

ATTACHMENT G1
APPENDIX A

TECHNICAL SPECIFICATIONS

PANEL CLOSURE SYSTEM
WASTE ISOLATION PILOT PLANT
CARLSBAD, NEW MEXICO

Section 01010

Summary of Work

Part 1 - General

1.1 Scope

This section includes:

- Scope of Work
- Definitions and Abbreviations
- List of Drawings
- Work by Others
- Contractors Use of Site
- Contractors Use of Facilities
- Work Sequence
- Work Plan
- Health and Safety Plan (HASP)
- Contractor Quality Control Plan (CQCP)
- Submittals

1.2 Scope of Work

The Contractor shall furnish all labor, materials, equipment and tools to construct two (2) WIPP panel closure systems for Panels 1 through 10. Each WIPP Panel closure system consists of two steel bulkheads or one steel bulkhead and one block wall and ROM salt, one of each to be installed in the air-intake drift and the air-exhaust drift of a waste disposal panel, as shown on the Drawings and described in these Specifications. Unless otherwise agreed by Nuclear Waste Partnership, the Contractor shall use Nuclear Waste Partnership supplied equipment underground. Such use shall be coordinated with Nuclear Waste Partnership and may include the use of Nuclear Waste Partnership qualified operators.

The scope of work shall include but not necessarily be limited to the following units of work:

- Develop work plan, health and safety plan (HASP) and contractors quality control plan (CQCP) and submit it to the designated WIPP authority for approval
- Mobilize to site
- Coordinate construction with WIPP operations
- Perform the following operations for the air-intake entry and the air-exhaust entries that do not contain block walls:
 1. Prepare the surfaces for the ROM salt.
 2. Construct the inner steel bulkhead
 3. Place ROM salt material in multiple layers
 4. Construct the outer steel bulkhead

5. Clean up construction areas in underground and above ground

6. Submit all required record documents

7. Demobilize from site

- Perform the following operations for the air-intake entry and the air-exhaust entries that contain block walls:

1. Prepare the surfaces for the ROM salt

2. Place ROM salt material in multiple layers

3. Construct the outer steel bulkhead

4. Clean up construction areas in underground and above ground

5. Submit all required record documents

6. Demobilize from site

1.3 Definitions and Abbreviations

Definitions

Block wall—Existing mortared concrete brick wall adjacent to the panel waste disposal area as shown in the drawings.

Creep—Viscoplastic deformation of salt under deviatoric stress.

Partial closure—The process of rendering a part of the hazardous waste management unit in the underground repository inactive and closed according to approved facility closure plans.

Run-of-Mine Salt (ROM)—Salt obtained from mining operations or a storage pile emplaced in an uncompacted state.

Volatile organic compound (VOC)—Any VOC with Hazardous Waste Facility Permit emission limits.

Nuclear Waste Partnership— Nuclear Waste Partnership LLC as the construction management authority.

Abbreviations/Acronyms

ACI American Concrete Institute

ANSI American National Standards Institute

ASTM American Society for Testing and Materials

CFR Code of Federal Regulations

CQCP Contractor Quality Control Plan

DOE U.S. Department of Energy

DWG drawing

EPA U.S. Environmental Protection Agency

HASP Health and Safety Plan

<u>JHA</u>	<u>Job Hazard Analysis</u>
<u>LHD</u>	<u>load haul dump</u>
<u>LLC</u>	<u>Limited Liability Corporation</u>
<u>MSHA</u>	<u>U.S. Mine Safety and Health Administration</u>
<u>RCRA</u>	<u>Resource Conservation and Recovery Act</u>
<u>VOC</u>	<u>volatile organic compound</u>
<u>WIPP</u>	<u>Waste Isolation Pilot Plant</u>

1.4 List of Drawings

The following drawings are made a part of this specification:

<u>DWG 262-001</u>	<u>WIPP Panel Closure System Title Sheet</u>
<u>DWG 262-002</u>	<u>WIPP Panel Closure System, Underground Waste Disposal Panel Configurations (3,4,6,7,8)</u>
<u>DWG 262-003</u>	<u>WIPP Panel Closure System, Underground Waste Disposal Panel Configurations (1,2,5)</u>
<u>DWG 262-004</u>	<u>Construction Details</u>

1.5 Work by Others

Survey

Survey work to locate, control, confirm, and complete the work will be performed by Nuclear Waste Partnership. Survey work for record purposes will be performed by Nuclear Waste Partnership. The Contractor shall be responsible for developing the ROM salt to fit the excavation.

