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Department of Energy

Ohio Field Office
Fernald Area Office

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OCT 23 1997
DOE-0079-98

Mr. James A. Saric, Remedial Project Manager
U.S. Environmental Protection Agency
Region V-SRF-5J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Mr. Tom Schneider, Project Manager
Ohio Environmental Protection Agency
401 East 5th Street
Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

INTEGRATED REMEDIAL DESIGN PACKAGE FOR AREA 2, PHASE I

The purpose of this letter is to transmit, for your review and approval, the draft Integrated Remedial Design Package (IRDP) for Area 2, Phase I (A2PI), the Southern Waste Units (SWU). This submission is in accordance with the Operable Unit 2 (OU2) and Operable Unit 5 (OU5) Remedial Design Work Plans (RDWP) and the Sitewide Excavation Plan (SEP). This IRDP for A2PI consists of:

Implementation Plan
Construction Drawings (for SWUs Excavation)
Technical Specification (for SWUs Excavation)

The Implementation Plan addresses the site preparation and excavation phases of the A2PI project. These documents reflect decisions made during recent meetings with project stakeholders, and also addresses previous U.S. Environmental Protection Agency/Ohio Environmental Protection Agency (U.S. EPA/OEPA) comments on the site preparation documents.

Implementation Plan Appendices

The Implementation Plan contains the following appendices:

Design Criteria Package
Surface Water Management Plan
Earthwork Calculations
Integrated Remedial Measurement Approach

The Design Criteria Package (DCP) was previously submitted to you with the 30% design documents for the Waste Units. The DCP was revised to address only the SWUs, and includes the Applicable or Relevant and Appropriate Requirements (ARAR) and To Be Considered (TBC) for A2PI.

The Surface Water Management Plan (SWMP) was previously submitted to you with the site preparation documents. The plan has been revised based on regulatory comments. Interceptor ditches that are part of the excavation design were incorporated into the document.

The Earthwork Calculations address the site preparation and excavation phases at the SWUs project. The calculations were previously submitted with responses to the U.S. EPA/OEPA comments on the site preparation documents. The calculations have been revised based on changes to the site preparation design and the latest excavation documents. The volume estimates for the above-Waste Acceptance Criteria (WAC) material in the Inactive Flyash Pile and the lead contaminated soil in the South Field are not final. These current estimates are reflected in the Implementation Plan, but will be revised based on additional data collected over the next few months.

The Integrated Remedial Measurement Approach (Appendix E) is based on recent discussions with project stakeholders and presents the overall strategy to monitor the excavation.

Construction Drawings and Technical Specifications

The enclosed construction drawings and technical specifications are for the excavation phase of the SWUs project. The excavation work of the SWUs, as represented by the enclosed documents, will be combined with Phase II of the On-Site Disposal Facility (OSDF) construction to form a consolidated contract package. The plan is to select a single contractor to construct Phase II of the OSDF, excavate the material from the SWUs, and place it in the OSDF (along with Decontamination and Decommissioning debris from the former production area). The procurement process for this work is scheduled to begin in November 1997. Upon your approval, excavation in the SWUs is scheduled to hopefully begin in June 1998.

The construction drawings and technical specifications for the site preparation phase of the project were previously submitted to you. The enclosed IRDP incorporated Design Change Notices (DNC) that resulted from responses to U.S. EPA/OEPA comments on the A2PI Site Preparation.

If you have questions regarding this submittal, please contact Robert Janke at (513) 648-3166.

Sincerely



Johnny W. Reising
Fernald Remedial Action
Project Manager

FEMP:Nickel

Enclosure: As Stated

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**Technical Specifications
for
Area 2, Phase I
Southern Waste Units
Remedial Action Project
Excavation Package
Contract No. 614
FDF Project No. 20402**

**October 1997
Revision C
95 Percent Design Review**

**Environmental Remedial Action Project
Fernald Environmental Management Project
Fernald, Ohio
Document 20402-TS-0001**



**25 Merchant Street
Cincinnati, Ohio 45246**

**Technical Specifications
for
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**25 Merchant Street
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U.S DEPARTMENT OF ENERGY

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

Contract No. 614

AREA 2, PHASE I
SOUTHERN WASTE UNITS
REMEDIAL ACTION PROJECT
EXCAVATION PACKAGE
TECHNICAL SPECIFICATIONS

PARSONS

Approved by: _____

Carlton Schroeder, Project Manager

Date

FLUOR DANIEL FERNALD, INCORPORATED

Approved by: _____

Anthony P. Klimek, Project Manager

Date

U.S. DEPARTMENT OF ENERGY
 FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
 CONTRACT NO. 614

WBS NO. 1.1.1.1.2.3.6
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 for
 AREA 2, PHASE I
 SOUTHERN WASTE UNITS
 REMEDIAL ACTION PROJECT
 EXCAVATION PACKAGE
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U.S DEPARTMENT OF ENERGY

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

Contract No. 614

AREA 2, PHASE I
SOUTHERN WASTE UNITS
REMEDIAL ACTION PROJECT
EXCAVATION PACKAGE
TECHNICAL SPECIFICATIONS

Division 2

PARSONS

Prepared by: _____

Date

Checked by: _____

Date

SECTION 02050
SURVEYING

PART 1 GENERAL

1.1 SCOPE

- A. This section includes the requirements for surveying, including but not limited to:
1. Establish survey benchmarks and baselines.
 2. Setting limits and boundaries of construction activities.
 3. Perform surveys for:
 - a. verification of the existing conditions.
 - b. support surveys during the construction activities.
 - c. measurement and payment.
 - d. conformance checks.
 4. Prepare and furnish as-built construction drawings.

1.2 RELATED SECTIONS AND PLANS

- A. Section 02205 - Impacted Material Excavation.
- B. Section 02150 - Site Preparation.
- C. Section 02275 - Erosion and Sediment Control.
- D. Part 6 - Statement of Work.
- E. Part 8 - Environmental Health and Safety, and Training Requirements.

1.3 REFERENCES

- A. National Geodetic Survey Standards.

1.4 QUALIFICATION

- A. Survey work shall be supervised and certified by a Land Surveyor licensed in the State of Ohio. Survey work shall be in accordance with accepted surveying practices, provisions herein, and subject to the Construction Manager's approval.
- B. Survey work shall be performed under the direct supervision of a licensed Land Surveyor in the State of Ohio, who has at least 5 years of experience in construction surveying.
- C. Work performed in referencing or re-establishment of FDF or United States survey monuments shall be stamped/certified by an Ohio licensed land surveyor.

1.5 SUBMITTALS

- A. Submit qualifications for land surveyor licensed in the State of Ohio to the Construction Manager within 10 calendar days from Notice to Proceed for review and approval.
- B. On request by the Construction Manager, submit documentation verifying accuracy of survey work.
- C. Submit survey notes, filed notes, sketches and drawings for the following surveys:
 - 1. Preliminary surveys.
 - 2. Prior to commencement of site preparation, erosion and sediment control and excavation.
 - 3. Intermediate surveys.
 - 4. Before the winter break and at completion of the Contract.
 - 5. At completion of excavation of the Southern Waste Units and stockpiles including completion of Above WAC excavation and lead contaminated soils excavation.
 - 6. Measurement and payment surveys.
 - 7. Final surveys.

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- D. Submit two (2) copies of field notes, sketches and drawings prepared by the licensed Land Surveyor, to the Construction Manager on a weekly basis or upon request by the Construction Manager. Field notes shall be legibly recorded on standardized field note books. Notation shall be consistently applied to survey work; the stake marking format and the field book notation shall be compatible. Identify survey benchmarks on the field notes, sketches and drawings.
- E. Upon completion of the survey work, provide the Construction Manager the original field note books, layout, computations, certified sketches and drawings in Intergraph Microstation (version 5.0 or later) ".dgn" files.
- F. Submittal requirements for the environmental health and safety requirements shall be as specified in Part 8.

1.6 PROJECT RECORD DOCUMENTS

- A. Maintain on site a complete and accurate log documenting survey work as it progresses.
- B. Maintain on site drawings clearly showing survey benchmarks and baselines.
- C. Maintain on site an accurate and current set of red-line drawings with as-built locations. Data shall be incorporated within one week of completion of the respective construction activity.

1.7 EXAMINATION OF THE EXISTING CONDITIONS

- A. Prior to the start of site preparation and excavation of the impacted material, verify the accuracy of the existing conditions shown on the Construction Drawings. Immediately notify the Construction Manager in writing of deviations from the existing conditions indicated on the Construction Drawings.

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- B. Verify the existing structures, utilities, wells, topography, erosion and sediment control measures, construction and radiological control fences, retention basins and appurtenances and drainage features shown on the Construction Drawings and notify the Construction Manager of any differences or conflicts with proposed work. Stake the locations of excavations and review proposed work with the Construction Manager in the field.

1.8 SURVEY BENCHMARKS

- A. Locate and verify benchmarks as shown on the Construction Drawings in accordance with this Section.
- B. Protect and preserve benchmarks.
- C. Replace disturbed or damaged survey benchmarks at no additional cost to FDF.

1.9 HEALTH AND SAFETY REQUIREMENTS

- A. Environmental Health and Safety, and Training requirements shall be as specified in Part 8.

PART 2 PRODUCTS

- A. The precision of horizontal and vertical control shall meet or exceed Third-Order, Class I and Third-Order accuracies, respectively, as defined by National Geodetic Survey Standards. Elevation shall be referenced to National Geodetic Vertical Datum (NGVD) of 1929 and horizontal coordinates to North American Datum (NAD) 1983.
- B. Provide materials as required to perform the surveys, including, but not limited to: instruments, tapes, rods, measures, mounts, tripods, stakes, hubs, nails, ribbon, and other reference markers.

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- C. The survey instruments shall be precise and accurate to meet the needs of the project. Survey instruments shall be capable of reading to a precision of 0.001 feet with a setting accuracy of 8 seconds.

