

SECTION 02 61 13

EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL
01/24

PART 1 GENERAL

1.1 REFERENCES

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

ASTM INTERNATIONAL (ASTM)

ASTM D698	(2012; E 2014; E 2015) Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/cu. ft. (600 kN-m/cu. m.))
ASTM D1556/D1556M	(2015; E 2016) Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method
ASTM D1557	(2012; E 2015) Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft ³) (2700 kN-m/m ³)
ASTM D2167	(2015) Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D2487	(2017; E 2020) Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D5434	(2012) Field Logging of Subsurface Explorations of Soil and Rock
ASTM D6938	(2017a) Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
ASTM D7928	(2017) Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	Safety -- Safety and Health Requirements Manual
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U.S. DEPARTMENT OF DEFENSE (DOD)

JEGS	(Apr 2024) Japan Environmental Governing
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Standards

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

29 CFR 1926

Safety and Health Regulations for
Construction

1.2 DESCRIPTION OF WORK

The work consists of excavation and temporary storage of approximately [_____] cubic meters of contaminated material. Approximate locations of contaminated material are shown on the drawings. Characterization data on the nature and extent of the contaminated material is shown in Appendix [_____] Subsurface conditions are shown [on the drawings] [in Appendix [_____]]. Submit a Work Plan as specified below. Notify the Contracting Officer within [24] [_____] hours, and before excavation, if contaminated material is discovered that has not been previously identified or if other discrepancies between data provided and actual field conditions are discovered. Backfill material is [not available onsite] [available onsite and typically consists of [_____]]. Ground water is approximately [_____] meters below pre-excavation ground surface. Required sampling and chemical analysis shall be conducted in accordance with [_____].

1.2.1 Scheduling

Notify the Contracting Officer [_____] calendar days prior to the start of excavation of contaminated material. The [Contracting Officer will] [Contractor shall] be responsible for contacting regulatory agencies in accordance with the applicable reporting requirements.

1.2.2 Work Plan

Submit a Work Plan within [30] [_____] calendar days after notice to proceed. No work at the site, with the exception of site inspections and surveys, shall be performed until the Work Plan is approved. Allow [30] [_____] calendar days in the schedule for the Government's review. No adjustment for time or money will be made if resubmittals of the Work Plan are required due to deficiencies in the plan. At a minimum, the Work Plan shall include:

- a. Schedule of activities.
- b. Method of excavation and equipment to be used.
- c. Shoring or side-wall slopes proposed.
- d. Dewatering plan.
- e. Storage methods and locations for liquid and solid contaminated material.
- f. Borrow sources and haul routes.
- g. Decontamination procedures.
- h. Spill contingency plan.

1.2.3 Other Submittal Requirements

Submit separate cross-sections of each area before and after excavation and after backfilling, test results, and [_____] copies of the Closure Report within [14] [_____] calendar days of work completion at the site.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are [for Contractor Quality Control approval.][for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government.] Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Work Plan; G[, [_____]]

Sampling And Analysis Plan; G

SD-02 Shop Drawings

Surveys

SD-06 Test Reports

Compaction

Analytical Results; G

Closure Report; G[, [_____]]

1.4 REGULATORY REQUIREMENTS

1.4.1 Permits and Licenses

Obtain required federal, GoJ, and local prefectural permits for excavation and storage of contaminated material. Permits shall be obtained at no additional cost to the Government.

1.4.2 Air Emissions

Air emissions shall be monitored and controlled in accordance with the JEGS, GoJ, and local prefectural laws.

PART 2 PRODUCTS

2.1 SPILL RESPONSE MATERIALS

Provide appropriate spill response materials including, but not limited to the following: containers, adsorbents, shovels, and personal protective equipment. Spill response materials shall be available at all times when contaminated materials/wastes are being handled or transported. Spill response materials shall be compatible with the type of materials and contaminants being handled.

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2.2 BACKFILL

Backfill material shall be obtained from [the location indicated on the drawings] [offsite sources approved by the Contracting Officer]. Backfill shall be classified in accordance with ASTM D2487 as GW, GP, GM, GC, SW, SP, SM, SC, ML, MH, CL, or CH and shall be free from roots and other organic matter, trash, debris, snow, ice or frozen materials. Backfill material shall be tested for the parameters listed below at a frequency of once per [3000] [_____] cubic m. A minimum of one set of classification tests shall be performed per borrow source. [One] [_____] backfill sample per borrow source shall also be collected and tested for the chemical parameters listed below.

