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SECTION 01010

SUMMARY OF WORK

PART 1 GENERAL

1.01 SUMMARY

- A. Work is located at the Mound Exit Project, a Government-owned facility, managed by BWXT of Ohio, Inc. (BWXTO), for the Department of Energy (DOE), in Miamisburg, Ohio.
- B. Work consists of furnishing labor, materials, tools, equipment, supplies, and services (except that specified to be furnished or performed by others) to accomplish decontamination and demolition of Building 38 and associated exterior equipment, stack and below grade drains, sumps, and electrical ducts.

1.02 DEMOLITION AND DISPOSAL OF BUILDING 38 AND ASSOCIATED STRUCTURES

- A. Building 38, also called PP (Plutonium Processing) Building, was formerly used as a ²³⁸Pu production processing facility, the assembly and testing of Radio-isotopic Thermoelectric Generators (RTGs), the repackaging and storage of excess nuclear material, and the storage and identification of orphan radiological sources from Mound. The total floor space of the two-story building is approximately 44,000 feet².
- B. Work Activity Sequencing and Phases
 - 1. Sequencing
 - a. The designated Utility Isolation and Removal activities (see Section 01900) and Fire Protection Suppression Isolation and Removal Activities (see Section 01920) shall be considered the first segments of work to be performed by the Subcontractor. The intent of this work sequence is to isolate the project structure(s) from all currently existing plant utilities and thus eliminate the work hazards associated with performing demolition activities within an electrically and mechanically energized facility per OSHA Regulation 29 CFR 1926.850, Subpart T.
 - 2. Phases
 - a. Phase I work includes all decontamination, dismantlement and demolition activities accomplished while the integrity of the building “environmental envelope” is intact. This envelope consists of the building structure, the ability to maintain a negative pressure to the outside, the building exhaust air HEPA filter bank, and effluent monitoring of the discharge air from the filter bank to the outside environment. This envelope system controls the spread of radioactive contamination in the building and prevents the release of radioactive contamination outside the building.

- b. Phase II work includes all remaining activities performed after the building “environmental envelope” has been breached (i.e. ventilation shutdown and loss of negative pressure). Even though Building 38 has undergone extensive D&D cleanup in the past, sealed-in-place ²³⁸Pu contamination is present.
3. Phase I Work Items Include:
- a. Isolation and removal of building utilities,
 - b. Installation of temporary electrical power,
 - c. Removal of ancillary equipment in Corridor 5A,
 - d. Removal of the F-Line gloveboxes and ancillary equipment in Corridor 17,
 - e. Decontamination (radiological and non-radiological) of the above referenced areas and the remaining areas on the first and second floors (as required),
 - f. Removal of Major/Minor equipment throughout the facility,
 - g. Removal of standby Emergency Generator #2 (provides back-up power to Building 38 and 50).
4. Phase II Work Items Include:
- a. Removal of the building ventilation exhaust HEPA filter bank and electrical substation providing power to Building 38,
 - b. Demolition of the exhaust duct from Building 38 to the plenum, the exhaust plenum with support platform, and the stack exhaust fan,
 - c. Below grade removals which include the excavation and removal of the following items: radioactive process piping and floor drains, process sumps, sanitary drains and sumps, storm drains, and electrical ductbank systems,
 - d. Removal of the 10,000 gallon above ground waste water collection tank, and waste transfer system,
 - e. Demolition of Building 38,
 - f. Decontamination and demolition of the Building 38 Stack,

1.03 SITE RESTORATION

- A. Following structure removal, the Subcontractor shall leave the site and any resulting depressions in a safe configuration that will meet long term erosion control and general safety regulations and guidelines for excavated areas.

1.04 SM WEST ASPHALT AREA

- A. The SM West Asphalt Area (See Drawing FSC 010037) is a non-regulated site administrative control over radiologically contaminated soils. At all times during this project, this area shall be maintained in an intact configuration and protected from damage.

1.05 SUBMITTALS

- A. Provide submittal information in accordance with Section 01300.
 - 1. Buyer approval required on submittals prior to start of construction activities.
- B. Submittal Requirements are included in each Technical Section.
- C. For Project Submittal Matrix, see Table 1.

1.06 SECURITY

- A. Work Requirements
 - 1. Work may be accomplished by uncleared personnel.
 - 2. Work shall be performed by United States Citizens.

1.07 BUYER INTERFACE

- A. The Buyer's Technical Representative shall perform Inspection and Acceptance activities to ensure work is in accordance with specified requirements; and includes participation in testing, inspections, and approval of submittals.
- B. Coordination between the Subcontractor and Buyer shall be through the Buyer's Technical Representative.
- C. Submittal of the Construction Daily Report shall be in accordance with Specifications Section 01300 "Submittals", and the Subcontract Special Conditions Article 2.2, Exhibit 2.1.
 - 1. Requests for utility system outages shall be in writing and should be included on the Construction Daily Report. The system outages shall be requested a minimum of seven (7) working days in advance of need to allow for coordination with the Buyer's Plant Utilities Department. This coordination shall be through the person of the Buyer's Technical Representative (BTR).
 - 2. Request for Radiation Work Permits (RWP) shall be in writing and should be included on the Construction Daily Report. The RWP shall be requested a minimum of seven (7) working days in advance of need.
 - 3. Request for special work permits (i.e. confined space permits, excavation permits, etc.) shall be in writing and should be included on the Construction Daily Report. The necessary permit shall be requested a minimum of forty-eight (48) hours in

advance of need.

1.08 SPECIFICATIONS AND DRAWINGS

A. Specifications

1. The specifications are directed to the Subcontractor, unless specifically noted otherwise.
2. The words "shall be" are included by inference where a colon (:) is used within sentences or phrases.
3. The term "Work" means the entire completed construction or the various separately identifiable parts required by the Contract Documents. Work includes labor, materials, equipment, and services provided by the Subcontractor to fulfill the contract requirements.
4. The term "provide" means to furnish and install, complete and ready for intended use.

B. Drawings

1. Work shall conform to the Drawings listed in Appendix B.
2. Reference Drawings listed in Appendix B are furnished to the Subcontractor for information only.
3. Reference Drawings cannot be relied on exclusively to prepare quantity takeoffs, pricing, or work planning.

C. Drawing FSC 010029 – “Site Plan, Subcontractor’s Compound” provides information for the following:

1. Personnel parking area.
2. Site location.
3. Storage area.
4. Waste Transfer Area.
5. Site access portals and access routes.

1.09 WORKING AND STORAGE AREAS

- A. Limit activities and storage to the immediate project site and designated storage areas as shown on Drawing no. FSC 010029. Limit travel to the main side roads as shown on Drawing no. FSC 010030.
- B. Store only work-related material and equipment in stockpile areas, storage trailers, and designated storage sites located in the subcontractors compound or common waste zone.

- C. Parking along roads is prohibited.
- D. Perform cleanup, trash disposal, and neatly arrange material and equipment on a daily basis.

1.10 PROJECT COORDINATION

- A. The Buyer will coordinate outages and provide an approved outage schedule. Hold outages to a minimum in number and duration.
- B. The Buyer will provide the excavation permit forms at the pre-construction meeting. Request task-specific Buyer-supplied permits (such as hotwork, etc.) 48 hours in advance of need or as specified in individual sections.

1.11 DELIVERY, STORAGE, AND HANDLING

- A. Comply with instructions, recommendations, and requirements stated by the manufacturer for handling and storing of material and equipment. Protect materials and equipment from moisture, dust, and damage including indoor storage when necessary.
- B. Identify items delivered to the work site with a weather_resistant tag or label with Subcontractor name, contract number and contents.
- C. Train operators in use of special handling or lifting equipment.

1.12 UNUSUAL CONDITIONS

- A. Asbestos, lead, radiological contamination and hazardous chemical waste materials are expected hazards.
- B. Buyer RADCON personnel will monitor excavation and demolition activities which have a potential of containing unidentified contamination to ensure contamination is controlled. Periodic surveys of the work area, equipment, and personnel will be performed.
- C. As-Built drawings are provided for information only and may not be complete or accurate. The subcontractor shall locate existing underground utilities using electronic scanning methods, or other buyer approved methods. Locations will be clearly marked and identified.
- D. Hand excavate within five feet of known or suspected utilities. All exterior excavations shall have a “spotter” at the excavation.
- E. The following have been identified as safety concerns and are in close proximity to the work site: overhead electrical lines, underground utilities, adjacent radiological contamination areas. All utilities shall be considered energized until verified by the subcontractor.

PART 2 PRODUCTS

2.01 PROPERTY AND SERVICES FURNISHED TO THE SUBCONTRACTOR

- A. Waste storage containers for (radiological, PCB, RCRA, chemical, hazardous) waste.
- B. Various Radiological, Safety & Health, Asbestos, Environmental, and Waste Management services as specified in the individual sections.

PART 3 EXECUTION

3.01 PREPARATION

- A. Training
 - 1. Ensure work specific training is provided prior to performing work activities. Document training files for current subcontractor employees shall be maintained on site.
 - 2. The Buyer's Training Matrix may be used as a guide, but it is the Subcontractor's responsibility to determine actual training required based on the Contract Documents, Federal and State laws, and method of accomplishment.

3.02 WELDING

- A. All welding on Permanent Plant Equipment shall conform to AWS D.1.1.

3.03 TESTING

- A. The Subcontractor will perform and document the following tests/inspections. Coordinate activities through the Buyer. Perform tests and inspections in a manner that allows observation by the Buyer.
 - 1. Leak testing of HEPA-filtered equipment [Sect. 01150]
 - 2. Sample Analysis [Sect. 01130]
 - 3. Settings and trip test for electric breakers [Sect. 16000]
 - 4. On-site welding/tests inspections.
- B. Provide labor and technical support, annually calibrated (unless more frequent calibration is specified) and properly maintained equipment, and materials required to perform testing. Equipment calibration records shall be submitted upon request.
- C. Notify the Buyer 24 hours (48 hours for fire or sprinkler systems) before performing tests and inspections.
- D. Submit a copy of tests as performed.

END OF SECTION

SECTION 01015

ACRONYMS AND ABBREVIATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES: Acronyms and abbreviations used throughout the Contract Documents.

A. Listing:

AB	Authorization Basis
AC	Asbestos Cement
ACGIH	American Conference of Governmental Industrial Hygienists
ACI	American Concrete Institute
ACL	Administrative Control Level
ACM	Asbestos Containing Material
A-E	Architect-Engineer
AHERA	Asbestos Hazard Emergency Response Act
AIA	American Institute of Architects
AIHA	American Industrial Hygiene Association
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AM	Access
ANSI	American National Standards Institute
APR	Air Purifying Respirator
ARA	Airborne Radioactivity Area
ARPA	Archeological Resources Protection Act
ASA	Auditable Safety Analysis
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATS	Alpha Treatment System
AWS	American Welding Society
AWWA	American Water Works Association
BCR	Buyer's Contracting Representative
BKG	Site Background activity
BIA	Brick Institute of American
Bq	Bequerel
BTR	Buyer's Technical Representative
BWXTO	BWXT of Ohio, Inc.
BUSTR	Bureau of Underground Storage Tank Regulations
CA	Contamination Area
CAM	Continuous Air Monitor
CAR	Corrective Action Report
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act

CFC	Certified for Construction or Chlorofluorocarbons
CFM	Cubic Feet Minute
CFR	Code of Federal Regulations
CGA	Compressed Gas Association
COC	Certificate of Conformance
CPM	Counts Per Minute or Critical Path Method
CPR	Cardiopulmonary Resuscitation
CRA	Contractor Readiness Assessment
CRMP	Cultural Resource Management Plan
CV	Corrosive Vapor System
CWA	Clean Water Act
CWPF	Consolidated Waste Processing Facility
CY	Calendar Year
D&D	Decontamination & Decommissioning
DAC	Derived Air Concentration
DCG	Derived Concentration Guideline
DDC	Direct Digital Control
DGP	Data Gathering Panels
DOE	Department of Energy
DOP	Dioctyl Phthalate
DOT	Department of Transportation
EC&AS	Environmental Compliance & Analytical Services
ECP	Environmental Compliance Profile
EDE	Effective Dose Equivalent
EDTA	Ethylene-diamine-tetra-acetic Acid
EPA	Environmental Protection Agency
EPA/USEPA	United States Environmental Protection Agency
FCA	Fixed Contamination Area
FFA	Federal Facilities Agreement
FHA	Fire Hazards Assessment
FOCI	Foreign Ownership Controlling Interest
FSP	Field Sampling Plan
GET	General Employee Training
GERT	General Employee Radiological Training
GFCI	Ground Fault Circuit Interrupter
GFE	Government Furnished Equipment
GFM	Government Furnished Material
GV	Risk-based Guideline Value
H	Hour
HASP	Health and Safety Plan
HCA	High Contamination Area
HCFC	Hydrochlorofluorocarbons
HEPA	High-Efficiency Particulate Air

HFC	Halogenated Fluorocarbons
HP	Health Physics
HRA	High Radiation Area
HSP	Health and Safety Plan
HVAC	Heating, Ventilation and Air Conditioning
IAEA	International Atomic Energy Agency
IDLH	Immediately Dangerous to Life or Health
IEEE	Institute of Electrical and Electronic Engineers
IH	Industrial Hygiene
IS&H	Industrial Safety & Hygiene
IWCP	Integrated Work Control Packages
JHA	Job Hazard Analysis
JSHA	Job Safety & Health Analysis
JSWP	Job Specific Work Plan
LF	Linear Foot
LLLW	Low Level Liquid Waste System
LLW	Low Level Waste
LOTO	Lock Out / Tag Out
LSA	Low Specific Activity
MCC	Motor Control Center
MCL	Maximum Contaminant Level
MD	Mound Site (Technical Manual)
MEMP	Miamisburg Environmental Management Project
MOA	Memorandum of Agreement
MORE	Mound Occupational Radiological Exposure (Records)
MOU	Memorandum of Understanding
MS	Mine Safety
MSA	Mine Safety Appliances Company
MSDS	Material Safety Data Sheet
MSHA	Mine Safety and Health Administration
MSS	Manufacturer's Standardization Society
M&TE	Measurement and Testing Equipment
NAGPRA	Native Americans Grave Patriation and Repatriation Act
NCR	Nonconformance Report
NEC	National Electrical Code
NECA	National Electrical Contractor's Association or National Energy Conservation Association
NEMA	National Electrical Manufacturers Association
NEPA	National Environmental Policy Act
NESC	National Electrical Safety Code
NESHAPs	National Emissions Standards for Hazardous Air Pollutants
NFPA	National Fire Protection Association
NHPA	National Historic Preservation Act

NIOSH	National Institute of Occupational Safety and Health
NIST	National Institute of Standards and Technology
NLGI	National Lubricant and Grease Institute
NPDES	National Pollutant Discharge Elimination System
NQA	National Quality Assurance
NTMA	National Terrazzo and Mosaic Association
NTS	Nevada Test Site
NUREG	Nuclear Regulatory
OAC	Ohio Administrative Code
OC	Occupational Control
ODOH	Ohio Department of Health
ODOT	Ohio Department of Transportation
ODS	Ozone Depleting Substance
OEPA	Ohio Environmental Protection Agency
ORC	Ohio Revised Code
ORR	Operation Readiness Review
OSHA	Occupational Safety and Health Administration
PAPR	Powered Air Purifying Respirator
PCB	Polychlorinated Biphenyl
PCM	Personal Contamination Monitor
PEL	Permissible Exposure Limit
PM	Project Manager
PPE	Personal Protective Equipment
PPG	Pittsburgh Plate Glass
PRS	Potential Release Site
PTI	Permit To Install
PTO	Permit To Operate
²³⁸ Pu	Plutonium-238
QA	Quality Assurance
QAP	Quality Assurance Plan
QAPP	Quality Assurance Program Plan
QC	Quality Control
RA	Radiation Area
RADCON	Radiological Controls Organization
RAPCA	Regional Air Pollution Control Agency
RBA	Radiological Buffer Area
RCRA	Resource Conservation and Recovery Act
RCT	Radiological Control Technician
RMA	Radioactive Material Area
RMMA	Radioactive Materials Management Area
RPP	Radiation Protection Program
RTGs	Radioisotope Thermoelectric Generators
RWP	Radiological Work Permit

SAP	Sampling & Analysis Plan
SCA	Soil Contamination Area
SCO	Surface Contaminated Object
SDWA	Safe Drinking Water Act
SMA	Special Metallurgical Annex
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
SMPP	Special Metallurgical Plutonium Processing
SOW	Statement of Work
SHO/SSHO	Site Safety and Health Officer
SSHP	Subcontractor Safety and Health Plan
SY	Square Yard
TLD	Thermoluminescent Dosimeter
TRU	Transuranic
TSCA	Toxic Substance Control Act
TSD	Treatment, Storage, and Disposal
TWA	Time Weighted Average
UL	Underwriters' Laboratories, Inc.
URMA	Underground Radioactive Material Area
USQ	Unreviewed Safety Questions
USQD	Unreviewed Safety Question Determination
UST	Underground Storage Tank
VHRA	Very High Radiation Area
WAC	Waste Acceptance Criteria
WIPP	Waste Isolation Pilot Plant
WM	Waste Management
WWTP	Waste Water Treatment Plant

PART 2 PRODUCTS

2.01 NOT USED.

PART 3 EXECUTION

3.01 NOT USED.

END OF SECTION

SECTION 01110

SAFETY AND HEALTH

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Safety and health requirements.

1.02 SAFETY AND HEALTH PROGRAM

- A. Within 10 days after the award of this subcontract, the Subcontractor shall submit to the Buyer a documented Subcontractor Safety and Health Plan (SS&HP) for approval. The Subcontractor Safety and Health Plan must meet the requirement of 29 CFR 1926 – Subpart C. Any changes to an approved Subcontractor Safety and Health Plan must be approved by the Buyer prior to implementation. The Subcontractor Safety and Health Plan shall encompass aspects of safety, health, environment and fire protection, as applicable to the project. The program shall contain as a minimum the following items:
1. A copy of the Subcontractor's safety policy signed by the principal officer of the company which describes:
 - a. The Safety and Health Organization
 - b. Safety Principles
 - c. Safety Philosophy
 - d. Organization's safety and health goals
 2. Subcontractor Program descriptions including:
 - a. Hazard Communication Program in accordance with 29 CFR 1910.1200.
 - b. A Lockout/Tagout Procedure that meets the requirements of OSHA 29 CFR 1926.417 lockout and tagging of circuits and 1926.850, preparatory operations under Subpart T - Demolition.
 - c. Training program.
 - d. Hearing Conservation program in accordance with 29CFR 1926.101.
 - e. Personal Protective Equipment program in accordance with 29CFR 1926-Subpart E.
 - f. Electrical Safety program in accordance with 29CFR 1926-Subpart K.

- g. Scaffold and ladder safety program in accordance with 29CFR 1926-Subparts L and X.
 - h. Fall protection/prevention program in accordance with 29CFR 1926-Subpart M.
 - i. Hoisting and Rigging Program in accordance with 29CFR 1926-Subparts H and N and ANSI B-30 Series.
 - j. Welding and Cutting (Hotwork) program in accordance with 29CFR 1926-Subpart J.
 - k. Confined space entry in accordance with 29CFR 1910.146.
3. Submit a copy of the Subcontractor's hazard analysis procedure for evaluating personnel safety, health, and fire hazards expected on projects; determining the types of safety equipment and/or procedures to be used in mitigating those hazards; and documenting hazards and required protective measures; performing work within established controls utilizing feedback to evaluate the adequacy of work controls; and continuing to improve safety performance.
 4. Job Hazard Analysis: The Subcontractor shall submit for approval a job specific hazard analysis, which will identify foreseeable hazards and planned protective measures. Whenever the Subcontractor discovers additional hazards or when control measures become inadequate, the Subcontractor must submit additional hazard analysis for approval. Prior to beginning work, the Subcontractor must brief the workers on identified hazards, control measures, and proper work practices. The briefing must be documented by use of the workers signatures on a Hazard Analysis Log. A copy of the hazard analysis must be posted at the work site. All persons entering the site must be briefed on the applicable hazard analysis and must sign the log. If revisions are made to the job specific hazard analysis, all persons entering the site are required to review and be briefed on such revisions and resign the log.
 5. A Safety Inspection Program must be included with a method for documentation of a daily field inspection. The subcontractor shall submit for information this inspection daily to the Buyer. The program must also provide a mechanism for verifying the safe operating condition and assurance of proper maintenance of earthmoving equipment, cranes, vehicles, pressure vessels, protective devices for portable electrical tools, and other portable equipment. The Subcontractor shall not operate or permit to be operated by its lower-tier subcontractors at the site, any hoisting and rigging equipment that contains suspect fasteners. In addition, the program must include a method for ensuring that all equipment and tools are inspected and maintained in a safe, environmentally acceptable condition and are adequate for purposes intended. The Subcontractor shall establish a staging area for inspection of tools and equipment prior to use. All tools and equipment, including rental equipment, shall be identified with Subcontractors or lower-tier subcontractor's name.

6. Specific measures for fire prevention and fire protection in accordance with the National Fire Protection Standards (NFPA).
 7. A respiratory protection program requiring a quantitative fit test which meets the guidelines, as applicable, of ANSI Z88.2, current edition. See Section 01180, Respiratory Protection.
 8. An emergency action plan for evacuation and accountability during emergencies and drills, as required by 29 CFR 1926.35.
 9. A thermal stress program that meets the guidelines of the American Conference of Government Industrial Hygienist (ACGIH).
- B. A full-time Safety and Health Officer (SHO) without collateral duties shall be required for this project. The Buyer shall approve the SHO. Additionally the SHO must possess the following:
1. Four-year degree in Safety & Health or related field or equivalent work experience, subject to Buyer approval.
 2. Prior experience as a Safety Officer on projects of similar size and nature.
 3. Ability to implement and ensure project activities comply with the Site Safety plan and Hazard Analysis.
 4. Complete 30-hour OSHA Construction Safety Program eg., OSHA Course 510.
NOTE: 40-Hour HAZWOPER is not equivalent.
- C. Before starting on-site work, provide an orientation of the Safety and Health Program contents and ensure required training has been performed for on-site personnel.
- D. Routinely hold “tool box” meetings with site personnel to discuss daily work tasks, to share lessons learned and to provide the site personnel with a mechanism for feed back
- E. Injury/Illness Reporting:
1. The subcontractor shall verbally notify the Buyer’s Technical Representative and Buyer’s Safety Representative immediately after an event occurs involving OSHA recordable injuries and illnesses, potentially serious hazards to personnel, or other abnormal events. The Subcontractor and the Buyer may jointly investigate each injury, illness, incident, or occurrence. Investigation to include any damage to equipment.
 2. The Subcontractor shall submit the DOE F-5484.3 (See Attachment I), “Individual Accident/Incident Report” within two workdays of any recordable or lost time accident or injury.

3. The subcontractor shall provide a copy of its company OSHA 200/300 Log to the Buyer upon request.

1.03 RELATED SECTIONS

- A. Section 01130, Asbestos.
- B. Section 01150, Work in Radiological Areas.
- C. Section 01180, Respiratory Protection.
- D. Section 01300, Submittals
- E. Section 01460, Integrated Safety Management System

1.04 REFERENCES

- A. American Conference of Governmental Industrial Hygienists (ACGIH). Threshold Limit Values for Chemical Substances and Physical Agents, and Biological Exposure Indices
- B. ANSI B30 Series, Crane Safety.
- C. ANSI Z41 - 1991, Personnel Protection - Protective Footwear.
- D. ANSI Z87.1 - 1989, Practice for Occupational and Educational Eye and Face Protection.
- E. ANSI Z89.1 - 1986, Protective Headwear for Industrial Workers.
- F. The Secretary of Labor's "Safety and Health Regulations for Construction" and material incorporated by reference, as contained in 29 CFR 1926.
- G. The Secretary of Labor's "Occupational Safety and Health Standards" and material incorporated by reference, as contained in 29 CFR 1910.
- H. The Secretary of Labor's "Recording and Reporting Occupational Injuries and Illnesses" and material incorporated by reference, as contained in 29 CFR 1904.
- I. The Secretary of Transportation's "Federal Motor Carrier Safety Regulations" as specified in 49 CFR 350-399 and the "Hazardous Materials regulations" as specified in 49 CFR 107-
- J. National Fire Protection Association (NFPA) Standard 51B, "Fire Protection in Use of Cutting a Welding Processes.
- K. National Electrical Code (NFPA 70).
- L. Mound site permits from MD-10286 (See Appendix G).

1.05 SUBMITTALS

- A. Subcontractor Safety and Health Plan (SS & HP)
- B. Material Safety Data Sheets (MSDS)
- C. Lead Compliance Plan
- D. Asbestos Abatement Plan
- E. Job Hazard Analysis (JHA)
- F. The Subcontractor shall develop and submit for approval to the Buyer, a Lockout/Tagout Procedure that meets the requirements of OSHA 29 CFR 1926.417 Lockout and Tagging of Circuits and 1926.850, Preparatory Operations under Subpart T - Demolition.
- G. Shoring Plan (as required)
- H. Evacuation Plan
- I. Competent Person List
- J. Engineering survey for structural integrity and overall work area safety in accordance with OSHA 29 CFR 1926.850-860. (Professional Engineer stamp required).

PART 2 NOT USED

PART 3 EXECUTION

3.01 Plant Safety Rules and Regulations - The following supplements the requirements of OSHA Regulations. In the event of inconsistencies, the more stringent safety requirement shall govern.

- A. Individual Conduct and Safety:
 - 1. Alcoholic beverages and illegal drugs are not permitted on the Mound plant. Employees entering the plant under the influence of alcohol or drugs shall be removed from the plant.
 - 2. Fighting, gambling, stealing, soliciting, and horseplay shall not be tolerated, and shall be removed from the plant.
 - 3. Riding equipment as a passenger is prohibited, unless a permanent seat with a seat belt is provided.
 - 4. Material and tools shall not be dropped or thrown uncontrolled from platforms, structures, or scaffolds.

B. General Site Conduct and Safety:

1. The Subcontractor with the assistance of the Buyer shall make all employees aware of the plant emergency signals, including announcements, and ensure the appropriate responses are followed in the event of a plant alarm signal for a fire or other emergency, building or area evacuation. As part of its Safety and Health program, the Subcontractor shall be required to establish an evacuation plan for the site, consistent with the Buyer's plan, and post evacuation routes and shelter locations in appropriate areas. New employee orientation shall include this information.
2. Evacuation of the Work Area
 - a. Observe and participate in site notices to evacuate the work area. The evacuation notices may be a drill or actual event.
 - b. Before evacuating the work area, shut down or make safe equipment or processes that could become a safety or fire hazard if left unattended.
3. Access to safety equipment, fire-fighting equipment, and fire protection systems shall be kept clear at all times.
4. Plant roadways, walkways, and fire hydrants shall not be blocked without prior approval of the Buyer's Technical Representative. Fire Protection Systems and alarms shall not be touched without prior approval of the Buyer's Technical Representative.
5. Use of explosives shall not be permitted.
6. No items or materials containing asbestos shall be provided in the supplies, articles or equipment, including individual parts or components of an assembly, delivered under this subcontract unless specifically approved by the Buyer.
7. The Subcontractor shall provide ground fault circuit interrupter protection for all cord sets, receptacles, and electrical tools including connections to generators and equipment connected by cord and plug for use by employees.
8. If the Subcontractor performs work that results in excavations or trenches that are more than four feet in depth the Subcontractor shall submit to the Buyer a shoring plan for approval.
9. Work shall not be performed on any mechanical or electrical equipment or system until all sources of hazardous energy (electrical, high-pressure liquids, hazardous chemicals, etc.) are locked and tagged out.
10. Nonionizing Radiation, the Subcontractor shall obtain written approval of the Buyer prior to bringing any laser equipment onto the site.

3.02 The Subcontractor shall survey the site for structural integrity and overall work area safety. The Subcontractor shall prepare an engineering survey in accordance with Occupational Safety and Health Administration (OSHA) 29 CFR 1926.850 through 1926.860, latest revision.

3.03 PERSONAL PROTECTIVE EQUIPMENT

A. Provide personal protective and life saving equipment in accordance with 29CFR 1926-Subpart E and the following:

1. Class C Full-body harness and twin shock-absorbing lanyards with double locking hook connectors are required whenever the potential full distance is 6 ft. or greater.
2. Provide appropriate hand protection.
3. Provide additional PPE based on the specific hazards encountered.
4. The Subcontractor shall consider the safety of all others not directly performing work under contract. The Subcontractor shall provide barricades on job sites where excavations are present. The job site shall be barricaded with substantial barricades such as temporary fences and sawhorses. Flashing lights are required if the excavation will be left open overnight. Yellow caution tape may be used to barricade a site only in temporary situations (2-3 days). If a job site is long term, more substantial and permanent barricades such as sawhorses, expanded plastic fencing, etc., shall be used. Caution tape may only be used to supplement more substantial barricades on long-term jobs. When the job site is exposed to roadways, barrels, sawhorses or traffic cones shall be used to mark off the roadway exposure. If the roadway will be exposed overnight, the barricades shall be equipped with flashing lights.
5. The Subcontractor shall provide the appropriate personal protective equipment for hazardous conditions that may be encountered, and shall provide training in the proper use and maintenance of the equipment.
6. Hard hats shall be worn at all times when working in construction and demolition areas that are designated as hard hat areas. The hard hat and the wearing of the hard hat must conform to ANSI Z89.1 Class B.
7. Safety glasses with rigid side shields shall be worn at all times when working in designated construction and demolition areas. Safety glasses shall comply with ANSI Z87. Additional eye protection may be necessary when grinding, welding, or handling hazardous materials.
8. Hearing protection shall be worn when an employee works in a hazardous or posted noise areas or if the noise the employee is creating exceeds the guidance set forth in 29 CFR 1926.52
9. Subcontractor employees shall wear full-length trousers and shirts that cover the

shoulders. Half length and "muscle man" shirts are not permitted. Shirts shall not be removed while on the Mound plant.

3.04 OCCUPATIONAL HEALTH PROTECTION THRESHOLD EXPOSURE LIMITS

- A. Limit exposure to chemical substances, physical agents, and biological hazards to the permissible exposure limits of 29 CFR 1926.
- B. The American Conference of Governmental Industrial Hygienist, (ACGIH), Threshold Limit Values for Chemical Substances and Physical Agents, and Biological Exposure Indices, exposure limits are to be administered per this document's "Policy Statement on the Uses of TLVs and BEIs".

3.05 HAZARD MATERIAL COMMUNICATION

- A. Pursuant to OSHA's Hazard Communication Standard (29 CFR 1926.59) for construction, access to MSDS's for all hazardous substances shall be present at the Work site and available upon request. The Buyer will provide MSDSs for existing buyer owned materials left on site when the Subcontractor mobilizes.
- B. Adhere to personal protective equipment and safety and health recommendations from manufacturer's MSDSs.
- C. Submit a copy of MSDS prior to delivery of material to the work site.

3.06 EXCAVATION

- A. A Buyer issued Excavation/Soil Disturbance permit is required before starting excavations.
- B. Perform excavations in accordance with 29 CFR 1926, Subpart P. MD-10286 "Excavation/Soil Disturbance", Section O5. Requires a permit for all but incidental soil disturbance. Permit must be submitted for Buyer approval.
- C. An excavation competent person shall be on-site during excavation work inside trenches greater than 4 feet deep.
- D. Submit shoring calculations, when calculations are required per 29 CFR 1926, Subpart P.

3.07 CONFINED SPACE

- A. Prior to mobilization, the Buyer will identify all known confined spaces as defined under the scope of this project in accordance with 29 CFR 1910.146.
- B. Perform work in accordance with 29 CFR 1910.146.
- C. A Buyer issued confined space permit is required before entering a confined space.

3.08 LOCKOUT/TAGOUT

- A. In accordance with 29 CFR 1910.147, the Buyer will perform the initial lockout/tagout of the permanent plant power or equipment and will remove the final lock. Five day advance notice is required. Subcontractor provided temporary power shall be locked and tagged using the subcontractor directed lockout tagout program as defined by 29 CFR 1926.417. Once utilities have been isolated the subcontractor shall utilize their own Buyer-approved Lockout/Tagout program.
- B. The Subcontractor will designate authorized individuals responsible for application and removal of Lockout/Tagout in accordance with the Subcontractor procedure. The subcontractor must ensure that all lower-tier subcontractor personnel are trained to the procedure. The Subcontractor shall maintain documentation of the training and submit training documents to the Buyer for information.
- C. Key Points of the Subcontractor LO/TO Program should include:
 - 1. A lockout/tagout permit is required before performing work on operating equipment or system.
 - 2. After lockout/tagout of a system, a walk-down of the system shall be performed to determine if there are entry points remote to the lockout/tagout origin point. During the initial walk-down and anytime thereafter, work shall be suspended when a question arises as to the correct location of an entry point on a system.
 - 3. Prior to working electrical equipment that is under the protection of a lockout/tagout, personnel shall verify that isolation and de-energization has been accomplished. All wiring, circuit elements, electrical parts, and any other part of the circuit(s) shall be tested to verify de-energization before making contact with the circuit by hand or tool.
 - 4. Test equipment shall be used to test the circuit elements and electrical parts of equipment at the point where work is to be performed to verify the circuit elements and equipment parts are de-energized before making contact with hand or tool.
 - 5. The test shall determine if any energized condition exists as a result of inadvertently induced voltage or unrelated backfeed, even though specific parts of the circuit have been de-energized and presumed safe. If an energized condition is encountered, work shall be discontinued immediately.
 - 6. Test equipment used to test for de-energization may be analog or digital, and shall be capable of indicating zero voltage. Test equipment shall be tested on a known energy source before and after use.
 - 7. Prior to working mechanical equipment and systems that are under the protection of a lockout/tagout, personnel shall verify that the equipment or system has been isolated and depressurized and/or drained such that no stored energy is present.

8. If a locking device cannot be applied, a “Danger-Do Not Operate” tag may be used, without a lock, and the tear-off tab placed in a lockbox. A tag used without a lock shall be supplemented by at least one additional (i.e. person at the electrical panel) safety measure that provides a level of safety equivalent to that obtained by use of a lock.
9. “Danger-Do Not Operate” tags, and associated locking devices or devices providing a level of safety equivalent to that obtained by use of a lock, shall be the only devices used to control against hazardous energy releases during construction and/or maintenance.
10. All locks used for lockout devices shall be substantial, red in color or identified red. Red locks shall not be used for any other purpose. All locks used for lockout/tagout shall be identified with the employee’s name and badge number or company.

D. Hoisting and Rigging

1. Perform hoisting and rigging activities in accordance 29 CFR 1926 Subparts H and N, and ANSI B-30 Series.
2. Hoisting or rigging activities using forklifts, backhoes, and trackhoes are not permitted unless the manufacturer's documentation specifies the equipment is designed for that purpose and lifting limits are properly identified.

E. Lead

1. Perform work in accordance with 29 CFR 1926.62 when construction activities present a potential for lead exposure.
2. Before starting work involving lead materials submit a project specific Lead Compliance Plan based on anticipated work activities.
3. Engineering controls are mandatory regardless of PPE provided.
4. Due to the age of the plant all painted surfaces are suspect for lead containing paint.

F. Hearing Protection

1. Develop and implement a continuous effective Hearing Conservation Program in accordance with 29 CFR 1926.101.
2. Determine the boundaries where continuous or intermittent noise is expected to exceed 85 dBA and enforce the use of hearing protection within those boundaries.

G. Emergency Services and Equipment

1. Provide first aid supplies and fire extinguishing equipment in accordance with 29 CFR 1926.

2. The Buyer will assist the Subcontractor with emergency ambulance and fire fighting service.
- H. Movement and Operation of Cranes and High-profile Mechanical Equipment.
1. In addition to the requirements identified in 29 CFR 1926 the following is required:
 2. Swing radius of operating equipment must always exceed the ten-foot minimum danger zone for energized electrical lines and equipment. Encroachment toward the safety zone requires of the electrical service in the area.
 3. When equipment is moved to a work location, the boom or mast shall be in a retracted traveling position. Assign a flagman who will direct movement of the equipment and prevent contact with objects on the ground or overhead. Personnel on the ground shall not be in contact with the equipment without consent of the flagman.
- I. Transport Vehicles for Flammables
1. Flammable liquid tank trucks, refueling vehicles, and other vehicles transporting flammable liquids or gases may be inspected and may require escort while on Government property.
- J. Vehicle and Equipment Contamination Surveys
1. Vehicles and equipment are subject to security inspections and contamination monitoring when entering and exiting the Plant. Inspections will be made at access portal or at locations designated by the Buyer.
- K. On-site Safety Inspection
1. The safety, health, fire, and environmental protection personnel of the Buyer, and the Government will inspect facilities and operations to ensure compliance with hazardous communications, safety, health, fire prevention, and environmental protection requirements. Communication, except in cases of imminent danger, will be through the Buyer point of contact.

3.09 EQUIPMENT AND TOOLS

- A. Inspect, maintain, and ensure that equipment and tools used are safe, environmentally acceptable, and adequate for the purpose intended. Defective or otherwise unsafe equipment shall be tagged "Do Not Use" and immediately removed from the work site to a secure place to prevent inadvertent use. Re-inspect repaired items before reentering the site.
- B. Utilize equipment only for the purpose for which it was designed. Modifications, extensions, replacement parts, or repairs of equipment shall maintain at least the same factor of safety as the original equipment. Modifications shall be authorized in writing

by the manufacturer and authorization provided to the Buyer upon request.

3.10 CONCRETE

- A. Activities that generate concrete silica dust will require appropriate engineering controls (wet methods) or PPE to prevent employee exposure to silica above that identified in 29 CFR 1926 Subpart Z or recommendations based on ACGIH exposure limits. Wet methods are recommended to reduce the amount of dust generated.

END OF SECTION

SECTION 01130

ASBESTOS

PART 1 GENERAL

1.01 SECTION INCLUDES: Requirements for removal and disposal of all regulated asbestos containing materials.

A. Description

1. Location (See Appendix A, Reconnaissance Level Characterization Report.)
 - a. **NOTE:** Verify state notification and plant permits are complete or being processed.
2. Perform work in accordance with 29 CFR 1926.1101, and 40 CFR 61; State of Ohio Regulations; and additional job-specific requirements stated herein. The non-mandatory Appendixes B and F in 29 CFR 1926.1101 are mandatory for this work. Determine the most recent asbestos removal and disposal requirements established by applicable federal, state, and local government regulations. If conflicts exist between applicable requirements and this section, the most stringent provisions apply.

1.02 DEFINITIONS

- A. The following definitions are in addition to those provided in 29 CFR 1926.1101(b), and 40 CFR 61.
1. **Abatement:** Asbestos work directed by procedures to control fiber release includes, but is not limited to, preparation, removal, encapsulation, enclosure, and cleanup activities.
 2. **Authorized Visitor:** Buyer and his representative or a representative of any regulatory or other agency having jurisdiction over the project.
 3. **Bulk Sample:** Sample of building material or other material taken for asbestos content analysis.
 4. **Encapsulant:** Material that surrounds or embeds asbestos fibers in an adhesive matrix to prevent the release of fibers. The encapsulant creates a membrane over the surface (bridging encapsulant) or penetrates the material and binds its components together (penetrating encapsulant).
 5. **Engineering Control:** Mechanism for controlling dispersal of airborne asbestos at point of origin including, but not limited to, source enclosure, exhaust ventilation, and mechanical collection.
 6. **PPE:** Device worn by an individual to provide protection from inhalation or contact with airborne asbestos fibers.

1.03 REFERENCES

- A. ANSI – American National Standards Institute, ANSI Z9.2, Fundamentals Governing the Design and Operation of Local Exhaust Systems
- B. ANSI – American National Standards Institute, ANSI Z88.2, Standard Practices for Respiratory Protection
- C. 29 CFR 1926.1101, OSHA Asbestos Standard for the Construction Industry
- D. 29 CFR 1910.1200, OSHA Hazard Communication
- E. 29 CFR 1926.103 and 1910.134 OSHA Respiratory Protection
- F. 29 CFR 1910.145, Specifications for Accident Prevention Signs and Tags
- G. 40 CFR 61, Subparts A and M, Environmental Protection Agency (EPA) Regulation for Removal and Disposal of Hazardous Materials, National Emission Standards for Hazardous Air Pollutants: Asbestos
- H. 40 CFR 302, EPA Designation, Reportable Quantities, and Notification Requirements under the Comprehensive Environmental Response, Compensation, and Liability Act
- I. 40 CFR 763, Asbestos Hazard Emergency Response Act
- J. 49 CFR 171, DOT General Information, Regulations, and Definitions
- K. 49 CFR 172, DOT Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements
- L. ORC Chapter 3710 and OAC Rule 3701-34, Ohio Department of Health Asbestos Hazard Abatement
- M. OAC 3745-20, Ohio EPA Asbestos Emission Control Rules
- N. NIOSH 582 Sampling and Evaluating Airborne Asbestos Dust
- O. NIOSH Method 7400 from the NIOSH Manual of Analytical Methods
- P. UL Test 723, Test for Surface Burning Characteristics of Building Materials
- Q. Regulation 150 of the Montgomery County Combined General Health District's Hazardous Air Pollution Control Regulations

1.04 SUBMITTALS

- A. Prejob Submittals: Before starting Work, provide the following submittals for information.

