

**COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY (CLEAN II)
Northern and Central California, Nevada, and Utah
Contract Number N62474-94-D7609
Contract Task Order 0147**

Prepared for

**DEPARTMENT OF THE NAVY
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**ALAMEDA POINT
ALAMEDA, CALIFORNIA
IR SITES 1, 2, 5 & 10, AND STORM DRAIN LINE F
RADIOLOGICAL REMOVAL ACTION
TECHNICAL SPECIFICATIONS
FOR
IMPLEMENTATION WORK PLAN**

**Final
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FINAL
RADIOLOGICAL REMOVAL ACTION FOR
SITES 1, 2, 5 & 10, AND STORM DRAIN LINE F
IMPLEMENTATION WORK PLAN
DRAWINGS

DATED 01 AUGUST 1998

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INTRODUCTION

SITE DESCRIPTION

Alameda Point is located in the City and County of Alameda, California, on an island in San Francisco Bay separated from Oakland, California, by an estuary. The island is accessible by bridge and tunnel. Alameda Point occupies 2,842 acres of land, water and airspace easement, of which 1,734 acres are lands above the bay waters. Installation Restoration (IR) Sites 1, 2, 5, and 10 are located within the Alameda Point facility

IR Sites 1 and 2 are former landfills used by the Navy for the disposal of industrial and municipal waste. Low level radioactive waste from dials or illuminators painted with radioluminescent paint may have been a minor component of the waste. Radium-226 was an ingredient in radioluminescent paint and is a source of ionizing radiation.

IR Site 1, which consists of approximately 22 acres in the northwest corner of Alameda Point, received all wastes generated by Alameda Point from 1943 to 1956. IR Site 2, which comprises approximately 65 acres in the southwest corner of Alameda Point, received all wastes generated by Alameda Point from 1956 to 1978.

IR Site 5 consists of Building 5 which was an aircraft rework facility. IR Site 10 consists of Building 400 which was a missile rework facility. Buildings 5 and 400 are currently unoccupied.

The use of radioactive materials at Alameda Point begin in the 1940s in Building 5 (IR Site 5), where radioluminescent aircraft dials were refurbished with radium-226, a source of ionizing radiation. Radium operations at Building 5 ended in the late 1950s to early 1960s (the exact date is unknown). Similar radiological refurbishing operations were performed in Building 400 (IR Site 10) from the 1950s to the closing of the base in 1997. After 1979, all radiological operations in Building 400 were conducted in a controlled booth and were carefully monitored.

REMOVAL ACTION

These Technical Specifications contain requirements and guidelines for completion of the Radiological Removal Action (RAA) at Alameda Point, Alameda California. The RAA work will be performed at IR Sites 1, 2, 5 and 10. The work consists of the following:

IR Sites 1 and 2

- **Anomaly Removal:** perform radiation surveys, and remove radiation anomalies at IR Sites 1 and 2 that pose an external radiation hazard. Locations of

previously identified anomalies requiring removal are contained in the following documents: 1) Radiation Survey Report, Naval Air Station, Alameda, California, Volumes I and II, Final, PRC Environmental Management, Inc., January, 1998. 2) Addendum to the RI/FS Data Transmittal Memo, Radiation Survey Report for Sites 1 and 2, Final, PRC Environmental Management, Inc., February, 1997.

IR Sites 5 and 10

- **Building Surface Surveys:** remove floor coverings and perform radiation surveys on floor surfaces at IR Sites 5 and 10 (Buildings 5 and 400).
- **Building Surface Removal:** remove radioactively contaminated floor and wall surfaces at IR Sites 5 and 10 (Buildings 5 and 400). Additional removal action may be required in Building 5, at a location across from Room 227, pending future radiation survey results.
- **Drain Line Removal:** remove radioactively contaminated exposed drain pipes located at Sites 5 and 10 (Buildings 5 and 400).
- **Drain Line Replacement:** replace selected drain pipes located at Sites 5 and 10 (Buildings 5 and 400).

IR Sites 5, 10 and Storm Drain Line F

- **Storm Drain Line Removal:** remove underground storm drain pipes and manholes located at IR Site 5 inside Building 5 and at storm drain line F between Building 5 and the outfall at the Seaplane Lagoon.
- **Sewer Line Removal:** remove underground industrial sewer pipe located at IR Site 10, north of Building 400.
- **Storm Drain Line Replacement:** replace underground storm drain pipes and manholes located at IR Site 5 inside Building 5 and between the west side of Building 5 and the outfall at the Seaplane Lagoon.
- **Sewer Line Replacement:** replace underground industrial sewer pipe located at IR Site 10, north of Building 400.
- **Radioactively Contaminated Soil Removal:** Survey and remove radioactively contaminated soil adjacent to the storm drain and sewer line removal locations.
- **Pipeline Radiation Survey:** Survey intersecting laterals.

IR Sites 1, 2 and 10

- **Site Restoration:** backfill excavations to match the existing grade, and resurface backfilled excavations to match the pre-excavation conditions.

Excavation work at Alameda Point shall be done in accordance with these Specifications and the

Protocol for Digging Operations at Alameda Point. A copy of the protocol is attached.

MEMORANDUM

29 May 1997

From: Officer in Charge, Navy Caretaker Site Office, Alameda Point

To: Alameda Point Transition Management Team

Subj: Protocol for Digging Operations at Alameda Point

1. **Purpose:** The purpose of this protocol is to establish the notification and action responsibilities for digging operations on Alameda Point (formally known as NAS Alameda).

2. **Background:** Naval Air Station Alameda closed on 30 APR 97 and shifted into caretaker status under the management of Engineering Field Activity West (EFA West). EFA West negotiated the Alameda Point Cooperative Agreement with the City of Alameda to perform all caretaker functions, including utility operations. The City of Alameda in-house personnel, the City operators/contractors, and Navy environmental remediation contractors have digging requirements. All operator/contractors will follow this protocol when any digging is required.

3. **Required Actions Before Digging:** When excavation is required for any reason, the operator/contractor will:

a. request utility clearance or marking from Underground Service Alert (USA) at (800) 642-2444. This process takes at least two working days lead time.

b. obtain a *digging permit* from the Navy Caretaker Site Office (CSO).

(1) For utility operators and City Public Works that have continual digging requirements, the Navy CSO will issue a "global" digging permit after transfer of utility information and briefings on environmental clean-up operations.

(2) For all contractors working specific projects, the Navy CSO will issue a "project" digging permit after review of specific site conditions.

(3) The overall Navy CSO point of contact to obtain digging permits is Mr. Steve Loo at (510) 749-8911. Mr. David Tse (749-8983) is an alternate point of contact for utility issues. Mr. Roger Caswell (749-8913) is an alternate point of contact for information on environmental clean-up operations and areas of potential environmental contamination.

4. **Required Actions During Digging Operations:** The operator/contractor may begin digging operations within the guidelines of the digging permit. Once the requirement for digging is satisfied, the operator will restore the area of excavation to its original condition, unless specifically authorized or required to do otherwise.

a. **Unexpected Utilities:** Should the operator/contractor encounter any unexpected underground utilities (pipes, cables, conduits) during digging operations, immediately contact the Navy CSO office for guidance. Our primary point of contact is Steve Loo (749-8911) with David Tse (749-8983) and Mel Asuncion (749-8910) as alternates. Take care to protect the potentially active utility line until the CSO can determine what the line is and if it is active.

b. **Unexpected Soil Contamination:** Should the operator/contractor encounter any unexpected underground material that is suspected of being contaminated with any foreign substance, immediately cease operations in that area and contact the Navy CSO office for investigation. Our primary point of contact is Roger Caswell (749-8913) with Susan Neishi (749-8912) and Doug DeLong (749-8979) as alternates. The CSO will notify the EFA BRAC Environmental Coordinator (BEC), Mr. Steve Edde (749-8903).

(1) The Navy CSO and the BEC will immediately investigate the excavation area, take samples of the suspect material, obtain analysis, and make a decision on how to proceed. *The operator is not authorized to continue digging operations without specific Navy direction.* If there is a utility emergency that must be abated, the Navy CSO, the City CA Manager, and the operator will determine an appropriate alternative corrective action.

(2) If the soil is found to be contaminated with a hazardous substance and immediate remedial action is required, the Navy CSO and the BEC will obtain emergency assistance from the EFA West BRAC Environmental Contracting Officer, Mr. Mark Meadows ((415) 244-2355), for emergency remediation contract support.

5. **Financial Responsibilities:** The following general guidelines apply:

a. The operator/contractor that fails to obtain utility clearance/markings through USA or fails to obtain a digging permit from the Navy CSO is financially responsible to repair damaged utility lines that would have been identified and located through the digging permit process.

b. The operator/contractor is financially responsible for the cost to clean up any hazardous material release, hazardous waste produced, or site contamination caused by the operator/contractor during work execution.

c. The Navy is financially responsible for the cost to remediate pre-existing soil contamination encountered during digging operations.

D. H. Orndoff
CDR, CEC, USN

SECTION 01010

SUMMARY OF WORK

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. The work specified in this removal action is being accomplished under two separate contracts.
1. Contractor One will perform the following:
 - a. Remove floor coverings.
 - b. Perform radiation surveys of building surfaces.
 - c. Decontaminate internal building surfaces.
 - d. Remove and replace exposed piping.
 - e. Remove radioactive anomalies from Landfills 1 and 2.
 - f. Perform radiation surveys (pre-removal and post-removal) at radioactive anomaly locations.
 - g. Backfill anomaly removal locations.
 - h. Containerize wastes generated by the work.
 - i. Other work necessary to perform these activities.
 2. Contractor Two will perform the following:
 - a. Remove and replace underground pipes including those under building floors.
 - b. Treat, or transport and dispose of groundwater accumulated during the work.
 - c. Remove radioactively contaminated soil adjacent to pipeline removal locations.
 - d. Perform radiation surveys at pipeline removal locations.
 - e. Dispose of wastes generated by the work of both Contractors One and Two.
 - f. Backfill excavations.
 - g. Resurface areas excavated for pipe removal/replacement work.
 - h. Other work necessary to perform these activities.

- B. Floor Covering Removal:** Includes removal of floor covering and mastic, that may consist of asbestos containing material (ACM), in Buildings 5 and 400. To be performed by Contractor One.
- C. Decontamination:** Includes cleaning and/or removal of contaminated floor and wall surfaces in Buildings 5 and 400. To be performed by Contractor One.
- D. Exposed Drain Line Removal:** Includes removal of exposed drain pipes located inside Buildings 5 and 400. To be performed by Contractor One.
- E. Storm Drain Line Removal:** Includes removal of underground storm drain pipes located inside Building 5, and pipes and manholes located between the west side of Building 5 and the outfall at the Seaplane Lagoon. To be performed by Contractor Two
- F. Industrial Sewer Line Removal:** Includes removal of underground industrial sewer pipes located north of Building 400. To be performed by Contractor Two.
- G. Contaminated Soil Removal:** Includes removal of contaminated soil adjacent to the pipeline removal locations. To be performed by Contractor Two.
- H. Sampling and Analysis:** Includes sampling and analytical testing for waste disposal profiles, field screening, wastewater disposal, and backfill construction. To be performed by Contractors One and Two.
- I. Radiation Survey:** Includes measurement of radiation activity on the floor surfaces of Buildings 5 and 400 at locations where floor covering has been removed (to be performed by Contractor One).
- J. Radiation Survey:** Includes measurement of radiation activity inside the laterals that intersect the removed storm drain pipes (to be performed by Contractor Two).

- K. **Waste Disposal:** Includes transportation and disposal of all contaminated and noncontaminated waste materials generated during the Work. To be performed by Contractor Two.
- L. **Plumbing System Installation:** Includes replacement of exposed drain pipes located inside Buildings 5 and 400. To be performed by Contractor One.
- M. **Storm Drain Line Installation:** Includes replacement of underground storm drain pipes located inside Building 5, and pipes and manholes located between the west side of Building 5 and the outfall at the Seaplane Lagoon. To be performed by Contractor Two.
- N. **Industrial Sewer Line Installation:** Includes replacement of underground industrial sewer pipes located north of Building 400. To be performed by Contractor Two.
- O. **Site Restoration:** Includes backfilling excavations to match the existing grade, and resurfacing the backfilled excavations to match the pre-excavation construction. To be performed by Contractors One and Two.

1.2 RELATED SECTIONS

- A. Section 01300 - Submittal Procedures

1.3 REFERENCES

- A. CLEAN II Contract Task Order 0147, Removal Action Drawings
- B. Tetra Tech EM, Inc., and Morrison Knudsen Corp. 1998. "Alameda Point, Alameda, California, IR Sites 1, 2, 5, and 10, Radiological Removal Action, Technical Work Document, Remedial Action Plan." (TWD/RAP).

1.4 DEFINITIONS

- A. **Navy:** In these Specifications "Navy" refers to the U.S. Navy or its designated representative(s).
- B. **Contractor:** In these Specifications "Contractor" refers to Contractor One and/or Contractor Two as appropriate to the work.

