DOE/OR/01-2934&D2/A1

Addendum to the Remedial Design Report/Remedial Action Work Plan for the Environmental Management Disposal Facility, Oak Ridge, Tennessee: Early Site Preparation Activities

East Spoils Area

This document is approved for public release per review by:

Leesa K. Laymance	10/4/2023
UCOR Classification & Information Control Office	Date

DOE/OR/01-2934&D2/A1

Addendum to the Remedial Design Report/Remedial Action Work Plan for the Environmental Management Disposal Facility, Oak Ridge, Tennessee: Early Site Preparation Activities

East Spoils Area

Date Issued—October 2023

Prepared for the
U.S. Department of Energy
Oak Ridge Office of Environmental Management

United Cleanup Oak Ridge LLC
under contract 89303322DEM000067

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ACRONYMS

ARAR	applicable or relevant and appropriate requirement
BMP	best management practice
EMDF	Environmental Management Disposal Facility
ESP	Early Site Preparation
ORNL	Oak Ridge National Laboratory
ORRL	Oak Ridge Reservation Landfill
RDR/RAWP	Remedial Design Report/Remedial Action Work Plan
ROD	Record of Decision
USF&WS	U.S. Fish and Wildlife Service

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1. INTRODUCTION

This Addendum to the *Remedial Design Report/Remedial Action Work Plan for the Environmental Management Disposal Facility, Oak Ridge, Tennessee: Early Site Preparation Activities* (DOE/OR/01-2934&D2) (Early Site Preparation [ESP] Remedial Design Report/Remedial Action Work Plan [RDR/RAWP]) incorporates additional scope of development of the East Spoils area. The Addendum only addresses this additional scope; other information from the ESP RDR/RAWP has not changed and is not repeated.

Following approval of the *Record of Decision for Comprehensive Environmental Response, Compensation, and Liability Act Oak Ridge Reservation Waste Disposal at the Environmental Management Disposal Facility, Oak Ridge, Tennessee* (Environmental Management Disposal Facility [EMDF] Record of Decision [ROD]) (DOE/OR/01-2794&D2/R2), the ESP RDR/RAWP was prepared and approved by the Federal Facility Agreement parties. The ESP RDR/RAWP contains the site description, the EMDF Project description, the EMDF ESP scope description, a summary of the stormwater management requirements, a summary of the waste management requirements, the project organization and schedule, and the design drawings and specifications for the ESP scope activities: reroute of portions of existing Bear Creek Road and Haul Road, initial preparation for Site 7b Borrow Area development, extension of power and water utilities, installation of a Construction Support Area, and development of the East Spoils area. (Note that EMDF is also referred to as the Onsite Waste Disposal Facility.)

The East Spoils area is an approximately 5-acre site located between Haul Road and Bear Creek Road in an area of second growth forest. The East Spoils area will be developed to receive both spoil material, as well as reusable soil and excess wood chips from the clearing of forested areas.

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2. SENSITIVE RESOURCES

2.4 ECOLOGICAL RESOURCES

A natural resource assessment was performed for the East Spoils area, including site walkdowns in the fall/winter of 2022. There are no wetlands or streams within or adjacent to the spoils area, and the timber assessment in that area is consistent with the other ESP areas.

Removal of the existing forest will be necessary. As reported in the ESP RDR/RAWP, trees in these areas were subject to harvesting around year 2000 and currently are mainly dense, secondary growth forest, much of which is loblolly pine, though areas of young hardwood also are present. Minimal suitable roosting habitat for the Indiana bat, northern long-eared bat, tricolored bat, and little brown bat is present within the East Spoils area, and forest density is such that minimal foraging habitat exists within this area.

No gray bat-roosting caves are present within the spoils area. Bear Creek Road to the south, Haul Road to the North, a small road to the west, and a small stream corridor to the east bracket the spoils area and may provide travel corridors for bats during non-hibernation times of year. Removal of this forested area will take place between November 15 and March 31. Informal consultation with the U.S. Fish and Wildlife Service (USF&WS) concurred with the Oak Ridge National Laboratory (ORNL) Natural Resources Management Team's determination that the federally listed endangered Indiana bat, northern long-eared bat, and gray bat may be affected, but will not be adversely affected, by forest removal East Spoils area (Appendix A).

Guidance from the Migratory Bird Permit Office indicates that the USF&WS Tennessee Field Office will consider migratory birds along with federally listed threatened and endangered bat species. The EMDF ESP Project area and Spoils Area are used as nesting and foraging habitat for many species of migratory birds; however, nesting of most migratory birds occurs between April 1 and October 30, and tree removal will be completed prior to April 1.

The ORNL Natural Resources Management Team Subject Matter Experts identified around 50 potential bat-roosting trees in the ESP areas, including some in the East Spoils area. These potential bat-roosting trees were removed from the ESP sites in March 2023, prior to start of field work and prior to the start of the foraging season.

The ORNL Natural Resources Management Team's walkdowns in late 2022 and subsequent sweeps of ESP areas in early 2023 did not identify the presence of other rare species in the East Spoils area, including four-toed salamander breeding sites or tubercled rein orchids.

2.5 CULTURAL RESOURCES

A Phase I cultural resources survey for several potential spoils areas, including the East Spoils area, was conducted in spring 2023 (Cultural Resource Analysts, Inc., *Phase I Cultural Resources Survey for a Proposed On-site Waste Disposal Facility: Spoil Areas 2 and 3, Oak Ridge, Roane County, Tennessee*). The archaeological survey consisted of pedestrian survey and screened shovel testing, supplemented by metal detecting and hand augering.

No historically significant architectural sites were identified in the East Spoils area. However, two new archaeological sites were located within the East Spoils area: an early twentieth-century farmstead and a small location with lithic scatters. All the sites were highly disturbed and appeared to contain no buried cultural deposits. The sites were not recommended for inclusion in the National Register of Historic Places.

3. PROJECT DESCRIPTION

The conceptual design of EMDF (Fig. 4 of the ESP RDR/RAWP) is based on a total constructed volumetric capacity of approximately 2.2 million cy, with approximately 100 acres impacted during development. EMDF will be designed and constructed to meet applicable or relevant and appropriate requirements (ARARs) as included in the EMDF ROD, including a liner and cap system compliant with Resource Conservation and Recovery Act of 1976 requirements. Surface water and groundwater will be managed by diverting water around the facility and constructing a liner and geologic buffer system that will isolate the facility from groundwater. A leachate collection system and other support facilities, including a landfill wastewater treatment system, will also be designed and constructed as part of EMDF; final details will be included in a separate RDR for the landfill design. Figure 4 of the ESP RDR/RAWP presents a conceptual layout of the landfill and its supporting features. The footprint and supporting features could change during the final design of the landfill.

ESP activities will support future construction of the disposal cells and support facilities by performing the initial activities necessary to support large-scale site development. These ESP activities include rerouting Haul Road and Bear Creek Road, extending utilities to the site, initial preparation of the Site 7b borrow area, installation of a Construction Support Area, and development of the East Spoils Area. Figure 1 shows the general locations for the ESP activities. Stormwater management requirements will be implemented to protect surface water during implementation of this scope.

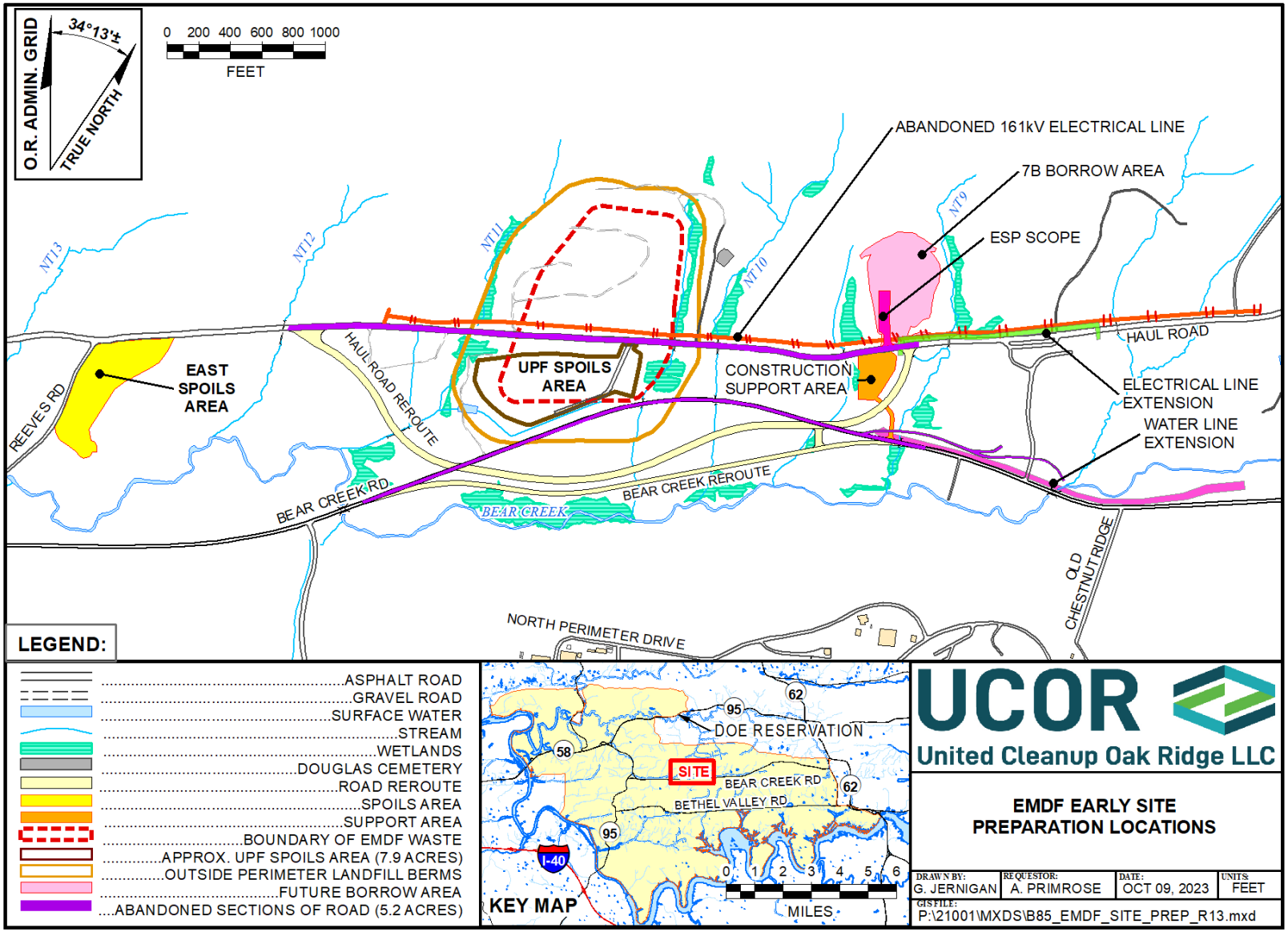

Fig. 1. Location of ESP Project areas.

4. REMEDIAL DESIGN REPORT

4.5 EAST SPOILS AREA

The East Spoils Area will be developed to receive both spoil material, as well as reusable soil and excess wood chips from the clearing of forested areas. The East Spoils Area is an approximately 5-acre site located between Haul Road and Bear Creek Road in an area of second-growth forests. Stormwater management requirements will be implemented to protect surface water during implementation of this scope (see Sect. 5 of this Addendum).

Development activities will include:

- Clear vegetation and trees in areas
- Install erosion-control measures
- Construct an entrance road to the spoils area
- Grade area for placement of spoil material
- Construct a sediment trap for stormwater management.

Appendix B contains the engineering design drawings and specifications for the development of the East Spoils Area.

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5. REMEDIAL ACTION WORK PLAN

Because this action consists of new construction in a clean area, verification, monitoring and operations, and maintenance plans are not required. Consistent with other ESP activities, development of the East Spoils Area will be performed under the purview of United Cleanup Oak Ridge LLC's existing programs and procedures, including health and safety, quality assurance/control, and waste management. Fill materials used at the East Spoils Area (if necessary), will be clean and free of contaminants. Quarried rock products are considered as clean material due to the nature of the material. In addition, ESP activities will comply with environmental laws and regulations identified in the EMDF ROD as ARARs.

The *Stormwater Management Requirements for Early Site Preparation for the Onsite Waste Disposal Facility, Oak Ridge, Tennessee* (UCOR-5215) supports the ESP clearing and grading activities and presents erosion and sediment control best management practices (BMPs); BMPs are specifically discussed in Sects. 2, 3, and 4 of UCOR-5215. Erosion and sediment control BMPs anticipated to be incorporated include:

- Minimizing disturbed areas
- Controlling stormwater runoff
- Stabilizing disturbed soils as soon as practical
- Protecting slopes and storm inlets downgradient from the work area
- Establishing perimeter controls
- Retaining sediment onsite

The following additional erosion and sediment control BMPs will be applied for the ESP East Spoils Area construction activities:

- Control of stormwater flowing onto and through project area
  - — Straw wattles: serve as run-on diversion, runoff filtration, water velocity dissipation
  - — Check dams: installed in swales and ditches to reduce velocity in channels and thereby reduce erosion
  - — Diversion berm: divert rainwater away from the cut slopes and control stormwater flowing onto the project
  - — Sediment trap: collect and store sediment from spoils area stormwater

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6. WASTE MANAGEMENT

As summarized in Sect. 2.2.1 of the EMDF ROD, the EMDF site, including where the ESP activities will occur, is in an uncontaminated area of Bear Creek Valley; therefore, waste materials are expected to be disposed at the Oak Ridge Reservation Landfills (ORRLs). A summary of waste stream characterization during the development of the East Spoils Area is provided in Table 1, which describes, quantifies, and defines waste streams and identifies the expected disposal outlet(s). While contaminated waste streams are not anticipated, if discovered or generated, DOE will notify the U.S. Environmental Protection Agency and the Tennessee Department of Environment and Conservation, and those waste streams will be evaluated and characterized for disposal at the Environmental Management Waste Management Facility or other suitable disposal facility.

Vegetation removed during the development of the East Spoils Area is not expected to be waste. Marketable timber will be harvested as possible and practical, segregated, and removed. The remaining vegetation is expected to be used at the EMDF site for mulch and/or erosion control (some of which may be chipped). Vegetation removal and management will be in accordance with the Stormwater Management Requirements Plan and BMPs, as discussed in Chap. 5 of the ESP RDR/RAWP and this Addendum. The remaining vegetation will be evaluated for other beneficial use as practical. Secondary waste generated during the primary waste-generating activities is expected to be disposed of with the primary waste streams.

The expected waste stream from the development of the East Spoils Area is listed in Table 1.

Table 1. Summary of waste stream characterization during development of East Spoils Area

Waste stream	Expected volume	Expected waste type	Characterization basis	Comments
Development of East Spoils Area				
Hydraulic line spill cleanup material and associated secondary waste	< 1 cy	Sanitary	PK, radiological surveys	ORRL disposal

ORRL = Oak Ridge Reservation Landfill
PK = process knowledge

The use of hydraulic equipment assumes the possibility that hydraulic line cleanup material and associated secondary waste could be generated. This waste (if any) is expected to be eligible for disposal in the ORRLs.

During the development of the East Spoils Area, it is assumed that surplus construction materials will not be a waste stream managed during this activity. If they are disposed onsite, disposal will be at the ORRL.

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7. REFERENCES

Cultural Resource Analysts, Inc. *Phase I Cultural Resources Survey for a Proposed On-site Waste Disposal Facility Spoil Areas 2 and 3, Oak Ridge, Roane County, Tennessee*, Contract Publication Series 23-131, May 2023, Cultural Resource Analysts, Inc., Knoxville, TN.

DOE/OR/01-2794&D2/R2. *Record of Decision for Comprehensive Environmental Response, Compensation, and Liability Act Oak Ridge Reservation Waste Disposal at the Environmental Management Disposal Facility, Oak Ridge, Tennessee*, September 2022, U.S. Department of Energy, Oak Ridge, TN.

———DOE/OR/01-2934&D2. *Remedial Design Report/Remedial Action Work Plan for the Environmental Management Disposal Facility, Oak Ridge, Tennessee: Early Site Preparation Activities*, March 2023.

UCOR-5215. *Stormwater Management Requirements for Early Site Preparation for the Onsite Waste Disposal Facility, Oak Ridge, Tennessee*, latest revision, United Cleanup Oak Ridge LLC, Oak Ridge, TN.

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APPENDIX A.
EAST SPOILS AREA SENSITIVE RESOURCES EVALUATION

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Tennessee Ecological Services Field Office

FWS Log No: 2023-0021311

The Service concurs with your effect determination(s) for resources protected by the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). This finding fulfills the requirements of the Act. If project design changes are made or new information becomes available, please submit new plans for review.

Field Supervisor Date

Alexander, Steven

From: Petrie, Roger <Roger.Petrie@orem.doe.gov>
Sent: Thursday, January 12, 2023 7:33 AM
To: Alexander, Steven; Pelren, David; Sykes, Robbie
Subject: [EXTERNAL] Additional Information for Informal Consultation on EMDF

Steve,

We have identified an additional area that we need to have an informal consultation on. I don't know if we can have it added to the previous consultation or if will need to be one on its own. Whichever is easier for you all is good with us.

In support of adding the easternmost Spoils Area to the EMDF Early Site Prep Project, the two paragraphs below describe the Natural Resources Management Team description of habitat present within the Spoils Area and our determination regarding T&E listed bat species, as well as information about migratory birds in that area.

It is necessary for us to include preparation of a Spoils Area in support of the EMDF Early Site Prep Project on the US DOE Oak Ridge Reservation. A suitable approximately 15-acre Spoils Area has been identified and is indicated on the attached map. Removal of the existing forest will be necessary. Trees in these areas were subject to harvesting around year 2000 and currently are mainly dense, secondary growth forest, much of which is loblolly pine, though areas of young hardwood also are present. Walkdown of this area was completed in November 2022 by Kitty McCracken and Sarah Darling. Minimal suitable roosting habitat for Indiana bat, northern long-eared bat, tricolored bat and little brown bat is present within the proposed Spoils Area, and forest density is such that minimal foraging habitat exists within this area. No gray bat roosting caves are present within the Spoils Area. Bear Creek Road to the south, Haul Road to the North, a small road to the west, and a small stream corridor to the east bracket the Spoils Area and may provide travel corridors for bats during non-hibernation times of year. Removal of this forested area will take place between November 15 and March 31. The ORNL Natural Resources Management Team has made a determination that the federally listed endangered Indiana bat, northern long-eared bat, and gray bat **may be affected, but will not be adversely affected** by forest removal on the proposed EMDF Spoils Area.

Guidance from the Migratory Bird Permit Office indicates that the USFWS Tennessee Field Office will consider migratory birds along with federally listed T&E bat species. The EMDF ESP Project area and Spoils Area are used as nesting and foraging habitat for many species of migratory birds, however, nesting of most migratory birds occurs between April 1 and October 30, and tree removal will be completed by April 1.

