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REMOVAL OF FUEL OIL UNDERGROUND STORAGE TANKS SPECIFICATIONS FOR
HARRY S TRUMAN ANIMAL IMPORT CENTER NAS KEY WEST FL

8/10/1998

HANSON ENGINEERS

**U.S. DEPARTMENT
OF AGRICULTURE**

ANIMAL AND PLANT HEALTH INSPECTION SERVICES

**REMOVAL OF UNDERGROUND
FUEL OIL STORAGE TANKS**

SPECIFICATIONS

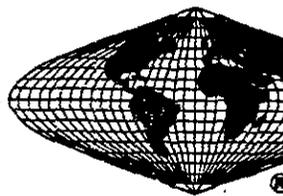
**HARRY S. TRUMAN
ANIMAL IMPORT CENTER
KEY WEST, FLORIDA**

APHIS-8-002
P/N: 97997D

AUGUST 10, 1998

CONSTRUCTION DOCUMENTS

ENGINEERS • ARCHITECTS • SCIENTISTS
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**HANSON
ENGINEERS**
INCORPORATED

500 south australian avenue 720 clearlake plaza, west palm beach, FL 33401-5046 (561)832-2606

HEI P/N: 97FM117

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SECTION 01010 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. The U.S. Department of Agriculture, Animal and Plant Health Inspection Service (APHIS) owns and operates an Animal Import Center in Key West, Florida. This facility operates boilers, incinerators, and an emergency electric generator set using No. 2 diesel fuel presently stored in underground storage tanks (UST's). This project calls for the complete removal of these tanks. This work is to be in compliance with applicable requirements of the Environmental Protection Agency and with all local and state codes.

1. Facility Location:

Harry S. Truman Animal Import Center (HSTAIC)
Fleming Key
Key West, Florida

2. Owner/Government

U.S. Department of Agriculture
USDA-APHIS, Contracting and Safety Branch
4700 River Road, Unit 115
Riverdale, MD 20737-1238

- B. Contract Documents were prepared for this project by:

Hanson Engineers, Inc.
500 South Australian Avenue, Suite 720
West Palm Beach, FL 33401

- C. The work includes, but is not limited to, removal of three (3) existing underground fuel storage tanks, three (3) existing concrete anchor pads and associated piping systems, and abandonment of the fuel oil pumping systems.

1. Work will also include associated electrical work. Equipment and material that is disconnected and will no longer be utilized shall be removed from the site and legally disposed. The storage capacity of the existing tanks as follows:
 - a. Emergency Electric Generator Set:
 - 1) Existing UST has storage capacity of 8,000 gallons.
 - b. Boilers and Incinerators:
 - 1) Existing two (2) UST's; each has storage capacity of 4,000 gallons.

During excavation work associated with tank removal, the soil will be monitored and tested for contamination due to any fuel oil leakage from the existing UST's. Any work associated with mitigation of soil contamination will be considered as a modification to the base contract work.

- D. The work will be provided under a single prime contract.

1.3 CONTRACTOR USE OF PREMISES

- A. General: During the demolition/removal period the Contractor shall have controlled (as approved by the Contracting Officers Representative [COR]) use of the premises for demolition/removal operations, including use of the site. The Contractor's use of the premises is limited only by the Owner's use of the facility for quarantine of animals being imported into the United States.
 1. Quarantine periods are conducted on a 120 day cycle wherein the animals are kept under controlled conditions for a duration of 90 days which is then followed by a period of 30 days for cleanup of the holding areas and preparation for the next quarantine period.
 2. During the actual quarantine periods all Contractor personnel will be required to follow the Facility's rules of entry and egress:
 - a. Upon entering the facility, personnel shall remove street clothing and don work clothing to be worn during the work day. Clothing shall include:
 - 1) Shirts and pants
 - 2) Shoes and stockings
 - 3) Underwear
 - 4) Jewelry, watches and other personal items.

- b. Upon leaving the facility, personnel shall remove all work clothing which shall be left inside a locker located in the appropriate dressing room (Men's and Women's).
 - 1) Before donning street clothing, personnel shall take full body showers and shampoo hair to remove all foreign particles picked up from the work site.
3. All Contractor personnel shall complete and sign the following document issued by the Government:

UNITED STATES DEPARTMENT OF AGRICULTURE
VETERINARY SERVICES

(Sample Copy)

Harry S. Truman Animal Import Center

Microbiological Security Program
Visitor's Agreement

I, _____, agree to abide by the provisions of the Harry S. Truman
Import Center's Microbiological Security Program as follows:

I certify that I have not been in contact with any susceptible species for 72 hours prior to entering
the Import Center nor have I been outside of the United States in the last seven (7) days.

Specify, I agree to the personnel decontamination procedure, including changing to and from
station clothing, showering-out, and avoiding contact with susceptible animals for a period of
seven (7) days after leaving the Center.

**A SUSCEPTIBLE ANIMAL IS DEFINED AS A RUMINANT OR SWINE, AND
IS IDENTIFIED BY HAVING CLOVEN (TWO-TOED) FEET. SUSCEPTIBLE
ANIMALS INCLUDE CATTLE SHEET, SWINE, GOATS, DEER, WATER
BUFFALO AND CAMELID SPECIES.**

CONTACT IS DEFINED AS:

Physically touching the animals, their feed, water or equipment.

Treading on surfaces to which the animals have access.

Occupying a space within ten meters (approx. 33 ft.) of the susceptible animal.

I shall be liable and shall indemnify USDA and/or other parties for all claims, suits, judgments
or damages resulting from my violation of these security procedures.

Signature:

Date:

Home Address:

- B. Use of the Site: Limit use of the premises to work in areas indicated. Confine operations to areas within contract limits indicated. Do not disturb portions of the site beyond the areas in which the Work is indicated.
1. Government Occupancy: Allow for Government occupancy and use by the public.
 2. Driveways and Entrances: Keep driveways and entrances serving the premises clear and available to the Government, the Government's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- B. Use of the Existing Building: Maintain the existing building in a weathertight condition throughout the demolition/removal period. Repair damage caused by demolition/removal operations. Take all precautions necessary to protect the building and its occupants during the demolition/removal period.

1.5 OCCUPANCY REQUIREMENTS

- A. Full Government Occupancy: The Government will occupy the site and existing building during the entire construction period. Cooperate with the Government during construction operations to minimize conflicts and facilitate Government usage. Perform the Work so as not to interfere with the Government's operations.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01010

SECTION 01026 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for unit prices.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Modification Procedures" for procedures for submitting and handling Change Orders.
 - 2. Division 1 Section "Quality Control Services" for general inspection requirements.
 - 3. Division 2 Section "Earthwork" for procedures for measurement and payment for excavation and backfill.

1.3 DEFINITIONS

- A. Unit price is an amount proposed by bidders, stated on the Bid Form, as a price per unit of measurement for materials or services added to the Contract Sum by appropriate modification, if the estimated quantities of Work required by the Contract Documents are increased.

1.4 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, overhead, profit, and applicable taxes.
- B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

- C. The Government reserves the right to reject the Contractor's measurement of work-in-place that involves use of established unit prices, and to have this work measured, at the Government's expense, by an independent surveyor acceptable to the Contractor.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 UNIT PRICE SCHEDULE

- A. Schedule: A "Unit Price Schedule" is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements for materials described under each unit price. The following unit prices will be used to negotiate modifications to the base contract:

1. Unit Price No. 1 - Contaminated Soil Removal:
 - a. Description: Contaminated soil removal, transport and disposal beyond the amount indicated and specified according to Division 15 Section "Underground Storage Tank Removal and Contaminated Soil Excavation."
 - b. Unit of Measurement: Cu. yard of earth excavated.
2. Unit Price No. 2 - Backfill to Replace Contaminated Soil:
 - a. Description: Backfill required to replace contaminated soil removed beyond the amount indicated and specified in Division 15 Section "Underground Storage Tank Removal and Contaminated Soil Excavation."
 - b. Unit of Measurement: Cu. Yard of backfill.
3. Unit Price No. 3 - Sludge Removal:
 - a. Description: Sludge removal, transport and disposal according to Division 15 Section "Underground Storage Tank Removal and Contaminated Soil Excavation."
 - b. Unit of Measurement: Per gallon removed.

END OF SECTION 01026

SECTION 01040 - PROJECT COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and supervisory requirements necessary for Project coordination including, but not necessarily limited to, the following:
1. General project coordination procedures.
 2. Administrative and supervisory personnel.
 3. Cleaning and protection.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
1. Division 1 Section "Submittals" for preparing and submitting the Contractor's Construction Schedule.
 2. Division 1 Section "Contract Closeout" for coordinating contract closeout.

1.3 COORDINATION

- A. Coordinate demolition/removal activities included in various Sections of these Specifications to assure efficient and orderly demolition/removal of each part of the Work. Coordinate demolition/removal operations included under different Sections that depend on each other for proper demolition/removal operation.
1. Schedule demolition/removal operations in the sequence required to obtain the best results where demolition/removal one part of the Work depends on demolition/removal of other components, before or after its own demolition/removal.
 2. Coordinate demolition/removal of different components to assure efficient and orderly sequence of work.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION

3.1 GENERAL PROVISIONS

- A. Inspection of Conditions: Requires the Contractor to inspect both the substrate and conditions under which Work is to be performed.

3.2 CLEANING AND PROTECTION

- A. Clean and protect work in progress and adjoining materials in place, during demolition/removal. Apply protective covering where required to assure protection from damage or deterioration at Substantial Completion.
- B. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:
1. Excessive static or dynamic loading.
 2. Excessive internal or external pressures.
 3. Soil contamination or pollution.
 4. Water.
 5. Solvents.
 6. Chemicals.
 7. Puncture.
 8. Abrasion.
 9. Heavy traffic.
 10. Soiling, staining and corrosion.
 11. Bacteria.
 12. Combustion.
 13. Electrical current.
 14. Unusual wear or other misuse.
 15. Contact between incompatible materials.
 16. Misalignment.
 17. Excessive weathering.
 18. Unprotected storage.
 19. Improper shipping or handling.
 20. Theft.
 21. Vandalism.

