure water quality. Sampling shall be in accordance with the sample requirements and methodology contained in Section 01450A and the quality control requirements contained in Section 01450A.

2.8.2 Solids

Residual solid materials from the treatment process shall be sampled, treated, and disposed of in accordance with regulatory and contract requirements.

2.9 FUEL SYSTEM

2.9.1 Feed Capability

The fuel system shall have direct feed capability to the burners. Meters, pressure gages and controls shall be provided to maintain proper operating conditions. Design shall be in conformance with the applicable requirements of NFPA 30 and NFPA 31, NFPA 54 or NFPA 58, as appropriate to the fuel type.

2.9.2 Secondary Containment

Fuel storage tanks shall be provided with secondary containment as required by paragraph 2-3.4 Control of Spillage from Aboveground Tanks of NFPA 30.

PART 3 EXECUTION

3.1 PERMITTING INFORMATION

3.1.1 Permit Applications

The Contractor shall be responsible for submission and compliance of any permit applications associated with the construction and operation of the LTTD and furnishing the permit applications to the proper authorities following the first Notice to Proceed, including a NJDEP Air Quality Permit Equivalency Application.

All correspondence between the NJDEP and the Contractor shall be provided to the Contracting Officer or designated representative. Correspondence from the Contractor to the NJDEP shall be submitted to the NJDEP and the Contracting Officer or designated representative simultaneously.

The Contractor shall note that the Government undertook preliminary evaluations related to the air permit equivalency requirements during design activities. These evaluations are provided as part of this design package for the Contractor's information. The Contractor shall be

responsible for all air permit evaluations related to selected LTTD equipment.

3.1.2 Proof of Performance Test Protocol

The Contractor shall prepare a Proof of Performance Test Protocol for approval by the NJDEP Bureau of Technical Services (BTS) in accordance with NJAC 7:27-8. Upon approval by the NJDEP BTS, the Contractor shall schedule and perform a proof of performance test in accordance with NJDEP testing requirements. The NJDEP requires seven days notice prior to proof of performance test performance by the Contractor.

3.1.2.1 CEM Certification Protocol

The CEM Certification Protocol shall be in accordance with 40 CFR 60 Appendices B & F and NJAC 7:27-8.

3.1.2.2 Emission Testing Protocol

Concurrent with the CEM Certification Protocol, the Emission Testing Protocol (ETP) shall be sent to the NJDEP BTS for review. The ETP shall address all NJDEP Air Quality Permit Equivalency requirements. The purpose of the Emission Testing Protocol is to demonstrate that the system will operate within the constraints of the NJDEP Air Quality Permit Equivalency. The testing to be performed shall be performed in accordance with the approved ETP and appropriate state and federal requirements.

3.1.3 Substantive Requirements

The Contractor shall meet all substantive requirements that an Air Quality Permit Equivalency from the NJDEP would contain. This will require the Contractor to provide the NJDEP with detailed qualifications of the air emission control units to be used in the LTTD. It is not the intent of this specification to instruct the Contractor on the details of a NJDEP Air Quality Permit Equivalency. However, the Contractor is alerted that the permitting process will require the detailing of each air contaminant that evolves from the operation and is discharged into the open air. The Contractor shall supply details concerning the emissions control apparatus. This description includes the basic method used to remove contaminants, manufacturer, model, size, type, and capacity of the apparatus, means of disposal or destruction of collected air contaminants, the temperature of gases entering into and leaving the control device, direction of gas flow and the pressure drop across the device.

3.1.4 NJDEP BTS Coordination

After the Contractor has submitted the NJDEP Air Quality Permit Equivalency, the NJDEP BTS will review the Continuous Emission Monitor (CEM) Certification Protocol, Equipment Protocol and the Emission Testing Protocol, of which the NJDEP BTS has approval authority.

3.1.5 Equipment Protocol

Concurrent with the CEM Certification Protocol and the Emission Testing Protocol, the Contractor shall submit an Equipment Protocol. The Equipment Protocol shall include the vendor specifications of the LTTD, flow diagram and a simplified P&ID.

3.1.6 Odor, Dust and Noise Control

Odor, dust and noise control shall be limited in accordance with local and State regulations and ordinances as specified in Sections 01110 SUMMARY OF WORK, 01351 SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW), 01500A TEMPORARY CONSTRUCTION FACILITIES, and 02320 BACKFILL AND COMPACTION. It shall be the Contractor's responsibility to meet these requirements.

3.2 COORDINATION

The Contractor shall coordinate the processing of contaminated soils in the LTTD with other remedial operations scheduled on site.

The Contractor shall be responsible for coordinating, permitting, inspections, test periods and other preliminary activities such that these efforts are completed prior to the commencement of scheduled remedial actions.

The Contractor shall initiate the interim operation, including the proof of performance test as described herein, only after the mobilization has been completed to the satisfaction of the Contracting Officer or designated representative.

3.3 LAYOUT

The size of the process area shall not be increased without approval of the Contracting Officer. Costs associated with any area increase shall be borne by the Contractor, including costs of construction, demolition and site restoration.

3.3.1 Equipment

The area indicated on the drawings shall be used for equipment such as an auxiliary generator; dewatering equipment; pre-treatment equipment such as shredders, screens, etc.; air emission controls and monitoring equipment; contaminated material conveyance, preparation and loading equipment; stockpile locations; and fuel tanks.

The Contractor shall provide a feed preparation structure to minimize dust, odors and noise, and to assist with moisture content reduction prior to LTTD treatment.

3.3.2 Stockpiles

The area provided for stockpiling shall be used for segregated temporary storage of untreated contaminated materials, treated materials, debris that cannot be treated, and solids captured by the pollution control system. Contaminated materials, treated materials and solids captured by the pollution control system shall not be mixed. Facilities for treated materials and solids captured by the pollution control system shall maintain segregation of treated materials and solids captured by the pollution control system until each has been characterized for additional treatment and/or disposal. Stockpiles shall be constructed to include:

a. A chemical resistant impermeable geomembrane liner with a minimum thickness of 40 mils. Subgrade preparation; and installation, testing, inspection and protection of the liner shall be in accordance with SECTION 02372 WASTE CONTAINMENT GEOMEMBRANE.

b. An impermeable geomembrane cover with a minimum thickness of 10 mils to prevent precipitation from entering the stockpile.

c. Berms surrounding the stockpile which meet height requirements for a 25 year storm.

d. The liner shall be sloped to a low point to allow contact water to be collected. Contact water collected from the stockpile shall be handled and treated in accordance with paragraph Liquid Wastes. Contact water collected from the stockpile may be used in the thermal desorption process provided the treated material meets the physical and chemical post-treatment test criteria.

3.3.3 Fuel System

Fuel system installation and testing shall comply with the applicable requirements of NFPA 30 and NFPA 31, NFPA 54 or NFPA 58, as appropriate to the type of fuel.

3.4 INSTALLATION/ERECTION/REMOVAL

The installation/erection of the LTTD shall be performed to allow removal of the LTTD from the site and site restoration.

3.5 SAMPLING, MONITORING AND INSPECTIONS

Sample preservation and analytical methods are covered in Section 01450A CHEMICAL DATA QUALITY CONTROL. The sampling of treated soils and solids captured by the air pollution control system shall be in accordance with ASTM E 122.

3.5.1 Stack Sampling

Stack samples shall be taken in accordance with State regulations and the NJDEP Air Quality Permit Equivalency.

3.5.2 Visual Inspections

The thermal desorber and associated equipment (pumps, valves, conveyors, pipes, etc.) shall be subjected to thorough visual inspections for leaks, spills, fugitive emissions, and signs of tampering or mechanical failure as indicated in TABLE 02181-1.

TABLE 02181-1

VISUAL INSPECTION SCHEDULE

Phase of Operation	Minimum Inspection Frequency
Proof of Performance	Once per 8-hour shift
Interim operations	Once per 8-hour shift
Operations	Daily

3.5.3 Interlocks, Automatic Cut-Offs and Alarms

Interlocks, automatic contaminated material feed cut-off and associated alarms shall be tested at least once per month.

3.6 LOGS

Data from sampling, inspections and tests shall be recorded and the records placed in the operating log. The field log book shall describe calibration procedures conducted and results obtained. Logs shall be maintained throughout the duration of operations and shall be made available for inspection upon request by the Contracting Officer.

3.7 STARTUP

Startup shall include material handling systems demonstration, instrumentation calibration, control interlock demonstration and 24 hour operation. Startup operations shall demonstrate that the LTTD is capable of processing material at the proposed feed rate and that the air pollution control system is capable of attaining the required throughput rates. Startup activities shall be performed using uncontaminated material.

3.7.1 Startup Plan

The Contractor shall submit a startup plan. The plan shall describe control system functions and specific procedures proposed to demonstrate each function and for testing the system with uncontaminated materials; formats and procedures for reporting the material handling demonstration and hot check results; proposed operating procedures for the proof of performance with detailed descriptions of the sampling and analysis to be performed.

3.7.2 Instrumentation Calibration

Instrumentation calibration shall ensure that compliance-related instrumentation functions will be performed reliably and accurately. Test instruments shall be calibrated by a recognized standards laboratory 30 days prior to testing with standards traceable to NIST SP 250. Instrumentation and control system calibrations will be witnessed by the Contracting Officer.

3.7.3 Control Interlock Demonstration

Following instrumentation calibration, the Contractor shall demonstrate that control system interlocks and alarms are programmed correctly and are fully functional. Each alarm point shall be tested for proper response. Alarms, interlocks, and emergency responses (activation of combustion gas by-pass system or an emergency system shut down) shall be demonstrated. Operating conditions which trigger system alarms may be artificially induced in the field, or the control set points may be altered to invoke the desired response alarm. Appropriate control system responses (including interlocks, alarms, by-pass activation and/or emergency shutdowns) to each of the specified stimuli shall be demonstrated.

3.7.4 24 Hour Operation

The LTTD shall be placed in operation under conditions proposed in the Proof of Performance Plan for 24 hours or the treatment of one batch (if a batch system) without a malfunction or shutdown related to the contaminated

material feed or the treated material and solids captured by the pollution control system handling systems with all continuous emissions monitoring systems functional throughout the 24 hour operations. Shakedown shall begin after the 24 hour prove-out period. Shakedown may be performed on contaminated materials.

3.7.5 Reporting

An interim letter-report will be acceptable with the results formally reported in the startup report.

3.8 PROOF OF PERFORMANCE

The Contractor shall provide proof of performance of the selected LTTD equipment.Proof of performance shall be conducted in accordance with the approved Proof of Performance Test Protocol, as described in paragraph Proof of Performance Plan Test Protocol..

3.8.1 Schedule

Written notification of the anticipated date of the full proof of performance shall be received at least 7 days prior to the projected start date. Proof of performance operations may begin upon receipt of written approval of the Proof of Performance Plan and written notification that final shake down activities have been completed and that all systems are ready to conduct a full proof of performance.

3.8.2 Source of Material

Contaminated material used for the proof of performance test shall be obtained from areas identified by the Contracting Officer.

3.8.3 Operating Conditions

All systems shall be operated at the conditions specified in the Proof of Performance Plan for the duration of the proof of performance.

3.8.4 Field Proof of Performance Report

The proof of performance report shall include results of the proof of performance, including sample analysis data, calculations, and conclusions within 14 days of the completion of a proof of performance. At a minimum, data collected during each proof of performance shall be sufficient to make the following determinations:

3.8.4.1 Quantitative Analysis of the Materials

A quantitative analysis of each contaminated feed, treated material, and pollution control system stream for each individual run for each parameter stated in the Proof of Performance Plan. From each feed stream, analysis of composites made from grab samples taken at 15 minute intervals for each individual test run during the proof of performance. The quantitative analysis shall include analyses for any surrogate or spiking compounds.

3.8.4.2 Quantitative Analysis of the Stack Gases

The Contractor shall conduct any analysis needed to substantiate that the criteria in Table 1 is being met. The Contractor shall also provide any additional stack testing as required by the NJDEP.

3.8.4.3 Fugitive Emissions

Identification of sources of fugitive emissions is required with 24 hours of discovery of said emissions. A means of control of the emissions must be in-place prior to startup of the operations of the LTTD the following day.

3.8.4.4 Continuous Measurement and Recording

Continuous measurement and recording of operating parameters as required in the approved Proof of Performance Plan.

3.9 OPERATION

The Contractor shall be responsible for attaining project schedules of the LTTD in the event of rain, lightning or other inclement weather events.

The Contractor is responsible for operating the LTTD in a manner to achieve all project scheduling goals. The Contractor shall submit an Operating Plan as described in paragraph SUBMITTALS.

The Contractor shall operate the LTTD to treat any soil, scrap metal and wood, rocks and other excavated material equal to or less than two inches in nominal size. The LTTD may include pretreatment to sort and reduce nominal size of materials too large for treatment. The Contractor may use the LTTD to treat stumps and roots prior to off-site disposal.

The Contractor shall operate the LTTD to confirm the LTTD is capable of achieving the soil remediation goals defined in Section 01110 SUMMARY OF WORK and the NJDEP Air Quality Permit Equivalency requirements for a minimum of two weeks. The NJDEP shall be contacted in accordance with paragraph PERMITTING INFORMATION. A proof of performance test shall be performed in accordance with NJDEP approved demonstration test protocol. Thermally treated soil shall be sampled and analyzed in accordance with Table 01450A-1 and quality control requirements of Sections 01450A CHEMICAL DATA QUALITY CONTROL and 01451A CONTRACTOR QUALITY CONTROL. If the soil remediation goals and NJDEP Air Quality Permit Equivalency requirements are not achieved within this two-week period, further operation shall continue until these goals/requirements are achieved. This further operation shall be at the Contractor's expense.

The Contractor shall reprocess, retreat and reanalyze soils which do not meet criteria established herein. The reprocessing and retreating of such soils shall be continued repetitively until analytical results indicate that the residual contaminants present in the soils are within the remediation goals defined in Section 01110 SUMMARY OF WORK.

The Contractor shall be responsible for implementing the treated soil sampling program outlined in Section 01450A CHEMICAL DATA QUALITY CONTROL. This program includes sampling and analyzing soil samples in accordance with the sample requirements and methodology contained in Table 01450A-1 in Section 01450A CHEMICAL DATA QUALITY CONTROL, and the quality control requirements of Section 01450A CHEMICAL DATA QUALITY CONTROL.

3.10 UTILITIES

Fuel and utilities shall be provided at locations indicated. Contractor shall verify availability and locations of utilities and shall compensate

the utility company for connection and usage.

3.10.1 Electricity

The power utility is Public Service Electric & Gas Co., phone number (732) 764-3127.

3.10.2 Water

The water utility is New Jersey American Water, phone number 1-800-652-6987/908-482-4859 (site contact).

3.10.3 Natural Gas

The natural gas utility Public Service Electric & Gas Co., phone number (908) 668-3837.

3.11 DEMOBILIZATION PLAN

Demobilization shall be completed in accordance with the approved demobilization plan. The Contractor shall begin LTTD demobilization only after all contaminated soil has been treated to satisfy the treatment criteria as required herein. This demobilization period shall include all disconnection of utilities, decontamination, disassembly, and removal of all LTTD equipment, materials handling equipment, and structures related to the LTTD. The LTTD shall be completely decontaminated, including applicable confirmatory testing for PCBs and other contaminants. If the LTTD cannot be decontaminated, the components shall be disposed of or recycled as applicable.The demobilization period shall be considered complete when the Contractor and all LTTD-related equipment leaves the site.

-- End of Section --

SECTION 02231

CLEARING AND GRUBBING
04/06

PART 1 GENERAL

1.1 SCOPE OF WORK

The Contractor shall be responsible for all labor, equipment, materials, and incidentals necessary to complete the clearing and grubbing work in all areas to be excavated or on which temporary access roads are to be constructed, material is to be stockpiled and staged, and the decontamination pad or other temporary structures are to be constructed.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Nonsaleable Materials; G

Written permission to dispose of such products on private property shall be filed with the Contracting Officer.

SD-04 Samples

Tree wound paint

Herbicide

Submit samples in cans with manufacturer's label.

1.3 DELIVERY, STORAGE, AND HANDLING

Deliver materials to, store at the site, and handle in a manner which will maintain the materials in their original manufactured or fabricated condition until ready for use.

PART 2 PRODUCTS

2.1 TREE WOUND PAINT

Bituminous based paint of standard manufacture specially formulated for tree wounds.

2.2 HERBICIDE

Comply with Federal Insecticide, Fungicide, and Rodenticide Act (Title 7 U.S.C. Section 136) for requirements on Contractor's licensing,

certification and record keeping.

PART 3 EXECUTION

3.1 PROTECTION

3.1.1 Roads and Walks

Keep roads and walks free of dirt and debris at all times.

3.1.2 Trees, Shrubs, and Existing Facilities

Trees and vegetation to be left standing shall be protected from damage incident to clearing, grubbing, and construction operations by the erection of barriers or by such other means as the circumstances require.

3.1.3 Utility Lines

Protect existing utility lines that are indicated to remain from damage. Notify the Contracting Officer immediately of damage to or an encounter with an unknown existing utility line. The Contractor shall be responsible for the repairs of damage to existing utility lines that are indicated or made known to the Contractor prior to start of clearing and grubbing operations. When utility lines which are to be removed are encountered within the area of operations, the Contractor shall notify the Contracting Officer with 3 days notice to minimize interruption of the service.

3.2 CLEARING

Clearing shall consist of the felling, trimming, and cutting of trees into sections and the satisfactory disposal of the trees and other vegetation designated for removal, including downed timber, snags, brush, and rubbish occurring within the areas to be cleared. Clearing shall also include the removal and disposal of structures that obtrude, encroach upon, or otherwise obstruct the work. Trees, stumps, roots, brush, and other vegetation in areas to be cleared shall be cut off flush with or below the original ground surface, except such trees and vegetation as may be indicated or directed to be left standing. Trees designated to be left standing within the cleared areas shall be trimmed of dead branches 1-1/2 inches or more in diameter and shall be trimmed of all branches to the heights indicated or directed. Limbs and branches to be trimmed shall be neatly cut close to the bole of the tree or main branches. Cuts more than 1-1/2 inches in diameter shall be painted with an approved tree-wound paint.

3.3 TREE REMOVAL

Where indicated or directed, trees and stumps that are designated to be removed shall be removed from areas outside those areas designated for clearing and grubbing. This work shall include the felling of such trees and the removal of their stumps and roots as specified in paragraph GRUBBING. Trees shall be disposed of as specified in paragraph DISPOSAL OF MATERIALS.

3.4 PRUNING

Trim trees designated to be left standing within the cleared areas of dead branches 1 1/2 inches or more in diameter; and trim branches to heights and in a manner as indicated. Neatly cut limbs and branches to be trimmed

close to the bole of the tree or main branches. Paint cuts more than 1 1/4 inches in diameter with an approved tree wound paint.

3.5 GRUBBING

Grubbing shall consist of the removal and disposal of stumps, roots larger than 3 inches in diameter, and matted roots from the designated grubbing areas. Material to be grubbed, together with logs and other organic or metallic debris not suitable for foundation purposes, shall be removed to a depth of not less than 18 inches below the original surface level of the ground in areas indicated to be grubbed and in areas indicated as construction areas under this contract, such as areas for buildings, and areas to be paved. Depressions made by grubbing shall be filled with suitable material and compacted to make the surface conform with the original adjacent surface of the ground.

3.6 DISPOSAL OF MATERIALS

All trees and other vegetation removed from the exclusion zone shall be sampled and analyzed in accordance with the requirements of the approved disposal facility. No trees shall be disposed of as saleable timber. The Contractor shall provide a submittal indicating written permission of disposal of Nonsaleable Materials on private property.

-- End of Section --

SECTION 02310

EXCAVATION

PART 1 GENERAL

1.1 SCOPE OF WORK

Contractor shall provide all labor, materials, equipment and incidentals required to perform all excavation and handling of earth materials as shown, specified, and required for site remediation as shown on the excavation and grading drawings. All temporary means needed to prevent discharge of sediment to water courses from dewatering systems or erosion are included. Excavation includes all materials regardless of type, character, composition, moisture, or condition thereof.

Work includes excavation of contaminated and uncontaminated soils; possible excavation dewatering; removal of existing pavement, pipes, rocks and boulders, concrete, or other materials; provision of temporary utilities; provision of temporary support structures; soil sampling and analysis; and related work. Contaminated material excavation includes field surveys, removal and disposal of soils and debris. Quantity of excavation shall be as shown and required to meet site remediation standards.

Independent reviews will be completed by others. Independent reviews will include reviewing the Contractor's verification data, onsite surveys involving direct measurements, and sampling and sample analyses. The Contracting Officer and their representatives for independent reviews shall be provided with unrestricted access; access will be coordinated with the Contractor.

1.2 REFERENCES

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM-1110-2-2504	(1994) Engineering and Design - Design of Sheet Pile Walls)

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1926.650	Safety and Health Regulations for Construction
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 761	Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions

NEW JERSEY ADMINISTRATIVE CODE (NJAC)

NJAC 7:26E	(2008) Technical Requirements for Site Remediation

NJAC 14.2	Board of Public Utilities Excavators Handbook

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION (NJDEP)

IGWSCC	Impact to Groundwater Soil Cleanup Criteria
RDCSCC	Residential Direct Contact Soil Cleanup Criteria
NRDCSCC	Non-Residential Direct Contact Soil Cleanup Criteria

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Excavation Support System Plan; G, A/E

Excavation Schedule; G

Dewatering Work Plan; G

Excavation and Material Handling Plan; G

Submit 15 days prior to starting work.

SD-03 Product Data

Notification of Opening of any Excavation

Notification of encountering rock in the project. Advance notice on the opening of excavation.

SD-06 Reports

Field Measurement Data; G

SD-07 Certificates

Contaminated Water Handling Plan; G, A/E, DO

1.4 SURVEYS

Perform surveys in accordance with Section 01550 SURVEYING.

1.5 EXCAVATION SCHEDULE

Submit an Excavation Schedule and backfill operations schedule prior to commencing the work. Identify the sequence of areas to be excavated. This schedule shall be detailed and within the overall project schedule (see Section 01320 PROJECT SCHEDULE). Excavations shall be sequenced to prevent recontamination of previously excavated areas.

1.6 FIELD MEASUREMENT DATA

Submit collected Field Measurement Data to the Contracting Officer as part of a Closeout Package Report. This Closeout Package Report shall contain data collection forms, maps, soil sample collection forms, soil sample analyses, surveying data, calibration sheets, quality control (QC) checklist cover sheets and Record Drawings. The Record Drawings shall be in accordance with the requirements of Section 01700 REMEDIAL PACKAGE CLOSEOUT AND RECORD DOCUMENTS. Blank master forms and base maps are available from the Contracting Officer.

1.7 EXCAVATION AND MATERIAL HANDLING PLAN

Submit an Excavation and Material Handling Plan to the Contracting Officer for approval 14 days prior to the Pre-Work Conference and no later than 30 days after the Notice to Proceed. The Plan shall describe the methods and procedures for excavation of contaminated soil; debris handling and sampling procedures prior to off-site disposal; procedures for working near, removing, and replacing utilities; and methods, materials, and procedures for backfilling, compacting and grading; and include design details for on-site stockpiling areas. Adverse conditions may be encountered during excavation operations and provisions should be made for such events.

The Excavation and Material Handling Plan shall address each of the major excavation areas separately, detailing the additional field sampling performed, work sequence, and volume estimates. Sections addressing specific excavation areas can be submitted for approval separately or together.

The Excavation and Material Handling Plan shall also address the stockpiling, storage and testing of soils to undergo LTTD treatment and intended for on-site reuse or disposal. Provide a description of pre and post excavation sampling and analysis protocols, segregation methodologies and procedures,and Soil Characterization flow chart. Include a tabular site fill balance summary with a total of all excavated soils, contaminated and non contaminated quantities, and final disposition and location of soils removed from and reused on-site. For non-hazardous soils to be reused on-site, the concentrations of contaminants must be below the New Jersey Department of Environmental Protection Impact to Groundwater Soil Cleanup Criteria (IGWSCC). If soils with concentrations below the IGWSCC but above the Residential Direct Contact Soil Cleanup Criteria (RDCSCC) or Non-Residential Direct Contact Soil Cleanup Criteria (NRDCSCC) are reused on-site, the Contractor shall document via survey the limits of the fill and provide this information to the Government.

The Excavation and Material Handling Plan shall also outline excavation equipment to be used, personnel requirements, procedures for waste segregation, coordinating dust control procedures, procedures for coordinating site-dewatering activities, procedures for coordinating storage methods and locations for liquid and solid contaminated material, procedures for preventing spills, and procedures for coordinating haul routes and traffic control, procedures for a temporary storm water management for each phase of the construction activities and procedures to minimize disruption to operation of Borough of South Plainfield roadways.

1.8 EXCAVATION SUPPORT SYSTEM PLAN

Prior to start of excavation operations and no later than 30 days after the

Notice to Proceed, submit written plan to demonstrate compliance with OSHA Standard 29 CFR 1926.650. As a minimum, Excavation Support System plan shall include:

a. Name of competent person.

b. Excavation method(s) or protective system(s) to be used.

c. Copies of "manufacturer's data" or other tabulated data if protective system(s) are designed on the basis of such data.

1.9 DEWATERING WORK PLAN

Submit a Dewatering Work Plan prior to construction and no later than 30 days after the Notice to Proceed that includes methods for handling, storage, treatment, and disposal of excavation-derived water.

1.10 Blasting

Blasting will not be permitted.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 JOB CONDITIONS

3.1.1 Existing Utilities

Locate existing underground utilities in the areas of the Work using geophysical methods. Scan the construction site with electromagnetic or sonic equipment, and mark the surface of the ground or paved surface where existing underground utilities are discovered. Verify the elevations of existing piping, utilities, and any type of underground or encased obstruction not indicated or to be specified or removed but indicated or discovered during scanning. If utilities are to remain in place, provide adequate means of protection during all operations. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, consult Contracting Officer immediately for directions as to procedure. Cooperate with utility owners and business tenants in keeping services and facilities in operation. Repair damaged utilities to satisfaction of utility owner. In general, service lines within the site are shown based on the best information available; the Government does not guarantee the accuracy of the information above.

Excavate test pits as required to verify the location and the depth of all existing utilities prior to the start of remedial excavation.

Do not perform excavation or intrusive work until site utilities have been field located and until local and private utility owners have been contacted and have located and marked their utilities. Prior to any excavation work, utility clearances shall be documented and field verified by the Contractor. Prevent damaging or disturbing utilities during construction. Utilities encountered within the excavation limits shall be protected and shall remain in service at all times. All damages to existing utilities resulting from the work shall be repaired in accordance with the specifications and to the satisfaction of the utility owner.

Coordinate physical removal of utilities to be performed by or according to local utility authorities.

Comply with New Jersey State's Underground Protection Act ("One Call Law" NJAC 14.2) as directed in the State of New Jersey Board of Public Utilities, Excavation Handbook. Call 1-800-272-1000 for a utility mark-out three full business days before beginning excavation. Comply with NJAC 14.2 (see State of New Jersey, Board of Public Utilities Excavator Handbook).

3.1.2 Existing Water Supply Line

The Contractor shall note the presence of a 36-inch water supply line that traverses the excavation areas as shown in the Contract Drawings. At this time, the requirements of this contract call for full protection of that water supply line during all performance of work and removal of all contaminated soil around the line. The Government is currently discussing the proposed work with the utility owner, New Jersey American Water and those discussion may lead to additional requirements under this contract.

3.1.3 Roadways and Walks

All hydrants, valves, fire alarm boxes, letter boxes, and other facilities which may require access during construction shall be kept accessible for use. During the progress of the Work, Contractor shall maintain all crosswalks, sidewalks, and roadways proximate to the site in satisfactory condition and the Work shall at all times be so conducted as to cause a minimum of inconvenience to public travel, and to permit safe and convenient access to private and public property along the line of the Work.

3.1.4 Clearing and Grubbing

Clear and grub trees, stumps, roots, brush or other vegetation as necessary for clearing, stripping, and removal. All clearing and grubbing activities shall be in accordance with 02231 CLEARING AND GRUBBING.

3.2 GENERAL EXCAVATION

The Contractor shall perform excavation of every type of material encountered to the lines, grades, and elevations indicated and as specified. The Contractor shall provide Notification of Opening of any Excavation to Contracting Officer sufficiently in advance to permit elevations and measurements of the undisturbed ground surface to be taken.

Notify the Contracting Officer at least 48 hours prior to the start of excavation of PCB-contaminated soils and debris Use methods and equipment that result in minimal disturbance to remaining material beyond the excavation limits. Remove and dispose of any material that becomes contaminated as a result of the Contractor's operation at no additional cost to the Government. Stage operations to minimize the time the contaminated material is exposed to the weather. Provide protection measures around the area of contaminated material to divert runoff of water from within the excavation boundaries.

The contractor shall excavate to the limits and depths required for removal of existing pavement and facilities. Depth and extent of excavations shall be limited to the minimum dimensions required and not more than 0.1 feet beyond that specified, unless otherwise directed by the Contracting Officer.

3.2.1 Stockpiled Material

Place PCB contaminated soil and concrete removed from the work area in a temporary containment area near the work area. Divert water from the containment area. Line containment area with 40 mil polyethylene sheeting. Place materials on the impervious barrier and cover with 10 mil polyethylene sheeting. Provide straw bale berm around the outer limits of the containment area and cover with polyethylene sheets. Secure edges of sheets to keep the polyethylene sheeting in place. Cover contaminated material at all times when not being worked. Maintain sheeting and replace when worn or ripped. As an option, soil may be stockpiled in roll-off containers or trucks suitable for carrying PCB contaminated materials as specified herein. Composite testing of stockpiled material shall be in accordance with Section 01450A CHEMICAL DATA QUALITY CONTROL.

The final stockpile locations shall be clearly demarcated on the site. Creation and maintenance of stockpiles shall not interfere with the excavation, dewatering, or dust control methods. Prior to stockpiling any material, the final stockpile location and size must be approved by the Contracting Officer.

3.2.2 Water Handling

3.2.2.1 Excavation Dewatering

Provide for the collection and disposal of surface and subsurface water encountered during construction. Surface water shall be diverted to prevent entry into the excavation areas; surface water that does not contact contaminated/exclusion zone areas shall be managed in accordance with Section 01356A STORM WATER POLLUTION PREVENTION MEASURES and the contract drawings. All surface and subsurface water that comes into contact with contaminated soil is considered impacted water and shall be collected, tested, and treated, as necessary. All water that has been in trenches and the decontamination pad is considered impacted water. The Contractor shall establish/construct storm drainage features at the earliest stages of site development. The Contractor shall grade the construction area throughout construction to direct surface water runoff away from the construction activity and contaminated areas and/or provide temporary ditches, swales, and other drainage features and equipment as required to maintain dry soils. Contractor shall make every effort and shall employ the necessary means and methods to prevent surface and subsurface water from coming into contact with contaminated soil and surfaces so as to minimize the generation of impacted water which must be treated prior to disposal. It is the responsibility of the Contractor to assess the soil and ground water conditions presented by the plans and specifications and to employ necessary measures to permit construction to proceed.

Groundwater flowing toward or into excavations shall be controlled to prevent sloughing of excavation slopes and walls, boils, uplift and heave in the excavation and to eliminate interference with orderly progress of construction. Control measures shall be taken by the time the excavation reaches the water level in order to maintain the integrity of the in situ material. While the excavation is open, the water level shall be maintained at or below the bottom of the excavation at all times. Submit performance records weekly.

The Contractor shall minimize area of open excavation so as to limit the volume of dewatering required for the project. The maximum allowable

excavation open at any time shall be limited to 5 acres maximum and jointly determined by the Contracting Officer and the Contractor.

3.2.2.2 Water Treatment

The Contractor shall arrange for off-site disposal to a privately owned disposal facility via frac tanks. The frac tanks shall be maintained according to applicable regulations including, regulations for a temporary unit as specified in 40 CFR 264.553.

3.2.2.3 Contaminated Water Handling Plan

Prepare and submit plan detailing methods and techniques for collection and treatment of contaminated water as required for personnel, equipment and miscellaneous decontamination and excavation dewatering operations in accordance with paragraph COLLECTION, TREATMENT, AND DISCHARGE OF CONTAMINATED WATER. The plan shall be submitted no later than 30 days after the Notice to Proceed. For treatment system, include size and location of equipment, catalog data on all components of system, size and arrangement of filters, type and quantity of filtering material, and method of containment.

3.2.3 Trench Excavation Requirements

Trench walls more than 4 feet high shall be shored, cut back to a stable slope, or provided with equivalent means of protection for employees who may be exposed to moving ground or cave in. Vertical trench walls more than 4 feet high shall be shored. Trench walls which are cut back shall be excavated to OSHA requirements. Special attention shall be given to slopes which may be adversely affected by weather or moisture content. The trench width and depth shall be controlled to the minimum dimension required unless otherwise directed by the Contracting Officer.

3.2.4 Underground Utilities

Existing and abandoned utilities shall be excavated as per the Contract Drawings and the direction of the Contracting Officer. Location of the existing utilities indicated is approximate and other underground utilities may be present. Scan the construction site with electromagnetic and sonic equipment and mark the surface of the ground where existing underground utilities are discovered. Physically verify the location and elevation of the existing utilities indicated prior to starting construction. If utilities other than those indicated are found, stop work and contact the Contracting Officer.

Protect existing utilities from damage and intrusion of PCBs. If the utility is to remain in service, decontaminate the utility in an attempt to meet the requirements for disposal as uncontaminated material. and as per the direction of the utility owner. The Contracting Officer will inspect the surfaces prior to sampling to ensure adhering soil has been removed to the greatest extent practical. If the utility is to be removed, disconnect the utility line from service as per the direction of the utility owner and excavate with the surrounding contaminated soil.

Movement of construction machinery and equipment over pipes and utilities during construction shall be at the Contractor's risk. Perform work adjacent to utilities as indicated in accordance with procedures outlined by utility company. Excavation made with power-driven equipment is not permitted within two feet of known utilities or subsurface construction. For work immediately adjacent to or for excavations exposing a utility or

other buried obstruction, excavate by hand. Start hand excavation on each side of the indicated obstruction and continue until the obstruction is uncovered or until clearance for the new grade is assured. Support uncovered lines or other existing work affected by the contract excavation until approval for backfill is granted by the Contracting Officer. Report damage to utility lines or subsurface construction immediately to the Contracting Officer.