PART 3 EXECUTION

3.1 GENERAL

- A. Establish elevations, lines, and levels. Locate and lay out by instrumentation and similar appropriate means. Topographic contours shall be shown to nearest foot. Field run data shall be taken to adjacent existing undisturbed area (100 ft. minimum overlap) to create a smooth contour transition.
- B. Maintain accurate and complete notes of surveys:
1. Handwritten survey notes and information shall be written with lead pencil(s) and entered in "write in rain" notebooks. A copy of the numbered, dated and signed field book pages shall be given to the Construction Manager weekly, or upon request, for use in reviewing the work.
 2. Electronically collected field survey information shall be collected and backup equipment shall be available in the event of equipment malfunction.
 - a. Electronic format for printed output of data collectors field survey notes shall be compatible with the field book notation format.
 - b. Electronic format for printed output of data collectors field work shall be compatible with the Contractor's and Construction Manager's computer equipment and software for reviewing the work. A copy of the data disk shall be submitted to the Construction Manager monthly or upon request.
- C. Conformance check surveys for elevation and for horizontal coordinates shall be to the nearest 0.01 foot and for angles to the nearest 20 seconds.

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- D. Measurement and payment surveys for elevation and for horizontal distance shall be to the nearest 0.1 foot +/- 0.05 foot.
- E. Perform construction layout surveys in advance of scheduled construction activities. The Contractor is responsible for rework and/or construction delays caused by survey or staking errors.
- F. Set grade stakes and slope stakes in accordance with accepted surveying practices.
- G. Set grade stakes for construction activities as the work progresses.
- H. Establish temporary survey benchmarks, as necessary, to support construction activities.
- I. Benchmarks, Accuracy and Documentation:
 - 1. Record the following information in survey notebooks for each benchmark established:
 - a. Designation of survey benchmark;
 - b. State Planer North American Datum (NAD);
 - c. Elevation based on NGVD;
 - d. Date of establishment;
 - e. Description and sketch of survey benchmark location; and
 - f. Survey benchmarks shall be referenced to a minimum of three features that can be seen from the survey benchmark.
 - 2. Document survey work in the field notebooks using the format and procedures described below:
 - a. Title and consecutive notebook number on the front cover;
 - b. Consecutively numbered pages;
 - c. Table of contents, indicated by survey task, on the first numbered page;
 - d. Legend indicating symbols and abbreviations used in survey notes;
 - e. Names of survey team for each task;
 - f. Notes on weather, equipment, etc.;

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- g. Date and time on each page to indicate when work was recorded;
- h. Notes in a uniform character such that they can be interpreted and used by anyone with survey knowledge;
- i. Description and/or sketches of the existing survey control used.

3.2 SUPPORT SURVEYS

A. Preliminary Surveys:

- 1. Verify location of the existing survey benchmarks and the existing conditions specified in this Section prior to starting work.
- 2. Establish location of benchmarks required for locating baseline grid. Establish baselines and grid as shown on the Construction Drawings.
- 3. Establish Construction Limits required for installation of the construction fence and radiological control fence as specified in Section 02150 and as shown on the Construction Drawings.
- 4. Establish location for the installation of the erosion and sediment control measures specified in Section 02275.
- 5. Establish limits of excavation at the Southern Waste Units and at the stockpiles. Maximum staking interval shall be 50 feet unless otherwise approved by the Construction Manager.
- 6. Perform surveys for conformance checks as specified in this Section.

B. Intermediate Surveys:

- 1. Perform surveys during progress of the construction activities to verify the accuracy of field work and as directed by the Construction Manager.
- 2. Perform surveys for measurement and periodic progress payment as specified in this Section.

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3. Perform surveys during progress of excavation to confirm limits of the excavation. In areas of above WAC excavation and lead contaminated soil excavation, perform surveys at each lift.
4. Perform conformance check surveys as specified in this Section.

D. Final Surveys:

1. Final topographic survey shall be at minimum 50 foot intervals or as required to define the topography. Additionally, the following points shall be surveyed and noted as applicable.
 - a. Grade breaks.
 - b. Points of horizontal curvature and tangency.
 - c. Ditches, pipes and channels: Stake ditches, channels and culverts such that layout remains undisturbed during construction.
 - d. Limits of final excavation.
2. Perform survey for conformance checks as specified in this Section.
3. Perform survey for final measurement and payment.

3.3 SURVEYS FOR MEASUREMENT AND PAYMENT

- A. Perform surveys for periodic progress payments and final payment to determine quantities of work.
- B. Calculate and certify quantities of work and submit survey notes and calculations to the Construction Manager for review, evaluation and payment.

3.4 SURVEYS FOR CONFORMANCE CHECKS

- A. Perform conformance check surveys immediately upon completion of a given construction activity. Provide the following minimum spacings and locations for survey points:
 1. A line of survey points spaced not more than 50 feet apart shall be taken, including along grade breaks (this will include the inside edge and outside edge of any bench on a slope);

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2. A line of survey points spaced not more than 50 feet apart shall be taken at the top of any pipes and any appurtenances, and at the top and invert of any storm culverts.

END OF SECTION

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SECTION 02150
SITE PREPARATION

PART 1 GENERAL

1.1 SCOPE

This section includes, but is not limited to, the requirements for the following site preparation activities:

- A. Traffic Plan.
- B. Construction and Radiological Control fencing.
- C. Protection of the existing wells.
- D. Maintenance of the existing woodchip stockpile.

1.2 RELATED SECTIONS AND PLANS

- A. Section 02050 - Surveying.
- B. Section 02205 - Impacted Material Excavation.
- C. Section 02275 - Erosion and Sediment Control.
- D. Section 02850 - Equipment Wash Facility.
- E. Part 6 - Statement of Work.
- F. Part 8 - Environmental Health and Safety, and Training Requirements.

1.3 REFERENCES

- A. Sitewide Excavation Plan, July 1997, Revision C.
- B. Area 2, Phase I Southern Waste Units Implementation Plan for Operable Unit 2, October 1997, Revision C.

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- C. Area 2, Phase I, Site Preparation Technical Specifications, Construction Drawings, Surface Water Management Plan and Systems Plan.
- D. State of Ohio, Department of Transportation (ODOT): Construction and Material Specification, January, 1997.

1.4 SUBMITTALS

- A. Submit a Traffic Plan within 10 calendar days from the Notice to Proceed for review and approval by the Construction Manager. The Traffic Plan shall include as a minimum:
 - 1. Planned traffic routes for hauling excavated impacted material from the Southern Waste Units (SWUs), stockpiles and Retention Basins 1, 2 and 3 to the On Site Disposal Facility (OSDF), the Lead Contaminated Soil Container Transfer Area and OU-1 Stockpile Area.
 - 2. Access from the stockpiles to the haul roads.
 - 3. Planned traffic routes within the SWUs.
 - 4. Planned traffic routes around and through certified areas.
 - 5. Planned crossings of major utilities (such as gas line, drinking water line, power lines and groundwater line), and a plan to protect the existing utilities at the crossings. The crossing protection should be at a minimum, a 1-inch thick steel plate or an equivalent alternative. Length and width of steel plate shall be as required to protect the existing utilities. Provide calculations to support equivalent alternatives to the 1-inch thick steel plate.
 - 6. Crossings for pedestrians and equipment. For bid purposes assume three (3) pedestrian crossings and three (3) equipment crossings.
 - 7. Maintenance and cleaning of haul road, planned traffic routes, pedestrian crossings and equipment crossings.
 - 8. Description of impact to traffic control during long breaks in work.

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9. Access control to and from radiological controlled areas and certified areas.

B. Within 10 calendar days from the Notice to Proceed, submit a Dust Control Plan in accordance with Part 6 for approval by the Construction Manager.

1.5 HEALTH AND SAFETY REQUIREMENTS

Environmental Health and Safety, and Training requirements shall be as specified in Part 8.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Suppressant agent for dust control shall be pine sap emulsion as approved by the Construction Manager.
- B. Materials for traffic control shall be as defined by the Traffic Plan and shall conform to ODOT specifications unless approved by the Construction Manager.
- C. Construction fence shall be orange, high density polyethylene, four-foot height, opening size approximately 4 inches by 1/2 inch, minimum tensile strength of 2000 lbs/ft of width. Posts shall be steel "T" as indicated on the Construction Drawings.
- D. Radiological control fence shall be as specified for construction fence, except the color shall be yellow.

PART 3 EXECUTION

3.1 GENERAL

- A. Verify the existing conditions as specified in Section 02050.

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- B. Install erosion and sediment control measures and repair the existing erosion and sediment controls prior to the start of site preparation and excavation activities in accordance with Section 02275.

3.2 DUST CONTROL

- A. Dust control shall be as specified in Part 6 and the Dust Control Plan.

3.3 CONSTRUCTION AND RADIOLOGICAL CONTROL FENCING

- A. Prior to initiating work activities install and relocate construction fencing and radiological control fencing as shown on the Construction Drawings and as specified in Part 8.
- B. Maintain and repair construction and radiological control fences until completion of the Contract.
- C. Locate radiological control fence around excavation of the Above WAC Material and Lead Contaminated Soils.

3.4 TRAFFIC CONTROL

- A. Control traffic in accordance with the approved Traffic Plan.

3.5 PROTECTION OF THE EXISTING WELLS

- A. If damage to existing monitoring wells and/or extraction wells occurs, repairs and/or replacement will be completed by FDF at the Contractor's expense.

3.6 MAINTENANCE OF THE EXISTING WOODCHIP STOCKPILE

- A. Maintain the existing woodchip stockpile and associated erosion and sediment control measures within the limits of the stockpile as shown on the Construction Drawings.

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- B. Turn woodchip material to prevent spontaneous combustion of the material.