END OF SECTION 01040

SECTION 01045 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for cutting and patching.
- B. Related Sections: *The following Sections contain requirements that relate to this Section:*
 - 1. Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
 - a. Requirements of this Section apply to mechanical and electrical demolition/removal work. Refer to Division 15 and 16 Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical systems.

1.3 QUALITY ASSURANCE

- A. Requirements for Structural Work: *Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity or load-deflection ratio.*
 - 1. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements:
 - a. Foundation construction.
 - b. Bearing and retaining walls.
 - c. Structural concrete.
 - d. Structural steel.
 - e. Lintels.
 - f. Miscellaneous structural metals.
 - g. Equipment supports.
 - h. Piping, vessels and equipment.

- B. **Operational Limitations:** Do not cut and patch operating elements or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut and patch operating elements or related components in a manner that would result in increased maintenance, or decreased operational life or safety.
1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:
 - a. Primary operational systems and equipment.
 - b. Water, moisture, or vapor barriers.
 - c. Membranes and flashings.
 - d. Control systems.
 - e. Communication systems.
 - f. Conveying systems.
 - g. Electrical wiring systems.
- C. **Visual Requirements:** Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would, in the COR's opinion, reduce the building's aesthetic qualities. Do not cut and patch construction in a manner that would result in visual evidence of cutting and patching. Remove and replace construction cut and patched in a visually unsatisfactory manner.

1.5 WARRANTY

- A. **Existing Warranties:** Replace, patch and repair material and surfaces cut or damaged by methods and with materials in such a manner as not to void any warranties required or existing.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible if identical materials are unavailable or cannot be used. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed before cutting. If unsafe or unsatisfactory conditions are encountered, take corrective action before proceeding.

3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.
- C. Avoid interference with adjoining areas or interruption of free passage to adjoining areas.
- D. Avoid cutting existing pipe and conduit serving the building but scheduled to be removed or relocated until provisions have been made to bypass them.

3.3 PERFORMANCE

- A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.
 - 1. Cut existing construction to provide for demolition/removal of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction using methods least likely to damage elements to be retained or adjoining construction.
 - 1. In general, where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Cut through concrete and masonry using a cutting machine such as a Carborundum saw or diamond-core drill.

4. Comply with requirements of applicable Division 2 Sections where cutting and patching requires excavating and backfilling.
 5. Where services are required to be removed or by-pass utility services such as pipe or conduit, before cutting. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.
- C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
 2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

3.4 CLEANING

- A. Clean areas and spaces where cutting and patching are performed. Completely paint, mortar, oils, putty and items. Thoroughly clean piping, conduit and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

END OF SECTION 01045

SECTION 01095 - REFERENCE STANDARDS AND DEFINITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Indicated": The term "indicated" refers to graphic representations, notes, or schedules on the Drawings, or other paragraphs or schedules in the Specifications, and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the reader locate the reference. Location is not limited.
- C. "Directed": Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by the COR, requested by the COR, and similar phrases.
- D. "Approved": The term "approved," when used in conjunction with the COR's action on the Contractor's submittals, applications, and requests, is limited to the COR's duties and responsibilities as stated in the Conditions of the Contract.
- E. "Regulations": The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": The term "furnish" means supply and deliver to the Project Site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": The term "install" describes operations at the Project Site including the actual unloading, temporary storage, unpacking, assembly, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": The term "provide" means to furnish and install, complete and ready for the intended use.

- I. "Installer": An "installer" is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform.
1. The term "experienced," when used with the term "Installer," means having successfully completed a minimum of 5 previous projects similar in size and scope to this Project, being familiar with the special requirements indicated; and having complied with requirements of the authority having jurisdiction.
 2. Trades: Using terms such as carpentry does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as carpenter. It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.
 3. Assigning Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in those operations. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no option. However, the ultimate responsibility for fulfilling Contract requirements remains with the Contractor.
 - a. This requirement shall not be interpreted to conflict with enforcing building codes and similar regulations governing the Work. It is also not intended to interfere with local trade union jurisdictional settlements and similar conventions.
- J. "Project Site" is the space available to the Contractor for performing construction activities, either exclusively or in conjunction, with others performing other work as part of the Project. The extent of the Project Site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.
- K. "Testing Agencies": A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.3 SPECIFICATION FORMAT AND CONTENT EXPLANATION

- A. Specification Format: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 16-Division format and MASTERFORMAT numbering system.

- B. **Specification Content:** This Specification uses certain conventions regarding the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:
1. **Abbreviated Language:** Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be interpolated as the sense requires. Singular words will be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.
 2. **Imperative and streamlined language** are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.
 - a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied wherever a colon (:) is used within a sentence or phrase.

1.4 INDUSTRY STANDARDS

- A. **Applicability of Standards:** Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. **Publication Dates:** Comply with the standards in effect as of the date of the Contract Documents.
- C. **Conflicting Requirements:** Where compliance with 2 or more standards is specified and where the standards may establish different or conflicting requirements for minimum quantities or quality levels, refer requirements that are different but apparently equal and uncertainties to the Contracting Officers Representative (COR) for a decision before proceeding.
1. **Minimum Quantity or Quality Levels:** The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as

appropriate, for the context of the requirements. Refer uncertainties to the COR for a decision before proceeding.

- D. **Copies of Standards:** Each entity engaged in demolition/removal on the Project is required to be familiar with industry standards applicable to its demolition/removal activity. Copies of applicable standards are not bound with the Contract Documents.
1. Where copies of standards are needed to perform a required demolition/removal activity, the Contractor shall obtain copies directly from the publication source and make them available on request.
- E. **Abbreviations and Names:** Trade association names and titles of general standards are frequently abbreviated. Where acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards-generating organization, authority having jurisdiction, or other entity applicable to the context of the text provision. Refer to Gale Research Inc.'s "Encyclopedia of Associations," which is available in most libraries.
- F. **Abbreviations and Names:** Trade association names and titles of general standards are frequently abbreviated. The following acronyms or abbreviations, as referenced in the Contract Documents, mean the associated names. Names and addresses are subject to change and are believed, but are not assured, to be accurate and up-to-date as of date of the Contract Documents.

ACIL	American Council of Independent Laboratories 1629 K St., NW Washington, DC 20006	(202) 887-5872
AIA	The American Institute of Architects 1735 New York Ave., NW Washington, DC 20006	(202) 626-7300
AIA	American Insurance Assoc. 1130 Connecticut Ave., NW, Suite 1000 Washington, DC 20036	(202) 828-7100
AIHA	American Industrial Hygiene Assoc. P.O. Box 8390 345 White Pond Dr. Akron, OH 44320	(216) 873-2442

ALI	Associated Laboratories, Inc. 500 S. Vermont St. Palatine, IL 60067	(708) 358-7400
ANSI	American National Standards Institute 11 West 42nd St., 13th Floor New York, NY 10036	(212) 642-4900
API	American Petroleum Institute 1220 L St., NW Washington, DC 20005	(202) 682-8000
ASC	Adhesive and Sealant Council 1627 K St., NW, Suite 1000 Washington, DC 20006-1707	(202) 452-1500
ASCE	American Society of Civil Engineers 345 East 47th St. New York, NY 10017-2398	(800)548-2723
NEC	National Electrical Code (from NFPA)	
NFPA	National Fire Protection Assoc. One Batterymarch Park P.O. Box 9101 Quincy, MA 02269-9101 (800) 344-3555	(617) 770-3000
UL	Underwriters Laboratories 333 Pfingsten Rd. Northbrook, IL 60062	(708) 272-8800
G.	Federal Government Agencies: Names and titles of Federal Government standard - or specification-producing agencies are often abbreviated. The following acronyms or abbreviations referenced in the Contract Documents indicate names of standard - or Specification-producing agencies of the federal government. Names and addresses are subject to change and are believed, but are not assured, to be accurate and up-to-date as of the date of the Contract Documents.	

CFR	Code of Federal Regulations (Available from the Government Printing Office) N. Capitol St. between G and H St. NW Washington, DC 20402 (Material is usually first published in the "Federal Register")	(202) 783-3238
COR	Contracting Officer's Representative	
CS	Commercial Standard (U.S. Department of Commerce) Government Printing Office Washington, DC 20402	(202) 783-3238
DOC	Department of Commerce 14th St. and Constitution Ave., NW Washington, DC 20230	(202) 482-2000
DOT	Department of Transportation 400 Seventh St., SW Washington, DC 20590	(202) 366-4000
EPA	Environmental Protection Agency 401 M St., SW Washington, DC 20460	(202) 382-2090
FS	Federal Specification (from GSA) Specifications Unit (WFSIS) 7th and D St., SW Washington, DC 20407	(202) 708-9205
GSA	General Services Administration F St. and 18th St., NW Washington, DC 20405	(202) 708-5082
NIST	National Institute of Standards and Technology (U.S. Department of Commerce) Gaithersburg, MD 20899	(301) 975-2000
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor) 200 Constitution Ave., NW Washington, DC 20210	(202) 219-6091

PS Product Standard of NBS
(U.S. Department of Commerce)
Government Printing Office
Washington, DC 20402 (202) 783-3238

USDA U.S. Department of Agriculture
Independence Ave. between 12th St. and 14th St., SW
Washington, DC 20250 (202) 720-2791

H. State Government Agencies: The following state government agency produces standards referenced in the Contract Documents:

FDEP Florida Department of Environmental
Protection
2295 Victoria Ave., Suite 364
Fort Myers, FL 33901-3881 (941) 332-6975

1.5 SUBMITTALS

A. Permits, Licenses, and Certificates: For the Government's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established in conjunction with compliance with standards and regulations bearing upon performance of the Work.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01095

SECTION 01300 - SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for submittals required for performance of the Work, including the following:

1. Contractor's construction schedule.

- B. Administrative Submittals: Refer to Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to the following:

1. Permits.
2. Applications for payment.
3. Performance and payment bonds.
4. Insurance certificates.
5. List of Subcontractors.

