

SECTION 020115 - REMOVAL & DISPOSAL OF UNDERGROUND STORAGE TANKS

Latest Update:10.16.15. Note all prior edits are included. See Underlined Text for 2015 edits.

(A/E shall edit specifications and blue text in header to meet project requirements. This includes but is not limited to updating Equipment and/or Material Model Numbers indicated in the specifications and adding any additional specifications that may be required by the project.)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 REFERENCES

- A. The following publications listed below form part of this specification and are referenced, by the basic designation only.

1. AMERICAN PETROLEUM INSTITUTE (API)

- a. API RP 1604 - Closure of underground Petroleum Storage Tanks, third edition published March 1, 1996, part of API RP 1650.
- b. API PUBL 1628 - Guide to the Assessment and Remediation of Underground Petroleum Releases, third edition, July 1, 1996.

2. AMERICAN SOCIETY FOR TESTING MATERIALS (ASTM)

- a. ASTM D 4397 - Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications latest edition.

3. CODE OF FEDERAL REGULATIONS (CFR)

- a. 29 CFR 1910 - Occupational Safety and Health Standards latest edition.
- b. 29 CFR 1926 - Occupational Safety and Health Standards latest edition.
- c. 40 CFR 280 - Owners and Operators of Underground Storage Tanks latest edition.

4. CODE OF MARYLAND REGULATIONS

- a. COMAR 26.10 - Oil Pollution and Tank Management latest edition.

5. ENVIRONMENTAL PROTECTION AGENCY (EPA)

- a. EPA SW-846 - Evaluating Solid Waste latest edition.
- b. EPA 600-4-79-20 - Contaminant Monitoring latest edition.

1.3 DESCRIPTION OF WORK

- A. The work includes removing and disposing or abandonment in-place of underground storage tanks, associated piping, and related work complying with the following:
 - 1. Tank Closure: Perform work to close, remove, and dispose of underground storage tanks, connecting piping, and dispensers; including but not limited to dewatering, disposal of oil, sludge and water, disposal of contaminated soil, providing reports required by regulatory agencies, backfilling, replacing paving, walks, and landscaping, etc.
 - 2. Regulations: Perform work in accordance with local, State, and Federal regulations including but not limited to COMAR 26.10 and 40 CFR 280.

1.4 SUBMITTALS

- A. Submit the following in accordance with Division 1 Specification for Shop Drawings, Product Data and Samples.
- B. Pework Submittals:
 - 1. The following plans shall be submitted prior to any work proceeding:
 - a. Site safety and health plan.
 - b. Excavation and material handling plan.
 - c. Tank, piping and dispenser removal and disposal plan.
 - d. Qualification and employee training certifications.
 - e. Spill and discharge control plan. Include the following:
 - 1) Site Safety and Health Plan: Describe safety and health plan and procedures as related to underground tank removal and pipe removal, and as to operations associated with petroleum contaminated soils and water. Furnish the name and qualifications based on education, training, and work experience of the proposed Site Safety and Health Officer.
 - 2) Excavation and Material Handling Plan: Describe methods, means, equipment, sequence of operations and schedule to be employed in excavation, transport, handling, and stockpiling of soil during

underground tank removal. Submit a material handling plan that describes phases of dealing with contaminated soil and water as it relates to the proposed tanks and piping removal, including methods of excavating, material handling plan for the contaminated material, soil testing requirements, safety precautions and requirements, and water pumping and collection requirements.

- 3) Tank, Piping and Dispenser Removal Plan: Describe methods, means, sequence of operations, and schedule to be employed in the pumping, cleaning, de-vaporizing, inspecting, removal, and disposal of underground storage tanks, piping and dispensers.
- 4) Qualification and Employee Training Certifications: Prior to start of work submit documentation of recent experience and resumes of personnel working on the project. All on-site Contractor employees shall have at a minimum current training per 29 CFR 1910.120, OSHA Hazardous Materials Site Worker. The Contractor's on-site project supervisor shall have at a minimum 29 CFR 1910.120, OSHA Hazardous Waste Site Worker Supervisor training.
- 5) Spill and Discharge Control Plan: Describe procedures and plan related to potential spills and discharge of contaminated soils and water.

C. Reports: The following reports shall be submitted prior to the Contractor's submission for final payment:

1. As built drawings of tanks removed and disposed of including documentation showing location of tank, piping and dispensers removed.
2. Starting and ending dates of reporting period.