If you have any questions, please let me know.

Thank you,

Roger Petrie
Regulatory Affairs Specialist

Oak Ridge Office of Environmental Management
United States Department of Energy
865-316-4063 (c)

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APPENDIX B.
EAST SPOILS AREA DEVELOPMENT DESIGN PACKAGE

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TECHNICAL SPECIFICATIONS

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United Cleanup Oak Ridge LLC

Specification Cover Sheet

SPECIFICATION

FOR

SECTION 31 11 00

CLEARING AND GRUBBING

OSWDF – EAST SPOILS AREA

		JOB NO.	
		SPECIFICATION NO.	**SPC-OSWDF-I444**
		SHEET	**1 of 6**
	Name	**Signature**	**Date**
Originator	Ken Oliver, PE	Ken Oliver Digitally signed by Ken Oliver DN: cn=Ken Oliver, c=US, o=Jacobs, Oak Ridge, ou=Civil engineering, email=kenneth.oliver@jacobs.com Date: 2023.06.29 11:28:04 -04'00'	6/29/2023
Checker	David Matlock, PE	David Matlock Digitally signed by David Matlock DN: cn=David Matlock, c=US, o=Jacobs, ou=Oak Ridge, email=david.matlock@jacobs.com Date: 2023.06.29 14:37:07 -04'00'	6/29/2023
Additional Reviewer	Butch Parton, PE	Frank Parton Digitally signed by Frank Parton DN: cn=Frank Parton, c=US, email=franklin.parton@jacobs.com Date: 2023.06.29 14:03:23 -04'00'	6/29/2023
Additional Reviewer			
Project Engineer	Greg Pickerel, PE	Greg Pickerel Digitally signed by Greg Pickerel Date: 2023.06.30 22:41:17 -04'00'	

Revision History		
Rev. No.	**Reason For Revision**	**Date**
0	Issued For Construction	6/29/2023

Form-362 (02/23) Rev. 3
PROC-DE-1007

SECTION 31 11 00

CLEARING AND GRUBBING

PART 1: GENERAL

1.01 DESCRIPTION

A. This specification addresses clearing and grubbing of trees, brush and other vegetation from the project site. Trees and brush indicated on the plans for removal shall be chipped onsite, and the resulting chips shall be used for erosion and sediment control.

1.02 DEFINITION OF TERMS

A. Clearing: Clearing operations consist of cutting, removing and disposing of trees, shrubs, bushes, windfalls and other vegetation within the construction limits. All trees and brush are cut off flush with or below the original ground surface.

B. Grubbing: Grubbing operations consist of removing and disposing of stumps, roots, debris, deleterious materials, and other remains (such as organic and metallic materials) which if left in place would interfere with proper performance or completion of the contemplated work, would impair its subsequent use, or form obstructions therein. Organic material from clearing or grubbing operations is not incorporated in fill or backfill.

C. Interfering or Objectionable Material: Trash, rubbish, and junk; vegetation and other organic matter, whether alive, dead, or decaying; and topsoil.

D. Stripping: Stripping operations consist of removing all organic soil material containing sod, grass, or other vegetation and topsoil to a minimum depth of 2 to 4 inches from all areas that will receive fill, over all trenches in field, and yard areas.

1.03 REFERENCES

A. International Fire Code, Section 2808 (2018), International Code Council

B. Site-specific Erosion Control Plan

1.04 SUBMITTALS

A. The following types of documents shall be submitted to the Subcontract Technical Representative (STR) in accordance with the requirements of Exhibit I of the Subcontract.

1. Clearing and Grubbing Plan (prior to implementation) that includes: Procedures to be used, protection methods for nearby existing wetlands and vegetation, descriptive list of equipment that includes wood chipping

and stump grinding, and approximate work extent for each phase of site clearing.

1.05 SCHEDULING AND SEQUENCE

A. Perform site clearing work only after adequate erosion and sediment controls are in place. Limit the bare earth areas that are exposed to uncontrolled erosion to manageable sizes. Install adequate erosion and sediment control measures for each area of bare earth.

B. The Subcontractor shall keep detailed records of all activities, correspondence, and related documents until the Subcontract Technical Representative (STR) has accepted the clearing and grubbing as required by the contract and construction drawings.

PART 2: PRODUCTS

2.01 MATERIALS

A. The Subcontractor shall furnish all materials, tools, equipment, facilities, and services as required for performing site clearing, grubbing and other site preparation work.

PART 3: EXECUTION

3.01 PROTECTION OF TREES AND SHRUBS OUTSIDE OF CLEARING LIMITS

A. Protect trees and vegetation to remain from damage incidental to the clearing, grubbing, and construction operations. Install flagging or temporary fencing where necessary to protect existing trees and shrubs to remain, and verify with STR as needed. Do not apply paint markings to trees or shrubs that will remain.

3.02 CLEARING

A. Clearing shall consist of the felling, trimming, and cutting of trees into sections and the satisfactory disposal of the trees and other vegetation designated for removal, including downed timber, snags, brush, and rubbish occurring within the areas to be cleared. Trees, stumps, roots, brush, and other vegetation in areas to be cleared shall be cut off flush with or below the original ground surface, except such trees and vegetation as may be indicated or directed to be left standing.

B. Do not remove vegetation beyond the limits shown on the construction drawings.

3.03 GRUBBING

A. Grubbing shall consist of the removal and disposal of stumps, roots greater than 2 inch caliper to a depth of 6 inches below subgrade, and matted roots from the

designated grubbing areas. Remove grubbed material to a depth of not less than 18 inches below the original surface level of the ground in areas indicated to be grubbed and in areas indicated for project construction under this subcontract. Compact the excavated surface.

B. Do not start earthwork operations in areas where clearing and grubbing are not complete, except that stumps and large roots may be removed concurrently with excavation when allowed by the STR. The Subcontractor shall immediately segregate stumps and large roots to a separate pile from the excavated earthwork.

C. Topsoil shall only be stripped from areas that will be disturbed by excavation, filling, paving, or compaction by equipment. Topsoil shall be stripped and stockpiled onsite before grading activities are commenced in any new area of the site. Stockpiled topsoil shall be stabilized using Best Management Practices (BMPs) in accordance with the Specification 31 25 00.

1. Stockpile areas shall be located where topsoil will not discharge into streams and other sensitive areas if BMP preservation measures fail, where it does not block natural or artificial drainage ways, and where it does not interfere with work on the site. Obtain approval of STR for stockpile locations.

2. Stabilize the stockpile with a temporary or permanent groundcover or other BMP protection measure, or as directed by the STR. In addition, perimeter measures shall be provided around the stockpile area to prevent sediment migration.

3.04 DISPOSAL OF MATERIALS

A. Chipping: Trees, brush, logs, stumps, roots, rotten wood, and other refuse from the clearing and grubbing operations, shall be chipped onsite and placed into stockpiles at locations designated by the Subcontract Technical Representative (STR). The stockpiles containing wood chips shall be protected from wind and weather, with coverings similar to topsoil stockpiles, and as directed by the STR.

B. Wood Chip Piles: Woody debris may be chipped onsite to provide a supply of wood chips for use in enhancement of sediment and erosion controls. Wood chip pile sizes and spacing shall be in accordance with the 2018 International Fire Code, Section 2808, which is attached as page 6 of this specification section.

C. Disposal:

1. Burying of trash and debris at the site will not be permitted. Burning of trash and debris at the site will not be permitted.

2. Remove trash and debris from the site at frequent intervals so that its presence will not delay the progress of the work, cause hazardous conditions for workers or the traveling public, or become unsightly.

3. Excess/unwanted materials, waste, trash, and debris shall be removed from the project site by the Subcontractor. Subcontractor shall dispose of waste, trash, and debris at the ORR Landfills operation, or as directed by the STR.

4. Waste disposed at the ORR Construction/Demolition Landfill VII or at Industrial Landfill V must meet Contractor's acceptance criteria and must have advance approval from the Contractor's Waste Certification Representative. ORR Landfill Operations will require pre-approved authorization (via Request For Disposal Form) prior to waste disposal.

3.05 ATTACHMENT

A. The attachment listed below, following "End of Section," is a part of this specification.

1. Section 2808. Storage and Processing of Wood Chips, Hogged Materials, Fines, Compost, Solid Biomass Feedstock and Raw Products Associated With Yard Waste, Agro-Industrial, Recycling Facilities.

International Fire Code (2018), page 28-3, International Code Council.

END OF SECTION

SECTION 2808
STORAGE AND PROCESSING OF WOOD CHIPS, HOGGED MATERIALS, FINES, COMPOST, SOLID BIOMASS FEEDSTOCK AND RAW PRODUCT ASSOCIATED WITH YARD WASTE, AGRO-INDUSTRIAL AND RECYCLING FACILITIES

2808.1 General. The storage and processing of wood chips, hogged materials, fines, compost, solid biomass feedstock and raw product produced from yard waste, debris and agro-industrial and recycling facilities shall comply with Sections 2808.2 through 2808.10.

2808.2 Storage site. Storage sites shall be level and on solid ground, elevated soil lifts or other all-weather surface. Sites shall be thoroughly cleaned before transferring wood products to the site.

2808.3 Size of piles. Piles shall not exceed 25 feet (7620 mm) in height, 150 feet (45 720 mm) in width and 250 feet (76 200 mm) in length. Stackable products shall not be stacked in excess of 25 feet (7620 mm) in height, 80 feet (24 384 mm) in width and 250 feet (76 200 mm) in length.

2808.3.1 Increase in pile or stack size. Piles or stackable products are permitted to be increased beyond the dimensions in Section 2808.3 provided that a written fire protection plan is *approved* by the *fire code official*. The fire protection plan shall include, but not be limited to, the following:

1. Contact information for after-hours response by facility personnel.
2. Storage yard areas and material-handling equipment selection, pile design and arrangement shall be based on sound safety and fire protection principles.
3. Fire apparatus access roads around the piles or stacks and access roads to the top of piles, if applicable, shall be established, identified and maintained.
4. The potential for spontaneous heating shall be evaluated and provisions made to control the temperature of the piles. Methods for monitoring the internal temperature of the pile shall be provided.
5. Routine yard inspections shall be conducted by trained personnel.
6. A means for early fire detection and reporting to the public fire department shall be provided.
7. Facilities and equipment needed by the fire department for fire extinguishment shall be provided, including a water supply in compliance with Section 507 and heavy equipment necessary to move material.
8. A de-inventory plan shall be utilized to remove alternating piles or stacked products in a manner to increase the separation distances between the remaining piles or stacks.
9. The increased pile size shall be based on the capabilities of the installed fire protection systems and features.
10. A controlled burn area shall be provided on-site for smoldering or damaged product.

2808.4 Pile separation. Piles or stacked product shall be separated from buildings, property lines and adjacent piles or stacks by a distance of not less than one and one-half times the height of the pile or stack. The distance between rows shall be a minimum of 30 feet (9144 mm). *Approved* fire apparatus access roads shall be provided within the separation space in accordance with Section 503.

2808.5 Combustible waste. The storage, accumulation and handling of combustible materials and control of vegetation shall comply with Chapter 3.

2808.6 Static pile protection. Static piles shall be monitored by an *approved* means to measure temperatures within the static piles. Internal pile temperatures shall be monitored and recorded weekly. Such records shall be maintained. An operational plan indicating procedures and schedules for the inspection, monitoring and restricting of excessive internal temperatures in static piles shall be submitted to the *fire code official* for review and approval.

2808.7 Pile fire protection. Automatic sprinkler protection shall be provided in conveyor tunnels and combustible enclosures that pass under a pile. Combustible conveyor systems and enclosed conveyor systems shall be equipped with an *approved automatic sprinkler system.*

2808.8 Fire extinguishers. Portable fire extinguishers complying with Section 906 and with a minimum rating of 4-A:60-B:C shall be provided on all vehicles and equipment operating on piles and at all processing equipment.

2808.9 Material-handling equipment. *Approved* material-handling equipment shall be available for moving wood chips, hogged material, wood fines and raw product during fire-fighting operations.

2808.10 Emergency plan. The *owner* or operator shall develop a plan for monitoring, controlling and extinguishing spot fires and submit the plan to the *fire code official* for review and approval.

SECTION 2809
EXTERIOR STORAGE OF FINISHED LUMBER AND SOLID BIOFUEL PRODUCTS

2809.1 General. Exterior storage of finished lumber and solid biofuel products shall comply with Sections 2809.2 through 2809.5.

2809.2 Size of piles. Exterior storage shall be arranged to form stable piles with a maximum height of 20 feet (6096 mm). Piles shall not exceed 150,000 cubic feet (4248 m^3) in volume.

2809.3 Fire apparatus access roads. Fire apparatus access roads in accordance with Section 503 shall be located so that a maximum grid system unit of 50 feet by 150 feet (15 240 mm by 45 720 mm) is established.

Excerpt is taken from:
2018 International Fire Code, Section 2808, Page 28-3
International Code Council

UCOR
United Cleanup Oak Ridge LLC

Specification Cover Sheet

SPECIFICATION

FOR

SECTION 31 20 00

SITE EARTHWORK

OSWDF – EAST SPOILS AREA

		JOB NO.	
		SPECIFICATION NO.	SPC-OSWDF-I445
		SHEET	1 of 8

	Name	Signature	Date
Originator	Ken Oliver, PE	Ken Oliver Digitally signed by Ken Oliver DN: cn=Ken Oliver, c=US, o=Jacobs, Oak Ridge, ou=Civil engineering, email=kenneth.oliver@jacobs.com Date: 2023.06.29 11:28:43 -04'00'	6/29/2023
Checker	David Matlock, PE	David Matlock Digitally signed by David Matlock DN: cn=David Matlock, c=US, o=Jacobs, ou=Oak Ridge, email=david.matlock@jacobs.com Date: 2023.06.29 14:36:36 -04'00'	6/29/2023
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Additional Reviewer			
Project Engineer	Greg Pickerel, PE	Greg Pickerel Digitally signed by Greg Pickerel Date: 2023.06.30 22:42:46 -04'00'	

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Rev. No.	Reason For Revision	Date
0	Issued For Construction	6/29/2023

Form-362 (02/23) Rev. 3
PROC-DE-1007

SECTION 31 20 00

SITE EARTHWORK

PART 1: GENERAL

1.01 DESCRIPTION

A. This specification covers the fill placement, compaction, and grading for the sediment trap, perimeter ditches, installation of erosion and sediment controls, and initial ground preparation prior to the first use of the East Spoils Area for stockpiling soils and wood chips.

B. The East Spoils Area is designed for the controlled placement of excavated materials generated by other Early Site Preparation subprojects, the Groundwater Field Demonstration (GWFD) project, and from the existing UPF West Soil Spoil Area.

1.02 DEFINITION OF TERMS

A. Satisfactory Materials For Earthwork: Satisfactory materials include any materials classified by ASTM D2487 as GC, SC, SM, ML, CL, or CH. Satisfactory materials for grading may include minor quantities of rock less than 3 inches in any dimension that will not affect soil compaction requirements.

B. Unsatisfactory Materials For Earthwork: Materials which do not comply with the requirements for satisfactory materials are unsatisfactory. Unsatisfactory materials also include man-made fills, trash, refuse, backfills from previous construction, any material containing chemical contamination, and material which contains root and other organic matter or frozen material. Notify the Subcontract Technical Representative (STR) when encountering any unsatisfactory materials.

C. Degree of Compaction: Degree of compaction required is expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D698, and abbreviated as a percent of laboratory maximum density.

D. Undercutting: Excavation of soft areas of soil in the subgrade or fill. Soft areas identified by proof-rolling shall be undercut and replaced with rock fill or satisfactory material (as directed by the Geotechnical Engineer or Technician) placed and compacted with heavy equipment until the area has been stabilized.

1.03 REFERENCES

A. American Association of State Highway Transportation Officials (AASHTO):

1. AASHTO R 18, Standard Practice for Establishing and Implementing a Quality Management System for Construction Materials Testing Laboratories

B. ASTM International (ASTM):

1. ASTM C136, Standard Method for Sieve Analysis of Fine and Coarse Aggregates

2. ASTM D448, Standard Classification for Sizes of Aggregate for Road and Bridge Construction

3. ASTM D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3)

4. ASTM D1140, Standard Test Methods for Determining the Amount of Material Finer than 75-mm (No. 200) Sieve in Soils by Washing

5. ASTM D1556, Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method

6. ASTM D2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)

7. ASTM D2937, Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method

8. ASTM D3740, Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction

9. ASTM D4318, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

10. ASTM D6938, Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

11. ASTM E329, Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection

C. Occupational Safety and Health Administration (OSHA):

1. OSHA Regulations, Code of Federal Regulations 29 CFR 1926, Subpart P-Excavations, Latest revision

D. Tennessee Department of Transportation (TDOT):

1. Standard Specifications for Road and Bridge Construction, Latest edition

1.04 SUBMITTALS

A. The following types of documents shall be submitted to the Subcontract Technical Representative (STR) in accordance with the requirements of Exhibit I of the Subcontract.

1. Pre-Construction Submittals:

   a. Qualifications and certifications for Testing Laboratory.

   b. Qualifications, certifications and documentation experience for Geotechnical Engineer and Geotechnical Field Technician.

   c. Documentation of current Nuclear Regulatory Commission radioactive material license, current calibration, and current leak test certification for each nuclear density gauge.

2. Test and Inspection Reports:

   a. Soil classification tests for fill materials and Select Granular Materials.

   b. Tests for moisture-density relation.

   c. Density and moisture tests.

   d. Inspection reports of proof-rolling (and undercutting and backfill if required).

   e. Weekly letter reports by Geotechnical Engineer/Technician.

   f. Daily inspection reports for excavations requiring worker and/or equipment access per OSHA regulations.

   g. Certification that backfill for undercut meets the specification.

3. Closeout Submittals:

   a. As-built topographic drawing for East Spoils Area, immediately after initial construction, and prior to adding any soils or wood chips for stockpiling.

1.05 QUALITY CONTROL INSPECTION AND TESTING

A. The Subcontractor shall retain a licensed Testing Laboratory, Geotechnical Engineer, and Geotechnical Field Technician, qualified per the requirements of this specification and approved by STR to perform inspections and testing.

B. Qualifications of Testing Laboratory: Shall be accredited per AASHTO R 18, ASTM D3740, and ASTM E329 and meeting the requirements for all testing standards and methods per this specification. The Testing Laboratory shall establish, maintain, and implement a program to identify, control, and calibrate test equipment.

C. Qualifications of Geotechnical Engineer: Shall be a Tennessee-Registered Professional Engineer (PE) with active registration and appropriate experience to verify that work by the Subcontractor meets the specification requirements. The Geotechnical Engineer shall have a minimum of five years of experience in field oversight of civil earthworks and geotechnical engineering projects

D. Qualifications of Geotechnical Field Technician: Shall be certified by the National Institute for Certification in Engineering Technologies (NICET) at Level II or III in Construction Materials Testing for Soils, or be able to demonstrate equivalency through an alternative certification program. Field technicians shall have a minimum of two years of experience performing field quality control for asphalt, concrete, and soil. Field technicians operating nuclear density gauges shall submit certification of training and records of participation in a dosimetry program.