1. License: Copy of the Ohio Department of Health Asbestos Hazard Abatement Contractor License.
 2. Work Plan: Provide a work plan before the start of work. See Attachment 1 for work plan requirements.
 3. Competent Person(s): List of designated competent person and one alternate, qualification and training certificates, as well as required State certifications. Update list as individuals change.
 4. Emergency Personnel: Qualifications of the person in charge of the emergency program.
 5. Trained Personnel: List of training received by personnel. Provide employee's full name, job title, title of course(s), training date, training organization, certification number, and copy of required State certification.
 6. Testing Laboratory Certifications: Independent testing laboratory proof of compliance with OSHA requirements regarding NIOSH training and testing methods. Evidence of current successful participation in American Industrial Hygiene Association (AIHA) Proficiency Analytical Testing (PAT) Program. Evidence of current, valid license issued by regulatory body having jurisdiction that radioactive samples can be accepted as applicable.
 7. Medical Examinations: List of personnel receiving the required medical examinations. Include the employee's full name, social security number, and date of most recent examination. Examination must be in compliance with 29 CFR 1926.110(m) and indicate acceptability to wear respirator.
 8. Copies of required Ohio Department of Health Asbestos Hazard Abatement Project Notification and Ohio EPA Notification of Demolition and Renovation.
- B. Construction Submittals: Provide the following submittals for information.
1. HEPA Filter Certification: Manufacturer's certification that equipment is in compliance with ANSI Z9.2 (includes HEPA-filtered exhaust systems and vacuum cleaners).
 2. Shower Filters: Description of filter system. Must filter to at least 5 microns.
 3. Request for Utilities shutdown: Listing of utilities and systems including ventilation systems to be shutdown to perform the work.
 4. Daily Negative Pressure Differential Log: Log of pressure differential for each negative pressure enclosure. Submit upon final clearance.
 5. Chemical Exposure Monitoring: Exposure monitoring results necessitated by the use of chemicals related to abatement activities.

6. Air Monitoring Test Results: Copies of the air sample documentation and analyses made by the testing laboratory. Deliver test results, including the results of the quality control blind recounts, as required by 29 CFR 1926.1101, Appendix A, within 72 hours. As a minimum, these submittals are to include information required by 29 CFR 1926.1101(2).
7. Daily Project Log: Log of daily project events maintained by Seller on site. At a minimum, this log shall include copies of daily pre-job work briefings and daily personnel entry/exit logs for all regulated work areas. Submit copy at project closeout.

C. Submittal Updates

1. Update submittals to indicate current status. Employees are not permitted to work if submittals do not demonstrate all requirements are met.
2. Revisions to regulatory notifications: Must be submitted to Buyer within 24 hours of issuance. Seller must give Buyer 24 hour notice and receive Buyer's approval prior to terminating notifications.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Handling

1. Bag ACMs at the immediate removal area, move to a designated cleaning area within the regulated area, and bag again (double-bagged).
2. Wrap, label, and seal large pieces of waste materials or building/equipment components containing asbestos with two layers of 6-mil polyethylene sheeting.
3. Package asbestos waste material containing sharp-edged components (e.g., nails, screws, tin sheeting, chicken wire, etc.) in such a manner that the integrity of the packaging is not compromised.
4. HEPA Vacuum and/or wet-wipe bags, drums, and wrapped material before removing from the regulated area.
5. Do not drop or throw to the ground asbestos material or disposal bags.
6. Ensure waste packages are labeled in accordance with applicable regulations.
7. Waste packages shall be sized so as to fit into supplied waste containers. (See Section 01150, Waste Management).

B. Central Collection Point

1. Cover the ground below the double-bagged, wrapped, or drummed waste with minimum 6-mil plastic sheeting.
2. Place barrier tape of flagging, and asbestos warning signs around stored waste.

3. Limit storage to 30 calendar days or until a full container load is accumulated, whichever occurs first. Contact Buyer for removal of waste containers as soon as they become full.

PART 2 PRODUCTS

2.01 MATERIAL

- A. Use only surfactant or wetting agents sold for the purpose of asbestos wetting. Materials intended for other uses, such as household detergents, are not permitted.
- B. Plastic used for enclosures: Flame spread index of five and smoke development index of 30-110 in accordance with UL Test 723. (White Griffolyn T-55 FR meets this requirement.) Plastic shall be minimum 6-mil thickness.
- C. Wood: Treated fire-retardant lumber or painted with fire-retardant paint.
- D. Disposal bags: Minimum 6-mil polyethylene with preprinted labels in accordance with Standards 29 CFR 1926.1101 and 49 CFR 172.
- E. Encapsulants of Lock Down – shall be specifically designed for application and adherence to substrate surface. Encapsulant/lock down shall be of type manufactured specifically for asbestos abatement and shall be applied in accordance with manufacturer's directions.

2.02 EQUIPMENT

- A. Equipment having a HEPA filter must have the original manufacturer's statement that the equipment complies with ANSI Z9.2. The equipment must be in good repair and must be maintained in accordance with manufacturer's recommendations.

PART 3 EXECUTION

3.01 PREPARATION

- A. Medical Surveillance
 1. Before the start of work, personnel shall receive a physical examination in accordance with 29 CFR 1926.1101(m). In addition to the requirements of 29 CFR 1926.1101(m), the following applies:
 - a. Conduct medical examinations regardless of the number of days of anticipated or actual airborne exposure levels or the type of respiratory protection.
 - b. Medical examination is mandatory before allowing access to regulated areas.
 - c. If a worker's medical examination anniversary date lapses, the worker is not allowed to continue work until after the required examination has been performed and the appropriate documentation submitted.

- d. Examining physician(s) documentation shall acknowledge that information stated in 29 CFR 1926.1101(m) was received.
- B. Communication of hazards: In addition to the requirements of 29 CFR 1926.1101(k), the following applies:
1. Signs
 - a. Signs shall be legible at least 20 ft away and conform to 29 CFR 1910.145 (red, black, and white).
 2. Labels
 - a. Labels for wrapped or drummed asbestos waste material shall be red, black, and white, and conform to 29 CFR 1910.145.
 - b. Label vacuum cleaners and negative air-pressure machines in accordance with 29 CFR 1926.1101(k).
 - c. Label bags, containers, or wrapped material in accordance with 49 CFR 171 and 172 including the name of the waste generator and the location at which the waste was generated.
 3. Training
 - a. If a worker's anniversary date for training lapses, the worker is not allowed to continue with work until after the required training has been performed and documentation submitted.
 - b. Provide copies of certification cards/papers (including dates) of the personnel receiving and conducting the training upon request.
 - c. Persons performing personal air monitoring shall have attended and passed the NIOSH 582 course, or be a certified Occupational Health and Safety Technologist, Industrial Hygienist-In-Training, Certified Industrial Hygienist, or be an Ohio Department of Health Certified Asbestos Hazard Abatement or Evaluation Specialist.
 - d. Personnel performing analysis of airborne asbestos samples shall be included in the AIHA or the NIOSH/AIHA Proficiency Analytical Testing Program, and have passed the NIOSH 582 course.
 4. Registration
 - a. Workers and Competent person shall be certified by the Ohio Department of Health as applicable.

3.02 INSTALLATION/APPLICATION/ERECTION

A. Competent Person

1. In addition to the requirements stated in 29 CFR 1926.1101(o), the competent person shall:
 - a. Ensure specified submittals are provided.
 - b. Ensure workers comply with training, respiratory fit testing and medical surveillance requirements.
 - c. Ensure that a work plan meeting the requirements of Attachment 1 is submitted and available at the work site.
 - d. Remain on the work site whenever work is being performed.

B. Protection

1. Respiratory Protection

- a. Respiratory protection requirements are identified in Section 01180 and shall be in compliance with 29 CFR 1910.134 and 1926.103.
- b. Wear respirators when doffing protective clothing.
- c. Ensure adequate respiratory protection is provided for air contaminants from other sources (e.g., spray poly, encapsulants).

2. Protective Clothing

- a. In addition to the requirements stated in 29 CFR 1926.1101 (I), the following applies:
 - i. Provide personnel with disposable coveralls, head and foot coverings, gloves, and eye protection for Class I-IV activities. Wear protective clothing and equipment when performing asbestos removal work or where required under 29 CFR 1926.1101.
 - ii. Street clothes are not permitted under disposable clothing. Nondisposable clothing is considered asbestos contaminated, and shall be laundered or disposed of as asbestos contaminated.

C. Regulated Area

1. In addition to the requirements of 29 CFR 1926.1101(e), the following applies:
 - a. Establish the regulated area prior to precleaning activities, constructing enclosures, or activity that could disturb asbestos fibers.
 - b. Access to the regulated area is limited to authorized personnel meeting the requirements for protective equipment and clothing, medical surveillance,

training, and respirator fitting. Buyer personnel will enter the regulated area to perform inspections and testing.

- c. Seller shall record the names and affiliations of all personnel entering the regulated area on a daily basis.
- d. Flag off entrances and approaches to the work areas with "Asbestos-Danger" labeled barrier tape, and post danger signs. Danger signs are required regardless of the anticipated or actual airborne exposure levels (even at or below the permissible exposure limit). Signage shall be in accordance with 29 CFR 1926.1101.
- e. Regulate work requiring flagging and proper danger signs, until written notification of clearance is received from the Buyer

D. Exposure Assessment

1. Submit initial exposure assessment as part of the Work Plan in accordance with 29 CFR 1926.1101.
2. A regulated area is required for asbestos work activities including when there is a "negative exposure assessment".
3. Personnel and area monitoring (which may include daily and periodic monitoring) is required including when there is a "negative exposure assessment".

E. Methods of Compliance

1. Conduct work using state-of-the-art work practices and engineering controls as required in 29 CFR 1926.1101(g) and Appendix F, and the following:
 - a. Pre-clean work areas prior to setup of the containment system. Ensure the area is controlled as a regulated area, and the workers are to be provided with appropriate protective equipment.
 - b. Equip high-speed portable hand tools used to drill, cut, or otherwise disturb ACMs with a HEPA-filtered exhaust ventilation. A HEPA-filtered vacuum cleaner, designated for asbestos, can also be used. Position the hose attachment in such a manner to ensure the vacuum will capture dust.
 - c. Adequately wet ACMs with amended water before disturbing or removing.
 - d. Wet methods are mandatory except when a situation restricts or prohibits the use of water, such as freezing or electrical hazards. The Buyer's written approval is required as is a written waiver from the EPA specific to each applicable situation.
 - e. Contain loose ACM as it is removed. Assure all loose ACM is contained at the end of each work shift.

- f. After completion of stripping/removal work, wet brush or sponge surface from which ACMs have been removed. Remove visible residue.
- g. Encapsulate exposed surfaces, which may contain friable asbestos (including all cleaned surfaces). After cleaning and approval from the Buyer, apply a thin coat of encapsulation agent (lock-down material).
- h. Vacuum and remove disposable clothing before leaving the regulated area. Disposable protective clothing is considered asbestos waste.
- i. Decontaminate tools and equipment by vacuuming and wet wiping before removing from the regulated area. Cleaning materials, including water (unless filtered), are considered as asbestos-containing waste materials.
- j. Filter water that contains asbestos through a 5-micrometer filter system before discharging into the sanitary sewer system. Submit documentation describing the type of filter system. Used filters are considered asbestos-contaminated waste.
- k. Negative-Pressure Enclosure
 - i. Work area enclosures shall have a 2-ft square clear plexiglass window approximately 5 ft above the floor, which permits inspection of the work area from outside the enclosure.
 - ii. The negative-pressure air filter system shall provide a minimum of one air change every 10 min (six air changes per hour). The negative-pressure filtration system shall operate continuously until final clearance has been approved by the Buyer.
 - iii. Vent the air leaving the HEPA-filtered negative-pressure machine to the outside of the building. Written approval from the Buyer is required to vent inside a building.
- l. Negative-Pressure Glovebag
 - i. Where glovebag control methods are used, the Seller shall ensure that the glovebags are used only for the removal of pipe insulation in accordance with the manufacturer's design and specifications without modification. Glovebags will be minimum 6-mil thick plastic, seamless at the bottom, installed in such a manner as to completely cover the circumference of the pipe substrate, and may only be used once (no sliding). Prior to removal of asbestos, installed glovebags shall be smoke-tested by the Seller in the presence of the Buyer and any leaks sealed prior to use. For Class I glovebag operations, at least two workers shall be utilized, and prior to disposal, glovebags shall be collapsed by removing contained air by use of HEPA vacuum. Impermeable drop cloths shall be placed on surfaces beneath all glovebag operations.
- m. Cut and Wrap

- i. Where “cut and wrap” control methods are used, the Seller shall wrap the material to be removed with two impermeable layers of minimum 6-mil thickness plastic sheeting prior to dismantling the underlying substrate (for instance, cutting out a section of insulated pipe). The substrate will only be cut/dismantled at points, which are not covered/treated with asbestos material in such a manner that does not disturb any adjacent/nearby ACM. Removed sections will be sized so as to allow safe removal and handling of the resultant packaged ACM/substrate, and size of removed sections will be coordinated with the Buyer so as to permit safe and proper conveyance of material for disposal. Removed sections of ACM/substrate will be properly labeled a asbestos waste by the Seller in accordance with applicable regulations.
- n. All work areas where ACM is removed and/or packaged shall be regulated in accordance with 29 CFR 1926.1101.

F. Hygiene Facilities and Practices

- 1. In addition to the requirements of 29 CFR 1926.1101(j), the following applies:
 - a. In situations where a contiguous shower may not be feasible provide a remote shower. Personnel leaving the regulated area shall clean protective clothing and respirator with a HEPA vacuum, remove the protective clothing (disposing as asbestos-contaminated waste), don clean clothing, and proceed directly to the nearby shower facility. Do not remove respirators until in the shower.

G. Area Decontamination and Clearance

- 1. After all asbestos has been removed, contamination cleaned up and waste removed, each regulated area shall pass a thorough initial inspection conducted by the Seller’s competent person. Once the Seller approved the area, the Buyer will perform a visual inspection to verify the adequacy of the work. Items to be checked during the first visual inspection include, but are not limited to, the following:
 - a. The adequacy of the removal of asbestos-containing material from the substrate and the absence of visible asbestos-containing materials and/or other suspect materials.
 - b. Cleanliness of the work area and decontamination areas: there shall be no visible accumulations of dust or debris on exposed surfaces, ductwork, piping, or floors.
 - c. In the case of work in areas which have dirt floors, all visible asbestos-containing debris in and on the loose soil shall be removed down to the level of the hardpan (hard-packed soil). Any such debris that protrudes up through the hardpan shall be excavated and removed. The Seller is forewarned that the Buyer may rake and sift through the loose soil in order to expose any existing asbestos debris within said layer

After the work area has successfully passed this inspection, the Seller shall apply encapsulant to all surfaces within the regulated area.

The Buyer shall conduct a second visual inspection of the work area after application of the encapsulant. Items to be checked during the second visual inspection include, but are not limited to, the following:

- a. Cleanliness of the work area and worked decontamination unit; accumulation s of loose dust or debris on surfaces, walls, and floors.
- b. Complete coverage of the exposed surfaces by the encapsulant.

Only after the work site has successfully passed this inspection, will the Buyer conduct final air monitoring. The Buyer shall perform the final air clearance tests after the work site has passed the final visual inspection and a period of approximately 24 hours has passed to allow the encapsulant to dry.

2. Final air tests will be performed by the Buyer to determine and document air quality upon completion of all abatement activities. Final air clearance samples will be conducted in accordance with the NIOSH 7400 Method. Samples shall be analyzed by phase-contrast microscope (PCM). Final air samples shall be taken using aggressive sampling methods. Final air sampling results will not exceed 48 hours (post sample collection).
3. Final clearance will not be given until the area is accepted by the Buyer's Technical Representative and written notification is issued. Final inspection will be made within 72 hours of the request. Work areas shall remain a regulated area until accepted.

3.03 FIELD QUALITY CONTROL

A. Testing Laboratory

1. Provide an independent testing laboratory to perform analyses. The analyzing laboratory shall comply with OSHA requirements regarding NIOSH training and testing methods. Personnel performing analysis of airborne asbestos fibers shall have attended and passed the NIOSH 582 course. Laboratory shall participate in the AIHA's PAT Program. For samples which have been determined to be radioactively contaminated, the analyzing laboratory must possess a current, valid license authorizing the laboratory to receive, acquire, possess, and/or transfer radioactive material as issued by the regulatory body having jurisdiction. The subcontractor must verify that the laboratory can accept the specific isotopes and quantities present on the samples submitted.

B. Air Sampling and Analysis

1. Perform sampling QA/QC procedures in strict accordance with 29 CFR 1926.1101, Appendixes A and B. In addition, provide precision within that specified by NIOSH Method 7400.
2. Post sampling results at the work site immediately after obtaining the results but not later than 48 hours after the samples were taken.

3. The competent person shall evaluate air-sampling results immediately upon receipt and initiate all corrective actions.
 4. Compare results of area sampling taken outside the regulated area during abatement activities to the prevalent background level. If any results exceed the prevalent background level (which cannot exceed the action level of 0.1 f/cc), immediately stop work, extend the boundaries of the regulated area, and notify the Buyer. Do not continue work until the problem is identified and corrected. Within 8 hours of receiving the monitoring results exceeding the background level, provide the Buyer with a written report describing the problem and corrective actions taken.
- C. Prevalent Level Monitoring
1. Take background measurements before beginning work or site preparation. Take a minimum of two samples inside the proposed regulated area. If the average background measurement exceeds .01 f/cc, the Buyer and Subcontractor shall establish the accepted clearance level in writing before the start of work. At no time will the background level be allowed to exceed 0.1 f/cc.
- D. Personal Monitoring
1. Conduct daily monitoring for work activities regardless of the results from historical data or the anticipated or actual airborne exposure levels. At a minimum, monitor 25% of each group of representative employees in the regulated areas for excursion limits and permissible exposure limits.
 - a. Class I activities require daily monitoring whenever work is being performed.
 - b. Class II and III activities require monitoring for 3 days, and may be reduced to monitoring 1 day a week if results show levels below the PEL.
- E. Clearance Sampling:
1. Buyer will conduct clearance monitoring in accordance with the NIOSH 7400 PCM.
 2. Negative-pressure filtration systems for negative-pressure enclosures shall continue in operation during all clearance sampling until the final clearance results are accepted.
 3. Buyer will conduct clearance monitoring for negative-pressure enclosures. Calibrate sampling pumps to draw an average airflow rate of 10 L/min. Volumes of air sampled shall be approximately 1200 L.

END OF SECTION

ATTACHMENT 1

WORK PLAN

- A. The work plan shall include a complete narrative description of the proposed work methods and procedures used. The plan is to be signed by the designated competent person. The work plan shall be written so as to satisfy the requirements of the Ohio Department of Health's Asbestos Hazard Abatement Project Agreement (OAC 3701-34-11). As a minimum, the plan shall include:
1. Project title, work order number, and brief summary of the work.
 2. Name of the competent person(s) in charge of abatement activities.
 3. Provide a schedule listing areas in the order work is to be performed, required utility shutdowns (including ventilation systems) for each area, and anticipated completion dates.
 4. Initial exposure assessment including supporting documentation.
 5. Details of the enclosure layout and erection and methods used to provide negative-pressure exhausting including calculations where applicable.
 6. Work methods used to remove the ACMs. Identify the wetting agent and other chemicals (e.g., lock-down encapsulant) and provide material safety data sheets.
 7. Detailed description of the air-monitoring and analysis program. Firm performing the air monitoring, name and qualifications of the person supervising the monitoring, and name and qualifications of the person performing the monitoring.
 8. Administrative procedures used to enforce the regulated area. Include personnel hygiene procedures, personnel protective device and clothing requirements, entry and exit procedures (including decontamination), prohibited activities, and work practices to be observed in the regulated area.
 9. Emergency program. Designate medical personnel needed in the regulated area to assist or rescue injured personnel. Emergency planning shall include considerations of fire, explosion, toxic atmospheres, electrical hazards, slips and falls, confined spaces, and heat-related injuries.
 10. Medical examination program.
 11. Respiratory protection program. Include information explaining the respirator selection logic, including personal monitoring data summaries if other than supplied-air respiratory protection is used.
 12. Training programs.
 13. Written Hazard Communication Program in accordance with 29 CFR 1926.59(e).

14. Describe the method for labeling waste and posting signs.
15. Methods for transporting asbestos-containing waste to the staging area established in conjunction with the Buyer.

END OF SECTION

SECTION 01150

WORK IN RADIOLOGICALLY CONTAMINATED AREAS

PART 1 GENERAL

1.01 SCOPE: Requirements for decontamination, dismantlement, demolition, and excavation activities in areas containing radioactive contamination.

A. Radiological Protection Program Overview

1. The Buyer's Radiation Protection Program (RPP), which is approved by the Department of Energy (DOE), implements the requirements of 10 CFR Part 835, "Occupational Radiation Protection; Final Rule," for all activities on the Site that cause, or could cause, occupational radiation exposure from radioactive materials or radiation-producing devices. All work performed on the project will be in accordance with the Buyer's RPP. (See Appendix C.)
2. The Subcontractor shall comply with the Buyer RPP. This includes ensuring that Subcontractor personnel are trained and perform their job duties within the confines of the Buyer's radiological controls program.
3. The Subcontractor and all lower-tier Subcontractors shall follow the Radiological Control Requirements for work in posted radiological areas. Working through the Buyer, the Subcontractor shall coordinate and involve the Buyer in planning and execution of work activities in posted radiological areas. Specific requirements for working in a posted radiological area are included on a Radiological Work Permit (RWP).

B. Building 38 Radiological Overview

1. Building 38 is posted as a controlled area and radiological buffer area (RBA) and Fixed Contamination Area (FCA) due to numerous FCAs in the building (some of which are not known or specifically posted). Specific rooms and systems in the building are posted as radiological areas due to the presence of radioactive contamination. The interior of certain contaminated equipment may also be posted as a radiation area (RA) when accessed. Numerous fixed contamination areas (FCAs) exist within the RBA also. All inaccessible areas such as pipe interiors, equipment internals are considered to be internally contaminated and will be considered as at least a contamination area inside until proven otherwise.
2. Overhead spaces above 7 feet are suspect for contamination and should be surveyed prior to access or work. Allow 5 working days for Buyer to perform surveys and report results.
3. The interior of the exhaust stack is a radiological area.
4. Portions of the soil areas surrounding Building 38 are posted as underground radioactive material areas (URMA). When soil is disturbed in an URMA, the area

will be posted as a soil contamination area (SCA). All postings are in accordance with 10 CFR 835.603. Contact Buyer prior to soil disturbance.

5. For a description of radiological contamination which may be present and its locations, see Appendix A: Reconnaissance Level Facility Characterization Report.

1.02 DEFINITIONS

A. The following definitions are in addition to those provided in 10 CFR 835.2

1. Administrative control level (ACL): A numerical dose constraint established at a level below the regulatory limits to administratively control and help reduce individual and collective dose in accordance with ALARA concepts.
2. Continuous air monitor (CAM): Instrument that continuously samples and measures the levels of airborne radioactive materials on a 'real-time' basis and has alarm capabilities at preset levels.
3. Radiological area: Any area within a controlled area defined in this section as a 'radiation area (RA),' 'high radiation area (HRA),' 'very high radiation area (VHRA),' 'contamination area (CA),' 'high contamination area (HCA),' or 'airborne radioactivity area (ARA)', as posted in accordance with 10 CFR 835.603.
4. Radiological buffer area (RBA): An intermediate area established to prevent the spread of radioactive contamination and to protect personnel from radiation exposure.
5. Radioactive material: Radioactive material includes any material, equipment or system component determined to be contaminated or suspected of being contaminated in excess of the Buyer's limits. Radioactive material also includes activated material, sealed and unsealed sources, and material that emits radiation.
6. Radioactive material area (RMA): Any area within a controlled area, accessible to individuals, in which items or containers of radioactive material exist and the total activity of radioactive material exceeds the applicable values provided in Appendix E of 10 CFR 835.
7. Radioactive material management area (RMMA): An area in which the potential exists for contamination due to the presence of unencapsulated or unconfined radioactive material or an area that is exposed to beams or other sources of particles (neutrons, protons, etc.) capable of causing activation. RMMAs are buildings, rooms, facilities, or areas where waste/excess chemicals or property is controlled as radioactive until proven otherwise.
8. Radiological control hold point: Cautionary step in a technical work document requiring the radiological control organization to perform some action or verification. The radiological control hold point requirements should be satisfactorily completed before the work is continued.
9. Radiological Work Permit (RWP): Permit that identifies radiological conditions, establishes worker protection and monitoring requirements, and contains specific approvals for radiological work activities. The Radiological Work Permit serves as

an administrative process for planning and controlling radiological work and informing the worker of the radiological conditions. All access or work in radiological areas as defined above require a RWP.

1.03 SOURCES

- A. Subcontractors who wish to conduct activities under this subcontract on-site using radioactive material or sealed radioactive sources owned by the Subcontractor under the control of another DOE site; a license or permit granted by the U.S. Nuclear Regulatory Commission; an agreement state, or a state radiological health organization, which allow activities under that license or permit that are within the scope of activities defined in this subcontract to occur, shall submit a copy of their RPP/license/permit. The Subcontractor shall submit all such licenses/permits to the BTR. The Buyer will review the RPP/license/permit, ensure that it covers the scope of work, and verify that all RPP/license/permit requirements are current, and based on this review, approve commencement of the work. These on-site activities are then controlled by, and completed in full compliance, with the off-site RPP, license or permit requirements and the Buyer's RPP requirements. Only after compliance is demonstrated with this paragraph, will the Subcontractor be allowed to bring radioactive material or sealed radioactive sources onto the Site.
- B. Subcontractors who wish to conduct activities under this subcontract off-site, at locations covered by another DOE-approved RPP; by a license or permit granted by the U.S. Nuclear Regulatory Commission; an agreement state, or a state radiological health organization, as appropriate, which allow activities under that license or permit that are within the scope of activities defined in this subcontract to occur, shall submit a copy of their RPP/license/permit to the Buyer's Technical Representative (BTR). The Buyer will review the RPP/license/permit and ensure that it covers the scope of work, and based on this review, approve commencement of the work. These on-site activities are then controlled by, and must be completed in full compliance, with the on-site RPP, license or permit requirements. Only after compliance with this paragraph is demonstrated will the Subcontractor not be subject to the requirements of the Mound RPP.
- C. Subcontractors who wish to conduct activities under this subcontract away from the Site, at locations NOT covered by activities under another DOE-approved RPP, or by a license or permit granted by the U.S. Nuclear Regulatory Commission, agreement state, or state radiological health organization, as appropriate, shall NOT conduct any activities until first obtaining approval of the Buyer through the BTR who, based on the outcome of the review, may seek approval for the activities from DOE through a revision to the RPP.

1.04 RELATED SECTIONS

- A. Section 01180, Respiratory Protection.
- B. Section 01330, Submittals.
- C. Section 01550, Waste Management.

1.05 REFERENCES

- A. 10 CFR 835, Radiation Protection: Final Rule.

- B. Mound Radiological Protection Plan (RPP).

1.06 SUBMITTALS

- A. Submit for information a list of personnel who have received Rad Worker II training. Provide employee's full name, job title, title of course(s), training date, and training organization. Include a copy of the training certification(s).
- B. The Subcontractor shall submit a written request to the Buyer at least 2 working days in advance for obtaining General Employee Radiological Training (GERT) or a Radiological Orientation. See section 3.01 B.
- C. The Subcontractor shall submit a request to the Buyer at least one week in advance to obtain radiological free release evaluations/surveys on equipment. See Section 3.01.C.
- D. The Subcontractor shall request the issuance of an RWP from the BTR at least 7 working days before the scheduled work activity.
- E. The Subcontractor shall notify the BTR at least two days in advance of any employee who will be terminating so that exit bioassay monitoring may be set up if required.
- F. The Subcontractor shall submit a written request to the Buyer for approval at least one week before any non-exempt or licensed radioactive sources are brought on-site. This includes any radiography equipment, moisture density gauges, or other equipment or sources that are licensed or non-exempt. While the source is on site, it shall have any inspection and maintenance performed as described in any license, procedure, or manufacturer's document, and the records shall be made available to the Buyer upon request. The Subcontractor shall notify the Buyer, both verbally and written, when the source is brought on-site and removed from site. The request shall be submitted to the BTR and shall contain, at a minimum, the following information:
 - 1. Description of source including radio nuclide(s).
 - 2. Activity of source and contact dose rates.
 - 3. Manufacturer of source as well as unique identification number.
 - 4. Data and results of last leak test and assay.
 - 5. A copy of license(s) permits, operating procedures and emergency procedures.
 - 6. List of authorized users and proof of their training.
 - 7. Procedures for inventory accountability, storage and loss or damage.
 - 8. Date the source will be arriving and the date it is to leave the site.
 - 9. Project names where source will be used.
 - 10. Source Custodian and phone number.

11. Emergency phone numbers.
 12. Storage location.
 13. Location(s) and work order where source is to be used.
 14. A description of the job and how the source will be used.
- G. The Subcontractor shall submit HEPA filter test certification. See Section 3.01.F.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Buyer-Furnished Equipment

1. Thermoluminescent Dosimeters (TLD)
2. Personnel Contamination Monitor Station and/or equipment necessary to perform required personnel monitoring. Subcontractor shall plan on moving the equipment twice during the project.
3. Radiological Instrumentation for gross alpha/beta/gamma/neutron detection and counting equipment for alpha/beta and gamma analysis for samples collected by the Buyer's Radiological Control Organization.
4. Radiological air sampling and monitoring equipment in support of RCT activities. Includes portable air samplers and portable continuous air monitors.
5. Contamination survey and air sampling media (e.g. swipes and air sample filters).
6. Bioassay containers.

B. Buyer Services

1. The Buyer will provide the following services:
 - a. Internal and External Dosimetry Services, including bioassay sampling, external dosimetry, and dosimetry storage location
 - b. Radiological Control Technician Coverage
 - c. Air monitoring
 - d. Radiological surveys and monitoring
 - e. Radiological count room
 - f. Radiological Work Permits

- g. Personnel exposure records
- h. Soil sample-screening lab
- i. Radiological engineering review for work packages
- j. Radiological Worker Training
- k. Radiological Instrumentation Maintenance/Calibration
- l. Environmental Count Lab

C. Subcontractor Furnished Equipment

1. Provide the Following Equipment:

- a. Personal Protective Equipment (PPE) for Subcontractor and Buyer personnel.

(1) The Buyer currently uses disposable type PPE due to the lack of an on-site laundry facility. The Subcontractor may choose to use either disposable or non-disposable PPE.

(2) If the Subcontractor chooses to use disposable PPE, the Buyer will provide a listing of currently used types and sizes for the following items:

Smocks - yellow paper (Durafab Comfort Gard 150)

Shoe covers - flat vinyl, yellow, 0.006 gauge top and 0.008 gauge embossed sole

Coveralls - splash resistant yellow paper or Tyvek with zipper closure, no hood

Hoods - yellow Tyvek with full head and shoulder coverage. Elastic face opening

Booties - vinyl boot with ties, 0.008 gauge

Surgeons gloves - non-latex

Rubber gloves - standard radiological, orange or yellow with trefoil marking

Cotton liners - standard ambidextrous

(3) If the Subcontractor chooses to use non-disposable PPE, the Subcontractor shall coordinate delivery, collection of used PPE, and transportation to and from a qualified radiological use laundry facility. Container/truck shipment receipt surveys are required for laundry.

(4) The Subcontractor is responsible for providing “modesty” clothing to be worn under PPE.

(5) Workers who choose to wear personal clothing or jewelry in radiological areas do so at the workers’ risk. The Buyer will not reimburse workers for personal items worn inside radiological areas.

(6) Assume approximately 15 Buyer personnel shall require PPE per day.

- b. Respiratory protection equipment: See Section 01180, Respiratory Protection.
 - c. Vacuum cleaners equipped with DOP or equivalent tested HEPA filters.
 - d. As required, portable electric hand tools, equipped with DOP or equivalent tested HEPA filters, or used in conjunction with separate HEPA exhaust.
 - e. Portable DOP or equivalent tested HEPA exhausters, with a minimum of 800 cubic feet per minute (cfm) flowrate.
 - f. HEPA filters for items c, d and e above. HEPA filters shall provide an efficiency of not less than 99.97% when challenged with a 0.30-micrometer particle size aerosol.
 - g. Decontamination supplies such as rags, mops, buckets, window cleaner (or other suitable decontamination agent) and other material needed for decontamination of equipment, personnel, and facilities.
 - h. Yellow plastic bags of various sizes for radiologically contaminated waste.
 - i. Janitorial supplies, as needed for support of the change rooms/restrooms in use.
 - j. Equipment and supplies to construct temporary containment structures or devices such as glovebags and/or perma-con type structures.
2. Change Facilities
- a. See section 01500, Construction Facilities and Project Boundaries.

PART 3 EXECUTION

3.01 PREPARATION

A. Radiological Worker Training

- 1. Personnel shall complete DOE Radiological Worker II training, consisting of a core academic module and a site specific practical factors module. Personnel shall pass examinations given after each module. Retraining is every two years. See Section 1.06 Submittals. See Section 01800 Training for further details regarding training.
- 2. The Buyer will provide the training. Submit a written request for training at least 7 working days in advance.
- 3. A waiver request for the core academic module may be submitted for personnel who provide proof of Department of Energy core Rad Worker II training which has been completed within the past two years. Personnel with this exemption will only have to complete the site-specific practical factors module and pass the practical examination.
- 4. There is no exemption for the site practical factors module.

B. Visitor Requirements

1. Personnel who enter areas posted as Controlled Areas shall meet the following requirements:
 - a. For visits of duration 2 weeks or longer – Personnel must attend General Employee Radiological Training (GERT). Please submit request for training at least 2 working days in advance. The Buyer will provide the training. Completion of GERT training allows for unescorted access into a Controlled Area.
 - b. For visits shorter than 2 weeks – Personnel may receive the Buyer’s radiological orientation. Please submit request for training 24 hours in advance. The Buyer will provide the orientation. Personnel who have this orientation may have escorted access to Controlled Areas. If personnel will be making multiple visits short-term visits over the period of two years, it is recommended that they obtain GERT training.
2. Visitors with a demonstrated need to enter the following areas may be allowed access if such access is controlled with area-specific training (i.e., GERT or Radiological Orientation) and the use of radworker-qualified escorts in lieu of Rad Worker training:
 - a. Radiological Buffer Areas
 - b. Radiation Areas
 - c. Contamination Areas
 - d. Radioactive Material Areas
3. Prior to being granted access, visitors requesting entry to the above areas, or areas requiring internal monitoring, must complete prior radiological work history forms.
4. Visitors shall be prevented from entering Very High Radiation Areas. If personnel require access to High Radiation, High Contamination and Airborne Radioactivity Areas, they shall complete Radiological Worker II training as described above.

C. Equipment Surveys

1. The Buyer may survey equipment upon arrival at the site to ensure the equipment meets the standards for radioactivity before it is brought into the work area. If items are found to be contaminated then they shall be decontaminated by the Subcontractor to site acceptable levels or removed from Site at Buyer’s discretion and at Subcontractor’s expense. Preliminary decontamination as applicable to remove existing radioactive contamination shall be performed off-site at the Subcontractor's expense prior to introduction on-site.
2. Tools and equipment which have been used in a radiological area, including power equipment and temporary scaffolding, shall remain within the radiological area until released or transferred to another radiological area, by the Buyer. Power tools or

equipment with inaccessible internal surfaces which cannot be fully surveyed which were used in radiological areas will not be free-released for use outside of radiological areas without Buyer's approval. Tools and equipment used in radiological areas may be transferred to other radiological areas within the building. Contaminated tools and equipment shall be bagged or external surfaces covered or decontaminated by the Subcontractor for transit through the RBA to other radiological areas.

3. In situations where tools/equipment allow for 100% survey or an evaluated survey, free release may be possible. Request for survey should be made at least 24 hours in advance of survey.
4. Buyer shall review and approve all survey results prior to authorizing free release of material.

D. Internal and External Dosimetry

1. Before starting on-site work in radiological areas, a baseline bioassay (urine and/or fecal analysis) may be required. Prior to any work in radiological areas, the Subcontractor shall complete a request for prior exposure information for the Buyer.
2. Subcontractor employees who may enter radiological areas or encounter radiological contamination may be issued Thermoluminescent Dosimeter (TLD) badges before the start of on-site work. Wear TLDs at all times when required by radiological postings or Radiological Work Permits. TLD badges may not be removed from the site and shall be stored (when not being worn) in Buyer supplied dosimeter storage location.
3. Nasal smears may be collected per direction of the Buyer.

E. Radiological Work Permit (RWP)

1. A RWP is required for any entry or work in a radiological area. No work will take place in such areas until the RWP is issued by the Buyer.
2. The Subcontractor shall request the issuance of an RWP from the BTR at least 7 working days before the scheduled work activity. The Buyer will provide a Radiological Work Permit (RWP) for work activities performed in radiological areas (CA, HCA, ARA, RA, HRA, and SCA). Allow 7 working days for completion of a RWP.
3. PPE shall be worn as specified on the RWP.

F. Equipment Testing

1. Equipment having a HEPA filter shall be tested by the Subcontractor prior to use on-site. HEPA filter replacement requires retesting of the equipment. All HEPA filtered equipment shall be tested to meet the requirements of ASTM D-2986 every two years of use. Re-testing is also required to be performed on equipment after maintenance work has been completed or if the equipment has been subjected to any activity that may affect the filter efficiency and/or seals.

2. Building ventilation systems maintenance shall be documented on the Construction Daily Report and submitted to the Buyer as performed.
 - a. Certificates of Conformance for the fabrication, inspection, and testing of Nuclear HEPA filters shall be submitted to the Buyer for approval prior to installation of the filters.
 - b. The in-line filter leak test shall be conducted by a qualified individual or vendor who must have attended the Nuclear Consulting Services, Inc. (NUCON) in-place filter testing workshop or equivalent. The pertinent certification shall be submitted to the Buyer for approval prior to test performance.

3.02 DECONTAMINATION AND DEMOLITION

A. Radiological Buffer Area

1. The RBA for Building 38 is also designated as a Radioactive Materials Management Area (RMMA) requiring evaluation and/or radiological survey for release of materials.
2. No eating, drinking, use of tobacco, or chewing gum is allowed.
3. No RWP or protective clothing is required for work in these areas, however RCT coverage may be required to verify that contamination is not present (such as in overhead areas).

B. Radiological Area (Contamination Area, High Contamination Area, Airborne Radioactivity Area)

1. An RWP (which prescribes appropriate levels of PPE) is required for entry into these areas.
2. Prior to start of work, review potential radiological hazards with all personnel who must work in the radiological area.
3. The Buyer will maintain a log of personnel entering the radiological area and, if required by the RWP, enter the entry and exit time every time a person enters or leaves the area.
4. No eating, drinking, applying cosmetics, use of tobacco, or chewing gum is allowed.
5. Enter only to perform required work within the bounds of the RWP and job plan.
6. Personnel monitoring is required upon exit.
7. PPE as required on the RWP.
8. Typical dress-out requirements:
 - a. Coveralls

- b. Shoe covers
- c. Booties
- d. Work boots
- e. Surgeon's gloves or Rubber gloves
- f. Hood
- g. Respiratory protection for certain work activities in ARAs
- i. For non-hands on tours and inspections in CA's, a smock, shoecovers, and gloves may be sufficient, per RWP
- j. For HCA's, a double set of a. through g. above is normally required.

C. Containment of Dust and Debris

1. The following are requirements for all contaminated work areas.
 - a. Use of engineering controls (e.g. glovebags) should be used to the maximum practical extent.
 - b. Equip portable hand tools used to drill, cut, or otherwise disturb contaminated materials with a HEPA-filtered exhaust ventilation system or provide a means for localized exhaust (within 1-2 feet) of the immediate work area as required by the Buyer.
 - c. Implement dust-suppression techniques. Dry sweeping, using compressed air for cleaning, or other dust-creating activities are prohibited.
 - d. HEPA filters and respirator cartridges shall be discarded as contaminated waste.
 - e. Containment devices shall be installed by the Subcontractor and inspected/approved by the Buyer after installation, prior to use and periodically during use.

D. Personnel Monitoring

1. Each worker exiting the radiological area into a less restrictive area shall be monitored. Each worker exiting the RBA into a less restrictive area shall be self monitored. Monitoring requirements will be provided during the Radiation Worker Training program. Follow posted instructions and utilize the equipment provided.
 - a. A whole body frisk is required (estimated time is 4 min).
 - b. A hand and foot frisk is required (estimated time is 2 min).
2. Contamination is not expected to be found during monitoring. If contamination is

found, remain at the monitoring station and notify the Buyer. Decontamination will be performed by the Buyer in a manner commensurate with the type and level of contamination, and must be completed before the worker leaves the facility.

E. Respiratory Protection

1. Respiratory protection is required for work in airborne radioactivity areas.
2. Respiratory protection may be required for activities that disturb or damage existing surfaces such as drilling, cutting, or demolition which may result in creation of an ARA. The Subcontractor shall provide respiratory protection in accordance to Sect. 01180, Respiratory Protection. The RWP and Buyer will determine when and what type respiratory protection is required.

F. Waste Management

1. Waste Disposal: Dispose of radiologically contaminated waste in accordance with Section 01550.
 - a. If waste boxes cannot be located within the radiological area, wrap or bag waste before moving it from the radiological area to the boxes.
 - b. All radiological waste must be authorized to be moved outside a radiological area by the Buyer.
2. In an effort to minimize waste, remove packaging to the maximum extent possible prior to transporting equipment and material into radiological buffer areas (RBA) and radiological areas.

3.03 FIELD QUALITY CONTROL

A. Personnel Exposure Records

1. The Buyer will maintain personnel exposure records for all employees. The personnel exposure records for this work will be supplied by the Buyer to the Subcontractor, and it is the responsibility of the Subcontractor to provide the information to employees.

END OF SECTION

SECTION 01180

RESPIRATORY PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES: Respiratory protection requirements for construction personnel.