Nuclear Waste Partnership may elect to perform certain portions or all of the work. The work performed by the Nuclear Waste Partnership will be defined prior to the contract. Unless otherwise agreed by Nuclear Waste Partnership, the Contractor shall use underground equipment furnished by Nuclear Waste Partnership for construction of the steel bulkheads and placement of ROM salt. Underground mining personnel who are qualified for the operation of such underground construction equipment may be made available to the Contractor. The use of WIPP facility government furnished equipment shall be coordinated with Nuclear Waste Partnership.

1.6 Contractor's Use of Site

Site Conditions

The WIPP site is located near Carlsbad in southeastern New Mexico, as shown on the Drawings. The underground arrangements and location of the WIPP waste disposal panels are shown on the Drawings. The work is to construct steel bulkheads and place ROM salt in the air-intake and air-exhaust drifts of one of the panels upon completion of the disposal phase of that panel. The waste disposal panels are located approximately 2,150 ft (655 m) below the ground

surface. The Contractor shall visit the site and become familiar with the site and site conditions prior to preparing a bid proposal.

Contractor's Use of Site and Coordination of Contractor's Work

Areas at the ground surface will be designated for the Contractor's use in assembling and storing his equipment and materials. The Contractor shall utilize only those areas so designated.

Limited space within the underground area will be designated for the Contractor's use for storage of material and setup of equipment.

1.7 Contractor's Use of Facilities

Existing facilities at the site available for use by the Contractor are:

- Waste shaft conveyance
- Salt skip hoist
- 460 volt AC, 3 phase power
- Water (underground, at waste shaft only) (above ground, at location designated by Nuclear Waste Partnership)
- Fuel underground and above ground at fueling stations

Contractor will only enter areas of the underground designated by NWP.

NWP will provide mine safety inspection services and will release areas for work after determining that such areas are safe for the work to be performed. Remediation of areas prior to performing work is the responsibility of NWP.

NWP will establish the ventilation needed for the contractor to perform work. The Contractor will not enter areas of the underground that have insufficient ventilation.

Additional information on mobilization and demobilization to these facilities is presented in Section 02010.

1.8 Work Sequence

Work Sequence shall be as shown on the Drawings and as directed by Nuclear Waste Partnership.

1.9 Work Plans

The Contractor shall prepare Work Plans fully describing the proposed fabrication, installation and construction for each WIPP Panel Closure System. The work plan shall define proposed materials, equipment and construction methods. The Work Plan shall state supporting processes, procedures, materials safety data sheets, and regulations by reference. The work plans shall address precautions related to the Job Hazards Check List. The Work Plan shall

address limitations such as hold and witness points. The Work Plans shall address prerequisites for work. Nuclear Waste Partnership shall approve the Work Plan and no work shall be performed prior to approval of the Work Plan.

1.10 Health and Safety Plan (HASP)

The Contractor shall obtain, review, and agree to applicable portions of the existing WIPP Safety Manual. The Contractor shall prepare a project-specific HASP taking into account all applicable sections of the WIPP Safety Manual. Personnel shall be qualified to work underground as necessary. Personnel operating heavy construction equipment shall be qualified to operate such equipment. The Contractor shall also perform a Job Hazard Analysis (JHA) in accordance with applicable NWP procedures. Nuclear Waste Partnership shall approve the HASP and JHA and no work shall be performed prior to approval of the HASP and JHA.