- C. Related Sections: The following Sections contain requirements that relate to the Section:

1. Division 1 Section "Coordination" specifies requirements governing preparation and submittal of required Coordination Drawings.
2. Division 1 Section "Contract Closeout" specifies requirements for submittal of Project Record Documents and warranties at project closeout.

1.3 SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of submittals with performance of demolition/removal activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

1. Coordinate each submittal with testing, delivery, other submittals, and related activities that require sequential activity.

2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - a. The COR reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.
3. Processing: To avoid the need to delay the work as a result of the time required to process submittals, allow sufficient time for submittal review, including time for resubmittals.
 - a. Allow 2 weeks for initial review. Allow additional time if the COR must delay processing to permit coordination with subsequent submittals.
 - b. If an intermediate submittal is necessary, process the same as the initial submittal.
 - c. Allow 2 weeks for reprocessing each submittal.
 - d. No extension of Contract Time will be authorized because of failure to transmit submittals to the COR sufficiently in advance of the Work to permit processing.

1.5 SUBMITTAL SCHEDULE

- A. After development and acceptance of the Contractor's demolition/removal schedule, prepare a complete schedule of submittals. Submit the schedule within 10 days of the date required for establishment of the Contractor's demolition/removal schedule.
 1. Coordinate submittal schedule with the list of subcontracts, schedule of values and the list of products as well as the Contractor's demolition/removal schedule.

1.6 CONTRACTING OFFICER'S REPRESENTATIVE (COR)'S ACTION

- A. Except for submittals for the record or information, where action and return is required, the COR will review each submittal, mark to indicate action taken, and return promptly.
 1. Compliance with specified characteristics is the Contractor's responsibility.
- B. Action Stamp: The COR will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:

1. Final Unrestricted Release: When the COR marks a submittal "Approved," the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents. Final payment depends on that compliance.
2. Final-But-Restricted Release: When the COR marks a submittal "Approved as Noted," the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents. Final payment depends on that compliance.
3. Returned for Resubmittal: When the COR marks a submittal "Not Approved, Revise and Resubmit," do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance to the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.
 - a. Do not permit submittals marked "Not Approved, Revise and Resubmit" to be used at the Project site, or elsewhere where Work is in progress.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION (Not Applicable).

END OF SECTION 01300

SECTION 01700 - PROJECT CLOSEOUT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including but not limited to, the following:

1. Inspection procedures.
2. Project record document submittal.
3. Final cleaning.

- B. Closeout requirements for specific demolition/removal activities are included in the appropriate Sections in Divisions-2 through -16.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.

1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete.
 - a. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
 - b. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
2. Advise Government of pending insurance changeover requirements.
3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.

4. Obtain and submit releases enabling the Government unrestricted use of the Work and access to services and utilities; include operating certificates and similar releases.
 5. Submit record drawings and similar final record information.
 6. Complete final clean up requirements, including touch-up painting.
 7. Touch up and otherwise repair and restore marred exposed finishes.
- B. Inspection Procedures: On receipt of a request for inspection, the COR will either proceed with inspection or advise the Contractor of unfilled requirements. The COR will prepare the Certificate of Substantial Completion following inspection, or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.
1. The COR will repeat inspection when requested and assured that the Work has been substantially completed.
 2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.4 FINAL ACCEPTANCE

- A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.
1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
 2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
 3. Submit a certified copy of the COR's final inspection list of items to be completed or corrected, endorsed and dated by the COR. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by the COR.
 4. Submit consent of surety to final payment.
 5. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

- B. **Reinspection Procedure:** The COR will reinspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed under circumstances acceptable to the COR.
1. Upon completion of reinspection, the COR will prepare a certificate of final acceptance. If the Work that is incomplete, the COR will advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
 2. If necessary, reinspection will be repeated.

1.5 RECORD DOCUMENT SUBMITTALS

- A. **General:** Do not use record documents for demolition/removal purposes. Protect record documents from deterioration and loss in a secure, fire-resistive location. Provide access to record documents for the COR's reference during normal working hours.
- B. **Record Drawings:** Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings. Mark the set to show the actual work where the work varies substantially from that originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
1. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.
 2. Mark new information that is important to the Government, but was not shown on Contract Drawings or Shop Drawings.
 3. Note related Change Order numbers where applicable.
 4. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
- C. **Record Specifications:** Maintain one complete copy of the Project Manual, including addenda. Include with the Project Manual one copy of other written construction documents, such as Change Orders and modifications issued in printed form during construction.
1. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.

2. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation.
3. Note related record drawing information and Product Data.
4. Upon completion of the Work, submit record Specifications to the COR for the Government's records.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: The General Conditions require general cleaning during execution of the work. Regular site cleaning is included in Division 1 Section "Construction Facilities and Temporary Controls."
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
 1. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.
 - a. Clean the site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.
- C. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during demolition/removal.
- D. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Government's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.

1. Where extra materials of value remaining after completion of associated Work have become the Government's property, arrange for disposition of these materials as directed.

END OF SECTION 01700

SECTION 02200 - EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Preparing and grading subgrades for walks, pavements, and landscaping.
 - 2. Excavating and backfilling for underground storage tank removals.
 - 3. Subbase course for walks and pavements.
 - 4. *Subsurface drainage backfill for walls and trenches.*
 - 5. Excavating and backfilling trenches outside building lines.
 - 6. Excavating and backfilling for underground mechanical and electrical utilities and appurtenances for underground storage tank removals.

1.3 DEFINITIONS

- A. Excavation consists of the removal of material encountered to subgrade elevations and the reuse or disposal of materials removed.
- B. Subgrade: The uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- C. Borrow: Soil material obtained off-site when sufficient approved soil material is not available from excavations.
- D. Subbase Course: The layer placed between the subgrade and base course in a paving system or the layer placed between the subgrade and surface of a pavement or walk.
- E. Base Course: The layer placed between the subbase and surface pavement in a paving system.

- F. **Drainage Fill:** Course of washed granular material supporting slab-on-grade placed to cut off upward capillary flow of pore water.
- G. **Unauthorized excavation** consists of removing materials beyond indicated subgrade elevations or dimensions without direction by the COR. Unauthorized excavation, as well as remedial work directed by the COR, shall be at the Contractor's expense.
- H. **Structures:** Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below ground surface.
- I. **Utilities** include on-site underground pipes, conduits, ducts, and cables, as well as underground services within building lines.

1.4 QUALITY ASSURANCE

- A. **Codes and Standards:** Perform earthwork complying with requirements of authorities having jurisdiction.
- B. Comply with applicable requirements of NFPA 495--Explosive Materials Code.
- C. **Testing and Inspection Service:** The Government will employ a qualified independent geotechnical engineering testing agency to classify proposed on-site and borrow soils to verify that soils comply with specified requirements and to perform required field and laboratory testing.

1.5 PROJECT CONDITIONS

- A. **Existing Utilities:** Do not interrupt existing utilities serving facilities occupied by the Government or others except when permitted in writing by the COR and then only after acceptable temporary utility services have been provided.
 - 1. Provide a minimum 72-hours' notice to the COR and receive written notice to proceed before interrupting any utility.
- B. **Demolish and completely remove from site, the existing underground storage tanks, concrete anchor pads and piping systems indicated to be removed.** Coordinate with COR to shutoff services if lines are active.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide approved borrow soil materials from off-site when sufficient approved soil materials are not available from excavations.
- B. Satisfactory Soil Materials: ASTM D 2487 soil classification groups GW, GP, GM, SW, SP, and SM; free of rock or gravel larger than 2 inches in any dimension, debris, waste, vegetation and other deleterious matter.
- C. Unsatisfactory Soil Materials: ASTM D 2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH, and PT.
- D. Backfill and Fill Materials: Satisfactory soil materials.
- E. Subbase and Base Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand, ASTM D 2940, with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve.
- F. Engineered Fill: Subbase or base materials.
- G. Bedding Material: Subbase or base materials with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.
- H. Drainage Fill: Washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, ASTM D 448, coarse aggregate grading size 57, with 100 percent passing a 1-1/2-inch sieve and not more than 5 percent passing a No. 8 sieve.
- I. Filtering Material: Evenly graded mixture of natural or crushed gravel or crushed stone and natural sand, with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 50 sieve.
- J. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by demolition/removal operations.

- B. Protect subgrades and foundation soils.
- C. Provide erosion control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.2 DEWATERING

- A. Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades.
- B. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.

3.3 EXCAVATION

- A. Explosives: Do not use explosives.
- B. Unclassified Excavation: Excavation is unclassified and includes excavation to required subgrade elevations regardless of the character of materials and obstructions encountered.
- C. Contaminated Soil: See Section 15481.

3.4 STABILITY OF EXCAVATIONS

- A. Comply with local codes, ordinances, and requirements of authorities having jurisdiction to maintain stable excavations.

3.5 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 0.10 foot. Extend excavations a sufficient distance from structures for placing and removing concrete formwork, installing services and other construction, and for inspections.
 - 1. Excavation for Underground Tank Removal, Concrete Anchor Pads, Mechanical or Electrical Appurtenances: Excavate to elevations and dimensions required to remove tanks and to allow soil testing for contamination.

3.6 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings. Lean concrete fill may be used to bring elevations to proper position when acceptable to the COR.
 - 1. Fill unauthorized excavations under other construction as directed by the COR.

3.7 STORAGE OF SOIL MATERIALS

- A. Stockpile excavated materials acceptable for backfill and fill soil materials, including acceptable borrow materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent wind-blown dust.
 - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.8 BACKFILL

- A. Backfill excavations promptly, but not before completing the following:
 - 1. Testing, inspecting, and approval of underground soil conditions.
 - 2. Concrete formwork removal.
 - 3. Removal of trash and debris from excavation.