END OF SECTION

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SECTION 02205
IMPACTED MATERIAL EXCAVATION

PART 1 GENERAL

1.1 SCOPE

This section includes the requirements for the excavation, loading, hauling, and unloading of impacted materials and related activities including, but not limited to:

- A. Excavation of impacted materials from the Southern Waste Units (SWU) area including unclassified impacted material, Above Waste Acceptance Criteria (WAC) material, lead contaminated soil, Special Materials, sediments and impacted material stockpiles designated on the Construction Drawings.
- B. Decommissioning of the existing Retention Basins 1 and 2, including removal of sediment, High Density Polyethylene (HDPE) liner material and associated appurtenances shown on the Construction Drawings and hauling and unloading this material in the On-Site Disposal Facility (OSDF).
- C. Loading and hauling of the excavated impacted materials from the SWU area and existing stockpiles and unloading of this material in the OSDF.
- D. Loading and transferring of the Special Material within the limits of the SWU in the Special Material Transfer Area, as shown on the Construction Drawings.
- E. Loading and hauling of the excavated Above WAC material and unloading in the OU-1 Stockpile Area as shown on the Construction Drawings.
- F. Loading, containerizing, and hauling of excavated lead contaminated soil material from the SWU area and unloading in the Lead Contaminated Soil Container Transfer Area as shown on the Construction Drawings. Provide United States Department of Transportation (US-DOT) approved containers for the lead contaminated soil material.

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- G. Supplemental excavation during pre-certification and certification of the Inactive Flyash Pile (IFP) and South Field (SF) and during pre-certification of the Active Flyash Pile (AFP).
- H. Dust control as specified in Part 6.
- I. Hand excavation around the existing wells to remain within the excavation area as shown on the Construction Drawings.

1.2 RELATED SECTIONS AND PLANS

- A. Section 02050 - Surveying.
- B. Section 02150 - Site Preparation.
- C. Section 02210 - Separation and Packaging of Presumed Asbestos Containing Materials (PACM).
- D. Section 02212 - Material Identification and Documentation.
- E. Section 02275 - Erosion and Sediment Control.
- F. Section 02850 - Equipment Wash Facility.
- G. Section 02900 - Seeding.
- H. Part 6 - Statement of Work.
- I. Part 8 - Environmental Health and Safety, and Training Requirements.
- J. Impacted Materials Placement Plan, On Site Disposal Facility, August 1997, Revision H.

1.3 REFERENCES

- A. Sitewide Excavation Plan, July 1997, Revision C.

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- B. Area 2 Phase I Southern Waste Units Implementation Plan for Operable Unit 2, October 1997, Revision 0.
- C. Waste Acceptance Criteria Attainment Plan for the On Site Disposal Facility, August 1997, Revision B.
- D. Area 2 Phase I Site Preparation Construction Drawings and Technical Specifications, latest revision available during the bid period.
- E. Flyash Piles and South Field Waste Units Geotechnical Report, April 1996, Revision 0.
- F. State of Ohio, Department of Natural Resources (ODNR): Rainwater and Land Development, Ohio's Standard for Storm Water Management, Land Development, and Urban Stream Protection - 1996.
- G. Title 49, Code of Federal Regulations (CFR), Parts 171 through 173, latest revision (US-DOT requirements for containers).
- H. Fernald Environmental Management Project Plan PL-2194, Spill Prevention Control and Countermeasure (SPCC) Plan, September 1996, Revision 3.
- I. Fernald Environmental Management Project Procedure RP-0010, Identification and Movement of Radioactive Material, May 1996, Revision 2.

1.4 SUBMITTALS

- A. Submit an Excavation Work Plan to the Construction Manager within 15 calendar days from the Notice to Proceed for review and approval. The Excavation Work Plan shall include, as a minimum, the following:
 1. Excavation, loading, hauling, and unloading methods and equipment, by size and type, for the impacted materials including unclassified impacted materials, the Above WAC material, lead contaminated soil, stockpiles, and sediment.

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2. Coordination and implementation of the excavation related activities including submittals, surveying, fencing, erosion and sediment control, water management, stump grinding, loading requirements, equipment wash, haul road maintenance, material identification and documentation, supplemental excavation during pre-certification and certification, seeding, stabilization of exposed excavated areas and dust control.
3. Critical Path Method (CPM) schedule for the excavation and excavation related activities showing sequence, duration, critical activities, resources for each activity, number of crews and crew size, and start and completion date of each activity. Coordinate this CPM schedule with the project construction schedule.
4. Environmental Health and Safety, and Training requirements for the excavation, loading, hauling and unloading.
5. Excavation, separation, and packaging of Presumed Asbestos Containing Materials (PACM) in accordance with Section 02210.
6. Methods for the transferring and storage of special materials and lead contaminated soil.
7. Loading, hauling and unloading methods for the impacted materials to the OU-1 Stockpile Area and to the OSDF, including:
 - a. Inclement weather operations.
 - b. Spreading, grading, and compaction.
 - c. Maintenance of surface conditions and drainage.
 - d. Temporary shutdown and work stoppage.
8. Location, sequencing, and construction of interim working stockpiles, if necessary.
9. Sequencing of construction of interceptor ditches.
10. Methods for complying with the Fernald Environmental Management Project Plan PL-2194, spill prevention and control.

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- B. Submit certification and drawings showing details for the metal containers with lids for the storage of the lead contaminated soil within 30 calendar days from the Notice to Proceed to the Construction Manager for review and approval.
- C. Submit manufacturer's material certification and installation methods and requirements for the geomembrane liner within 10 calendar days from the Notice to Proceed to the Construction Manager for review and approval. Certificates shall include the name of the manufacturer and chemical composition, and certification for the HDPE liner material.

1.5 EXISTING CONDITIONS

Prior to start of excavation of the impacted materials, examine the existing conditions as specified in Section 02050.

1.6 HEALTH AND SAFETY REQUIREMENTS

Environmental Health and Safety, and Training requirements shall be as specified in Part 8.

1.7 DEFINITIONS

- A. Impacted material is defined as materials placed in the existing stockpiles, fill materials in the SWU, sediment accumulated in the retention basins, ditches, and at erosion and sediment control measures, and non-fill material with contaminant levels above established Final Remediation Levels (FRLs).
- B. Unclassified impacted material shall be impacted material encountered during excavation, regardless of type, character, composition, and condition thereof, unless otherwise specified in this Section. Unclassified impacted material also includes debris encountered during excavation in the SWU and excavation in the impacted material debris stockpiles.

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Distribution of debris mixed with soil or soil like material in the excavation of the unclassified impacted material is not expected to be uniform throughout the SWU and impacted material stockpiles and may comprise up to 15 percent of the total volume of impacted material. Debris shall consist of impacted material such as construction materials, concrete, asphalt, steel rebar, non-friable Presumed Asbestos Containing Material (PACM), and other materials not defined as a Special Material. Size reduction of debris shall be as specified in the Impacted Materials Placement Plan for On Site Disposal Facility (OSDF).

- C. Lead Contaminated Soil: Soil with lead concentrations above the FRL for lead [400 parts per million (ppm)] and may, upon further Toxicity Characteristic Leaching Procedure (TCLP) analysis, qualify as a Resource Conservation and Recovery Act (RCRA) toxicity characteristic hazardous waste.
- D. Above WAC Material: Soil, soil mixed with debris, or soil-like impacted material with total uranium concentrations above the OSDF total uranium WAC [1030 milligram/kilogram(mg/kg)], or any other material that does not meet the OSDF Waste Acceptance Criteria (WAC).
- E. Special Materials: Impacted material which requires special handling due to potential health and safety concerns; Special Materials shall be as listed below:
 - 1. Friable Presumed Asbestos Containing Materials (PACM), specified in Section 02210;
 - 2. Nonpressurized containers, including drums, boxes, cans;
 - 3. Pressurized containers;
 - 4. Pumps and piping;
 - 5. Non-soil residues, including green salt, black oxide, orange oxide, sump cake;
 - 6. Transformers and electrical equipment;
 - 7. Lead acid batteries;
 - 8. Uranium metal, including derbies, ingots and irregularly shaped scrap;

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9. Medical/infectious waste;
10. Tires;
11. Miscellaneous debris, including oil and air filters, personnel protective equipment (PPE), radiators, cables, wires, tools, heavy equipment, office materials and documents.

F. Stockpiles: Impacted material in stockpiles as designated on the Construction Drawings.

G. Sediment: Impacted material accumulated in the existing retention basins, interceptor ditches and erosion and sediment control measures.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Rope fence shall be yellow, nylon, 3/8-inch diameter.
- B. Posts for rope fence shall be steel "T". Posts for silt fence shall be in accordance with ODNR-Rainwater Standards.
- C. Signs and sign posts for the radiological control areas and certified areas shall be furnished and installed by FDF.
- D. Geomembrane liner for Special Material Transfer Area shall be 60 mil textured High Density Polyethylene (HDPE). HDPE geomembrane liner shall be factory seamed and transported in largest sections possible to minimize field seaming. Field seams shall be as recommended by the HDPE liner manufacturer.
- E. Metal containers for the storage of lead contaminated soil shall be approximately 3 x 4 x 6 foot in size, capable of containing 9000 pounds gross weight of lead contaminated soil including the container, and shall be suitable for loading, storage, and hauling in accordance with the US-DOT requirements of 49 CFR Parts 171 through 173.

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- F. FDF shall furnish materials, equipment, and personnel for radiological characterization and monitoring of the impacted material.

2.2 EQUIPMENT

- A. Provide equipment of size and type to excavate, load, haul, and unload impacted material to meet the Contract requirements. Haul equipment shall be equipped with automatic load covers.
- B. Provide equipment of size and type to load, haul, unload, place, manage, and compact the OU-1 stockpile to meet the Contract requirements.
- C. Equipment used to haul impacted material over the existing Impacted Material Haul Road as shown on the Construction Drawings:
1. Equipment shall be equal to or less than the gross vehicle weight, tire pressure and axle loading for a Caterpillar CAT D300E truck (gross vehicle weight of 106,700 pounds, tire pressure of 60 psi, and axle load of 37,400 pounds).
 2. Equipment used to haul impacted materials on the Impacted Material Haul Road shall have enclosed cabs. Enclosed cab is defined as equipment cab isolated from outside environment (intact windows, doors, panels and floors surrounding driver with all windows and doors shut) which provides a barrier from intrusion of outside airborne particles. Any HVAC (heating, ventilating or air conditioning) units associated with the equipment cab must not provide a direct path for outside air to enter (air conditioner on air recirculate mode) or HEPA filter the air if pulling directly from outside the cab.