1.11 Contractor Quality Control Plan (CQCP)

The Contractor shall prepare a CQCP identifying personnel and procedures necessary to produce an end product, which complies with the contract requirements. The CQCP shall comply with applicable Nuclear Waste Partnership requirements, including operator training and qualification; and Section 01400, Contractor Quality Control, of this Specification. Nuclear Waste Partnership shall approve the CQCP and no work shall be performed prior to approval of the CQCP.

1.12 Submittals

Submittals shall be in accordance with Nuclear Waste Partnership Submittal Procedures and as required by the individual Specifications.

Part 2 - Products

Not used.

Part 3 - Execution

Not Used.

End of Section

Section 01090

Reference Standards

Part 1 - General

1.1 Scope

This section includes:

- Provision of Reference Standards at Site
- Acronyms used in Contract Documents for Reference Standards

1.2 Quality Assurance

For products or workmanship specified by association, trade, or Federal Standards, the Contractor shall comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

Conform to reference by date of issue current on the date of the owner-contractor agreement.

The Contractor shall obtain, at his own expense, a copy of the standards referenced in the individual Specification sections and shall maintain that copy at the job site until completion and acceptance of the work.

Should specified Reference Standards conflict with the contract documents, the Contractor shall request clarification from Nuclear Waste Partnership before proceeding.

1.3 Schedule of References

Various publications referenced in other sections of the Specifications establish requirements for the work. These references are identified by document number and title. The addresses of the organizations responsible for these publications are listed below.

<u>ANSI</u>	<u>American National Standards Institute</u> <u>25 West 43rd St.</u> <u>New York NY 10036</u> <u>Ph: 212-642-4900</u> <u>Fax: 212-398-0023</u>
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<u>ASTM</u>	<u>ASTM International</u> <u>100 Barr Harbor Drive</u> <u>P.O. Box C700</u> <u>West Conshohocken, PA 19428-2959</u> <u>Ph: 610-832-9585</u> <u>Fax: 610-832-9555</u>
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CFR Code of Federal Regulations
Government Printing Office
732 N. Capital Street, NW
Washington, DC 20402-0002
Ph: 202-512-1530
Fax: 202 512-1262

EPA Environmental Protection Agency (Region VI)
1455 Ross Avenue
Suite 1200
Dallas, TX 75202-2733
Ph: 214-665-2200
Fax: 800-887-6063

FTM-STD Federal Test Method Standards
Standardization Documents Order Desk
Bldg. 4D
700 Robbins Ave.
Philadelphia, PA 19111-5094
Ph: 215-697-2179
Fax: 215-697-2978

NIST National Institute of Standards and Technology
100 Bureau Drive, Stop 1000
Gaithersburg, MD 20899-1000
Ph: 301-975-6478
Fax: 301-975-8295

NTIS National Technical Information Service
U.S. Department of Commerce
5301 Shawnee Rd
Alexandria, VA 22312
Ph: 703-605-6000
Fax: 703-321-8547

End of Section

Section 01400

Contractor Quality Control

Part 1 - General

1.1 Scope

This section includes:

- Contractor Quality Control Plan (CQCP)
- Reference Standards
- Quality Assurance
- Tolerances
- Testing Services
- Inspection Services
- Submittals

1.2 Related Sections

- 01090 - Reference Standards
- 01600 - Material and Equipment
- 02222 - Excavation
- 04100 - Run-of-Mine Salt

1.3 Contractor Quality Control Plan (CQCP)

The Contractor shall prepare a Contractor Quality Control Plan (CQCP) describing the methods to be used to verify the performance of the engineered components of the Panel Closure System. The quality control plan for the run-of-mine (ROM) salt shall detail the methods the Contractor proposes to meet the minimum requirements, and the standard quality control test methods to be used to verify compliance with minimum requirements. Equipment methods employed shall be traceable to standard quality control tests as approved in the CQCP. No work shall be performed prior to Nuclear Waste Partnership approval of the CQCP.

1.4 References and Standards

Refer to individual specification sections for standards referenced therein, and to Section 01090, Reference Standards, for general listing. Additional standards will be identified in the CQCP.