3.9 FILL

- A. Preparation: Remove vegetation, topsoil, debris, wet, and unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placing fills.
 - 1. Plow strip, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing surface.
- B. When subgrade or existing ground surface to receive fill has a density less than that required for fill, break up ground surface to depth required, pulverize, moisture-condition or aerate soil and recompact to required density.
- C. Place fill material in layers to required elevations for each location listed below.
 - 1. Under grass, use satisfactory excavated or borrow soil material.

2. Under walks and pavements, use subbase or base material, or satisfactory excavated or borrow soil material.
3. Under footings and foundations, use engineered fill.

3.10 MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 2 percent of optimum moisture content.
 1. Do not place backfill or fill material on surfaces that are muddy.
 2. Remove and replace, or scarify and air-dry satisfactory soil material that is too wet to compact to specified density.
 - a. Stockpile or spread and dry removed wet satisfactory soil material.

3.11 COMPACTION

- A. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill materials evenly on all sides of structures to required elevations. Place backfill and fill uniformly along the full length of each structure.
- C. Percentage of Maximum Dry Density Requirements: Compact soil to not less than the following percentages of maximum dry density according to ASTM D 1557:
 1. Under structures, building slabs, steps, and pavements, compact the top 12 inches below subgrade and each layer of backfill or fill material at 95 percent maximum dry density.
 2. Under walkways, compact the top 6 inches below subgrade and each layer of backfill or fill material at 95 percent maximum dry density.
 3. Under lawn or unpaved areas, compact the top 6 inches below subgrade and each layer of backfill or fill material at 90 percent maximum dry density.

3.12 GRADING

- A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between existing adjacent grades and new grades.
 2. Cut out soft spots, fill low spots, and trim high spots to conform to required surface tolerances.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
1. Lawn or Unpaved Areas: Plus or minus 0.10 foot.
 2. Walks: Plus or minus 0.10 foot.
 3. Pavements: Plus or minus 1/2 inch.

3.13 SUBBASE AND BASE COURSES

- A. Under pavements and walks, place subbase course material on prepared subgrades. Place base course material over subbases to pavements.
1. Compact subbase and base courses at optimum moisture content to required grades, lines, cross sections and thickness to not less than 95 percent of ASTM D 4254 relative density.
 2. Shape subbase and base to required crown elevations and cross-slope grades.
 3. When thickness of compacted subbase or base course is 6 inches or less, place materials in a single layer.
 4. When thickness of compacted subbase or base course exceeds 6 inches, place materials in equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.
- B. Pavement Shoulders: Place shoulders along edges of subbase and base course to prevent lateral movement. Construct shoulders at least 12 inches wide of acceptable soil materials and compact simultaneously with each subbase and base layer.

3.14 FIELD QUALITY CONTROL

- A. Testing Agency Services: Allow testing agency to inspect and test each subgrade and each fill or backfill layer. Do not proceed until test results for previously completed work verify compliance with requirements.
1. Perform field in-place density tests according to ASTM D 1556 (sand cone method), ASTM D 2167 (rubber balloon method), or ASTM D 2937 (drive cylinder method), as applicable.

- a. Field in-place density tests may also be performed by the nuclear method according to ASTM D 2922, provided that calibration curves are periodically checked and adjusted to correlate to tests performed using ASTM D 1556. With each density calibration check, check the calibration curves furnished with the moisture gages according to ASTM D 3017.
 - b. When field in-place density tests are performed using nuclear methods, make calibration checks of both density and moisture gages at beginning of work, on each different type of material encountered, and at intervals as directed by the COR.
- B. When testing agency reports that subgrades, fills, or backfills are below specified density, scarify and moisten or aerate, or remove and replace soil to the depth required, recompact and retest until required density is obtained.

3.15 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris.
- B. Repair and re-establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or lose compaction due to subsequent construction operations or weather conditions.
1. Scarify or remove and replace material to depth directed by the COR; reshape and recompact at optimum moisture content to the required density.
- C. Settling: Where settling occurs during the Project correction period, remove finished surfacing, backfill with additional approved material, compact, and reconstruct surfacing.
1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

3.16 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off the Government property.

- B. Disposal: Transport surplus satisfactory soil to designated storage areas on the Government property. Stockpile or spread soil as directed by COR.
1. Remove waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off the Government's property.

END OF SECTION 02200

SECTION 02260 - EXCAVATION SUPPORT AND PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes excavation support and protection systems.
- B. Related Sections include the following:
 - 1. Division 2 Section "Earthwork" for excavating and backfilling.

1.3 PERFORMANCE REQUIREMENTS

- A. Design, provide, monitor, and maintain an anchored and braced excavation support and protection system capable of resisting soil and hydrostatic pressure and supporting sidewalls of excavations.
 - 1. Work includes removing excavation support and protection systems when no longer needed.
 - 2. Prevent surface water from entering excavations by grading, dikes, or other means.
 - 3. Install excavation support and protection systems without damaging existing buildings, pavements, and other improvements adjacent to excavation.

1.4 SUBMITTALS

- A. Shop Drawings: Prepared by or under the supervision of a qualified professional engineer for excavation support and protection systems. System design and calculations must be acceptable to authorities having jurisdiction.
 - 1. Include Shop Drawings signed and sealed by the qualified professional engineer responsible for their preparation.
- B. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

- C. Photographs or videotape, sufficiently detailed, of existing conditions of adjoining construction and site improvements that might be misconstrued as damage caused by excavation support and protection systems.

1.5 QUALITY ASSURANCE

- A. **Installer Qualifications:** Engage an experienced installer to assume engineering responsibility and perform work of this Section who has specialized in installing excavation support and protection systems similar to those required for this Project and with a record of successful in-service performance.
- B. **Professional Engineer Qualifications:** A professional engineer who is legally qualified to practice in the jurisdiction where the Project is located and who is experienced in providing engineering services for designing excavation support and protection systems that are similar to those indicated for this Project in material, design, and extent.
 - 1. **Engineering Responsibility:** Engage a qualified professional engineer to prepare or supervise the preparation of data for the excavation support and protection system including drawings and comprehensive engineering analysis that shows the system's compliance with specified requirements.

1.6 PROJECT CONDITIONS

- A. **Existing Utilities:** Do not interrupt utilities serving facilities occupied by the Government or others unless permitted in writing by the COR and then only after arranging to provide temporary utility services according to requirements indicated.
- B. **Project Site Information:** A geotechnical report has been prepared for this Project and is available for information only. The report is not part of the Contract Documents. The opinions expressed in this report are those of the geotechnical engineer and represent interpretations of the subsoil conditions, tests, and results of analyses conducted by the geotechnical engineer. Government will not be responsible for interpretations or conclusions drawn from this data by Contractor.
 - 1. **Make additional test borings and conduct other exploratory operations as necessary.**
- C. **Survey adjacent structures and improvements, employing a qualified professional engineer or surveyor; establish exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.**

1. During installation of excavation support and protection systems, regularly resurvey benchmarks, maintaining an accurate log of surveyed elevations for comparison with original elevations. Promptly notify COR if changes in elevations occur or if cracks, sags, or other damage is evident in adjacent construction.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Materials need not be new but must be in serviceable condition.
- B. Structural Steel: ASTM A 36.
- C. Steel Sheet Piling: ASTM A 328 or ASTM A 572
- D. Wood Lagging: Lumber, mixed hardwood, nominal rough thickness of 3 inches.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards that could develop during excavation support and protection system operations.
 1. Shore, support, and protect utilities encountered.
- B. Install excavation support and protection systems to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.
 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from COR and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
- C. Locate excavation support and protection systems clear of permanent construction and to permit forming and finishing of concrete surfaces.
- D. Monitor excavation support and protection systems daily during excavation progress and for as long as excavation remains open. Promptly correct bulges, breakage, or other evidence of movement to ensure excavation support and protection systems remain stable.

- E. Promptly repair damages to adjacent facilities caused by installing excavation support and protection systems.

3.2 SOLDIER BEAMS AND LAGGING

- A. Install steel soldier piles before starting excavation. Space soldier piles at intervals indicated. Accurately align exposed faces of flanges to vary not more than 2 inches from a horizontal line and not more than 1:120 out of vertical alignment.
- B. Install wood lagging within flanges of soldier piles as excavation proceeds. Trim excavation as required to install lagging. Fill voids behind lagging with soil, and compact.
- C. Install wales horizontally at centers indicated and secure to soldier piles.

3.3 SHEET PILING

- A. Install one-piece sheet piling and tightly interlock to form a continuous barrier. Accurately align exposed faces of sheet piling to vary not more than 2 inches from a horizontal line and not more than 1:120 out of vertical alignment. Cut tops of sheet piling to uniform elevation at top of excavation.

3.4 CONSTRUCTION SEQUENCE & PROCEDURES FOR SHEET PILING

- A. Remove associated piping to two 4000 gallon UST fuel oil tanks.
- B. Hand dig to verify edge of footing of equipment building and probe to verify edge of 6'x6' footings along column lines 44-E and 43-E of incinerator room of animal holding building.
- C. Hand dig and probe to verify west edge of west UST tank and east edge of east UST and ballast slab and retaining wall footing.
- D. If ballast slab interferes with sheet piling layout, punch or auger thru slab so sheet piling may be installed as required to protect existing building foundations to the east and west per plan.
- E. Drive 17' lengths of sheet piling - (ZP27, AP3 & CP40 by Bethlehem Steel or approved equal), as noted in partial site plan. Install waters and bracing as required and remove existing fuel oil tanks and contaminated soils per governing agencies. Contractor shall comply with "Trench Safety Act 1990." Dispose of excavated contaminated soils and fuel oil tanks per governing agencies requirements.
- F. Backfill excavation after all required removals with granular backfill (clean natural sand with no more than 8% passing the 200 sieve. Compact backfill to 95%

- G. Cut off new sheet piling 2'-0" below grade and finish backfilling operations to match existing grade. Compact top two feet to 90% MPD.
- H. Any deviation in the above "Construction Sequence and Procedures" shall be approved in writing by the Contracting Officer.