- D. Provide water tank trucks, tank trucks for the suppressant agent and crusting agent, portable tanks, pressure distributors, piping or other equipment designed to apply dust suppressant and crusting agent uniformly and in controlled quantities to variable surface widths to provide dust suppression as required in Part 6.
- E. Provide stump grinder to meet the Contract requirements.
- F. Provide equipment to weigh loaded lead contaminated soil containers.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

- A. Establish site boundaries and access controls in accordance with Section 02150 and Part 6.
- B. Survey and layout excavation limits and grid in accordance with Section 02050 and as shown on the Construction Drawings.
- C. Install and maintain erosion and sediment control measures in accordance with Section 02275.
- D. Provide material identification and documentation in accordance with Section 02212.
- E. Continuously observe excavations and immediately notify the Construction Manager of a change in material as specified in Section 02212.
- F. Dust control shall be in accordance with Part 6 and the Dust Control Plan.
- G. Location of the interim working stockpiles shall be within the limits of the SWU and as approved by the Construction Manager. Interim working stockpiles shall be removed within a maximum of 30 calendar days.

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- H. Use of explosives or explosive devices is not permitted under this Contract.
- I. Install construction fence and radiological control fence as specified in Section 02150 and as shown on the Construction Drawings.
- J. Water management shall be as specified in Section 02275.
- K. Unexpected discovery of cultural resources: Upon the unexpected discovery of any historic, prehistoric, or archeological site, feature or object, immediately cease ground disturbing activities at the find and contact the Construction Manager.
- L. Categories of impacted materials excavated and to be hauled to the OSDF shall be in accordance with the Impacted Materials Placement Plan.
- M. The following requirements shall apply to equipment for excavation, loading, hauling, and unloading:
1. Equipment used for excavation, loading, hauling and unloading of the impacted material from the SWU and the stockpiles shall be clearly, conspicuously marked by the Construction Manager as "Radioactive Material" in accordance with site procedure RP-0010.
 2. Equipment used during excavation, loading, hauling, and unloading of the impacted material and periods of non-use (evenings, weekends, holidays) shall be kept under control at all times.
 3. Equipment used for hauling of the impacted material shall be equipped with an automatic cover. The cover shall be in place sealed during all periods of vehicular movement on-site, whether empty or full.

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4. Equipment used for excavation, loading, hauling, and unloading the impacted material shall not be permitted to leave the radiological control areas until equipment decontamination activities are completed by the Contractor and radiological survey of the equipment are performed by FDF.
 5. Equipment cab shall remain closed and operators shall not be allowed out of the equipment in any posted contamination area without protective clothing except in emergency situations.
- N. Equipment used during the excavation of the Above WAC material, lead contaminated soil material, and soil placement in the OU-1 Stockpile Area shall stay in their respective areas until completion of the respective excavation and placement.
- O. Excavation shall proceed in accordance with the approved Excavation Work Plan.
- P. Loading Requirements:
1. Haul equipment shall be loaded so as to minimize load shifting during transit.
 2. Visually check impacted material for free liquid prior to loading. Moisture content in the impacted material before loading shall be as specified in the Impacted Material Placement Plan.
- Q. Hauling requirements:
1. Haul equipment shall be washed at the equipment wash facilities before entering the Impacted Material Haul Road at the SWU, OSDF, and SP-3 stockpile. Requirements for equipment wash shall be as specified in Section 02850.
 2. In accordance with Part 6, maintain the Impacted Material Haul Road free of visible mud, soil, soil-like material, debris, or impacted material.
 3. Provide dust control for the haul roads on a continual basis in accordance with Part 6.

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- 4. Haul equipment traffic shall remain on the haul roads designated on the Construction Drawings. Equipment that enters these roads shall not be allowed to exit, except at the SWU area, stockpiles and/or the OSDF, without approval by the Construction Manager.
- 5. Tracked equipment shall be prohibited from hauling, operating, or tracking over or on the Impacted Material Haul Road.

- R. FDF will perform monitoring of the surface of each lift to be excavated to determine if WAC has been attained. Contractor shall excavate in another location during monitoring and while awaiting the results, at no additional cost to FDF. FDF monitoring of each lift will take at least two (2) dry (no precipitation) work days.

- S. After excavation has been completed, FDF will perform pre-certification and certification sampling to determine if FRLs have been attained. If FRLs have not been attained, perform additional excavation as directed by the Construction Manager and as specified in this Section.

- T. If Contractor is unable to excavate within the limits of the Inactive Flyash Pile (IFP), move excavation to the South Field Impacted Material Stockpile and/or the South Field (SF), as directed by the Construction Manager. If Contractor is unable to excavate within the limits of the South Field (SF), move excavation to the Active Flyash Pile (AFP), unless otherwise directed by the Construction Manager. Movement between excavation areas shall be at no additional cost to FDF.

- U. Temporary shutdown shall be as specified in Part 6.

- V. Stump Grinding:
 - 1. Grind stumps within SWU to a minimum depth of 12 inches or to the bottom of the root-mass within 18 inches of the stump in all horizontal directions. Grind the wood chip in pieces generally smaller than 12 inches dimensions.

2. Excavate the ground stump wood chips with the soil and transport to the OSDF. The volume of organic material shall be less than 1/3 of the truckload for hauling to the OSDF. Determination of the fraction of organic material shall be by visual observation.

W. Tolerances for the excavation grades shown on the Construction Drawings shall be from 0 to +6 inches.

X. Perform stabilization of the excavated areas using crusting agent and temporary seeding in accordance with Sections 02275 and 02900, respectively.

3.2 UNCLASSIFIED IMPACTED MATERIAL EXCAVATION

A. Typically excavations shall proceed in an up gradient to down gradient pattern to the limits indicated on the Construction Drawings.

B. Excavate from a location higher in elevation than the area to be excavated , except at the impacted material stockpile areas, unless otherwise approved by the Construction Manager.

C. Select equipment and excavation methods to minimize obstruction of continuous visual observation of the excavation.

D. Excavation of the unclassified impacted materials shall proceed by excavating the material in 3 foot +/- 1 foot lifts and in maximum 100 foot by 200 foot areas, followed by monitoring of the surface area by FDF. Thinner lift thicknesses shall be as approved by the Construction Manager. After excavation of each lift, rough grade the area to drain. Maximum slope of the rough graded area shall be 6 percent. Move excavation operation a minimum of 50 feet from the previous excavation area while awaiting monitoring results. Construction Manager will notify Contractor of areas available for excavation.

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- E. If Above WAC Material, Special Materials, or cultural resources are encountered, stop excavation and move the excavation operation to another location.
- F. Hand excavate around the existing monitoring wells as shown on the Construction Manager.

3.3 LEAD CONTAMINATED SOIL EXCAVATION

- A. Survey and stake the limits of lead contaminated soil excavation in accordance with Section 02050 and as shown on the Construction Drawings.
- B. Excavate the unclassified impacted material overburden as indicated on the Construction Drawings and in accordance with this Section.
- C. Excavate the lead contaminated soil to the limits and elevations as shown on the Construction Drawings. Notify the Construction Manager seven (7) calendar days prior to the start of excavation.
- D. Deliver metal containers with lids fourteen (14) days prior to start of excavation. Load the lead contaminated soil into metal containers and haul to the Lead Contaminated Soil Container Transfer Area. FDF will sample the material prior to the Contractor fastening the container lids and hauling to the transfer area. The containers shall be loaded and fastened as per US-DOT requirements in 49 CFR Parts 171 through 173.
- E. Loaded containers shall not exceed 9000 pounds in gross weight. Containers shall be weighed by the Contractor prior to placement in the Lead Contaminated Soil Container Transfer Area. Lead contaminated soil is expected to have a dry unit weight of approximately 100 to 115 pounds per cubic foot (pcf).
- F. Visually check lead contaminated soil material for free liquid prior to loading in the container. Moisture content in the soil shall not result in "bleeding" of liquids. Material with free liquid shall not be loaded.

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Place lid on containers immediately after loading.
Contractor shall fasten lid after FDF sampling.

- G. Lead contaminated soil shall be loaded immediately adjacent to the lead contaminated soil excavation area.
- H. Grade transfer area to drain and compact before transfer of the containers. Loaded containers shall be placed on the compacted surface in the Lead Contaminated Soil Container Transfer Area, in a manner that protects the containers from damage.
- I. FDF will perform confirmatory sampling of the lead contaminated soil area. Contractor shall excavate in another location during sampling and while awaiting the results of the sampling, at no additional cost to FDF.
- J. Perform additional excavation as directed by the Construction Manager and as specified in this Section.

3.4 ABOVE WAC MATERIAL EXCAVATION

- A. Material above or outside the Above WAC excavation area shall be excavated as unclassified impacted material as specified in this Section. Areas anticipated to contain Above WAC material shall be as designated on the Construction Drawings.
- B. Excavation within the Above WAC Material Area shall proceed by removing the material in 4 foot lifts, followed by monitoring at the perimeter of the Above WAC area by FDF.
- C. If monitoring results along a side of the Above WAC excavation are above WAC, the Above WAC material area shall be expanded horizontally in 5 foot increments along that side.