3.3 SHORING

3.3.1 General Requirements

The Contractor shall submit an Excavation Support Plan for approval 15 days prior to starting work. Submit drawings and calculations, certified by a registered professional engineer, describing the methods for shoring and sheeting of excavations. Shoring, including sheet piling, shall be furnished and installed as necessary to protect workmen, banks, adjacent paving, structures, and utilities to remain in place. Shoring, bracing, and sheeting shall be removed as excavations are backfilled, in a manner to prevent excavation sidewall collapse.

The Contractor shall design, provide, and maintain the excavation support systems as required to complete the work. The Contractor shall provide all necessary sheeting, bracing, and sloping as required by federal, state, and local safety requirements; to support the sides of excavations; to prevent any movement which could diminish the width of the excavation below that necessary for proper construction to minimize soil cut volumes and groundwater infiltration; and to protect adjacent structures from undermining or other damage.

The design of shoring methods and sheet piles shall conform to the USACE engineering design manual EM-1110-2-2504 and other applicable standards and be stamped by an engineer licensed in the State of New Jersey. The design shall account for anticipated groundwater elevations. Design loads included shall account for live loads outside of the excavation area.

3.3.2 Sheeting, Shoring and Bracing

Used material shall be in good condition, not damaged or excessively pitted. All steel or wood sheeting designated to remain in place shall be new. New or used sheeting may be used for temporary work.

All timber used for breast boards (lagging) shall be new or used, meeting the requirements for Douglas Fir Dense Construction grade with a bending strength not less than 1500 psi or Southern Pine No. 2 Dense.

All steel work for sheeting, shoring, bracing etc., shall be designed in accordance with the provisions of the "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings", of the AISC, except that field welding will be permitted.

Maintain shoring and bracing in excavations regardless of time period excavations will be open. Carry down shoring and bracing as excavation progresses.

Unless otherwise shown, specified, or directed, all materials used for temporary construction shall be removed when Work is completed. Such removal shall be made in a manner not injurious to the structure or its appearance or to adjacent Work.

The clearances and types of the temporary structures, insofar as they affect the character of the finished Work, and the design of sheeting to be left in place, will be subject to the approval of Engineer; but Contractor shall be responsible for the adequacy of all sheeting, shoring, bracing, etc.

Safe and satisfactory sheeting, shoring and bracing shall be the entire responsibility of Contractor.

All municipal, County, State, and Federal ordinances, codes, regulations and laws shall be observed.

3.3.3 Removal of Sheeting and Bracing

Remove sheeting and bracing from excavations, unless otherwise directed by the Contracting Officer, in writing. Sheeting and bracing shall not be removed from the excavation until authorized at a minimum by the site designated competent person and the health and safety officer. Removal shall be done so as to not cause injury to the Work. Removal shall be equal on both sides of excavation to ensure no unequal loads on pipe or structure.

3.4 CONTAMINATED MATERIAL REMOVAL

3.4.1 Excavation of Contaminated Material

Soils delineated to be excavated as shown on the Contract Drawings shall be tested in-situ and analyzed for total PCBs in accordance with disposal facility requirements. Based on this pre-excavation sampling, the Contractor may propose revised limits of excavation to the Contracting Officer for government consideration. The Contractor shall place the excavated materials in prepared stockpile areas for subsequent verification sampling and analysis as specified below. Excavations may be sheeted and shored as required to minimize over excavation, in addition to slope requirements. Upon completion of the excavation to the lines and grades shown or as revised by the Contractor and approved by the Contracting Officer, conduct post-excavation in-situ verification sampling of excavation bottom and sidewalls in accordance with NJDEP Requirements (NJAC 7:26E).

3.4.2 Excavated Material Setback

Place excavated and stockpiled materials and equipment at a safe distance from the edge of the excavation to prevent excessive loading on the face of the excavation.

3.4.3 Temporary Barricades

Place barricades around the excavation in such a manner to alert personnel to the danger and prevent them from falling into the excavation if the excavation must be left open during periods when the work site is unoccupied.

3.5 CONTAMINATED MATERIAL STORAGE

The requirements of TSCA regulations in 40 CFR 761.65(a)(9) shall take precedence over any specified requirements below. Place material in temporary storage stockpiles immediately after excavation. Keep a written

log to track the source of contaminated material in each temporary storage unit.

3.5.1 Stockpiles

Construct stockpiles to isolate stored contaminated material from the environment as discussed in Section 02181 REMEDIATION OF CONTAMINATED SOILS BY THERMAL DESORPTION.

3.5.2 Roll-Off Units

To provide flexibility, roll-off units may be used to temporarily store contaminated material. Water-tight roll-off units used to temporarily store contaminated material shall have an impermeable cover placed over the units to prevent precipitation from contacting the stored material and dust from leaving. Remove and store liquid that collects inside the units in accordance with paragraph Liquid Storage.

3.5.3 Screening

Excavated material shall be screened in accordance with 02181 REMEDIATION OF CONTAMINATED SOILS BY THERMAL DESORPTION to determine materials eligible for on-site treatment via LTTD and materials to be disposed of off-site without treatment. Screened materials for the LTTD shall be stockpiled accordingly.

3.5.4 Sampling

3.5.4.1 Soils

Stockpiled soil designated for on-site treatment shall be sampled and analyzed in accordance with 01450A CHEMICAL DATA QUALITY CONTROL.

3.5.4.2 Debris

Stockpiled debris designated for off-site disposal shall be sampled and analyzed in accordance with the requirements of the approved disposal facility.

3.6 SUBSURFACE STRUCTURES

3.6.1 Excavation of Subsurface Structures

Debris and other unknown subsurface anomalies that are encountered within the limits of excavation shall be removed. The Contractor shall segregate and sample in accordance with Section 01450A CHEMICAL DATA QUALITY CONTROL. Final disposal shall be as approved by the Contracting Officer.

3.7 COLLECTION, TREATMENT, AND DISCHARGE OF CONTAMINATED WATER

Furnish labor, materials, and equipment necessary for collecting, treating, sampling, and off-site disposal to a privately owned disposal facility of contaminated surface and subsurface water in excavations at the site. Conduct excavation and backfilling operations at the site in a manner that minimizes the amount of surface and subsurface water which may collect in the open excavation as discussed in paragraph EXCAVATION DEWATERING.

3.7.1 Subsurface Drainage

Remove water by pumping or other methods to prevent softening of surfaces exposed by excavation. The Contractor shall arrange for off-site disposal to a privately owned disposal facility. Provide water treatment necessary to treat water to levels to meet off-site disposal facility requirements if needed. Submit performance records weekly. Measure and record performance or dewatering system at the same time each day by use of observation wells or piezometers installed in conjunction with the dewatering system.

3.7.2 Treatment System Requirements

The Contractor shall be responsible for all aspects of designing, providing, installing, operating, maintaining, and removing collection, storage, and treatment facilities as required to pre-treat waters to within the treatment limits required by the privately owned disposal facility (if required). The treatment system shall:

a. Be capable of removing PCB contaminants to below the limit defined by the off-site treatment facility for contaminated water.

b. Include effluent holding tanks designed to allow on-site testing of water quality prior to discharge.

c. Include recycle capability for retreatment of effluent not meeting the discharge requirements of this specification, as determined by on-site testing.

3.7.3 Treatment System Operations

Monitor, test, and adjust the treatment system in accordance with the work plan and Sampling and Analysis Plan, or as otherwise modified by special regulatory requirements. If there is a conflict between requirements, the more stringent requirement shall prevail. Test water in accordance with EPA Method 608.

3.7.4 Off-site Disposal of Treated Water

Off-site disposal shall be in accordance with the Contractor's approved Contaminated Water Handling Plan.

3.7.5 Cleanup and Removal of Treatment System

Upon completion of work, close and remove from the site the surface water and groundwater treatment system. Restore the site to its original condition. Decontaminate equipment in accordance with the Contractor's Site Health and Safety Plan. Containerize, sample, test, and dispose of carbon, residues, cleaning aids, decontamination liquids, and waste as specified for the contaminated soils.

-- End of Section --

SECTION 02320

BACKFILL AND COMPACTION

PART 1 GENERAL

1.1 SCOPE OF WORK

Contractor shall provide all labor, materials, equipment, and incidentals to furnish, place, and compact all backfill, fill, and other materials required for structures, pipelines, roads, and site restoration, and to provide finish grades as shown, specified and ordered.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO T 180	(2001) Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and an 457-mm (18-in) Drop
AASHTO T 224	(2001) Correction for Coarse Particles in the Soil Compaction Test
AASHTO T 90	Standard Method of Test for Determining the Plastic Limit and Plasticity Index of Soils

ASTM INTERNATIONAL (ASTM)

ASTM D 1556	(2000) Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557	(2002e1) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu.m.))
ASTM D 2487	(2000) Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 2922	(2005) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 3017	(2004) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
ASTM D 422	(1963; R 2002) Particle-Size Analysis of Soils

NEW JERSEY ADMINISTRATIVE CODE (NJAC)

NJAC 7:26E	(2008) Technical Requirements for Site Remediation
NJAC 7:26D	(2008) Remediation Standards
NJAC 7:28-12	Soil Remediation Standards for Radioactive Materials

NEW JERSEY DEPARTMENT OF TRANSPORTATION (NJDOT)

NJDOT 901.04	Aggregates - Broken Stone
NJDOT 901.05	Aggregates - Washed Gravel
NJDOT 901.08	Aggregates - Dense-Graded Aggregate
NJDOT 909.10	Topsoil
NJDOTSS	(2007) Standard Specifications for Road and Bridge Construction

1.3 MEASUREMENT

Not Used

1.4 PAYMENT

Not Used

1.5 DEFINITIONS

1.5.1 Satisfactory Materials

Soils classified by ASTM D 2487 as GW, GP, GM, GP-GM, GW-GM, SW, SP, SM, SC, CL, ML, SW-SM, SW-SC, SP-SM, and SP-SC; free of rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter. Backfill material shall be free of organic material, recycled material, broken concrete, masonry, rubble, asphalt pavement, frozen materials, rubbish, other manmade fills, trash, refuse, backfills from previous construction, or radiologically or chemically contaminated materials exceeding the limits indicated in Section 01450A CHEMICAL DATA QUALITY CONTROL. Soils shall be certified clean fill, the certification shall be submitted in the Excavation and Material Handling Plan in accordance with Section 02310 EXCAVATION. On-site soils to be reused as backfill shall also comply with the New Jersey Department of Environmental Protection Requirements as discussed in the Excavation and Material Handling Plan. Sample potential backfill materials at each source for radiological and chemical contaminants in accordance with Section 01450A CHEMICAL DATA QUALITY CONTROL.

1.5.2 Treated Materials

On-site soils which have undergone LTTD treatment may be used for site backfill provided that they meet the treatment goals and objectives in accordance with Section 01110 SUMMARY OF WORK.

1.5.3 Unsatisfactory Materials

Uncontaminated materials which do not comply with the requirements for satisfactory materials are unsatisfactory. Unsatisfactory materials also include man-made fills; trash; refuse; backfills from previous construction; and material classified as satisfactory which contains root and other organic matter or frozen material.

1.5.4 Degree of Compaction

Degree of compaction required, except as noted in the second sentence, is expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557 abbreviated as a percent of laboratory maximum density. Since ASTM D 1557 applies only to soils that have 30 percent or less by weight of their particles retained on the 3/4 inch sieve, the degree of compaction for material having more than 30 percent by weight of their particles retained on the 3/4 inch sieve shall be expressed as a percentage of the maximum density in accordance with AASHTO T 180 Method D and corrected with AASHTO T 224. To maintain the same percentage of coarse material, the "remove and replace" procedure as described in the NOTE 8 in Paragraph 7.2 of AASHTO T 180 shall be used.

1.5.5 Topsoil

Material suitable for topsoil obtained from offsite areas is defined as: Natural, friable soil capable of supporting vegetative growth. Topsoil shall meet the requirements of NJDOT 909.10.

1.5.6 Hard/Unyielding Materials

Weathered rock, dense consolidated deposits, or conglomerate materials which are not included in the definition of "rock" with stones greater than 30 inches in any dimension or as defined by the pipe manufacturer, whichever is smaller. These materials usually require the use of heavy excavation equipment, ripper teeth, or jack hammers for removal.

1.5.7 Unstable Material

Unstable material shall consist of materials too wet to properly support the utility pipe, conduit, or appurtenant structure.

1.6 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Proposed source of borrow material.

SD-06 Reports

Testing; G, A/E

Borrow Site Testing; G, A/E

Off-Site Soils Chemical Testing; G, A/E

Within 24 hours of conclusion of tests, 6 copies of test results, including calibration curves and results of calibration tests. Results of testing at the borrow site.

SD-07 Certificates

Commercial Testing Laboratory Qualifications

Qualifications of the commercial testing laboratory or Contractor's testing facilities.

PART 2 PRODUCTS

2.1 REQUIREMENTS FOR OFF-SITE SOILS

Off-site soils brought in for use as backfill and topsoil shall be satisfactory materials and meet the NJDEP requirements of NJAC 7:26E-6.4 and NJAC 7:26D with regard to condition and quality to ensure that the materials do not contain contaminants in concentrations which exceed NJDEP commercial direct contact and impact to groundwater criteria. Backfill shall have a pH between 4.5 and 9. Sample potential backfill materials at each source for radiological and chemical contaminants in accordance with Section 01450A CHEMICAL DATA QUALITY CONTROL. The contractor shall submit results from Off-Site Soils Chemical Testing. Testing of backfill shall also demonstrate that it is free of radiological contamination above site backgrounds in accordance with NJAC 7:28-12. Provide a written backfill material certification/source for all backfill materials proposed to be used on site including a written historical summary of the site the fill materials are coming from. This includes but is not limited to previous uses of the site, violations, and whether the site was previously an Environmental Responsibility Act/Industrial Recovery Site. Material shall not be brought on site until test results have been evaluated and the soils approved by the Contracting Officer.

2.2 SUBBASE MATERIAL

Subbase material shall generally be used for all backfill on-site when excavated treated or untreated materials are determined to be unsuitable and to supplement the volume of on-site materials removed as debris. Subbase material shall also be placed beneath all paved areas as shown. Subbase material shall be sound and will be accepted on the basis of a magnesium sulfate soundness loss after 4 cycles of 20 percent or less. Subbase material shall consist of stone, sand, and gravel or blends of these materials. Dense graded aggregate conforming to NJDOT 901.08, broken stone confirming to NJDOT 901.04, and crushed gravel conforming to NJDOT 901.05. Blast furnace slag shall not be used. The moisture content of the dense graded aggregate shall be 4 to 8% immediately prior to placement based on dry weight. The dense graded aggregate shall have the following gradation:

Sieve Size	**Percent Passing by Weight**
1.5 inch	100
3/4 inch	55 to 90
No. 4	25 to 60
No. 50	5 to 25
No. 200	3 to 12

Percent Passing by Weight

When tested according to AASHTO T 90, the portion passing the No. 40 sieve shall be non-plastic. Recycled concrete aggregate may not be used. RAP produced dense aggregate may not be used. Material shall also meet the other requirements of satisfactory materials as defined in paragraph SATISFACTORY MATERIALS.

PART 3 EXECUTION

3.1 GENERAL

Backfill materials shall come from an approved source. Treated materials shall be used as backfill only if in compliance with the treatment goals and objectives in Section 01110 SUMMARY OF WORK.

3.2 GROUND SURFACE PREPARATION

3.2.1 General Requirements

Unsatisfactory material in surfaces to receive fill or in excavated areas shall be removed and replaced with satisfactory materials as directed by the Contracting Officer.

3.2.2 Frozen Material

Material shall not be placed on surfaces that are muddy, frozen, or contain frost. Frozen material shall not be placed in excavations nor shall clean fill be placed upon frozen material.

3.2.3 Ground Surface Compaction

Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, or other approved equipment well suited to the soil being compacted. Material shall be moistened or aerated as necessary to provide the moisture content that will readily facilitate obtaining the specified compaction with the equipment used. Minimum subgrade density shall be as specified in paragraph TESTING.

3.3 BACKFILLING

Furnish, place, and compact all backfill materials to soil excavation limits for grading, pavement subgrades, pipe trenches and other areas as shown and specified. Backfill shall be placed to the lines and grades shown. Placement of Backfill shall be in accordance with the applicable sections of NJDOTSS. No backfill shall be placed without prior approval from the Contracting Officer. Backfill excavations as promptly as work permits but not before acceptance by the Contracting Officer of construction below finished grade, including all inspections and testing. Compaction requirements for backfill materials shall also conform to the applicable portions of paragraph SUBGRADE PREPARATION and COMPACTION. Place fill in 8 inches (max) lifts prior to compaction except when hand-operated compactors are used, in which case maximum uncompacted lift thickness shall be 6 inches.

If the fill does not meet optimum moisture requirements, the fill must be wetted or dried and thoroughly mixed to achieve optimum moisture content.

Natural undisturbed soils or compacted soil subsequently disturbed or removed by construction operations shall be replaced with materials compacted as specified above.

3.3.1 Trench Backfill

Trenches shall be backfilled to blend with existing adjacent site grades, and will be sloped as shown. The trench shall not be backfilled until all specified tests are performed.

3.4 COMPACTION

3.4.1 General

Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibrating compactors, or other approved equipment. Compact soil and subgrade to not less than the following percentages of maximum dry unit weight and optimum moisture according to ASTM D 1557:

a. Areas under pavements, which is the entire OU-2 site, compact each layer of backfill to 95 percent;

b. Plus or minus 2.5 percent of optimum moisture.

3.5 SUBGRADE PREPARATION

Subgrade shall be proof-rolled with a minimum 10 ton roller to the satisfaction of the Contracting Officer prior to installation of geotextile. The surface underlying the geotextile shall be smooth and free of ruts or protrusions which could damage the geotextile.

3.6 FINISHING

3.6.1 Grading Around Structures

Areas within 5 feet outside structure line shall be constructed true-to-grade, shaped to drain, and shall be maintained free of trash and debris until final inspection has been completed and the work has been accepted.

3.7 TESTING

Testing shall be performed by an approved commercial testing laboratory or by the Contractor subject to approval. The Contractor shall submit the Commercial Testing Laboratory Qualifications if a commercial testing laboratory will be used. If the Contractor elects to establish testing facilities, no work requiring testing will be permitted until the Contractor's facilities have been inspected and approved by the Contracting Officer. Field in-place density shall be determined in accordance with ASTM D 2922. When ASTM D 2922 is used, the calibration curves shall be checked and adjusted using only the sand cone method as described in ASTM D 1556. ASTM D 2922 results in a wet unit weight of soil and when using this method ASTM D 3017 shall be used to determine the moisture content of the soil. The calibration curves furnished with the moisture gauges shall also be checked along with density calibration checks as described in ASTM D 3017; the calibration checks of both the density and moisture gauges shall be made at the beginning of a job on each different type of material encountered and at intervals as directed by the

Contracting Officer. When test results indicate, as determined by the Contracting Officer, that compaction is not as specified, the material shall be removed, replaced and recompacted to meet specification requirements. Tests on recompacted areas shall be performed to determine conformance with specification requirements. Inspections and test results shall be certified by a registered professional civil engineer. These certifications shall state that the tests and observations were performed by or under the direct supervision of the engineer and that the results are representative of the materials or conditions being certified by the tests. The following number of tests, if performed at the appropriate time, will be the minimum acceptable for each type operation.

3.7.1 Fill and Backfill Material Gradation

One test per 5,000 cubic yards stockpiled or in-place source material, and one test per 3000 cubic yards for on-site soils which have undergone LTTD treatment, whenever a change of material occurs, or at the direction of Contracting Officer for imported materials. Gradation of fill and backfill material shall be determined in accordance with ASTM D 422.

3.7.2 In-Place Densities

a. One test per 5,000 square feet or fraction thereof, of each lift of fill, for subbase backfill layer beneath proposed bituminous pavement, compacted by other than hand-operated machines (no less than one sample per lift).

3.7.3 Moisture Contents

In the stockpile, excavation, or borrow areas, the Contractor shall perform a minimum of one moisture test per 2,500 cubic yards per type of material or source of material being placed during stable weather conditions.During unstable weather, tests shall be made as dictated by local conditions and approved by the Contracting Officer. The Contractor shall submit all Borrow Site Testing results.

3.7.4 Optimum Moisture and Laboratory Maximum Density

Tests shall be made for each type material or source of material including borrow material to determine the optimum moisture and laboratory maximum density values in accordance with ASTM D 1557. One representative test per 5,000 cubic yards of fill and backfill, when any change in material occurs which may affect the optimum moisture content or laboratory maximum density, or as directed by the Contracting Officer.

-- End of Section --

SECTION 02350

WASTE TRANSPORTATION AND DISPOSAL

PART 1 GENERAL

1.1 SCOPE OF WORK

Contractor shall provide all labor, materials, tools, and equipment to transport and dispose Hazardous and Toxic Waste (HT) materials. Included are all plans, manifests, record keeping, and any other supporting documentation necessary for shipment and disposal of HT materials.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA OSWER Directive 9834.11	Close Out Procedures for National Priorities List Sites

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 61	National Emission Standards for Hazardous Air Pollutants
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 263	Standards Applicable to Transporters of Hazardous Waste
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 300	National Oil and Hazardous Substances Pollution Contingency Plan
40 CFR 761	Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions
49 CFR 107	Hazardous Materials Program Procedures
49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements

49 CFR 173	Shippers - General Requirements for Shipments and Packagings
49 CFR 176	Specifications for Packagings

NEW JERSEY ADMINISTRATIVE CODE (NJAC)

NJAC 7:26-1	Requirements for the management, transportation and disposal of asbestos containing material (ACM)

UNITED STATES CODE (USC)

10 USC 2692	Title 10 United States Code 2692 Storage, treatment, and disposal of non-defense toxic and hazardous materials
15 USC 2601 et seq.	Title 15 United States Code 2601 Toxic Substances Control Act
42 USC 6901	Title 42 United States Code 6901 Solid Waste Disposal/Resource Conservation and Recovery Act and Major Amendments
42 USC 9601	Title 42 United States Code 9601 Comprehensive environmental Response, Compensation and Liability Act (CERCLA or Superfund)
49 USC 1801	Title 49 United States Code 1801 Hazardous Materials Transportation Act

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Waste Management Plan and Addendum; G, A/E

Prior to start of work and no later than 30 days after the Notice to Proceed, the Contractor shall develop a Waste Management Plan. The Waste Management Plan shall detail the manner in which all material/wastes shall be managed both on and off site for the remediation activities. This plan shall include the relevant requirements for handling, transportation, storing, treatment and/or disposal of all nonhazardous and hazardous materials and wastes as required by the applicable laws and regulations.

Security Plan for Hazardous Materials Shipments; G

Traffic Control Plan; G

Notices of Non-Compliance and Notices of Violation

Notices of non-compliance or notices of violation by a federal, state, or local regulatory agency issued to the Contractor in relation to any work performed under this contract. Provide copies of such notices to the Contracting Officer. Also furnish all relevant documents regarding the incident and any information requested by the Contracting Officer, coordinate its response to the notice with the Contracting Officer prior to submission to the notifying authority. Also furnish a copy to the Contracting Officer of all documents submitted to the regulatory authority, including the final reply to the notice, and all other materials, until the matter is resolved.

Hazardous Waste Manifest; G

EPA Form 8700-12, Notification of Hazardous Waste Activity; G

SD-06 Reports

Hazardous Waste Manifest Annual and/or Biennial Reports

State Reporting Requirements; G

Transportation and Disposal Tracking Form

Discrepancy Reports

Exception Reports

Toxic Substance Control Act PCB Reporting Requirements; G

Final Disposal Report; G

SD-07 Certificates

Qualifications; G

Regulatory specialist and transportation and disposal coordinator; G

Off-Site Policy Compliance Certification

A letter certifying that USEPA Region 2 considers the facilities to be used for all off-site disposal to be acceptable in accordance with the Off-Site policy in 40 CFR 300.440. This certification shall be provided for wastes from Resource Conservation and Recovery Act (RCRA), 42 USC 6901 et seq., sites as well as from Comprehensive Environmental Response Compensation and Liability Act (CERCLA), 42 USC 9601 et seq., responses. See Attachment A, Sample Certification, at the end of this section.

Certificates of Disposal

Shipping Documents and Packagings Certification

The Complete Manifest Package consists of, at a minimum, all hazardous waste manifests, PCB manifests, hazardous material shipping papers, waste profile sheets, the land disposal restriction notification and certification forms, and all other supporting documentation. Supporting documentation shall include

waste disposal history, all analytical results, Material Safety Data Sheets available, and any other information received in identifying the proper waste code. The Contractor shall also include as part of the supporting documentation, the specific type of inner and outer packaging, markings, labeling, and placards offered to the transporter.

PCB-Contaminated Soil and Debris Disposal Plan; G, A/E, DO

SD-11 Closeout Submittals

Closeout Report; G, A/E, DO

1.4 QUALIFICATIONS

1.4.1 Regulatory Specialist and Transportation and Disposal Coordinator

Designate, by position and title, one person to act as the Regulatory Specialist and Transportation and Disposal Coordinator (TDC) for this contract. The TDC:

shall have a minimum of three (3) years working experience in federal, state, and local laws and regulations, and guidance associated with HTRW investigations, studies, designs, and remediations;

shall have the capability and experience to identify all required permits;

shall have specialized training in Hazardous Materials Transportation;

shall meet the requirements for DOT certification;

shall serve as the single point of contact for all environmental regulatory matters;

shall have overall responsibility for total environmental compliance at the site including accurate identification and classification of hazardous waste and hazardous materials; determination of proper shipping names; identification of marking, labeling, packaging and placarding requirements; completion of waste profiles, hazardous waste manifests, asbestos waste shipment records, PCB manifests, bills of lading, exception and discrepancy reports; and all other environmental documentation; and,

1.4.2 Training

The Contractor's employees transporting hazardous materials or preparing hazardous materials for transportation shall be trained, tested, and certified in accordance with 49 CFR 172.

1.4.3 Certification

The Contractor and/or subcontractors transporting hazardous materials shall possess a current certificate of registration issued by the Research and Special Programs Administration (RSPA), U.S. Department of Transportation, when required by 49 CFR 107, Subpart G.

Submit an Off-Site Policy Compliance Certification letter certifying that

EPA considers the facilities to be used for all off-site disposal to be acceptable in accordance with the Off-Site policy in 40 CFR 300.440. This certification shall be provided for wastes from Resource Conservation and Recovery Act (RCRA), 42 USC 6901 et seq., sites as well as from Comprehensive Environmental Response Compensation and Liability Act (CERCLA), 42 USC 9601 et seq., responses. See Attachment A, Sample Certification, at the end of this section.

1.5 LAWS AND REGULATIONS REQUIREMENTS

Work shall meet or exceed the minimum requirements established by federal, state, and local laws and regulations that are applicable. These requirements are amended frequently and the Contractor shall be responsible for complying with amendments as they become effective. In the event that compliance exceeds the scope of work or conflicts with specific requirements of the contract, the Contractor shall notify the Contracting Officer immediately.

Determine the state reporting requirements (i.e., generator state and/or disposal state) and obtain current state reporting forms. A completed draft of all required forms, with applicable attachments, shall be submitted to the CO for approval prior to submission to the federal or state regulator. The state reporting forms shall also be included within the Final Disposal Report.

1.6 DEFINITIONS

1.6.1 Hazardous Material

A substance or material determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and which has been so designated pursuant to the Hazardous Materials Transportation Act, 49 USC 1801. The term includes materials designated as hazardous materials under the provisions of 49 CFR 172.101 and 49 CFR 172.102 and materials that meet the defining criteria for hazard classes and divisions in 49 CFR 173. EPA designated hazardous wastes are also hazardous materials. Materials that meet the criteria established in the Toxic Substances Control Act (TSCA) in 15 USC 2601 et seq. are also hazardous materials.

1.6.2 Hazardous Waste

A waste that meets criteria established in RCRA or specified by the EPA in 40 CFR 261 or meets criteria established in TSCA or which has been designated as hazardous by a RCRA authorized state program.

Hazardous wastes for this project are expected to originate from one of the following categories. Material segregation shall also be based on the disposal facility's waste acceptance criteria.

1.6.2.1 Soil

The following categories are applicable to soils disposal.

a. Non-RCRA/Non-TSCA Soil Greater Than IGWSCC.

b. RCRA Soil Not Requiring Pre-Treatment and Greater Than IGWSCC. (i.e. soil material has RCRA characteristics, but concentrations are below landfill disposal criteria).

c. RCRA Soil Not Meeting LDRS for Organics/Inorganics and Greater Than IGWSCC (organic and/or inorganic waste). This material will require treatment prior to disposal.

d. TSCA Soil (PCBs Greater Than 50 ppm).

e. Mixed TSCA and RCRA Soil (total halogenated organic compound concentration less Than 1,000 ppm).

f. Mixed TSCA and RCRA Soil (total halogenated organic compound concentration greater Than 1,000 ppm).

g. Mixed TSCA and RCRA Soil (RCRA metals, organics, PCBs less than 100 ppm, and can treat non-PCB Underlying Hazardous Constituents (UHCs) LDRs).

h. Mixed TSCA and RCRA Soil (RCRA metals, organics, PCBs less than 100 ppm, and cannot treat non-PCB UHCs to meet LDRs).

i. Mixed TSCA and RCRA Soil (RCRA metals, organics failure and PCBs greater than 100 ppm)

1.6.2.2 Debris

The following categories are applicable to debris disposal.

j. Non-RCRA/Non-TSCA Debris Greater Than IGWSCC.

k. RCRA Debris Not Requiring Pre-Treatment and Greater Than IGWSCC.

l. RCRA Debris Not Meeting LDRS for Organics/Inorganics and Greater Than IGWSCC.

m. TSCA Debris (PCBs greater than 50 ppm).

n. TSCA and RCRA Debris (Total VOCs less than 500 ppm).

o. TSCA and RCRA Debris (Total VOCs greater than 500 ppm).

1.7 QUALITY ASSURANCE

1.7.1 PCB-Contaminated Soil and Debris Disposal Plan

Submit a PCB-Contaminated Soil and Debris Disposal Plan within 45 calendar days after award of contract for Contracting Officer's approval. Comply with applicable requirements of Federal, State, and local PCB waste regulations and address:

a. Identification of PCB wastes associated with the work.

b. Estimated quantities of wastes to be generated and disposed of.

c. Names and qualifications of each Contractor that will be transporting, storing, treating, and disposing of the wastes. Include the facility location and a 24-hour point of contact. Furnish two copies of EPA, State and local PCB waste permit applications, permits and EPA identification numbers.

d. Names and qualifications (experience and training) of personnel who will be working on-site with PCB wastes.

e. List of waste handling equipment to be used in performing the work, to include cleaning, volume reduction, and transport equipment.

g. Location of state certified weigh station.

h. Work plan and schedule for PCB waste containment, removal, and disposal. Clean up and containerize wastes daily.

1.7.2 Closeout Report

Prepare closeout report containing following items: test results including readings and locations, a diagram of the limits of the excavated area with sample locations indicated (indicate reference benchmark used), chain of custody forms, certificates of disposal, truck manifests, and description of the work completed.

PART 2 PRODUCTS

2.1 MATERIALS

Provide all of the materials required for the packaging, labeling, marking, placarding and transportation of hazardous wastes and hazardous materials in conformance with Department of Transportation standards. Details in this specification shall not be construed as establishing the limits of the Contractor's responsibility.

2.1.1 Packagings

Provide bulk and non-bulk containers for packaging hazardous materials/wastes consistent with the general packaging requirements of

Subpart B of 49 CFR 173 referenced in the Hazardous Materials Table in 49 CFR 172.101, Column 8;

49 CFR 178 at the specified packing group performance level; and,

40 CFR 262.

Provide bulk and non-bulk containers for non-hazardous materials/wastes. Provide other packaging related materials such as materials used to cushion or fill voids in overpacked containers, etc. Sorbent materials shall not be capable of reacting dangerously with, being decomposed by, or being ignited by the hazardous materials being packaged. Additionally, sorbents used to treat free liquids to be disposed of in landfills shall be non-biodegradable as specified in 40 CFR 264.314.

2.1.2 Markings

Provide markings for each hazardous material/waste package, freight container, and transport vehicle consistent with the requirements of 49 CFR 172, Subpart D and 40 CFR 262.32 for hazardous waste, 40 CFR 761.45 for PCBs, 40 CFR 61.149(d) for asbestos. Markings shall be capable of withstanding, without deterioration or substantial color change, a 180-day exposure to conditions reasonably expected to be encountered during

container storage and transportation.

2.1.3 Labeling

Provide primary and subsidiary labels for hazardous materials/wastes consistent with the requirements in the Hazardous Materials Table in 49 CFR 172.101, Column 6. Labels shall meet design specifications required by 49 CFR 172, Subpart E including size, shape, color, printing, and symbol requirements. Labels shall be durable and weather resistant and capable of withstanding, without deterioration or substantial color change, a 180-day exposure to conditions reasonably expected to be encountered during container storage and transportation.

2.1.4 Placards

For each off-site shipment of hazardous material/waste, provide primary and subsidiary placards consistent with the requirements of 49 CFR 172, Subpart F. Provide placards for each side and each end of bulk packaging, freight containers, and transport vehicles requiring such placarding. Placards may be plastic, metal, or other material capable of withstanding, without deterioration, a 30-day exposure to open weather conditions and shall meet design requirements specified in 49 CFR 172, Subpart F.

2.1.5 Spill Response Materials

Provide spill response materials including containers, adsorbent, shovels, and personal protective equipment. Spill response materials shall be available at all times in which hazardous materials/wastes are being handled or transported. Spill response materials shall be compatible with the type of material being handled.

2.2 EQUIPMENT AND TOOLS

Provide miscellaneous equipment and tools necessary to handle hazardous materials and hazardous wastes in a safe and environmentally sound manner.

PART 3 EXECUTION

3.1 ON-SITE HAZARDOUS WASTE MANAGEMENT

These paragraphs apply to government-owned waste only. Contractors are prohibited by 10 USC 2692 from storing contractor-owned waste on site for any length of time. The Contractor shall be responsible for ensuring compliance with all federal, state, and local hazardous waste laws and regulations and shall verify those requirements when preparing reports, waste shipment records, hazardous waste manifests, or other documents.

Identify hazardous wastes using criteria set forth in 40 CFR 261 or all applicable state and local laws, regulations, and ordinances.

When accumulating hazardous waste on site, comply with generator requirements in 40 CFR 262 and any applicable state or local laws or regulations. On-site accumulation times shall be restricted to applicable time frames referenced in 40 CFR 262.34, and any applicable state or local law or regulation. Accumulation start dates shall commence when waste is first generated (i.e., containerized or otherwise collected for discard).