Standards referenced in this section are as follows:

- ASTM E 329-01b Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection
- ASTM E 543-02 Standard Practice for Agencies Performing Nondestructive Testing

1.5 Quality Assurance

The Contractor shall:

- Monitor suppliers, manufacturers, products, services, site conditions, and workmanship to produce work of specified quality
- Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship
- Perform work with qualified persons to produce required and specified quality

1.6 Tolerances

The Contractor shall:

- Monitor excavation, fabrication, and tolerances in order to produce acceptable work. The Contractor shall not permit tolerances to accumulate.

1.7 Testing Services

Unless otherwise agreed by Nuclear Waste Partnership, the Contractor shall employ an independent firm qualified to perform the testing services and other services specified in the individual Specification sections, and as may otherwise be required by Nuclear Waste Partnership. Testing and source quality control may occur on or off the project site. An independent firm is one that is not associated with the firm performing the work being tested.

The testing laboratory shall comply with applicable sections of the Reference Standards and shall be authorized to operate in the State of New Mexico.

Testing equipment shall be calibrated at reasonable intervals traceable to either the National Institute of Standards and Technology or accepted values of natural physical constants.

1.8 Inspection Services

The Contractor may employ an independent individual(s) to perform inspection services as a supplement to the Contractor's quality control as specified in the individual Specification sections, and as may be required by Nuclear Waste Partnership. Inspection may occur on or off the project site. An independent individual is one that did not perform the work being inspected.

The inspectors shall comply with applicable sections of the Reference Standards.

1.9 Submittals

The Contractor shall submit a CQCP as described herein.

Prior to start of work, the Contractor shall submit for approval, the testing laboratory name, address, telephone number and name of responsible officer of the firm as well as a copy of the testing laboratory compliance with the reference ASTM standards and a copy of report of laboratory facilities inspection made by Materials Reference Laboratory of National Institute of

Standards and Technology with memorandum of remedies of any deficiencies reported by the inspection.

The Contractor shall submit the names and qualifications of personnel proposed to perform the required inspections, along with their individual qualifications and certifications. Once approved by Nuclear Waste Partnership these personnel shall be available as may be required to promptly and efficiently complete the work.

Part 2 - Products

Not used.

Part 3 - Execution

3.1 General

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system. The quality control system shall consist of plans, procedures, and organization necessary to produce an end product which complies with the contract requirements. The system shall cover all construction operations, both on site and off site, and shall be keyed to the proposed construction sequence. The project superintendent will be held responsible for the quality of work on the job. The project superintendent in this context is the individual with the responsibility for the overall management of the project, including quality and production.

3.2 Contractor Quality Control Plan

3.2.1 General

The Contractor shall supply, not later than 30 days after receipt of notice to proceed, the Contractor Quality Control Plan (CQCP) which implements the requirements of the Contract. The CQCP shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. Construction shall not begin until the CQCP is approved by Nuclear Waste Partnership.

3.2.2 Content of the Contractor Quality Control Plan (CQCP)

The CQCP shall cover applicable construction operations, both on site and off site, including work by subcontractors, fabricators, suppliers, and purchasing agents and shall include, as a minimum, the following items:

- A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the Contractor Quality Control (CQC) staff shall implement the control system for aspects of the work specified.
- The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.
- A description of CQCP responsibilities and a delegation of authority to adequately perform the functions described in the CQCP, including authority to stop work.

- Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, off-site fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with Nuclear Waste Partnership submittal procedures.
- Control, verification, and acceptance testing procedures as may be necessary to ensure that the work is completed to the requirements of the Drawings and Specifications.
- Procedures for tracking deficiencies from identification, through acceptable corrective action, to verification that identified deficiencies have been corrected.
- Reporting procedures, including proposed reporting formulas.

3.2.3 Acceptance of Plan

Acceptance of the Contractor's plan is conditional. Nuclear Waste Partnership reserves the right to require the Contractor to make changes in the CQCP and operations, including removal of personnel, if necessary, to obtain the quality specified.

3.2.4 Notification of Changes

After acceptance of the CQCP, the Contractor shall notify Nuclear Waste Partnership in writing of any proposed change. Proposed changes are subject to acceptance by Nuclear Waste Partnership prior to implementation.