D. Records: The Contractor shall submit to the Owner's Representative legible copies or originals of the following:

1. All local agency permits required as part of the tank removal project.
2. Tank disposal paperwork and manifest, such as copies of UST Notification Form and method of conditioning tank for disposal.
3. Contaminated soil and water disposal paperwork, including the disposal manifest.

1.5 CONTRACTOR EXPERIENCE

A. Prior to start of work, submit data for approval showing that the tank removal Contractor, subcontractors and, personnel employed on the project have been engaged in removal, transportation and disposal of underground tanks, associated piping, are familiar with and shall abide with the following:

1. API RP 1604.
2. 40 CFR 280, COMAR 26.10 and other State and local regulations and procedures.

3. Application safety rules and regulations.
4. Use of Equipment and procedures for testing and vapor-freeing tanks.
5. Handling and disposal of types of wastes encountered in underground tank and pipe removal including disposal of underground tanks and associated piping.
6. Excavation, testing, and disposal of petroleum contaminated soils, liquids, and sludges.
7. Provide documentation that tank removers are certified.

- B. In addition, furnish data proving experience on at least three prior projects completed in Maryland under the jurisdiction of the Maryland Department of the Environment (MDE). Provide project titles, dates of projects, owners of projects, point of contact for each project, and phone numbers of each point of contact.

1.6 COMPLIANCE

- A. Comply with applicable local, State, and Federal regulations and procedures.

PART 2 - PRODUCTS

2.1 PLASTIC SHEETING

- A. ASTM D 4397.

PART 3 - EXECUTION

3.1 REMOVAL AND DISPOSAL OF TANKS

- A. Furnish labor, materials, necessary permits, reports and equipment to remove and dispose of products remaining in the underground tanks; clean and vapor free the underground tanks and connecting piping; remove underground tanks and associated piping, and backfill to the level of the adjacent ground; dispose of tanks and associated piping and petroleum contaminated soil and water. Provide work in accordance with COMAR 26.10 and 40 CFR 280 and in accordance with appropriate Federal, State, and local regulations. Backfill activities shall not proceed until confirmatory soil sample analysis has been completed to determine acceptability of excavation and backfill material. Backfill activities shall not proceed until MDE has approved closure of the excavation.

3.2 SITE SAFETY AND HEALTH PLAN (SSHP)

- A. Furnish safety, health, and accident prevention provisions and develop a Site Safety and Health Plan (SSHP). The SSHP shall incorporate the requirements of 29 CFR 1910, 29 CFR 1926, and COMAR 26.10. Site work shall not start until the SSHP is approved by the Owner's representative.

3.3 CONFINED SPACE REQUIREMENTS

- A. Prior to entrance into any fuel tank, the Contractor shall submit a plan as specified in paragraph 3.2 above.
- B. Entrance into a confined space shall be performed in accordance with 29CFR.1910.146.

3.4 SITE SAFETY AND HEALTH OFFICER

- A. Identify an individual to serve as the Site Safety and Health Officer (SSHO). The SSHO shall report problems and concerns regarding health and safety to the Owner's representative. The SSHO shall have a working knowledge of local, State and Federal occupational safety and health regulations, and shall provide training to Contractor's employees in air monitoring practices and techniques. The SSHO shall also provide day to day industrial hygiene support, including air monitoring, training, and daily site safety inspections. The SSHO shall be trained in the use of the monitoring and sampling equipment, interpretation of data required to implement the SSHP, and to administer the elements of the SSHP. The SSHO shall remain onsite as project foreman or quality control manager.

3.5 SPILL AND DISCHARGE CONTROL PLAN

- A. Develop, implement, and maintain a comprehensive spill and discharge control plan. The plan shall provide contingency measures for potential spills, and discharges from handling and transportation of contaminated soils and water. A possible source guidance for assessment and remediation is API PUBL 1628.

3.6 EXCLUSION ZONE (EZ) AND CONTAMINATION REDUCTION ZONE (CRZ)

- A. Do not permit personnel not directly involved with the project to enter the work zones, called EZ and CRZ. The EZ shall be an area around the tank a minimum of 10 feet from the limits of the tank excavation. At the perimeter of the EZ, establish a CRZ. Limits of the CRZ shall be established by the Contractor. Within the CRZ, equipment and personnel shall be cleaned as stated in the paragraph entitled "Personnel and Equipment Decontamination". The Contractor's site office, parking area, and other support facilities shall be located outside the EZ and CRZ. Boundaries of the EZ and CRZ shall be clearly marked and posted.

3.7 TRAINING

- A. Provide health and safety training in accordance with 29 CFR 1910 prior to starting work. Furnish copies of current training certification statements for personnel prior to initial entry into the work site.