1.5 SUBMITTALS

- A. **Submit to the Navy for approval at least 30 days prior to the proposed start of any removal action work, a Work Plan (WP) that describes how the Contractor will perform the work described in the Drawings and these Specifications (as appropriate to the individual Contractor's scope of work). The WP shall address the following elements, as appropriate to the individual Contractor's scope of work:**
 - 1. **Methods for removal of contaminated building surface materials, piping, and soil, at each building or area where removal action work will occur.**
 - 2. **Methods for isolating the sections of the storm drain system undergoing removal and construction, and for maintaining the operations of the active sections of the storm drain system.**
 - 3. **Methods for containing the contaminated wastes**
 - 4. **Methods for minimizing the volume of wastewater generated during removal action work.**
 - 5. **Methods for handling, treatment and minimizing the volume of groundwater accumulated during removal action work.**
 - 6. **Identification of final disposal site(s).**
 - 7. **Methods for handling, storage, transportation and disposal of contaminated wastes including wastewater.**
 - 8. **Methods and equipment for field screening sampling and analysis.**
 - 9. **Contingency plans for incident/emergency situations.**
 - 10. **Methods and equipment for performing the radiation survey work at the building floor surfaces, and the storm drain pipes.**
 - 11. **Construction details and procedures for equipment and personnel decontamination facilities.**

12. Traffic routing during the work.
13. Locations where temporary fencing will be installed.

B. Removal action work shall not begin until the Contractor has provided the Navy with an approved version of the WP.

C. Provide a written health and safety program that includes procedures covering work to be performed.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 SAFETY REQUIREMENTS

A. Perform all work in accordance with the requirements of Title 8 of the California Code of Regulations, US Army Corp of Engineers Manual EM-385-1-1, and selected portions of Title 10 of the Code of Federal Regulations identified as ARARS in the TWD/RAP.

END OF SECTION

SECTION 01039

COORDINATION AND MEETINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Preconstruction meeting.
- B. Site mobilization meeting.
- C. Progress meetings.
- D. Tailgate meetings.

1.2 PRECONSTRUCTION MEETING

- A. The Navy will schedule a meeting after Notice of Award.
- B. Attendance Required: key personnel of the Navy, CLEAN project manager (PM), CLEAN site quality assurance supervisor (SQAS), Contractor's PM, Contractor's superintendent, and major subcontractors.
- C. Agenda:
 - 1. Submission of schedule of values and progress schedule.
 - 2. Designation of personnel representing the parties to the Contract.
 - 3. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 - 4. Schedules.
 - 5. Coordination with CLEAN SQAS.
 - 6. Health and safety procedures.
 - 7. Decontamination and contaminant controls.

D. The Navy will record minutes and distribute copies to participants.

1.3 SITE MOBILIZATION MEETING

A. The Navy will schedule a meeting at the project site prior to Contractor occupancy.

B. Attendance Required: The Navy, CLEAN PM, CLEAN SQAS, Contractor's PM, Contractor's superintendent, and major subcontractors.

C. Agenda:

1. Use of premises by the Navy and the Contractor.
2. Navy's requirements and partial/temporary occupancy.
3. Construction facilities and controls provided by the Navy.
4. Temporary utilities provided by the Navy.
5. Site layout.
6. Security and housekeeping procedures.
7. Schedules.
8. Application for payment procedures.
9. Procedures for testing.
10. Procedures for maintaining record documents.
11. Health and safety procedures.

D. The Navy will record minutes and distribute copies to participants.

1.4 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at weekly intervals.

B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

C. Attendance Required: CLEAN SQAS, Contractor's superintendent, major subcontractors and suppliers, as appropriate to agenda topics for each meeting. Navys attendance will be at the Navy's option.

D. Agenda:

1. Minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems which might impede planned progress.
5. Review of submittals schedule and status of submittals.
6. Maintenance of progress schedule.
7. Corrective measures to regain projected schedules.
8. Planned progress during succeeding work period.
9. Coordination of projected progress.
10. Maintenance of quality and work standards.
11. Effect of proposed changes on progress schedule and coordination.
12. Health and Safety procedures.
13. Other business relating to the Work.

E. Record minutes and distribute copy to the Navy for review and comment within two days after meeting.

1.5 TAILGATE MEETINGS

A. Schedule and conduct daily tailgate meetings throughout progress of the Work.

B. Attendance Required: Contractor's and subcontractor's on-site field personnel.

C. Agenda:

1. Planned activities for the day.
2. Health and safety issues.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 NIGHT WORK

- A. Prior approval by the Navy Transition Office, Alameda Point is required for all night work.

END OF SECTION

SECTION 01300

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Prepare required submittals for the Navy's review.**

1.2 RELATED SECTIONS

- A. Section 01400 - Quality Control**

1.3 SUBMITTAL PROCEDURES

- A. Transmit five (5) copies of each submittal with a transmittal form approved by the Navy.**
- B. Number the submittal forms sequentially. Revise submittals using original submittal number and alphabetic suffixes assigned sequentially.**
- C. Maintain log of original and revised submittal numbers.**
- D. Complete submittal form by providing project name, Contractor name, subcontractor or supplier name, pertinent drawing and detail number, and specification section number, as appropriate.**
- E. Sign submittal certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.**

- F. Schedule submittals to expedite the Work and deliver to the Navy at site. Coordinate submittal of related items.
- G. For each submittal for review, allow 15 calendar days, excluding delivery time to and from the Navy.
- H. Identify variances from Contract Documents and product or system limitations which may be detrimental to successful performance of the Work.
- I. Provide space for review stamps.
- J. When Contract Documents have been revised, identify in writing all changes made since previous submission.
- K. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
- L. Submittals not requested by the Navy will not be recognized or processed.
- L. Submittals in English language.

1.4 SUBMITTAL APPROVAL/REJECTION

- A. Proceed with work for submittals marked "Approved".
- B. Do not proceed with work for submittals marked "Rejected". Resubmit submittals marked "Rejected". Proceed with previously rejected work when submittals have been revised and marked "Approved".

1.5 MATERIAL DATA

- A. Material Data For Review:
 - 1. Submit to the Navy for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.

2. Submit at least 15 days prior to installation.
 3. After review, distribute copies in accordance with Article 1.3. Retain one (1) copy of each submittal for project records.
- B. **Material Data For Information:** Submit for the Navy's information only.
- C. **Material Data For Project Close-out:** Submit for the Navy's information during and after project completion.
- D. **Mark each copy of material data to identify applicable materials, models, options, and other data.** Supplement manufacturers' standard data to provide information specific to this project.

1.6 SHOP DRAWINGS

- A. **Shop Drawings For Review:**
1. Submit to the Navy for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
 2. Submit at least 15 days prior to installation.
 3. After review, distribute copies in accordance with Article 1.3. Retain one (1) copy of each submittal for project records.
- B. **Shop Drawings For Information:** Submit for the Navy's information only.
- C. **Shop Drawings For Project Close-out:** Submit for the Navy's information during project and after project completion.

1.7 CONFORMANCE TEST REPORTS

- A. Submit conformance test reports to the Navy for the purpose of determining conformance with information given and the design concept expressed in the contract documents.
- B. Submit at least 15 days prior to installation.

1.8 CERTIFICATES

- A. When specified in individual specification sections, submit certification by the manufacturer, installation/application subcontractor, or Contractor, in quantities specified for material data.**
- B. Certify materials conform to or exceed specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.**
- C. Certificates of test results on materials shall be dated within 90 days prior to the submittal and must be acceptable to the Navy.**

1.9 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, adjusting, and finishing.**
- B. Specify special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.**
- C. Submit at least 15 days prior to installation.**

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01310

PROJECT SCHEDULES

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Prepare required schedules and submit to the Navy for review.**
- B. Revise required schedules based upon the Navy's comments and actual project conditions and submit to the Navy.**

1.2 RELATED SECTIONS

- A. Section 01300 - Submittal Procedures**

1.3 REFERENCES

- A. Associated General Contractors of America (AGC): "The Use of Critical Path Method (CPM) in Construction - A Manual for General Contractors and the Construction Industry".**

1.4 SUBMITTALS

- A. Submit initial detailed Progress Schedule. Revise to agreed upon Navy requirements and resubmit within ten days after Navy review.**
- B. Within 15 days after date of Notice to Proceed with Mobilization, submit Manpower Buildup/Equipment Usage projections.**
- C. Within 15 days after date of Notice to Proceed with Mobilization, submit to the Navy for approval a Schedule of Submittals that lists the required submittals and submittal dates.**

- D. Within 15 days after date of Notice to Proceed with Mobilization, submit a Schedule of Major Materials proposed for use, with name of manufacturer, trade name, and model number of each material. For materials specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.5 PROGRESS SCHEDULE

A. Format:

1. Prepare progress schedule using a Project Evaluation and Review Technique (PERT) or a CPM format, with a separate line for each item of Work at each Installation Restoration (IR) site, identifying first work day of each week.
2. Scale and Spacing: To provide space for notations and revisions.
3. Sheet Size: Minimum 22 x 17 inches

B. Content:

1. Show complete sequence of Work by IR site and activity, with dates for beginning and completion of each element of project.
2. Identify work of separate stages and other logically grouped activities.
3. Provide sub-schedules to define critical portions of the entire schedule.
4. Include conferences and meetings in schedule.
5. Show accumulated percentage of completion of each item, and total percentage of Work completed for each item of Work at IR sites, as of the first day of each month.
6. Provide separate schedule of submittal dates for shop drawings, material data, and samples, including dates reviewed submittals will be required from the Navy.

C. Revisions:

1. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
2. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
3. Provide narrative report to define problem areas, anticipated delays, and

schedule impact. Report corrective action taken, or proposed, and its effect.

1.6 DISTRIBUTION

- A. Distribute copies of reviewed schedules to project site file, subcontractors, suppliers, and other concerned parties.**
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.**

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01400

QUALITY CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Quality control of work.
- B. Tolerances.
- C. References and standards.
- D. Testing services.

1.2 RELATED SECTIONS

- A. Section 01300 - Submittal Procedures
- B. Section 01405 - Geotechnical Soil Testing Services
- C. Section 01412 - Analytical Testing Services

1.3 REFERENCES AND STANDARDS

- A. For materials or workmanship specified by association, trade, or other consensus standards, comply with requirements of the relevant standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard current on date of the Navy-Contractor Agreement except where a specific date is established by code.

- C. Obtain copies of standards where required by product specification sections.

1.4 QUALITY CONTROL OF WORK

- A. Monitor quality control over suppliers, manufacturers, materials, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions. Follow each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from the Navy before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- F. Secure materials in place with positive anchorage devices designed and sized to withstand stresses, vibration, or physical distortion.

1.5 TOLERANCES

- A. Monitor fabrication and installation tolerance control of materials to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from the Navy before proceeding.
- C. Adjust materials to appropriate dimensions. Position materials in place before securing them.

1.6 TESTING SERVICES

- A. Provide services of Navy-approved, State-certified, independent testing laboratories to perform specified sampling and analyses.**
- B. Testing and source quality control may occur on or off the project site. Perform testing as required by the Specifications.**
- C. Submit reports prepared by the independent testing laboratories to the Navy. The reports shall describe observations, summarize results of tests, and indicate compliance or non-compliance with Contract Documents.**
- D. Perform re-testing required because of non-conformance to specified requirements.**

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that existing site conditions and surfaces are acceptable for subsequent Work prior to beginning the affected portion of the Work.**
- B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.**
- C. Examine and verify specific conditions described in individual specification sections.**

END OF SECTION

SECTION 01405

GEOTECHNICAL SOIL TESTING SERVICES

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Provide specified services of a Navy-approved, State-certified, independent testing laboratory to perform geotechnical soil sampling and testing.**

1.2 RELATED SECTIONS

- A. Section 01300 - Submittal Procedures**
- B. Section 01400 - Quality Control**
- C. Section 02200 - Earthwork**
- D. Section 02205 - Soil Materials**
- E. Section 02207 - Aggregate Materials**

1.3 REFERENCES

- A. American Society of Testing and Materials (ASTM).**
 - 1. C1077 - Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.**
 - 2. D3740 - Practice for the Evaluation of Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.**
 - 3. E329 - Standard Specification for Agencies Engaged in Testing and/or Inspection of Materials Used in Construction.**

4. E543 - Practice for Evaluating Agencies that Perform Nondestructive Testing.
5. E548 - Guide for General Criteria Used for Evaluating Laboratory Competence.
6. E699 - Criteria for Evaluation of Agencies Involved in Testing, Quality Assurance, and Evaluating Building Components in Accordance with Test Methods Promulgated by ASTM Committee E-6.

B. Clean II Contract Task Order 0147, Construction Quality Assurance Plan (CQAP).

1.4 CONTRACTOR SUBMITTALS

- A. Prior to start of Work, submit the following:
1. Proposed testing laboratory name, address, and telephone number, and names of full time specialist and responsible officer.
 2. Copy of report of laboratory facilities inspection made by the Materials Reference Laboratory of the National Bureau of Standards during its most recent inspection, with a memorandum of remedies of any deficiencies reported after inspection.
 3. Documentation regarding the qualifications of the Independent Laboratory to perform the required testing, and the independence of the laboratory from Contractor. (See the requirements of ASTM D3740 and ASTM E329).

1.5 QUALITY ASSURANCE

- A. Comply with requirements of ASTM C1077, ASTM D3740, ASTM E329, ASTM E543, ASTM E548, and ASTM E699.
- B. Laboratory: Certified by the State of California and approved by the Navy.
- C. Laboratory Staff: Maintain a full time specialist on staff to review services.

- D. **Testing Equipment:** Calibrated, at intervals required by appropriate standards, with devices of an accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.