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- D. After excavating a lift within the Above WAC area, excavate the surrounding unclassified impacted material to a depth of at least 1 foot above the excavated bottom of the Above WAC excavation area. Grade surrounding area to drain away from the Above WAC excavation.
- E. Excavate Above WAC material and surrounding unclassified impacted material to the limits shown on the Construction Drawings or as otherwise directed by the Construction Manager.
- F. Maintain sumps within the Above WAC excavation to collect water encountered during excavation. Water collected in these sumps shall be pumped to the nearest retention basin as specified in Section 02275. If sump excavation penetrates the Great Miami Aquifer (GMA), line the sump with a 60 mil textured HDPE geomembrane liner to prevent contamination of the GMA.
- G. Loading area for haul equipment shall be adjacent to the Above WAC Area and as close to the Equipment Wash Facility as possible. The loading area shall be relocated as necessary during excavation.
- H. Haul equipment shall remain outside of the Above WAC Area at all times.
- I. Loading area shall be covered with a 60 mil textured HDPE geomembrane liner or approved equal. Liner shall be repaired and replaced if visible tears or holes are present. Loading area shall be graded to drain into the Above WAC excavation sump. Maintain loading area clear of spillage. Remove spillage prior to entry of next equipment in loading area.
- J. Above WAC materials shall be hauled to the OU-1 Stockpile Area. Others may also be hauling Above WAC materials to this stockpile during the period of this Contract.

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- K. Requirements for unloading and stockpiling the Above WAC material at the OU-1 Stockpile Area shall be:
1. Construction of ingress/egress to the stockpile.
 2. Constructing an unloading area that prevents haul equipment tires from coming in contact with the Above WAC Material.
 3. Placing material in the stockpile.
 4. Immediately repair damage caused to the stockpile structures (i.e., silt fence, perimeter fence, etc.) by the Contractor.
 5. Dust suppressant shall be in accordance with Part 6. Suppressant agent shall be applied, within 7 calendar days, upon completion of the stockpile or if the stockpile is to be inactive for more than 45 calendar days.
 6. Surface of the stockpile in use shall be compacted/sealed at close of each work day.
 7. Equipment and material used in the placement and management of Above WAC impacted material in the OU-1 Stockpile Area shall not be removed from the area without the approval of the Construction Manager. Equipment shall not be removed from this area before washing. Equipment washing shall be performed within the OU-1 Stockpile Area. Wheels, tires, undercarriage and body of equipment shall be washed free of visible mud, dirt and debris.

3.5 SPECIAL MATERIAL EXCAVATION

- A. Special Materials identified during excavation shall be excavated, segregated, managed, and hauled to the Special Materials Transfer Area as directed by the Construction Manager.
- B. FDF will be responsible for final disposition of the Special Materials.
- C. The Special Material Transfer Area shall be located within approximately twenty feet of an existing gravel road within the limits of the SWU. Actual location shall

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vary as excavation progresses and shall be approved by the Construction Manager. Special Materials Transfer Area shall be as shown on the Construction Drawings.

- D. PACM such as transite siding, floor tiles, and insulation encountered during excavation shall be managed in accordance with Section 02210.

3.6 EXCAVATION OF THE IMPACTED MATERIAL STOCKPILES

- A. Excavation of the impacted material stockpiles, including debris stockpiles, designated on the Construction Drawings shall be in accordance with unclassified impacted material excavation as specified in this Section.
- B. Refer to the Construction Drawings for approximate locations of impacted material stockpiles to be excavated and hauled to the OSDF.
- C. Install erosion and sediment controls before the excavation of the stockpiles and maintain until completion of stockpile excavation. Erosion and sediment control measures shall be as specified in Section 02275.
- D. After completion of stockpile excavation, grade the area to match the surrounding grade and provide temporary seeding as specified in Section 02900.

3.7 REMOVAL OF SEDIMENT AND DECOMMISSIONING OF RETENTION BASINS

- A. Removal of sediment:
 - 1. Remove accumulated sediment and debris from existing Retention Basin 1 and 2, ditches and erosion and sediment control measures.
 - 2. Haul sediment and debris that has been removed to the OSDF as unclassified impacted material. FDF will sample and test the sediments and debris prior removal.

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- B. Removal of HDPE liner:
1. Remove HDPE liner from Retention Basin 1 and 2 and ditches draining to these retention basins.
 2. Size reduce HDPE liner in accordance with the WAC Attainment Plan. After size reduction, load, haul and unload HDPE liner after size reduction to the OSDF.
- C. Decommissioning of Retention Basins:
1. After Construction Manager provides notification that upgradient areas have achieved certification, Retention Basin 1 and 2 shall be decommissioned as indicated on the Construction Drawings.
 2. Decommissioning activities include:
 - a. Disconnecting power at retention basin pump station 1 and 2.
 - b. Removing the pumps and controls and turn over to FDF.

3.8 SUPPLEMENTAL EXCAVATION, PRE-CERTIFICATION AND CERTIFICATION

- A. After excavation is completed to the limits shown on the Construction Drawings, the Contractor shall survey the excavated area in accordance with Section 02050. After survey, FDF will perform monitoring to pre-certify the areas as having attained FRLs. FDF will take up to 30 calendar days to perform monitoring of an area. If the monitoring indicates an area has not attained FRLs, continue additional excavation in 1-foot lifts as directed by the Construction Manager until FRLs have been attained. Pre-certification monitoring by FDF will follow each lift of the supplemental excavation.
- B. After pre-certification has been achieved, install rope fencing along the perimeter of the pre-certified area as directed by the Construction Manager and maintain erosion controls and drainage in the area. FDF will install sign posts and signs.

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- C. FDF will perform certification sampling and analysis after pre-certification. Receipt of sampling data may take 120 calendar days. After receipt of certification sampling laboratory data, the Construction Manager will determine if areas of additional supplemental excavation are required in the excavation area. These areas shall be excavated as directed by the Construction Manager.

- D. Supplemental excavation shall be considered as Unclassified Impacted Material excavation unless otherwise directed by the Construction Manager.

END OF SECTION

SECTION 02210
SEPARATION AND PACKAGING OF PRESUMED
ASBESTOS CONTAINING MATERIALS (PACM)

PART 1 GENERAL

1.1 SCOPE

This section includes the requirements for handling and packaging of Presumed Asbestos Containing Materials (PACM).

1.2 RELATED SECTIONS AND PLANS

- A. Section 02205 - Impacted Material Excavation.
- B. Section 02212 - Materials Identification and Documentation.
- C. Part 6 - Statement of Work.
- D. Part 8 - Environmental Health and Safety, and Training Requirements.
- E. Impacted Material Placement Plan, On Site Disposal Facility, August 1997, Revision H.

1.3 REFERENCES

- A. Ohio Administrative Code (OAC), Chapter 3745-20, Asbestos.
- B. Ohio Administrative Code (OAC), Chapter 3701-34, Asbestos Hazard Abatement.
- C. Sitewide Excavation Plan, July 1997, Revision C.
- D. Title 29, Code of Federal Regulations (CFR), Part 1926.1101, Asbestos

1.4 HEALTH AND SAFETY REQUIREMENTS

- A. Environmental Health and Safety, and Training requirements shall be as specified in Part 8.

1.5 SUBMITTALS

- A. Submit a PACM Handling Plan in compliance with all applicable regulatory (federal and state) requirements within 10 calendar days from the Notice to Proceed for approval by the Construction Manager. The plan describe the following as a minimum:
1. Method for determination of whether the PACM is friable or non-friable.
 2. Personal protective equipment to be worn by employees.
 3. Work practices to be observed by employees.
 4. Methods to be used to handle and package friable PACM and to ensure no visible asbestos emissions during handling.
 5. Methods to handle and package non-friable PACM, to minimize the potential for non-friable PACM to become friable during handling and disposal and to ensure no visible asbestos emissions during handling.
 6. The encapsulant and surfactant agents to be used.
 7. Labeling methods.
 8. Methods to be used if PACM must be size-reduced to size criteria described in the Impacted Material Placement Plan.
 9. Product data and technical information including application instructions and Material Safety Data Sheet (MSDS) sheets for each material proposed for use.
 10. State of Ohio certification for the Contractor's personnel as required by law and administrative code.
 11. State of Ohio certificates and licenses for the Contractor.

PART 2 PRODUCTS**2.1 MATERIALS**

- A. Clear polyethylene sheeting and clear disposal bags shall be a minimum of 6 mils thick.
- B. Materials to be used as encapsulants and surfactants shall be in original, new, and unopened packages and containers bearing manufacturer's name, label, and the following information:
1. Name of material.
 2. Manufacturer's stock number and date of manufacture.
 3. Manufacturer's name.
 4. Thinning instructions.
 5. Application instructions.
- C. Surfactant (wetting agent) shall as specified by the following approved manufacturers:
1. Childers CP-225 CHIL-SORB.
 2. Certech.
 3. Expert Environmental Products.
 4. International Protective Coatings Corp.
 5. Or approved equal.
- D. Encapsulants shall be as specified by the following approved manufacturers:
1. Childers CP-240 CHIL-LOCK.
 2. Certified Technologies - Certane 2050.
 3. Expert Environmental Products - EPPCO #1.
 4. International Protective Coatings - Serpiloc.
 5. Or approved equal.
- E. Other materials required by the Contractor for handling and packaging of friable PACM.

PART 3 EXECUTION**3.1 APPLICATION**

- A. The Contractor shall be responsible for:

1. Adherence and compliance to work practices and procedures set forth in applicable federal and state codes, regulations, and standards.
2. Obtaining certifications and licenses.
3. Conforming with Part 8 for training requirements.
4. Using wet methods and other work practices and engineering controls to prevent creation of visible asbestos emissions during handling of PACM.