Physical Parameter	Criteria	Test Method
Grain Size	[_____]	ASTM D7928
Compaction	[_____]	ASTM D698
[_____]	[_____]	[_____]

Chemical Parameter	Test Frequency	Criteria
[_____]	[_____]	[_____]

Do not use material for backfill until borrow source chemical and physical test results have been submitted and approved.]

PART 3 EXECUTION

3.1 SURVEYS

Perform surveys immediately prior to and after excavation of contaminated material to determine the volume of contaminated material removed. Also, perform surveys immediately after backfill of each excavation. Provide cross-sections on [7.6] [_____] meter intervals and at break points for all excavated areas. Locations of confirmation samples shall also be surveyed and shown on the drawings. Perform surveys in accordance with Section: [_____].

3.2 EXISTING STRUCTURES AND UTILITIES

No excavation shall be performed until site utilities have been field located. Take the necessary precautions to ensure no damage occurs to existing structures and utilities. Damage to existing structures and utilities resulting from the Contractor's operations shall be repaired at no additional cost to the Government. Utilities encountered that were not previously shown or otherwise located shall not be disturbed without approval from the Contracting Officer.

3.3 CLEARING

Clearing shall be performed to the limits shown on the drawings in

accordance with Section 31 11 00 CLEARING AND GRUBBING.]

3.4 CONTAMINATED MATERIAL REMOVAL

3.4.1 Excavation

Areas of contamination shall be excavated to the depth and extent shown on the drawings and not more than [60] [_____] mm beyond the depth and extent shown on the drawings unless directed by the Contracting Officer.

Excavation shall be performed in a manner that will limit spills and the potential for contaminated material to be mixed with uncontaminated material. As material is removed from the excavation, field analysis shall be used to determine the presence of [_____] contamination using [a real time vapor monitoring instrument] [immunoassay field kits] [_____]. Excavated contaminated material shall be separated and stored from excavated uncontaminated material. An excavation log describing visible signs of contamination encountered shall be maintained for each area of excavation. Excavation logs shall be prepared in accordance with ASTM D5434.

3.4.2 Shoring

If workers must enter the excavation, it shall be evaluated, shored, sloped or braced as required by EM 385-1-1 and 29 CFR 1926 section 650.

3.4.3 Dewatering

Surface water shall be diverted to prevent entry into the excavation. [Dewatering shall be limited to that necessary to assure adequate access, a safe excavation, prevent the spread of contamination, and to ensure that compaction requirements can be met.] [No dewatering shall be performed without prior approval of the Contracting Officer.]

3.5 CONFIRMATION SAMPLING AND ANALYSIS

After all material suspected of being contaminated has been removed, the excavation shall be examined for evidence of contamination. If the excavation appears to be free of contamination, field analysis shall be used to determine the presence of [_____] contamination using [a real time vapor monitoring instrument] [immunoassay field kits] [_____]. Excavation of additional material shall be as directed by the Contracting Officer. Confirmation samples shall be collected and analyzed for the following contaminants:

Chemical Parameter	Action Level
[_____]	[_____]

Samples shall be collected at a frequency of one per [_____] [5000] square m from the bottom [and each of the side walls] or as directed by the Contracting Officer. A minimum of one sample shall be collected from the bottom [and each side wall] of the excavation. Additional excavation shall be subject to approval by the Contracting Officer. Locations of samples shall be marked in the field and documented on the as-built drawings.

3.6 CONTAMINATED MATERIAL STORAGE

Material shall be placed in temporary storage after excavation . The

following paragraphs describe acceptable methods of material storage. Storage units shall be in good condition and constructed of materials that are compatible with the material or liquid to be stored. If multiple storage units are required, each unit shall be clearly labeled with an identification number and a written log shall be kept to track the source of contaminated material in each temporary storage unit.