1.6 LABORATORY RESPONSIBILITIES

- A. Provide qualified personnel as necessary at site. Cooperate with the Navy in performance of services.
- B. Perform specified sampling and testing of materials in accordance with specified standards.
- C. Ascertain compliance of materials and mixes with requirements of Contract Documents.
- D. Promptly notify the Navy of observed irregularities or non-conformance of Work or materials.
- E. Perform additional tests required by the Navy.

1.7 LABORATORY REPORTS

- A. After each test, promptly submit laboratory report to the Navy. Include in each report:
 - 1. Date(s) and time(s) of sampling, inspection and/or testing.
 - 2. Project title and number.
 - 3. Name of technician.
 - 4. Location within the site.
 - 5. Type of inspection or test.
 - 6. Results of tests.
 - 7. Statement of conformance with Contract Documents.
- B. When requested by the Navy, provide interpretation of test results.

1.8 CONTRACTOR RESPONSIBILITIES

- A. Notify the Navy 24 hours prior to expected start time of operations requiring testing services.**

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 SCHEDULE OF TESTS

- A. Required tests and test standards are contained in related Specification sections.**

END OF SECTION

SECTION 01412

ANALYTICAL TESTING SERVICES

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Provide services of a Navy-approved testing laboratory(s) to perform specified and required analytical sampling and testing.

1.2 RELATED SECTIONS

- A. Section 01300 - Submittal Procedures
- B. Section 01400 - Quality Control
- C. Section 02052 - Waste Transportation and Disposal
- D. Section 02200 - Earthwork
- E. Section 02225 - Pipeline Removal

1.3 REFERENCES

- A. Department of the Navy, Naval Energy and Environmental Support Activity (NEESA) 20.2-047B

1.4 CONTRACTOR SUBMITTALS

- A. Prior to start of Work, submit the following:
 - 1. Proposed testing laboratory(s) name, address, and telephone number, and names of full time specialist and responsible officer.

2. Copy of report of laboratory facilities inspection made by the Materials Reference Laboratory of the National Bureau of Standards during its most recent inspection, with a memorandum of remedies of any deficiencies reported after the inspection.
3. Documentation regarding the certifications and qualifications of the laboratory(s) to perform the required testing.

1.5 QUALITY ASSURANCE

- A. Laboratory(s): Certified to operate in State of California, meets NEESA 20.2-047B requirements, and a participant in the USEPA Contract Laboratory Program (CLP).
- B. Laboratory staff: Maintain a full time specialist on staff to review services.
- C. Testing equipment: Calibrated, at intervals required by appropriate standards and regulations, with devices of an accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.

1.6 LABORATORY RESPONSIBILITIES

- A. Provide qualified personnel at site. Cooperate with the Navy in performance of services.
- B. Perform specified sampling and testing of materials in accordance with Specifications 02052 and 02200.
- C. Promptly advise the Navy and the Contractor of observed irregularities or non-conforming Work.
- D. Perform additional tests required by the Navy.

1.7 LABORATORY REPORTS

- A. After each test, promptly submit laboratory report to the Navy. Include in each report:**
 - 1. Date(s) and time(s) of sampling, inspection and/or testing.**
 - 2. Project title and number.**
 - 3. Name of technician.**
 - 4. Location within the site.**
 - 5. Type of inspection or test.**
 - 6. Results of tests.**
 - 7. Statement of Conformance with Contract Documents and regulations.**

- B. Provide interpretation of test results when requested by the Navy.**

1.8 CONTRACTOR RESPONSIBILITIES

- A. Provide on-site office space and secure storage space for use by analytical laboratory.**

- B. Notify the Navy 24 hours prior to expected start time of operations requiring testing services.**

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01430

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. The requirements of this section apply to hazardous substances or waste materials that may be generated or released during site remediation and demolition processes, or as a result of releases, accidental or otherwise, due to Contractor's operations.

1.2 RELATED SECTIONS

- A. Section 01010 - Summary of Work
- B. Section 01300 - Submittal Procedures
- C. Section 01450 - Removal of Asbestos Containing Material

1.3 REFERENCES

- A. Contractor's site specific Health and Safety Plan (HASP)
- B. U.S. Environmental Protection Agency (EPA) National Emission Standards for Hazardous Air Pollutants (NESHAPS) Asbestos Regulations (40 CFR 61, Subpart M)

1.4 SUBMITTALS

- A. Submit for Navy approval a complete Radiation Protection Plan identifying radiological controls, methods for certifying equipment is free of radiological contamination before release, elements of radiation, and safety orientation.

- B. **Submit for Navy approval a Sampling and Analysis Plan that includes procedures for characterization of radiological and mixed waste, and for sampling and analysis of soils which will be returned to the excavation.**
- C. **Submit for Navy approval construction plans and details for contaminated waste accumulation areas.**
- D. **Submit, in the Work Plan, information regarding the construction details and procedures for equipment and personnel decontamination facilities.**
- E. **Submit material safety data sheets (MSDS) for all chemical products used on site**

1.5 PROTECTION OF ENVIRONMENTAL RESOURCES

- A. **Confine activities to areas defined by the Drawings or these Specifications.**
- B. **Comply with environmental protection rules identified as ARARs.**
- C. **Maintain decontamination facilities in accordance with the HASP.**
- D. **Maintain radiological controls program in accordance with the approved Radiation Protection Plan.**
- E. **Use only Navy-approved sites for the purpose of storing materials and equipment.**
- F. **Construct bermed and lined contaminated waste accumulation areas to prevent cross-contamination of underlying surfaces.**
- G. **Protect contaminated wastes at all times from wind and precipitation to prevent release of air-borne or water-borne environmental contaminants. Implement temporary drainage control measures including berms, sand bags, stormwater collection and treatment, and other measures needed to prevent run-on and run-off from the contaminated waste accumulation areas.**

- H. Restore construction material storage areas, and contaminated waste accumulation areas to their original conditions (less native vegetation) and to the satisfaction of the Navy. Complete restoration as soon as the sites are no longer needed for storage, or contaminated waste accumulation.
- I. Dispose of fuels, oils, bitumen, or other potentially harmful materials at Navy-approved disposal facilities.
- J. Do not allow water used for on-site cleaning, material processing, concrete curing, and clean-up, or other wastewaters, to flow off the project site or to enter a sewer, storm drain, stream, or other water resource.
- K. Provide for safe handling, storage, and proper disposal of all materials, hazardous or otherwise, that are brought onto the site by Contractor.
- L. Decontaminate all equipment used to process hazardous materials prior to such equipment's being removed from the work area. Decontaminate in accordance with the HASP and applicable state and local regulations. Notify the Navy 24 hours prior to releasing equipment to allow witness of final survey. Remove any residual radioactivity identified by final survey to satisfaction of the Navy. Maintain records of all releases of equipment.

1.6 AIR QUALITY

- A. Do not burn materials on or off the site.
- B. Apply water as necessary to prevent dust generation during excavation, hauling and handling.
- C. Cover loads to prevent release of contaminated materials and dust generation during hauling.
- D. Comply with EPA NESHAPS regulations for controlling asbestos emission during removal of asbestos containing material (ACM).

1.7 POST CONSTRUCTION CLEANUP

- A. Remove temporary facilities including but not limited to haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess or waste material, or any other vestiges of the Work.**

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01450

REMOVAL OF ASBESTOS CONTAINING MATERIALS

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Remove and dispose of floor covering and mastic containing asbestos containing materials (ACM) from locations shown on the Drawings.
- B. Provide medical examinations and maintain medical records of personnel as required by the applicable state regulations.
- C. Assume full responsibility and liability for compliance with all applicable state and local regulations pertaining to work practices, hauling, disposal, and protection of workers, visitors to the site, and persons occupying areas adjacent to the site. Contractor shall hold the Navy harmless for failure to comply with any applicable work, hauling, disposal, safety, health or other regulation on the part of himself, his employees, or his subcontractors.

1.2 RELATED SECTIONS

- A. Section 01300 - Submittal Procedures

1.3 CODES AND REGULATIONS

- A. This section sets forth government regulations and industry standards which are made a part of the Specifications. This section also sets forth those permits which must be applied for and received, or those notices which must be given to government agencies before start of work.
 - 1. State of California requirements for asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:

- a. California Code of Regulations (CCR), Title 8, Section 341.6 - Registration Requirements
 - b. CCR, Title 8, Sections 1528, 1531, and 5144 - California General Industry Safety Orders, Construction Safety Orders, Respirators and Respiratory Fit Test
 - c. CCR, Title 8, Sections 1529 - Asbestos
 - d. CCR, Title 8, Section 3204 - Medical and Exposure Records
 - e. CCR, Title 8, Section 5194 - California General Industry Safety Orders, Hazard Communication Standard
 - f. CCR, Title 22 - Minimum Standards for Management of Hazardous Waste and Extremely Hazardous Waste
 - g. CCR, Title 22, Section 25100 - Hazard Waste Control
 - h. CCR, Title 22, Sections 25915, 25916, 25917, 25920, 25923.1, 25924 - Notice to Employees
 - i. CCR, Title 22, Section 25249.5 - Proposition 65
 - j. CCR, Title 22, Section 66261.24 - Disposal Classification Requirements
 - k. CCR, Title 22, Section 66263.23 - Packaging Requirements
 - l. CCR, Title 22, Section 66264.318 - After January 1, 1995; Disposal Requirements
 - m. California Business and Professional Code (CBPC), Section 7058.5-6 - Contractors Asbestos Certification
 - n. CBPC, Section 7118.5 - Use of Uncertified Contractors
 - o. CBPC, Section 7180 - Asbestos Consultants
 - p. California Labor Code (CLC), Section 6501.5-6511 - Asbestos Related Work
 - q. CLC, Section 9030 - Asbestos Carcinogen Registration and Reporting
 - r. California Health and Safety Code (CHSC), Section 25143.7 - Asbestos Waste Discharge Regulations
 - s. CHSC, Section 25163 - Transportation Requirements
 - t. CHSC, Section 25179.6 - Treatment Requirements
2. United States Environmental Protection Agency (EPA) National Emissions Standards for Hazardous Air Pollutants (NESHAPS) Asbestos

Regulations (40 CFR 61, Subpart M).

3. **Local requirements for asbestos work include, but are not limited to, the following:**
 - a. **City of Alameda Fire Department Asbestos Abatement Regulations**
 - b. **Industry standards applicable to the Work. Obtain copies of standards applicable to performance of a required activity. Copies of applicable standards are not bound with the Contract Documents.**

1.4 SUBMITTALS

- A. **Provide a copy of California Annual Registration for Asbestos-Related Work. Maintain all required licenses, certifications, permits, inspection reports, releases, regulations, proof of transmittal, and registrations to perform asbestos abatement or removal work in the State of California for the duration of the job.**
- B. **Describe in the Work Plan how the Contractor will remove, contain, store, transport and dispose of ACM.**

1.5 NOTICES

- A. **Send written notification, as required by United States Environmental Protection Agency (EPA) National Emission Standards for Hazardous Air Pollutants (NESHAPS) Asbestos Regulations (40 CFR 61, Subpart M), to the Bay Area Air Quality Management District on district forms postmarked or delivered no later than 10 working days prior to beginning any work on ACM.**
- B. **Notify the local Cal-OSHA Division Office 24 hours prior to asbestos removal activities.**

1.6 POSTING OF NOTICES AND MAINTENANCE OF REGULATIONS

- A. Post all notices required by federal, state and local regulations in areas accessible by workers and regulatory personnel.**
- B. Maintain two (2) copies of federal, state and local regulations and standards. Maintain one copy of each at job site and one copy of each at Contractor's office.**

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 ACM REMOVAL

- A. Perform all work in accordance with applicable regulations.**
- B. Implement air monitoring measures during ACM removal work.**
- C. Wrap or encapsulate all materials containing ACM.**
- D. Dispose of all materials containing ACM together.**
- E. Public exposure to asbestos during the work shall not exceed regulated levels.**

END OF SECTION

SECTION 01500

CONTRACTOR FACILITIES AND TEMPORARY CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Temporary Utilities: electricity, lighting, ventilation, telephone and facsimile service, and water and sanitary facilities.
- B. Temporary Controls: fencing, water control, and security.
- C. Facilities: access roads, parking, progress cleaning and waste removal, and temporary buildings.

1.2 RELATED SECTIONS

- A. Section 02830 - Fencing

1.3 TEMPORARY ELECTRICITY

- A. Provide and maintain electrical power for Contractor's operations:
 - 1. Existing building power may be utilized during construction subject to availability and capacity. Provide meter(s) at connection(s) to Contractor's facilities.
 - 2. Provide power by portable generator where building power is not available or suitable.
- B. Do not disrupt the Navy's use of service without written approval. Exercise measures to conserve energy.