Immediately mark all hazardous waste containers with the words "hazardous waste" and other information required by 40 CFR 262.32, and any applicable

state or local laws or regulations as soon as the waste is containerized. Only use containers in good condition and compatible with the waste to be stored. Ensure containers are closed except when adding or removing waste. Inspect containers for signs of deterioration and respond to any spills or leaks. Inspect all hazardous waste areas weekly and provide written documentation of the inspection. Inspection logs shall contain date and time of inspection, name of individual conducting the inspection, problems noted, and corrective actions taken.

3.1.1 Hazardous Waste Classification

Characterize the waste stream to determine the most cost-effective TSDF facility that is in compliance with federal, state, and local laws and regulations.

The Contractor shall have a single Transportation and Disposal Coordinator review the complete classification, manifest package, and shipping documents and packagings certification. The cost for all samples to properly fill out the disposal waste profile sheet as required by the contractor shall be borne by the Contractor. The Transportation and Disposal Coordinator shall certify as correct the Hazardous Waste Manifest, Waste Profile Sheets, and Land Disposal Restriction Notification and Certification forms and supporting documentation. Once the review is completed, the Contractor shall submit these documents to the Contracting Officer for approval.

The Contractor shall perform TCLP sampling on the potentially RCRA or mixed waste material in accordance with Section 01450A CHEMICAL DATA QUALITY CONTROL.

3.1.2 Waste Management Plan and Addendum

The Contractor shall prepare and submit a Waste Management Plan no later than 30 days after the Notice to Proceed. The Waste Management Plan shall detail the manner in which nonhazardous and hazardous material will be managed both on and off site for the remedial activities. The plan shall also describe the types and volumes of wastes, including construction debris, soil, water from excavations, and vegetation anticipated to be managed and the management practices to be utilized. Identify the following in the onsite portion of the plan:

the method to be used to ensure accurate quantity counts and/or weights of shipments;

waste minimization methods;

the loading method that prevents the spreading of contaminated material and minimizes production of dust and spillage;

proposed facilities to be utilized for storage and disposal;

the final stockpile locations for contaminated and uncontaminated material;

areas onsite where nonhazardous and hazardous materials are to be handled;

whether transfer facilities are to be utilized; and if so,

how the materials/wastes will be manifested to ultimate disposal; and, procedures to minimize the onsite holding times for waste.

3.1.3 Measurement of Transported Waste

Record the weight of waste shipped offsite in each container as measured by the onsite scale at the transshipment facility. The Onsite Measurement of Transported Waste and Scale Calibrations shall be recorded and submitted to the Contracting Officer daily. Included on the documentation for will be the date and time of shipment, total weight measured, and name of scale operator.

The scale used to weigh the shipped waste shall be calibrated twice per day, as per the scale manufacturer's recommendations. Submit records of the calibration of the scale to the Contracting Officer within 2 days of the date of calibration.

The Contractor is required to comply with all requirements set forth by the receiving facility and transportation systems pertaining to the weight of shipments. Satisfying the weight requirements based on the measurements of the onsite scale does not relieve the Contractor of the responsibility to comply with receiving or transporting facility requirements.

Copies of each manifest shall be submitted to the Contracting Officer or designated representative within two days following shipment, and within two days after notification of receipt at the permitted disposal facility. Any manifest discrepancies shall be reported immediately to the Contracting Officer and resolved by the Contractor.

3.1.4 Liquid Storage

Liquid including but not limited to wastewater generated from dewatering and decontamination shall be handled as specified in Section 02310 EXCAVATION. Liquids from potential Underground Storage Tanks (USTs) shall be pumped for subsequent disposal off-site and as specified in Section 02650 UNDERGROUND STORAGE TANKS.

3.2 OFF-SITE HAZARDOUS WASTE MANAGEMENT

The Contractor shall be responsible for acceptance of the specific material at an appropriately permitted disposal facility, for ensuring that the facility is properly permitted to accept the stated material, and that the facility provides the stated disposal services.

The off-site handling, transportation, and disposal of hazardous wastes and materials shall comply with applicable DOT regulations, CFR, and state and local laws. Dispose of the hazardous materials/hazardous waste only in government-approved facilities. Provide the date of the proposed disposal facility's last compliance inspection. List all active compliance orders, enforcement notices, or Notices of Non-Compliance and Notices of Violation issued against proposed transporters and disposal facilities. State the source and nature of the cause of violation, if known. If applicable, drawings may be provided.

The Contracting Officer or designated representative reserves the right to contact and visit the disposal facilities to verify the agreement to accept the stated material and to verify any other information provided. This does not in any way relieve the Contractor of the responsibilities

specified herein the contract.

In the case of all disposal facilities, if the identified and approved facility ceases to accept the stated material or the facility ceases operation, it is the Contractor's responsibility to locate an alternate USEPA approved and permitted facility for accepting material. The Contractor is responsible for making the necessary arrangements to utilize the facility, and the alternate facility must be approved in writing by the Contracting Officer or designated representative in the same manner and with the same requirements as for the original facility. This shall be done with no extra cost toe the Government.

3.2.1 Offsite Disposal Plan

Submit as part of the Waste Management Plan an Offsite Disposal Section that includes the following:

all proposed government-approved transporters AND transfer and disposal facilities for all hazardous materials and wastes generated during construction;

a material unloading and loading procedure;

all aspects and considerations for transportation hazards that will be involved during material/waste hauling operations; and,

procedures for incident response, methods to contain and clean up spills, details of manpower and equipment available, the coordination necessary to mobilize forces in an emergency, and traffic maintenance/warning procedures to be implemented within one hour following any accident or release of contaminated material.

3.2.2 Traffic Control Plan

Any transportation via truck shall be in accordance with the Contractor's Traffic Control Plan, which shall detail the local haul routes, street closure requirements, signage requirements, and repair and maintenance of haul routes. Coordinate with local emergency response and highway/road departments. The Traffic Control Plan shall be in accordance with Section 01500A TEMPORARY CONSTRUCTION FACILITIES and shall be submitted no later than 30 days after the Notice to Proceed.

3.2.3 Description of TSD Facility and Transporter

Provide the Contracting Officer with General Information on Transporters and all Offsite Disposal Facilities, including transfer facilities. At minimum, provide the following:

a. Name and USEPA identification number. Complete EPA Form 8700-12, Notification of Hazardous Waste Activity, and submit to the Contracting Officer for review and approval. Allow a minimum of 30 days for processing the application and assigning the EPA ID number. Shipment shall be made not earlier than one week after receipt of the EPA ID number;

b. Address;

c. Name of responsible contact for the facility;

d. Telephone and fax number for the contact;

e. Signed letter of agreement to accept waste as specified in this Contract; and,

f. Unit of measure utilized for costing purposes.

This information shall be contained in the Waste Management Plan for approval prior to waste disposal.

3.2.4 Shipping Documents and Packagings Certification

Prior to shipment of any hazardous material off-site, TDC shall provide written certification to the Contracting Officer that hazardous materials have been properly packaged, labeled, and marked in accordance with Department of Transportation and EPA requirements.

Provide Certificates of Disposal documenting the ultimate disposal of contaminated material, hazardous waste, PCBs, and/or ACM within 180 days of initial shipment. Receipt of these certificates will be required for final payment and shall be included in the Final Disposal Report.

3.2.5 Transportation

Transportation to an approved disposal facility shall comply with all requirements in the Department of Transportation referenced regulations in the 49 CFR series. Use manifests for transporting hazardous and contaminated wastes as required by 40 CFR 263 or any applicable state or local law or regulation. Ensure that all operations for loading and hauling of wastes comply with Federal and State Department of Transportation (DOT) regulations, 40 CFR 262, 40 CFR 263, EPA OSWER Directive 9834.11 and all other applicable federal, state and local requirements. The Contractor shall be responsible for obtaining permits and authorizations necessary to use the selected shipping routes. Comply with restrictions imposed by local governmental agencies regarding use of the routes.

3.2.5.1 Security Plan for Hazardous Materials Shipments

Security Plan for Hazardous Materials Shipments shall be submitted in accordance with the regulatory requirements issued 25 March 2003 by the Research and Special Programs Administration (RSPA) of the Department of Transportation (DOT). The Security Plan for Hazardous Materials Shipments shall meet the requirements of 49 CFR 172 and must be approved prior to shipment of any hazardous materials. The plan shall be submitted no later than 30 days after the Notice to Proceed.

3.2.5.2 Transportation of Wastes and Materials

All vehicles used for transporting hazardous waste shall be in good working order, watertight, and have current inspections. The Contracting Officer shall inspect all the vehicles at the site prior to loading. At a minimum, the following will be verified:

Demonstrate to the Contracting Officer that vehicle tailgates are sealed watertight during operation. Any vehicle bed not providing an adequate leakproof seal shall be repaired or replaced as required.

Covers shall be placed over trucks, trailers or other conveyances used for bulk shipment. The covers shall completely enclose the bulk shipment with no open areas along the sides or openings on the top.

Containers shall be sealed such that the material meets the requirements of the government-approved disposal site's permit. The containers shall conform to the requirements of 49 CFR 173.

The vehicles designated by the Contractor to haul contaminated material/waste shall be used exclusively for this purpose until released by the Contracting Officer for "unrestricted use" based on the decontamination protocols defined in the Contractor's approved SSHP.

Failure of the shipping container, liner, seals, hatches, doors, or cover system to meet the above requirements that cause material to be rejected by the government-approved disposal site shall be addressed at no additional expense to the government.

Transportation routes to and from project areas shall be included in the Waste Management Plan. No deviation from transportation routes shall be allowed without prior written approval from the Contracting Officer.

Provide transportation of the waste directly to the disposal facility. If containerized, the waste may be transferred from one transportation vehicle to another, (e.g., from a truck to another truck). Shipments of contaminated material shall remain packaged after leaving the project site. Coordinate recording quantities of waste leaving the site with the Contracting Officer.

3.2.5.3 Decontamination

Monitor vehicles for external contamination prior to leaving the excavation sites. In the event a vehicle becomes muddy or soil-covered, decontaminate in accordance with the Site Health and Safety Plan prior to leaving the site.

3.2.5.4 Accidental Spills and Cleanup

Any and all spills shall be cleaned up immediately. The Contractor shall be responsible for any and all actions necessary to remedy situations involving material spilled in transit or mud and dust tracked off site. This cleanup shall be accomplished at no additional expense to the government. If a truck is contaminated during unloading operations, clean the contaminated material from the truck, load it into an approved container, and dispose of the material as contaminated. Maintain all haul and access roads in a clean condition so that no dirt or contamination is tracked onto clean areas or public roads and highways.

3.2.6 Disposal of Hazardous Materials/Hazardous Wastes

Transport the hazardous materials/hazardous waste to a government-approved hazardous waste storage or disposal facility within 90 days of the accumulation start date on each container.

Use the disposal facilities identified in the approved Waste Management Plan for the performance of the work. Substitutions or additions will not be permitted without prior written approval from the Contracting Officer. Confirm that such facility provided the appropriate disposal services.

3.2.6.1 Staging Areas

Staging areas, if needed, shall be located onsite. The staging area shall be constructed in accordance with Section 02310 EXCAVATION. The equipment staging areas shall be sampled prior to the start of work to determine background contamination levels. Equipment staging areas shall be sampled post-remediation to verify contamination has not spread to previously uncontaminated areas.

3.2.6.2 Non-Hazardous Waste Disposal

Dispose of miscellaneous items and uncontaminated soils and debris resulting from the work at an approved landfill facility pursuant of NJAC 7:26-1 et seq.

a. Disposal of Debris Encountered During Excavation

Debris encountered during excavation shall be sampled and characterized as in Section 01450A CHEMICAL DATA QUALITY CONTROL. Dispose of characterized debris accordingly. Do not recycle the debris.

b. Wastewater

Collect, store, treat, sample, and dispose of wastewater including run off which enters excavations generated as part of the work in accordance with Section 01450A CHEMICAL DATA QUALITY CONTROL.

3.3 HAZARDOUS MATERIALS MANAGEMENT

Evaluate, in consultation with the Contracting Officer, prior to shipment of any material off-site, whether the material is regulated as a hazardous waste in addition to being regulated as a hazardous material; do this for the purpose of determining proper shipping descriptions, and marking and disposal requirements. The Contractor shall be responsible to prepare and provide to the Contracting Officer the Waste Profiles/Waste Analysis and Shipment Papers including the Manifests for signature by the Government.

3.3.1 Documentation

Prepare and submit all information necessary to file the Hazardous Waste Manifest Annual and/or Biennial Reports to the Contracting Officer for each Task Order to meet all federal or state laws and regulations as a part of the Final Disposal Report. These report sections shall contain all the information necessary for the filing of the formal report in the form and format required by the governing federal or state regulatory agency, including the Contract number; Contractor name; USACE Task Order number and project name; location of project; report type; and date of submittal.

Complete the Transportation and Disposal Tracking Form provided by the Government. This form allows the tracking of key Transportation and Disposal milestones throughout the performance of the work. The form lists all waste materials going off site including quantities, destination, and waste classification. When tracking the waste, identify the date that the transporter accepts the waste by their signature on the manifest.

Discrepancy Reports shall be provided to the Contracting Officer when differences occur between the quantities or types of hazardous waste

designated on the manifest or shipping papers, and the quantity or type of hazardous waste a facility actually receives. Report and rectify discrepancies within 15 days after receiving the waste. This information shall be presented in the Final Disposal Report.

Verify if the generator or generator's representative has received a copy of the signed manifest from the TSDF on or before the 35th day after transporter signature. If the generator or generator's representative has failed to receive a signed copy of the manifest by the 44th day, the Contractor shall prepare a draft EPA Exception Reports for CO approval. The Final Exception Report shall be submitted to the Contracting Officer no later than the 45th day after transporter signature. This information shall also be presented in the Final Disposal Report. Prior to official submittal of Exception Report, a draft copy of the report shall be submitted to the Contracting Officer for review.

Toxic Substance Control Act PCB Reporting Requirements: If specified in the Task Order, or in the event of discovery of equipment or containers, or any media including soil or water with PCB-contaminated fluid impacted by the work in Task Order notify the Contracting Officer immediately and report the findings in writing as soon as possible and complete and submit all necessary logs and reports in accordance with federal and state laws and regulations. Report all information concerning the incident, and include copies of all related documents in the Final Disposal Report.

Final Disposal Report: Provide all requirements mentioned above in paragraph Hazardous Materials Management.

3.4 WASTE MINIMIZATION

Minimize the generation of hazardous waste to the maximum extent practicable. Take all necessary precautions to avoid mixing clean and contaminated wastes.

3.5 EMERGENCY CONTACTS

Comply with the emergency contact provisions in 49 CFR 172.604. Whenever shipping hazardous materials, provide a 24-hour emergency response contact and the phone number of a person knowledgeable about the hazardous materials being shipped. This person will have comprehensive emergency response and incident mitigation information for that material, or immediate access to a person who possesses such knowledge and information. The telephone must be monitored on a 24-hour basis when the hazardous materials are in transport, including during storage incidental to transportation. Ensure that information regarding this emergency contact and telephone number is placed on all hazardous material shipping documents. Designate an emergency coordinator and post the following information where hazardous wastes are managed:

a. The name of the emergency coordinator.

b. Telephone number through which the emergency coordinator can be contacted on a 24-hour basis.

c. The telephone number of the local fire department.

d. The location of fire extinguishers and spill control materials.

Provide all spill information to the Contracting Officer within 2 hours of

a spill.

Attachment A
SAMPLE OFF-SITE POLICY CERTIFICATION MEMO

Project/Contract #: _____
Waste Stream: _____
Primary TSD Facility, EPA ID # and Location: _____
Alter. TSD Facility, EPA ID # and Location: _____

EPA Region	Primary Contact	Secondary Contact
I	(617) 565-9446	(617) 573-1754
II	(212) 637-4139	(212) 264-2638
III	(814) 566-3450	(215) 597-8338
IV	(404) 562-8589	(404) 347-7603
V	(312) 886-3587	(312) 886-4445
VI	(214) 665-2282	(214) 655-2281
VII	(913) 551-7883	(913) 551-7667
VIII	(303) 312-6419	(303) 293-1506
IX	(415) 744-2091	(415) 744-2114
X	(206) 553-1061	(206) 553-1061

EPA representative contacted: _____
EPA representative phone number: _____
Date contacted: _____

Comment: _____
The above EPA representative was contacted on _____. As of that date the above sites were considered acceptable in accordance with the Off-Site Policy in 40 CFR 300.440.

Signature: _____ Date: _____
Phone number: _____

-- End of Section --

SECTION 02372

WASTE CONTAINMENT GEOMEMBRANE
04/06

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM D 1004	(2003) Initial Tear Resistance of Plastic Film and Sheeting
ASTM D 1505	(2003) Density of Plastics by the Density-Gradient Technique
ASTM D 1603	(2006) Carbon Black Content in Olefin Plastics
ASTM D 3895	(2006) Oxidative-Induction Time of Polyolefins by Differential Scanning Calorimetry
ASTM D 4218	(1996; R 2001) Determination of Carbon Black Content in Polyethylene Compounds by the Muffle-Furnace Technique
ASTM D 4833	(2000e1) Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
ASTM D 5199	(2001) Measuring Nominal Thickness of Geosynthetics
ASTM D 5397	(1999e1) Evaluation of Stress Crack Resistance of Polyolefin Geomembranes Using Notched Constant Tensile Load Test
ASTM D 5596	(2003) Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics
ASTM D 5721	(1995; R 2002) Air-Oven Aging of Polyolefin Geomembranes
ASTM D 5885	(1997) Oxidative Induction Time of Polyolefin Geosynthetics by High-Pressure Differential Scanning Calorimetry
ASTM D 5994	(1998; R 2003) Measuring Core Thickness of Textured Geomembrane

ASTM D 638	(2003) Tensile Properties of Plastics
ASTM D 6392	(1999) Determining the Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods
ASTM D 6497	(2002) Mechanical Attachment of Geomembrane to Penetrations or Structures

GEOSYNTHETIC INSTITUTE (GSI)

GSI GRI GM11	(1997) Accelerated Weathering of Geomembranes Using a Fluorescent UVA Device
GSI GRI GM12	(1998) Asperity Measurement of Textured Geomembranes Using a Depth Gauge
GSI GRI GM7	(1995) Accelerated Curing of Geomembrane Test Strip Seams Made by Chemical Fusion Methods
GSI GRI GM9	(1995) Cold Weather Seaming of Geomembranes

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Proposed Layout Drawings; G

Geomembrane panel layout and penetration detail drawings, a minimum of 7 days prior to geomembrane placement.

As-Built Drawings; G

Final as-built drawings of geomembrane installation

SD-03 Product Data

Tests, Inspections, and Verifications; G

Manufacturer's and fabricator's QC manuals, a minimum of 7 days prior to geomembrane shipment.

Field Seaming; G

Installer's QC manual, a minimum of 7 days prior to geomembrane placement.

Qualifications; G

Manufacturer's, and fabricator's qualification statements, including resumes of key personnel involved in the project, a minimum of 7 days prior to geomembrane shipment.

Installer's, QC inspector's, and QC laboratory's qualification statements including resumes of key personnel involved in the project a minimum of 7 days prior to geomembrane placement. The submittal from the QC laboratory shall include verification that the laboratory is accredited via the Geosynthetic Accreditation Institute's Laboratory Accreditation Program (GAI-LAP) for the tests the QC laboratory will be required to perform.

SD-04 Samples

Samples

Geomembrane QA and QC samples.

SD-06 Test Reports

Materials; G

Manufacturer's certified raw and sheet material test reports and a copy of the QC certificates, a minimum of 7 days prior to shipment of geomembrane to the site.

Surface Preparation; G

Certification from the QC inspector and installer of the acceptability of the surface on which the geomembrane is to be placed, immediately prior to geomembrane placement.

Non-Destructive Field Seam Continuity Testing; G

QC inspector certified test results on all field seams.

Tests; G

Certified QC test results.

1.3 QUALIFICATIONS

1.3.1 Manufacturer

Manufacturer shall have produced the proposed geomembrane sheets for at least 5 completed projects having a total minimum area of 1.0 million square feet.

1.3.2 Fabricator

The fabricator is responsible for seaming geomembrane sheets into panels. Fabricator shall have fabricated the proposed geomembrane panels for at least 5 completed projects having a total minimum area of 1.0 million square feet.

1.3.3 Installer

The installer is responsible for field handling, deploying, seaming, anchoring, and field Quality Control (QC) testing of the geomembrane. The installer shall have installed the proposed geomembrane material for at least 5 completed projects having a total minimum area of 1 million square feet. At least one seamer shall have experience seaming a minimum of

500,000 square feet of the proposed geomembrane using the same type of seaming equipment and geomembrane thickness specified for this project.

1.3.4 QC Inspector

The QC inspector is the person or corporation hired by the Contractor, who is responsible for monitoring and documenting activities related to the QC of the geomembrane from manufacturing through installation. The QC inspector shall have provided QC inspection during installation of the proposed geomembrane material for at least 5 completed projects having a total minimum area of 1 million square feet.

1.3.5 QC Laboratory

The QC laboratory shall have provided QC and/or Quality Assurance (QA) testing of the proposed geomembrane and geomembrane seams for at least five completed projects having a total minimum area of 2 million square feet.

1.4 DELIVERY, STORAGE AND HANDLING

1.4.1 Delivery

Each geomembrane roll/panel shall be labeled with the manufacturer's name, product identification number, roll/panel number, and roll dimensions.

1.4.2 Storage

Temporary storage at the project site shall be on a level surface, free of sharp objects where water cannot accumulate. The geomembrane shall be protected from puncture, abrasion, excessive heat or cold, material degradation, or other damaging circumstances. Storage shall not result in crushing the core of roll goods or flattening of the rolls. Rolls shall not be stored more than two high. Palleted materials shall be stored on level surfaces and shall not be stacked on top of one another. Damaged geomembrane shall be removed from the site and replaced with geomembrane that meets the specified requirements.

1.4.3 Handling

Rolls/panels shall not be dragged, lifted by one end, or dropped. A pipe or solid bar, of sufficient strength to support the full weight of a roll without significant bending, shall be used for all handling activities. The diameter of the pipe or solid bar shall be small enough to be easily inserted through the core of the roll. Chains shall be used to link the ends of the pipe or bar to the ends of a spreader bar. The spreader bar shall be wide enough to prevent the chains from rubbing against the ends of the roll. Alternatively, a stinger bar protruding from the end of a forklift or other equipment may be used. The stinger bar shall be at least three-fourths the length of the core and also must be capable of supporting the full weight of the roll without significant bending. If recommended by the manufacturer, a sling handling method utilizing appropriate loading straps may be used.

1.5 WEATHER LIMITATIONS

Geomembrane shall not be deployed or field-seamed in the presence of excess moisture (i.e., rain, fog, dew), in areas of ponded water, or in the presence of excess wind. Unless authorized by the Contracting Officer, no placement or seaming shall be attempted at ambient temperatures below 32

degrees F or above 104 degrees F. Ambient temperature shall be measured at a height no greater than 6 inches above the ground or geomembrane surface. If seaming is allowed below 32 degrees F, the procedures outlined in GSI GRI GM9 shall be followed. In marginal conditions, seaming shall cease unless destructive field seam tests, conducted by the QC laboratory, confirm that seam properties meet the requirements listed in Table 3. Tests shall be conducted in accordance with paragraph Destructive Field Seam Testing.

1.6 EQUIPMENT

Equipment used in performance of the work shall be in accordance with the geomembrane manufacturer's recommendations and shall be maintained in satisfactory working condition.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Raw Materials

Resin used in manufacturing geomembrane sheets shall be made of virgin uncontaminated ingredients. No more than 10 percent regrind, reworked, or trim material in the form of chips or edge strips shall be used to manufacture the geomembrane sheets. All regrind, reworked, or trim materials shall be from the same manufacturer and exactly the same formulation as the geomembrane sheet being produced. No post consumer materials or water-soluble ingredients shall be used to produce the geomembrane. For geomembranes with plasticizers, only primary plasticizers that are resistant to migration shall be used. The Contractor shall submit a copy of the test reports and QC certificates for materials used in the manufacturing of the geomembrane shipped to the site.

2.1.2 Sheet Materials

Geomembrane sheets shall be manufactured as wide as possible to minimize factory and field seams. Geomembrane sheets shall be uniform in color, thickness, and surface texture. For slopes greater than or equal to 1V on 3 H, sheets shall be textured on both faces. The textured surface features shall consist of raw materials identical to that of the parent sheet material and shall be uniform over the entire face of the geomembrane. Geomembrane sheets and factory seams shall conform to the requirements listed in Table 1, 2, and 3 for Manufacturing Quality Control (MQC).

TABLE 1. SMOOTH HDPE GEOMEMBRANE PROPERTIES

PROPERTY	TEST VALUE	MQC TESTING FREQUENCY (MIN.)	TEST METHOD
Thickness (min ave)	40 mils	per roll	ASTM D 5199
Lowest individual of 10 values	-10 percent	per roll	ASTM D 5199

TABLE 1. SMOOTH HDPE GEOMEMBRANE PROPERTIES

PROPERTY	TEST VALUE	MQC TESTING FREQUENCY (MIN.)	TEST METHOD
Density (min)	0.940 g/cc	per 200,000 lb	ASTM D 1505
Tensile Properties (1) (min ave)		per 20,000 lb	ASTM D 638 Type IV
-yield stress	84 lb/in		
-break stress	152 lb/in		
-yield elong	12 percent		
-break elong	700 percent		
Tear Resistance (min ave)	28 lb	per 45,000 lb	ASTM D 1004
Puncture Resistance (min ave)	72 lb	per 45,000 lb	ASTM D 4833
Stress Crack Resistance (2)	200 hr	per 200,000 lb	ASTM D 5397 (Appendix)
Carbon Black Content	2.0-3.0 percent	per 20,000 lb	ASTM D 1603 (3)
Carbon Black Dispersion	Note (4)	per 45,000 lb	ASTM D 5596
Oxidative Induction Time (OIT) (min ave) (5)		per 200,000 lb	
-Std OIT	100 min		ASTM D 3895
or -High Pres OIT	400 min		ASTM D 5885
Oven Aging at 85 deg C (min ave) (5), (6)		per year and change in formulation	ASTM D 5721
-Std OIT	55 percent at 90 days		ASTM D 3895
or -High Pres OIT	80 percent at 90 days		ASTM D 5885
UV Resistance (min ave) (7)		per year and change in formulation	GSI GRI GM11

TABLE 1. SMOOTH HDPE GEOMEMBRANE PROPERTIES

PROPERTY	TEST VALUE	MQC TESTING FREQUENCY (MIN.)	TEST METHOD
-High Pres OIT(8)(9)	50 percent at 1600 hours		ASTM D 5885

MQC = Manufacturing Quality Control

Note (1): Minimum average machine direction and minimum average cross machine direction values shall be based on 5 test specimens in each direction. For HDPE geomembrane, yield elongation is calculated using a gauge length of 1.3 inches. For HDPE geomembrane, break elongation is calculated using a gauge length of 2.0 inches.

Note (2): For HDPE geomembrane, the yield stress used to calculate the applied load for test method ASTM D 5397 (Appendix), shall be the manufacturer's mean value. ASTM D 5397 does not need to be run on LLDPE geomembrane.

Note (3): Other methods such as ASTM D 4218 or microwave methods are acceptable if an appropriate correlation to ASTM D 1603 can be established.

Note (4): Carbon black dispersion for 10 different views:
- minimum 8 of 10 in Categories 1 or 2
- all 10 in Categories 1,2, or 3

Note (5): The manufacturer has the option to select either one of the OIT methods to evaluate the antioxidant content.

Note (6): Evaluate samples at 30 and 60 days and compare with the 90 day response.

Note (7): The condition of the test shall be a 20 hour UV cycle at 167 degrees F followed by a 4 hour condensation cycle at 140 degrees F.

Note (8): The standard OIT test (ASTM D3895) shall not be used in determining UV resistance.

Note (9): UV resistance is based on percent retained value regardless of the original HP-OIT value.

TABLE 2. TEXTURED HDPE GEOMEMBRANE PROPERTIES

PROPERTY	TEST VALUE	MQC TESTING FREQUENCY (MIN.)	TEST METHOD
Nominal Thickness	40 mils		
Thickness (min ave)	-5 percent of nominal	per roll	ASTM D 5994
Lowest individual for 8 out of 10 values	-10 percent of nominal	per roll	ASTM D 5994
Lowest individual of 10 values	-15 percent of nominal	per roll	ASTM D 5994
Asperity Height (min ave) (10)	10 mils	every second roll	GSI GRI GM12 (11)
Density (min)	0.940 g/cc	per 200,000 lb	ASTM D 1505
Tensile Properties (1) (min ave)		per 20,000 lb	ASTM D 638 Type IV
-yield stress	84 lb/in		
-break stress	60 lb/in		
-yield elong	12 percent		
-break elong	100 percent		
Tear Resistance (min ave)	28 lb	per 45,000 lb	ASTM D 1004
Puncture Resistance (min ave)	60 lb	per 45,000 lb	ASTM D 4833
Stress Crack Resistance (2)	200 hr	per 200,000 lb	ASTM D 5397 (Appendix)
Carbon Black Content	2.0-3.0 percent	per 20,000 lb	ASTM D 1603 (3)
Carbon Black Dispersion	Note (4)	per 45,000 lb	ASTM D 5596
Oxidative Induction Time (OIT) (min ave) (5)		per 200,000 lb	
-Std OIT	100 min		ASTM D 3895
or			

TABLE 2. TEXTURED HDPE GEOMEMBRANE PROPERTIES

PROPERTY	TEST VALUE	MQC TESTING FREQUENCY (MIN.)	TEST METHOD
-High Pres OIT	400 min		ASTM D 5885
Oven Aging at 85 deg C (min ave) (5), (6)		per year and change in formulation	ASTM D 5721
-Std OIT	55 percent at 90 days		ASTM D 3895
or -High Pres OIT	80 percent at 90 days		ASTM D 5885
UV Resistance (min ave) (7)		per year and change in formulation	GSI GRI GM11
-High Pres OIT(8)(9)	50 percent at 1600 hours		ASTM D 5885

MQC = Manufacturing Quality Control

Note (1): Minimum average machine direction and minimum average cross machine direction values shall be based on 5 test specimens in each direction. For HDPE geomembrane, yield elongation is calculated using a gauge length of 1.3 inches. For HDPE geomembrane, break elongation is calculated using a gauge length of 2.0 inches. For LLDPE geomembrane, break elongation is calculated using a gage length of 2.0 inches at 2 inches/min.

Note (2): For HDPE geomembrane, the yield stress used to calculate the applied load for test method ASTM D 5397 (Appendix), shall be the manufacturer's mean value. ASTM D 5397 does not need to be run on LLDPE geomembrane.

Note (3): Other methods such as ASTM D 4218 or microwave methods are acceptable if an appropriate correlation to ASTM D 1603 can be established.

Note (4): Carbon black dispersion for 10 different views:
- minimum 8 of 10 in Categories 1 or 2
- all 10 in Categories 1,2, or 3

Note (5): The manufacturer has the option to select either one of the OIT methods to evaluate the antioxidant content.

Note (6): Evaluate samples at 30 and 60 days and compare with the 90 day response.

Note (7): The condition of the test shall be a 20 hour UV cycle at 167 degrees F followed by a 4 hour condensation cycle at 140 degrees F.

Note (8): The standard OIT test (ASTM D3895) shall not be used in determining UV resistance.

TABLE 2. TEXTURED HDPE GEOMEMBRANE PROPERTIES

PROPERTY	TEST VALUE	MQC TESTING FREQUENCY (MIN.)	TEST METHOD

Note (9): UV resistance is based on percent retained value regardless of the original HP-OIT value.

Note (10): Textured Geomembrane Only: Of 10 readings; 8 out of 10 must be 7 mil, and lowest individual reading must be 5 mil.

Note (11): Textured Geomembrane Only: Alternate the measurement side for double sided textured sheet.

TABLE 3. HDPE SEAM PROPERTIES

PROPERTY	TEST VALUE	TEST METHOD
Seam Shear Strength (min) (1)	81 lb/in	ASTM D 6392
Seam Peel Strength (min) (1) (2)	52 lb/in	ASTM D 6392

Note (1): Seam tests for peel and shear must fail in the Film Tear Bond mode. This is a failure in the ductile mode of one of the bonded sheets by tearing or breaking prior to complete separation of the bonded area.

Note (2): Where applicable, both tracks of a double hot wedge seam shall be tested for peel adhesion.

2.1.3 Factory Seams

Geomembrane sheets shall be factory seamed into maximum sized panels to minimize field seaming. Factory seaming shall be by methods approved by the geomembrane manufacturer. Seams shall meet the minimum shear and peel strength requirements shown in Table 3. Factory seams shall extend to the end of the sheet so that no unbonded edges greater than 1/8 inch wide are present.

2.2 TESTS, INSPECTIONS, AND VERIFICATIONS

2.2.1 Manufacturing, Sampling, and Testing

2.2.1.1 Raw Materials

Raw materials shall be tested in accordance with the approved MQC manual. Any raw material which fails to meet the geomembrane manufacturer's specified physical properties shall not be used in manufacturing the

sheet. Seaming rods and pellets shall be manufactured of materials which are essentially identical to that used in the geomembrane sheet. Seaming rods and pellets shall be tested for density, melt index and carbon black content in accordance with the approved MQC manual. Seaming rods and pellets which fail to meet the corresponding property values required for the sheet material, shall not be used for seaming.

2.2.1.2 Sheet Material

Geomembrane sheets shall be tested in accordance with the approved MQC manual. As a minimum, MQC testing shall be conducted at the frequencies shown in Table 1. Sheets not meeting the minimum requirements specified in Table 1 shall not be sent to the site.

PART 3 EXECUTION

3.1 PREPARATION

The Contractor shall provide Proposed Layout Drawings describing geomembrane panel layout and penetration detail drawings, a minimum of 7 days prior to geomembrane placement.

3.1.1 Surface Preparation

Surface preparation shall be performed in accordance with Section 02320 BACKFILL AND COMPACTION. Rocks larger than 1/2 inch in diameter and any other material which could damage the geomembrane shall be removed from the surface to be covered with the geomembrane. Construction equipment tire or track deformations beneath the geomembrane shall not be greater than 1.0 inch in depth. Repairs to the subgrade shall be performed at no additional cost to the Government.