E. The Geotechnical Engineer and/or Geotechnical Field Technician shall be onsite to perform inspections of excavations, proof-rolling and fill placement, and compaction testing throughout construction. The Geotechnical Engineer and/or Geotechnical Field Technician shall provide weekly letter reports of inspections and reports of all test results at the beginning of the following week to the STR.

F. The Geotechnical Engineer and/or Geotechnical Field Technician shall be the "Competent Person" required by OSHA regulations to perform daily inspections and assessments of excavations.

G. The Subcontractor shall provide access to work areas and shall coordinate for inspections and testing by the Geotechnical Engineer/Technician. The Subcontractor shall provide the equipment and operator for proof-rolling.

H. Access by Other Testing Firms: When requested by the STR, the Subcontractor shall provide immediate access to work areas for independent soil inspections or soil testing by other firms.

PART 2: PRODUCTS

2.01 MATERIALS

A. Fill material for earthwork (sediment trap, plus the perimeter ditches, plus initial site access) shall be natural fill material from offsite or shall be excavated onsite soil free of debris, foreign objects, large rock fragments, organics, and other deleterious materials. Visible rock particles shall be maximum dimension of 3 inches in any direction for 8-inch thick loose lifts. Smaller lifts shall have visible rock particles no larger than one-half of the lift thickness. Material for compacted fill shall conform to GC, SC, SM, ML, CL, or CH according to the Unified Soil Classification System per ASTM D2487.

B. Select Granular Material: Select granular material shall consist of materials classified as GW or SW in accordance with ASTM D2487 where indicated. Not

more than 10% by weight may be finer than No. 200 sieve when tested in accordance with ASTM D1140.

C. Backfill for replacement of undercut soft soils shall be satisfactory material or shot rock or rubble stone riprap in accordance with TDOT Section 709.02.A.

D. Construction water for moisture conditioning of the compacted fill shall be obtained from the onsite water source designated by the STR.

E. Construction safety fence for activities shall be orange, high-density polyethylene, 4 feet in height, opening size approximately 4 inches by 1 inch, minimum tensile strength of 2,000 pounds per foot of width. Posts shall be T-shaped (T-post) or as approved by the STR.

F. Topsoil: Soil containing organic material excavated onsite from the ground surface or near surface, or soil containing organic material obtained from an offsite source.

PART 3: EXECUTION

3.01 SITEWORK COORDINATION

A. The use of Bear Creek Road for transporting excavated soil is prohibited, unless approved by the STR in advance due to specific circumstances.

3.02 TOPSOIL STRIPPING AND STOCKPILE

A. On-site topsoil from the East Spoils Area will be stripped and stockpiled on-site. This topsoil will be re-used for dressing disturbed areas that are to be reseeded.

3.03 INITIAL SITE PREPARATION FOR STORAGE AREAS

A. After clearing and grubbing and stripping of topsoil, smooth the excavated areas and then proof-roll the existing subgrade.

B. Topsoil shall only be stripped from areas that will be disturbed by excavation, filling, paving, or compaction by equipment. Topsoil shall be stripped and stockpiled onsite before grading activities are commenced in any new area of the site. Stockpiled topsoil shall be stabilized using Best Management Practices (BMP) in accordance with Section 31 25 00, Erosion and Sediment Control. Obtain approval of the STR for topsoil stockpile location.

C. Proof-Rolling:

1. Proof-roll the East Spoils Area placement subgrade with evenly-spaced passes of a loaded dump truck. Operate the truck in a systematic manner to proof-roll all areas, typically at speeds between 2.5 to 3.5 mph. Geotechnical Engineer/Technician shall direct, observe, and document all

proof-rolling. Notify the STR a minimum of 2 days prior to each area of proof-rolling.

2. The passing criteria for the proof-rolling test is 3 inches maximum deflection, with minimal pumping or surface cracking. Pumping is defined as recoverable vertical heave of the soil created by the test load.

3. Areas that have failed the proof-rolling test shall be undercut as recommended by the Geotechnical Engineer/Technician, and then backfilled with controlled compacted soil layers.

D. Finish perimeter ditches in a manner that will result in effective drainage. Repair graded or backfilled areas prior to acceptance of the work, and re-establish grades to the required elevations and slopes. During construction, keep embankments and excavations shaped and drained. Maintain perimeter ditches to drain effectively at all times.

3.04 UTILIZATION OF EXCAVATED MATERIALS

A. Satisfactory material from excavations shall be stockpiled for use as fill or immediately placed as fill. Do not place fill on frozen or saturated surfaces that will prevent adequate compaction. Remove frozen, wet or soft soils as needed prior to filling. Place fill in loose lifts with maximum 8" thickness, and reduce lift thickness when adequate soil compaction is not being achieved.

B. The topsoil stockpile shall be protected against erosion. Stabilize the stockpile with a temporary or permanent groundcover or other BMP topsoil stockpiling protection measures. In addition, perimeter measures shall be provided around the stockpile area to prevent sediment migration.

C. Stockpile areas shall be located where topsoil will not discharge into streams and other sensitive areas if BMP measures fail, where it does not block natural or artificial drainage ways, and where it does not interfere with work on the site.

3.05 EARTHWORK COMPACTION FOR SEDIMENT TRAP AND ENTRANCE ROAD

A. Compaction shall be performed by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment. Compact each layer of fill to a minimum of 95% of laboratory maximum density as determined in accordance with ASTM D698. Adjust moisture during compaction to obtain required density.

B. Areas which are actively receiving fill material shall be sealed prior to periods of inactivity greater than 5 days and/or prior to precipitation events. The surface shall be sealed by making one pass each at two directions using a smooth-drum roller or other construction equipment acceptable to the STR. Sealed areas shall be scarified to a minimum depth of 3 inches prior to placement of the next lift.

3.06 TESTING AND INSPECTION

A. The Geotechnical Engineer/Technician shall perform inspections and field testing, as well as observe proof-rolling operations. Inspections and test results shall be provided in a timely manner to STR.

B. One laboratory compaction test shall be performed in accordance with ASTM D698 on every 10,000 cubic yards of each type of fill material to determine maximum density of material to be used as fill. Geotechnical Engineer/Technician or STR may require an additional laboratory test if material appearance or source changes.

C. Tests shall be performed on compacted fill and backfill to determine conformance with these specification requirements. The Geotechnical Engineer/Technician shall perform inspections, perform or oversee testing, certify test results, and document that the results are representative of the materials or conditions being certified by the tests and that the compacted fill or backfill meets the specification requirements. The following number of tests shall be performed.

1. Fill and Backfill Material Verification: Characterization of fill and backfill material in accordance with ASTM D2487. One test is required for each type of material, and whenever a significant change in the material properties is observed.

2. In-Place Densities: In accordance with ASTM D6938. One test per 15,000 square feet, or fraction thereof, of each lift of fill or backfill compacted by heavy equipment.

3.07 RECOMPACTION

A. If in-place density tests indicate that soil compaction is less than required, the Geotechnical Engineer/Technician will indicate the extent of under-compacted material, and the Subcontractor shall either recompact or replace the backfill until the required density is achieved.

END OF SECTION

UCOR
United Cleanup Oak Ridge LLC

Specification Cover Sheet

SPECIFICATION

FOR

SECTION 31 25 00

EROSION AND SEDIMENT CONTROL

OSWDF – EAST SPOILS AREA

		JOB NO.	
		SPECIFICATION NO.	SPC-OSWDF-I447
		SHEET	1 of 10
	Name	**Signature**	**Date**
Originator	Ken Oliver, PE	Ken Oliver Digitally signed by Ken Oliver DN: cn=Ken Oliver, c=US, o=Jacobs, Oak Ridge, ou=Civil engineering, email=kenneth.oliver@jacobs.com Date: 2023.06.29 11:29:14 -04'00'	6/29/2023
Checker	David Matlock, PE	David Matlock Digitally signed by David Matlock DN: cn=David Matlock, c=US, o=Jacobs, ou=Oak Ridge, email=david.matlock@jacobs.com Date: 2023.06.29 14:36:12 -04'00'	6/29/2023
Additional Reviewer	Butch Parton, PE	Frank Parton Digitally signed by Frank Parton DN: cn=Frank Parton, c=US, email=franklin.parton@jacobs.com Date: 2023.06.29 14:03:54 -04'00'	6/29/2023
Additional Reviewer			
Project Engineer	Greg Pickerel, PE	Greg Pickerel Digitally signed by Greg Pickerel Date: 2023.06.30 22:44:12 -04'00'	

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0	Issued For Construction	6/29/2023

Form-362 (02/23) Rev. 3
PROC-DE-1007

SECTION 31 25 00

EROSION AND SEDIMENT CONTROL

PART 1: GENERAL

1.01 DESCRIPTION

A. This work includes temporary control measures (including temporary seeding) for slope protection and controls to reduce erosion, sedimentation, and water pollution through the use of sediment trap, porous baffles, check dams, erosion control matting, mulches, grasses, temporary silt fences, and other control devices.

B. The Subcontractor shall anticipate future conditions and transitions as the construction work progresses to satisfy erosion and sediment control measures through each phase of project development.

C. Activities shall conform to the Tennessee Erosion and Sediment Control Handbook and to the construction drawings. In the event of a conflict, the more stringent requirement shall apply.

1.02 DEFINITION OF TERMS

A. Check Dam: A temporary structure made of riprap or gravel across a ditch, that can reduce velocities in small channels and provide moderate sediment-filtering capability.

B. Construction Exit: A compacted stone pad to remove mud and soil from construction vehicles prior to entering an existing road in use.

C. Erosion Control Matting: A biodegradable product designed to stabilize areas with moderate erosion control and/or low flows. These mats help to provide stabilization, support and coverage around hillsides, banks, and shorelines. They protect soil against wind and water erosion by reducing raindrop impact and slowing runoff as it flows across the surface.

D. Filter Ring: A temporary sediment control, constructed or riprap and aggregate, which can be placed around a storm drainage inlet to reduce flow velocities and to serve as a forebay in the upper reach of a sediment trap.

E. Filter Sock: A tube-shaped manufactured geotextile that can be used to reduce flow velocities and/or filter sediment on a slope or in a small drainage channel. Place along a contour to intercept water running down a slope.

F. Hydroseed or Hydromulch: A hydraulically-applied mixture containing mulch, tackifiers, soil amendments and/or seed in a water-based slurry, applied to slopes

to establish vegetation. Can be used for seeding, mulching, and bonded fiber matrix application.

G. Mulch: An organic material applied to the soil surface for protection or improvement of the area covered. Improvements include conservation of soil moisture, improving fertility and health of the soil, reducing weed growth, and enhancing the visual appeal of the area.

H. Porous Baffle: Barriers within a sediment trap to reduce the velocity and turbulence of storm water flowing through the measure. Porous baffle can be constructed from coir erosion blanket, coir mesh or jute fabric (typical 20 oz/yd^2) with wire backing and steel posts.

I. Sediment Trap: A temporary sediment storage area with an embankment, wet storage area, filter ring near entrance, porous baffles, and a riprap outlet spillway.

J. Silt Fence: A temporary sediment control device used on construction sites to protect water quality in nearby streams, rivers, and lakes from sediment in stormwater runoff.

K. Temporary Seeding: On any cleared, unvegetated, or sparsely vegetated soil surface where vegetative cover is needed for less than 1 year, seeding with a temporary groundcover until permanent stabilization can be achieved.

1.03 REFERENCES

A. Tennessee Department of Environment and Conservation (TDEC):

1. Erosion and Sediment Control Handbook, Latest edition

B. Tennessee Department of Transportation (TDOT):

1. Standard Specifications for Road and Bridge Construction, Latest edition

1.04 SUBMITTALS

A. The following types of documents shall be submitted to the Subcontract Technical Representative (STR) in accordance with the requirements of Exhibit I of the Subcontract.

1. Erosion Control Plan in accordance with the construction drawings. Include construction schedule for implementing Erosion Control Plan in phases, and disposal of waste material.

2. Product data for materials, along with installation procedures, to show that manufactured erosion control products are in accordance with the construction drawings, these specifications, and the TDEC Erosion and Sediment Control Handbook.

3. Product data and delivery tickets for aggregate and riprap materials that are delivered as part of erosion and sediment controls installation.

4. Temporary seeding materials and equipment, along with hydroseed and/or hydromulch blend product data sheets as applicable.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Delivery, storage, and handling shall be in accordance with the manufacturer's recommendations.

B. Stored materials shall be protected from damaging conditions to include sunlight, rain, extreme temperatures, and moist conditions.

1.06 QUALITY ASSURANCE

A. Keep detailed records of all activities, correspondence, inspections, maintenance work, and related documents until project work defined by the contract and construction drawings has been accepted.

B. Comply with the project requirements for inspection frequency, repairs, and recordkeeping.

PART 2: PRODUCTS

2.01 MATERIALS

A. The Subcontractor shall furnish all materials, tools, and equipment to deliver, install and maintain erosion and sediment control measures. Other erosion and sediment control devices are described in the TDEC Erosion and Sediment Control Handbook where not listed here.

B. Check Dam: Check dam material as specified on construction drawings and TDEC Erosion and Sediment Control Handbook.

C. Construction Exit: In accordance with TDEC Erosion and Sediment Handbook.

D. Erosion Control Matting: Erosion control mats shall be in accordance with TDOT Section 920 and be photodegradable double-net, straw, coconut, or wood fiber, Erosion Control Blanket Type II, and anchored with biodegradable staples or wooden stakes.

E. Erosion Control Matting Anchoring Devices: 11-gauge biodegradable staples with at least 6 inches length by 1 inch width, or 12-inch minimum length wooden stakes, or as recommended by erosion control matting manufacturer.

F. Filter Ring: Constructed of riprap, aggregate, and filter geotextile as specified on the construction drawings. Minimum height equal to 2 feet, with typical 2:1 side slopes.

G. Filter Sock: Manufactured compost filter sock, 8" to 12" in diameter, typically photodegradable or biodegradable material but may be constructed of woven polypropylene. Use 2" x 2" wooden stakes or fasteners as recommended by manufacturer.

H. Hydroseeding or Hydromulching Material: Hydroseeding and hydromulching material shall be in accordance with Specification 32 92 19.

I. Porous Baffle: Porous fabric/matting material shall be coir erosion blanket, coir mesh, or jute fabric of adequate width per drawing detail. Use steel posts and industrial netting, normally intended for use with silt fences, as the framework. Use 9-gauge wire fasteners or plastic ties in sufficient quantities. Use continuous rope or wire cable at top of baffle to prevent sagging.

J. Silt Fences: Posts with an industrial netting manufactured for the specific purpose of silt control with geotextile filter fabric to meet the requirements of TDOT Section 918.

K. Temporary Seeding: A non-invasive grass or grass-legume mixture suitable to the area and season of the year, which coincides with TDEC Erosion and Sediment Control Handbook.

PART 3: EXECUTION

3.01 PREPARATION

A. Site Preparation:

1. The site shall be prepared in accordance with Best Management Practices (BMPs) for the installation of engineering filter fabrics and other surface control features. Site preparation and field installation for BMPs shall be as directed in these specifications, TDEC Erosion and Sediment Control Handbook, and the site-specific Erosion Control Plan.

2. The surface location of each erosion and sediment control measure shall be loosely compacted, with pockets of soft soil removed and replaced as necessary, to provide a consistently uniform and stable surface for installation.

3.02 INSTALLATION/APPLICATION

A. General:

1. Control surface water runoff onsite and provide temporary soil stabilization measures as required to prevent the removal of soil by the action of either water or wind, more commonly known as erosion. Protect land areas adjacent to the work site from sedimentation by the installation of erosion and sediment control measures.

2. As a first step in the construction operation, install perimeter barriers and other measures intended to deter erosion and the transport of sediment associated with construction activities. Make sure measures are functional before upslope land disturbance takes place.

3. Prior to allowing vehicles and equipment to exit the project site onto a road, install temporary construction exit per TDEC Erosion and Sediment Control Handbook. The temporary construction exit can coincide with the Spoils Area entrance, as long as the final entrance will be graded and compacted with correct materials free from soil/mud to the indicated aggregate depth.

4. Seed and mulch completed slopes, ditches, and other areas within 14 days of completion. Any areas that will not be worked within 30 days shall be seeded and mulched within 14 days.

B. Silt Fences:

1. Install silt fence as indicated on the construction drawings and at natural drainage areas as to reduce the quantity of sediment and flow velocities to downstream areas. Install silt fence in accordance with the manufacturer specifications and TDEC Erosion and Sediment Control Handbook.

C. Erosion Control Matting:

1. Erosion control matting shall be installed on slopes steeper than 3:1 that are not otherwise protected by other means.

2. Place the matting 2 to 3 feet over the top of the slope and into an excavated end trench measuring approximately 12 inches deep by 6 inches wide. Then pin the matting at 1-foot intervals along the bottom of the trench. Place backfill into the trench, and compact backfill.

3. Unroll the matting down (or along) the slope, maintaining direct contact between the soil and the matting. Overlap adjacent rolls a minimum of 3 inches. Pin the erosion control matting to ground using staples or pins in a 3-foot center-to-center pattern or as recommended by manufacturer.

4. Drive the anchoring devices so that the top of the staple is flush with the ground, or top of the stake is 4 inches above the ground surface. Anchor each erosion control mat every 3 feet along its center.

5. Longitudinal overlaps must be sufficient to accommodate a row of anchors and uniform along the entire length of overlap and anchored every 3 feet along the overlap length. Roll ends may be spliced by overlapping 2 feet (in the direction of water flow), with the upstream/upslope mat placed on top of the downstream/downslope mat and anchored at 1-foot spacing across the erosion control mats.

D. Filter Socks:

1. Place filter socks in a continuous barrier along the contour (across the slope) to intercept water running down a slope. Overlap joints as needed.

2. Remove all rocks, clods, vegetation or other obstructions so that installed filter socks have direct contact with the underlying soil surface.

3. Install filter socks by laying them flat on the ground, without gaps and openings underneath. Install stakes at spacings per the manufacturer's recommendation. Stakes should be installed on the downstream side of the filter socks.

E. Sediment Trap with Porous Baffles:

1. Clear, grub, and strip the area only underneath the main embankment. Remove soil and stockpile/dispose. Place embankment fill in loose lifts not to exceed 9 inches and machine-compact. Overfill the embankment by 6 inches to allow for settlement.

2. Clear, grub, and strip the areas to construct the remaining embankments for the sediment trap. Compact the remaining embankments in the same fashion as the main embankment. Construct the emergency spillway. Stabilize the embankments and all sloped areas, prior to excavating the remainder of the sediment trap area.

3. Clear, grub, and strip the remaining area of the sediment trap. Grade the sediment trap storage zones, and compact the subgrades and all prepared slopes.