3.6.1 Stockpiles

Stockpiles shall be constructed to isolate stored contaminated material from the environment. The maximum stockpile size shall be [_____] [100][400] cubic m. Stockpiles shall be constructed to include:

- a. [A chemically resistant geomembrane liner free of holes and other damage. Non-reinforced geomembrane liners shall have a minimum thickness of [0.5] [_____] mm. Scrim reinforced geomembrane liners shall have a minimum weight of 20 kg/100 square m. The ground surface on which the geomembrane is to be placed shall be free of rocks greater than 13 mm in diameter and any other object which could damage the membrane.] [Pavement shall be used as the liner system. Pavement shall be constructed in accordance with Section [_____]].
- b. Geomembrane cover free of holes or other damage to prevent precipitation from entering the stockpile. Non-reinforced geomembrane covers shall have a minimum thickness of 0.25 mm. Scrim reinforced geomembrane covers shall have a minimum weight of 13 kg/100 square m. The cover material shall be extended over the berms and anchored or ballasted to prevent it from being removed or damaged by wind.
- c. Berms surrounding the stockpile, a minimum of 300 mm in height. Vehicle access points shall also be bermed.
- d. The liner system shall be sloped to allow collection of leachate. Storage and removal of liquid which collects in the stockpile, in accordance with paragraph Liquid Storage.

3.6.2 Roll-Off Units

Roll-off units used to temporarily store contaminated material shall be water tight. A cover shall be placed over the units to prevent precipitation from contacting the stored material. The units shall be located [as shown on the drawings] [_____] . Liquid which collects inside the units shall be removed and stored in accordance with paragraph Liquid Storage.

3.6.3 Liquid Storage

Liquid collected from excavations and stockpiles shall be temporarily stored in [220 L barrels] [[2000] [_____] L tanks]. Liquid storage containers shall be water-tight and shall be located [as indicated] [_____] .

3.7 SAMPLING

The Contractor shall submit a Sampling and Analysis Plan prior to conducting any sampling of material. Use a laboratory [participating in the EPA National Lead Laboratory Accreditation Program (NLLAP) by being accredited by either the American Association for Laboratory Accreditation (A2LA) or the American Industrial Hygiene Association (AIHA).] [in

accordance with GoJ requirements.] All analytical results shall be submitted to the Contracting Officer upon receipt from the laboratory. The sampling and analysis plan shall include at a minimum the following information:

- 1) Introduction and Site Background
- 2) Data Quality Objectives
- 3) Sampling Methodology/Technical Approach
- 4) Sample Collection Procedures
- 5) Field Decontamination/IDW
- 6) Sample Documentation and Chain of Custody
- 7) Packaging and Shipment of Samples
- 8) QA/QC management (Sampling and Analytical Data)
- 9) Reporting requirements
- 10) Lab requirements and certifications

3.7.1 Sampling of Stored Material

Samples of stored material shall be collected at a frequency of once per [____][100][400] cubic m. Samples shall be tested for [all analytes listed in the JEGS][the following:

Chemical Parameter	Action Level
[____]	[____]

]

Stored material with contaminant levels that exceed the action levels shall be disposed of offsite. Analyses for contaminated material to be taken to an offsite disposal facility shall conform to the JEGS, local prefectural, GoJ, and federal criteria as well as to the requirements of the disposal facility. Documentation of all analyses performed shall be furnished to the Contracting Officer. Additional sampling and analyses to the extent required by the approved offsite storage or disposal (TSD) facility shall be the responsibility of the Contractor and shall be performed at no additional cost to the Government.

3.7.2 Sampling Liquid

Liquid collected from [excavations] [storage areas] [decontamination facilities] shall be sampled at a frequency of once for every [2,000] [____] L of liquid collected. Samples shall be tested for [all analytes listed in the JEGS][the following:

Chemical Parameter	Action Level
[____]	[____]

]

Liquid with contaminant levels that exceed action levels shall be disposed offsite. Analyses for contaminated liquid to be taken to an offsite disposal facility shall conform to local prefectural, GoJ, and federal

criteria as well as to the requirements of the disposal facility. Documentation of all analyses performed shall be furnished to the Contracting Officer. Additional sampling and analysis to the extent required by the approved offsite storage or disposal (TSD) facility receiving the material shall be the responsibility of the .

3.7.3 Sampling Beneath Storage Units

Samples from beneath each storage unit shall be collected prior to construction of and after removal of the storage unit. Samples shall be collected at a frequency of one per each [_____] [5000] square m from a depth interval of [0 to 0.15] [_____] m and shall be tested [all analytes listed in JEGS Table 13.1][for the following:

Chemical Parameter	Action Level
[_____]	[_____]

]

Based on test results, soil which has become contaminated above action levels shall be removed at no additional cost to the Government. Contaminated material which is removed from beneath the storage unit shall be handled in accordance with paragraph Sampling of Stored Material. As directed by the Contracting Officer and at no additional cost to the Government, additional sampling and testing shall be performed to verify areas of contamination found beneath stockpiles have been cleaned up to below action levels.