1.4 TEMPORARY LIGHTING

- A. Provide and maintain lighting for Contractor's operations.**
- B. Existing building lighting may be utilized during construction.**

1.5 TEMPORARY VENTILATION

- A. Ventilate enclosed areas to prevent accumulation of dust, fumes, vapors, or gases.**

1.6 TELEPHONE SERVICE

- A. At time of project mobilization provide, maintain, and pay for telephone service to field office.**

1.7 FACSIMILE SERVICE

- A. Provide, maintain and pay for facsimile service and a dedicated telephone line to field office at time of project mobilization.**

1.8 TEMPORARY WATER SERVICE

- A. Connect to the Navy's existing water source for Contractor's operations at time of project mobilization. Provide meter(s) at connection(s) to Contractor's facilities. Do not disrupt the Navy's use of service without written approval. Exercise measures to conserve water use.**

1.9 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain separate men's and women's sanitary facilities and enclosures for Contractor use at time of project mobilization. Maintain facilities and enclosures in clean and sanitary condition daily.**

- B. Provide and maintain separate men's and women's change room and shower facilities. Equip with radiological survey meters. Provide emergency personal decontamination and first aid supplies at this location.**

1.10 FENCING

- A. Provide temporary chain link fence with vehicle gates around excavation and storage sites to prevent unauthorized entry.**

1.11 WATER CONTROL

- A. Minimize generation of wastewater.**
- B. Maintain subsurface structures free of water. Provide, operate, and maintain pumping equipment. Collect, sample and test as necessary, and properly dispose of at an approved off-site facility, any water that collects in excavations prior to soil cleanup verification sampling. Do not discharge collected water to sanitary or industrial waste sewers, or storm drain system.**

1.12 SECURITY

- A. Coordinate with the Navy and comply with its security program.**
- B. Provide and maintain available at all times 3 complete pairs of personal protective equipment (PPE) for U.S. Government visitors to the site.**

1.13 ACCESS ROADS

- A. Provide and maintain access to fire hydrants free of obstructions.**
- B. Designated existing on-site roads may be used for Contractor's traffic. Traffic routing is subject to the Navy's approval. Discuss in the Work Plan how traffic will be routed during the work.**

1.14 PARKING

- A. Utilize designated contractor parking to accommodate Contractor personnel's personal vehicles.**

1.15 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain work areas free of waste materials, debris, and rubbish and in an orderly condition.**
- B. Provide daily cleaning and maintenance of Contractor office facilities.**
- C. Collect and remove non-contaminated waste materials and rubbish from site weekly. Dispose of such materials at an Navy-approved off-site facility.**

1.16 TEMPORARY BUILDINGS

- A. Provide and maintain Field offices during progress of Work.**
- B. Provide space for project meetings, with table and chairs to accommodate 6 persons.**
- C. Install storage and field offices in Navy-designated and approved locations only.**
- D. Some existing office space may be available for temporary use for field offices. The availability of such space will be determined by the Work schedule and by the Navy.**

1.17 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to final inspection.**

- B. Clean and repair damage caused by installation or use of temporary equipment and facilities.
- C. Restore existing and permanent facilities used during construction to original condition.

PART 2 PRODUCTS

2.1 MATERIALS, EQUIPMENT, FURNISHINGS

- A. Materials, equipment and furnishings shall be serviceable, new or used, and adequate for required purpose.

2.2 TEMPORARY BUILDINGS

- A. Temporary buildings shall be portable or mobile buildings, or buildings constructed with floors raised above ground, securely fixed to foundations, with steps and landings at entrance doors.
- B. Temporary buildings or offices and storage spaces shall be structurally sound, secure, weather tight enclosures.
- C. Offices shall be equipped with lighting, electrical outlets, heating, cooling and ventilating equipment, and equipped with sturdy furniture and drawing display tables.
- D. Temperature transmission resistance of floors, walls, and ceilings shall be compatible with occupancy and storage requirements.
- E. Contractor shall provide appropriate fire extinguishers at each office and each storage area.
- F. Interior materials in storage sheds shall be as required to provide specified conditions for storage of products.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 02003

DECONTAMINATION

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Perform site decontamination in accordance with criteria identified in this section.**
- B. Collect and contain all solid waste, residue and wastewater generated during decontamination.**
- C. Transport and dispose of the collected materials in accordance with Sections 01430 and 02052.**

1.2 RELATED SECTIONS

- A. Section 01300 - Submittals**
- B. Section 01430 - Environmental Protection**
- C. Section 02052 - Waste Transportation and Disposal**
- D. Section 02200 - Earthwork**
- E. Section 02225 - Pipeline Removal**

1.3 REFERENCES

- A. U.S. Environmental Protection Agency (EPA). 1997. Memorandum Regarding Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination. OSWER No. 9200.4-18.**

- B. U.S. Nuclear Regulatory Commission (NRC). 1974. Regulatory Guide NRC. RG 1.86.
- C. PRC Environmental Management Inc. (PRC). 1997. "Radiation Survey Report, Pre-Draft, Naval Air Station, Alameda, California." March 6.
- D. Tetra Tech EM, Inc., and Morrison Knudsen Corp. 1998. "Alameda Point, Alameda, California, IR Sites 1, 2, 5, and 10, Radiological Removal Action, Technical Work Document, Remedial Action Plan." (TWD/RAP).

1.4 DEFINITIONS

- A. Decontamination shall mean the removal of all radiologically contaminated building surfaces, pipelines and adjacent soil to specified removal action goals.
- B. Wastewater shall mean all wastewater generated during decontamination activities including dewatering excavations.

PART 2 PRODUCTS

2.1 WASTE CONTAINMENT AND STORAGE

- A. Provide equipment for the complete containment of decontamination wastes.
- B. Provide Navy-approved containers for the temporary storage of decontamination wastes.

PART 3 EXECUTION

3.1 GENERAL

- A. The decontamination methods shall conform to the approved Implementation Work Plan.

- B. Minimize the production of waste materials and wastewater.**
- C. Separate waste material according to waste type (i.e., non-contaminated, asbestos, chemically contaminated, radiological, and mixed waste).**
- D. Label and temporarily store decontamination waste materials in accordance with Section 02052 and applicable regulations at an area approved by the Navy.**
- E. Sample, treat, and dispose of wastewater generated during decontamination in accordance with Section 02052 and applicable regulations.**

3.2 REMOVAL ACTION GOALS

- A. Decontamination will be deemed complete when the removal action goals presented in Table 4-1 of the TWD/RAP have been reached.**
- B. The determination that the removal action goals have been reached will be based upon results of confirmation sampling performed by the Navy.**

END OF SECTION

SECTION 02010

RADIATION SURVEYS

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Perform radiation surveys in accordance with criteria identified in this section. Contractor may propose exceptions to these procedures. Proposals for exceptions must be supported by sufficient documentation, and are subject to Navy approval.**
- B. Prepare a report of findings of the radiation survey for Sites 1 and 2 (Contractor 1).**
- C. Prepare a report of findings of the sewer laterals radiation survey (Contractor 2).**

1.2 RELATED SECTIONS

- A. Section 01300 - Submittals**
- B. Section 02003 - Decontamination**

1.3 REFERENCES

- A. Tetra Tech EM Inc. (TtEMI). 1998. "Radiation Survey Report, Naval Air Station, Alameda, California, Final." January.**

1.4 SUBMITTALS

- A. Information, which shall be included in the Work Plan, regarding the type of equipment and procedures for performing the radiation survey work, and an**

outline of the format that will be used to report the findings of the radiation survey. All radiation survey procedures shall conform to the procedures described in the Radiation Survey Report (TtEMI 1998) for the appropriate survey areas.

- B. Submit, within 15 days of completing the radiation survey in any given area, a Report of Findings of the radiation survey. The report shall include plans showing the locations, extent, and level of radioactivity of any anomalies detected on the building floors, and the locations and radioactivity levels of all readings taken within the pipelines. The report shall contain all raw data readings as well as the calculated activity values for the readings, and an instrument calibration report.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 GENERAL

- A. The radiation survey procedures shall conform to the approved Work Plan.

3.2 STORM DRAINS

- A. Perform survey measurements a minimum of 25 feet into each previously unsurveyed lateral that intersects with a pipe section being removed.
- B. Perform survey measurements a minimum of 25 feet beyond the last pipe section removed.

3.3 BUILDING FLOORS

- A. Perform radiation surveys inside Buildings 5 and 400 at locations where the existing floor covering has been removed by the Contractor as part of the Work.
- B. Mark all anomalous areas detected on the building floors.
- C. Resurvey after decontamination.

3.4 EQUIPMENT

- A. Use equipment similar to that used in the Radiation Survey Report (TtEMI 1997).

END OF SECTION

SECTION 02052

WASTE TRANSPORTATION AND DISPOSAL

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Provide all materials, labor, supervision, tools, equipment and construction machinery necessary to perform the following work for wastes generated during the performance of the Work, including all Contractor-generated wastes:
1. Load, transport, and dispose of non-contaminated waste at a regulated non-hazardous waste disposal site.
 2. Load, transport, and dispose of asbestos containing materials (ACM) waste at a regulated ACM waste disposal site.
 3. Load, transport, and dispose of radium contaminated waste at a regulated waste disposal site licensed to accept radioactively contaminated waste.
 4. Load, transport, and dispose of contaminated mixed waste at a regulated waste disposal site licensed to accept contaminated mixed waste. Mixed waste is RCRA hazardous waste contaminated with radioactive material above 5 picocuries per gram.
- B. Collect and contain all water used during decontamination. Sample and analyze containerized wastewater. Treat, transport and dispose of contaminated wastewater as appropriate.
- C. Collect and contain all free liquids from pipes being removed. Sample and analyze containerized free liquids. Treat, transport and dispose of, or recycle, liquids as appropriate.
- D. Sample and analyze all accumulated groundwater. Treat, transport and dispose of contaminated groundwater as appropriate.

- E. All waste transporters and disposal facilities must be approved in writing by the Navy prior to use.

1.2 RELATED SECTIONS

- A. Section 01300 - Submittal Procedures
- B. Section 01430 - Environmental Protection
- C. Section 01450 - Removal of Asbestos Containing Materials

1.3 REFERENCES

- A. U.S. Department of Transportation (DOT)

1.4 SUBMITTALS

- A. Submit information on the following to the Navy for approval within 15 days after Notice to Proceed:
 - 1. The proposed non-hazardous materials disposal facility(s).
 - 2. The proposed ACM disposal facility(s).
 - 3. The proposed radium-contaminated materials disposal facility(s).
 - 4. The proposed mixed waste materials disposal facility(s).
 - 5. The proposed material transporter(s) including applicable hazardous waste transport licenses.
- B. Submit on a daily basis information on the following to the Navy during waste transport operations:
 - 1. The completed landfill disposal receipts, showing type and load weight of non-hazardous materials.
 - 2. The completed waste transportation manifests.
 - 3. The completed land disposal restriction notification forms as required by 40 CFR 268.
- C. Submit waste profile analysis results to the Navy prior to waste disposal.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 WASTE PROFILE TESTING

- A. Collect and analyze waste profile samples prior to waste disposal.**
- B. Perform waste profile sampling and analysis in accordance with regulatory agency and disposal facility requirements.**

3.2 TRANSPORTATION

- A. Transport all materials in accordance with U.S. DOT regulations, in appropriate U.S. DOT-approved shipping containers.**
- B. Load all materials on trucks for transportation to disposal facilities. Ensure that trucks are legally loaded, properly secured, covered and placarded.**
- C. Obtain waste profile information prepared by the disposal facility. Prepare the hazardous waste manifests and land disposal restriction notification forms 48 hours prior to shipment of materials to be disposed of. Submit the prepared manifests to the Navy for approval and receive signature of the Navy or a designated agent of the Navy prior to shipment.**
- D. Transport radium-contaminated, and mixed waste materials to be disposed of in trucks operated by a licensed hazardous waste hauler approved by the Navy.**
- E. Transport materials to be disposed of at an ACM landfill in trucks operated by a licensed ACM waste hauler approved by the Navy.**

3.3 DISPOSAL

- A. Contaminated soil and materials shall be disposed of only at facilities approved by the Navy.

END OF SECTION

SECTION 02200

EARTHWORK

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. This section addresses the excavation and backfilling requirements for the Work including:**
 - 1. Excavation, shoring, sheet piling and underpinning for excavations in preparation for, but not limited to, removal of subsurface pipeline within the work area.**
 - 2. Excavation of contaminated soil adjacent to the pipeline removal locations.**
 - 3. Classification of contaminated material according to waste type, and stockpiling according to classification.**
 - 4. Water management within excavations.**
 - 5. Sampling and analysis for waste disposal profiles.**
 - 6. Backfilling and compaction of excavations.**

1.2 RELATED SECTIONS

- A. Section 01300 - Submittal Procedures**
- B. Section 01400 - Quality Control**
- C. Section 01405 - Geotechnical Soil Testing Services**
- D. Section 01412 - Analytical Testing Services**
- E. Section 01430 - Environmental Protection**
- F. Section 01500 - Contractor Facilities and Temporary Controls**

- G. Section 02003 - Decontamination
- H. Section 02052 - Waste Transportation and Disposal
- I. Section 02205 - Soil Materials
- J. Section 02207 - Aggregate Materials
- K. Section 02225 - Pipeline Removal
- L. Section 02254 - Drainage Control
- M. Section 02510 - Asphalt Concrete Paving
- N. Section 03300 - Concrete

1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. D422 Standard Test Method for Particle-Size Analysis of Soils
 - 2. D1557 Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort
 - 3. D1556 Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
 - 4. D2216 Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock
 - 5. D2922 Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth) (AASHTO T238)
 - 6. D3017 Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth) (AASHTO T239)
- B. Uniform Building Code (UBC-94), Chapter 29 "Excavations, Foundations, and Retaining Walls", and Chapter 70 "Excavation and Grading"

- C. California Occupational Safety and Health Administration (CAL OSHA), Title 8, Article 6, Excavations.
- D. U.S. Environmental Protection Agency (EPA) SW-846 Test Methods for Evaluating Solid Wastes.