4. Install filter ring at the sediment trap inlet, per the construction drawings.

5. Install porous baffles equally spaced as shown on construction drawings. Place steel posts at 2-ft depth and maximum 4-ft spacing. Dig trench on uphill side of steel posts to bury porous fabric material into trench and attach to steel posts. Install a support rope or wire across top of porous baffle assembly. Securely fasten porous fabric material to steel posts and industrial netting using 9-gauge wire ties or fasteners.

6. Install and maintain sediment trap in accordance with the TDEC Erosion and Sediment Control Handbook standards.

F. Filter Ring:

1. The filter ring shall be constructed of TDOT Class A-1 (clean from fines) riprap with stone sizes from 2 to 15 inches.

2. A woven geotextile shall be used as a separator between the graded stone and soil base and abutments. Geotextile fabric shall be set into the subgrade soils. The geotextile fabric shall be placed immediately adjacent to the subgrade without any voids and extend to beneath the inlet to prevent scour within the filter ring.

3. The filter ring shall be constructed at a height of two feet with slopes no steeper than 2:1. Install per TDEC Erosion and Sediment Control Handbook standards.

G. Hydroseed or Hydromulch:

1. Do not apply any type of hydraulic seeding or mulching during high wind conditions or very dry conditions.

2. Prohibit foot, equipment and vehicle traffic across the area after application.

3. Apply uniformly, providing a minimum of 95% coverage of all hydromulched surfaces based upon visual inspection. To aid in visually verifying the correct application, a green dye shall be added to the mixture.

4. To ensure the proper application rate, mark off a section on the ground, such as a 1,000 square feet area, and calibrate the sprayer to apply the correct seeding rate for 1,000 square feet.

5. Hand seeding and application of straw mulch may be used at locations that are inaccessible to hydraulic application equipment.

6. Install per TDEC Erosion and Sediment Control Handbook standards and per Specification 32 92 19.

H. Rock Check Dams:

1. Prior to installing rock check dams, construct the roadside ditch with riprap lining per manufacturer instructions.

2. Install temporary rock check dam as shown on construction drawings at regular spacing. Adjust rock check dam spacing to handle field conditions or as directed by the Subcontract Technical Representative (STR).

3.03 TEMPORARY SEEDING

A. Temporary Seeding Mixes and Application:

1. Temporary seeding for late winter and early spring -

Species	**Rate (lb/acre)**
Rye	120

Seeding dates

East .....Above 2500 feet: Feb. 15 - May 15
Below 2500 feet: Feb. 1- May 1
Middle ..... Jan. 1 - May 1
West ..... Dec. 1 - Apr. 15

Soil amendments

Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750 lb/acre 10-10-10 fertilizer.

Mulch

Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.

Maintenance

Refertilize if growth is not fully adequate. Reseed, refertilize and mulch immediately following erosion or other damage.

2. Temporary seeding for summer -

Species	**Rate (lb/acre)**
Oats	60
Brown top millet	30

Seeding dates

East ..... May 15 - Aug. 15
Middle ..... May 1 - Aug. 15
West ..... Apr. 15 - Aug. 15

Soil amendments

Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750 lb/acre 10-10-10 fertilizer.

Mulch

Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.

Maintenance

Refertilize if growth is not fully adequate. Reseed, refertilize and mulch immediately following erosion or other damage.

3. Temporary seeding for fall -

Species	Rate (lb/acre)
Oats	30
Winter wheat	30

Seeding dates

East ..... Aug 15 – Dec 15
Middle ..... Aug. 15 – Dec 30
West ..... Aug. 15 – Dec 30

Soil amendments

Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750 lb/acre 10-10-10 fertilizer.

Mulch

Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.

Maintenance

Refertilize if growth is not fully adequate. Reseed, refertilize and mulch immediately following erosion or other damage. If necessary to extend temporary cover beyond June 15, overseed with 50 lb/ac crimson clover in late February or early March.

B. Preparation for Temporary Seeding:

1. Complete grading before preparing seeded area and install all necessary erosion control measures. Minimize steep slopes because they make seedbed preparation difficult and increase the erosion hazard. If soils become compacted during grading, loosen them to a depth of 6 to 8 inches using a ripper, harrow, or chisel plow.

2. Excessive water runoff shall be reduced by properly designed and installed erosion control practices such as ditches, dikes, diversions, and sediment ponds.

3. Prepare a good seedbed that is well pulverized, loose and uniform. Where hydroseeding methods are used, the surface may be left with a more irregular surface of large clods and stones.

4. Reseed and mulch areas where seedling emergence is poor or where erosion occurs, as soon as possible. Do not mow until reseeding is successful.

END OF SECTION

UCOR
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Specification Cover Sheet

SPECIFICATION

FOR

SECTION 31 50 20

GEOTEXTILES

OSWDF – EAST SPOILS AREA

		JOB NO.	
		SPECIFICATION NO.	SPC-OSWDF-I448
		SHEET	1 of 5

	Name	Signature	Date
Originator	Ken Oliver, PE	Ken Oliver Digitally signed by Ken Oliver DN: cn=Ken Oliver, c=US, o=Jacobs, Oak Ridge, ou=Civil engineering, email=kenneth.oliver@jacobs.com Date: 2023.06.29 11:29:45 -04'00'	6/29/2023
Checker	David Matlock, PE	David Matlock Digitally signed by David Matlock DN: cn=David Matlock, c=US, o=Jacobs, ou=Oak Ridge, email=david.matlock@jacobs.com Date: 2023.06.29 14:35:34 -04'00'	6/29/2023
Additional Reviewer	Butch Parton, PE	Frank Parton Digitally signed by Frank Parton DN: cn=Frank Parton, c=US, email=franklin.parton@jacobs.com Date: 2023.06.29 14:04:10 -04'00'	6/29/2023
Additional Reviewer			
Project Engineer	Greg Pickerel, PE	Greg Pickerel Digitally signed by Greg Pickerel Date: 2023.06.30 22:45:39 -04'00'	

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0	Issued For Construction	6/29/2023

Form-362 (02/23) Rev. 3
PROC-DE-1007

SECTION 31 50 20

GEOTEXTILES

PART 1: GENERAL

1.01 DESCRIPTION

A. This specification covers the use of geotextile filter fabric in separation and filter applications. Geotextile will be used in two applications on this project:

1. Geotextile fabric used as a filter between soil and riprap to allow water to pass through, but to retain soil and prevent erosion of soil beneath the riprap, shall be a nonwoven fabric.

2. Geotextile fabric used as a separator between subgrade soil and aggregate base for roadways to prevent mixing of the soil into the aggregate shall be a woven fabric.

1.02 DEFINITIONS

A. Geotextile Separation: A fabric barrier placed between dissimilar materials, so that the integrity of both materials can remain intact or be improved.

B. Geotextile Filtration: The movement of liquid through the fabric while retaining the soil on the upstream side of the fabric.

C. Nonwoven Fabric: Fabric made by extruding and spraying fibers onto a moving conveyor belt to form a continuous web. The fabric is then bonded by melt-bonding, resin-bonding, or needle punching. Nonwoven fabric is nondirectional and has equal properties in all directions.

D. Woven Fabric: Fabric made by weaving individual flat yarns or fibers of polypropylene or polyester. Generally, woven fabric exhibits high tensile strength and low elongation.

E. Ultraviolet (UV): UV light is a component of sunlight and breaks down polymeric materials over time. Some polymers are stabilized against UV degradation.

1.03 REFERENCES

A. ASTM International (ASTM):

1. ASTM D4355, Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus

2. ASTM D4491, Standard Test Methods for Water Permeability of Geotextiles by Permittivity

3. ASTM D4533, Standard Test Method for Trapezoidal Tearing Strength of Geotextiles

4. ASTM D4632, Standard Test Method for Grab Breaking Load and Elongation of Geotextiles

5. ASTM D4751, Standard Test Method for Determining Apparent Opening Size of a Geotextile

6. ASTM D5261, Standard Test Method for Measuring Mass per Unit Area of Geotextiles

7. ASTM D6241, Standard Test Method for Static Puncture Strength of Geotextiles and Geotextile-Related Products Using a 50-mm Probe

1.04 SUBMITTALS

A. The following types of documents shall be submitted to the Subcontract Technical Representative (STR) in accordance with the requirements of Exhibit I of the Subcontract.

1. Submit manufacturer product data sheets and also manufacturer's certificates of conformance to show that geotextiles are in accordance with product properties listed in Sections 2.01.B and 2.01.C.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Provide geotextile fabric in rolls wrapped with protective covering to protect them from mud, dirt, UV, dust, and debris. The geotextile fabric shall be free of defects or flaws which could significantly affect its physical properties.

B. Number each roll of fabric in a shipment with a number or symbol to identify that production run.

C. Protect geotextile from sunlight, moisture, excessive heat or cold, puncture, mud, dirt, and dust or other damaging conditions. Follow the geotextile manufacturer recommendations for handling and storage. Store geotextile rolls on pallets or other elevated structure. Do not store geotextile rolls directly on the ground.

1.06 QUALITY ASSURANCE

A. The manufacturer's quality control certification shall be provided with the geotextile and submitted to the STR. It shall document that the geotextile rolls provided have been tested as part of the manufacturer's quality control program and that they meet or exceed the manufacturer's minimum average roll values.

PART 2: PRODUCTS

2.01 MATERIALS

A. Geotextile materials shall meet the following requirements:

1. Minimum average roll values with 95% lower confidence limits meeting or exceeding the required property values specified.

2. Geotextiles furnished by the Subcontractor shall meet or exceed the required property values specified. Geotextiles shall be manufactured from first quality polymers with not more than 20% reclaimed polymer used in production.

B. Geotextile Separation Fabric for Roads: Physical requirements for woven geotextile separator placed between the prepared subgrade and roadway aggregate base shall be:

Property:	Min. Test Value Req'd:	Test Method:
Weight	6 oz. per sq. yd.	ASTM D5261
Grab Strength, lbs.	315 lbs.	ASTM D4632
Elongation	12%	ASTM D4632
Puncture Strength	900 lbs.	ASTM D6241
Trapezoidal Tear	113 lbs.	ASTM D4533
Apparent Opening Size	40 (Std Sieve Size)	ASTM D4751
Permittivity	4 gpm/sq. ft.	ASTM D4491
UV Resistance	70% Strength Retained	ASTM D4355

C. Geotextile Filter Fabric for Use with Riprap: Physical requirements for non-woven geotextile separator placed between the prepared subgrade and riprap shall be:

Property:	Min. Test Value Req'd:	Test Method:
Weight	8 oz. per sq. yd.	ASTM D5261
Grab Strength, lbs.	200 lbs.	ASTM D4632
Elongation	50%	ASTM D4632
Puncture Strength	100 lbs.	ASTM D6241
Trapezoidal Tear	90 lbs.	ASTM D4533
Apparent Opening Size	80 (Std Sieve Size)	ASTM D4751
Permittivity	100 gpm/sq. ft.	ASTM D4491
UV Resistance	70% Strength Retained	ASTM D4355

PART 3: EXECUTION

3.01 INSPECTION

A. Verify the grades and elevations are correct.

B. Verify the subgrade does not contain unsuitable, unstable, or soft material. The subgrade shall be free from mud or soft soil which would choke fabric openings. Subgrade preparation shall be in accordance with Specification 31 20 00. If unstable materials are encountered, repair subgrade as described in Specification 31 20 00.

3.02 INSTALLATION

A. Install geotextile fabric to the limits and grades indicated on the plans.

B. Join geotextile by sewing seams or overlapping in accordance with manufacturer's instructions. If geotextile is joined with sewn seams, sew in the field with nylon thread at a stitch density of at least five stitches per inch and two rows of single thread stitches or one row of double-thread stitches.

C. Utilize sandbags or other weight for temporary anchoring.

D. Backfill material placed directly on the fabric shall be free from mud or soft soil material which will choke fabric openings. Place aggregate base or riprap onto geotextile fabric carefully to avoid damage to the fabric by heavy equipment blades, buckets or tracks.

E. Exposure of geotextiles to the elements between laydown and cover shall not exceed 30 days to minimize damage potential.

F. Place a geotextile patch over any damaged area and extend 3 feet beyond the perimeter of the tear or damage. Notify the STR and investigate reason for damaged geotextile prior to applying a geotextile patch.

END OF SECTION

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United Cleanup Oak Ridge LLC

Specification Cover Sheet

SPECIFICATION

FOR

SECTION 32 12 00

AGGREGATE AND RIPRAP MATERIALS

OSWDF – EAST SPOILS AREA

		JOB NO.	
		SPECIFICATION NO.	SPC-OSWDF-I449
		SHEET	1 of 4

	Name	Signature	Date
Originator	Ken Oliver, PE	Ken Oliver Digitally signed by Ken Oliver DN: cn=Ken Oliver, c=US, o=Jacobs, Oak Ridge, ou=Civil engineering, email=kenneth.oliver@jacobs.com Date: 2023.06.29 11:30:16 -04'00'	6/29/2023
Checker	David Matlock, PE	David Matlock Digitally signed by David Matlock DN: cn=David Matlock, c=US, o=Jacobs, ou=Oak Ridge, email=david.matlock@jacobs.com Date: 2023.06.29 14:35:13 -04'00'	6/29/2023
Additional Reviewer	Butch Parton, PE	Frank Parton Digitally signed by Frank Parton DN: cn=Frank Parton, c=US, email=franklin.parton@jacobs.com Date: 2023.06.29 14:04:28 -04'00'	6/29/2023
Additional Reviewer			
Project Engineer	Greg Pickerel, PE	Greg Pickerel Digitally signed by Greg Pickerel Date: 2023.06.30 22:47:00 -04'00'	

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Form-362 (02/23) Rev. 3
PROC-DE-1007

SECTION 32 12 00

AGGREGATE AND RIPRAP MATERIALS

PART 1: GENERAL

1.01 DESCRIPTION

A. This section includes aggregate and riprap materials for construction exit, site access roads, ditches, filter ring, and sediment trap spillway installation.

1.02 DEFINITIONS

A. Aggregate: Unconsolidated rock fragments that have a defined particle size range and typically include size classes referenced to a TDOT section or standard table.

B. Riprap: Clean shot rock that meets the requirements and gradations of TDOT Section 709.

1.03 REFERENCES

A. ASTM International (ASTM):

1. ASTM C88, Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate

2. ASTM C117, Standard Test Method for Materials Finer Than 75 micrometer (No. 200) Sieve in Mineral Aggregates by Washing

3. ASTM C131, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

4. ASTM C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates

5. ASTM D75, Standard Practice for Sampling Aggregates

6. ASTM D448, Standard Specification for Sizes of Aggregate for Road and Bridge Construction

7. ASTM D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3)

8. ASTM D1556, Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method

9. ASTM D6938, Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

B. Tennessee Department of Transportation (TDOT):

1. Standard Specifications for Road and Bridge Construction, Latest edition

1.04 SUBMITTALS

A. The following types of documents shall be submitted to the Subcontract Technical Representative (STR) in accordance with the requirements of Exhibit I of the Subcontract.

1. Pre-Construction Submittals:

a. Submit the sources of aggregate and riprap materials along with written certification from the suppliers that the material meets the requirements of this section. Certification shall include test results as required by TDOT Specifications for aggregate base materials.

2. Test and Inspection Reports:

a. In-place density tests for aggregate.

b. Delivery tickets for aggregate and riprap.

c. Weekly letter reports by Geotechnical Engineer/Technician

1.05 QUALITY CONTROL INSPECTION AND TESTING

A. The Subcontractor shall retain a licensed Testing Laboratory, Geotechnical Engineer, and Geotechnical Field Technician with qualifications and duties as listed in Specification 31 00 00, approved by the STR to perform inspections and testing.

B. The Geotechnical Engineer/Technician shall be onsite to perform inspections and testing of aggregate and riprap placement throughout construction. The Geotechnical Engineer/Technician shall provide weekly letter reports of inspections and reports of all test results at the beginning of the following week.

PART 2: PRODUCTS

2.01 MATERIALS

A. Construction Exit and Initial Access Road: Use TDOT #3 aggregate meeting the gradation in TDOT Section 903. Aggregate shall be stockpiled, handled, and installed in such a way as to keep it free of organic matter and other deleterious materials.

B. Filter Ring: Use TDOT #57 clean aggregate meeting the gradation in TDOT Section 903. Aggregate shall be stockpiled, handled, and installed in such a way as to keep it free of organic matter and other deleterious materials.

C. Shot Rock/Riprap: Shot rock/riprap for undercut of soft areas shall be defined by TDOT Section 709.03 Machined Riprap (Class A-3) and shall vary in size from 2 inches to 6 inches with no more than 20% by weight being less than 4 inches.

D. Riprap Armoring: Riprap armoring shall be hard durable rock conforming to TDOT Section 709.03 Machined Riprap (Class A-1) and shall vary in size from 2 inches to 1.25 feet with no more than 20% by weight being less than 4 inches.

PART 3: EXECUTION

3.01 INSPECTION

A. Verify that prepared soil subgrade is ready to receive the work of this section and that the subgrade is within reasonably close conformity to the lines, grades, and cross-sections.

B. In locations where geotextile is to be installed between the subgrade and aggregate or riprap, verify that geotextile is installed to the limits shown on the construction drawings with adequate overlay.

3.02 AGGREGATE PLACEMENT

A. Place TDOT #3 aggregate for construction exit and for initial site access road. Place aggregate base in layers not to exceed 6 inches compacted thickness and compact with a heavy vibratory roller.

B. Place TDOT #57 clean aggregate for filter ring against the upstream face of a riprap core, and pack firmly.

3.03 INSTALLATION OF RIPRAP

A. When used as backfill for undercut soft areas, shot rock/riprap shall be dumped into the undercut area, spread in layers not to exceed 1-foot loose thickness, and walked into the subsoil with heavy equipment, dozer or front loader. Fill and compact the riprap into the subgrade until the soft area is stable and the area is backfilled to the final subgrade limits shown on the construction drawings.

B. Riprap armoring of drainage ditches or filter ring shall be placed over a shaped ditch with geotextile fabric in place. Riprap shall be a minimum thickness as shown on drawings. The top of each armored drainage channel and the filter ring shall match the finish grades shown on the construction drawings.

3.04 TESTING AND INSPECTION

A. The Geotechnical Engineer/Technician shall observe aggregate placement for construction exit and for initial site access road, and document the effectiveness of aggregate compaction.

B. The Geotechnical Engineer/Technician shall estimate riprap dimensions, take supporting measurements, and verify that riprap gradation is per specifications.

