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REMEDATION WORK PLAN FOR FUEL PIPELINE REPAIR AT SOUTH WALL AND ECHO
PIER NS MAYPORT FL
10/1/1996
BECHTEL ENVIRONMENTAL

REMEDICATION WORK PLAN
FOR FUEL PIPELINE REPAIR AT
SOUTH WALL AND ECHO PIER

FOR

U.S. NAVAL STATION
MAYPORT, FLORIDA

Prepared for

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND

Under Contract No. N62467-93-D-0936

Prepared by

BECHTEL ENVIRONMENTAL, INC.
OAK RIDGE, TENNESSEE

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REVISION 1

Bechtel Job No. 22567

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ACRONYMS

ASTM	American Society for Testing and Materials
CFR	Code of Federal Regulations
ComQAP	Comprehensive Quality Assurance Plan
DFM	Diesel Fuel Marine
DOT	Department of Transportation
EPA	Environmental Protection Agency
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
PP	Project Procedure
PPE	Personal Protective Equipment
ppb	parts per billion
ppm	parts per million
PSHP	Program Safety and Health Plan
PWC	Public Works Center
QC	Quality Control
QCP	Quality Control Plan
QCPA	Quality Control Program Addendum
RAC	Response Action Contractor
RCRA	Resource Conservation and Recovery Act
ROICC	Resident Officer in Charge of Construction
RWP	Remediation Work Plan
SSHPP	Site Safety and Health Plan
VOC	Volatile Organic Compound

UNITS OF MEASURE

ft	feet
ft ²	square feet
gal.	gallon
in.	inch
mg/l	milligram per liter
yd ³	cubic yards
ug/l	microgram per liter

FORWARD

This Remediation Work Plan (RWP) has been prepared to document the planning and execution process to support activities associated with the repair of the leaking diesel fuel marine (DFM) pipeline at South Wall and Echo Pier, located at the U.S. Naval Station Mayport, Florida. The U.S. Department of the Navy, through Southern Division, Naval Facilities Engineering Command intends to perform these removal actions through the use of the Navy's Environmental Response Action Contractor (RAC). Bechtel Environmental, Inc. (Bechtel), the RAC, intends to execute the actions described in this RWP as part of the prime contract N62467-93-D-0936.

1.0 INTRODUCTION

The U.S. Department of Navy, Southern Division, Naval Facilities Engineering Command intends to conduct a remedial action at the U.S. Naval Station Mayport, Mayport, Florida. This Remediation Work Plan (RWP) addresses the remedial action activities that will be implemented by Bechtel Environmental, Inc. (Bechtel) as the Environmental Response Action Contractor (RAC) for the Southern Division. The remedial action described in this RWP is being executed as part of Prime Contract N62467-93-D-0936.

The remedial action presented in the RWP involves the removal of approximately 3000 yd³ of excessively contaminated soil, manual recovery of any free product in the open excavation, and repair the leaking diesel fuel marine (DFM) pipeline at the South Wall and Echo Pier (hereafter referred to as the Site). The DFM and other product transfer lines (i.e., JP-5 and waste oil) are constructed of schedule-40 carbon steel, ranging between 6-12-in. in diameter and are connected to a distant fuel farm.

In 1996, product loss was discovered in a DFM pipeline. During periods of rain and at low tide, a sheen is evident at the Site. After Site investigation, a leaking DFM pipeline was discovered at the Site (Echo 1 and Echo 3 fueling pits). The amount of product that has leaked from the DFM is unknown at this time.

This RWP presents instructions to the field for execution of the removal of contaminated soil and groundwater, repair the leaking pipeline, and provides necessary information for Navy approval to proceed with the remedial action.

1.1 SITE DESCRIPTION

U.S. Naval Station Mayport is located about 15 miles east-northeast of downtown Jacksonville, Florida (see Figure 1, Appendix A). The turning basin, where ships are docked and serviced, is located in the northern part of the station. The Site is located on the southeastern side of the turning basin (see Figures 2 and 3, Appendix A) and is actually two contiguous piers, South Wall and Echo Pier.

This facility was established in 1942 and the official mission is to provide facilities, service, and managerial support for the operation, maintenance, and repair of equipment, ships, aircraft, and other support units assigned to the Second Fleet stationed at Mayport.

There are existing underground utility lines throughout the pier area. These utility lines include fuel and oily waste steel pipelines, electrical cables, stormwater pipe, wastewater, sanitary sewer, potable water, compressed air, and steam.

1.2 REGULATORY SETTING

The actions described in this RWP are being implemented following the guidelines described in Florida Administrative Code (FAC) Chapter 62-770. Soil will be processed consistent with guidelines described in Chapter 62-775 FAC. Soil excavation and free product recovery notifications required by FAC 62-770.300 will be the responsibility of the Navy.

2.0 REMEDIATION ACTIVITIES

The objective of the remedial action described in this RWP involves the repair of leaking DFM pipelines at the Site. After approval of this RWP, and notice to proceed from the Navy, the following activities will be implemented to complete the physical remediation actions at the Site:

- mobilization
- temporary facilities
- asphalt pavement demolition
- soil excavation and stockpile construction
- free product recovery
- repairing DFM line
- backfill
- equipment decontamination
- transport excessively contaminated soil
- site restoration

Specifications that are issued as guidance documents for the Bechtel-supplied field crews are included in Appendix B. These specifications provide general guidance to the field crew and are intended to be used in conjunction with the RWP. Only the applicable sections of the attached specifications will be used. In addition, safety and health monitoring will be performed during work activities at the Site to maintain a safe work environment.

2.1 MOBILIZATION

Mobilization will include delivering to the Site and work areas all construction equipment, tools, materials, supplies, and miscellaneous articles; establishing a work force sufficient to commence and sustain remedial activities, designate laydown and material storage areas, maintaining traffic control during construction activities as required; and securing all necessary permits and registrations. Prior to the commencement of the work, a preconstruction meeting will be held with the U.S. Naval Station Mayport Resident Officer In Charge of Construction (ROICC) to discuss execution of the work, access roads, security, transportation routes, and contact personnel for actions during construction activities (i.e., utilities, security, environmental, and safety and health).

2.2 TEMPORARY FACILITIES

Temporary facilities will include the following:

- Control access to the Site, temporary barricades will be used around open excavations.
- Temporary decontamination area will be provided.
- Temporary utilities (potable water for decontamination) will be supplied to the Site if not available.

Bechtel will provide and construct an area that will serve for personnel and equipment decontamination. This will be a lined area, bermed with either soil or straw bales and a sump for collection of the decontamination water. The liner and size of the area will be determined by the Bechtel Site Superintendent based on projected usage and equipment. Decontamination water collected in the sump will be drummed, labeled, and disposed as discussed in the Waste Management section of this RWP.

Electrical power, if not available, will be provided by a portable generator. Communication will be accomplished using portable radios and/or cellular telephones.

2.3 ASPHALT PAVEMENT DEMOLITION

Asphalt pavement will be demolished (saw cut) and excavated by Bechtel. This material will be treated as potentially petroleum hydrocarbon material and will be disposed as discussed in Section 3.3.2. The estimated quantity of this material to be disposed is approximately 10 yd³.

Asphalt will be demolished only within the limits of DFM pipeline leaks in accordance with Section 5.7 of Technical Specification 001-SP000-005, "Contaminated Earthwork and Miscellaneous Demolition," Appendix B.

2.4 SOIL EXCAVATION

Soil excavation will consist of excavating soil at locations necessary to facilitate the work. Based on observations at the Site, the estimated volume of soil to be removed from the site will be approximately 1,000 tons. The designated areas will be visually inspected to verify location of underground utilities and checked for potential interferences. Bechtel will review all relevant as-built drawings to further delineate all underground utilities. Bechtel will perform utility location surveys using an active/passive field utility detection equipment. No excavation will be initiated until the subgrade interference survey is completed. Prior to excavation, Bechtel will coordinate the disconnection of electrical power circuits, if required, and any required temporary connections. Soil will be hand excavated around subgrade utilities. Machine excavation (backhoe and/or excavator) will only be used in clear areas. Excavation will be performed in accordance with applicable sections of Technical Specification 001-SP000-005, "Contaminated Earthwork and Miscellaneous Demolition," and Technical Specification 001-SP000-006, "Uncontaminated Earthwork," Appendix B.

During the excavation process, headspace samples will be taken at 10'-20' on center and analyzed as defined in 62-770.200 FAC. Headspace analysis with readings of greater than 50 ppm total VOCs are considered excessively contaminated.

The excavated soil will be temporarily stockpiled as directed by the Navy. A lined and bermed area will be constructed. The liner and size of the area will be determined by the Bechtel Site Superintendent based on the volume of soil. Soils excessively contaminated with petroleum hydrocarbons will be segregated. The stockpiles will be covered to protect the material from the elements until backfill or disposal is complete.

2.5 FREE PRODUCT RECOVERY

During excavation, some free product present will be captured. Also during soil excavation, if free product is present, manual bailing from the open excavation, skimmer pumps or adsorbent pads will be used to remove free product to the extent practicable.

The recovered free product/groundwater will be stored in appropriate containers in accordance with State and Federal requirements. Volume of recovered free product/groundwater stored will be recorded on Bechtel NavyRAC Waste Management Plan logs.

Bechtel will coordinate any required characterization testing with the Navy. Manifests, if required, and disposal of any product will be the responsibility of the Navy.

2.6 DFM PIPELINE REPAIR

The DFM pipeline and all utilities in the excavated area around the DFM pipeline will be locked (tagged) in a safe position. Once the DFM pipeline is accessible, a pneumatic test will be performed, and examined with a soap solution to isolate the leak(s). Once the leaks have been located, the DFM pipe will be welded. Upon completion of the repairs, the pipeline will be inspected and hydrostatic tested. Once the DFM pipeline has been determined repaired, a protective coating will be applied. All pipeline work will be performed in accordance with the following Technical Specifications, Section 15116, "Fuel Piping Welding and Weld Examination," and Section 15486, "Fuel Piping," Appendix B.

2.7 BACKFILL

Backfill will consist of the clean excavated soil. Backfill will be performed in accordance Technical Specification 001-SP000-006, "Uncontaminated Earthwork," Appendix B. Soils determined excessively contaminated will not be used for backfill.

Backfill material will be a clean sandy soil (SW or SP), cohesive well graded material free of contamination, trash, debris, roots, or other organic matter, stones or material larger than 3 inches in diameter. The borrow source will be approved by the ROICC. Backfill will be placed in 18-in. lifts and compacted to 95 percent dry density. Compaction testing will be performed at a rate of 1 test per 2000 ft² of material or a minimum of 1 test per lift in accordance with ASTM D 2922.

As an option, CLSM can be used as backfill. This option shall be coordinated with the ROICC.

2.8 EQUIPMENT DECONTAMINATION

Bechtel will provide and construct an area that will serve for personnel and equipment decontamination. This will be a lined area, bermed with either soil or straw bales and a sump for collection of decontamination water. The liner type and size of the decontamination area will be determined by the Bechtel Site Superintendent based on projected usage of equipment.

All equipment used in handling contaminated soil or free product will be decontaminated before leaving the site. Decontamination water collected in the sump will be stored in 55-gal. drums which are appropriately labeled.

2.9 EXCESSIVELY CONTAMINATED SOIL TRANSPORTATION AND DISPOSAL

A Subcontractor will be procured to transport and dispose of the excessively contaminated soil, and asphalt pavement. The Bechtel Navy RAC generic Technical Specification 001-SP000-003, "Transportation of Contaminated Materials" is included in Appendix B. All waste material shipped off-site will be tracked using the Waste Tracking log contained in the Navy RAC Waste Management Plan.

2.10 SITE RESTORATION

All excavated areas will be successfully backfilled, and asphalt pavement will be installed. Existing conditions will be noted and the Site returned to the original grade to the extent practicable.

All temporary facilities, equipment and material will be de-mobilized from the site. Temporary utilities will be abandoned and the Site returned to the pre-remedial condition to the extent practicable.

2.11 POST REMEDIATION ACTIVITIES

At the completion of the physical remediation actions, soil borings will be taken up to 5-ft outside the boundary of excavation. The horizontal extents of contamination will be confirmed by sidewall samples taken at 10 - 20-ft on center. Soils that exhibits headspace analyses readings as defined by Rule 62-770.200 of greater than 50 ppm are considered excessively contaminated.

Four monitoring wells will be installed for the groundwater sampling. Sample collection will not occur any sooner than 1 week after well development, nor no later than 1 month after development. One monitoring well will be installed in the middle of the area excavated, additional monitoring wells will be installed upgradient, down gradient, and to the east of the building. Samples will be collected in accordance with the appropriate project procedures defined

in section 4.0. The parameters will be from the diesel analytical group as specified in Rule 62-770.600 (8b).

The actions that will be completed by Bechtel include the completion of the as-built drawings (as applicable) and the completion of an contamination assessment report.

3.0 WASTE MANAGEMENT

General waste management practices used by Bechtel on this project will be as defined in the *Environmental Response Action Contract Waste Management Plan* (Bechtel 1995). There are several waste management activities anticipated during this remedial action, including the management and disposition of:

- Construction debris
- Excavated soils
- Free product
- Decontamination water
- Personal protective equipment (PPE) and other incidentally contaminated materials
- Other non-hazardous solid wastes

3.1 WASTE MINIMIZATION

Waste materials to be disposed of during this removal action are not anticipated to be classified as "hazardous" wastes. All previous investigations and reports regarding this site have defined the contaminants as fuel and petroleum related products resulting from the Facility activities. Construction activities at this site will be controlled to minimize the amount of materials that must eventually be disposed of. Waste minimization is an important goal and will be implemented during all site operations. These practices will include:

- Limiting extraneous materials taken into contaminated areas
- Decontamination of equipment used to support onsite activities
- Use of consumable that can be compacted or otherwise volume reduced

3.2 HAZARDOUS WASTE

Hazardous waste is not expected to be found associated with the remedial actions at this site. Based on site characterization data and the well known history of site operations, no hazardous wastes would be encountered. If any hazardous wastes are identified, they will be managed in accordance with Resource Conservation and Recovery Act (RCRA), 40 CFR Parts 260, and related federal and state regulations. Hazardous wastes will be disposed of by the U.S. Naval Station Mayport Public Works Center (PWC). NAS Jacksonville will pick up the containerized wastes from the sites.

3.3 WASTE DISPOSAL

A subcontractor will be procured to transport and dispose of the excessively contaminated soil, and the asphalt pavement. This subcontract is not apart of this RWP.

The following sections provide guidance for the decision process for disposal of the wastes generated at the site. Manifests, non-hazardous waste profiles, and shipping papers if required will be signed by the Navy.

3.3.1 Construction Debris and Personal Protective Equipment

Construction debris resulting from this RWP will be transported and properly disposed at a Subtitle D or construction rubble licensed landfill as appropriate, or as directed by the Navy. Personal protective equipment (PPE) will be doubled bagged and disposed of at a Subtitle D licensed landfill.

All contaminated disposable PPE will be placed in DOT approved 55-gal. drums which will be sealed, labeled, and stored onsite. Disposal of the drums and their contents will be the responsibility of the Navy.

3.3.2 Asphalt Pavement

Asphalt pavement will be demolished (saw cut) and excavated by Bechtel. This material will be treated as potentially petroleum hydrocarbon material and will be disposed in a Subtitle D licensed landfill.

3.3.3 Excavated Soils

Excavated soils will be stockpiled, stored, and disposed by Bechtel.

3.3.4 Free Product

If free product is encountered, it will be containerized, labeled and turned over to the PWC. Sampling requirements for the free product will be coordinated with the PWC.

3.3.5 Decontamination Water

Decontamination water will be containerized and turned over to the PWC. Sampling requirements for the decontamination water will be coordinated with the PWC.

3.4 SPILL PREVENTION

Activities associated with the refueling of equipment will be conducted in a manner to ensure that potentially contaminated water or fuel is not released into the environment. When conducting operations which may result in possible fuel release, Bechtel's work will provide the best management practices to preclude a spill. Provisions for spill prevention and control that will be used during transfer of fuel will include:

- Performing manual level checks in the portable fuel tank prior to refilling
- Performing manual level checks in the equipment tank prior to refueling
- Manual transfer of fuel
- Proper liners and berms to prevent migration of contaminants if a spill occurs
- Immediate availability of spill mitigation equipment (e.g., absorbent materials)
- Notification: Immediate notification shall be made to the U.S. Naval Station Mayport Fire Department and U.S. Naval Station Mayport Environmental personnel, if a spill occurs.