1.4 SUBMITTALS

A. Submit the following:

1. Copies of the final excavation boundary and confirmation sample location surveys. Submit data on electronic file and hard copy format.
2. Copies of particle-size analysis and laboratory compaction characteristics test results from the geotechnical testing laboratory for each type of imported soil. Testing shall be done within 30 days prior to delivery of materials to the site. Submit test results to the Navy immediately after testing and prior to delivery to site.
3. Copies of in-place density and moisture content test results with a map showing the accurate location of the tests. Submit in-place soil test results to the Navy immediately after testing and prior to subsequent work.
4. Should the Contractor elect to use shoring, sheet piling, or underpinning to protect existing facilities, provide design for Navy approval including engineering calculations, manufacturer product data, proposed location of use, and detailed shop drawings. Shoring, sheet piling and underpinning systems must comply with CAL OSHA requirements.
5. Copy of the CAL OSHA excavation permit for the site work.
6. Identification of the on-site "competent person(s)" (as defined by CAL OSHA) to the Navy. Each on site competent person shall have attended a formal OSHA-certified excavation competent person training course. Submit training certification for each competent person named on the list.
7. The identification of the geotextile filter fabric material manufacturer, and the manufacturers technical description of the material.

1.5 PROTECTION

A. Protect the following:

1. Benchmarks and monuments, existing vegetation, existing structures outside of the immediate work zone such as roads, fences, walks, pavings, curbs, etc. from equipment and vehicular traffic damage.
2. Existing buried utilities and pipelines encountered during the work.
3. Monitoring wells. If damaged, replace in accordance with State and local agency regulations.
4. Perimeter of excavation to prevent surface water runoff into excavation.
5. Existing facilities not specified for removal by underpinning during excavation activities.
6. Finished work.

B. Exercise caution to avoid damaging existing utilities and facilities during construction.

1.6 QUALITY ASSURANCE

A. Field Requirements:

1. Provide all horizontal and vertical controls necessary for excavation and backfill operations.
2. Geotechnical testing for backfill shall meet the requirements of Section 01405.
3. Confirmation sampling and analysis shall meet the requirements of Section 01412.
4. Submit the results of the following tests and supplemental information to the Navy. These tests are a minimum requirement.
 - a. Backfill:
 - 1) One particle-size analysis test (ASTM D422) for each type of backfill material from each material source.
 - 2) One moisture-density relationship test (ASTM D1557) for each type of backfill, and one test for each 2,000 cubic yards, or fraction thereof, of each type of backfill placed.

- 3) One in-place density and moisture content test (ASTM D1556 or D2922) per each 750 cubic yards, or fraction thereof, of compacted backfill.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

- A. Soil fill: As specified in Section 02205.
- B. Bedding sand: As specified in Section 02205.
- C. Aggregate fill: As specified in Section 02207.
- D. Aggregate base: As specified in Section 02207.

2.2 GEOTEXTILE FILTER FABRIC

- A. The geotextile filter fabric material shall be made of nonwoven polypropylene of uniform color, thickness, size and surface texture. The finished geotextile filter fabric shall be free from contaminates, dirt and defects.

PART 3 EXECUTION

3.1 SOIL EXCAVATION

- A. General
 1. Prior to the start of excavation, locate, mark, and identify all buried utilities or underground facilities. During excavation, carefully uncover, support and protect existing utilities and facilities. Do not cut, remove, or damage these items without prior written approval by the Navy. Items damaged without Navy approval shall be repaired or replaced.

2. Locate all undocumented buried utilities or underground structures encountered during excavation. Mark and identify on the as-built records.
3. Slope or shore all excavations in compliance with CAL OSHA regulatory requirements for excavations. Shoring, sheet piling and underpinning systems must comply with CAL OSHA requirements.
4. Monitor open excavations at all times. Provide a competent person as required by CAL OSHA to verify that excavations do not become unstable or unsafe.
5. Perform field screening sampling and analysis as necessary to assure all contaminated material is removed from the excavation areas.
6. Provide and maintain safe access to excavations to allow confirmation sampling. Excavations shall remain open until all confirmatory soil sampling and laboratory analysis is complete and the Navy gives the Contractor notice to proceed to place backfill. The project time required for soil sampling and analysis is part of the schedule work and will not be considered a delay of the work.

B. Pipeline Areas

1. Pipeline removal shall conform to Section 02225.
2. Segregate excavated soil that does not exhibit any contaminant characteristics.
3. Use non-contaminated soil for backfill of pipeline excavation areas.
4. Continue excavation until analytical results of confirmation samples indicate that removal action goals have been met.

3.2 CONFIRMATION SOIL SAMPLING

- A. Notify the CLEAN site quality assurance supervisor (SQAS) when an excavation has been completed based on visual inspection, screening survey and sampling, and is ready for confirmation sampling. Provide 4 hours advance notice for confirmation sampling.

- B. Assist the CLEAN Contractor with collection of confirmation samples including providing operated equipment to remove soil from excavations where personnel entry is prohibited by OSHA regulations.
- C. Remove groundwater from excavations so that soil sampling can be performed. Obtain permission from the Navy prior to removing groundwater from an excavation. Collect groundwater in containers. Sample and analyze containerized groundwater, and discharge or dispose of as appropriate in accordance with regulatory requirements.
- D. The remedial excavation shall be considered complete when confirmatory soil sampling results meet the soil cleanup levels defined in Section 02003.
- E. Survey final excavation boundaries and confirmation sample locations. Survey data shall be referenced to the California State Plane Coordinate System. Survey data shall include discrete survey point identification number, horizontal and vertical coordinates, and description of survey point including confirmation sample ID if appropriate. Surveyor shall coordinate with CLEAN SQAS for sample location's identification.

3.3 SEGREGATION AND ACCUMULATION OF CONTAMINATED EXCAVATION MATERIALS

- A. Perform waste disposal profile sampling to determine proper disposal facility.
- B. Segregate excavation materials based on the type of disposal facility to which they will be sent as described in Section 02052.
- C. Transport excavated materials to be disposed of to the soil staging area(s) approved by the Navy. Transport materials in a manner that prevents spills or leakage of material. Immediately notify the Navy in the event of material spills or leakage. Construct the soil staging area(s) to meet the requirements Section 01430.

3.4 WATER MANAGEMENT

- A. Prevent surface water run-on and run-off using the procedures defined in Section 02254.**

3.5 BACKFILLING

- A. Remove standing water and soft or otherwise unsatisfactory material from the excavation prior to placing backfill material. Scarify the excavation subgrade (except where below the water table elevation) to a depth of approximately 6 inches and compact to 90 percent of maximum dry density. Obtain Navy approval of the prepared subgrade prior to placing the backfill material.**
- B. Use aggregate fill material to backfill below the water table elevation.**
- C. Aggregate bedding may be used in lieu of sand bedding material below the water table elevation.**
- D. Place a layer of non-woven filter fabric between aggregate materials and soil materials.**
- E. Complete backfill to the lines and grades indicated on the Drawings or as otherwise directed by the Navy. Remove, replace and recompact any portion of the backfill that does not meet the requirements of the Sections.**
- F. Prior to compaction, moisture condition backfill materials (except coarse fill used below the water table elevation) to plus or minus five percent (+/- 5%) of the optimum water content as determined by ASTM D1557.**
- G. Place backfill materials in continuous and approximately horizontal layers, not exceeding 12 inches loose thickness, for their full length and width unless otherwise specifically approved by the Navy.**
- H. Compact backfill materials to the following minimum densities relative to the maximum density as determined by the ASTM D1557:**

1. Soil/aggregate fill: 90 percent of maximum density below 3 feet from finished grade. 95 percent of maximum density within 3 feet of finished grade.
2. Aggregate base: 95 percent of maximum density.
3. IR-1 and IR-2: 85 percent of maximum density.

3.6 PROTECTION OF FINISHED WORK

- A. Protect finished work under provisions of Section 01500.
- B. Reshape and recompact backfilled areas disturbed by vehicular traffic.

3.7 RESURFACING EXCAVATIONS

- A. Resurface backfilled excavations to match the pre-excavation construction.

END OF SECTION

SECTION 02205

SOIL MATERIALS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Imported soil and uncontaminated excavated soil used for backfill.**
- B. Bedding sand for utility trenches.**

1.2 RELATED SECTIONS

- A. Section 01300 - Submittal Procedures**
- B. Section 01405 - Geotechnical Soil Testing Services**
- C. Section 02200 - Earthwork**

1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM):**
 - 1. C136 Method for Sieve Analysis of Fine and Coarse Aggregates**

1.4 SUBMITTALS

- A. Imported materials source: Submit to the Navy:**
 - 1. The name of the material vendor, and the location of the materials source.**
 - 2. Certification, signed by the material vendor and the Contractor, that the imported material is non-contaminated.**

3. Analytical results that verify that the imported material is non-contaminated.
- B. Samples: Submit, in air-tight containers, a 40 pound (lb) sample of each type of soil to a geotechnical testing laboratory for specified testing.
 - C. Excavated material for reuse as backfill: Submit analytical results 48 hours in advance of anticipated placement.
 - D. Laboratory results: Submit to the Navy test results from the geotechnical testing laboratory for each type of imported soil. Testing shall be done within 30 days prior to delivery of materials to the site.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

- A. Soil fill:
 1. Imported or non-contaminated excavated and re-used material free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
- B. Bedding sand:
 1. Material shall be free from clay and organic material, suitable for the purpose intended, and shall be of such size that 90 percent to 100 percent will pass a No. 4 sieve and not more than 5 percent will pass a No. 200 sieve.

2.2 SOURCE QUALITY CONTROL

- A. Survey, sample and analyze excavated material intended to be reused as backfill to verify that it is non-contaminated. Survey for radioactivity. Collect and analyze one sample per each 50 cubic yards of excavated material intended for reuse as backfill. Notify CLEAN SQAS three days prior to anticipated surveying/sampling event. Analyze samples for the same contaminants found

in the contaminated soils that are being disposed of.

- B. Perform testing and analysis of materials in accordance with ASTM C136.
- C. If tests indicate materials do not meet specified requirements, change materials and retest.
- D. Provide materials of each type from a tested and Navy-approved source throughout the Work.

PART 3 EXECUTION

3.1 STOCKPILING

- A. Stockpile soil materials on site at locations approved by the Navy.
- B. Stockpile in sufficient quantities to meet project schedule and requirements.
- C. Separate different materials with dividers or stockpile apart to prevent mixing.
- D. Prevent mixing of soil types and mixing of soils with contaminated materials.
- E. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

3.2 STOCKPILE CLEANUP

- A. Remove stockpile and leave area in a clean and neat condition.

END OF SECTION

SECTION 02207

AGGREGATE MATERIALS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Aggregate materials.**

1.2 RELATED SECTIONS

- A. Section 01300 - Submittal Procedures**
- B. Section 01405 - Geotechnical Soil Testing Services.**
- C. Section 02200 - Earthwork**

1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM):**
 - 1. C136 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates**
 - 2. D2487 Classification of Soils for Engineering Purposes**
- B. California Department of Transportation (Caltrans): Standard Specifications**

1.4 SUBMITTALS

- A. Imported materials source: Submit to the Navy:**
 - 1. The name of the material vendor, and the location of the materials source.**
 - 2. Certification, signed by the material source vendor and the Contractor, that the imported material is non-contaminated.**

3. Analytical results that verify that the imported material is non-contaminated.

B. Samples: Submit, in air-tight containers, a 40 pound (lb) sample of each type of aggregate to a geotechnical testing laboratory for specified testing.

C. Laboratory results: Submit to the Navy test results from a geotechnical testing laboratory for each type of imported aggregate. Testing shall be done within 30 days prior to delivery of materials to the site.

PART 2 PRODUCTS

2.1 COARSE AGGREGATE MATERIALS

A. Aggregate fill:

1. Material shall be free from clay and organic material, suitable for the purpose intended, and shall be of such size that 100 percent will pass a 2-inch sieve and not more than 5 percent will pass a No. 4 sieve.

B. Class 2 Aggregate Base:

1. Material shall conform to State of California Department of Transportation (Caltrans) standard within the following limits:

<u>Sieve Size</u>	<u>Percent Passing</u>
2 inches	100
1-1/2 inches	95 to 100
3/4 inch	50 to 85
No. 4	25 to 45
No. 30	10 to 25
No. 200	2 to 9

C. Bedding aggregate:

1. Material shall be free from clay and organic material, suitable for the purpose intended, and shall be of such size that 100 percent percent will pass a 3/8 inch sieve and not more than 5 percent will pass a No. 200 sieve.

2.2 SOURCE QUALITY CONTROL

- A. Aggregate Material - Testing and Analysis: Perform in accordance with ASTM C136.
- B. If tests indicate materials do not meet specified requirements, change materials and retest.
- C. Provide materials from a tested and Navy-approved source throughout the Work.

PART 3 EXECUTION

3.1 STOCKPILING

- A. Stockpile materials on site at locations approved by the Navy.
- B. Stockpile in sufficient quantities to meet project schedule and requirements.
- C. Separate differing materials with dividers or stockpile apart to prevent mixing.
- D. Direct surface water away from stockpile site so as to prevent erosion or deterioration of materials.

3.2 STOCKPILE CLEANUP

- A. Remove stockpile and leave area in a clean and neat condition.