1. On-Site Training: Prior to starting on-site work, a health and training class shall be held by the SSHO to discuss the implementation of the SSHP. Document the names of employees attending the training class.
2. Training Outline: Provide the following:
 - a. Health and safety organization, including discussions of distribution of functions and responsibilities.
 - b. Organization and components of the SSHP.
 - c. Physical and chemical site hazard identification.
 - d. Discussions of the EZ and CRZ.
 - e. Protective clothing.
 - f. Respiratory protection.
 - g. Air quality monitoring.
 - h. Personnel exposure guidelines.
 - i. Decontamination procedures.
 - j. Basic first aid review.
 - k. Emergency procedures and contingency plan.
 - l. Site entry and exit procedures.
 - m. Sampling procedures.

3.8 PERSONNEL PROTECTION

- A. Furnish appropriate personal safety equipment and protective clothing to personnel and ensure that safety equipment and protective clothing is kept clean and well maintained.

3.9 RESPIRATORY PROTECTION PROGRAM

- A. Develop a respiratory protection program, addressing respirator usage and training in accordance with 29 CFR 1910.134.

3.10 DECONTAMINATION

- A. Decontaminate or properly dispose of personal protective clothing worn in contaminated areas at the end of the work day. The SSHO shall be responsible for ensuring that personal protective clothing and equipment are decontaminated before being reissued.

3.11 FIRST AID AND EMERGENCY RESPONSE EQUIPMENT AND PROCEDURES

- A. Provide appropriate emergency first aid equipment for treatment of exposure to site physical and chemical hazards. Provide and post a list of emergency phone numbers and points of contact for fire, hospital, police, ambulance, and other necessary contacts. Provide and post a route map detailing the directions to the nearest medical facility.

3.12 IGNITION SOURCE

- A. Do not permit ignition sources in the EZ and CRZ.

3.13 PERSONNEL AND EQUIPMENT DECONTAMINATION

- A. Decontaminate personnel and equipment before exiting work zones.

3.14 WASTE DISPOSAL

- A. The SSHP shall detail the practices and procedures to be utilized to dispose wastes. Upon completion of the project, certify that equipment and materials were properly decontaminated prior to being removed from the site.

3.15 EMERGENCY RESPONSE REQUIREMENTS

- A. Furnish emergency response and contingency plan in accordance with 29 CFR 1910. In an emergency, take action to remove or minimize the cause of the emergency, alert the Owner's representative, and institute necessary measures to prevent repetition of the emergency. Equip site-support vehicles with route maps providing directions to the medical treatment facility.

3.16 UNFORSEEN HAZARDS

- A. Notify the Owner's representative of any unforeseen hazard or condition which becomes evident during work.

3.17 ADDITIONAL REQUIREMENTS

- A. Provide clean and vapor free tank in accordance with API RP 1604 and the following:

1. Tank Access: Tanks in this project may not have manholes. A hole of suitable size may be cut in the tank to gain access to the tank interior. Vapor-free tank and perform preliminary cleaning before cutting tank. Perform tank cutting using cold processes. No hot work cutting shall be permitted.
2. Tank Cleaning: For the interior of the tanks, the shell, bottom, columns, roof, roof beams, and interior accessory equipment such as pumps, piping, and ladders shall be cleaned not to bear metal but only to the sound surface of the lining or coating, free of rust, dirt, scale, loose materials, fuel, oil, grease, sludge, and other deleterious materials. If no lining or coatings are present in the tank, the tank shall be cleaned to bear metal.
3. Air Monitoring During Cleaning: Perform personal and area monitoring during the entire tank cleaning operation.
4. Water, Sediment, and Sludge Analysis: The Owners on-site representative shall be responsible for testing the water, sediment, and sludge in accordance with 40 CFR 261 to verify if the sludge's are hazardous or nonhazardous. If the laboratory tests