Daily inspections of the refueling operations will be performed by the Safety and Health representative to ensure availability of prevention controls.

4.0 SAMPLING AND ANALYSIS PLAN

An approved Comprehensive Quality Assurance Program Plan (ComQAP) is presently on file with the Florida Department of Environmental Protection (FDEP #940316). Project procedures based on the FDEP sample collection guidelines will be utilized throughout the data collection phase of this project. This section outlines the specific field methods and techniques that will be used to collect soil and water samples during the course of the activities outlined in this work plan.

4.1 SAMPLING PROTOCOL

The following Bechtel Navy RAC project procedures will be utilized for this work:

- Project Procedure (PP) 6003 *Sample Identification and Data Encoding*
- PP 6004 *Field Logbook Management*
- PP 6005 *Chain-of-Custody Record Procedures*
- PP 6006 *Sample Tracking*
- PP 6010 *Sample Containers, Preservation, and Aliquot Requirements*
- PP 6011 *Sample Packaging and Shipment*
- PP 6021 *Water Sampling*
- PP 6024 *Decontamination of Field Sampling Equipment*
- PP 6025 *Soil Sampling*

4.2 FIELD SAMPLING AND ANALYSIS

Samples identified in this section will be collected in accordance with the previously identified project procedures. Analysis of these samples will be in accordance with the Environmental Protection Agency (EPA) criteria for the defined method or by the procedure identified as appropriate. Sampling efforts can be segregated on the basis of data objectives:

- Soil Disposal Sampling
- Groundwater Monitoring

4.2.1 Soil Disposal Sampling

Table 1 (Appendix C) provides the sample collection requirements for the excessively contaminated soils prior to shipment off site for treatment. In addition the sampling requirements for the clean soil criteria are included in this table. Table 2 (Appendix C) provides the clean soil criteria as established by FAC Rule 62-775-400.

5.0 QUALITY CONTROL PLAN

Appropriate Quality Control (QC) criteria is developed and included in the site-specific addendum to the Quality Control Program Plan (QCP). This site-specific plan called the Quality Control Program Plan Addendum (QCPA) is based on the Navy approved QCP for the basic contract. Bechtel will implement, maintain, and comply with Navy approved basic contract QCP and the site-specific QCPA.

The intent of this section is to provide general guidance to the field construction crew as to the items that require inspection during installation. The following sections discuss the construction field inspection, testing requirements, and submittals. These sections will be revised as appropriate during actual field implementation based on equipment.

5.1 EXCAVATION

During the excavation process, the Quality Assurance Representative will ensure records are kept on the amount of material excavated, staking of the limits, and records of excavation limits (i.e. confirmation sidewall headspace samples). In addition, the Quality Assurance Representative will ensure that the proper soil disposal sampling protocol is followed.

5.2 DFM PIPELINE REPAIRS

A Quality Assurance Representative (designated qualified person) will be responsible for inspecting the welds in accordance with Technical Specification Section 15116, "Fuel Piping Welding and Weld Examination," Appendix B.

5.3 SITE RESTORATION

During site restoration activities, the Quality Assurance Representative will ensure compaction testing, grading, and seeding. Additionally, erosion controls will be inspected for proper placement and usage.

6.0 SAFETY AND HEALTH PLAN

A program Safety and Health Plan (PSHP) defines the policies for the Navy RAC project. A Site Safety and Health Plan (SSHP) has been prepared for each of the Navy RAC bases. Addendum Number 30 to the SSHP, which is provided separately, defines task-specific requirements for this remedial action at the U.S. Naval Station Mayport Site that is described in this RWP.

7.0 PROJECT MANAGEMENT PLAN

7.1 PROJECT ORGANIZATION

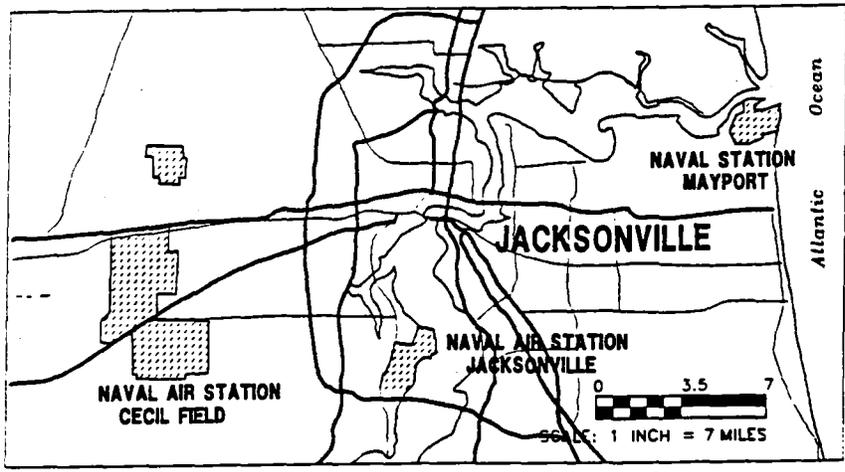
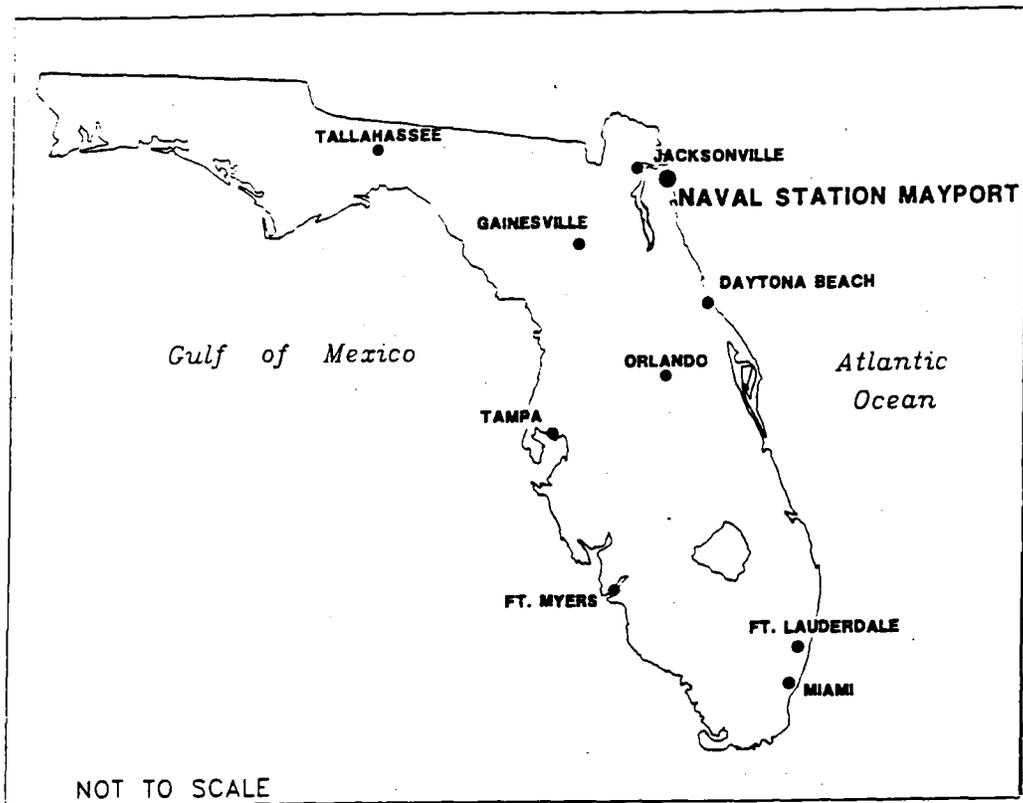
As the Environmental RAC for the Navy, Bechtel provides U.S. Naval Station Mayport management of remedial action field activities, which includes all activities necessary to implement field work delineated in work plans. Typically, these activities include development and procurement of subcontract services; development, implementation, and overview of plans; collection and review of data, including sampling results, quality assurance/quality control submittals, and sample tracking and custody; technical guidance to onsite personnel; report preparation; cost management; and schedule control. Key leadership for the project is provided by the project manager, Hermann Bauer; the construction manager, Ed Najmola; the construction superintendent, Ed Najmola; safety and health representative, Greg Olsen; and quality assurance representative, Greg Olsen.

7.2 SCHEDULE

The schedule for the implementation of the actions described in this RWP is not finalized. When the schedule has been finalized, a copy will be forwarded to the Navy.

APPENDIX A

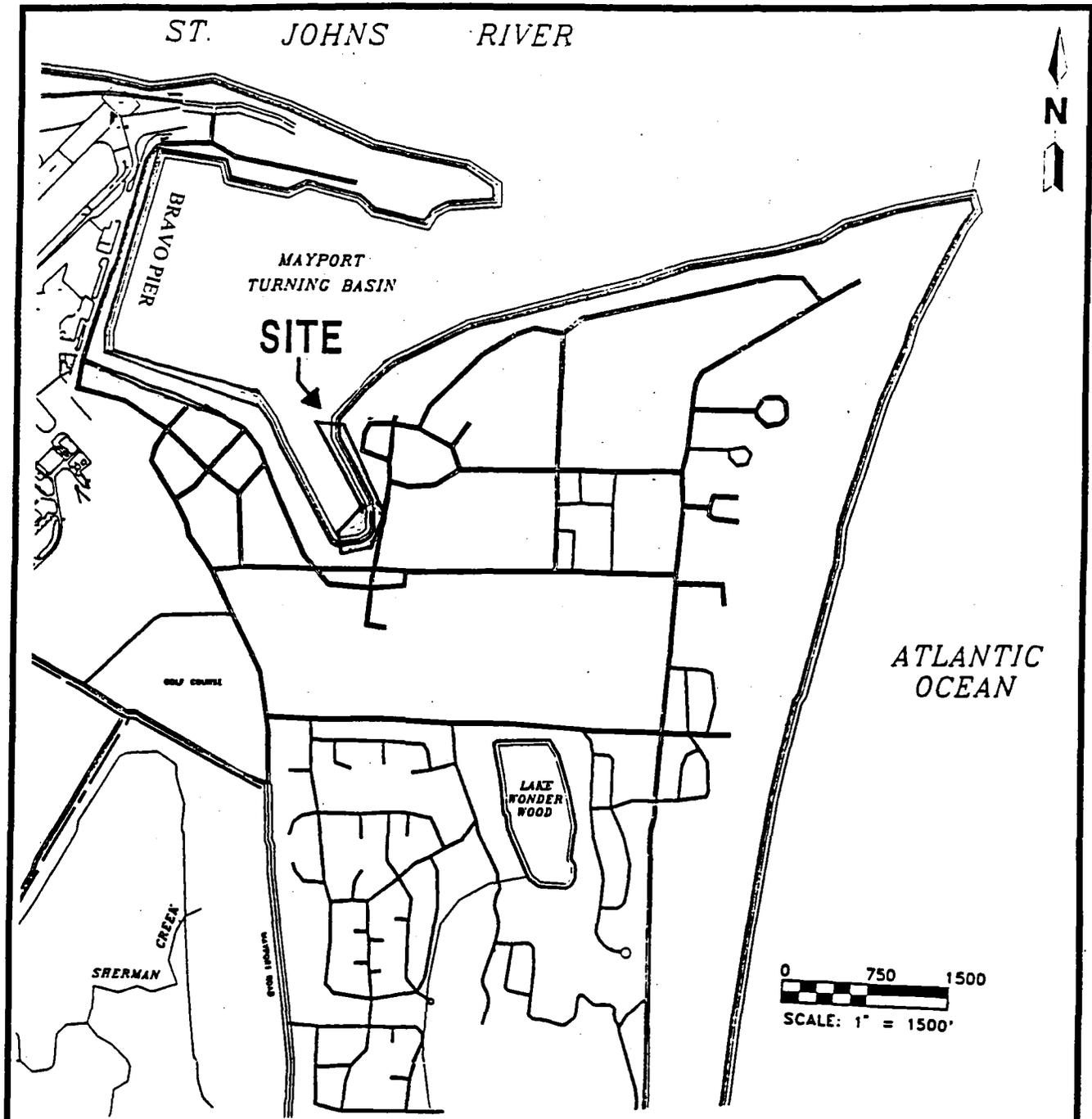
FIGURES



REMEDATION WORK PLAN FOR
DFM PIPELINE LEAK



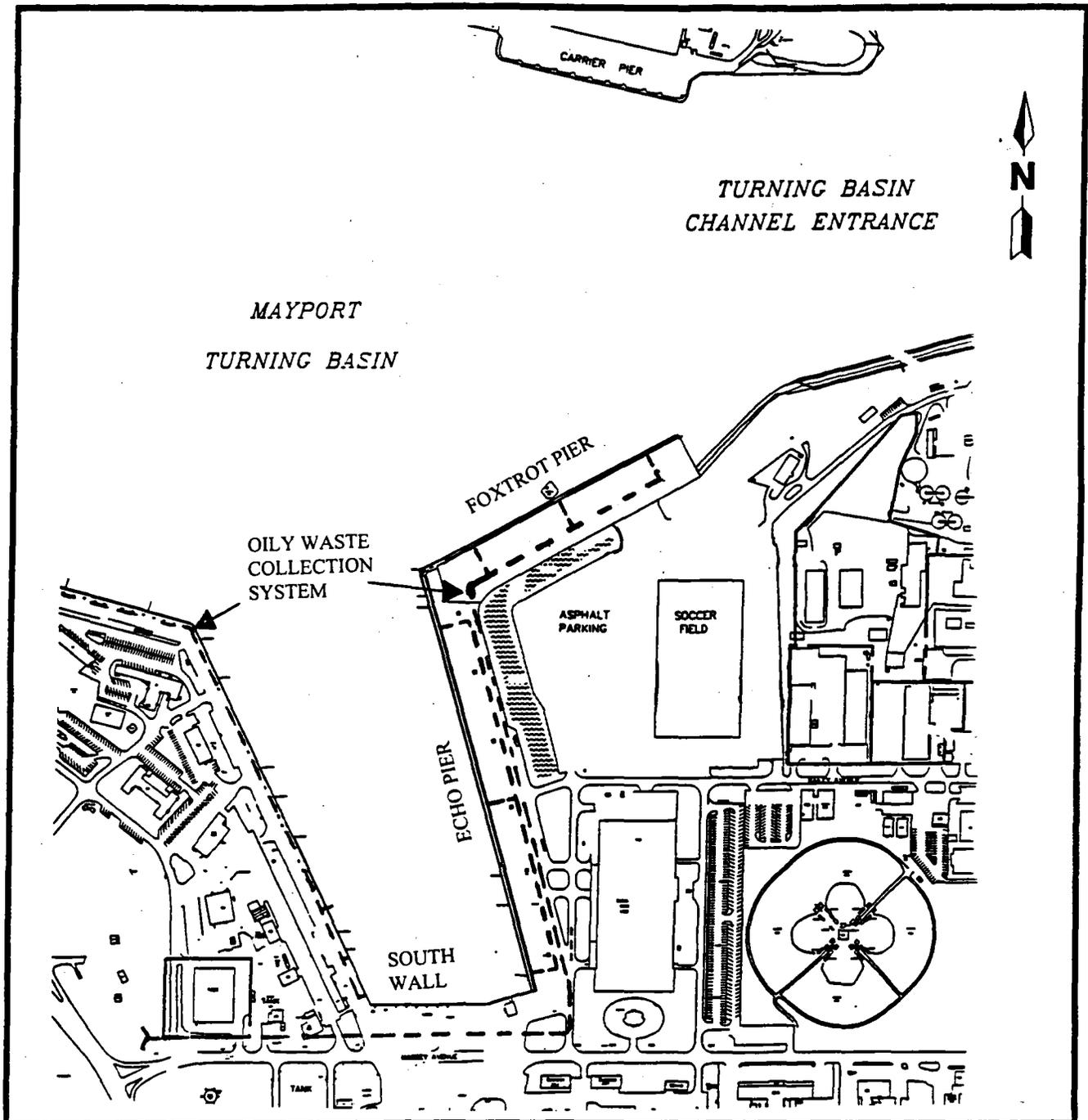
FIGURE 1
FACILITY LOCATION MAP



**REMEDICATION WORK PLAN FOR
DFM PIPELINE LEAK**

**FIGURE 2
SITE LOCATION MAP**





REMEDATION WORK PLAN FOR
DFM PIPELINE LEAK

FIGURE 3
SOUTH WALL and ECHO PIER



APPENDIX B

TECHNICAL SPECIFICATIONS

<u>TITLE</u>	<u>NUMBER</u>
TRANSPORTATION OF CONTAMINATED MATERIALS	001-SP000-003
CONTAMINATED EARTHWORK AND MISCELLANEOUS DEMOLITION	001-SP000-005
UNCONTAMINATED EARTHWORK	001-SP000-006
FUEL PIPING WELDING AND WELD EXAMINATION	SECTION 15116
FUEL PIPING	SECTION 15486

DEPARTMENT OF THE NAVY

SOUTHERN DIVISION

TECHNICAL SPECIFICATION

FOR

TRANSPORTATION OF CONTAMINATED MATERIALS

2	4/12/95	Revised to reduce submittals	TD <i>TD</i>	TLP <i>TLP</i>	TRW <i>TRW</i>	JRM <i>JRM</i>
1	10/6/94	Revised notice to transporter concerning lead time	TD	KCN	KCN	JRM
0	8/2/94	Issued for use	KCN	TLP	TRW	JRM
No.	Date	REASON FOR REVISION	BY	CHECK	SUPV	PE
ORIGIN		Transportation of Contaminated Material	TECHNICAL SPECIFICATION			
			001-SP000-003		REV. 2	
			SHEET 1 OF 20			

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**TECHNICAL SPECIFICATION
FOR
TRANSPORTATION OF CONTAMINATED MATERIALS**

1.0 GENERAL

1.1 PURPOSE

This Specification addresses requirements and conditions that apply to transportation of hazardous material(s) (HM), hazardous waste(s) (HW), and contaminated material(s) (CM) at various project and construction job sites. The Subcontractor, Common Motor Carrier (if different), and motor vehicle operator(s) shall be knowledgeable of and comply with Federal Department of Transportation (DOT) regulations (49 CFR), and Environmental Protection Agency (EPA) regulations (40 CFR). Not all transport operations defined herein may be required. Reference is directed to applicable Subcontract Scope of Work and Design Drawings for specific services required.