END OF SECTION

SECTION 02220

RADIOACTIVE ANOMALY REMOVAL

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. This section addresses the requirements for the removal of radioactive anomalies at IR Sites 1 and 2 including:**
 - 1. Relocation and verification of known radioactive anomalies.**
 - 2. Excavation of radioactive anomalies and adjacent radioactively contaminated soil.**
 - 3. Separation of contaminated and uncontaminated excavated soil using radiation survey methods.**
 - 4. Loading of contaminated wastes into U.S. DOT-approved containers.**
 - 5. Removal confirmation using radiation survey methods.**
 - 6. Backfilling of excavations.**

1.2 RELATED SECTIONS

- A. Section 01300 - Submittal Procedures**
- B. Section 01430 - Environmental Protection**
- C. Section 02003 - Decontamination**
- D. Section 02010 - Radiation Surveys**
- E. Section 02052 - Waste Transportation and Disposal**
- F. Section 02205 - Soil Materials**

1.3 SUBMITTALS

- A. Submit copies of the field surveys for the final excavation and confirmation radiation survey locations. Submit data on electronic file and hard copy format.

1.4 REFERENCES

- A. U.S. Department of Transportation (DOT)

1.5 PROTECTION

- A. Protect the following:
 1. Benchmarks and monuments, existing vegetation, existing structures outside of the immediate work zone such as roads, fences, walks, pavings, curbs, etc. from equipment and vehicular traffic damage.
 2. Monitoring wells. If damaged, replace in accordance with State and local agency regulations.
 3. Perimeter of excavation to prevent surface water runoff into excavation.
 4. Finished work.

1.6 QUALITY ASSURANCE

- A. Notify CLEAN SQAS prior to backfilling anomaly removal excavations.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

- A. Soil fill
 1. Use excavated soil if material is free of radioactive contamination as verified by field screening and sampling per Section 02205.
 2. Use imported soil if sufficient suitable excavated material is unavaialble.

PART 3 EXECUTION

3.1 PRE-EXCAVATION SURVEY

- A. Perform radiation survey in accordance with Section 02010 and the approved radiation survey workplan prior to excavation.**

3.2 EXCAVATION

A. General

- 1. Relocate and verify the locations of anomalies detected in previous radiation surveys for IR Sites 1 and 2.**
- 2. Excavate soil until anomaly is removed. Screen soil below anomaly location for radiation.**
- 3. Excavations shall not extend below the water table that exists at the time of excavation.**
- 4. Perform field screening radiation surveys to ensure all contaminated material, including contaminated soil, is removed from the excavation areas.**
- 5. Provide and maintain continuous safe access to excavations to allow confirmation radiation surveys. Each excavation shall remain open until the confirmatory radiation survey is complete and the Navy gives the Contractor notice to proceed to place backfill.**
- 6. The time required for radiation surveying is part of the project schedule and will not be considered a delay of the work.**

3.3 FINAL RADIATION SURVEYING

- A. Notify the CLEAN site quality assurance supervisor (SQAS) when an excavation has been completed, based on post-excavation screening, and is ready for confirmation radiation surveying.**
- B. Provide equipment to remove soil from excavations where personnel entry is prohibited by OSHA regulations.**

- C. The excavation shall be considered complete when confirmation radiation survey results meet the soil cleanup levels in Section 02003, or, in the vertical direction, at the water table, whichever is first.

3.4 SEGREGATION OF CONTAMINATED EXCAVATION MATERIALS

- A. Place excavated materials on plastic sheets laid on the ground adjacent to the excavation locations.
- B. Segregate noncontaminated excavated materials from contaminated excavated materials using radiation survey methods.
- C. Load contaminated materials into U.S. DOT specification containers for radioactive materials, for removal from the site.
- D. Transport shipping containers to the staging area(s) approved by the Navy. Transport materials in a manner that prevents spills or leakage of material. Immediately notify the Navy in the event of material spills or leakage.

3.5 BACKFILLING

- A. Hand compact backfill material in accordance with Section 02200, Part 3.5.

END OF SECTION

SECTION 02225

PIPELINE REMOVAL

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. This section addresses removal procedures for the following:
 1. Exposed drain pipes located inside Buildings 5 and 400.
 2. Underground storm drain pipes inside Building 5.
 3. Underground storm drain pipes located between the west side of Building 5 and the outfall at the Seaplane Lagoon.
 4. Storm drain manholes located between the west side of Building 5 and the outfall at the Seaplane Lagoon.
 5. Underground industrial sewer pipes located north of Building 400.

1.2 RELATED SECTIONS

- A. Section 01300 - Submittal Procedures
- B. Section 02052 - Waste Transportation and Disposal
- C. Section 02200 - Earthwork
- D. Section 02254 - Drainage Control

1.3 SUBMITTALS

- A. Submit to the Navy for approval any Contractor requested variance to the procedures specified in this section.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.1 WATER IN PIPELINES

A. Remove water from underground pipelines as follows:

1. Install bypass measures for active pipes. Bypass measures must be approved by the Navy.
2. Isolate pipeline section to be removed by temporarily plugging the upstream and lateral pipes.
3. Allow water to drain from isolated pipes through outfall during low tide.
4. Seal downstream end of isolated section to be removed.
5. Remove all remaining water from isolated section.
6. Place all water removed in temporary storage containers.
7. Treat or dispose of containerized water per Section 02052 as appropriate.

3.2 PIPELINES

A. Remove underground pipelines as follows:

1. Excavate soil necessary to uncover the isolated pipelines in conformance with Section 02200. Monitor excavated materials for contamination. Stockpile on site excavated materials that do not exhibit any contamination. Use onsite excavated material for backfill. Continue excavation until the pipelines are adequately exposed to allow removal.
2. Remove pipelines from the ground. Place removed pipelines in a staging area approved by the Navy.
3. Ensure that no sludges that may have accumulated in the pipes drain into the excavation or into the surrounding work area during pipe removal.

3.3 MANHOLES

A. Remove manholes as follows:

- 1. Excavate soil necessary to uncover the structures in conformance with Section 02200. Monitor excavated materials for contamination. Stockpile on-site excavated soil materials that do not exhibit any contamination. Use onsite excavated material for backfill. Continue excavation until the structures are adequately exposed to allow removal.**
- 2. Remove covers, grade rings, and upper sections from the structure. Place in a salvage material staging area approved by the Navy.**
- 3. Remove bottom section and base from the ground. Place in a contaminated material staging area approved by the Navy.**

3.4 PROTECTION OF UTILITIES

- A. Exercise caution to avoid damaging existing utilities.**
- B. Notify the Navy immediately if existing utilities or underground pipes are damaged.**
- C. Replace utilities and underground pipes damaged by Contractor's work in accordance with appropriate codes, and manufacturer's or product association's recommendations.**
- D. Maintain or bypass existing services/facilities during construction.**
- E. Coordinate with the Navy Transition Office (NTO), Alameda Point, during utility outages or road closures.**

END OF SECTION

SECTION 02254

DRAINAGE CONTROL

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Bypass drainage from upstream storm drain lines away from storm drain removal and constructions locations.**
- B. Implement temporary measures to control stormwater ponding and pollution during the execution of the Work.**
- C. Temporary measures including berms, sand bags, filter mats, silt fences, covers, and other drainage and pollution control devices or methods shall be installed at the locations where needed and as directed by Navy.**
- D. Direct uncontaminated surface stormwater into the existing active storm drainage system.**

1.2 RELATED SECTIONS

- A. Section 01430 - Environmental Protection**
- B. Section 01500 - Construction Facilities and Temporary Controls**
- C. Section 02225 - Pipeline Removal**

1.3 GENERAL PROCEDURES

- A. Maintain the project site, including excavations, free of ponded stormwater. Provide equipment and resources required to collect, transfer, provide**

treatment as necessary, and properly dispose of water or runoff.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 CONSTRUCTION REQUIREMENTS

- A. Prevent stormwater drainage from entering the isolated sections of storm drains or excavations.
- B. Isolate manholes and storm drain sections undergoing removal and construction. Temporarily plug the pipes upstream and downstream of the work areas.
- C. Install temporary pumps and bypass pipes as necessary to maintain operation of the storm drain system without backup.
- D. Remove temporary plugs upon completion of storm drain construction.
- E. Contractor shall, at the request of the Navy, provide immediate temporary or permanent pollution control measures to prevent drainage water runoff and possible contamination of uncontaminated areas, including industrial waste sewers, sanitary sewers, storm drains, adjacent watercourses, ditches, or water impoundment areas.

END OF SECTION

SECTION 02510

ASPHALT CONCRETE PAVING

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Provide all materials, labor, supervision, tools, equipment and construction machinery necessary to perform the following work:
 - 1. Sawcut existing asphalt concrete (AC) pavement.
 - 2. Install AC pavement.

1.2 RELATED SECTIONS

- A. Section 01300 - Submittal Procedures
- B. Section 02200 - Earthwork
- C. Section 02207 - Aggregate Materials

1.3 REFERENCES

- A. California Department of Transportation (Caltrans): Standard Specifications

1.4 QUALITY ASSURANCE

- A. AC paving mixture shall be the product of a bulk asphalt mixing plant that is regularly engaged in the production of hot-mixed, hot-laid asphalt paving mixtures.
- B. Establish and maintain lines and grades for the AC pavement construction by means of line and grade stakes placed at site of work.

1. Surface tolerance shall comply with Caltrans Standard Specifications.

1.5 SUBMITTALS

A. Submit to the Navy the following:

1. Information, which shall be included in the Work Plan, regarding the intended delivery route from the AC plant to the site.
2. The design mix formula and test data for the proposed job mix formula for each type of AC, 14 days prior to placement of material. Include a certificate from the supplier stating that the furnished material meets Caltrans Standard Specifications.
3. A copy of the delivery ticket for each truckload of AC mixture delivered to the site, at the end of each day during progress of the paving work.
 - a. The delivery tickets shall include the certified tare and loaded weights of the delivery truck and the date and time of batching and receipt on site.
 - b. Each ticket shall be signed by Contractor upon receipt of the load at the site.

1.6 STORAGE AND DELIVERY OF MATERIAL

A. Storage of AC

1. Do not store the mixture for more than 4 hours.

B. Transportation of AC

1. Transport the mixture from the paving plant to the site in trucks having tight, clean, smooth beds lightly coated with an approved releasing agent to prevent adhesion of mixture to the truck beds.
2. Drain excessive releasing agent prior to loading.
3. Loads that have crusts of cold, unworkable material, or have become wet, will be rejected.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Materials, composition of mixtures, and job-mix formula shall conform to the Caltrans Standard Specifications for Type A Asphalt Concrete.**

PART 3 EXECUTION

3.1 SAWCUTTING EXISTING PAVEMENT

- A. Sawcut existing AC pavement to provide clean, undamaged contact surface before placing and spreading AC pavement. Sawcut surface will be inspected by the Navy prior to AC placement. Recut damaged areas.**

3.2 SUBGRADE PREPARATION

- A. Compact subgrade and roadway shoulders to required relative density. Before placing and spreading AC pavement, clean the subgrade of all foreign substances. Subgrade will be inspected by the Navy for adequate compaction prior to AC placement.**

3.3 CONSTRUCTION OF ASPHALT CONCRETE PAVEMENT

- A. Construction of AC pavement shall conform to the Caltrans Standard Specifications. Ensure pavement edges are adequately rolled.**

3.4 PRIME COAT

- A. Apply prime coat at a rate of 0.25 gallon per square yard as specified in the Caltrans Standard Specifications.**

3.5 TACK COAT

- A. Apply tack coat at a rate of 0.1 gallon per square yard as specified in the Caltrans Standard Specifications.**

3.6 CLEAN-UP AND PROTECTION

- A. After completion of paving operations, clean surfaces of excess and spilled paving materials.**
- B. Direct vehicular traffic away from pavement until it has cooled and hardened.**

END OF SECTION

SECTION 02630

UNDERGROUND PIPING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Replacement of storm drain pipes.**
- B. Replacement of industrial waste sewer pipes.**
- C. Replacement of manholes, catch basins, and appurtenances.**

1.2 RELATED SECTIONS

- A. Section 01300 - Submittal Procedures**
- B. Section 02200 - Earthwork**
- C. Section 02205 - Soil Materials**
- D. Section 02207 - Aggregate Materials**
- E. Section 03300 - Concrete**

1.3 REFERENCES

- A. American Association of State Highway and Transportation Officials
(AASHTO)**
 - 1. M198 Joints for Circular Concrete Sewer and Culvert Pipe Using
Flexible Watertight Gaskets**

B. American Concrete Pipe Association (ACPA)

1. 01-102 Concrete Pipe Handbook
2. 01-103 Concrete Pipe Installation Manual

C. American Society for Testing and Materials (ASTM):

1. A74 Cast Iron Soil Pipe and Fittings
2. A497 Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement
3. A615 Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
4. C14 Concrete Sewer, Storm Drain, and Culvert Pipe
5. C76 Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
6. C150 Portland Cement
7. C443 Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets
8. C476 Grout for Masonry
9. C478 Precast Reinforced Concrete Manhole Sections
10. C564 Rubber Gaskets for Cast Iron Soil Pipe and Fittings
11. C923 Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals
12. D4101 Propylene Plastic Injection and Extrusion Materials

D. Code of Federal Regulations (CFR)

1. 29 CFR 1910.27 Fixed Ladders

E. Federal Specifications (FS)

1. FS TT-C-490 (Rev. D; Int Am. 1) Cleaning Methods for Ferrous Surfaces and Pretreatments for Organic Coatings
2. FS RR-F-621 (Rev. E) Frames, Covers, Gratings, Steps, Sump and Catch Basin, Manhole

1.4 SUBMITTALS

A. Manufacturer's Catalog Data

1. Concrete piping including fittings and jointing materials

B. Drawings

1. Precast concrete structures
2. Metal items

C. Certificates shall be submitted for one of the following:

1. Tests that are mandatory as set forth in each referenced publication.
2. Production control tests that have been performed at the frequency or intervals specified in the referenced publication.
3. Tests that have been performed on the same type, class, grade, and size of material being provided for the Work, provided the certificates are no older than 3 years prior to the date of submittal.
 - a. Concrete piping including fittings and jointing materials
 - b. Cast-iron frames, covers, and gratings
 - c. Precast concrete structures

1.5 DELIVERY AND STORAGE, AND HANDLING

A. Piping

1. Inspect materials delivered to site for damage. Store materials with minimum of handling. Store rubber gaskets under cover out of direct sunlight. Do not store materials directly on the ground. Keep inside of pipes and fittings free of dirt and debris.