3.3 Tests

3.3.1 Testing Procedure

The Contractor shall perform specified or required tests to verify that control measures are adequate to complete the work to contract requirements. Upon request, the Contractor shall furnish, at his own expense, duplicate samples of test specimens for testing by Nuclear Waste Partnership. The Contractor shall perform, as necessary, the following activities and permanently record the results:

- Verify that testing procedures comply with contract requirements and are the most current version of such procedures.
- Verify that facilities and testing equipment are available and comply with testing standards.
- Check test instrument calibration data against certified standards.
- Verify that recording forms and test identification control number system, including the applicable test documentation requirements, have been prepared.
- Record the results of tests taken, both passing and failing. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test will be given. If approved by Nuclear Waste Partnership, actual test

reports may be submitted later with a reference to the test number and date taken. An information copy of tests performed by an offsite or commercial test facility will be provided directly to Nuclear Waste Partnership.

- The Contractor may elect to develop an equipment specification with construction parameters based upon test results of a test section of emplaced ROM salt. The equipment specification based upon construction parameters shall be traceable to standard test results identified in the CQCP. Specification paragraph reference, location where construction parameters were taken, and the sequential control number identifying the construction parameters will be given. If approved by Nuclear Waste Partnership, actual construction parameter reports may be submitted later with a reference to the recording of construction parameters, location, time and date taken.

3.4 Testing Laboratory

The testing laboratory shall provide qualified personnel to perform specified sampling and testing of products in accordance with specified standards, and the requirements of Contract Documents.

Reports indicating results of tests, and compliance or noncompliance with the contract documents will be submitted in accordance with Nuclear Waste Partnership submittal procedures. Testing by an independent firm does not relieve the Contractor of the responsibility to perform the work to the contract requirements.

3.5 Inspection Services

The inspection firm shall provide qualified personnel to perform specified inspection of products in accordance with specified standards.

Reports indicating results of the inspection and compliance or noncompliance with the contract documents will be submitted in accordance with Nuclear Waste Partnership submittal procedures.

Inspection by the independent individual(s) does not relieve the Contractor of the responsibility to perform the work to the contract requirements.

3.6 Completion Inspection

3.6.1 Pre-Final Inspection

At appropriate times and at the completion of all work, the Contractor shall conduct an inspection of the work and develop a list of items which do not conform to the Drawings and Specifications. The Contractor shall then notify Nuclear Waste Partnership that the work is ready for inspection. Nuclear Waste Partnership will perform this inspection to verify that the work is satisfactory and appropriately complete. A final list will be developed as a result of this inspection. The Contractor shall ensure that all items on this list are corrected and notify Nuclear Waste Partnership so that a final inspection can be scheduled. Any items noted on the final inspection shall be corrected in a timely manner. These inspections and any deficiency corrections required by this paragraph will be accomplished within the time slated for completion of the entire work.

3.6.2 Final Acceptance Inspection

The final acceptance inspection will be formally scheduled by Nuclear Waste Partnership based upon notice from the Contractor. This notice will be given to Nuclear Waste Partnership at least 14 days prior to the final acceptance inspection. The Contractor shall ensure that specific items previously identified as unacceptable, along with remaining work performed under the contract, will be complete and acceptable prior to the final acceptance inspection.

3.7 Documentation

The Contractor shall maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records shall include the work of subcontractors and suppliers and shall be on an acceptable form approved by Nuclear Waste Partnership.

3.8 Notification of Noncompliance

Nuclear Waste Partnership will notify the Contractor of any noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the worksite, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, Nuclear Waste Partnership may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

End of section.

Section 01600

Material and Equipment

Part 1 - General

1.1 Scope

This section includes:

- Equipment
- Products
- Transportation and Handling
- Storage and Protection
- Substitutions

1.2 Related Sections

- 01010 - Summary of Work
- 01400 - Contractor Quality Control
- 02010 - Mobilization and Demobilization
- 02222 - Excavation
- 04100 - Run-of-Mine Salt

1.3 Equipment

The Contractor shall specify his proposed equipment in the Work Plan. Power equipment for use underground shall be either electrical or diesel engine driven. All diesel engine equipment shall be appropriate for use underground at the WIPP site.