1.2 ABBREVIATIONS

The abbreviations listed below, when used in this Specification, have the following meanings:

AAR	Association of American Railroads
BEI	Bechtel Environmental, Inc.
CDL	Commercial Driver's License
CFR	Code of Federal Regulations
CM	Contaminated Material
COFC	Container on flat car
DOT	Department of Transportation
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
HM	Hazardous Material
HW	Hazardous Waste
ICC	Interstate Commerce Commission
ISO	International Standards Organization
LSA	Low Specific Activity
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated Biphenyl
RCRA	Resource Conservation and Recovery Act
RQ	Reportable quantity TSCA Toxic Substance Control Act
TSDF	Treatment, Storage, and Disposal Facility

1.3 QUALITY STANDARDS

The quality standards, as defined by Bechtel Environmental, Inc. (BEI) and Federal DOT and EPA regulations [i.e., Code of Federal Regulations (CFRs)] applicable to this Specification are identified herein and are applicable directly or indirectly to:

- roll-on/roll-off bimodal containers
- transporting vehicle (also referred to as motor vehicle)
- rail cars (flat, box, gondola)
- equipment and material
- packaging, labeling, marking, placarding, handling, and transporting of HM, HW, and CM
- qualifications of Subcontractor provided personnel.

The following CFRs, which are a codification of the general and permanent rules published in the Federal Register by the Executive departments and agencies of the Federal Government, are identified in this Specification for the purpose of quality standards. Failure to identify an applicable CFR does not imply elimination of required Subcontractor knowledge and compliance.

Title	No.	CFR Regulations Title
40	262	"Standards Applicable to Generators of Hazardous Waste"
40	263	"Standards Applicable to Transporters of Hazardous Waste"
40	761	"Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions"
49	171	"General Information, Regulations and Definitions"
49	172	"Hazardous Materials Table, Special Provisions, Communications, Emergency Response Information and Training Requirements"
49	173	"Shippers - General Requirements for Shipments and Packagings"
49	177	"Carriage by Public Highway"
49	178	"Specifications for Packagings"
49	383	"Commercial Driver's License Standards; Requirements and Penalties"
49	385	"Safety and Fitness"
49	387	"Minimum Levels of Financial Responsibility for Motor Carriers"
49	391	"Qualifications of Drivers"
49	392	"Driving of Motor Vehicles"
49	393	"Parts and Accessories Necessary for Safe Operation"

Title	No.	CFR Regulations Title
49	395	"Hours of Service of Drivers"
49	396	"Inspection, Repair, and Maintenance"
49	397	"Transportation of Hazardous Materials; Driving and Parking Rules"
49	1300	"Passenger and Freight Tariffs and Schedules (of Subtitle B, "Other Regulations Relating to Transportation"; Subchapter D, "Tariffs and Schedules")"

Quality, where standards are not identified in this Specification, will be reviewed by BEI for approval on a case-by-case basis. Replacement of material, equipment, or personnel (including time lost) due to failure to meet the Subcontract specified quality standards, or BEI approval when standards are not identified, shall be at the Subcontractor's expense. When requested, and at no cost to BEI, the Subcontractor shall provide material samples, manufacturer specifications, and documentation in support of quality standards.

1.4 EQUIPMENT, MATERIAL, AND PERSONNEL REQUIRED

Equipment, material, and personnel provided to BEI by the Subcontractor shall be as follows:

1.4.1 Transportation by Highway

- Transport vehicles (e.g., dry van, flatbed, roll-off, lowboy, and ocean style trailers; truck tractors; and roll-off and ocean style containers) that meet the requirements of 49 CFR 393 and 396. Bulk liquids shall be transported in DOT Specification 311 and 312 transport vehicles.
- Securement systems, especially tiedown assemblies (e.g., chains, cables, steel straps, and fiber webbing); load binders and hardware (e.g., hooks, bolts, welds, or other connectors); and winches or other fastening devices that are without visual damage from wear or misuse and that meet the requirements of 49 CFR 393, Subpart I.
- Weatherproof tarpaulins that are without visual damage from wear or misuse and of a quality highly resistant to tears, rips, snags, punctures, abrasion, cracking, peeling, and weathering, and that are suitable for use as an external cargo wrap.
- Side boards that are suitable as a frame for use with tarpaulins to form a closed transport vehicle.
- Motor vehicle operators who meet the requirements of 49 CFR 383, 391, 392, 395, 397, and 172 Subpart H, and 177. A signed affidavit stating that all vehicle operators handling hazardous waste are HAZMAT trained in accordance with 49 CFR Part 172, Subpart H will be made available on request for inspection by BEI at the job site.

1.4.2 Roll-On/Roll-Off Bimodal Containers

Delivery

The Subcontractor shall deliver to project job sites roll-on/roll-off bimodal containers for BEI use. BEI will order containers through work releases which identify the job site, delivery rate (e.g., two per day), and the date of the first delivery. Every effort will be made by BEI to give at least 10 work days notice to the Subcontractor; however, some instances may occur where only 2 days notice will be provided. Other delivery specific details will be shown in the work release.

Design, Construction, and Testing

All Subcontractor roll-on/roll-off bimodal containers provided for BEI use shall be designed, constructed, and tested in accordance with the Association of American Railroads (AAR) Specification M-930-90 and shall be capable of meeting the DOT requirements as a strong-tight container. Each container offered to BEI shall be identified with a certification plate as prescribed in Section 6.13 of AAR Specification M-930-90. The Subcontractor shall have available on request details the materials of construction, door closure and fasteners, and hold down and lifting pads for the roll-on/roll-off bimodal containers.

Size of Roll-On/Roll-Off Bimodal Containers

The roll-on/roll-off bimodal container to be provided by the Subcontractor shall be approximately 20 cubic yard or 25.5 cubic yard capacity or as noted in the work release. The Subcontractor shall provide BEI, the external and internal dimensions and the tare weight and gross weight rating of the container.

Condition of Containers

At the time of delivery, the Subcontractor shall provide containers janitorially clean (broom clean), free of extraneous debris, holes, and free of excess scale and corrosion which could be an impediment to decontamination in the event the containers should become contaminated.

Liners

The Subcontractor shall provide polyethylene liners that have a polyethylene nominal thickness of at least 6 mils. The liner shall be fabricated to fit squarely in the corners to virtually eliminate tearing on filling and shall be watertight. Alternate materials and thicknesses for the liner may be offered by the Subcontractor, but the proposed change must be approved in advance by BEI as an equivalent liner.

The Subcontractor shall install or provide written procedures for the bag liner installation and proper assembly of roll-on/roll-off bimodal containers to meet DOT requirements as strong-tight and sift-proof containers during transport.

1.4.3 Rail Freight Cars and Siding Requirements

Defects and Restrictions

The Subcontractor shall provide BEI with rail freight cars as specified in the work release. All rail freight shall be in good order and shall contain no defects in accordance with 49 CFR Part 215, Subpart B, or any restrictions at time of delivery as defined in 49 CFR Part 215, Subpart C.

Freight Car Load Ratings

The Subcontractor shall provide rail freight cars having a load capacity of not less than 75 tons nor more than 100 tons. The ratings of the rail gondola cars shall be mainly 95- and 100-ton cars. Written approval, in advance, shall be obtained from BEI in order to supply rail gondola cars having a load capacity rating of less than 90 tons.

Qualification of Rail Transportation Crew

All Subcontractor personnel who handle and process BEI loaded rail freight cars and intermodal packages shall be HAZMAT trained in accordance with 49 CFR 172.700, Subpart H.

Freight Car Cleanliness

The rail freight cars provided by the Subcontractor shall be free of loose debris and be janitorially clean (broom clean).

Rail Gondola Car

The Subcontractor shall provide to BEI rail gondola cars that are free of internal appurtenances which could affect the integrity of sift-proof liners that BEI will provide and install.

The Subcontractor-provided rail gondola cars shall have an internal height of not less than 4.5 feet nor greater than 5.75 feet or as specified in the work release.

The Subcontractor shall provide cars whose internal surfaces, in BEI's opinion, are free of major rust or scale which could affect the ability to easily decontaminate the car in the event it became contaminated.

Rail Siding Maintenance

Subcontractor-provided rail sidings (i.e., frogs, switches, ballast, crossties, rails, fastenings) shall be maintained to at least a Class 1 standard throughout any shipping campaign in accordance with 49 CFR Part 213.

1.5 PACKAGING, LABELING, MARKING, AND PLACARDING

1.5.1 Transportation by Highway

Packaging, labeling, marking, and placarding will be in compliance with 49 CFR 172, 173, 178, and 40 CFR 262, 263, and 761. The motor vehicle operator(s) shall perform an inspection to verify, based on their training in accordance with 49 CFR 172, Subpart H, and experience, the packaging, labeling, marking, and placarding are in accordance with the requirements listed above and the accompanying shipping documents. Upon acceptance of the load for transport, the Subcontractor shall be responsible for maintaining the integrity of packaging, labeling, marking, placarding, and the accompanying shipping documents in compliance with 49 CFR 177.800, Subpart A. BEI shall be notified immediately (see Section 6.0, "Accidents Involving Transport Vehicles," for notification procedures) upon the Subcontractor's discovery of a change in the condition of packaging, labeling, marking, or placarding (e.g., changes due to equipment failure, packaging failure, accident, adverse weather conditions, vandalism, or theft). Concerns or questions related to the inspection, maintenance, or notification procedures are to be addressed to the BEI site manager or his designee prior to the motor vehicle operator's load acceptance.

1.5.2 Roll-On/Roll-Off Bimodal Containers

BEI will inspect the roll-on/roll-off bimodal container in accordance with the Specification at the time of Subcontractor delivery and, upon acceptance, will direct where to place the container.

BEI may elect to survey the roll-on/roll-off bimodal container at the time of delivery for the presence of hazardous materials. BEI will install the Subcontractor provided liner, fill the container, and seal it for shipment in accordance with Subcontract provided packaging procedures.

BEI will mark, label, placard, certify the packaging, and prepare required shipping documents in accordance with DOT requirements.

1.5.3 Rail Freight Cars

BEI will offer strong-tight packages to be used for packaging of some waste. These packages will be designed to meet AAR Specification M-930-90, "Closed Van-Type Dry Cargo Containers for Domestic Container-on-Flat-Car (COFC) Service." BEI will mark, label, certify, and provide shipping papers describing the packaged container contents in full compliance with 49 CFR Parts 171, 172, and 173. These containers will be turned over to the Subcontractor for loading and shipment.

Schedule adjustments shall be made by BEI, when needed, that result from weather conditions that prevent loading of transport materials into or onto rail freight cars. The BEI Site Superintendent or designee will notify the Subcontractor of all necessary schedule adjustments due to inclement weather.

The Subcontractor shall provide equipment, such as but not limited to, clevis, slings, cranes and bridges, lifting and handling procedures, training of workers and supervision in order to transfer BEI packages to rail flat cars and to provide blocking, bracing, and load securement for the packages such that the packages will not move or fall during conditions normally incident to transportation.

BEI shall placard the rail freight cars and intermodal packages in accordance with 49 CFR Part 172, Subpart F. Subcontractor rail crew members shall replace placards and car certificates that become lost in transit at the next inspection point in accordance with 49 CFR Part 174.59.

2.0 MOTOR VEHICLE REQUIREMENTS

2.1 GENERAL

The Subcontractor shall provide equipment that is appropriate to accomplish successful transportation of HM, HW, or CM either from project sites or to or from the TSDF. Motor vehicles shall be maintained and operated in accordance with the manufacturer's recommendations, Occupational Safety and Health Administration (OSHA) requirements, federal regulations as specified in 49 CFR 393, 396, and 397, and applicable state and local regulations. The Subcontractor shall take all precautions necessary for safe operation of his equipment/vehicle and to safeguard the public and the environment from injury or accidental release of HM, HW, or CM.

The Subcontractor shall provide to BEI a list of the transport vehicles to be used, identification number, type, and size. These transport vehicles shall meet the requirements of the transportation work release (example work release is Section 8.0).

2.2 MOTOR VEHICLE INSPECTIONS

All vehicles shall be inspected by the Subcontractor in accordance to 49 CFR 393, "Parts and Accessories Necessary for Safe Operation," and shall conform to all applicable local, state, and federal requirements for registration, insurance, inspection, certification, and performance.

All motor vehicle inspections shall be performed by qualified inspectors as required by 49 CFR 396.19, "Inspector Qualifications." The Subcontractor shall have available for inspection by the BEI site representative a copy of the current certificate of commercial motor vehicle inspection prior to any transportation activities (or a statement certifying that all motor vehicles supplied to BEI have been inspected in accordance with the requirements of 49 CFR 396.17, 396.19, and 396.23). Brake inspections shall be performed by a certified brake inspector for commercial motor vehicles as described in 49 CFR 396.25, "Qualifications of Brake Inspectors."

Prior to being placed into use, and at least once each day, in accordance with the requirements of 49 CFR 396.11, "Driver Vehicle Inspection Report," and 396.13, "Driver Inspection," the motor vehicle operator shall perform a safety inspection of the motor vehicle.

All motor vehicles (and equipment) provided shall be subject to a quality surveillance by BEI prior to loading to determine that the motor vehicle (and equipment) in accordance with 49 CFR 393 and 396. Such inspection and approval shall not relieve the Subcontractor of responsibility for the use of proper equipment. **INSPECTION OF VEHICLES BY BEI DOES NOT IMPLY CERTIFICATION.**

Motor vehicles determined by BEI or the Subcontractor to be potentially unsafe and/or unsuitable for their intended use shall be removed from the site until repaired by the Subcontractor at his expense or replaced with a different motor vehicle. Repaired or replaced motor vehicles will receive new inspections to determine if repairs are correct and meet inspection standards. Time lost due to reinspection shall be at the Subcontractor's expense.

3.0 MOTOR VEHICLE OPERATOR REQUIREMENTS

3.1 QUALIFICATION OF MOTOR VEHICLE REQUIREMENTS

Before transportation services are rendered, motor vehicle operators (drivers) shall meet the requirements, including all required endorsements (and shall provide evidence of such) specified in 49 CFR 383, "Commercial Driver's License Standards: Requirements and Penalties"; 391, "Qualifications of Drivers"; and 172, Subpart H, "Training."