END OF SECTION

UCOR
United Cleanup Oak Ridge LLC

Specification Cover Sheet

SPECIFICATION

FOR

SECTION 32 92 19

SEEDING

OSWDF – EAST SPOILS AREA

		JOB NO.	
		SPECIFICATION NO.	SPC-OSWDF-I450
		SHEET	1 of 6

	Name	Signature	Date
Originator	Ken Oliver, PE	Ken Oliver Digitally signed by Ken Oliver DN: cn=Ken Oliver, c=US, o=Jacobs, Oak Ridge, ou=Civil engineering, email=kenneth.oliver@jacobs.com Date: 2023.06.29 11:30:43 -04'00'	6/29/2023
Checker	David Matlock, PE	David Matlock Digitally signed by David Matlock DN: cn=David Matlock, c=US, o=Jacobs, ou=Oak Ridge, email=david.matlock@jacobs.com Date: 2023.06.29 14:34:44 -04'00'	6/29/2023
Additional Reviewer	Butch Parton, PE	Frank Parton Digitally signed by Frank Parton DN: cn=Frank Parton, c=US, email=franklin.parton@jacobs.com Date: 2023.06.29 14:04:46 -04'00'	6/29/2023
Additional Reviewer			
Project Engineer	Greg Pickerel, PE	Greg Pickerel Digitally signed by Greg Pickerel Date: 2023.06.30 22:40:01 -04'00'	

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0	Issued For Construction	6/29/2023

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PROC-DE-1007

SECTION 32 92 19

SEEDING

PART 1: GENERAL

1.01 DESCRIPTION

A. This specification includes permanent seeding, fertilizing, liming, and mulching.

B. Temporary seeding is described within Specification 31 25 00, which lists the seeding dates, seed mix, soil amendments, mulch and maintenance requirements for Temporary Seeding.

1.02 DEFINITION OF TERMS

A. Dry Seeding: Dry broadcast seeding by spreader or seeding machine.

B. Hydroseeding: Wet hydraulic spraying of seed, fertilizer, and mulch, if applicable, in a one-step process.

1.03 REFERENCES

A. Tennessee Department of Transportation (TDOT):

1. Standard Specifications for Road and Bridge Construction, Latest edition

1.04 SUBMITTALS

A. The following types of documents shall be submitted to the Subcontract Technical Representative (STR) in accordance with the requirements of Exhibit I of the Subcontract.

1. Statements of guarantee and/or certifications from vendors who supply seed, mulches, tackifiers, fertilizers, and erosion control products for establishing grass.

2. Statement certifying that the seed furnished is from a lot that has been tested by a recognized laboratory for seed testing within six months prior to the date of delivery.

3. Seed container labels, prior to use.

4. Manufacturer's guaranteed chemical analysis, name, trade name, trademark, and conformance to state law of all fertilizers and herbicides.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.

B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

C. Seed and fertilizer shall be stored in a dry location.

1.06 QUALITY ASSURANCE

A. Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.

PART 2: PRODUCTS

2.01 MATERIALS

A. Permanent Seed Mixture:

1. Permanent Seed Mixture: In accordance with the requirements of TDOT Section 918.01, the percentages forming the group shall be as set out below:

Seed Group	Quantity % by Weight	Seeding Dates
Group A		
Kentucky 31 Fescue	80	Feb.1 - July 1
English Rye	5	
Korean Lespedeza	15	
Group B		
Kentucky 31 Fescue	55	June 1 – Aug. 15
English Rye	20	
Korean Lespedeza	15	
German Millet	10	
Group C		
Kentucky 31 Fescue	70	Aug. 1 – Dec. 1
English Rye	20	
White Clover	10	
Group C1		
Kentucky 31 Fescue	70	Feb. 1 – Dec. 1
Crown Vetch	25	
English Rye	5	

B. Topsoil: Topsoil in accordance with Specification 31 20 00.

C. Accessories:

1. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are not acceptable. All straw mulch materials shall be air dried and reasonably free of noxious weeds and weed seeds or other materials detrimental to plant growth. Straw shall be suitable for spreading with standard mulch blower equipment.

2. Hydromulch shall be applied immediately following seeding at an application rate of 90 to 100 lb/1,000 ft^2 (two to three bales). Hydromulch shall be TurboTurf Hydroseeding Mulch or approved equal.

3. Fertilizer: Standard commercial fertilizer conforming to the requirements of TDOT Section 918.02, with the guarantee of analysis conforming to a Grade 10-10-10 or 1-1-1 formula. The fertilizer shall be uniform in composition, free flowing, and suitable for application with approved equipment.

4. Agricultural Limestone: Agricultural Limestone shall contain not less than 85% of calcium carbonate and magnesium carbonate combined and crushed so that at least 85% will pass the No. 10 mesh sieve and 50% through the No. 40 mesh sieve.

5. Water: Clean, fresh, and free of substances or matter which could inhibit vigorous growth of grass.

6. Erosion Control Matting:

a. Jute mesh shall be in accordance with TDOT Section 805.

b. Erosion control matting, erosion control fabric, and staples shall be in accordance with TDOT Section 920.

PART 3: EXECUTION

3.01 INSPECTION

A. Verify that prepared soil base is ready to receive the work of this section and that the final grading is within reasonably close conformity to the lines, grades, and cross-sections.

3.02 INSTALLATION

A. Fertilizing:

1. Apply commercial Grade 10-10-10 or 1-1-1 formula fertilizer at a rate of not less than 20 lb/1,000 ft^2 and agricultural limestone at a rate of not less than 75 lb/1,000 ft^2.

2. Apply after smooth raking of topsoil.

3. Do not apply fertilizer at same time or with the same machine used to apply seed.

4. Uniformly incorporate into the soil for a depth of approximately 1/2 inch.

B. Dry Seeding:

1. Apply per TDOT Section 801, at a rate of 5 lb/1,000 ft^2.

2. Do not seed area in excess of that which can be mulched on same day.

3. Do not sow immediately following rain, or when ground is too dry, or during windy period.

4. Immediately following seeding, apply mulch uniformly.

5. Apply water with a fine spray immediately after each area has been mulched. Saturate to 2 inches of soil.

C. Hydroseeding:

1. Apply seeded slurry at a rate of 3 lb/1,000 ft^2 evenly in two intersecting directions with a hydraulic seeder. If straw mulch or excelsior matting is used, do not hydroseed area in excess of that which can be mulched or matted on same day.

2. Fiber mulch shall be applied hydraulically at a rate of 35 lb/1,000 ft^2 with the seed and fertilizer.

3. The spraying equipment and mixture shall be designed so that when the mixture is sprayed over an area, the grass seed and fiber mulch shall be equal in quantity to the specified rates.

D. Seed Protection:

1. Cover seeded slopes where grade is 3 inches/foot or greater or other areas at locations shown on the plans with erosion control fabric matting.

2. The placing and securing of either jute mesh, excelsior matting, erosion control fabric, or other approved matting on previously shaped and seeded channels, slopes, and locations, shall be in accordance with the construction requirements of TDOT Section 805.

E. Maintenance:

1. Maintain topsoiled and seeded areas until final acceptance. Restore areas showing settlement or washout to the specified grades at no additional cost. Newly seeded areas shall be watered and maintained as necessary, or reseeded per specification, until an acceptable stand of grass has been achieved.

2. Immediately remove clippings after mowing and trimming.

3. Apply water frequently to prevent grass and soil from drying out.

4. Immediately reseed areas which show bare spots.

5. Protect seeded areas with warning signs during maintenance period.

F. Temporary Seeding:

1. Specification 31 25 00 describes Temporary Seeding and lists the seeding dates, seed mix, soil amendments, mulch and maintenance requirements.

END OF SECTION

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DESIGN DRAWINGS

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DEPARTMENT OF ENERGY
OAK RIDGE OFFICE OF
ENVIRONMENTAL MANAGEMENT

ON-SITE WASTE DISPOSAL FACILITY
(OSWDF)
EARLY SITE PREPARATION

EAST SPOILS AREA
DESIGN DRAWINGS

DRW BY	JIMMY ASHWORTH	Jimmy Ashworth — Digitally signed by Jimmy Ashworth Date: 2023.06.29 08:35:18 -04'00'
ORG	FRANKLIN PARTON, PE	Frank Parton — Digitally signed by Frank Parton DN: cn=Frank Parton, c=US, email=franklin.parton@jacobs.com Date: 2023.06.29 14:01:59 -04'00'
ENGR CHK	DAVID MATLOCK, PE	David Matlock — Digitally signed by David Matlock DN: cn=David Matlock, c=US, o=Jacobs, ou=Oak Ridge, email=david.matlock@jacobs.com Date: 2023.06.29 14:33:03 -04'00'
PROJ ENGR	GREG PICKEREL, PE	Greg Pickerel — Digitally signed by Greg Pickerel Date: 2023.06.30 22:36:25 -04'00'
	ELECTRONIC SIGNATURES	

DRAWING REVISIONS

REV	DATE	DESCRIPTION	DRW BY	ORG/ ENGR	ENGR CHK					PROJ ENGR
0	6/29/23	ISSUED FOR CONSTRUCTION	JA	FP	DM					GP

UCOR
an AECOM-led partnership with Jacobs

OAK RIDGE RESERVATION
MANAGED FOR THE DEPARTMENT OF ENERGY
UNDER CONTRACT DE-M-00067
OAK RIDGE TN 37830

PROJECT RECORD NUMBER	CONFIGURATION MANAGEMENT LEVEL
N/A	CM-3

PROJECT NAME:
OSWDF EARLY SITE PREPARATION

TITLE:
COVER SHEET

CAD FILENAME	BUILDING	SITE	CLASS
G2EOSWDFI453.DGN	OSWDF	ORR	U

SCALE	TYPE	DRAWING NUMBER	REV
NONE	IN	G2E-OSWDF-I453	0

MICROSTATION FILE
I:\UCOR\35DK4217 – Early Site Prep\2–ENG\C_Civil\Drawing\G2EOSWDFI453.dgn

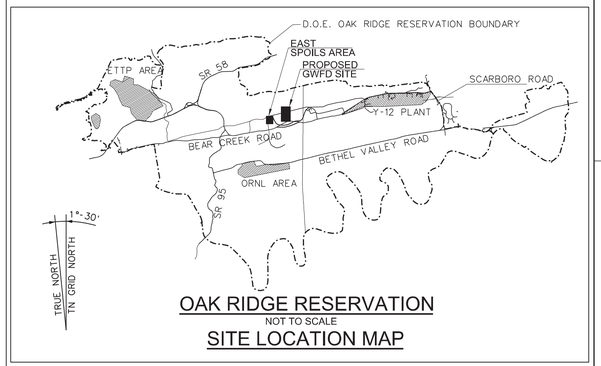
6/29/2023 8:30:25 AM

DRAWING INDEX

ON-SITE WASTE DISPOSAL FACILITY EAST SPOILS AREA		
DRAWING NO.	TITLE	REVISION
G2E-OSWDF-I453	COVER SHEET	0
G2E-OSWDF-I454	EAST SPOILS AREA GENERAL NOTES, LEGEND, AND ABBREVIATIONS	0
C2E-OSWDF-I455	EAST SPOILS AREA EXISTING CONDITIONS PLAN	0
C2E-OSWDF-I462	EAST SPOILS AREA INITIAL SITE DEVELOPMENT PLAN	0
C2E-OSWDF-I463	EAST SPOILS AREA SEDIMENT TRAP PLAN, SECTIONS AND DETAILS	0

GENERAL NOTES

1. HORIZONTAL DATUM: Y-12 PLANT COORDINATE SYSTEM, OAK RIDGE, TENNESSEE. VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM OF 1929.
2. SOURCE OF TOPOGRAPHY IS LIDAR-DERIVED IMAGERY FROM THE STATE OF TENNESSEE SUPPLEMENTED WITH LIMITED GROUND SURVEY DATA OF SOME FEATURES, SUCH AS EXISTING ROADWAY AND HISTORIC SITE SITE BOUNDARIES.
3. TOPSOIL STRIPPED FROM THE PROJECT SITE SHALL BE STOCKPILED AT LOCATIONS SPECIFIED BY SUBCONTRACT TECHNICAL REPRESENTATIVE (STR). EROSION AND SEDIMENT CONTROL SHALL BE PROVIDED FOR STOCKPILE AREAS STORMWATER MANAGEMENT REQUIREMENTS DOCUMENT .



OAK RIDGE RESERVATION
NOT TO SCALE
SITE LOCATION MAP

GENERAL NOTES FOR SEDIMENT AND EROSION CONTROLS

1. EROSION AND SEDIMENT CONTROL CONSTRUCTION SHALL BE IN ACCORDANCE WITH STORMWATER MANAGEMENT REQUIREMENTS DOCUMENT AND TECHNICAL SPECIFICATION NUMBER 31 25 00. REQUIREMENTS SHOWN FOR EROSION CONTROL ARE THE MINIMUM NECESSARY TO PERFORM THE WORK.
2. INSTALL CONSTRUCTION EXITS FROM ACCESS ROADS INTO PROJECT TO MINIMIZE TRANSPORT OF SEDIMENT/MUD OFF-SITE, AS SHOWN ON DETAIL 2, DRAWING C2E-OSWDF-I462.
3. SILT FENCE SHALL BE INSTALLED ALONG CONTOURS TO THE EXTENT PRACTICAL.
4. THE SUBCONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL TEMPORARY EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AND TO MEET TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION REQUIREMENTS.
5. DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES THROUGHOUT THE DURATION OF CONSTRUCTION.
6. INSPECT ALL EROSION AND SEDIMENT CONTROL MEASURES TWICE WEEKLY AND AFTER EVERY SIGNIFICANT RAILFALL EVENT PER STORMWATER MANAGEMENT REQUIREMENTS DOCUMENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.
7. ALL REQUIRED EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSTALLED PRIOR TO EARTH MOVING ACTIVITIES.
8. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF STORM WATER COLLECTED IN AREAS EXCAVATED BELOW GRADE.
9. THE SUBCONTRACTOR SHALL SEQUENCE WORK IN A MANNER THAT PREVENTS UNCONTROLLED RELEASES OF STORM WATER FROM THE SITE. INSTALL ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES AS REQUIRED TO CONTROL RUNOFF PRIOR TO EXCAVATION ACTIVITIES.
10. AS WORK PROCEEDS, DISTURBED AREAS SHALL BE COVERED WITH GRAVEL OR EROSION CONTROL BLANKET/MATTING OR BE STABILIZED WITH SEEDING, DEPENDENT ON THE GROWING SEASON, AND AS DIRECTED BY THE SUBCONTRACT TECHNICAL REPRESENTATIVE (STR).

TDEC BEST MANAGEMENT PRACTICES MANUAL (BMP) CHART

CODE	PRACTICE	DETAIL	DESCRIPTION
CD-1	CHECK DAM		A SMALL TEMPORARY BARRIER OR DAM CONSTRUCTED ACROSS A SWALE, DRAINAGE DITCH OR AREA OF CONCENTRATED FLOW, MADE FROM STONE OR ROCK.
CE	CONSTRUCTION EXIT		A CRUSHED STONE PAD LOCATED AT THE CONSTRUCTION SITE EXIT TO PROVIDE A PLACE FOR REMOVING MUD FROM TIRES THEREBY PROTECTING PUBLIC STREETS.
DB	DIVERSION BERM		AN EARTH CHANNEL OR BERM LOCATED ABOVE ACROSS A SLOPE TO DIVERT RUNOFF.
SF	SILT FENCE OR OTHER SEDIMENT BARRIER		A BARRIER TO PREVENT SEDIMENT FROM LEAVING THE CONSTRUCTION SITE. IT MAY BE SANDBAGS, BALES OR STRAW OR HAY, BRUSH, LOGS & POLES, GRAVEL, OR A SEDIMENT FENCE. THE BARRIERS ARE USUALLY TEMPORARY & INEXPENSIVE.
OP	STORM DRAIN INLET/OUTLET PROTECTION		A PAVED OR SHORT SECTION OF RIPRAP CHANNEL AT THE OUTLET OF A STORM DRAIN SYSTEM PREVENTING EROSION FROM THE CONCENTRATED RUNOFF.
TS PS	DISTURBED AREA STABILIZATION (WITH PERMANENT VEGETATION)		ESTABLISHING TEMPORARY & PERMANENT VEGETATIVE COVER SUCH AS TREES, SHRUBS, VINES, GRASSES, SOD, OR LEGUMES ON DISTURBED AREAS.
SR	SURFACE ROUGHENING		A ROUGH SOIL SURFACE WITH HORIZONTAL DEPRESSIONS ON A CONTOUR OR SLOPES LEFT IN A ROUGHENED CONDITION AFTER GRADING.
RR	PERMANENT STABILIZATION W/ RIPRAP		A PERMANENT, EROSION-RESISTANT GROUND COVER OF LARGE, LOOSE, ANGULAR STONE WITH A GEOTEXTILE OR GRANULAR UNDERLINING.
MA	EROSION CONTROL BLANKET/MATTING		A PROTECTIVE BLANKET OR SOIL STABILIZATION MAT USED TO ASSIST IN ESTABLISHMENT OF TEMPORARY OR PERMANENT VEGETATION ON STEEP SLOPES, CHANNELS, OR STREAM BANKS.
FR	FILTER RING		SEDIMENT CONTROL AND STORM WATER RUNOFF FILTER MADE FROM RIPRAP, GEOTEXTILE, AND STONE.
IP-SF	SILT FENCE INLET PROTECTION		A TEMPORARY PROTECTIVE DEVICE FORMED AROUND A STORM DRAIN INLET TO PREVENT SEDIMENT FROM ENTERING STORM DRAINAGE SYSTEMS, PRIOR TO TEMPORARY OR PERMANENT STABILIZATION OF THE DISTURBED AREA.
SB	SEDIMENT BASIN		RETAINS RUNOFF WATER TEMPORARILY TO ALLOW SEDIMENT TO SETTLE PRIOR TO A CONTROLLED RELEASE DOWNSTREAM.
ST	SEDIMENT TRAP		A TEMPORARY SEDIMENT STORAGE AREA WITH A PERMANENT POOL, FORMED BY EMBANKMENTS OR EXCAVATION.
PB	POROUS BAFFLES		POROUS BAFFLES WITHIN TEMPORARY SEDIMENT TRAPS AND SEDIMENT BASINS TO REDUCE VELOCITY AND TURBULENCE OF STORM WATER AND FACILITATE SETTLING OF SEDIMENT.
FS	FILTER SOCK		A SMALL TEMPORARY SEDIMENT BARRIER CONSTRUCTED TO INTERCEPT SHEET FLOW.