- A. For respiratory protection use, the Subcontractor shall submit for approval a Respiratory Protection Program in accordance with ANSI Z88.2-1992, "Practices for Respiratory Protection"; and OSHA Regulations for Construction, Standard 29 CFR 1926.103, "Respiratory Protection."
- B. Limit exposure to toxic and hazardous substances to the permissible exposure limits of 29 CFR 1926, Subpart Z.
- C. Where feasible, administrative and engineering controls are required to be used before the option of respiratory protection is required. When engineering controls are not used, provide documentation listing reasons why they are not feasible.
- D. As a minimum, respiratory protection is required during the following work/operations:
 - 1. Abrasive blasting.
 - 2. Work on surfaces with the potential to generate airborne asbestos; lead and/or lead particulates; or entry into posted asbestos, or lead work areas.
 - 3. Work with substances or on surfaces with the potential to generate respirable man-made fibers.
 - 4. Work on radiologically contaminated or activated surfaces with the potential to generate airborne radioactivity or entry into posted airborne radioactivity areas.
 - 5. Work that creates silica dust and man-made fibers that are known or suspected to be a health hazard.
- E. Waiver for Respiratory Protection
 - 1. Usage of respiratory protection may be waived by the Buyer upon receipt of a written recommendation, based on workplace assessment, by a Certified Industrial Hygienist or Professional Industrial Hygienist.

1.02 DEFINITIONS

- A. Single-use of respirator: The time period starting at entry into the hazardous work area until the respirator face-to-face piece seal is broken. Essentially one donning and doffing cycle.

- B. Certified Industrial Hygienist or Professional Industrial Hygienist: Individual certified in the practice of industrial hygiene by the American Board of Industrial Hygiene or a professional qualified by education, training, and experience to anticipate, recognize, evaluate, and develop controls for occupational health hazards.
- C. Disposable Respirator: A respirator for which maintenance is not intended; has a filter element which is not an inseparable part of the respirator; and that is designed to be discarded after excessive resistance, sorbent exhaustion, physical damage, or end-of-service-life renders it unsuitable for use. Examples of this type of respirator are a disposable half-face and full-face respirator or a disposable escape-only self-contained breathing apparatus.
- D. Engineering Controls: Mechanism for controlling dispersal of airborne contamination at point of origin such as wetting, vacuuming, enclosures, filters, and exhaust ventilation.
- E. Administrative Controls: Methods of controlling employee exposures to contaminants by job rotation, work assignment, or time periods away from the contaminant.

1.03 REFERENCES

- A. ANSI Z88.2, 1992, Practices for Respiratory Protection.
- B. OSHA Regulations for Construction, Standard 29 CFR 1926.103, Respiratory Protection (current issue).
- C. ANSI/CGA G7.1, Commodity Specification for Air.
- D. National Institute of Occupational Safety and Health (NIOSH).

1.04 QUALITY ASSURANCE

- A. Required Records
 1. Maintain records in accordance with ANSI Z88.2 and 29 CFR 1926.103.
 2. These records shall include, but are not limited to, the items below:
 - a. Respirator Inspection - inspection dates, findings, and remedial actions for respirators maintained for emergency or rescue use.
 - b. Training - type of training received, type of respirator equipment, manufacturer of respirator, names of persons trained, and date training occurred.
 - c. Respirator Fit Testing - type of respirator used; specific make, model, and size of respirator tested; NIOSH approval number; name of person tested; name of test operator and qualifications; date of test; and results of respirator fit test (protection factor and fit factor).
 - d. Medical Approval - documented opinion by health services that a person is

physiologically and psychologically able to wear respiratory protective devices while performing the job.

- e. Program Appraisal - the findings, outcomes, and actions resulting from the annual Respiratory Protection Program evaluation.
- f. Program Surveillance - the findings, outcomes, and actions resulting from spot checks of operations where respirators are in use.

1.05 SUBMITTALS

- A. Submit the following for approval.
 - 1. Respirator Protection Program
 - 2. Waiver not to use respirators.
 - 3. Request not to use engineering controls.
- B. Submit the following for information.
 - 1. Copy of fit-test results/cards.
 - 2. Records required under Paragraph 1.04.

PART 2 PRODUCTS

2.01 MATERIAL

- A. Provide respirators and cartridges that are NIOSH/MSHA approved (such as MSA or Survivair-type). Provide additional respiratory protection equipment, including breathing air, when using atmosphere supplying respiratory protection. The Subcontractor shall provide respirators and associated filter cartridges for the use of the Buyer.

Subcontractor shall provide the following types of respirators to the Buyer as needed: MSA full-face (including powered air-purifying respirators and supplied-air respirators), MSA half-face, North full-face and North half-face. The Buyer shall provide documentation for Buyer's personnel such as training, fit tests, and medical evaluations as required under 29 CFR 1926.103.

- B. Provide compressed breathing air when required to provide adequate protection factor. Submit data demonstrating the compressed breathing air quality supplied to the air respiratory protection systems meets the ANSI/CGA G7.1 requirements for Grade D breathing air.
- C. Air purifying respirators (APR) shall not be worn in oxygen deficient or immediately dangerous to life or health (IDLH) environments.

PART 3 EXECUTION

3.01 INSPECTION

- A. Inspect respirator before use to ensure that it is working properly.
- B. Inspect respirators stored for emergency or rescue use monthly.

3.02 PREPARATION

A. Medical Evaluation

- 1. Before an employee is issued a respirator, a physician's approval is required. This approval shall verify the employee will be able to function normally wearing a respirator and the employee's safety and health will not be impaired. The medical evaluation and physician's approval shall be in accordance with the requirements of ANSI Z88.2 and 29 CFR 1926.103 and shall be updated annually.

B. Training

- 1. Before an employee is issued a respirator, the employee shall complete training that conforms to ANSI Z88.2 and 29 CFR 1926.103. Update training annually, except where a particular substance requires more frequent training.

C. Fit Test

- 1. Before an employee is issued a respirator and within 60 days of the training and medical examination, the employee shall receive a quantitative fit test in accordance with ANSI Z88.2 and 29 CFR 1926.103. Assigned protection factors shall be as specified by NIOSH and/or OSHA, whichever is more stringent. Perform fit testing for initial fitting and annually afterwards except where a particular substance requires more frequent fit testing.

3.03 APPLICATION

A. Respirator Information

- 1. Single-use of respirators is required in the following situation:
 - a. In radiological areas involving the abrading of fixed surface contamination, airborne radioactivity areas where the air concentration exceeds the derived air concentration (DAC), or in other areas where removable surface contamination has the potential to be re-suspended during normal operations and no feasible method of checking for the presence of such contamination exists; and
 - b. In nonradiological areas where surface contamination of the respirator may occur and no feasible method of checking for the presence of such contamination exists.
- 2. The Subcontractor's Respiratory Protection Program Administrator may approve the

reuse of respirators, except as noted, provided good work practices are followed that ensure the unit remains both serviceable and uncontaminated. Upon removal, the respirator wearer shall place the respirator in a clean plastic bag and store it in a secure location accessible only to the wearer. Appropriate materials for cleaning and disinfecting the respirator shall be provided to the wearer when the respirator is first issued, in accordance with 29 CFR 1926.103.

3. Quarter-mask respirators and disposable dust masks are **prohibited** for any operations where respiratory protection is recommended.

B. General Requirements

1. Modifications to the respirator or its parts are prohibited.
2. The Subcontractor's supervisor shall monitor use of the respirator to ensure they are properly worn.
3. The Subcontractor shall implement a respirator hygiene program in compliance with 29 CFR 1926.103, which is capable of addressing contamination issues as they arise. The Subcontractor's program shall include the cleaning, sanitation, repair, and inspection of all respirators issued to and used by the Buyer. Should the Subcontractor's program necessitate the shipping of respirators off of the Buyer's site, the Subcontractor shall comply with all applicable Department of Transportation (DOT) regulations concerning shipment of contaminated materials.

3.04 FIELD QUALITY CONTROL

- A. The Buyer may perform periodic surveillance of the Subcontractor's respiratory protection program to ensure compliance with this section.

END OF SECTION

SECTION 01190

ENVIRONMENTAL COMPLIANCE

PART 1 GENERAL

1.01 SCOPE

- A. This section addresses Subcontractor actions and generation, verification of data, results, information, and submittals necessary for the Buyer to meet environmental compliance responsibilities, including:
1. Subcontractor actions that must be completed to insure that the Buyer's monitoring and reporting functions can be accomplished.
 2. The necessity and requirements for the Subcontractor to perform work activities and achieve environmental emissions release requirements as mandated by, federal, state, and local laws and regulations and as verified by the Buyer.
 3. The necessity for the Subcontractor to generate and maintain appropriate records to document environmental cleanup related activities to include training and reporting.
- B. The Subcontractor shall accomplish the Buyer's required submittals and tasks through acknowledgment and incorporation of Section 01460 Integrated Work Control or as otherwise directed.

1.02 As part of the review of Subcontractor-generated Work Packages, the Buyer shall generate an Environmental Compliance Profile (ECP) for each Work Package. ECP's are prepared by the Buyer to document the status of key environmental compliance areas of specific project activities. The Subcontractor must provide data and information to allow completion of ECPs by the Buyer, and to display understanding of environmental concerns and requirements, and the resolution or mitigation thereof.

- A. All elements of the ECP may not be applicable to a Work Package.
1. Key ECP elements include:
 - a. Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) [40 CFR]
 - b. Permits to Install (PTIs) and Permit to Operate (PTOs) [OAC 3745-31 and -35]
 - c. National Emission Standards for Emissions of Radionuclides from DOE Facilities [40 CFR 61 Subpart H]
 - d. National Pollutant Discharge Elimination System (NPDES) Permit [OAC 3435-33]

- e. National Environmental Policy Act (NEPA) [10 CFR 1021]
- f. Asbestos Emission Control [OAC 3745-20]
- g. Protection of Historic and Cultural Properties [36 CFR 800]
- h. Floodplain / Wetland Review [10 CFR 1022] and Wetland Antidegradation [OAC 3745-1-54]
- i. Storm Water Pollution Prevention [NPDES Permit No. 11O00005*HD]
- j. Safe Drinking Water Act (SDWA) [OAC 3745-81, -82, -83, -85, and -95]

1.03 RELATED SECTIONS

- A. Section 01130 - Asbestos
- B. Section 01210 - Facility Surveillance & Maintenance
- C. Section 01300 - Submittals
- D. Section 01400 - Quality Assurance
- E. Section 01460 – Integrated Work Control
- F. Section 01500 - Construction Facilities and Project Boundaries
- G. Section 01550 - Waste Management
- H. Section 01900 - Utility Isolation & Removal
- I. Section 01910 - F-Line Glove Box Removals
- J. Section 01915 - Electrical Equipment Removal
- K. Section 01920 - Fire Protection/Suppression Systems
- L. Section 01925 – Heating, Ventilation & Air Conditioning/Systems Demolition
- M. Section 01930 - Other Systems
- N. Section 01935 - Building Demolition
- O. Section 01940 - Stack Demolition
- P. Section 16000 - Electrical

- Q. Special Condition 3.1 - Integrated Safety Management System (ISMS)
- R. Section 01800 – Training

1.04 SUBMITTALS

- A. Submittal requirements shall be in accordance with the general requirements of the subcontract specifications including Sections 01300, Submittals, and 01460, Integrated Work Control or as otherwise directed. All information required for accomplishment of Environmental Compliance Profiles shall be submitted to the Buyer as part of the Work Package or Work Package section approval process or as otherwise directed. The Subcontractor shall provide the following submittals:
 - 1. Data and Information for Environmental Compliance Profiles
 - a. Radionuclide Inventories - NESHAPs
 - b. Ohio Environmental Protection Agency Notification of Demolition and Renovation for asbestos removal and building demolition
 - c. Asbestos Inspection Reports
 - d. Fugitive Emissions Control Plan
 - e. Spill Prevention and Control Plan - NPDES
 - f. Erosion Control Plan - NPDES
 - g. Isolation of utilities, in particular, the potable water lines
 - h. Ozone Depleting Substances

1.05 REFERENCES:

- A. Action Memorandum, Building 38 Removal Action, Mound Plant, Miamisburg, Ohio, October 2001, Final, Revision 2, Appendix I
- B. Federal Facilities Agreement under CERCLA Section 120, United States Environmental Protection Agency Region V and the State of Ohio, signed July 15, 1993 (29 CFR 1910.120)
- C. Work Plan For Environmental Restoration of the DOE Mound Site, The Mound 2000 Approach, February 1999, Final, Revision 0
- D. 40 CFR 61, Subpart H, National Emission Standards for Emission of Radionuclides Other Than Radon from Department of Energy Facilities
- E. 40 CFR 61 Subpart M, National Emission Standard for Asbestos

- F. 40 CFR 82 Subpart F, Ozone Depleting Substance (ODS) Management
- G. 40 CFR 300, National Oil and Hazardous Substances Pollution Contingency Plan
- H. 40 CFR 302, Designation, Reportable Quantities, and Notification
- I. DOE N441-1, Radiation Protection of the Public and the Environment
- J. DOE ORDER 5400.1, General Environmental Protection Program
- K. DOE ORDER 5400.5, Radiation Protection of the Public and the Environment
- L. OAC 3745-17-08, Restriction of Emission of Fugitive Dust
- M. OAC 3745-20, Asbestos Emission Control
- N. OPA980099, (Plant Site) Storm Water Pollution Prevention Plan
- O. Montgomery County Hazardous Air Pollution Control Regulation 150
- P. DOE NPDES Permit 11O00005*HD

PART 2 PRODUCTS

2.01 NOT USED

PART 3 EXECUTION

3.01 CERCLA

- A. The Subcontractor shall plan and execute work in accordance with provisions of the Federal Facilities Agreement (FFA), especially to include:
 - 1. Section XII: Consultation With U.S. EPA and OEPA (Review and Comment Process for Draft and Final Documents and demolition work packages)
 - 2. Section XIV: Project Managers
 - 3. Section XVI: Reporting Requirements
 - 4. Section XVIII: Sampling and Data/Document Availability

3.02 THE SUBCONTRACTOR SHALL PLAN AND ACCOMPLISH WORK IN ACCORDANCE WITH:

- A. The Action Memorandum, Building 38 Removal Action, Appendix I

3.03 ASBESTOS REMOVAL, BUILDING DEMOLITIONS, RAPCA NOTIFICATIONS

- A. Removals involving asbestos and building demolitions (with or without asbestos) are subject to NESHAPs regulations. Federal regulatory authority has been delegated to the State of Ohio. For the Mound Plant, the requirements are administered by the Regional Air Pollution Control Agency (RAPCA) on behalf of the Ohio Environmental Protection Agency (OEPA). The Subcontractor must submit copies of all notifications and notification amendments to the Buyer within 24 hours of submittal to RAPCA.
- B. Notification requirements apply to all building demolitions - whether or not asbestos is present. Quantities of non-friable asbestos materials to be left in place during demolition (i.e., floor tile and asphalt roofing) must be included on any demolition notifications in accordance with EPA requirements. Notification of RAPCA is required for all friable asbestos removals. The Subcontractor shall provide a certified Ohio Asbestos Hazard Evaluation Specialist to provide a certification in Section V of the notification that an asbestos survey was performed. The Subcontractor shall submit notifications at least ten (10) business days in advance of planned asbestos removals or demolition.
- C. Following submission of a notification, the Subcontractor must notify RAPCA immediately (i.e., same business day or within 24 hours) of any increase in the quantity of asbestos to be removed, any deviation in the removal or demolition schedule, or any change in the name or location of the waste disposal site. The Subcontractor must submit an amended notification within two (2) business days following any change. (An Asbestos Hazard Evaluation Specialist certification is not needed for revised notification if the quantity of asbestos has not changed.) Copies of all revised notifications must be submitted to the Buyer within 24 hours. The Subcontractor shall obtain written approval from the Buyer prior to terminating any asbestos removal notifications.
- D. Friable and all other asbestos regulated by the EPA must be removed from a facility being demolished before any wrecking or dismantling that would break up or disturb the materials. The Subcontractor shall accomplish this removal.

3.04 WASTE MANAGEMENT

- A. The Subcontractor shall not dispose of liquid waste in sanitary or storm system sewers or waterways or drainage ditches without written permission of the Buyer.
- B. The Subcontractor shall not allow hazardous liquids (including, but not limited to, gasoline, diesel fuel, lubricating oil, antifreeze, chlorine mixtures, and cleaning chemicals) to enter the sanitary or storm sewer systems, waterways, drainage ditches, or the ground.
- C. The Subcontractor shall prevent cross-contamination of areas, soils, wastes, and related materials by taking precautions to control the spread of all soil, water, etc. contacted during excavation, and movement of soil.

3.05 TRAINING

- A. The Subcontractor shall insure that personnel are trained in requirements of the approved Fugitive Emissions Control Plans, the Spill Prevention and Control Plans, and the Erosion Control Plans.

3.06 NESHAPs

- A. Radionuclide emissions from DOE facilities to the atmosphere are subject to regulation by the U.S. EPA. The impact from DOE air emissions to any member of the public cannot exceed 10 mrem/year. Based on contractual agreements and other remediation work onsite, the Subcontractor cannot exceed a 4.0 mrem/year for Building 38 and SM Stack demolition activities. Activities with the potential to result in an effective dose equivalent (EDE) > 0.1 mrem/year to a member of the public requires U.S. EPA approval. (For dose calculations: The distance to the nearest inhabited facility, Building 105, is 190 meters.)

The Subcontractor shall calculate and provide to the Buyer, a radionuclide inventory for all equipment and structure demolitions associated with this section. With this information, the Buyer shall perform a NESHAPs emissions standards assessment for Building 38 or SM Stack dismantlement and demolition activities. Since this analysis exceeds the NESHAPs emissions standard for release to the public, the Subcontractor may have to perform area decontamination to bring the levels below the approved standard.

Then, per NESHAPs (40 CFR 61 Subpart H), the Buyer can submit a request to DOE for approval of the Subcontractor's work package from the U.S. EPA to proceed with the project based on the results of the above NESHAPs assessment. USEPA approval would be part of the 6 month lead time for work package approval process.

3.07 PTIs/PTOs AND (FUGITIVE) AIR EMISSIONS

- A. There are no State of Ohio Permits To Install (PTI) or Permits To Operate (PTO) required for equipment removals, structure demolitions, and below grade removals.
- B. The Subcontractor shall provide to the Buyer for approval, a Fugitive Emissions Control Plan that specifies measures to prevent or control visible emissions. The Fugitive Emissions Control Plan and Work Packages shall specify dust control practices for all activities, which generate fugitive dust.
- C. The Subcontractor shall plan for, develop, and employ reasonably available control measures to prevent fugitive dust from becoming airborne, particularly from bulk waste staging and transfer areas. Visual particulate emissions from any fugitive dust source shall not exceed 20% opacity as a three-minute average. At Mound, the goal of fugitive dust control is no visible emissions.
- D. The Subcontractor shall specify project personnel responsibilities for employing dust controls and monitoring their effectiveness.

- E. The Subcontractor shall promptly notify the Buyer and update the Fugitive Emissions Control Plan if emissions not previously anticipated and addressed in the Plan are to occur. The Buyer shall review project Work Packages to ensure that dust control is adequately addressed and provide oversight to ensure that such practices are implemented and effective.

3.08 NPDES PERMIT

- A. The Subcontractor shall ensure that liquid effluent that results from glove box removals, structure demolitions, and below grade removals complies with the NPDES permit.
- B. The Subcontractor must report to the Buyer any anticipated problems with permit compliance.
- C. All underground sanitary and storm lines are to be plugged / abandoned at the manhole(s) to prevent any potentially contaminated storm water or suspended solids from discharging to the waste water treatment plant (WWTP) or to the environment.

3.09 STORM WATER POLLUTION PREVENTION

- A. The Subcontractor shall provide an Erosion Control Plan as required by the Plant site's NPDES permit for approval by the Buyer. The Buyer shall review project Work Packages to ensure that erosion control is adequately addressed and provide oversight to ensure that such controls are implemented and effective.
- B. The Erosion Control Plan shall specify erosion control practices for all project activities, which could affect site storm water effluent (runoff). The Subcontractor shall conduct work operations such as to minimize the potential for erosion of soils, and to prevent the entry of construction debris, soils, silt, or other deleterious materials into surface streams or the storm sewer system.
- C. The Erosion Control Plan shall specify the Subcontractor's plans and procedures to prevent or control soil erosion, and to ensure that such controls are properly maintained and are effective. The Subcontractor shall plan for, develop, and employ storm water controls to prevent or minimize soil erosion in areas of soil disturbances.
- D. The Subcontractor must ensure that storm water controls are employed to prevent run-on and run-off from bulk waste staging and transfer areas. The Subcontractor shall control the grading in the vicinity of all work so that the surface of the ground shall be properly sloped to minimize water from running into or off of excavated areas.
- E. The Subcontractor shall provide a point of contact responsible for erosion control activities.
- F. Poned water must be tested before release. Request testing through the BTR. The discharge shall comply with the NPDES permit and can not be greater than one-half the DOE derived concentration guideline (DCG) for the radionuclide of concern if radionuclides are a factor. The concentration and gallons of liquid are recorded by the

Buyer.

3.010 SPILL PREVENTION AND CONTROL

- A. The Subcontractor shall provide a Spill Prevention and Control Plan for approval by the Buyer.
- B. The Spill Prevention and Control Plan shall specify preventive measures for all Subcontractor activities involving hazardous materials or oils on site. The Subcontractor shall plan for, develop, and employ spill prevention measures, both controls and work practices, to prevent the occurrence of spills of hazardous (chemical or radiological) substances or oils.
- C. The Subcontractor shall plan for, develop, and employ countermeasures in the event of a reportable or non-reportable spill or release. The Subcontractor shall immediately report to the Buyer any spill or release of hazardous substances or oils.
- D. The Subcontractor shall notify the Buyer and update the Spill Prevention and Control Plan if hazardous materials or oils, not previously covered in the Plan, are expected to be stored or used at the site.
- E. The Buyer shall review project Work Packages to ensure that spill prevention and control is adequately addressed and provide oversight to ensure that such preventive measures are implemented and effective.
- F. The Subcontractor shall provide a listing of and maintain spill response and communications equipment.
- G. The Subcontractor shall provide a point of contact responsible for spill prevention and control activities.

3.011 POTABLE WATER

- A. Prior to demolition, the potable water supply to Building 38 must be turned off and capped at the water main to protect the integrity of the water supply to that portion of the plant site. Buildings close to the project must be posted if their potable water supply is shut off while capping the water supply main to Building 38.
- B. If the ground must be excavated to cap-off the water line, then such buildings that are affected shall be monitored for total coliform bacteria.
- C. The Subcontractor shall disinfect all fittings and open pipes by swabbing with chlorine.

3.012 OZONE DEPLETING SUBSTANCES (ODS)

- A. Ozone Depleting Substances include CFCs and HCFCs. Per Section 608 of the Clean Air Act, and pursuant to 40 CFR 82, Subpart F, during the servicing and disposal of refrigeration and air conditioning equipment, recycling of ODSs must be maximized. No

one may knowingly vent ODSs used as refrigerants into the atmosphere while maintaining, servicing, repairing or disposing of air conditioning or refrigeration equipment, except for small releases emitted during normal operations of the equipment, or releases resulting from purging or hose disconnection. The Subcontractor must report non-compliance to the Buyer.

- B. The Subcontractor must certify to the Buyer that recycling and recovery equipment have been acquired and shall be available.
- C. The Subcontractor must certify to the Buyer that recycling and recovery equipment have been certified by an approved testing organization.
- D. The Subcontractor must provide to the Buyer evidence of compliance with the requirements of 40 CFR 82, Part F.
- E. Subcontractor provided technicians required to dispose of, or service or repair, subject refrigeration and air conditioning equipment, must be certified.

3.013 VENTILATION/EXHAUST SYSTEMS

- A. Modifications to the Building 38 ventilation/exhaust systems, including any increase or reduction in exhaust flow rate or amount of HEPA filtration, or changes in the configuration of building ventilation, may be subject to approval from USEPA based on NESHAPs requirements.
- B. The Subcontractor shall provide to the Buyer plans and drawings outlining specifications of proposed modifications to the building HEPA filter banks or building ventilation configuration.
- C. Following any modifications to the Building 38 ventilation/exhaust system affecting the building exhaust flow rate, the Subcontractor shall calculate and provide to the Buyer the exhaust flow rate from the building or a reasonable engineering estimate thereof.
- D. The Subcontractor shall calculate and provide to the Buyer the most recent radionuclide inventories for subject activities affecting ventilation/exhaust systems in accordance with the requirements of Section 3.06. If decontamination has not been completed, the Subcontractor shall provide a reasonable engineering estimate of the inventory.
- E. The effluent stream from the SM Stack shall be sampled continuously in accordance with 40 CFR 61.93. Downtime must not exceed 400 hours/year. Every effort must be made to keep the SM Stack sampling system functioning, including the utilization of a temporary emergency power generator (Subcontractor provided) should a power outage occur.

END OF SECTION

SECTION 01205

AUTHORIZATION BASIS

PART I GENERAL

1.01 SCOPE

- A. This section will define the Authorization Basis for Building 38, and outline the requirements for conducting work planning, demolition, and environmental restoration within the established safety envelope.
- B. Building 38 and the surrounding areas is considered as a single unit for the purposes of Hazard Categorization. Building 38 is categorized as a Radiological Facility.
- C. The Authorization Basis for Building 38 and the surrounding areas includes MD-10520, *Building 38 Auditable Safety Analysis* (See Appendix D) and MD-10527, *Building 38 Administrative Manual* (See Appendix E). The Auditable Safety Analysis (ASA) analyzes hazards present in the facility and hazards associated with selected operations, and specifies controls to reduce the frequency or mitigate hazards associated with analyzed accidents. The Administrative Manual formalizes processes to maintain the facility within its approved safety envelope.

1.02 RELATED SECTIONS

- A. Section 1210 Facility Maintenance
- B. Section 1460 Integrated Work Control

1.03 SUBMITTALS

- A. Work Plans (See Section 01460) will be reviewed by the Buyer for “USQ-Like” determinations.

1.04 SEQUENCING / SCHEDULING

- A. Not used.

1.05 REFERENCES

- A. MD-10520, *Building 38 Auditable Safety Analysis (ASA)*, Appendix D
- B. MD-10527, *Building 38 Administrative Manual*, Appendix E

1.06 DEFINITIONS

- A. Authorization Basis - Those aspects of design basis and operational requirements relied upon by DOE to authorize operations. Those aspects considered important to the safety of facility operations.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Not used.

1.08 SITE CONDITIONS

- A. Not used.

PART 2 PRODUCTS

- 2.01 Not used.

PART 3 EXECUTION

3.01 PREPARATION

- A. The Subcontractor shall identify an Authorization Basis point of contact within their organization. This Subcontractor resource shall have a working knowledge of DOE Nuclear Safety programs, Appendices D and E.
- B. The Subcontractor shall institute measures to prohibit introduction of hazardous materials, radioactive materials, and excess combustible loading without prior approval by the Buyer.

3.02 APPLICATION

- A. The Subcontractor shall maintain all Defense-in-depth systems in operable condition until they are deactivated and removed as part of the utility isolation and building demolition process. Defense-in-depth systems listed in the ASA include:
 - 1. Building ventilation system
 - 2. Building Air Monitoring
 - 3. Wastewater collection system / 10K gallon storage tank
 - 4. Standby power system (Emergency Generator 2)
- B. All proposed work must be screened to ensure that proposed activities may be conducted within the approved Authorization Basis of the facility. The Buyer will conduct this screening during the Work Package review process (see Section 01460 – Integrated Work Control).

3.03 SPECIAL INSTRUCTIONS

- A. Not Used.

END OF SECTION

SECTION 01210

FACILITY SURVEILLANCE AND MAINTENANCE

PART 1 GENERAL

1.01 SCOPE

Section includes: Facility surveillance and maintenance to be performed after Subcontractor mobilization and Buyer acceptance of the Subcontractor Safety and Health Plan.

The level of facility surveillance and maintenance will be reduced as various building systems are removed from service. Reference Specification Section 01900, "Utility Isolation and Removal", for building systems configuration change sequence.

- A. Required facility surveillances to be performed by the Subcontractor, necessary for the occupation of Building 38 and the subsequent conduct of work activities therein
1. Building ventilation air flows and differential pressures.
 - a. Ventilation air flows shall be maintained such that the interior of the building structure has a negative differential pressure in relation to the exterior of the structure. The negative differential pressure shall be maintained until such time as the potential for the spread of particulate radiological contamination to the outside of the structure has been eliminated through decontamination and demolition efforts and/or the institution of alternate engineering controls.
 - b. Ventilation air flows shall be maintained such that differential pressures between partitioned areas and/or rooms is in order of descending potential with regard to the spread of radiological particulate contamination, i.e. static air pressures shall be increasingly negative from areas of least contamination to areas of greater contamination potential.
 - c. Glovebox differential pressures shall be maintained such that the glovebox exhibits a negative static pressure in relation to the surrounding room until such time as the potential for the spread of particulate radiological contamination to the outside of the glovebox has been eliminated through decontamination efforts and/or the institution of alternate engineering controls.
 2. Building sump system and associated 10,000 gallon wastewater collection tank (10K Tank) conditions.
 - a. The building sump system, primarily located in Room-6E, shall be maintained in an operable condition at all times, until the system has been deactivated prior to demolition.
 - b. The 10K Tank capacity should be maintained at a volume less than 70 percent (<7,000 gallons) to allow for the coordination of the transfer of the collected

liquid waste to the site Alpha Treatment System (ATS) facility. (Reference Specification Section 01550, "Waste Management").

3. Portable fire extinguishers, provided by the Subcontractor, shall be pressurized and in an operable condition.
 4. Emergency egress lights shall be in an operable condition.
 5. The presence of ignition sources and transient combustible materials shall be minimized.
 6. The introduction of radioactive or hazardous materials shall be prohibited without the prior approval of the Buyer's Technical Representative (BTR).
- B. Required facility maintenance to be performed by the Subcontractor, necessary to ensure the operability of essential systems in Building 38. (Reference Section 1.04 Sequencing/Scheduling).
1. Building ventilation system, as necessary per the operating configuration of the system.
 - a. Semi-annual lubrication of the stack fan shaft bearings (AJ-117), the building ventilation exhaust fan shaft bearings (AJ-113), and the four building ventilation supply fans shaft bearings (AJ-107, AJ-108, AJ-109, AJ-111), as necessary per the operating configuration of the system.
 - b. Semi-annual inspection and/or replacement of the motor pulley to fan shaft pulley drive belts of the stack fan (AJ-117), the building ventilation exhaust fan (AJ-113), and the four building ventilation supply fans (AJ-107, AJ-108, AJ-109, AJ-111), as necessary per the operating configuration of the system.
 - c. Replacement of the motor control center power and position (high/low) indicator lights located in Corridor-19 for the stack fan (AJ-117), the building ventilation exhaust fan (AJ-113), and the four building ventilation supply fans (AJ-107, AJ-108, AJ-109, AJ-111), as necessary per the operating configuration of the system.
 - d. Replacement of the building ventilation exhaust absolute filter bank prefilters and HEPA filters located in Room-6E, as necessary per the operating efficiency and configuration of the system. In-line filter leak (DOP) testing of the building ventilation exhaust HEPA filter ductbank is required upon each HEPA filter changeout.
 - e. Replacement of the building ventilation supply fan filters located east of Bay-2, as necessary per the operating efficiency and configuration of the system.
 - f. Replacement of the building ventilation return dust-stop filters (to prevent premature loading of the HEPA bank prefilters) located throughout the building, as necessary per the operating efficiency and configuration of the system.
 2. Building sump system.

- a. Semi-annual lubrication of the motor to impeller shaft bearings of the four sump pumps (two pumps per sump) located in Room-6E, as necessary per the operating configuration of the system.
3. Building HVAC reheat coil supply water system.
 - a. Bimonthly lubrication of the two circulating pumps located in Corridor-19, as necessary per the operating configuration of the system. This system circulates hot water to the in-line reheat duct coils utilized for area heating by the building HVAC system.
 4. Building domestic (potable) water system.
 - a. Bimonthly lubrication of the two domestic hot water circulating pumps located in Corridor-19, as necessary per the operating configuration of the system.
 5. Building breathing air supply system.
 - a. Semi-annual blowdown of the breathing air manifolds located in positions throughout the building and the breathing air reserve tank located in Bay-1, as necessary per the operating configuration of the system.
- C. Required facility related maintenance activities to be performed by the Subcontractor, within the perimeter boundary designated in the subcontract but outside of Building 38.
1. Maintain the integrity of the asphalt/blacktop pad surface encompassing SM West Asphalt, located west of the Building 38 ventilation exhaust stack, Drawing FSC010030, Site Plan Below Grade Removal Areas. A quarterly surveillance inspection will be performed by the Buyer's Technical Representative to determine which, if any, surface imperfections require repairs.
 2. Replacement of the aircraft warning lights on the Building 38 ventilation exhaust stack.
 3. General maintenance of the yards and grounds within the subcontract designated perimeter boundary.
- D. Facility surveillance and maintenance activities to be performed by the Buyer, within the perimeter boundary designated in the subcontract, requiring assistance from the Subcontractor labor force.
1. Building 38 ventilation exhaust stack annual airflow calibration. Approximate duration of this activity is one working day, requiring the labor assistance of four personnel who shall be physically capable of climbing the stack ladder and working on the lower platform of the stack.
 2. Receipt and movement of P10 gas cylinders for use with the personnel contamination monitor (PCM) located inside of Building 38.

- E. Facility surveillance and maintenance activities to be performed by the Buyer, within the perimeter boundary designated in the subcontract.
 - 1. Annual inspection and certification of the existing backflow preventer on the domestic (potable) water system located within Building 38, as necessary per the operating configuration of the system. The inspection and testing shall be at the discretion of the Buyer and shall be coordinated with the Subcontractor through the Buyer's Technical Representative (BTR).
 - 2. Inspection and testing of the fixed fire detection and suppression system components located both inside and outside of Building 38, as necessary per the operating configuration of the system. The intervals of inspection and testing shall be at the discretion of the Buyer and shall be coordinated with the Subcontractor through the BTR.
 - 3. Inspection and testing of the emergency power standby generator system located outside of Building 38, as necessary per the operating configuration of the system. The intervals of inspection and testing shall be at the discretion of the Buyer and shall be coordinated with the Subcontractor through the BTR.

1.02 RELATED SECTIONS

- A. Specification sections that relate to facility surveillance and maintenance activities:
 - 1. Section 01110, Safety and Health
 - 2. Section 01150, Work in Radiologically Contaminated Areas
 - 3. Section 01300, Submittals
 - 4. Section 01460, Integrated Work Control
 - 5. Section 01500, Construction Facilities and Project Boundaries
 - 6. Section 01550, Waste Management
 - 7. Section 01900, Utility Isolation and Removal
 - 8. Section 01910, F-Line Glovebox Removals
 - 9. Section 01915, Electrical Equipment Removals
 - 10. Section 01920, Fire Protection/Suppression Systems
 - 11. Section 01925, HVAC Demolition
 - 12. Section 01930, Other Systems
 - 13. Section 01935, Building Demolition

14. Section 01940, Stack Demolition

15. Section 01945, Below Grade Removals

1.03 SUBMITTALS

- A. Facility surveillances: submittal of the required Construction Daily Report shall be in accordance with Specification Section 01300, "Submittals" and the Subcontract Special Conditions Article 2.2, Exhibit 2.1.
1. Building differential pressure verifications shall be documented on the Construction Daily Report and submitted to the Buyer daily.
 2. Building sump system operability and 10K Tank volumetric capacity status shall be documented on the Construction Daily Report and submitted to the Buyer weekly, as necessary per the operating configuration of the system.
 3. Inspection of fire extinguishers for operability shall be recorded on inspection tags attached to each fire extinguisher. Performance of this inspection shall be documented on the Construction Daily Report and submitted to the Buyer monthly.
 4. Inspection of emergency egress lights for operability shall be performed periodically, on a schedule appropriate to the current condition of the structure and available routes of egress. Performance of this inspection shall be documented on the Construction Daily Report and submitted to the Buyer as performed.
 5. Inspection of the building and surrounding grounds for the presence of ignition sources and transient combustible materials shall be performed daily as part of the Subcontractor general housekeeping effort to minimize potential fire hazards. The noted inspection shall also be performed on a monthly basis with the Buyer's Technical Representative in attendance. The results of the inspection shall be documented on the Construction Daily Report and submitted to the Buyer monthly.
- B. Facility Maintenance: submittal of the required Construction Daily Report shall be in accordance with Specification Section 01300, "Submittals" and the Subcontract Special Conditions Article 2.2, Exhibit 2.1.
1. Building ventilation systems maintenance shall be documented on the Construction Daily Report and submitted to the Buyer as performed.
 - a. Certificates of Conformance for the fabrication, inspection, and testing of Nuclear HEPA filters shall be submitted to the Buyer for approval prior to installation of the filters.
 - b. The in-line filter leak test shall be conducted by a qualified individual or vendor who must have attended the Nuclear Consulting Services, Inc. (NUCON) in-place filter testing workshop or equivalent. The pertinent certification shall be submitted to the Buyer for approval prior to test performance.
 2. Building sump system maintenance shall be documented on the Construction Daily

Report and submitted to the Buyer as performed.

3. Building HVAC reheat coil supply water system maintenance shall be documented on the Construction Daily Report and submitted to the Buyer as performed.
4. Building domestic (potable) water maintenance shall be documented on the Construction Daily Report and submitted to the Buyer as performed.
5. Building breathing air supply system maintenance shall be documented on the Construction Daily Report and submitted to the Buyer as performed.
6. Any unusual or unexpected facility maintenance activities shall be documented on the Construction Daily Report and submitted to the Buyer as performed.

1.04 SEQUENCING/SCHEDULING

- A. The sequencing and scheduling of the Subcontractor facility surveillance and maintenance activities is the responsibility of the Subcontractor, as long as the parameters of paragraphs 1.01 and 1.03 are met.
 1. Semi-annual building ventilation system maintenance is on a June to December performance schedule.
 2. Semi-annual sump systems maintenance is on a June to December performance schedule.
 3. Exhaust stack airflow calibration is annually scheduled for June performance.
- B. Activities that require coordination with the Buyer require a forty-eight (48) hour or two working day courtesy notification from the Subcontractor.

1.05 REFERENCES

- A. Appendix B, Drawings
- B. Appendix F, Photographs

PART 2 PRODUCTS

2.01 MATERIALS

- A. Subcontractor will provide:
 1. Bearing lubrication grease; NLGI Grade 2 multipurpose grease.
 2. Drive belts; model numbers per Motion Industries, Inc. 800-242-7477 or 937-236-7711.
 - a. Stack exhaust fan (AJ-117): CP-225, 07 each

- b. Building ventilation exhaust fan (AJ-113): CP-136, 04 each
 - c. Building ventilation supply fan (AJ-107): BP-75, 02 each
 - d. Building ventilation supply fan (AJ-108): BP-144, 04 each
 - e. Building ventilation supply fan (AJ-109): BP-95, 03 each
 - f. Building ventilation supply fan (AJ-111): BP-120, 02 each
3. HEPA ductbank prefilters; Flanders High Efficiency Econocell Air Filters. Filter Model #0-00B-C-04-01-IL-14-13-YY-D. Rated flow at 1,000 cfm, resistance of 0.35" w.g. and ASHRAE efficiency rated at 80%-85%. Nominal and actual size is 23.375" x 23.375" x 5.875". There are twenty-eight (28) prefilters in the ductbank, arranged in a 4 x 7 configuration.
 4. HEPA ductbank absolute filters; Flanders Nuclear HEPA Filter. Filter Model #0-007-C-04-00-NU-12-13-GG-FU5. Rated flow at 1,000 cfm, resistance of 1" w.g. maximum. DOP efficiency at 99.97%. Actual size is 24" x 24" x 12". A Certificate of Conformance for the filters is required, submit upon receipt. There are fifty-six (56) Nuclear HEPA filters in the ductbank, arranged in a two stage 4 x 7 configuration.
 5. Ventilation return duct dust-stop filters; recommend Farr model no. 3030, size 23-3/8" x 23-3/8" x 3-7/8", or equivalent.
 6. Supply fan prefilters; Airguard Industries conoflow sock filter, size 24" x 24" x 10", or equivalent.
 7. Domestic hot water circulating pump lubricant; recommend Bell & Gossett pump lubricant for pumps and motors, SAE #20 mineral lubricating oil, or equivalent.
 8. Stack aircraft warning light replacement bulbs; 69 watt lamp, traffic signal-clear, 120 volt, 675 lumens, brass base. A21, 2-5/8" diameter, w/medium base. Grainger 69A21/TS stock no. 4V916 or equivalent.
 9. Motor Control Center indicator light bulbs; miniature lamp, equivalent to installed item.

2.02 EQUIPMENT

A. Subcontractor will provide:

1. All hand tools necessary to perform the listed maintenance activities. No special or unique tools will be required.

PART 3 EXECUTION

3.01 PREPARATION

- A. Subcontractor shall notify the BTR, forty-eight (48) hours or two working days in advance of any non-emergency maintenance to be performed on the building ventilation or sump systems.
- B. Subcontractor shall notify the BTR, as soon as possible of the need for emergency maintenance activities on any system.

3.02 APPLICATION

- A. Systems considered essential to the general safety of Buyer and subcontract personnel and the performance of demolition activities within the perimeter boundary designated in the subcontract shall be maintained in an acceptable operating condition per the requirements of this specification section.

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Requirements for submittals identified in the specifications and on the drawings.