B. Metal Items

1. Check upon arrival. Identify and segregate as to types, functions, and sizes. Store off the ground in a manner affording easy accessibility and not causing excessive rusting or coating with grease or other objectionable materials.

1.6 HANDLING

- A. Handle pipe, fittings, and other accessories in a manner to ensure delivery to the trench in sound, undamaged condition.**

- B. Carry, do not drag pipe to trench.**

PART 2 PRODUCTS

2.1 PIPELINE MATERIALS

A. Cast-Iron Soil Pipe and Fittings

1. Industrial waste sewer pipe shall be ASTM A74, service-weight.
2. Jointing materials for cast iron pipes shall be compression-type rubber gaskets conforming to ASTM C564.

B. Concrete Pipe and Fittings

1. Storm drainage pipe 12-inch diameter through 24-inch diameter may be either reinforced or non-reinforced concrete pipe.
2. Storm drainage pipe larger than 24-inch diameter shall be reinforced concrete pipe.
3. Non-reinforced concrete pipe shall conform to ASTM C 14, Class 2.
4. Reinforced concrete pipe shall conform to ASTM C 76:
 - a. Class II if cover is less than 6 feet.
 - b. Class III if cover is 6 feet or more, and less than 8 feet.
5. Circular pipe with elliptical reinforcement shall have a readily visible line no less than 12 inches long painted or otherwise applied on the inside and outside of the pipe at each end so that when the pipe is laid in the proper position, the line will be at the center of the top of the pipe.
6. Fittings and specials shall conform to the applicable requirements specified for the pipe and shall be of the same strength as the pipe.
7. Cement used in manufacturing pipe and fittings shall be Type V conforming to ASTM C 150.

C. Jointing Materials for Concrete Piping

1. Gaskets and pipe ends for rubber gasket joint shall conform to ASTM C 443.

2.2 CONCRETE MATERIALS

- A. Provide concrete materials as specified in Section 03300

2.3 MISCELLANEOUS MATERIALS

A. Drainage Structures

1. Construct of precast or cast-in-place concrete.
2. Cement used in constructing drainage structures shall be Type V conforming to ASTM C 150.
3. Grout used in constructing drainage structures shall conform to ASTM C 476.
4. Mortar pipe-to-wall connections to produce smooth transitions and watertight joints or provide with ASTM C 923 resilient connectors.
5. Bases shall have smooth inverts accurately shaped to a semicircular bottom conforming to the inside contour of the adjacent pipe sections.
6. Manhole inverts shall have a circular curve between the inlet and outlet pipes of as large a radius as the size of the manhole will permit.
7. Changes in direction of the pipeline and entering branches into the manhole shall have a circular curve in the manhole invert of as large a radius as the size of the manhole will permit.

B. Precast Concrete Structures

1. Manhole sections shall conform to ASTM C 478. Provide a minimum wall thickness of 5 inches.
2. Reinforcing bars conforming to ASTM A 615.
3. Welded wire fabric conforming to ASTM A 497.
4. Type B gaskets for joint connections shall conform to ASTM C 443 or AASHTO M198,
5. Provide a 4 inch layer of bedding, below the bottom of the pipes, consisting of aggregate fill in accordance with Section 02207.

C. Frames, Covers, and Gratings

1. Shall be cast iron conforming to FS RR-F-621.

D. Drainage Structure Steps

1. Zinc-coated steel shall conform to 29 CFR 1910.27 or plastic or rubber coating pressure-molded to the steel.

2. Plastic coating shall conform to ASTM D 4101, copolymer polypropylene.
3. Rubber shall conform to ASTM C 443, except shore A durometer hardness shall be 70 plus or minus 5.
4. Aluminum steps or rungs shall not be permitted.
5. Steps are not required in manholes or catch basins less than 4 feet deep.

PART 3 EXECUTION

3.1 INSTALLATION OF PIPELINES AND APPURTENANT CONSTRUCTION

A. Pipe Laying and Jointing

1. Place pipeline on a uniformly sloped grade between manholes to the extent possible with accomodation to reconnection with existing laterials, and clearance of other buried utilities.
2. Inspect each pipe and fitting before and after installation. Remove those found defective from site and replace with new.
3. Provide proper facilities for lowering sections of pipe into trenches. Lay pipe with the bell ends in the upgrade direction. Adjust spigots in bells to produce a uniform space. Blocking or wedging between bells and spigots will not be permitted.
4. Replace by one of the proper dimensions any pipe or fitting that does not allow sufficient space for installation of joint material.
5. At the end of each work day, close open ends of pipe temporarily with wood blocks or bulkheads.
6. Provide batterboards not more than 25 feet apart in trenches for checking grade. Laser beam method may be used in lieu of batterboards for the same purpose.

B. Connections to Existing Lines

1. Notify the Navy in writing at least 10 days prior to date that connections are to be made.
2. Obtain approval of the Navy before interrupting service. Conduct work so that there is minimum interruption of service on existing line.

C. Installation of Concrete Piping

1. Install pipe and fittings with provisions for rubber gasket jointing in accordance with jointing procedures of ACPA 01-103 or ACPA 01-102, Chapter 9.
2. Clean and dry surfaces receiving lubricants, cements, or adhesives. Affix gaskets to pipe not more than 24 hours prior to the installation of the pipe. Protect gaskets from sun, blowing dust, and other deleterious agents at all times. Before installation of the pipe, inspect gaskets and remove and replace loose or improperly affixed gaskets.
3. Align each pipe section with the previously installed pipe section, and pull the joint together. If, while pulling the joint, the gasket becomes loose and can be seen through the exterior joint recess when the pipe is pulled up to within one inch of closure, remove the pipe and remake the joint.

D. Concrete Work

1. Perform cast-in-place concrete work in accordance with Section 03300.

E. Manhole and Catch Basin Construction

1. Construct base slab of cast-in-place concrete or use precast concrete base sections.
2. Make inverts in cast-in-place concrete and precast concrete bases with a smooth-surfaced semi-circular bottom conforming to the inside contour of the adjacent drainage sections.
3. Between entering branches into the manhole, make a circular curve in the manhole invert of as large a radius as manhole size will permit.
4. For cast-in-place concrete construction, either pour bottom slabs and walls integrally or key and bond walls to bottom slab.
5. For precast concrete construction, make joints between sections with the gaskets specified for this purpose; install in the manner specified for installing joints in concrete piping. Give a smooth finish to inside joints of precast concrete manholes and catch basins. Parging will not be required for precast concrete manholes.

6. Make joints between concrete manholes and pipes entering manholes with the resilient connectors specified for this purpose or mortared to produce a watertight joint. Install in accordance with the recommendations of the connector manufacturer.
7. Where a new manhole is constructed on an existing line, remove existing pipe as required to construct the manhole. Cut existing pipe so that pipe ends are approximately flush with the interior face of manhole wall, but not protruding beyond into the manhole.

F. Field Painting

1. After installation, clean cast-iron frames, covers, gratings, and steps not buried in concrete of mortar, rust, grease, dirt, and other deleterious materials.
2. Apply a coat of bituminous paint.
3. Do not paint surfaces subject to abrasion.

G. Bedding

1. Install bedding for concrete pipes in accordance with ACPA recommendations.
2. Install bedding for other pipes in accordance with manufacturer's or appropriate production association's recommendations.

3.2 FIELD QUALITY CONTROL

A. Field Tests and Inspections

1. The Navy will conduct field inspections and witness field tests specified in this section.
2. The Contractor shall perform field tests and provide labor, equipment, and incidentals required for testing.
3. The Contractor shall produce evidence, when required, that each item of work has been constructed properly in accordance with the drawings and specifications.

B. Pipeline Testing

1. Check each straight run of pipeline for gross deficiencies by holding a light in a manhole. A practically full circle of light through the pipeline shall be visible when viewed from the opposite end of pipeline.

END OF SECTION

SECTION 02830

FENCING

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Furnish and install temporary chain link fencing as specified in Section 01500.

1.2 RELATED SECTIONS

- A. Section 01010 - Summary of Work
- B. Section 01300 - Submittal Procedures
- C. Section 01500 - Contractor Facilities and Temporary Controls

1.3 SUBMITTALS

- A. **Shop Drawings:** Submit for approval prints of shop drawings for all work specified. Approval will be for general arrangement and design only and will not relieve Contractor of responsibility for quantities or field fit.
- B. Submit, in the Work Plan, information regarding the locations where the Contractor intends to install temporary fencing.

PART 2 PRODUCTS

2.1 MATERIALS: TEMPORARY FENCES

- A. **General:**
 - 1. Fencing shall include wire fabric, framework, stands, hardware and all appurtenances to provide a complete installation.

2. Fence sections shall be 6 feet tall and a maximum 10 feet long.
3. Gates are not required.

PART 3 EXECUTION

3.1 INSTALLATION: TEMPORARY FENCES

- A. Fasten individual sections of fencing together with a minimum of two bolted clamps, or three No. 6 guage aluminum wire ties, or three 1/4 inch self-locking plastic slip ties.
- B. Inspect fence sections. Replace broken or loose ties.
- C. Place filled sand bag on top of each fence stand to prevent tipping.
- D. Remove fences after completion of work.

END OF SECTION

SECTION 03300

CONCRETE

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Cast-in-place concrete, formwork, curing, and associated work for replacement of floor and roadway slabs.
- B. Cast-in-place concrete, formwork, curing, and associated work for construction of subsurface drainage structures.
- C. Precast concrete pipe and drainage structures.
- D. Reinforcing steel for cast-in-place concrete.

1.2 RELATED SECTIONS

- A. Section 01300 - Submittal Procedures
- B. Section 02200 - Earthwork
- C. Section 02630 - Underground Piping

1.3 REFERENCES

- A. American Concrete Institute (ACI):
 - 1. 211.1 Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete
 - 2. 301 Specifications for Structural Concrete for Buildings
 - 3. 304R Guide for Measuring, Mixing, Transporting, and Placing Concrete

4. 305R Hot Weather Concreting
5. 315 Details and Detailing of Concrete Reinforcement

B. American Society for Testing and Materials (ASTM):

1. A615 Deformed and Plain Billet Steel Bars for Concrete Reinforcement
2. C33 Concrete Aggregates
3. C39 Test Method for Comprehensive Strength of Cylindrical Concrete Specimens
4. C94 Ready-Mixed Concrete
5. C131 Test Method for Resistance to Degradation of Small-size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
6. C150 Portland Cement
7. C192 Making and Curing Concrete Test Specimens in the Laboratory
8. C309 Liquid Membrane-Forming Compounds for Curing Concrete
9. C494 Chemical Admixtures for Concrete

1.4 SUBMITTALS

A. Submit to Navy for approval the following:

1. **Reinforcing Steel:** Prepare shop drawings in accordance with ACI 315. Indicate bar sizes, spacings, location and quantities of reinforcing steel, binding and cutting schedule supporting and spacing devices. Design reinforcement under direct supervision of a Professional Engineer experienced in design of this work and licensed in the State of California.
2. **Concrete mix design(s).**
3. **A current mill Certificate of Materials for compliance with specified requirements:**
 - a. **Physical and chemical properties of cement obtained by the tests required in ASTM C150.**

1.5 QUALITY ASSURANCE

A. Cast-In-Place Concrete.

1. Perform Work in accordance with ACI 301.
2. Obtain cement and aggregate from same source for all work.
3. Conform to ACI 305R when concreting during hot weather.

B. Concrete Reinforcement Installation.

1. Perform Work in accordance with ACI 315. Maintain one copy of the shop drawings and ACI 315 on site.

PART 2 PRODUCTS

2.1 GENERAL

A. Where applicable, reference is made to the following section of ACI 301:

1. Material requirements - Chapter 2
2. Proportioning - Chapter 3
3. Formwork - Chapter 4
4. Curing and Protection - Chapter 12

2.2 CONCRETE MATERIALS

A. Cement: Portland Cement, ASTM C150:

1. Type I for slabs and above-ground structures
2. Type V for pipes and below ground drainage structures

B. Fine and Coarse Aggregate:

1. Conform to ASTM C33, except as noted below.
 - a. Maximum size aggregate shall be 1-1/2 inches.
 - b. Blast furnace slag, bank or crusher run fine, or coarse aggregate shall not be permitted.