3.5 TIE BACKS

- A. Tiebacks: Drill for, install, tension, and grout tiebacks into position. Test load-carrying capacity of each tieback and replace and retest deficient tiebacks.

3.6 BRACING

- A. Bracing: Locate bracing to clear columns, floor framing construction, and other permanent work. If necessary to move a brace, install new bracing before removing original brace.
 1. Do not place bracing where it will be cast into or included in permanent concrete work, unless otherwise approved by COR.
 2. Install internal bracing, if required, to prevent spreading or distortion of braced frames.
 3. Maintain bracing until structural elements are supported by other bracing or until permanent construction is able to withstand lateral earth and hydrostatic pressures.

3.7 REMOVAL AND REPAIRS

- A. Leave excavation support and protection systems permanently in place.

END OF SECTION 02260

SECTION 03300 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies cast-in place concrete, including formwork, reinforcing, mix design, placement procedures, and finishes.
- B. Cast-in-place concrete includes the following:
 - 1. Foundations and footings.
 - 2. Equipment pads and bases.

1.3 SUBMITTALS

- A. General: Submit the following according to Conditions of the Contract and Division 1 Specification Sections.
- B. Product data for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, waterstops, joint systems, curing compounds, dry-shake finish materials, and others if requested by COR.
- C. Shop drawings for reinforcement detailing fabricating, bending, and placing concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, stirrup spacing, bent bar diagrams, and arrangement of concrete reinforcement. Include special reinforcing required for openings through concrete structures.
- D. Shop drawings for formwork indicating fabrication and erection of forms for specific finished concrete surfaces. Show form construction including jointing, special form joints or reveals, location and pattern of form tie placement, and other items that affect exposed concrete visually.
 - 1. COR's review is for general architectural applications and features only. Designing formwork for structural stability and efficiency is Contractor's responsibility.

- E. Samples of materials as requested by COR, including names, sources, and descriptions, as follows:
1. Color finishes.
 2. Normal weight aggregates.
 3. Fiber reinforcement.
 4. Reglets.
 5. Waterstops.
 6. Vapor retarder/barrier.
 7. Form liners.
- F. Laboratory test reports for concrete materials and mix design test.
- G. Material certificates in lieu of material laboratory test reports when permitted by COR. Material certificates shall be signed by manufacturer and Contractor, certifying that each material item complies with or exceeds specified requirements. Provide certification from admixture manufacturers that chloride content complies with specification requirements.

1.4 QUALITY ASSURANCE

- A. Codes and Standards: Comply with provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified:
1. American Concrete Institute (ACI) 301, "Specifications for Structural Concrete for Buildings."
 2. ACI 318, "Building Code Requirements for Reinforced Concrete."
 3. Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice."
- B. Concrete Testing Service: Engage a testing agency acceptable to COR to perform material evaluation tests and to design concrete mixes.
- C. Materials and installed work may require testing and retesting at any time during progress of Work. Tests, including retesting of rejected materials for installed Work, shall be done at Contractor's expense.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

- A. Forms for Exposed Finish Concrete: Plywood, metal, metal-framed plywood faced, or other acceptable panel-type materials to provide continuous, straight, smooth,

exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings.

1. Use overlaid plywood complying with U.S. Product Standard PS-1 "A-C or B-B High Density Overlaid Concrete Form," Class I.
 2. Use plywood complying with U.S. Product Standard PS-1 "B-B (Concrete Form) Plywood," Class I, Exterior Grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.
- B. Form Release Agent: Provide commercial formulation form release agent with a maximum of 350 mg/l volatile organic compounds (VOCs) that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
- C. Form Ties: Factory-fabricated, adjustable-length, removable or snap-off metal form ties designed to prevent form deflection and to prevent spalling of concrete upon removal. Provide units that will leave no metal closer than 1-1/2 inches to the plane of the exposed concrete surface.
1. Provide ties that, when removed, will leave holes not larger than 1 inch in diameter in the concrete surface.

2.2 REINFORCING MATERIALS

- A. Reinforcing Bars: ASTM A 615, Grade 60, deformed.
- B. Galvanized Reinforcing Bars: ASTM A 767, Class II (2.0 oz. zinc psf), hot-dip galvanized after fabrication and bending.
- C. Epoxy-Coated Reinforcing Bars: ASTM A 775.
- D. Steel Wire: ASTM A 82, plain, cold-drawn steel.
- E. Welded Wire Fabric: ASTM A 185, welded steel wire fabric.
- F. Deformed-Steel Welded Wire Fabric: ASTM A 497.
- G. Epoxy-Coated Welded Wire Fabric: ASTM A 884, Class A.
- H. Supports for Reinforcement: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Use wire bar-type supports complying with CRSI specifications.

1. For slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs.

2.3 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type II.

1. Use one brand of cement throughout Project unless otherwise acceptable to COR.

B. Fly Ash: ASTM C 618, Type F.

C. Normal-Weight Aggregates: ASTM C 33 and as specified. Provide aggregates from a single source for exposed concrete.

1. For exposed exterior surfaces, do not use fine or coarse aggregates that contain substances that cause spalling.
2. Local aggregates not complying with ASTM C 33 that have been shown to produce concrete of adequate strength and durability by special tests or actual service may be used when acceptable to COR.

D. Water: Potable.

E. Fiber Reinforcement: Polypropylene fibers engineered and designed for secondary reinforcement of concrete slabs, complying with ASTM C 1116, Type III, not less than 3/4 inch long.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide products by one of the following:
 - a. Gilco Fibers, Cormix Construction Chemicals.
 - b. Durafiber, Durafiber Corp.
 - c. Fiberstrand 100, Euclid Chemical Co.
 - d. Fibermesh, Fibermesh Co., Div. Synthetic Industries, Inc.
 - e. Forta, Forta Corp.
 - f. Grace Fibers, W.R. Grace & Co.
 - g. Polystrand, Metalcrete Industries

F. Admixtures, General: Provide concrete admixtures that contain not more than 0.1 percent chloride ions.

- G. **Air-Entraining Admixture:** ASTM C 260, certified by manufacturer to be compatible with other required admixtures.
1. **Available Products:** Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 2. **Products:** Subject to compliance with requirements, provide products by one of the following:
 - a. Air-Tite, Cormix Construction Chemicals.
 - b. Air-Mix or Perma-Air, Euclid Chemical Co.
 - c. Darex AEA or Daravair, W.R. Grace & Co.
 - d. MB-VR or Micro-Air, Master Builders, Inc.
 - e. Sealtight AEA, W.R. Meadows, Inc.
 - f. Sika AER, Sika Corp.
- H. **Water-Reducing Admixture:** ASTM C 494, Type A.
1. **Available Products:** Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 2. **Products:** Subject to compliance with requirements, provide products by one of the following:
 - a. Chemtard, ChemMasters Corp.
 - b. PSI N, Cormix Construction Chemicals.
 - c. Eucon WR-75, Euclid Chemical Co.
 - d. WRDA, W.R. Grace & Co.
 - e. Pozzolith Normal or Polyheed, Master Builders, Inc.
 - f. Metco W.R., Metalcrete Industries.
 - g. Prokrete-N, Prokrete Industries.
 - h. Plastocrete 161, Sika Corp.
- I. **High-Range Water-Reducing Admixture:** ASTM C 494, Type F or Type G.
1. **Available Products:** Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 2. **Products:** Subject to compliance with requirements, provide products by one of the following:
 - a. Super P, Anti-Hydro Co., Inc.
 - b. Cormix 200, Cormix Construction Chemicals.

- c. Eucon 37, Euclid Chemical Co.
- d. WRDA 19 or Daracem, W.R. Grace & Co.
- e. Rheobuild or Polyheed, Master Builders, Inc.
- f. Superslump, Metalcrete Industries.
- g. PSPL, Prokrete Industries.
- h. Sikament 300, Sika Corp.

J. Water-Reducing, Accelerating Admixture: ASTM C 494, Type E.

- 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
- 2. Products: Subject to compliance with requirements, provide products by one of the following:
 - a. Q-Set, Conspec Marketing & Manufacturing Co.
 - b. Lubricon NCA, Cormix Construction Chemicals.
 - c. Accelguard 80, Euclid Chemical Co.
 - d. Daraset, W.R. Grace & Co.
 - e. Pozzutec 20, Master Builders, Inc.
 - f. Accel-Set, Metalcrete Industries.

K. Water-Reducing, Retarding Admixture: ASTM C 494, Type D.

- 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
- 2. Products: Subject to compliance with requirements, provide products by one of the following:
 - a. PSI-R Plus, Cormix Construction Chemicals.
 - b. Eucon Retarder 75, Euclid Chemical Co.
 - c. Daratard-17, W.R. Grace & Co.
 - d. Pozzolith R, Master Builders, Inc.
 - e. Protard, Prokrete Industries.
 - f. Plastiment, Sika Corporation.

2.4 RELATED MATERIALS

- A. Sand Cushion: Clean, manufactured or natural sand.
- B. Vapor Retarder: Provide vapor retarder that is resistant to deterioration when tested according to ASTM E 154, as follows:

1. Polyethylene sheet not less than 8 mils thick.
2. Water-resistant barrier consisting of heavy kraft papers laminated together with glass-fiber reinforcement and overcoated with black polyethylene on each side.
 - a. Product: Subject to compliance with requirements, provide Moistop by Fortifiber Corporation.

2.5 PROPORTIONING AND DESIGNING MIXES

- A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301. For the trial batch method, use an independent testing agency acceptable to COR for preparing and reporting proposed mix designs.
 1. Do not use the same testing agency for field quality control testing.
 2. Limit use of fly ash to not exceed 25 percent of cement content by weight.
- B. Submit written reports to COR of each proposed mix for each class of concrete at least 15 days prior to start of Work. Do not begin concrete production until proposed mix designs have been reviewed by Architect.
- C. Design mixes to provide normal weight concrete with the following properties:
 1. 4000-psi, 28-day compressive strength; water-cement ratio, 0.40 maximum (air-entrained).
- D. Water-Cement Ratio: Provide concrete for following conditions with maximum water-cement (W/C) ratios as follows:
 1. Subjected to brackish water, salt spray, or deicers: W/C 0.40.
- E. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:
 1. Ramps, slabs, and sloping surfaces: Not more than 5 inches.
 2. Other concrete: Not more than 5 inches.