The following information must be available for inspection by BEI prior to any transportation activity:

- A medical examiner's certificate, or a legible photographic copy of a certificate, or a statement attesting to a record on file with the Subcontractor of a medical examiner's certificate on each motor vehicle operator's physical qualifications to operate a motor vehicle in accordance with 49 CFR 391.43, "Medical examination; Certification of Physical Examination," and 49 CFR 391.41, "Physical Qualifications for Drivers."
- A statement certifying the Subcontractor, at least once every 12 months, reviews the driving record of each motor vehicle operator it employs in accordance with 49 CFR 391.25, "Annual Review of Driving Record." Included in this review shall be a list of all violations of motor vehicle traffic laws in accordance with 49 CFR 391.27, "Record of Violations."
- A valid commercial driver's license (CDL) for each motor vehicle operator.

3.2 MOTOR VEHICLE OPERATORS NOT QUALIFIED

Motor vehicle operators may not be deemed qualified or acceptable in accordance with 49 CFR 391.51, "Disqualification of Drivers." Motor vehicle operators deemed not acceptable for transporting HW, HM, or CM shall be replaced at Subcontractor's expense, including time lost.

4.0 OTHER REQUIREMENTS

4.1 MOTOR VEHICLE WEIGHT REQUIREMENTS

Prior to arrival for loading, all Subcontractor motor vehicles provided, shall be weighed at an offsite certified (certified calibrated) scale. Upon arrival for loading, each vehicle operator shall provide a legible copy of the certified tare (light) weight receipt for that motor vehicle.

Prior to releasing the loaded motor vehicle for transport, the Subcontractor will verify motor vehicle and load weight by requiring all loaded motor vehicles (truck, trailer, and load) to be weighed at an offsite certified scale located within 30 miles of the project site. The Subcontractor shall provide BEI with a legible copy of the certified loaded weight receipt for each motor vehicle.

Only certified tare- and loaded-weight receipts containing the following information will be accepted by BEI:

- Motor vehicle identification number
- Date motor vehicle was weighed
- Name, address, and telephone number of offsite certified scale
- Weigh master's signature

Gross weight of loaded motor vehicles (tractor, trailer, and load) released from the site(s) shall not exceed gross vehicle weight/road weight restrictions. If a motor vehicle (tractor, trailer, and load) exceeds gross vehicle weight, the motor vehicle is to return to the jobsite to off-load the excess weight at the Subcontractor's expense.

4.2 TRANSPORTATION SAFETY RATING

The Subcontractor shall have available for inspection by BEI a current copy of his Federal Motor Carrier Safety Rating assigned by the Federal Highway Administration (FHWA) as set forth in 49 CFR 385, "Determination of Safety Rating." A Subcontractor receiving notification by the FHWA of a "conditional" or "unsatisfactory" rating will be ineligible to transport HM, HW, or CM for BEI.

4.3 TRANSPORTER EPA ID NUMBER

If hazardous wastes are to be transported, the Subcontractor shall submit to BEI a copy of their (or their lower-tier subcontractor's) completed RCRA Part A waste transporter application and a notarized copy of their EPA waste transport identification number. If polychlorinated biphenyls (PCBs) are being transported, the Subcontractor is also required to have submitted a separate "Notification of PCB Activity" Form 7710-53 to EPA as required by 40 CFR 761.202 and 761.205. A legible copy shall be provided to BEI prior to BEI's release of the load.

4.4 CARRIER SURETY BOND OR POLICIES OF INSURANCE

The Subcontractor shall submit to BEI proof of insurance on DOT Form MCS-82 or MCS-90, as required in 49 CFR 387.

4.5 TRANSPORTATION REPRESENTATIVE

The Subcontractor shall designate a competent, authorized representative, acceptable to BEI, that is knowledgeable in DOT hazardous materials regulations to represent and act for the Subcontractor. The Subcontractor shall inform BEI in writing of the name and address of such a representative.

4.6 REQUIRED PERMITS AND LICENSES

The Subcontractor shall obtain all required permits and/or licenses and shall make all required notifications for transporting HM, HW, or CM from project sites to the TSDF (or to another site), including any over-dimension/over-weight permits and/or notifications.

4.7 DOCUMENTATION

The Subcontractor shall complete and be responsible for all documents/shipping papers in accordance with 49 CFR 177.817 or 49 CFR 174.24, "Shipping Papers." The Subcontractor shall comply with the directions provided elsewhere in the subcontract document prior to shipment regarding TSDF documents/shipping papers. All documents/shipping papers shall be kept with shipments at all times. Subcontractor documents will include the following when applicable:

- Signed Uniform Hazardous Waste Manifest/Bill of Lading
- Exclusive Use Control Instruction
- Vehicle Survey Release Form (completed at the site prior to vehicle release)
- TSDF specific forms
- Emergency Response Guide Information

The Subcontractor shall submit a copy of the signed Bill of Lading, the Uniform Hazardous Waste Manifest (when required under 40 CFR 262), and any TSDF specific forms. These forms shall be included with the Subcontractor's invoice for payment of transportation services.

4.8 TRANSPORTATION ROUTES AND EMERGENCY RESPONSE PLAN

4.8.1 Transportation by Highway

The Subcontractor shall meet all existing federal, state, and local regulations for traffic control and motor vehicle operation for transportation of HM, HW, or CM on public roads and highways.

If hazardous wastes are transported, the Subcontractor shall have available for inspection by BEI a written transportation Emergency Response Plan, which includes instructions for compliance with 49 CFR 171.15, "Immediate Notice of Certain Hazardous Materials Incidents," and 172, Subpart G, "Emergency Response Information." The plan shall include all aspects and considerations for HM, HW, or CM transportation hazards that may arise during transportation operations, and shall be available for BEI review 10 working days prior to any waste hauling.

The Subcontractor shall notify BEI immediately upon learning that a transportation-related accident has occurred as stated in Section 6.0, "ACCIDENTS INVOLVING TRANSPORT VEHICLES," of this Specification.

The Subcontractor shall have available on request a proposed transportation route that is in compliance with 49 CFR 397, "Transportation of Hazardous Materials; Driving and Parking Rules" [397.9, "Routes," and 397, Subpart D, "Routing of Class 7 (Radioactive) Materials"] to be used between the project site (or TSDF) and TSDF (or another project site) prior to transport.

The cleanup cost for any release of HM, HW, or CM by the Subcontractor shall be the responsibility of the Subcontractor. The cleanup operations shall be performed at the expense of the Subcontractor. Cleanup shall be performed immediately.

4.8.2 Railroad Routing Map

The Subcontractor shall make available to BEI upon request a map showing the proposed routing of rail freight cars from point of origin to the disposal facility. The routing map should identify all utilized railroads and indicate key milestones expressed in travel days from the time leaving the point of origin.

4.9 TRACKING AND NOTIFICATION

4.9.1 Transportation by Highway

The Subcontractor shall have in operation a vehicle tracking system to be used on all BEI shipments. The Subcontractor shall provide the capability to recall or reroute a shipment due to unforeseen events which may require the motor vehicle/load to return to the origination point or be rerouted to an alternate TSDF.

BEI shall be notified if the Subcontractor's motor vehicle is delayed due to equipment failure, accident, inclement weather, or any condition that prevents the motor vehicle/load from continuing on the approved route and/or transportation schedule.

The Subcontractor shall contact the TSDF, or other destination, 24 hours in advance to schedule an arrival time. The Subcontractor shall be responsible for contacting the pickup and destination facilities before shipments begin, to identify appropriate procedures at the individual facilities (i.e., opening and closing times, pass requirements, etc.). Any cost incurred due to failure to comply with these procedures, or due to lack of appropriate planning, shall be the responsibility of the Subcontractor. The contact and telephone

number for the pickup and destination facilities will be provided with the Work Release or as otherwise provided. BEI shall be notified within 24 hours of the scheduled delivery date if the shipment was not delivered to the TSDF on the scheduled delivery date.

4.9.2 Transportation by Rail

The Subcontractor shall notify BEI of any abnormal occurrences identified in the following subsections or any similar, but not identified, occurrences.

Location Tracking and Notification

The Subcontractor shall have in operation a system which identifies the location of each BEI rail freight car grouping in transit from the project site to the designated TSDF.

The Subcontractor shall contact the disposal site 24 hours in advance of the scheduled arrival time.

Movement of Defective Cars for Repair

The Subcontractor shall notify BEI as soon as practical whenever a loaded rail freight car has been determined to have a defective component. The Subcontractor shall relay to BEI's Subcontractor Administrator the related information and restrictions imposed by the designated inspector in accordance with 49 CFR Part 215.9.

Reporting Hazardous Material Incidents and Abnormal Occurrences

The term *abnormal occurrences* means any of, or similar to, the following conditions noted during transport of hazardous materials, substances, or wastes:

- failure of the watertight, sift-proof liner
- broken tamper-indicating devices or package seals
- deviation from the designated routing maps
- any transportation condition that is not normally incident to transportation

As soon as practical, the Subcontractor shall notify BEI of an incident which occurs during transportation in which HM, HW, or CW materials are involved, whether a report is or is not required by 49 CFR Parts 171.15 and 171.16.

Leaking Rail Freight Cars and/or Intermodal Packages

The Subcontractor shall notify BEI immediately of any noted leakage of material from any rail freight car or intermodal package during transportation.

Emergency Response Plan

The Subcontractor shall make available to BEI (upon request) a written transportation Emergency Response Plan. The plan shall include instructions for compliance with 49 CFR Part 171.15, "Immediate Notice of Certain Hazardous Material Incidents." The plan shall include all aspects and considerations arising from transport incidents involving hazardous substances, materials, or wastes. The plan shall be available to BEI for review at least 10 working days in advance of any waste transportation as scheduled. The plan shall include the name of the Subcontractor emergency response coordinator.

4.10 ADDITIONAL REQUIREMENTS FOR LOOSE CONVEYANCE LOADS

Vehicles used for loose conveyance transport of soil shall meet the following requirements:

- (1) The truckbed shall be free of drain holes, cracks, or other conditions that may allow leakage of soil.
- (2) If the vehicle has a tailgate for dumping, the Subcontractor vehicle operator shall demonstrate to the BEI site superintendent or designee that the tailgate can maintain a seal. A vehicle that cannot maintain a seal will be repaired or replaced by the Subcontractor before being placed into service. If seals fail after the vehicle is placed into service, they are to be repaired immediately, and BEI shall be notified.
- (3) Vehicles are not to be equipped with side boards while transporting loose conveyances.
- (4) Material shall not be loaded higher than one foot below the top of the vehicle side walls.
- (5) Tarpaulin covers shall be installed and used on all vehicles. Before being installed, sharp objects and/or protrusions are to be eliminated to prevent cutting or puncture of the tarpaulin.
- (6) Tarpaulins are to be firmly secured over the soil with sufficient overlap so that the material will not be blown from the vehicle during transport.

5.0 MOTOR VEHICLE LOADING AND UNLOADING OPERATIONS

All areas and buildings of the project/jobsites (or TSDF) are off limits to Subcontractor motor vehicles (and motor vehicle operators) except those areas and buildings designated by BEI (or TSDF). Motor vehicle operators shall remain inside the tractor cab at all times, unless directed otherwise by BEI (or TSDF). Staging of vehicles for loading will be at the direction of the BEI site manager. Where space is limited, the Subcontractor will be given instructions as to the maximum number of vehicles to be loaded and a schedule for loading.

All Subcontractor motor vehicles will be monitored by BEI for external contamination prior to being allowed onto project/job sites. Subcontractor motor vehicles shall arrive at the site sufficiently clean to allow accurate monitoring. Motor vehicles shall be free of dried mud, dirt, grease, or other accumulations.

If accurate monitoring is unsuccessful, due to excess mud, dirt, grease, or other accumulations, the motor vehicle shall be removed from the site and cleaned. Motor vehicle cleaning and time lost will be at the Subcontractor's expense. Only motor vehicles determined to be free of contamination will be allowed onto project/job sites.

Loading and unloading operations will be conducted in a highly controlled manner that prevents contamination of motor vehicles. BEI will verify that motor vehicles are free of contamination before their release from the loading/unloading area. Subcontractor motor vehicles will be checked for contamination as appropriate prior to leaving the loading/unloading area.

Motor vehicles that become contaminated during loading/unloading operations at the jobsite will be decontaminated by BEI. After decontamination, the motor vehicle will be checked again by BEI to verify that it is free of contamination prior to its release for transport.

Load configurations shall be a joint effort of BEI and the motor vehicle operator(s). After loading, and prior to leaving the site (or TSDf), the motor vehicle operator(s) shall perform an inspection to verify the load is arranged and secured properly (based on experience and training, and in accordance with 49 CFR 393, Subpart I, "Protection Against Shifting or Falling Cargo," and 392.9, "Safe Loading").

Upon acceptance of the load for transport, the Subcontractor shall be responsible for maintaining the integrity of the load, the load arrangement, and any security seals. The motor vehicle operator shall examine and periodically reexamine the load (load inspections during transit do not apply to sealed trailers, only to the inspection of security seals) and its load-securing devices as may be necessary to maintain the integrity of the load and the load arrangement in accordance with 49 CFR 392.9.

The Subcontractor shall be in compliance with the requirements of Section 6.0, "Accidents Involving Transport Vehicles," of this Specification, upon discovery of a change in the condition of BEI's load, load arrangement, or security seals (e.g., changed due to equipment/packaging failure, motor vehicle accident, adverse weather conditions, vandalism, or theft) which involves a release of HM, HW, or CM.

6.0 ACCIDENTS INVOLVING TRANSPORT VEHICLES

In the event of an accident, the Subcontractor shall follow the procedures outlined in its Emergency Response Plan and shall be in compliance with the requirements of 49 CFR 390.15, "Assistance in Investigations and Special Studies, Subpart E, Accidents and License Revocation: Duties of Driver," and 172, Subpart G, "Emergency Response Information."

In the event of an accident involving a release of HM, HW, or CM, the Subcontractor shall notify BEI immediately upon learning of the accident, and if initially unsuccessful, will continue to attempt to contact BEI.

Notification of an accident shall include location, date and time of the accident, resultant damage or injury, person(s) involved, probable cause, condition of the load, if HM, HW, or CM was released and the amount, and any other pertinent information concerning the accident. Also to be included if applicable,

are weather conditions, distance to water sources, government agencies on the scene and a telephone number where communications can be maintained.

The motor vehicle operator shall comply with all directions provided by BEI (unless counter to FHWA regulations) and/or the laws and ordinances of the jurisdiction in which the motor vehicle was in operation at the time of the accident. BEI will issue instructions regarding continued transportation of the load. The motor vehicle operator shall remain with the motor vehicle until assistance arrives or until otherwise directed.

The Subcontractor shall submit to BEI within five days of an accident or incident involving a release of HM, HW, or CM a written report which shall include the location, date and time of the accident or incident, resultant damage or injury, person(s) involved, probable cause, the amount of HM, HW, or CM released, government agencies involved, and any other pertinent information concerning the accident or release. In addition, when an accident or incident occurs involving the release of HM, HW, or CM, the Subcontractor shall submit to BEI copies of any accident/incident reports required by State or other governmental entities.

7.0 SUBMITTALS

BEI documentation requirements are summarized in the Subcontractor Submittal Requirements Summary of the issued Subcontract package. BEI will determine if documentation is complete as submitted by the Subcontractor, and reserve the right to reject and require resubmittal of any submittal that in BEI's opinion does not meet the Subcontract requirements.

Certificates that are specific to each individual motor vehicle operator (e.g., copy of CDL, Medical Examiner's Certificate) must be available for inspection by BEI site superintendent at the job site. Nonshipment specific submittals (e.g., Carrier Surety Bond, or Policies of Insurance) required upon acceptance of the Subcontract award, must be received within five working days from time of Subcontract award notification and acceptance. Status of the submittals will be made to the Subcontractor by BEI within three working days following the receipt of required submittals. Rejected submittals must be corrected and received by BEI within three working days of notification of submittal rejection. All submittals must be accepted by BEI prior to the start of onsite work.

The minimum required transportation submittals include:

- List of vehicles, type, and size to be provided
- Proof of insurance and bonding
- Name of Subcontractor Representative and contact phone number
- Dimensions and weights of containers

For hazardous materials:

- EPA transporter ID number
- Manifesting documentation

To be available for inspection at the job site:

- Proof of medical qualifications
- Proof of vehicle inspection, daily inspection report, and brake certification
- Proof of Hazmat training
- Federal Motor Carrier Safety Rating
- Route maps
- Emergency Response Plan (if required)

8.0 TRANSPORTATION WORK RELEASE

The attached example is typical of the information provided in a transportation work release.