B. Contractor shall use the following project specific handling methods in accordance with the approved PACM Handling Plan:

1. Prior to excavation and at least once a day during excavation, walk the site and identify PACM.
2. Friable PACM identified shall be wetted with amended water (water mixed with surfactant), separated from the impacted material, double bagged in 6-mil polyethylene bags for disposal, and labeled. Transfer friable PACM to the Special Material Transfer Area.
3. Care shall be taken so that friable PACM does not break during handling. In the event it is broken, encapsulate the broken edges.
4. Surfactants shall be applied during sizing to meet OSDF requirements of any large PACM.
5. Friable PACM components meeting the On Site Disposal Facility (OSDF) Waste Acceptance Criteria (WAC) and removed intact shall be wrapped in two layers of 6-mil polyethylene sheeting, secured with duct tape, and transported to the OSDF.
6. PACM with sharp-edged components (e.g., nails, screws, metal lath, tin sheeting) capable of tearing the polyethylene bags and sheeting shall be placed into Contractor-supplied, properly labeled, sealed, plastic lined containers (i.e. fiberboard boxes or drums). Metal containers are not allowed. Container size is subject to OSDF Impacted Material Placement Plan for Category 5.

C. Friable PACM shall be placed in the OSDF in accordance with the Impacted Material Placement Plan for On Site Disposal Facility.

- D. Non-friable PACM, which is determined not to have the potential to become friable, shall be considered as unclassified impacted material and shall be excavated, loaded, hauled and unloaded as specified in Section 02205.

END OF SECTION

SECTION 02212
MATERIAL IDENTIFICATION AND DOCUMENTATION

PART 1 GENERAL

1.1 SCOPE

This section includes the requirements for the impacted material identification and documentation to be performed by the Contractor. Materials handled but retained in a given Material Tracking Location (MTL) are not subject to these requirements.

1.2 RELATED SECTIONS

- A. Section 02050 - Surveying.
- B. Section 02205 - Impacted Material Excavation.
- C. Section 02275 - Erosion and Sediment Control.
- D. Part 6 - Statement of Work.
- E. Part 8 - Environmental Health and Safety, and Training Requirements.
- F. Impacted Material Placement Plan, On Site Disposal Facility, August 1997, Revision H.

1.3 REFERENCES

- A. Sitewide Excavation Plan, July 1997, Revision C.
- B. Waste Acceptance Criteria Attainment Plan for the On Site Disposal Facility, August 1997, Revision B.
- C. Area 2, Phase I Southern Waste Units Implementation Plan for Operable Unit 2, October 1997, Revision 0.

1.4 DEFINITIONS

- A. Material Tracking Locations (MTLs) - The specific areas identified in this specification and as shown on the Construction Drawings; MTLs include:

MTL Number	MTL Description
CON-017	OU1 Stockpile
SWU-001	Inactive Flyash Pile (IFP)
SWU-004	South Field Impacted Material Stockpile
OSD-002	On Site Disposal Facility (OSDF)
SWU-007	SWU Equipment Wash Facility
SWU-008	Wood Chip Stockpile
SWU-011	Active Flyash Pile (AFP)
SWU-012	South Field Area (SF)
SWU-016	Special Material Transfer Area
SWU-017	Lead Contaminated Soil Container Transfer Area
SWU-018	Lead Contaminated Soil Area
SWU-019	Retention Basin 1
SWU-020	Retention Basin 2
SWU-021	Retention Basin 3
NAR-008	Impacted Material Stockpile at OSDF Sedimentation Basin
W800057	OSDF East Impacted Material Stockpile
W800011	OSDF East Impacted Material Construction Debris Stockpile
W800056	OSDF West Impacted Material Stockpile
W800010	OSDF West Impacted Material Construction Debris Stockpile

Additional MTLs may be added as the SWU excavation progresses. These new MTLs will be identified by the Construction Manager and provided to the Contractor.

- B. OSDF Manifest - Document the identity and source location (and associated analytical data) of the material hauled to the OSDF. See Attachment I.
- C. Field Tracking Log (FTL) - Document the source MTL, quantity, material profile/description, and destination MTL, of the material moved between MTLs (including Special Materials moved to the Special Material Transfer Area) by the Contractor. See Attachment II.
- D. The following notes apply to the attachments to this Section:
 - Note 1. Contractor to provide information; FDF to record on form.
 - Note 2. Contractor equipment operator signature required.
 - Note 3. All other boxes to be completed by FDF.

1.5 SUBMITTALS

Submit for approval, within ten (10) calendar days from Notice to Proceed, the Material Identification and Documentation Work Plan. The plan shall include the following:

- A. Methods for providing information for identification and documentation of material movement as specified in this Section.
- B. A table which presents each piece of haul equipment, its haul capacity in cubic yards, and its assigned unique alpha-numeric identifier.
- C. Identify all competent personnel who will be involved with material identification and documentation.

1.6 HEALTH AND SAFETY

Environmental Health and Safety, and Training requirements shall be as specified in Part 8.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Provide approximately 12-inch by 12-inch metallic identifier, two per piece of hauling equipment, showing unique alpha-numeric equipment identification.
- B. OSDF manifest and FTL forms will be provided by FDF.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

- A. Each piece of hauling equipment shall be uniquely identified with an alpha-numeric identifier. The alpha-numeric identifier must be clearly visible on the two lateral sides of the equipment.
- B. Contractor shall provide the following information for material documentation:
 - 1.

Transfer Type	Target Form	Required Information	Frequency	Method
MTL to OSDF MTL	OSDF Manifest	Source MTL; estimated volume; transported by; OSDF initial placement grid and/or OSDF grid; material returns/ comments	Per Load	verbal; plus transport signature; record to daily log

MTL to Special Material Transfer Area MTL	FTL	Source MTL; destination MTL; material description; estimated volume or item count	Per event and Per MTL	verbal; plus record to daily log
MTL to other MTLs	FTL	Source MTL; destination MTL; material description; estimated volume or item count	Per day and Per MTL	verbal; plus record to daily log

2. Estimate quantities of material by volumes (cubic yards) and type moved based on visual observations. Use the number of hauls per equipment type and each type's respective capacity to estimate volumes to the nearest 3 cubic yards per load.
 3. Identify the type (and placement category for material to be placed in the OSDF) of material, based on a visual observation, in accordance with the OSDF Impacted Material Placement Plan and as specified in Section 02205. Provide a general description such as "soil and soil-like material (including flyash, gravel, etc.)", "debris", or "Special Material".
 - a. An example of general descriptions of soil or soil-like material is 10 percent flyash/90 percent soil.
 - b. Special Materials will include atypical items like transformers or pressurized containers or other Special Material items as specified in 02205.
- C. Carry the OSDF manifest in equipment when hauling to the OSDF.
- D. Submit the OSDF manifest to the OSDF Construction Quality Control representative upon arrival at the OSDF.

- E. Provide information for FTL(s) for materials moved to the Special Material Transfer Area to the Construction Manager at the time of delivery. Contractor shall record this information in Contractor's daily log.
- F. Provide information for materials moved between MTLs (other than OSDF) at the close of business each working day, or at the morning safety briefing on the following working day. Contractor shall record this information in Contractor's daily log.

3.2 PREPARATION

- A. Field stake delineation of MTLs.
- B. Train and familiarize personnel (minimum of 3) with the material identification and documentation requirements. Identify all competent personnel who will be involved with material identification and documentation to the Construction Manager.

3.3 METHODS AND REPORTING REQUIREMENTS

Comply with detailed methods included in approved Material Identification and Documentation Work Plan.

3.4 FIELD QUALITY CONTROL

FDF will provide intermittent inspections of material identification and documentation, and work with the Contractor to assist with the implementation of this Section.

END OF SECTION

SECTION 02275
EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.1 SCOPE

This section includes, but is not limited to the following requirements for erosion and sediment control:

- A. Soil erosion and sedimentation control measures for work included in this Contract including areas disturbed by the Contractor.
- B. Dumped rock fill, erosion control blankets, geotextile and High Density Polyethylene (HDPE) liner for ditches, sumps and erosion control areas.
- C. Maintenance of erosion and sediment control measures installed by this contract and existing erosion and sediment control measures and facilities including retention basins 1, 2 and 3, transfer line and related appurtenances as shown on the Construction Drawings.
- D. Control of surface water and management of ponded water in construction areas during site preparation and excavation activities as specified in this Section.

1.2 RELATED SECTIONS AND PLANS

- A. Section 02150 - Site Preparation.
- B. Section 02205 - Impacted Material Excavation.
- C. Section 02212 - Material Identification and Documentation.
- D. Section 02900 - Seeding.
- E. Part 6 - Statement of Work.
- F. Part 8 - Environmental Health and Safety, and Training Requirements.

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1.3 REFERENCES

- A. State of Ohio, Department of Natural Resources (ODNR): Rainwater and Land Development, Ohio's Standard for Storm Water Management, Land Development, and Urban Stream Protection - 1996.
- B. Sitewide Excavation Plan, July 1997, Revision C.
- C. Waste Acceptance Criteria Attainment Plan for On Site Disposal Facility, August 1997, Revision B.
- D. Ohio Department of Transportation (ODOT), Construction and Material Specification, 1997 edition.
- E. Area 2 Phase I Southern Waste Units Implementation Plan for Operable Unit 2, October 1997, Revision C.
- F. Latest version of American Society for Testing Materials (ASTM) Standards:
 - 1. ASTM D3786 Standard Test Method for Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabric-Diaphragm Bursting Strength Test Method.
 - 2. ASTM D4533 Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
 - 3. ASTM D4491 Standard Test Method for Water Permeability of Geotextiles by Permittivity.
 - 4. ASTM D4632 Standard Test Method for Breaking Load and Elongation of Geotextiles (Grab Method).
 - 5. ASTM D4751 Standard Test methods for Determining Apparent Opening Size of a Geotextile.
 - 6. ASTM D4833 Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products.