- F. **Adjustment to Concrete Mixes:** Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, as accepted by COR. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Architect before using in Work.
- G. **Fiber Reinforcement:** Add at manufacturer's recommended rate but not less than 1.5 lb per cu. yd.

2.6 ADMIXTURES

- A. Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in concrete, as required, for placement and workability.
- B. Use accelerating admixture in concrete slabs placed at ambient temperatures below 50 deg F (10 deg C).
- C. Use air-entraining admixture in exterior exposed concrete unless otherwise indicated. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content with a tolerance of plus or minus 1-1/2 percent within the following limits:
 - 1. Concrete not exposed to freezing, thawing, or hydraulic pressure, or to receive a surface hardener: 2 to 4 percent air.
- D. Use admixtures for water reduction and set accelerating or retarding in strict compliance with manufacturer's directions.

2.7 CONCRETE MIXING

- A. **Ready-Mixed Concrete:** Comply with requirements of ASTM C 94, and as specified.
 - 1. When air temperature is between 85 deg F (30 deg C) and 90 deg F (32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 GENERAL

- A. Coordinate the installation of joint materials, vapor retarder/barrier, and other related materials with placement of forms and reinforcing steel.

3.2 FORMS

- A. **General:** Design, erect, support, brace, and maintain formwork to support vertical, lateral, static, and dynamic loads that might be applied until concrete structure can support such loads. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position. Maintain formwork construction tolerances and surface irregularities complying with the following ACI 347 limits:
 - 1. Provide Class A tolerances for concrete surfaces exposed to view.
 - 2. Provide Class C tolerances for other concrete surfaces.
- B. Construct forms to sizes, shapes, lines, and dimensions shown and to obtain accurate alignment, location, grades, level, and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in the Work. Use selected materials to obtain required finishes. Solidly butt joints and provide backup at joints to prevent cement paste from leaking.
- C. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like for easy removal.
- D. Provide temporary openings for clean-outs and inspections where interior area of formwork is inaccessible before and during concrete placement. Securely brace temporary openings and set tightly to forms to prevent losing concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- E. Chamfer exposed corners and edges as indicated, using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.
- F. **Provisions for Other Trades:** Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.
- G. **Cleaning and Tightening:** Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before placing concrete. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

3.3 VAPOR RETARDER/BARRIER INSTALLATION

- A. General: Place vapor retarder/barrier sheeting in position with longest dimension parallel with direction of pour.
- B. Lap joints 6 inches and seal with manufacturer's recommended mastic or pressure-sensitive tape.
 - 1. Cover vapor retarder/barrier with sand cushion and compact to depth indicated.

3.4 PLACING REINFORCEMENT

- A. General: Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars," for details and methods of reinforcement placement and supports and as specified.
 - 1. Avoiding cutting or puncturing vapor retarder/barrier during reinforcement placement and concreting operations. Repair damages before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials that reduce or destroy bond with concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as approved by Architect.
- D. Place reinforcement to maintain minimum coverages as indicated for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

3.5 JOINTS

- A. Construction Joints: Locate and install construction joints so they do not impair strength or appearance of the structure, as acceptable to COR.
- B. Provide keyways at least 1-1/2 inches deep in construction joints in walls and slabs and between walls and footings. Bulkheads designed and accepted for this purpose may be used for slabs.

- C. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints except as indicated otherwise. Do not continue reinforcement through sides of strip placements.
- D. Use bonding agent on existing concrete surfaces that will be joined with fresh concrete.
- E. Waterstops: Provide waterstops in construction joints as indicated. Install waterstops to form continuous diaphragm in each joint. Support and protect exposed waterstops during progress of Work. Field-fabricate joints in waterstops according to manufacturer's printed instructions.
- F. Isolation Joints in Slabs-on-Grade: Construct isolation joints in slabs-on-grade at points of contact between slabs-on-grade and vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Joint fillers and sealants are specified in Division 7 Section "Joint Sealants."

3.6 INSTALLING EMBEDDED ITEMS

- A. General: Set and build into formwork anchorage devices and other embedded items required for other work that is attached to or supported by cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached.
- B. Forms for Slabs: Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and contours in finished surfaces. Provide and secure units to support screed strips using strike-off templates or compacting-type screeds.

3.7 PREPARING FORM SURFACES

- A. General: Coat contact surfaces of forms with an approved, nonresidual, low-VOC, form-coating compound before placing reinforcement.
- B. Do not allow excess form-coating material to accumulate in forms or come into contact with in-place concrete surfaces against which fresh concrete will be placed. Apply according to manufacturer's instructions.
 - 1. Coat steel forms with a nonstaining, rust-preventative material. Rust-stained steel formwork is not acceptable.

3.8 CONCRETE PLACEMENT

- A. **Inspection:** Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast in. Notify other trades to permit installation of their work.
- B. **General:** Comply with ACI 304, "Guide for Measuring, Mixing, Transporting, and Placing Concrete," and as specified.
- C. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened sufficiently to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation at its final location.
- D. **Placing Concrete in Forms:** Deposit concrete in forms in horizontal layers no deeper than 24 inches and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
 - 1. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete complying with ACI 309.
 - 2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the machine. Place vibrators to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix to segregate.
- E. **Placing Concrete Slabs:** Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until completing placement of a panel or section.
 - 1. Consolidate concrete during placement operations so that concrete is thoroughly worked around reinforcement, other embedded items and into corners.
 - 2. Bring slab surfaces to correct level with a straightedge and strike off. Use bull floats or darbies to smooth surface free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.
 - 3. Maintain reinforcing in proper position on chairs during concrete placement.

- F. **Hot-Weather Placement:** When hot weather conditions exist that would impair quality and strength of concrete, place concrete complying with ACI 305 and as specified.
1. Cool ingredients before mixing to maintain concrete temperature at time of placement to below 90 deg F (32 deg C). Mixing water may be chilled or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedding in concrete.
 3. Fog spray forms, reinforcing steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without puddles or dry areas.
 4. Use water-reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions, as acceptable to Architect.

3.9 FINISHING FORMED SURFACES

- A. **Rough-Formed Finish:** Provide a rough-formed finish on formed concrete surfaces not exposed to view in the finished Work or concealed by other construction. This is the concrete surface having texture imparted by form-facing material used, with tie holes and defective areas repaired and patched, and fins and other projections exceeding 1/4 inch in height rubbed down or chipped off.

3.10 MONOLITHIC SLAB FINISHES

- A. **Nonslip Broom Finish:** Apply a nonslip broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.
1. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with COR before application.

3.11 CONCRETE CURING AND PROTECTION

- A. **General:** Protect freshly placed concrete from premature drying and excessive hot temperatures. In hot, dry, and windy weather protect concrete from rapid moisture loss before and during finishing operations with an evaporation-control material. Apply according to manufacturer's instructions after screeding and bull floating, but before power floating and troweling.

- B. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than 7 days.
- C. Curing Methods: Cure concrete by curing compound, by moist curing, by moisture-retaining cover curing, or by combining these methods, as specified.
- D. Provide moisture curing by the following methods:
 - 1. Keep concrete surface continuously wet by covering with water.
 - 2. Use continuous water-fog spray.
 - 3. Cover concrete surface with specified absorptive cover, thoroughly saturate cover with water, and keep continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with a 4-inch lap over adjacent absorptive covers.
- E. Provide moisture-retaining cover curing as follows:
 - 1. Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3 inches and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
- F. Apply curing compound on exposed interior slabs and on exterior slabs, walks, and curbs as follows:
 - 1. Apply curing compound to concrete slabs as soon as final finishing operations are complete (within 2 hours and after surface water sheen has disappeared). Apply uniformly in continuous operation by power spray or roller according to manufacturer's directions. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - 2. Use membrane curing compounds that will not affect surfaces to be covered with finish materials applied directly to concrete.

3.12 CONCRETE SURFACE REPAIRS

- A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removing forms, when acceptable to COR.

- B. Mix dry-pack mortar, consisting of one part portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing.
1. Cut out honeycombs, rock pockets, voids over 1/4 inch in any dimension, and holes left by tie rods and bolts down to solid concrete but in no case to a depth less than 1 inch. Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with bonding agent. Place patching mortar before bonding agent has dried.
 2. For surfaces exposed to view, blend white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Provide test areas at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

END OF SECTION 03300

SECTION 15001 - PHASING, DEMOLITION AND MAINTAINING EXISTING
SERVICES

A. WORK INCLUDED IN CONTRACT

1. During the execution of the work, required relocation of existing equipment and systems at the existing facility areas where new work and connections are schedule to be made shall be performed by the Contractor as indicated on the drawings, as required by job conditions and as determined in close cooperation with the COR to facilitate the demolition/removal of the existing underground storage tanks and completion of this Contract. The Government will require the continuous operation of all existing critical equipment and systems (such as boiler, incinerators and emergency generator), while demolition/removal, work or new tie-ins are being performed. Outages required for demolition/removal purposes shall be scheduled for the shortest practical periods of time, in coordination with the Government's designated representative (COR) for specific, mutually agreeable periods of time, after each of which the interruption shall cease and service shall be restored. This procedure shall be repeated to suit the Government's working schedule as many times as required until all work is completed. The cost of all work and temporary fuel oil tanks and pumping systems shall be included under this Contract. No extra compensation will be allowed for phasing work.
2. Prior to any deactivation, capping, valving, tie-in or demolition/removal work, consult the drawings and arrange a conference with the COR in the field to inspect each of the items to be deactivated, removed or relocated. Care shall be taken to protect all equipment designated to be relocated and reused. Give notice to all parties, with a minimum of five (5) working days in advance.
3. All draining of existing systems, filling and venting required to remove and relocate existing piping systems or make new tie-ins to existing systems shall be included and provided under the Contract of the respective Trade scheduled to perform the various work under this project.
4. Deactivation, safe capping, valving, etc., of systems designated to be demolished, removed, or tied into shall be provided as applicable. All demolition/removal and disposal of demolished materials shall be performed by the Contractor.