3.2 GEOMEMBRANE DEPLOYMENT

The procedures and equipment used shall not elongate, wrinkle, scratch, or otherwise damage the geomembrane, other geosynthetic layers, or the underlying subgrade. Geomembrane damaged during installation shall be replaced or repaired, at the QC inspector's discretion. Only geomembrane panels that can be anchored and seamed together the same day shall be deployed. Adequate ballast (i.e., sand bags) shall be placed on the geomembrane, without damaging the geomembrane, to prevent uplift by wind.

3.3 FIELD SEAMING

3.3.1 Trial Seams

Trial seams shall be made under field conditions on strips of excess geomembrane. Trial seams shall be made each day prior to production seaming, whenever there is a change in seaming personnel or seaming equipment and at least once every four hours, by each seamer and each piece of seaming equipment used that day. Trial seam samples shall be collected and tested in accordance with ASTM D 6392. One sample shall be obtained from each trial seam. This sample shall be at least 36 inches long by 12 inches wide with the seam centered lengthwise. Ten random specimens 1 inch wide shall be cut from the sample. Five seam specimens shall be field tested for shear strength and 5 seam specimens shall be field tested for peel adhesion using an approved quantitative tensiometer. Where necessary, accelerated curing of trial seams made by chemical methods shall be conducted in accordance with GSI GRI GM7. To be acceptable, 4 out of 5

replicate test specimens shall meet seam strength requirements specified in Table 3. If the field tests fail to meet these requirements, the entire operation shall be repeated. If the additional trial seam fails, the seaming apparatus or seamer shall not be used until the deficiencies are corrected by the installer and 2 consecutive successful trial seams are achieved.

3.3.2 Field Seams

Panels shall be seamed in accordance with the geomembrane manufacturer's recommendations. In sumps, corners and odd-shaped geometric locations, the number of field seams shall be minimized. Seaming shall extend to the outside edge of panels. Soft subgrades shall be compacted and approved prior to seaming. The seam area shall be free of moisture, dust, dirt, and foreign material at the time of seaming. Fish mouths in seams shall be repaired.

3.3.2.1 Polyethylene Seams

Polyethylene geomembranes shall be seamed by thermal fusion methods. Extrusion welding shall only be used for patching and seaming in locations where thermal fusion methods are not feasible. Seam overlaps that are to be attached using extrusion welds shall be ground prior to welding. Grinding marks shall be oriented perpendicular to the seam direction and no marks shall extend beyond the extrudate after placement. Extrusion welding shall begin within 10 minutes after grinding. Where extrusion welds are temporarily terminated long enough to cool, they shall be ground prior to applying new extrudate over the existing seam. The total depth of the grinding marks shall be no greater than 10 percent of the sheet thickness.

3.4 SAMPLES

One QC sample, 18 inches in length, for the entire width of a roll, shall be obtained for every 100,000 square feet of material delivered to the site. Samples shall not be obtained from the first three feet of the roll.

3.5 TESTS

The Contractor shall provide all QC samples to the QC laboratory to determine density, thickness, tensile strength at break, and elongation at break in accordance with the methods specified in Table 1. Samples not meeting the specified requirements shall result in the rejection of applicable rolls/panels. As a minimum, rolls/panels produced immediately prior to and immediately after the failed roll/panel shall be tested for the same failed parameter. Testing shall continue until a minimum of three successive rolls/panels on both sides of the original failing roll/panel pass the failed parameter.

3.5.1 Non-Destructive Field Seam Continuity Testing

Field seams shall be non-destructively tested for continuity over their full length in accordance with the installer's approved QC manual. Seam testing shall be performed as the seaming work progresses, not at the completion of field seaming. Any seams which fail shall be documented and repaired in accordance with the installer's approved QC manual.

3.6 DEFECTS AND REPAIRS

3.6.1 Patches

Tears, holes, blisters and other defects shall be repaired with patches. Patches shall have rounded corners, be made of the same geomembrane, and extend a minimum of 6 inches beyond the edge of defects. Minor localized flaws shall be repaired by spot welding or seaming as determined by the QC inspector. Repairs shall be non-destructively tested. The QC inspector may also elect to perform destructive seam tests on suspect areas.

3.7 PENETRATIONS

Geomembrane penetration details shall be in accordance with ASTM D 6497 or as recommended by the geomembrane manufacturer.

3.8 PROTECTION AND BACKFILLING

The deployed and seamed geomembrane shall be covered with the specified material within 5 calendar days of acceptance. Wrinkles in the geomembrane shall be prevented from folding over during placement of cover materials. Cover soil shall not be dropped onto the geomembrane or overlying geosynthetics from a height greater than 3 feet. The soil shall be pushed out over the geomembrane or overlying geosynthetics in an upward tumbling motion. Soil shall be placed from the bottom of the slope upward.

3.9 RECORD DRAWINGS

The Contractor shall provide final As-Built Drawings for the geomembrane installation.

-- End of Section --

SECTION 02373

GEOTEXTILE
04/06

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM D 4354	(1999) Sampling of Geosynthetics for Testing
ASTM D 4355	(2002) Deterioration of Geotextiles from Exposure to Light, Moisture and Heat in a Xenon-Arc Type Apparatus
ASTM D 4533	(2004) Trapezoid Tearing Strength of Geotextiles
ASTM D 4632	(1991; R 2003) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	(2004) Determining Apparent Opening Size of a Geotextile
ASTM D 4759	(2002) Determining the Specification Conformance of Geosynthetics
ASTM D 4833	(2000e1) Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
ASTM D 4873	(2002) Identification, Storage, and Handling of Geosynthetic Rolls and Samples

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-04 Samples

Manufacturing Quality Control Sampling And Testing

Quality Assurance Samples and Tests

Samples for quality assurance testing; 7 days shall be allotted

in the schedule to allow for testing.

SD-07 Certificates

Geotextile

A minimum of 7 days prior to scheduled use, manufacturer's certificate of compliance stating that the geotextile meets the requirements of this section. The certificate of compliance shall be attested to by a person having legal authority to bind the geotextile manufacturer.

1.3 DELIVERY, STORAGE AND HANDLING

Delivery, storage, and handling of geotextile shall be in accordance with ASTM D 4873.

1.3.1 Delivery

The Contracting Officer shall be notified a minimum of 24 hours prior to delivery and unloading of geotextile rolls. Rolls shall be packaged in an opaque, waterproof, protective plastic wrapping. The plastic wrapping shall not be removed until deployment. If quality assurance samples are collected, rolls shall be immediately rewrapped with the plastic wrapping. Geotextile or plastic wrapping damaged during storage or handling shall be repaired or replaced, as directed. Each roll shall be labeled with the manufacturer's name, geotextile type, roll number, roll dimensions (length, width, gross weight), and date manufactured.

1.3.2 Storage

Rolls of geotextile shall be protected from construction equipment, chemicals, sparks and flames, temperatures in excess of 160 degrees F, or any other environmental condition that may damage the physical properties of the geotextile. To protect geotextile from becoming saturated, rolls shall either be elevated off the ground or placed on a sacrificial sheet of plastic in an area where water will not accumulate.

1.3.3 Handling

Geotextile rolls shall be handled and unloaded with load carrying straps, a fork lift with a stinger bar, or an axial bar assembly. Rolls shall not be dragged along the ground, lifted by one end, or dropped to the ground.

PART 2 PRODUCTS

2.1 RAW MATERIALS

2.1.1 Geotextile

Geotextile shall be a nonwoven pervious sheet of polymeric material and shall consist of long-chain synthetic polymers composed of at least 95 percent by weight polyolefins, polyesters, or polyamides. The use of woven slit film geotextiles (i.e. geotextiles made from yarns of a flat, tape-like character) will not be allowed. Stabilizers and/or inhibitors shall be added to the base polymer, as needed, to make the filaments resistant to deterioration by ultraviolet light, oxidation, and heat exposure. Regrind material, which consists of edge trimmings and other scraps that have never reached the consumer, may be used to produce the

geotextile. Post-consumer recycled material may also be used. Geotextile shall be formed into a network such that the filaments or yarns retain dimensional stability relative to each other, including the edges. Geotextiles shall meet the requirements specified in Table 1. Where applicable, Table 1 property values represent minimum average roll values (MARV) in the weakest principal direction. Values for AOS represent maximum average roll values.

TABLE 1
MINIMUM PHYSICAL REQUIREMENTS FOR DRAINAGE GEOTEXTILE

PROPERTY	UNITS	ACCEPTABLE VALUES	TEST METHOD
GRAB STRENGTH	LBS	160	ASTM D 4632
PUNCTURE	LBS	95	ASTM D 4833
TRAPEZOID TEAR	LBS	60	ASTM D 4533
MASS/ UNIT AREA	G/SQ M	246	ASTM D 4751
ULTRAVIOLET DEGRADATION	PERCENT	70 AT 500 HRS	ASTM D 4355

2.2 MANUFACTURING QUALITY CONTROL SAMPLING AND TESTING

The Manufacturer shall be responsible for establishing and maintaining a quality control program to assure compliance with the requirements of the specification. Documentation describing the quality control program shall be made available upon request. Manufacturing quality control sampling and testing shall be performed in accordance with the manufacturer's approved quality control manual. As a minimum, geotextiles shall be randomly sampled for testing in accordance with ASTM D 4354, Procedure A. Acceptance of geotextile shall be in accordance with ASTM D 4759. Tests not meeting the specified requirements shall result in the rejection of applicable rolls.

PART 3 EXECUTION

3.1 QUALITY ASSURANCE SAMPLES AND TESTS

3.1.1 Quality Assurance Samples

The Contractor shall provide assistance to the Contracting Officer in the collection of quality assurance samples. Samples shall be collected upon delivery to the site for quality assurance testing at the request of the Contracting Officer and in accordance with ASTM D 4354, Procedure B. Lot size for quality assurance sampling shall be considered to be the shipment quantity of the product or a truckload of the product, whichever is smaller. The unit size shall be considered one roll of geotextile. Samples shall be identified with a waterproof marker by manufacturer's name, product identification, lot number, roll number, and machine direction. The date and a unique sample number shall also be noted on the sample. The outer layer of the geotextile roll shall be discarded prior to sampling a roll. Samples shall then be collected by cutting the full-width

of the geotextile sheet a minimum of 3 feet long in the machine direction. Rolls which are sampled shall be immediately resealed in their protective covering.

3.1.2 Quality Assurance Tests

The Contractor shall provide quality assurance samples to an Independent Laboratory. Samples will be tested to verify that geotextile meets the requirements specified in Table 1. Test method ASTM D 4355 shall not be performed on the collected samples. Geotextile product acceptance shall be based on ASTM D 4759. Tests not meeting the specified requirements shall result in the rejection of applicable rolls.

3.2 INSTALLATION

3.2.1 Subgrade Preparation

The surface underlying the geotextile shall be smooth and free of ruts or protrusions which could damage the geotextile. Subgrade materials and compaction requirements shall be in accordance with Section 02320 Backfill and Compaction.

3.2.2 Placement

The Contractor shall notify the Contracting Officer a minimum of 24 hours prior to installation of geotextile. Geotextile rolls which are damaged or contain imperfections shall be repaired or replaced as directed. The geotextile shall be laid flat and smooth so that it is in direct contact with the subgrade. The geotextile shall also be free of tensile stresses, folds, and wrinkles.

3.3 SEAMS

3.3.1 Overlap Seams

Geotextile panels shall be continuously overlapped a minimum of 12 inches at all longitudinal and transverse joints.

3.4 PROTECTION

The geotextile shall be protected during installation from clogging, tears, and other damage. Damaged geotextile shall be repaired or replaced as directed. Adequate ballast (e.g. sand bags) shall be used to prevent uplift by wind. The geotextile shall not be left uncovered for more than 14 days after installation.

3.5 REPAIRS

Torn or damaged geotextile shall be repaired. Repairs shall be performed by placing a patch of the same type of geotextile over the damaged area. The patch shall extend a minimum of 12 inches beyond the edge of the damaged area. Geotextile rolls which cannot be repaired shall be removed and replaced. Repairs shall be performed at no additional cost to the Government

3.6 COVERING

Geotextile shall not be covered prior to inspection and approval by the Contracting Officer. Cover soil shall be placed in a manner that prevents

soil from entering the geotextile overlap zone, prevents tensile stress from being mobilized in the geotextile, and prevents wrinkles from folding over onto themselves. Cover soil shall not be dropped onto the geotextile from a height greater than 3 feet. No equipment shall be operated directly on top of the geotextile without approval of the Contracting Officer. Equipment with ground pressures less than 7 psi shall be used to place the first lift over the geotextile.

-- End of Section --

SECTION 02630

STORM DRAINAGE
07/06

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO M 198	(2005) Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants

ASTM INTERNATIONAL (ASTM)

ASTM A 123/A 123M	(2002) Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A 48/A 48M	(2003) Gray Iron Castings
ASTM A 536	(1984; R 2004) Ductile Iron Castings
ASTM C 139	(2005) Concrete Masonry Units for Construction of Catch Basins and Manholes
ASTM C 231	(2004) Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C 270	(2006) Mortar for Unit Masonry
ASTM C 443	(2005a) Joints for Concrete Pipe and Manholes, Using Rubber Gaskets
ASTM C 478	(2006b) Precast Reinforced Concrete Manhole Sections
ASTM C 923	(2002) Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals
ASTM C 924	(2002) Testing Concrete Pipe Sewer Lines by Low-Pressure Air Test Method
ASTM D 1248	(2005) Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable
ASTM D 1557	(2002e1) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700

	kN-m/cu.m.))
ASTM D 1751	(2004) Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
ASTM D 1752	(2004a) Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction
ASTM D 2167	(1994; R 2001) Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D 2321	(2005) Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
ASTM D 2513	(2007a) Thermoplastic Gas Pressure Pipe, Tubing, and Fittings
ASTM D 2657	(2007) Heat Fusion Joining Polyolefin Pipe and Fittings
ASTM D 2922	(2005) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 3212	(1996a; R 2003e1) Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
ASTM D 3350	(2006) Polyethylene Plastics Pipe and Fittings Materials
ASTM F 1055	(1998; R 2006) Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene Pipe and Tubing
ASTM F 1417	(1992; R 2005) Installation Acceptance of Plastic Gravity Sewer Lines Using Low-Pressure Air
ASTM F 714	(2006a) Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Placing Pipe

Printed copies of the manufacturer's recommendations for installation procedures of the material being placed, prior to

installation.

SD-04 Samples

Pipe for Culverts and Storm Drains

SD-07 Certificates

Resin Certification
Pipeline Testing
Hydrostatic Test on Watertight Joints
Determination of Density
Frame and Cover for Gratings

Certified copies of test reports demonstrating conformance to applicable pipe specifications, before pipe is installed. Certification on the ability of frame and cover or gratings to carry the imposed live load.

1.3 DELIVERY, STORAGE, AND HANDLING

1.3.1 Delivery and Storage

Materials delivered to site shall be inspected for damage, unloaded, and stored with a minimum of handling. Materials shall not be stored directly on the ground. The inside of pipes and fittings shall be kept free of dirt and debris. Before, during, and after installation, plastic pipe and fittings shall be protected from any environment that would result in damage or deterioration to the material. The Contractor shall have a copy of the manufacturer's instructions available at the construction site at all times and shall follow these instructions unless directed otherwise by the Contracting Officer. Lubricants, elastomeric gaskets, and any similar materials required to install plastic pipe shall be stored in accordance with the manufacturer's recommendations and shall be discarded if the storage period exceeds the recommended shelf life.

1.3.2 Handling

Materials shall be handled in a manner that ensures delivery to the trench in sound, undamaged condition. Pipe shall be carried to the trench, not dragged.

PART 2 PRODUCTS

2.1 PIPE FOR CULVERTS AND STORM DRAINS

Pipe for culverts and storm drains shall be of the sizes indicated and shall conform to the requirements specified.

2.1.1 HDPE Pipe

The pipe manufacturer's resin certification indicating the cell classification of HDPE used to manufacture the pipe shall be submitted prior to installation of the pipe. The minimum cell classification for polyethylene plastic shall apply to each of the seven primary properties of the cell classification limits in accordance with ASTM D 3350.

2.1.1.1 Solid HDPE Pipe

HDPE shall be certified by the resin producer as meeting the requirements of ASTM D 3350. All drainage pipe shall be SDR 17 and meet the requirements of ASTM F 714.2.2 MISCELLANEOUS MATERIALS

2.2.1 Concrete

Unless otherwise specified, concrete and reinforced concrete shall conform to the requirements for 4000 psi concrete. The concrete mixture shall have air content by volume of concrete, based on measurements made immediately after discharge from the mixer, of 5 to 7 percent when maximum size of coarse aggregate exceeds 1-1/2 inches. Air content shall be determined in accordance with ASTM C 231. The concrete covering over steel reinforcing shall not be less than 1 inch thick for covers and not less than 1-1/2 inches thick for walls and flooring. Concrete covering deposited directly against the ground shall have a thickness of at least 3 inches between steel and ground. Expansion-joint filler material shall conform to ASTM D 1751, or ASTM D 1752, or shall be resin-impregnated fiberboard conforming to the physical requirements of ASTM D 1752.

2.2.2 Mortar

Mortar for pipe joints, connections to other drainage structures, and brick or block construction shall conform to ASTM C 270, Type M, except that the maximum placement time shall be 1 hour. The quantity of water in the mixture shall be sufficient to produce a stiff workable mortar. Water shall be clean and free of harmful acids, alkalies, and organic impurities. The mortar shall be used within 30 minutes after the ingredients are mixed with water. The inside of the joint shall be wiped clean and finished smooth. The mortar head on the outside shall be protected from air and sun with a proper covering until satisfactorily cured.

2.2.3 Precast Concrete Segmental Blocks

Precast concrete segmental block shall conform to ASTM C 139, not more than 8 inches thick, not less than 8 inches long, and of such shape that joints can be sealed effectively and bonded with cement mortar.

2.2.4 Precast Reinforced Concrete Manholes

Precast reinforced concrete manholes conform to ASTM C 478. Joints between precast concrete risers and tops shall be made with flexible watertight, rubber-type gaskets.

2.2.5 Frame and Cover for Gratings

Frame and cover for gratings shall be cast gray iron, ASTM A 48/A 48M, Class 35B; or cast ductile iron, ASTM A 536, Grade 65-45-12. Weight, shape, size, and waterway openings for grates and curb inlets shall be as indicated on the drawings.

2.2.6 Joints

2.2.6.1 Solid HDPE Plastic Pipe

Heat Fusion: Heat fusion fittings shall comply with the requirements of ASTM D 2657. Electrofusion: Electrofusion fittings shall be manufactured

in conformance with ASTM F 1055 to meet ASTM D 2513, ASTM D 1248, and ASTM D 3350.

2.3 STEEL LADDER

Steel ladder shall be provided where the depth of the manhole exceeds 12 feet. These ladders shall be not less than 16 inches in width, with 3/4 inch diameter rungs spaced 12 inches apart. The two stringers shall be a minimum 3/8 inch thick and 2-1/2 inches wide. Ladders and inserts shall be galvanized after fabrication in conformance with ASTM A 123/A 123M.

2.4 RESILIENT CONNECTORS

Flexible, watertight connectors used for connecting pipe to manholes and inlets shall conform to ASTM C 923.

2.5 HYDROSTATIC TEST ON WATERTIGHT JOINTS

2.5.1 HDPE Pipe

A hydrostatic test shall be made on the watertight joint types as proposed. Only one sample joint of each type needs testing; however, if the sample joint fails because of faulty design or workmanship, an additional sample joint may be tested. During the test period, gaskets or other jointing material shall be protected from extreme temperatures which might adversely affect the performance of such materials. Performance requirements for joints in reinforced and nonreinforced concrete pipe shall conform to AASHTO M 198 or ASTM C 443. Test requirements for joints HDPE plastic pipe shall conform to ASTM D 3212.

2.6 EROSION CONTROL RIPRAP

The erosion control riprap shall be composed of a well-graded mixture such that 50 percent of the mixture by weight shall be larger than 12 inches (d_{50}) and a sufficient mixture of other sizes to fill progressively smaller voids. The d_{75} shall be 15 inches and the d_{15} shall be 6 inches. The thickness of a riprap lining should be at least three times the d_{50} size if a filter layer is not used and two times the d_{50} size if a filter is used.

PART 3 EXECUTION

3.1 EXCAVATION FOR PIPE CULVERTS, STORM DRAINS, AND DRAINAGE STRUCTURES

Excavation of trenches, and for appurtenances and backfilling for culverts and storm drains, shall be in accordance with the Contract Drawings, the applicable portions of Section 02310 EXCAVATION, and the requirements specified below.

3.1.1 Trenching

The width of trenches at any point below the top of the pipe shall be not greater than the outside diameter of the pipe plus 24 inches to permit satisfactory jointing and thorough tamping of the bedding material under and around the pipe. Sheeting and bracing, where required, shall be placed within the trench width as specified. Contractor shall not overexcavate. Contractor shall verify depth to bedrock prior to excavating for pipe installation. Where trench widths are exceeded, redesign with a resultant increase in cost of stronger pipe or special installation procedures will be necessary. Cost of this redesign and increased cost of pipe or

installation shall be borne by the Contractor without additional cost to the Government.

3.1.2 Removal of Unstable Material

Where wet or otherwise unstable soil incapable of properly supporting the pipe, as determined by the Contracting Officer, is unexpectedly encountered in the bottom of a trench, such material shall be removed to the depth required and replaced to the proper grade with select granular material, compacted as provided in paragraph BACKFILLING. When removal of unstable material is due to the fault or neglect of the Contractor while performing shoring and sheeting, water removal, or other specified requirements, such removal and replacement shall be performed at no additional cost to the Government.

3.2 BEDDING

The bedding surface for the pipe shall provide a firm foundation of uniform density throughout the entire length of the pipe. Trenches shall be lined with geomembrane as specified in Section 02372 WASTE CONTAINMENT GEOMEMBRANE.

3.2.1 Plastic Pipe

Bedding for HDPE pipe shall meet the requirements of ASTM D 2321. Bedding, haunching, and initial backfill shall be either Class IB or II material.

3.3 PLACING PIPE

Each pipe shall be thoroughly examined before being laid; defective or damaged pipe shall not be used. Plastic pipe shall be protected from exposure to direct sunlight prior to laying, if necessary to maintain adequate pipe stiffness and meet installation deflection requirements. Pipelines shall be laid to the grades and alignment indicated. Proper facilities shall be provided for lowering sections of pipe into trenches. Lifting lugs in vertically elongated metal pipe shall be placed in the same vertical plane as the major axis of the pipe. Pipe shall not be laid in water, and pipe shall not be laid when trench conditions or weather are unsuitable for such work. Diversion of drainage or dewatering of trenches during construction shall be provided as necessary. Deflection of installed flexible pipe shall not exceed the following limits:

TYPE OF PIPE	MAXIMUM ALLOWABLE DEFLECTION (%)
HDPE	7.5

Not less than 30 days after the completion of backfilling, the Government may perform a deflection test on the entire length of installed flexible pipe using a mandrel or other suitable device. Installed flexible pipe showing deflections greater than those indicated above shall be retested by a run from the opposite direction. If the retest also fails, the suspect pipe shall be replaced.

3.4 DRAINAGE STRUCTURES

3.4.1 Manholes and Inlets

Construction shall be of precast reinforced concrete; complete with frames

and covers or gratings; and with fixed galvanized steel ladders where indicated. Pipe connections to concrete manholes and inlets shall be made with flexible, watertight connectors.

3.4.2 Walls and Headwalls

Construction shall be as indicated.

3.4.3 Storm water Detention Basin

Contractor shall provide a storm water detention basin as shown on the contract drawings.

3.5 GALVANIZED STEEL LADDER INSTALLATION

Ladders where indicated shall be adequately anchored to the wall by means of steel inserts spaced not more than 6 feet vertically, and shall be installed to provide at least 6 inches of space between the wall and the rungs. The wall along the line of the ladder shall be vertical for its entire length.

3.6 BACKFILLING

3.6.1 Backfilling Pipe in Trenches

After the pipe has been properly bedded, selected material from excavation or borrow, at a moisture content that will facilitate compaction, shall be placed along both sides of pipe in layers not exceeding 6 inches in compacted depth. The backfill shall be brought up evenly on both sides of pipe for the full length of pipe. The fill shall be thoroughly compacted under the haunches of the pipe. Each layer shall be thoroughly compacted with mechanical tampers or rammers. This method of filling and compacting shall continue until the fill has reached an elevation of at least 12 inches above the top of the pipe. The remainder of the trench shall be backfilled and compacted by spreading and rolling or compacted by mechanical rammers or tampers in layers not exceeding 12 inches. Tests for density shall be made as necessary to ensure conformance to the compaction requirements specified below. Where it is necessary, in the opinion of the Contracting Officer, that sheeting or portions of bracing used be left in place, the contract will be adjusted accordingly. Untreated sheeting shall not be left in place beneath structures or pavements.

3.6.2 Movement of Construction Machinery

When compacting by rolling or operating heavy equipment parallel with the pipe, displacement of or injury to the pipe shall be avoided. Movement of construction machinery over a culvert or storm drain at any stage of construction shall be at the Contractor's risk. Any damaged pipe shall be repaired or replaced.

3.6.3 Compaction

3.6.3.1 General Requirements

Cohesionless materials include gravels, gravel-sand mixtures, sands, and gravelly sands. Cohesive materials include clayey and silty gravels, gravel-silt mixtures, clayey and silty sands, sand-clay mixtures, clays, silts, and very fine sands. When results of compaction tests for moisture-density relations are recorded on graphs, cohesionless soils will

show straight lines or reverse-shaped moisture-density curves, and cohesive soils will show normal moisture-density curves.

3.6.3.2 Minimum Density

Backfill over and around the pipe and backfill around and adjacent to drainage structures shall be compacted at the approved moisture content to the following applicable minimum density, which will be determined as specified below.

a. The density shall be not less than 90 percent of maximum density for cohesive material and 95 percent of maximum density for cohesionless material, up to the elevation where requirements for pavement subgrade materials and compaction shall control.

3.6.4 Determination of Density

Testing shall be the responsibility of the Contractor and performed at no additional cost to the Government. Testing shall be performed by an approved commercial testing laboratory or by the Contractor subject to approval. Tests shall be performed in sufficient number to ensure that specified density is being obtained. Laboratory tests for moisture-density relations shall be made in accordance with ASTM D 1557 except that mechanical tampers may be used provided the results are correlated with those obtained with the specified hand tamper. Field density tests shall be determined in accordance with ASTM D 2167 or ASTM D 2922.

3.7 PIPELINE TESTING

3.7.1 Leakage Tests

Lines shall be tested for leakage by low pressure air testing. Low pressure air testing for concrete pipes shall conform to ASTM C 924. Low pressure air testing for plastic pipe shall conform to ASTM F 1417.

3.7.2 Deflection Testing

Perform a deflection test on entire length of installed plastic pipeline on completion of work adjacent to and over the pipeline, including leakage tests, backfilling, placement of fill, grading, paving, concreting, and any other superimposed loads. Deflection of pipe in the installed pipeline under external loads shall not exceed 4.5 percent of the average inside diameter of pipe. Determine whether the allowable deflection has been exceeded by use of a pull-through device or a deflection measuring device.

a. Pull-through device: This device shall be a spherical, spheroidal, or elliptical ball, a cylinder, or circular sections fused to a common shaft. Circular sections shall be so spaced on the shaft that distance from external faces of front and back sections will equal or exceed diameter of the circular section. Pull-through device may also be of a design promulgated by the Uni-Bell Plastic Pipe Association, provided that the device meets the applicable requirements specified in this paragraph, including those for diameter of the device. Ball, cylinder, or circular sections shall conform to the following:

(1) A diameter, or minor diameter as applicable, of 95 percent of the average inside diameter of the pipe; tolerance of plus 0.5 percent will be permitted.

(2) A homogeneous material throughout, with a density greater than 1.0 as related to water at 39.2 degrees F, and a surface Brinell hardness of not less than 150.

(3) Center bored and through bolted with a 1/4 inch minimum diameter steel shaft having a yield strength of not less than 70,000 psi, with eyes or loops at each end for attaching pulling cables.

(4) Each eye or loop shall be suitably backed with a flange or heavy washer such that a pull exerted on opposite end of shaft will produce compression throughout remote end.

b. Deflection measuring device: Sensitive to 1.0 percent of the diameter of the pipe being tested and accurate to 1.0 percent of the indicated dimension. Deflection measuring device shall be approved by the Contracting Officer prior to use.

c. Pull-through device: Pass the pull-through device through each run of pipe, either by pulling it through or flushing it through with water. If the device fails to pass freely through a pipe run, replace pipe which has the excessive deflection and completely retest in same manner and under same conditions as specified.

d. Deflection measuring device procedure: Measure deflections through each run of installed pipe. If deflection readings in excess of 4.5 percent of average inside diameter of pipe are obtained, retest pipe by a run from the opposite direction. If retest continues to show a deflection in excess of 4.5 percent of average inside diameter of pipe, remove pipe which has excessive deflection, replace with new pipe, and completely retest in same manner and under same conditions.

e. Warranty period test: Pipe found to have a deflection of greater than 5 percent of average inside diameter when deflection test is performed just prior to end of one-year warranty period shall be replaced with new pipe and tested as specified for leakage and deflection.

-- End of Section --

SECTION 02650

UNDERGROUND STORAGE TANK REMOVAL
04/06

PART 1 GENERAL

1.1 DESCRIPTION

This section includes the requirements for materials, equipment, and personnel for uncovering, handling and disposal of underground storage tanks (USTs) which may be encountered during excavation activities. At this time there are no known USTS at the site requiring removal; however, the past industrial uses at the site do not prevent the possibility of discovery during routing soil remediation excavation activities. All tanks which are encountered at the site will be closed and removed from the site. In-place closure will not be permitted.

All Storage Tank closure activities including registration and preparation of Tank Closure Reports, sampling, monitoring, testing, excavation and backfill, disposal of residuals and providing all documentation shall be performed by a Certified Tank Handler.

It has been assumed that all tanks are coated with lead-based paint. The Contractor shall conduct removal activities to protect workers and the public from lead exposure in accordance with Section 13281A LEAD BASED PAINT AWARENESS.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN PETROLEUM INSTITUTE (API)

API RP 1604	(1996; R 2001) Closure of Underground Petroleum Storage Tanks
API RP 2003	(1998) Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents
API RP 2219	(2005) Safe Operation of Vacuum Trucks in Petroleum Service
API STD 2217A	(2005) Guidelines for Work in Inert Confined Spaces in the Petroleum Industry
API Std 2015	(2001) Requirements for Safe Entry and Cleaning of Petroleum Storage Tanks

ASTM INTERNATIONAL (ASTM)

ASTM D 1556	(2000) Density and Unit Weight of Soil in Place by the Sand-Cone Method

ASTM D 1557	(2002e1) Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3) (2700 kN-m/m3)
ASTM D 2167	(1994; R 2001) Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D 2922	(2005) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 3017	(2005) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 265	Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 266	Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
40 CFR 268	Land Disposal Restrictions
40 CFR 279	Standards for the Management of Used Oil
40 CFR 280	Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)

NEW JERSEY ADMINISTRATIVE CODE (NJAC)

NJAC 7:14	Water Pollution Control Act, including 7:14A, Pollutant Discharge Elimination System
NJAC 7:26E	(2008) Technical Requirements for Site Remediation

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA SW-846.3-3	(1999, Third Edition, Update III-A) Test Methods for Evaluating Solid Waste: Physical/Chemical Methods

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Storage Tank Handling Plan; G.

The Storage Tank Handling Plan within 30 days after Notice To Proceed. The Contractor shall allow 30 days in the schedule for the Government's review and approval. No adjustment for time or money will be made for resubmittals required as a result of noncompliance.

Qualifications; G

A document indicating that the Contractor meets the specified requirements.

Salvage Rights.

A record of the disposition of salvaged materials at the end of the contract.

SD-06 Test Reports

Backfill Material; G, A/E.

Tank Sampling And Analytical Program

The Contractor shall maintain field log documentation of all sampling activities and a chain of custody for the samples collected.

Contaminated Water Disposal; G.

Soil Examination, Testing, and Analysis; G, A/E

Reports including the chain-of-custody records.

Backfilling; G.

Copies of all laboratory and field test reports.

Tank Closure Report.

Five (5) copies of the report for each tank site opened, prepared in a standard 3-ring binder, within 14 days of completing work at each site. Each binder shall be labeled with contract number, project name, location and tank number; each binder shall be indexed. A copy of the report shall be furnished to the Installation Environmental Coordinator.

1.4 QUALIFICATIONS

The Contractor shall have a minimum of 5 years of tank removal experience and shall be certified by the State of New Jersey for tank removal work.

1.4.1 Laboratory Services

For laboratory services the Contractor shall be validated in accordance with state certification requirements and Section 01450A CHEMICAL DATA QUALITY CONTROL.

1.4.2 Support Staff

The Contractor shall identify all staff involved for the various components, including personnel collecting and shipping samples. The qualifications of these staff members shall be detailed by the Contractor.

1.5 REGULATORY REQUIREMENTS

1.5.1 Permits and Licenses

The Contractor, as required or as directed by the Contracting Officer, shall obtain local, state, or federal permits and licenses that directly impact the Contractor's ability to perform the work prior to commencing removal operations.

1.5.2 Statutes and Regulations

Tank closures shall be carried out in accordance with 40 CFR 280, 40 CFR 262, 40 CFR 264, and 40 CFR 265 as well as the applicable local and State of New Jersey regulations, such as NJAC 7:14B-9, NJAC 7:26EE3.9, and NJAC 7:26E E-6.3. Hazardous waste shall be transported in accordance with Section 02350 TRANSPORTATION AND DISPOSAL.

1.6 SEQUENCING AND SCHEDULING

The Contractor shall notify the Installation Environmental Coordinator and the Contracting Officer of any unexpected USTs encountered during excavation activities and shall coordinated all on-site activities related to UST removal with the Contracting Officer.