1.02 DEFINITIONS

- A. As-Constructed Drawings: "Red-line mark-ups", sketches, or similar documentation of changes provided at completion of the project that represents changes made in the field which differ from the Contract Documents.
- B. Certification: Verification of compliance to a specified requirement.
- C. Inspection, Test, and Submittal Checklist: A summary of inspections, tests, and submittals required in the technical specifications and on the drawings.
- D. Integrated Test Plan: A plan for testing an integrated system to ensure that equipment, mechanical systems, instrumentation, and electrical systems perform specified requirements. Test procedures are required to implement an integrated test plan.
- E. Operation and Maintenance Manuals: Operation instructions, repair manuals, and parts list providing information needed to maintain and operate installed material and equipment.
- F. Pre-approved Products: Products listed in the individual specification sections by specific manufacturer, model, series, catalog number, or national standard (ASTM, ANSI, etc.).
- G. Procedures and Policies: Documents that provide detailed instructions of how specified results will be obtained. These are designated numerically at the Mound Site with the prefixes "MD" for procedures and "PP" for policies.
- H. Product Data: Illustrations, material schedules, performance charts, instructions, brochures, and other information furnished to illustrate materials or equipment.
- I. Samples: Physical examples of materials, equipment, or workmanship that represent a portion of the Work and establishes the standards by which the portion of Work will be judged.
- J. Shop Drawings: Drawings, diagrams, illustrations, material schedules, and data specifically prepared to illustrate a portion of the Work.
- K. Test and Inspection Reports: Test results and/or inspection results. Certified test reports for materials require manufacturer's verification of the specified requirements.

- L. Work Package: A document that provides detailed instructions of how specified results will be obtained, specifically by describing the expected typical tasks to be performed and the requirements to be followed to assure safe completion of the tasks.

1.03 SUBMITTAL REQUIREMENTS

- A. Documents shall be submitted under cover of the Technical Submittal Form, which is found in the Special Conditions, Exhibit 2.4.
- B. Individual specification sections will identify specific submittals required for approval or information.
- C. See Table 1 for a summary of Project Submittal Requirements.
- D. Pre-approved products do not require a submittal except as noted in the individual specification sections.
- E. Submittal for Approval
 - 1. Obtain written approval prior to activity commencement and before delivery of material or equipment to the Work site.
 - 2. Submit proposed substitutions for approval.
- F. Submittal for Information
 - 1. Provide when equipment or material is delivered to the Work site.
 - 2. Provide reports, documents, and written procedures prior to starting the related work.
 - 3. Written response will not be provided by the Buyer.
- G. Number of Copies
 - 1. Nine (9) except as noted. After review has been indicated on each copy by appropriate signature, stamp and date, three (3) copies will be returned to the Subcontractor and the balance retained by the Buyer. If the Subcontractor requires the return of more than three (3) approved copies, he must submit an equal number of additional copies or a reproducible copy.
 - 2. Exceptions
 - a. As-Constructed Drawings: One set, (red-lined).
 - b. Shop Drawings: One reproducible.
 - c. Samples: One.
 - d. Work Packages

- i. The Subcontractor shall submit an Integrated Work Control Package for each task to be performed. This can be one work control package with sections on each task or a series of work control packages. The Subcontractor shall follow the format specified in Attachment I of Section 01460, Integrated Work Control.
- ii. Work Packages for activities that fall under Phase I will be reviewed and approved by the Buyer and made available to the USDOE, USEPA and the OEPA on request. Thirty copies of the submittal are required, which includes 10 copies of the first submission for review, and 20 copies of the final approved Work Package.
- iii. Phase II Work Packages will be reviewed and approved by the Buyer, USDOE, USEPA and OEPA. Forty copies of the submittal are required, which includes 20 copies of the first submission for review and 20 copies of the final approved plan.

PART 2 PRODUCTS

2.01 NOT USED

PART 3 EXECUTION

3.01 BUYER REVIEW

- A. The Buyer review period for all submittals shall be 30 calendar days, unless otherwise noted.
- B. The Buyer review period for Work Packages submitted in accordance with Section 01460, Integrated Work Control shall be as follows:
 1. Work Packages for Phase I activities shall be submitted thirty (30) calendar days prior to needing the approved document.
 2. Work Packages for Phase II activities shall be submitted six (6) months prior to needing the approved document.

3.02 SUBCONTRACTOR REVIEW

- A. All submitted documents shall bear the approval stamp and signature of the Subcontractor submitting the same as evidence that such documents are in conformance of the requirements of Contract Documents.
- B. All submitted documents shall have the attached Subcontractor Submittal Review and Transmittal sheet, with the top section completed.
 1. Submittals shall be numbered SSSSS-X-Y where SSSSS is, will be the CSI specification number that the submittal is related to. X is a sequential number of the submittal made against this specification, and Y is the number of tracking

resubmittals against the SSSSS-X number. For example, if there are to be three submittals against the electrical specification of Section 16000, the first submittal would be 16000-1-0. If it would require resubmittal, the number would increment to 16000-1-1. The second submittal against 16000 would be 16000-2-0, and the resubmittal would be 16000-2-1.

- C. Coordinate submittals with the work requirements and the Contract Documents.
- D. Do not begin work activities requiring approval until written acceptance is obtained.

3.03 PREPARATION

A. Work Packages

1. Prepare and submit Work Packages in accordance with the Section 01460, Integrated Work Control and the specific discipline sections.

B. As-Constructed Drawings

1. Provide documentation showing actual conditions upon completion of the work.
2. Show existing underground utilities not identified on the drawings or excavation/penetration permit.
3. Provide elevations, survey points, etc., material identification, and location.

C. Test Report

1. Submit within 5 calendar days after test is performed. Notify Buyer within 24 hours of tests failing to meet specified requirements.
2. Include item tested, date, name of individual performing test, test method, results, actions taken, and signature of responsible person.

D. Inspection Report

1. Submit within 5 calendar days after test is performed. Notify Buyer within 24 hours of any inspection failing to meet specified requirements.
2. Include item inspected, date, inspector's name, type of inspection acceptance criteria, results of inspection, actions taken, and signature of responsible person.

E. Shop Drawings

1. Identify field dimensions and show relation to adjacent or critical features.
2. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment.
3. Sketches may be used in lieu of drawings for "In-house" fabrication.

F. Product Data

1. Submit only pages which are pertinent to the Work. Mark standard printed data to identify products. Reference Specification Section and Article number.
2. Show reference standards, performance characteristics, and capacities; wiring and piping diagrams and controls; component parts; finishes; dimensions; weight and required clearances.
3. Modify manufacturer's standard schematic drawings and diagrams to supplement standard information and provide information applicable to the project. Delete information not applicable.

G. Samples

1. Provide samples required in specification sections. Install sample complete and finished. Acceptable finishes in place may be retained as part of the completed Work.

END OF SECTION

SECTION 01400

QUALITY ASSURANCE

PART 1 GENERAL

1.01 SECTION INCLUDES: Quality Assurance requirements for the project.

- A. Submit a detailed Quality Assurance Plan (QAP) specific to the work to be performed. The QAP shall contain a description of how the QA Criteria described in this section will be implemented.
- B. Approval of the QAP is required prior to performance of procurement or work activities, and revisions shall be approved by the Buyer. Acceptance of the QAP does not relieve the Subcontractor of meeting the contract requirements.

1.02 RELATED SECTIONS

- A. Section 01190, Environmental Compliance
- B. Section 01205, Authorization Basis
- C. Section 01300, Submittals
- D. Section 01460, Integrated Work Control

1.03 REFERENCES

- A. 10 CFR 830.120, Quality Assurance Requirements

1.04 SUBMITTALS

- A. Quality Assurance Plan (QAP)
- B. Nonconformance Reports (NCR)

1.05 QUALITY ASSURANCE CRITERIA

- A. Program
 1. Provide organizational structure for the project, including levels of authority and functional responsibilities.
 2. Describe interface for those managing, performing, and assessing adequacy of work, including work assigned to lower tier subcontractors and independent testing laboratories.
 3. Define the responsibilities and authority to stop unsatisfactory work and establish

methods for determining prerequisites prior to resuming work.

4. The Program shall:
 - a. Identify the activities and items to which it applies.
 - b. Provide control over activities affecting quality to an extent consistent with their importance.
 - c. Provide for special controls, processes, test equipment, tools, and/or skills to attain and maintain the required quality.

B. Personnel Training and Qualification

1. Define the methods for establishing the requirements for specific job categories such as inspectors, instructors, welders, IS&H and laboratory personnel.
2. Ensure employees performing work have sufficient training and possess the necessary skills to perform assigned tasks in compliance with contractual requirements.
3. Address the methods in which training and indoctrination of personnel, including certification as required, will be conducted and documented.
4. Provide controls to ensure work/site-specific training is completed for personnel before starting the work.

C. Quality Improvement

1. Take necessary actions to promptly correct non-conformances whether identified by the Subcontractor or the Buyer.
2. Control and document non-conformances in accordance with the Contract Documents.
3. Submit NCRs requiring Buyer approval (i.e., Use As-Is or Repair) using the Buyer's design change document.
4. Identify critical operations for which trends will be tracked in order to assess the effectiveness of the quality program and methods in which data will be collected for trending purposes. Provide measures for prompt detection and correction of conditions deemed adverse to quality.
5. Identify the methods in which non-compliant conditions adverse to quality are documented, to include: noncompliance description, corrective action taken or to be taken, cause analysis and actions to prevent recurrence.

D. Documents and Records

1. Define the methods in which documents that establish policies, prescribe work, or

describe safety requirements are prepared, reviewed, approved, and revised.

2. Implementing procedures shall contain sufficient quantitative and qualitative acceptance criteria for determining the acceptance of work being performed.
3. Establishing a document control system that will:
 - a. Identify the documents to be controlled and their specified distribution.
 - b. Identify the personnel, positions, and/or organizations responsible for preparing, reviewing, approving, and issuing documents.
 - c. Include a review of documents for adequacy, completeness, and correctness by technically competent personnel prior to issuance.
 - d. Provide assurance that correct and applicable documents are available at the location where they are needed.
 - e. Provide controls of superseded or canceled documents to ensure that only correct and current documents are in use.
4. Establish a records system that specifies records to be generated and maintained accurately reflect completed work.
5. Include provisions for retention, protection, preservation, traceability, accountability, retrievability, and validation.
6. Address methods governing access to record files and control and accountability for records removed from files.
7. Transmit Inspection Records, Test Records, NCRs, and corrective action documents to the Buyer as they are generated using the Buyer's "Submittal Form" (Special Condition Exhibit 2.4).
8. Test/Inspection Records shall contain:
 - a. Job title.
 - b. Date of test.
 - c. Equipment of system identification.
 - d. Specific type of test performed.
 - e. Description of test instrumentation and date of calibration.
 - f. Section of specification defining test, with accept/reject criteria identified.
 - g. Test results.

- h. Actions taken as a result of any deviations noted during the test.
- i. Signature of person supervising test.
- j. Signature of Subcontractor representative.
- k. Space for signature of Buyer.

E. Work Processes

- 1. Identify processes to be controlled and control methods conforming to contractual requirements.
- 2. Define the appropriate control measures and procedures to be used for each controlled process.
- 3. Establish the methods to assure that identification of items are maintained.
- 4. Establish processes to control consumables and items with limited shelf life to prevent use of incorrect or defective items.
- 5. Establish measures to control the handling, storage, shipping, cleaning, and preservation/traceability.
- 6. Define methods for marking and labeling of items during packaging, shipping, handling, and storage.

F. Design

- 1. Define the processes used for design activities performed.
- 2. Address control of design requirements, inputs, processes, outputs, changes, records, and organizational interfaces.
- 3. Identify methods for translating design input, such as the design basis, reliability requirements, and fire protection requirements into design output documents.
- 4. Identify design records requirements required to provide evidence that design was properly accomplished, such as calculations, analyses, and computer programs.
- 5. Define the methods used for design verification, including design reviews, alternate calculations, and qualification testing.
- 6. Document changes to approved design via the Buyer design change document. This design change document shall outline the proposed change and justification for it. Forward to the Buyer for processing. Work shall not be performed to the requested change until approval is obtained. Identify the persons or positions with authority to initiate and process design change documents.
- 7. Address the methods for maintaining redlined/as-built drawings.

G. Procurement

1. Define the procurement procedure to be implemented to ensure purchased items and services meet specified requirements and perform as expected.
2. The procedure shall address the following:
 - a. Inclusion of applicable technical requirements and acceptance criteria.
 - b. Appropriate controls for the selection, determination of suitability, evaluation, and receipt of purchased items (Receipt Inspection).
 - c. Evaluation of prospective suppliers to ensure qualified suppliers are selected.
 - d. Methods of acceptance of items, such as review of manufacturing process data, source validation, receipt inspection, pre-installation and post-installation tests, certificates of conformance, or combination thereof.
 - e. Resolution of supplier non-conformances.

H. Inspection and Acceptance Testing

1. Establish methods to specify types of inspection (i.e., source, in-process, final, receipt, etc.) to be performed.
2. Define administrative controls and/or status indicators to preclude inadvertent bypassing of required inspections and preventing inadvertent operation of the item or process.
3. Identify methods of inspection planning and identify the organization responsible for performing required inspections.
4. Establish testing methods that demonstrate items and processes perform as intended.
5. Test procedures shall include:
 - a. Instruction and prerequisites to perform the test.
 - b. Assurance of completeness and accuracy of data.
 - c. Use of test equipment.
 - d. Acceptance criteria.
 - e. Inspection hold points, as required.
 - f. Test records.
6. Define the control methods for calibration, maintenance, accountability and use of

M&TE which are used for in-process or final acceptance of an item. Controls shall ensure the M&TE is of the accuracy and type suitable for the intended use.

7. Identify the type of M&TE to be used and calibration frequencies.
 8. Provide controls for M&TE to indicate calibration status, date of next scheduled calibration, person who performed the calibration, and traceability to calibration test data.
 9. Calibrate M&TE against standards having an accuracy that will ensure calibrated equipment will meet required tolerances. Use nationally recognized standards.
 10. Provide for tagging or segregating M&TE found out of tolerance and provide evaluation of acceptability of items or processes measured, inspected, or tested with out-of-tolerance M&TE.
 11. Schedule tests to allow witnessing by the Buyer. Final acceptance of test results is the responsibility of the Buyer.
- I. Independent Assessment
1. The Buyer may perform random or scheduled assessments to determine effectiveness of Subcontractor QA efforts and verify compliance to the contract requirements.

PART 2

2.01 NOT USED.

PART 3 EXECUTION

3.01 IMPLEMENTATION

- A. Implement QAP requirements during performance of the Work.

END OF SECTION

ATTACHMENT I

WORK PACKAGE FORMAT

PART 1 GENERAL

- 1.01 Pages in the body of the Work Package shall be numbered "Page X of Y", where X is the page number and Y is the total number of pages in the Work Package.
- 1.02 All signatures shall be entered in blue or black indelible ink and dated.

PART 2 COVER PAGE

- 2.01 A Cover Page shall be used for all Work Packages and Work Package revisions with the names, title, signatures of Subcontractor reviewers.
- 2.02 The Work Package Number is assigned by the Subcontractor in the form Bldg. 38-XXX(-YY), where XXX is a sequentially assigned control number, and YY is the field indicating the revision number.
- 2.03 Revisions will be numbered sequentially with the original approved Work Package numbered as Revision 0.
- 2.04 Drafts should also be numbered with letter designations A, B, C, etc.

PART 3 REVISION HISTORY FORM

- 3.01 A Revision History Form will follow the Revision 0 Cover Sheet. The revision history form shall include the items listed in below:
 - 1. The person entering the approved revision will enter the Revision Number, a brief narrative explanation for the revision, the date the revision was entered, and the name and signature of the person entering the revision. Buyer's Technical Representative must approve the revision.

PART 4 TABLE OF CONTENTS

- 4.01 A Table of Contents, with at least the following sections, is recommended and should follow the Revision History Form. The Work Review Group will add other sections as required for the specific activity or project:
 - A. Work Package
 - B. Work Scope
 - C. Drawings and References
 - D. Hazards Identification, Analysis, Mitigation and Operational Controls

- E. Work Performance Requirements, Initial Conditions and Prerequisites
 - F. Work Instructions
 - G. Pre-Job Briefings and Updates
 - H. Post Job Review
- 4.02 Work Package Backup Package
- A. Work Package Backup Package documents may include: calculations, facility history information, characterization studies and backup data, radiation survey data sheets (RSDS), air flow studies, waste management plan, unreviewed safety questions (USQ), etc. (NOTE: Facility History, RSDS, and USQ furnished by the Buyer).

PART 5 WORK SCOPE

- 5.01 The objective(s) and intent of the Work Package will be included with a listing of major activities to be performed and equipment affected by the work and safety requirements. Any specific exclusions or exceptions shall be indicated. This is the first of the five ISMS Core Functions.

PART 6 DRAWINGS AND REFERENCES

- 6.01 Development References.
 - A. List all pertinent references used to develop the Work Package.
- 6.02 Performance References.
 - A. List all references workers will be required to use in performing the work.
 - B. Performance references shall be included as an appendix to the Work Package.

NOTE: Including specific sections of references in the body of the Work Package rather than referring the user to an appendix reduces the risk of personnel error.

PART 7 INITIAL CONDITIONS AND PREREQUISITES

- 7.01 List those actions required to be verified prior to starting work; for example:
 - A. Readiness Evaluation
 - B. Notifications
 - C. LOTO
 - D. Permit Approvals

- E. Verification of training/qualifications
- F. Special tools, equipment, parts, and materials

NOTE: Do not list commonly available materials and "tools of the trade". Do list any equipment requiring calibration.

- G. Pre-Job briefing
- H. Pre-Job radiological surveys
- I. ALARA review
- J. The name and signature of the Job Supervisor verifying prerequisites completed

NOTE: The Job Supervisor is the person responsible for the safe conduct of the work described in the Work Package. If the Job Supervisor is replaced with another person, temporarily or permanently, workers should be immediately advised.

- 7.02 For each pre-job work prerequisite, establish whether specific signature verification of the prerequisite is required, whether the item must be completed before work initiation or some intermediate milestone, etc.

PART 8 WORK INSTRUCTIONS

- 8.01 The work instructions, in combination with the use of permits and effective supervision, provide the mechanism for workers to use in "Working Within Controls," the fourth of the five ISMS Core Functions.
- 8.02 Write action steps to develop the activities.
 - A. Workers are expected to follow instruction steps in the exact sequence presented unless otherwise stated within the document.
 - B. Incorporate the level of detail sufficient for the intended workers.
 - C. Provide spaces, when appropriate, to allow for entering or recording:
 - 1. An initial, a check mark, or an X in a placekeeping box, as appropriate.
 - 2. Worker's or inspector's signature.
 - 3. Independent or second party verifier's signature.
 - 4. Data, remarks, and other information.
 - 5. Hold point sign-offs
 - D. Incorporate all of the appropriate requirements of the Health & Safety practices

governing the work to be performed (e.g., Welding, Confined Space Entry, Excavation and Trenching, Radiological Controls, LOTO, etc.) For example, selected requirements for confined spaces entry which should be specifically addressed in the Work Package include the posting of an observer, Industrial Hygiene analysis prior to entry, and daily (or more frequent) atmospheric sampling.

8.03 Write Action Steps To Develop The Activities

- A. Ensure that appropriate radiological controls are incorporated into the work package, including: contamination and radiation surveys, airborne radioactivity monitoring, high radiation area controls, personnel breathing zone air sampling, radiological hold points, special postings, dosimeter requirements, and other applicable radiological controls.
1. Record data generated by a document in the body of the Work Package or in data sheets provided as appendices to the Work Package.
 2. For jobs that will be worked by more than one shift, or over a period of several days, require and make provisions for recording daily and/or pre-shift briefings. Consider also re-verification of selected prerequisites required to be met prior to restarting work.
 3. Provide warnings or cautions ahead of and on the same page as the steps to which they apply. The location of warnings and cautions applies to action steps wherever they are used. For example, precautions and limitations, performance, data sheets, or appendices.

PART 9 POST JOB REVIEW

- 9.01 This section of the Work Package provides documentation of the last of the five ISMS Core Functions, "Feedback and Continuous Improvement."
- 9.02 Document areas identified by the Project Team for continuous improvement or Lesson's Learned.

END OF SECTION

ATTACHMENT II

READINESS EVALUATION FOR INTEGRATED WORK CONTROL PACKAGES

Work Package Title: _____ Preparer _____ Work Package Number _____ Page ____ of ____	Required Items (Yes, No or N/A)	Validate Required Items (Buyer's Technical Rep. Initials)
I. FACILITY AND RELATED EQUIPMENT		
I.1. Industrial Safety and Hygiene		
I.1.1. Are all required physical safety systems operational and functioning?		
I.1.2. Are required utilities operational?		
I.1.3. Is required ventilation functioning & available?		
I.1.4. Is required breathing air in place?		
I.1.5. Is appropriate storage available for flammable material?		
I.1.6. Are the MSDS sheets available at the worksite?		
I.1.7. Is required lighting available and functioning?		
I.1.8. Is required PPE available at the Job Site?		
I.1.9. Have work/rest cycles been established and the workers been briefed?		
I.1.10. Is critical lift plan required?		
I.1.11. Have preparations been made to have a certified HVAC mechanic evacuate the systems (freon)?		
I.1.12. Has elevated work surface/fall protection training been verified?		
I.1.13. Has confined space entry training been verified?		
I.1.14. Has scaffolding inspection been completed and tag installed or at work site?		
I.1.15. Is Industrial Hygiene type Air quality checks required?		
Other:		
I.2. Emergency Preparedness		
I.2.1. Is emergency communications available and verified to be functioning?		
I.2.2. Is necessary fire equipment in-place, functional and properly labeled?		
I.2.3. Are evacuation routes designated and posted or building exit signs clearly visible?		
I.2.4. Are warning devices and alarms for safety system malfunctions (i.e., ventilation) in place?		
I.2.5. Are required safety showers, eyewash stations, or decon facilities in place and functional?		
I.2.7. Are spill containment materials available?		
Other:		
I.3. Fire Protection		
I.3.1. Are flammable materials minimized at work site?		
I.3.2. Are any hot work operations planned (cutting, welding, grinding)?		
I.3.3. Are extinguishers present?		
I.3.4. Fire Protection Plan in place?		
Other:		
I.4. Waste Management		

Work Package Title: _____ Preparer _____ Work Package Number _____ Page ____ of ____ .	Required Items (Yes, No or N/A)	Validate Required Items (Buyer's Technical Rep. Initials)	
I.4.1. Has potential waste been adequately characterized?			
I.4.2. Are proper containers available on site?			
Other:			
I.5. Radiation Protection			
I.5.1. Are required radiological surveys current?			
I.5.2. Have workers been briefed on the ALARA review?			
I.5.3. Have the required air monitoring evaluations been completed and monitoring in place?			
I.5.4. If an RWP is required, has it been completed and a copy available at the job site?			
I.5.5. Is required personnel or environmental monitoring equipment available at the jobsite?			
Other:			
I.6. Environmental Protection			
I.6.1. Are effluent control systems operational, and do they meet appropriated specifications?			
I.6.2. Have permit modifications/ notifications been completed?			
I.6.3. OEPA Notification of Demolition & Renovation filed with RAPCA? (10-day or 20-day notification period required)			
I.6.4. Have the required NESHAPs calculation been completed?			
Other:			
I.7. Equipment/Hardware Material			
I.7.1. Is the calibration current for equipment requiring calibration?			
I.7.2. Is preventative maintenance for critical equipment current and up-to-date?			
Other:			
II. PROCEDURES AND MANAGEMENT CONTROLS			
II.1. Written Procedures			
II.1.2. Are required permits (RWP, burn, excavation, etc.) available at the work site?			
Other:			
II.2. Managerial Controls			
II.2.1. Has coordination of required system outages with building or site been completed?			
II.2.2. Is appropriate staff available?			
II.2.3. Has the required walkdown prior to start of work been completed?			
Other:			
III. PERSONNEL READY			
III.1. Training, Testing & Qualification			
III.1.1. Is training complete and documented records up to date?			

Work Package Title: _____ Preparer _____ Work Package Number _____ Page ____ of ____ .	Required Items (Yes, No or N/A)	Validate Required Items (Buyer's Technical Rep. Initials)	
III.1.2. Do any training certifications expire within the schedule of the project?			
III.1.3. Has any dry run or demonstration been completed?			
III.1.4. Are personnel aware of the 'person-in-charge' concept, i.e., who is in charge for all field operations? Has an alternate been identified?			
III.1.5. Does the pre-job conference adequately consider the net effect of recent changes, new hazards, maintenance, etc.?			
III.1.6. Are personnel aware of their stop work authority?			
III.1.7. Has a review of the personnel assigned to the project been conducted to assure none are restricted?			
Other:			

SECTION 01460

INTEGRATED WORK CONTROL

1.01 GENERAL

A. SCOPE:

1. This section specifies the requirements for the development, review, comment incorporation, and approval of Integrated Work Control Package(s) (IWCPs) which will be referred to as Work Packages.
2. All Integrated Work Control Packages shall comply with Buyer's "Terms and Conditions of Purchase" I.19 Integration of Environment, Safety and Health into Work Planning and Execution and Special Conditions 3.1.
3. The Subcontractor's Integrated Work Control Packages or copy shall be kept at the work area during performance of the work to allow the personnel performing the work access to the Package to ensure compliance. Both the original and the copy shall be controlled.
4. All Integrated Work Control Packages shall be reviewed by the Buyer to verify that work is covered by the current Authorization Basis (see Section 01205).

B. WORK PHASES

1. This project is in two phases.
 - a. Phase I work includes all decontamination, dismantlement and demolition activities accomplished while the integrity of the building "environmental envelope" is intact. This envelope consists of the building structure, the ability to maintain a negative pressure to the outside, the building exhaust air HEPA filter bank, and effluent monitoring of the discharge air from the filter bank to the outside environment. This envelope system controls the spread of radioactive contamination in the building and prevents the release of radioactive contamination outside the building.
 - b. Phase II work includes all remaining activities performed after the building "environmental envelope" has been breached (i.e. ventilation shutdown and loss of negative pressure).

1.02 REFERENCES

- A. Action Memorandum, Building 38 Removal Action, Mound Plant, Miamisburg, Ohio (September 2001) Final (Revision 2), Appendix I.

1.03 SUBMITTALS

- A. The Subcontractor shall submit an Integrated Work Control Package for each task to be

performed. This can be one work control package with sections on each task or a series of work control packages. The Subcontractor shall follow the format specified in Attachment I.

- B. Work Packages for activities that fall under Phase I will be reviewed and approved by the Buyer and made available to the USDOE, USEPA and the OEPA on request. Thirty copies of the submittal are required. The Subcontractor shall provide 10 copies of the first submission for review, and 20 copies of the final approved Work Package.
- C. Phase II Work Packages will be reviewed and approved by the Buyer, USDOE, USEPA and OEPA. Forty copies of the submittal are required. The Subcontractor shall provide 20 copies of the first submission for review and 20 copies of the final approved plan.

1.04 SEQUENCING/SCHEDULING:

- A. Phase I Work Packages requiring Buyer approval shall be submitted 30 calendar days prior to needing the approved document.
- B. Phase II Work Packages requiring Buyer, USDOE, USEPA and OEPA's approval shall be submitted 6 months prior to needing the approved document.

1.05 READINESS EVALUATION

- A. The Integrated Work Control Package shall include a Readiness Evaluation to determine the Subcontractor's "state of readiness" to start the work described in the Package. The Readiness Evaluation form (Attachment II) shall be completed, indicating items applicable to the Work Package and submitted with the Work Package. The form is a general listing of questions, which may or may not apply (n/a) to the current work package. This will be reviewed by the Buyer for completeness. Prior to the commencement of work, the Buyer will validate those topics listed on the Readiness Evaluation form with the Subcontractor to ensure "readiness" to start the work. An example of the demonstration of "readiness" includes: a) requiring training dates for employees to insure training is current, b) a listing by chemical of MSDS sheets and c) verification of a "walk-through" of the work zone to insure everything is prepared for work to commence.

END OF SECTION

SECTION 01500

FACILITIES, CONTROLS, AND PROJECT BOUNDARIES

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Facilities, Temporary Utilities, Protection of the Work Area, Site Access, Traffic and Pedestrian Control.

1.02 RELATED WORK

- A. Section 01110 Safety and Health
- B. Section 01190 Environmental Compliance
- C. Section 01900 Utility Isolation and Removal
- D. Section 16000 Electrical

1.03 REFERENCES

- A. Drawing FSC010029, Site Plan, Appendix B
- B. Appendix F, Photographs
- C. American National Standards Institute (ANSI) A225.1, 1987, Manufactured Home Installation.
- D. ANSI/NFPA 70-1993, National Electrical Code (NEC).
- E. NFPA 501A, 1992, Manufactured Home Installation, Sites, and Communities.
- F. ANSI D 6.1, Manual on Uniform Traffic Control Devices for Streets and Highways.

1.04 SUBMITTALS

- A. Facility Location Plan, see Section 3.01.A
- B. Access Monitor Identification, see Section 3.04.A
- C. Traffic Control Plan, see Section 3.05.A

PART 2 PRODUCTS

2.01 MATERIALS

- A. Barrier Fence: 6 feet high, "free-standing" chain link fence panels, National Rent-A-Fence Co. or approved equal.

PART 3 EXECUTION

3.01 FACILITIES

- A. Submit for approval, a mobilization plan indicating the location and layout of temporary facilities to be brought on-site including the use of two existing trailers within the subcontractor's work area. Should the Subcontractor choose to use the two trailers; maintenance of the units will be the responsibility of the Subcontractor.
- B. Provide a change facility that includes clean/dirty change areas, lockers, and storage for clean/dirty protective clothing.
- C. Locate trailers a minimum of 35 feet clear of existing buildings and at least 10 feet clear from fire hydrants and fire department connections.
- D. Provide a platform, stairs, and handrails at each exterior door of trailers. Platforms shall be level with the trailer floor. Platforms and steps shall have a non-skid surface.
- E. Anchor and support the trailer to prevent sliding and overturning according to ANSI A225.1 and NFPA 501A. A Buyer-supplied Excavation/Soil Disturbance permit will be required. See Section 01110, Safety and Health, for further details.
- F. Provide portable fire extinguishers that are properly mounted and clearly identified.
- G. Subject structures shall not interfere with any exit necessary for life safety or fire lanes.
- H. Erect temporary facilities (trailers, portable structures, fabricated temporary storage buildings, etc.) with the approval of the Buyer.
- I. The location of portable buildings intended for occupancy or storage shall minimize fire exposure, allow Fire Department access, and conform to the following requirements:
 - 1. Life Safety Code- NFPA 101 "Life Safety Code" Business Occupancy Class shall be used for the arrangement of corridors, hallways, exits and fire alarms, doors, and locks.
 - 2. Exits and Emergency Lighting- any normally occupied unit, such as one used for an office, shall have two exits. These exits shall be clear of all obstructions and marked with proper exit signs.
 - 3. Electrical Requirements- All electrical wiring shall be installed to meet the NEC NFPA 70.
 - 4. All electrical fixtures and boxes shall be physically secured.
 - 5. Lighting levels shall meet or exceed the lighting standards specified in requirements contained in 29 CFR 1926.56.
 - 6. Electrical Panels, breakers and disconnects shall be labeled and not blocked.

7. Portable Extinguishers- Portable fire extinguishers shall be provided in each unit, with the number, type, and size in accordance with NFPA 10.
8. Underwriters Laboratories Inc. (UL) labeled Class A ground-fault interrupters shall protect outlets on the exterior and/or in any other location where there is a potential for contact with water.
9. Each unit shall have an individual, external disconnect switch, unless the installed electrical panel has a single main disconnect.
10. Storage of materials beneath portable structures is prohibited.

3.02 TEMPORARY UTILITIES

- A. Provide temporary lines to use existing plant utilities. Tie-ins and disconnects to existing systems will be performed by the Subcontractor. Remove temporary utilities after final disconnect.
 1. Electric power: Utility Isolation and Removal (see Section 01900), Electrical (see Section 16000), will provide for temporary electrical power. Perform temporary electrical work in accordance with ANSI/NFPA 70 (NEC) requirements.
 2. Water: Utility Isolation and Removal (see Section 01900) describes access for obtaining temporary water service. Install reduced-pressure backflow preventers for all temporary water lines.
 3. Telephone service will be made available to the Subcontractor. Telephones are for business use only and may be monitored. Charges for non-business calls may be rejected and/or phones may be removed.
 4. The Subcontractor will provide for chemical toilet facilities to be located within the Subcontractor's compound. Facilities must conform to 29 CFR 1926.51. Dispose of wastewater offsite.

3.03 PROTECTION OF THE WORK AREA

- A. Provide flags, barricades, and signs per OSHA for job site, storage areas, and hazardous work areas.
- B. The Subcontractor shall install compound fencing per Drawing FSC010029 "Site Plan", utilizing fencing specified in this section. This fence is not classified as a security.
- C. The Subcontractor shall make provisions to protect the project during adverse weather conditions and insure continuation of the project during winter months without stoppage and at no additional expense to the government. On any project where any adverse weather conditions are anticipated, the Subcontractor shall prior to the start of activities submit to the Buyer a plan for providing weather protection.
- D. In accordance with Special Conditions 2.11, post a sign providing Subcontractor's name,

telephone number, project title, and contract number for storage areas not located within the Work site.

3.04 SITE ACCESS, TRAFFIC AND PEDESTRIAN CONTROL

A. Access to Mound Site

1. For access to the project site including equipment, Subcontractor personnel, and material control, the subcontractor will furnish an Access Monitor. The Access Monitor is responsible for controlling access to the project and monitoring a radio for emergency notification. The Access Monitor may have collateral duties, (i.e. recordkeeping.)
2. The Access Monitor will maintain a list of personnel approved by the Buyer. Personnel not on the approved list must obtain permission from the Buyer prior to site entry.
3. Access by trained site workers will be controlled through the Access Monitor.
4. Other than trained site workers, personnel entering the Subcontractor's compound are considered visitors. Designated escorts, approved by the Buyer, shall accompany visitors at all times. A log will be kept by the Access Monitor to record visitor entry and exit from the area.
5. Oversight personnel shall conform to the requirements of site workers.
6. The Buyer must approve access to the site after normal working hours. The Subcontractor shall provide written notice to the Buyer 48 hours prior to need to access site after normal working hours.
7. Vehicles, equipment and personnel access to the site will be controlled through the contractor access gate at Guard Post 8 off Mound Road. Entrance and exit of personnel will be through a portal with a badge reader, allowing access at numerous portals at the plant, however, the primary entrance will be the turnstile near Building 50. The Subcontractor will be issued visitor badges for the badge readers at the portals. (See Drawing FSC010030.)

3.05 TRAFFIC AND PEDESTRIAN CONTROL

- A. A traffic control plan shall be developed to identify required road closures and all potential impediments to emergency vehicle traffic. Submit plan for approval 30 days prior to implementation. Buyer's approval is required prior to implementation of the plan.
- B. Provide the flagging, barriers and signs required to close the road.
- C. Potential traffic interruptions are possible on the plant road that is located west of the Subcontractor's Compound passing between the water tower and Building 38.
- D. Provide traffic control that conforms to ANSI D 6.1, Manual on Uniform Traffic Control Devices for Streets and Highways.

- E. Provide and maintain pedestrian walkways and building access during the project. The work area shall be posted properly with applicable signs.
- F. Provide structurally sound temporary crossing walkways for pedestrians over open excavations.
- G. Provide proper protection in front of open trenches adjacent to vehicle traffic.
- H. Plant road surfaces to the Subcontractor's compound shall be cleaned of any debris caused by the subcontractor's vehicles.

END OF SECTION

SECTION 01550 – ATTACHMENT I

WASTE MANAGEMENT

INTRODUCTION

The purpose of this waste management plan is to identify waste streams expected to be encountered during decommissioning and removal of F-line and associated equipment, located in Building 38 Rooms 142W and 161. Characterization of waste streams will be summarized and disposal options specified.

The plan will outline types of waste / waste quantities expected. Information will be provided on the schedule for waste generation, RCRA characterization, radiological characterization, packaging requirements / mode of disposal, and any specific waste acceptance criteria that must be met for disposal.

Waste types and estimates are based on a physical examination of the work areas, and a review of construction drawings and specifications. Wastes are listed in expected order of generation.

Waste Type	Metal (from wall between corridor and 161/142W)
Quantity expected	400 cu ft
Schedule for waste generation	October 2000
RCRA characterization	Non-hazardous
Radiological characterization	Assumed to be uncontaminated or slightly contaminated
Packaging requirements	LLW boxes or Sea Land
Mode of disposal	NTS, Ongoing Alpha profile

Waste Type	Partition wall 142W-161 gypsum/sheet metal
Quantity expected	200 cu ft
Schedule for waste generation	October 2000
RCRA characterization	Non-hazardous
Radiological characterization	Assumed slightly contaminated
Packaging requirements	LLW boxes or SeaLand
Mode of disposal	NTS, Ongoing Alpha profile

Waste Type	Control panel 205, eyewash station
Quantity expected	200 cu ft
Schedule for waste generation	October 2000
RCRA characterization	Non-hazardous
Radiological characterization	Assumed slightly contaminated
Packaging requirements	LLW boxes or SeaLand containers
Mode of disposal	NTS, Ongoing Alpha profile
Note:	Control panel units (205) should be examined by Project Engineer and Waste Coordinator prior to disposal, to determine whether removal or printed circuit boards or other electrical components will be required.

Waste Type	Glovebox / fumehood: loose components and debris
Quantity expected	75 cu ft
Schedule for waste generation	November 2000
RCRA characterization	Non-hazardous
Radiological characterization	TBD – will be required to determine disposal option
Packaging requirements	Depends on radiological characterization: If LSA or SCO, in LLW boxes with other low-level wastes. If waste does not qualify as LSA or SCO, in Type A 55-gallon drums.
Mode of disposal	NTS, Ongoing Alpha profile
Note:	<ul style="list-style-type: none"> Any suspect hazardous wastes should be segregated for assessment by Project Engineer / Waste Coordinator Radiological characterization (isotopes / activities) will be required prior to disposal

Waste Type	Lead lined gloves
Quantity expected	2 pairs
Schedule for waste generation	October 2000
RCRA characterization	Hazardous waste - D008
Radiological characterization	TBD - assumed contaminated
Packaging requirements	5-gallon bucket or small drum
Mode of disposal	Transfer to BD23 – Mixed Waste Operations
Note:	<ul style="list-style-type: none"> Radiological characterization (isotopes and activities required prior to transfer to WM).

Waste Type	Door counterweights
Quantity expected	3 counterweights
Schedule for waste generation	November 2000
RCRA characterization	May be lead covered in stainless steel – If so and not recycled, hazardous waste (D008)
Radiological characterization	To be accomplished
Packaging requirements	No special requirements
Mode of disposal	Contingent upon rad characterization
Note:	<ul style="list-style-type: none"> • Preferred option is to free release (or decon/free release) counterweights, and recycle through Hazardous waste operations • If objects cannot be decontaminated for free release, transfer to Mixed Waste operations

Waste Type	F-line control console
Quantity expected	200 cu ft
Schedule for waste generation	November 2000
RCRA characterization	Non-hazardous
Radiological characterization	Assumed slightly contaminated
Packaging requirements	LLW boxes or SeaLand containers
Mode of disposal	NTS, Ongoing Alpha profile
Note:	Hazardous materials (mercury switches, suspect PCB transformers must be segregated prior to disposal)

Waste Type	Glovebox shielding: water shielding and tanks, steel frame, Benelex shield panels, Plexiglas shield windows
Quantity expected	1000 cu ft
Schedule for waste generation	December 2000 – May 2001
RCRA characterization	Non-hazardous
Radiological characterization	Assumed slightly contaminated
Packaging requirements	LLW boxes or SeaLand containers
Mode of disposal	NTS, Ongoing Alpha profile

Waste Type	Gloveboxes
Quantity expected	7 gloveboxes
Schedule for waste generation	May 2001 – October 2001
RCRA characterization	Non-hazardous
Radiological characterization	Slight contamination in most boxes. Elevated levels in Box 602 drains (see Radiological monitoring plan).
Packaging requirements	SeaLand containers
Mode of disposal	NTS, Ongoing Alpha profile
Note:	<ul style="list-style-type: none"> SeaLand containers will provide adequate packaging for surface contaminated objects (SCO)

Waste Type	Fumehood
Quantity expected	1 box
Schedule for waste generation	May 2001
RCRA characterization	Non-hazardous
Radiological characterization	Surface contamination
Packaging requirements	SeaLand container
Mode of disposal	NTS – Ongoing alpha waste profile
Note:	<ul style="list-style-type: none"> SeaLand containers will provide adequate packaging for surface contaminated objects (SCO)

Waste Type	LSA waste: misc PPE and lab waste generated during removal operations.
Quantity expected	1000 cu ft
Schedule for waste generation	October 2000 – May 2001
RCRA characterization	non-hazardous
Radiological characterization	Possible low levels of external contamination – isotopes and activities to be assigned per Blum memo 8/23/99
Packaging requirements	LLW boxes
Mode of disposal	As radioactive waste at NTS, under Ongoing Alpha waste profile.

Any unusual or unexpected items or wastes not addressed in this plan should be set aside for examination and evaluation by the BTR and Waste Coordinator.