- determine that the water, sediment, and/or sludge's are hazardous, then the hazardous wastes shall be packaged, labeled, stored, transported, treated and disposed of in accordance with 40 CFR 260, 40 CFR 261, 40 CFR 263, 40 CFR 264, 40 CFR 265, and 40 CFR 266. Transporters, storers, treaters, and disposers must be permitted and have EPA ID numbers.
5. Disposal of Water, Sediment, and Sludge as Hazardous Waste: For bidding purposes, the Contractor shall assume a total of 2,000 gallons water, product, sediment and sludge analyzed to be hazardous waste or off-specification waste oil and shall be removed as part of the base bid. Payment for removal and disposal of additional water and sludge above quantity in base bid shall be paid for at a contract unit price per gallon as indicated on the Bid Form. If quantities of water, product, sediment or sludge disposed of as hazardous waste do not meet or exceed the quantity in the base bid, the Contractor shall credit the contract in the amount of dollars based on the unit price cost for disposal. Pump or otherwise remove water from the tank. Ensure that the sludge or sediment are not pumped out or mixed with the water. Waste disposal manifest shall be by the Contractor in accordance with all applicable Federal, State and local regulations and must be signed by the owner prior to waste shipment. As applicable land disposal forms shall be provided with the manifest.
6. Disposal of Water, Sediment, and Sludge as Non-Hazardous Waste: For bidding purposes, the Contractor shall assume a total of 15,000 gallons water, product, sediment and sludge analyzed to be non-hazardous waste, meeting the State of Maryland specifications for waste oil and shall be removed as part of the base bid. Payment for removal and disposal of additional water and sludge above quantity in base bid shall be paid for at a contract unit price per gallon as indicated on the Bid Form. If quantities of water, product, sediment or sludge disposed of as non-hazardous waste do not meet or exceed the quantity in the base bid, the Contractor shall credit the contract in the amount of dollars based on the unit price cost for disposal. Pump or otherwise remove water from the tank. Ensure that the sludge or sediment are not pumped out or mixed with the water. Waste disposal manifest shall be by the Contractor in accordance with all applicable Federal, State and local regulations and must be signed by the owner prior to waste shipment. As applicable land disposal forms shall be provided with the manifest.
7. Washing: After water, fuel, and sludge have been removed from, thoroughly wash the tank interior. Minimize the use of water; substitute brush blasting when practical. Start washing the top of the walls and columns and work down to the floor. Wash the floor last starting from the sides and working toward the sump. Wash to remove oil, sludge, wax, tar, and other fuel residue adhering to the surface.
8. Wash Water, Detergent Solution, and Sediment Removal: During the washing process, operate a portable pump continuously with suction hose extended to the tank bottom to remove water, detergent, dirt, oil, or other loose materials washed off. Following the final rinse, pump, squeegee and mop tank dry.

3.18 FUEL REMOVAL

- A. All usable fuel will be pumped or otherwise removed from the tank by the Owner. Consider remaining fuel contaminated or waste fuel; pump into 55 gallon drums, vacuum unit, or other suitable containers for disposal in accordance with approved procedures meeting local, State, and Federal regulations. Dispose of the remaining fuel emulsions in accordance with applicable local, State, and Federal regulations. Drums or tanks used for containerizing waste fuel shall be furnished by the Contractor.

3.19 TEMPORARY CONTAINMENT OF EXCAVATED SOIL

- A. Excavated soil shall be loaded onto dump trucks and immediately removed off-site, since there is no location on-site to temporarily store excavated soil stockpiles.

3.20 EXCAVATION

- A. Notify Owner's representative in writing, no later than ten (10) calendar days prior to excavation work beginning. Notify Owner's Representative at least seven (7) calendar days prior to excavation work proceeding to locate underground utilities. Notify the Maryland Department of Oil Control and University of Maryland, Department of Environmental Health and Safety no later than ten (10) calendar days prior to work beginning. Stage the operations to minimize the time that the tank excavation is open and the time that the contaminated soil is exposed to the weather. Provide protection measures around the excavation area to prevent water runoff and to contain the soil within the excavation area.

1. Excavation Procedures: Excavate as required to remove tanks or piping. Remove soils from the excavation area. Monitor soil materials excavated with an OVA/FID capable of detecting volatile organic vapors to a minimum of one ppm. Contaminated soils with OVA/FID readings 10 ppm or greater shall be further tested for TPH (DRO) or BTEX as specified herein. Soils with OVA/FID readings of less than 10 ppm may be used as clean backfill. Contaminated soils shall be disposed of in accordance with Federal, State, and local regulations.
2. Excavation Methods: Select methods and equipment to remove soil to minimize disturbance to areas beyond the limits of the excavation area. Material that becomes contaminated as a result of the Contractor's operation shall be removed and disposed of at no additional cost to the Owner. Where excavation extends into groundwater levels, dewatering methods shall be employed on a localized basis to facilitate excavation operations. Water generated by dewatering during excavation required for removal of tanks or piping, surface water collected in open excavation, or water used for washing equipment or existing concrete or bituminous surfaces, shall be collected and tested in accordance with EPA methods 8015 and 8020, state or locally required analysis by the Owner's on-site representative. Water that contains contaminants above locally acceptable levels shall be disposed of in

accordance with Federal, State and local regulations. Non-contaminated water may be disposed of on-site.