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1.4 SUBMITTALS

- A. For each product proposed for use, submit the following to the Construction Manager for review within 10 calendar days from the Notice to Proceed:
1. Manufacturer's product data and recommended methods of installation; and
 2. Certification from supplier or manufacturer that the product meets the material requirements of this Section.
- B. Prepare and submit to the Construction Manager within 10 calendar days from Notice to Proceed a Surface Water Management and Erosion and Sediment Control Plan that includes the following, at a minimum:
1. descriptions of the surface water management and erosion and sediment control measures to be implemented throughout the duration of the contract;
 2. methods for installing and maintaining surface water management and erosion and sediment control measures;
 3. drawings illustrating, in plan view, the location and sequencing of the surface water management and erosion and sediment control measures;
 4. methods and measures for collection and discharge of surface water from the excavated areas and protection of the excavated areas during progress of the work, inclement weather and at the end of each work day.

1.5 QUALITY ASSURANCE PROGRAM

- A. Inspect erosion and sediment control measures to evaluate the effectiveness of, and for maintenance of, the control measures. Any repairs to the erosion and sediment control measures shall be corrected within 24 hours of problem discovery. Inspections shall occur, at a minimum, at the following frequencies:
1. Weekly;
 2. Daily after each rain event exceeding 0.5 inches at the FEMP;

3. At least daily during prolonged rainfall events at the Fernald Environmental Management Project (FEMP).

B. Records of inspections shall be kept on file at Contractor's site office and shall be submitted monthly to the Construction Manager.

1.6 HEALTH AND SAFETY REQUIREMENTS

A. Environmental Health and Safety, and Training requirements shall be as specified in Part 8.

PART 2 PRODUCTS

2.1 MATERIALS

A. Furnish silt fence with either woven or non-woven fabric. Silt fence shall:

1. be woven fabric consisting of slit films of polypropylene treated with ultraviolet light stabilizers, or be non-woven fabric consisting of long chain polymeric filaments or polyester yarns and treated with ultraviolet light stabilizers;
2. be inert to chemicals commonly found in soils and to hydrocarbons;
3. be resistant to mildew, rot, insects, and rodent attack; and
4. have fabric and fence post properties and minimum dimensions in accordance with ODNR.

B. Dumped Rock Fill: Dumped rock fill shall meet the requirements of ODOT Item 601.07 for the type specified on the Construction Drawings.

C. Non-woven geotextile fabric for beneath dumped rock fill shall meet the following minimum values:

PROPERTY	TEST METHOD	ROLL VALUES
Grab Tensile Strength (lbs)	ASTM D4632	80
Puncture (lbs)	ASTM D4833	25
Trapezoidal Tear (lbs)	ASTM D4533	25
Mullen Burst (psi)	ASTM D3786	130
Apparent Opening Size	ASTM D4751	less than 0.6mm
Permittivity (cm/sec ²)	ASTM D4491	1 X 10 ⁻²

D. The erosion control blanket shall be constructed of 100 percent coconut fiber stitch bonded between a heavy duty UV stabilized bottom net and a heavy duty UV stabilized top net. The crimped netting shall form prominently closely spaced ridges across the entire width of the mat. The netting shall be stitched together on 1.5 inch centers with UV stabilized polyester thread to form a permanent three dimensional structure. The mat shall have the following physical properties and be rated for 2 years service life for use on 1:1 slopes.

1. Material Content
 - a. Coconut fiber: 100 percent; 0.5 pounds per square yard.
 - b. Netting: Top and bottom - Heavy UV stabilized; polypropylene; 3 pounds per 1,000 square feet.
 - c. Thread: UV stabilized polyester.
2. Physical Specifications (Roll)
 - a. Width: 6.5 feet.
 - b. Length: 83.5 feet.
 - c. Weight: 30 lbs ±10 percent.
 - d. Area: 60 square yards.

- E. Geomembrane liner material for ditch liner shall be 60 mil textured High Density Polyethylene (HDPE). HDPE geomembrane liner shall be factory seamed and transported in largest sections possible to minimize field seaming. Field seams shall be recommended by the HDPE manufacturer.
- F. Crusting agent shall be as approved by the Construction Manager.

PART 3 EXECUTION

3.1 GENERAL

- A. Construct and maintain erosion and sediment control measures as specified in this Section, and as shown on the construction drawings. Maintain existing erosion and sediment control facilities and measures in accordance with Part 6.
- B. As the excavation progresses, excavate depressions in the excavated area to be used as temporary water collection sumps as shown on the Construction Drawings. Water accumulated in the sumps shall be pumped directly to the nearest retention basin via portable sump pump system and flexible hose. Excavations shall be sloped to sumps and/or graded to drain to existing ditches discharging to the nearest retention basin. Excavations are to be kept free of standing water. Runoff into excavation areas shall be minimized by grading the surrounding area away from the excavation area and/or by diversions.
- C. Remove erosion and sediment control measures at the direction of the Construction Manager after the disturbed areas are established with satisfactory conditions of seeding as specified in Section 02900.
- D. Compact pipe backfill and geomembrane liner anchor trench backfill soil by thoroughly tamping in maximum one foot lifts.

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3.2 SILT FENCES

Install in accordance with the requirements of the ODNR Rainwater Standards. Place at locations shown on Construction Drawings prior to start of site preparation and excavation activities. Remove accumulated sediment when deposition reaches one-half the height of the silt fence or sooner if accumulated sediment prevents performance of silt fence; remove accumulated sediment within 24 hours of discovery. Sediment shall be removed as specified in Section 02205.

3.3 EROSION CONTROL BLANKETS

Install in accordance with manufacturer's recommendations in the ditches shown on the Construction Drawings. Erosion control blankets shall be anchored with wire staples, spaced at a maximum of 3 foot on center, with size as shown on the Construction Drawings.

3.4 INACTIVE EXPOSED EXCAVATION & CONSTRUCTION AREAS

- A. Forty-five (45) calendar days shall be the maximum time that an area can be left in an exposed condition without seeding. If an exposed excavation area shall not be worked for a period of 45 calendar days, the soils shall be stabilized within 7 calendar days of excavation by one of the following methods:
1. During the seeding season, temporary seeding shall be applied as specified in Section 02900.
 2. During non-seeding seasons, crusting agents shall be applied as specified in this Section.
- B. Forty-five (45) calendar days shall be the maximum time that a stockpile can be left in an exposed condition without seeding. Stockpiles that are to be inactive for a period of 45 calendar days shall be stabilized within 7 calendar days by means of crusting agents, as specified in this Section.

3.5 RETENTION BASINS AND DITCHES

- A. Remove accumulated sediment and debris from the existing retention basins and ditches. In no case shall sediment build up to a depth greater than the painted indicator on the riser pipe in the retention basins or to a depth greater than one-half the constructed depth of the ditch.
- B. Remove sediment and debris as specified in Section 02205.
- C. Protect the existing pump station, transfer line, HDPE liner and appurtenances during the removal of sediment and debris.

3.6 DUMPED ROCK FILL

- A. Place and maintain dumped rock fill as indicated on the Construction Drawings and in accordance with ODOT Item 601.
- B. Maintain the existing dumped rock fill in the SWU area.

3.7 HIGH DENSITY POLYETHYLENE (HDPE) LINER

- A. Install and maintain HDPE liner in the ditches as shown on the Construction Drawings.
- B. Maintain the existing HDPE liner in Retention Basins 1, 2 and 3 and existing ditches.

END OF SECTION

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SECTION 02850
EQUIPMENT WASH FACILITY

PART 1 GENERAL

1.1 SCOPE

This Section includes, but is not limited to:

- A. Performance criteria for the equipment wash facility.
- B. Equipment and material to be provided by the Contractor.
- C. Operation and maintenance of the equipment wash facility.
- D. Equipment Wash Facility provided by FDF.

1.2 RELATED SECTIONS AND PLANS

- A. Section 02205 - Impacted Material Excavation.
- B. Part 6 - Statement of Work.
- C. Part 8 - Environmental Health and Safety, and Training Requirements.

1.3 REFERENCES

- A. Area 2, Phase I, Site Preparation Technical Specifications and Construction Drawings.

1.4 HEALTH AND SAFETY REQUIREMENTS

Environmental Health and Safety, and Training requirements shall be as specified in Part 8.

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1.5 SUBMITTALS

Within ten (10) calendar days from Notice to Proceed submit the Equipment Wash Plan to the Construction Manager for review and approval. The Equipment Wash Plan shall include:

- A. Equipment wash methods and washing and maintenance equipment proposed to meet the performance criteria.
- B. Utility requirements.
- C. Operation and maintenance requirements and schedule.
- D. Catalog information and drawings of proposed washing and maintenance equipment.
- E. Materials required for washing and maintenance.

1.6 FACILITIES PROVIDED BY FDF

- A. Concrete wash pad will be provided by FDF at the existing Equipment Wash Facility as shown on the construction drawings for the Area 2 Phase I Site Preparation. The wash pad will be equipped with three water yard hydrants limited to a maximum flow of 5 gallons per minute (gpm) each (total flow rate of 15 gpm. A drain collection system, with trenches and an oil/water separator, capable of discharging a maximum flow of 50 gpm to the existing West Pump Station will be provided. The pump capacity at the existing West Pump Station is 50 gpm.
- B. 15 gpm water supply and a 480 Volt, 3 phase, 60 Hz electric power supply will be provided at the existing Equipment Wash Facility.

PART 2 PRODUCTS

- A. Provide washing equipment, including pressure washers and other equipment and materials required for equipment washing and maintenance of washing equipment and equipment wash facility, pressure washers or

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suitable washing equipment, holding tanks and associated piping to meet the performance criteria specified in this Section.

- B. Signs and sign posts at equipment wash facility for traffic control.
- C. If more than 15 gpm flow of water is required additional water for the equipment wash shall be provided by the Contractor at no additional cost to FDF. Provide holding tank and piping as required.