1.7 STORAGE TANK HANDLING PLAN

The Contractor shall develop, implement, maintain, and supervise as part of the work, a comprehensive plan for tank removal and related operations. As a minimum the plan shall include, but not be limited to, excavation, removal, and ultimate disposal of the tank, its contents, and any contaminated materials. No work at the site, with the exception of site inspections and mobilization, shall be performed until the Storage Tank Handling Plan is approved. The Storage Tank Handling Plan shall be based on work experience, on the requirements of this specification, API RP 1604, API Std 2015, API RP 2003, API STD 2217A and API RP 2219. At a minimum, the Storage Tank Handling Plan shall include:

a. Discussion of the removal approach, tank cleaning, and tank cutting procedures.

b. A Sampling and Analysis Plan prepared in accordance with Section 01450A CHEMICAL DATA QUALITY CONTROL.

c. Methods to be employed for product, sludge, vapor, and pumpable liquid removal; purging and inerting; and storage methods proposed for control of surface water.

d. Identification of waste, tank and contaminated soil transporters and means of transportation.

e. Treatment, disposal, and alternate facilities, and means of treatment, disposal or remediation.

f. Borrow source.

g. Spill prevention plan.

h. Spill contingency plan.

i. Decontamination procedures, shoring plan, and safety measures in accordance with Section 01351 SAFETY, HEALTH AND EMERGENCY RESPONSE (HTRW).

PART 2 PRODUCTS

2.1 BACKFILL MATERIAL

Backfill material shall be obtained from off-site sources and consist of Dense-Graded Aggregate in accordance with Section 02320 BACKFILL AND COMPACTION..

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

3.1.1 Safety Guidelines

Personnel shall abide by the safety guidelines specified in Section 01351 SAFETY. HEALTH AND EMERGENCY RESPONSE (HTRW).

3.1.2 Burning and Explosives

Use of explosives or burning debris will not be allowed.

3.1.3 Protection of Existing Structures and Utilities

The Contractor shall take all necessary precautions to avoid damage to existing structures, their appurtenances, monitoring wells, or utilities that may be affected by work activities. Any damage to utilities and /or existing monitoring wells resulting from the Contractor's operations shall be repaired at no expense to the Government. The Contractor shall coordinate with the installation to locate underground utilities prior to beginning construction. Utilities encountered which were not previously shown or otherwise located shall not be disturbed without approval from the Contracting Officer.

3.1.4 Shoring

Shoring requirements shall be provided in accordance with Section 01351 SAFETY. HEALTH AND EMERGENCY RESPONSE (HTRW).

3.2 TANK SAMPLING AND ANALYTICAL PROGRAM

3.2.1 General

All sampling of liquids, sludges, and/or solids from storage tanks shall be performed by the Contractor. The Contractor shall provide all sample containers and be responsible for sample collection, packing, preservation, transport, and analysis. The Contractor shall maintain field log documentation of all sampling activities and a chain of custody for the samples collected.

3.2.2 Objectives

a. The Contractor shall segregate tank contents as they are encountered during construction activities based on visual observations and air monitoring readings. The rationale shall be to consolidate and stage similar tank contents together to more effectively sample the contents. The Contractor shall bulk similar materials prior to representative sampling for analytical testing, to the extent possible for efficient and cost-effective sampling, analysis, and disposal. The Analytical Program shall be structured to provide data in a time frame that will allow expedient removal, off-site transportation and disposal of tank materials exhibiting hazardous characteristics.

b. Tank opening and sampling procedures shall be in accordance with current OSHA Standards for protection of tank sampling personnel. Personnel in the immediate vicinity shall be upwind of the tank being opened. The Contractor shall be responsible for collection of a representative sample.

c. The Contractor shall describe the sampling procedures and equipment to sample tank liquids, sludges, and solids in the Storage Tank Handling Plan. The objective of this plan shall be to characterize the tank material as required to:

(1) Field screen materials for staging using appropriate instrumentation and applicable field screening tests.
(2) Determine material compatibility for safe staging, segregation, bulking, or recontainerization.
(3) Sample and analyze tank material for hazardous characteristics.
(4) Determine treatment and disposal requirements for tank material exhibiting hazardous characteristics.
(5) Allow transportation of tank material in accordance with regulatory requirements.
(6) Identify potential RCRA permitted disposal facilities.

3.2.3 Sampling and Analytical Plan Contents

a. The Contractor's sampling and analytical program to be described in the Storage Tank Handling Plan shall address:
(1) Sample identification and tracking procedures.
(2) Waste compatibility testing procedures, protocols and analytical parameters.
(3) Waste segregation criteria.
(4) Waste sample collection procedures and methodology.
(5) Information necessary to complete waste disposal application requirements for off-site disposal facilities.
(6) Schedule of all activities including typical sample analysis

response times (RCRA and disposal characterization), assessment of treatment/disposal options, waste consolidation if appropriate, and off-site disposal.

3.2.4 Hazardous Characterization Determination

a. The Contractor shall use the following USEPA methods from EPA SW-846.3-3 for characterizing tank material samples or as necessary to satisfy off-site disposal facility requirements:

(1) Ignitability: USEPA 1010.
(2) Corrosivity: USEPA 9040/9045.
(3) Reactivity:
6.4.3.1 Cyanide: USEPA 9012.
6.4.3.2 Sulfide: USEPA 9030.
(4) Free Liquids: USEPA 9095.
(5) Toxicity:
USEPA 1311-Toxicity Characteristic Leaching Procedure (TCLP) Preparation.
USEPA 8270C-TCLP Semivolatiles.
USEPA 8260B-TCLP Volatiles.
USEPA 8081A0-TCLP Pesticides.
USEPA 8082-TCLP PCBs.
USEPA 8151A-TCLP Herbicides.
USEPA 6010B, 7470A and 7471A-TCLP Metals.
(6) Compatibility: The purpose of compatibility testing is to determine which materials for off-site disposal (i.e., classified as exhibiting characteristics of hazardous waste as defined by 40 CFR 261) can be safely consolidated (i.e., bulked) for disposal purposes. The Contractor shall bulk materials to the extent possible based on the characterization results and in field bulking tests. The Contractor shall describe the procedures to be followed for bulking (i.e., compatibility testing) in the Storage Tank Handling Plan.
(7) Partial TCLP Parameter: Analytical testing of solid materials (e.g., testing for the inorganic fraction only) will be allowed if it is apparent from visual observations that the likelihood of the sample containing any TCLP organic parameters is minimal. For example, a sample collected from a tank containing sand or gravel would be tested only for TCLP inorganic parameters and the other hazardous characteristic parameters.

3.2.5 Disposal Samples

The Contractor shall follow the analytical methods necessary to satisfy off-site disposal facility requirements.

3.2.6 Data Reporting

Written results of the hazardous characterization testing performed by the Contractor shall be submitted to the Contracting Officer within 21 calendar days of sampling and at least 14 days prior to transportation of tank material off-site. Written results of the compatibility testing shall be submitted to the Contracting Officer within 2 days of performing the compatibility testing and 14 days prior to transportation of the materials off-site. For materials which are determined to be Hazardous, the Contracting Officer will obtain provisional generator ID number for the site.

3.3 CLEARING, GRUBBING AND REMOVALS

Clearing and grubbing shall be as completed as required and directed by the Contracting Officer shall be cleared of all trees, stumps, down timber, brush, rubbish, roots larger than 3 inches in diameter, and matted roots prior to commencing operations. Concrete or asphalt pavement shall be saw cut at the limits of removal, broken and removed with the resulting debris disposed of at an off-site disposal facility. Chain link fence shall be disposed of off-site.

3.4 PREPARATIONS FOR EXCAVATION

Before excavating, the Contractor shall drain product piping back to the tank and remove all product from the tank; and the tank shall be purged and vented in accordance with API RP 1604, and as specified herein.

3.4.1 Removal of Product, Pumpable Liquids, and Sludge

Tank product, pumpable liquids, and sludge shall be contained, and stored onsite, prior to disposal. Contaminated water shall be treated to meet off-site disposal facility requirements. Tank product, pumpable liquids, and sludge shall be removed and disposed of by the Contractor. No site facilities shall be used for permanent storage or disposal of the wastes. Temporary storage on-site will be allowed only until testing is complete, manifests (if necessary) are complete, and transportation is arranged. The Contractor shall be responsible for complying with all required permits. The Contractor shall provide approved containers, vehicles, equipment, labor, signs, labels, placards and manifests and associated land disposal restriction notices and notifications, necessary for accomplishment of the work, including materials necessary for cleaning up spills that could occur from tank removal operations.

3.4.2 Contaminated Water Disposal

3.4.2.1 Sampling, Analysis, and Containment

Contaminated water shall be taken to an off-site treatment facility. Analyses and testing of the contaminated water shall conform to the requirements of the treatment facility with documentation of all analyses performed furnished to the Contracting Officer in accordance with paragraph RECORDS. Contaminated water shall be contained, stored onsite, and analyzed prior to being transported to the approved treatment, storage and disposal facility and disposed of by the Contractor in accordance with applicable Federal and state disposal regulations. The Contractor shall provide approved containers, vehicles, equipment, labor, signs, labels, placards and manifests and associated land disposal notices and notifications, necessary for accomplishment of the work. Sampling and analyses of contaminated water and the Contractor and laboratory quality assurance program shall be in accordance with Section 01450A CHEMICAL DATA QUALITY CONTROL.

3.4.2.2 Treatment

Contaminated water shall not be treated on-site. All water shall be sent for off-site disposal; any necessary treatment shall be in accordance with the approved disposal facility.

3.5 UNDERGROUND TANK REMOVAL AND DISPOSAL

At this time, the presence of underground tanks is unknown. Any such tanks uncovered during the soils excavation process shall be handled in accordance with this section.

Tanks shall be drained and cleaned.

The Contractor shall excavate the soil and fill along the top of each tank to expose all fittings and piping on and connected to the tank.

All product suction and return piping and level instrumentation conduits shall be disconnected, drained and removed.

Excavate and remove soils within three feet of the tank and segregate them based upon visual determination or use of using a photoionization detector (PID) or other Contracting Officer approved device into obviously contaminated and not believed to be contaminated soil piles.

For soils which are obviously contaminated, including but not limited to: product staining or saturation, ponded product in the excavation, or free product or sheen in the excavation, the Contracting Officer must be notified.

Remove the tank from the excavation for off-site disposal and complete confirmatory sampling for the tank and fill and delivery piping in accordance with the Closure Requirements for Underground Storage Tank Systems.

3.6 PURGING AND INERTING

3.6.1 Purging

Tanks shall be purged for confined space entry. The flammable vapors shall be reduced to less than 10% of the LFL and the oxygen content shall be between 19.5% and 23.5%. Confined space entry into the tanks shall not be attempted unless absolutely necessary, as for example, to remove sludge from the tank. Flammable vapors may be exhausted from the tank by any of the methods from API RP 1604 listed below, or any method approved by the Contracting Officer. The APP/SSHP shall specify the purging method to be used.

a. Ventilation by Eductor-Type Air Movers: The eductor-type air mover shall be properly bonded and grounded to prevent the generation and discharge of static electricity. When using this method, the fill (drop) tube shall remain in place to ensure ventilation at the bottom of the tank. Tanks equipped with fill (drop) tubes that are not removable shall be purged by this method. An eductor extension shall be used to discharge vapors a minimum of 12 feet above grade or 3 feet above adjacent roof lines, whichever is greater. If this is not possible, alternative methods shall be proposed and approved prior to purging. Noise levels generated by these devices as a result of high airflow may exceed OSHA PELs. Noise levels shall be evaluated and appropriate hearing protection shall be provided.

b. Ventilation by Diffused Air Blowers: When using this purging method, the air-diffusing pipe is properly bonded and grounded to prevent the discharge of a spark. Fill (drop) tubes shall be removed to allow proper diffusion of the air in the tank. Air supply shall be

from a compressor that has been checked to ensure that Grade D breathing air is being supplied. Air pressure in the tank shall not exceed 5 psi gauge to avoid tank failure.

c. Commercial Emulsifiers and Volatile Fuel Encapsulators: These products are completely miscible in water, aid in the elimination of flammable vapors, and are biodegradable. Regulatory requirements for treatment and disposal of the water shall be determined prior to using this method. Standing outside the tank, the operator shall rinse the tank with a 3-to-6 percent solution of the product using a pressure sprayer through a tank opening. Explosive concentrations shall be measured at several levels (top, middle, and bottom) within the tank. If readings are greater than 10% of the LFL, the tank shall be rinsed again. When LFL readings are acceptable, the water in the tank shall be pumped out for disposal.

3.6.2 Tank Inerting

Following the removal of tank contents but prior to excavation of the tanks and tank preparation activities, the tanks shall be inerted only by introducing an inert gas, carbon dioxide (CO_2) or liquid nitrogen (N_2), to remove flammable vapors. Before inerting, all openings in the tanks shall be plugged with threaded or expansion type plugs except the vent tube and the opening to be used for introducing the inert gas. Within 30 minutes prior to initiating any activities (e.g., excavating, preparation, removal, opening, demolition, transportation, or other similar activities) involving a tank which has been inerted, the inerted nature of the tank (oxygen levels less than 8%) shall be verified.

a. CO_2 fire extinguishers shall not be used for inerting the tank interiors. If a compressed gas (e.g., CO_2 or N_2) is introduced into the tank the following requirements shall be met to prevent the buildup of static electricity:

(1) The UST and the compressed gas supply tank shall be bonded together and grounded.

(2) The compressed gas shall be supplied only at low flows.

(3) The liquid or gas shall be released at the tank bottom so that static electricity is not generated by liquid falling to the bottom of the tank. The tank shall be slowly filled from the bottom up.

b. Dry ice, which evolves CO_2 gas as it evaporates, if used, shall be introduced in the amount of at least 3 lbs per 100 gallons of tank capacity. Skin contact with dry ice shall be prevented by wearing heavy cloth gloves.

c. Sufficient quantities of inert gas (CO_2 or N_2) shall be introduced into the tanks to lower the oxygen content to less than 8%. Pressure inside the tank shall not exceed 5 psi. Prior to proceeding with additional activities on the tank (e.g., excavating), the oxygen content of the tanks shall be monitored to confirm that it is less than 8%. Additional oxygen level monitoring shall be conducted at least hourly while activities involving the tanks are underway but prior to decontamination of tank interiors; at least daily during periods in which the tanks are not being disturbed but prior to decontamination of their interiors; or as directed by the Contracting Officer. If

monitoring of tank interiors indicates that oxygen levels are not remaining below 8%, additional inert gas shall be introduced and more frequent oxygen monitoring shall be initiated.

d. During inerting procedures, an extension vent tube a minimum of 12 feet above grade or 3 feet above any adjacent (within 75 feet) roof lines, whichever is greater shall be used to discharge tank vapors. If this is not possible, alternative methods shall be proposed and approved prior to inerting. Continuous combustible gas/oxygen monitoring shall be conducted at the vent and inert gas introduction holes.

3.6.3 Tank Atmosphere Testing

The air within the storage tanks shall be monitored to ensure the space is either adequately purged and safe for personnel entry, or to ensure the tank has been adequately inerted and the oxygen content is less than 8%. In both instances, monitoring shall be performed at the top, bottom, and middle areas of the tanks to ensure stratification has not occurred. Monitoring results shall be reported to project personnel to ensure safe operations. Data shall be recorded as specified in paragraph EXPOSURE MONITORING/AIR SAMPLING PROGRAM.

3.6.4 Monitoring to Ensure Purging

When monitoring to ensure purging, both oxygen content and LFL readings are required. Prior to obtaining LFL readings, the Contractor shall monitor the oxygen content of the space and verify that the combustible gas indicators are operating within the oxygen limits identified by the CGI manufacturer. Personnel shall not be permitted to enter spaces with oxygen levels less than 19.5%, except in emergencies, and then only when equipped with the proper PPE and when following permit-required confined space entry procedures. Toxic air contaminants shall be monitored as specified in paragraph EXPOSURE MONITORING/AIR SAMPLING PROGRAM.

3.6.5 Monitoring to Ensure Inerting

Inerted tanks shall be monitored to ensure oxygen readings remain below a maximum allowable percentage of 8% by volume.

3.7 TANK CLEANING

3.7.1 General

Safety practices and procedures for the cleaning of the storage tanks shall conform to API Std 2015. Opening of the tanks to permit decontamination shall be conducted utilizing only methods approved in the APP/SSHP. The interior and exterior of the tank shall be decontaminated prior to removing it from the work site unless the tank is being transported directly to a state certified tank destruction facility. Plans and procedures, including materials and supplies, for safely and effectively opening the tanks, cleaning surfaces of the interior and exterior of the tanks, and disposing of the decontamination fluids shall be submitted in the SSHP. Volatile organic solvents shall not be permitted to be utilized for decontamination procedures. Personnel shall not enter any of the storage tanks as a part of this project, except when following permit-required confined space entry procedures. Decontamination fluids shall be collected and disposed. Upon

completion of this project, written certification shall be made that the tank was properly decontaminated prior to being removed from the site.

3.7.2 Exterior

Soil shall be removed from the exterior of the tank, piping, and associated equipment to eliminate soil deposition on roadways during transportation to a temporary storage area, ensure markings will adhere to the surfaces, and simplify tank cutting. Soil shall be removed using non-sparking tools. Removed uncontaminated soil and soil not regulated by the state as a hazardous waste shall be recovered and used as backfill in the former tank excavation or disposed of onsite. Soil believed to be contaminated shall be removed and containerized, or if the site is a RCRA designated CAMU, collected on an impermeable 30 millimeter polyethylene sheeting and stockpiled with other contaminated soil removed from the excavation as specified in Section 02310 EXCAVATION.

3.7.3 Temporary Storage

If the tank is stored after the tank exterior is cleaned and ancillary equipment is removed, and prior to being cut into sections, the tank shall be labeled as directed in API RP 1604, placed on blocks, and temporarily stored on a flat area adjacent to the excavation. Prior to cleaning the tank interior the tank atmosphere shall be monitored for combustible vapors and purged or inerted if combustible vapors are detected.

3.7.4 Interior

The tank interior shall be cleaned using a high pressure (greater than 500 psi), low volume (less than 2 gpm) water spray or steam cleaned until all loose scale and sludge is removed, and contamination, in the form of a sheen, is no longer visible in the effluent stream. The interior surfaces of piping shall also be cleaned, to the extent possible, using the same method used for cleaning the tank.

All contaminated water resulting from cleaning operations shall be collected and stored on-site for future off-site disposal. Cleaning shall be accomplished eliminating, to the greatest extent possible, the need for personnel to enter the tank. Cleaning shall be done using specially designed tank cleaning equipment which allows the tank to be cleaned prior to cutting into sections without requiring personnel to enter the tank or, if less specialized equipment is used, the tank shall be partially dissected to overcome confined space entry hazards. This work shall be accomplished in accordance with Section 01351 SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW).

3.8 EXCAVATION

Excavation areas, as well as work near roadways, shall be marked in accordance with Section 01351 SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW).

3.8.1 Exploratory Trenches

Exploratory trenches shall be excavated as necessary to determine the tank location, limits and the location of ancillary equipment.

3.8.2 Tank Excavation

Excavation around the perimeter of the tank shall be performed limiting the

amount of potentially petroleum contaminated soil that could be mixed with previously uncontaminated soil. Petroleum contaminated soil shall be segregated in separate stockpiles. The Contractor shall maintain around the tank an excavation of sufficient size to allow workers ample room to complete the work, but also protect the workers from sliding or cave-ins. Sheeting, bracing, or shoring shall be installed in the absence of adequate side slopes if there is a need for workers to enter the excavated area. Surface water shall be diverted to prevent direct entry into the excavation. Dewatering of the excavation may require a discharge permit by the State and shall be limited to allow adequate access to the tank and piping, to assure a safe excavation, and to ensure that compaction and moisture requirements are met during backfilling. Dewatering may result in the production of petroleum contaminated water and/or free product. Free product shall be recovered from the groundwater only as part of necessary dewatering.

3.8.3 Piping Excavation

Excavation shall be performed as necessary to remove tank piping and ancillary equipment in accordance with paragraphs: Shoring, Tank Excavation, and Open Excavations.

3.8.4 Open Excavations

Open excavations and stockpile areas shall be secured while awaiting confirmation test results from the soil beneath the tank. The excavation shall be backfilled as soon as possible after tank and contaminated soil removals have been completed and confirmation samples have been taken. The Contractor shall divert surface water around excavations to prevent water from directly entering into the excavation.

3.8.5 Stockpiles

Excavated material which is visibly stained and which has an obvious petroleum odor or as required by the State of New Jersey shall be considered contaminated and shall be placed in containers such as drums, roll-offs or dumpsters for sampling in accordance with paragraph Stockpiled Material Sampling. Excavated material that appears to be uncontaminated soil be stockpiled separately from the contaminated soil, a safe distance away from, but adjacent to, the excavation. Allowable stockpiles of contaminated soil shall be placed on an impermeable 30 millimeter polyethylene sheeting as specified in Section 02310 EXCAVATION. The sheeting shall be placed to prevent the stockpiled soil from coming into contact with surface water run-off. The sheeting cover shall prevent rain or surface water from coming into contact with the contaminated soil, as well as limit the escape of the volatile constituents in the stockpile.

3.9 REMOVAL OF PIPING, ANCILLARY EQUIPMENT, AND TANK

3.9.1 Piping and Ancillary Equipment

All piping and ancillary equipment shall be disconnected from the tank. The piping shall be removed completely (interior and exterior of the tank) within the limits of the excavation, where it shall be capped and abandoned in place or as directed by the Contracting Officer. All tank ancillary equipment and piping connections shall be capped, except those connections necessary to inert the tank within the excavation zone. The piping exterior and ancillary equipment shall be cleaned to remove all soil and inspected for signs of corrosion and leakage. The Contractor shall ensure

no spillage of the piping contents occurs, as specified in the Storage Tank Handling Plan, and as required in paragraph SPILLS.

3.9.2 Tank Lifting

Tanks shall be lifted using equipment with a rated capacity greater than the load to be lifted. Tanks shall be lifted by lifting eyes or by straps under the ends of the tanks. Tanks shall not be lifted by the manhole flange or by removing the bungs. Personnel shall be directed to remain away from the ends of the tanks and tanks shall be positioned, whenever possible, with the ends oriented away from occupied or traveled areas, due to potential for rupture. During transportation, the tanks shall be secured to prevent movement.

3.9.3 Tank Demolition

Excavated tanks shall be demolished before being removed from the site unless they are transported directly to a state certified tank destruction facility. Demolition will not be permitted until a decontamination of the interiors and exteriors is complete. Demolition shall involve opening the tanks sufficiently to permanently prohibit further use as containers of liquids. Tanks shall be inerted and tested before they are opened. Plans and procedures, including a list of materials and supplies, for safely and effectively demolishing the tanks shall be submitted in the APP/SSHP.

3.9.4 Contaminated Soil, Tank and Piping Excavation Examination

After the tank has been removed from the ground, the adjacent and underlying soil shall be examined for any evidence of leakage. The soil shall be visually inspected for staining after removal of all obviously contaminated soil, then screened for the presence of volatile and/or semi-volatile contamination using a real time vapor monitoring instrument. Petroleum contaminated soil not regulated by the state as hazardous waste shall be stockpiled onsite per paragraph Stockpiles and transported off-site for disposal. Contaminated soil or suspected contaminated soil shall be containerized stockpiled until further disposition. The Contracting Officer shall determine the extent of the contaminated soil to be removed from each site but shall not exceed 100 cubic yards. The Contractor shall report any evidence indicating that the amount of contaminated soil may exceed the individual site limit specified, to the Contracting Officer the same day it is discovered. If minimal additional excavation is required, the Contracting Officer may allow the Contractor to proceed. If extensive contamination is encountered, the excavation shall be sampled and backfilled in accordance with paragraph BACKFILLING. After the known contaminated soil is removed, the excavation shall be sampled and analyzed in accordance with Section 01450A CHEMICAL DATA QUALITY CONTROL. The tank and piping shall be removed and disposed of in accordance with paragraph UNDERGROUND TANK REMOVAL AND DISPOSAL.

3.10 SOIL EXAMINATION, TESTING, AND ANALYSIS

3.10.1 Tank Excavation Sampling Procedures

After soil known to be contaminated has been removed or after soil excavation is complete, the excavation shall be sampled with procedures, number, location, and methodology in accordance with state regulations and Section 01450A CHEMICAL DATA QUALITY CONTROL. Sample preservation and analytical procedures shall conform to Section 01450A CHEMICAL DATA QUALITY CONTROL.

3.10.2 Stockpiled Material Sampling

Stockpiled soil shall be sampled and preserved in accordance with the approved Sampling and Analysis Plan, and Section 01450A CHEMICAL DATA QUALITY CONTROL. Sampling locations, number and specific procedures shall be as required by the State of New Jersey and the disposal facility.

3.10.3 Analysis

Soil samples from the excavation and stockpiled material shall be tested in accordance with the approved Sampling and Analysis Plan, and Section 01450A CHEMICAL DATA QUALITY CONTROL. Copies of all test results shall be provided to the Contracting Officer.

3.11 BACKFILLING

The tank area and any other excavations shall be backfilled as soon as possible after tank and contaminated soil removals have been completed and confirmation samples have been taken and after the soil test results have been approved. Contaminated soil removal shall be complete after the bottom of the tank excavation is determined to have soil contamination levels below the state standards of 100 ppm TPH and approval by the Contracting Officer. The excavation shall be dewatered if necessary. Stockpiled material subjected to chemical confirmation testing shall be used as backfill if it is found to conform to the requirements of clean fill per appropriate state and local regulations and contain less than 100 ppm of total petroleum hydrocarbons (TPH) and contain less than 10 ppm of BETX. Backfill consisting of clean fill or alternatively dense graded aggregate shall be placed in layers with a maximum loose thickness of 8 inches, and compacted to 95 percent maximum density for cohesive soils and 95 percent maximum density for cohesionless soils in accordance with Section 02320 BACKFILL AND COMPACTION. Density tests shall be performed by an approved commercial testing laboratory or by facilities furnished by the Contractor. Test results shall be attached to Contractor's Quality Control Report. A minimum of 1 density test shall be performed on each lift. Laboratory tests for moisture density relations shall be determined in accordance with ASTM D 1557, Method B, C, or D, or ASTM D 3017. A mechanical tamper may be used provided that the results are correlated with those obtained by the hand tamper. Field in-place density shall be determined in accordance with ASTM D 1556, ASTM D 2922, or ASTM D 2167.

3.12 DISPOSAL REQUIREMENTS

3.12.1 Treatment, Disposal, and Recycling

Disposal of hazardous or special wastes shall be in accordance with all local, State, and Federal solid and hazardous waste laws and regulations; the RCRA; Section 02350 TRANSPORTATION AND DISPOSAL; and conditions specified herein. This work shall include all necessary personnel, labor, transportation, packaging, detailed analyses (if required for disposal, manifesting or completing waste profile sheets), equipment, and reports. Product and pumpable liquids removed from the tank shall be recycled to the greatest extent practicable. The tanks removed shall be disposed of at state approved facilities. Each tank disposed of in this manner shall be manifested as required by the State of New Jersey to document delivery and acceptance at the disposal facility.

3.12.2 Tank and Ancillary Equipment Disposal

After the tank, piping, and ancillary equipment have been removed from the excavation and the tank cleaned, the tank shall be cut into sections with no dimension greater than 5 feet. Tank and piping sections shall be disposed of in a USEPA Region 2 approved off-site disposal facility. The tank shall be cut into sections prior to being taken from the tank removal site. The Contractor shall not sell the tank intact. Ancillary equipment shall be disposed of at an approved off-site disposal facility.

3.12.3 Transportation of Wastes

Transportation shall be provided in accordance with Department of Transportation (DOT) Hazardous Material Regulations and State and local requirements, including obtaining all necessary permits, licenses, and approvals. Evidence that a State licensed waste transporter is being used shall be included in the SUBMITTALS.

3.12.4 Salvage Rights

The Contractor shall retain the rights to salvage value of recycled or reclaimed product and metal, so long as the requirements of 40 CFR 266 and 40 CFR 279, or the applicable State requirements are met. At the end of the contract, the Contractor shall provide documentation on the disposition of salvaged materials.

3.12.5 Records

Records shall be maintained of all waste determinations, including appropriate results of analyses performed, substances and sample location, the time of collection, and other pertinent data as required by 40 CFR 280, Section 74 and 40 CFR 262 Subpart D, and Section 01450A CHEMICAL DATA QUALITY CONTROL. Transportation, treatment, disposal methods and dates, the quantities of waste, the names and addresses of each transporter and the disposal or reclamation facility, shall also be recorded and available for inspection, as well as copies of the following documents:

a. Manifests.

b. Waste analyses or waste profile sheets.

c. Certifications of final treatment/disposal signed by the responsible disposal facility official.

d. Land disposal notification records required under 40 CFR 268for hazardous wastes.

Records shall be provided in accordance with Section 02350 TRANSPORTATION AND DISPOSAL. Following contract close out, the records shall become the property of the Government.

3.12.6 Hazardous/Special Waste Manifests

Manifesting shall conform to the requirements specified in Section 02350 TRANSPORTATION AND DISPOSAL.

3.12.7 Documentation of Treatment or Disposal

The wastes, other than recyclable or reclaimable product or metal, shall be

taken to a treatment, storage, or disposal facility which has EPA or appropriate state permits and hazardous or special waste identification numbers and complies with the provisions of the disposal regulations. Documentation of acceptance of special waste by a facility legally permitted to treat or dispose of those materials shall be furnished to the Contracting Officer not later than 5 working days following the delivery of those materials to the facility; and a copy shall be included in the Tank Closure Report. A statement of agreement from the proposed treatment, storage or disposal facility and certified transporters to accept hazardous or special wastes shall be furnished in the Storage Tank Handling Plan and to the Contracting Officer not less than 14 days before transporting any wastes. If the Contractor selects a different facility than is identified in the Storage Tank Handling Plan, documentation shall be provided for approval to certify that the facility is authorized and meets the standards specified in 40 CFR 264.

3.13 SPILLS

Immediate containment actions shall be taken as necessary to minimize effect of any spill or leak. Cleanup shall be in accordance with applicable Federal, State, local laws and regulations, and district policy at no additional cost to the Government. Refer to Section 02350 TRANSPORTATION AND DISPOSAL for spill response and reporting requirements.

3.14 TANK CLOSURE REPORT

Tank Closure Reports shall include the following information as a minimum:

a. A narrative report describing what was encountered at each site, including:

(1) condition of the UST.

(2) any visible evidence of leaks or stained soils.

(3) results of vapor monitoring readings.

(4) actions taken including quantities of materials treated or removed.

(5) reasons for selecting sample locations.

(6) sample locations.

(7) collection data such as time of collection and method of preservation.

(8) reasons for backfilling site.

(9) whether or not groundwater was encountered.

c. Copies of all analyses performed for disposal.

d. Copies of all waste analyses or waste profile sheets.

e. Copies of all certifications of final disposal signed by the responsible disposal installation official.

f. Information on who sampled, analyzed, transported, and accepted all wastes encountered, including copies of manifests, waste profile sheets, land disposal restriction, notification and certification forms, certificates of disposal, and other pertinent documentation.

g. Copies of all analyses performed for confirmation that underlying soil is not contaminated, with copies of chain-of-custody for each sample. Analyses shall give the identification number of the sample used. Sample identification numbers shall correspond to those provided on the one-line drawings.

h. Scaled one-line drawings showing tank locations, limits of excavation, limits of contamination, underground utilities within 50 feet, sample locations, and sample identification numbers.

i. Progress Photographs. The Contractor shall take a minimum of 4 views of the site showing such things as the location of each tank, entrance/exit road, and any other notable site condition before work begins. After work has been started at the site, the Contractor shall photographically record activities at each work location daily. Photographs shall be 3 x 5 inches and shall include:

(1) Soil removal, handling, and sampling.

(2) Unanticipated events such as discovery of additional contaminated areas.

(3) Soil stockpile area.

(4) Tank.

(5) Site or task-specific employee respiratory and personal protection.

(6) Fill placement and grading.

(7) Post-construction photographs. After completion of work at each site, the Contractor shall take a minimum of four (4) views of the site. Prints shall illustrate the condition and location of work and the state of progress. The photographs shall be mounted and enclosed back-to-back in a double face plastic sleeve punched to fit standard three ring binders. Each color print shall show an information box, 1-1/2 x 3-1/2 inches. The information box for the 3 x 5 inch photographs shall be scaled down accordingly, or taped to the bottom of the photo. The box shall be typewritten and arranged as follows:

Project No. Contract No.

Location
Contractor/Photographer

Photograph No. Date/Time:

Description

Project No. Contract No.
Direction of View

-- End of Section --

SECTION 02742

HOT MIX BITUMINOUS PAVEMENT

PART 1 GENERAL

1.1 SCOPE OF WORK

Contractor shall provide all labor, materials, tools, and equipment to install all temporary and permanent paving as shown, specified, and ordered.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

NEW JERSEY DEPARTMENT OF TRANSPORTATION (NJDOT)

NJDOT STANDARD SPECIFICATIONS	(1996) New Jersey Department of Transportation Standard Specifications for Road and Bridge Construction

ASTM INTERNATIONAL (ASTM)

ASTM C 117	(2003) Materials Finer Than 75 micrometer (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C 131	(2003) Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C 136	(2001) Sieve Analysis of Fine and Coarse Aggregates
ASTM D 1559	(1989) Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus
ASTM D 2172	(2001e1) Quantitative Extraction of Bitumen from Bituminous Paving Mixtures
ASTM D 4867/D 4867M	(1996) Effect of Moisture on Asphalt Concrete Paving Mixtures
ASTM D 546	(1999e1) Sieve Analysis of Mineral Filler for Bituminous Paving Mixtures
ASTM D 75	(2003) Sampling Aggregates
ASTM D 979	(2001) Sampling Bituminous Paving Mixtures
ASTM D 3666	(2004) Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-05 Design Data

Mix Design; G, A/E

SD-06 Reports

Specific gravity of asphalt

Specific gravity of mineral filler

Aggregates tests

Bituminous Mix Tests

Pavement Courses Testing

1.4 QUALITY ASSURANCE

1.4.1 Required Data

The Mix Design shall show the following:

a. Source and proportions, percent by weight, of each ingredient of the mixture;

b. Correct gradation, the percentages passing each size sieve listed in the specifications for the mixture to be used, for the aggregate and mineral filler from each separate source and from each different size to be used in the mixture and for the composite mixture;

c. Amount of material passing the No. 200 sieve determined by dry sieving;

d. Number of blows of hammer compaction per side of molded specimen;

e. Temperature viscosity relationship of the asphalt cement;

f. Stability, flow, percent voids in mineral aggregate, percent air voids, unit weight;

g. Asphalt absorption by the aggregate;

h. Effective asphalt content as percent by weight of total mix;

i. Temperature of the mixture immediately upon completion of mixing;

j. Asphalt performance grade; and

k. Curves for the leveling, binder, and wearing courses.

1.4.2 Charts

Plot and submit, on a grain size chart, the specified aggregate gradation band, the job-mix gradation and the job-mix tolerance band.