1.4 Products

The Contractor shall specify in the Work Plan, or in subsequently required submittals, the proposed products including, but not limited to steel bulkheads and ROM salt. The proposed products shall be supported by laboratory test results as required by the Specifications. Products shall be subject to approval by Nuclear Waste Partnership.

1.5 Transportation and Handling

The Contractor shall:

- Transport and handle products in accordance with manufacturers' instructions.
- Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.6 Storage and Protection

The Contractor shall:

- Store and protect products in accordance with manufacturers' instructions.
- Store with seals and labels intact and legible.
- Store sensitive products in weather-tight, climate-controlled enclosures in an environment favorable to product.
- Provide ventilation to prevent condensation and degradation of products.
- Store loose granular materials on solid flat surfaces in a well-drained area and prevent mixing with foreign matter.
- Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- Arrange storage of products to permit access for inspection and periodically inspect to verify products are undamaged and are maintained in acceptable condition.

1.7 Substitutions

1.7.1 Equipment Substitutions

The Contractor may substitute equipment for that proposed in the Work Plan subject to Nuclear Waste Partnership approval.

1.7.2 Product Substitutions

The Contractor may not substitute products after the proposed products have been approved by Nuclear Waste Partnership unless he can demonstrate that the supplier/source of that product no longer exists in which case he shall submit alternate products with lab test results to Nuclear Waste Partnership for approval.

Part 2 - Products

Not used.

Part 3 - Execution

Not used.

End of section.

Section 02010

Mobilization and Demobilization

Part 1 - General

1.1 Scope

This section includes:

- Mobilization of Equipment and Facilities to Site
- Contractor Use of Site
- Use of Existing Facilities
- Demobilization of Equipment and Facilities
- Site Cleanup

1.2 Related Sections

- 01010 - Summary of Work
- 01600 - Material and Equipment

Part 2 - Products

Not used.

Part 3 - Execution

3.1 Mobilization of Equipment and Facilities to Site

Upon authorization to proceed, the Contractor shall mobilize his equipment and facilities to the jobsite. Equipment and facilities shall be as specified and as defined in the Contractor's Work Plan.

Nuclear Waste Partnership will provide utilities at designated locations. The Contractor shall be responsible for all hookups and tie-ins required for his operations.

The Contractor shall be responsible for providing his own office, storage, and sanitary facilities.

Areas will be designated for the Contractor's use in the underground area in the vicinity of the panel closure system installation. These areas are limited.

3.2 Contractor Use of Site

The Contractor shall use only those areas specifically designated for his use by Nuclear Waste Partnership. The Contractor shall limit his on-site travel to the specific routes required for performance of his work, and designated by Nuclear Waste Partnership.

3.3 Use of Existing Facilities

Existing facilities available for use by the Contractor are:

- Waste shaft conveyance
- Salt skip hoist
- 460 Volt AC, 3 phase power
- Water underground at waste shaft only
- Water on surface at location designated by Nuclear Waste Partnership
- Fuel for construction equipment on the surface and underground

The Contractor shall arrange for use of the facilities with Nuclear Waste Partnership and coordinate his actions and requirements with ongoing Nuclear Waste Partnership operations.

Use of water in the underground will be restricted. No washout or cleanup will be permitted in the underground except as designated by Nuclear Waste Partnership. Above ground washout or cleanup of equipment will be allowed in the areas designated by Nuclear Waste Partnership.

The Contractor is cautioned to be aware of the physical dimensions of the waste conveyance and the air lock.

The Contractor shall be responsible for any damage incurred by the existing site facilities as a result of his operations. Any damage shall be reported immediately to Nuclear Waste Partnership and repaired at the Contractor's cost.

3.4 Demobilization of Equipment and Facilities

At completion of this work, the Contractor shall demobilize his equipment and facilities from the job site. Contractor's equipment and materials shall be removed and disturbed areas restored. Utilities shall be removed to their connection points unless otherwise directed by Nuclear Waste Partnership.