5. The phasing of the work shall be performed in strict accordance with the Contractor's construction schedule. Coordinate requirements for installing the temporary fuel oil supply systems and rerouting of existing services as required to accomplish the demolition/removal schedule.

END OF SECTION 15001

SECTION 15481 - UNDERGROUND FUEL SYSTEM REMOVAL

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Furnish all labor, materials and equipment necessary for the complete removal of the existing underground fuel systems, as indicated on the drawings and specified herein. Work includes all required excavation, backfill, compaction, testing, finish grading, disposal of unsuitable materials, removal of the existing fuel oil tanks, tank concrete anchor pads and piping systems.
- B. The Contractor shall obtain and pay all costs for required State, County, City and Local fees and permits associated with the work of this Section.
- C. The Contractor shall notify the Department of Environmental Regulation as stated in Rule 17-761, Florida Administrative code, "Underground Storage Tank Systems," 30 days prior to removal of existing tanks and removal of existing fuel oil piping using Form 17-761.900(2) as stated in 17-761.450 "Notification." The Contractor shall provide at least 24 hours notice to the Department prior to system closure and shall comply with all other notifications required in 17-761.450.

1.2 QUALITY ASSURANCE

- A. Where requirements of these Specifications exceed governing codes and regulations, the Specifications govern. Where codes or regulations exceed these Specifications, the prevailing codes or regulations shall govern.
- B. The Codes, Regulations and Agencies known to have specific jurisdiction for this project.
- C. Engineer's Examination:
 1. A representative of Hanson Engineers, Inc. May assist the COR representative in observing and documenting all or portions of the work performed by the Contractor.
- D. Notify COR of any procedures or conditions encountered that may be in violation of Laws, Ordinances, Rules, Regulations or Authorities having jurisdiction.
- E. The fuel system removal contractor shall be:

1. Registered by the State of Florida, Department of Professional Regulation as a Pollutant Storage Systems Specialty Contractor (PSSSC) and familiar with all Local, State and Federal regulations required for fuel tank removal and disposition, permanent closure and change of service.
 2. Contractor shall be licensed by the State of Florida Department of Business and Professional Regulation (DBPR).
 3. Contractor shall be qualified to develop a Comprehensive Quality Assurance Plan (COMP QAP).
- F. Notify the COR a minimum of seven (7) days prior to the start of any excavation work. COR representative must be on site during excavation operations. Do not proceed with excavation without COR representative present.
- G. Excavations and shoring shall be performed in strict compliance with OSHA Standards and the Florida Trench Safety Act (90-96), Laws of Florida effective October 1, 1990.
- H. Referenced Codes and Standards:
1. Perform earthwork and grading compliance with applicable requirements of governing authorities having jurisdiction.
 2. American Petroleum Institute (API) Publication 1604, removal and disposal of used underground petroleum storage tanks.
 3. API Publication 2015, "Cleaning Petroleum Storage Tanks," 1985.
 4. API Publication 2015A, "A Guide for Controlling the Lead Hazard Associated with Tank Entry and Cleaning."
 5. API PuvlixRION 2217A, "Guidelines for Work in Inert Confined Spaces in the Petroleum Industry," 1987.
 6. API Publication 2219, "Safe Operating Guidelines for Vacuum Trucks in Petroleum Service," 1986.
 7. Occupational Safety and health Administration (OSHA) 2226, "Excavation and Trenching Operations," 1990.
 8. National Institute for Occupational Safety and Health (NIOSH), "Criteria for Recommended Standard...Working in Confined Spaces," 1979.

9. NIOSH Publication 87-113, "A Guide to Safety in Confined Spaces," 1987.
 10. National Fire Protection Association (NFPA) 69, "Explosion Prevention Systems," 1986 (table with minimum oxygen levels necessary to support combustion for various products).
 11. NFPA 30.
 12. NFPA 77.
 13. NFPA 326.
 14. NFPA 327.
 15. Florida Statute 373.303 Ch. 17-761.
 16. EPA Technical Standards.
- I. Testing and Inspection Service for Fill and Compaction:
1. The Government shall engage a testing and inspection service, to include testing soil materials proposed for use in the work. Soil survey for satisfactory soil materials and samples of soil materials shall be furnished to the testing service by the Contractor. Refer to paragraph "TESTING" hereinafter for specific test requirements.
- J. Testing Agency for Contamination Assessment: The Government shall engage and pay all costs for services of a certified independent testing agency to assess, observe and inspect fuel oil piping and areas surrounding tank as well as provide all tests and certifications as required by Federal, State, County and Local Codes and Ordinances. The testing agency shall provide:
1. Laboratory test reports.
 2. All required notification to Federal, State, County and Local authorities.
 3. Make recommendations for decontamination of areas discovered by this work.
- 1.3 SUBMITTALS
- A. Submit two copies of the following reports directly to the COR:
1. Field density test reports.

2. One optimum moisture-maximum density curve for each type of soil encountered.
3. Other tests and materials certificates as required.
4. All required certificates, registrations and permits.

1.4 JOB CONDITIONS

- A. Existing Utilities: Locate existing underground utilities in the areas of work before starting earthwork operations. Where utilities are indicated to remain in place, provide adequate means of protection during earthwork operations.
1. Should uncharted, or incorrectly charged, piping or other utilities be encountered during excavation, consult the COR and the utility owner immediately for directions. Cooperate with the COR, and public and private utility companies in keeping their respective services and facilities in operation. Repair damaged utilities to the satisfaction of the utility owner.
 2. Do not interrupt existing utilities or operation of the facilities occupied and used by the Government or others at this site, except when permitted in writing by the COR and then only after acceptable temporary utility and fuel oil tank services have been provided.
 3. Demolish and completely remove from the site, underground fuel oil storage tanks, tank concrete anchor pads and piping systems indicated to be removed. Coordinate with local utility companies for shut-off of services if lines are active. Refer to Fuel System Removal specified hereinafter for removal procedures.
- B. Temporary Protection: Protect structures, utilities and other facilities from damages caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.
- C. If containment testing reveals petroleum product contamination of soils, ground water or surface water in the vicinity of the existing tank, remedial action to decontaminate will be performed as specified hereinafter; and the contract amount adjusted appropriate to the actions required, based on unit prices submitted in the bid form.

1.5 PROTECTION

- A. Where excavation occurs in areas with uncharted utilities or areas indicated to contain existing utilities, excavation shall be by hand to prevent damage to utilities to remain. Provide adequate temporary support for utilities exposed during removal. Backfilling

and compaction operations around existing utilities shall be by hand to prevent damage or dislodgment to utilities.

- B. Should unforeseen utilities be encountered that interfere with removal operations, immediately inform COR and obtain instructions.

1.6 DEFINITIONS & ABBREVIATIONS

A. Definitions:

1. Cap - A method of sealing abandoned fuel lines by a positive mechanical method such as a threaded cap, bolted flange or soldered copper cap.
2. Plug - A method of sealing abandoned fuel lines to prevent future use and prevent entry of insects or rodents such as filling with a non-shrinking grout.

B. Abbreviations:

1. API - American Petroleum Institute
2. ANSI - American National Standards Institute
3. ASTM - American Society of Testing and Materials
4. NFPA - National Fire Protection Association

PART 2 - PRODUCTS

2.1 MATERIALS/EQUIPMENT

- A. Fill: Use fill material for filling and backfilling which is a coarse-grain, well-graded sand, free of organic material and having no more than 5% fines passing the No. 200 sieve, with a plastic index of not more than 10 and a moisture content at the time of placement that is within 2% of the optimum moisture content for achieving maximum compaction.
- B. Uncontaminated excavated material conforming to requirements for fill land backfill material may be used for fill and backfill.
- C. Unsuitable Subsoil Material: Unsuitable subsoil material is defined as muck, rubbish, saw dust, vegetable matter and highly plastic and silty clayey soils located near the surface of the ground.
- D. Compaction: For compacting succeeding lifts of fill, use a "walk-behind," vibrator compactor having a maximum weight of 1,000 lbs.

- E. Topsoil: A fertile, friable soil which has natural characteristics of representative productive soils in the vicinity and is free of subsoil, refuse, roots, rocks larger than 2 inches diameter, toxic substances and other materials detrimental to plant growth.

2.2 USABLE PRODUCT DISPOSITION

- A. The Contractor shall transfer the residual liquids in the underground fuel storage tank(s) scheduled for removal into a transport vehicle and properly dispose of usable (or recycle) and waste materials. Such directive will be given by COR.

The Contractor shall remove and dispose of the usable product, the Contractor shall retain salvage value obtained from the product. Therefore, the Contractor shall reflect the salvage value of the produce in the net cost submitted for the work.

The Contractor shall be responsible for disposing of the product or other liquids in accordance with applicable local, state and federal regulations.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine the areas and conditions under which the work is to be performed and do not proceed with the work until satisfactory conditions have been corrected.

3.2 TESTING

- A. Testing for Proposed Soil Materials:

1. Test soil materials proposed for use in the work and promptly submit test result reports.
2. Provide one optimum moisture-maximum density curve for each type of soil encountered in subgrade and fills. Determine maximum densities in accordance with ASTM D 1557.
 - a. The testing service will determine the suitability of materials to be used as fill.