1.4.3 Selection of Optimum Asphalt Content

Base selection on percent of total mix and the average of values at the following points on the curves for each mix:

a. Stability: Peak

b. Unit Weight: Peak

c. Percent Air Voids: Median

1.5 DELIVERY, STORAGE, AND HANDLING

Inspect materials delivered to the site for damage and store with a minimum of handling. Store aggregates in such a manner as to prevent segregation, contamination, or intermixing of the different aggregate sizes.

1.6 ENVIRONMENTAL CONDITIONS

Place bituminous mixture only during dry weather and on dry surfaces. Place courses only when the surface temperature of the underlying course is greater than 45 degrees F for course thicknesses greater than one inch and 55 degrees F for course thicknesses one inch or less.

1.7 CONSTRUCTION EQUIPMENT

Calibrated equipment, such as scales, batching equipment, spreaders and similar equipment, shall have been recalibrated by a calibration laboratory approved by the Contracting Officer within 12 months of commencing work.

1.7.1 Testing Laboratory

Provide a testing laboratory for control and acceptance testing functions during periods of mix production, sampling and testing, and whenever materials subject to the provisions of these specifications are being supplied or tested. The laboratory shall provide adequate equipment, space, and utilities as required for the performance of the specified tests.

1.7.2 Surge and Storage Bins

Use surge and storage bins for temporary storage of hot bituminous mixtures will not be permitted.

1.7.3 Drum-Dryer Mixer

Do not use drum-dryer mixer if specified requirements of the bituminous mixture or of the completed bituminous pavement course cannot be met. If drum-dryer mixer is prohibited, use either batch or continuous mix plants meeting the specifications and producing a satisfactory mix.

1.7.4 Paving Equipment

1.7.4.1 Spreading Equipment

Self-propelled electronically controlled type, unless other equipment is authorized by the Contracting Officer. Equip spreading equipment of the self-propelled electronically controlled type with hoppers, tamping or vibrating devices, distributing screws, electronically adjustable screeds, and equalizing devices. Equipment shall be capable of spreading hot bituminous mixtures without tearing, shoving, or gouging and to produce a finished surface of specified grade and smoothness. Operate spreaders, when laying mixture, at variable speeds between 5 and 45 feet per minute. Design spreader with a quick and efficient steering device; a forward and reverse traveling speed; and automatic devices to adjust to grade and confine the edges of the mixture to true lines. The use of a spreader that leaves indented areas or other objectionable irregularities in the fresh laid mix during operations is prohibited.

1.7.4.2 Rolling Equipment

Self-propelled pneumatic-tired rollers supplemented by three-wheel and tandem type steel wheel rollers. The number, type and weight of rollers shall be sufficient to compact the mixture to the required density without detrimentally affecting the compacted material. Rollers shall be suitable for rolling hot-mix bituminous pavements and capable of reversing without backlash. Pneumatic-tired rollers shall be capable of being operated both forward and backward without turning on the mat, and without loosening the surface being rolled. Equip rollers with suitable devices and apparatus to keep the rolling surfaces wet and prevent adherence of bituminous mixture. Vibratory rollers especially designed for bituminous concrete compaction may be used provided rollers do not impair stability of pavement structure and underlying layers. Repair depressions in pavement surfaces resulting from use of vibratory rollers. Rollers shall be self-propelled, single or dual vibrating drums, and steel drive wheels, as applicable; equipped with variable amplitude and separate controls for energy and propulsion.

1.7.4.3 Hand Tampers

Minimum weight of 25 pounds with a tamping face of not more than 50 square inches.

1.7.4.4 Mechanical Hand Tampers

Commercial type, operated by pneumatic pressure or by internal combustion.

PART 2 PRODUCTS

2.1 PRODUCTS

2.1.1 Paving Materials (Job-Mix Designs)

Surface course (Mix I-4) shall conform to the NJDOT STANDARD SPECIFICATIONS, as amended.

Subbase shall be Dense Graded Aggregate, AASHTO No. 57, as shown on Table 901-1 of the NJDOT STANDARD SPECIFICATIONS.

Prime coat as per Section 404.13 of NJDOT STANDARD SPECIFICATIONS.

2.2 SOURCE QUALITY CONTROL

Employ a commercial laboratory approved by the Contracting Officer to perform testing. The laboratory used to perform all sampling and testing shall meet the requirements of ASTM D 3666 and NJDOT. A certification signed by the manager of the laboratory stating that it meets these requirements or clearly listing all deficiencies shall be submitted to the Contracting Officer prior to the start of construction. The certification shall contain as a minimum:

a. Qualifications of personnel; laboratory manager, supervising technician, and testing technicians.

b. A listing of equipment to be used in developing the job mix.

c. A copy of the laboratory's quality control system.

d. Evidence of participation in the AASHTO Materials Reference Laboratory (AMRL) program.

2.2.1 Tests

Perform testing in accordance with the NJDOT STANDARD SPECIFICATIONS Sections 301, 305, 404, and 903.

PART 3 EXECUTION

3.1 GENERAL

3.1.1 Subgrades

Subgrades shall be prepared in accordance with Section 02320 BACKFILL AND COMPACTION.

3.1.2 Base Course

Aggregate Base Course shall be constructed in accordance with NJDOT STANDARD SPECIFICATIONS Section 301.

3.1.3 Surface Course

Surface Course shall be constructed in accordance with NJDOT STANDARD SPECIFICATIONS Section 404.

3.2 TRANSPORTATION OF BITUMINOUS MIXTURES

Transport bituminous material from the mixing plant to the paving site in trucks having tight, clean, smooth beds that have been coated with a minimum amount of concentrated solution of hydrated lime and water or other approved coating to prevent adhesion of the mixture to the truck. Petroleum products will not be permitted for coating truck. If air temperature is less than 60 degrees F or if haul time is greater than 30 minutes, cover each load with canvas or other approved material of ample size to protect the mixture from the loss of heat. Make deliveries so that the spreading and rolling of all the mixture prepared for one day's run can be completed during daylight, unless adequate approved artificial lighting is provided. Deliver mixture to area to be paved so that the temperature at the time of dumping into the spreader is within the range specified herein. Reject loads that are below minimum temperature, that have crusts of cold

unworkable material, or that have been wet excessively by rain. Hauling over freshly laid material is prohibited.

The Contracting Officer shall have access at all times to all areas of the plant for checking adequacy of equipment, inspecting operation of the plant, verifying weights, proportions, and material properties, checking the temperatures maintained in the preparation of the mixtures, and taking samples.

3.3 SPRAYING OF CONTACT SURFACES

Spray surface of aggregate base course with a thin coat of emulsion or other approved bituminous material prior to placing the bituminous mixture.

3.4 PLACEMENT

3.4.1 Machine Spreading

TABLE VI

MINIMUM SPREADING TEMPERATURES

Base Temp. in Degrees F (*)	Wearing, Binder, or Leveling Course Thickness, Inches							
	1/2	3/4	1	1 1/2	2	3	3 1/2	4
20-32 (**)	---	---	---	---	---	---	275 (**)	260 (**)
+32-40 (**)	---	---	---	---	295	280	270	260
+40-50	---	---	---	300	285	275	265	255
+50-60	---	---	300	295	280	270	260	255
+60-70	---	300	290	285	275	265	255	250
+70-80	300	290	285	280	270	265	255	250
+80-90	290	280	275	270	265	260	250	250
+90	280	275	270	265	265	255	250	250

* Note: Base on which mix is placed.

** Note: Increase by 15 degrees when placement is on base or subbase containing frozen moisture. Normally, hot mix paving is not allowed on base temperatures below 45 degrees F.

The range of temperatures of the mixtures at the time of spreading shall be between 250 degrees F and 300 degrees F. Bituminous concrete having temperatures less than minimum spreading temperature when dumped into the spreader will be rejected. Adjust spreader and regulate speed so that the surface of the course is smooth and continuous without tears and pulling, and of such depth that, when compacted, the surface conforms with the cross section, grade, and contour indicated. Unless otherwise directed, begin the placing along the centerline of areas to be paved on a crowned section or on the high side of areas with a one-way slope. Place mixture in consecutive adjacent strips having a minimum width of 10 feet, except where the edge lanes require strips less than 10 feet to complete the area. Construct longitudinal joints and edges to true line markings. Establish lines parallel to the centerline of the area to be paved, and place string lines coinciding with the established lines for the spreading machine to follow. Provide the number and location of the lines needed to accomplish proper grade control. When specified grade and smoothness requirements can be met for initial lane construction by use of an approved long ski-type device of not less than 30 feet in length and for subsequent lane construction by use of a short ski or shoe, in-place string lines for grade control may be omitted. Place mixture as nearly continuous as possible and adjust the speed of placing as needed to permit proper rolling.

3.4.2 Shoveling, Raking, and Tamping After Machine-Spreading

Shovelers and rakers shall follow the spreading machine. Add or remove hot mixture and rake the mixture as required to obtain a course that when completed will conform to requirements specified herein. Broadcasting or fanning of mixture over areas being compacted is prohibited. When segregation occurs in the mixture during placing, suspend spreading operation until the cause is determined and corrected. Correct irregularities in alignment left by the spreader by trimming directly behind the machine. Immediately after trimming, compact edges of the course by tamping laterally with a metal lute or by other approved methods. Distortion of the course during tamping is prohibited.

3.4.3 Hand-Spreading in Lieu of Machine-Spreading

In areas where the use of machine spreading is impractical, spread mixture by hand. The range of temperatures of the mixtures when dumped onto the area to be paved shall be between 250 and 300 degrees F. Mixtures having temperatures less than minimum spreading temperature when dumped onto the area to be paved will be rejected. Spread hot mixture with rakes in a uniformly loose layer of a thickness that, when compacted, will conform to the required grade, thickness, and smoothness. During hand spreading, place each shovelful of mixture by turning the shovel over in a manner that will prevent segregation. Do not place mixture by throwing or broadcasting from a shovel. Do not dump loads any faster than can be properly handled by the shovelers and rakers.

3.5 COMPACTION OF MIXTURE

Compact mixture by rolling. Begin rolling as soon as placement of mixture will bear rollers. Delays in rolling freshly spread mixture shall not be permitted. Start rolling longitudinally at the extreme sides of the lanes and proceed toward center of pavement, or toward high side of pavement with a one-way slope. Operate rollers so that each trip overlaps the previous adjacent strip by at least one foot. Alternate trips of the roller shall be of slightly different lengths. Conduct tests for conformity with the specified crown, grade and smoothness immediately after initial rolling. Before continuing rolling, correct variations by removing or adding materials as necessary. If required, subject course to diagonal rolling with the steel wheeled roller crossing the lines of the previous rolling while mixture is hot and in a compactable condition. Speed of the rollers shall be slow enough to avoid displacement of hot mixture. Correct displacement of mixture immediately by use of rakes and fresh mixture, or remove and replace mixture as directed. Continue rolling until roller marks are eliminated and course has a density of at least 90 percent but not more than 100 percent of that attained in a laboratory specimen of the same mixture prepared in accordance with ASTM D 1559. During rolling, moisten wheels of the rollers enough to prevent adhesion of mixture to wheels, but excessive water is prohibited. Operation of rollers shall be by competent and experienced operators. Provide sufficient rollers for each spreading machine in operation on the job and to handle plant output. In places not accessible to the rollers, compact mixture thoroughly with hot hand tampers. Skin patching of an area after compaction is prohibited. Remove mixture that becomes mixed with foreign materials or is defective and replace with fresh mixture compacted to the density specified herein. Roller shall pass over unprotected edge of the course only when laying of course is to be discontinued for such length of time as to permit mixture to become cold.

3.6 JOINTS

Joints shall present the same texture and smoothness as other portions of the course, except permissible density at the joint may be up to 2 percent less than the specified course density. Carefully make joints between old and new pavement or within new pavements in a manner to ensure a thorough and continuous bond between old and new sections of the course. Vertical contact surfaces of previously constructed sections that are coated with dust, sand, or other objectionable material shall be painted with a thin uniform coat of emulsion or other approved bituminous material just before placing fresh mixture.

3.6.1 Transverse

Roller shall pass over unprotected end of freshly laid mixture only when laying of course is to be discontinued. Cut back the edge of previously laid course to expose an even, vertical surface for the full thickness of the course. When required, rake fresh mixture against joints, thoroughly tamp with hot tampers, smooth with hot smoothers, and roll.

3.6.2 Longitudinal Joints

Space 6 inches apart. Adjust screed to permit compaction to produce a smooth dense joint. Remove and waste excess material. When edges of longitudinal joints are irregular, honeycombed, or poorly compacted, cut back unsatisfactory sections of joint and expose an even vertical surface for the full thickness of the course. When required, rake fresh mixture against joint, thoroughly tamp with hot tampers, smooth with hot smoothers, and roll while hot.

3.7 FIELD QUALITY CONTROL

3.7.1 Sampling

3.7.1.1 Aggregates At Source

Prior to production and delivery of aggregates, take at least one initial sample in accordance with ASTM D 75 at the source. Collect each sample by taking three incremental samples at random from the source material to make a composite sample of not less than 50 pounds. Repeat the sampling when the material source changes or when testing reveals unacceptable deficiencies or variations from the specified grading of materials.

3.7.1.2 Cold Feed Aggregate Sampling

Take two samples daily from the belt conveying materials from the cold feed. Collect materials in three increments at random to make a representative composite sample of not less than 50 pounds. Take samples in accordance with ASTM D 75.

3.7.1.3 Coarse and Fine Aggregates

Take a 50 pound sample from the cold feed at least once daily for sieve analyses and specific gravity tests. Additional samples may be required to perform more frequent tests when analyses show deficiencies, or unacceptable variances or deviations. The method of sampling is as specified herein for aggregates.

3.7.1.4 Mineral Filler

ASTM D 546. Take samples large enough to provide ample material for testing. Include the Specific Gravity of Mineral Filler.

3.7.1.5 Pavement and Mixture

Take plant samples for the determination of mix properties and field samples for thickness and density of the completed pavements. Furnish tools, labor and material for samples, and satisfactory replacement of pavement. Take samples and tests at not less than frequency specified hereinafter and at the beginning of plant operations; for each day's work as a minimum; each change in the mix or equipment; and as often as

directed. Accomplish sampling in accordance with ASTM D 979. Include the Specific Gravity of Asphalt.

3.7.2 Testing

3.7.2.1 Aggregates Tests

a. Gradation: ASTM C 136.

b. Mineral Filler Content: ASTM D 546.

c. Abrasion: ASTM C 131 for wear (Los Angeles test). Perform one test initially prior to incorporation into the work and each time the source is changed.

3.7.2.2 Bituminous Mix Tests

Test one sample for each 500 tons, or fraction thereof, of the uncompacted mix for extraction in accordance with ASTM D 2172; perform a sieve analysis on each extraction sample in accordance with ASTM C 136 and ASTM C 117. Test one sample for each 500 tons or fraction thereof for stability and flow in accordance with ASTM D 1559. Test one sample for each material blend for Tensile Strength Ratio in accordance with ASTM D 4867/D 4867M.

3.7.2.3 Pavement Courses Testing

Perform the following tests:

a. Density: Compare density of in-place material against laboratory specimen or certificates on same bituminous concrete mixture. Use nuclear devices to determine densities. A minimum of one in-place density test shall be performed for every 500 square yards of pavement and a minimum of one in-place density test for each property at which pavement is constructed.

   Minimum acceptable density of in-place course material will be 90 percent of the recorded laboratory specimen or certificate density. Maximum acceptable density will be 98 percent.

b. Thickness: Determine thickness of each course from samples taken for the field density test. The maximum allowable deficiency at any point shall not be more than 1/4 inch less than the thickness for the indicated course. Average thickness of course or of combined courses shall be not less than the indicated thickness. Where a deficiency exceeds the specified tolerances, correct each such representative area or areas by removing the deficient pavement and replacing with new pavement.

c. Smoothness: Straightedge test the compacted surface of each course as work progresses. Apply straightedge parallel with and at right angles to the centerline after final rolling. Unevenness of each course shall not vary more than 1/4 inch in 10 feet; variations in the wearing course shall not vary more than 1/8 inch in 10 feet. Correct each portion of the pavement showing irregularities greater than that specified.

d. Finished Grades: Finish grades of each course placed shall not vary from the finish elevations, profiles, and cross sections indicated by more than 1/4 inch. Finished surface of the final

wearing course will be tested by running lines of levels at intervals of 10 feet longitudinally and transversely to determine elevations of completed pavement. Within 45 days after completion of final placement, Correct deficient paved areas by removing existing work and replacing with new materials that meet the specifications. Skin patching for correcting low areas is prohibited.

e. Finish Surface Texture of Surface Course: Visually check final surface texture for uniformity and reasonable compactness and tightness. Final wearing course with a surface texture having undesirable irregularities such as segregation, cavities, pulls or tears, checking, excessive exposure of coarse aggregates, sand streaks, indentations, ripples, or lack of uniformity shall be repaired as directed by the Contracting Officer.

3.8 PROTECTION

Do not permit vehicular traffic, including heavy equipment, on pavement until surface temperature has cooled to at least 120 degrees F. Measure surface temperature by approved surface thermometers or other satisfactory methods.

3.9 PATCHING

As directed by Contracting Officer, in writing, remove and replace all defective areas. Cut out such areas and fill with fresh bituminous concrete. Compact to the required density.

3.10 CLEANING AND PROTECTION

3.10.1 Cleaning

After completion of paving operations, clean surfaces of excess or spilled bituminous materials and all foreign matter.

3.10.2 Cover Openings

Cover openings of drainage structures in the area of paving until permanent coverings are placed.

3.11 ROADWAY REPAIRS

The Contractor shall be responsible for repairing all incidental damage and settlement that occurs in roadways as result of construction activities. Material and labor to complete all repair work, in accordance with all local codes and ordinances, shall be at the Contractor's expense. The Government will not provide additional compensation for this work.

-- End of Section --

SECTION 02821A

FENCING
04/06

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM A 153/A 153M	(2005) Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A 392	(2003) Zinc-Coated Steel Chain-Link Fence Fabric
ASTM A 824	(2001) Metallic-Coated Steel Marcelled Tension Wire for Use With Chain Link Fence
ASTM F 1043	(2004) Strength and Protective Coatings on Metal Industrial Chain-Link Fence Framework
ASTM F 1083	(2004) Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures
ASTM F 1184	(2003) Industrial and Commercial Horizontal Slide Gates
ASTM F 626	(1996a; R 2003) Fence Fittings
ASTM F 883	(2004) Padlocks
ASTM F 900	(2003) Industrial and Commercial Swing Gates

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-07 Certificates

Chain Link Fence

Statement, signed by an official authorized to certify on behalf of the manufacturer, attesting that the chain link fence and component materials meet the specified requirements.

PART 2 PRODUCTS

2.1 FENCE FABRIC

Fence fabric shall conform to the following:

2.1.1 Chain Link Fence Fabric

ASTM A 392,Class 1, zinc-coated steel wire with minimum coating weight of 1.2ounces of zinc per square foot of coated surface. Fabric shall be fabricated of 9 gauge wire woven in 2 inch mesh. Fabric height shall be 6 feet as shown. Fabric shall be twisted and barbed on the top selvage and knuckled on the bottom selvage.

2.2 GATES

ASTM F 900 and/or ASTM F 1184. Gate shall be the type and swing shown. Gate frames shall conform to strength and coating requirements of ASTM F 1083 for Group IA, steel pipe, with external coating Type A, nominal pipe size (NPS) 1-1/2. Gate frames shall conform to strength and coating requirements of ASTM F 1043, for Group IC, steel pipe with external coating Type A or Type B, nominal pipe size (NPS) 1-1/2. Gate fabric shall be as specified for chain link fabric. Gate leaves more than 8 feet wide shall have either intermediate members and diagonal truss rods or shall have tubular members as necessary to provide rigid construction, free from sag or twist. Gate leaves less than 8 feet wide shall have truss rods or intermediate braces. Gate fabric shall be attached to the gate frame by method standard with the manufacturer except that welding will not be permitted. Latches, hinges, stops, keepers, rollers, and other hardware items shall be furnished as required for the operation of the gate. Latches shall be arranged for padlocking so that the padlock will be accessible from both sides of the gate. Stops shall be provided for holding the gates in the open position.

2.3 POSTS

2.3.1 Metal Posts for Chain Link Fence

ASTM F 1083, zinc-coated. Group IA, with external coating Type A steel pipe. Sizes shall be as shown on the drawings. Line posts and terminal (corner, gate, and pull) posts selected shall be of the same designation throughout the fence. Gate post shall be for the gate type specified subject to the limitation specified in ASTM F 900 and/or ASTM F 1184.

2.4 BRACES AND RAILS

ASTM F 1083, zinc-coated, Group IA, steel pipe, size NPS 1-1/4.

2.5 WIRE

2.5.1 Tension Wire

Tension wire shall be Type I or Type II, Class 4 coating, in accordance with ASTM A 824.

2.6 ACCESSORIES

ASTM F 626. Ferrous accessories shall be zinc or aluminum coated. Truss rods shall be furnished for each terminal post. Truss rods shall be

provided with turnbuckles or other equivalent provisions for adjustment. Tie wire for attaching fabric to rails, braces, and posts shall be 9 gauge steel wire and match the coating of the fence fabric. The tie wires shall be a double loop and 6.5 inches in length. Miscellaneous hardware coatings shall conform to ASTM A 153/A 153M unless modified.

PART 3 EXECUTION

3.1 INSTALLATION

Fence shall be installed to the lines necessary to secure the work area. Line posts shall be spaced equidistant at intervals not exceeding 10 feet. Terminal (corner, gate, and pull) posts shall be set at abrupt changes in vertical and horizontal alignment. Fabric shall be continuous between terminal posts; however, runs between terminal posts shall not exceed 500 feet.

3.2 POST INSTALLATION

3.2.1 Posts for Chain Link Fence

Posts shall generally be driven into the soil/pavement plumb and in alignment. Where solid rock is encountered with no overburden, posts shall be set to a minimum depth of 18 inches in rock. Where solid rock is covered with an overburden of soil or loose rock, posts shall be set to the minimum depth indicated on the drawing unless a penetration of 18 inches in solid rock is achieved before reaching the indicated depth, in which case depth of penetration shall terminate. All portions of posts set in rock shall be grouted. Portions of posts not set in rock shall be set in concrete from the rock to ground level. Posts set in concrete shall be set in holes not less than the diameter shown on the drawings. Diameters of holes in solid rock shall be at least 1 inch greater than the largest cross section of the post. Concrete and grout shall be thoroughly consolidated around each post, shall be free of voids and finished to form a dome. Concrete and grout shall be allowed to cure for 72 hours prior to attachment of any item to the posts. Line posts may be mechanically driven, for temporary fence construction only, if rock is not encountered. Driven posts shall be set to a minimum depth of 3 feet and shall be protected with drive caps when being set.

3.3 RAILS

3.3.1 Top Rail

Top rail shall be supported at each post to form a continuous brace between terminal posts. Where required, sections of top rail shall be joined using sleeves or couplings that will allow expansion or contraction of the rail. Top rail, if required for high security fence, shall be installed as indicated on the drawings.

3.4 BRACES AND TRUSS RODS

Braces and truss rods shall be installed as indicated and in conformance with the standard practice for the fence furnished. Horizontal (compression) braces and diagonal truss (tension) rods shall be installed on fences over 6 feet in height. A center brace or 2 diagonal truss rods shall be installed on 12 foot fences. Braces and truss rods shall extend from terminal posts to line posts. Diagonal braces shall form an angle of approximately 40 to 50 degrees with the horizontal. No bracing is required

on fences 6 feet high or less if a top rail is installed.

3.5 CHAIN LINK FABRIC

Chain link fabric shall be installed on the side of the post indicated. Fabric shall be attached to terminal posts with stretcher bars and tension bands. Bands shall be spaced at approximately 15 inch intervals. The fabric shall be installed and pulled taut to provide a smooth and uniform appearance free from sag, without permanently distorting the fabric diamond or reducing the fabric height. Fabric shall be fastened to line posts at approximately 15 inch intervals and fastened to all rails at approximately 24 inch intervals. Splicing shall be accomplished by weaving a single picket into the ends of the rolls to be joined.

3.6 GATE INSTALLATION

Gates shall be installed as necessary for access to the wok site and at the locations shown. Hinged gates shall be mounted to swing as indicated. Latches, stops, and keepers shall be installed as required. Slide gates shall be installed as recommended by the manufacturer. Padlocks shall be attached to gates or gate posts with chains. All padlocks shall meet the requirements of ASTM F 883. Hinge pins, and hardware shall be welded or otherwise secured to prevent removal.

3.7 MAINTENANCE

Chain link fence and gates shall be maintained, as necessary, by the Contractor until the completion of this contract or as directed by the Contracting Officer. Other fencing shall be maintained or removed from the site when no longer needed, as directed by the Contracting Officer. The Contractor shall dispose of fencing removed.

SECTION 13281A

LEAD BASED PAINT AWARENESS
04/06

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction

1.2 DESCRIPTION

There is no specific task for lead based paint abatement, however it should be assumed that any discovered underground storage tanks are coated in lead based paint and painted materials are lead based, and Contractors should make employees aware of the potential worker exposure issues during remediation procedures.

1.3 SUMMARY OF WORK

1.3.1 Potential Lead Hazard

The disturbance or dislocation of lead-containing materials may cause lead dust to be released into the atmosphere, thereby creating a potential health hazard to workmen and others who may be on-site. Contractor shall apprise all workers, supervisory personnel, Subcontractor's and consultants who will be at the job site of the seriousness of the hazard and of proper Work procedures which must be followed. Take appropriate measures as necessary to protect all site workers from the potential hazard to airborne lead dust. Such measures shall include the procedures and methods described herein, regulations of the Occupational Safety and Health Administration (OSHA), such as 29 CFR 1910.1025, and the U.S. Environmental Protection Agency (EPA).

1.3.2 Lead Compliance Plan

The Contractor is required to submit a Lead Compliance Plan in accordance with 29 CFR 1910 and 29 CFR 1926.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

APPENDIX A
BOROUGH OF SOUTH PLAINFIELD NOISE ORDINANCE

AREA CODE 908

Mayor's Office-226-7601
Clerk-226-7606
Assessing-226-7623
Building Dept.-226-7640
CFO/Administrator-226-7602
Computer Services-226-7649
Emergency Mgmt.-226-7718
Eng./T&M Assoc.-732-671-6400
Environmental-226-7621
Finance-226-7615
Fire Official-756-4761

BOROUGH OF SOUTH PLAINFIELD
2480 Plainfield Avenue
South Plainfield, NJ 07080

AREA CODE 908

Health-226-7630
Library-754-7885
Municipal Court-226-7651
Plan Bd/Bd. of Adj.-226-7641
Police-755-0700
Public Works-755-2187
Recreation-226-7713
Recycling-226-7621
Social Services-226-7625
Tax/Sewer-226-7610
Senior Center-754-1047

June 2, 2008

Malcolm Pirnie
104 Corporate Park Drive
P.O. Box 751
White Plains, NJ 10602
Attn: Erika Zamek

Re: Request for Public Records
Noise Ordinance

Dear Ms. Zamek:

As per your request, enclosed please find copies of the Noise Ordinance as it relates to construction projects.

Also, please find your receipt which represents the fee for copying.

If you need further assistance, please contact our office at (908) 226-7606.

Thank you for your cooperation.

Very truly yours,

JoAnn L. Graf
Acting Municipal Clerk

enc.

#2

Chapter 135

NOISE

§ 135-1. Findings; policy; scope.

§ 135-2. Terminology and definitions.

§ 135-3. Prohibited acts.

§ 135-4. Exceptions and variances.

§ 135-5. Maximum permissible sound levels; exemptions.

§ 135-6. Required mufflers or sound-dissipating devices.

§ 135-7. Standing motor vehicles.

§ 135-8. Violations and penalties.

[HISTORY: Adopted by the Mayor and Council of the Borough of South Plainfield 2-22-82 as Ord. No. 918. Section 135-2B amended at time of adoption of Code; see Ch. 1. General Provisions, Art. I. Other amendments noted where applicable.]

GENERAL REFERENCES

Peace and good order — See Ch. 143.

§ 135-1. Findings; policy; scope.

A. Findings.

(1) Excessive sound and vibration are a serious hazard to the public health and welfare, safety and the quality of life.

(2) A substantial body of science and technology exists by which excessive sound and vibration may be substantially abated.

(3) The people have a right to and should be ensured an environment free from excessive sound and vibration that may jeopardize their health or welfare or safety or degrade the quality of life.

B. Policy. It is the policy of the Borough of South Plainfield to prevent excessive sound and vibration which may jeopardize the health and welfare or safety of its citizens or degrade the quality of life.

C. Scope. This chapter shall apply to the control of all sound and vibration originating within the limits of the Borough of South Plainfield.

§ 135-2. Terminology and definitions.

A. Terminology. All terminology used in this chapter but not defined below shall be in conformance with applicable publications of the American National Standards Institute (ANSI) or its successor body.

B. Definitions. As used in this chapter, the following terms shall have the meanings indicated:

A-WEIGHTED SOUND LEVEL — The sound-pressure level in decibels as measured on a sound-level meter using the A-weighting network. The level so read is designated "dB(A)" or "dBA."

COMMERCIAL AREA — As defined in the Borough Zoning Ordinance.[1]

CONSTRUCTION — Any site preparation, assembly, erection, substantial repair, alteration or similar action, but excluding demolition, for or of public or private rights-of-way, structures, utilities or similar property.

DECIBEL (dB) — A unit for measuring the volume of a sound, equal to twenty (20) times the logarithm to the base ten (10) of the ratio of the pressure of the sound measured

[1] **Editor's Note: The Borough Zoning Ordinance is on file in the office of the Borough Clerk.**

to the reference pressure, which is twenty (20) micropascals [twenty (20) micronewtons per square meter].

DEMOLITION — Any dismantling, intentional destruction or removal of structures, utilities, public or private right-of-way surfaces or similar property.

EMERGENCY — Any occurrence or set of circumstances involving actual or imminent physical trauma or property damage which demands immediate action.

EMERGENCY WORK — Any work performed for the purpose of preventing or alleviating the physical trauma or property damage threatened or caused by an emergency.

EQUIVALENT A-WEIGHTED SOUND LEVEL — The constant sound level that, in a given situation and time period, conveys the same sound energy as the actual time-varying A-weighted sound.

GROSS VEHICLE WEIGHT RATING (GVWR) — The value specified by the manufacturer as the recommended maximum loaded weight of a single motor vehicle. In cases where trailers and tractors are separable, the gross combination weight rating (GCWR), which is the value specified by the manufacturer as the recommended maximum loaded weight of the combination vehicle, shall be used.

IMPULSIVE SOUND — Sound of short duration, usually less than one (1) second, with an abrupt onset and rapid decay. Examples of sources of impulsive sound include explosions, drop forge impacts and the discharge of firearms.[2]

INDUSTRIAL AREA — As defined in the Borough Zoning Ordinance.[3]

MOTOR CARRIER VEHICLE ENGAGED IN INTERSTATE COMMERCE — Any vehicle for which regulations apply pursuant to Section 18 of the Federal

[2] Editor's Note: Amended at time of adoption of Code; see Ch. 1, General Provisions, Art. I

[3] Editor's Note: The Borough Zoning Ordinance is on file in the office of the Borough Clerk.

Noise Control Act of 1972 (P.L.92-574), as amended, pertaining to motor carriers engaged in interstate commerce.

MOTORCYCLE — As defined in the Motor Vehicle Code of the state. An unenclosed motor vehicle having a saddle for the use of the operator and two (2) or three (3) wheels in contact with the ground, including but not limited to motor scooters and minibikes.

MOTOR VEHICLE — As defined in the Motor Vehicle Code of the state. Any vehicle which is propelled or drawn on land by a motor, such as but not limited to passenger cars, trucks, truck-trailers, semitrailers, campers, go-carts, snowmobiles, amphibious craft on land, dune buggies or racing vehicles, but not including motorcycles.

MUFFLER or SOUND DISSIPATIVE DEVICE — A device for abating the sound of escaping gases of an internal-combustion engine.

NOISE — Any sound which annoys or disturbs humans or which causes or tends to cause an adverse psychological or physiological effect on humans.

NOISE DISTURBANCE — Any sound which endangers or injures the safety or health of humans or animals, or annoys or disturbs a reasonable person or normal sensitivities, or endangers or injures personal or real property.

PERSON — An individual, association, partnership or corporation, and includes any officer, employee, department, agency or instrumentality of a state or any political subdivision of a state or federal agency not associated with national defense.

POWERED MODEL VEHICLE — Any self-propelled airborne, waterborne or landborne plane, vessel or vehicle which is not designated to carry persons, including but not limited to any model airplane, boat, car or rocket.

PUBLIC RIGHT-OF-WAY — Any street, avenue, boulevard, highway, sidewalk or alley or similar place which is owned or controlled by a governmental entity.

PUBLIC SPACE — Any real property or structures thereon which are owned or controlled by a governmental entity.

REAL PROPERTY BOUNDARY — Any imaginary line along the ground surface, and its vertical extension, which separates the real property owned by one person from that owned by another person, but not including intrabuilding real property division.

RESIDENTIAL AREA — As defined in the Borough Zoning Ordinance.[4]

RMS SOUND PRESSURE — The square root of the time-averaged square of the sound pressure, denoted "Prms."

SOUND — An oscillation in pressure, particle displacement, particle velocity or other physical parameter in a medium with internal forces that causes compression and rarefaction of that medium. The description of "sound" may include any characteristic of such "sound," including duration, intensity and frequency.

SOUND LEVEL — The weighted sound-pressure level obtained by the use of a sound-level meter and frequency weighting network, such as A, B or C as specified in American National Standards Institute specifications for sound-level meters (ANSI SI.4-1971, or the latest approved revision thereof). If the frequency weighting employed is not indicated, the A-weighting shall apply.

SOUND-LEVEL METER — An instrument which includes a microphone, amplifier, RMS detector, integrator or time averager, output meter and weighting networks used to measure sound-pressure levels and meets ANSI S-1.4.

SOUND PRESSURE — The instantaneous difference between the actual pressure and the average or barometric pressure at a given point in space, as produced by sound energy.

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[4] **Editor's Note: The Borough Zoning Ordinance is on file in the office of the Borough Clerk.**

SOUND-PRESSURE LEVEL — Twenty (20) times the logarithm to the base ten (10) or the ratio of the RMS sound pressure to the reference pressure of twenty (20) micropascals ($20 \times 10^{-6} N/m^2$). The sound-pressure level is denoted "LP" or "SPL" and is expressed in decibels.