3.5 Site Cleanup

At conclusion of the work, the Contractor shall remove trash, waste, debris, excess construction materials, and restore the affected areas as close to their prior condition as practical, to the satisfaction of Nuclear Waste Partnership. A final inspection will be conducted by Nuclear Waste Partnership and the Contractor before final payment is approved.

End of section.

Section 02222

Excavation

Part 1 - General

1.1 Scope

This section includes:

- Excavation for surface preparation and leveling of surrounding areas for ROM salt
- Disposition of excavated materials
- Field measurement and survey

1.2 Related Sections

- 01010 - Summary of Work
- 01600 - Material and Equipment

1.3 Reference Documents

Krieg, R. D., 1984, *Reference Stratigraphy and Rock Properties for the Waste Isolation Pilot Plant*, SAND83-1908, Sandia National Laboratories, Albuquerque, New Mexico.

1.4 Field Measurements and Survey

Survey required for performance of the work will be provided by Nuclear Waste Partnership.

Part 2 - Products

Not used.

Part 3 - Execution

3.1 Excavation for Surface Preparation and Leveling of Surrounding Areas for Salt

The Contractor shall inspect the panel entry excavations and perform any necessary ground control to ensure worker safety. The contractor may install ground support, as necessary, to address loose material (rock slabs). The surface preparation of the floor shall produce a surface suitable for placing the first layer of ROM salt.

3.2 Disposition of Excavated Materials

The Contractor shall dispose of excavated materials as directed by Nuclear Waste Partnership.

3.3 Field Measurements and Survey

Survey required for performance of the work will be provided by Nuclear Waste Partnership. The Contractor shall protect survey control points, benchmarks, etc., from damage by his

operations. Nuclear Waste Partnership will verify that the Contractor has excavated to the required lines and grades. No salt shall be emplaced until approved by Nuclear Waste Partnership.

End of section.

Section 04100

Run-of-Mine Salt

Part 1 - General

1.1 Scope

This section includes:

- Salt Placement

1.2 Related Sections

- 01010 - Summary of Work
- 01400 - Contractor Quality Control
- 01600 - Material and Equipment

1.3 Submittals for Review and Approval

The salt emplacement method, dust control plan and other safety-related material shall be approved by Nuclear Waste Partnership.

1.4 Quality Assurance

The Contractor shall perform the work in accordance with the CQCP.

Part 2 - Products

2.1 Salt Material

The salt is ROM salt and requires no grading or compaction. The salt shall be free of organic material that could impact performance of the closure such as trash, wood, plastic, rubber, and other organic debris.

Part 3 - Execution

3.1 General

The Contractor shall furnish labor, material, equipment and tools to handle and place the salt.

The Contractor shall use underground equipment and underground mine personnel as required in Part 1.5, Work by Others in Section 01010 Summary of Work. Nuclear Waste Partnership will supply ROM salt. The Contractor shall make suitable arrangements for transporting and placing the ROM salt.

3.2 Installation

ROM salt shall be transported to the panel closure area after the construction of the inner steel bulkhead for those panels that do not already have walls constructed. The ROM salt is not

required to achieve a specified density. The salt shall be free of organic material that could impact performance of the closure, such as trash, wood, plastic, rubber, and other organic debris.

Salt may be emplaced in layers to facilitate the construction. The ROM salt is emplaced in layers with an appropriate slope near the ends of the WIPP Panel Closure System. The inner and outer salt emplacements are designated on the drawings.

For the inner emplacement of the ROM salt, the salt is emplaced at an appropriate angle of repose. Initially, there shall be no gap left between salt and roof or sidewalls. Hand placement or the use of push plates can be used to fill the voids if necessary. ROM salt will be pushed up to the roof against explosion isolation walls in Panels 1, 2, and 5 as designated in the drawings.

3.3 Field Quality Control

The Contractor shall provide a Quality Control Inspector to inspect the emplacement of salt.

End of Section.