SECTION 01550 – ATTACHMENT II

**RADIOACTIVE WASTE INPUT FORM
SUMMARY INFORMATION**

SHIPPING CONTAINER ID #		<input type="checkbox"/> NON-WASTE RADIOACTIVE MAT'L		WASTE TYPE <input type="checkbox"/> LLW <input type="checkbox"/> MIXED <input type="checkbox"/> TRU		CONTAINER TYPE <input type="checkbox"/> DRUM <input type="checkbox"/> BOX <input type="checkbox"/> SEALAND <input type="checkbox"/> RAIL <input type="checkbox"/> OTHER <input type="checkbox"/> NONE		
PROFILE NO(S) & REVISION(S)		WASTE DESCRIPTION/COMMENTS						
PROJECT	WASTE VOLUME	PACKAGE CODE	TARE WT (KG)	GROSS WT (KG)	GROSS WT (LBS)	NET WT (KG)		

RADIONUCLIDE	CURIES	nCi/g	SCALE NO.	NO. OF OVERPACKED CONTAINERS			
				WEIGH DATE			
						TID NO./TYPE	DATE
				RQ			
				HM			
				NO			

Radionuclide continuation page attached Container DOT appropriate for RAD contents (WM Core Team Verified)
(Bldg. 22/31 Metal Containers Only)

WASTE CHARACTERIZATION AND PACKAGING

The waste described on this form has been generated, characterized, and packaged in accordance with the manuals/procedures listed.

Manual/Procedure(s): _____

_____ HP No. _____
Package Custodian Date _____

(The Package Custodian is the individual accountable for maintaining control over the waste package described on the input form).

WASTE COMPLIANCE SECTION

THIS CONTAINER IS FROM AN ACCEPTABLE LOT. THE ABOVE DATA HAS BEEN REVIEWED AND FOUND ACCEPTABLE

_____ Waste Compliance/Certification Representative

_____ HP No.

_____ Date

RADIOLOGICAL OPERATIONS SECTION

PACKAGE IS WITHIN DOT EXTERNAL CONTAMINATION AND RADIATION LIMITS
(SEE MD-80036, OPER. 20015)

HIGHEST WIPE	INITIAL
ALPHA (DPM/100 CM ²)	
BETA (DPM/100 CM ²)	
TRITIUM (DPM/100 CM ²)	

HIGHEST NET READING	MR/HR @ CONTACT	MR/HR @ 1m	INSTRUMENT NO.
GAMMA RATE			
NEUTRON RATE			
TOTAL RATE			

_____ RSDS #

_____ Rad. Con. Technician

_____ HP No.

_____ Date

NOTE: These surveys should be performed at the time of shipment preparation.

ORIGINAL COPY

SECTION 01550

WASTE MANAGEMENT

PART I GENERAL

1.01 SCOPE

- A. Section includes: Requirements for handling, segregation, packaging, and transfer of wastes generated by the decontamination and demolition of Building 38 and surrounding areas.
- B. Wastes generated during the demolition of Building 38 and surrounding areas must be properly packaged and documented for transfer to Mound storage facilities pending offsite shipment for disposal. The majority of waste generated will be low-level radioactive waste, but small volumes of transuranic, hazardous, and mixed wastes are also anticipated. Some selected items may be surveyed and decontaminated (if necessary) to support free release.
- C. The Subcontractor is responsible for packaging and documentation of wastes. The Buyer is responsible for on-site storage, transportation, and disposal of wastes, and for oversight of waste generating operations. The Subcontractor is responsible for temporary waste storage requirements until the documentation is complete and the Buyer accepts transfer of the waste.

1.02 RELATED SECTIONS

- A. 01150 Work in Radiologically Contaminated Areas
- B. 01190 Environmental Safeguards and Compliance
- C. 01500 Construction Facilities and Project Boundaries
- D. 01210 Facility Surveillance and Maintenance
- E. 01900 Utility Isolation and Removal
- F. 01910 F-Line Glove Box Removals
- G. 01915 Electrical Equipment Removal
- H. 01920 Fire Protection/Suppression Systems
- I. 01925 Ventilation/Exhaust Systems
- J. 01930 Other Systems
- K. 01935 Building Demolition

- L. 01940 Stack Demolition
- M. 01945 Below Grade Removals

1.03 SUBMITTALS

- A. Monthly waste generation report (for record) □ information on waste generated during the previous month, including waste volumes, waste types, serial numbers of containers, and date transferred to Buyer. Subcontractor shall submit report by the second working day of each month.
- B. Two month waste generation look ahead (for information) □ projections for waste volumes expected to be generated over the next two months, and estimates of numbers and types of containers required. Subcontractor shall submit report by the second working day of each month.
- C. Requests for empty containers (for information) □ Subcontractor shall make requests for new empty containers (LLW boxes, Type A boxes, SeaLands, drums) no later than one calendar week before they are required.
- D. Records of transuranic waste packaging (for record) □ including detailed waste descriptions for each container, and a photographic record (as described in Section 3.02.B).
- E. Records of scale calibrations (for record)

1.04 SEQUENCING / SCHEDULING

- A. The Buyer Waste Management organization will be responsible for storage of waste after removal from the project Common Waste Zone (ref: Drawing FSC010029). The Buyer Waste Management organization will also be responsible for transportation and disposal at suitable disposal sites. The Subcontractor must provide a two-month waste generation look-ahead each month to allow the Buyer to plan Waste Management activities associated with these responsibilities.
- B. The Subcontractor shall make requests for empty containers no later than one week before they are required at the work site.

1.05 REFERENCES

- A. 49 CFR 173, Department of Transportation, Shippers-General Requirements for Shipments and Packagings
- B. MD-10167, *Radioactive Waste Generating Procedure* (see Appendix H)
- C. OPA920003, Nevada Test Site Waste Acceptance Criteria, Revision 3
- D. MD-80045, Mound Methods Compendium (see Appendix J)

1.06 DEFINITIONS

- A. Bulk waste □ waste transferred without outer packaging.
- B. Bulk packaging - for solids, waste packaging with capacity greater than 450 Liters (119 gallons) and a maximum net mass greater than 400 kg (882 pounds).
- C. Hazardous Waste □ wastes that exhibit any of the characteristics of a hazardous waste (ignitable, corrosive, reactive, toxic) as specified in RCRA Subpart C (40 CFR 261.20-261.24), or are listed in RCRA Subpart D (40 CFR 261.30-261.33), or are declared to be hazardous on the basis of process knowledge.
- D. Industrial waste - Wastes releasable from the Mound Site and meeting definition of RCRA Subtitle D: suitable for disposal in sanitary landfill.
- E. Low-level Radioactive Waste (LLW) - Waste with radiological contamination exceeding free release levels, but below transuranic waste levels.
- F. Low Specific Activity (LSA) - radioactive material with limited specific activity which satisfies the descriptions and limits set forth in 49 CFR 173.403.
- G. Mixed Waste - Hazardous waste that is also radiologically contaminated.
- H. Radioactive Waste □ any material having a specific activity greater than 70 Bq per gram (0.002 microcuries per gram), or exceeding SCO thresholds.
- I. Specific Activity □ of a radionuclide means the activity of the radionuclide per unit mass of that nuclide. The specific activity of a material in which the radionuclide is essentially uniformly distributed is the activity per unit mass of the material.
- J. Surface Contaminated Object (SCO) - a solid object which is not itself radioactive but which has radioactive material distributed on any of its surfaces. A more complete definition, including definition of classes of SCO can be found in 49 CFR 173.403.
- K. Transuranic Waste - Radioactive wastes > 100 nCi/g of alpha-emitting isotopes with a molecular weight greater than 92, and a half-life greater than 20 years.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Following waste generation and packaging (where applicable), the Subcontractor shall move wastes from the work site to the Common Waste Zone (see Section 01500, Construction Facilities and Project Boundaries and Drawing FSC010029: Site Plan).
- B. The Common Waste Zone will be accessible by both the Subcontractor and the Buyer, each with a dedicated locked gate.
- C. The Buyer will:
 - 1. Deliver QA-accepted containers as requested by the Subcontractor to support project waste generation.

2. Pick up waste containers and bulk wastes from the common waste zone, after certification by the Buyer that waste, packaging (if required), and documentation have been completed.
 3. Upon request by Subcontractor, the Buyer will transfer liquid wastes from the 10,000 gallon tank to the onsite radioactive liquid treatment plant (ATS – Alpha Treatment System).
- D. The Subcontractor shall:
1. Segregate waste as specified in work packages, package waste (if applicable), complete documentation, and deliver wastes to the Common Waste Zone.
 2. Stage bulk wastes at the Common Waste Zone in a manner meeting all requirements of Section 01190 – Environmental Safeguards and Compliance, regarding control of runoff and air emissions.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Subcontractor shall provide:
1. Absorbent material for packaging of radioactive waste in boxes or Sea Lands (Florco, PetroSorb, or buyer-approved equivalent)
 2. Solidification agents (such as Aquaset, Petroset, No Char) for treatment of liquid radioactive wastes.
 3. Locks for securing in-process containers.
 4. Dumpsters and/or rollofs for storage and disposal of industrial wastes.
 5. Storage tanks for collection and staging of wastewater
- B. Buyer will provide:
1. QA-accepted containers for packaging of radioactive wastes, hazardous wastes, and mixed wastes. Typical sizes of waste containers are:
 - a. LLW boxes (strong, tight containers) – 79” x 51” x 43”, internal volume = 83 cubic feet. SeaLand containers are typically 8” x 8” x 20” (1280 cu ft)
 - b. Type A containers: 55-gallon drums, Type A boxes (88” x 44” x 43”, 96 cubic feet)
 - c. Vented Type-A drums or TRUPACT II standard waste boxes (71” x 54” x 37” , 75 cubic feet) for TRU waste packaging.
 - d. 30-gallon and 55-gallon drums for non-radioactive wastes

2.02 EQUIPMENT

A. Subcontractor shall provide:

1. Forklift(s), trucks, or other appropriate equipment designed to safely move waste boxes from job site to the Common Waste Zone.
2. Dump trucks, loaders, or other appropriate equipment designed to safely move bulk wastes from job site to the Common Waste Zone.
3. Scale(s) for weighing waste boxes (capacity no less than 8000 pounds). Scale(s) must have a certification no more than 60 days old, upon arrival at the Mound Site, thereafter, the scales shall be calibrated annually with National Institute of Standards and Technology (NIST) standards, to certify accuracy of at least $\pm 2\%$. Upon completion of scale calibrations by the Subcontractor, records of scale calibration shall be submitted to the Buyer.

B. Buyer will provide:

1. Clark Model CST20 counterbalanced walk-behind forklift (walkie-stacker) to move waste boxes within building (load capacity of the unit is 4000 lb), and charging station. Subcontractor shall be responsible for maintenance of noted forklift.

NOTE: Reference the Buyer's Special Condition 1.10, Government Property Furnished "As Is".

PART 3 EXECUTION

3.01 PREPARATION

A. Roles and Responsibilities

1. Subcontractor responsibilities include:
 - a. Assigns an individual to be prime liaison with the Buyer's Waste Coordinator. This individual shall be familiar with waste disposal facilities, acceptable waste profiles, waste packaging requirements, waste documentation requirements, and Department of Transportation (DOT) regulations.
 - b. Complies with all regulatory requirements; including Federal, State, Local and Government Site.
 - c. All regulatory interface is to be through the Buyer.
 - d. Generation of waste that complies with waste acceptance criteria (WAC) of receiving sites
 - e. Projection of waste types and volumes to be generated

- f. Planning, scheduling, and coordination for waste to be dispositioned
 - g. Assures that personnel have adequate training and experience to complete assigned tasks (see Buyer's Training Matrix).
 - h. Ensures that only acceptable wastes are placed in waste packages; verifies that no prohibited items are loaded into waste containers
 - i. Ensures the waste documentation is completed, and adequate for acceptance by the Buyer's Waste Management organization.
 - j. Issues which require clarification shall be directed to the Buyer's Technical Representative.
2. Buyer's Waste Coordinator □ is responsible for assuring that the Subcontractor adequately segregates, packages, and documents for disposal all waste generated by the project. Serves as liaison between the Subcontractor's Waste Coordinator and the Buyer Waste Management (WM) organization. Waste Coordinator responsibilities include:
- a. Provide clarification on questions of waste characterization, classification, packaging requirement, Buyer WM requirements, and Department of Transportation (DOT) issues.
 - b. Ensures that adequate numbers of appropriate QA-accepted containers are available on the job site
 - c. Schedules waste transfers from the Common Waste Zone to WM storage facilities
 - d. Verifies adequacy of waste characterization and concurs with waste package selection. Verifies that documentation is adequate for waste disposal.
 - e. Maintains waste disposal records for the project.

B. Waste Characterization

- 1. Individual Work Packages as required in Section 01460 shall include a project-specific Waste Management Plan. The plan should include estimates of types and volumes of waste expected to be generated, and a waste segregation and packaging plan. (See attachment I; sample of F-line glovebox waste management plan).
- 2. Segregation requirements vary depending on chemical and radiological characteristics of the wastes. Requirements for each waste type are included in Section 3.02.

C. Waste Identification and Labeling

- 1. The Subcontractor must complete Buyer's ML-7042X, Radioactive Waste Input Form, before packaged radioactive waste can be transferred to the project Common

Waste Zone. (See attachment II; radioactive waste input form).

2. The Subcontractor must weigh each waste container, and the weight in pounds and kilograms shall be clearly marked on each waste container. For Sealand containers, in lieu of weighing, the Subcontractor shall provide the approximate net weight of the contents.
3. Waste containers will be marked or labeled by the Subcontractor, with oversight by Buyer Waste Management personnel, prior to removal from the work site.
4. A transfer tag, as required by Radiological Controls, shall be attached to containers by the Subcontractor prior to removal from the work site.

D. Waste Segregation

1. The Subcontractor must segregate wastes by type (radioactive, transuranic, hazardous, mixed, industrial). Records must be maintained documenting the technical basis for segregation of waste streams. Records will be provided to the Buyer upon request.
2. The Buyer's Waste Coordinator will review and monitor identification of waste types, and segregation, packaging, labeling, marking, and storage requirements.
3. Section 3.02 covers most wastes anticipated during the Building 38 project. If unexpected or unusual wastes are encountered during the project, contact the Buyer's Waste Coordinator for guidance and instructions.

3.02 APPLICATION

A. Low-level radioactive waste

1. The majority of the waste generated during the decontamination and demolition of Building 38 and restoration of the surrounding area will be low-level radioactive waste (LLW). Low-level radioactive waste is contaminated with radioactive material above free release levels, but below transuranic (TRU) levels (i.e., less than 100 nCi/g or alpha-emitting isotopes with a molecular weight greater than 92, and a half-life greater than 20 years).
2. Waste Segregation / Packaging - The Subcontractor must make every effort to segregate and package waste per an existing waste profile. Prior to transfer to the Common Waste Zone, all LLW requires a determination that the waste form is acceptable under a waste profile at Envirocare or NTS. Radiological contamination (isotopes and activities, surface vs. bulk contamination) must be identified and documented for each waste package, and for each bulk waste stream. In addition, a physical description of the waste is required.
3. Packaging and disposal options are dependent upon radiological characterization, as summarized below:
 - a. Bulk wastes may be shipped via rail to Envirocare of Utah. Waste destined for

Envirocare may not require packaging, but must be size reduced to less than 10 inches in one dimension. Maximum size for items disposed of at Envirocare is 8 feet x 8 feet x 10 inches. Size reduction, as required, shall be performed by the Subcontractor prior to movement of bulk wastes to the Common Waste Zone.

- b. Wastes that cannot be shipped in bulk via rail (due to size or non-conformance with Envirocare waste profiles) must be packaged in containers in accordance with DOT regulations. Packaged waste will require more formal documentation as specified in sampling and analysis plans with data quality objectives (MD-10167, Op. 428; MD-80045, Q-017).
4. The Buyer's Waste Coordinator will be involved in planning and oversight of waste generation and waste documentation activities. It will be a responsibility of the Subcontractor to assist the Buyer to minimize costs by shipping bulk waste streams via rail where possible, efficiently packaging wastes, and taking advantage of DOT packaging exceptions when available.

B. Transuranic waste

1. As projected waste streams approach transuranic (TRU) levels, the Subcontractor will be required to determine conclusively whether wastes should be classified as LLW or TRU. Wastes with higher levels of radiological contamination will require more rigorous analysis and documentation to select a suitable segregation option.
2. Possible locations for TRU waste generation include building sumps and drains, and the 10,000 gallon wastewater tank.

C. Hazardous waste/Mixed waste

1. Limited amounts of hazardous or mixed waste will be generated during Building 38 D&D. Hazardous wastes meet the definition in 40 CFR 261.3 (Resource Conservation and Recovery Act, RCRA).
2. Mixed wastes are hazardous wastes, which are also radioactively contaminated.
3. Expected sources of hazardous and/or mixed wastes during the Building 38 project include but are not limited to: lead joints in cast iron pipes, lead bricks that cannot be recycled, lead paint if removed from surfaces, and lead batteries (e.g. wet cells for the fire alarm systems). Oils from vacuum pumps and bubblers should be characterized to verify RCRA status. Other possible sources of hazardous wastes include sludges from wastewater collection sumps and tanks.
4. The Subcontractor must plan operations to minimize generation of hazardous and mixed wastes. If feasible, the Subcontractor should decontaminate potentially mixed wastes with surface contamination to meet free release criteria, and allow disposition as hazardous waste.
5. Hazardous wastes shall be packaged for transfer to the Buyer's Hazardous Waste Operations.

6. Buyer to sample to determine proper waste categorization for compliant segregation and packaging, and designation of land disposal requirements.
 7. During the life cycle of a project, many materials that are used at the site may contain hazardous compounds as listed under OSHA, USDOT and/or USEPA hazardous chemical lists. Hazardous materials may be fuels, solvents, paints, adhesives, lubricants, sealers/epoxies binders, additives, engine fluids, and so on. These materials must be used, managed, stored, transported and disposed of in accordance with applicable regulations. When these hazardous materials are no longer useable, or recyclable, or become contaminated with other materials rendering it useless, the material must be managed as waste and properly characterized for solid and hazardous waste considerations.
 8. Excess materials are items that are left over from activities that required their use, and no longer meet specifications, or are not returnable in their present state, such as a bucket of opened paint. For these materials, reuse or recycle should be the first option for disposal, however, if the material cannot be reused, then it must be characterized and evaluated for solid and hazardous waste considerations. Like the hazardous materials listed above, use, management, storage, transportation and disposal must be in accordance with applicable OSHA, USDOT and USEPA regulations.
- D. Toxic Substances Control Act (TSCA) wastes. Wastes regulated by TSCA include asbestos and polychlorinated biphenyls (PCBs).
1. **Asbestos** - Asbestos containing materials (ACM) present in Building 38 are assumed to be radioactively contaminated, and will be disposed of at the Nevada Test Site (NTS). Upon generation, the Subcontractor must segregate friable asbestos waste from non-friable asbestos wastes. The Subcontractor must package friable asbestos separately, and friable asbestos may not be mixed with other wastes (pipes may be removed and disposed with friable pipe insulation). Non-friable asbestos may be mixed with other low-level radioactive wastes, but documentation for the package must include certification from a Certified Asbestos Abatement Inspector that the ACM is non-friable.
 2. **PCBs** - Some fluorescent light ballasts may contain PCBs. If not labeled otherwise, all ballasts will be assumed to contain PCBs. The Subcontractor must separate ballasts from light fixtures, and have them surveyed for free release. Free releasable ballasts shall be packaged by the Subcontractor for transfer to Mound Hazardous Waste Management. Ballasts that cannot be free released due to radiological contamination shall be packaged by the Subcontractor for transfer to the Buyer's Mixed Waste Operations group, with documentation on the radiological characterization of the material.
- E. Industrial Waste
1. Standard Industrial Wastes (those materials meeting RCRA Subtitle D requirements) will be generated from support activities (office trash, packaging materials, etc.). The subcontractor shall collect and arrange for disposal of these wastes. Rolloffs and dumpsters are subject to surveys to verify the absence of radiological contamination. All rolloff containers must be surveyed by the Buyer and documented for release.

Allow two working days for a rolloff survey.

2. Wastes generated in Building 38 are assumed to be radiologically contaminated, and cannot be disposed of in landfills unless surveyed for free release.

F. Liquid Waste

1. There are no options for offsite disposal of radioactive liquids. Disposal of free liquids is prohibited at both the Nevada Test Site and Envirocare.
2. The Subcontractor must disposition any liquids generated during the project as follows:
 - a. For water that is documented to be neither radioactive nor hazardous wastes: discharge to plant Sanitary sewer system with approval from the Buyer.
 - b. Glycols: The Subcontractor shall sample glycol wastes to determine radiological status. If glycols can be free released, they may be placed in closed-head drums and transferred to the Buyer's Waste Management organization. If glycols cannot be free released, they shall be solidified and transferred to the Buyer's Waste Management organization for disposal as radioactive waste.
 - c. Waste Oils: The Subcontractor shall support the sampling of waste oils to determine RCRA and radiological status. If waste oils can be free released, they may be placed in closed-head drums and transferred to the Buyer's Waste Management organization. If waste oils cannot be free released, they shall be solidified by the Subcontractor and transferred to the Buyer's Waste Management organization for disposal as radioactive waste or treated mixed waste, as appropriate.
 - d. Sump/Tank Sludge: Sludges from the 10,000 gallon tank and associated building sumps shall be solidified by the Subcontractor, and transferred to the Buyer's Waste Management organization. Packaging requirements will depend upon radiological characterization
 - e. Radioactive Liquids: The Buyer's Waste Management Operations organization operates a radioactive wastewater treatment plant, the Alpha Treatment System (ATS). Radioactive liquids meeting ATS waste acceptance criteria may be transferred to the facility for treatment and disposal.
 - i. ATS Waste Acceptance Criteria:

Isotope	Concentration (pCi/L)
Pu-238	43,300
Am-241	99
U233/234	14

- ii. The ATS cannot accept hazardous wastes, wastewaters containing suspended solids, or wastewaters containing chelating agents.
- iii. The Subcontractor can stage wastewater in the 10,000 gallon wastewater storage tank (10K tank) located in Building 38 while that system is in operation. While the system is operational, the Buyer's Waste Management organization will be responsible for transfer of wastewater from Building 38 to the ATS. The Subcontractor shall notify the Buyer when volume in the 10K tank exceeds 5000 gallons. A request for wastewater transfer is required from the Subcontractor no later than two calendar weeks prior to the planned transfer date.
- iv. Following removal of the 10K tank, the Subcontractor will stage wastewater in tanks supplied and maintained by the Subcontractor.
- v. Radioactive wastewaters not acceptable at the ATS: the Subcontractor shall drum and solidify with Aquaset or Buyer-approved equivalent. Solidified wastewater shall be treated by the Subcontractor so that the packaged waste is acceptable for disposal at NTS. Determination of acceptability will be by the Buyer's Waste Coordinator.

3.03 SPECIAL INSTRUCTIONS

A. Waste Minimization

1. The Subcontractor shall take steps to minimize generation of radioactive wastes: unpackage supplies and materials prior to introduction to Radiological Buffer Areas (RBAs). Waste packages shall be filled efficiently, so as to minimize void space in packages.
2. The Subcontractor shall take steps to minimize generation of transuranic, hazardous, and mixed wastes. Where possible, mixed wastes shall be decontaminated to meet free release criteria, and dispositioned as hazardous waste.

B. Wastes with no path for disposal:

1. The Subcontractor shall take all steps necessary to avoid generation of wastes with no path for disposal. Examples of wastes with no path to disposal include radioactive wastes contaminated with chelating agents and wastes containing free liquids.
2. The Buyer's Waste Coordinator shall identify processes that can potentially generate wastes with no path for disposal during review of work packages and oversight of work activities.

END OF SECTION

Training Matrix

NO.	TRAINING TYPE	DURATION	FREQUENCY	PROVIDED BY	REQUIRED FOR
1	General Employee Training (GET)	4 hours	Every 2 years	Buyer	All contractors working on site or visiting for extended periods of time.
2	Contractor Safety	1 hour	Every 2 years	Buyer	All personnel working on site or visiting for extended periods of time.
3	General Employee Radiation Training (GERT)	1 hour	Every 2 years	Buyer	All personnel working on site or visiting for extended periods of time.
4	Radiation Worker II	2 days	Retrain Every 2 years, refresher between training	Buyer	All personnel entering radiological areas or when work activities are likely to encounter previously unidentified contamination.
5	Security Briefing (Read and Sign Agreement)	.5 hours	Once	Buyer	All personnel working on site or visiting for extended periods of time.
6	NTSWAC Orientation Course #070250	1.5 hours	Every 3 years	Buyer	Those directly involved in characterization and packaging of wastes destined for the Nevada Test Site (NTS).
7	Fall Protection and Prevention	1.5 hours	Once	SA	All personnel who access construction site
8	Hoisting and Rigging Awareness	.5 hours	Once	SA	Personnel not involved in actual oversight of hoisting and rigging activities.
9	Refrigerant Recovery	Note 1	Once	SA	Only for personnel involved in refrigerant recovery activities
10	Respirator Training	SD	Annually	SA	All personnel who wear respirators
11	AHERA Asbestos Contractor/Supervisor	40 hours	Once	SA	Personnel performing supervisory functions over asbestos abatement projects and workers.
12	AHERA Refresher Asbestos Contractor/Supervisor	8 hours	Annually	SA	Required for all asbestos contractor/supervisor personnel to keep training current and valid.
13	AHERA Asbestos Worker	32 hours	Once	SA	Workers performing asbestos abatement operation.
14	AHERA Refresher for Asbestos Workers	8 hours	Annually	SA	Workers performing asbestos abatement operation to keep training current and valid.
15	AHERA Asbestos Inspector/Management Planner	40 hours	Once	SA	Personnel inspecting and evaluating the job site for asbestos hazards

NO.	TRAINING TYPE	DURATION	FREQUENCY	PROVIDED BY	REQUIRED FOR
16	AHERA Asbestos Inspector/Management Planner Refresher	8 hours	Annually	SA	Required for all Asbestos Inspector personnel to keep training current and valid.
17	AHERA Asbestos Abatement Project Designer	24 hours	Once	SA	Personnel designing projects involving asbestos control or abatement issues.
18	AHERA Asbestos Abatement Project Designer, Refresher	8 hours	Annually	SA	Required for all asbestos related design (as defined above) to keep training current and valid.
19	Basic First Aid	4 hours Note 2	Every 3 years	SA	Each project is required to have at least one trained employee on site during working hours.
20	Cardiopulmonary Resuscitation (CPR)	4 hours Note 2	Annually	SA	Each project is required to have at least one trained employee on site during working hours.
21	Occupational Exposure to Blood Borne Pathogens	SD	Annually	SA	Anyone with potential exposure to blood due to injury.
22	Noise and hearing conservation	SD	Once	SA	All personnel working around equipment/machinery.
23	Back injury prevention	SD	Once	SA	All personnel performing lifting and task bending.
24	Confined Space Entry General	2 hours	Once	SA	All personnel entering a confined space and/or serving as an attendant. NOTE: Must have both General and Attendant Training.
25	Confined Space Entry Attendant	2 hours	Once	SA	All personnel entering a confined space and/or serving as an attendant. NOTE: Must have both General and Attendant Training.
26	Lead Awareness	1 hour	Once	SA	Personnel who may be exposed to Lead.
27	Beryllium Awareness	1 hour	Once	SA	Personnel who may be exposed to Beryllium.
28	Hoisting and Rigging Awareness	8 hours	Every 2 years	SA	All personnel directly involved or supervising hoisting and rigging activities.
29	Flagman Qualification	2 hours	Every 2 years	SA	Personnel performing construction flagging operations.
NO.	TRAINING TYPE	DURATION	FREQUENCY	PROVIDED BY	REQUIRED FOR

30	Mobile Crane Operations	4 hours	Every 2 years	SA	Personnel operating mobile cranes.
31	Vehicle-Mounted Elevating and Rotating Work Platforms	SD	Once	SA	Personnel operating a bucket truck
32	Boom Supported Elevating Work Platforms	SD	Once	SA	Personnel operating boom supported aerial lifts.
33	Construction and Demolition Operating/Digger Derrick	SD	Once	SA	Personnel operating a digger derrick
34	Self Propelled Elevating Work Platforms	SD	Once	SA	Personnel operating Scissors Lift
35	Manually Propelled Elevating Aerial Platforms	SD	Once	SA	Personnel operating an Aerial Lift
36	Forklift Operator	SD	Once	SA	Any personnel operating forklifts.
37	OSHA Certified Construction Safety Outreach Program	30 hours	Once	OSHA approved instructors	OSHA Competent Person training required for all contracts or equivalent experience. All sites must have at least one on site during work activities.
38	Powder-Actuated Tools	Note 1	Once	SA/Tool Manufacturer	All personnel operating powder actuated tools, i.e., Hilti Guns require for each model operated.
39	Lockout/Tagout Worker Training	SD	As needed	SA	Personnel who work in or around an area where Lockout/Tagout protection is in place.
40	Lockout/Tagout Authorized Individual	4 hours	Once	SA	Personnel who will initiate the verification and company acceptance for work under the protection Lockout/Tagout.
41	Scaffolding Competent Person	N/A	Once	SA	Personnel supervising the erection and tagging of scaffolding.
42	Excavation Competent Person	8 hours	Once	SA	All projects involving excavation and trenching must have at least one competent person on site.
43	Fire Watch	SD	Every 3 years	SA	Personnel performing fire watch duties during hotwork activities.
44	Welder Training	SD	NA	SA	Mandatory for all welders.

- 1- Refers to special competency training tasks.
- 2- First Aid and CPR are included in the American Red Cross standard 8-hour course.

Buyer = BWXTO

SA=Subcontractor Arranged

SD=Subcontractor Determined

SECTION 01800

TRAINING

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Requirements for Subcontractor employee training and records management.

1.02 General Employee Training (GET)

- A. Approximately 4 hours of GET training is required for all Subcontractor and lower-tier subcontractor employees who may work in the plant for more than 10 working days or 14 calendar days in a period of one year. (Employees who require access for ten or fewer working days in a one-year period may be given a brief orientation and be escorted by Buyer or Subcontractor personnel on a case by case basis.)

1.03 Additional Required Training:

- A. A listing of additional, job-specific training requirements are included in a Training Matrix at the end of this section.

1.04 Training Provided by the Buyer

- A. Unless approval is granted by the Buyer to use alternate training sources, Subcontractor employees shall receive their required training from the Buyer to the extent such training is offered. The Buyer will maintain records of all training it provides. The Buyer will provide upon request, copies of attendance sheets, training cards or computer printouts to Subcontractors for their employees. It is the Subcontractor's responsibility to ensure that their employees receive refresher training as required.

1.05 Training provided by the Subcontractor

- A. If the Buyer does not offer a required training or if the Subcontractor chooses to use alternate source of training, the following information shall be maintained and provided to the Buyer upon request:
 - 1. The contents of the training material provided.
 - 2. Documents which show that the instructor is qualified to teach the course based on work related experience and either (a) experience as a trainer or (b) successful completion of a "Train the Trainer" class.
 - 3. Attendance sheets, certificates of completion, or training cards

4. Examination/Test documents and employee results.
5. Documentation showing course approval by Ohio Department of Health, where applicable.

END OF SECTION

SECTION 01900

UTILITY ISOLATION AND REMOVAL

PART 1 GENERAL

1.01 SCOPE

- A. Section includes: The required utility systems isolations and relocations, the sequencing of the utility systems isolations and relocations, and the extent of the utility systems demolitions and removals.
1. Electrical utility systems included:
 - a. Electrical power isolation from and the temporary electrical power feed to the Building 38 (PP) Substation which shall be performed per the requirements of Specification Section 16000 "Electrical".
 2. Telephone system
 - a. Isolate phone system from building. The current system provides for normal phone service in the building and "paging" from the plant system. The subcontractor must provide a means of communicating with workers in the building. Cell phones or two-way radios are acceptable (the frequency must not interfere with buyer's systems).
 - b. Reroute telephone feeders to Building 95 and the water tower. These telephone lines are in close proximity to Building 38 and must be relocated prior to building demolition.
 3. Alarm systems
 - a. Fire protection/suppression system detection alarms (sprinkler and hose cabinet water flow alarms, valve manipulation alarms), reference Specification Section 01920.
 - b. Building sumps' (west and east sumps) high level alarms.
 - c. 10,000 gallon wastewater collection tank (10K tank) high level alarm.
 4. Remove previously abandoned miscellaneous exterior electrical cables as necessary to allow access for demolition.
 5. Remove exterior (street) lights as necessary to allow access for demolition.
 6. Remove existing electrical service poles as necessary to allow access for demolition once the attached service utilities are no longer required.

- B. Mechanical utility systems as follows:
 - 1. Steam supply system
 - 2. Condensate system
 - 3. Domestic (potable) water system
 - 4. Chill water (glycol) system
 - 5. Plant compressed air system
 - 6. Plant breathing air system
 - 7. Inert gas (argon) system
 - 8. Sanitary sewer system
 - 9. Storm drain (sewer) system
 - 10. Fire Protection/Suppression (firewater) system, reference Specification Section 01920

1.02 RELATED SECTIONS

- A. Section 01110, Safety and Health
- B. Section 01150, Work in Radiologically Contaminated Areas
- C. Section 01190, Environmental Compliance
- D. Section 01210, Facility Surveillance and Maintenance
- E. Section 01300, Submittals
- F. Section 01460, Integrated Work Control
- G. Section 01500, Construction Facilities and Project Boundaries
- H. Section 01550, Waste Management
- I. Section 01915, Electrical Equipment Removal
- J. Section 01920, Fire Protection/Suppression Systems
- K. Section 01925, HVAC Systems Demolition
- L. Section 01930, Other systems

- M. Section 01945, Below Grade Removals
- N. Section 16000, Electrical

1.03 REFERENCE MATERIALS

- A. Appendix A – Facility Characterization Report
- B. Appendix B – Drawings
- C. Appendix F - Photographs
- D. 29 CFR 1926, Subpart T-Demolition, Sections 850-860

1.04 SUBMITTALS

- A. As noted in Section 01460, Integrated Work Control, it is the Subcontractor’s discretion regarding the number of Work Packages submitted and utilized on this project. However, a Work Package shall be submitted that includes all Utility Isolation Removal Activities, especially addressing work activity sequencing and method of accomplishment. The Work Package shall be in accordance with the general requirements of the subcontract specifications including Sections 01300, Submittals and 01460, Integrated Work Control. The Subcontractor shall not proceed with Utility Isolation and Removal covered in this section until written approval is received regarding this **HOLD POINT** from the Buyer.
- B. Outage, permit, and/or Buyer support service requests shall utilize the Construction Daily Report as described in Section 01010.
- C. The Subcontractor shall submit a request for the appropriate utility system outage(s).
- D. The Subcontractor shall submit a request for the necessary special work permits (i.e., hot work permit, excavation permit, etc.) as required per the approved method of accomplishment.
- E. The Subcontractor shall submit a request for a Radiation Work Permit(s) (RWP) if required per existing radiological postings.
- F. The Subcontractor shall submit product information on backfill material.

1.05 SEQUENCING

- A. The designated Utility Isolation and Removal activities, in coordination with the Fire Protection and Suppression Systems activities in Section 01920, shall be considered the first segments of work to be performed by the Subcontractor. The intent of this work sequence is to isolate the project structure(s) from all currently existing plant utilities and thus eliminate the work hazards associated with performing demolition activities within an electrically and mechanically energized facility per OSHA Regulation 29 CFR 1926.850, Subpart T.

- B. Work sequencing for Utility Isolation and Removals shall be performed at the Subcontractor's discretion except as follows:
1. Mechanical utility isolation sequencing shall be at the Subcontractor's discretion except for the following requirements:
 - a. The domestic (potable) water, chill water, and firewater systems shall be isolated and drained prior to the isolation of the steam supply system in order to minimize freeze protection issues. For the same reason, the condensate system shall be isolated and drained once the steam supply system has been isolated.
 2. The project isolation from the existing plant electrical power grid, distributed through the Building 38 (PP) Substation, shall occur once the mechanical utility systems isolations are completed, the need for electrical power to the mechanical systems' circulating pumps is deemed unnecessary, and the fire alarm system is no longer required.
 - a. The electrical system isolation shall be performed per the requirements of Specification Section 16000 "Electrical" and Section 01915 "Electrical Equipment Removal".
 - b. The telephone system isolation for Building 38 can occur after the electrical isolation and temporary power has been completed per Specification Section 16000, and the HVAC controls (DDC) have been isolated per Specification Section 01925.
 3. Subcontractor work sequencing may be modified from the instructions detailed above to account for seasonal weather conditions or other variables with written permission from the Buyer.

PART 2 PRODUCTS

- 2.01** The Subcontractor shall provide all proper materials, incidentals, and accessories necessary for the timely execution of the work activities in requisite numbers, sizes, and capacity.
- 2.02** The Subcontractor shall field verify all pipe sizes, system appurtenances and components, and locations prior to planning and/or installation activities.

PART 3 EXECUTION

3.01 PREPARATION

- A. The Subcontractor shall establish access controls to the work area(s) using appropriate signs and barriers.
- B. The Subcontractor shall ensure that proper control measures are in place for slope protection and soil erosion during excavation activities as required.

- C. The Subcontractor shall prevent damage to adjacent structures and systems during isolation and removal activities.
- D. The Subcontractor shall follow standard sanitation requirements associated with domestic (potable) water isolation (see Section 01190 Environmental Compliance, potable water).
- E. Buyer shall support Subcontractor with utility line isolations.

3.02 APPLICATION

- A. The steam supply system shall be isolated from Building 38 when the need for building heat, i.e. freeze protection, is no longer required. The isolation of the system will terminate the use of the building HVAC system in-line reheat duct coils for area heating purposes.
 - 1. The system isolation shall be made at the location indicated on Drawing FSC010038 by the installation of a 6 inch diameter, 150#, carbon steel blind flange to an existing flanged connection. A non-asbestos gasket rated for steam service to at least 350 degrees F shall be utilized. The amount of piping removed from the existing system to accommodate the installation of the blind flange shall be left to the discretion of the Subcontractor, however, both the abandoned and the active portions of the system shall be adequately supported.
 - a. The coordination for the system outage and depressurization shall be through the Buyer's Technical Representative. The isolation shall not be considered complete until the Buyer's Plant Utilities Department has performed an in-service leak test upon the system.
 - 2. The extent of the removal of the system inside of the Building 38 structure shall be at a minimum adequate to drain the system. The extent of the system removal outside of the structure shall be from the exterior of the building to a point on the pipe rack located west of the service road adjacent to Building 38 as indicated on Drawing FSC010038. Additional portions of the system may be removed up to the point of isolation to allow access for or to expedite structural demolition at the Subcontractor's discretion.
 - a. The system inside of Building 38 shall be drained to the building sumps.
 - b. The material of system construction is carbon steel pipe.
 - c. Exterior pipe is covered by fiberglass insulation with a metal jacket or metal foil wrap covering.
- B. The condensate system shall be isolated from Building 38 immediately after the isolation of the steam supply system.
 - 1. The system isolation shall be made at the location indicated on Drawing FSC010038 by the installation of a 4 inch diameter, 150#, carbon steel blind flange to an existing flanged connection. A non-asbestos gasket rated for steam service to at least 350

degrees F shall be utilized. The amount of piping removed from the existing system to accommodate the installation of the blind flange shall be left to the discretion of the Subcontractor, however, both the abandoned and the active portions of the system shall be adequately supported.

- a. The coordination for the system outage and depressurization shall be through the Buyer's Technical Representative. The isolation shall not be considered complete until the Buyer's Plant Utilities Department has performed an in-service leak test upon the system.
2. The extent of the removal of the system inside of the Building 38 structure shall be at a minimum adequate to drain the system. The extent of the system removal outside of the structure shall be from the exterior of the building to a point on the pipe rack located west of the service road adjacent to Building 38 as indicated on Drawing FSC010038. Additional portions of the system may be removed up to the point of isolation to allow access for or to expedite structural demolition at the Subcontractor's discretion.
 - a. The system inside of Building 38 shall be drained to the building sumps.
 - b. The material of system construction is carbon steel pipe.
 - c. Exterior pipe is covered by fiberglass insulation with a metal jacket or metal foil wrap covering.
- C. The domestic (potable) water system shall be isolated from Building 38 prior to the isolation of the steam supply system.
1. The extent of the removal of the system inside of the Building 38 structure shall be at a minimum adequate to drain the system. The extent of the system removal outside of the structure shall be from the exterior of the building to a point outside of the building demolition footprint, reference Section 01945 "Below Grade Removals". The exterior portion of the system removal will not occur until the demolition of the structure has been initiated.
 - a. The system inside of Building 38 shall be drained to the building sumps.
 - b. The system backflow preventer and valve station located in Bay-1 in the Building 38 basement maybe salvaged at the Subcontractor's discretion for later onsite usage.
 - c. The material of system construction exterior to the building is asbestos cement (AC) pipe. The material of system construction inside the building is carbon steel pipe, copper pipe, and copper tubing.
 - d. Ensure the water heaters located in Corridor-19 have been electrically isolated prior to draining the system.
 - e. Clean service water provided by the Subcontractor will be required in limited

quantities for use with the vacuum pump separation chamber in Room-70 during the operation of the waste transfer system between the building sumps and the 10,000 gallon wastewater tank, reference Drawing 303812-01011 (Building 38 Work Scope Supplemental Drawings).