3.8 SPILLS

In the event of a spill or release of a hazardous substance (as designated in JEGS), pollutant, contaminant, or oil, notify the Contracting Officer immediately. If the spill exceeds the reporting threshold, follow the pre-established procedures as described in the Installation Spill Response and Prevention Plan for immediate reporting and containment. Immediate containment actions shall be taken to minimize the effect of any spill or leak. Cleanup shall be in accordance with the JEGS, applicable federal, GoJ, and local prefectural regulations. As directed by the Contracting Officer, additional sampling and testing shall be performed to verify spills have been cleaned up. Spill cleanup and testing shall be done at no additional cost to the Government.

[

3.9 BACKFILLING

3.9.1 Confirmation Test Results

Excavations shall be backfilled immediately after all contaminated materials have been removed and confirmation test results have been approved. Backfill shall be placed and compacted to the lines and grades shown on the drawings.

3.9.2 Compaction

Place approved backfill in lifts with a maximum loose thickness of [200] [_____] mm. Compact soil to [90] [_____] percent of [ASTM D698] [ASTM D1557] maximum dry density. Perform density tests at a frequency of once per [930] [_____] square meters per lift. conduct a minimum of [one density test] [[_____] density tests] on each lift of backfill placed. Determine field in-place dry density in accordance with ASTM D1556/D1556M, ASTM D2167, or ASTM D6938. If ASTM D6938 is used, a minimum of one in ten

tests shall be checked using ASTM D1556/D1556M or ASTM D2167. Test results from ASTM D1556/D1556M or ASTM D2167 shall govern if there is a discrepancy with the ASTM D6938 test results.]

3.10 DISPOSAL REQUIREMENTS

Offsite disposal of contaminated material shall be in accordance with the JEGS, GoJ, and local prefectural laws at a GoJ-approved facility..

3.11 CLOSURE REPORT

Submit [_____] copies of a Closure Report within [14] [_____] calendar days of completing work at the site. The report shall be labeled with the contract number, project name, location, date, name of general Contractor, and the Corps of Engineers District contracting for the work. The Closure Report shall include the following information as a minimum:

- a. A cover letter signed by the Environmental Manager certifying that all services involved have been performed in accordance with the terms and conditions of the contract documents and regulatory requirements.
- b. A narrative report including, but not limited to, the following:
 - (1) site conditions, ground water elevation, and cleanup criteria;
 - (2) excavation logs;
 - (3) field screening readings;
 - (4) quantity of materials removed from each area of contamination;
 - (5) quantity of water/product removed during dewatering;
 - (6) sampling locations and sampling methods;
 - (7) sample collection data such as time of collection and method of preservation;
 - (8) sample chain-of-custody forms; and
 - (9) source of backfill.
- c. Copies of all chemical and physical test results.
- d. Copies of all manifests and land disposal restriction notifications.
- e. Copies of all certifications of final disposal signed by the responsible disposal facility official.
- f. Waste profile sheets.
- g. Scale drawings showing limits of each excavation, limits of contamination, known underground utilities within 15 m of excavation, sample locations, and sample identification numbers. On-site stockpile, storage, loading, and disposal areas shall also be shown on the drawings.
- h. Progress Photographs. Color photographs shall be used to document progress of the work. A minimum of four views of the site showing the

location of the area of contamination, entrance/exit road, and any other notable site conditions shall be taken before work begins. After work has been started, activities at each work location shall be photographically recorded [daily] [weekly]. Photographs shall be a minimum of 76.2 by 127.0 mm and shall include:

- (1) Soil removal and sampling.
- (2) Dewatering operations.
- (3) Unanticipated events such as spills and the discovery of additional contaminated material.
- (4) Contaminated material/water storage, handling, and transport.
- (5) Site or task-specific employee respiratory and personal protection.
- (6) Fill placement and grading.
- (7) Post-construction photographs. After completion of work at each site, take a minimum of four views of each excavation site.

A digital version of all photos shown in the report shall be included with the Closure Report. Photographs shall be a minimum of 76 by 127 mm and shall be mounted back-to-back in double face plastic sleeves punched to fit standard three ring binders. Each print shall have an information box attached. The box shall be typewritten and arranged as follows:

Project Name:	Direction of View:
Location:	Date/Time:
Photograph No.:	Description of View:

-- End of Section --