VIBRATION — An oscillatory motion of solid bodies of deterministic or random nature described by displacement, velocity or acceleration with respect to a given reference point.

WEEKDAY — Any day Monday through Friday which is not a legal holiday.

§ 135-3. Prohibited acts.

A. Noise disturbances prohibited. No person shall unreasonably make, continue or cause to be made or continued any noise disturbance. Noncommercial public speaking and public assembly activities conducted on any public space or public right-of-way shall be exempt from the operation of this section.

B. Specific prohibitions. The following acts and the causing thereof are declared to be in violation of this chapter:

(1) Radios, television sets, musical instruments and similar devices. Operating, playing or permitting the operation or playing of any radio, television, phonograph, drum, musical instrument, sound amplifier or similar device which produces, reproduces or amplifies sound between the hours of 10:00 p.m. and 7:00 a.m. the following day in such a manner as to create a noise disturbance across a real property boundary.

(2) Loudspeakers/public-address systems. Using or operating for any noncommercial purpose any loudspeaker, public-address system or similar device between the hours of 10:00 p.m. and 7:00 a.m. the following day such that the sound therefrom creates a noise disturbance across a residential real property boundary.

#2

ORDINANCE NO. 1633

AN ORDINANCE AMENDING CHAPTER 135 OF THE CODE OF THE BOROUGH OF SOUTH PLAINFIELD ENTITLED: "NOISE"

Be it ordained by the Governing Body of the Borough of South Plainfield that Chapter 135 of the Code of the Borough of South Plainfield be hereby amended as follows:

SECTION 135-3.

(10) Domestic Power Tools / Construction Equipment. Operating or permitting the operation of any construction equipment and/or any mechanically powered saw, drill, sander, grinder, lawn or garden tool, snowblower or similar device used outdoors in residential areas between the hours of 10:00 p.m. and 7:45 a.m. the following day so as to not cause a noise disturbance across a residential real property boundary.

All other provisions of Chapter 135 of the Code of the Borough of South Plainfield shall remain in full force and effect.

This Ordinance shall take effect immediately after publication and adoption in accordance with New Jersey Law.

§ 135-5. Maximum permissible sound levels; exemptions. [Amended 9-9-99 by Ord. No. 1521]

A. No person shall cause, suffer, allow or permit sound from any industrial, commercial operation or residential property which when measured at any residential property line is in excess of any of the following:

(1) From 7:00 a.m. to 10:00 p.m.

(a) Continuous airborne sound which has sound level in excess of sixty-five (65) dBA.

(b) Continuous airborne sound which has an octave band sound-pressure level in decibels which exceeds the values listed below in one (1) or more octave bands:

Octave Band Center Frequency (Hz)	Octave Band Sound-Pressure Level (dB)
31.5	96
63	82
125	74
250	67
500	63
1,000	60
2,000	57
4,000	55
8,000	53

(c) Impulsive sound in air which has an impulsive sound level in excess of eighty (80) decibels.

(2) From 10:00 p.m. to 7:00 a.m.

(a) Continuous airborne sound which has a sound level in excess of fifty (50) dBA.

(b) Continuous airborne sound which has an octave band sound-pressure level in decibels which exceeds the values listed below in one (1) or more octave bands:

(3) Impulsive sound in air which has an impulsive sound level in excess of eighty (80) decibels.

C. Exemptions. The provisions of this section shall not apply to:

(1) The unamplified human voice.

(2) Religion.

(3) Emergency responses.

(4) Interstate railway locomotives and cars.

(5) All agricultural activities.

35-6. Required mufflers or sound-dissipating devices.

A. Requirements.

(1) No person shall operate or cause to be operated any motor vehicle or motorcycle not equipped with a muffler or other sound-dissipative device in good working order and in constant operation.

(2) No person shall remove or render inoperative or cause to be removed or rendered inoperative, other than for purposes of maintenance, repair or replacement, any muffler or sound-dissipative device on a motor vehicle or motorcycle.

(3) The Borough Council may list those acts which constitute violation of this section.

B. Motor vehicle horns and signaling devices. The following acts and the causing thereof are declared to be in violation of this chapter:

(1) The sounding of any horn or other auditory signaling device on or in any motor vehicle or motorcycle on any public right-of-way or public space except as a warning of danger as provided in the Vehicle Code.

§ 135-7. Standing motor vehicles.

A. No person shall operate or permit the operation of any motor vehicle with a gross vehicle weight rating (GVWR) in excess of ten thousand (10,000) pounds or any auxiliary equipment attached to such a vehicle for a period longer than ten (10) minutes in any hour while the vehicle is stationary, for reasons other than traffic congestion on a public right-of-way or public space within one hundred fifty (150) feet [forty-six (46) meters] of a residential area or designated noise-sensitive zone, between the hours of 10:00 p.m. and 7:00 a.m. the following day.

B. All public utilities shall be exempt from the provisions of this section.

C. No person shall operate or cause to be operated a public or private motor vehicle or motorcycle on a public right-of-way at any time in such a manner that the sound level emitted by the motor vehicle or motorcycle exceeds the level set forth below:

Sound Level in dBA

Vehicle Class	Speed Limit 35 mph or less	Speed Limit Over 35 mph	Speed Limit Stationary Run-Up
Motor carrier vehicles engaged in interstate commerce of GVWR or GCWR of 10,000 pounds or more	86	90	88
All other motor vehicles of GVWR or GCWR of 10,000 pounds or more	86	90	—

Sound Level in dBA - Cont'd

Vehicle Class	Speed Limit 35 mph or less	Speed Limit Over 35 mph	Speed Limit Stationary Run-Up
Any motorcycle	82	86	—
Any other motor vehicle or any combination of vehicles towed by any motor vehicle	76	82	

D. The provisions of the United States Environmental Protection Agency, Rail Carrier Regulations, promulgated January 14, 1976, Title 40, Part 201, shall apply.

§ 135-8. Violations and penalties. [Amended 9-9-99 by Ord. No. 1521]

A. Violation of any provision of this chapter shall be cause for proper action by the Police Department or Environmental Protection Officer.

B. Abatement orders. The Police Department is responsible for enforcement of any provision of this chapter and may issue an order requiring abatement of any source of sound or vibration alleged to be in violation of this chapter within a reasonable time period.

C. Penalties. Any person who violates any provision of this chapter shall be fined for each offense not more than one thousand dollars ($1,000.).

D. Other remedies. No provision of this chapter shall be construed to impair any common-law or statutory cause of action, or legal remedy therefrom, of any person for injury or damage arising from any violation of this chapter or from other law.

APPENDIX B
SUMMARY OF THERMAL PROPERTIES TESTING RESULTS FOR PRE-DESIGN INVESTIGATION SOIL SAMPLES

Cornell-Dubilier Electronics Superfund Site (OU-2)
Summary of Thermal Properties Testing Results for Pre-Design Investigation Soil Samples

Key to Column Headings

Column Heading	Definition
SAMP_ID	Sample ID
LSAMP_ID	Laboratory Sample ID
SAMP_TYPE	Sample Type
x	Easting (New Jersey State Plane NAD83)
y	Northing (New Jersey State Plane NAD83)
z	Surface Elevation of Sampling Location (Feet Above Mean Sea Level)
SAMP_DATE	Date of Sample Collection
SAMP_TIME	Time of Sample Collection
LAB_ID	ID of Laboratory that Performed the Analysis
METH_ID	Analysis Method ID
COMP	Analytical Parameter
CAS_NUM	Chemical Abstracts Service Registry Number of Analytical Parameter
C_UNIT	Units of Sample Concentration
CONC	Sample Concentration
REP_FLAG	If Sample Concentration equals "LIMIT_1", a "<" is sometimes reported in this column.
LIMIT_1	Detection Limit (same units as Sample Concentration)
LIMIT_2	Laboratory Detection Limit (same units as Sample Concentration)
ER_Q1	Laboratory Qualifier
Data Val Qual	Data Validator Qualifier
CASE_ID	Contract Laboratory Program Case Number
SDG_ID	Contract Laboratory Program SDG Number (Sample Group Number)
CUSTODY	Date Sample was Received by Laboratory
BLANK_ID	Sample ID of Associated Blank
FILTERED	Indicates if the Sample was Filtered (Yes/No)
ICED	Indicates if the Sample was Iced (Yes/No)
PRESERVED	Indicates if the Sample was Preserved (Yes/No)
SAMPLE_DEPTH	Depth of Sample in Soil Boring (Feet Below Ground Surface) [a]

Notes:

[a] For some samples, the Depth of Sample is included at the end of the Sample ID. For example, the Depth of Sample for Sample ID "CD-SB-41-0-2" is 0-2 feet.

Cornell-Dubilier Electronics Superfund Site (OU-2)
Summary of Thermal Properties Testing Results for Pre-Design Investigation Soil Samples
Total Organic Carbon (TOC)

SAMP_ID	LSAMP_ID	SAMP_DATE	METH_ID		COMP	C_UNIT	CONC	LIMIT_1
CD-SB-2-0-2	695331	12/18/2006	IN847	SOIL	TOC by Lloyd Kahn	mg/Kg	8,990	557
CD-SB-18-0-2	695325	12/18/2006	IN847	SOIL	TOC by Lloyd Kahn	mg/Kg	64,400	620
CD-SB-19-0-2	695335	12/18/2006	IN847	SOIL	TOC by Lloyd Kahn	mg/Kg	3,590	568
CD-SB-27-0-2	695593	12/19/2006	IN847	SOIL	TOC by Lloyd Kahn	mg/Kg	179,000	546
CD-SB-32-0-2	695346	12/18/2006	IN847	SOIL	TOC by Lloyd Kahn	mg/Kg	10,500	600
CD-SB-34-0-6(COMP)	696285	01/04/2007	IN847	SOIL	TOC by Lloyd Kahn	mg/Kg	37,300	577
CD-SB-38-0-13(COMP)	696294	01/04/2007	IN847	SOIL	TOC by Lloyd Kahn	mg/Kg	29,600	627
CD-SB-39-0-14(COMP)	696291	01/04/2007	IN847	SOIL	TOC by Lloyd Kahn	mg/Kg	40,000	588
CD-SB-40-0-13.5(COMP)	696288	01/04/2007	IN847	SOIL	TOC by Lloyd Kahn	mg/Kg	42,500	584
CD-SB-41-0-2	696181	12/21/2006	IN847	SOIL	TOC by Lloyd Kahn	mg/Kg	14,300	611
CD-SB-44-0-2	696174	12/22/2006	IN847	SOIL	TOC by Lloyd Kahn	mg/Kg	10,300	590
CD-SB-45-0-2	696205	12/21/2006	IN847	SOIL	TOC by Lloyd Kahn	mg/Kg	33,100	573
CD-SB-46-0-4(COMP)	696276	01/04/2007	IN847	SOIL	TOC by Lloyd Kahn	mg/Kg	11,600	597
CD-SB-47-2-6	696199	12/21/2006	IN847	SOIL	TOC by Lloyd Kahn	mg/Kg	175,000	580
CD-SB-48-2-6	696193	12/21/2006	IN847	SOIL	TOC by Lloyd Kahn	mg/Kg	135,000	613
CD-SB-49-0-8(COMP)	696279	01/04/2007	IN847	SOIL	TOC by Lloyd Kahn	mg/Kg	5,160	570
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	IN847	SOIL	TOC by Lloyd Kahn	mg/Kg	5,460	559
CD-SB-B	695762	12/20/2006	IN847	SOIL	TOC by Lloyd Kahn	mg/Kg	134,000	628
						Average	54,754	
						High	175,000	
						Low	5,160	

Cornell-Dubilier Electronics Superfund Site (OU-2)
Summary of Thermal Properties Testing Results for Pre-Design Investigation Soil Samples
British Thermal Units (BTU)

SAMP_ID	LSAMP_ID	SAMP_TYPE	SAMP_DATE	METH_ID	COMP	C_UNIT	CONC	LIMIT_1	ER_Q1
CD-SB-2-0-2	00287-002	S	12/18/2006	ASTM D240	BTU	btu/lb	4,390	2500	
CD-SB-18-0-2	00287-001	S	12/18/2006	ASTM D240	BTU	btu/lb	2,500	2500	U
CD-SB-19-0-2	00287-003	S	12/18/2006	ASTM D240	BTU	btu/lb	2,500	2500	U
CD-SB-27-0-2	00287-012	S	12/19/2006	ASTM D240	BTU	btu/lb	3,800	2500	
CD-SB-32-0-2	00287-004	S	12/18/2006	ASTM D240	BTU	btu/lb	2,500	2500	U
CD-SB-34-0-6(COMP)	00287-008	S	01/04/2007	ASTM D240	BTU	btu/lb	2,500	2500	U
CD-SB-38-0-13(COMP)	00287-011	S	01/04/2007	ASTM D240	BTU	btu/lb	2,500	2500	U
CD-SB-39-0-14(COMP)	00287-010	S	01/04/2007	ASTM D240	BTU	btu/lb	2,500	2500	U
CD-SB-40-0-13.5(COMP)	00287-009	S	01/04/2007	ASTM D240	BTU	btu/lb	2,500	2500	U
CD-SB-41-0-2	00287-014	S	12/21/2006	ASTM D240	BTU	btu/lb	3,170	2500	
CD-SB-44-0-2	00287-018	S	12/21/2006	ASTM D240	BTU	btu/lb	2,500	2500	U
CD-SB-44-0-2REP	00287-018DP	S	12/21/2006	ASTM D240	BTU	btu/lb	2,500	2500	U
CD-SB-45-0-2	00287-017	S	12/21/2006	ASTM D240	BTU	btu/lb	2,500	2500	U
CD-SB-46-0-4(COMP)	00287-005	S	01/04/2007	ASTM D240	BTU	btu/lb	2,500	2500	U
CD-SB-47-2-6	00287-016	S	12/21/2006	ASTM D240	BTU	btu/lb	7,350	2500	
CD-SB-48-2-6	00287-015	S	12/21/2006	ASTM D240	BTU	btu/lb	2,500	2500	U
CD-SB-49-0-8(COMP)	00287-006	S	01/04/2007	ASTM D240	BTU	btu/lb	2,500	2500	U
CD-SB-50-0-7.5(COMP)	00287-007	S	01/04/2007	ASTM D240	BTU	btu/lb	2,500	2500	U
CD-SB-B	00287-013	S	12/20/2006	ASTM D240	BTU	btu/lb	5,100	2500	
						Average	3,023		
						High	7,350		
						Low	2,500		

Cornell-Dubilier Electronics Superfund Site (OU-2)
Summary of Thermal Properties Testing Results for Pre-Design Investigation Soil Samples
Toxicity Characteristic Leaching Procedure (TCLP) Ash

SAMP_ID	LSAMP_ID	METH_ID	COMP	C_UNIT	CONC	REP_FLAG	LIMIT_1	LIMIT_2
CD-SB-18-0-2(ASH)	695328	SW6010B	Arsenic	ug/L	5.6		2.8	5.5933
CD-SB-19-0-2(ASH)	695338	SW6010B	Arsenic	ug/L	2.8	<	2.8	5.5933
CD-SB-2-0-2(ASH)	695334	SW6010B	Arsenic	ug/L	2.8	<	2.8	5.5933
CD-SB-27-0-2(ASH)	695596	SW6010B	Arsenic	ug/L	10.1		2.8	5.5933
CD-SB-32-0-2(ASH)	695617	SW6010B	Arsenic	ug/L	3.7		2.8	5.5933
CD-SB-34-0-6(COMPASH)	696287	SW6010B	Arsenic	ug/L	2.8		2.8	5.5933
CD-SB-38-0-13(COMPASH)	696296	SW6010B	Arsenic	ug/L	5.0		2.8	5.5933
CD-SB-39-0-14(COMPASH)	696293	SW6010B	Arsenic	ug/L	4.6		2.8	5.5933
CD-SB-40-0-13.5(COMPASH)	696290	SW6010B	Arsenic	ug/L	2.8	<	2.8	5.5933
CD-SB-41-0-2(ASH)	696184	SW6010B	Arsenic	ug/L	4.2		2.8	5.5933
CD-SB-44-0-2(ASH)	696176	SW6010B	Arsenic	ug/L	4.0		2.8	5.5933
CD-SB-45-0-2(ASH)	696208	SW6010B	Arsenic	ug/L	3.9		2.8	5.5933
CD-SB-46-0-4(COMPASH)	696278	SW6010B	Arsenic	ug/L	5.8		2.8	5.5933
CD-SB-47-2-6(ASH)	696202	SW6010B	Arsenic	ug/L	2.8	<	2.8	5.5933
CD-SB-48-2-6(ASH)	696196	SW6010B	Arsenic	ug/L	5.5		2.8	5.5933
CD-SB-49-0-8(COMPASH)	696281	SW6010B	Arsenic	ug/L	4.2		2.8	5.5933
CD-SB-50-0-7.5(COMPASH)	696284	SW6010B	Arsenic	ug/L	2.9		2.8	5.5933
CD-SB-B(ASH)	695765	SW6010B	Arsenic	ug/L	5.3		2.8	5.5933
CD-SB-B(ASH)	695765	SW6010B	Arsenic	ug/L	5.3		2.8	5.5933
				Average	4.4	5,000 mg/l		
CD-SB-18-0-2(ASH)	695328	SW6010B	Barium	ug/L	241.0		3.4	16.3188
CD-SB-19-0-2(ASH)	695338	SW6010B	Barium	ug/L	268.0		3.4	16.3188
CD-SB-2-0-2(ASH)	695334	SW6010B	Barium	ug/L	341.0		3.4	16.3188
CD-SB-27-0-2(ASH)	695596	SW6010B	Barium	ug/L	91.8		3.4	16.3188
CD-SB-32-0-2(ASH)	695617	SW6010B	Barium	ug/L	430.0		3.4	16.3188
CD-SB-34-0-6(COMPASH)	696287	SW6010B	Barium	ug/L	546.0		3.4	16.3188
CD-SB-38-0-13(COMPASH)	696296	SW6010B	Barium	ug/L	500.0		3.4	16.3188
CD-SB-39-0-14(COMPASH)	696293	SW6010B	Barium	ug/L	404.0		3.4	16.3188
CD-SB-40-0-13.5(COMPASH)	696290	SW6010B	Barium	ug/L	229.0		3.4	16.3188
CD-SB-41-0-2(ASH)	696184	SW6010B	Barium	ug/L	537.0		3.4	16.3188
CD-SB-44-0-2(ASH)	696176	SW6010B	Barium	ug/L	892.0		3.4	16.3188
CD-SB-45-0-2(ASH)	696208	SW6010B	Barium	ug/L	522.0		3.4	16.3188
CD-SB-46-0-4(COMPASH)	696278	SW6010B	Barium	ug/L	660.0		3.4	16.3188
CD-SB-47-2-6(ASH)	696202	SW6010B	Barium	ug/L	140.0		3.4	16.3188
CD-SB-48-2-6(ASH)	696196	SW6010B	Barium	ug/L	157.0		3.4	16.3188
CD-SB-49-0-8(COMPASH)	696281	SW6010B	Barium	ug/L	568.0		3.4	16.3188
CD-SB-50-0-7.5(COMPASH)	696284	SW6010B	Barium	ug/L	460.0		3.4	16.3188
CD-SB-B(ASH)	695765	SW6010B	Barium	ug/L	482.0		3.4	16.3188
CD-SB-B(ASH)	695765	SW6010B	Barium	ug/L	482.0		3.4	16.3188
				Average	418.5	100,000 ug/l		

Cornell-Dubilier Electronics Superfund Site (OU-2)
Summary of Thermal Properties Testing Results for Pre-Design Investigation Soil Samples
Toxicity Characteristic Leaching Procedure (TCLP) Ash

SAMP_ID	LSAMP_ID	METH_ID	COMP	C_UNIT	CONC	REP_FLAG	LIMIT_1	LIMIT_2
CD-SB-18-0-2(ASH)	695328	SW6010B	Cadmium	ug/L	20.9		0.50	0.6156
CD-SB-19-0-2(ASH)	695338	SW6010B	Cadmium	ug/L	0.6		0.50	0.6156
CD-SB-2-0-2(ASH)	695334	SW6010B	Cadmium	ug/L	0.7		0.50	0.6156
CD-SB-27-0-2(ASH)	695596	SW6010B	Cadmium	ug/L	31.2		0.50	0.6156
CD-SB-32-0-2(ASH)	695617	SW6010B	Cadmium	ug/L	0.7		0.50	0.6156
CD-SB-34-0-6(COMPASH)	696287	SW6010B	Cadmium	ug/L	5.5		0.50	0.6156
CD-SB-38-0-13(COMPASH)	696296	SW6010B	Cadmium	ug/L	760.0		0.50	0.6156
CD-SB-39-0-14(COMPASH)	696293	SW6010B	Cadmium	ug/L	877.0		0.50	0.6156
CD-SB-40-0-13.5(COMPASH)	696290	SW6010B	Cadmium	ug/L	3.0		0.50	0.6156
CD-SB-41-0-2(ASH)	696184	SW6010B	Cadmium	ug/L	5.1		0.50	0.6156
CD-SB-44-0-2(ASH)	696176	SW6010B	Cadmium	ug/L	201.0		0.50	0.6156
CD-SB-45-0-2(ASH)	696208	SW6010B	Cadmium	ug/L	3.7		0.50	0.6156
CD-SB-46-0-4(COMPASH)	696278	SW6010B	Cadmium	ug/L	3.5		0.50	0.6156
CD-SB-47-2-6(ASH)	696202	SW6010B	Cadmium	ug/L	24.2		0.50	0.6156
CD-SB-48-2-6(ASH)	696196	SW6010B	Cadmium	ug/L	125.0		0.50	0.6156
CD-SB-49-0-8(COMPASH)	696281	SW6010B	Cadmium	ug/L	111.0		0.50	0.6156
CD-SB-50-0-7.5(COMPASH)	696284	SW6010B	Cadmium	ug/L	4.0		0.50	0.6156
CD-SB-B(ASH)	695765	SW6010B	Cadmium	ug/L	13,800.0		5.0	0.6156
CD-SB-B(ASH)	695765	SW6010B	Cadmium	ug/L	13,800.0		5.0	0.6156
				Average	1,567.2	1,000 ug/l		
CD-SB-18-0-2(ASH)	695328	SW6010B	Chromium	ug/L	86.3		1.0	2.3038
CD-SB-19-0-2(ASH)	695338	SW6010B	Chromium	ug/L	31.0		1.0	2.3038
CD-SB-2-0-2(ASH)	695334	SW6010B	Chromium	ug/L	36.7		1.0	2.3038
CD-SB-27-0-2(ASH)	695596	SW6010B	Chromium	ug/L	9.1		1.0	2.3038
CD-SB-32-0-2(ASH)	695617	SW6010B	Chromium	ug/L	46.6		1.0	2.3038
CD-SB-34-0-6(COMPASH)	696287	SW6010B	Chromium	ug/L	3.4		1.0	2.3038
CD-SB-38-0-13(COMPASH)	696296	SW6010B	Chromium	ug/L	93.0		1.0	2.3038
CD-SB-39-0-14(COMPASH)	696293	SW6010B	Chromium	ug/L	385.0		1.0	2.3038
CD-SB-40-0-13.5(COMPASH)	696290	SW6010B	Chromium	ug/L	8.6		1.0	2.3038
CD-SB-41-0-2(ASH)	696184	SW6010B	Chromium	ug/L	23.5		1.0	2.3038
CD-SB-44-0-2(ASH)	696176	SW6010B	Chromium	ug/L	11.9		1.0	2.3038
CD-SB-45-0-2(ASH)	696208	SW6010B	Chromium	ug/L	51.8		1.0	2.3038
CD-SB-46-0-4(COMPASH)	696278	SW6010B	Chromium	ug/L	28.2		1.0	2.3038
CD-SB-47-2-6(ASH)	696202	SW6010B	Chromium	ug/L	22.0		1.0	2.3038
CD-SB-48-2-6(ASH)	696196	SW6010B	Chromium	ug/L	10.2		1.0	2.3038
CD-SB-49-0-8(COMPASH)	696281	SW6010B	Chromium	ug/L	45.3		1.0	2.3038
CD-SB-50-0-7.5(COMPASH)	696284	SW6010B	Chromium	ug/L	18.2		1.0	2.3038
CD-SB-B(ASH)	695765	SW6010B	Chromium	ug/L	28.8		1.0	2.3038
CD-SB-B(ASH)	695765	SW6010B	Chromium	ug/L	28.8		1.0	2.3038
				Average	51.0	5,000 ug/l		

Cornell-Dubilier Electronics Superfund Site (OU-2)
Summary of Thermal Properties Testing Results for Pre-Design Investigation Soil Samples
Toxicity Characteristic Leaching Procedure (TCLP) Ash

SAMP_ID	LSAMP_ID	METH_ID	COMP	C_UNIT	CONC	REP_FLAG	LIMIT_1	LIMIT_2
CD-SB-18-0-2(ASH)	695328	SW6010B	Lead	ug/L	120.0		1.7	1.7407
CD-SB-19-0-2(ASH)	695338	SW6010B	Lead	ug/L	6.8		1.7	1.7407
CD-SB-2-0-2(ASH)	695334	SW6010B	Lead	ug/L	9.4		1.7	1.7407
CD-SB-27-0-2(ASH)	695596	SW6010B	Lead	ug/L	122.0		1.7	1.7407
CD-SB-32-0-2(ASH)	695617	SW6010B	Lead	ug/L	11.0		1.7	1.7407
CD-SB-34-0-6(COMPASH)	696287	SW6010B	Lead	ug/L	10.0		1.7	1.7407
CD-SB-38-0-13(COMPASH)	696296	SW6010B	Lead	ug/L	54,700.0		34.0	1.7407
CD-SB-39-0-14(COMPASH)	696293	SW6010B	Lead	ug/L	16,900.0		17.0	1.7407
CD-SB-40-0-13.5(COMPASH)	696290	SW6010B	Lead	ug/L	1,480.0		1.7	1.7407
CD-SB-41-0-2(ASH)	696184	SW6010B	Lead	ug/L	9.7		1.7	1.7407
CD-SB-44-0-2(ASH)	696176	SW6010B	Lead	ug/L	325.0		1.7	1.7407
CD-SB-45-0-2(ASH)	696208	SW6010B	Lead	ug/L	25.9		1.7	1.7407
CD-SB-46-0-4(COMPASH)	696278	SW6010B	Lead	ug/L	14.3		1.7	1.7407
CD-SB-47-2-6(ASH)	696202	SW6010B	Lead	ug/L	2,000.0		1.7	1.7407
CD-SB-48-2-6(ASH)	696196	SW6010B	Lead	ug/L	580.0		1.7	1.7407
CD-SB-49-0-8(COMPASH)	696281	SW6010B	Lead	ug/L	202.0		1.7	1.7407
CD-SB-50-0-7.5(COMPASH)	696284	SW6010B	Lead	ug/L	6.4		1.7	1.7407
CD-SB-B(ASH)	695765	SW6010B	Lead	ug/L	79,700.0		34.0	1.7407
				Average	8,679.0	5,000 ug/l		
CD-SB-18-0-2(ASH)	695328	SW7470A	Mercury	ug/L	1.0	<	1.0	2.0
CD-SB-19-0-2(ASH)	695338	SW7470A	Mercury	ug/L	1.0	<	1.0	2.0
CD-SB-2-0-2(ASH)	695334	SW7470A	Mercury	ug/L	1.0	<	1.0	2.0
CD-SB-27-0-2(ASH)	695596	SW7470A	Mercury	ug/L	1.0	<	1.0	2.0
CD-SB-32-0-2(ASH)	695617	SW7470A	Mercury	ug/L	1.0	<	1.0	2.0
CD-SB-34-0-6(COMPASH)	696287	SW7470A	Mercury	ug/L	1.0	<	1.0	2.0
CD-SB-38-0-13(COMPASH)	696296	SW7470A	Mercury	ug/L	1.0	<	1.0	2.0
CD-SB-39-0-14(COMPASH)	696293	SW7470A	Mercury	ug/L	1.0	<	1.0	2.0
CD-SB-40-0-13.5(COMPASH)	696290	SW7470A	Mercury	ug/L	1.0	<	1.0	2.0
CD-SB-41-0-2(ASH)	696184	SW7470A	Mercury	ug/L	1.0	<	1.0	2.0
CD-SB-44-0-2(ASH)	696176	SW7470A	Mercury	ug/L	1.0	<	1.0	2.0
CD-SB-45-0-2(ASH)	696208	SW7470A	Mercury	ug/L	1.0	<	1.0	2.0
CD-SB-46-0-4(COMPASH)	696278	SW7470A	Mercury	ug/L	1.0	<	1.0	2.0
CD-SB-47-2-6(ASH)	696202	SW7470A	Mercury	ug/L	1.0	<	1.0	2.0
CD-SB-48-2-6(ASH)	696196	SW7470A	Mercury	ug/L	1.0	<	1.0	2.0
CD-SB-49-0-8(COMPASH)	696281	SW7470A	Mercury	ug/L	1.0	<	1.0	2.0
CD-SB-50-0-7.5(COMPASH)	696284	SW7470A	Mercury	ug/L	1.0	<	1.0	2.0
CD-SB-B(ASH)	695765	SW7470A	Mercury	ug/L	1.0		1.0	2.0
CD-SB-B(ASH)	695765	SW7470A	Mercury	ug/L	1.0		1.0	2.0
				Average	1.0	200 ug/L		

Cornell-Dubilier Electronics Superfund Site (OU-2)
Summary of Thermal Properties Testing Results for Pre-Design Investigation Soil Samples
Toxicity Characteristic Leaching Procedure (TCLP) Ash

SAMP_ID	LSAMP_ID	METH_ID	COMP	C_UNIT	CONC	REP_FLAG	LIMIT_1	LIMIT_2
CD-SB-18-0-2(ASH)	695328	SW6010B	Selenium	ug/L	4.7		4.2	4.7814
CD-SB-19-0-2(ASH)	695338	SW6010B	Selenium	ug/L	4.3		4.2	4.7814
CD-SB-2-0-2(ASH)	695334	SW6010B	Selenium	ug/L	4.9		4.2	4.7814
CD-SB-27-0-2(ASH)	695596	SW6010B	Selenium	ug/L	4.2	<	4.2	4.7814
CD-SB-32-0-2(ASH)	695617	SW6010B	Selenium	ug/L	4.5		4.2	4.7814
CD-SB-34-0-6(COMPASH)	696287	SW6010B	Selenium	ug/L	4.2	<	4.2	4.7814
CD-SB-38-0-13(COMPASH)	696296	SW6010B	Selenium	ug/L	4.2	<	4.2	4.7814
CD-SB-39-0-14(COMPASH)	696293	SW6010B	Selenium	ug/L	4.2	<	4.2	4.7814
CD-SB-40-0-13.5(COMPASH)	696290	SW6010B	Selenium	ug/L	4.2	<	4.2	4.7814
CD-SB-41-0-2(ASH)	696184	SW6010B	Selenium	ug/L	4.2	<	4.2	4.7814
CD-SB-44-0-2(ASH)	696176	SW6010B	Selenium	ug/L	4.2	<	4.2	4.7814
CD-SB-45-0-2(ASH)	696208	SW6010B	Selenium	ug/L	4.2	<	4.2	4.7814
CD-SB-46-0-4(COMPASH)	696278	SW6010B	Selenium	ug/L	4.2	<	4.2	4.7814
CD-SB-47-2-6(ASH)	696202	SW6010B	Selenium	ug/L	4.2	<	4.2	4.7814
CD-SB-48-2-6(ASH)	696196	SW6010B	Selenium	ug/L	4.2	<	4.2	4.7814
CD-SB-49-0-8(COMPASH)	696281	SW6010B	Selenium	ug/L	4.2	<	4.2	4.7814
CD-SB-50-0-7.5(COMPASH)	696284	SW6010B	Selenium	ug/L	4.2	<	4.2	4.7814
CD-SB-B(ASH)	695765	SW6010B	Selenium	ug/L	4.2		4.2	4.7814
CD-SB-B(ASH)	695765	SW6010B	Selenium	ug/L	4.2		4.2	4.7814
				Average	4.3	1,000 ug/l		
CD-SB-18-0-2(ASH)	695328	SW6010B	Silver	ug/L	1.8	<	1.8	1.5478
CD-SB-19-0-2(ASH)	695338	SW6010B	Silver	ug/L	1.8	<	1.8	1.5478
CD-SB-2-0-2(ASH)	695334	SW6010B	Silver	ug/L	1.8	<	1.8	1.5478
CD-SB-27-0-2(ASH)	695596	SW6010B	Silver	ug/L	1.8	<	1.8	1.5478
CD-SB-32-0-2(ASH)	695617	SW6010B	Silver	ug/L	1.8	<	1.8	1.5478
CD-SB-34-0-6(COMPASH)	696287	SW6010B	Silver	ug/L	1.8	<	1.8	1.5478
CD-SB-38-0-13(COMPASH)	696296	SW6010B	Silver	ug/L	5.4		1.8	1.5478
CD-SB-39-0-14(COMPASH)	696293	SW6010B	Silver	ug/L	2.0		1.8	1.5478
CD-SB-40-0-13.5(COMPASH)	696290	SW6010B	Silver	ug/L	1.9		1.8	1.5478
CD-SB-41-0-2(ASH)	696184	SW6010B	Silver	ug/L	1.8	<	1.8	1.5478
CD-SB-44-0-2(ASH)	696176	SW6010B	Silver	ug/L	1.8	<	1.8	1.5478
CD-SB-45-0-2(ASH)	696208	SW6010B	Silver	ug/L	1.8	<	1.8	1.5478
CD-SB-46-0-4(COMPASH)	696278	SW6010B	Silver	ug/L	1.8	<	1.8	1.5478
CD-SB-47-2-6(ASH)	696202	SW6010B	Silver	ug/L	1.8	<	1.8	1.5478
CD-SB-48-2-6(ASH)	696196	SW6010B	Silver	ug/L	1.8	<	1.8	1.5478
CD-SB-49-0-8(COMPASH)	696281	SW6010B	Silver	ug/L	1.8	<	1.8	1.5478
CD-SB-50-0-7.5(COMPASH)	696284	SW6010B	Silver	ug/L	1.8	<	1.8	1.5478
CD-SB-B(ASH)	695765	SW6010B	Silver	ug/L	3.5		1.8	1.5478
CD-SB-B(ASH)	695765	SW6010B	Silver	ug/L	3.5		1.8	1.5478
				Average	2.2	5,000 ug/l		