WORK RELEASE

Subcontract No. 22567-

WORK RELEASE NO. _____

Work Included:

The work to be performed under this work release will include the items contained below carried out in accordance with the Subcontract documents and technical specifications.

Type of Work: Equipment Lease Profile/ID Transportation
 Treatment Disposal

Site Location:

~ EXAMPLE FORM ~

IR-3, Truman Annex DDT Mixing Area
Naval Air Station
Keywest, Florida

NOTE: Waste will be profiled prior to excavation and then stockpiled for loading purposes.

Required Equipment	Quantity Required	Date Required	Lease Duration
Tractor	<u>4-8 Per Day</u>	<u>08/07 thru 08/28/95</u>	<u>0 - 3 Months</u>
Flatbed Trailer	<u>Not Required</u>	_____	<u>3 - 6 Months</u>
Roll-Off Trailer	<u>Not Required</u>	_____	<u>6 - 9 Months</u>
Roll On/Roll Off Container	<u>Not Required</u>	_____	
Overpacks	<u>Not Required</u>	_____	
Dump-Style Trailer	<u>4-8 Per Day</u>	<u>08/07 thru 08/28/95</u>	
Scales to Weigh Trucks	<u>1 Each</u>	<u>08/07 thru 08/28/95</u>	

Schedule for Work Effort: Monday thru Thursday Loading Operation. Arrival Times 7:30-1st Truck, 8:30-2nd Truck, 9:30-3rd Truck, 10:30-4th Truck, 12:30-5th Truck, 1:30-6th Truck, 2:30-7th Truck, 3:30-8th Truck See attached Schedule for Further Info.

Material to be Transported: Hazardous Waste-U061 (DDT).

Container Types:

Drums Quantity ea. Total Estimated Weight of Each Vehicle: _____
 Roll on/Roll off Quantity ea. Total Estimated Weight of Each Vehicle: _____
 Other Quantity 63 ea. Total Estimated Weight of Each Vehicle: 80,000 lbs.

Description for Other: Dump Style Truck shall meet the criteria of a sift-proof strong tight container.

Additional Information or Instructions: Tentative Schedule Provided; however, dates may shift +/- 30 days. Waste shall be sampled while in-situ and then stockpiled for transport.

Prepared By: _____ Date: _____

Approved By: _____ Date: _____

Subcontractor Concurrence: _____ Date: _____

DEPARTMENT OF THE NAVY

SOUTHERN DIVISION

TECHNICAL SPECIFICATION

FOR

CONTAMINATED EARTHWORK AND MISCELLANEOUS DEMOLITION

NO.	DATE	REVISION	BY	CHECK	SUPV	PE
1	1/9/95	Revised to CSI format and Section 3.8	KK	GAC	AE	JRM
0	7/21/94	Issued for use	KK	RTJ	PH	RBB
ORIGIN		Contaminated Earthwork	NO. 22567			
			TECHNICAL SPECIFICATION			REV
			001-SP000-005			1
			SHEET 1 OF 10			

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PART 1 GENERAL

1.1 SCOPE

This Specification provides the technical requirements for the excavation of contaminated material and miscellaneous demolition. Not all work defined herein is necessarily required; reference is directed to the Scope of Work and engineering drawings for specific services required.

1.2 WORK INCLUDED

- 1.2.1 Furnishing labor, materials, tools and equipment.
- 1.2.2 Installing and maintaining dust, sediment and erosion control.
- 1.2.3 Demolishing existing concrete and asphalt surfaces.
- 1.2.4 Providing shoring as needed.
- 1.2.5 Securing area (temporary barriers) as needed.
- 1.2.6 Excavating contaminated material.
- 1.2.7 Decontaminating subcontractor-supplied equipment.

1.3 WORK NOT INCLUDED

- 1.3.1 Establishing limits of excavation.
- 1.3.2 Sampling and testing excavated material.
- 1.3.3 Backfilling
- 1.3.4 Treating contaminated material.
- 1.3.5 Loading and transporting contaminated material.
- 1.3.6 Clearing and grubbing is included in Technical Specification 001-SP000-002.
- 1.3.7 Operations of decontamination facility, other than that required for subcontractor equipment decontamination.

1.3.8 Temporary storage/placement of contaminated material.

1.3.9 Disposal of decontamination water.

1.4 REFERENCED CODES AND STANDARDS

Unless otherwise specified or shown, the latest edition at the time of bid of the following Codes and Standards shall apply to the extent indicated herein:

OCCUPATIONAL SAFETY AND HEALTH (OSHA)

29 CFR 1910 Occupational Safety and Health Regulations for General Industry

29 CFR 1926 Occupational Safety and Health Regulations for Construction

The Subcontractor shall comply with all federal, state, local, and facility codes and standards applicable to the propose work.

1.5 SUBMITTALS

Not all submittals defined herein may be required. Only engineering document requirements as summarized in Exhibit F (Attachment A), "Subcontractor Submittal Requirements Summary" (SSRS), shall apply. Submittals identified shall meet the detailed requirements defined herein. Bechtel will determine if documentation is complete as submitted and reserves the right to require the resubmittal of any submittals that do not meet specified requirements.

1.5.1 Equipment List

Submit list of equipment for use in contaminated earthwork. The list shall include the type, size, and rated capacity of the equipment proposed.

1.5.2 Drainage, Dewatering, and Stream Diversion Design

Submit proposed drainage, dewatering, and stream diversion design prior to construction not indicated on engineering drawings. Design shall be signed and stamped by a Professional Engineer licensed in the state where the work is performed.

1.5.3 Shoring Design and Calculations

Submit proposed shoring design and engineering calculations or alternate slope protection measures in accordance with Subpart P, OSHA 29 CFR 1926. Design shall be signed and stamped by a Professional Engineer licensed in the state where the work is performed.

1.5.4 Excavation Daily Inspections

Submit daily inspections of the excavation areas in accordance with OSHA 29 CFR 1910 and 1926 prior to commencing work each day.

1.5.5 Shoring Inspector

Submit name and resume of the shoring inspector to be provided for bid evaluation. Inspector shall be qualified in accordance with OSHA 29 CFR 1926, Subpart P.

1.5.6 Professional Engineer's License

Submit copy of Professional Engineer's license for bid evaluation (for the state where work is performed) of Professional Engineer(s) used for the shoring and drainage designs.

1.5.7 Alternate Methods

Submit copy of alternate shoring method when applicable at least one week prior to use. Design shall be signed and stamped by a Professional Engineer licensed in the state where the work is performed.

1.5.8 Temporary Decontamination Facility Plan

Submit plans for a temporary decontamination facility at least one week prior to mobilization.

1.5.9 Sediment Barriers

Submit copy of materials and plan for sediment barriers prior to use.

1.5.10 Erosion Control Blankets

Submit product data sheet for erosion control blankets prior to use.

1.6 QUALITY STANDARDS

Perform the work and control the quality of items and services to meet the requirements of this specification, subcontract documents, and applicable codes and standards.

PART 2 PRODUCTS

2.1 SEDIMENT BARRIERS

Materials used for sediment barriers shall consist of straw bales, hay bales, geotextile filter fabric made expressly for use as a silt screen, or other materials approved by Bechtel prior to their use. Straw and hay bales shall not be used for permanent sediment barriers unless approved by Bechtel.

2.1.1 Baled hay or straw shall be laid end to end such that no gap exists between bales. Reinforcing bars shall be #4 bar and a minimum of 2½ feet long.

2.1.2 Filter fabric shall be a material made expressly for the purpose of sediment control such as Exxon GTF 101S Silt Screen or approved equal.

2.2 EROSION CONTROL BLANKETS

Erosion control blankets shall be Curlex Blankets manufactured by American Excelsior Company or approved equal.

PART 3 EXECUTION

3.1 PRE-EARTHWORK EVALUATION

Prior to performing any earthwork, examine the work area if possible depending on the site conditions as determined by Bechtel, to identify pre-existing conditions (e.g. overhead power lines, access, etc.) that could impact the performance and completion of work. Bechtel will provide available information on the location of underground utilities. Verify these locations, provide structural support to utility lines, and coordinate inspection with and provide support to utility companies. Unless directed otherwise, the services of all underground utilities encountered during any earthwork shall be restored to their original condition. Applicable permits shall be obtained prior to commencing work unless directed otherwise.

3.2 EROSION AND SEDIMENT CONTROL

3.2.1 Potentially contaminated material shall be prevented from being eroded or transported into an uncontaminated area or an area with a lower level of contamination.

3.2.2 Temporary sediment barriers shall be installed in accordance with the subcontract documents and maintained during construction until permanent sediment barriers are in place.

3.2.3 Erosion and sediment shall be controlled by the following techniques subject to Bechtel review on a case-by-case basis:

- covering with synthetic liner material
- covering with uncontaminated soil material
- sediment barriers

3.3 DUST CONTROL

Dust shall be controlled by the following techniques subject to Bechtel review on a case-by-case basis:

- wetting with water
- wetting with a synthetic dust suppressant
- establishing temporary vegetative cover compaction
- sealing by rolling with a smooth drum
- maintaining slopes of exposed surfaces within defined limits

3.4 DRAINAGE, DEWATERING, AND STREAM DIVERSION

3.4.1 Drainage

Surface water shall be directed away from excavation and construction areas. Diversion ditches, check dams, dikes, and/or grading shall be developed and maintained during construction.

Excavated slopes and backfill surfaces shall have a minimum 3 percent slope to promote runoff and shall be protected from erosion and sloughing. Excavation slopes shall conform to Subpart P, "Excavation, Trenching, and Shoring," of OSHA 29 CFR 1926.

3.4.2 Dewatering

Unless noted otherwise, all excavations shall be kept in a dewatered condition. 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 any interference with excavation progress. Water, which has come in contact with contaminated material, shall be collected and transported to an offsite location, which is not within the scope of this specification.

3.4.3 Stream Diversion

Stream diversion(s) shall be developed as shown on the engineering drawings or Scope of Work, and maintained to prevent the spread of contamination.

3.5 BLASTING

Blasting is not permitted.

3.6 EXCAVATION

3.6.1 General

Excavation shall conform to the lines, grades, and depths identified on the engineering drawings or Scope of Work, and field-verified by Bechtel. Excavated areas shall be maintained in a clean condition, free from leaves, brush, trash and other debris. They shall be inspected and documented daily in accordance with OSHA 29 CFR 1910 and 1926 prior to commencing work.

Rocks, 6 inches or greater in any dimension, shall be separated from the soil and cleaned of most soil material by scrapers, brushes, etc. These rocks shall be left in the excavation area.

3.6.2 Contamination Control

Excavation shall be performed such that the spread of contamination is prevented. Unless indicated otherwise, the cutting edge of the excavator(s) shall be toothless and the excavation performed in the direction of surface run-off (i.e., from high to lower elevation). Contamination spread through the improper execution of the subcontract documents shall be cleaned up to the satisfaction of Bechtel at no expense to Bechtel.

3.6.3 Shoring

Shoring, including temporary sheet piling, shall be furnished and installed as necessary to protect workers, slopes, adjacent paving, structures, and utilities. Shoring, bracing, and sheeting shall be removed as excavations are backfilled to prevent cave-ins. Alternate methods (e.g. benching, sloping, trench boxes, etc.) may be used where applicable. They shall be developed in accordance with OSHA 29 CFR 1926, Subpart P.

Care shall be taken to minimize exposure of shoring or other slope protection devices to contamination. These items shall not be released from the site until they have been decontaminated in accordance with this specification.

3.6.4 Excavation Sequence

The sequence for the excavation of contaminated material shall be as follows:

- (1) Define and isolate exclusion zones identified on the engineering drawings, Scope of Work, or as directed by Bechtel.
- (2) Construct haul road identified on the engineering drawings, Scope of Work or as directed by Bechtel.
- (3) Perform initial excavation to the lines and grades identified on the engineering drawings, Scope of Work or as directed by Bechtel.
- (4) Allow excavated area to be sampled to determine if the area meets remedial cleanup standards.
- (5) Continue excavation as directed by Bechtel. Allow area to be resampled after each lift of material is removed.
- (6) Cease excavation upon direction by Bechtel.

3.7 DEMOLITION OF CONCRETE AND ASPHALT SURFACES

- 3.7.1** Demolition shall consist of demolishing, rubblizing, scabbling and/or disposing of asphalt, concrete, or bituminous concrete surfaces within the limits to be excavated as identified on the engineering drawings, Scope of Work and/or as directed by Bechtel.
- 3.7.2** Construction joints shall be saw cut in existing concrete or asphalt, where new concrete or asphalt will be placed.
- 3.7.3** Reinforcing bars encountered during concrete removal shall be cut with a method approved by Bechtel.
- 3.7.4** Daily inspections shall be performed in accordance with OSHA 29 CFR 1910 and 1926 when fuel powered tools are used indoors. Inspections shall include the review and documentation of administrative and engineering controls and measurement of air quality in confined spaces. No personnel shall enter the work area until required corrective measures are completed.

3.8 EQUIPMENT DECONTAMINATION

- 3.8.1 The equipment decontamination facility shall have a 30-mil plastic liner and be bermed to provide containment of decontamination water.
- 3.8.2 All equipment and tools used in contaminated areas shall be decontaminated to remove all adhering dirt and mud.
- 3.8.3 Authorization shall be obtained from Bechtel before entering or exiting the decontamination facility.
- 3.8.4 Bechtel is not responsible for the operations of the decontamination facility.
- 3.8.5 Equipment that has been in contaminated areas shall be decontaminated. The decontamination facility shall be used only for light and final decontamination and not for operations that would require gross decontamination (i.e., removal of most visible materials by scrapers, brushes, etc). Gross decontamination, if required, shall be performed as part of the specified earthwork at the area where trucks are loaded or unloaded. Decontamination shall be repeated as required. Following decontamination, all equipment shall be made available for inspection by Bechtel. Equipment shall be cleaned to the satisfaction of Bechtel.
- 3.8.6 Written approval from Bechtel shall be obtained prior to removing equipment from the site.
- 3.8.7 The decontamination water shall be containerized in 55-gallon drums, which is not within the scope of this specification.

3.9 PROTECTION OF WORK

Settlement or erosion that occurs in compacted materials prior to acceptance of the work shall be repaired to required conditions at no expense to Bechtel.

3.10 SECURITY

Work areas shall be secured using barriers (e.g., rope, snow fence) to prevent inadvertent entry to work areas as determined by Bechtel.

DEPARTMENT OF THE NAVY
 SOUTHERN DIVISION
 STANDARD SPECIFICATION
 FOR
 UNCONTAMINATED EARTHWORK

1	1-31-95	Revised throughout and to CSI format	KK	STB	FAE	JRM
0	7/21/94	Issued for use	KK	RTJ	PH	RBB
NO.	DATE	REVISION	BY	CHECK	SUPV	PE
ORIGIN		Uncontaminated Earthwork	NO. 22567			
			STANDARD SPECIFICATION			Rev
			001-SP000-006			1
			SHEET 1 OF 17			

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PART 1.0 GENERAL

1.1 SCOPE

Perform excavation of uncontaminated materials.

1.2 WORK INCLUDED

- 1.2.1 Furnishing labor, materials, tools and equipment.
- 1.2.2 Installing and maintaining dust, sediment and erosion control.
- 1.2.3 Performing soil testing
- 1.2.4 Providing shoring as needed.
- 1.2.5 Securing area (temporary barriers) as needed.
- 1.2.6 Excavating and backfilling uncontaminated material.

1.3 RELATED WORK NOT INCLUDED

- 1.3.1 Establishing limits of excavation and backfill.
- 1.3.2 Clearing and grubbing is included in Technical Specification 001-SP000-002.

1.4 REFERENCED CODES AND STANDARDS

Unless otherwise specified or shown, the latest edition of the following Codes and Standards at the time of bid shall apply to the extent indicated herein.