ABBREVIATIONS

ABDN	ABANDON, ABANDONED
AC	ASPHALTIC CONCRETE OR ACRE
ACI	AMERICAN CONCRETE INSTITUTE
ADJ	ADJACENT
BMP	BEST MANAGEMENT PRACTICE
CB	CATCH BASIN
CL	CENTERLINE
CLR	CLEAR, CLEARANCE
CMP	CORRUGATED METAL PIPE
CONC	CONCRETE, CONCENTRIC
CONN	CONNECTION
CONT	CONTINUED, CONTINUOUS, CONTINUATION
CSA	CONSTRUCTION SUPPORT AREA
CTR	CENTER
CU FT	CUBIC FOOT
CY, CU YD	CUBIC YARD
Dc	DEGREE OF CURVATURE
DET	DETAIL
DIA	DIAMETER
DWG	DRAWING
△	DELTA
E	EASTING
EA	EACH
EL	ELEVATION
EOP	EDGE OF PAVEMENT
EW	EACH WAY
EXIST	EXISTING
FB	FLAT BOTTOM
FL	FLOW LINE
FT	FOOT OR FEET
G, GND	GROUND
GVL	GRAVEL
GWFD	GROUND WATER FIELD DEMONSTRATION
HDPE	HIGH DENSITY POLYETHYLENE
HORIZ	HORIZONTAL
HP	HIGH POINT
HWL	HIGH WATER LEVEL
IN	INCH
INV	INVERT ELEVATION
L	LENGTH OR LONG
LBS	POUNDS
LF	LINEAR FEET
LP	LOW POINT
LT	LEFT
MAX	MAXIMUM
MIN	MINIMUM
MISC	MISCELLANEOUS
N	NORTHING
NA	NOT APPLICABLE
NGVD	NATIONAL GEODETIC VERTICAL DATUM
NO. #	NUMBER
NT	NORTH TRIBUTARY
NTS	NOT TO SCALE
OC	ON CENTERS
OD	OUTSIDE DIAMETER
OSWDF	ON-SITE WASTE DISPOSAL FACILITY
OZ	OUNCE
PB	POROUS BAFFLE
PC	POINT OF CURVATURE
PI	POINT OF INTERSECTION
PP	POWER POLE
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE OR POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
PVT	POINT OF VERTICAL TANGENCY
R, RAD	RADIUS
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
REINF	REINFORCED
RT	RIGHT
S	SOUTH
SB	SEDIMENT BASIN
SCHED	SCHEDULE
SD	SIGHT DISTANCE, STORM DRAIN
SECT	SECTION
SF	SILT FENCE
SPEC, SPECS	SPECIFICATIONS
SQ	SQUARE
SQ FT	SQUARE FOOT, FEET
SQ IN	SQUARE INCH
SY	SQUARE YARD
ST	SEDIMENT TRAP
STA	STATION
STR	SUBCONTRACT TECHNICAL REPRESENTATIVE
T, TAN	TANGENT
TDEC	TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
TDOT	TENNESSEE DEPARTMENT OF TRANSPORTATION
TECH	TECHNICAL
TEMP	TEMPORARY
THK	THICKNESS
TYP	TYPICAL
UPF	URANIUM PROCESSING FACILITY
VC	VERTICAL CURVE
VERT	VERTICAL
W	WEST OR WIDE
W/	WITH
WS	WATER SURFACE

SECTION / DETAIL DESIGNATIONS

SECTION (LETTER) OR DETAIL (NUMERAL) DESIGNATION

A
F XXX

DRAWING NUMBER (REPLACED WITH A LINE IF TAKEN AND SHOWN ON SAME SHEET)

ON DRAWING WHERE SECTION OR DETAIL IS TAKEN:

1
F XXX

DRAWING NUMBER WHERE SHOWN

B
F XXX

SECTION
SCALE:

ON DRAWING WHERE SECTION IS SHOWN:

DRAWING NUMBER(S) WHERE TAKEN

2
F XXX

DETAIL
SCALE:

ON DRAWING WHERE DETAIL IS SHOWN:

DRAWING NUMBER(S) WHERE TAKEN

DRAWING TITLE
SCALE:

ON DRAWING WHERE ONLY A TITLE IS REQUIRED WITH NO REFERENCE (eg: ELEVATIONS)

B

B
–

SECTION CALLOUT WHERE SECTION IS ON THE SAME SHEET AND CUT EXTENDS TO A FIXED LIMIT

EXISTING LEGEND

1025	MAJOR CONTOUR
	MINOR CONTOUR
	TREE LINE
	ROAD
	WETLAND
	CULVERT
	DITCH/STREAM

PROPOSED LEGEND

1000	MAJOR CONTOUR
	MINOR CONTOUR
	SITE BOUNDARY
	ROAD
	STORM CULVERT
	SILT FENCE
	RIPRAP
	CENTERLINE
N #####.## E #####.## EL ###.##	COORDINATE POINT W/ ELEVATION
	CHECK DAM
	POROUS BAFFLE
	GRADE BREAK LINE
	CLEARING LIMITS
B-XX	DELINEATION MARKERS FOR FUTURE DEVELOPED LIMITS

FRANKLIN M. PARTON REGISTERED ENGINEER No. 19208 STATE OF TENNESSEE 6/29/23

DRW BY	JIMMY ASHWORTH	Jimmy Ashworth	Digitally signed by Jimmy Ashworth Date: 2023.06.29 08:37:57 -04'00'
ORG	FRANKLIN PARTON, PE	Frank Parton	Digitally signed by Frank Parton DN: cn=Frank Parton, o=UCOR, ou=Engineering, email=fmparton@ucor.com Date: 2023.06.29 14:52:21 -04'00'
ENGR CHK	DAVID MATLOCK, PE	David Matlock	Digitally signed by David Matlock DN: cn=David Matlock, o=UCOR, ou=Jacobs, ou=Oak Ridge, email=david.matlock@jacobs.com Date: 2023.06.29 14:54:02 -04'00'
PROJ ENGR	GREG PICKEREL, PE	Greg Pickerel	Digitally signed by Greg Pickerel Date: 2023.06.30 22:37:56 -04'00'

ELECTRONIC SIGNATURES

REV	DATE	DESCRIPTION	DRW BY	ORG/ ENGR	ENGR CHK	PROJ ENGR
0	6/29/23	ISSUED FOR CONSTRUCTION	JA	FP	DM	GP

DRAWING REVISIONS

UCOR an AECOM led partnership with Jacobs

OAK RIDGE RESERVATION
MANAGED FOR THE DEPARTMENT OF ENERGY
UNDER CONTRACT DE-EM-00067
OAK RIDGE TN 37830

PROJECT RECORD NUMBER	CONFIGURATION MANAGEMENT LEVEL
N/A	CM-3

PROJECT NAME:
OSWDF EARLY SITE PREPARATION

TITLE:
EAST SPOILS AREA
GENERAL NOTES, LEGEND,
AND ABBREVIATIONS

CAD FILENAME	BUILDING	SITE	CLASS
G2EOSWDFI454.DGN	OSWDF	ORR	U

SCALE	TYPE	DRAWING NUMBER	REV
NONE	IN	G2E-OSWDF-I454	0

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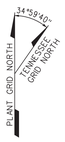
MICROSTATION_FILE

6/29/2023 8:31:01 AM

B-148

NOTES

1. SEE DRAWING G2E-OSWDF-I454 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
2. COORDINATES & GRID DENOTE Y-12 PLANT GRID COORDINATE SYSTEM.
3. EXISTING CONTOURS SHOWN ON THIS DRAWING WERE EXTRACTED FROM LIDAR DATA OBTAINED ONLINE FROM TN GIS. OTHER DATA WAS PROVIDED BY UCOR, AND OTHER SOURCES.



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SCALE: 1"= 200'

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ENGR CHK	DAVID MATLOCK, PE	David Matlock	Digitally signed by David Matlock DN: cn=David Matlock, o=US, ou=Jacobs, ou=Oak Ridge, email=dmatlock@jacobs.com Date: 2023.06.29 14:31:06 -04'00'										
PROJ ENGR	GREG PICKEREL, PE	Greg Pickerel	Digitally signed by Greg Pickerel Date: 2023.06.30 22:31:15 -04'00'										
				0	6/29/23	ISSUED FOR CONSTRUCTION	JA	FP	DM				GP
ELECTRONIC SIGNATURES				REV	DATE	DESCRIPTION	DRW BY	ORG / ENGR	ENGR CHK				PROJ ENGR
DRAWING REVISIONS													

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OAK RIDGE RESERVATION
MANAGED FOR THE DEPARTMENT OF ENERGY
UNDER CONTRACT DE-SC-0004645
OAK RIDGE TN 37830

PROJECT RECORD NUMBER	CONFIGURATION MANAGEMENT LEVEL
N/A	CM-3

PROJECT NAME:
OSWDF EARLY SITE PREPARATION

TITLE:
EAST SPOILS AREA
EXISTING CONDITIONS PLAN

CAD FILENAME	BUILDING	SITE	CLASS
C2EOSWDFI455.DGN	OSWDF	ORR	U

SCALE	TYPE	DRAWING NUMBER	REV
1" = 200'	IN	C2E-OSWDF-I455	0

FRANKLIN M. PARTON
REGISTERED ENGINEER
No. 19208
STATE OF TENNESSEE
6/29/23

MICROSTATION FILE
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6/29/2023 8:23:12 AM

B-149

NOTES

1. SEE DRAWING G2E-OSWDF-I454 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
2. COORDINATES & GRID DENOTE Y-12 PLANT GRID COORDINATE SYSTEM.
3. EXISTING CONTOURS SHOWN ON THIS DRAWING WERE EXTRACTED FROM LIDAR DATA OBTAINED ONLINE FROM TN GIS. OTHER DATA WAS PROVIDED BY UCOR AND OTHER SOURCES.
4. BOUNDARY OF SENSITIVE RESOURCE AREA SHOWN IS APPROXIMATE. CONSTRUCTION ACTIVITIES SHALL REMAIN A MINIMUM OF 30' AWAY FROM PROTECTED AREA.

ESTIMATED QUANTITIES

CUT: 6,939.9 CU YD
FILL: 322.3 CU YD
NET: 6,617.6 CU YD

RIPRAP CLASS A-1, 18" THICK - 416 CY

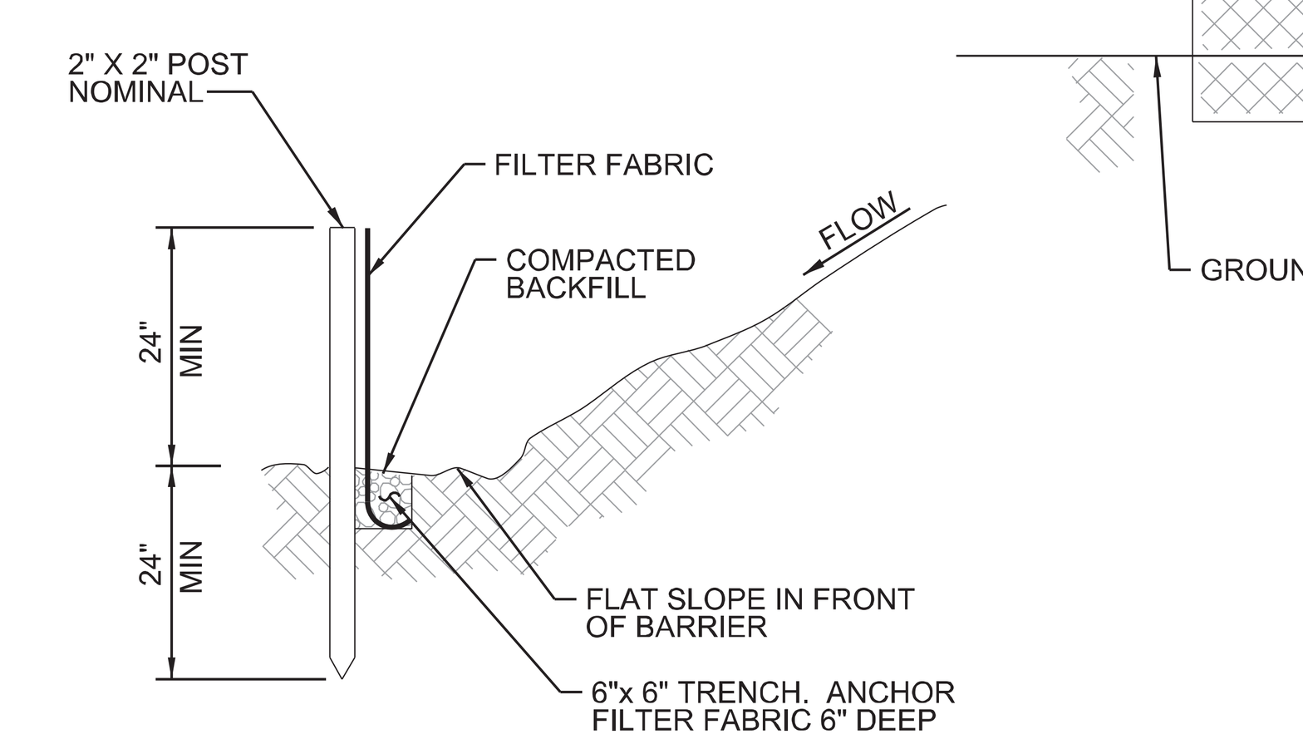
NON-WOVEN GEOTEXTILE, 8 OZ PER SY - 11,203 SF

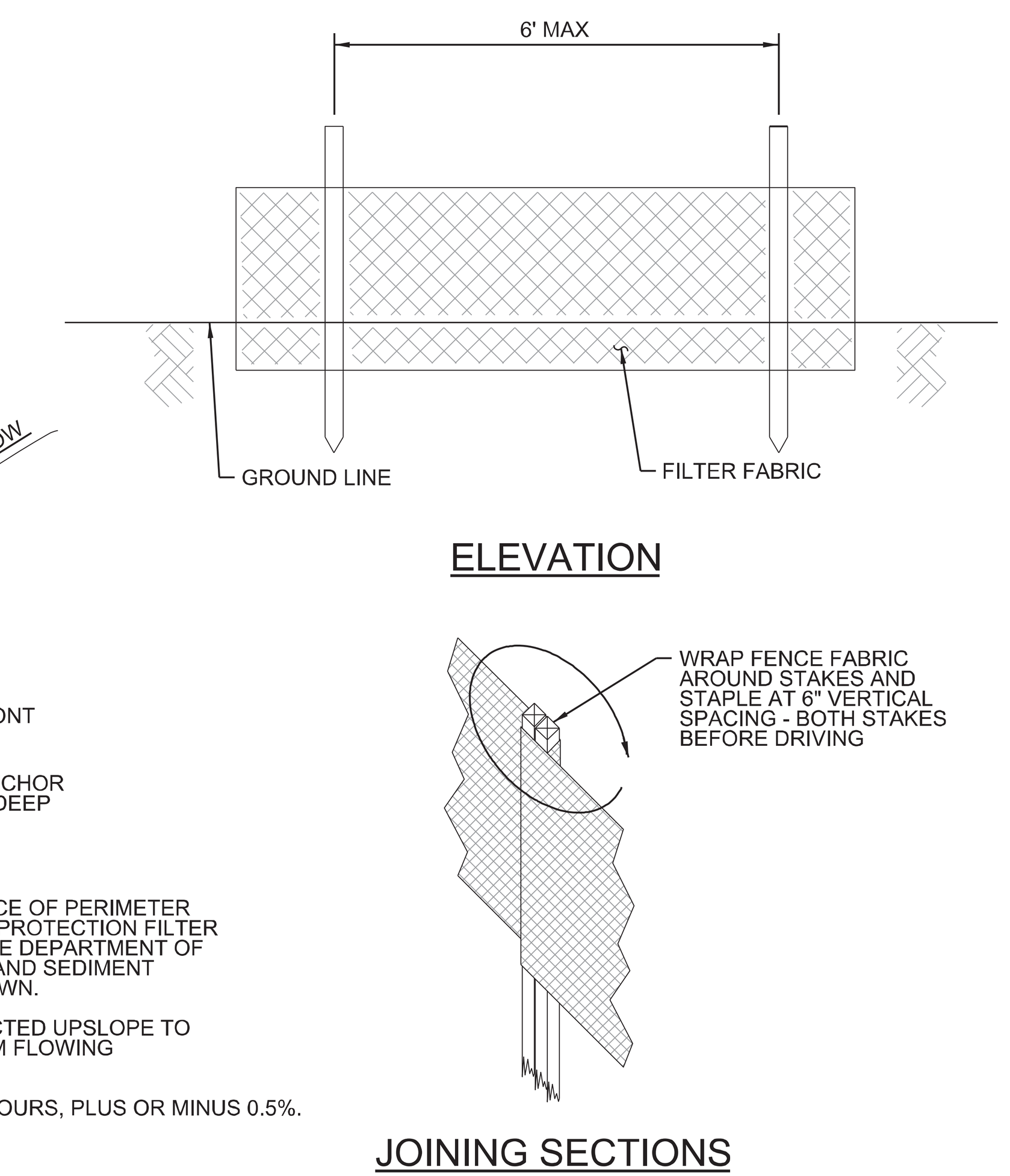
SILT FENCE - 320 LF

POROUS BAFFLE - 58 LF + 58 LF

AGGREGATE #3 CONSTRUCTION EXIT, 12" THICK - 96 CY

CLEARING AND GRUBBING, 12" DEEP - 5 AC

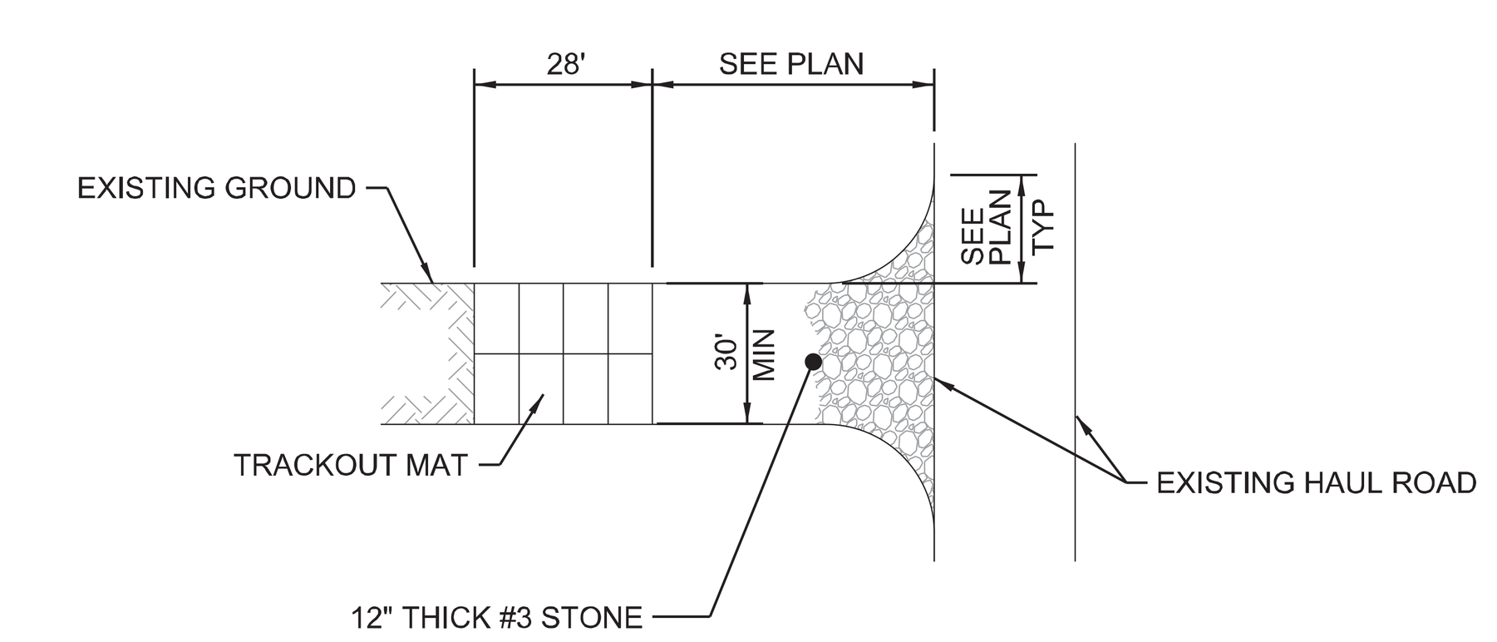




NOTES:

1. PLACEMENT, CONSTRUCTION AND MAINTENANCE OF PERIMETER FILTER FABRIC FENCE AND TEMPORARY INLET PROTECTION FILTER FABRIC FENCE SHALL CONFORM TO TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION EROSION AND SEDIMENT CONTROL HANDBOOK. TYPE A SILT FENCE SHOWN.
2. THE ENDS OF SILT FENCE SHALL BE CONSTRUCTED UPSLOPE TO PREVENT WATER PONDED BY THE FENCE FROM FLOWING AROUND THE ENDS.
3. SILT FENCE SHALL BE INSTALLED ALONG CONTOURS, PLUS OR MINUS 0.5%.