2. The system isolation shall be made at the location indicated on Drawing FSC010044. The system isolation shall consist of the removal of the Building 38 branch line tee from the 6 inch diameter main header (constructed of asbestos cement pipe) and subsequent replacement with a new segment of ductile iron pipe and the appropriately sized transition couplings. The amount of piping removed from the existing system to accommodate the installation of the ductile iron pipe segment shall be left to the discretion of the Subcontractor. The existing pipe is approximately six feet below grade.
 - a. The trench shall be excavated to a width and depth adequate to allow for the proper joining of the transition couplings. The bedding of the replacement segment of pipe shall be of “pea” gravel that extends upward around the pipe to a depth of not less than 30 percent of the outside diameter and extends below the bottom of the pipe for a thickness of at least six inches. The backfill shall be reasonably compacted and firm for the full length of the replacement pipe and couplings.
 - b. The trench shall be dewatered prior to backfilling. “Pea” gravel backfill placed to a depth of twelve inches above the top of the pipe shall be carefully placed. This initial lift shall be adequately compacted or tamped to fill all voids and to ensure the proper seating and stability of the pipe. Succeeding lifts of backfill shall not contain any stones larger than approximately four inches in diameter and not exceed eighteen inches in loose depth. These lifts will be adequately compacted or tamped to fill all voids and achieve proper stability of the backfill material.
 - c. The uppermost six inches of the excavation shall be backfilled with granular aggregate suitable for subgrade treatment. The aggregate should consist of crushed stone, crushed slag, or crushed or uncrushed gravel in combination with sand and/or finely divided mineral particles. Compaction shall be adequate to provide a stable surface suitable for light traffic. The area shall be satisfactorily maintained until the project has been completed and accepted.
 - d. The coordination for the system outage and depressurization shall be through the Buyer’s Technical Representative. The isolation shall not be considered complete until the Buyer’s Plant Utilities Department has performed an in-service leak test upon the system.
3. A yard hydrant(s) to allow use of the system for dust suppression, personnel shower trailers or other Buyer approved uses shall be installed at the Subcontractor’s discretion, provided that it originates from the replacement segment of ductile iron pipe.
 - a. The proposed method and schedule of installation, materials, and hydrant

selection shall be detailed in the applicable Work Package, reference Section 1.04A.

- b. A tested and certified backflow preventer must be in place at the hydrant before usage. Freeze protection of the system shall become the responsibility of the Subcontractor.
- c. A thrust block sized for 150psi shall be installed at the hydrant.

3.04 The plant chill water system shall be isolated from Building 38 prior to the isolation of the steam supply system. The system contains a mixture of approximately 30% ethylene glycol.

A. The system isolation shall be made at the two locations inside of Building 95 as indicated on Drawing FSC010040 by use of 8 inch diameter, standard weight, welded pipe caps. The coordination for the system outage and depressurization shall be through the Buyer's Technical Representative. The isolation shall not be considered complete until the Buyer's Plant Utilities Department has performed an in-service leak test upon the system.

- 1. Approximately 1,000 gallons of glycol will have to be drained from the system inside of Building 95 in order to cap the supply and return headers. The glycol will be temporarily drummed or tanked and added back to the system after the installation of the two pipe caps, (Buyer shall provide storage tank/drums.)
- 2. The material of system construction inside of Building 95 is carbon steel pipe. The system piping is covered with fiberglass insulation.
- 3. The amount of piping removed from the supply and return headers to accommodate the installation of the pipe caps shall be left to the discretion of the Subcontractor, however, both the abandoned and the active portions of the system shall be adequately supported. Expandable pipe plugs shall be installed in the sectioned ends of the supply and return headers to Building 38. The pipe elevation is approximately eleven feet above floor level. Comparable insulation shall be installed at the locations of the new pipe caps and shall be smoothly meshed with the existing insulation. Painting of the new insulation is not required.

B. The extent of the removal of the system inside of the Building 38 structure shall be at a minimum adequate to drain the system. The extent of the system removal outside of the structure shall be from the exterior of the building to a point outside of the building demolition footprint, reference Section 01945 "Below Grade Removals". The exterior portion of the system removal will not occur until the demolition of the structure has been initiated. Additional portions of the system may be removed up to the point of isolation to allow access for or to expedite structural demolition at the Subcontractor's discretion.

- 1. The portion of the system containing glycol shall be drained and handled per the instructions provided in Specification Section 01550, "Waste Management". This includes the following: the two underground lines between Building 95 and Building 38; the two lines between the cooling unit on the roof of the Waste Solid building addition (the west building addition composed of Rooms 50, 175, 177 and 178) and

the main system valve station located in Room 1 (air intake tunnel); and the lines routed to the various chillers and heat exchangers located inside of the Building 38. Approximately 2,500 gallons of glycol will have to be pumped from Room 1 out of the building to be drummed or tanked for waste disposition (Buyer shall provide tank or recycle truck.)

2. The material of system construction inside of Building 38 is carbon steel pipe. This includes the lines to and from the cooling unit on the roof of the Waste Solid building addition. Various chillers or exchangers may utilize copper tubing as part of their internals. The material of system construction for the two underground lines between Building 95 and Building 38 is double walled fiberglass pipe.
3. Ensure the standby chiller system located in Corridor-20 has been electrically isolated prior to draining the main system. Reference Section 01930, "Other Systems".
4. The two underground lines to Building 95 shall be plugged at the point of abandonment. Plugs shall be adequate to prevent groundwater infiltration into the system.

3.05 The plant compressed air system may be isolated from Building 38 either prior to or after the isolation of the steam supply system.

A. The system isolation shall be made at the location indicated on Drawing FSC010038 by the installation of a 4 inch diameter, 150#, carbon steel blind flange to an existing flanged connection. A rubberized gasket compatible for air service shall be utilized. The amount of piping removed from the existing system to accommodate the installation of the blind flange shall be left to the discretion of the Subcontractor, however, both the abandoned and the active portions of the system shall be adequately supported.

1. The coordination for the system outage and depressurization shall be through the Buyer's Technical Representative. The isolation shall not be considered complete until the Buyer's Plant Utilities Department has performed an in-service leak test upon the system.

B. The extent of the removal of the system inside of the Building 38 structure shall be at the Subcontractor's discretion. The extent of the system removal outside of the structure shall be from the exterior of the building to a point on the pipe rack located west of the service road adjacent to Building 38 as indicated on Drawing FSC010038. Additional portions of the system may be removed up to the point of isolation to allow access for or to expedite structural demolition at the Subcontractor's discretion.

1. The material of system construction is carbon steel pipe, copper pipe, and copper tubing.

3.06 The plant breathing air system shall be isolated from Building 38 either prior to or after the isolation of the steam supply system.

A. The system isolation shall be made at the location indicated on Drawing FSC010039 by

the installation of a 4 inch diameter, 150#, stainless steel blind flange to an existing flanged connection. A rubberized gasket compatible for breathing air service and stainless steel materials application shall be utilized. The amount of piping removed from the existing system to accommodate the installation of the blind flange shall be left to the discretion of the Subcontractor, however, both the abandoned and the active portions of the system shall be adequately supported.

1. The coordination for the system outage and depressurization shall be through the Buyer's Technical Representative. The plant breathing air system is critical to the plant and a USQD must be generated (Buyer responsibility) prior to isolation. The isolation of this system shall be planned during "off-hours". The isolation shall not be considered complete until the Buyer's Plant Utilities Department has performed an in-service leak test upon the system.
- B. The extent of the removal of the system inside of the Building 38 structure shall be at the Subcontractor's discretion. The extent of the system removal outside of the structure shall be from the exterior of the building to a point on the pipe rack located west of the service road adjacent to Building 38 as indicated on Drawing FSC010039. Additional portions of the system may be removed up to the point of isolation to allow access for or to expedite structural demolition at the Subcontractor's discretion.
 1. The material of system construction is stainless steel pipe.

3.07 The inert gas (argon) system shall be isolated from Building 38 either prior to or after the isolation of the steam supply system.

- A. The system isolation shall be made at the location indicated on Drawing FSC010038 by the installation of a 1-inch diameter, standard weight, copper pipe cap. The amount of piping removed from the existing system to accommodate the installation of the pipe cap shall be left to the discretion of the Subcontractor, however, both the abandoned and the active portions of the system shall be adequately supported.
 1. The coordination for the system outage and depressurization shall be through the Buyer's Technical Representative. The isolation shall not be considered complete until the Buyer's Plant Utilities Department has performed an in-service leak test upon the system.
 - B. The extent of the removal of the system inside of the Building 38 structure shall be at the Subcontractor's discretion. The extent of the system removal outside of the structure shall be from the exterior of the building to a point on the pipe rack located west of the service road adjacent to Building 38 as indicated on Drawing FSC010038. Additional portions of the system may be removed up to the point of isolation to allow access for or to expedite structural demolition at the Subcontractor's discretion.
 1. The material of system construction is copper pipe.

3.08 The sanitary sewer system shall be isolated from Building 38 after the isolation of the domestic water system.

- A. The system isolation shall be made at the locations indicated on Drawing FSC010043.
 - 1. There are two points of isolation as noted on the referenced drawing. At both points the sanitary sewer system shall be isolated from the building at the specified manholes by the use of a six inch diameter plug installed in the sanitary sewer line from the building. The plug shall be of an adequate construction to prevent groundwater infiltration into the plant sanitary sewer system.
- B. The extent of the removal of the system inside of the Building 38 structure shall be at a minimum adequate to drain the system. The extent of the system removal outside of the structure shall be from the exterior of the building to a point outside of the building demolition footprint, reference Section 01945 "Below Grade Removals". The exterior portion of the system removal will not occur until the demolition of the structure has been initiated. Additional portions of the system may be removed up to the point of isolation to allow access for or to expedite structural demolition at the Subcontractor's discretion.
 - 1. The system should be flushed with water prior to its removal from service. This includes the sanitary sewage sump located in Room-3 in the basement of Building 38.
 - 2. The material of system construction is either cast iron pipe (CIP) or ductile iron pipe (DIP), see referenced drawings for details.
 - 3. The sanitary sewer manhole located to the west of the men's changeroom (Room 61) shall be abandoned, reference Drawing FSC010043. The manhole may be removed or reduced in place to a point approximately one foot below final grade and then filled in. The fill shall not contain any stone greater than two inches in size. Compaction of fill shall be adequate to prevent any slump or settling in the final site grade.

3.09 The storm drain (sewer) system shall be isolated from Building 38 at the time of structural demolition.

- A. The system isolation shall be made at the locations indicated on Drawing FSC010043.
- B. Interior demolition shall consist of plugging (grouting) any drains located within the building that connect to the storm drain system prior to the initiation of decontamination (scabbling, blasting, etc.) activities in order to prevent the possible spread of radiological contamination through the system, reference Drawing FSC010042.
- C. The extent of the system removal outside of the Building 38 structure shall be from the exterior of the building to a point outside of the building demolition footprint, reference Section 01945 "Below Grade Removals". The exterior portion of the system removal will not occur until the demolition of the structure has been initiated. Additional portions of the system may be removed up to the point of isolation to allow access for or to expedite structural demolition at the Subcontractor's discretion.
 - 1. All abandoned in place drain pipe branch lines (from roof drains, etc.) shall be plugged at the point where the pipe is left in the ground. Plugs shall be adequate to

prevent groundwater infiltration into the system.

2. The material of system construction is either cast iron pipe (CIP), ductile iron pipe (DIP), vitrified clay pipe (VCP), reinforced concrete pipe (RCP), or concrete pipe (CONC). The slotted trench drains are fabricated from steel grating and corrugated pipe. See referenced drawings for location details.

3.10 The fire suppression (firewater) system shall be isolated from Building 38 and associated out-buildings per the instructions provided in Specification Section 01920, "Fire Protection/Suppression Systems", prior to the isolation of the steam supply system.

3.11 The overhead telephone lines into Building 38 and surrounding the building must be relocated or removed prior to building demolition.

- A. The Building 38 telephone system is provided by an overhead line which enters at the northeast corner of the building. This line needs to be removed from the building back to the first telephone pole. See Section 1.05 concerning Sequencing.
- B. An overhead 300-pair telephone cable is routed on the stanchion system along the road on the west side of the building (same stanchion system which carries steam, condensate, compressed air and breathing air lines) which must be rerouted prior to the building demolition. An underground 400-pair telephone cable is routed in the vicinity of the overhead line which has enough spare capacity to accommodate the required service from the overhead telephone line which must be removed from service.

PART 4 SPECIAL INSTRUCTIONS

4.01 Utility system(s) pipe racks or structural supports shall be removed to a point outside the immediate area of structural building demolition and soil excavations.

- A. The utility system pipe rack located on the west side of Building 38 shall be demolished to a point west of the adjacent service road.
 - B. The utility system pipe rack located on the south side of Building 38 shall be demolished to a point south of the adjacent service road.
1. All pipe racks shall be left remaining in a condition of structural integrity, satisfactory to the Buyer.

END OF SECTION

SECTION 01910

F-LINE GLOVEBOX REMOVALS

PART 1 GENERAL

1.01 SCOPE

- A. This section defines the work required to remove the following gloveboxes, shielding, fumehoods, and equipment required to support glovebox operations located in Building 38, Rooms 17, 142W and 161 (F-Line).
- B. The gloveboxes to be removed are labeled R-601 through R-607.
- C. This work will be accomplished in accordance with Section 01205, Authorization Basis, which was formulated to describe current conditions within Building 38 and the systematic decommissioning of the facility from equipment/glovebox removals to the remediation of the surrounding soil areas after building demolition.
- D. Hazard identification and mitigators shall be generated for this removal activity. See Section 01110, Safety and Health and Special Condition 3.1, Integrated Safety Management.
- E. During the course of demolition and if applicable, the Subcontractor shall repair the floor and remove protrusions that may create a safety hazard (tripping, head interference).
- F. The Facility Characterization Report included in Appendix A was developed to reasonably describe the extent of chemical and radiological contamination for the project and including (1) in Rooms 17, 142W and 161; (2) on the utility services within Rooms 17, 142W and 161; (3) internal and external of the gloveboxes; and (4) on the ancillary equipment and fixtures. However, due to inaccessible surfaces of pipe, duct, etc., additional sampling and characterization may be required.
- G. This project is in two phases. Phase I work includes all decontamination, dismantlement and demolition activities accomplished while the integrity of the building “environmental envelope” is intact. This envelope consists of the building structure, the ability to maintain a negative pressure to the outside, the building exhaust air HEPA filter bank, and effluent monitoring of the discharge air from the filter bank to the outside environment. Phase II work includes all remaining activities performed after the building “environmental envelope” has been breached (i.e. ventilation shutdown and loss of negative pressure). This envelope system controls the spread of radioactive contamination outside the building. F-Line Glovebox Removals are part of Phase I activities.
- H. All piping and ducts from the associated equipment shall be traced back to the glovebox or headers, and removed. Piping, tubing, and conduit attached to the exterior of the shielding and gloveboxes shall be removed.

1.02 RELATED SECTIONS

- A. Section 01110 Safety and Health
- B. Section 01130 Asbestos
- C. Section 01150 Work in Radiologically Contaminated Areas
- D. Section 01180 Respiratory Protection
- E. Section 01190 Environmental Safeguards and Compliance
- F. Section 01205 Authorization Basis
- G. Section 01460, Integrated Work Control
- H. Section 01550 Waste Management
- I. GC 3.02, Integrated Safety Management

1.03 REFERENCE MATERIALS

- A. Appendix A – Facility Characterization Report
- B. Appendix B – Drawings
- C. Appendix F - Photographs

1.04 REFERENCES, CODES, AND STANDARDS

- A. Occupational Safety & Health Administration (OSHA)
 - 1. 29 CFR 1926, Subpart T – Demolition - Sections 850-86
 - 2. 40 CFR 61, Subpart H, National Emission Standards for Emissions of Radionuclides Other than Radon from Department of Energy Facilities
- B. DOE N441-1 Radiation Protection of the Public and the Environment

1.05 SUBMITTALS

- A. The Subcontractor shall submit for approval a Work Package that covers removal of F-Line Gloveboxes and associated systems and components, and at a minimum, contains the items identified below. The Work Package shall be in accordance with the general requirements of the subcontract specifications including Sections 01300 Submittals and 01460 Integrated Work Control. The Subcontractor shall not proceed with F-Line Glovebox Removals covered in this section until written approval is received regarding this **HOLD POINT** from the Buyer.

1. Detailed method and sequence of radiological decontamination, as applicable.
2. Detailed method and sequence for dismantlement and demolition, including equipment to be used, of F-Line Gloveboxes and associated items covered under this section.
3. A Waste Management Plan that covers the F-Line Glovebox Removals scope of work in this Section in accordance with Section 01550, Waste Management.
4. Verification of meeting all Environmental Safeguards and Compliance Department specific plan submittal requirements in accordance with Section 01190, Environmental Safeguards and Compliance. Examples include methods for dust control and control of contaminants; control of fugitive emissions; spill prevention and control.
5. Location of debris staging areas and equipment/material laydown areas.
6. Materials, such as surfactants, to be used.
7. Methods of cutting including lead-painted steel (where applicable) and equipment to be used.
8. Method for protecting lay down and cutting areas from contamination by lead paint chips and for controlling airborne radiological emissions.

1.06 SEQUENCING OF WORK

- A. The sequencing of work activities is at the Subcontractor's discretion. Project breakdown by phases as described in paragraph 1.01.G shall be followed.

In addition, there are activities/submittals listed below that must take place prior to dismantlement and demolition. These are **HOLD POINTS** and must be adhered to.

- B. F-Line Glovebox Removal activities shall not begin until:
1. Receipt of written Buyer approval of the Work Package that covers F-Line Glovebox Removal.
 2. Completion of all Utility Isolation and Removal activities that impact the F-Line Glovebox Removals as covered in Section 01900.

1.07 BACKGROUND INFORMATION

- A. The area occupied by the F-Line (Rooms 142W and 161) was originally "F-Lab Area". Seven gloveboxes (R-601 through R-607) were installed in 1970/1971.
- B. The glovebox shielding was modified shortly after installation.
- C. The water filled shield doors on the rear of the glovebox line were removed and replaced

with Benelex and plate plexiglass shielding.

- D. A fumehood in Room 161 was installed after the gloveboxes were installed.
- E. Systems supporting glovebox operations are located on the basement floor in Room 17. Systems supporting glovebox operations include a water distillation unit, inert gas purifier, and HEPA exhaust filters, and associated ductwork.
- F. Glovebox manipulators have been removed.

1.08 FACILITY DESCRIPTION

- A. Enclosed below is basic facility information and suggested methods (direct or implied). This information should be utilized at the Subcontractor's discretion to formulate the Work Package for this section scope of work.
- B. Structural
 - 1. The equipment required to support glovebox operations is located on the basement floor of Building 38, Room 17 (see Drawing FSE990045, Sheet 1, Part 2, Building 38 Work Scope Supplemental Drawings).
 - 2. The majority of the equipment is supported/anchored to the floor slab.
 - 3. Pipe, duct, raceway, and small equipment (filters, bubblers, valves, etc.) are attached to an interior reinforced concrete wall. The basement floor is a 6-inch thick reinforced (one layer of reinforcing) concrete slab on grade. The allowable floor load is 400 psf. The interior walls are 10-inch thick reinforced concrete and support the first floor.
 - 4. The gloveboxes are located in the southwest corner of Building 38 on the first floor (see Drawing FSE990045, Sheet 2, Part 2, Building 38 Work Scope Supplemental Drawings). The first floor consists of precast concrete "T" beams (14" deep) with a 3-inch concrete topping. The maximum span of the "T" beams is 13'-7". The exterior walls are load-bearing masonry. The interior walls are non-load bearing masonry or drywall/metal sheeting on steel studs. The floor is covered with a vinyl tile, which contains asbestos. The allowable floor load in Rooms 142W and 161 is 827 psf and 358 psf, respectively.
 - 5. The roof is also constructed of precast concrete "T" beams and the underside of the deck is exposed (no ceilings). Two ½ ton monorails are supported from the underside of the roof structure. The monorails are used to remove manipulators and glovebox lights for servicing.
 - 6. The structural integrity of the building envelope is being maintained during D&D activities. Only interior non-load bearing walls are being modified. The allowable floor loads are adequate for D&D activities.
- C. Mechanical

1. The main concern is maintaining the building exhaust system during D&D of the laboratory to ensure proper balance of building airflow for worker and environmental protection. Suggested methods for maintaining this airflow balance include combining Rooms 142W and 161 into one room. The partition wall between these rooms shall be removed, thus effectively combining the two rooms. Gloveboxes 601 and 602 (air supplied gloveboxes) will remain negative to the combined Room 142W & 161 until the gloveboxes are ready to be decommissioned. As the work is performed, this area will be kept negative with respect to the adjacent rooms (141W and 142E). In summary, the ventilation air will flow from the Room 141W and 142E into Room 161/142W.
2. Supply air will be provided from Rooms 141W and 142E via openings in walls/doors with “dust-stop” type filters.
3. Room 161 is exhausted through exhaust register ER-15 into the laboratory exhaust main. Room 142W is exhausted through an exhaust grill and glovebox exhaust and fumehood exhaust into the Access Corridor Exhaust System.
4. Rooms 17, 142W and 161 are maintained under negative pressure relative to surrounding areas. Magnehelics shall be installed between each area (existing magnehelics may be reused) and monitored to ensure approximate pressure differentials are maintained. As demolition proceeds, dampers will need to be adjusted to maintain proper balance.

D. Electrical

1. All permanent building electrical service will be terminated with temporary power supplied for lighting, tools, etc. See Section 16000, Electrical for specific details.
2. The interior of the electrical raceway below the ceiling of Corridor 20 is radiologically contaminated. With the circuits de-energized, the wires can be cut at the top of the first floor and at the panel box. The raceway can then be removed at a later date after the piping systems are removed allowing access to the raceway from the basement floor.

E. Glovebox Description

1. The glovebox is constructed of 11-gage stainless steel supported by a structural tube steel frame. The front (Room 161 side) of the box consists of water windows and sleeves for manipulators. The rear of the box consists of Plexiglas windows with glove ports. The sides of the boxes have transfer ports of various sizes. Gloveboxes are connected by bolting at the pass throughs.
2. Shielding consists of removable Plexiglas panels, Benelex panels, removable water windows, and water tanks. The Plexiglas and Benelex panels are attached (supported) by the glovebox. Plexiglas is used around the gloveports on the rear (Room 142W side) of the glovebox. Benelex shielding is located on the rear and top of the glovebox. The water windows and tanks are supported independent of the glovebox

by their own steel frame. Water windows are located on the front of the glovebox. Water tanks are located along the top, front, and rear of the glovebox, and have been drained.

3. Power to the control console located along the front of the glovebox line is provided from an electrical raceway directly below the first floor. Other services (argon, water, helium, etc.) are also provided through the first floor below the control console. Some of these services have been terminated and capped below the first floor.

F. Chemicals of Concern

1. Glovebox R-602 contains a sink where fuel elements were washed with nitric and hydrofluoric acid. This sink was drained to a tank located in the basement. The tank was removed and new piping (double walled) installed to collect and route sink lines from all gloveboxes to the sump in Room 6E.

G. Hazardous Materials

1. Hazardous materials include lead, asbestos, mercury, and PCBs.
2. Sources of lead include the counterweights on pass through doors (gloveboxes R-601, R-602 & R-603); paint on the steel frames supporting the gloveboxes and the water tanks; gloves in glovebox R-606 and fumehood; and circuit boards located in the control console. The counterweights on the pass through doors are located inside the glovebox and are encased in stainless steel.
3. Vinyl floor tile in Rooms 142W and 161 contain asbestos.
4. Possible sources of mercury include the lights, switches, and thermometers. Lights are located in the top water tanks of the glovebox line. Switches and thermometers are located in the control console.
5. PCBs may be in the ballasts located in the control console of the glovebox line.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. The Subcontractor shall supply all proper equipment necessary for the timely execution of the work in requisite numbers, sizes and capacity.
- B. The Subcontractor shall provide all incidentals and accessories as required for the proper execution of the work.
- C. Surfactants
 1. CP-225 CHIL-SORB by Childers
 2. Buyer approved equal

- D. Encapsulates/Sealants
 - 1. CP-240 CHIL-LOCK by Childers
 - 2. Certane 2050 by Certified Technologies
 - 3. Eppco #1 by Expert Environmental Products
 - 4. Serpiloc by International Protection Coatings Corp
 - 5. Buyer approved equal

PART 3 EXECUTION

3.01 PREPARATION

- A. The Subcontractor shall establish access controls to the project area using appropriate signs and barriers.
- B. The Subcontractor shall ensure that adequate laydown space has been cleared and barriers have been established.
- C. Items shall have contamination fixed, sealed or removed prior to dismantlement and if applicable, prior to removing local containment, negative ventilation or building enclosures, in accordance with Section 01150, Work in Radiologically Contaminated Areas.

3.02 APPLICATION

- A. Cutting:
 - 1. The Subcontractor shall utilize all methods available to perform activities with a minimum of dust production.
 - 2. Subcontractor shall apply mechanical means of cutting to the largest extent possible while avoiding damage to adjacent structures, components, equipment, and utilities.
 - 3. Lead-based paint chips and debris, released during demolition, shall be collected and managed in accordance with Section 01550, Waste Management.
 - 4. Because of contamination levels, some concrete may require local containment for cutting activities.
 - 6. All material shall be reduced in size as required for containerization or transfer as bulk waste in accordance with Section 01550 Waste Management.

3.03 MAJOR WORK ACTIVITIES

- A. Major work activities consist of (1) Shielding Removal, (2) Glovebox Removal, and (3)

Equipment Removal.

1. Shielding Removal
 - a. Remove Plexiglas shield windows and Benelex shield panels
 - b. Disassemble water shield windows.
 - c. Disassemble water shield tanks including supporting frame.
2. Glovebox Removal
 - a. Remove utility services to gloveboxes.
 - b. Remove equipment, instrumentation, components attached to the exterior of the glovebox.
 - c. Separate gloveboxes.
 - d. Load gloveboxes into waste containers.
3. Equipment Removal
 - a. Remove distilled water system.
 - b. Remove argon cleanup system.
 - c. Remove Glovebox exhaust system (baghouses, vacuum pumps, bubblers, etc.).
 - d. Remove Inert Gas Purifier system.
 - e. Remove all piping, instrumentation, conduit, etc. related to these systems.
 - f. Remove Fumehood.

CAUTION: Do not terminate fumehood exhaust until fumehood has been removed. The ventilation system is to continue to operate until the fumehood and gloveboxes have been removed from the room. Air from the room is removed through the fumehood ventilation system and is used in maintaining negative pressure in the room.

3.04 QUALITY ASSURANCE

- A. The Subcontractor shall inspect debris generation, stockpiling and containerization to ensure that all materials have been sized to meet size criteria and are being managed in accordance with Section 01550, Waste Management.

3.05 FINAL INSPECTION AND ACCEPTANCE

- A. Subcontractor shall perform a final inspection with the Buyer to ensure that the completed work satisfies all contractual requirements. A written punchlist will be made of those items or conditions not approved. Upon completion of a satisfactory inspection, the work will be accepted.
- B. Upon completion and acceptance of the work, the Subcontractor shall promptly remove all equipment, excess materials, and supplies from the work area (as applicable) and as otherwise noted on drawings and specifications.
- C. When the work designated in the work package is completed, a post-job briefing will be conducted and documented so that Lessons Learned can be communicated on issues which other groups can use to avoid mistakes and/or improve work results by incorporation of areas of success.

END OF SECTION

SECTION 01915

ELECTRICAL EQUIPMENT REMOVAL

PART 1 GENERAL

1.01 SECTION INCLUDES: Electrical demolition necessary to allow Building 38 to be demolished and meet the NESHAPs criteria. NOTE: See Section 01190, Environmental Compliance for further details on NESHAPs criteria. Pockets of radiological contamination may exist on conduits and in accessible locations.

A. Major items of equipment include:

1. Building 38 Motor Control Center in Corridor 19 will be a contaminated waste item
2. Building 38 Substation (BWXT0 to retain) to salvage area, see drawing FSC010029
3. Standby Generator #2 (BWXT0 will retain) to salvage area, see drawing FSC010029

1.02 RELATED SECTIONS

- A. Section 01110, Safety and Health
- B. Section 01550, Waste Management
- C. Section 01920 provides guidance regarding Fire Protection / Suppression Systems.
- D. Section 01925 provides guidance regarding HVAC Control System, DDC, Direct Digital Controls.
- E. Section 16000 Electrical provides design and guidance for power supply isolation of Building 38 and its components including the substation, standby generator #2 and the MCC.

1.03 SUBMITTALS

- A. The Subcontractor shall submit for approval a Work Package that covers removal of Electrical Equipment. The Work Package shall be in accordance with the general requirements of the subcontract specifications including Sections 01300 Submittals and 01460 Integrated Work Control. The Subcontractor shall not proceed with Electrical Equipment Removals covered in this section until written approval is received regarding this **HOLD POINT** from the Buyer.

PART 2 PRODUCTS - not used

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify field measurements and circuiting arrangements.
- B. Verify abandoned wiring and equipment serve only abandoned facilities.
- C. Identify items indicated in contract documents to be salvaged or retained.
- D. Report discrepancies to Buyer before disturbing existing installation.

3.02 PREPARATION

- A. Disconnect electrical systems in walls, floors, and ceilings scheduled for removal.

3.03 APPLICATION

- A. Existing Electrical Service: Maintain existing system in service until new system is complete and ready for service. See Section 16000 for new electrical installation details. Disable system only to make switchovers and connections. Notify Buyer 30 days prior to disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to work area and for temporary construction activities.
- B. Existing Fire Alarm System: Maintain existing system in service until Utility Systems isolation occurs. See Section 01900 for information regarding Utility Isolation and Removal and Section 01920 for details on activities associated with Fire Protection / Suppression systems. Notify Buyer 30 days prior to disabling system.
- C. Standby Generator #2 and Building 38 (PP) Substation components shall be salvaged and delivered to designated salvage points on Drawing FSC010029.

- 3.04** Existing Direct Digital Control (DDC) System: Maintain existing system in service until utility isolation occurs. See sections 01900 Utility Isolation and Removal and Section 01925, HVAC Systems Demolition.

PART 4 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL SYSTEMS

4.01 ELECTRICAL EQUIPMENT TO BE REMOVED BY SUBCONTRACTOR:

- A. Remove electrical equipment not required to remain in service.
- B. Remove abandoned wiring to source of supply.
- C. Remove exposed abandoned conduit including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors.
- D. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed.
- E. Disconnect and remove abandoned panel boards, distribution equipment, and their source wiring.

- F. Disconnect and remove electrical devices and equipment serving equipment that has been removed.
- G. Disconnect and remove abandoned luminaries. Remove ballasts. (Ballasts may contain PCB's, see Section 10550 Waste Management.)

4.02 SPECIAL INSTRUCTIONS:

- A. In accordance with RADCON practices (re: Section 01150), use water misting or other suitable methods to limit amount of dust and dirt rising and scattering in air to lowest level of air pollution practical.
- B. Provide barricades and observe safety regulations.
- C. Maintain access and clearance to existing active temporary electrical installations.

END OF SECTION

SECTION 01920

FIRE PROTECTION/SUPPRESSION SYSTEMS

PART 1 — GENERAL

1.01 SCOPE -- Section includes: The required fire protection/suppression system isolations and relocations, the sequencing of the fire protection/suppression system isolations and relocations, and the extent of the fire protection/suppression system demolitions and removals.

A. The fire protection/suppression system consists of the following:

1. Alarm system

a. Fire detection alarms

1. wet sprinkler system water flow alarm
2. wet hose cabinet water flow alarm
3. wet system riser isolation valve manipulation/tamper alarms
4. dry system low pressure and temperature alarms
5. dry system water flow alarm
6. pull station alarms

b. Data Gathering Panels (DGP) for alarm code transmission

c. Alarm bells

2. Suppression system

a. Fire sprinklers (wet system; throughout Building 38)

b. Fire sprinklers (dry system; exterior west/basement dock area of Building 38 and the Standby Generator #2 outbuilding)

c. Hose cabinets (wet system; throughout Building 38)

d. Fire extinguishers (local; throughout Building 38)

1.02 RELATED SECTIONS

A. Section 01110, Safety and Health

- B. Section 01150, Work in Radiologically Contaminated Areas
- C. Section 01210, Facility Surveillance and Maintenance
- D. Section 01300, Submittals
- E. Section 01460, Integrated Work Control
- F. Section 01500, Construction Facilities and Project Boundaries
- G. Section 01550, Waste Management
- H. Section 01900, Utility Isolation and Removal
- I. Section 01915, Electrical Equipment Removal
- J. Section 01945, Below Grade Removals
- K. Section 16000, Electrical

1.03 REFERENCE MATERIALS

- A. Appendix A – Facility Characterization Report
- B. Appendix B – Drawings
 - 1. FSE16467; Outside Fire Lines, (Part 2, Building 38 workscope supplemental drawings)
 - 2. FSC010036, sheets 1 through 5; Below Grade Utilities
 - 3. 353601, sheets 4061 and 4062; Fire Alarm System, (Part 2, Building 38 workscope supplemental drawings)
- C. Fire Hazards Analysis (FHA) for Building 38 Safe Shutdown / Building Demolition
- D. 29 CFR 1926, Subpart T-Demolition, Sections 850-860
- E. Appendix E - Photographs

1.04 SUBMITTALS

- A. As noted in Section 01460, Integrated Work Control, it is the Subcontractor’s discretion regarding the number of Work Packages submitted and utilized on this project. However, a Work Package shall be submitted that includes all removal of fire protection/suppression systems, especially addressing work activity sequencing and method of accomplishment. The Work Package shall be in accordance with the general requirements of the subcontract specifications including Sections 01300, Submittals and 01460, Integrated Work Control. The Subcontractor shall not proceed with fire

protection/suppression systems covered in this section until written approval is received regarding this HOLD POINT from the Buyer.

- B. Outage, permit, and/or Buyer support service requests shall utilize the Construction Daily Report as described in Section 01010.
- C. The Subcontractor shall submit a request for the appropriate fire protection/suppression system outage(s).
- D. The Subcontractor shall submit a request for the necessary special work permits (i.e., hot work permit, excavation permit, etc.) as required per the approved method of accomplishment.
- E. The Subcontractor shall submit a request for a Radiation Work Permit(s) (RWP) if required per existing radiological postings.

1.05 SEQUENCING

- A. The designated fire protection/suppression isolation and removal activities, in coordination with the Utility Isolation and Removal Activities in Section 01900, shall be considered the first segments of work to be performed by the Subcontractor. The intent of this work sequence is to isolate the project structure(s) from all currently existing plant utilities and thus eliminate the work hazards associated with performing demolition activities within an electrically and mechanically energized facility per OSHA Regulation 29 CFR 1926.850, Subpart T.
- B. Work sequencing shall be performed at the Subcontractor's discretion except as follows:
 - 1. Mechanical utility isolation sequencing shall be at the Subcontractor's discretion except for the following requirements:
 - a. The fire protection/suppression system shall be isolated and drained prior to the isolation of the steam supply system in order to minimize freeze protection issues.
 - 2. The project isolation from the existing plant electrical power grid, distributed through the Building 38 (PP) Substation, shall occur once the mechanical utility systems isolations are completed and the fire protection/suppression system alarm capability is no longer required.
 - a. The electrical system isolation shall be performed per the requirements of Specification Section 16000 "Electrical" and Section 01915 "Electrical Equipment Removal".
 - b. Written notice shall be provided to the Buyer thirty (30) days prior to electrical isolation to allow for exterior fire alarm routing modifications by Buyer personnel.
 - c. Local alarm disconnections shall be coordinated through the Buyer as necessary.

3. Subcontractor work sequencing may be modified from the instructions detailed above to account for seasonal weather conditions or other variables with written permission from the Buyer.
- C. Fire protection/suppression system isolation and removal work activities shall not commence until the Subcontractor, the Buyer's Technical Representative (BTR), and the Buyer's Fire Protection Engineer have performed a complete and documented walkdown of the areas protected by the system to ensure that potential fire hazards and combustible materials ("fireloading") have been minimized. The Subcontractor shall not proceed with fire protection/suppression systems isolation until written approval is received regarding this HOLD POINT from the Buyer. Reference "Fire Hazards Analysis (FHA) for Building 38 Safe Shutdown / Building Demolition".

PART 2 – PRODUCTS

2.01 MATERIALS

- A. The Subcontractor shall provide all proper materials, incidentals, and accessories necessary for the timely execution of the work activities in requisite numbers, sizes, and capacity.

2.02 EQUIPMENT

- A. The Subcontractor shall provide all equipment necessary for the timely execution of the work activities in requisite numbers, sizes, and capacity.

PART 3 – EXECUTION

3.01 PREPARATION

- A. The Subcontractor shall establish access controls to the work area(s) using appropriate signs and barriers.
- B. The Subcontractor shall ensure that proper control measures are in place for slope protection and soil erosion during excavation activities as required.
- C. The Subcontractor shall prevent damage to adjacent structures and systems during isolation and removal activities.

3.02 APPLICATION

- A. The fire protection/suppression system shall be isolated from Building 38 prior to the isolation of the steam supply system.
1. The wet fire protection/suppression system isolation shall be made at the location indicated on Drawing FSC010041. The isolation shall consist of the removal of the Building 38 branch line tee from the 8 inch diameter main header (constructed of asbestos cement pipe) and subsequent replacement with a new segment of ductile

iron pipe and the appropriately sized transition couplings. The amount of piping removed from the existing system to accommodate the installation of the ductile iron pipe segment shall be left to the discretion of the Subcontractor. The existing pipe is approximately six feet below grade. A thrust block sized for 200psi shall be installed at the isolation point.

- a. The trench shall be excavated to a width and depth adequate to allow for the proper joining of the transition couplings. The bedding of the replacement segment of pipe shall be of “pea” gravel that extends upward around the pipe to a depth of not less than 30 percent of the outside diameter and extends below the bottom of the pipe for a thickness of at least six inches. The bedding shall be reasonably compacted and firm for the full length of the replacement pipe and couplings.
 - b. The trench shall be dewatered prior to backfilling. “Pea” gravel shall be carefully placed to a depth of twelve inches above the top of the pipe. This initial lift shall be adequately compacted or tamped to fill all voids and to ensure the proper seating and stability of the pipe. Succeeding lifts of backfill shall not exceed eighteen inches in loose depth and be adequately compacted or tamped to fill all voids and achieve proper stability of the backfill material.
 - c. The uppermost six inches of the excavation shall be backfilled with granular aggregate suitable for subgrade treatment. The aggregate should consist of crushed stone, crushed slag, or crushed or uncrushed gravel in combination with sand and/or finely divided mineral particles. Compaction shall be adequate to provide a stable surface suitable for light traffic. The area shall be satisfactorily maintained until the project has been completed and accepted.
 - d. The isolation shall not be considered complete until the Buyer’s Fire Department has performed an in-service leak test upon the system.
2. The extent of the removal of the **wet** system inside of the Building 38 structure shall be at a minimum adequate to drain the system. The extent of the system removal outside of the structure shall be from the exterior of the building to a point outside of the building demolition footprint, reference Section 01945 “Below Grade Removals”. The exterior portion of the system removal will not occur until the demolition of the structure has been initiated.
- a. The system inside of Building 38 shall be drained to the building sumps.
 - b. The Building 38 east dock area firewater piping has been freeze protected by the addition of ethylene glycol to the system. The glycol shall be drained and handled per the instructions found in Specification Section 01550, “Waste Management”. The valve separating the freeze protected portion of the wet system from the primary portion of the wet system is located in Room-107. The system pipe containing glycol is routed from Room-107, through the north high bay (AB dock), southward across the exterior east dock, and into the south high bay (EF dock).

- c. The material of system construction inside of Building 38 and above grade is carbon steel. The material of system construction outside of Building 38 below grade is asbestos cement (AC) pipe.
 - d. The wet system valve station located in Bay-1 in the Building 38 basement shall salvaged at the Subcontractor's schedule convenience for turnover to the Buyer. The Buyer's Radiological Control support personnel shall make the determination as to whether or not a valve station component can be readily salvaged. Intrusive decontamination by the Subcontractor will not be required.
3. The dry fire protection/suppression system isolation shall be made at the location indicated on Drawing FSC010041. The isolation shall consist of the removal of the fire hydrant H-41 branch line tee from the 8 inch diameter main header (constructed of asbestos cement pipe) and subsequent replacement with a new segment of ductile iron pipe and the appropriately sized transition couplings. The amount of piping removed from the existing system to accommodate the installation of the ductile iron pipe segment shall be left to the discretion of the Subcontractor. The existing pipe is approximately six feet below grade.
- a. The trench shall be excavated to a width and depth adequate to allow for the proper joining of the transition couplings. The bedding of the replacement segment of pipe shall be of granular material that extends upward around the pipe to a depth of not less than 30 percent of the outside diameter and extends below the bottom of the pipe for a thickness of at least six inches. The bedding shall be reasonably compacted and firm for the full length of the replacement pipe and couplings.
 - b. The trench shall be dewatered prior to backfilling. Granular backfill shall be carefully placed to a depth of twelve inches above the top of the pipe. This initial lift shall be adequately compacted or tamped to fill all voids and to ensure the proper seating and stability of the pipe. Succeeding lifts of backfill shall not exceed eighteen inches in loose depth and be adequately compacted or tamped to fill all voids and achieve proper stability of the backfill material.
 - c. The uppermost six inches of the excavation shall be backfilled with granular aggregate suitable for subgrade treatment. The aggregate should consist of crushed stone, crushed slag, or crushed or uncrushed gravel in combination with sand and/or finely divided mineral particles. Compaction shall be adequate to provide a stable surface suitable for light traffic. The area shall be satisfactorily maintained until the project has been completed and accepted.
 - d. The isolation shall not be considered complete until the Buyer's Fire Department has performed an in-service leak test upon the system.
 - e. The isolation of the dry fire protection/suppression system shall not proceed until Standby Generator #2 has been isolated from the appropriate electrical disconnect (fuses pulled and cables air gapped), mechanically isolated from the associated fuel tank, and all remaining fuel drained from the generator.