3. Structures: During excavation activities, if asphalt pavement, concrete slabs, or other structures are encountered, remove and wash with high pressure water cleaning equipment. Remove and dispose of the pavement, concrete, and other structures.

3.21 TESTING

- A. Soils with OVA/FID readings of ten (10) ppm or greater shall be further sampled and tested for TPH (DRO) in accordance with EPA method 8015 modified where tanks are holding diesel fuel. Soils with OVA/FID readings of 10 ppm or greater shall be further sampled and tested for BTEX in accordance with EPA method 8020 and for toxicity characteristic leaching procedure (TCLP) for lead EPA method 1311/200.8 where tanks are holding gasoline. In areas where BTEX samples are collected, a trip blank will be collected and analyzed. All water and soil testing shall be conducted by the Owner's Representative.

1. Testing Under Tank After Removal of Tank: Based on direction from MDE, Division of Oil Control representatives, the Contractor shall collect soil samples from under the tank for analysis by the Owner's Representative.
2. Testing Along Piping: Based on direction from MDE, Division of Oil Control representatives, the Contractor shall collect soil samples from under the piping and in trenches for analysis by the Owner's Representative.

3.22 WATER DISPOSAL

- A. Dewatering will be permitted only with approval of the Owner's representative. Water generated during removal of the tanks and piping shall be stored and tested. If contaminated, transport and dispose of water to an EPA approved disposal site in compliance with Federal, State, and local regulations.

3.23 SECURING TANK SYSTEM

- A. API RP 1604. Remove stored product from the tank using one of the following methods:
 1. Drain product lines into the tanks.
 2. Remove liquids and sludge from tanks. Hydrocarbon products, sludge, and waste water recovered from the tanks shall be the property of the Contractor and shall be disposed of in an EPA approved site in compliance with Federal, State and local requirements.
 3. Remove flammable or combustible liquids.
- B. Cap the fill pipe, gauge pipe, tank vapor recovery fitting and vapor return.

- C. Cap the product piping at the service station island, at associated buildings, or where indicated if pumps are removed.
- D. Disconnect electric power to pumps.
- E. Leave vent piping open.

3.24 REMOVAL OF UNDERGROUND TANKS, ANCHORS, SLABS AND ASSOCIATED PIPING

- A. Preparation: API RP 1604. Remove the fill pipe, gauge pipe, vapor recovery truck connection, submersible pumps, and drop tube, etc. Cap or remove non-product piping, except vent piping. Plug tank openings so that vapors will exit through vent piping during vapor-freeing process.
- B. Purging: Remove flammable vapor in accordance to API RP 1604. Tanks shall be certified as “vapor free” prior to further work.
- C. Cleaning and Testing: Cleaning and tank atmosphere testing shall be in accordance with API RP 1604. Distribution (product delivery) piping shall be cleaned and removed. Test the tank atmosphere and the excavation are for flammable and combustible vapor concentrations, with a combustible gas indicator until the tank is removed from the excavation and from the site.
- D. Tank Removal: Plug or cap accessible holes. One (1) plug shall have a minimum vent hole. Excavate around the tank to uncover it for removal. Remove the tank from the excavation and place it on a level surface and render it useless in accordance with API RP 1604. Provide warning labels on the tank if the tank contained leaded fuels. Warning labels shall read as follows or similar wording:
 - 1. “TANK HAS CONTAINED LEADED GASOLINE, NOT VAPOR FREE, NOT SUITABLE FOR STORAGE OF FOOD OR LIQUIDS INTENDED FOR HUMAN OR ANIMAL CONSUMPTION DATE OF REMOVAL: MONTH/DAY/YEAR”
- E. Future Use: Make tank unusable for future use, then transport and dispose of tank at EPA approved disposal site in accordance with applicable local, State, and Federal regulations.

3.25 INSPECTIONS

- A. Arrange for and perform required inspections. Provide copies of inspections to Owner’s Representative.

3.26 SPILLS OF CONTAMINATED SOILS

- A. Use appropriate vehicles and operating practices to prevent spillage or leakage of contaminated materials from occurring during operations. Inspect vehicles leaving the area of contamination to ensure that no contaminated materials adhere to the wheels or undercarriage.

3.27 BACKFILL

- A. Provide backfill, compaction, grading, and seeding in accordance with Section 02302 “Excavation and Backfill”.

END OF SECTION 020115