Cornell-Dubilier Electronics Superfund Site (OU-2)
Summary of Thermal Properties Testing Results for Pre-Design Investigation Soil Samples
Soil pH

SAMP_ID	SAMP_DATE	METH_ID		COMP	C_UNIT	CONC	LIMIT_1
CD-SB-18-0-2	12/18/2006	9045	DI	Soil pH (std. units)	pH Units	6.4	0.0
CD-SB-19-0-2	12/18/2006	9045	DI	Soil pH (std. units)	pH Units	5.3	0.0
CD-SB-2-0-2	12/18/2006	9045	DI	Soil pH (std. units)	pH Units	6.2	0.0
CD-SB-27-0-2	12/19/2006	9045	DI	Soil pH (std. units)	pH Units	6.8	0.0
CD-SB-32-0-2	12/18/2006	9045	DI	Soil pH (std. units)	pH Units	4.7	0.0
CD-SB-34-0-6(COMP)	01/04/2007	9045	DI	Soil pH (std. units)	pH Units	7.6	0.0
CD-SB-38-0-13(COMP)	01/04/2007	9045	DI	Soil pH (std. units)	pH Units	7.3	0.0
CD-SB-39-0-14(COMP)	01/04/2007	9045	DI	Soil pH (std. units)	pH Units	6.5	0.0
CD-SB-40-0-13.5(COMP)	01/04/2007	9045	DI	Soil pH (std. units)	pH Units	5	0.0
CD-SB-41-0-2	12/21/2006	9045	DI	Soil pH (std. units)	pH Units	5.3	0.0
CD-SB-44-0-2	12/22/2006	9045	DI	Soil pH (std. units)	pH Units	8.4	0.0
CD-SB-45-0-2	12/21/2006	9045	DI	Soil pH (std. units)	pH Units	6.4	0.0
CD-SB-46-0-4(COMP)	01/04/2007	9045	DI	Soil pH (std. units)	pH Units	4.5	0.0
CD-SB-47-2-6	12/21/2006	9045	DI	Soil pH (std. units)	pH Units	4.6	0.0
CD-SB-48-2-6	12/21/2006	9045	DI	Soil pH (std. units)	pH Units	6.4	0.0
CD-SB-49-0-8(COMP)	01/04/2007	9045	DI	Soil pH (std. units)	pH Units	6.9	0.0
CD-SB-50-0-7.5(COMP)	01/04/2007	9045	DI	Soil pH (std. units)	pH Units	6.3	0.0
CD-SB-B	12/20/2006	9045	DI	Soil pH (std. units)	pH Units	6.9	0.0
CD-SB-BREP	12/20/2006	9045	DI	Soil pH (std. units)	pH Units	6.9	0.0
BLKPH010607B		9045	DI	Soil pH (std. units)	pH Units	4.1	0.0
BLKPH122906A		9045	DI	Soil pH (std. units)	pH Units	6.3	0.0
BLKPH122906A		9045	DI	Soil pH (std. units)	pH Units	6.3	0.0
BLKPH122906A		9045	DI	Soil pH (std. units)	pH Units	6.3	0.0
BLKPH122906A		9045	DI	Soil pH (std. units)	pH Units	6.3	0.0
LCSPH010607B		9045	DI	Soil pH (std. units)	pH Units	6	0.0
LCSPH122906A		9045	DI	Soil pH (std. units)	pH Units	6	0.0
LCSPH122906A		9045	DI	Soil pH (std. units)	pH Units	6	0.0
LCSPH122906A		9045	DI	Soil pH (std. units)	pH Units	6	0.0
LCSPH122906A		9045	DI	Soil pH (std. units)	pH Units	6	0.0
					Average	6.1276	
					High	8.4	
					Low	4.1	

Cornell-Dubilier Electronics Superfund Site (OU-2)
Summary of Thermal Properties Testing Results for Pre-Design Investigation Soil Samples
Moisture Content

SAMP_ID	LSAMP_ID	SAMP_DATE	METH_ID	COMP	C_UNIT	CONC	LIMIT_1
CD-SB-18-0-2	695325	12/18/2006	D2216	Moisture Content	%	22.3	0.0
CD-SB-19-0-2	695335	12/18/2006	D2216	Moisture Content	%	14.2	0.0
CD-SB-2-0-2	695331	12/18/2006	D2216	Moisture Content	%	12.6	0.0
CD-SB-27-0-2	695593	12/19/2006	D2216	Moisture Content	%	13.2	0.0
CD-SB-32-0-2	695346	12/18/2006	D2216	Moisture Content	%	18.4	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	D2216	Moisture Content	%	15	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	D2216	Moisture Content	%	18.4	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	D2216	Moisture Content	%	17.8	0.0
CD-SB-40-0-13.5(COMP)	696288	01/04/2007	D2216	Moisture Content	%	17.4	0.0
CD-SB-41-0-2	696181	12/21/2006	D2216	Moisture Content	%	23.2	0.0
CD-SB-42-0-10.8(COMP)	699411		D2216	Moisture Content	%	20	0.0
CD-SB-44-0-2	696174	12/22/2006	D2216	Moisture Content	%	16.9	0.0
CD-SB-44-0-4(COMP)	699412		D2216	Moisture Content	%	15.9	0.0
CD-SB-45-0-2	696205	12/21/2006	D2216	Moisture Content	%	16.5	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	D2216	Moisture Content	%	18.8	0.0
CD-SB-47-0-2	696197	12/21/2006	D2216	Moisture Content	%	17.2	0.0
CD-SB-48-2-6	696193	12/21/2006	D2216	Moisture Content	%	24.3	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	D2216	Moisture Content	%	14.4	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	D2216	Moisture Content	%	12.6	0.0
CD-SB-B	695762	12/20/2006	D2216	Moisture Content	%	18	0.0
					Average	17.4	
					High	24.3	
					Low	12.6	

Moisture content was calculated using the equation defined in ASTM D2216:

$$w = [(Mcws - Mcs) / (Mcs - Mc)] \times 100 = (Mw/Ms) \times 100$$

where:
w = water content, %
Mcws = mass of container and wet specimen, g
Mcs = mass of container and oven-dry specimen, g
Mc = mass of container, g
Mw = mass of water (Mw = Mcws - Mcds), g, and
Ms = mass of solid particles (Ms = Mcds - Mc), g

Cornell-Dubilier Electronics Superfund Site (OU-2)
Summary of Thermal Properties Testing Results for Pre-Design Investigation Soil Samples
In-Place Density

SAMP_ID	LSAMP_ID	SAMP_DATE	METH_ID	COMP	C_UNIT	CONC	LIMIT_1
CD-SB-18-0-2	695325	12/18/2006	D2937	In-Place Density	g/cm3	1.240	0.0
CD-SB-19-0-2	695335	12/18/2006	D2937	In-Place Density	g/cm3	1.450	0.0
CD-SB-2-0-2	695331	12/18/2006	D2937	In-Place Density	g/cm3	1.440	0.0
CD-SB-27-0-2	695593	12/19/2006	D2937	In-Place Density	g/cm3	1.160	0.0
CD-SB-32-0-2	695346	12/18/2006	D2937	In-Place Density	g/cm3	1.460	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	D2937	In-Place Density	g/cm3	1.370	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	D2937	In-Place Density	g/cm3	1.220	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	D2937	In-Place Density	g/cm3	1.370	0.0
CD-SB-40-0-13.5(COMP)	696288	01/04/2007	D2937	In-Place Density	g/cm3	1.340	0.0
CD-SB-41-0-2	696181	12/21/2006	D2937	In-Place Density	g/cm3	1.240	0.0
CD-SB-42-0-10.8(COMP)	699411		D2937	In-Place Density	g/cm3	1.520	0.0
CD-SB-44-0-2	696174	12/22/2006	D2937	In-Place Density	g/cm3	1.510	0.0
CD-SB-44-0-4(COMP)	699412		D2937	In-Place Density	g/cm3	1.370	0.0
CD-SB-45-0-2	696205	12/21/2006	D2937	In-Place Density	g/cm3	1.270	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	D2937	In-Place Density	g/cm3	1.430	0.0
CD-SB-47-0-2	696197	12/21/2006	D2937	In-Place Density	g/cm3	0.950	0.0
CD-SB-48-2-6	696193	12/21/2006	D2937	In-Place Density	g/cm3	1.160	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	D2937	In-Place Density	g/cm3	1.590	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	D2937	In-Place Density	g/cm3	1.590	0.0
CD-SB-B	695762	12/20/2006	D2937	In-Place Density	g/cm3	1.050	0.0
					Average	1.337	
					High	1.590	
					Low	0.950	

Cornell-Dubilier Electronics Superfund Site (OU-2)
Summary of Thermal Properties Testing Results for Pre-Design Investigation Soil Samples
Grain Size

SAMP_ID	LSAMP_ID	SAMP_DATE	METH_ID	COMP	C_UNIT	CONC	LIMIT_1
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	75000	% passing	100	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	50000	% passing	100	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	37500	% passing	100	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	25000	% passing	100	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	19000	% passing	100	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	9500	% passing	87	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	4750	% passing	83.2	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	2000	% passing	76.2	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	850	% passing	66.7	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	425	% passing	55.6	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	250	% passing	44.8	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	180	% passing	38.6	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	150	% passing	36.3	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	75	% passing	30.1	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	34	% passing	25.5	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	22	% passing	22.1	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	12.7	% passing	18.7	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	9.1	% passing	15.3	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	6.5	% passing	14.1	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	3.2	% passing	10.7	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	1.4	% passing	8.4	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	Gravel	%	16.8	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	Coarse Sand	%	7	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	Medium Sand	%	20.6	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	Fine Sand	%	25.5	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	Silt	%	16	0.0
CD-SB-18-0-2	695325	12/18/2006	ASTM D422	Clay	%	14.1	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	75000	% passing	100	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	50000	% passing	100	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	37500	% passing	100	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	25000	% passing	100	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	19000	% passing	100	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	9500	% passing	100	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	4750	% passing	100	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	2000	% passing	97.7	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	850	% passing	86.9	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	425	% passing	77.3	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	250	% passing	65.6	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	180	% passing	56.3	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	150	% passing	52.2	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	75	% passing	39.9	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	30	% passing	31.6	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	20	% passing	26.8	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	12.0	% passing	21.2	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	8.8	% passing	17.9	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	6.4	% passing	14.7	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	3.2	% passing	9.9	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	1.3	% passing	6.7	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	Gravel	%	0	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	Coarse Sand	%	2.3	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	Medium Sand	%	20.5	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	Fine Sand	%	37.4	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	Silt	%	25.2	0.0
CD-SB-19-0-2	695335	12/18/2006	ASTM D422	Clay	%	14.7	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	75000	% passing	100	0.0

Cornell-Dubilier Electronics Superfund Site (OU-2)
Summary of Thermal Properties Testing Results for Pre-Design Investigation Soil Samples
Grain Size

SAMP_ID	LSAMP_ID	SAMP_DATE	METH_ID	COMP	C_UNIT	CONC	LIMIT_1
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	50000	% passing	100	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	37500	% passing	100	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	25000	% passing	100	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	19000	% passing	100	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	9500	% passing	100	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	4750	% passing	99.5	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	2000	% passing	96.3	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	850	% passing	86.7	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	425	% passing	74.9	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	250	% passing	60.8	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	180	% passing	49.9	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	150	% passing	45.1	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	75	% passing	35.1	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	32	% passing	30.3	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	21	% passing	27.4	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	12.3	% passing	21.6	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	8.8	% passing	18.7	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	6.4	% passing	16.7	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	3.1	% passing	11.9	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	1.3	% passing	8	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	Gravel	%	0.5	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	Coarse Sand	%	3.2	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	Medium Sand	%	21.4	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	Fine Sand	%	39.8	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	Silt	%	18.3	0.0
CD-SB-2-0-2	695331	12/18/2006	ASTM D422	Clay	%	16.7	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	75000	% passing	100	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	50000	% passing	100	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	37500	% passing	100	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	25000	% passing	67.2	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	19000	% passing	56.1	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	9500	% passing	47.7	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	4750	% passing	36.4	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	2000	% passing	28.6	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	850	% passing	21.8	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	425	% passing	16.3	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	250	% passing	12	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	180	% passing	9.7	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	150	% passing	8.9	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	75	% passing	6.7	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	35	% passing	6.4	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	22	% passing	5.4	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	13.1	% passing	4.9	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	9.3	% passing	4	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	6.8	% passing	3	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	3.3	% passing	1.6	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	1.4	% passing	1.5	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	Gravel	%	63.6	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	Coarse Sand	%	7.7	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	Medium Sand	%	12.4	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	Fine Sand	%	9.5	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	Silt	%	3.7	0.0
CD-SB-27-0-2	695593	12/19/2006	ASTM D422	Clay	%	3	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	75000	% passing	100	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	50000	% passing	100	0.0

Cornell-Dubilier Electronics Superfund Site (OU-2)
Summary of Thermal Properties Testing Results for Pre-Design Investigation Soil Samples
Grain Size

SAMP_ID	LSAMP_ID	SAMP_DATE	METH_ID	COMP	C_UNIT	CONC	LIMIT_1
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	37500	% passing	100	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	25000	% passing	100	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	19000	% passing	100	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	9500	% passing	100	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	4750	% passing	100	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	2000	% passing	99.2	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	850	% passing	83.9	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	425	% passing	74.1	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	250	% passing	65.7	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	180	% passing	60.5	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	150	% passing	58.9	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	75	% passing	53.1	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	32	% passing	41.6	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	20	% passing	36.6	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	12.2	% passing	29.1	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	8.9	% passing	25.4	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	6.2	% passing	21.6	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	3.2	% passing	15.4	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	1.4	% passing	9.1	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	Gravel	%	0	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	Coarse Sand	%	0.8	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	Medium Sand	%	25.1	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	Fine Sand	%	21	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	Silt	%	31.5	0.0
CD-SB-32-0-2	695346	12/18/2006	ASTM D422	Clay	%	21.6	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	75000	% passing	100	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	50000	% passing	100	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	37500	% passing	100	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	25000	% passing	100	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	19000	% passing	77.5	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	9500	% passing	70.9	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	4750	% passing	63.1	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	2000	% passing	56	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	850	% passing	47.1	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	425	% passing	40.5	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	250	% passing	34.8	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	180	% passing	31	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	150	% passing	29.7	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	75	% passing	25.1	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	33	% passing	21.3	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	21	% passing	19	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	12.3	% passing	15.9	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	9.0	% passing	13.6	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	6.2	% passing	11.2	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	3.2	% passing	8.9	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	1.4	% passing	5.7	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	Gravel	%	36.9	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	Coarse Sand	%	7.1	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	Medium Sand	%	15.4	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	Fine Sand	%	15.5	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	Silt	%	13.8	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	ASTM D422	Clay	%	11.2	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	75000	% passing	100	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	50000	% passing	100	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	37500	% passing	100	0.0

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Grain Size

SAMP_ID	LSAMP_ID	SAMP_DATE	METH_ID	COMP	C_UNIT	CONC	LIMIT_1
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	25000	% passing	68.2	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	19000	% passing	68.2	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	9500	% passing	51.1	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	4750	% passing	41.8	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	2000	% passing	34.8	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	850	% passing	29.1	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	425	% passing	24.5	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	250	% passing	20.7	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	180	% passing	18.6	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	150	% passing	17.9	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	75	% passing	15.1	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	34	% passing	11.5	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	22	% passing	10.3	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	12.8	% passing	8.5	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	9.0	% passing	7.4	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	6.6	% passing	6.2	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	3.1	% passing	4.4	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	1.4	% passing	3.2	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	Gravel	%	58.2	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	Coarse Sand	%	7	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	Medium Sand	%	10.4	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	Fine Sand	%	9.4	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	Silt	%	8.9	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	ASTM D422	Clay	%	6.2	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	75000	% passing	100	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	50000	% passing	100	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	37500	% passing	100	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	25000	% passing	100	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	19000	% passing	100	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	9500	% passing	99	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	4750	% passing	91.6	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	2000	% passing	80.2	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	850	% passing	69.6	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	425	% passing	59.6	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	250	% passing	52.4	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	180	% passing	48.5	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	150	% passing	46.8	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	75	% passing	35.4	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	32	% passing	25.7	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	21	% passing	23	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	12.4	% passing	17.6	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	8.8	% passing	14.9	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	6.4	% passing	12.2	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	3.3	% passing	8.6	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	1.4	% passing	5.9	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	Gravel	%	8.4	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	Coarse Sand	%	11.4	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	Medium Sand	%	20.6	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	Fine Sand	%	24.3	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	Silt	%	23.2	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	ASTM D422	Clay	%	12.2	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	75000	% passing	100	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	50000	% passing	100	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	37500	% passing	100	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	25000	% passing	100	0.0

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SAMP_ID	LSAMP_ID	SAMP_DATE	METH_ID	COMP	C_UNIT	CONC	LIMIT_1
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	19000	% passing	100	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	9500	% passing	100	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	4750	% passing	97.8	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	2000	% passing	94.8	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	850	% passing	78.6	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	425	% passing	65.5	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	250	% passing	55.2	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	180	% passing	49.8	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	150	% passing	47.9	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	75	% passing	40.6	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	33	% passing	31.6	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	21	% passing	27.9	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	12.5	% passing	22.9	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	8.8	% passing	19.2	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	6.4	% passing	15.5	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	3.3	% passing	11.8	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	1.4	% passing	7.9	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	Gravel	%	2.2	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	Coarse Sand	%	3.1	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	Medium Sand	%	29.3	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	Fine Sand	%	24.9	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	Silt	%	25.1	0.0
CD-SB-40-0-13.5(COMP	696288	01/04/2007	ASTM D422	Clay	%	15.5	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	75000	% passing	100	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	50000	% passing	100	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	37500	% passing	100	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	25000	% passing	100	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	19000	% passing	100	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	9500	% passing	100	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	4750	% passing	100	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	2000	% passing	99.8	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	850	% passing	86.9	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	425	% passing	77.1	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	250	% passing	68.1	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	180	% passing	62.7	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	150	% passing	60.9	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	75	% passing	55.2	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	30	% passing	49	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	20	% passing	41.5	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	11.9	% passing	35.3	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	8.5	% passing	30.3	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	6.3	% passing	25.3	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	3.2	% passing	17.9	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	1.3	% passing	11.6	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	Gravel	%	0	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	Coarse Sand	%	0.2	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	Medium Sand	%	22.7	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	Fine Sand	%	21.9	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	Silt	%	29.9	0.0
CD-SB-41-0-2	696181	12/21/2006	ASTM D422	Clay	%	25.3	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	75000	% passing	100	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	50000	% passing	100	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	37500	% passing	100	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	25000	% passing	100	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	19000	% passing	100	0.0

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SAMP_ID	LSAMP_ID	SAMP_DATE	METH_ID	COMP	C_UNIT	CONC	LIMIT_1
CD-SB-42-0-10.8(COMP	699411		ASTM D422	9500	% passing	87.1	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	4750	% passing	82.5	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	2000	% passing	81	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	850	% passing	67.8	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	425	% passing	58.5	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	250	% passing	50.4	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	180	% passing	44.7	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	150	% passing	41.8	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	75	% passing	33.1	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	33	% passing	28.1	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	21	% passing	24.7	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	12.5	% passing	20.1	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	9.0	% passing	17.8	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	6.4	% passing	15.5	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	3.1	% passing	11.1	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	1.3	% passing	10.9	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	Gravel	%	17.5	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	Coarse Sand	%	1.5	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	Medium Sand	%	22.5	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	Fine Sand	%	25.4	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	Silt	%	17.6	0.0
CD-SB-42-0-10.8(COMP	699411		ASTM D422	Clay	%	15.5	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	75000	% passing	100	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	50000	% passing	100	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	37500	% passing	100	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	25000	% passing	100	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	19000	% passing	100	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	9500	% passing	98.1	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	4750	% passing	96.8	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	2000	% passing	93.6	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	850	% passing	84	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	425	% passing	72.6	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	250	% passing	60.8	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	180	% passing	54.7	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	150	% passing	52.6	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	75	% passing	46.2	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	30	% passing	40.2	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	20	% passing	36.1	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	11.8	% passing	30	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	8.4	% passing	25.9	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	6.1	% passing	22.8	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	3.2	% passing	17.7	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	1.3	% passing	13.6	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	Gravel	%	3.2	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	Coarse Sand	%	3.2	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	Medium Sand	%	21	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	Fine Sand	%	26.3	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	Silt	%	23.4	0.0
CD-SB-44-0-2	696174	12/22/2006	ASTM D422	Clay	%	22.8	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	75000	% passing	100	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	50000	% passing	100	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	37500	% passing	100	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	25000	% passing	100	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	19000	% passing	88.8	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	9500	% passing	87	0.0

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SAMP_ID	LSAMP_ID	SAMP_DATE	METH_ID	COMP	C_UNIT	CONC	LIMIT_1
CD-SB-44-0-4(COMP)	699412		ASTM D422	4750	% passing	82.7	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	2000	% passing	80.9	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	850	% passing	72	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	425	% passing	63.8	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	250	% passing	56.3	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	180	% passing	52.2	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	150	% passing	50.7	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	75	% passing	45.5	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	32	% passing	34.1	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	21	% passing	30.6	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	12.3	% passing	24.8	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	8.8	% passing	21.4	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	6.4	% passing	19.1	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	3.1	% passing	14.6	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	1.3	% passing	12.1	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	Gravel	%	17.3	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	Coarse Sand	%	1.8	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	Medium Sand	%	17.1	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	Fine Sand	%	18.2	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	Silt	%	26.5	0.0
CD-SB-44-0-4(COMP)	699412		ASTM D422	Clay	%	19.1	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	75000	% passing	100	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	50000	% passing	100	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	37500	% passing	100	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	25000	% passing	100	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	19000	% passing	100	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	9500	% passing	94.8	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	4750	% passing	93.5	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	2000	% passing	92.7	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	850	% passing	83.1	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	425	% passing	72.9	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	250	% passing	61	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	180	% passing	53.6	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	150	% passing	51.4	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	75	% passing	44.5	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	32	% passing	38	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	21	% passing	34.1	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	12.4	% passing	27.6	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	8.9	% passing	22.5	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	6.2	% passing	19.9	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	3.2	% passing	13.4	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	1.4	% passing	8	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	Gravel	%	6.5	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	Coarse Sand	%	0.8	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	Medium Sand	%	19.8	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	Fine Sand	%	28.3	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	Silt	%	24.7	0.0
CD-SB-45-0-2	696205	12/21/2006	ASTM D422	Clay	%	19.9	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	75000	% passing	100	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	50000	% passing	100	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	37500	% passing	100	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	25000	% passing	100	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	19000	% passing	100	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	9500	% passing	100	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	4750	% passing	99.5	0.0

Cornell-Dubilier Electronics Superfund Site (OU-2)
Summary of Thermal Properties Testing Results for Pre-Design Investigation Soil Samples
Grain Size

SAMP_ID	LSAMP_ID	SAMP_DATE	METH_ID	COMP	C_UNIT	CONC	LIMIT_1
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	2000	% passing	97.9	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	850	% passing	82.2	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	425	% passing	72.1	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	250	% passing	63.1	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	180	% passing	57.7	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	150	% passing	56.1	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	75	% passing	50.3	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	32	% passing	39	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	21	% passing	34	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	12.2	% passing	29	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	8.8	% passing	24	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	6.4	% passing	20.3	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	3.1	% passing	14.1	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	1.4	% passing	8.9	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	Gravel	%	0.5	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	Coarse Sand	%	1.5	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	Medium Sand	%	25.9	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	Fine Sand	%	21.8	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	Silt	%	30	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	ASTM D422	Clay	%	20.3	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	75000	% passing	100	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	50000	% passing	100	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	37500	% passing	100	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	25000	% passing	100	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	19000	% passing	100	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	9500	% passing	100	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	4750	% passing	85.6	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	2000	% passing	68.9	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	850	% passing	52.5	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	425	% passing	38.9	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	250	% passing	29.1	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	180	% passing	23.1	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	150	% passing	20.3	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	75	% passing	12.7	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	35	% passing	11.3	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	23	% passing	8.1	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	13.1	% passing	7.3	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	9.1	% passing	5.8	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	6.7	% passing	4.2	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	3.2	% passing	2.6	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	1.4	% passing	1.8	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	Gravel	%	14.4	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	Coarse Sand	%	16.7	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	Medium Sand	%	30	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	Fine Sand	%	26.2	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	Silt	%	8.5	0.0
CD-SB-47-2-6	696199	12/21/2006	ASTM D422	Clay	%	4.2	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	75000	% passing	100	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	50000	% passing	100	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	37500	% passing	100	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	25000	% passing	100	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	19000	% passing	100	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	9500	% passing	96.7	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	4750	% passing	95.5	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	2000	% passing	90.5	0.0

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Summary of Thermal Properties Testing Results for Pre-Design Investigation Soil Samples
Grain Size

SAMP_ID	LSAMP_ID	SAMP_DATE	METH_ID	COMP	C_UNIT	CONC	LIMIT_1
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	850	% passing	80.5	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	425	% passing	68.2	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	250	% passing	53.9	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	180	% passing	44.2	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	150	% passing	40.5	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	75	% passing	32.3	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	31	% passing	24.8	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	20	% passing	22.7	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	12.1	% passing	17.8	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	8.5	% passing	15.7	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	6.3	% passing	13.6	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	3.0	% passing	10.1	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	1.4	% passing	6.6	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	Gravel	%	4.5	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	Coarse Sand	%	5.1	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	Medium Sand	%	22.3	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	Fine Sand	%	35.9	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	Silt	%	18.7	0.0
CD-SB-48-2-6	696193	12/21/2006	ASTM D422	Clay	%	13.6	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	75000	% passing	100	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	50000	% passing	100	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	37500	% passing	100	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	25000	% passing	100	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	19000	% passing	100	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	9500	% passing	100	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	4750	% passing	99.4	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	2000	% passing	96.7	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	850	% passing	85	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	425	% passing	71.6	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	250	% passing	56.2	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	180	% passing	45.3	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	150	% passing	41.9	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	75	% passing	31.7	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	33	% passing	23	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	21	% passing	21	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	12.5	% passing	18.1	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	9.0	% passing	15.1	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	6.5	% passing	13.2	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	3.2	% passing	9.2	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	1.4	% passing	7.2	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	Gravel	%	0.6	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	Coarse Sand	%	2.8	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	Medium Sand	%	25.1	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	Fine Sand	%	39.9	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	Silt	%	18.5	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	ASTM D422	Clay	%	13.2	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	75000	% passing	100	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	50000	% passing	100	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	37500	% passing	100	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	25000	% passing	100	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	19000	% passing	100	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	9500	% passing	100	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	4750	% passing	98.6	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	2000	% passing	94.1	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	850	% passing	80.9	0.0

Cornell-Dubilier Electronics Superfund Site (OU-2)
Summary of Thermal Properties Testing Results for Pre-Design Investigation Soil Samples
Grain Size

SAMP_ID	LSAMP_ID	SAMP_DATE	METH_ID	COMP	C_UNIT	CONC	LIMIT_1
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	425	% passing	66.6	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	250	% passing	66.6	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	180	% passing	56.7	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	150	% passing	53.5	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	75	% passing	44.5	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	33	% passing	21.2	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	21	% passing	19	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	12.3	% passing	16.7	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	9.0	% passing	14.4	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	6.4	% passing	12	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	3.2	% passing	8.9	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	1.4	% passing	5.7	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	Gravel	%	1.4	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	Coarse Sand	%	4.5	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	Medium Sand	%	27.5	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	Fine Sand	%	22	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	Silt	%	32.5	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	ASTM D422	Clay	%	12	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	75000	% passing	100	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	50000	% passing	100	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	37500	% passing	100	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	25000	% passing	100	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	19000	% passing	100	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	9500	% passing	91.1	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	4750	% passing	73	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	2000	% passing	55.8	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	850	% passing	44.8	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	425	% passing	34.8	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	250	% passing	28.2	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	180	% passing	24.3	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	150	% passing	22.5	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	75	% passing	17.2	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	34	% passing	12.2	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	22	% passing	9.9	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	12.8	% passing	8.2	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	9.2	% passing	6.5	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	6.4	% passing	5.4	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	3.3	% passing	3.6	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	1.4	% passing	2.5	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	Gravel	%	27	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	Coarse Sand	%	17.3	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	Medium Sand	%	20.9	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	Fine Sand	%	17.6	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	Silt	%	11.9	0.0
CD-SB-B	695762	12/20/2006	ASTM D422	Clay	%	5.4	0.0

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Summary of Thermal Properties Testing Results for Pre-Design Investigation Soil Samples
Liquid Limit and Plasticity Index/Limit

SAMP_ID	LSAMP_ID	SAMP_DATE	METH_ID		COMP	CONC	LIMIT_1
CD-SB-18-0-2	695325	12/18/2006	D4318	LL	Liquid Limit	0	0.0
CD-SB-18-0-2	695325	12/18/2006	D4318	PL	Plastic Limit	0	0.0
CD-SB-18-0-2	695325	12/18/2006	D4318	PI	Plasticity Index	NP	0.0
CD-SB-19-0-2	695335	12/18/2006	D4318	LL	Liquid Limit	0	0.0
CD-SB-19-0-2	695335	12/18/2006	D4318	PL	Plastic Limit	0	0.0
CD-SB-19-0-2	695335	12/18/2006	D4318	PI	Plasticity Index	NP	0.0
CD-SB-2-0-2	695331	12/18/2006	D4318	LL	Liquid Limit	0	0.0
CD-SB-2-0-2	695331	12/18/2006	D4318	PL	Plastic Limit	0	0.0
CD-SB-2-0-2	695331	12/18/2006	D4318	PI	Plasticity Index	NP	0.0
CD-SB-27-0-2	695593	12/19/2006	D4318		Liquid Limit	0	0.0
CD-SB-27-0-2	695593	12/19/2006	D4318		Plastic Limit	0	0.0
CD-SB-27-0-2	695593	12/19/2006	D4318		Plasticity Index	NP	0.0
CD-SB-32-0-2	695346	12/18/2006	D4318	LL	Liquid Limit	25	0.0
CD-SB-32-0-2	695346	12/18/2006	D4318	PL	Plastic Limit	0	0.0
CD-SB-32-0-2	695346	12/18/2006	D4318	PI	Plasticity Index	NP	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	D4318		Liquid Limit	0	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	D4318		Plastic Limit	0	0.0
CD-SB-34-0-6(COMP)	696285	01/04/2007	D4318		Plasticity Index	NP	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	D4318		Liquid Limit	0	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	D4318		Plastic Limit	0	0.0
CD-SB-38-0-13(COMP)	696294	01/04/2007	D4318		Plasticity Index	NP	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	D4318		Liquid Limit	0	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	D4318		Plastic Limit	0	0.0
CD-SB-39-0-14(COMP)	696291	01/04/2007	D4318		Plasticity Index	NP	0.0
CD-SB-40-0-13.5(COMP)	696288	01/04/2007	D4318		Liquid Limit	26	0.0
CD-SB-40-0-13.5(COMP)	696288	01/04/2007	D4318		Plastic Limit	24	0.0
CD-SB-40-0-13.5(COMP)	696288	01/04/2007	D4318		Plasticity Index	3	0.0
CD-SB-41-0-2	696181	12/21/2006	D4318		Liquid Limit	28	0.0
CD-SB-41-0-2	696181	12/21/2006	D4318		Plastic Limit	24	0.0
CD-SB-41-0-2	696181	12/21/2006	D4318		Plasticity Index	4	0.0
CD-SB-42-0-10.8(COMP)	699411		D4318		Liquid Limit	0	0.0
CD-SB-42-0-10.8(COMP)	699411		D4318		Plastic Limit	0	0.0
CD-SB-42-0-10.8(COMP)	699411		D4318		Plasticity Index	NP	0.0
CD-SB-44-0-2	696174	12/22/2006	D4318		Liquid Limit	0	0.0
CD-SB-44-0-2	696174	12/22/2006	D4318		Plastic Limit	0	0.0
CD-SB-44-0-2	696174	12/22/2006	D4318		Plasticity Index	NP	0.0
CD-SB-44-0-4(COMP)	699412		D4318		Liquid Limit	28	0.0
CD-SB-44-0-4(COMP)	699412		D4318		Plastic Limit	23	0.0
CD-SB-44-0-4(COMP)	699412		D4318		Plasticity Index	6	0.0
CD-SB-45-0-2	696205	12/21/2006	D4318		Liquid Limit	24	0.0
CD-SB-45-0-2	696205	12/21/2006	D4318		Plastic Limit	20	0.0
CD-SB-45-0-2	696205	12/21/2006	D4318		Plasticity Index	4	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	D4318		Liquid Limit	26	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	D4318		Plastic Limit	23	0.0
CD-SB-46-0-4(COMP)	696276	01/04/2007	D4318		Plasticity Index	3	0.0
CD-SB-47-2-6	696199	12/21/2006	D4318		Liquid Limit	0	0.0
CD-SB-47-2-6	696199	12/21/2006	D4318		Plastic Limit	0	0.0
CD-SB-47-2-6	696199	12/21/2006	D4318		Plasticity Index	NP	0.0
CD-SB-48-2-6	696193	12/21/2006	D4318		Liquid Limit	0	0.0
CD-SB-48-2-6	696193	12/21/2006	D4318		Plastic Limit	0	0.0
CD-SB-48-2-6	696193	12/21/2006	D4318		Plasticity Index	NP	0.0

Cornell-Dubilier Electronics Superfund Site (OU-2)
Summary of Thermal Properties Testing Results for Pre-Design Investigation Soil Samples
Liquid Limit and Plasticity Index/Limit

SAMP_ID	LSAMP_ID	SAMP_DATE	METH_ID	COMP	CONC	LIMIT_1
CD-SB-49-0-8(COMP)	696279	01/04/2007	D4318	Liquid Limit	0	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	D4318	Plastic Limit	0	0.0
CD-SB-49-0-8(COMP)	696279	01/04/2007	D4318	Plasticity Index	NP	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	D4318	Liquid Limit	0	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	D4318	Plastic Limit	0	0.0
CD-SB-50-0-7.5(COMP)	696282	01/04/2007	D4318	Plasticity Index	NP	0.0
CD-SB-B	695762	12/20/2006	D4318	Liquid Limit	0	0.0
CD-SB-B	695762	12/20/2006	D4318	Plastic Limit	0	0.0
CD-SB-B	695762	12/20/2006	D4318	Plasticity Index	NP	0.0