1.4.1 American Society for Testing and Materials (ASTM)

- ASTM D 1556 Density of Soil In-Place by the Sand-Cone Method
- ASTM D 1557 Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb (4.54-kg) Rammer and 18-in. (457-mm) Drop
- ASTM D 2167 Density and Unit Weight of Soils In-Place by the Rubber Balloon Method
- ASTM D 2216 Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures
- ASTM D 2487 Classification of Soils for Engineering Purposes
- ASTM D 2922 Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth)

- ASTM D 3017 Water Content of Soil and Rock In-Place by Nuclear Methods (Shallow Depth)
- ASTM D 4253 Maximum Index Density of Soils Using a Vibratory Table
- ASTM D 4254 Minimum Index Density of Soils and Calculation of Relative Density
- ASTM D 4318 Liquid Limit, Plastic Limit, and Plasticity Index of Soils

1.4.2 Occupational Safety and Health (OSHA)

- 29 CFR 1910 Occupational Safety and Health Regulations for General Industry
- 29 CFR 1926 Occupational Safety and Health Regulations for Construction

1.5 SUBMITTALS

Not all submittals defined herein may be required. Only engineering document requirements as summarized in Exhibit F (Attachment A), "Subcontractor Submittal Requirements Summary" (SSRS), shall apply. Submittals identified shall meet the detailed requirements herein. Bechtel will determine if documentation is complete as submitted and reserves the right to require the resubmittal of any submittals that do not meet specified requirements.

1.5.1 Testing Reports

Submit two unbound copies of testing results, including calibration curves and calibration results within 24 hours of conclusion of physical tests.

1.5.2 Testing Laboratory Certifications and Qualifications

Submit qualifications and requested certifications of the commercial testing laboratory. Include resumes of key personnel, client references from previous work of similar scope and laboratory capabilities.

1.5.3 List of Equipment

Submit a list of equipment proposed for use. Include type, size, and rating of equipment proposed to be used. For compactive rollers, include the weight, drum, or wheel size and cleat size, if any.

1.5.4 Onsite Borrow Pit Operations

Submit proposed operations plans for any onsite borrow pit(s). Include proposed procedures and plans for control of water, erosion and dust, access road construction and maintenance, and borrow excavation. Bechtel will provide the information on onsite borrow pit location and available test reports on the borrow material.

1.5.5 Offsite Borrow Pit Operations

Submit proposed offsite borrow information to include: borrow pit location and address, owner's name and state permit/licensing number, and the ASTM test reports required to satisfy the requirements listed in the "2.0 PRODUCTS" section of this specification.

1.5.6 Aggregate Source

Submit proposed offsite aggregate source information to include aggregate source location and address, owner's name and state permit/licensing number, and ASTM test reports required to satisfy the requirements listed in the "2.0 PRODUCTS" section of this specification.

1.5.7 Protection of Existing Foundations

Submit proposed modifications to protect existing foundations in accordance with this specification.

1.5.8 Shoring Design and Calculations

Submit proposed shoring design and engineering calculations or alternate slope protection measures in accordance with Subpart P, OSHA 29 CFR 1926. Design shall be signed and stamped by a Professional Engineer licensed in the state where the work is performed.

1.5.9 Soils Laboratory Test Results

Submit soil classification test results and relative density or compaction curve test results, as appropriate.

1.5.10 Drainage Design

Submit proposed drainage design prior to drainage system construction not indicated on engineering drawings. Design shall be signed and stamped by a Professional Engineer licensed in the state where the work is performed.

1.5.11 Excavation Daily Inspections

Submit daily inspections of the excavation areas in accordance with OSHA 29 CFR 1910 and 1926 prior to commencing work each day.

1.5.12 Shoring Inspector

Submit resume of the shoring inspector to be provided for bid evaluation. Inspector shall be qualified in accordance with Subpart P, OSHA 29 CFR 1926.

Bedding materials shall be free from rocks 2 in. or larger in any dimension or free from rocks of such size as recommended by the pipe manufacturer, whichever is smaller. Bedding material, for pipes coated or wrapped for corrosion protection, shall be free of stones larger than 1 in. in any dimension, or as recommended by the pipe manufacturer, whichever is smaller.

2.3 AGGREGATE BASE

Aggregate base shall be in accordance with state transportation requirements.

2.4 TEMPORARY SEDIMENT BARRIERS

Materials used for sediment barriers shall consist of straw bales, hay bales, geotextile filter fabric made expressly for use as a silt screen, or other materials approved by Bechtel prior to their use. Straw and hay bales shall not be used for permanent sediment barriers unless approved by Bechtel.

2.4.1 Baled hay or straw shall be laid end to end such that no gap exists between bales. Reinforcing bars shall be #4 bar and a minimum of 2½ ft long.

2.4.2 Filter fabric shall be a material made expressly for the purpose of sediment control such as Exxon GTF 101S Silt Screen or approved equal.

2.5 EROSION CONTROL BLANKETS

Erosion control blankets shall be Curlex Blankets manufactured by American Excelsior Company or approved equal.

2.6 PLASTIC MARKING TAPE

Plastic marking tape shall be of a type specifically manufactured for marking and locating underground utilities. It shall contain acid- and alkali-resistant polyethylene film and integral wires, foil backing, or other means to enable detection by a metal detector when the tape is buried in soil up to 3 ft deep. The metallic core of the tape shall be encased in a protective jacket or provided with other metallic core type to protect it from corrosion. The plastic marking tape shall have the following properties:

<u>Properties</u>	<u>Value</u>
Thickness (min.)	0.004-in.
Width	6-in.
Strength (min.)	
lengthwise	1750 psi
crosswise	1500 psi

<u>Properties</u>	<u>Value</u>
Color	Utility line type
Red	Electric
Yellow	Gas, Oil, Dangerous materials
Orange	Telephone, Telegraph, Television, Police, Fire, Communication
Blue	Water
Green	Sewer

PART 3.0 EXECUTION

3.1 PRE-EARTHWORK EVALUATION

Prior to performing any earthwork, examine the work area to identify pre-existing conditions (e.g. overhead power lines, access, etc.) that could impact the performance and completion of work. Bechtel will provide available information on the location of underground utilities. Verify these locations, provide structural support to utility lines, and coordinate inspection with and provide support to utility companies. Unless directed otherwise, the services of all underground utilities encountered during any earthwork shall be restored to their original condition. Applicable permits shall be obtained prior to commencing work unless directed otherwise.

3.2 EROSION AND SEDIMENT CONTROL

Temporary sediment barriers shall be installed in accordance with the subcontract documents and maintained during construction until permanent sediment barriers are in place.

Erosion and sediment shall be controlled by the following techniques subject to Bechtel review on a case-by-case basis:

- covering with synthetic liner material
- covering with uncontaminated soil material
- sediment barriers

3.3 DUST CONTROL

Dust shall be controlled by the following techniques subject to Bechtel review on a case-by-case basis:

- wetting with water
- wetting with a synthetic dust suppressant
- establishing temporary vegetative cover
- compaction
- sealing by rolling with a smooth drum

3.4 DRAINAGE, DEWATERING, AND STREAM DIVERSION

3.4.1 Drainage

Surface water shall be directed away from excavation and construction areas. Diversion ditches, check dams, dikes, and/or grading shall be developed and maintained during construction.

Excavated slopes and backfill surfaces shall have a minimum 3% slope to promote runoff and shall be protected from erosion and sloughing. Excavation slopes shall conform to Subpart P, "Excavation, Trenching, and Shoring," of OSHA 29 CFR 1926.

3.4.2 Dewatering

Unless noted otherwise, all excavations shall be kept in a dewatered condition. 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 any interference with excavation progress.

3.4.3 Stream Diversion

Stream diversion(s) shall be developed as shown on the engineering drawings or Scope of Work.

3.5 BLASTING

Blasting is not permitted.

3.6 EXCAVATION

3.6.1 General

Excavation shall conform to the lines, grades, and depths identified on the engineering drawings or Scope of Work, and field-verified by Bechtel in accordance with OSHA regulations. Excavated areas shall be maintained in a clean condition, free from leaves, brush, trash and other debris. They shall be inspected and documented daily, prior to commencing work, in accordance with OSHA 29 CFR 1910 and 1926.

3.6.2 Shoring

Shoring, including temporary sheet piling, shall be furnished and installed as necessary to protect workers, slopes, adjacent paving, structures, and utilities. Shoring, bracing, and sheeting shall be removed as excavations are backfilled to prevent cave-ins. Alternate methods (e.g. benching, sloping, trench boxes, etc.) may be used where applicable. They shall be developed in accordance with Subpart P, OSHA 29 CFR 1926.

3.6.3 Foundation Excavation

Excavations shall extend a sufficient distance from walls and footings to allow for placement and removal of forms. Excavation to final grade shall be performed within 48 hours of subsequent concrete placement. Only excavation methods that will leave the foundation soils in a solid condition shall be used. Excavation shall be inspected and approved by Bechtel prior to placement of rebar.

3.6.4 Utility Excavation

Trench Excavation

Trench walls below the top of utility lines (pipe or conduit) shall be sloped or made vertical as recommended by the manufacturer. Installation shall be in accordance with OSHA 2207. Trench walls more than five ft deep shall be shored, cut back to a stable slope at least equal to the angle of repose, or provided with equivalent means of protection for employees who may be exposed to moving ground or cave-in. Special considerations shall be given to slopes that may be adversely affected by construction erosion or sloughing. Remove and handle any additional material caused by erosion or sloughing.

Excavation Widths

The trench width below the top of pipe shall not exceed 24 in. plus pipe or conduit outside diameter (O.D.) for pipes or conduits of less than 24 in. inside diameter (I.D.), and 36 in. plus pipe O.D. for pipes larger than 24 in. I.D. Where recommended trench widths are exceeded, redesign a stronger pipe or conduit, or utilize special installation procedures.

Rock

Rock in either ledge or boulder formation shall be replaced with suitable materials to provide a compacted earth cushion having a thickness between unremoved rock and the pipe or conduit of at least 9 in. Where bell-and-spigot pipe or slip-jointed conduit is used, the cushion shall be maintained under the joint as well as under the straight portion of the pipe or conduit. Rock faces shall be cleaned of loose debris and cut to a firm surface either level, stepped, or serrated, as shown on the engineering drawings or as directed by Bechtel. Loose disintegrated rock and thin strata shall be removed.

Appurtenances

Excavation for manholes, catch basins, inlets or similar structures shall be sufficient to leave at least 12 in. clear between outer structure surfaces and the face of the excavation or support members. Removal of unstable/unyielding material (e.g., loose disintegrated rock and thin strata, etc.) shall be removed as specified herein. When concrete or masonry is to be placed in an excavated area, special care shall be taken not to disturb the bottom of the excavation.

Trench Bottoms

Trench bottoms shall be accurately graded to provide uniform bearing and support for the bottom quadrant of each section of pipe.

Replacement of Unstable/Unyielding Material

Where unstable and/or unyielding material is encountered in the trench bottom, such material shall be removed as required herein or as directed by Bechtel and replaced with bedding material.

3.7 OVEREXCAVATION

Overexcavation shall be backfilled to design grade with general backfill and compacted to a density equal to or greater than that required for the subsequent fill material.

3.8 DITCHES, GUTTERS, AND CHANNELS

Ditches, gutters, and channel changes shall be cut accurately to the cross sections and grades indicated on the engineering drawings or as directed by Bechtel. All roots, stumps, rock, and foreign matter in the sides and/or bottom of ditches, gutters, and channel changes shall be trimmed and dressed or removed to conform to the slope, grade and shape of the section indicated.

3.9 STOCKPILING

Excavated material satisfying the requirements for backfill in this specification shall be either transported and placed in designated fills or stockpiled at onsite locations as determined by Bechtel. All materials to be stockpiled shall be placed in areas that have been cleared and grubbed.

Stockpiles shall be kept in a neat and well-drained condition. Excavated backfill material and unsatisfactory materials shall be stockpiled separately. Stockpiles of satisfactory materials shall be protected from contamination. If the material in the stockpile becomes unsatisfactory for use as backfill such material shall be removed and replaced with satisfactory material from sources approved by Bechtel.

3.10 SUBGRADE PREPARATION

Subgrades in structural areas shall be proof-rolled prior to placement of fill. Unsatisfactory material identified by proof-rolling shall be removed and replaced with general backfill and compacted in accordance with this specification.

Subgrades and compacted lifts for backfills shall be either scarified 2 in. prior to placement of the subsequent lift or compacted by sheepsfoot roller or similar equipment designed to compact the lift from the bottom to the top.

3.11 BORROW AND AGGREGATE SOURCES

Unless directed otherwise, borrow material shall be obtained from onsite areas designated by Bechtel. Borrow areas shall be cleared, grubbed, disposed of debris, and surface water flow and erosion controlled. This work shall be considered operation related to onsite borrow excavation and shall be performed in accordance with this specification. If directed by Bechtel, the borrow and/or aggregate sources shall be identified and certification provided to Bechtel that the borrow/aggregate materials meets the requirements of this specification and transport material to the fill area. No offsite borrow and/or aggregate shall be brought onsite without prior written approval by Bechtel.

3.12 BACKFILLING

3.12.1 General

General backfill shall be used for bringing fill and excavations to the lines and grades identified by Bechtel, and for replacing unsatisfactory subgrade materials. Compaction shall be accomplished by rollers and other equipment accepted by Bechtel suited to the type of material being compacted. Backfill shall be placed in horizontal layers not exceeding 8 in. in loose thickness when using conventional compaction equipment or 6 in. when using hand-operated compaction equipment. Backfill shall not be placed on unsatisfactory materials.

3.12.2 Placement and Compaction Requirements

Compacted subgrades damaged during performance or work shall be repaired to the required density prior to further construction at no expense to Bechtel. Each lift shall be moisture conditioned or aerated as necessary and compacted to not less than the percentage of maximum density specified below:

- The relative compaction (RC) and relative density (RD) of pipe or conduit bedding material shall be 90 percent and 70 percent respectively.
- In unpaved areas, general backfill shall be used and compacted to 85 percent RC and 50 percent RD.
- In areas to receive structures, general backfill shall be placed to 2 ft below footing depth and compacted to 90 percent RC, 70 percent RD. Structural fill, placed at 95 percent RC, 80 percent RD shall be used in the top 2 ft.
- In areas to receive paving, general backfill shall be placed to 6 in. below subgrade elevation, and compacted to 90 percent RC, 70 percent RD. Structural fill, placed at 95 percent RC, 80 percent RD shall be used in the top 6 in.

Backfilling adjacent to structures shall be placed and compacted uniformly to prevent wedging action or eccentric loading upon or against the structure. Backfill shall not be placed against concrete or masonry foundation wall prior to 7 days after completion of the walls.

Additional Requirements for Trench Backfilling

Damaged pipes, conduits, culverts, or storm drains damaged from the performance of work shall be repaired or replaced at no expense to Bechtel.

Bedding material shall be in accordance with Part 2, "Products." Care shall be taken to ensure the bedding under the haunches of the pipe or conduit are compacted. The bedding shall be placed and compacted with approved tampers to a height of 1 ft above the utility line or as specified on the engineering drawings or as directed by Bechtel. The bedding surface for the line shall provide a firm foundation of uniform density throughout the entire length of the line. The joints and/or couplings shall be left uncovered during pressure tests.

Final backfill shall not be placed above the top of the pipe or conduit until all tests are satisfactorily performed. The remainder of the trench shall be filled with general or structural backfill and compacted to grade in accordance with this specification.

Manholes, catch basins, inlets, or similar structures shall be placed in such a manner that the structure will not be damaged by the shock of falling earth while backfilling. Backfill material shall be deposited and compacted as specified for final backfill and shall be brought up evenly, as practical, on all sides of the structure to prevent eccentric loading and stress.

Plastic marking tape as specified in Part 2, "Products," shall be installed 18 in. directly above the utility line.

3.13 AGGREGATE BASES

Aggregate bases shall be constructed under pavements and placed directly on the subgrade. The aggregate base shall be placed in 4-in. lifts and compacted with a minimum of two passes of a hand-operated plate-type vibratory compactor or equivalent compactive effort. The material shall be compacted to 95 percent RC.

3.14 FINISH GRADING

Graded areas shall be constructed true-to-grade, shaped to drain, and maintained free of trash and debris until final inspection is completed and the work is accepted. The embankment and excavation surfaces shall be finished to a smooth and compact surface in accordance with the lines, cross-sections or elevations and grades shown on the engineering drawings. Unless indicated otherwise, tolerances for graded areas shall be ± 0.1 ft.

3.15 PROTECTION OF WORK

Settlement or erosion that occurs in backfilled, filled, graded, or topsoiled areas prior to acceptance of the work shall be repaired to the required conditions at no expense to Bechtel.

3.16 SECURITY

When necessary and practical, as determined by Bechtel, work areas shall be secured using barriers (e.g., rope, snow fence) to prevent inadvertent entry to work areas.