- c. Weight loss, as measured by the Los Angeles Abrasion Test, ASTM C131, shall not exceed 40 percent.
- d. If manufactured sand is to be used in lieu of natural sand, it shall consist of hard, strong, durable, uncoated particles made from rock that meets all of the requirements for coarse aggregate.
- e. Manufactured sand shall be well graded within limits by weight passing U.S. Standard Series test sieves as follows:

<u>Size of Sieve</u>		<u>Percent Passing</u>
3/8 in.	(9.5 mm)	100
No. 4	(4760 microns)	95 - 100
No. 16	(1180 microns)	50 - 70
No. 50	(300 microns)	15 - 30
No. 100	(150 microns)	8 - 13

2.3 ADMIXTURES

- A. The use of any admixture must be approved by the Navy.
- B. If admixtures are specified, or if Contractor proposes their use, the concrete mix shall be designed or redesigned incorporating the admixtures described in ASTM C494.
- C. If requested by Navy, Contractor shall supply test results indicating the effect the admixture has on such things as durability, workability and segregation. These tests are in addition to those specified in Paragraph 2.5.B.
- D. Admixtures containing calcium chloride or other soluble chlorides shall not be used.
- E. Use all admixtures in strict conformance with the manufacturer's recommendations.

2.4 FORMWORK

- A. Forms: Use wood, steel or other material based on safety of use, and required quality of finished work.
- B. Form Ties: For exposed work, use type so arranged that when forms are removed, no metal will be closer than 1 inch from any surface.
 - 1. Wire ties may be used where concrete will not be exposed to weather and where discoloration would not be objectionable.
- C. Form coating: If required, form coating shall be non-staining mineral oil, or non-staining form coating compound on two (2) coats of nitrocellulose lacquer so as not to stain or damage the concrete finish.

2.5 CONCRETE MIX

- A. General: Concrete shall conform to ASTM C94, "Ready-Mixed Concrete" except as noted. Provide information concerning cement and aggregates noted in Paragraph 5.4.2 of ASTM C94 and any other information required by Navy.
- B. Mix Design:
 - 1. Placed concrete shall have the following properties:
 - a. Compressive Strength (28 day) - 3000 psi
 - b. Concrete Slump - 2 to 4 inches
 - c. Minimum Cement Content - 5 bags (470 lbs)/cu. yd.
 - 2. Design the concrete mixes per ACI 211.1 "Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete".
 - a. The mix shall result in a homogeneous, durable, readily placeable, and uniformly workable concrete which, when properly placed and cured, shall attain the specified strength.
 - 3. Furnish current (less than six months old) documented results of compressive tests performed by the concrete producer indicating that the mix and material proportions selected will produce concrete of the specified quality.

4. Conduct required tests using the same brand and types of cement, aggregates, admixtures, and water that will be used in the product placed in the Work.
5. The final design mix submitted shall include compressive strength test results for 3 cylinders at 7 days and 3 cylinders at 28 days in accordance with ASTM C39.
6. Cylinders shall be made and cured in accordance with ASTM C192.
7. After the mix design has been approved by the Navy, the brands or types of cement, admixtures, water-cement ratios, and aggregate proportions shall not be varied without the prior written approval of the Navy.
8. Contractor shall be responsible for the concrete mix design.
 - a. Provide all laboratory tests required by this Specification, including the testing of aggregate for abrasion loss, soluble chlorides content and other tests required by ASTM C94, ASTM C33 and the Navy.
 - b. The testing shall be done in a laboratory approved by the Navy.

2.6 REINFORCING STEEL

A. Reinforcing bars:

1. Deformed new billet-steel ASTM A615, Grade 40 yield point 40,000 psi minimum.
2. Mechanical or welded splices are not permitted.

B. Accessories:

1. Tie Wire: Minimum 16 gage annealed type.
2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions.

2.7 CURING MATERIALS

- A. The Contractor may propose using curing, sealing, hardening and finishing compound subject to Navy approval.
 1. Liquid membrane-forming curing compounds shall conform to ASTM C309.

2. The compound shall incorporate some type of fugitive dye to make it visible when applied.
 3. Material shall be free of paraffin or petroleum.
- B. **Finishing Aid:** Sprayable material designed to form a monomolecular film on fresh plastic concrete and to retard moisture evaporation prior to finishing.

PART 3 EXECUTION

3.1 FORMWORK

- A. As specified in ACI 301, Chapter 4, except as noted below:
1. **Form Design and Construction:**
 - a. Make forms that accurately conform to required line, grade and shape. Tie and brace forms to maintain proper position and dimensions during concrete placing.
 - b. Arrange forms and supports so they may be readily removed without hammering or prying against concrete.
 - c. Obtain Navy approval of completed formwork before placing concrete.
 2. **Form Removal:** Do not remove forms less than 24 hours after placing concrete.

3.2 PLACING CONCRETE

- A. Mix, transport and place concrete in accordance with ACI 304R.
- B. Place concrete in accordance with ACI 301, Chapter 8. Place concrete in one continuous pour. Cold joints will not be permitted without written consent from the Navy.
- C. Remove from reinforcing steel loose mill seals and rust, dirt and other coatings that would reduce or destroy bond.

- D. Ensure reinforcement, inserts and embedded parts are firmly secured and not disturbed during concrete placement.
- E. Notify the Navy a minimum of 24 hours prior to commencement of operations.

3.3 CONCRETE FINISHING

- A. Provide formed concrete walls with smooth form finish.
- B. Finish exposed concrete surfaces by steel trowel.

3.4 CURING AND PROTECTION

- A. Cure concrete per the method specified in ACI 301, Chapter 12.
- B. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and damage.
- C. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

3.5 FIELD QUALITY CONTROL

- A. Comprehensive strength tests shall be performed as follows:
 - 1. Provide a set of three concrete test cylinders, from a single batch, for each day of pouring.
 - 2. Transport cylinders to the laboratory to cure.
 - 3. Perform compressive strength tests for 1 cylinder at 7 days and 1 cylinder at 28 days.
 - 4. The third cylinder shall be tested at 28 days if the other 28 day test cylinder does not meet strength requirements.
- B. Perform one slump test for each set (of three) test cylinders taken.

3.6 PATCHING

- A. Allow Navy to inspect concrete surfaces immediately upon removal of forms.**
- B. Excessive honeycomb or embedded debris in concrete is not acceptable.**
- C. Patch imperfections in accordance with ACI 301.**

3.7 DEFECTIVE CONCRETE

- A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements shall be considered defective.**
- B. Repair or replace defective concrete.**
- C. Do not patch, fill, touch-up, repair, or replace exposed concrete except as approved by Navy for each individual area.**

END OF SECTION

SECTION 15400

PLUMBING SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Replacement of drain, waste and vent pipes, fittings and appurtenances.**

1.2 RELATED SECTIONS

- A. Section 01300 - Submittal Procedures**
- B. Section 02630 - Underground Piping**

1.3 REFERENCES

- A. American National Standards Institute (ANSI)**

- 1. A112.36.2M Cleanouts**

- B. American Society for Testing and Materials (ASTM):**

- 1. A74 Cast Iron Soil Pipe and Fittings**
 - 2. C564 Rubber Gaskets for Cast Iron Soil Pipe and Fittings**
 - 3. D2665 Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings**

- C. Cast Iron Soil Pipe Institute (CISPI)**

- 1. HSN Neoprene Rubber Gaskets for Hub and Spigot Cast Iron Soil Pipe and Fittings**
 - 2. 301 Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications**
 - 3. 310 Couplings Joint for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings**

D. International Code Council (ICC)

1. **IPC International Plumbing Code**

E. Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. (MSS)

1. **SP-58 Pipe Hangers and Supports - Materials, Design and Manufacture**
2. **SP-69 Pipe Hangers and Supports - Selection and Application**

1.4 SUBMITTALS

A. Manufacturer's Catalog Data

1. **Pipe and fittings**
2. **Pipe hangers and supports**

1.5 SYSTEM DESCRIPTION

- A. Provide new and modify existing plumbing systems, complete and ready for operation.**
- B. Plumbing systems including manufacturer's products shall be in accordance with the required and advisory provisions of the ICC IPC.**
- C. Plumbing systems include piping extending less than 5 feet outside building walls, including connections to exterior distribution systems.**

1.6 QUALITY ASSURANCE

- A. Plumbing systems including fixtures, equipment, materials, installation, and workmanship shall be in accordance with the Plumbing Code except as modified herein.**
- B. The advisory provision of the Plumbing Code shall be considered to be mandatory, as though the word "shall" had been substituted for the word "should" wherever the latter appears.**

- C. Reference to the "authority having jurisdiction," the Administrative Authority, the Plumbing Official, and the Design Engineer shall be interpreted to mean the Navy.

PART 2 PRODUCTS

2.1 DRAIN, WASTE, AND VENT (DWV) PIPE AND FITTINGS

A. Aboveground Piping:

1. Minimum size piping shall be 1.5 inches in diameter.
2. Cast-iron hubless pipe and fittings shall conform to CISPI 301 with CISPI 310 couplings.
3. Cast-iron hub and spigot pipe and fittings shall conform to ASTM A74, with ASTM C564 or CISPI HSN rubber compression gasket joints.
4. Polyvinyl chloride (PVC) pipe, fittings, and solvent cement shall conform to ASTM D2665.

B. Buried Piping:

1. Minimum size piping shall be 2 inches.
2. Provide piping up to but not more than 6 inches aboveground or floor slab on grade.
3. Cast-iron hub and spigot pipe and fittings shall conform to ASTM A74, with ASTM C564, or CISPI HSN rubber compression gasket joints.

C. Fittings:

1. Fittings shall be long radius fittings, except for vent piping where short radius fittings will be allowed.

2.2 CLEANOUTS

A. General:

1. Conform to ANSI A112.36.2M.
2. Threaded bronze, thermoplastic, or PVC plastic cleanout plugs.

B. Floor Cleanouts:

1. Cast-iron or ductile-iron floor cleanout with flange.
2. Adjustable height polished bronze, nickel bronze, stainless steel, or chromium-plated copper alloy rim and scoriated floor plate with "CO" cast in the plate, and countersunk screws for installing floor plate flush with finished floor.

C. Wall Cleanouts:

1. Polished stainless steel or chromium-plated copper alloy cover plate.
2. Secure to cleanout plug with countersunk stainless steel screw.

2.3 PIPE HANGERS AND SUPPORTS

A. MSS SP-58 and MSS SP-69, Type 1 with adjustable type steel support rods, except as specified or indicated otherwise.

B. Attachment Hardware:

1. Attach to steel joists with MSS SP-69, Type 19 or 23 clamps and retaining straps.
2. Attach to steel W or S beams with MSS SP-69, Type 21, 28, 29, or 30 clamps.
3. Attach to steel angles and vertical web steel channels with MSS SP-69, Type 20 clamp and beam clamp channel adapter.
4. Attach to horizontal web steel channel and wood with drilled hole on centerline and double nut and washer.
5. Attach to concrete with MSS SP-69, Type 18 insert or drilled expansion anchor.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install plumbing systems including fixtures, equipment, materials, and workmanship in accordance with the Plumbing Code, except as modified

herein.

1. Plastic piping shall not penetrate fire walls or fire floors, and shall not be used closer than 6 inches to the penetration on one side of fire walls and fire floors.
2. Cast-iron drainage/waste/vent (DWV) piping only shall be provided in buildings with more than two-stories.

B. Threaded Connections

1. Jointing compound for pipe threads shall be polytetrafluoroethylene (PTFE) pipe thread paste, pipe cement and oil, or PTFE powder and oil.
2. Apply jointing compound to male threads only.
3. Provide exposed ferrous pipe threads with one coat of lead-free primer applied to a minimum dry film thickness of 1.0 mil.
4. Do not thread metal pipe into plastic piping.

C. Maximum Spacing Between Supports

1. Vertical Piping
 - a. Support metal piping at each floor, at not more than 10 foot intervals, with pipe riser clamps or offset pipe clamps.
 - b. Support plastic piping at each floor and at midpoint between floors, at not more than 5 foot intervals.
2. Horizontal Piping
 - a. Support steel piping at the following interval:
 - 1) 2-inch diameter - 10 feet
 - 2) 3-inch diameter - 12 feet
 - 3) 4-inch diameter - 14 feet
 - b. Support plastic piping at 4 foot intervals and at each change of direction.

3.2 INSPECTIONS

- A. Prior to initial operation, inspect piping system for compliance with drawings, specifications, and manufacturer's submittals.

3.3 FIELD TESTING

- A. Before final acceptance of the work, test each system as in service to demonstrate compliance with the contract requirements.**
- B. Correct defects in the work provided by Contractor, and repeat tests until work is in compliance with contract requirements.**
- C. Furnish water, electricity, instruments, connecting devices, and personnel for performing tests.**
- D. Perform the following tests in addition to the tests specified in the Plumbing Code:**
 - 1. Before the connection to fixtures, cap ends of each system, fill piping with water to the roof, and allow to stand until a thorough inspection has been made.**
 - 2. If the system is tested in sections, each opening shall be plugged and each section tested with not less than a 10 foot head of water.**
 - 3. After plumbing fixtures have been connected and their traps filled with water, subject the entire system to a final air pressure test of not more than 1.0 inch of water column.**

END OF SECTION