- f. The extent of above grade system removal shall be adequate to salvage for turnover to the Buyer the wet riser valve station and the dry valve system located in the fire suppression riser room at the southwest corner of Building 38.
 - g. Fire hydrant #H-41 is available from Buyer, without warranty, and may be salvaged by the Subcontractor for use on potable water isolation. Hydrant must be painted green to indicate potable water. (See Section 01900 Utility Isolation and Removal)
 - h. The extent of the system removal outside of the Building 38 structure and below grade shall be from the exterior of the building to a point outside of the building demolition footprint, reference Section 01945 "Below Grade Removals". The exterior portion of the system removal will not occur until the demolition of the structure has been initiated.
 - i. The material of system construction inside of Building 38 and above grade is carbon steel. The material of system construction outside of Building 38 below grade is asbestos cement (AC) pipe.
- B. The fire protection/suppression system alarm capability shall be eliminated at the time of the isolation of the Building 38 (PP) Substation from the existing plant electrical power grid. Reference Specification Section 16000 "Electrical" and Section 01915 "Electrical Equipment Removal".
- 1. The following items shall be salvaged for turnover to the Buyer where it is radiologically feasible. The Buyer's Radiological Control support personnel shall make the determination as to whether or not an alarm system component can be readily salvaged. Intrusive decontamination by the Subcontractor will not be required.
 - a. Data Gathering Panels located in Corridor-20 in the basement of Building 38.
 - b. Pull stations located at various locations throughout Building 38.
 - c. Alarm bells located at various locations throughout Building 38.
 - d. Wet system riser isolation valve manipulation/tamper alarms located in Bay-1 in the basement of Building 38.

3.03 SPECIAL INSTRUCTIONS

- A. Prior to the initiation of Subcontractor demolition activities inside of Building 38, the existing fire extinguishers that are the property of the Buyer shall be removed from the building and turned over to the Buyer where radiologically feasible. Intrusive decontamination by the Subcontractor will not be required. The Subcontractor shall be responsible for providing fire extinguishers appropriate to the work being performed.
- B. Building 38 is classified as an "Industrial Occupancy" by the 1997 edition of the NFPA Life Safety Code. There is no routine personnel occupancy of the building.

- C. Upon termination of the fire protection/suppression sprinkler system, all existing common paths of travel and exits within the building will be required to be clear and free of obstruction.
- E. Fire doors communicating between building floors must be retained until immediately prior to structural demolition.
- F. Existing "Exit" signs shall be maintained in place and visible during interior demolition activities.

END OF SECTION

SECTION 01925

HEATING, VENTILATING, and AIR CONDITIONING (HVAC) SYSTEMS DEMOLITION

PART 1 GENERAL

1.01 SCOPE

A. This section describes the elements of work related to the demolition of HVAC systems within Building 38. Work will include maintaining and operating the Building 38 Stack Exhaust Fan as well as the Building 38 Exhaust HEPA Filter Bank during the demolition period to ensure a negative environment within the building, to protect the worker and to protect the environment. Elements include but are not limited to:

1. Air handling units
2. Heating and cooling coils
3. Valves
4. Dampers
5. Actuators
6. Pneumatic and electric control devices
7. Andover Direct Digital Control (DDC) panels
8. Supply and exhaust ductwork
9. Heat exchangers
10. Pumps
11. Expansion tanks
12. Condensing units
13. Other miscellaneous HVAC components

B. The existing high efficiency particulate air (HEPA) filter bank will be maintained and operated until Phase I activities are completed. Differentials across each stage will be monitored to ensure proper operation of the filterbank. The pre-filter stage particularly will need to be monitored weekly for build-up and will be changed out as necessary to maintain proper airflow through the filterbank.

1.02 RELATED SECTIONS

- A. Section 01110, Safety and Health
- B. Section 01130, Asbestos
- C. Section 01150, Work in Radiologically Contaminated Areas
- D. Section 01190, Environmental Compliance
- E. Section 01210, Facility Surveillance and Maintenance
- F. Section 01300, Submittals
- G. Section 01460, Integrated Work Control
- H. Section 01550, Waste Management
- I. Section 01900, Utility Isolation and Removal
- J. Section 01915, Electrical Equipment Removal
- K. Section 01930, Other Systems
- L. Section 16000, Electrical

1.03 DESCRIPTION OF HVAC SYSTEMS

A. Supply Air Systems

1. The main building is supplied with tempered air from four air handling units located in Room 1. These units, air handlers AJ-107, AJ-108, AJ-109, and AJ-111 utilize a common steam preheated plenum and house individual glycol cooling coils. Individual zoning throughout the building is provided with hot water reheat coils. A west addition to the building has its own air handling unit, designated WS-1, located on the building addition roof, utilizing a direct expansion cooling system. Also, the cooling unit servicing the men's change room, (rooms 61 through 69) is located on the change room roof and utilizes direct expansion cooling.

B. Exhaust Air System

1. Building 38 is exhausted through a ducted system to the building exhaust HEPA filter bank located in room 6E and consists of three stages, one pre-filter and two HEPA stages in a seven by four grid. The filter bank has its own fan, designated AJ-113. This fan exhausts into a duct that leads to the external stack containing the stack fan designated as AJ-117.

1.04 WORK PHASES

- A. The initial phase of work under this section will be one of verification of HVAC system

status and continued operation of the exhaust system. In coordination with Section 01210, Facility Surveillance and Maintenance, and the work phases described in Section 01935, Paragraph 1.02 A, internal decontamination, dismantlement, and demolition will be taking place. All building power will be deactivated. A separate dedicated power source will be used to feed the exhaust stack fan as well as necessary temporary power for lighting and demolition equipment. In accordance with the approved Fire Safety Hazard Analysis, the building fire sprinkler system may be deactivated. Therefore, heating will not be required. The contractor will lock out the supply air handling units, and pump down the glycol chilled water for reuse by plant utilities. The refrigerant in the two direct expansion systems described in 1.03 will be pumped down and contained. During this phase, the stack fan will continue to operate, maintaining a negative environment within the building, with a controlled exhaust airflow path through the filterbank. Outside air dampers will be locked open and supply air fan belts disconnected to allow free-wheeling of the supply air fans and minimal resistance to make-up air within the building.

- B. Once all systems are pumped down, evacuated, and locked/tagged out, removal of HVAC components may commence per a phased schedule prepared and submitted by the Subcontractor and approved by the Buyer.
- C. During the second phase of demolition, when the building's "environmental envelope" has been breached, the filterbank will be deactivated and the filters removed. A temporary HEPA filterbank is available from the Buyer, without warranty, for use by the Subcontractor at his discretion for continued control of the ventilation exhaust path during the demolition of the filterbank.

1.05 REFERENCES

- A. Drawings (See Appendix B, Part 2, Building 38 Work Scope Supplemental Drawings)
 - 1. FSE 871197 Building 38 HVAC Ductwork As-built - Partial First Floor Plan - East
 - 2. FSE 871198 Building 38 HVAC Ductwork As-built - Partial First Floor Plan – West
- B. Codes
 - 1. ERDA 76-21-79 Nuclear Air Cleaning Handbook
 - 2. 40 CFR Part 82 Protection of the Stratospheric Ozone

1.06 SUBMITTAL

- A. The Subcontractor shall submit for approval Work Package(s) that cover HVAC Systems Demolition, and at a minimum, contains the items identified below. The Work Package shall be in accordance with the general requirements of the subcontract specifications including Sections 01300 Submittals and 01460 Integrated Work Control. The Subcontractor shall not proceed with HVAC Systems Demolition covered in this section until written approval is received regarding this HOLD POINT from the Buyer.

NOTE: Work Packages for Phase I activities will be reviewed and approved by the

Buyer and made available to the DOE, USEPA and the OEPA on request. Work Packages for Phase II activities will be reviewed and approved by the Buyer, DOE, USEPA and OEPA. There are significant differences in review periods between the two phases. See Section 01300 Submittals and Section 01460 Integrated Work Control for specific details.

PART 2 PRODUCTS

2.01 MATERIALS

A. The subcontractor shall provide:

1. HEPA filters – see Section 01210, Facility Surveillance and Maintenance
2. Portable HEPA exhaust units – as necessary for localized radiological control
3. Refrigerant recycling equipment

B. The buyer has available for the subcontractor's use:

1. One (1) each temporary filterbank as described in drawing FSD 930101, Sheet 3. (See Appendix B, Part 2, Building 38 Work Scope Supplemental Drawings). The unit is a combination Flanders Model E-7 (12 units) and E-8 (4 units) with a nominal capacity of 4,000 CFM.

NOTE: The Subcontractor may utilize equipment items within this section for accomplishment of work with the prior approval of the buyer. Utilization of the equipment shall be “as is” condition; see Special Conditions, Article 1.10, Government Property Furnished “As Is”.

PART 3 EXECUTION

3.01 PREPARATION

- A. Lockout/Tagout of systems per Section 01110
- B. Pumpdown of glycol for waste disposition per Section 01550
- C. Evacuation of refrigerant condensing units for waste disposition per Section 01550

3.02 OPERATION

- A. Maintenance of the stack fan, AJ-117
- B. Maintenance of the HEPA filterbank (building ventilation exhaust)
- C. Monitoring of building differential air pressure(s)
- D. Removal of HVAC equipment

1. HVAC equipment shall be removed and packaged as waste in accordance with Section 01550, Waste Management.
 2. Equipment shall be removed to ensure the potential spread of radiological contamination is minimized prior to Phase II building demolition.
- E. Removal of Andover direct digital control (DDC) panels.
1. The DDC panels shall be salvaged for turnover to the Buyer where it is radiologically feasible. The Buyer's Radiological Control support personnel shall make the determination as to whether or not the system component can be readily salvaged. Intrusive decontamination by the Subcontractor shall not be required.

END OF SECTION

SECTION 01930
OTHER SYSTEMS

PART 1 GENERAL

1.01 SCOPE

- A. This section defines the work required to remove the following:
1. The 10,000 gallon Low Level Liquid Waste System (LLLW) located in Room 70.
 2. The Process Chill Water System for Building 38 located in Corridors 19 & 20.
 3. The Backup Air Compressor located in Corridor 20.
 4. The electric hot water heater and steam heat exchanger hot water heater located in Corridor 19 for domestic hot water.
 5. The small air compressor located in Corridor 19 for supporting HVAC controls in the building.
 6. The DC power wet cell battery racks and chargers located in Corridor 18 which supports the Fire Alarm and Detection System.
 7. The Breathing Air reserve tank located in Bay 1 which is supplied by the Powerhouse via overhead lines. This also includes breathing air lines and manifolds throughout the building.
 8. The domestic water system valve and backflow preventer located in Bay 1 which is supplied by the underground domestic (potable) water system. This also includes potable and process water lines and manifolds throughout the building.
 9. The passenger elevator located in Room 110 and its associated hydraulic system in Room 3.
 10. The freight elevator located in Room 138 and its associated hydraulic system in Room 12B.
 11. The sheetmetal decontamination enclosure, 20 feet x 20 feet x 10 feet high, located in Room 6W.
 12. The Stokes Vacuum pump with HEPA filter system located in Room 12A.
 13. The spare exhaust blower fan for the AJ-113 system.
 14. An Atlas-Copco air compressor system located under the west dock canopy.

15. Two rotary, positive displacement blowers located under the west dock canopy. Blowers provide vacuum for “fixed head” air sampler system within the building.
16. The vault with vault type door and an aqueous foam deterrent system located in Room 100.
17. All drains “above grade” within the interior of the building. These include Glovebox/fumehood liquid drain system, general floor drain system and sanitary drain system.
18. Numerous steam and condensate lines located in the basement of the building; generally associated with the HVAC systems.
19. This project is in two phases. Phase I work includes all decontamination, dismantlement and demolition activities accomplished while the integrity of the building “environmental envelope” is intact. This envelope consists of the building structure, the ability to maintain a negative pressure to the outside, the building exhaust air HEPA filter bank, and effluent monitoring of the discharge air from the filter bank to the outside environment. Phase II work includes all remaining activities performed after the building “environmental envelope” has been breached (i.e. ventilation shutdown and loss of negative pressure). This envelope system controls the spread of radioactive contamination in the building and prevents the release of radioactive contamination outside the building.

The 10,000 gallon Low Level Liquid Waste System, 1.01.A.1 could be a Phase I or Phase II removal; all remaining items in Other Systems in this section fall under Phase I.

1.02 RELATED SECTIONS

- A. Section 01110 Safety and Health
- B. Section 01130 Asbestos
- C. Section 01150 Work in Radiologically Contaminated Areas
- D. Section 01180 Respiratory Protection
- E. Section 01190 Environmental Compliance
- F. Section 01205 Authorization Basis
- G. Section 01460, Integrated Work Control
- H. Section 01550 Waste Management
- I. Special Conditions 3.1, Integrated Safety Management

1.03 REFERENCE MATERIALS

- A. Appendix A – Facility Characterization Report
- B. Appendix B – Drawings
- C. Appendix F - Photographs

1.04 REFERENCES, CODES, AND STANDARDS

- A. Occupational Safety & Health Administration (OSHA)
 - 1. 29 CFR 1926, Subpart T – Demolition - Sections 850-860
 - 2. 40 CFR 61, Subpart M, National Emission Standard for Asbestos
 - 3. 40 CFR 61, Subpart H, National Emission Standards for Emissions of Radionuclides Other than Radon from Department of Energy Facilities
 - 4. 10 CFR 835, Occupational Radiation Protection.
- B. DOE N441-1 Radiation Protection of the Public and the Environment
- C. Ohio Administrative Code (OAC): 3745-17-08 Restriction of Emission of Fugitive Dust
- D. Ohio Administrative Code (OAC): 3745-20, Asbestos Emission Control

1.05 SUBMITTALS

- A. Renovations involving asbestos and building demolitions (with or without asbestos) are subject to National Emission Standards for Hazardous Air Pollutants (NESHAPs) regulations. Federal regulatory authority has been delegated to the State of Ohio. For the Mound Plant, the requirements are administered by the Regional Air Pollution Control Agency (RAPCA) on behalf of the Ohio EPA (OEPA).

The Subcontractor shall submit notifications to RAPCA for the asbestos abatement portion of this demolition project. Notifications must be submitted to RAPCA two weeks before work is to begin in accordance with Section 01190, Environmental Safeguards and Compliance. The Subcontractor shall not proceed with asbestos abatement covered in this section until RAPCA associated activities are completed.

- B. The Subcontractor shall submit for approval Work Packages that covers Other System removals, and at a minimum, contains the items identified below. The Work Package shall be in accordance with the general requirements of the subcontract specifications including Sections 01300 Submittals and 01460 Integrated Work Control. The Subcontractor shall not proceed with Other System removals covered in this section until written approval is received regarding this **HOLD POINT** from the Buyer.

NOTE: Work Packages for Phase I activities will be reviewed and approved by the Buyer and made available to the DOE, USEPA and the OEPA on request. Work Packages for Phase II activities will be reviewed and approved by the Buyer, DOE, USEPA and OEPA. There are significant differences in review periods between the two phases. See Section 01300 Submittals and Section 01460 Integrated Work Control for specific details.

1. Detailed method and sequence of radiological decontamination, as applicable.
2. Detailed method and sequence for dismantlement and demolition, including equipment to be used, for the Other Systems covered under this section.
3. A Waste Management Plan that covers the Other System removals scope of work in this Section in accordance with Section 01550, Waste Management.
4. Verification of meeting all Environmental Compliance Department specific plan submittal requirements in accordance with Section 01190, Environmental Compliance. Examples include methods for dust control and control of contaminants; control of fugitive emissions; spill prevention and control.
5. Location of debris staging areas and equipment/material laydown areas.
6. Materials, such as surfactants, to be used.
7. Methods of cutting including lead-painted steel (where applicable) and equipment to be used.
8. Method for protecting lay down and cutting areas from contamination by lead paint chips and for controlling airborne radiological emissions.

1.06 SEQUENCING OF WORK

- A. The sequencing of work activities is at the Subcontractor's discretion with the exception of item 1.01.A.1, the 10,000 gallon Low Level Liquid Waste System. This system needs to be maintained to provide for the disposal of contaminated water from the project. Project breakdown by phases as described in paragraph 1.01.A.19 shall be followed. The 10,000 gallon Low Level Liquid Waste System could be a Phase I or Phase II removal; all remaining items in Other Systems in this section fall under Phase I.

In addition, there are activities/submittals listed below that must take place prior to dismantlement and demolition. These are **HOLD POINTS** and must be adhered to.

- B. Other Systems removal activities shall not begin until:
 1. Receipt of written Buyer approval of the Work Package that covers Other Systems removal or Work Packages covering individual segments of Other Systems.

2. RAPCA notifications and associated activities are completed.
3. Completion of all Utility Isolation and Removal activities that impact the Other Systems removal as covered in Section 01900.

1.07 BACKGROUND INFORMATION

- A. All items listed in this section have the potential for radioactive contamination although the equipment may be located in a “non-posted” area. Inaccessible surfaces under the items or internal to the items may be radioactively contaminated. “**HOLD POINTS**” must be incorporated into the work packages when these surfaces are exposed.
- B. Many of the items listed in the section were installed as part of the original building construction and have been abandoned in-place.

1.08 FACILITY DESCRIPTION

- A. Low Level Liquid Waste System (LLLW)
 1. The Low Level Liquid Waste System is described in drawing set 303812 (See Appendix B, Part 2, Building 38 Work Scope Supplemental Drawings, 19 drawings) from the firm of Bruce Menkel Consulting Engineers, dated 10-5-77 with a title “Low Risk Liquid Waste Transfer System – PP to WD”.
 2. The drawings describe a system which has been changed very little since the original installation and is still an operating system which must be maintained by the Subcontractor, see Section 01210 Facility Maintenance.
 3. An “over-the –road” tank truck is used to transport contaminated wastewater from Building 38 to the treatment facility on site. The tank truck is filled using a vacuum system located in Room 70 with the 10,000-gallon storage tank. The tank truck is placed under vacuum and the liquid is drawn from the tank to the truck. The sumps in Room 6E deliver contaminated water to the 10, 000-gallon tank.
 4. Room 70 is an addition to Building 38 with a common wall; however, the only penetrations through the wall are for piping and a 2’ x 2’ exhaust duct. Personnel entrance to Room 70 is from outside of Building 38.
 5. Room 70 has minimal ventilation associated with Building 38; therefore, the LLLW system currently sits outside the “environmental envelope” of the building. This will require special consideration in formulating the “disposal” design package.
 6. The 10,000-gallon tank is hot rolled carbon steel 9 feet in diameter x 21 feet long and designed for 15” Hg. Vacuum (ultrasonic measurement indicates ½” wall thickness). The interior of the tank is coated with PPG “coal cat” cold tar epoxy coating. The exterior is painted with PPG epoxy paint. The tank was originally placed in Room 70 by removing the roof panels and lowering the tank into the saddles.

7. The tank will typically accumulate radioactive contaminated sludge/residue in the bottom (heel). The sludge has not been cleaned from the tank since 1985, however no building D&D work has occurred since 1985.

B. Process Chill Water Systems

1. The current process cooling water system in Building 38 was installed by Slagle Mechanical Contractors in the autumn of 1986. It consists of four (4) separate fluid loops: the Building 95 central glycol system (newer than 1986, used to be a central "brine" system), the building chilled water system, the vault water system (potentially radioactive), and the tempered water system (slightly radioactive).
2. The central plant glycol system, from Building 95, is the primary cooling media, but it is backed up by the building chilled water system which is served by the 30 ton Carrier chiller in Corridor 20. The chiller and the two (2) chilled water pumps (one is a back-up) are on the Building 38 emergency power system. The control panel of the chiller unit is contaminated.
3. The plant glycol system and the chilled water system are uncontaminated and they pick up heat from the two actual process loops (vault water and tempered water) through special, double wall (tubes) heat exchangers located in Corridor 19.
4. The tempered water system was the process cooling water that served the nuclear labs in the building which includes: the corrosive vapor system refrigerant condenser in corridor 5A, the inert purifiers for F-Line in Corridor 17, and chill plates in the F-Line gloveboxes. The tempered water system was shutdown in 1999.
5. The vault system served a 2,500-gallon tank beneath the floor in Room 100. Building 38, Room 100 was the vault. The vault water system was shut down in 1992.
6. The tempered water system and the vault system each have two pumps located in corridor 19.
7. The various water loops are monitored by the building DDC system.
8. Upon isolation of the utility systems (see Section 01900), internal building lines shall be drained to prevent freezing.

C. Air Compressor

1. This is a 15 HP Worthington standard oil/piston type compressor. The compressor unit is mounted on top of a 400-gallon horizontal receiver tank. Unit has some minor surface contamination.
2. The compressor unit was used as a back-up unit when the plant air system went down. The compressor has not been activated in several years. Unit is located in Corridor 20.

D. Water Heaters

1. The primary source of hot water for the building is a steam heat exchanger unit (PK compact series 400) located in Corridor 19. Dual circulating pumps are located on the domestic water side of the heat exchanger.
2. Approximately one year ago, an electric water heater was installed in parallel with the steam heat exchanger. In the summer, steam to the building was shutdown for energy conservation and the electric water is utilized. Unit has an 80-gallon capacity and is located in Corridor 19.
3. Upon isolation of the utility systems (see Section 01900), internal building lines need to be drained to prevent freezing.

E. HVAC Air Compressor

1. This is a Champion standard oil/piston type compressor. The unit includes two individual compressors mounted on top of a 200-gallon horizontal receiver tank.
2. The unit is located in Corridor 19 and supports the DDC system and pneumatic HVAC controls.

F. DC Power Wet Cell

1. This is the back-up power system associated with the annunciater panel on the operations floor of the.
2. Refer to Section 01550 Waste Management for disposal of wet cell batteries, prior to disposal of electronics and cabinet unit.

G. Breathing Air System

1. The current breathing air system in the building is supplied by a central compressor at the plant powerhouse. This system will be isolated and removed from service (see Section 01900, Utilities Isolation and Removal).
2. The system includes a receiver tank in the NE corner of Bay 1 in the basement of the building. The tank is approximately 36" diameter and 72" long. The tank is 304 SS and is fed by a 2" SS line attached to the outside north wall of the building (from powerhouse source).
3. The building contains a 1 ½" copper line breathing air "loop" in the basement and operations floor; both loops connect to the receiver tank. There are ten breathing air stations in the basement and six stations on the operations floor.

H. Domestic Water System

1. A 4-inch domestic water line enters the NE corner of Bay 1 in the basement. The incoming line is connected to a 4-inch backflow preventer, which separates process water in the building from potable water in the building.
 2. The backflow preventer is tested on an annual basis.
 3. Upon isolation of the utility systems (see Section 01900), internal building lines need to be drained to prevent freezing.
- I. Passenger Elevator (V-102)
1. Passenger elevator V-102 is an Otis Elevator with a hydraulic ram and pump system.
 2. The elevator was installed with the building (late 1960's) and removed from service in May, 1996.
 3. The well hole associated with the cylinder is approximately 8.5 feet below the basement floor level. (See Drawing FSC010035).
 4. The rated capacity of the elevator is 2500 lbs.
 5. The 15 HP, 480v, 3 phase hydraulic pump unit with oil reservoir is located in the Room 3 adjacent to the elevator.
- J. Freight Elevator (V-101)
1. Freight elevator V-101 is an Otis Elevator with a hydraulic ram and pump system.
 2. The elevator was installed with the building (late 1960's) and removed from service in May 1996.
 3. The well hole associated with the cylinder is approximately 22.5 feet below the basement floor level. (See Drawing FSC010035).
 4. The rated capacity of the elevator is 3000 lbs.
 5. The 15 HP, 480v, 3 phase hydraulic pump unit with oil reservoir is located in the Room 12B adjacent to the elevator.
- K. Decontamination Enclosure
1. A sheetmetal enclosure (20'x20'x10'high) was fabricated in the early 1980's for "downsizing" contaminated materials for placement into waste boxes. The enclosure has not been used since the mid-1980's.
 2. The enclosure is located in Room 6W. Access to Room 6W is limited due to doorway openings; however, for any downsizing of equipment from Room 6E, the enclosure could be used.

L. Stokes Vacuum Pump

1. A 7 ½ HP Stokes Vacuum Pump located in Room 12A was used as a vacuum source for glovebox 607 in F-Line. This vacuum system has not run since 1980.
2. The vacuum line exiting the pump is six-inch pipe with two in-line filter housings. The 6” line exits Room 12A and into 12B where it goes up through the floor into Room 142W under glove box 607. See Section 01910, F-Line Glovebox Removal.

M. Spare Exhaust Blower

1. A spare exhaust fan for AJ-113 is located in Room 10 corridor; the unit has never been in service.
2. This unit may be “free released” from the building prior to D&D work starting in Room 10 corridor. The unit would be delivered to the salvage point (see Drawing FSC010029). After additional characterization by the Buyer, if unit is contaminated, it would be treated as LLW (see Section 01550 Waste Management.)

N. Atlas-Copco Air Compressor

1. This compressor was purchased in the early 1980’s to provide supplemental compressed air for various “scabbling” operations during the first D&D effort associated with Building 38.
2. The unit is located outside the building under the west canopy dock and has not run since 1985.
3. The unit may be “free released” since it was never inside the building. The unit would be delivered to the salvage point (see Drawing FSC010029). After additional characterization by the Buyer, if unit is contaminated, it would be treated as LLW (see Section 01550 Waste Management.)

O. Positive Displacement Blowers (2ea.)

1. Two 15 HP Fuller rotary vane compressors are located outside the building under the west dock canopy. These units provide the vacuum source for the “fixed” head filter sample units located throughout the building. Heads are checked on a periodic basis to monitor contamination levels. Only one rotary compressor is working at a time and the units are alternated on a periodic basis.
2. These units are currently functioning but they will be shutdown as part of the Utility Isolation (see section 01900).

P. Vault

1. Room 100 in the building was a storage vault, which was utilized to store radioactive

components in the past. The floor of the room was made up of removable metal plates, which provided access to a water pool beneath the floor. The water in the pool was circulated through a “cooling loop” (see section 1.08.C above). The water cooling system was deactivated and drained over ten years ago and plywood flooring replaced the metal plates.

2. The vault contained an aqueous foam deterrent system, which has been deactivated; however most of the system components are still in the vault. These components need to be removed prior to building demolition.

Q. Drains (above grade)

1. The original glovebox/fumehood drains were replaced with a double line system. The inner line is 1” to 2” polypropylene. The outer line is 3” to 4” polypropylene. See installation drawing FSE 910617 (See Drawing Index Appendix B, Part 2, Building 38, Work Scope Supplemental Drawings, 5 sheets) for piping layout and details.
2. Building 38 operations floor drain system includes piping that drains to the two sump tanks located in Room 6E. There are general floor drains, equipment drains, drinking fountain drains, and clean-outs. The drain lines have bell and spigot joints with lead oakum. Mixed waste will be generated during the removal of these joints. The drain system runs parallel to the webs of the T-beams, which form the support for the second floor. Many of these drains have been plugged at the floor level during past D&D activities. Two areas where additional concrete was added into the T-beam web area for shielding, the drains were plugged and cut from past D&D activities (corridors 17 & 20). With the exception of the drain openings being within the floor slab, most of the drain system is located below the floor and suspended from hangers between the webs of the beams.
3. These drain lines are assumed to be highly contaminated. The specific removal of these will have to be included in a Work Package covering these specific activities. See the Facility Characterization Report for further details.
4. Sanitary drains run along the north and east wall of the building and hang beneath the T-beams. The sanitary drain lines have bell and spigot joints with lead oakum. The potential for mixed waste exists during the removal of these joints. From the exterior, the sanitary drain lines look identical in construction to the contaminated floor drain system.

R. Steam, Condensate, and Reheat Water Lines

1. These lines are primarily used to supply the air handling units located in the basement, along the west wall. The reheat water lines supply various reheat coils throughout the building.
2. A large number of the steam and condensate lines are insulated with asbestos containing material (ACM).

3. Steam and condensate are utilized in the potable hot water heat exchanger located in Bay 19.
4. Steam and condensate were utilized as part of the Corrosive Vapor System located in Corridor 5A.
5. Upon isolation of the utility systems (see Section 01900), internal building lines shall be drained to prevent freezing.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. The Subcontractor shall supply all proper equipment necessary for the timely execution of the work in requisite numbers, sizes and capacity.
- B. The Subcontractor shall provide all incidentals and accessories as required for the proper execution of the work.
- C. The Subcontractor may utilize equipment items within this section for accomplishment of work with the prior approval of the buyer. Utilization of the equipment shall be “as is” condition; see Special Conditions, Article 1.10, Government Property Furnished “As Is”.
- D. Surfactants:
 1. CP-225 CHIL-SORB by Childers.
 2. Buyer approved equal.
- E. Encapsulants/Sealants:
 1. CP-240 CHIL-LOCK by Childers
 2. Certane 2050 by Certified Technologies
 3. Eppco #1 by Expert Environmental Products
 4. Serpiloc by International Protection Coatings Corp.
 5. Buyer approved equal.

PART 3 EXECUTION

3.01 PREPARATION

- A. The Subcontractor shall establish access controls to the project area using appropriate signs and barriers.

- B. The Subcontractor shall ensure that adequate laydown space has been cleared and barriers have been established.
- C. Items shall have contamination fixed, sealed or removed prior to dismantlement and if applicable, prior to removing local containment, negative ventilation or building enclosures, in accordance with Section 01150, Work in Radiologically Contaminated Areas.

3.02 APPLICATION

- A. Cutting:
 - 1. The Subcontractor shall utilize all methods available to perform activities with a minimum of dust production.
 - 2. Subcontractor shall apply mechanical means of cutting to the largest extent possible while avoiding damage to adjacent structures, components, equipment, and utilities.
 - 3. Lead-based paint chips and debris, released during demolition, shall be collected and managed in accordance with Section 01550, Waste Management.
 - 4. Because of contamination levels, some concrete may require local containment for cutting activities.
 - 5. All material shall be reduced in size as required for containerization or transfer as bulk waste in accordance with Section 01550 Waste Management.

3.03 MAJOR WORK ACTIVITIES

- A. The major work activities consist of (1) Safe Shutdown, and (2) and Equipment Removal.
 - 1. Safe Shutdown
 - a. Remove all equipment, tools, debris, etc. from fumehoods, remove furniture from the rooms, remove all miscellaneous process items and disconnect fumehoods.

CAUTION: Do not terminate various exhaust ducts until the equipment has been removed. The ventilation system is to continue to operate until the items of equipment have been removed from the area. Air from the room is removed through the ventilation system and is used in maintaining negative pressure in the room.
 - 2. Equipment Removal
 - a. Remove LLLW system.

- b. Remove various compressor systems (capture freon).
- c. Remove various process chill water system components.
- d. Remove elevator support equipment (drain hydraulic oil).
- e. Remove all piping, instrumentation, conduit, etc. related to these systems.
- f. Remove various vacuum system equipment (drain vac pump oil)
- g. Remove fumehoods and bases.

3.04 QUALITY ASSURANCE

- A. The Subcontractor shall inspect debris generation, stockpiling and containerization to ensure that all materials have been cut to meet size criteria and are being managed in accordance with Section 01550, Waste Management.

3.05 FINAL INSPECTION AND ACCEPTANCE

- A. Subcontractor shall perform a final inspection with the Buyer to ensure that the completed work satisfies all contractual requirements. A written punchlist will be made of those items or conditions not approved. Upon completion of a satisfactory inspection, the work will be accepted.
- B. When the work designated in the work package is completed, a post-job briefing will be conducted and documented so that Lessons Learned can be communicated on issues which other groups can use to avoid mistakes and/or improve work results by incorporation of areas of success.

END OF SECTION

SECTION 01935

BUILDING 38 DISMANTLEMENT AND DEMOLITION

PART 1 GENERAL

1.01 SCOPE

- A. This section covers all above-grade dismantlement and demolition of Building 38 concrete/masonry, structural steel, and roofing, including but not limited to:
1. Cast-in place walls and floors
 2. Pre-stressed columns, girders, and tee sections
 3. Masonry block walls
 4. Built-up insulated asphalt roof
 5. Structural steel items including but not limited to miscellaneous support structures, handrails, stairs, walkways, canopies, platforms, large doors, overhead/monorail crane rails, ventilation louvers and framed wall openings.
- B. Building 38 Structure Description
1. Building 38 is a two-story structure with an approximate floor space of 44,000 square feet. The First Floor is constructed of poured-in-place reinforced concrete and pre-stressed concrete structures. The Second Floor is constructed of poured-in place reinforced concrete, pre-stressed concrete columns and beams, pre-stressed concrete double tee sections, and concrete block. The Roof is constructed of pre-stressed concrete double tee sections and a poured concrete cap with an insulated built-up membrane of asphalt. (See Drawings in Appendix B, Part 3).
- C. The items covered under this section are considered sources of potential radiological contamination and releasable inventory. Consult Section 01150; Work in Radiologically Contaminated Areas and Appendix A, Facility Characterization Report, for detailed information.

1.02 WORK PHASES

- A. This project is in two phases. Phase I work includes all decontamination, dismantlement and demolition activities accomplished while the integrity of the building “environmental envelope” is intact. This envelope consists of the building structure, the ability to maintain a negative pressure to the outside, the building exhaust air HEPA filter bank, and effluent monitoring of the discharge air from the filter bank to the outside environment. Phase II work includes all remaining activities performed after the building “environmental envelope” has been breached (i.e. ventilation shutdown and loss of

negative pressure). This envelope system controls the spread of radioactive contamination in the building and prevents the release of radioactive contamination outside the building.

1.03 RELATED SECTIONS

- A. Section 01010 Summary of Work
- B. Section 01110 Safety and Health
- C. Section 01150 Work in Radiologically Contaminated Areas
- D. Section 01190 Environmental Compliance
- E. Section 01480 Integrated Work Control
- F. Section 01550 Waste Management
- G. Section 01925 Ventilation / Exhaust Systems
- H. Section 01940 Building 38 Stack Decontamination, Dismantlement and Demolition
- I. Section 01945 Below Grade Removals

1.04 REFERENCE MATERIALS

- A. Appendix A Reconnaissance Characterization Report
- B. Appendix B Drawings
- C. Appendix F Photographs

1.05 REFERENCES, CODES, AND STANDARDS

- A. Occupational Safety & Health Administration (OSHA)
 - 1. 29 CFR 1926, Subpart T – Demolition - Sections 850-860
 - 2. 40 CFR 61, Subpart M, National Emission Standard for Asbestos
 - 3. 40 CFR 61, Subpart H, National Emission Standards for Emissions of Radionuclides Other than Radon from Department of Energy Facilities
 - 4. 10 CFR 835, Occupational Radiation Protection.
- B. National Fire Protection Association (NFPA):
 - 1. NFPA 101A-98 Code for Safety to Life from Fire in Buildings and Structures

- 2. NFPA 241-93 Standard for Safeguarding Construction, Alteration and Demolition activities.
- C. DOE N441-1 Radiation Protection of the Public and the Environment
- D. Ohio Administrative Code (OAC): 3745-17-08 Restriction of Emission of Fugitive Dust
- E. Ohio Administrative Code (OAC): 3745-20 Asbestos Emission Control

1.06 SUBMITTALS

- A. Renovations involving asbestos and building demolitions (with or without asbestos) are subject to National Emission Standards for Hazardous Air Pollutants (NESHAPs) regulations. Federal regulatory authority has been delegated to the State of Ohio. For the Mound Plant, the requirements are administered by the Regional Air Pollution Control Agency (RAPCA) on behalf of the Ohio EPA (OEPA).

The Subcontractor shall submit notifications to RAPCA for this demolition project in accordance with Section 01190, Environmental Compliance. The Subcontractor shall not proceed with Building 38 decontamination, dismantlement, and demolition activities covered in this section until all associated RAPCA notifications are satisfied.

- B. Radionuclide emissions from DOE facilities to the atmosphere are subject to regulation by the U. S. EPA. The impact from DOE air emissions to any member of the public cannot exceed 10 mrem/year. Based on contractual agreements and other remediation work onsite, the Subcontractor cannot exceed 4.0 mrem/year for Building 38 demolition activities. Activities with the potential to result in an effective dose equivalent (EDE) > 0.1 mrem/year to a member of the public require U.S. EPA approval.

The Subcontractor shall calculate and provide to the buyer, a radionuclide inventory for all equipment and structure demolitions associated with this section. With this information, the Buyer will perform a NESHAPs emissions standards analysis for Building 38 dismantlement and demolition activities. Should this analysis exceed the NESHAPs emissions standard for release to the public, the subcontractor may have to perform area decontamination to bring the levels below the approved standard.

Then, per NESHAPs (40 CFR 61 Subpart H), the Buyer shall submit a request for approval of the Subcontractor's work package from the USEPA to proceed with the project based on the results of the above NESHAPs analysis. USEPA approval would be part of the 6-month lead-time for work package approval process.

- C. The Subcontractor shall submit for approval a Work Package that covers Building 38 Dismantlement and Demolition, and at a minimum, contains the items identified below. The Work Package shall be in accordance with the general requirements of the subcontract specifications including Sections 01300 Submittals and 01460 Integrated Work Control. The Subcontractor shall not proceed with Building 38 dismantlement and demolition covered in this section until written approval is received regarding this **HOLD POINT** from the Buyer.

NOTE: Work Packages for Phase I activities will be reviewed and approved by the Buyer and made available to the DOE, USEPA and the OEPA on request. Work Packages for Phase II activities will be reviewed and approved by the Buyer, DOE, USEPA and OEPA. There are significant differences in review periods between the two phases. See Section 01300 Submittals and Section 01460 Integrated Work Control for specific details.

1. Detailed method and sequence of radiological decontamination, as applicable.
2. Detailed method and sequence of performing radionuclide inventory activities for Buyer NESHAPs analysis.
3. Detailed method and sequence for dismantlement and demolition of Building 38 and associated items covered under this section, including equipment to be used.
4. A Waste Management Plan that covers the Building 38 Dismantlement and Demolition scope of work in this Section in accordance with Section 01550, Waste Management.
5. Verification of meeting all Environmental Compliance Department specific plan submittal requirements in accordance with Section 01190, Environmental Compliance. Examples include methods for dust control and control of contaminants; control of fugitive emissions; spill prevention and control; and storm water and erosion control.
6. Method for verifying that all previous steps of the demolition process have been performed including the isolation of utilities to the building.
7. Location of debris staging areas and equipment/material laydown areas.
8. Method of protecting existing above-grade and below-grade services and utilities.
9. Methods for dust control and control of contaminants, including control of fugitive emissions in accordance with Section 01190, Environmental Compliance.
10. Materials, such as surfactants, to be used.
11. Methods of cutting including lead-painted steel and equipment to be used.
12. Method for protecting lay down and cutting areas from contamination by lead paint chips and for controlling airborne radiological emissions.

1.07 SEQUENCING OF WORK

- A. The sequencing of work activities is at the Subcontractor's discretion. The general sequence of work will potentially involve the following activities: Work Package submittal and approval process; possible decontamination activities; radionuclide inventory activities; NESHAPs submittal and approval process based on inventory numbers and dismantlement, demolition and notification activities.

1. Project breakdown by phases as described in paragraph 1.02 shall be followed. The Building 38 dismantlement and demolition activities as covered in this section fall under Phase II.
 2. In addition, there are activities/submittals listed below that must take place prior to dismantlement and demolition. These are HOLD POINTS and must be adhered to.
- B. Prior to demolition of the building, all tritium exit lights shall be removed, segregated and transferred to the Buyer.
- C. Building 38 decontamination, dismantlement and demolition activities shall not begin until:
1. Receipt of written Buyer approval of the Decontamination, Dismantlement, and Demolition Work Package discussed in paragraph 1.06C.
 2. The NESHAPs analysis is completed and, if required, approval is received from the U.S. EPA. See Section 01190, Environmental Compliance for further details regarding this subject.
 3. RAPCA notifications and associated activities are completed.
 4. Completion of Utility Isolation and Removal activities that impact the building and its systems as covered in Section 01900.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. The Subcontractor shall supply all equipment necessary for the timely execution of the work in requisite numbers, sizes and capacity.
- B. The Subcontractor shall provide all incidentals and accessories as required for the execution of the work.
- C. Surfactants:
1. CP-225 CHIL-SORB by Childers.
 2. Buyer approved equal.
- D. Encapsulants/Sealants:
1. CP-240 CHIL-LOCK by Childers
 2. Certane 2050 by Certified Technologies
 3. Eppco #1 by Expert Environmental Products
 4. Serpiloc by International Protection Coatings Corp.
 5. Buyer approved equal.

PART 3 EXECUTION

3.01 PREPARATION

- A. The Subcontractor shall establish access controls to the project area using appropriate signs and barriers.
- B. The Subcontractor shall ensure that adequate laydown space has been cleared and barriers have been established.
- C. The Subcontractor shall be responsible to ensure that the control measures are in place throughout the course of the project for slope protection and controls to reduce erosion, sedimentation, and water pollution through the use of erosion control devices in accordance with Section 01190, Environmental Compliance.
- D. In accordance with Section 01190, Environmental Compliance, the Subcontractor shall take precautions to control fugitive emissions.
- E. Items shall have contamination fixed or removed prior to dismantlement and if applicable, prior to removing local containment, negative ventilation or building enclosures, in accordance with Section 01150, Work in Radiologically Contaminated Areas.