1 SILT FENCE (SF)
NOT TO SCALE



2 CONSTRUCTION EXIT (CE)
NOT TO SCALE

SCALE: 1"= 40'

DRW BY	JIMMY ASHWORTH	Jimmy Ashworth	Digitally signed by Jimmy Ashworth Date: 2023.06.29 08:36:37 -04'00'
ORG	FRANKLIN PARTON, PE	Frank Parton	Digitally signed by Frank Parton DN: cn=Frank Parton, c=US, email=franklin.parton@jacobs.com Date: 2023.06.29 14:01:13 -04'00'
ENGR CHK	DAVID MATLOCK, PE	David Matlock	Digitally signed by David Matlock DN: cn=David Matlock, c=US, o=Jacobs, ou=Oak Ridge, email=david.matlock@jacobs.com Date: 2023.06.29 14:31:59 -04'00'
PROJ ENGR	GREG PICKEREL, PE	Greg Pickerel	Digitally signed by Greg Pickerel Date: 2023.06.30 22:33:20 -04'00'

ELECTRONIC SIGNATURES

DRAWING REVISIONS

REV	DATE	DESCRIPTION	DRW BY	ORG/ ENGR	ENGR CHK	PROJ ENGR
0	6/29/23	ISSUED FOR CONSTRUCTION	JA	FP	DM	GP

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OAK RIDGE RESERVATION
MANAGED FOR THE DEPARTMENT OF ENERGY
UNDER CONTRACT DE-M-00067
OAK RIDGE TN 37830

PROJECT RECORD NUMBER	CONFIGURATION MANAGEMENT LEVEL
N/A	CM-3

PROJECT NAME:
OSWDF EARLY SITE PREPARATION

TITLE:
EAST SPOILS AREA
INITIAL SITE DEVELOPMENT PLAN

CAD FILENAME	BUILDING	SITE	CLASS
C2EOSWDFI462.DGN	OSWDF	ORR	U

SCALE	TYPE	DRAWING NUMBER	REV
1" = 40'	IN	C2E-OSWDF-I462	0

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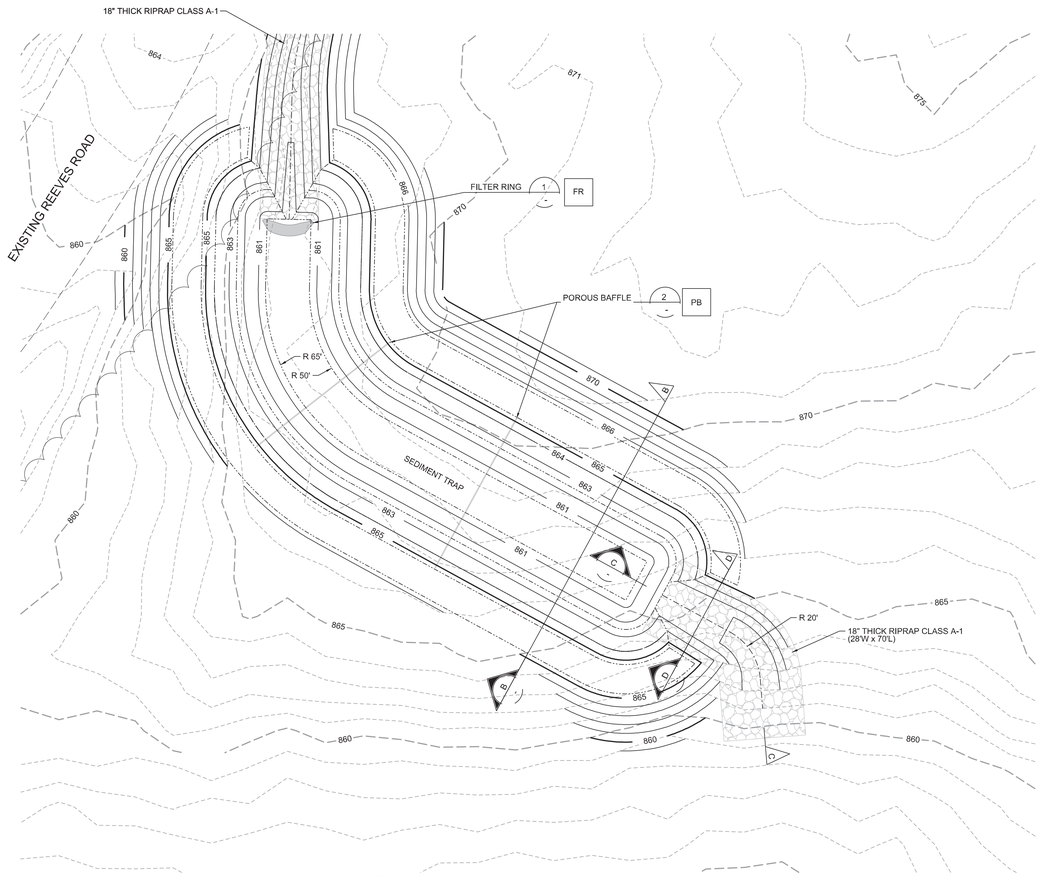
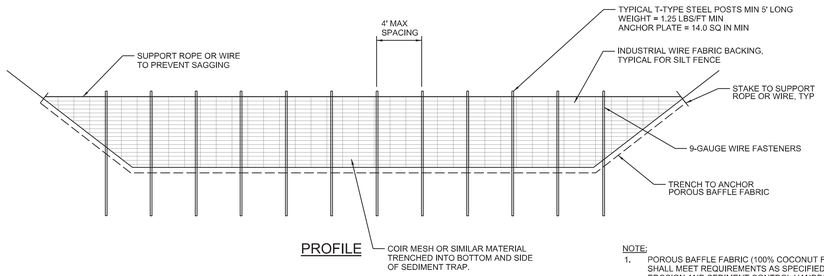


SEDIMENT TRAP PLAN

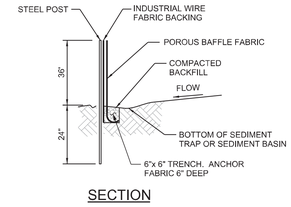
SCALE: 1"=20'

NOTES

1. SEE DRAWING G2E-OSWDF-I454 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
2. COORDINATES & GRID DENOTE Y-12 PLANT GRID COORDINATE SYSTEM.
3. EXISTING CONTOURS SHOWN ON THIS DRAWING WERE EXTRACTED FROM LIDAR DATA OBTAINED ONLINE FROM TN GIS. OTHER DATA WAS PROVIDED BY UCOR AND OTHER SOURCES.
4. BOUNDARY OF SENSITIVE RESOURCE AREA SHOWN IS APPROXIMATE. CONSTRUCTION ACTIVITIES SHALL REMAIN A MINIMUM OF 30' AWAY FROM SENSITIVE RESOURCE AREA.
5. CHECK FILTER STONE AND RIPRAP SPILLWAY TO ENSURE THAT FILTRATION PERFORMANCE IS MAINTAINED. REMOVE AND REPLACE FILTER RING STONE THAT IS CAKED WITH SEDIMENT.



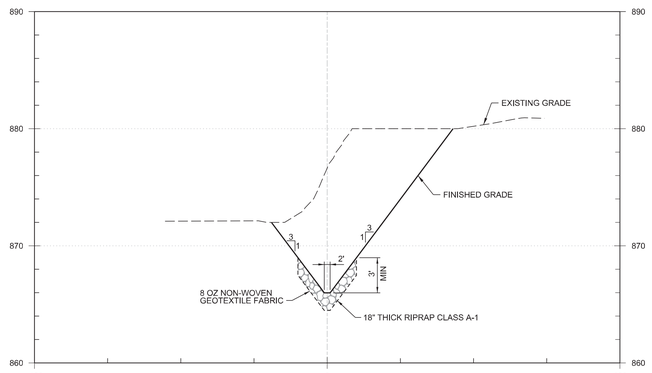
PROFILE



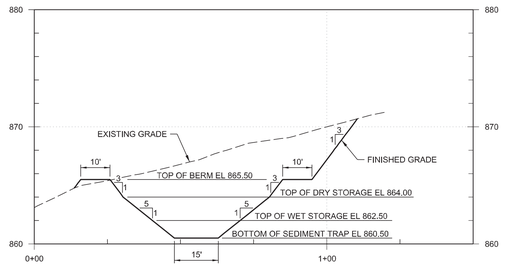
SECTION

NOTE:
1. POROUS BAFFLE FABRIC (100% COCONUT FIBER-COIR) SHALL MEET REQUIREMENTS AS SPECIFIED IN TDEC EROSION AND SEDIMENT CONTROL HANDBOOK.

2 POROUS BAFFLE PB
NOT TO SCALE



A SECTION
I462
SCALE:1" = 20' HORIZ
1" = 5' VERT



B SECTION
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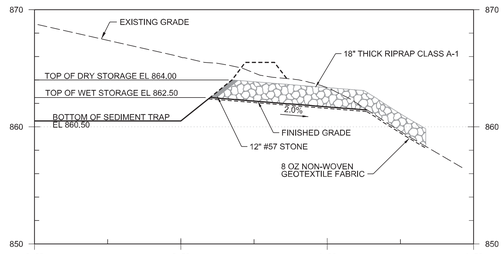
1" = 5' VERT



C SECTION
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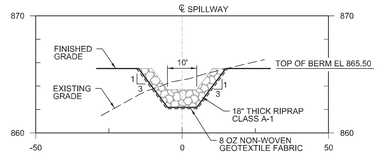
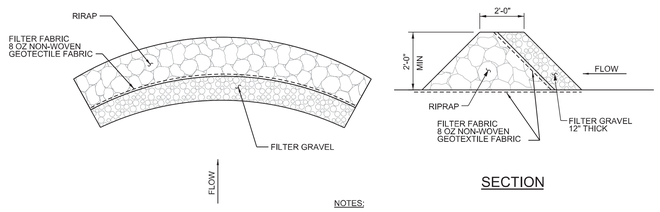
1" = 5' VERT



D SECTION
-
SCALE:1" = 20' HORIZ
1" = 5' VERT



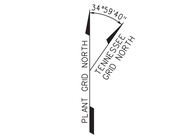
PLAN

SECTION

NOTES:

1. RIPRAP SHALL BE TDOT 709 CLASS A-1 PER TDOT STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION.
2. FILTER GRAVEL SHALL BE TDOT 903.22 CLEAN 57 STONE PER TDOT STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION.
3. EXTEND GEOTEXTILE BENEATH RIPRAP AND BENEATH FILTER GRAVEL. INSTALL SECOND GEOTEXTILE BETWEEN RIPRAP AND FILTER GRAVEL.

1 FILTER RING FR
NOT TO SCALE



5 0 5 10FT
SCALE: 1"= 5'

20 0 20 40FT
SCALE: 1"= 20'

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ORG	FRANKLIN PARTON, PE	Frank Parton	Digitally signed by Frank Parton DN: cn=Frank Parton, c=US, email=franklin.parton@jacobs.com Date: 2023.06.29 14:01:05 -04'00'	△											
ENGR CHK	DAVID MATLOCK, PE	David Matlock	Digitally signed by David Matlock DN: cn=David Matlock, o=US, ou=Jacobs, email=david.matlock@jacobs.com Date: 2023.06.29 14:32:05 -04'00'	△											
PROJ ENGR	GREG PICKEREL, PE	Greg Pickerel	Digitally signed by Greg Pickerel Date: 2023.06.30 22:34:56 -04'00'	△											
				△											
				△											
				△											
				△											
				0	6/29/23	ISSUED FOR CONSTRUCTION	JA	FP	DM						GP
ELECTRONIC SIGNATURES				REV	DATE	DESCRIPTION	DRW BY	ORG/ ENGR	ENGR CHK						PROJ ENGR
DRAWING REVISIONS															

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OAK RIDGE RESERVATION
MANAGED FOR THE DEPARTMENT OF ENERGY
UNDER CONTRACT DE-M-00067
OAK RIDGE TN 37830

PROJECT RECORD NUMBER	CONFIGURATION MANAGEMENT LEVEL
N/A	CM-3

PROJECT NAME:
OSWDF EARLY SITE PREPARATION

TITLE:
EAST SPOILS AREA
SEDIMENT TRAP PLAN, SECTIONS AND DETAILS

CAD FILENAME	BUILDING	SITE	CLASS
C2EOSWDF1463.DGN	OSWDF	ORR	U
SCALE: AS SHOWN	TYPE: IN	DRAWING NUMBER: C2E-OSWDF-1463	REV: 0

MICROSTATION FILE
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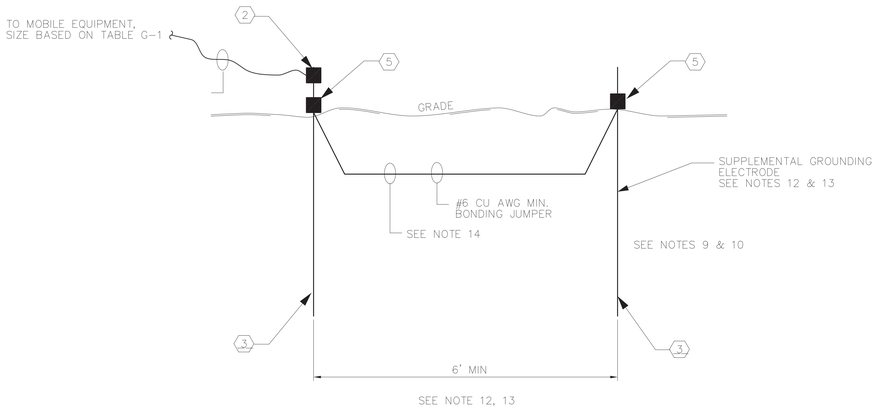
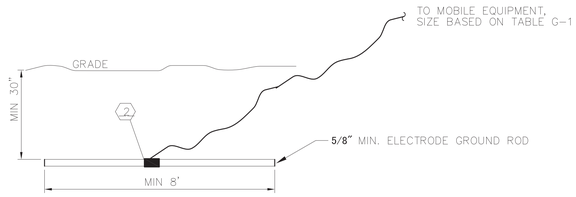
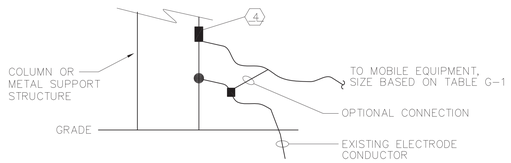
6/29/2023 8:18:09 AM

B-5-1

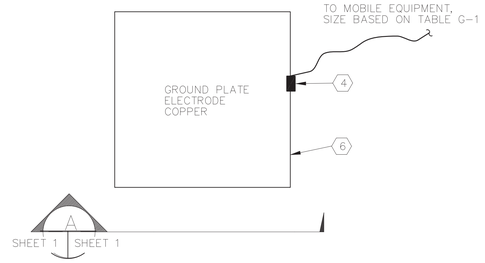


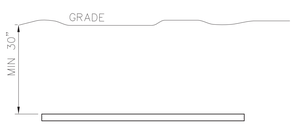
1 ROD & PIPE ELECTRODE SYSTEM (NEC 250.52(A)(5))
SHEET 1 | SHEET 1 SCALE: NONE



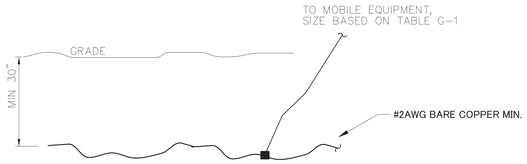


2 BUILDING ELECTRODE SYSTEM (SEE NEC 250.68 & NOTE #11)
SHEET 1 | SHEET 1 SCALE: NONE



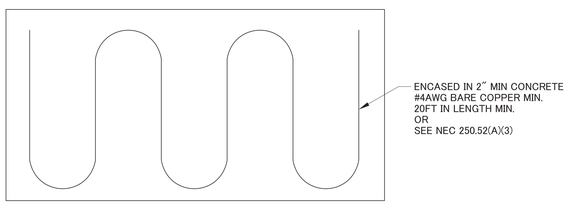


A PLATE_SECTION
SHEET 1 | SHEET 1 SCALE: NONE



3 GROUND RING ELECTRODE (NEC 250.52(A)(4))
SHEET 1 | SHEET 1 SCALE: NONE

5 PLATE ELECTRODE (NEC 250.52(A)(7))
SHEET 1 | SHEET 1 SCALE: NONE



4 CONCRETE ENCASED ELECTRODE (NEC 250.52(A)(3))
SHEET 1 | SHEET 1 SCALE: NONE

NOTES:

1. THESE GROUNDING STANDARDS ARE FOR USE FOR INSTALLATION OF TYPICAL MOBILE EQUIPMENT USED AT UCOR PROJECTS. FOR OTHER MOBILE EQUIPMENT NOT COVERED BY THIS STANDARD, AN APPROVED EI OR DCN IS REQUIRED UNLESS (A) THE EQUIPMENT IS POWERED AND GROUNDED THROUGH A STANDARD CORD–AND–PLUG CONNECTION, OR (B) THE MANUFACTURER'S INSTRUCTIONS DO NOT REQUIRE ADDITIONAL GROUNDING, OR (C) THE DEVICE DOES NOT CONSTITUTE A SEPARATELY DERIVED SYSTEM PER NEC.
2. UNLESS SPECIFIED OTHERWISE BY THE GENERATOR MANUFACTURERS' INSTRUCTIONS, THE FRAME OF A VEHICLE OR TRAILER–MOUNTED GENERATOR SHALL NOT BE REQUIRED TO BE CONNECTED TO A GROUNDING ELECTRODE AS DEFINED IN NEC 250.52 FOR A SYSTEM SUPPLIED BY A GENERATOR LOCATED ON THIS VEHICLE OR TRAILER UNDER ALL OF THE FOLLOWING CONDITIONS:
   A. THE FRAME OF THE GENERATOR IS BONDED TO THE VEHICLE OR TRAILER FRAME.
   B. THE GENERATOR SUPPLIES ONLY EQUIPMENT LOCATED ON THE VEHICLE OR TRAILER; CORD–AND–PLUG–CONNECTED EQUIPMENT THROUGH RECEPTACLES MOUNTED ON THE VEHICLE; OR BOTH EQUIPMENT LOCATED ON THE VEHICLE OR TRAILER AND CORD–AND–PLUG–CONNECTED EQUIPMENT THROUGH RECEPTACLES MOUNTED ON THE VEHICLE, TRAILER, OR ON THE GENERATOR.
   C. THE NORMALLY NON–CURRENT–CARRYING METAL PARTS OF EQUIPMENT AND THE EQUIPMENT GROUNDING CONDUCTOR TERMINALS OF THE RECEPTACLES ARE CONNECTED TO THE GENERATOR FRAME.
3. THERE IS NO LIMIT TO THE NUMBER OF MOBILE EQUIPMENT CONNECTED TO A COMMON GROUNDING ELECTRODE SYSTEM AS SHOWN ON DETAIL 6.
4. IF MOBILE EQUIPMENT INCLUDES A VENDOR–PROVIDED GROUNDING ELECTRODE, THAT ELECTRODE OR A GROUNDING ELECTRODE SYSTEM MAY BE USED.
5. ATTACH THE GROUNDING ELECTRODE CONDUCTOR TO VENDOR–FURNISHED EQUIPMENT GROUND CONNECTION LUG WHEN PROVIDED.
6. WHEN A MOBILE GENERATOR IS USED FOR SERVICE EQUIPMENT (SEPARATELY DERIVED SYSTEM), TERMINATE THE GROUNDING ELECTRODE CONDUCTORS (GEC) AT THE SAME POINT THE MAIN BONDING JUMPER IS CONNECTED TO THE GROUNDED CONDUCTOR (NEUTRAL).
7. WHEN CONNECTING POWER CABLE TO GENERATOR OUTPUT TERMINAL LUGS, ALWAYS CONNECT THE EQUIPMENT GROUNDING CONDUCTOR IN POWER FEEDER TO MANUFACTURER'S GROUND CONNECTION LUG LOCATED NEXT TO GENERATOR PHASE TERMINAL/LUGS.
8. WHEN GROUND CONNECTION LUG IS NOT AVAILABLE FOR GROUNDING ELECTRODE CONDUCTOR OR NOT COMPATIBLE FOR TWO CONDUCTORS (EQUIPMENT GROUNDING CONDUCTOR AND GROUNDING ELECTRODE CONDUCTOR) THEN MOUNT LUG ON VEHICLE (TRAILER) FRAME AS CLOSE AS PRACTICAL TO SYSTEM BONDING JUMPER. DRILL HOLE(S), REMOVE PAINT, USE NON–OX–ID CONDUCTIVE GREASE, MOUNT GROUND LUG WITH STAINLESS STEEL BOLTS, NUTS AND LOCK WASHERS WITH FLAT WASHERS OR WITH BELLEVILLE WASHERS. THIS FRAME MOUNTED GROUND LUG CONNECTION SHALL BE USED FOR GROUNDING ELECTRODE CONDUCTOR.
9. DRIVE GROUND(S) IN LOCATIONS TO AVOID TRIPPING AND IMPALEMENT HAZARDS.
10. GROUNDING ELECTRODE CONDUCTOR SHALL BE BARE COPPER OR INSULATED. IF INSULATED, COLOR SHALL BE GREEN OR RE–IDENTIFIED GREEN PER NEC.
11. PIPE BRIDGES & PIPE RACKS WITH AN EXISTING GROUNDING ELECTRODE CONDUCTOR ARE CONSIDERED TO BE BUILDING/STRUCTURAL STEEL. ACCEPTABLE RESISTANCE TESTING VALUE IS 25 OHMS OR LESS WHEN USING EXISTING BUILDING/STRUCTURAL STEEL. DOCUMENT RESISTANCE READING AND METER INFORMATION ON FORM 2957 OR OTHER WORK CONTROL DOCUMENT
12. INSTALLATION OF AN ADDITIONAL GROUNDING ELECTRODE SHALL BE REQUIRED UNLESS RESISTANCE TO EARTH OF ORIGINAL SINGLE GROUNDING ELECTRODE IS 25 OHMS OR LESS. TESTING FOR SECOND GROUND ROD NOT REQUIRED PER NEC 250.53(2) EXCEPTION. DOCUMENT RESISTANCE READING AND METER INFORMATION ON FORM 2957 OR OTHER WORK CONTROL DOCUMENT.
13. ADDITIONAL GROUNDING ELECTRODES SHALL NOT BE LESS THAN 6 FEET FROM ANY OTHER ELECTRODE.
14. PROTECT BONDING JUMPER BETWEEN GROUNDING ELECTRODES, WHERE SUBJECT TO DAMAGE.
15. VERIFY CONTINUITY BETWEEN EQUIPMENT FRAME AND SYSTEM BONDING JUMPER, EQUIPMENT GROUNDING CONDUCTOR (EGC) AND FRAME, EQUIPMENT GROUND OUTPUT TERMINAL AND GROUNDING ELECTRODE, EQUIPMENT FRAME AND GROUNDING ELECTRODE. THE ACCEPTANCE VALUE IS LESS THAN 1 OHM. RECORD THE RESISTANCE READING AND METER INFORMATION ON FORM–2957.
16. SELECT GROUNDING ELECTRODE CONDUCTOR BASED ON TABLE BELOW UNLESS THE MANUFACTURER'S INSTALLATION INSTRUCTIONS SPECIFY A DIFFERENT CONFIGURATION. TERMINALS AND CONNECTION DEVICES SHOWN ARE FOR TYPICAL INSTALLATIONS. ENSURE CONNECTION DEVICES ARE LISTED FOR CONDUCTOR SIZES.
17. COMPLETED INSTALLATIONS MUST BE INSPECTED AND APPROVED BY THE UCOR ELECTRICAL AHJ PRIOR TO ENERGIZATION.
18. PER NEC 250.52(A)(6), OTHER LISTED GROUNDING ELECTRODES ARE PERMITTED TO BE USED.

MATERIAL LIST:

1. GROUND LUG MECHANICAL
   UL LISTED, BURNDY, TWO HOLE, 6STR–350, CAT. NO. KKA31U–2N OR EQUAL LISTED ASSEMBLY.
2. GROUND CLAMP (CABLE TO ROD)
   UL LISTED, BURNDY, 4 SOL.–2/0 STR., CAT. NO. GAR6426 OR EQUAL.
   BURNDY, 8 SOL.– 4 STR., CAT. NO. GAR644C OR EQUAL LISTED ASSEMBLY.
3. GROUND ROD (MIN. OF 8' IN GROUND) NEC
   UL LISTED, COPPER CLAD,⅝" MINIMUM DIAMETER, 8' LONG MINIMUM
4. GROUND CLAMP (CABLE TO COLUMN)
   UL LISTED, COMPRESSION, SIZE FOR COLUMN, BURNDY TYPE YGIB OR EQUAL, WITH UL LISTED TERMINAL SIZED FOR CONDUCTOR, BURNDY TYPE YGHA OR EQUAL LISTED ASSEMBLY.
   ALTERNATE CONNECTION TO COLUMN:
   DRILL COLUMN AND USE UL LISTED SERVIT POST FOR COPPER CABLE TO FLAT, BURNDY TYPE KC, BURNDY TYPE YC SERIES, LISTED "C" TAP OR EQUAL LISTED ASSEMBLY.
5. GROUND ROD CLAMP (CABLE TO ROD)
   UL LISTED, HIGH STRENGTH, COPPER CABLE TO ROD
   BURNDY CAT. NO. GRC58 OR EQUAL LISTED ASSEMBLY.
6. GROUND PLATE ELECTRODE
   MINIMUM 14 GAUGE COPPER, MINIMUM 2 SQUARE FEET,
   DRILL PLATE AND USE UL LISTED FOR DIRECT BURIAL SERVIT POST FOR COPPER CABLE TO FLAT, BURNDY TYPE KC OR EQUAL LISTED ASSEMBLY.

GROUNDING ELECTRODE CONDUCTOR TABLE G–1

FEEDER SIZE (BASED ON COPPER)	GROUNDING ELECTRODE CONDUCTOR SIZE MIN PER NEC 250.66
#2 OR SMALLER	#8
#1 OR 1/0	#6
2/0 OR 3/0	#4
OVER 3/0 THROUGH 350	#2
OVER 350 THROUGH 600	1/0
OVER 600 THROUGH 1100	2/0
OVER 1100	3/0

ELECTRONIC SIGNATURES	REV	DATE	DESCRIPTION	DRW BY	DRG ENGR	ENGR CHK	ENV			PROJ ENGR
Digitally signed by Tommy Morgan Date: 2023.04.10 08:19:52 -04'00'	7									
CHRISTIAN STROM (Affiliate) Digitally signed by CHRISTIAN STROM (Affiliate) Date: 2023.04.10 08:13:07 -04'00'	6									
Chris Grundt Digitally signed by Chris Grundt Date: 2023.04.06 15:02:30 -04'00'	5									
CAMERON PETREE (Affiliate) Digitally signed by CAMERON PETREE (Affiliate) Date: 2023.04.06 14:57:57 -04'00'	4	4/6/23	COMPLETE REDESIGN	CP	CP	CG	CS			TM
CAMERON PETREE (Affiliate) Digitally signed by CAMERON PETREE (Affiliate) Date: 2023.04.06 14:56:49 -04'00'	3	1/9/23	REVISED PER RYAN KAUFMANN COMMENTS	JB	CG	CP	AG			RK
DRAWING REVISIONS										

UCOR United Cleanup Oak Ridge LLC
OAK RIDGE RESERVATION
MANAGED FOR THE DEPARTMENT OF ENERGY UNDER CONTRACT DE–AC–05–00OR67
OAK RIDGE TN 37830

FIELD VERIFIED	DRAWING CATEGORY	CONFIG MGMT LEVEL
N/A	TBD	CM–1

PROJECT NAME: ELECTRICAL ENGINEERING STANDARD
TITLE: MOBILE EQUIPMENT GROUNDING STANDARD SHEET 1 OF 2

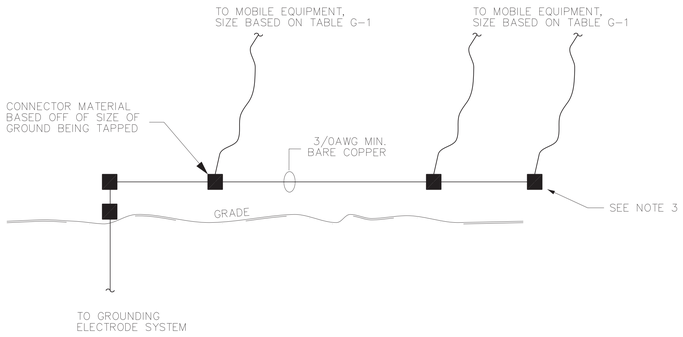
CAD FILENAME	BUILDING	SITE	CLASS
E1E700002A106 R7-SHT-1.dwg	KAREA–02	ETTP	U

SCALE	TYPE	DRAWING NUMBER	REV
NTS	IN	E1E700002A106	7

Plotted: 4/6/2023 File Name: M:\DD INFRASTRUCTURE\GROUNDING STANDARD\E1E700002A106 R7-SHT-1.DWG

NOTE:

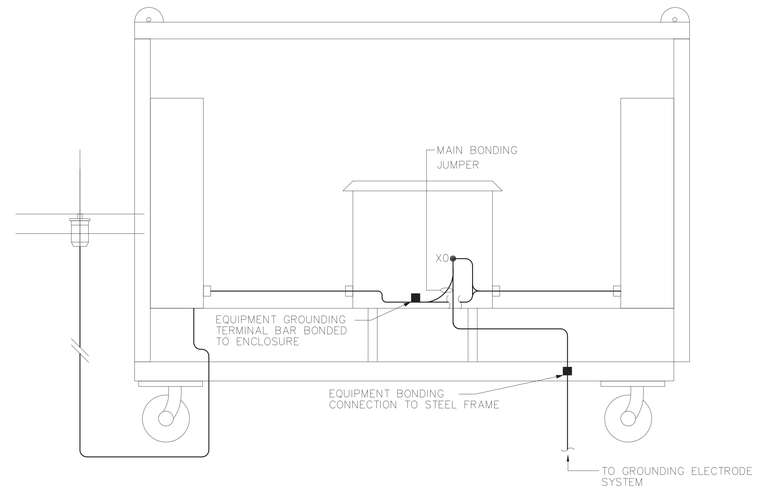
REFER TO SHEET 1 OF 2 FOR NOTES, MATERIAL LIST, TABLE G-1 AND ADDITIONAL DETAILS



6 COMMON GROUNDING ELECTRODE SYSTEM (NEC 250.30(A)(6))

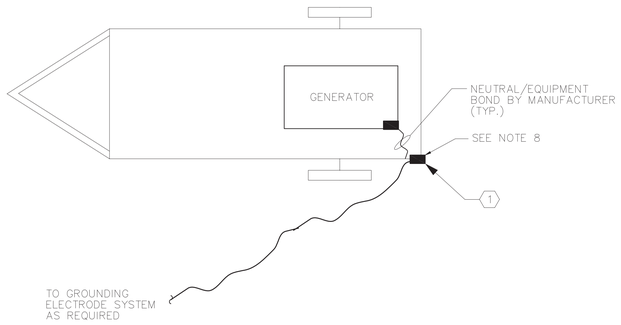
SHEET 2 | SHEET 2 SCALE: NONE

SEE SHEET 1 NOTE 3 FOR AMOUNT OF GENERATORS/POWER CARTS CONNECTED TO THE GROUNDING ELECTRODE SYSTEM



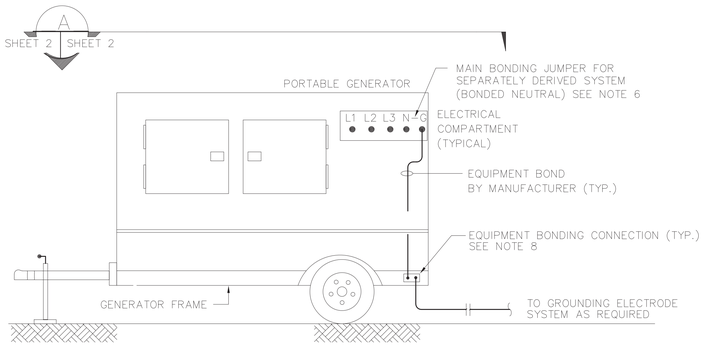
8 TYPICAL GROUNDING/BONDING DETAIL TEMPORARY POWER CART

SHEET 2 | SHEET 2 SCALE: NONE



A MOBILE GENERATOR CONNECTION PLAN DETAIL

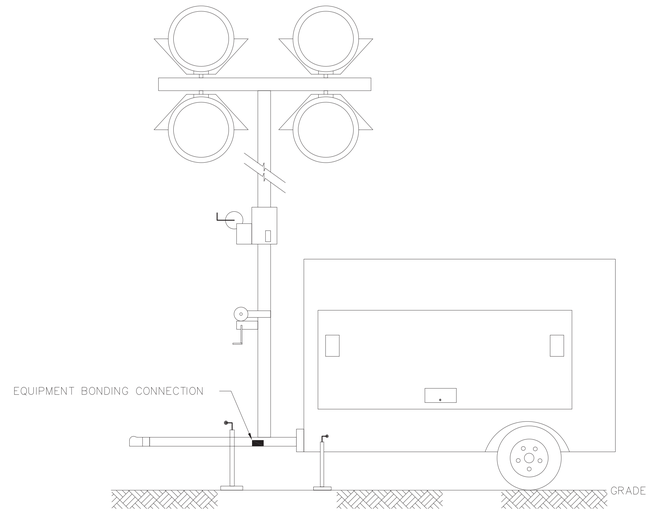
SCALE: NONE



7 TYPICAL GROUNDING DETAIL OF MOBILE GENERATOR ELEVATION VIEW

SHEET 2 | SHEET 2 SCALE: NONE

CATERPILLAR XQ SERIES GENERATORS REQUIRE GROUNDING ELECTRODE SYSTEM PER MANUFACTURER INSTRUCTIONS



9 TYPICAL GROUNDING DETAIL FOR MOBILE LIGHT TOWER UNIT

SHEET 2 | SHEET 2 SCALE: NONE

GROUNDING ELECTRODE SYSTEM NOT REQUIRED WHEN IN COMPLIANCE WITH SHEET 1 NOTE 2

REV	DATE	DESCRIPTION	DRW BY	ORG ENGR	ENGR CHK				PROJ ENGR
7	4/6/23	COMPLETE REDESIGN	CP	CP	CG	CS			TM
6	1/9/23	REVISED PER RYAN KAUFMANN COMMENTS	JB	CG	CP	AG			RK

ELECTRONIC SIGNATURES

Tommy Morgan — Digitally signed by Tommy Morgan Date: 2023.04.10 08:25:52 -04'00'

CHRISTIAN STROM (Affiliate) — Digitally signed by CHRISTIAN STROM (Affiliate) Date: 2023.04.10 08:13:51 -04'00'

Chris Grundt — Digitally signed by Chris Grundt Date: 2023.04.06 15:03:02 -04'00'

CAMERON PETREE (Affiliate) — Digitally signed by CAMERON PETREE (Affiliate) Date: 2023.04.06 14:58:50 -04'00'

CAMERON PETREE (Affiliate) — Digitally signed by CAMERON PETREE (Affiliate) Date: 2023.04.06 14:58:30 -04'00'

DRAWING REVISIONS

OAK RIDGE RESERVATION
MANAGED FOR THE DEPARTMENT OF ENERGY UNDER CONTRACT DE-M-000067
OAK RIDGE TN 37830

FIELD VERIFIED	DRAWING CATEGORY	CONFIG MGMT LEVEL
N/A	TBD	CM-1

PROJECT NAME: ELECTRICAL ENGINEERING STANDARD

TITLE: MOBILE EQUIPMENT GROUNDING STANDARD SHEET 2 OF 2

CAD FILENAME	BUILDING	SITE	CLASS
E1E700002A106 R7-SHT-2.dwg	KAREA-02	ETTP	U

SCALE	TYPE	DRAWING NUMBER	REV
NTS	IN	E1E700002A106	7

Plotted: 4/6/2023 File Name: M:\DD INFRASTRUCTURE\GROUNDING STANDARD\E1E700002A106 R7-SHT-2.DWG

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DOE/OR/01-2934&D2/A1

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