3.17 QUALITY CONTROL AND VERIFICATION

- 3.17.1** Testing shall be performed by a commercial testing laboratory approved by Bechtel. Verification that the placement of backfill meets the requirements of this specification shall be submitted via testing reports. Testing shall be considered part of earthwork.
- 3.17.2** Test results shall be submitted for review prior to placement of the next lift above that area.
- 3.17.3** Table 3-1 shows the tests to be performed, test specifications, and test frequencies to verify that the backfill meets specification requirements. Additional tests shall be performed if the material or compaction requirements of this specification are not met.

Table 3-1
 Backfill Testing Specifications

<u>Test Name</u>	<u>Test Specification</u>	<u>Test Application</u>	<u>Test Frequency</u>
Moisture-Density Relation	ASTM D 1557 or ASTM D4253 and ASTM D 4254	Each type of material or source of material to determine optimum moisture and laboratory maximum density values	a) one representative test per 2,000 cy of fill and backfill or when any change in material occurs that may affect the optimum moisture content or laboratory maximum density.
In-Place Moisture Content and In-place Density	ASTM D 3017 ASTM D 2216 ASTM D 2922 ASTM D 1556 or ASTM D 2167	ASTM D 3017 is for determining moisture content of soil backfill. ASTM D 2216 is for checking accuracy of ASTM D 3017 ASTM D 2922 is for determining field in-place density (see Note 1 under "Test Frequency"). ASTM D 1556 or ASTM D 2167 are for checking accuracy or ASTM D 2922.	a) one test per 20,000 sf or one test per lift, whichever is greater, for general backfill areas compacted by other than hand or hand-operated machines. b) one test per 10,000 sf or minimum of one test per lift, whichever is greater, for general backfill areas compacted by hand or hand-operated machines. c) one test per 2,000 sf or minimum of two tests per lift, whichever is greater, for structural backfill areas compacted by other than hand-operated machines. d) one test per 1,000 sf or minimum of two tests per lift, whichever is greater, for structural backfill areas compacted hand-operated machines. e) one test per each area less than 1,000 sf or one test for each 100 lf of length, whichever is greater, for trenches, pits, building perimeters, or other structures or areas less than 10 ft in width and compacted by hand-operated machines.

Table 3-1
Backfill Testing Specifications (continued)

<u>Test Name</u>	<u>Test Specification</u>	<u>Test Application</u>	<u>Test Frequency</u>
Accuracy Tests			<p>Accuracy Test: One ASTM D 2216 test for every ten ASTM D 3017 tests performed.</p> <p>Accuracy Test: One ASTM D 1556 of ASTM D 2167 test for every 20 ASTM D 2922 tests performed.</p> <p>Note 1: The calibration curves for ASTM D 2922 shall be checked and adjusted per ASTM D 2922, "Adjusting Calibration Curve". Both the calibration curves furnished with the moisture gauges and density calibration curves shall also be checked per ASTM D 3017. Calibration checks of the density and moisture gauges shall be made at the beginning of a job on each different type of material encountered and at the beginning and end of each day that the equipment is used.</p>

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction
49 CFR 195	Transportation of Hazardous Liquid by Pipeline

1.2 SUBMITTALS

Submit the following in accordance with Section 01300, "Submittals."

1.2.1 SD-08, Statements

- a. Welding procedure specifications G
- b. Nondestructive examination (NDE) procedures G

1.2.2 SD-18, Records

- a. Examination records G
- b. Welding procedure qualification records G
- c. Welder performance qualification records G
- d. Welder qualification test reports
- e. NDE and inspection personnel qualification records G

1.3 NDE AND INSPECTION PERSONNEL QUALIFICATIONS

The Commercial Inspection or Testing Laboratory inspection and nondestructive testing personnel, including visual inspectors, shall be qualified in accordance with the requirements of ASNT-SNT-TC-1A for Level II or Level III in the applicable nondestructive testing method. An AWS certified weld inspector shall be considered qualified to perform visual inspections only, in lieu of an ASNT Level II visual inspection. Final approval of NDE and weld inspection personnel will be made by the Contracting Officer.

PART 2 PRODUCTS

1 WELDING ELECTRODES

1.1 Carbon Steel Piping

Gas tungsten arc welding process: AWS 5.4. Shielded metal arc welding process: AWS A5.1 or AWS A5.5, low hydrogen electrodes.

PART 3 EXECUTION

3.1 QUALITY ASSURANCE

Except as modified herein, welding and weld examination shall be performed in accordance, as applicable, with 49 CFR 195, ASME B31.3, ASME B31.4, API STD 1104, and with all recommendations in API RP 1107.

All welding shall be done in strict conformance to submitted and approved welding procedures for joint preparation, alignment, fit-up, cleanliness, use of proper welding materials, proper machine settings and placement of back-up rings to ensure weldments of proper size, profile and mechanical characteristics. No welding shall begin until welding procedure, welder performance, and NDE qualifications have been submitted and approved. For purposes of applicability of regulations, standards, codes and recommended practices, assume the pipeline operates at a stress level in excess of 20 percent of the line pipe's specified minimum yield strength. The Contractor shall have one copy of each of these standards available for review by contractor and government personnel at the jobsite office. With respect to referenced regulations, standards, codes and recommended practices, the terms "employer," "manufacturer," "fabricator" and "erector" mean the Contractor, and the terms "inspector", "company" and "Owner" mean the Contracting Officer or his representative.

3.1.1 Welding Procedure and Welder Performance Qualifications

API STD 1104. Qualify all welders on site. Notify the Contracting Officer at least 1 week in advance of the time and place of the tests. Qualify welders and welding procedures in the 6G position. The Contracting Officer shall be furnished a copy of qualified procedures and a list of names and identification symbols of qualified welders.

3.1.2 Welder Qualification Tests

API STD 1104 except as modified herein. All welded test segments shall be sent to the Government approved commercial inspection or testing laboratory for test specimen preparation, examinations, and testing. Testing shall include: visual examination, tensile-strength, nick-break, and bend tests. Submit test specimens and test reports to the Contracting Officer. All test specimens shall be obtained and prepared in accordance to API STD 1104, Section 3, Qualification of Welders.

1.3 Previous Qualifications

At the discretion of the Contracting Officer, welders previously qualified by test within the previous 6 months may be accepted for this contract without requalification if all the following conditions are met:

- a. Copies of the welder qualification test records are submitted and approved.
- b. Testing was performed by an approved testing laboratory, technical consultant, or the Contractor's approved quality control organization.
- c. The welder qualification tests conform to the requirements of API

STD 1104 and this specification and are applicable to welding conditions encountered under this contract.

3.1.4 Welding Procedure Specifications

Root and first weld passes on pipeline joints shall be made using gas tungsten arc welding (GTAW) procedures. GTAW or shielded metal arc welding procedures may be used on remaining passes. If backing rings are to be removed, include a description of the removal process in the specification, including measures taken to prevent damage to interior pipe wall surfaces. Include contingency specifications for welding new pipe to existing pipe of unequal wall thickness, weather conditions under which welding will be permitted and preheat and postheat requirements.

3.1.5 Welding Symbols

Conform to AWS A2.4.

3.1.6 Safety

Conform to ANSI Z49.1, 29 CFR 1910-SUBPART Q, "Welding, Cutting, and Brazing," 29 CFR 1926-SUBPART J, "Welding and Cutting", as well as API standards and recommended practices. When welding to existing fuel piping, continuously monitor pipe interior for the presence of hydrocarbons.

3.1.7 Welder Identification

Assign each welder or welding operator an identifying number, letter, or symbol that shall be used to identify his welds. Each welder or welding operator shall apply his mark adjacent to his weld using an approved rubber stamp or felt-tipped marker with permanent, weatherproof ink or other approved methods that do not deform the metal.

3.1.8 Weather Conditions

Welding shall not be done when weld quality can be affected by weather conditions. The Contracting Officer will decide if weather conditions are suitable for welding.

1.2 SUPPORTS

Welding of pipeline supports shall conform to AWS D1.1.

1.3 EXAMINATIONS

API STD 1104, except as modified herein. Employ the services of an accredited or government approved commercial inspection or testing laboratory or technical consultant for performance of all weld examinations. The contractor shall provide the Contracting Officer a list of NDE personnel who will be performing tests under this contract. All NDE personnel shall at all times carry certification cards or proof of certification while on site. The extent of required examination shall be as follows:

Weld Type	Visual	Radiographic	Liquid Penetrant
UNDERGROUND CIRCUMFERENTIAL AND LONGITUDINAL BUTTWELDS			
a. Root and intermediate passes (each pass)	100%	---	
b. Completed weld	100%	100%	
ABOVEGROUND CIRCUMFERENTIAL AND LONGITUDINAL BUTTWELDS			
a. Root and intermediate passes (each pass)	100%		
b. Completed weld	100%	10%	
TIE-IN GIRTH WELDS	100%	100%	
SOCKET AND OTHER FILLET WELDS	100%		100%

NOTES:

1. Thickness refers to pressure boundary wall thickness (such as pipe wall, fitting wall, or nozzle wall thickness).
2. Radiographic examination of branch welds shall be performed before any nonintegral reinforcing material is applied.
3. The thickness of butt welds is defined as the thicker of the two abutting ends after end preparation.
4. Liquid penetrant examination shall be performed at the lesser of one-half of the weld thickness or each 1/2 inch of weld thickness and all accessible final weld surfaces.
5. For nondestructive examination of the pressure retaining component, refer to the standards listed in applicable code or the manufacturing specifications.

3.1 Non-Destructive Examination Procedures

Develop a comprehensive quality assurance and NDE procedures document which demonstrates a thorough knowledge of the weld examination requirements and sufficient planning to coordinate examination with the work. NDE procedures shall include weather conditions in which welding will be permitted and inspection tools such as gauges, equipment and penetrant materials.

3.2 Additional Visual Examination

- a. Before welding -- for compliance with requirements for joint preparation, placement of backing rings or consumable inserts, alignment and fit-up, and cleanliness.
- b. During welding -- for conformance to the qualified welding procedure, cleaning between passes, complete fusion of each pass and weld quality.

- c. After welding -- for bead reinforcement, undercutting, arc strikes/burns, porosity, overlap, profile, and size of welds.

3.3.3 Additional Acceptance Criteria Limits

3.3.3.1 Visual

- a. Convexity of fillet weld surface may be no greater than 10 percent of longest leg plus 0.03 inch (1.0 mm).
- b. Concavity in fillet welds may be no greater than 1/16 inch (2.0 mm).
- c. Fillet weld size may be no less than indicated or greater than 1 1/4 times the minimum specified fillet leg length.

3.3.3.2 Radiography

- a. No indications of cracks, incomplete fusion, slag inclusion beyond allowable limits and inadequate penetration, including inadequate penetration due to high-low shall be permitted.
- b. No elongated indication which has a length greater than:

(1) 1/4 inch (6.0 mm) for "t" up to 3/4 inch (19.0 mm), inclusive;

("t" pertains to the thickness of the weld being examined. If a weld joins two members having different thickness at the weld, "t" is the thinner of these two thicknesses.)

- c. No group of indications in line that have an aggregate length greater than "t" in a length of 12t, except where the distance between the successive indications exceeds 6L where L is the longest indication in the group.
- d. No porosity in excess of that shown acceptable in Appendix A-250, Acceptance Standard for Radiographically Determined Rounded Indications in Welds, ASME BPVC SEC VIII.

4 NDE EXAMINATION RECORDS

Submit visual, liquid penetrant, and radiographic records. Submit radiographic examination results and original films for Government records including reader sheets, piping diagrams, and film numbering data.

5 GOVERNMENT REVIEW OF WELDING AND INSPECTION RESULTS

The Government, at the option of the Contracting Officer, may provide a weld inspector for the purposes of reviewing all non-destructive examination

results, for witnessing welding procedure and welder qualification tests, and inspecting welds provided under this contract. The final determination for the necessity for repairs shall be made by the Contracting Officer.

-- End of Section --

SECTION 15486

FUEL PIPING

09/93

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 in the text by the basic designation only.

AMERICAN PETROLEUM INSTITUTE (API)

API SPEC 5L	1992 Line Pipe
API SPEC 6D	1991 (Supp. 1993) Pipeline Valves (Gate, Plug, Ball, and Check Valves)
API STD 607	1985 Fire Test for Soft-Seated Quarter-Turn Valves
API RP 1110	1991 Pressure Testing of Liquid Petroleum Pipelines
API BULL 2209	1978 Pipe Plugging Practices

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME/ANSI B16.5	1988 (Errata 1988) (Addenda 1992) Pipe Flanges and Flanged Fittings
ASME/ANSI B16.9	1993 Factory-Made Wrought Steel Buttwelding Fittings
ASME B16.11	1992 Forged Fittings, Socket-Welding and Threaded
ASME B16.21	1978 Nonmetallic Flat Gaskets for Pipe Flanges
ASME B31.3	1990 (Errata 1990) (Addenda 1992) Chemical Plant and Petroleum Refinery Piping
ASME B31.4	(1992) Liquid Transportation Systems for Hydrocarbons, Liquid Petroleum Gas, Anhydrous Ammonia, and Alcohols
ANSI/ASME B40.1	1991 (Special Notice 1992) Gauges - Pressure Indicating Dial Type - Elastic Element

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 36/A 36M	1991 Structural Steel
ASTM A 53	1990 (Rev. B) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless
ASTM A 105/A 105M	1992 Forgings, Carbon Steel, for Piping Components
ASTM A 193/A 193M	1992 Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service
ASTM A 194/A 194M	1992 (Rev. A) Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service
ASTM A 234/A 234M	1992 (Rev. A) Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures
ASTM D 229	1991 Rigid Sheet and Plate Materials Used for Electrical Insulation

CODE OF FEDERAL REGULATIONS (CFR)

49 CFR 195	Transportation of Hazardous Liquids by Pipeline
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FEDERAL SPECIFICATIONS (FS)

FS L-G-530	(Rev. C) Coating, Pipe, Thermoplastic Resin
FS L-T-1512	(Rev. A Reinst) Tape, Pressure Sensitive Adhesive, Pipe Wrapping

MILITARY SPECIFICATIONS (MIL)

MIL-V-12003	(Rev. F) (Am. 1) Valves, Plug: Cast Iron or Steel, Manually Operated
MIL-P-2441	(Rev. A), (Supp. 1) Paint, Epoxy Polyamide

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY, INC. (MSS)

SS SP-58	1988 Pipe Hangers and Supports - Materials, Design and Manufacture
SS SP-69	1991 Pipe Hangers and Supports - Selection and Application

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 30	1990 Flammable and Combustible Liquids Code
NFPA 70	1993 National Electrical Code
NFPA 407	1990 Aircraft Fuel Servicing

1.2 DEFINITIONS

In ASME B31.3, ASME B31.4 and NFPA 30 publications, the advisory provisions shall be considered mandatory, as though the work "shall" had been substituted for "should" wherever it appears; reference to the "authority having jurisdiction" and "owner" shall be interpreted to mean the Contracting Officer.

1.3 SUBMITTALS

Submit the following in accordance with Section 01300, "Submittals."

1.3.1 SD-02, Manufacturer's Catalog Data

- a. Pipe G
- b. Valves G
- c. Protective coatings G
- d. Fittings G

1.3.2 Pipeline Repair Record

Contractor shall submit four copies of a pipeline repair record for documentation in accordance with 49 CFR 195. Report shall state repairs were performed in accordance with 49 CFR 195. The record shall be bound and include the statements and records required above as well as the following:

- a. Date, location and description of repair
- b. Pipeline repair procedures
- c. Pipe material certification
- d. Hydrostatic testing procedure, records and certification
- e. Weld inspection results
- f. Miscellaneous field information including photographs (or color photocopies of photographs), drawings, sketches and notes.

1.4 REGULATORY REQUIREMENTS

Conform to the safety and fire regulations of the Station Fire Department when work is in progress. Obtain a "Hot Work" permit each day before performing welding or burning.

PART 2 PRODUCTS

2.1 SPECIAL REQUIREMENTS

2.1.1 Metal

Metal contacting the fuel shall be stainless steel or aluminum alloy, except as modified herein. Zinc, zinc-coated steel, zinc-coated cast iron, brass, copper, and copper-bearing alloys contacting the fuel shall not be permitted. Carbon steel containing up to a maximum of one percent copper contacting the fuel shall be permitted in carbon steel piping systems.

2.1.2 System

Capacity and efficiency of equipment shall not be less than that indicated. System components, including piping, equipment, valves, and accessories shall be suitable for maximum working pressure of ANSI Class 150 (275 psig at 100 degrees F).