- B. Testing and Contamination Assessment

1. The Contractor shall coordinate with the testing agency and the COR.

2. A representative of the testing agency shall test the soil during all phases of the excavation of the tank using an organic vapor analysis instrument with a flame ionization detector (O.V.A. Meter). Tests shall be conducted at the intervals as prescribed by governing agencies and at any other locations the testing agency suspects may be contaminated.
3. Any soil or water producing a reading on the O.V.A. meter above regulated levels shall be considered to be contaminated and shall be taken to an approved incinerator for disposal, or shall be disposed of in landfills or facilities approved for handling contaminated materials of the degree detected.
4. Complete records must be kept of all materials found to be contaminated, including amount removed and the facility in which it was received and processed. These records shall be dated by the receiving facility and shall be submitted to the COR. These records will be kept in the Project File for a *minimum of thirty (30) years*.
5. When contamination is detected and following recommendations by the testing agency, the COR and/or Government shall direct the Contractor to proceed with decontamination.

3.3 EXCAVATING

- A. General: Immediately dispose of any excavated materials off-site which are unsuitable for backfill or for other uses on the premises. Remove all muck and organic subsoil. Excavate only to the necessary depth and size required for tank and piping removal and inspection of soil conditions.
- B. Dewatering: Provide ample means and devices with which to keep excavation dry at all times. Do not work where groundwater is within one foot of the exposed surface. Dispose of water in a manner which will not cause damage to utilities, pipelines, pavements, nor other properties. Continue the dewatering process until backfill operations are complete.
 1. Prevent surface water and subsurface or ground water from flowing into excavations. Do not allow water to accumulate in excavations. Remove water from excavations to prevent softening of bottom and soil changes detrimental to the stability of subgrades.
 2. Convey water removed from excavations and rain water to collecting areas or run-off areas. Do not use trench excavations for utilities as temporary drainage ditches.

- C. **Diking:** If uncontaminated, use soil from excavation to form temporary dikes around the excavations and shape so as to divert surface water away from the excavations.
- D. **Protection:** Contractor shall provide adequate barricades or other means to ensure protection to workmen, Government personnel and the public at all times during the open excavation in accordance with OSHA standards.
- E. **Shoring:** Construct and maintain all shoring and sheeting for excavations in excess of 5 feet in accordance with the Florida Trench Safety Act (90-96, Laws of Florida) effective October 1, 1990.
- F. **Material Storage:** Stockpile excavated materials classified as satisfactory soil material where directed, until required for fill. Place, grade and shape stockpiles for proper drainage. Immediately dispose of unsatisfactory soil material, trash and debris, off the site. Repair surfaces damaged by stockpiling.

3.4 FUEL SYSTEM REMOVAL

- A. **General:** fuel systems indicated to be removed shall be done so in strict compliance with all applicable codes and standards. The following paragraph entitled "Method of Procedure" outlines steps for the safe removal of underground fuel systems as prescribed by APT, Publication 1604. In addition to these steps, exercise extreme caution during all phases of tank, concrete anchor pad and pipe removal work.
- B. **Method of Procedure:** The following sequence of operations shall be followed by the Contractor for the removal of the underground fuel storage tank(s):
 1. Notify the implementing state agency charged with underground fuel storage tank enforcement for updating tank inventories and to receive specific regulatory instructions regarding the underground tank removal.
 2. Notify the local Fire Department prior to the removal.
 3. Product remaining in piping shall be drained and flushed into the tank(s) that are to be removed.
 - a. It is impossible to completely remove all of the product from pies during the drain and flush process. Therefore, prior to loosening or disconnecting any pipe which previously contained product, a ground covering of 6 mil (visqueen) plastic shall be placed under the joint being disconnected. The ground surface under the plastic shall be cupped out so that the plastic forms a basin to receive any product which may be left in the pipe. If it is

impractical, because of limited space, to prepare a basin as described, other similar methods shall be implemented to prevent product from making contact with the soil when the pipes are disconnected.

- b. Absorbent material shall be used to soak up product trapped within the plastic basin so that it will not be spilled during the removal process. If product is accidentally spilled, the soil contaminated by the spill shall be immediately removed and processed as described above.
4. A qualified electrician shall disconnect all electrical controls and wiring of the oil pumping system and remove as necessary for tanks removal.
5. Excavate down to the top of the tank exposing all lines.
6. Initial cleaning from outside the tank(s):
 - a. Tank(s) shall be cleaned in place.
 - b. Remove all residual product and other remaining sludge/water mixtures in the tank by a suitable pump utilizing the procedures outlined in Paragraph 3.10 of API Publication 2015. It may be necessary to use a hand pump to remove the bottom few inches of material. Waste materials shall be removed from the tank, transported and disposed of in a manner consistent with governing regulations.
 - c. Liquid waste materials shall be disposed of at an incineration facility or treatment facility capable of eliminating the waste products. The Contractor shall provide the names of the companies transporting the waste and accepting the waste on the bid form in the spaces provided.
 - d. All liquid or slurry waste material shall be transported in drums, tanks or suitable liquid tight containers approved by the appropriate State Department of Transportation to ensure no waste material leaks are released during transport.
 - e. Clean the tanks using a triple rinse or other method approved by the Authorities Having Jurisdiction. The cleaning shall be accomplished prior to tank removal. Use a liquid appropriate for the contents of the tank.
7. Remove the fill (drop) tube. Disconnect the supply, return and gauge lines. Disconnect any equalizer lines. Purge all lines free of product with compressed air or nitrogen. Cap or plug open ends of all supply and gauge lines.
8. Remove all residual product and other remaining material in the tank.

9. Final cleaning of the tank(s): Tanks shall be cleaned by removing all visible signs of liquids, sludges and residues from the interior tank surfaces. It is the Contractor's responsibility to take appropriate precautions and to adhere to established practices standard to the industry and to all applicable, relevant and appropriate codes and regulations throughout the closure activities. The Contractor retains sole responsibility for site and worker safety.
 - a. Tanks which can not be entered may be cleaned in accordance with procedures outlined in API Publication 2015.
 - b. Waste material and water generated by the cleaning process shall be removed and disposed of at an approved disposal site.
10. After cleaning the tank(s) the Contractor shall have the COR representative examine the tank to document the tank cleaning. The Contractor shall arrange for the observation of the tank.
11. Disconnect and remove the vent line , plug all tank openings. Complete the excavation and remove tie-down bands.
12. Remove underground storage tank(s), placing them in a secure position, checked to prevent movement. Extreme caution should be used during these procedures, especially when removing tie-down anchors in excavations containing water.
13. Remove and dispose of the concrete anchor pads.
14. Backfill excavated areas with clean native material or suitable imported backfill.
15. Finish grade excavated areas to match existing slopes and restore to original condition.
16. Dispose of tanks and removed piping. Prior to removal of tanks from the site, they must be rendered unusable.
17. The Contractor shall ready the tanks for transportation to final disposal destination.
 - a. The tanks shall be secured on trucks for transition.
 - b. The Contractor shall obtain all permits to transport the tanks.
18. Submit manifests, receipts and all supporting documents relating to transport, transfer, disposal and treatment of fuels, sludges, liquids, piping, etc.

3.5 ABANDONMENT OF PIPING AND OIL PUMPING ACCESSORIES IN BUILDING

- A. Refer to Project Drawings for specific regarding pipe and oil pumping system abandonment located within the buildings.
- B. All materials and equipment abandoned inside the building shall remain the property of the Government. All other materials and equipment removed shall be removed and disposed of by the Contractor as shown on the Project Drawings.

3.6 DISPOSITION OF PIPING AND EQUIPMENT

- A. All piping, tanks and associated equipment shall become the property of the Contractor after they have been removed from the premises. The Contractor shall submit a letter, typed on company letterhead that he accepts ownership and associated equipment after removal.
- B. The Contractor shall submit a letter, typed on company letterhead, stating how he intends to use or dispose of, all contaminated piping, tanks and associated equipment.
- C. Disposal of piping, tanks and associated equipment shall comply with all Local, County, State and Federal Regulations.

3.7 FILLING AND COMPACTING

- A. Place fill in uniform lifts of twenty-four (24) inches (loose measure) and compact. Compact will and backfill to the minimums listed below of a maximum density as determined to the Modified Proctor Test, ASTM D-1557, Method A:
 - 1. Unpaved Areas: Compact top 6 inches of subgrade and each layer of backfill or fill material at 90 percent maximum dry density.
- B. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent removal operations or adverse weather, scarify surface, re-shape and compact to the required density prior to further removal.

3.8 FIELD QUALITY CONTROL

- A. Quality Control Testing During Construction: The government's testing service must inspect and approve subgrades and fillers before further removal work is performed.
- B. Perform field density tests in accordance with ASTM D-1556 (sand cone method) or ASTM D-2167 (rubber balloon method).

- C. Make at least one field density test of the subgrade.
- D. In each compacted filllayer, make one field density test.
- E. If, in the opinion of the COR, based on reports of the testing service and inspection, the subgrade or fills which have been placed are below the specified density, additional compaction and testing will be required until satisfactory results are obtained.

3.9 GROUNDING

- A. Finish Grading: Grade uniformly (visually detectable) to elevations required to meet surrounding existing grades to within 0.1 foot and within one inch in ten feet.

3.10 CLEANING

- A. Remove all unsuitable materials from the site.

END OF SECTION 15481

SECTION 16050 - BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. Requirements specified in Division 16 Section "Basic Electrical Requirements" apply to this Section.

1.2 SUMMARY

- A. This Section includes limited scope general construction materials and methods for application with electrical work as follows:
 - 1. Selective demolition including:
 - a. Nondestructive removal of materials and equipment for reuse or salvage as indicated.
 - b. Dismantling electrical materials and equipment made obsolete by this project.

PART 2 - PRODUCTS - Not Applicable

PART 3 - EXECUTION

3.1 PREPARATION FOR JOINT SEALERS

- A. Surface Cleaning for Joint Sealers: Clean surfaces of joints immediately before applying joint sealers to comply with recommendations of joint sealer manufacturer.
- B. Apply joint sealer primer to substrates as recommended by joint sealer manufacturer. Protect adjacent areas from spillage and migration of primers, using masking tape. Remove tape immediately after tooling without disturbing joint seal.

END OF SECTION 16050