3.02 APPLICATION

- A. The contractor shall prevent damage to adjacent structures, materials, and equipment including overhead and underground utilities during demolition activities. Activities to fell concrete structures outside their footprint require prior approval. Activities to fell concrete structures shall maintain the integrity of porous surfaces to the extent practical to minimize dispersal of debris. If concrete dust is generated as a result of demolition operations (due to crumbling, etc.), dust suppression techniques must be employed during demolition and, if necessary, during transportation.
- B. Cutting:
 - 1. The Subcontractor shall utilize all methods available to perform activities with a minimum of dust production.
 - 2. Subcontractor shall apply mechanical means of cutting and removing concrete/masonry and structural steel to the largest extent possible while avoiding damage to adjacent structures, components, equipment, and utilities.
 - 3. Lead-based paint chips and debris, released during structural steel demolition, shall be collected and managed in accordance with Section 01550, Waste Management.
 - 4. All material shall be reduced in size as required for containerization or transfer as bulk waste in accordance with Section 01550 Waste Management.
 - 5. Embedded steel reinforcing is considered part of concrete. Reinforcing bar/mesh shall be cut to less than 1 ft. from concrete mass.

6. Because of contamination levels, some concrete may require local containment for cutting activities.
7. Use of explosives is prohibited.

3.03 SPECIAL INSTRUCTIONS

A. Doors

1. The Subcontractor shall remove all doors (wood and/or steel) and place them in appropriate containers (see Section 01550, Waste Management).

B. Lead Materials

1. The Subcontractor shall segregate all lead materials (e.g., flashing, vent stacks, pipe joint materials, etc.) and place them in appropriate containers in accordance with Section 01550, Waste Management.
2. Prior to torch cutting on a surface coated with a lead-based paint, an eight-inch strip of paint shall be removed at the area of the cut (e.g., 4 inches on each side of cut). All removal of lead-based paint shall be performed in accordance with the OSHA construction standard for lead (29 CFR 1926.62).

C. Wall and Roof Louvers

1. The Subcontractor shall remove louvers and roof vents during exterior concrete/masonry removal and place in appropriate containers (see Section 01550, Waste Management).

D. Roofing

1. All roofing materials shall be demolished with the concrete roof structure wherever possible. Asphalt-based roofing materials are assumed to contain asbestos and shall be handled in accordance with the EPA NESHAP regulation (40 CFR 61, subpart M) and OSHA (29 CFR 1926.1101).

3.04 QUALITY ASSURANCE

- A. The Subcontractor shall inspect debris generation, stockpiling and containerization to ensure that all materials have been cut to meet size criteria and are being managed in accordance with Section 01550, Waste Management.

3.05 FINAL INSPECTION AND ACCEPTANCE

- A. Subcontractor shall perform a final inspection with the Buyer to ensure that the completed work satisfies all contractual requirements. A written punchlist will be made of those items or conditions not approved. Upon completion of a satisfactory inspection, the work will be accepted.

- B. Upon completion and acceptance of the work, the Subcontractor shall promptly remove all equipment, excess materials, and supplies from the work area (as applicable) and as otherwise noted on drawings and specifications.

END OF SECTION

SECTION 01940

BUILDING 38 STACK DECONTAMINATION, DISMANTLEMENT AND DEMOLITION

PART 1 GENERAL

1.01 SCOPE

- A. This section covers all Building 38 Stack above-grade decontamination, dismantlement and demolition activities including:
1. Brick and mortar walls reinforced with wire mesh and rebar with coating on the inside face.
 2. Structural steel platforms and ladders.
 3. Aircraft lights, lightning arrestor system.
 4. Stack monitoring and sampling instrumentation and equipment, including the concrete structure that houses these items.
 5. Exhaust duct and supports from Building 38 to the plenum, the exhaust plenum with support platform and the stack exhaust fan, AJ-117.

NOTE: The Building 38 exhaust and ventilation system is divided into two parts.
Part 1. This part is defined as all exhaust and ventilation components physically located inside the building and upstream of and including the Building Exhaust HEPA Filter Bank and associated exhaust fan AJ-113.
Part 2. This part of the system includes all exhaust and ventilation components that are physically located outside the building and downstream of the HEPA Filter Bank. This section, 01940, covers the dismantlement and demolition activities associated with Part 2 exhaust and ventilation system components. All other exhaust and ventilation system components are considered Part 1 and are covered under Section 01925, Ventilation/Exhaust Systems.

- B. Building 38 Stack Structure Description
1. The Building 38 stack, also called the SM stack, is a masonry process exhaust stack that served SM Building prior to the building's demolition. It currently serves Building 38, and is located approximately 70 feet away.
 2. The stack is 200 feet tall with an outer diameter of approximately 16 feet at the base that tapers to an outer diameter of approximately 7 feet at the top. The wall thickness is 18 inches at the base and 8 inches at the top. (See Drawing FSC010033.)

The stack is constructed of bricks and mortar, reinforced with wire mesh and rebar. It

is coated on the inside face with Gilsonite. Based on a 1991 Engineering study, the Gilsonite is present on the interior surface primarily on the bricks with little on the mortar joints.

The stack is supported by a reinforced concrete base pad that is 8 ft deep in three steps, 4 ft, 2 ft and 2 ft. (See Drawing FSC010034.)

There are three openings in the stack: the 2 ft x 3 ft manway at the base of the stack, the 8 ft x 4 ft air inlet duct opening at the 16 ft-to-24 ft elevation, and two air monitoring probe holes at the 104 ft elevation.

Two structural steel platforms are located on the stack, one at the 100-ft elevation and the other at approximately 192 feet. Both are accessible from the ground by a ladder with safety cage and safety tie-on.

In addition, aircraft lights are located on the platforms and a lightning arrestor system with four lightning rods and a ground wire are attached.

The Building 38 stack also includes the 48-in. diameter exhaust duct and associated support structure from Building 38 to the plenum, the exhaust plenum with support platform, and the stack exhaust fan. The ductwork is generally welded 1/8" thick carbon steel. The plenum is fabricated from a minimum 18-gauge carbon steel.

NOTE: The Stack is part of an active system that makes up the negative pressure environmental envelope of the building. Activities on this system must be sequenced. See paragraph 1.02 for further detail.

- C. The components covered under this section are considered sources of potential radiological contamination and releasable inventory. Consult Section 01150, Work in Radiologically Contaminated Areas and Appendix A, Reconnaissance Level Characterization Report, for detailed information.

1.02 WORK PHASES

- A. This project is in two phases. Phase I work includes all decontamination, dismantlement and demolition activities accomplished while the integrity of the building "environmental envelope" is intact. This envelope consists of the building structure, the ability to maintain a negative pressure to the outside, the building exhaust air HEPA filter bank, and effluent monitoring of the discharge air from the filter bank to the outside environment. Phase II work includes all remaining activities performed after the building "environmental envelope" has been breached (i.e. ventilation shutdown and loss of negative pressure). This envelope system controls the spread of radioactive contamination in the building and prevents the release of radioactive contamination outside the building.

1.03 RELATED SECTIONS

- A. Section 01010 Summary of Work

- B. Section 01110 Safety and Health
- C. Section 01150 Work in Radiologically Contaminated Areas
- D. Section 01190 Environmental Compliance
- E. Section 01480 Integrated Work Control
- F. Section 01550 Waste Management
- G. Section 01925 Ventilation / Exhaust Systems
- H. Section 01935 Building 38 Dismantlement and Demolition
- I. Section 01945 Below Grade Removals

1.04 REFERENCE MATERIALS

- A. Appendix A Reconnaissance Level Characterization Report
- B. Appendix B Drawings
- C. Appendix F Photographs

1.05 REFERENCES, CODES, AND STANDARDS

- A. Occupational Safety & Health Administration (OSHA)
 - 1. 29 CFR 1926, Subpart T – Demolition - Sections 850-860
 - 2. 40 CFR 61, Subpart M – National Emission Standard for Asbestos
 - 3. 40 CFR 61, Subpart H – National Emission Standards for Emissions of Radionuclides Other than Radon from Department of Energy Facilities
 - 4. 10 CFR 835, Occupational Radiation Protection.
- B. National Fire Protection Association (NFPA):
 - 1. NFPA 101A-98 Code for Safety to Life from Fire in Buildings and Structures
 - 2. NFPA 241-93 Standard for Safeguarding Construction, Alteration and Demolition activities.
- C. DOE N441-1 Radiation Protection of the Public and the Environment
- D. Ohio Administrative Code (OAC): 3745-17-08 Restriction of Emission of Fugitive Dust
- E. Ohio Administrative Code (OAC): 3745-20 Asbestos Emission Control

1.06 SUBMITTALS

- A. Renovations involving asbestos and building demolitions (with or without asbestos) are subject to National Emission Standards for Hazardous Air Pollutants (NESHAPs) regulations. Federal regulatory authority has been delegated to the State of Ohio. For the Mound Plant, the requirements are administered by the Regional Air Pollution Control Agency (RAPCA) on behalf of the Ohio EPA (OEPA).

The Subcontractor shall submit notifications to RAPCA for this stack demolition project. Notifications must be submitted to RAPCA two weeks before work is to begin, in accordance with Section 01190, Environmental Compliance. The Subcontractor shall not proceed with Building 38 Stack decontamination, dismantlement, and demolition activities covered in this section until RAPCA associated activities are completed.

- B. Radionuclide emissions from DOE facilities to the atmosphere are subject to regulation by the U. S. EPA. The impact from DOE air emissions to any member of the public cannot exceed 10 mrem/year. Based on contractual agreements and other remediation work onsite, the Subcontractor cannot exceed 4.0 mrem/year for Building 38 stack demolition activities. Activities with the potential to result in an effective dose equivalent (EDE) > 0.1 mrem/year to a member of the public require U.S. EPA approval.

The Subcontractor shall calculate and provide to the buyer, a radionuclide inventory for all equipment and structure demolitions associated with this section. With this information, the Buyer will perform a NESHAPs emissions standards analysis for Stack dismantlement and demolition activities. Should this analysis exceed the NESHAPs emissions standard for release to the public, the subcontractor may have to perform stack decontamination to bring the levels below the approved standard.

Then, per the NESHAPs (40 CFR 61 Subpart H), the Buyer shall submit a request for approval of the Subcontractor's work package from the U.S. EPA to proceed with the project based on the results of the above NESHAPs analysis. USEPA approval would be part of the 6 month lead time for work package approval process.

- C. The Subcontractor shall submit for approval a Building 38 Stack Decontamination, Dismantlement and Demolition Work Package, which contains, at a minimum, the items identified below. The Work Package shall be in accordance with the general requirements of the subcontract specifications including Sections 01300 Submittals and 01460 Integrated Work Control. The Subcontractor shall not proceed with Building 38 Stack decontamination, dismantlement, and demolition activities covered in this section until written approval is received from the Buyer.

NOTE: Work Packages for Phase I activities will be reviewed and approved by the Buyer and DOE and made available to the USEPA and the OEPA on request. Work Packages for Phase II activities will be reviewed and approved by the Buyer, DOE, USEPA and OEPA. There are significant differences in review periods between the two phases. See Section 01300 Submittals and Section 01460 Integrated Work Control for specific details.

1. Detailed method and sequence of radiological decontamination of the inside face of the stack and other areas, as applicable. (see Appendix A, Facility Characterization Report.)
2. Detailed method and sequence of performing radionuclide inventory activities for Buyer NESHAPs analysis.
3. Detailed method and sequence for dismantlement and demolition, including equipment to be used, of all Building 38 Stack masonry, structural steel, air handling equipment and electrical items covered under this section.
4. A Waste Management Plan that covers the Building 38 Stack Decontamination, Dismantlement and Demolition scope of work in this Section in accordance with Section 01550, Waste Management.
5. Verification of meeting all Environmental Compliance Department specific plan submittal requirements in accordance with Section 01190, Environmental Compliance. Examples include methods for dust control and control of contaminants; control of fugitive emissions; spill prevention and control; and storm water and erosion control.
6. Method for verifying that all previous steps of the demolition process have been performed including the isolation of utilities to the stack and its components.
7. Location of debris staging areas and equipment/material laydown areas.
8. Method of protecting existing above-grade and below-grade services and utilities.
9. Materials, such as surfactants, to be used.
10. Method of size/volume reduction in accordance with Section 01550, Waste Management.
11. Method for protecting lay down and cutting areas from radiological contamination, lead paint chips and for controlling airborne radiological emissions.

1.07 SEQUENCING OF WORK

- A. The sequencing of work activities is at the Subcontractor's discretion. The general sequence of work will potentially involve the following activities: Work Package submittal and approval process; possible decontamination activities; radionuclide inventory activities; NESHAPs submittal and approval process based on inventory numbers and dismantlement, demolition, and notification activities.

Project breakdown by Phases as described in paragraph 1.02 shall be followed. The Building 38 Stack decontamination, dismantlement and demolition activities as covered in this section fall under Phase II.

In addition, there are activities/submittals listed below that must take place prior to

dismantlement and demolition. These are HOLD POINTS and must be adhered to.

- A. Building 38 Stack decontamination, dismantlement and demolition activities shall not begin until:
 - 1. Receipt of written Buyer approval of the Decontamination, Dismantlement, and Demolition Work Package discussed in paragraph 1.05.
 - 2. The NESHAPs analysis is completed and (if required) approval is received from the U.S. EPA. See Section 01190, Environmental Compliance for further details regarding this subject.
 - 3. RAPCA notifications and associated activities are completed.
 - 4. Completion of all Utility Isolation and Removal activities that impact the stack and its system components as covered in Section 01900.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. The Subcontractor shall supply all proper equipment necessary for the timely execution of the work in requisite numbers, sizes and capacity.
- B. The Subcontractor shall provide all incidentals and accessories as required for the proper execution of the work.
- C. Surfactants:
 - 1. CP-225 CHIL-SORB by Childers.
 - 2. Buyer approved equal.
- D. Encapsulants/Sealants:
 - 1. CP-240 CHIL-LOCK by Childers
 - 2. Certane 2050 by Certified Technologies
 - 3. Eppco #1 by Expert Environmental Products
 - 4. Serpiloc by International Protection Coatings Corp.
 - 5. Buyer approved equal.

PART 3 EXECUTION

3.01 PREPARATION

- A. The Subcontractor shall establish access controls to the project area using appropriate signs and barriers.
- B. The Subcontractor shall ensure that adequate laydown space has been cleared and barriers have been established.
- C. The Subcontractor shall be responsible to ensure that the proper control measures are in place throughout the course of the project for slope protection and controls to reduce erosion, sedimentation, and water pollution through the use of erosion control devices in accordance with Section 01190, Environmental Compliance.
- D. In accordance with Section 01190, Environmental Compliance, the Subcontractor shall take precautions to control fugitive emissions.
- E. In general, items shall have radiological contamination fixed or removed prior to dismantlement and if applicable, prior to removing local containment, negative ventilation or building enclosures, in accordance with Section 01150, Work in Radiologically Contaminated Areas.
- F. Cutting:
 - 1. The Subcontractor shall utilize all methods available to perform activities with a minimum of dust production, such as mechanically dismantling duct flanges by removing the flange bolts and nuts.
 - 2. The Subcontractor shall apply mechanical means of cutting and removing concrete/masonry, structural steel, and exhaust system components to the largest extent possible while avoiding damage to adjacent structures, components, equipment, and utilities.
 - 3. Lead-based paint chips and debris, released during exhaust system dismantlement (i.e. ductwork, exhaust fan, plenum, and structural steel), shall be collected and managed in accordance with Section 01550, Waste Management.
 - 4. All material shall be reduced in size as required for containerization or transfer as bulk waste in accordance with Section 01550 Waste Management.
 - 5. All material shall be reduced in size as required for containerization or transfer as bulk waste in accordance with Section 01550 Waste Management.
 - 6. Embedded steel reinforcing is considered part of concrete. Reinforcing bar/mesh shall be cut to less than 1 ft. from concrete mass.
 - 7. Because of radiological contamination levels, some concrete may require local containment for cutting activities.
 - 8. Use of explosives is prohibited.

3.02 SPECIAL INSTRUCTIONS

A. Sampling Equipment and Instrumentation

1. With reference to paragraph 1.02, Work Phases, when the Building 38 Negative Pressure Environmental Envelope is permanently breached, the Buyer will remove certain Stack Sampling Instrumentation and Equipment pieces from the stack platforms and the concrete instrumentation and equipment housing just west of the stack. Any remaining items encountered during stack dismantlement and demolition are considered waste and should be disposed of according to Section 01550, Waste Management. The concrete housing should be demolished as part of this section as well.

B. Lead Materials

1. Prior to torch cutting on a surface coated with a lead-based paint, an eight-inch strip of paint shall be removed at the area of the cut (e.g., 4 inches on each side of cut).

3.03 QUALITY ASSURANCE

- A. The Subcontractor shall inspect debris generation, stockpiling and containerization to ensure that all materials have been cut to meet size criteria and are being managed in accordance with Section 01550, Waste Management.

3.04 FINAL INSPECTION AND ACCEPTANCE

- A. Subcontractor shall perform a final inspection with the Buyer to ensure that the completed work satisfies all contractual requirements. A written punchlist will be made of those items or conditions not approved. Upon completion of a satisfactory inspection, the work will be accepted.
- B. Upon completion and acceptance of the work, the Subcontractor shall promptly remove all equipment, excess materials, and supplies from the work area (as applicable) and as otherwise noted on drawings and specifications.

END OF SECTION

SECTION 01945

BELOW GRADE REMOVALS

PART 1 GENERAL

1.01 SCOPE

- A. This section includes descriptions of below grade structures to be removed. Brief descriptions of associated radiological contamination are also included. More complete descriptions of contamination conditions are found in the Characterization Report (Appendix A).
- B. Below Grade Removals include the removal of utility piping and services below the floor slab associated with Building 38. (See Drawing FSC010037.)
- C. The SM West Asphalt Area (See Drawing FSC010037) functions as a non-regulated site administrative control over radiologically contaminated soils. At all times during this project, this area shall be maintained in an intact configuration and protected from damage. Should disturbance of this area be required to allow for structure removal, a plan must be approved by the Buyer that describes how the asphalt disturbance activities will be carried out.
- D. Building 38
 1. The ductbank from the emergency generator and substation to the building motor control center (MCC) is ^{238}Pu contaminated. Readings taken during past D&D efforts in this area were greater than 200,000-dpm/100 sq. cm. and were sealed in place.
 2. There are various trenches, pits and sumps within the base slab of the building. These include a sanitary sewer sump associated with a toilet and lift pump; an electrical service trench located at the underside of MCC and the pits and hydraulic cylinders associated with the building elevator system.
 3. The Building 38 floor drain system includes piping that drains to the two sumps located in Room 6E or the storm drain system. See Drawings FSC010042 and FSC010043 for specific details.
 - a. There are general floor drains, equipment drains, drinking fountain drains, and clean-outs.
 - b. The drain lines have bell and spigot joints with lead oakum.
 - c. Mixed waste will be generated during the removal of these joints.
 - d. The drain system runs perpendicular to the building footers and second floor support walls. Many of these drains have been plugged at the floor level during past D&D activities.

- e. With the exception of the drain openings being within the floor slab, most of the drain system is located below the floor slab within the soil/gravel fill.
 - f. The drain lines and sumps are expected to have radiological contamination with the potential of being treated as TRU waste. Their removal shall be included in a Work Package covering these specific activities.
4. Building 38 elevator includes removal of elevator shaft lift piston and packaging, containerizing and storage of oils.

1.02 WORK PHASES

- A. This project is in two phases. Phase I work includes all decontamination, dismantlement and demolition activities accomplished while the integrity of the building “environmental envelope” is intact. This envelope consists of the building structure, the ability to maintain a negative pressure to the outside, the building exhaust air HEPA filter bank, and effluent monitoring of the discharge air from the filter bank to the outside environment. Phase II work includes all remaining activities performed after the building “environmental envelope” has been breached (i.e. ventilation shutdown and loss of negative pressure). This envelope system controls the spread of radioactive contamination in the building and prevents the release of radioactive contamination outside the building.

Below Grade Removals could be a Phase I, Phase II or combination removal.

1.03 RELATED SECTIONS

- A. Section 01150 Work in Radiologically Contaminated Areas
- B. Section 01190 Environmental Safeguards and Compliance
- C. Section 01550 Waste Management
- D. Section 01935 Building 38 Dismantlement and Demolition
- E. Section 01940 Building 38 Stack Decontamination, Dismantlement and Demolition

1.04 REFERENCE MATERIALS

- A. Appendix A Facility Characterization Report
- B. Appendix B Drawings
- C. Appendix F Photographs

1.05 REFERENCES, CODES, AND STANDARDS

- A. Occupational Safety & Health Administration (OSHA)
 - 1. 29 CFR 1926, Subpart T – Demolition - Sections 850-860
- B. Environmental Protection Agency
 - 1. 40 CFR 61, Subpart M, National Emission Standard for Asbestos
 - 2. 40 CFR 61, Subpart H, National Emission Standards for Emissions of Radionuclides Other than Radon from Department of Energy Facilities
- C. 10 CFR 835, Occupational Radiation Protection
- D. DOE N441-1 Radiation Protection of the Public and the Environment
- E. Ohio Administrative Code (OAC): 3745-17-08 Restriction of Emission of Fugitive Dust

1.06 SUBMITTALS

- A. As noted in Section 01460 Integrated Work Control, it is the Subcontractor’s discretion regarding the number of Work Packages submitted and utilized on this project. However, a Work Package shall be submitted that includes all Below Grade Removals, containing at a minimum, the items identified below. The Work Package shall be in accordance with the general requirements of the subcontract specifications including Sections 01300 Submittals and 01460 Integrated Work Control. The Subcontractor shall not proceed with Below Grade Removals covered in this section until written approval is received regarding this **HOLD POINT** from the Buyer.

NOTE: Work Packages for Phase I activities will be reviewed and approved by the Buyer and made available to the DOE, USEPA and the OEPA on request. Work Packages for Phase II activities will be reviewed and approved by the Buyer, DOE, USEPA and OEPA. There are significant differences in review periods between the two phases. See Section 01300 Submittals and Section 01460 Integrated Work Control for specific details.

- 1. Detailed method and sequence of all Below Grade Removals and Disposal, including equipment to be used, as covered under this section.
- 2. Method for verifying that all previous steps of the demolition process have been performed including the isolation of utilities in the area (as applicable).
- 3. Methods for ensuring that the proper control measures are in place throughout the course of the project for slope protection and controls to reduce erosion, sedimentation, and water pollution through the use of erosion control devices in accordance with Section 01190, Environmental Safeguards and Compliance. Plan by which site configuration will be left following structure removal should be included.
- 4. Location of debris staging areas and equipment/material laydown areas.

5. Method of protecting existing above-grade and below-grade services and utilities.
6. Methods for dust control and control of contaminants, including control of fugitive emissions in accordance with Section 01190, Environmental Safeguards and Compliance.
7. Materials, such as surfactants, to be used.
8. Methods of cutting, including equipment to be used.
9. Method of size/volume reduction in accordance with Waste Management Criteria in Section 01550.
10. Waste characterization and packaging

1.07 SEQUENCING OF WORK

- A. The sequencing of work activities is at the Subcontractor's discretion. The general sequence of the work process will potentially involve the following activities (at a minimum): submittal and approval process for the Work Package; possible decontamination activities; radionuclide inventory activities; possible NESHAPs submittal and approval process based on inventory data, demolition activities.
- B. Project breakdown by phases as described in paragraph 1.02 shall be followed. The Below Grade Removals could be accomplished under Phase I, Phase II, or a combination.
- C. Radionuclide emissions from DOE facilities to the atmosphere are subject to regulation by the U. S. EPA. The impact from DOE air emissions to any member of the public cannot exceed 10 mrem/year. Based on contractual agreements and other remediation work onsite, the Subcontractor cannot exceed 4.0 mrem/year for Building 38 demolition activities. Activities with the potential to result in an effective dose equivalent (EDE) > 0.1 mrem/year to a member of the public require U.S. EPA approval.

The Subcontractor shall calculate and provide to the buyer, a radionuclide inventory for all equipment and structure demolitions associated with this section. With this information, the Buyer will perform a NESHAPs emissions standards analysis for Building 38 dismantlement and demolition activities. Should this analysis exceed the NESHAPs emissions standard for release to the public, the subcontractor may have to perform area decontamination to bring the levels below the approved standard.

Then, per NESHAPs (40 CFR 61 Subpart H), the Buyer shall submit a request for approval of the Subcontractor's work package from the USEPA to proceed with the project based on the results of the above NESHAPs analysis. USEPA approval would be part of the 6 month lead time for work package approval process.

- D. Below Grade Removals shall not begin until:

1. Receipt of written Buyer approval of the Work Package that covers Below Grade Removals discussed in paragraph 1.06.
2. If accomplished as Phase II: The NESHAPs analysis is completed and approval is received from the U.S. EPA. See Section 01190, Environmental Safeguards and Compliance for further details regarding this subject.
3. Completion of all Utility Isolation and Removal activities that impact Below Grade Removals as covered in Section 01900.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. The Subcontractor shall supply all proper equipment necessary for the timely execution of the work in requisite numbers, sizes and capacity.
- B. The Subcontractor shall provide all incidentals and accessories as required for the proper execution of the work.

PART 3 EXECUTION

3.01 PREPARATION

- A. The Subcontractor shall establish access controls to the project area using appropriate signs and barriers.
- B. The Subcontractor shall ensure that adequate laydown space has been cleared and barriers have been established.
- C. The Subcontractor shall be responsible to ensure that the proper control measures are in place throughout the course of the project for slope protection and controls to reduce erosion, sedimentation, and water pollution through the use of erosion control devices in accordance with Section 01190, Environmental Safeguards and Compliance, and Section 02000, Site Work.
- D. In accordance with Section 01190, Environmental Safeguards and Compliance, the Subcontractor shall take precautions to control fugitive dust emissions. A wet dust suppression system is recommended.

3.02 APPLICATION

- A. The contractor shall prevent damage to adjacent structures, materials, and equipment including overhead and underground utilities during demolition activities. If concrete dust is generated as a result of demolition operations (due to crumbling, etc.), dust suppression techniques must be employed during demolition and, if necessary, during transportation.
- B. The Subcontractor shall utilize all methods available to perform activities with a

minimum of dust production.

- C. Subcontractor shall apply mechanical means of cutting and removing concrete/masonry and steel items to the largest extent possible while avoiding damage to adjacent structures, components, equipment, and utilities.
- D. All material shall be reduced in size as required for containerization or transfer as bulk waste in accordance with Section 01550 Waste Management.
- E. Embedded steel reinforcing is considered part of concrete. Reinforcing bar/mesh shall be cut to less than 1 ft. from concrete mass.
- F. Because of radiological contamination levels, some concrete may require local containment for cutting activities.
- G. Use of explosives is prohibited.
- H. Execute demolition work in an orderly, careful manner. Provide barricades, fences, lights, and other protection to protect adjacent access.
- I. Obtain advance approval from Buyer for any work performed in roadways or walkways adjacent to site and for any detouring of traffic. Provide all safety measures and devices required by the Buyer and applicable regulatory agencies.
- J. Remove and dispose of material resulting from demolition operations as soon as practical. Prevent spillage on streets or adjacent areas. Dispose of material in accordance with Section 01550 Waste Management. Burying debris is prohibited.
- K. Existing utility lines shown on site drawings should be considered to be approximate locations only. Field verify all existing utility lines prior to demolition or grading. Report deviations for the locations shown in writing to the Buyer prior to beginning demolition.
- L. Coordinate disconnection of piping and utilities with Buyer. Do not commence work until disconnections are approved in writing.
- M. Plug dead ends of disconnected gravity pipelines by plugging with concrete or standard pipe plugs. Cap or plug dead ends of disconnected pressure pipelines with standard pressure pipefittings, and anchor with concrete thrust blocks. Provide capped and plugged joints that are watertight.
- N. Preserve active utilities traversing project site, including, but not limited to, mains, lines, duct banks, manholes, catch basins, valve boxes, poles, guys, and other appurtenances in operating condition. Repair damage to any active utility in accordance with the Buyer's instructions.
- O. Where portions of concrete or asphalt work are to be retained, saw concrete along straight lines to a depth of not less than 2 in. Cuts shall be made perpendicular to face and in alignment with cut in opposite face. Break out remainder of asphalt or concrete, provided that broken area is concealed in finished work and that remaining is sound. Where broken

face cannot be concealed, ground smooth or the saw-cut shall penetrate entirely through the material.

- P. Areas of “fixed” contamination on the slab shall be coated with 2 applications of paint of contrasting colors.
- Q. Where portions of the slab have been removed, onsite crushed concrete/stone will be provided to the Subcontractor for use as backfill.
- R. All dismantlement or demolition and debris or equipment removal will stop at existing ground or lowest exposed concrete surface unless specified otherwise.
- S. All pipes or openings that remain at existing ground or lowest exposed concrete surface after equipment and pipe removal shall be sealed and sumps, pits, trenches or excavations covered.

3.03 QUALITY ASSURANCE

- A. The Subcontractor shall inspect debris generation, stockpiling and containerization to ensure that all materials meet size criteria and are being managed in accordance with Section 01550, Waste Management.

3.04 FINAL INSPECTION AND ACCEPTANCE

- A. Subcontractor shall perform a final inspection with the Buyer to ensure that the completed work satisfies all contractual requirements. A written punchlist will be made of those items or conditions not approved. Upon completion of a satisfactory inspection, the work will be accepted.
- B. Upon completion and acceptance of the work, the Subcontractor shall promptly remove all equipment, excess materials, and supplies from the work area (as applicable) and as otherwise noted on drawings and specifications.

END OF SECTION

SECTION 16000

ELECTRICAL

PART 1 GENERAL

1.01 SCOPE

- A. SECTION INCLUDES: Subcontractor to furnish all supervision, labor, materials, tools, and equipment, required to perform new Electrical Work shown on the Contract Drawings, as specified in this section or as required to successfully carry out the work.
- B. Contract Drawings and Specifications
 - 1. The Contract Drawings are an outline to indicate the approximate location and arrangement of conduit, wiring and equipment. Do not scale Contract Drawings, but check measurements at site and adjust work to fit space allotted. The Contract Drawings and specifications are intended to depict the general intent of the work in scope, layout, and quality of workmanship and are not intended to show or describe in minute detail all trades and accessories necessary for the proper and complete execution of the work.
- C. The work shall include the following areas:
 - 1. Temporary power distribution system, as shown on Drawing FSC010045, Sheets 1 and 2.
 - 2. Temporary lighting systems installation (interior and exterior).
 - 3. Temporary Alarm System
 - 4. Connection of mechanical equipment.
 - 5. Tie-ins to existing Mound utilities.
 - 6. Testing and Verification of building de-energization and temporary distribution system, in accordance with LO/TO procedures and Section 01110, Safety and Health.

1.02 TEMPORARY ELECTRICAL UTILITIES

- A. Temporary electrical power with special markings shall be installed to certain identified critical equipment including the Building 38 stack exhaust fan, the stack environment monitoring equipment, the stack aircraft warning lights, Building 38 sump equipment in Room 6E and the vacuum transfer system associated with the 10K tank and wastewater tanker.
- B. A temporary 480 volt power panel, a 208/120 volt existing lighting panel on the first floor and a 208/120 volt existing lighting panel on the second floor are available for the

Subcontractor's connection of equipment, and portable electrical distribution system.

- C. A portable electrical distribution system, which has GFCI breakers, shall be used for hand tools, small space heaters, RAD monitoring equipment, temporary lighting within the building interior and circuits for the existing 120 volt emergency lights (e.g. Spider System).
- D. All temporary wiring must meet or exceed NEC 1999 Article 305 - Temporary Wiring.
- E. All temporary wiring within the building must have special markings or color to allow for ease of identification.
- F. The local utilities company, Dayton Power & Light (DP&L), will provide a temporary 480v; 3 phase service to be used by the Subcontractor as the source of power for the existing Building 38 Substation (also known as the PP Substation).

1.03 MAJOR ELECTRICAL ACTIVITIES

- A. Separate Building 38 Substation (PP Substation) from the Mound electrical primary system. (See Drawing FSC010045, Sheets 1 and 2.)
 - 1. Prepare Building 38 Substation for DP&L temporary 480 volt feeder and transfer with meter and disconnect.
 - 2. Disconnect twelve (12) primary conductors from Building 38 Substation and splice all twelve primary conductors (15,000 volt shielded cable) in Manhole #PP-1 in order to maintain primary power to substations downstream of Building 38 (PP) Substation. BWXTO electrical distribution system consists of two completely separate primary feeders. Subcontractor will work on splicing one primary feeder while plant is powered by the other feeder. The plant will not experience a power outage during this work. (PPE requirements per NFPA 70E).
 - 3. Remove six 750 kcmil tie conductors from Building 38 Substation to Building 50 (AF) Substation.
 - 4. Tie in DP&L temporary 480 volt feeder to Subcontractor connection points. Stand-by Generator #2 will be disabled at time of attachment to DP&L temporary feeder.
 - 5. Remove Building 38 Substation main breaker and lock-out and tag the main breaker rails. Adjust breaker PP-D2 in Building 38 Substation for 250 amperes. Adjust breaker PP-C3 in Building 38 Substation for 240 amperes.
 - 6. Connect stack fan with a new motor starter and the existing stack lights directly to Building 38 Substation (Breaker D2).
 - 7. Remove existing conductors from Building 38 Substation Breaker B1. Mount weather head on substation and connect Breaker B1 through existing weather head on Room 70 Panel PD-5.

8. Building 38 Substation breakers (480v) must be calibrated and certification provided.
- B. Disable all Building 38 automatic transfer switches connected to Generator #2. (See Drawing FSD871697, Sheet 2. Drawing Index, Appendix B, Part 2, Building 38 Work Scope Supplemental Drawings).
- C. Maintain the 120 volt source to the stack environmental monitoring equipment currently located in Standby Generator #2 shed.
- D. Install Building 38 temporary distribution system. (See Drawing FSC010045, Sheets 1 and 2 with suggested installation.)
- E. Install Building 38 liquid level and stack alarms to single flashing light.
 1. The listed Building 38 (PP Bldg.) alarm contact points will be wired to a single flashing beacon light to be located on the outside wall of PP-70 located at the northwest corner of Building 38. Anyone of the alarm points must be wired to activate the flashing light, which will stay lit until it is manually reset. The light will be bright blue in color. The Building 38 alarm points are currently fed through the plant fire alarm data gathering panel (DGP). Individual alarm lights, within the area of the reset button shall indicate which alarm is signaling.
 2. Beacon light alarm points
 - a. The two (2) sump water level alarms (Building 38, Room 6E).
 - b. The tanker liquid level alarm (Building 38, Room 70).
 - c. The stack alarm that currently is connected to the auto-dialer (Stack Monitoring Shack).
 3. Upon completion of the work, the current signal lines to the DGP panel and the auto-dialer will be disconnected.
- F. Provide electrical distribution system throughout the building for such loads as temporary lighting, hand tools, small space heaters, existing 120 volt emergency lighting, etc. (e.g. Spider System). Emergency lighting is a safety system which must remain in service while the building is occupied per the Fire Hazard Analysis.
- G. Test and verify that Building 38 is de-energized, except for the above temporary distribution system.

1.04 RELATED SECTIONS

- A. Section 01110 Safety and Health
- B. Section 01150 Work in Radiologically Contaminated Areas
- C. Section 01500 Construction Facilities and Project Boundaries

- D. Section 01900 Utility Isolation and Removal
- E. Section 01300 Submittals
- F. Section 01460 Integrated Work Control

1.05 REFERENCES

- A. NFPA 70 - National Electrical Code.
- B. NFPA 70E – Standard Electrical Safety Requirements 2000 Edition
- C. IEEE - Institute of Electrical and Electronic Engineers
- D. OSHA - Occupational Safety and Health Administration
- E. Underground Electrical Layout Drawing FSC010034

1.06 SUBMITTALS

- A. In accordance with Section 01300, Submittals, shop drawings, catalog data, equipment and material lists, elementary diagrams, wiring diagrams, installation instructions, maintenance manuals and instructions, and operation brochures, shall be submitted for equipment and materials in accordance with the code. If materials or equipment are required and are not specifically listed herein, the most closely related item listed will govern the type of submittal required.
- B. Submit a detailed work package that covers “Building 38 Substation Isolation” for approval by Buyer, in accordance with Section 01460, Integrated Work Control.
- C. Submit documentation that Building 38 is de-energized except for new temporary power system.
- D. Submit copies of test reports to Buyer as performed.
- E. Outage, permit, and/or Buyer support service requests shall utilize the Construction Daily Report as described in Section 01010.
- F. Electrical work shall be performed by qualified personnel of a firm regularly engaged in such installation for at least five years. Submit for information evidence of qualifications.

1.07 QUALITY ASSURANCE

- A. Regulatory Requirements –The latest published edition of the following shall apply:
 - 1. All electrical work shall be in accordance with the requirements of the National Electrical Code (NEC) except where specifically otherwise noted on the drawings and in the specifications.

2. All overhead line work shall be in accordance with the requirements of the National Electric Safety Code (NESC) except where specifically otherwise noted on the drawings in the specifications.

B. Workmanship:

1. Outlet boxes shall be left with cover or device plates installed with all mounting screws. Non-used knock-outs to have approved closures.

C. Inspection

1. All work shall be subject to inspection and approval by the Buyer and shall not be concealed until such inspection and approval has been made.

D. Test and Reports

1. Test all work incidental to this contract and demonstrate to the Buyer all requirements have been met.
2. Defective materials, equipment or connections shall be repaired or replace and retested until satisfactory results are obtained.
3. Test all wiring and junctions for continuity and grounds before equipment is connected.
4. Notify the Buyer 24 hours prior to any test. Tests not witnessed by the Buyer shall be substantiated in written report.
5. Verify rotation of three phase motors, reconnecting as required.

1.08 DELIVERY, STORAGE AND HANDLING

- A. Storage and Handling - Store all materials on site in enclosures or under protective covering to keep them clean and dry. Do not store materials directly on the ground. Care shall be taken in handling so as not to damage materials. The use of damaged materials will not be permitted.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. All electrical materials provided by the Subcontractor shall be new.
- B. All electrical equipment and materials furnished and installed shall bear the Underwriters' Laboratories Label of Approval for the particular service fitted. Exceptions shall be submitted for approval.
- C. Manufacturers' Directions: All manufactured articles, material and equipment shall be

applied, installed, connected, erected, used, cleaned and conditioned, as directed by the manufacturer unless specified to the contrary.

- D. Provide any offsets, fittings, etc., as a part of this contract. All equipment and installation materials obviously intended to complete any system shall be furnished whether or not enumerated herein.
- E. Keys: Properly tag all keys and other devices necessary to gain access to panelboards, control panels, and equipment enclosures. Furnish a minimum of two (2) keys to the Buyer for each item.

PART 3 EXECUTION

3.01 EXAMINATION

- A. The Subcontractor shall verify all existing conditions against the Contract Drawings and specifications. Discrepancies shall be brought to the Buyer's attention, as soon as possible.

3.02 PREPARATION

- A. Protection
 1. Make delivery of material and equipment to construction site only after prior arrangement for storage and protection have been made.
 2. All motorized equipment, switches, controllers, control cabinets, light fixtures and rotating equipment shall be covered securely to exclude dust and moisture. All stored conduit shall be placed on pallets and protected from weather and from entry of foreign material.
 3. Protect factory finishes on equipment. Secure necessary covers and padding to provide maximum protection against all weather elements, plastering, painting and other types of damage.
- B. The Subcontractor shall be responsible for coordinating the work with other crafts to minimize interferences. Coordinate the locations and mounting characteristics of all electrical equipment and materials, with the work to be performed by other trades. Coordination is for the purpose of avoiding any interferences with the work of other disciplines.

3.03 DEMOLITION

- A. All wires, cables and conduits to be demolished shall be removed back to the source of power for the circuit involved. Under no circumstances shall unused conductors be left in an exposed, unprotected condition. Conduit to be reused may remain in place but all wires and cables to be demolished shall be removed back to source.

3.04 INSTALLATION

- A. If deviations from drawings are necessitated by field conditions, proposed departures shall be referred to the Buyer for written approval prior to proceeding with the work.
- B. Subcontractor is responsible to verify all measurements. Refer to architectural, structural, special equipment, and mechanical drawings, specifications, and approved prints for details, dimensions and location of other work.
- C. Subcontractor shall ensure installation/demolition activities are in compliance with ordinances and statutes.
- D. The Subcontractor shall check all building openings for admitting equipment and shall arrange with the Buyer, the proper locations of all chases, sleeves, boxes, and inserts required for the admission of and the supporting of all conduit and equipment entering into this work.
 - 1. All conduits and equipment shall be adequately supported either suspended from the construction above or by means of struts to the construction below. Suspension from metal decking will not be permitted.
 - 2. The Subcontractor shall be responsible for the provision of supplementary angles, channels, plates, rods, etc., where supports are required between building structural members, spanning the space and attached to building structural members by welding, bolting or with concrete anchors which are required for suspension or support of conduit and equipment.
 - 3. To the extent possible, equipment and material installed under this phase of work shall be supported from the building structure, independent of other pipe, duct, equipment, etc.
- E. Install electrical items in a manner to clear overhead doors, ductwork, piping, and other miscellaneous equipment.

3.05 LINES AND GRADES:

- A. No cutting shall be done which will reduce the structural strength of the building. Keep cutting to a minimum.

3.06 FIELD QUALITY CONTROL

- A. Cleaning
 - 1. Leave area in a clean and safe condition. All debris must be removed.

3.07 FINAL INSPECTION AND ACCEPTANCE

- A. Subcontractor shall perform a final inspection with the Buyer to ensure that the completed work satisfies all contractual requirements. A written punchlist will be made of those items or conditions not approved. Upon completion of a satisfactory inspection,

the work will be accepted.

- B. Upon completion and acceptance of the work, the Subcontractor shall promptly remove all equipment, excess materials, and supplies from the work area (as applicable) and as otherwise noted on drawings and specifications.

END OF SECTION