2.2 CARBON STEEL PIPING

2.2.1 Pipe

ASTM A 53, Type E (electric-resistance welded, Grades A or B) or Type S (seamless, Grade A or B), black steel; Weight Class STD (Standard) for pipe sizes larger than 2 inches, Weight Class XS (Extra-Strong) for pipe sizes 2 inches and smaller.

2.2 Line Pipe

API SPEC 5L, seamless, submerged-arc weld or gas metal-arc weld; Grade B, black steel, Weight Class STD (Standard) for pipe sizes larger than 2 inches, Weight Class XS (Extra-Strong) for pipe sizes 2 inches and smaller.

3 FITTINGS FOR CARBON STEEL PIPING

3.1 Threaded Fittings and Socket Welding Fittings

SME B16.11 and ASTM A105, threaded fitting shall be limited to pressure gauge and relief valve instruments.

3.2 Buttwelding Fittings and Tapered Reducing Fittings

SME/ANSI B16.9, ASTM A 234/A 234M, Type WPB, of the same material and weight as the piping in which fittings are installed.

2.3.3 Flanges

ASME/ANSI B16.5, Class 150, Raised Face Type, ASTM A 105/A 105M.

2.4 WELDING FOR CARBON STEEL PIPING

See Section 15116

2.5 GASKETS, BOLTS, NUTS AND WASHERS

2.5.1 Gaskets

ASME B16.21, composition ring 0.0625-inch thick, of one piece factory cut, resistant to the effects of aviation hydrocarbon fuels and manufactured of fire-resistant materials. Provide full-face gaskets for flat-face flanged joints, and ring gaskets for raised-face flanged joints.

2.5.2 Bolts

ASTM A 193/A 193M, Grade B8. Extend no less than two full threads beyond the nut with the bolts tightened to the required torque. Apply an anti-sieze compound to threads.

2.5.3 Nuts

ASTM A 194/A 194M, Grade 8.

2.5.4 Electrically Isolating (Insulating) Gaskets for Flanges

Provide ASTM D 229 electrical insulating material of 1000 ohms minimum resistance. Material shall be resistant to the effects of aviation hydrocarbon fuels. Provide full face insulating gaskets between flanges. Provide full surface 0.03-inch thick wall thickness, spiral-wound mylar insulating sleeves between the bolts and the holes in flanges; bolts may have reduced shanks of a diameter not less than the diameter at the root of threads. Provide 0.125-inch thick high-strength phenolic insulating washers next to flanges and flat circular stainless steel washers over insulating washers and under bolt heads and nuts. Provide bolts 0.5 inch longer than standard length to compensate for the thicker insulating gaskets and the washers under bolt heads and nuts.

6 VALVES

Steel body except stainless steel shall be Type 304L or Type 316, and aluminum alloys shall be 3003, 6061-T6, or 356-T6, except as modified in paragraph titled "Special Requirements," in this section, suitable for working pressure of ANSI Class 150 (275 psig at 100 degrees F), with weatherproof housing designed to exclude driving rain and snow for arm-gear operators. Flanged or socket weld end connections, except as modified herein.

1 Ball Valves

1 SPEC 6D, ANSI Class 150, reduced bore. Minimum reduced bore size shall be 55 percent of nominal pipe size. Conform to fire test requirements

of API STD 607. Provide nonlubricated double seated type capable of handling two-way shutoff, with weather-proof worm-gear operators, except valves 6 inches and smaller may be lever operated with 10 positions or infinitely adjustable positions between full open and full close. Valves in carbon steel piping shall have steel bodies with type 316 stainless steel balls. Valves shall have stainless steel stems and trim, and Viton or Teflon seats, body seals, and stem seals. Valves 3-inch and larger shall be flanged. Valves 2-inch and smaller shall be socket weld.

2.6.2 Plug (Double Block and Bleed) Valves

API SPEC 6D and MIL-V-12003 Type III, ANSI Class 150, nonlubricated, resilient, double seated, tapered lift, plug type capable of handling two-way shutoff; steel body, chrome-plated interior, and tapered plug of steel or ductile iron, chrome or nickel plated, supported on upper and lower trunnions, and steel or ductile iron, sealing slips, with Viton seals. Valve design shall permit sealing slips to be replaced from the bottom with the valve mounted in the piping. Valves shall operate from fully open to fully closed by rotation of the handwheel to lift and turn the plug. Valves shall have weatherproof operators with mechanical position indicators and a minimum bore size of 65 percent of nominal pipe size, unless the manufacturer can show an equivalent or greater flow rate with a lower percent internal cross sectional area. Full port valves shall be located as indicated.

2.6.2.1 Valve Operation

Rotation of the handwheel toward open shall lift the plug without wiping the seals and retract the sealing slips so that clearance is maintained between the sealing slips and the valve body. Rotation of the handwheel toward closed shall lower the plug after the sealing slips are aligned with the valve body and force the sealing slips against the valve body for positive closure. When valve is closed, the slips shall form a secondary fire-safe metal-to-metal seat on both sides of the resilient seal.

2.6.2.2 Relief Valves

ANSI Class 150, steel body. Provide plug valves with automatic thermal relief valves to relieve the pressure buildup in the internal body cavity when the plug valve is closed. Relief valves shall open at 25 psi differential pressure, and discharge to the throat of and to the upstream side of the plug valve.

2.6.2.3 Bleed Valves

ANSI Class 150, steel body valve. Provide manually operated bleed valves that can be opened to verify that plug valves are not leaking when in the closed position. Provide discharge piping so that released liquid can be contained.

6.3 Relief Valves

ANSI Class 150, steel body, threaded connections, except as modified herein. Set relief at the pressure indicated. Relief valves shall be suitable for back pressure service.

2.7 PIPING ACCESSORIES

2.7.1 Pipe Hangers and Supports

MSS SP-58 and MSS SP-69, of the adjustable type, except as modified herein or indicated otherwise. Provide steel pipe hangers and supports. The finish of rods, nuts, bolts, washers, hangers, and supports shall be hot-dip galvanized. ;

2.7.1.1 Miscellaneous Metal

ASTM A 36/A 36M, standard mill finished structural steel shapes, hot-dip galvanized.

2.7.1.2 Anchors, Bolts, Nuts, Washers and Screws

Hot-dip galvanized steel.

2.7.2 Gages

ANSI/ASME B40.1, single style pressure gage for fuel with 4.5-inch dial, liquid filled stainless steel case, stainless steel tube, pressure snubbers, and scale range for the intended service.

2.8 PROTECTIVE COATINGS FOR PIPING

2.8.1 Protective Coatings for Aboveground Carbon Steel Piping

Shop coat pipe to within 3-inches of ends. Field coat fitting, flanges, valves and accessories. Do not coat stainless steel components. Apply coating as per manufacturers instructions.

2.8.1.1 Shop Coating

Abrasive blast pipe lengths to SSPC SP10. Tape ends and spray apply prime coat MIL-P-24441 formula 152 (white), intermediate coat of MIL-P-24442 formula 151 (grey), and a top coat of MIL-P-24441 formula 152 (white). Apply each coat for a dry film thickness of 3 mils. Total system shall not be less than 8 mils.

2.8.1.2 Field Coating

Power tool clean welds, fittings, and accessories to SSPC SP3. Apply three coats of MIL-P-2441 as above by brush or roller. Touch-up all damage to shop coating.

3.2 Coatings for Underground Piping

Protective Coatings for Buried Carbon Steel Piping: Provide pipe with S L-C-530 coating system of factory-applied adhesive undercoat and continuously extruded plastic resin coating; minimum thickness shall be 36 mils for pipe sizes 6 inches and larger.

2.8.3 Damaged Areas of Pipe Coating

Provide FS L-T-1512, 20 mils nominal thickness tape over damaged areas.

2.8.4 Fittings, Couplings, and Regular Surfaces

Provide FS L-T-1512, 10 mils nominal thickness tape overlapped a minimum one inch over damaged areas.

2.9 BONDING

NFPA 70 for materials and workmanship. The fuel piping system shall be bonded in metallic contact to provide electrical continuity to fixed and moving components for grounding the entire system. Provide jumpers to overcome the insulating effects of gaskets, paints, or nonmetallic components. Minimum size ground conductor shall be No. 6, with single covered, flexible, stranded, copper conductor, Type RR-USE. Provide dielectric connection in riser pipe for underground piping protected by impressed current.

2.10 BURIED UTILITY WARNING AND IDENTIFICATION TAPE

Provide detectable aluminum foil plastic-backed tape or detectable magnetic plastic tape for warning and identification of buried piping. Tape shall be detectable by an electronic detection instrument. Provide tape in minimum 3-inch width rolls, color coded for the utility involved, with warning and identification imprinted in bold black letters continuously and repeatedly over entire tape length. Use permanent code and letter coloring unaffected by moisture and other substances contained in trench backfill material.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 Demolition

Remove materials so as not to damage materials which are to remain. Replace existing work damaged by the Contractor's operations with new work of the same construction. The Government will drain the existing piping insofar as practicable with the existing pumps. The Contractor shall be responsible for removing the remaining fuel and sludge, and for cleaning and inerting the piping to make it safe for welding.

2 INSTALLATION

Provide exterior aviation fuel distribution systems including above ground piping, buried piping, piping in manholes, dispensing hardware and related work. Install piping straight and true to bear evenly on supports. Install valves with stems horizontal or above. Install flanges and unions at valves, connections to equipment, and where indicated. Provide each system complete and ready for operation. Equipment, materials, installation, workmanship, fabrication, assembly, erection, examination, inspection, and testing shall be in accordance with ASME B31.3 and NFPA 30, except as modified herein.

3.2.1 Protection Against Hazardous Conditions

The piping and the surrounding area shall be inspected for explosive vapors prior to work and frequently during the course of the work. If, in the opinion of the Contracting Officer, a hazardous condition exists, work shall cease until such condition has been corrected.

3.2.2 Safety

NFPA 30 and NFPA 407; safety rules shall be strictly observed. The flash points of fuels in degrees Fahrenheit are as follows:

FUELS

Jet Fuel JP-5

FLASH POINT

Plus 140

3.2.3 Connections To Existing Systems

Notify the Contracting Officer in writing at least 15 days prior to the date the connections are required; receive approval before interrupting service. Provide materials required to make connections into existing systems and perform excavating, backfilling, compacting, and other incidental labor as required.

3.2.4 Cutting Existing Pipe

Perform the initial cutting of the existing piping with a multiwheel pipe cutter, using a nonflammable lubricant. After cutting, seal the interior of the piping with a gas barrier plug in accordance with API BULL 2209. The interior of the piping shall be purged with carbon dioxide or nitrogen during welding process. The complete method of cutting, sealing, and welding shall be approved in advance of the actual work.

3.2.5 Cleaning of Piping

Keep the interior and ends of new piping and existing piping affected by the Contractor's operations thoroughly cleaned of water and foreign matter. Keep piping systems clean during installation by means of plugs or other approved methods. When work is not in progress, securely close open ends of pipe and fittings to prevent entry of water and foreign matter. Inspect piping before placing into position.

2.6 Pipeline Work

The portion of the work indicated as "pipeline work" shall be performed in accordance to 49 CFR 195 and ASME B31.4. Prehydrotest pipeline materials. Perform welding and inspection as required in Section 15116. Document existing conditions, work performed, and test results as required by 49 CFR 195.

APPENDIX C

SAMPLING TABLES

TABLE 1

Data Requirements

Location ID	Analytical Parameters	Method	Laboratory Data Objective	Water ¹	Solid ²	Dup ³	Trip Blank ⁴	Remarks
SOIL SAMPLING - PRE -TRANSPORT SAMPLING (FAC 62-775.410)								
TBD	TVOA ⁵	EPA Method 8020	C		7	1	1	Composite samples for the preburn or pre-transport soil will be taken in accordance with the <i>Quality Assurance Standard Operating Procedures Manual for Soil Thermal Treatment Facilities</i>
	TRPH ⁶	EPA Method 9073	C		7	1		
	TVOH ⁷	EPA Method 8010	C		7	1		
	As, Ba, Cd, Cr, Pb, Hg, Se, Ag	EPA Methods 6010 and 7471	C		7	1		
SOIL SAMPLING -CLEAN SOIL CRITERIA (FAC 62-775:400)								
TBD ¹²	TVOA	EPA Method 8020	C		7 (Note 8)	NA ⁹	1	
	TRPH ¹⁰	EPA Method 9073	C		7 (Note 8)	NA		
	As, Ba, Cd, Cr, Pb, Hg, Se, Ag	EPA Method 6010 and 7471	C		7 (Note 8)	NA		
	TCLP ¹¹	EPA Method 1311/8011 (Metals)	C		7 (Note 8)	NA		
GROUNDWATER MONITORING SAMPLES								
	TVOH (Plus 1,2-Dichloroethane)	EPA Method 601	C	11		1		Quantity noted apply to each of the sampling events.

TABLE 1

Data Requirements

Location ID	Analytical Parameters	Method	Laboratory Data Objective	Water ¹	Solid ²	Dup ³	Trip Blank ⁴	Remarks
Monitoring Wells	TVOA (BETX, MTBE, and TVOA)	EPA Method 602	C	11		1	1	
	Lead	EPA Method 239.2	C	11		1		Quantity noted apply to each of the sampling events
	TRPH	EPA Method 418.1	C	11		1		
	PAH ¹³	EPA Method 610	C	11		1		
	1,2-Dibromoethane (Ethylene dibromide)	EPA Method 504	C	11		1	1	

NOTES:

1. Water indicates the estimated number of liquid samples to be taken during the interim measure activities.
2. Solid indicates the number of soil and/or sludge samples to be taken during the interim measure activities.
3. Dup = Duplicate sample. Generally provided at a rate of 1 in 20.
4. Trip Blanks are to be provided at the rate of one per cooler, when analysis calls for VOC and the number of samples exceed five.
5. TVOA = Total volatile organic aromatics
6. TRPH = Total recoverable petroleum hydrocarbons
7. TVOH = Total volatile organic halocarbons
8. Number of samples shown are minimum number of samples based on a sample every 400 tons. Disposal Subcontractor will collect samples 8-hr interval, or maximum of 400 tons processed (refer to FAC 62-775.400) and composite them into one (or hourly over a days production, not to exceed 8-hr). If thermal treatment is not the chosen alternative for treatment, the minimum number of samples shall apply.
9. NA = Not Applicable.
10. If TRPH values exceed 10 ppm, analyze for Polynuclear Aromatic Hydrocarbons (PAH) (EPA Methods 8100, 8250, 8270, or 8310) and TVOH (EPA Method 8010). Refer to Rule 62-775.400 (2) FAC
11. TCLP = Toxicity Characteristic Leaching Procedure. TCLP analysis required only if total metals results fail clean soil criteria for total metals. Refer to Rule 62-775.400 (3) FAC
12. TBD = To Be Decided
13. PAH = Polynuclear Aromatic Hydrocarbons

TABLE 2**Clean Soil Criteria**

ANALYSIS	LIMIT (Totals)	REMARK
TVOA	100 (ppb)	Treated soil must meet this criteria.
TRPH	10 (ppm)	If TRPH is greater than 10 ppm, see below.
TRPH	50 (ppm)	If TRPH is greater than 10 ppm, it must not exceed 50 ppm and PAH must not exceed 1 ppm and total VOH must not exceed 50 ppb.
PAH	1 (ppm)	
VOH	50 (ppb)	
Arsenic	10 (mg/kg)	If totals are exceed the following TCLP can be applied (see Table 1) 5.0 mg/l
Barium	4940 (mg/kg)	If totals are exceed the following TCLP can be applied (see Table 1) 100.0 mg/l
Cadmium	37 (mg/kg)	If totals are exceed the following TCLP can be applied (see Table 1) 1.0 mg/l
Chromium	50 (mg/kg)	If totals are exceed the following TCLP can be applied (see Table 1) 5.0 mg/l
Lead	108 (mg/kg)	If totals are exceed the following TCLP can be applied (see Table 1) 5.0 mg/l
Mercury	23 (mg/kg)	If totals are exceed the following TCLP can be applied (see Table 1) 0.2 mg/l
Selenium	389 (mg/kg)	If totals are exceed the following TCLP can be applied (see Table 1) 1.0 mg/l
Silver	353 (mg/kg)	If totals are exceed the following TCLP can be applied (see Table 1) 5.0 mg/l