PART 3 EXECUTION

3.1 PERFORMANCE CRITERIA

- A. Provide equipment wash and maintenance equipment and materials as per the approved Equipment Wash Plan.
- B. Wheels, tires, undercarriage, and body of equipment shall be washed free of visible mud, dirt and debris before leaving the equipment wash facility.
- C. Keep Impacted Material Haul Road clean and free of visible mud, dirt, and debris.
- D. Wash pad, drain line and trenches shall be kept clean to prevent flow blockage. Equipment wash shall be performed only within the wash pad area.
- E. Water overspray shall be controlled and confined to the wash pad area.
- F. Wash water flow to the existing West Pump Station shall be restricted to 50 gpm. Provide holding tank as required to recycle wash water before draining to the existing West Pump Station.
- G. Clean and maintain oil/water separator as necessary and maintain wash pad and associated facilities.

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- H. Remove sediment from wash pad, drain line, trenches, and oil/water separator and haul to the OSDF as specified in Section 02205.

END OF SECTION

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SECTION 02900
SEEDING

PART 1 GENERAL

1.1 SCOPE

This section includes temporary seeding requirements which includes but is not limited to, soil preparation, seed mixture, fertilizer, lime, mulch and asphalt emulsion tackifier.

1.2 RELATED SECTIONS AND PLANS

- A. Section 02050 - Surveying.
- B. Section 02205 - Impacted Material Excavation.
- C. Section 02275 - Erosion and Sediment Control.
- D. Part 6 - Statement of Work.
- E. Part 8 - Environmental Health and Safety, and Training Requirements.

1.3 REFERENCES

- A. State of Ohio, Department of Natural Resources (ODNR): Rainwater and Land Development, Ohio's Standard for Storm Water Management, Land Development, and Urban Stream Protection - 1996.
- B. Sitewide Excavation Plan, July 1997, Revision C.
- C. AASHTO M140, latest revision.
- D. AASHTO M208, latest revision.
- E. Federal Seed Act, latest revision.

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1.4 SUBMITTALS

- A. Submit the following to the Construction Manager within 30 calendar days from Notice to Proceed for review and approval:
1. Proposed seed mixes, mulch, asphalt emulsion tackifier, and fertilizers.
 - a. Manufacturer's product data and recommended methods of application for seed, mulches, lime, asphalt emulsion tackifier and fertilizer, and crusting agent.
 2. Material Safety Data Sheet (MSDS) for lime, fertilizer, and asphalt emulsion tackifier.
- B. Submit certificate of compliance for the following within fifteen (15) calendar days before the seeding. Do not sow seed until the Construction Manager has reviewed the certificates.
1. Certificate stating seed mixture, guaranteed percentages of purity, weed content, germination of seed, name of seller, the test date for the seed, and the net weight and date of shipment.
 2. Manufacturer's certificate stating the available nutrients contained in the proposed fertilizer;
 3. Manufacturer's certificate stating the lime meets the requirements of this Section;
 4. Manufacturer's certificate stating the wood cellulose mulch meets the requirements of this Section; and
 5. Manufacturer's certificate stating the asphalt emulsion tackifier meets the requirements of this Section.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver containerized materials in uniform packages bearing the name of the manufacturer, the net weight and a statement of content. Deliver containerized materials to the site in original, properly labeled, unopened, clean containers each showing the manufacturer's guaranteed analysis conforming to applicable regulations and standards.

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- B. Store materials in a dry area in a manner to prevent physical damage from the elements.

1.6 HEALTH AND SAFETY REQUIREMENTS

Environmental Health and Safety, and Training requirements shall be as specified in Part 8.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Furnish seed labeled in accordance with the U.S. Department of Agriculture (USDA) Rules and Regulations under the Federal Seed Act and applicable State seed laws. Furnish seed in sealed bags or containers bearing the date of expiration. Do not use seed after its expiration date. Each variety of seed shall: have a purity of not less than 90 percent, have a percentage of germination not less than 80 percent, have a weed to seed content of not more than 0.75 percent and contain no noxious weeds. The above percentages are by weight.
- B. Seed mixture for temporary seeding shall be as follows:
1. Creeping Red Fescue - 20 pounds/acre.
 2. Annual Ryegrass - 10 pounds/acre.
 3. Kentucky Bluegrass - 15 pounds/acre.
 4. Aliske Clover - 5 pounds/acre.
 5. Flatpea - 5 pounds/acre.
- C. Obtain water from the on-site sources shown on the Construction Drawings and specified in Part 6, unless otherwise approved by the Construction Manager.
- D. Fertilizer:
1. Use fertilizer that is dry or liquid commercial grade fertilizer, uniform in composition that meets the requirements of all State and Federal regulations and standards of the Association of Agricultural Chemists.
 2. Fertilizer shall be VCOTE 34-0-14 as manufactured by George W. Hill. No substitution allowed.

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- E. Furnish mulch meeting the following requirements:
1. Mulch shall be straw or wood cellulose fiber, free of clay, stone, foreign substances, and reasonably free of weeds.
 2. Furnish straw that does not contain sticks larger than 1/4-inch diameter or other materials that may prevent matting down during application. Use straw that is free from mold and other objectionable material and in an air-dry condition suitable for placing with mulch blower equipment or other equipment as approved by the Construction Manager. Dust control during mulch blowing shall meet the dust control requirements specified in Part 6. Straw shall be generally 6 inches or more in length.
 3. Mulch applied by spraying shall be a wood cellulose processed into a uniform fibrous physical state. Use wood cellulose fiber containing a green dye that will provide for easy visual inspection for uniformity of slurry spread. The wood cellulose fiber including dye, shall contain no growth or germination inhibiting properties. The wood cellulose fiber shall be manufactured in such a manner that, after addition and agitation in slurry tanks with water, the fibers in the material become uniformly suspended to form a homogeneous material. When sprayed on the ground, the material shall allow absorption and percolation of moisture. The wood cellulose fiber shall meet the following requirements:

<u>Quantity</u>	<u>Specification Limit</u>
Particle Length	0.375 inch (maximum)
Particle Thickness	0.047 inch (maximum)
pH	4.0 to 8.5
Ash Content	1.6 percent (maximum)
Water Holding Capacity	90 percent (maximum)

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- F. Furnish lime that shall be agricultural ground limestone with a minimum total neutralizing power of 90 percent. The lime shall have a material gradation of at least 40 percent passing the U.S. Standard Number 100 sieve, and at least 95 percent passing the U.S. Standard Number 8 sieve.
- G. Furnish asphalt emulsion tackifier for mulch conforming to AASHTO M 140 or AASHTO M 208. Asphalt emulsion tackifier shall be nontoxic to plants and shall be prepared so that it will not change in transportation or storage.

2.2 EQUIPMENT

Provide equipment of size and type to perform work specified in this Section.

PART 3 EXECUTION

3.1 GENERAL

- A. Perform soil preparation by tilling/cultivating, to a depth of approximately 4 inches, to eliminate uneven areas and low spots. Maintain lines, levels and contours.
- B. Repeat cultivation in areas where equipment used for hauling and spreading has compacted subgrade.
- C. Temporary seeding shall be performed at completion of excavation before pre-certification and after certification. Stabilization of the inactive exposed excavation and construction areas shall be as specified in Section 02275.

3.2 APPLICATION

- A. Apply fertilizer, lime, seed, mulch and asphalt emulsion tackifier to disturbed areas and areas excavated and graded in this Contract requiring seeding unless otherwise indicated.

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- B. Application of Fertilizer:
1. Apply fertilizer at a uniform rate of 12 pounds per 1000 square feet.
 2. Apply agricultural lime at a rate of two tons per acre.
 3. Disc lime and fertilizer thoroughly into upper 2 inches.
 4. Lightly water to aid the distribution of fertilizer.
- C. Sequence of application of temporary seeding mixture, mulch and asphalt emulsion tackifier:
1. Apply temporary seed mixture at the minimum rate as specified in this Section. Seeding shall be done by hydroseeding or by drilling to a depth of 0.25 inches followed by cultipacking.
 2. Do not seed areas in excess of that which can be mulched within 24 hours.
 3. Seeding season for temporary seeding shall be March 1 through October 31.
 4. Within 24 hours following seeding, apply mulch.
 5. Mulch shall be spread in a 1 to 2 inch layer.
 6. Apply water with a fine spray immediately after each area has been mulched. Wet soil at approximately a rate of 120 gallons per 1,000 square feet.
 7. Apply asphalt emulsion tackifier at the rate specified in this Section.
- D. Spread straw mulch, either by hand or by blowing method, at the rate of 2 air-dried tons per acre.
- E. Apply sprayed wood cellulose fiber at a net dry weight of 750 pounds per acre. Mix the wood cellulose fiber with water at a ratio of 50 pounds of wood cellulose fiber per 100 gallons of water.
- F. Maintain mulching material in place with an asphalt emulsion tackifier. Apply asphalt emulsion tackifier at a rate of 120 gallons per acre.

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3.3 MAINTENANCE

- A. Maintain the seeded areas in satisfactory condition until acceptance of the seeding by the Construction Manager. Maintenance of the seeded areas includes repairing eroded areas, revegetating when necessary, watering and mowing (if applicable). A satisfactory condition of the vegetated area is defined as follows:
1. An area shall have a good, clean stand of perennial grass.
 2. Within 3 weeks, germination must occur over 95 percent of the area with no single bare area greater than 3 square feet.
 3. Within 3 months, 95 percent of the area must be covered with mature perennial grass.
- B. Areas that fail to meet these requirements shall be repaired or reseeded as necessary to produce an acceptable stand of grass, as specified in this Section.

3.4 ACCEPTANCE

- A. Seeded areas shall be subject to a guarantee period of not less than 24 months from initial establishment of temporary seeding over 100 percent of the seeded areas.
- B. At the end of the warranty period, the Construction Manager will perform an inspection upon written request by the Contractor. Seeded areas not demonstrating satisfactory condition of vegetation as specified herein, shall be repaired, reseeded and maintained to meet all requirements as specified herein at the Contractor's expense.
- C. After necessary corrective work has been completed, the Construction Manager will certify in writing the final acceptance of the seeded areas.

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3.5

WARRANTY

- A. The seeded areas shall be accepted at the end of the warranty period if a satisfactory condition exists as defined in this Section.

END OF SECTION

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